

TE	PROJECT NO.		PCN	SECTION NO.	SHEET NO.
)	BRO-0011(021)	23275	1	1	
GOVERNING SPECIFICATIONS			Date Published and Adopted by the North Dakota Department of Transportation		
Standard Specifications			1/1/202	22	
Supplemental Specifications			NONI	E	
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PROJECT	GROSS MILES	NET MILES
BRO-0011(021)	0.133	0.133
TOTAL	0.133	0.133

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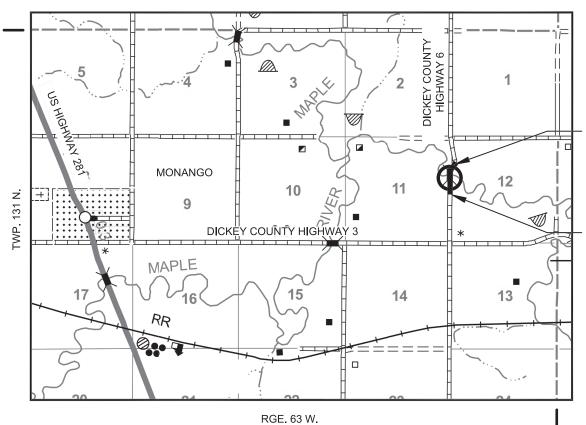
PLAN SECTIONS

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2	1	Table of Contents	D-101-10	NDDOT Utility Company and Or
4	1	Scope of Work	D-101-20, 21	Line Styles
6	1	Notes	D-101-30, 31, 32, 33	Symbols
6	1	Environmental Notes	D-260-1	Erosion And Siltation Controls -
8	1	Quantities	D-261-1	Erosion Control - Fiber Roll Plac
10	1	Basis of Estimate	D-622-1	Pile Splice Details
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76	1 - 2	Temporary Erosion Control	D-704-11	Construction Sign Details - War
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			D-764-40	MGS W-Beam Guardrail Genera
			D-764-48	Typical Grading at Bridge Ends

SPECIAL PROVISIONS

_	Number	Description
	PSP 19(22)	Permits and Environmental Considerations
	SSP 1	Temporary Erosion and Sediment Best Management Practices
	SSP 2	Federal Migratory Bird Treaty Act
	SSP 3	Local Agency Contracts

ber 1-1, 2, 3, 4 1-10 1-20, 21 1-30, 31, 32, 33 0-1 1-1 2-1 4-6	ND LIST OF STANDARD DRAWINGS Description NDDOT Abbreviations NDDOT Utility Company and Organization Abbreviations Line Styles Symbols Erosion And Siltation Controls - Silt Fence Erosion Control - Fiber Roll Placement Details Pile Splice Details	BRO-0011(021)	2 No.	<u>NO.</u>					
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2-1	Pile Splice Details								
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	Construction Sign Details Project Funding Sign								
D-704-8 Breakaway Systems For Construction Zone Signs - U-Channel Post									
-704-9 Construction Sign Details - Terminal And Guide Signs									
4-10	Construction Sign Details - Regulatory Signs								
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4-13	Barricade And Channelizing Device Details								
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4-24	Mounting Details Perforated Tube								
4-24A	Breakaway Coupler System For Perforated Tubes								
4-37	Sign Punching, Stringer and Support Location Details Regulatory, Warr	ning and Guide Signs							
4-38	MGS Flared Energy Absorbing Terminal - Wood Post								
4-40	MGS W-Beam Guardrail General Details								
	Typical Grading at Bridge Ends with MGS W-Beam Guardrail								
	4-11 4-13 4-14 3-6 4-23 4-24 4-24 4-24A 4-37 4-38	 4-11 Construction Sign Details - Warning Signs 4-13 Barricade And Channelizing Device Details 4-14 Construction Sign Punching And Mounting Details 8-6 Erosion And Siltation Controls - Median Or Ditch Inlet Protection 4-23 Perforated Tube Assembly Details 4-24 Mounting Details Perforated Tube 4-24A Breakaway Coupler System For Perforated Tubes 4-37 Sign Punching, Stringer and Support Location Details Regulatory, Warr 4-38 MGS Flared Energy Absorbing Terminal - Wood Post 	 4-11 Construction Sign Details - Warning Signs 4-13 Barricade And Channelizing Device Details 4-14 Construction Sign Punching And Mounting Details 8-6 Erosion And Siltation Controls - Median Or Ditch Inlet Protection 4-23 Perforated Tube Assembly Details 4-24 Mounting Details Perforated Tube 4-24A Breakaway Coupler System For Perforated Tubes 4-37 Sign Punching, Stringer and Support Location Details Regulatory, Warning and Guide Signs 4-38 MGS Flared Energy Absorbing Terminal - Wood Post 	 4-11 Construction Sign Details - Warning Signs 4-13 Barricade And Channelizing Device Details 4-14 Construction Sign Punching And Mounting Details 3-6 Erosion And Siltation Controls - Median Or Ditch Inlet Protection 4-23 Perforated Tube Assembly Details 4-24 Mounting Details Perforated Tube 4-24A Breakaway Coupler System For Perforated Tubes 4-37 Sign Punching, Stringer and Support Location Details Regulatory, Warning and Guide Signs 4-38 MGS Flared Energy Absorbing Terminal - Wood Post 					



END PROJECT

STA. 20+50 = A POINT APPROXIM. 1,429 FEET SOUTH AND 155 FEET THE NORTHEAST CORNER OF SE TWP. 131 N., RGE. 63 W.

BEGIN PROJECT

STA. 13+50 = A POINT APPROXIM 2,088 FEET SOUTH OF THE NORT CORNER OF SEC. 11, TWP. 131 N

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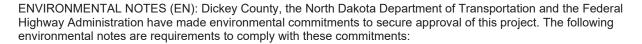
NOTES

- **100-P01 UTILITIES:** Utilities that the Engineer has been made aware of are shown in the plans. Other Utilities may exist that are not shown. The horizontal utility locations shown in the plans and specifications are approximate. Plan locations should not be interpreted as exact for bidding or construction purposes.
- **202-P01 REMOVAL OF STRUCTURE:** The existing structure is a 28-foot concrete tee beam bridge, with a deck width of 25 feet.
- **202-P02 REMOVAL OF AGGREGATE MATERIALS**: Removal of aggregate material is included in the Excavation quantity in Section 10.
- **203-P01 COMMON EXCAVATION-TYPE B:** Include all costs associated with excavating, transporting, and placing the material in the price bid for "COMMON EXCAVATION-TYPE B". "COMMON EXCAVATION-TYPE B" will be paid at plan quantity. Any change to plan quantity must be approved by the Owner or Engineer.
- 203-P02 COMMON EXCAVATION-WASTE: Excess material as listed in the earthwork summary is to be disposed of in accordance with Section 107.17 of the Standard Specifications. Include all costs associated with disposing of excess material in the price bid for "COMMON EXCAVATION-WASTE". "COMMON EXCAVATION-WASTE" will be paid at plan quantity.
- **203-P03 BENCHING ON WIDENING SECTIONS:** Bench all inslopes regardless of rate of slope unless directed otherwise. Construct benches deep enough to provide sufficient width to permit placing, spreading and compacting equipment to operate and compact each bench thoroughly before placing additional embankment. Include the cost of benching in the price bid for earthwork items.
- **262-P01 FLOTATION SILT CURTAIN:** Install the "FLOTATION SILT CURTAIN" on the water prior to removal of the existing riprap, bridge components and the stripping of any topsoil in the adjacent area (see Sheet 1 Section 20). Place the flotation silt curtain at a distance that allows for sufficient area to construct the project without placing material against the flotation silt curtain. The silt curtain will not be paid for twice.
- **708-P01 SEEDING:** Seed all the disturbed areas of the right of way and construction easements, except the roadbed.
- **754-P01 SIGNING:** Stockpile existing signs onsite in an accessible location for Dickey County Highway Department to collect.

Existing Signs					
Sign	Quantity	Mounting Style			
Type III Barricade	2	Skid Mounted			
Bridge Marker	4	Post Mounted			
Warning Sign	5	Post Mounted			

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ENVIRONMENTAL NOTES



EN-1 SPAWNING RESTRICTION: Do not work within the Maple River from April 15 to June 1.

<u>EN-2</u> 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, Benjamin Holen, at 701-368-9117 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). If an inspection is not required, no follow up documentation is required.

<u>EN-3 TEMPORARY WETLAND IMPACT</u>: Temporary impact areas within wetlands and or other waters are incorporated into the plans for this project. Remove temporary fill placed and sedimentation in wetlands or other waters. Restore these wetlands to preconstruction contours.

<u>EN-4</u> <u>DEBRIS</u>: Minimize debris falling into the Maple River to the maximum extent practicable. Retrieve any debris that falls into the waterway.

<u>EN-5</u> WETLAND MITIGATION CREDITS: Prior to beginning any work on the project, purchase exactly 0.17 acre of wetland mitigation credits from Ducks Unlimited to satisfy the Environmental Commitments shown in Section 75 of the plans. No work can begin on the project until a Credit Sales Letter from Ducks Unlimited is submitted to and accepted by the project engineer.

Purchase the wetland mitigation credits from the Missouri River Basin Southern Zone service area. The details are:

Missouri River Basin Southern Zone 0.17 Credits @ \$76,000/credit = \$12,920

The contact information to purchase the wetland mitigation credits from Ducks Unlimited is Trenton Hieb Regional Biologist - Ecosystem Services - Mitigation Ducks Unlimited (Great Plains Region) 2525 River Road Bismarck. ND 58503 Phone: 701-355-3573 Email: thieb@ducks.org

<u>EN-6</u> PRE-CONSTRUCTION PHOTOS AND NOTIFICATION: In accordance with the Section 404 Permit issued for the project (see PSP 19(22)), notify the US Army Corps of Engineers (USACE), North Dakota Regulatory Office, of the anticipated start date for the work at least 10 days prior to commencing construction activities within waters of the US (i.e., jurisdictional wetlands and Other Waters as shown in Section 75). At the same time, submit pre-construction site photographs and/or satellite imagery of the waters of the US to the USACE that have been taken no more than one year prior to initiation of construction activities. Photos shall include all major project features and waters of the US, including avoidance areas. Reference Project Number NWO-2022-01182-BIS when contacting the USACE.

<u>EN-7</u> <u>POST-CONSTRUCTION PHOTOS</u>: In accordance with the Section 404 Permit issued for the project (see PSP 19(22)), provide ground photographs of the completed work within waters of the US to the owner. Identify the camera positions and view-angles of the ground photographs on a map, aerial photograph, or project drawing. Photos shall include all major project features and waters of the US, including avoidance areas. The owner will provide these photos and additional information to the USACE in accordance with the permit.

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Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	Mainline:	
103	0100	CONTRACT BOND	L SUM	1	
202	0105	REMOVAL OF STRUCTURE	L SUM	1	
203	0102	COMMON EXCAVATION-TYPE B	CY	1261	
203	0109	TOPSOIL	CY	351	
203	0113	COMMON EXCAVATION-WASTE	CY	137	
210	0099	CLASS 1 EXCAVATION	L SUM	1	
210	0127	CHANNEL EXCAVATION	L SUM	1	
210	0201	FOUNDATION PREPARATION	EA	1	
216	0100	WATER	M GAL	31	
251	0200	SEEDING CLASS II	ACRE	0.53	
251	2000	TEMPORARY COVER CROP	ACRE	0.53	
253	0101	STRAW MULCH	ACRE	1.06	
256	0200	RIPRAP GRADE II	CY	431	
260	0200	SILT FENCE SUPPORTED	LF	50	
260	0201	REMOVE SILT FENCE SUPPORTED	LF	50	
261	0112	FIBER ROLLS 12IN	LF	1850	
261	0113	REMOVE FIBER ROLLS 12IN	LF	915	
262	0100	FLOTATION SILT CURTAIN	LF	110	
262	0101	REMOVE FLOTATION SILT CURTAIN	LF	110	
302	0356	AGGREGATE SURFACE COURSE CL 13	TON	570	
602	0130	CLASS AAE-3 CONCRETE	CY	100.6	
602	1130	CLASS AE-3 CONCRETE	CY	75	
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	314	
604	9900	PRESTRESSED I-BEAM-36IN	LF	455	
612	0115	REINFORCING STEEL-GRADE 60	LBS	10142	
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	12082	
622	0020	STEEL PILING HP 10 X 42	LF	700	
624	0151	RAILING	LF	188	
702	0100	MOBILIZATION	L SUM	1	
704	1000	TRAFFIC CONTROL SIGNS	UNIT	312	
704	1052	TYPE III BARRICADE	EA	8	
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	647	
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	17	
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	27.6	
764	0131	W-BEAM GUARDRAIL	LF	157	
764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	4	
900	2001	WETLAND MITIGATION SITE 1	ACRE	0.17	

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		50	
		1850	
		915	
		110 110	
		570	
		100.6	
		75	
		314 455	
		10142	
		12082	
		700	
		188 1	
		312	
		8	
		647	
		17	
		27.6 157	
		4	
		0.17	

BASIS OF ESTIMATE

Aggregate Surface Course CL 13

Seeding & Mulching

Water

1.875 Ton/CY (Shrinkage and Compaction)

All disturbed areas within the right of way and project limits minus hard surfaces.

50 M Gal/Mile for Dust Palliative 10 Gal/CY for Embankment 20 Gal/Ton for Aggregate Surface Course CL 13

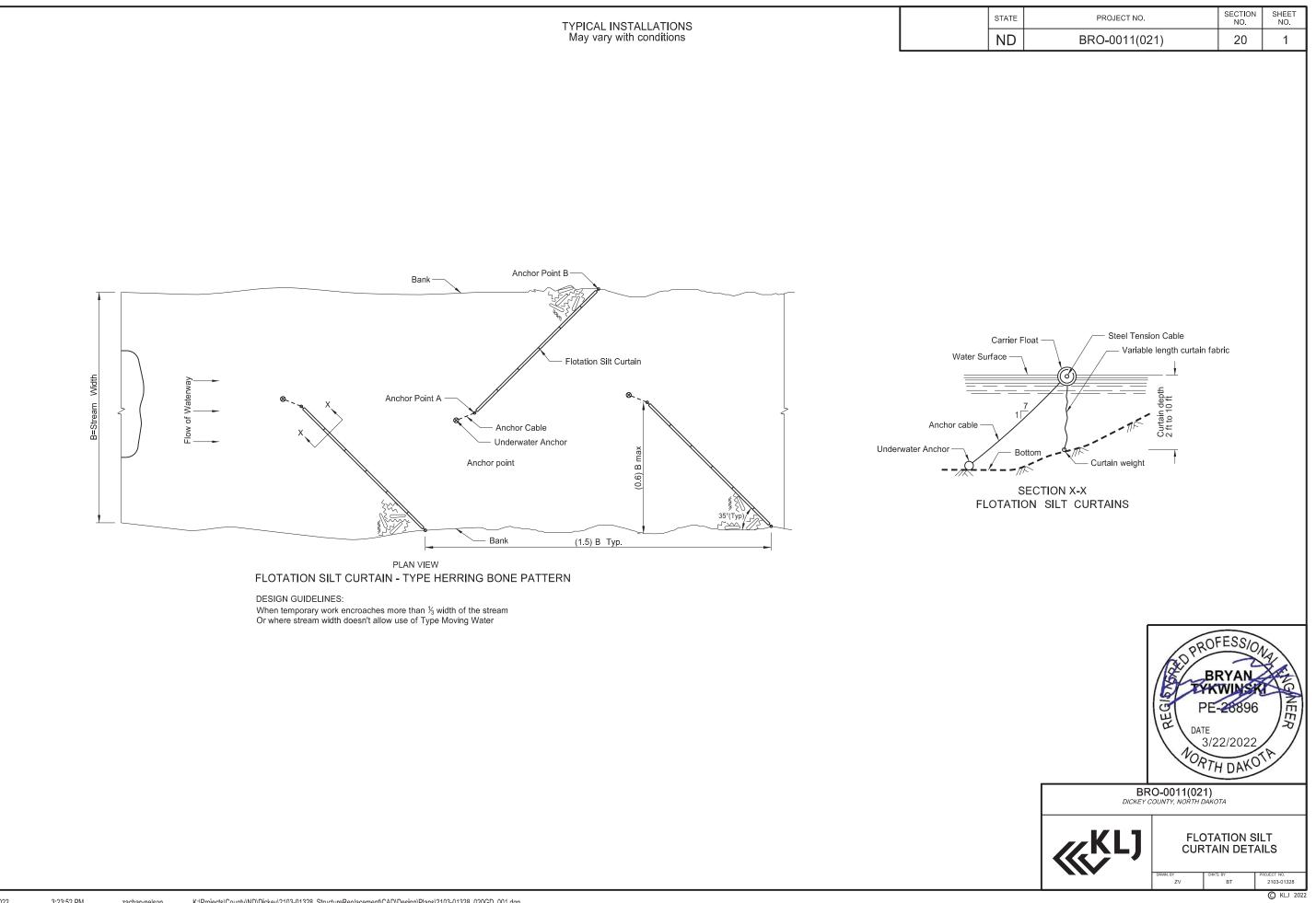
Earthwork Summary								
	Earthwork					Topsoil		
Location	Excavation ¹ (CY)	Embankment ² (CY)	203-0102 Common Excavation-Type B (CY)	203-113 Common Excavation-Waste (CY)	Tospoil Stripped (CY)	203-0109 Topsoil (CY)	Excess Topsoil (CY)	
	А	В	С	D = A - B	Е	F	G = E - F	
BRO-0011(021)	1,398	1,261	1,261	137	494	351	143	

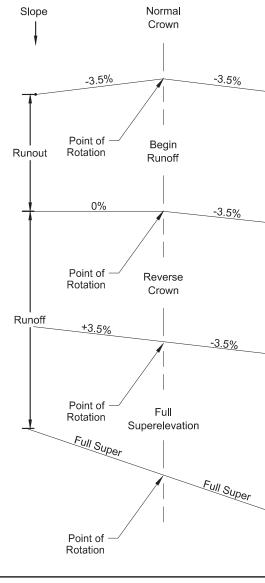
1) Includes existing aggregate.

2) Embankment quantities include 35% for shrinkage for roadway grading and 50% shrinkage and losses for channel grading.

3) Topsoil quantities based on 6" stripping and 4" respreading. Excess topsoil shall be uniformly spread on the site within the ROW.

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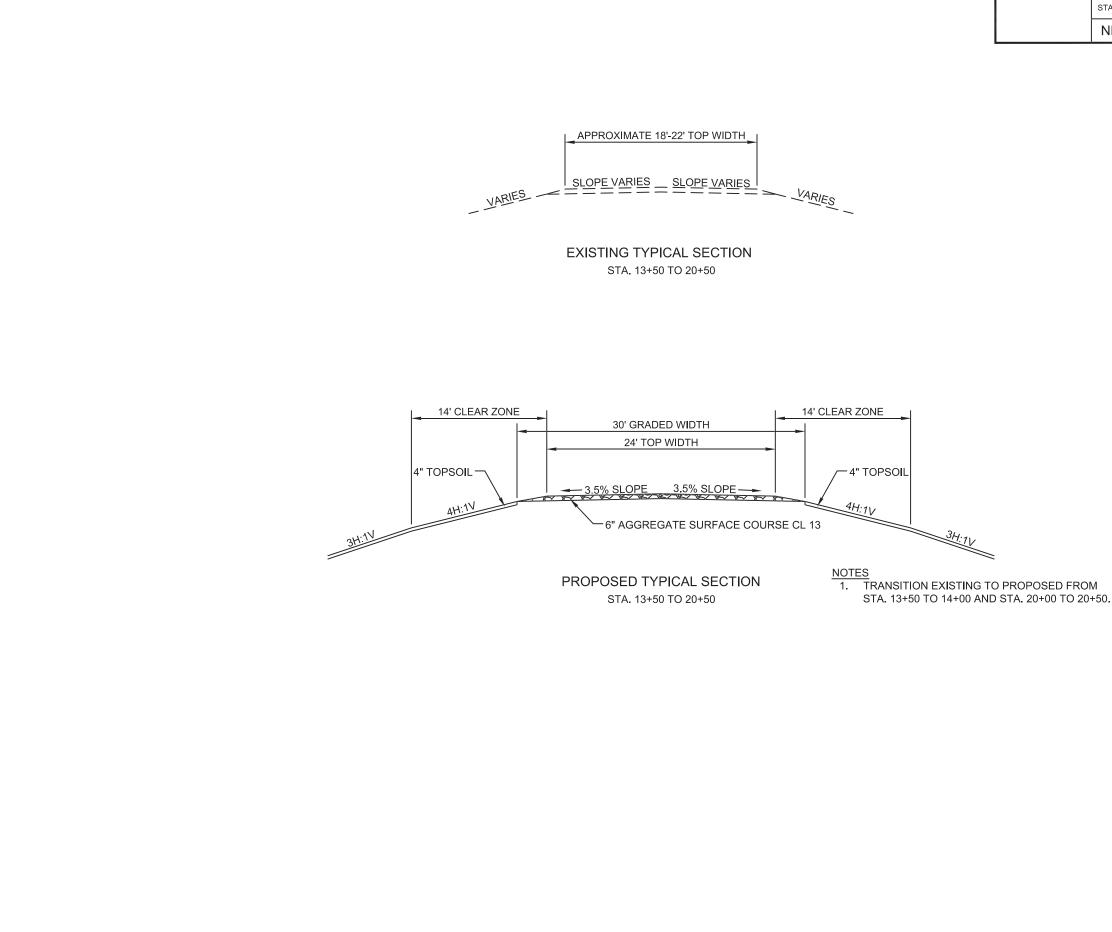




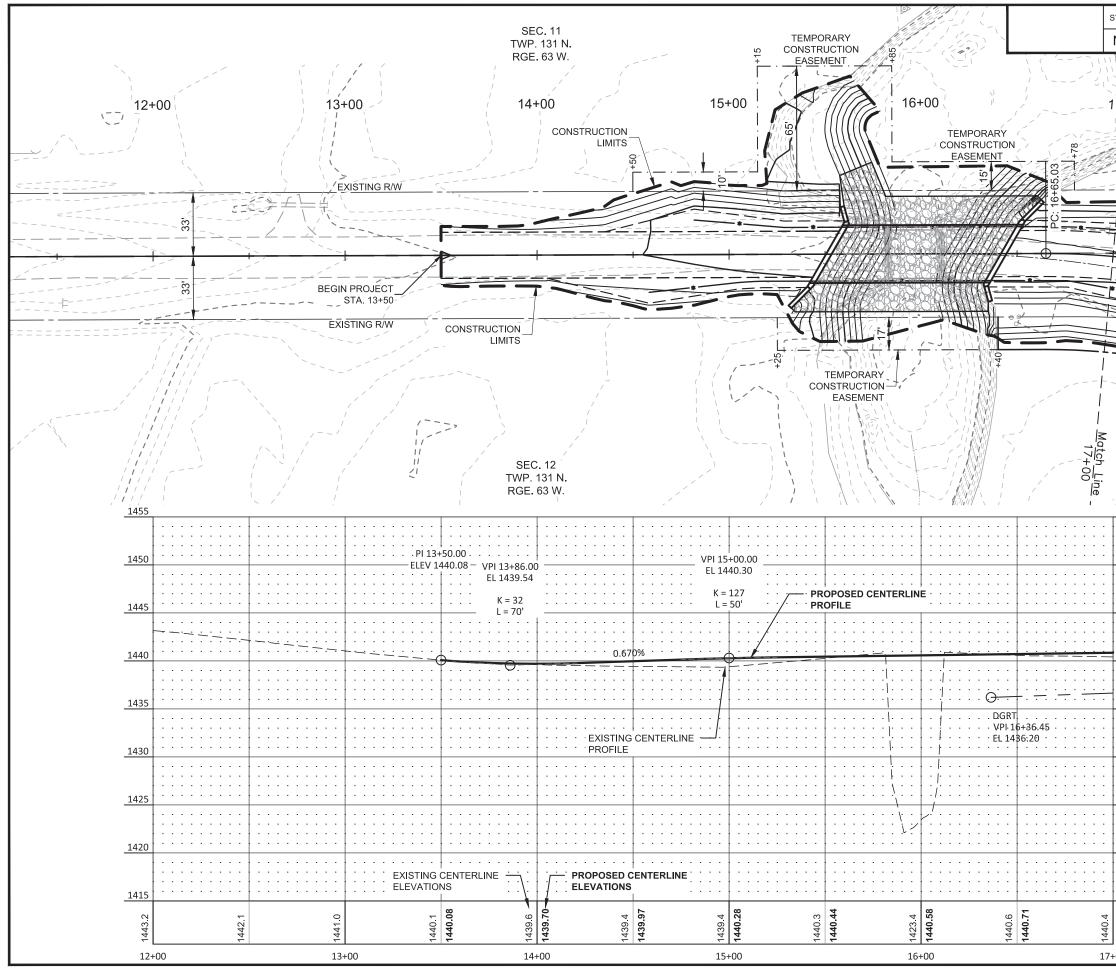
Represents a Right Turning Curve.

P.C. Station		16+65.03						
P.I. Station		17+77.63						
Delta =		33°51'02"						
Degree =		00°16'12"						
Tangent =		112.59'						
Length =		218.60'						
Radius =		370.00'						
P.T. Station		18+83.63						
	Station	Left Slope	Right Slope					
Begin Runout	13+95.84	-3.5	-3.5					
Begin Runoff	14+63.58	0.0	-3.5					
Reverse Crown	15+41.00	3.5	-3.5					
Reverse Crown	16+55.35	3.5	-3.5					
Begin Full Super	17+03.74	6.0	-6.0					
End Full Super	18+44.92	6.0	-6.0					
Reverse Crown	18+93.31	3.5	-3.5					
End Runoff	19+61.05	0.0	-3.5					
End Runout	20+28.79	-3.5	-3.5					

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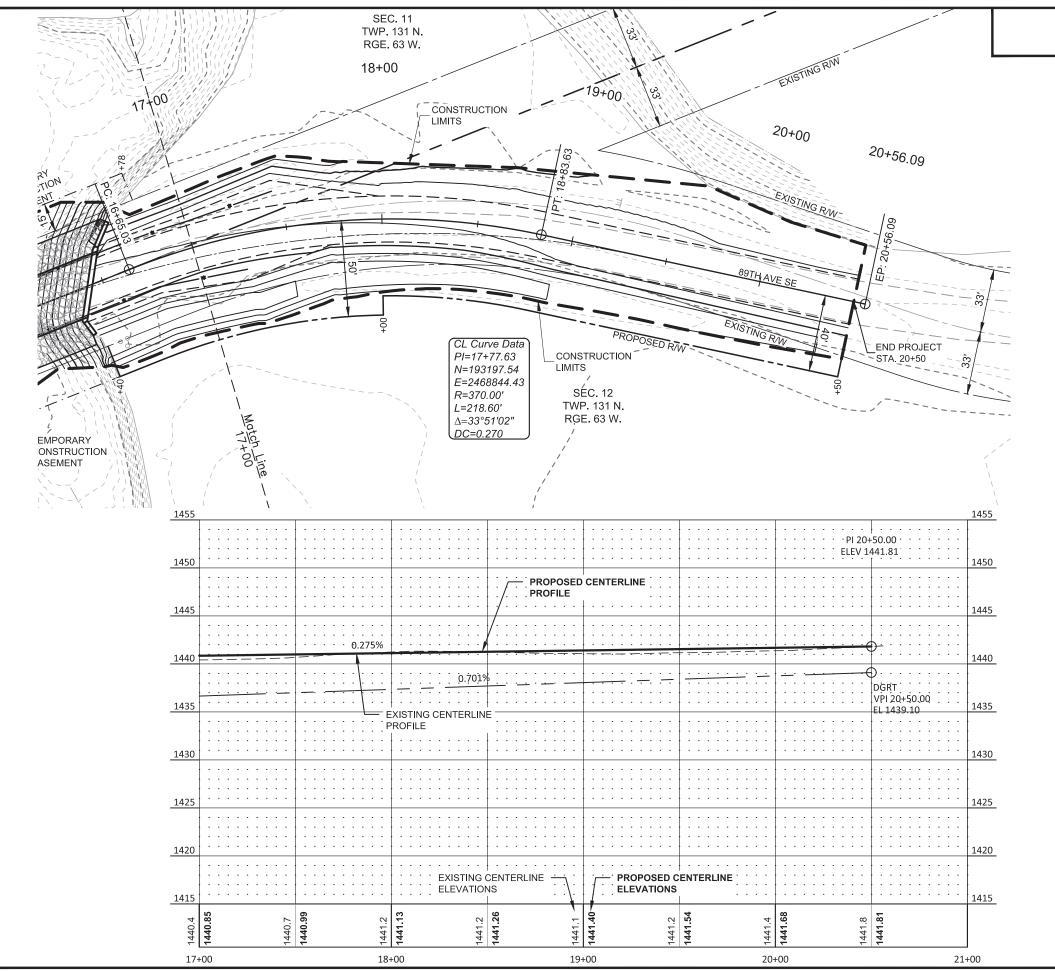


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						Wetland In	npact Table	Э					
						V	Vetland Impac	ct			We	etland Mitigat	ion
Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands ¹	Wetland Impac	and Impacts Acre(s) USFWS Easement Impact Acre(s)			Mitigation Proposed			USACE/1	
					Temp.	Perm. (Fill/Drain)	Perm. (Cut)	Temp.	Perm.	EO 11990	USACE	USFWS	Location
1a	Sec. 11, T131N, R63W	Riverine	Natural	Y	0.014	0.022	-	0	0	Y	Y	-	DU ILF; 2:1
1c	Sec. 11 & 12, T131N, R63W	Riverine	Natural	Y	0.002	-	-	0	0	N	N	-	-
				Totals	0.016	0.022	0.000	0.000	0.000				

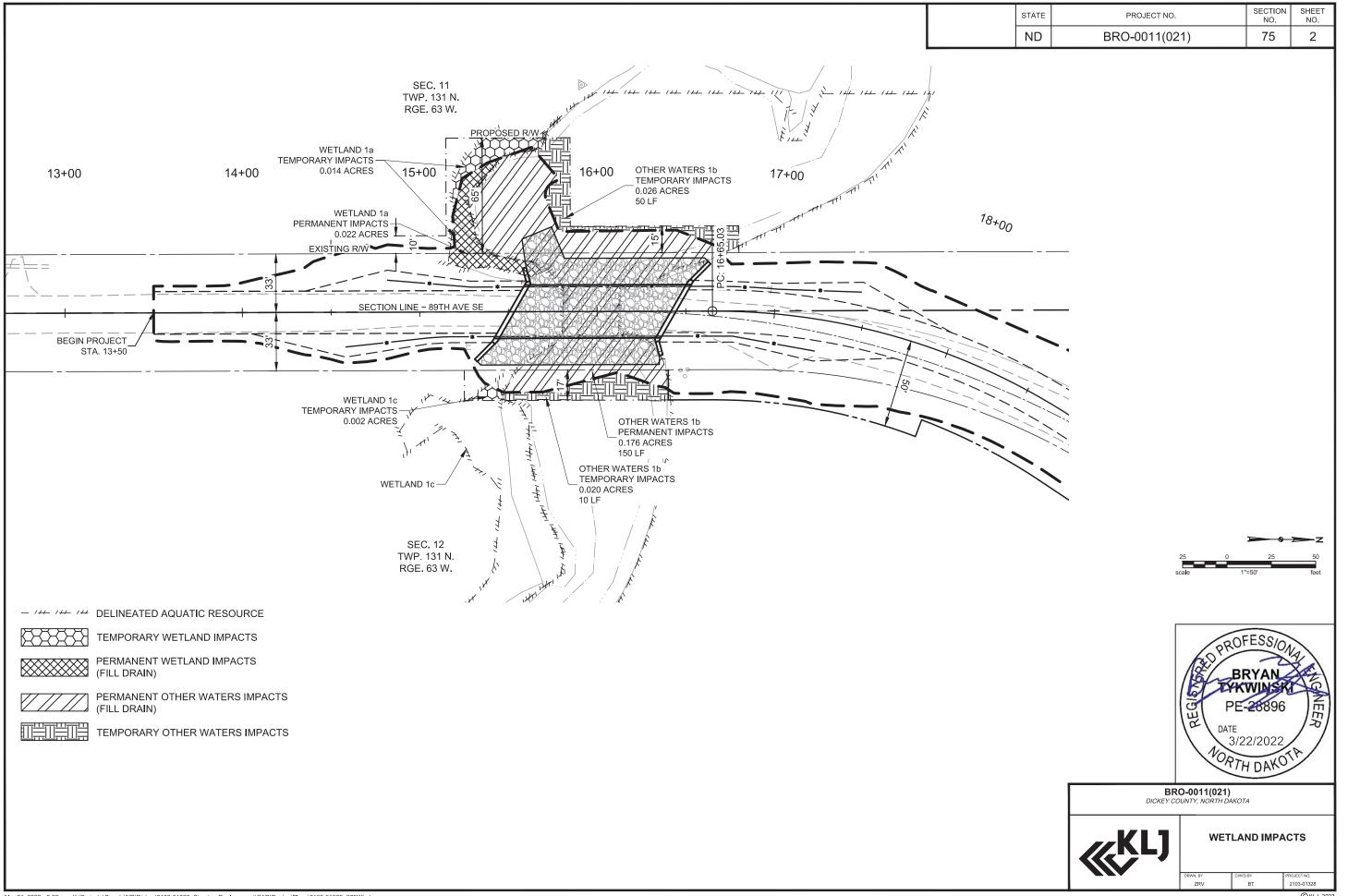
	Other Waters Impact Table												
							Impacts to C	Other Waters			Other Water Mitiga		
OW Number	Location	OW Type	OW Feature	USACE Jurisdictional		Acres Linear Feet		Mitigation Proposed		ed			
				our our official	Temp.	Perm. (Fill/Drain)	Perm. (Cut)	Temp.	Perm. (Fill/Drain)	Perm. (Cut)	EO 11990	USACE	USFWS
OW 1b	Sec. 11 & 12, T131N, R63W	River	Natural	Y	0.046	0.176	-	60	150	-	N	Y 2	-
				Totals	0.046	0.176	0.000	60	150	0			

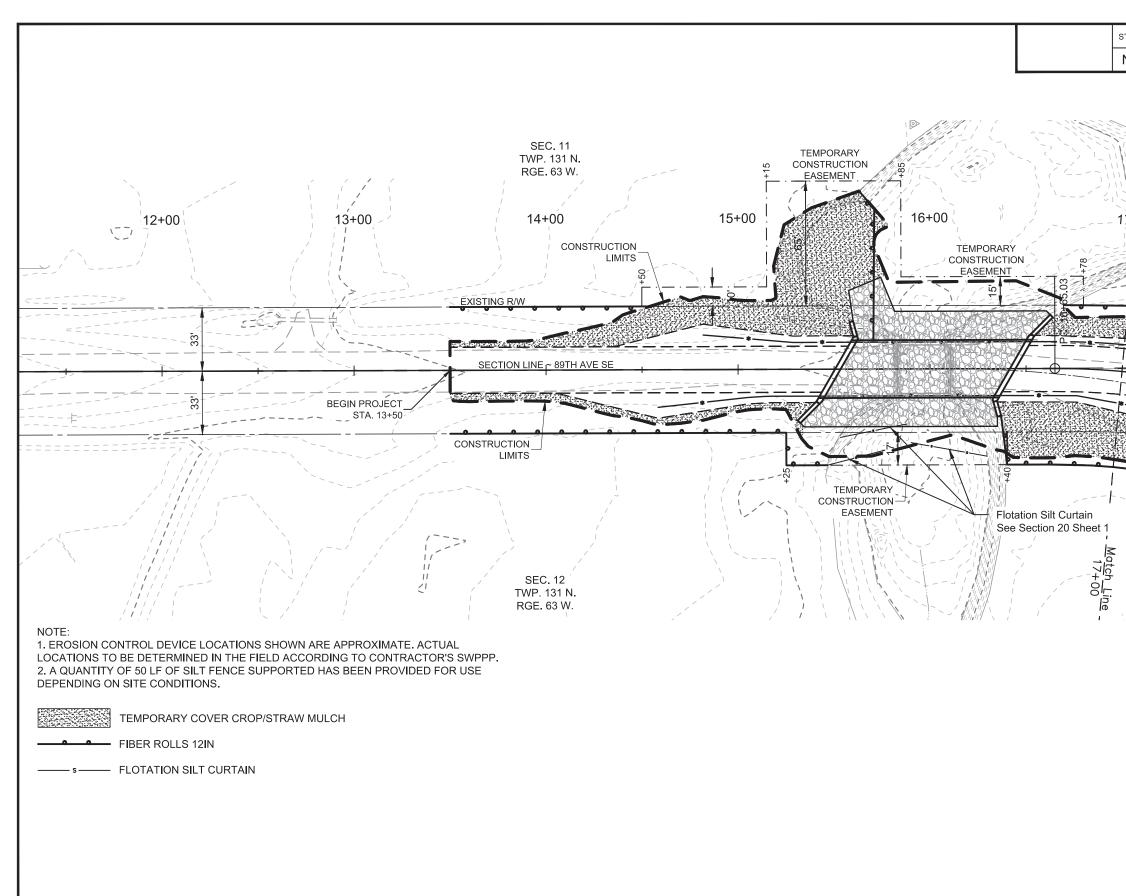
All aquatic resources are assumed to be under USACE jurisdiction.

² Compensatory mitigation not proposed where channel would be riprapped (0.114 acres) because

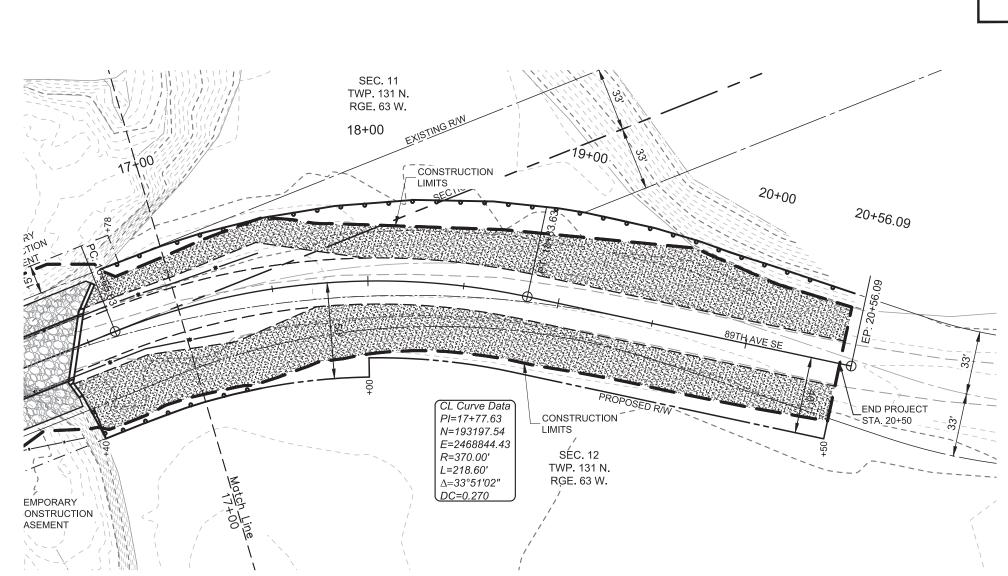
	Impact Summar	y Table	
Permanent	Impact Summary	Temporary I additional in	
Wetland Type	Total Acre(s)	WaterType	Total Acre(s)
Natural/JD (Fill/Drain)	0.022	Temporary Wetland JD	0.016
Natural/Non-JD (Fill/Drain)	-	Non-JD Wetland Temporary	-
Artificial/JD (Fill/Drain)	-		
Artificial /Non-JD (Fill/Drain)	-	Permanent OW	0.176
Total	0.022	Temporary OW	0.046
JD Natural (Cut)	-	Permanent OW-d	-
JD Artificial (Cut)	-	Temporary OW-d	-
Non-JD Natural (Cut)	-		
Non-JD Artificial (Cut)	-		
Total	0.000		

							_							
								S	TATE		PROJEC ⁻	T NO.	SECTION NO.	SHEET NO.
								1	ND DI		BRO-0012	1(021)	75	1
	Wetland Im	nact Table	•											
		etland Impac				Wet	land Mitigat	ion						
npac	ts	Acre(s)	USFWS Easer Acre	ment Impacts e(s)	м	litigation Proposed	ł	USACE/	11990 Bar	ınk				
	Perm.	Perm.	Temp.	Perm.	EO 11990	USACE	USFWS	Location	Aci	re(s)				
	(Fill/Drain) 0.022	(Cut) -	0	0	Y	Y		DU ILF; 2:1		.044				
	-	-	0	0	N	N	-	-		-				
	0.022	0.000	0.000	0.000	J				0.0	.044				
	Other W	/aters Impa				• • • • • • • • • • • • • • • • • • •								
		Impacts to C	ther Waters					er Water Mitig	gation					
	Acres	Dama		Linear Feet	Dama	Mit	igation Propose	ed	U	USACE/119	90 Bank			
	Perm. (Fill/Drain)	Perm. (Cut)	Temp.	Perm. (Fill/Drain)	Perm. (Cut)	EO 11990	USACE	USFWS		cation	Acre(s)			
	0.176 0.176	0.000	60 60	150 150	- 0	N	Y 2	-	DUIL	LF; 2:1	0.124 0.124			
	01110	01000		100	ů	1				L	01121			
				Mitigation Su	Immary Table									
		Loca	ition	Ditch Shift Acre(s)	Onsite Acre(s)	11990 Bank Acre(s)	USACE/ 11990 Bank Acre(s)	USFWS Banl Acre(s)	¢					
	USACE Only	-		-	-	\geq	-		>					
	EO 11990 Only	-		-	-	-	\ge		>					
	USACE/11990	DU	ILF	-	-	\ge	0.17	\geq	_					
	USFWS	-		-	\ge	\geq	\times	-	_					
			Total	0	0	0	0.17	0						
											DICI DICI	BRO-00111(021 key county, north I	TLAND TABL	HIGNIEER A
											·	DRWN. BY ZRV		DJECT NO. 2103-01328





TATE		PROJECT NO.		SECTION NO.	SHEET NO.		
ND		BRO-0011(02	21)	76	1		
SPE	C CODE	BID ITEM		Q	TY UNIT		
<u>251</u>	2000	TEMPORARY CO STA. 13+50 TO 17		0.	.18 ACRE		
<u>253</u>	0101	STRAW MULCH STA. 13+50 TO 17	-+00	0.	.18 ACRE		
	0200	SILT FENCE SUP STA. 13+50 TO 17			25 LF		
7†0 <u>260</u>	0201	REMOVE SILT FE STA. 13+50 TO 17			25 LF		
<u>261</u>	0112	FIBER ROLLS 12II STA. 13+50 TO 17		5	015 LF		
<u>261</u>	0113	REMOVE FIBER R STA. 13+50 TO 17		5	515 LF		
<u>262</u>	0100	FLOTATION SILT STA. 13+50 TO 17		1	10 LF		
262	0101	REMOVE FLOTAT STA. 13+50 TO 17			10 LF		
		s	25 0 ccale	25 1"=50'	50		
			HEGISTAN DAT	010010000)\$		
			O-0011(021) DUNTY, NORTH DA	КОТА			
	TEMPORARY EROSION CONTROL STA. 13+50 TO 17+00						
			DRWN. BY ZRV	снко ву БТ	PROJECT NO. 2103-01328 CKLJ 2022		



NOTE:

 EROSION CONTROL DEVICE LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD ACCORDING TO CONTRACTOR'S SWPPP.
 A QUANTITY OF 50 LF OF SILT FENCE SUPPORTED HAS BEEN PROVIDED FOR USE DEPENDING ON SITE CONDITIONS.



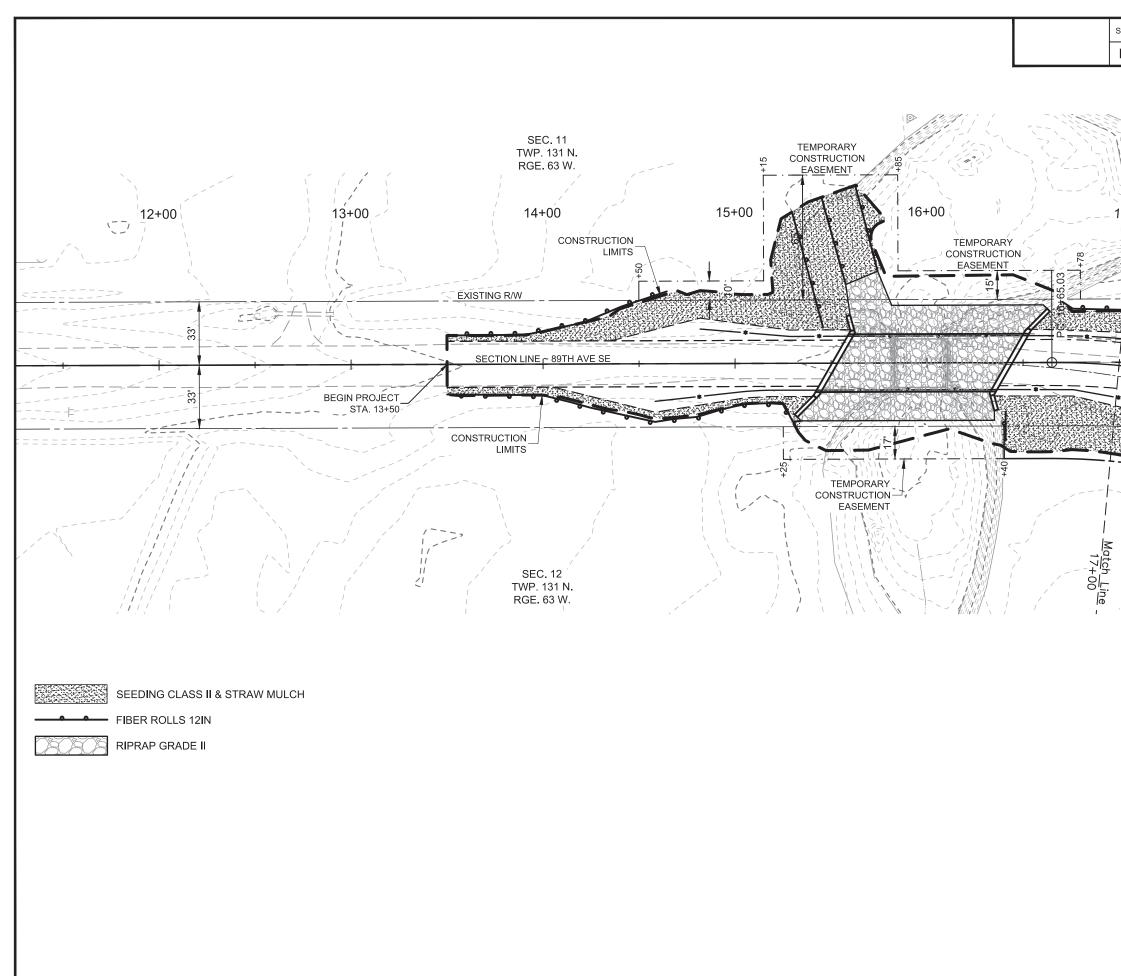
TEMPORARY COVER CROP/STRAW MULCH

FIBER ROLLS 12IN

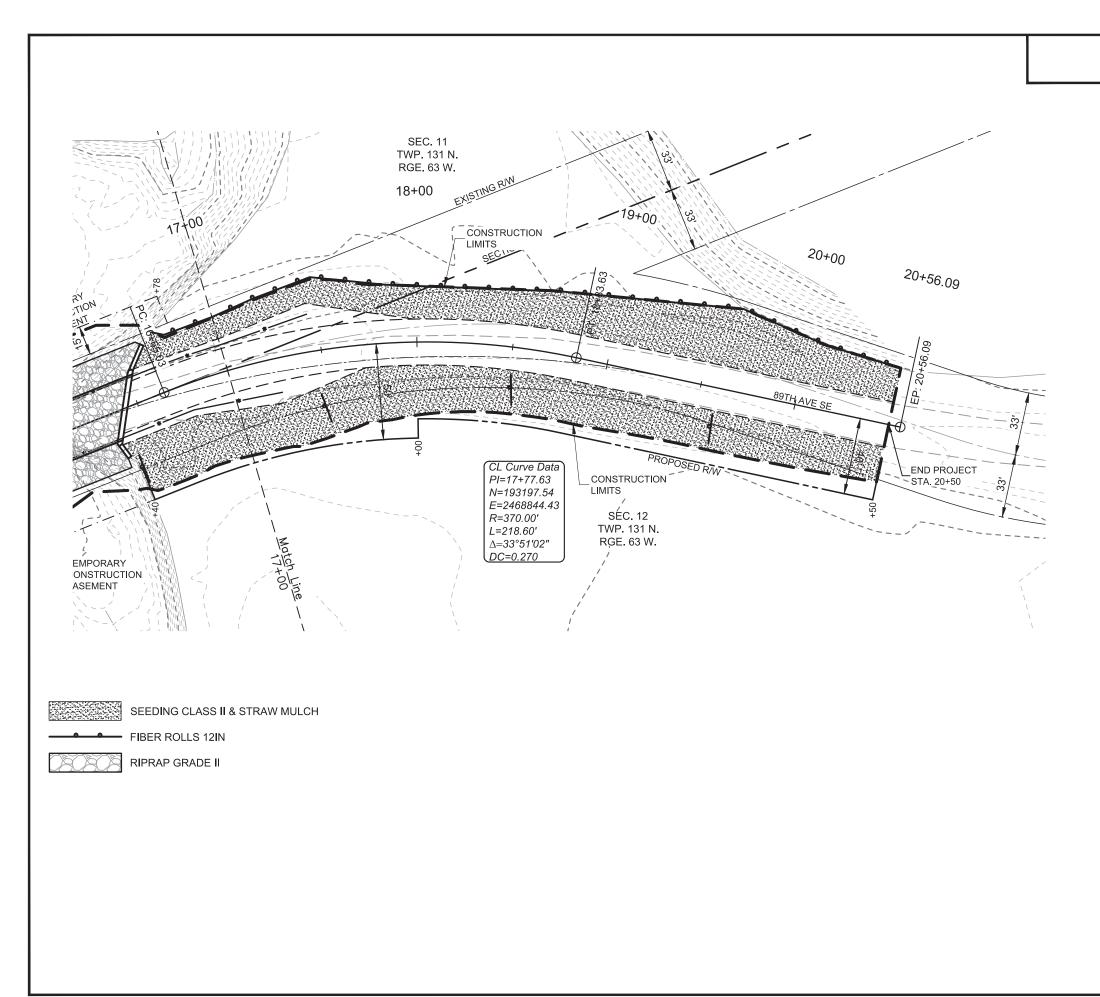
-s ----- FLOTATION SILT CURTAIN

	SECTION	SHEET
TATE PROJECT NO.	NO.	NO.
ND BRO-0011(021)	76	2
SPEC CODE BID ITEM	QT	Y UNIT
251 2000 TEMPORARY COVER CROP STA. 17+00 TO 20+50	0.3	34 ACRE
253 0101 STRAW MULCH STA. 17+00 TO 20+50	0.;	34 ACRE
260 0200 SILT FENCE SUPPORTED STA. 17+00 TO 20+50	:	25 LF
260 0201 REMOVE SILT FENCE SUPPORT STA. 17+00 TO 20+50		25 LF
261 0112 FIBER ROLLS 12IN STA. 17+00 TO 20+50	40	00 LF
261 0113 REMOVE FIBER ROLLS 12IN STA. 17+00 TO 20+50	40	00 LF
BRO-0011(021) DICKEY COUNTY, NORTH DAKO EROSI STA. 11	07A MPORARY ON CONTE 7+00 TO 20	feet

s



							SECTION	SHEET
STATE				DJECT NO.			NO.	NO.
ND		E	SKO-0	011(02	21)		77	1
	SPEC C	ODE E	BID ITEN	Л			Q.	TY UNIT
The second	251 02			G CLASS +50 TO 17			0.	18 ACRE
际长	<u>253 0′</u>	101 S	STRAW STA. 13+	MULCH +50 TO 17	7+00		0.	18 ACRE
-1-				OLLS 12 +50 TO 17			5	25 LF
					25 scale	0	25 "=50'	50 feet
				BR	REG-0011	DATE NORT	FESS/0, RYAN, WINS -28896 22/2022 4 DAKO	HIGNEER
				DICKEY C	CO-0011	(021) DRTH DAKO	TA	
			Ķ	LJ		EROSIC	RMANENT DN CONTI +50 TO 1	ROL
					DRWN. BY ZRV	СНК	D BY F BT	2103-01328



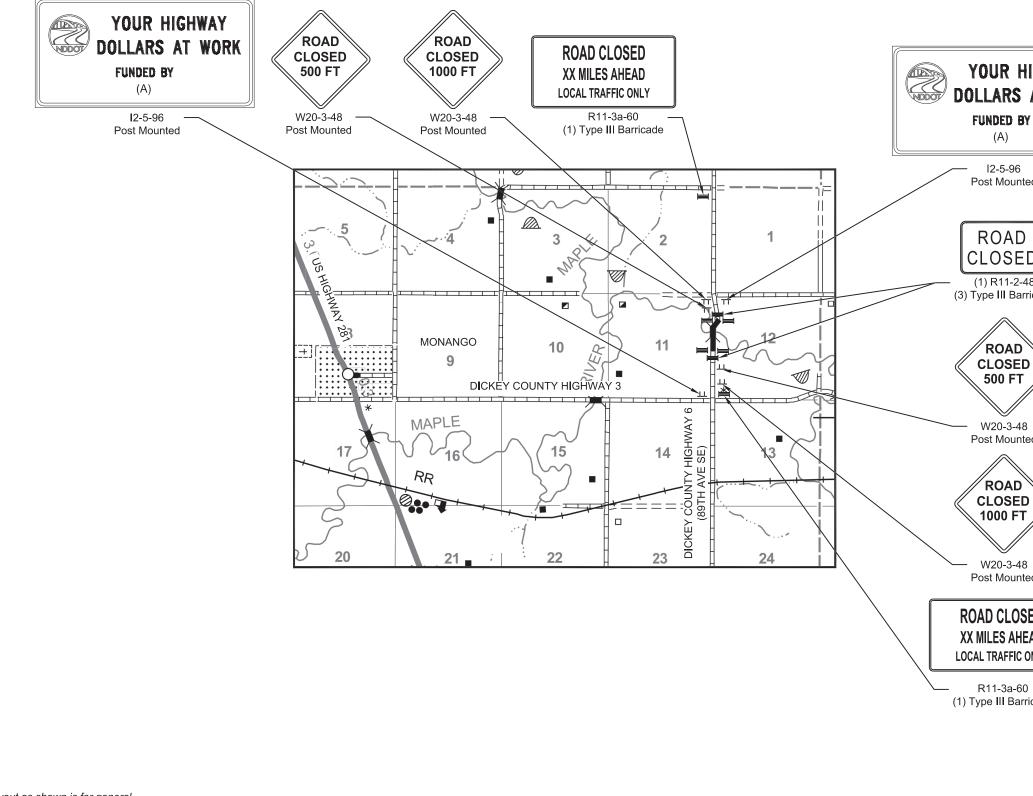
STATE			PROJECT NO.		SECTION NO.	SHEET NO.
ND			BRO-0011(02	21)	77	2
	SPEC	CODE	BID ITEM		QT	Y UNIT
	251	0200	SEEDING CLASS STA. 17+00 TO 20		0.3	34 ACRE
	253	0101	STRAW MULCH STA. 17+00 TO 20	2450		34 ACRE
	261	0112			0.3	ACRE
			STA. 17+00 TO 20)+50	41	10 LF
						7
				25 0	25	50
				scale	1"=50'	feet
				OPRO	FESSION	
				B	RYAN	
				E PE	-28896	E
				DATE	20/0000	/\$/
				NORT	22/2022 H DAKO	A
	Г		BR	20-0011(021)	TURIT	
	┟		DICKEY C	OUNTY, NORTH DAKC		
			KL]	EROSI	RMANENT ON CONTR 7+00 TO 20	
				DRWN. BY CHI ZRV		OJECT NO. 2103-01328
				· · ·		©KLJ 2022

		STATE			F	ROJECT	NO.		SECTION NO.	SHEET NO.
		ND			BRO	-0011((02	1)	81	1
				SUR	VEY	CON	1TF		NTS	
	PI	NT M	NOR	THING		EASTIN		ELEV ESCRIPTION	STA	OFFSET
-	DI	FK#1 10	0/ 81	7 78	2 469	,784.56	1	469.76		
						"KLJ Ct				
	/0					1120 01		<u> </u>		
	R٦	FK#2 19	90,94	4.10	2,468	,929.04	1	480.75		
	5∕8	X 18 In	ch R	ebar w	ith cap	"KLJ Ct	trl P	t"		
_										
+										
-							Γ			
								a DPRO	FESS/0/	
								B		TE)
								PE PE	-28896	NEE
		All coordi on this do	ocum	ent deriv	ved fron			I DATE	00/0000	/لخر/
		Internatio	onal F	oot defi	nition.			NORT	2/2022 H DAKO	(A)
								0-0011(021)		
JS		H MARK				DICKE	EY CO	UNTY, NORTH ΔΑΚΟ	TA	
	D 1	8			K	(L)		SURVEY (CUF	COORDIN	
T: S	5							DRWN. BY CHK ZRV		ROJECT NO. 2103-01328
_								I		©KLJ 2022

				PRELIMINARY	SURVEY COORDINATE AND CL	JRVE DATA -	BRO-00	11(021)		STATE ND	PROJECT NO BRO-0011(0		SECTION NO.SHEET NO.811
	HORIZO	ONTAL ALIGNME	ENT		CURVE DATA	US F	PUBLIC L	AND SURVE	Y DATA		SURVEY CONT		ITS
PNT	STATION	NORTHING	EASTING		ARC DEFINITION	CORNER	IRN	NORTHING	EASTING	PNT NC			STA OFFSET
BOP	13+50.00	192,769.96	2,468,850.44	CURVE 1			T-	131-N R-63-W			CONTROL POINT	DESCRIPTION	
PC	16+65.03	193,084.96	2,468,846.01	PI STA= 17+77.63		NE Cor Sec 11	11-C	194,858.14	2,468,821.08	RTK#1 194,	,817.78 2,468,784.56	1469.76	
PI	17+77.63	193,197.54	2,468,844.43	DELTA= 33°51'02"		SE Cor Sec 11	11-E	189,580.64	2,468,895.27	5% X 18 Inch	Rebar with cap "KLJ Ctrl	Pt"	
PT	18+83.63	193,291.92	2,468,905.82	D= 00°16'12"									
EOP	20+50.00	193,431.38	2,468,996.54	R= 370.00'									
				T= 112.59'						RTK#2 190,	,944.10 2,468,929.04	1480.75	
				L= 218.60'						5% X 18 Inch	Rebar with cap "KLJ Ctrl	Pt"	
												B	ESS/ONY RYAN
										on this doc	ates and measurements ument derived from the al Foot definition.	DATE 3/2	26896 FEE 2/2022 1 DAKOTH
											DI	RO-0011(021)	
						Assumed Coo	rdinates			G BENCH MARK DPUS		COUNTY, NORTH DAKOT.	4
NOTES:					Date Survey Completed 10/20/2021	All coordinates Plane Coordina They are derive System of 1983	on this sheet a ites. d from the "Noi 3". NAD83(CON	e North Dakota State th Dakota Coordinate US), South Zone	NAVD-88		//KL1	SURVEY C	OORDINATE & VE DATA
											DRWN. BY CHKD		

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
E5-1-48	48"x48"	EXIT GORE		35	
G20-1-60	60"x24"	ROAD WORK NEXT MILES		28	
G20-1b-60	60"x24"	NO WORK IN PROGRESS (Sign and installation only)	_	18	
G20-2-48 G20-4-36	48"x24" 36"x18"	END ROAD WORK PILOT CAR FOLLOW ME (Mounted to back of pilot car)		26 18	
G20-4-50 G20-10-108	108"x48"	CONTRACTOR SIGN		70	
G20-50a-72	72"x36"	ROAD WORK NEXT MILES RT & LT ARROWS		43	
G20-52a-72	72"x24"	ROAD WORK NEXT MILES RT or LT ARROW		36	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT		59	
1 2-5-96 M1-1-36	96"x48" 36"x36"	YOUR HIGHWAY DOLLARS AT WORK INTERSTATE ROUTE MARKER (Post and installation only)	2	59 10	118
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)		10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)		10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)		7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)		7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)		7	
M3-4-24 M4-8-24	24"x12" 24"x12"	WEST (Mounted on route marker post) DETOUR (Mounted on route marker post)		7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT		15	
M4-10-48	48"x18"	DETOUR (INSIDE ARROW) RIGHT or LEFT (Mounted on barricade)		7	
M5-1-21	21"x15"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)		7	
M5-1-30	30"x21"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)		9	
M6-1-21	21"x15"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)		7	
M6-1-30	30"x21" 21"x15"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)	+	9	l
M6-3-21 R1-1-48	21"x15" 48"x48"	DIRECTIONAL ARROW UP (Mounted on route marker post) STOP	+	7 32	
R1-2-60	60"x60"	YIELD		29	
R2-1-36	36"x48"	SPEED LIMIT (Portable only)		30	
R2-1-48	48"x60"	SPEED LIMIT		39	
R2-1aP-24	24"x18"	MINIMUM FEE \$80 (Mounted on Speed Limit post)		10	
R3-2-48	48"x48"	NO LEFT TURN		35	
R4-1-48 R4-7-48	48"x60" 48"x60"	DO NOT PASS KEEP RIGHT		39 39	l
R5-1-48	48 x60 48"x48"	DO NOT ENTER		39	
R6-1-54	54"x18"	ONE WAY RIGHT or LEFT (Mounted on STOP or DO NOT ENTER post)		14	
R7-1-12	12"x18"	NO PARKING ANY TIME		11	
R10-6-24	24"x36"	STOP HERE ON RED		16	
R11-2-48	48"x30"	ROAD CLOSED (Mounted on barricade)	2	12	24
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)	-	12	-
R11-3a-60 R11-3c-60	60"x30" 60"x30"	ROAD CLOSEDMILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade) STREET CLOSED MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)	2	15 15	30
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC (Mounted on barricade)		15	
W1-3-48	48"x48"	REVERSE TURN RIGHT or LEFT		35	
W1-4-48	48"x48"	REVERSE CURVE RIGHT or LEFT		35	
W1-4b-48	48"x48"	TWO LANE REVERSE CURVE RIGHT or LEFT		35	
W1-6-48	48"x24" 48"x48"	ONE DIRECTION LARGE ARROW	_	26	
W3-1-48 W3-3-48	48"x48"	STOP AHEAD SIGNAL AHEAD		35 35	
W3-4-48	48"x48"	BE PREPARED TO STOP		35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD		35	
W4-2-48	48"x48"	LANE ENDS RIGHT or LEFT		35	
W5-1-48	48"x48"	ROAD NARROWS		35	
W5-8-48	48"x48"		+	35	l
W5-9-48 W6-3-48	48"x48" 48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW TWO WAY TRAFFIC		35 35	
W8-1-48	48"x48"	BUMP	-	35	
N8-3-48	48"x48"	PAVEMENT ENDS	1	35	
N8-7-48	48"x48"	LOOSE GRAVEL		35	
N8-11-48	48"x48"	UNEVEN LANES		35	
N8-12-48	48"x48"			35	l
N8-17-48 N8-53-48	48"x48" 48"x48"	SHOULDER DROP-OFF SYMBOL TRUCKS ENTERING HIGHWAY		35 35	
N8-53-46 N8-54-48	46 x46 48"x48"	TRUCKS ENTERING HIGHWAY		35	
N8-55-48	48"x48"	TRUCKS CROSSING AHEAD or FT or MILE		35	
N8-56-48	48"x48"	TRUCKS EXITING HIGHWAY		35	
N9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL		35	
N13-1P-30	30"x30"	MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)		14	
N 14-3-64 N 16-2P-30	64"x48" 30"x24"	NO PASSING ZONE FEET PLAQUE (Mounted on warning sign post)		28 10	
W20-1-48	48"x48"	ROAD WORK AHEAD or FT or MILE		35	
N20-1-40	48"x48"	DETOUR AHEAD or FT orMILE		35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or FT or _ MILE	4	35	14
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or FT or MILE		35	
W20-5-48	48"x48"	RIGHT or CENTER or LEFT LANE CLOSED AHEAD or FT or _ MILE		35	
W20-7-48	48"x48"			35	
W20-8-18 W20-52P-54	18"x18"	STOP - SLOW PADDLE Back to Back NEXT MILES (Mounted on warning sign post)		5 12	
W20-52P-54 W21-1-48	54"x12" 48"x48"	NEXTMILES (Mounted on warning sign post) WORKERS	+	12 35	
W21-1-48	48 x48	FRESH OIL		35	
W21-2-40	48"x48"	ROAD MACHINERY AHEAD or FT or MILE	1	35	
	48"x48"	SHOULDER WORK	1	35	

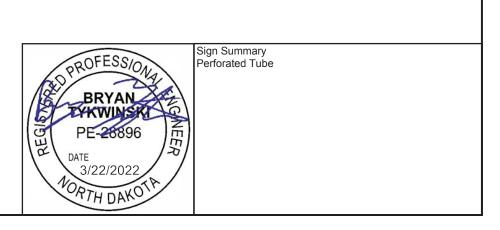
					STATE		PRO	DJECT NO.	SECTION NO.	SHEET NO.
				ľ	ND		BRO-	0011(021)	100	1
SIGN NUMBER	SIGN SIZE	DESCRIPTION		•	AMOUN REQUIRE		UNITS SUB TOTAL]		
21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or	FT or MILE			35		-		
/21-6-48	48"x48"	SURVEY CREW				35		-		
V21-50-48 V21-51-48	48"x48" 48"x48"	BRIDGE PAINTING AHEAD or FT			_	35 35		-		
V21-52-48	48"x48"	PAVEMENT BREAKS				35		-		
V21-53-48	48"x48"	RUMBLE STRIPS AHEAD				35				
V22-8-48	48"x48"	FRESH OIL LOOSE ROCK			-	35		-		
					_			-		
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								NOTE:		
								If additional si required, units	-	
PEC & CO	DE								ng the formula	
704-1000		TRAFFIC CONTROL SIGNS	Т	OTAL UNITS			312	from Section		
		·						Design Manua http://www.do		
SPEC & CODE		DESCRIPTION		UNIT	QUANTITY			http://www.do	Lind.gov/	
		0								
704-0100 704-1048	FLAGGIN			MHR						
		E RUMBLE STRIPS		FACH						
704-1050	TYPE IB.	LE RUMBLE STRIPS ARRICADES		EACH EACH						
704-1050 704-1052	TYPE III	ARRICADES BARRICADES		EACH EACH	8			· · · · · · · · · · · · · · · · · · ·		
704-1050 704-1052 704-1060	DELINEA	ARRICADES BARRICADES TOR DRUMS		EACH EACH EACH	8				OFESSIO	
704-1050 704-1052 704-1060 704-1065 704-1067	TYPE III DELINEA TRAFFIC TUBULAR	ARRICADES BARRICADES TOR DRUMS CONES R MARKERS		EACH EACH EACH EACH EACH	8			PF	OFESSIO	
704-1050 704-1052 704-1060 704-1065 704-1067 704-1070	TYPE III DELINEA TRAFFIC TUBULAR DELINEA	ARRICADES BARRICADES TOR DRUMS CONES MARKERS TOR		EACH EACH EACH EACH EACH EACH EACH	8				OFESSIO,	V A
704-1050 704-1052 704-1060 704-1065 704-1067 704-1070 704-1072	TYPE III DELINEA TRAFFIC TUBULAR DELINEA FLEXIBLI	ARRICADES BARRICADES TOR DRUMS CONES R MARKERS TOR E DELINEATORS		EACH EACH EACH EACH EACH EACH EACH	8				-	V A
704-1050	TYPE III DELINEA TRAFFIC TUBULAF DELINEA FLEXIBLI STACKAI	ARRICADES BARRICADES TOR DRUMS CONES MARKERS TOR		EACH EACH EACH EACH EACH EACH EACH	8			1 Alexandre	OFESSIO BRYAN	A CO
704-1050 704-1052 704-1060 704-1065 704-1067 704-1070 704-1072 704-1080 704-1081 704-1085	TYPE III I DELINEA TRAFFIC TUBULAF DELINEA FLEXIBLI STACKAI VERTICA SEQUEN	ARRICADES BARRICADES TOR DRUMS CONES R MARKERS TOR E DELINEATORS BLE VERTICAL PANELS L PANELS - BACK TO BACK CING ARROW PANEL - TYPE A		EACH EACH EACH EACH EACH EACH EACH EACH	8			10 TO	BRYAN	A CO
704-1050 704-1052 704-1060 704-1065 704-1067 704-1070 704-1072 704-1080 704-1081 704-1085 704-1086	TYPE III I DELINEA TRAFFIC TUBULAF DELINEA FLEXIBLI STACKAI VERTICA SEQUEN SEQUEN	ARRICADES BARRICADES TOR DRUMS CONES MARKERS TOR E DELINEATORS 3LE VERTICAL PANELS L PANELS - BACK TO BACK CING ARROW PANEL - TYPE A CING ARROW PANEL - TYPE B		EACH EACH EACH EACH EACH EACH EACH EACH	8				-	A CO
704-1050 704-1060 704-1065 704-1065 704-1067 704-1070 704-1070 704-1080 704-1085 704-1085 704-1086 704-1087 704-1500	TYPE III DELINEA TRAFFIC TUBULAF DELINEA FLEXIBLI STACKAI VERTICA SEQUEN SEQUEN SEQUEN OBLITER	ARRICADES BARRICADES TOR DRUMS CONES R MARKERS TOR E DELINEATORS SLE VERTICAL PANELS L PANELS - BACK TO BACK CING ARROW PANEL - TYPE A CING ARROW PANEL - TYPE B CING ARROW PANEL - TYPE C ATION OF PVMT MK		EACH EACH EACH EACH EACH EACH EACH EACH	8			C L L L L L L L L L L L L L L L L L L L	BRYAN KWINSK PE-28896	V A
704-1050 704-1062 704-1065 704-1065 704-1070 704-1070 704-1072 704-1080 704-1085 704-1087 704-1087 704-1500 704-3501	TYPE III DELINEA TRAFFIC TUBULAF DELINEA FLEXIBLI STACKAI VERTICA SEQUEN SEQUEN SEQUEN OBLITER PORTAB	ARRICADES BARRICADES TOR DRUMS CONES R MARKERS TOR E DELINEATORS BLE VERTICAL PANELS L PANELS - BACK TO BACK CING ARROW PANEL - TYPE A CING ARROW PANEL - TYPE B CING ARROW PANEL - TYPE C CING ARROW PANEL - TYPE C ATION OF PVMT MK E PRECAST CONCRETE MED BARRIER	2	EACH EACH EACH EACH EACH EACH EACH EACH	8			E H	BRYAN KWINSK E-28896	HIGHNEER
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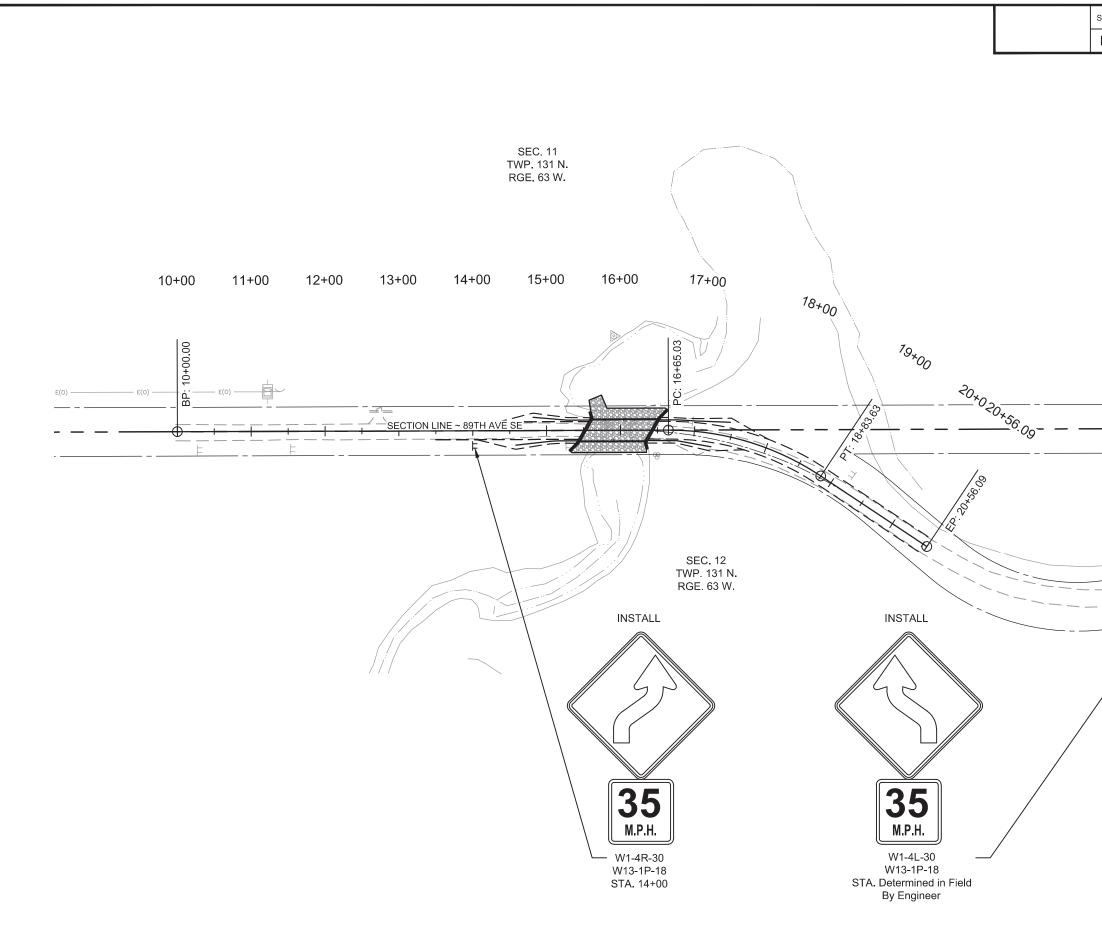
The sign layout as shown is for general information purposes only. The contractor will be required to conform to MUTCD and the Standard Drawings when installing the traffic control signing.

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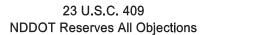
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24+50 Lt	W1-4L	53		8.5	9.8				5.0	2.25 x 2.25 12 ga	10.1						1	4	2.5 x 2.5 12 ga						
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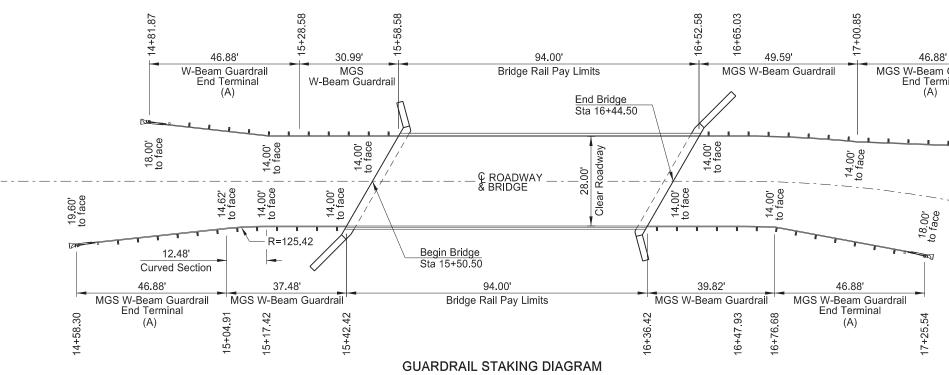


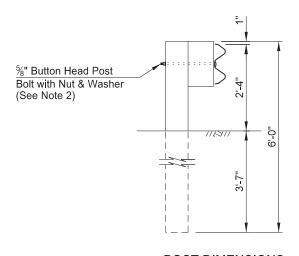
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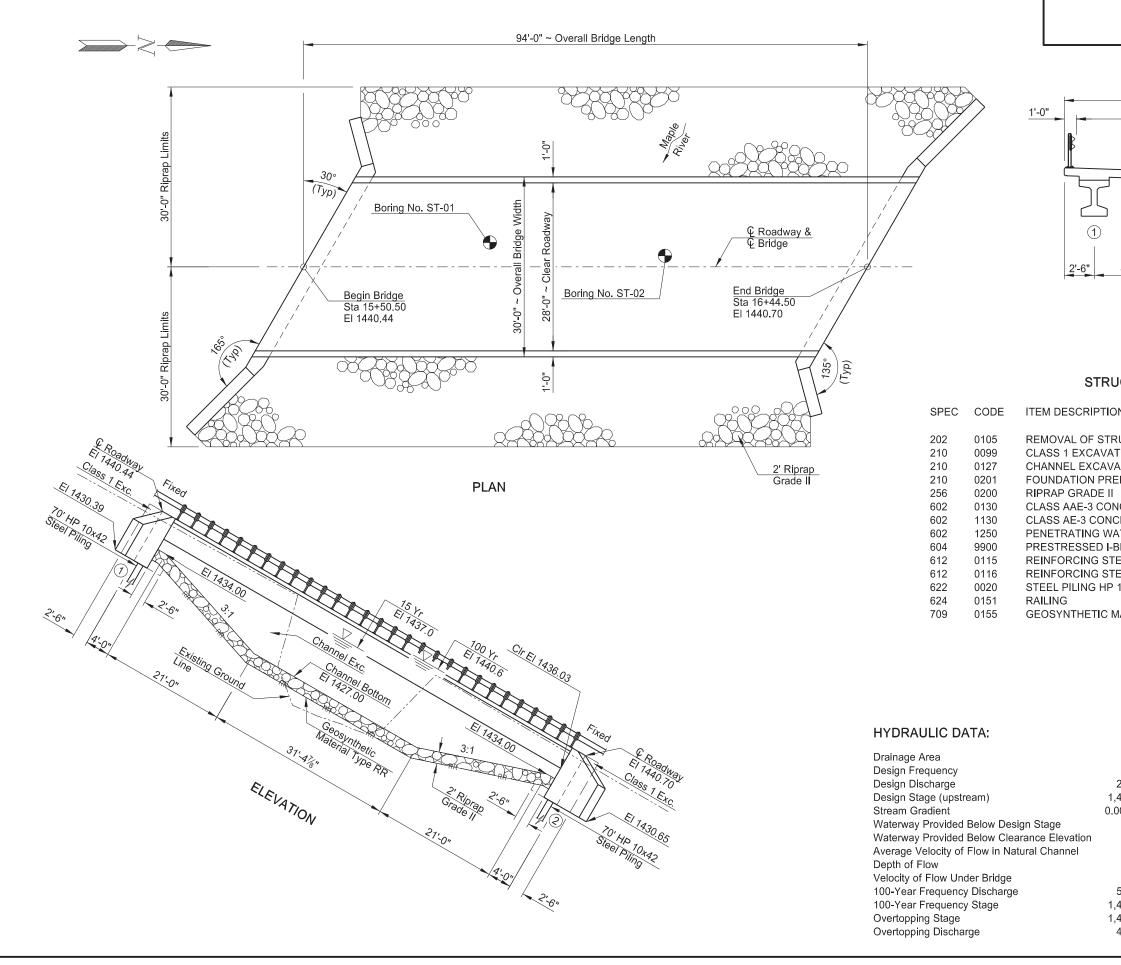
NOTES:

A. MGS Flared Energy Absorbing Terminal to be installed at this location.

B. Guardrail offsets to face of rail.

POST DIMENSIONS

	STATE	PROJECT NUMBER	R	SECTION NO.	SHEET NO.
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	STATE	PROJECT NUMBER	2	SECTION	
	ND	BRO-0011(02	:1)	<u>NO.</u>	NO.
		30'-0" ~ Overall Bridge Width 28'-0" ~ Clear Roadway Roadway &	<u>3.50%</u>	(5) (2'-6"	
UCT		TYPICAL SECTION			
	UKAL (QUANTITIES ONLY	UNIT	QUANT	
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32: 1! 2,690 1,437.0002 53: 5,54 5,54 1,440.0 1,439.4 4,500	5 yr 6 cfs 0 ft 7 ft/ft 9 sqft 9 sqft 0 fps 5 ft 0 fps 7 cfs 6 ft 4 ft	DICKEY C	0-0011(02 OUNTY, NORTH D ICTURE #11-123.01	AKOTA	JTA .

STRUCTURAL NOTES

the Maple River 3-Miles east and 1-Mile north of Monango, North Dakota. The new bridge will be a 94-foot, single span concrete structure with prestressed I-beams having a clear roadway width of 28'-0".
GENERAL: Include the cost of furnishing and placing preformed expansion joint filler and other miscellaneous items in the price bid for "CLASS AE-3 CONCRETE" and "CLASS AAE-3 CONCRETE".
WORK DRAWINGS: Submit the prestressed concrete box beam work drawings to the Engineer for review. Use the following minimum text sizes on all work drawing sheets.
Dimensions and Notes =0.08"Detail Subtitles =0.09"Detail Titles =0.10"
REMOVAL OF STRUCTURE: The existing strucuture is a 28-foot long single-span reinforced concrete beam bridge. The abutments are supported by piling.
The lump sum bid item, "REMOVAL OF STRUCTURE" includes all work required to remove all existing bridge components and hazard markers in accordance with the Standard Specifications. All materials removed become property of the contractor and will be disposed of properly off the right-of-way.
Submit SFN 17987 "Asbestos Notification of Demolition and Renovation" to the North Dakota Department of Health 10 days before beginning removal of concrete.
EXCAVATION: Include the excavation at the abutments, as shown, in the lump sum bid item, "CLASS 1 EXCAVATION".
CHANNEL EXCAVATION: Dispose of any unsuitable or excess channel excavation material at a location outside the right-of-way determined by the contractor and acceptable to the Engineer. Inlcude all costs associated with excavating, hauling, depositing, and leveling the material in the unit price bid for "CHANNEL EXCAVATION".
CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01 C.2, "Coarse Aggregate" and Section 802.01 C.3 "Fine Aggregate."
DIAPHRAGMS AND ENDWALLS: Place the intermediate diaphragm concrete at least 72 hours before placing the deck concrete. Place the endwall concrete at the same time as the deck concrete.
PILING: Drive piling with a diesel hammer with a rated energy and ram weight (minimum of 2,750 pounds) of at least 35,946 foot-pound-tons computed by the formula:
W (E-14,553) + 0.49 E W = weight of the ram (tons) E = rated hammer energy

SCOPE OF WORK: Work at this site consists of removing and replacing an existing 28-foot single span bridge over

Run the hammer at an energy that produces a penetration at bearing between $\frac{1}{2}$ inches and 3 inches in the last 10 blows.

DESIGN STRENGTH:

F'c	4,000 PSI	Class AE-3 Concrete (Requ
F'c	4,000 PSI	Class AAE-3 Concrete (Red
Fy	60,000 PSI	Grade 60 Reinforced Steel
F'c	7,300 PSI	Prestressed Girder Concret

Load Resistance and Factor Design (HL-93) 15 PSF Future Wearing Surface

WORK DRAWINGS: Submit the following work drawings to the Engineer of Record:

Prestressed Concrete I-Beams Bridge Rail

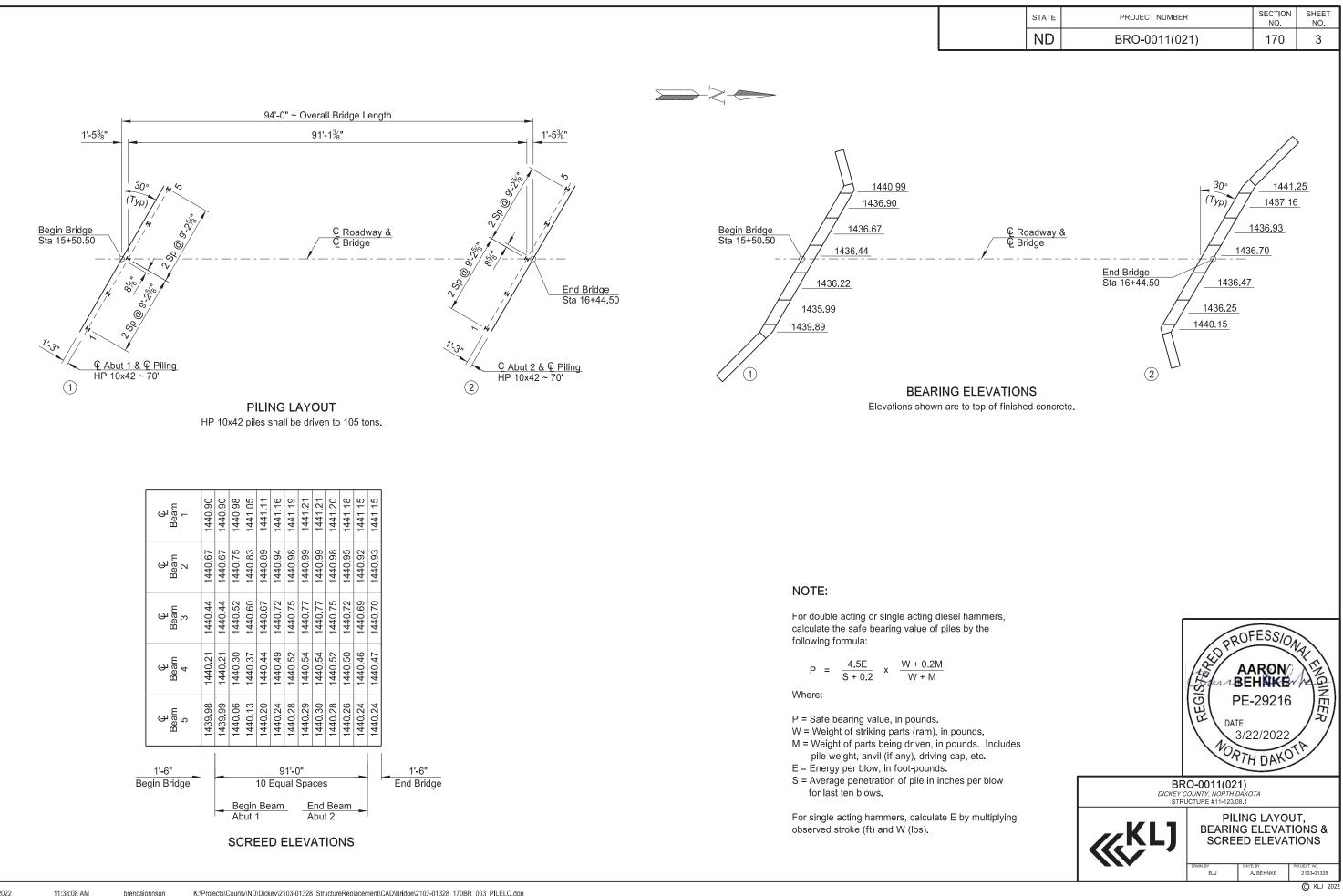
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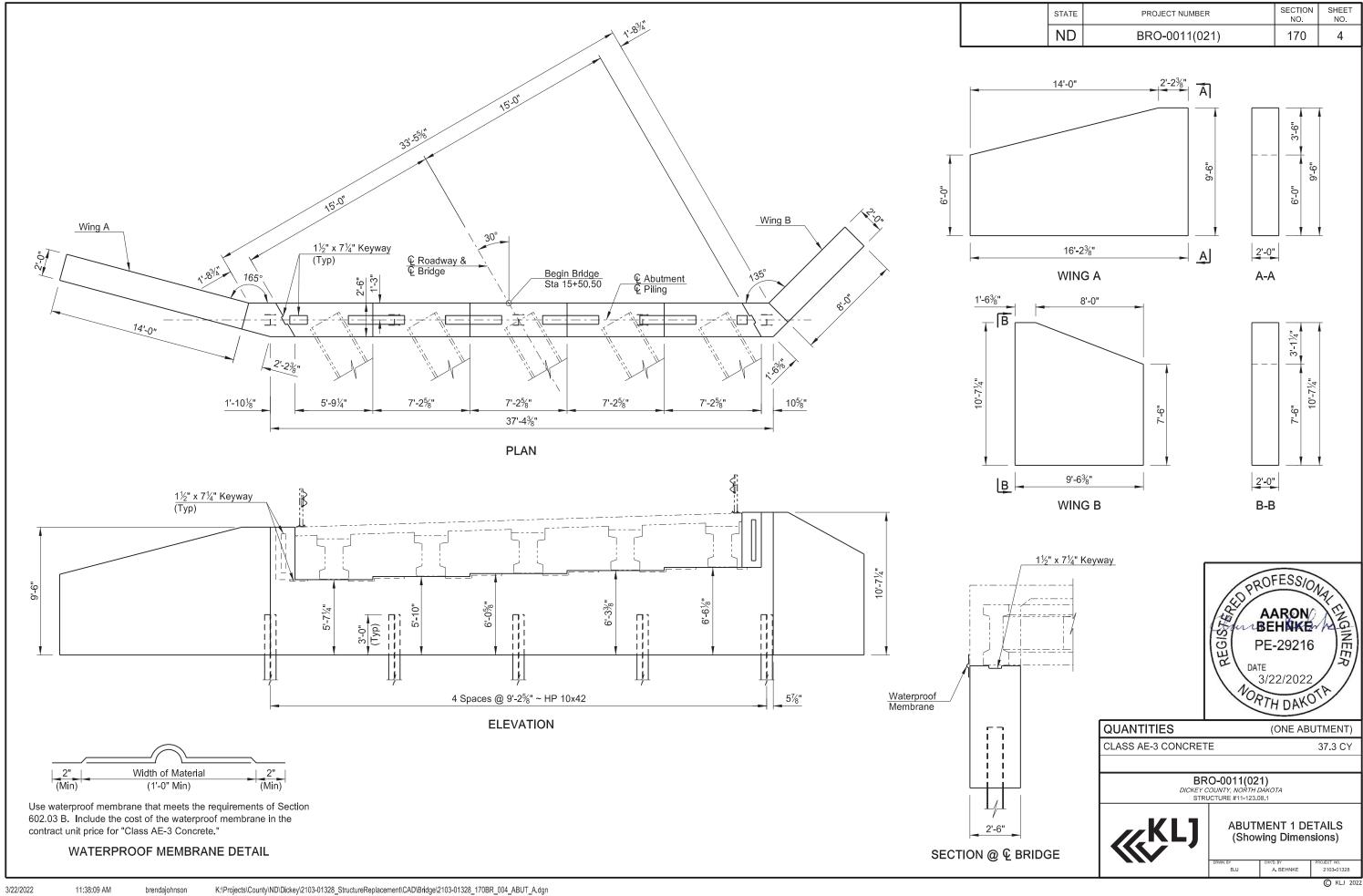
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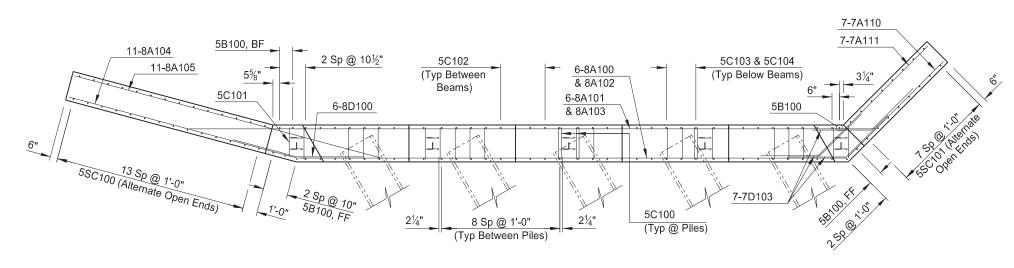
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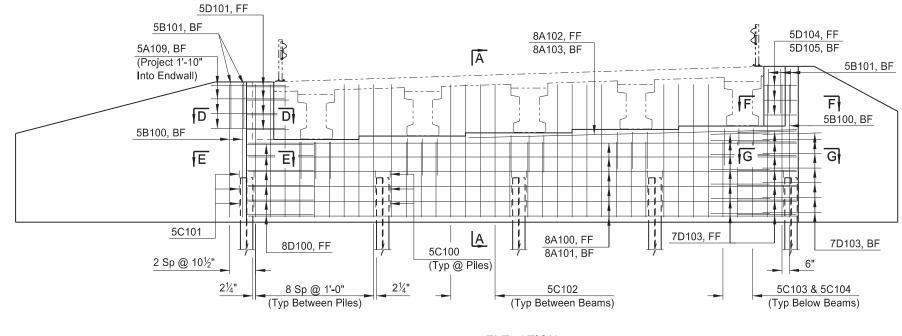






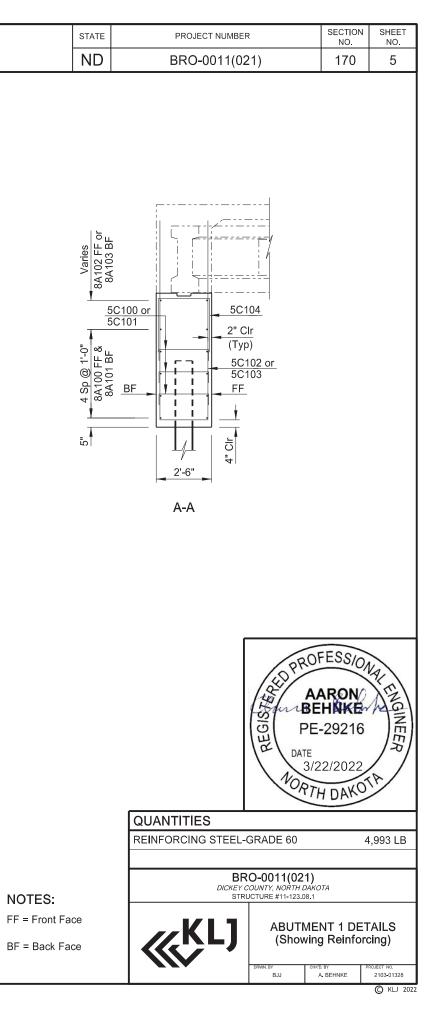


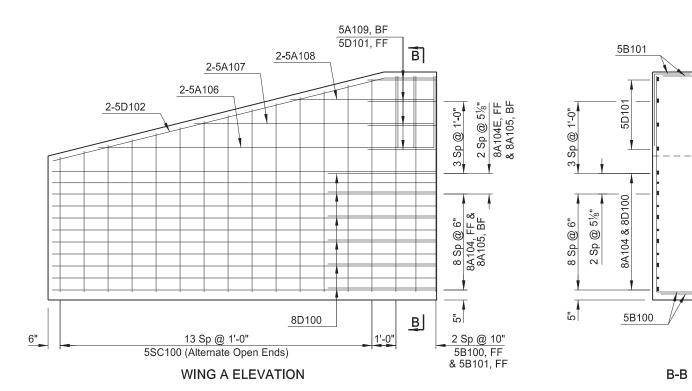


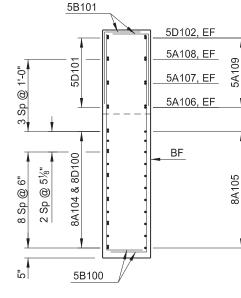


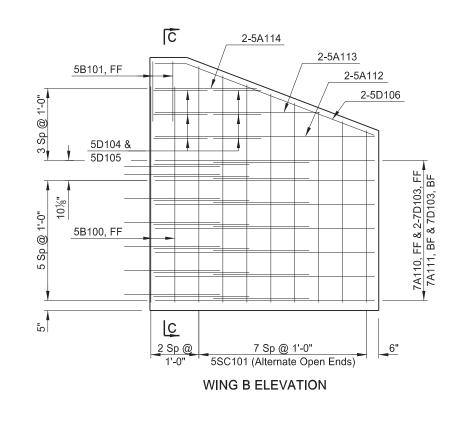
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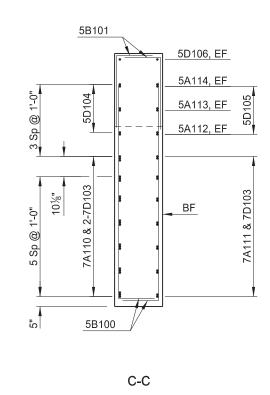
NOTES: FF = Front Face

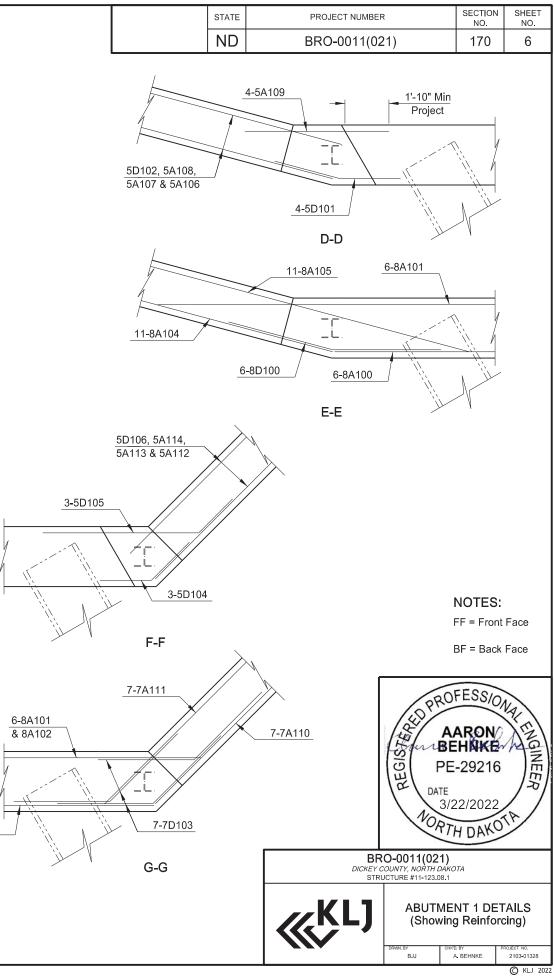


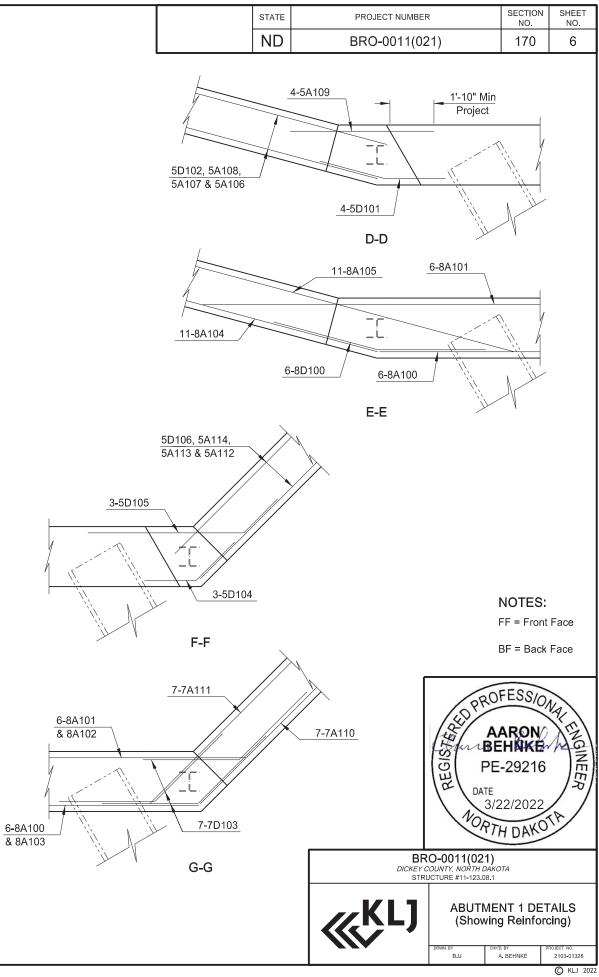


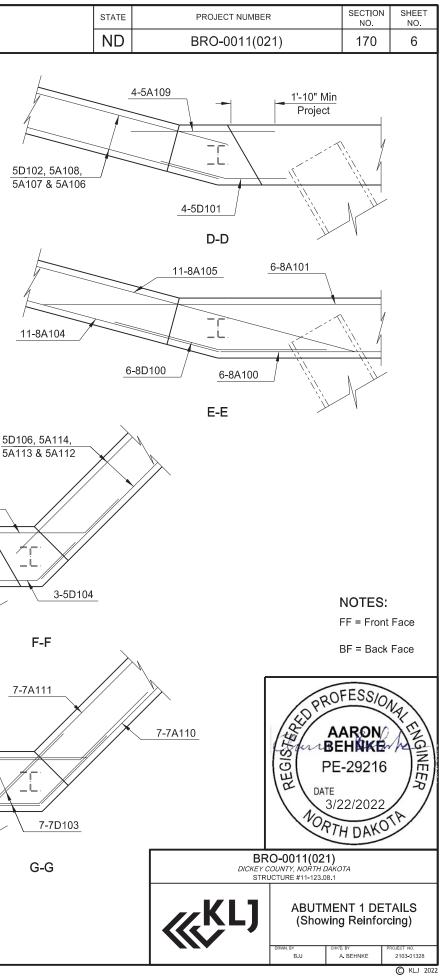




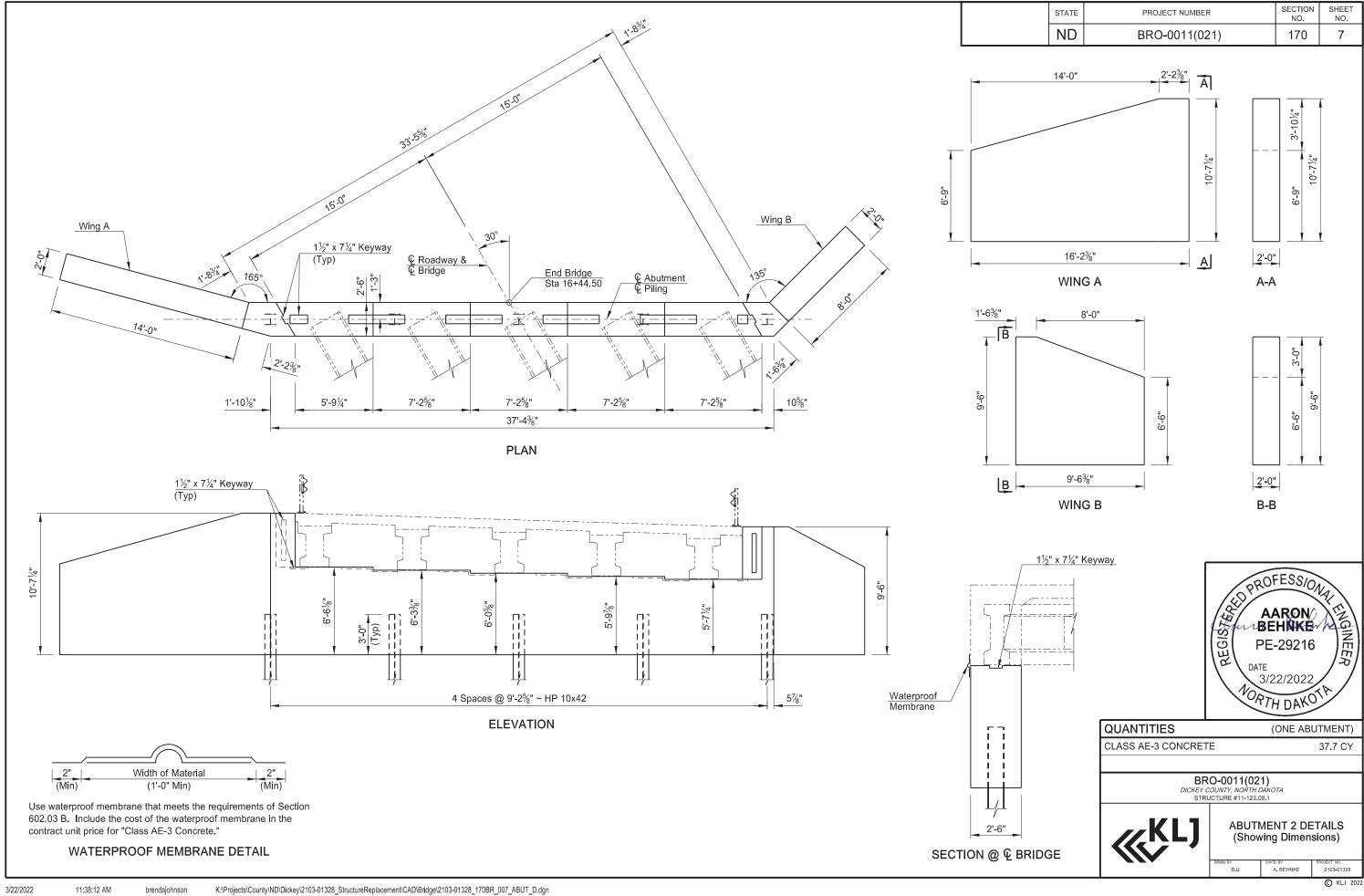


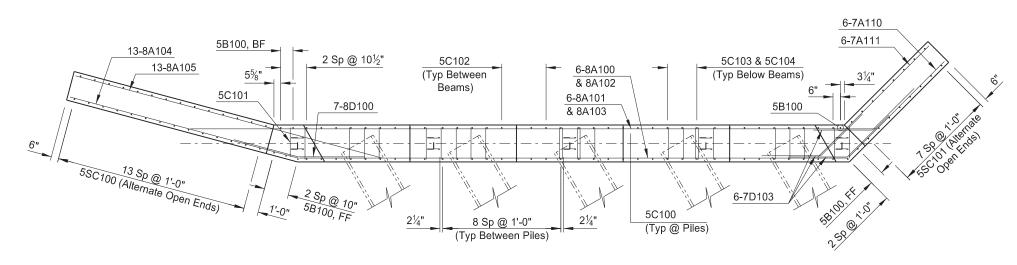




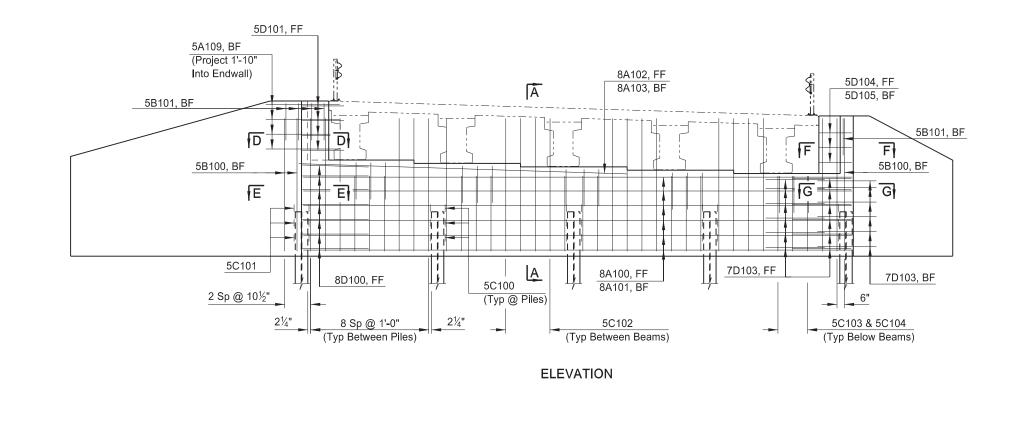




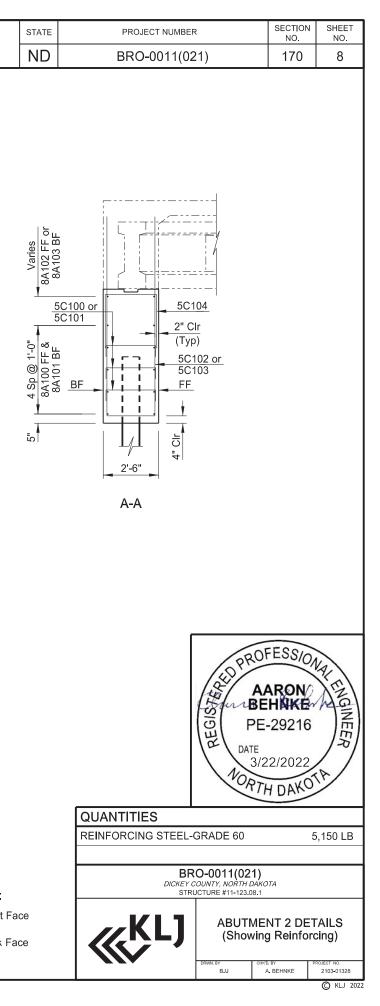


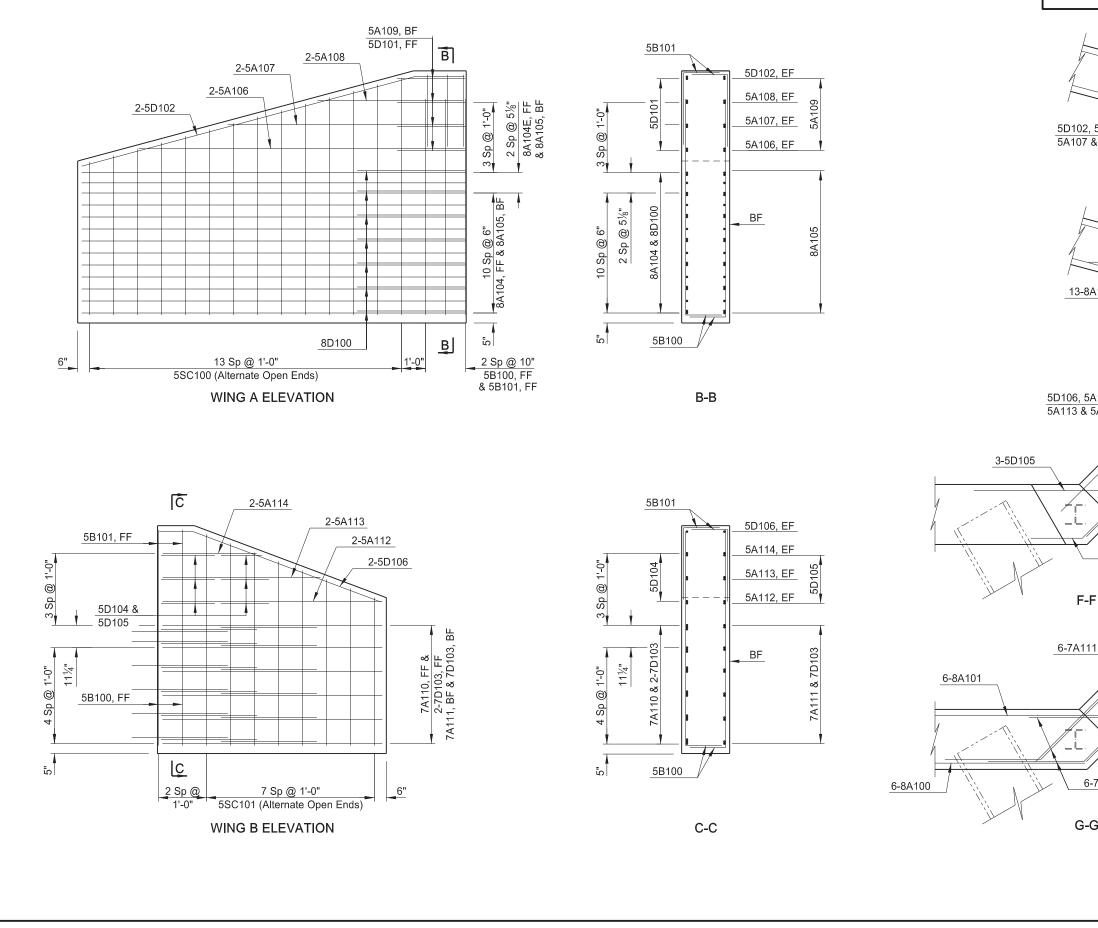


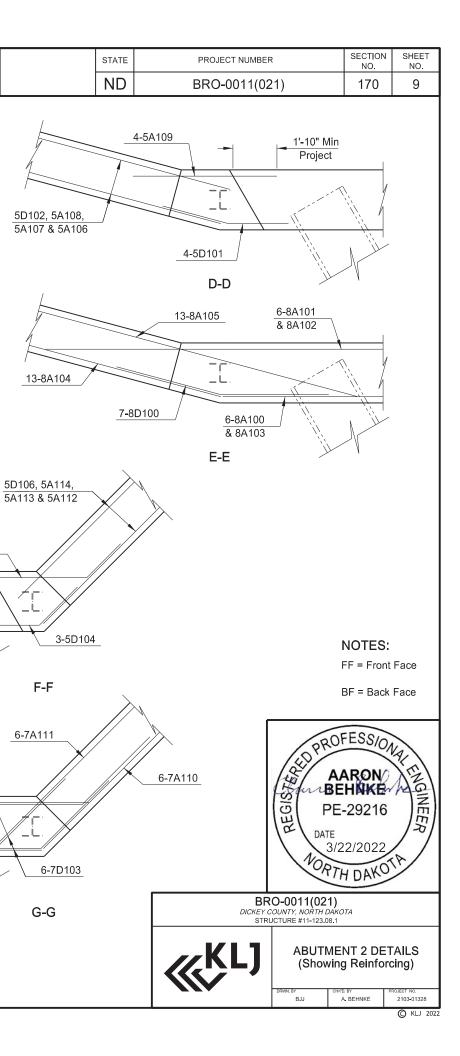
PLAN



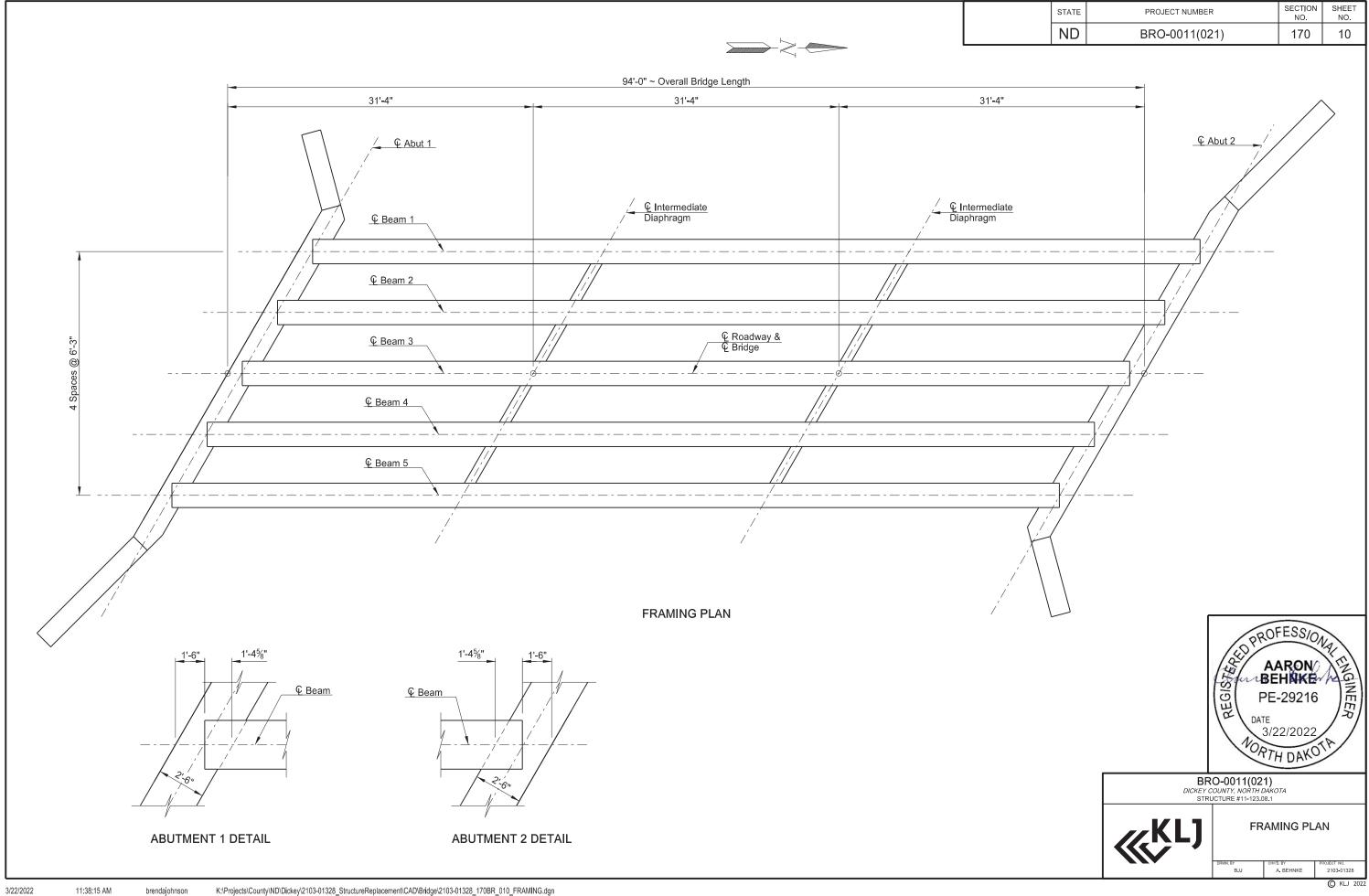
NOTES: FF = Front Face

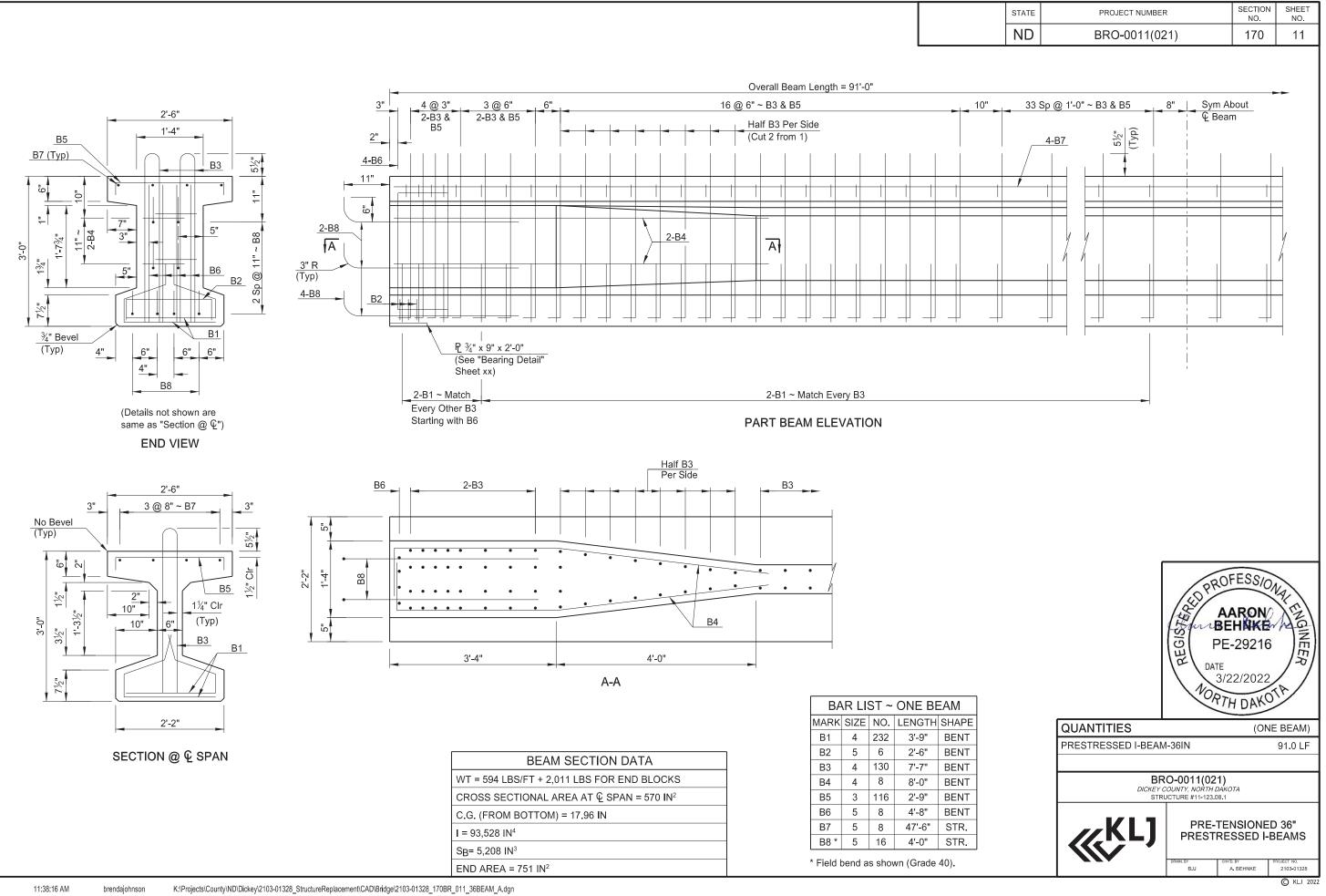


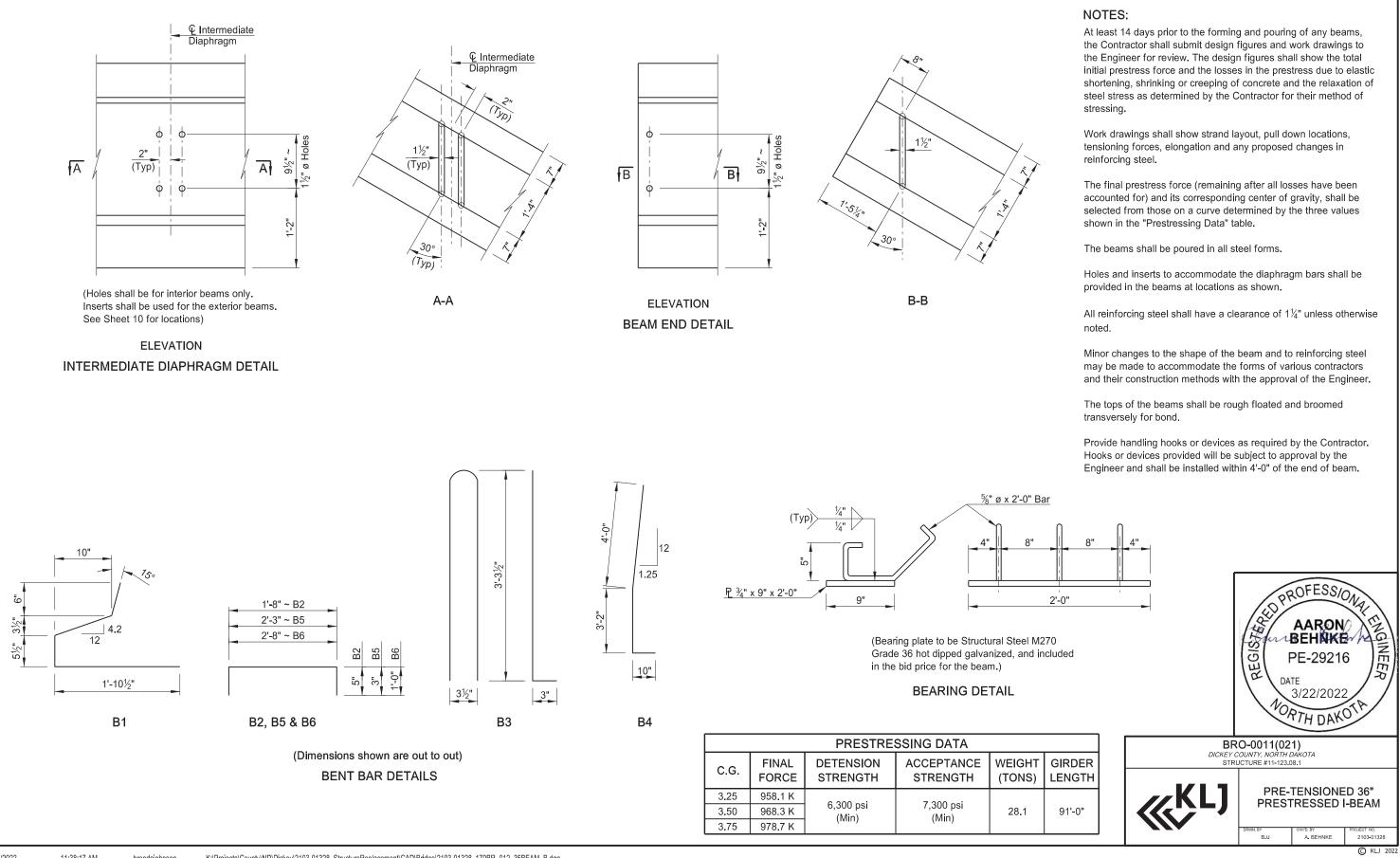




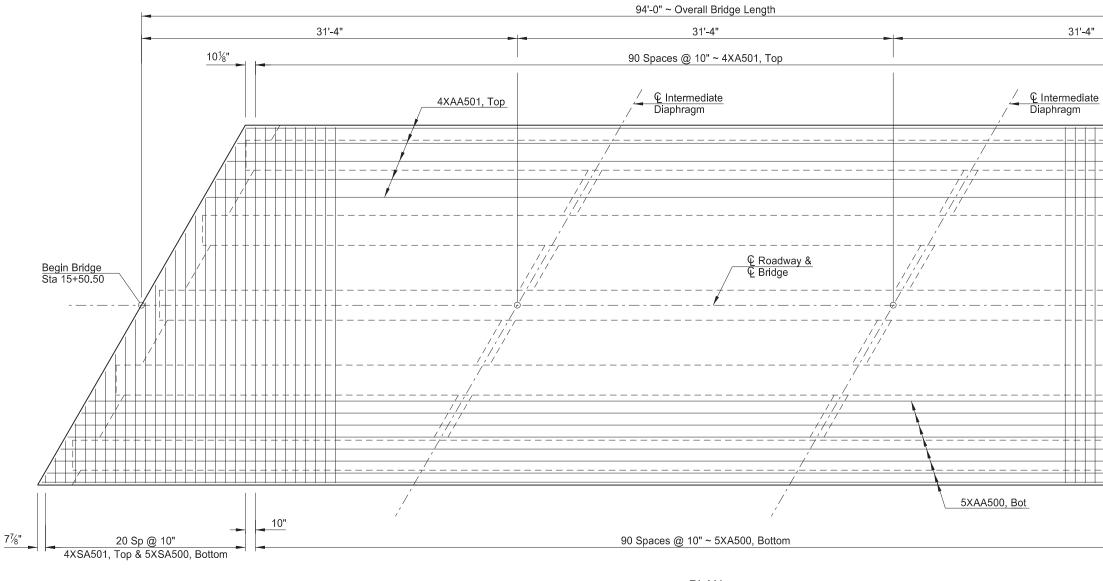
F-F



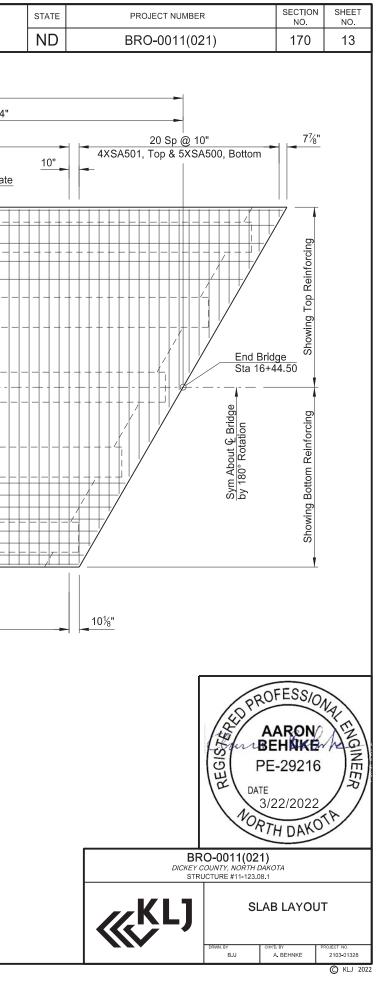


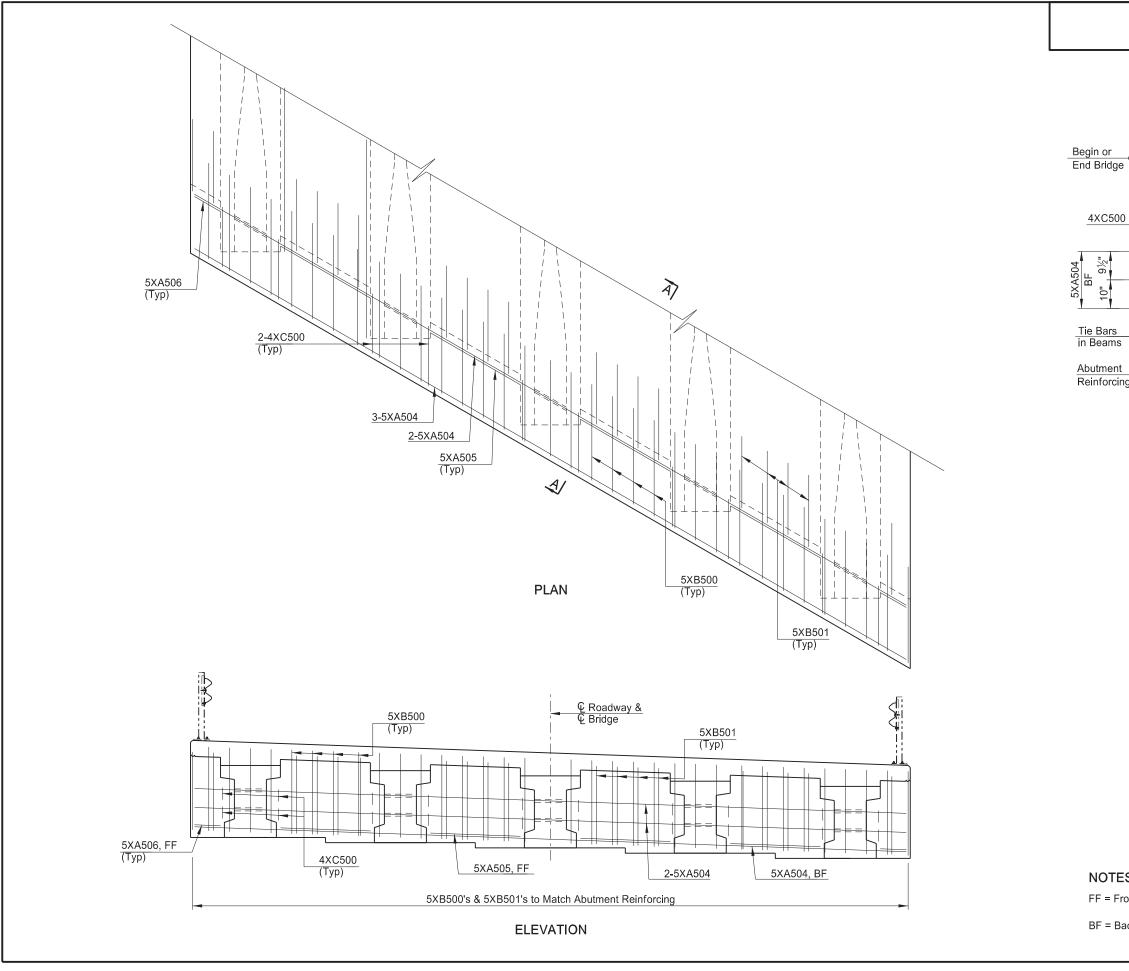


STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRO-0011(021)	170	12

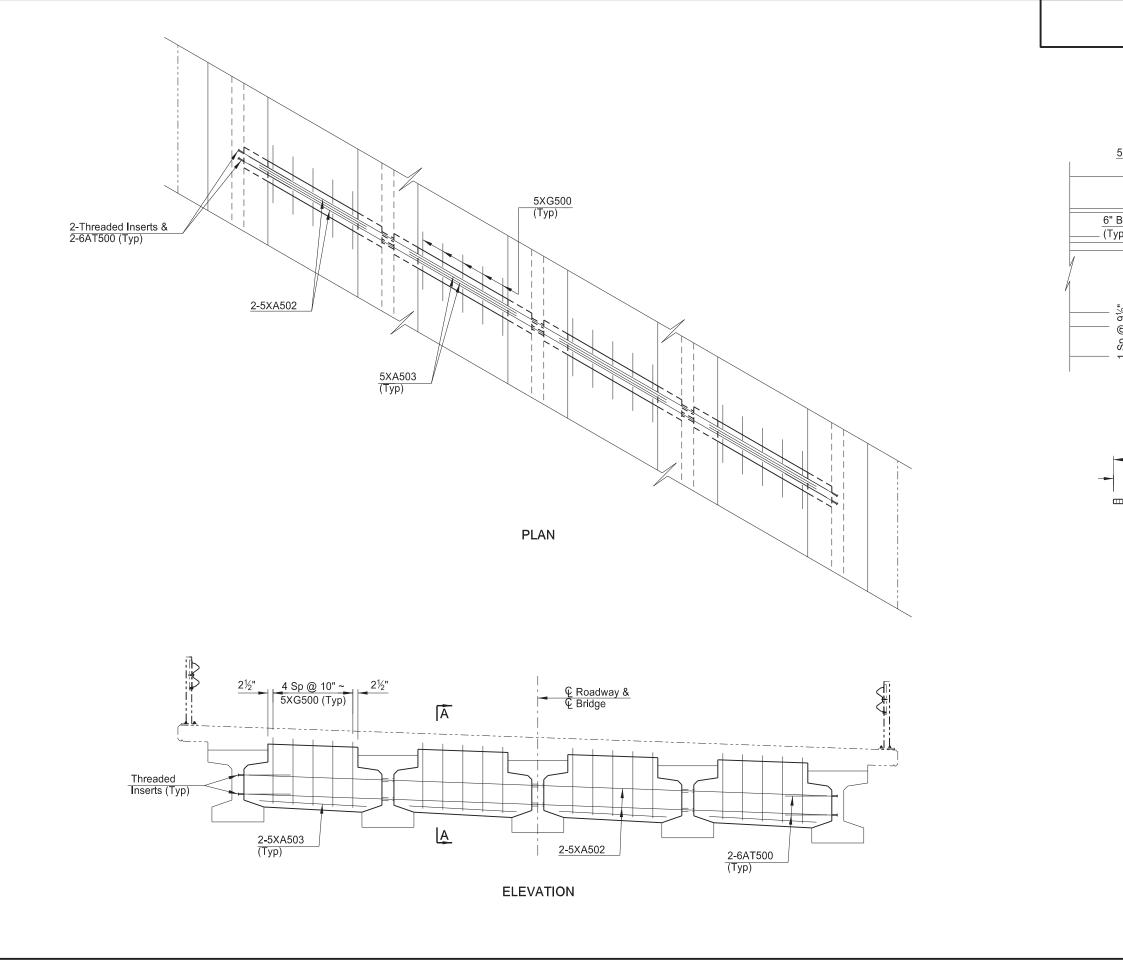


PLAN

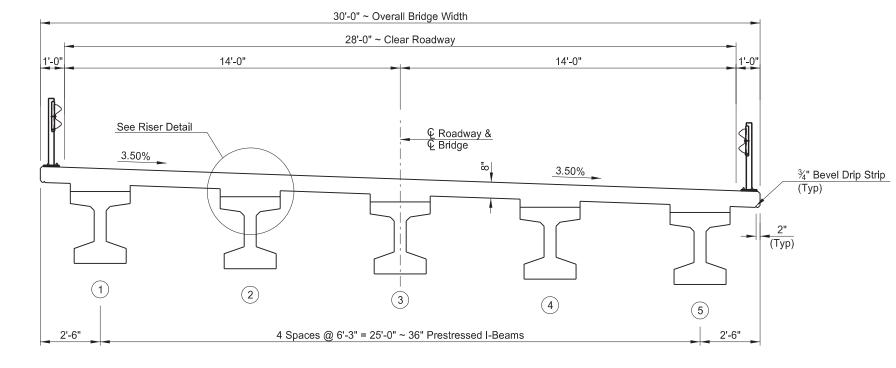




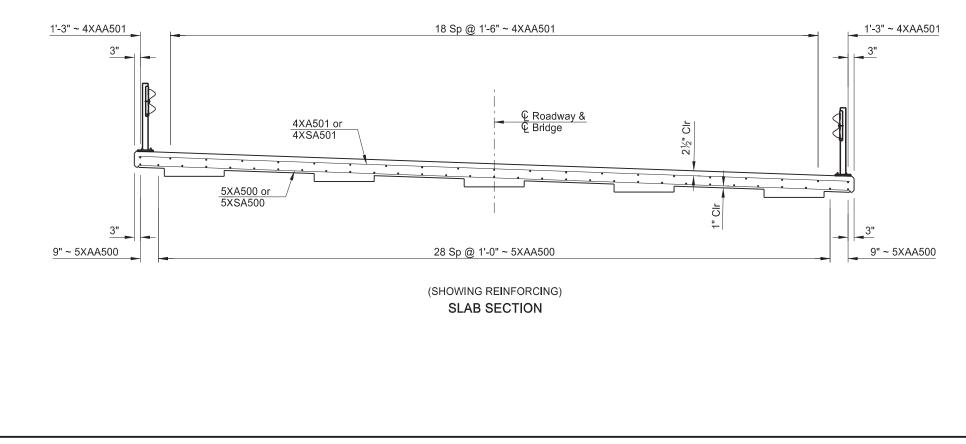
	PROJECT NUMBER	3	SECTION NO.	SHEET NO.
ND	BRO-0011(02	21)	170	14
	B500 3¼" Clr (Between Beams Only)	<u>%" Clr</u>		
S:			3/22/2022 97H DAKO 1) DAKOTA	/ /



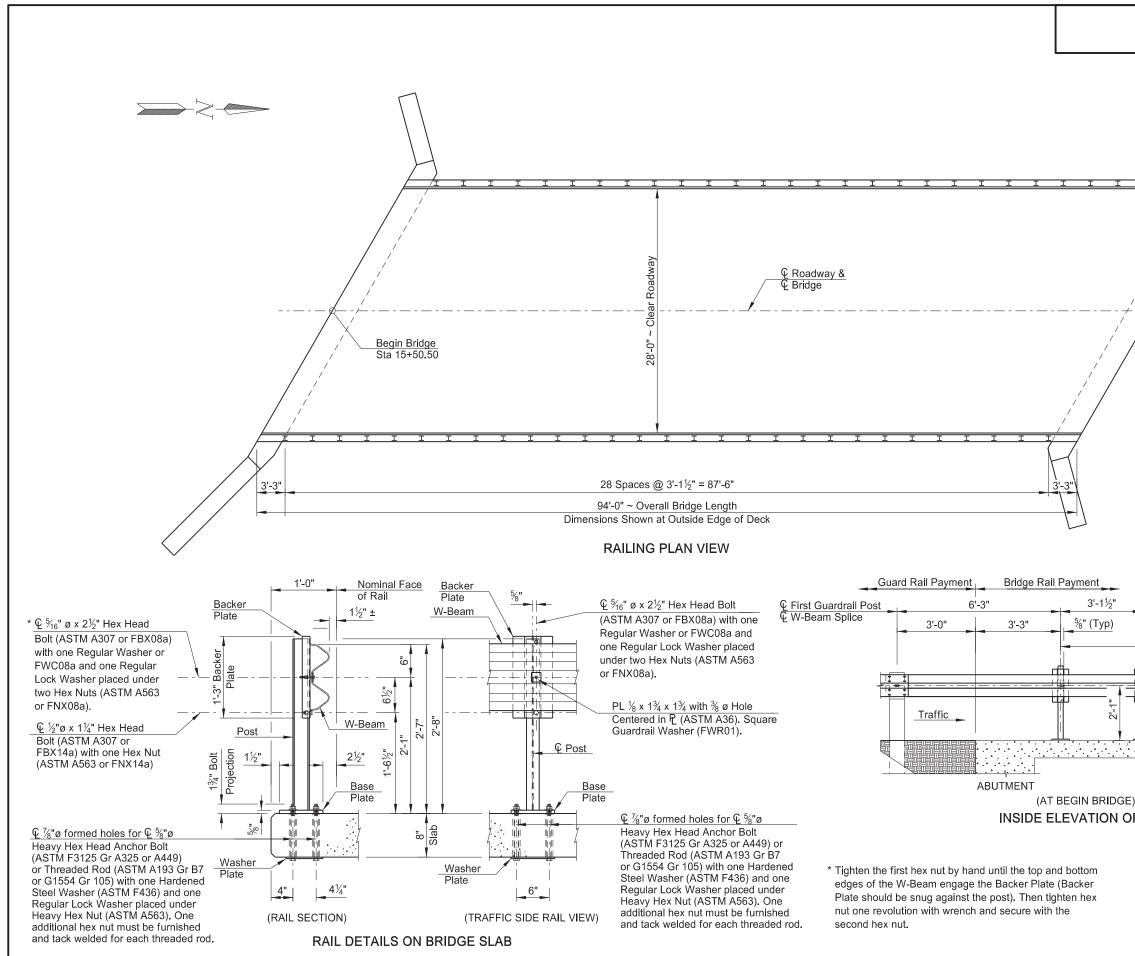
	STATE	PROJECT NUMBER	2	SECTION NO.	SHEET NO.
	ND	BRO-0011(02	21)	170	15
5x G 6" Beve (Typ)	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	Construction Joint			
	the Prest	orcing Steel ~ Include ressed Beam bid item. 500 DETAIL			
		BR	NOR 0-0011(021	3/22/2022 TH DAKO	/ /
		DICKEY	COUNTY, NORTH DA JCTURE #11-123.08	ERMEDIAT	



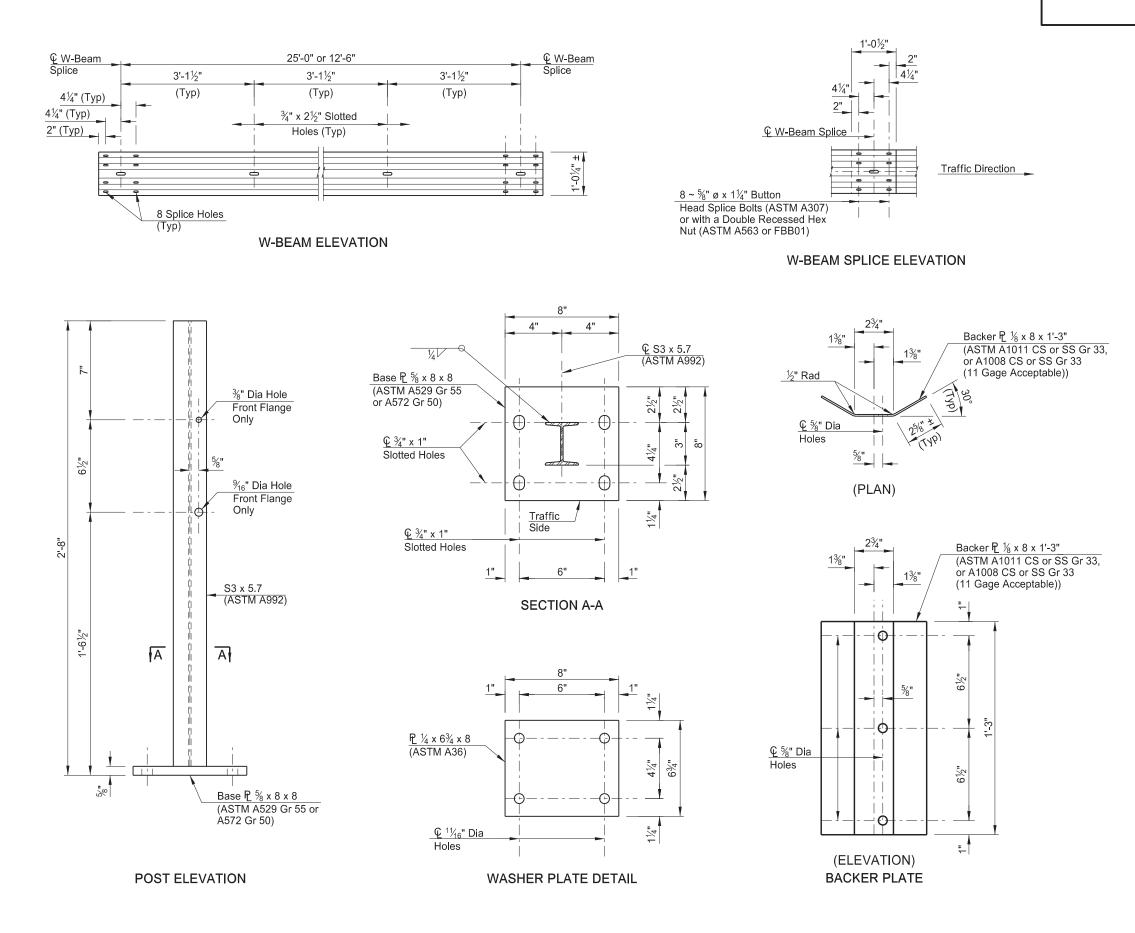
(SHOWING DIMENSIONS) SLAB SECTION



STATE	PROJECT NUMBE	R	SECTION	SHEET
ND	BRO-0011(0	21)	NO. 170	_{NO.}
1.	OTES: The 3½" dimension shown located at the supports. The riser is ½". Adjust the riser is slab thickness. Turn the 5XAA500 & 4XAA so that the splice locations	e anticipated to maintain 501 bars en	d midspan the 8" d for end	
	© Beam	33/2		
	RISER DE	TAILS		
			AARON/ BEHNKE PE-29216 ATE 3/22/2022	/ /
	QUANTITIES CLASS AAE-3 CONCRI	ETE		00.6 CY
	REINFORCING STEEL			00.6 C f 082 LBS
	BF	RO-0011(0 <i>COUNTY, NORTI</i> RUCTURE #11-12	21) <i>H DAKOTA</i>	
	KL J	s	LAB SECTIO	N
		DRWN. BY BJJ	CHK'D. BY PF A. BEHNKE	0JECT NO. 2103-01328



	STATE	PROJECT NUMBE	R	SECTION NO.	SHEET NO.
	ND	BRO-0011(0	21)	170	17
	<u>I</u> <u>3'-1</u>	End Bridge Sta 16+44.50			
			DATE NORT	FESS/0/ ARON/ EHAKE 22/2022 H DAKO	/ /
)		QUANTITIES			
FR	AIL	RAILING			188 LF
		DICKEY	RO-0011(021) COUNTY, NORTH DAK RUCTURE #11-123.08.1	OTA	
		KLJ	BRI	DGE RAIL	
			DRWN. BY CHI BJJ	KD. BY P A. BEHNKE	2103-01328
					© KLJ 2022



STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRO-0011(021)	170	18

CONSTRUCTION NOTES:

Plumb face of rail post. Install post perpendicular to adjacent roadway grade. Use epoxy mortar under post base plates if gaps larger than $\gamma_6"$ exist.

Round or chamfer exposed edges of rail post and backer plate to approximately $\gamma_{\rm 16}"$ by grinding prior to galvanizing.

Work drawings are required for this rail.

MATERIAL NOTES:

Galvanize all steel components.

Use %" ø anchor bolts for base plate that meet ASTM F3125 Gr A325 or A449 bolts (or ASTM A193 Gr B7 or F1554 Gr 105 threaded rods with one tack welded heavy hex nut each) with one hardened steel washer (ASTM F436) and one regular lock washer placed under each heavy hex nut (ASTM A563).

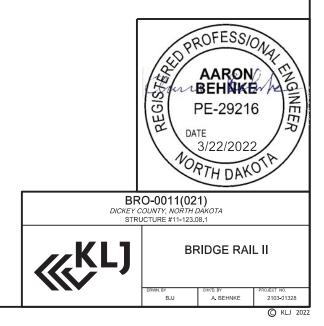
Use galvanized steel W-beam that meets the requirements of Section 862.03, except as modified in the plans. The Contractor may furnish rail elements of 25'-0", or 12'-6" (nominal) lengths. Use W-Beam with slotted holes at 3'-1½".

Some part numbers from the "Task Force 13" Guide to Standardized Highway Barrier Hardware have been furnished for quick reference.

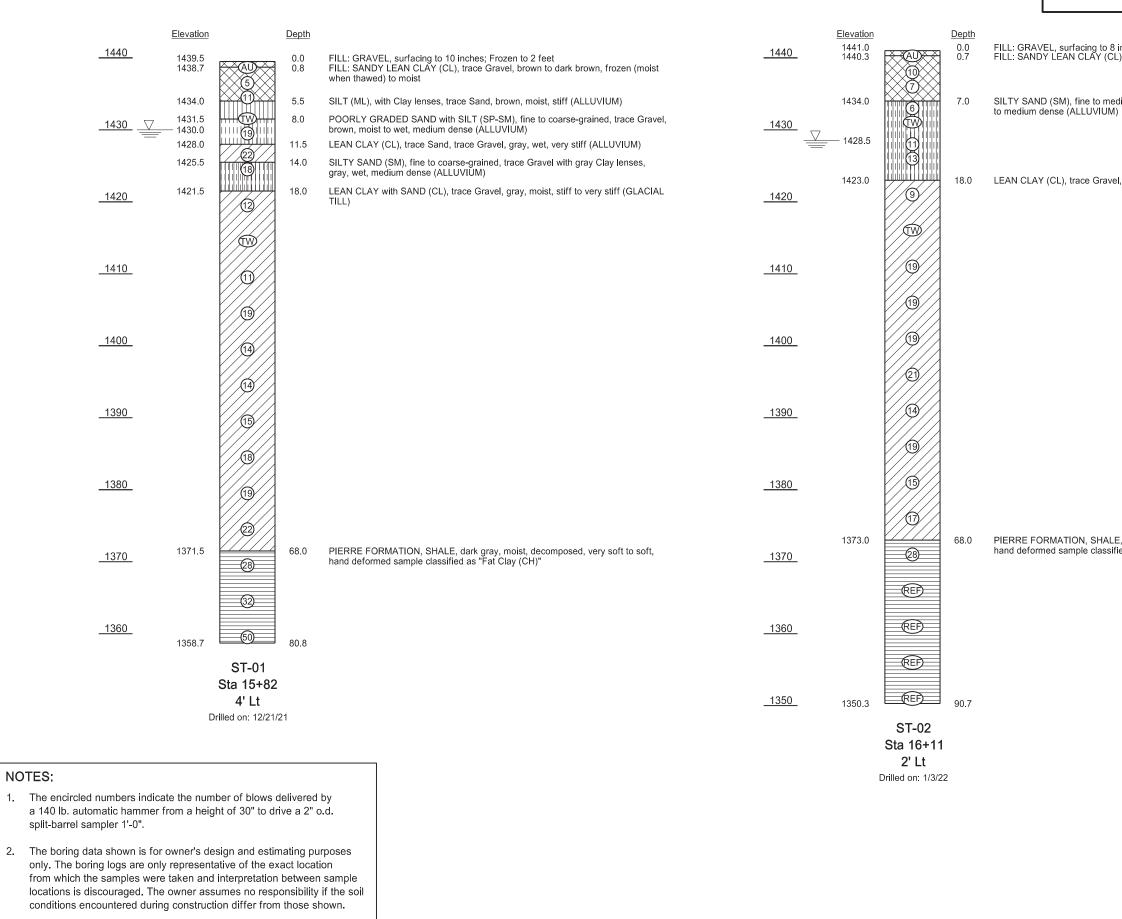
GENERAL NOTES:

This railing has been successfully evaluated by full-scale crash test to meet MASH TL-3 criteria.

Repairs to impact-damaged post and base plate unit are not p ermitted. Replace all impact-damaged posts with new post and base plate unit.



															, 									_		STA	ATE PROJECT NU	JMBER	SECTION NO.	SHEE NO.
			NO.	NOMINAL				TAILING			FIX OF B	AR MARK		•		NO.	TAILS NOMINAL			רשח	FAILING I		IONS	_		N	D BRO-001	1(021)	170	19
ON SIZE	E N	MARK	EACH /SET	LENGTH	а	b	c	d	e	f	q	h k		N SIZE	MARK	EACH /SET	LENGTH	а	b	c	d	e	f	q	h k	1	L		I	
8	-	4100	6	37'-2"		37'-2"					0			8	A100	6	37'-2"		37'-2"								TES:			
8	-	A101	6 1	46'-6" 22'-3"		46'-6"							_	8	A101	6	46'-6" 22'-3"		46'-6"							- 1 V	/erify the quantity, size, and	shape of the ba	ar reinforcemer	nt
8	-	4102 4103	1	22-3		22'-3" 29' - 3"							_	8	A102 A103	1	22-3		22'-3" 29' - 3"							— а	against the structure drawing	s and immediat	ely notify the E	inginee
8	-	A104	11	16'-0"		16'-0"								8	A104	13	16'-0"		16'-0"								of any discrepancies. Discre			be
8	-	A105	11	21'-6"		21'-6"								8	A105	13	21'-6"		21'-6"							c	cause for adjustment of the o	contract unit pric	e.	
5	-	4106	2	14'-0"		14'-0"								5	A106	2	13'-7"		13'-7"							2. A	All dimensions are out to out	of bars.		
5	_	A107	2	10'-0"		10'-0"							_	5	A107	2	9'-10"		9'-10"							_				
5	-	4108 4109	2	6'-0" 6'-0"		6'-0" 6'-0"							_	5	A108 A109	2	6'-1" 6'-0"		6'-1" 6'-0"								Nominal length of each bent			of the
7	_	4110	7	9'-2"		9'-2"								7	A110	6	9'-2"		9'-2"							°	detailing dimensions for that	bar, unless othe	erwise noted.	
7	4	A111	7	10'-8"		10'-8"								7	A111	6	10'-8"		10'-8"							4. т	Turn adjacent "AA" bars end	for end so that	the splice loca	tions
5	-	4112	2	9'-2"		9'-2"								5	A112	2	9'-2"		9'-2"							a	are staggered.			
- 5		A113	2	6'-10" 4'-3"		6'-10" 4'-3"							- ~	1 5	A113	2	6'-7" 3'-11"		6'-7" 3'-11"							— _{5 т}	The "f" dimension indicates t	he inside radius	unless otherw	ise
-		A114	2	4-3		4-3									A114	2	3-11		3-11								noted.			
	E	3100	8	11'-0"		9'-0"	2'-0"							5	B100	8	11'-0"		9'-0"	2'-0"						\neg	A 115711 11 1 1 1 1			
5	E	3101	10	5'-0"		3'-0"	2'-0"							5	B101	10	5'-0"		3'-0"	2'-0"						6. A	An "X" preceding a bar desig	nation indicates	an epoxy coal	ied bar
		2400	07	01.01		0"	01.01	01					ARLITMENT	<u>نا</u> کُ	0.100	07	01.01		01	01.01	0"					_				
4 5 5	_	C100 C101	27 3	3'-2" 3'-0"		6" 6"	2'-2" 2'-0"	6" 6"					_ `	5 5	C100 C101	27	3'-2" 3'-0"		6" 6"	2'-2" 2'-0"	6" 6"					_				
5	_	C102	21	20'-2"		9'-0"	2'-2"	9'-0"					_	5	C101	21	20'-2"		9'-0"	2'-2"	9'-0"					-	h		٩	
5	-	C103	15	16'-3"		9'-0"	2'-2"	5'-1"						5	C103	15	16'-3"		9'-0"	2'-2"	5'-1"								*	
5	0	C104	15	5'-2"		1'-6"	2'-2"	1'-6"						5	C104	15	5'-2"		1'-6"	2'-2"	1'-6"						·			
		2400	-	01.01		41.01	41.01					40 0	_		D 100		01.01		41.01	41.01					10 01	_	A	-	-	
8		D100 D101	7	9'-0" 5'-8"		4'-6" 2'-10"	4'-6" 2'-10"					12 3. 12 3.		8	D100 D101	7	9'-0" 5'-8"		4'-6" 2'-10"	4'-6" 2'-10"					12 3.1 12 3.1			E	3)	
5		D102	2	16'-4"		2'-1"	14'-3"					12 3.		5	D101	2	16'-5"		2'-1"	14'-4"					12 3.2			-		
7		D103	18	8'-0"		4'-0"	4'-0"						2	7	D103	18	8'-0"		4'-0"	4'-0"					12 12				l Leg for B500 00 and XB501	,
5		D104	3	4'-6"		2'-3"	2'-3"					12 1		5	D104	3	4'-6"		2'-3"	2'-3"					12 12	_		B001, AB0		
5	_	D105 D106	3 2	8'-6" 9'-9"		2'-0" 1'-4"	6'-6" 8'-5"					12 1 12 4.	2	5	D105 D106	3	8'-6" 9'-9"		2'-0" 1'-5"	6'-6" 8'-4"					12 12 12 4.					
5		5100	2	3-3		1 -4	0-5					12 4.	0	5	D100	2	3-3		1-5	0-4					12 4.,	<u>-</u>	1		h /	
5	S	C100	1	249'-8"	1'-8"	6'-4"	9'-10"	1'-8"	13					5	SC100	1	249'-8"	1'-8"	6'-4"	9'-10"	1'-8"	13					σ		k k	
5	S	C101	1	132'-8"	1'-8"	6'-2"	8'-9"	1'-8"	7					5	SC101	1	132'-8"	1'-8"	6'-2"	8'-9"	1'-8"	7								
5		AA500	31	96'-8"		60'-0"	3'-0"	36'-8"	1		96'-8"		_														С	b		
4	-	AA500	21	90-8		60'-0"	1'-6"	35'-2"	1		90-8 95'-2"		_		1	,											\sim		\sim	
															\int	- D											Ô		D	
5		A500	91	29'-8"		29'-8"									Γ	* k														
4		A501	91	29'-8"		29'-8"							_			ש h			-			g					4			
5 1 5	_	A502 A503	8 16	27'-10" 5'-2"		27'-10" 5'-2"							_		h .		U			-	b	-		-	d 🕨				OFFOR	/
5	_	A503	10	34'-3"	+ +	34'-3"								ĩ		V											٩ ا	1	ROFESSIC	No
5 5	X	A505	8	4'-4"		4'-4"								4	d					_ →	C		⊫ h		<u></u>	π	σ	141		Xa
5 5	X	A506	4	1'-3"		1'-3"							_		,		k <u>h</u>		-	•	4		D					12	AARON/ BEHNKE	A
5 5 5 5 5 5 5 5 4		B500	68	7'-6"	+	3'-6"	4'-0"						_			G						(AA)					e = #	REGISTER		1
		B500	38	6'-3"	+ +	3-6	4-0 3'-0"													Lap Splic		-					Eq Sp		PE-29216	']
																	<u> </u>		e	= # of "b" L	ength Pie						SA	\ <u>a</u> \ [ATE	1.
n 4	X	C500	40	3'-6"		6"	2'-6"	6"									↑		To	tal Length	per Set =	exb+	d				\bigcirc	1 Au	3/22/2022	TA.
-		0500	40	71 4 4 11		E"		41.0"				10 0		4			0												RTHDAK	>>//
5	+ ×	G500	40	7'-11"	2'-9"	5"	2'-9"	1'-0"				12 (, 	q															\sim	
5	XS	SA500	2	315'-11"	7"	29'-6"			20					ļ													DI	BRO-0011(0 CKEY COUNTY, NORTH	H DAKOTA	
4		SA501	2	315'-11"	7"	29'-6"			20						a		d											STRUCTURE #11-12	3.08.1	
																= # Eq Sp		-											ORCING BA	RIIC
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																-												DRWN. BY BJJ	CHKD. BY A. BEHNKE	PROJECT NO. 2103-013
		11:38:24 AM		brendajohnson			D\Dickey\2103																							©



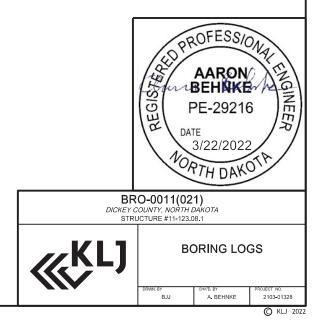
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRO-0011(021)	175	1

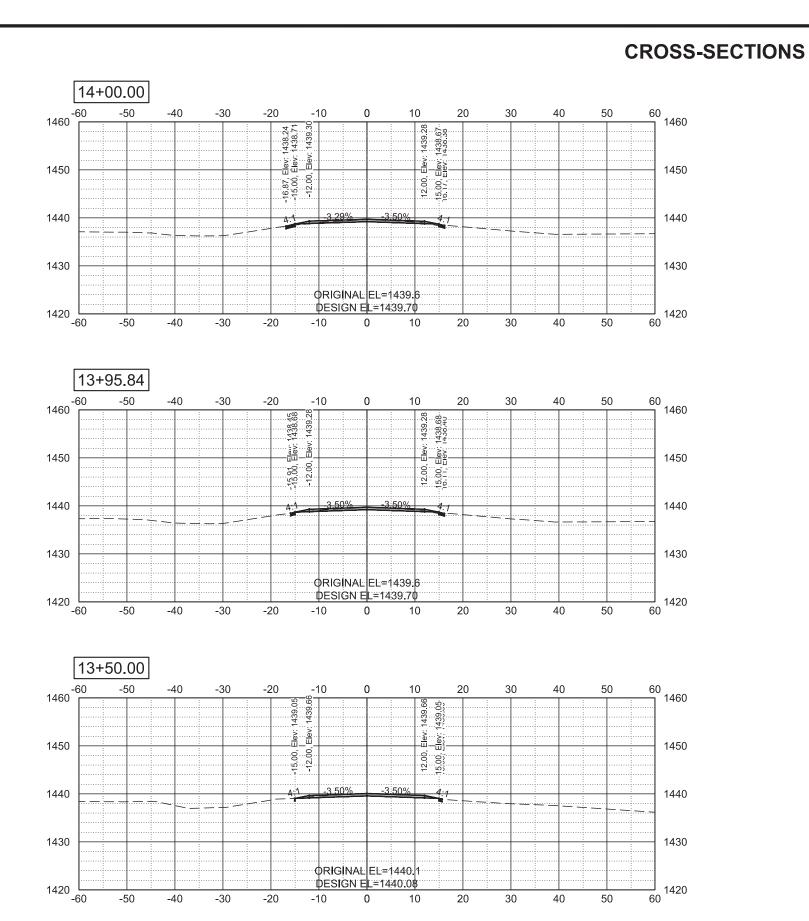
FILL: GRAVEL, surfacing to 8 inches; Frozen to 2 feet FILL: SANDY LEAN CLAY (CL), dark brown, frozen (moist when thawed) to moist

SILTY SAND (SM), fine to medium-grained, little Gravel, brown, moist to wet, loose to medium dense (ALLUVIUM)

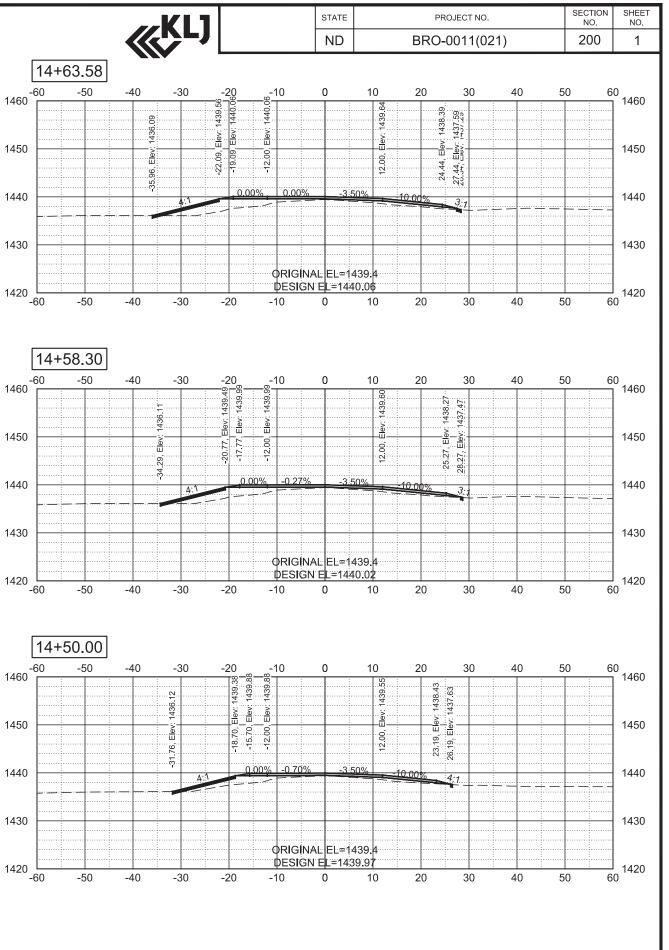
18.0 LEAN CLAY (CL), trace Gravel, gray, moist, stiff to very stiff (GLACIAL TILL)

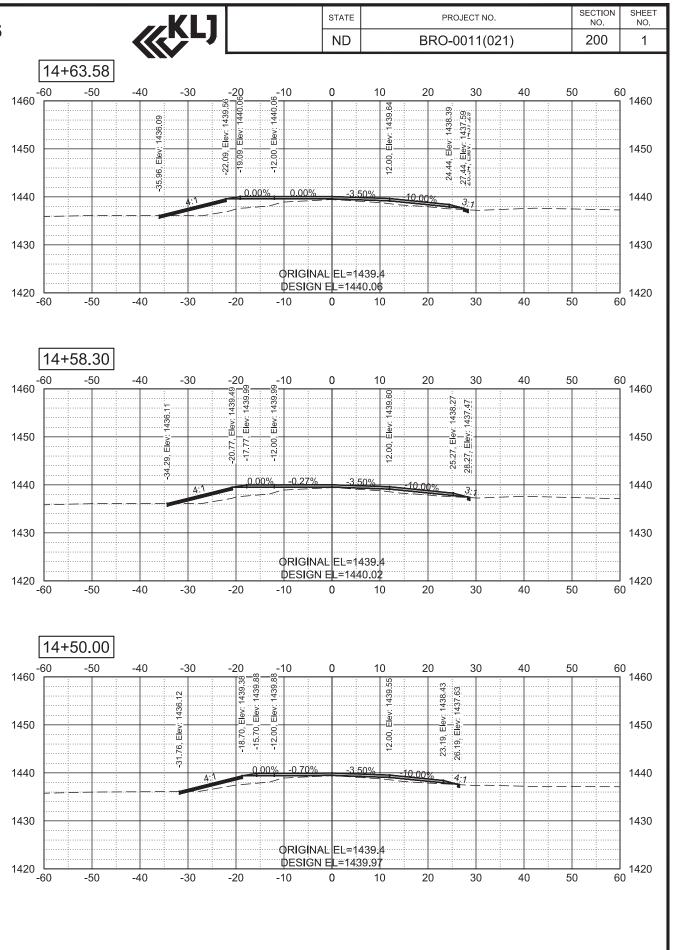
PIERRE FORMATION, SHALE, dark gray, moist, decomposed, very soft to soft, hand deformed sample classified as "Fat Clay (CH)"



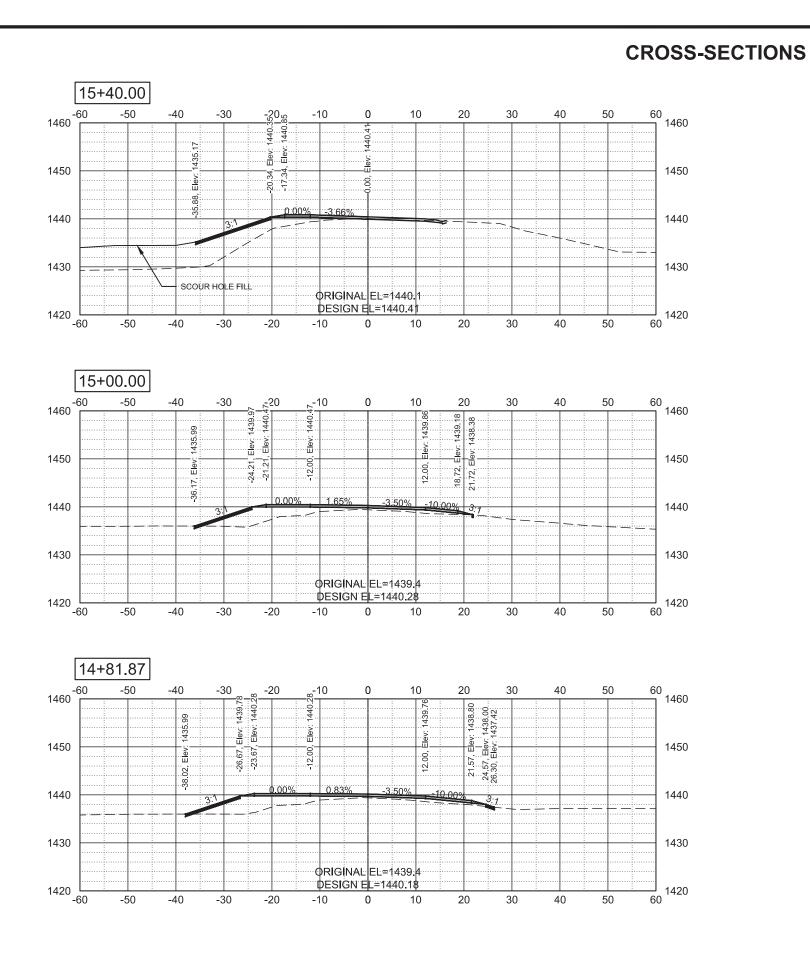


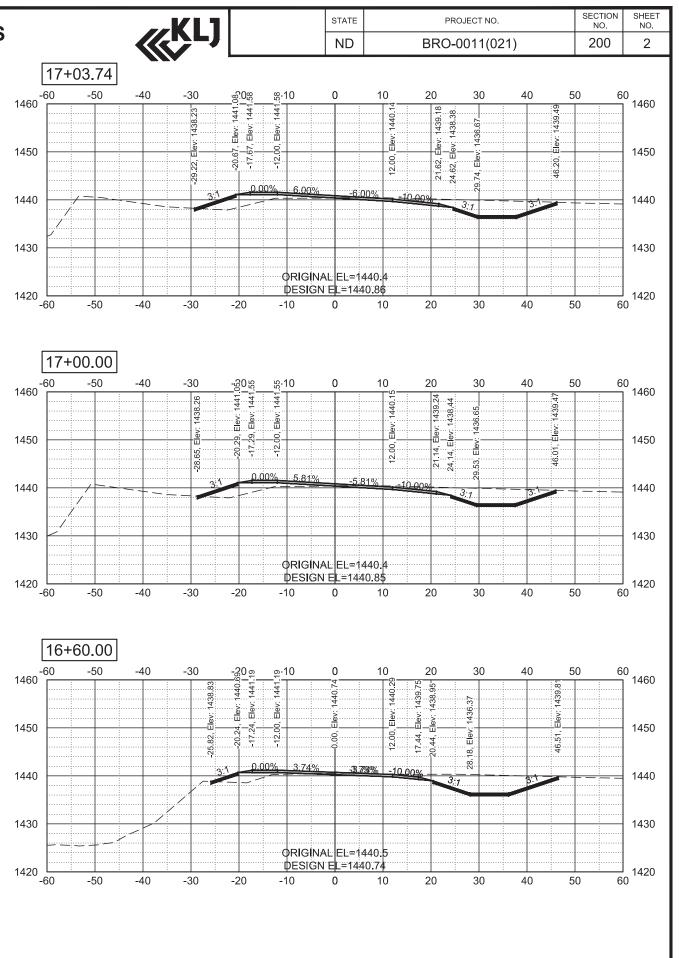
14+63.58 1460 -60 -20 -50 -40 -30 1439.1 1436.09 . ē. 1450 . 6 <u>е</u>.. 22. 35.96, 0.00% 1440 1430

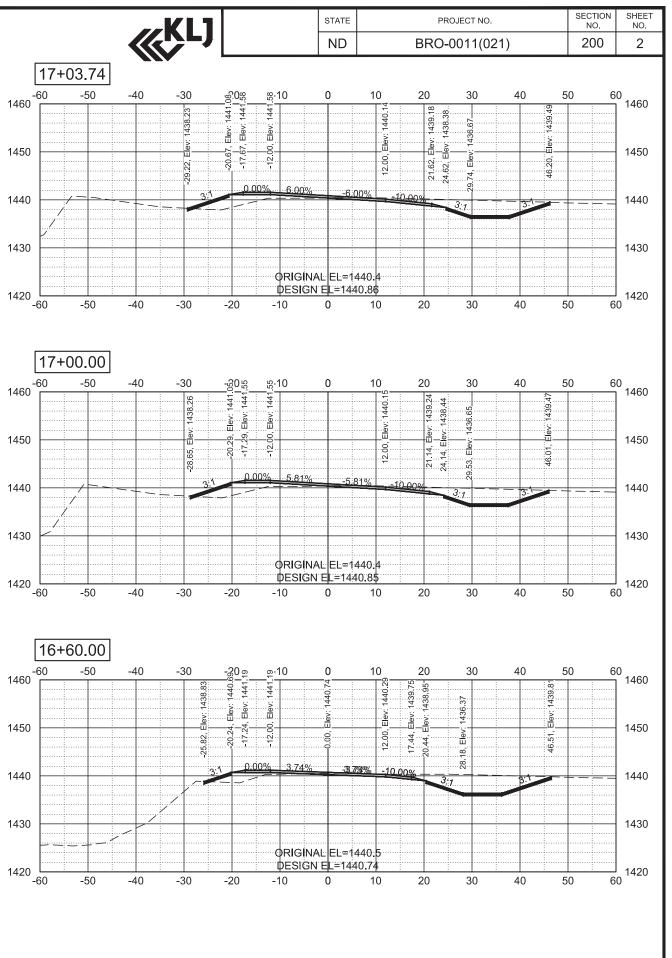


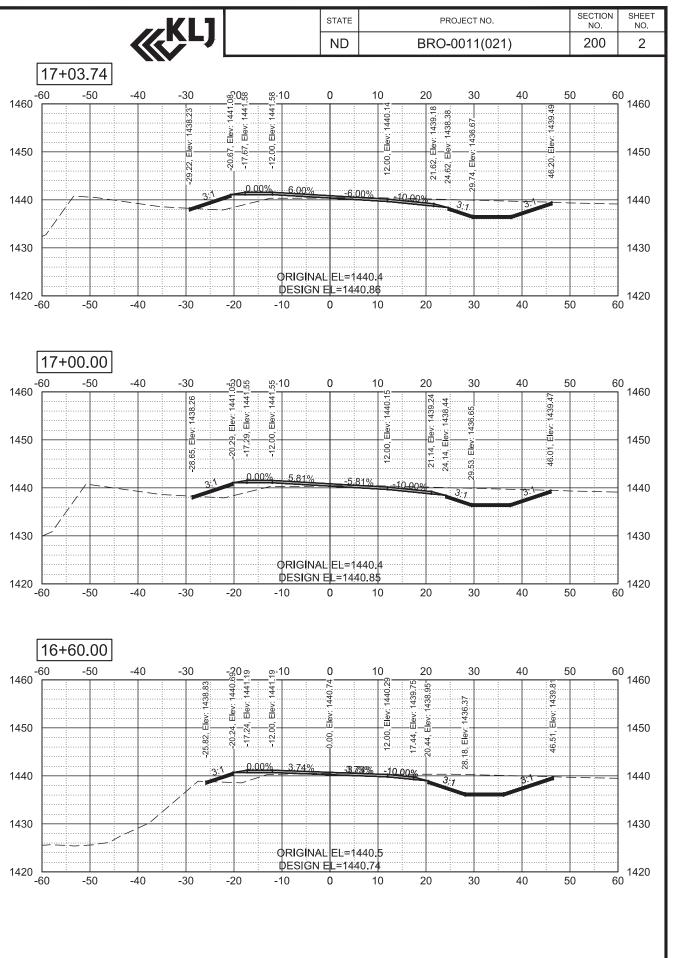


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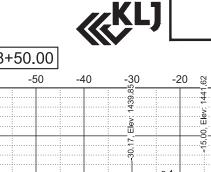


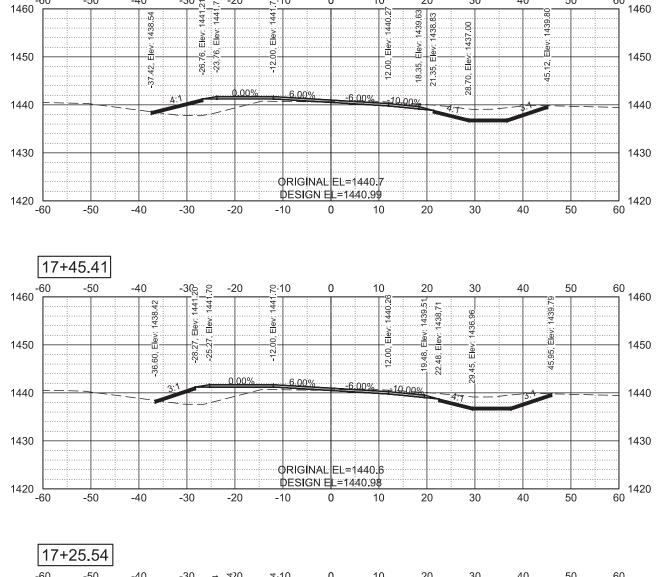


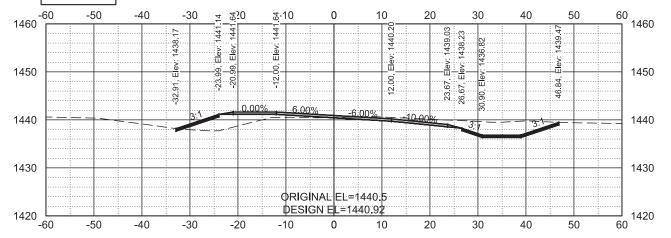


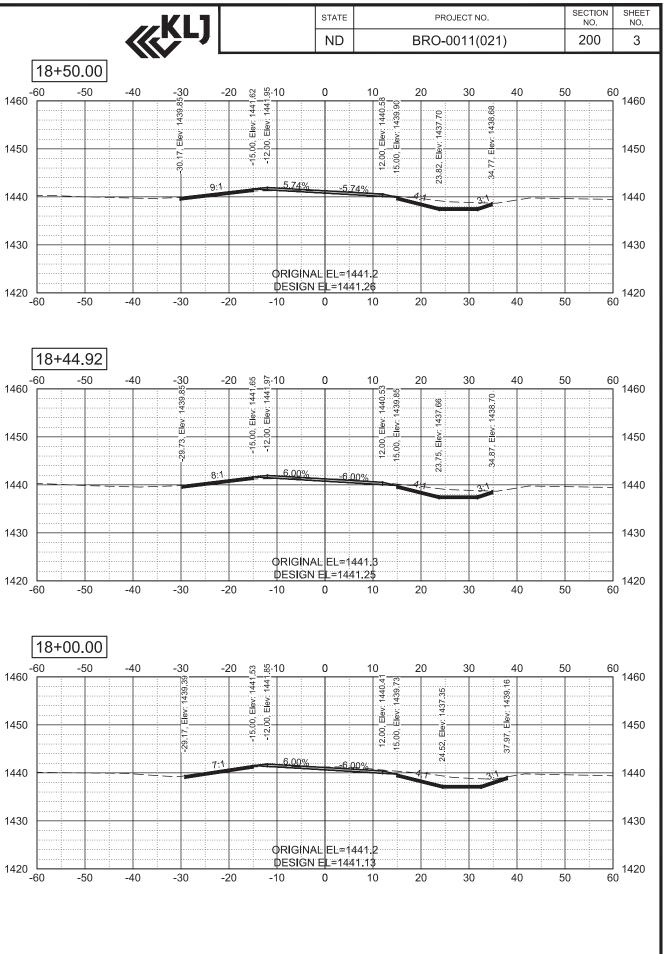


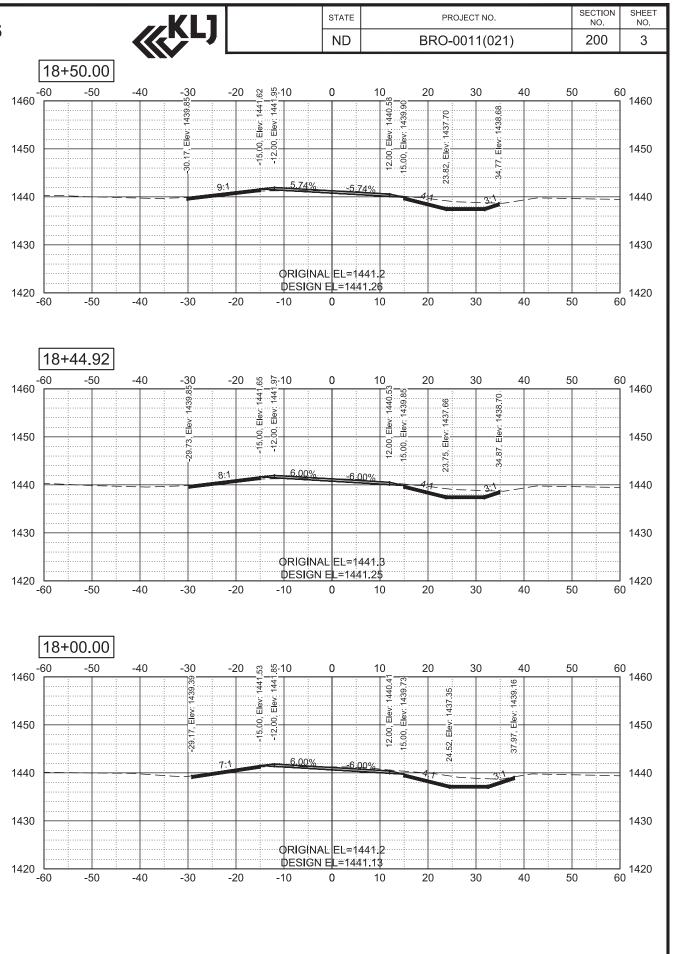












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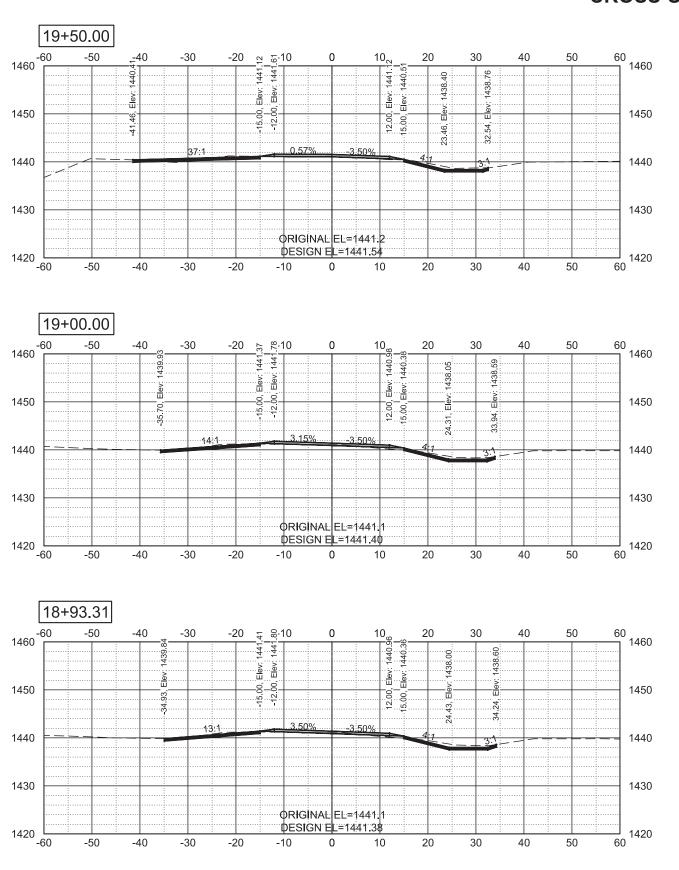
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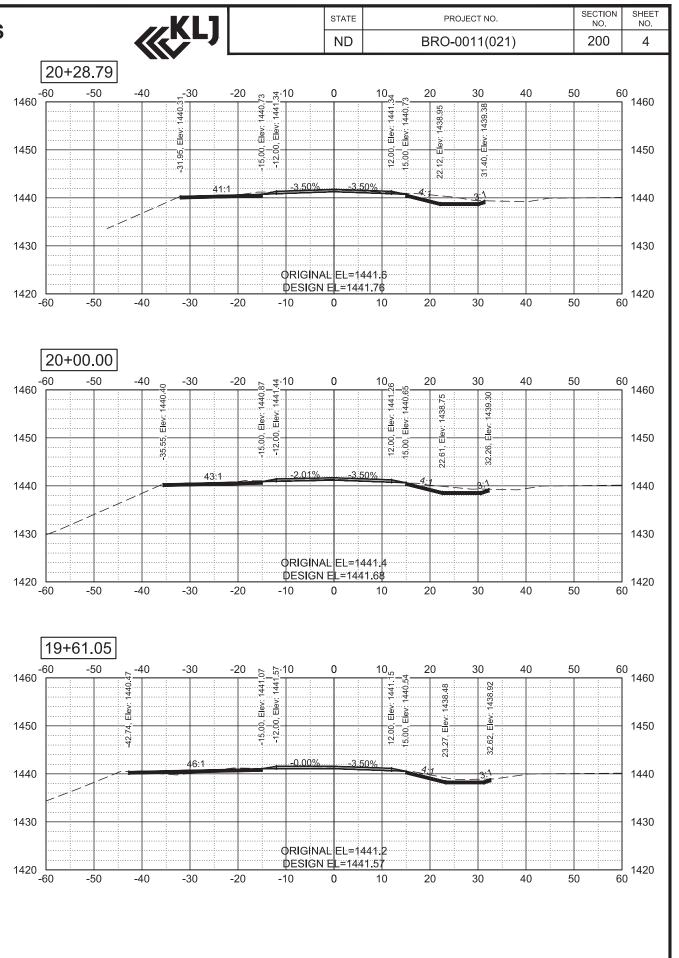
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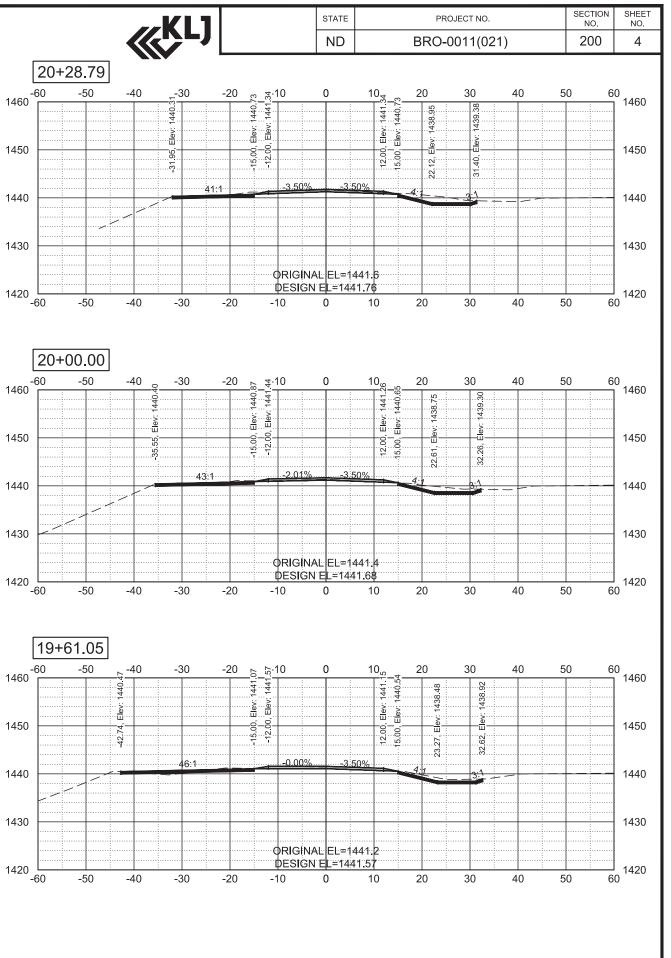
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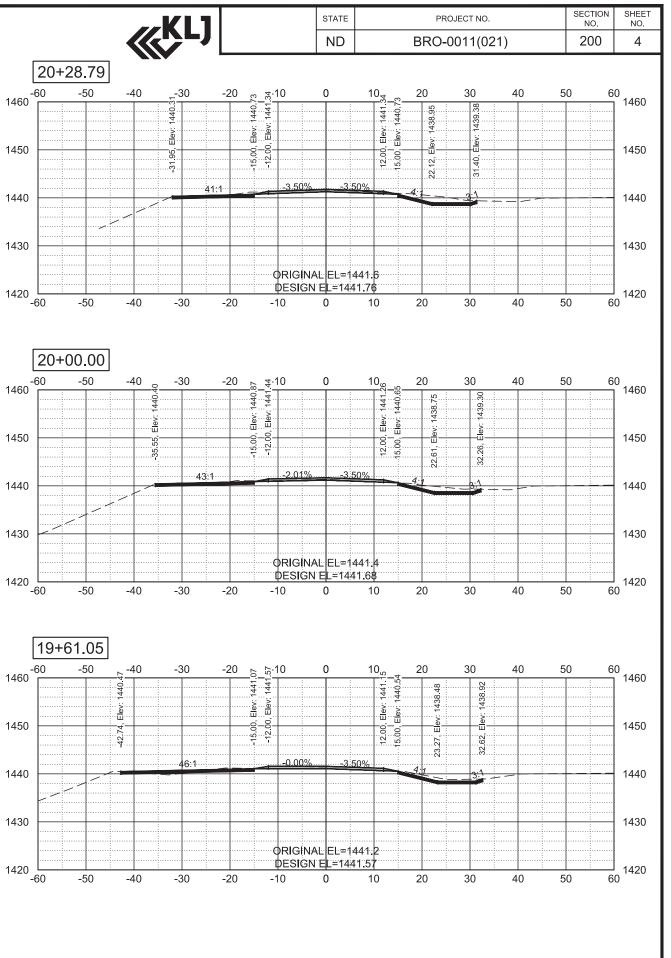
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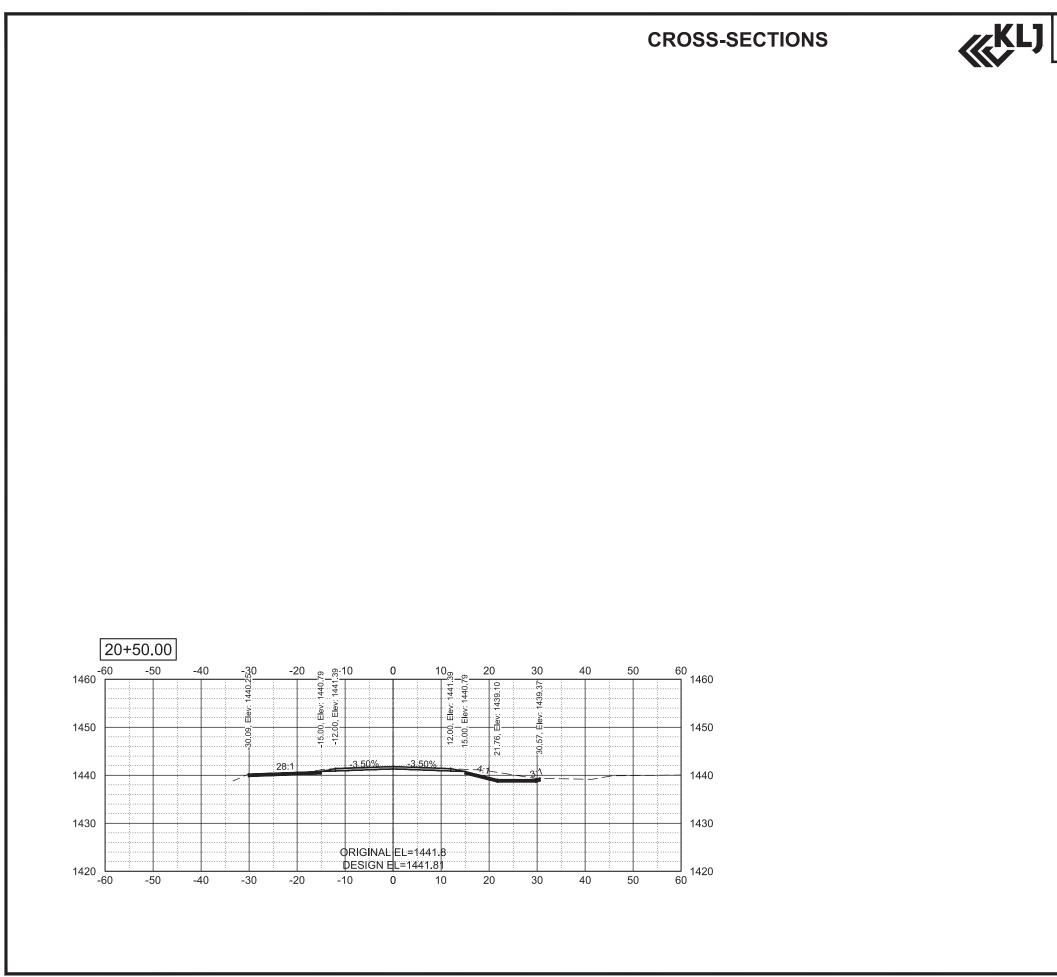
CROSS-SECTIONS











STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BRO-0011(021)	200	5