

DESIGN DATA				
Traffic	Average Daily			30th Max.Hr.
Current 2011	Pass: 1,890	Trucks: 330	Total: 2,220	225
Forecast 2031	Pass: 2,440	Trucks: 475	Total: 2,915	295
Clear Zone Distance: 34'		Design Speed: 65 MPH		
Minimum Sight Dist. for Stopping: 645'		Bridges: HL-93 Design Loading		
Sight Dist. for No Passing Zone: 1,100'				
Pavement Design Life 20 (years)				
Design Accumulated One-way Flexible ESALs: 1,200,009				

# JOB # 44 NORTH DAKOTA

## DEPARTMENT OF TRANSPORTATION

SNH-BRN-3-281(109)128

FHWA Limited Involvement

Eddy County

New Rockford North to Junction of ND 15

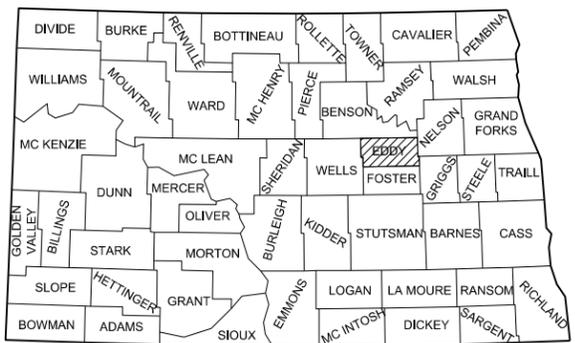
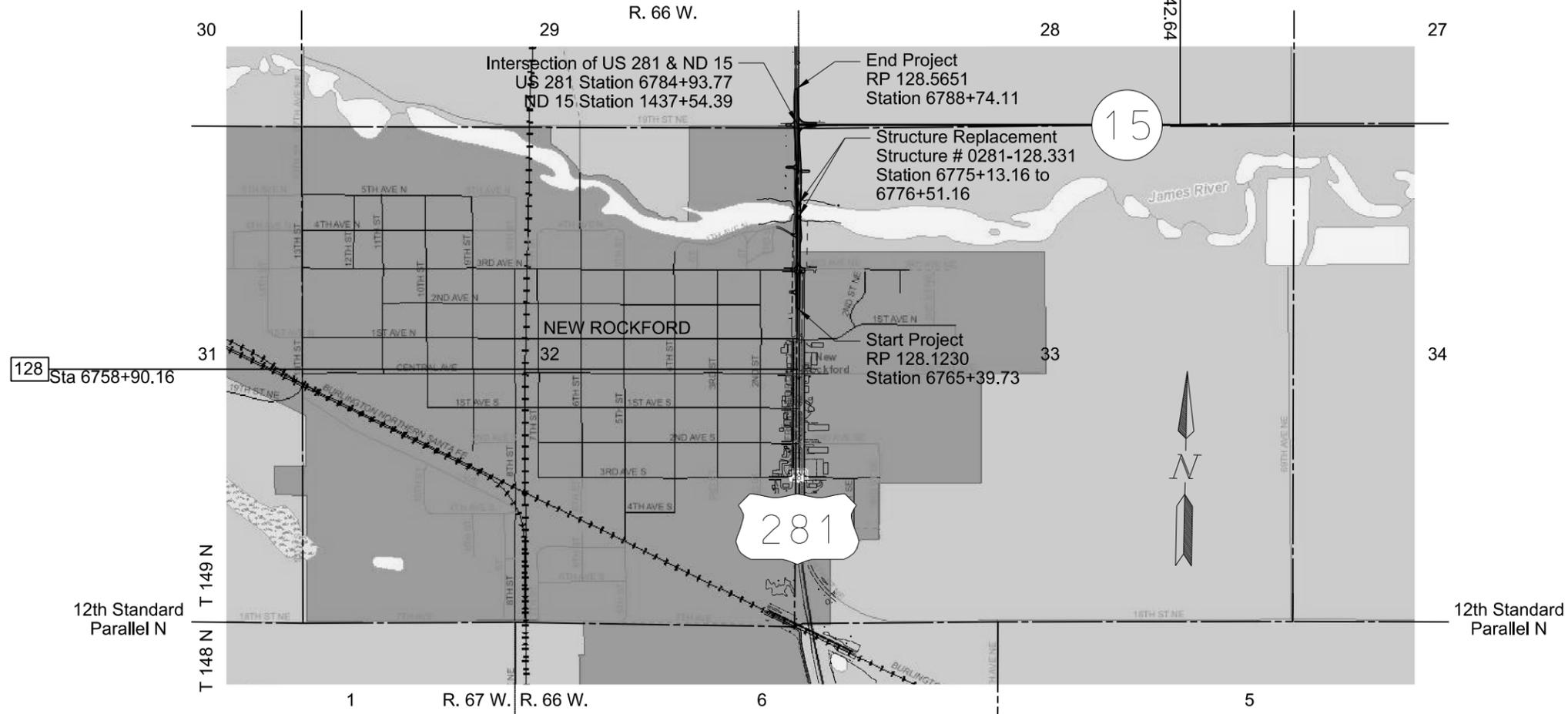
Structure Replacement, Realignment, HBP, Aggregate Base,  
Earthwork, Drainage, Signing, Striping & Lighting

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	18881	1	1

**GOVERNING SPECIFICATIONS:**

Standard Specifications adopted by the North Dakota  
Department of Transportation October 2008; Standard Drawings  
currently in effect; and other Contract Provisions submitted herein.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SNH-BRN-3-281(109)128	0.4160	0.4421



STATE COUNTY MAP

DESIGNERS
Garrett Hartl /s/
Eli Ulmer /s/

APPROVED DATE 8-27-2013  
 Roger Weigel /s/  
 FOR OFFICE OF PROJECT DEVELOPMENT  
 ND DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.  
 APPROVED DATE 8-27-13  
 James Douglas Rath /s/  
 NDDOT DESIGN DIVISION

This document was originally issued and sealed by James Douglas Rath, Registration Number PE- 4288, on 8/27/13 and the original document is stored at the North Dakota Department of Transportation

TABLE OF CONTENTS

<u>Section No.</u>	<u>Sheet No.</u>	<u>Description</u>
1	1	Title Sheet
2	1-2	Table of Contents
4	1	Scope of Work
6	1-6	Notes
6	7-9	Environmental Commitments
8	1-4	Quantities
10	1	Basis of Estimate
11	1	Earthwork Summary
20	1-5	General Details
30	1	Typical Sections
40	1-4	Removals
50	1	Inlet & Manhole Summary
51	1	Pipe List
60	1-11	Plan & Profile Sheets
70	1-5	Contours
75	1-2	Wetland Impacts
75	3-6	Temporary Erosion Control
75	7-10	Permanent Erosion Control & Seeding
80	1	Superelevation
81	1	Preliminary Survey Coordinate and Curve Data
82	1	Alignment Description
82	2-5	Survey Data
90	1-4	Paving Layouts
100	1-13	Work Zone Traffic Control
110	1-15	Signing
120	1-2	Pavement Marking
130	1-3	Guardrail
140	1-12	Lighting
150	1-3	ESS
170	1-20	James River Bridge
175	1-2	Boring Log
200	1-35	Cross Sections

LIST OF SPECIAL PROVISIONS (SP)

<u>SP #</u>	<u>Description</u>
SP 1278(08)	Permits and Environmental Considerations
SP 1101(08)	Split Sampling & Testing Requirements for Aggregate Base
SP 1010(08)	Temporary Erosion and Sediment Best Management Practices
SP 1247(08)	Surveillance Camera System
SP 1275(08)	Weather Limitations For Hot Bituminous Mix
SP 1280(08)	Architectural Concrete Finish

LIST OF STANDARD DRAWINGS

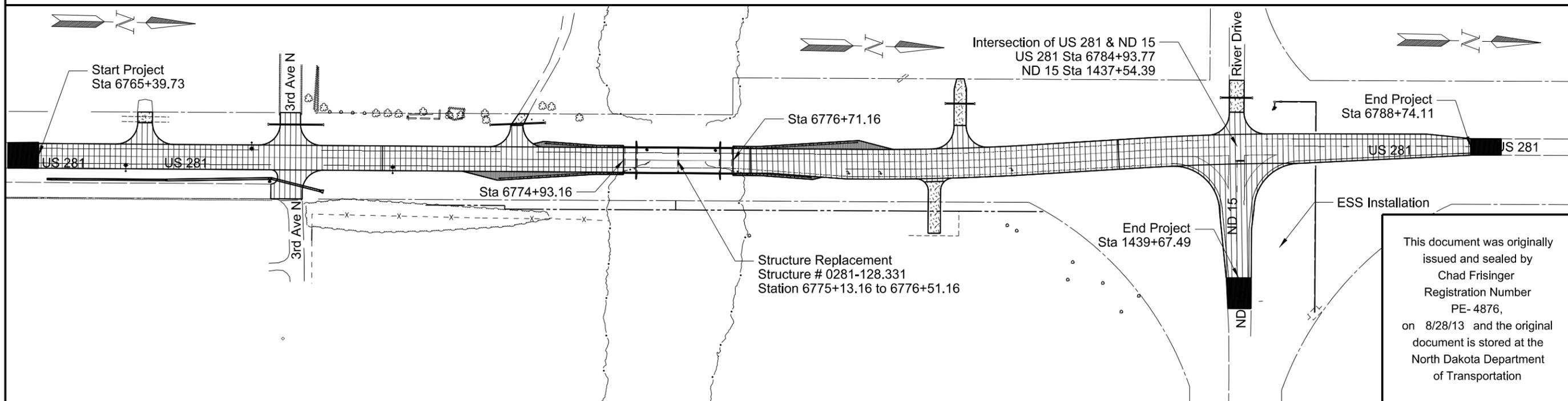
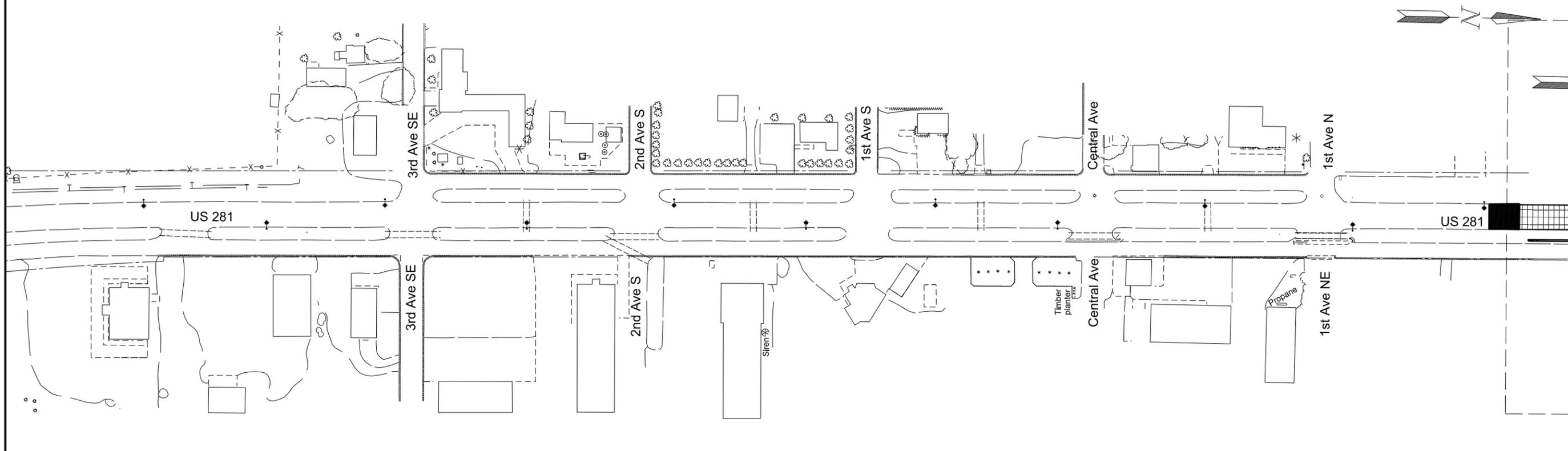
<u>Standard No.</u>	<u>Description</u>
D-20-1 to 32	Abbreviations, Line Styles, and Symbols
D-203-6	Standard 90 Flared Intersection
D-203-8	Section Line and Private Drive Approaches (Rural)
D-622-1	Pile Splice Details
D-704-1	Attenuation Devices
D-704-2	Traffic Control for Coring of Hot Bituminous Pavement
D-704-7	Breakaway Systems for Construction Zone Signs Perforated Tube
D-704-8	Breakaway Systems for Construction Zone Signs
D-704-9 to 11	Construction Sign Details
D-704-13	Barricade Details and Channelizing Devices
D-704-14	Construction Sign and Barricade Assembly Details
D-704-15	Construction Sign and Barricade Location Details
D-704-16	Typical Construction Signal Layout
D-704-22, 24	Construction Sign and Barricade Location Details
D-704-27	Traffic Control Plan for Moving Operations on Conventional Highways
D-704-50	Portable Sign Support Assembly
D-704-51	Portable Precast Concrete Median Barrier (Temporary Usage)
D-706-1	Type C Field Laboratory
D-708-2	Erosion and Siltation Controls
D-708-4	Bridge Approach Slab Drainage Detail
D-708-5	Erosion and Siltation Control Blanket Installation
D-708-6	Erosion Control Median or Ditch Inlet Protection
D-708-7	Erosion Control Fiber Roll Staking Details
D-714-1	Reinforced Concrete Pipe Culvert and End Section
D-714-4	Corrugated Steel Pipe Culverts and End Sections (Round Pipe)
D-714-22	Concrete Pipe Ties
D-720-1	Standard Right of Way Markers and Monuments
D-722-7	Precast Concrete Median Drain
D-748-1	Valley Gutter and Curb & Gutter
D-754-1	Pipe or W-Shape Assembly Details
D-754-7	Mounting, Post Cap and Panel Details

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	2	2

LIST OF STANDARD DRAWINGS (cont.)

<u>Standard No.</u>	<u>Description</u>
D-754-9	Letter and Arrow Details for Variable Length Signs
D-754-13	Structural Details W Shape Supports
D-754-14	Wind Beams and Anchor Plates for W-Shape Supports
D-754-19	Reference Markers
D-754-23	Assembly Details
D-754-24, 25	Mounting Details Perforated Tube
D-754-26, 27, 29	Sign Punching, Stringer, and Support Location Details Regulatory, Warning, and Guide Signs
D-754-47, 48, 49	Sign Punching, Stringer, and Support Location Details for Variable Length Signs
D-754-51, 52, 61	Sign Punching, Stringer, and Support Location Details – Route Marker Signs
D-754-83	Object Markers
D-754-87	Sign Punching, Stringer and Support Location Details for Street Name Signs and 911 Signing
D-760-5	Saw Slotted Rumble Strips at Intersections
D-762-1	Pavement Marking Message Details
D-762-3	Pavement Marking for Standard 90 Flared Intersection
D-762-4	Pavement Marking
D-764-1	Beam Guardrail - General Details
D-764-2C	Flared Energy Absorbing Terminal for Steel Breakaway System
D-764-2H	Slotted Rail Terminal 6 Post System
D-764-3	W-Beam Transition to Concrete Jersey Barrier With Approach Curb
D-764-8A	Guardrail at Bridge Ends 65 mph Design Speed
D-764-12A	Typical Grading at Bridge Ends With Flared W-Beam Guardrail 65 MPH Design Speed
D-764-29	Short Term End Treatment for Bridges (Attenuation Device Method)
D-764-30	Short Term End Treatment for Bridges (Guardrail Method)
D-770-1	Concrete Foundations (Traffic Signals and Highway Lighting)
D-770-2	Feed Points (Roadway Lighting)
D-770-4	Lighting and Signal Details
D-770-5	Light Standard Details
D-900-1	Bridge Bench Marks

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	4	1



This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

Reconstruction/Realignment

Guardrail Paving

Aggregate Tie

Pavement Transition

Light Standard

Scope of Work  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	6	1

## NOTES

- 105-200 UTILITY COORDINATION: The Contractor shall arrange a Post Bid Utility Coordination Meeting with affected Utility Companies, NDDOT District Office, and the Project Engineer. This meeting shall be in addition to the preconstruction meeting. The Post Bid Utility Coordination Meeting shall be held near the project area or at the District office and shall be held no later than two weeks after the Department and the Contractor have executed the contract, as approved by the Engineer. The contractor shall provide an agenda for the meeting, and be prepared to discuss the items on it. Items to discuss shall include, but not be limited to; plan for constructing the project, work schedule, utility adjustment/relocates needed prior to project start, utility adjustment/relocates that can be done concurrent with project, utility locates and site access. The contractor shall publish meeting minutes and distribute the minutes to all attendees and the NDDOT Utilities Engineer within one week after the meeting.
- 107-P01 HAUL ROAD RESTRICTIONS: The contractor shall contact the appropriate State, County, Township, City or Political Subdivision official(s) to determine if the proposed haul road has local load restrictions or is designated as a "No Haul Route" prior to preparing a bid for this project. Paved roads off the state system will not be designated as haul roads by the NDDOT. If the contractor chooses to use a paved road off the state system for this project, the contractor shall be responsible for all costs of the inspection, maintenance, restoration, and release of the haul road. The entire haul cycle, loaded and empty, will be considered for haul routes.
- 107-P02 HAUL ROAD RESTORATION: Any gravel or water needed for haul road restoration will be paid for under the NDDOT Price Schedule for Miscellaneous Items (PS-1). All gravel needed for haul road restoration will be CL-13 aggregate, accepted under Section 302 of the Standard Specifications.
- 200-010 SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.
- 200-P01 PAVEMENT REMOVAL: All pavements paid for as removal have been deducted from the excavation quantity.
- 202-P01 ABUTTING PAVEMENT: Where the new pavement will abut existing pavement, a full depth vertical cut shall be made along the entire length of the joint. The material to be removed shall then be removed without disturbing the material that is designated to remain. The sawed edge shall be reasonably free of frays or spalls. The new pavement shall be placed to match the existing pavement and to provide a satisfactory surface profile. Any intermediate saw cuts performed to aid in the removal of pavements shall not be paid for. Sawing shall be paid as "Saw Bituminous Surfacing – Full Depth."
- The contractor has the option to make coultter cuts instead of saw cut. If a coultter cut is performed, it shall also be paid for as "Saw Bituminous Surfacing – Full Depth."

- 202-P02 REMOVAL OF BITUMINOUS SURFACING: Existing typical sections are based on old grading and paving plans. Actual thickness might vary due to previous construction methods or intermittent patching. No additional payment will be made for unforeseen pavement thickness. All pavement removals shall be paid for as "Removal of Bituminous Surfacing."
- 203-P01 EARTHWORK: Due to the fact that traffic is maintained on the existing Hwy 281 then switched to the realigned Hwy 281 after the structure is constructed, it is anticipated that the embankment within the Right of Way will not be available due to the phasing. Therefore, a quantity of borrow is included in the plans for the construction of the newly realigned Hwy 281. All borrow required shall be obtained by the contractor from a source outside of the highway right of way. This described work shall be paid for "Borrow – Excavation".
- The excavation required for the removal of the existing Hwy 281 will be paid for as "Common Excavation – Type A". The excavation will take place after traffic is moved to the newly constructed James River Structure. A portion of the excavation may be used as embankment for the realigned Hwy 281. Any excess excavation shall become property of the contractor. The excess excavation shall be disposed of off the highway right of way and shall not be placed in wetlands. All costs of hauling and disposing of any excess excavation shall be included in the bid item "Common Excavation – Type A."
- 203-P02 COMMON EXCAVATION - RIPRAP REMOVAL: There is a small area of riprap (4' x 10') to be removed at one pipe end section. It is located east of Hwy 281 south of 3<sup>rd</sup> Ave. The riprap varies in size from 6" to 12" in diameter. The removed riprap shall become property of the contractor. All costs to remove and dispose of the riprap should be not be paid for separately but be included in the price bid for "Common Excavation – Type A".
- 203-P03 HAUL: No average haul has been computed for this project.
- 203-P04 TOPSOIL - WETLAND: The Contractor shall strip a minimum of 6 inches of topsoil from wetland areas. The Contractor shall construct a separate stockpile site for the wetland topsoil that is no greater than 3 feet high.
- The Contractor shall place and spread a minimum of 6 inches of wetland topsoil at the mitigation sites.
- The Contractor shall include all costs for removal, stockpiling, and placement of wetland topsoil in the price bid for "Topsoil - Wetland."
- 302-P01 TRAFFIC SURFACE GRAVEL: 2500 tons of Aggregate Base Course CL 5 has been provided for maintaining traffic. The aggregate shall be used as directed by the engineer in the field. Aggregate base has been provided for maintaining

This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

**NOTES**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	6	2

traffic during the connections of the existing roadway to the proposed roadway based on 3 lifts, 24' wide, 3" deep, 1000' on the north and south connections.

302-P02 AGGREGATE BASE COURSE CL 5: CL 5 will be used where aggregate is required. Salvaged Base Course cannot be substituted for Aggregate Base Course CL 5.

410-P01 SUPERPAVE FAA 45: The 5.5" hot bituminous pavement shall be paver laid in three lifts. The contractor shall allow the mat to cool sufficiently before placing subsequent lifts of HBP so no damage is done to the prior lift. PG 58-28 Asphalt Cement shall be used in the bottom two lifts and PG 64-34 shall be used in the top 2" lift.

410-P02 AGGREGATE AND MIX DESIGN PROPERTIES: The aggregate blend and mix design properties shall meet the requirements outlined in Section 410 Superpave Volumetric Mix Design. The following aggregate and mix design properties are required.

Test	Criteria	Reference
Coarse Aggregate Angularity	85% min	NDDOT Field Sampling/Testing Manual
Fine Aggregate Angularity	45% min	AASHTO T 304
Gyratory Effort, # Gyration	$N_{ini}=7, N_{des}=75, N_{max}=115$	AASHTO R 35
Voids Filled with Asphalt	65-75%	AASHTO M 323, T 166
%G <sub>mm</sub> @ N <sub>ini</sub>	89% max	AASHTO M 323, T 166

410-P03 CONTRACTOR MIX DESIGN: The final mix design shall be a Contractor – developed mix design as per NDDOT Standard Specification 410.04B and submitted 10 days prior to beginning hot bituminous pavement production.

410-P04 CONTRACTOR CORING: Immediately after the cores have been cut, the Contractor shall fill the core holes as follows:

- Remove any free standing water;
- Tack the hole as specified in Section 401;
- Place the same type of bituminous material; and
- Compact each lift with hand tamper.

If the core hole is 2 inches or greater, fill the core hole with the same type of bituminous material in a minimum of two lifts.

Before the next lift of asphalt, the Engineer will inspect all core holes to ensure a uniform surface. Once the inspection has been completed and accepted, the Department will pay for the number of cores required by the Engineer for that lift. For the final lift of asphalt, the Engineer will not pay for cores until the entire lift has been completed and inspected.

410-P05 PAVING SEAMS: All seams must be at least 11.5' from the centerline of the roadway unless a hot seam is used. Hot seams can be located at any offset distance. A hot seam will be defined as a seam created when two pavers are paving

at the same time, with no more than 300' between the pavers. The seam must be rolled in a way to join and hide the seam so it is not visible to the traveling public.

411-P01 TEMPORARY ASPHALT WEDGES: The contractor shall place temporary asphalt wedges at the milled locations to allow smooth passage of vehicles. Bituminous surfacing shall be placed on these milled areas prior to the traffic being allowed back on the milled roadway section. All costs associated with labor, materials and equipment for the installation and removal of the asphalt wedges shall be included in the price bid for "Milling Pavement Surface".

411-P02 MILLING SECTIONS: At the beginning and end of the milling sections, the existing bituminous material shall be removed to form a straight vertical edge to allow placement of the full depth of surfacing. All material removed in these operations shall become the property of the contractor and shall be disposed of off the right of way.

704-200 PRECAST CONCRETE MEDIAN BARRIERS - STATE FURNISHED: The number of precast concrete median barriers required on the project shall be 34 ten x 2.5 foot units. The contractor shall obtain the barriers from the NDDOT Maintenance Yard in Devils Lake. Upon completion of the project, all barriers shall remain the property of the state and the contractor shall return them to the NDDOT Maintenance Yard in Devils Lake. Upon final storage, one barrier connecting bolt with two washers shall be placed through the barrier loops at one end of each segment, and the nut shall be installed sufficiently threaded to the bolt to retain this hardware during transportation. Any barrier segments that become damaged during handling, transportation, placing, or use, or any missing connecting bolts, nuts or washers, shall be replaced at the contractor's expense. The contractor shall contact the District Office a minimum of 7 days prior to and again 24 hours prior to picking up the barriers. The contractor shall contact the District Office a minimum of 24 hours prior to returning barriers.

The barriers shall be counted prior to removal from the storage area and after placement on the roadway and the number agreed to by the Engineer and the Contractor. Another count shall be made once the barriers have been returned to the storage area and agreed to by the Engineer and the Contractor. Both agreements shall be made in writing and signed by all parties.

Upon final storage, the state furnished barriers shall be stacked a maximum of two high and shall be placed on 4" x 4" boards separating the barrier from the ground and separating the barriers between stacked rows. Some 4" x 4" boards are available from the NDDOT Maintenance Yard in Devils Lake, but any additional 4" x 4" boards that are needed shall be supplied by the contractor, become property of the NDDOT, and shall be included in the price bid for "Precast Concrete Median Barrier - State Furnished."

All labor and equipment needed for obtaining, loading, transporting, installing, moving, removing, unloading, and maintaining the portable precast concrete median barriers

This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

**NOTES**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	6	3

shall be provided by the Contractor and included in the price bid for the item "Precast Concrete Median Barriers - State Furnished."

704-P01 LANE CLOSURE - SIGNAL CONTROL: At the location(s) shown in the plans, the contractor shall install a "Signal Controlled" lane closure for two-lane roadways as shown on Standard D-704-16. The traffic signal system shall be similar to the one shown, and any modifications shall be approved by the engineer prior to the preconstruction conference.

The contractor shall be responsible for obtaining the electrical source to operate the traffic signals. The contractor shall make arrangement with the utility company or provide generators for electrical service. Solar powered traffic signals may be used. The contractor shall be responsible for all costs of providing the electrical source and any costs required to operate and maintain the traffic signal. The generator shall be placed at least 60 feet from the roadway centerline unless the generator and signal are part of a trailer-mounted unit.

If the contractor chooses to use the utility company, the poles and all equipment shall be placed at least 60 feet from the roadway centerline. The power conductors shall be placed a minimum of 6 inches below the ground.

Upon completion of the project and the traffic is returned to the closed roadway, all equipment shall be removed.

The cost of furnishing, installing, and providing power to the traffic signal shall be included in the price bid for "Lane Closure - Signal Control/Flagging Control."

The traffic control devices shall be installed as shown on Phase 1 and Phase 2 Section 100 plan sheets and in accordance with Standard Drawing D-704-16. The traffic control devices will be measured and paid for at the contract unit price for each device.

704-P02 SIGN ANCHORS: The sign anchors shall be removed as part of the same operation as when the sign faces come down. The sign anchors cannot remain in the ground without a sign attached to them.

704-P03 TRAFFIC CONTROL DEVICES: Traffic control shall consist of a lane closure. Traffic Control Devices shall comply with the following Standard Drawings:

- D-704-1: Attenuation Device
- D-704-2: Coring bituminous pavement.
- D-704-7, 8, 9, 10, 11, 13, and 14 are applicable.
- D-704-15, Layout A: For flagging and lanes closure. Pilot car is only required when paving HBP.
- D-704-15, Layout B: For shifting traffic to the proposed roadway.
- D-704-16: For single lane w/signal control on existing structure.
- D-704-22, Type K and L: For construction trucks entering from an aggregate source or a contractor jobsite.

D-704-24, Type T: Shoulder closure when constructing the lighting system. Two shoulder closures have been provided – one for each direction. 15 Delineator drums have been provided for each work area.

D-704-27: For pavement marking operations.

D-704-50: Portable Sign Support Assembly

D-704-51: Portable Precast Concrete Median Barrier (Temporary Usage)

704-P04 PROJECT PHASING: The traffic control details, as indicated on the plans, have been developed on the basis that this project will be constructed in two phases. The work zone traffic control summary list includes the required numbers of devices for each phase. The devices for the first phase will be moved as required for the second phase.

Phase 1:

This phase consists of a signal controlled lane closure for two-lane roadways. This phase is required for the partial removal of the existing structure and construction of the new structure and realigned roadway. Traffic is maintained on existing Hwy 281.

Phase 2:

In this phase, the traffic will be shifted east to the new structure and realigned Hwy 281. Hwy 281 will consist of aggregate surfacing. Short term guardrail will be required for the east side of the new structure. Jersey barrier and attenuation devices will be placed on the west side of the new structure. This phase will allow the contractor to complete the pavement removals, structure removal, west abutment wingwalls and remaining earthwork on the west side of Hwy 281.

Final Phase:

The final phase shall consist of a single lane closure to complete the paving, guardrail, striping, etc.

The sign placement required for Phase 1 requires the signs to be paced near the structure work area. Phase 2 will require the signs to be relocated further north and south to accommodate the new realigned roadway. Additional payment will not be made to relocate the signs and supports required for Phase 2 or the Final Phase.

704-P05 DELINEATOR DRUMS FOR GUARDRAIL INSTALLATION: A quantity of 30 delineator drums has been included in the plans for marking areas of guardrail installation as per Spec. 764.03.

704-P06 STACKABLE VERTICAL PANEL: The stackable vertical panel made of hollow low density polyethylene orange plastic panel which is held in an upright position by a molded rubber base shall be provided.

The panel shall be a minimum 43 inches high with a minimum bottom dimension 15 inches x 9 inches. The panel shall be held down with a molded rubber base. The minimum

This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

## NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	6	4

weight of the panel shall be 4 pounds. The minimum weight of the molded rubber base shall be 30 pounds.

The reflective sheeting shall have a minimum width of 8 inches and 36 inches long. The reflective sheeting shall be as specified for vertical panel and shall have 6" wide stripes sloping downward at an angle of 45 degrees in the direction vehicular traffic is to pass. The reflective sheeting shall be on both sides of the Stackable Vertical Panels. The Stackable Vertical Panel shall meet the requirements of NCHRP Report 350 as a Category II Traffic Control Device.

The item "Stackable Vertical Panel" shall be measured by the number of each installed. All materials, equipment, and labor for installation, relocation, and removal shall be included in the price bid for "Stackable Vertical Panel."

706-P01 FIELD LABORATORY TYPE B: A concrete pad sufficient to run a proctor on shall accompany the Type B laboratory and be setup directly adjacent to the building.

The laboratory shall be wired for DSL Broadband internet capabilities. The internet shall have a wireless Wi-Fi router and also the capabilities of hard wiring to a computer. The cost of installation and monthly fee for the internet will be included in the cost of the laboratory.

706-P02 FIELD LABORATORY TYPE C: Both Type C Laboratories shall be wired for DSL Broadband internet capabilities. The internet shall have a wireless Wi-Fi router and also the capabilities of hard wiring to a computer. The cost of installation and monthly fee for the internet will be included in the cost of the laboratory.

706-P03 FIELD LABORATORY TYPE C: The Quality Assurance laboratory shall have forced air ovens capable on maintaining 300°F.

706-P04 FIELD OFFICE: The Contractor is to provide a field office which meets the following requirements:

1. The field office shall be completely insulated and weather tight, have a minimum floor area of 230 square feet, minimum exterior width of 8 feet, and a minimum ceiling height of 7 feet.
2. A dependable source of electricity for power and lights shall be furnished. There shall be a minimum of six electrical outlets spaced throughout the building and three light fixtures spaced to uniformly light the entire interior.
3. The office shall be wired for DSL Broadband internet capabilities. The internet shall have a wireless Wi-Fi router and also the capabilities of hard wiring to a computer. The cost of the installation and monthly fee for the internet will be included in the cost of the field office.
4. The heating and cooling system shall be capable of maintaining the temperature between 65 F and 78 F year around.
5. Shall have 3 desks and desk chairs provided, 3 extra chairs, one 2 or more drawer file cabinet, one table minimum of 2.5 ft x 5 ft.

6. Photocopy machine capable of 11 x 17 photocopies and toner to last the duration of the project. The Engineer will be responsible to furnish the paper. Also a separate table or cabinet to support the copier.
7. The office shall be equipped with a 15 cubic foot or larger refrigerator and a microwave.
8. The location of the field office shall be on, or as close to the project and Field Laboratory – Type B as possible. Prior to installation of the Field Office, the location shall be approved by the Engineer. Any rental fees shall be paid by the Contractor.
9. The field office shall be available at the start of the project and remain available through project completion.

All requirements of the Field Office are subject to approval by the Engineer. Payment for the field office shall be under the bid item "Field Office".

708-P01 FIBER ROLLS 12IN: Fiber rolls shall consist of wood excelsior that has been compressed and stuffed into degradable netting. Dimension of the fiber roll shall be 9 to 12 inches nominal in diameter.

708-P02 MULCHING: The area to be mulched shall be hydro-mulched as specified in the 708.02 B.3.a of the Standard Specifications. The grass hay, straw mulch or bonded fiber matrix mulch will not be allowed. The hydro-mulch shall be applied after the Class II seed mixture is drilled into the topsoil. All cost for labor, equipment and materials necessary to complete the work shall be included in the price bid for "Mulching."

This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

**NOTES**

708-P03 WETLAND - SEEDING: The wetlands shall be seeded with the following seed mixture:

Grass			Full Seeding Rate PLS/Acre	% Species in Mix	PLS lbs./Ac
Common Name	Scientific Name	Variety			
Prairie Cord Grass	Spartina pectinata	Red River	7.0	15	1.1
American Slough Grass	Beckmannia syzigachne	Common	0.9	20	0.2
Virginia Wild-rye	Elymus virginicus	Omaha	10.0	20	2.0
Fowl Blue Grass	Poa palustris	Common	1.0	20	0.2
Fox Sedge	Carex vulpinoidea	Common	1.0	15	0.2
American Manna Grass*	Glyceria grandis	Common	1.5	10	0.2
Fowl Manna Grass*	Glyceria striata	Common	1.0	10	0.1
Bluejoint Grass**	Calamagrostis canadensis	Common	1.0	10	0.1
			Total	120	3.9

\* American, fowl, or both may be used. If only one is used the seeding rate of other species does not need to be increased.

\*\* Seed may not be available and can be removed without increasing the seeding rate of other species

All labor, equipment and materials required to seed the wetlands shall be included in the price bid for "Seeding – Type B CL V."

714-P01 PIPE BENDS AND ECCENTRIC T-SECTION: Four pipe bends are required for the ditch storm sewer installation east of Hwy 281 (south of 3rd Street) between the highway and parallel frontage road. Two 7 ½ degree short radius pipe bends are required for the 24" RCP and two 7 ½ degree short radius pipe bends are for the 30" RCP as shown in the Section 20 Detail Plan sheet. All costs for labor, equipment and material to install the pipe bends shall be included in the price bid for "Pipe Conduit 24 IN or 30 IN – Storm Drain".

One Eccentric T-Section is also required for the storm sewer at the same location as described above. The T-Section shall consist of a 30" RCP with a 15" RCP T-Section as shown in the Section 20 Detail Plan sheet. All costs for labor, equipment and material to install the Eccentric T-Section shall be included in the price bid for "Pipe Conduit 30 IN – Storm Drain".

720-P01 RIGHT OF WAY MARKERS: The station and offset listed on the Section 80 survey data sheet for Right of Way Limits is the location of the iron pin. The Right of Way Markers shall be offset from the iron pin as detailed and noted on Standard D-720-1.

722-P01 INLETS: All new inlets on this project have a minimum 4-foot riser. The bottom of the inlet shall be filled with concrete up to the elevation that will accommodate the lowest invert elevation. All costs to accomplish this work will be included in the unit price bid for the respective inlet.

762-P01 PAVEMENT MARKING: Pavement markings will not be measured for payment unless changes are made in the field. Payment for pavement markings will be at plan quantity.

762-P02 PAVEMENT MARKING REMOVAL: When the signal system is required in Phase 1, portions of the double yellow pavement marking shall be obliterated as shown in the Work Zone Traffic control plan sheets. In lieu of obliterating the markings, the Contractor may choose to cover the markings with black preformed plastic sheeting with an adhesive coating or cover the markings using pavement marking paint. The pavement marking painting width shall be a maximum of 1" wider than the existing marking on all sides. The paint shall be mixed so as to closely approximate the color of the in-place pavement.

The cost of all equipment, material, and labor shall be included in the price bid for "Obliteration of Pavement Marking".

This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	6	6

## NOTES

### SECTION 100

- 764-P01 W-BEAM GUARDRAIL FOR PHASE 1: At the existing James River Bridge the existing W-beam guardrail shall remain in place on the west side of the existing bridge through phase 1.
- 764-P02 W-BEAM GUARDRAIL FOR PHASE 2: At the new James River Bridge, W-beam guardrail and W-beam guardrail end terminals shall be installed on the east side of the new bridge, as shown in the plans, before phase 2 is put into operation. The guardrail for phase 2 shall remain in place until the new roadway is completed to the full proposed width and it is necessary to remove the guardrail for asphalt surfacing. The guardrail shall be removed and reset in the permanent guardrail installation.

### SECTION 110

- 754-P01 SIGN REMOVAL: City signs at Sta 6761+49 rt, 6762+68 lt, 6778+77 lt 6780+53 lt and all Street Name Signs shall be delivered to and become the property of the city. The cost of the delivery shall not be bid separately but shall be included in the price for other items.
- 894-100 RETROREFLECTIVE SHEETING: Provide Type IV retroreflective sheeting that meets ASTM D 4956, Type IV. Provide Type XI retroreflective sheeting that meets ASTM D 4956, Type XI.

### SECTION 130

- 748-P01 CURB & GUTTER – TYPE 1 SPECIAL: Twenty lineal feet of curb and gutter is required along each side of the roadway at the ends of the bridge approach slabs, at the James River Bridge, as shown in the plans.
- The curb and gutter shall be Type 1 as shown on Standard Drawing D-748-1, except the last 3 feet of curb and gutter, at the end nearest the approach slab, shall be transitioned to match the shape of the jersey barrier and the end of the curb furthest from the bridge approach slab shall be tapered from a 6" curb height to 0" curb height in 3 feet, as shown on Standard Drawing D-764-3.
- All costs for constructing the curb and gutter as described above, shall be included in the price bid for the item "Curb & Gutter – Type 1 Special."
- 764-P01 REMOVE END TREATMENT & TRANSITION: The removed end treatment and transition shall become the property of the contractor.
- The item "Remove End Treatment & Transition" shall be measured by the number removed.
- The cost of removing the end treatment and transition, and disposing of the material shall be included in the price bid for the item "Remove End Treatment and Transition."

- 764-P02 REMOVE W-BEAM GUARDRAIL & POSTS: The removed W-beam guardrail and posts that are not reset shall become the property of the contractor.
- The item "Remove W-Beam Guardrail & Posts" shall be measured by the linear foot of guardrail removed.
- The cost of removing the guardrail and posts, and disposing of these materials shall be included in the price bid for the item "Remove W-Beam Guardrail & Posts."

### SECTION 140

- 770-700 LUMINAIRES: The high-pressure sodium vapor luminaires shall be internal ballast-constant wattage, 120x240 voltage, operated on 240 volts.
- 770-P01 BREAKAWAY LIGHT STANDARD: The bases for all light standards shall be of the breakaway type. The breakaway light standards shall be designed for 6' mast arms and shall be galvanized. The shaft length shall be 42' from the top of the foundation to the bottom of the luminaire for all light standards.
- 770-P02 REMOVE LIGHT STANDARD: The removed light standards shall become the property of the contractor.

### SECTION 150

- 772-P01 FOUNDATIONS: The camera cabinet foundation and working slab shall be constructed using Standard Drawing D-770-1 for Controller Cabinet Foundation Pad Mount.
- The cabinet foundation shall be of sufficient size so there is a minimum of 2" of clearance from the outside edge of cabinet to the outside edge of the foundation on any side. The Contractor shall ensure a water-tight seal between the cabinet and the foundation by caulking, except for V groove. The materials and preparation of the working slab shall be as approved by the Engineer.
- All costs associated with the cabinet foundation and working slab shall be included in the price bid "Surveillance Camera System".

This document was originally issued and sealed by Douglas A Schumaker, Registration Number PE-5047, on 8/29/13 and the original document is stored at the North Dakota Department of Transportation.

## ENVIRONMENTAL COMMITMENTS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	6	7

**ENVIRONMENTAL COMMITMENTS:** The North Dakota Department of Transportation and the Federal Highway Administration have made several environmental commitments to various agencies and the public to secure approval of this project. The environmental commitments are as follows:

**COMMITMENT NO. 1:** Unavoidable impacts to wetlands will be mitigated onsite, adjacent to the project, or at a NDDOT approved mitigation site or bank. Approximately 0.05 *natural/jurisdictional*, 0.00 *natural/non-jurisdictional*, 0.37 *artificial/jurisdictional*, and 0.06 *artificial/non-jurisdictional* acres of wetlands will be impacted permanently, and 1.56 acres will be impacted temporarily.

**ACTION TAKEN/REQUIRED:** 0.30 acres at a 2:1 and 0.12 acres at a 1:1 of permanent impacts to wetlands will require mitigation. The NDDOT proposes to mitigate these impacts at adjacent to Wetland 4 & 5 in the Missouri River Basin Southern Zone Regional Service Area. Mitigation is not required for stream (riverine) impacts. Temporary impacts will not be mitigated as original grades will be reestablished.

Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size Ac.	Wetland Feature	USACE Jurisdictional Wetlands*	Wetland Impacts (acres)		USFWS Easement Impacts		WETLAND MITIGATION			
							Temp. Ac.	Perm. Ac.	Temp.	Perm.	Mitigation Required		Location	Onsite Mitigation Acres
											11990	USACE		
1	Sec.29, T149N, R66W	PEMCx	Ditch	0.37	Artificial	N/A	0.06	0.01	-	-	N	N	none	-
2	Sec. 32, T149N, R66W	PEMC	Adjacent to River	0.05	Natural	Yes	0.01	0.02	-	-	Y	Y	Onsite 2:1 at WL 4 & 5	-
2 - b	Sec. 32, T149N, R66W	PEMC	Adjacent to River	0.06	Natural	Yes	0.02	0.01	-	-	Y	Y	Onsite 2:1 at WL 4 & 5	-
2 - c	Sec. 33, T149N, R66W	PEMC	Adjacent to River	0.07	Natural	Yes	0.02	0.01	-	-	Y	Y	Onsite 2:1 at WL 4 & 5	-
2 - d	Sec. 33, T149N, R66W	PEMC	Adjacent to River	0.06	Natural	Yes	0.02	0.01	-	-	Y	Y	Onsite 2:1 at WL 4 & 5	-
2 - e	Sec. 33, T149N, R66W	PEMCx	Ditch	0.53	Artificial	Yes	0.12	0.25	-	-	N	Y	Onsite 2:1 at WL 4 & 5	-
3	Sec. 32, T149N, R66W	PEMCx	Ditch	0.09	Artificial	Yes	0.04	0.00	-	-	N	N	none	-
4	Sec. 33, T149N, R66W	PEMAx	Ditch	1.58	Artificial	Yes	0.54	0.12	-	-	N	Y	Onsite 1:1 at WL 4	0.50
5	Sec. 28, T149N, R66W	PEMAx	Ditch	1.14	Artificial	N/A	0.73	0.05	-	-	N	N	none	0.22
<b>Totals</b>				<b>3.95</b>			<b>1.56</b>	<b>0.48</b>	-	-				<b>0.72</b>

\* A wetland Jurisdictional Determination was issued by the USACE on 6/27/2012; NWO-2006-60322-BIS.

## ENVIRONMENTAL COMMITMENTS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	6	8

POTENTIAL OTHER WATERS							POW MITIGATION						
Number	Location	Type	Size		Feature	USACE Jurisdictional*	Impacts to Potential Other Waters			Mitigation Required		Location	Method
			Acres	Linear Feet			Temp	Acres Perm	Linear Feet	11990	USACE		
2 - a	Sec. 32, T149N, R66W	James River	1.00	273	Natural	Yes	0.15	0.33	120	N	N	NA	NA
<b>Totals</b>			<b>1.00</b>	<b>273</b>			<b>0.15</b>	<b>0.33</b>	<b>120</b>				

\* A wetland Jurisdictional Determination was issued by the USACE on 7/27/2012; NWO-2006-60322-BIS.

Total Permanent Impact Summary		Additional Impact Info for 404 Permit	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/Non-JD	0.00	Permanent JD ≥ 0.10	0.42
Artificial /Non-JD	0.06	Temporary JD	0.77
Natural /JD	0.05	POW	.33 ac/120 ft.
Artificial /JD	0.37		
<b>Totals</b>	<b>0.48</b>		

**COMMITMENT NO. 2:** A concrete structure or bridge will be demolished as a part of this project. SFN 17987 Asbestos Notification of Demolition and Renovation is required.

**ACTION TAKEN/REQUIRED:** The contractor will complete and submit SFN 17987 to the North Dakota Department of Health 10 days prior to beginning the activity.

**COMMITMENT NO. 3:** No construction or demolition activities are to take place in the James River channel from April 15 to June 1 unless methods to avoid, minimize, or mitigate impacts to fish during migration/spawning are incorporated.

**ACTION TAKEN/REQUIRED:** No work will take place in the channel from April 15 to June 1 unless the contractor installs and maintains floating turbidity barriers to isolate the construction site from the main channel of the James River.

**COMMITMENT NO. 4:** Active migratory bird nests with eggs or chicks are protected by the Federal Migratory Bird Treaty Act. Demolition on bridges with active nesting cannot start until nesting season is over unless measures are taken to prevent nesting.

**ACTION TAKEN/REQUIRED:** The contractor shall not remove any existing bridge if active nests are present. The contractor can legally remove inactive nests prior to the nesting season. After inactive nests are removed the contractor can use nets or tarps secured to the structure to discourage nesting. Please also refer to the bridge note section of the plans.

**COMMITMENT NO. 5:** The contractor shall provide the ND Game & Fish Department a reasonable opportunity to inspect all vessels, motors, trailers, and construction equipment prior to these items being launched or placed into the waters of the state.

**Action taken/required:** A minimum of 72 hours notice must be provided for scheduling an inspection. The department's Aquatic Nuisance Species Coordinator, Fred Ryckman, can be contacted at 701-770-0920 for equipment inspections or any additional information regarding Aquatic Nuisance Species prevention protocols.

**COMMITMENT NO. 6:** No wire span signal system will be used when traffic is limited to a single lane due to potential impacts to the Whooping Crane.

**ACTION TAKEN/REQUIRED:** The contractor shall use a trailer mounted signal light when traffic is limited to a single lane.

## ENVIRONMENTAL COMMITMENTS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	6	9

**COMMITMENT NO. 7:** The contractor shall reconstruct the two park entrance approaches in a manner that each entrance will be closed for no more than two days. A temporary detour route shall be signed for each entrance during the closure.

**ACTION TAKEN/REQUIRED:** No action required.

**PERMITS REQUIRED:**

- Section 404 Permit (US Army Corps of Engineers)
- Sovereign Lands Permit (ND State Water Commission)

# ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	RDWY BRIDGE BRN-3- 281(109)128	LIGHTING SNH-3- 281(109)128	TURN LANE SIGNS SNH-3 281(109)128	TOTAL
103	0100	CONTRACT BOND	L SUM	1			1
202	0105	REMOVAL OF STRUCTURE	L SUM	1			1
202	0112	REMOVAL OF CONCRETE	SY	221			221
202	0135	REMOVAL OF BITUMINOUS SURFACING	TON	5,496			5,496
202	0153	SAW BITUMINOUS SURFACING-FULL DEPTH	LF	168			168
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	217			217
203	0101	COMMON EXCAVATION-TYPE A	CY	9,537			9,537
203	0109	TOPSOIL	CY	2,943			2,943
203	0121	TOPSOIL-WETLAND	CY	1,549			1,549
203	0140	BORROW-EXCAVATION	CY	13,880			13,880
210	0101	CLASS I EXCAVATION	L SUM	1			1
210	0111	CLASS 2 EXCAVATION	L SUM	1			1
210	0127	CHANNEL EXCAVATION	L SUM	1			1
210	0201	FOUNDATION PREPARATION	EA	1			1
216	0100	WATER	M GAL	333			333
302	0120	AGGREGATE BASE COURSE CL 5	TON	15,562		1,317	16,879
401	0100	MC70 OR 250 LIQUID ASPHALT	GAL	3,273		305	3,578
401	0150	SS1H OR CSS1H OR MS1 EMULSIFIED ASPHALT	GAL	1,265		122	1,387
410	0215	SUPERPAVE FAA 45	TON	3,813		355	4,168
410	0445	PG 58-28 ASPHALT CEMENT	TON	150		14	164
410	0464	PG 64-34 ASPHALT CEMENT	TON	82		8	90
410	0910	CORED SAMPLE	EA	13			13
411	0100	MILLING PAVEMENT SURFACE	TON	62			62
602	0130	CLASS AAE-3 CONCRETE	CY	205.3			205.3
602	1130	CLASS AE-3 CONCRETE	CY	94.2			94.2
602	1134	PILE SUPPORTED APPROACH SLAB	SY	190.4			190.4
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	613			613
604	9610	PRESTRESSED BOX BEAM-27IN	LF	670			670
612	0115	REINFORCING STEEL-GRADE 60	LBS	9,090			9,090
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	43,068			43,068
616	0364	STRUCTURAL STEEL M270-GRADE 36	LBS	392			392
622	0020	STEEL PILING HP 10 X 42	LF	860			860

# ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	8	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	RDWY BRIDGE BRN-3- 281(109)128	LIGHTING SNH-3- 281(109)128	TURN LANE SIGNS SNH-3 281(109)128	TOTAL
-----	-----	-----	-----	-----	-----	-----	-----
622	0040	STEEL PILING HP 12 X 53	LF	1,075			1,075
622	0060	STEEL PILING HP 14 X 73	LF	630			630
626	0120	PIER COFFERDAM	EA	1			1
702	0100	MOBILIZATION	L SUM	1			1
704	0100	FLAGGING	MHR	1,400			1,400
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1,643			1,643
704	1018	LANE CLOSURE-SIGNAL CONTROL/FLAGGING CONTROL	EA	1			1
704	1041	ATTENUATION DEVICE-TYPE B-55	EA	2			2
704	1052	TYPE III BARRICADE	EA	6			6
704	1060	DELINEATOR DRUMS	EA	55			55
704	1067	TUBULAR MARKERS	EA	99			99
704	1080	STACKABLE VERTICAL PANELS	EA	74			74
704	1185	PILOT CAR	HR	100			100
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	34			34
706	0200	FIELD LABORATORY-TYPE B	EA	1			1
706	0300	FIELD LABORATORY-TYPE C	EA	2			2
706	0400	FIELD OFFICE	EA	1			1
708	1020	RIPRAP-LOOSE ROCK	CY	1,220			1,220
708	1325	SILT FENCE SUPPORTED	LF	1,865			1,865
708	1335	REMOVAL SILT FENCE SUPPORTED	LF	1,865			1,865
708	1375	FLOTATION SILT CURTAIN	LF	500			500
708	1376	REMOVAL FLOTATION SILT CURTAIN	LF	500			500
708	1430	FIBER ROLLS 12IN	LF	2,406			2,406
708	1431	REMOVAL FIBER ROLLS 12IN	LF	155			155
708	2240	SEEDING-TYPE B-CL II	ACRE	5.569			5.569
708	2280	SEEDING-TYPE B-CL V	ACRE	2.198			2.198
708	5500	MULCHING	ACRE	5.569			5.569
708	5651	ECB TYPE 2	SY	195			195
708	5660	TRM TYPE 1	SY	965			965
709	0600	GEOTEXTILE FABRIC-TYPE RR	SY	1,830			1,830
714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	4			4
714	4099	PIPE CONDUIT 18IN-APPROACH	LF	264			264

# ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	8	3

SPEC	CODE	ITEM DESCRIPTION	UNIT	RDWY BRIDGE BRN-3- 281(109)128	LIGHTING SNH-3- 281(109)128	TURN LANE SIGNS SNH-3 281(109)128	TOTAL
714	4107	PIPE CONDUIT 24IN-STORM DRAIN	LF	188			188
714	4112	PIPE CONDUIT 30IN-STORM DRAIN	LF	254			254
720	0100	MONUMENTS	EA	4			4
720	0110	RIGHT OF WAY MARKERS	EA	13			13
722	3770	INLET SPECIAL MOUNTABLE-TYPE A 60IN	EA	1			1
722	4060	INLET MOUNTABLE CURB-TYPE B	EA	1			1
748	0141	CURB & GUTTER-TYPE 1 SPECIAL	LF	80			80
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF			201	201
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF			342	342
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF			850	850
754	0214	GALV STEEL POSTS-W-SHAPE POSTS(TWO OR MORE)	LF			58	58
754	0534	PANEL FOR SIGNS-TYPE IV REFLECTIVE SHEETING	SF			43	43
754	0563	REFERENCE MARKER-TYPE C	EA			1	1
754	0592	RESET SIGN PANEL	EA			5	5
754	0805	OBJECT MARKERS - CULVERTS	EA	10			10
760	0009	RUMBLE STRIPS - INTERSECTION	EA	1			1
762	0112	EPOXY PVMT MK MESSAGE	SF	48			48
762	0113	EPOXY PVMT MK 4IN LINE	LF	9,175			9,175
762	0115	EPOXY PVMT MK 8IN LINE	LF	963			963
762	0117	EPOXY PVMT MK 24IN LINE	LF	12			12
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	16,463			16,463
762	0434	SHORT TERM 8IN LINE-TYPE NR	LF	2,889			2,889
762	0436	SHORT TERM 24IN LINE-TYPE NR	LF	24			24
762	1500	OBLITERATION OF PVMT MK	SF	240			240
764	0131	W-BEAM GUARDRAIL	LF	208			208
764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	4			4
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	598			598
764	1050	RESET W-BEAM GUARDRAIL	LF	354			354
764	1059	RESET W-BEAM GUARDRAIL END TERMINAL	EA	2			2
764	2081	REMOVE END TREATMENT & TRANSITION	EA	4			4
770	0001	LIGHTING SYSTEM	EA		1		1
772	3150	REMOVE FLASHING BEACON SYSTEM	EA			1	1

# ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
<b>ND</b>	SNH-BRN-3-281(109)128	<b>8</b>	<b>4</b>

SPEC CODE	ITEM DESCRIPTION	UNIT	RDWY BRIDGE BRN-3- 281(109)128	LIGHTING SNH-3- 281(109)128	TURN LANE SIGNS SNH-3 281(109)128	TOTAL
772 9300	SURVEILLANCE CAMERA SYSTEM	EA	1			1
930 3000	BRIDGE BENCH MARKS	SET	1			1
930 9537	ABUTMENT UNDERDRAIN SYSTEM	EA	2			2

## BASIS OF ESTIMATE

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	10	1

### Materials:

Aggregate Base Course CL 5 @ 1.875 Ton/CY  
 MC70 or 250 Liquid Asphalt @ 0.25 Gal/SY  
 Blotter Material CI 44 @ 15 lbs/SY (Not a pay item – to be included in the price bid for Prime)  
 SS1H or CSS1H or MS1 Emulsified Asphalt @ 0.05 Gal/SY (Between Lifts of HBP)  
 Superpave FAA 45 @ 2 Ton/CY  
 PG 58-28 @ 6.1% HBP, Bottom Lifts  
 PG 64-34 @ 6.1% HBP, 2" Top Lift

### Removals:

Removal of Bituminous Surfacing	2 Ton/CY
Saw Bituminous Surfacing – Full Depth	LF
Milling Pavement Surfacing	2 Ton/CY

### Water:

Water for Compaction:  
 10 Gal/Ton of Aggregate Base Course CL 5  
 16,879 Tons x 10 = 168,790/1,000 = **169 MGal**  
 10 Gal/CY of Embankment  
 13,880 CY x 10 Gal /1000 = **139 MGal**  
Water for Dust Palliative:  
**25 MGal**

### Topsoil:

Removal of topsoil is based on 6" depth.

### Cored Samples:

2,334 LF – 138 LF Structure - 40 LF Approach Slabs = 2,156 LF  
Density Cores  
 2,156 LF /2,000 LF \* 3 Lifts \* 2 lanes \* 2 Cores/ Sublot = **12 Cores**  
District Materials Coordinator Cores  
 One full depth core per mile  
 0.4083 miles \* 1 core/mile = **1 Core**

### Object Markers – Culverts

<u>Approach Culverts</u>	<u>No.(each End)</u>	<u>Total Quantity</u>
Sta 6769+54 Lt	1	2
Sta 6769+52 Rt	1	2
Sta 6773+22 Lt	1	2
Sta 6780+44 Lt	1	2
Sta 6784+94 Lt	1	2
<b>Total</b>		<b>10</b>

### Temporary Pavement Marking:

#### Phase 1:

Quantities shown in the Traffic Control Device List & Phase 1 - Work Zone Traffic Control sheets

#### Phase 2:

No quantity required – aggregate surfacing only

#### Final Phase – Paving:

Short Term 4IN Line – Type NR:  
 4" Double Yellow: 1940 LF \* 2 stripes = 3880 LF  
 4" Yellow Centerline Skips: 557 LF / 4 = 160 LF  
 4" Yellow Single Barrier: 557 LF  
 4587 LF \* 3 Applications = **13,761 LF**  
 (3 Lifts of HBP = 3 Applications of Temp Pavement Marking)  
 Pavement marking to be place at same location as permanent pavement marking shown in Section 120 of the plans

Short Term 8IN Line – Type NR:  
 963 LF \* 3 Applications = **2,889 LF**  
 Pavement marking to be place at same location as permanent pavement marking shown in Section 120 of the plans

### Rumble Strip Intersection:

WB Roadway of ND 15 @ US 281 Intersection = **1 EA**  
 (See Standard Drawing D-760-5)

This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

## EARTHWORK SUMMARY

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	11	1

<b>EARTH SUMMARY</b>					
Location	Excavation (CY)	Pvmt Removal from Excavation Areas (CY)	Common Excavation - Type A (CY) Pay Item C = A - B	Embankment (CY) D	Borrow - Excavation (CY) Pay Item E = D
	A	B			
<b>US 281</b>					
Phase 1 - Structure South	4,898	1,418	3,480	0	0
Phase 1 - Structure North	7,570	1,513	6,057	0	0
Phase 2 - Structure South	0	0	0	3,684	3,684
Phase 2 - Structure North	0	0	0	10,196	10,196
<b>Totals</b>	<b>12,468</b>	<b>2,931</b>	<b>9,537</b>	<b>13,880</b>	<b>13,880</b>

An additional volume of 25% is included for shrinkage in earth embankment.

Phase 1: Borrow is required to build the realigned Highway 281 and new structure while traffic is being maintained on the existing roadway.

Phase 2: Traffic is moved from the existing roadway to the realigned roadway. The existing roadway is removed as "Common Excavation – Type A".

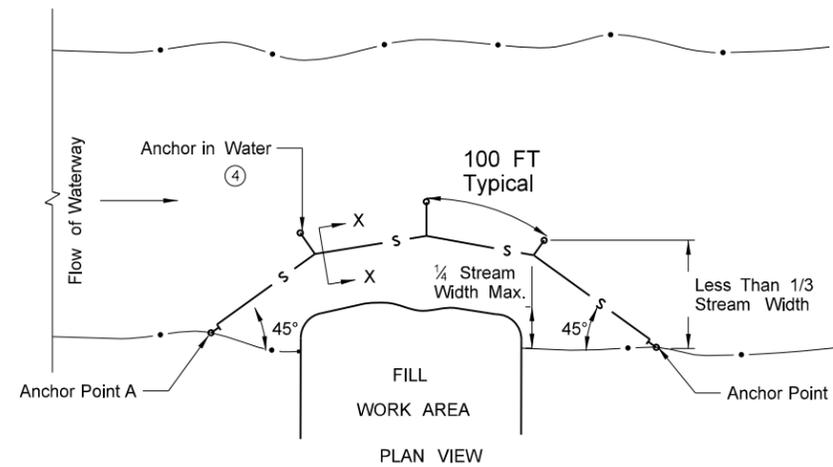
If the contractor elects, he may use portions of the removed roadway to complete the grading for the realigned roadway. Quantities are based upon the contractor building the new roadway in its entirety with borrow and then removing the old roadway as "Common Excavation Type A".

Project was developed by providing all the borrow to build the new realigned roadway. The common excavation would be for wasting material off of the NDDOT right of way. Any excavation removed from current roadway and placed as embankment will reduce the quality of borrow required. Any material used as embankment will require compaction control.

Any excess excavation shall become property of the contractor. The excess excavation shall be disposed of off the highway right of way and shall not be placed in wetlands.

This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

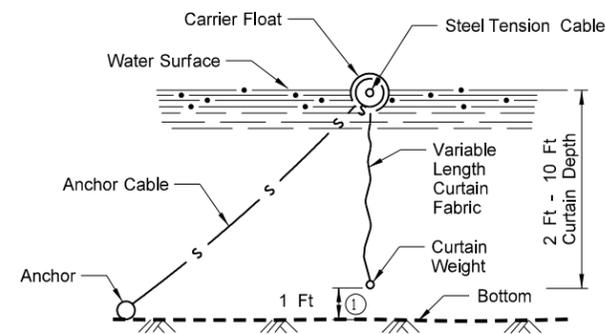
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	20	1



**FLOTATION SILT CURTAIN - TYPE WORK AREA**

FOR CONTAINING OVERFLOWS FROM WEIRS, STANDPIPES, SETTLING PONDS

DESIGN GUIDELINES:  
 WHEN TEMPORARY FILL ENCROACHES LESS THAN 1/4 OF THE WIDTH OF STREAM.  
 MAXIMUM WATER VELOCITY: 5 FT./SEC.  
 MAXIMUM WATER DEPTH: 11 FT.



**SECTION X-X  
 FLOTATION SILT CURTAINS**

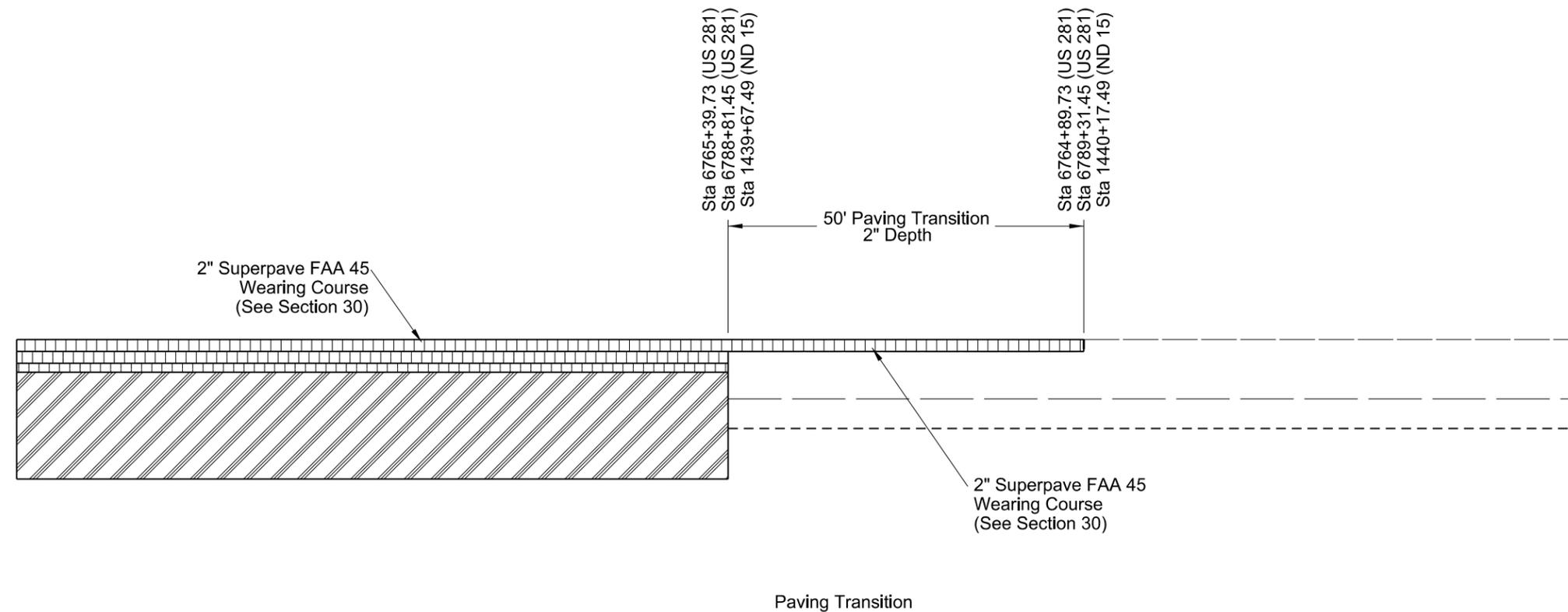
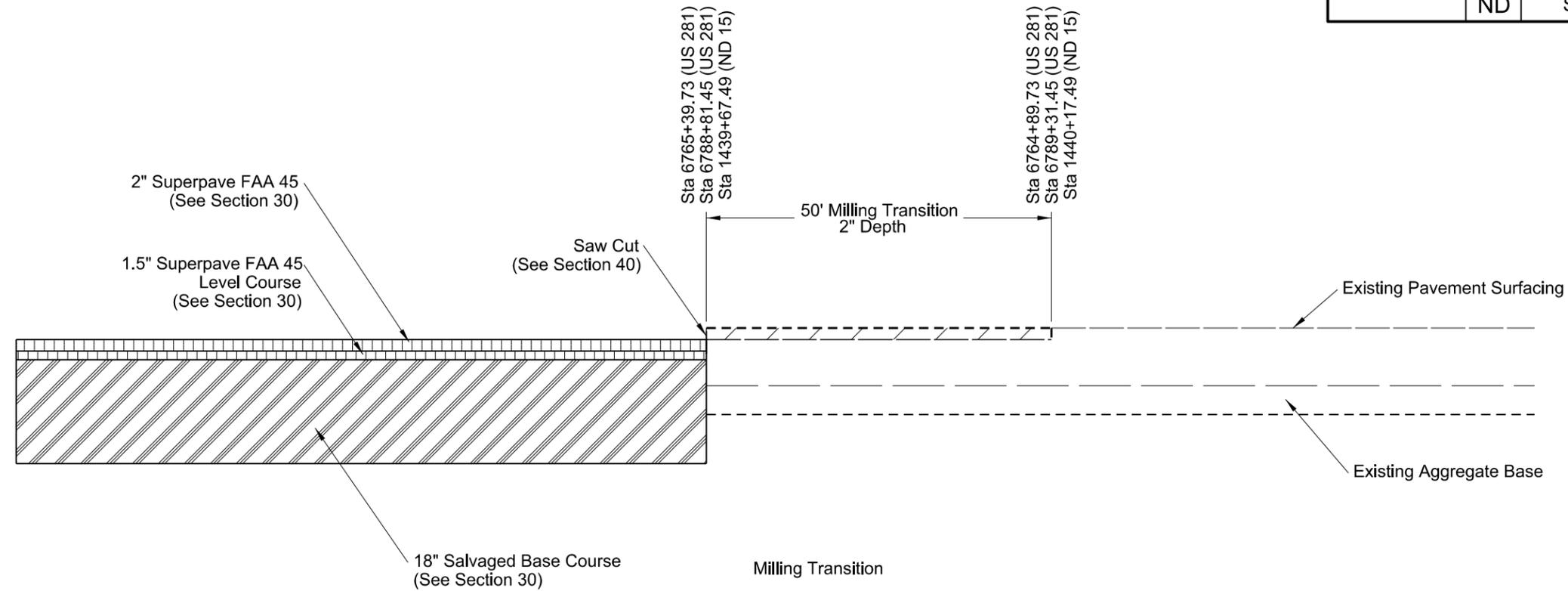
Notes:

- ① Curtain 1 FT from Bottom
- ④ Use enough Anchors to Hold Silt Curtain in Place

This document was originally issued and sealed by Chad Frisinger Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Temporary Erosion Control  
 Flotation Silt Curtain  
 US 281  
 New Rockford North to Jct ND 15

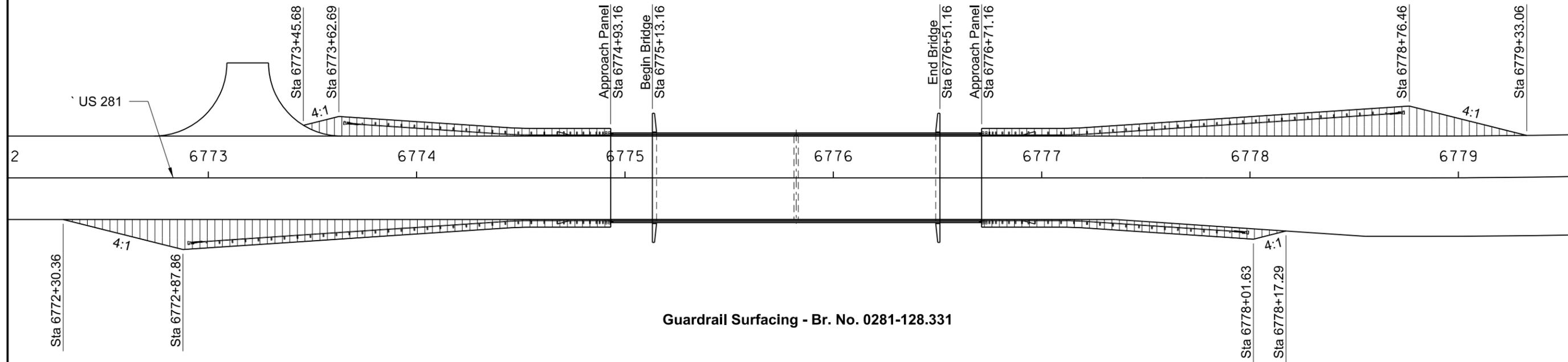
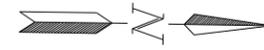
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	20	2



This document was originally issued and sealed by  
Chad Frisinger  
Registration Number  
PE- 4876,  
on 8/28/13 and the original document is stored at the  
North Dakota Department  
of Transportation

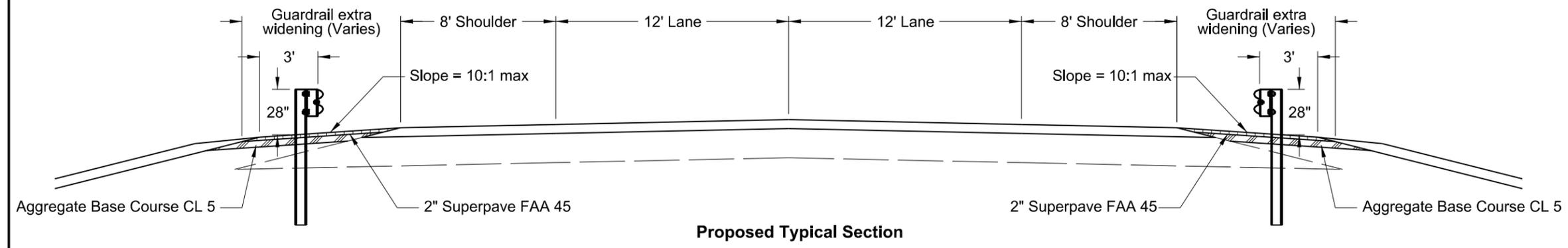
Milling & Paving Transition  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	20	3



Guardrail Surfacing - Br. No. 0281-128.331

Legend



Proposed Typical Section

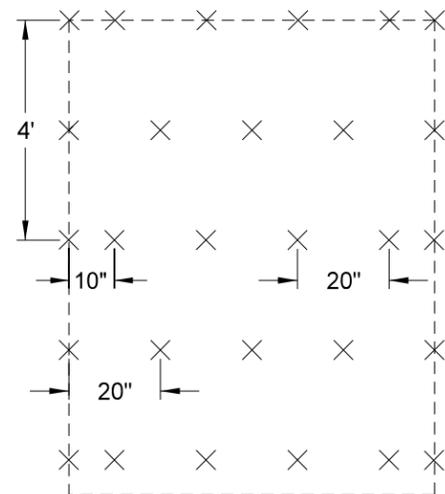
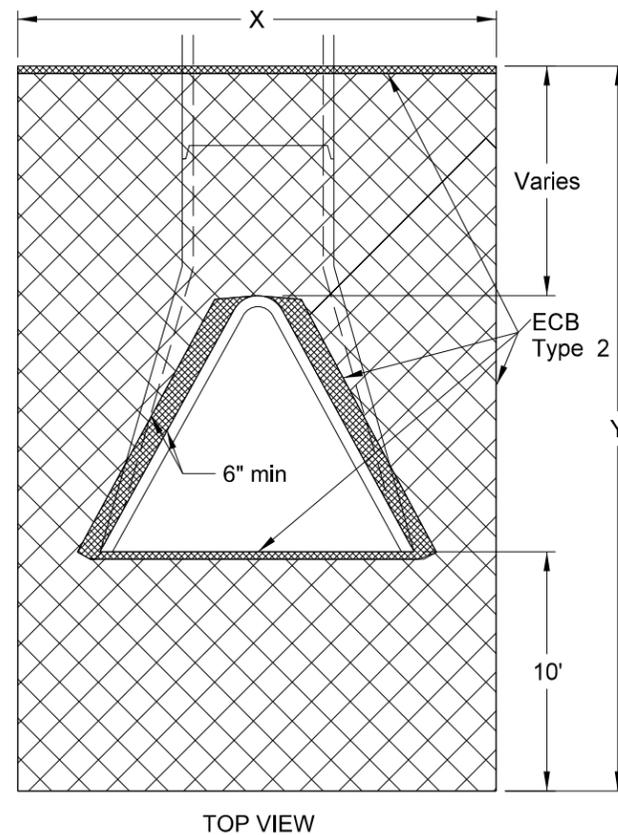
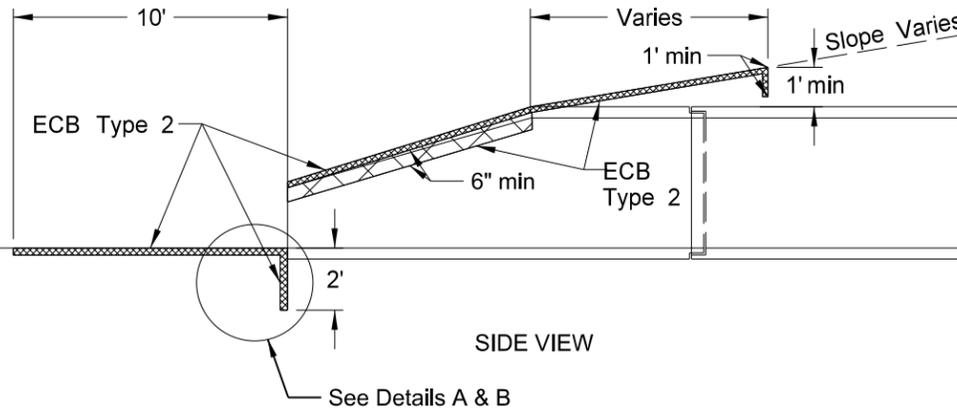
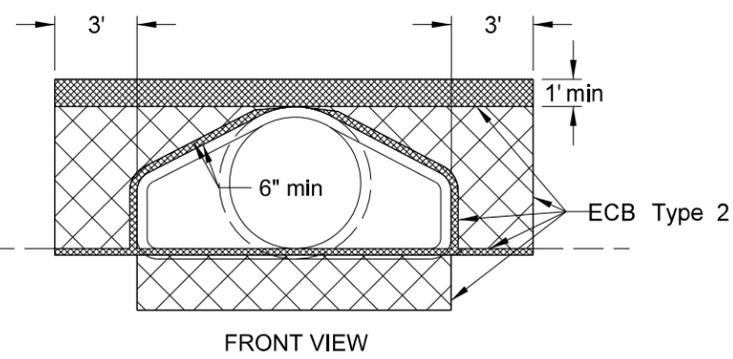
This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

Guardrail Surfacing Details  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	20	4

Item	Description	Quantity	Unit
708-5661	ECB TYPE 2 (Locations Listed Below)	195	SY

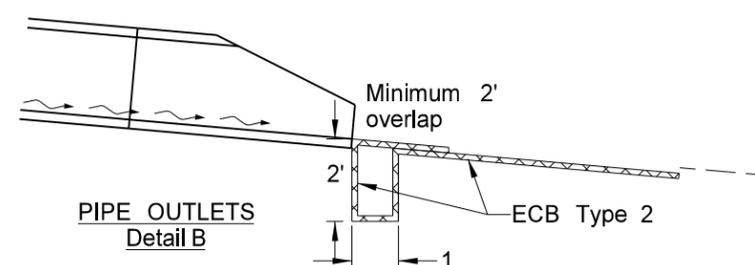
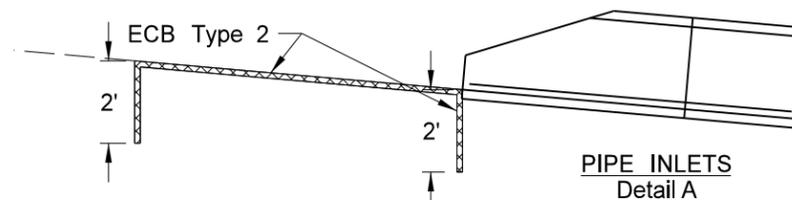
Location	Pipe Diameter	No.	Unit Quantity	Total Quantity
Approach Culverts				
Sta 6769+54 LT	18	2	21	42
Sta 6769+52 RT	30	1	27	27
Sta 6773+22 LT	18	2	21	42
Sta 6780+44 LT	18	2	21	42
Sta 6784+94 LT	18	2	21	42



Dia	X	Y	Surface area to be Protected (SF)	ECB Type 2 (SY)
(In)	(Ft)	(Ft)	(SF)	(SY)
15	9.0	20.0	176.0	20
18	9.5	20.7	190.7	21
21	9.5	21.0	190.9	21
24	10.5	21.6	214.1	24
30	11.6	22.5	241.5	27
36	12.7	23.3	268.8	30
42	13.3	23.3	279.7	31
48	13.8	24.0	293.2	33
54	14.5	23.4	300.6	33
60	15.0	23.0	307.5	34
66	15.6	24.0	325.6	36
72	16.2	24.5	340.6	38

STAPLE PATTERN: 3.8 staples per square yard using 8-inch 11 gauge wire "u" staples

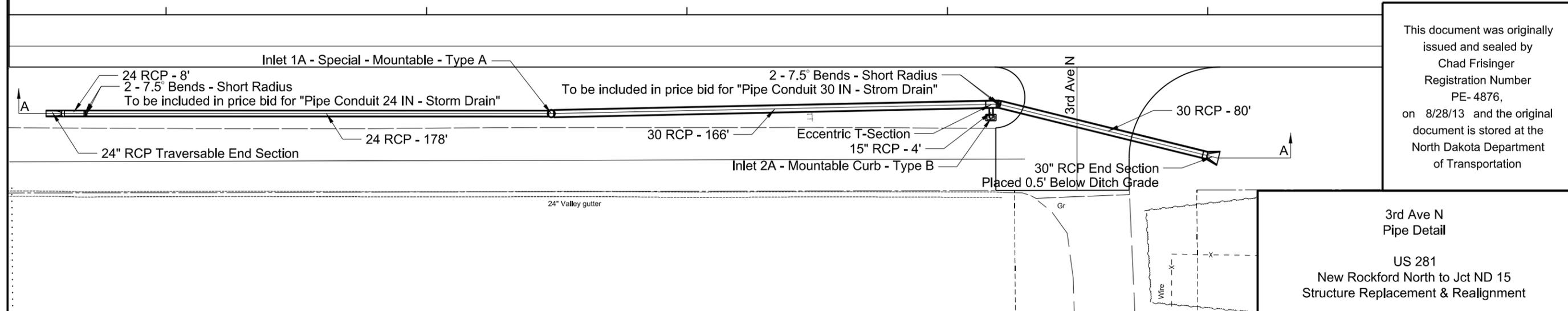
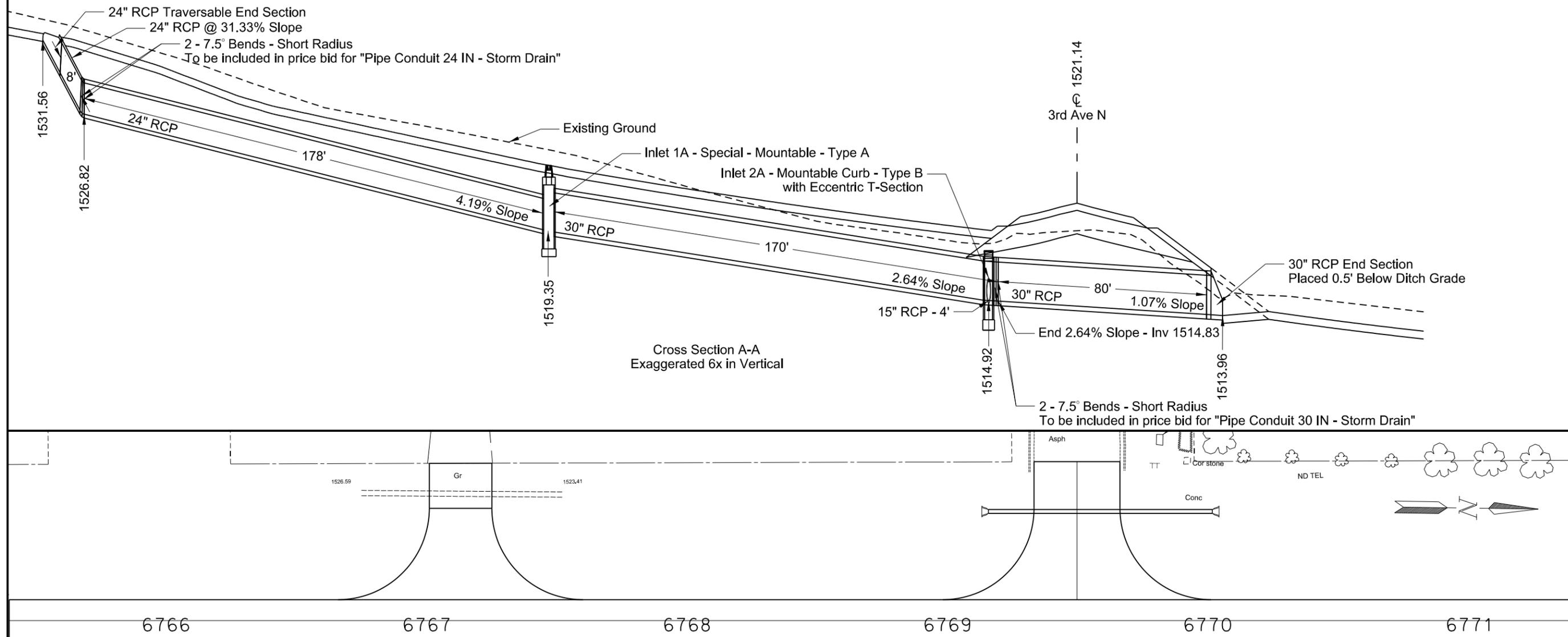
NOTE: The ECB shall be tucked a minimum of 1' into the embankment above the flared end section, a minimum of 6" into the embankment (against the flared end section) around the opening of the flared end section, and 2' into the ground at the end of the flared end section.



This document was originally issued and sealed by  
Chad Frisinger  
Registration Number  
PE- 4876,  
on 8/28/13 and the original document is stored at the  
North Dakota Department  
of Transportation

Culvert End Protection Detail  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

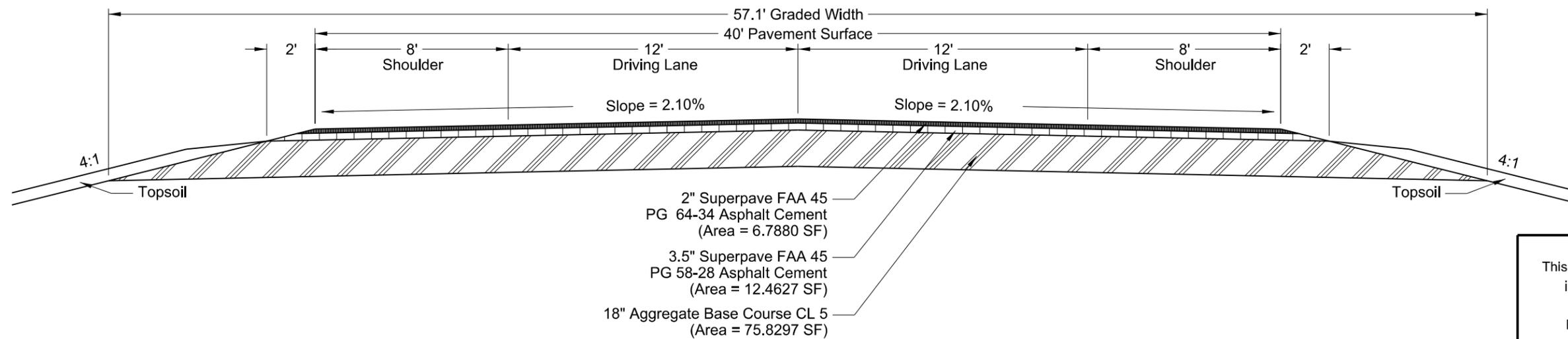
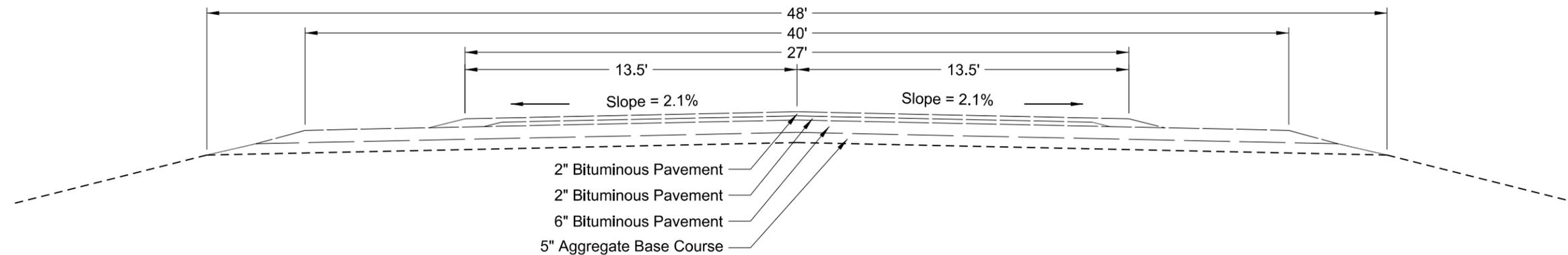
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	20	5



This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

**3rd Ave N  
Pipe Detail**  
  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	30	1



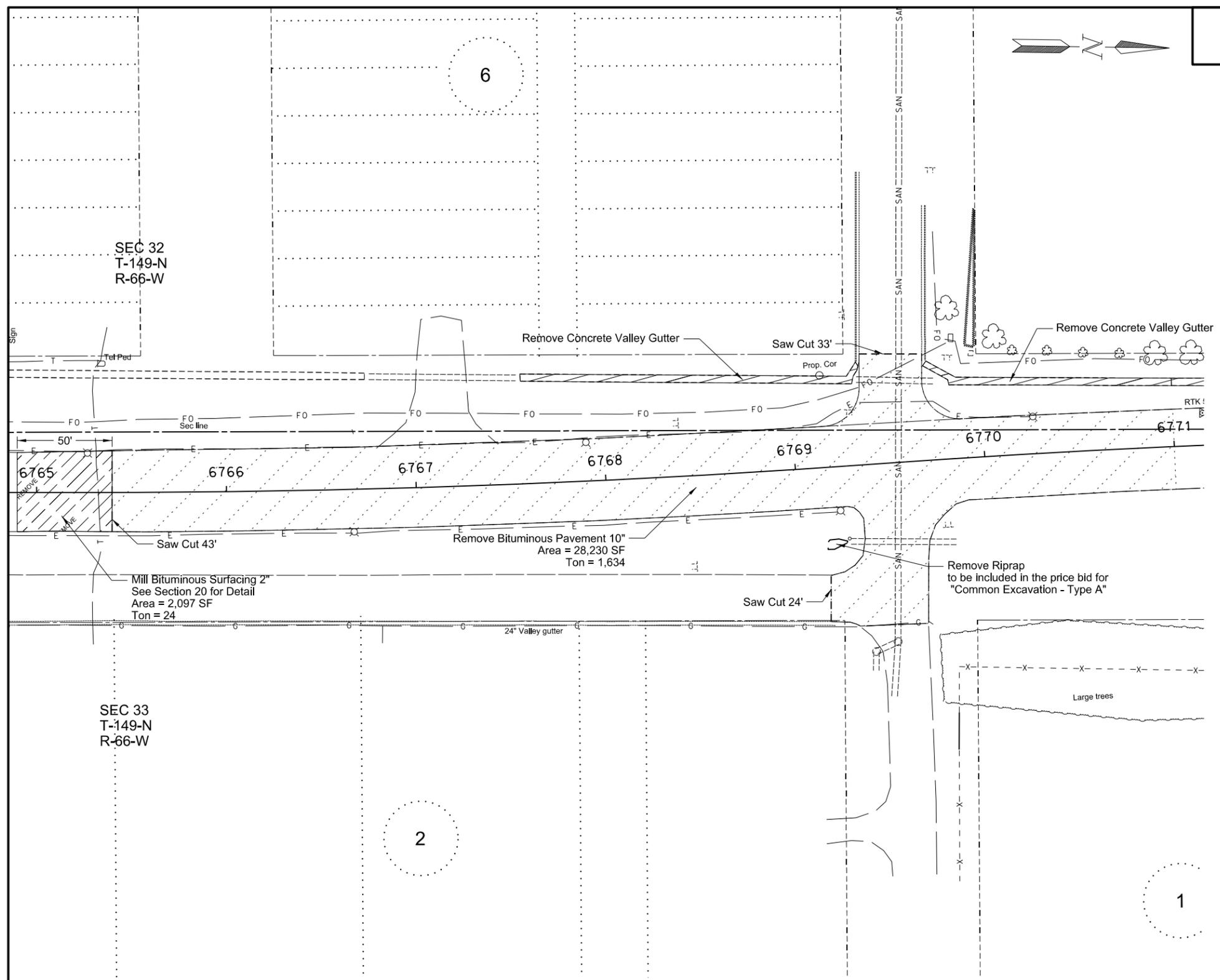
This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

Existing and Proposed Typical Sections  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	40	1

Item	Description	Quantity	Unit
202-0112	REMOVAL OF CONCRETE		
	Sta 6767+56.92 to 6769+70.48 Lt - SCL281	78	SY
	Sta 6769+70.48 to 6771+00 Lt - SCL281	57	SY
202-0135	REMOVAL OF BITUMINOUS SURFACING		
	Sta 6765+39.73 to 6771+00 - SCL281	1,634	TON
202-0153	SAW BITUMINOUS SURFACING - FULL DEPTH		
	Sta 3765+39.73 - SCL281	43	LF
	Sta 200+77.13 - 3rd Ave	33	LF
	Sta 201+93.46 to 202+17.80 - 31' Rt - 3rd Ave	24	LF
411-0100	MILLING PAVEMENT SURFACING		
	Sta 6764+89.73 to 6765+39.73 - SCL281	24	TON



SEC 32  
T-149-N  
R-66-W

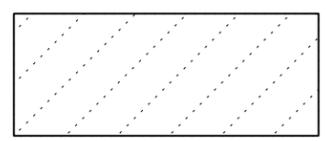
SEC 33  
T-149-N  
R-66-W

6

2

1

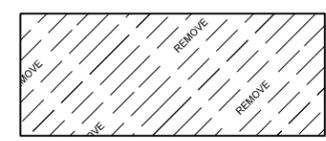
This document was originally issued and sealed by  
Chad Frisinger  
Registration Number  
PE- 4876,  
on 8/28/13 and the original document is stored at the  
North Dakota Department  
of Transportation



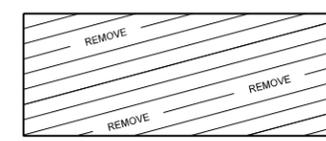
Removal of Bituminous Surfacing



Saw Bituminous Pavement - Full Depth



Mill Bituminous Surfacing

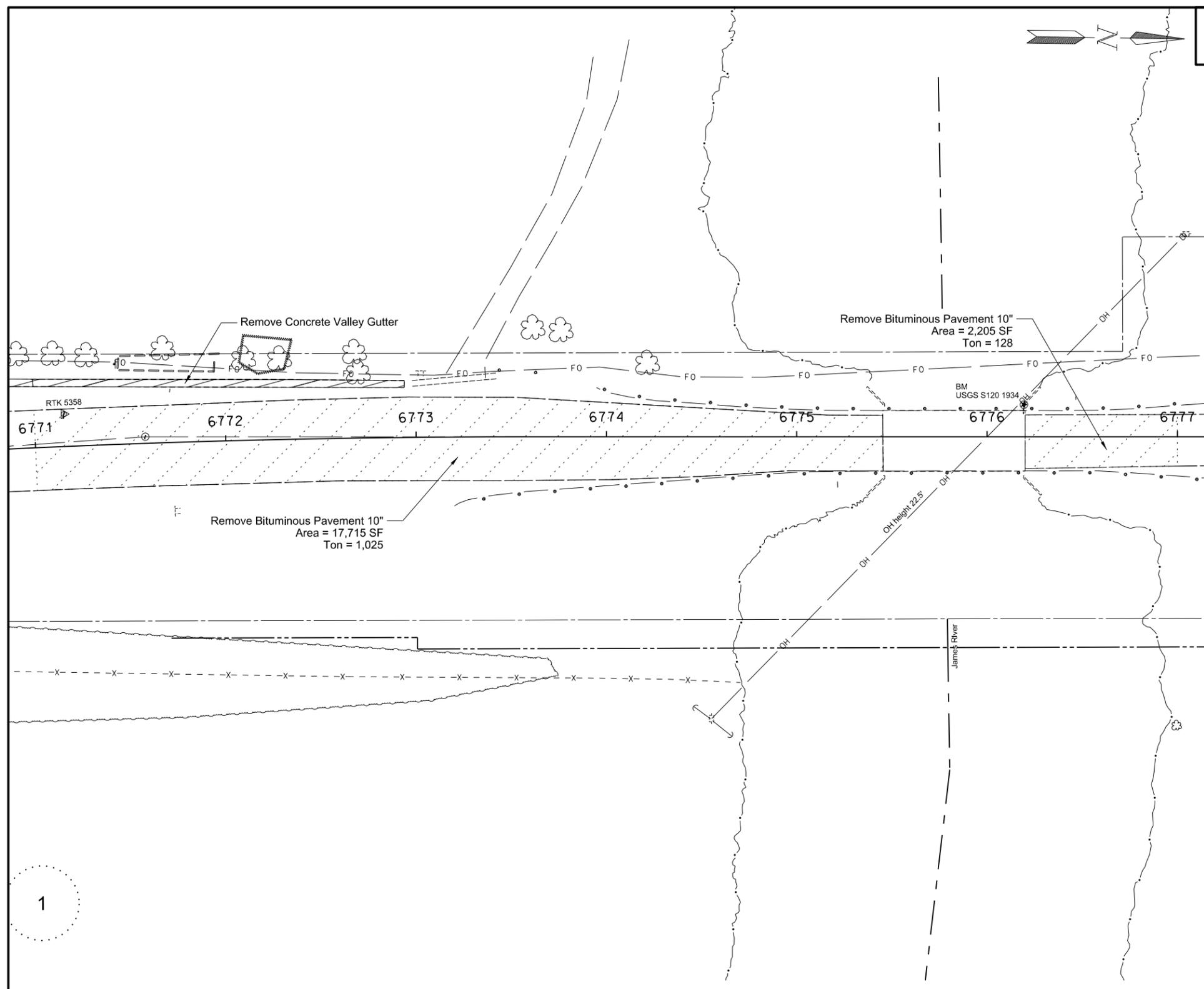


Removal of Concrete

Removals  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

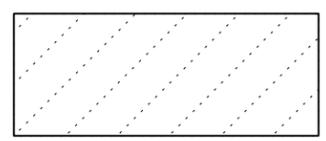
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	40	2

Item	Description	Quantity	Unit
202-0112	REMOVAL OF CONCRETE Sta 6771+00 to 6772+94.11 Lt - SCL281	86	SY
202-0135	REMOVAL OF BITUMINOUS SURFACING Sta 6771+00 to 6775+45.32 - SCL281	1,025	TON
	Sta 6776+20.04 to 6777+00 - SCL281	128	TON



1

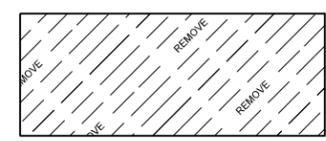
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation



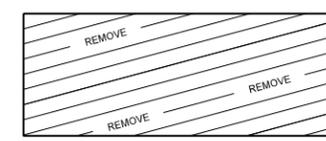
Removal of Bituminous Surfacing



Saw Bituminous Pavement - Full Depth

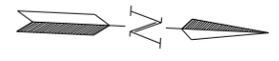


Mill Bituminous Surfacing



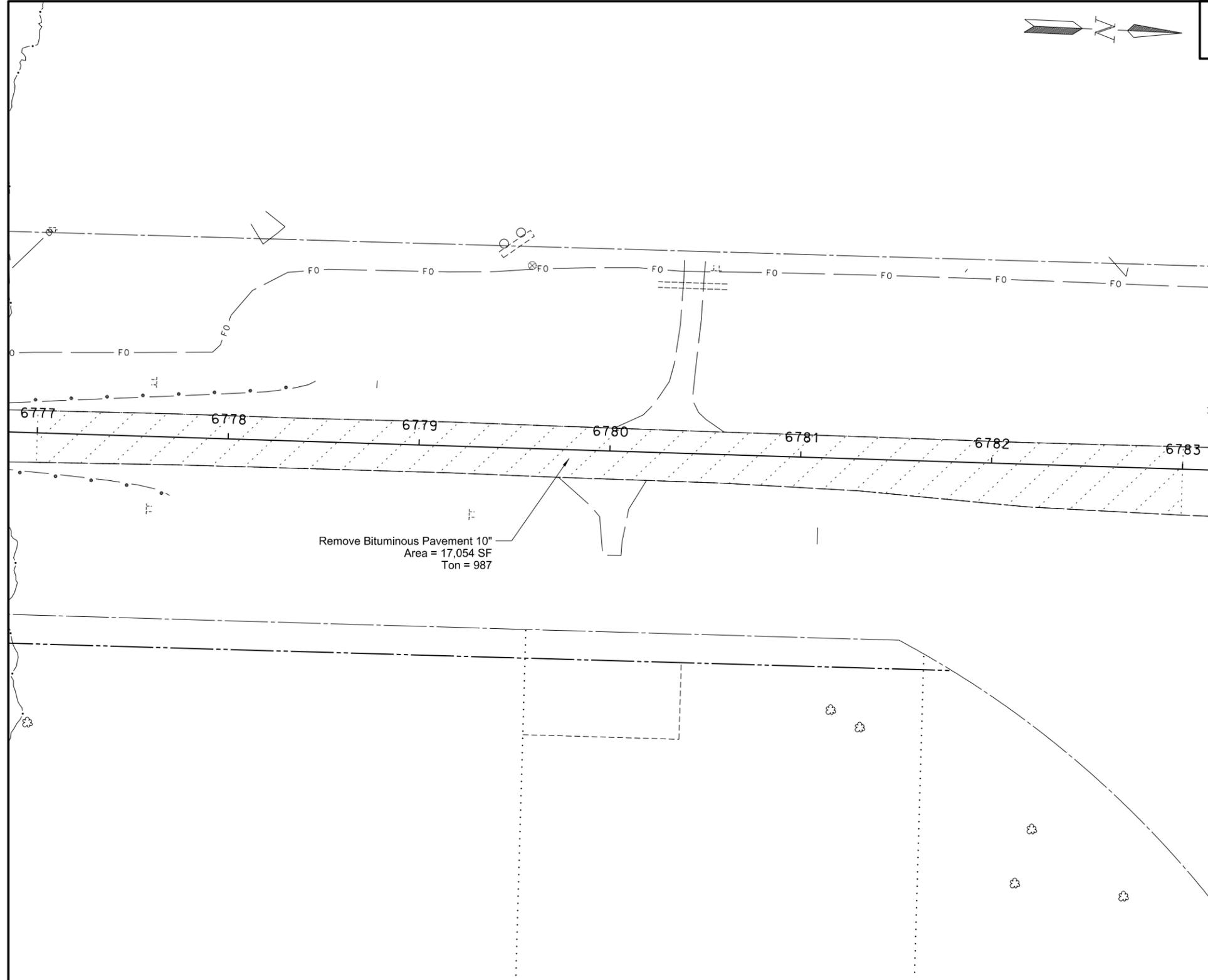
Removal of Concrete

Removals  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



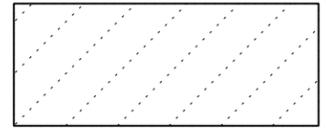
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	40	3

Item	Description	Quantity	Unit
202-0135	REMOVAL OF BITUMINOUS SURFACING		
	Sta 6777+00 to 6783+00 - SCL281	987	TON



Remove Bituminous Pavement 10"  
 Area = 17,054 SF  
 Ton = 987

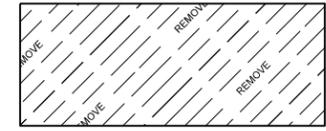
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation



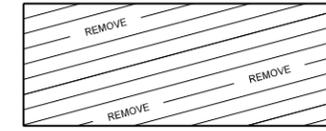
Removal of Bituminous Surfacing



Saw Bituminous Pavement - Full Depth



Mill Bituminous Surfacing



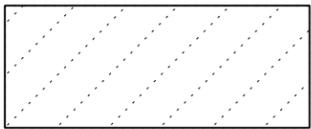
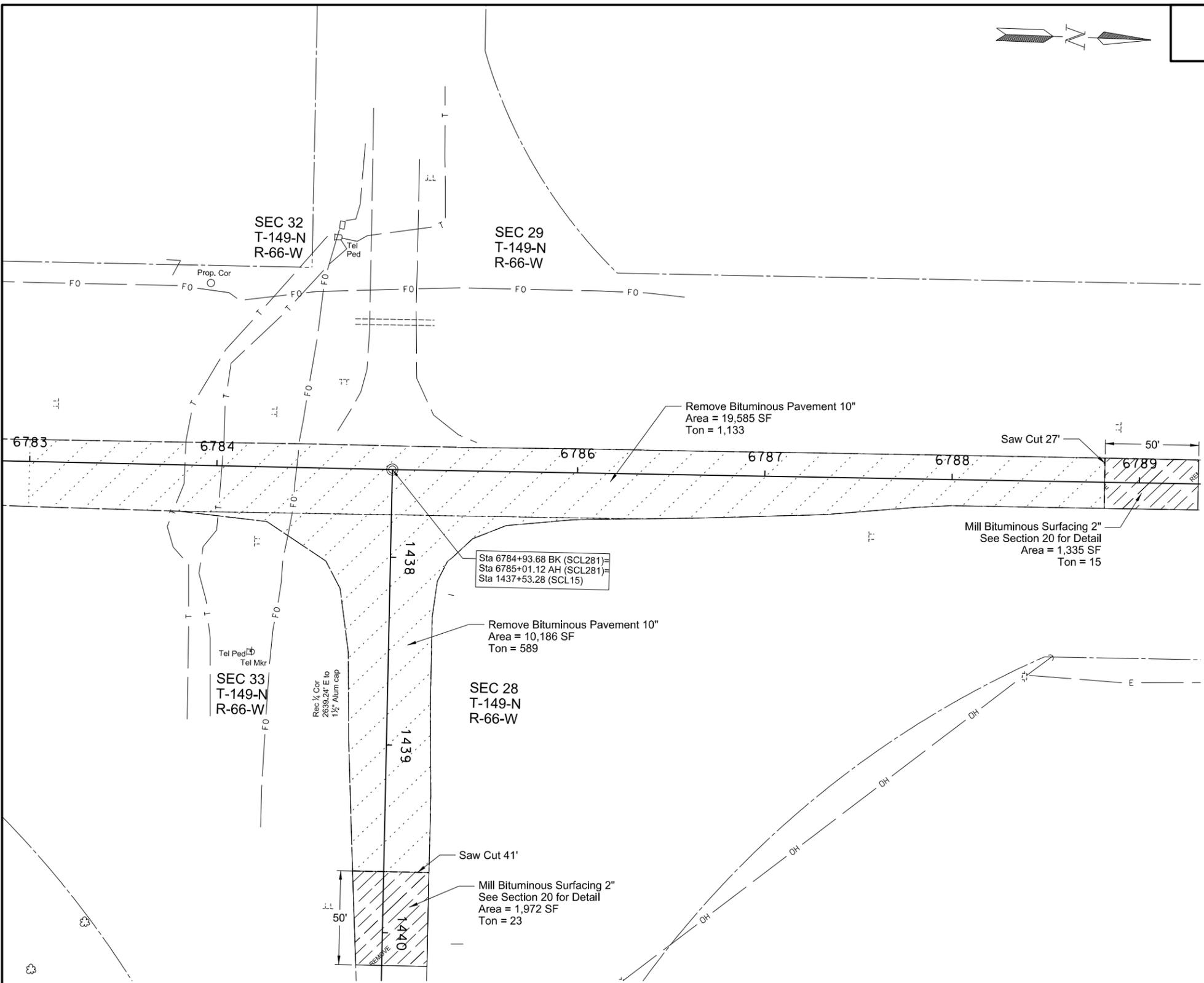
Removal of Concrete

Removals  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

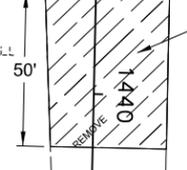


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	40	4

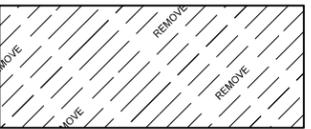
Item	Description	Quantity	Unit
202-0135	REMOVAL OF BITUMINOUS SURFACING		
	Sta 6783+00 to 6788+81.45 R2 - SCL281	1,133	TON
	Sta 1437+77.37 to 1439+67.49 - SCL15	589	TON
202-0153	SAW BITUMINOUS SURFACING - FULL DEPTH		
	Sta 6788+81.45 R2 - SCL281	27	LF
	Sta 1439+67.49 - SCL15	41	LF
411-0100	MILLING PAVEMENT SURFACING		
	Sta 6788+81.45 R2 to 6789+31.45 R2 - SCL281	15	TON
	Sta 1439+67.49 to 1440+17.49 - SCL15	23	TON



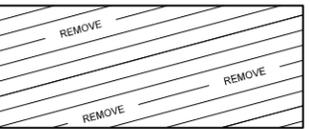
Removal of Bituminous Surfacing



Saw Bituminous Pavement - Full Depth



Mill Bituminous Surfacing



Removal of Concrete

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department of Transportation

Removals  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

# INLET AND MANHOLE SUMMARY

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	50	1

**Inlet No.** 1A  
**Type** Inlet - Special - Mountable - Type A  
           - 60 In.  
**Sta.** 6767+47.89 - 37.77' Rt. (P\_US281)  
**Grate Elev.** 1,523.55  
**Base Elev.** 1,518.22  
**Invert Elev.** 1,519.35  
**H' Dist.** 4.00 Ft.

**Inlet No.** 2A  
**Type** Inlet - Mountable Curb - Type B  
           w/Eccentric T-Section  
**Sta.** 6769+16.72 - 39.27' Rt. (P\_US281)  
**Grate Elev.** 1,518.11  
**Base Elev.** 1,513.69  
**Invert Elev.** 1,514.92  
**H' Dist.** 4.00 Ft.

This document was  
 originally issued and  
 sealed by Brad Pfeifer,  
 Registration Number  
 PE-5247, on 7/25/13  
 and the original  
 document is stored at  
 the North Dakota  
 Department of  
 Transportation.

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	51	1

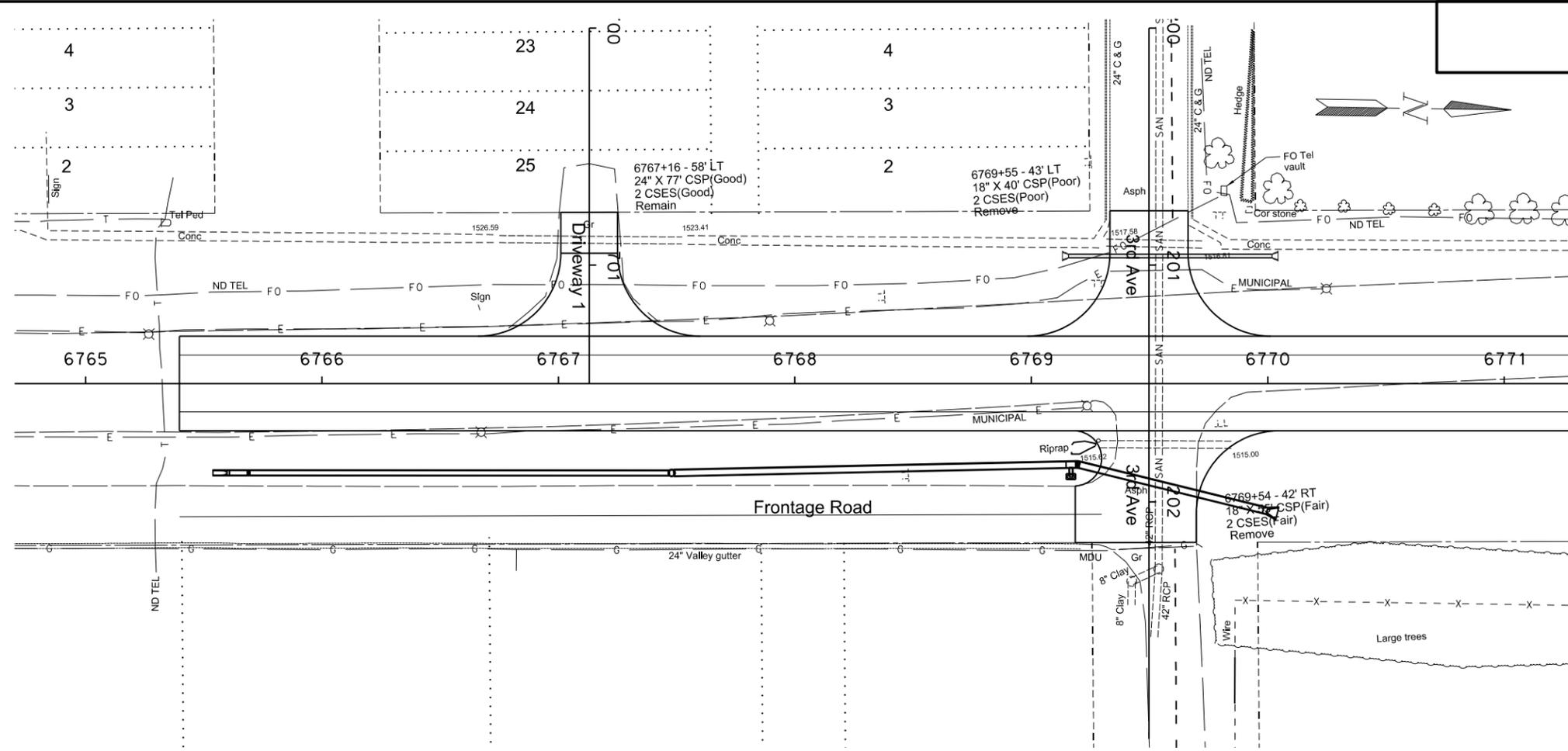
Begin Station / Location	Begin Offset	End Station / Location	End Offset	Length LF	Pipe Conduit Pay Size	Pipe Conduit Approach Pay Size	Pipe Storm Drain Pay Size	Allowable Material	Required Diameter In	Minimum Thickness In	R1 Fabric (Pay Item) SY	(A) End Sections		Applicable Backfill Detail	
												Begin EA	End EA		
6769+16	54' Lt	6770+02	54' Lt	86	18			Reinforced Concrete Pipe - Class III (barrel length = 78 LF)	18			Y	Y		
								Zinc Coated Steel Corrugated Steel	18	0.064					
								Aluminum Coated Corrugated Steel (Type 2)	18	0.064					
								Polymeric Coated Steel (over zinc or aluminum coated steel)	18	0.064					
								High Density Polyethylene (HDPE)	18						
6765+60	38' Rt	Inlet 1A		188			24	Reinforced Concrete Pipe - Class III (barrel length = 8+178 LF) Bends to be included in the price bid for pipe and not paid for separately. See Detail in Section 20	24			Traversable		D714-27	
Inlet 1A		6770+00	54' Rt	254			30	Reinforced Concrete Pipe - Class III (barrel length = 170+80 LF) Bends and Eccentric T-Section to be included in the price bid for pipe and not paid for separately. See Detail in Section 20	30				Y		D714-26 D714-27
6769+18	35' Rt	Inlet 2A		4			15	Reinforced Concrete Pipe - Class III (barrel length = 4 LF)	15						D714-27
6772+77	56' Lt	6773+63	59' Lt	86	18			Reinforced Concrete Pipe - Class III (barrel length = 78 LF)	18			Y	Y		
								Zinc Coated Steel Corrugated Steel	18	0.064					
								Aluminum Coated Corrugated Steel (Type 2)	18	0.064					
								Polymeric Coated Steel (over zinc or aluminum coated steel)	18	0.064					
								High Density Polyethylene (HDPE)	18						
6780+22	93' Lt	6780+67	92' Lt	44	18			Reinforced Concrete Pipe - Class III (barrel length = 36 LF)	18			Y	Y		
								Zinc Coated Steel Corrugated Steel	18	0.064					
								Aluminum Coated Corrugated Steel (Type 2)	18	0.064					
								Polymeric Coated Steel (over zinc or aluminum coated steel)	18	0.064					
								High Density Polyethylene (HDPE)	18						
6784+71	80' Lt	6785+18	79' Lt	48	18			Reinforced Concrete Pipe - Class III (barrel length = 40 LF)	18			Y	Y		
								Zinc Coated Steel Corrugated Steel	18	0.064					
								Aluminum Coated Corrugated Steel (Type 2)	18	0.064					
								Polymeric Coated Steel (over zinc or aluminum coated steel)	18	0.064					
								High Density Polyethylene (HDPE)	18						

(A) Not paid for separately, to be included in the price bid for Pipe Conduit.

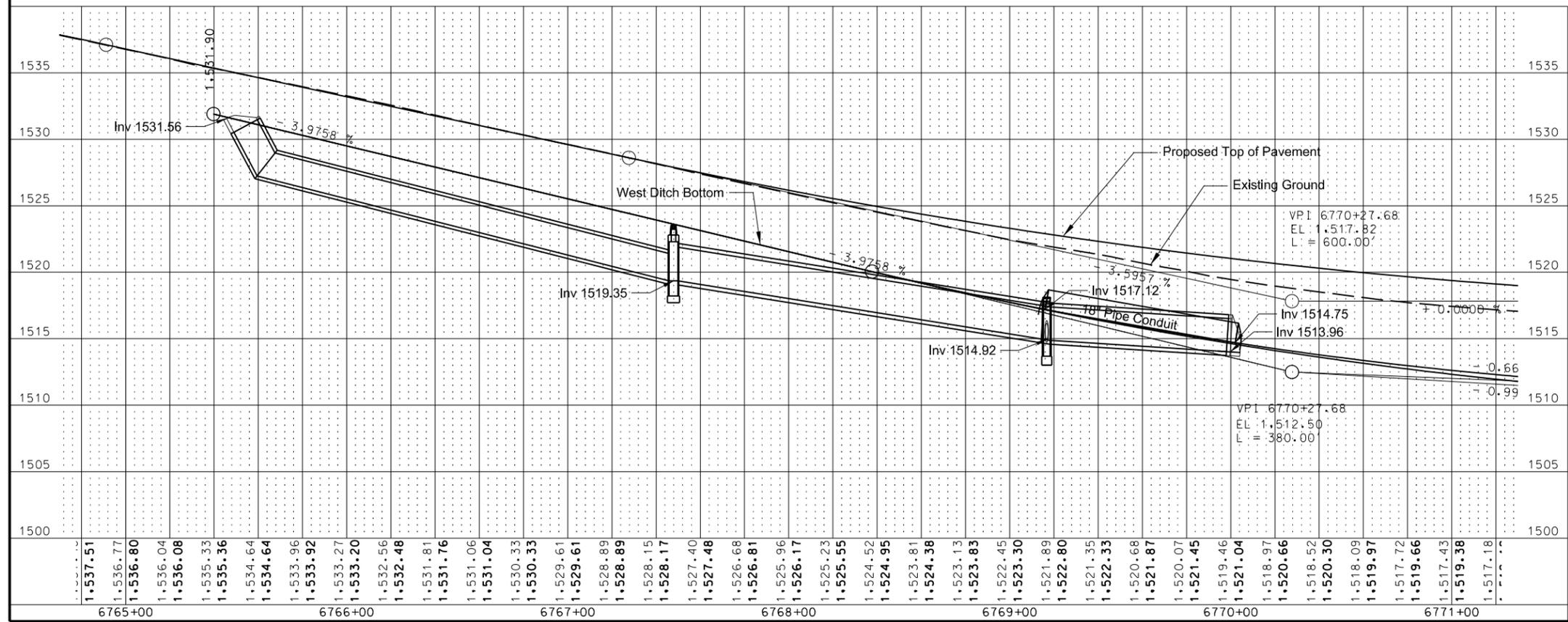
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Pipe List  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	1



Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 6769+54 - 42' Rt 18" CSP Sta 6769+55 - 43' Lt 18" CSP	55 40	LF LF
714-4097	PIPE CONDUIT 15 IN - STORM DRAIN Sta 6769+17.97 - 35.46' Rt to Inlet 2A	4	LF
714-4099	PIPE CONDUIT 18 IN - APPROACH Sta 6769+15.75 - 53.77' Lt to 6770+01.75 - 53.77' Lt	86	LF
714-4107	PIPE CONDUIT 24 IN - STORM DRAIN Sta 6765+59.88 - 37.73' Rt to Inlet 1A Bends to be included in the price bid for pipe and not paid for separately See Pipe Detail in Section 20 of the plans	188	LF
714-4112	PIPE CONDUIT 30 IN - STORM DRAIN Inlet 1A Sta 6769+99.68 - 53.79' Rt Bends and Eccentric T-Section to be included in the price bid for pipe and not paid for separately See Pipe Detail in Section 20 of the plans	254	LF
722-3770	INLET SPECIAL MOUNTABLE - TYPE A 60 IN Inlet 1A	1	EA
722-4060	INLET MOUNTABLE CURB - TYPE B Inlet 2A	1	EA

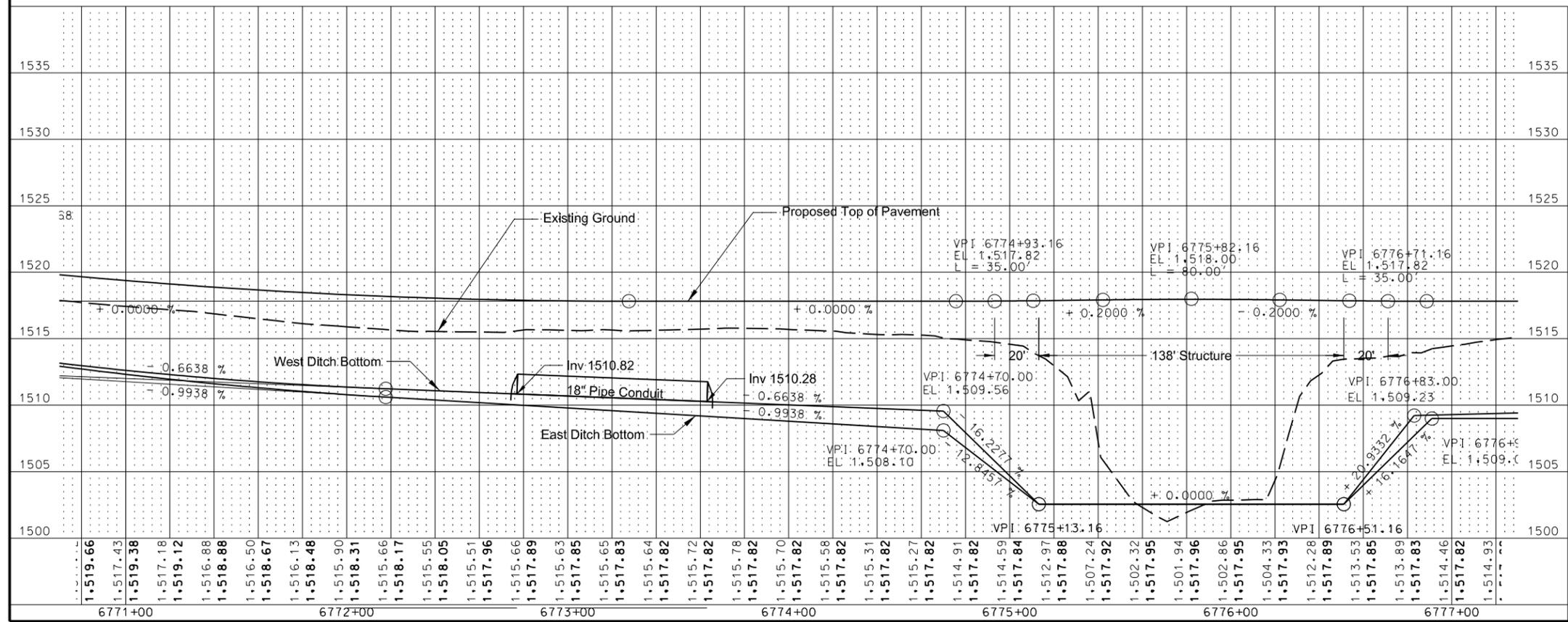
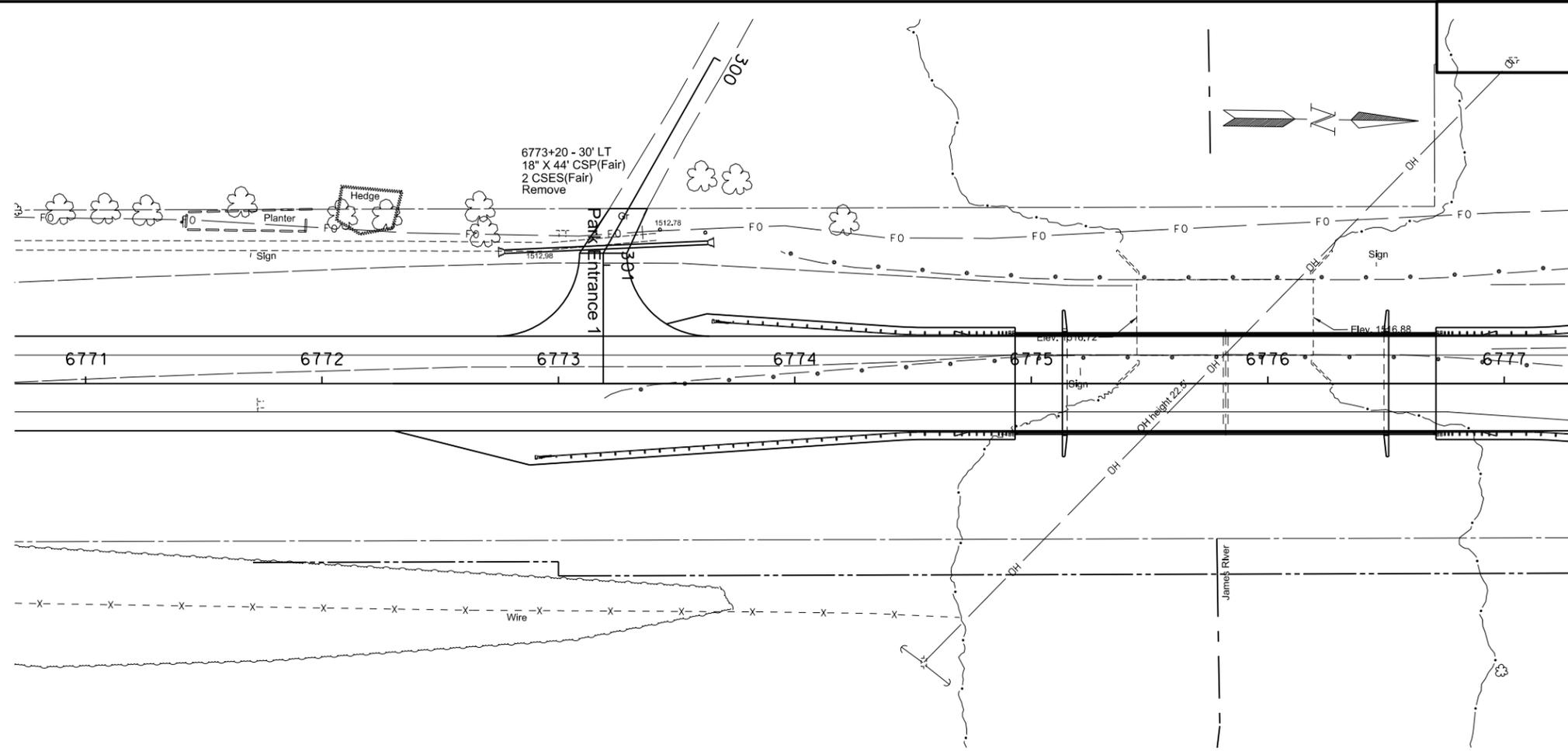


This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

US 281  
 Plan & Profile  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	2

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 6773+20 - 30' Lt 18" CSP	44	LF
714-4099	PIPE CONDUIT 18 IN - APPROACH Sta 6772+77.26 - 55.61' Lt to 6773+63.17 - 59.42' Lt	86	LF

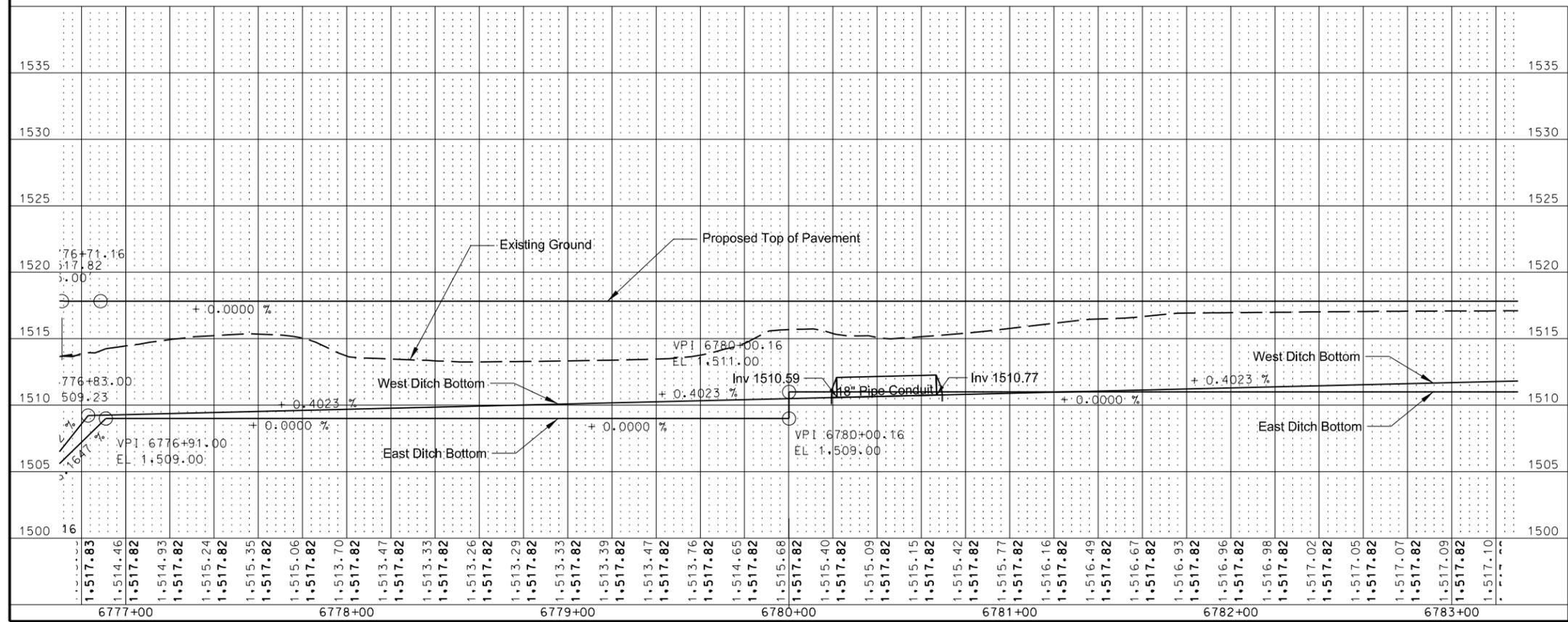
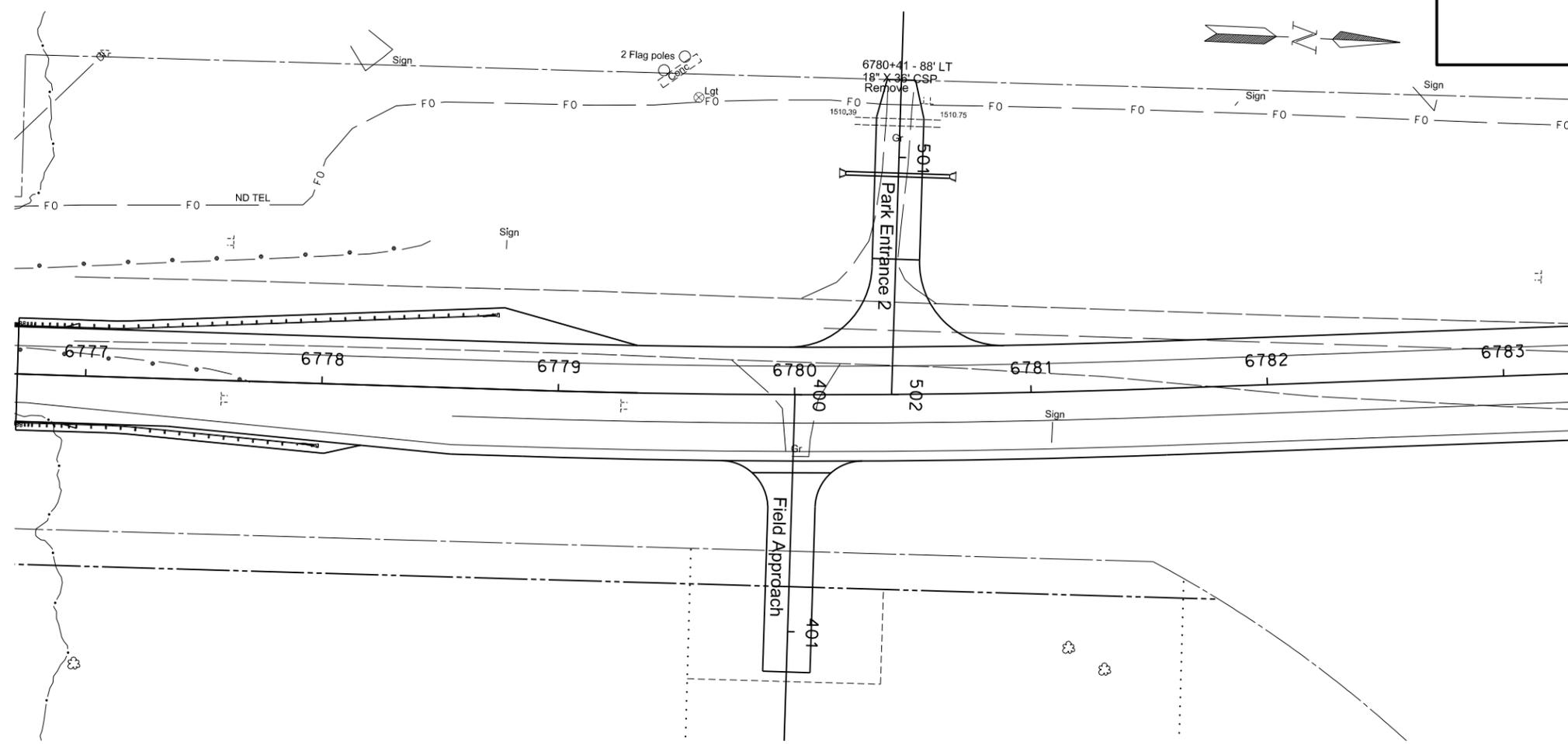


This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

US 281  
 Plan & Profile  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	3

Item	Description	Quantity	Unit
F0 202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 6780+41 - 88' Lt 18" CSP	36	LF
714-4099	PIPE CONDUIT 18 IN - APPROACH Sta 6780+21.86 - 93.35' Lt to 6780+66.87 - 91.60' Lt	44	LF

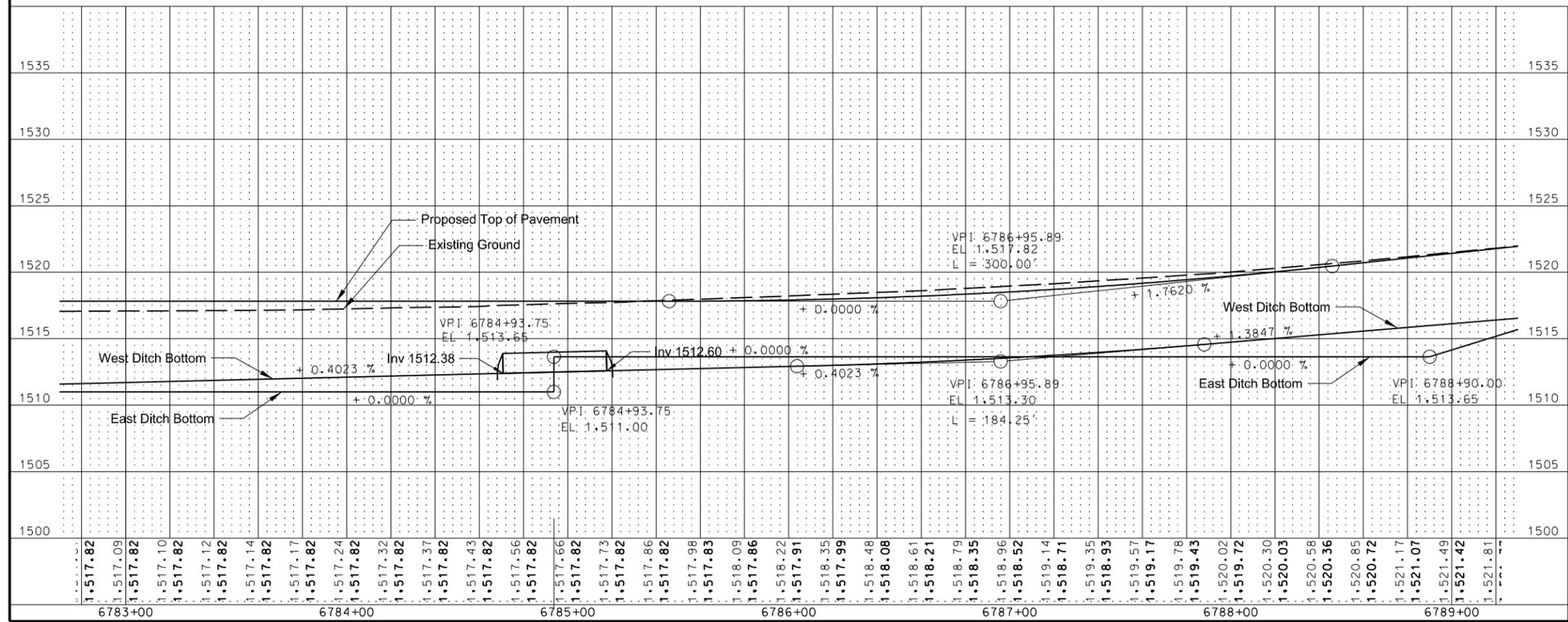
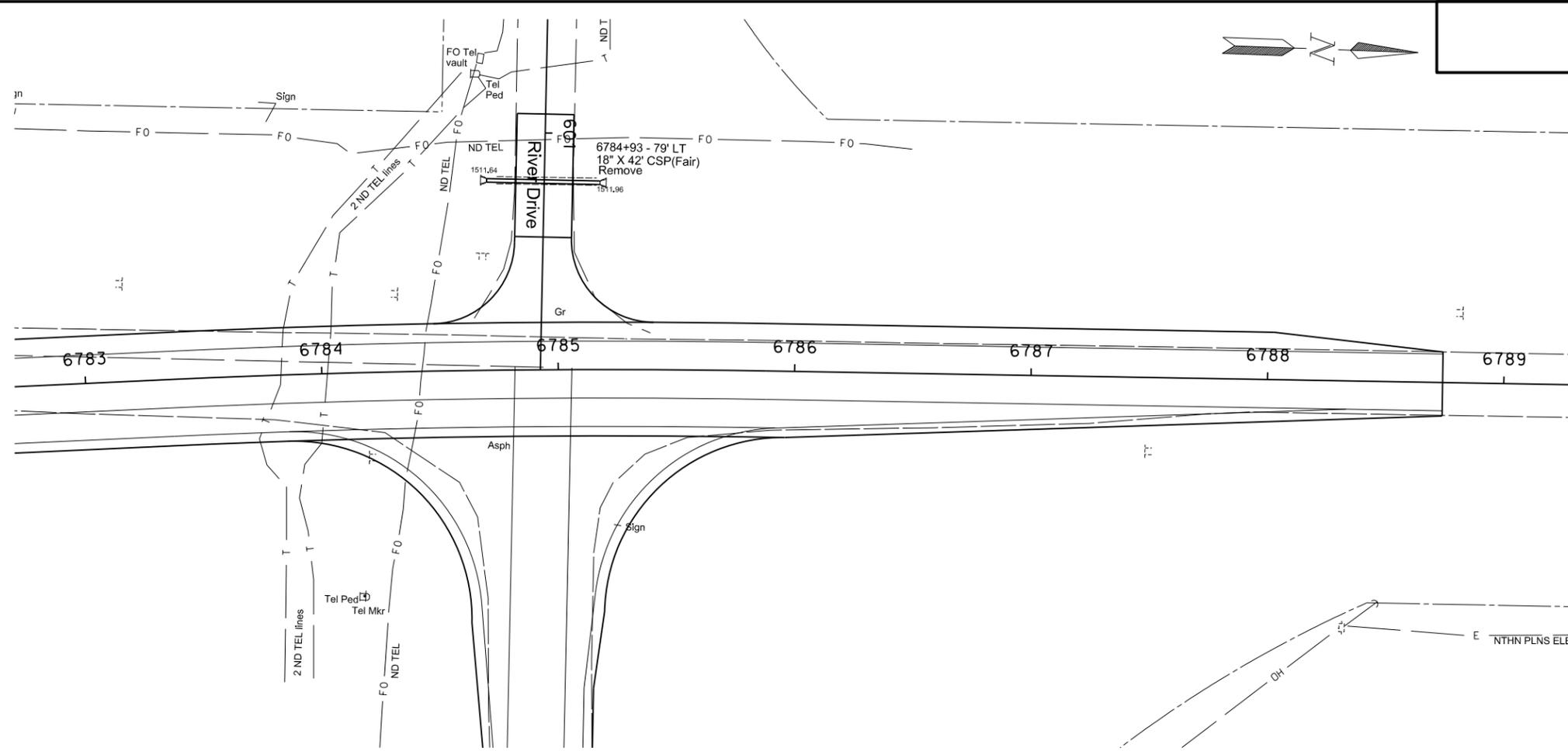


This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

US 281  
 Plan & Profile  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

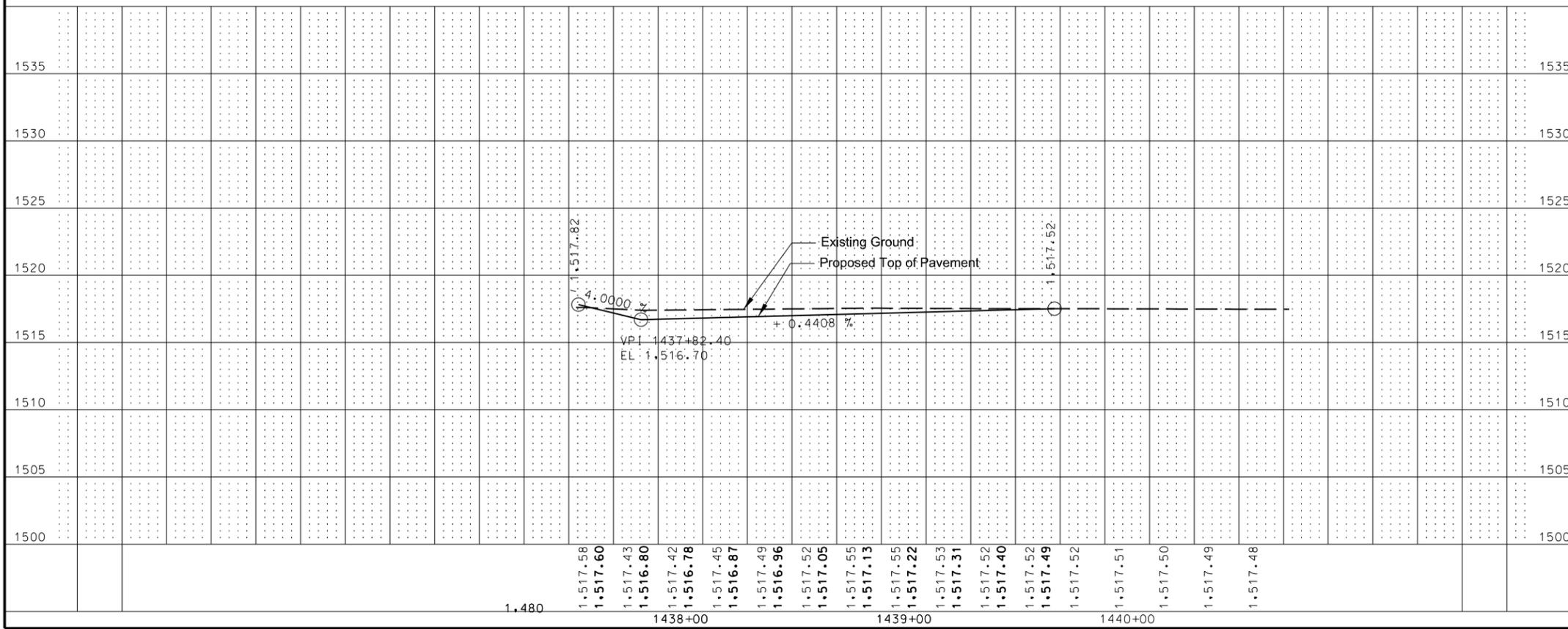
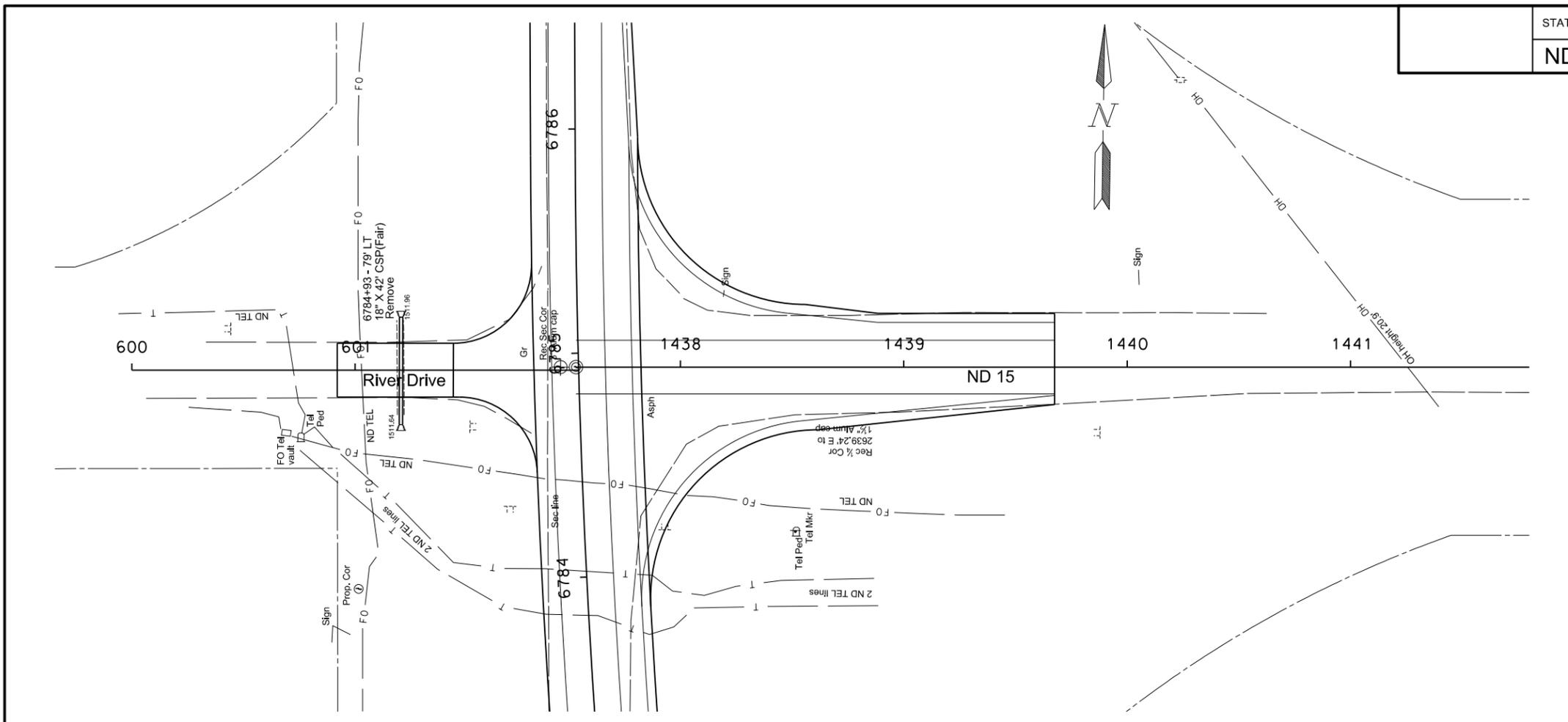
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	4

Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 6784+93 - 79' Lt 18" CSP	42	LF
714-4099	PIPE CONDUIT 18 IN - APPROACH Sta 6784+70.72 - 80.20' Lt to 6785+17.76 - 78.85' Lt	48	LF



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

US 281  
 Plan & Profile  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

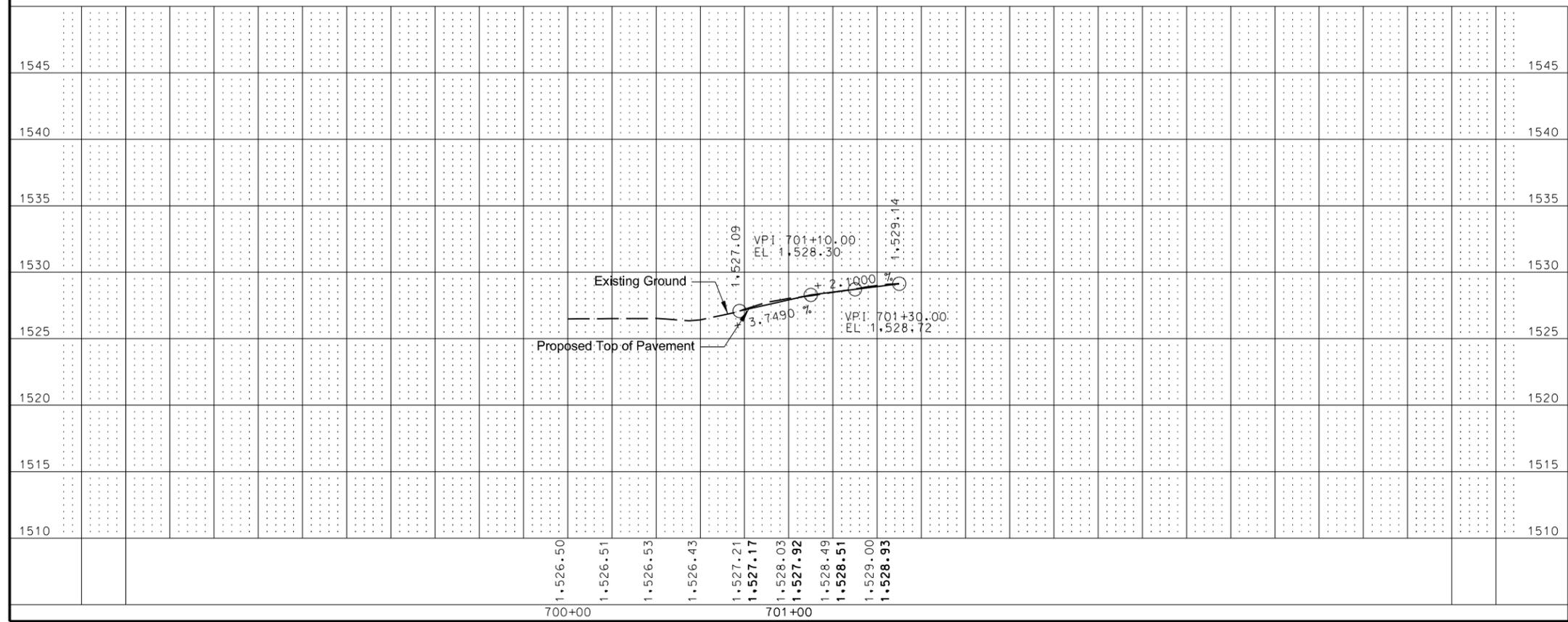
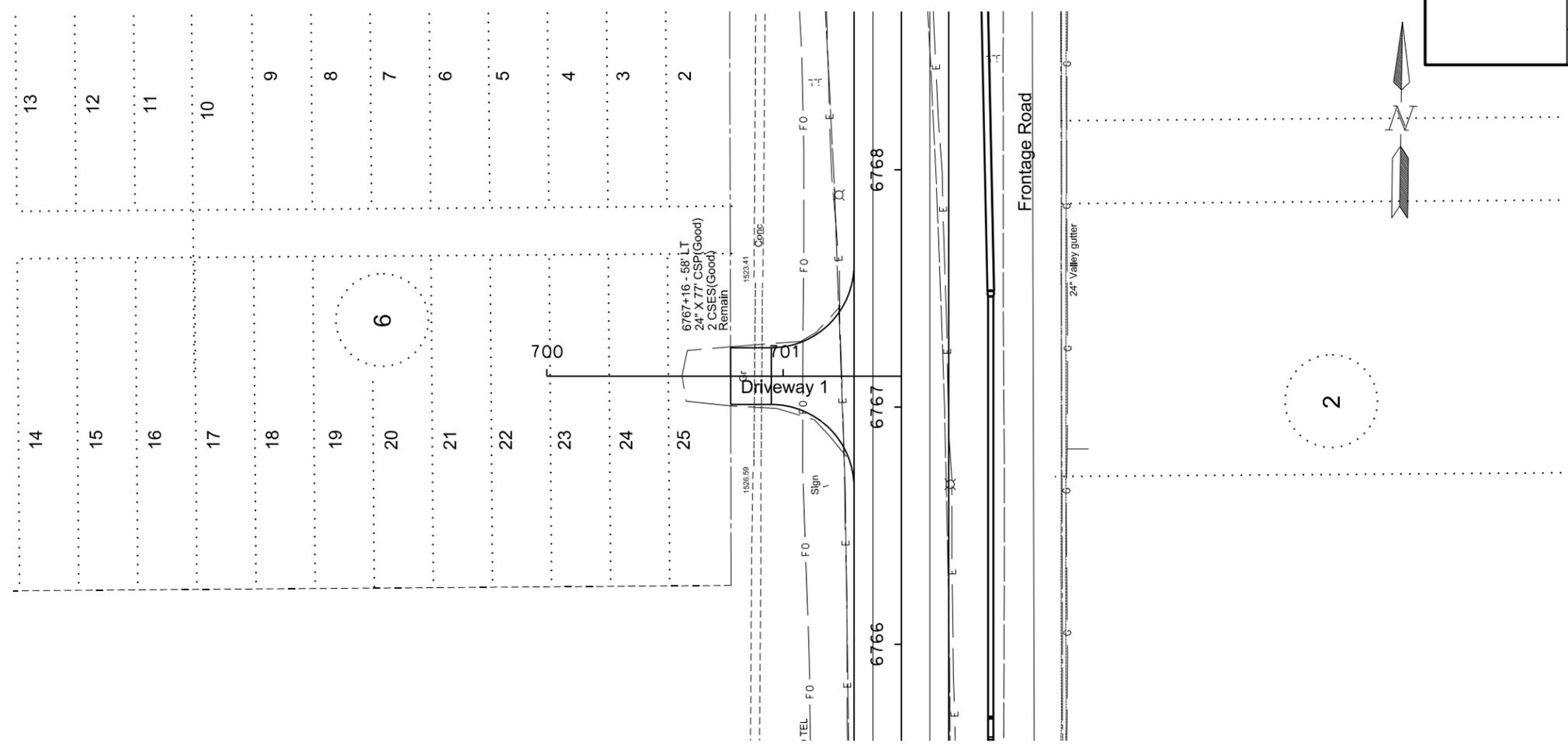


This document was originally issued and sealed by Chad Frisinger Registration Number PE- 4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

**ND 15  
Plan & Profile**

**US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment**

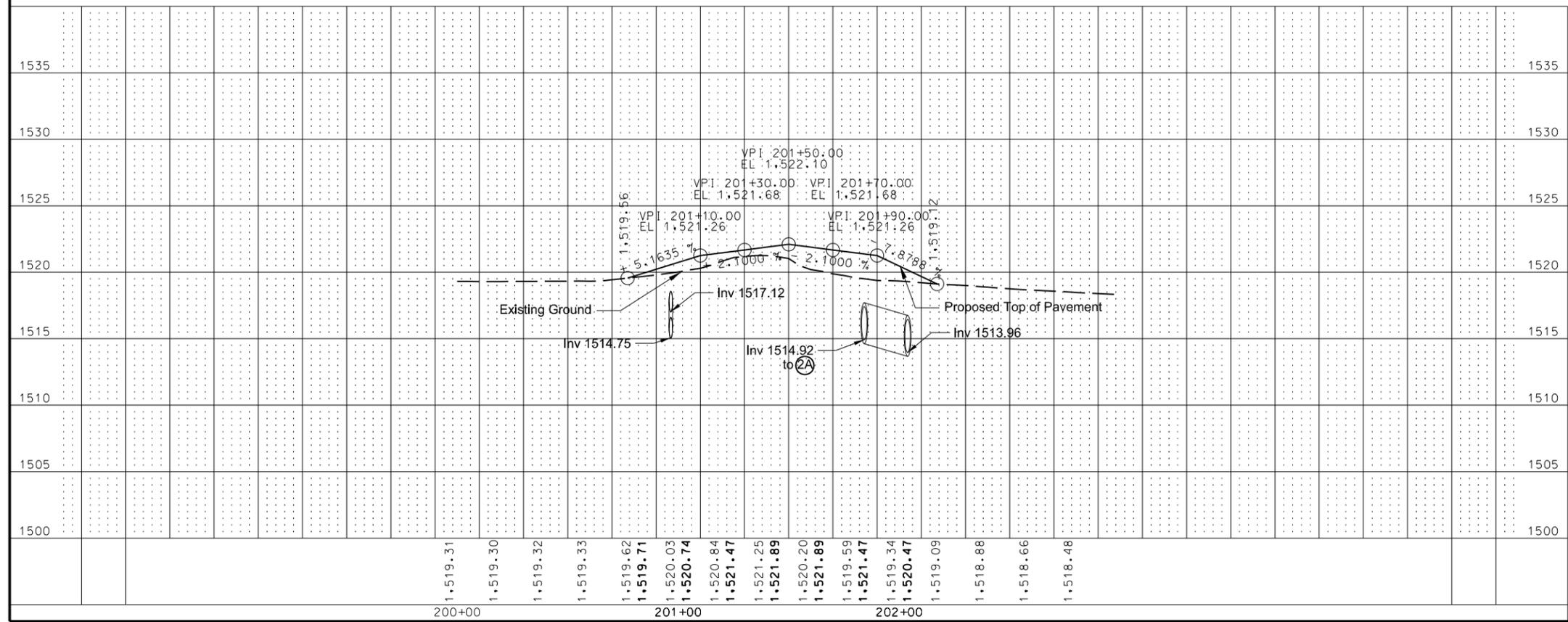
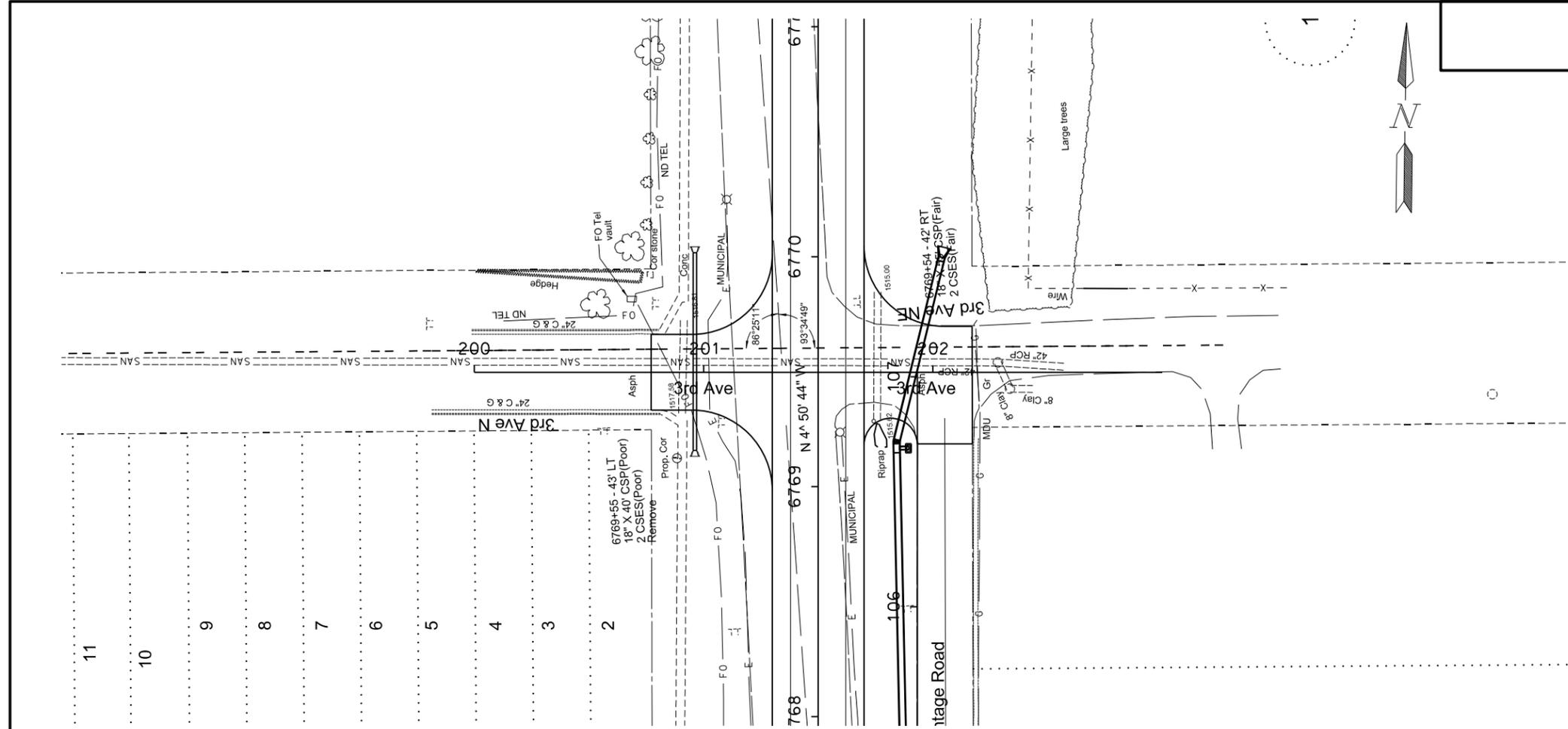
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	6



This document was originally issued and sealed by Chad Frisinger, Registration Number PE- 4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

Driveway Plan & Profile  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

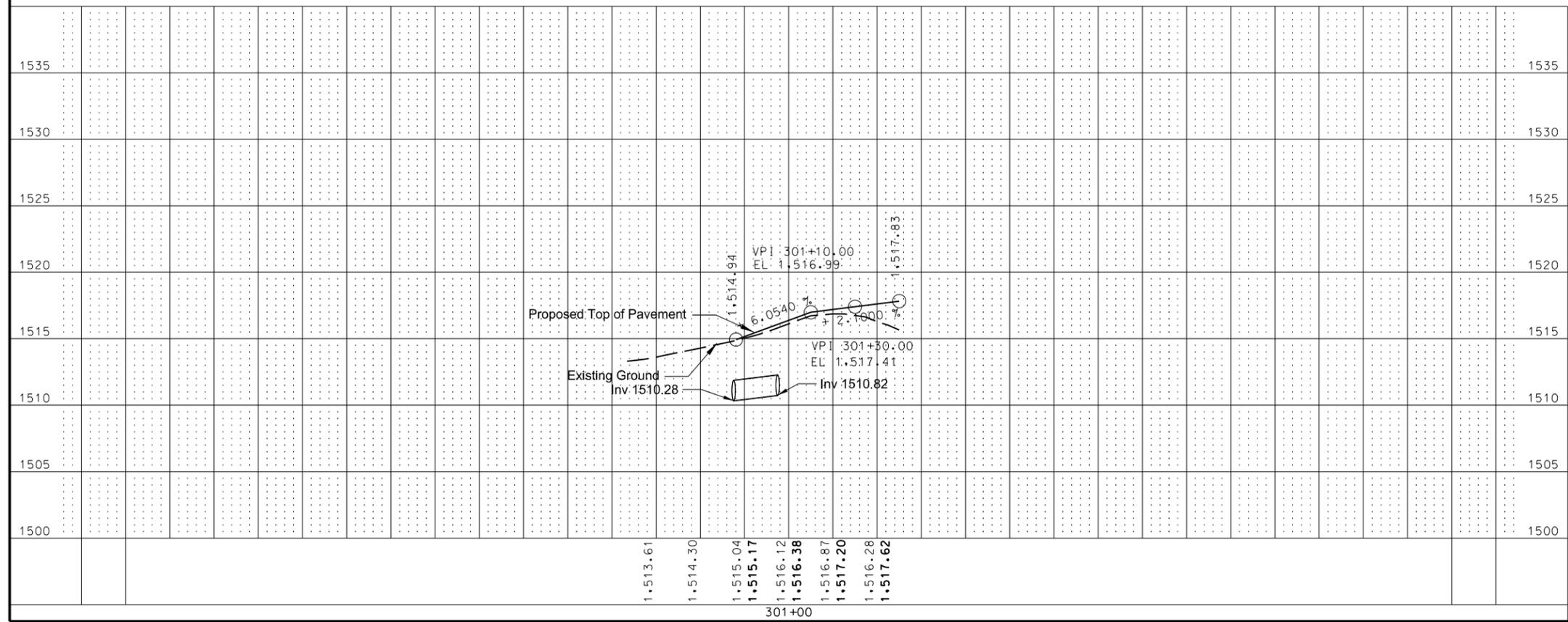
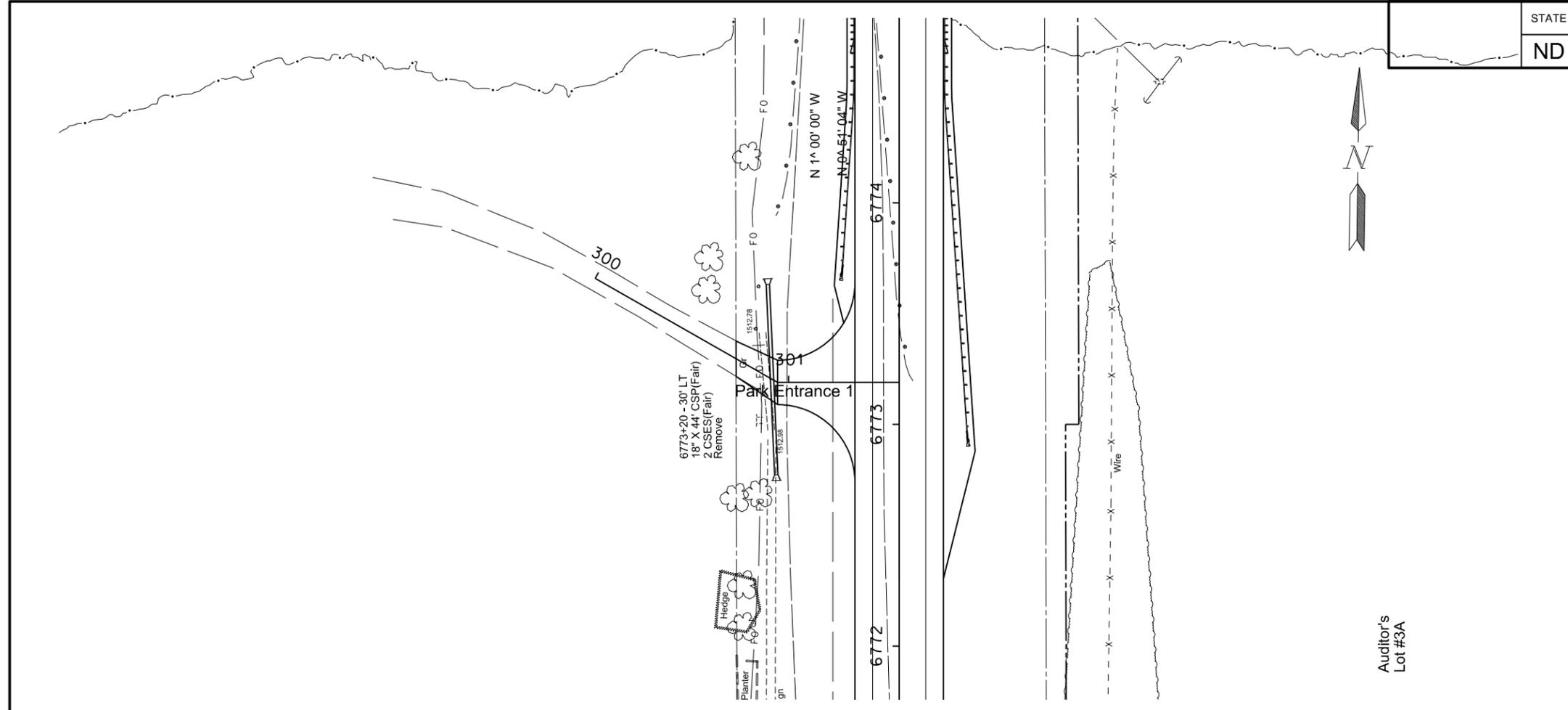
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	7



This document was originally issued and sealed by Chad Frisinger, Registration Number PE- 4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

3rd Ave N  
Plan & Profile  
  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

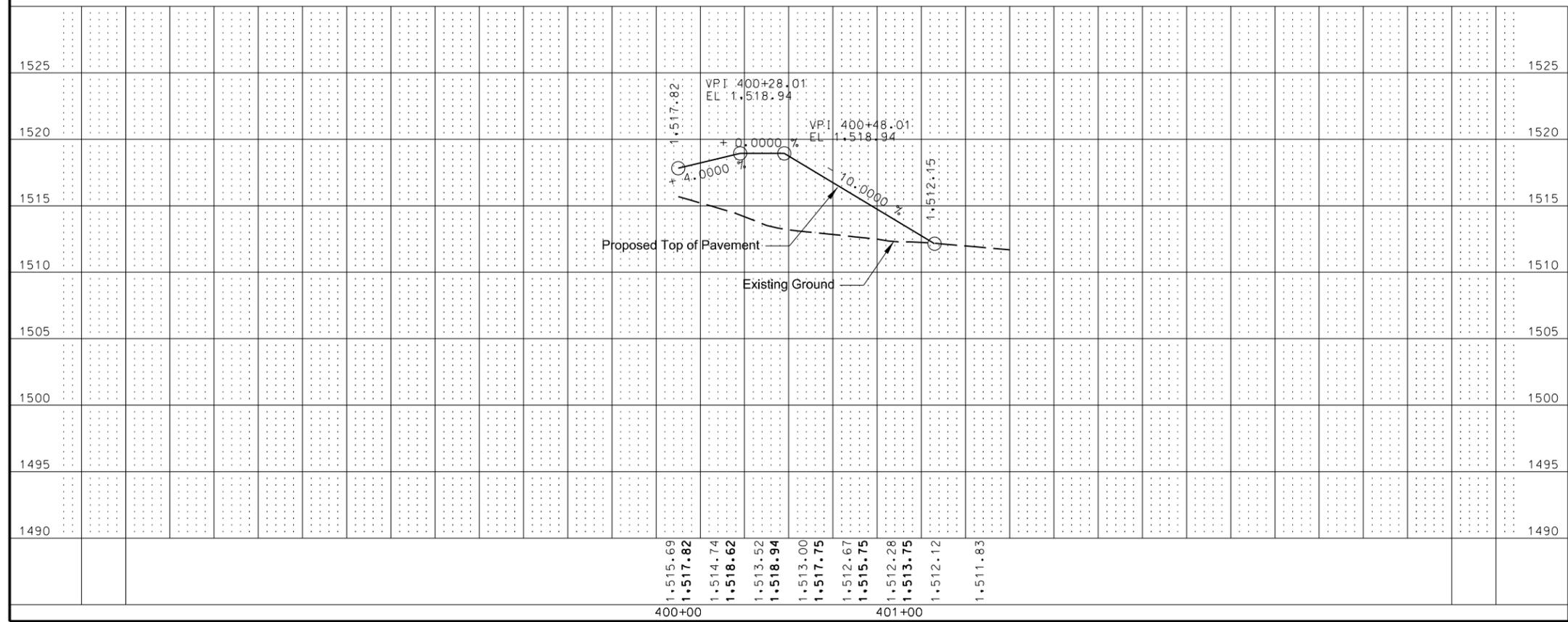
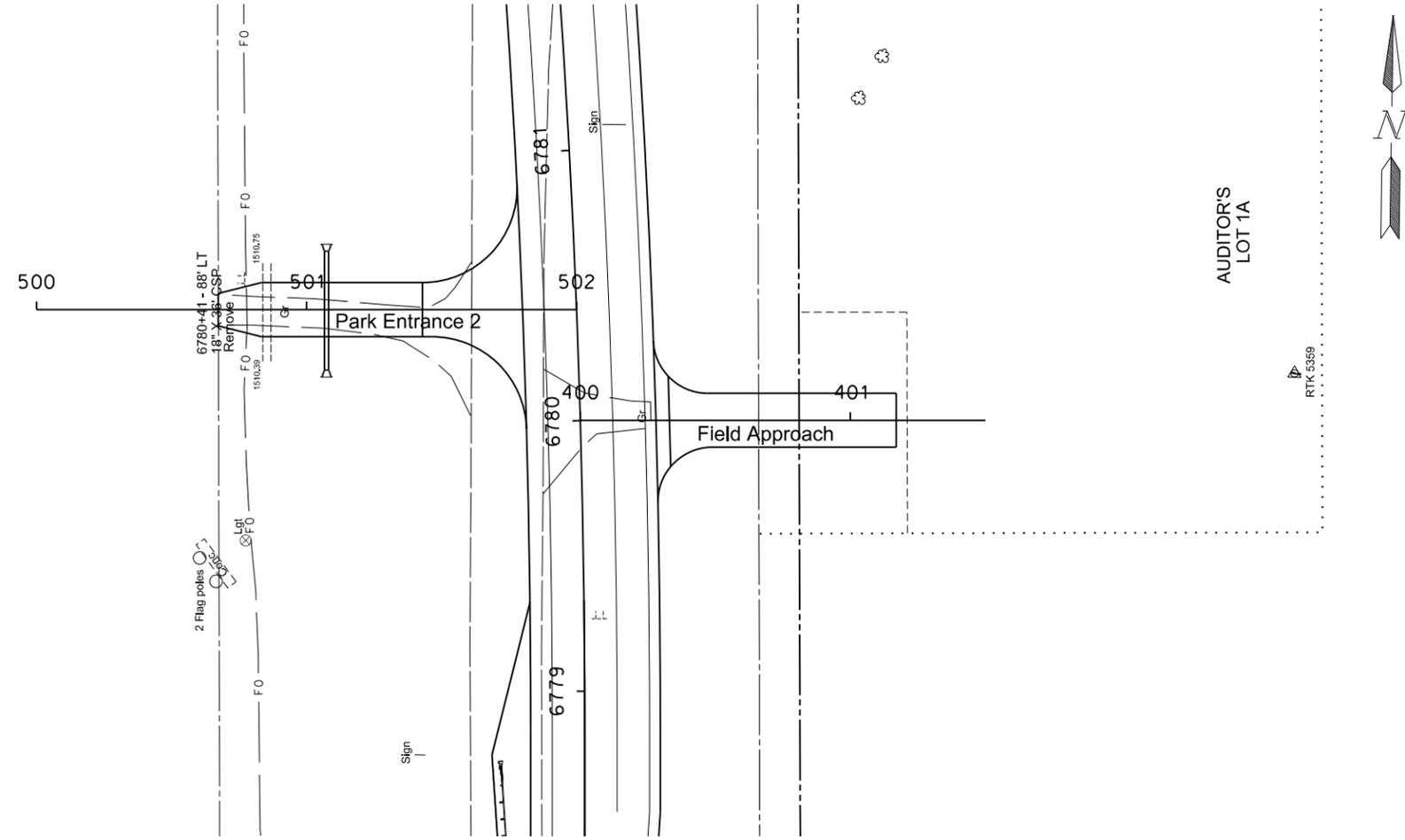
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	8



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Park Entrance 1  
 Plan & Profile  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	9

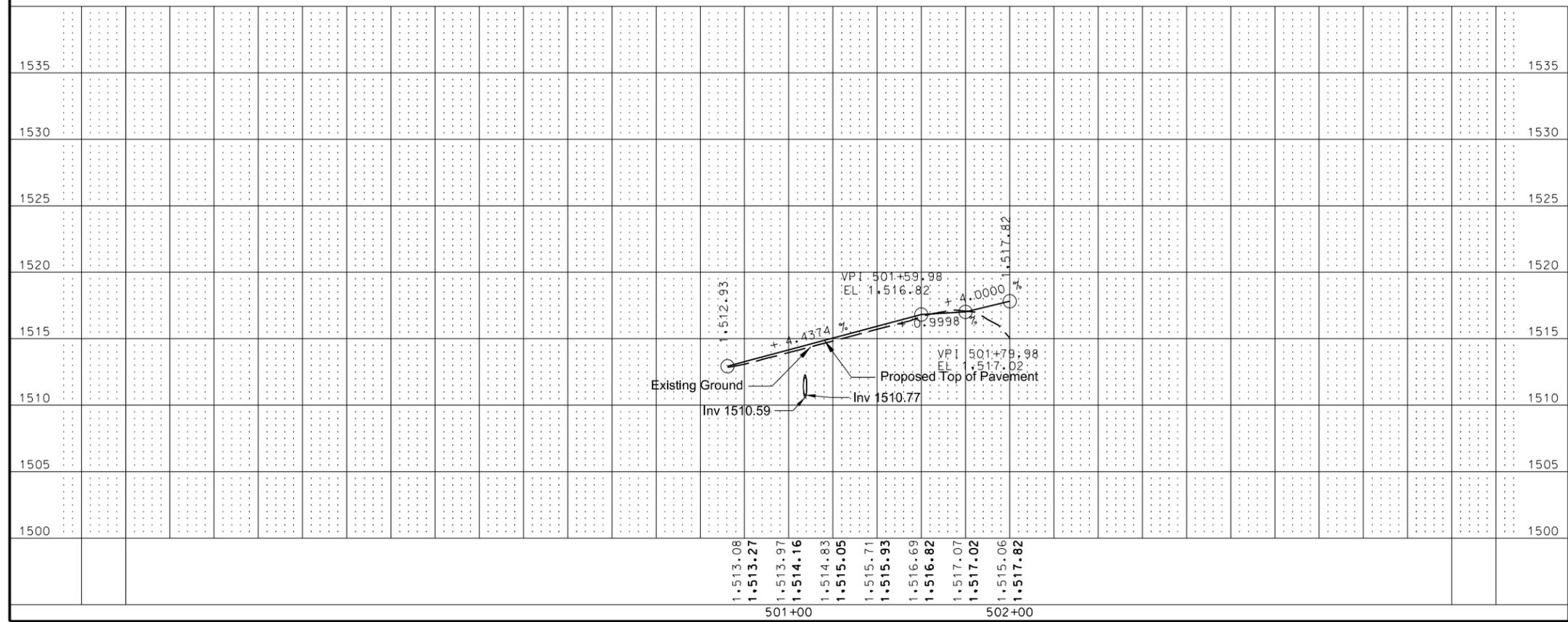
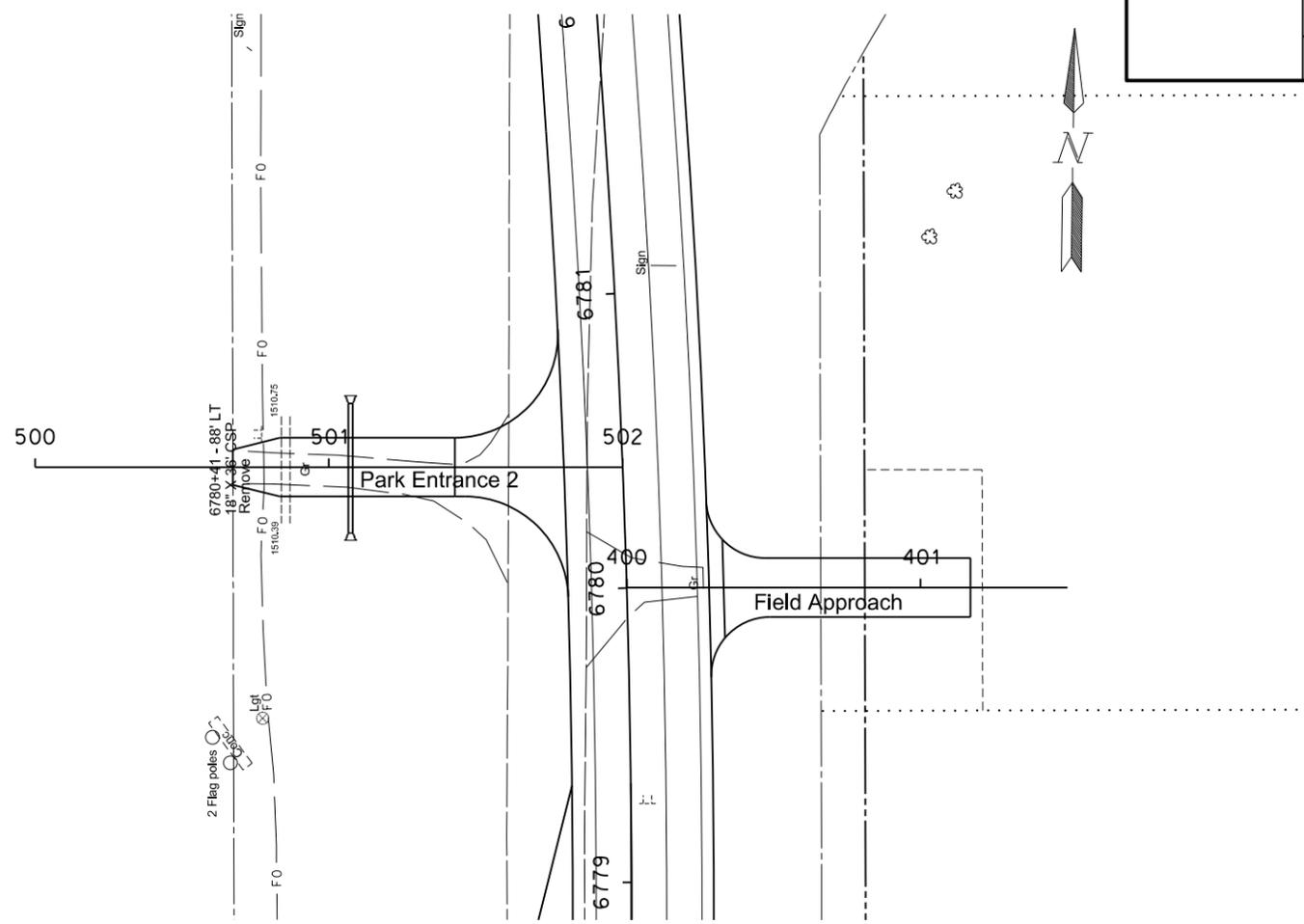


This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Field Approach  
 Plan & Profile

US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	10

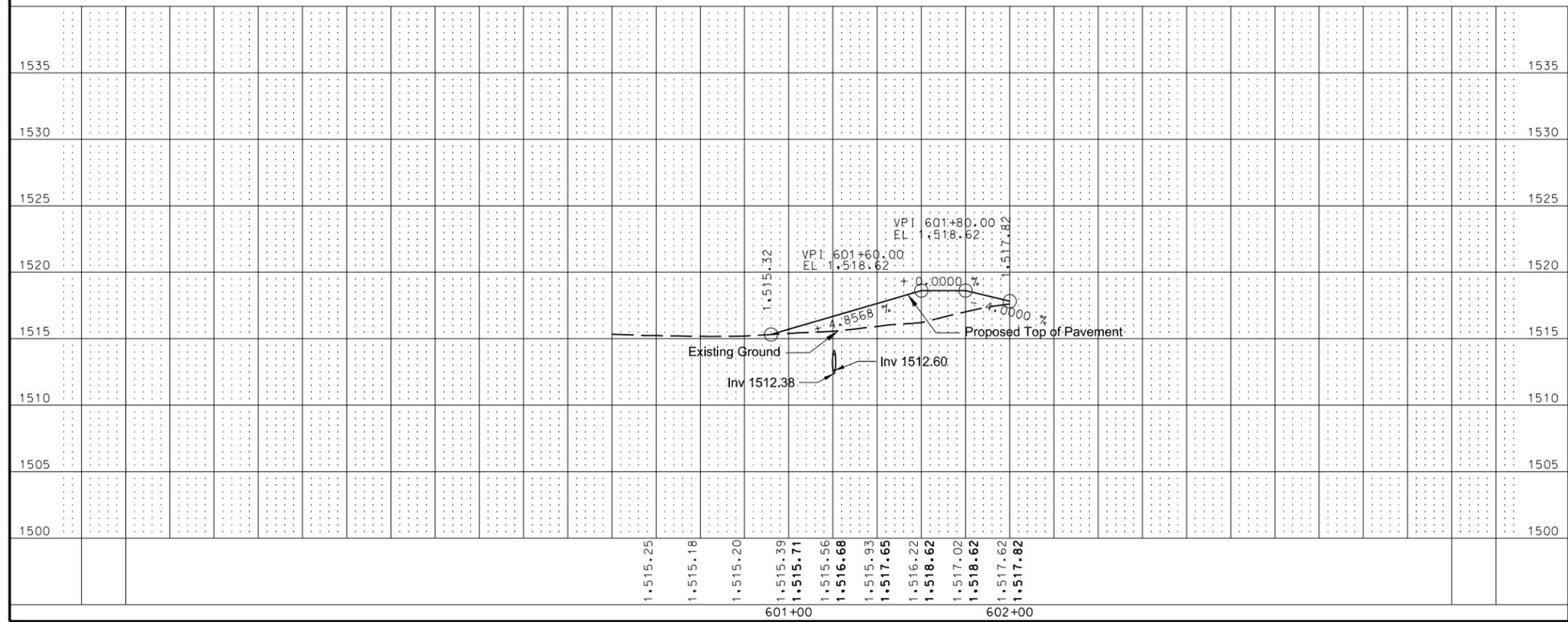
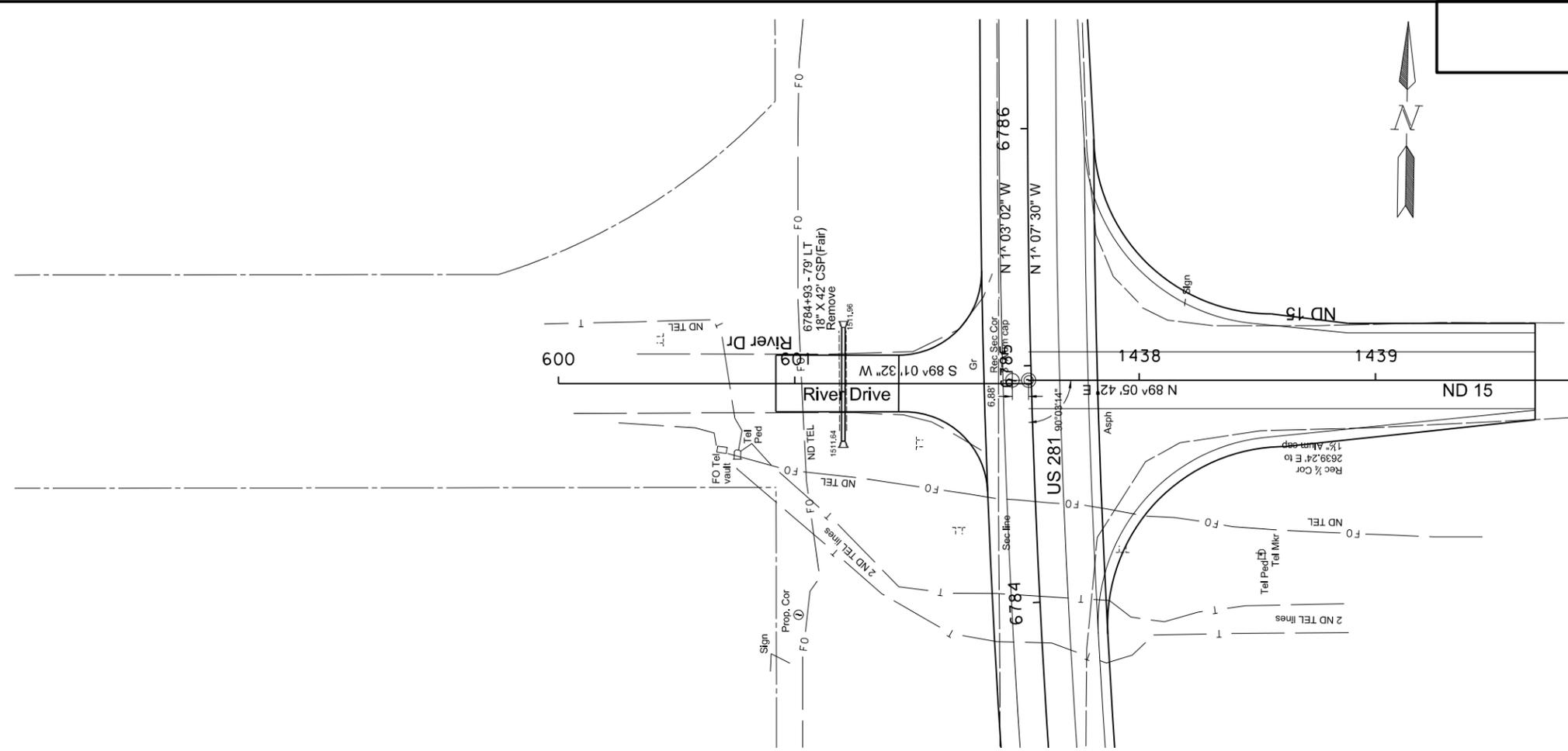


This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

**Park Entrance 2  
 Plan & Profile**

**US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment**

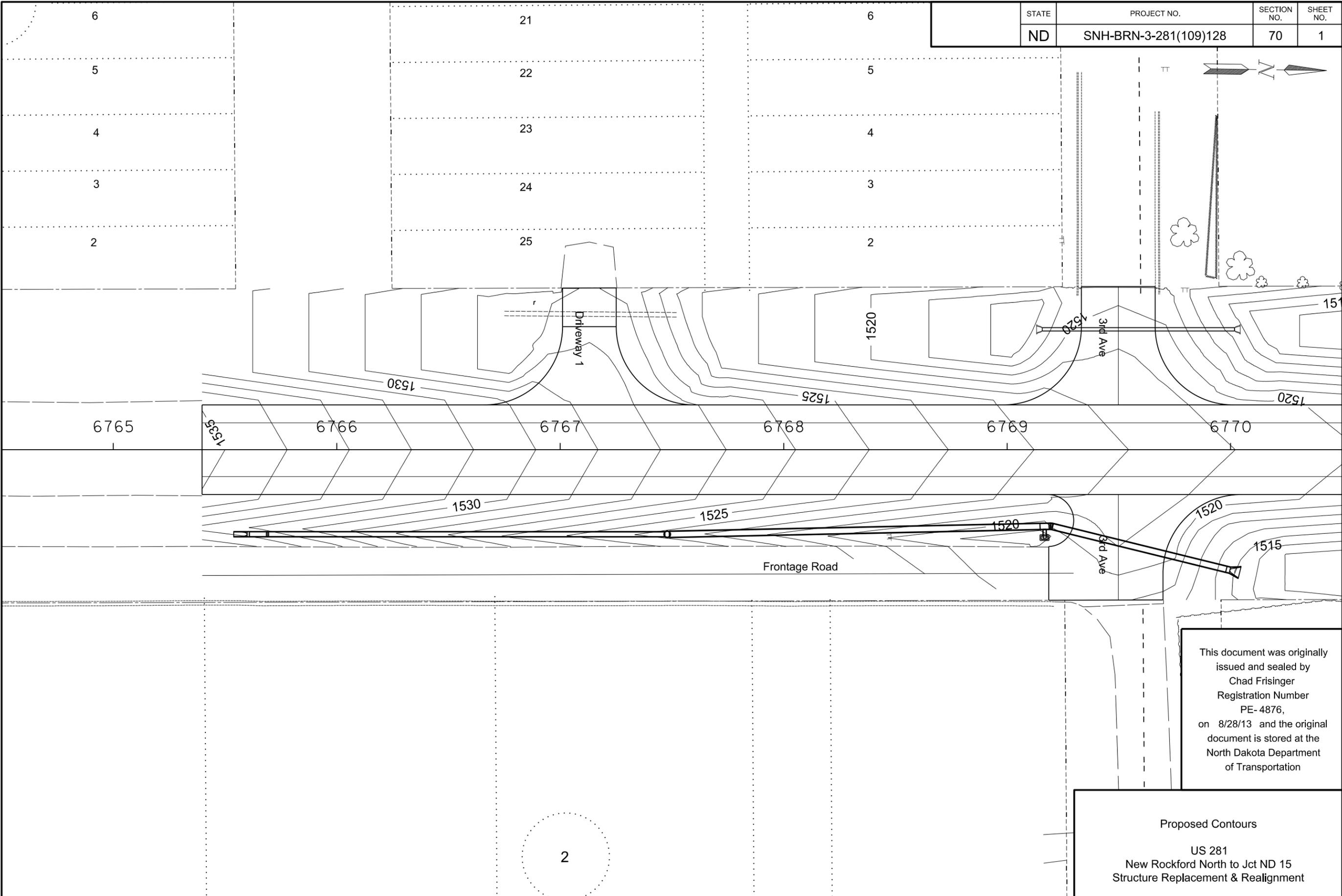
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	60	11



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

River Drive  
 Plan & Profile  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

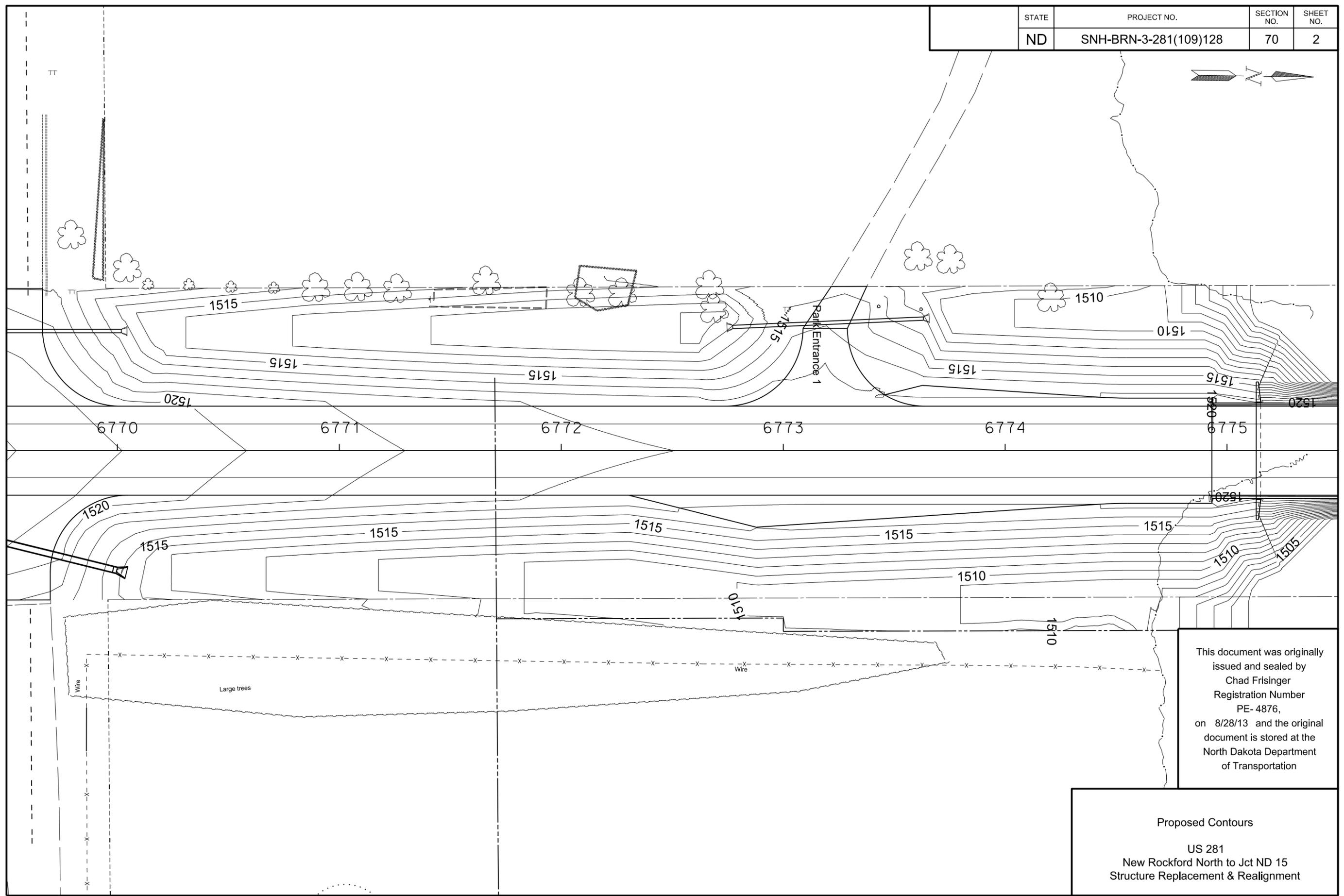
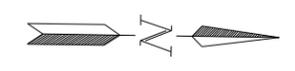
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	70	1



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Proposed Contours  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

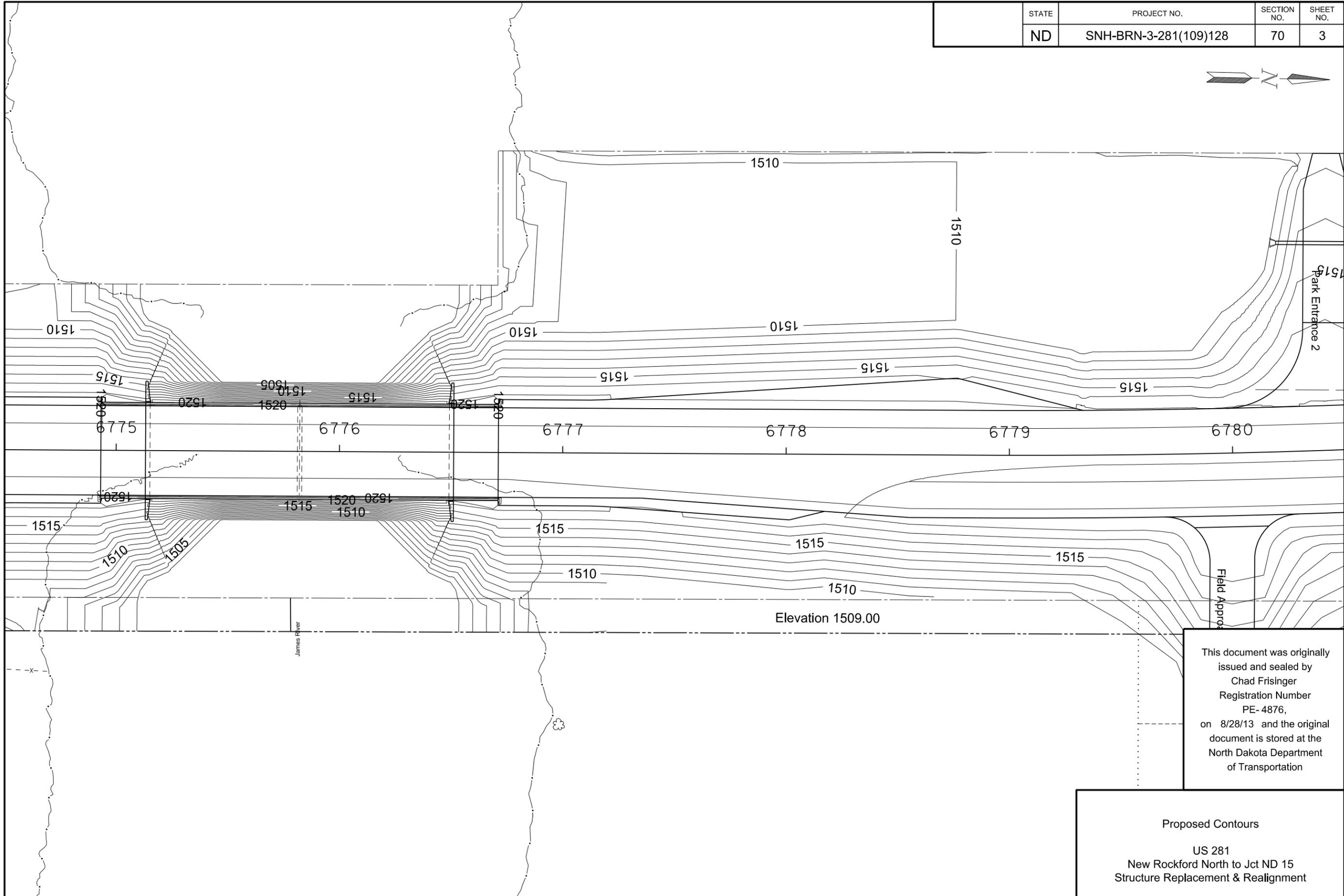
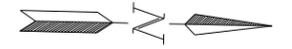
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	70	2



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Proposed Contours  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

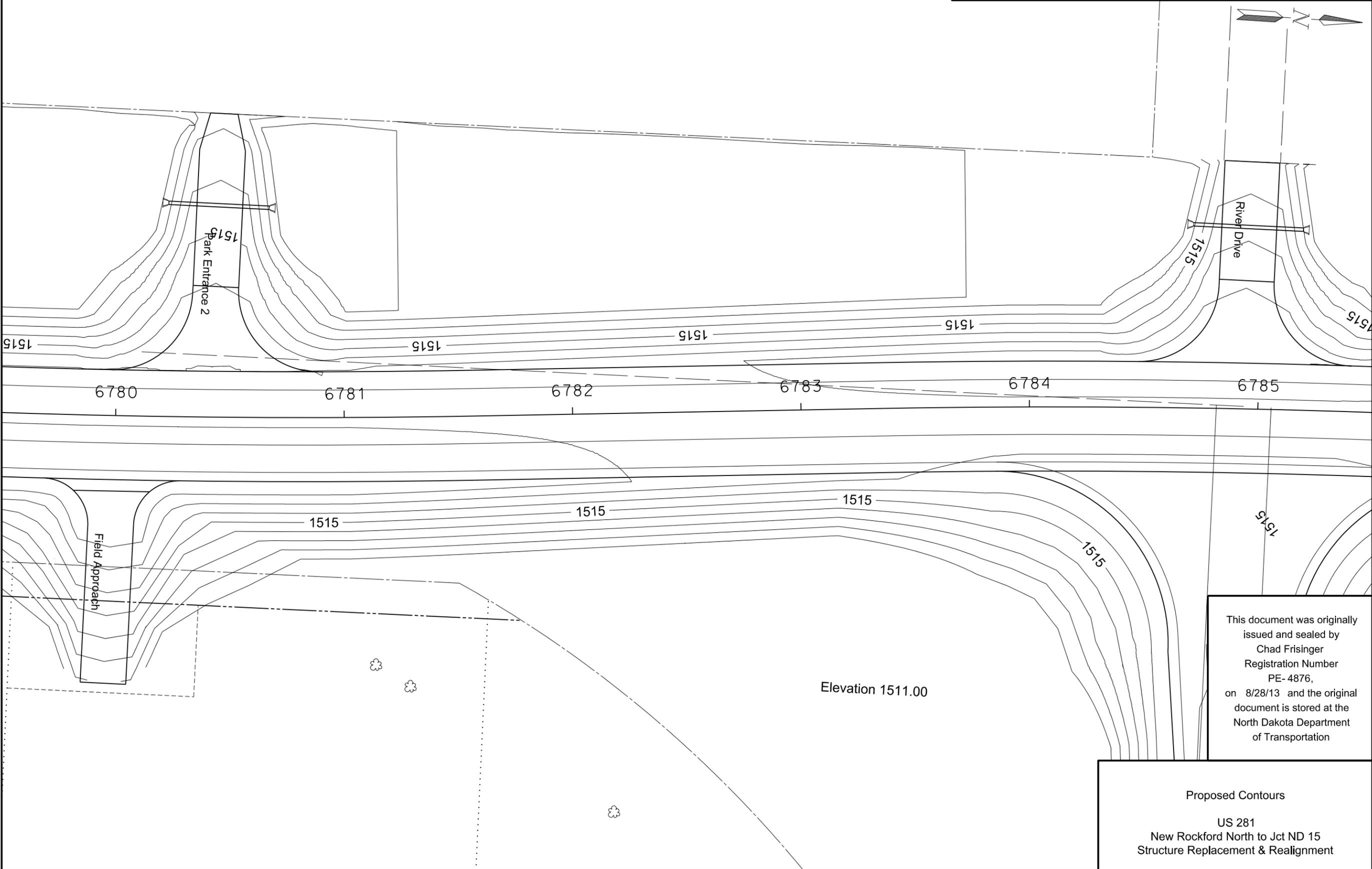
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	70	3



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Proposed Contours  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

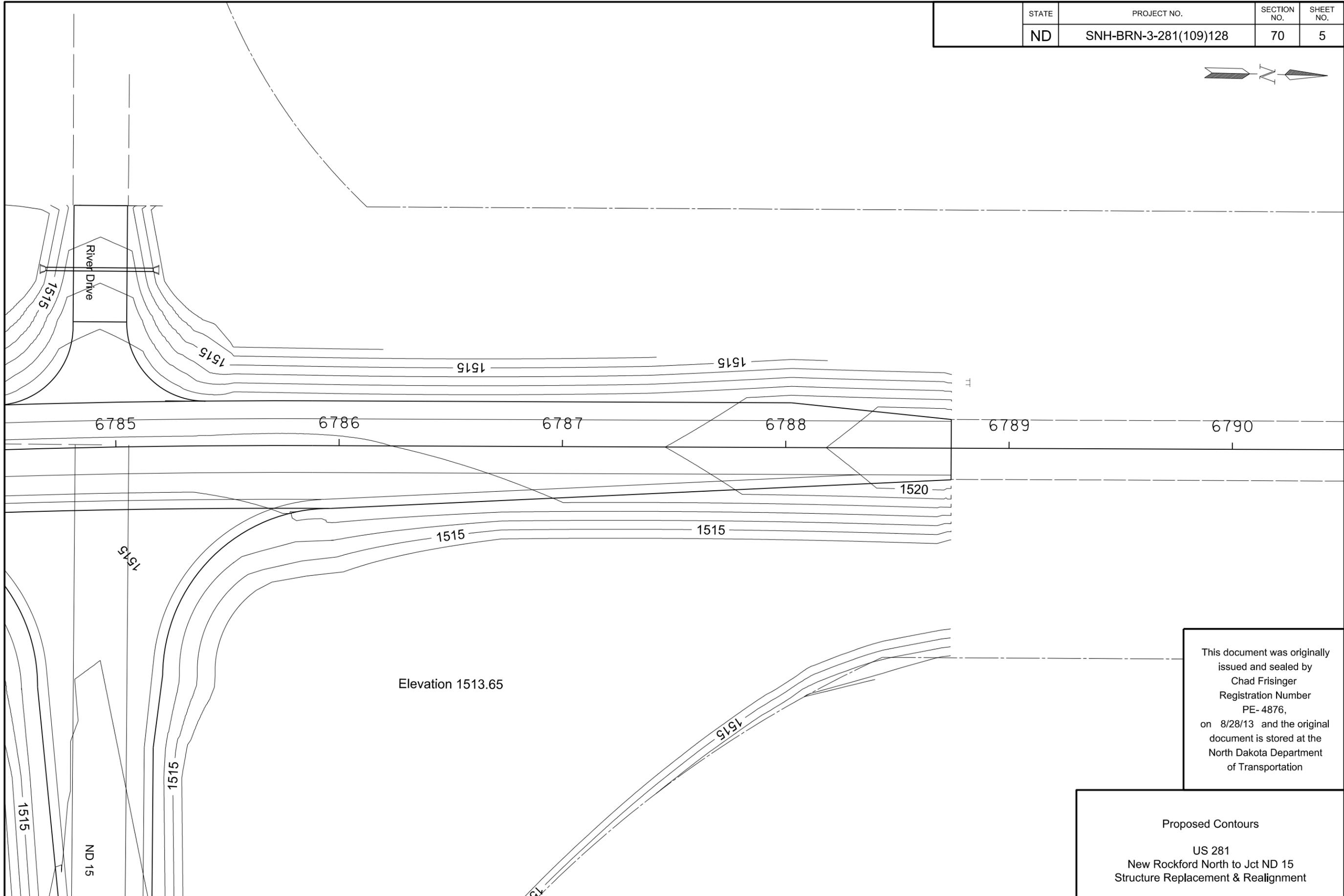
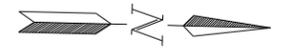
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	70	4



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Proposed Contours  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	70	5

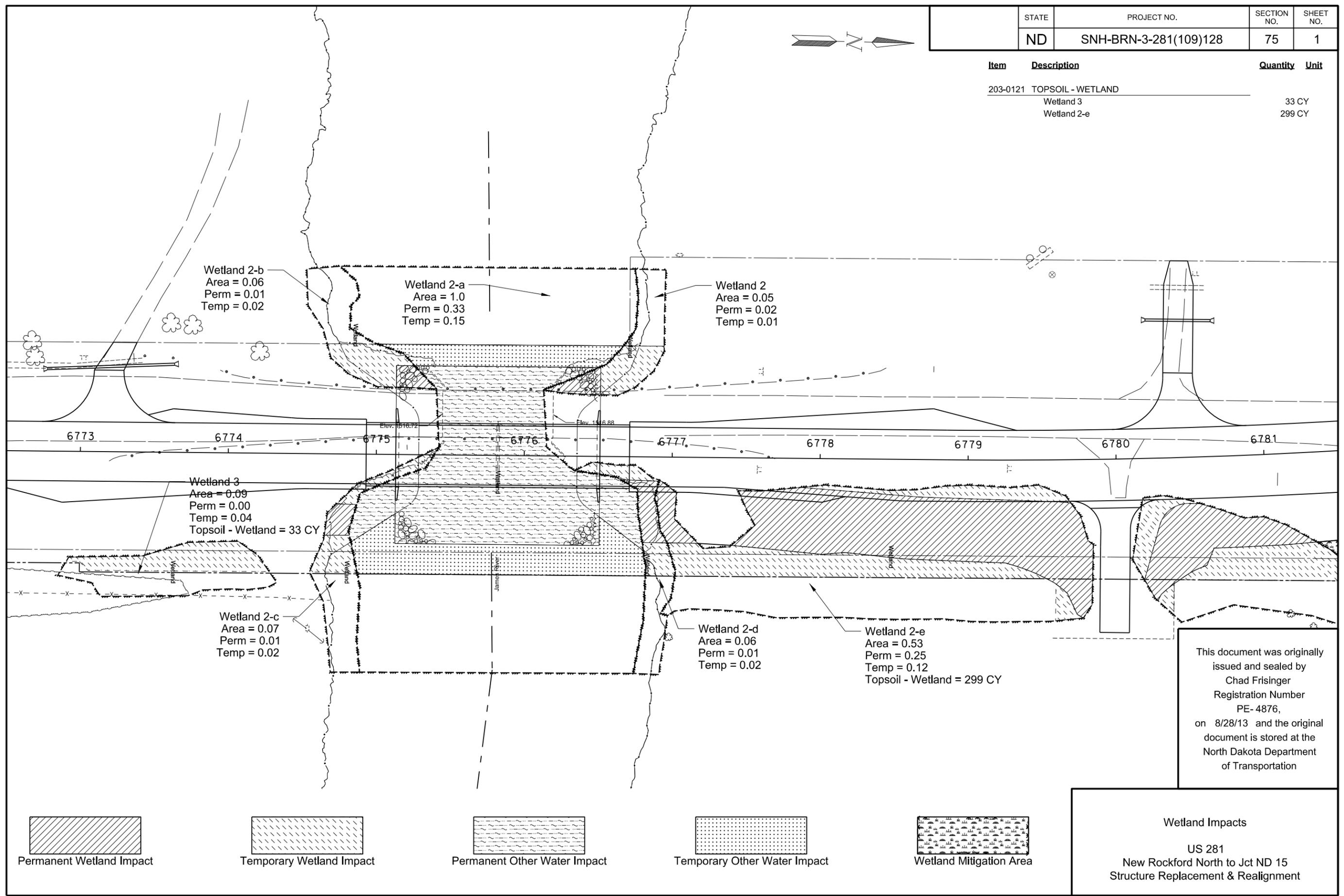
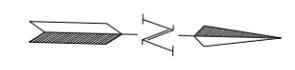


This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Proposed Contours  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	1

Item	Description	Quantity	Unit
203-0121	TOPSOIL - WETLAND		
	Wetland 3	33	CY
	Wetland 2-e	299	CY



This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

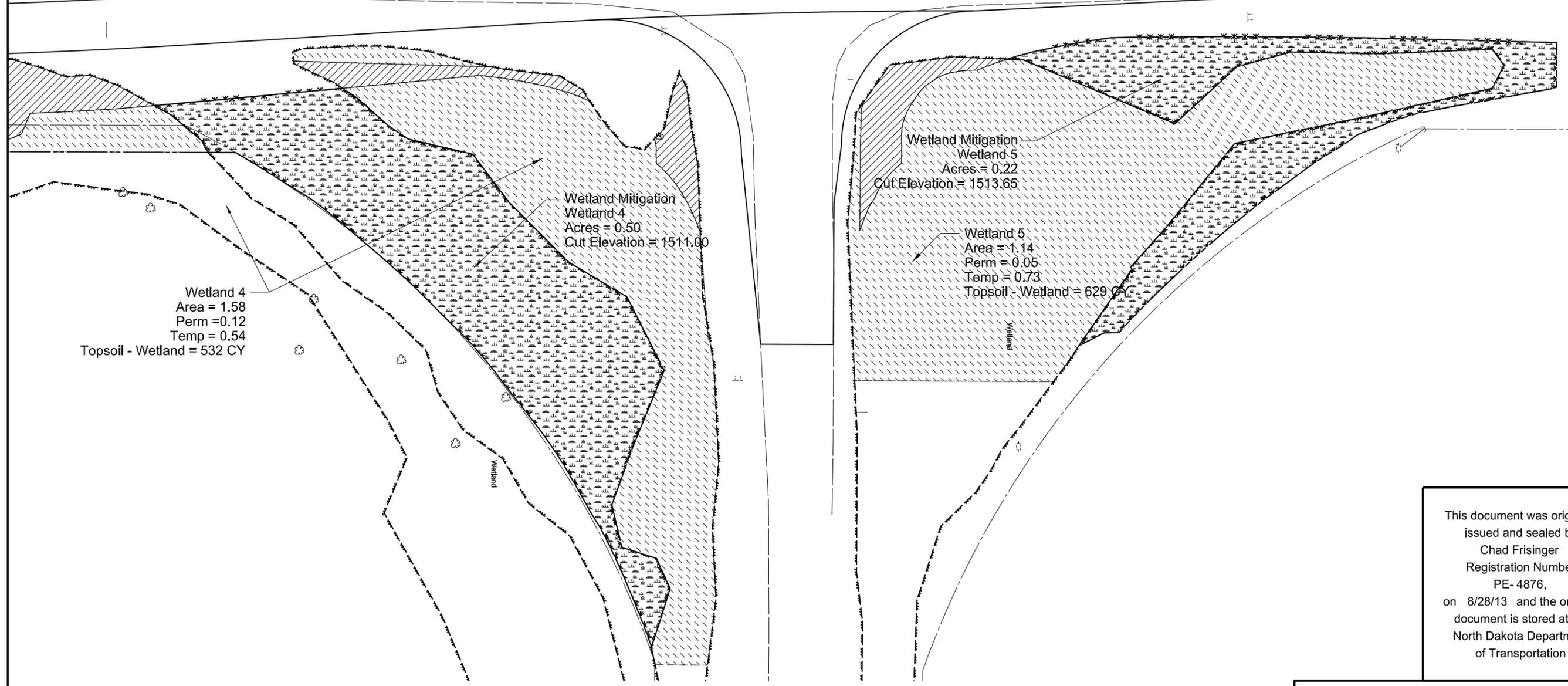
**Wetland Impacts**  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	2

Item	Description	Quantity	Unit
203-0121	TOPSOIL - WETLAND		
	Wetland 1	56	CY
	Wetland 4	532	CY
	Wetland 5	629	CY

Wetland 1  
Area = 0.37  
Perm = 0.01  
Temp = 0.06  
Topsoil - Wetland = 56 CY

6781      6782      6783      6784      6785      6786      6787      6788      6789



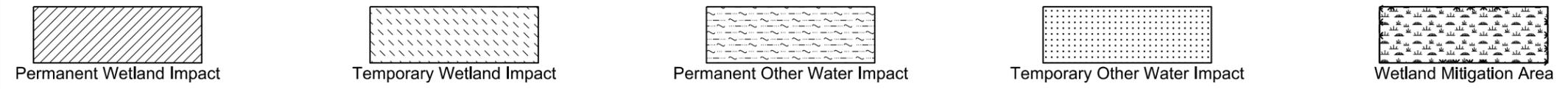
Wetland 4  
Area = 1.58  
Perm = 0.12  
Temp = 0.54  
Topsoil - Wetland = 532 CY

Wetland Mitigation  
Wetland 4  
Acres = 0.50  
Cut Elevation = 1511.00

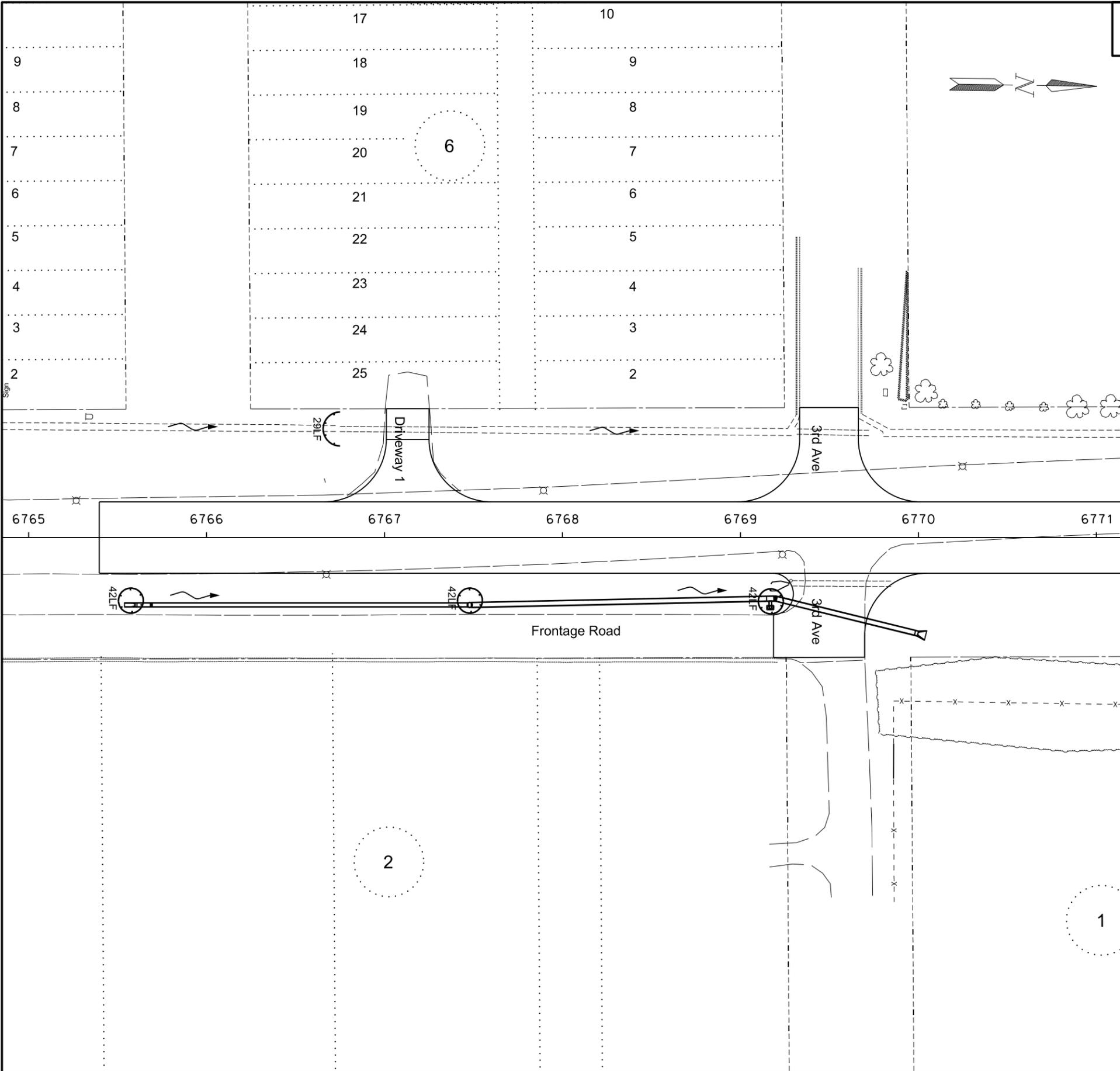
Wetland Mitigation  
Wetland 5  
Acres = 0.22  
Cut Elevation = 1513.65

Wetland 5  
Area = 1.14  
Perm = 0.05  
Temp = 0.73  
Topsoil - Wetland = 629 CY

This document was originally issued and sealed by  
Chad Frisinger  
Registration Number  
PE- 4876,  
on 8/28/13 and the original document is stored at the  
North Dakota Department  
of Transportation



Wetland Impacts  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment



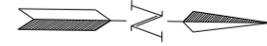
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	3

Item	Description	Quantity	Unit
708-1430	FIBER ROLLS 12IN Sta 6765+00 to 6771+00	155	LF
708-1431	REMOVAL FIBER ROLLS 12IN Sta 6765+00 to 6771+00	155	LF

- F ——— Fiber Roll
- x - - - - x - - - - Silt Fence Supported
- s —— Flotation Silt Curtain

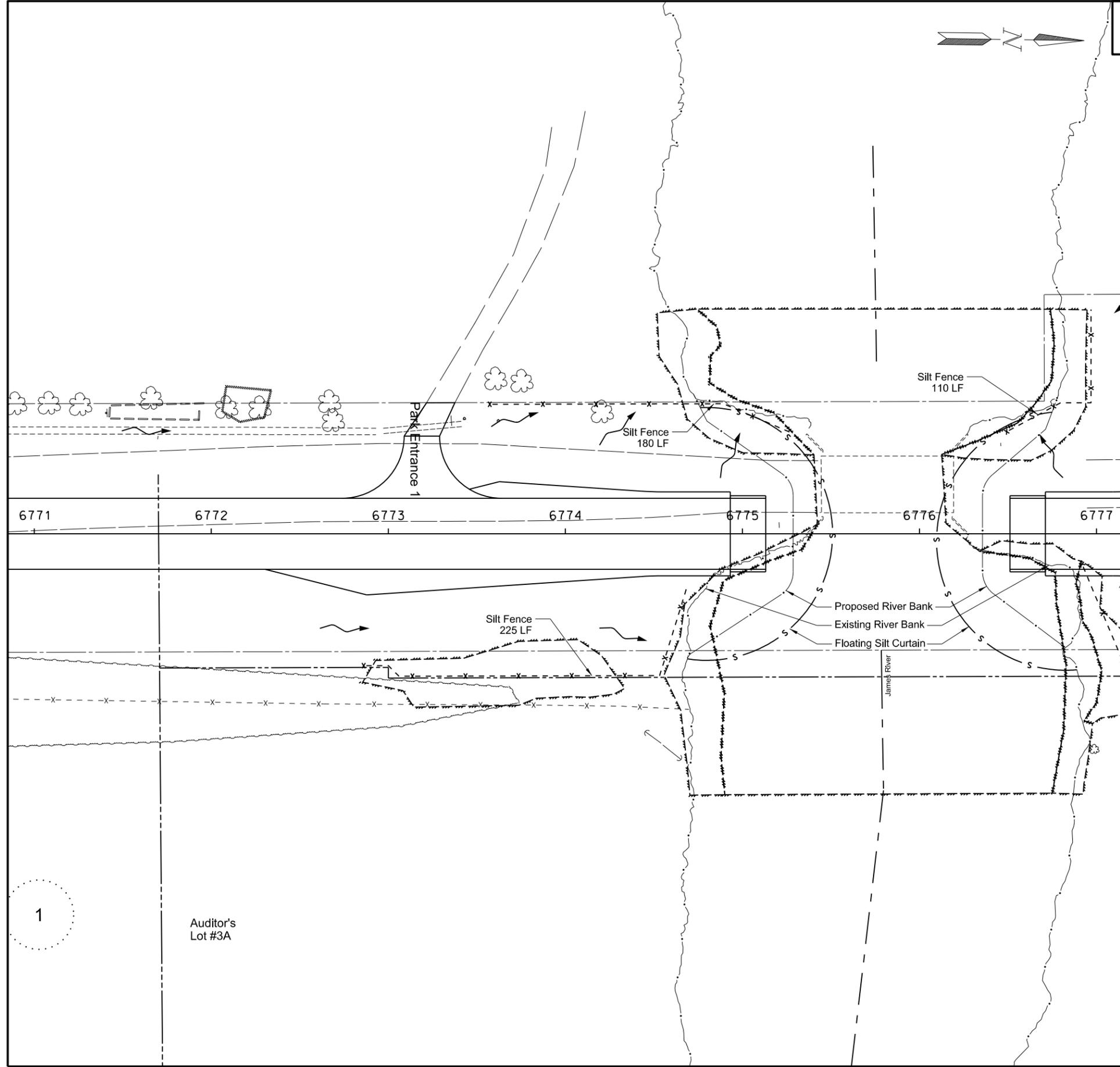
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Temporary Erosion Control  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	4

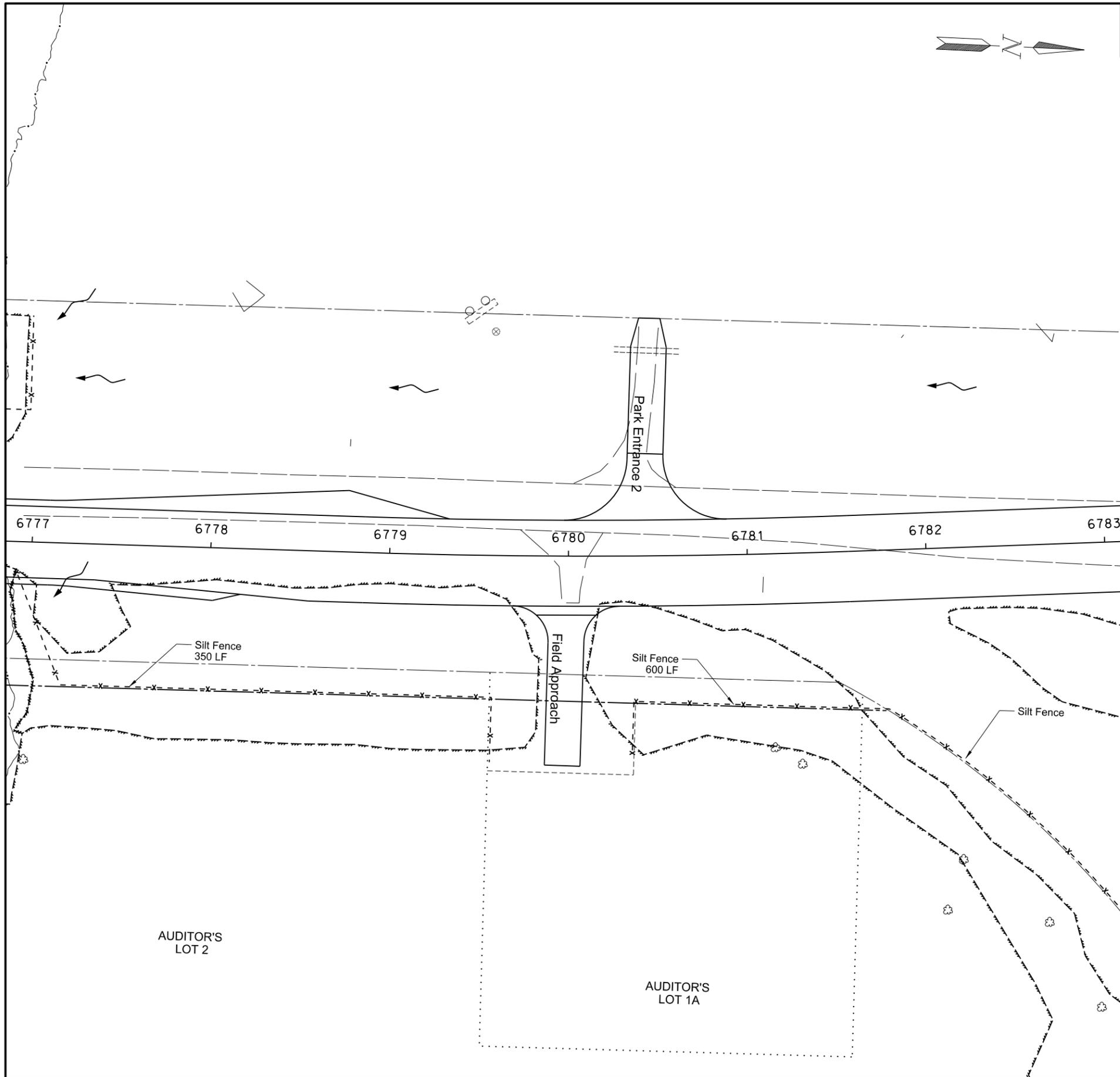
Item	Description	Quantity	Unit
708-1325	SILT FENCE SUPPORTED Sta 6771+00 to 6777+00	515 LF	
708-1335	REMOVAL SILT FENCE SUPPORTED Sta 6771+00 to 6777+00	515 LF	
708-1375	FLOTATION SILT CURTAIN South Bank North Bank	250 LF 250 LF	
708-1376	REMOVAL FLOTATION SILT CURTAIN South Bank North Bank	250 LF 250 LF	



- Fiber Roll
- Silt Fence Supported
- Flotation Silt Curtain

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Temporary Erosion Control  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	5

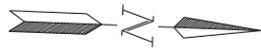
Item	Description	Quantity	Unit
708-1325	SILT FENCE SUPPORTED Sta 6777+00 to 6783+00	950	LF
708-1335	REMOVAL SILT FENCE SUPPORTED Sta 6777+00 to 6783+00	950	LF

- Fiber Roll
- x - - - x - - - Silt Fence Supported
- s — Flotation Silt Curtain

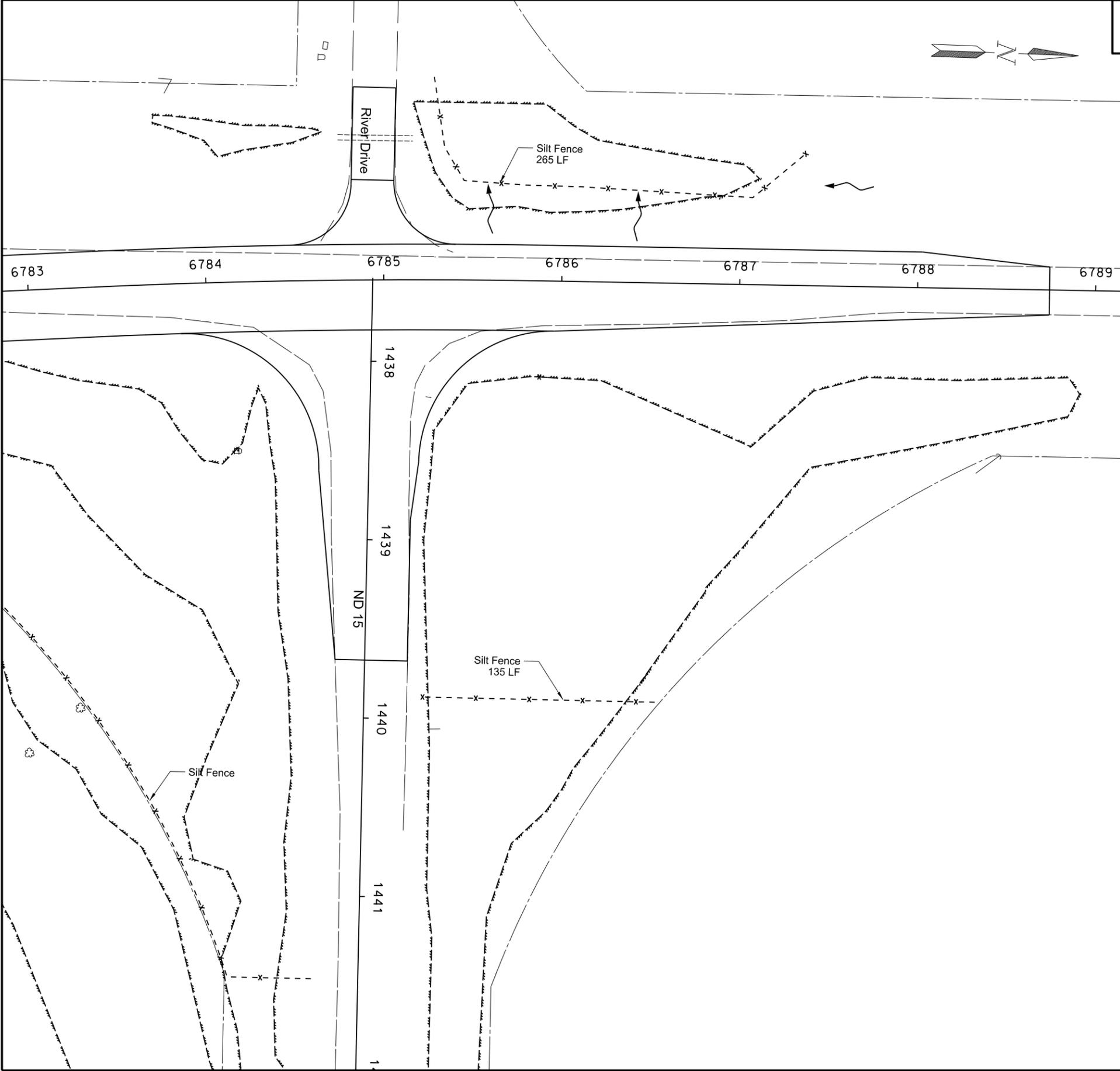
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Temporary Erosion Control  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	6



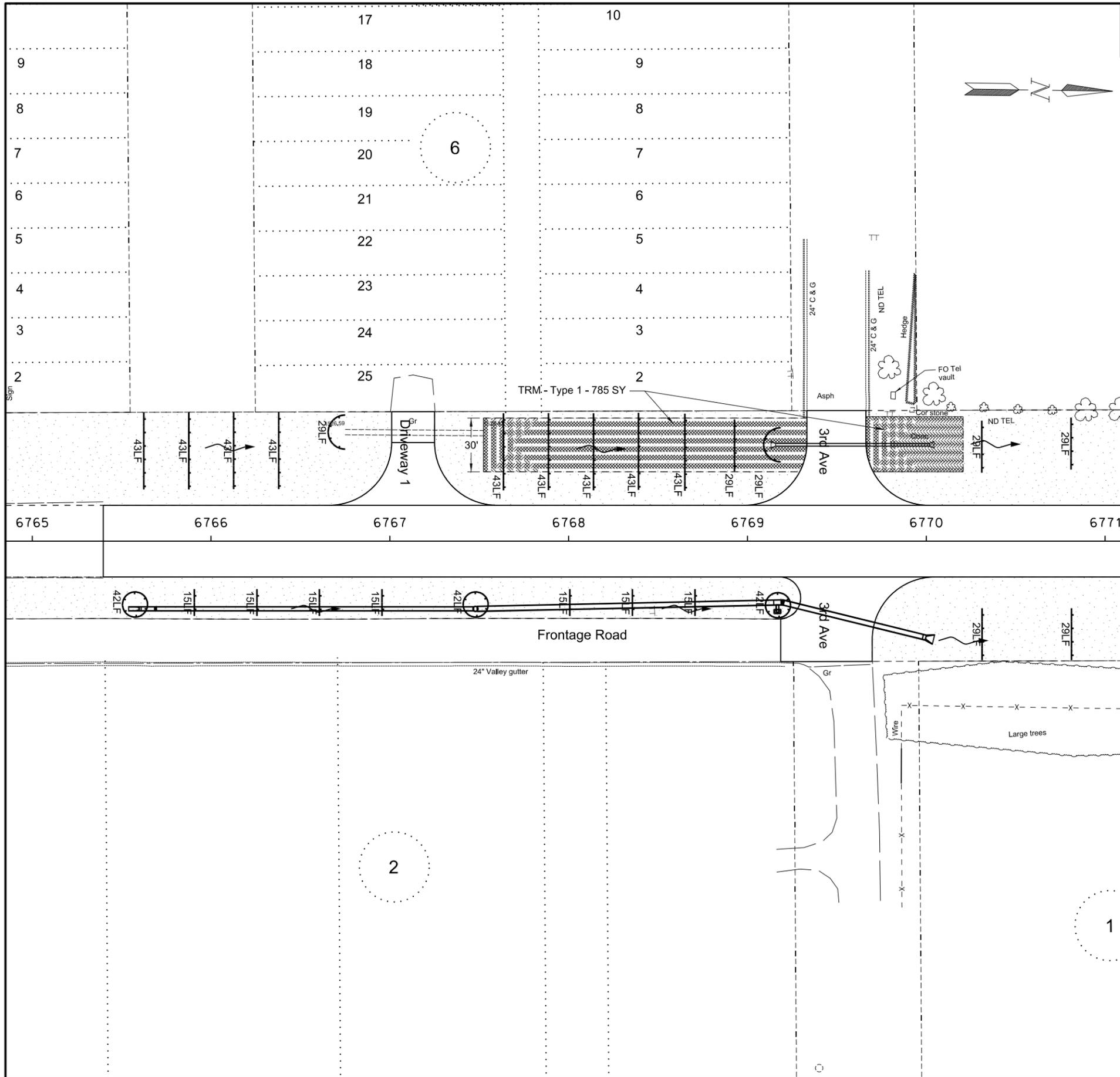
Item	Description	Quantity	Unit
708-1325	SILT FENCE SUPPORTED Sta 6783+00 to 6789+00	400	LF
708-1335	REMOVAL SILT FENCE SUPPORTED Sta 6783+00 to 6789+00	400	LF



- Fiber Roll
- x- - - -x- - - Silt Fence Supported
- s ——— Flotation Silt Curtain

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Temporary Erosion Control  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



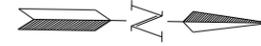
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	7

Item	Description	Quantity	Unit
708-1430	FIBER ROLLS 12IN Sta 6765+00 to 6771+00	819 LF	
708-2240	SEEDING - TYPE B - CL II Start Project to 3rd Ave - East US 281 Start Project to Driveway - West US 281 Driveway to 3rd Ave - West US 281	0.261 ACRE 0.305 ACRE 0.239 ACRE	
708-5500	MULCHING Start Project to 3rd Ave - East US 281 Start Project to Driveway - West US 281 Driveway to 3rd Ave - West US 281	0.261 ACRE 0.305 ACRE 0.239 ACRE	
708-5660	TRM TYPE 1 Sta 6767+52 to 6770+20 Lt	785 SY	

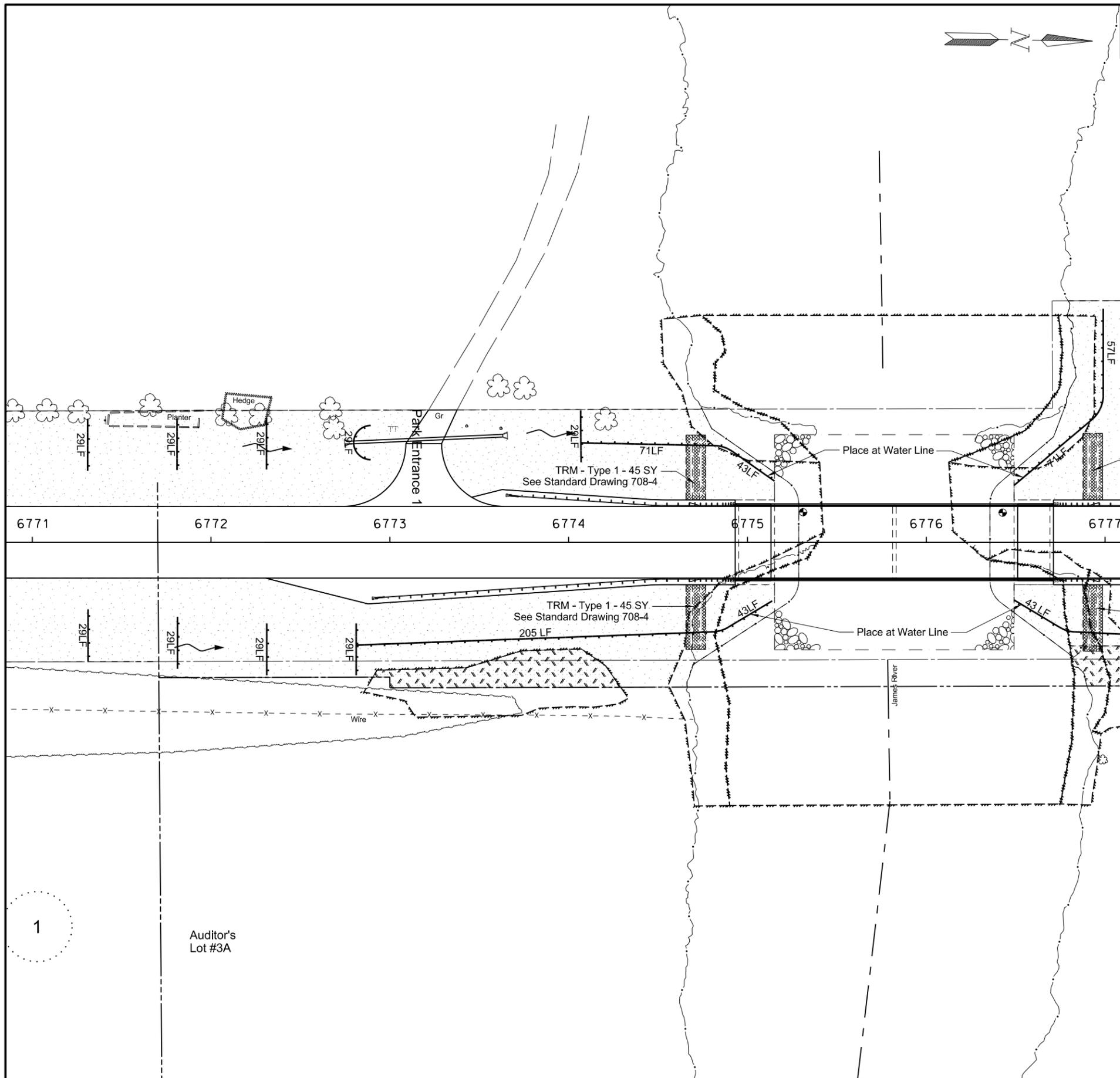
-  TRM - Type 1
-  Fiber Roll
-  Seeding - Type B - CL II & Mulching
-  Seeding - Type B - CL V

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Permanent Erosion Control & Seeding  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	8

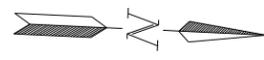


Item	Description	Quantity	Unit
708-1430	FIBER ROLLS 12IN Sta 6771+00 to 6777+00	794	LF
708-2240	SEEDING - TYPE B - CL II 3rd Ave to James River - East US 281 3th Ave to Park Entrance 1 - West US 281 Park Entrance to James River - West US 281	0.553 ACRE 0.410 ACRE 0.184 ACRE	
708-2280	SEEDING - TYPE B - CL V 3rd Ave to James River - East US 281	0.045	ACRE
708-5500	MULCHING 3rd Ave to James River - East US 281 3th Ave to Park Entrance 1 - West US 281 Park Entrance to James River - West US 281	0.553 ACRE 0.410 ACRE 0.184 ACRE	
708-5660	TRM TYPE 1 Southeast of Structure Southwest of Structure	45 SY 45 SY	

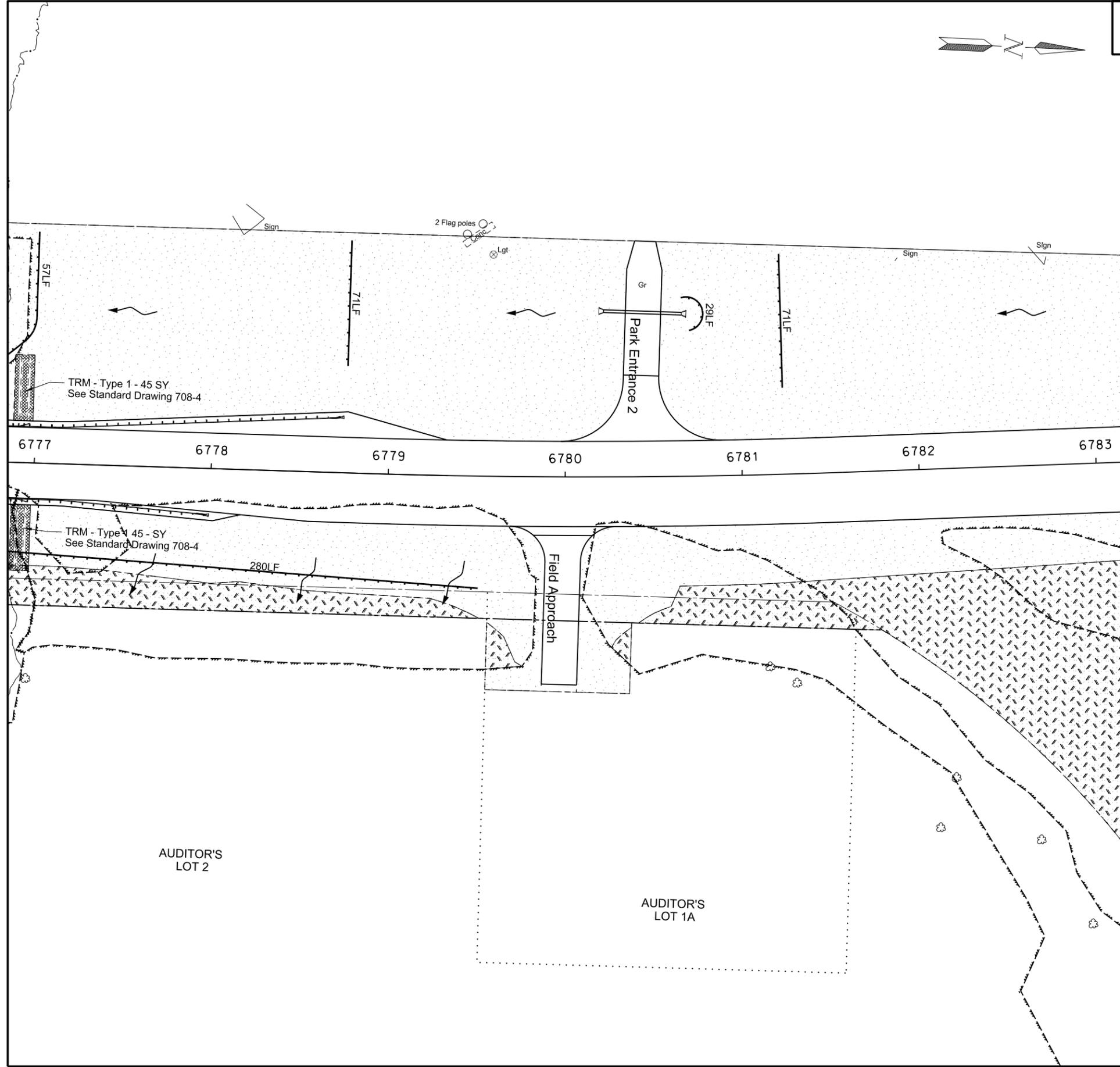
-  TRM - Type 1
-  Fiber Roll
-  Seeding - Type B - CL II & Mulching
-  Seeding - Type B - CL V

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Permanent Erosion Control & Seeding  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	9

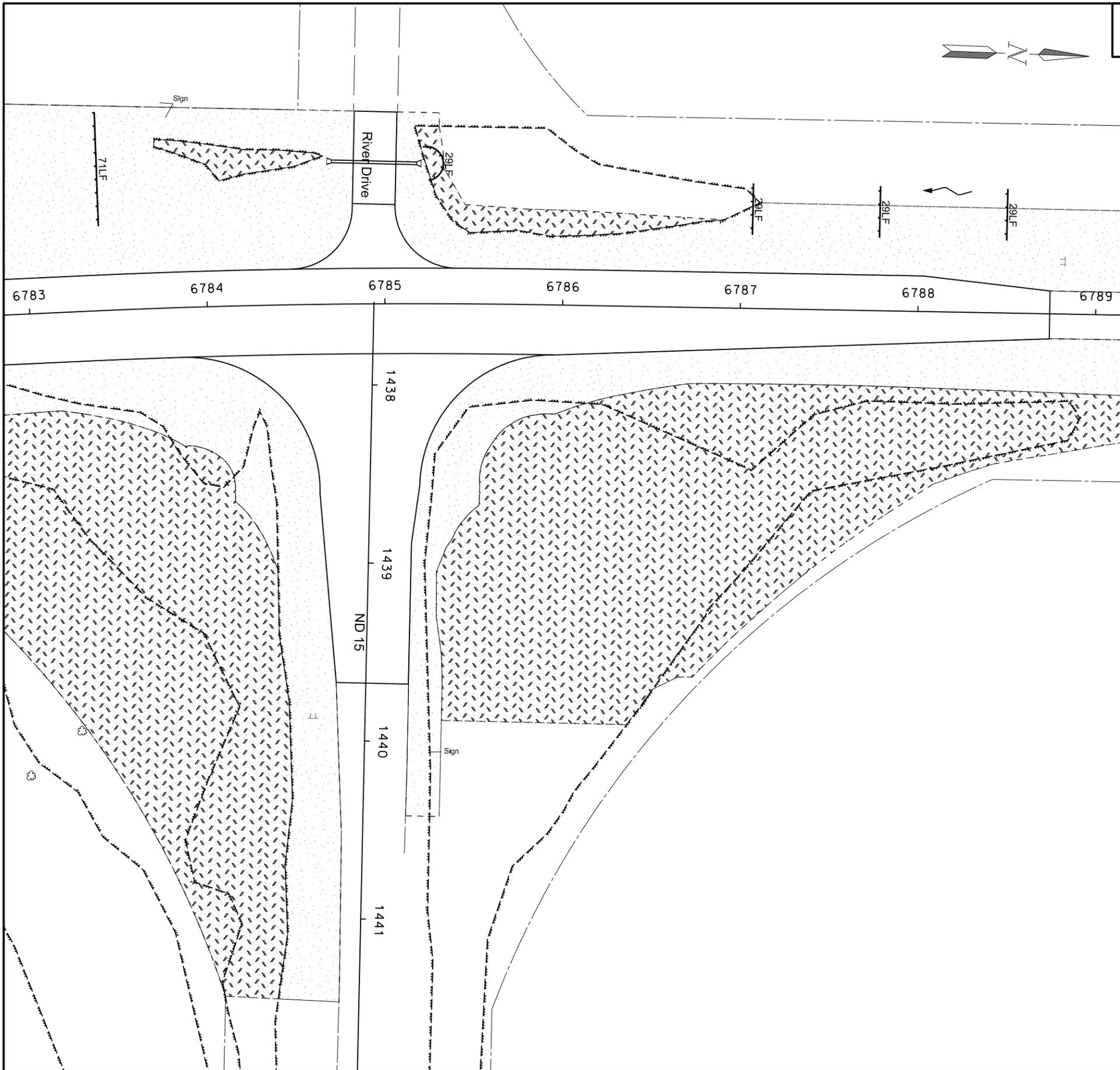


Item	Description	Quantity	Unit
708-1430	FIBER ROLLS 12IN Sta 6777+00 to 6783+00	451 LF	
708-2240	SEEDING - TYPE B - CL II James River to Field Approach - East US 281 James River to Park Entrance 2 - West US 281 Field Approach to ND 15 - East US 281 Park Entrance 2 to River Drive - West US 281	0.320 ACRE 0.896 ACRE 0.615 ACRE 0.949 ACRE	
708-2280	SEEDING - TYPE B - CL V James River to Field Approach - East US 281 Field Approach to ND 15 - East US 281	0.102 ACRE 1.027 ACRE	
708-5500	MULCHING James River to Field Approach - East US 281 James River to Park Entrance 2 - West US 281 Field Approach to ND 15 - East US 281 Park Entrance 2 to River Drive - West US 281	0.320 ACRE 0.896 ACRE 0.615 ACRE 0.949 ACRE	
708-5660	TRM TYPE 1 Northeast of Structure Northwest of Structure	45 SY 45 SY	

	TRM - Type 1
	Fiber Roll
	Seeding - Type B - CL II & Mulching
	Seeding - Type B - CL V

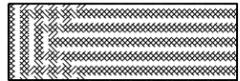
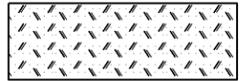
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Permanent Erosion Control & Seeding  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	75	10

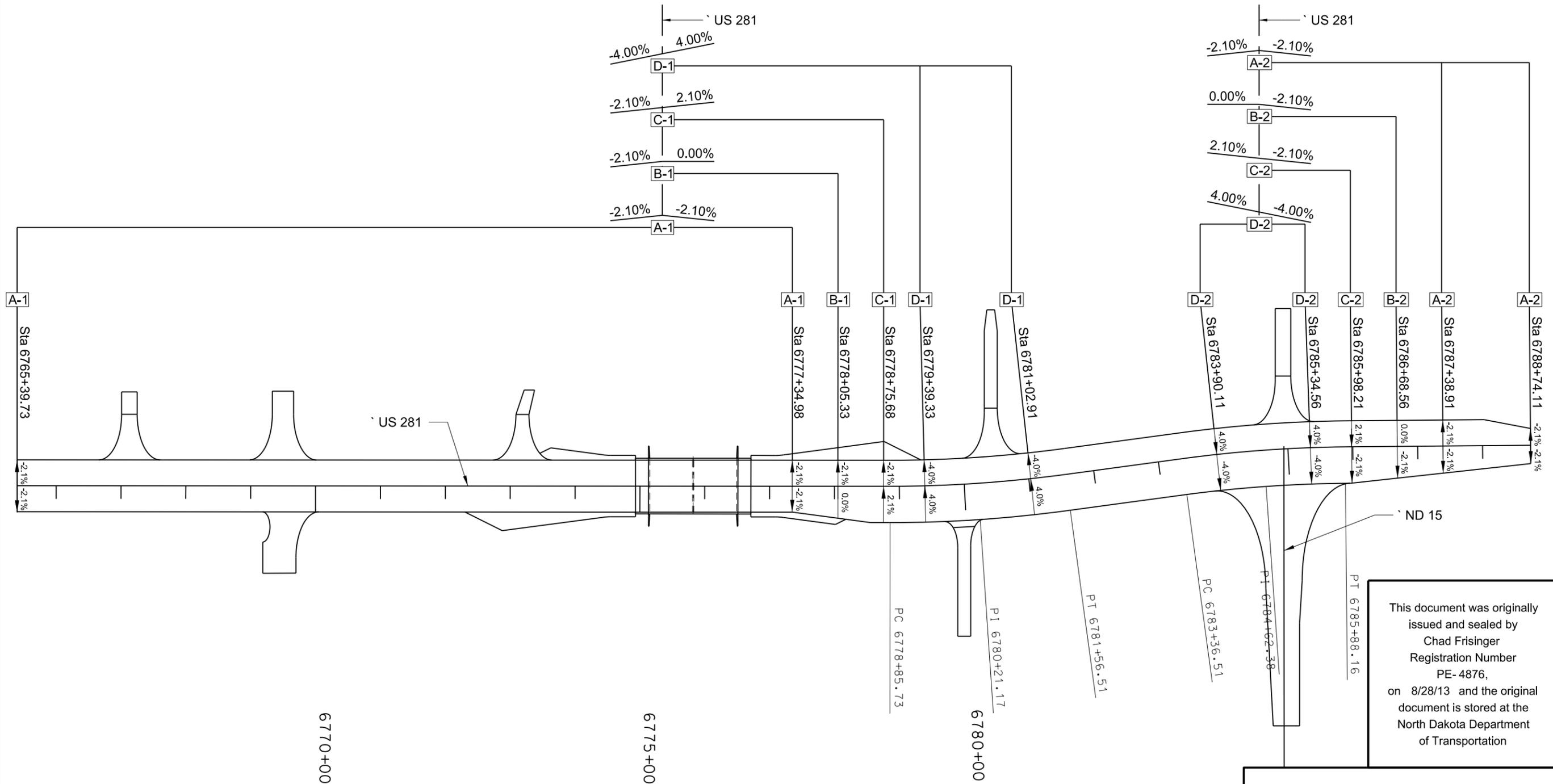
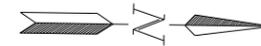
Item	Description	Quantity	Unit
708-1430	FIBER ROLLS 12IN Sta 6783+00 to 6789+00	187 LF	
708-2240	SEEDING - TYPE B - CL II ND 15 to End Project - East US 281 River Drive to End Project - West US 281	0.443 ACRE 0.394 ACRE	
708-2280	SEEDING - TYPE B - CL V Park Entrance 2 to River Drive - West US 281 ND 15 to End Project - East US 281 River Drive to End Project - West US 281	0.022 ACRE 0.952 ACRE 0.050 ACRE	
708-5500	MULCHING ND 15 to End Project - East US 281 River Drive to End Project - West US 281	0.443 ACRE 0.394 ACRE	

-  TRM - Type 1
-  Fiber Roll
-  Seeding - Type B - CL II & Mulching
-  Seeding - Type B - CL V

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Permanent Erosion Control & Seeding  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	80	1



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Superelevation Layout  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - New Rockford North to N Jct ND 15

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BRN-2-281(109)128	81	1

HORIZONTAL ALIGNMENT				CURVE DATA		US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS					
PNT	STATION	NORTHING	EASTING	ARC DEFINITION		DESC.	SEC-TWP-RGE	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET
										CONTROL POINT DESCRIPTION					
US 281 (SCL281)															
Beg	6758+46.16	251,128.54	2,307,320.06			SW Cor Sec 32 T-149-N R-66-W		248481.39	2307348.53						
										PRIMARY CONTROL					
PC	6765+27.55	251,809.85	2,307,309.94			W 1/4 Cor Sec 32 T-149-N R-66-W		251127.87	2307290.07	GPS 2	254422.83	2307289.99	1523.35	6791+48	52' R+
PI	6767+27.36	252,009.64	2,307,306.97	C300	C301	N 1/4 Cor Sec 33 T-149-N R-66-W		253816.28	2309889.66	#6 Rebar w/1 1/2" Alum cap - LS 1139					
PT	6769+27.01	252,208.74	2,307,290.10	PI STA= 6767+27.36	PI STA= 6771+57.88										
PC	6769+58.07	252,239.68	2,307,287.47	Delta = 3° 59' 40" LT	Delta = 3° 59' 40" RT										
PI	6771+57.88	252,438.78	2,307,270.59	D <sub>o</sub> = 1° 00'	D <sub>o</sub> = 1° 00'										
PT	6773+57.53	252,638.57	2,307,267.63	R = 5,729.65'	R = 5,729.65'										
Station Equation US 281 & ND 15				T = 199.81'	T = 199.81'										
US BK	6784+93.68	253,774.60	2,307,250.75	L = 399.46'	L = 399.46'										
US AH	6785+01.12	253,774.60	2,307,250.75												
ND 15	1437+53.28	253,774.60	2,307,250.75												
End	6837+87.60	259,067.49	2,307,146.81												
ND 15 (SCL15)															
Intscn US 281	1437+53.28	253,774.60	2,307,250.75												
End	1463+92.52	253,816.28	2,309,889.66												

REFERENCE MARKERS

R Mkr #	NORTHING	EASTING	STATION	OFFSET
129	256438.08	2307228.14	6811+65	30' R+

NOTES: Sheet 1 of 1

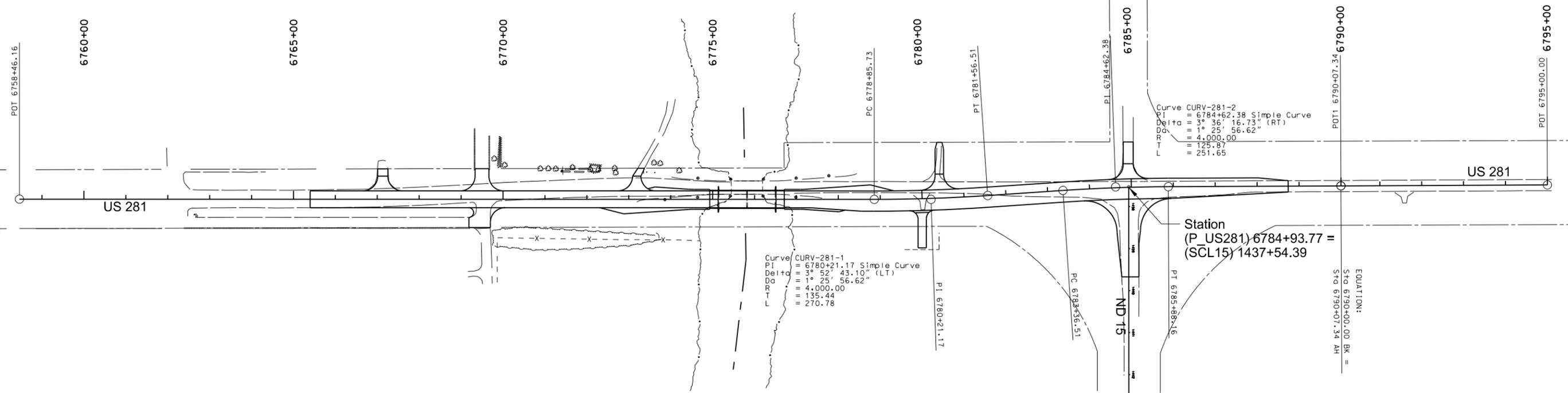
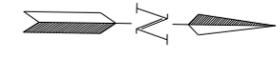
Date Survey Completed   /  /  

- Assumed Coordinates
- All coordinates on this sheet are Eddy County ground coordinates. They are derived from the "North Dakota Coordinate System of 1983", NAD83(CORS96).North Zone Combination Factor (cf) = 0.9998765

All coordinates and measurements on this document derived from the International Foot definition.

- INITIALIZING BENCH MARK NDGPS Stations (OPUS)
- NAVD-88
  - NGVD-29
  - GEOID 09
  - GEOID 03

This document was originally issued and sealed by  
 Lou Ann Gosbee  
 Registration Number  
 LS- 4973 ,  
 on 8/27/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation



Chain P US281 contains:  
8001 CUR CURV-281-1 CUR CURV-281-2 8003 8002

Beginning chain P US281 description  
=====

Point 8001 N 251,128.5358 E 2,307,320.0611 Sta 6758+46.16

Course from 8001 to PC CURV-281-1 N 0° 51' 03.58" W Dist 2,039.5700

Curve Data  
\*-----\*

Curve CURV-281-1  
P.I. Station 6780+21.17 N 253,303.3077 E 2,307,287.7576  
Delta = 3° 52' 43.10" (LT)  
Degree = 1° 25' 56.62"  
Tangent = 135.4418  
Length = 270.7802  
Radius = 4,000.0000  
External = 2.2924  
Long Chord = 270.7285  
Mid. Ord. = 2.2911  
P.C. Station 6778+85.73 N 253,167.8808 E 2,307,289.7692  
P.T. Station 6781+56.51 N 253,438.2883 E 2,307,276.5899  
C.C. N 253,108.4724 E 2,303,290.2104  
Back = N 0° 51' 03.58" W  
Ahead = N 4° 43' 46.68" W  
Chord Bear = N 2° 47' 25.13" W

Course from PT CURV-281-1 to PC CURV-281-2 N 4° 43' 46.68" W Dist 180.0000

Curve Data  
\*-----\*

Curve CURV-281-2  
P.I. Station 6784+62.38 N 253,743.1143 E 2,307,251.3699  
Delta = 3° 36' 16.73" (RT)  
Degree = 1° 25' 56.62"  
Tangent = 125.8675  
Length = 251.6519  
Radius = 4,000.0000  
External = 1.9798  
Long Chord = 251.6104  
Mid. Ord. = 1.9789  
P.C. Station 6783+36.51 N 253,617.6754 E 2,307,261.7482  
P.T. Station 6785+88.16 N 253,868.9575 E 2,307,248.8987  
C.C. N 253,947.4913 E 2,311,248.1277  
Back = N 4° 43' 46.68" W  
Ahead = N 1° 07' 29.95" W  
Chord Bear = N 2° 55' 38.32" W

Course from PT CURV-281-2 to 8003 N 1° 07' 29.95" W Dist 411.8379

End Region 1  
Equation: Sta 6790+00.00 (BK) = Sta 6790+07.34 (AH) -----  
Begin Region 2

Point 8003 N 254,280.7160 E 2,307,240.8129 Sta 6790+07.34

Course from 8003 to 8002 N 1° 07' 29.95" W Dist 492.6616

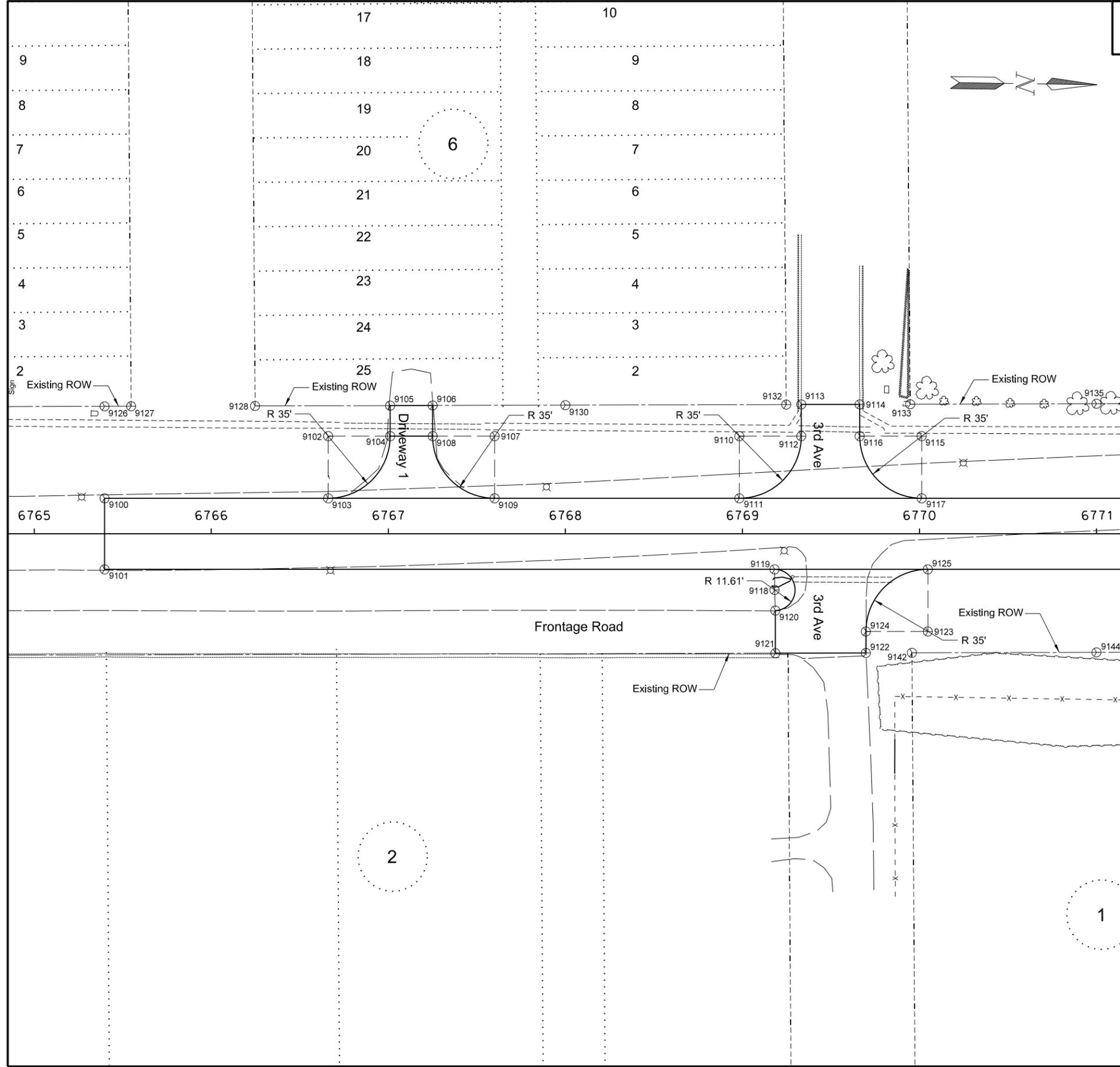
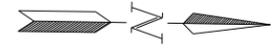
Point 8002 N 254,773.2826 E 2,307,231.1402 Sta 6795+00.00

=====

Ending chain P US281 description

This document was originally issued and sealed by  
Chad Frisinger  
Registration Number  
PE- 4876,  
on 8/28/13 and the original document is stored at the  
North Dakota Department  
of Transportation

Alignment Description  
  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

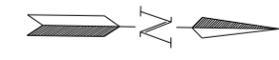


Point	North	East	Station	Offset
9100	251821.7323	2307289.7623	6765+39.73	-20.0000
9101	251822.3263	2307329.7579	6765+39.73	20.0000
9102	251947.5148	2307252.8901	6766+66.05	-55.0000
9103	251948.0346	2307287.8863	6766+66.05	-20.0000
9104	251982.5109	2307252.3703	6767+01.05	-55.0000
9105	251982.2552	2307235.1509	6767+01.05	-72.2213
9106	252006.2516	2307234.7321	6767+25.05	-72.2836
9107	252041.5044	2307251.4940	6767+60.05	-55.0000
9108	252006.5083	2307252.0138	6767+25.05	-55.0000
9109	252042.0242	2307286.4902	6767+60.05	-20.0000
9110	252179.6887	2307249.4415	6768+98.25	-55.0000
9111	252180.2085	2307284.4376	6768+98.25	-20.0000
9112	252214.6848	2307248.9216	6769+33.25	-55.0000
9113	252214.4195	2307231.0561	6769+33.25	-72.8675
9114	252247.4158	2307230.5660	6769+66.25	-72.8675
9115	252282.6773	2307247.9117	6770+01.25	-55.0000
9116	252247.6812	2307248.4315	6769+66.25	-55.0000
9117	252283.1971	2307282.9078	6770+01.25	-20.0000
9118	252200.8802	2307335.7476	6769+18.15	31.6113
9119	252200.7077	2307324.1375	6769+18.15	20.0000
9120	252201.5061	2307347.3420	6769+18.61	43.2138
9121	252201.8626	2307371.3395	6769+18.61	67.2139
9122	252252.9940	2307370.4471	6769+69.75	67.0810
9123	252287.8107	2307357.8476	6770+04.75	55.0000
9124	252252.8145	2307358.3674	6769+69.75	55.0000
9125	252287.2908	2307322.8514	6770+04.75	20.0000
9126	251820.9629	2307237.9659	6765+39.73	-71.8021
9127	251835.9717	2307237.7040	6765+54.74	-71.8411
9128	251905.9618	2307236.4824	6766+24.74	-72.0230
9130	252081.1941	2307233.4241	6768+00.00	-72.4784
9132	252205.9194	2307231.2473	6769+24.74	-72.8025
9133	252275.9095	2307230.0258	6769+94.74	-72.9844
9135	252381.1495	2307228.1891	6771+00.00	-73.2579
9142	252279.0012	2307369.9932	6769+95.76	67.0134
9144	252383.2288	2307368.1741	6771+00.00	66.7425

Stations and offsets from US 281 ` chain: P\_US281

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

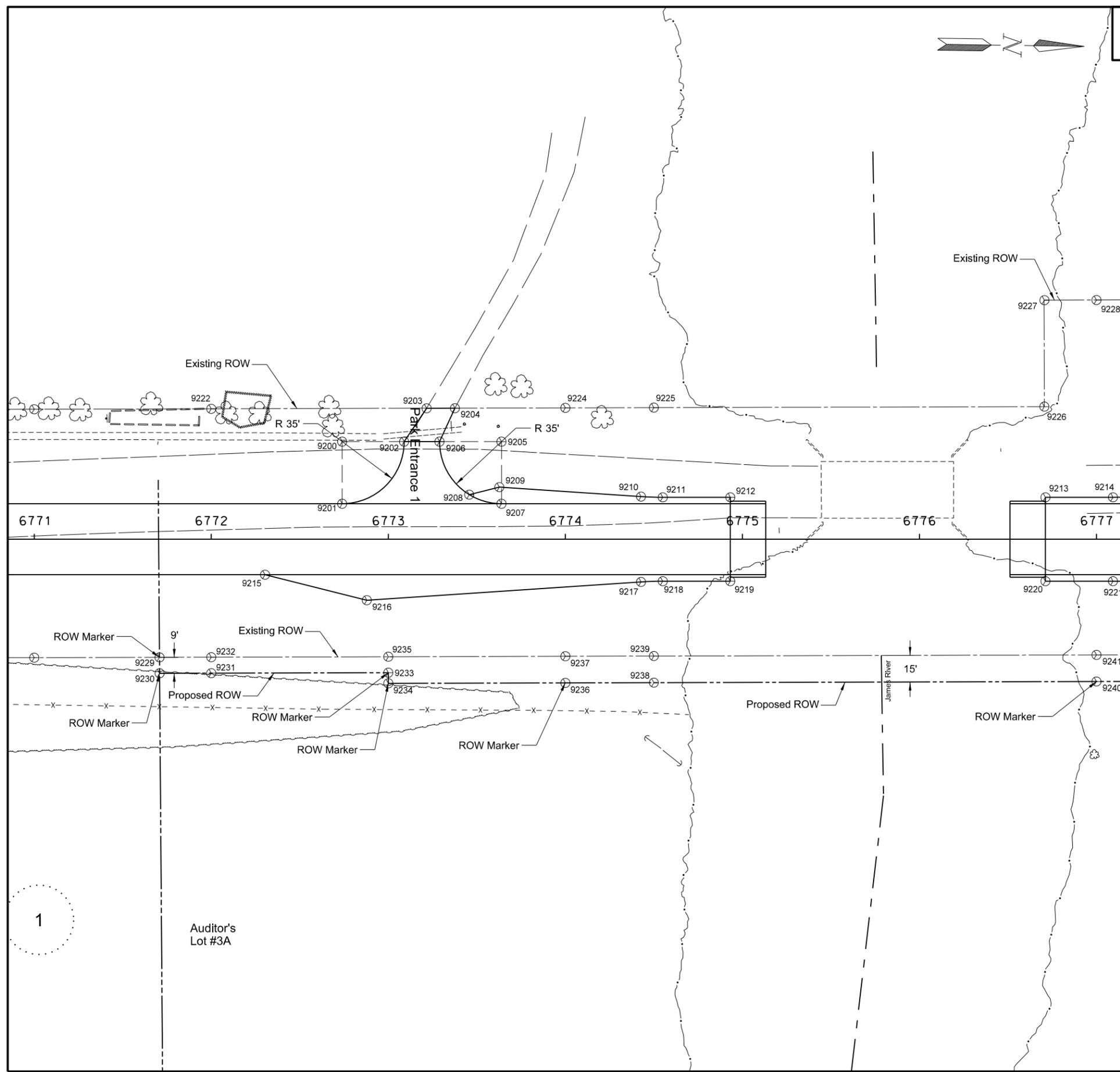
Survey Data Points  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



Item	Description	Quantity	Unit
720-0110	RIGHT OF WAY MARKERS Sta 6771+70.8 to 6777+00.0	6	EA

Point	North	East	Station	Offset
9200	252555.3204	2307243.8619	6772+73.92	-55.0000
9201	252555.8402	2307278.8581	6772+73.92	-20.0000
9202	252590.3165	2307243.3421	6773+08.92	-55.0000
9203	252602.7544	2307224.3422	6773+21.64	-73.8130
9204	252618.7481	2307224.0631	6773+37.63	-73.8546
9205	252645.3105	2307242.5252	6773+63.92	-55.0000
9206	252610.3143	2307243.0451	6773+28.92	-55.0000
9207	252645.8303	2307277.5214	6773+63.92	-20.0000
9208	252627.5173	2307272.6650	6773+45.68	-25.1279
9209	252644.4617	2307268.1604	6773+62.69	-29.3802
9210	252724.5655	2307272.3068	6774+42.72	-24.0447
9211	252736.8615	2307272.5334	6774+55.01	-23.6354
9212	252775.0031	2307271.9669	6774+93.16	-23.6354
9213	252952.9835	2307269.3232	6776+71.16	-23.6354
9214	252991.1251	2307268.7566	6777+09.31	-23.6354
9215	252512.8808	2307319.4960	6772+30.36	19.9954
9216	252570.5829	2307333.0142	6772+87.86	34.3692
9217	252725.2798	2307320.3908	6774+42.72	24.0447
9218	252737.5635	2307319.7990	6774+55.01	23.6354
9219	252775.7052	2307319.2325	6774+93.16	23.6354
9220	252953.6855	2307316.5888	6776+71.16	23.6354
9221	252991.8272	2307316.0223	6777+09.31	23.6354
9222	252481.1346	2307226.4441	6772+00.00	-73.5178
9224	252681.1048	2307222.9540	6774+00.00	-74.0375
9225	252731.0974	2307222.0815	6774+50.00	-74.1674
9226	252951.6138	2307218.2329	6776+70.55	-74.7405
9227	252950.7487	2307158.2388	6776+70.58	-134.7407
9228	252980.1690	2307157.7254	6777+00.00	-134.8172
9229	252453.9764	2307366.9394	6771+70.76	66.5587
9230	252454.1752	2307375.9373	6771+70.82	75.5585
9231	252483.3475	2307375.4281	6772+00.00	75.4827
9232	252483.2139	2307366.4291	6772+00.00	66.4827
9233	252583.3327	2307373.6831	6773+00.00	75.2229
9234	252583.4218	2307379.6824	6773+00.00	81.2229
9235	252583.1990	2307364.6841	6773+00.00	66.2229
9236	252683.4069	2307377.9374	6774+00.00	80.9630
9237	252683.1841	2307362.9390	6774+00.00	65.9630
9238	252733.3994	2307377.0649	6774+50.00	80.8331
9239	252733.1767	2307362.0665	6774+50.00	65.8331
9240	252983.3622	2307372.7023	6777+00.00	80.1835
9241	252983.1394	2307357.7040	6777+00.00	65.1835

Stations and offsets from US 281 ` chain: P\_US281



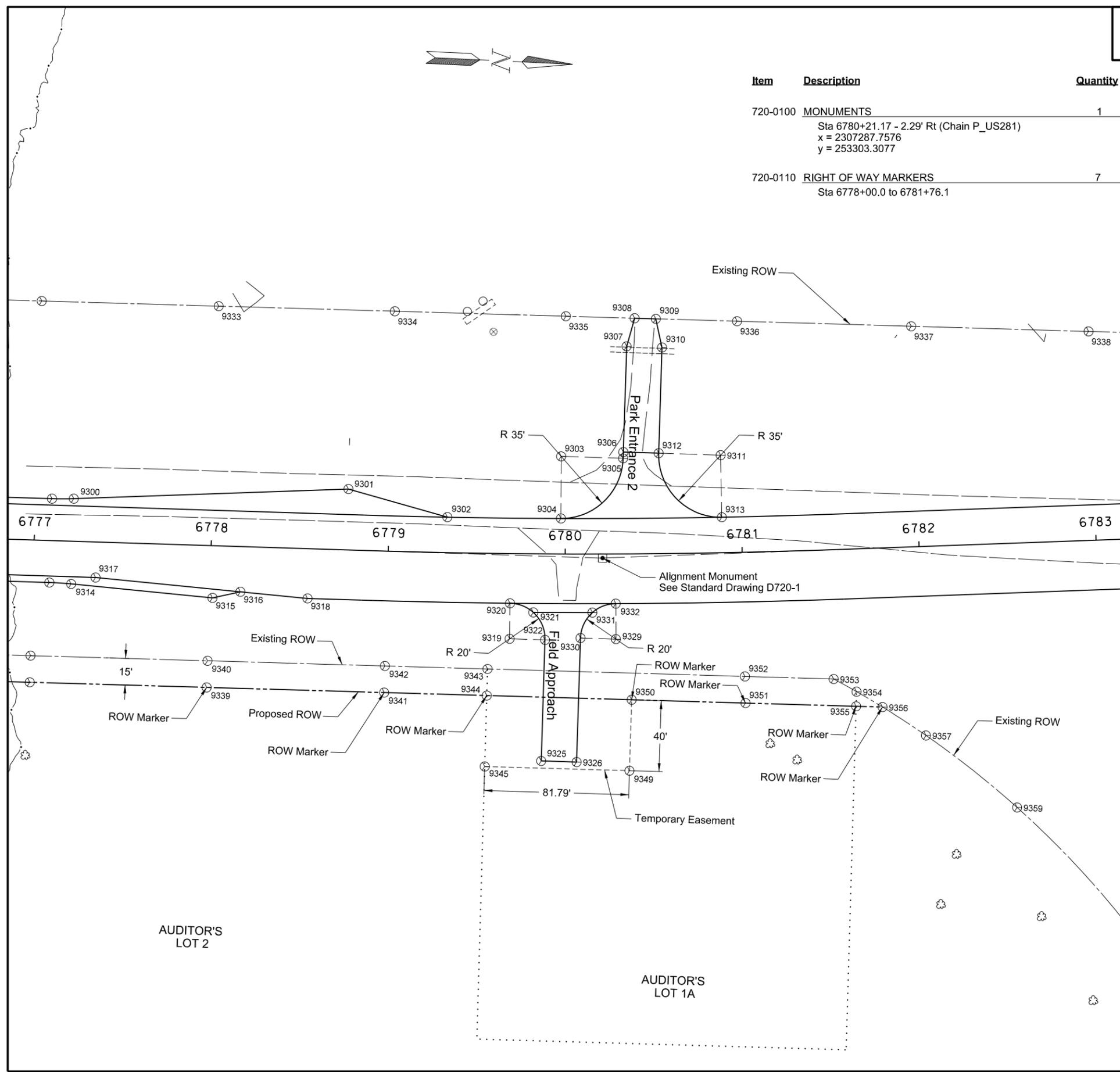
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Survey Data Points  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

Item	Description	Quantity	Unit
720-0100	MONUMENTS Sta 6780+21.17 - 2.29' Rt (Chain P_US281) x = 2307287.7576 y = 253303.3077	1	EA
720-0110	RIGHT OF WAY MARKERS Sta 6778+00.0 to 6781+76.1	7	EA

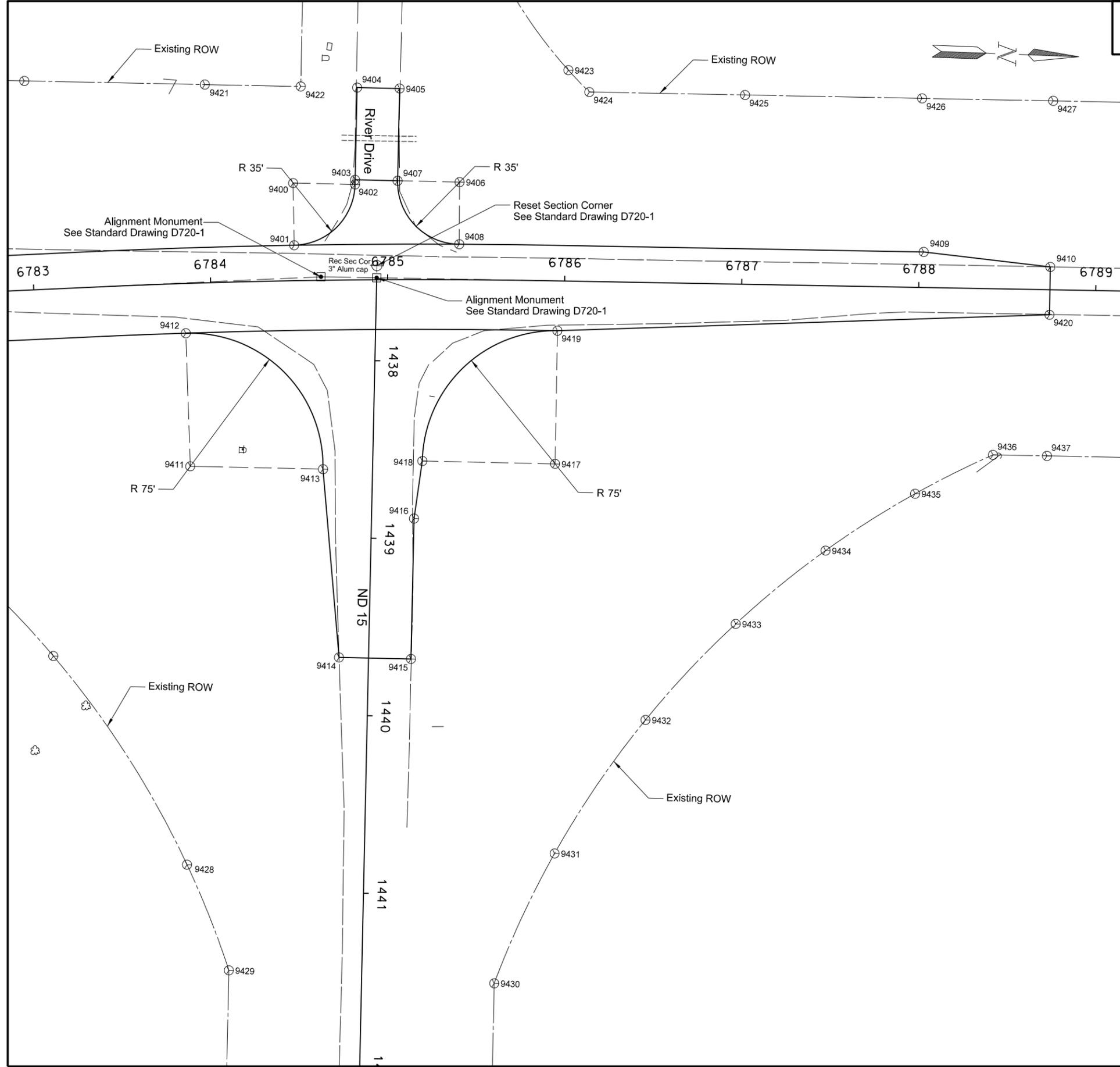
Point	North	East	Station	Offset
9300	253003.4089	2307268.1649	6777+21.60	-24.0447
9301	253158.1058	2307255.5414	6778+76.46	-34.3692
9302	253214.6708	2307268.7933	6779+33.06	-20.0000
9303	253277.2972	2307231.5963	6779+97.55	-55.0000
9304	253278.7950	2307266.5643	6779+97.55	-20.0000
9305	253312.2934	2307231.0765	6780+33.01	-53.8666
9306	253312.2407	2307227.5317	6780+33.15	-57.4094
9307	253311.3553	2307167.9216	6780+35.41	-116.9849
9308	253315.1172	2307151.8640	6780+40.16	-132.8214
9309	253327.1159	2307151.6857	6780+52.56	-132.3396
9310	253331.3531	2307167.6246	6780+55.99	-116.1853
9311	253367.2347	2307226.7148	6780+88.88	-55.0000
9312	253332.2385	2307227.2346	6780+53.42	-56.6219
9313	253369.5304	2307261.6394	6780+88.88	-20.0000
9314	253004.1231	2307316.2489	6777+21.60	24.0447
9315	253084.2270	2307320.3952	6778+01.63	29.3802
9316	253099.8239	2307316.2489	6778+17.29	25.4660
9317	253017.7613	2307312.0012	6777+35.30	20.0000
9318	253137.8669	2307318.2181	6778+55.30	28.0000
9319	253252.9829	2307335.6301	6779+69.15	48.0000
9320	253252.2689	2307315.6428	6779+69.15	28.0000
9321	253265.6425	2307320.1467	6779+82.24	33.0000
9322	253272.9807	2307335.3331	6779+88.90	48.4664
9325	253273.9943	2307403.5691	6779+87.19	116.6877
9326	253293.9921	2307403.2721	6780+06.62	117.2435
9329	253312.9511	2307333.0426	6780+28.46	48.0000
9330	253292.9533	2307333.3397	6780+08.71	47.3359
9331	253299.0050	2307318.7072	6780+15.36	33.0000
9332	253311.9408	2307313.0681	6780+28.46	28.0000
9333	253080.1541	2307155.9803	6778+00.00	-135.0770
9334	253179.6565	2307154.2437	6779+00.00	-135.3110
9335	253276.2816	2307152.5574	6780+00.00	-134.0093
9336	253373.0322	2307150.8688	6781+00.00	-130.2875
9337	253471.3831	2307149.1523	6782+00.00	-124.2749
9338	253571.5801	2307147.4036	6783+00.00	-117.7560
9339	253083.3473	2307370.9573	6778+00.00	79.9237
9340	253083.1245	2307355.9589	6778+00.00	64.9237
9341	253183.6167	2307369.2073	6779+00.00	79.6891
9342	253183.3404	2307354.2099	6779+00.00	64.6891
9343	253241.3131	2307353.1981	6779+57.05	65.1588
9344	253241.5748	2307368.1958	6779+56.83	80.1570
9345	253242.2728	2307408.1897	6779+56.24	120.1525
9349	253324.0472	2307406.7625	6780+35.60	122.1929
9350	253323.4531	2307366.7668	6780+37.07	82.2211
9351	253387.7502	2307365.6446	6781+00.00	84.9921
9352	253386.7233	2307350.6603	6781+00.00	69.9276
9353	253436.8647	2307349.7852	6781+49.19	72.8355
9354	253450.0990	2307356.3016	6781+61.71	80.4141
9355	253450.2431	2307364.5540	6781+61.17	88.6503
9356	253465.1684	2307364.2935	6781+76.07	89.6213
9357	253490.4107	2307379.1326	6782+00.00	106.4913
9358	253600.0246	2307470.4284	6783+01.71	206.5142
9359	253543.7395	2307417.3020	6782+50.00	148.9279

Stations and offsets from US 281 chain: P\_US281



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Survey Data Points  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



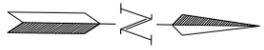
Item	Description	Quantity	Unit
720-0100	MONUMENTS	3	EA
	Sta 6784+62.38 - 1.98' Lt (Chain P_US281) x = 2307251.3699 y = 253743.1143		
	Sta 6784+93.80 - 1.11' Lt (Chain P_US281) x = 2307250.7517 y = 253774.5952		
	Sta 6784+93.99 - 7.99' Lt (Chain P_US281) x = 2307243.8775 y = 253774.4866		

Point	North	East	Station	Offset
9400	253725.4285	2307199.2126	6784+47.54	-55.0000
9401	253727.3452	2307234.1601	6784+47.54	-20.0000
9402	253760.4242	2307198.6598	6784+82.05	-53.7863
9403	253760.3831	2307196.0612	6784+82.13	-56.3841
9404	253759.5627	2307144.1227	6784+83.66	-108.3054
9405	253783.5598	2307143.7437	6785+07.02	-107.6564
9406	253819.3761	2307195.1520	6785+40.30	-55.0000
9407	253784.3805	2307195.7048	6785+05.79	-55.7042
9408	253820.4819	2307230.1345	6785+40.30	-20.0000
9409	254082.7989	2307224.6956	6788+02.44	-20.0000
9410	254154.5950	2307230.4540	6788+74.11	-12.8331
9411	253673.3203	2307360.7842	6783+85.05	103.0000
9412	253668.0437	2307285.9700	6783+85.05	28.0000
9413	253748.3110	2307359.5997	6784+61.99	106.3741
9414	253761.3077	2307465.1983	6784+69.99	212.4917
9415	253801.9752	2307464.5560	6785+12.94	213.6311
9416	253800.7260	2307385.4685	6785+14.79	134.5536
9417	253879.2028	2307351.7173	6785+96.39	103.0000
9418	253804.2121	2307352.9018	6785+19.63	102.1399
9419	253877.7303	2307276.7318	6785+96.39	28.0000
9420	254155.1241	2307257.3959	6788+74.11	14.1140
9421	253673.5498	2307145.6239	6784+00.00	-111.6397
9422	253727.7068	2307144.6787	6784+52.66	-109.3307
9423	253878.4603	2307129.8683	6786+00.00	-118.8208
9424	253890.7113	2307141.7293	6786+12.02	-106.7216
9425	253978.6808	2307140.1162	6787+00.00	-106.6073
9426	254078.6641	2307138.2826	6788+00.00	-106.4774
9427	254152.7584	2307136.9239	6788+74.11	-106.3812
9428	253679.8871	2307585.0658	6783+75.00	327.1763
9429	253705.7222	2307643.6448	6783+98.80	387.4179
9430	253855.7681	2307645.3570	6785+64.89	396.0620
9431	253887.1229	2307571.0016	6786+00.00	322.3975
9432	253935.6192	2307493.9360	6786+50.00	246.2989
9433	253984.5299	2307437.9723	6787+00.00	191.3062
9434	254033.6923	2307394.8274	6787+50.00	149.1350
9435	254083.0365	2307360.9418	6788+00.00	116.2246
9436	254126.1876	2307337.4448	6788+43.60	93.5794
9437	254156.6851	2307336.8855	6788+74.11	93.6190

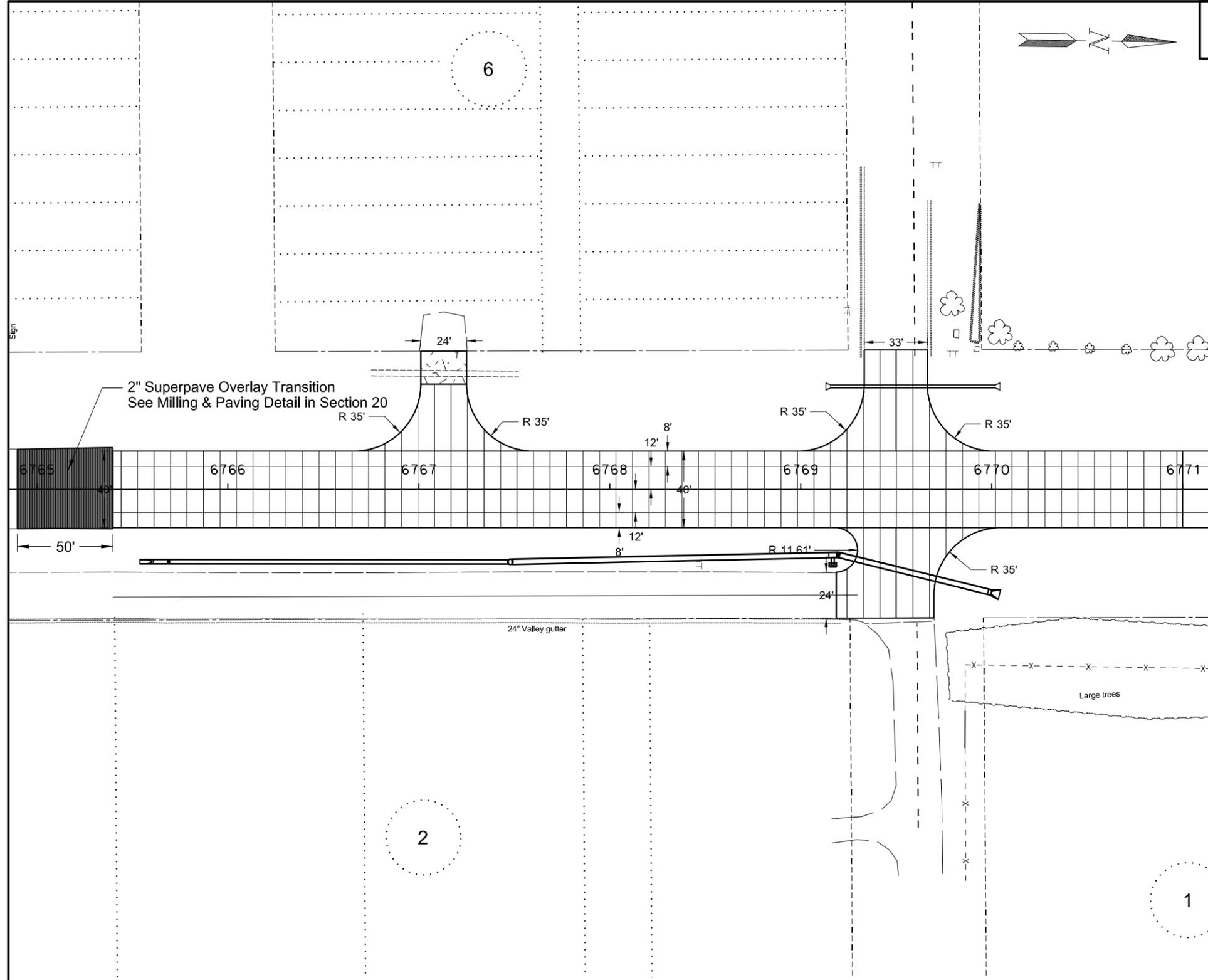
Stations and offsets from US 281 ` chain: P\_US281

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

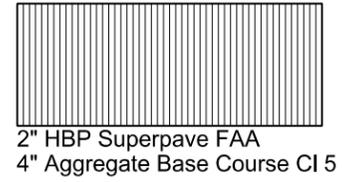
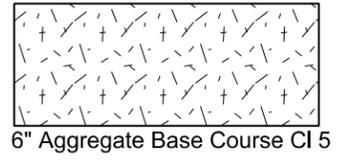
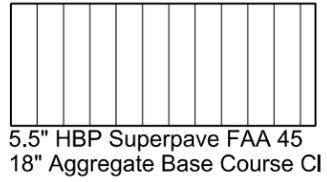
Survey Data Points  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	90	1



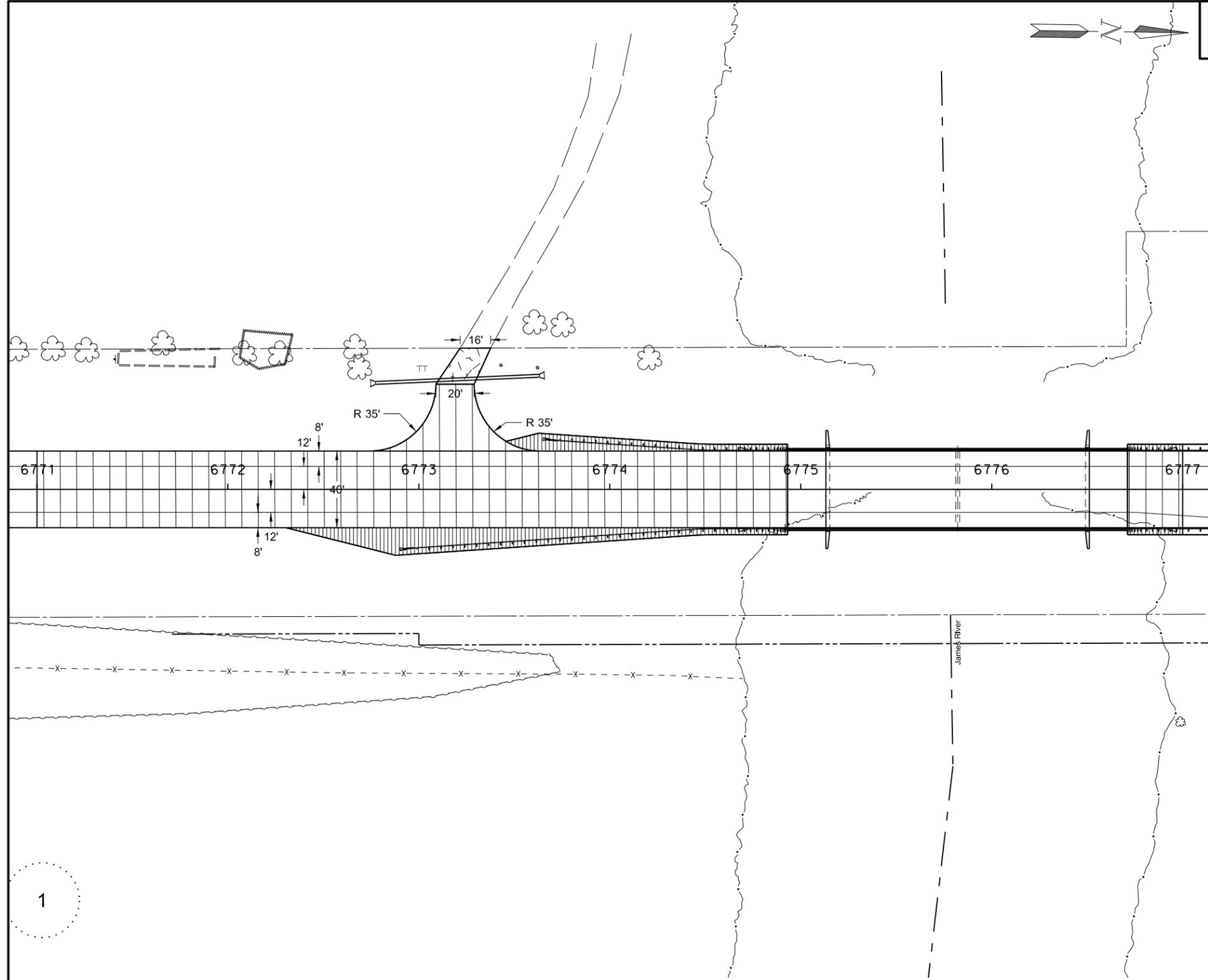
Item	Description	Quantity	Unit
302-0120	AGGREGATE BASE COURSE CL 5		
	Sta 6765+39.73 to 6771+00 - US 281 - 18"	2,794	Ton
	Sta 700+77.75 to 700+95.00 - Driveway - 6"	16	Ton
	Sta 700+95.00 to 700+30.00 - Driveway - 18"	196	Ton
	Sta 200+77.13 to 201+30.00 - 3rd Ave - 18"	310	Ton
	Sta 201+70.00 to 202+17.13 - 3rd Ave - 18"	305	Ton
401-0100	MC 70 OR 250 LIQUID ASPHALT		
	Sta 6765+39.73 to 6771+00 - US 281	669.1	Gal
	Sta 700+95.00 to 700+30.00 - Driveway	43.9	Gal
	Sta 200+77.13 to 201+30.00 - 3rd Ave	71.0	Gal
	Sta 201+70.00 to 202+17.13 - 3rd Ave	74.2	Gal
401-0150	SS1H OR CSSH OR MS1 EMULSIFIED ASPHALT		
	Sta 6764+89.73 to 6765+39.73 - US 281	11.7	Gal
	Sta 6765+39.73 to 6771+00 - US 281	267.6	Gal
	Sta 700+95.00 to 700+30.00 - Driveway	17.6	Gal
	Sta 200+77.13 to 201+30.00 - 3rd Ave	28.4	Gal
	Sta 201+70.00 to 202+17.13 - 3rd Ave	29.7	Gal
410-0215	SUPERPAVE FAA 45		
	Sta 6764+89.73 to 6765+39.73 - US 281 - 2"	26	Ton
	Sta 6765+39.73 to 6771+00 - US 281 - 5.5"	789	Ton
	Sta 700+95.00 to 700+30.00 - Driveway - 5.5"	50	Ton
	Sta 200+77.13 to 201+30.00 - 3rd Ave - 5.5"	82	Ton
	Sta 201+70.00 to 202+17.13 - 3rd Ave - 5.5"	87	Ton



This document was originally issued and sealed by  
Chad Frisinger  
Registration Number  
PE- 4876,  
on 8/28/13 and the original document is stored at the  
North Dakota Department  
of Transportation

Paving  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

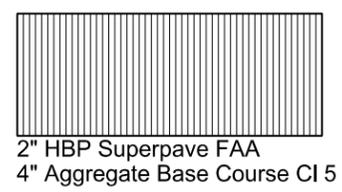
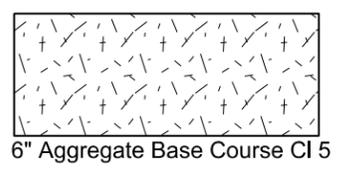
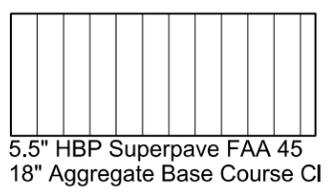
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	90	2

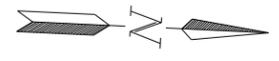


Item	Description	Quantity	Unit
302-0120	AGGREGATE BASE COURSE CL 5		
	Sta 6771+00 to 6774+93.16 - US 281 - 18"	1,812	Ton
	Sta 6776+71.16 to 6777+00 - US 281 - 18"	120	Ton
	Sta 6772+30.36 to 6774+93.16 Rt - Gaurdrail - 4"	60	Ton
	Sta 6773+53.47 to 6774+93.16 Lt - Gaurdrail - 4"	24	Ton
	Sta 6776+71.16 to 6777+00 Rt - Guardrail - 4"	4	Ton
	Sta 6776+71.16 to 6777+00 Lt - Guardrail - 4"	4	Ton
	Sta 300+76.17 to 300+95.00 - Park 1 - 6"	13	Ton
	Sta 300+95.00 to 301+30.00 - Park 1 - 18"	165	Ton
401-0100	MC 70 OR 250 LIQUID ASPHALT		
	Sta 6771+00 to 6774+93.16 - US 281	454.6	Gal
	Sta 6776+71.16 to 6777+00 - US 281	32.0	Gal
	Sta 6772+30.36 to 6774+93.16 Rt - Gaurdrail	64.2	Gal
	Sta 6773+53.47 to 6774+93.16 Lt - Gaurdrail	25.1	Gal
	Sta 6776+71.16 to 6777+00 Rt - Guardrail	3.8	Gal
	Sta 6776+71.16 to 6777+00 Lt - Guardrail	3.8	Gal
	Sta 300+95.00 to 301+30.00 - Park 1	38.8	Gal
401-0150	SS1H OR CSSH OR MS1 EMULSIFIED ASPHALT		
	Sta 6771+00 to 6774+93.16 - US 281	178.3	Gal
	Sta 6776+71.16 to 6777+00 - US 281	12.8	Gal
	Sta 300+95.00 to 301+30.00 - Park 1	14.6	Gal
410-0215	SUPERPAVE FAA 45		
	Sta 6771+00 to 6774+93.16 - US 281 - 5.5"	545	Ton
	Sta 6776+71.16 to 6777+00 - US 281 - 5.5"	39	Ton
	Sta 6772+30.36 to 6774+93.16 Rt - Gaurdrail - 2"	27	Ton
	Sta 6773+53.47 to 6774+93.16 Lt - Gaurdrail - 2"	10	Ton
	Sta 6776+71.16 to 6777+00 Rt - Guardrail - 2"	1	Ton
	Sta 6776+71.16 to 6777+00 Lt - Guardrail - 2"	1	Ton
	Sta 300+95.00 to 301+30.00 - Park 1 - 5.5"	45	Ton

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

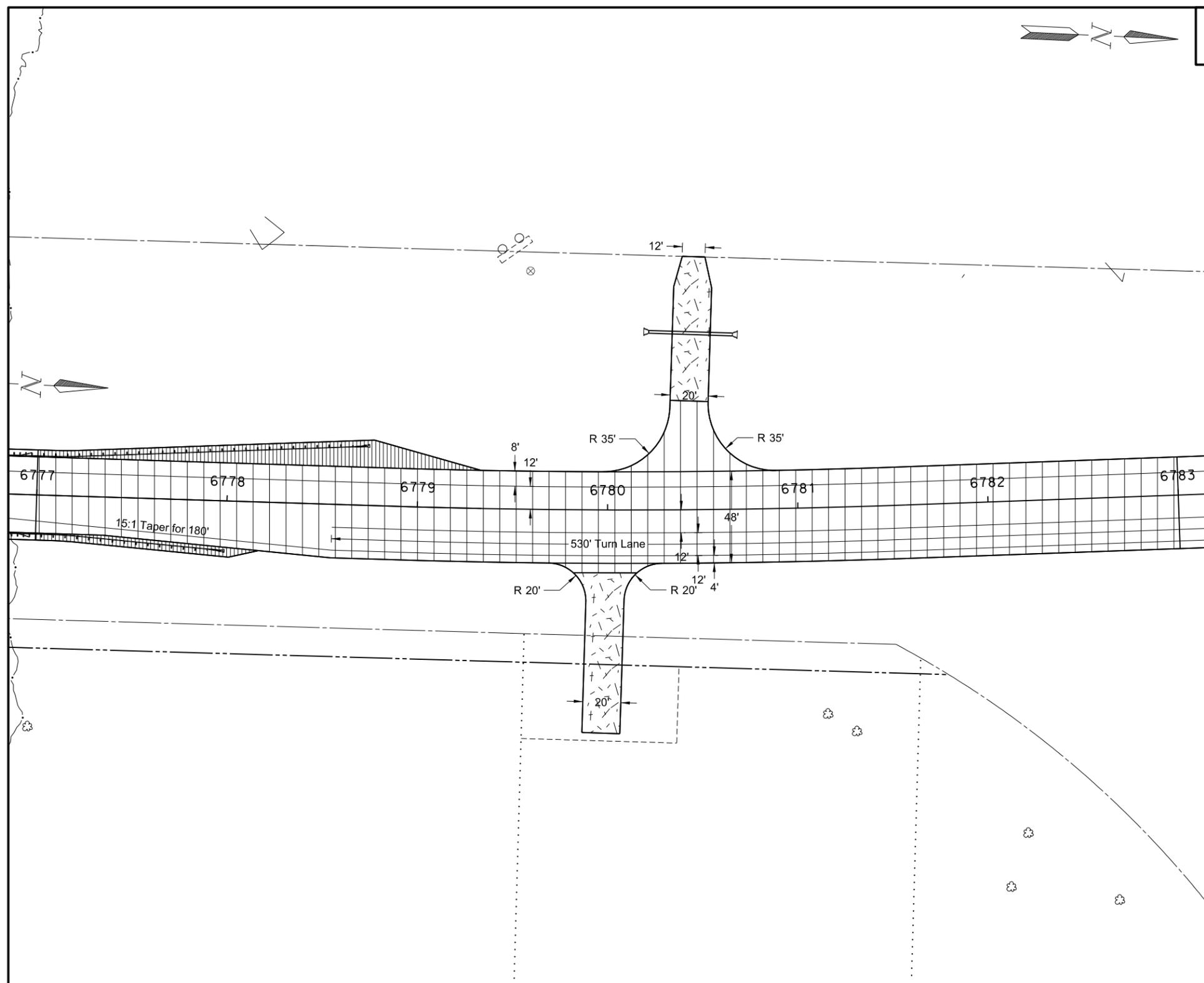
Paving  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



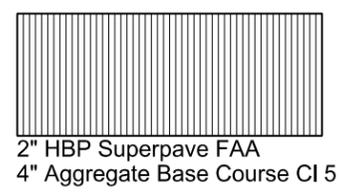
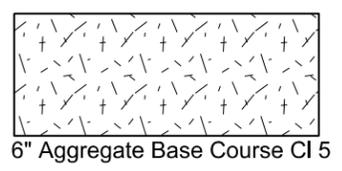
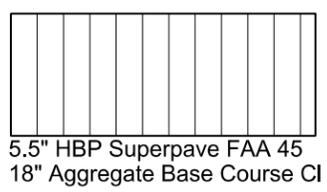


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	90	3

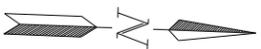
Item	Description	Quantity	Unit
302-0120	AGGREGATE BASE COURSE CI 5		
	Sta 6777+00 to 6783+00 - US 281 - 18"	3,310	Ton
	Sta 6777+00 to 6779+33.06 Lt - Guardrail - 4"	56	Ton
	Sta 6777+00 to 6778+17.29 Rt - Guardrail - 4"	18	Ton
	Sta 400+28.00 to 400+33.00 - Approach - 18"	35	Ton
	Sta 400+33.00 to 400+96.04 - Approach - 6"	51	Ton
	Sta 500+67.31 to 501+42.93 - Park 2 - 6"	56	Ton
	Sta 501+42.93 to 501+79.98 - Park 2 - 18"	190	Ton
401-0100	MC 70 OR 250 LIQUID ASPHALT		
	Sta 6777+00 to 6783+00 - US 281	818.5	Gal
	Sta 6777+00 to 6779+33.06 Lt - Guardrail	60.3	Gal
	Sta 6777+00 to 6778+17.29 Rt - Guardrail	17.7	Gal
	Sta 400+28.00 to 400+33.00 - Approach	7.3	Gal
	Sta 501+42.93 to 501+79.98 - Park 2	41.7	Gal
401-0150	SS1H OR CSSH OR MS1 EMULSIFIED ASPHALT		
	Sta 6777+00 to 6783+00 - US 281	327.4	Gal
	Sta 400+28.00 to 400+33.00 - Approach	2.9	Gal
	Sta 501+42.93 to 501+79.98 - Park 2	16.7	Gal
410-0215	SUPERPAVE FAA 45		
	Sta 6777+00 to 6783+00 - US 281 - 5.5"	976	Ton
	Sta 6777+00 to 6779+33.06 Lt - Guardrail - 2"	25	Ton
	Sta 6777+00 to 6778+17.29 Rt - Guardrail - 2"	7	Ton
	Sta 400+28.00 to 400+33.00 - Approach - 5.5"	8	Ton
	Sta 501+42.93 to 501+79.98 - Park 2 - 5.5"	47	Ton



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

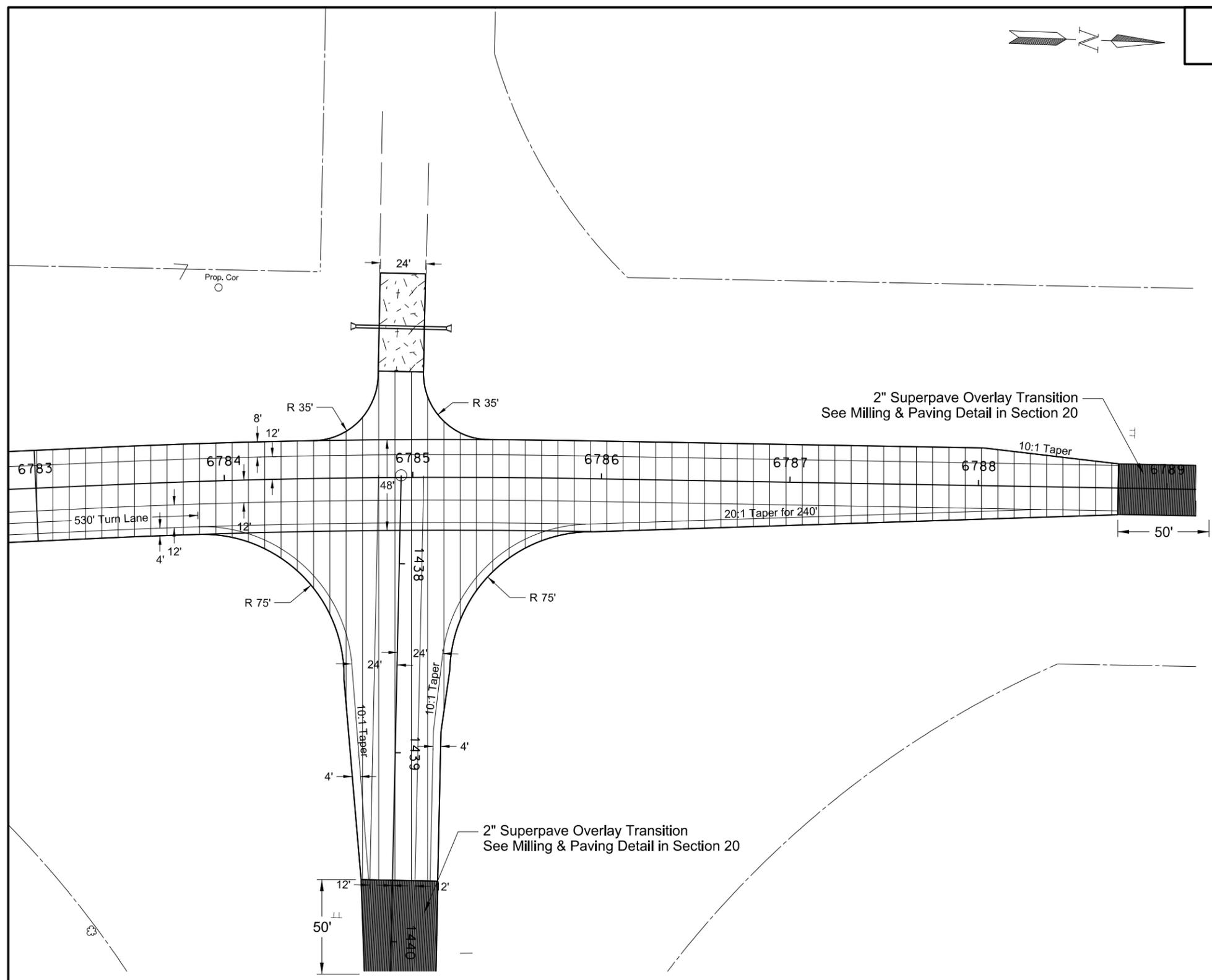


Paving  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

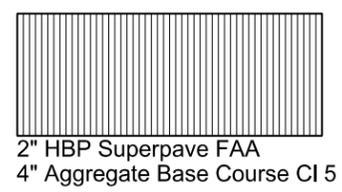
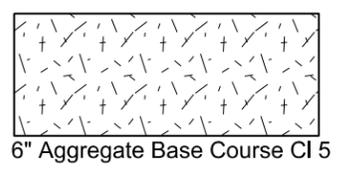
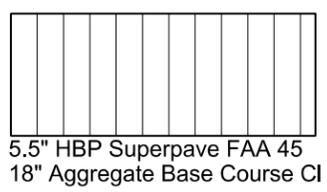


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	90	4

Item	Description	Quantity	Unit
302-0120	AGGREGATE BASE COURSE CI 5		
	Sta 6783+00 to 6788+74.11 - US 281 - 18"	3,106	Ton
	Sta 600+92.00 to 601+43.96 - River Dr - 6"	47	Ton
	Sta 601+43.96 to 601+79.99 - River Dr - 18"	199	Ton
	Sta 1437+82.40 to 1439+67.49 - ND 15 - 18"	1,486	Ton
401-0100	MC 70 OR 250 LIQUID ASPHALT		
	Sta 6783+00 to 6788+74.11 - US 281	751.4	Gal
	Sta 601+43.96 to 601+79.99 - River Dr	44.4	Gal
	Sta 1437+82.40 to 1439+67.49 - ND 15	356.2	Gal
401-0150	SS1H OR CSSH OR MS1 EMULSIFIED ASPHALT		
	Sta 6783+00 to 6788+74.11 - US 281	300.6	Gal
	Sta 601+43.96 to 601+79.99 - River Dr	17.8	Gal
	Sta 1437+82.40 to 1439+67.49 - ND 15	142.5	Gal
	Sta 1439+67.49 to 1440+17.49 - ND 15	11.0	Gal
	Sta 6788+74.11 to 6789+24.11 - US 281	7.4	Gal
410-0215	SUPERPAVE FAA 45		
	Sta 6783+00 to 6788+74.11 - US 281 - 5.5"	890	Ton
	Sta 601+43.96 to 601+79.99 - River Dr - 5.5"	51	Ton
	Sta 1437+82.40 to 1439+67.49 - ND 15 - 5.5"	420	Ton
	Sta 1439+67.49 to 1440+17.49 - ND 15 - 2"	24	Ton
	Sta 6788+74.11 to 6789+24.11 - US 281 - 2"	16	Ton



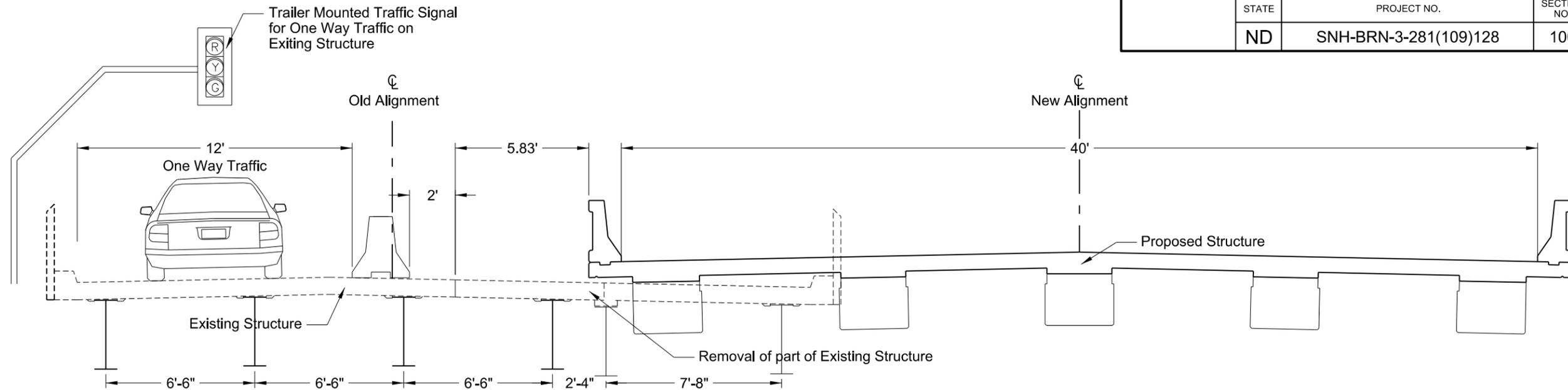
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation



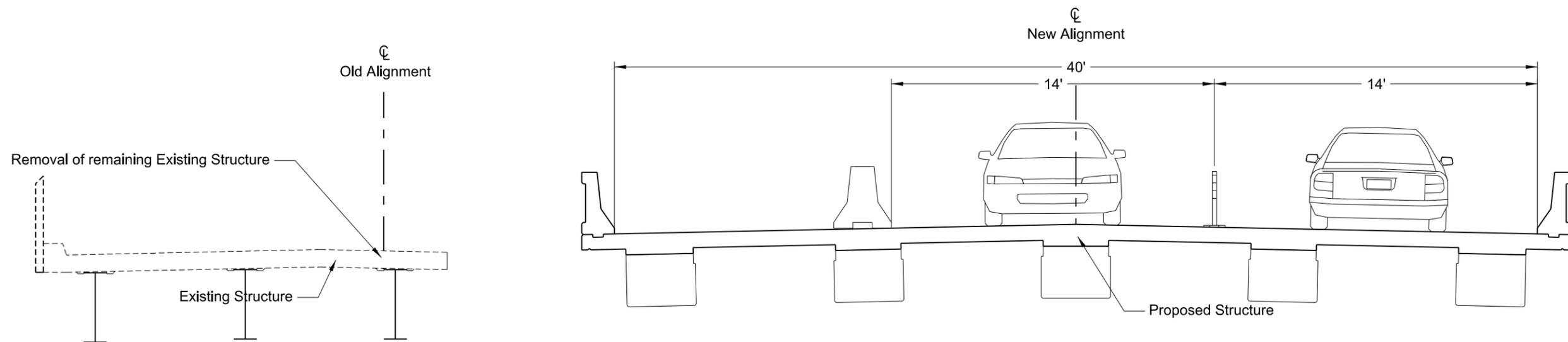
Paving  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	2



Phase 1



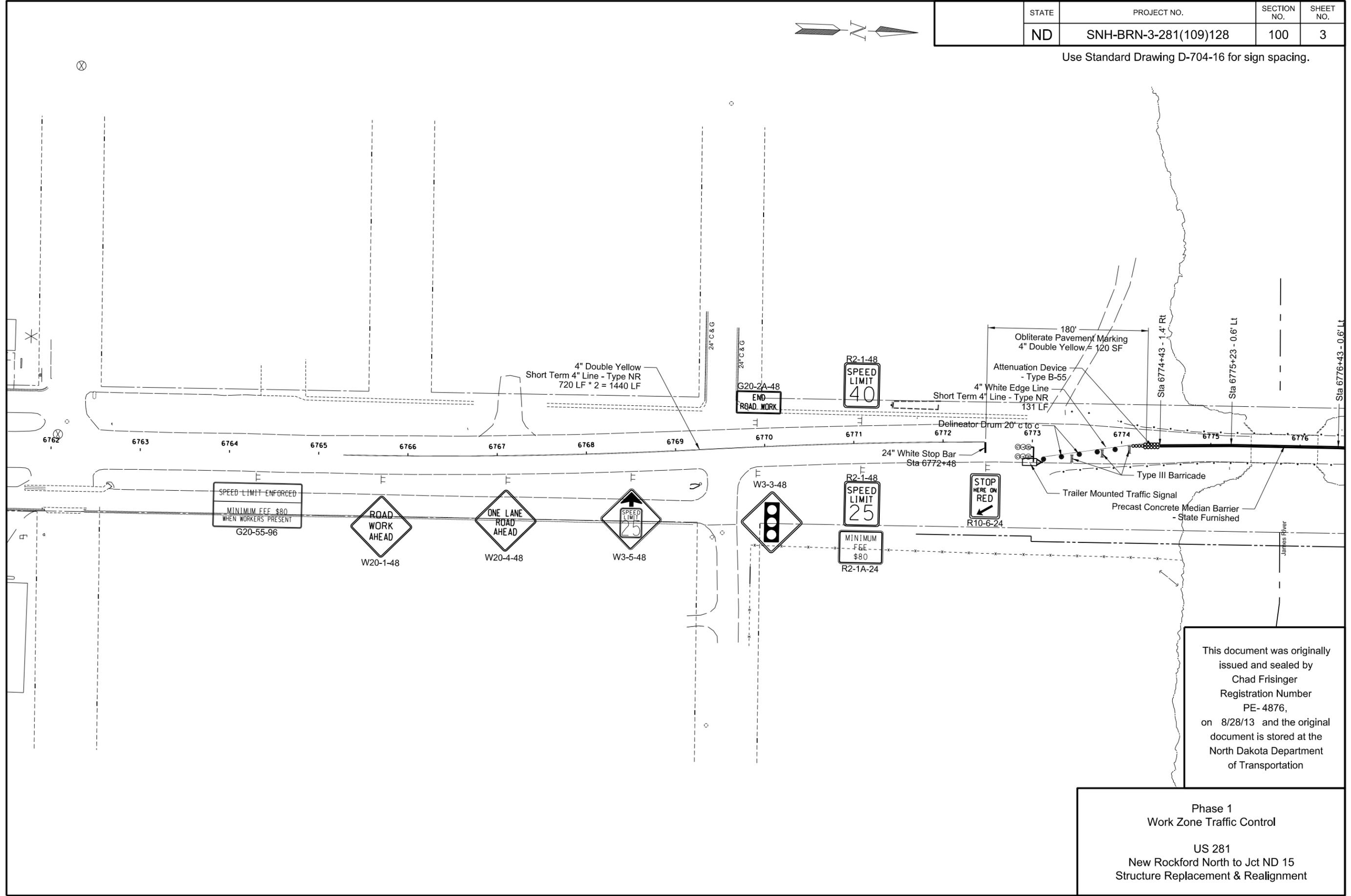
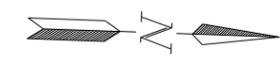
Phase 2

This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Typical Section  
 Work Zone Traffic Control  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	3

Use Standard Drawing D-704-16 for sign spacing.

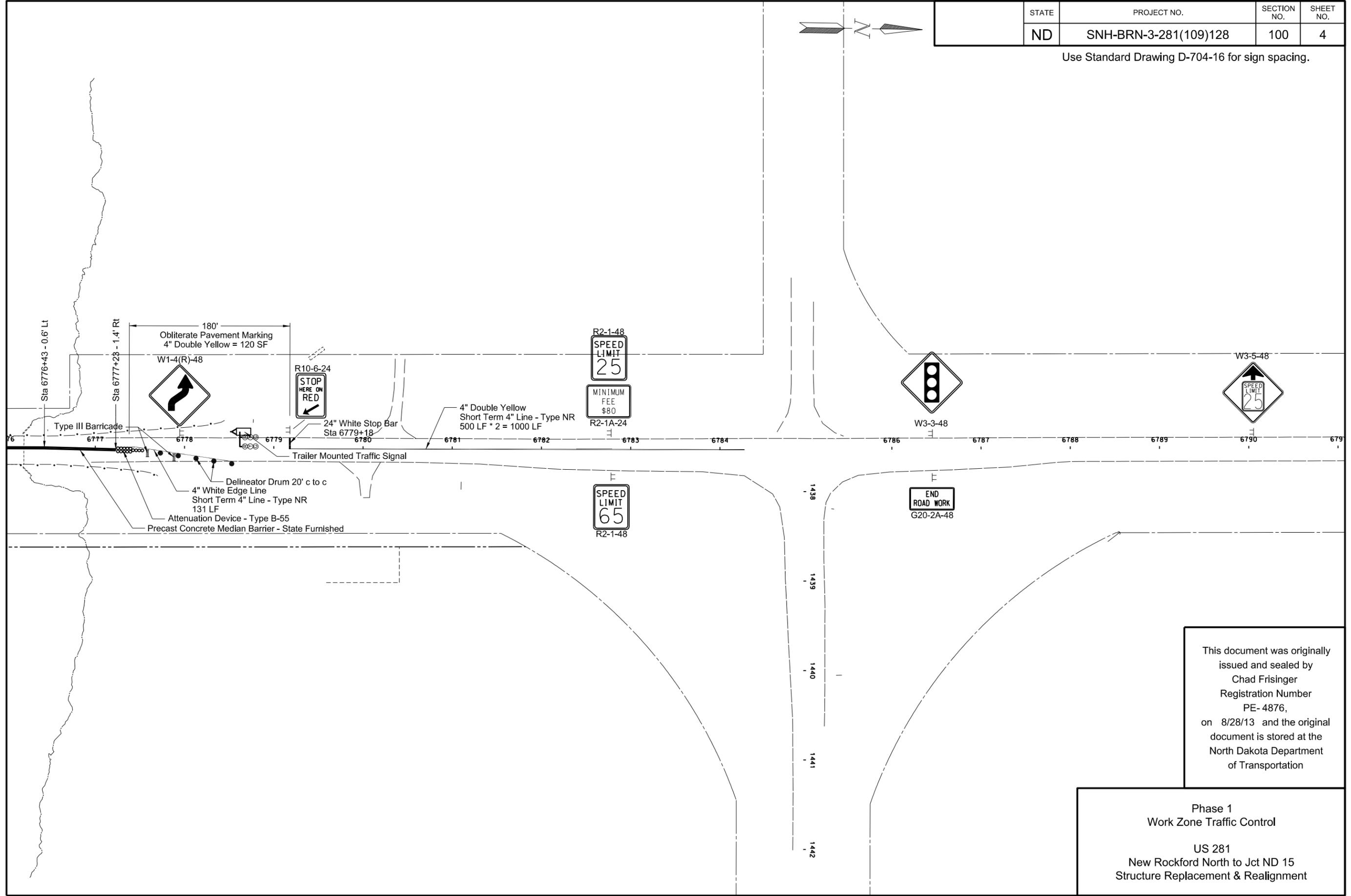
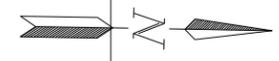


This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Phase 1  
 Work Zone Traffic Control  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	4

Use Standard Drawing D-704-16 for sign spacing.



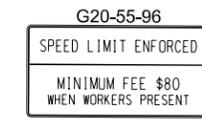
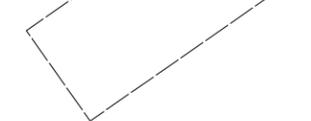
This document was originally issued and sealed by Chad Frisinger, Registration Number PE-4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation.

Phase 1  
Work Zone Traffic Control  
  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	5

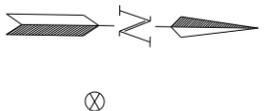
Use Standard Drawing D-704-16 for sign spacing.



6791 6792 6793 6794 6795 6796 6797 6798 6799 6800 6801 6802 6803 6804 6805

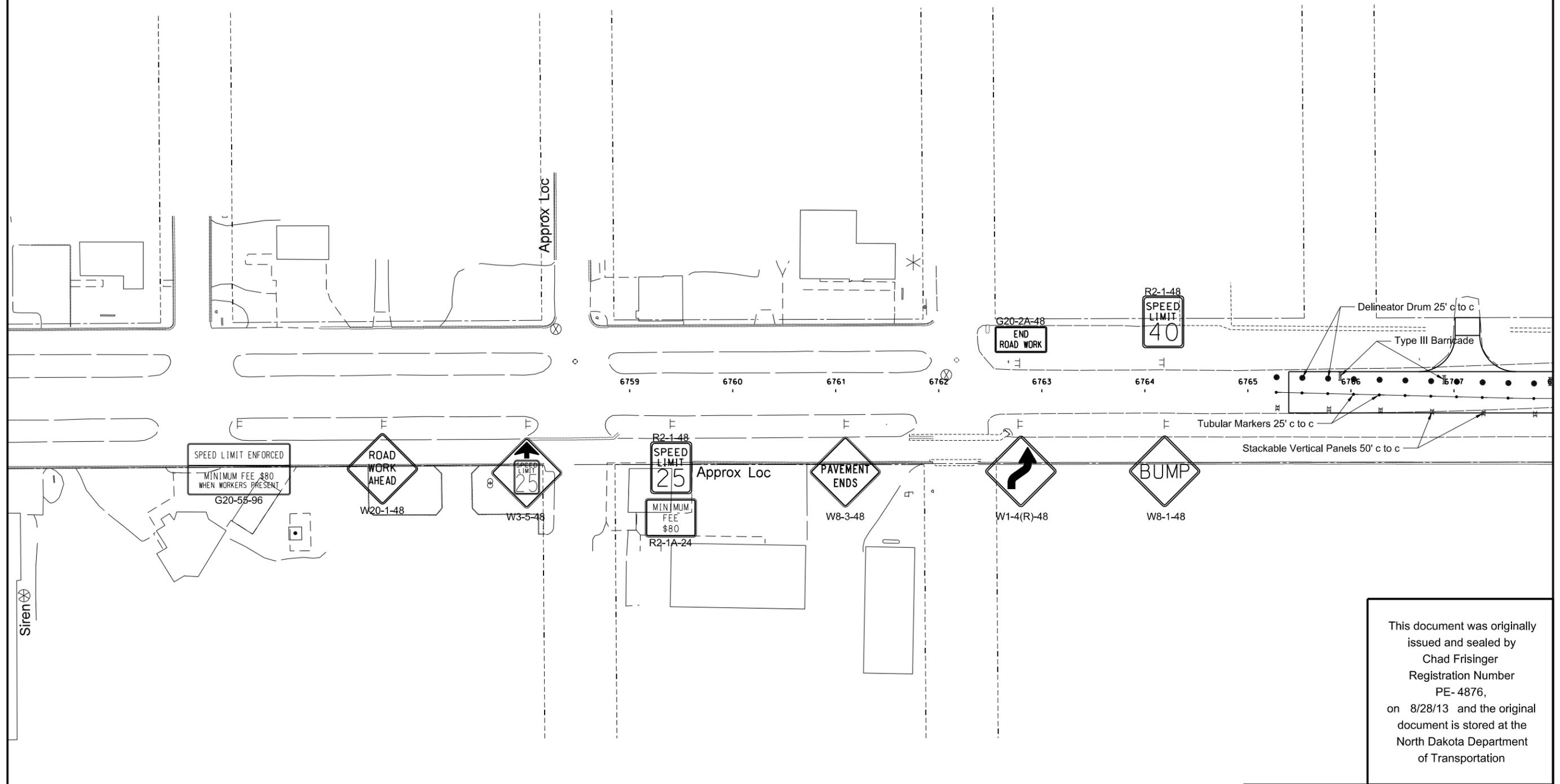
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Phase 1  
 Work Zone Traffic Control  
  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



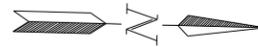
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	6

Use Standard Drawing D-704-15 Type B & D-704-26 Type FF for sign spacing.



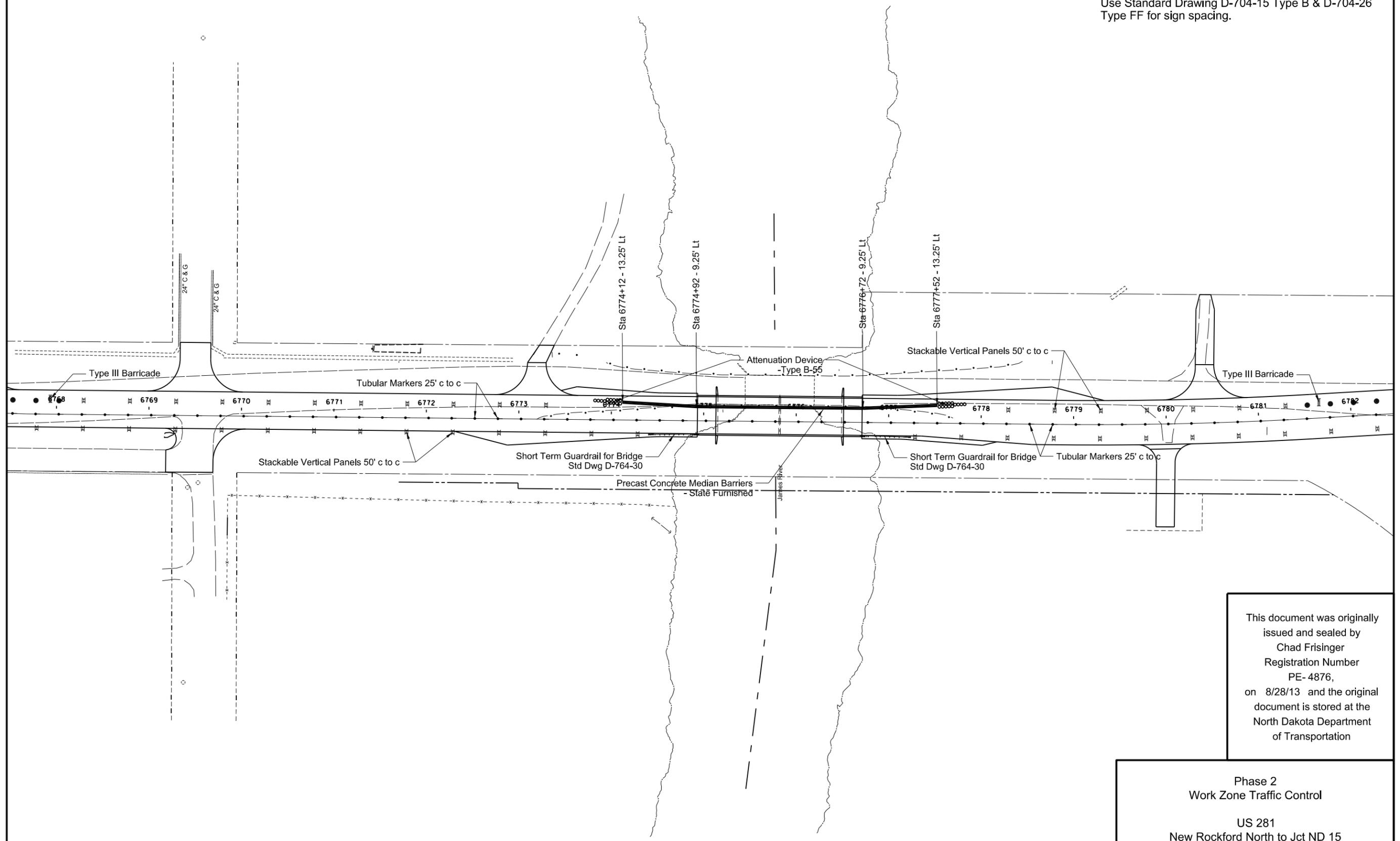
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Phase 2  
 Work Zone Traffic Control  
  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



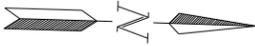
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	7

Use Standard Drawing D-704-15 Type B & D-704-26 Type FF for sign spacing.



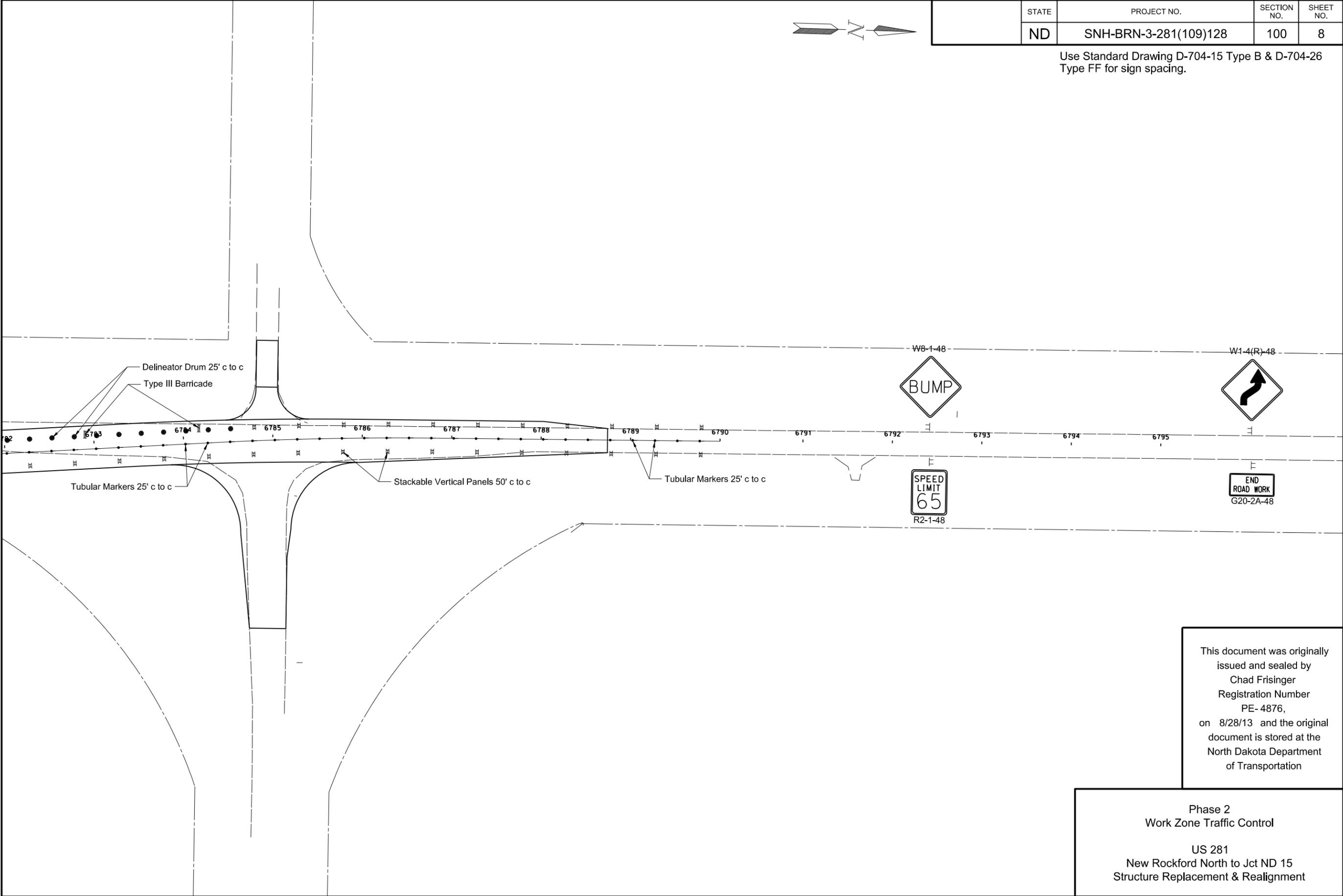
This document was originally issued and sealed by Chad Frisinger Registration Number PE- 4876, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Phase 2  
Work Zone Traffic Control  
  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment



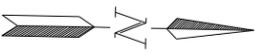
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	8

Use Standard Drawing D-704-15 Type B & D-704-26 Type FF for sign spacing.



This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Phase 2  
 Work Zone Traffic Control  
  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



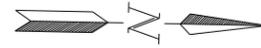
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	9

Use Standard Drawing D-704-15 Type B & D-704-26 Type FF for sign spacing.



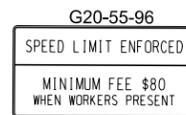
This document was originally issued and sealed by  
 Chad Frisinger  
 Registration Number  
 PE- 4876,  
 on 8/28/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Phase 2  
 Work Zone Traffic Control  
 US 281  
 New Rockford North to Jct ND 15  
 Structure Replacement & Realignment



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	10

Use Standard Drawing D-704-15 Type B & D-704-26 Type FF for sign spacing.

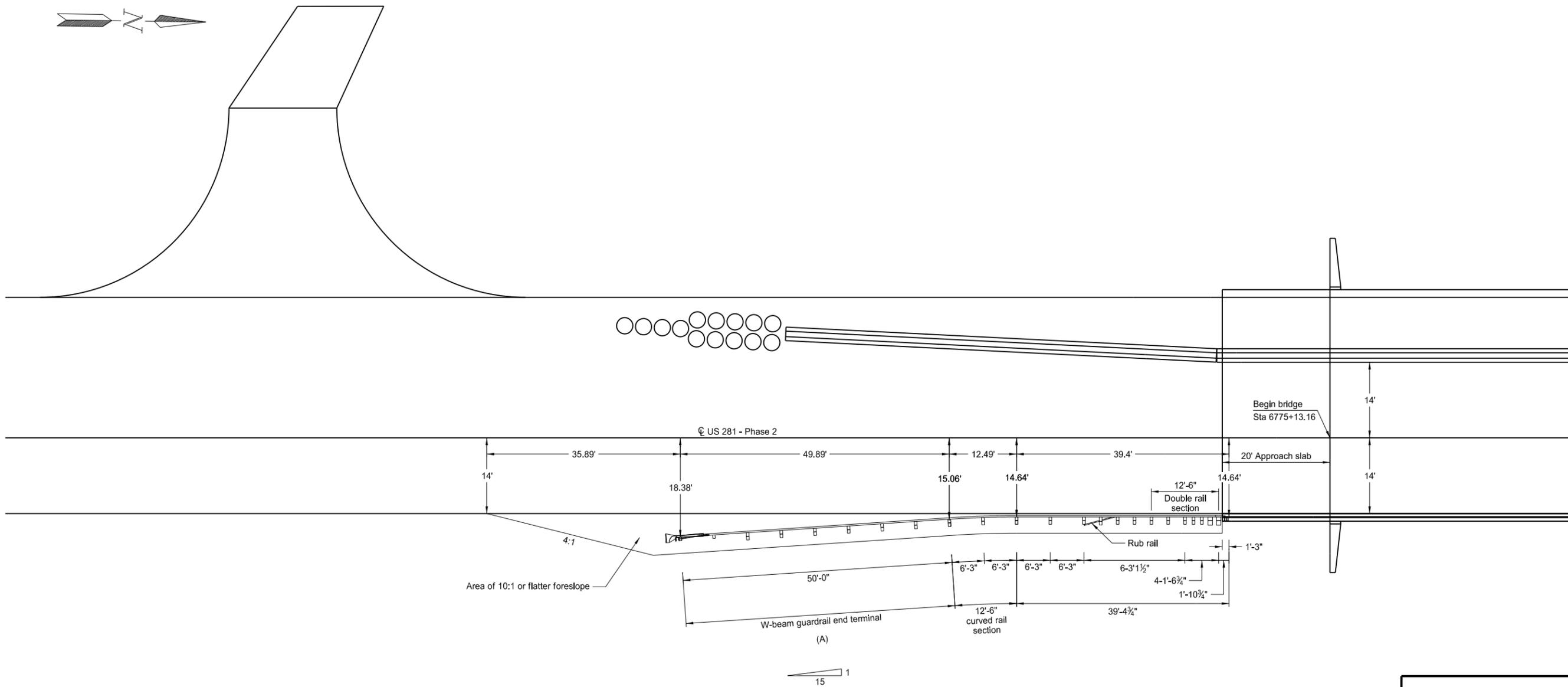
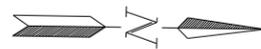


This document was originally issued and sealed by  
Chad Frisinger  
Registration Number  
PE- 4876,  
on 8/28/13 and the original document is stored at the  
North Dakota Department  
of Transportation

Phase 2  
Work Zone Traffic Control  
  
US 281  
New Rockford North to Jct ND 15  
Structure Replacement & Realignment

23 USC § 409 Documents  
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	11



Area of 10:1 or flatter foreslope



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

W-Beam Guardrail Layout at Beginning of Bridge For Phase 2

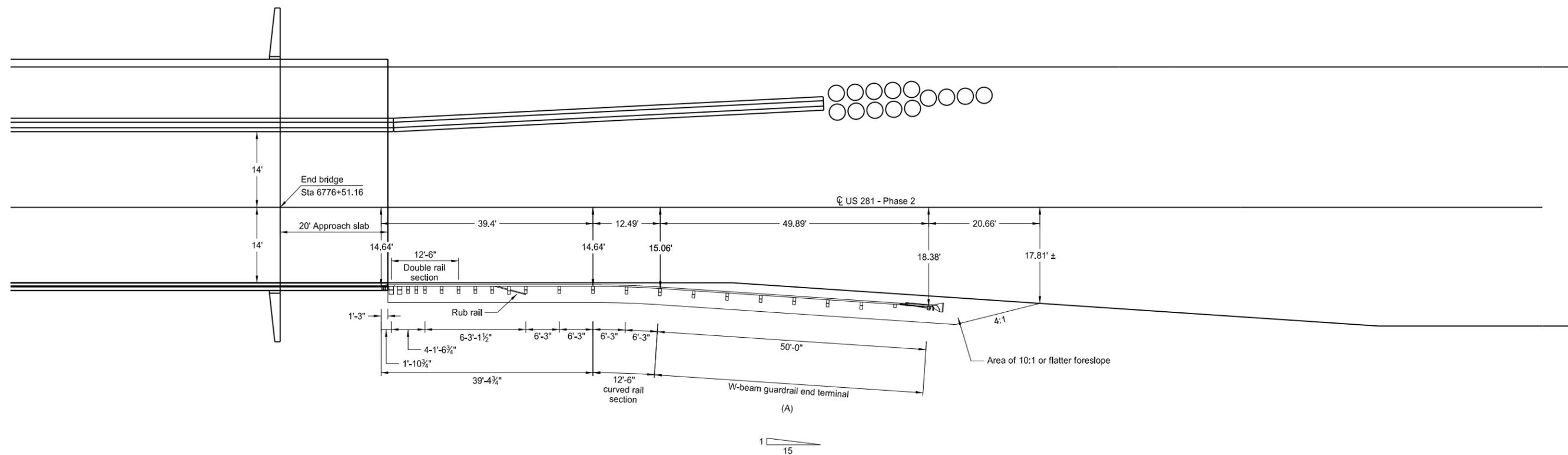
James River Bridge  
 RP 128.331

US 281

(A) The W-beam guardrail end terminal to be installed at this location shall be a FLEAT.

23 USC § 409 Documents  
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	100	12



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

W-Beam Guardrail Layout at Beginning of Bridge For Phase 2  
 James River Bridge  
 RP 128.331  
 US 281

(A) The W-beam guardrail end terminal to be installed at this location shall be a FLEAT.

23 USC § 409 Documents  
NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	100	13

W-BEAM GUARDRAIL SUMMARY OF QUANTITIES

W-BEAM GUARDRAIL AT BRIDGE ENDS

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	
	TER- MIN- AL CON- NECTOR	5/8" Ø x 22" LONG GUARD- RAIL BOLT	5/8" Ø x 20" LONG GUARD- RAIL BOLT	7/8" Ø x 9" LONG H.S. HEX HEAD BOLT	5/8" Ø x 18" LONG GUARD- RAIL BOLT	6"x 8" x 14" WOOD OFF- SET BLOCK	6"x 8" x 6" TIMBER POST	5/8" Ø x 1 1/4" LONG GUARD- RAIL BOLT	12'-6" DOUBLE RAIL SECTION	12'-6" STRAIGHT RAIL SECTION	12'-6" CURVED RAIL SECTION	5/8" Ø x 11" LONG HEX HEAD BOLT	1/2" Ø x 4" LONG LAG SCREW	6" x 8" x 7'-0" TIMBER POSTS	RUB RAIL END SHOE	C 6 x 8.2 x 14'-6 1/4" RUB RAIL SECTION	C 6 x 8.2 x 12'-7" BENT RUB RAIL SECTION	5/8" Ø x 1 1/2" LONG GUARD- RAIL BOLT	7 3/4" x 4 1/2" x 3/8" RUB RAIL SPLICE PLATE	10"x 10" x 8'-0" TIMBER POST	10"x 8" x 21" TAPERED TIMBER BLOCK	6"x 8" x 21" TIMBER BLOCK	6"x 9 3/4" x 14" TIMBER BLOCK	REFL- ECTOR- IZED PLATES
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
Sta 6774+42.52 to 6774+94.41 Rt Sta 6776+69.91 to 6777+21.80 Rt	1 1	2 2	10 10	4 4	12 12	5 5	10 10	40 40	1 1	2 2	1 1	2 2	1 1	3 3	1 1	1 1	1 1	4 4	1 1	2 2	2 2	7 7	1 1	6 6
<b>TOTAL</b>	<b>2</b>	<b>4</b>	<b>20</b>	<b>8</b>	<b>24</b>	<b>10</b>	<b>20</b>	<b>80</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>8</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>14</b>	<b>2</b>	<b>12</b>

W-beam guardrail

Sta 6774+42.52 to 6774+94.41 Rt	51.9 LF
Sta 6776+69.91 to 6777+21.80 Rt	51.9 LF
Total	103.8 LF

Remove end treatment & transition

Sta 6773+92.63 to 6774+42.52 Rt	1 ea (B)
Sta 6777+46.74 to 6777+96.63 Rt	1 ea (B)
Total	2 ea

(A) These items are not to be bid separately but shall be included in the price bid for the item "W-Beam Guardrail".

W-beam guardrail end terminal

Sta 6773+92.63 to 6774+42.52 Rt	1 ea
Sta 6777+46.74 to 6777+96.63 Rt	1 ea
Total	2 ea

(B) The guardrail for two-way traffic at the new bridge shall remain in place during phase 2 until it is necessary to remove the guardrail for asphalt surfacing of the guardrail embankment. The guardrail shall be removed and reset in the permanent installation. See Section 130 for these reset quantities.

Remove W-beam guardrail & posts

Sta 6774+42.52 to 6774+94.41 Rt	112 LF (B)
Sta 6776+69.91 to 6777+21.80 Rt	187 LF (B)
Total	299 LF

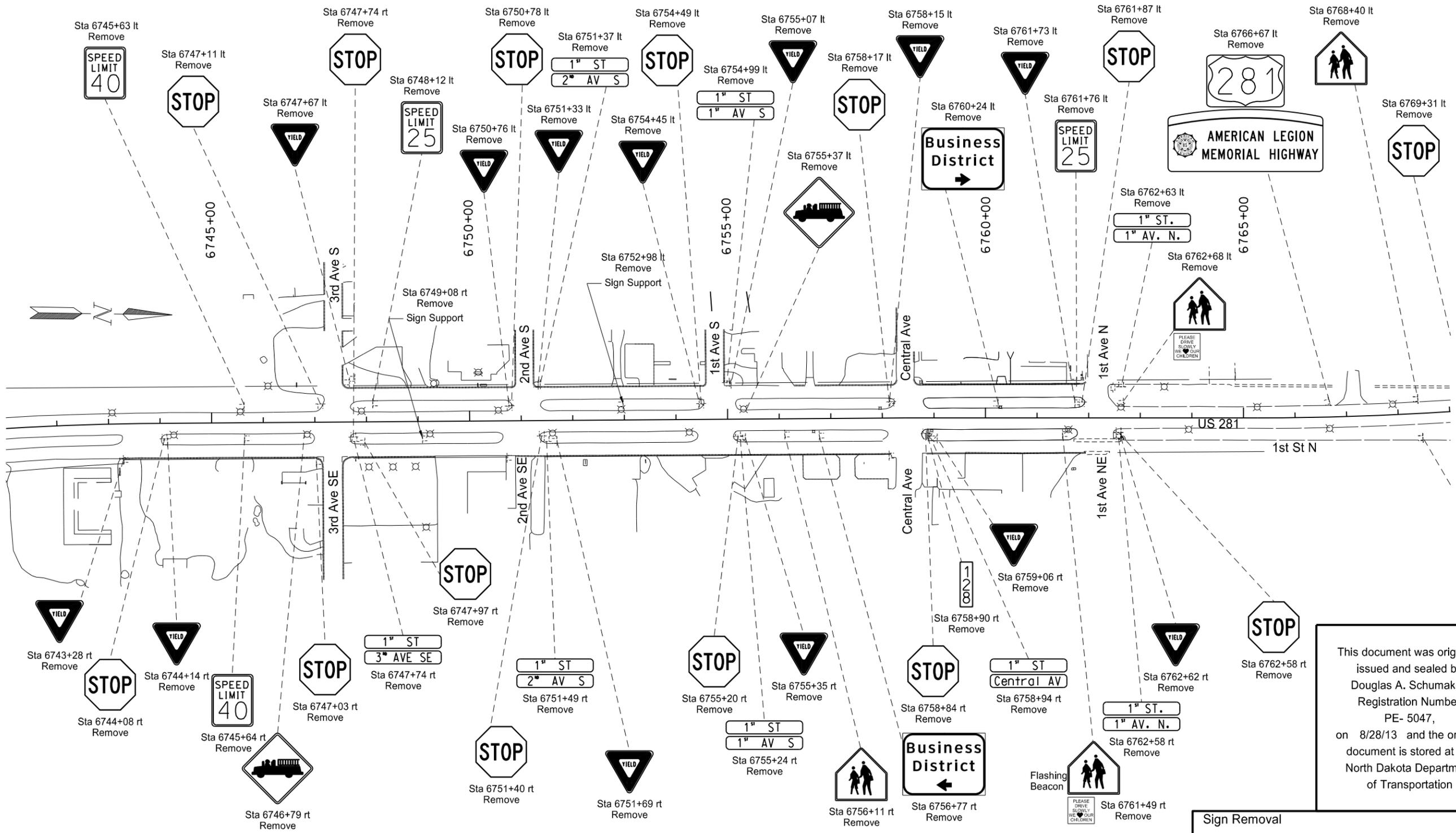
This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

**W-Beam Guardrail Quantities  
For Phase 2**

**James River Bridge  
RP 128.331**

**US 281**

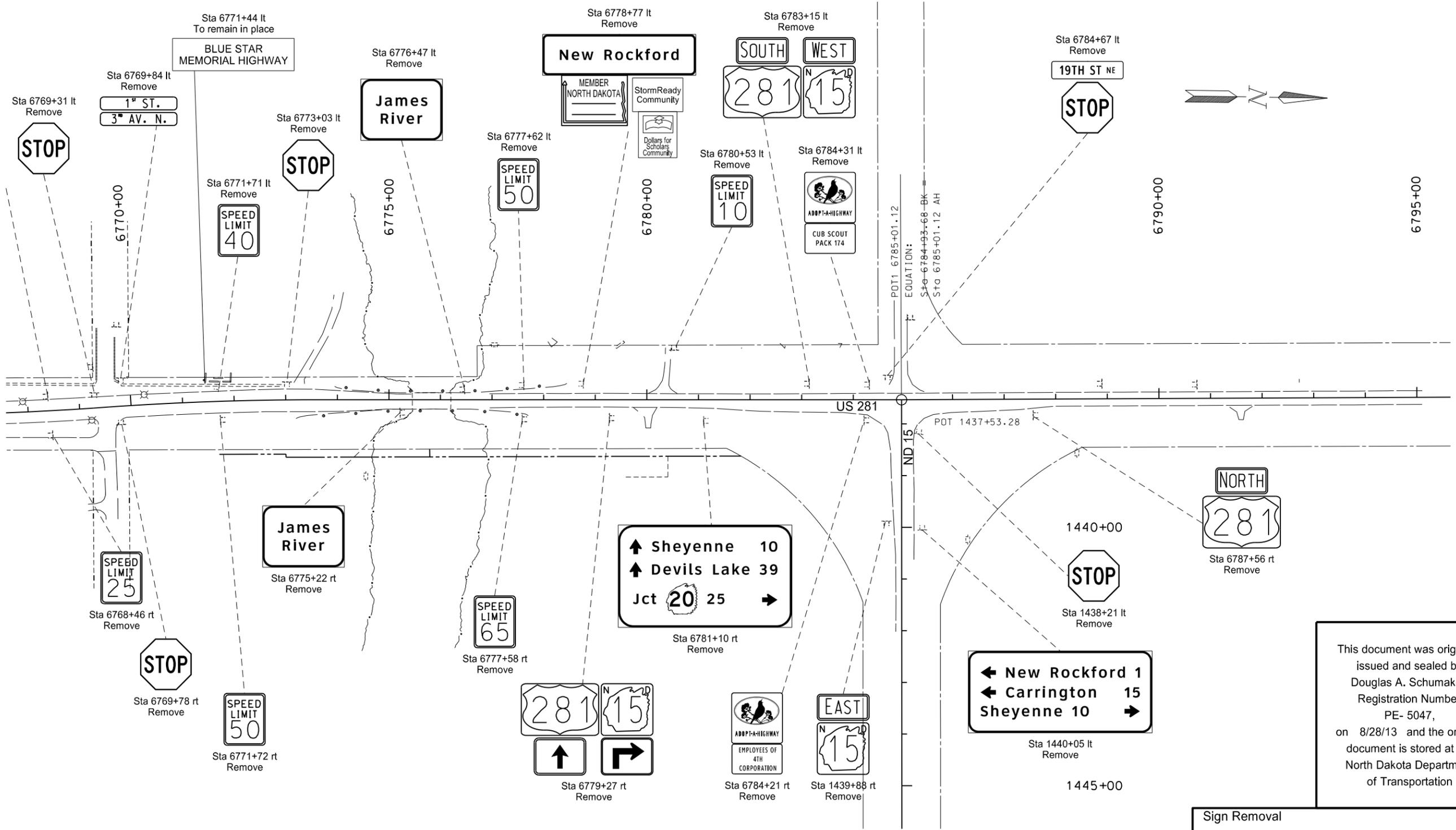
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	110	1



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Sign Removal  
US 281  
New Rockford North to Jct ND 15

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	110	2



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Sign Removal  
 US 281  
 New Rockford North to Jct ND 15

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	SNH-BRN-3-281(109)128	110	3

Sta/RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				Support Size	Max Post Len LF	Sleeve Length				Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
			IV SF	XI SF	1st LF	2nd LF	3rd LF	4th LF			1st LF	2nd LF	3rd LF	4th LF								
<b>US 281</b>																						
6743+28 Rt		4		3.9	7.8				2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga				
6743+51 Lt		377	13.0		12.8				2.5 x 2.5 10 ga	15.2	3.4			2.19 x 2.19 10 ga	1	4	3 x 3 7 ga			1		
6744+08 Rt		1		5.2																	Mount on Existing Supports	
6744+14 Rt		4		3.9	10.2				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6745+63 Lt		9		5.0																	Mount on Existing Supports	
6745+64 Rt		9		5.0																	Mount on Existing Supports	
6746+79 Rt		19		6.3	10.5				2.25 x 2.25 12 ga	11.6					1	4	2.5 x 2.5 12 ga					
6747+03 Rt		1		5.2																	Mount on Existing Supports	
6747+11 Lt	SA 2E		13.0	5.2	13.0				2.5 x 2.5 10 ga	15.9					1	4	3 x 3 7 ga			1		
6747+67 Lt		4		3.9	7.8				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6747+74 Rt	SA 2E		13.0	5.2	13.0				2.5 x 2.5 10 ga	15.9					1	4	3 x 3 7 ga			1		
6747+97 Rt		1		5.2																	Mount on Existing Supports	
6748+12 Lt		9		5.0																	Mount on Existing Supports	
6750+76 Lt		4		3.9	10.2				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6750+78 Lt	SA 2E		13.0	5.2	12.3				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					
6751+33 Lt		4		3.9	7.8				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6751+40 Rt	SA 2E		13.0	5.2	12.3				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					
6751+69 Rt		4		3.9	10.2				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6754+45 Lt		4		3.9	10.2				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6754+49 Lt	SA 2E		12.0	5.2	12.3				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					
6755+07 Lt		4		3.9	7.8				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6755+20 Rt	SA 2E		12.0	5.2	12.3				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					
6755+35 Rt		4		3.9	10.2				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6755+88 Lt		19		6.3																	Mount on Light Standard	
6756+77 Rt	SN 7		17.5		12.8	11.6			2.25 x 2.25 12 ga	14.1	4.2	2.9		2 x 2 12 ga	2	4	3 x 3 7 ga			2		
6758+15 Lt		4		3.9	10.2				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6758+17 Lt	SA 2E		14.0	5.2	12.4				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					
6758+84 Rt	SA 2E		14.0	5.2	12.4				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					
6759+06 Rt		4		3.9	10.2				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6760+24 Lt	SN 8		17.5		12.8	11.6			2.25 x 2.25 12 ga	14.1	4.2	2.9		2 x 2 12 ga	2	4	3 x 3 7 ga			2		
6761+73 Lt		4		3.9	10.2				2 x 2 12 ga	13.6					1	4	2.25 x 2.25 12 ga					
6761+76 Lt		9		5.0																	Mount on Existing Supports	
6761+87 Lt	SA 2E		12.0	5.2	12.3				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					
6762+58 Rt	SA 2E		12.0	5.2	12.3				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					

Basis of Estimate  
Sign Support Lengths  
The sign support lengths have been calculated using the following vertical clearances:  
Rural Roadway - 60"

<p>This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 8/28/2013 and the original document is stored at the North Dakota Department of Transportation</p>	<p>Sign Summary Perforated Tube US 281 New Rockford North to Jct ND 15</p>
---	--

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	SNH-BRN-3-281(109)128	110	4

Sta/RP	Sign No.	Assembly No.	Flat Sheet For Signs		Sign Support Length				Support Size	Max Post Len LF	Sleeve Length				Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
			IV SF	XI SF	1st LF	2nd LF	3rd LF	4th LF			1st LF	2nd LF	3rd LF	4th LF								
6762+62 Rt		4		3.9	10.2				2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga				
6766+67 Lt			5.0		13.2				2.5 x 2.5 10 ga	14.4	4.1			2.19 x 2.19 10 ga	1	4	3 x 3 7 ga	1		1		
6768+48 Rt		9		5.0	13.0				2.25 x 2.25 12 ga	15.0					1	4	2.5 x 2.5 12 ga					
6769+28 Lt	SA 2E		13.0	5.2	12.5				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					
6769+80 Rt	SA 2E		13.0	5.2	12.5				2.5 x 2.5 12 ga	13.5					1	4	3 x 3 7 ga					
6771+71 Lt		9		5.0	12.6				2.25 x 2.25 12 ga	15.0					1	4	2.5 x 2.5 12 ga					
6771+72 Rt		9		5.0	12.6				2.25 x 2.25 12 ga	15.0					1	4	2.5 x 2.5 12 ga					
6772+95 Lt		1		5.2	9.2				2 x 2 12 ga	10.5					1	4	2.25 x 2.25 12 ga					
6774+87 Rt	SN 10		12.0		9.6				2.25 x 2.25 12 ga	10.4	3.2			2 x 2 12 ga	1	4	3 x 3 7 ga				1	
6776+77 Lt	SN 10		12.0		9.6				2.25 x 2.25 12 ga	10.4	3.2			2 x 2 12 ga	1	4	3 x 3 7 ga				1	
6777+58 Rt		9		5.0	9.9				2 x 2 12 ga	11.5					1	4	2.25 x 2.25 12 ga					
6777+62 Lt		9		5.0	9.9				2 x 2 12 ga	11.5					1	4	2.25 x 2.25 12 ga					
6779+27 Rt		406	13.4		13.6				2.5 x 2.5 10 ga	14.9	4.3			2.19 x 2.19 10 ga	1	4	3 x 3 7 ga				1	
6779+33 Lt	SN 11		14.0		12.0	13.0			2.5 x 2.5 10 ga	15.1					2	4	3 x 3 7 ga				2	
6781+33 Lt		8			12.5				2 x 2 12 ga	14.6					1	4	2.25 x 2.25 12 ga	1				
6783+17 Lt		376	13.0		13.1				2.5 x 2.5 10 ga	15.2	3.8			2.19 x 2.19 10 ga	1	4	3 x 3 7 ga				1	
6784+21 Rt	SA A		3.8		11.8				2.5 x 2.5 10 ga	12.3					1	4	3 x 3 7 ga	1			1	
6784+31 Lt	SA A				12.4				2.5 x 2.5 10 ga	12.8					1	4	3 x 3 7 ga	1			1	
6784+69 Lt	SA 2B				12.9				2.25 x 2.25 12 ga	14.7					1	4	2.5 x 2.5 12 ga	1				
6785+22 Lt		407	13.4		12.5				2.5 x 2.5 10 ga	14.9	3.2			2.19 x 2.19 10 ga	1	4	3 x 3 7 ga				1	
6787+56 Rt		372	7.0		13.2				2.5 x 2.5 12 ga	14.1					1	4	3 x 3 7 ga					
<b>Sub Total</b>			295.6	191.5		<b>Total 570.9</b>									<b>Total 200</b>			5	0		17	
<b>ND 15</b>																						
1437+78 Lt		1		5.2	8.6				2 x 2 12 ga	10.5						1	4	2.25 x 2.25 12 ga				
1438+04 Lt		4		3.9	12.3				2 x 2 12 ga	13.6						1	4	2.25 x 2.25 12 ga				
1439+88 Rt		371	6.0																		Mount on Existing Supports	
1440+05 Lt	SN 14		40.0		12.9	12.9	12.9		2.5 x 2.5 10 ga	14.5	4.1	4.1	4.1	2.19 x 2.19 10 ga	3	4	3 x 3 7 ga				3	
<b>Sub Total</b>			46.0	9.1		<b>Total 59.5</b>									<b>Total 20</b>			0	0		3	
<b>Grand Total</b>			341.6	200.6		<b>Total 630.4</b>									<b>Total 220</b>			5	0		20	

Basis of Estimate  
Sign Support Lengths  
The sign support lengths have been calculated using the following vertical clearances:  
Rural Roadway - 60"

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 8/28/2013 and the original document is stored at the North Dakota Department of Transportation

Sign Summary  
Perforated Tube  
US 281  
New Rockford North to Jct ND 15

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	SNH-BRN-3-281(109)128	110	5

Sta/RP	Sign/Assembly No.	Flat Sheet For Signs		Panel For Signs		Overlay Panel		Galv Steel Post Standard Pipe		Size	Galv Steel Post W-Shape Posts			Max Post Len LF	Post Space FT	Revise Fuse Joint EA	Std Pipe Fdn			W-Shape Pile LF	Remove Sign Fdns		Reset Sign Panel EA	Reset Sign Support EA	Stub Post EA	Multi Dir Base EA	Comments	
		IV SF	XI SF	IV SF	XI SF	IV SF	XI SF	1st LF	2nd LF		3rd LF	1st LF	2nd LF				3rd LF	Dia FT	Dep FT		Vol CY	Conc Fdn EA						W-Shape Pile EA
<b>US 281</b>																												
6781+07 Rt	SN 12		42.5							W4x13	14.2	15.3		19.9	4.3					28								
<b>Sub Total</b>		0.0	0.0	42.5	0.0	0.0	0.0	<b>Total</b> 0.0				<b>Total</b> 29.5							0.0	28	0	0	0	0	0	0		
<b>Grand Total</b>		0.0	0.0	42.5	0.0	0.0	0.0	<b>Total</b> 0.0				<b>Total</b> 29.5							0.0	28	0	0	0	0	0	0		

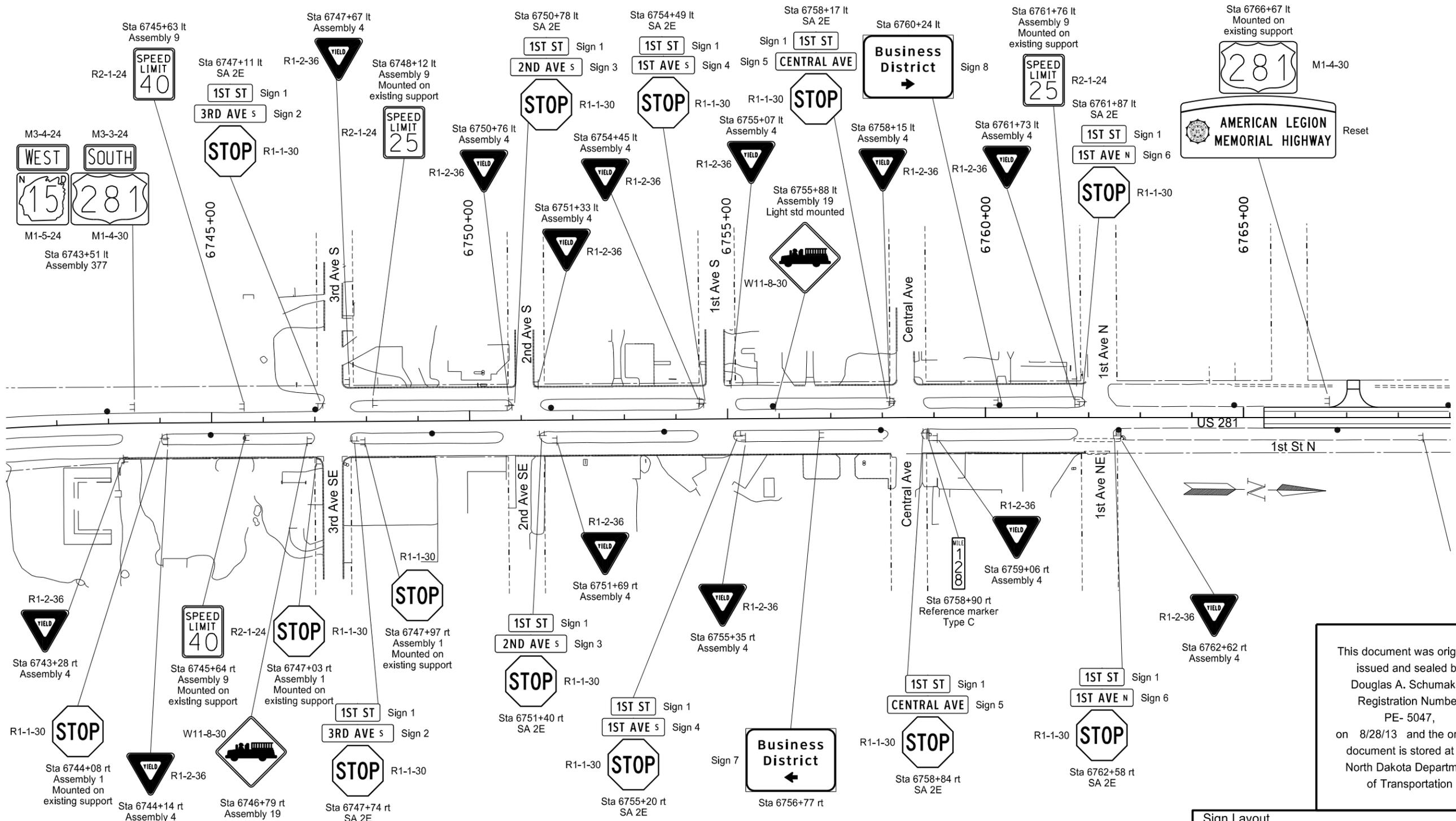
Basis of Estimate  
Sign Support Lengths

The sign support lengths have been calculated using the following vertical clearances:

Rural Roadway - 60"

<p>This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 8/28/2013 and the original document is stored at the North Dakota Department of Transportation</p>	<p>Sign Summary Round Steel Pipe and W-Shape US 281 New Rockford North to Jct ND 15</p>
---	---

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	110	6

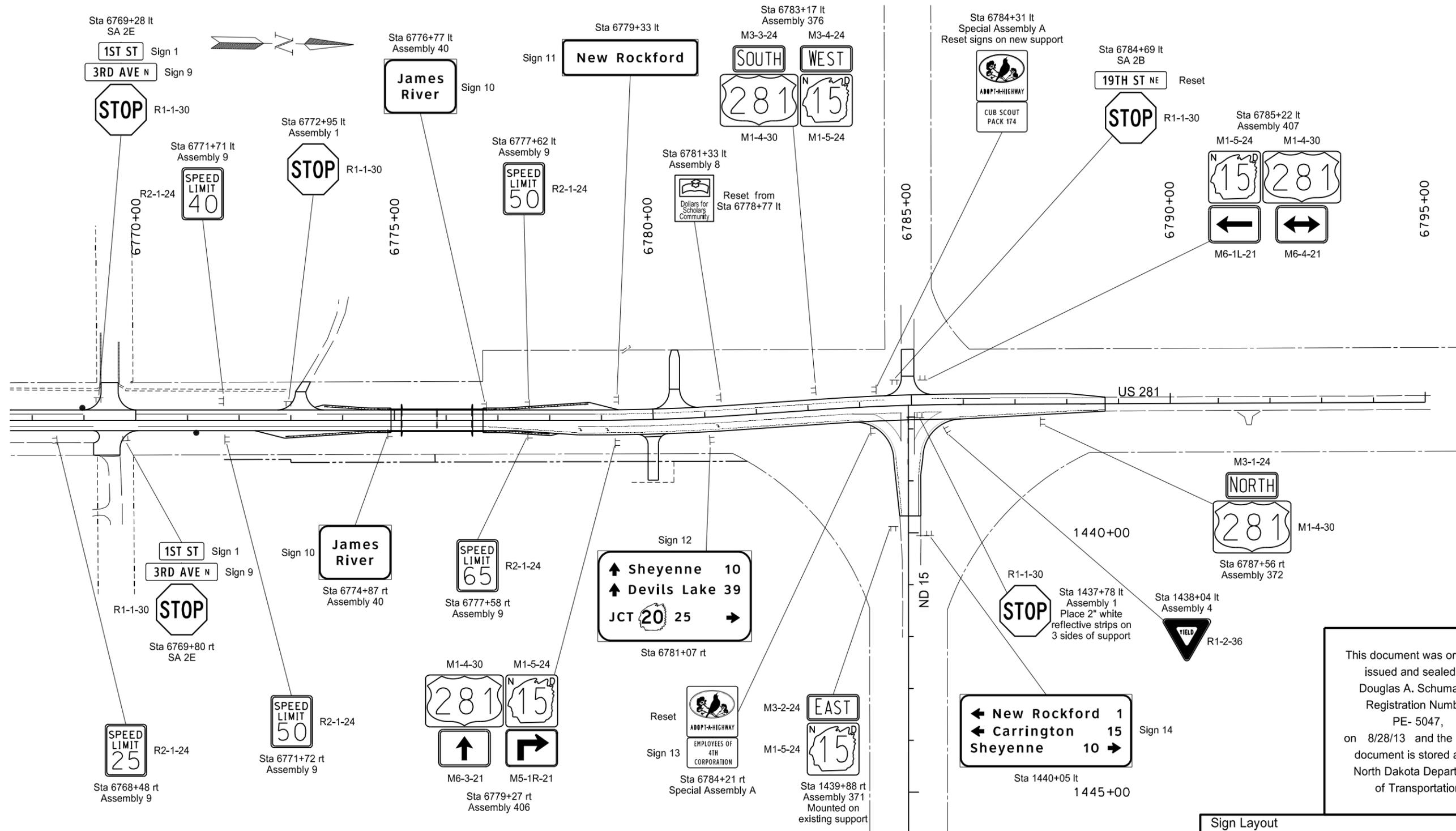


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Sign Layout  
US 281  
New Rockford North to Jct ND 15

Reference Marker - Type C  
Sta 6758+90 rt 1 EA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	110	7



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Sign Layout  
US 281  
New Rockford North to Jct ND 15



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	110	9

SIGN NUMBER	Sign 4
WIDTH x HEIGHT	3'-6" x 1'-0"
BORDER WIDTH	0" (inset 0")
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective COLOR: White
LEGEND/BORDER	TYPE: Non-reflective COLOR: Black

STATION(S):  
6754+49 lt  
6755+20 rt

AREA: 3.5 Sq.Ft.



SYMBOL	X	Y	WID	HT	ANGLE

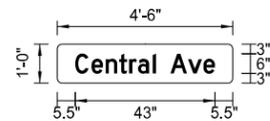
Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

LETTER POSITION (X)											LENGTH	SIZE	SERIES
1	s	t	A	v	e	S					34.7	6/4.5	D 2000
3.7	6.1	9.2	11.6	16.1	21.5	26.2	29.8	34.3					


SIGN NUMBER	Sign 5
WIDTH x HEIGHT	4'-6" x 1'-0"
BORDER WIDTH	0" (inset 0")
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective COLOR: White
LEGEND/BORDER	TYPE: Non-reflective COLOR: Black

STATION(S):  
6758+17 lt  
6758+84 rt

AREA: 4.5 Sq.Ft.



SYMBOL	X	Y	WID	HT	ANGLE

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

LETTER POSITION (X)											LENGTH	SIZE	SERIES
C	e	n	t	r	a	l	A	v	e		43	6/4.5	D 2000
5.5	10.5	14.9	19.1	22.1	24.8	29.4	30.3	34.8	40.2	45			


SIGN NUMBER	Sign 6
WIDTH x HEIGHT	3'-6" x 1'-0"
BORDER WIDTH	0" (inset 0")
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective COLOR: White
LEGEND/BORDER	TYPE: Non-reflective COLOR: Black

STATION(S):  
6761+87 lt  
6762+58 rt

AREA: 3.5 Sq.Ft.



SYMBOL	X	Y	WID	HT	ANGLE

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

LETTER POSITION (X)											LENGTH	SIZE	SERIES
1	s	t	A	v	e	N					34.7	6/4.5	D 2000
3.7	6.1	9.2	11.6	16.1	21.5	26.2	29.8	34.3					

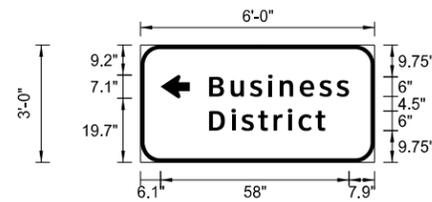

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047 , on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Sign Details  
US 281  
New Rockford North to Jct ND 15

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	110	10

SIGN NUMBER	Sign 7
WIDTH x HEIGHT	6'-0" x 3'-0"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	6"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective COLOR: White

STATION(S): 6756+77 rt AREA: 18.0 Sq.Ft.



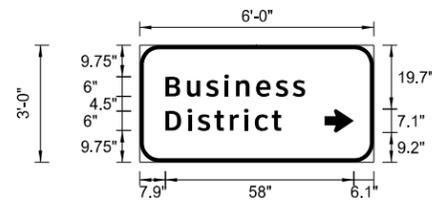
Dimensions are in inches.tenths Letter locations are panel edge to lower left corner

SYMBOL	X	Y	WID	HT	ANGLE
ARDD	6.1	19.7	7.1	9	180

LETTER POSITION (X)										LENGTH	SIZE	SERIES
B	u	s	i	n	e	s	s			43	6/4.9	ClearviewHwy-5-W
21.1	27.7	33.6	39.2	42.8	49	55	60.3					
D	i	s	t	r	i	c	t			35.7	6/4.9	ClearviewHwy-5-W
21.1	27.9	31	36.2	40.9	45.3	48.6	53.8					

SIGN NUMBER	Sign 8
WIDTH x HEIGHT	6'-0" x 3'-0"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	6"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective COLOR: White

STATION(S): 67660+24 ft AREA: 18.0 Sq.Ft.



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

SYMBOL	X	Y	WID	HT	ANGLE
ARDD	56.9	9.2	7.1	9	0

LETTER POSITION (X)										LENGTH	SIZE	SERIES
B	u	s	i	n	e	s	s			43	6/4.9	ClearviewHwy-5-W
7.9	14.5	20.4	26	29.6	35.8	41.8	47.1					
D	i	s	t	r	i	c	t			35.7	6/4.9	ClearviewHwy-5-W
7.9	14.7	17.8	23	27.7	32.1	35.4	40.6					

SIGN NUMBER	Sign 9
WIDTH x HEIGHT	4'-0" x 1'-0"
BORDER WIDTH	0" (inset 0")
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective COLOR: White
LEGEND/BORDER	TYPE: Non-reflective COLOR: Black

STATION(S): 6769+28 lt 6769+80 rt AREA: 4.0 Sq.Ft.



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

SYMBOL	X	Y	WID	HT	ANGLE
--------	---	---	-----	----	-------

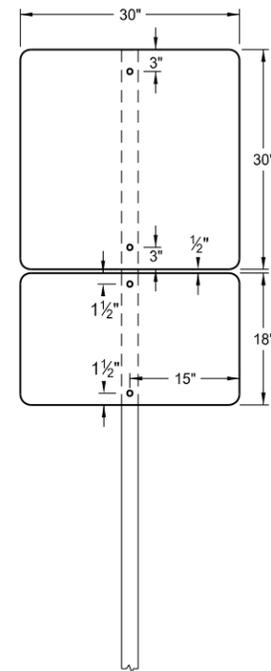
LETTER POSITION (X)										LENGTH	SIZE	SERIES
3	r	d	A	v	e	N				38.4	6/4.5	D 2000
4.8	10.1	12.8	16.4	20.9	26.3	31.1	34.6	39.1				

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	110	13



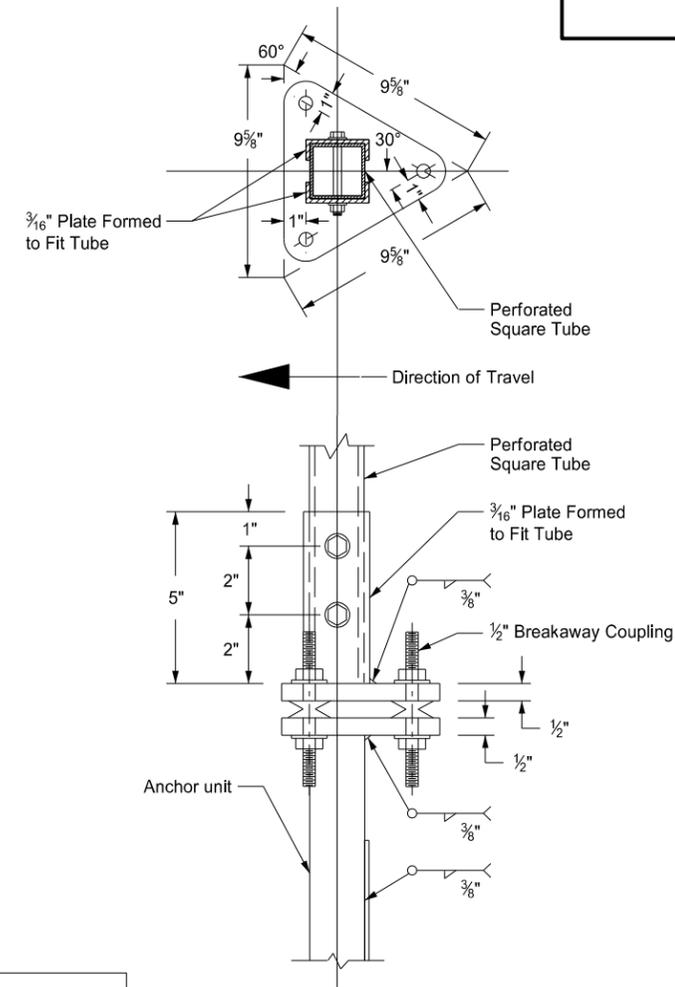
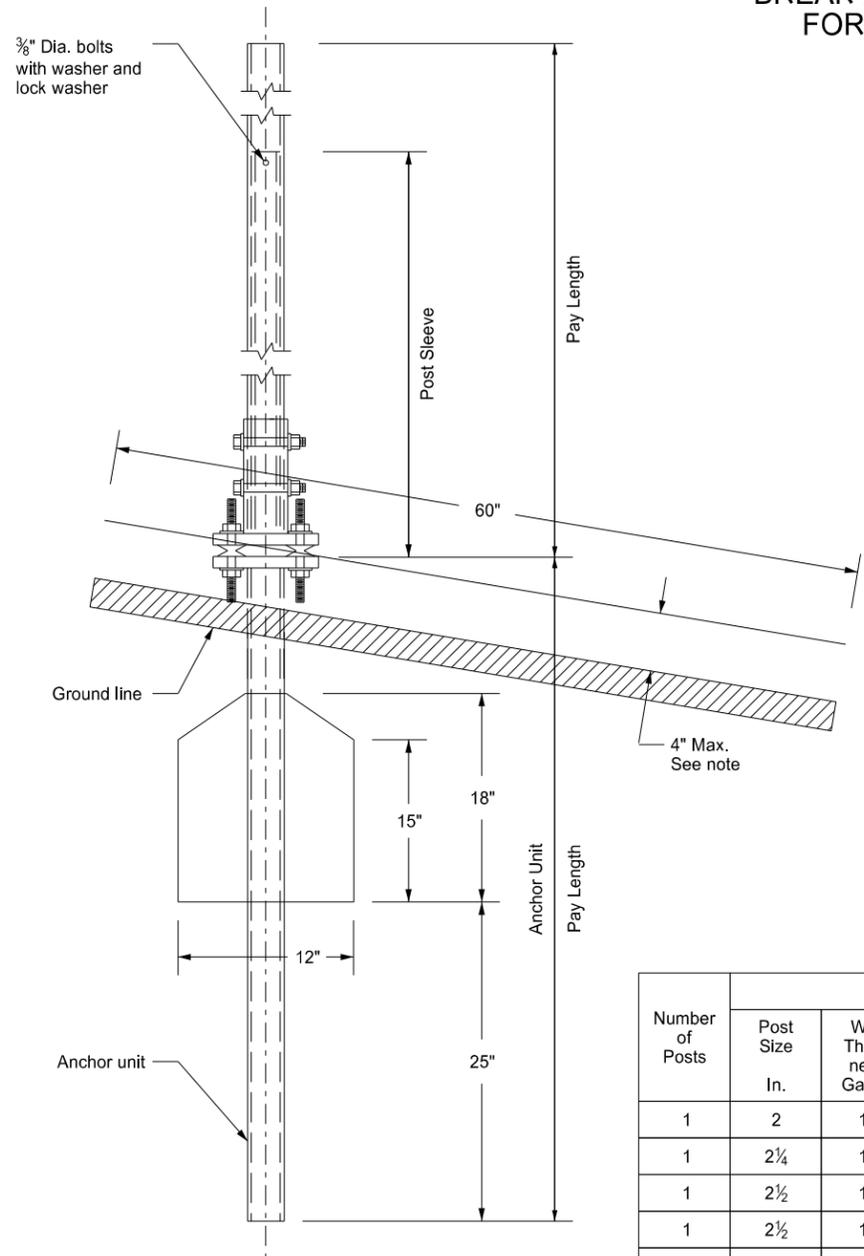
Special Assembly A  
Sta 6784+21 rt  
Sta 6784+31 lt

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Special Assembly  
US 281  
New Rockford North to Jct ND 15

# BREAK-AWAY COUPLER SYSTEM FOR PERFORATED TUBES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	110	14



**NOTES:**

- 4" Vertical clearance of anchor or breakaway base. The 4" x 60" measurement shall be made above and below post location and also back and ahead of post.
- Anchor unit shall be the same size as the post and shall have the same specification as the post.
- When used in concrete sidewalk, anchor shall be the same except the anchor plate shall be omitted.
- Four post signs shall have over 8' between the first and fourth post.
- In lieu of the breakaway base system on standard D-754-24 the breakaway coupling system may be used. The breakaway coupler system shall be manufactured from material meeting the requirements of ASTM A325 fasteners with the special requirements as specified by DENT BREAKAWAY IND., INC. which meets the test requirements of NCHRP Report 350.
- Base plates and formed plates shall be fabricated from steel meeting the requirements of AASHTO M-183 and M232.

**BASE PLATE WITH BREAKAWAY COUPLER**

Number of Posts	Telescoping Perforated Tube					
	Post Size In.	Wall Thickness Gauge	Sleeve Size In.	Wall Thickness Gauge	Slip Base	Anchor Size In.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			B	2 1/2
1	2 1/2	10			Yes	2 1/2
1	2 1/4	12	2	12	Yes	2 1/4 & 2 Sleeve
1	2 1/2	12	2 1/4	12	Yes	2 1/2 & 2 1/4 Sleeve
2	2	12			No	2 1/4
2	2 1/4	12			No	2 1/2
2	2 1/2	12			Yes	2 1/2
2	2 1/2	10			Yes	2 1/2
2	2 1/4	12	2	12	Yes	2 1/4 & 2 Sleeve
2	2 1/2	12	2 1/4	12	Yes	2 1/2 & 2 1/4 Sleeve
3 & 4	2 1/2	12			Yes	2 1/2
3 & 4	2 1/2	10			Yes	2 1/2
3 & 4	2 1/2	12	2 1/4	12	Yes	2 1/2 & 2 1/4 Sleeve
3 & 4	2 1/4	12	2	12	Yes	2 1/4 & 2 Sleeve
3 & 4	2 1/2	10	2 3/16	10	Yes	2 1/2 & 2 3/16 Sleeve

Telescoping Perforated Tubes						
Tube Size In.	Wall Thickness In.	U.S. Standard Gauge	Weight Per Foot Lbs.	Moment of Inertia In. 4	Cross Sect. area In. 2	Section Modulus In. 3
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499
2 3/16 x 2 3/16	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.785

The 2 3/16" size 10 gauge is shown as 2.19" size on the plans. The 2 1/2" size 10 gauge is shown as 2.51" size on the plans.

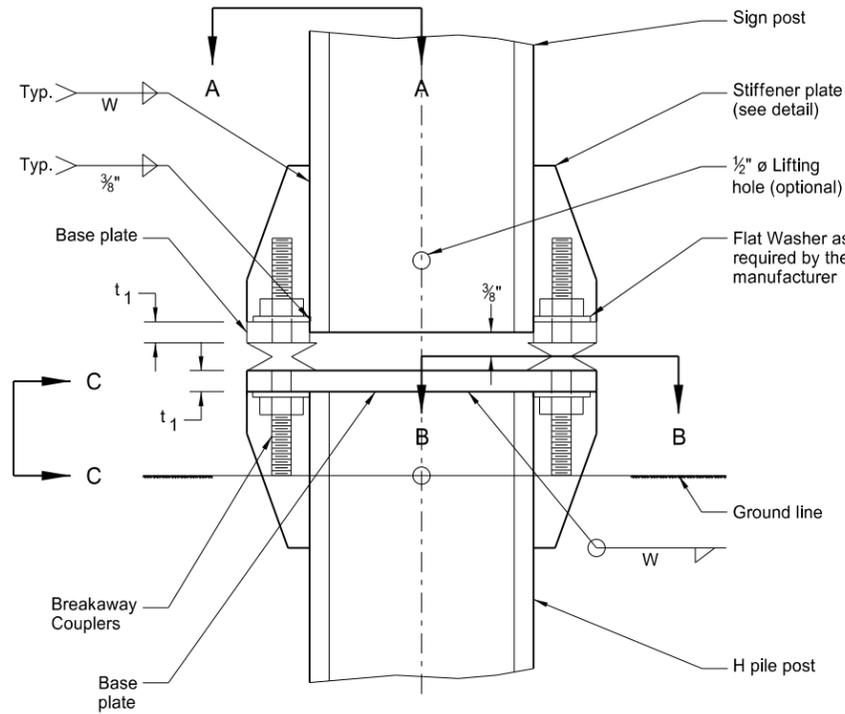
B - The 2 1/2" 12 gauge posts do not need breakaway bases when placed in standard soils. The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak. Weak soils are classified as boggy, wet, or loose soil areas.

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

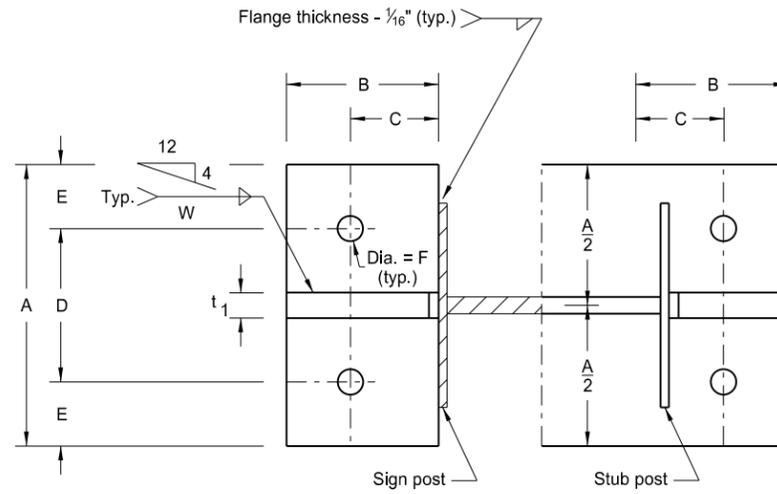
Perforated Tube Details  
Break-Away Coupler System  
US 281  
New Rockford North to Jct ND 15

# BREAK-AWAY COUPLER SYSTEM STRUCTURAL DETAILS FOR W-SHAPE SUPPORTS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	110	15

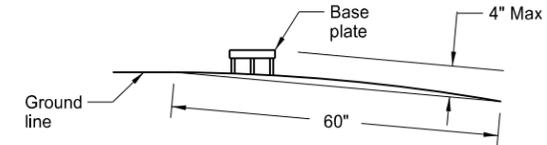


**SIGN POST AND STUB POST  
ELEVATION**



**SECTION A-A SECTION B-B**

(See Table For Dimensions)

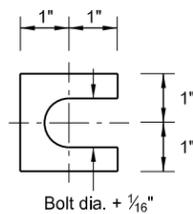


**SECTION C-C**

**NOTES:**  
Structural steel shall conform to Sec. 894.06B.6. Reinforcing bars shall conform to Section 612. High strength bolts shall conform to ASTM - A325. Refer to "Sign Summary" sheet for specific data on each individual sign installation.

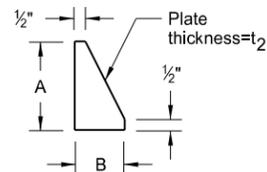
**ASSEMBLY PROCEDURE**

1. Assemble post to stub with breakaway coupling bolts with one flat washer as shown.
2. Shim as required to plumb post.
3. Tighten all bolts the maximum possible with 12" to 15" wrench.
4. In lieu of the breakaway base system shown on standard D-754-13 the breakaway coupling system may be used. The breakaway coupling system shall be manufactured from material meeting the requirements of ASTM A325 fasteners with the special requirements as specified by DENT BREAKAWAY IND., INC. which meets the requirements of NCHRP Report 350.



**SHIM DETAIL**

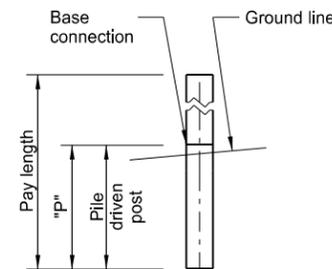
Furnish 2 - .012"± thick and 2 - .032"± thick shims per post. Shims shall be fabricated from brass shim stock or strip conforming to ASTM B36.



**STIFFENER PLATE DETAIL**

(See Table For Dimensions)

Sections shown are for installations on right shoulder and in gore. Plate slot bevels are opposite hand from that shown for installations on left shoulder.



**H-PILE FOOTING**

Max. protection of the stub post is 4" above a 60" chord aligned radially to the center line of the highway and connecting any point, within the length of the chord, on the ground surface on one side of the support to a point in the ground surface on the other side.

DIMENSION POST SIZE	BASE CONNECTION DATA										FOOTING DATA H PILE POST P
	BOLT SIZE	A	B	C	D	E	t <sub>1</sub>	t <sub>2</sub>	W	F	
W4X13	3/4" ø x 5 1/4"	6"	2-1/2"	1-1/2"	3-1/2"	1-1/4"	1"	1/2"	1/4"	1 3/16"	14'
W5X16											14'
W6X20	7/8" ø x 5 1/4"	8"	3"	1-3/4"	4"	2"	1-1/4"	1/2"	1/4"	1 5/16"	14'
W8X24											14'
W8X31	1 1/4" ø x 7"	9"	3-1/2"	2"	5"	2"	1-1/2"	3/4"	5/16"	1 5/16"	14'
W10X39											14'
W8X28	1" ø x 5 1/4"	8"	3"	2"	4"	2"	1-1/2"	3/4"	5/16"	1 1/16"	14'

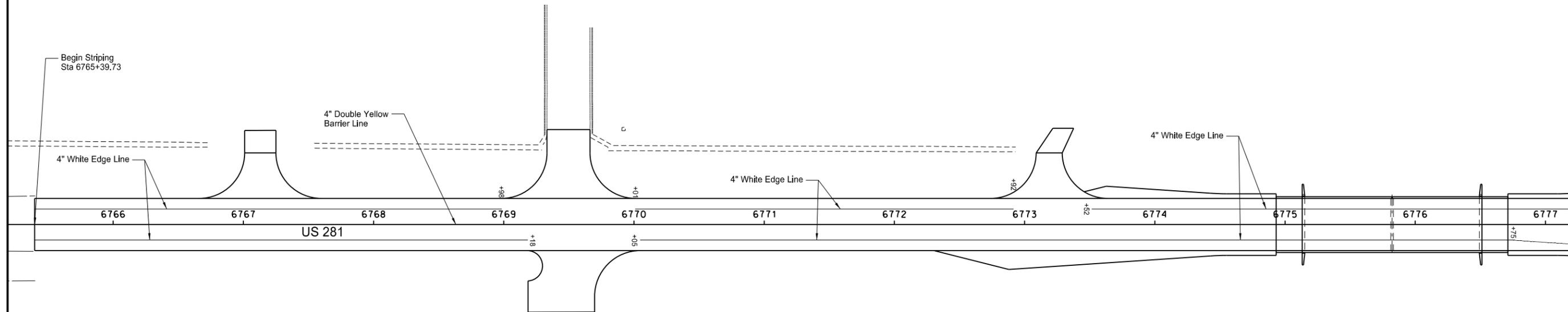
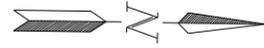
This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

W-Shape Support Details  
Break-Away Coupler System

US 281  
New Rockford North to Jct ND 15

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	120	1

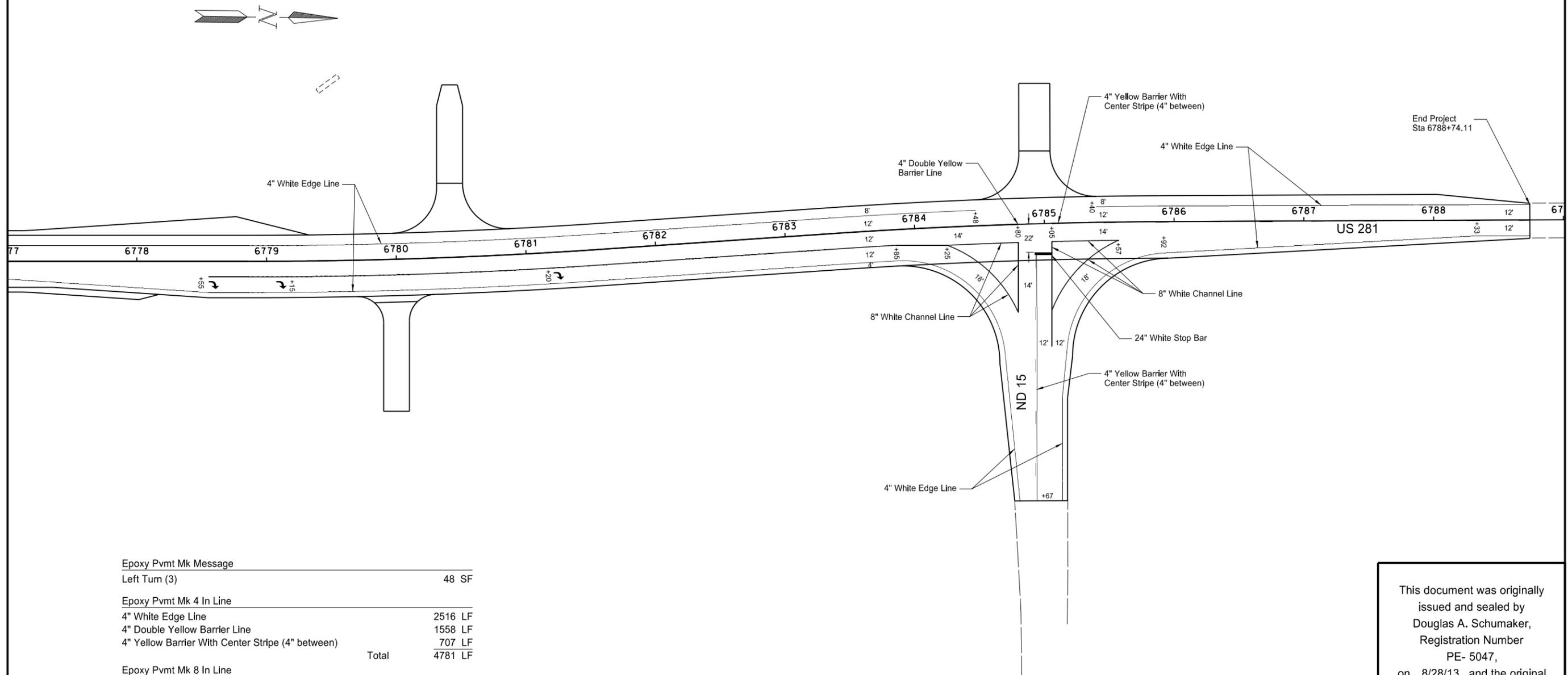
Epoxy Pvmt Mk 4 In Line	2072 LF
4" White Edge Line	2322 LF
4" Double Yellow Barrier Line	
Total	4394 LF



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Pavement Marking  
 US 281  
 New Rockford North to Jct ND 15

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	120	2



End Project  
Sta 6788+74.11

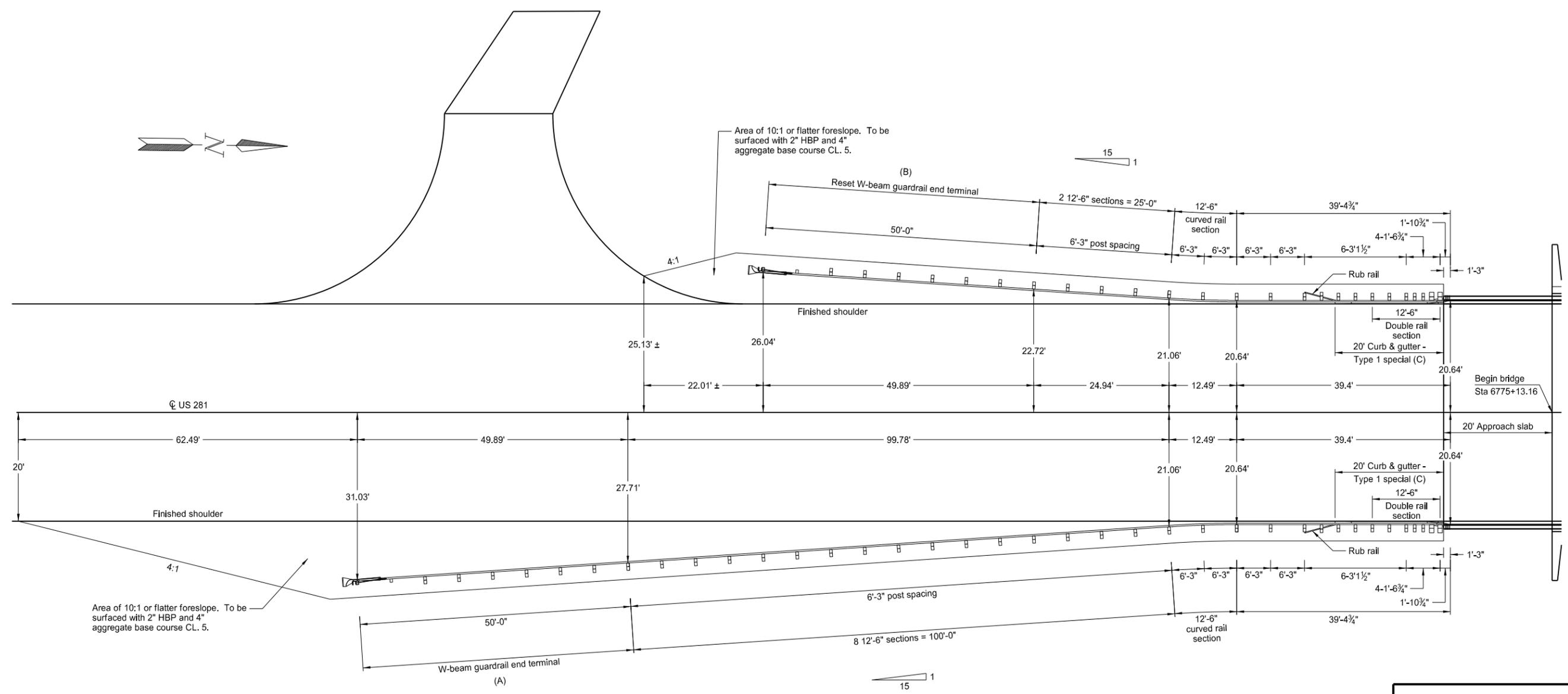
Epoxy Pvmt Mk Message	
Left Turn (3)	48 SF
Epoxy Pvmt Mk 4 In Line	
4" White Edge Line	2516 LF
4" Double Yellow Barrier Line	1558 LF
4" Yellow Barrier With Center Stripe (4" between)	707 LF
Total	4781 LF
Epoxy Pvmt Mk 8 In Line	
8" White Channel Line	963 LF
Epoxy Pvmt Mk 24 In Line	
24" White Stop Bar	12 LF

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Pavement Marking  
US 281  
New Rockford North to Jct ND 15

23 USC § 409 Documents  
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	130	1



Area of 10:1 or flatter foreslope. To be surfaced with 2" HBP and 4" aggregate base course CL. 5.

Area of 10:1 or flatter foreslope. To be surfaced with 2" HBP and 4" aggregate base course CL. 5.

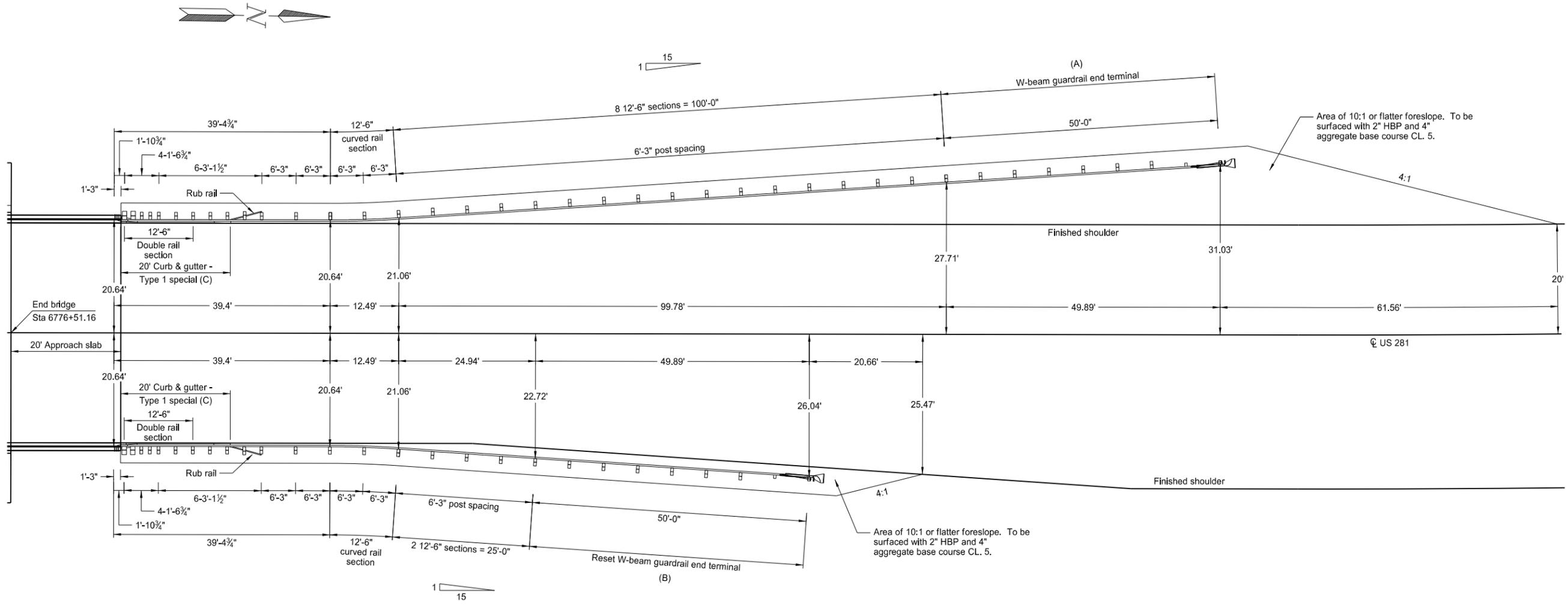
- (A) The W-beam guardrail end terminal to be installed at this location shall be either a FLEAT or a Slotted Rail Terminal.
  - (B) The W-beam guardrail end terminal to be reset at this location shall be a FLEAT.
  - (C) The curb and gutter shall be installed in accordance with Standard Drawing D-748-1, except that there shall be height transitions provided for a distance of 3 feet at each end, as shown on Standard Drawing D-764-3.
- The curb and gutter shall be measured and paid for by the linear foot as "Curb & gutter - type 1 special".

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

W-Beam Guardrail Layout  
 At Beginning of Bridge  
 James River Bridge  
 RP 128.331  
 US 281

23 USC § 409 Documents  
 NDDOT Reserves All Objections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	130	2



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

- (A) The W-beam guardrail end terminal to be installed at this location shall be either a FLEAT or a Slotted Rail Terminal.
  - (B) The W-beam guardrail end terminal to be reset at this location shall be a FLEAT.
  - (C) The curb and gutter shall be installed in accordance with Standard Drawing D-748-1, except that there shall be height transitions provided for a distance of 3 feet at each end, as shown on Standard Drawing D-764-3.
- The curb and gutter shall be measured and paid for by the linear foot as "Curb & gutter - type 1 special".

W-Beam Guardrail Layout  
 At End of Bridge  
 James River Bridge  
 RP 128.331  
 US 281

**23 USC § 409 Documents  
NDDOT Reserves All Objections**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
<b>ND</b>	<b>SNH-BRN-3-281(109)128</b>	<b>130</b>	<b>3</b>

**W-BEAM GUARDRAIL SUMMARY OF QUANTITIES**

**W-BEAM GUARDRAIL AT BRIDGE ENDS**

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	
	TERMINAL CONECTOR	5/8" Ø x 22" LONG GUARD-RAIL BOLT	5/8" Ø x 20" LONG GUARD-RAIL BOLT	7/8" Ø x 9" LONG H.S. HEX HEAD BOLT	5/8" Ø x 18" LONG GUARD-RAIL BOLT	6"x 8" x 14" WOOD OFF-SET BLOCK	6"x 8" x 6" TIMBER POST	5/8" Ø x 1 1/4" LONG GUARD-RAIL BOLT	12'-6" DOUBLE RAIL SECTION	12'-6" STRAIGHT RAIL SECTION	12'-6" CURVED RAIL SECTION	5/8" Ø x 11" LONG HEX HEAD BOLT	1/2" Ø x 4" LONG LAG SCREW	6" x 8" x 7'-0" TIMBER POSTS	RUB RAIL END SHOE	C 6 x 8.2 x 14'-6 1/4" RUB RAIL SECTION	C 6 x 8.2 x 12'-7" RUB RAIL SECTION	5/8" Ø x 1 1/2" LONG GUARD-RAIL BOLT	7 3/4" x 4 1/2" x 3/8" RUB RAIL SPLICE PLATE	10"x 10" x 8'-0" TIMBER POST	10"x 8" x 21" TAPERED TIMBER BLOCK	6"x 8" x 21" TIMBER BLOCK	6"x 9 3/4" x 14" TIMBER BLOCK	REFLECTORIZED PLATES
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
Sta 6773+42.74 to 6774+42.52 Rt	1	2	10	4	12	5	10	40	1	2	1	2	1	3	1	1	1	4	1	2	2	7	1	4
Sta 6774+42.52 to 6774+94.41 Lt																								7
Sta 6776+69.91 to 6777+21.80 Rt	1	2	10	4	12	5	10	40	1	2	1	2	1	3	1	1	1	4	1	2	2	7	1	1
Sta 6776+69.91 to 6777+21.80 Lt																								10
<b>TOTAL</b>	<b>2</b>	<b>4</b>	<b>20</b>	<b>8</b>	<b>24</b>	<b>10</b>	<b>20</b>	<b>80</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>8</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>14</b>	<b>2</b>	<b>22</b>

W-beam guardrail

Sta 6774+42.52 to 6774+94.41 Lt	51.9	LF
Sta 6776+69.91 to 6777+21.80 Lt	51.9	LF
<b>Total</b>	<b>103.8</b>	<b>LF</b>

Reset W-beam guardrail end terminal

Sta 6773+67.69 to 6774+17.58 Lt	1	ea	(B)
Sta 6777+46.74 to 6777+96.63 Rt	1	ea	(B)
<b>Total</b>	<b>2</b>	<b>ea</b>	

W-beam guardrail end terminal

Sta 6772+92.85 to 6773+42.74 Rt	1	ea
Sta 6778+21.58 to 6778+71.47 Lt	1	ea
<b>Total</b>	<b>2</b>	<b>ea</b>

Remove W-beam guardrail & posts

Sta 6774+33.85 to 6775+45.64 Lt	112	LF
Sta 6776+18.27 to 6778+04.88 Lt	187	LF
<b>Total</b>	<b>299</b>	<b>LF</b>

Reset W-beam guardrail

Sta 6773+42.74 to 6774+42.52 Rt	100	LF	(C)
Sta 6774+42.52 to 6774+94.41 Rt	51.9	LF	(B)
Sta 6774+17.58 to 6774+42.52 Lt	25	LF	(C)
Sta 6776+69.91 to 6777+21.80 Rt	51.9	LF	(B)
Sta 6777+21.80 to 6777+46.74 Rt	25	LF	(C)
Sta 6777+21.80 to 6778+21.58 Lt	100	LF	(C)
<b>Total</b>	<b>353.8</b>	<b>LF</b>	

Remove end treatment & transition

Sta 6773+96.88 to 6774+33.85 Lt	1	ea
Sta 6778+04.88 to 8778+41.85 Lt	1	ea
<b>Total</b>	<b>2</b>	<b>ea</b>

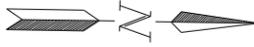
Curb & gutter - Type 1 special

Sta 6774+73.16 to 6774+93.16 Rt	20	LF
Sta 6774+73.16 to 6774+93.16 Lt	20	LF
Sta 6776+71.16 to 6776+91.16 Rt	20	LF
Sta 6776+71.16 to 6776+91.16 Lt	20	LF
<b>Total</b>	<b>80</b>	<b>LF</b>

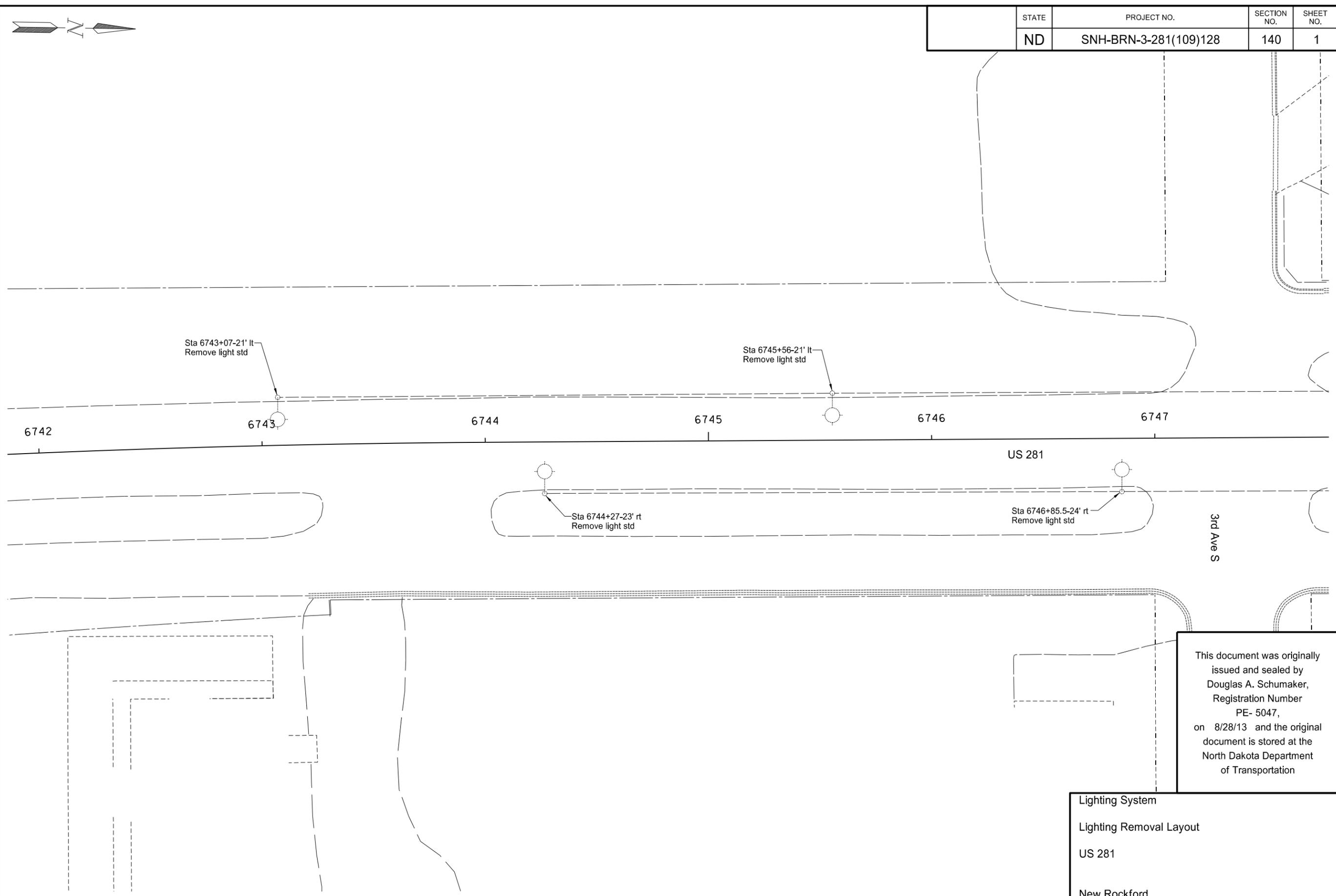
- (A) These items are not to be bid separately but shall be included in the price bid for the item "W-Beam Guardrail".
- (B) These portions of the reset quantities shall be reset from guardrail for Phase 2. Reflectorized plates shall also be reset from Phase 2. See Section 100.
- (C) These portions of the reset quantities shall be reset from the guardrail at the existing bridge.

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE-5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

**W-Beam Guardrail Quantities**  
**James River Bridge**  
**RP 128.331**  
  
**US 281**

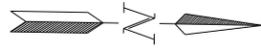


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	140	1

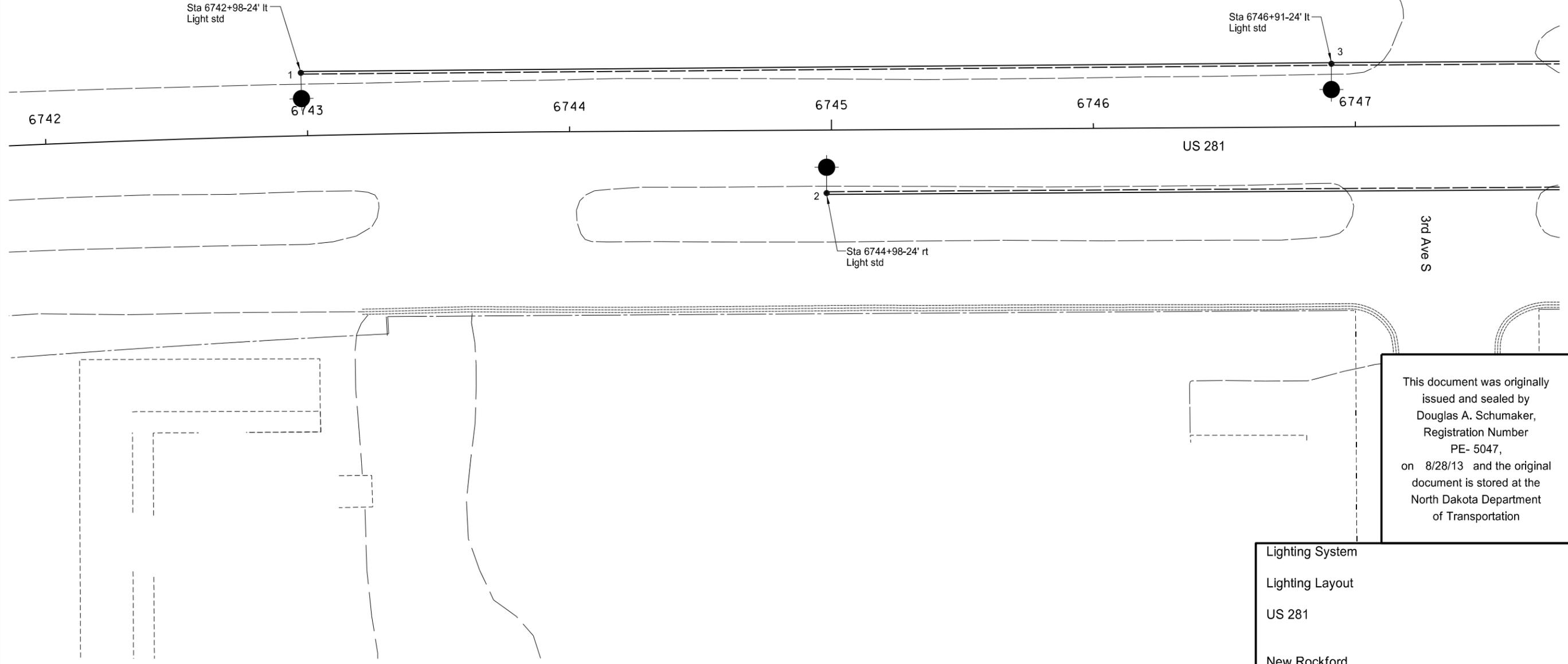


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
Lighting Removal Layout  
US 281  
New Rockford

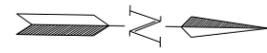


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	140	2

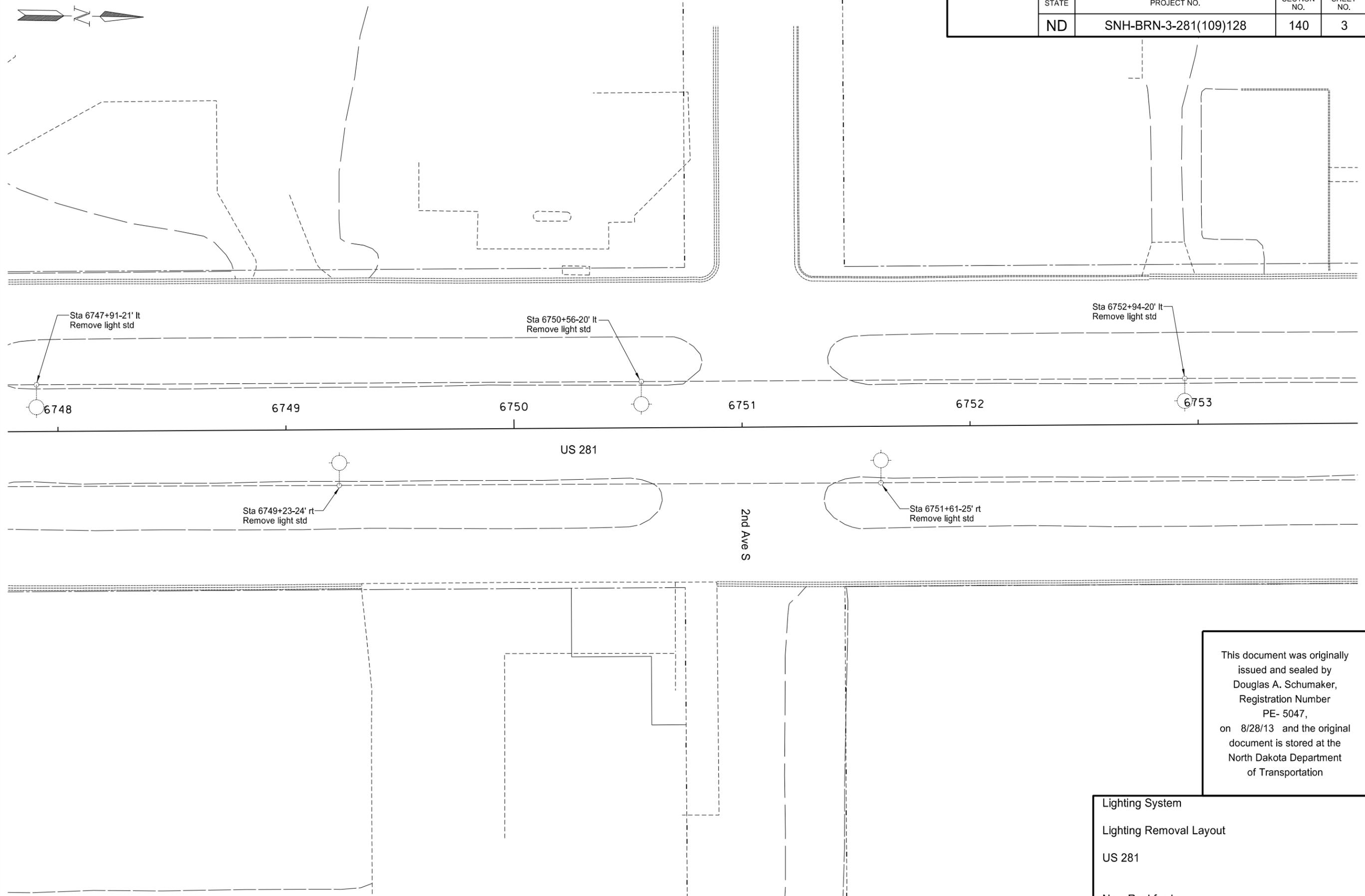


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
Lighting Layout  
US 281  
New Rockford

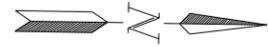


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	140	3

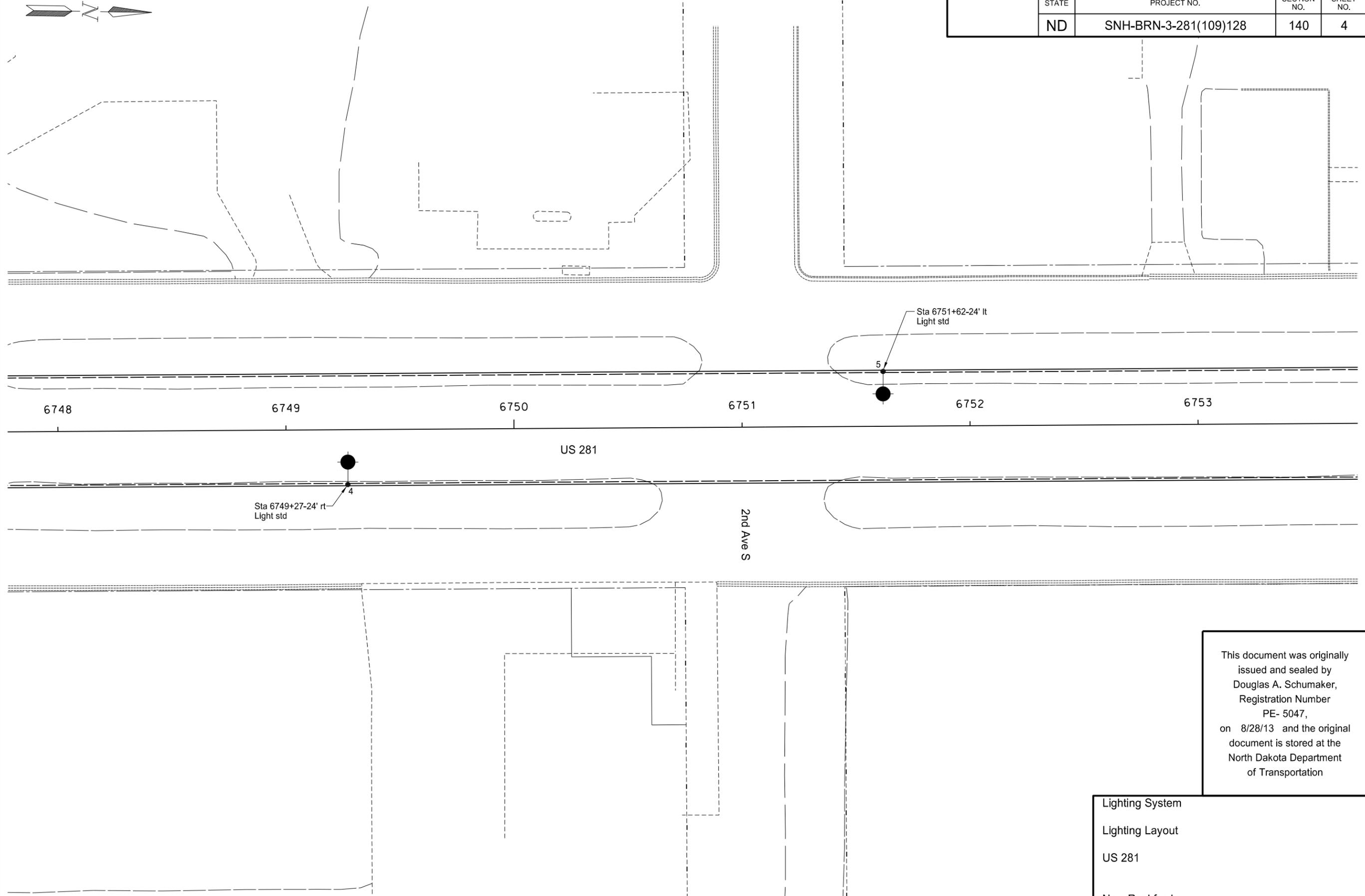


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
Lighting Removal Layout  
US 281  
New Rockford

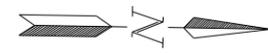


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	140	4

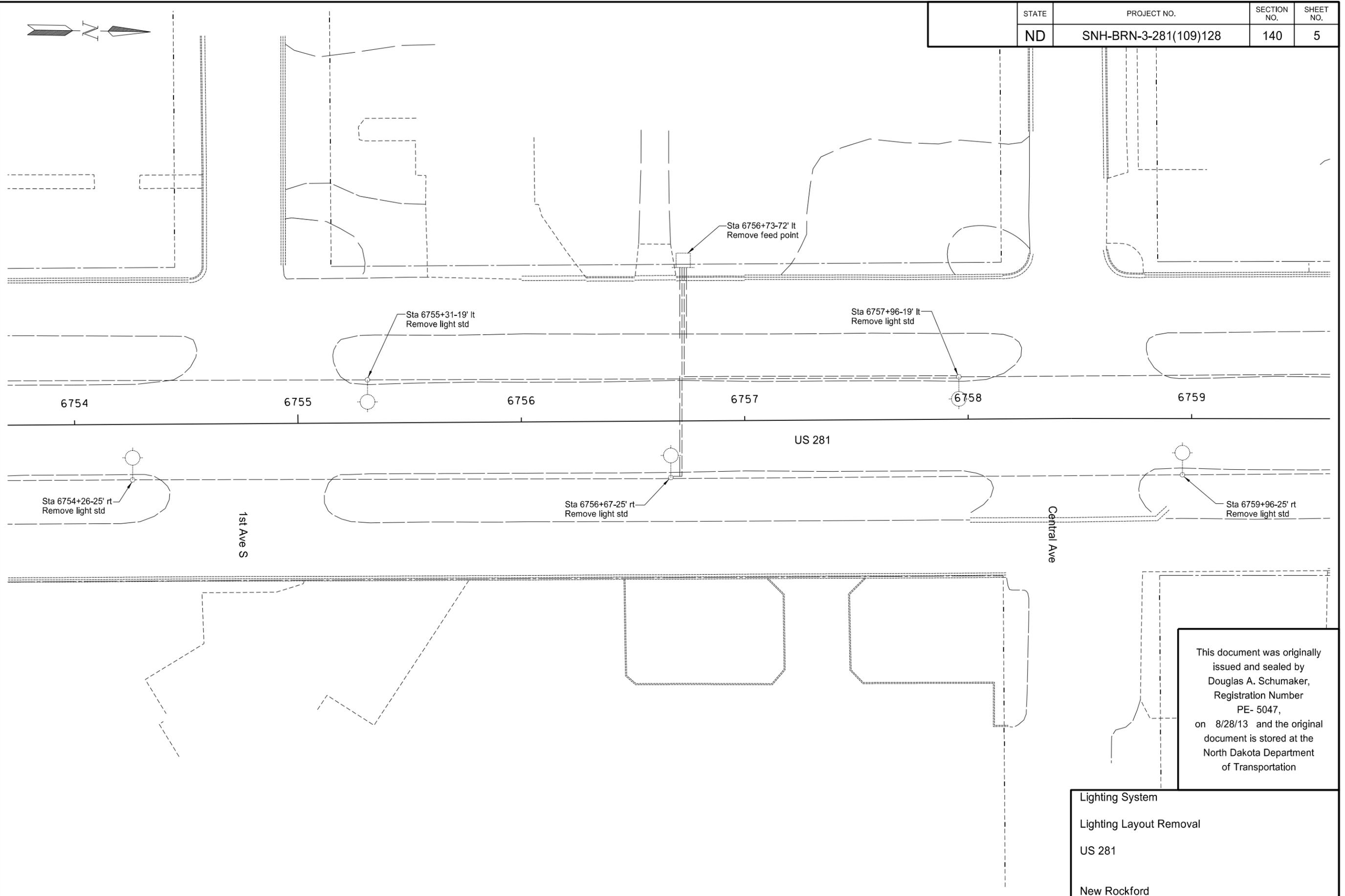


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
Lighting Layout  
US 281  
New Rockford

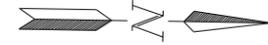


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	140	5

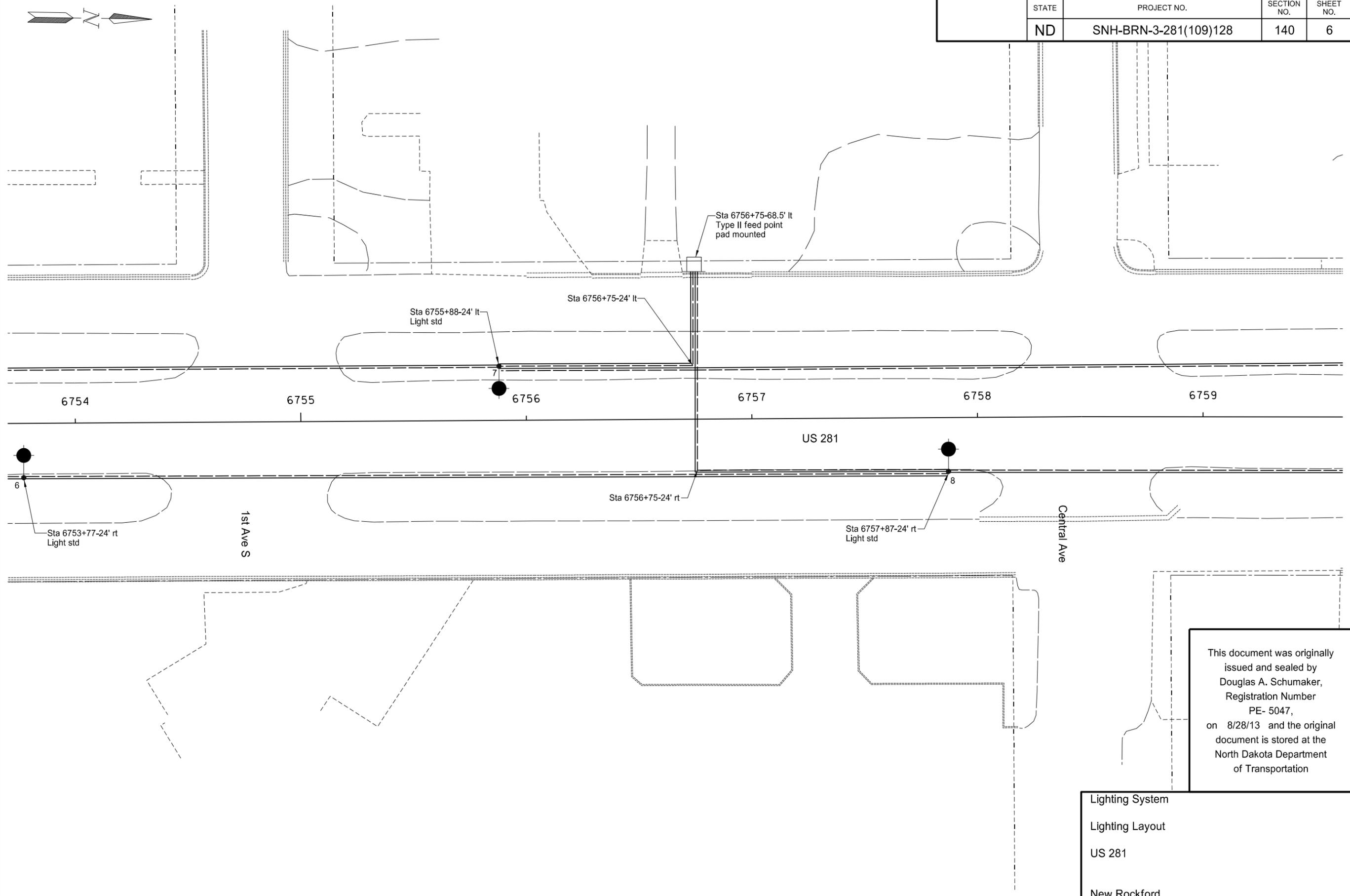


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
 Lighting Layout Removal  
 US 281  
 New Rockford

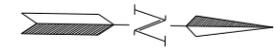


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	140	6

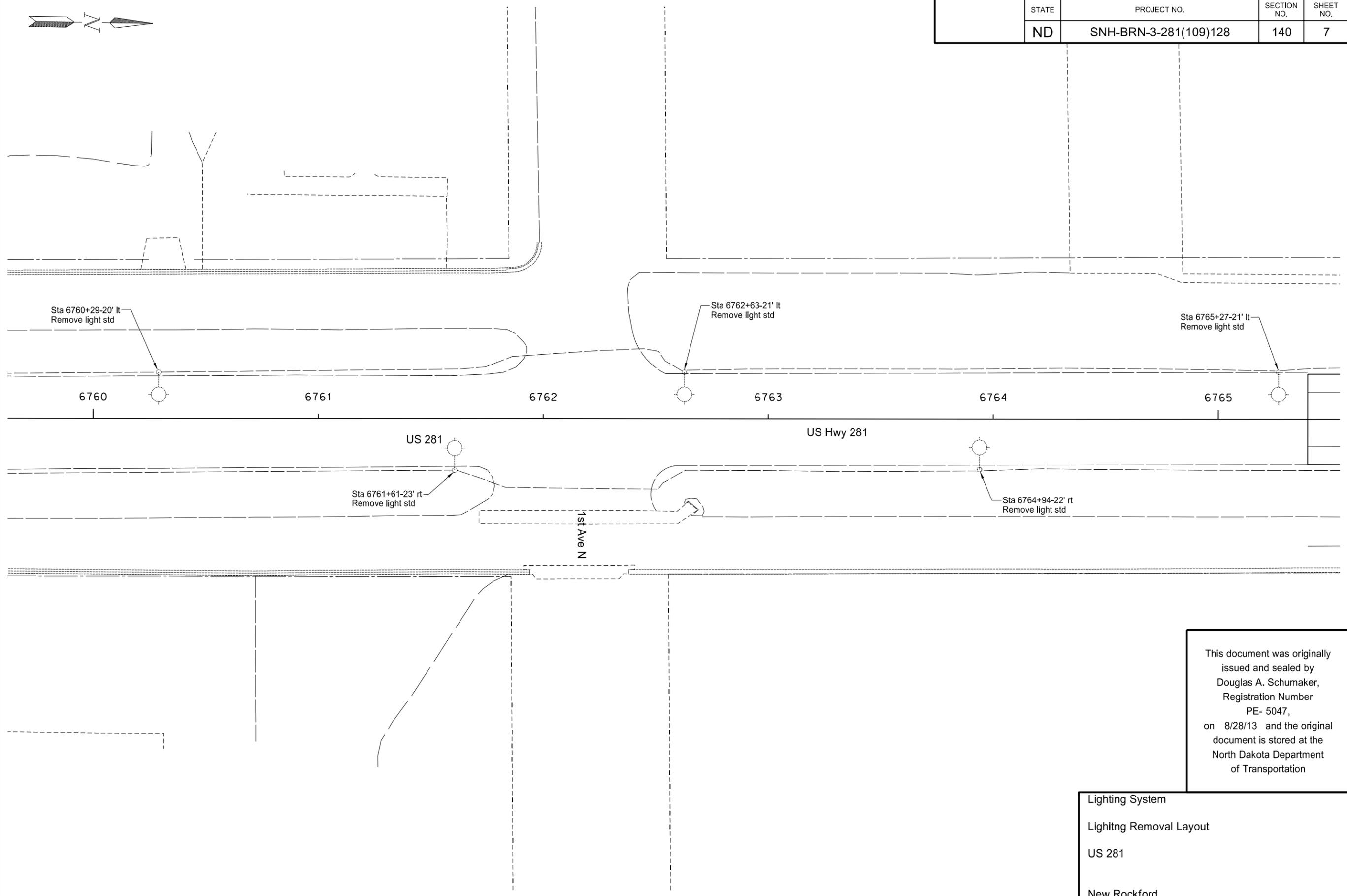


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
Lighting Layout  
US 281  
New Rockford

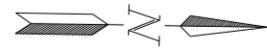


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	140	7

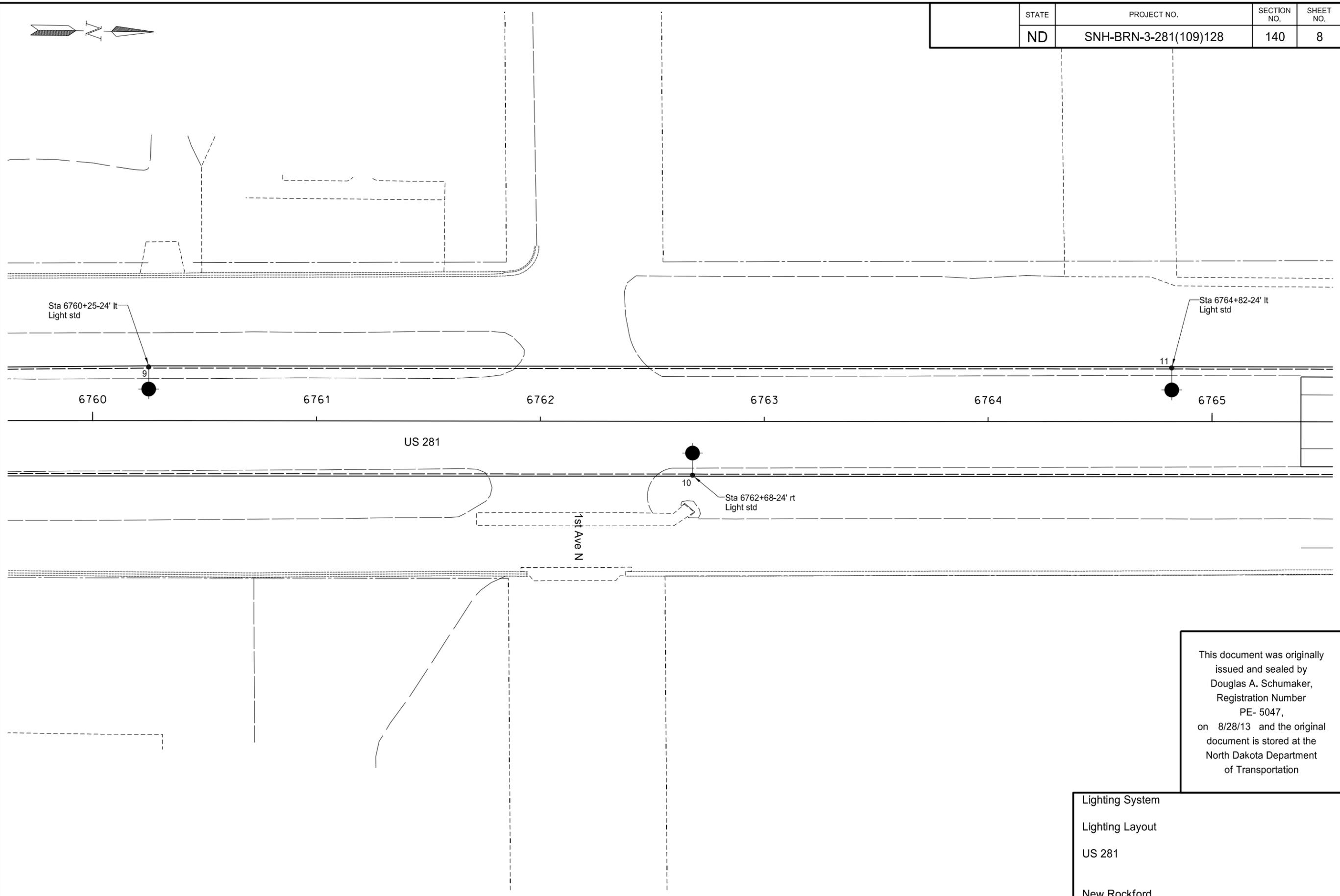


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
 Lightng Removal Layout  
 US 281  
 New Rockford

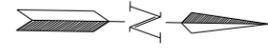


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SNH-BRN-3-281(109)128	140	8

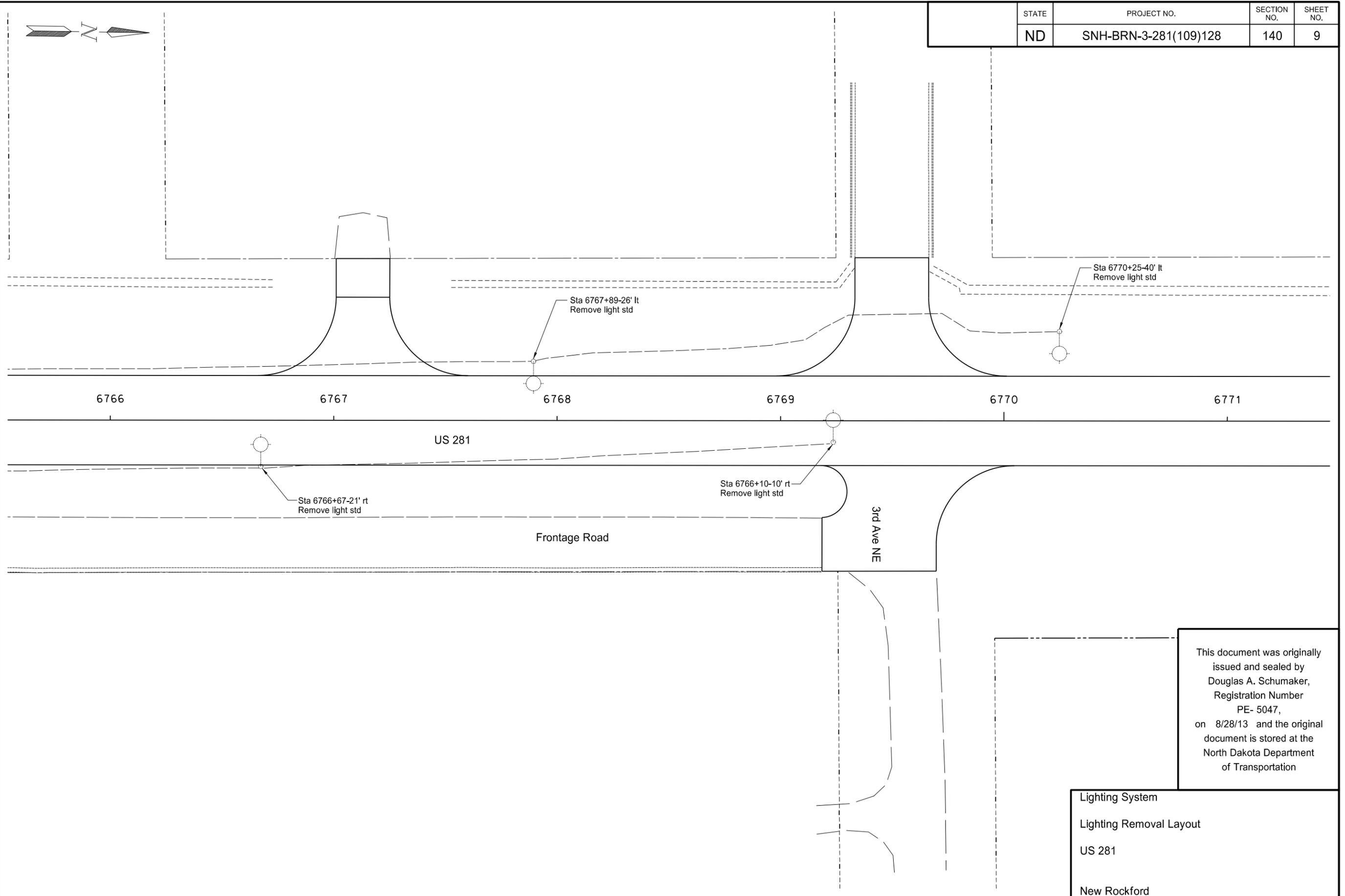


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
Lighting Layout  
US 281  
New Rockford

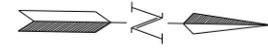


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	140	9

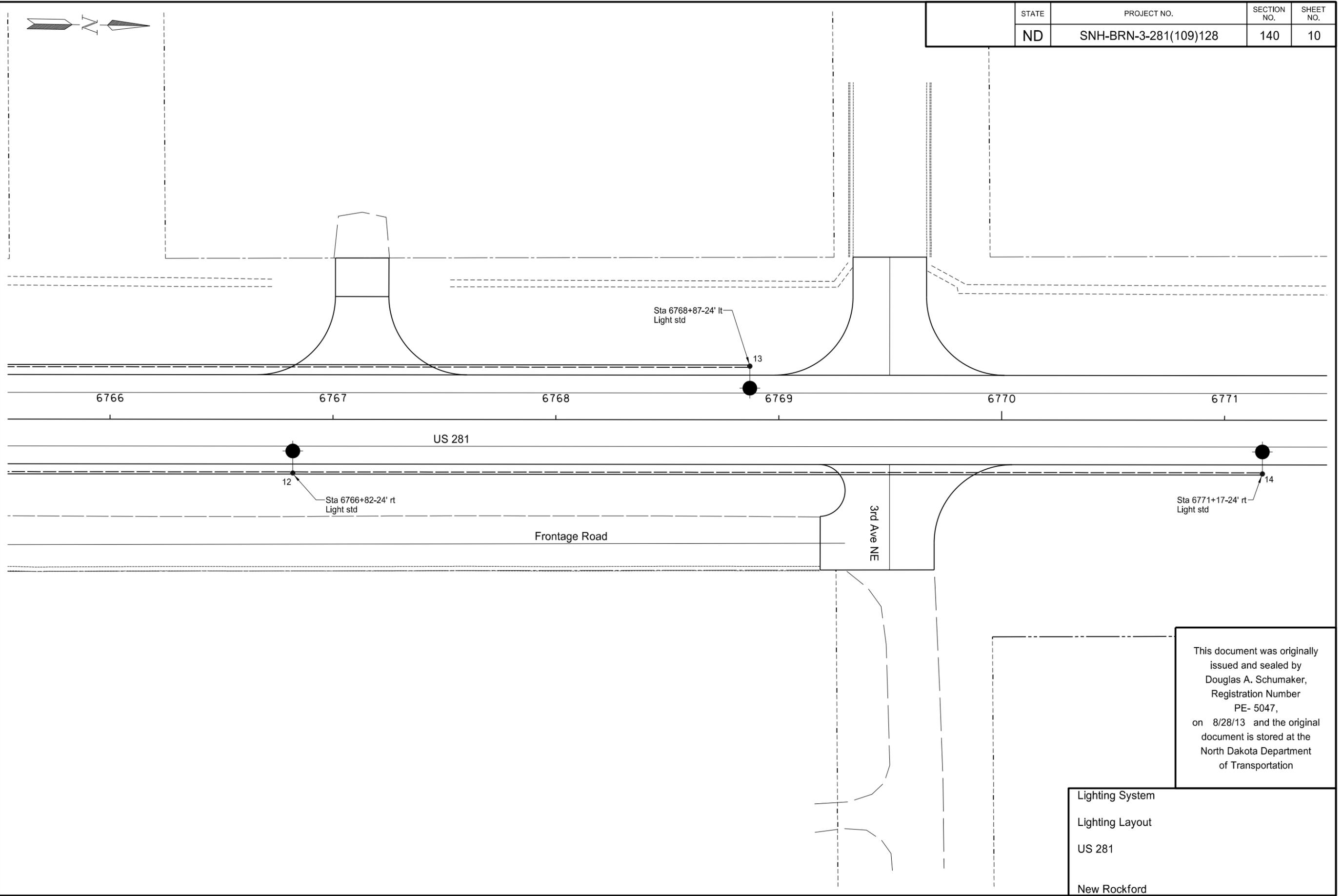


This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
Lighting Removal Layout  
US 281  
New Rockford



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	140	10



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
 Lighting Layout  
 US 281  
 New Rockford

Light Std Number	Station	Conduit Runs		Cable Trench	Cable Runs	
		LF	Dia	LF	LF	Type
1 3	6742+98-24' lt to 6746+91-24' lt	391	2"		802 401	(2) #6 RHW (1) #6 THW
3 5	6746+91-24' lt to 6751+62-24' lt	469	2"		958 479	(2) #6 RHW (1) #6 THW
5 7	6751+62-24' lt to 6755+88-24' lt	424	2"		868 434	(2) #6 RHW (1) #6 THW
7 FP	6755+88-24' lt to 6756+75-24' lt to 6756+75-68.5' lt	86 44	2" 2"		292 146	(2) #6 RHW (1) #6 THW
7 9	6755+88-24' lt to 6760+25-24' lt	435	2"		890 445	(2) #6 RHW (1) #6 THW
9 11	6760+25-24' lt to 6764+82-24' lt	455	2"		930 465	(2) #6 RHW (1) #6 THW
11 13	6764+82-24' lt to 6768+87-24' lt	403	2"		826 413	(2) #6 RHW (1) #6 THW
2 4	6744+98-24' rt to 6749+27-24' rt	427	2"		874 437	(2) #6 RHW (1) #6 THW
4 6	6749+27-24' rt to 6753+77-24' rt	448	2"		916 458	(2) #6 RHW (1) #6 THW
6 8	6753+77-24' rt to 6757+87-24' rt	408	2"		836 418	(2) #6 RHW (1) #6 THW
8 FP	6757+87-24' rt to 6756+75-24' rt to 6756+75-68.5' lt	111 92	2" 2"		438 219	(2) #6 RHW (1) #6 THW
8 10	6757+87-24' rt to 6762+68-24' rt	479	2"		978 489	(2) #6 RHW (1) #6 THW
10 12	6762+68-24' rt to 6766+82-24' rt	412	2"		844 422	(2) #6 RHW (1) #6 THW
12 14	6766+82-24' rt to 6771+17-24' rt	433	2"		886 443	(2) #6 RHW (1) #6 THW

Lighting Quantities (A)										
Concrete Foundation - Highway Lighting	2" Dia Rigid Conduit	Underground Conductor NO6-Type RHW	Underground Conductor NO6-Type THW	HP Sodium Vapor Luminaire - 250 Watt	Lt Std 6 ft MA 42 ft Pole - Breakaway	Feed Point-Type II Pad Mounted	Remove Light Standard	Remove Feed Point		Lighting System
EA	LF	LF	LF	EA	EA	EA	EA	EA		EA
14	5517	11338	5669	14	14	1	23	1		1

(A) These items shall not be bid separately but shall be included in the item "Lighting System".

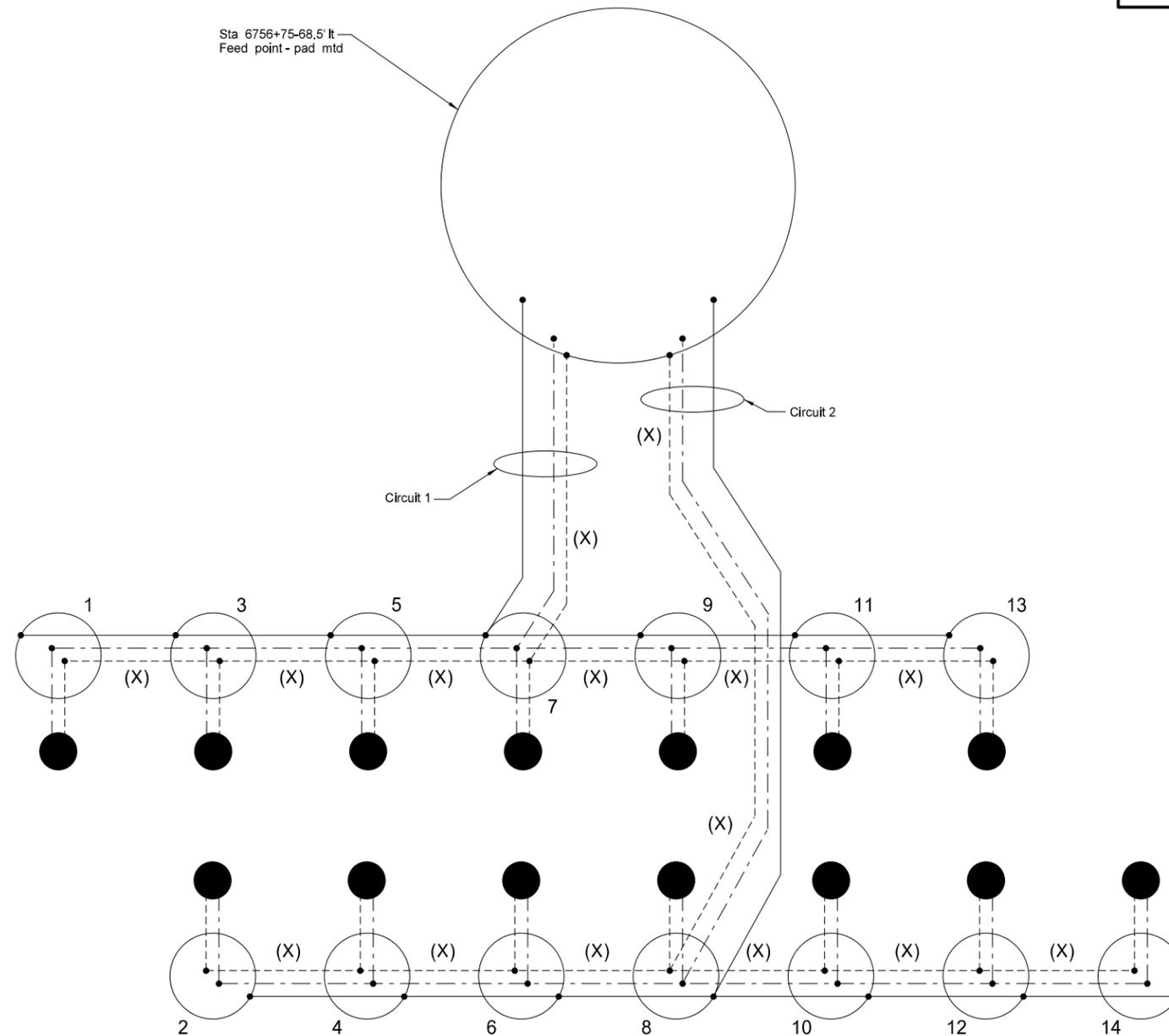
Light Standards						
No.	Station	Wattage	Circuit	IES-Type	Pole Ht.	Mast Arm
1	6742+98-24' lt	250	1	MSC III	42'	6'
2	6744+98-24' rt	250	2	MSC III	42'	6'
3	6746+91-24' lt	250	1	MSC III	42'	6'
4	6749+27-24' rt	250	2	MSC III	42'	6'
5	6751+62-24' lt	250	1	MSC III	42'	6'
6	6753+77-24' rt	250	2	MSC III	42'	6'
7	6755+88-24' lt	250	1	MSC III	42'	6'
8	6757+87-24' rt	250	2	MSC III	42'	6'
9	6760+25-24' lt	250	1	MSC III	42'	6'
10	6762+68-24' rt	250	2	MSC III	42'	6'
11	6764+82-24' lt	250	1	MSC III	42'	6'
12	6766+82-24' rt	250	2	MSC III	42'	6'
13	6768+87-24' lt	250	1	MSC III	42'	6'
14	6771+17-24' rt	250	2	MSC III	42'	6'

LIGHTING FOUNDATION TABLE		
Description	Footing Depth "D" 24" and 30" Dia	Footing Depth "D" 36" and 42" Dia
Light Standard 42' Pole	6'	5'

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Lighting System  
Lighting Quantities  
US 281  
New Rockford

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	140	12



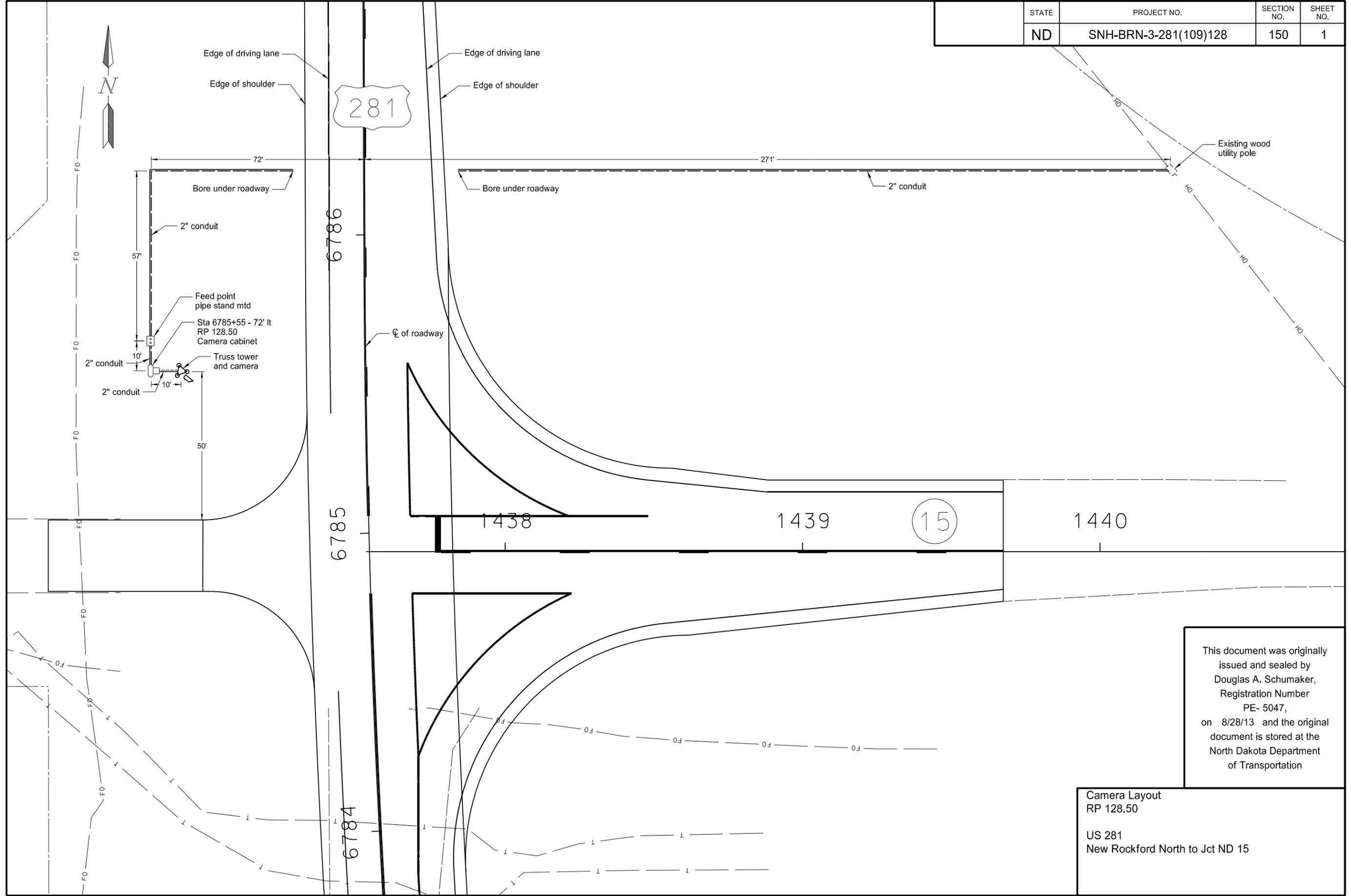
LEGEND

- Phase Conductor
- - - - - Phase Conductor
- Ground Conductor
- (X) 2 No 6 RHW  
1 No 6 THW
- 250 Watt High Pressure Sodium Vapor Luminaire  
120v x 240v operated on 240v
- Light Standard
- 5 Light Standard number

This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

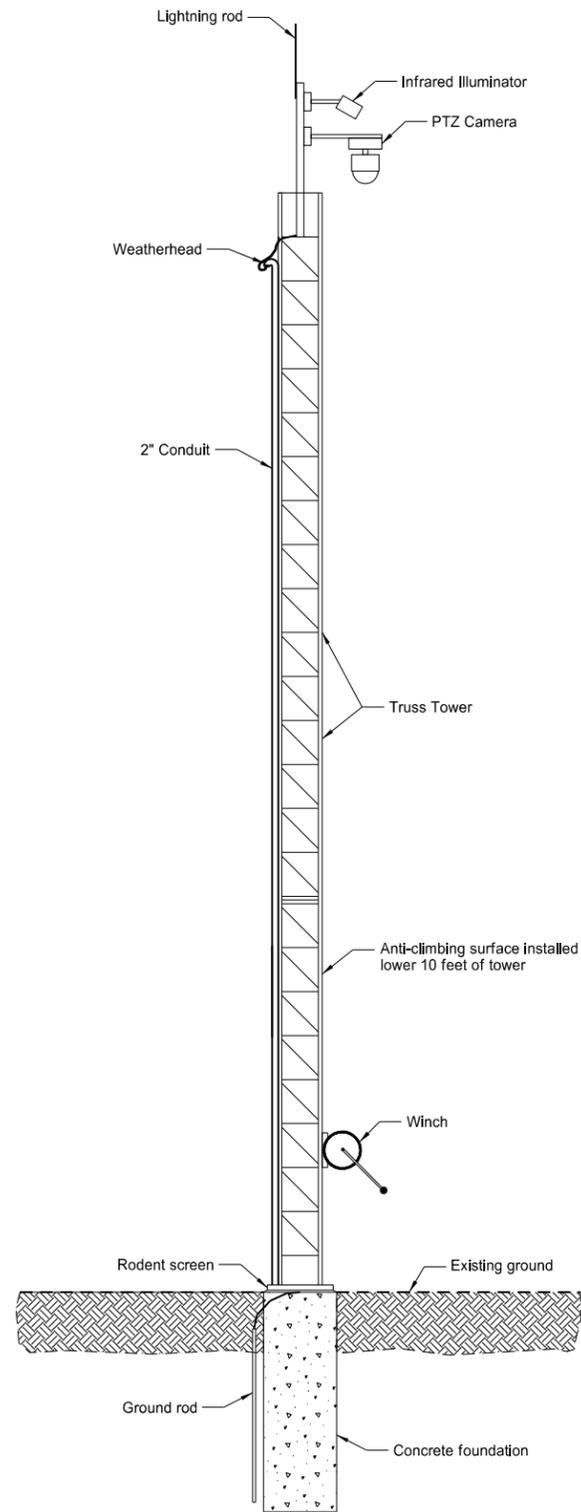
Lighting System  
Lighting Schematic  
US 281  
New Rockford

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	150	1



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Camera Layout  
 RP 128.50  
 US 281  
 New Rockford North to Jct ND 15



Truss Tower Detail

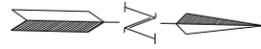
Quantities (A)		
Underground Conductor No 4 Type RHW (B)	LF	928
Underground Conductor No 6 Type THW (B)	LF	464
2 Inch Diameter Rigid HDPE conduit	LF	514
NEMA Type 4 Ground Mounted Cabinet (C)	EA	1
Concrete ESS Recorder Cabinet Foundation with working slab (D)	EA	1
Ethernet Switch	EA	1
4G Cellular Modem with all necessary cabling including ethernet and power	EA	1
PTZ Camera with PoE Cable	EA	1
OSP Cat 5e Cable (E)	LF	55
Infrared Illuminator	EA	1
No 14 AWG 2, 600V Conductor Cable (F)	LF	60
Feed Point- Pipe Stand Mounted including switch box, meter trim, 2 inch perforated tube, and concrete slab	EA	1
30 Foot Hinged Truss Tower (accessories to be included according to Special Provision)	EA	1
Manufacturer Field Technician	EA	1
Surveillance Camera System	LSUM	1

- (A) These quantities shall be included in the price bid for the item "Surveillance Camera System".
- (B) 1 No 6 and 2 No 4 conductors are provided to extend from the feed point cabinet to the utility pole on the NE corner of the intersection.
- (C) The ESS cabinet shall meet all the standards in the Special Provision.
- (D) The foundation for the ESS cabinet shall be built according to Standard Drawing D-770-1.
- (E) This cable will extend from the cabinet to the PTZ camera.
- (F) This cable will extend from the cabinet to the Infrared Illuminator.

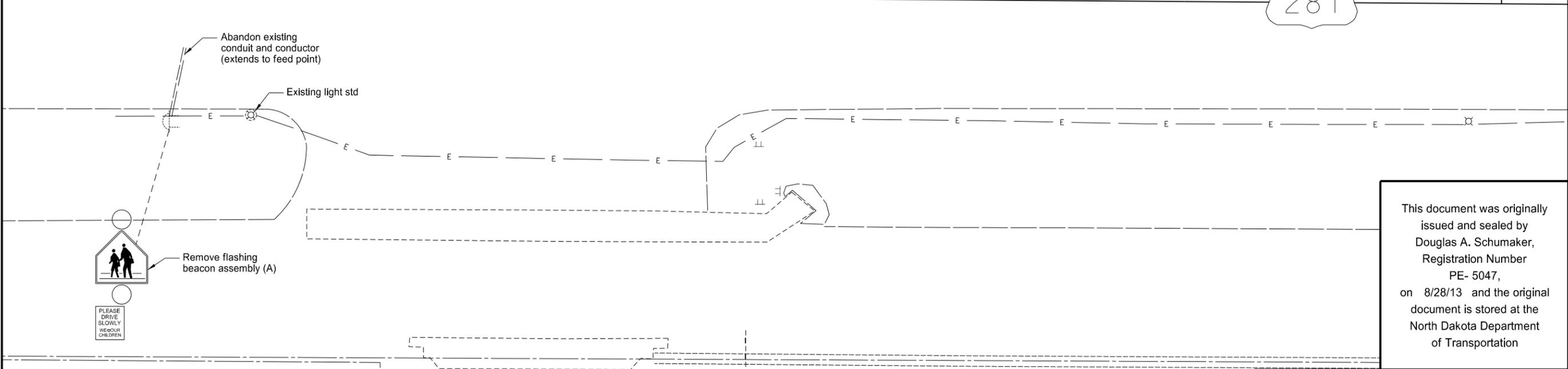
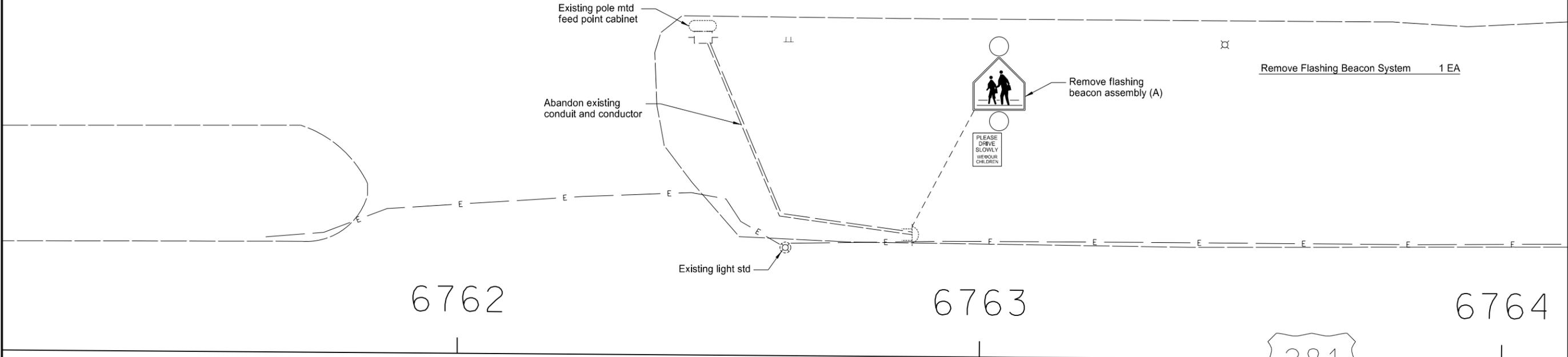
This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Camera Details  
 RP 128.50  
 US 281  
 New Rockford North to Jct ND 15

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SNH-BRN-3-281(109)128	150	3

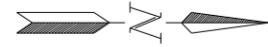


(A) The flashing beacon assembly consists of a school crossing sign and a supplementary sign, two flashing beacons, and a perforated tube sign support system. All items shall be removed, and the conduit and conductor disconnected 2 feet below the ground surface.



This document was originally issued and sealed by Douglas A. Schumaker, Registration Number PE- 5047, on 8/28/13 and the original document is stored at the North Dakota Department of Transportation

Remove Flashing Beacon  
 US 281  
 New Rockford North to Jct ND 15



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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	1

**DESIGN STRENGTHS:**

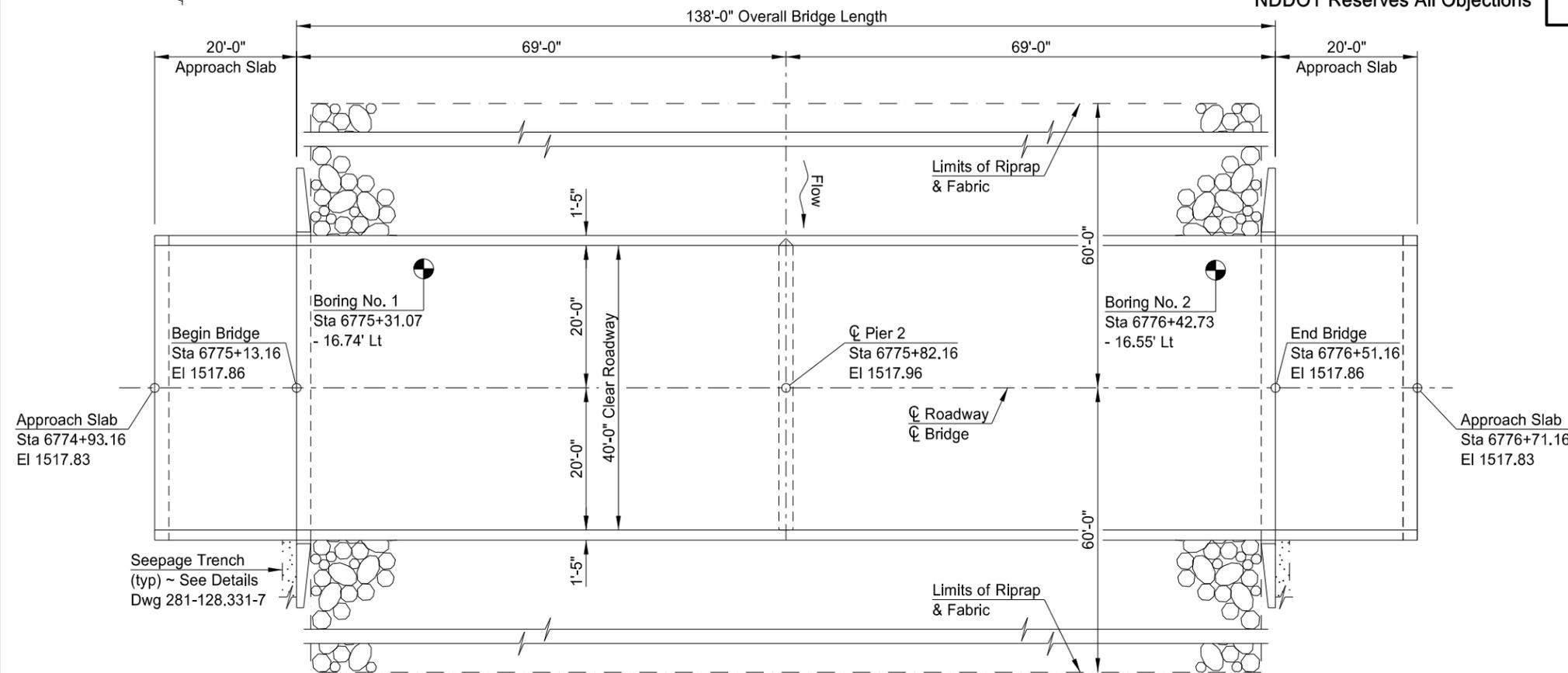
f'c = 3,000 psi ~ Class AE-3 Concrete  
 f'c = 4,000 psi ~ Class AAE-3 Concrete  
 f'c = 7,000 psi ~ Prestressed Beam Concrete  
 fy = 60,000 psi ~ Reinforcing Steel

Load & Resistance Factor Design

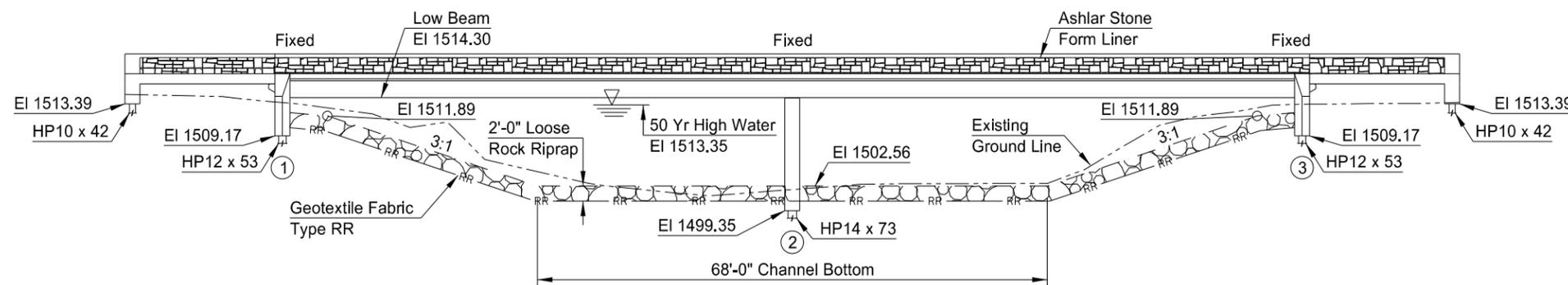
**HYDRAULIC DATA:**

Drainage Area	459.43	sq mi
Design Frequency	50	yr
Design Discharge	4991	cfs
Design Stage (upstream)	1513.35	ft
Stream Gradient	0.001	ft/ft
Waterway Provided Below Design Stage	1057.13	sq ft
Waterway Provided Below Clearance Elevation	1206.88	sq ft
Average Velocity of Flow in Natural Channel	2.02	fps
Depth of Flow	10.79	ft
Velocity of Flow Under Bridge	4.74	fps
100-Year Frequency Discharge	6605	cfs
100-Year Frequency Stage	1514.00	ft
Overtopping Stage	1517.87	ft
Overtopping Discharge	27807.5	cfs

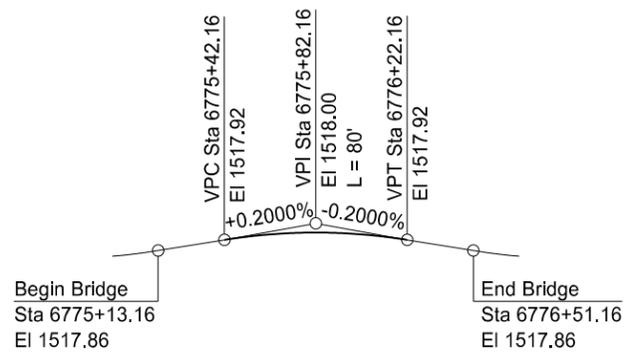
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/26/13 and the original document is stored at the North Dakota Department of Transportation



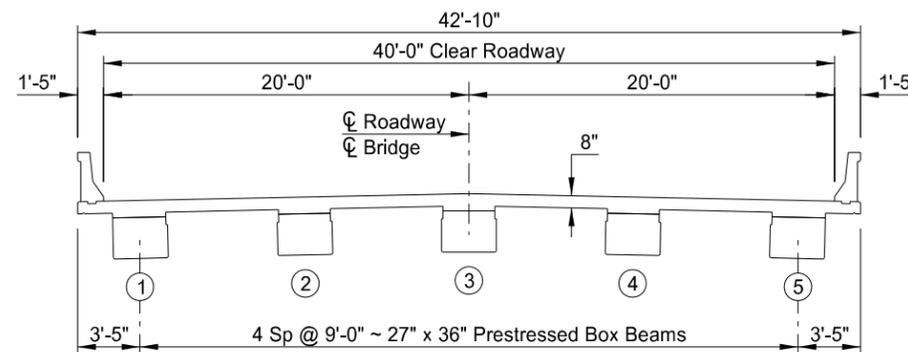
PLAN



ELEVATION



VERTICAL CURVE DATA



TYPICAL SECTION

SURVEY CONTROL POINTS			
POINT	NORTHING	EASTING	ELEVATION
RTK 5358	252,395.81	2,307,259.34	1517.27
RTK 5359	253,303.48	2,307,550.64	1510.85

SPECIAL PROVISION	
SP 1280(08)	ARCHITECTURAL CONCRETE FINISH
STANDARD DRAWINGS	
D-622-1, D-900-1	
F.W.S. 15 PSF	
HL-93 DESIGN LOADING	
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION JAMES RIVER NEW ROCKFORD	
BRIDGE LAYOUT	
PROJECT: BRN-3-281(109)128 STATION: 6775+82.16 EDDY COUNTY	
DATE: 08/26/13	Terrence R. Udland BRIDGE ENGINEER

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	2

**NOTES**

- 100 SCOPE OF WORK: This project consists of building a new 2-span spread box beam bridge with an overall bridge length of 138'-0" and a clear roadway width of 40'-0".
- 100 GENERAL: The cost of furnishing and placing preformed expansion joint filler, concrete inserts, rebar couplers, silicone sealant, and other miscellaneous items shall be included in the price bid for Class AE-3 and AAE-3 concrete.
- 107 HAZARDOUS MATERIAL: The existing structural steel is painted with lead-based paint. Certain Contractor operations could expose employees to hazardous levels of lead. The Contractor shall plan accordingly and shall inform employees of the hazards of lead-based paint. Any loose and peeling paint found on the existing structural steel shall be removed, contained, and disposed of properly.
- 202 REMOVAL OF STRUCTURE: The existing structure is a single span steel girder bridge, 75'-0" long with a clear roadway width of 32'-0". The substructures are made of concrete and supported on timber piling. The abutment footing concrete shall be removed in entirety. The eastern portion of the existing bridge must be removed prior to the construction of Pier 2 as part of the Phase 1 removal. After the removal and required excavation near the existing abutments, the Contractor shall shore the embankment to facilitate the construction of the abutments.  
  
In accordance with the Federal Migratory Bird Act, measures to prevent birds from building new nests or using old nests for active nesting must be incorporated into the project. The Contractor shall remove all nesting sites on the structure. The Contractor shall remove any new bird nests on a weekly basis. These measures shall be maintained until the existing structure has been removed. The lump sum bid item, "Removal of Structure", shall include all work required to remove the bridge, provide shoring as needed, and all costs associated with the removal of bird nests.
- 210 EXCAVATION: The excavation and shaping of the channel bottom and end slopes shall be included in the lump sum bid item, "Channel Excavation." The excavation at the abutments and approach slab footings, as shown, shall be included in the lump sum bid item, "Class 1 Excavation." The excavation at the pier shall be included in the lump sum bid item, "Class 2 Excavation."
- 210 SELECT BACKFILL: Select backfill shall meet the requirements of Section 816.03, Class 3. The backfill shall be placed in layers of not more than 6 inches, moistened or dried as required, and thoroughly compacted with mechanical tamping equipment. Moisture and density controls shall be in accordance with Section 203.02 G of the Standard Specifications. The work and material needed for placing the select backfill shall not be bid separately but shall be included in the pay item, "Abutment Underdrain System."
- 602 CONCRETE AGGREGATE TESTING: The Contractor must have coarse and fine aggregate used in the bridge and approach slabs tested by an independent lab for alkali-silica reactivity. In addition to NDDOT 816, AASHTO Standard Practice PP 65 shall be used. If test results show an expansion greater than 0.10 percent the aggregate will not

- be allowed for use in the structure. Acceptable test results must be given to the Engineer at least 30 calendar days before the aggregate is used on the project.
- 602 DIAPHRAGMS AND ENDWALLS: The pier diaphragm and endwall concrete shall be placed at the same time as the deck concrete.
- 602 DECK CONCRETE: Beams have slight variations in the anticipated camber. To build the deck to the designated thickness will require slight adjustments in deck elevation and/or riser dimensions. These adjustments result in minor concrete quantity discrepancies. The Contractor shall consider this quantity discrepancy when he bids the unit price for Class AAE-3 concrete. The Department will pay plan quantity of Class AAE-3 concrete.
- 602 BRIDGE APPROACH SLABS: Mechanical finishing of the approach slabs shall be required. A tine finish shall be applied using the deck tining requirements. Tining shall start 6" from the beginning and end of the approach slabs. A surface tolerance of 3/16" in 10 feet is also required.
- 602 BRIDGE DECK AND APPROACH SLAB CURING: The bridge deck and approach slabs shall be cured by the wet-cure method. No work shall be done on the bridge deck or approach slabs while the wet cure is in progress, including forming the barriers. No vehicles or equipment not required in the curing process shall be on the bridge deck or approach slabs.
- 602 FORM LINERS: The cost to provide and install the form liners shall be included in the price bid for Class AAE-3 concrete.
- 602 SURFACE FINISH "D": Surface Finish "D" shall be required on all exposed substructure surfaces, the fascia of the exterior beams, the outside edges of the pier diaphragm, the outside edges of the deck, the exposed endwall areas outside of the exterior beams, and on all barrier surfaces except for the recessed form liner areas. The surface finish color shall be gray, color number 36424, and shall meet Federal Standard No. 595B. This work shall be included in the price bid for Class AE-3 and AAE-3 concrete.
- 602 PENETRATING WATER REPELLENT TREATMENT: Penetrating water repellent shall be applied to the driving surface of the concrete deck.
- 616 STRUCTURAL STEEL: Structural steel shall be AASHTO M 270, Grade 36T2, except the requirement for Charpy V-Notch test is waived.

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE-4361, on 09/10/13 and the original document is stored at the North Dakota Department of Transportation.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	3

**NOTES**

622 PREBORING: The Contractor will be required to bore pilot holes through the existing constructed embankment for the abutment and approach slab piling to an elevation of 1500 before driving piling. All pilot holes shall have a diameter of 20 inches. Prior to pile driving, the pilot holes shall be backfilled by placing water in the empty hole until there is about 2 feet of standing water. Then 2 to 3 feet of bentonite chips shall be added to the standing water. The bentonite chips shall be ¼" or greater in size. After waiting 10 to 15 minutes, the process is repeated until the hole is filled with bentonite. The holes should set overnight prior to being covered by embankment, aggregate or concrete, to allow for the bentonite to fully "hydrate" and to allow time to check for settling. Holes which have settlement will have to be topped off with additional bentonite. All costs associated with boring pilot holes and backfilling with bentonite shall be included in the price bid for HP10 x 42 and HP12 x 53 piling.

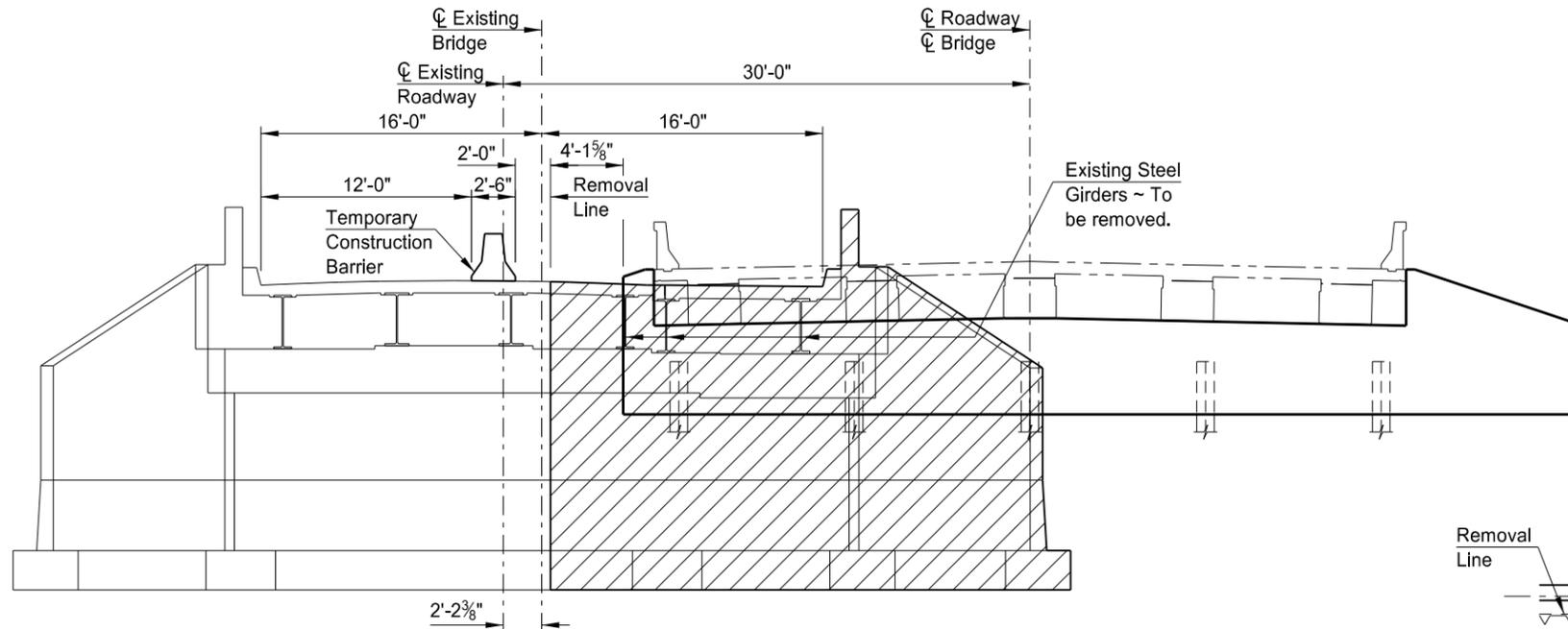
622 PILING: Piling shall be driven with a steam, air, or diesel hammer with a rated energy and ram weight not less than 107,166 foot-pound-tons, as computed by the formula  $W(E-22,176) + 0.967E$ , where W is the weight of the ram in tons and E is the rated hammer energy. In no case shall the ram weight be less than 5,000 pounds. The hammer shall be run at an energy that produces a penetration at bearing between ½" and 3 inches in the last 10 blows.

SHOP DRAWINGS: The Contractor shall submit the following shop drawings to the Engineer for review:

1. Prestressed Box Beams

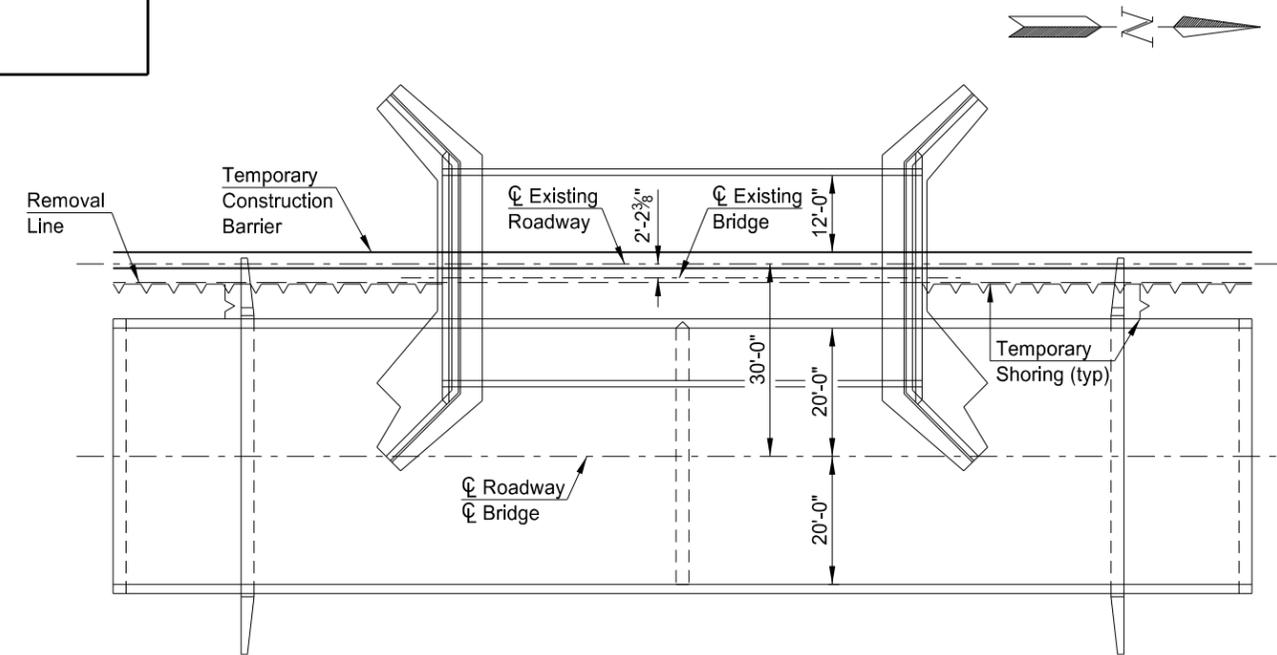
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE-4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation.

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	4

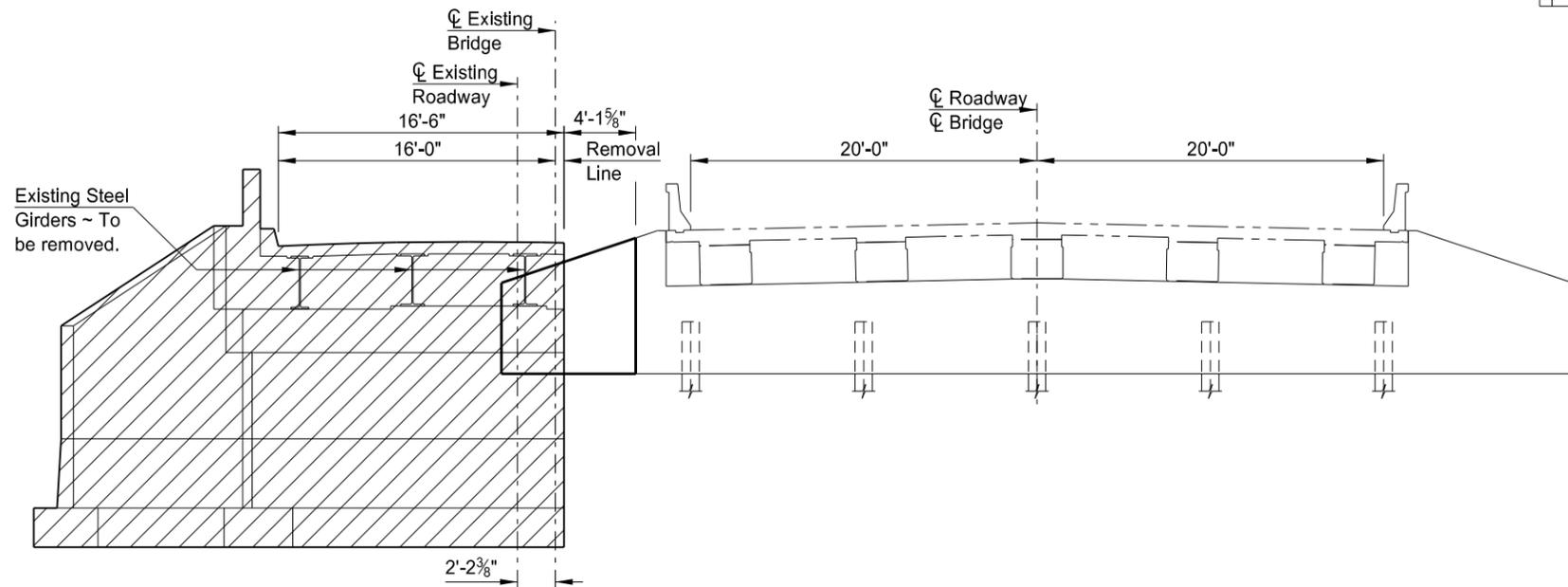


(SHOWING STAGE 1 REMOVAL & ABUTMENT CONSTRUCTION)  
SECTION AT ABUTMENT  
REMOVAL DETAIL

 Hatched area indicates concrete to be removed.



(SHOWING EXISTING & NEW BRIDGE)  
PLAN  
BRIDGE LAYOUT



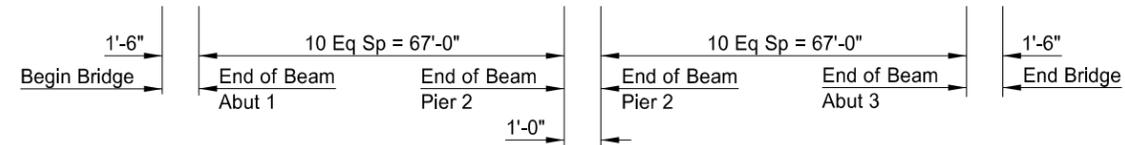
(SHOWING STAGE 2 REMOVAL & ABUTMENT WING CONSTRUCTION)  
SECTION AT ABUTMENT  
REMOVAL DETAIL

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

**JAMES RIVER  
NEW ROCKFORD**  
**EXISTING BRIDGE REMOVAL DETAILS**

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	5

CL	BEAM 1	BEAM 2	BEAM 3	BEAM 4	BEAM 5
	1517.49	1517.68	1517.86	1517.68	1517.49
	1517.49	1517.68	1517.87	1517.68	1517.49
	.56	.74	.93	.74	.56
	.61	.80	1517.99	.80	.61
	.66	.85	1518.03	.85	.66
	.70	.88	.07	.88	.70
	.72	.90	.09	.90	.72
	.72	.91	.09	.91	.72
	.70	.89	.08	.89	.70
	.68	.86	.05	.86	.68
	.64	.82	1518.01	.82	.64
	1517.59	1517.77	1517.96	1517.77	1517.59
	1517.59	1517.77	1517.96	1517.77	1517.59
	.64	.82	1518.01	.82	.64
	.68	.86	.05	.86	.68
	.70	.89	.08	.89	.70
	.72	.91	.09	.91	.72
	.72	.90	.09	.90	.72
	.70	.88	.07	.88	.70
	.66	.85	1518.03	.85	.66
	.61	.80	1517.99	.80	.61
	.56	.74	.93	.74	.56
	1517.49	1517.68	1517.87	1517.68	1517.49
	1517.49	1517.68	1517.86	1517.68	1517.49



Beam 1 is the west beam.  
**SCREED ELEVATIONS**

**BRIDGE BID ITEMS**

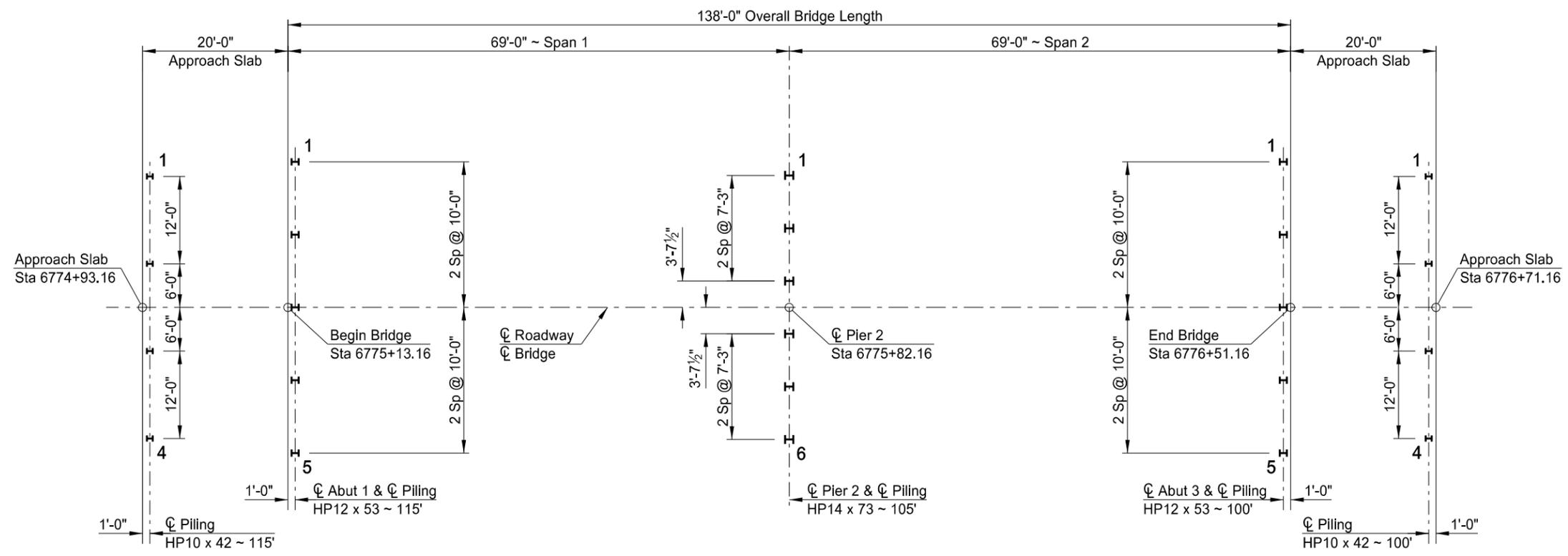
SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0105	REMOVAL OF STRUCTURE	L SUM	1
210	0101	CLASS 1 EXCAVATION	L SUM	1
210	0111	CLASS 2 EXCAVATION	L SUM	1
210	0127	CHANNEL EXCAVATION	L SUM	1
210	0201	FOUNDATION PREPARATION	EA	1
602	0130	CLASS AAE-3 CONCRETE	CY	205.3
602	1130	CLASS AE-3 CONCRETE	CY	94.2
602	1134	PILE SUPPORTED APPROACH SLAB	SY	190.4
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	613
604	9610	PRESTRESSED BOX BEAM-27 IN	LF	670.0
612	0115	REINFORCING STEEL-GRADE 60	LBS	9,090
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	43,068
616	0364	STRUCTURAL STEEL M270-GRADE 36	LBS	392
622	0020	STEEL PILING HP 10 X 42	LF	860
622	0040	STEEL PILING HP 12 X 53	LF	1,075
622	0060	STEEL PILING HP 14 X 73	LF	630
626	0120	PIER COFFERDAM	EA	1
708	1020	RIPRAP-LOOSE ROCK	CY	1,220
709	0600	GEOTEXTILE FABRIC-TYPE RR	SY	1,830
930	3000	BRIDGE BENCH MARKS	SET	1
930	9537	ABUTMENT UNDERDRAIN SYSTEM	EA	2

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

**JAMES RIVER  
NEW ROCKFORD**

**SCREED ELEVATIONS &  
BID ITEM QUANTITIES**

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	6

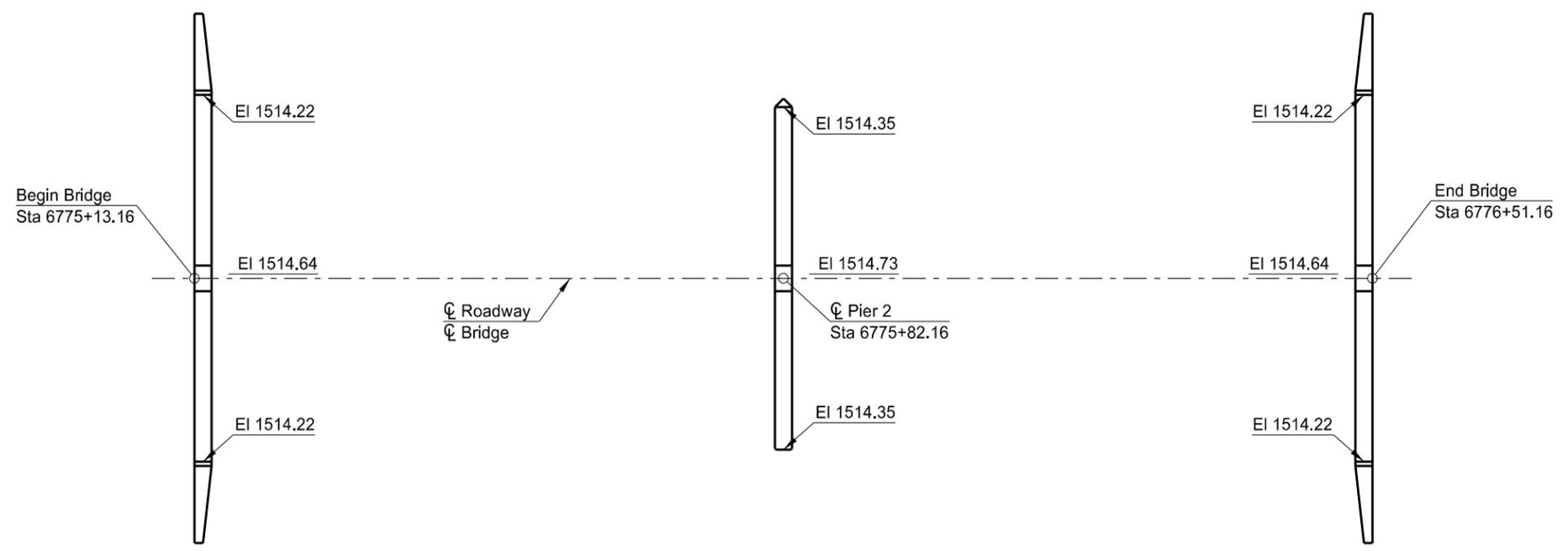


HP10 x 42 Pile shall be driven to 105 tons.  
HP12 x 53 Pile shall be driven to 130 tons.  
HP14 x 73 Pile shall be driven to 180 tons.  
**PILING LAYOUT**

**NOTE:**  
For double acting or single acting diesel hammers, the safe bearing value of piles shall be determined by the following formula:

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

PILE COORDINATES			
	PILE	NORTHING	EASTING
SOUTH APPR SLAB	1	252,776.09	2,307,277.59
	4	252,776.62	2,307,313.58
ABUT 1	1	252,796.05	2,307,275.29
	5	252,796.65	2,307,315.29
PIER 2	1	252,864.08	2,307,276.15
	6	252,864.61	2,307,312.40
ABUT 3	1	252,932.04	2,307,273.27
	5	252,932.63	2,307,313.27
NORTH APPR SLAB	1	252,952.07	2,307,274.97
	4	252,952.60	2,307,310.97



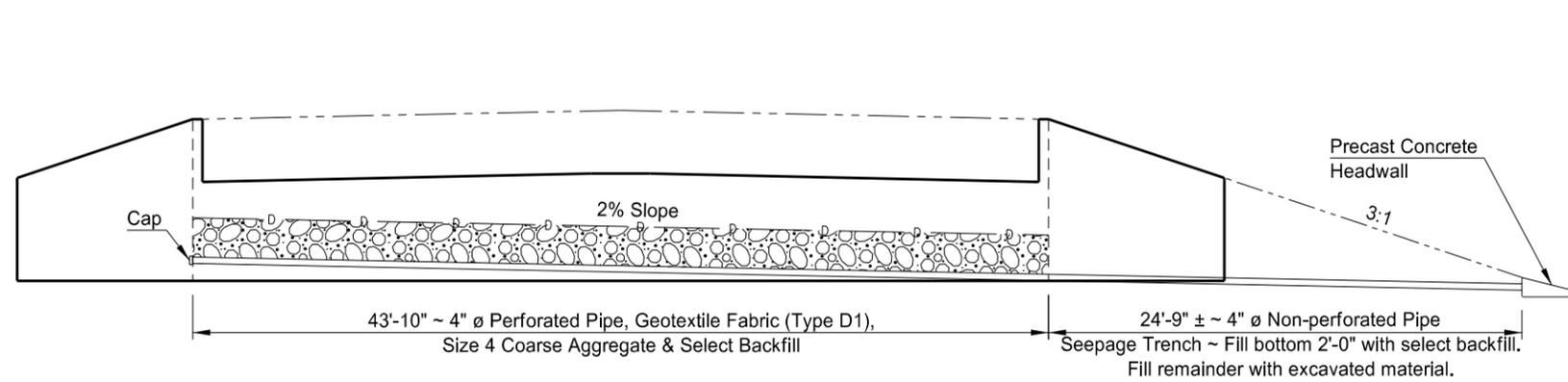
Elevations shown are to top of finished concrete.  
**BEARING ELEVATIONS**

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

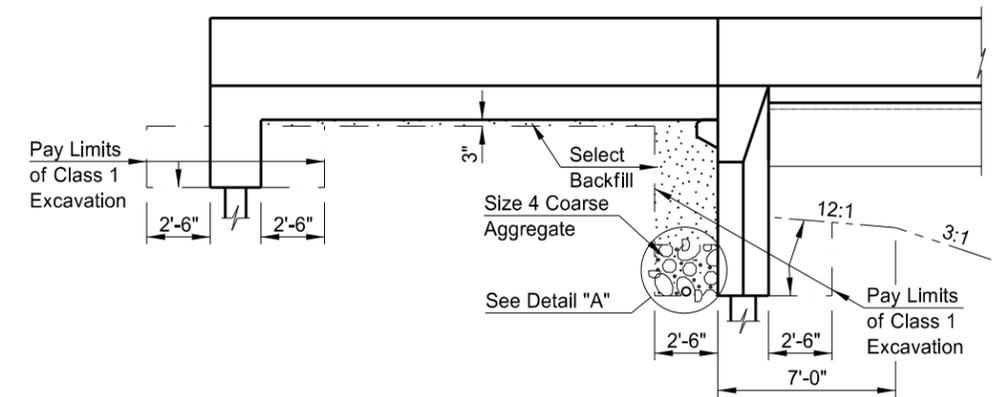
**JAMES RIVER  
NEW ROCKFORD**

**PILING LAYOUT &  
BEARING ELEVATIONS**

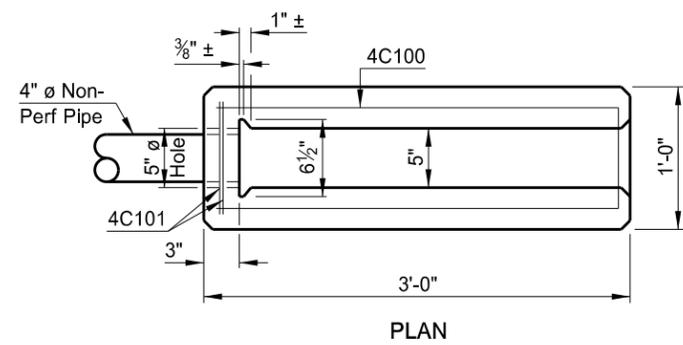
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	7



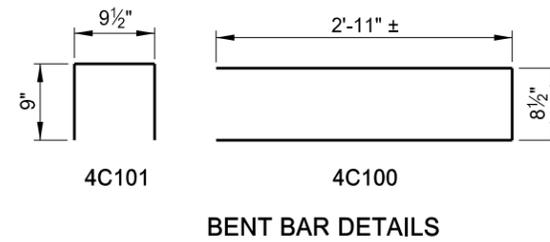
BACK FACE OF ABUTMENT



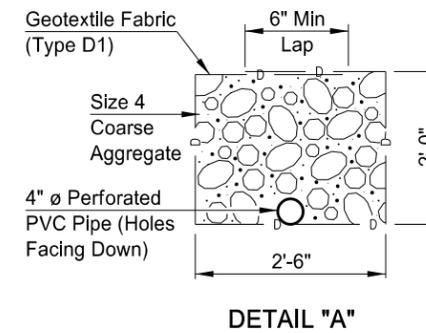
DETAIL AT ABUTMENT



PLAN



BENT BAR DETAILS



DETAIL "A"

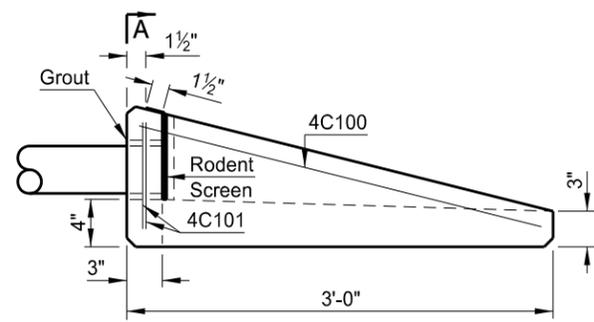
**NOTES:**

The dimensions for the rodent screen are approximate to allow for bending and a snug fit into the slot in the headwall.

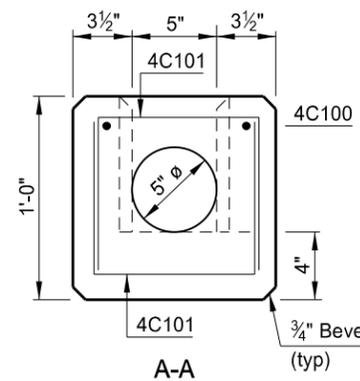
The rodent screen shall be fabricated from flattened, expanded metal with screen openings of approximately 0.25 square inches. The screen shall be 16 gage metal and be hot dip galvanized after fabrication.

The cost to furnish and place the select backfill, coarse aggregate, geotextile fabric, perforated pipe, non-perforated pipe, headwalls and rodent screens shall be included in the pay item "Abutment Underdrain System."

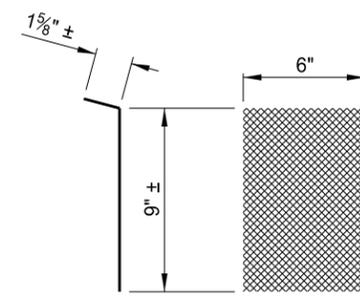
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation



ELEVATION  
 PRECAST CONCRETE HEADWALL DETAILS



A-A

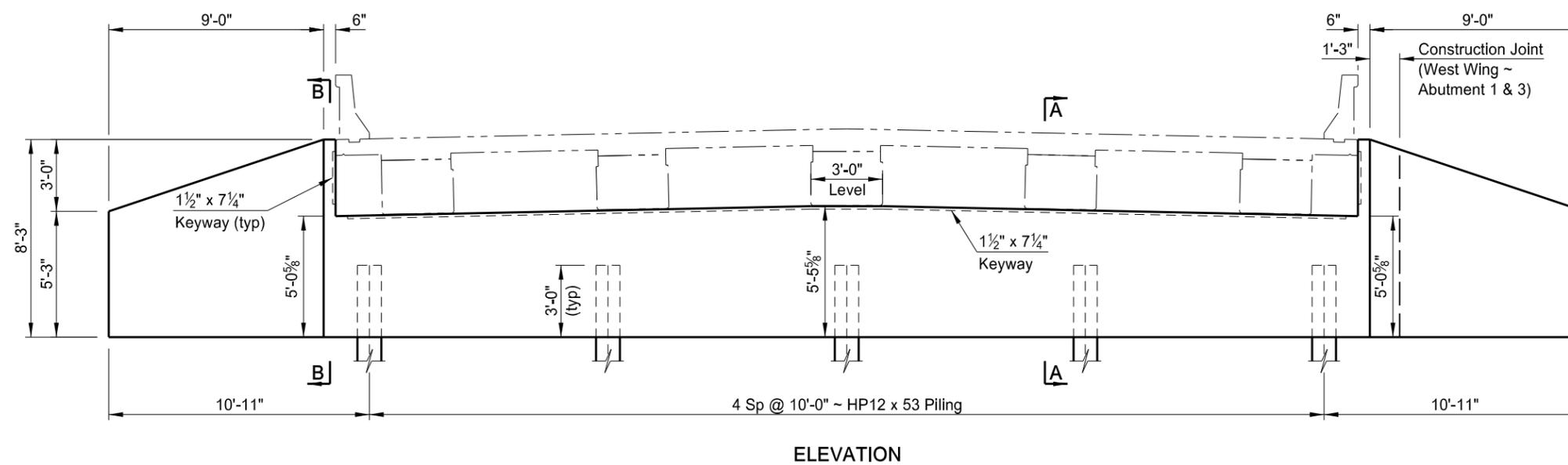
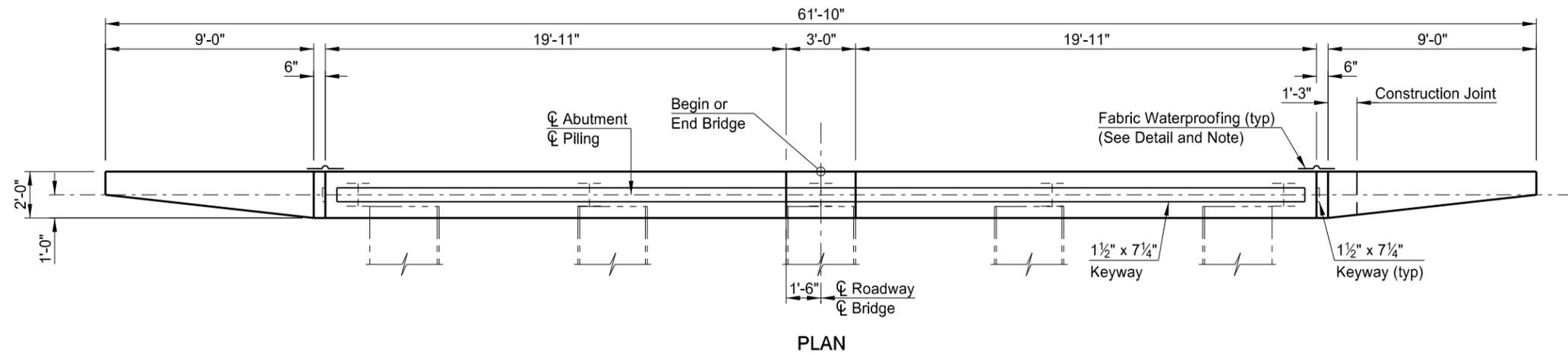


SIDE VIEW FRONT VIEW  
 RODENT SCREEN DETAILS

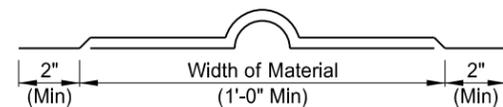
JAMES RIVER  
 NEW ROCKFORD

ABUTMENT UNDERDRAIN &  
 EXCAVATION DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	8

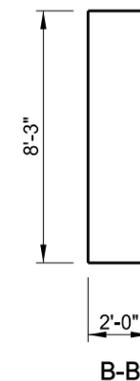
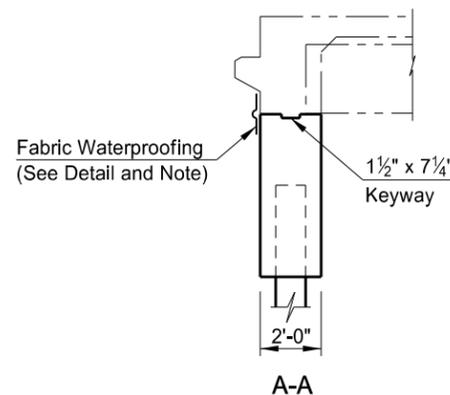


**NOTE:**  
The west abutment wingwalls are to be poured after the remaining bridge is complete and carrying traffic.



Fabric waterproofing shall be applied in accordance with Section 740 of the NDDOT Specifications. All material and work shall be included in the pay item "Class AE-3 Concrete."

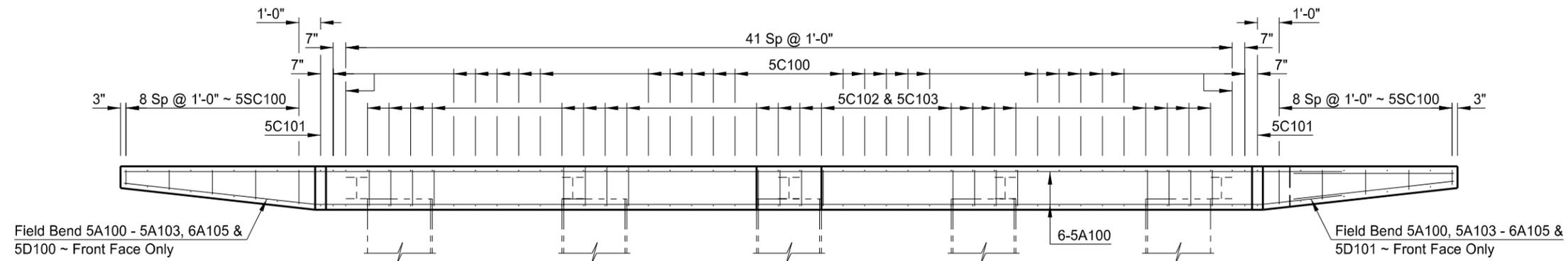
**FABRIC WATERPROOFING DETAIL**



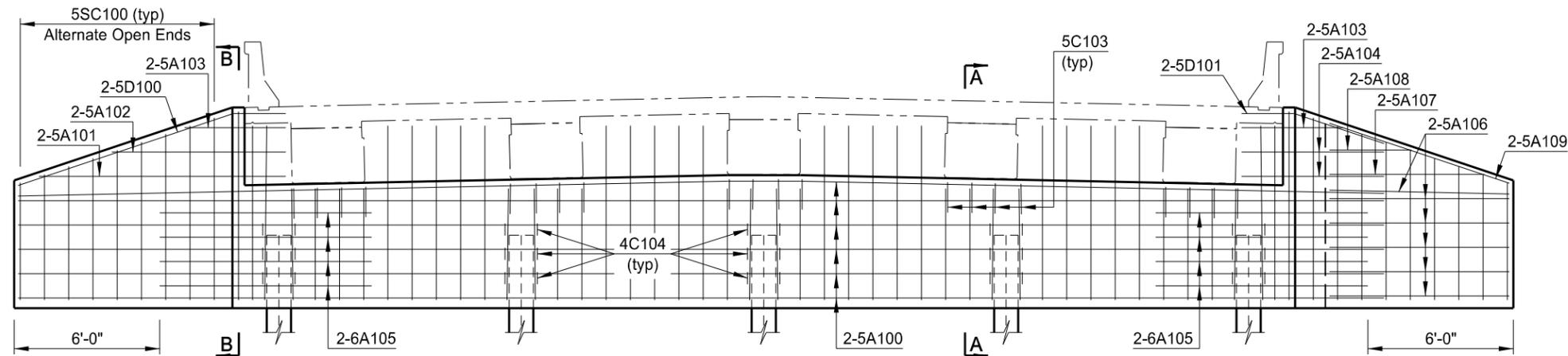
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

<b>QUANTITIES</b>
SEE DWG 281-128.331-9
<b>JAMES RIVER NEW ROCKFORD</b>
(SHOWING DIMENSIONS) <b>ABUTMENT DETAILS</b>

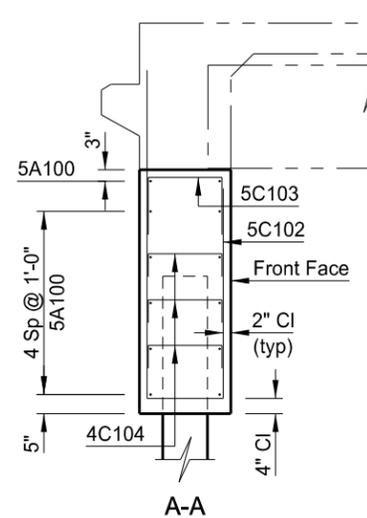
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	9



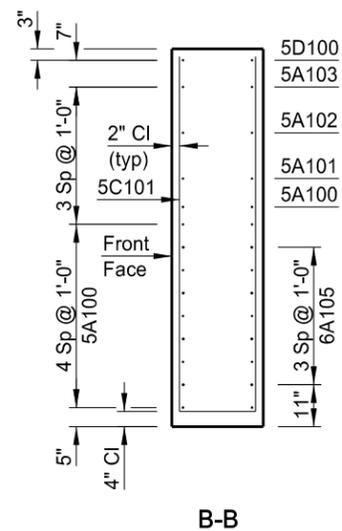
PLAN



ELEVATION



A-A



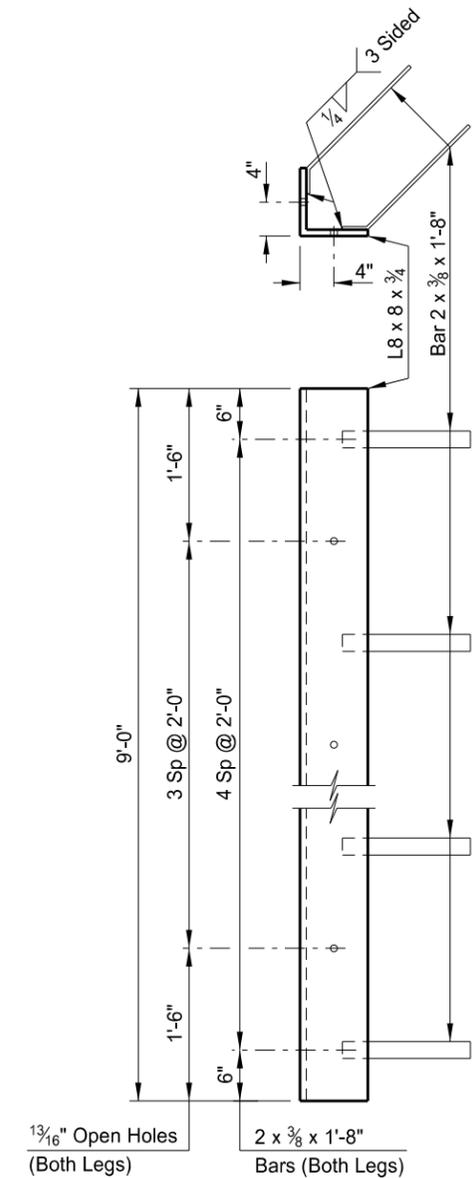
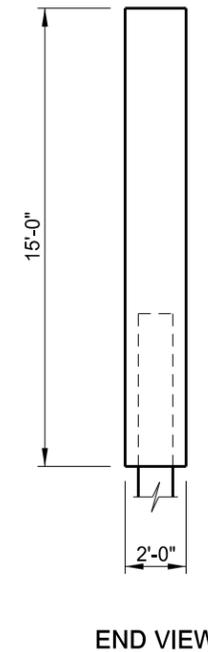
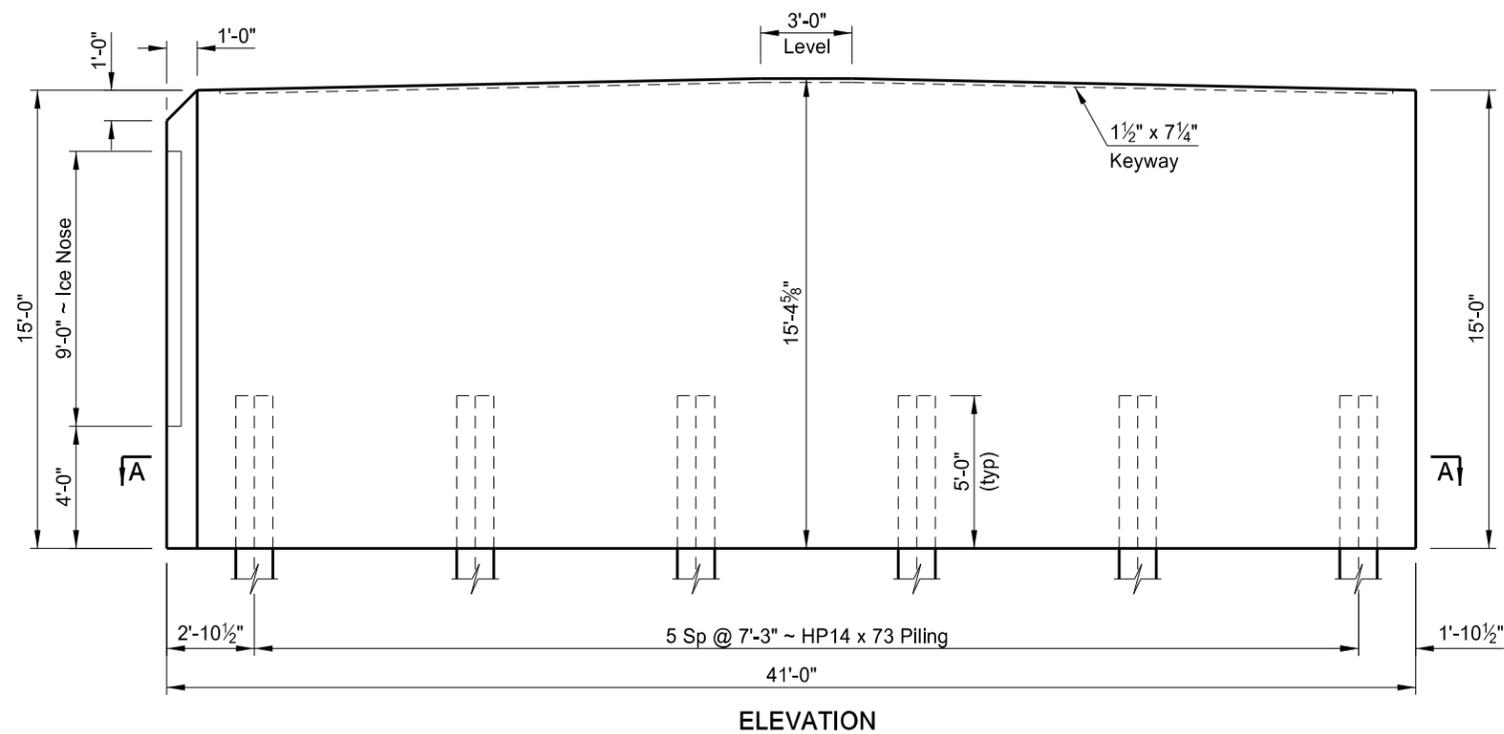
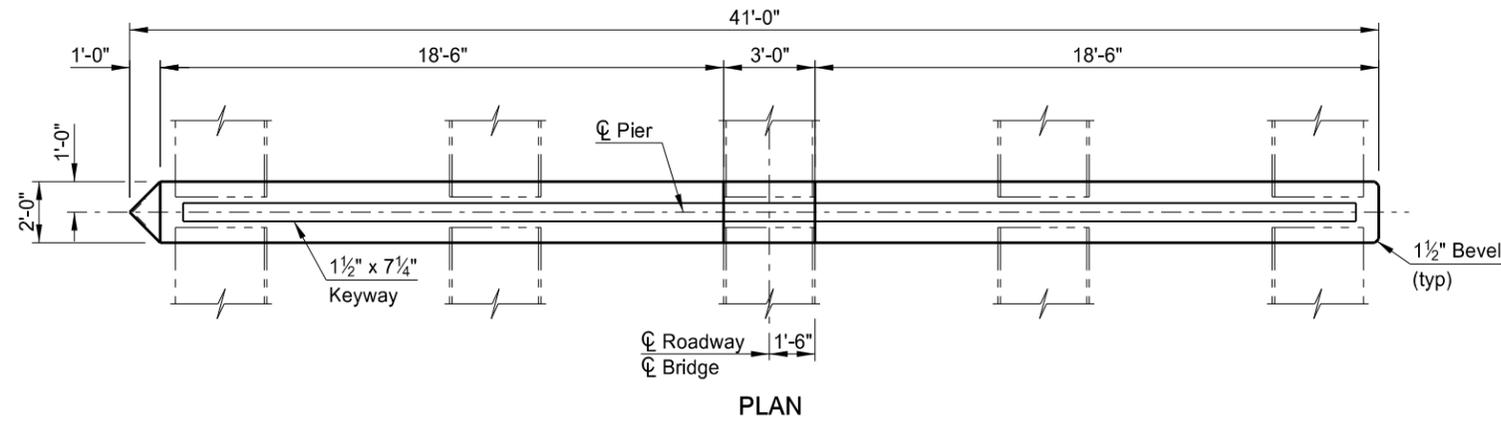
B-B

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	(ONE ABUTMENT)
CLASS AE-3 CONCRETE	24.3 CY
REINFORCING STEEL	2,265 LBS

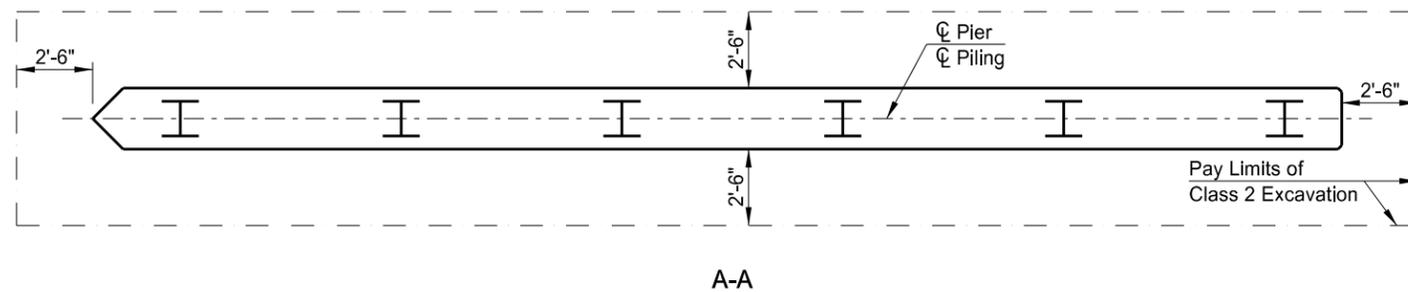
**JAMES RIVER  
NEW ROCKFORD**  
  
(SHOWING REINFORCING)  
**ABUTMENT DETAILS**

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	10



Galvanize in accordance with AASHTO M 111 after fabrication.

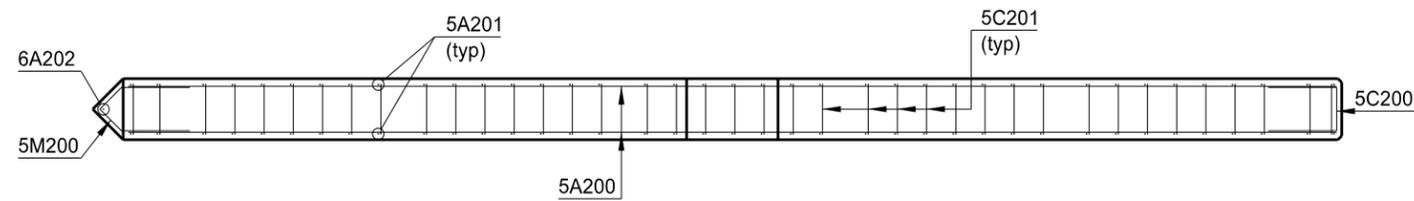
ICE NOSE DETAIL



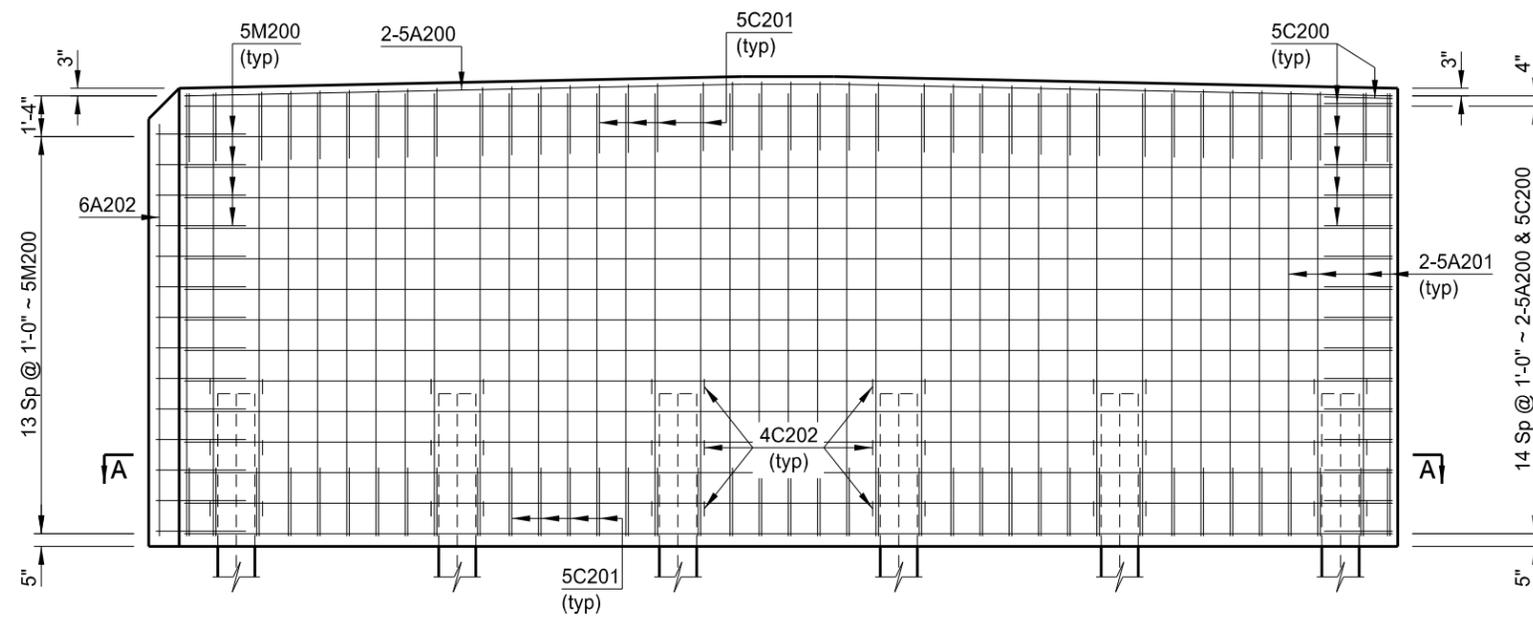
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

<b>QUANTITIES</b>
SEE DWG 281-128.331-11
<b>JAMES RIVER NEW ROCKFORD</b>
(SHOWING DIMENSIONS)
<b>PIER DETAILS</b>

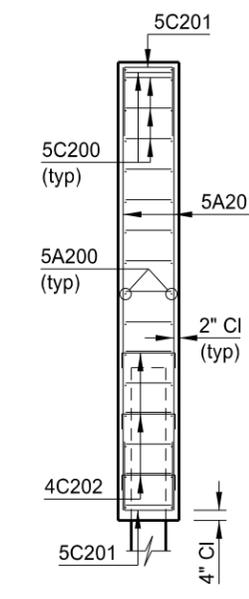
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	11



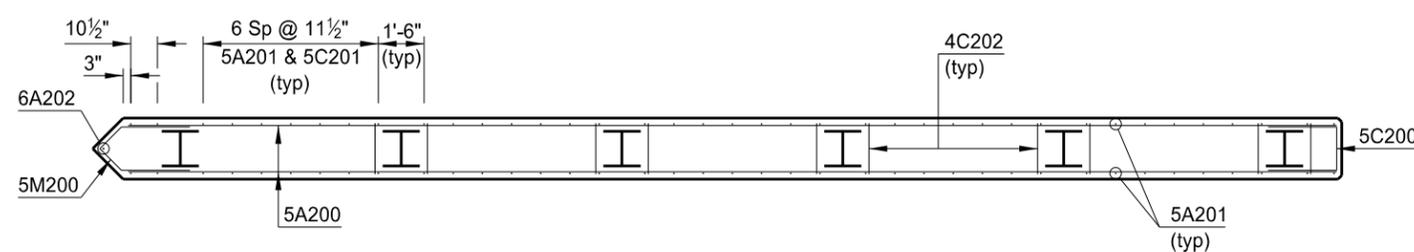
PLAN



ELEVATION



END VIEW

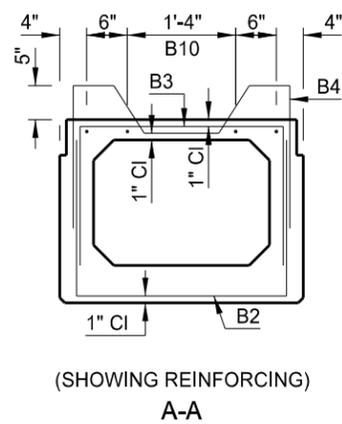
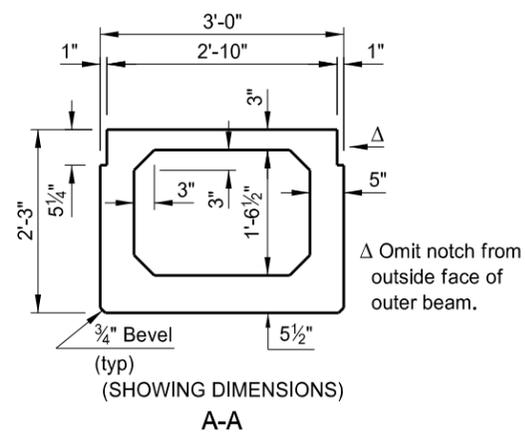
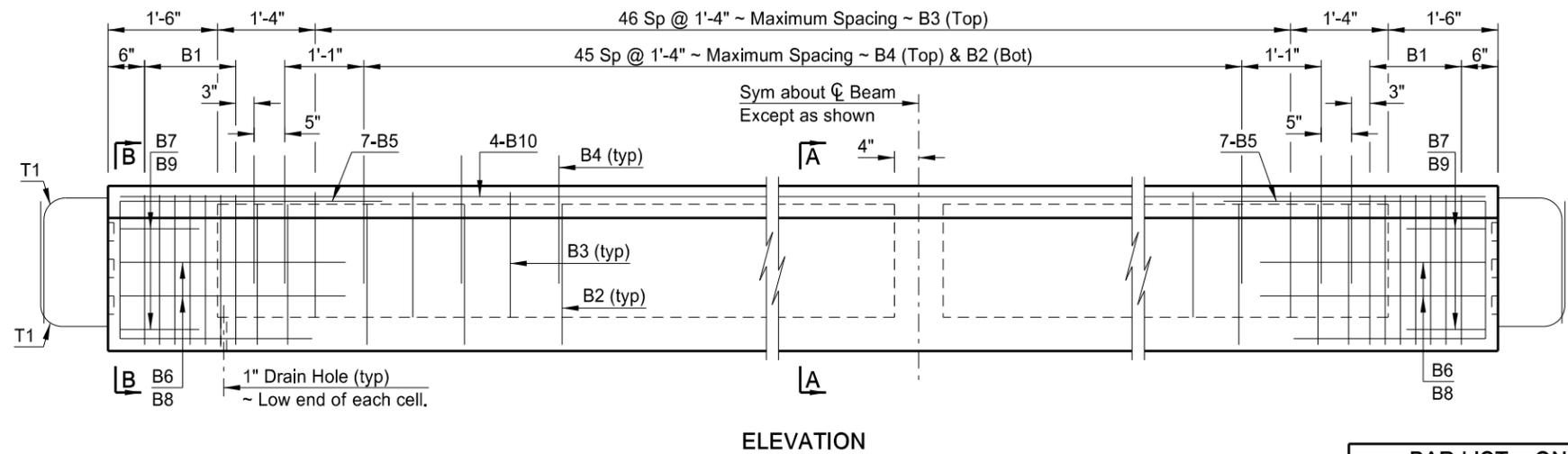
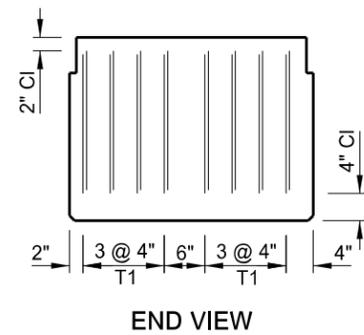
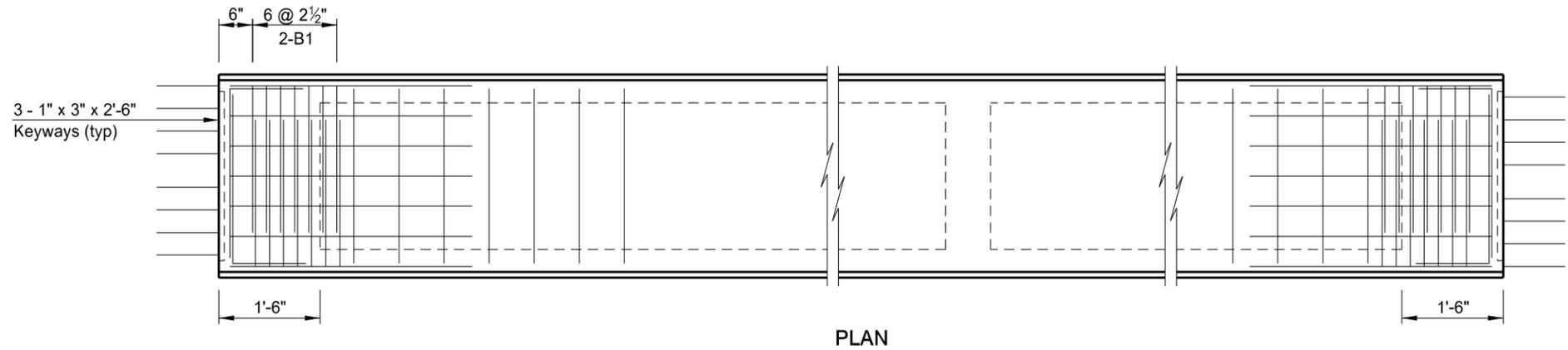
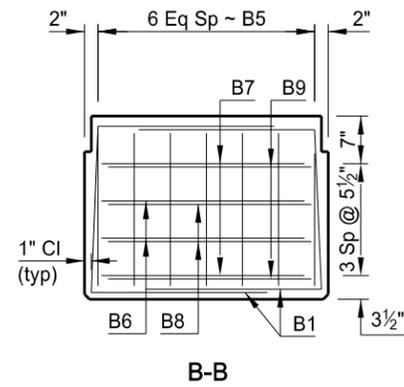


A-A

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	
CLASS AE-3 CONCRETE	45.6 CY
REINFORCING STEEL	3,287 LBS
STRUCTURAL STEEL	392 LBS

JAMES RIVER  
NEW ROCKFORD  
  
(SHOWING REINFORCING)  
PIER DETAILS



This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

BAR LIST ~ ONE BEAM				
MARK	SIZE	NO.	LENGTH	SHAPE
B1	4	28	6'-5"	BENT
* B2	4	50	6'-5"	BENT
* B3	4	47	6'-0"	BENT
B4	4	50	6'-9"	BENT
B5	5	14	8'-1"	BENT
B6	4	4	5'-7"	BENT
B7	4	4	3'-7"	BENT
B8	4	4	5'-7"	BENT
B9	4	4	3'-7"	BENT
B10	4	8	34'-10"	STR
** T1	4	32	4'-6"	STR

QUANTITIES (ONE BEAM)	
BEAM LENGTH	67.0 LF

BEAM SECTION DATA	
WT =	536.6 LBS/FT + 1827 LBS
CROSS SECTIONAL AREA =	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>

<b>JAMES RIVER NEW ROCKFORD</b>	
<b>PRE-TENSIONED 27" x 36" PRESTRESSED SPREAD BOX BEAM</b>	

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

\* Welded Wire Reinforcing with minimum circumferential steel area of 0.15 sq in per ft may be substituted for B2 and B3 bars.

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	13

**NOTES:**

At least 14 days prior to the forming and pouring of any beams, the Contractor shall submit shop drawings to the Engineer for review. The shop drawings shall include the total initial prestress force and the losses in the prestress due to elastic shortening, shrinking or creeping of concrete and the relaxation of steel stress as determined by the Contractor for his method of stressing.

Shop drawings shall show strand layout, pull down locations, tensioning forces, elongation and any proposed changes in reinforcing steel.

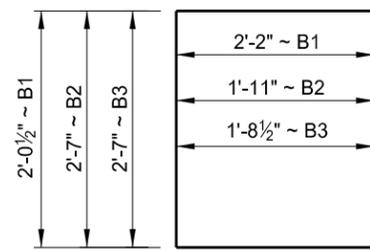
The final prestress force (remaining after all losses have been accounted for) and its corresponding center of gravity, shall be selected from those on a curve determined by the three values shown.

The beams shall be poured in all steel forms.

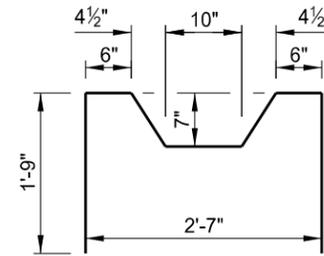
Minor changes to the shape of the beam and to reinforcing steel may be made to accommodate the forms of various contractors and their construction methods with the approval of the Engineer.

The tops of the beams shall be rough floated and broomed transversely for bond.

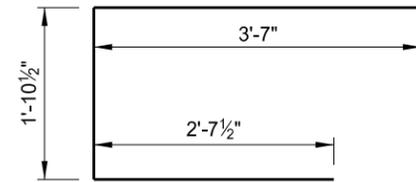
Provide handling hooks or devices as required by the Contractor. Hooks or devices provided will be subject to approval by the Engineer and shall be installed within 4'-0" of the end of beam.



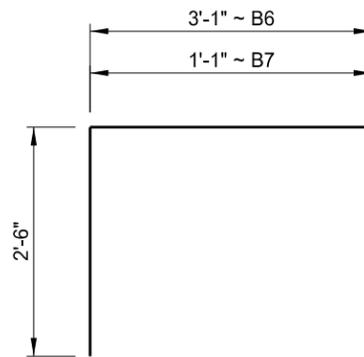
B1, B2 & B3



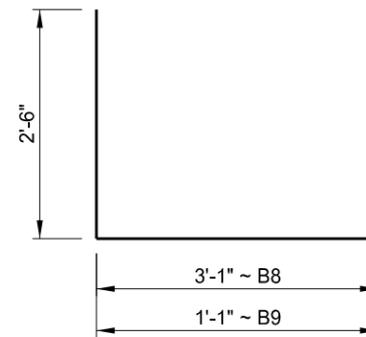
B4



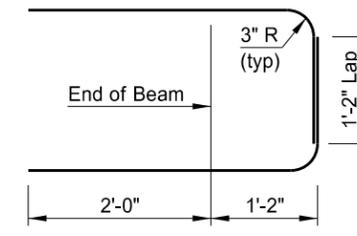
B5



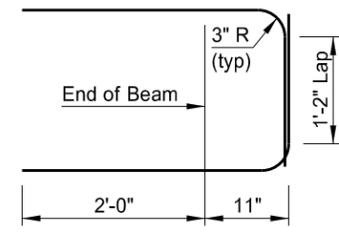
B6 & B7



B8 & B9



(AT ABUTMENTS)

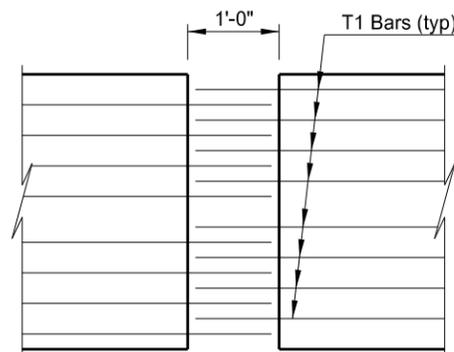


(AT PIER)

T1

(DIMENSIONS SHOWN ARE OUT TO OUT)

**BENT BAR DETAILS**



**BEAM END PLAN AT PIER**

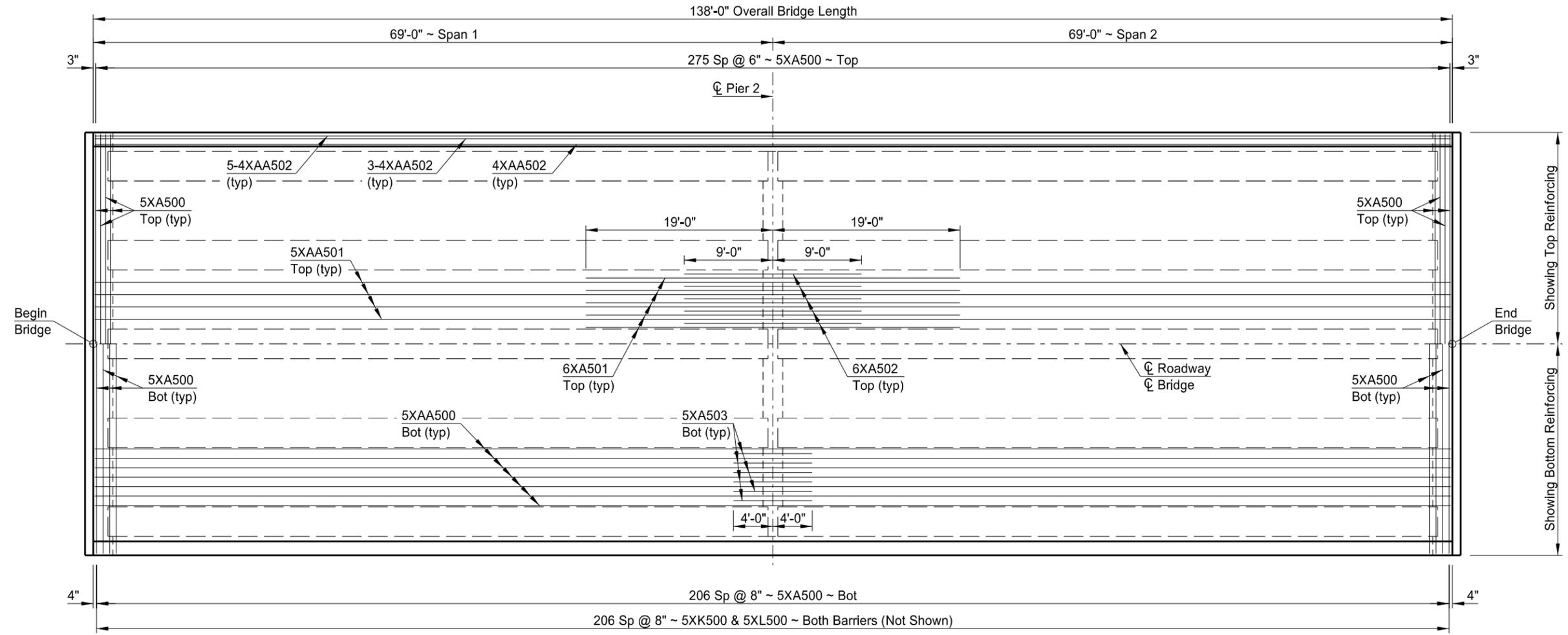
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

PRESTRESSING DATA					
C.G.	FINAL FORCE	DETENSION STRENGTH	ACCEPTANCE STRENGTH	WEIGHT (TONS)	BEAM LENGTH
4.00"	931.8 k	7000 psi (Min)	7000 psi (Min)	18.9	67'-0"
4.25"	947.2 k				
4.50"	963.2 k				

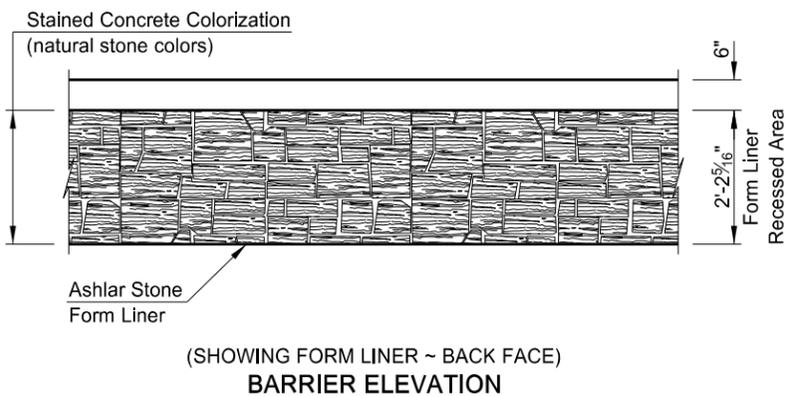
**JAMES RIVER  
NEW ROCKFORD**

**PRE-TENSIONED 27" x 36"  
PRESTRESSED SPREAD BOX BEAM**

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	14



PLAN

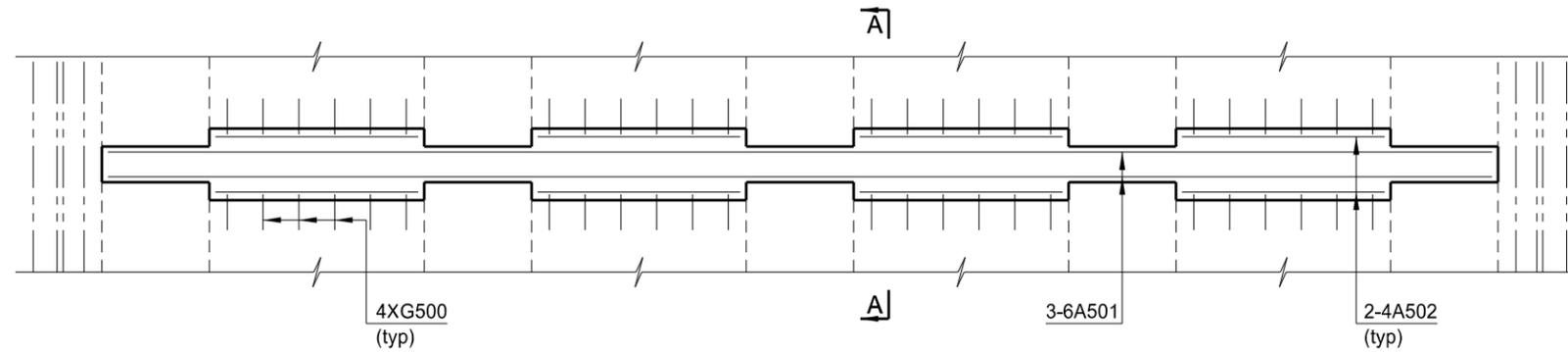


**NOTE:**  
The stained concrete colorization is to be approved by the Engineer. All costs associated with staining the concrete form liner areas shall be included in the price bid for Class AAE-3 concrete.

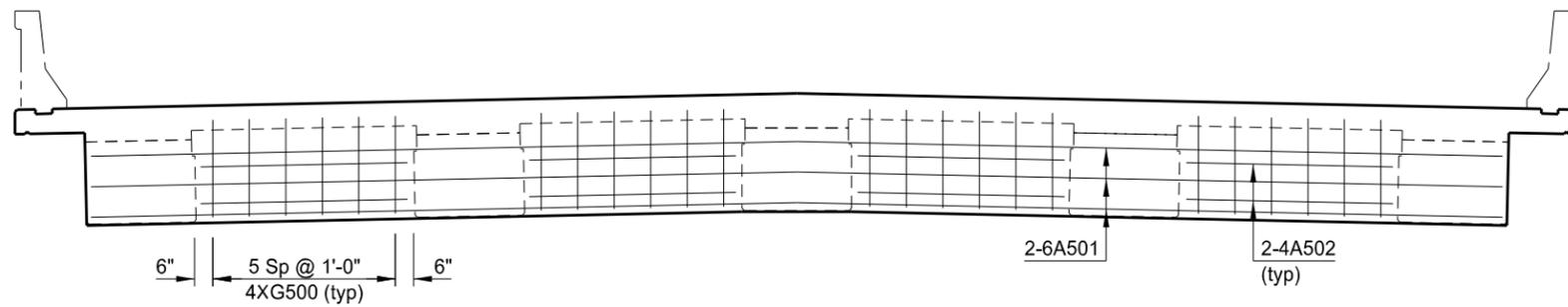
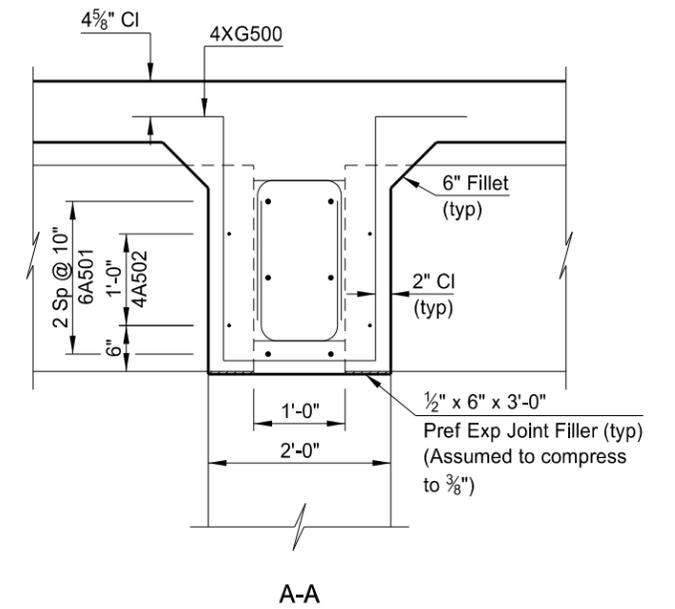
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

<b>QUANTITIES</b>
SEE DWG 281-128.331-17
<b>JAMES RIVER NEW ROCKFORD</b>
<b>SLAB LAYOUT</b>

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	15



PLAN

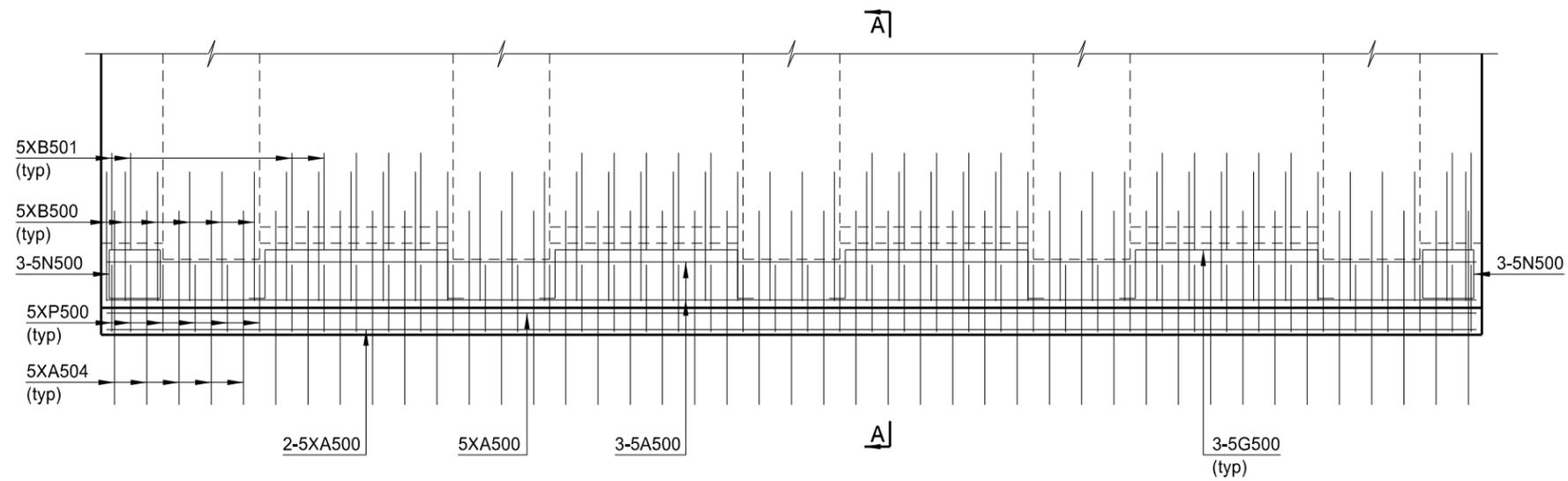


ELEVATION

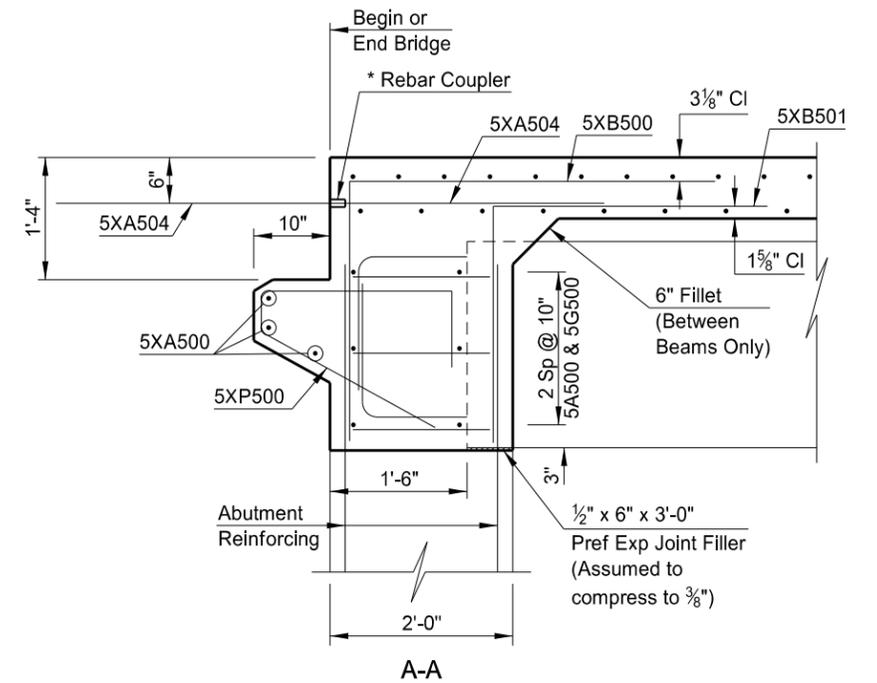
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

<b>QUANTITIES</b>
SEE DWG 281-128.331-17
JAMES RIVER NEW ROCKFORD
PIER DIAPHRAGM DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	16

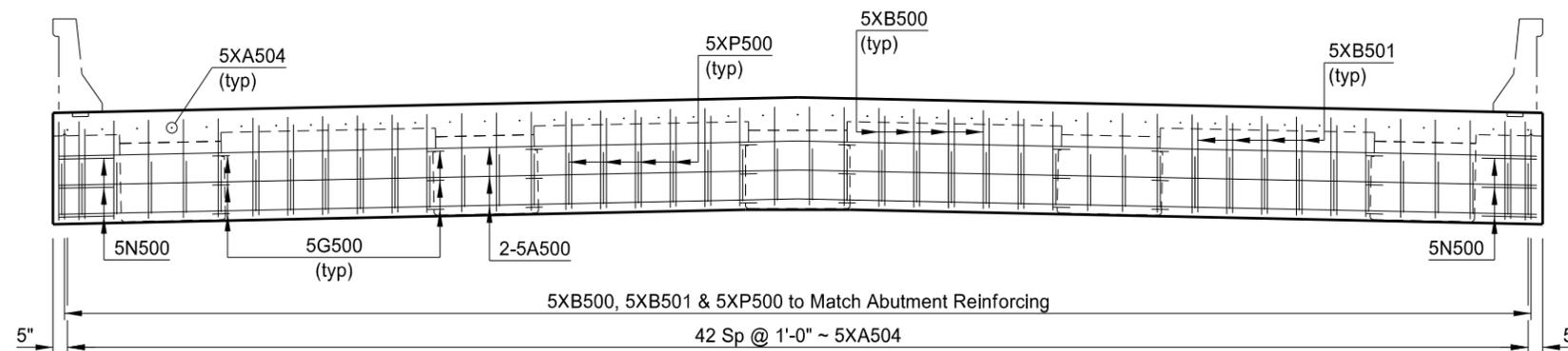


PLAN



A-A

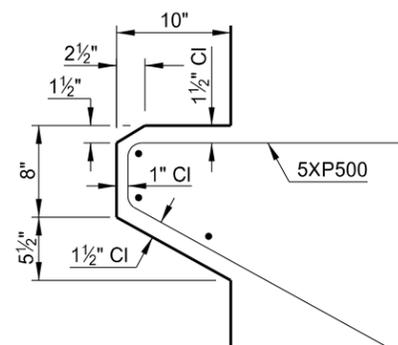
\* The couplers shall be an approved mechanical connector capable of developing 125% of the specified yield strength of the reinforcing steel. The couplers shall be epoxy coated according to AASHTO M 284. Damaged epoxy coating on the couplers shall be repaired according to Section 612.03 E.



(APPROACH LIP NOT SHOWN)  
ELEVATION

**NOTE:**

The 5XA504 bars extending into the approach slab shall not be installed until all of the select backfill is in place.

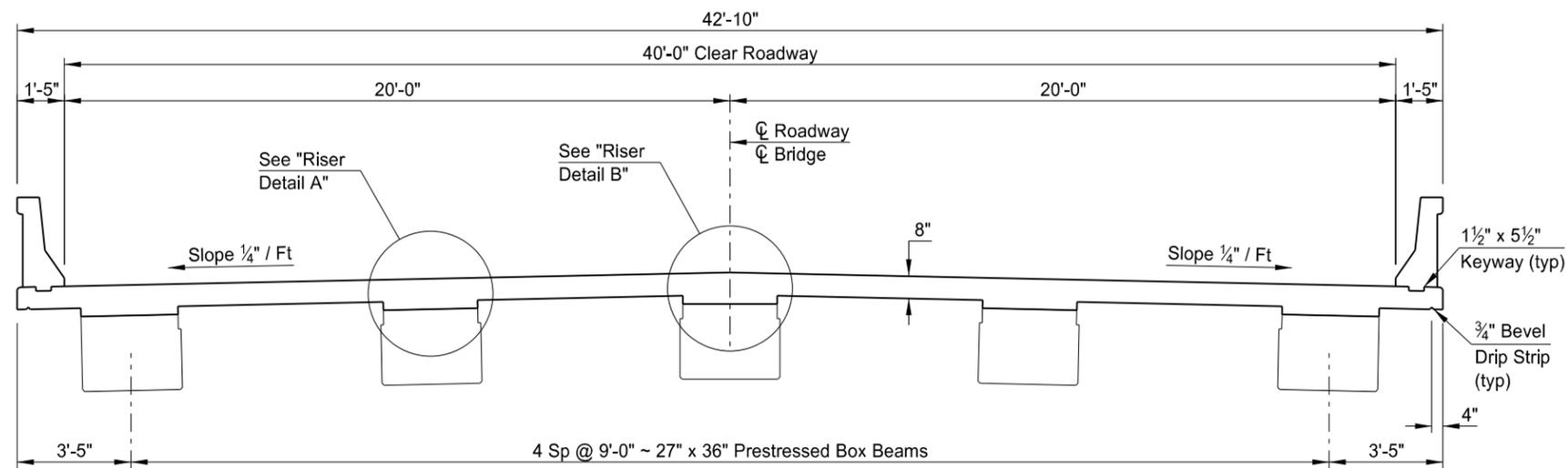


APPROACH LIP DETAIL

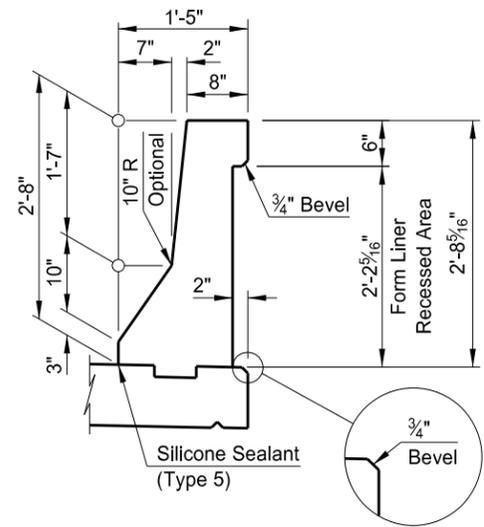
This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

<b>QUANTITIES</b>
SEE DWG 281-128.331-17
<b>JAMES RIVER NEW ROCKFORD</b>
<b>ENDWALL DETAILS</b>

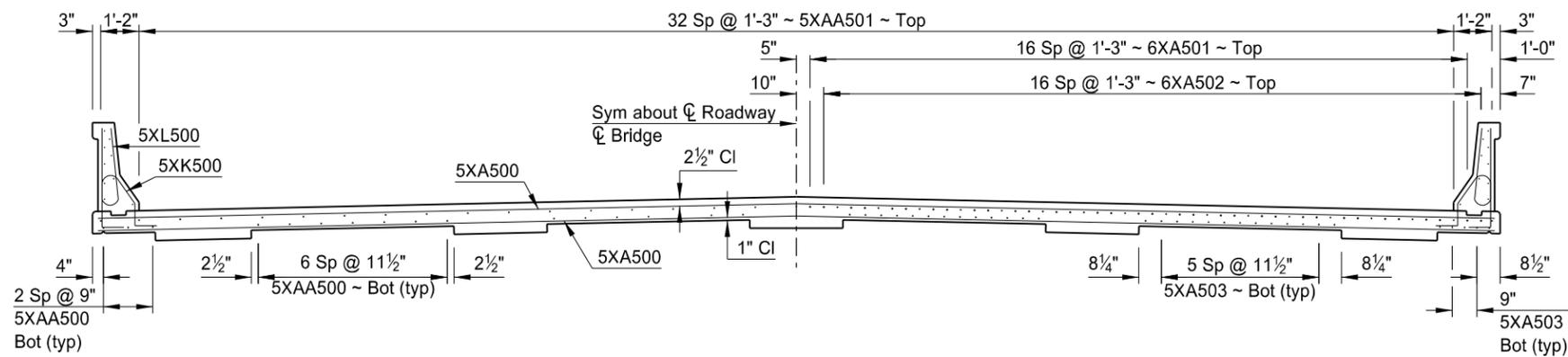
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	17



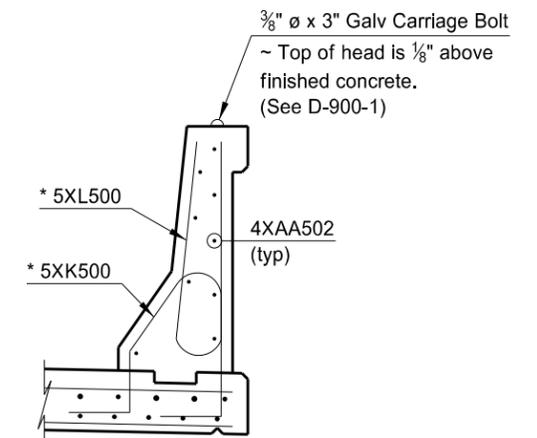
(SHOWING DIMENSIONS)  
 SLAB SECTION



SHOWING DIMENSIONS

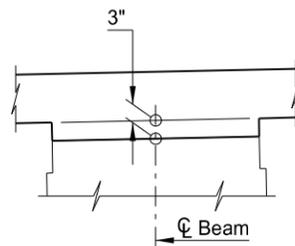


(SHOWING REINFORCING BETWEEN SUPPORTS) (SHOWING REINFORCING OVER PIER)  
 SLAB SECTION



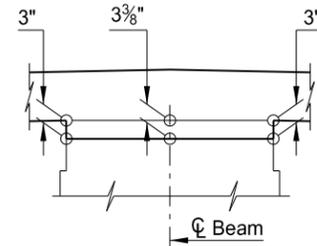
\* Barrier reinforcing shall have a 1/2" clearance from the front face.

SHOWING REINFORCING  
 BARRIER DETAIL



RISER DETAIL A

The 3" dimensions shown are located at the supports. The anticipated midspan riser is 1". The riser shall be adjusted to maintain the 8" slab thickness.



(AT BEAM 3 ONLY)  
 RISER DETAIL B

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	
CLASS AAE-3 CONCRETE	205.3 CY
REINFORCING STEEL	1,273 LBS
REINFORCING STEEL (EPOXY)	43,068 LBS

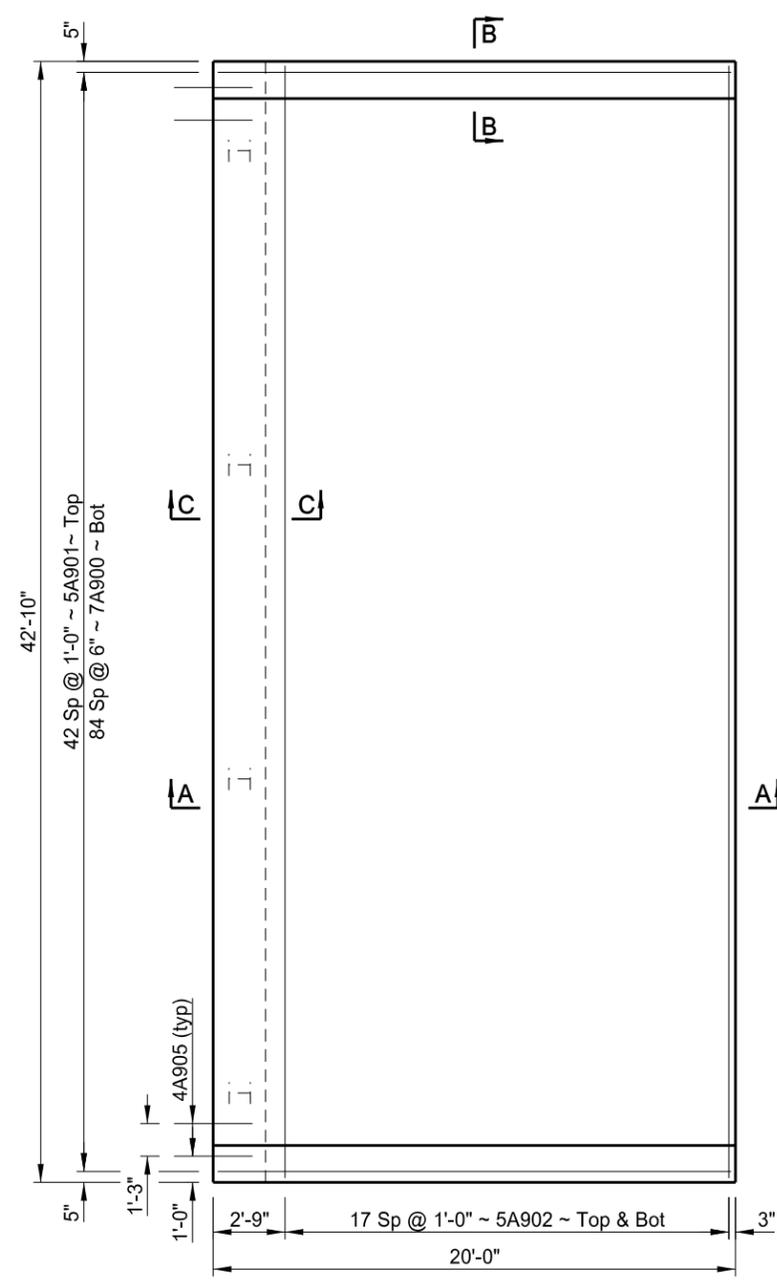
JAMES RIVER  
 NEW ROCKFORD

SLAB SECTION

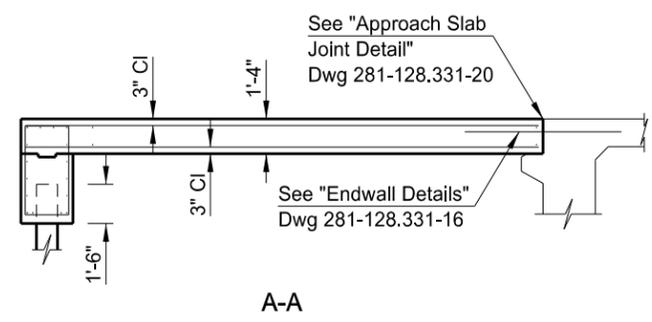


23 U.S.C. 409  
NDDOT Reserves All Objections

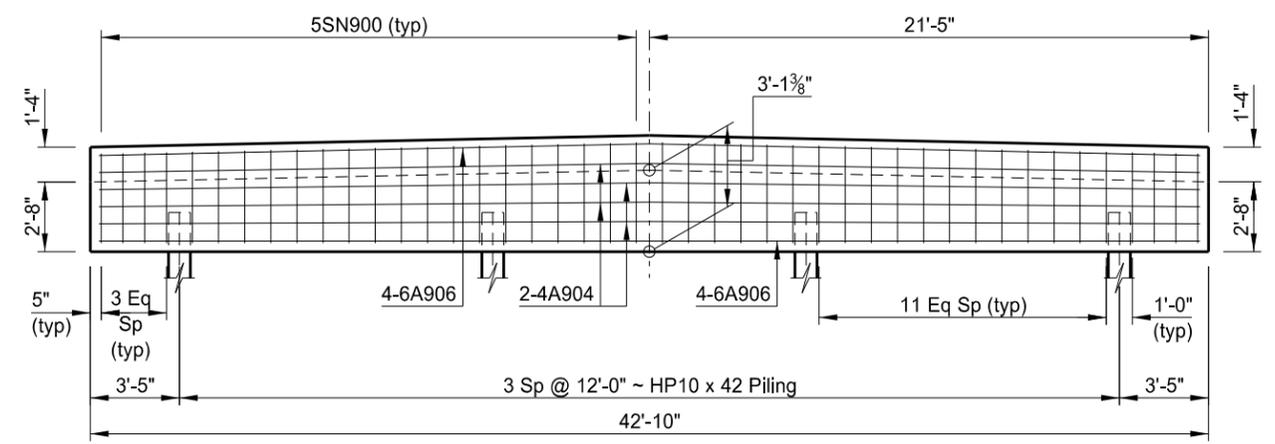
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	19



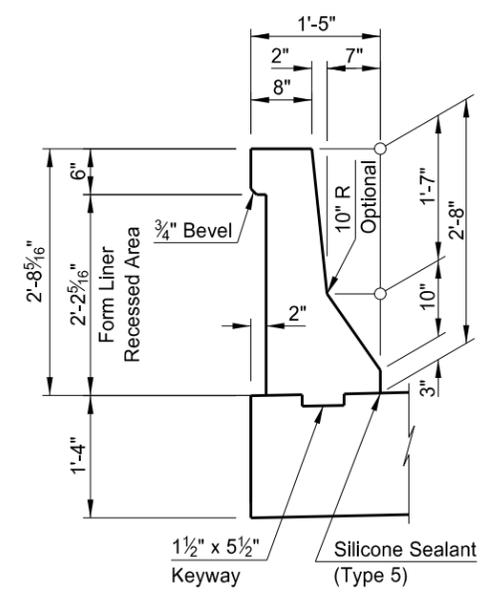
PLAN



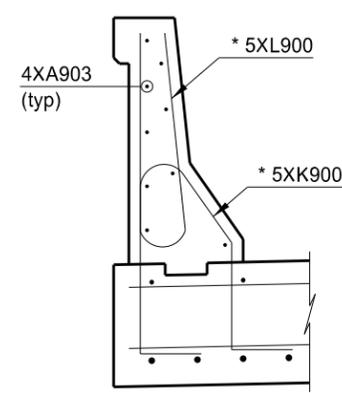
A-A



FOOTING ELEVATION

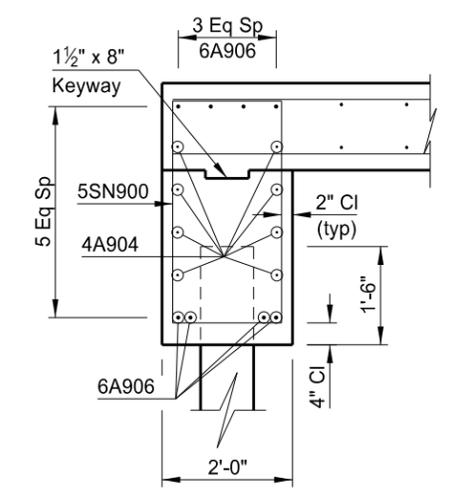


SHOWING DIMENSIONS

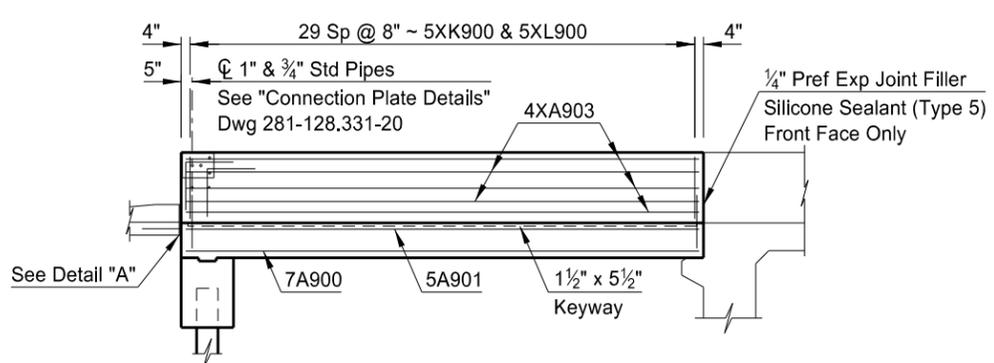


SHOWING REINFORCING

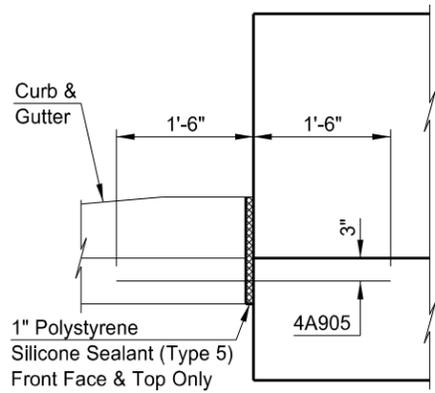
B-B



C-C



ELEVATION

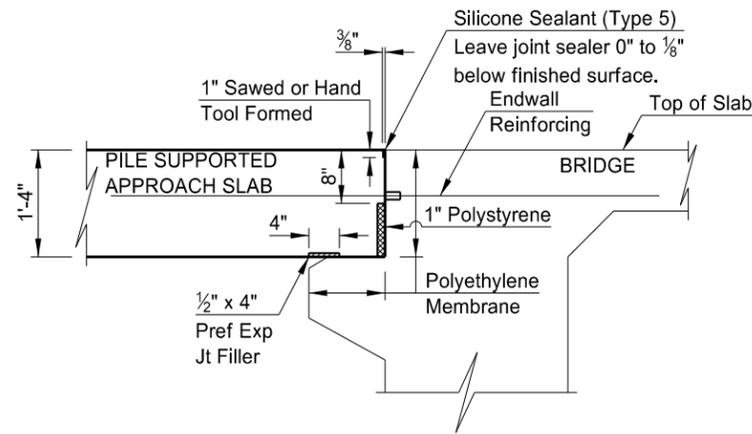


DETAIL "A"

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

<b>QUANTITIES</b>
SEE DWG 281-128.331-20
<b>JAMES RIVER NEW ROCKFORD</b>
<b>APPROACH SLAB DETAILS</b>

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BRN-3-281(109)128	170	20



APPROACH SLAB JOINT DETAIL

NOTES:

The estimated material quantities shown are for information purposes only. All materials including concrete, reinforcing bars, polyethylene membrane, preformed joint filler, polystyrene, silicone sealant, connection plates and pipes, and all labor required to build the approach slabs and barriers shall be included in the pay item "Pile Supported Approach Slab." The concrete shall be Class AE-3 and the reinforcing steel shall be Grade 60. The polyethylene membrane shall meet the requirements of AASHTO M 171.

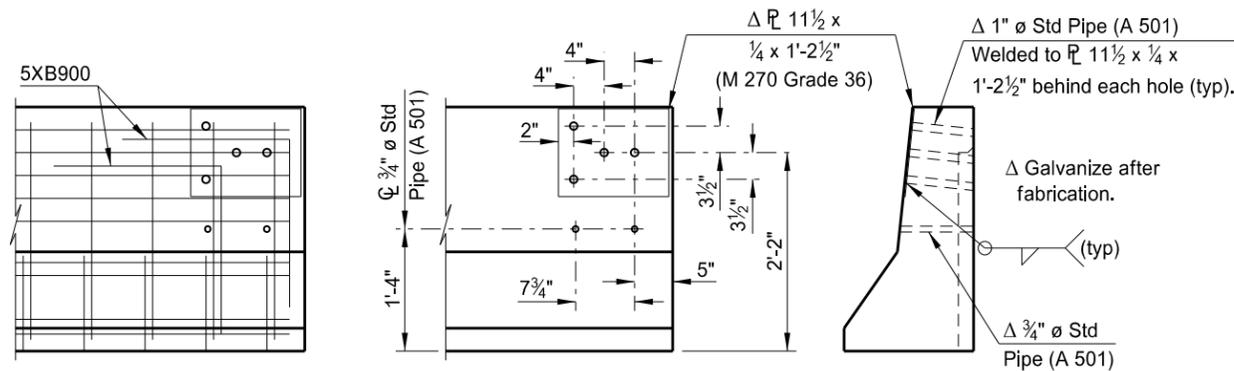
Surface Finish "D" shall be required for all surfaces of the approach slab barriers, except for the recessed form liner areas. The color shall be as listed on drawing number 281-128.331-2.

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	85	19'-8"
5	A901	43	19'-8"
5	A902	36	42'-6"
4	XA903	18	19'-8"
4	A904	8	42'-6"
4	A905	4	3'-0"
6	A906	8	42'-6"
5	XB900	4	3'-8"
5	XK900	60	5'-11"
5	XL900	60	5'-0"
5	SN900	2	254'-10"

ESTIMATED MATERIAL QUANTITIES

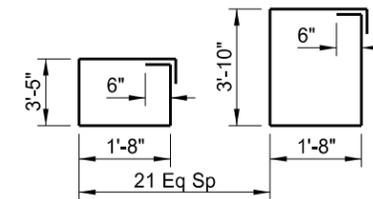
REINFORCING STEEL (LBS)	CONCRETE (CY)
8,107	55.2



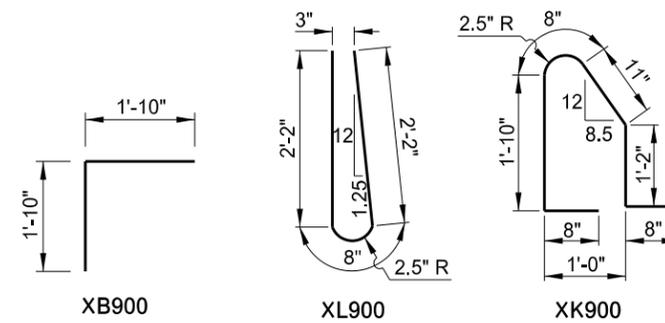
SHOWING REINFORCING

SHOWING DIMENSIONS

(SHOWING FRONT FACE)  
CONNECTION PLATE DETAILS



SN900

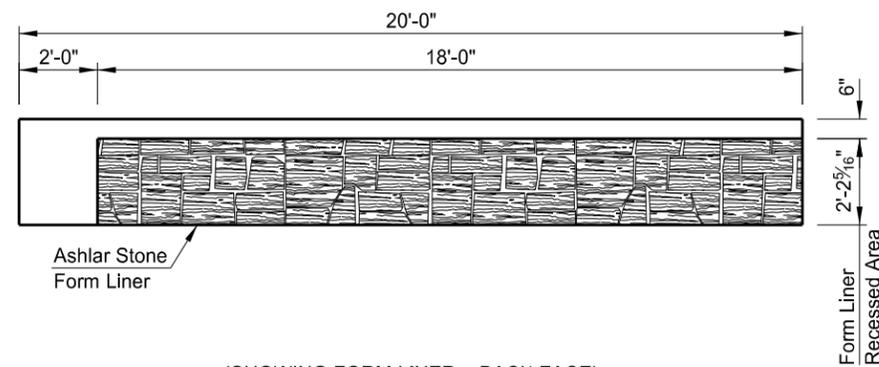


XB900

XL900

XK900

BENT BAR DETAILS



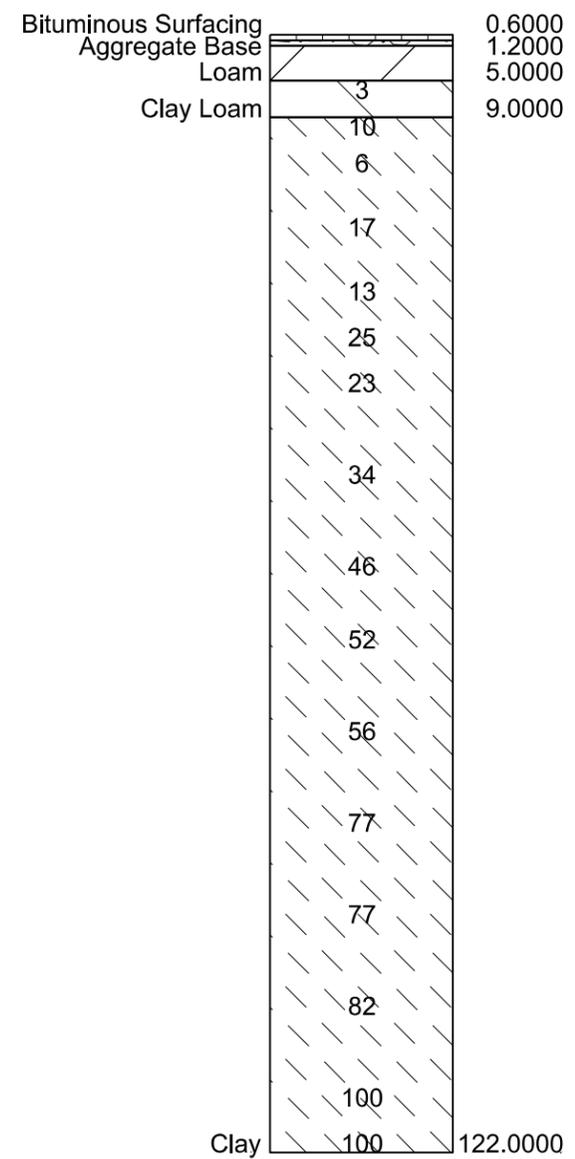
(SHOWING FORM LINER ~ BACK FACE)  
BARRIER ELEVATIONS

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 08/21/13 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	(ONE SLAB)
PILE SUPPORTED APPROACH SLAB	95.2 SY

JAMES RIVER  
NEW ROCKFORD

APPROACH SLAB DETAILS



Project Number: BRN-3-281(109)128  
 PCN: 18881  
 Bridge Number: 0281-128.331  
 Location: James River – New Rockford  
 Boring Number: 1  
 Dates Drilled: 5/7/2012 to 5/17/2013

RP+feet: 128+1643  
 Station: 6775+31  
 Offset: 11 East of Centerline  
 Orientation: Southeast Corner  
 Elevation of Boring: 1516.6'

Depth (ft.)	Textural Class	SSS Soil Class	Sample Type	Test Type	Comp. Strength (psf)	Friction Angle (degr.)	Cohesion (Shear Strength) (psf)	Blow Count (bpf)	Field Moisture (%)	Dry Unit Weight (pcf)
0.0-1.2	Asphalt/Base	A-4(0)	M	---	---	---	---	---	28.8	---
3.0-5.0	SNDY CLY	A-1-b(0)	3TW	UC	684	---	342	---	4.2	87.6
5.0-7.0	CLY LM	A-6(4)	SS	SPT	---	---	375	3	22.1	85.0
7.0-9.0	CLY LM	A-6(6)	3TW	UC	1,050	---	525	---	22.2	106.0
9.0-11.0	CLY	A-6(9)	SS	SPT	---	---	1,250	10	16.2	90.0
11.0-13.0	CLY	A-7-6(27)	3TW	UC	1,983	---	991	---	29.4	89.9
13.0-15.0	CLY	A-7-6(38)	SS	SPT	---	---	750	6	19.3	85.0
18.0-20.0	CLY	A-7-6(38)	3TW	UU	---	---	615	---	35.9	85.5
20.0-22.0	CLY	A-7-5(47)	SS	SPT	---	---	2,125	17	33.0	90.0
25.0-27.0	CLY	A-7-5(57)	3TW	UC	1,561	---	781	---	35.3	86.9
27.0-29.0	CLY	A-7-5(54)	SS	SPT	---	---	1,625	13	31.4	90.0
30.0-32.0	CLY	A-7-5(65)	3TW	UC	---	---	655	---	31.7	89.9
32.0-34.0	CLY	A-7-5(56)	SS	SPT	---	---	3,125	25	29.9	90.0
35.0-37.0	CLY	A-7-5(62)	3TW	UC	---	---	1,187	---	32.5	89.0
37.0-39.0	CLY	A-7-5(52)	SS	SPT	---	---	2,875	23	32.8	90.0
45.0-47.0	CLY	A-7-5(49)	3TW	UC	---	---	2,854	---	30.4	91.8
47.0-49.0	CLY	A-7-5(52)	SS	SPT	---	---	4,250	34	30.4	90.0
55.0-57.0	CLY	A-7-5(59)	3TW	M	---	---	---	---	27.9	---
57.0-59.0	CLY	A-7-5(59)	SS	SPT	---	---	4,500	36	28.4	100.0
65.0-67.0	CLY	A-7-5(55)	SS	SPT	---	---	5,250	42	29.2	100.0
75.0-77.0	CLY	A-7-5(53)	SS	SPT	---	---	7,000	56	27.4	100.0
85.0-87.0	CLY	A-7-5(45)	SS	SPT	---	---	9,625	77	29.1	105.0
95.0-97.0	CLY	A-7-5(72)	SS	SPT	---	---	9,625	77	29.5	105.0
105.0-107.0	CLY	A-7-5(63)	SS	SPT	---	---	10,250	82	26.9	105.0
115.0-117.0	CLY	A-7-5(19)	SS	SPT	---	---	12,500	100/0.5	20.0	105.0
120.0-122.0	CLY	A-7-5(12)	SS	SPT	---	---	15,500	100/0.5	40.0	105.0

Notes:  
 THE BORING DATA SHOWN IS FOR NORTH DAKOTA DEPARTMENT OF TRANSPORTATION'S (NDDOT) DESIGN AND ESTIMATING PURPOSES ONLY. THE BORING LOGS ARE ONLY REPRESENTATIVE OF THE EXACT LOCATION FROM WHICH THE SAMPLES WERE TAKEN AND INTERPRETATION BETWEEN THE SAMPLE LOCATIONS IS DISCOURAGED. THE NDDOT ASSUMES NO RESPONSIBILITY IF THE SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE SHOWN. FURTHER SOIL INFORMATION MAY BE AVAILABLE AT:  
 NDDOT  
 MATERIALS & RESEARCH DIVISION  
 300 AIRPORT ROAD  
 BISMARCK, NORTH DAKOTA 58504-6005  
 PHONE (701)328-6900

SS - Split Spoon  
 3TW - 3" Thin Wall Shelby Tube  
 M - Moisture Test  
 D - Density Test  
 UC - Unconfined Compression Test  
 UU - Unconsolidated Undrained Triaxial Test  
 SPT - Standard Penetration Test

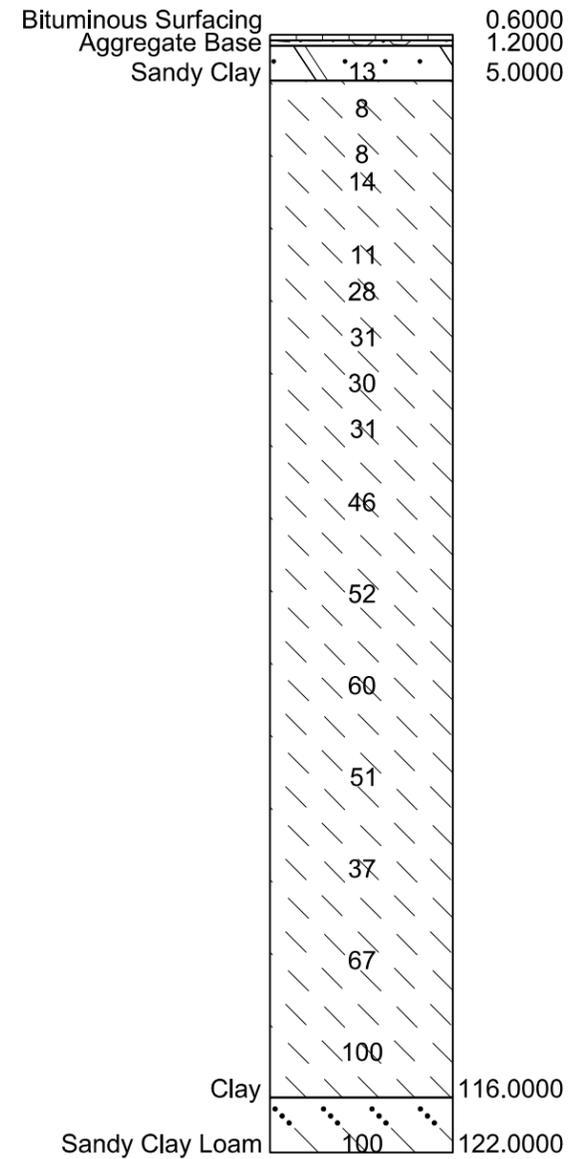
This document was originally issued and sealed by  
 Jeff Jirava  
 Registration Number  
 PE- 5950,  
 on 8/21/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation

Boring Log  
 Bridge 0281-128.331 - Boring #1

**Notes:**  
 THE BORING DATA SHOWN IS FOR NORTH DAKOTA DEPARTMENT OF TRANSPORTATION'S (NDDOT) DESIGN AND ESTIMATING PURPOSES ONLY. THE BORING LOGS ARE ONLY REPRESENTATIVE OF THE EXACT LOCATION FROM WHICH THE SAMPLES WERE TAKEN AND INTERPRETATION BETWEEN THE SAMPLE LOCATIONS IS DISCOURAGED. THE NDDOT ASSUMES NO RESPONSIBILITY IF THE SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE SHOWN. FURTHER SOIL INFORMATION MAY BE AVAILABLE AT:  
 NDDOT  
 MATERIALS & RESEARCH DIVISION  
 300 AIRPORT ROAD  
 BISMARCK, NORTH DAKOTA 58504-6005  
 PHONE (701)328-6900

SS - Split Spoon  
 3TW - 3" Thin Wall Shelby Tube  
 M - Moisture Test  
 D - Density Test  
 UC - Unconfined Compression Test  
 UU - Unconsolidated Undrained Triaxial Test  
 SPT - Standard Penetration Test

This document was originally issued and sealed by  
 Jeff Jirava  
 Registration Number  
 PE- 5950,  
 on 8/21/13 and the original document is stored at the  
 North Dakota Department  
 of Transportation



Project Number: BRN-3-281(109)128  
 PCN: 18881  
 Bridge Number: 0281-128.331  
 Location: James River – New Rockford  
 Boring Number: 2  
 Dates Drilled: 5/7/2012 to 5/17/2013  
 RP+feet: 128+1743  
 Station: 6776+43  
 Offset: 10 East of Centerline  
 Orientation: Northeast Corner  
 Elevation of Boring: 1516.5'

Depth (ft.)	Textural Class	Soil Class	Sample Type	Test Type	Comp. Strength (psf)	Friction Angle (degr.)	Cohesion (Shear Strength) (psf)	Blow Count (bpf)	Field Moisture (%)	Dry Unit Weight (pcf)
0.0-2.0	Asphalt/Base	---	---	---	---	---	---	---	---	---
2.0-3.0	SNDY CLY	A-2-6(1)	3TW	UC	1,324	---	662	---	13.6	117.5
3.0-5.0	SNDY CLY LM	A-2-4(0)	SS	SPT	---	---	1,625	13	3.3	85.0
5.0-7.0	CLY	A-7-6(35)	3TW	UC	2,386	---	1,193	---	20.7	100.3
7.0-9.0	CLY	A-7-6(25)	SS	SPT	---	---	1,000	8	29.9	85.0
10.0-12.0	CLY	A-7-6(17)	3TW	UC	1,544	---	772	---	39.4	79.9
12.0-14.0	SND	A-7-6(54)	SS	SPT	---	29	---	8	34.8	90.0
15.0-17.0	CLY	A-1-b(1)	SS	SPT	---	---	1,750	14	12.8	90.0
23.0-25.0	CLY	A-7-5(49)	SS	SPT	---	---	1,375	11	33.2	90.0
25.0-27.0	CLY	A-7-45(49)	3TW	UU	---	---	1,963	---	31.3	90.2
27.0-29.0	CLY	A-7-5(52)	SS	SPT	---	---	3,500	28	31.3	90.0
30.0-32.0	CLY	A-7-5(40)	3TW	UC	5,593	---	2,796	---	31.3	91.7
32.0-34.0	CLY	A-7-5(34)	SS	SPT	---	---	3,875	31	30.4	90.0
35.0-37.0	CLY	A-7-5(43)	3TW	UC	1,338	---	669	---	33.5	86.9
37.0-39.0	CLY	A-7-5(38)	SS	SPT	---	---	3,750	30	30.6	90.0
40.0-42.0	CLY	A-7-5(31)	3TW	UC	1,907	---	953	---	36.9	82.3
42.0-44.0	CLY	A-7-5(37)	SS	SPT	---	---	3,875	31	31.6	90.0
50.0-52.0	CLY	A-7-5(51)	SS	SPT	---	---	5,750	46	27.8	100.0
60.0-62.0	CLY	A-7-5(42)	SS	SPT	---	---	6,500	52	27.6	100.0
70.0-72.0	CLY	A-7-5(43)	SS	SPT	---	---	7,500	60	24.9	100.0
80.0-82.0	CLY	A-7-5(45)	SS	SPT	---	---	6,375	51	27.5	100.0
90.0-92.0	CLY	A-7-5(62)	SS	SPT	---	---	4,625	37	30.9	100.0
100.0-102.0	CLY	A-7-5(62)	SS	SPT	---	---	9,625	77	24.3	100.0
110.0-112.0	CLY	A-7-5(46)	SS	SPT	---	---	12,500	100	27.0	105.0
120.0-122.0	SNDY CLY LM	A-7-5(12)	SS	SPT	---	---	12,500	100/0.4	38.0	105.0

Boring Log  
 Bridge 0281-128.331 - Boring #2