

December 5, 2023

**ADDENDUM 2 – JOB 23343**

**TO:** All prospective bidders on Projects SS-6-999(050), Job No. 23343 scheduled for the December 8, 2023 bid opening.

The following revision(s) shall be made:

**Plan Revisions:**

See attached summary from Jason Thorenson, P.E. dated December 4, 2023 for an explanation.

**Request for Proposal Revisions:**

- Remove and replace pages 5 thru 10 of 12 of the Proposal pages located at the beginning of the Request for Proposal with pages revised December 4, 2023.
- Bid Item Changes are summarized in the Plan Addendum Summary and Approval.

This addendum is to be incorporated into the bidder's proposal for this project. AASHTOWare Project Bids files should be updated by downloading the addendum file from the Bid Express on-line bidding exchange at <http://www.bidx.com/> and load it into the AASHTOWare Project Bids program.

*Phillip Murdoff*

PHILLIP MURDOFF, P.E. – CONSTRUCTION SERVICES ENGINEER

80: jwj

Enclosure

**PLAN ADDENDUM SUMMARY AND APPROVAL**

PROJECT INFORMATION		
<b>Project:</b>	SS-6-999(050)	<b>PCN:</b> 23343
<b>Location:</b>	Grand Forks, Griggs & Pembina Cos: Various US/State Highways – Grand Forks District	
<b>Date:</b>	11/29/2023	<b>Lead Designer:</b> Gayle Cox
<b>Bid Opening Date:</b>	12/08/2023	<b>JOB#:</b> 23343 <b>Addendum#:</b> 2

PLAN SHEET CHANGES		
Section	Sheet	Description
8	1	Sheet Revised: See chart below
8	2	Sheet Revised: See chart below
10	2	The row for non-reinforced concrete pavement CL AE – Doweled was revised.
51	1	Revised the allowable pipe materials for each of the two pipes
60	4	Changed the bid item for the 18IN pipe from 714-4100 PIPE CONDUIT 18IN TO 714-4099 PIPE CONDUIT 18IN-APPROACH.
60	5	Changed the bid item for the 18IN pipe from 714-4100 PIPE CONDUIT 18IN TO 714-4099 PIPE CONDUIT 18IN-APPROACH.
90	1	Revised bid item quantities for 550 0305 9IN NON-REINF CONCRETE PVMT CL AE-DOWELED and 550 0310 10IN NON-REINF CONCRETE PVMT CL AE-DOWELED
100	3	Revised bid item quantity for 704 1500 OBLITERATION OF PVMT MK. Added bid item 762 0422 SHORT TERM 6IN LINE-TYPE R
100	4	Changed short term 6IN – Type NR to short term 6IN – Type R.
100	5	Changed short term 6IN – Type NR to short term 6IN – Type R.
170	1	Factored design moments and shears were added for a single 12' x 3' barrel box culvert.
170	2	Plan note 606-P01 revised to allow for substitution of a single 12' x 3' x 70' precast concrete box culvert and two end sections in lieu of two singular 6' x 3' x 70' precast box culvert and four end sections.
170	4	Factored design moments and shears were added for a single barrel box culvert.
170	5	Plan note 606-P01 revised to include that separate single or double cell precast units may be used as alternates to a multi cell culvert.

CHANGES MADE TO BID ITEMS FOR JOB					
Spec	Code	Description	Unit	Previous Quantity	Revised Quantity
550	0305	9IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	672	1153
550	0310	10IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	1024	1229
704	1500	OBLITERATION OF PVMT MK	SF	1370	4550
714	4099	PIPE CONDUIT 18IN-APPROACH	LF	0	1008
714	4100	PIPE CONDUIT 18IN	LF	1008	0
762	0422	SHORT TERM 6IN LINE-TYPE R	LF	0	6360

**APPROVAL**

Should the revisions described above be processed as a plan addendum?

Yes                       No

*Jason Thorenson*  
 \_\_\_\_\_  
 Jason Thorenson, P.E.

12/4/23  
 Date

BID ITEMS

Project: SS-6-999(050) (PCN-23343)

**Bidder must type or neatly print unit prices in numerals, make extensions for each item, and total. Do not carry unit prices further than three (3) decimal places.**

Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
001	103	0100	CONTRACT BOND	L SUM	1.				
002	202	0104	REMOVAL OF STRUCTURE	EA	4.				
003	202	0114	REMOVAL OF CONCRETE PAVEMENT	SY	2,862.				
004	202	0132	REMOVAL OF BITUMINOUS SURFACING	SY	1,853.				
005	202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	190.				
006	202	0312	REMOVE EXISTING FENCE	LF	1,384.				
007	202	0350	REMOVAL OF TEMPORARY BYPASS	EA	4.				
008	203	0101	COMMON EXCAVATION-TYPE A	CY	1,298.				
009	203	0109	TOPSOIL	CY	4,036.				
010	203	0140	BORROW-EXCAVATION	CY	12,324.				
011	210	0050	BOX CULVERT EXCAVATION	EA	2.				
012	210	0210	FOUNDATION FILL	CY	6,638.				
013	210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	2.				
014	216	0100	WATER	M GAL	569.				
015	251	0200	SEEDING CLASS II	ACRE	4.570				
016	251	2000	TEMPORARY COVER CROP	ACRE	4.570				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$	000	\$\$\$\$	00
017	253	0101	STRAW MULCH	ACRE	9.140				
018	255	0102	ECB TYPE 2	SY	361.				
019	256	0200	RIPRAP GRADE II	CY	164.				
020	261	0112	FIBER ROLLS 12IN	LF	10,600.				
021	261	0113	REMOVE FIBER ROLLS 12IN	LF	4,881.				
022	262	0100	FLOTATION SILT CURTAIN	LF	183.				
023	262	0101	REMOVE FLOTATION SILT CURTAIN	LF	183.				
024	302	0050	TRAFFIC SERVICE AGGREGATE	TON	730.				
025	302	0120	AGGREGATE BASE COURSE CL 5	TON	7,228.				
026	430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	2,415.				
027	550	0305	9IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	1,153.				
028	550	0310	10IN NON REINF CONCRETE PVMT CL AE-DOWELED	SY	1,229.				
029	606	0603	6FT X 3FT PRECAST RCB CULVERT	LF	140.				
030	606	3006	DBL 10FT X 6FT PRECAST RCB CULVERT	LF	464.				
031	606	4603	6FT X 3FT PRECAST RCB END SECTION	EA	4.				
032	606	7006	DBL 10FT X 6FT PRECAST RCB END SECTION	EA	4.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
033	624	3005	CONNECTION PLATE MODIFICATION	EA	1.				
034	702	0100	MOBILIZATION	L SUM	1.				
035	704	1000	TRAFFIC CONTROL SIGNS	UNIT	3,436.				
036	704	1018	LANE CLOSURE-SIGNAL CONTROL/FLAGGING CONTROL	EA	1.				
037	704	1036	ATTENUATION DEVICE-TYPE B-30	EA	4.				
038	704	1045	ATTENUATION DEVICE-TYPE B-75	EA	4.				
039	704	1052	TYPE III BARRICADE	EA	24.				
040	704	1060	DELINEATOR DRUMS	EA	74.				
041	704	1067	TUBULAR MARKERS	EA	92.				
042	704	1072	FLEXIBLE DELINEATORS	EA	41.				
043	704	1080	STACKABLE VERTICAL PANELS	EA	55.				
044	704	1081	VERTICAL PANELS-BACK TO BACK	EA	6.				
045	704	1088	SEQUENCING ARROW PANEL-TYPE C-CROSSOVER	EA	2.				
046	704	1500	OBLITERATION OF PAVEMENT MARKING	SF	4,550.				
047	704	3511	STATE FURNISHED MEDIAN BARRIER	LF	1,550.				
048	704	8015	VEHICLE SPEED FEEDBACK SIGN	EA	1.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
049	706	0400	FIELD OFFICE	EA	1.				
050	706	0500	AGGREGATE LABORATORY	EA	1.				
051	709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	7,212.				
052	709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	1,607.				
053	714	4099	PIPE CONDUIT 18IN-APPROACH	LF	1,008.				
054	714	4150	PIPE CONDUIT 78IN	LF	358.				
055	714	4155	PIPE CONDUIT 84IN	LF	26.				
056	714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES	EA	2.				
057	720	0110	RIGHT OF WAY MARKERS	EA	3.				
058	720	0130	IRON PIN R/W MONUMENTS	EA	3.				
059	752	0320	FENCE BARBED WIRE 4 STRAND-STEEL POST	LF	1,241.				
060	752	0905	TEMPORARY FENCE	LF	913.				
061	752	3150	CORNER ASSEMBLY BARBED WIRE-WOOD POST	EA	8.				
062	754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	13.				
063	754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	25.				
064	754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	64.				

BID ITEMS

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
065	754	0592	RESET SIGN PANEL	EA	1.				
066	754	0596	RESET MILE POST	EA	1.				
067	754	0803	OBJECT MARKERS - TYPE III	EA	8.				
068	754	0805	OBJECT MARKERS - CULVERTS	EA	4.				
069	760	0021	SINUSOIDAL RUMBLE STRIP - CONCRETE SHOULDER	MILE	.200				
070	760	0025	SINUSOIDAL RUMBLE STRIP - ASPHALT SHOULDER	MILE	.120				
071	760	0027	SINUSOIDAL RUMBLE STRIP - ASPHALT CENTERLINE	MILE	.060				
072	762	0110	EPOXY PVMT MK 4IN LINE-GROOVED	LF	1,054.				
073	762	0113	EPOXY PVMT MK 4IN LINE	LF	675.				
074	762	0200	RAISED PAVEMENT MARKERS	EA	2,378.				
075	762	0422	SHORT TERM 6IN LINE-TYPE R	LF	6,360.				
076	762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	150.				
077	762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	132.				
078	764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	2.				
079	764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	975.				
080	764	2081	REMOVE END TREATMENT & TRANSITION	EA	6.				



**BID ITEMS**

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Item No.	Spec No.	Code No.	Description	Unit	Approx. Quantity	Unit Price		Amount	
						\$\$\$\$\$	000	\$\$\$\$\$	00
081	772	2110	FLASHING BEACON-POST MOUNTED	EA	2.				
082	900	1001	TEMPORARY STREAM DIVERSION - SITE 1	EA	1.				
083	900	1002	TEMPORARY STREAM DIVERSION - SITE 2	EA	1.				
084	900	1003	TEMPORARY STREAM DIVERSION - SITE 3	EA	1.				
			TOTAL SUM BID						

Estimated Quantities

Revised 11/30/2023	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SS-6-999(050)	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	SITE 1	SITE 2	SITE 3	TOTAL
103	0100	CONTRACT BOND	L SUM	0.34	0.33	0.33	1
202	0104	REMOVAL OF STRUCTURE	EA	1	2	1	4
202	0114	REMOVAL OF CONCRETE PAVEMENT	SY		2862		2862
202	0132	REMOVAL OF BITUMINOUS SURFACING	SY	112	641	1100	1853
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF			190	190
202	0312	REMOVE EXISTING FENCE	LF		409	975	1384
202	0350	REMOVAL OF TEMPORARY BYPASS	EA		2	2	4
203	0101	COMMON EXCAVATION-TYPE A	CY	234	1051	13	1298
203	0109	TOPSOIL	CY	200	2814	1022	4036
203	0140	BORROW-EXCAVATION	CY	238	3832	8254	12324
210	0050	BOX CULVERT EXCAVATION	EA	1	1		2
210	0210	FOUNDATION FILL	CY	705	5933		6638
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1	1		2
216	0100	WATER	M GAL	40	421	108	569
251	0200	SEEDING CLASS II	ACRE	0.26	2	2.31	4.57
251	2000	TEMPORARY COVER CROP	ACRE	0.26	2	2.31	4.57
253	0101	STRAW MULCH	ACRE	0.52	4	4.62	9.14
255	0102	ECB TYPE 2	SY			361	361
256	0200	RIPRAP GRADE II	CY	35	129		164
261	0112	FIBER ROLLS 12IN	LF	908	6237	3455	10600
261	0113	REMOVE FIBER ROLLS 12IN	LF	504	2722	1655	4881
262	0100	FLOTATION SILT CURTAIN	LF	27	43	113	183
262	0101	REMOVE FLOTATION SILT CURTAIN	LF	27	43	113	183
302	0050	TRAFFIC SERVICE AGGREGATE	TON			730	730
302	0120	AGGREGATE BASE COURSE CL 5	TON	218	6785	225	7228
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	85	1869	461	2415
550	0305	9IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY		1153		1153
550	0310	10IN NON REINF CONCRETE PVMT CL AE-DOWELED	SY		1229		1229
606	0603	6FT X 3FT PRECAST RCB CULVERT	LF	140			140
606	3006	DBL 10FT X 6FT PRECAST RCB CULVERT	LF		464		464
606	4603	6FT X 3FT PRECAST RCB END SECTION	EA	4			4
606	7006	DBL 10FT X 6FT PRECAST RCB END SECTION	EA		4		4
624	3005	CONNECTION PLATE MODIFICATION	EA		1		1
702	0100	MOBILIZATION	L SUM	0.34	0.33	0.33	1
704	1000	TRAFFIC CONTROL SIGNS	UNIT	600	1986	850	3436
704	1018	LANE CLOSURE-SIGNAL CONTROL/FLAGGING CONTROL	EA			1	1
704	1036	ATTENUATION DEVICE-TYPE B-30	EA			4	4
704	1045	ATTENUATION DEVICE-TYPE B-75	EA		4		4
704	1052	TYPE III BARRICADE	EA	7	7	10	24
704	1060	DELINEATOR DRUMS	EA	8	54	12	74
704	1067	TUBULAR MARKERS	EA	28	64		92
704	1072	FLEXIBLE DELINEATORS	EA		41		41
704	1080	STACKABLE VERTICAL PANELS	EA			55	55
704	1081	VERTICAL PANELS-BACK TO BACK	EA		6		6
704	1088	SEQUENCING ARROW PANEL-TYPE C-CROSSOVER	EA		2		2
704	1500	OBLITERATION OF PAVEMENT MARKING	SF		4550		4550
704	3511	STATE FURNISHED MEDIAN BARRIER	LF		1190	360	1550

Estimated Quantities

Revised 11/30/2023	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SS-6-999(050)	8	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	SITE 1	SITE 2	SITE 3	TOTAL
704	8015	VEHICLE SPEED FEEDBACK SIGN	EA		1		1
706	0400	FIELD OFFICE	EA			1	1
706	0500	AGGREGATE LABORATORY	EA			1	1
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	179	7033		7212
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	92	1515		1607
714	4099	PIPE CONDUIT 18IN-APPROACH	LF		1008		1008
714	4150	PIPE CONDUIT 78IN	LF			358	358
714	4155	PIPE CONDUIT 84IN	LF			26	26
714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES	EA			2	2
720	0110	RIGHT OF WAY MARKERS	EA	3			3
720	0130	IRON PIN R/W MONUMENTS	EA	3			3
752	0320	FENCE BARBED WIRE 4 STRAND-STEEL POST	LF		290	951	1241
752	0905	TEMPORARY FENCE	LF		253	660	913
752	3150	CORNER ASSEMBLY BARBED WIRE-WOOD POST	EA		4	4	8
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	13			13
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	25			25
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	64			64
754	0592	RESET SIGN PANEL	EA	1			1
754	0596	RESET MILE POST	EA			1	1
754	0803	OBJECT MARKERS - TYPE III	EA	4	4		8
754	0805	OBJECT MARKERS - CULVERTS	EA			4	4
760	0021	SINUSOIDAL RUMBLE STRIP - CONCRETE SHOULDER	MILE		0.2		0.2
760	0025	SINUSOIDAL RUMBLE STRIP - ASPHALT SHOULDER	MILE			0.12	0.12
760	0027	SINUSOIDAL RUMBLE STRIP - ASPHALT CENTERLINE	MILE			0.06	0.06
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED	LF		1054		1054
762	0113	EPOXY PVMT MK 4IN LINE	LF			675	675
762	0200	RAISED PAVEMENT MARKERS	EA		2378		2378
762	0422	SHORT TERM 6IN LINE-TYPE R	LF		6360		6360
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF			150	150
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF		132		132
764	0145	W-BEAM GUARDRAIL END TERMINAL	EA		2		2
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF			975	975
764	2081	REMOVE END TREATMENT & TRANSITION	EA			6	6
772	2110	FLASHING BEACON-POST MOUNTED	EA		2		2
900	1001	TEMPORARY STREAM DIVERSION - SITE 1	EA	1			1
900	1002	TEMPORARY STREAM DIVERSION - SITE 2	EA		1		1
900	1003	TEMPORARY STREAM DIVERSION - SITE 3	EA			1	1

BASIS OF ESTIMATE		I-29 SB		I-29 NB		Crossovers		Mainline			
		9" Concrete 20" Aggregate Base Course		10" Concrete 4" Aggregate Base Course		6" Commercial Grade Asphalt 18" Aggregate Base					
		Station	Station	Station	Station	Station	Station				
		7821+94	7824+67	7822+51	7825+42	7808+18	7816+20				
						7826+51	7834+53				
Total Stations		2.73	Total Stations		2.91	Total Stations		16.04			
Material	Unit	Width (ft)	Area (sf)	Quantity per Station	Width (ft)	Area (sf)	Quantity per Station	Width (ft)	Area (sf)	Total Quantity	TOTAL
Aggregate Base CL5 @ 1.875 TON/CY (Based on SF on Typical Sections)	TON	44.66	64.6	448.3	44.66	15.2	105.3	Varies		5255.1	6,785
Commercial Grade Asphalt	Ton							Varies		1868.5	1,868.5
*Asphalt Cement @ 6.0%	Ton							Varies		112.1	112.1
*Tack Coat @ 0.05 Gal/SY (1st Lift)	Gal							Varies		280.3	280.3
*Tack Coat @ 0.05 Gal/SY (2nd Lift)	Gal							Varies		280.3	280.3
Non-Reinforced Concrete Pavement CL AE - Doweled	SY	38.00	22.16	422.2	38.00	31.8	422.2				2382
Geosynthetic Material Type G	SY							Varies		5605.4	5605.4

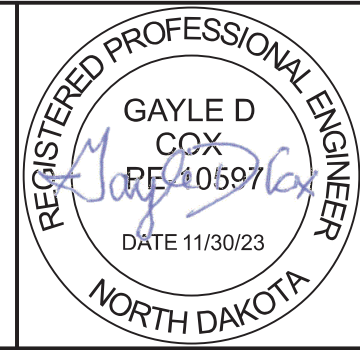
\*Provided for informational purpose, Incidental to Commercial Grade Asphalt

Earthwork Summary						
Location	Common Excavation- Type A (Pay Item)	Box Culvert Excavation	Embankment Volume	Adjusted Embankment Volume	Borrow - Excavation (Pay Item)	Topsoil (Pay Item)
	CY	CY	CY	CY	CY	CY
	A		B	C = B * 1.25	D = C - A	E
I-29						
Sta 7821+94 to 7825+42	266.7		1007.3	1259.1	992.4	696.9
Box Culvert Excavation						
Box Culvert		4230.0			-992.4	
South Crossover						
Sta 7808+18 to 7816+20	347.2		2134.4	2668.0	2320.8	1064.5
North Crossover						
Sta 7826+51 to 7834+53	437.3		1559.1	1948.9	1511.6	1053.0
<b>Totals=</b>	<b>1051.2</b>	<b>4230.0</b>	<b>4700.8</b>	<b>5876.0</b>	<b>3832.4</b>	<b>2814.4</b>

216 - 0100 WATER				
Description	Basis	Amount	Unit	Quantity
Dust Palliative	25 M Gal/Mile	0.1	M GAL	3
Subgrade Preparation	25 M Gal/Mile		M GAL	0
Aggregate	20 Gal/Ton	17,999	M GAL	360
Embankment	10 Gal/CY	5876	M GAL	59
<b>TOTAL:</b>				<b>421</b>

Water  
 25 Mgal/Mile for Subgrade Preparation  
 25 Mgal/Mile for Dust Palliative  
 20 Gal/Ton for Aggregates  
 10 Gal/CY for Embankment

Basis of Estimate  
 Site #2  
 Structure Replacement  
 Grand Forks County  
 Interstate 29  
 4 Miles South of Manvel  
 Str# 29-148.172



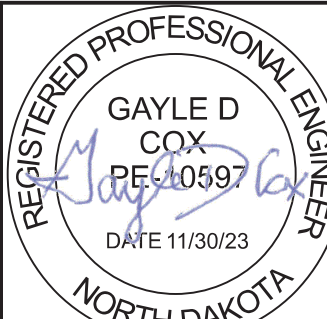
Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	Geosynthetic Material - Type G (Pay Item)	(*) End Sections		Applicable Backfill
				In	Bid Item	LF							Begin EA	End EA	
7809+13	CL	7814+65	CL	18	Pipe Conduit - Approach	552	Reinforced Concrete Pipe - Class III (barrell length = 552 LF)	18					FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	18	Z, A, P	2	0.064				
							Spiral Rib Steel Pipe	18	Z, A, P	3/4, 1	0.064				
							High-Density Polyethylene	18							
							Polypropylene Pipe (AASHTO M330, Type S)	18							
7828+68	CL	7833+24	CL	18	Pipe Conduit	456	Reinforced Concrete Pipe - Class III (barrel length = 456 LF)	18				FES	FES	Specification 714.04 A	
							Corrugated Steel Pipe	18	Z, A, P	2	0.064				
							Spiral Rib Steel Pipe	18	Z, A, P	3/4, 1	0.064				
							High-Density Polyethylene	18							
							Polypropylene Pipe (AASHTO M330, Type S)	18							

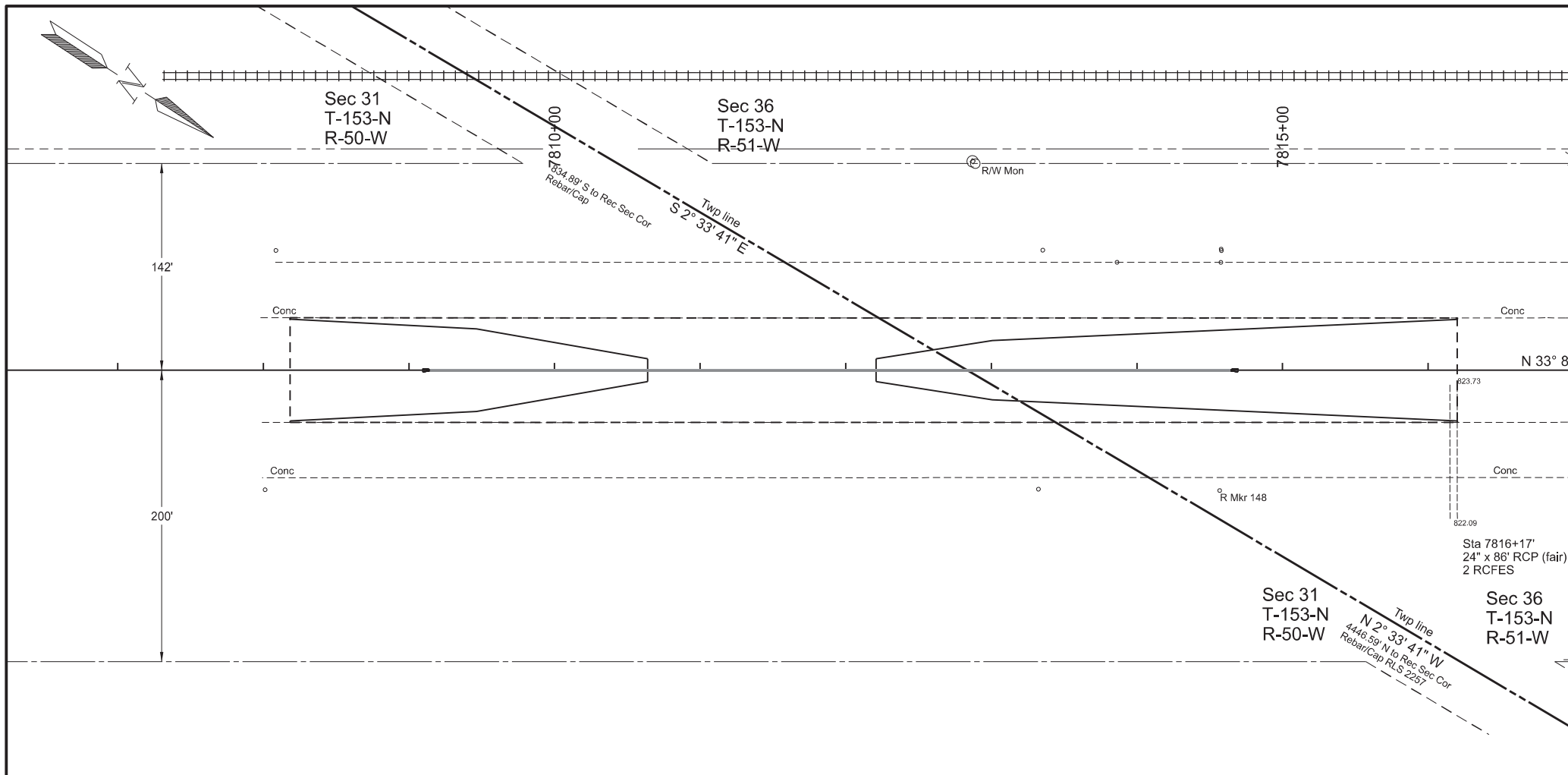
Corrugations: 2 = 2-2/3"x1/2"  
3 = 3"x1"  
5 = 5"x1"

Coatings: Z = Zinc  
A = Aluminum  
P = Polymeric (over Zinc or Aluminum)

Spiral Ribs: 3/4 = 3/4"x3/4"@7-1/2"  
1 = 3/4"x1"@11-1/2"

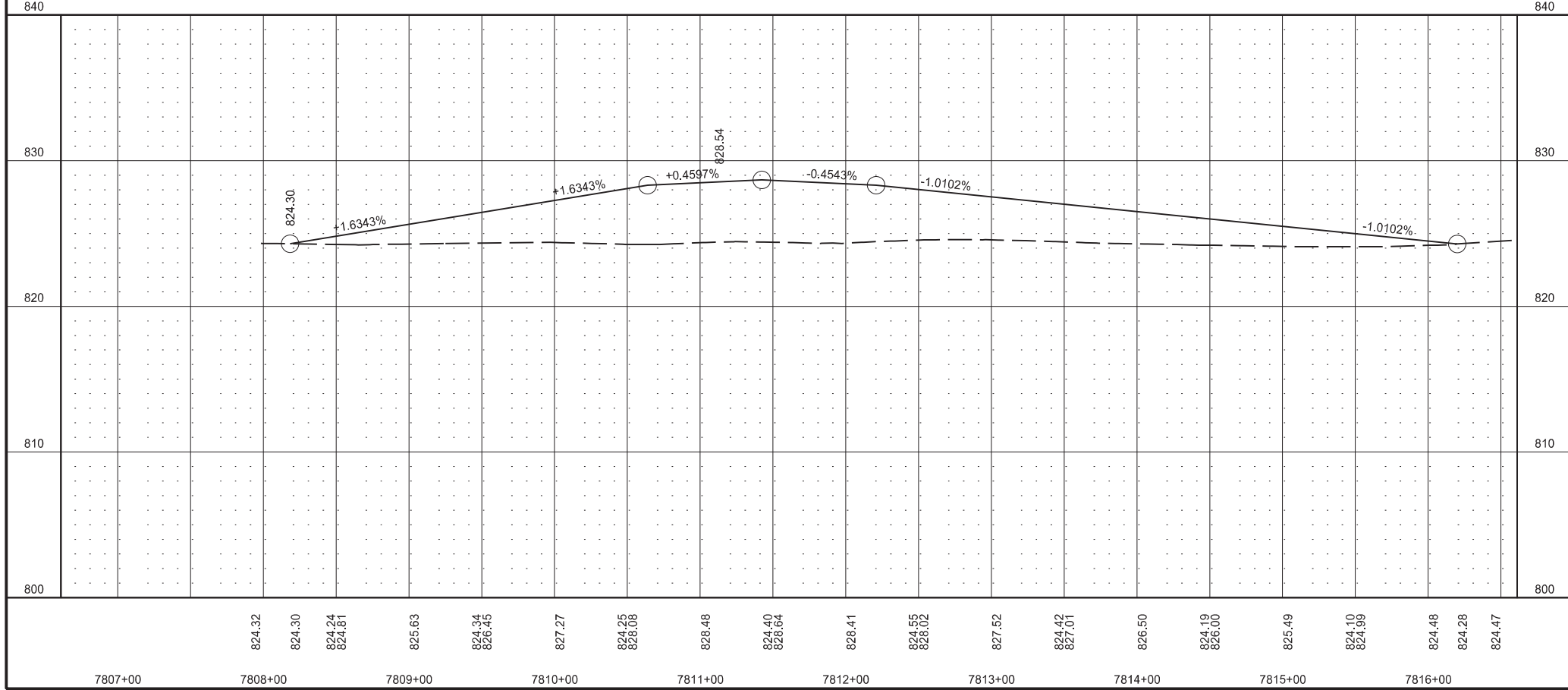
(\*) End sections are measured and paid for separately for pipe extensions.  
**FES** = Flared End Section  
**TES** = Traversable End Section

Allowable Pipe List  Site #2  Structure Replacement Grand Forks County Interstate 29 4 Miles South of Manvel Str# 29-148.172	
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	ND	SS-6-999(050)	60	4

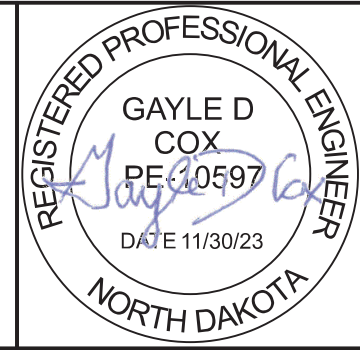
SPEC CODE	BID ITEM	UNIT	QUANTITY
714 4099	PIPE CONDUIT 18IN-APPROACH	LF	552
	STA 7809+13 to 7814+65 CL		

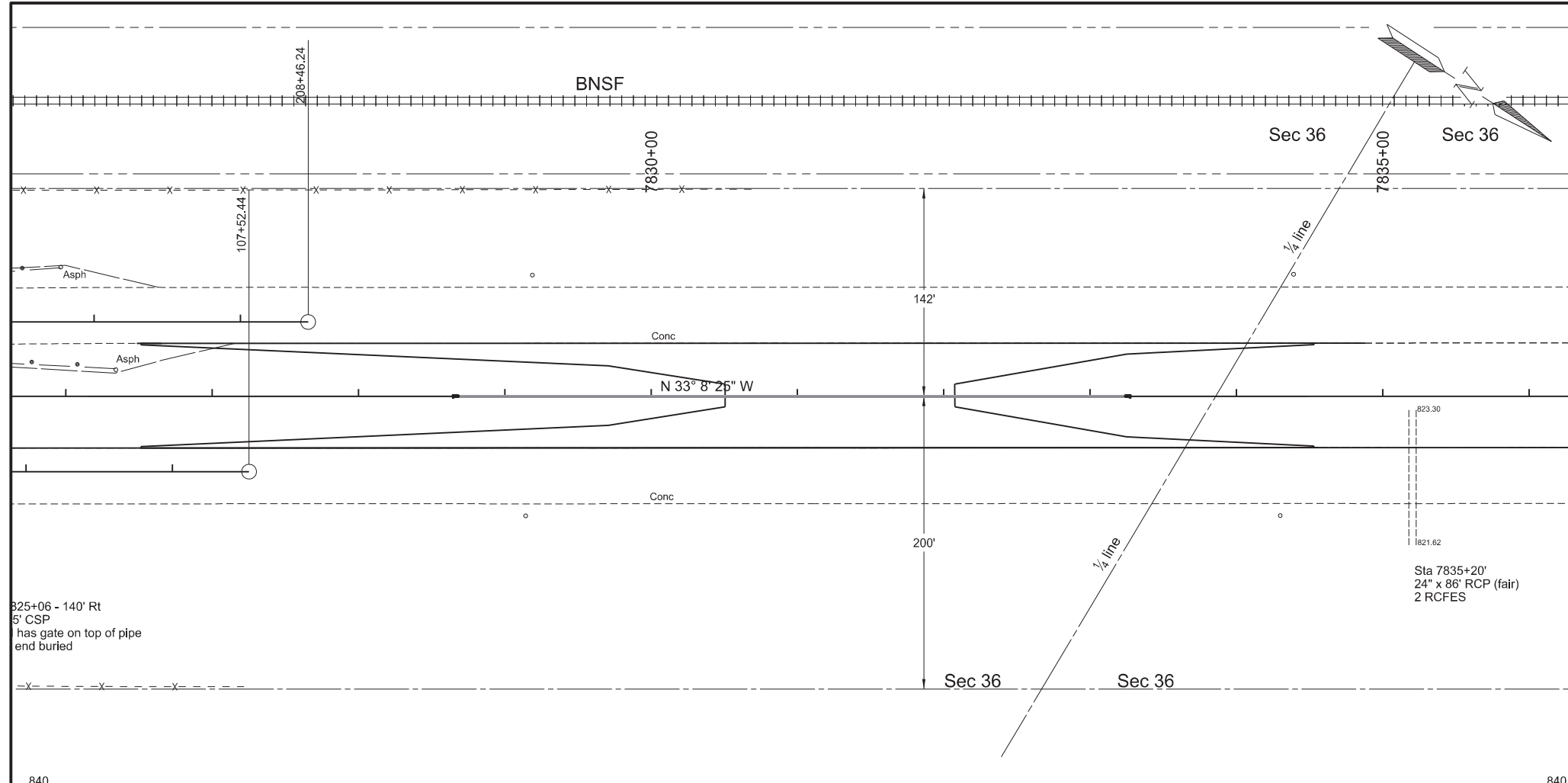


Plan & Profile  
South Crossover

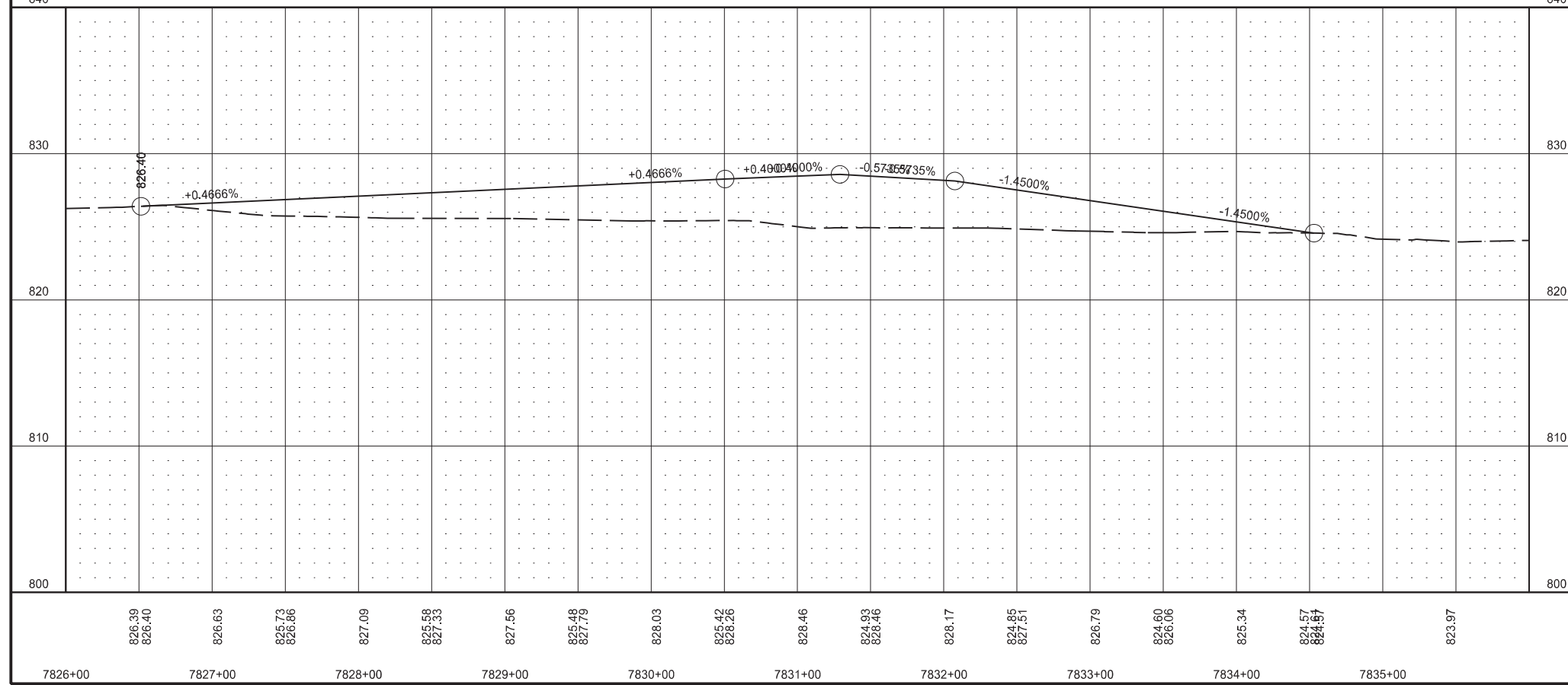
Site #2

Structure Replacement  
Grand Forks County  
Interstate 29  
4 Miles South of Manvel  
Str# 29-148.172

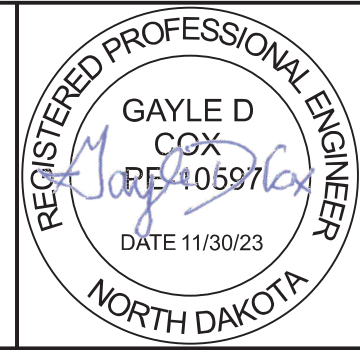


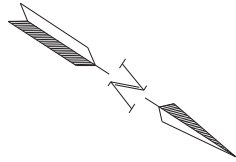


SPEC CODE	BID ITEM	UNIT	QUANTITY
714 4099	PIPE CONDUIT 18IN-APPROACH	LF	456
	STA 7828+68 to 7833+24 CL		



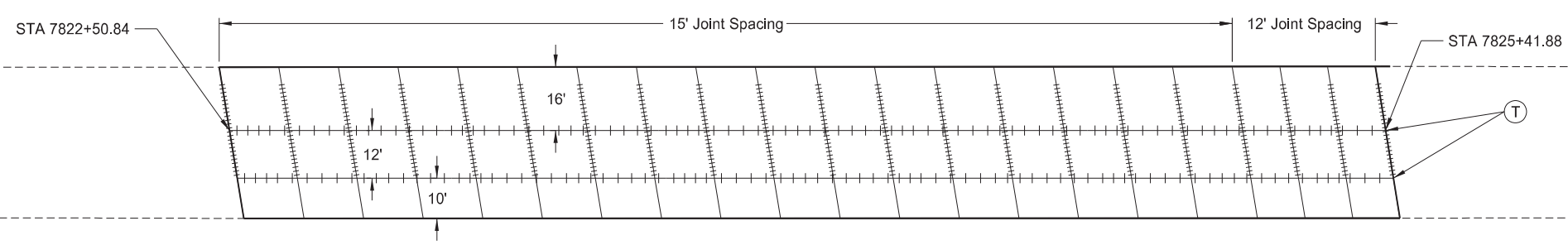
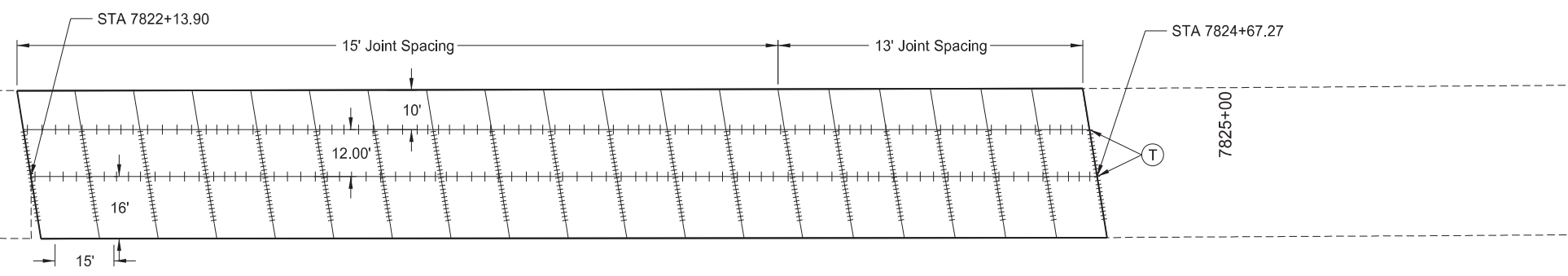
Plan & Profile  
North Crossover  
  
Site #2  
  
Structure Replacement  
Grand Forks County  
Interstate 29  
4 Miles South of Manvel  
Str# 29-148.172





Revised 11/30/2023	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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SPEC CODE	BID ITEM	UNIT	QUANTITY
550 305	9IN NON-REIN CONCRETE PVMT AL AE-DOWELED		
	Sta. 7821+94.32 to 7824+67.27 LT	SY	1153
550 310	10IN NON-REIN CONCRETE PVMT AL AE-DOWELED		
	Sta. 7822+50.85 to 7825+41.89 RT	SY	1234



- Ⓣ Tied Joint - See Detail
- ===== Doweled Joint
- Transverse Joint

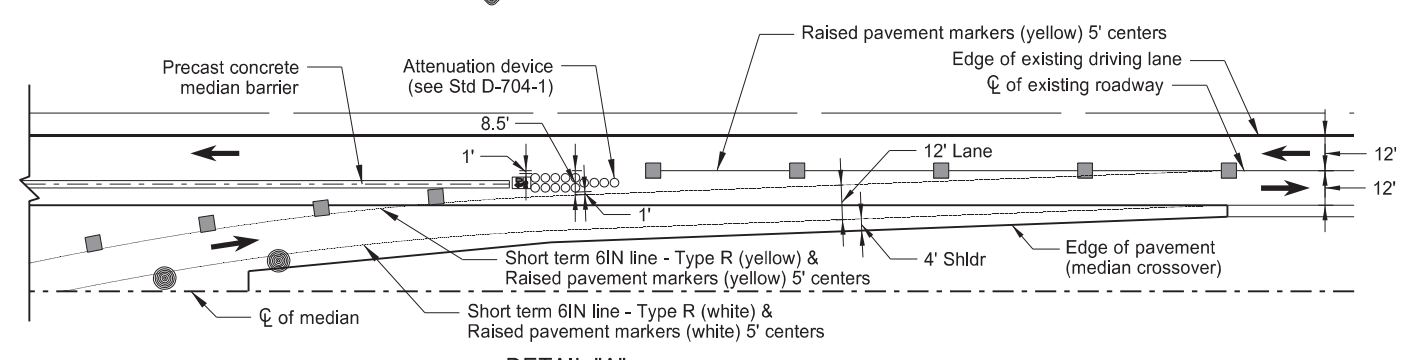
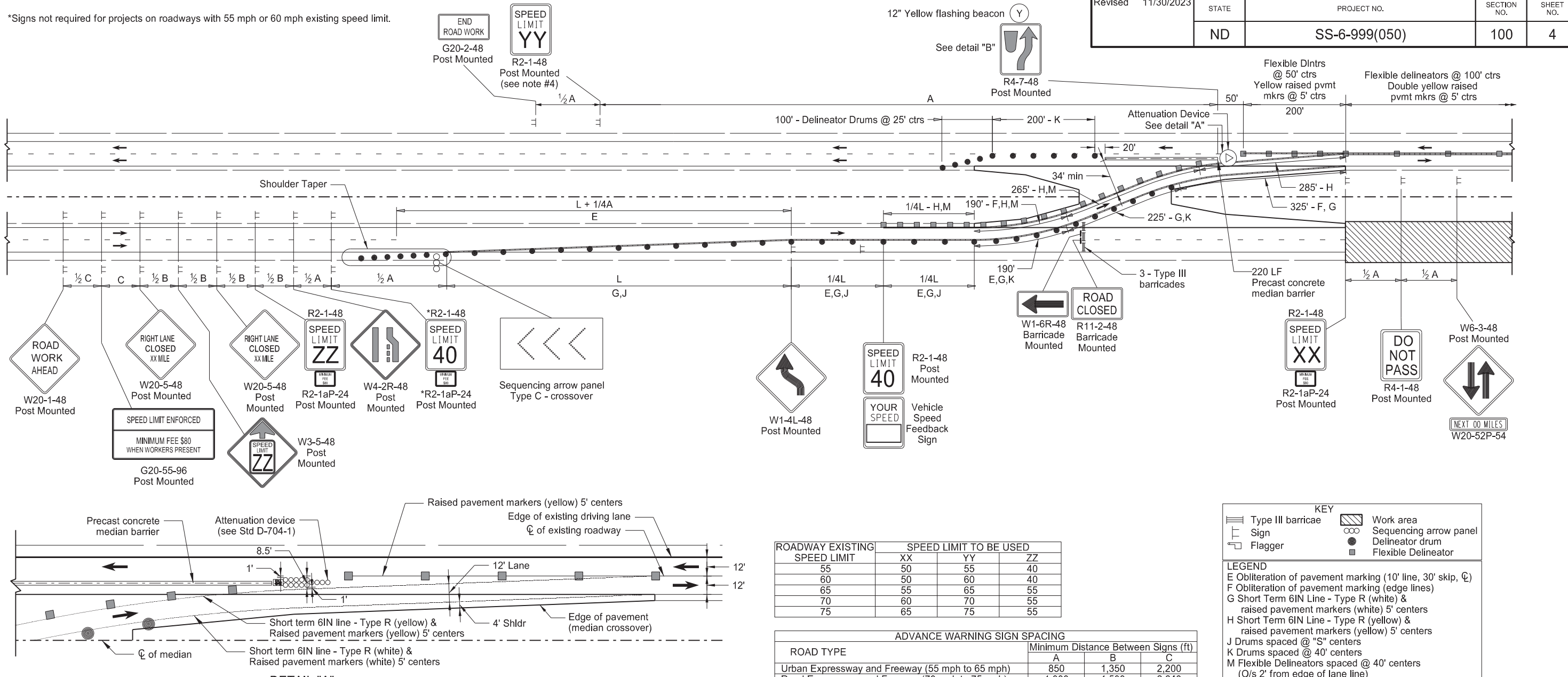
Paving Layout Site #2 Structure Replacement Grand Forks County Interstate 29 4 Miles South of Manvel Str# 29-148.172	
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\*Signs not required for projects on roadways with 55 mph or 60 mph existing speed limit.

Revised 11/30/2023	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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ROADWAY EXISTING SPEED LIMIT	SPEED LIMIT TO BE USED		
	XX	YY	ZZ
55	50	55	40
60	50	60	40
65	55	65	55
70	60	70	55
75	65	75	55

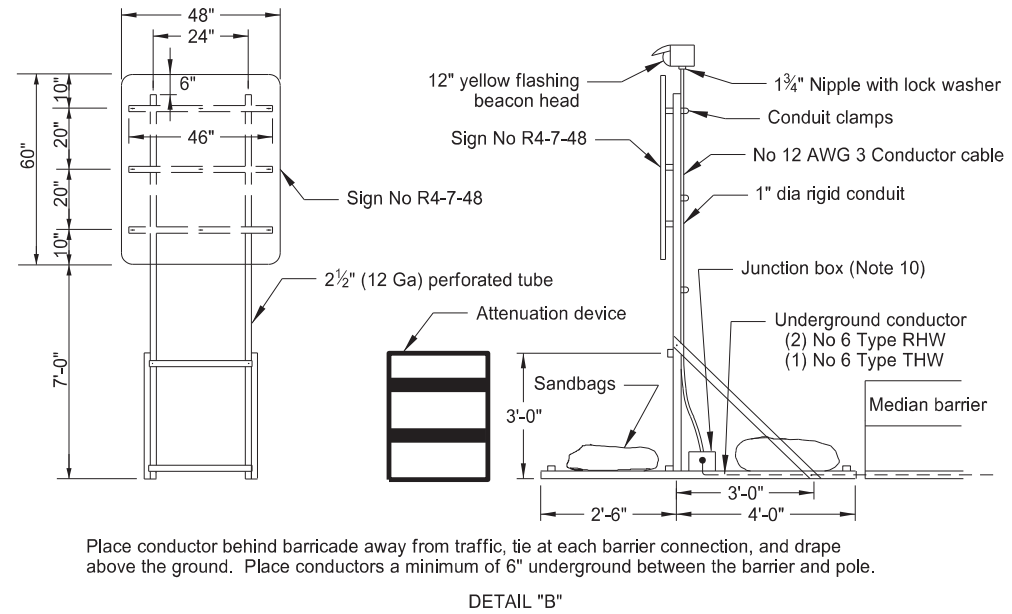
ROAD TYPE	ADVANCE WARNING SIGN SPACING		
	Minimum Distance Between Signs (ft)		
	A	B	C
Urban Expressway and Freeway (55 mph to 65 mph)	850	1,350	2,200
Rural Expressway and Freeway (70 mph to 75 mph)	1,000	1,500	2,640

**KEY**

- Type III barricade
- Sign
- Flagger
- Work area
- Sequencing arrow panel
- Delineator drum
- Flexible Delineator

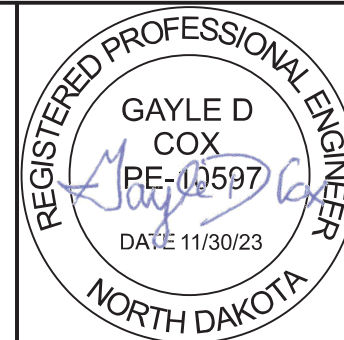
**LEGEND**

- E Obliteration of pavement marking (10' line, 30' skip, C)
- F Obliteration of pavement marking (edge lines)
- G Short Term 6IN Line - Type R (white) & raised pavement markers (white) 5' centers
- H Short Term 6IN Line - Type R (yellow) & raised pavement markers (yellow) 5' centers
- J Drums spaced @ "S" centers
- K Drums spaced @ 40' centers
- M Flexible Delineators spaced @ 40' centers (O/s 2' from edge of lane line)



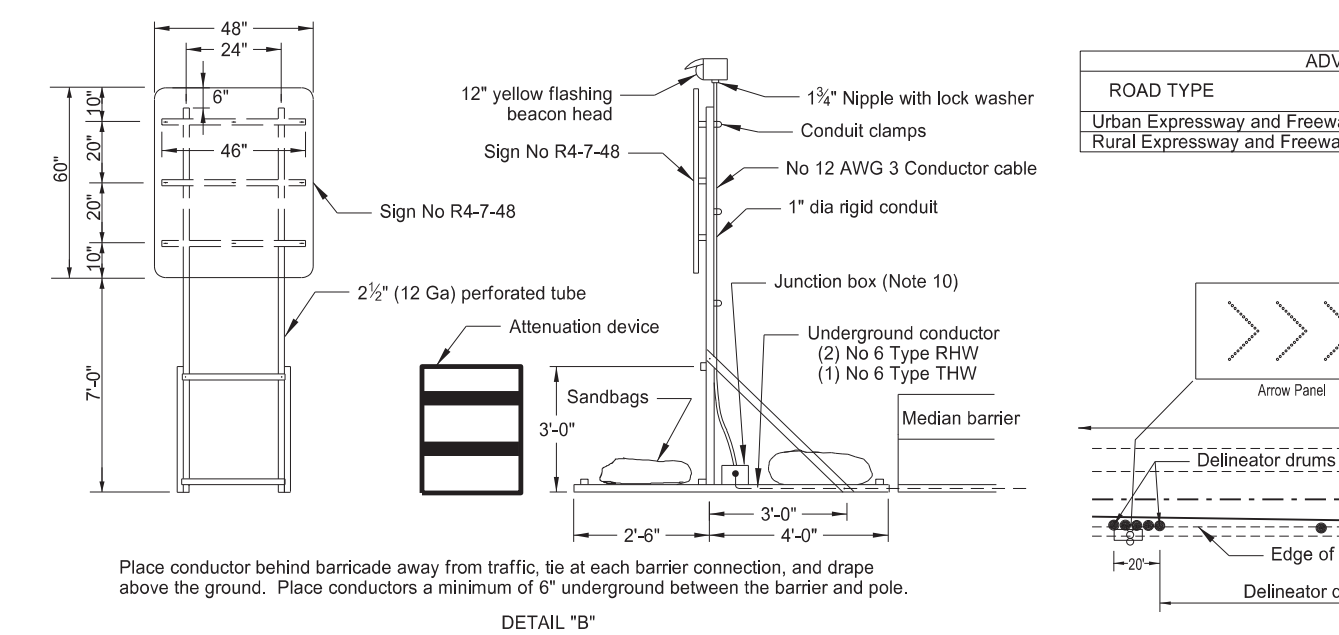
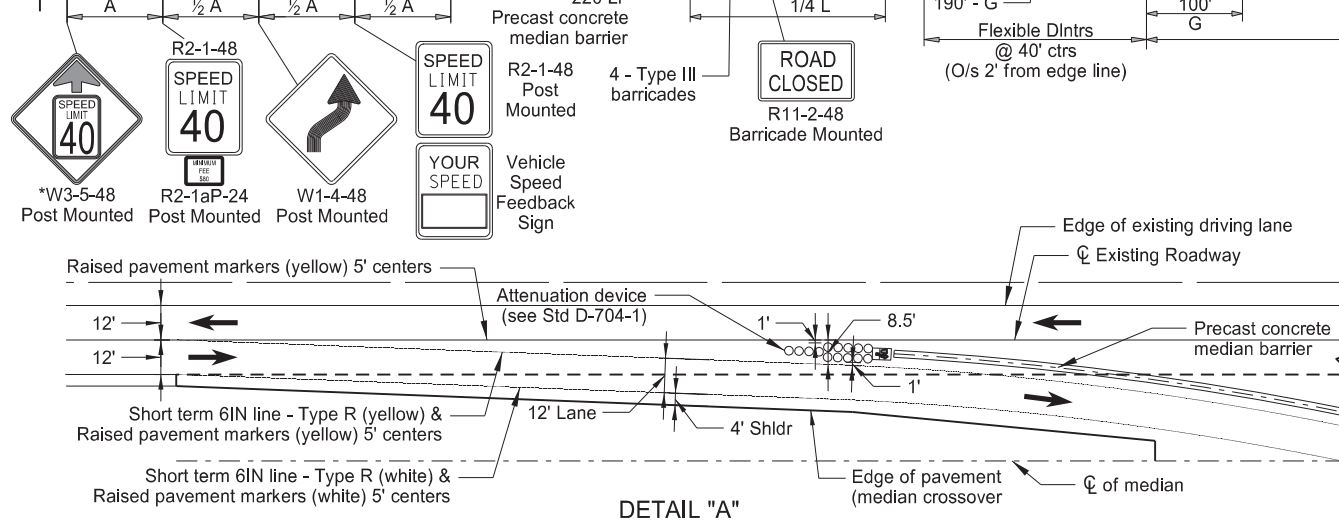
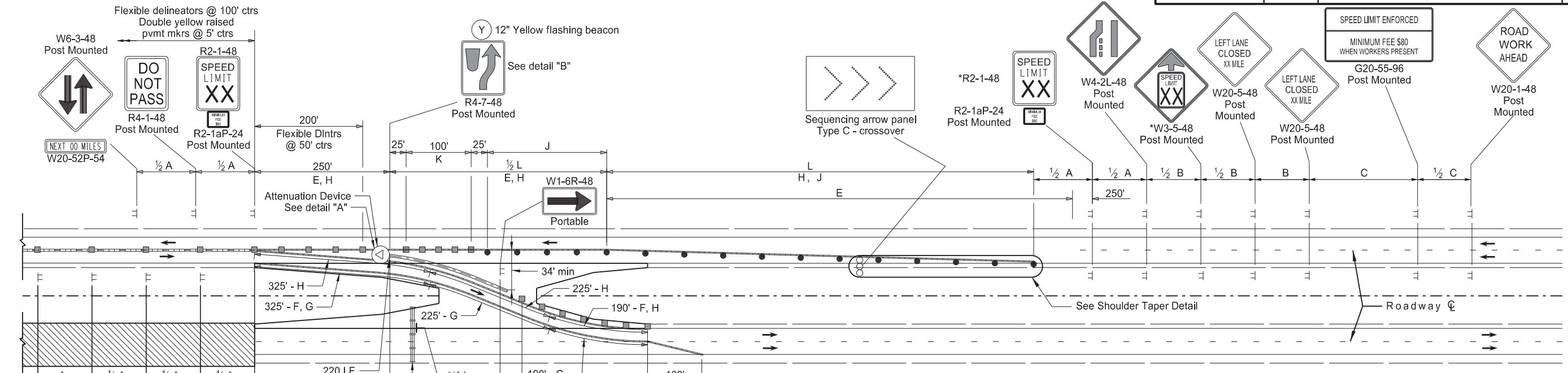
- Notes:**
- Variables:
    - S=Numerical value of posted speed limit, off-peak 85th percentile speed prior to work starting, or anticipated operating speed in MPH.
    - W=Width of offset in feet
    - L=Taper length in feet. Speeds 45 mph or greater L=WS.
  - Place signs and barricades on the roadway on moveable assemblies. Mount signs on barricades with the sign bottom on the top of the top barricade bar.
  - Install signs R4-1-48, W6-3-48, and W20-52P-54 at one mile increments and after each interchange.
  - Place the speed limit sign only if the crossover is more than 1 mile from an interchange exit ramp.
  - Place Sequencing Arrow Panels at the beginning of the taper when possible. Where shoulder width does not provide sufficient room, move the panel closer to the work area and place on the roadway surface. Use Type C on roadways with high traffic speeds and volumes (over 40 mph or 5000 ADT or greater)
  - Cover existing speed limit signs within a reduced speed zone.
  - Upon approval, the Engineer will measure obliterated or covered pavement marking as Obliteration of Pavement Marking.
  - As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
  - Reduce speed when placing traffic control devices. Place "Minimum Fee \$80" signs below speed limit signs in reduced speed areas. Place "Work Zone Speed Limit Enforced" sign in advance of the project at the time traffic control devices are installed.
  - Determine proper size, waterproof junction box, and attach to skid or vertical brace assembly.

Traffic Control System  
Median Crossover  
Site #2  
Structure Replacement  
Grand Forks County  
Interstate 29  
4 Miles South of Manvel  
Str# 29-148.172



\*Not required for projects on roadways with 55 mph existing speed limit.

Revised 11/30/2023	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SS-6-999(050)	100	5



**KEY**

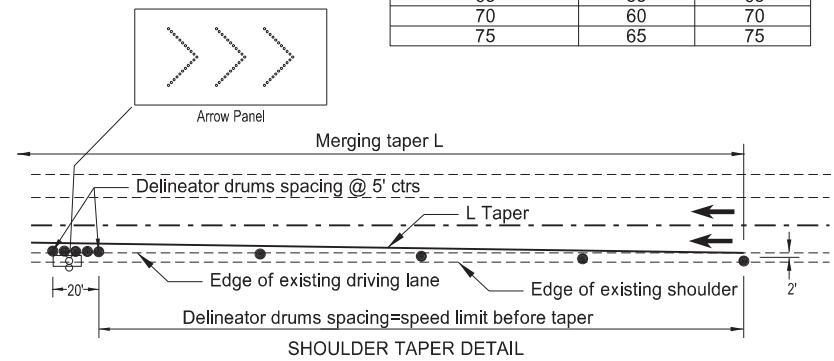
- Type III barricade
- Sign
- Flagger
- Work area
- Sequencing arrow panel
- Delineator drum
- Flexible Delineator

**LEGEND**

- E Obliteration of pavement marking (10' line, 30' skip,  $\phi$ )
- F Obliteration of pavement marking (edge lines)
- G Short Term 6IN Line - Type R (white) & raised pavement markers (white) 5' centers
- H Short Term 6IN Line - Type R (yellow) & raised pavement markers (yellow) 5' centers
- J Drums spaced @ "S" centers
- K Flexible delineators-4 spaces @ 25'

ROAD TYPE	ADVANCE WARNING SIGN SPACING		
	Minimum Distance Between Signs (ft)		
	A	B	C
Urban Expressway and Freeway (55 mph to 65 mph)	850	1,350	2,200
Rural Expressway and Freeway (70 mph to 75 mph)	1,000	1,500	2,640

ROADWAY EXISTING SPEED LIMIT	SPEED LIMIT TO BE USED	
	XX	YY
55	50	55
60	50	60
65	55	65
70	60	70
75	65	75



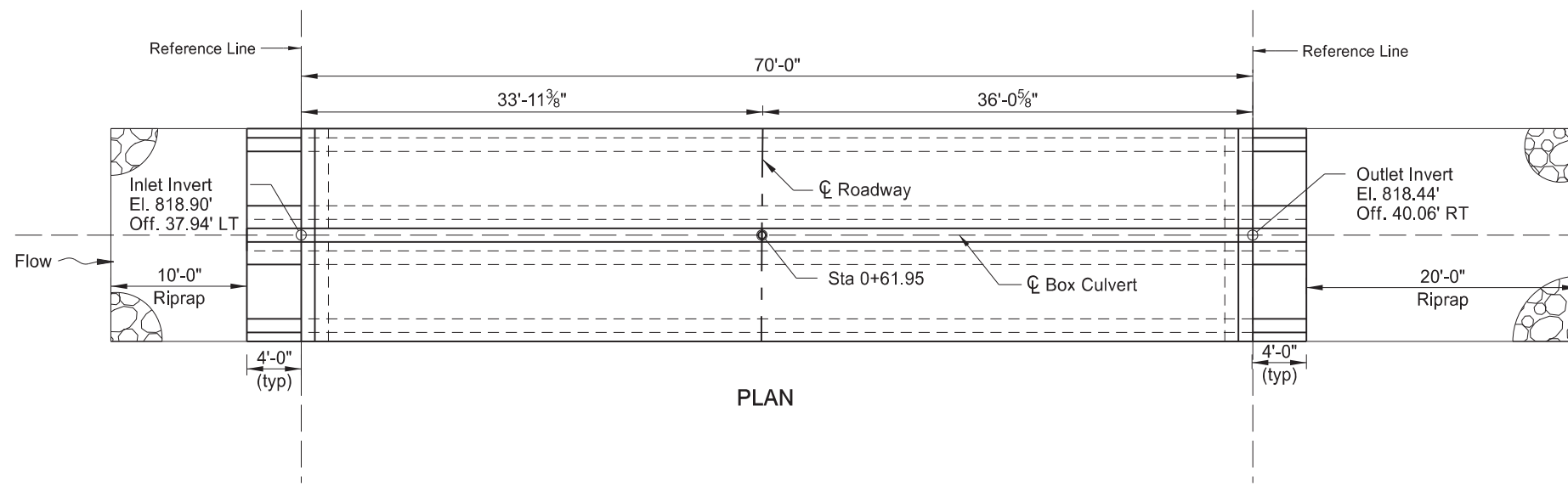
- Notes:**
- Variables:  
S=Numerical value of posted speed limit, off-peak 85th percentile speed prior to work starting, or anticipated operating speed in MPH.  
W=Width of offset in feet  
L=Taper length in feet. Speeds 45 mph or greater L=WS.
  - Place signs and barricades on the roadway on moveable assemblies. Mount signs on barricades with the sign bottom on the top of the top barricade bar.
  - Install signs R4-1-48, W6-3-48, and W20-52P-54 at one mile increments and after each interchange.
  - Place the speed limit sign only if the crossover is more than 1 mile from an interchange exit ramp.
  - Place Sequencing Arrow Panels at the beginning of the taper when possible. Where shoulder width does not provide sufficient room, move the panel closer to the work area and place on the roadway surface. Use Type C on roadways with high traffic speeds and volumes (over 40 mph or 5000 ADT or greater)
  - Cover existing speed limit signs within a reduced speed zone.
  - Upon approval, the Engineer will measure obliterated or covered pavement marking as Obliteration of Pavement Marking.
  - As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
  - Reduce speed when placing traffic control devices. Place "Minimum Fee \$80" signs below speed limit signs in reduced speed areas. Place "Work Zone Speed Limit Enforced" sign in advance of the project at the time traffic control devices are installed.
  - Determine proper size, waterproof junction box, and attach to skid or vertical brace assembly.

Traffic Control System  
Median Crossover  
Site #2  
Structure Replacement  
Grand Forks County  
Interstate 29  
4 Miles South of Manvel  
Str# 29-148.172



23 U.S.C. 407  
NDDOT Reserves All Objections

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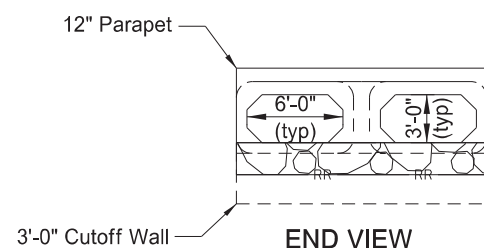
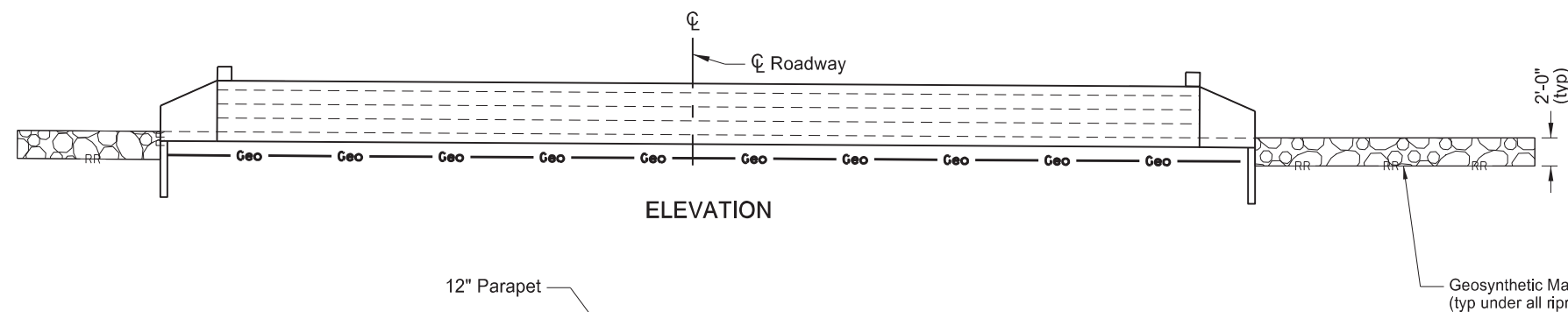


For a single 6'x3' barrel box culvert with 8" thick roof, 8" floor and 8" walls, the following total factored moments and shears would result from the application of the required loads:

FACTORED DESIGN MOMENTS (SINGLE)		FACTORED DESIGN SHEARS (SINGLE)	
WALL MOMENT	6,220 ft-lbs	WALL SHEAR	760 lbs
ROOF MOMENTS		ROOF SHEARS	
CORNER	5,930 ft-lbs	CORNER	7,570 lbs
BOTTOM	8,910 ft-lbs	WALL	7,570 lbs
TOP	980 ft-lbs	FLOOR SHEARS	
FLOOR MOMENTS		CORNER	6,990 lbs
CORNER	6,430 ft-lbs	WALL	6,990 lbs
TOP	8,610 ft-lbs		
BOTTOM	500 ft-lbs		

For a single 12'x3' barrel box culvert with 16" thick roof, 16" floor and 14" walls, the following total factored moments and shears would result from the application of the required loads:

FACTORED DESIGN MOMENTS (SINGLE)		FACTORED DESIGN SHEARS (SINGLE)	
WALL MOMENT	18,800 ft-lbs	WALL SHEAR	1,730 lbs
ROOF MOMENTS		ROOF SHEARS	
CORNER	19,370 ft-lbs	CORNER	11,610 lbs
BOTTOM	25,490 ft-lbs	WALL	11,610 lbs
TOP	10,830 ft-lbs	FLOOR SHEARS	
FLOOR MOMENTS		CORNER	9,380 lbs
CORNER	18,570 ft-lbs	WALL	9,380 lbs
TOP	22,200 ft-lbs		
BOTTOM	9,040 ft-lbs		



HYDRAULIC DATA:

Drainage Area	2.982	sq mi
Stream Gradient	0.00049	ft/ft
Design Frequency	10	yr
Design Discharge	81.3	cfs
Design Headwater Stage	821.55	ft
Design Tailwater Stage	821.15	ft
Velocity Through Culvert	2.54	fps
100-Year Frequency Discharge	110.6	cfs
100-Year Frequency Headwater	825.33	ft
Overtopping Stage	925.33	ft
Overtopping Discharge	NA	cfs

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0104	REMOVAL OF STRUCTURE	EA	1
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	705
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	35
606	0603	6FT X 3FT PRECAST RCB CULVERT	LF	140
606	4603	6FT X 3FT PRECAST RCB END SECTION	EA	4
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	179
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	92



SPECIAL PROVISIONS	
SSP 2	MIGRATORY BIRD TREATY ACT
STANDARD DRAWINGS	
D-714-22	
HL-93 DESIGN LOADING	
SIDE APPROACH OVER HIGHWAY DITCH JCT US 81 AND ND 5	
CLEAR SPAN 2 X 6' CLEAR HEIGHT 3' MAXIMUM FILL 5'	
PRECAST CONCRETE DOUBLE BOX CULVERT LAYOUT	
ND DEPARTMENT OF TRANSPORTATION BRIDGE DIVISION	
Approval Name	Date Signed
Jason Thorenson	12/04/23

REVISED 11/30/2023

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-6-999(050)	170	2

**NOTES**

**100-P01 SCOPE OF WORK:** Work at this site consists of removing an existing structure and building a new double barrel 6' x 3' x 70'-0" precast concrete box culvert.

**202-P01 REMOVAL OF STRUCTURE:** The existing structure is a double 5' x 3' x 26' RCB.

The bid item "REMOVAL OF STRUCTURE" includes all work required to remove all structure components.

**606-P01 PRECAST SECTION:** Tie the barrel sections together with 1" diameter tie bolts as shown on Standard Drawing D-714-22. Place two ties per exterior wall at each joint located at third points of the wall clear height.

Cast holes at 3'0" centers through the last end section and into the cutoff wall to receive 3/4" diameter reinforcing bars. Cast holes in the first end section at 2'0 centers for 3/4" diameter reinforcing bars to attach the parapet. Cast parapet against the sections. Install the bars according to the manufacturer's recommendations, with a high strength adhesive specifically intended for concrete anchorage, in accordance with Section 806.02. Payment for the end section includes the cutoff wall and parapet.

Install the barrel sections with a maximum gap of 3/4" wide. Install each line of barrels to terminate within 1" of the begin and end points of the adjacent barrel lines.

It will be acceptable to utilize a single cell 12' x 3' x 70' precast concrete box culvert with two end sections as an alternate to the two single cell 6' x 3' x 70' precast concrete box culverts with four end sections. Plan quantity will be paid for the box culvert and end sections.

Provide a distance of 1'-0" between separate precast units. Fill this gap with a controlled density backfill. The gap between the end sections will use AE-3 concrete on controlled density backfill or Class 41 aggregate Include the AE-3 concrete, controlled density backfill or Class 41 and rebar used for the 12" cap in the price bid for the Precast RCB Culvert.

**606-P02 JOINTS:** Provide joints in accordance with Section 606.04.E.3, with the exception that a 12" minimum width waterproof membrane is allowable around the exterior surfaces of the box culvert walls and roof.

**910-P01 CONTROLLED DENSITY BACKFILL:** Controlled density backfill consists of cement, water, fly ash and aggregate at the ratio specified below. Place controlled density backfill as shown in the plans. Mix the material continuously during pumping or placement to keep the solution from separating.

**MIX DESIGN 1**

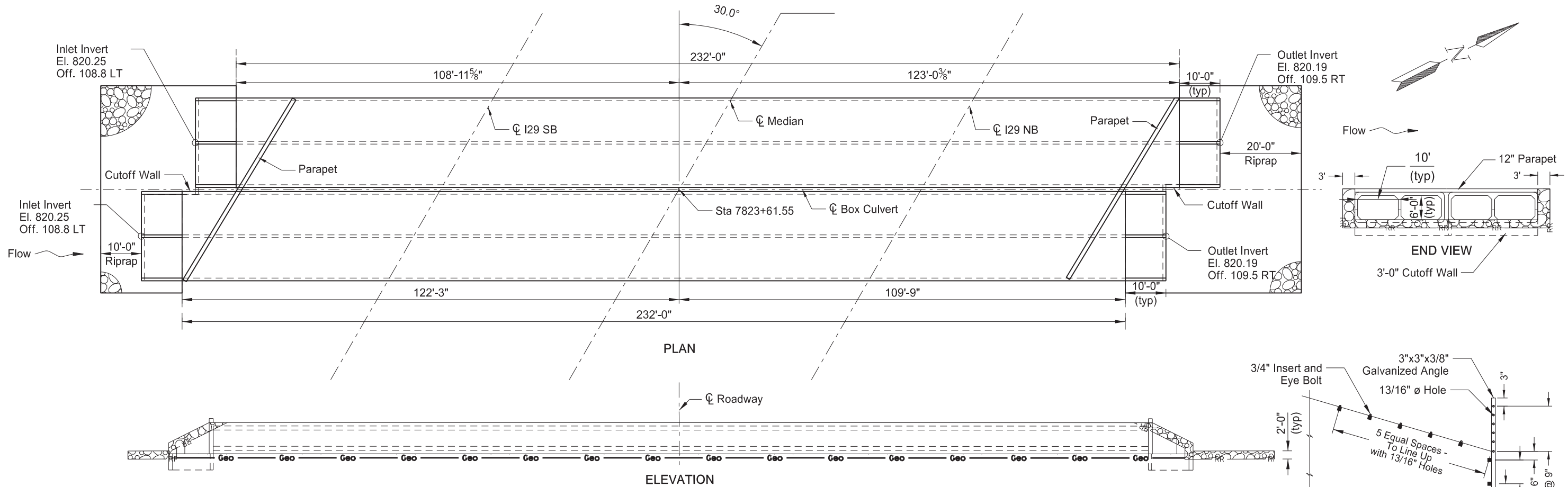
Cement	75 lbs
Fly Ash	125 lbs
Fine Aggregate	2600 lbs
Water	416.5 gals

Include the controlled density backfill and materials used for the 12" cap in the price bid for "6Ft X 3Ft Precast RCB Culvert."



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NDDOT Reserves All Objections

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For a double 10'x6' barrel box culvert with 10" thick roof, 10" floor and 8" walls, the following total factored moments and shears would result from the application of the required loads:

FACTORED DESIGN MOMENTS (DOUBLE)		FACTORED DESIGN SHEARS (DOUBLE)	
WALL MOMENT	5,150 ft-lbs	WALL SHEAR	1,980 lbs
ROOF MOMENTS		ROOF SHEARS	
CORNER	7,510 ft-lbs	CORNER	9,660 lbs
BOTTOM	17,190 ft-lbs	WALL	11,770 lbs
TOP	12,680 ft-lbs	FLOOR SHEARS	
FLOOR MOMENTS		CORNER	5,430 lbs
CORNER	4,210 ft-lbs	WALL	8,180 lbs
TOP	10,760 ft-lbs		
BOTTOM	11,840 ft-lbs		

For a single 10'x6' barrel box culvert with 9" thick roof, 9" floor and 8" walls, the following total factored moments and shears would result from the application of the required loads:

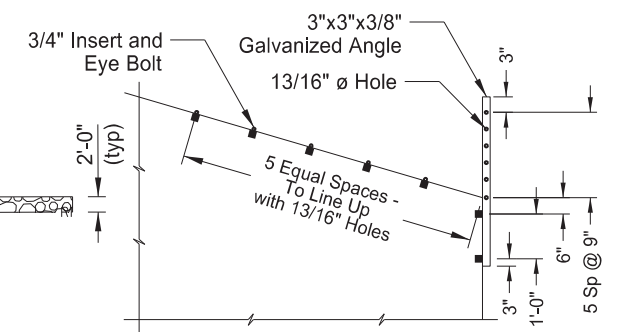
FACTORED DESIGN MOMENTS (SINGLE)		FACTORED DESIGN SHEARS (SINGLE)	
WALL MOMENT	9,970 ft-lbs	WALL SHEAR	1,710 lbs
ROOF MOMENTS		ROOF SHEARS	
CORNER	10,790 ft-lbs	CORNER	10,670 lbs
BOTTOM	19,900 ft-lbs	WALL	10,670 lbs
TOP	3,640 ft-lbs	FLOOR SHEARS	
FLOOR MOMENTS		CORNER	9,090 lbs
CORNER	10,220 ft-lbs	WALL	9,090 lbs
TOP	18,610 ft-lbs		
BOTTOM	2,500 ft-lbs		

**HYDRAULIC DATA:**

Drainage Area	18.89	sq mi
Stream Gradient	0.0005	ft/ft
Design Frequency	50	yr
Design Discharge	514.8	cfs
Design Headwater Stage	825.09	ft
Design Tailwater Stage	825.13	ft
Velocity Through Culvert	1.78	fps
100-Year Frequency Discharge	623.4	cfs
100-Year Frequency Headwater	825.31	ft
Overtopping Stage	829.92	ft
Overtopping Discharge	N/A	cfs

**BOX CULVERT BID ITEMS**

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0104	REMOVAL OF STRUCTURE	EA	2
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	5933
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	129
606	3006	DBL 10FT X 6FT PRECAST RCB CULVERT	LF	464
606	7006	DBL 10FT X 6FT PRECAST RCB END SECTION	EA	4
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	1428
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	1515



SPECIAL PROVISIONS	
SSP 2	MIGRATORY BIRD TREATY ACT
STANDARD DRAWINGS	
D-714-22	
HL-93 DESIGN LOADING	
4 MILES SOUTH OF MANVEL COUNTY DRAIN NO. 11	
CLEAR SPAN 4 X 10' CLEAR HEIGHT 6' MAXIMUM FILL 4' PRECAST CONCRETE QUAD BOX CULVERT LAYOUT	
ND DEPARTMENT OF TRANSPORTATION BRIDGE DIVISION	
Approval Name	Date Signed
<i>Jason Thorenson</i>	Jason Thorenson 12/04/23



REVISED 11/30/2023

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-6-999(050)	170	5

**NOTES**

**100-P01 SCOPE OF WORK:** Work at this site consists of removing two existing structures and building a new quad barrel 10' x 6' x 228'-0" precast concrete box culvert.

**202-P01 REMOVAL OF STRUCTURE:** The existing structures are a 2 span 36-foot concrete slab bridge and a 2 span 40-foot concrete slab bridge.

The bid item "REMOVAL OF STRUCTURE" includes all work required to remove all structure components.

**606-P01 PRECAST SECTION:** Tie the barrel sections together with 1" diameter tie bolts as shown on Standard Drawing D-714-22. Place two ties per exterior wall at each joint located at third points of the wall clear height.

Cast holes at 3'0" centers through the last end section and into the cutoff wall to receive 3/4" diameter reinforcing bars. Cast holes in the first end section at 2'0 centers for 3/4" diameter reinforcing bars to attach the parapet. Cast parapet against the sections. Install the bars according to the manufacturer' recommendations, with a high strength adhesive specifically intended for concrete anchorage, in accordance with Section 806.02. Payment for the end section includes the cutoff wall and parapet.

Install the barrel sections with a maximum gap of 3/4" wide.

Separate single or double cell precast units may be used as alternates to a multi cell culvert. Provide a distance of 1'-0" between separate precast units. Fill this gap with a controlled density backfill. The gap between the end sections will use AE-3 concrete on controlled density backfill or Class 41 aggregate Include the AE-3 concrete, controlled density backfill or Class 41 and rebar used for the 12" cap in the price bid for the Precast RCB Culvert. Plan quantity will be paid for the box culvert and end sections.

**606-P02 JOINTS:** Provide joints in accordance with Section 606.04.E.3, with the exception that a 12" minimum width waterproof membrane is allowable around the exterior surfaces of the box culvert walls and roof.

**910-P01 CONTROLLED DENSITY BACKFILL:** Controlled density backfill consists of cement, water, fly ash and aggregate at the ratio specified below. Place controlled density backfill as shown in the plans. Mix the material continuously during pumping or placement to keep the solution from separating.

**MIX DESIGN 1**

Cement	75 lbs
Fly Ash	125 lbs
Fine Aggregate	2600 lbs
Water	416.5 gals

Include the controlled density backfill and materials used for the 12" cap in the price bid for "DBL 10Ft X 6Ft Precast RCB Culvert."

