DESIGN DATA - CVD-NHU-4-002(136)906				
Traffic	Average Daily			
Current 2020	Pass: 7970	Trucks: 205	Total: 8175	
Preventive Maintenance				

DESIGN DATA - CVD-NHU-4-083(151)920				
Traffic	Average Daily			
Current 2020	Pass: 11580	Trucks: 520	Total: 12100	
Preventive Maintenance				

DESIGN DATA - CVD-NHU-4-002(137)144				
Traffic	Average Daily			
Current 2020	Pass: 8960	Trucks: 1050	Total: 10010	
Preventive Maintenance				

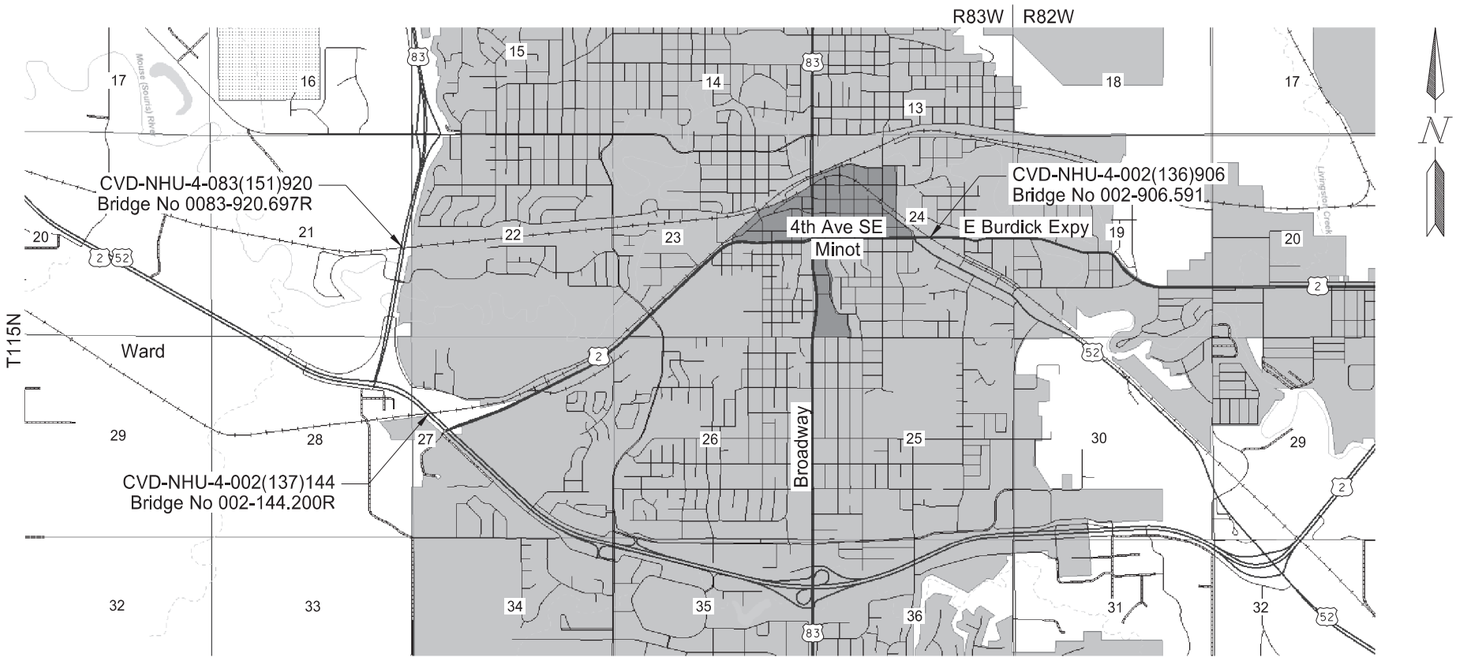
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	22910	1	1
	CVD-NHU-4-083(151)920	22912		
	CVD-NHU-4-002(137)144	22911		

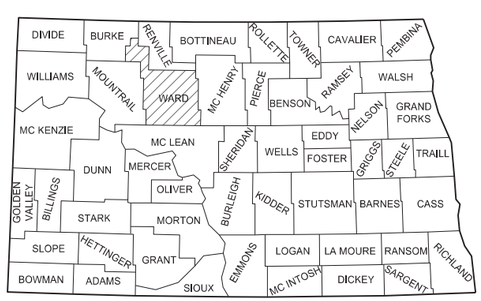
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

CVD-NHU-4-002(136)906
CVD-NHU-4-083(151)920
CVD-NHU-4-002(137)144
Ward County
Concrete Paving, Lighting
Bridge Repairs, & Incidentals

GOVERNING SPECIFICATIONS	Date Published and Adopted by the North Dakota Department of Transportation
Standard Specifications	1/1/2022
Supplemental Specifications	NONE

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
CVD-NHU-4-002(136)906	0.191	0.191
CVD-NHU-4-083(151)920	0.036	0.036
CVD-NHU-4-002(137)144	0.038	0.038





STATE COUNTY MAP

DESIGNER
Adam Kaye
DESIGNER
Gunnar Cowing
DESIGNER
Carlie Borchers

ND DEPARTMENT OF TRANSPORTATION
OFFICE OF PROJECT DEVELOPMENT
Orn, Chad M.
08/15/22

HOUSTON ENGINEERING, INC.
REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA
8/11/2022

5/10/2022 7:26:20 AM gcowing H:\JBN\3900\3950\3950_0299 PCN 22910 US 2 RP 906 Minot\CAD\Design\Sheets\001TS_001.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	2	1

CVD-NHU-4-083(151)920
CVD-NHU-4-002(137)144

TABLE OF CONTENTS

PLAN SECTIONS

SPECIAL PROVISIONS

LIST OF STANDARD DRAWINGS

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	4	1

CVD-NHU-4-083(151)920
CVD-NHU-4-002(137)144

N

83
Bypass

Bridge No 83-920.697R
Northbound CP Railroad Separation Bridge
Sta 8612+34.06 to Sta 8614+35.18
Mill and Overlay, Deck Overlay, & Bridge Repairs

Bridge No 2-906.591
CP Railroad Separation Bridge, Burdick Expressway
Sta 342+79.43 to Sta 352+85.35
Concrete Paving, Lighting, & Bridge Repairs

Burdick Expy E

2
52
Mouse River

Bridge No 2-144.200R
Eastbound BNSF Railroad Separation Bridge
Sta 7612+01.97 to Sta 7614+02.97
Bridge Repairs

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Scope of Work

Bridge Repairs

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	6	1

CVD-NHU-4-083(151)920
CVD-NHU-4-002(137)144

NOTES

105-110 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic.

Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection.

Use a vacuum or pick-up type sweeper to perform this work.

105-P01 UTILITIES: Buried and overhead utilities exist within the project corridor. Protect the existing utilities in place when working in the vicinity.

107-P01 MAINTAINING TRAFFIC – DROP-OFFS: If, at the end of the work-day, drop-offs greater than 2 inches and less than 18 inches or slopes steeper than 4:1 existing between the edge of a traffic lane and the outside edge of the proposed roadway, perform one of the following actions:

- Construct a traversable wedge in the area of the drop-off or steep slope; or
- Close the lane adjacent to the drop-off or steep slope and provide 24-hour flagging or pilot car operations.

When constructing a wedge, construct a wedge composed of aggregate material with a 4:1 or flatter slope along the entire length of the area. Compact materials using Type C compaction, as specified in 203.04 G.4, “Compaction Control Type C”.

Install delineator drums or tubular markers that meet the requirements of Section 704.03 along the edge of the driving lane closest to the wedge.

The Engineer will measure delineator drums and tubular markers as specified in Section 704.05, “Method of Measurement”, and will pay for devices as specified in Section 704.06, “Basis of Payment”.

The Engineer will not measure material used to construct the wedge. Include the cost of material, equipment, labor, and incidentals required for this operation in the price bid for “Aggregate Base Course CL 5”.

If a 4:1 or flatter wedge is not installed, provide 24-hour flagging or pilot car operations and associated traffic control at no additional cost to the Department.

108-100 WEEKLY PLANNING & REPORTING MEETING: A weekly planning and reporting meeting is required.

108-150 PUBLIC RELATIONS COORDINATOR: Provide a public relations and information coordinator. The coordinator cannot be the project superintendent or construction foreman. The coordinator should be knowledgeable in construction operations, be able to develop effective media releases, possess written and verbal communication skills, and be able to organize productive meetings.

Provide the name, work address, and work phone number to the relevant project, community, and media personnel.

The public relations coordinator is responsible for providing the following:

1. Organizing, scheduling, and conducting the meeting specified in Note 108-100, "Weekly Planning/Reporting Meeting".

2. Advise Stephen Joersz, from the City of Minot, PH: (701) 857-4100, of upcoming construction activities in regard to street closures and traffic detour routes so that city police, emergency services, schools, and other pertinent city agencies may be notified.

3. Provide news releases and necessary drawings to the media before and during construction. News releases should inform the public on construction activities, schedules, street closures, width or height restrictions to traffic, and traffic detour routes. Update news releases regarding construction activities every other week, at a minimum.

4. Be available for media interviews.

5. Work directly with property owners and businesses affected by construction activities. The coordinator must have sufficient knowledge and authority to resolve property owner and business concerns regarding scheduling, maintaining access, and construction operations.

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	6	2

CVD-NHU-4-083(151)920
CVD-NHU-4-002(137)144

NOTES

430-P01 COMMERCIAL GRADE HOT MIX ASPHALT: Supply and install a readily available mixture meeting or exceeding the requirements for Superpave FAA 45. Provide the asphalt mix design to the Engineer for approval.

704-200 PRECAST CONCRETE MEDIAN BARRIERS – STATE FURNISHED: Obtain 144 barriers from the Minot Maintenance Yard. Return barriers to the Minot Maintenance Yard.

Obtain 66 barriers from the Williston Maintenance Yard. Return barriers to the Williston Maintenance Yard.

Install any missing markers on the barriers before traffic use. Include the cost of the markers in the contract unit price for "Precast Concrete Median Barrier – State Furnished".

Some 4 inch x 4 inch boards are available at the return location. Provide any additional 4 inch x 4 inch boards necessary to stack barriers. The boards will become property of the Department. Include the cost for boards in the contract unit price for "Precast Concrete Median Barrier - State Furnished".

704-P01 TRAFFIC CONTROL: Provide traffic control consisting of temporary lane closures to close half the road at a time. Perform construction sequencing in a manner that requires traffic to be switched over one time per bridge site.

Traffic control device quantities based on the list below. The Department will pay for all necessary deployed devices.

1. Standard D-704-15, Type C;
2. Standard D-704-23, Type Q;
3. Standard D-704-27; and
4. Standard D-704-34.

704-P02 TRAFFIC CONTROL: Remove temporary traffic control channelization devices from Burdick Expressway upon City closure of the roadway to accommodate the parade during the ND State Fair. Replace all devices prior to the City reopening the roadway to traffic. Include all costs to remove and replace these devices in the price bid for “Traffic Control Signs” and “Precast Concrete Med Barrier-State Furnished”.

704-P03 BURDICK EXPRESSWAY PORTABLE CHANGEABLE MESSAGE SIGN: Install Portable Changeable Message Signs (PCMS) before work begins on the project. The Engineer will determine the locations for PCMS installation. Relocate the PCMS as directed by the Engineer.

Provide an operator trained in the use of the PCMS.

The Engineer will determine the message to be displayed. Program the message within one hour of the Engineer’s request to change the message.

752-P01 TEMPORARY SAFETY FENCE: 400 linear feet of temporary safety fence has been provided for repairing two separate bridge pier sites simultaneously (Burdick Expressway, CVD-NHU-4-002(136)906). Install safety fence around perimeter of bridge pier prior to performing repairs. Relocate fence as construction progresses.

Maintain adequate parking under the bridge during pier repairs.

762-050 PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment for pavement marking items.

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	6	3
	CVD-NHU-4-083(151)920		
	CVD-NHU-4-002(137)144		

NOTES

770-P01 LIGHT STANDARD - DECORATIVE: Valmont Industries 30’ round tapered fluted (16 sharp) steel pole, 4.38” X 12” tenon, modified baseplate to match existing anchor bolt circle of 13” with 1” diameter anchor bolts, nut covers, all Holophane black. Lisbon Series Glasswerks Arm, tenon mount, 29” long for mounting a single fixture, Holophane black. Clamp-on banner arm, 32” long, 1.25” diameter pipe with ball finial, Holophane black. GFI receptacle with small in-use weatherproof cover, Holophane black.
Catalog # RTFS 30 80 G12 FST NC BCMOD BK RFD326036, LSC 29IN 1A TN BK, (2) BA 32IN 1A CO CDX BL 125P BK RFD326036, FGIUS BK

Pole fluting to start at base plate.

Locate the following:
1) Handholes facing toward the roadway
2) Festoon receptacles facing downstream of approaching traffic at a 15’ height
3) Adjustable banner arms facing away from the roadway at a height of 12’ and 18’

770-P02 LED LUMINAIRE - DECORATIVE: Holophane Esplanade Tear Drop LED 2 series (ESL2), 19,000 lumens, 5 COBs, 3000K CCT, auto-sensing voltage (120-277) 50/60 Hz, black, teardrop glass and door, type III asymmetric distribution, quick lock stem mount. Boston Harbour decorative arm fitter, slip fits 2.00 nominal pipe (2.38” OD), black.
Catalog # ESL2-P50S-30K-AS-BK-TG-3-S-BHDF13-200-BK

Operate LED luminaires at 240V.

770-P03 LIGHTING CIRCUIT TESTING: Test each segment of the existing underground circuitry with a megohm-meter to ensure there is no damage to the conductors or insulation. Meter to read infinite resistance at a minimum of 500 volts. Provide the Engineer with a meter reading for each segment. Include all costs for testing in the bid price for “Revise Lighting System”.

770-P04 LIGHT STANDARD NUMBERING: Number light standards as directed by the City of Minot Traffic Division. The City will provide a list of numbers. Provide and deliver numbers to the City of Minot and city forces will install the numbers. Numbers to be black on reflective silver; 2-inch characters on a 6.5-mil thick Mylar sticker; overall length and width being 2-3/8 inches tall by 1-1/2 inches wide; Hillman Group self-adhesive series 839380-839xxx; or approved equal. Include all costs for numbering light standards in the bid price for “Revise Lighting System”.

770-P05 EXISTING LIGHT STANDARD ANCHOR BOLTS: Existing anchor bolts to remain in place and be utilized for the proposed light standards. Verify that a minimum of two threads will be exposed above the top nut as shown on Standard Drawing D-770-5. Notify the Engineer if a two-thread minimum cannot be achieved.

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906 CVD-NHU-4-083(151)920 CVD-NHU-4-002(137)144	6	4

ENVIRONMENTAL NOTES

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

NOTIFICATIONS TO BE FILED BY CONTRACTOR:

EN-1 FAA Notice: Notification is required for work within 3 nautical miles of the airport. Complete the Federal Aviation Administration Notice of Proposed Construction or Alteration Form 7460-1 in accordance with 14 CFR 77.7 and 77.9 (at least 45 days before the start date of the proposed construction or alteration or the date an application for a construction permit is filed, whichever is earliest) (online at http://oeaaa.faa.gov).

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Estimated Quantities

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906 CVD-NHU-4-083(151)920 CVD-NHU-4-002(137)144	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	CVD-NHU-4-002(136)906	CVD-NHU-4-083(151)920	CVD-NHU-4-002(137)144		TOTAL
103	0100	CONTRACT BOND	L SUM	0.7	0.2	0.1		1
107	0103	RAILWAY PROTECTION INSURANCE-SITE 1	EA	1				1
107	0104	RAILWAY PROTECTION INSURANCE-SITE 2	EA		1			1
107	0105	RAILWAY PROTECTION INSURANCE-SITE 3	EA			1		1
107	0141	RAILROAD COORDINATION - COMPANY A	L SUM	0.7	0.3			1
107	0142	RAILROAD COORDINATION - COMPANY B	L SUM			1		1
107	0145	RAILROAD FLAGGING	DAY			1500		1500
202	0111	REMOVAL OF CONCRETE	L SUM	1				1
202	0132	REMOVAL OF BITUMINOUS SURFACING	SY	414				414
203	0113	COMMON EXCAVATION-WASTE	CY	98				98
216	0100	WATER	M GAL	4				4
258	0100	CONCRETE SLOPE PROTECTION	SY			54.5		54.5
261	0112	FIBER ROLLS 12IN	LF		224	976		1200
261	0113	REMOVE FIBER ROLLS 12IN	LF		112	488		600
302	0120	AGGREGATE BASE COURSE CL 5	TON	173				173
411	0105	MILLING PAVEMENT SURFACE	SY		270			270
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON		34			34
550	0210	PCC PAVEMENT GRINDING	SY		405			405
550	0302	8.5IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	414				414
602	0130	CLASS AAE-3 CONCRETE	CY	100.7				100.7
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	4932	752	894		6578
602	1260	BRIDGE DECK CRACK SEALING	LF	4956	252	603		5811
602	1300	BRIDGE DECK GROOVING	SF	40776				40776
602	7000	SPECIAL SURFACE FINISH	SF	32930				32930
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	6569				6569
616	5890	STRUCTURAL STEEL	L SUM	1				1
624	0119	REMOVE PEDESTRIAN RAILING	LF	1039.8				1039.8
624	0123	PEDESTRIAN RAILING	LF	901.3				901.3
624	0125	PEDESTRIAN FENCE-REMOVE & REPLACE	L SUM		1			1
624	0127	PEDESTRIAN SEMI-CANOPY	LF	138.7				138.7
650	0704	OVERLAY CONCRETE	CY		28			28
650	0707	DECK CONCRETE	CY		9			9
650	0720	CLASS 1 REMOVAL	SY		653			653
650	0721	CLASS 2 REMOVAL	SY		98			98
650	0722	CLASS 2-A REMOVAL	LF		176			176
650	0723	CLASS 3 REMOVAL	SY		24			24
650	0724	CLASS 4 REMOVAL	SY		2			2
702	0100	MOBILIZATION	L SUM	0.7	0.1	0.2		1
704	0100	FLAGGING	MHR	100				100
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1707	844	777		3328
704	1036	ATTENUATION DEVICE-TYPE B-30	EA	2				2
704	1040	ATTENUATION DEVICE-TYPE B-50	EA			1		1
704	1041	ATTENUATION DEVICE-TYPE B-55	EA		1			1
704	1052	TYPE III BARRICADE	EA	10				10
704	1054	SIDEWALK BARRICADE	EA	3				3
704	1060	DELINEATOR DRUMS	EA	56	27	22		105
704	1067	TUBULAR MARKERS	EA	52	7	7		66

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906 CVD-NHU-4-083(151)920 CVD-NHU-4-002(137)144	8	2

Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION	UNIT	CVD-NHU-4-002(136)906	CVD-NHU-4-083(151)920	CVD-NHU-4-002(137)144		TOTAL
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	2	1	1		4
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	311	55	50		416
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	109	51	50		210
704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	EA	4				4
708	1540	INLET PROTECTION-SPECIAL	EA	4	2			6
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	4	2			6
752	0911	TEMPORARY SAFETY FENCE	LF	400				400
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	35				35
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	6				6
762	0113	EPOXY PVMT MK 4IN LINE	LF	200	593			793
762	0120	PREFORMED PATTERNED PVMT MK-MESSAGE	SF	32				32
762	0420	SHORT TERM 4IN LINE-TYPE R	LF	1347	1522	1402		4271
762	1304	PREFORMED PATTERNED PVMT MK 4IN LINE	LF	416				416
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	1966				1966
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF			150		150
762	1308	PREFORMED PATTERNED PVMT MK 8IN LINE	LF	61				61
762	1344	PREF PATT PVMT MK 7IN LINE CONTRAST-GROOVED	LF	570				570
770	4525	REVISE LIGHTING SYSTEM	EA	1				1
930	3631	POLYURETHANE FOAM	LBS	5200				5200
930	8680	EXPANSION JOINT STRIP SEAL	LF	164				164
930	9534	MODIFY DECK DRAIN	EA			4		4
930	9610	DECK SPALL REPAIR	SF	75		16		91
930	9612	SPALL REPAIR	SF	371.1				371.1
930	9620	PIER REPAIR	SF	179.3		15.4		194.7
930	9660	ABUTMENT REPAIR	L SUM		1			1
930	9665	BARRIER REPAIR	EA			2		2
930	9696	BEAM END REPAIR	EA	17		9		26
930	9930	ANTI-GRAFFITI COATING	SF	18560				18560
950	8673	EXPANSION JOINT MODIFICATION	LF	24		56		80
990	0220	GUARD POST-PERMANENT	EA	78				78

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	10	1

BASIS OF ESTIMATE

		Stations		
		Sta 352+12.74 to Sta 352+85.35		
Material	**Unit**	Area (SF)	Depth (in)	**Total**
Removal of Bituminous Surfacing	SY	3726	---	**414**
8.5 IN Non-Reinforced Concrete Pavement AE-Doweled	SY	3726	---	**414**
Aggregate Base Course Cl 5 @ 1.875 Ton/CY	Ton	3726	8	**173**
Common Excavation - Waste	CY	3726	8.5	**98**

Water
25 MGal/Mile for Dust Palliative
20 Gal/Ton for Aggregates
Total: 4 MGal

Phase 1 Short Term Pavement Markings						
			Obliteration of Pvmt Mk		Short Term 4IN Line Type R	
Station Begin	**Station End**	**Direction**	**Area (SF)**	**Comment**	**Length (LF)**	**Comment**
338+06	339+31	EB	10	4IN White Lane Line	125	Yellow Edge Line
340+06	340+81	WB	50	4IN Dbl Yellow Centerline	150	Yellow and White Edge Lines
352+84	354+19	EB	7	4IN White Lane Line	128	Yellow Edge Line
352+84	353+19	WB	185	4IN Dbl Yellow Centerline, 8IN White Turn Lane Line, Left Turn Arrows (2)	107	White Edge Line
358+05	359+30	WB	10	4IN White Lane Line	125	White Edge Line
Total			**262**		**635**	

Phase 2 Short Term Pavement Markings						
			Obliteration of Pvmt Mk		Short Term 4IN Line Type R	
Station Begin	**Station End**	**Direction**	**Area (SF)**	**Comment**	**Length (LF)**	**Comment**
338+06	339+31	EB			125	White Edge Line
339+31	340+06	WB	7	4IN White Lane Line	75	Yellow Edge Line
340+06	340+81	EB			150	Yellow and White Edge Lines
352+84	354+19	EB	35	4IN White Lane Line, 8IN White Turn Lane Line	278	Yellow and White Edge Lines, White Lane Line
352+84	354+49	WB	7	4IN White Lane Line	84	Yellow and White Edge Lines
Total			**49**		**712**	

Permanent Pavement Markings									
Station Begin	**Station End**	**Direction**	**Epoxy Pvmt Mk 4IN Line**	**Preformed Patterned Pvmt Mk 4IN Line - Grooved**	**Pref Patt Pvmt Mk 7IN Line Contrast - Grooved**	**Preformed Patterned Pvmt Mk 4IN Line**	**Preformed Patterned Pvmt Mk 8IN Line**	**Preformed Patterned Pvmt Mk - Message**	**Comment**
			Length (LF)	**Length (LF)**	**Length (LF)**	**Length (LF)**	**Length (LF)**	**Area (SF)**	
338+20	339+10	EB	30						Skip White Lane Line
339+55	340+05	WB	20						Skip White Lane Line
340+06	340+81	CL	150						Dbl Yellow Centerline
343+19	352+85	CL		1,966					Dbl Yellow Centerline
343+33	354+19	EB			280				Skip White Lane Line
343+33	353+35	WB			260				Skip White Lane Line
352+85	354+19	CL				416			Dbl Yellow Centerline
353+58	354+19	EB						32	White Left Turn Lane Arrows
353+58	354+19	EB					61		White Turn Lane Line
358+30	359+20	WB			30				Skip White Lane Line
Total			**200**	**1,966**	**570**	**416**	**61**	**32**	

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA
8/11/2022

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-MCH-NHU-4-083(151)920	10	2

BASIS OF ESTIMATE

		Stations		Stations		
		Sta 8612+34.06 to Sta 8612+70.97		Sta 8614+98.71 to Sta 8614+35.18		
Material	**Unit**	Area (SF)	Depth (in)	Area (SF)	Depth (in)	**Total**
Milling Pavement Surface	SY	1204	---	1227	---	**270**
Commercial Grade Hot Mix Asphalt @ 2 Ton/CY	Ton	1204	2 - 2.5	1227	2 - 2.5	**34**
Tack Coat @ 0.05 Gal/SY*	Gal	1204	---	1227	---	**14**
Fog Seal @ 0.05 Gal/SY*	Gal	1204	---	1227	---	**14**

*Included in Commercial Grade Hot Mix Asphalt

Phase 1 Short Term Pavement Markings						
Station Begin	**Station End**	**Direction**	**Obliteration of Pvmt Mk**		**Short Term 4IN Line Type R**	
			Area (SF)	**Comment**	**Length (LF)**	**Comment**
8600+54.06	8607+14.06	NB	55	4IN Skip White Centerline	660	White Lane Line
8615+60.18	8616+60.18	NB			101	White Lane Line
Total			**55**		**761**	

Phase 2 Short Term Pavement Markings						
Station Begin	**Station End**	**Direction**	**Area (SF)**	**Comment**	**Short Term 4IN Line Type R**	
					Length (LF)	**Comment**
8600+54.06	8607+14.06	NB			660	Yellow Lane Line
8615+60.18	8616+60.18	NB			101	Yellow Lane Line
Total			**0**		**761**	

Permanent Pavement Markings				
Station Begin	**Station End**	**Direction**	**Epoxy Pvmt Mk 4IN Line**	
			Length (LF)	**Comment**
8600+54.06	8607+14.06	NB	165	Skip White Centerline
8612+39.33	8614+29.33	NB	190	Yellow Lane Line
8612+39.33	8614+29.33	NB	48	Skip White Centerline
8612+39.33	8614+29.33	NB	190	White Lane Line
Total			**593**	

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-MCH-NHU-4-002(137)144	10	3

BASIS OF ESTIMATE

Phase 1 Short Term Pavement Markings						
Station Begin	Station End	Direction	Obliteration of Pvmt Mk		Short Term 4IN Line Type R	
			Area (SF)	Comment	Length (LF)	Comment
7601+54.64	7607+54.64	EB	50	4IN Skip White Centerline	598	White Lane Line
7615+23.15	7616+23.15	EB			101	White Lane Line
Total			**50**		**699**	

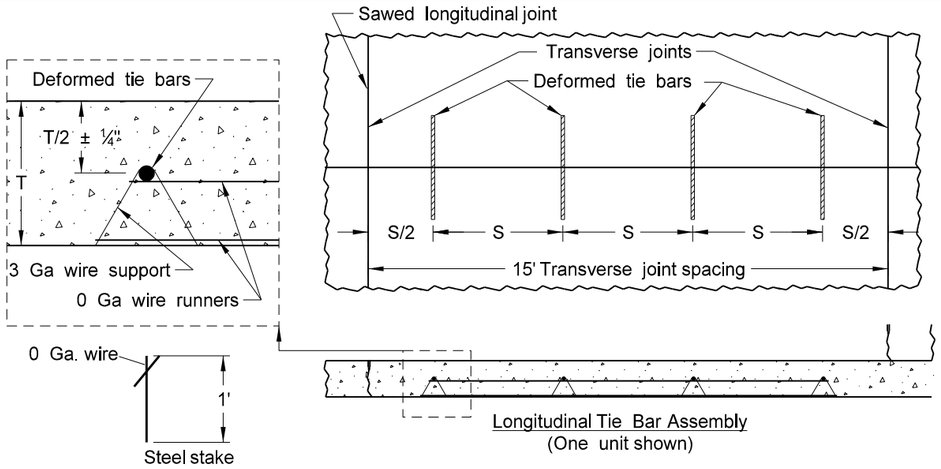
Phase 2 Short Term Pavement Markings						
Station Begin	Station End	Direction	Obliteration of Pvmt Mk		Short Term 4IN Line Type R	
			Area (SF)	Comment	Length (LF)	Comment
7601+54.64	7607+54.64	EB			602	Yellow Lane Line
7615+23.15	7616+23.15	EB			101	Yellow Lane Line
Total			**0**		**703**	

Permanent Pavment Markings				
Station Begin	Station End	Direction	Pref Patt Pvmt Mk 6IN Line - Grooved	
			Length (LF)	Comment
7601+54.64	7607+54.64	EB	150	Skip White Centerline
Total			**150**	

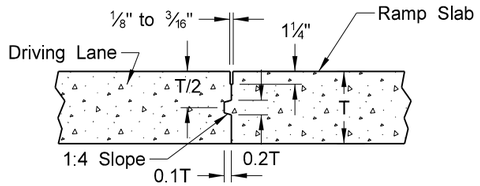
REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

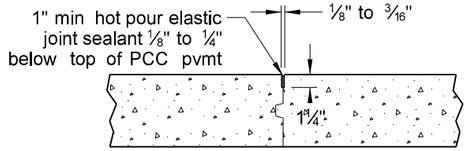
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	20	1



Longitudinal Tie Bar Assembly
(One unit shown)



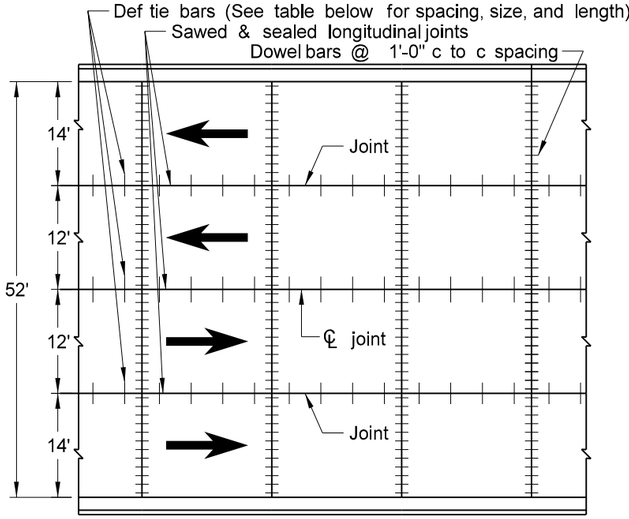
Longitudinal Joint Sawing Detail
(at ramps - non-tied keyed joints)



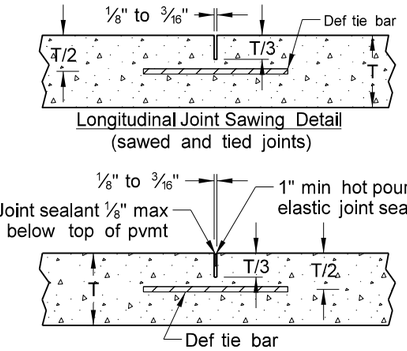
Longitudinal Joint Sealing Detail
(non-tied keyed joints)

Notes:

1. S = Tiebar spacing
2. T = Pavement thickness
3. Place dowels in ramp tapers also.
4. Place no tie bar within 15" of a transverse joint.

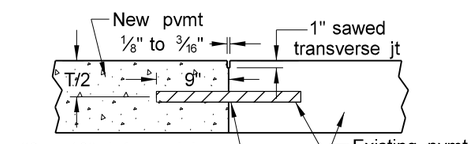


Mainline Joints
15' joint spacing

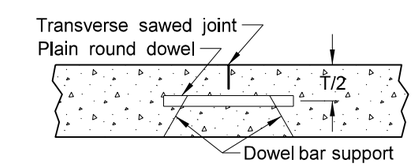


Longitudinal Joint Sawing Detail
(sawed and tied joints)

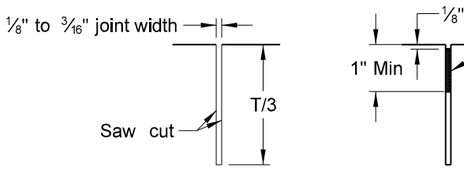
Longitudinal Joint Sealing Detail
(sawed and tied joints)



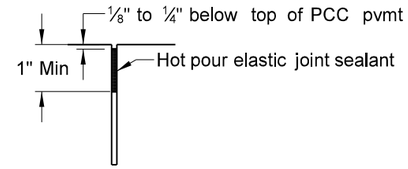
Deformed Bar Installation (2'-0" c to c)
(Transverse Joints)



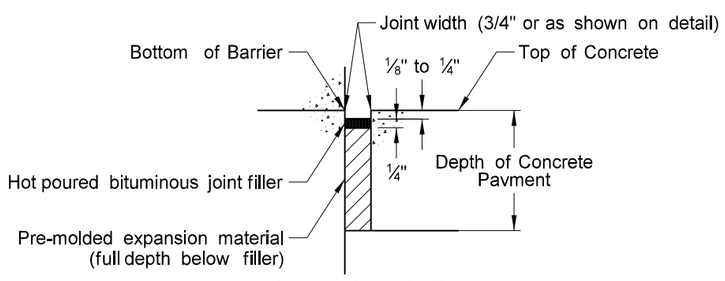
Doweled Transverse Joint



Transverse Joint Sawing



Transverse Joint Sealing



Typical Isolation Joint Seal

PCC Depth	8.5"
Mainline Centerline	
Bar Size x Length (S=30")	#5 x 30"
Bar Size x Length (S=45")	#6 x 36"
Ramp/Loop Centerline	
Bar Size x Length (S=30")	#4 x 24"
Bar Size x Length (S=45")	#5 x 30"
10' Shoulder Joint	
Bar Size x Length (S=30")	#4 x 24"
Bar Size x Length (S=45")	#5 x 30"

PCC Depth	8.5"
Mainline Centerline	
Bar Size x Length (S=30")	#4 x 36"
Bar Size x Length (S=45")	#5 x 42"
Ramp/Loop Centerline	
Bar Size x Length (S=30")	#4 x 36"
Bar Size x Length (S=45")	#4 x 36"
10' Shoulder Joint	
Bar Size x Length (S=30")	#3 x 30"
Bar Size x Length (S=45")	#4 x 36"

Transverse Joint Dowel Bars

Joint Location	Dia x Length
ML	1.25"

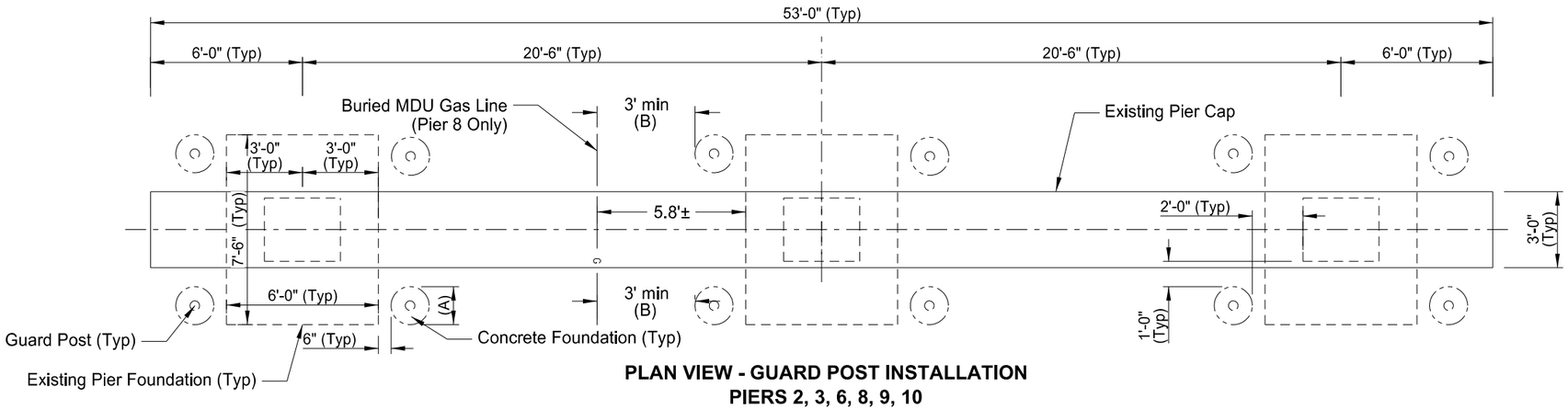
REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

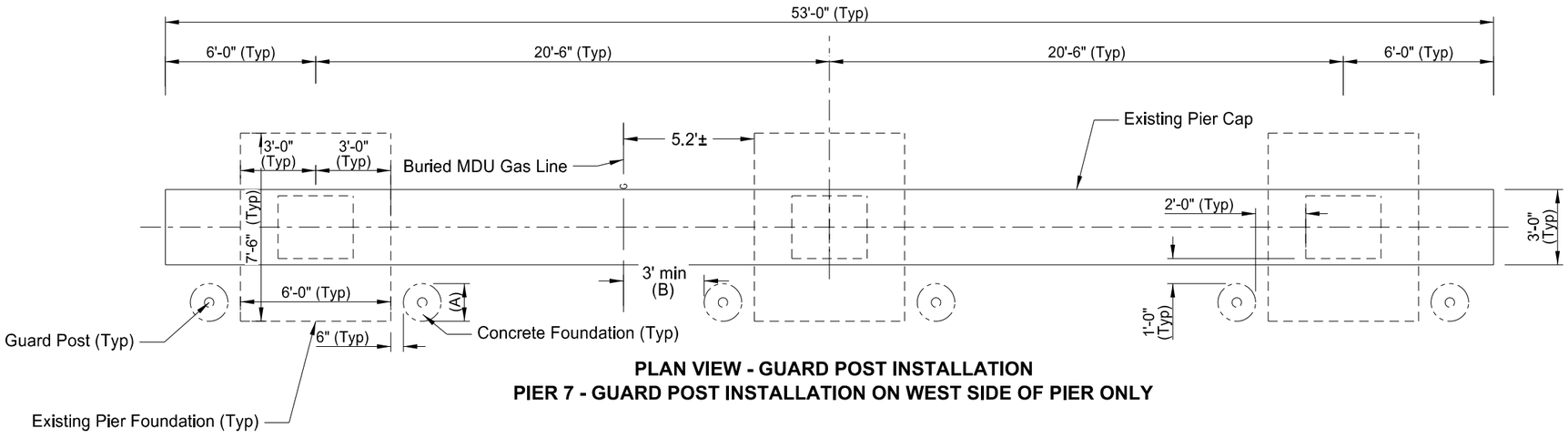
PCC Pavement & Joint Details

Bridge No 2-906.591
Burdick Expressway East - CP Rail

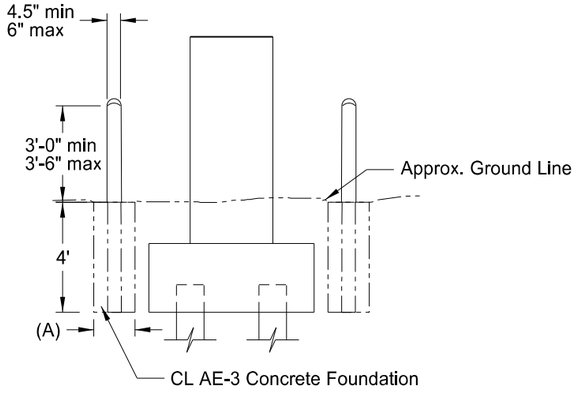
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	20	2



PLAN VIEW - GUARD POST INSTALLATION
PIERS 2, 3, 6, 8, 9, 10



PLAN VIEW - GUARD POST INSTALLATION
PIER 7 - GUARD POST INSTALLATION ON WEST SIDE OF PIER ONLY



ELEVATION

Notes:
Install guard posts compliant with ASTM F3016, with speed rating of S10 (10 mph) and penetration rating of P1 (1 ft).

Install domed guard posts, with a 4.5" min diameter to 6" max diameter, and an above ground height of 36" minimum and 42" maximum.

Embed guard posts in concrete with a footing depth of 4'.

Install Type 304 Stainless steel guard post exteriors, painted traffic yellow, or steel with locking polyethylene bollard cover, color to be traffic yellow.

(A) Concrete foundation diameter as per guardpost manufacturer's recommendations.

(B) At pier 7 and pier 8 an existing MDU gas line is located north of the center column as shown. Adjust guard post location as necessary to provide 3' of clearance between the guard post foundation and the gas line.

990	220	Guard Post (Permanent)	EA
		Pier 2	12
		Pier 3	12
		Pier 6	12
		Pier 8	12
		Pier 9	12
		Pier 10	12
		Pier 7	6

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

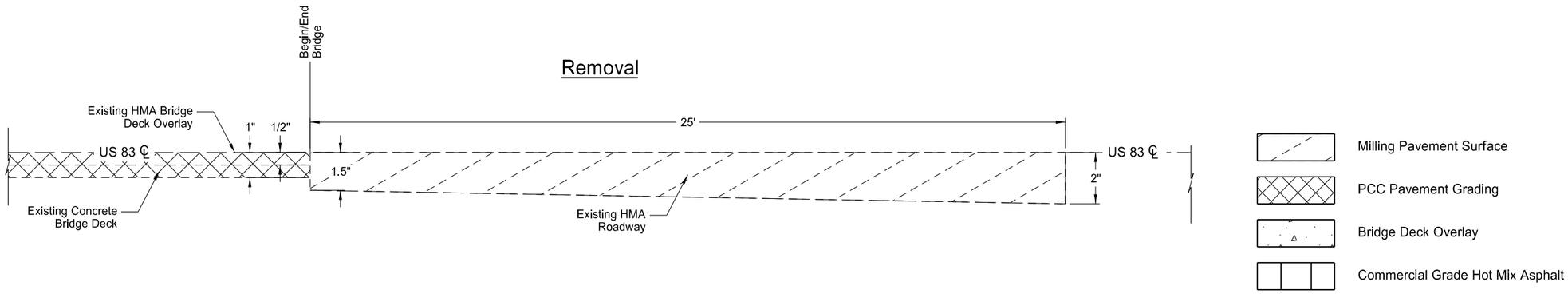
BURDICK EXPRESSWAY EAST -CP RAIL SEP
MINOT, NORTH DAKOTA

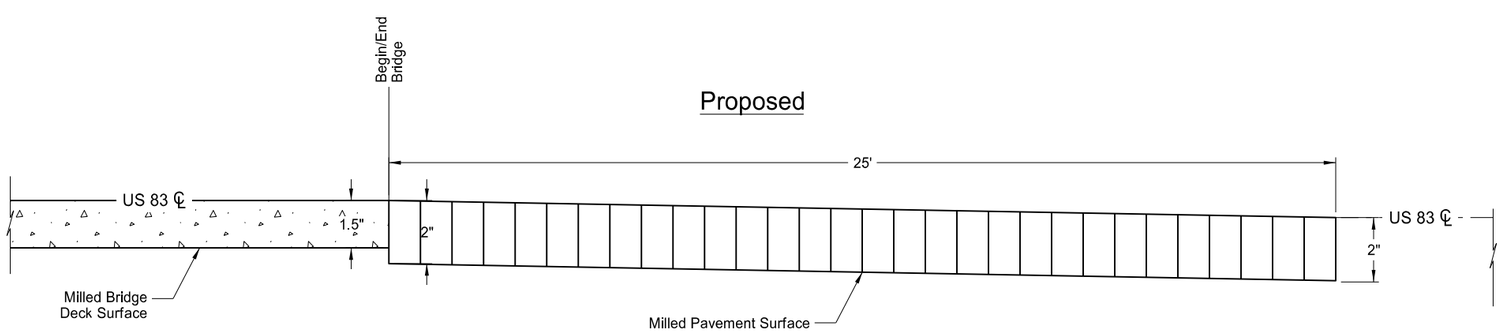
GUARD POST INSTALLATION
PIERS 2,3,6,7,8,9,10

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-083(151)920	20	3

Notes:

1. After the bituminious surfacing has been removed from the bridge deck, the Engineer will perform chaining to assess delamination. If the Department decides that a deck overlay is not necessary, 1/2" will not be removed from the bridge deck and the HMA overlay will be transitioned to the existing deck.





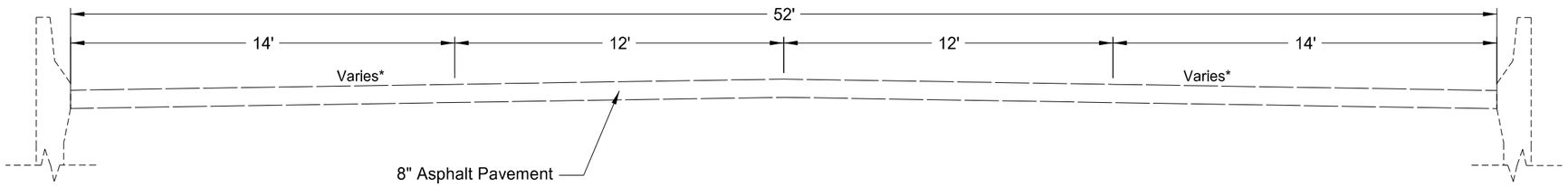
REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

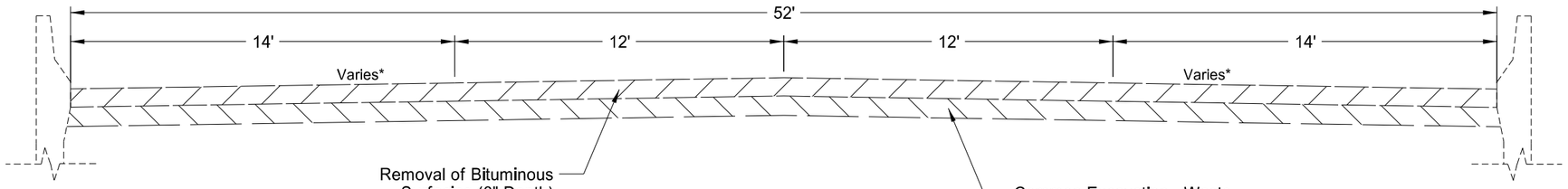
Milling & Paving Transitions

Bridge No 83-920.967R
US 83 Bypass - CP Rail Overpass

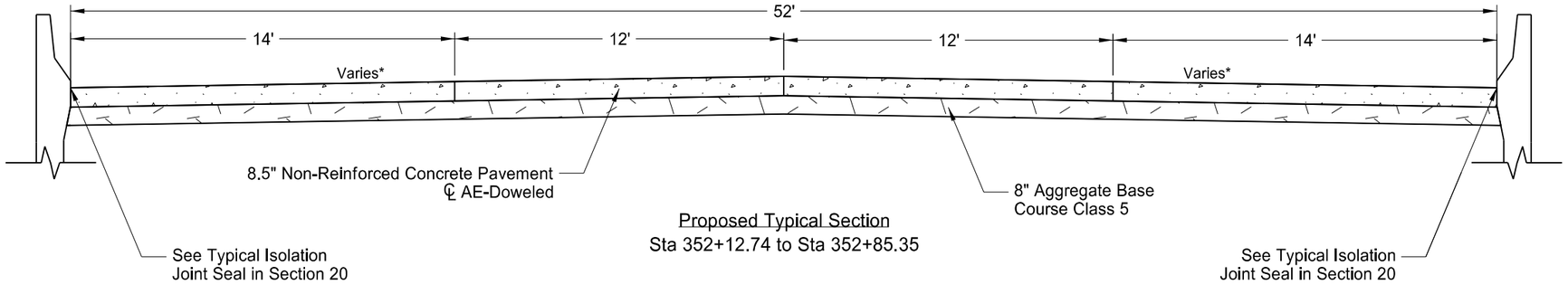
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	30	1



Existing Typical Section
Sta 352+12.74 to Sta 352+85.35



Removal Typical Section
Sta 352+12.74 to Sta 352+85.35



Proposed Typical Section
Sta 352+12.74 to Sta 352+85.35

Notes:

* Transition cross slope to match existing approach slab and existing concrete pavement

** Removal of Bituminous Surfacing to include existing pavement and aggregate base.

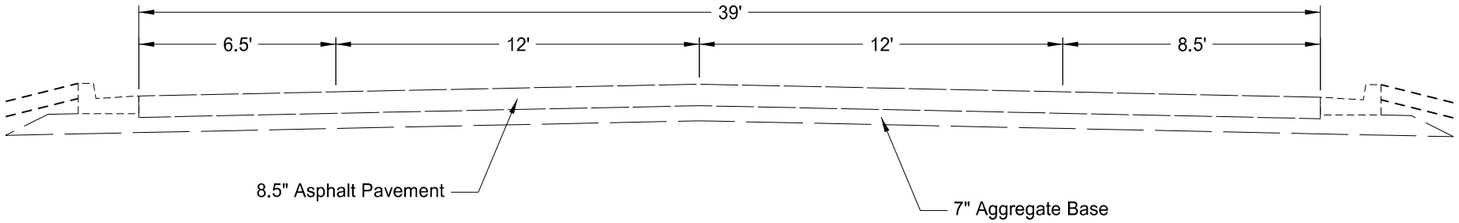
REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

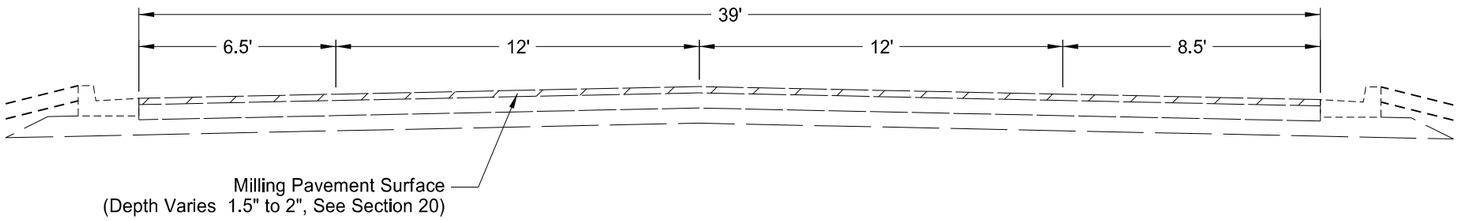
Typical Sections

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

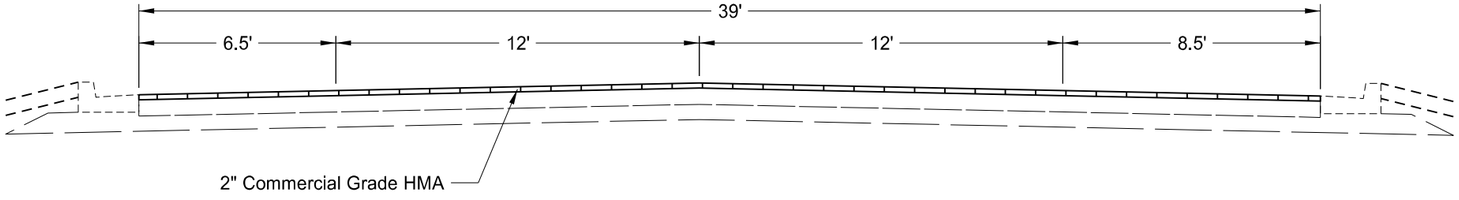
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-083(151)920	30	2



Existing Typical Section
Sta 8612+34.06 to Sta 8612+70.97
Sta 8614+98.71 to Sta 8614+35.18



Milling Typical Section
Sta 8612+34.06 to Sta 8612+70.97
Sta 8614+98.71 to Sta 8614+35.18



Proposed Typical Section
Sta 8612+34.06 to Sta 8612+70.97
Sta 8614+98.71 to Sta 8614+35.18

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

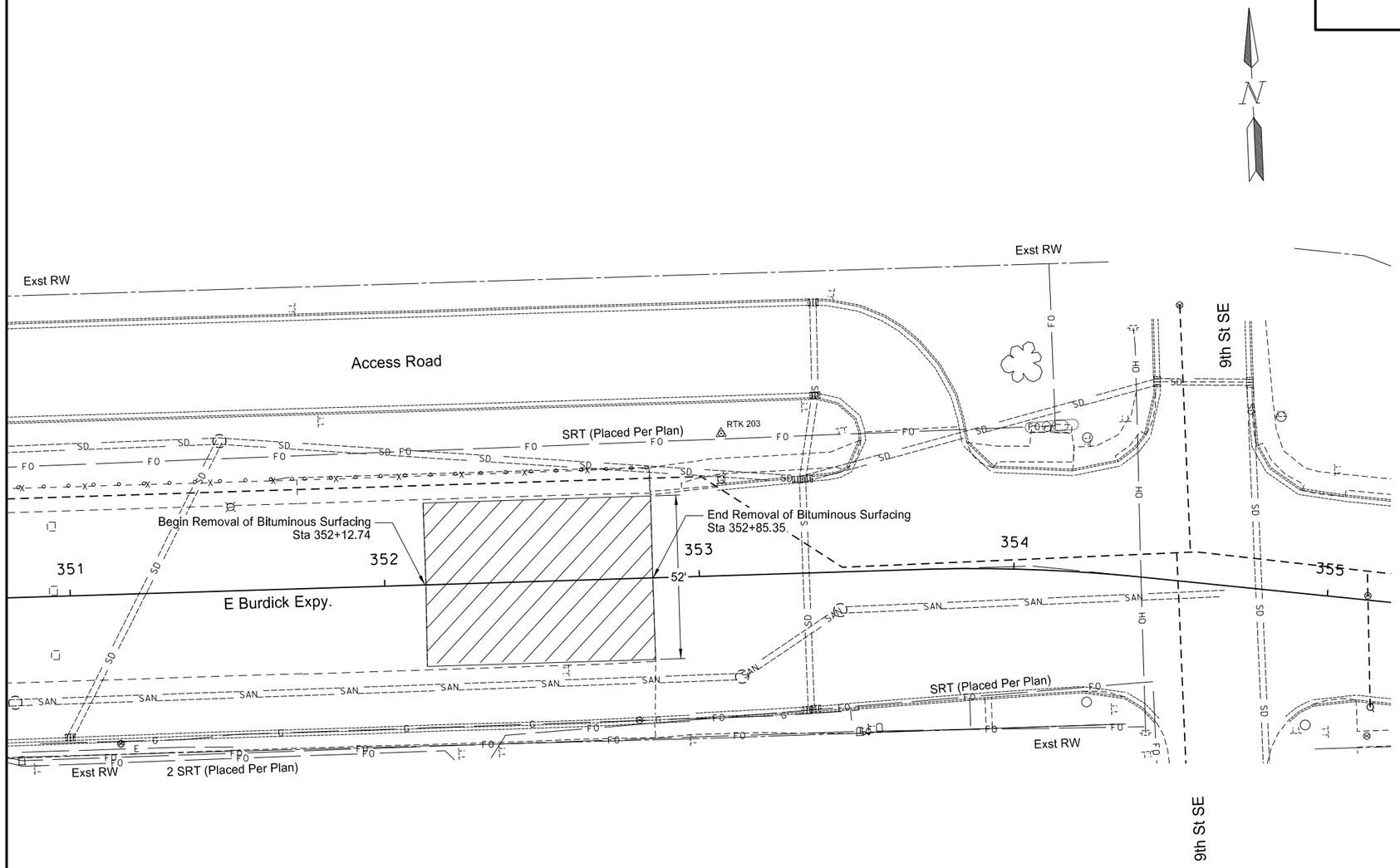
8/11/2022

Typical Sections

Bridge No 83-920.967R
US 83 Bypass - CP Rail Overpass

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	40	1

SPEC	CODE	BID ITEM	QTY	UNIT
202	132	REMOVAL OF BITUMINOUS SURFACING Sta 352+12.73 to Sta 352+85.35	414	SY



Removal of Bituminous Surfacing

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Removals

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-083(151)920	40	2

SPEC	CODE	BID ITEM	QTY	UNIT
411	105	MILLING PAVEMENT SURFACE		
		Sta 8612+34.06 to Sta 8612+70.97	134	SY
		Sta 8614+98.71 to Sta 8614+35.18	136	SY

Milling Pavement Surface

Begin Milling Pavement Surface
Sta 8612+34.06

End Milling Pavement Surface
Sta 8614+35.18

25'

36.5'

8612 18.5'

8613

8614

20'

8615

8616

US 83 NW Byp

20.5'

22'

36.91'

25'

See Section 170
For Bridge Deck Removals

SRT (Placed Per Plan)

Sec line

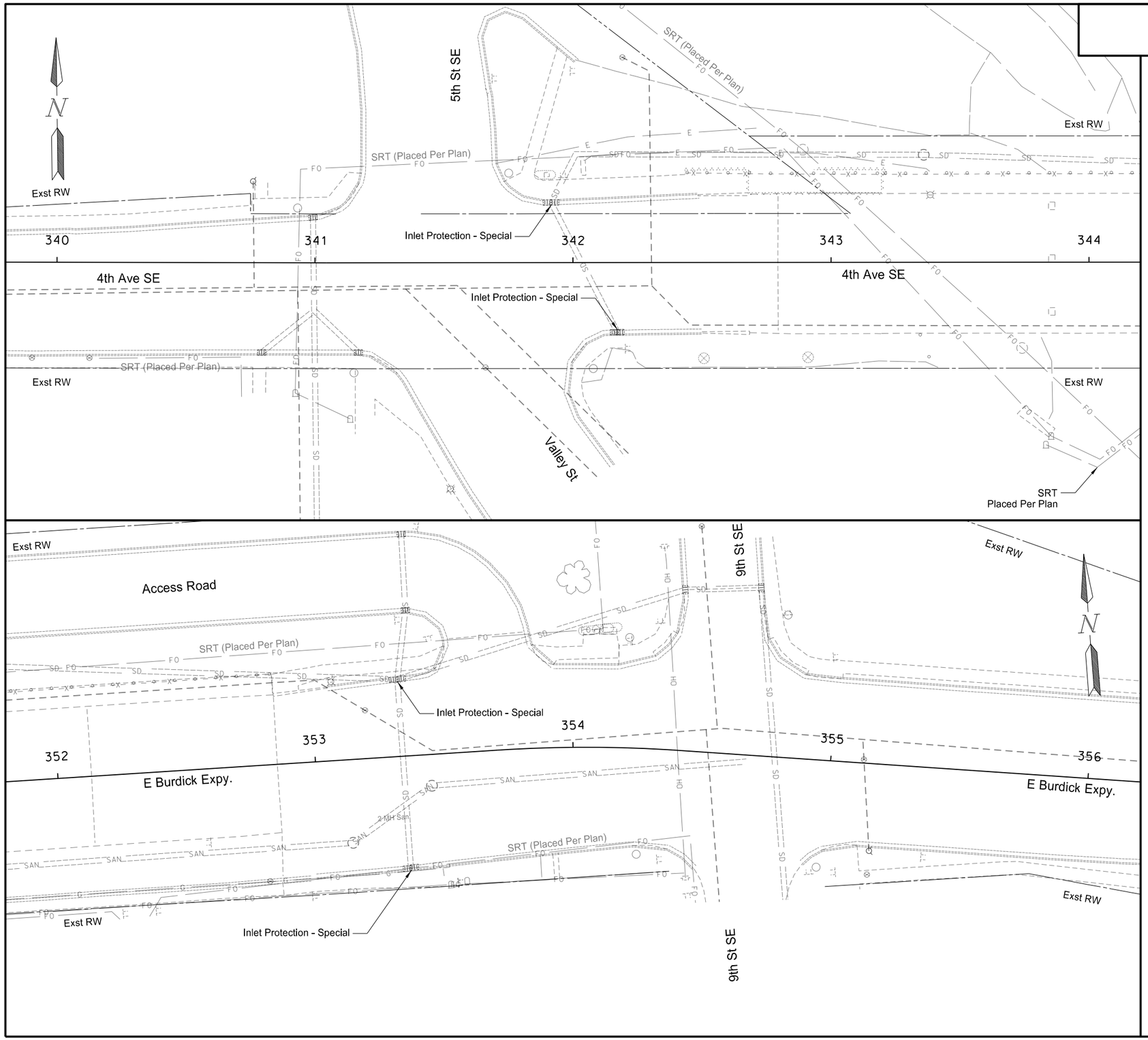
REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Removals

Bridge No 83-920.967R
US 83 Bypass - CP Rail Overpass

5/10/2022 7:28:32 AM gcowing H:\JBN\3900\3950\3950_0303 PCN 22912 US 83 West Bypass RR Sep Minot\CAD\Design\Sheets\040RM_002.dgn



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	76	1

SPEC	CODE	BID ITEM	QTY	UNIT
708	1540	INLET PROTECTION-SPECIAL		
		Sta 340+00.00 to Sta 344+00.00	2	EA
		Sta 352+00.00 to Sta 356+00.00	2	EA
708	1541	REMOVE INLET PROTECTION-SPECIAL		
		Sta 340+00.00 to Sta 344+00.00	2	EA
		Sta 352+00.00 to Sta 356+00.00	2	EA

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Temporary Erosion Control

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-083(151)920	76	2

SPEC	CODE	BID ITEM	QTY	UNIT
261	112	FIBER ROLLS 12IN		
		Sta 8612+00.00 to Sta 8612+16.42 Lt	17	LF
		Sta 8612+00.00 to Sta 8612+28.71 Rt	29	LF
		Sta 8614+20.41 to Sta 8614+50.00 Lt	30	LF
		Sta 8614+31.51 to Sta 8614+50.00 Rt	19	LF
		Sta 8614+50.00 Rt	17	LF
261	113	REMOVE FIBER ROLLS 12IN		
		Sta 8612+00.00 to Sta 8612+16.42 Lt	17	LF
		Sta 8612+00.00 to Sta 8612+28.71 Rt	29	LF
		Sta 8614+20.41 to Sta 8614+50.00 Lt	30	LF
		Sta 8614+31.51 to Sta 8614+50.00 Rt	19	LF
		Sta 8614+50.00 Rt	17	LF
708	1540	INLET PROTECTION-SPECIAL		
		Sta 8612+00.00 to Sta 8616+00.00	2	EA
708	1541	REMOVE INLET PROTECTION-SPECIAL		
		Sta 8612+00.00 to Sta 8616+00.00	2	EA

Fiber Rolls 12IN

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Temporary Erosion Control

Bridge No 83-920.967R
US 83 Bypass - CP Rail Overpass

STATE	SOLICITATION NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(137)144	76	3

SPEC	CODE	BID ITEM	QTY	UNIT
261	112	FIBER ROLLS 12IN		
		Sta 7611+50.00 to Sta 7611+78.15 Rt	29	LF
		Sta 7611+50.00 to Sta 7612+19.95 Lt	71	LF
		Sta 7611+79.50 to Sta 7612+50.00 Rt	72	LF
		Sta 7612+20.89 to Sta 7612+95.00 Lt	74	LF
		Sta 7613+06.97 to Sta 7613+77.90 Rt	71	LF
		Sta 7613+52.76 to Sta 7614+20.48 Lt	68	LF
		Sta 7613+80.00 to Sta 7614+50.00 Rt	70	LF
		Sta 7614+17.60 to Sta 7614+50.00 Lt	33	LF
261	113	REMOVE FIBER ROLLS 12IN		
		Sta 7611+50.00 to Sta 7611+78.15 Rt	29	LF
		Sta 7611+50.00 to Sta 7612+19.95 Lt	71	LF
		Sta 7611+79.50 to Sta 7612+50.00 Rt	72	LF
		Sta 7612+20.89 to Sta 7612+95.00 Lt	74	LF
		Sta 7613+06.97 to Sta 7613+77.90 Rt	71	LF
		Sta 7613+52.76 to Sta 7614+20.48 Lt	68	LF
		Sta 7613+80.00 to Sta 7614+50.00 Rt	70	LF
		Sta 7614+17.60 to Sta 7614+50.00 Lt	33	LF

Fiber Rolls 12IN

7611 7612 7613 7614 7615

US 2

3 SRT (Placed Per Plan)

Exst RW

Exst RW

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Temporary Erosion Control

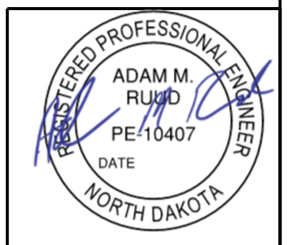
Bridge No 2-144.200R
US Hwy 2 East - BNSF Rail Sep

5/10/2022 7:29:58 AM gcowing H:\JBN\3900\3950\3950_0304 PCN 22911 US 2 RP 144 RR Sep Minot\CAD\Design\Sheets\076TE_003.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-083(151)920	77	1

SPEC	CODE	BID ITEM	QTY	UNIT
261	112	FIBER ROLLS 12IN		
		Sta 8612+00.00 to Sta 8612+16.42 Lt	17	LF
		Sta 8612+00.00 to Sta 8612+28.71 Rt	29	LF
		Sta 8614+20.41 to Sta 8614+50.00 Lt	30	LF
		Sta 8614+31.51 to Sta 8614+50.00 Rt	19	LF
		Sta 8614+50.00 Rt	17	LF

Fiber Rolls 12IN



8/11/2022

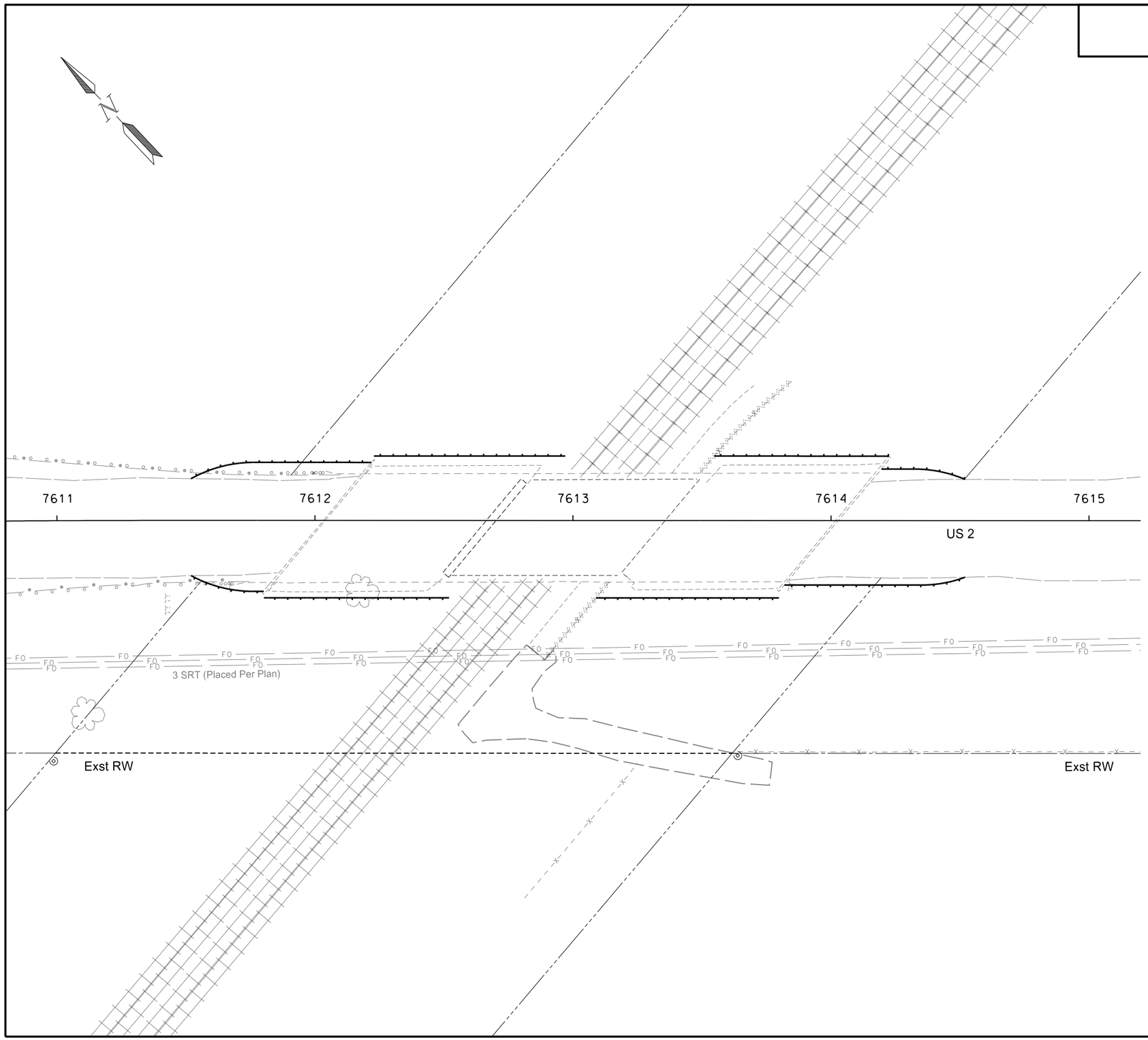
Permanent Erosion Control

Bridge No 83-920.967R
US 83 Bypass - CP Rail Overpass

	STATE	SOLICITATION NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(137)144	77	2

SPEC	CODE	BID ITEM	QTY	UNIT
261	112	FIBER ROLLS 12IN		
		Sta 7611+50.00 to Sta 7611+78.15 Rt	29	LF
		Sta 7611+50.00 to Sta 7612+19.95 Lt	71	LF
		Sta 7611+79.50 to Sta 7612+50.00 Rt	72	LF
		Sta 7612+20.89 to Sta 7612+95.00 Lt	74	LF
		Sta 7613+06.97 to Sta 7613+77.90 Rt	71	LF
		Sta 7613+52.76 to Sta 7614+20.48 Lt	68	LF
		Sta 7613+80.00 to Sta 7614+50.00 Rt	70	LF
		Sta 7614+17.60 to Sta 7614+50.00 Lt	33	LF

Fiber Rolls 12IN



REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Permanent Erosion Control

Bridge No 2-144.200R
US Hwy 2 East - BNSF Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	82	1

Chain SCL BURDICK contains:
10 11 CUR C12 CUR C13 CUR C14 15

Beginning chain SCL BURDICK description
==========

Point 10 N 450,677.6375 E 1,777,068.4511 Sta 337+75.30

Course from 10 to 11 S 89° 07' 16.29" E Dist 329.1993

Point 11 N 450,672.5884 E 1,777,397.6117 Sta 341+04.50

Course from 11 to PC C12 S 89° 17' 45.91" E Dist 1,266.3030

Curve Data

Curve C12
P.I. Station 354+05.99 N 450,656.5992 E 1,778,699.0032
Delta = 7° 35' 47.69" (RT)
Degree = 10° 48' 37.89"
Tangent = 35.1867
Length = 70.2702
Radius = 530.0000
External = 1.1667
Long Chord = 70.2188
Mid. Ord. = 1.1642
P.C. Station 353+70.80 N 450,657.0315 E 1,778,663.8192
P.T. Station 354+41.07 N 450,651.5195 E 1,778,733.8213
C.C. N 450,127.0715 E 1,778,657.3080
Back = S 89° 17' 45.91" E
Ahead = S 81° 41' 58.22" E
Chord Bear = S 85° 29' 52.07" E

Course from PT C12 to PC C13 S 81° 41' 58.22" E Dist 265.1671

Curve Data

Curve C13
P.I. Station 357+99.13 N 450,599.8291 E 1,779,088.1246
Delta = 19° 52' 52.42" (LT)
Degree = 10° 48' 37.89"
Tangent = 92.8870
Length = 183.9062
Radius = 530.0000
External = 8.0781
Long Chord = 182.9850
Mid. Ord. = 7.9568
P.C. Station 357+06.24 N 450,613.2387 E 1,778,996.2106
P.T. Station 358+90.15 N 450,618.4760 E 1,779,179.1207
C.C. N 451,137.6867 E 1,779,072.7240
Back = S 81° 41' 58.22" E
Ahead = N 78° 25' 09.36" E
Chord Bear = N 88° 21' 35.57" E

Course from PT C13 to PC C14 N 78° 25' 09.36" E Dist 61.4825

Curve Data

Curve C14
P.I. Station 360+08.67 N 450,642.2690 E 1,779,295.2292
Delta = 12° 17' 06.38" (RT)
Degree = 10° 48' 37.89"
Tangent = 57.0388
Length = 113.6402
Radius = 530.0000
External = 3.0604
Long Chord = 113.4227
Mid. Ord. = 3.0429
P.C. Station 359+51.63 N 450,630.8185 E 1,779,239.3515
P.T. Station 360+65.27 N 450,641.5678 E 1,779,352.2637
C.C. N 450,111.6079 E 1,779,345.7483
Back = N 78° 25' 09.36" E
Ahead = S 89° 17' 44.27" E
Chord Bear = N 84° 33' 42.55" E

Course from PT C14 to 15 S 89° 17' 44.27" E Dist 697.7640

Point 15 N 450,632.9900 E 1,780,049.9750 Sta 367+63.03

==========
Ending chain SCL BURDICK description

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Survey Data
Alignment Definition

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	82	2

Chain EX83BP contains:
111 CUR C8 CUR C2 SCS S8 CUR C9 SCS S2 159 151

Beginning chain EX83BP description
==========

Point 111 N 446,936.2180 E 1,763,151.6830 Sta 8576+00.00

Course from 111 to PC C8 N 19° 05' 31.22" E Dist 326.6908

Curve Data

Curve C8
P.I. Station 8587+39.72 N 448,013.2435 E 1,763,524.4683
Delta = 8° 06' 59.86" (LT)
Degree = 0° 29' 59.99"
Tangent = 813.0254
Length = 1,623.3305
Radius = 11,459.1900
External = 28.8057
Long Chord = 1,621.9734
Mid. Ord. = 28.7335
P.C. Station 8579+26.69 N 447,244.9390 E 1,763,258.5390
P.T. Station 8595+50.02 N 448,811.3979 E 1,763,679.2578
C.C. N 450,993.0804 E 1,752,429.6669
Back = N 19° 05' 31.22" E
Ahead = N 10° 58' 31.36" E
Chord Bear = N 15° 02' 01.29" E

Course from PT C8 to PC C2 N 10° 58' 37.25" E Dist 1,864.7957

Curve Data

Curve C2
P.I. Station 8619+24.51 N 451,142.4465 E 1,764,131.3826
Delta = 3° 34' 00.13" (RT)
Degree = 0° 21' 00.00"
Tangent = 509.6946
Length = 1,019.0600
Radius = 16,370.2500
External = 7.9329
Long Chord = 1,018.8955
Mid. Ord. = 7.9290
P.C. Station 8614+14.82 N 450,642.0747 E 1,764,034.3433
P.T. Station 8624+33.88 N 451,635.8123 E 1,764,259.3623
C.C. N 447,525.3895 E 1,780,105.1665
Back = N 10° 58' 31.36" E
Ahead = N 14° 32' 31.50" E
Chord Bear = N 12° 45' 31.43" E

Course from PT C2 to TS S8B N 14° 32' 31.50" E Dist 657.3946

SCS S8 found within chain EX83BP, contains:
SPI S8B CUR S8 SPI S8A

PISCS S8 N 453,458.5438 E 1,764,732.1813 STA 8643+16.94
Total Tangent = 1,225.6635
Total Length = 2,422.9064
Total Delta = 22° 13' 43.62" (LT)
Back Tangent = N 14° 32' 31.50" E
Ahead Tangent = N 7° 41' 12.13" W

Beginning SCS S8 description

Spiral Back
Spiral S8B Type 1 Spiral Element

Angle 0° 59' 59.95" (LT) P 0.2909 BK N 14° 32' 31.50" E
LS 200.0000 K 99.9990 AH N 13° 32' 31.54" E
R 5,729.6500 LT 133.3355 CB N 14° 12' 31.52" E
YS 1.1635 ST 66.6686 Defl 0° 19' 59.98"
XS 199.9939 LC 199.9973 Deg 0° 59' 59.95"

Spiral Coordinates

Point	North	East	Station
TS	452,272.1463	1,764,424.4282	8630+91.27
PI	452,401.2101	1,764,457.9075	8632+24.61
SC	452,466.0252	1,764,473.5186	8632+91.27
CC	453,807.6783	1,758,903.1635	

Circular Section

Curve Data

Curve S8
P.I. Station 8643+13.36 N 453,459.7015 E 1,764,712.8515
Delta = 20° 13' 43.72" (LT)
Degree = 0° 59' 59.95"
Tangent = 1,022.0924
Length = 2,022.9064
Radius = 5,729.6500
External = 90.4498
Long Chord = 2,012.4162
Mid. Ord. = 89.0442
P.C. Station 8632+91.27 N 452,466.0252 E 1,764,473.5186
P.T. Station 8653+14.18 N 454,474.8413 E 1,764,593.8386
C.C. N 453,807.6783 E 1,758,903.1635
Back = N 13° 32' 31.54" E
Ahead = N 6° 41' 12.17" W
Chord Bear = N 3° 25' 39.68" E

Spiral Ahead
Spiral S8A Type 2 Spiral Element

Angle 0° 59' 59.95" (LT) P 0.2909 BK N 6° 41' 12.17" W
LS 200.0000 K 99.9990 AH N 7° 41' 12.13" W
R 5,729.6500 LT 133.3355 CB N 7° 21' 12.15" W
YS 1.1635 ST 66.6686 Defl 0° 19' 59.98"
XS 199.9939 LC 199.9973 Deg 0° 59' 59.95"

Spiral Coordinates

Point	North	East	Station
CS	454,474.8413	1,764,593.8386	8653+14.18
PI	454,541.0564	1,764,586.0757	8653+80.85
ST	454,673.1938	1,764,568.2412	8655+14.18
CC	453,807.6783	1,758,903.1635	

Ending SCS S8 description

Course from ST S8A to PC C9 N 7° 41' 12.13" W Dist 1,539.6944

Curve Data

Curve C9
P.I. Station 8694+52.59 N 458,576.2126 E 1,764,041.4548
Delta = 37° 02' 00.79" (RT)
Degree = 0° 47' 59.98"
Tangent = 2,398.7139
Length = 4,629.2315
Radius = 7,162.0300
External = 391.0159
Long Chord = 4,549.0683
Mid. Ord. = 370.7733
P.C. Station 8670+53.87 N 456,199.0529 E 1,764,362.2976
P.T. Station 8716+83.10 N 460,667.0966 E 1,765,217.0534
C.C. N 457,157.0187 E 1,771,459.9715
Back = N 7° 41' 12.13" W
Ahead = N 29° 20' 48.67" E
Chord Bear = N 10° 49' 48.27" E

Course from PT C9 to TS S2B N 29° 20' 48.67" E Dist 7,993.7515

SCS S2 found within chain EX83BP, contains:
SPI S2B CUR S2 SPI S2A

PISCS S2 N 469,249.2908 E 1,770,042.3883 STA 8815+28.81
Total Tangent = 1,851.9539
Total Length = 3,370.3278
Total Delta = 61° 24' 12.72" (RT)
Back Tangent = N 29° 20' 48.67" E
Ahead Tangent = S 89° 14' 58.62" E

Beginning SCS S2 description

Spiral Back
Spiral S2B Type 1 Spiral Element

Angle 2° 59' 59.47" (RT) P 1.3088 BK N 29° 20' 48.67" E
LS 300.0000 K 149.9863 AH N 32° 20' 48.14" E
R 2,864.9300 LT 200.0287 CB N 30° 20' 48.41" E
YS 5.2347 ST 100.0261 Defl 0° 59' 59.74"
XS 299.9178 LC 299.9635 Deg 1° 59' 59.65"

Spiral Coordinates

Point	North	East	Station
TS	467,635.0004	1,769,134.7542	8796+76.86
PI	467,809.3592	1,769,232.7874	8798+76.88
SC	467,893.8639	1,769,286.3055	8799+76.86
CC	466,361.0083	1,771,706.6728	

Circular Section

Curve Data

Curve S2
P.I. Station 8814+81.10 N 469,164.6883 E 1,770,091.1379
Delta = 55° 24' 13.78" (RT)
Degree = 1° 59' 59.65"
Tangent = 1,504.2440
Length = 2,770.3278
Radius = 2,864.9300
External = 370.8966
Long Chord = 2,663.6493
Mid. Ord. = 328.3837
P.C. Station 8799+76.86 N 467,893.8639 E 1,769,286.3055
P.T. Station 8827+47.18 N 469,223.7306 E 1,771,594.2227
C.C. N 466,361.0083 E 1,771,706.6728
Back = N 32° 20' 48.14" E
Ahead = N 87° 45' 01.92" E
Chord Bear = N 60° 02' 55.03" E

Spiral Ahead
Spiral S2A Type 2 Spiral Element

Angle 2° 59' 59.47" (RT) P 1.3088 BK N 87° 45' 01.92" E
LS 300.0000 K 149.9863 AH S 89° 14' 58.62" E
R 2,864.9300 LT 200.0287 CB N 89° 45' 01.65" E
YS 5.2347 ST 100.0261 Defl 0° 59' 59.74"
XS 299.9178 LC 299.9635 Deg 1° 59' 59.65"

Spiral Coordinates

Point	North	East	Station
CS	469,223.7306	1,771,594.2227	8827+47.18
PI	469,227.6567	1,771,694.1718	8828+47.21
ST	469,225.0371	1,771,894.1833	8830+47.18
CC	466,361.0083	1,771,706.6728	

Ending SCS S2 description

Course from ST S2A to 159 S 89° 14' 58.62" E Dist 442.0627

Point 159 N 469,219.2477 E 1,772,336.2081 Sta 8834+89.25

Course from 159 to 151 S 89° 15' 27.36" E Dist 2,677.7341

Point 151 N 469,184.5524 E 1,775,013.7175 Sta 8861+66.98

==========
Ending chain EX83BP description

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Survey Data
Alignment Definition

Bridge No 83-920.967R
US 83 Bypass - CP Rail Overpass

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	82	3

Beginning chain EX2-52EB description
==========

Point 120 N 448,431.2670 E 1,759,605.1740 Sta 7557+93.67

Course from 120 to PC C7 S 59° 58' 20.73" E Dist 286.3114

Curve Data

Curve C7
P.I. Station 7564+80.34 N 448,087.6475 E 1,760,199.6795
Delta = 2° 00' 05.66" (RT)
Degree = 0° 15' 00.00"
Tangent = 400.3553
Length = 800.6292
Radius = 22,918.3118
External = 3.4966
Long Chord = 800.5885
Mid. Ord. = 3.4961
P.C. Station 7560+79.98 N 448,287.9920 E 1,759,853.0580
P.T. Station 7568+80.61 N 447,875.3188 E 1,760,539.0921
C.C. N 428,445.6689 E 1,748,384.3515
Back = S 59° 58' 20.73" E
Ahead = S 57° 58' 15.07" E
Chord Bear = S 58° 58' 17.90" E

Course from PT C7 to TS S5B S 57° 58' 15.18" E Dist 587.0552

SCS S5 found within chain EX2-52EB, contains:
SPI S5B CUR S5 SPI S5A

PISCS S5 N 447,176.5550 E 1,761,656.0838 STA 7581+98.16
Total Tangent = 730.4960
Total Length = 1,444.9995
Total Delta = 22° 53' 59.97" (LT)
Back Tangent = S 57° 58' 15.07" E
Ahead Tangent = S 80° 52' 15.04" E

Beginning SCS S5 description

Spiral Back
Spiral S5B Type 1 Spiral Element

Angle 3° 00' 00.00" (LT) P 1.3089 BK S 57° 58' 15.07" E
LS 300.0000 K 149.9863 AH S 60° 58' 15.07" E
R 2,864.7890 LT 200.0287 CB S 58° 58' 14.99" E
YS 5.2350 ST 100.0261 Defl 0° 59' 59.92"
XS 299.9178 LC 299.9634 Deg 2° 00' 00.00"

Spiral Coordinates

Point	North	East	Station
TS	447,563.9740	1,761,036.7850	7574+67.67
PI	447,457.8886	1,761,206.3650	7576+67.69
SC	447,409.3505	1,761,293.8252	7577+67.67
CC	449,914.2445	1,762,683.9769	

Circular Section

Curve Data

Curve S5
P.I. Station 7581+93.26 N 447,202.8311 E 1,761,665.9494
Delta = 16° 53' 59.97" (LT)
Degree = 2° 00' 00.00"
Tangent = 425.5898
Length = 844.9995
Radius = 2,864.7890
External = 31.4401
Long Chord = 841.9397
Mid. Ord. = 31.0988
P.C. Station 7577+67.67 N 447,409.3505 E 1,761,293.8252
P.T. Station 7586+12.67 N 447,113.4079 E 1,762,082.0386
C.C. N 449,914.2445 E 1,762,683.9769
Back = S 60° 58' 15.07" E
Ahead = S 77° 52' 15.04" E
Chord Bear = S 69° 25' 15.05" E

Spiral Ahead
Spiral S5A Type 2 Spiral Element

Angle 3° 00' 00.00" (LT) P 1.3089 BK S 77° 52' 15.04" E
LS 300.0000 K 149.9863 AH S 80° 52' 15.04" E
R 2,864.7890 LT 200.0287 CB S 79° 52' 15.12" E
YS 5.2350 ST 100.0261 Defl 0° 59' 59.92"
XS 299.9178 LC 299.9634 Deg 2° 00' 00.00"

Spiral Coordinates

Point	North	East	Station
CS	447,113.4079	1,762,082.0386	7586+12.67
PI	447,092.3908	1,762,179.8318	7587+12.69
ST	447,060.6541	1,762,377.3268	7589+12.67
CC	449,914.2445	1,762,683.9769	

Ending SCS S5 description

Course from ST S5A to TS S6B S 80° 52' 14.98" E Dist 825.8947

SCS S6 found within chain EX2-52EB, contains:
SPI S6B CUR S6 SPI S6A

PISCS S6 N 446,812.5959 E 1,763,920.9741 STA 7604+76.12
Total Tangent = 737.5566
Total Length = 1,438.9670
Total Delta = 34° 10' 08.43" (RT)
Back Tangent = S 80° 52' 15.04" E
Ahead Tangent = S 46° 42' 06.60" E

Beginning SCS S6 description

Spiral Back
Spiral S6B Type 1 Spiral Element

Angle 4° 30' 00.00" (RT) P 1.9631 BK S 80° 52' 15.04" E
LS 300.0000 K 149.9692 AH S 76° 22' 15.04" E
R 1,909.8593 LT 200.0647 CB S 79° 22' 15.32" E
YS 7.8505 ST 100.0588 Defl 1° 29' 59.72"
XS 299.8150 LC 299.9178 Deg 3° 00' 00.00"

Spiral Coordinates

Point	North	East	Station
TS	446,929.6170	1,763,192.7600	7597+38.56
PI	446,897.8746	1,763,390.2905	7599+38.62
SC	446,874.2971	1,763,487.5317	7600+38.56
CC	445,018.2171	1,763,037.4988	

Circular Section

Curve Data

Curve S6
P.I. Station 7604+64.92 N 446,773.8306 E 1,763,901.8877
Delta = 25° 10' 08.43" (RT)
Degree = 3° 00' 00.00"
Tangent = 426.3618
Length = 838.9670
Radius = 1,909.8593
External = 47.0124
Long Chord = 832.2376
Mid. Ord. = 45.8830
P.C. Station 7600+38.56 N 446,874.2971 E 1,763,487.5317
P.T. Station 7608+77.53 N 446,506.6813 E 1,764,234.1763
C.C. N 445,018.2171 E 1,763,037.4988
Back = S 76° 22' 15.04" E
Ahead = S 51° 12' 06.60" E
Chord Bear = S 63° 47' 10.82" E

Spiral Ahead
Spiral S6A Type 2 Spiral Element

Angle 4° 30' 00.00" (RT) P 1.9631 BK S 51° 12' 06.60" E
LS 300.0000 K 149.9692 AH S 46° 42' 06.60" E
R 1,909.8593 LT 200.0647 CB S 48° 12' 06.32" E
YS 7.8505 ST 100.0588 Defl 1° 29' 59.72"
XS 299.8150 LC 299.9178 Deg 3° 00' 00.00"

Spiral Coordinates

Point	North	East	Station
CS	446,506.6813	1,764,234.1763	7608+77.53
PI	446,443.9866	1,764,312.1579	7609+77.59
ST	446,306.7832	1,764,457.7639	7611+77.53
CC	445,018.2171	1,763,037.4988	

Ending SCS S6 description

Course from ST S6A to 148 S 46° 42' 06.60" E Dist 3,742.0526

Point 148 N 443,740.5020 E 1,767,181.2100 Sta 7649+19.58

==========
Ending chain EX2-52EB description

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Survey Data
Alignment Definition

Bridge No 2-144.200R
US Hwy 2 East - BNSF Rail Sep

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	90	1

SPEC	CODE	BID ITEM	QTY	UNIT
302	120	AGGREGATE BASE COURSE CL 5 Sta 352+12.74 to Sta 352+85.35	173	TON
550	302	8.5IN NON-REINF CONCRETE PVMT CL AE-DOWELED Sta 352+12.74 to Sta 352+85.35	414	SY

Doweled Joint - See Section 20

Tied Joint - See Section 20

8.5IN Non-Reinf Concrete Pvmt CL AE-Doweled

Exst RW

Exst RW

Access Road

N

SRT (Placed Per Plan)

13.8' 15' 15' 15' 13.8'

14'

12'

12'

14'

352

353

354

E Burdick Expy.

2 MH San

Drill and Epoxy into Existing Pavement

SRT (Placed Per Plan)

Exst RW

Exst RW

REGISTERED PROFESSIONAL ENGINEER
ADAM M. RUUD
PE-10407
DATE
NORTH DAKOTA

8/11/2022

Paving Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	100	1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL 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	**48"x24"**	**END ROAD WORK**	**2**	**2**		**2**	**26**	**52**
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)					18	
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	
I2-5-96	**96"x48"**	**PROJECT FUNDING SIGN**	**2**	**2**		**2**	**58**	**116**
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)					10	
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)**	**11**	**11**		**11**	**7**	**77**
M3-2-24	24"x12"	EAST (Mounted on route marker post)					7	
M3-3-24	**24"x12"**	**SOUTH (Mounted on route marker post)**	**3**	**3**		**3**	**7**	**21**
M3-4-24	24"x12"	WEST (Mounted on route marker post)					7	
M4-6-24	**24"x12"**	**END**	**3**	**3**		**3**	**7**	**21**
M4-8-24	**24"x12"**	**DETOUR (Mounted on route marker post)**	**17**	**17**		**17**	**7**	**119**
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT					15	
M4-9b-30	**30"x24"**	**PEDESTRIAN DETOUR**	**6**			**6**	**15**	**90**
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)**	**4**	**4**		**4**	**7**	**28**
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)**	**6**	**6**		**6**	**7**	**42**
M6-1-30	30"x21"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)					9	
M6-3-21	**21"x15"**	**DIRECTIONAL ARROW UP (Mounted on route marker post)**	**4**	**4**		**4**	**7**	**28**
R1-1-48	**48"x48"**	**STOP**	**1**	**1**		**1**	**32**	**32**
R1-2-60	**60"x60"**	**YIELD**		**1**		**1**	**29**	**29**
R2-1-36	**36"x48"**	**SPEED LIMIT __ (Portable only)**	**4**	**4**		**4**	**30**	**120**
R2-1-48	48"x60"	SPEED LIMIT __					39	
R2-1aP-24	**24"x18"**	**MINIMUM FEE $80 (Mounted on Speed Limit post)**	**2**	**2**		**2**	**10**	**20**
R3-2-36	**36"x36"**	**NO LEFT TURN**	**5**	**5**		**5**	**27**	**135**
R3-2-48	48"x48"	NO LEFT TURN					35	
R4-1-48	48"x60"	DO NOT PASS					39	
R4-7-48	48"x60"	KEEP RIGHT					39	
R5-1-48	48"x48"	DO NOT ENTER					35	
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	
R9-9-24	**24"x12"**	**SIDEWALK CLOSED**	**3**			**3**	**3**	**9**
R10-6-24	24"x36"	STOP HERE ON RED					16	
R11-2-48	48"x30"	ROAD CLOSED (Mounted on barricade)					12	
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)					12	
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)					15	
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)					15	
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**	**2**	**3**		**3**	**35**	**105**
W1-4b-48	48"x48"	TWO LANE REVERSE CURVE RIGHT or LEFT					35	
W1-6-48	48"x24"	ONE DIRECTION LARGE ARROW					26	
W3-1-48	48"x48"	STOP AHEAD					35	
W3-3-48	48"x48"	SIGNAL AHEAD					35	
W3-4-48	48"x48"	BE PREPARED TO STOP					35	
W3-5-48	**48"x48"**	**SPEED REDUCTION AHEAD**	**2**	**2**		**2**	**35**	**70**
W4-2-48	**48"x48"**	**LANE ENDS RIGHT or LEFT**	**2**	**2**		**2**	**35**	**70**
W5-1-48	48"x48"	ROAD NARROWS					35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE					35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW					35	
W6-3-48	48"x48"	TWO WAY TRAFFIC					35	
W8-1-48	48"x48"	BUMP					35	
W8-3-48	48"x48"	PAVEMENT ENDS					35	
W8-7-48	48"x48"	LOOSE GRAVEL					35	
W8-11-48	48"x48"	UNEVEN LANES					35	
W8-12-48	48"x48"	NO CENTER LINE					35	
W8-17-48	48"x48"	SHOULDER DROP-OFF SYMBOL					35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY					35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or __ FT or _ MILE					35	
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or __ FT or _ MILE					35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY					35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL					35	
W12-2-48	48"x48"	LOW CLEARANCE					35	
W13-1P-30	30"x30"	__ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)					14	
W14-3-64	64"x48"	NO PASSING ZONE					28	
W16-2P-30	30"x24"	__ FEET PLAQUE (Mounted on warning sign post)					10	
W16-7aP-18	**18"x12"**	**RIGHT DOWN ARROW PLAQUE**	**3**	**3**		**3**	**2**	**6**
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**6**	**6**		**6**	**35**	**210**
W20-2-48	48"x48"	DETOUR AHEAD or __ FT or _ MILE					35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT or _ MILE					35	
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**	**2**	**2**		**2**	**35**	**70**
W20-7-48	**48"x48"**	**FLAGGER**	**1**	**1**		**1**	**35**	**35**
W20-8-18	**18"x18"**	**STOP - SLOW PADDLE Back to Back**	**2**	**2**		**2**	**5**	**10**

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W20-52P-54	54"x12"	NEXT __ MILES (Mounted on warning sign post)					12	
W21-1-48	48"x48"	WORKERS					35	
W21-2-48	48"x48"	FRESH OIL					35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or __ FT or _ MILE					35	
W21-5-48	48"x48"	SHOULDER WORK					35	
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED					35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT or _ MILE					35	
W21-6-48	48"x48"	SURVEY CREW					35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT					35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY					35	
W21-52-48	48"x48"	PAVEMENT BREAKS					35	
W21-53-48	48"x48"	RUMBLE STRIPS AHEAD					35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK					35	

SPECIAL SIGNS

Consign 1	**30"x12"**	**Front St**	**4**	**4**		**4**	**12**	**48**
Consign 2	**30"x12"**	**Valley St**	**3**	**3**		**3**	**12**	**36**
Consign 3	**30"x12"**	**9th St NE**	**9**	**9**		**9**	**12**	**108**

SPEC & CODE

704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS 1707**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO. 1	2		TOTAL QUANTITY
704-0100	**FLAGGING**	MHR	**50**	**50**		**100**
704-1036	**ATTENUATION DEVICE-TYPE B-30**	EACH	**2**	**2**		**2**
704-1048	PORTABLE RUMBLE STRIPS	EACH				
704-1050	TYPE I BARRICADES	EACH				
704-1052	**TYPE III BARRICADES**	EACH	**10**	**9**		**10**
704-1054	**SIDEWALK BARRICADE**	EACH	**3**			**3**
704-1060	**DELINEATOR DRUMS**	EACH	**33**	**56**		**56**
704-1065	TRAFFIC CONES	EACH				
704-1067	**TUBULAR MARKERS**	EACH	**52**	**39**		**52**
704-1070	DELINEATOR	EACH				
704-1072	FLEXIBLE DELINEATORS	EACH				
704-1080	STACKABLE VERTICAL PANELS	EACH				
704-1081	VERTICAL PANELS - BACK TO BACK	EACH				
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH				
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH				
704-1087	**SEQUENCING ARROW PANEL - TYPE C**	EACH	**2**	**2**		**2**
704-1500	**OBLITERATION OF PVMT MK**	SF	**262**	**49**		**311**
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF				
704-3510	**PRECAST CONCRETE MED BARRIER - STATE FURNISHED**	EACH	**109**	**108**		**109**
704-4011	**PORTABLE CHANGEABLE MESSAGE SIGN**	EACH	**4**	**4**		**4**
762-0200	RAISED PAVEMENT MARKERS	EACH				
762-0420	**SHORT TERM 4IN LINE - TYPE R**	LF	**635**	**712**		**1347**
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF				

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-18.06 of the Design Manual.
http://www.dot.nd.gov/

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Traffic Control Devices List

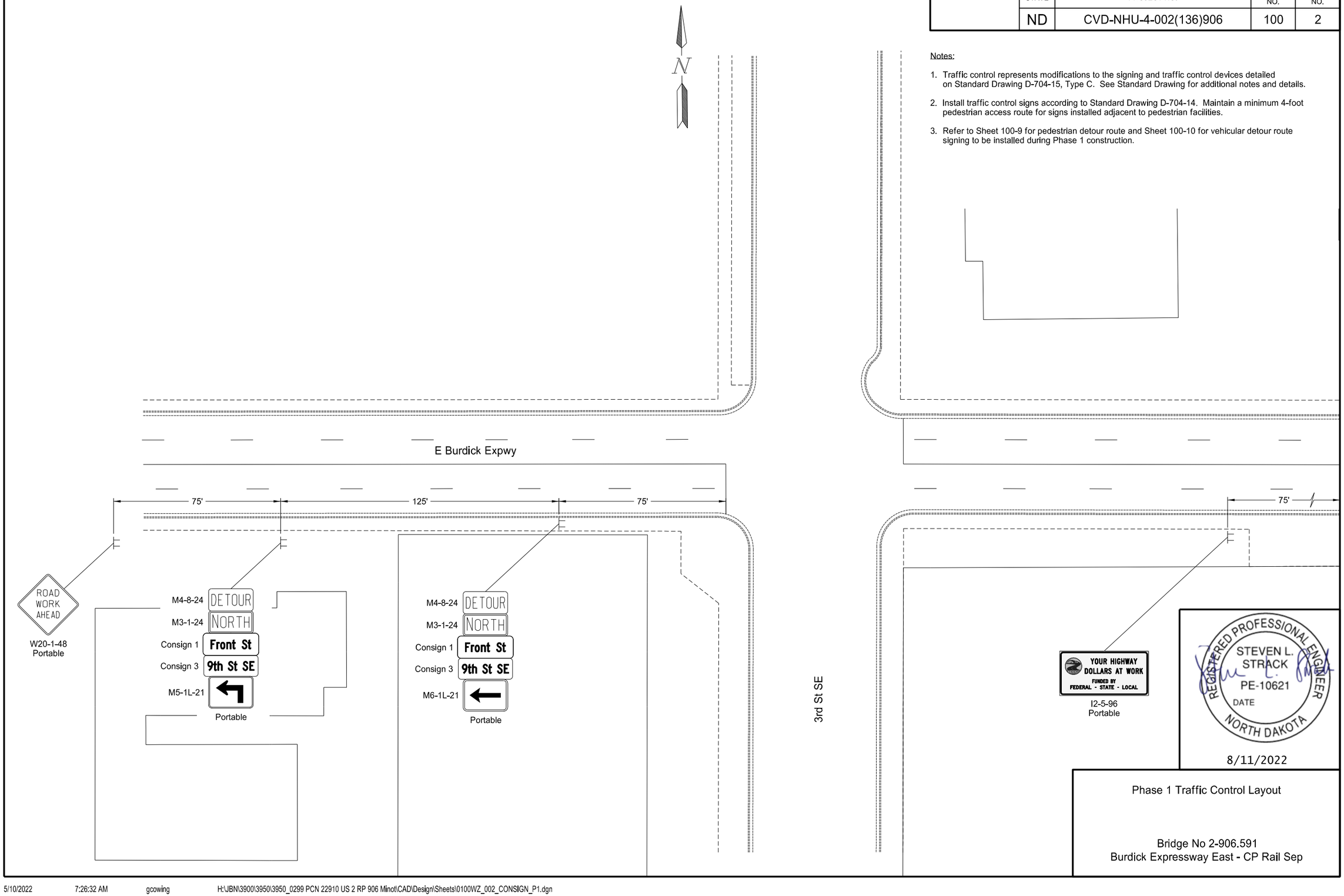
Burdick Expressway East - CP Rail Sep

Minot, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	2

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-9 for pedestrian detour route and Sheet 100-10 for vehicular detour route signing to be installed during Phase 1 construction.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

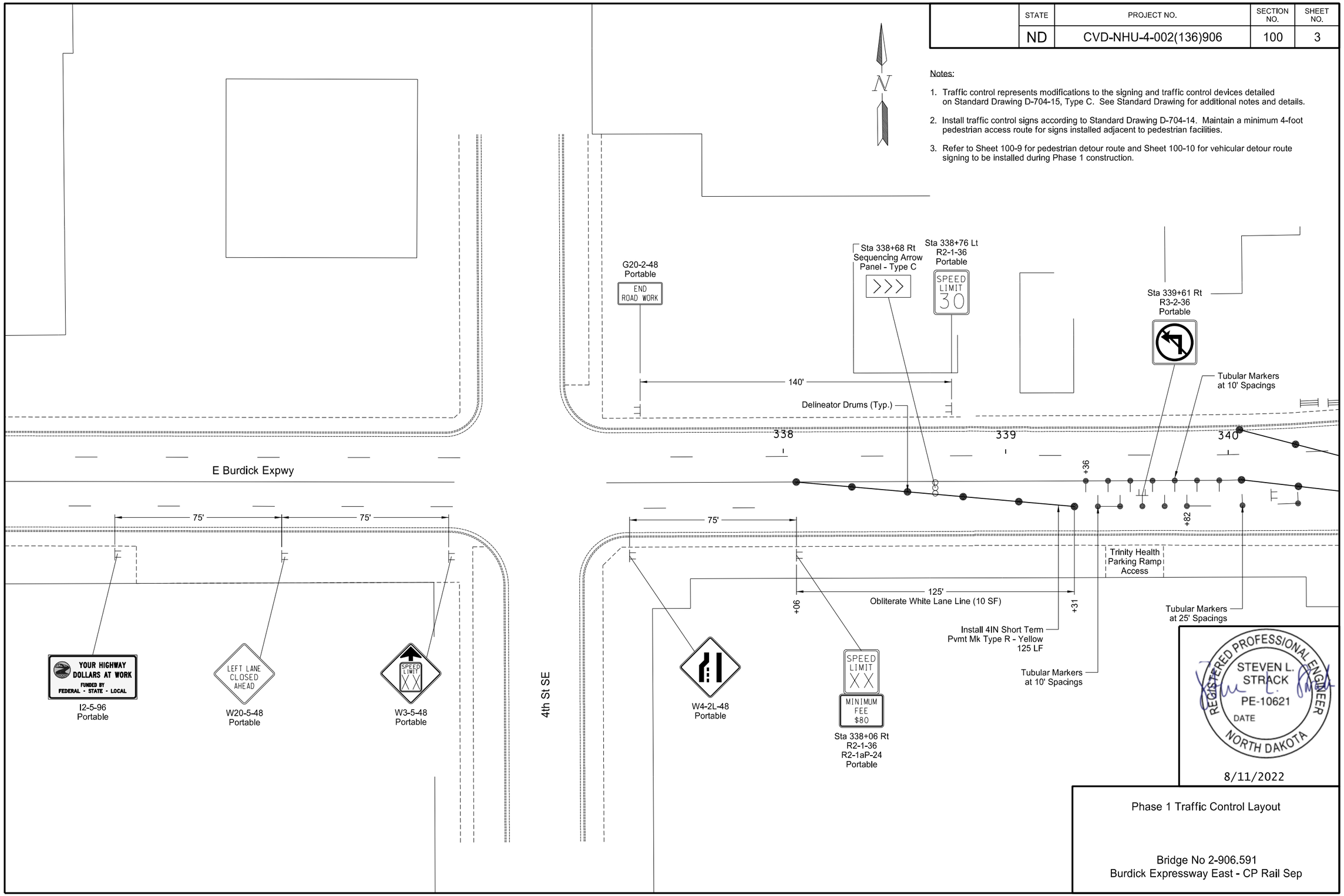
Phase 1 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	3

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-9 for pedestrian detour route and Sheet 100-10 for vehicular detour route signing to be installed during Phase 1 construction.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

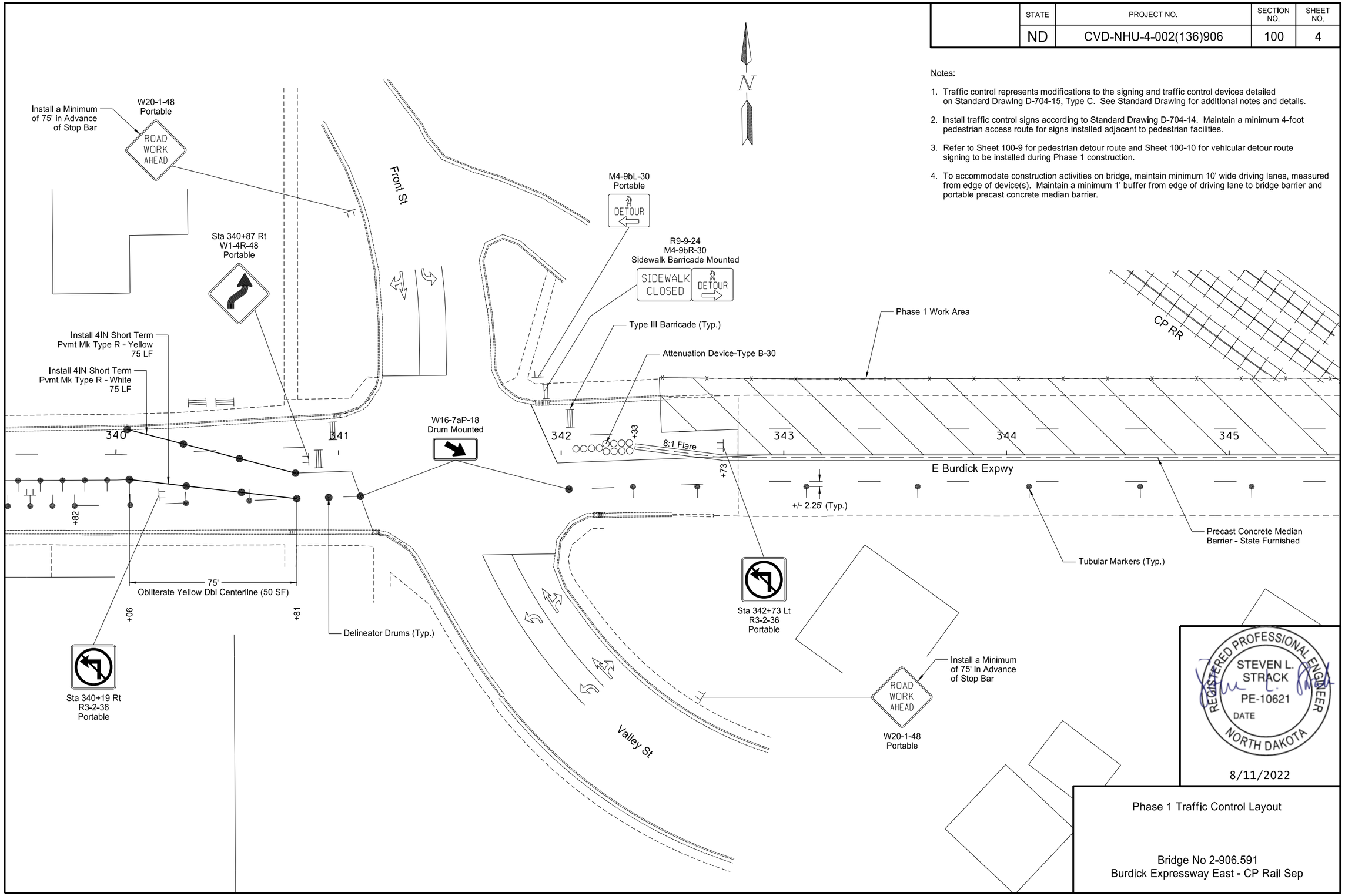
Phase 1 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	4

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-9 for pedestrian detour route and Sheet 100-10 for vehicular detour route signing to be installed during Phase 1 construction.
4. To accommodate construction activities on bridge, maintain minimum 10' wide driving lanes, measured from edge of device(s). Maintain a minimum 1' buffer from edge of driving lane to bridge barrier and portable precast concrete median barrier.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

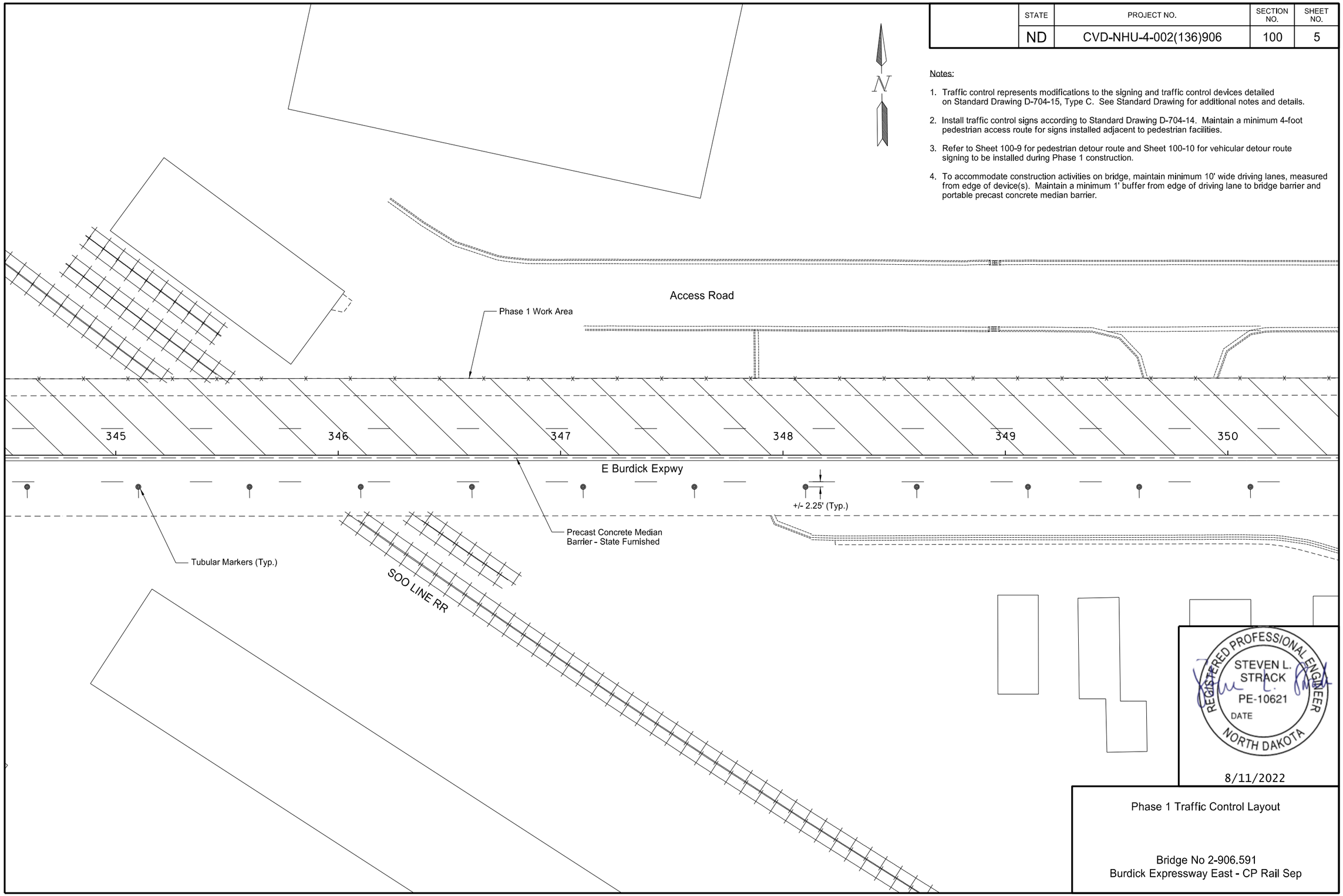
Phase 1 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	5

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-9 for pedestrian detour route and Sheet 100-10 for vehicular detour route signing to be installed during Phase 1 construction.
4. To accommodate construction activities on bridge, maintain minimum 10' wide driving lanes, measured from edge of device(s). Maintain a minimum 1' buffer from edge of driving lane to bridge barrier and portable precast concrete median barrier.



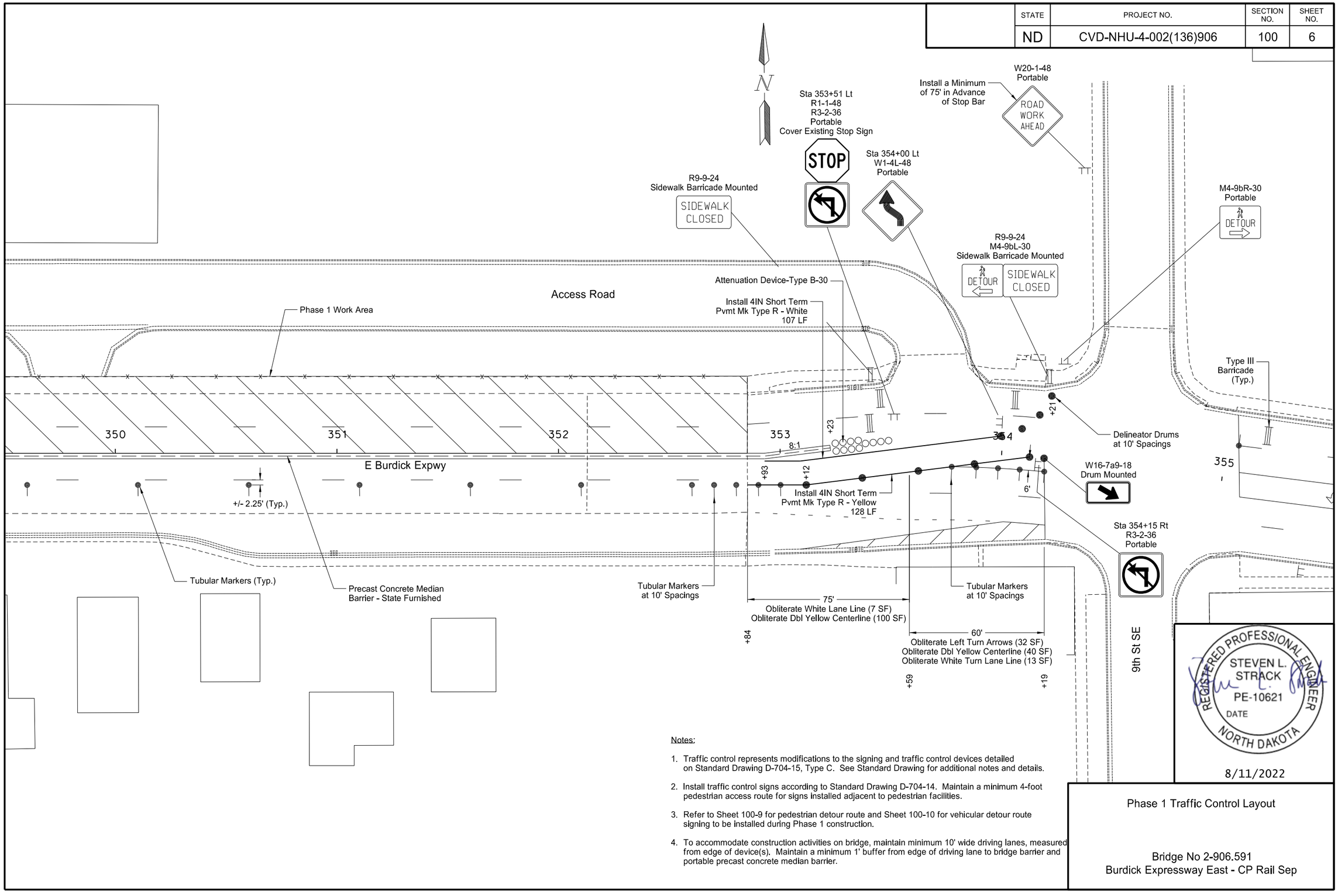
REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Phase 1 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	6



Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-9 for pedestrian detour route and Sheet 100-10 for vehicular detour route signing to be installed during Phase 1 construction.
4. To accommodate construction activities on bridge, maintain minimum 10' wide driving lanes, measured from edge of device(s). Maintain a minimum 1' buffer from edge of driving lane to bridge barrier and portable precast concrete median barrier.

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

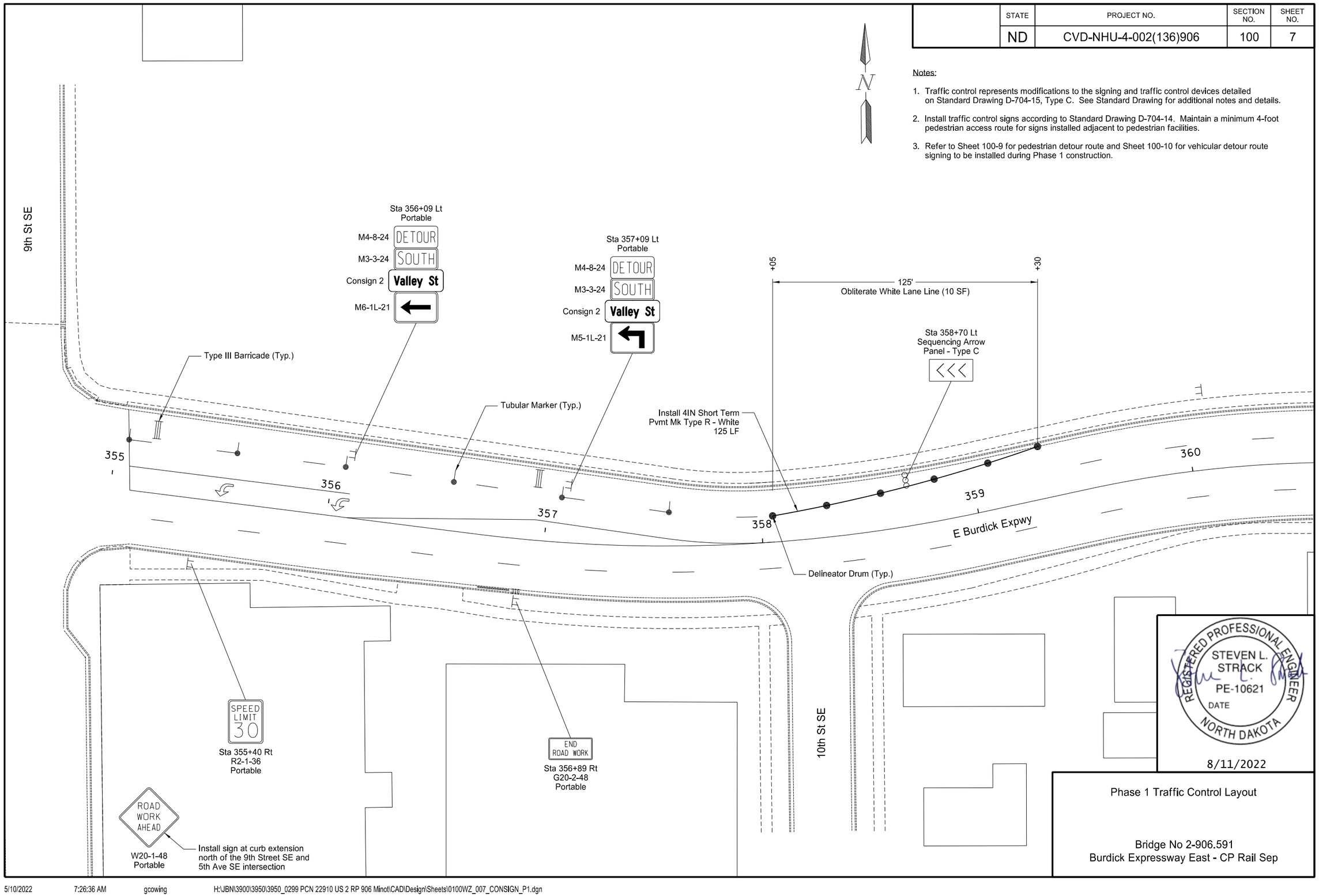
Phase 1 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	7

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-9 for pedestrian detour route and Sheet 100-10 for vehicular detour route signing to be installed during Phase 1 construction.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

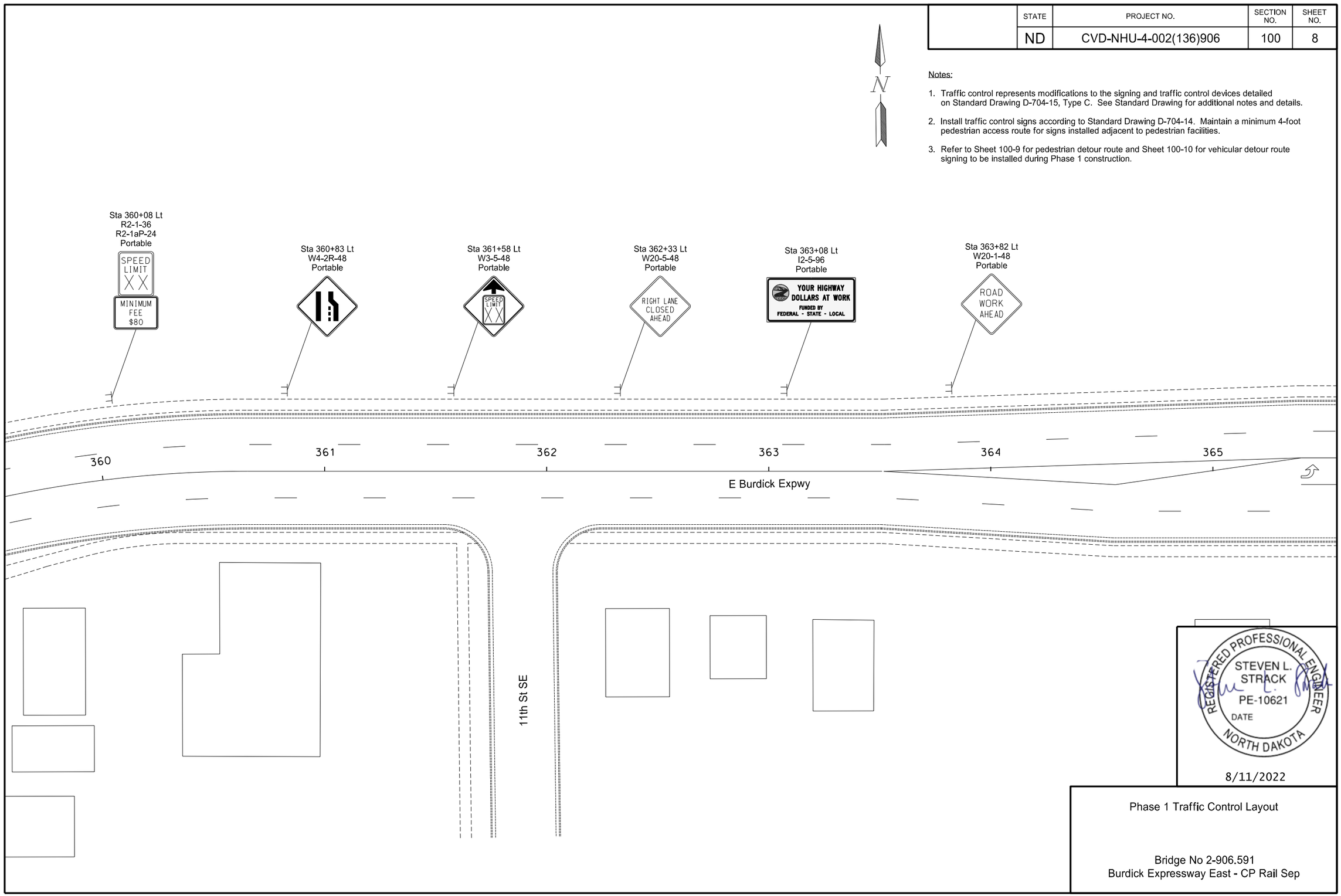
Phase 1 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	8

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-9 for pedestrian detour route and Sheet 100-10 for vehicular detour route signing to be installed during Phase 1 construction.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

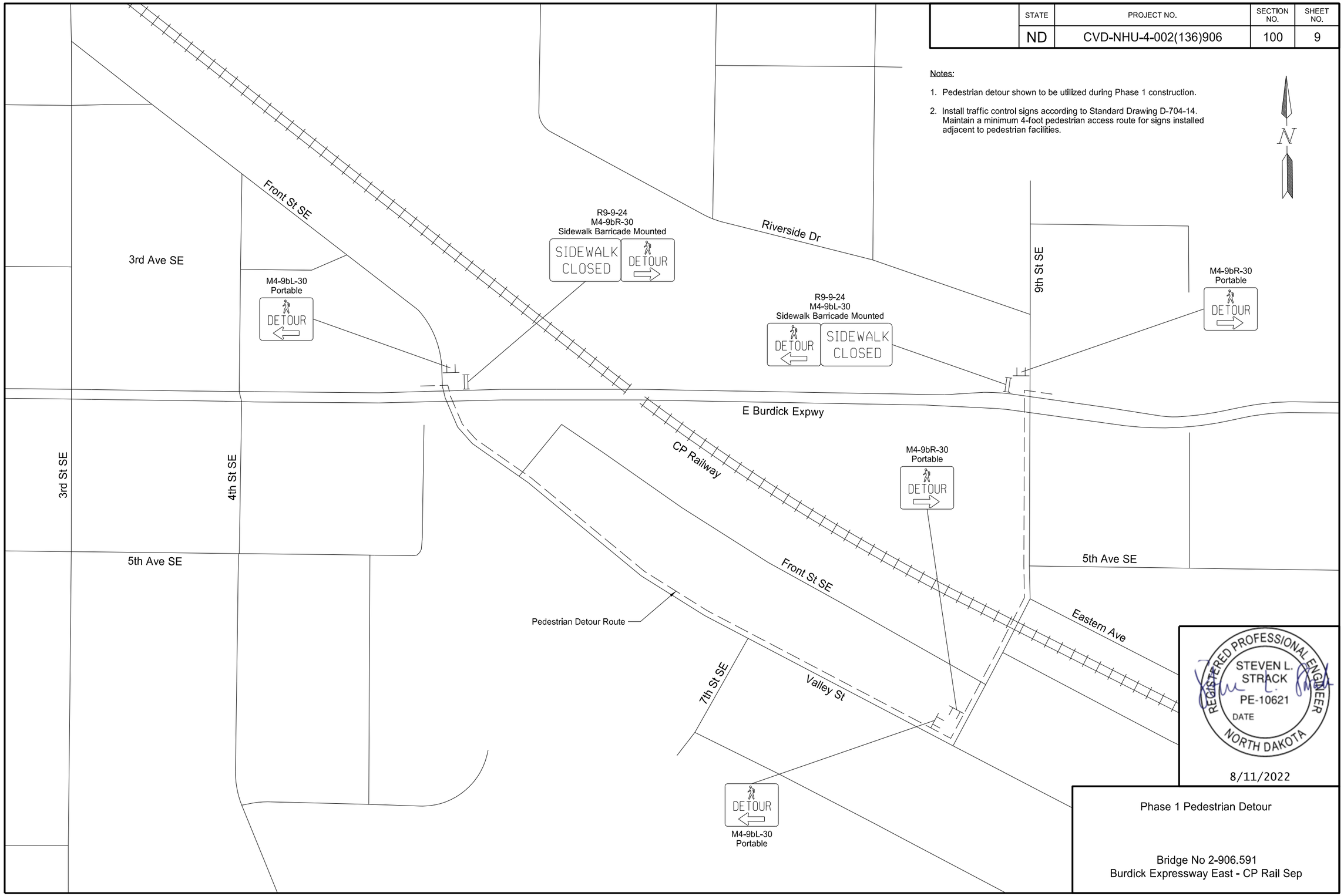
Phase 1 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	9

Notes:

1. Pedestrian detour shown to be utilized during Phase 1 construction.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

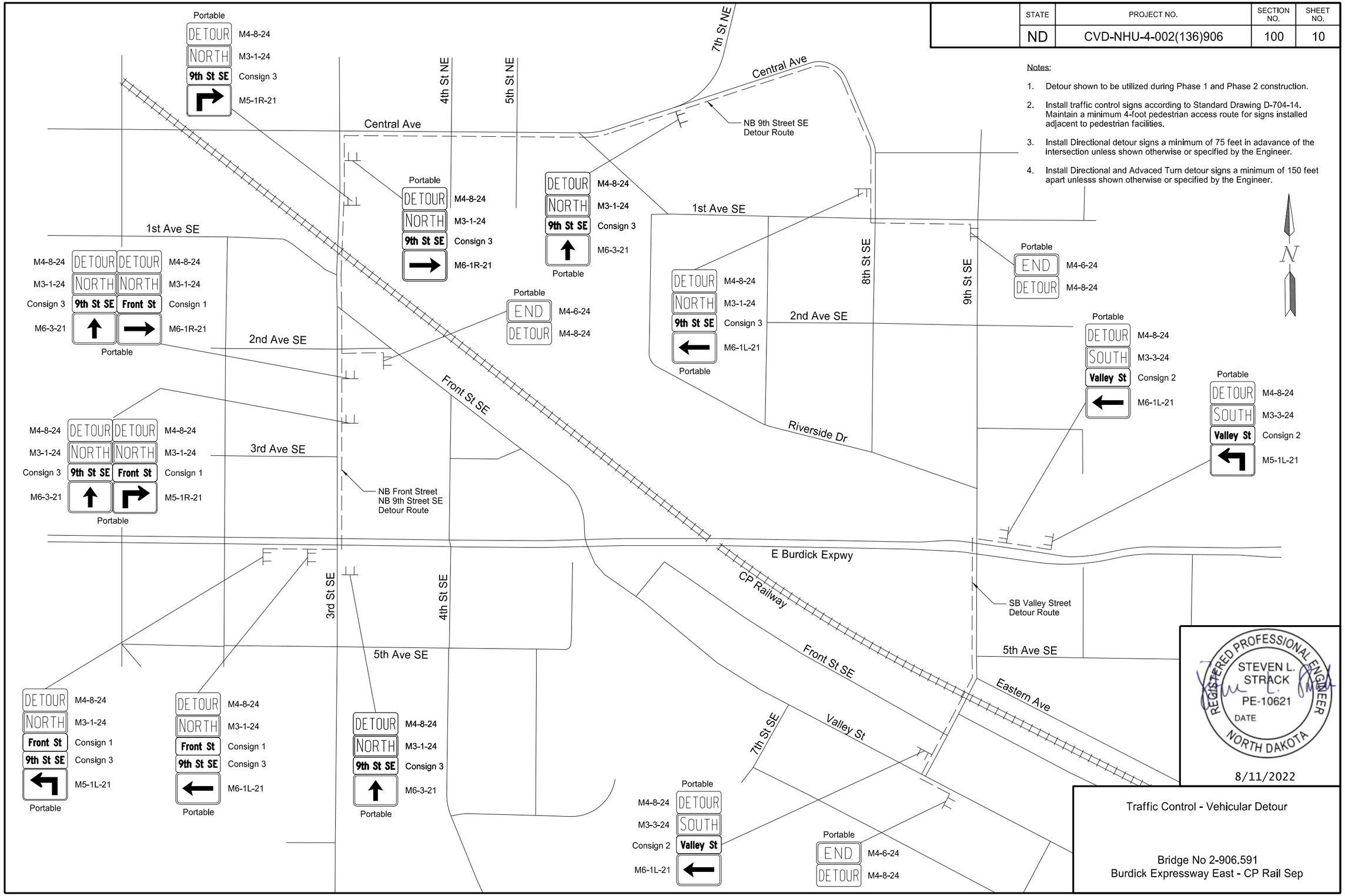
Phase 1 Pedestrian Detour

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	100	10

Notes:

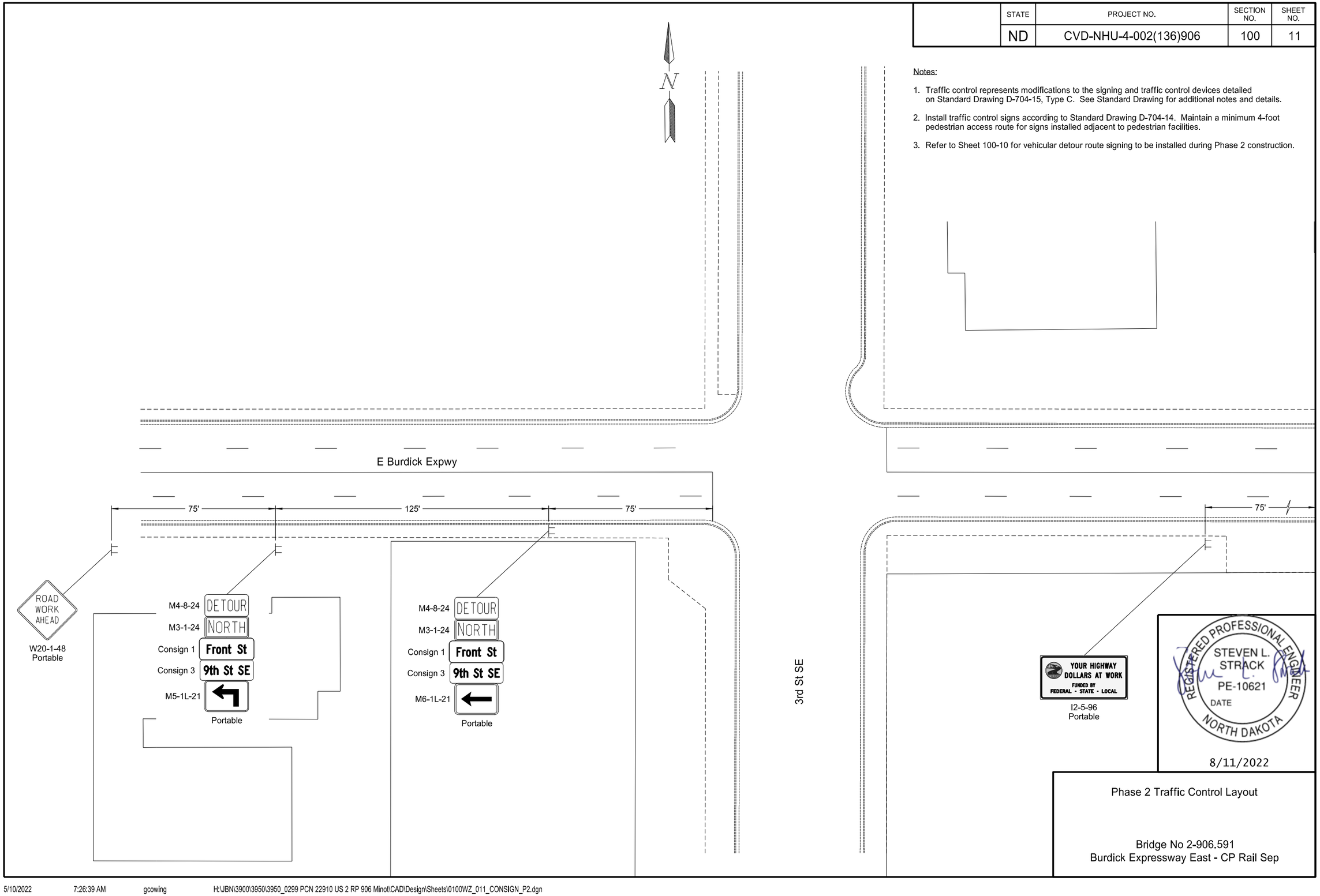
1. Detour shown to be utilized during Phase 1 and Phase 2 construction.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Install Directional detour signs a minimum of 75 feet in adavance of the intersection unless shown otherwise or specified by the Engineer.
4. Install Directional and Advaced Turn detour signs a minimum of 150 feet apart unlesss shown otherwise or specified by the Engineer.



Traffic Control - Vehicular Detour

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	11



Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-10 for vehicular detour route signing to be installed during Phase 2 construction.

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

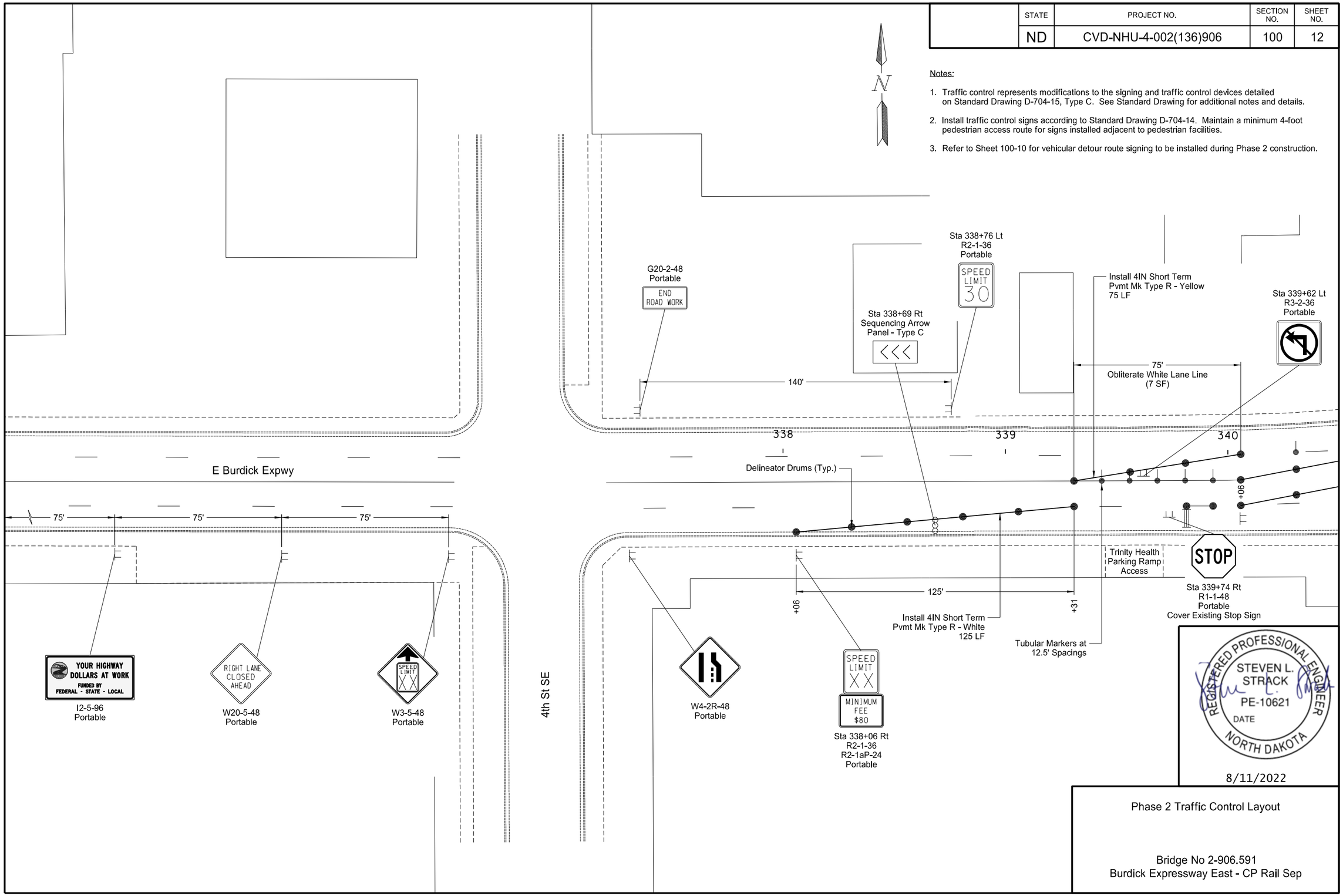
Phase 2 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	12

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-10 for vehicular detour route signing to be installed during Phase 2 construction.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

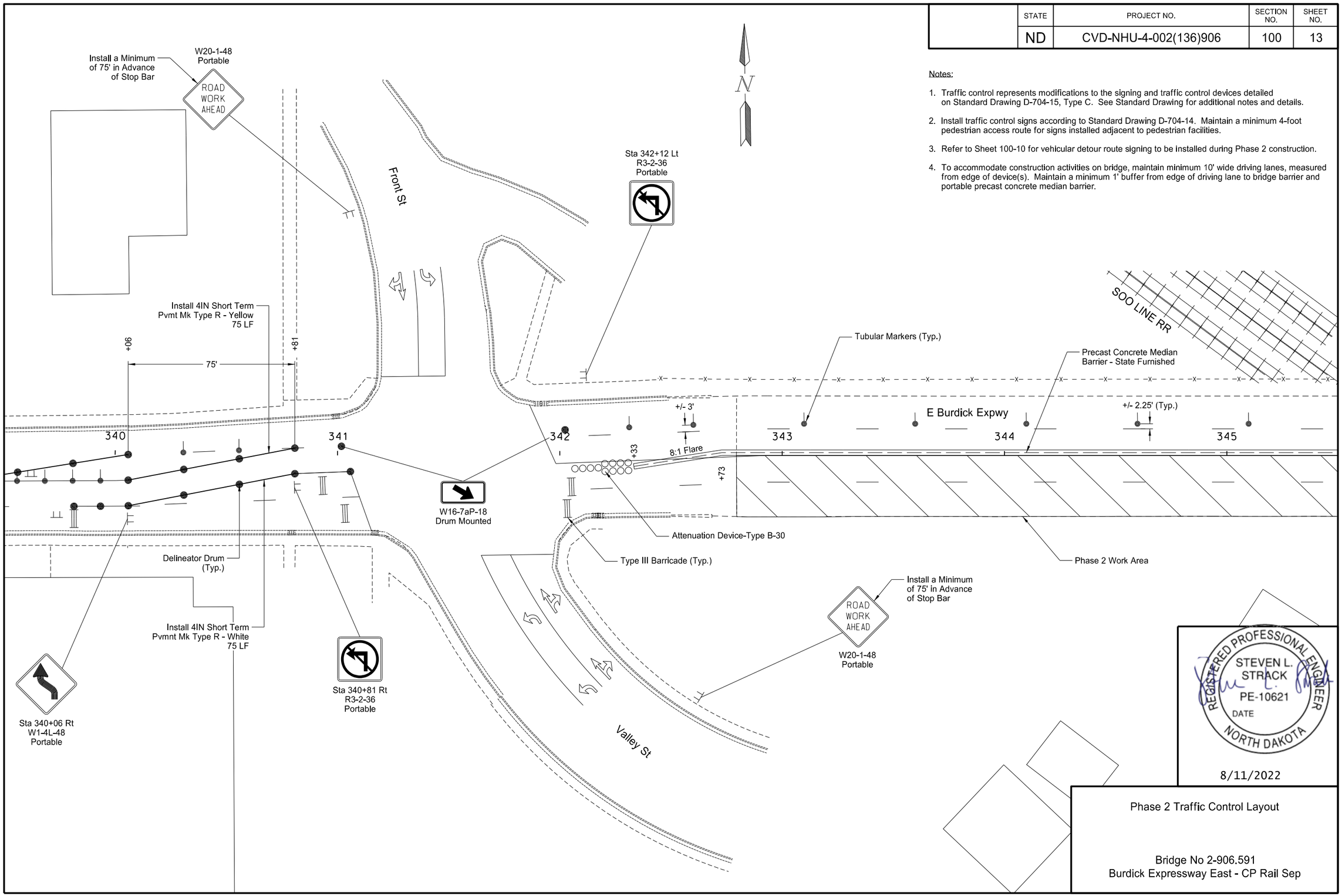
Phase 2 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	13

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-10 for vehicular detour route signing to be installed during Phase 2 construction.
4. To accommodate construction activities on bridge, maintain minimum 10' wide driving lanes, measured from edge of device(s). Maintain a minimum 1' buffer from edge of driving lane to bridge barrier and portable precast concrete median barrier.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

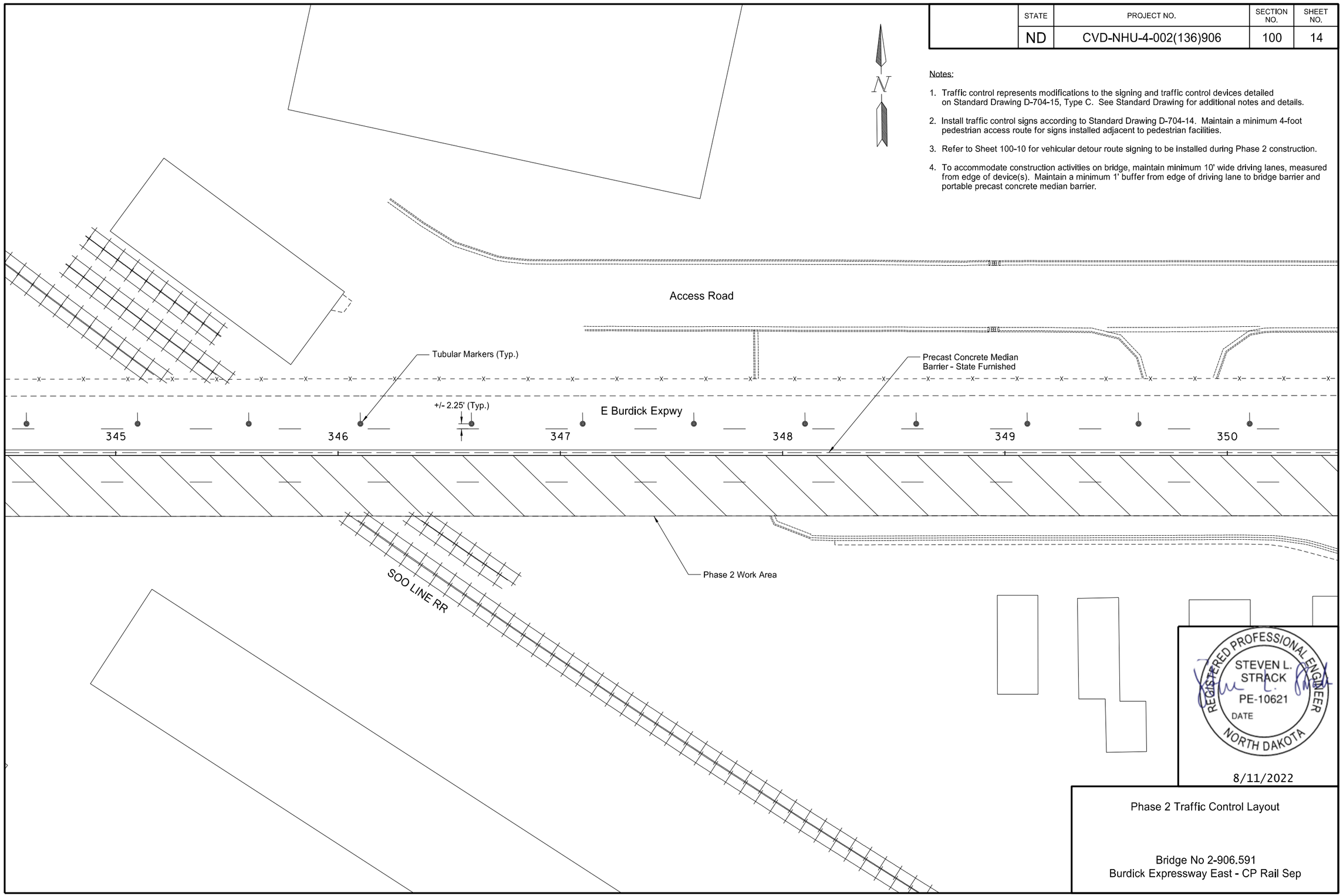
Phase 2 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	14

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-10 for vehicular detour route signing to be installed during Phase 2 construction.
4. To accommodate construction activities on bridge, maintain minimum 10' wide driving lanes, measured from edge of device(s). Maintain a minimum 1' buffer from edge of driving lane to bridge barrier and portable precast concrete median barrier.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

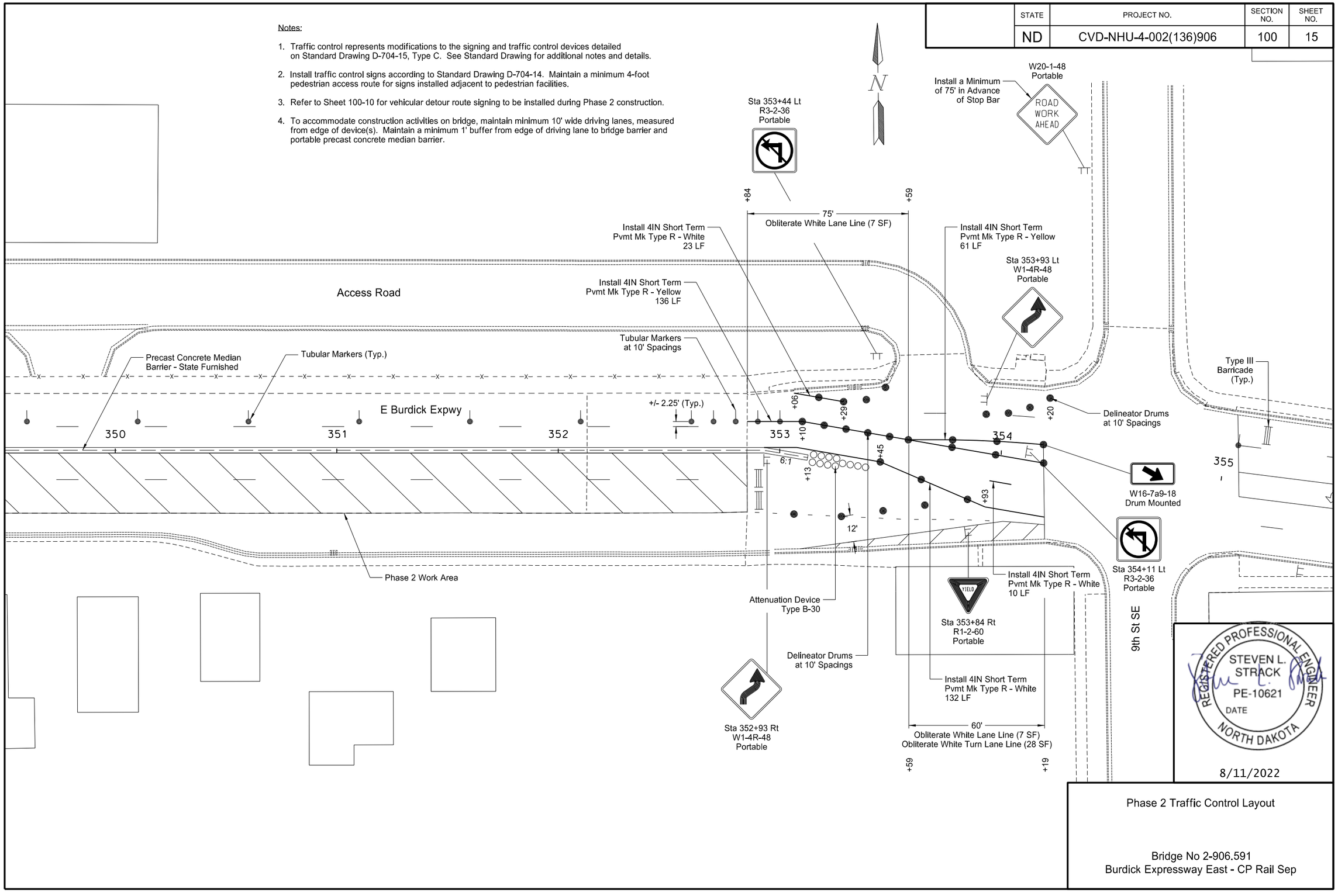
Phase 2 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	15

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-10 for vehicular detour route signing to be installed during Phase 2 construction.
4. To accommodate construction activities on bridge, maintain minimum 10' wide driving lanes, measured from edge of device(s). Maintain a minimum 1' buffer from edge of driving lane to bridge barrier and portable precast concrete median barrier.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

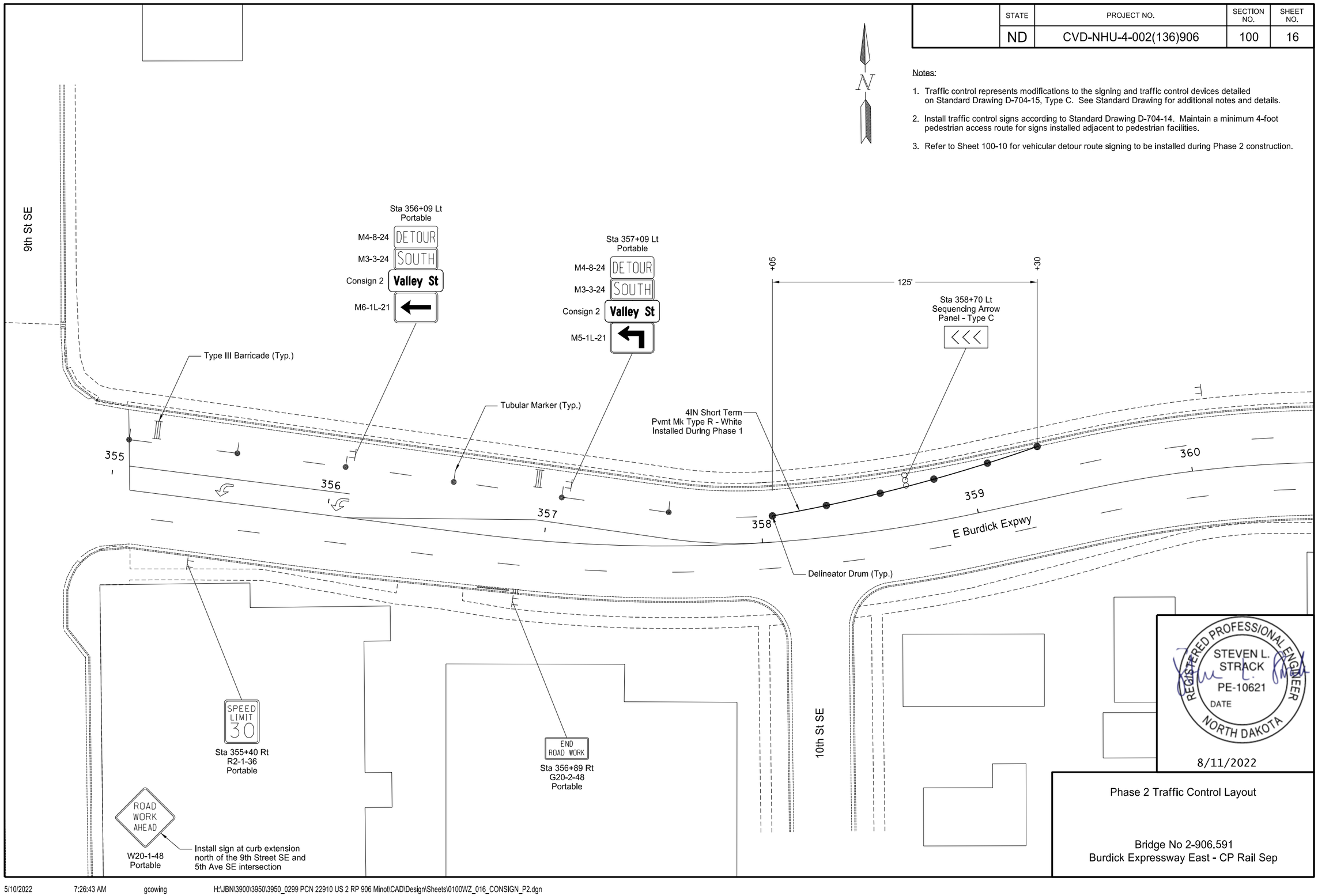
Phase 2 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	16

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-10 for vehicular detour route signing to be installed during Phase 2 construction.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

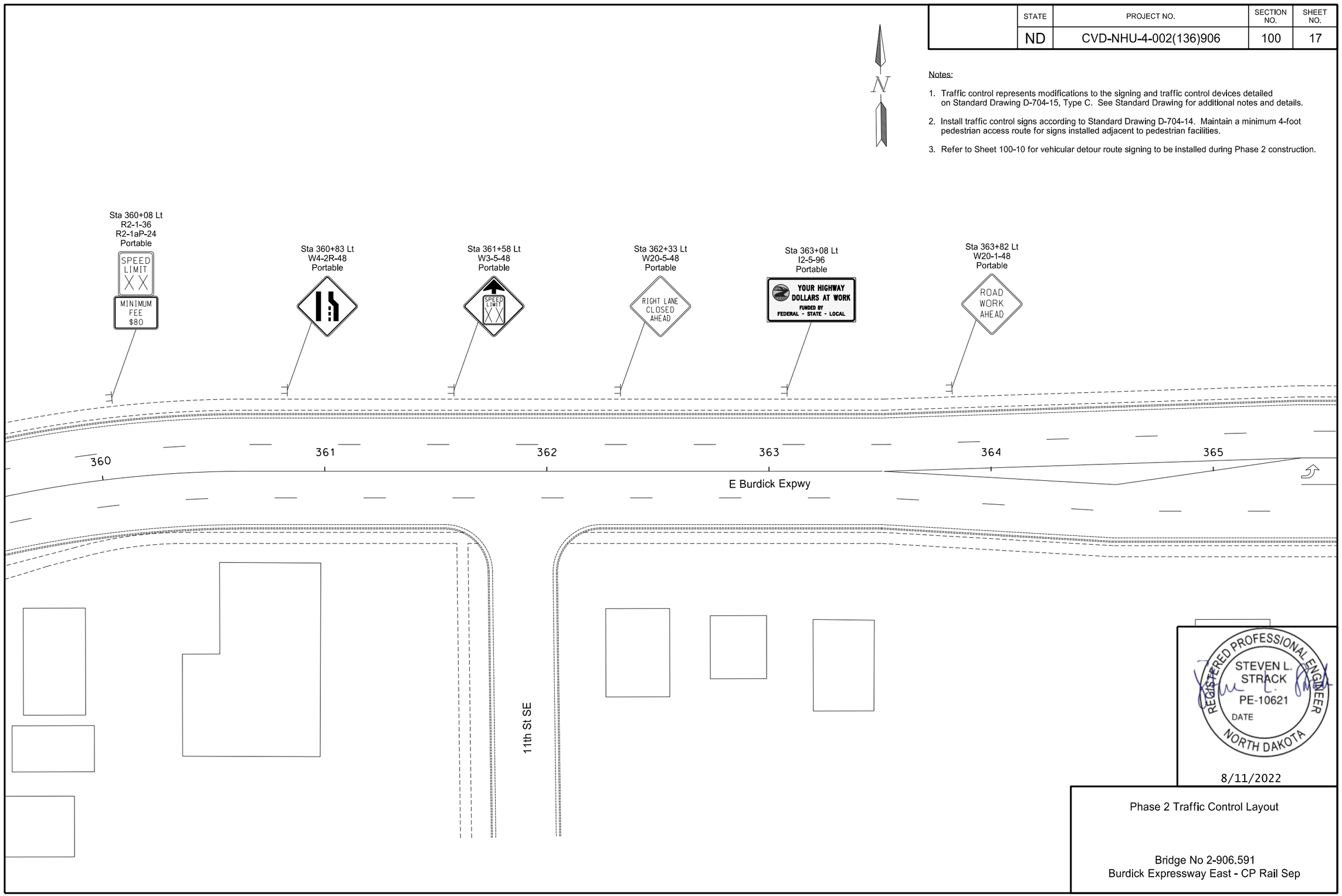
Phase 2 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	17

Notes:

1. Traffic control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-15, Type C. See Standard Drawing for additional notes and details.
2. Install traffic control signs according to Standard Drawing D-704-14. Maintain a minimum 4-foot pedestrian access route for signs installed adjacent to pedestrian facilities.
3. Refer to Sheet 100-10 for vehicular detour route signing to be installed during Phase 2 construction.



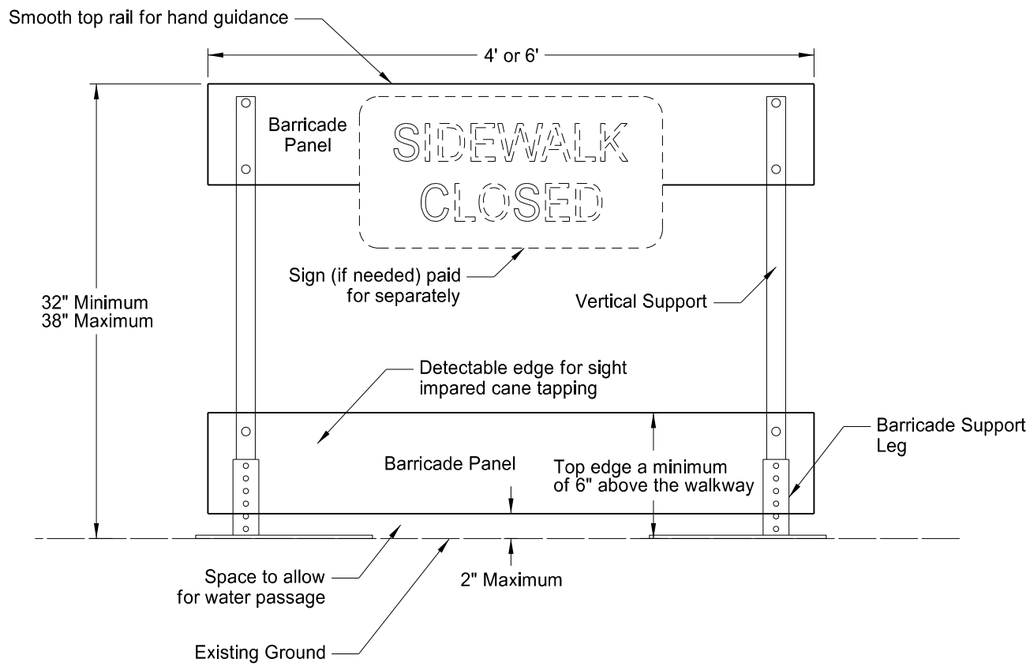
REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

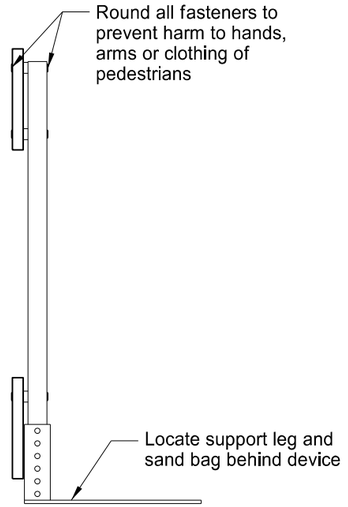
Phase 2 Traffic Control Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	100	18



Front View

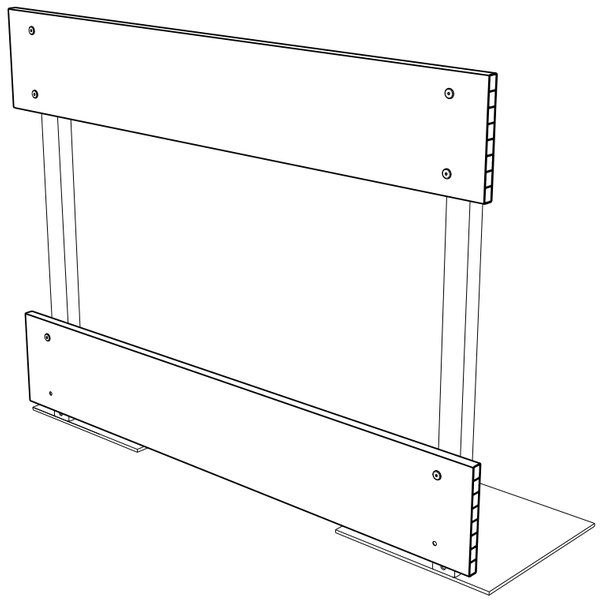


End View

NOTES:

Sidewalk Barricades

1. Provide self standing sidewalk barricade with no supports extending into the pedestrians path.
2. Use orange or orange and white diagonal striped barricade panels contrasting with the walkway surface.
3. Alternate barricades may be accepted provided they meet the dimensions shown, are ADA compliant, and are NCHRP 350 or Mash Test Level 3 (TL3) approved sidewalk barricades.
4. Include all costs to furnish, maintain and remove sidewalk barricades in the price bid for "Sidewalk Barricade".



Perspective View

8/11/2022

Sidewalk Barricade Details

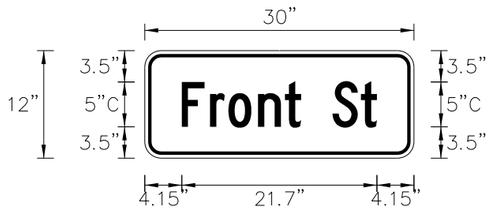
Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	100	19

SIGN NUMBER	Consign 1
WIDTH X HEIGHT	2'-6" x 1'-0"
BORDER WIDTH	0.38" (inset 0.38")
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: XI Reflective
	COLOR: Fluorescent Orange
LEGEND/BORDER	TYPE: Non-Reflective
	COLOR: Black

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): AREA: 2.5 Sq.Ft.



Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

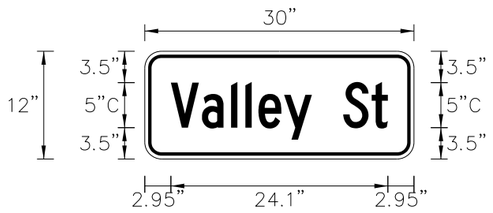
PANEL STYLE: SS_Const_Special_Street.sst

LETTER POSITION (X)																		LENGTH	SIZE	SERIES
F	r	o	n	t	S	t												21.7	5/3.8	C 2000
4.1	7.3	9.3	12.6	15.6	20.9	24.1														

SIGN NUMBER	Consign 2
WIDTH X HEIGHT	2'-6" x 1'-0"
BORDER WIDTH	0.38" (inset 0.38")
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: XI Reflective
	COLOR: Fluorescent Orange
LEGEND/BORDER	TYPE: Non-Reflective
	COLOR: Black

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): AREA: 2.5 Sq.Ft.



Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

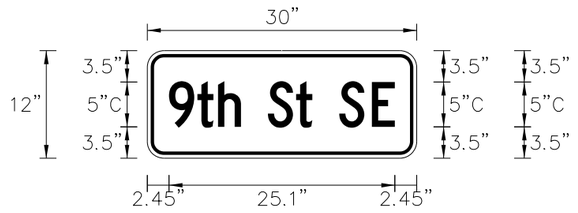
PANEL STYLE: SS_Const_Special_Street.sst

LETTER POSITION (X)																		LENGTH	SIZE	SERIES
V	a	l	l	e	y	S	t											24.1	5/3.8	C 2000
2.9	6.4	9.6	11.2	12.7	15.5	22.1	25.3													

SIGN NUMBER	Consign 3
WIDTH X HEIGHT	2'-6" x 1'-0"
BORDER WIDTH	0.38" (inset 0.38")
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: XI Reflective
	COLOR: Fluorescent Orange
LEGEND/BORDER	TYPE: Non-Reflective
	COLOR: Black

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S): AREA: 2.5 Sq.Ft.



Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

PANEL STYLE: SS_Const_Special_Street.sst

LETTER POSITION (X)																		LENGTH	SIZE	SERIES
9	t	h	S	t	S	E												25.1	5/3.8	C 2000
2.4	5.6	7.9	13.4	16.6	21.4	25														

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Construction Sign Details

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-083(151)920	100	20

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL 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	**48"x24"**	**END ROAD WORK**	**2**	**2**		**2**	**26**	**52**
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)					18	
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**	**2**	**2**		**2**	**59**	**118**
I2-5-96	**96"x48"**	**PROJECT FUNDING SIGN**	**2**	**2**		**2**	**58**	**116**
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)					10	
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	24"x12"	WEST (Mounted on route marker post)					7	
M4-8-24	24"x12"	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"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)					9	
M6-3-21	21"x15"	DIRECTIONAL ARROW UP (Mounted on route marker post)					7	
R1-1-48	**48"x48"**	**STOP**	**1**	**1**		**1**	**32**	**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 __**	**4**	**4**		**4**	**39**	**156**
R2-1aP-24	**24"x18"**	**MINIMUM FEE $80 (Mounted on Speed Limit post)**	**2**	**2**		**2**	**10**	**20**
R3-2-48	48"x48"	NO LEFT TURN					35	
R4-1-48	48"x60"	DO NOT PASS					39	
R4-7-48	48"x60"	KEEP RIGHT					39	
R5-1-48	48"x48"	DO NOT ENTER					35	
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)					12	
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)					12	
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)					15	
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)					15	
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"	ONE DIRECTION LARGE ARROW					26	
W3-1-48	48"x48"	STOP AHEAD					35	
W3-3-48	48"x48"	SIGNAL AHEAD					35	
W3-4-48	48"x48"	BE PREPARED TO STOP					35	
W3-5-48	**48"x48"**	**SPEED REDUCTION AHEAD**	**2**	**2**		**2**	**35**	**70**
W4-2-48	**48"x48"**	**LANE ENDS RIGHT or LEFT**	**2**	**2**		**2**	**35**	**70**
W5-1-48	48"x48"	ROAD NARROWS					35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE					35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW					35	
W6-3-48	48"x48"	TWO WAY TRAFFIC					35	
W8-1-48	48"x48"	BUMP					35	
W8-3-48	48"x48"	PAVEMENT ENDS					35	
W8-7-48	48"x48"	LOOSE GRAVEL					35	
W8-11-48	48"x48"	UNEVEN LANES					35	
W8-12-48	48"x48"	NO CENTER LINE					35	
W8-17-48	48"x48"	SHOULDER DROP-OFF SYMBOL					35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY					35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or __ FT or _ MILE					35	
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or __ FT or _ MILE					35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY					35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL					35	
W12-2-48	48"x48"	LOW CLEARANCE					35	
W13-1P-30	30"x30"	__ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)					14	
W14-3-64	64"x48"	NO PASSING ZONE					28	
W16-2P-30	30"x24"	__ FEET PLAQUE (Mounted on warning sign post)					10	
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**4**	**4**		**4**	**35**	**140**
W20-2-48	48"x48"	DETOUR AHEAD or __ FT or _ MILE					35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT or _ MILE					35	
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**	**2**	**2**		**2**	**35**	**70**
W20-7-48	48"x48"	FLAGGER					35	
W20-8-18	18"x18"	STOP - SLOW PADDLE Back to Back					5	
W20-52P-54	54"x12"	NEXT __ MILES (Mounted on warning sign post)					12	
W21-1-48	48"x48"	WORKERS					35	
W21-2-48	48"x48"	FRESH OIL					35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or __ FT or _ MILE					35	
W21-5-48	48"x48"	SHOULDER WORK					35	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED					35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT or _ MILE					35	
W21-6-48	48"x48"	SURVEY CREW					35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT					35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY					35	
W21-52-48	48"x48"	PAVEMENT BREAKS					35	
W21-53-48	48"x48"	RUMBLE STRIPS AHEAD					35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK					35	

SPECIAL SIGNS

SPEC & CODE		
704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS 844**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO. 1	2		TOTAL QUANTITY
704-0100	FLAGGING	MHR				
704-1041	**ATTENUATION DEVICE-TYPE B-55**	EACH	**1**	**1**		**1**
704-1048	PORTABLE RUMBLE STRIPS	EACH				
704-1050	TYPE I BARRICADES	EACH				
704-1052	TYPE III BARRICADES	EACH				
704-1060	**DELINEATOR DRUMS**	EACH	**27**	**26**		**27**
704-1065	TRAFFIC CONES	EACH				
704-1067	**TUBULAR MARKERS**	EACH	**7**	**7**		**7**
704-1070	DELINEATOR	EACH				
704-1072	FLEXIBLE DELINEATORS	EACH				
704-1080	STACKABLE VERTICAL PANELS	EACH				
704-1081	VERTICAL PANELS - BACK TO BACK	EACH				
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH				
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH				
704-1087	**SEQUENCING ARROW PANEL - TYPE C**	EACH	**1**	**1**		**1**
704-1500	**OBLITERATION OF PVMT MK**	SF	**55**			**55**
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF				
704-3510	**PRECAST CONCRETE MED BARRIER - STATE FURNISHED**	EACH	**51**	**51**		**51**
762-0200	RAISED PAVEMENT MARKERS	EACH				
762-0420	**SHORT TERM 4IN LINE - TYPE R**	LF	**761**	**761**		**1522**
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF				

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-18.06 of the Design Manual.
http://www.dot.nd.gov/

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Traffic Control Devices List

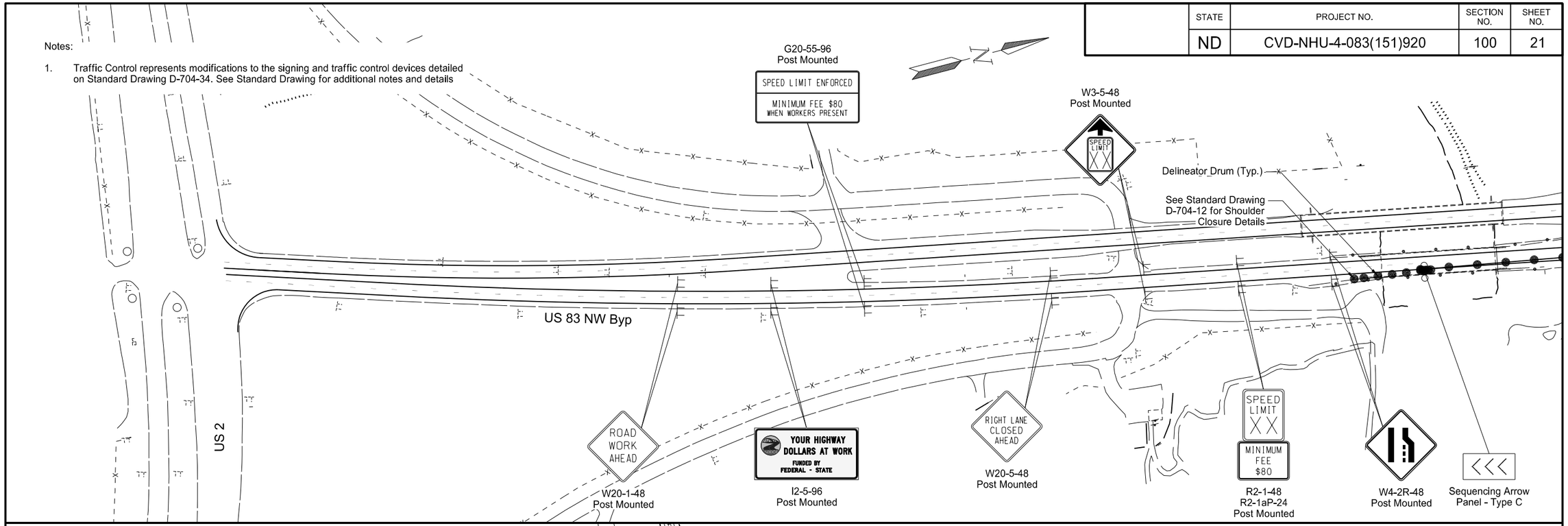
Burdick Expressway East - CP Rail Sep

Minot, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-083(151)920	100	21

Notes:

1. Traffic Control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-34. See Standard Drawing for additional notes and details



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Phase 1 Traffic Control Layout

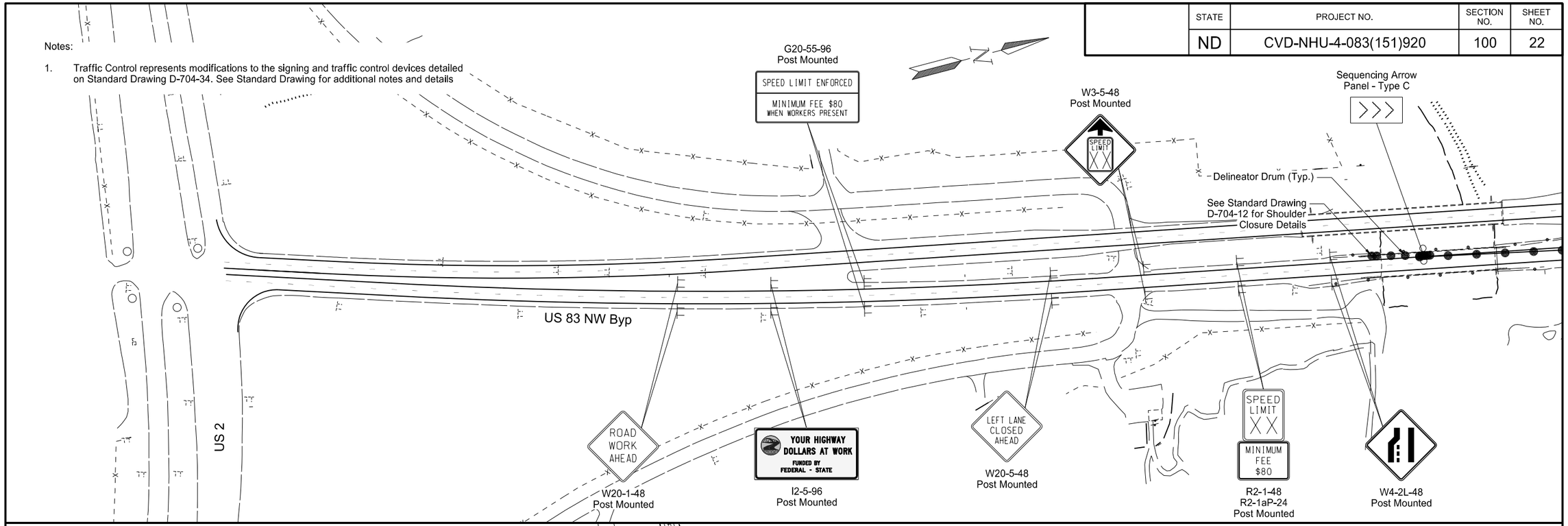
Bridge No 83-920.967R
US 83 Bypass - CP Rail Overpass

5/10/2022 7:28:36 AM gcowing H:\JBN\3900\3950\3950_0303 PCN 22912 US 83 West Bypass RR Sep Minot\CAD\Design\Sheets\100WZ_021.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-083(151)920	100	22

Notes:

1. Traffic Control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-34. See Standard Drawing for additional notes and details



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Phase 2 Traffic Control Layout

Bridge No 83-920.967R
US 83 Bypass - CP Rail Overpass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(137)144	100	23

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL 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	**48"x24"**	**END ROAD WORK**	**2**	**2**		**2**	**26**	**52**
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)					18	
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**	**2**	**2**		**2**	**59**	**118**
I2-5-96	**96"x48"**	**PROJECT FUNDING SIGN**	**2**	**2**		**2**	**58**	**116**
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)					10	
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	24"x12"	WEST (Mounted on route marker post)					7	
M4-8-24	24"x12"	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"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)					9	
M6-3-21	21"x15"	DIRECTIONAL ARROW UP (Mounted on route marker post)					7	
R1-1-48	48"x48"	STOP					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 __**	**4**	**4**		**4**	**39**	**156**
R2-1aP-24	**24"x18"**	**MINIMUM FEE $80 (Mounted on Speed Limit post)**	**2**	**2**		**2**	**10**	**20**
R3-2-48	48"x48"	NO LEFT TURN					35	
R4-1-48	48"x60"	DO NOT PASS					39	
R4-7-48	48"x60"	KEEP RIGHT					39	
R5-1-48	48"x48"	DO NOT ENTER					35	
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)					12	
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)					12	
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)					15	
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)					15	
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"	ONE DIRECTION LARGE ARROW					26	
W3-1-48	48"x48"	STOP AHEAD					35	
W3-3-48	48"x48"	SIGNAL AHEAD					35	
W3-4-48	48"x48"	BE PREPARED TO STOP					35	
W3-5-48	**48"x48"**	**SPEED REDUCTION AHEAD**	**2**	**2**		**2**	**35**	**70**
W4-2-48	**48"x48"**	**LANE ENDS RIGHT or LEFT**	**2**	**2**		**2**	**35**	**70**
W5-1-48	48"x48"	ROAD NARROWS					35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE					35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW					35	
W6-3-48	48"x48"	TWO WAY TRAFFIC					35	
W8-1-48	48"x48"	BUMP					35	
W8-3-48	48"x48"	PAVEMENT ENDS					35	
W8-7-48	48"x48"	LOOSE GRAVEL					35	
W8-11-48	48"x48"	UNEVEN LANES					35	
W8-12-48	48"x48"	NO CENTER LINE					35	
W8-17-48	48"x48"	SHOULDER DROP-OFF SYMBOL					35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY					35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or __ FT or _ MILE					35	
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or __ FT or _ MILE					35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY					35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL					35	
W12-2-48	48"x48"	LOW CLEARANCE					35	
W13-1P-30	30"x30"	__ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)					14	
W14-3-64	64"x48"	NO PASSING ZONE					28	
W16-2P-30	30"x24"	__ FEET PLAQUE (Mounted on warning sign post)					10	
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**3**	**3**		**3**	**35**	**105**
W20-2-48	48"x48"	DETOUR AHEAD or __ FT or _ MILE					35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT or _ MILE					35	
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**	**2**	**2**		**2**	**35**	**70**
W20-7-48	48"x48"	FLAGGER					35	
W20-8-18	18"x18"	STOP - SLOW PADDLE Back to Back					5	
W20-52P-54	54"x12"	NEXT __ MILES (Mounted on warning sign post)					12	
W21-1-48	48"x48"	WORKERS					35	
W21-2-48	48"x48"	FRESH OIL					35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or __ FT or _ MILE					35	
W21-5-48	48"x48"	SHOULDER WORK					35	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED					35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT or _ MILE					35	
W21-6-48	48"x48"	SURVEY CREW					35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT					35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY					35	
W21-52-48	48"x48"	PAVEMENT BREAKS					35	
W21-53-48	48"x48"	RUMBLE STRIPS AHEAD					35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK					35	

SPECIAL SIGNS

SPEC & CODE

704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	777

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO. 1	2		TOTAL QUANTITY
704-0100	FLAGGING	MHR				
704-1040	**ATTENUATION DEVICE-TYPE B-50**	EACH	**1**	**1**		**1**
704-1048	PORTABLE RUMBLE STRIPS	EACH				
704-1050	TYPE I BARRICADES	EACH				
704-1052	TYPE III BARRICADES	EACH				
704-1060	**DELINEATOR DRUMS**	EACH	**22**	**16**		**22**
704-1065	TRAFFIC CONES	EACH				
704-1067	**TUBULAR MARKERS**	EACH	**7**	**7**		**7**
704-1070	DELINEATOR	EACH				
704-1072	FLEXIBLE DELINEATORS	EACH				
704-1080	STACKABLE VERTICAL PANELS	EACH				
704-1081	VERTICAL PANELS - BACK TO BACK	EACH				
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH				
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH				
704-1087	**SEQUENCING ARROW PANEL - TYPE C**	EACH	**1**	**1**		**1**
704-1500	**OBLITERATION OF PVMT MK**	SF	**50**			**50**
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF				
704-3510	**PRECAST CONCRETE MED BARRIER - STATE FURNISHED**	EACH	**50**	**50**		**50**
762-0200	RAISED PAVEMENT MARKERS	EACH				
762-0420	**SHORT TERM 4IN LINE - TYPE R**	LF	**699**	**703**		**1402**
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF				

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-18.06 of the Design Manual.
http://www.dot.nd.gov/

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Traffic Control Devices List

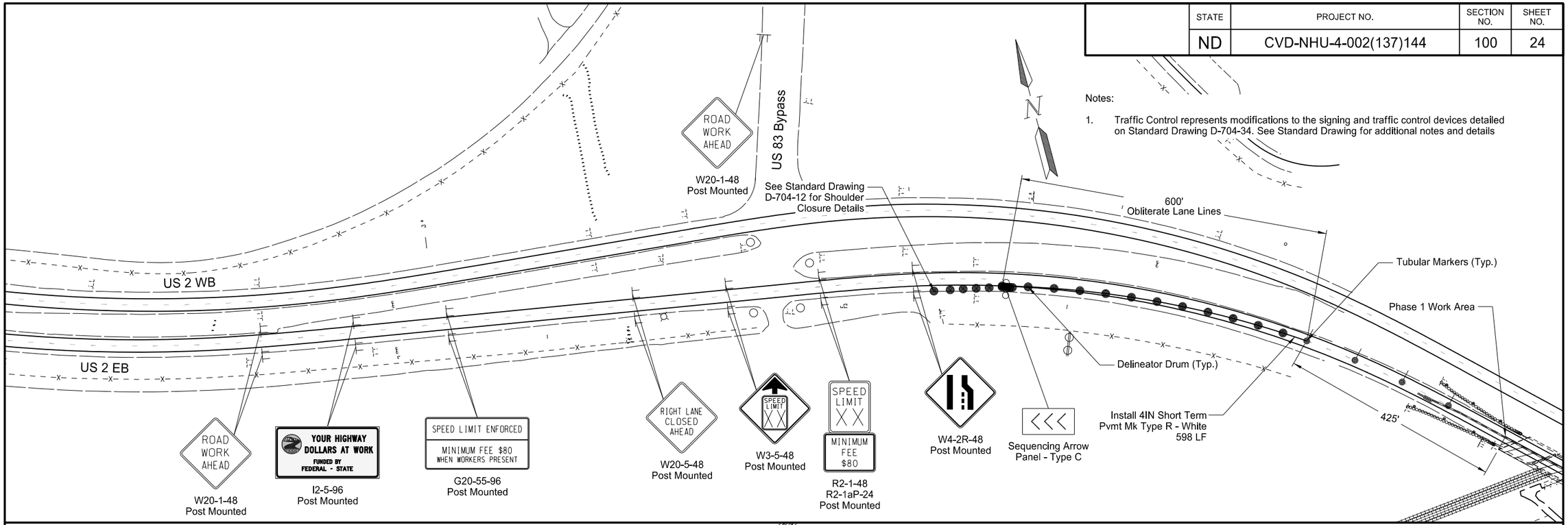
Burdick Expressway East - CP Rail Sep

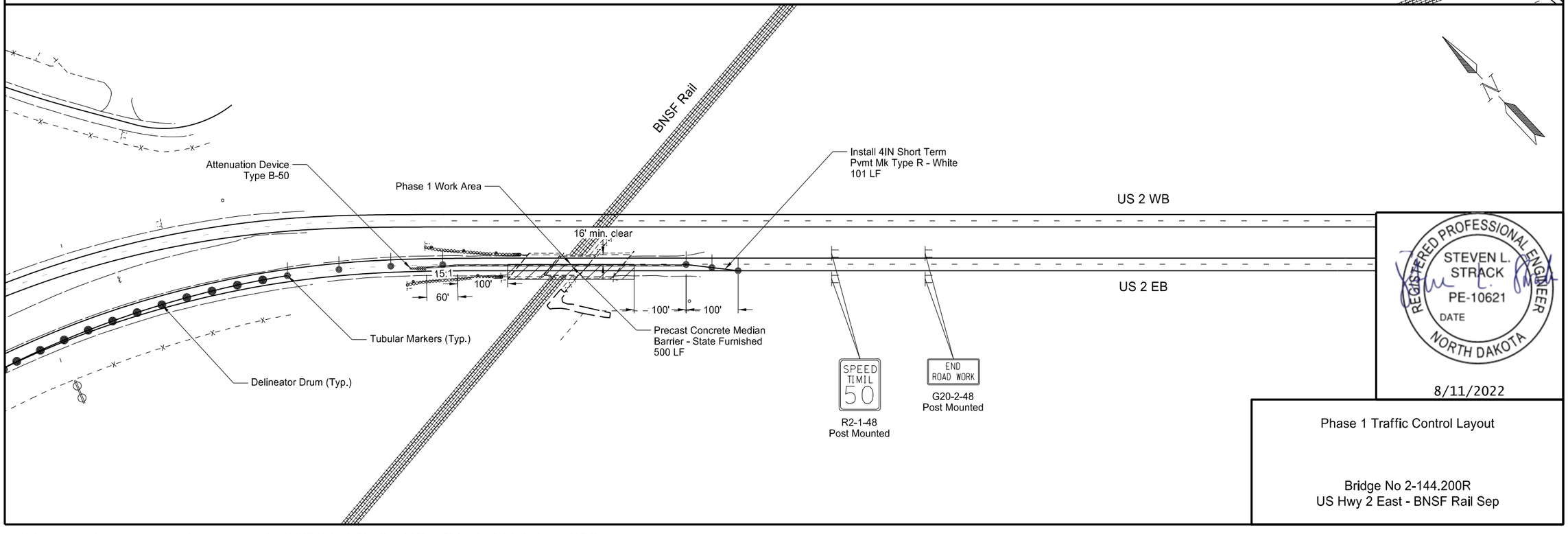
Minot, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(137)144	100	24

Notes:

1. Traffic Control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-34. See Standard Drawing for additional notes and details





REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

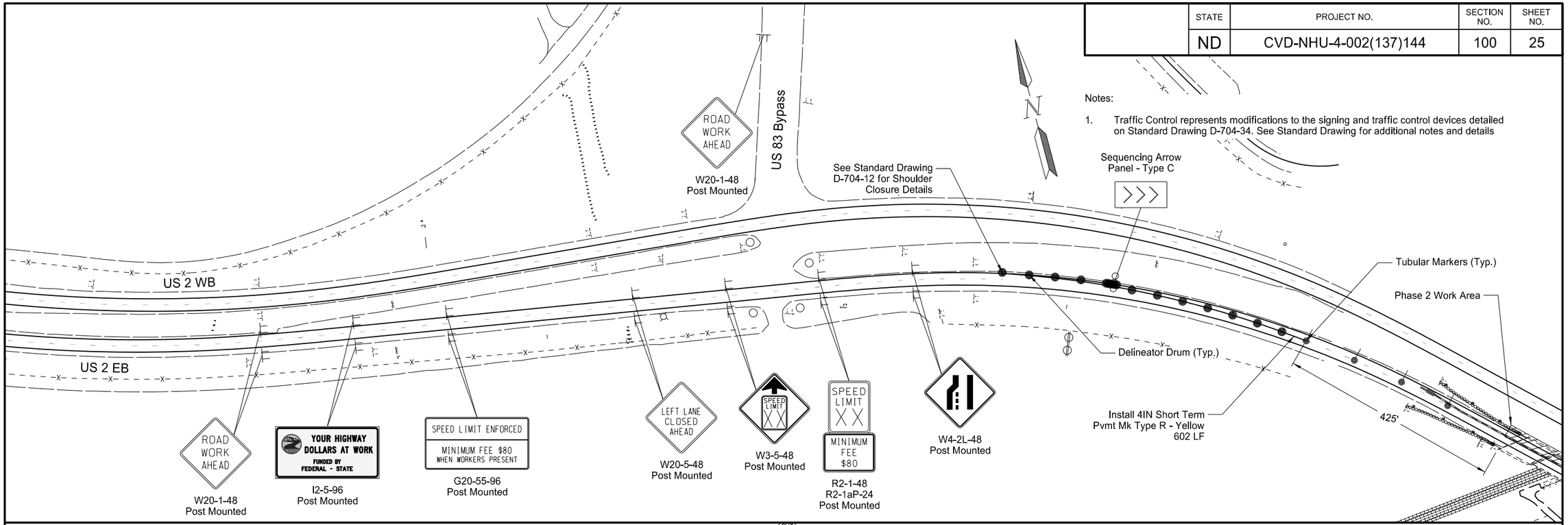
Phase 1 Traffic Control Layout

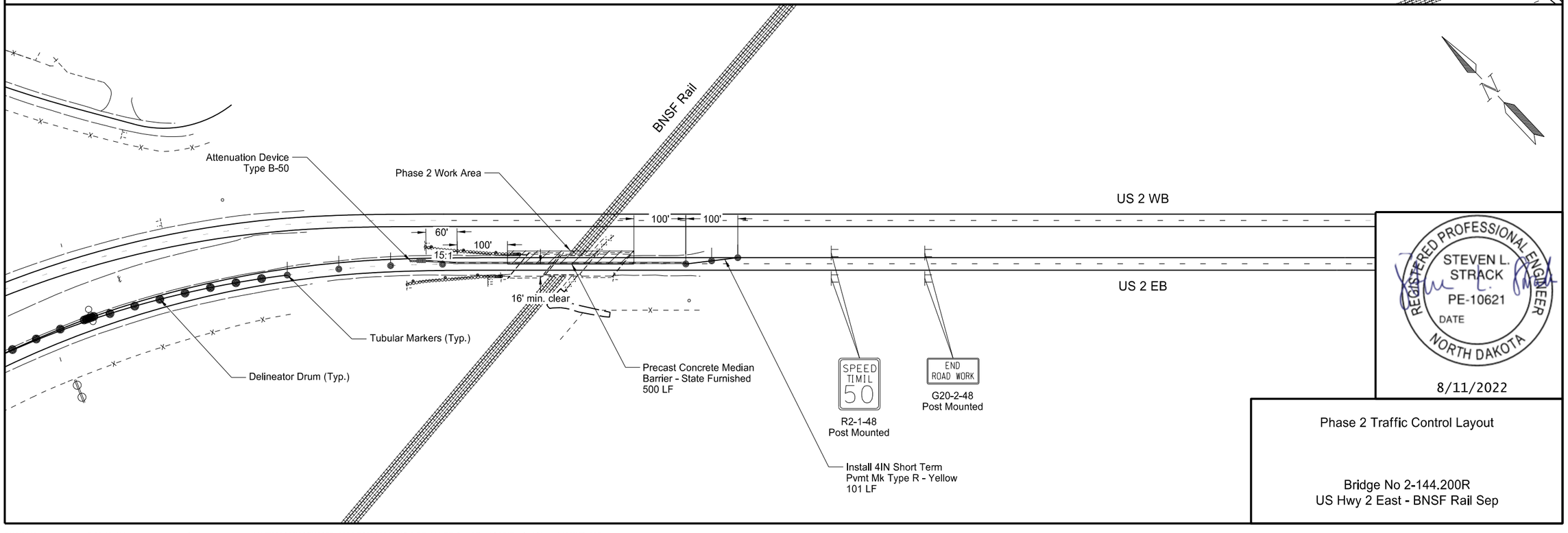
Bridge No 2-144.200R
US Hwy 2 East - BNSF Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(137)144	100	25

Notes:

1. Traffic Control represents modifications to the signing and traffic control devices detailed on Standard Drawing D-704-34. See Standard Drawing for additional notes and details





REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Phase 2 Traffic Control Layout

Bridge No 2-144.200R
US Hwy 2 East - BNSF Rail Sep

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	CVD-NHU-4-002(136)906	110	1

Station / RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	2nd LF	3rd LF	4th LF	Vert Clear-ance FT	Support Size	Max Post Len LF	Sleeve Length 1st LF	2nd LF	3rd LF	4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
Burdick Expressway																							
343+38.5 Lt		10		7.5					7.0														Mount on Light Standard
344+75.2 Rt		10		7.5					9.5														Mount on Light Standard
344+75.2 Rt		9		5.0					7.0														Mount on Light Standard
346+10.6 Lt		9		5.0					7.0														Mount on Light Standard
347+45.8 Rt		371	6.0						7.0														Mount on Light Standard
350+13.4 Rt		9		5.0					7.0														Mount on Light Standard
351+51.8 Lt		9		5.0					7.0														Mount on Light Standard
Sub Total			6.0	35.0		**Total**	0.0										**Total**	0.0		0	0	0	
Grand Total			**6.0**	**35.0**		**Total**	**0.0**										**Total**	**0**	**0**	**0**	**0**	**0**	

8/11/2022

Sign Summary
Perforated Tube

Burdick Expressway East - CP Rail Sep

Minot, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	110	2

N

N

SOO LINE RR

Sta. 343+38.5 - 26.2' Lt
Install new sign on light standard
Assembly No. 10

R2-1-30

SPEED LIMIT 30

Sta. 343+38.5 - 26.2' Lt
Romove sign

SPEED LIMIT 30

Sta. 346+10.6 - 26.3' Lt
Install new sign on light standard
Assembly No. 9

NO PARKING R8-3a-24

Sta. 346+10.6 - 26.3' Lt
Remove sign

NO PARKING

Access Road

343 344 345 346 347 348

E Burdick Expwy

SPEED LIMIT 30

NO PARKING

Sta. 344+75.2 - 27.0' Rt
Remove signs

SPEED LIMIT 30 R2-1-30

NO PARKING R8-3a-24

Sta. 344+75.2 - 27.0' Rt
Install new sign on light standard
Assembly Nos. 9 and 10

BUSINESS M4-3-24

2 M1-4-24

Sta. 347+45.8 - 26.9' Rt
Install new signs
on light standard
Assembly No. 371

BUSINESS

2

NO PARKING

Sta. 347+45.8 - 26.9' Rt
Remove signs

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Permanent Signing

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

5/10/2022 7:26:47 AM gcowing H:\JBN\3900\3950\3950_0299 PCN 22910 US 2 RP 906 Minot\CAD\Design\Sheets\0110SN_002_LSIGN.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	110	3

Sta. 348+80.4 - 26.5' Lt
Remove sign

NO PARKING

Sta. 351+51.8 - 26.6' Lt
Install new sign on light standard
Assembly No. 9

NO PARKING R8-3a-24

Sta. 351+51.8 - 26.6' Lt
Remove sign

NO PARKING

N

Access Road

348 349 350 351 352 353

E Burdick Expwy

SOO LINE RR

STATE FAIRGROUNDS

NO PARKING

Sta. 350+13.4 - 26.9' Rt
Remove signs

NO PARKING R8-3a-24

Sta. 350+13.4 - 26.9' Rt
Install new signs on light standard
Assembly No. 9

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Permanent Signing

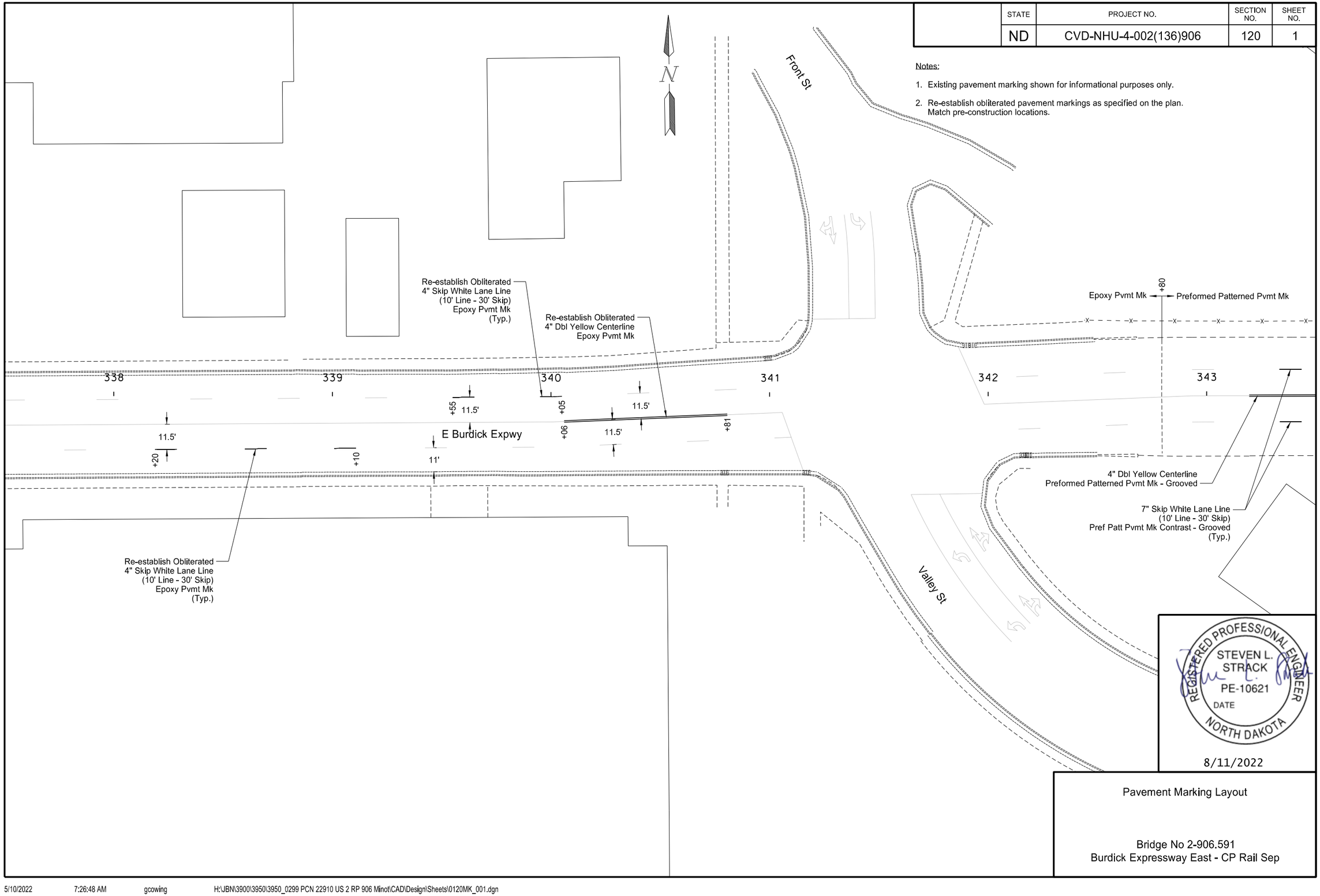
Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

5/10/2022 7:26:48 AM gcowing H:\JBN\3900\3950\3950_0299 PCN 22910 US 2 RP 906 Minot\CAD\Design\Sheets\0110SN_003_LSIGN.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	120	1

Notes:

1. Existing pavement marking shown for informational purposes only.
2. Re-establish obliterated pavement markings as specified on the plan. Match pre-construction locations.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

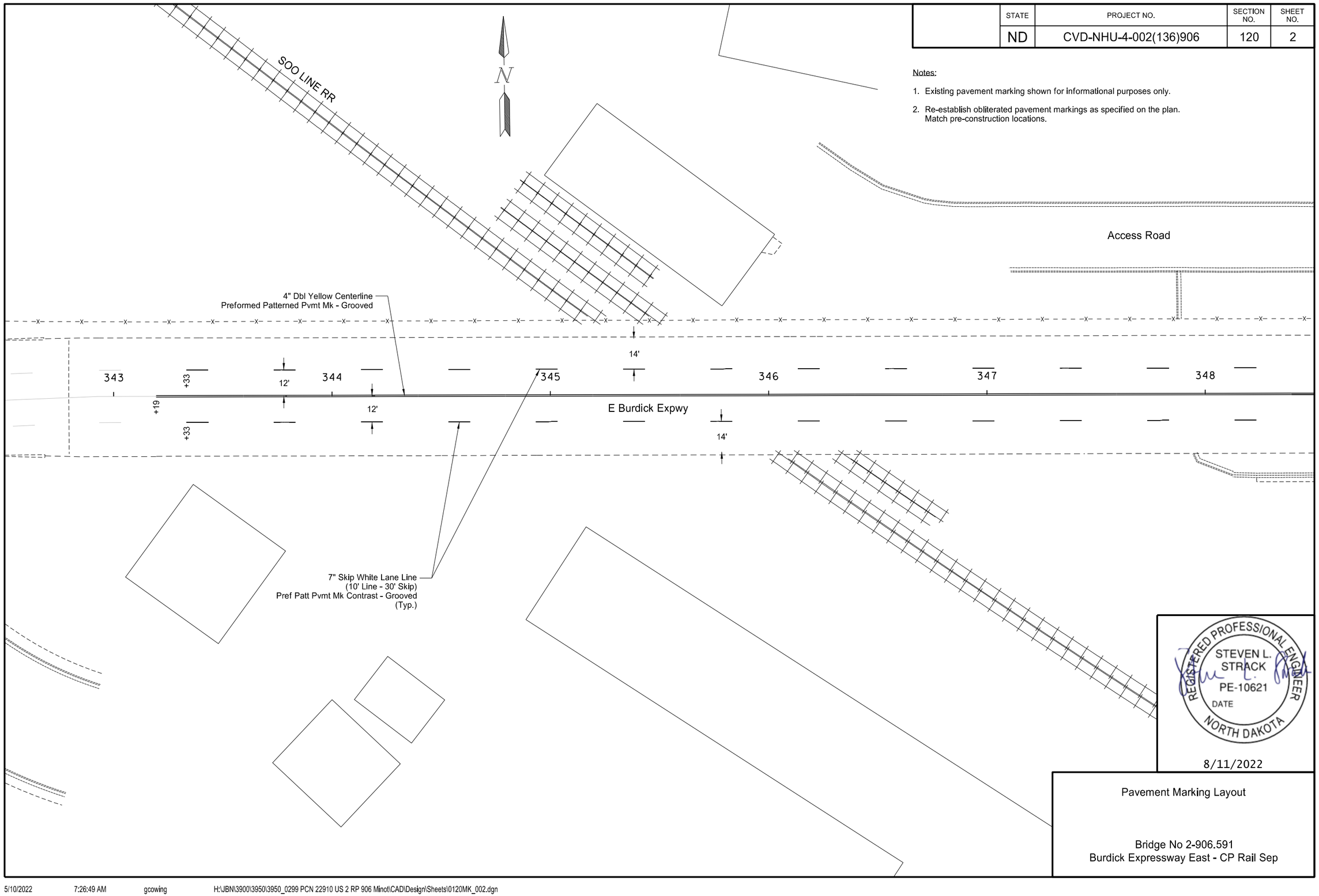
Pavement Marking Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	120	2

Notes:

1. Existing pavement marking shown for informational purposes only.
2. Re-establish obliterated pavement markings as specified on the plan. Match pre-construction locations.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Pavement Marking Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	120	3

N

Re-establish Obliterated
7" Skip White Lane Line
(10' Line - 30' Skip)
Pref Patt Pvmt Mk Contrast - Grooved
(Typ.)

Sta. 352+85
End Preformed Patterned Pvmt Mk - Grooved
Begin Preformed Patterned Pvmt Mk

Access Road

4" Dbl Yellow Centerline
Preformed Patterned Pvmt Mk - Grooved

4" Dbl Yellow Centerline
Preformed Patterned Pvmt Mk - Grooved

348 349 350 351 352 353

14' 12' 12' 14'

+88

E Burdick Expwy

7" Skip White Lane Line
(10' Line - 30' Skip)
Pref Patt Pvmt Mk Contrast - Grooved
(Typ.)

7" Skip White Lane Line
(10' Line - 30' Skip)
Pref Patt Pvmt Mk Contrast - Grooved
(Typ.)

Re-establish Obliterated
4" Dbl Yellow Centerline
Preformed Patterned Pvmt Mk

Re-establish Obliterated
7" Skip White Lane Line
(10' Line - 30' Skip)
Pref Patt Pvmt Mk Contrast - Grooved
(Typ.)

SOO LINE RR

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Notes:

1. Existing pavement marking shown for informational purposes only.
2. Re-establish obliterated pavement markings as specified on the plan. Match pre-construction locations.

Pavement Marking Layout

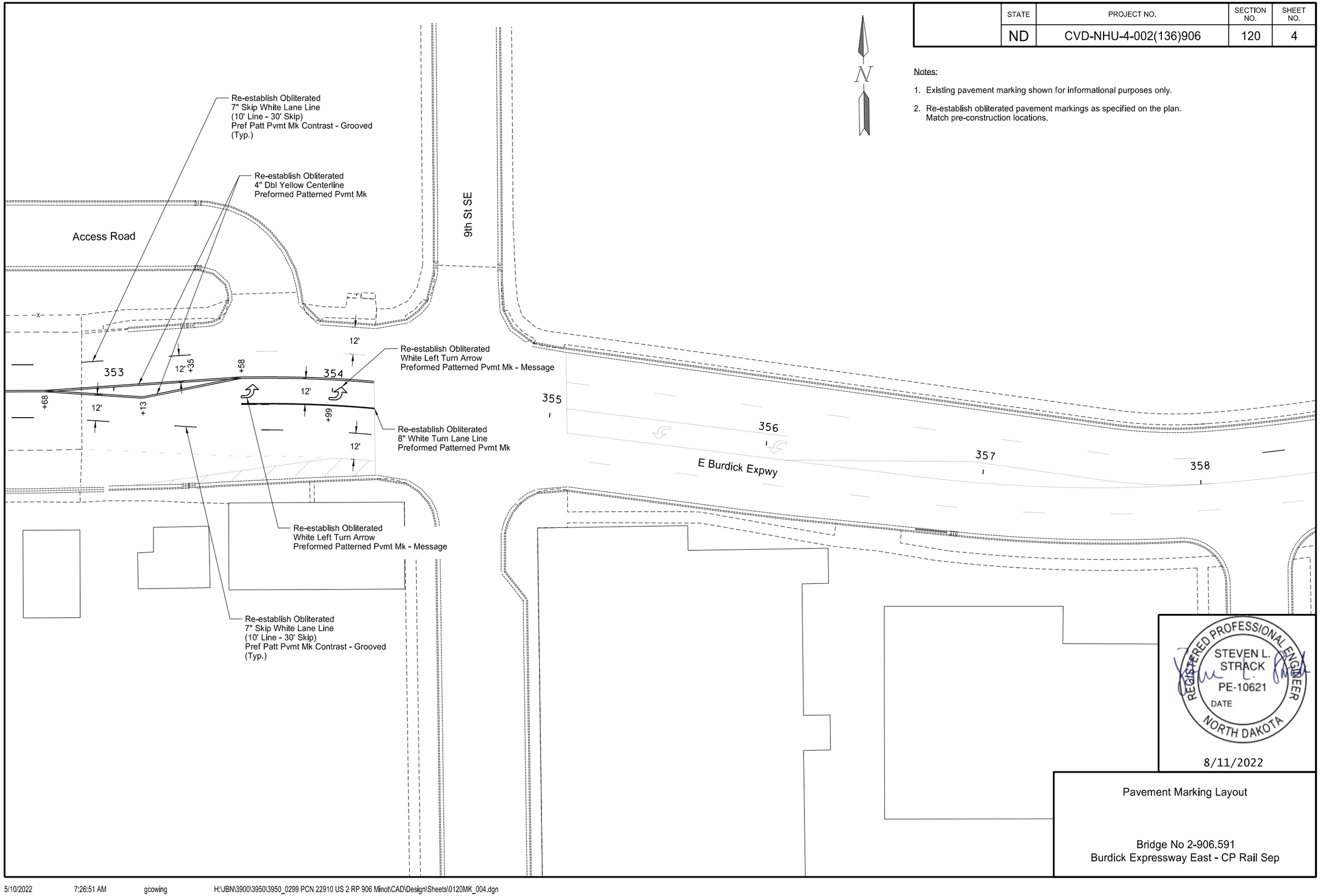
Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

5/10/2022 7:26:50 AM gcowing H:\JBN\3900\3950\3950_0299 PCN 22910 US 2 RP 906 Minot\CAD\Design\Sheets\0120MK_003.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	120	4

Notes:

1. Existing pavement marking shown for informational purposes only.
2. Re-establish obliterated pavement markings as specified on the plan. Match pre-construction locations.



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

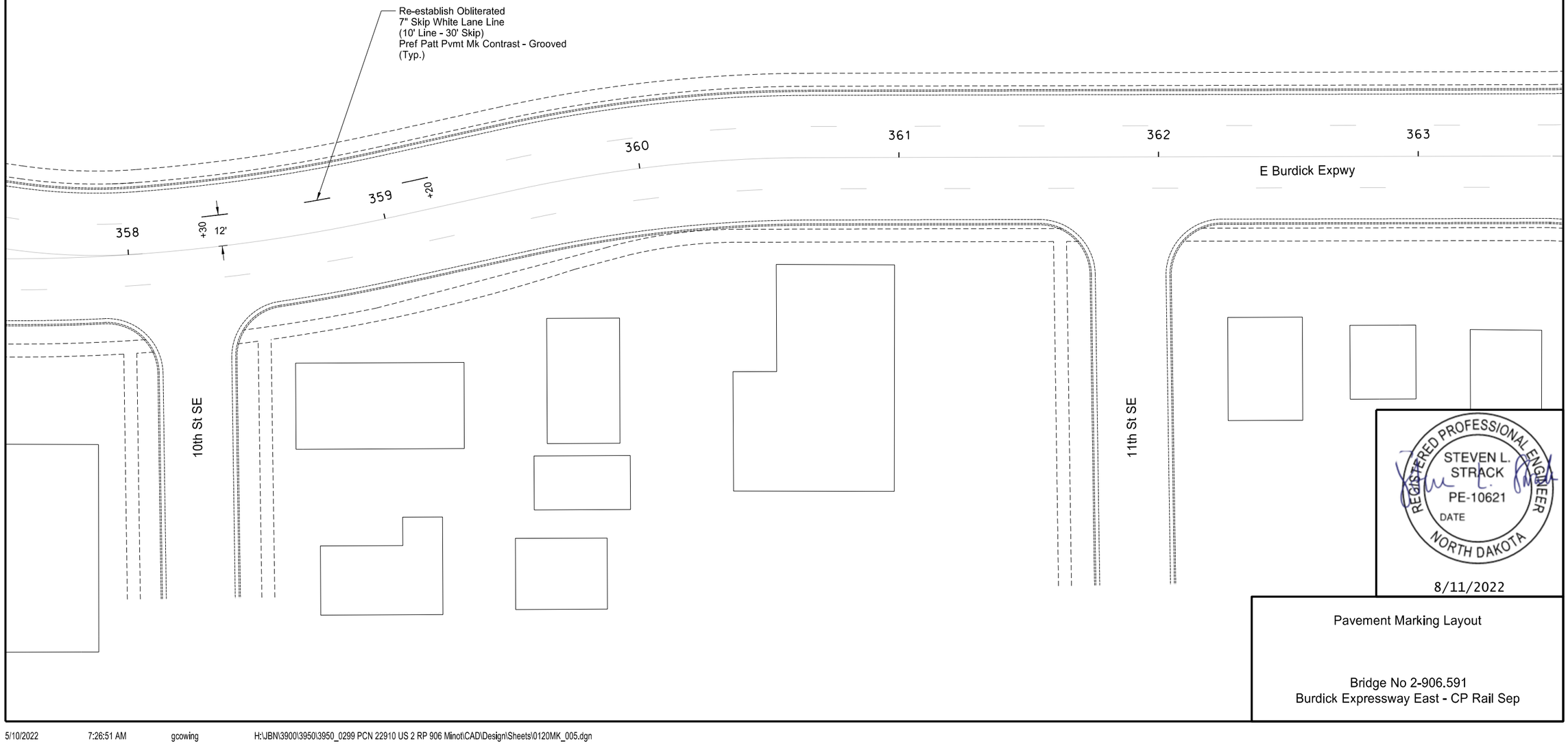
Pavement Marking Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	120	5

Notes:

1. Existing pavement marking shown for informational purposes only.
2. Re-establish obliterated pavement markings as specified on the plan. Match pre-construction locations.



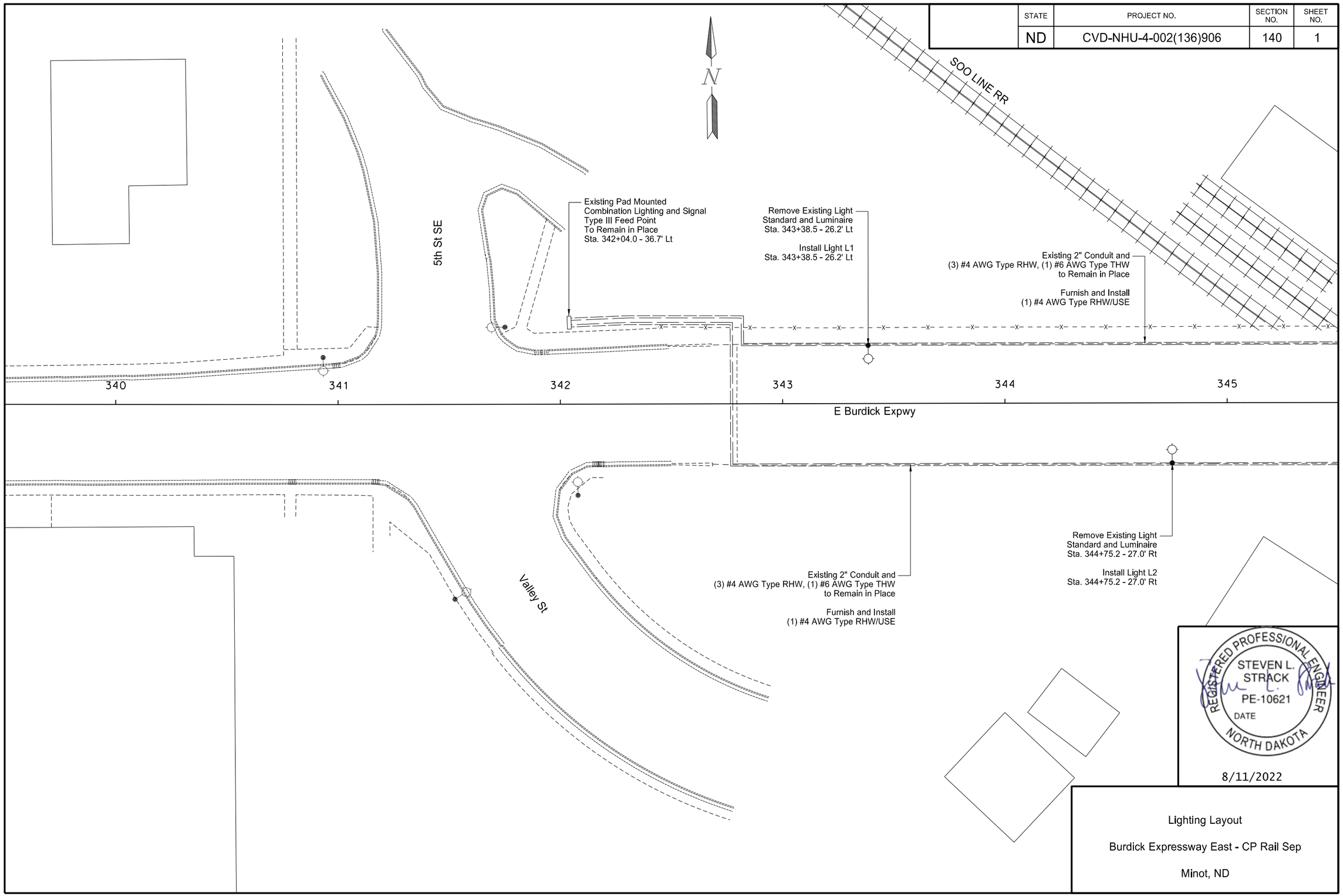
REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Pavement Marking Layout

Bridge No 2-906.591
Burdick Expressway East - CP Rail Sep

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	140	1



REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Lighting Layout

Burdick Expressway East - CP Rail Sep

Minot, ND

5/10/2022 7:26:52 AM gcowing H:\JBN\3900\3950\3950_0299 PCN 22910 US 2 RP 906 Minot\CAD\Design\Sheets\0140LT_001_LLIGHT.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	140	2

N

Existing 2" Conduit and
(3) #4 AWG Type RHW, (1) #6 AWG Type THW
to Remain in Place

Furnish and Install
(1) #4 AWG Type RHW/USE

Remove Existing Light
Standard and Luminaire
Sta. 348+80.4 - 26.5' Lt

Install Light L5
Sta. 348+80.4 - 26.5' Lt

Access Road

Remove Existing Light
Standard and Luminaire
Sta. 346+10.6 - 26.3' Lt

Install Light L3
Sta. 346+10.6 - 26.3' Lt

345 346 347 348 349 350

E Burdick Expwy

Remove Existing Light
Standard and Luminaire
Sta. 347+45.8 - 26.9' Rt

Install Light L4
Sta. 347+45.8 - 26.9' Rt

Existing 2" Conduit and
(3) #4 AWG Type RHW, (1) #6 AWG Type THW
to Remain in Place

Furnish and Install
(1) #4 AWG Type RHW/USE

SOO LINE RR

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Lighting Layout

Burdick Expressway East - CP Rail Sep

Minot, ND

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	140	3

Existing 2" Conduit and
(3) #4 AWG Type RHW, (1) #6 AWG Type THW
to Remain in Place

Furnish and Install
(1) #4 AWG Type RHW/USE

Remove Light Standard
and Luminaire
Sta. 351+51.8 - 26.6' Lt

Install Light L7
Sta. 351+51.8 - 26.6' Lt

N

Access Road

9th St SE

350 351 352 353 354 355

E Burdick Expwy

Remove Existing Light
Standard and Luminaire
Sta. 350+13.4 - 26.9' Rt

Install Light L6
Sta. 350+13.4 - 26.9' Rt

Existing 2" Conduit and
(3) #4 AWG Type RHW, (1) #6 AWG Type THW
to Remain in Place

Furnish and Install
(1) #4 AWG Type RHW/USE

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Lighting Layout

Burdick Expressway East - CP Rail Sep

Minot, ND

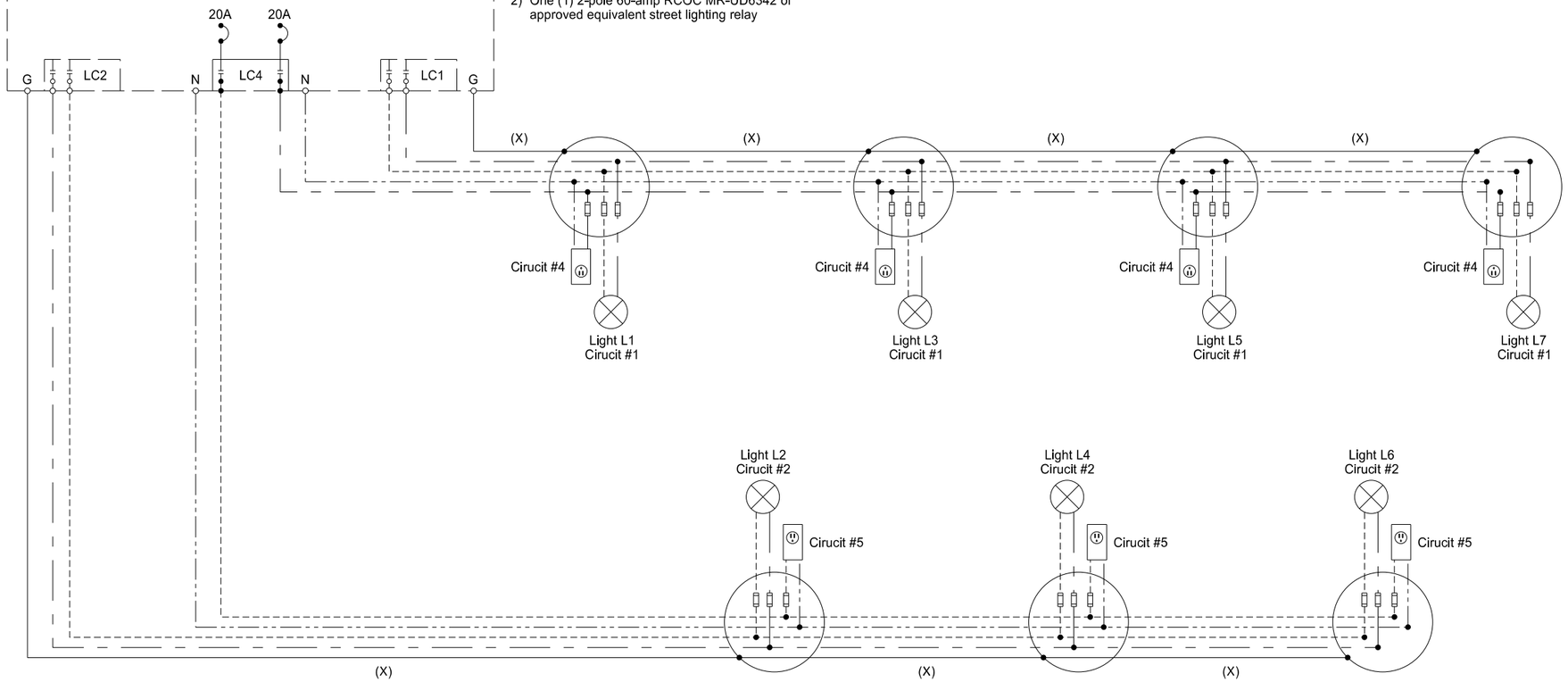
5/10/2022 7:26:54 AM gcowing H:\JBN\3900\3950\3950_0299 PCN 22910 US 2 RP 906 Minot\CAD\Design\Sheets\0140LT_003_LLIGHT.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	140	4

Existing Pad Mounted Combination Lighting and Signal Feed Point Type III

NE Corner of Burdick Expressway and Valley Street Intersection
Sta. 342+04.0 - 36.7' Lt

(Existing Lighting Circuit #3 and Traffic Signal Service Not Shown)



Feed Point Modifications

Furnish and install the following:

1) Two (2) 1-pole 20A circuit breakers
2) One (1) 2-pole 60-amp RCOC MR-UD6342 or approved equivalent street lighting relay

LEGEND

- LED Luminaire, 240 Volt
- Light Standard, Refer to Section 6 Notes
- Phase A Conductor
- Phase B Conductor
- Nuetral Conductor
- Equipment Ground Conductor
- In-Line Fuse, Refer to Specs
- Festoon GFI Receptacle
- (X) Existing (3) #4 AWG Type RHW, (1) #6 AWG Type THW; Furnish and Install (1) #4 AWG Type RHW/USE

Lighting Quantities (A)

	Remove Luminaire	Remove Light Standard	#4 AWG Type RHW/USE Conductor	LED Luminaire - Decorative	Light Standard - Decorative	Modify Existing Feed Point		Revise Lighting System
UNIT	EA	EA	LF	EA	EA	EA		EA
QTY	7	7	1832	7	7	1		1

(A) Quantities for informational purposes only. Provide all necessary for a fully operational system as shown in the plans. All to be included in the lump sum bid price for "Revise Lighting

REGISTERED PROFESSIONAL ENGINEER
STEVEN L. STRACK
PE-10621
DATE
NORTH DAKOTA

8/11/2022

Lighting Details

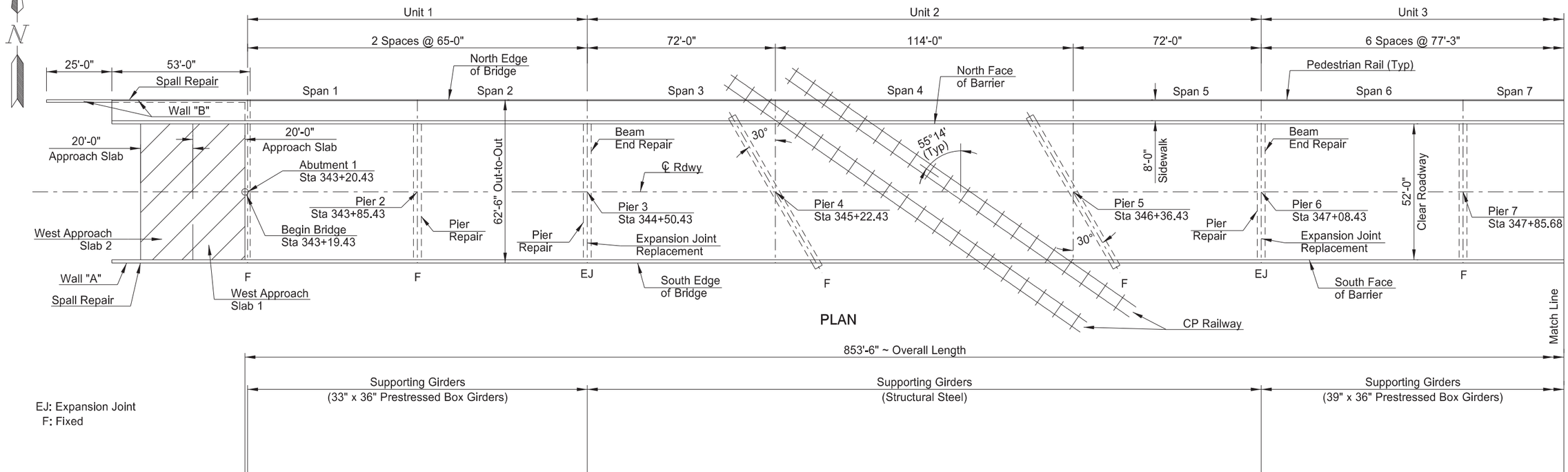
Burdick Expresswa East - CP Rail Sep

Minot, ND

Foam lift slabs approximately 3" @ end of first slab and begin second slab & taper to 0" @ begin bridge and end of second slab.
See Notes & DWG 2-906.591-35.

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	1

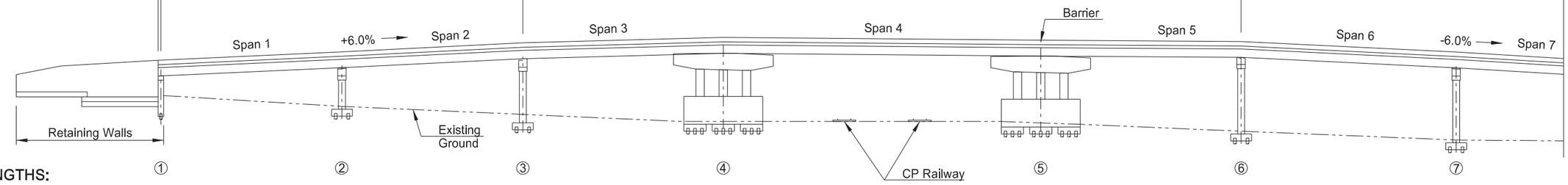


PLAN

853'-6" ~ Overall Length

Supporting Girders (33" x 36" Prestressed Box Girders)
Supporting Girders (Structural Steel)
Supporting Girders (39" x 36" Prestressed Box Girders)

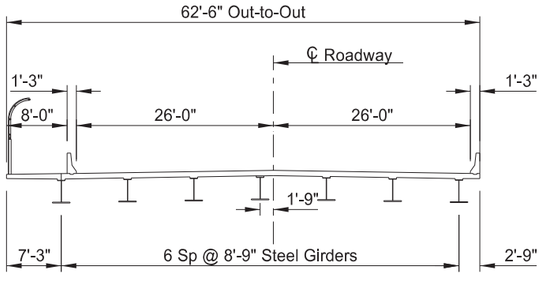
EJ: Expansion Joint
F: Fixed



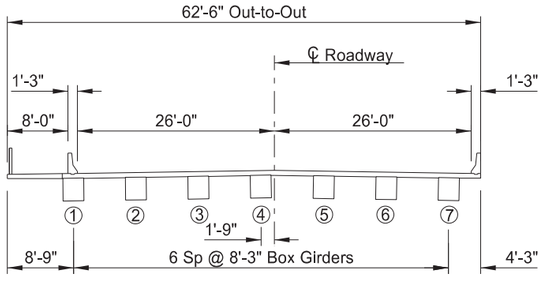
ELEVATION

DESIGN STRENGTHS:

f'c = 4,000 psi ~ Class AAE-3 Concrete
fy = 50,000 psi ~ Structural Steel
fy = 60,000 psi ~ Reinforcing Steel



(Looking East Unit 2)
TYPICAL SECTION



(Looking East Unit 1 & 3)
TYPICAL SECTION

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

SPECIAL PROVISIONS	
SP 233(20)	RAILROAD REQUIREMENTS CP
SP 513(20)	BRIDGE BEAM END REPAIR SELF CONSOLIDATING CONCRETE

MINOT, NORTH DAKOTA
BURDICK EXPRESSWAY EAST-CP RAIL SEP

STA 347+46.18

BRIDGE LAYOUT
SHEET 1 OF 2

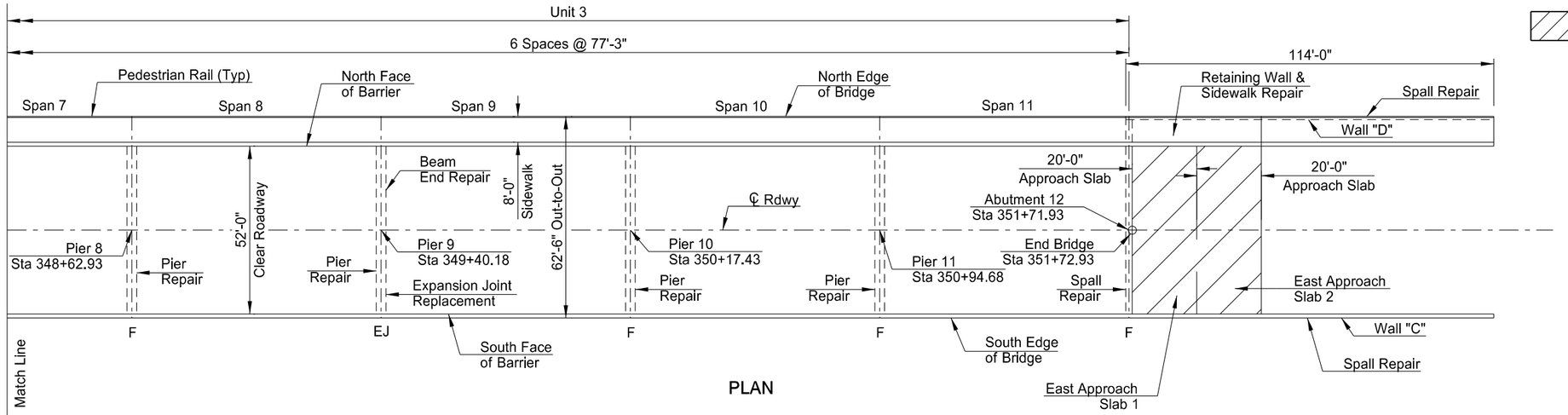
ND DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISION

Ketterling, Jonathan
08/12/22

DocuSign

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	2

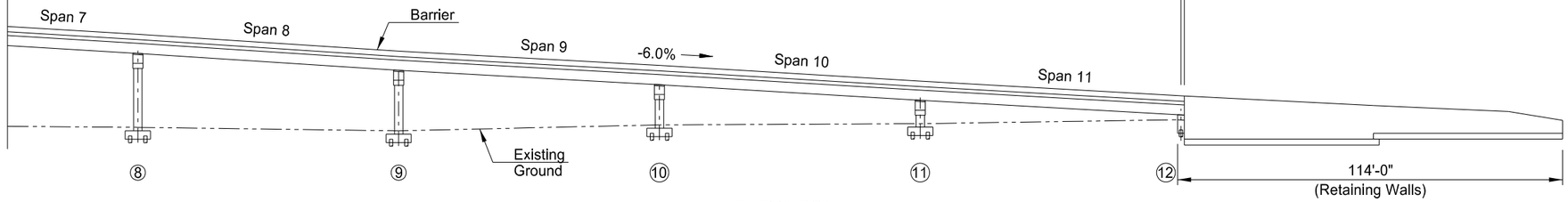


PLAN

Foam lift slabs approximately 3" @ end of first slab and begin second slab & taper to 0" @ end bridge and end of second slab.
See Notes & DWG 2-906.591-35.

N

EJ: Expansion Joint
F: Fixed



ELEVATION

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
107	0103	RAILWAY PROTECTION INSURANCE - SITE 1	L SUM	1
107	0141	RAILROAD COORDINATION - COMPANY A	L SUM	0.7
202	0111	REMOVAL OF CONCRETE	L SUM	1
602	0130	CLASS AAE-3 CONCRETE	CY	100.7
602	1250	PENETRATING WATER REPELLANT TREATMENT	SY	4,932
602	1260	BRIDGE DECK CRACK SEALING	LF	4,956
602	1300	BRIDGE DECK GROOVING	SF	40,776
602	7000	SPECIAL SURFACE FINISH	SF	32,930
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	6,569
616	5890	STRUCTURAL STEEL	L SUM	1
624	0119	REMOVE PEDESTRIAN RAILING	LF	1,039.8

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
624	0123	PEDESTRIAN RAILING	LF	901.3
624	0127	PEDESTRIAN SEMI CANOPY	LF	138.7
930	3631	POLYURETHANE FOAM	LBS	5,200
930	8680	EXPANSION JOINT STRIP SEAL	LF	164
930	9610	DECK SPALL REPAIR	SF	75
930	9612	SPALL REPAIR	SF	371.1
930	9620	PIER REPAIR	SF	179.3
930	9696	BEAM END REPAIR	EA	17
930	9930	ANTI-GRAFFITI COATING	SF	18,560
950	8673	EXPANSION JOINT MODIFICATION	LF	24

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

MINOT, NORTH DAKOTA
BURDICK EXPRESSWAY EAST-CP RAIL SEP

STA 347+46.18

BRIDGE LAYOUT
SHEET 2 OF 2

NOTES

100 SCOPE OF WORK: This project consists of but is not limited to concrete beam end repair, pier repair, barrier repair, spall repair, deck spall repair, retaining wall and sidewalk repair, joint replacement, bridge deck grooving, and replacement of the pedestrian railing and fence.

100 GENERAL: Include the cost of furnishing and placing preformed expansion joint filler, silicone sealant along the barriers, concrete inserts, rebar couplers, and other miscellaneous items in the price bid for Class AAE-3 Concrete.

100 PHASING: Complete all superstructure repair half of the bridge at a time.

105 WORK DRAWINGS: Submit work drawings for the Pedestrian Railing/Canopy, Expansion Joints, and Anti-Graffiti Coating to the Engineer for Review.

202 REMOVAL OF CONCRETE: Remove concrete in a manner that prevents any damage to the parts of the structure to remain. Any damage to the existing structure, conduit, or existing reinforcing steel that is to remain shall be repaired by the Contractor at their expense. Remove concrete with a max. 15lb. hammer size. Include the deck, diaphragm, and barrier removal at piers 3, 6, 9, as well as sidewalk, barrier, and retaining wall removal on the northwest retaining wall in the lump sum bid item, Removal of Concrete. Removed Concrete is the Contractor's property. Dispose of all removed concrete properly off of the right of way. Estimated quantity of concrete to be removed is 42 cu. yds.

In accordance with the Federal Migratory Bird Act, incorporate measures to prevent birds from building new nests or using old nests for active nesting into the project. Remove all nesting sites on the bridge. Remove any new bird nests on a weekly basis. Maintain these measures until the project completion. Include all costs associated with the removal of bird nests in the price bid for Removal of Concrete.

602 PIER DIAPHRAGM CONCRETE: Place pier diaphragm concrete with the deck.

602 PENETRATING WATER REPELLENT TREATMENT: Apply penetrating water repellent to the top of the bridge deck, top of approach slabs, front face and top of barriers, and tops of pier caps at piers 3, 6, and 9. Apply penetrating water repellent solution prior to sealing any bridge deck and approach slab cracks. Apply water repellent treatment to the deck after grooving, surface finishes, and grooved pavement markings have been installed and prior to switching traffic to the other side.

If water washing equipment is used for cleaning, provide either a water pressure washer with 160°F water at 1800 psi minimum nozzle pressure or a cold water pressure washer at 3,000 psi minimum nozzle pressure.

602 SPECIAL SURFACE FINISH: Remove loose existing Surface Finish D and reapply new Surface Finish D on all exposed surfaces of the outside edges of the deck, the underside of the deck outside of the exterior beams, all barrier surfaces, outside faces of the exterior beams, all piers and abutments, and all retaining walls.

Clean all areas before the surface finish is applied to the existing concrete by sandblasting or by another method approved by the engineer. Match the existing surface finish color and texture.

Include the costs for this work in the price bid for Special Surface Finish.

602 BRIDGE DECK CRACK SEALING: After the penetrating water repellent has been applied and is dry, the Engineer will perform a visual inspection of the bridge deck, approach slabs, barriers, and tops of pier caps at piers 3, 6, and 9 to determine the need for crack sealing. Repair all cracks designated by the Engineer at this time.

Perform a visual inspection of the bridge deck, approach slab surfaces, barriers, and tops of pier caps at piers 3, 6, and 9 and mark all visible cracks appearing on the top surface 0.007" or greater in width at its widest segment or as directed by the Engineer.

Immediately before applying the sealer, clean the cracks by removing all dust and debris with compressed air. Seal the cracks with a two-part epoxy in accordance with the manufacturer s recommendations. Chase crack with the sealant application to limits of crack, including those portions that are narrower than 0.007" wide. The epoxy sealer may be Paulco TE-2501 (Viking Paints, Inc.), Dural 50 LM (Euclid Chemical Co.), TK-9000 or TK-2110 (TK Products), or an approved equal. Include all work and materials associated with the deck, approach slab, barriers, and pier cap crack sealing in the bid item Bridge Deck Crack Sealing.

602 BRIDGE DECK GROOVING: Cut grooves in the driving surface of the existing deck per Section 602.04 D.3 of NDDOT Standard Specifications. Complete bridge deck grooving prior to applying Penetrating water repellent treatment. Include all work in the price bid for Bridge Deck Grooving.

624 PEDESTRIAN RAILING: Complete the removal of the existing pedestrian railing and erection of the new pedestrian railing and pedestrian semi-canopy between the dates of May 29, 2023 and August 18, 2023 so pedestrian access across the bridge can be maintained during months while school is in session.

930 PIER REPAIR: The bid item Pier Repair is for the saw cutting, removal, and replacement of all unsound concrete on the Pier columns, and caps. Restore the piers to their original cross section.

Saw cut the perimeter of the repair areas to a depth of 1". Remove all unsound concrete with a 15 pound maximum size chipping hammer. Remove concrete around the periphery of any exposed reinforcing steel to provide a minimum clearance behind the bar of ¼" plus the dimension of the maximum size aggregate of the repair material. Take care in the removal process to ensure no damage is done to the reinforcing steel.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA
8/11/2022

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	4

NOTES

Sand blast clean the existing concrete and exposed reinforcing steel. Clean the existing concrete surface by high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent.

Use a two component, polymer-modified, cementitious repair mortar material that is specifically intended for patching concrete and contains a corrosion inhibitor. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400 (BASF Corporation), or an approved equal repair mortar. Cure the material as recommended by the manufacturer.

The pier repair quantity is based on the assumption that area to be repaired is to the dimensions shown in plans. The actual limits of the repair are to be determined by the Engineer in the field. Include the costs for all labor, equipment and materials needed to repair each pier in the price bid for Pier Repair.

930 BEAM END REPAIR: See Beam Repair Details Sheet for the approximate repair areas of the prestressed beam ends. A quantity of 17 beam ends is anticipated with locations to be verified by the Engineer in the field. Additional repair areas may be identified after the existing deck and diaphragms are removed. The actual limits of the repair are to determined by the Engineer in the field. Complete beam end repair only on the half of the bridge that is not carrying traffic.

930 DECK SPALL REPAIR: The bridge deck and approach slabs have spall areas as shown. Construct the deck spall repair as a Bridge Deck Overlay meeting Section 650. The actual limits of the area to be repaired will be determined by the Engineer in the field.

Saw cut the perimeter of the repair area to a depth of 1”. Remove the concrete to a minimum depth of 2”. Include the saw cutting and all material labor and equipment required to remove the concrete and repair the deck and approach slab spall areas in the bid item Deck Spall Repair.

930 SPALL REPAIR: The bid item Spall Repair is for the saw cutting, removal, and replacement of the unsound concrete on the concrete barriers, bottom of deck, diaphragms on pier 10, and abutment 12, and the retaining walls. Restore the spalled areas to their original cross section.

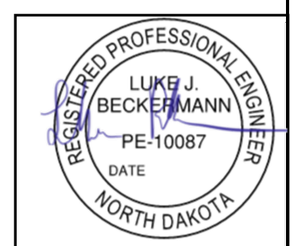
Saw cut the perimeter of the repair areas to a depth of 1”. Remove all unsound concrete with a 15 pound maximum size chipping hammer. Remove concrete around the periphery of any exposed reinforcing steel to provide a minimum clearance behind the bar of ¼” plus the dimension of the maximum size aggregate of the repair material. Take care in the removal process to ensure no damage is done to the reinforcing steel.

Sand blast clean the existing concrete and exposed reinforcing steel. Repair any damaged epoxy coating on the reinforcing steel according to Section 612.04E. Clean the existing concrete surface by high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent that includes a migratory corrosion inhibitor. The bonding agent and corrosion inhibitor may be Sika FerroGard 903 (Sika Corp.), Tamms Duralprep A.C., Pro-Poxy 204 (Unitex) or an approved equal.

Use a two component, polymer-modified, cementitious repair mortar material that is specifically intended for patching concrete and contains a corrosion inhibitor. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400 (BASF Corporation), or an approved equal repair mortar. Cure the material as recommended by the manufacturer.

The spall repair quantity is based on the assumption that area to be repaired is to the dimensions shown in plans. The actual limits of the repair are to be determined by the Engineer in the field. Include the costs of all labor, equipment, and materials needed for spall repair in the price bid for Spall Repair. Dispose of all removed concrete properly off of the right of way.

930 SILICONE SEALANT: Remove and replace the silicone sealant in the designated approach slab joints. Clean the joint of all foreign material and sand blast before the new silicone sealant is installed. Extend the silicone sealant 3" up the front face of the barrier. Include all materials, labor, and equipment required to remove and replace the silicone sealant in the bid item Polyurethane Foam.



8/11/2022

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	5

NOTES

930 POLYURETHANE FOAM: This work consists of lifting and leveling the existing concrete bridge approach slabs by a polyurethane foam system. Lift and level the concrete slabs by drilling injection holes and injecting polymer. Verify elevations to control lift of slabs. Cleanup as directed by the Engineer.

Provide a water-blown, hydrophobic, closed cell, high-density polyurethane medium to lift and level the approach slabs. Provide material meeting the following physical characteristics and properties:

Density, Lb/Cu Ft (ASTM 1622)	Compressive Strength (ASTM 1621)
3.0	40 psi
3.5	50 psi
4.0	60 psi
6.0	110 psi

Provide a polyurethane foam system with a free-rise density of 3.0 -3.2 lb/ft3, a minimum compressive strength of 40 psi, and a foam density that increases during expansion that is above the original free-rise density value.

Provide a high-density formulation that reaches 90% of full compressive strength within 15 minutes of injection, at which time the Contractor may allow traffic on the treated areas, as approved by the Engineer.

Submit to the Engineer the manufacturer's certification stating that all materials and methods meet requirements. Transfer and submit all warranties and guarantees to the Department upon acceptance by the Engineer.
Submit a list of the lifting and undersealing equipment to the Engineer for review. The minimum list of equipment required is listed below. This list does not preclude the use of additional equipment.

a. A pneumatic drill or an electric drill capable of drilling 5/8-inch diameter holes to the required depths.

b. A truck-mounted pumping unit capable of injecting the high-density polyurethane formulation between the concrete pavement and the underlying surface. Provide a pumping unit, equipped with a dial gauge in increments of 45 grams (1/10 pound), capable of controlling the rate of flow of the material as well as the rise of the pavement.

c. A laser leveling unit to ensure that the concrete is raised to an even plane and to the required elevations.

Seal and protect all stored materials from contamination of dust or any foreign material.

Prior experience using high-density polyurethane to raise and underseal concrete slabs is required.

Drill a series of 5/8 inch holes at the locations required for the proper raising of the surface. Determine the exact locations and spacing required. Calibrate the pumping unit daily, or at the Engineer s request, to ensure consistent accuracy of injected material.

Inject high-density polyurethane formulation under the slab. Control the amount of rise, using the pumping unit, by regulating the rate of injection of the raising/undersealing polymer. When the nozzle is removed from the hole, remove any excessive polyurethane material from the area and seal the hole with a non-expansive cementitious grout. Dispose of all removed material in an environmentally acceptable manner conforming to Federal, State and local regulations. Final elevations are to be within ¼" of the elevations proposed by profile. A tight string line may be used to monitor and verify elevations for slab lengths of 50 feet or less. For longer sections, a laser level will be used to monitor and verify elevations. The Contractor is responsible for any pavement blowouts or excessive pavement lifting which may result from the process, and will repair the damaged area to the satisfaction of the Engineer without additional cost.

Do not raise the slab more than ¼" while pumping in any one hole at any one time. Grind pavement areas to grade that are raised above specified tolerances. If over jacking is greater than 0.10 feet, full-depth removal and replacement of the affected area is required, at no cost to the Department.

The price bid for the item Polyurethane Foam includes full compensation for furnishing all labor, supervision, materials, tools, equipment, and incidentals for all work called for in this note. Daily material usage will be verified by the Engineer and the Contractor and reported on a field production report.

930 ANTI-GRAFFITI COATING: Apply an anti-graffiti coating to all pier surfaces including all pier cap surfaces, where the bottom of pier cap less than 15' above the finished grade, and all pier surfaces up to the bottom of the pier cap, where the bottom of pier cap is more than 15' above the finished grade, as well as all abutment, retaining wall, and barrier surfaces. Provide an anti-graffiti coating compatible with special surface finish. Use a clear, multi-coat coat system designed for exterior architectural concrete surfaces. Use a non-yellowing and UV-resistant product that does not require reapplication after graffiti removal. Use a product with bio-degradable, non-toxic, and non-flammable graffiti removal agents that do not mar, shadow, or alter the existing appearance of the concrete following application. Use a product that leaves no traces of graffiti following removal. Submit the anti-graffiti coating to the engineer for approval. Include all costs associated with applying anti-graffiti coating in the price bid for Anti-Graffiti Coating.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA
8/11/2022

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	6

NOTES

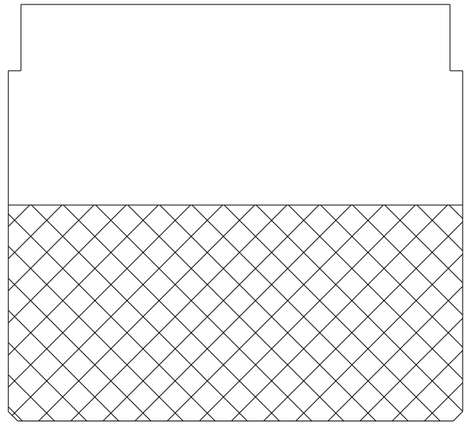
950 EXPANSION JOINT MODIFICATION: Use a pre-compressed polymer impregnated polyurethane foam expansion joint seal coated with a highway-grade silicone surface providing a permanent weather tight seal. Use a compatible two-component epoxy adhesive on the expansion joint seal for bonding. The joint seal may be Wabo FS Bridge Seal (Watson Bowman Acme); BEJS Bridge Expansion Joint System (Emseal); Iso-Flex Silfast XL (LymTal International), or an approved equal. Prepare existing joint opening and install the joint seal according to the manufacturer's recommendations. The quantity of expansion joint modification includes an additional 6 inches of joint seal at each end to be turned up vertically matching the inside face of the barrier. Include all work and materials associated with the expansion joint seal installation in the bid item Expansion Joint Modification.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA
8/11/2022

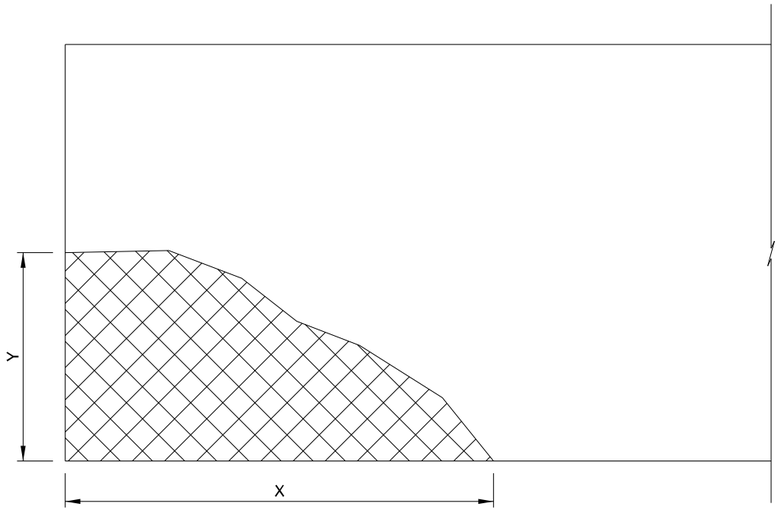
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	7

Indicates Beam End Repair Area.

NOTE:
All areas to be verified by Engineer in the field prior to removal.



END VIEW



PART BEAM ELEVATION

BEAM END REPAIR DETAILS

Beam End Repair Locations					
Span	Beam #	End	At Pier	X (ft)	Y (ft)
2	1	East	Pier 3	1.5	1.5
2	2	East	Pier 3	1.5	1.5
2	3	East	Pier 3	1.5	1.5
2	5	East	Pier 3	1.5	1.5
2	6	East	Pier 3	4	1
2	7	East	Pier 3	8.5	2
6	1	West	Pier 6	5	1
6	7	West	Pier 6	7	1

Beam End Repair Locations					
Span	Beam #	End	At Pier	X (ft)	Y (ft)
8	1	East	Pier 9	5	2
8	4	East	Pier 9	1	0.5
8	7	East	Pier 9	1	0.5
9	1	West	Pier 9	4	1.5
9	2	West	Pier 9	3	1
9	3	West	Pier 9	3	1
9	4	West	Pier 9	3.5	1
9	5	West	Pier 9	1.5	1
9	7	West	Pier 9	3	1.5

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

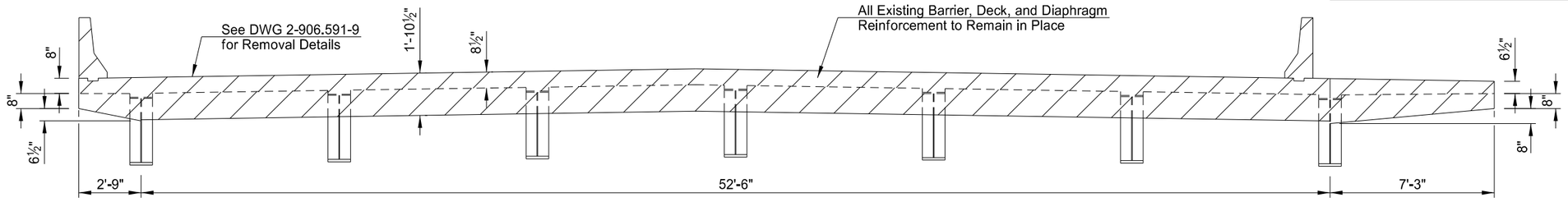
8/11/2022

QUANTITIES	
BEAM END REPAIR	17 EA

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT

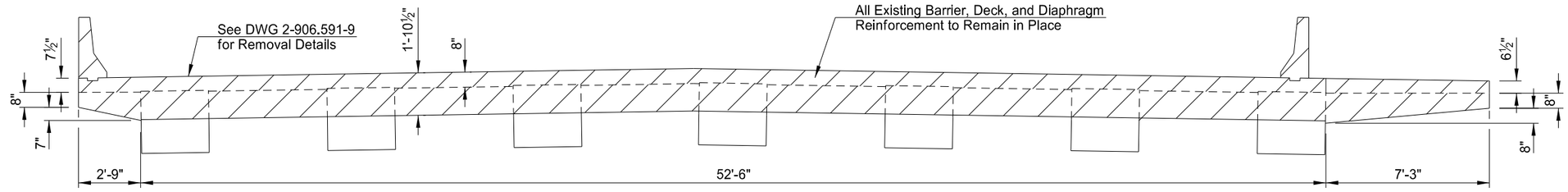
BEAM REPAIR DETAILS

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	8



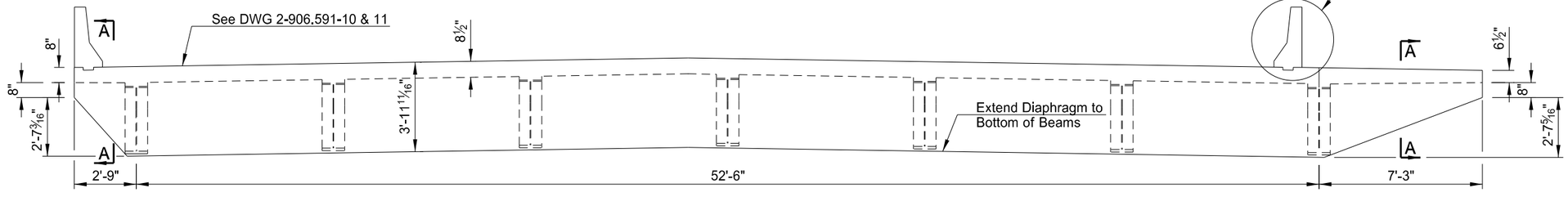
EXISTING ELEVATION AT EXPANSION JOINT

Pier 3, Facing East
Pier 6, Facing West



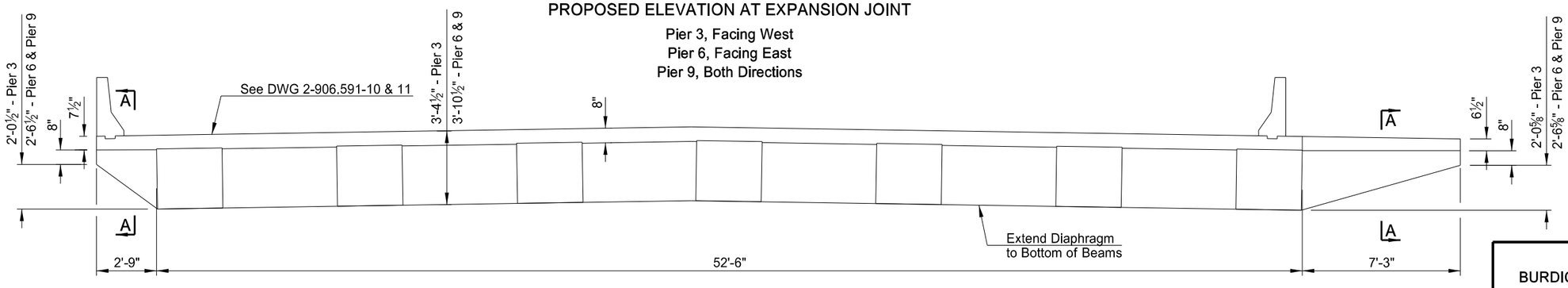
EXISTING ELEVATION AT EXPANSION JOINT

Pier 3, Facing West
Pier 6, Facing East
Pier 9, Both Directions



PROPOSED ELEVATION AT EXPANSION JOINT

Pier 3, Facing West
Pier 6, Facing East
Pier 9, Both Directions



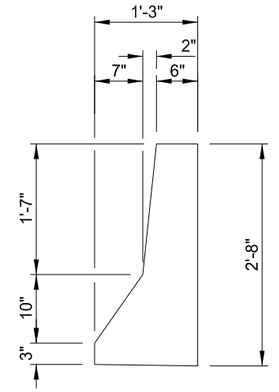
PROPOSED ELEVATION AT EXPANSION JOINT

Pier 3, Facing West ~ Pier 6, Facing East ~ Pier 9, Both Directions

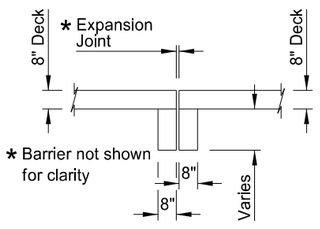
Hatched area indicates concrete to be removed.

NOTES:

Hatched areas indicate concrete to be removed. Saw cut the deck and concrete barrier to a depth of 1" to produce a neat line between the concrete to remain. Take care to ensure no damage is done to the reinforcing steel that is to remain in place.



BARRIER DETAIL



A-A

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

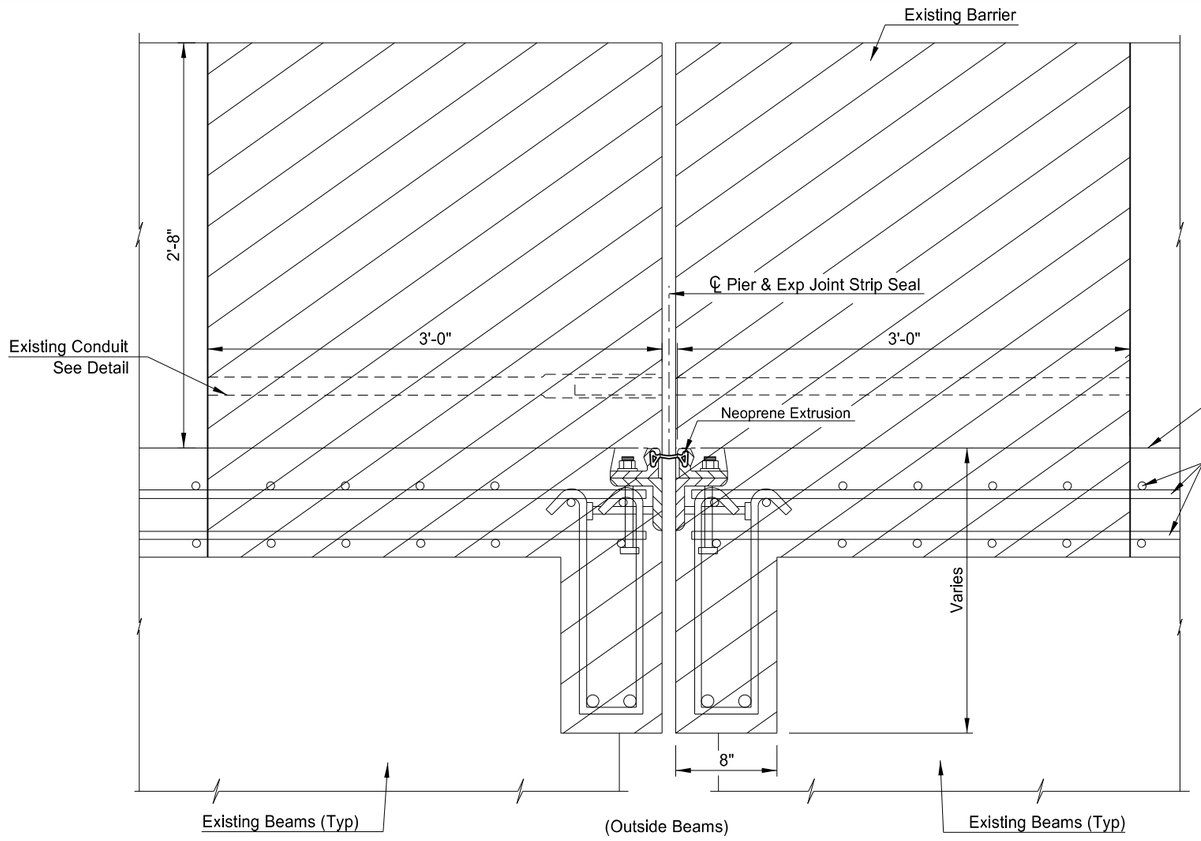
BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

DECK SECTION REMOVAL AND REPAIR DETAILS

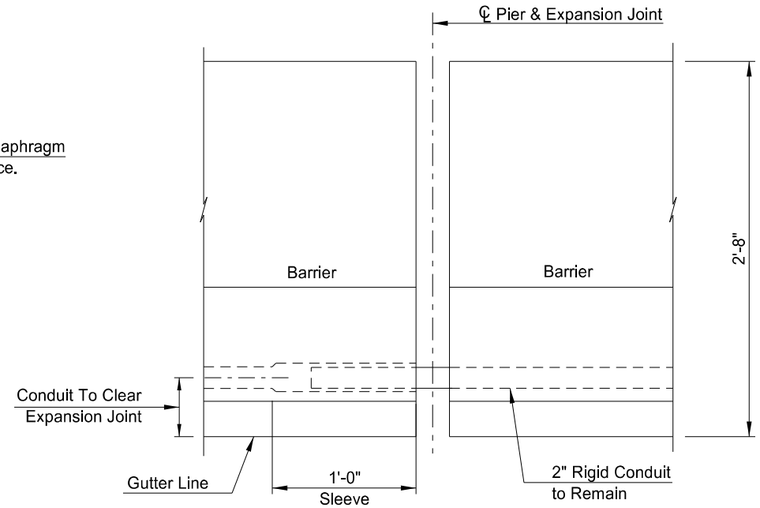
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	9

23 U.S.C. 409
NDDOT Reserves All Objections

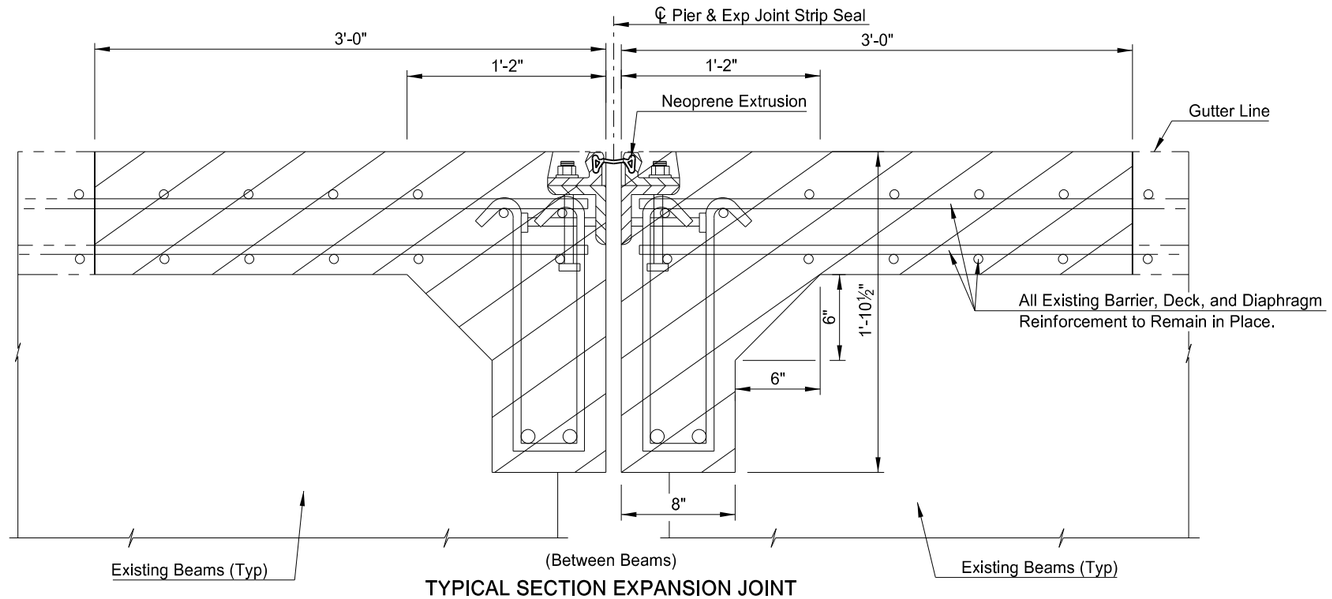


TYPICAL SECTION EXPANSION JOINT

Hatched area indicates concrete to be removed.



CONDUIT SLEEVE DETAIL



TYPICAL SECTION EXPANSION JOINT

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

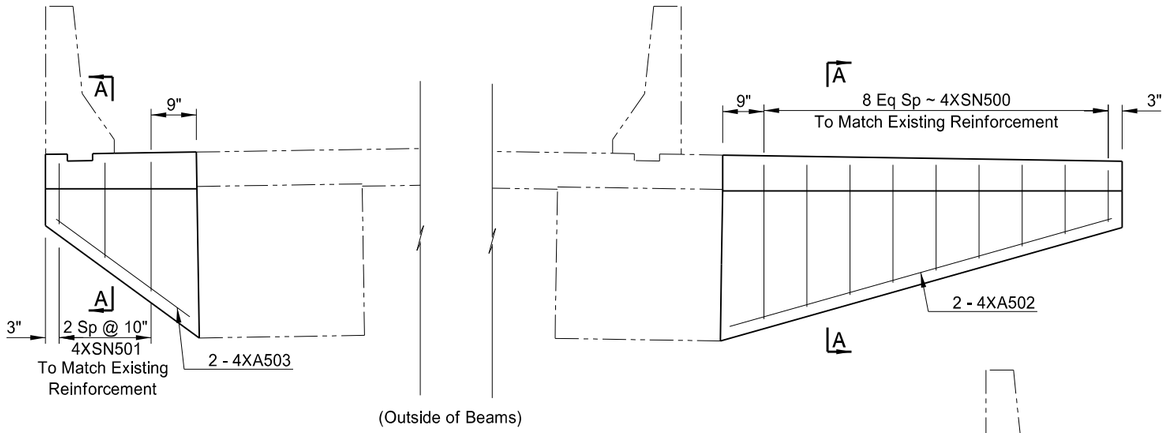
DECK, DIAPHRAGM, AND BARRIER REMOVAL DETAILS

23 U.S.C. 409
NDDOT Reserves All Objections

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	10

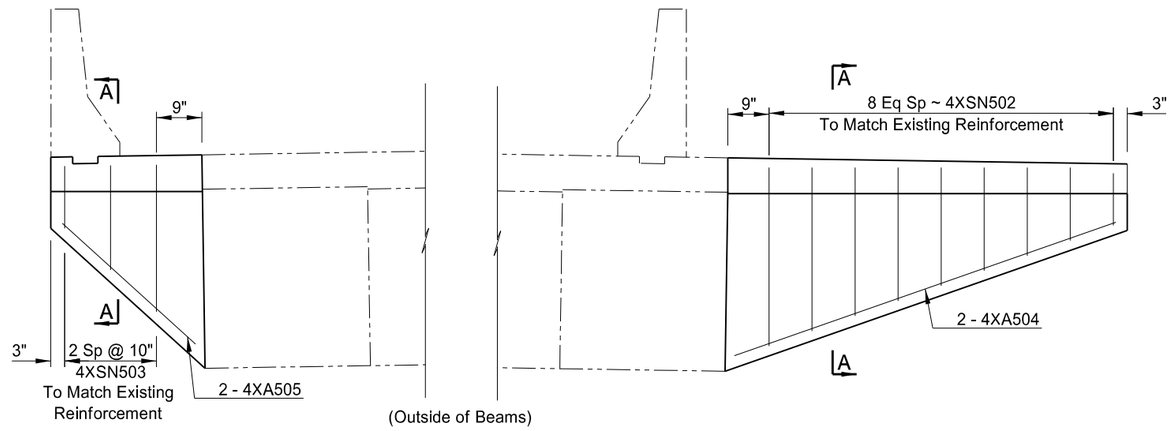
NOTE:

All Existing Barrier, Deck, and Diaphragm Reinforcement to Remain in Place.



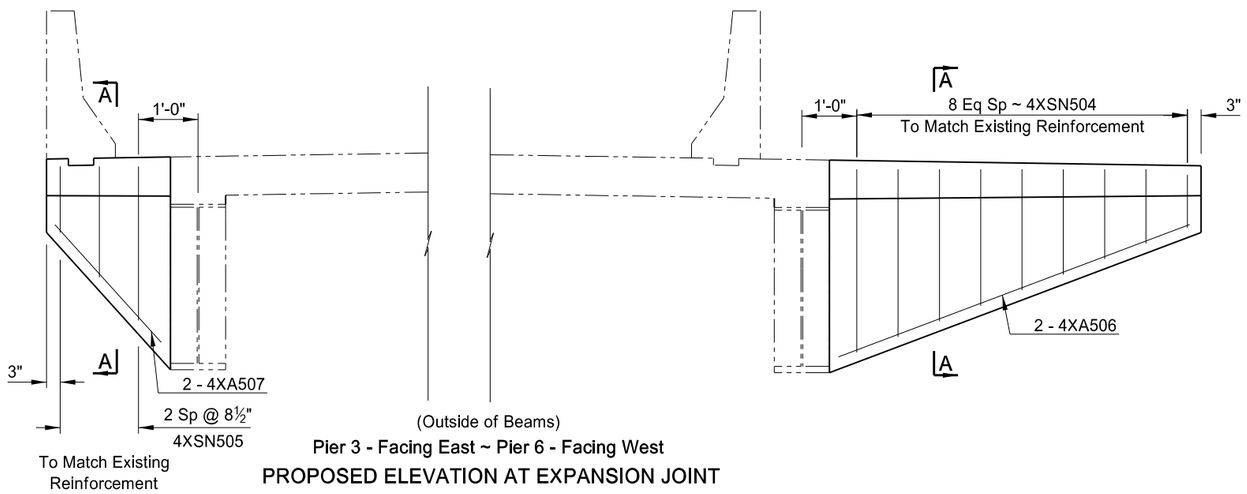
Pier 3 - Facing West

PROPOSED ELEVATION AT EXPANSION JOINT



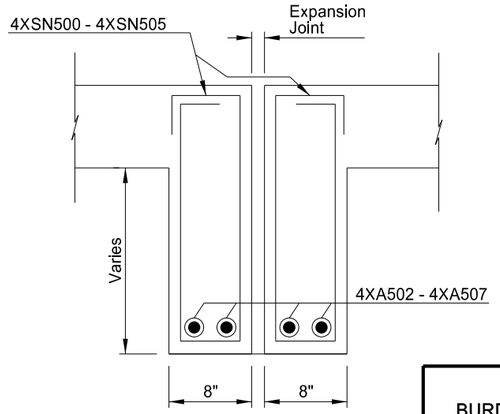
Pier 6 - Facing East ~ Pier 9 - Both Directions

PROPOSED ELEVATION AT EXPANSION JOINT



Pier 3 - Facing East ~ Pier 6 - Facing West

PROPOSED ELEVATION AT EXPANSION JOINT



(Barriers not shown for clarity)
(Outside of Beams)

A-A

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

BURDICK EXPRESSWAY EAST-CP RAIL SEP

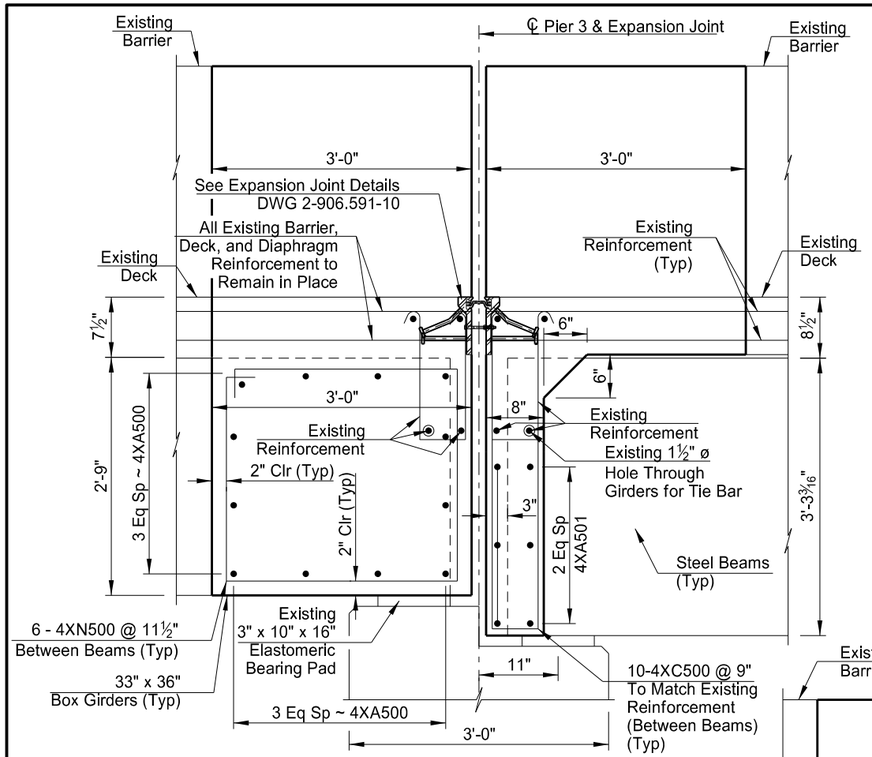
MINOT

DECK, DIAPHRAGM, AND BARRIER REPAIR DETAILS

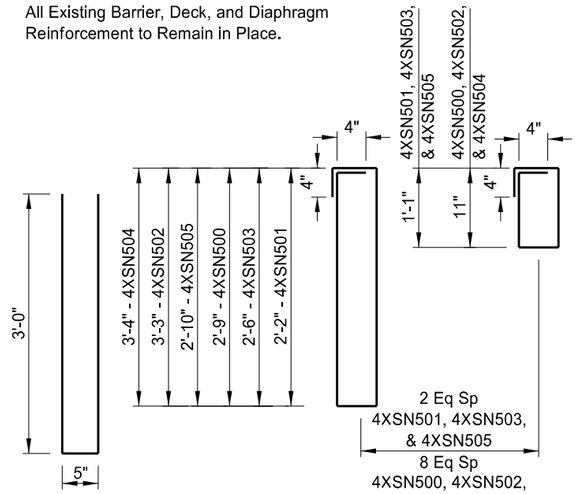
23 U.S.C. 409
NDDOT Reserves All Objections

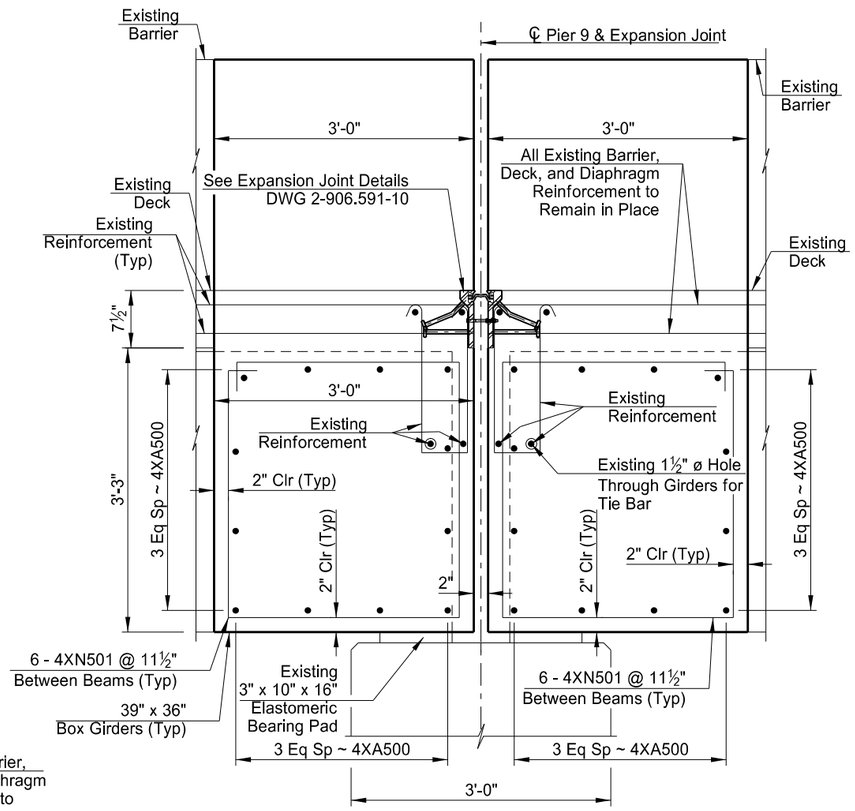
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	11

NOTE:
All Existing Barrier, Deck, and Diaphragm Reinforcement to Remain in Place.



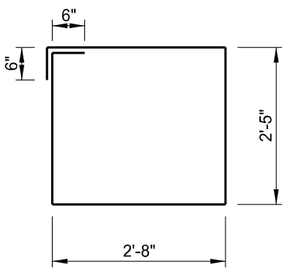
(Looking North)
(Between Beams)
Expansion Joint - Pier 3



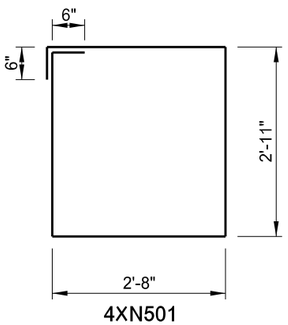


(Looking North)
(Between Beams)
Expansion Joint - Pier 9

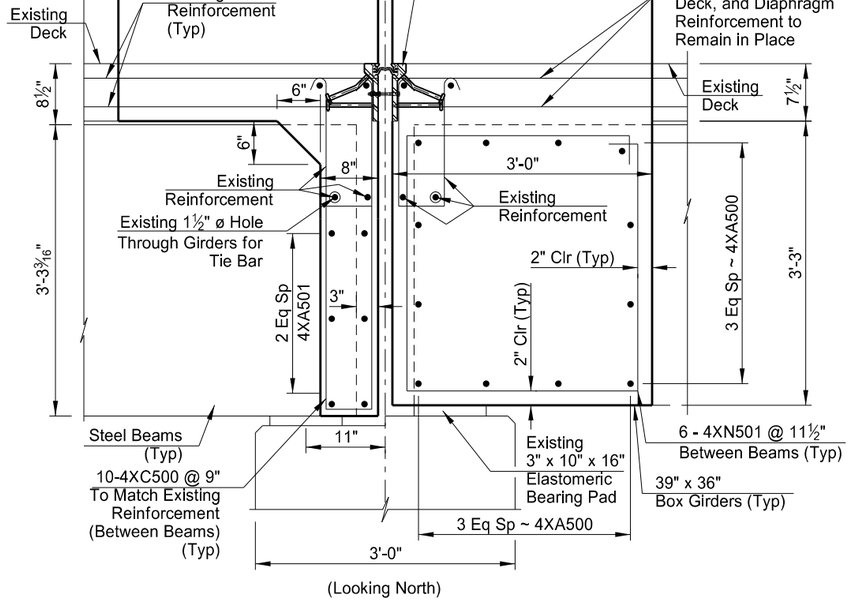
BAR LIST			
SIZE	MARK	NO.	LENGTH
4	XA500	288	5'-0"
4	XA501	72	8'-4"
4	XA502	2	7'-1"
4	XA503	2	2'-11"
4	XA504	6	7'-3"
4	XA505	6	3'-2"
4	XA506	4	6'-9"
4	XA507	4	2'-8"
4	XC500	120	6'-5"
4	XN500	36	11'-2"
4	XN501	108	12'-2"
4	XSN500	1 SET	46'-6"
4	XSN501	1 SET	13'-9"
4	XSN502	3 SET	53'-8"
4	XSN503	3 SET	15'-1"
4	XSN504	2 SET	54'-10"
4	XSN505	2 SET	16'-1"



4XN500



4XN501



(Looking North)
(Between Beams)
Expansion Joint - Pier 6

QUANTITIES	
CLASS AAE-3 CONCRETE	72.7 CY
REINF STEEL - GRADE 60 - EPOXY COATED	3,376 LBS

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

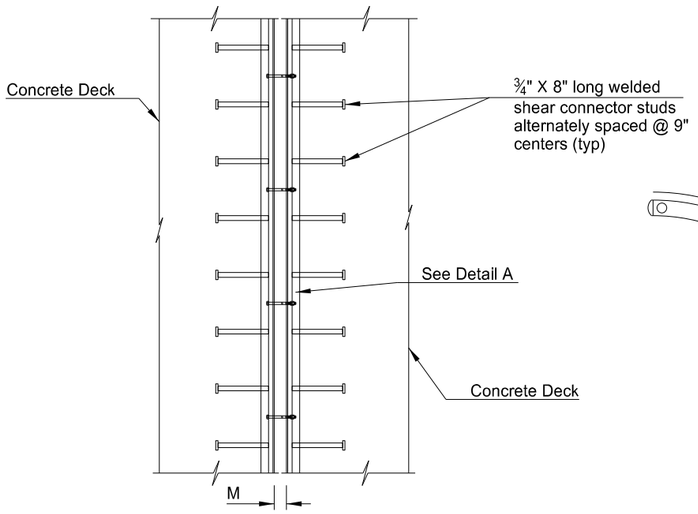
BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

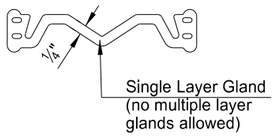
DECK, DIAPHRAGM, AND BARRIER REPAIR DETAILS

23 U.S.C. 409
NDDOT Reserves All Objections

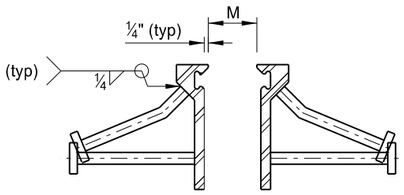
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	12



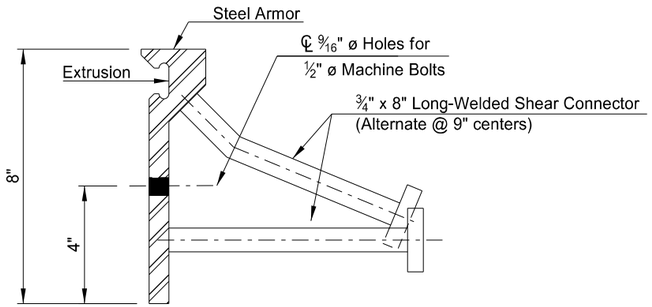
EXPANSION JOINT PART PLAN



DETAIL OF GLAND



DETAIL A



DETAIL OF JOINT ARMOR

NOTES:

Fabricated expansion joint system in two sections for half the clear roadway width at a time. Fabricate and install the expansion joint system to the cross slope and grade of the roadway.

Install the strip seal gland in one piece.

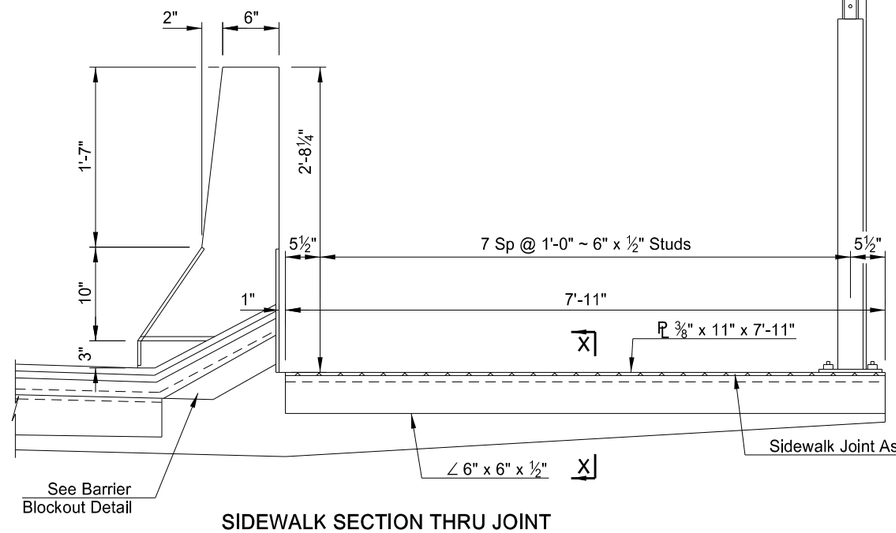
Provide structural steel for the expansion joint system and sidewalk joint assembly meeting ASTM A709 Grade 36. Provide steel armor, meeting ASTM A709 Grade 50W.

Galvinize structural steel for the expansion joint system and sidewalk joint assembly in accordance with ASTM A123.

Trim longitudinal reinforcing steel so that ends are not less than 1"± from the vertical leg of the steel armor at the expansion joint system.

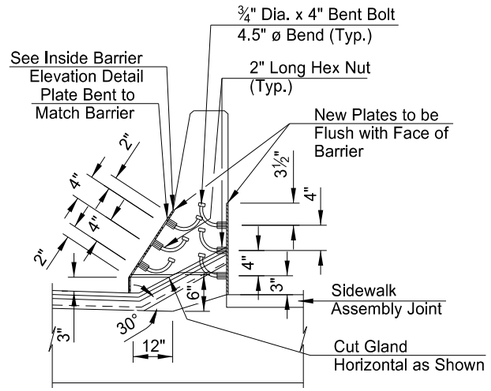
Include expansion joint system in the price bid for "Expansion Joint Strip Seal". This includes all structural steel, anchors, and gland.

Include structural steel for all three sidewalk joint assemblies in the price bid for structural steel. Include the polyurethane foam, and epoxy bonding adhesive for all three sidwalk joint assemblies in the price for expansion joint modification.

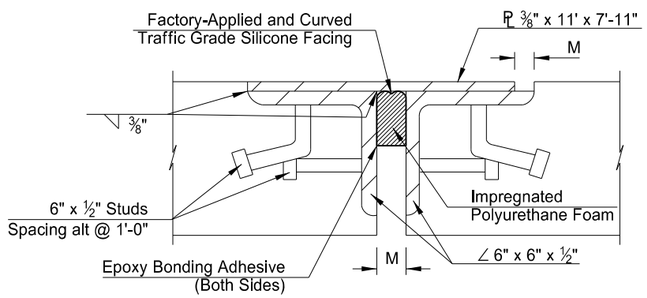


SIDEWALK SECTION THRU JOINT

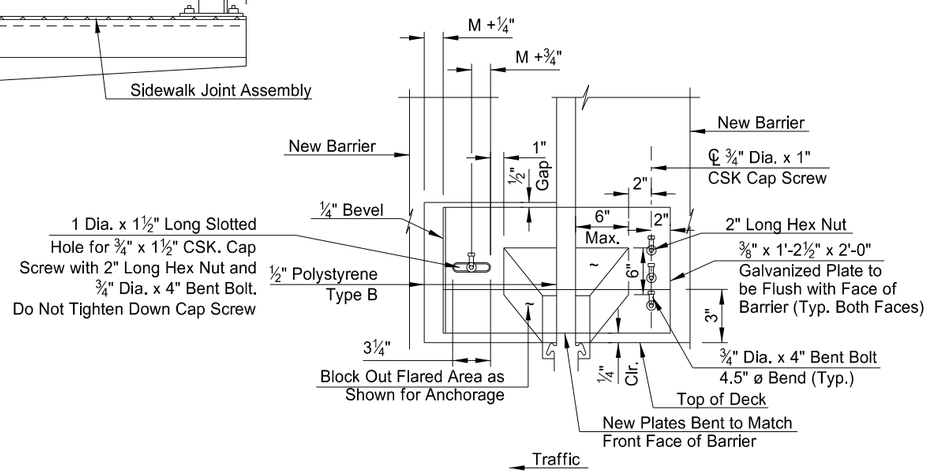
SUPERSTRUCTURE TEMPERATURE TABLE			
JOINT AT:	PIER 3	PIER 6	PIER 9
TEMP (°F)	DIM "M"	DIM "M"	DIM "M"
40	2.30"	2.46"	2.50"
50	2.15"	2.23"	2.25"
60	2"	2"	2"
70	1.85"	1.77"	1.75"
80	1.7"	1.54"	1.50"



BARRIER BLOCKOUT DETAIL



SIDEWALK JOINT ASSEMBLY



INSIDE BARRIER ELEVATION

QUANTITIES	
STRUCTURAL STEEL	1 LSUM
EXPANSION JOINT STRIP SEAL	164 LF
EXPANSION JOINT MODIFICATION	24 LF

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

EXPANSION JOINT DETAILS

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	13

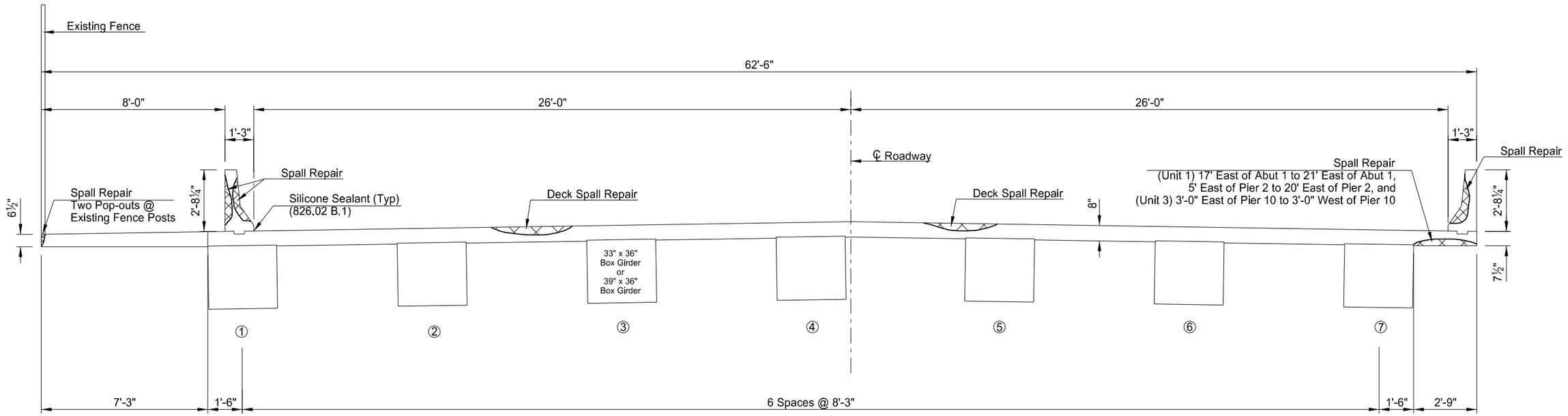
Indicates spall repair area.

NOTES:

All areas to be verified by Engineer in the field prior to removal.

Spall repair is required at various areas on the bottom, and sides of the deck and along the length of both barriers.

Deck Spall Repair is for locations as determined by the Engineer. (Assumed 60 SF)



(Looking East)

TYPICAL DECK SECTION

Approximate Spall Repair on Barriers	
West of Abut 1	7 SF
Span 1	6 SF
Span 2	39 SF
Span 3	3 SF
Span 4	2 SF
Span 5	4 SF
Span 6	12 SF
Span 7	9 SF
Span 8	6 SF
Span 9	9 SF
Span 10	6 SF
Span 11	14 SF
East of Abut 12	3 SF

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

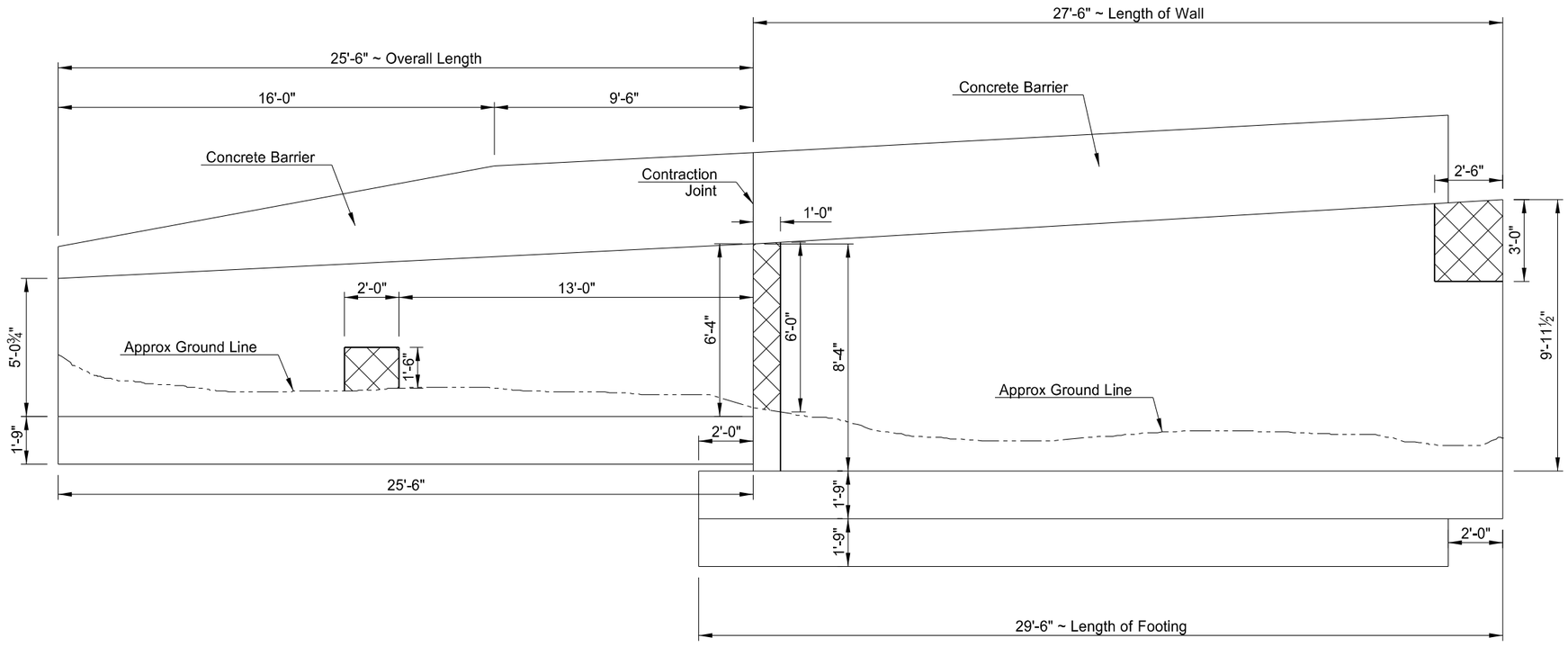
8/11/2022

QUANTITIES	
DECK SPALL REPAIR	60 SF
SPALL REPAIR	190 SF

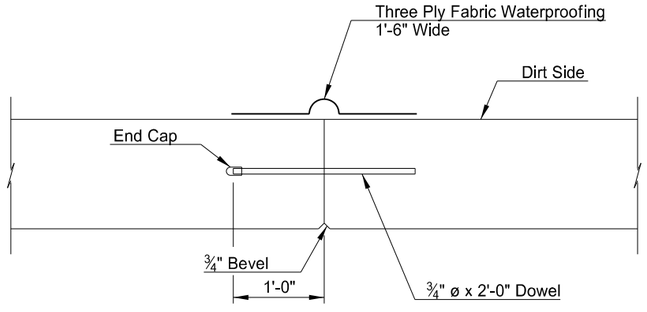
BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

SLAB SECTION

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	14



ELEVATION



(Provided for Information Only)
CONTRACTION JOINT

Indicates spall repair area.

NOTES:

All areas to be verified by Engineer in the field prior to removal.

South Face Shown.

Expose the wall below the approximate ground line where there are spall repair areas to be repaired to verify spall repair area does not continue below the approximate ground line.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES	
SPALL REPAIR	16.5 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

WALL "A"
SUBSTRUCTURE

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	15

Indicates spall repair area.

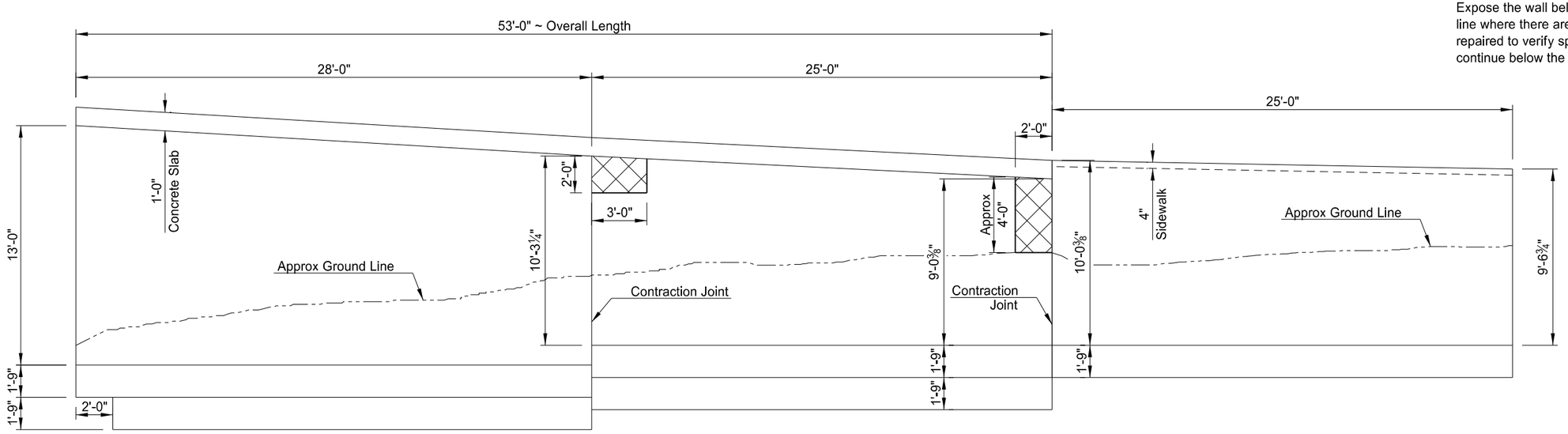
NOTES:

All areas to be verified by Engineer in the field prior to removal.

See Contraction Joint Detail DWG 2-906.591-14 for Existing Conditions.

Noth Face Shown.

Expose the wall below the approximate ground line where there are spall repair areas to be repaired to verify spall repair area does not continue below the approximate ground line.



ELEVATION

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES	
SPALL REPAIR	14 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

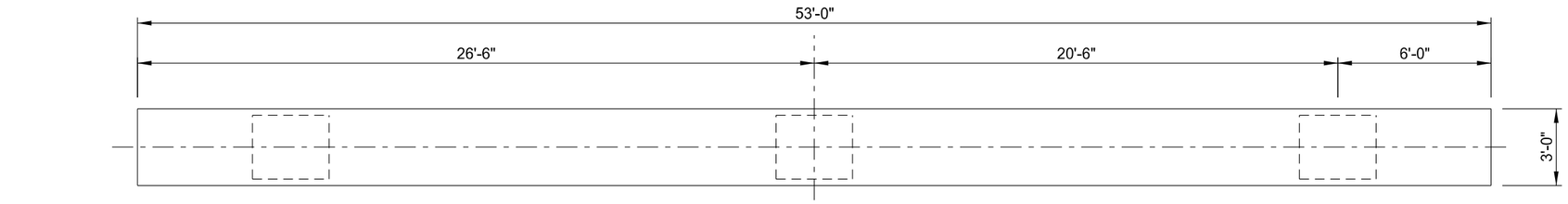
WALL "B"
SUBSTRUCTURE

23 U.S.C. 409
NDDOT Reserves All Objections

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	16

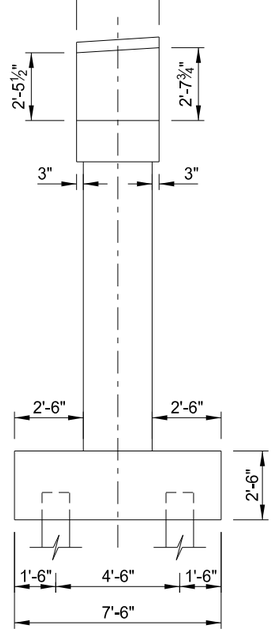
Indicates pier repair area.

NOTE:
All areas to be verified by Engineer in the field prior to removal.

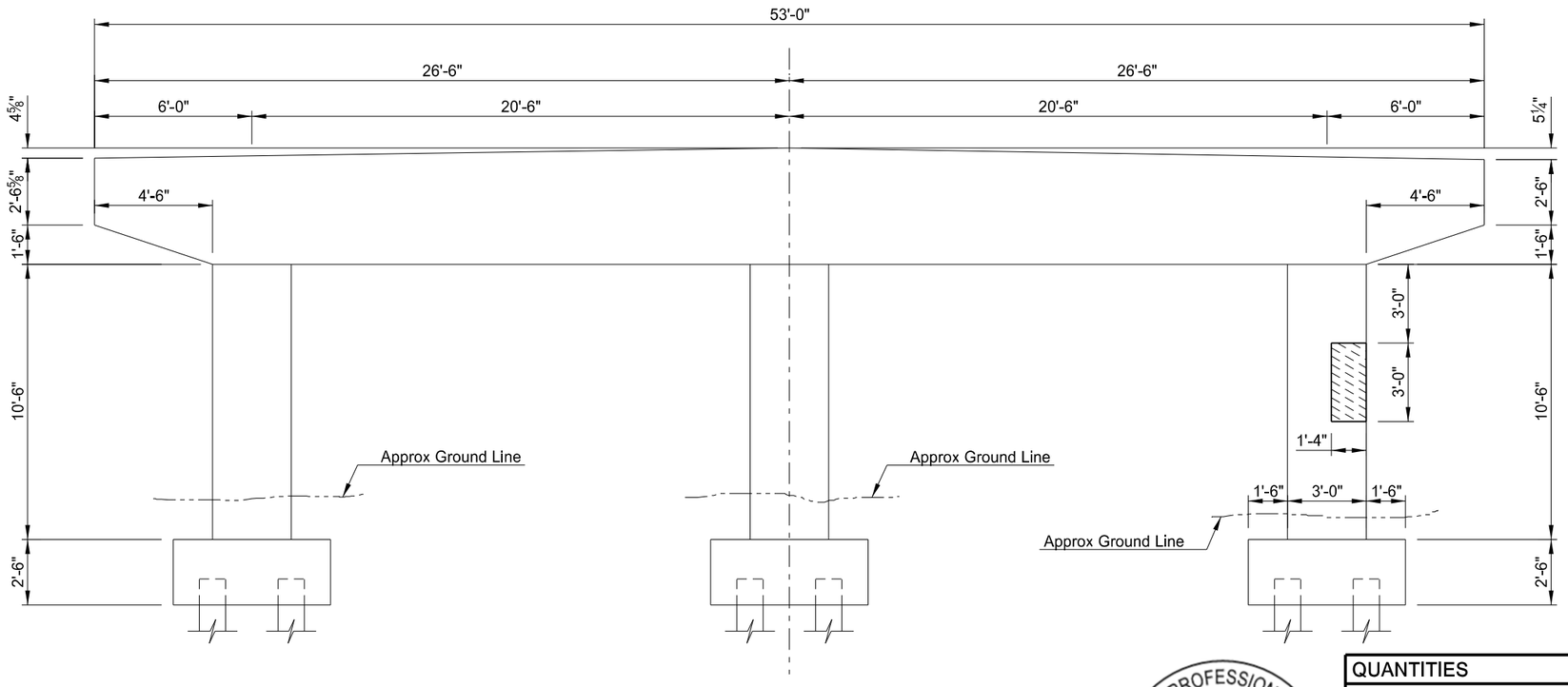


SOUTH NORTH

PLAN



SOUTH FACE
END VIEW



EAST FACE
ELEVATION

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES

PIER REPAIR	4 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 2
EAST FACE

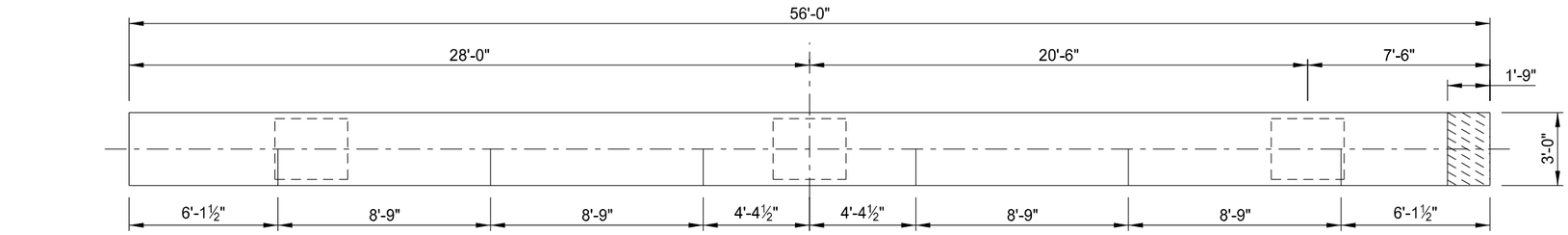
PIER REPAIRS

23 U.S.C. 409
NDDOT Reserves All Objections

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	17

Indicates pier repair area.

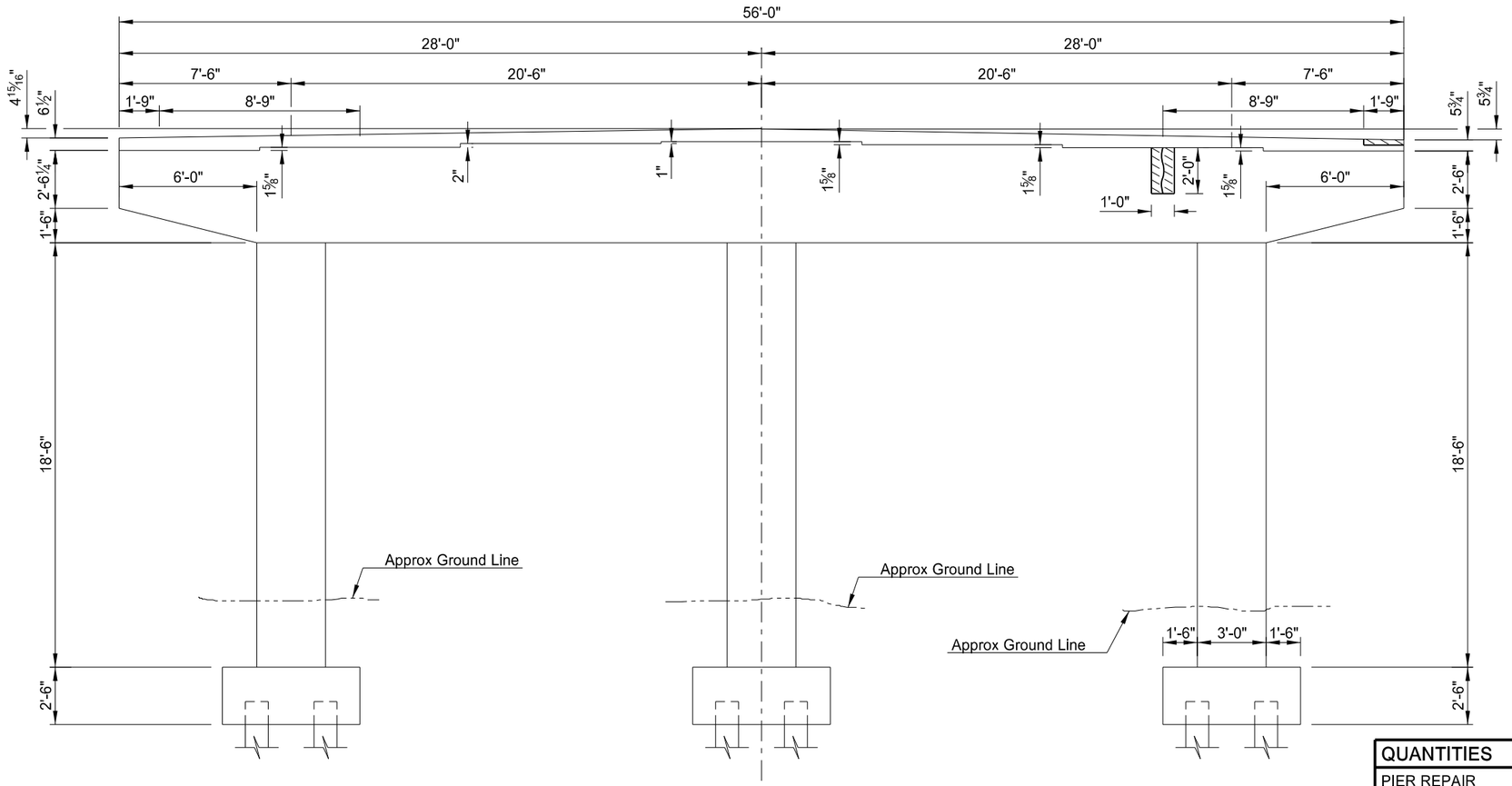
NOTE:
All areas to be verified by Engineer in the field prior to removal.



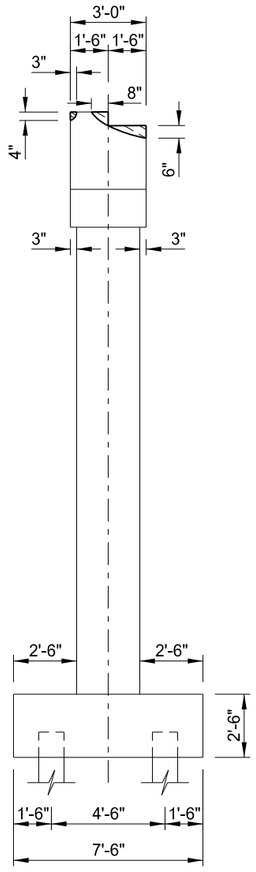
NORTH

SOUTH

PLAN



WEST FACE
ELEVATION



SOUTH FACE
END VIEW

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES

PIER REPAIR	7.3 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 3
WEST FACE

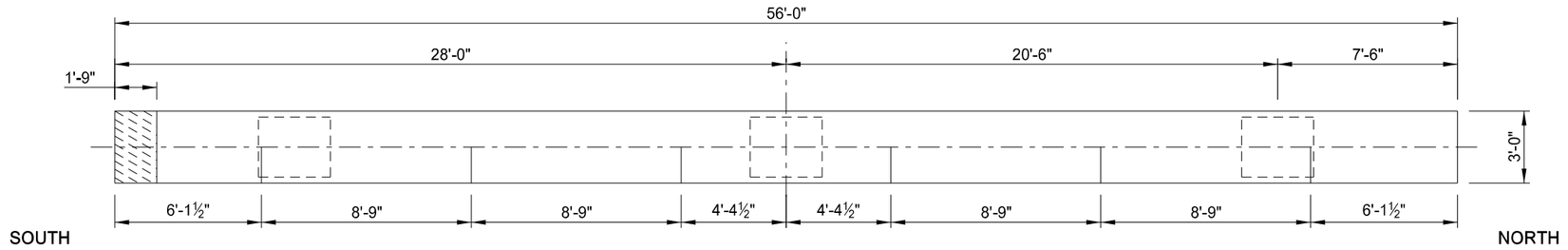
PIER REPAIRS

23 U.S.C. 409
NDDOT Reserves All Objections

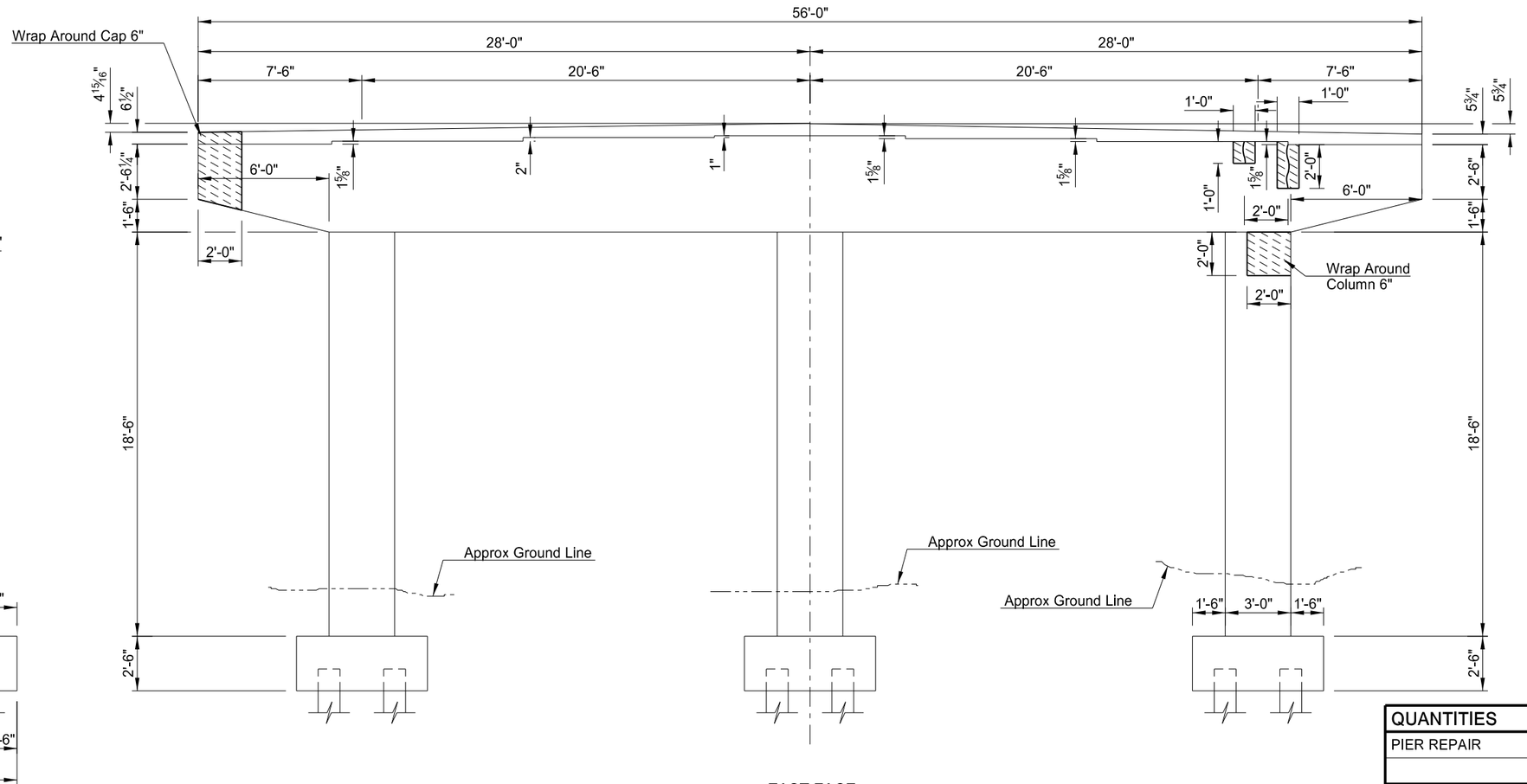
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	18

Indicates pier repair area.

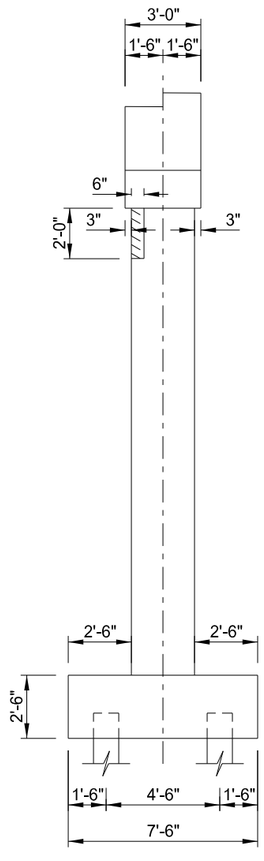
NOTE:
All areas to be verified by Engineer in the field prior to removal.



PLAN



EAST FACE
ELEVATION



NORTH FACE
END VIEW

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES

PIER REPAIR	15.5 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 3
EAST FACE

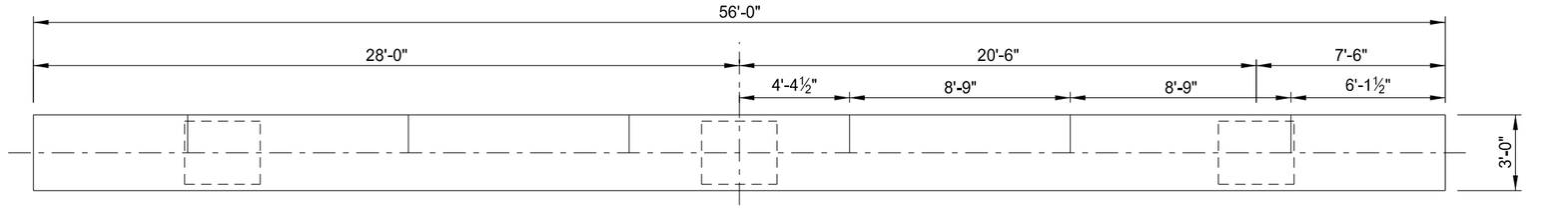
PIER REPAIRS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	19

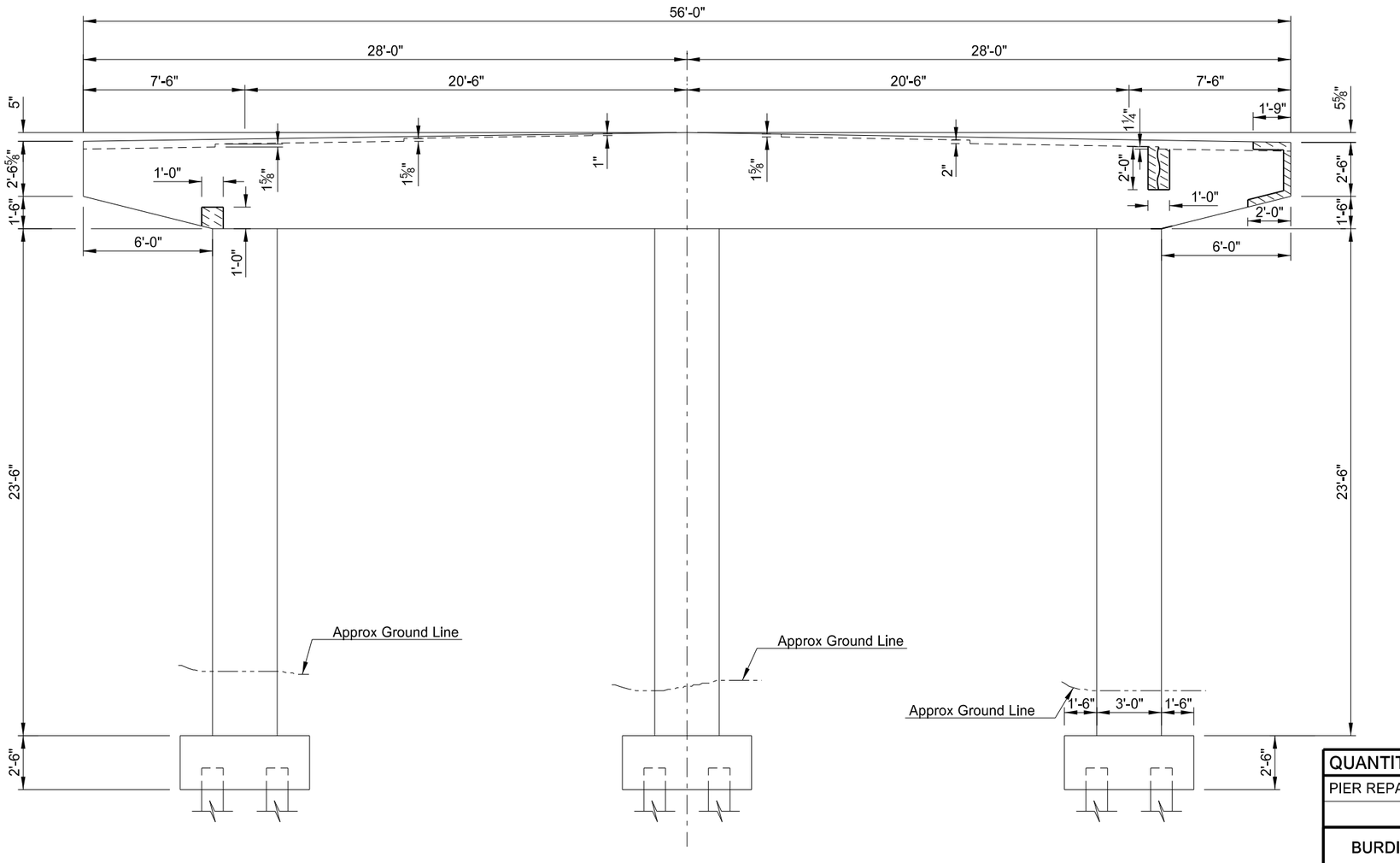
23 U.S.C. 409
NDDOT Reserves All Objections

Indicates pier repair area.

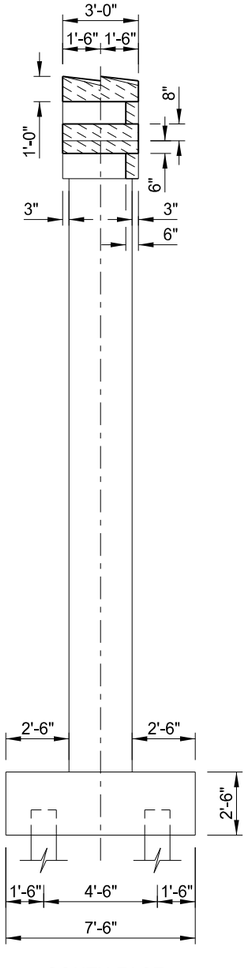
NOTE:
All areas to be verified by Engineer in the field prior to removal.



PLAN



WEST FACE
ELEVATION



SOUTH FACE
END VIEW

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES

PIER REPAIR	19.3 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 6
WEST FACE

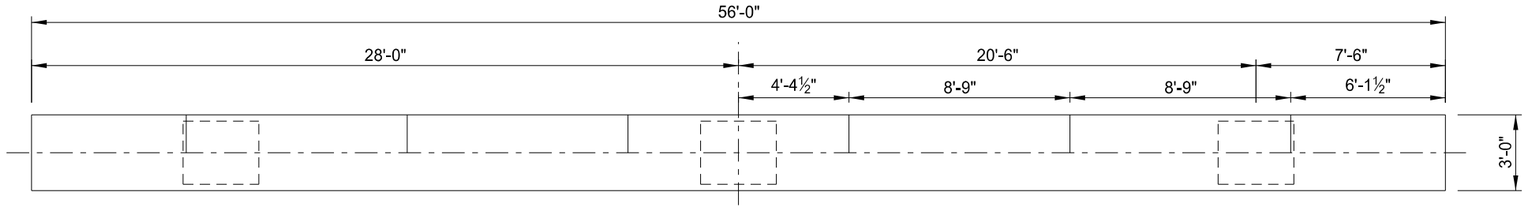
PIER REPAIRS

23 U.S.C. 409
NDDOT Reserves All Objections

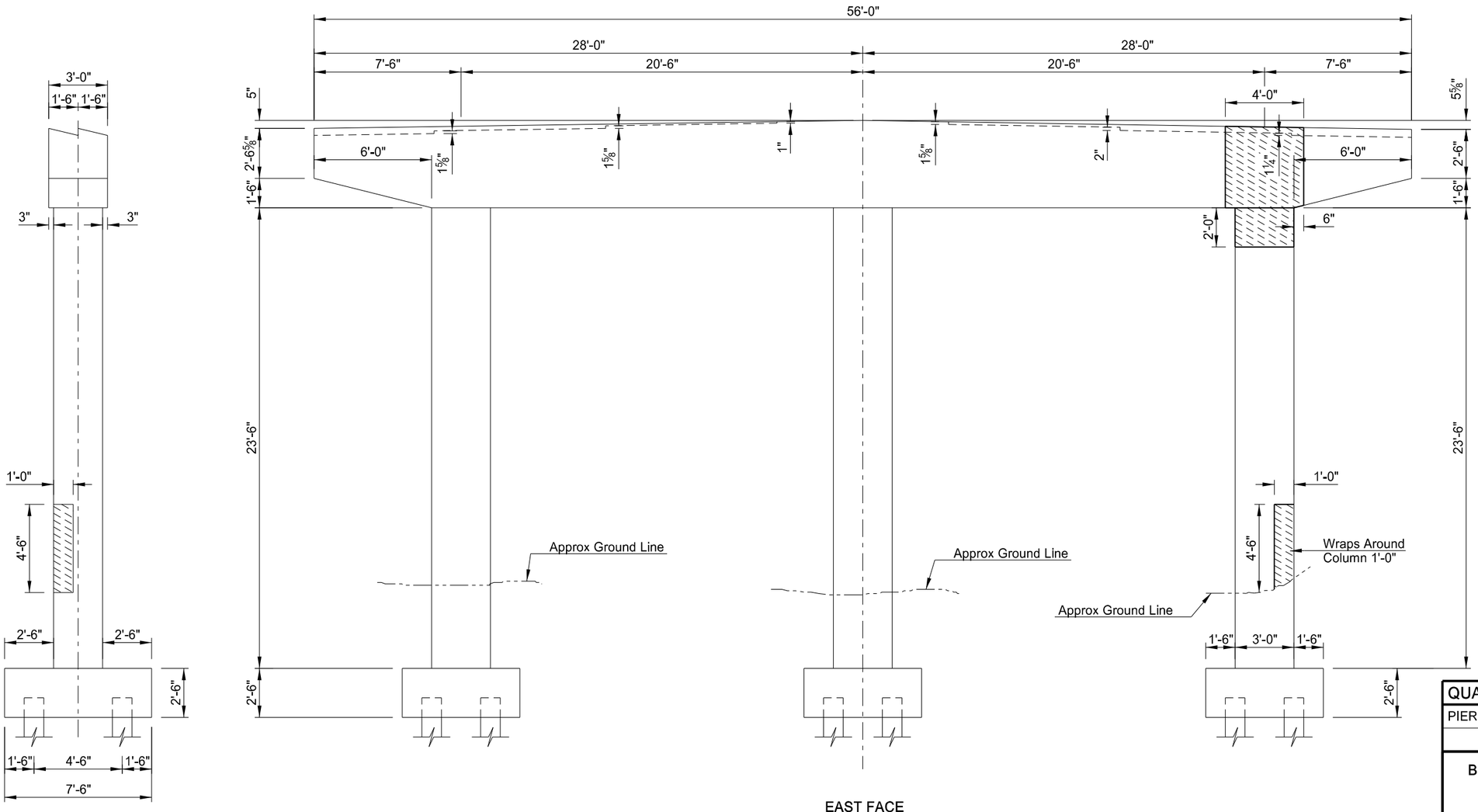
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	20

Indicates pier repair area.

NOTE:
All areas to be verified by Engineer in the field prior to removal.



SOUTH — PLAN — NORTH



NORTH FACE
END VIEW

EAST FACE
ELEVATION

NOTE:
Expose the column below the approximate ground line where there are pier repair areas to be repaired to verfiy pier repair area does not continue below the approximate ground line.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES

PIER REPAIR	32.7 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 6
EAST FACE

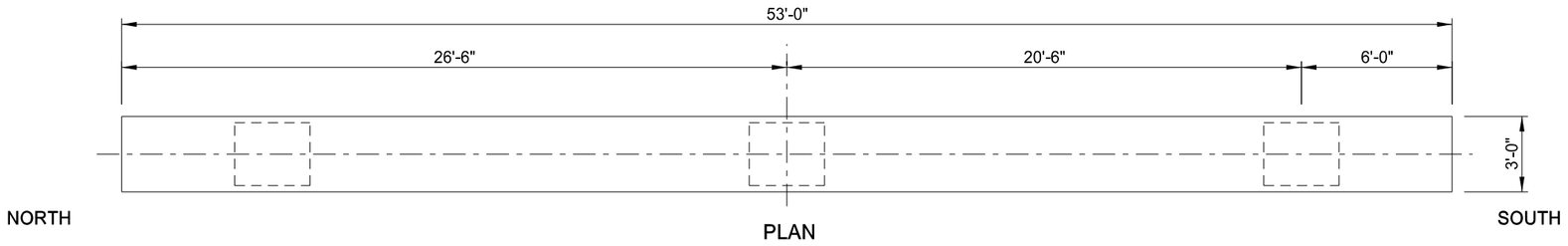
PIER REPAIRS

23 U.S.C. 409
NDDOT Reserves All Objections

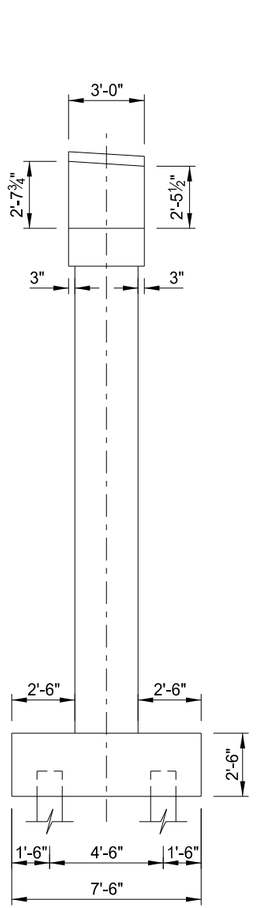
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	21

Indicates pier repair area.

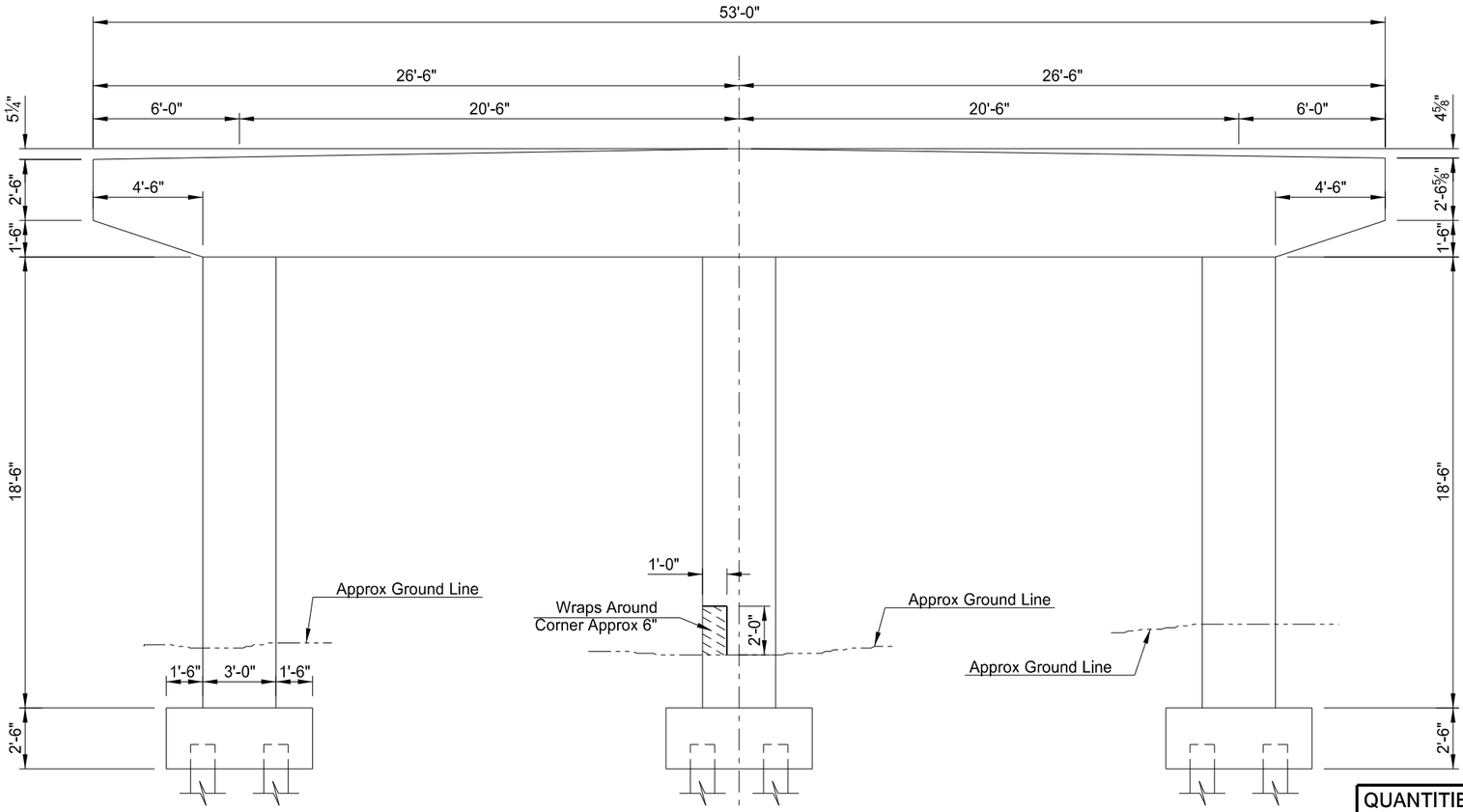
NOTE:
All areas to be verified by Engineer in the field prior to removal.



PLAN



SOUTH FACE
END VIEW



WEST FACE
ELEVATION

NOTE:
Expose the column below the approximate ground line where there are pier repair areas to be repaired to verfiy pier repair area does not continue below the approximate ground line.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES	
PIER REPAIR	3 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 8
WEST FACE

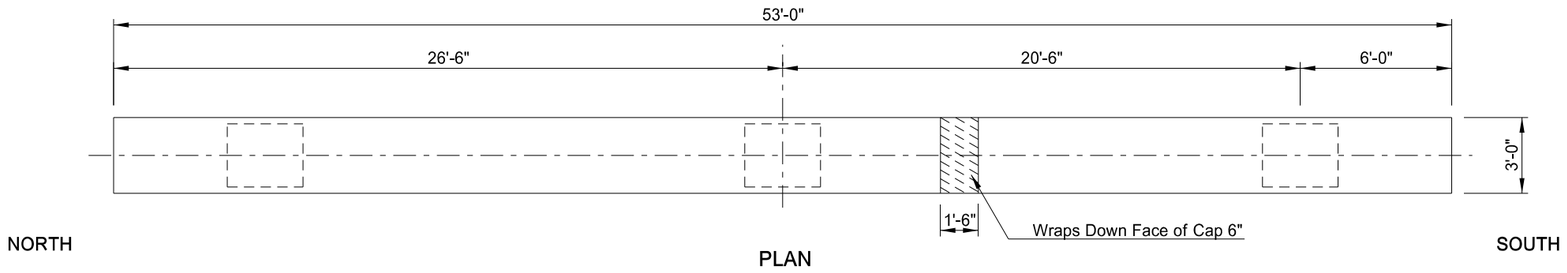
PIER REPAIRS

23 U.S.C. 409
NDDOT Reserves All Objections

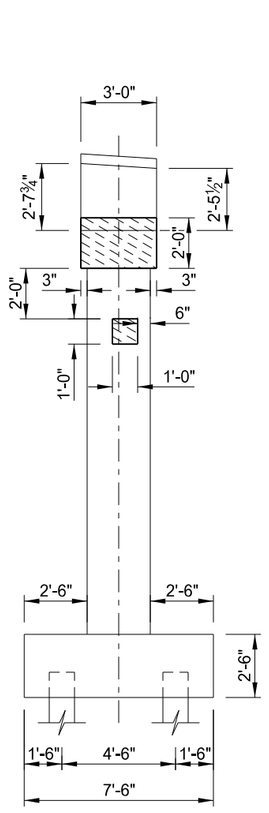
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	22

Indicates pier repair area.

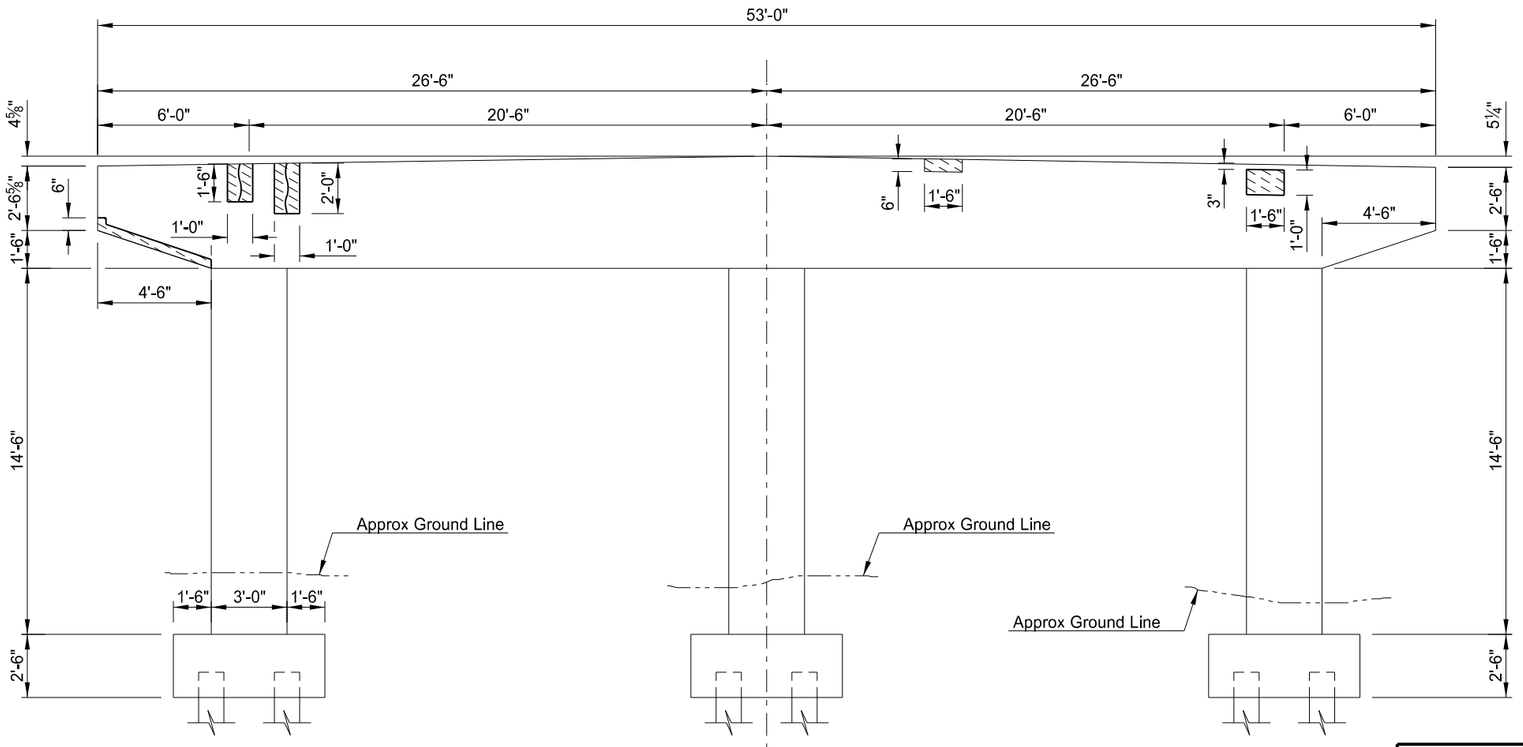
NOTE:
All areas to be verified by Engineer in the field prior to removal.



PLAN



NORTH FACE
END VIEW



WEST FACE
ELEVATION

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES

PIER REPAIR	21 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 9
WEST FACE

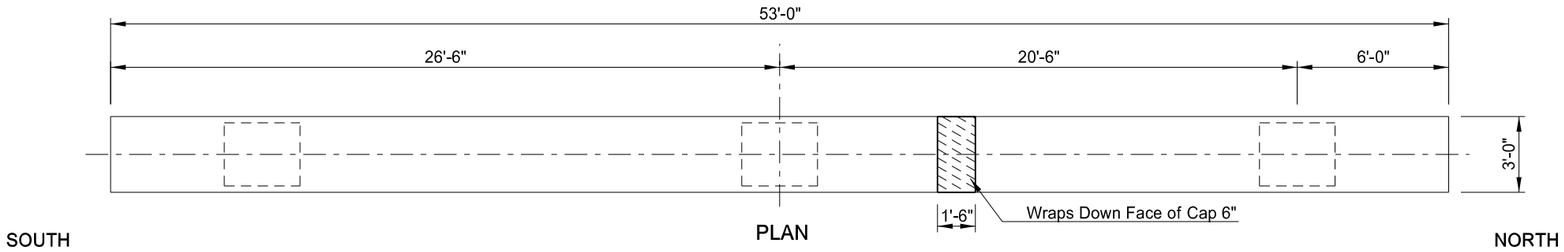
PIER REPAIRS

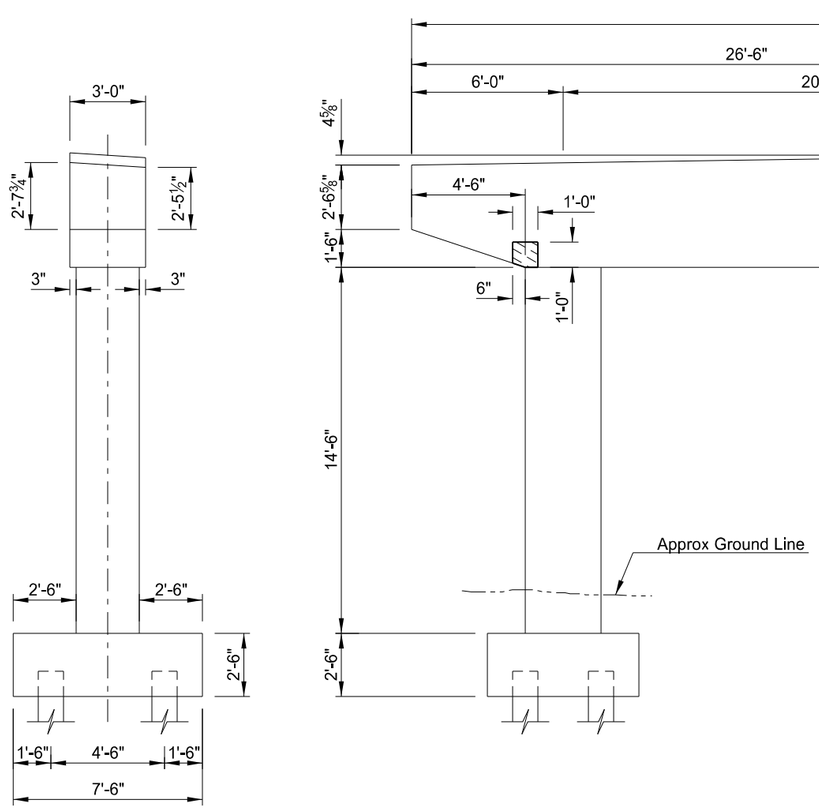
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	23

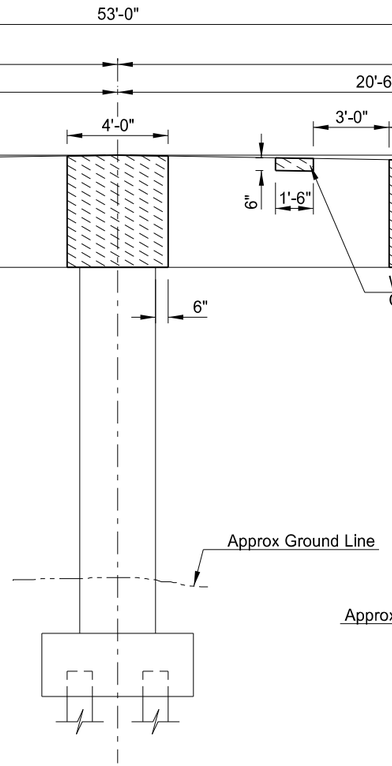
23 U.S.C. 409
NDDOT Reserves All Objections

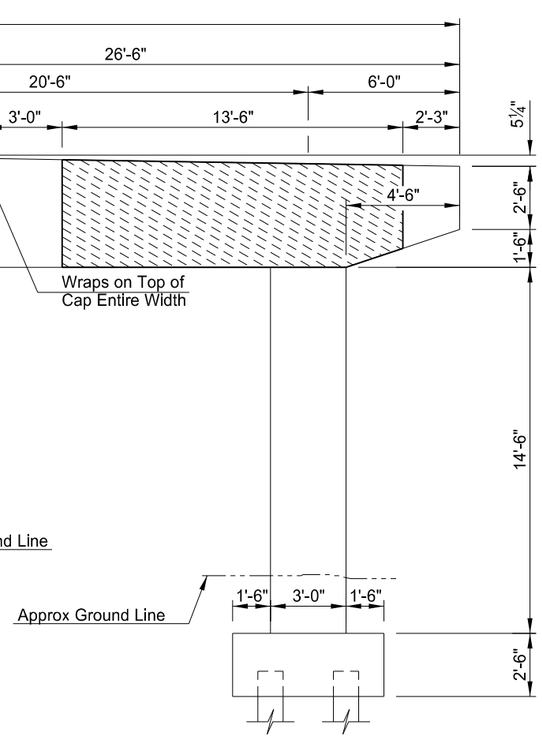
Indicates pier repair area.

NOTE:
All areas to be verified by Engineer in the field prior to removal.









REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES

PIER REPAIR	67 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 9
EAST FACE

PIER REPAIRS

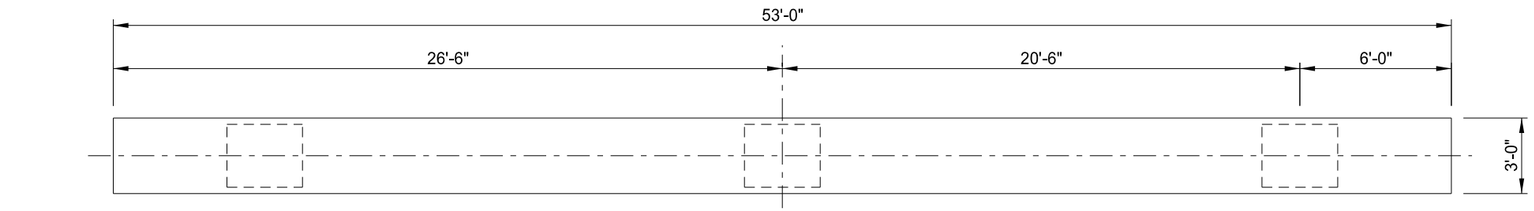
Indicates pier repair area.

Indicates spall repair area.

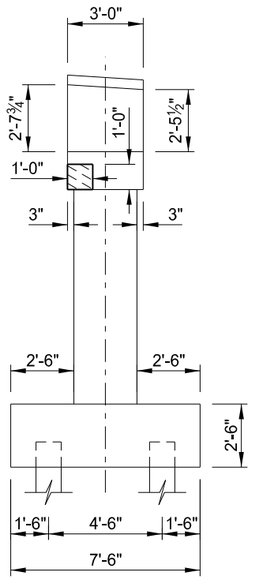
NOTE:
All areas to be verified by Engineer in the field prior to removal.

23 U.S.C. 409
NDDOT Reserves All Objections

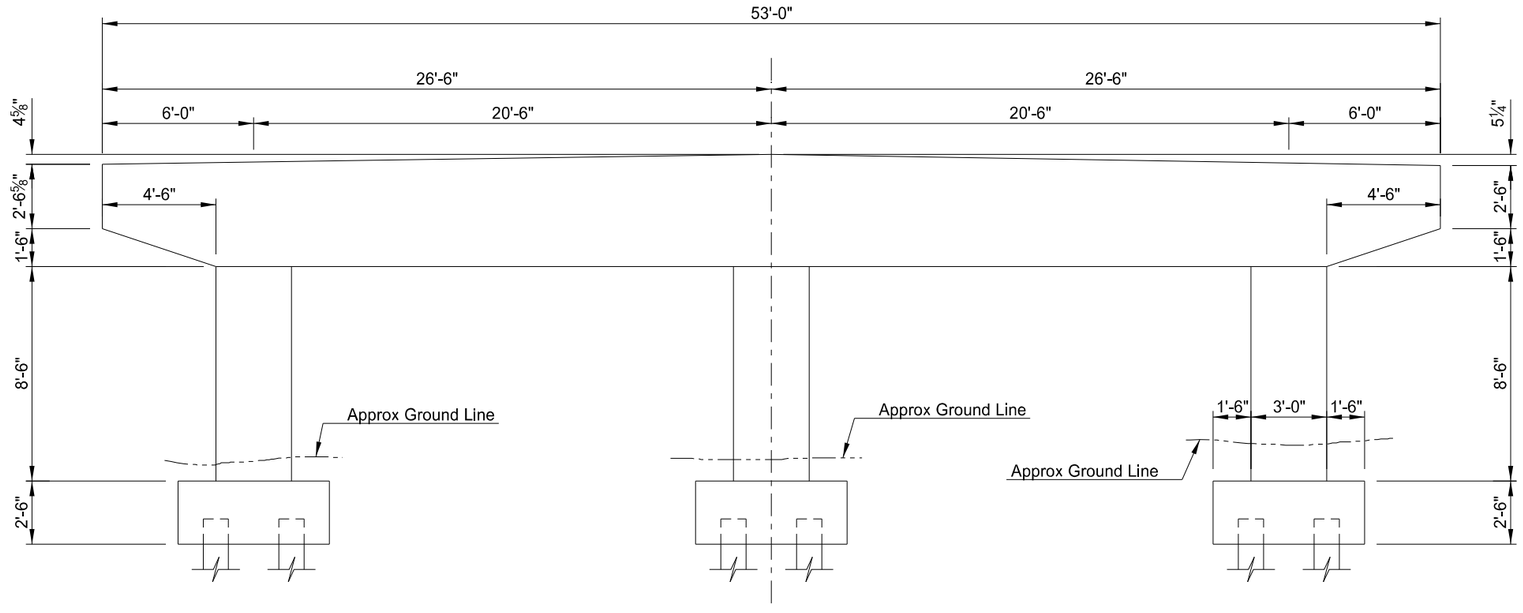
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	24



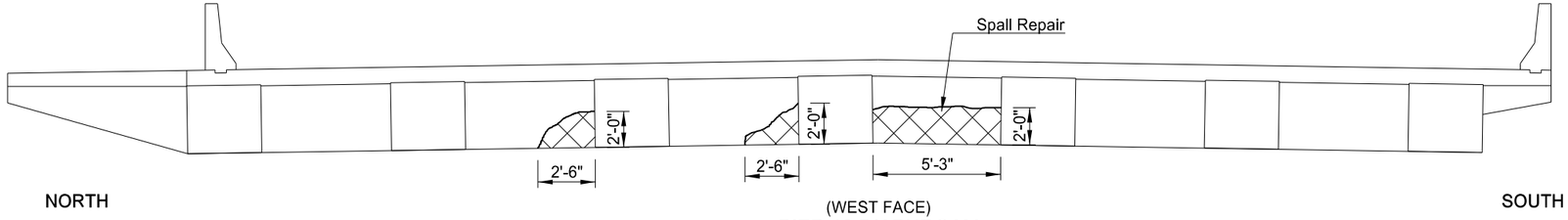
SOUTH — PLAN — NORTH



SOUTH FACE
END VIEW



EAST FACE
ELEVATION



NORTH — (WEST FACE) — SOUTH

PIER 10 DIAPHRGAM

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES	
PIER REPAIR	1 SF
SPALL REPAIR	15.5 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 10
EAST FACE

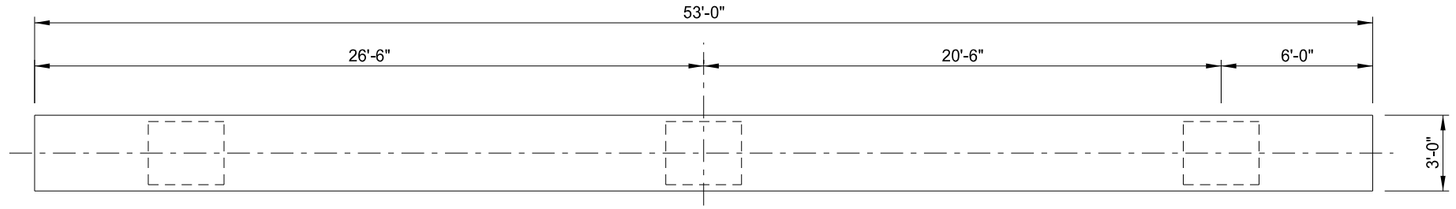
PIER REPAIRS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	25

23 U.S.C. 409
NDDOT Reserves All Objections

Indicates pier repair area.

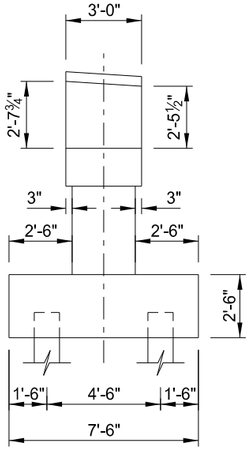
NOTE:
All areas to be verified by Engineer in the field prior to removal.



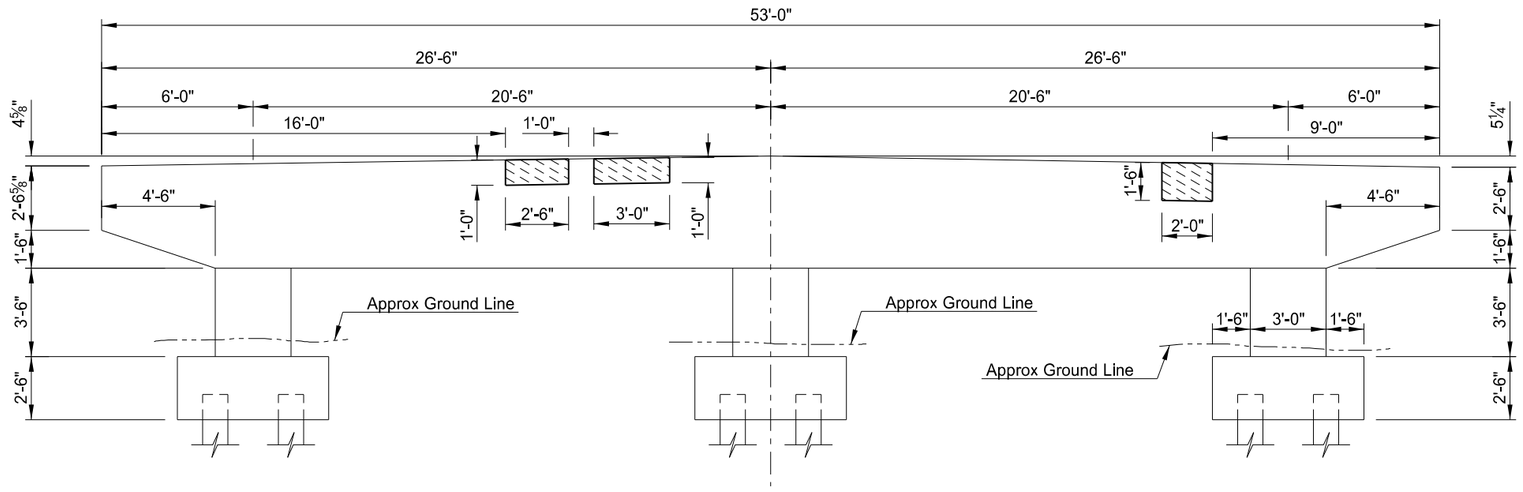
PLAN

SOUTH

NORTH



SOUTH FACE
END VIEW



EAST FACE
ELEVATION

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES	
PIER REPAIR	8.5 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

PIER 11
EAST FACE

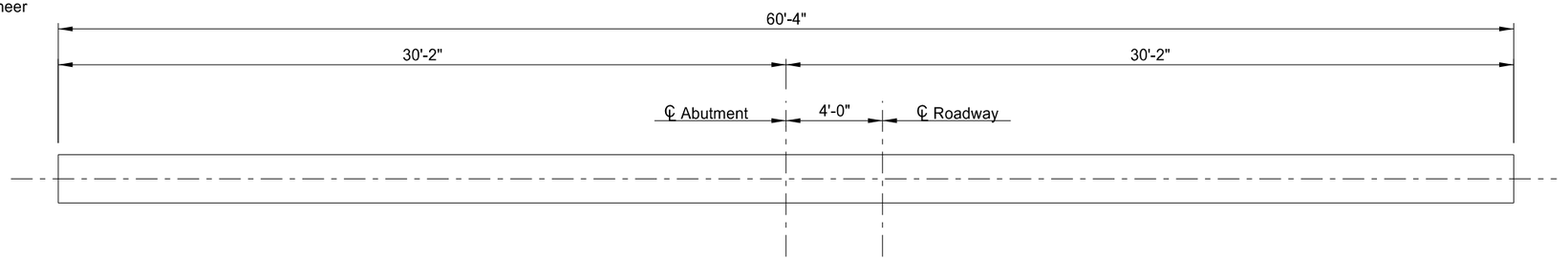
PIER REPAIRS

23 U.S.C. 409
NDDOT Reserves All Objections

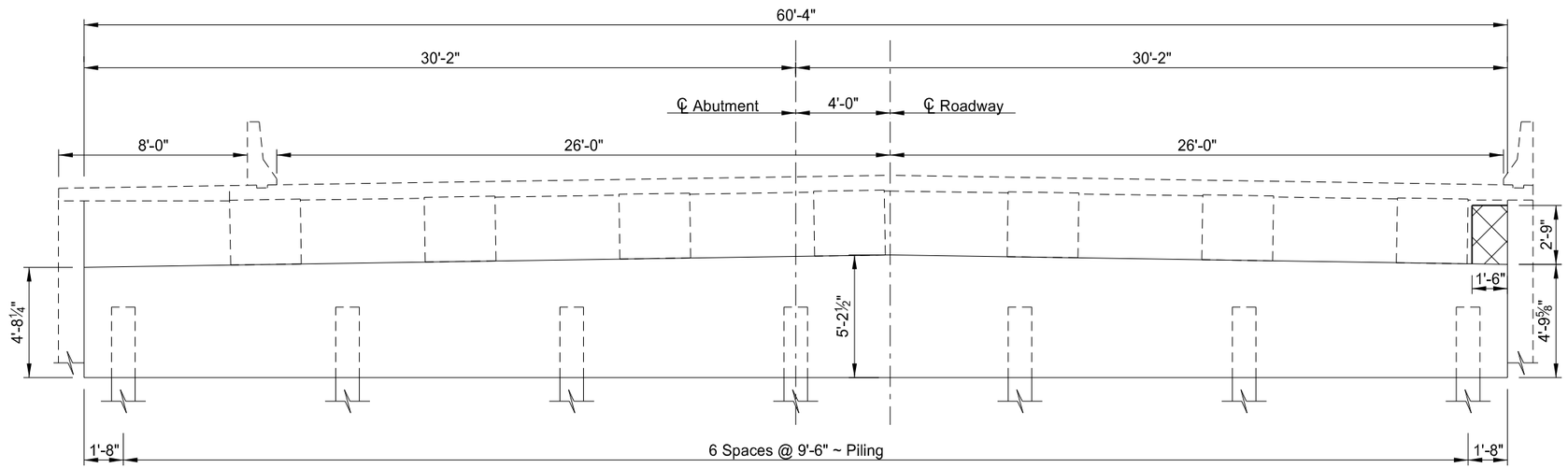
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	26

Indicates spall repair area.

NOTE:
All areas to be verified by Engineer in the field prior to removal.



PLAN



(West Face)
ELEVATION

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES

SPALL REPAIR	4.1 SF

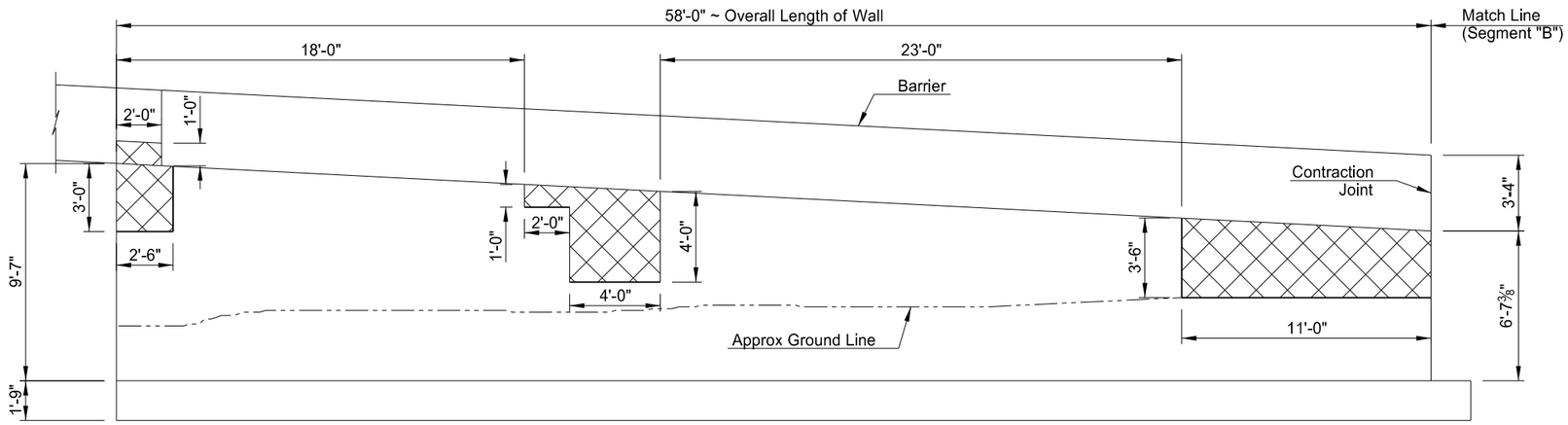
BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT, NORTH DAKOTA

ABUTMENT 12
WEST FACE

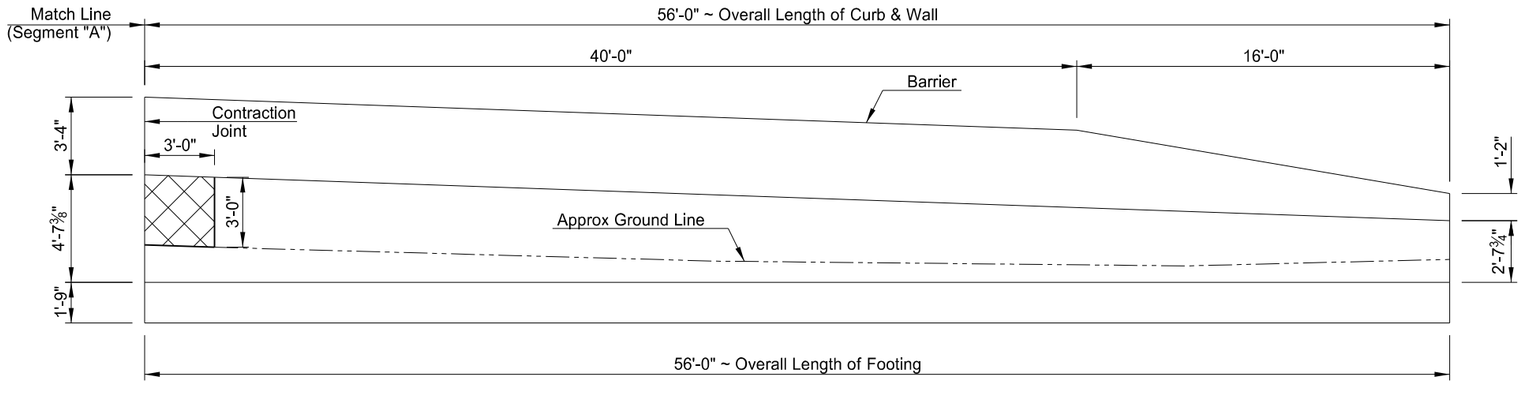
SPALL REPAIRS

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	27



SEGMENT "A"
ELEVATION



SEGMENT "B"
ELEVATION

Indicates spall repair area.

NOTES:

All areas to be verified by Engineer in the field prior to removal.

See Contraction Joint Detail DWG 2-906.591-14 for Existing Conditions.

South Face Shown.

Expose the wall below the approximate ground line where there are spall repair areas to be repaired to verify spall repair area does not continue below the approximate ground line.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES	
SPALL REPAIR	75 SF

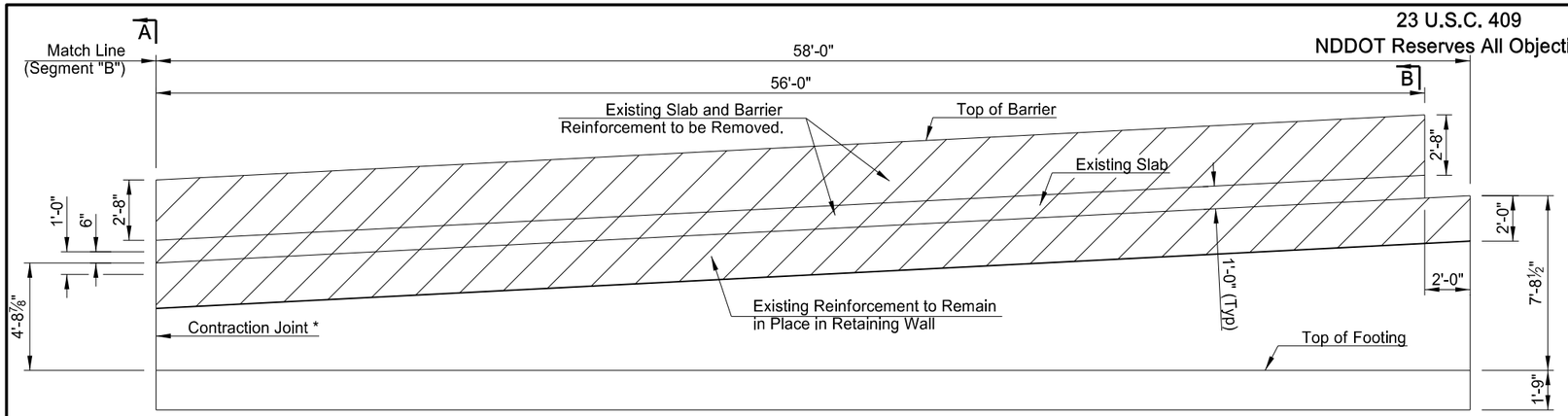
BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

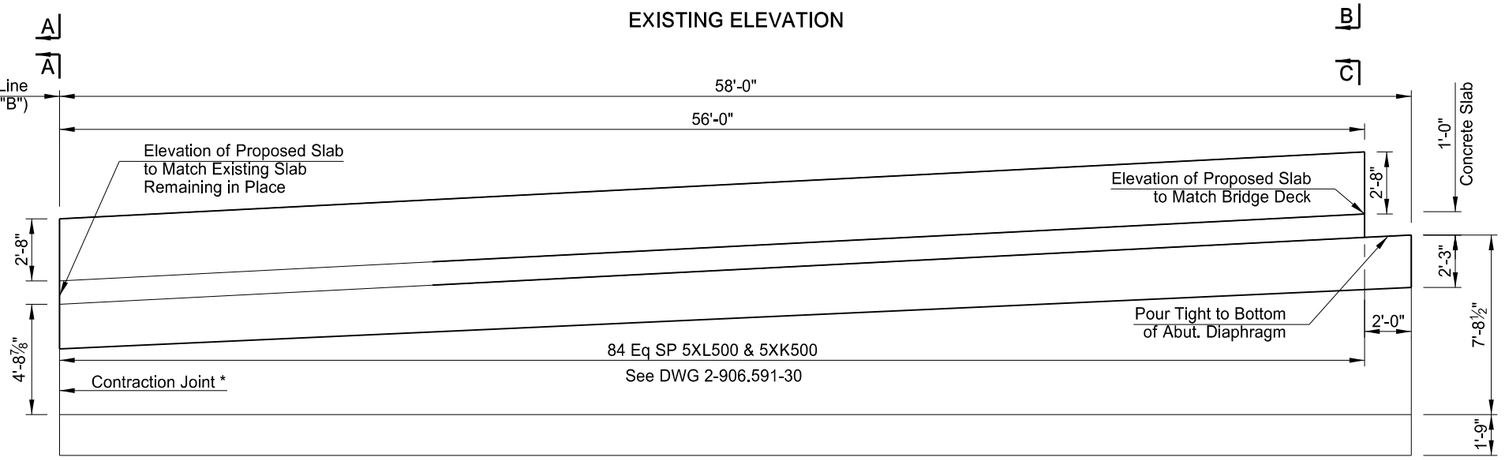
WALL "C" SEGMENT "A" & "B"
SUBSTRUCTURE

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	28



EXISTING ELEVATION



PROPOSED ELEVATION

B-B
EXISTING

C-C
PROPOSED

A-A

Hatched area indicates concrete to be removed.

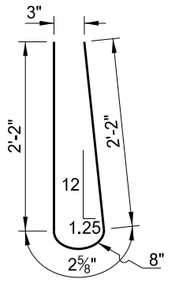
NOTES:

All areas to be verified by Engineer in the field prior to removal.

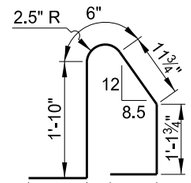
* See Contraction Joint Detail DWG 2-906.591-14 for Existing Conditions.

Complete Wall "D" and Sidewalk work after Approach Slabs have been foam lifted to tie into Approach Slabs.

North Face Shown.

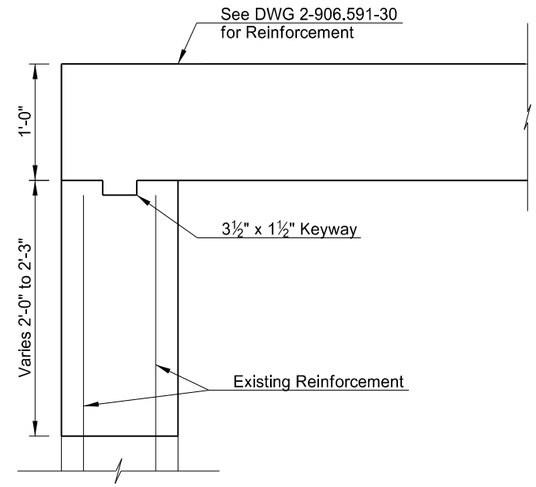


5XL100



5XK100

BAR LIST			
SIZE	MARK	NO.	LENGTH
4	XA100	29	39'-8"
5	XA101	112	8'-11"
4	XA102	56	3'-0"
5	XK100	85	5'-10"
5	XL100	85	5'-0"



DETAIL "A"

QUANTITIES	
CLASS AAE-3 CONCRETE	28 CY
REINF STEEL - GRADE 60 - EPOXY COATED	3,193 LBS

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

WALL "D" SEGMENT "A"
SUBSTRUCTURE

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	29

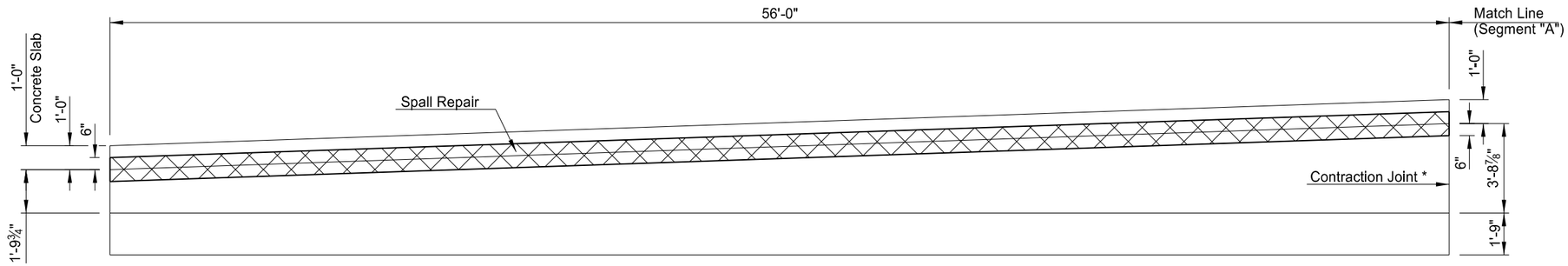
Indicates spall repair area.

NOTES:

All areas to be verified by Engineer in the field prior to removal.

* See Contraction Joint Detail DWG 2-906.591-14 for Existing Conditions.

North Face Shown.



ELEVATION

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

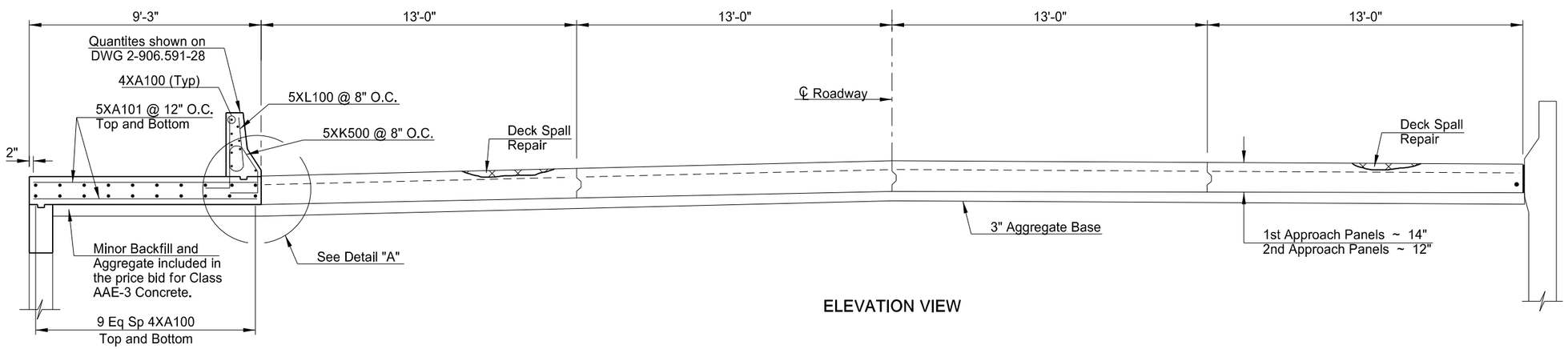
QUANTITIES	
SPALL REPAIR	56 SF

BURDICK EXPRESSWAY EAST-CP RAIL SEP

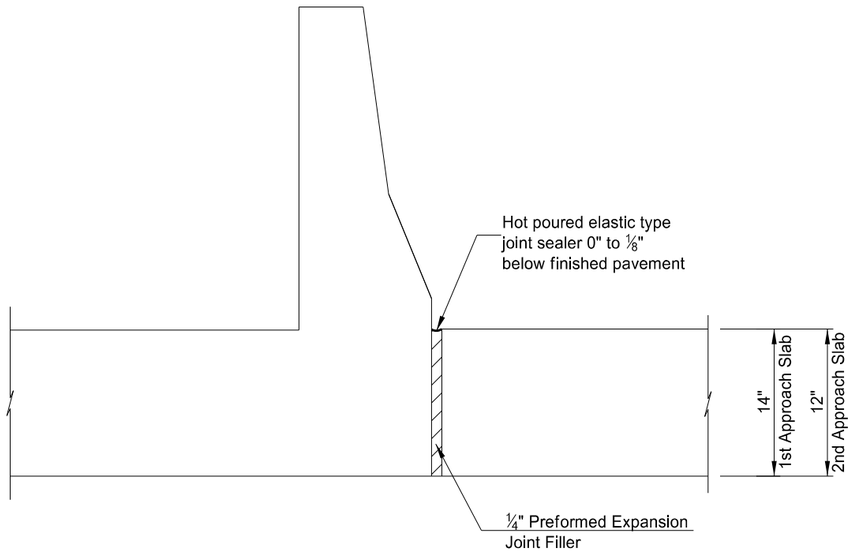
MINOT

WALL "D" SEGMENT "B"
SUBSTRUCTURE

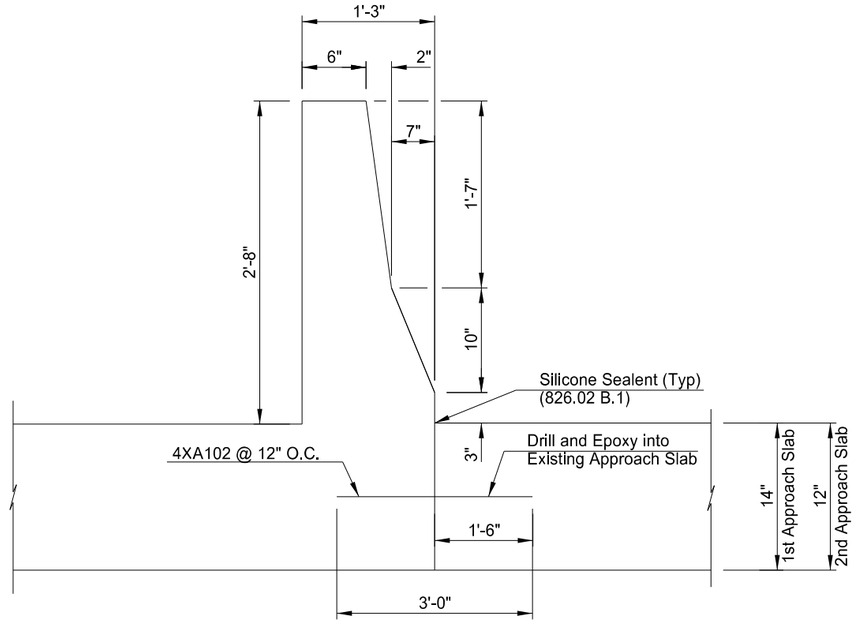
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	30



ELEVATION VIEW



EXISTING DETAIL A



PROPOSED DETAIL A

Indicates spall repair area.

NOTE:

All areas to be verified by Engineer in the field prior to removal.

Compact clay materials as specified in Section 203.04G.2.b, "ND T-99", of the Standard Specifications.

Compact aggregate and granular materials as specified in Section 203.04G.2.a, "ND T-180", of the Standard Specifications.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES	
DECK SPALL REPAIR	15 SF

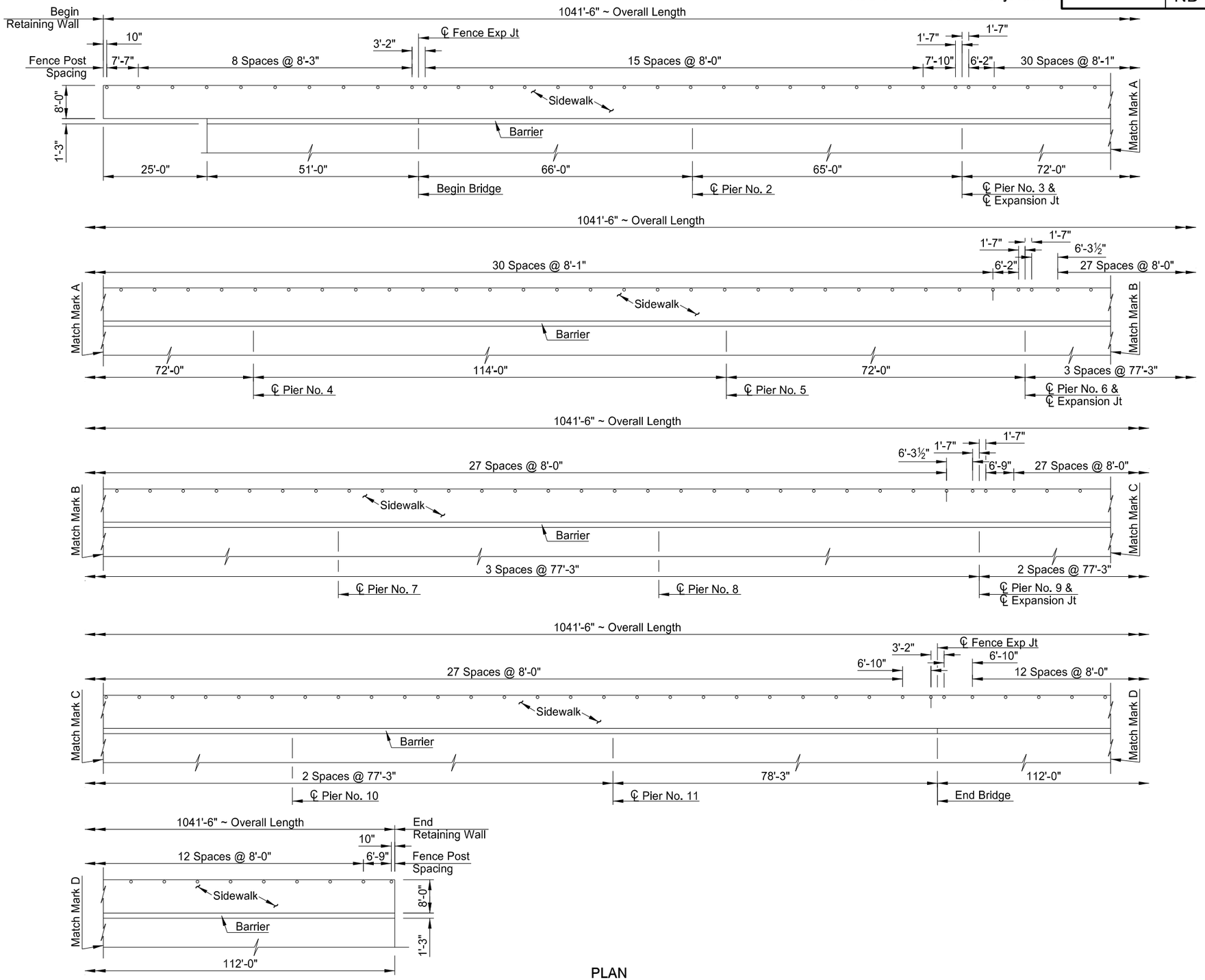
BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

SIDEWALK & APPROACH SLAB DETAILS

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	31



PLAN

NOTES:

Existing pedestrian rail to be removed. see existing details DWG 2-906.591-32.

Sandblast clean and epoxy grout over the bottom of all visible posts on underside of deck. Submit epoxy grout to the Engineer for approval prior to completing the work.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES	
REMOVE PEDESTRIAN RAILING	1039.8 LF

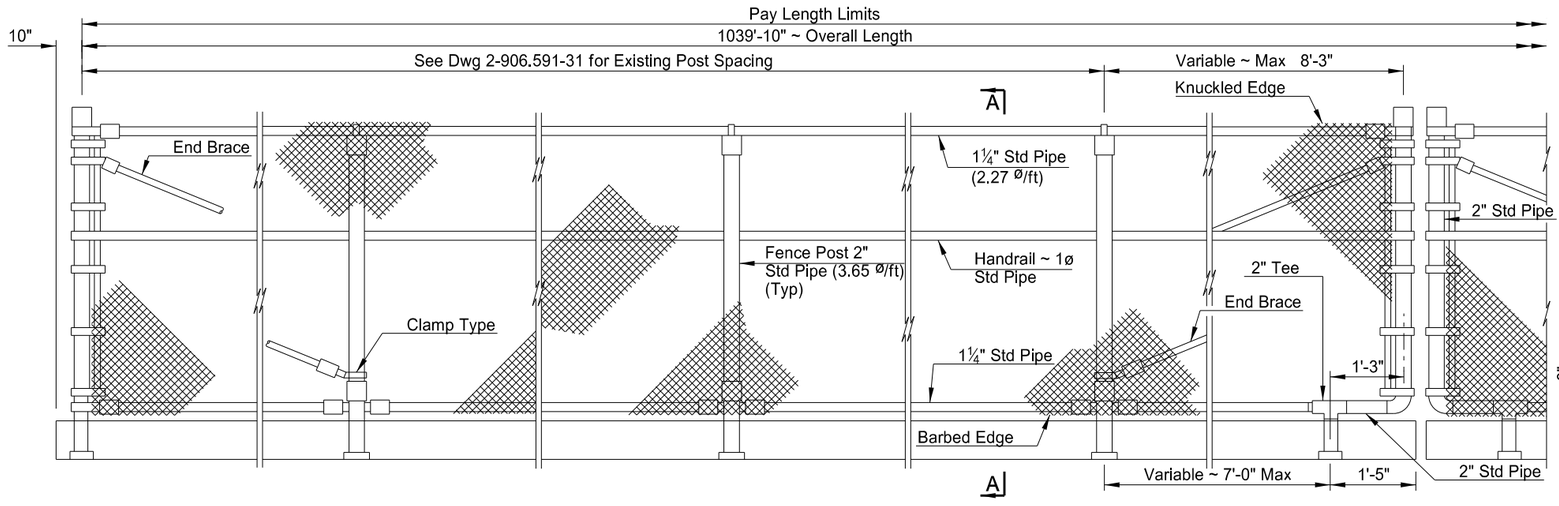
BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

EXISTING PEDESTRIAN FENCE POST SPACING LAYOUT

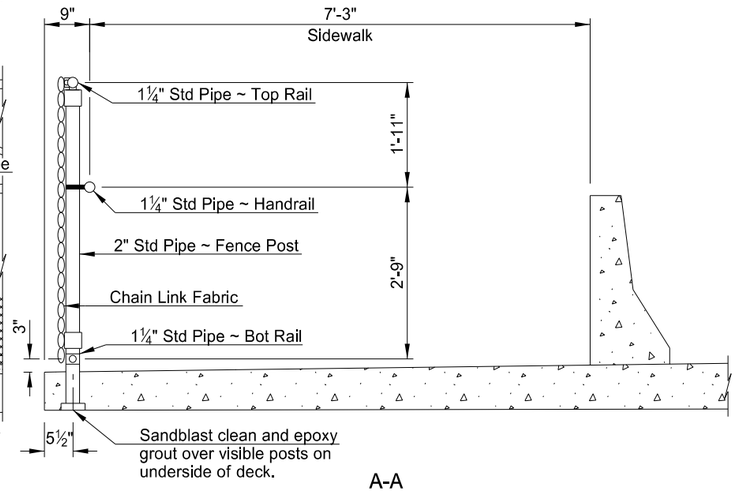
23 U.S.C. 409
NDDOT Reserves All Objections

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	32

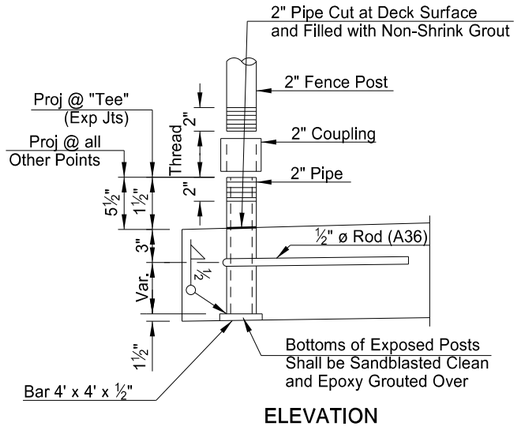


WIRE FENCE ELEVATION
(Looking North)

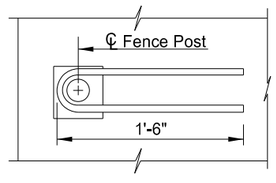
DETAIL AT EXPANSION SEAL JOINTS



A-A

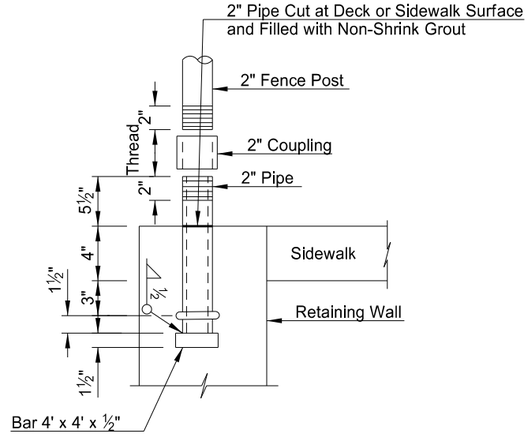


ELEVATION



PLAN

PIPE ANCHORAGE FOR FENCE POSTS



ELEVATION OF
FENCE POST ANCHORAGE

NOTES:

Existing pedestrian rail to be removed.

Sandblast clean and epoxy grout over the bottom of all visible posts on underside of deck. Submit epoxy grout to the Engineer for approval prior to completing the work.

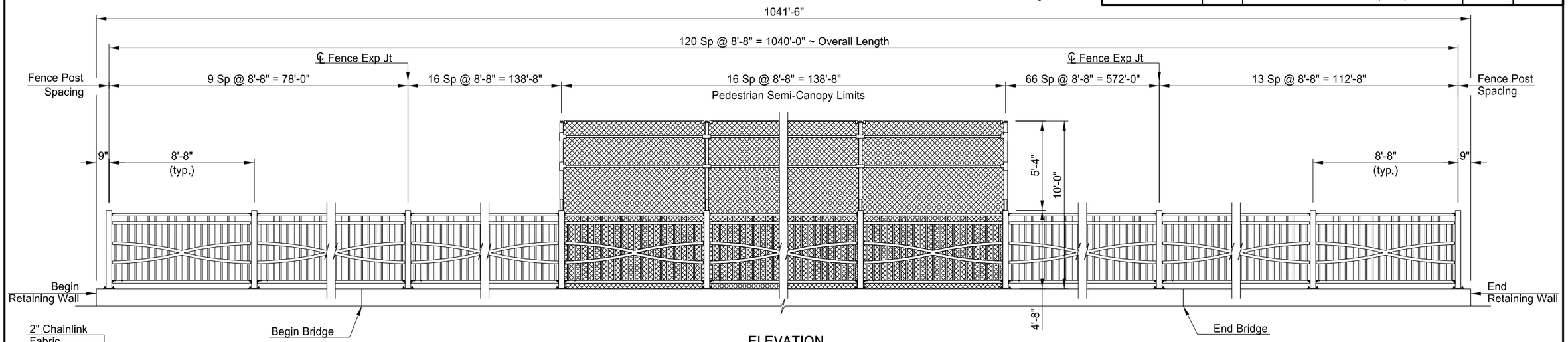
REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

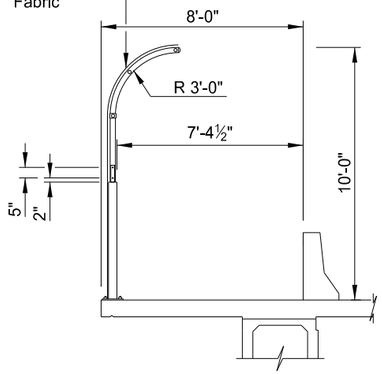
BURDICK EXPRESSWAY EAST-CP RAIL SEP
MINOT

REMOVE PEDESTRIAN RAIL

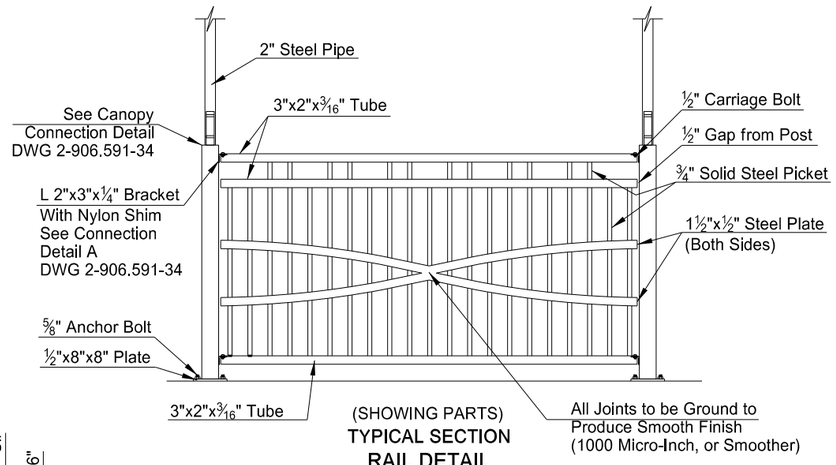
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(136)906	170	33



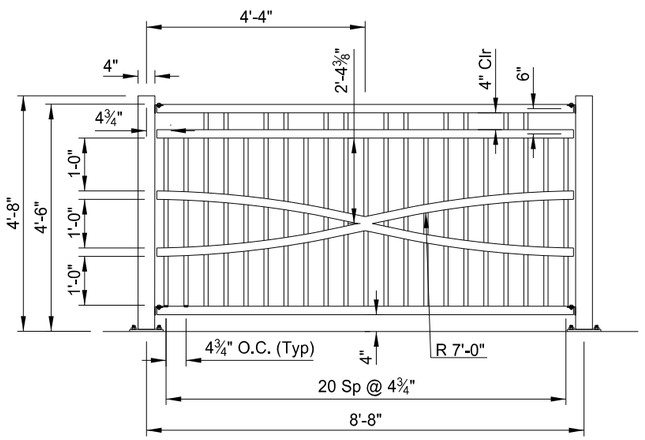
ELEVATION



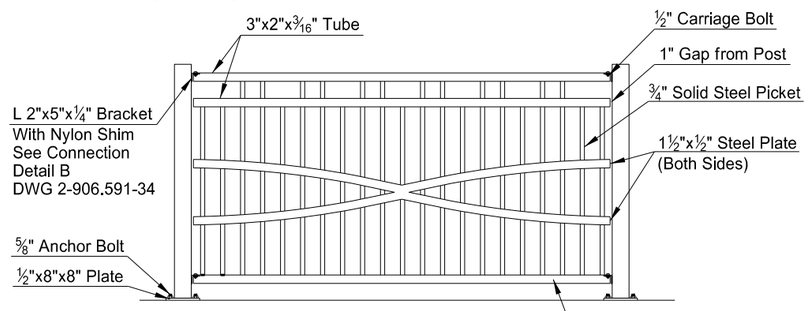
PEDESTRIAN SEMI-CANOPY SECTION



(SHOWING PARTS)
TYPICAL SECTION
RAIL DETAIL



(SHOWING DIMENSIONS)
RAIL DETAIL



(SHOWING PARTS)
SECTION OVER EXPANSION JOINT
AT PIER 3, PIER 6, & PIER 9
RAIL DETAIL

NOTES:

Provide fabric meeting AASHTO M 181 Type 4, Class B and shall be 9 gauge wire, 2 inch mesh, knuckled finish top and bottom.

Galvanize and paint black all pipe, posts, fittings, ties and hardware, above pedestrian railing in accordance with North Dakota Standard Specification Sections 852 and 854.
100% bonded black vinyl coat all fence fabric above and below pedestrian railing.

Galvanize and paint black the pedestrian railings in accordance with North Dakota Standard Specification sections 852 and 854.

To install anchor base plates, drill in ASTM A449 ⅝" ø x 8" through bolts. Core drill all holes. Hammer drilling will not be permitted on the deck. Exercise caution not to damage edge of deck. Place base plates along the edge of deck as shown in the "Base Plate Plan" view. Install all posts perpendicular to the deck. Repair any damage to the edge of deck at the contractors expense.

Include the 4'- 6" railing in the price bid for "PEDESTRIAN RAILIING". Include the 10'- 0" railing with fence as detailed including all chainlink fabric and assemblies in the price bid for "PEDESTRIAN SEMI-CANOPY".

Contractor to lay out base plates prior to fabrication to identify any conflicts. Present any conflicts to the engineer immediately.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

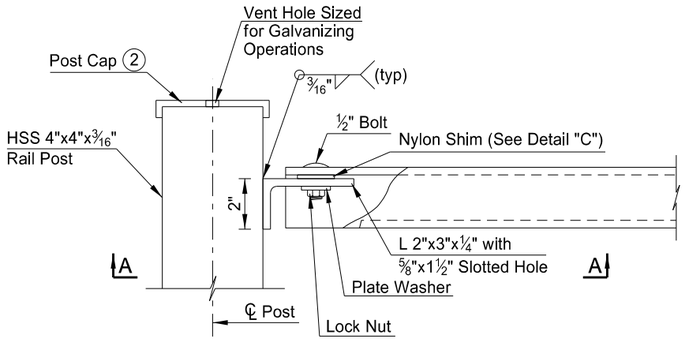
QUANTITIES	
PEDESTRIAN RAILING	901.3 LF
PEDESTRIAN SEMI-CANOPY	138.7 LF

BURDICK EXPRESSWAY EAST-CP RAIL SEP

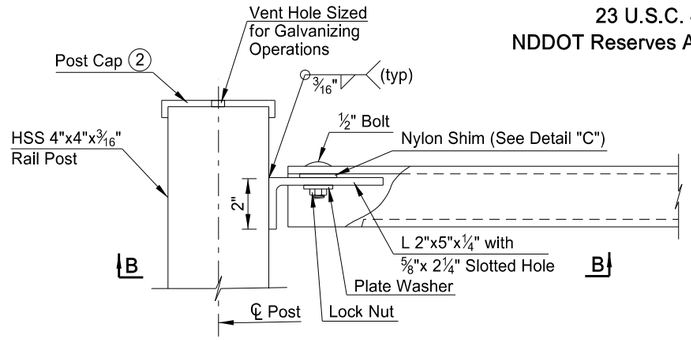
MINOT

PROPOSED PEDESTRIAN RAIL

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	34



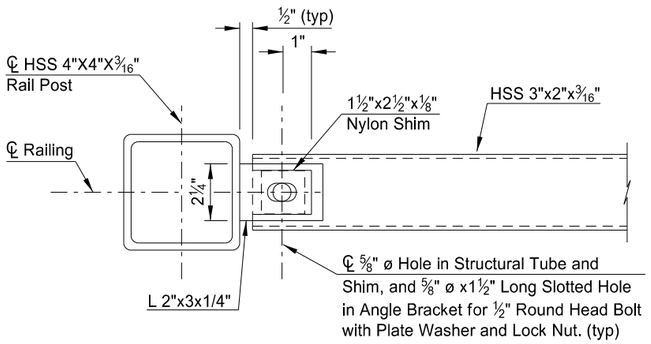
CONNECTION DETAIL A



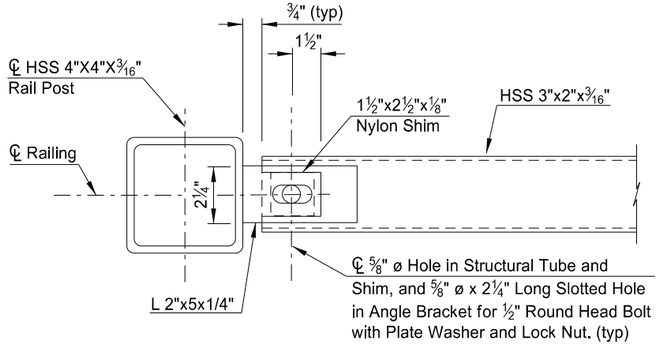
CONNECTION DETAIL B

NOTES:

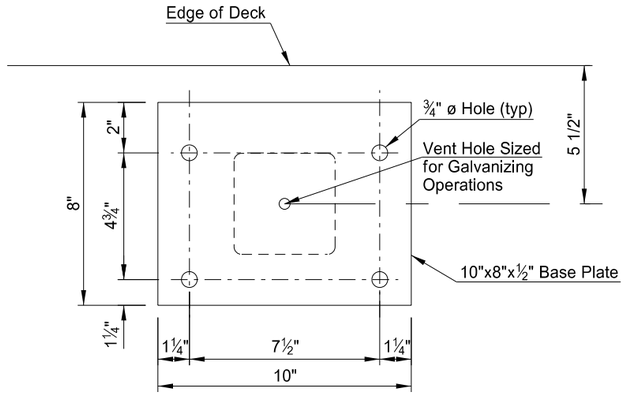
1. 5/8" ø Anchor System with 6" Embedment in Cleaned Hole capable of providing the proof load required. Install According to Manufacturer's Recommendations. Proof Load to 7.4 KIPS. Prood load the first four bolts and a random 10% of bolts after first four selected by the Engineer.
2. Provide a Flat Top Style Steel Cap Welded to Top of Post with a Surface Finish of 1000 Micro-Inch, or Smoother, Prior to Galvanizing.
3. Weld posts to the base plates around the entire periphery of the post. Weld pickets to he HSS tubes at each intersecting location. Weld steel plates to each picket at each intersecting location.



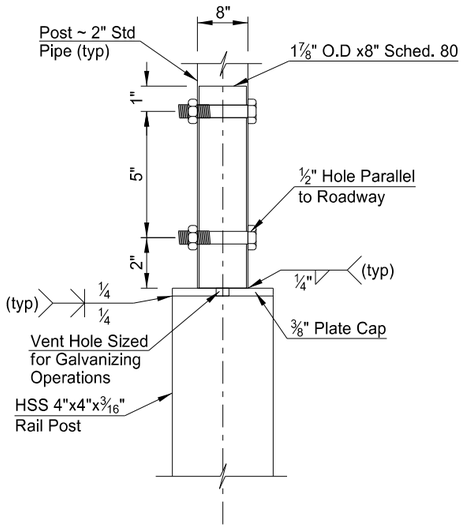
VIEW A-A



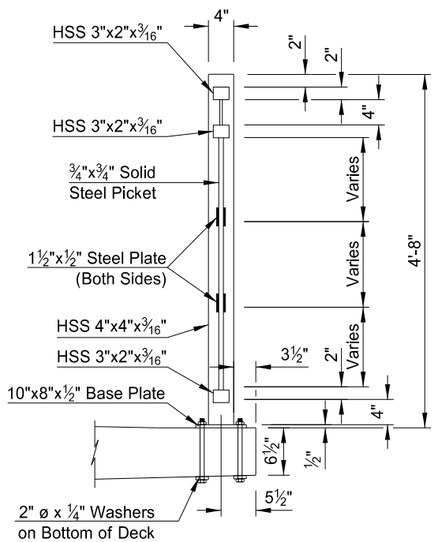
VIEW B-B



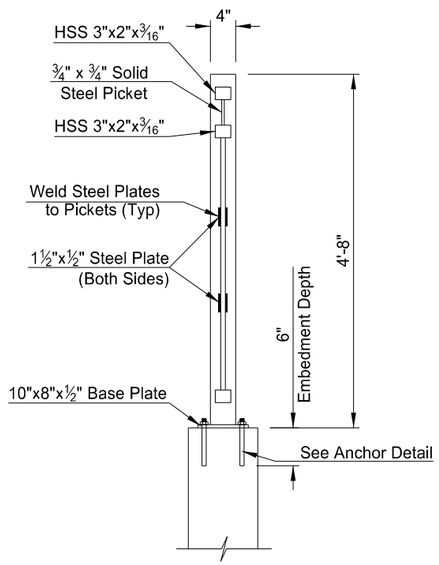
BASE PLATE PLAN (ALL POSTS)



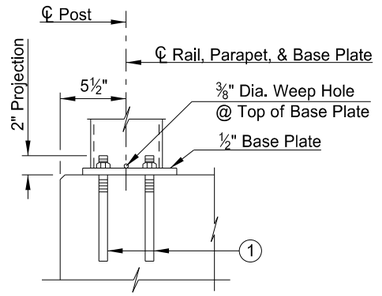
CANOPY CONNECTION DETAIL



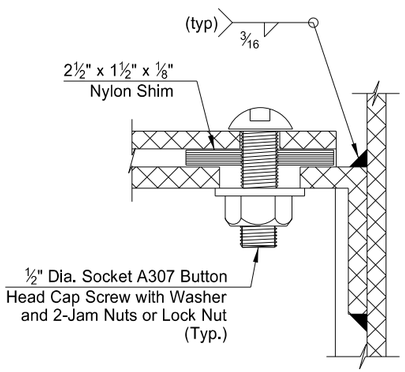
SECTION THROUGH RAILING ON DECK



SECTION THROUGH RAILING ON RETAINING WALL



ANCHOR DETAIL



DETAIL "C"

8/11/2022

BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

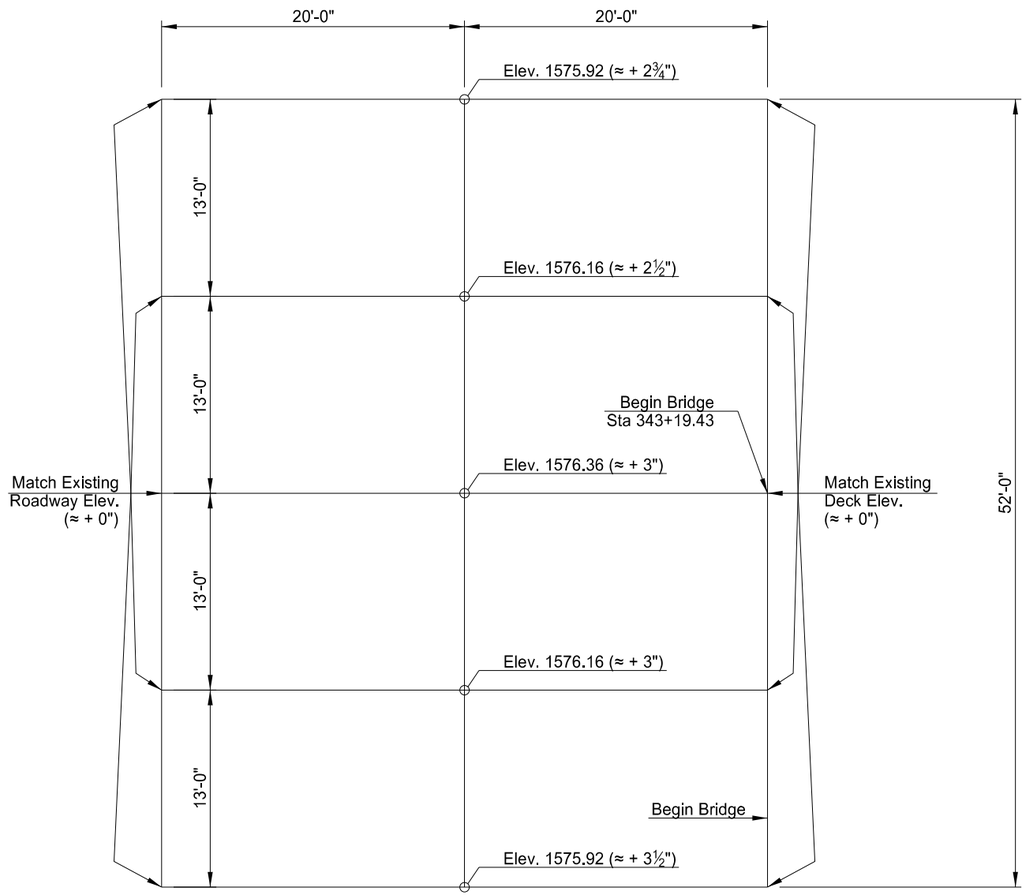
PROPOSED PEDESTRIAN RAIL

23 U.S.C. 409
NDDOT Reserves All Objections

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(136)906	170	35

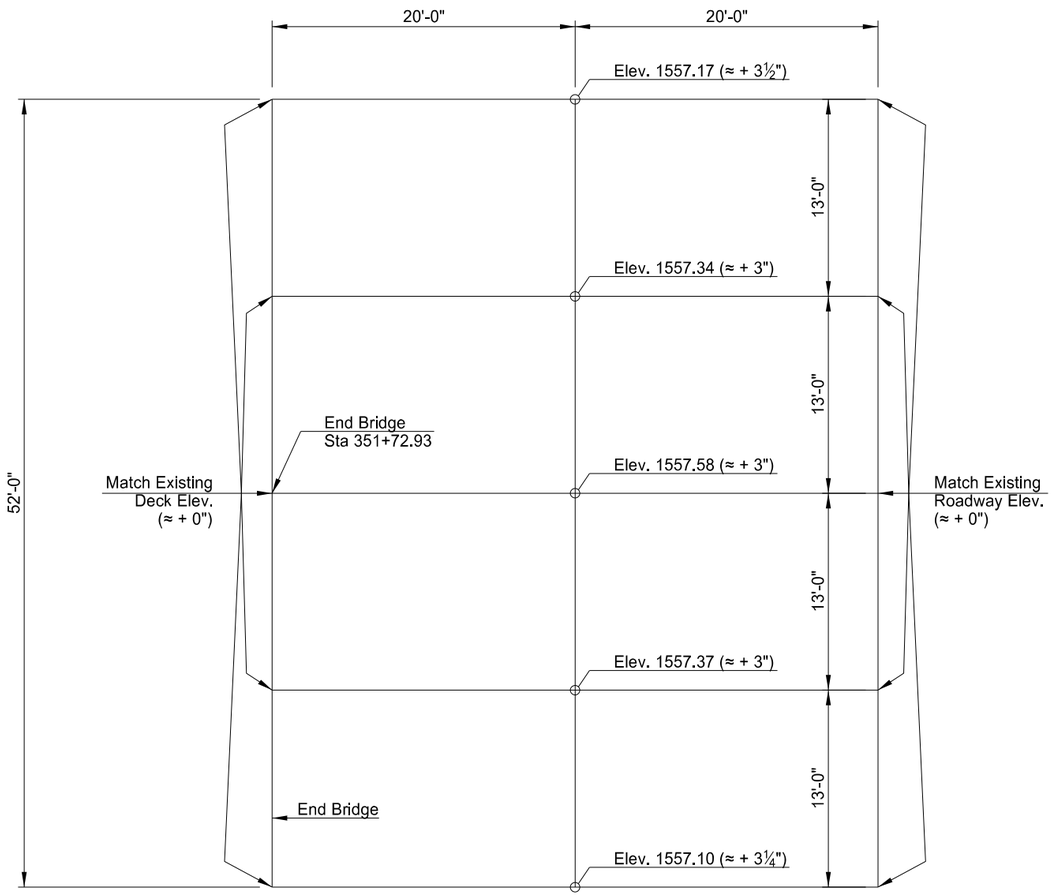
NOTE:

Foam lift the existing approach slabs to the elevations provided where the first approach slab meets the second approach slab. The intent of this elevation is to make a straight line from the begin/end of the bridge to the end of the second approach slab where the approach slab meets the roadway. Elevation/raise dimensions may need to be modified slightly in the field to accomplish this. An approximate amount of foam lifting is provided to meet the elevation (≈ + X"). Match the approach slab elevation to the existing bridge and roadway elevations where they tie in.



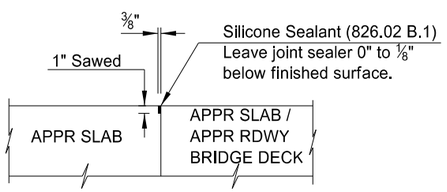
WEST APPROACH SLAB 2 WEST APPROACH SLAB 1

WEST APPROACH SLAB



EAST APPROACH SLAB 1 EAST APPROACH SLAB 2

EAST APPROACH SLAB



JOINT DETAIL

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES	
POLYURETHANE FOAM	5,200 LBS

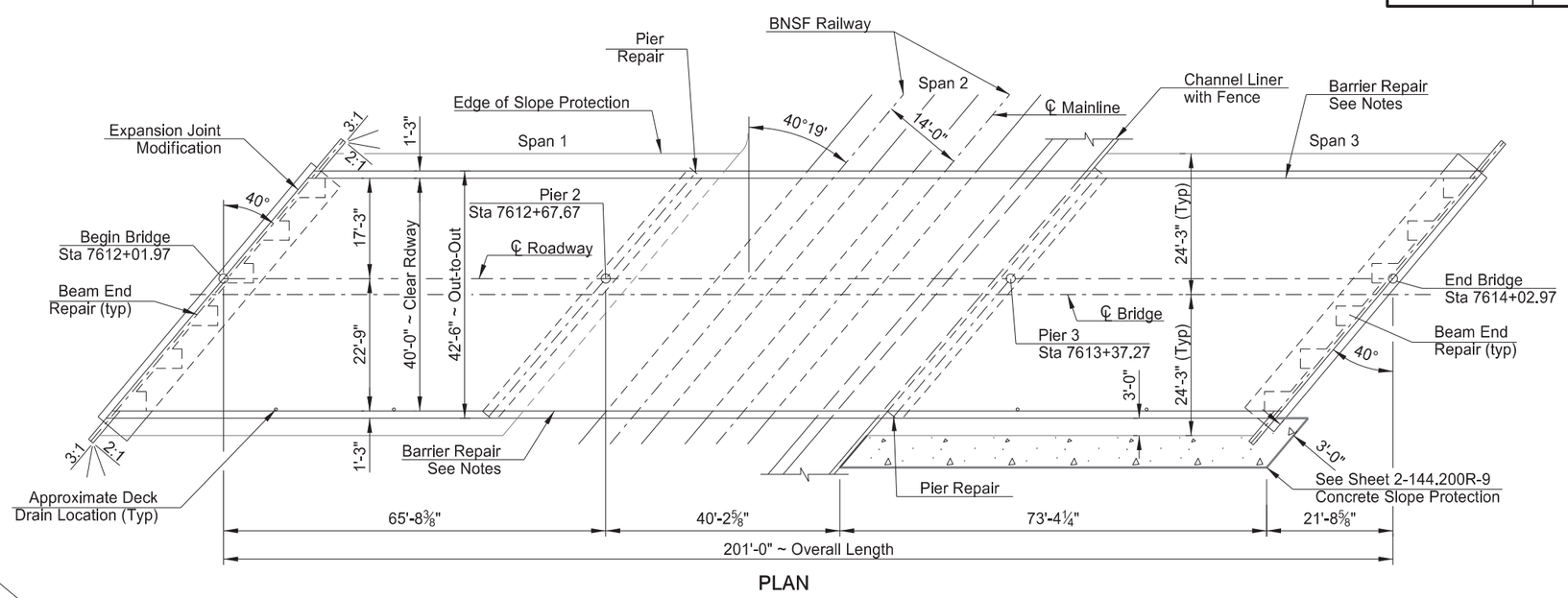
BURDICK EXPRESSWAY EAST-CP RAIL SEP

MINOT

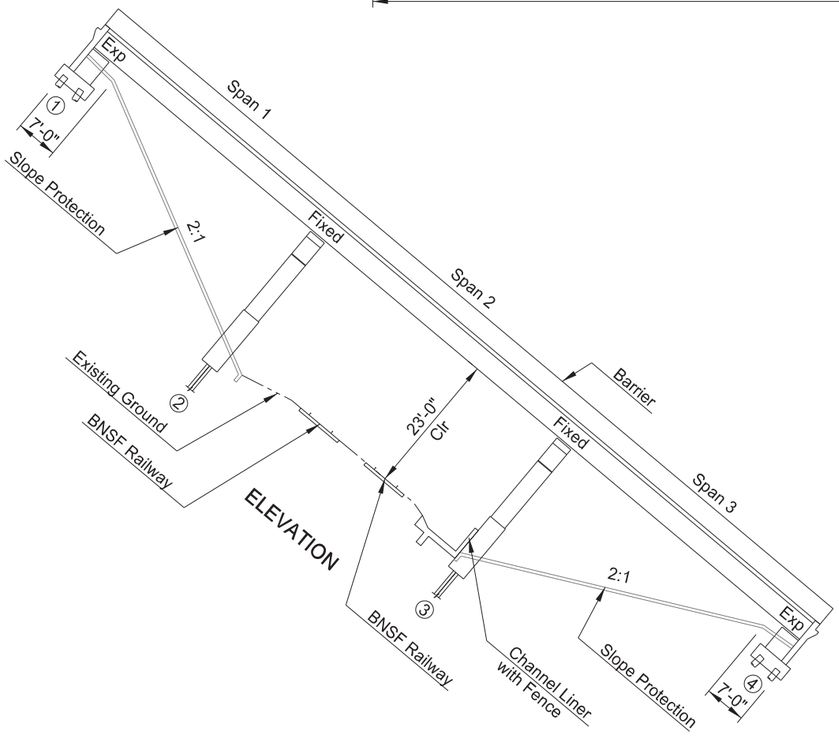
APPROACH SLAB FOAM JACKING

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(137)144	170	36

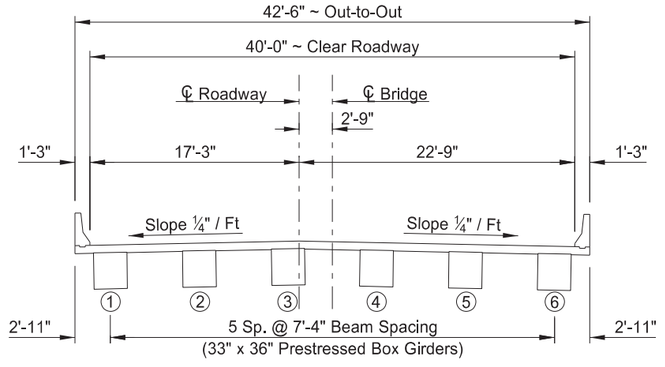


PLAN



BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
107	0105	RAILWAY PROTECTION INSURANCE - SITE 3	L SUM	1
107	0142	RAILROAD COORDINATION - COMPANY B	L SUM	1
107	0145	RAILROAD FLAGGING	DAY	1500
258	0100	CONCRETE SLOPE PROTECTION	SY	54.5
602	1250	PENTRATING WATER REPELLANT TREATMENT	SY	894
602	1260	BRIDGE DECK CRACK SEALING	LF	603
930	9534	MODIFY DECK DRAIN	EA	4
930	9610	DECK SPALL REPAIR	SF	16
930	9620	PIER REPAIR	SF	15.4
930	9665	BARRIER REPAIR	EA	2
930	9696	BEAM END REPAIR	EA	9
950	8673	EXPANSION JOINT MODIFICATION	LF	56



LOOKING SOUTHEAST
TYPICAL SECTION

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

SPECIAL PROVISIONS	
SP 232(20)	RAILROAD REQUIREMENTS BNSF

STANDARD DRAWINGS
D-258-1

F.W.S. 0 PSF

HS-20 DESIGN LOADING

MINOT, NORTH DAKOTA
US HWY 2 EAST - BNSF RAIL SEP

STA 7613+02.47

BRIDGE LAYOUT

ND DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISON

Ketterling, Jonathan
08/12/22

DocuSign

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(137)144	170	37

NOTES

100 SCOPE OF WORK: This project consists of, but is not limited to, beam end repair, pier repair, barrier repair, deck spall repairs, joint repair, slope protection, and extension of deck drains.

100 GENERAL: Include the cost of furnishing and placing preformed expansion joint filler, silicone sealant along the barriers, concrete inserts, rebar couplers, and other miscellaneous items in the price bid for Deck Spall Repair.

100 PHASING: Complete all superstructure repair half of the bridge at a time.

602 SURFACE FINISH “D”: Remove loose existing Surface Finish D and reapply new Surface Finish D on all exposed surfaces of the barriers.

Clean all areas before the surface finish is applied to the existing concrete by sandblasting or by another method approved by the engineer. Match the existing surface finish color and texture.
Include the costs for this work in the price bid for Barrier Repair.

602 PENETRATING WATER REPELLENT TREATMENT: Apply penetrating water repellent to the top of the bridge deck, front face and top of barriers, and top of abutments. Apply penetrating water repellent solution prior to sealing any bridge deck cracks. Apply water repellent treatment to the deck prior to switching traffic to the other side.

If water washing equipment is used for cleaning, provide either a water pressure washer with 160°F water at 1800 psi minimum nozzle pressure or a cold water pressure washer at 3,000 psi minimum nozzle pressure.

602 BRIDGE DECK CRACK SEALING: After the penetrating water repellent has been applied and is dry, the Engineer will perform a visual inspection of the bridge deck, and barriers to determine the need for crack sealing. Repair all cracks designated by the Engineer at this time.

Perform a visual inspection of the bridge deck, and barriers and mark all visible cracks appearing on the top surface 0.007" or greater in width at its widest segment or as directed by the Engineer.

Immediately before applying the sealer, clean the cracks by removing all dust and debris with compressed air. Seal the cracks with a two-part epoxy in accordance with the manufacturer s recommendations. Chase crack with the sealant application to limits of crack, including those portions that are narrower than 0.007" wide. The epoxy sealer may be Paulco TE-2501 (Viking Paints, Inc.), Dural 50 LM (Euclid Chemical Co.), TK-9000 or TK-2110 (TK Products), or an approved equal. Include all work and materials associated with the deck, and barrier crack sealing in the bid item Bridge Deck Crack Sealing.

930 BARRIER REPAIR: Remove all unsound concrete and replace it with new concrete to restore the barriers to their original cross section.

Saw cut the perimeter of the repair areas to a depth of 1”. Remove all unsound concrete with a 15 pound maximum size chipping hammer. Remove concrete around the periphery of any exposed reinforcing steel to provide a minimum clearance behind the bar of ¼” plus the dimension of the maximum size aggregate of the repair material. Take care in the removal process to ensure no damage is done to the reinforcing steel.

After all unsound concrete is removed, sandblast the entire barrier, and clean the barrier surface with compressed air before placing concrete. Sandblast all exposed reinforcing steel to remove rust scale, oil, and concrete lattice from the surface of the barrier and reinforcing bars. Remove rust before making repairs. Protect the concrete surface from contamination during rebar coating repairs. Clean the existing concrete surface by high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent that includes a migratory corrosion inhibitor. The bonding agent and corrosion inhibitor may be Sika FerroGard 903 (Sika Corp.), Tamms Duralprep A.C., Pro-Poxy 204 (Unitex) or an approved equal.

Use a two component, polymer-modified, cementitious repair mortar material that is specifically intended for patching concrete and contains a corrosion inhibitor. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400 (BASF Corporation), or an approved equal repair mortar. Cure the material as recommended by the manufacturer.

Include the costs for all labor, equipment and materials needed to repair each barrier in the price bid for Barrier Repair.

930 DECK SPALL REPAIR: The bridge deck has spall areas as shown. Construct the deck spall repair as a Bridge Deck Overlay meeting Section 650. The actual limits of the area to be repaired will be determined by the Engineer in the field.

Saw cut the perimeter of the repair area to a depth of 1”. Remove the concrete to a minimum depth of 2”. Include the saw cutting and all material labor and equipment required to remove the concrete and repair the deck spall areas in the bid item Deck Spall Repair.

930 PIER REPAIR: The bid item Pier Repair is for the saw cutting, removal, and replacement of all unsound concrete on the Pier columns, and caps. Restore the piers to their original cross section.

Saw cut the perimeter of the repair areas to a depth of 1”. Remove all unsound concrete with a 15 pound maximum size chipping hammer. Remove concrete around the periphery of any exposed reinforcing steel to provide a minimum clearance behind the bar of ¼” plus the dimension of the maximum size aggregate of the repair material. Take care in the removal process to ensure no damage is done to the reinforcing steel.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA
8/11/2022

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-4-002(137)144	170	38

NOTES

Sand blast clean the existing concrete and exposed reinforcing steel. Clean the existing concrete surface by high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent.

Use a two component, polymer-modified, cementitious repair mortar material that is specifically intended for patching concrete and contains a corrosion inhibitor. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400 (BASF Corporation), or an approved equal repair mortar. Cure the material as recommended by the manufacturer.

The pier repair quantity is based on the assumption that area to be repaired is to the dimensions shown in plans. The actual limits of the repair are to be determined by the Engineer in the field. Include the costs for all labor, equipment and materials needed to repair each pier in the price bid for Pier Repair.

930 BEAM END REPAIR: See Beam Repair Details Sheet for the approximate repair areas of the prestressed beam ends. A quantity of 9 beam ends is anticipated with locations to be verified by the Engineer in the field. The actual limits of the repair are to determined by the Engineer in the field. Remove all unsound concrete and replace it with new concrete to restore the beam ends to their original cross section. Complete beam end repair only on the half of the bridge that is not carrying traffic.

Saw cut the perimeter of the repair areas to a depth of 1”. Remove all unsound concrete with a 15 pound maximum size chipping hammer. Remove concrete around the periphery of any exposed reinforcing steel to provide a minimum clearance behind the bar of ¼” plus the dimension of the maximum size aggregate of the repair material. Take care in the removal process to ensure no damage is done to the reinforcing steel.

Sand blast clean the existing concrete and exposed reinforcing steel. Clean the existing concrete surface by high pressure water blasting. After the surface has dried and just before the patching material is placed, coat the surface with an epoxy bonding agent that includes a migratory corrosion inhibitor. The bonding agent and corrosion inhibitor may be Sika FerroGard 903 (Sika Corp.), Tamms Duralprep A.C., Pro-Poxy 204 (Unitex) or an approved equal.

Use a two component, polymer-modified, cementitious repair mortar material that is specifically intended for patching concrete and contains a corrosion inhibitor. This patching material may be SikaTop 123 Plus (Sika Corporation), Duraltop Gel (Euclid Chemical Company), MasterEmaco N 400 (BASF Corporation), or an approved equal repair mortar. Cure the material as recommended by the manufacturer.

Include the costs for all labor, equipment and materials needed to repair each beam end in the price bid for Beam End Repair.

950 EXPANSION JOINT MODIFICATION: Remove existing neoprene gland and sandblast clean. Use a pre-compressed polymer impregnated polyurethane foam expansion joint seal coated with a highway-grade silicone surface providing a permanent weather tight seal. Use a compatible two-component epoxy adhesive on the expansion joint seal for bonding. The joint seal may be Wabo FS Bridge Seal (Watson Bowman Acme); BEJS Bridge Expansion Joint System (Emseal); Iso-Flex Silfast XL (LymTal International), or an approved equal. Prepare existing joint opening and install the joint seal according to the manufacturer's recommendations. The quantity of expansion joint modification includes an additional 6 inches of joint seal at each end to be turned up vertically matching the inside face of the barrier. Include all work and materials associated with the expansion joint seal installation in the bid item Expansion Joint Modification.

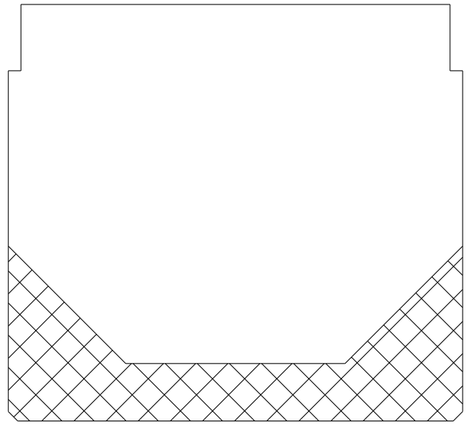
REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA
8/11/2022

23 U.S.C. 409
NDDOT Reserves All Objections

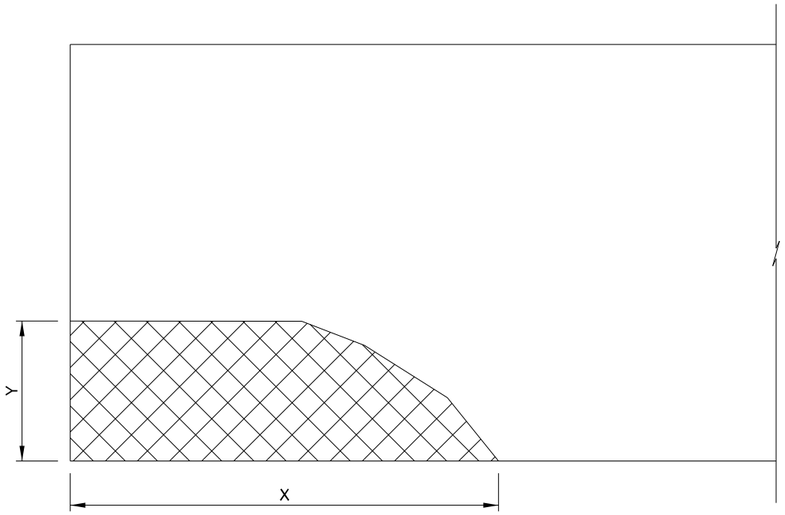
	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(137)144	170	39

Indicates Beam End Repair Area.

NOTE:
All areas to be verified by Engineer in the field prior to removal.



END VIEW



PART BEAM ELEVATION

BEAM END REPAIR DETAILS

	Beam End Repair Locations				
Span	Beam #	End	At Abutment	X (Ft)	Y (Ft)
1	1	North	Abut 1	3.5	1
1	2	North	Abut 1	1	1
1	3	North	Abut 1	1	1
1	4	North	Abut 1	2	1
1	5	North	Abut 1	2.5	1
1	6	North	Abut 1	3	1

Beam End Repair Locations					
Span	Beam #	End	At Abutment	X (Ft)	Y (Ft)
3	1	South	Abut 4	1.5	1
3	2	South	Abut 4	2	1
3	5	South	Abut 4	1	1

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

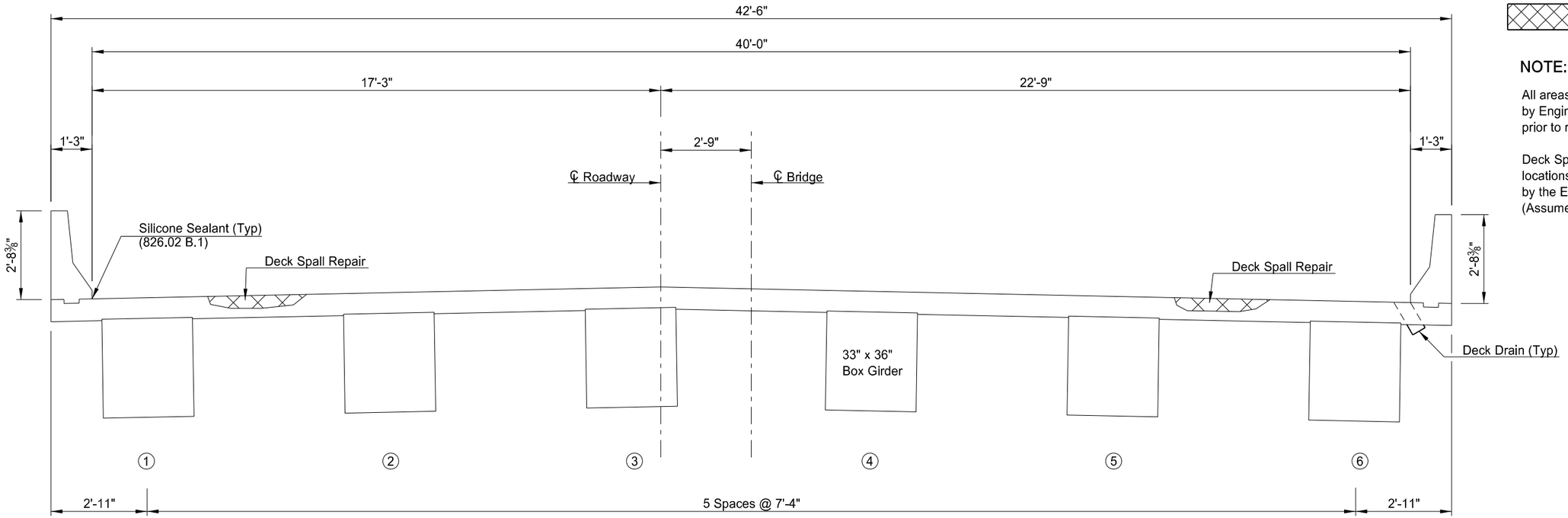
QUANTITIES	
BEAM END REPAIR	9 EA

US HWY 2 EAST - BNSF RAIL SEP
MINOT, NORTH DAKOTA

BEAM REPAIR DETAILS

23 U.S.C. 409
NDDOT Reserves All Objections

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(137)144	170	40



Indicates spall repair area.

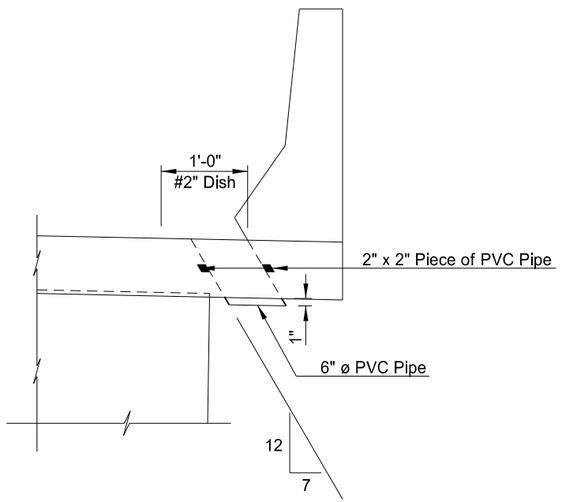
NOTE:

All areas to be verified by Engineer in the field prior to removal.

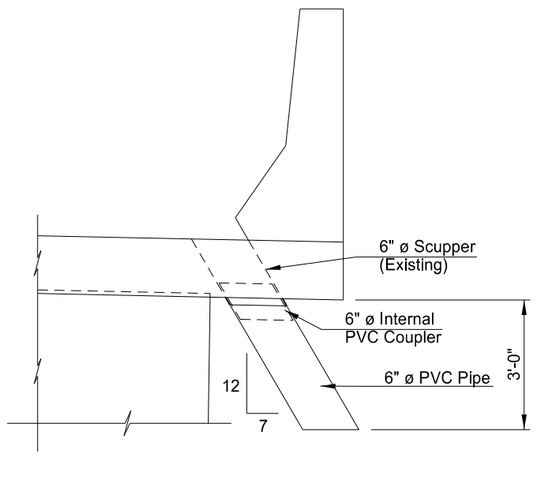
Deck Spall Repair is for locations as determined by the Engineer. (Assumed 16 SF)

(Looking Southeast)

ELEVATION



EXISTING DECK DRAIN DETAIL



MODIFIED DECK DRAIN DETAIL

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

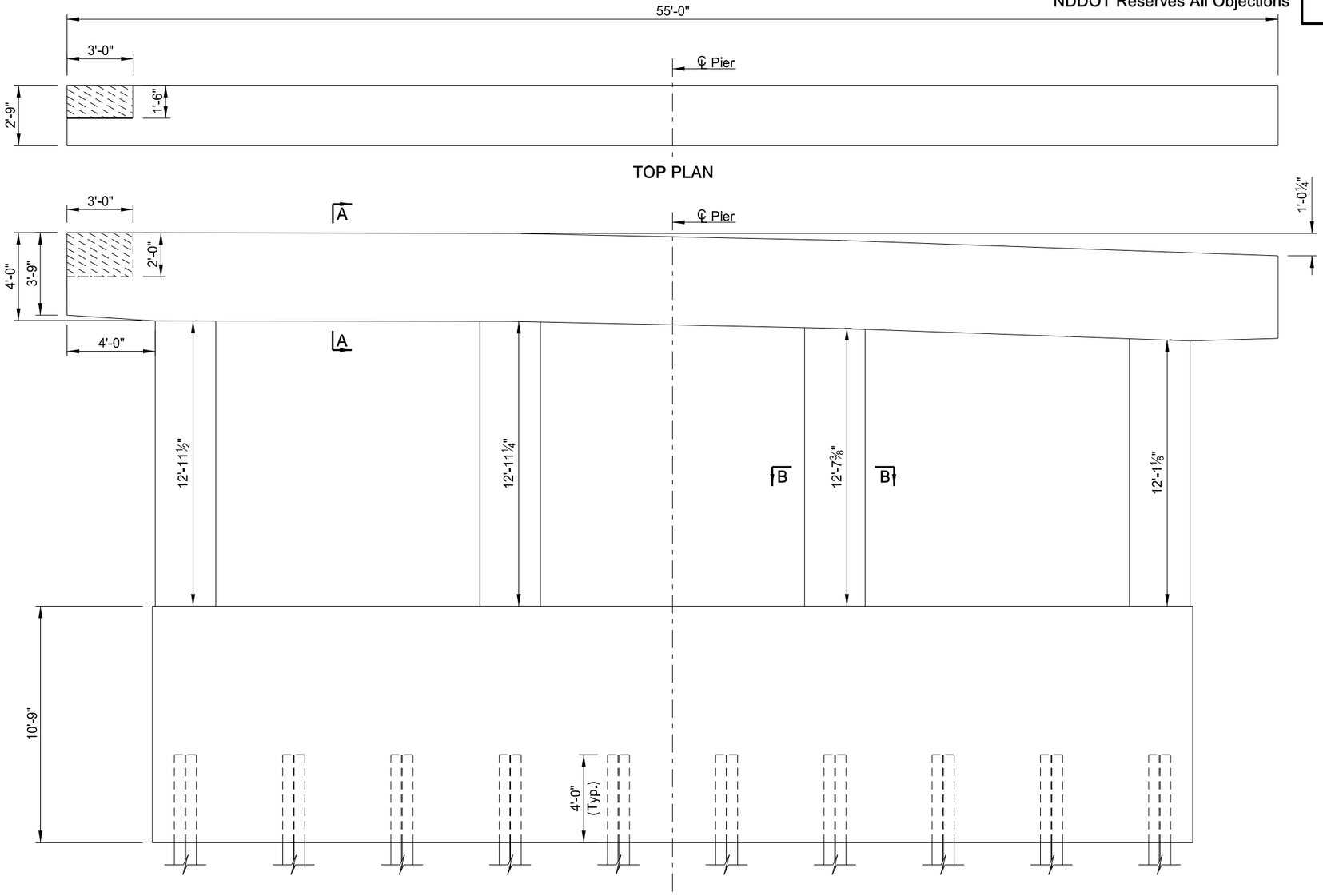
QUANTITIES	
DECK SPALL REPAIR	16 SF
MODIFY DECK DRAIN	4 EA

US HWY 2 EAST - BNSF RAIL SEP
MINOT, NORTH DAKOTA

SLAB SECTION

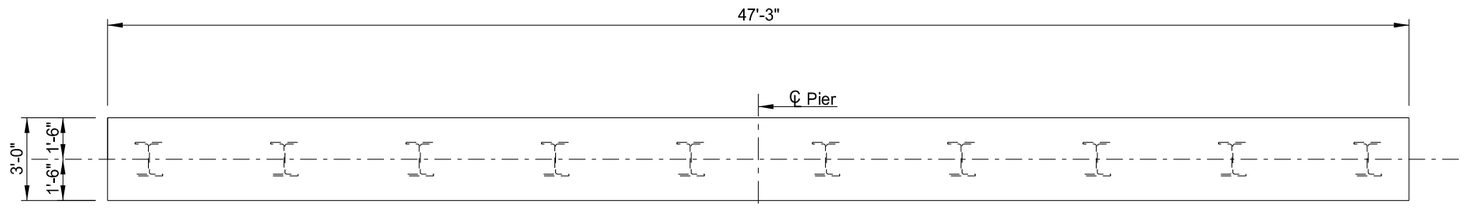
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(137)144	170	41

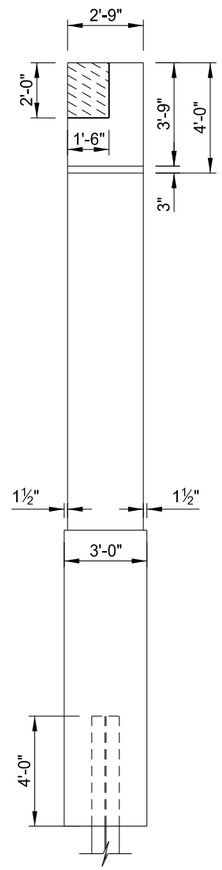


TOP PLAN

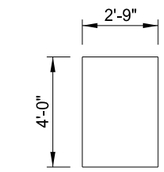
(NORTH FACE)
ELEVATION



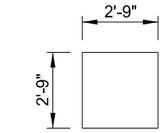
FOOTING PLAN



(EAST FACE)
END SECTION



A-A



B-B

Indicates Pier repair area.

NOTE:

All areas to be verified by Engineer in the field prior to removal.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

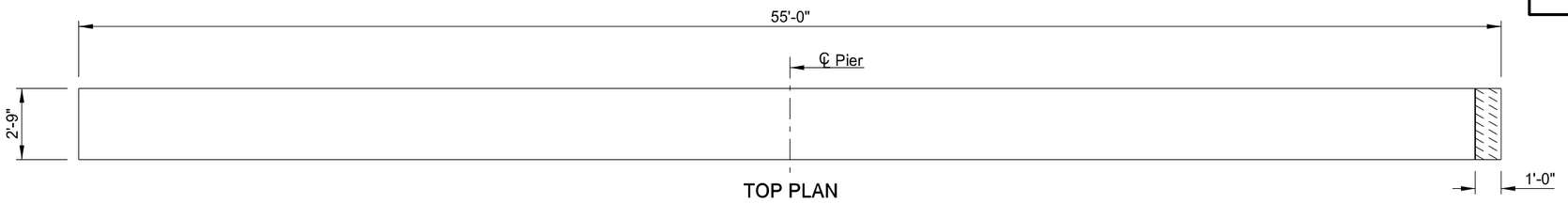
QUANTITIES	
PIER REPAIR	13.5 SF

US HWY 2 EAST - BNSF RAIL SEP
MINOT, NORTH DAKOTA

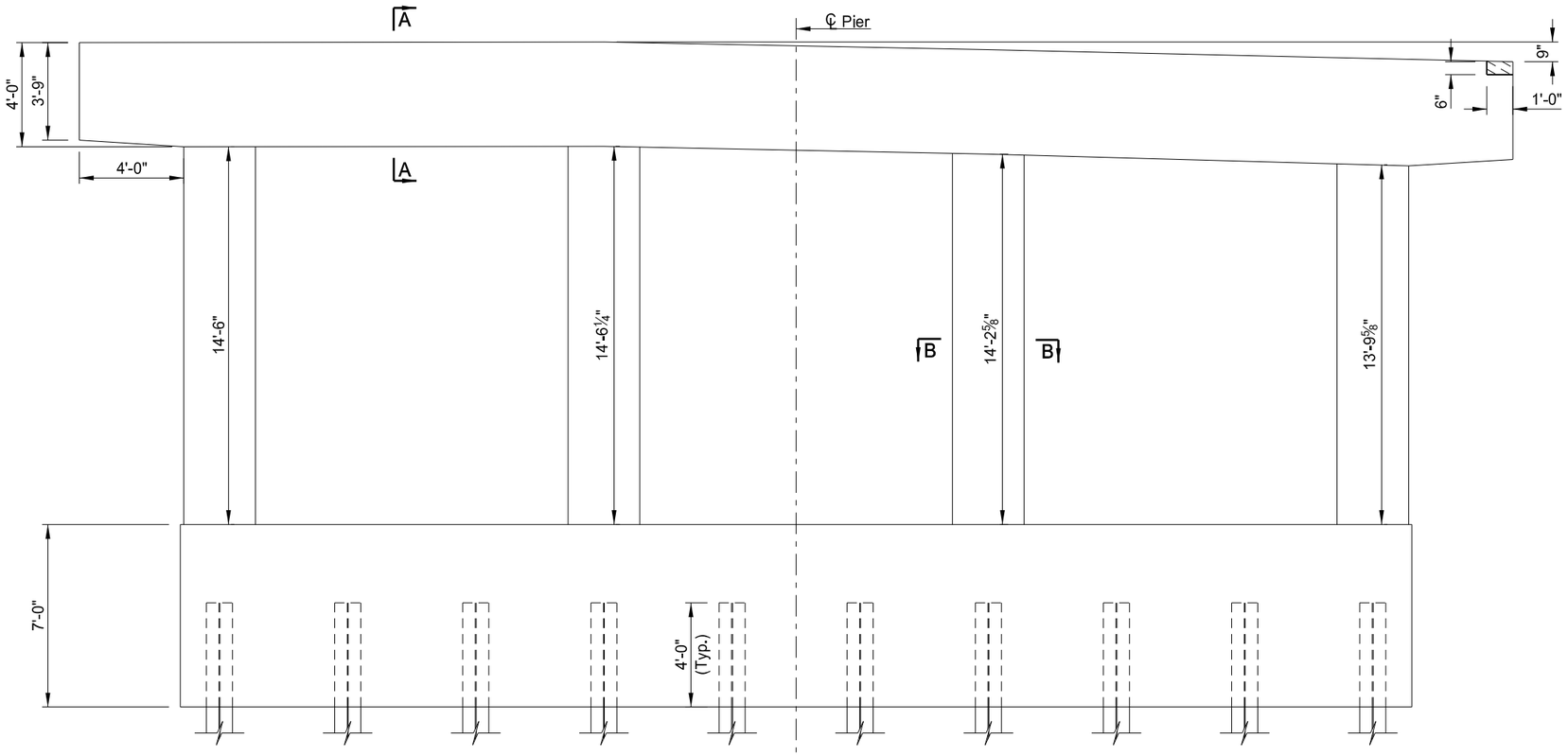
PIER 2
NORTH FACE

PIER REPAIRS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(137)144	170	42

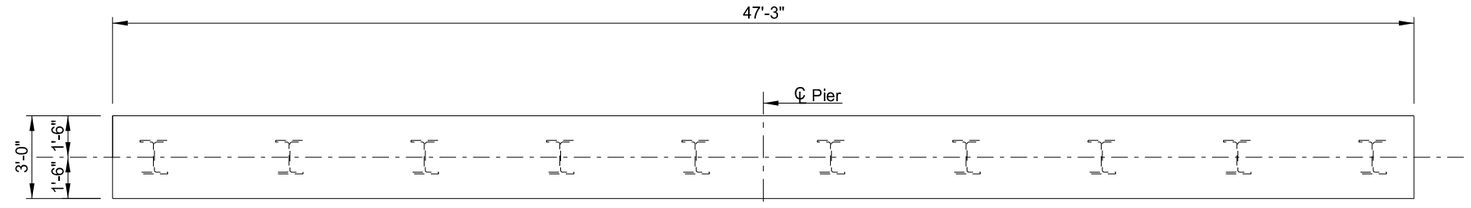


TOP PLAN

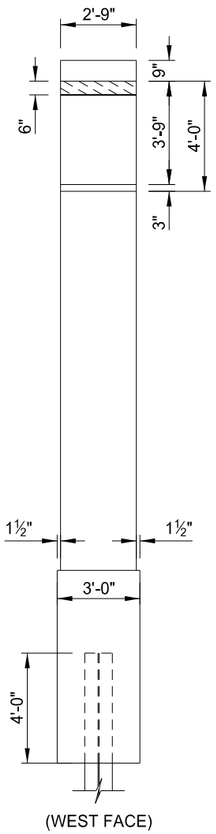


(NORTH FACE)

ELEVATION

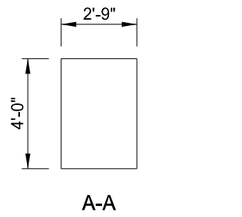


FOOTING PLAN

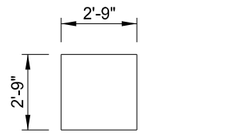


(WEST FACE)

END SECTION



A-A



B-B

Indicates Pier repair area.

NOTE:

All areas to be verified by Engineer in the field prior to removal.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

QUANTITIES

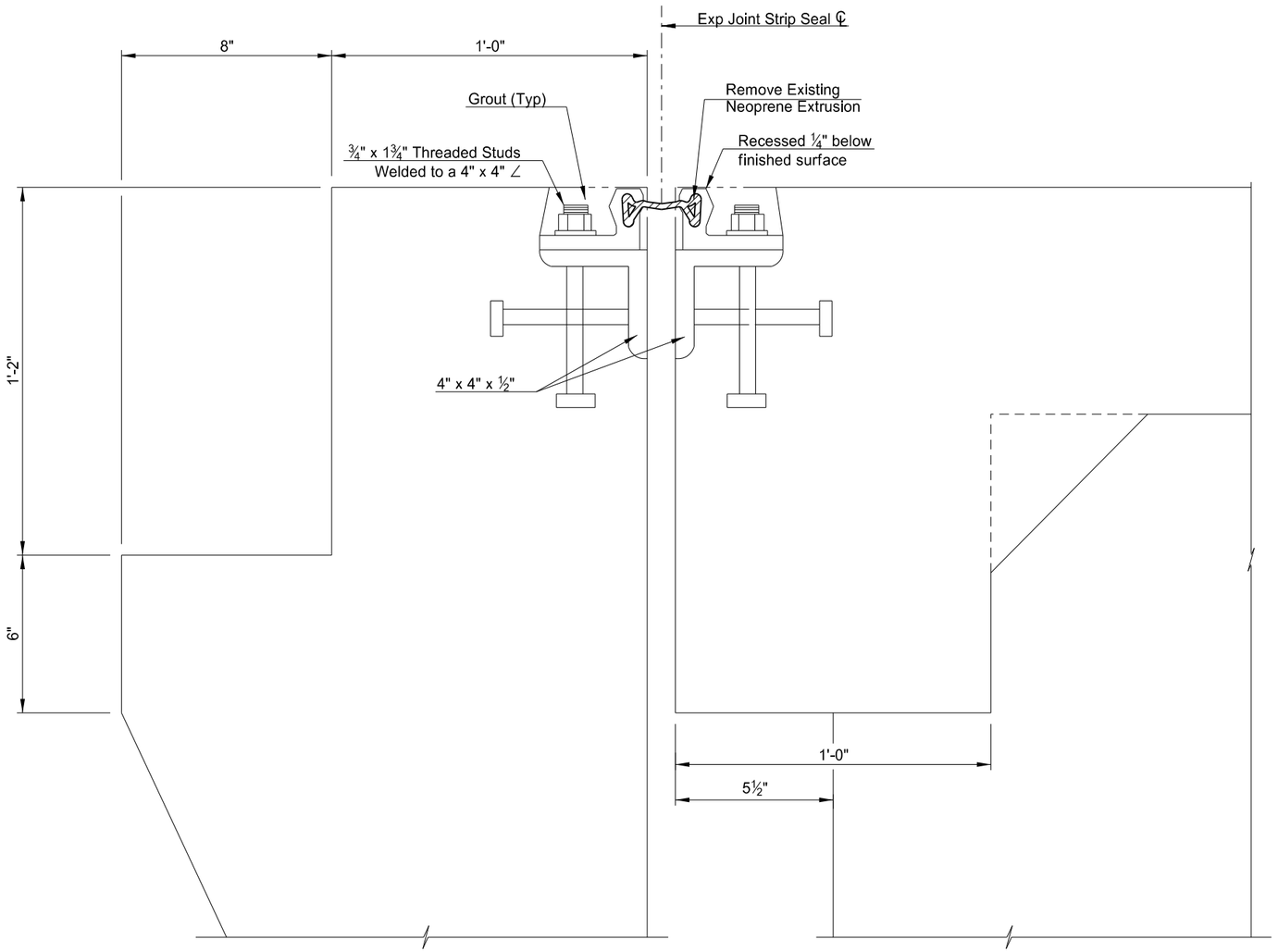
PIER REPAIR	1.9 SF

US HWY 2 EAST - BNSF RAIL SEP
MINOT, NORTH DAKOTA

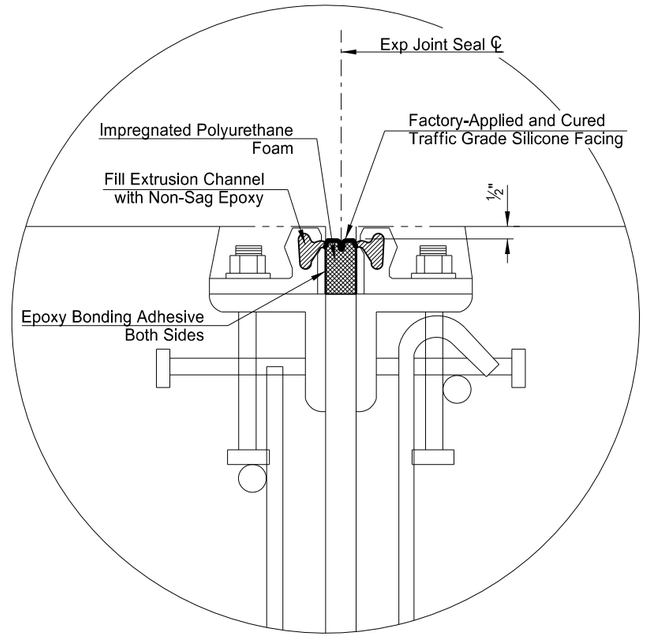
PIER 3
NORTH FACE

PIER REPAIRS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-002(137)144	170	43



EXISTING SECTION EXPANSION JOINT
(AT ABUTMENT 1)



PROPOSED SECTION EXPANSION JOINT
(AT ABUTMENT 1)

NOTES:

Install Expansion joint in two pieces with a field splice at ℄ Roadway.

Take Care during the removal of the neoprene extrusion. Repair any damage to the existing structure or steel armor plates at the contractor's expense.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

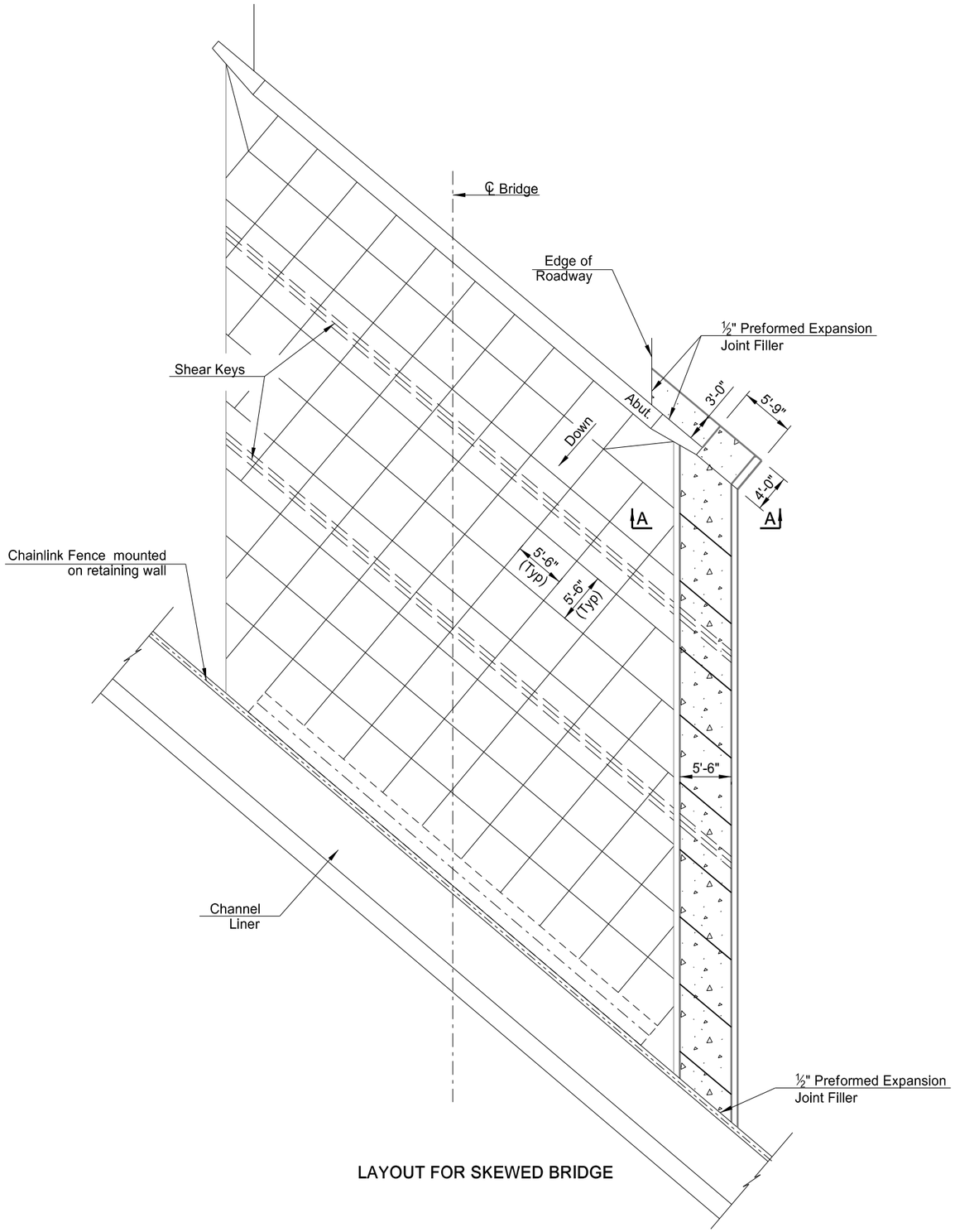
8/11/2022

QUANTITIES	
EXPANSION JOINT MODIFICATION	56 LF

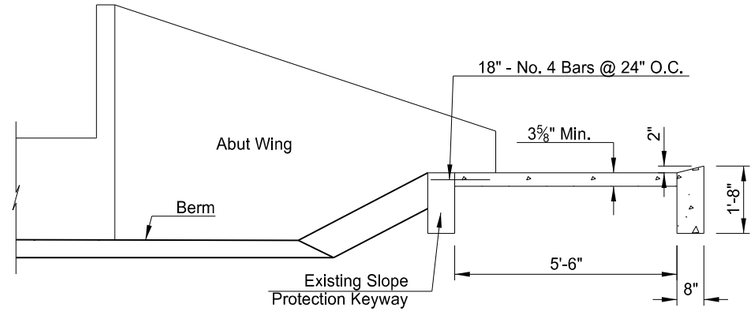
US HWY 2 EAST - BNSF RAIL SEP
MINOT, NORTH DAKOTA

EXPANSION JOINT DETAIL

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-002(137)144	170	44



LAYOUT FOR SKEWED BRIDGE



A-A

NOTES:

See D-258-1 "Standard Slope Protection Under Bridges" for dimensions and reinforcement details.

Minor regrading around the abutment wingwall and down the slope may be required for the construction of the slope protection. Included minor regrading in the price bid for "Concrete Slope Protection".

Drill and epoxy No. 4 Bars at 24" O.C. into existing concrete slope protection with a minimum 6" embedment.

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

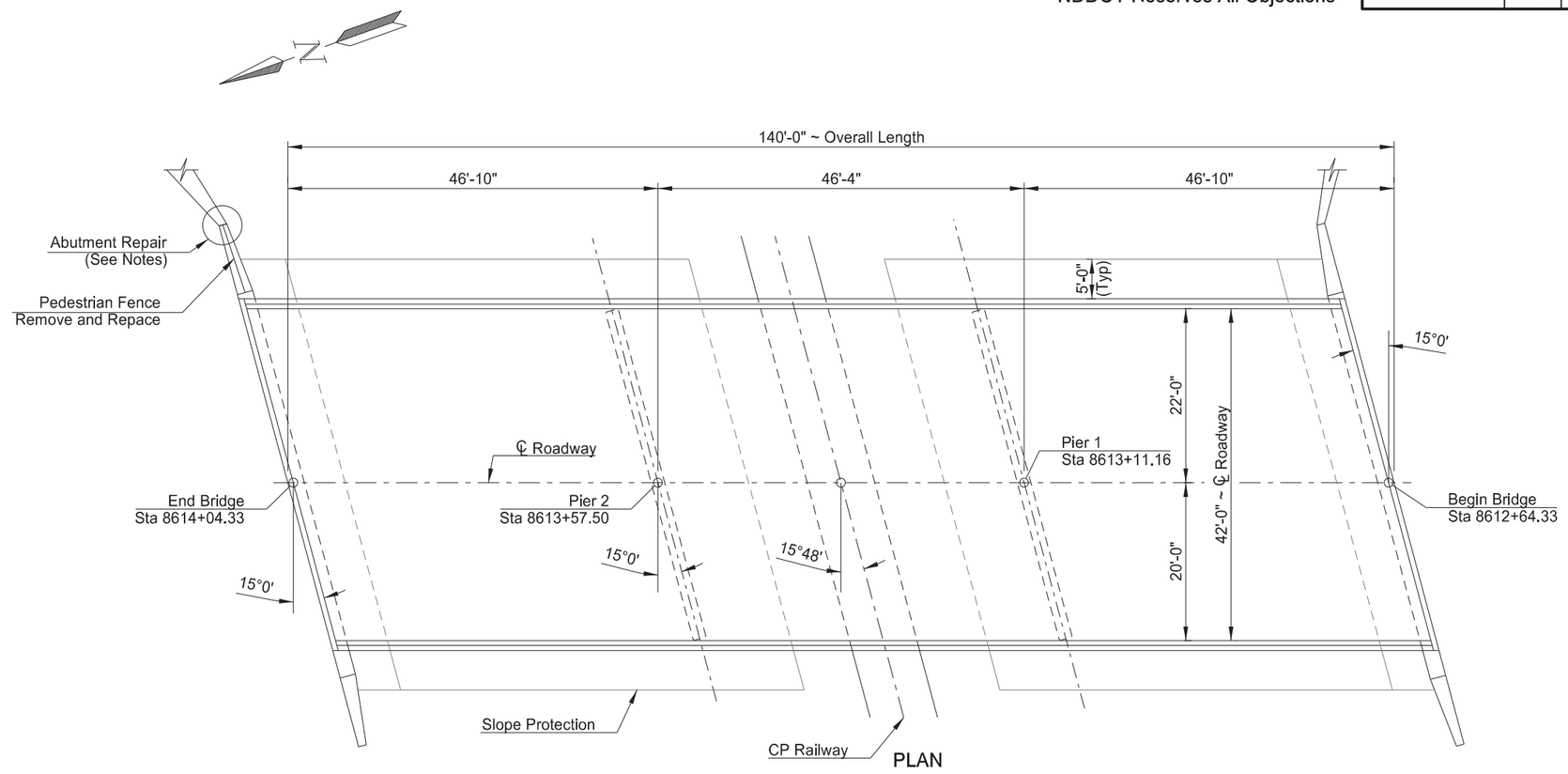
QUANTITIES	
CONCRETE SLOPE PROTECTION	54.5 SY

US HWY 2 EAST - BNSF RAIL SEP
MINOT, NORTH DAKOTA

CONCRETE SLOPE PROTECTION

23 U.S.C. 409
NDDOT Reserves All Objections

	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	CVD-NHU-4-083(151)920	170	45



PLAN

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
107	0104	RAILWAY PROTECTION INSURANCE - SITE 2	L SUM	1
107	0141	RAILROAD COORDINATION - COMPANY A	L SUM	0.3
550	0210	PCC PAVEMENT GRINDING	SY	405
602	1250	PENETRATING WATER REPELLANT TREATMENT	SY	752
602	1260	BRIDGE DECK CRACK SEALING	LF	252
624	0125	PEDESTRIAN FENCE-REMOVE & REPLACE	L SUM	1
650	0704	OVERLAY CONCRETE	CY	28
650	0707	DECK CONCRETE	CY	9
650	0720	CLASS 1 REMOVAL	SY	653
650	0721	CLASS 2 REMOVAL	SY	98
650	0722	CLASS 2A REMOVAL	LF	176
650	0723	CLASS 3 REMOVAL	SY	24
650	0724	CLASS 4 REMOVAL	SY	2
930	9660	ABUTMENT REPAIR	L SUM	1

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

SPECIAL PROVISIONS	
SP 233(20)	RAILROAD REQUIREMENTS CP

MINOT, NORTH DAKOTA
US 83 WEST BYPASS - CP RAIL SEP

STA 8613+34.33

BRIDGE LAYOUT

ND DEPARTMENT OF TRANSPORTATION
BRIDGE DIVISION

Ketterling, Jonathan
08/12/22

DocuSign

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-083(151)920	170	46

NOTES

100 SCOPE OF WORK: Work at this site consists of removing an asphalt overlay from the bridge deck, minor abutment repair, and potentially placing a deck overlay. After the Contractor has removed the asphalt overlay from the bridge deck, the Engineer will determine if a Bridge Deck Overlay is required. If the Engineer determines that a Bridge Deck Concrete Overlay is not required, the Engineer will eliminate bit items Overlay Concrete, and Class 1 through Class 4 Removal. Pavement grades and details shown in these plans are valid if the overlay is completed. The Engineer will provide new grades and details if a Bridge Deck Concrete Overlay is not required.

100 PHASING: Complete all superstructure repair half of the bridge at a time.

550 PCC PAVEMENT GRINDING: The bridge deck has been overlaid with approximately ½" to 1" maximum of asphalt. Remove this asphalt overlay off the concrete surface by milling or diamond grinding. Do not damage the surface of the concrete deck with asphalt removal equipment. Diamond grind the final driving surface of the bridge deck. The Engineer will pay plan quantity for the asphalt removal, regardless of the number of passes required by the Contractor's operation to complete the removal.

602 PENETRATING WATER REPELLENT TREATMENT: Apply penetrating water repellent treatment to bridge deck, and front face and top of barriers if overlay work is not completed. Apply penetrating water repellent treatment to overlaid bridge deck, and front face and top of barriers if overlay work is completed. Apply penetrating water repellent solution prior to sealing any bridge deck overlay cracks. Apply water repellent treatment to the deck prior to switching traffic to the other side.

If water washing equipment is used for cleaning, provide either a water pressure washer with 160°F water at 1800 psi minimum nozzle pressure or a cold water pressure washer at 3,000 psi minimum nozzle pressure.

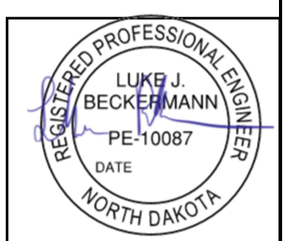
650 BRIDGE DECK CRACK SEALING: After the penetrating water repellant solution has been applied and is dry, the Engineer will perform a visual inspection of the bridge deck to determine the need for crack sealing. Repair all cracks designated by the Engineer at this time.

Perform a visual inspection of the bridge deck surface and mark all visible cracks appearing on the top surface 0.007" or greater in width at its widest segment or as directed by the Engineer.

Immediately before applying the sealer, clean the cracks by removing all dust and debris with compressed air. Seal the cracks with a two-part epoxy in accordance with the manufacturer's recommendations. Chase crack with the sealant application to limits of crack, including those portions that are narrower than 0.007" wide. The epoxy sealer may be Paulco TE-2501 (Viking Paints, Inc.), Dural 50 LM (Euclid Chemical Co.), TK-9000 or TK-2110 (TK Products), or an approved equal. Include all work and materials associated with the deck crack sealing in the bid item Bridge Deck Crack Sealing.

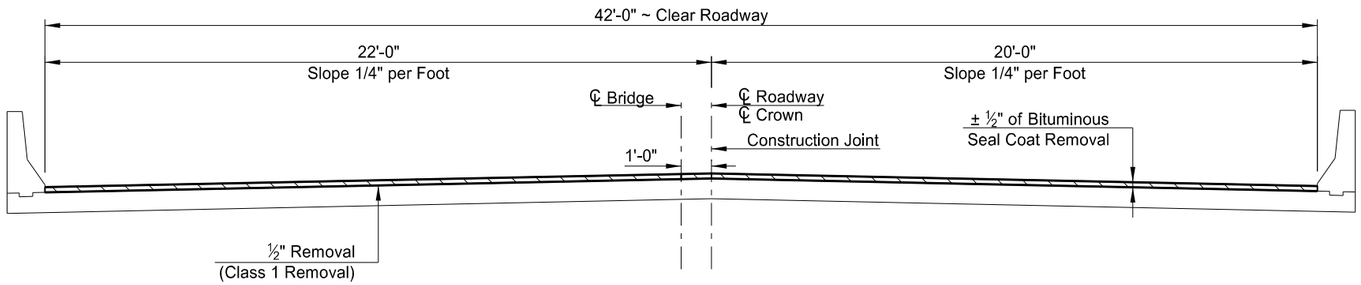
930 ABUTMENT REPAIR: Realign the northeast abutment wingwall to its original position in line with the back face of the abutment stem wall. This will likely include excavating behind the abutment and shifting the wingwall back into alignment. Take care not to damage the concrete. Any damage to the concrete will be repaired at the cost of the contractor. Two weeks prior to completing this work, submit a plan to the engineer for approval for how the work will be completed. Include the equipment used and how the abutment wingwall will be realigned in the plan.

Include the cost of excavation, furnishing and placing waterproof membrane, silicone sealant, and other miscellaneous items in the bid item Abutment Repair.

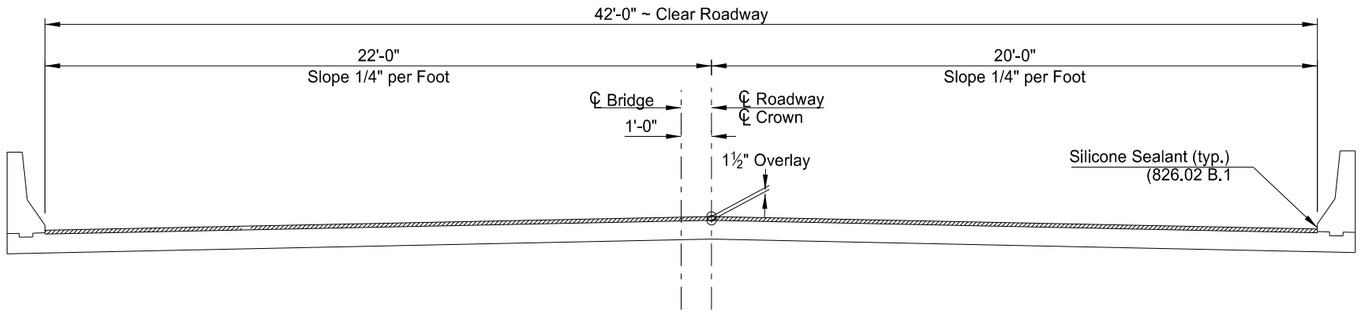


8/11/2022

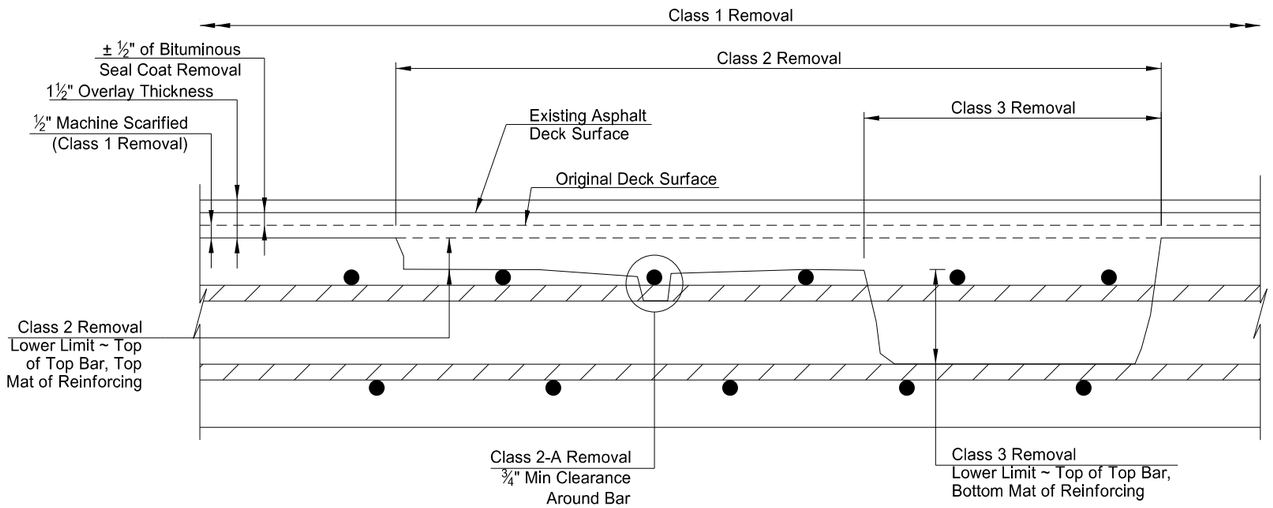
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-083(151)920	170	47



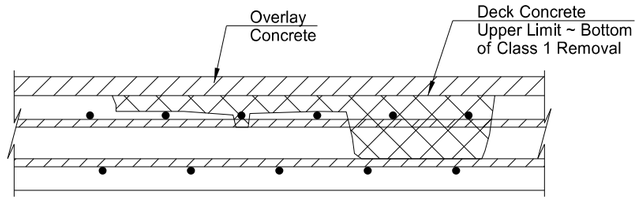
TYPICAL DECK SECTION
(Showing Removal)



TYPICAL DECK SECTION
(Showing Overlay)



BRIDGE DECK SECTION
(Removal Classifications)



BRIDGE DECK SECTION
Deck Concrete

NOTE:
Bituminous seal coat has an assumed thickness of ½" to 1".

8/11/2022

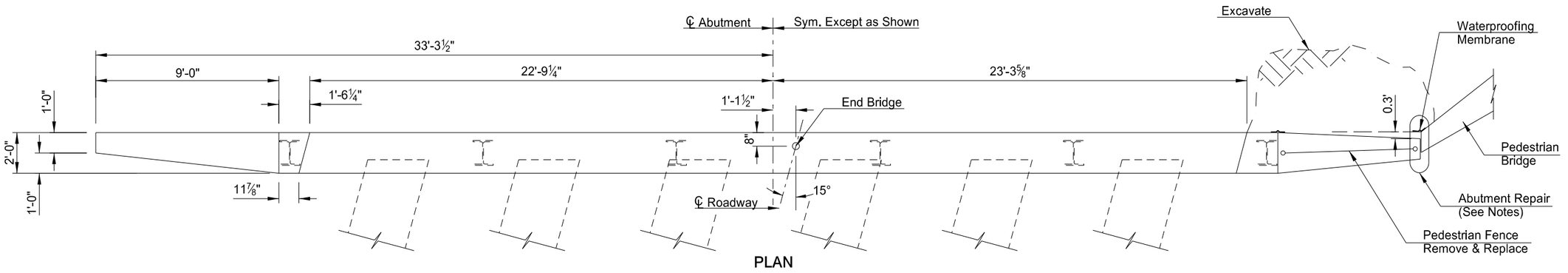
QUANTITIES	
PCC PAVEMENT GRINDING	405 SY
OVERLAY CONCRETE	28 CY
DECK CONCRETE	9 CY
CLASS 1 REMOVAL	653 SY
CLASS 2 REMOVAL	98 SY
CLASS 2A REMOVAL	176 LF
CLASS 3 REMOVAL	24 SY
CLASS 4 REMOVAL	2 SY

US 83 WEST BYPASS - CP RAIL SEP
MINOT, NORTH DAKOTA

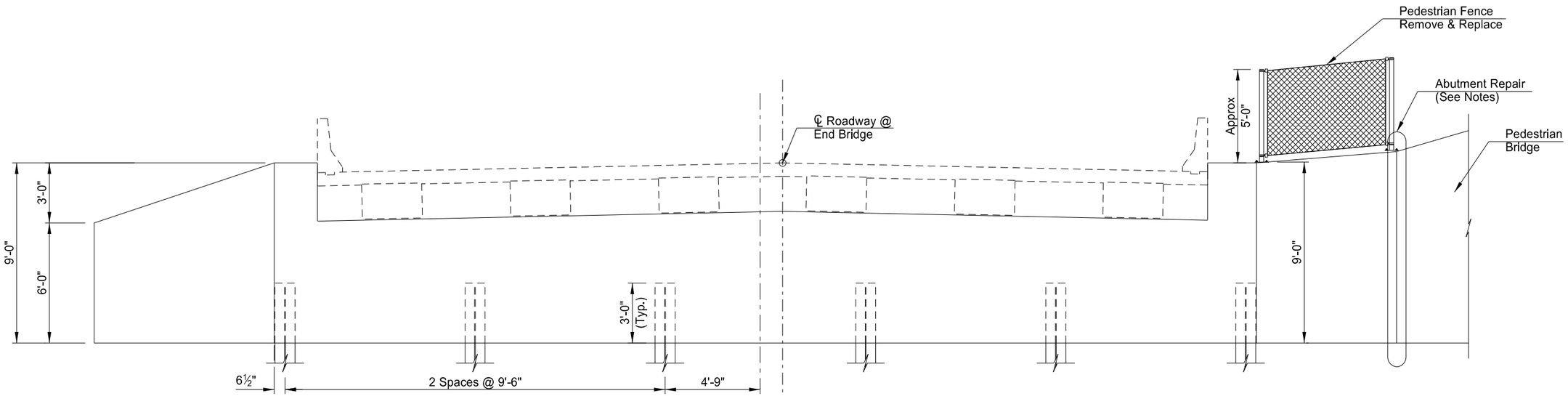
DECK OVERLAY DETAILS

23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	CVD-NHU-4-083(151)920	170	48



PLAN



SOUTH FACE
ELEVATION

REGISTERED PROFESSIONAL ENGINEER
LUKE J. BECKERMANN
PE-10087
DATE
NORTH DAKOTA

8/11/2022

US 83 WEST BYPASS - CP RAIL SEP
MINOT, NORTH DAKOTA

NORTH ABUTMENT
SOUTH FACE

ABUTMENT REPAIR