

DESIGN DATA			
Traffic	Average Daily		
Current 2016	Pass: 3,925	Trucks: 2,055	Total: 5,980
Forecast 2036	Pass: 5,300	Trucks: 2,775	Total: 8,075
Clear Zone Distance: 32 LF (4:1)		Design Speed: 55 mph	
Minimum Sight Dist. for Stopping: 495 ft		Bridges: HL-93	
Sight Dist. for No Passing Zone: 900 ft			

# JOB # 53 NORTH DAKOTA

## DEPARTMENT OF TRANSPORTATION

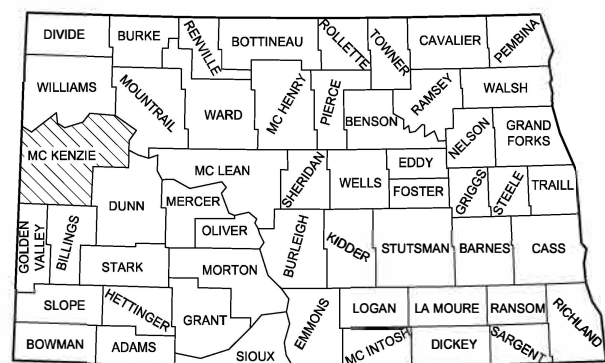
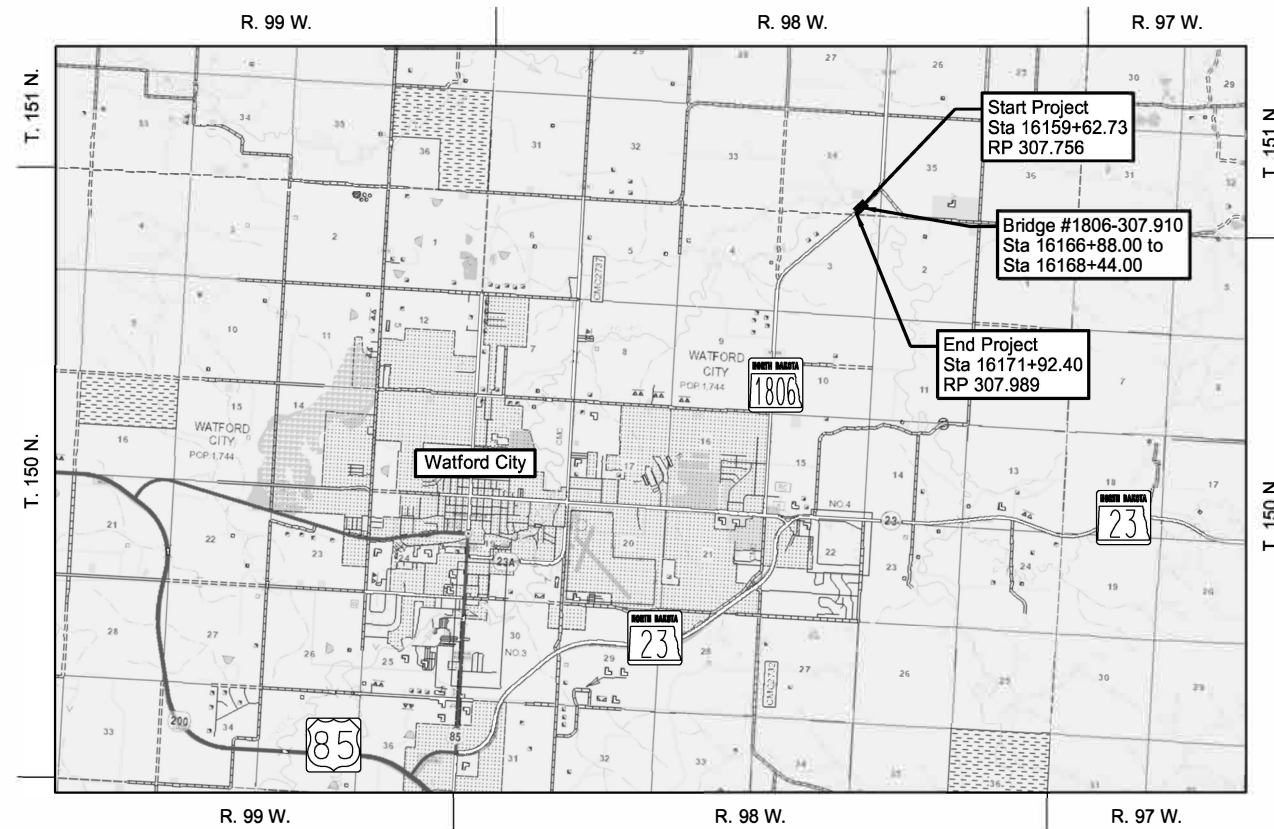
SS-7-806(021)307

McKenzie County, North Dakota  
ND Highway 1806  
Cherry Creek Bridge  
Bridge Replacement, Guardrail,  
Grading, Aggregate Base, HMA,  
Static Load Test

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	22880	1	1

GOVERNING SPECIFICATIONS	Date Published and Adopted by the North Dakota Department of Transportation
Standard Specifications	10/1/2020
Supplemental Specifications	NONE

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SS-7-806(021)307	0.233	0.233



STATE COUNTY MAP

DESIGNER Jonathan Morgenroth, PE
DESIGNER Matt Isley, PE
DESIGNER

ND DEPARTMENT OF TRANSPORTATION OFFICE OF PROJECT DEVELOPMENT	
Approval Name	Date Signed
/s/ Derek D Pfeifer	01/20/2021

KLJ

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

**TABLE OF CONTENTS**

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SS-7-806(021)307	2	1

**PLAN SECTIONS**

Section	Page(s)	Description
1	1	Title Sheet
2	1	Table of Contents
4	1	Scope of Work
6	1 - 2	Notes
6	3	Environmental Notes
8	1 - 2	Quantities
10	1	Basis of Estimate
11	1	Data Tables
20	1 - 4	General Details
30	1	Typical Sections
40	1	Removals
51	1	Allowable Pipe List
60	1	Plan & Profile
75	1 - 2	Wetland Impacts
76	1	Temporary Erosion Control
77	1	Permanent Erosion Control
81	1 - 2	Survey Coordinate and Curve Data
100	1 - 7	Work Zone Traffic Control
120	1	Pavement Marking
130	1 - 3	Guardrail
170	1 - 21	Bridge
175	1	Soil Boring Logs
200	1 - 31	Cross Sections

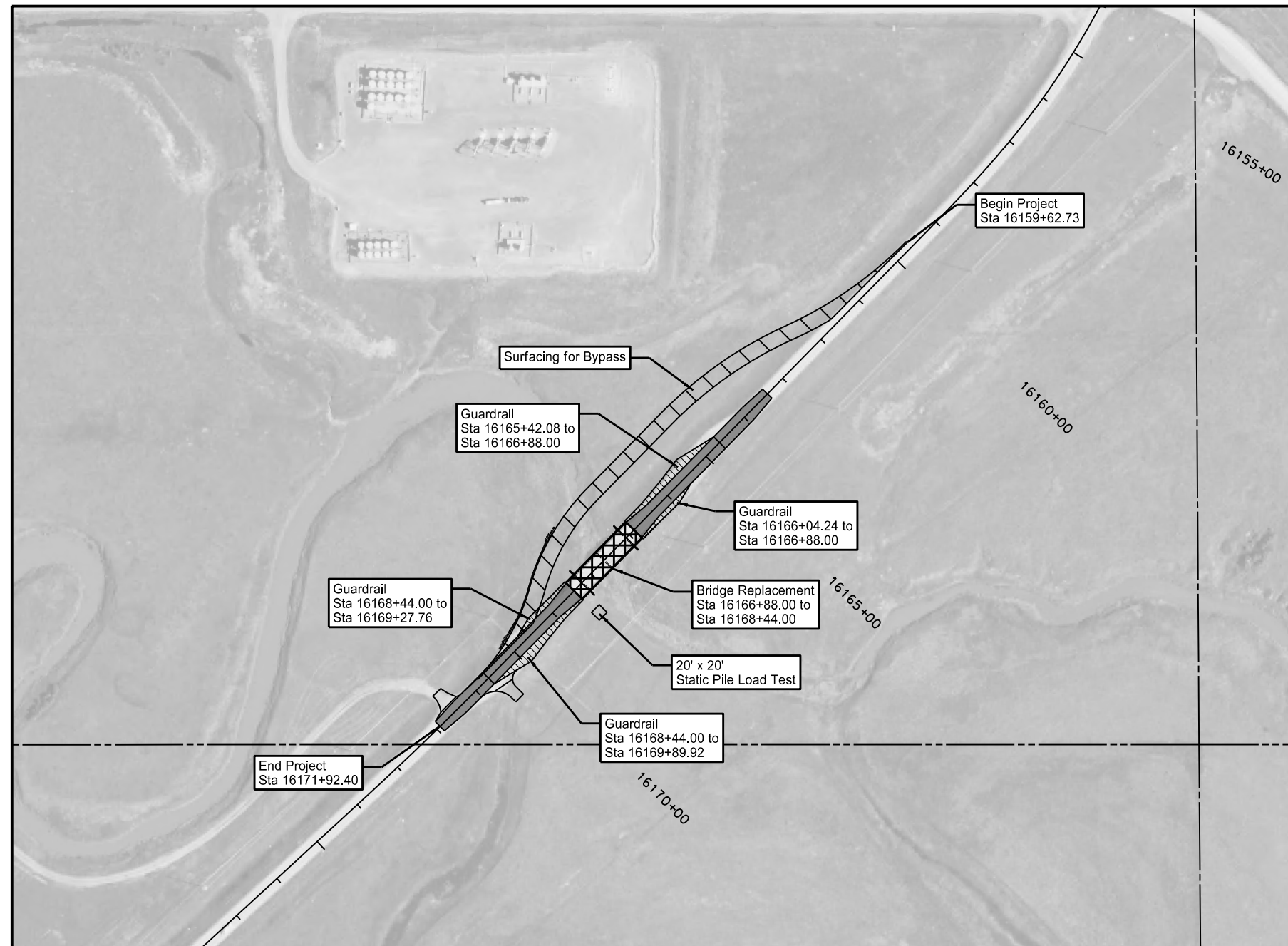
**SPECIAL PROVISIONS**

Number	Description
PSP 52(20)	Permits and Environmental Considerations
SP 205(20)	Commercial Grade Asphalt
SP 206(20)	Temporary Water Diversion
SSP1	Temporary Erosion and Sediment Best Management Practices
SSP2	Federal Migratory Bird Treaty Act

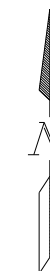
**LIST OF STANDARD DRAWINGS**

Number	Description
D-101-1, 2, 3,4	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20, 21	Line Styles
D-101-30, 31, 32,33	Symbols
D-101-40	Cross Section Legend
D-203-8	Standard Rural Approaches
D-255-1	Bridge Approach Slab Drainage Detail
D-255-2	Erosion And Siltation Control - Erosion Control Blanket Installation
D-256-1	Erosion And Siltation Controls
D-258-1	Standard Slope Protection Under Bridges
D-260-1	Erosion And Siltation Controls - Silt Fence
D-261-1	Erosion Control - Fiber Roll Placement Details
D-704-1	Attenuation Device
D-704-5	Construction Sign Detail
D-704-7	Breakaway Systems For Construction Zone Signs - Perforated Tube
D-704-8	Breakaway Systems For Construction Zone Signs - U-Channel Post
D-704-9	Construction Sign Details - Terminal And Guide Signs
D-704-10	Construction Sign Details - Regulatory Signs
D-704-13	Barricade And Channelizing Device Details
D-704-14	Construction Sign Punching And Mounting Details
D-704-15	Road Closure Layouts
D-704-17	Sign Layout For One Lane Closure Two Lane Roadway
D-704-27	Mobile Operation (Pavement Marking)
D-704-51	Portable Precast Concrete Median Barrier (Temporary Usage)
D-704-56	Mobile Operation - Grinding Shoulder Rumble Strips
D-714-1	Reinforced Concrete Pipe Culverts And End Sections (Round Pipe)
D-714-4	Round Corrugated Steel Pipe Culverts And End Sections
D-714-25	Transverse Mainline Pipe Installation Detail - Pipes More Than 4 Feet Below Top of Subgrade
D-720-1	Standard Monuments And Right Of Way Markers
D-752-1	Standard Barbed Wire Fence
D-754-19	(Conventional Use) Reference Markers
D-754-83	Object Markers - Culverts
D-760-4	Rumble Strips Undivided Highways (Shoulders Less Than 4')
D-762-4	Pavement Marking
D-762-11	Short-Term Pavement Marking
D-764-38	MGS Flared Energy Absorbing Terminal - Wood Post
D-764-40	MGS W-Beam Guardrail General Details
D-764-48	Typical Grading at Bridge Ends with MGS W-Beam Guardrail
D-764-50	MASH SoftStop End Terminal - Steel Post
D-764-51	MASH Sequential Kinking Terminal - Wood Post
D-764-60	MGS W-Beam Transition with Approach Curb to Concrete Single Slope or Jersey Barrier
D-764-61	Single Slope to Thrie Beam Connector Plate Details
D-900-1	Bridge Bench Marks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	4	1



LEGEND	
	7" Commercial Grade HMA on 18" Aggr. Base Course
	Guardrail Grading and Paving
	Bridge Replacement
	3" Commercial Grade HMA on 12" Dense Graded Base Course w/ Geosynthetic Material Type G



This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge

Scope of Work

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	6	1

**NOTES**

105-P01 UTILITY COORDINATION: Protect-in-place the gye wire at 109+60 RT of the temporary bypass by installing portable precast concrete median barrier and impact attenuation devices. Grade the inslope to avoid fill on the wire with a maximum 2:1 slope. See section 100 installation and additional details.

203-010 SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.

203-385 AVERAGE HAUL: No average haul has been computed for this project.

704-100 TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.

704-500 PORTABLE RUMBLE STRIPS (PRS): Use PRS made of rubber or engineered polymers.

Install PRS as part of the temporary traffic control when the following signs are also part of the required traffic control set up:

- "Be Prepared to Stop" (W3-4); and
- "Flagger" symbol (W20-7)

Install PRS that meet the following criteria:

- Have no adhesives or fasteners required for placement;
- Have a manufacture's speed rating that meets or exceeds the posted speed limit; and
- Each strip in the array must weigh a minimum of 100 pounds.

Use individual PRS constructed in one of the following manners:

- A single piece.
- Interlocking segments; or
- Two pieces hinged at the midpoint.

An installed array of PRS consists of a minimum of 3 individual strips.

Move rumble strips with the flagging operation. Do not place rumble strips on horizontal curves.

The Engineer will count and measure each array as one unit. Include the cost of providing, installing, maintaining, and relocating PRS in the unit price bid for "Portable Rumble Strips".

202-P01 TEMPORARY BYPASS: Install temporary culverts as shown in these plans to provide positive drainage from the upstream to the downstream ends of the culverts. Install culvert 4" below existing streambed elevation, if more than one culvert is installed only one of them needs to be set 4" below the existing streambed.

Construct temporary bypass across stream and culverts, minimize streambed and streambank impacts to the extent practicable.

Place riprap on the temporary bypass embankment below the water line upstream and downstream. Install straw mulch on the temporary bypass above the water line upstream and downstream.

Remove erosion control items, culverts, and temporary bypass to the original contours while minimizing streambed and streambank impacts to the extent practicable.

704-P02 TRAFFIC CONTROL PHASING: Construct the project utilizing the following phasing

1. Phase 1: Construct temporary bypass utilizing lanes closures with pilot cars and flagging when necessary. Remove existing guardrail in conflict with temporary bypass.
2. Phase 2: Move traffic to temporary bypass. See sections 100 for details. Demolish existing bridge, construct proposed bridge, pave, and install guardrail grading, paving and guardrail in all areas except west side south of the bridge.
3. Move traffic to mainline. Remove temporary bypass, and construct remaining guardrail, grading, and paving utilizing lane closures with pilot cars and flagging when necessary.

706-P01 FIELD OFFICE: Provide a field office which meets the following requirements:

1. Be completely insulated and weather tight.
2. Minimum total area of 450 square feet.
3. Indoor bathroom facilities, sewer and potable water.
4. Have a dependable source of electricity for power and lights with a minimum of 6 electrical outlets spaced throughout the building and light fixtures spaced to uniformly light the entire interior (lumens required 110 foot-candles).
5. Be wired for DSL Broadband internet with wireless Wi-Fi and have the capability to allow for hard wiring the computer. Include the cost of the installation and monthly fees.
6. A heating and cooling system that is capable of maintaining the temperature between 65°F and 78°F year around.
7. A minimum of 3 desks and 3 desk chairs, 3 extra chairs, a drawer file cabinet with at least two drawers, one table minimum of 2.5 ft x 5 ft.
8. Photocopy machine/Printer capable of 11x17 photocopies/prints and toner to last the duration of the project. Engineer will provide paper. Other features to include digital coping & scanning. (Fax capabilities can be included but not necessary).
9. The location of the field office will be on and will avoid impact to all cultural resources identified on this project, or as close to the project as possible and approved by the Engineer. Any rental fees will be paid by the Contractor.
10. Make the field office available for occupancy one week before the start of the project and remain through project completion.

This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number PE-6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation.

**NOTES**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	6	2

11.Heat, electric, internet service, sewer, and water hookups to be furnished by contractor, contractor to pay utility bills.  
All requirements of the Field Office are subject to approval by the Engineer.  
Include the costs for the field office in the bid item "Field Office" and the Schedule for Payment is as follows:

- 25% when set up on site.
- 50% when 30% of the work is complete.
- 75% when 60% of the work is complete.
- 100% when project is complete.

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

762-200 PERMANENT WATER BASED PAVEMENT MARKING: Replace the first paragraph of 762.04 C.2.a "Method of Application" with the following:

Allow new bituminous treatment to cool to a temperature below 125 °F and cure for a period of 72 hours before applying permanent pavement marking.

764-P01 REMOVE GUARDRAIL AND END TREATMENTS: Deliver the removed guardrail, end treatments, and transitions to the NDDOT District yard in Watford City. Provide 24 hrs notice prior to delivery.

This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number PE-6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation.

## ENVIRONMENTAL NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	6	3

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:

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

EN-2 WHOOPING CRANE: The project is located within the migration corridor of the endangered whooping crane, and suitable stopover habitat for the whooping crane is present. The migration periods of the whooping crane are April 1st to May 15th and September 10 to October 31.

Stop all construction activities and notify the Engineer immediately in the event a whooping crane is identified within one mile of the project location. The Engineer will then coordinate with the USFWS, FHWA and NDDOT. Do not resume work within the avoidance area until the Engineer has confirmed that the bird has left the area.

Above ground utility conflicts are not foreseen with this project but if any impacts are required, contact the NDDOT Utility Engineer to coordinate with the utility company. Bird diverters will be installed by the utility company on overhead utility lines that are shifted due to the proposed action.

EN-3 AQUATIC NUISANCE SPECIES (ANS): Equipment that was last used outside of North Dakota or within a Class I infested waterbody (identified on the North Dakota Game and Fish Department (NDGFD) website) requires an inspection by NDGFD. Notify the NDGFD at least 10 business days prior to pumps, watercraft, or any equipment entering a public water to allow the NDGFD sufficient time to inspect any and all such equipment for ANS. Contact the NDGFD ANS Coordinator, Ben Holen by e-mail - bholen@nd.gov for equipment inspections. Supply one of the following to the engineer as proof of compliance prior to work taking place in the water: (1) the NDGFD inspection report, (2) documented NDGFD correspondence (email or signed letter).

EN-4 TEMPORARY WETLAND IMPACT: Temporary impact areas within wetlands and or other waters are incorporated into the plans for this project. Remove temporary fill placed and sedimentation in wetlands or other waters. Restore these wetlands to preconstruction contours.

NOTIFICATIONS TO BE FILED BY CONTRACTOR:

North Dakota Department of Health SFN 17987 Asbestos Notification of Demolition and Renovation for bridges and boxes.

This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number PE-6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation.

Estimated Quantities

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	Mainline:	TOTAL
103	0100	CONTRACT BOND	L SUM	1	1
201	0300	CLEARING & GRUBBING	ACRE	1	1
202	0105	REMOVAL OF STRUCTURE	L SUM	1	1
202	0136	REMOVAL OF PAVEMENT	TON	1869	1869
202	0312	REMOVE EXISTING FENCE	LF	118	118
202	0350	REMOVAL OF TEMPORARY BYPASS	EA	1	1
202	0400	REMOVAL OF RIPRAP - LOOSE ROCK	CY	85	85
203	0101	COMMON EXCAVATION-TYPE A	CY	1030	1030
203	0109	TOPSOIL	CY	1268	1268
203	0140	BORROW-EXCAVATION	CY	4445	4445
210	0099	CLASS 1 EXCAVATION	L SUM	1	1
210	0111	CLASS 2 EXCAVATION	L SUM	1	1
210	0201	FOUNDATION PREPARATION	EA	1	1
216	0100	WATER	M GAL	152	152
251	0200	SEEDING CLASS II	ACRE	1.98	1.98
251	1000	WETLAND SEED	ACRE	0.07	0.07
251	2000	TEMPORARY COVER CROP	ACRE	1.48	1.48
253	0101	STRAW MULCH	ACRE	3.46	3.46
255	0103	ECB TYPE 3	SY	27	27
255	0201	TRM TYPE 1	SY	63	63
256	0200	RIPRAP GRADE II	CY	943	943
260	0200	SILT FENCE SUPPORTED	LF	269	269
260	0201	REMOVE SILT FENCE SUPPORTED	LF	269	269
261	0112	FIBER ROLLS 12IN	LF	3226	3226
261	0113	REMOVE FIBER ROLLS 12IN	LF	1555	1555
262	0100	FLOTATION SILT CURTAIN	LF	68	68
262	0101	REMOVE FLOTATION SILT CURTAIN	LF	68	68
302	0120	AGGREGATE BASE COURSE CL 5	TON	3671	3671
302	0200	DENSE GRADED BASE COURSE	TON	2128	2128
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	1559	1559
602	0130	CLASS AAE-3 CONCRETE	CY	163.9	163.9
602	1130	CLASS AE-3 CONCRETE	CY	105.9	105.9
602	1133	CONCRETE BRIDGE APPROACH SLAB	SY	188.8	188.8
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	516	516
604	9610	PRESTRESSED BOX BEAM-27IN	LF	560	560
612	0115	REINFORCING STEEL-GRADE 60	LBS	9715	9715
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	37918	37918
616	0360	STRUCTURAL STEEL	LBS	12618	12618
622	0040	STEEL PILING HP 12 X 53	LF	2592	2592
622	0100	LOADING TEST	EA	1	1
622	1200	STEEL TEST PILING HP 12 X 53	LF	72	72
702	0100	MOBILIZATION	L SUM	1	1
704	0100	FLAGGING	MHR	504	504
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1200	1200
704	1035	ATTENUATION DEVICE-TYPE B-25	EA	2	2
704	1048	PORTABLE RUMBLE STRIPS	EA	2	2
704	1052	TYPE III BARRICADE	EA	6	6

Estimated Quantities

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	8	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	Mainline:	TOTAL
704	1060	DELINEATOR DRUMS	EA	8	8
704	1081	VERTICAL PANELS-BACK TO BACK	EA	30	30
704	1185	PILOT CAR	HR	252	252
704	3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	190	190
706	0400	FIELD OFFICE	EA	1	1
706	0500	AGGREGATE LABORATORY	EA	1	1
708	1531	INLET PROTECTION-FIBER ROLL 12IN	EA	1	1
708	1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN	EA	1	1
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	4971	4971
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	1287	1287
714	4110	PIPE CONDUIT 30IN	LF	114	114
714	4130	PIPE CONDUIT 54IN	LF	180	180
720	0110	RIGHT OF WAY MARKERS	EA	7	7
720	0125	ALIGNMENT MONUMENTS	EA	4	4
720	0130	IRON PIN R/W MONUMENTS	EA	5	5
720	0135	IRON PIN REFERENCE MONUMENTS	EA	2	2
748	0141	CURB & GUTTER-TYPE 1 SPECIAL	LF	60	60
752	0200	FENCE BARBED WIRE 4 STRAND	LF	74	74
752	3140	CORNER ASSEMBLY BARBED WIRE	EA	1	1
754	0563	REFERENCE MARKER-TYPE C	EA	1	1
754	0805	OBJECT MARKERS - CULVERTS	EA	2	2
760	0005	RUMBLE STRIPS - ASPHALT SHOULDER	MILE	0.176	0.176
760	0007	RUMBLE STRIPS - ASPHALT CENTERLINE	MILE	0.132	0.132
762	1104	PVMT MK PAINTED 4IN LINE	LF	6517	6517
764	0131	W-BEAM GUARDRAIL	LF	283	283
764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	4	4
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	583	583
764	2081	REMOVE END TREATMENT & TRANSITION	EA	4	4
900	1000	TEMPORARY STREAM DIVERSION	EA	1	1
930	3000	BRIDGE BENCH MARKS	SET	1	1
930	9537	ABUTMENT UNDERDRAIN SYSTEM	EA	2	2

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	10	1

Stations			
Sta 16163+39.60 to Beg Bridge Sta 16166+88.00			
End Bridge Sta 16168+44.00 to Sta 16171+92.40			
Material	Unit	Width (ft)	Quantity per Station
Aggregate CI 5 @ 1.875 Ton/CY	Ton	Varies	476.61
Commercial Grade Hot Mix Asphalt @ 2 Ton/Cy	Ton	Varies	154.13

RIGHT OF WAY MARKERS & IRON PIN MONUMENTS							
Station	Offset	Northing	Easting	Description	720 0110 RIGHT OF WAY MARKERS	720 0130 IRON PIN R/W MONUMENTS	720 0135 IRON PIN REFERENCE MONUMENTS
16159+68.53	-75.00	321778.62	1305996.67	ST	X	X	
16159+68.53	75.00	321887.86	1305893.88	ST	X	X	
16170+79.34	-75.00	321017.41	1305187.68	PC	X	X	
16170+79.34	75.00	321126.66	1305084.89	PC	X	X	
16172+39.32	-75.00	320908.01	1305068.10	TWP CROSSING	X		X
16172+39.32	75.00	321020.09	1304968.40	TWP CROSSING	X		X
16173+72.89	75.00	320933.62	1304868.90	PT	X	X	
TOTAL =					7	5	2

720 0125 ALIGNMENT MONUMENTS					
Station	Offset	Northing	Easting	Description	720 0125 ALIGNMENT MONUMENTS
16159+68.53	0.00	321833.24	1305945.28	ST	X
16170+79.34	0.00	321072.04	1305136.28	PC	X
16172+39.32	0.00	320964.05	1305018.25	TWP CROSSING	X
16173+72.89	0.00	320876.44	1304917.43	PT	X
TOTAL =					4

760 0005 RUMBLE STRIPS - ASPHALT SHOULDER			
Begin Station	End Station	Basis	Quantity (MILE)
16163+39.60 Lt	16166+04.24 Lt	5,280 LF/Mile	0.050
16169+89.92 Lt	16171+92.40 Lt		0.038
16163+39.60 Rt	16165+42.08 Rt		0.038
16169+27.76 Rt	16171+92.40 Rt		0.050
TOTAL =			0.176

760 0007 RUMBLE STRIPS - ASPHALT CENTERLINE			
Begin Station	End Station	Basis	Quantity (MILE)
16163+39.60	16166+88.00	5,280 LF/Mile	0.066
16168+44.00	16171+92.40		0.066
TOTAL =			0.132

754 0563 REFERENCE MARKER-TYPE C		
Reference Point	Station	Quantity (EA)
308	16172+50.73	1
TOTAL =		1

754 0805 OBJECT MARKERS - CULVERTS			
Station	Offset		Quantity (EA)
	Lt	Rt	
16171+52 Appr Rt	-	2	2
TOTAL =			2

SPEC CODE	BID ITEM	QTY	UNIT
302 0120	AGGREGATE BASE COURSE CL 5 Mainline & Guardrail Paving	3,321	TON
430 0500	COMMERCIAL GRADE HOT MIX ASPHALT Mainline & Guardrail Paving	1,074	TON
720 0110	RIGHT OF WAY MARKERS Right of Way Markers	7	EA
720 0125	ALIGNMENT MONUMENTS Alignment Monuments	4	EA
720 0130	IRON PIN R/W MONUMENTS Iron Pin R/W Monuments	5	EA
720 0135	IRON PIN REFERENCE MONUMENTS Iron Pin Reference Monuments	2	EA
754 0563	REFERENCE MARKER-TYPE C Reference Marker - Type C	1	EA
754 0805	OBJECT MARKERS - CULVERTS Object Markers - Culverts	2	EA
760 0005	RUMBLE STRIPS - ASPHALT SHOULDER Rumble Strips - Asphalt Shoulder	0.176	MILE
760 0007	RUMBLE STRIPS - ASPHALT CENTERLINE Rumble Strips - Asphalt Centerline	0.132	MILE

Water  
25 M Gal/Mile for Dust Palliative  
20 Gal/Ton for Aggregate  
10 Gal/CY for Embankment

Removal of Pavement  
Aggregate Base @ 1.875 Ton/CY  
Bituminous @ 2 Ton/CY  
Concrete @ 2 Ton/CY

Pavement  
Aggregate Base Course CI 5 @ 1.875 Ton/CY  
Dense Graded Base Course @ 1.875 Ton/CY  
Commercial Grade HMA @ 2 Ton/CY

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge

Basis of Estimate

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SS-7-806(021)307	11	1

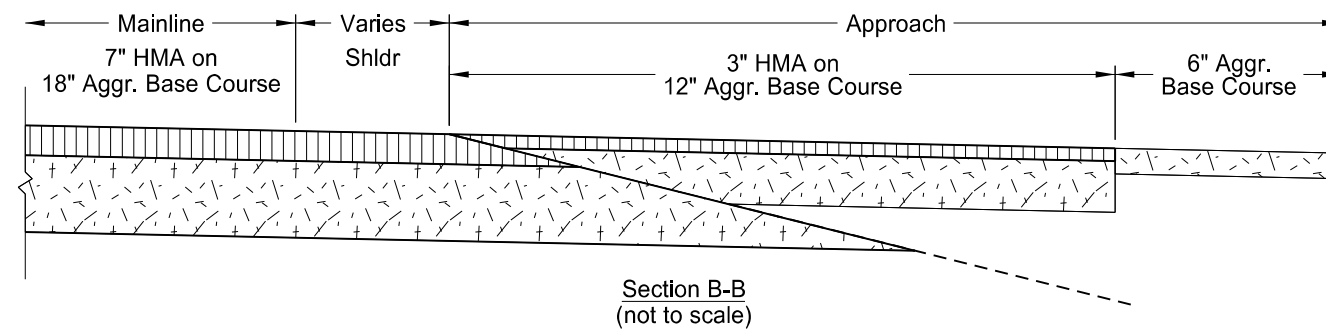
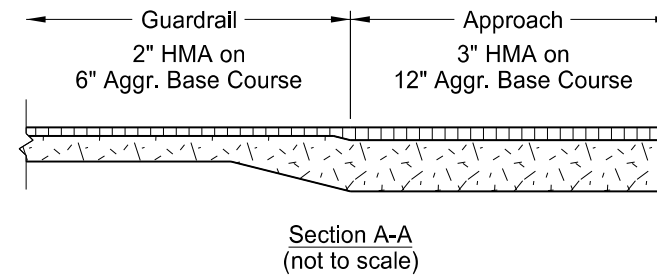
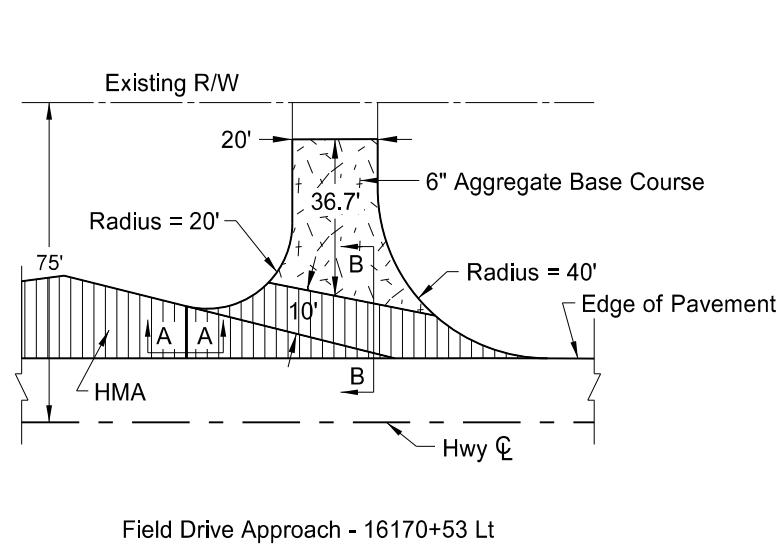
Earthwork Summary				
LOCATION	EARTHWORK SUMMARY			TOPSOIL SUMMARY
	Excavation	Embankment 1	203 0140 BORROW-EXCAVATION	203 0109 TOPSOIL
	(CY)	(CY)	(CY)	(CY)
	A	B	D = B - A	E
<b>ND 1806</b>				
Sta 16163+39.60 to Sta 16171+92.40 (SCL1806)	990	621	-369	291
<b>Temporary Bypass</b>				
Sta 100+00.00 to Sta 111+92.71 (PRBYPASS)	40	4,854	4,814	977
<b>TOTAL =</b>	<b>1,030</b>	<b>5,475</b>	<b>4,445</b>	<b>1,268</b>

**Notes:**  
This computation report is not a balance sheet. Contractor to balance their own materials.  
1 Additional 25% volume included for shrinkage.

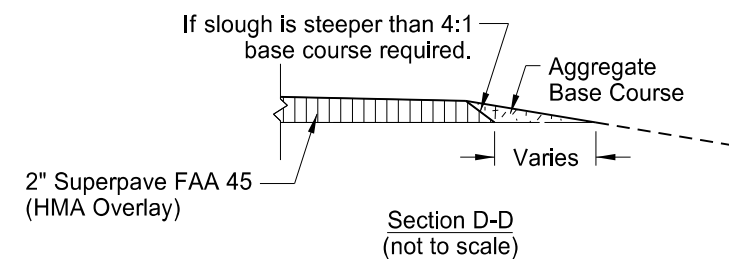
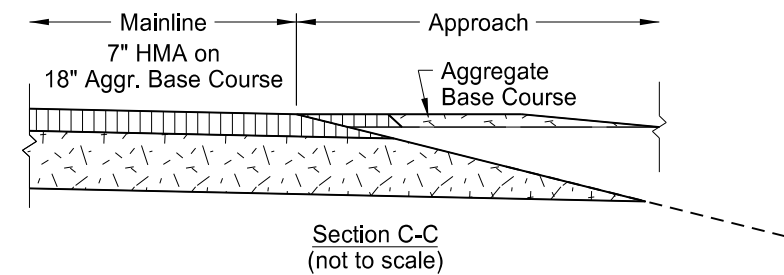
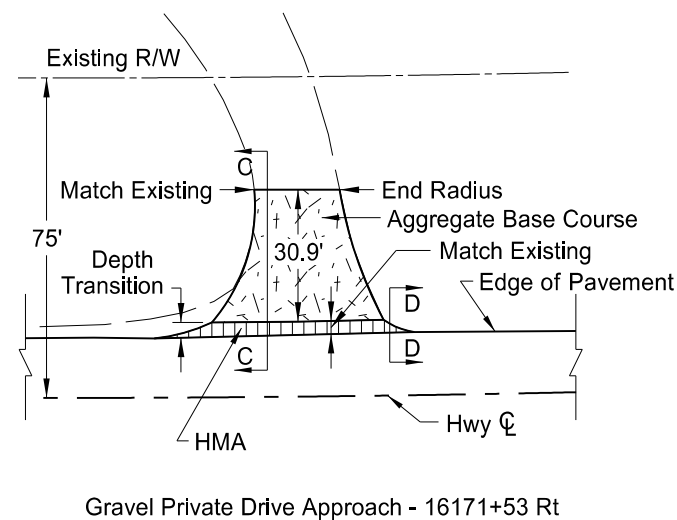
This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
Earthwork Summary

### Approach Paving Details for Regrading Rural Approaches



### Approach Paving Details for Existing Rural Approaches



- Notes:
- HMA paving and aggregate base course locations may vary in the field, as approved by the Engineer.
  - Quantity totals have been included in the bid items of the "Estimate of Quantities" of the plans.
  - Aggregate base course has been provided in the quantities to fill in around the radii. This material will be required when sloughs are steeper than 4:1 (see section D-D).

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

BASIS OF ESTIMATE		Regrade	Existing	TOTALS
ITEM	UNIT	Field Drive	Gravel Private Drive	
Number of Locations	#	1	1	2
Aggregate Base Course CL 5	TON	99	10	109
Commercial Grade HMA	GAL	12	2	14

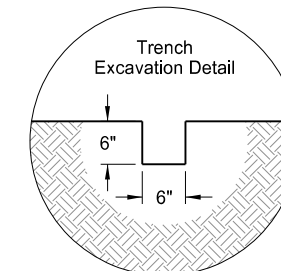
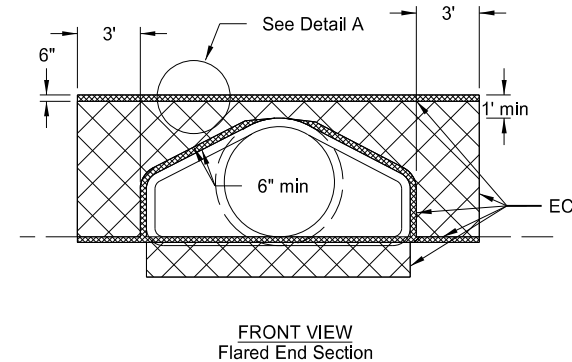
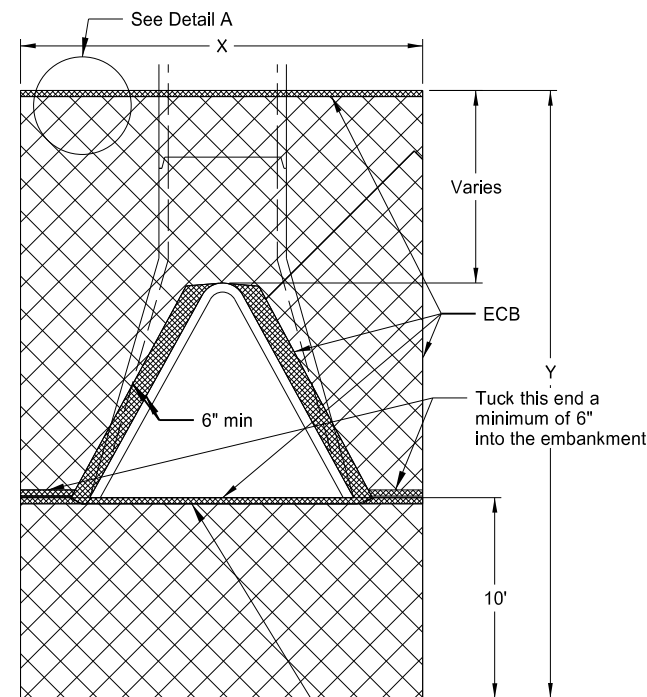
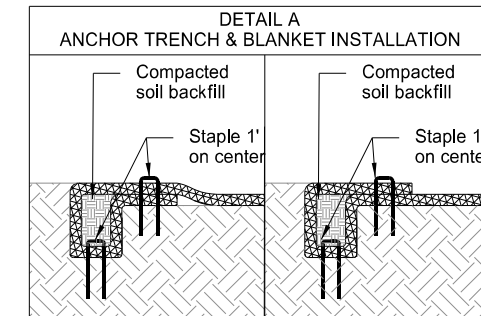
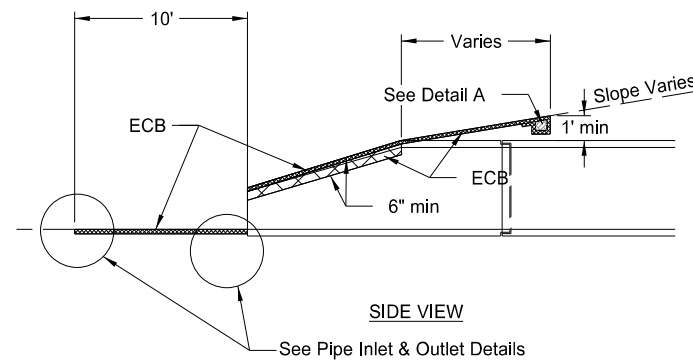
ND 1806 - Cherry Creek Bridge  
Approach Paving Details

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	20	2

255 0103 ECB TYPE 3								
Location of Surface Area to be Protected		Pipe Diam	Description	No.	X	Y	Unit Quantity	
Station	Offset	(IN)			(FT)	(FT)	(SY)	
16171+52	Rt	30	Approach	1	11.6	22.5	27	
							TOTAL =	27

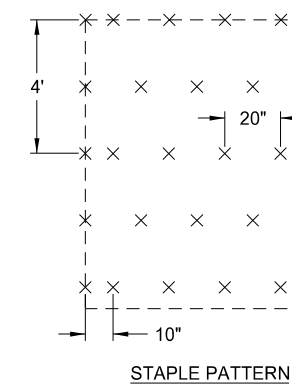
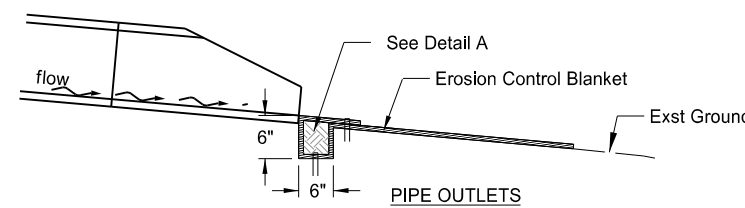
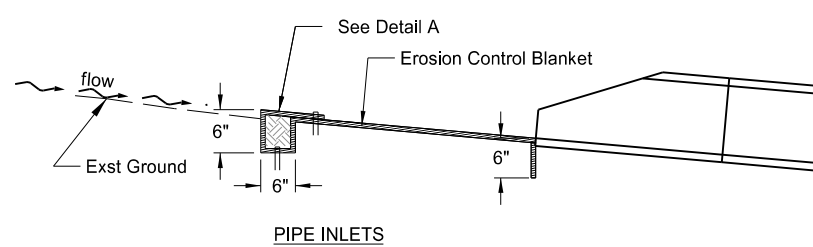
Notes:  
1) Quantities for approach culverts based on 8:1 inslopes.

SPEC CODE	BID ITEM	QTY	UNIT
255 0103	ECB TYPE 3	27	SY



TOP VIEW  
Flared End Section  
Inlet Side - See applicable detail for pipe inlet  
Outlet Side - See applicable detail for pipe outlet

NOTE: Tuck the ECB a minimum of 6" into the embankment (against the flared end section) around the opening of the flared end section.

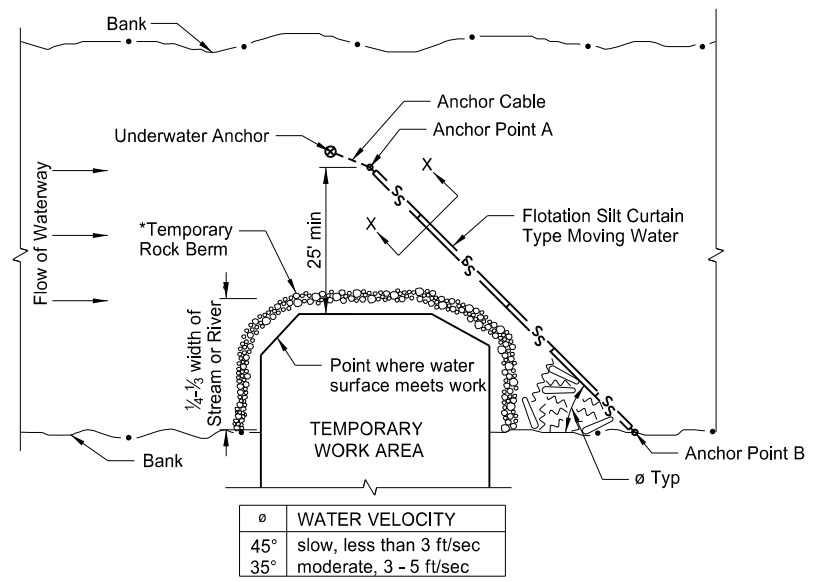


This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
Erosion Control at Culvert Flared End Sections

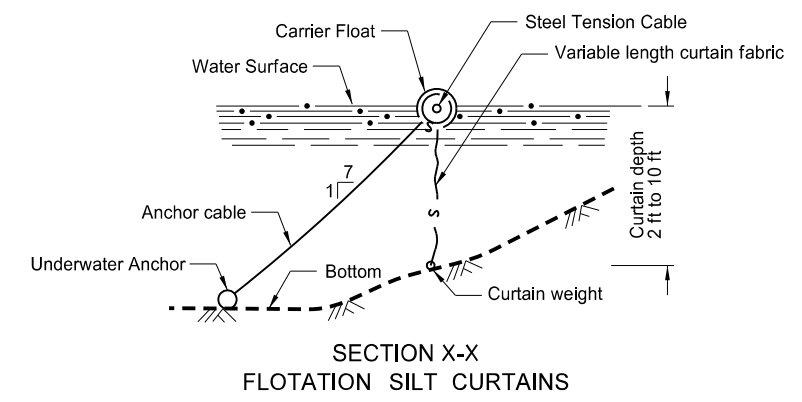
TYPICAL INSTALLATIONS  
May vary with conditions

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	20	3



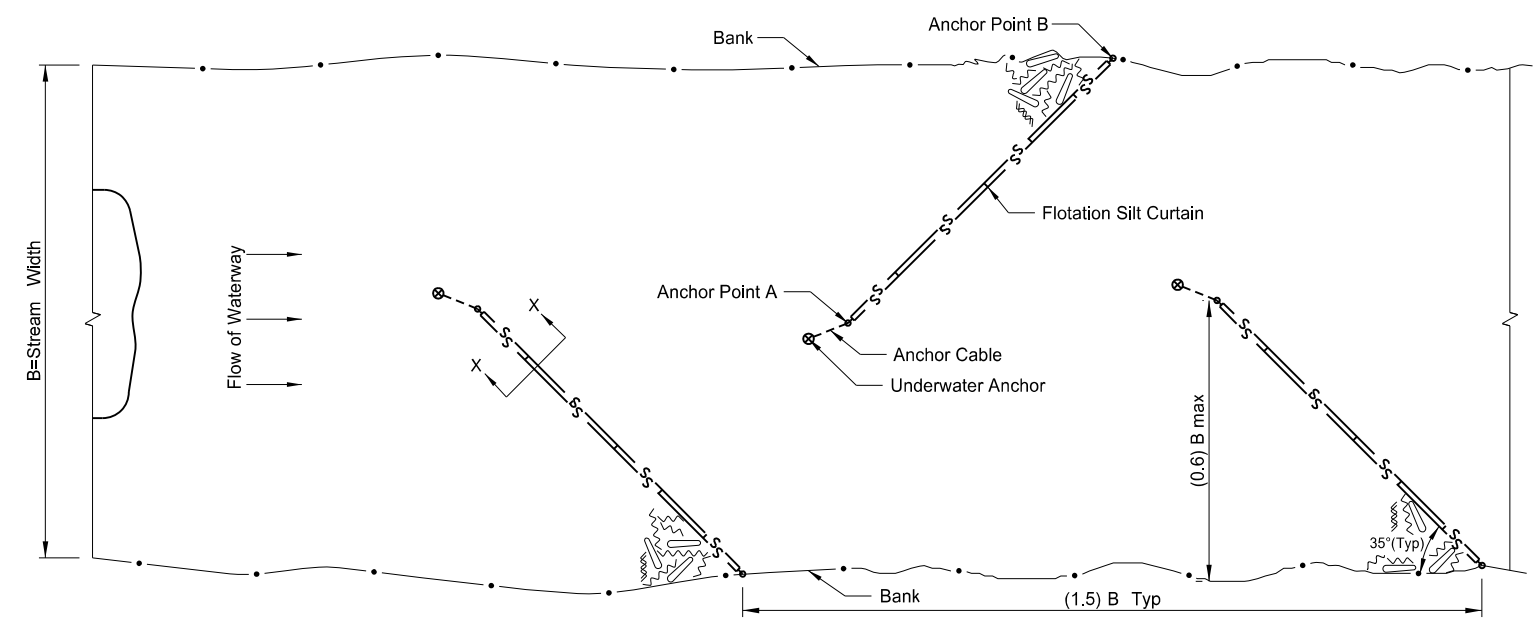
PLAN VIEW  
FLOTATION SILT CURTAIN - TYPE MOVING WATER

**DESIGN GUIDELINES:**  
When temporary work encroaches more than 1/4 but less than 1/3 width of the stream.  
For narrow waterways, the curtain may be placed 1 foot above the bottom of waterway to allow water flow.  
\*In areas where the plans call for riprap at the bridge, provide a temporary rock berm. Include all costs for the temporary rock berm in price bid for the "Riprap".



SECTION X-X  
FLOTATION SILT CURTAINS

Note:  
Maximum water velocity for moving water = 5 ft/sec



PLAN VIEW  
FLOTATION SILT CURTAIN - TYPE HERRING BONE PATTERN

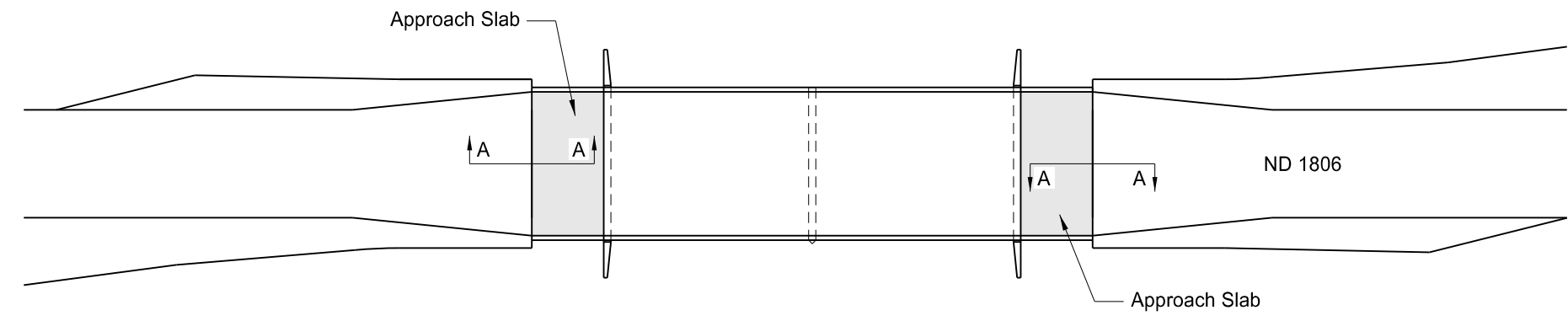
**DESIGN GUIDELINES:**  
When temporary work encroaches more than 1/3 width of the stream  
Or where stream width doesn't allow use of Type Moving Water

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

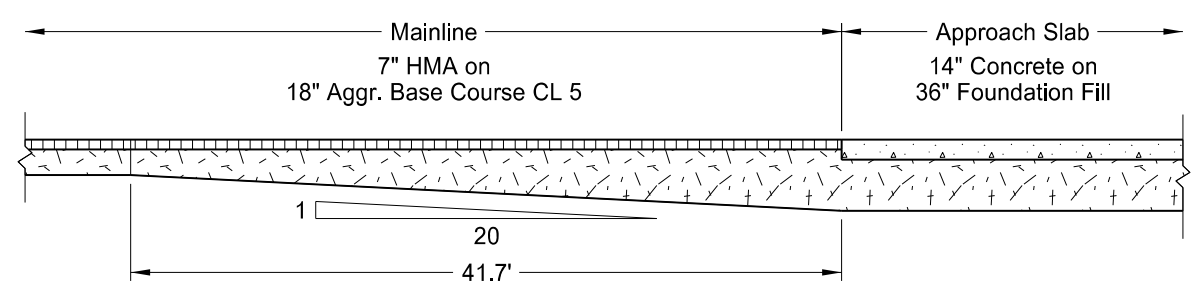
ND 1806 - Cherry Creek Bridge  
Flotation Silt Curtain Detail

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	20	4

SPEC CODE	BID ITEM	QTY	UNIT
302 0120	AGGREGATE BASE COURSE CL 5		
	Aggregate Base Course Cl 5	241	TON



Proposed Design Plan View

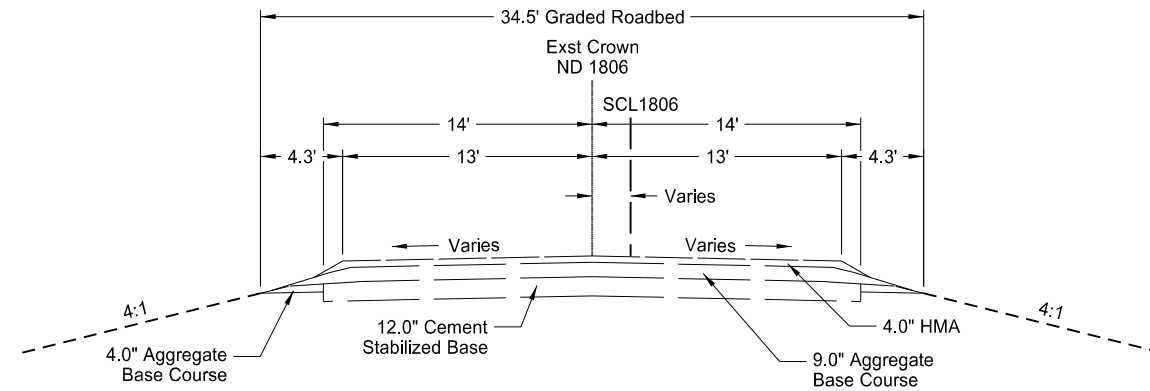


Section A-A  
(not to scale)

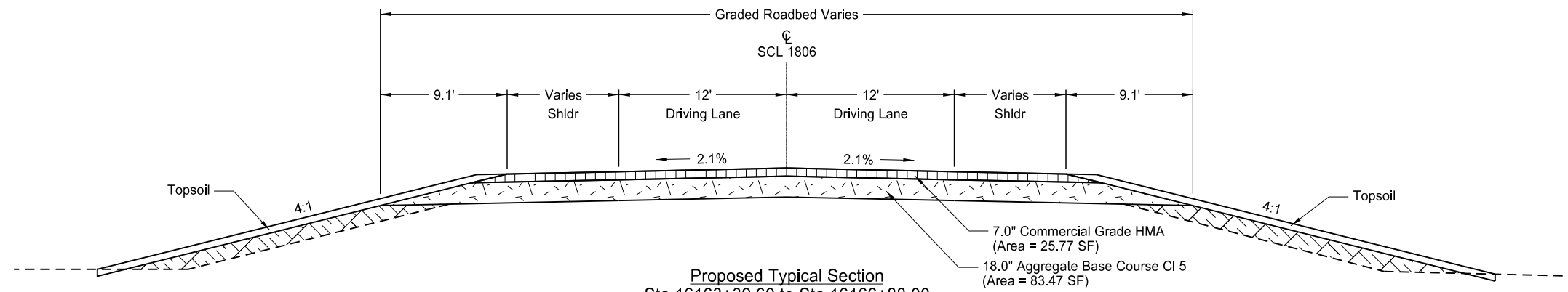
This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
Approach Slab Detail  
for Beginning and End of Bridge

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	30	1



**ND 1806 Existing Typical Section**  
 Sta 16163+39.60 to Sta 16167+17.80  
 Sta 16168+17.80 to Sta 16171+92.40



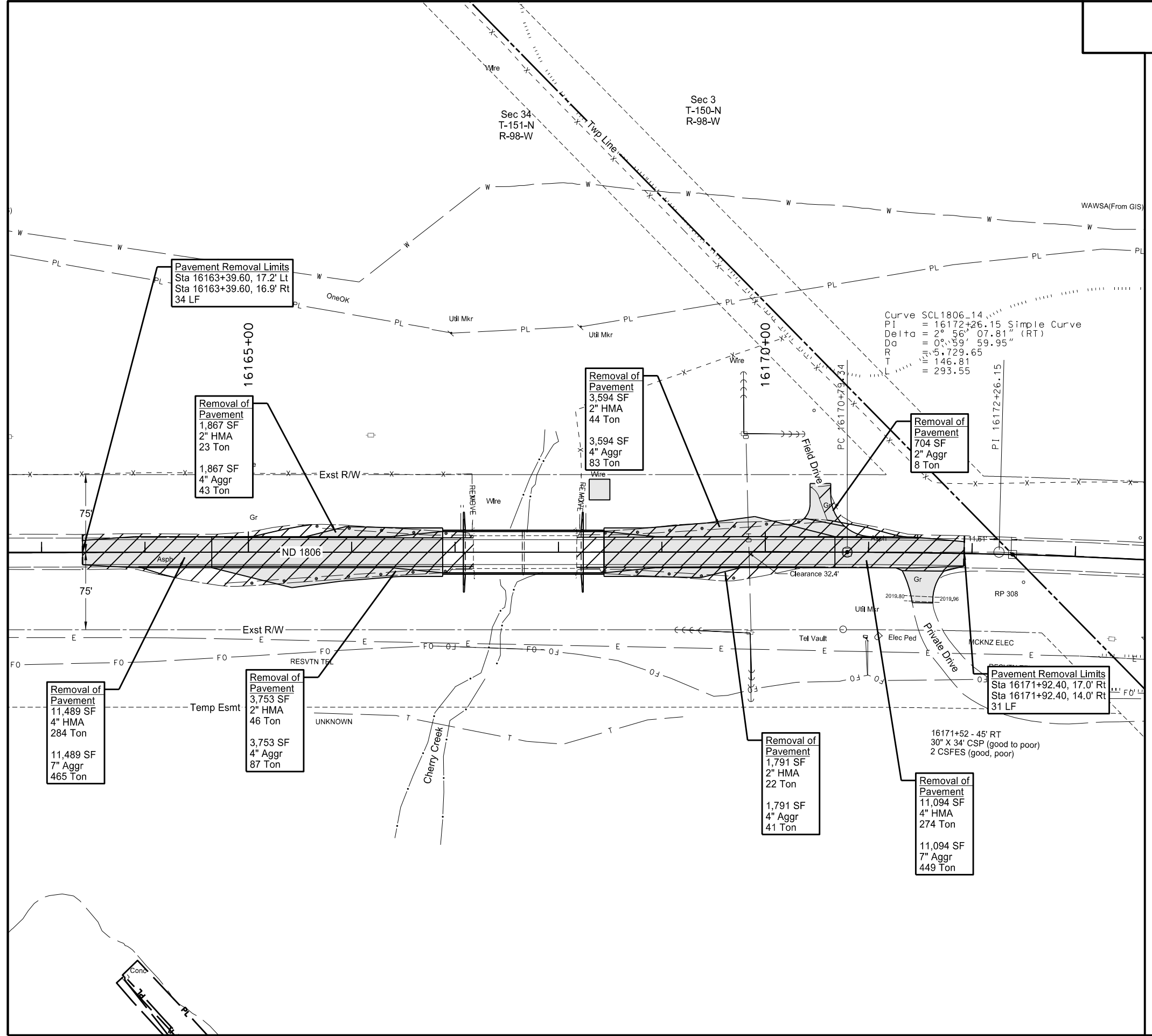
**Proposed Typical Section**  
 Sta 16163+39.60 to Sta 16166+88.00  
 Sta 16168+44.00 to Sta 16171+92.40

**Notes:**  
 1. Proposed Guardrail (see Section 130) from Sta 16165+42.08 to Sta 16166+88.00, and from Sta 16168+44.00 to Sta 16169+89.92.

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
 Typical Sections

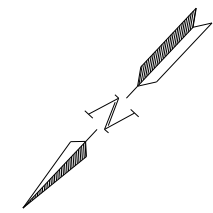
SPEC CODE	BID ITEM	QTY	UNIT
202 0136	REMOVAL OF PAVEMENT		
	Mainline - Sta 16163+39.60 to 16167+17.80 C	749	TON
	Mainline - Sta 16163+93.71 to 16167+17.80 Rt	133	TON
	Mainline - Sta 16164+76.44 to 16167+17.80 Lt	66	TON
	Mainline - Sta 16168+17.80 to 16170+58.31 Rt	63	TON
	Mainline - Sta 16168+17.80 to 16171+47.31 Lt	127	TON
	Mainline - Sta 16168+17.80 to 16171+92.40 C	723	TON
	Approach - Sta 16170+69.00 Lt	8	TON
202 0312	REMOVE EXISTING FENCE		
	Sta 16167+06.93, 75.0' Lt to Sta 16167+16.55, 19.7' Lt	65	LF
	Sta 16168+20.58, 22.5' Lt to Sta 16168+22.04, 75.0' Lt	53	LF



- Notes:
- Quantities assume bottom 2 inches of aggregate is not salvageable.
  - Guardrail embankment is assumed to have 2" of asphalt on 6" of base course.
  - Gravel approaches are assumed to have 4" of surface aggregate.

LEGEND	
	Removal of Pavement
	Pavement Removal Limits
	REMOVE Fence Barbed Wire

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation



ND 1806 - Cherry Creek Bridge  
Removals

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SS-7-806(021)307	51	1

ALLOWABLE PIPE LIST FOR SS-7-806(021)307														
Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	(*), (A)		Applicable Backfill
				(IN)	Bid Item	(LF)						Begin (EA)	End (EA)	
101+92.09	24.8' RT	103+29.60	24.5' LT	30	Pipe Conduit	144	Reinforced Concrete Pipe - Class III (barrel length = 144 LF)	30				FES	FES	Standard D-714-25
							Corrugated Steel Pipe	30	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	30	Z, A, P	3/4, 1	0.064			
107+50.30	38.7' RT	107+93.07	40.7' LT	54	Pipe Conduit	90	Reinforced Concrete Pipe - Class III (barrel length = 90 LF)	54				FES	FES	Section 6 Sheet 1
							Corrugated Steel Pipe	54	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	54	Z, A, P	3/4, 1	0.064			
107+64.09	37.4' RT	108+09.93	40.3' LT	54	Pipe Conduit	90	Reinforced Concrete Pipe - Class III (barrel length = 90 LF)	54				FES	FES	Section 6 Sheet 1
							Corrugated Steel Pipe	54	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	54	Z, A, P	3/4, 1	0.064			

(A) McKenzie County is reserving the right to allow burning in their ditches. Plastic coated metal or plastic pipe must have approved segments and end treatments that are non-flammable.

(\*) End sections are measured and paid for separately for pipe extensions.

FES = Flared End Section

TES = Traversable End Section

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

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

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

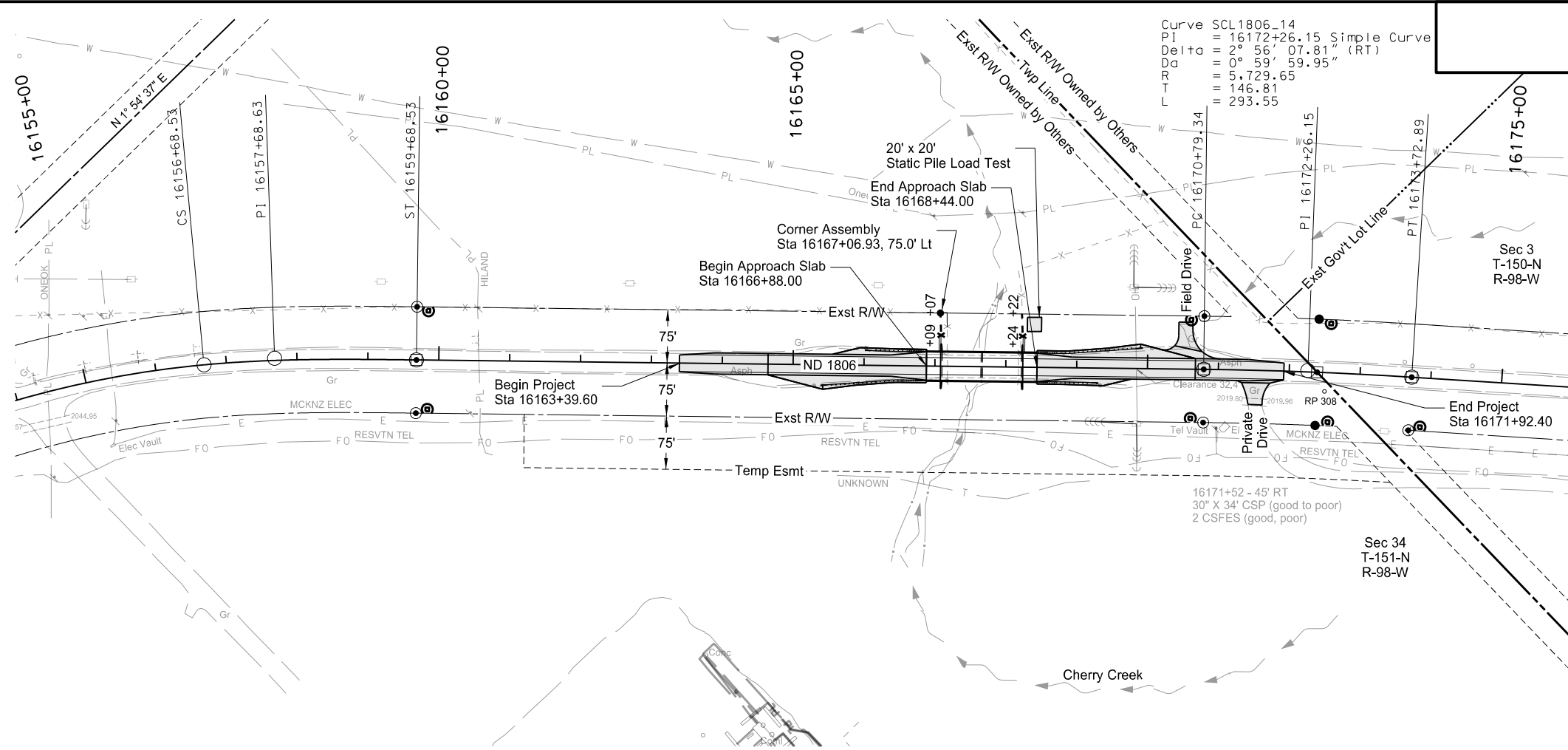
This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
Allowable Pipe List  
Temporary Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	60	1

SPEC CODE	BID ITEM	QTY	UNIT
752	0200 FENCE BARBED WIRE 4 STRAND		
	Sta 16167+06.93, 75.0' Lt to Sta 16167+08.50, 38.7' Lt	37	LF
	Sta 16168+22.04, 75.0' Lt to Sta 16168+23.50, 38.7' Lt	37	LF
752	3140 CORNER ASSEMBLY BARBED WIRE		
	Sta 16167+06.93, 75.0' Lt	1	EA

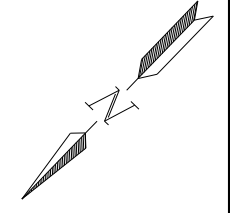
Curve SCL1806\_14  
 PI = 16172+26.15 Simple Curve  
 Delta = 2° 56' 07.81" (RT)  
 Dg = 0° 59' 59.95"  
 RT = 5.729.65  
 L = 146.81  
 T = 293.55



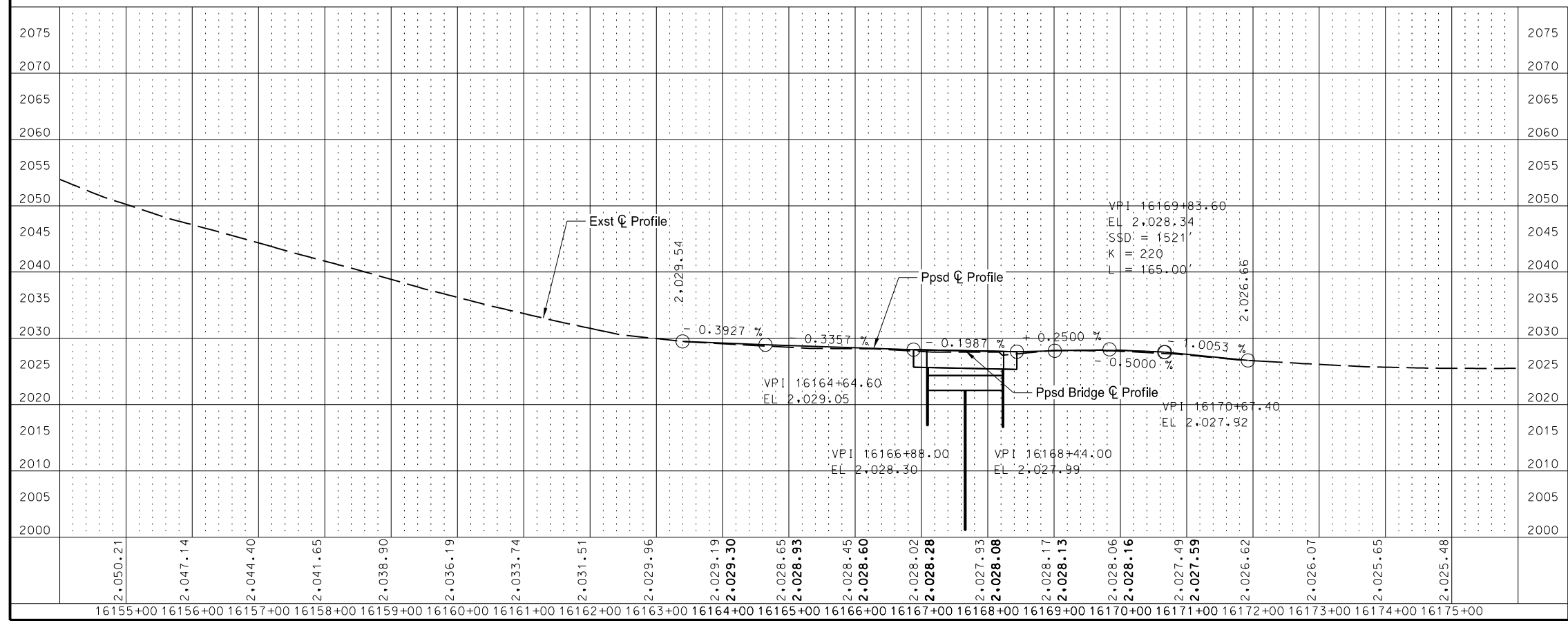
Notes:  
 1. Refer to Section 10 for Paving and Monument Quantities.

LEGEND	
- -x-	Fence Barbed Wire
⊕	R/W Marker (Witness Post)
⊠	Alignment Monument
⊙	Iron Pin R/W Monument
●	Iron Pin Reference Monument
○	Existing Monument
⊕	Existing R/W Marker (Witness Post)

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation



ND 1806 - Cherry Creek Bridge  
 Plan & Profile  
 Sta 16155+00 to Sta 16175+00 (SCL 1806)



16155+00 16156+00 16157+00 16158+00 16159+00 16160+00 16161+00 16162+00 16163+00 16164+00 16165+00 16166+00 16167+00 16168+00 16169+00 16170+00 16171+00 16172+00 16173+00 16174+00 16175+00

Wetland Impact Table																				
Wetland Number	Location	Wetland Feature	USACE Jurisdictional Wetlands <sup>1</sup>	Wetland Impacts Acre(s)				USFWS Easement Impacts Acre(s)		Wetland Mitigation										
				Temp.	Perm.	Temp.	Perm.	Mitigation Required			USACE/11990 Bank		11990 Bank		USFWS Bank		Onsite			
								EO 11990	USACE	USFWS	Location	Acre(s)	Location	Acre(s)	Location	Acre(s)	Mitigation Location; Ratio	Acre(s)	Constructed Site #	Constructed Size Acre(s)
1a	Sec. 3, T150N, R98W	Natural	Yes	0.00	0.00	NA	NA	Y	N	NA	NA	NA	Vollrath 16/17	0.00	NA	NA	NA	NA	NA	NA
1b	Sec. 34, T151N, R98W	Natural	Yes	0.07	0.05	NA	NA	Y	N	NA	NA	NA	Vollrath 16/17	0.05	Na	NA	NA	NA	NA	NA
				<b>0.07</b>	<b>0.05</b>	<b>NA</b>	<b>NA</b>					<b>NA</b>	<b>0.05</b>		<b>NA</b>		<b>NA</b>		<b>NA</b>	

Other Waters Impact Table															
Other Waters											Other Water Mitigation				
Number	Location	Type	Size		Feature	USACE Jurisdictional <sup>1</sup>	Impacts to Other Waters				Mitigation Required			Mitigation Location; ratio	Method
			Acre(s)	Linear Feet			Acre(s)		Linear Feet		EO 11990	USACE	USFWS		
							Temp	Perm	Temp	Perm					
OW 1c	Sec.34, T151N, R98W	River	1.73	1,813	Natural	Yes	0.02	0.01	118	48	N	N	NA	NA	NA
<b>Totals</b>			<b>1.73</b>	<b>1,813</b>			<b>0.02</b>	<b>0.01</b>	<b>118</b>	<b>48</b>					

<sup>1</sup> A wetland Jurisdictional Determination was issued by the USACE on 6/16/2016; NWO-2016-0038-BIS.

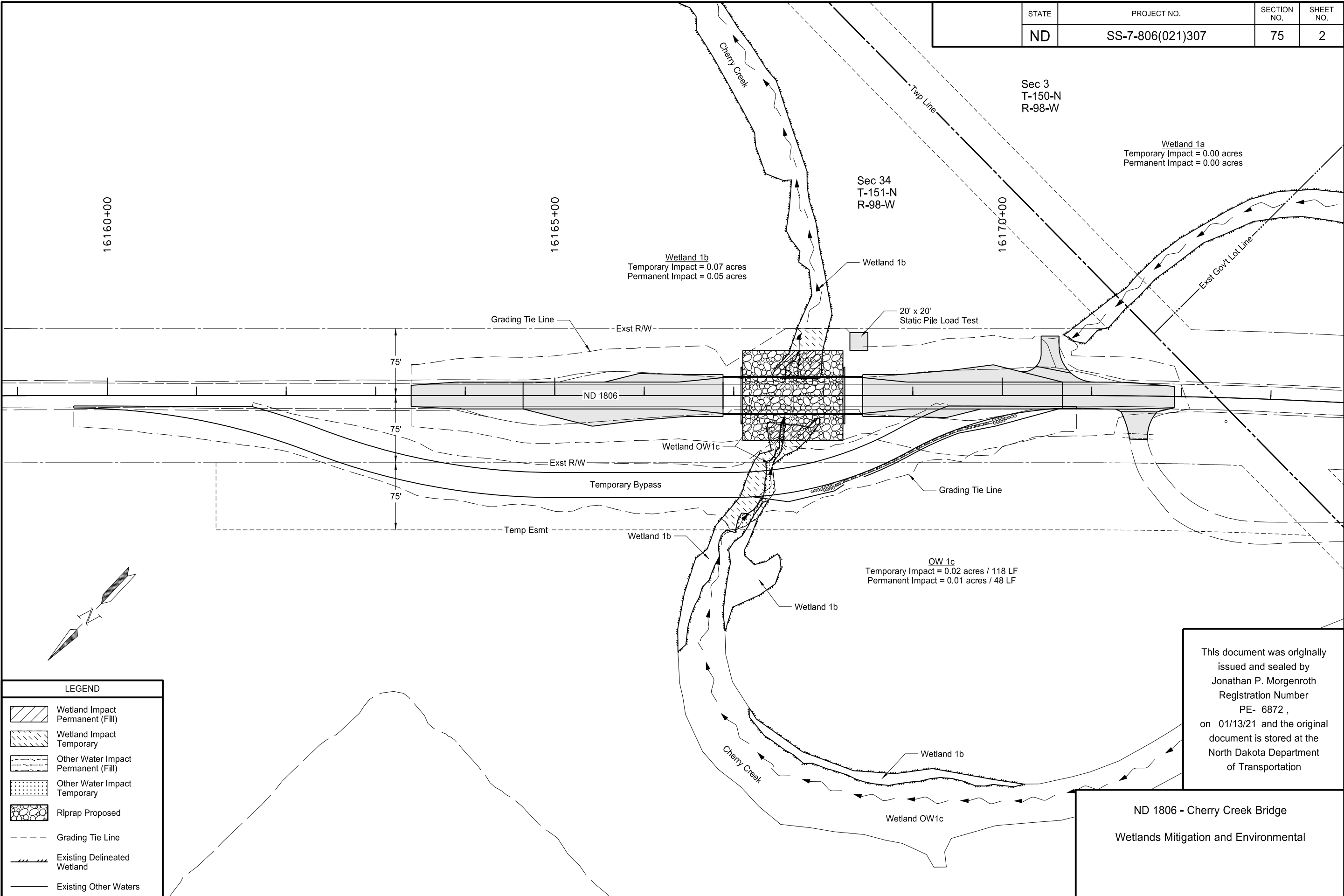
Impact Summary Table			
Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD	0.05	Temporary JD	0.07
Natural/Non-JD	0.00	Non-JD Temporary	0.00
Artificial/JD	0.00	Permanent JD > 0.10	0.00
Artificial/Non-JD	0.00	Permanent OW	0.01 / 48
<b>Total</b>	<b>0.05</b>	<b>Temporary OW</b>	<b>0.02 / 118</b>

Mitigation Summary Table					
	Location	Onsite Acre(s)	11990 Bank Acre(s)	USACE/11990 Bank Acre(s)	USFWS Bank Acre(s)
USACE Only	Onsite	0.00		0.00	
EO 11990 Only	Onsite and Vollrath16/17	0.00	0.00		
USACE/11990	Onsite	0.00		0.00	
USFWS	Vollrath 15/21 UFWS Easement				0.00
<b>Total</b>		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number PE-6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation.

ND 1806 - Cherry Creek Bridge  
Wetlands Mitigation and Environmental

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	75	2



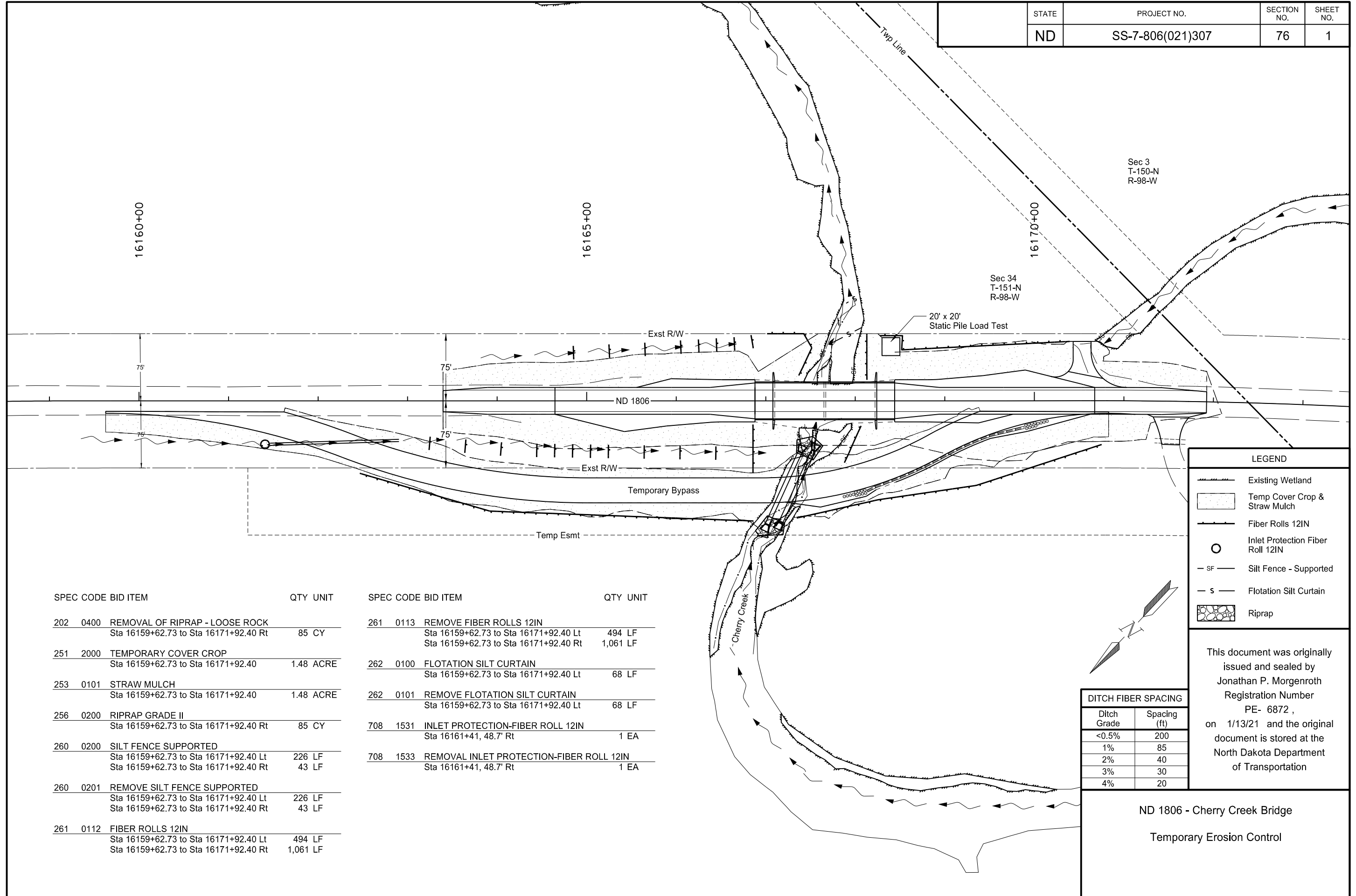
This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 01/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
Wetlands Mitigation and Environmental

**LEGEND**

	Wetland Impact Permanent (Fill)
	Wetland Impact Temporary
	Other Water Impact Permanent (Fill)
	Other Water Impact Temporary
	Riprap Proposed
	Grading Tie Line
	Existing Delineated Wetland
	Existing Other Waters

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	76	1



LEGEND	
	Existing Wetland
	Temp Cover Crop & Straw Mulch
	Fiber Rolls 12IN
	Inlet Protection Fiber Roll 12IN
	Silt Fence - Supported
	Flotation Silt Curtain
	Riprap

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

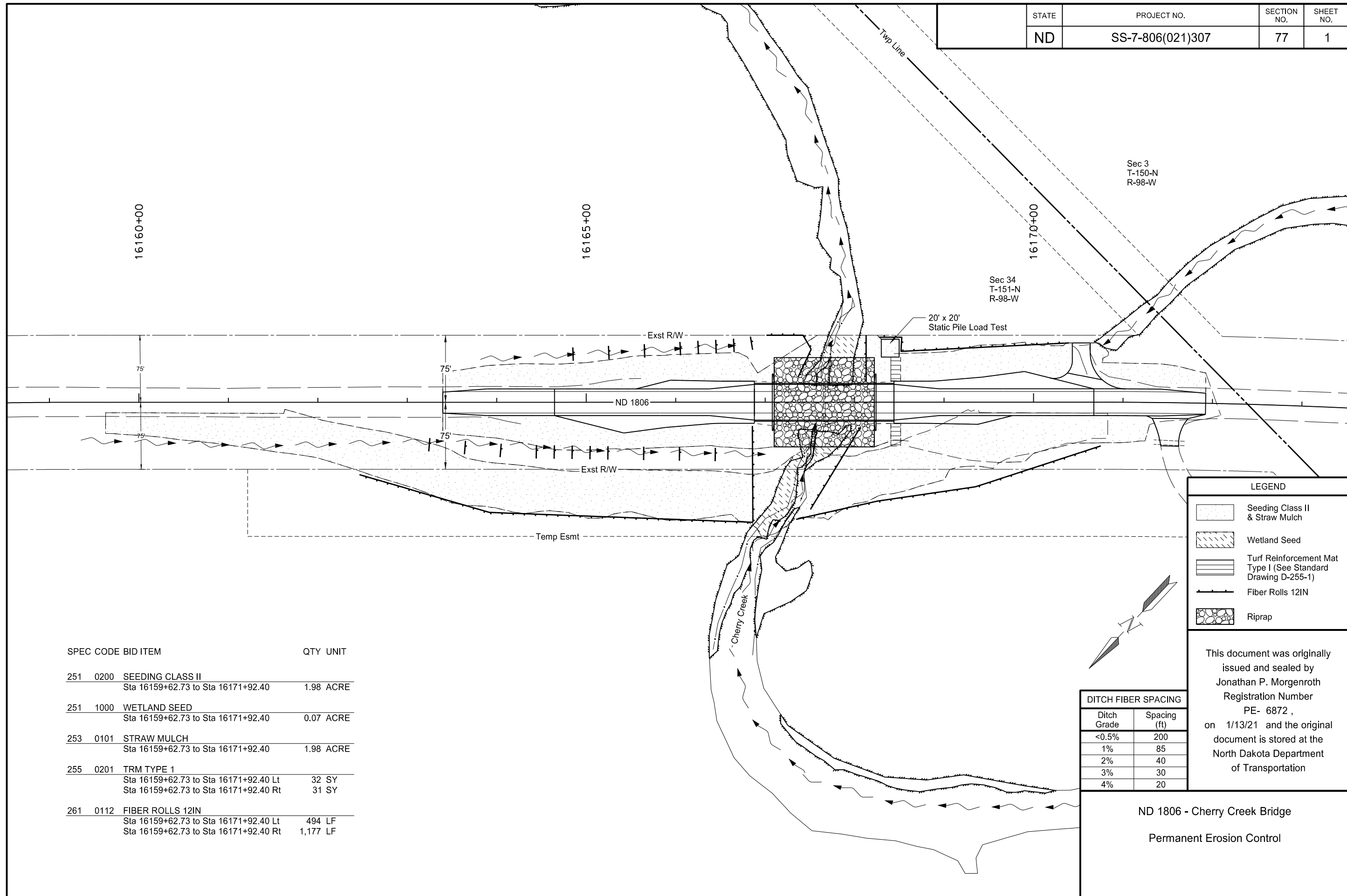
DITCH FIBER SPACING	
Ditch Grade	Spacing (ft)
<0.5%	200
1%	85
2%	40
3%	30
4%	20

SPEC CODE	BID ITEM	QTY	UNIT
202 0400	REMOVAL OF RIPRAP - LOOSE ROCK Sta 16159+62.73 to Sta 16171+92.40 Rt	85	CY
251 2000	TEMPORARY COVER CROP Sta 16159+62.73 to Sta 16171+92.40	1.48	ACRE
253 0101	STRAW MULCH Sta 16159+62.73 to Sta 16171+92.40	1.48	ACRE
256 0200	RIPRAP GRADE II Sta 16159+62.73 to Sta 16171+92.40 Rt	85	CY
260 0200	SILT FENCE SUPPORTED Sta 16159+62.73 to Sta 16171+92.40 Lt Sta 16159+62.73 to Sta 16171+92.40 Rt	226 43	LF LF
260 0201	REMOVE SILT FENCE SUPPORTED Sta 16159+62.73 to Sta 16171+92.40 Lt Sta 16159+62.73 to Sta 16171+92.40 Rt	226 43	LF LF
261 0112	FIBER ROLLS 12IN Sta 16159+62.73 to Sta 16171+92.40 Lt Sta 16159+62.73 to Sta 16171+92.40 Rt	494 1,061	LF LF

SPEC CODE	BID ITEM	QTY	UNIT
261 0113	REMOVE FIBER ROLLS 12IN Sta 16159+62.73 to Sta 16171+92.40 Lt Sta 16159+62.73 to Sta 16171+92.40 Rt	494 1,061	LF LF
262 0100	FLOTATION SILT CURTAIN Sta 16159+62.73 to Sta 16171+92.40 Lt	68	LF
262 0101	REMOVE FLOTATION SILT CURTAIN Sta 16159+62.73 to Sta 16171+92.40 Lt	68	LF
708 1531	INLET PROTECTION-FIBER ROLL 12IN Sta 16161+41, 48.7' Rt	1	EA
708 1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN Sta 16161+41, 48.7' Rt	1	EA

ND 1806 - Cherry Creek Bridge  
Temporary Erosion Control

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	77	1



LEGEND	
	Seeding Class II & Straw Mulch
	Wetland Seed
	Turf Reinforcement Mat Type I (See Standard Drawing D-255-1)
	Fiber Rolls 12IN
	Riprap

DITCH FIBER SPACING	
Ditch Grade	Spacing (ft)
<0.5%	200
1%	85
2%	40
3%	30
4%	20

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

SPEC CODE	BID ITEM	QTY	UNIT
251 0200	SEEDING CLASS II Sta 16159+62.73 to Sta 16171+92.40	1.98	ACRE
251 1000	WETLAND SEED Sta 16159+62.73 to Sta 16171+92.40	0.07	ACRE
253 0101	STRAW MULCH Sta 16159+62.73 to Sta 16171+92.40	1.98	ACRE
255 0201	TRM TYPE 1 Sta 16159+62.73 to Sta 16171+92.40 Lt Sta 16159+62.73 to Sta 16171+92.40 Rt	32 31	SY SY
261 0112	FIBER ROLLS 12IN Sta 16159+62.73 to Sta 16171+92.40 Lt Sta 16159+62.73 to Sta 16171+92.40 Rt	494 1,177	LF LF

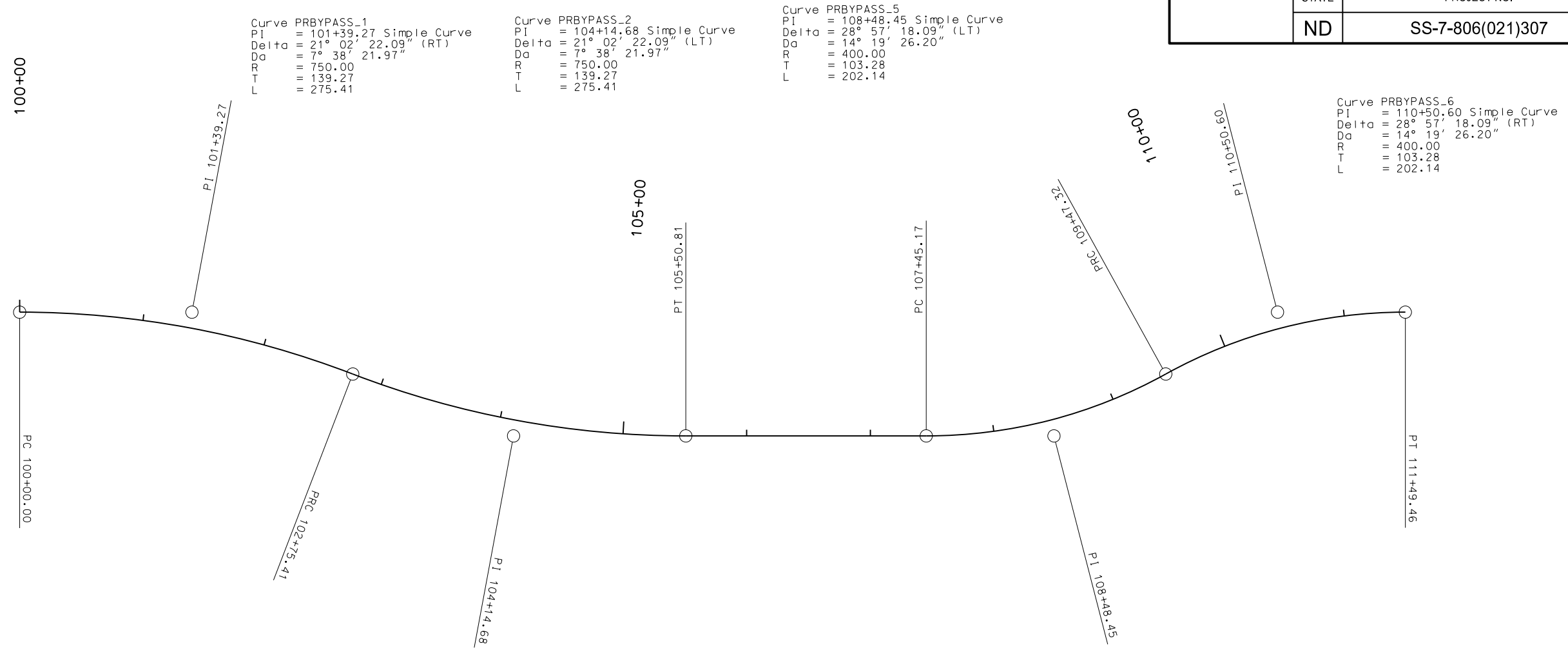
ND 1806 - Cherry Creek Bridge  
Permanent Erosion Control

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - ND 1806 Cherry Creek Bridge

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	81	1

HORIZONTAL ALIGNMENT				CURVE DATA		US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS							
PNT	STATION	NORTHING	EASTING	ARC DEFINITION		CORNER	IRN	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET		
SCL1806 - Existing ND 1806				Curve C1	Curve C3	T-150-N R-98-W				CONTROL POINT DESCRIPTION							
POT	16061+51.88	331474.28	1306790.19	PI = 16152+89.59	PI = 16224+55.45	NW Cor Sec 3	7-A	321116.95	1301158.14								
Qtr Cor	16088+01.77	328825.89	1306701.04	Delta = 44° 50' 00" (RT)	Delta = 47° 47' 56" (LT)	W 1/4 Cor Sec 3	7-B	318485.30	1301071.80	PRIMARY CONTROL							
Sec Cor	16114+51.80	326177.35	1306612.16	Da = 4° 00' 00"	Da = 4° 00' 00"	S 1/4 Cor Sec 3	8-C	315748.88	1303624.18	GPS 7	308664.46	1300818.43	2085.05	16313+04	71' LT		
Qtr Cor	16140+91.79	323538.78	1306525.53	R = 1432.41	R = 1432.41	E 1/4 Cor Sec 3	9-B	318278.67	1306350.62	1½" Alum Cap Stamped "NDDOT GPS7"							
TS	16145+47.68	323083.14	1306510.33	Ls = 300.00	Ls = 300.00	SE Cor Sec 3	9-C	315644.11	1306263.35	GPS 8	336757.63	1307017.80	2085.07	N/A	N/A		
SC	16148+47.68	322783.99	1306489.89	Sc = 6° 00' 00"	Sc = 6° 00' 00"	NE Cor Sec 9	7-C	315856.20	1300985.49	1½" Alum Cap Stamped "NDDOT GPS8"							
PI (C1)	16152+89.59	322341.65	1306485.60	Ts = 741.91	Ts = 785.84					GPS 10	322041.39	1306567.71	2053.09	16154+53	335' LT		
CS	16156+68.53	322046.22	1306156.36	L = 820.85	L = 894.98	T-151-N R-98-W				¾" Rebar w/ 2" Alum Cap stamped "KLJ 1806-10"							
ST	16159+68.53	321833.24	1305945.28			W 1/4 Cor Sec 34	7-M	323755.56	1301245.62	SECONDARY CONTROL							
PC	16170+79.34	321072.04	1305136.28			S 1/4 Cor Sec 34	8-N	321012.35	1303798.08								
PI (C2)	16172+26.15	320971.44	1305029.36	Curve C2		SW Cor Sec 35	9-N	320907.86	1306437.79	RTK 21	326216.81	1306720.71	2055.26	16114+09	107' LT		
PT	16173+72.89	320876.44	1304917.43	PI = 16172+26.15						"Reset J396"							
QTR Line	16188+89.44	319895.13	1303761.17	Delta = 2° 56' 08" (RT)						RTK 20	305091.45	1300719.46	2079.89	N/A	N/A		
QTR Line	16211+27.69	318446.82	1302054.65	Da = 1° 00' 00"													
TS	16216+69.61	318096.17	1301641.48	R = 5729.65						RTK 50	306275.39	1300695.12	2078.34	16336+96	43' LT		
SC	16219+69.61	317894.28	1301419.77	T = 146.81													
PI (C3)	16224+55.45	317587.67	1301042.33	L = 293.55						RTK 51	306289.35	1300549.14	2078.56	16336+89	104' RT		
CS	16228+64.59	317101.42	1301036.84														
ST	16231+64.59	316802.25	1301016.55							RTK 52	307959.73	1300772.99	2079.68	16320+10	50' LT		
Sec Cor	16241+11.15	315856.20	1300985.49														
Qtr Cor	16267+58.27	313210.49	1300898.95							RTK 53	307911.23	1300570.20	2078.99	16320+66	151' RT		
Sec Cor	16294+05.51	310564.67	1300812.42														
Qtr Cor	16320+39.76	307931.99	1300721.63							RTK 54	321103.31	1305012.80	2022.32	16171+49	107' RT		
PI	16327+91.91	307180.28	1300695.81							REFERENCE MARKERS							
PI	16340+87.97	305885.70	1300633.93			R Mkr #	NORTHING	EASTING	STATION	O/S	ALIGNMENT	RTK 55	321238.52	1305274.64	2026.20	16168+64	26' RT
POT	16347+43.20	305230.83	1300612.38			308	320976.35	1304992.16	16172+51	27' RT	ND 1806						
NOTES: Sheet 1 of 1				Date Survey Completed 01/14/16				<input type="checkbox"/> Assumed Coordinates <input checked="" type="checkbox"/> All coordinates on this sheet are McKenzie County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota North Zone Combination Factor (cf) = 0.9998485				All coordinates and measurements on this document derived from the International Foot definition.			This document was originally issued and sealed by Carl P. Olson, Registration Number LS- 4687, on 01/13/21 and the original document is stored at the North Dakota Department of Transportation		
												INITIALIZING BENCH MARK NDGPS Stations (OPUS) <input checked="" type="checkbox"/> NAVD-88 <input type="checkbox"/> NGVD-29 <input type="checkbox"/> GEOID 09 <input type="checkbox"/> _____ <input checked="" type="checkbox"/> GEOID 12A					

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	81	2



Curve PRBYPASS\_1  
 PI = 101+39.27 Simple Curve  
 Delta = 21° 02' 22.09" (RT)  
 Da = 7° 38' 21.97"  
 R = 750.00  
 T = 139.27  
 L = 275.41

Curve PRBYPASS\_2  
 PI = 104+14.68 Simple Curve  
 Delta = 21° 02' 22.09" (LT)  
 Da = 7° 38' 21.97"  
 R = 750.00  
 T = 139.27  
 L = 275.41

Curve PRBYPASS\_5  
 PI = 108+48.45 Simple Curve  
 Delta = 28° 57' 18.09" (LT)  
 Da = 14° 19' 26.20"  
 R = 400.00  
 T = 103.28  
 L = 202.14

Curve PRBYPASS\_6  
 PI = 110+50.60 Simple Curve  
 Delta = 28° 57' 18.09" (RT)  
 Da = 14° 19' 26.20"  
 R = 400.00  
 T = 103.28  
 L = 202.14

Beginning chain PRBYPASS description  
 Feature: Alignment 4 S

Curve Data  
 \*-----\*  
 Curve PRBYPASS 1  
 P.I. Station 101+39.27 N 321,741.7730 E 1,305,848.0669  
 Delta = 21° 02' 22.09" (RT)  
 Degree = 7° 38' 21.97"  
 Tangent = 139.2715  
 Length = 275.4060  
 Radius = 750.0000  
 External = 12.8214  
 Long Chord = 273.8613  
 Mid. Ord. = 12.6059  
 P.C. Station 100+00.00 N 321,837.2110 E 1,305,949.4973  
 P.T. Station 102+75.41 N 321,689.1122 E 1,305,719.1351  
 C.C. N 322,383.4307 E 1,305,435.5479  
 Back = S 46° 44' 36.51" W  
 Ahead = S 67° 46' 58.60" W  
 Chord Bear = S 57° 15' 47.56" W

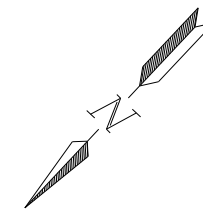
Curve Data  
 \*-----\*  
 Curve PRBYPASS 2  
 P.I. Station 104+14.68 N 321,636.4513 E 1,305,590.2034  
 Delta = 21° 02' 22.09" (LT)  
 Degree = 7° 38' 21.97"  
 Tangent = 139.2715  
 Length = 275.4060  
 Radius = 750.0000  
 External = 12.8214  
 Long Chord = 273.8613  
 Mid. Ord. = 12.6059  
 P.C. Station 102+75.41 N 321,689.1122 E 1,305,719.1351  
 P.T. Station 105+50.81 N 321,541.0133 E 1,305,488.7730  
 C.C. N 320,994.7936 E 1,306,002.7224  
 Back = S 67° 46' 58.60" W  
 Ahead = S 46° 44' 36.51" W  
 Chord Bear = S 57° 15' 47.56" W

Course from PT PRBYPASS 2 to PC PRBYPASS 5 S 46° 44' 36.51" W Dist 194.3613

Curve Data  
 \*-----\*  
 Curve PRBYPASS 5  
 P.I. Station 108+48.45 N 321,337.0502 E 1,305,272.0033  
 Delta = 28° 57' 18.09" (LT)  
 Degree = 14° 19' 26.20"  
 Tangent = 103.2796  
 Length = 202.1442  
 Radius = 400.0000  
 External = 13.1182  
 Long Chord = 200.0000  
 Mid. Ord. = 12.7017  
 P.C. Station 107+45.17 N 321,407.8242 E 1,305,347.2210  
 P.T. Station 109+47.32 N 321,238.7084 E 1,305,240.4510  
 C.C. N 321,116.5070 E 1,305,621.3274  
 Back = S 46° 44' 36.51" W  
 Ahead = S 17° 47' 18.43" W  
 Chord Bear = S 32° 15' 57.47" W

Curve Data  
 \*-----\*  
 Curve PRBYPASS 6  
 P.I. Station 110+50.60 N 321,140.3665 E 1,305,208.8987  
 Delta = 28° 57' 18.09" (RT)  
 Degree = 14° 19' 26.20"  
 Tangent = 103.2796  
 Length = 202.1442  
 Radius = 400.0000  
 External = 13.1182  
 Long Chord = 200.0000  
 Mid. Ord. = 12.7017  
 P.C. Station 109+47.32 N 321,238.7084 E 1,305,240.4510  
 P.T. Station 111+49.46 N 321,069.5925 E 1,305,133.6810  
 C.C. N 321,360.9097 E 1,304,859.5746  
 Back = S 17° 47' 18.43" W  
 Ahead = S 46° 44' 36.51" W  
 Chord Bear = S 32° 15' 57.47" W

Ending chain PRBYPASS description

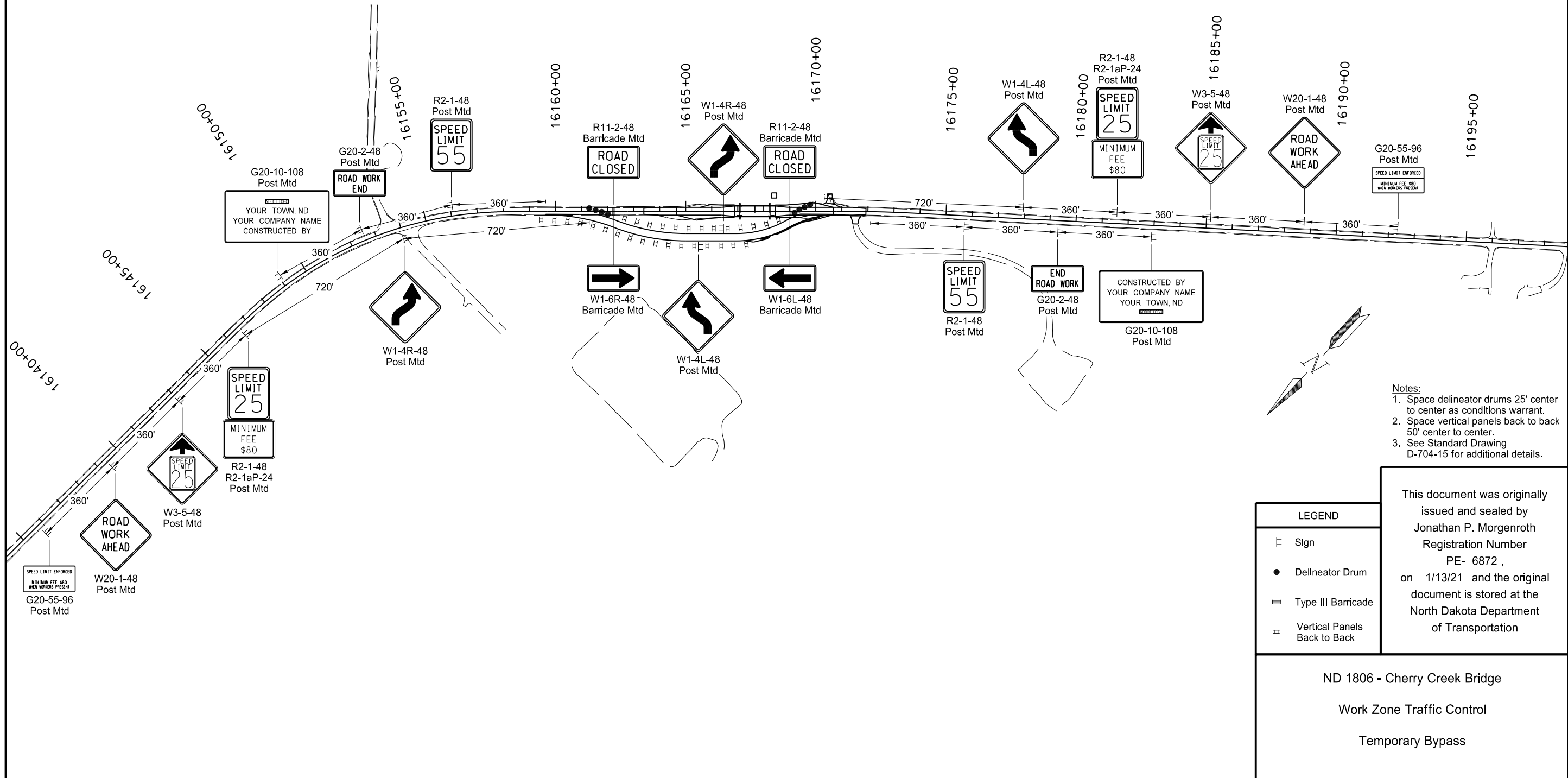


This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
 Survey Coordinate and Curve Data  
 Temporary Bypass

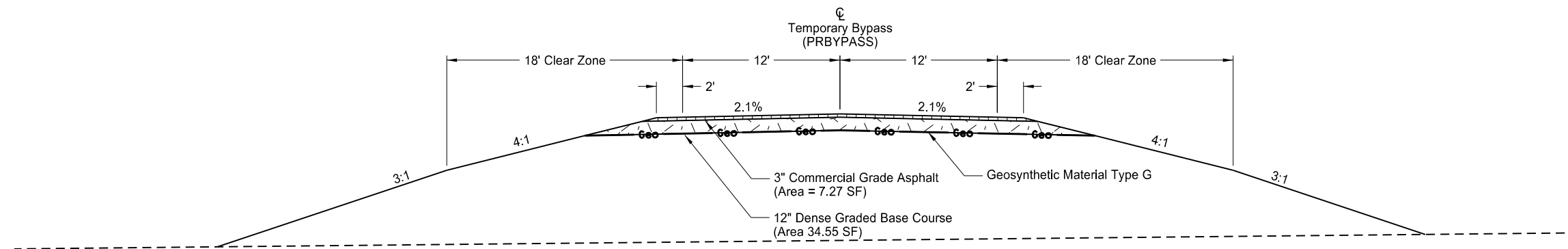


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	100	2





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SS-7-806(021)307	100	4

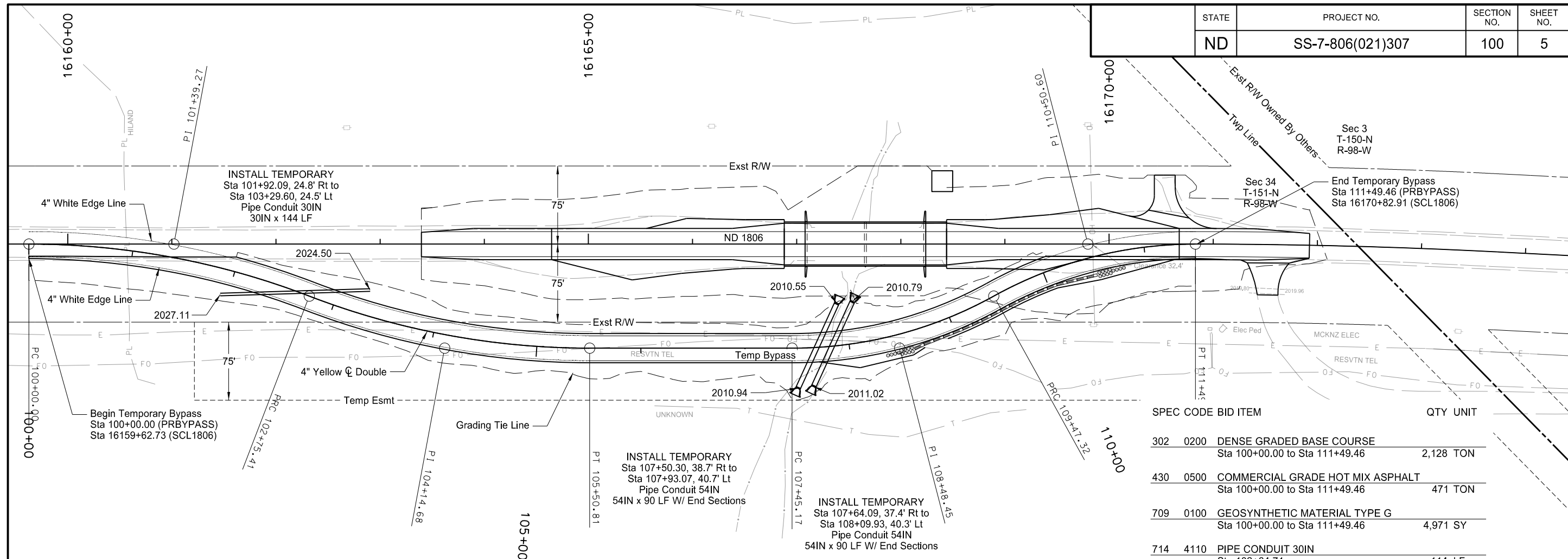


Proposed Temporary Bypass Typical Section  
Sta 100+00.00 to Sta 111+49.46 (PRBYPASS)

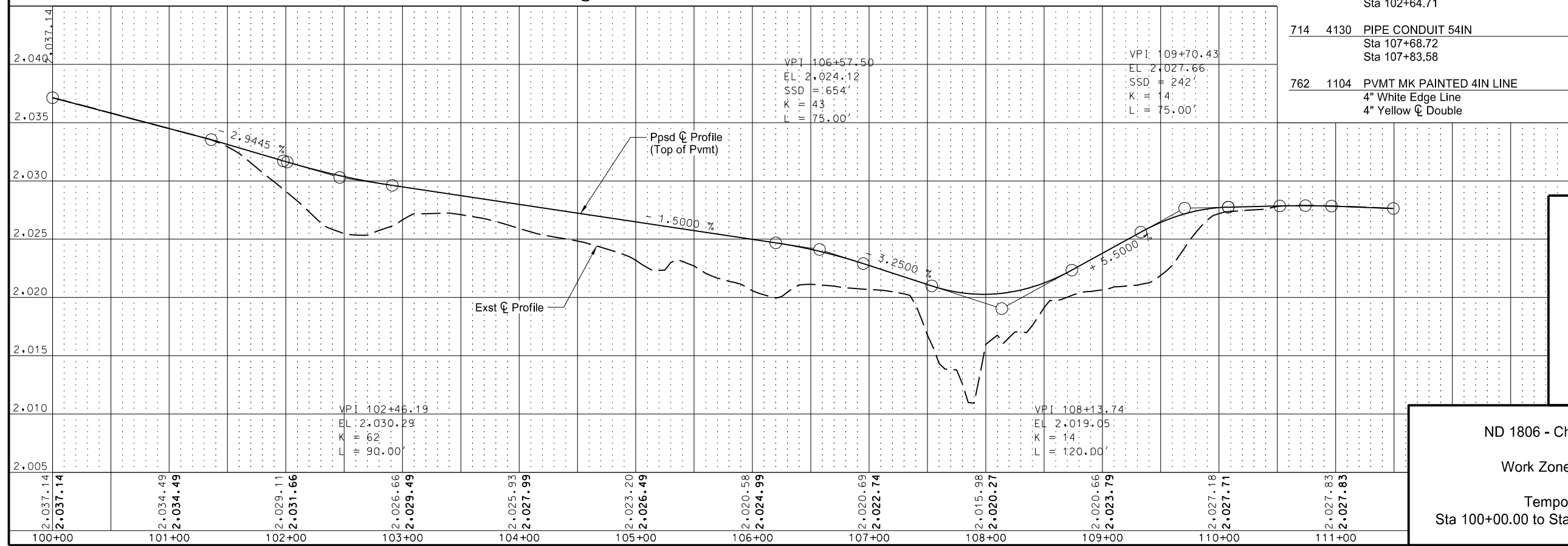
This document was originally issued and sealed by Jonathan P. Morgenroth, Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation.

ND 1806 - Cherry Creek Bridge  
Work Zone Traffic Control  
Temporary Bypass Typical Section

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	100	5



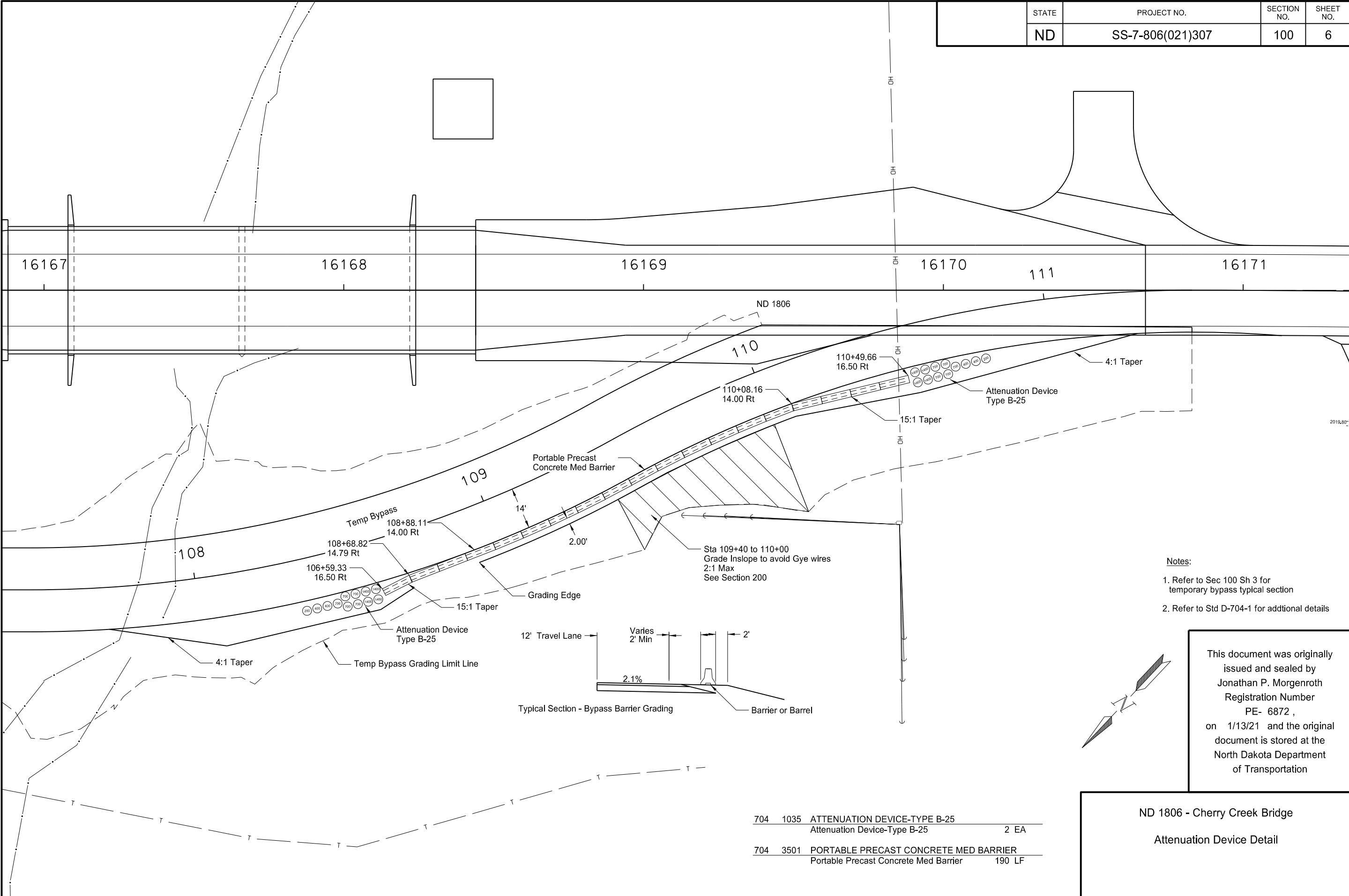
SPEC CODE	BID ITEM	QTY	UNIT
302 0200	DENSE GRADED BASE COURSE Sta 100+00.00 to Sta 111+49.46	2,128	TON
430 0500	COMMERCIAL GRADE HOT MIX ASPHALT Sta 100+00.00 to Sta 111+49.46	471	TON
709 0100	GEOSYNTHETIC MATERIAL TYPE G Sta 100+00.00 to Sta 111+49.46	4,971	SY
714 4110	PIPE CONDUIT 30IN Sta 102+64.71	114	LF
714 4130	PIPE CONDUIT 54IN Sta 107+68.72 Sta 107+83.58	90	LF
762 1104	PVMT MK PAINTED 4IN LINE 4" White Edge Line 4" Yellow C Double	2,299	LF



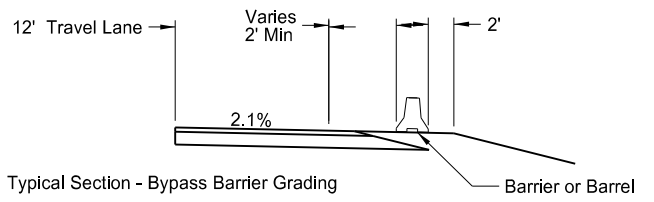
This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

**ND 1806 - Cherry Creek Bridge**  
**Work Zone Traffic Control**  
**Temporary Bypass**  
**Sta 100+00.00 to Sta 111+49.46 (PRBYPASS)**

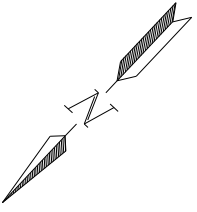
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	100	6



- Notes:
1. Refer to Sec 100 Sh 3 for temporary bypass typical section
  2. Refer to Std D-704-1 for additional details



This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation



704	1035	ATTENUATION DEVICE-TYPE B-25	2 EA
		Attenuation Device-Type B-25	
704	3501	PORTABLE PRECAST CONCRETE MED BARRIER	190 LF
		Portable Precast Concrete Med Barrier	

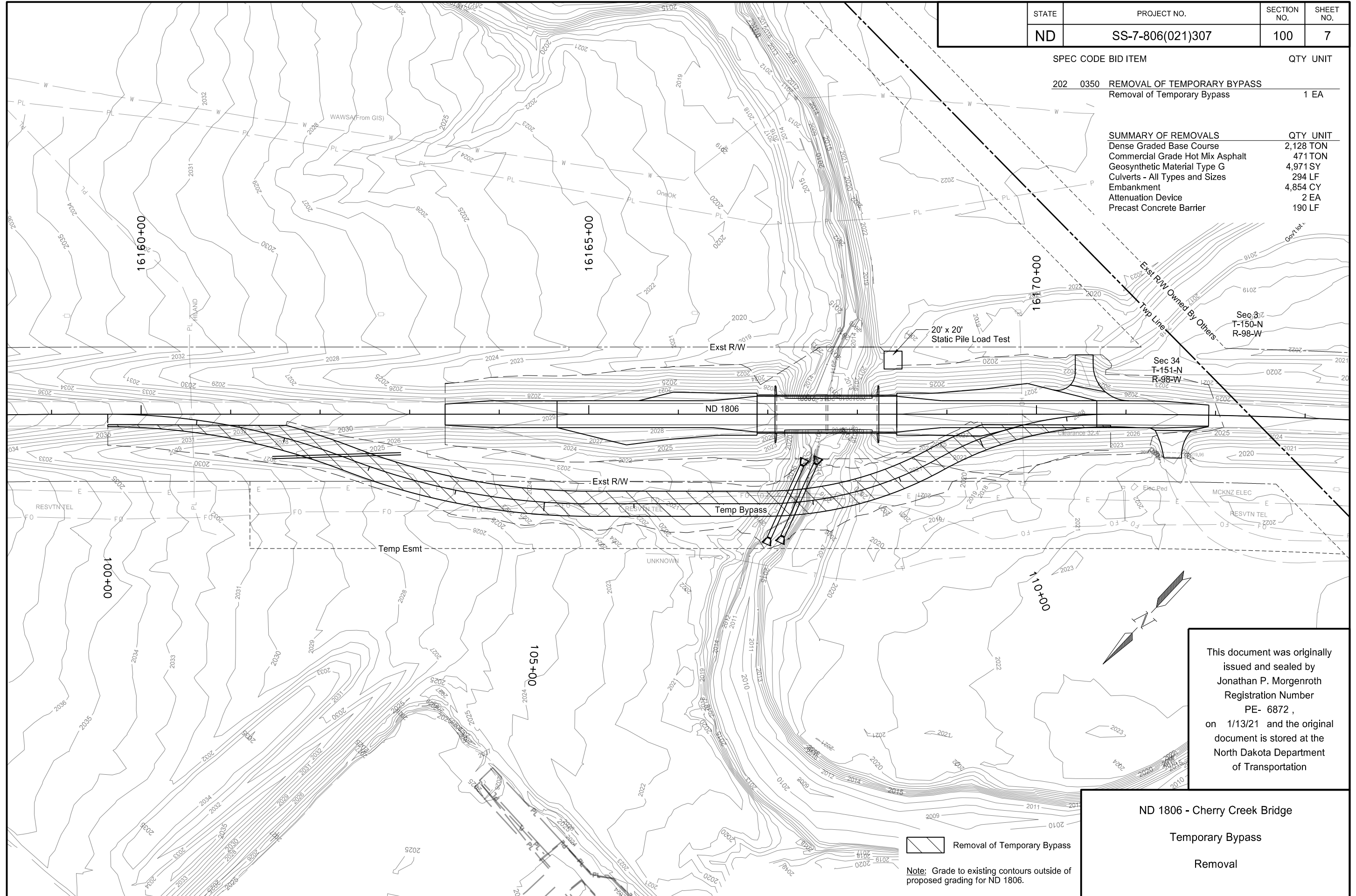
ND 1806 - Cherry Creek Bridge  
Attenuation Device Detail

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	100	7

SPEC CODE BID ITEM QTY UNIT


202 0350 REMOVAL OF TEMPORARY BYPASS  
Removal of Temporary Bypass 1 EA

SUMMARY OF REMOVALS	QTY UNIT
Dense Graded Base Course	2,128 TON
Commercial Grade Hot Mix Asphalt	471 TON
Geosynthetic Material Type G	4,971 SY
Culverts - All Types and Sizes	294 LF
Embankment	4,854 CY
Attenuation Device	2 EA
Precast Concrete Barrier	190 LF



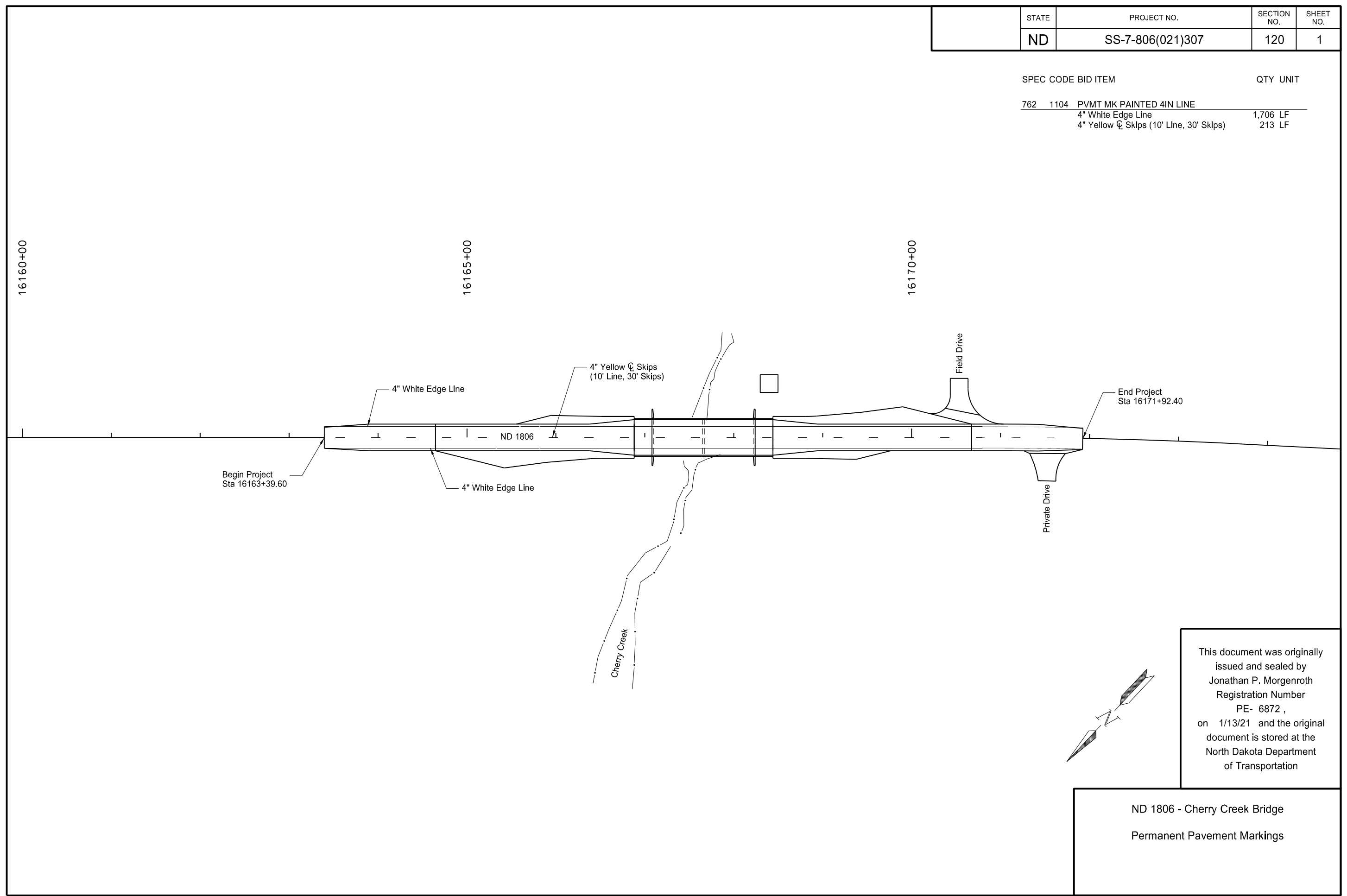
This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
Temporary Bypass  
Removal

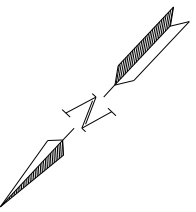
 Removal of Temporary Bypass  
Note: Grade to existing contours outside of proposed grading for ND 1806.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	120	1

SPEC CODE	BID ITEM	QTY	UNIT
762 1104	PVMT MK PAINTED 4IN LINE		
	4" White Edge Line	1,706	LF
	4" Yellow $\varnothing$ Skips (10' Line, 30' Skips)	213	LF



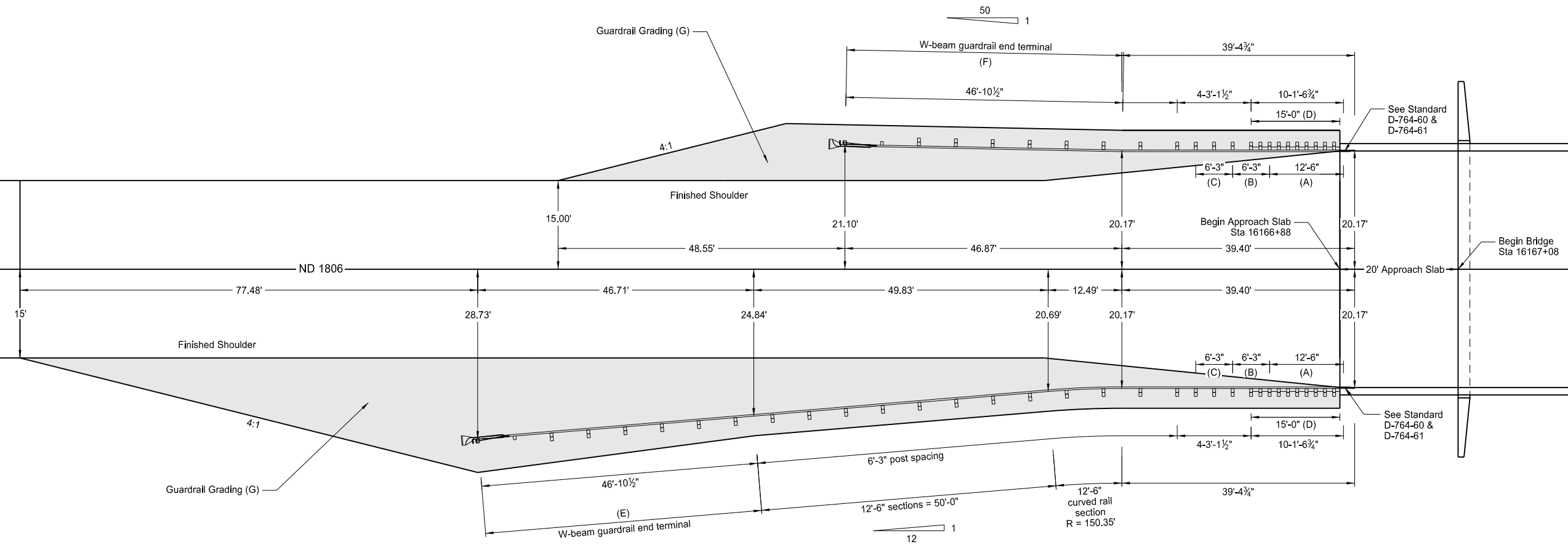
This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872 , on 1/13/21 and the original document is stored at the North Dakota Department of Transportation



ND 1806 - Cherry Creek Bridge  
Permanent Pavement Markings

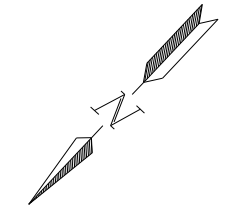
23 USC § 409 Documents  
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	130	1



- (A) Thrie beam double rail section (12 Gauge).
- (B) Thrie beam (12 Gauge).
- (C) Non-Symmetrical transition to W-Beam (10 Gauge).
- (D) Install curb and gutter in accordance with Standard D-748-01. Transition the last 2 feet of curb and gutter nearest the bridge approach slab to match the shape of the jersey barrier. Transition the first 3 feet of curb and gutter furthest from the bridge approach slab from a 6" curb height to a 0" curb height as shown on Standard D-764-60.
- (E) Install a MGS FLEAT end terminal at this location. See Standard D-764-38.
- (F) Install either a MGS SoftStop or MGS Sequential Kinging Terminal (SKT) end terminal at this location. See Standard D-764-50 or D-764-51. Use a 50:1 taper for this end terminal.
- (G) Surface this area with 2" HMA and 6" aggregate base course. See Section 10 for paving quantities. See Standard D-764-48 for additional grading details. Embankment included in Section 11 earthwork summary.

 Guardrail Grading

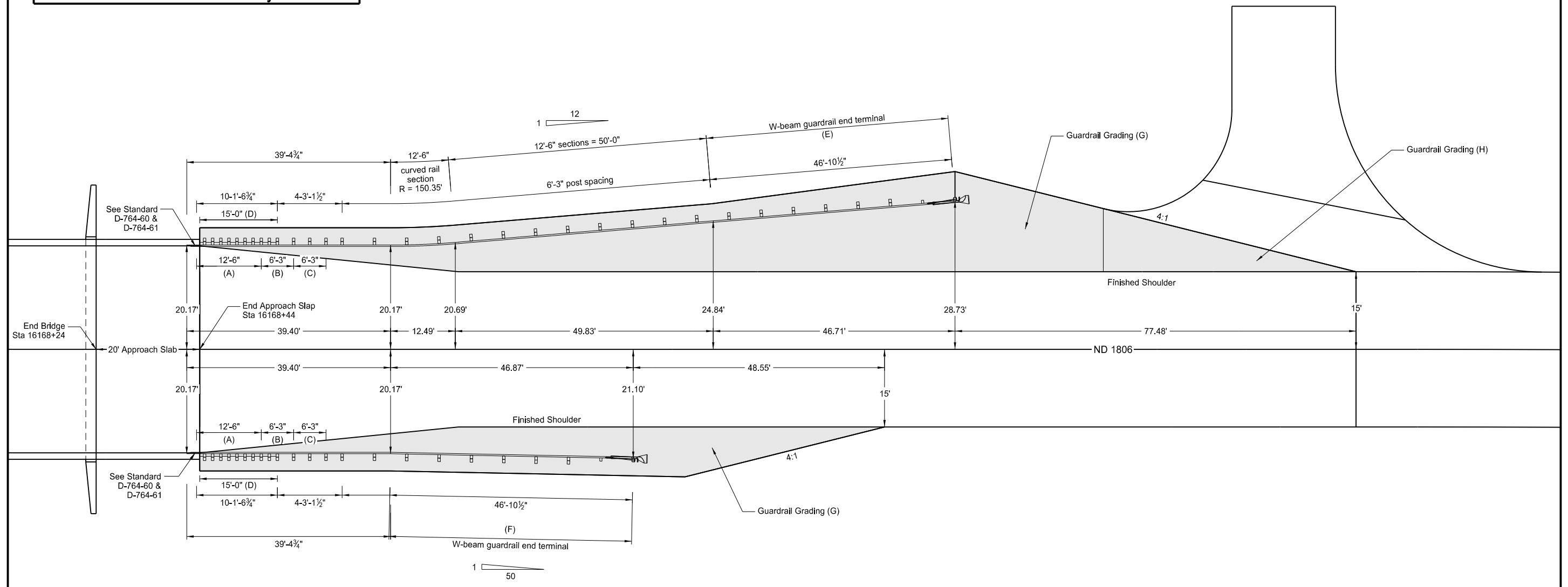


This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
 At Beginning of Bridge  
 Thrie/MGS W-Beam Guardrail Layout  
 Cherry Creek  
 Str 1806-307.910

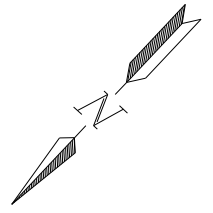
23 USC § 409 Documents  
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	130	2



- (A) Thrie beam double rail section (12 Gauge).
- (B) Thrie beam (12 Gauge).
- (C) Non-Symmetrical transition to W-Beam (10 Gauge).
- (D) Install curb and gutter in accordance with Standard D-748-01. Transition the last 2 feet of curb and gutter nearest the bridge approach slab to match the shape of the jersey barrier. Transition the first 3 feet of curb and gutter furthest from the bridge approach slab from a 6" curb height to a 0" curb height as shown on Standard D-764-60.
- (E) Install a MGS FLEAT end terminal at this location. See Standard D-764-38.
- (F) Install either a MGS SoftStop or MGS Sequential Kinging Terminal (SKT) end terminal at this location. See Standard D-764-50 or D-764-51. Use a 50:1 taper for this end terminal.
- (G) Surface this area with 2" HMA and 6" aggregate base course. See Section 10 for paving quantities. See Standard D-764-48 for additional grading details. Embankment included in Section 11 earthwork summary.
- (H) Surface this area with 3" HMA and 12" aggregate base course. See Section 10 for paving quantities. See Standard D-764-48 for additional grading details. Embankment included in Section 11 earthwork summary.

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation



ND 1806 - Cherry Creek Bridge  
 At End of Bridge  
 Thrie/MGS W-Beam Guardrail Layout

Cherry Creek  
 Str 1806-307.910

Guardrail Grading

23 USC § 409 Documents  
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	130	3

SPEC CODE	BID ITEM	QTY	UNIT
748 0141	CURB & GUTTER-TYPE 1 SPECIAL		
	Sta 16166+73.00, 20' Lt to Sta 16166+88.00, 20' Lt	15	LF
	Sta 16166+73.00, 20' Rt to Sta 16166+88.00, 20' R	15	LF
	Sta 16168+44.00, 20' Lt to Sta 16168+59.00, 20' Lt	15	LF
	Sta 16168+44.00, 20' Rt to Sta 16168+59.00, 20' R	15	LF
764 0131	W-BEAM GUARDRAIL		
	Sta 16165+88.79 to Sta 16166+90.50 Rt	101.9	LF
	Sta 16166+51.10 to Sta 16166+90.50 Lt	39.4	LF
	Sta 16168+41.50 to Sta 16168+80.90 Rt	39.4	LF
	Sta 16168+41.50 to Sta 16169+43.21 Lt	101.9	LF
764 0145	W-BEAM GUARDRAIL END TERMINAL		
	Sta 16165+42.08 to Sta 16165+88.79 Rt	1	EA
	Sta 16166+04.24 to Sta 16166+51.10 Lt	1	EA
	Sta 16168+80.90 to Sta 16169+27.76 Rt	1	EA
	Sta 16169+43.21 to Sta 16169+89.92 Lt	1	EA
764 0151	REMOVE W-BEAM GUARDRAIL & POSTS		
	Sta 16165+28.14 to Sta 16167+17.22 Rt	189.4	LF
	Sta 16166+15.44 to Sta 16167+17.22 Lt	101.9	LF
	Sta 16168+18.00 to Sta 16169+19.78 Rt	101.9	LF
	Sta 16168+18.00 to Sta 16170+07.08 Lt	189.4	LF
764 2081	REMOVE END TREATMENT & TRANSITION		
	Sta 16164+78.25 to Sta 16165+28.14 Rt	1	EA
	Sta 16165+65.55 to Sta 16166+15.44 Lt	1	EA
	Sta 16169+19.78 to Sta 16169+68.22 Rt	1	EA
	Sta 16170+07.08 to Sta 16170+55.53 Lt	1	EA

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES (B)																
THRIE/MGS W-BEAM GUARDRAIL AT BRIDGE ENDS																
LOCATION	(A) 2'-6" THRIE BEAM TERMINAL CONNECTOR	(A) SINGLE SLOPE TO THRIE BEAM CONNECTOR PLATE	(A) 5/8" Ø x 18" LONG GUARDRAIL BOLT	(A) 6" x 8" x 6'-0" TIMBER POST	(A) 6" x 8" x 7'-0" TIMBER POST	(A) 6" x 8" x 19" WOOD TIMBER BLOCK	(A) 6" x 8" x 14" WOOD TIMBER BLOCK	(A) 5/8" Ø x 1 1/4" LONG GUARDRAIL BOLT	(A) 12'-6" DOUBLE THRIE BEAM SECTION	(A) 6'-3" THRIE BEAM SECTION	(A) 12'-6" STRAIGHT W-BEAM RAIL SECTION	(A) 12'-6" CURVED W-BEAM RAIL SECTION	(A) 6'-3" NON- W-THRIE BEAM TRANSITION SECTION	(A) 7/8" Ø x 15" LONG HEX HEAD BOLT	(A) REFLECT- ORIZED PLATES	
	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	
Sta 16165+88.79 to 16166+90.50 Rt	1	1	36	19	6	12	13	92	1	1	5	1	1	5	7	
Sta 16166+51.10 to 16166+90.50 Lt	1	1	26	9	6	12	3	52	1	1	1	-	1	5	4	
Sta 16168+41.50 to 16168+80.90 Rt	1	1	26	9	6	12	3	52	1	1	1	-	1	5	4	
Sta 16168+44.00 to 16169+43.21 Lt	1	1	36	19	6	12	13	92	1	1	5	1	1	5	7	
TOTAL	4	4	124	56	24	48	32	288	4	4	12	2	4	20	22	

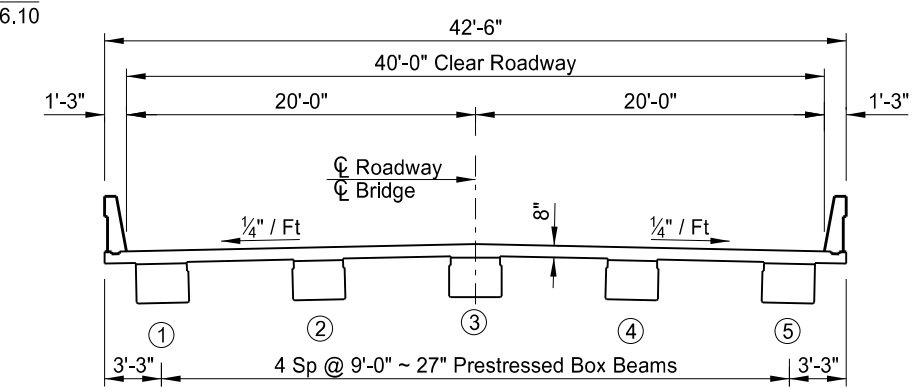
(A) Include these items in the contract unit price for "W-BEAM GUARDRAIL".

This document was originally issued and sealed by Jonathan P. Morgenroth Registration Number PE- 6872, on 1/13/21 and the original document is stored at the North Dakota Department of Transportation

ND 1806 - Cherry Creek Bridge  
 Thrie/MGS W-Beam Guardrail Quantities  
 Cherry Creek  
 Str 1806-307.910

BRIDGE CODE	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
X081	ND	SS-7-806(021)307	170	1

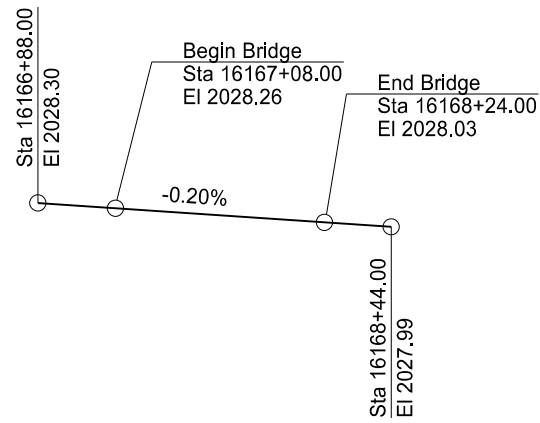
23 U.S.C. 409  
NDDOT Reserves All Objections



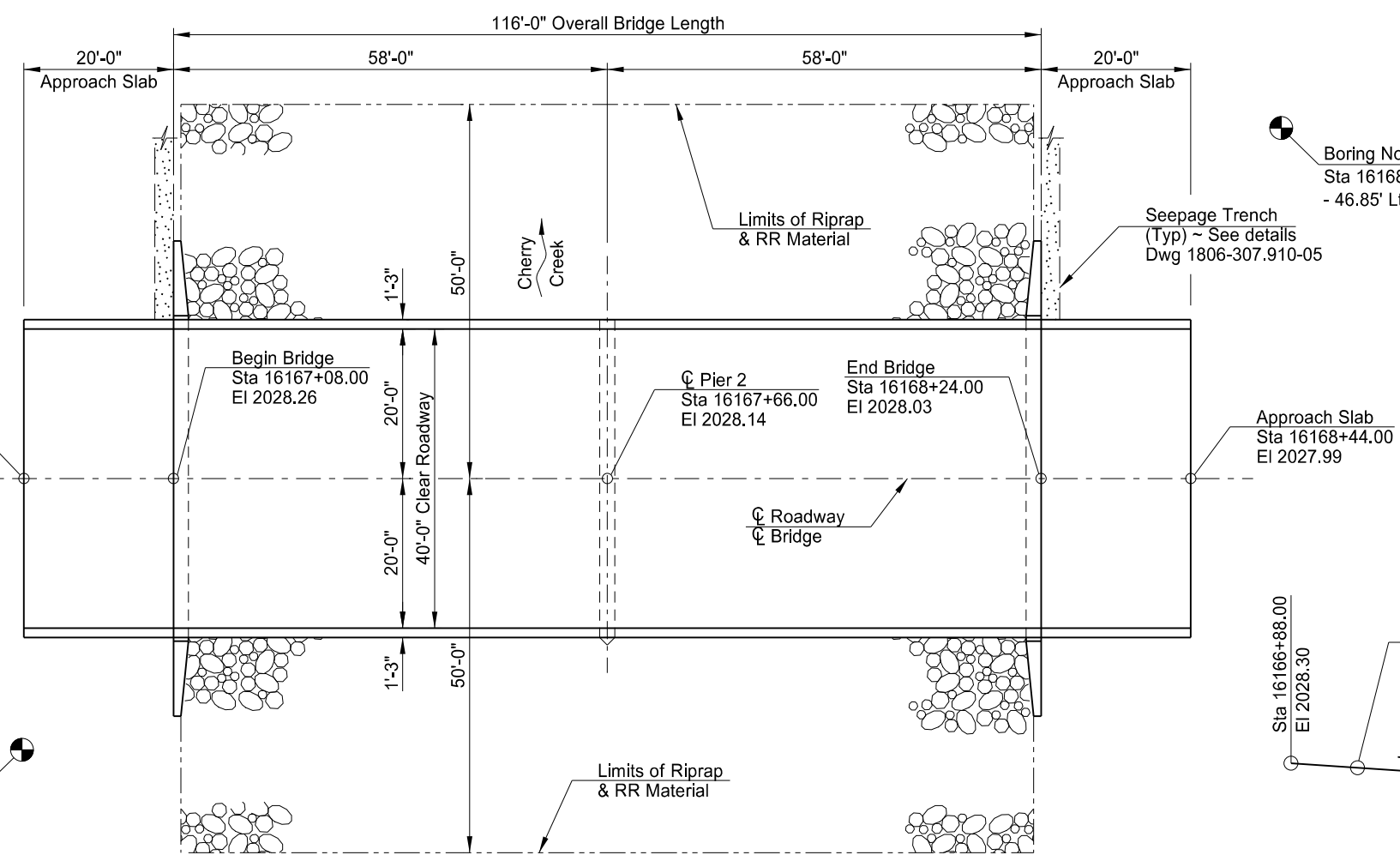
TYPICAL SECTION

HYDRAULIC DATA:

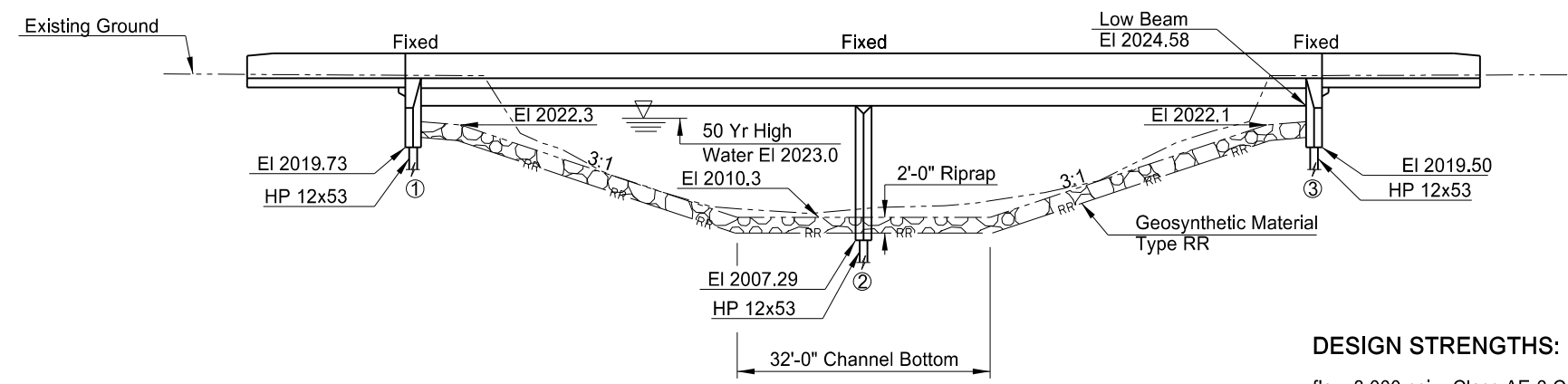
Drainage Area	188	sq mi
Stream Gradient	0.00055	ft/ft
Design Frequency	50	yr
Design Discharge	2,819	cfs
Design Headwater Stage	2023.0	ft
Design Tailwater Stage	2022.7	ft
Velocity Through Bridge	3.3	fps
100-Year Frequency Discharge	3,421	cfs
100-Year Frequency Headwater	2023.2	ft
Overtopping Stage	2027.9	ft
Overtopping Discharge	17,500	cfs



VERTICAL CURVE DATA



PLAN



ELEVATION

DESIGN STRENGTHS:

f<sub>c</sub> = 3,000 psi ~ Class AE-3 Concrete  
f<sub>c</sub> = 4,000 psi ~ Class AAE-3 Concrete  
f<sub>c</sub> = 5,500 psi ~ Prestressed Beam Concrete  
f<sub>y</sub> = 60,000 psi ~ Reinforcing Steel

Load & Resistance Factor Design

This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

SURVEY CONTROL POINTS			
POINT	NORTHING	EASTING	ELEVATION
RTK 54	321,103.31	1,305,012.80	2022.32
RTK 55	321,238.52	1,305,274.64	2026.20

SPECIAL PROVISION	
SSP 2	MIGRATORY BIRD TREATY ACT
STANDARD DRAWINGS	
D-622-1, D-714-18 & D-900-1	
F.W.S. 15 PSF	
HL-93 DESIGN LOADING	
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
CHERRY CREEK BRIDGE LAYOUT	
PROJECT: SS-7-806(014)306 STATION: 16167+66 McKENZIE COUNTY	
01/21/2021	/s/ Jon Ketterling
DATE	BRIDGE ENGINEER

**NOTES**

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

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	2

- 100 SCOPE OF WORK: Work at this site consists of building a new 2-span prestressed concrete spread box beam bridge with an overall bridge length of 116'-0" and a clear roadway width of 40'-0".
- 100 GENERAL: Include the cost of furnishing and placing preformed expansion joint filler, concrete inserts, rebar couplers, silicone sealant, and other miscellaneous items in the price bid for Class AE-3 and AAE-3 concrete.
- 202 REMOVAL OF STRUCTURE: The existing structure is a 2-span prestress concrete Tee girder bridge, 102'-0" long with a clear roadway width of 32'-3". The substructures are made of concrete and supported on timber piling. Remove the pier and abutment concrete in its entirety. Include all work required to remove the bridge in the contract unit price for "Removal of Structure."
- 210 EXCAVATION: Include the excavation costs at the abutments, as shown in the "Detail at Abutment", in the lump sum bid item, "Class 1 Excavation." Include the excavation costs at the pier in the lump sum bid item, "Class 2 Excavation."
- 602 DIAPHRAGMS AND ENDWALLS: Place the pier diaphragm and endwall concrete at the same time as the deck concrete.
- 602 SURFACE FINISH "D": Apply Surface Finish "D" on the inside and top surfaces of the bridge and approach slab barrier. Use gray surface finish, color number 36424 meeting Federal Standard 595B.
- 602 PENETRATING WATER REPELLANT: Apply penetrating water repellent solution to the driving surface of the bridge deck, and front faces and tops of barriers a minimum of 14 days after placement of concrete and 48 hours after completion of the final surface finish as required by Section 602.04 I, "Surface Finish".
- 616 STRUCTURAL STEEL: Use ASTM A36 structural steel.

622 PILING: Drive piling with a diesel hammer with a rated energy and ram weight (minimum of 4,000 pounds) of at least 84,865 foot-pound-tons computed by the formula:

$$W(E-18,018) + 0.677E$$

W = Weight of the ram (tons)

E = Rated hammer energy

Run the hammer at an energy that produces a penetration at bearing between 1/2" and 3 inches in the last 10 blows.

Submit the following pile driving system information to the Geotechnical Section 14 days prior to driving pile;

Hammer: manufacturer, model, type, serial number, rated energy at specific length of stroke, and explosive force (for diesel hammers)

Ram: ram weight, ram length (for diesel hammers), ram cross sectional area

Anvil: anvil weight (for diesel hammers)

Capblock: material type, area, thickness, modulus of elasticity E(psi), Coefficient of Restitution e

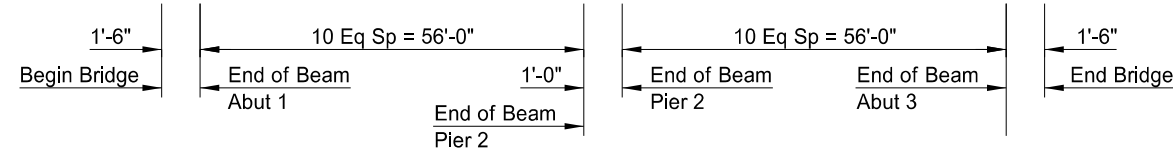
Pile cap (helmet, bonnet, anvil block, drivehead): weight

Cushion: material type, area, thickness, modulus of elasticity E(psi), Coefficient of Restitution e

This document was originally issued and sealed by Matthew L Isley, Registration Number PE-10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation.

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	3

Beam	2027.88	2027.88	.90	.91	.92	.92	.91	.89	.87	.84	.81	2027.77	2027.77	.78	.79	.80	.80	.79	.78	.76	.73	.69	2027.65	2027.65
BEAM 5	2027.88	2027.88	.90	.91	.92	.92	.91	.89	.87	.84	.81	2027.77	2027.77	.78	.79	.80	.80	.79	.78	.76	.73	.69	2027.65	2027.65
BEAM 4	2028.07	2028.07	.08	.10	.10	.10	.10	.08	.06	2028.03	2027.99	2027.96	2027.95	.97	.98	.99	.99	.98	.97	.94	.91	.88	2027.84	2027.84
BEAM 3	2028.26	2028.26	.27	.28	.29	.29	.28	.27	.25	.22	2028.03	2028.14	2028.14	.16	.17	.18	.18	.17	.15	.13	.10	.07	2028.03	2028.03
BEAM 2	2028.07	2028.07	.08	.10	.10	.10	.10	.08	.06	2028.03	2027.99	2027.96	2027.95	.97	.98	.99	.99	.98	.97	.94	.91	.88	2027.84	2027.84
BEAM 1	2027.88	2027.88	.90	.91	.92	.92	.91	.89	.87	.84	.81	2027.77	2027.77	.78	.79	.80	.80	.79	.78	.76	.73	.69	2027.65	2027.65



Beam 1 is the east beam.  
SCREED ELEVATION

BRIDGE BID ITEMS

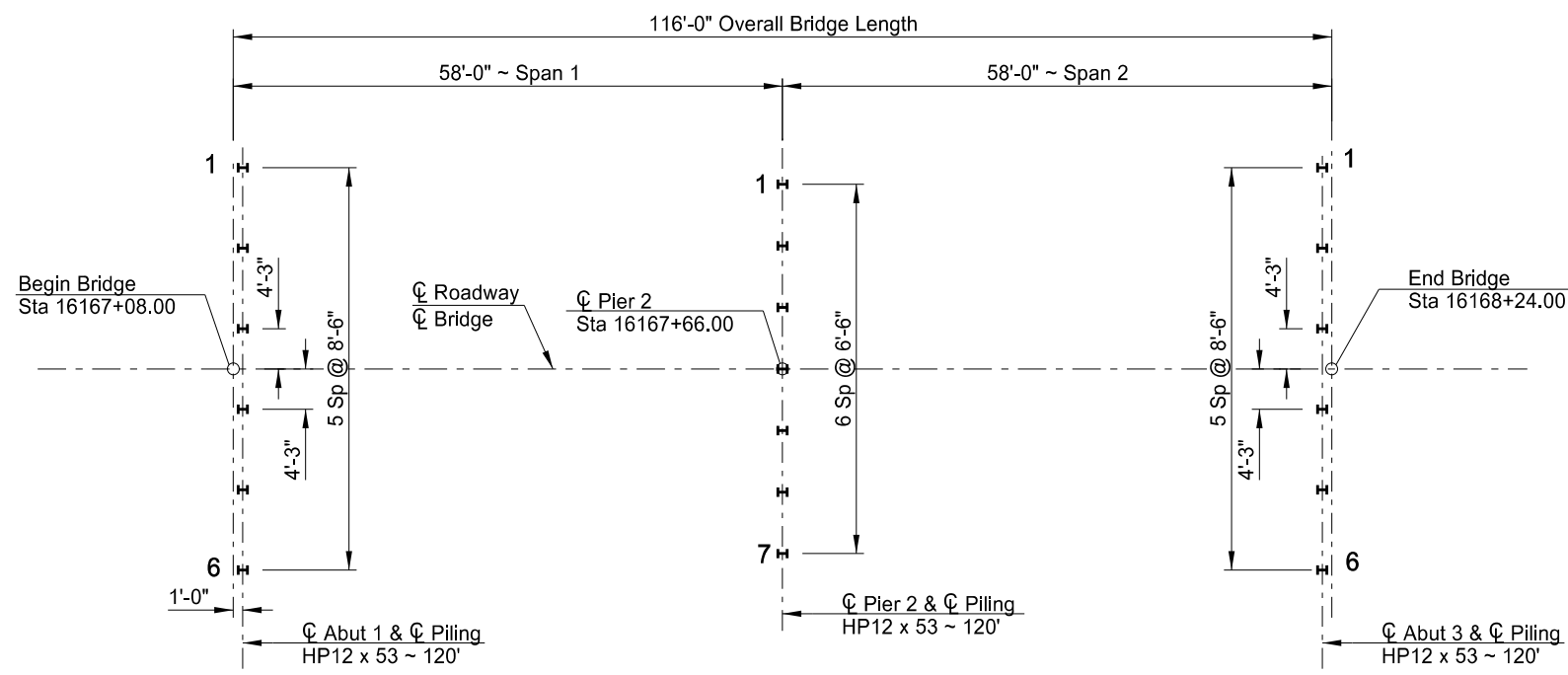
SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0105	REMOVAL OF STRUCTURE	L SUM	1
210	0099	CLASS 1 EXCAVATION	L SUM	1
210	0111	CLASS 2 EXCAVATION	L SUM	1
210	0201	FOUNDATION PREPARATION	EA	1
256	0200	RIPRAP GRADE II	CY	858
602	0130	CLASS AAE-3 CONCRETE	CY	163.9
602	1130	CLASS AE-3 CONCRETE	CY	105.9
602	1133	CONCRETE BRIDGE APPROACH SLAB	SY	188.8
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	516
604	9610	PRESTRESSED BOX BEAM-27 IN	LF	560
612	0115	REINFORCING STEEL-GRADE 60	LBS	9,715
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	37,918
616	0360	STRUCTURAL STEEL	LBS	12,618
622	0040	STEEL PILING HP 12 X 53	LF	2,592
622	0100	LOAD TEST	EA	1
622	1200	STEEL TEST PILING HP 12 X 53	LF	72
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	1,287
930	3000	BRIDGE BENCH MARKS	SET	1
930	9537	ABUTMENT UNDERDRAIN SYSTEM	EA	2

This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/12/21 and the original document is stored at the North Dakota Department of Transportation

CHERRY CREEK

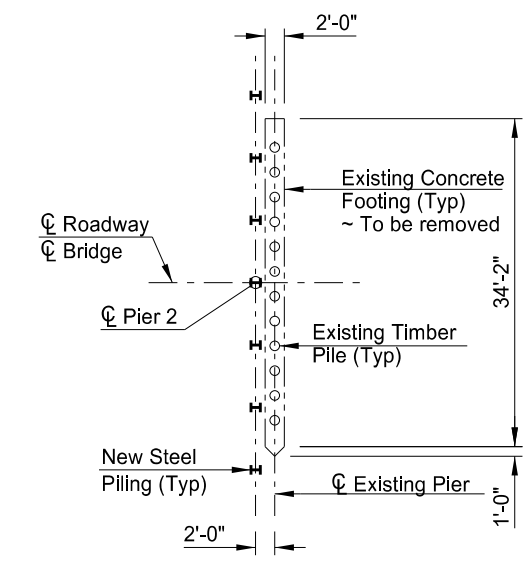
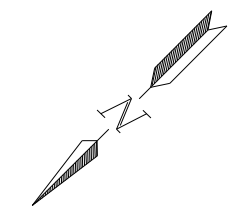
SCREED ELEVATIONS & BID ITEM QUANTITIES

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	4



Drive the HP12 x 53 Pile to a safe bearing value of 130 tons.

**PILING LAYOUT**



**PIER PILING LAYOUT**

**NOTE:**

For double acting or single acting diesel hammers, calculate the safe bearing value of piles by the following formula:

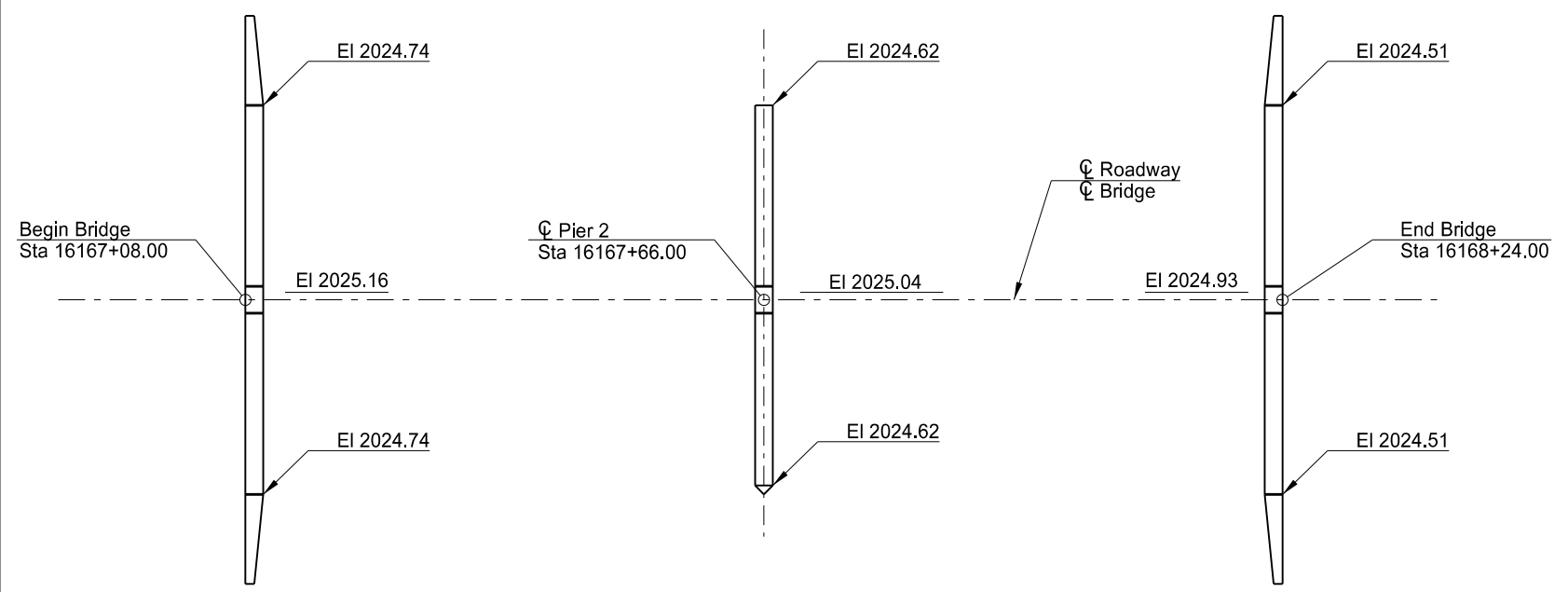
$$P = \frac{4.5E}{S + 0.2} \times \frac{W + 0.2M}{W + M}$$

Where:

- P = Safe bearing value, in pounds.
- W = Weight of striking parts (ram), in pounds.
- M = Weight of parts being driven, in pounds. Includes pile weight, anvil (if any), driving cap, etc.
- E = Energy per blow, in foot-pounds.
- S = Average penetration of pile in inches per blow for last ten blows.

For single acting hammers, calculate E by multiplying observed stroke (ft) and W (lbs).

PILE COORDINATES			
	PILE	NORTHING	EASTING
ABUT 1	1	321,310.34	1,305,420.56
	6	321,341.30	1,305,391.43
PIER 2	1	321,272.56	1,305,377.85
	7	321,300.96	1,305,351.12
ABUT 3	1	321,232.22	1,305,337.53
	6	321,263.18	1,305,308.41



Elevations shown are to top of finished concrete.

**BEARING ELEVATIONS**

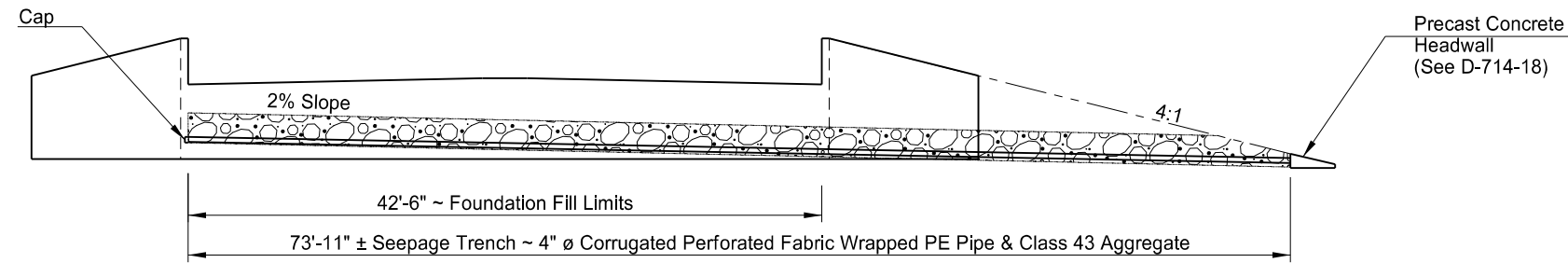
This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

**CHERRY CREEK**

**PILING LAYOUT & BEARING ELEVATIONS**

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	5

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

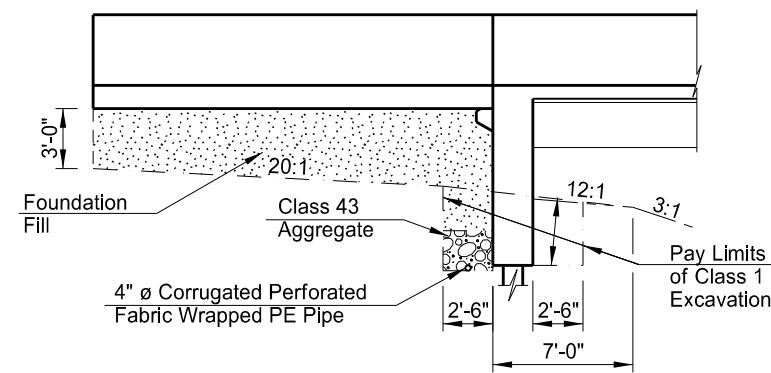


BACK FACE OF ABUTMENT

**NOTES:**

Use corrugated perforated fabric wrapped PE pipe that meets the requirements of Section 830.03 A.4. Provide fabric wrapping for the pipe that meets the requirements of Section 858.01 for D3 or D4 drainage fabric. Provide aggregate that meets the requirements of Section 816.03, Class 43. Provide foundation fill that meets the requirements of Section 210.

Include the cost to furnish and place the foundation fill, aggregate, corrugated perforated pipe and headwalls in the pay item "Abutment Underdrain System."



DETAIL AT ABUTMENT

This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

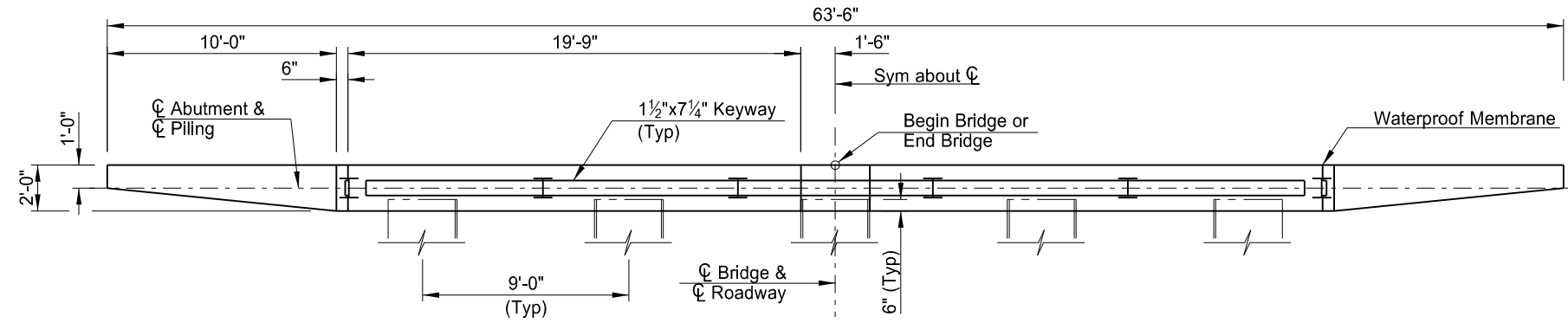
CHERRY CREEK

ABUTMENT UNDERDRAIN & EXCAVATION DETAILS

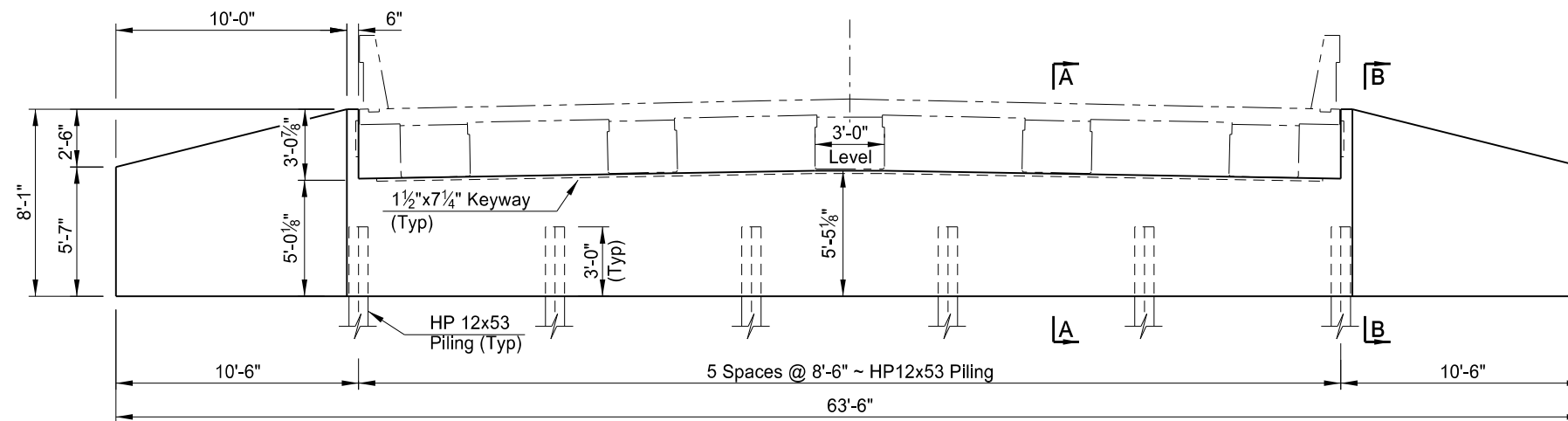
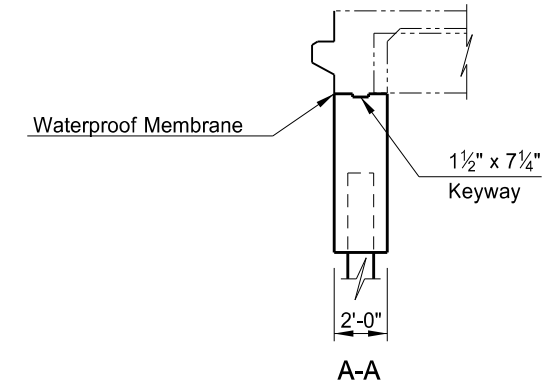
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	6

NOTE:

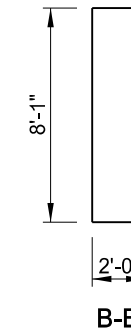
Use waterproof membrane that meets the requirements of Section 602.03 B. Include the cost of the waterproof membrane in the contract unit price for "Class AE-3 Concrete."



PLAN



ELEVATION

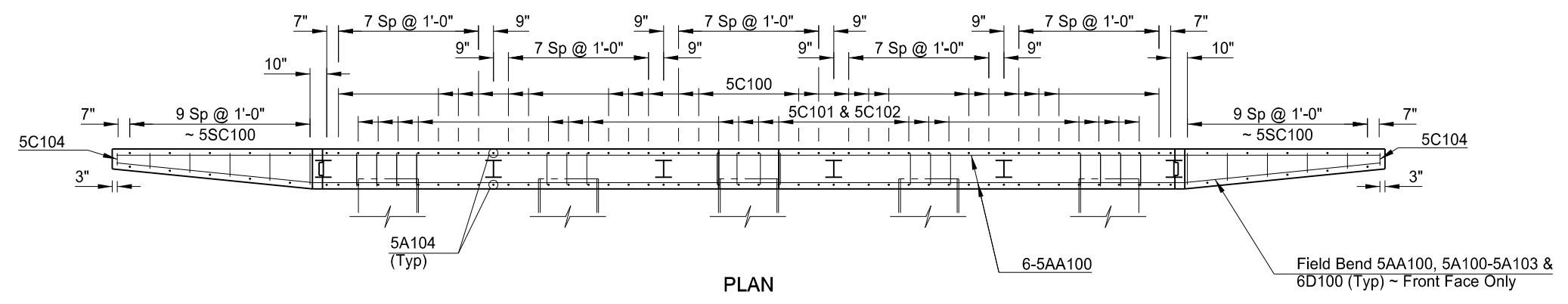


This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

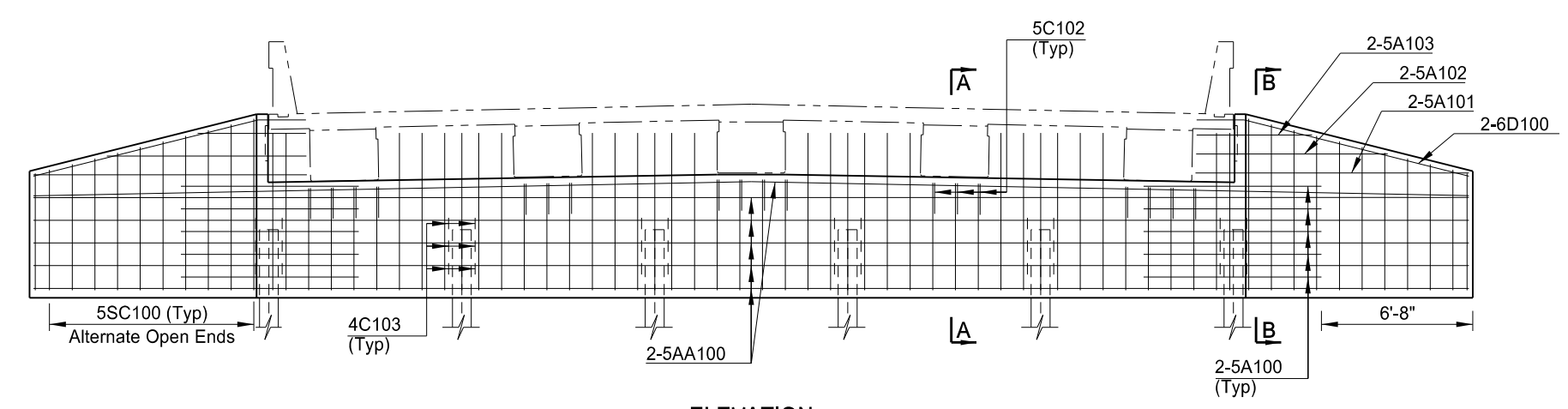
<b>QUANTITIES</b>
SEE DWG 1806-307.910-7
<b>CHERRY CREEK</b>
(SHOWING DIMENSIONS)
<b>ABUTMENT DETAILS</b>

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	7

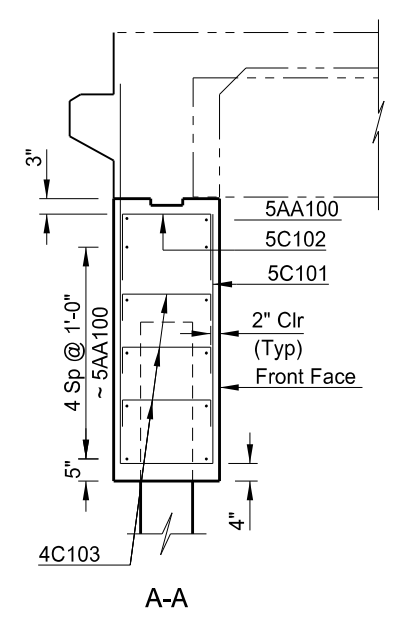
23 U.S.C. 409  
 NDDOT Reserves All Objections



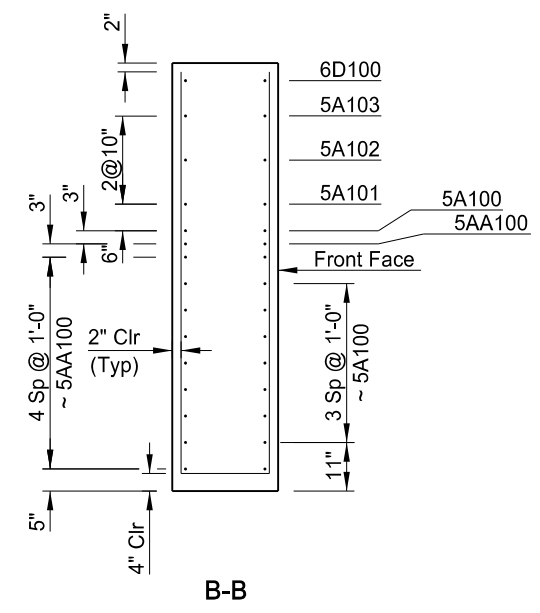
PLAN



ELEVATION



A-A



B-B

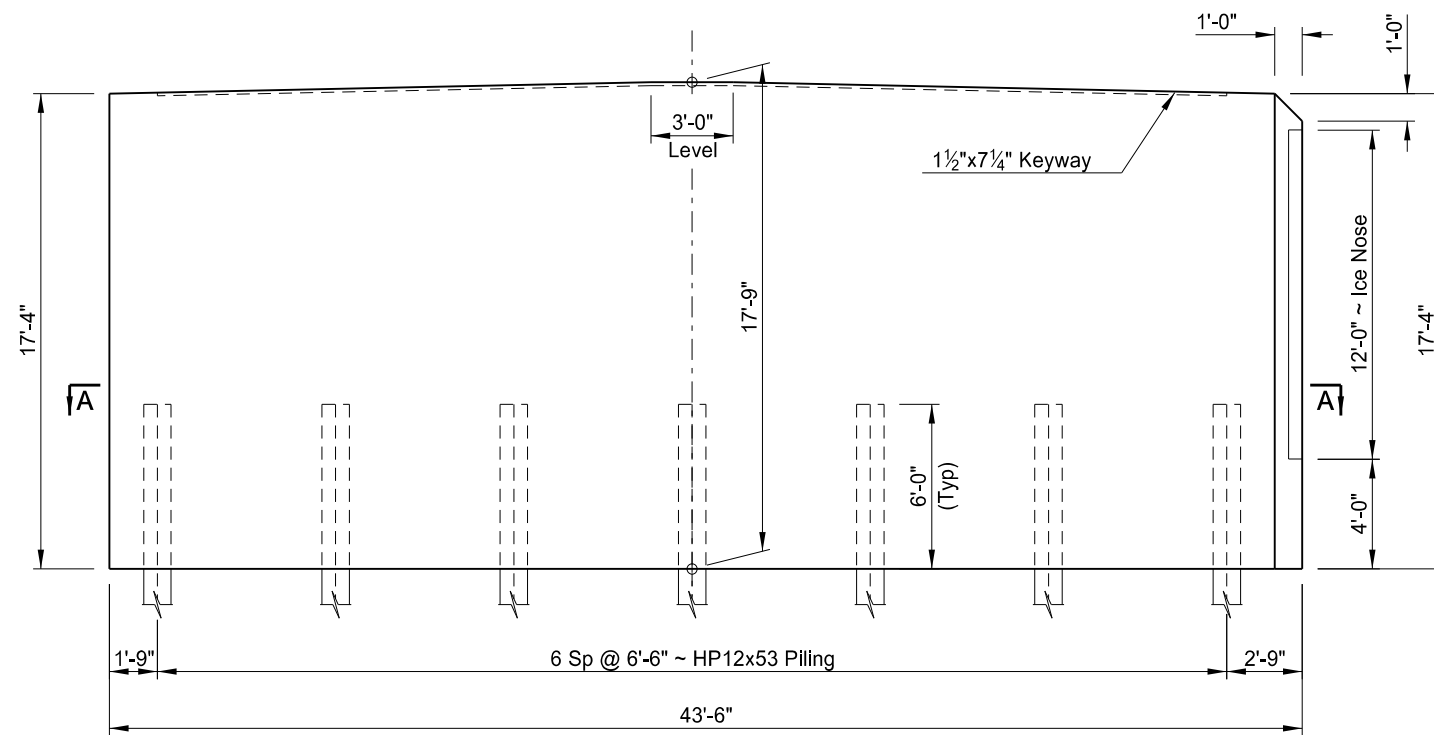
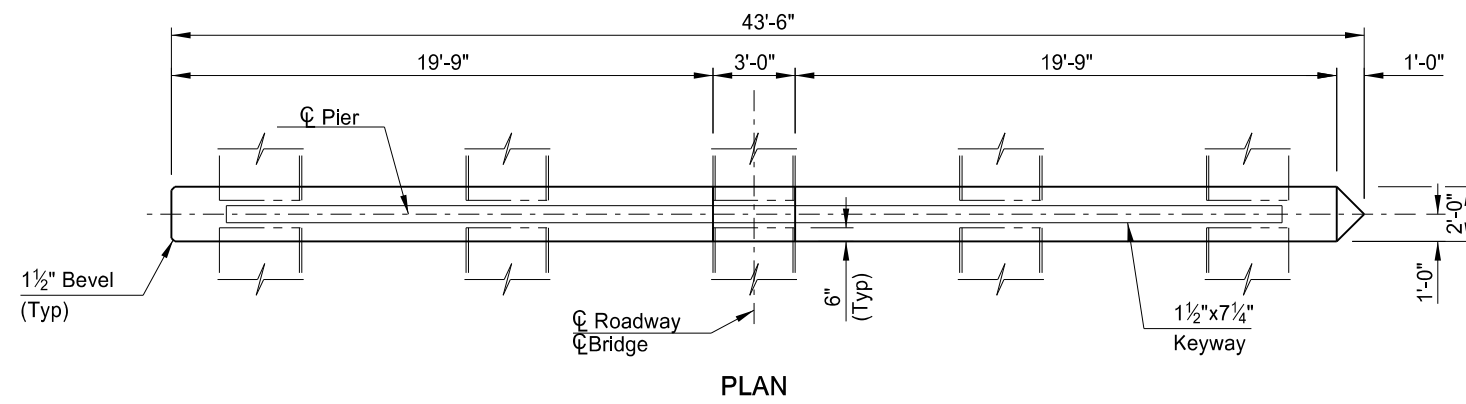
This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	(ONE ABUTMENT)
CLASS AE-3 CONCRETE	25.0 CY
REINFORCING STEEL-GRADE 60	2,309 LBS

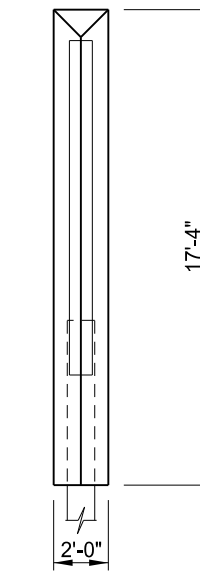
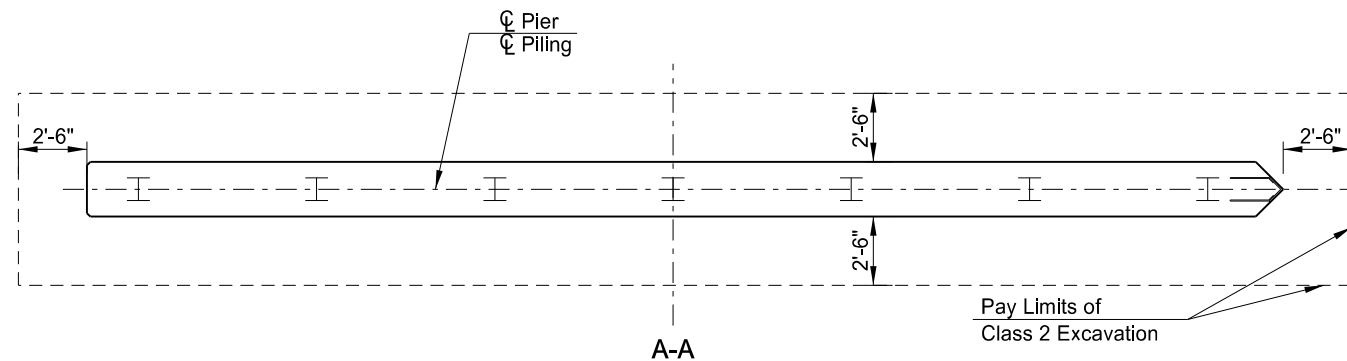
CHERRY CREEK  
 (SHOWING REINFORCING)  
 ABUTMENT DETAILS

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

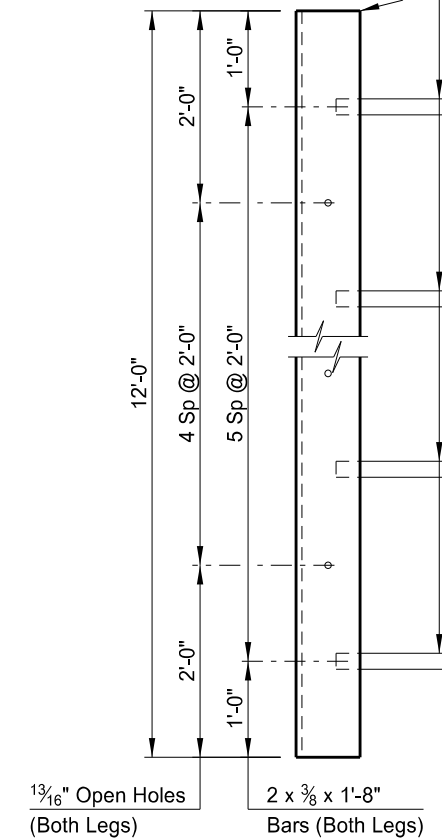
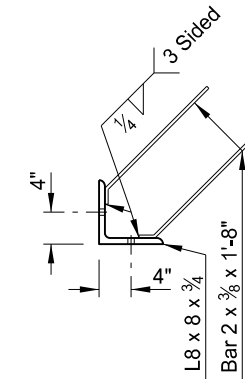
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	8



ELEVATION



END VIEW



Galvanize in accordance with Section 854 after fabrication.

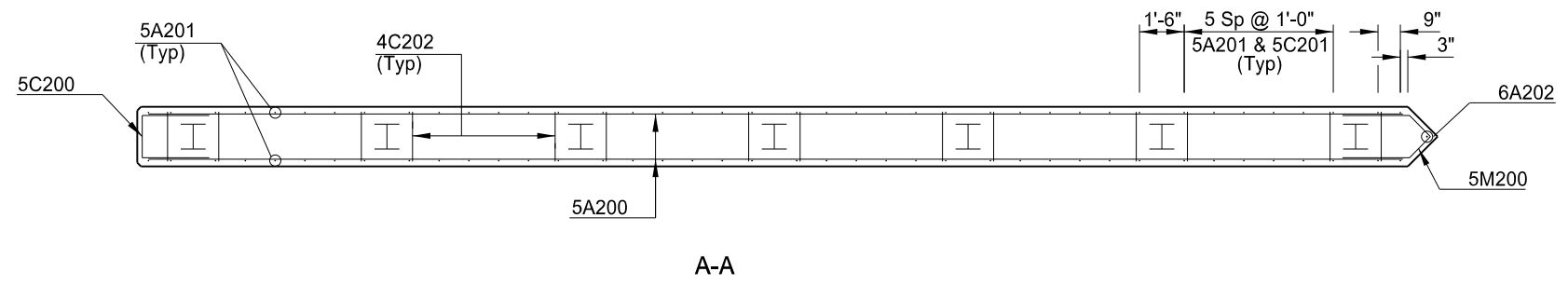
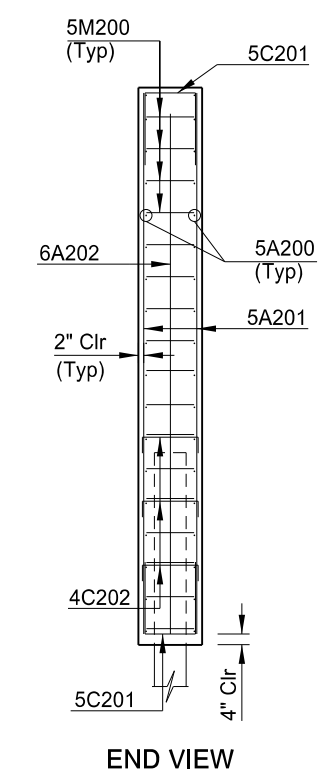
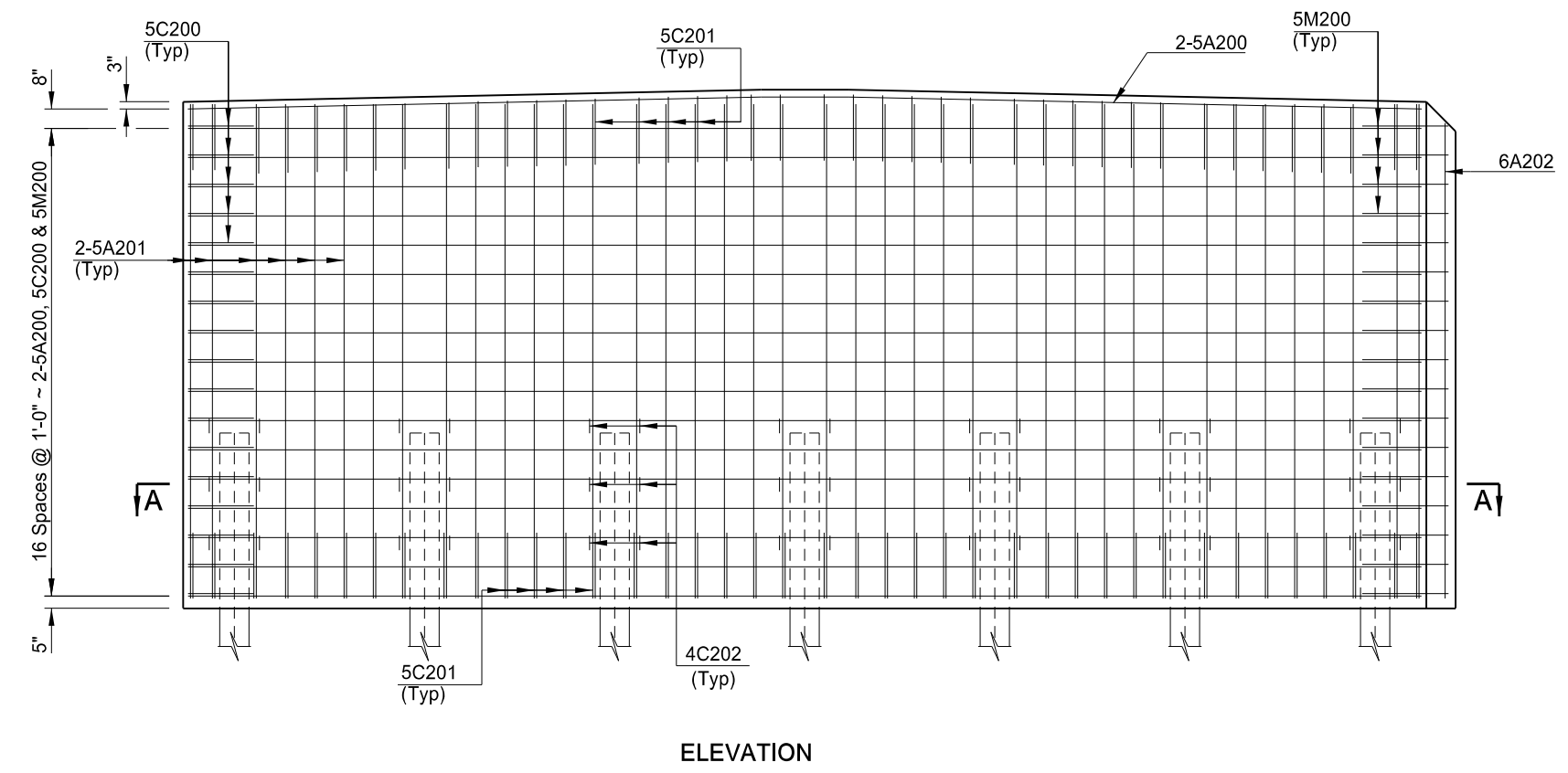
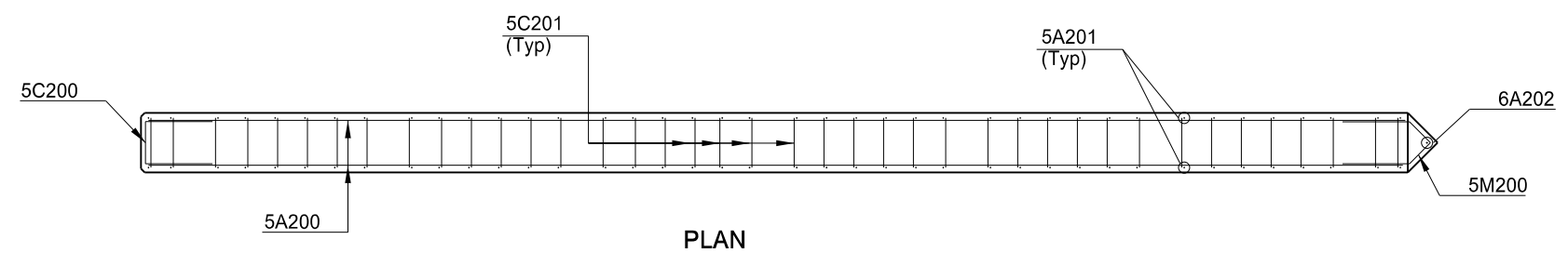
ICE NOSE DETAIL

This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES
SEE DWG 1806-307.910-9
<b>CHERRY CREEK</b> (SHOWING DIMENSIONS) <b>PIER DETAILS</b>

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	9

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

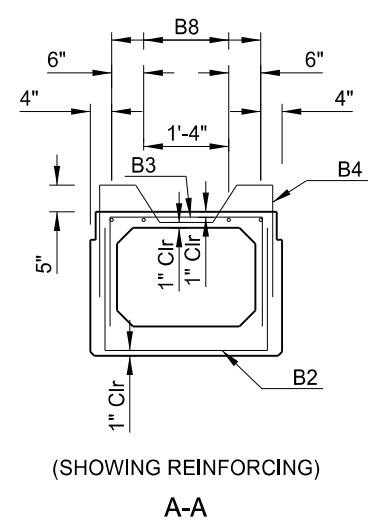
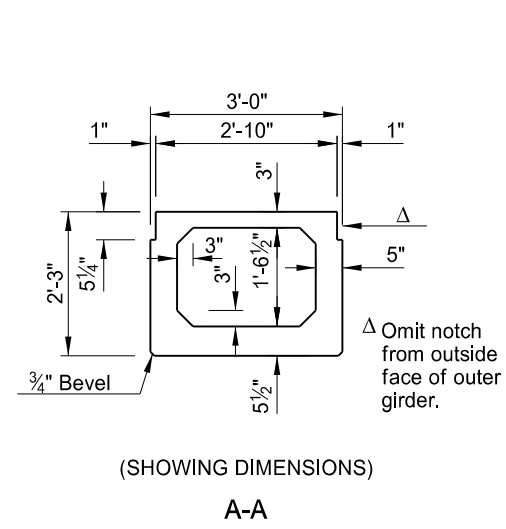
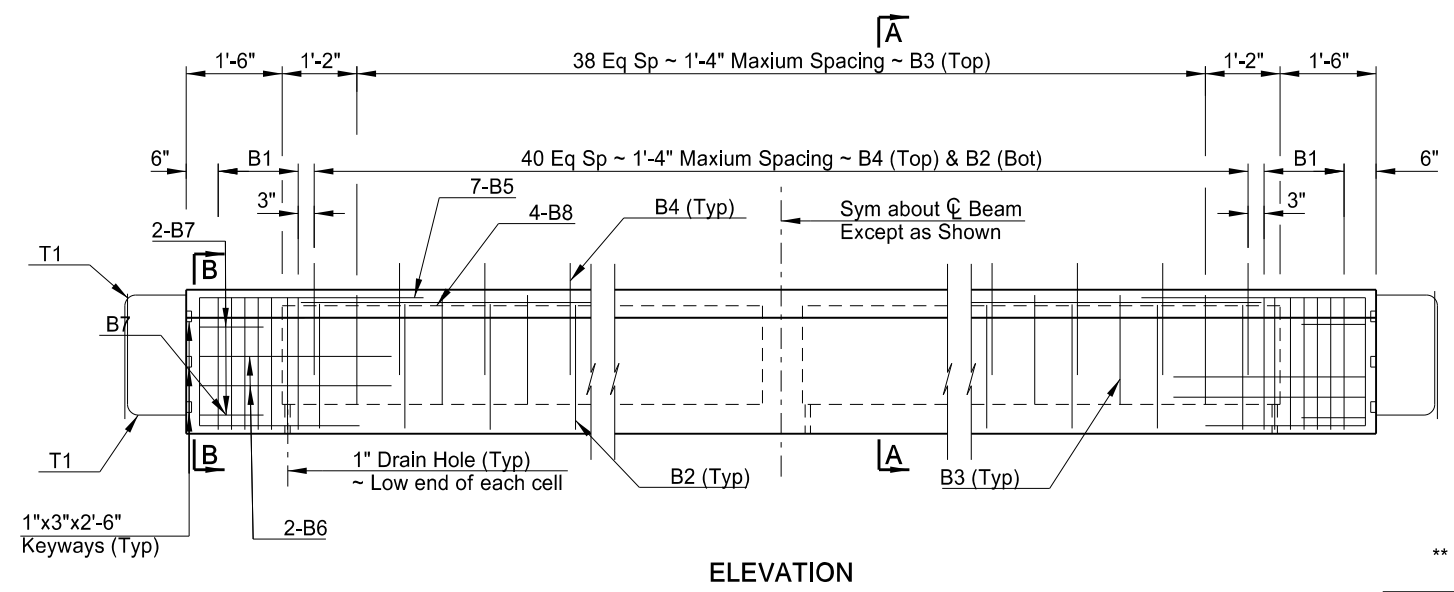
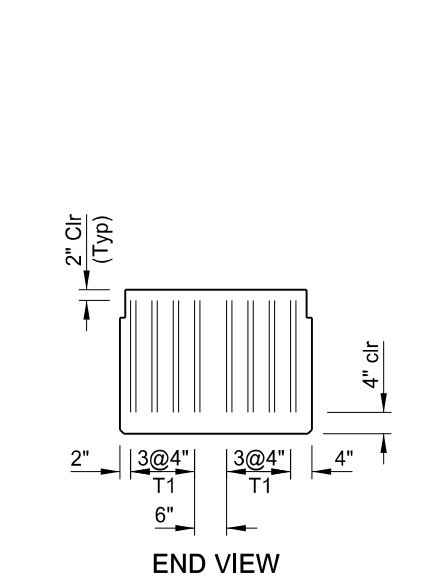
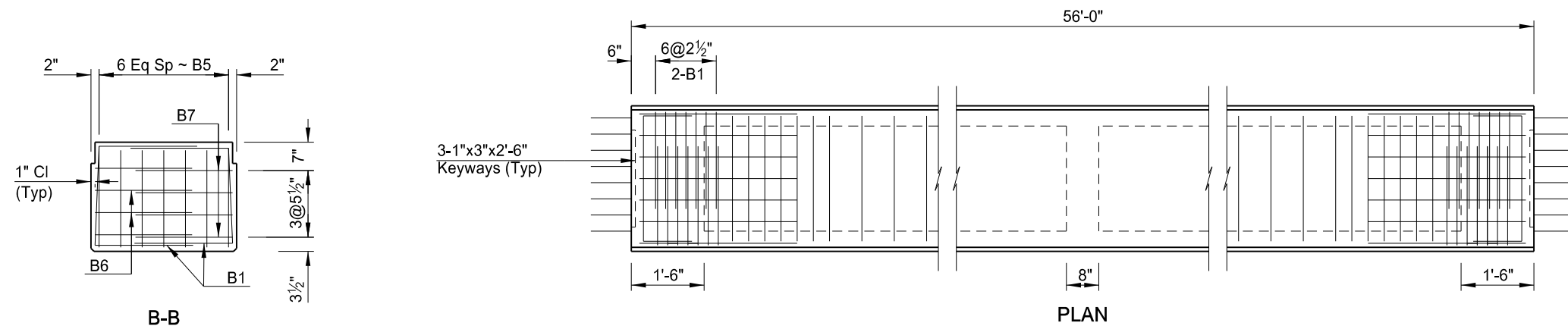


This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	(ONE PIER)
CLASS AE-3 CONCRETE	55.9 CY
REINFORCING STEEL-GRADE 60	3,826 LBS
STRUCTURAL STEEL	518 LBS

CHERRY CREEK  
(SHOWING REINFORCING)  
PIER DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	10



\* Welded wire fabric with minimum circumferential steel area of 0.15 sq in per ft may be substituted for B2's and B3's.

This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

\*\* Field bend as shown (Grade 40)

BAR LIST ~ ONE BEAM				
MARK	SIZE	NO.	LENGTH	SHAPE
B1	4	28	6'-5"	BENT
B2	4	41	6'-5"	BENT
B3	4	39	6'-0"	BENT
B4	4	41	6'-9"	BENT
B5	5	14	8'-1"	BENT
B6	4	8	5'-7"	BENT
B7	4	8	3'-7"	BENT
B8	4	4	55'-8"	STR
** T1	4	32	4'-6"	STR

BEAM SECTION DATA	
WT =	537 LBS/FT + 1828 LBS
CROSS SEC. AREA AT CL SPAN =	498.5 IN <sup>2</sup>
C.G. (FROM BOTTOM) =	12.11 IN
I =	43,612 IN <sup>4</sup>
S <sub>B</sub> =	3,601 IN <sup>3</sup>

QUANTITIES (ONE BEAM)	
BEAM LENGTH	56 LF

CHERRY CREEK  
PRE-TENSIONED 27" PRESTRESSED SPREAD BOX BEAM

**NOTES:**

Submit the work drawings to the Engineer for review at least 14 days prior to forming or pouring any beams.

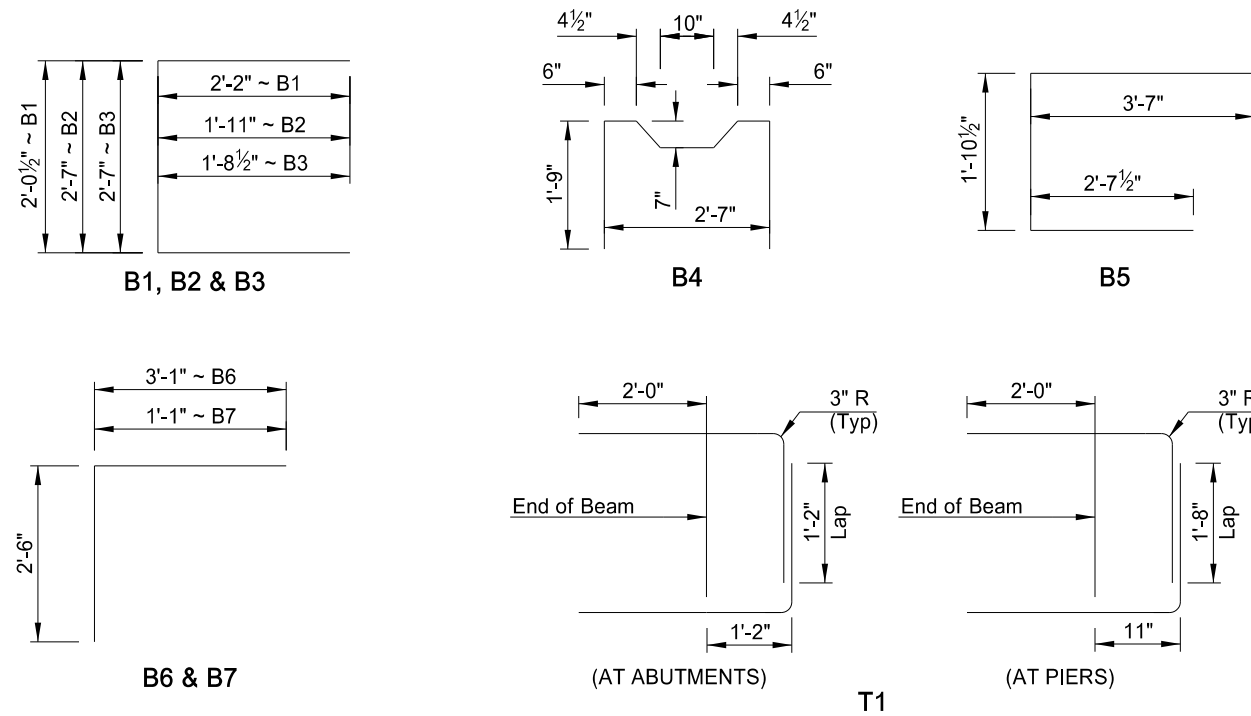
Select the final prestress force (remaining after all losses have been accounted for) and its corresponding center of gravity, from those on a curve determined by the three values shown in the "Prestressing Data" table.

Minor changes to the shape of the beam and to reinforcing steel may be made to accommodate the forms of various contractors and their construction methods with the approval of the Engineer.

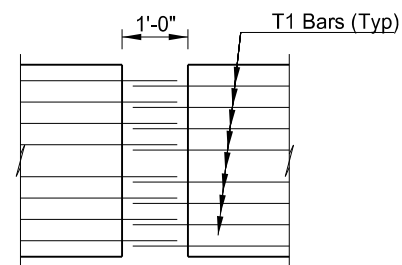
Provide handling hooks or devices as required by the Contractor. Install hooks or devices within 4'-0" of the end of the beam.

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	11

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



**BENT BAR DETAILS**



**GIRDER END PLAN AT PIER**

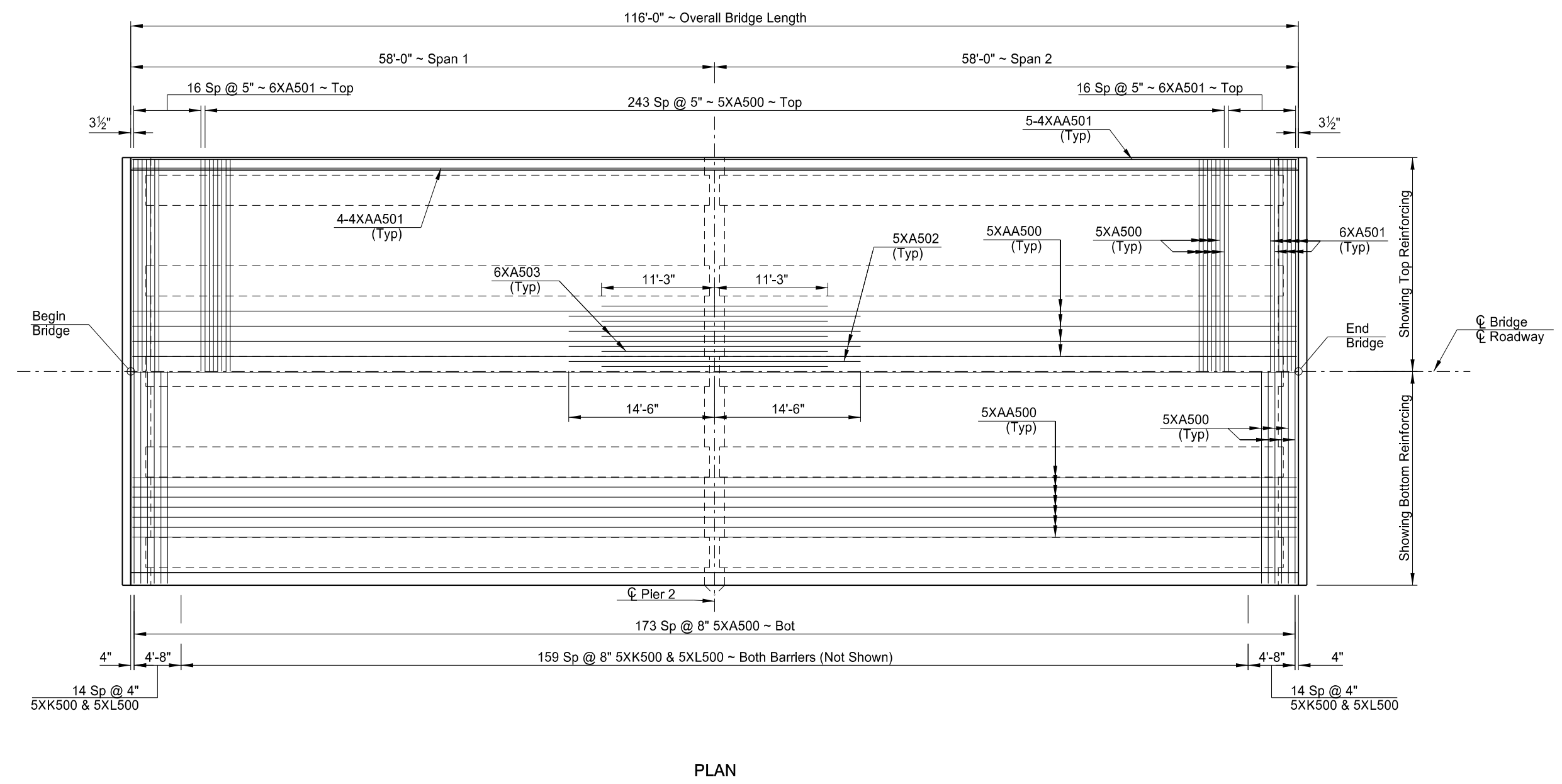
This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

PRESTRESSING DATA					
C.G.	FINAL FORCE	DETENSION STRENGTH	ACCEPTANCE STRENGTH	WEIGHT (TONS)	BEAM LENGTH
2.00"	569.1 k	4500 psi (Min)	5500 psi (Min)	16.0	56'-0"
2.25"	577.4 k				
2.50"	586.0 k				

CHERRY CREEK  
  
PRE-TENSIONED 27"  
PRESTRESSED SPREAD BOX BEAM

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	12

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

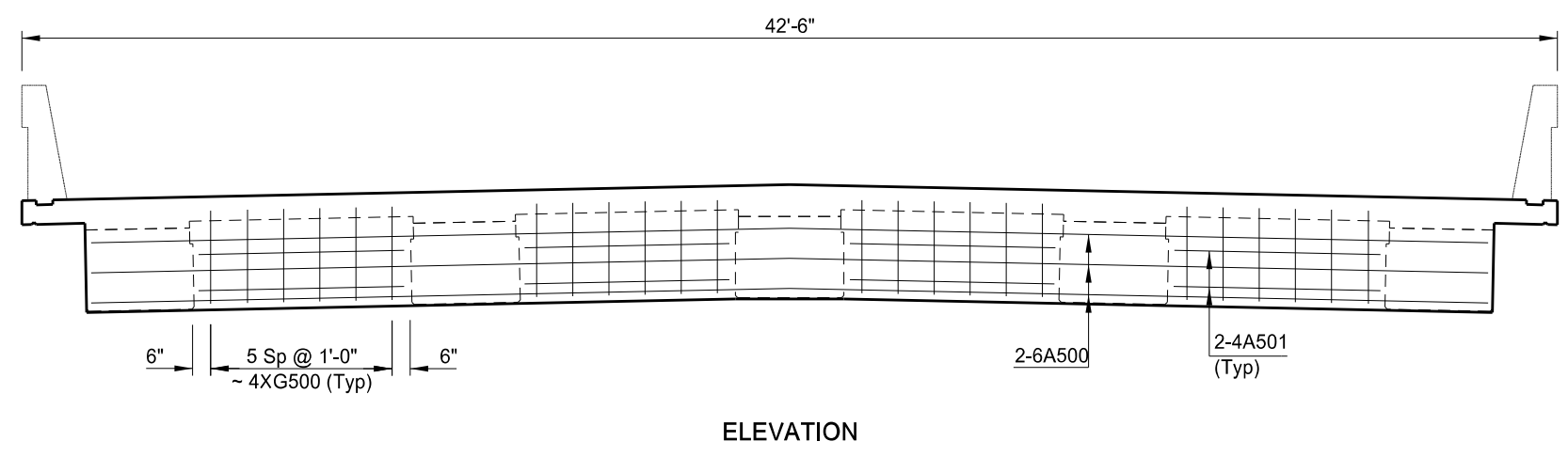
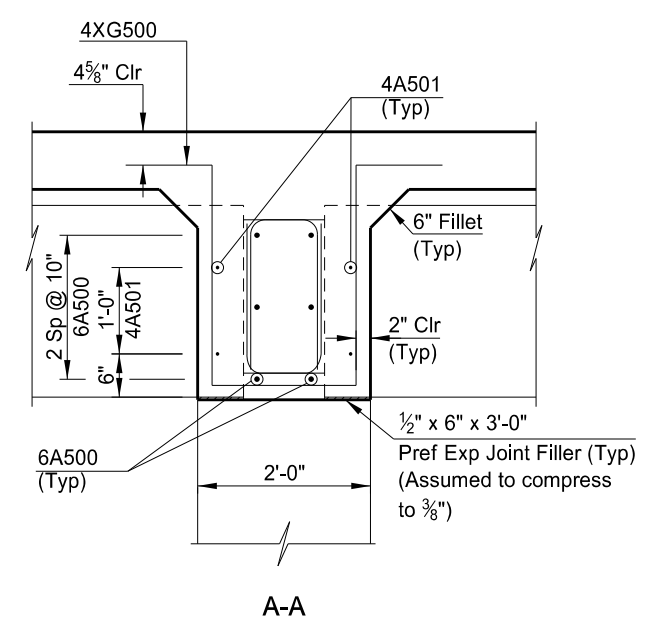
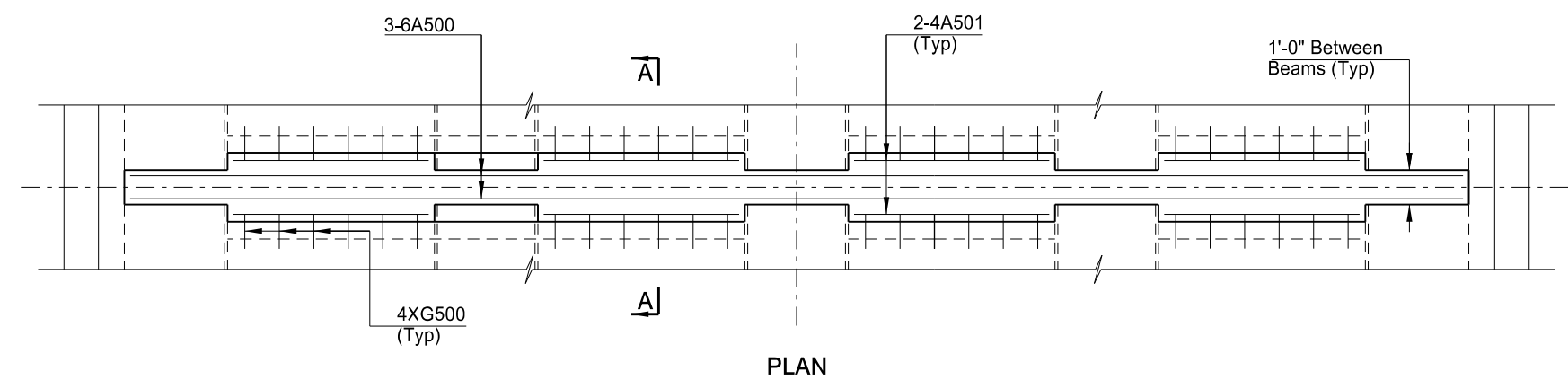


This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

<b>QUANTITIES</b>
SEE DWG 1806-307.910-15
CHERRY CREEK
SLAB LAYOUT

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	13

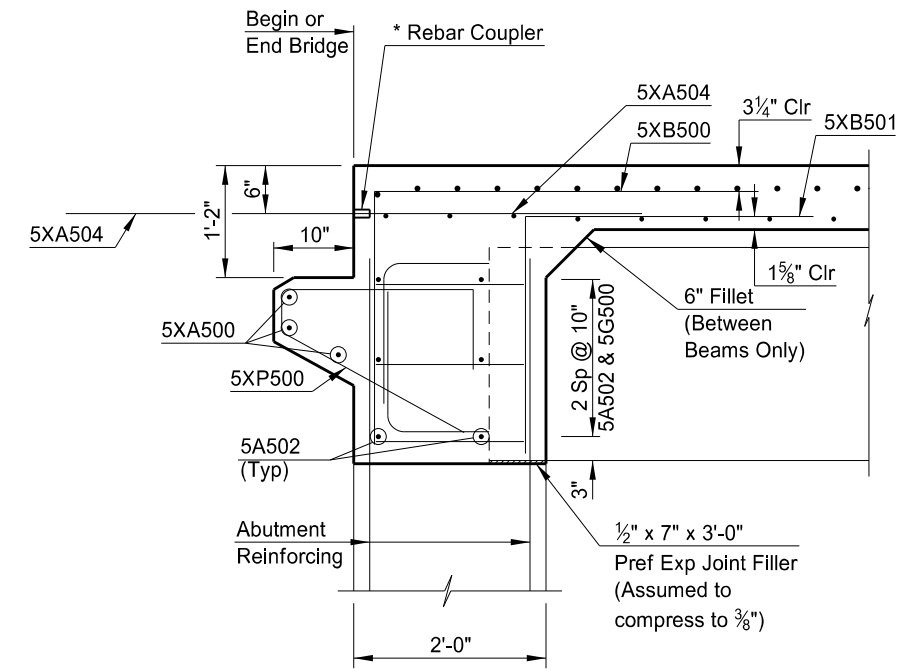
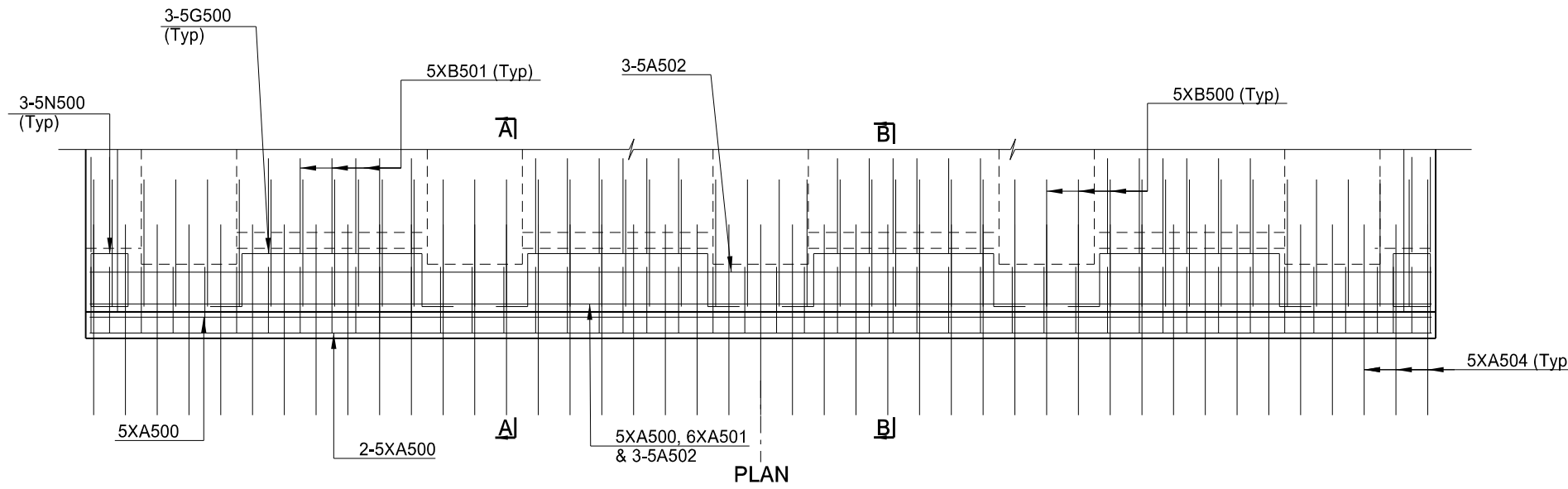
23 U.S.C. 409  
NDDOT Reserves All Objections



This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

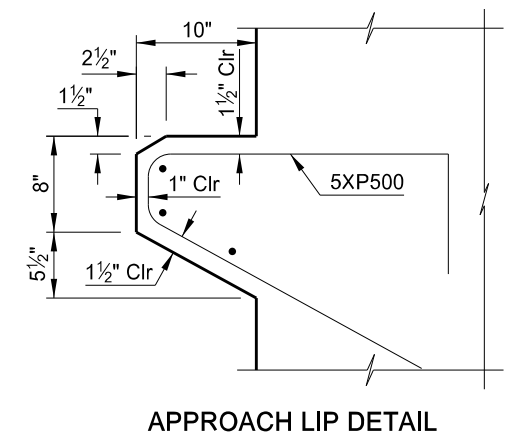
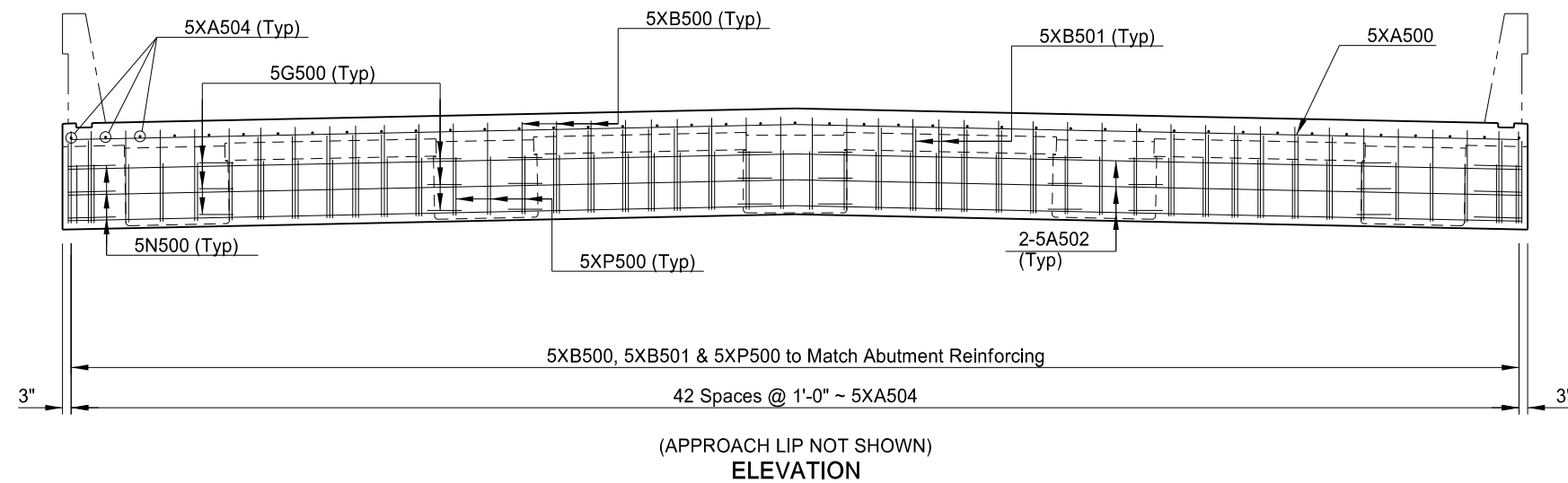
<b>QUANTITIES</b>
SEE DWG 1806-307.910-15
<b>CHERRY CREEK</b>
<b>PIER DIAPHRAGM DETAILS</b>

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	14



\* Use approved mechanical connectors for the couplers capable of developing 125% of the reinforcing steel specified yield strength. Provide epoxy coated couplers according to Section 836.02 A and repair any damaged epoxy coating according to Section 612.04 E.

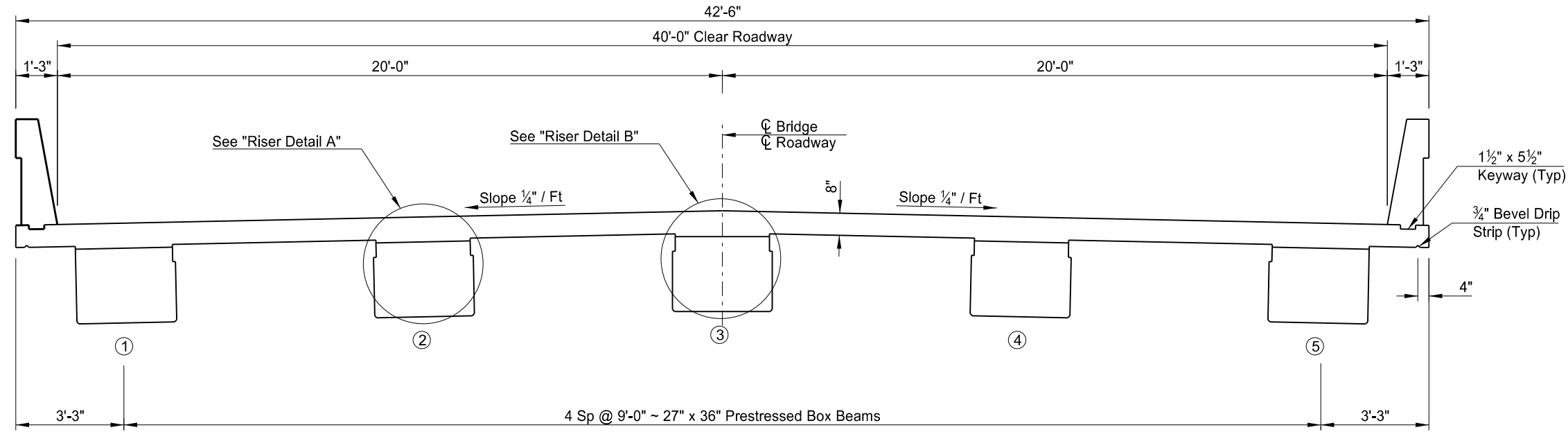
**NOTE:**  
Do not install the 5XA504 bars into the approach slab until all of the foundation fill is in place.



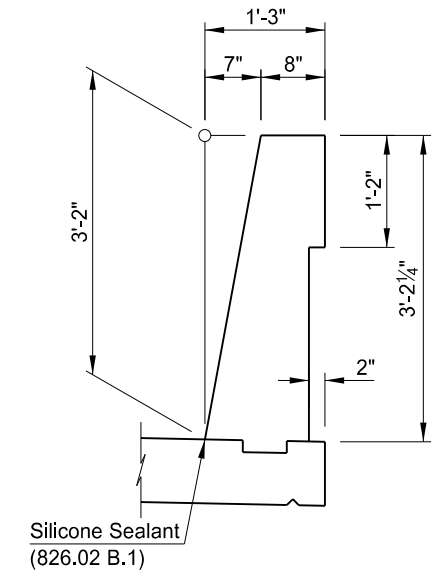
This document was originally issued and sealed by Matthew L Isley Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

<b>QUANTITIES</b>
SEE DWG 1806-307.910-15
<b>CHERRY CREEK</b>
<b>ENDWALL DETAILS</b>

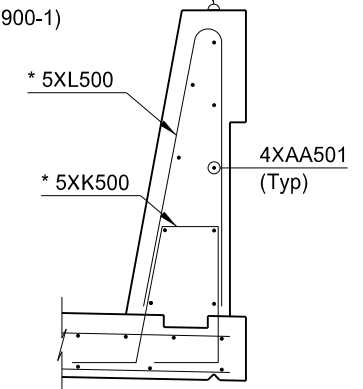
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	15



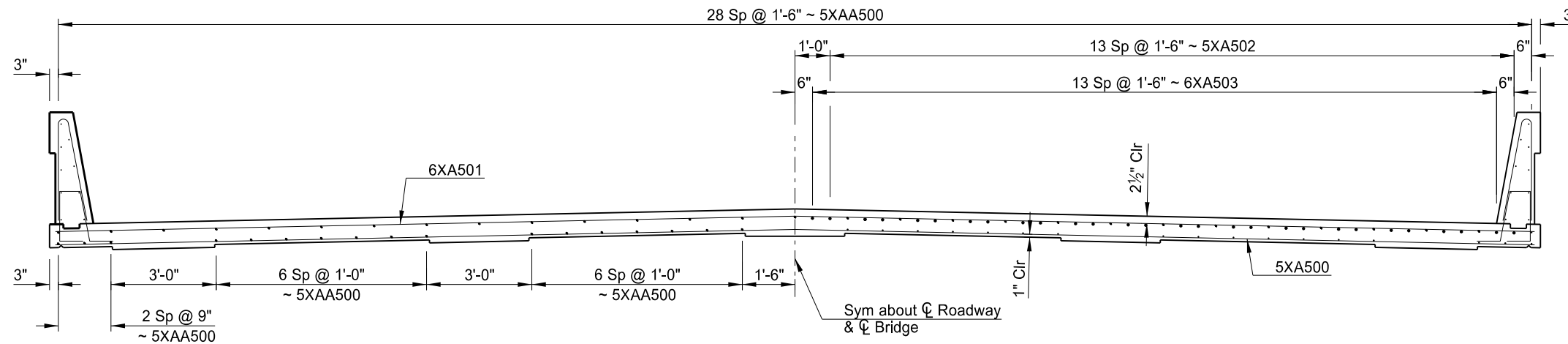
(SHOWING DIMENSIONS)  
SLAB SECTION



3/8" ø x 3" Galv Carriage Bolt  
Leave top of head 1/8" above finished concrete.  
(See D-900-1)



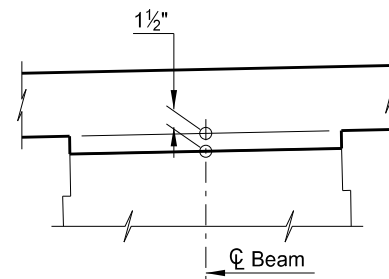
\* Provide a 1 1/2" clearance to the barrier reinforcing.  
SHOWING REINFORCING  
BARRIER DETAIL



(SHOWING REINFORCING BETWEEN SUPPORTS)

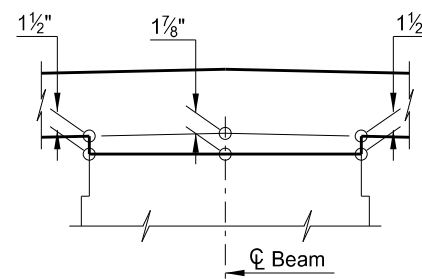
(SHOWING REINFORCING OVER PIERS)

SLAB SECTION



RISER DETAIL A

The 1 1/2" dimensions shown are located at the supports. The anticipated midspan riser is 1/2". Adjust the riser to maintain the 8" slab thickness.



(AT BEAM 3 ONLY)  
RISER DETAIL B

This document was originally issued and sealed by Matthew L Isley Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	
CLASS AAE-3 CONCRETE	163.9 CY
REINFORCING STEEL-GRADE 60	1,271 LBS
REINFORCING STEEL-GRADE 60 EPOXY	37,918 LB

CHERRY CREEK

SLAB SECTION

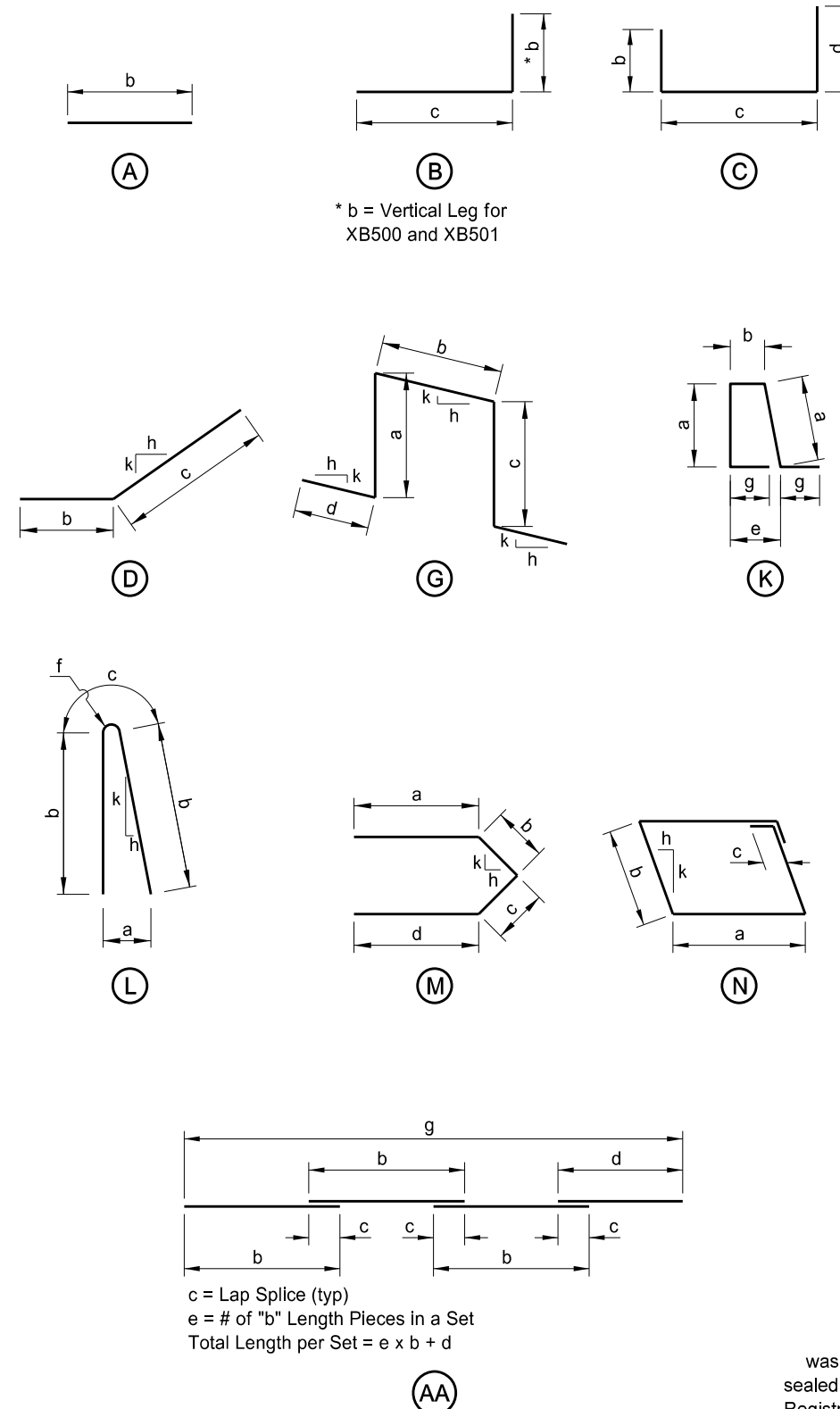
**BILL OF REINFORCING STEEL, GRADE 60**

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS									
					a	b	c	d	e	f	g	h	k	
ABUTMENTS 1 & 3	5	A100	40	7'-10"		7'-10"								
	5	A101	8	11'-10"		11'-10"								
	5	A102	8	8'-4"		8'-4"								
	5	A103	8	5'-0"		5'-0"								
	5	A104	24	6'-11"		6'-11"								
	5	C100	44	15'-6"		6'-11"	1'-8"	6'-11"						
	5	C101	36	13'-1"		6'-11"	1'-8"	4'-6"						
	5	C102	36	4'-2"		1'-3"	1'-8"	1'-3"						
	4	C103	72	2'-8"		6"	1'-8"	6"						
	5	C104	4	10'-10"		5'-1"	8"	5'-1"						
	6	D100	8	12'-4"		2'-3"	10'-1"					12	3	
	5	AA100	24	65'-6"		60'-0"	2'-4"	5'-6"	1		63'-2"			
	5	SC100	4	140'-5"	9"	5'-3"	7'-7"	1'-8"	9					
	PIER 2	5	A200	36	42'-2"		42'-2"							
5		A201	80	16'-10"		16'-10"								
6		A202	1	15'-10"		15'-10"								
5		C200	17	6'-0"		2'-3"	1'-6"	2'-3"						
5		C201	80	6'-2"		2'-3"	1'-8"	2'-3"						
4		C202	42	2'-8"		6"	1'-8"	6"						
5	M200	17	6'-8"	2'-3"	1'-1"	1'-1"	2'-3"				12	12		
SUPERSTRUCTURE EPOXY	5	XA500	418	42'-2"		42'-2"								
	6	XA501	34	42'-2"		42'-2"								
	5	XA502	28	29'-0"		29'-0"								
	6	XA503	28	22'-6"		22'-6"								
	5	XA504	172	3'-0"		3'-0"								
	5	XB500	92	6'-8"		2'-8"	4'-0"							
	5	XB501	56	5'-6"		2'-6"	3'-0"							
	4	XG500	24	8'-8"	2'-6"	1'-8"	2'-6"	1'-0"				12	0	
	5	XK500	376	4'-11"	1'-6"	7"			10"			8"	2.2	12.0
	5	XL500	376	5'-11"	9"	2'-9"	5"			1.25		2.3	12	
	5	XP500	92	5'-6"	5"	2'-1"	2'-2"			1.25"	10"	12	6.5	
	5	XAA500	63	118'-2"		60'-0"	2'-6"	58'-2"	1		115'-8"			
	4	XAA501	18	117'-2"		60'-0"	1'-6"	57'-2"	1		115'-8"			
	REGULAR	6	A500	6	38'-8"		38'-8"							
4		A501	16	5'-8"		5'-8"								
5		A502	12	42'-2"		42'-2"								
5		G500	24	9'-10"	1'-7"	5'-8"	1'-7"	6"				12	0	
5		N500	12	7'-0"	1'-5"	1'-7"	6"					12	0	

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	16



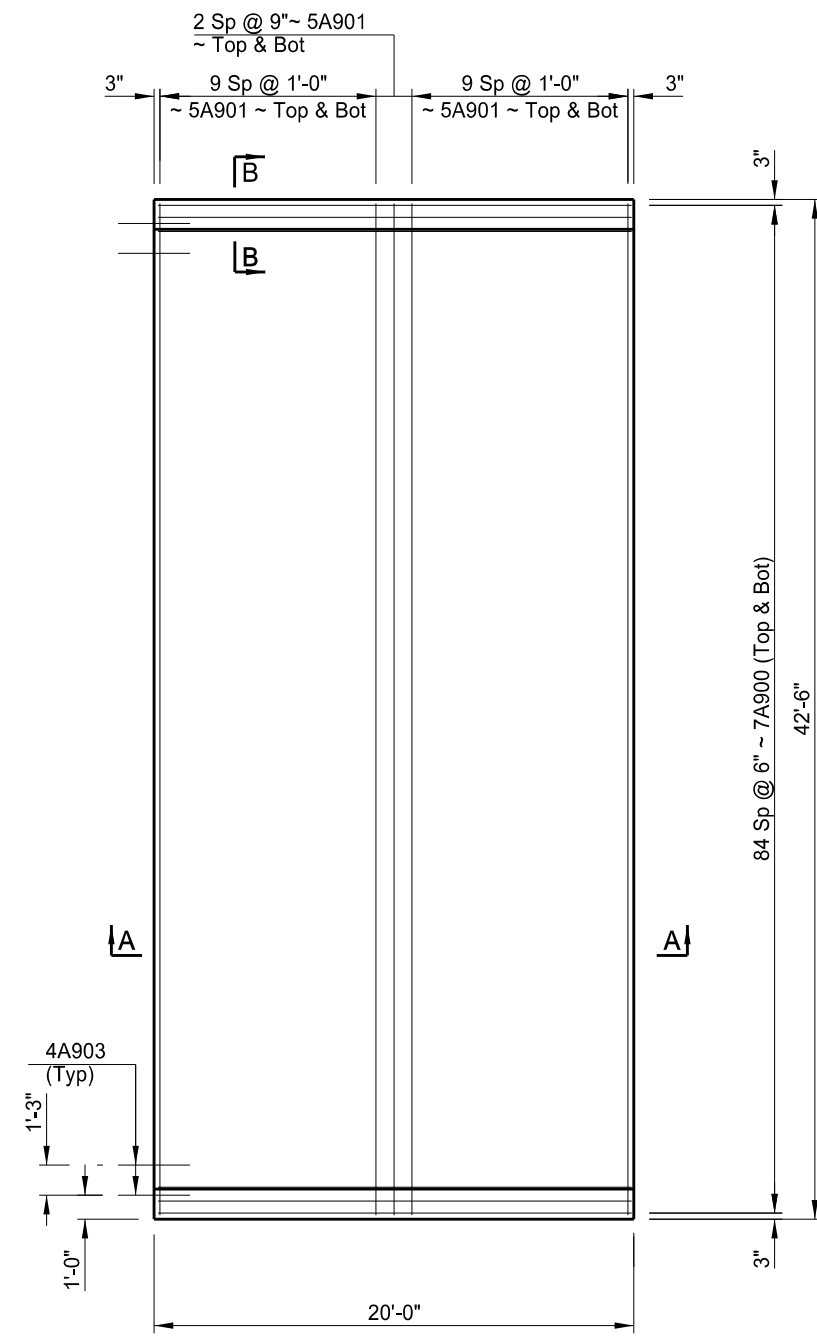
- NOTES:**
1. Verify the quantity, size, and shape of the bar reinforcement against the structure drawings and immediately notify the Engineer of any discrepancies. Discrepancies in the bar list will not be cause for adjustment of the contract unit price.
  2. All dimensions are out to out of bars.
  3. Nominal length of each bent bar or cut bar is the sum total of the detailing dimensions for that bar, unless otherwise noted.
  4. Adjacent "AA" bars shall be turned end for end so that the splice locations are staggered.
  5. The "f" dimension indicates the inside radius unless otherwise noted.
  6. An "X" preceding a bar designation indicates an epoxy coated bar.

c = Lap Splice (typ)  
e = # of "b" Length Pieces in a Set  
Total Length per Set = e x b + d

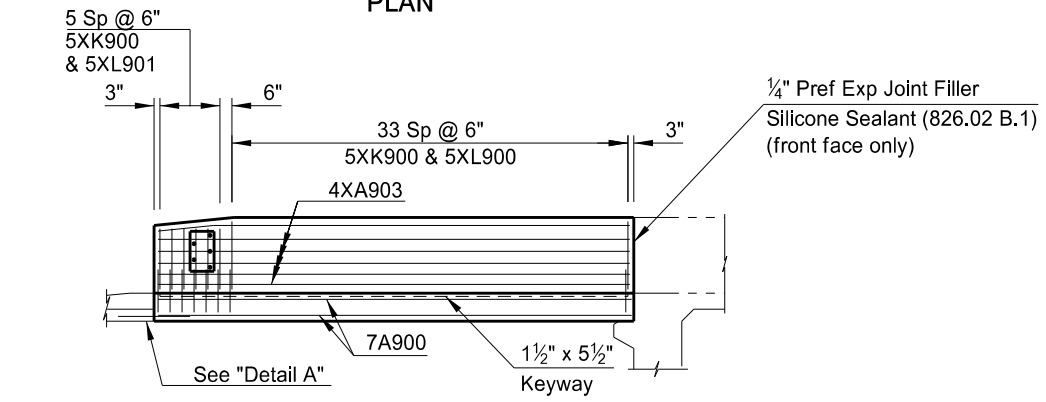
This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

CHERRY CREEK  
REINFORCING BAR LIST & DETAILS

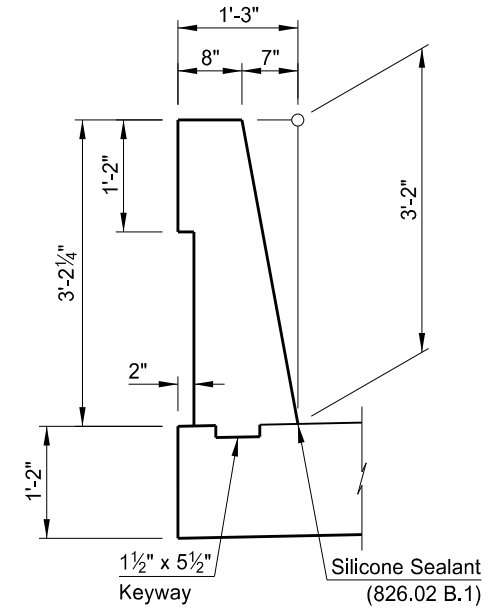
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	17



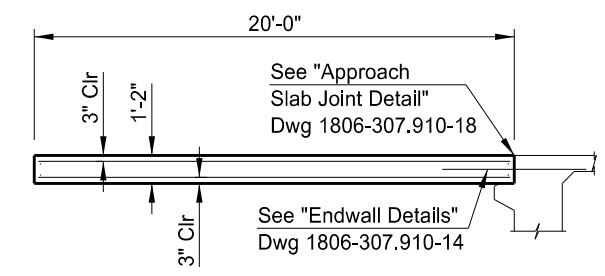
PLAN



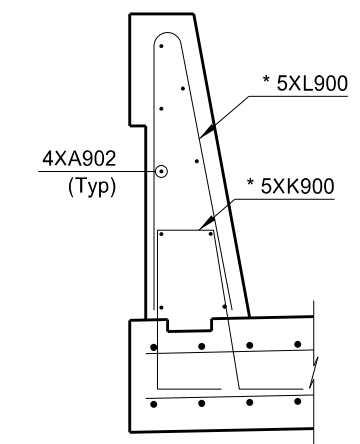
ELEVATION



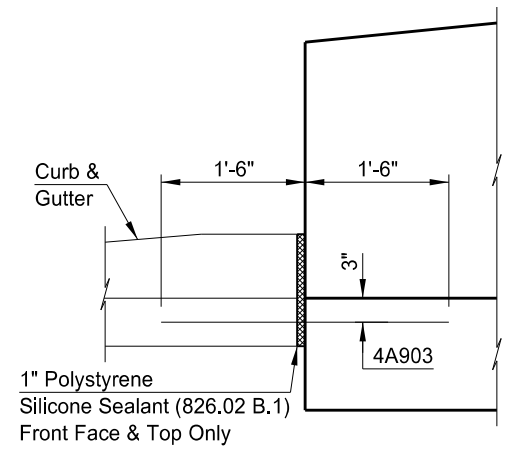
SHOWING DIMENSIONS



A-A



SHOWING REINFORCING  
 BARRIER DETAIL

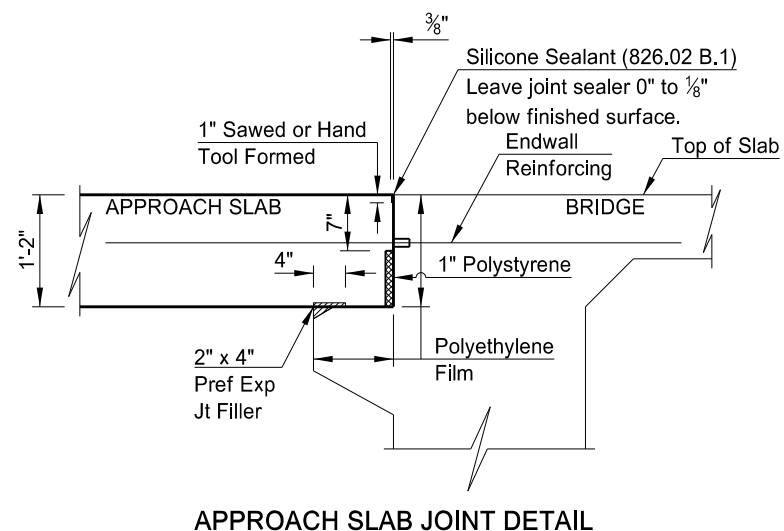


DETAIL "A"

This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

<b>QUANTITIES</b>
SEE DWG 1806-307.910-18
<b>CHERRY CREEK</b>
<b>APPROACH SLAB DETAILS</b>

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	18



**NOTES:**

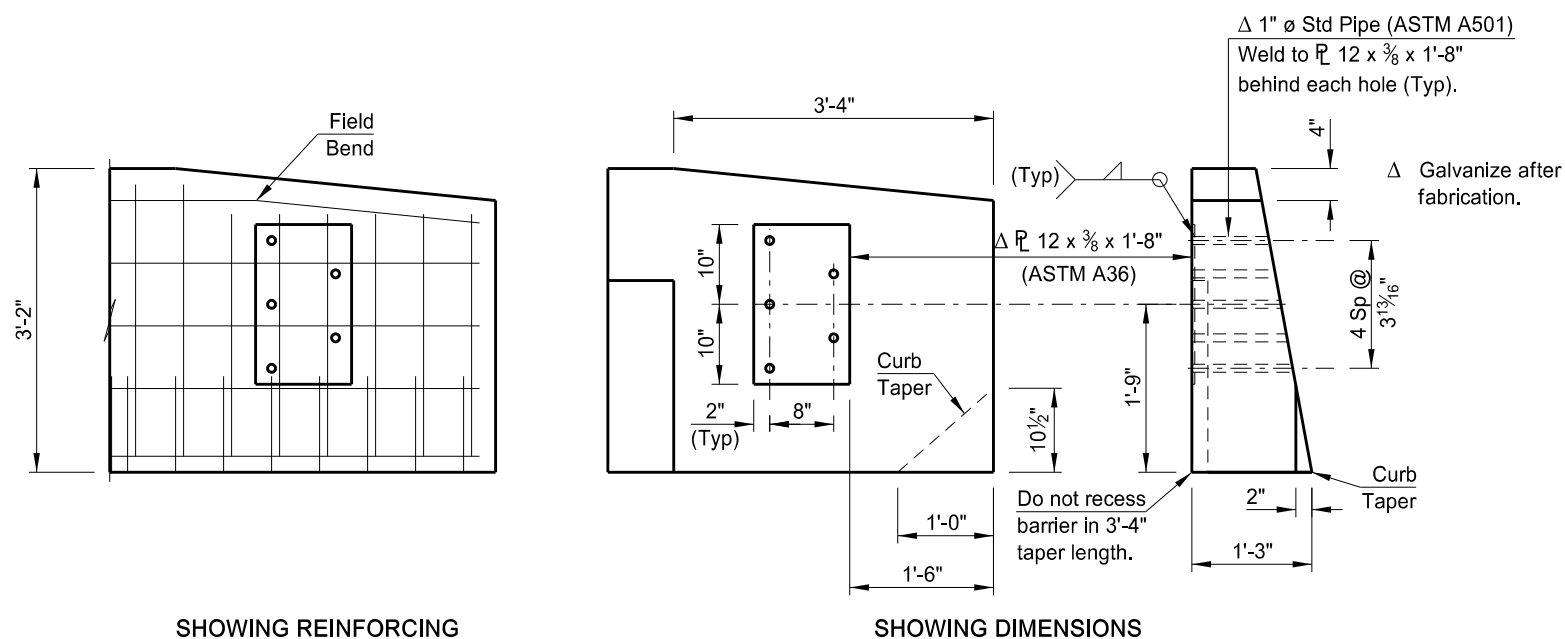
The estimated material quantities shown are for information purposes only. Include the concrete, reinforcing bars, polyethylene film, preformed joint filler, polystyrene, silicone sealant, connection plates and pipes, and labor required to build the approach slabs and barriers in the pay item "Concrete Bridge Approach Slab." Use Class AE-3 concrete and Grade 60 reinforcing steel. Provide reinforcing steel that meets the requirements of Section 612. Use polyethylene film that meets the requirements of ASTM C171.

The bar marks beginning with an "X" indicate an epoxy coated bar. The dimensions shown in the "Bent Bar Details" are out to out.

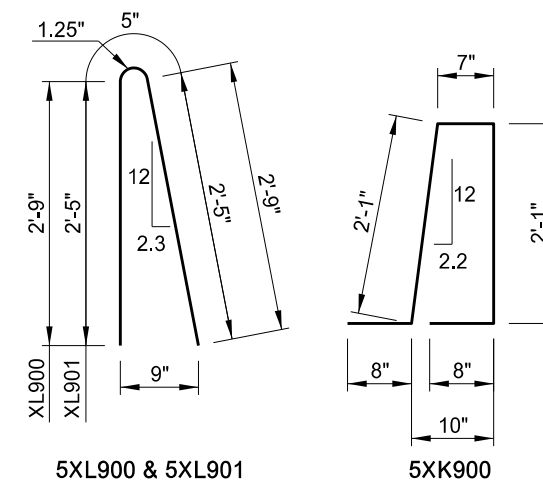
SKEW ANGLE = 0°			
BAR LIST - ONE SLAB			
SIZE	MARK	NO.	LENGTH
7	A900	170	19'-8"
5	A901	42	42'-2"
4	XA902	18	19'-8"
4	A903	4	3'-0"
5	XK900	80	6'-1"
5	XL900	68	5'-11"
5	XL901	12	5'-3"

ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL (LBS)	CONCRETE (CY)
9,616	41.2



(SHOWING BACK FACE)  
**CONNECTION PLATE DETAILS**



**BENT BAR DETAILS**

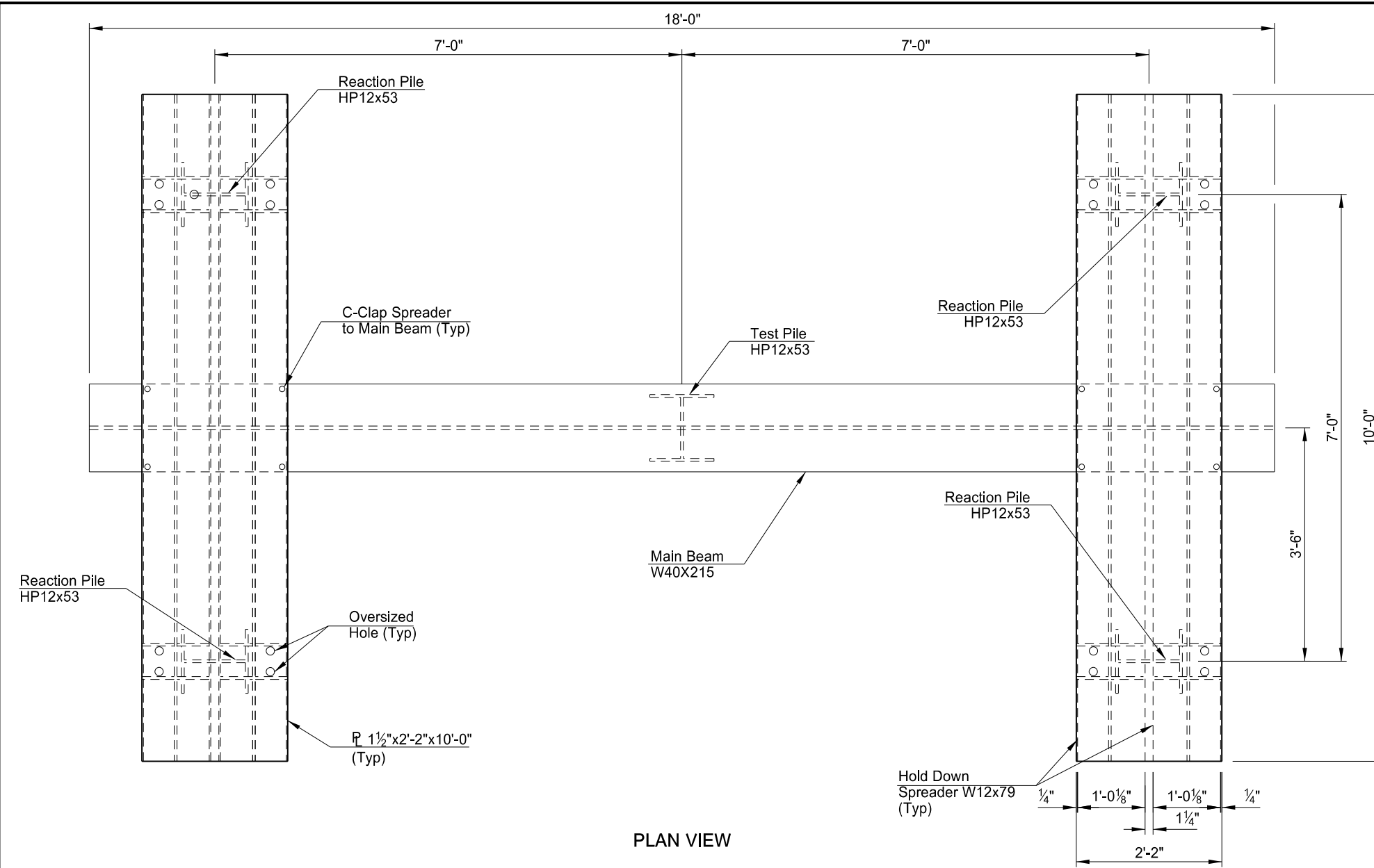
This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	(ONE SLAB)
APPROACH SLAB	94.4 SY

CHERRY CREEK

APPROACH SLAB DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	19



PLAN VIEW

Load Frame Design Load = 1,000 kip Ultimate

**STATIC LOAD TEST NOTES:**

The purpose of the static load test is to apply a measured load on a pile to evaluate the test pile's geotechnical resistance in order to aid in the Department's development of pile driving formulas. The Department and it's research team will develop and perform the testing of the pile. The Contractor's responsibility is to drive pile, supply and assemble the load test reaction structure, as well as provide assistance to testing personal as described here.

The static load test assembly is made up of reusable components of the load frame and the single use elements of the foundation pile (reaction and test piles). When the testing is complete the load frame components will become the property of the Department and the Contractor will be deliver and unload the load frame components at the Materials and Research Office. The remaining foundation components will salvaged as described below and become property of the Contractor.

Provide four steel reaction H-Piles, one steel test H-Pile and Two steel angels as detailed. If necessary, splicing the test pile will be completed prior to sensor instrumentation. Drive all pile to the nominal axial resistance listed in the components list in accordance with the NDDOT Standard Specification Section 622.

Provide all beams, fabrication, and components needed for the pile test frame, as detailed and in accordance with NDDOT Standard Specification Section 616. For all steel components of the load frame meet the requirements of ASTM A709 Grade 50, the high strength threaded bars will meet the requirements of ASTM A354. Shop prime all components of the load frame.

1. Notify the Materials & Research Geotechnical Section and provide detailed hammer information 14 working days prior to the beginning of pile driving activities for coordination of testing staff and equipment.
2. The Contractor will ensure the steel load frame is fabricated as detailed and delivered to the job site prior to driving the reaction and test piles. The test pile and steel angles are needed at the site at least 7 working days prior to pile driving to allow for instrumentation.
3. The Contractor is to assist the research team with instrumentation of the test pile, this includes, but is not limited to, installation of the strain gauges (drilling through the web of the test pile, providing welding to steel blocks for sensor installation, welding attachments to the test pile, and lifting and flipping the test pile) followed by welding on steel protection angles as detailed.
4. The Contractor will drive the 4 reaction piles prior to the test pile, unless otherwise requested by the research team.
6. During the test pile drive a pile driving analyzer (PDA) will be used to collect data on the drive. The Contractor's assistance will be needed to ensure sensor leads remain intact during set up and driving.
7. The test pile will have a restrrike at 1 hour and 24 hours after the original drive utilizing the PDA equipment.
8. After the all the steel piling is driven as noted, assemble the steel load frame and the connection to the steel piling as detailed additional assistance may be required to set up testing equipment, which includes, but is not limited to, lifting and place the hydraulic jack.
9. Upon completion of testing, the Contractor will remove the steel frame from the piling, inspect for damage, ensure the existing conditions are agreed upon with the Engineer, and dismantle the steel frame. Remove the test piles and reaction piles 2'-0" below finished grade.

COMPONENTS OF THE LOADING FRAME	
Multi-Use Items	Single Use Items
1. Main Reaction Beam (I Beam) Size: W40x215 Length: 18'-0" Stiffener: 6 Total 7 1/2" Width x 1" Thick x 36 1/2" Depth	7. Anchor Plates (8 Plates) Length: 8" Width: 8" Thickness: 1 1/2"
2. Hold Down Spreaders (4 Beams) Size: W12x79 Length: 10'-0" Oversized Holes: 8 - 1 1/2" Holes Stiffener: 6 Total 5 1/2" Width x 1/2" Thick x 10 7/8" Depth	8. Anchor Plate Gusset (16 Plates) Length: 10" Width: 7" Thickness: 1/2"
3. Top Plates to Spreader (2 Plates) Length: 10'-0" Width: 2'-2" Thickness: 1 1/2" Oversized Holes: 8 - 11#2" Holes	4. Bottom Plates to Spreader (2 Plates) Length: 10'-0" Width: 2'-2" Thickness: 1/2" Oversized Holes: 8 - 11#2" Holes
	5. High Strength Threaded Bolt (16 Bolts) Diameter: 1 1/8" Length: 9'-0" Sleeve Nuts at Top & Bottom Ends
	6. Shim Plates (6 Plates) Length: 14" Width: 14" Thickness: 1" (2) 1 1/2" (2) 2" (2)

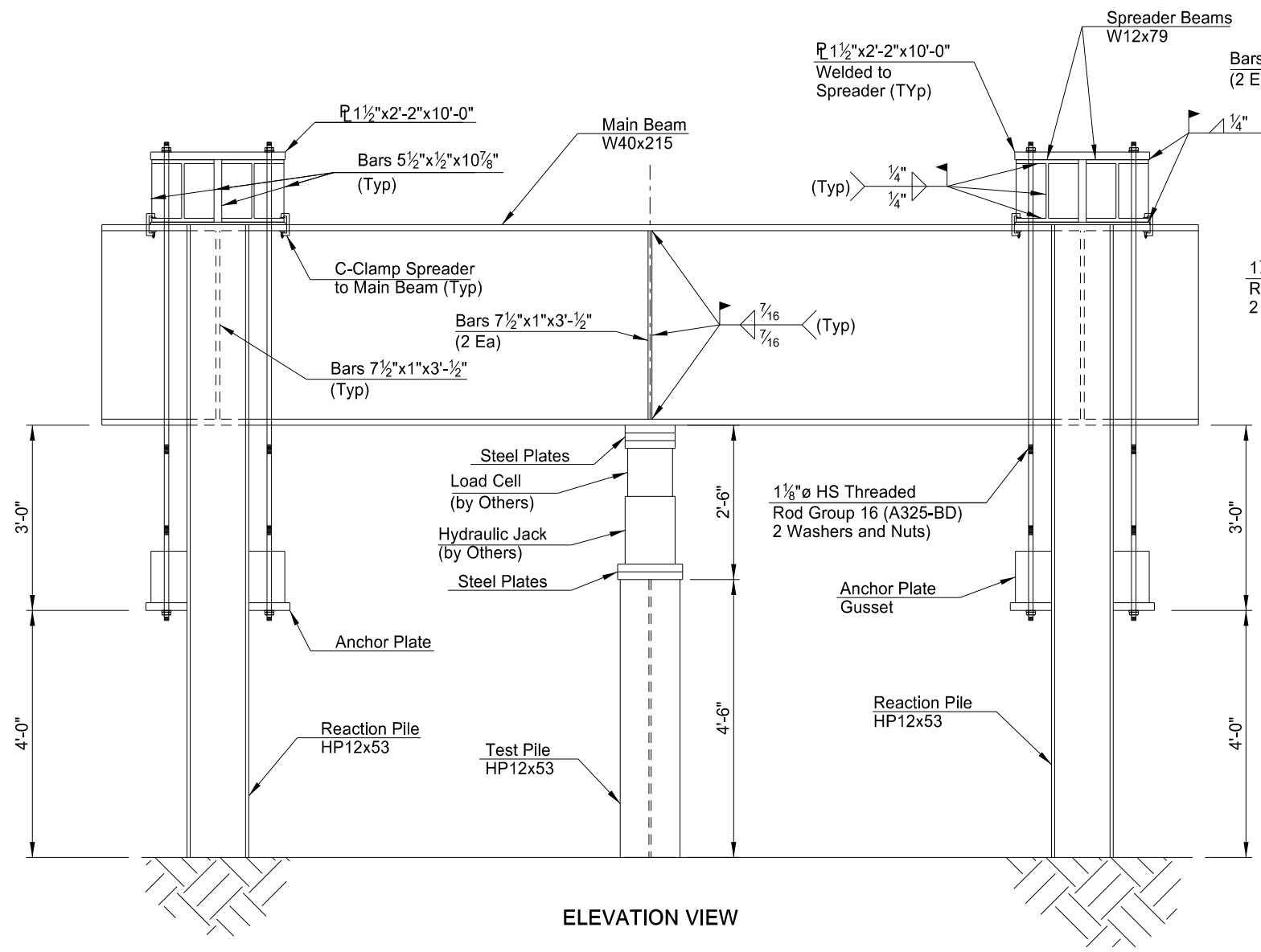
COMPONENTS OF THE FOUNDATION	
1. Test Pile (1 Pile) Size: HP12x53 Exposed Length: 4'-6" Expected Pile Tip Elevation = 1953.0 Ft Embedded Length: 67'-6" Estimated Nominal Vertical Pile Resistance = 448 Kip	
2. Reaction Pile (4 Piles) Size: HP12x53 Exposed Length: 10'-6" Expected Pile Tip Elevation = 1953.0 Ft Embedded Length: 67'-6" Estimated Nominal Vertical Pile Resistance = 448 Kip Estimated Nominal Uplift Resistance = 285 Kip	
3. Steel Angles (2 Angles) Size: L3x3x1/4" Length: 72'-0"	4. Field Fillet Weld of Steel Angles Thickness: 1/4" Length: 6" in every 12" of Test Pile

This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/12/21 and the original document is stored at the North Dakota Department of Transportation

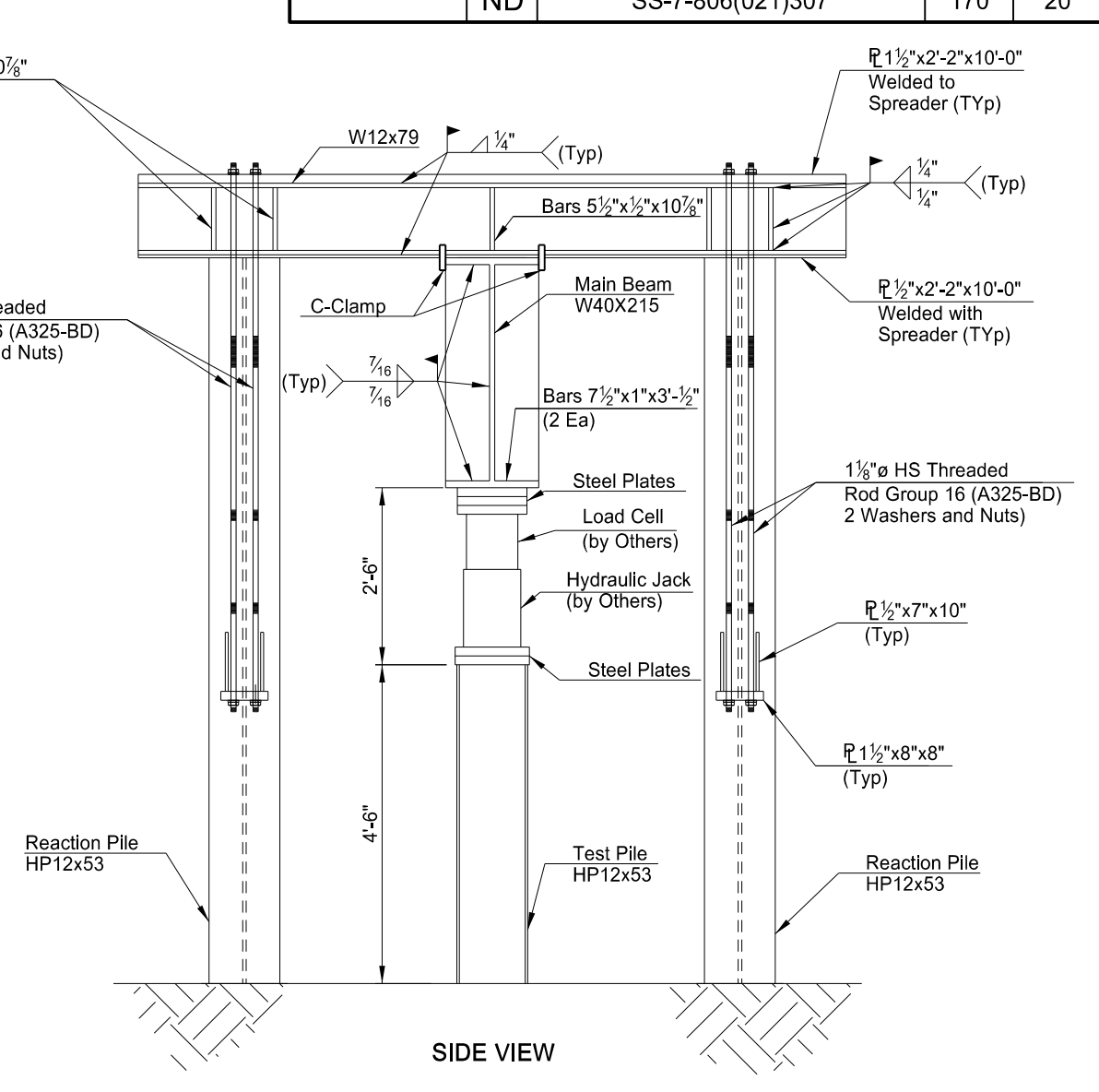
**CHERRY CREEK**

**LOAD FRAME DETAILS**

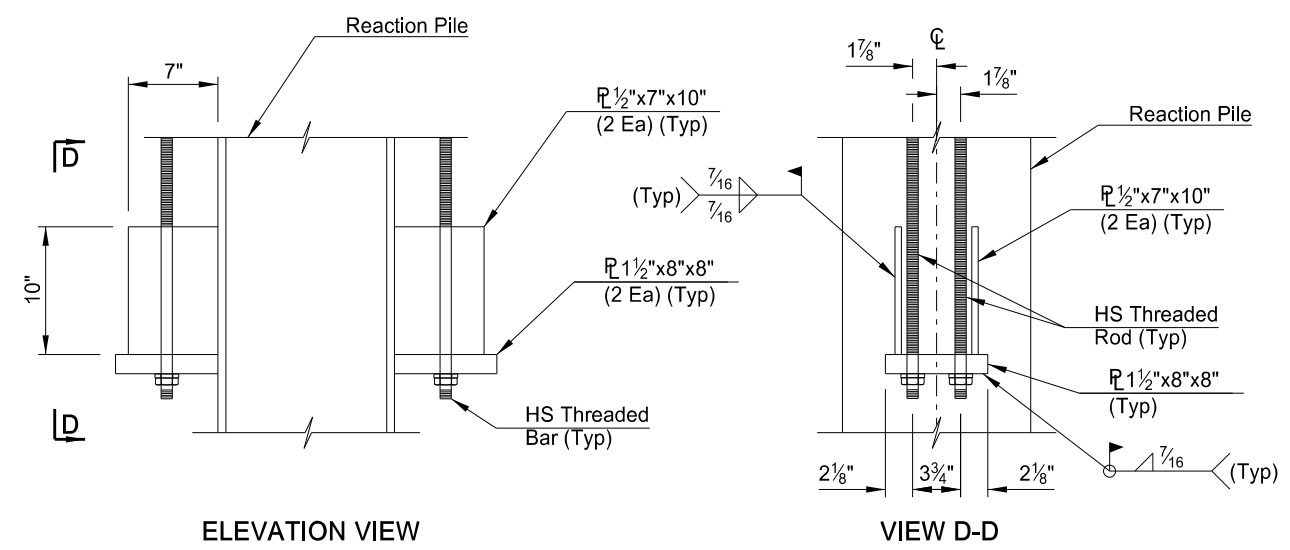
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	20



ELEVATION VIEW



SIDE VIEW



ELEVATION VIEW

VIEW D-D

PILE ANCHOR ASSEMBLY DETAILS  
(Required at 4 Piles)

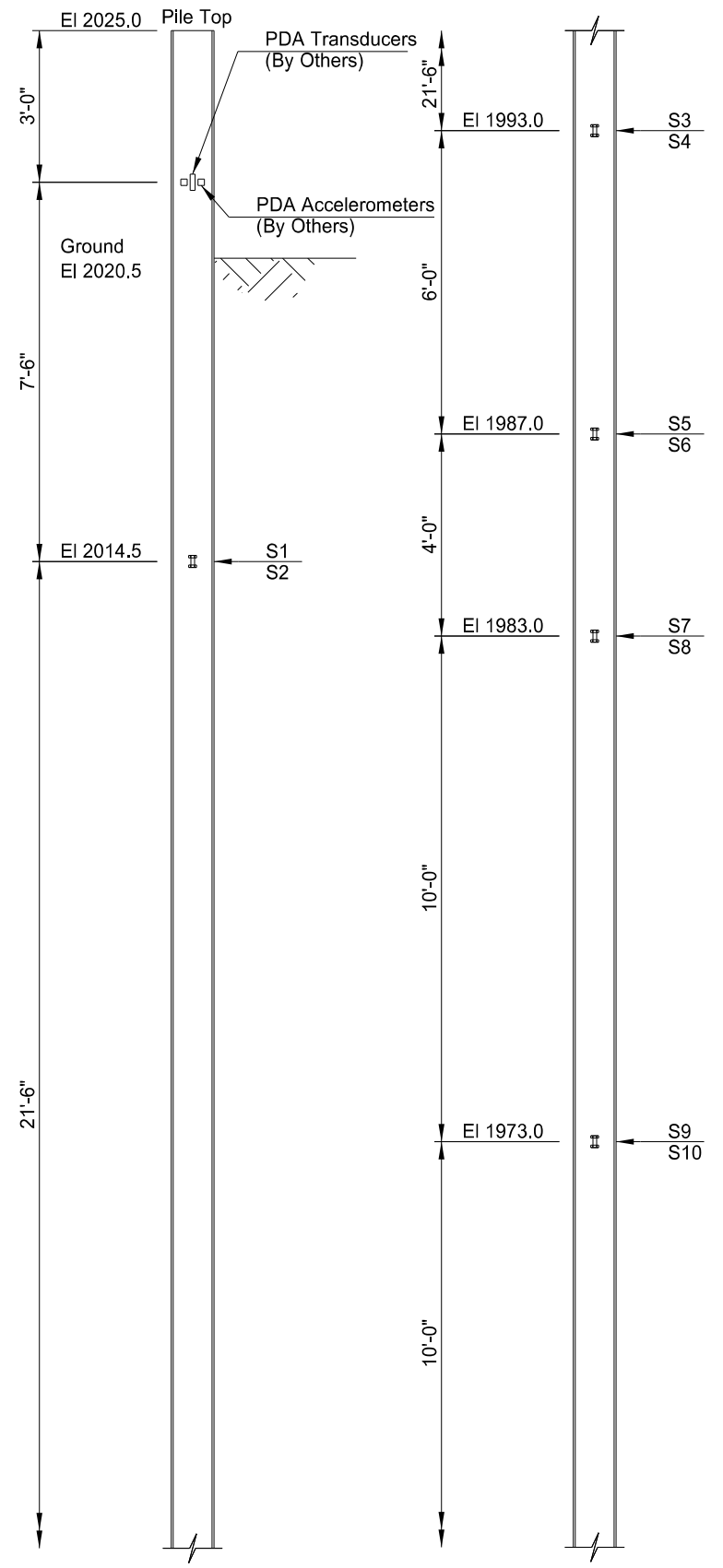
QUANTITIES	
STRUCTURAL STEEL	12,100 LBS
STEEL PILING HP 12 X 53	312 LF
LOADING TEST	1 EA
STEEL TEST PILING HP 12 X 53	72 LF

**CHERRY CREEK**

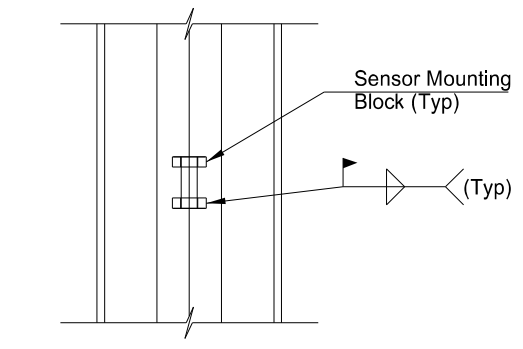
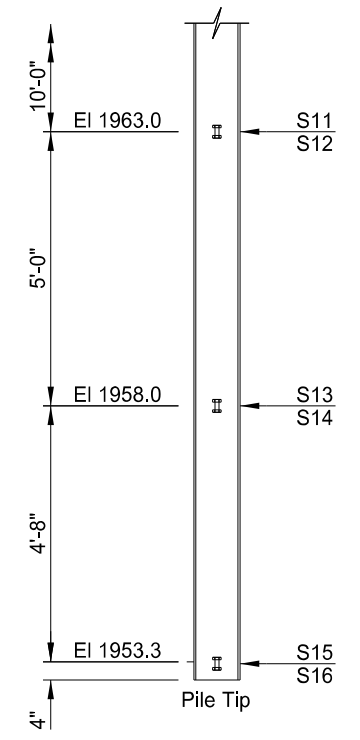
**LOAD FRAME DETAILS**

This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/12/21 and the original document is stored at the North Dakota Department of Transportation

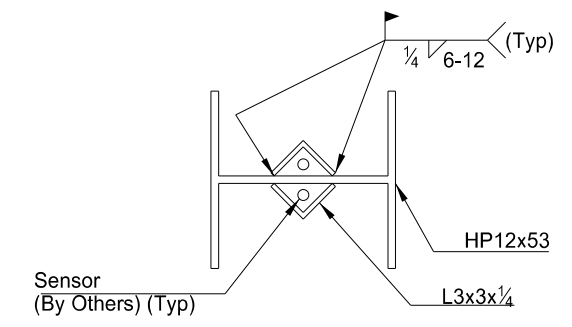
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SS-7-806(021)307	170	21



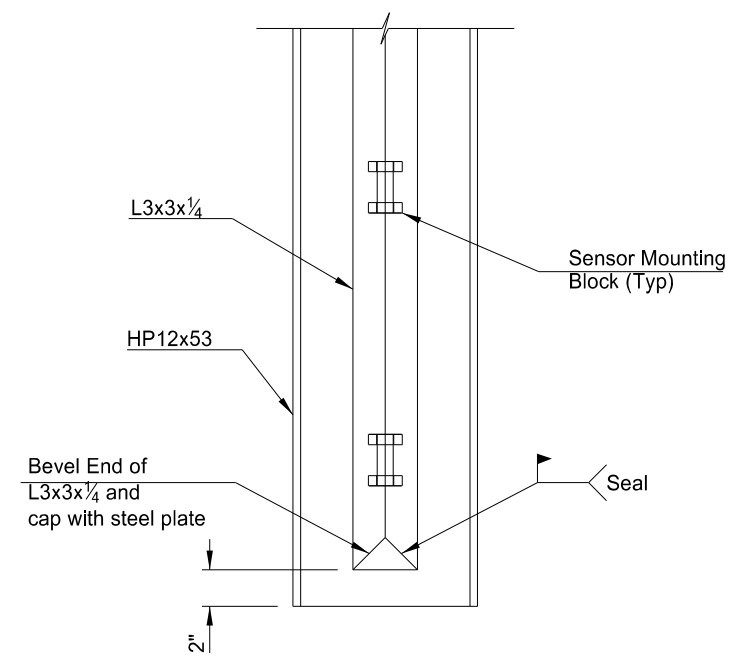
TEST PILE INSTRUMENTATION ELEVATION



MOUNTING BLOCK DETAIL



TEST PILE SECTION

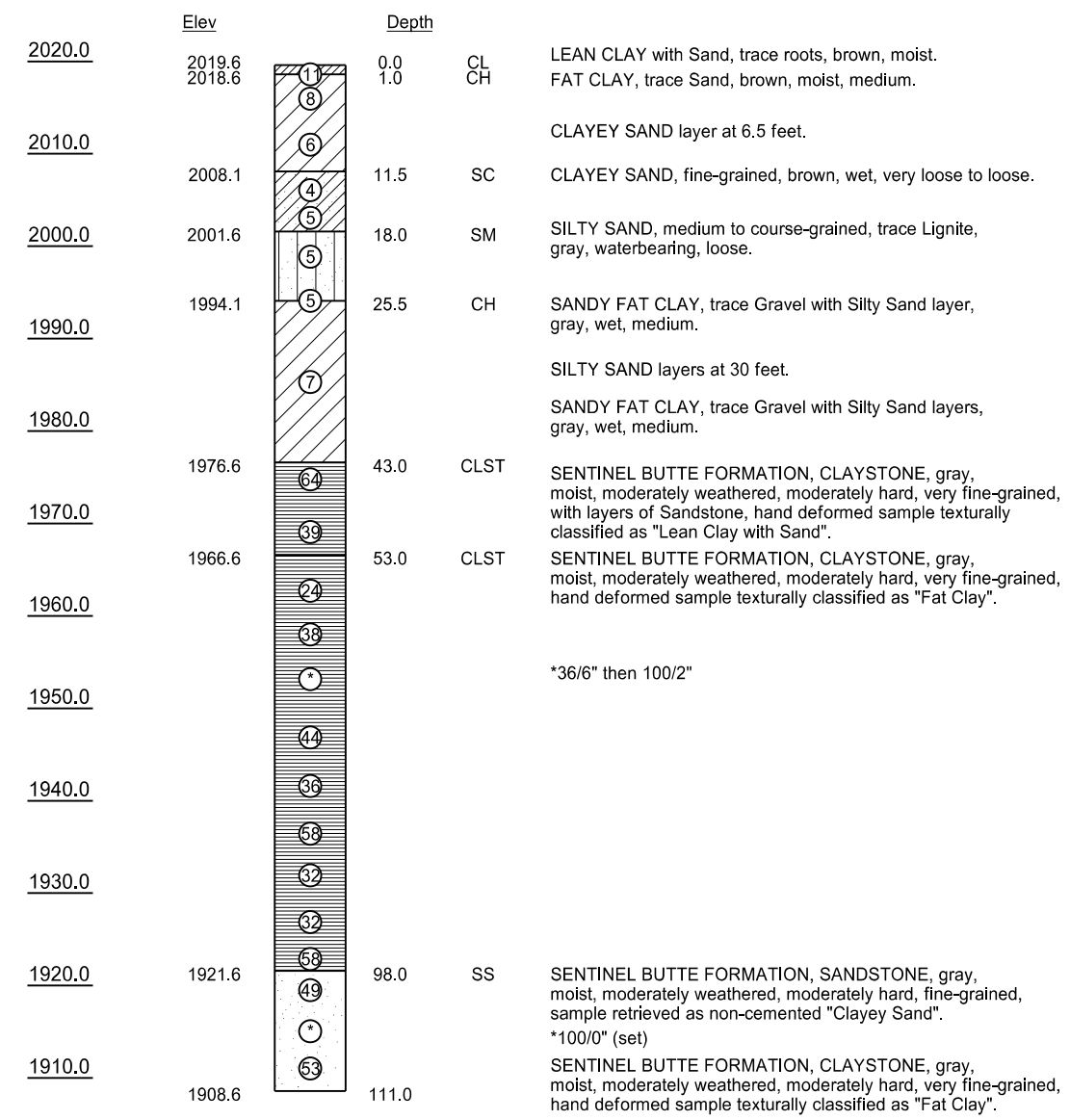


TEST PILE ELEVATION

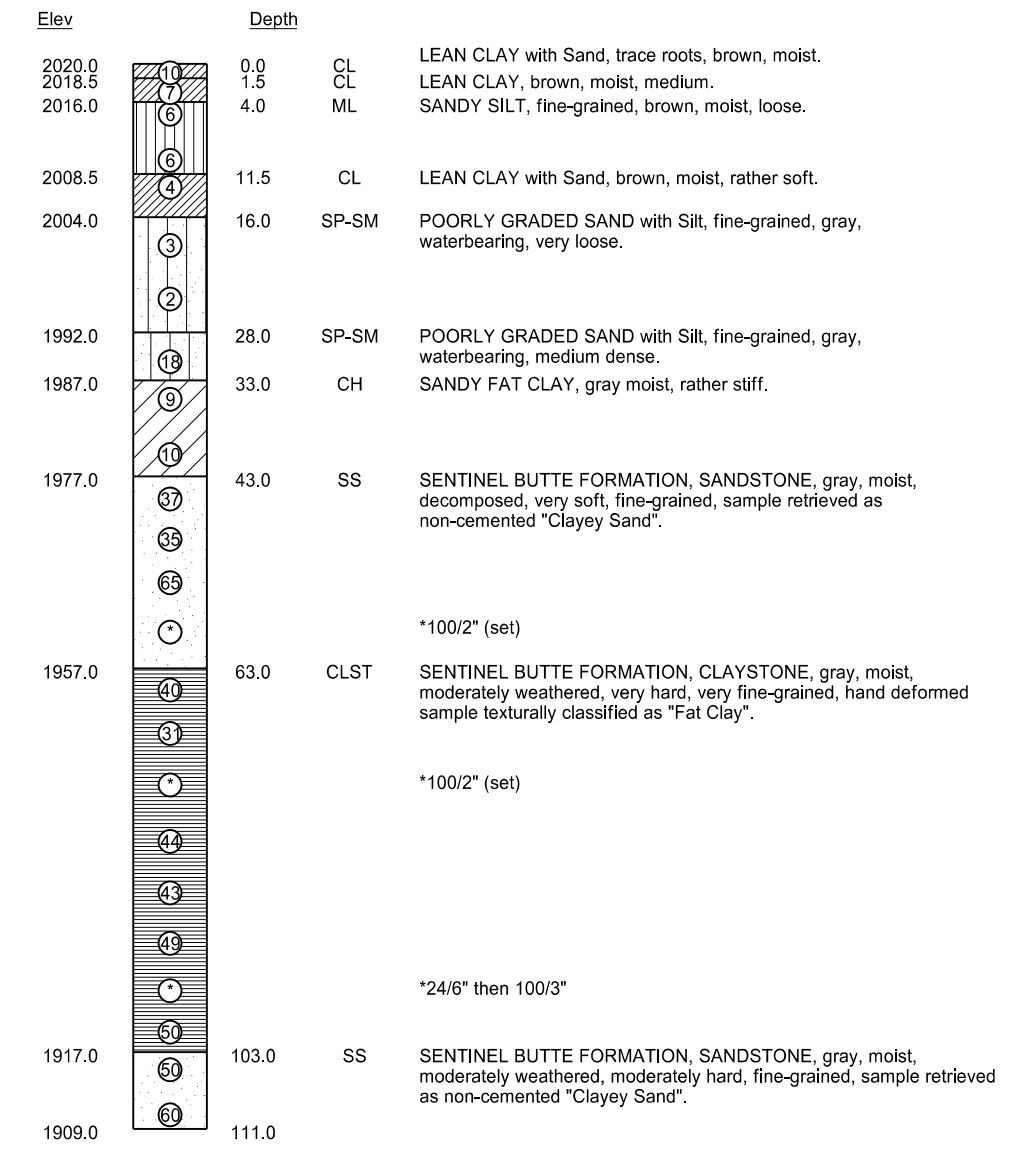
This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

CHERRY CREEK

TEST PILE INSTRUMENTATION DETAILS



**ST-01**  
**Sta 16166+87.75**  
**36.25' Rt**  
 Drilled on: July 21, 2016



**ST-02**  
**Sta 16168+56.10**  
**46.85' Lt**  
 Drilled on: July 21, 2016

This document was originally issued and sealed by Matthew L Isley, Registration Number PE 10095, on 1/11/21 and the original document is stored at the North Dakota Department of Transportation

**NOTES:**

- The encircled numbers indicate the number of blows delivered by a 140 lb. automatic hammer from a height of 30" to drive a 2" o.d. split-barrel sampler 1'-0".
- The boring data shown is for owner's design and estimating purposes only. The boring logs are only representative of the exact location from which the samples were taken and interpretation between sample locations is discouraged. The owner assumes no responsibility if the soil conditions encountered during construction differ from those shown.

**CHERRY CREEK**

**BORING LOGS**