

DESIGN DATA				
Traffic	Average Daily			
Current 2019	Pass: 1300	Trucks: 385	Total: 1685	
Forecast 2039	Pass: 1590	Trucks: 520	Total: 2110	
Clear Zone Distance: 32 ft; *		Design Speed: 70 mph		
Minimum Sight Dist. for Stopping: 730 ft		Bridges: HL-93		
Limited Access Control				
Pavement Design Life 20 (years)				
Design Accumulated One-way flexible ESALs: 2,532,042				

*Clear zone = 41.2 ft. on outside of curve #1, R=2,396.00 ft



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

BND-NH-6-002(134)313 Bridge Replacement and Roadway Construction on New Alignment of Westbound Roadway at BNSF Railroad Separation

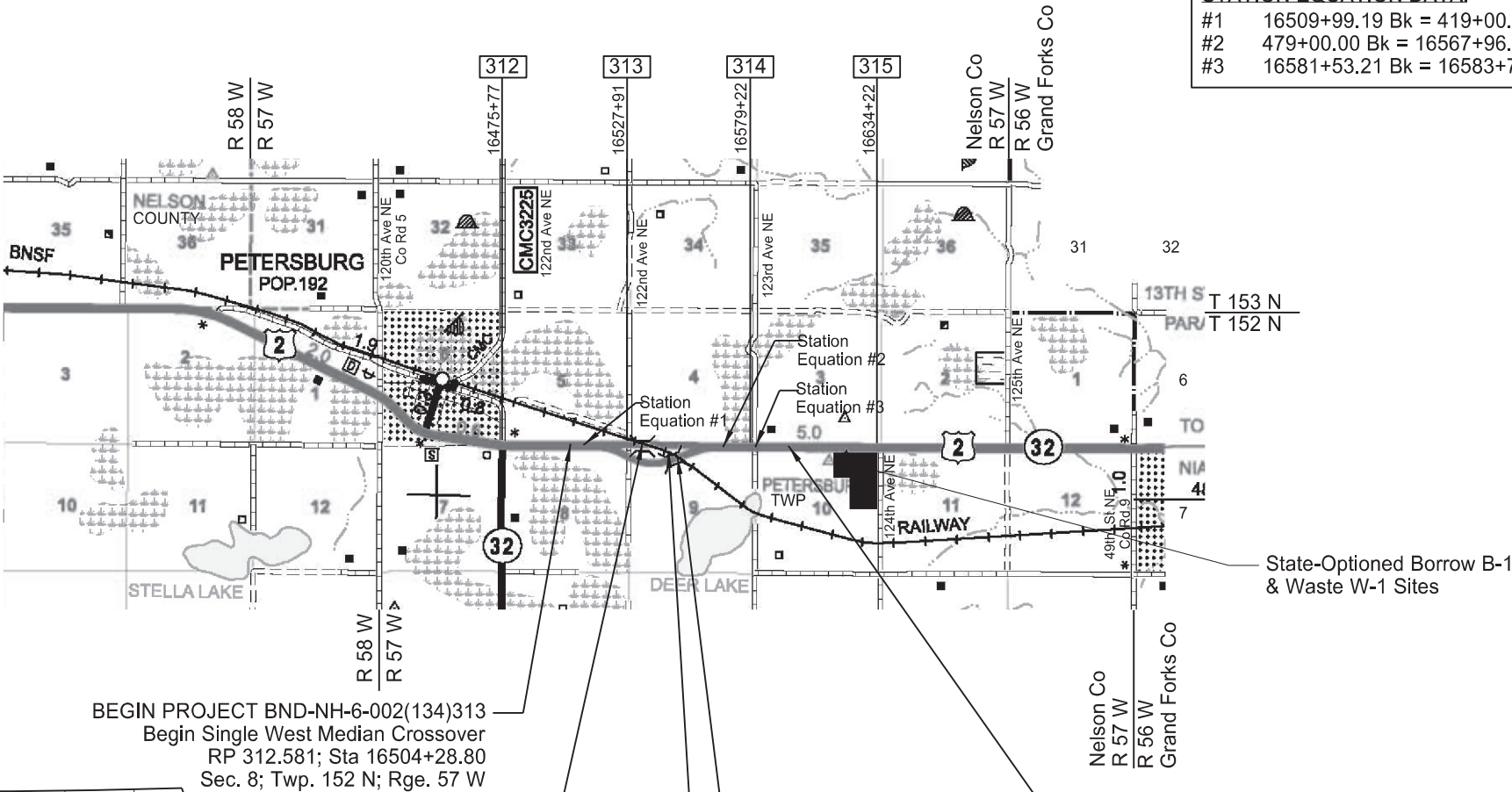
Nelson County
1 Mile East of ND 32 South
New Bridge, Removal of Existing Bridge, WB Roadway Obliteration, Median Crossovers,
Grading, Culvert Work,
Aggregate Base Course, Hot Mix Asphalt, Guardrail, Signing, Pavement Marking, and Incidentals

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	22278	1	1

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

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
BND-NH-6-002(134)313	1.733	1.733

STATION EQUATION DATA:	
#1	16509+99.19 Bk = 419+00.00 Ahd
#2	479+00.00 Bk = 16567+96.86 Ahd
#3	16581+53.21 Bk = 16583+71.50 Ahd



BEGIN PROJECT BND-NH-6-002(134)313
Begin Single West Median Crossover
RP 312.581; Sta 16504+28.80
Sec. 8; Twp. 152 N; Rge. 57 W

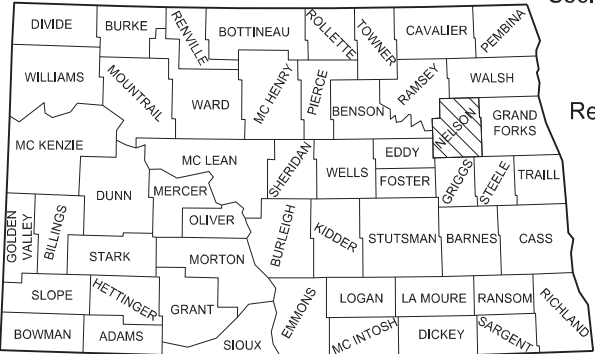
BNSF Railway Separation
Remove Bridge 0002-313.200 L

BNSF Railway Separation
Bridge 0002-313.465 R

Build New WB Bridge on New Alignment
Bridge 0002-313.399 L

END PROJECT BND-NH-6-002(134)313
End Single East Median Crossover
RP 314.276; Sta 16595+96.98
Sec. 10; Twp. 152 N; Rge. 57 W

DESIGNER Jon Collado
DESIGNER Jeff Nuelle
DESIGNER Monte Deis
DESIGNER Douglas Schumaker
DESIGNER



STATE COUNTY MAP

ND DEPARTMENT OF TRANSPORTATION
OFFICE OF PROJECT DEVELOPMENT
Hoff, Kirk J.
04/12/22



TABLE OF CONTENTS

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	2	1

PLAN SECTIONS

Section	Page(s)	Description
1	1	Title Sheet
2	1 - 2	Table of Contents
4	1 - 3	Scope of Work
6	1 - 7	Notes
6	8	Environmental Notes
8	1 - 4	Quantities
10	1 - 3	Basis of Estimate
11	1	Data Tables
20	1 - 21	General Details
30	1 - 11	Typical Sections
40	1 - 3	Removals
50	1	Hydraulic Data
51	1	Allowable Pipe List
60	1 - 6	Plan & Profile
75	1 - 4	Wetland Impacts
76	1 - 5	Temporary Erosion Control
77	1 - 3	Permanent Erosion Control
81	1 - 4	Survey Coordinate and Curve Data
82	1 - 3	Survey Data Layouts
90	1	Paving Layouts
100	1 - 10	Work Zone Traffic Control
110	1 - 6	Signing
130	1 - 2	Guardrail
170	1 - 30	Bridges and Box Culverts
175	1 - 2	Soil Boring Logs
180	1	Pit Plats and Borrow Areas
200	ML1 - ML34	Cross Sections
200	P1 - P4	Cross Sections
200	WL1 - WL3	Cross Sections
200	122-1 - 122-5	Cross Sections
200	SCL1 - SCL9	Cross Sections

SPECIAL PROVISIONS

Number	Description
PSP 110(20)	Permits and Environmental Considerations
SP 222(20)	Railroad Requirements
SP 369(20)	Geotechnical Instrumentation
SP 371(20)	Flexible Pavement Surface Tolerance
SP 426(20)	Construction Prosecution and Progress of Work
SP 433(20)	TC Pipeline Permit
SP 446(20)	Soil Stabilizer
SSP 1	Temporary Erosion and Sediment Best Management Practices
SSP 10	E-Ticketing
SSP 2	Federal Migratory Bird Treaty Act
SSP 4	Longitudinal Joint Density

TABLE OF CONTENTS
LIST OF STANDARD DRAWINGS

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	2	2

Number	Description
D-101-1, 2,3,4	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20, 21	Line Styles
D-101-30, 31,32	Symbols
D-101-40	Cross Section Legend
D-203-8	Standard Rural Approaches
D-255-1	Bridge Approach Slab Drainage Detail
D-255-2	Erosion And Siltation Control - Erosion Control Blanket Installation
D-260-1	Erosion And Siltation Controls - Silt Fence
D-261-1	Erosion Control - Fiber Roll Placement Details
D-622-1	Pile Splice Details
D-704-1	Attenuation Device
D-704-2	Traffic Control For Coring Of Hot Bituminous Pavement
D-704-5, 6	Construction Sign Detail
D-704-7	Breakaway Systems For Construction Zone Signs - Perforated Tube
D-704-8	Breakaway Systems For Construction Zone Signs - U-Channel Post
D-704-9	Construction Sign Details - Terminal And Guide Signs
D-704-10	Construction Sign Details - Regulatory Signs
D-704-11, 11A	Construction Sign Details - Warning Signs
D-704-12	Shoulder Closure Tapers
D-704-13	Barricade And Channelizing Device Details
D-704-14	Construction Sign Punching And Mounting Details
D-704-15	Road Closure Layouts
D-704-20	Terminal And Seal Coat Sign Layouts
D-704-22	Construction Truck And Temporary Detour Layouts
D-704-24	Shoulder Closures And Bridge Painting Layouts
D-704-26	Miscellaneous Sign Layouts
D-704-34	Sign Layout For One Lane Closure
D-704-34A	Traffic Control System Lane Shift Between A Lane Closure And An Opposite Lane Closure
D-704-49	Construction Sign and Barricade Location Details - Construction Traffic Median Crossing
D-704-51	Portable Precast Concrete Median Barrier (Temporary Usage)
D-704-63	One Road Closure Four-Lane Divided Highway - For Access to Two-Way Two-Lane Roadway
D-714-1	Reinforced Concrete Pipe Culverts And End Sections (Round Pipe)
D-714-4	Round Corrugated Steel Pipe Culverts And End Sections
D-714-16	Jacked And Bored Pipe
D-714-18	Precast Concrete Headwall Details
D-714-22	Concrete Pipe, Cattle Pass, or Precast Concrete Box Culvert Ties
D-714-25	Transverse Mainline Pipe Installation Detail - Pipes More Than 4 Feet Below Top of Subgrade
D-720-1	Standard Monuments And Right Of Way Markers
D-748-1	Curb & Gutter And Valley Gutter
D-754-20	(Expressway-Freeway Use) Mile Posts
D-754-21	Reflectorized Delineators
D-754-23	Perforated Tube Assembly Details

Number	Description
D-754-24, 25	Mounting Details Perforated Tube
D-754-24A	Breakaway Coupler System For Perforated Tubes
D-754-29, 31	Sign Punching, Stringer, and Support Location Details Regulatory, Warning and Guide Signs
D-754-77	Sign Punching, Stringer And Support Location Details - Divided Highway Control Signs
D-754-85G	Pulley Winch Sign Cover For Warning Signs
D-760-2	Rumble Strips Divided Highways (Non-Interstate)
D-762-4	Pavement Marking
D-762-11	Short-Term Pavement Marking
D-764-1	W-Beam Guardrail General Details
D-764-5	Sequential Kinking Terminal
D-764-22	Typical Grading At Bridge Ends With W-Beam Guardrail
D-764-38	MGS Flared Energy Absorbing Terminal - Wood Post
D-764-40	MGS W-Beam Guardrail General Details
D-764-48	Typical Grading at Bridge Ends with MGS W-Beam Guardrail
D-764-60	MGS W-Beam Transition with Approach Curb to Concrete Single Slope or Jersey Barrier
D-764-61	Single Slope to Thrie Beam Connector Plate Details
D-770-3	Pull Box Details
D-900-1	Bridge Bench Marks

NOTES

- 105-110 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic.
- Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection.
- Use a vacuum or pick-up type sweeper to perform this work.
- 105-200 UTILITY COORDINATION: A utility coordination meeting is required.
- 105-P01 UTILITIES: Coordinate work activities with utility companies to address utility conflicts as needed for the proposed cuts and fills.

Utility Company Name	Contact Name	Phone Number	Email
Enbridge	Loren Howard	(701) 739-1950	Loren.Howard@enbridge.com
Otter Tail Power Company	Dennis Huffman	Office: (218)739-8764 Cell: (701) 351-2982	dhuffman@otpc.com
Nodak Electric Cooperative, Inc.	Steven Breidenbach	Office: (701) 795-6759 Cell: (701) 741-3969	sbreidenbach@nodakelectric.com

Enbridge pipeline: Notify Enbridge 48 hours prior to any excavation near or above the pipeline, potholing and driving bridge piling or working above the high-pressure petroleum pipeline to make the arrangements for a representative to be on site.

Before any excavation occurs near or above the pipeline, a potholing will be required to determine its exact location and depth. One pothole will be required at the location of the new bridge and second pothole will be required near the existing bridge pier which is to be removed after completion of the new bridge. Include all costs for equipment, labor, and incidentals in the contract unit price for "Pothole Utility."

Expose the pipeline and mark its location and elevation prior to placing embankment.

Positively locate and protect in place the high-pressure petroleum pipeline prior to the embankment and bridge pier removal from the existing westbound roadway. Adjust methods of pier removal to allow for pipeline protection.

Enbridge will supply either the sonotube or drain tile material to the Contractor to use for marking the pipeline. Include all costs for equipment, labor, and incidentals in the contract unit price for "Utility Resolution – Gas Line – PIP."

A minimum depth of cover over the high-pressure petroleum pipeline is 4 feet. No heavy equipment will be allowed to pass over the pipeline if the cover is 4 ft or less unless matting is installed. Contact Enbridge for clarification on matting requirements.

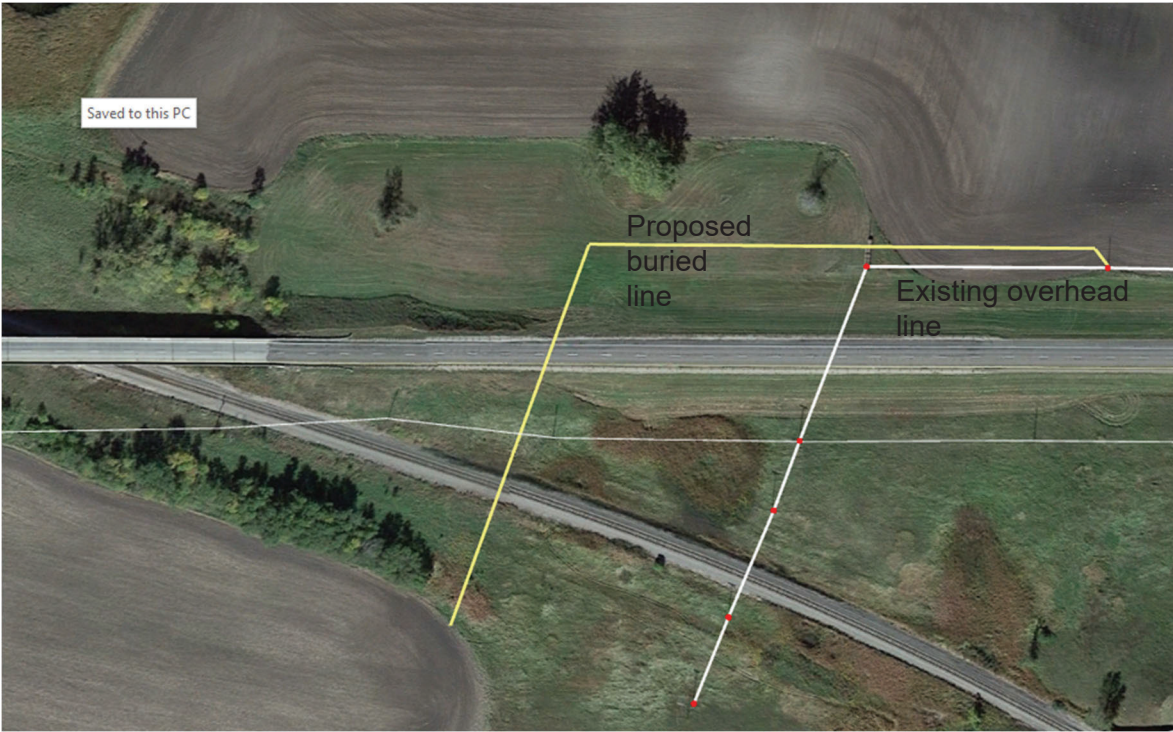
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	6	1

Otter Tail Power Overhead: Coordinate the relocation of the overhead power lines (Sta 466+55.76; Alignment PR_WB104OS) to buried power lines (approximate Sta 463+52.13; Alignment PR_WB104OS) with Otter Tail Power Company.

Otter Tail Power Company's projected dates are June 1, 2022 to start and June 15, 2022 to complete the final relocation work.

Provide a two-week notification to Otter Tail Power Company prior to removing the existing westbound roadway embankment near the existing guy line pole anchor located at Sta 16540+67 – 9.1' Rt. (Chain SCL002_RP311). Otter Tail Power Company will adjust the anchor to avoid any construction removal conflicts.

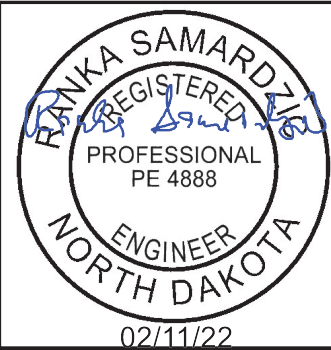
Nodak Electric Cooperative, Inc.: Nodak Electric Cooperative is in process of obtaining a permit from BSNF to remove the overhead power line crossing the railroad and install buried power line as shown in the Exhibit below. (Yellow line represents the proposed relocated power line.)



Nodak plans to remove the anchor pole and guy wires prior to June 15, 2022 (see locations below) to allow for the roadway embankment construction:

Sta 454+72.77 - 137.4' Lt. (Alignment PR_WB104OS)
Sta 454+61.55 – 123.6' Lt.
Sta 454+44.08 – 101.5' Lt.
Sta 454+46.79 – 104.7' Lt.
Sta 454+50.10 – 108.5' Lt

If, for any reason, this permit from BNSF is not obtained on time and the anchor pole and guy wires are not removed by this date, the Contractor will be required to coordinate with Nodak Electric two weeks prior to placing any fill over the guy wires to allow Nodak Electric time to remove the guy wires prior to placing fill.



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	6	2

NOTES

- 105-P02 UTILITIES: Buried Fiber Optic cable exists within the project corridor. Protect the cable in place when working in its vicinity. This includes ensuring the driving surface crossing the line to and from remains intact/traversable.
- 105-P03 ORDER OF OPERATION (First Year Construction): Jack/bore 30 IN pipe under the eastbound roadway before placing embankment to build the proposed westbound roadway. See Section 51 for culvert location. Use lane closures for traffic control during jacking/boring operation.

For the installation of other culverts see First Year Construction Scope of Work. See Section 51 for culvert locations. Schedule installations in a manner so that placing the embankment within the pipes' vicinity doesn't generate unnecessary excavations. No additional compensation will be allowed for unnecessary excavations.
- 107-P01 CONSTRUCTION ACCESS ROAD (EAST SIDE): Construct temporary road prior to start construction of the new westbound roadway.

Temporary road will be allowed to access work area during daylight hours with the following conditions:
 - A maximum of one entrance and one exit road will be allowed to haul materials in.
 - Construct temporary access road with a minimum of 4 inches of aggregate surfacing.
 - Crossing traffic lanes is not allowed.
 - Provide traffic control as per Standard Drawing D-704-49.
 - Vehicles using temporary road must have top mounted flashing beacons visible from the front and rear of the vehicle.
 - Place Type III barricades across the temporary road when median access is not in use. Place barricades at 45 degrees away from approaching traffic.
 - Any damage to the eastbound roadway or shoulder as a result of the temporary road will be repaired at no expense to the Department.
Construct, maintain, and remove temporary road at no additional cost to the Department. Place traffic control signs and provide flaggers needed to construct, maintain, operate, and remove temporary road at no additional cost to the Department.
- 107-P02 MAINTAINING TRAFFIC –DROP-OFFS: If, at the end of the work-day, drop-offs greater than 2 inches and less than 18 inches or slopes steeper than 4:1 exist between the edge of a traffic lane and the outside edge of the proposed roadway, perform one of the following actions:
 - Construct a traversable wedge in the area of the drop-off or steep slope; or
 - Close the lane adjacent to the drop-off or steep slope and provide 24-hour flagging.
When constructing a wedge, construct a wedge composed of aggregate or earthen materials with a 4:1 or flatter slope along the entire length of the area. Compact materials using Type C compaction, as specified in 203.04 E.4, "Compaction Control Type C".

The Engineer will not measure material used to construct the wedge. Include the cost of materials, equipment, labor, and incidentals required for this operation in the price bid for aggregate or earthwork pay items.

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

- The requirements of Section 704.04 O, "Traffic Control for Uneven Pavement" apply to drop-offs created by milling or the placement of hot mix asphalt.
- 108-100 WEEKLY PLANNING & REPORTING MEETING: A weekly planning and reporting meeting is required.
- 109-P01 MEASUREMENT OF QUANTITIES: A prismatic method was used for volume calculations of the earthwork items.
- 201-P01 CLEARING & GRUBBING: Clearing and grubbing includes the removal and disposal of trees (all sizes), shrubs, stumps, roots, brush, and other surface objects from the excavation areas along this project. Payment for "Clearing and Grubbing" is lump sum.
- 202-P01 REMOVAL OF INLETS: Two existing curb inlets are located at the eastbound Structure # 0002-313.465 R, one near SE and one near NE bridge corners. Remove the curb inlets.

Each inlet consists of a 4' long, 30" RCP, and a 5' long, 30" RCP, resting on 6" thick concrete bases, with inlet castings and grates. The inlets are connected with a 15" diameter corrugated steel pipe and drained by a 15" diameter corrugated steel outlet pipe and end section.

Remove the pipe end sections, drain frames, and grates. Cap the 15" diameter corrugated steel pipe ends with concrete. Fill the pipe and risers with flowable fill as shown in the plans.

Deliver the frames and grates to the NDDOT Michigan Maintenance Section located at 519 South St; Michigan; ND.

Include the costs for all labor required to remove the inlets in the price bid for the item "Removal of Inlets".
- 202-P02 REMOVAL OF TEMPORARY BYPASS: Remove the median crossovers when no longer needed to maintain traffic.

This work will consist of:
 1. Shaping the median foreslopes to 6:1 and placing topsoil.
 2. Removal, hauling, and disposal of aggregate base and PVC pipe.
Include all labor and equipment costs for removing, hauling, and disposing off aggregate base and pipe, shaping of median slopes and foreslopes, and placement of topsoil in the unit price bid for "Removal of Temporary Bypass".

Costs incurred for the removal and disposal of the embankment material is included in the unit price bid for "Common Excavation-Waste".
- 203-010 SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.
- 203-P01 BORROW SITE: There is an oil/gas pipeline running from north to south through NE1/4 of Section 10 – 152 - 57. Contact landowner prior to entering borrow site to discuss preferred areas for borrow removal, access, and approach locations.



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	6	3

NOTES

- 203-P02 COMMON EXCAVATION-WASTE: There are layers of Geosynthetic Fabric Type R1 (approximately 8500 SY) in the embankment at all four corners of the existing westbound bridge. Remove all remnants of the geosynthetic fabric from the embankment. Disposal of geosynthetic remnants in the Waste Option site will not be allowed.

Include costs incurred for the removal and disposal of the geosynthetic material in the unit price bid for "Common Excavation-Waste".

Haul excess embankment material to the Waste Option site located in the N½NE¼ of Section 10, T152N, R57W. Include costs incurred for hauling excess excavation off the project in the unit price bid for "Common Excavation-Waste".
- 203-P03 DITCH BLOCKS: Include the cost for ditch blocks in the contract unit price for "Common Excavation – Type A" and "Borrow – Excavation."
- 203-P04 EMBANKMENT - FIRST YEAR CONSTRUCTION: Construct embankment to the proposed final roadway elevation from Sta 449+00 to 470+00. Once embankment is in place, wait a minimum of 3 weeks to place the proposed surcharge. Do not place surcharge embankment until directed by the NDDOT Geotechnical Section.

Once surcharge embankment is in place to the design elevation, wait a minimum of 9 months to remove it. Do not remove surcharge embankment until directed by the NDDOT Geotechnical Section.

EMBANKMENT - SECOND YEAR CONSTRUCTION: After directed by the NDDOT Geotechnical Section, remove surcharge embankment to the final subgrade elevation. Prior to bringing in any borrow excavation, use removed surcharge embankment material to build temporary median crossovers embankment and to finish the remainder of the westbound roadway subgrade embankment.

Upon opening newly constructed westbound roadway and demolition of the existing westbound structure, remove the old westbound roadbed embankment from the railroad right of way. Remove the old westbound roadbed embankment to construct the ditches along the re-aligned roadway.
- 203-P05 BORROW EXCAVATION: Prior to hauling material onto the project, determine the optimum moisture and density as specified in ND T 180 for each type of material encountered that is intended to be used for embankment. Perform a multi-point test using a minimum of 4 points. If the maximum dry density is less than 100 lb/ft^3, as determined by ND T 180, the material from the Department Option source or Contractor's source will be deemed unsuitable. Material deemed unsuitable is not allowed to be used as part of the project.

If the material meets the maximum dry density requirement, submit the ND T 180 results to the Engineer along with a split sample of the material. If the material fails either the Contractor's or the Department's test the material will be deemed unsuitable. The Engineer's results from the split material will be used for determining the optimum moisture and density. If the Engineer determines the material has changed, take an additional sample and follow the process outlined above.
- 230-P01 RESHAPING CONNECTION: The median crossovers will be used for the work associated with connecting the realigned westbound roadway onto the existing westbound roadway. Blade, shape, compact, and maintain the two aggregate median crossovers when required. Add

additional CI 13 aggregate to the crossovers to correct any surface deficiencies such as holes, depressions, blowouts, and ruts. Include all labor and equipment costs for the work associated with the crossovers' maintenance in the unit price bid for "Reshaping Connection".

- 302-110 BASE COURSE: Trim base course as specified in Section 302.04 C.1, "Surface Tolerance Type B."
- 302-P01 AGGREGATE COMPACTION: Compact the aggregate transitions at the bridge ends according to Section 714.04 A.7.
- 401-P01 FOG SEAL: Fog seal HMA pavement after final rolling with a minimum mat temperature of 125 degrees Fahrenheit.
- 411-P01 SALVAGED MILLINGS: Salvage all milled asphalt material. Stockpile all excess milled material with a front-end loader at the NDDOT Michigan Section stockpile site located at approximately 1 mile north of Michigan on ND 35. Process the millings so that the maximum particle size does not exceed 1.5 inches. Include all costs for labor and equipment to mill, haul, and stockpile the material in the contract bid price for "Milling Pavement Surface."
- 430-P01 MAINTENANCE OF TRAVELED ROADWAY: The Contractor will be fully responsible for monitoring and maintaining the entire traveled roadway (eastbound and westbound). In areas where patching is required, only the top 4" will be replaced with hot bituminous pavement. The remaining depth will be replaced with aggregate base course as requested or approved by the Engineer.

Payment for aggregate base course will be at the unit price bid. Include all costs for labor, equipment, and materials (including asphalt cement) to patch the areas and to remove and dispose broken pavement in the contract bid price for "Patching". A quantity of 50 tons has been provided for this work.
- 704-100 TRAFFIC CONTROL SUPERVISOR (Second Year Construction): Provide a Traffic Control Supervisor.
- 704-200 PRECAST CONCRETE MEDIAN BARRIERS – STATE FURNISHED: Obtain 30 barriers from Grand Forks District Yard in Grand Forks. Return barriers to the original location.

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

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



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	6	4

NOTES

- 704-P01

WORKZONE TRAFFIC CONTROL: The traffic control devices lists have been developed using the traffic control phasing layouts and Standard Drawings for traffic control:

D-704-15, Layout Type A

D-704-20, Layout Type G as the basis of the Construction Signing Sheet

D-704-22 and D-704-26, Layout Type K Type L, and Type Y for construction trucks hauling material

D-704-26, Layout Type BB, CC, EE, FF, and GG as needed

D-704-34, for Jacking/boring the culvert under the eastbound (EB) roadway and other culvert work, abandonment of bridge inlets on the existing EB bridge, construction and removal of temporary median crossovers, obliteration of westbound roadway, placement and removal of surcharge embankment, jersey barrier placement and removal, etc.

D-704-34A, for lane shift between a lane closure and an adjacent lane closure.

D-704-49, for construction trucks to access work area, for exiting and entering median when building and/or removing ramp connections.

D-704-63, for access to two-way two-lane roadway when the westbound roadway is closed to traffic.

The required traffic control signs and devices are included in the Traffic Control Devices List and will be measured and paid at the Contract Unit Price for each device. Additional devices required to accommodate the Contractor's operation will be the Contractor's responsibility.
- 704-P02

WORKZONE TRAFFIC CONTROL: Use temporary median crossovers for the work associated with connecting the realigned westbound roadway onto the existing westbound roadway. Head-to-head traffic on the existing eastbound roadway will be allowed for up to 10 working days. Saturdays are included as working days. If the work is not completed within the days listed, liquidated damages will be charged in accordance with Section 108.07 and will run concurrent with any other liquidated damages that may apply to the project. There is no limit on the amount of liquidated damage which may be charged.

Working days will begin being counted on the day traffic is shifted head-to-head on the east bound roadway. Working days will stop being counted when the realigned westbound roadway is connected to the existing roadway and paved with a minimum of one lift of hot mix asphalt to allow for normal traffic flow.
- 704-P03

SEQUENCING ARROW PANEL – TYPE C: Provide solar powered arrow panels that meet the requirements of the MUTCD and ITE and that are capable of operating for 20 days without a solar charge.

Include all costs for materials, equipment, labor, and incidentals in the contract unit price for "Sequencing Arrow Panel".

- 704-P04

OBLITERATION OF PAVEMENT MARKING: Obliterate the white centerline marking and white and yellow edge lines at the begin and end project locations where the roadway alignment is changed.

Mask the dashed white centerline markings throughout the two-lane, two-way area, designated for obliteration, as specified in Section 704.04 N.2, "Masking" of the Standard Specifications.

Include the cost of all equipment, material, and labor, including the removal of tape, if used, in the unit price bid for "Obliteration of Pavement Marking."

- 704-P05

TRAFFIC CONTROL FOR HMA OVERLAY (After switching head-to-head traffic to normal flow):

Provide traffic control consisting of a temporary lane closure and flagging.

The maximum work zone length is limited to the project length.

For estimating purposes, the traffic control device list is based on a 1.8-mile work zone and the following list:

1. Standard D-704-20, Type G.

2. Standard D-704-22, Types K and L;

3. Standard D-704-26, Type CC, EE, and GG;

4. Standard D-704-34 – quantities include 24 delineator drums for approaches; and

5. Standard D-704-34A.

If all or portions of the lane closure are removed and uneven lanes exist, provide traffic control as specified in Section 704.04 O, "Traffic Control for Uneven Pavement".

Complete work in a manner such that lane closure can safely be removed if no work is to take place for more than 3 consecutive days. Remove lane closure if no work is to take place for more than 3 consecutive days.

The Department will pay for all necessary deployed devices.

- 706-P01

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

1. Be completely insulated and weather tight

2. Minimum total area of 450 square feet

3. Indoor bathroom facilities, sewer, and potable water.

4. Have a dependable source of electricity for power and lights with a minimum of 6 electrical outlets, spaced throughout the building and light fixtures spaced to uniformly light the entire interior (lumens required 110 foot- candles).

5. Be wired for all DSL broadband internet with wireless Wi-Fi and have capability to allow for had wiring the computer. Include the cost of the installation and monthly fees.



NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	6	5

6. A heating and cooling system that is capable of maintaining the temperature between 65°F and 78°F year around.
7. A minimum of 3 desks and 3 chairs, 3 extra chairs, a drawer file cabinet with at least two drawers, one table minimum of 2.5 ft x 5 ft.
8. Photocopy machine/Printer capable of 11x17 photocopies/prints and toner to last the duration of the project. Engineer will provide paper. Other features to include digital copying and scanning. (Fax capabilities can be included but not necessary).
9. The location of the field office will be on, or as close to the project as possible and approved by the Engineer. Any rental fees will be paid by the contractor.
10. Make the field office available for occupancy one week before the start of the project and remain thorough the project completion.
11. Heat, electric, internet service, sewer, and water hookups to be furnished by Contractor. Contractor to pay utility bills.

All requirements of the Field Office are subject to approval by the Engineer. Include the costs for the field office in the bid item "Field Office" and the schedule for Payment is as follows:

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

714-P01 PIPE CONDUIT 30IN – JACKED OR BORED: Bore or jack pipe indicated as jacked on the plans. If the boring method is used, use of smooth wall steel pipe in lieu of RCP is acceptable. For jacked concrete pipe sections, use the class required for the height of fill, but with a minimum concrete compressive strength of 6,000 psi.

Install bored or jacked pipe culverts in accordance with section 714 and section 830 of the standard specifications.

Supply pipe meeting Section 830.02 F, "Smooth Wall Steel Pipe"; pipe meeting ASTM A 252, Grade 2; or pipe meeting ASTM A 53, Grade B.

Provide pipes with a minimum wall thickness as specified in Table 830-01 of the Standard Specifications.

Protect the traveling public with proper traffic control and traffic safety measures during the jacking or boring process (while extending the pipe through the undisturbed fill) without disrupting traffic, or damaging roadway grade and surface.

Bore or jack pipe culvert with equipment that encases the hole as the earth is removed and installs the pipe concurrently. Use an encased hole a maximum of 0.1 foot greater than the outside diameter of the pipe. Do not use water in the boring or jacking process. Use proper cushioning material between the jack and pipe. Remove damaged sections with an unsatisfactory joint and install a new section.

Start the boring or jacking from the low or downstream end and proceed in straight lines to the grade and alignment as shown on the plans. Maintain flow line elevation at the starting point for boring or jacking within 0.1 ft. of staked grade; do not reverse the flow line at any point; and do not vary the line and grade at any point within the pipe more than 0.5 ft. from the designated line and grade.

Once the pipe jacking has begun, proceed with the operation without interruption to prevent the pipe from becoming firmly set in the embankment. Fill openings greater than 1/4 inch (5 mm) in width between adjacent sections of concrete pipe with 1:2 cement/sand mortar. Tie all concrete pipe sections and end sections in accordance with standard drawing D-714-22. Weld all steel sections continuously around their periphery.

Include temporary removal and replacement of embankment in the price bid for Pipe Conduit – Jacked or Bored. Use a maximum 2:1 slope beyond the existing pavement section (base, pavement, etc) for any temporary removal of embankment. Protect and stabilize the slope throughout the jacking or boring process.

The culvert consists of separate bid items for each portion: "Pipe Conduit 30 In –Jacked or Bored" and "Pipe Conduit 30 In". The pay lengths of the pipe bid items are as shown for the type and size specified per linear foot. Include all costs for required materials, labor, and equipment (including connecting bands or couplers) in the unit price bid for "Pipe Conduit 30 In – Jacked or Bored".

714-P02 SILTED PIPE: Remove the silt from the existing culverts by flushing or cleaning to re-establish drainage. Include the cost of removing silt in the contract unit price of pipe bid items.

714-P03 PIPE WORK: Provide dewatering if necessary according to site conditions. Include all costs associated with dewatering in the price bid for pipe installation.

714-P04 PLUG PIPE: At location designated on the plans for plug and abandon pipe, pump the pipe full of controlled density backfill to prevent any future collapse or failure of the abandoned pipe.

Mix the backfill as a blend of cement, water, pozzolanic materials, and fillers. The material will be fluid on placement to flow around and fill voids within the pipe. The material will have a compressive strength in the range of 75 psi to 125 psi at 28 days. The material will be such that it lends itself to easy removal with a tractor backhoe. If the mix design shown is used, no further testing will be required. The mix design yields approximately one cubic yard of flowable mortar. Ensure means to identify the pipe is completely full such as a 4" PVC riser or other means approved by the Engineer prior to controlled density backfill placement.

MIX DESIGN	
Cement	100 lbs
Flyash	300 lbs
Fine Aggr	2600 lbs
Water	70 gals

Include all labor, materials, and equipment necessary to perform this work in the price bid for "Plug Pipe – All Types and Sizes."



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	6	6

NOTES

- 714-P05 PIPE BEND: A 15° fabricated pipe bend is required for the 24" RCP at Sta 439+30 – 52' Lt. to 439+53.2 – 60.7' Rt as shown in Sec 60 (Plan & Profile Sheets). No field cutting will be allowed. The pipe bend is not a separate pay item but has been included in the pay length for "Pipe Conc Reinf 24IN CL III."
- 714-P06 PIPE TIES: Pipe ties are required for all concrete pipe, pipe bends, and end sections per Standard Specification 714.04 and in accordance with standard drawing D-714-22.
- 720-P01 RIGHT OF WAY MARKERS: Remove existing right of way markers where no longer in correct location. Include the cost to remove and dispose of existing right of way markers in the price bid for "Right of Way Markers."
- 762-050 PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment for pavement marking items.
- 762-200 PERMANENT WATER BASED PAVEMENT MARKING: Replace the first paragraph of 762.04 C.2.a "Method of Application" with the following:
- Allow new bituminous treatment to cool to a temperature below 125 °F and cure for a period of 72 hours before applying permanent pavement marking.
- 900-P01 SETTLEMENT PLATE: Inform the Engineer three days before beginning construction of the embankment to allow the Engineer to establish benchmarks. The benchmarks will be set to be permanent and stable for the duration of the project established by differential leveling (GPS not allowed). The benchmarks will meet Federal Geodetic Control Subcommittee (FGCS) Second Order, Class I standards.
- The Engineer will set benchmark locations on both the east and west side of the proposed structure by differential leveling (GPS not allowed). The benchmarks will be outside the limits of any fill areas and in a location that is unaffected by construction activities. Do not disturb the benchmarks.
- Allow the Engineer to survey, by differential leveling only (GPS not allowed), the settlement plates and fill height according to the following intervals:
1. Immediately after settlement plate is installed;
 2. After every new pipe section is installed;
 3. Every 3 days during fill operations; and
 4. After completion of the embankment.
- The Engineer will continue to survey the settlement plate weekly until the removal of the surcharge embankment.
- Remove pull box and necessary settlement plate pipes as the surcharge is removed. Cut the settlement pipes off 1' below the proposed subgrade elevation and abandon-in-place the remaining settlement plate pipes.
- Include the cost of all work related to the settlement plates in the contract unit price for "Settlement Plate".
- 900-P02 FLEXIBLE GROWTH MEDIUM: Use one of the following Flexible Growth Medium products:

Profile Flexterra HP-FGM
Mat Inc. Flex Guard
EarthGuard FM

If requested to the Engineer, Environmental & Transportation Services will review other manufacturers' products. Apply Flexible growth medium (FGM) with hydraulic seeding equipment using a hose and a 50° nozzle. Apply FGM from opposing directions to assure 100% soil coverage. Apply FGM at a rate of 3000-3500 lbs/acre.

Include all costs associated with installation FGM areas in the unit price bid for "Flexible Growth Medium."



NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	6	7

SECTION 100

764-P01 W-BEAM GUARDRAIL END TERMINAL FOR CONSTRUCTION: One W-beam guardrail end terminal is required for protection of the median side of the bridge rail end at the BNSF Railroad Separation, RP 313.465, on the eastbound roadway. This guardrail will be installed to protect the surcharged embankment during construction of the new westbound bridge and roadway, and it will remain in place to protect the bridge rail end during two-way traffic operation.

Install a W-beam terminal connector, a 12'-6" double rail section, two 12'-6" W-beam rail sections and a W-beam guardrail end terminal, as shown in the plans.

The W-beam guardrail end terminals, and additional guardrail materials, required for construction will remain the property of the contractor and be removed when no longer needed at the end of two-way traffic operation. The W-beam guardrail end terminals will be measured and paid for by the number of W-beam guardrail end terminals required and accepted by the engineer and include all materials, including W-beam terminal connector and W-beam rail sections, and all necessary posts, blocks, hardware, equipment, and labor.

SECTION 110

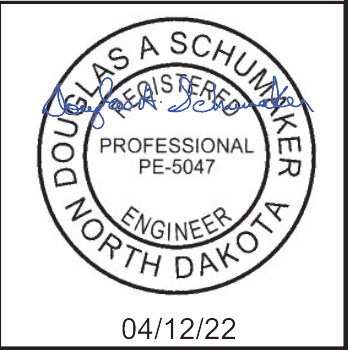
754-P01 Return the "Gusty Wind Area" signs at Sta 16550+16 Lt and 16550+17 Lt-Mdn to the Michigan Maintenance Section at 519 South St, Michigan ND 58259-0139.

754-P02 REMOVE HINGED SIGNS, SUPPORTS, AND FLASHING BEACONS: Contact the Utility Company to disconnect the power to the feed point. Remove the feed point and flasher cabinet that powers the flashing beacons on signs at sta 16556+73 Lt-Mdn. Abandon the existing conductor and conduit. Include all cost to remove the feed point and flasher cabinet in the price bid for "Steel Galv Posts-Telescoping Perforated Tube."

SECTION 130

748-P01 CURB & GUTTER – TYPE 1 SPECIAL: Install curb and gutter at the westbound roadway at the BNSF Railroad Separation, RP 313.399, in accordance with Standard Drawing D-748-1, except for transitions provided at each end, as shown on Standard Drawing D-764-60.

Include all costs for constructing the curb and gutter as described above in the contract unit price bid for the item "Curb & Gutter – Type 1 Special."



ENVIRONMENTAL NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	6	8

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

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

EN-2 THREATENED AND ENDANGERED SPECIES: The NDDOT will request that the utility company install line markers (bird diverters) at a 1:1 ratio (per linear foot) on overhead utility lines to be raised, lowered, and/or moved to reduce the risk of flight collisions during the spring and fall whooping crane migration periods. The utility company determines the type, number and placement/spacing of the line markers and may conclude that the placement of line markers is not feasible in certain situations.

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

EN-4 WETLAND MITIGATION: Wetland mitigation is required for unavoidable permanent wetland impacts. The wetland mitigation plan is incorporated into the plans for this project. After completion of the mitigation area, the Engineer will complete the Onsite Mitigation Certification Form SFN 61042. Any sedimentation occurring within the mitigation area will be removed.



ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
----	----	-----	----	-----	-----
103	0100	CONTRACT BOND	L SUM	1	1
105	0200	POTHOLE UTILITY	EA	2	2
105	0701	UTILITY RESOLUTION - GAS LINE - PIP	EA	1	1
107	0100	RAILWAY PROTECTION INSURANCE	L SUM	1	1
107	0140	RAILROAD COORDINATION	L SUM	1	1
107	0145	RAILROAD FLAGGING	DAY	1,500	1,500
201	0330	CLEARING & GRUBBING	L SUM	1	1
202	0105	REMOVAL OF STRUCTURE	L SUM	1	1
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES	EA	6	6
202	0170	REMOVAL OF CULVERTS-ALL TYPES & SIZES	LF	559	559
202	0230	REMOVAL OF INLETS	EA	2	2
202	0350	REMOVAL OF TEMPORARY BYPASS	EA	2	2
203	0101	COMMON EXCAVATION-TYPE A	CY	71,655	71,655
203	0109	TOPSOIL	CY	20,640	20,640
203	0113	COMMON EXCAVATION-WASTE	CY	216,842	216,842
203	0122	TOPSOIL-DEPT OPTION BORROW AREA	CY	114,751	114,751
203	0140	BORROW-EXCAVATION	CY	315,452	315,452
210	0099	CLASS 1 EXCAVATION	L SUM	1	1
210	0201	FOUNDATION PREPARATION	EA	1	1
216	0100	WATER	M GAL	4,647	4,647
230	0104	RESHAPING CONNECTION	EA	2	2
251	0200	SEEDING CLASS II	ACRE	30.72	30.72
251	1000	WETLAND SEED	ACRE	3.48	3.48
251	2000	TEMPORARY COVER CROP	ACRE	28.31	28.31
253	0050	SOIL STABILIZER	SY	37,516	37,516
253	0101	STRAW MULCH	ACRE	59.03	59.03
255	0102	ECB TYPE 2	SY	409	409
255	0202	TRM TYPE 2	SY	355	355
256	0100	RIPRAP GRADE I	CY	36	36
260	0100	SILT FENCE UNSUPPORTED	LF	4,127	4,127
260	0101	REMOVE SILT FENCE UNSUPPORTED	LF	4,127	4,127
260	0200	SILT FENCE SUPPORTED	LF	5,582	5,582
260	0201	REMOVE SILT FENCE SUPPORTED	LF	5,582	5,582

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	8	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
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261	0112	FIBER ROLLS 12IN	LF	36,781	36,781
261	0113	REMOVE FIBER ROLLS 12IN	LF	24,815	24,815
265	0100	STABILIZED CONSTRUCTION ACCESS	EA	2	2
265	0101	REMOVE STABILIZED CONSTRUCTION ACCESS	EA	2	2
302	0120	AGGREGATE BASE COURSE CL 5	TON	34,702	34,702
302	0356	AGGREGATE SURFACE COURSE CL 13	TON	713	713
401	0050	TACK COAT	GAL	3,801	3,801
401	0070	FOG SEAL	GAL	1,130	1,130
411	0100	MILLING PAVEMENT SURFACE	TON	14,857	14,857
430	0045	SUPERPAVE FAA 45	TON	9,020	9,020
430	1000	CORED SAMPLE	EA	49	49
430	2000	PATCHING	TON	54	54
430	5818	PG 58H-34 ASPHALT CEMENT	TON	543	543
602	0130	CLASS AAE-3 CONCRETE	CY	500.2	500.2
602	1130	CLASS AE-3 CONCRETE	CY	343.2	343.2
602	1134	PILE SUPPORTED APPROACH SLAB	SY	267	267
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	1,994	1,994
604	9645	PRESTRESSED BOX BEAM-45IN	LF	1,890	1,890
612	0115	REINFORCING STEEL-GRADE 60	LBS	35,139	35,139
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	101,925	101,925
622	0020	STEEL PILING HP 10 X 42	LF	1,260	1,260
622	0040	STEEL PILING HP 12 X 53	LF	1,190	1,190
622	0070	STEEL PILING HP 14 X 102	LF	1,080	1,080
702	0100	MOBILIZATION	L SUM	1	1
704	0100	FLAGGING	MHR	1,000	1,000
704	1000	TRAFFIC CONTROL SIGNS	UNIT	4,887	4,887
704	1044	ATTENUATION DEVICE-TYPE B-70	EA	1	1
704	1052	TYPE III BARRICADE	EA	20	20
704	1060	DELINEATOR DRUMS	EA	234	234
704	1067	TUBULAR MARKERS	EA	175	175
704	1072	FLEXIBLE DELINEATORS	EA	12	12
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	3	3
704	1088	SEQUENCING ARROW PANEL-TYPE C-CROSSOVER	EA	2	2

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	8	3

SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
704	1500 OBLITERATION OF PAVEMENT MARKING	SF	670	670
704	3510 PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	30	30
706	0400 FIELD OFFICE	EA	1	1
706	0500 AGGREGATE LABORATORY	EA	1	1
706	0550 BITUMINOUS LABORATORY	EA	1	1
706	0600 CONTRACTOR'S LABORATORY	EA	1	1
709	0100 GEOSYNTHETIC MATERIAL TYPE G	SY	8,611	8,611
714	0615 PIPE CONC REINF 24IN CL III	LF	136	136
714	0840 PIPE CONC REINF 30IN CL V	LF	132	132
714	3020 END SECT-CONC REINF 24IN	EA	1	1
714	4100 PIPE CONDUIT 18IN	LF	28	28
714	4105 PIPE CONDUIT 24IN	LF	294	294
714	4110 PIPE CONDUIT 30IN	LF	436	436
714	4113 PIPE CONDUIT 30IN-APPROACH	LF	114	114
714	4166 PIPE CONDUIT 30IN-JACKED OR BORED	LF	86	86
714	5015 PIPE CORR STEEL .064IN 18IN	LF	40	40
714	5810 END SECT CORR STEEL .064IN 18IN	EA	2	2
714	7033 PIPE PVC 15IN	LF	582	582
714	7036 PIPE PVC 18IN	LF	450	450
714	9660 REMOVE & RELAY END SECTION-ALL TYPE & SIZES	EA	2	2
720	0110 RIGHT OF WAY MARKERS	EA	24	24
720	0125 ALIGNMENT MONUMENTS	EA	6	6
720	0130 IRON PIN R/W MONUMENTS	EA	24	24
720	0135 IRON PIN REFERENCE MONUMENTS	EA	2	2
748	0141 CURB & GUTTER-TYPE 1 SPECIAL	LF	30	30
752	0911 TEMPORARY SAFETY FENCE	LF	4,820	4,820
754	0110 FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	90	90
754	0150 DELINEATORS-TYPE A	EA	17	17
754	0168 DELINEATORS-TYPE D	EA	2	2
754	0206 STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	213	213
754	0557 INTERSTATE MILE POSTS-TYPE C	EA	2	2
754	0805 OBJECT MARKERS - CULVERTS	EA	21	21
760	0005 RUMBLE STRIPS - ASPHALT SHOULDER	MILE	2.31	2.31

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	8	4

SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
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762 1104	PVMT MK PAINTED 4IN LINE	LF	23,364	23,364
764 0131	W-BEAM GUARDRAIL	LF	342	342
764 0145	W-BEAM GUARDRAIL END TERMINAL	EA	3	3
764 0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	104	104
764 2020	REMOVE 3-CABLE GUARDRAIL & POSTS	LF	2,572	2,572
764 2081	REMOVE END TREATMENT & TRANSITION	EA	2	2
900 0100	SETTLEMENT PLATE	EA	6	6
900 0700	FLEXIBLE GROWTH MEDIUM	SY	41,534	41,534
910 0565	CONTROLLED DENSITY BACKFILL	CY	22	22
920 1318	VIBRATING WIRE PIEZOMETER	EA	2	2
920 1325	VIBRATING WIRE BOREHOLE EXTENSOMETER	EA	2	2
930 3000	BRIDGE BENCH MARKS	SET	1	1
930 4225	INSTRUMENTATION-DATA LOGGING EQUIPMENT	L SUM	1	1
930 7012	ROADWAY CANOPY	L SUM	1	1
930 8686	AGGREGATE SLOPE PROTECTION	SY	1,217	1,217
930 9537	ABUTMENT UNDERDRAIN SYSTEM	EA	2	2

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	10	1

MATERIALS:

Aggregate Base Course CL 5 @ 1.5 Tons/CY + 25% = 1,875 Tons/CY
Aggregate Surface Course CL 13 @ 1.5 Tons/CY + 25% = 1,875 Tons/CY
Tack Coat @ 0.05 Gal/SY
Fog Coat @ 0.05 Gal/SY
Superpave FAA 45 @ 2 Tons/CY
PG 58H-34 Asphalt Cement @ 6.0% of Superpave FAA 45

WATER		
Material	Application Rate	Quantity (M Gal)
Embankment	10 Gal/CY	3,872
Aggregates	20 Gal/Ton	709
Dust Palliative	25 M Gal/Mile	66

MILLING PAVEMENT SURFACE:

Milling Pavement Surface @ 2 Tons/CY

HMA Cored Samples							
Specification Section	A	B		C			Unit
	Distance (Ft) / 1000	Lanes	Joints	Lifts	Quantity (A x B x C)	Quantity (1 per mile)	
430.04 I.2.b(1), "General"	6	2	N/A	3	36	N/A	EA
SSP 4 Longitudinal Joint Density in HMA Pavements (Centerline)	6	N/A	1	2	12	N/A	EA
430.04 I.2.b(2), "Pavement Thickness Determination Cores"					N/A	1	EA
				Total	48	1	EA

OBJECT MARKERS - CULVERTS		
LOCATION	QUANTITY	UNIT
423+21.4 Lt.	1	EA
431+00 Lt. & Rt.	2	EA
434+60 Med.	1	EA
434+80 Lt. & Rt.	2	EA
437+80 Lt. & Rt.	2	EA
438+37 Lt. (122nd Ave NE) Bk & Ahd	2	EA
439+30 Lt.	1	EA
439+51.5 Med.	1	EA
451+00 Lt. & Med.	2	EA
452+65 Lt.	1	EA
468+00 Lt. & Med.	2	EA
473+00 Lt. & Med.	2	EA
474+95 Lt. (Appr Culvert Extension)	1	EA
475+57 Lt. (Appr Culvert Extension)	1	EA
Total =	21	EA

RUMBLE STRIPS	
Location	Rumble Strips - Asphalt Shoulder (Mile)
418+50.00 to 479+50.00	2.31

PERMANENT PAVEMENT MARKING		
Location - Type	Basis	Quantity
US 2 WB Roadway: 16503+00.00 to 16509+99.19 Bk = 419+00.00 Ahd to 479+00.00 Bk = 16567+96.86 Ahd to 16581+53.21 Bk = 16583+71.50 to 16597+00.00; Miles = 1.7773 Mi		
Pvmt Mk Painted 4IN Line (White Skip Line)	1,320 LF/Mi	2,346 LF
Pvmt Mk Painted 4IN Line (White Edge Line)	5,280 LF/Mi	9,384 LF
Pvmt Mk Painted 4IN Line (Yellow Edge Line)	5,280 LF/Mi	9,384 LF
US 2 EB Roadway: 16503+00.00 to 16512+00.00 and 16588+00.00 to 16597+00.00; Miles = 0.3409 Mi		
Pvmt Mk Painted 4IN Line (White Skip Line)	1,320 LF/Mi	450 LF
Pvmt Mk Painted 4IN Line (Yellow Edge Line)	5,280 LF/Mi	1,800 LF
	TOTAL for Pvmt Mk Painted 4IN Line =	23,364 LF

Basis of Estimate

Bridge Replacement on New Alignment,
Median Crossovers, Roadway Realignment,
Existing WB Roadway Obliteration,
Removal of Structure, Removal of Crossovers

1 Mile East of ND 32 South
Nelson County

RANKA SAMARDZIC
REGISTERED
PROFESSIONAL
PE 4888
ENGINEER
NORTH DAKOTA

12/15/21

US 2 NEW WESTBOUND ROADWAY

SPEC	CODE	DESCRIPTION	UNIT	APPLICATION RATE	Tangent Section				Superelevation Transition Curve #1 Beginning from Tangent Section to Curve #1 Section				Curve #1 Section				Superelevation Transition Curve #1 Ending from Curve #1 Section to Tangent Section				Superelevation Transition Curve #2 Beginning from Tangent Section to Curve #2 Section			
					419+00(Beg Const) to 422+81.54 437+30.23 to 438+03.91 460+48.47(End Br Appr Slab) to 463+65.75 477+93.68 to 479+00(End Const)				422+81.54 to 425+59.51				425+59.51 to 434+52.26				434+52.26 to 437+30.23				438+03.91 to 440+46.91			
					Total Stations = 8.7882				Total Stations = 2.7797				Total Stations = 8.9275				Total Stations = 2.7797				Total Stations = 2.4300			
					Width	Depth	Quantity per	Subtotal	Avg. Width	Depth	Quantity per	Subtotal	Width	Depth	Quantity per	Subtotal	Avg. Width	Depth	Quantity per	Subtotal	Avg. Width	Depth	Quantity per	Subtotal
					ft.	in.	Station		ft.	in.	Station		ft.	in.	Station		ft.	in.	Station		ft.	in.	Station	
302	0120	AGGREGATE BASE COURSE CL 5	TON	1.875 Tons/CY	43.44	18	559.8993	4,921	43.44	18	560.2278	1,558	43.43	18	560.5563	5,005	43.44	18	560.2278	1,558	43.46	18	560.7139	1,363
401	0050	TACK COAT (1st Lift HMA)	GAL	0.05 Gal/SY	37.94	-	21.0778	186	37.92	-	21.0667	59	37.89	-	21.0500	188	37.92	-	21.0667	59	37.92	-	21.0667	52
401	0050	TACK COAT (2nd Lift HMA)	GAL	0.05 Gal/SY	37.35	-	20.7500	183	37.33	-	20.7389	58	37.31	-	20.7278	186	37.33	-	20.7389	58	37.34	-	20.7444	51
401	0050	TACK COAT (3rd Lift HMA)	GAL	0.05 Gal/SY	36.75	-	20.4167	180	36.74	-	20.4111	57	36.73	-	20.4056	183	36.74	-	20.4111	57	36.74	-	20.4111	50
401	0070	FOG SEAL	GAL	0.05 Gal/SY	36.00	-	20.0000	176	36.00	-	20.0000	56	36.00	-	20.0000	179	36.00	-	20.0000	56	36.00	-	20.0000	49
430	0045	SUPERPAVE FAA 45	TON	2 Tons/CY	36.00	6.5	148.3837	1,304	36.00	6.5	148.4393	413	36.00	6.5	148.4941	1,326	36.00	6.5	148.4393	413	36.00	6.5	148.4533	361
430	5818	PG 58H-34 ASPHALT CEMENT	TON	6.0% of HMA	36.00	6.5	8.9030	78.3	36.00	6.5	8.9064	24.8	36.00	6.5	8.9096	79.6	36.00	6.5	8.9064	24.8	36.00	6.5	8.9072	22.0

US 2 NEW WESTBOUND ROADWAY

SPEC	CODE	DESCRIPTION	UNIT	APPLICATION RATE	Curve #2 Section				Superelevation Transition Curve #2 Ending from Curve #2 Section to Beg Br Appr Slab				Superelevation Transition Curve #3 Beginning from Tangent Section to Curve #3 Section				Curve #3 Section				Superelevation Transition Curve #3 Ending from Curve #3 Section to Tangent Section			
					440+46.91 to 455+07.10				455+07.10 to 456+71.91(Beg Br Appr Slab)				463+65.75 to 466+71.31				466+71.31 to 474+88.12				474+88.12 to 477+93.68			
					Total Stations = 14.6019				Total Stations = 1.6481				Total Stations = 3.0556				Total Stations = 8.1681				Total Stations = 3.0556			
					Width	Depth	Quantity per	Subtotal	Avg. Width	Depth	Quantity per	Subtotal	Avg. Width	Depth	Quantity per	Subtotal	Width	Depth	Quantity per	Subtotal	Avg. Width	Depth	Quantity per	Subtotal
					ft.	in.	Station		ft.	in.	Station		ft.	in.	Station		ft.	in.	Station		ft.	in.	Station	
302	0120	AGGREGATE BASE COURSE CL 5	TON	1.875 Tons/CY	43.47	18	561.5292	8,200	43.18	18	552.9014	912	43.35	18	558.0486	1,706	43.26	18	556.1979	4,544	43.35	18	558.0486	1,706
401	0050	TACK COAT (1st Lift HMA)	GAL	0.05 Gal/SY	37.90	-	21.0556	308	37.93	-	21.0722	35	37.92	-	21.0667	65	37.89	-	21.0500	172	37.92	-	21.0667	116
401	0050	TACK COAT (2nd Lift HMA)	GAL	0.05 Gal/SY	37.32	-	20.7333	303	37.34	-	20.7444	35	37.33	-	20.7389	64	37.31	-	20.7278	170	37.33	-	20.7389	64
401	0050	TACK COAT (3rd Lift HMA)	GAL	0.05 Gal/SY	36.73	-	20.4056	298	36.74	-	20.4111	34	36.74	-	20.4111	63	36.73	-	20.4056	167	36.74	-	20.4111	63
401	0070	FOG SEAL	GAL	0.05 Gal/SY	36.00	-	20.0000	293	36.00	-	20.0000	33	36.00	-	20.0000	62	36.00	-	20.0000	164	36.00	-	20.0000	62
430	0045	SUPERPAVE FAA 45	TON	2 Tons/CY	36.00	6.5	148.5230	2,169	36.00	6.5	148.4630	245	36.00	6.5	148.4178	454	36.00	6.5	148.4519	1,213	36.00	6.5	148.4178	454
430	5818	PG 58H-34 ASPHALT CEMENT	TON	6.0% of HMA	36.00	6.5	8.9114	130.2	36.00	6.5	8.9078	14.7	36.00	6.5	8.9051	27.3	36.00	6.5	8.9071	72.8	36.00	6.5	8.9051	27.3

122ND AVE NE

122nd Ave NE Typical Section 23+76.50 to 27+56.00							
Total Stations = 3.7950							
SPEC	CODE	DESCRIPTION	UNIT	APPLICATION RATE	Width	Depth	Subtotal
					ft.	in.	
302	0120	AGGREGATE BASE COURSE CL 5	TON	1.875 Tons/CY	28.36	6	403
302	0356	AGGREGATE SURFACE COURSE CL 13	TON	1.875 Tons/CY	24	6	346

SUMMARY OF QUANTITIES FOR SHEET

SPEC	CODE	DESCRIPTION	UNIT	TOTAL QUANTITIES FOR SHEET
302	0120	AGGREGATE BASE COURSE CL 5	TON	31,876
302	0356	AGGREGATE SURFACE COURSE CL 13	TON	346
401	0050	TACK COAT	GAL	3,564
401	0070	FOG SEAL	GAL	1,130
430	0045	SUPERPAVE FAA 45	TON	8,352
430	5818	PG 58H-34 ASPHALT CEMENT	TON	502

Notes:

- Quantities for Tack Coat are based on two 2" HMA Lifts and one top 2.5" HMA Lift.
- Stationing shown corresponds to proposed typical section stationing shown in Section 30 - Proposed Typical Sections.
- Quantity per Station is based on information shown in Section 30 - Proposed Typical Sections.

Basis of Estimate
Surfacing Quantities
US Hwy 2 Westbound Roadway
& 122nd Ave NE

Bridge Replacement on New Alignment,
Median Crossovers, Roadway Realignment,
Existing WB Roadway Obliteration,
Removal of Structure, Removal of Crossovers

1 Mile East of ND 32 South
Nelson County

RANKA SAMARDZIC
REGISTERED
PROFESSIONAL
PE 4888
ENGINEER
NORTH DAKOTA

12/15/21

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	10	3

ACCUMULATED TOTAL PLAN SHEET SURFACING QUANTITIES

				Sheet 10-2	Sheet 20-9	Sheet 20-10	Sheet 20-11	Sheet 20-12	Sheet 20-13	Sheet 20-14	Sheet 20-15	Sheet 20-16	Sheet 60-1	Sheet 60-2
				US 83 New Westbound Roadway Realignment and 122nd Ave NE	Median Approach 420+92.57 Rt.	122nd Ave NE Median Approach 438+68.32 Rt	122nd Ave NE Section Line Approach 438+68.32 Lt	Median Approach 475+35.95 Rt	Private Drive Approach 475+35.94 Lt	Aggr Base Crse Cl 5 Subgrade Transition At Bridge Approach Slabs	Milling And Paving At Begin Project	Milling And Paving At End Project	West Crossover	East Crossover
SPEC	CODE	DESCRIPTION	UNIT	SHEET QUANTITY	SHEET QUANTITY	SHEET QUANTITY	SHEET QUANTITY	SHEET QUANTITY	SHEET QUANTITY	SHEET QUANTITY	SHEET QUANTITY	SHEET QUANTITY	SHEET QUANTITY	SHEET QUANTITY
302	0120	AGGREGATE BASE COURSE CL 5	TON	31.876	212	596	412	240	202	344			272	278
302	0356	AGGREGATE SURFACE COURSE CL 13	TON	346									181	186
401	0050	TACK COAT	GAL	3,564	23	68	45	26	18		11	11		
401	0070	FOG SEAL	GAL	1,130										
411	0100	MILLING PAVEMENT SURFACE	TON								25	26		
430	0045	SUPERPAVE FAA 45	TON	8,352	66	203	134	76	51		30	30		
430	2000	PATCHING	TON											
430	5818	PG 58H-34 ASPHALT CEMENT	TON	502	4.0	12.2	8.0	4.6	3.1		1.8	1.8		

				Sheet 90-1	TOTAL
				Br Paving Transition, Guardrail Surfacing, and Patching for Removal of Inlets	PLAN SHEET QUANTITIES
SPEC	CODE	DESCRIPTION	UNIT	SHEET QUANTITY	TOTAL QUANTITIES
302	0120	AGGREGATE BASE COURSE CL 5	TON	270	34,702
302	0356	AGGREGATE SURFACE COURSE CL 13	TON		713
401	0050	TACK COAT	GAL	35	3,801
401	0070	FOG SEAL	GAL		1,130
411	0100	MILLING PAVEMENT SURFACE	TON		51
430	0045	SUPERPAVE FAA 45	TON	78	9,020
430	2000	PATCHING	TON	4	4
430	5818	PG 58H-34 ASPHALT CEMENT	TON	4.72	543

Basis of Estimate
Accumulated Total Plan Sheet
Surfacing Quantities

Bridge Replacement on New Alignment,
Median Crossovers, Roadway Realignment,
Existing WB Roadway Obliteration,
Removal of Structure, Removal of Crossovers

1 Mile East of ND 32 South
Nelson County

RANKA SAMARDZIC

REGISTERED

PROFESSIONAL

PE 4888

ENGINEER

NORTH DAKOTA

12/15/21

Phase 1
First Year Construction - Surcharge and Wetland Excavation

Phase 2
Second Year Construction - Surcharge Removal and Other Non Transition Areas

Phase 3
Second Year Construction - Transition Areas

Phase 4
Second and Third Year Construction - Existing WB Bridge Embankment Removal, 122nd Ave (Remaining)

Offset Group

- G 450' Lt - 700' Lt
F 300' Lt - 450' Lt
E 225' Lt - 300' LT
D 150' Lt - 225' Lt
C 75' Lt - 150' Lt
B \varnothing - 75' LT
A 150' Rt - \varnothing

Phase	Total Mass	Surcharge Mass	Crossover Mass	Excavation * Δ	Embankment *	Borrow	Waste
1 West	-138266	-51052		16154	-154420	138266	
1 East	-177186	-63874		1656	-178842	177186	
2 West	75571	48499	-1500	115326	-38255		74071
2 East	104856	60680	-974	109963	-5107		103882
3 West	6852			9923	-3072		2970
3 East	-3882			3481	-7363		
4 West	16772		1500	15321	-49		18272
4 East	16673		974	16674	-1		17647
Total	-98610	-5746		288497	-387107	315452	216842

Mass shown in CY
The railroad is the division between East and West.
* Excavation and embankment columns include surcharge mass but not crossover mass.
* Δ Excavation column includes excavation-waste
Some phase 2 excavation under traffic can not be completed until phase 3.
Surcharge Recovery was estimated at 95% due to settlement.
The "Earthwork Phasing.xlsx" spread sheet included in supplement design data.

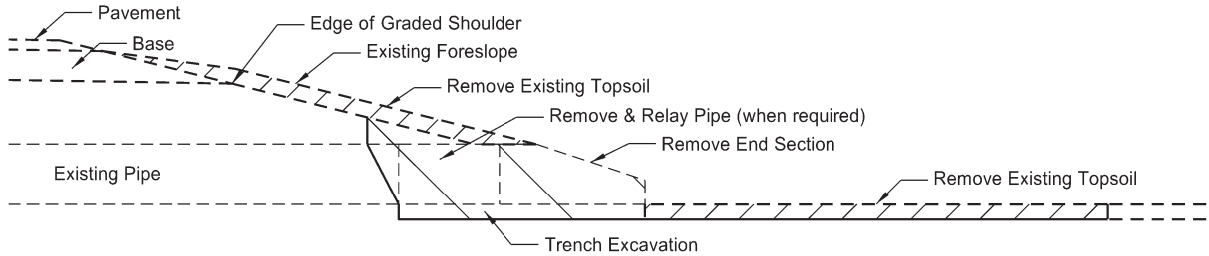
Spec-Code	Pay Item	Quantity
203-0101	Common Excavation - Type A (CY)	71655
203-0113	Common Excavation - Waste (CY)	216842
203-0140	Borrow-Excavation (CY)	315452

Cell Mass Description
The project is divided into cells (boundaries) for quantity calculations. Earthwork is calculated prismaticly for each cell. Cell intervals are at 100'
Cell boundaries are not intended to represent literal construction boundaries. Actual construction boundaries and calculated boundaries will be different.

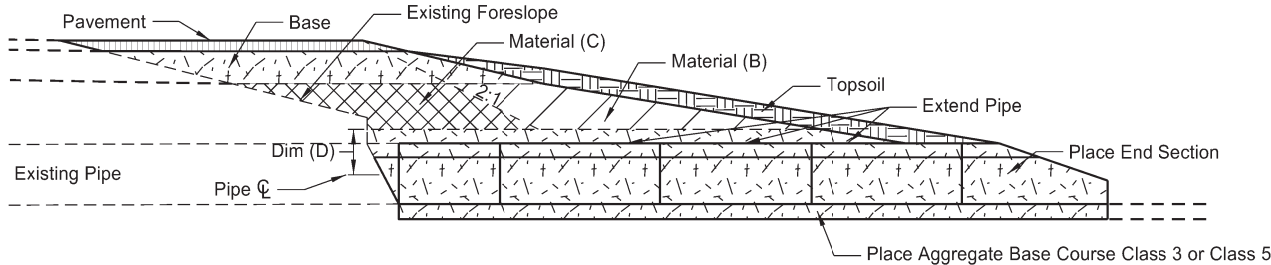
Earthwork Phasing
Cell Mass Description
Earthwork Quantities
1"=500'

US Hwy 2 Westbound Roadway
1 Mile East of ND 32 South
Nelson County

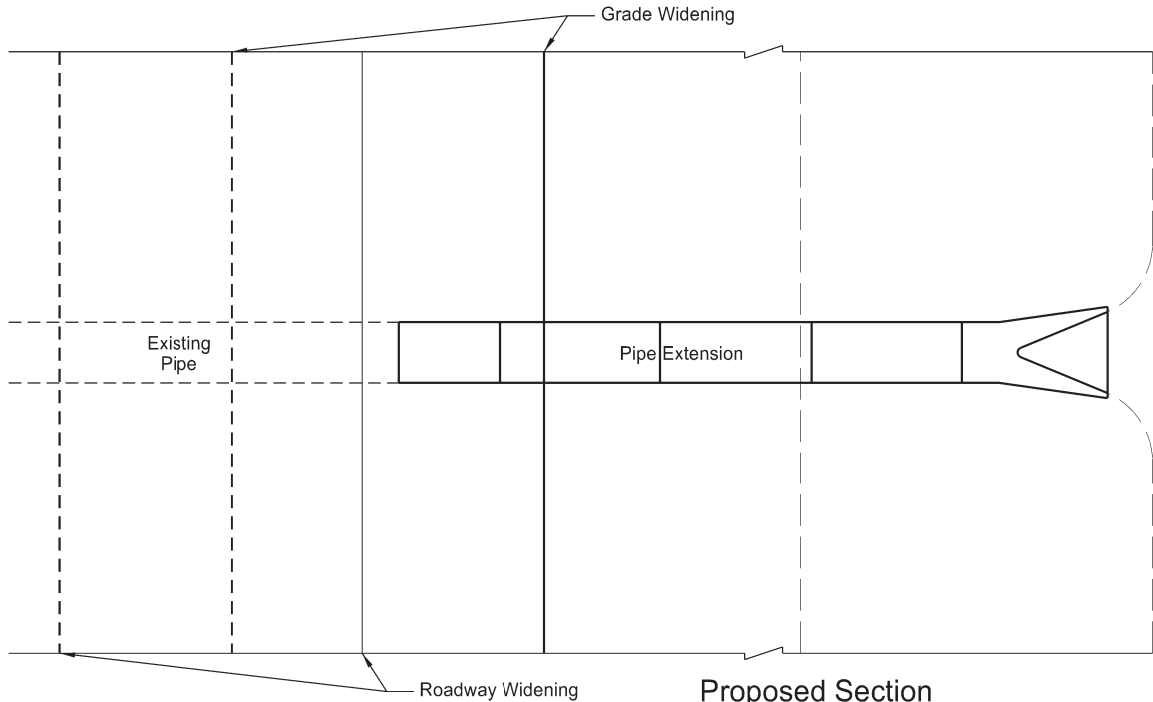




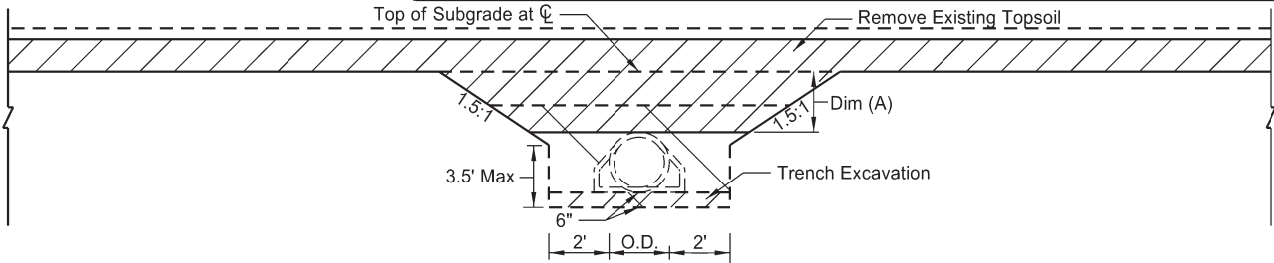
Removal Section
Cross Section View



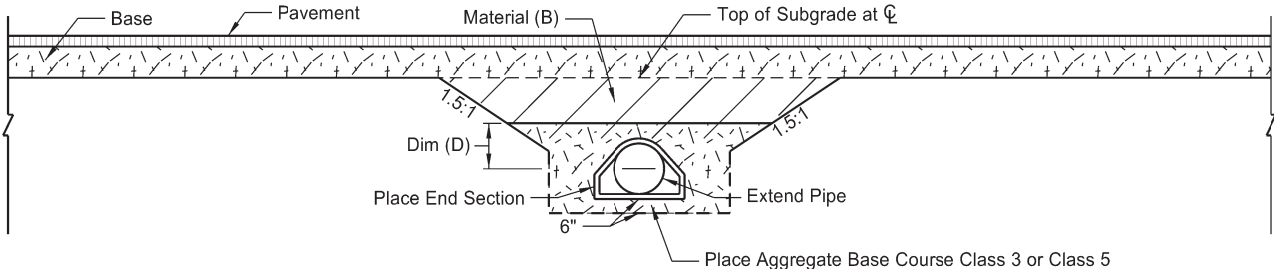
Proposed Section
Cross Section View



Proposed Section
Plan View



Removal Detail
Side View



Backfill Detail
Side View (Topsoil not shown)

Pay Items

- 1) Pipe*
- 2) Remove & Relay Pipe - All Types & Sizes (when required)
- 3) Remove & Reset End Section or Remove End Section and Place New End Section
- 4) Borrow Excavation or Common Excavation
- 5) Topsoil
- 6) Seeding
- 7) Mulching

*Included in Pipe Pay Item

- 1) Pipe
- 2) Trench excavation
- 3) Aggregate Base Course Class 3 or Class 5

Pipe Materials	Dim (A) <= 4 Feet		Backfill Dimension
	Material (B)	Material (C)	Dim (D)
Concrete	Embank or Aggr	Aggregate	0.5 O.D.
Metal	Embank or Aggr	Aggregate	0.5 O.D. + 1 Foot

Pipe Materials	Dim (A) > 4 Feet		Backfill Dimension
	Material (B)	Material (C)	Dim (D)
Concrete	Embankment	Embankment	0.5 O.D.
Metal	Embankment	Embankment	0.5 O.D. + 1 Foot

NOTES:

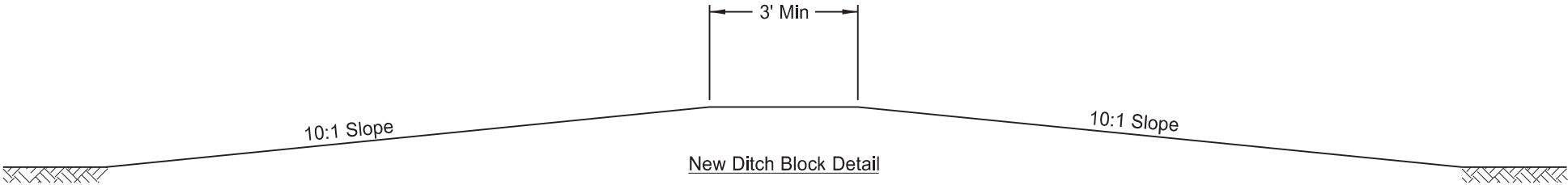
- 1. Embankment may be either Borrow Excavation or Common Excavation
- 2. Aggregate may be either Class 3 or Class 5 Aggregate Base Course.



Centerline Pipe Extension Detail
US Hwy 2

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	3



DITCH BLOCK

Location	Top Elevation
434+80 Med.	1522.00
450+90 Med.	1533.00
468+10 Med.	1539.00

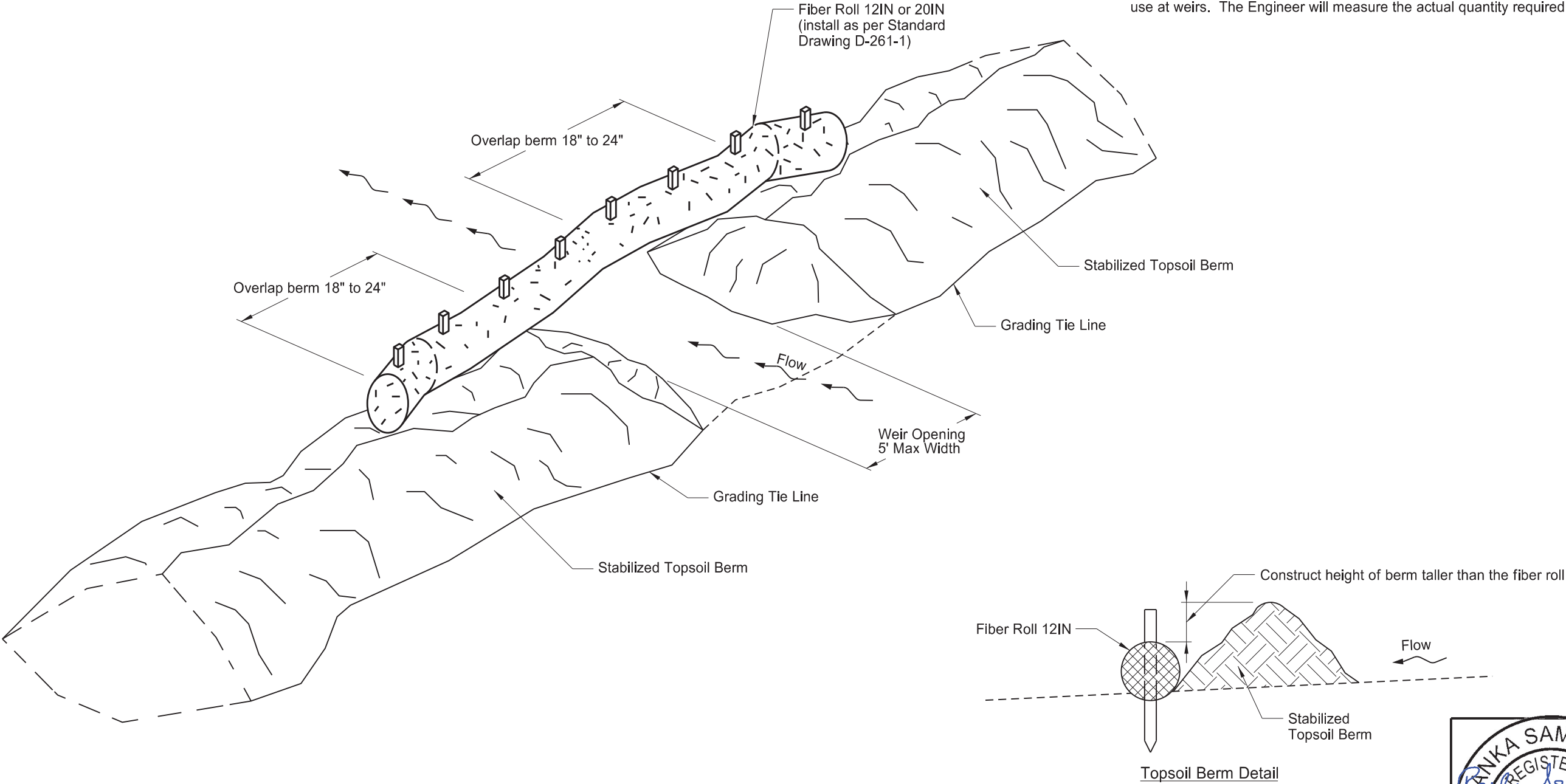


Ditch Block Detail
US 2 Westbound Rdwy

Bridge Replacement; Roadway Realignment;
Roadway New Construction; Roadway Obliteration;
Removal of Structure; Median Crossovers
1 mile East of ND 32 South
Nelson County

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	20	4

A quantity of 250 LF of Fiber Roll 12IN has been included in the quantities for use at weirs. The Engineer will measure the actual quantity required in the field.



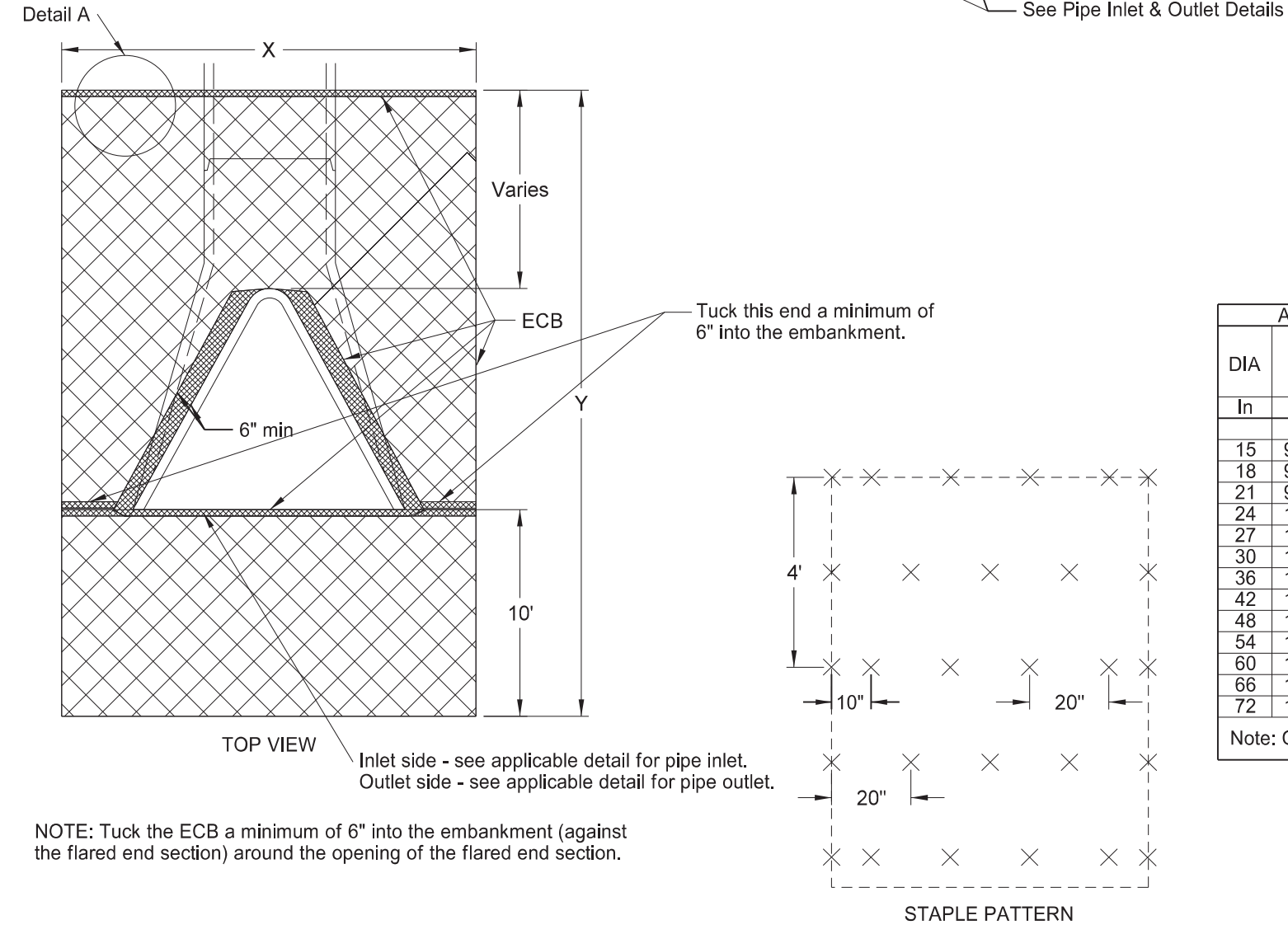
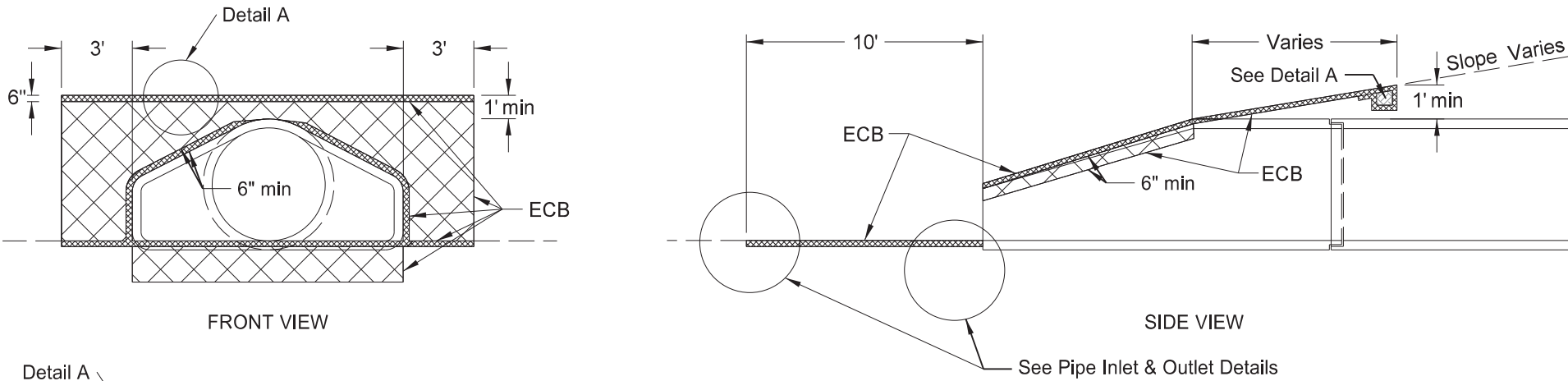
- Notes:
1. Windrow the existing topsoil from the foreslope to create a berm at the grading tie line.
 2. Stabilize berms in accordance with the Construction General Permit.
 3. Place weirs intermittently throughout the length of the berm to allow stormwater to drain through the berm.
 4. Avoid placing weirs adjacent to waterbodies.
 5. Install fiber rolls as the weirs are created in the topsoil berm.
 6. Include costs to create, stabilize, maintain, and dismantle the berm in the unit price bid for "Topsoil".
 7. Include costs for fiber rolls in the unit price bid for "Fiber Rolls 12IN".



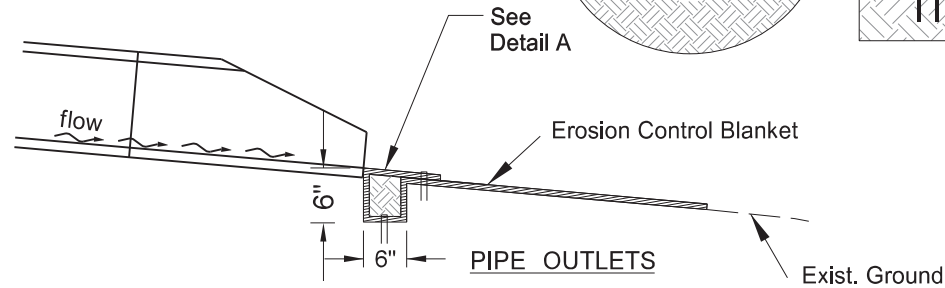
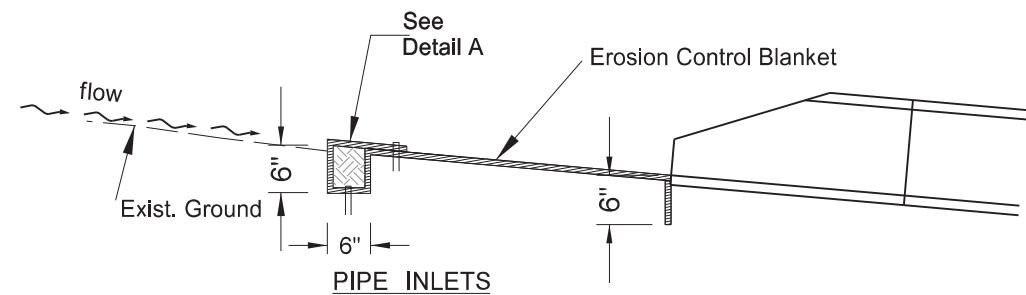
Temporary Topsoil Berm and Weir Detail
US 2 Westbound Rdwy

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 mile East of ND 32 South
Nelson County

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	20	5



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

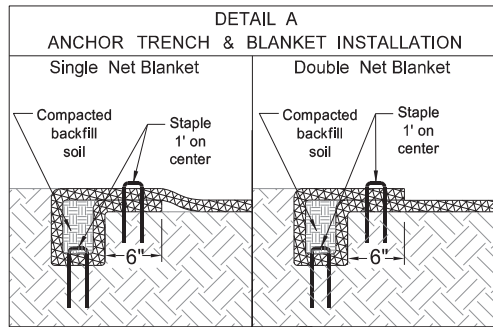


APPROACH CULVERTS				
DIA	X	Y	Surface area to be protected	ECB
In	Ft	Ft	SF	SY
15	9.0	20.0	176.0	20
18	9.5	20.7	190.7	22
21	9.5	21.0	190.9	22
24	10.5	21.6	214.1	24
27	11.0	22.0	226.3	25
30	11.6	22.5	241.5	27
36	12.7	23.3	268.8	30
42	13.3	23.3	279.7	31
48	13.8	24.0	293.2	33
54	14.5	23.4	300.6	34
60	15.0	23.0	307.5	35
66	15.6	24.0	325.6	37
72	16.2	24.5	340.6	38

Note: Quantities based on 8:1 slope.

CENTERLINE CULVERTS				
DIA	X	Y	Surface area to be protected	ECB
In	Ft	Ft	SF	SY
24	10.5	19.6	193.1	22
27	11.0	20.0	204.3	23
30	11.6	20.5	218.3	25
36	12.7	21.2	242.1	27
42	13.3	21.2	251.8	28
48	13.8	22.0	265.6	30
54	14.5	21.5	273.7	31
60	15.0	21.0	278.3	31
66	15.6	22.0	295.7	33
72	16.2	22.5	309.2	35

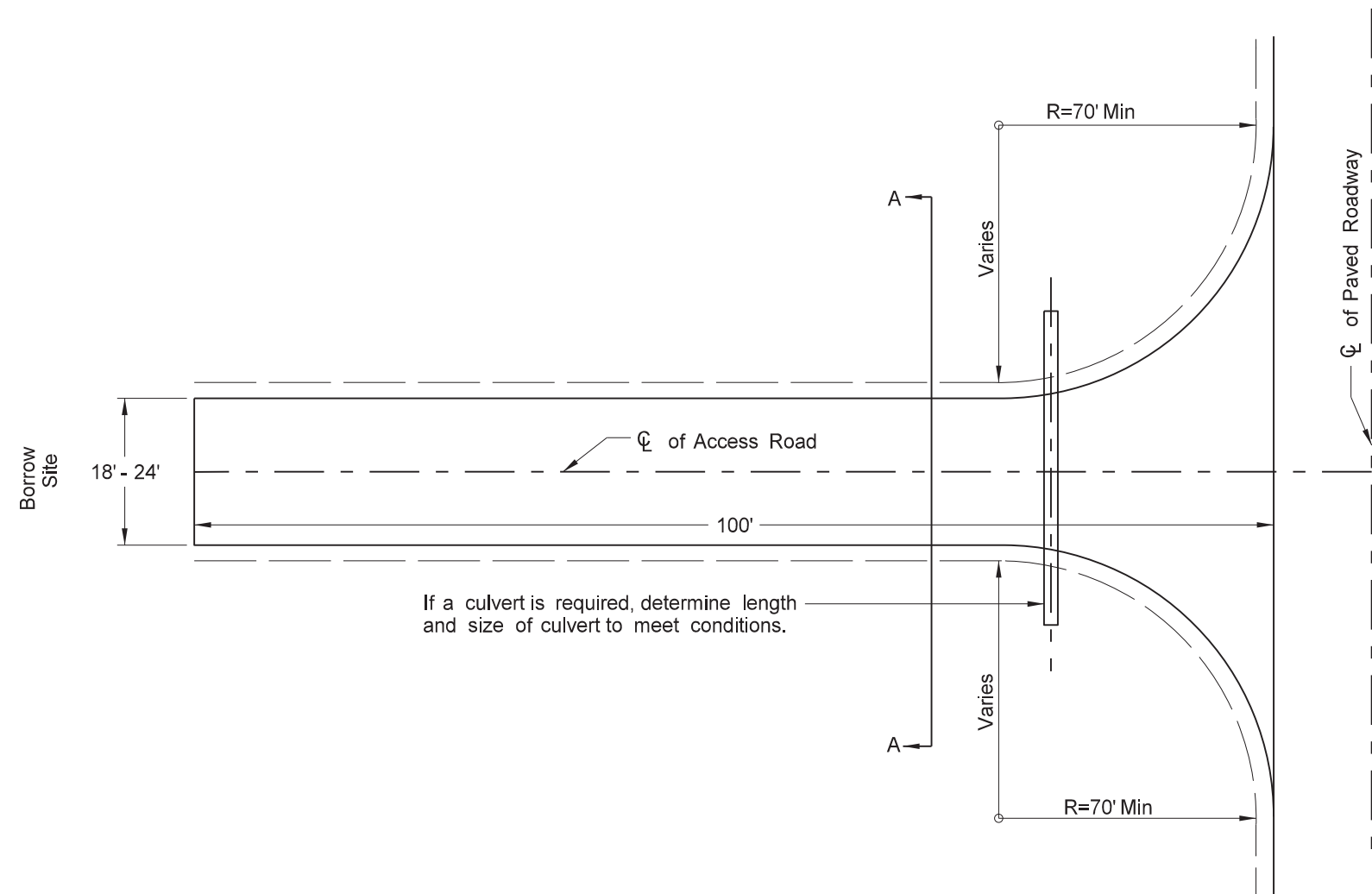
Note: Quantities based on 6:1 slope.



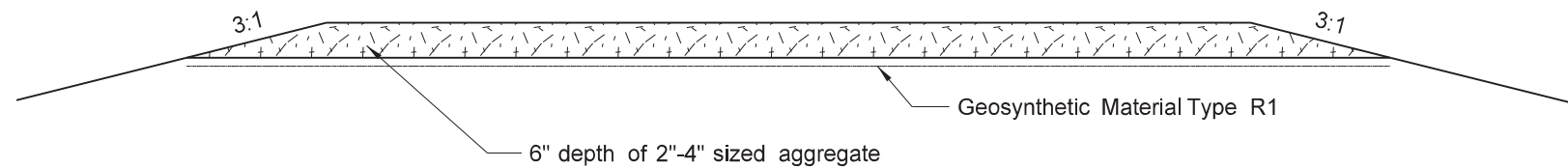
Erosion Control at Culvert Flared End Sections
US 2 Westbound Rdwy

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 mile East of ND 32 South
Nelson County

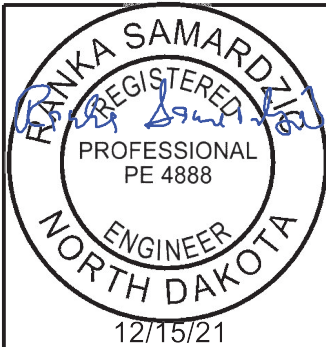
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	6



PLAN VIEW



A - A Cross Section



Stabilized Construction Access
US 2 Westbound Rdwy

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 mile East of ND 32 South
Nelson County

CURVE 1 = Spiral Curve 1

T.S. Station	423+54.51
S.C. Station	425+59.51
CURVE 1	
P.C. Station	425+59.51
P.I. Station	430+11.12
Delta =	21° 20' 54.21" (RT)
Degree =	2° 23' 28.68"
Tangent =	451.6133
Length =	892.7526
Radius =	2,396.0100
External =	42.1898
P.T. Station	434+52.26
C.S. Station	434+52.26
S.T. Station	436+57.26

Station	Left Slope	Right Slope
TS - 72.97'	-2.1	-2.1
TS	0.0	-2.1
SC	5.9	-5.9
CS	5.9	-5.9
ST	0.0	-2.1
ST+ 72.97'	-2.1	-2.1

Note:
CURVE 1 to CURVE 2 = Reverse Curves - 2 Spiral Curves
with 73.68' of tangent distance between the Tangent Runouts

CURVE 2 = Spiral Curve 2

T.S. Station	438+66.91
S.C. Station	440+46.91
CURVE 2	
P.C. Station	440+46.91
P.I. Station	448+09.87
Delta =	41° 00' 40.16" (LT)
Degree =	2° 48' 31.02"
Tangent =	762.9511
Length =	1,460.1906
Radius =	2,040.0000
External =	138.0024
P.T. Station	455+07.10
C.S. Station	455+07.10
S.T. Station	456+87.10

Station	Left Slope	Right Slope
TS - 63'	-2.1	-2.1
TS	-2.1	0.0
SC	-6.0	6.0
CS	-6.0	6.0
ST	-2.1	0.0
ST+ 63'	-2.1	-2.1

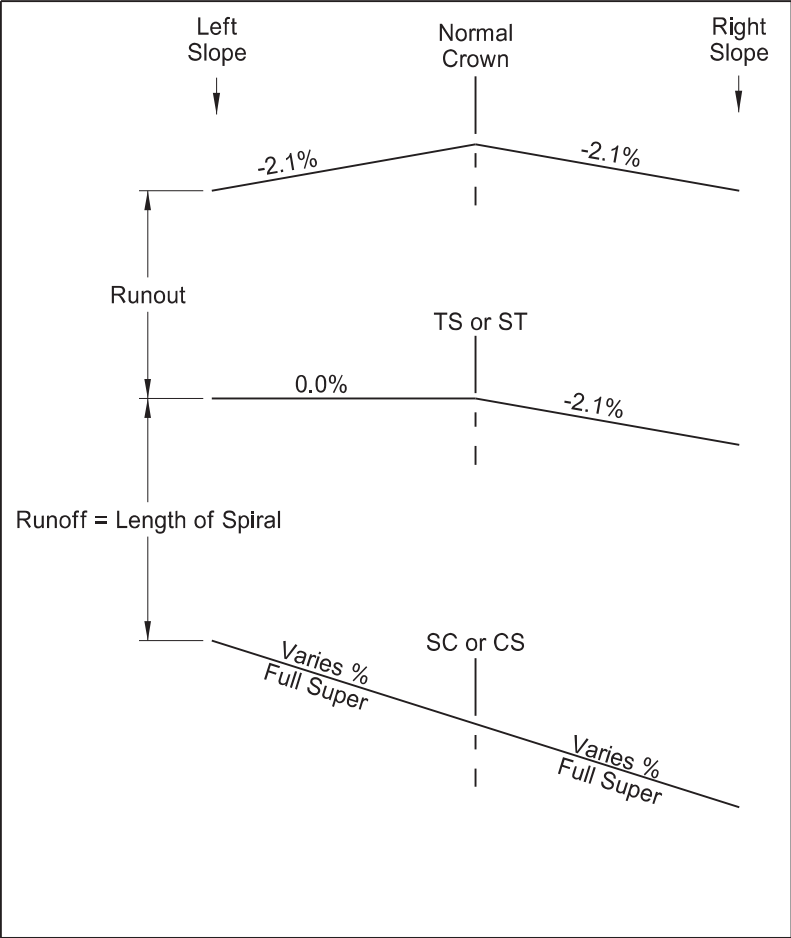
CURVE 3 = Spiral Curve 3

T.S. Station	464+51.31
S.C. Station	466+71.31
CURVE 3	
P.C. Station	466+71.31
P.I. Station	470+82.31
Delta =	15° 45' 47.27" (RT)
Degree =	1° 55' 47.45"
Tangent =	410.9995
Length =	816.8077
Radius =	2,968.9300
External =	28.3131
P.T. Station	474+88.12
C.S. Station	474+88.12
S.T. Station	477+08.12

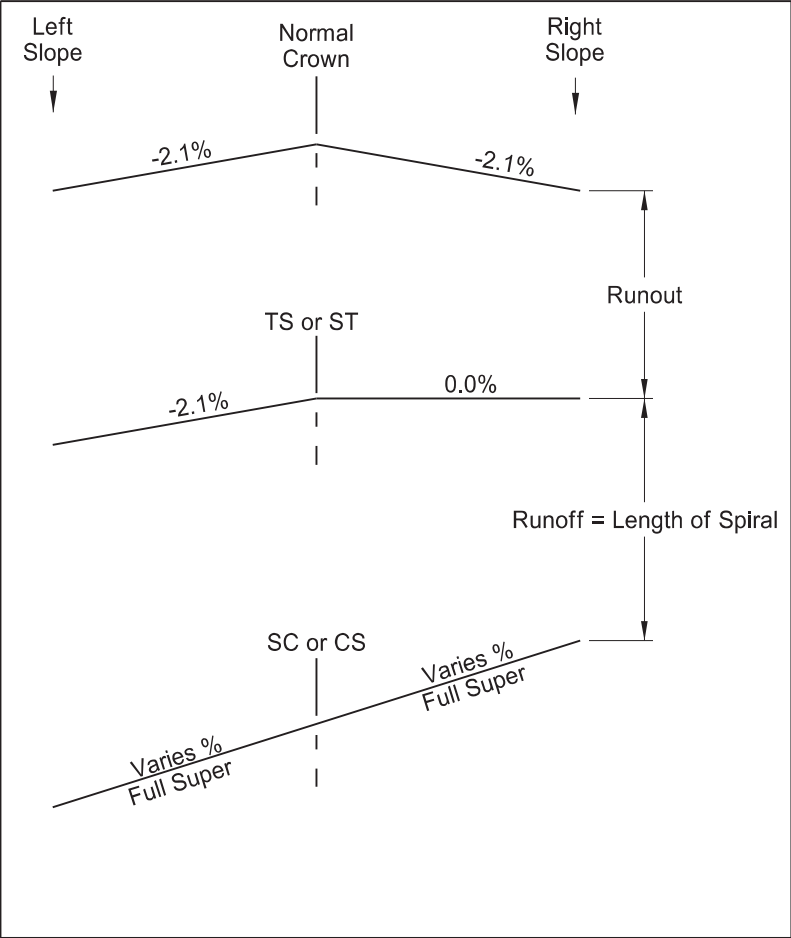
Station	Left Slope	Right Slope
TS - 85.56'	-2.1	-2.1
TS	0.0	-2.1
SC	5.4	-5.4
CS	5.4	-5.4
ST	0.0	-2.1
ST+ 85.56'	-2.1	-2.1

Note:
1.) See Supplemental Design Data for Superelevation Report.
2.) Calculations based on AASHTO method five. A design speed of 70 mph and maximum superelevation of 6% were used.

SPIRAL CURVE 1 and 3



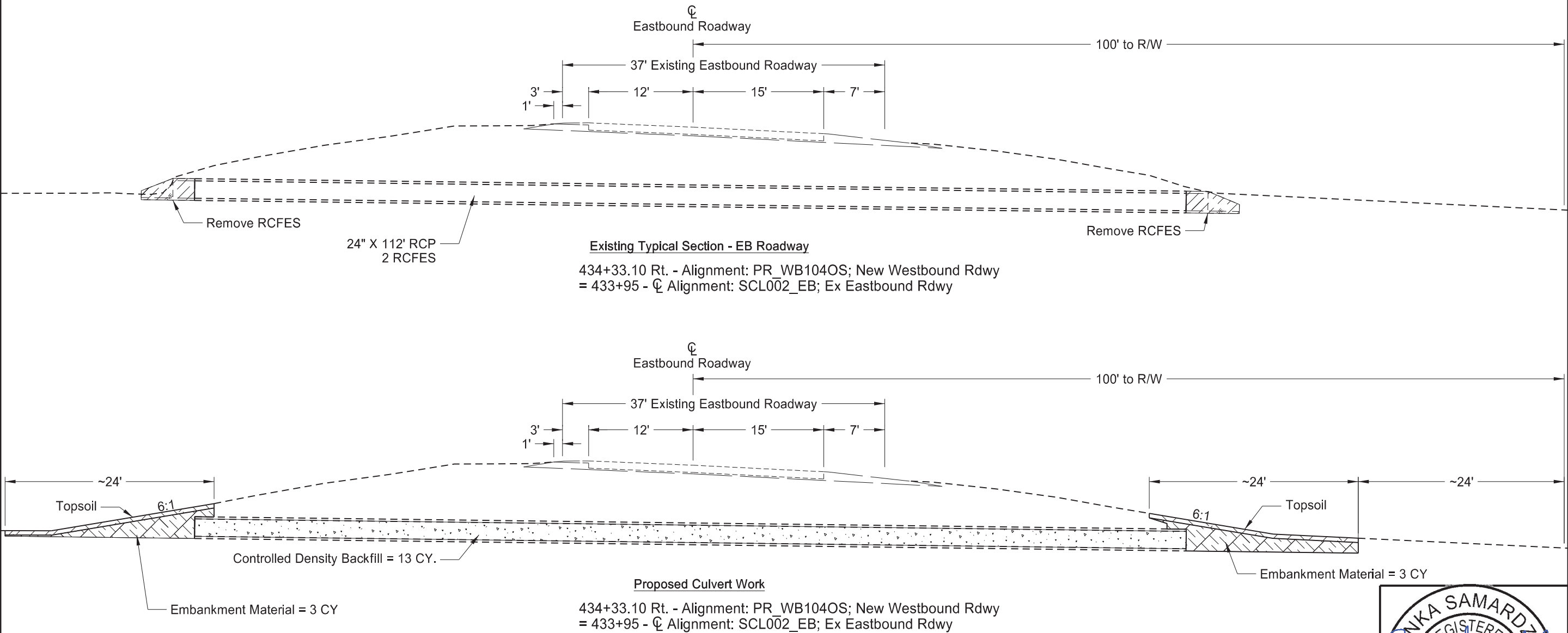
SPIRAL CURVE 2



SUPERELEVATION TABLE
US 2 Westbound Rdwy

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 Mile East of ND 32 South
Nelson County

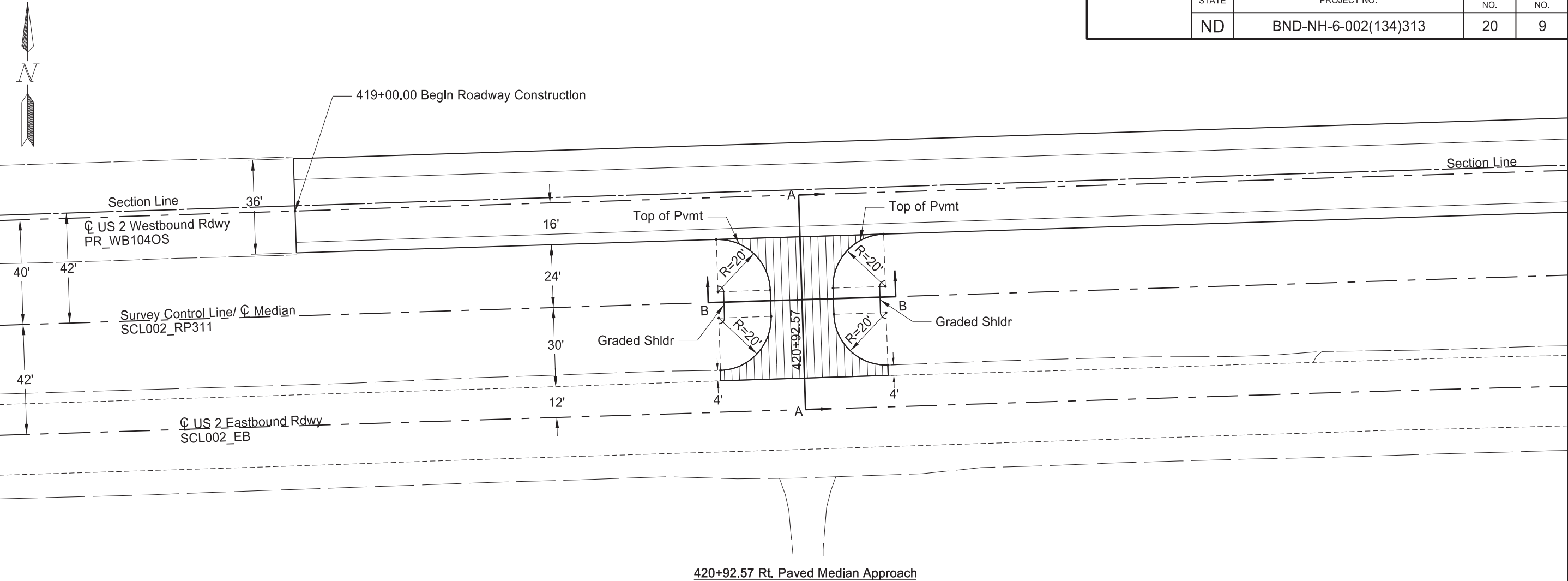
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	8



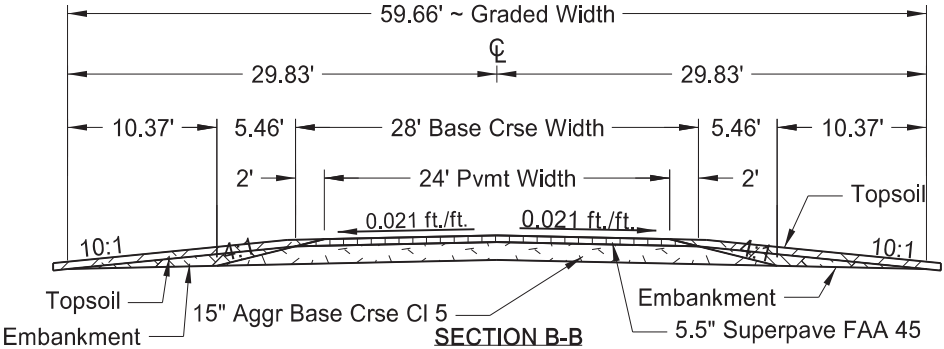
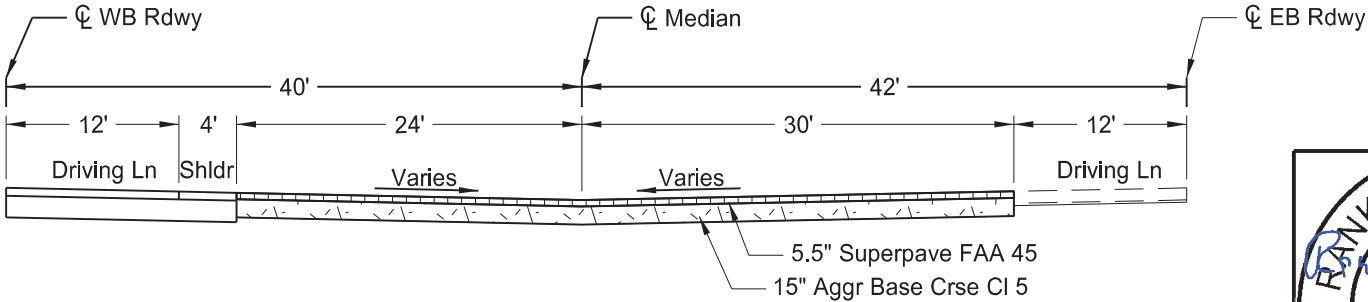
24" Centerline Pipe Abandonment Details
US 2 Eastbound Rdwy

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 Mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	9



BASIS OF ESTIMATE				
SPEC	CODE	DESCRIPTION	UNIT	TOTAL QUANTITIES FOR SHEET
302	0120	AGGREGATE BASE COURSE CL 5	TON	212
401	0050	TACK COAT	GAL	23
430	0045	SUPERPAVE FAA 45	TON	66
430	5818	PG 58H-34 ASPHALT CEMENT	TON	4.0

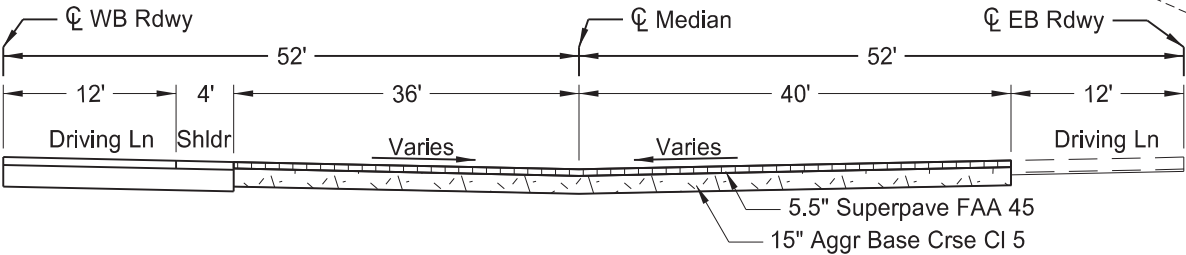
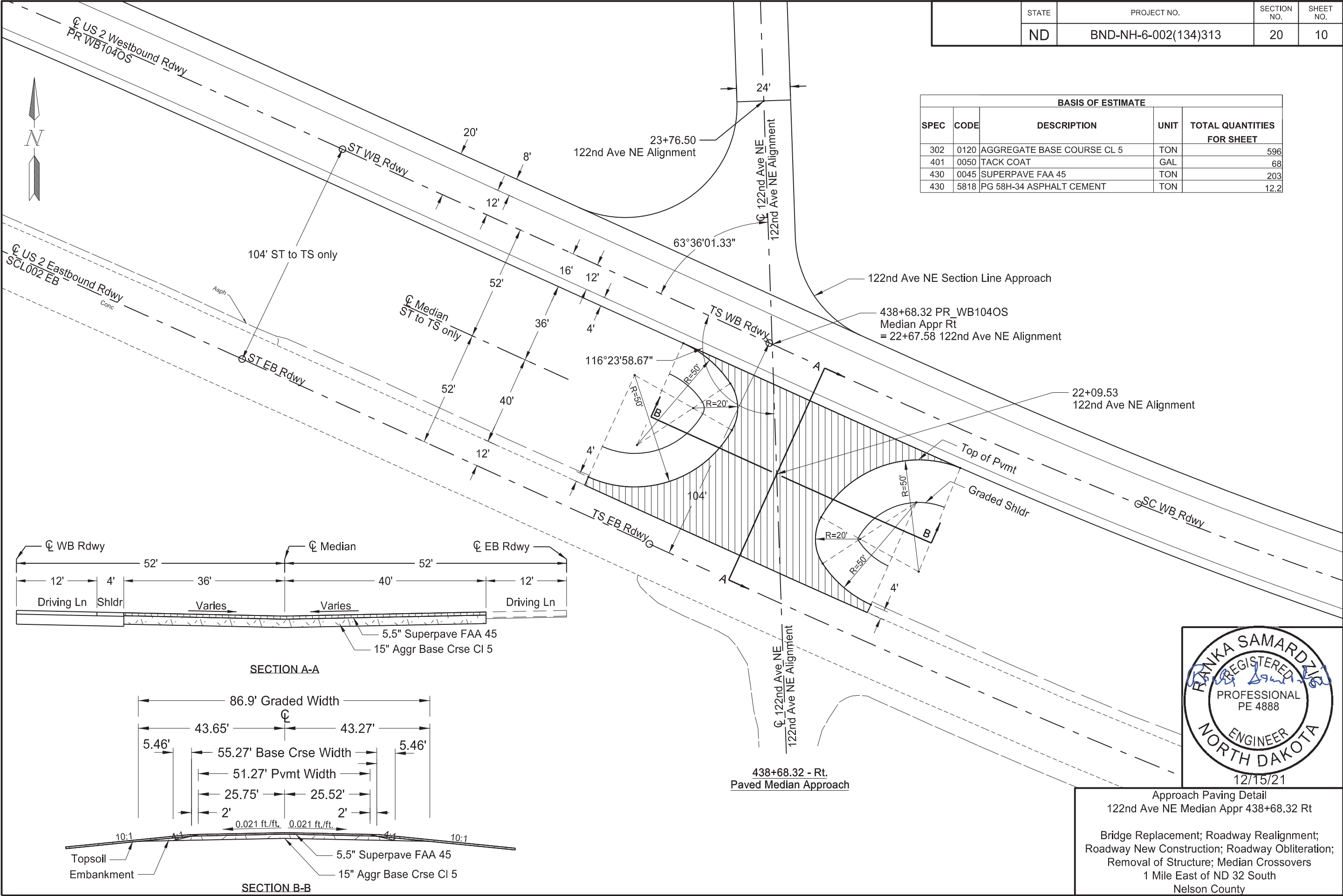


Approach Paving Detail
Median Approach 420+92.57 Rt.

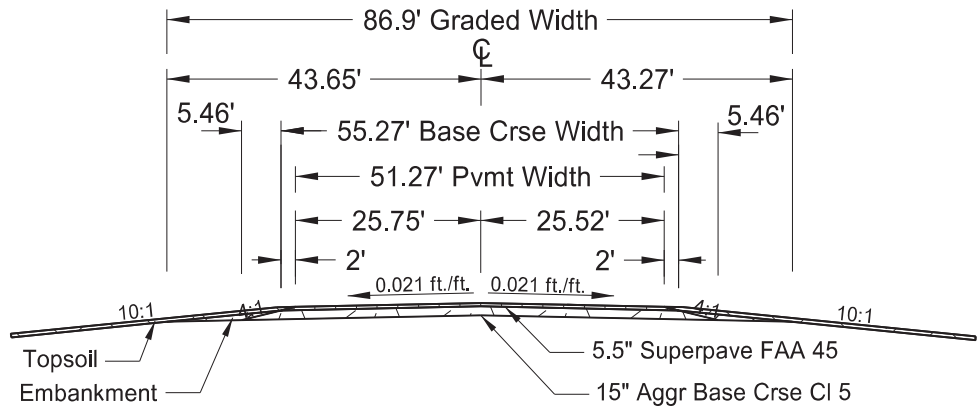
Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 Mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	10

BASIS OF ESTIMATE				
SPEC	CODE	DESCRIPTION	UNIT	TOTAL QUANTITIES FOR SHEET
302	0120	AGGREGATE BASE COURSE CL 5	TON	596
401	0050	TACK COAT	GAL	68
430	0045	SUPERPAVE FAA 45	TON	203
430	5818	PG 58H-34 ASPHALT CEMENT	TON	12.2



SECTION A-A



SECTION B-B

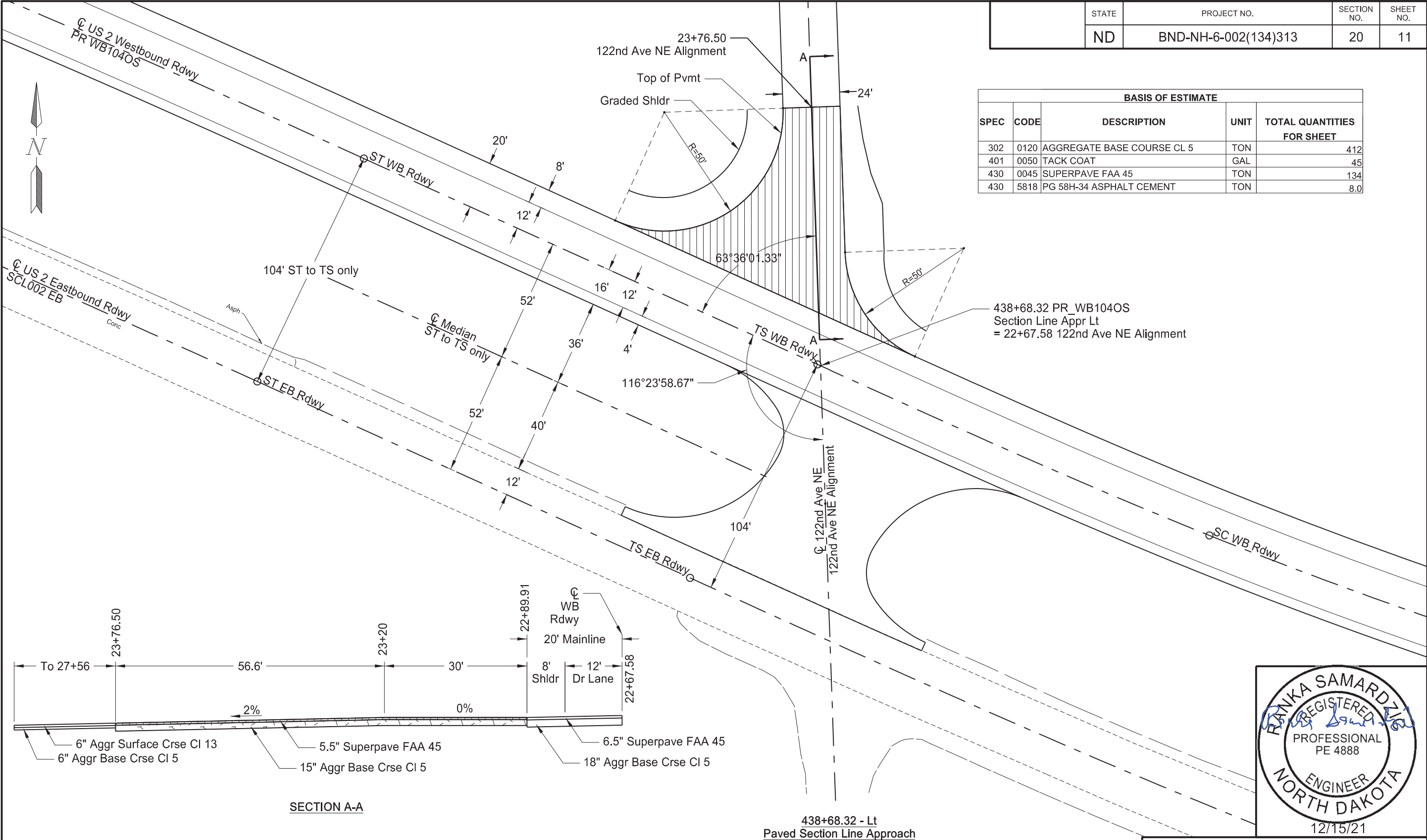


Approach Paving Detail
122nd Ave NE Median Appr 438+68.32 Rt

Bridge Replacement; Roadway Realignment;
Roadway New Construction; Roadway Obliteration;
Removal of Structure; Median Crossovers
1 Mile East of ND 32 South
Nelson County

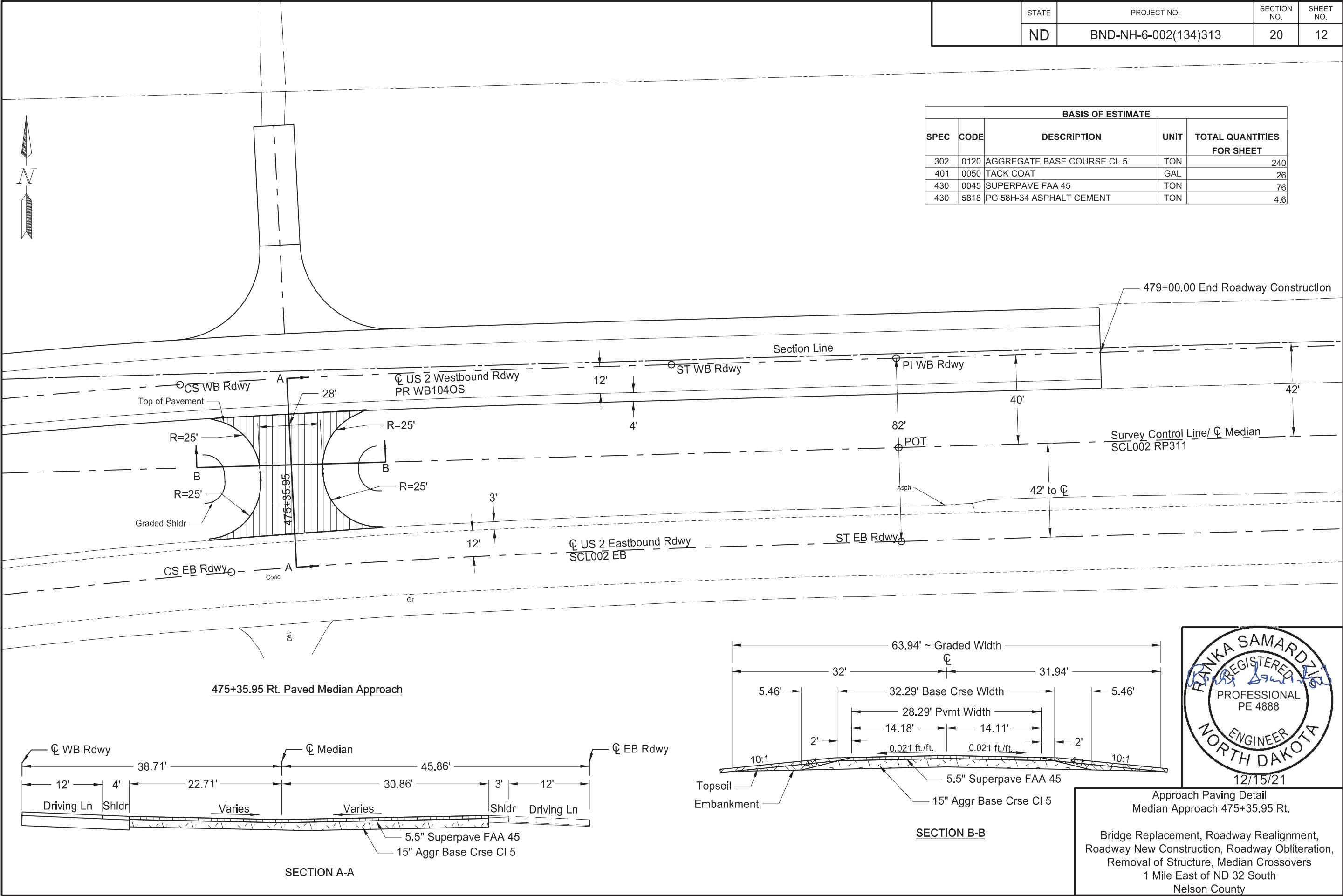
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	11

BASIS OF ESTIMATE				
SPEC	CODE	DESCRIPTION	UNIT	TOTAL QUANTITIES FOR SHEET
302	0120	AGGREGATE BASE COURSE CL 5	TON	412
401	0050	TACK COAT	GAL	45
430	0045	SUPERPAVE FAA 45	TON	134
430	5818	PG 58H-34 ASPHALT CEMENT	TON	8.0

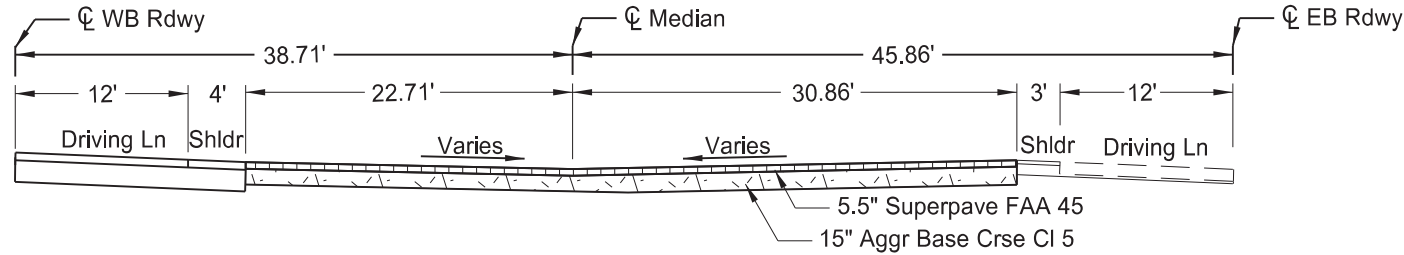


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	ND	BND-NH-6-002(134)313	20	12

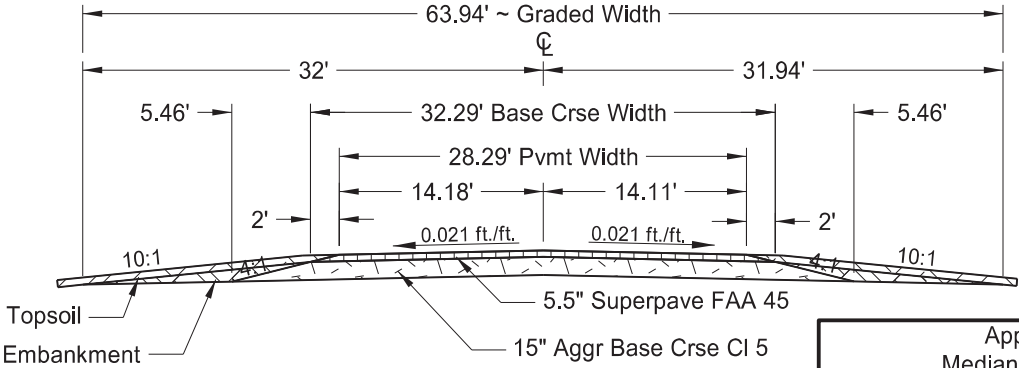
BASIS OF ESTIMATE				
SPEC	CODE	DESCRIPTION	UNIT	TOTAL QUANTITIES FOR SHEET
302	0120	AGGREGATE BASE COURSE CL 5	TON	240
401	0050	TACK COAT	GAL	26
430	0045	SUPERPAVE FAA 45	TON	76
430	5818	PG 58H-34 ASPHALT CEMENT	TON	4.6



475+35.95 Rt. Paved Median Approach



SECTION A-A



SECTION B-B

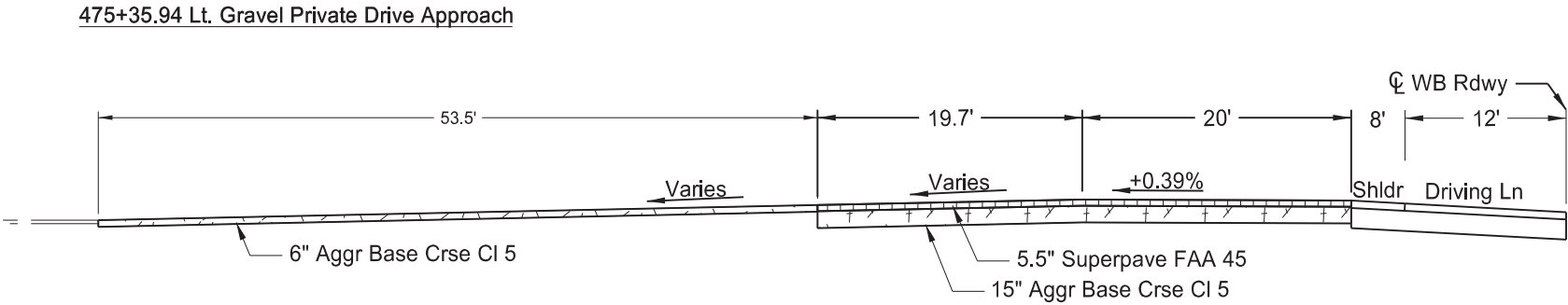
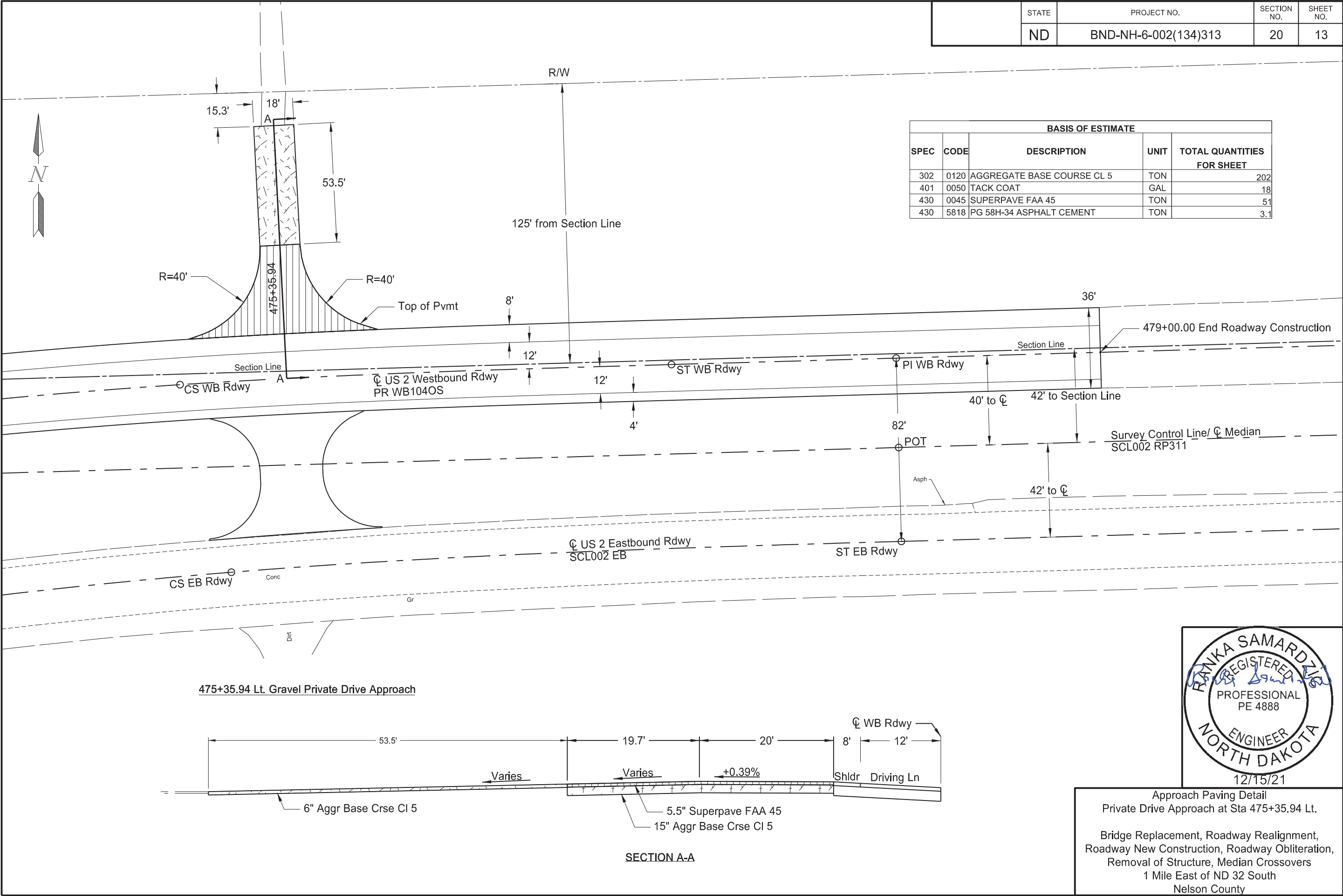


Approach Paving Detail
Median Approach 475+35.95 Rt.

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 Mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	13

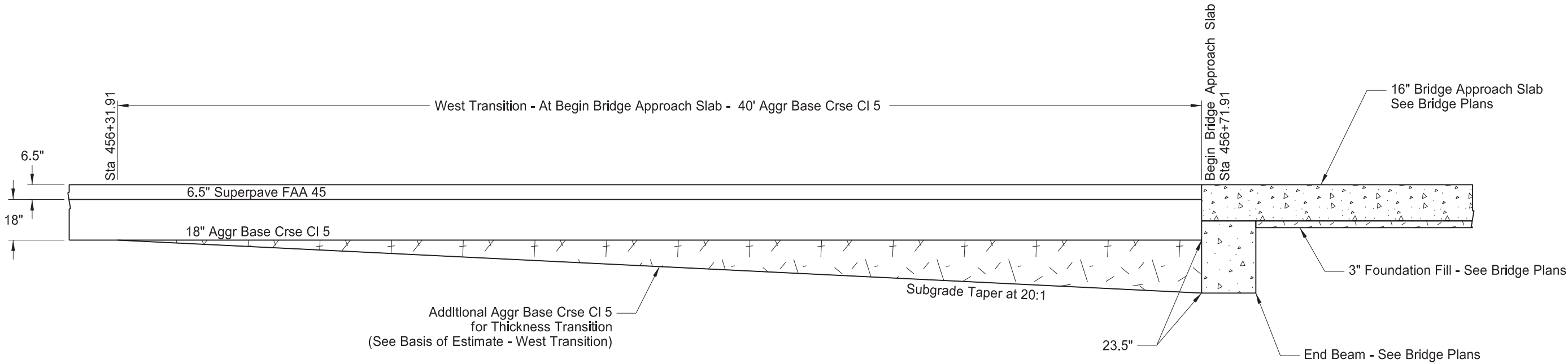
BASIS OF ESTIMATE				
SPEC	CODE	DESCRIPTION	UNIT	TOTAL QUANTITIES FOR SHEET
302	0120	AGGREGATE BASE COURSE CL 5	TON	202
401	0050	TACK COAT	GAL	18
430	0045	SUPERPAVE FAA 45	TON	51
430	5818	PG 58H-34 ASPHALT CEMENT	TON	3.1



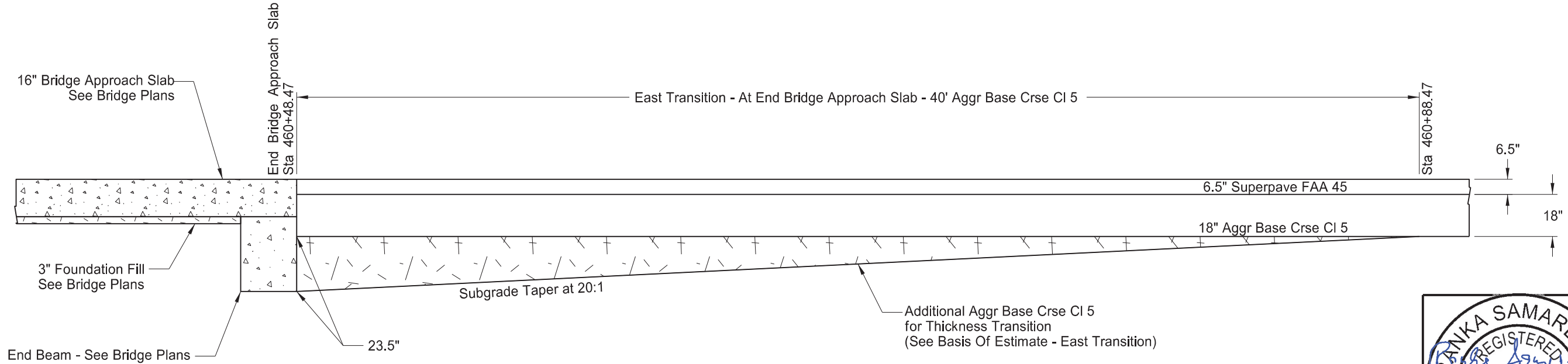
Approach Paving Detail
Private Drive Approach at Sta 475+35.94 Lt.

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 Mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	14



Profile View (On Vertical Curve) At Begin Bridge Approach Slab



Profile View (On Vertical Curve) At End Bridge Approach Slab

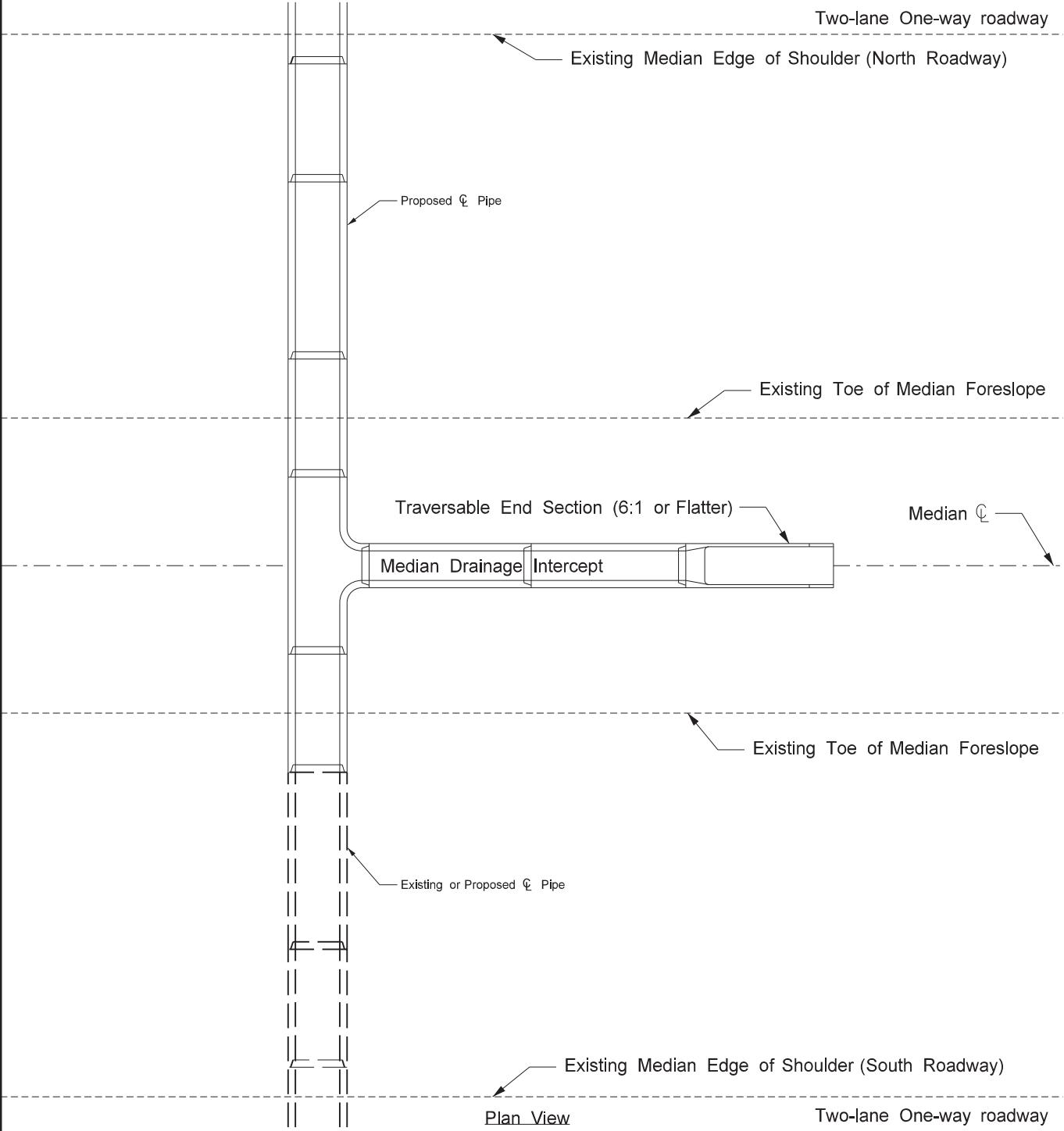
BASIS OF ESTIMATE					
SPEC	CODE	DESCRIPTION	UNIT	TOTAL QUANTITIES FOR SHEET	
				West Transition	East Transition
302	0120	AGGREGATE BASE COURSE CL 5	TON	216	128



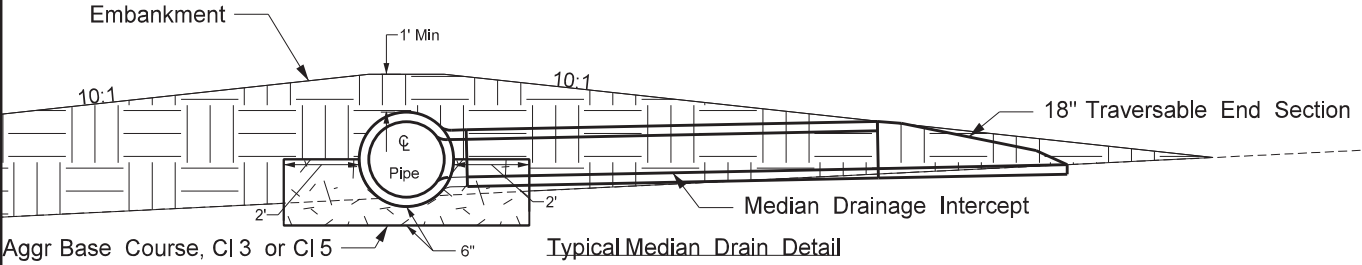
Aggregate Base Course Transition
At Begin & End of Bridge Approach Slab

US Hwy 2 Westbound Roadway
1 Mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	17



NOTE: Place fill to provide drainage into the pipe end sections.



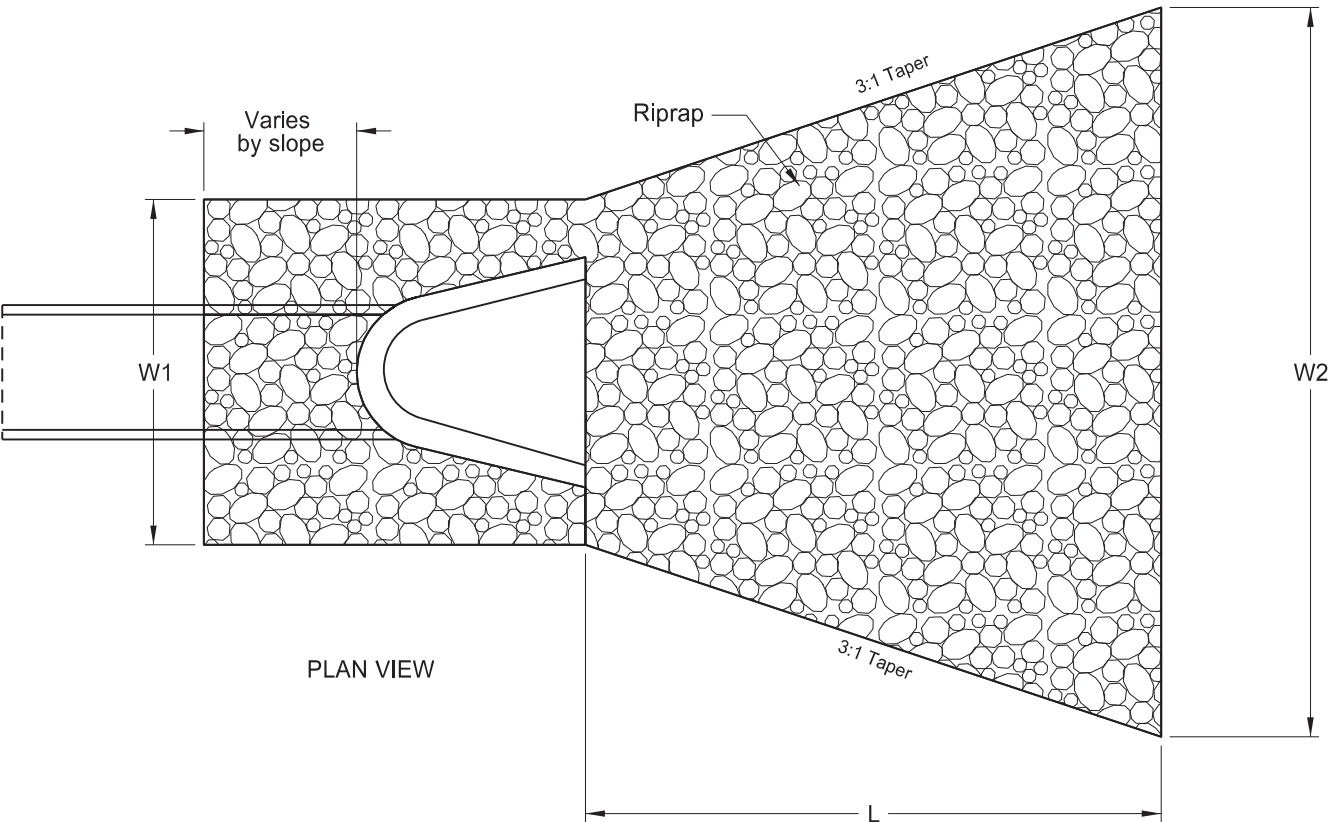
Refer to Standard D-714-1 for culvert details.



Centerline Pipe Median Connections (One-Way Drain)

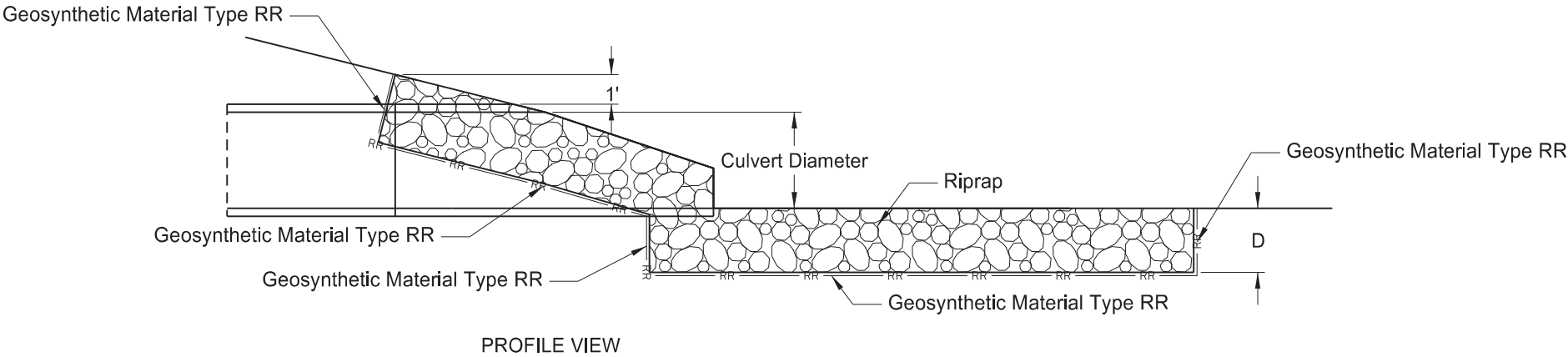
US Hwy 2 Westbound Roadway

1 Mile East of ND 32 South
Nelson County



Location	Dimensions						Quantities	
	Culvert Diameter (inches)	L (feet)	W1 (feet)	W2 (feet)	Riprap Depth, D (inches)	Riprap Grade	*Geosynthetic Material Type RR (SY)	Riprap Grade I (CY)
434+80	30	12	7.5	16	24	1	33	12
451+00	30	12	7.5	16	24	1	33	12
468+00	30	12	7.5	16	24	1	33	12
TOTAL							99	36

*Not a pay item. Include in the unit price bid for "Riprap Grade I."

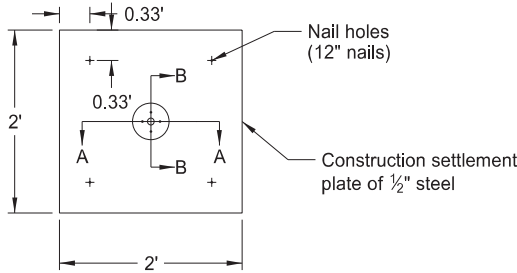


Riprap at Pipe Outlets
US Hwy 2 Westbound Roadway

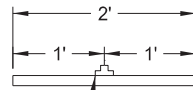
1 Mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	19

Settlement Plate
Plan View

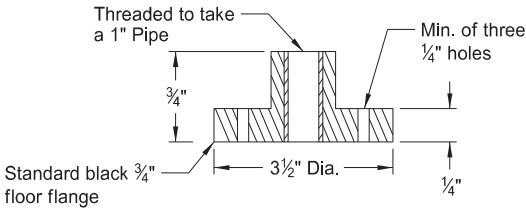


Section A-A

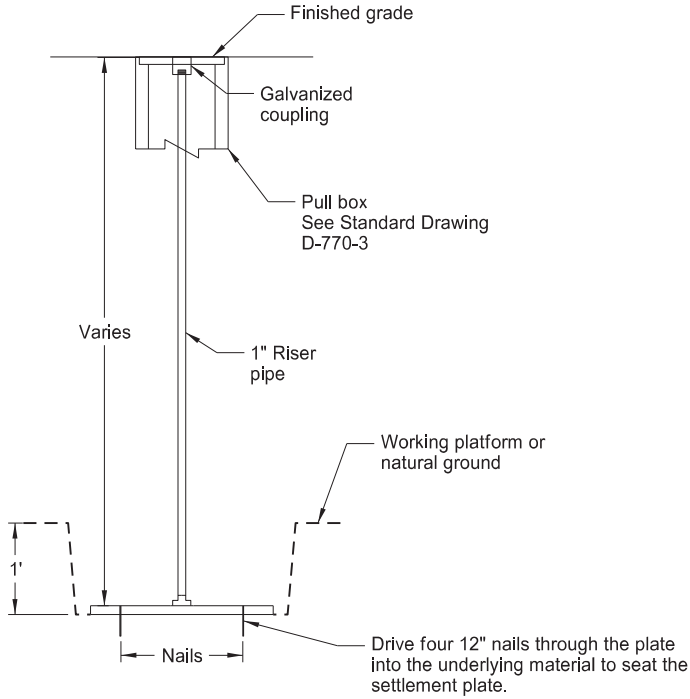


Bolt floor flange to the plate
with a minimum of three
1/4" x 1 1/2" bolts

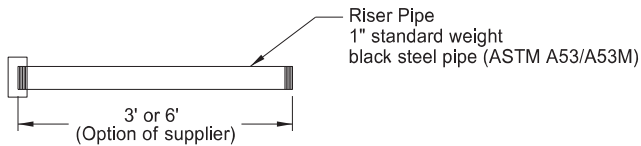
Section B-B
(Not to scale)



Settlement Plate
Installation

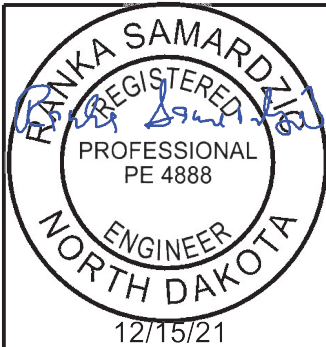


Riser Pipe & Coupling
(Not to scale)



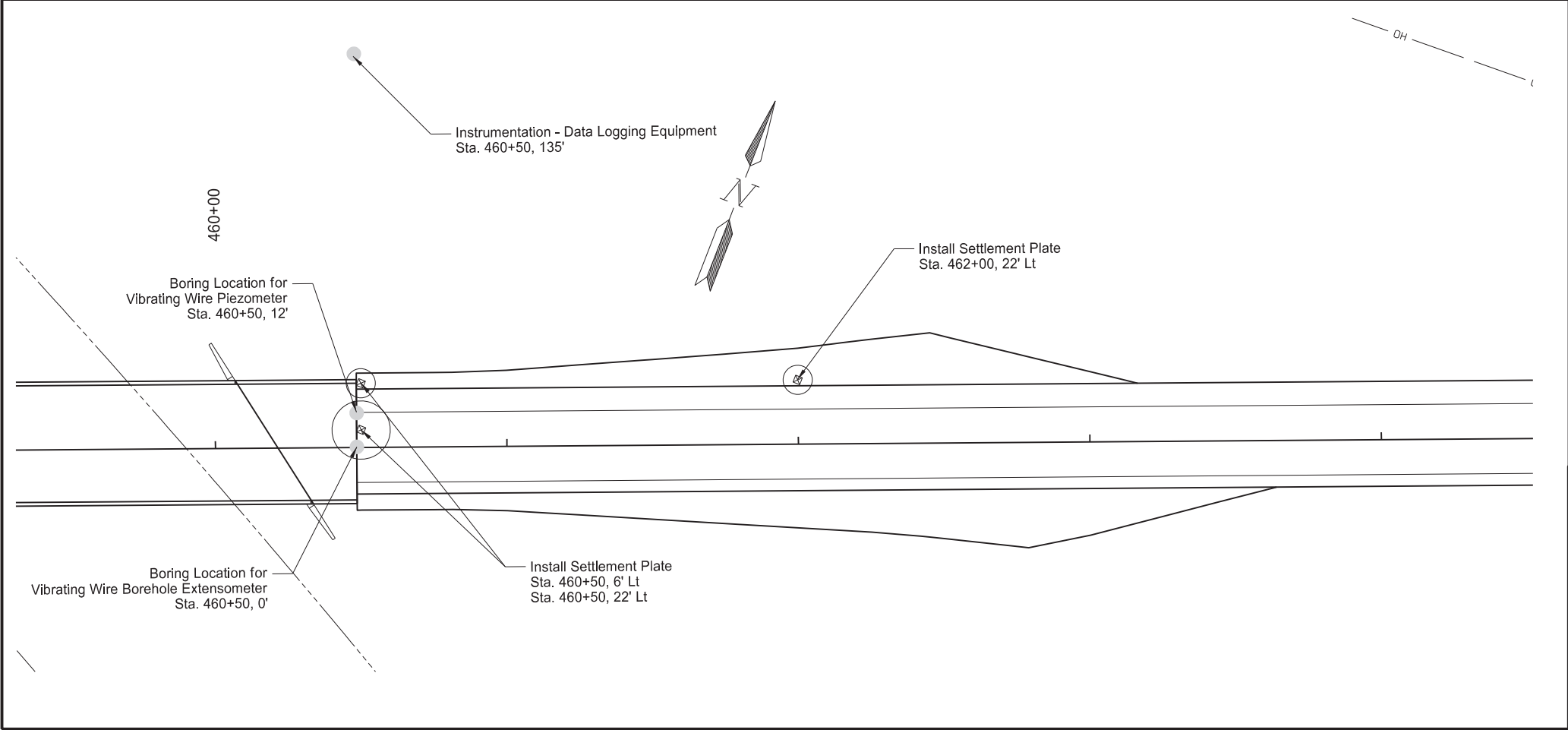
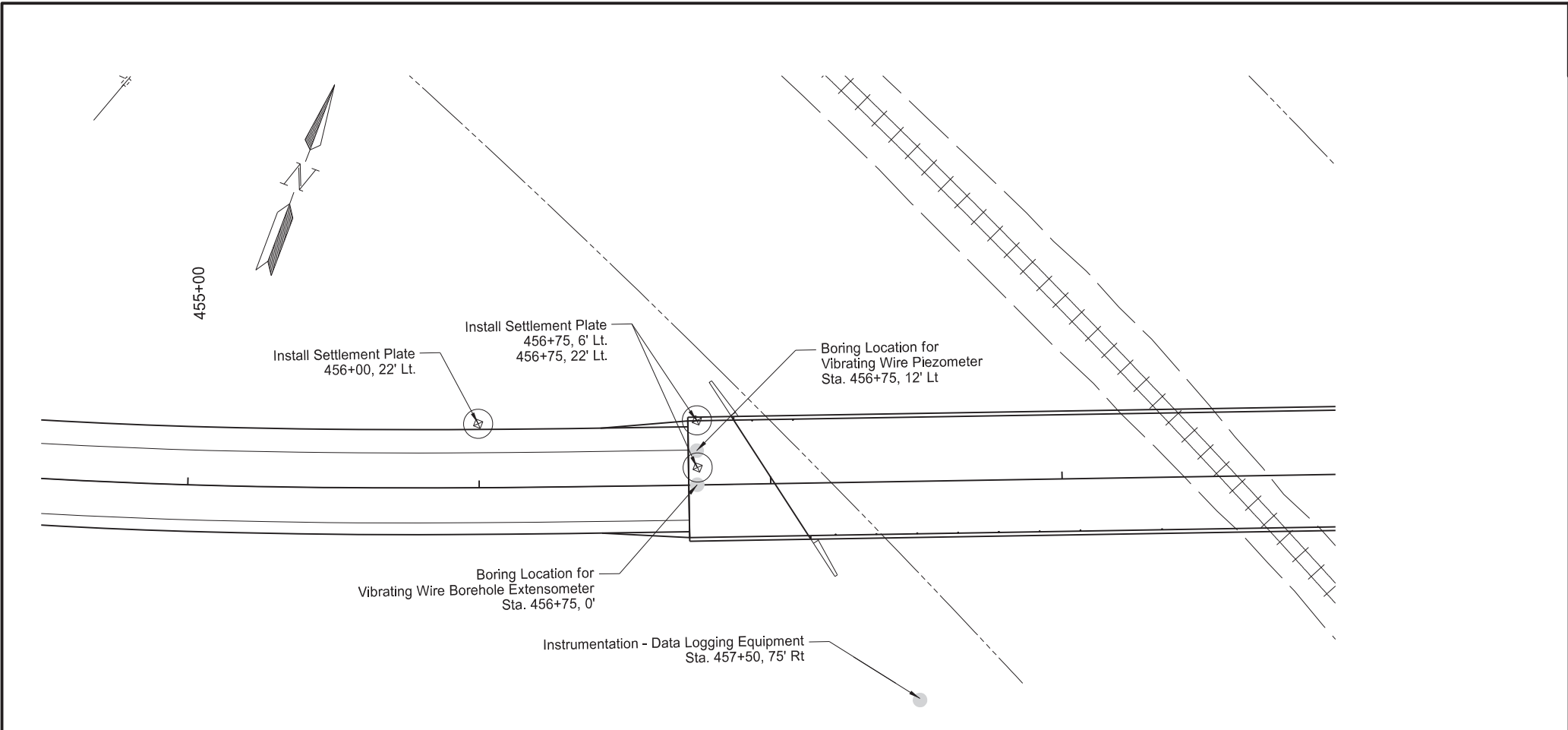
Notes:

1. Notify the Engineer prior to settlement plate installation.
2. Install settlement plate on a smooth and level surface and prior to the addition of any fill material.
3. Install settlement plate in position and extend pipes in sections as the embankment is placed. Notify the Engineer when the pipe is to be extended. Submit a date and exact length of pipe added each time the pipe is extended.
4. Install pull box flush with proposed ground.
5. Maintain settlement plate and pull box until project completion. Any damage to the plate will be repaired/replaced at Contractor's expense.



Settlement Plate Detail
US 2 New Westbound Roadway

Bridge Replacement; Roadway Realignment;
roadway New Construction; Roadway Obliteration;
Removal of Structure; Median Crossovers
1 mile East of ND 32 South
Nelson County



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	20	20

SPEC	CODE	BID ITEM	UNIT	QUANTITY
900	100	SETTLEMENT PLATE		
		Sta 456+00, 22' Lt	EA	1
		Sta 456+75, 6' Lt	EA	1
		Sta 456+75, 22' Lt	EA	1
		Sta 460+50, 6' Lt	EA	1
		Sta 460+50, 22' Lt	EA	1
		Sta 462+00, 22' Lt	EA	1
920	1318	VIBRATING WIRE PIEZOMETER		
		Sta 456+75, 12' Lt	EA	1
		Sta 460+50, 12' Lt	EA	1
920	1325	VIBRATING WIRE BOREHOLE EXTENSOMETER		
		Sta 456+75, 0'	EA	1
		Sta 460+50, 0'	EA	1
930	4225	INSTRUMENTATION-DATA LOGGING EQUIPMENT		
		Sta 457+50, 75' Rt	L SUM	0.5
		Sta 460+50, 135' Lt	L SUM	0.5

Instrumentation
US Hwy 2 Westbound Roadway

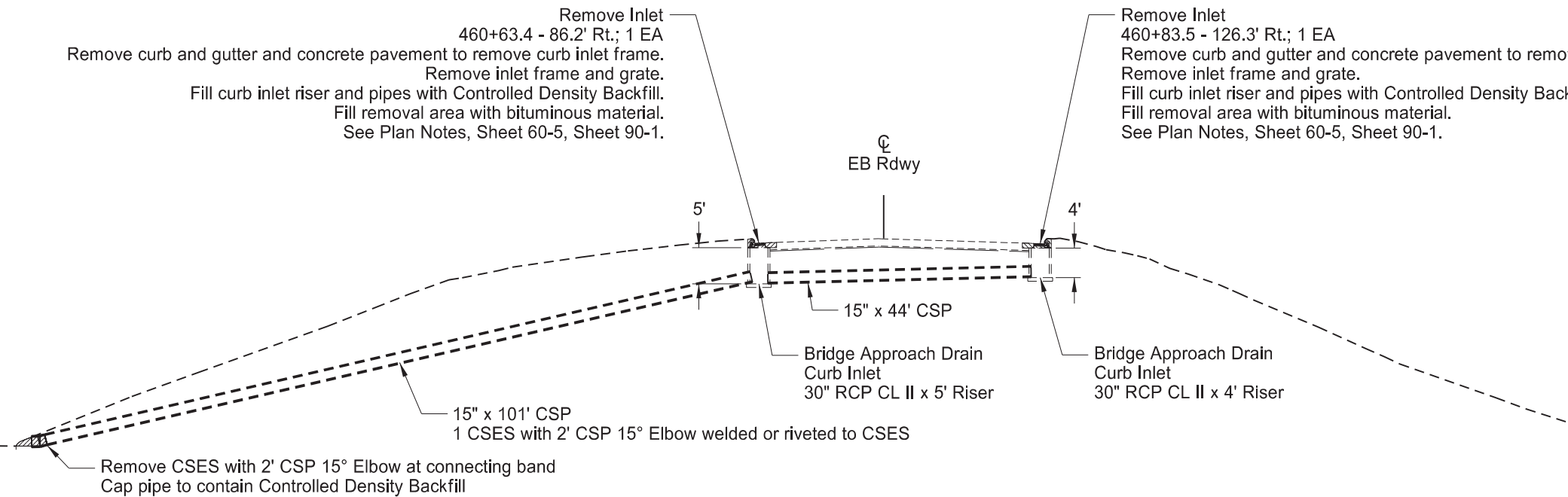
1 Mile East of ND 32 South
Nelson County

ANKA SAMARDZIC
REGISTERED
PROFESSIONAL
PE 4888
ENGINEER
NORTH DAKOTA
12/15/21

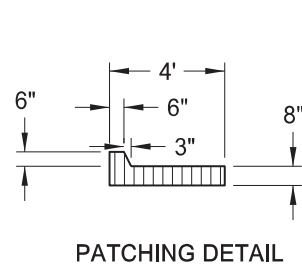
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	20	21

Remove Inlet
460+63.4 - 86.2' Rt.; 1 EA
Remove curb and gutter and concrete pavement to remove curb inlet frame.
Remove inlet frame and grate.
Fill curb inlet riser and pipes with Controlled Density Backfill.
Fill removal area with bituminous material.
See Plan Notes, Sheet 60-5, Sheet 90-1.

Remove Inlet
460+83.5 - 126.3' Rt.; 1 EA
Remove curb and gutter and concrete pavement to remove curb inlet frame.
Remove inlet frame and grate.
Fill curb inlet riser and pipes with Controlled Density Backfill.
Fill removal area with bituminous material.
See Plan Notes, Sheet 60-5, Sheet 90-1.

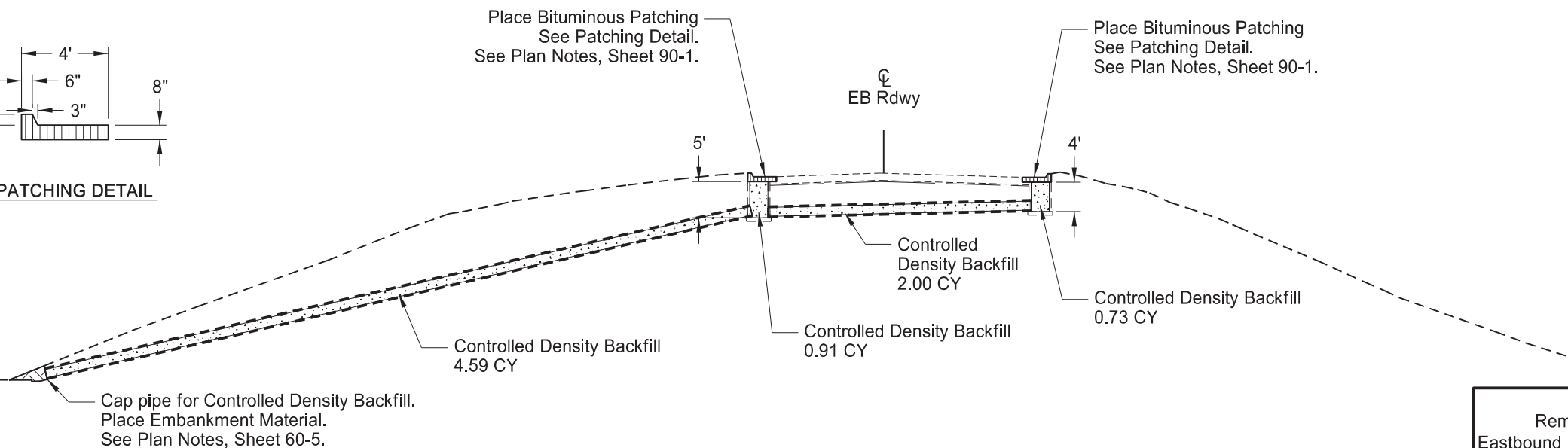


Existing Typical Section - EB Roadway
460+63.4 Rt. - Alignment: PR WB104OS; New Westbound Rdwy
= 461+13 - CL Alignment: SCL002 EB; Ex Eastbound Rdwy

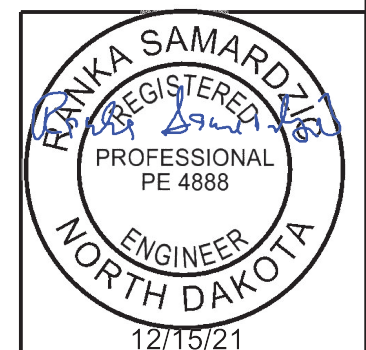


Place Bituminous Patching
See Patching Detail.
See Plan Notes, Sheet 90-1.

Place Bituminous Patching
See Patching Detail.
See Plan Notes, Sheet 90-1.



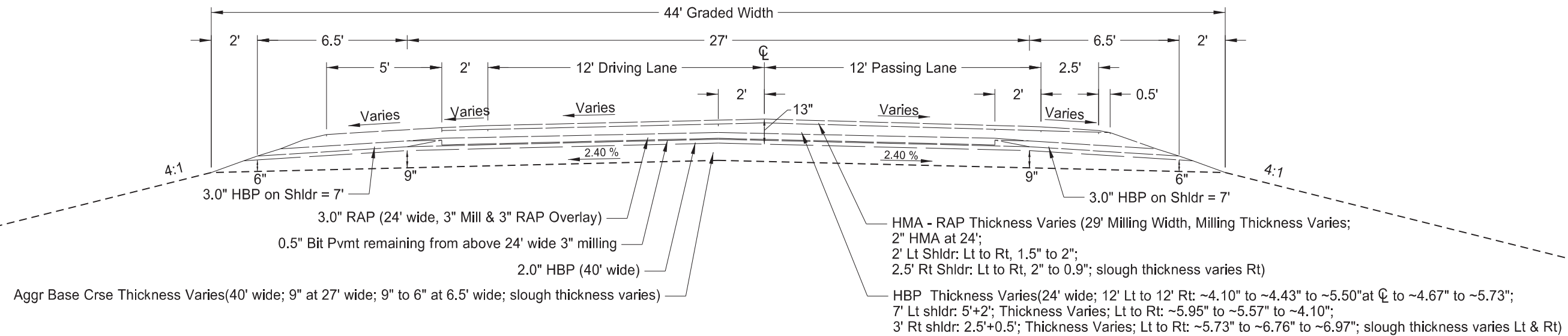
Proposed Typical Section - EB Roadway
460+63.4 Rt. - Alignment: PR WB104OS; New Westbound Rdwy
= 461+13 - CL Alignment: SCL002 EB; Ex Eastbound Rdwy



Removal of Inlets and Culvert Detail for
Eastbound Bridge #0002-313.465 R (NE & SE Inlets)

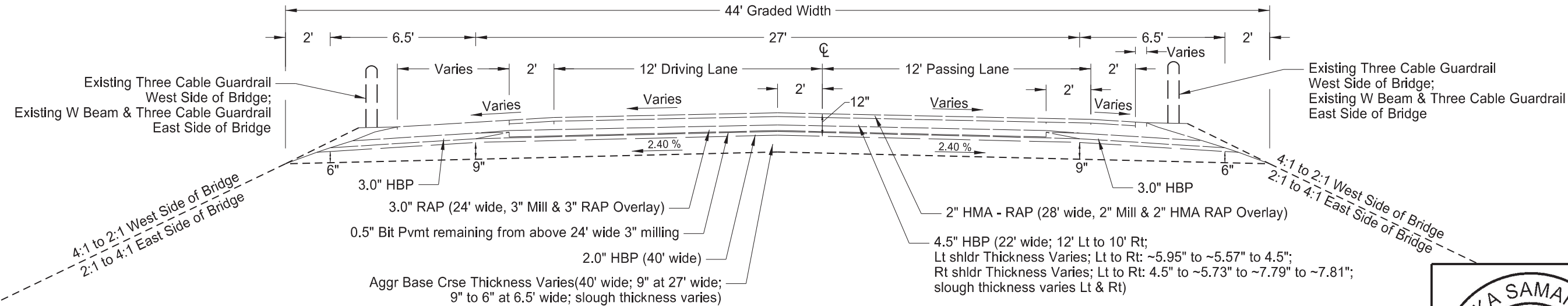
US Hwy 2 Westbound Roadway
1 Mile East of ND 32 South
Nelson County

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	30	1



Existing Typical Section - US 2 Westbound Rdwy

16503+00 to 16529+45 (Begin Three Cable Guardrail)
16547+64 (End Three Cable Guardrail) to 16597+00



Existing Typical Section - US 2 Westbound Rdwy

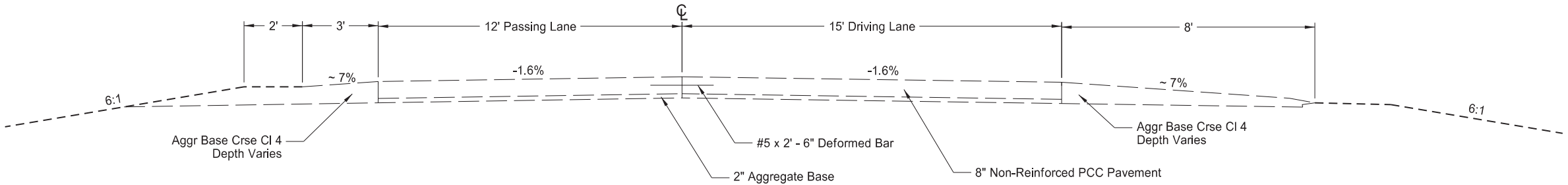
16529+45 (Begin Three Cable Guardrail) to 16534+79.93 (Begin Bridge)
16539+06.93 (End Bridge) to 16547+64 (End Three Cable Guardrail)



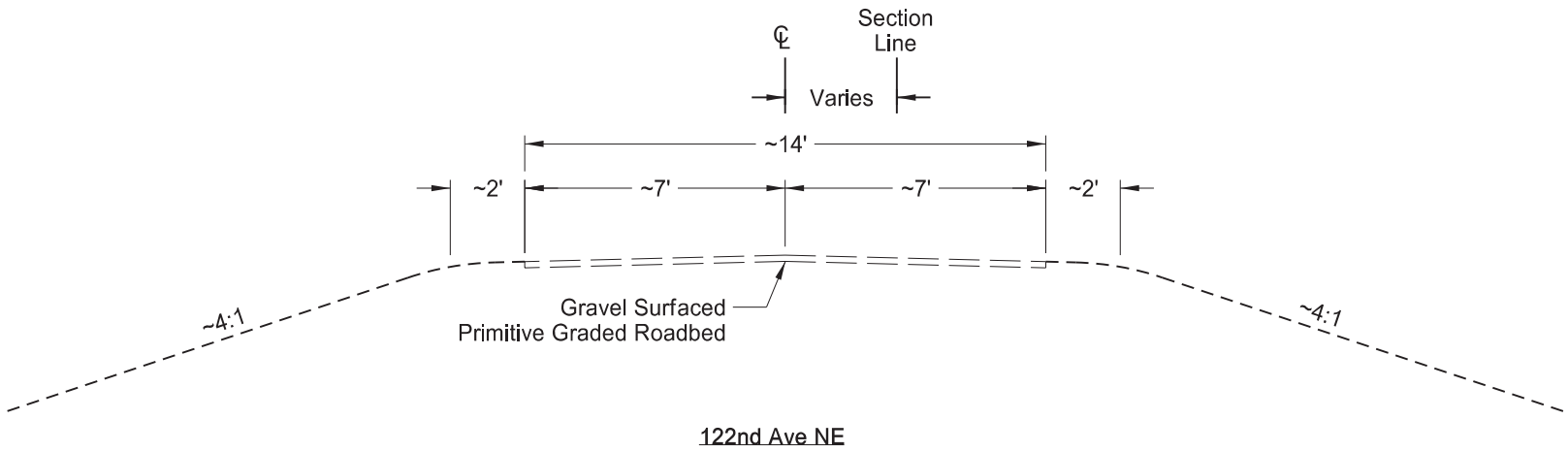
Existing Typical Section
US 2 Westbound Rdwy

Bridge Replacement; Roadway Realignment;
Roadway New Construction; Roadway Obliteration;
Removal of Structure; Median Crossovers
1 mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	30	2



Existing Typical - US 2 Eastbound Roadway
16504+28 to 16511+06
16588+70 to 16595+97

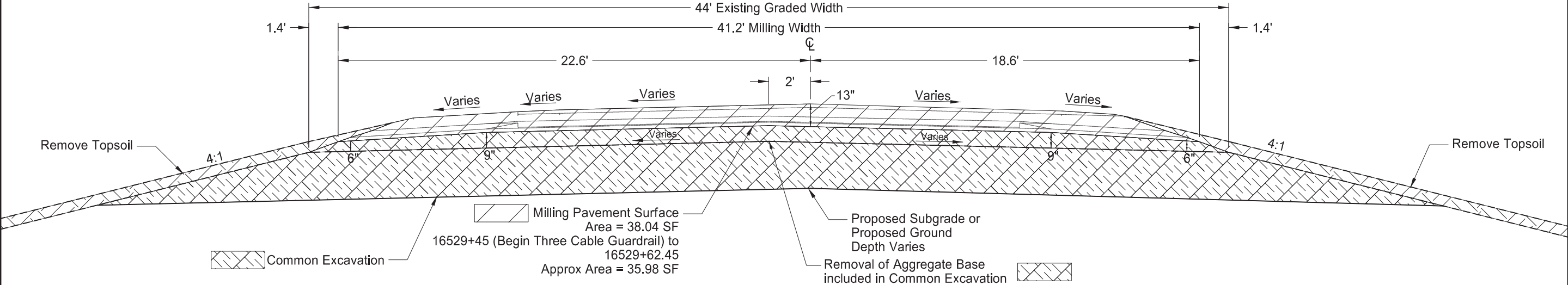


122nd Ave NE

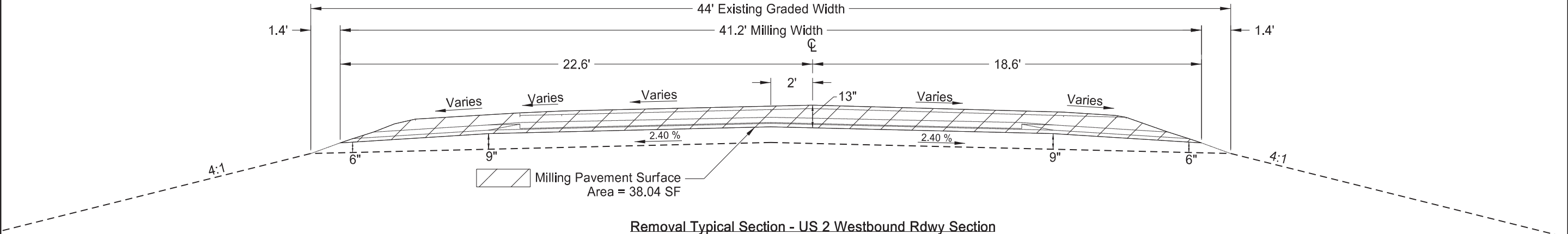


Existing Typical Section
US 2 Eastbound Rdwy & 122nd Ave NE
Bridge Replacement; Roadway Realignment;
Roadway New Construction; Roadway Obliteration;
Removal of Structure; Median Crossovers
1 mile East of ND 32 South
Nelson County

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	30	3



Removal Typical Section - US 2 Westbound Rdwy
16509+99.19 (Begin Rdwy Construction on New Alignment) to 16525+62.52
16528+38.45 to 16529+62.45
16554+24.85 to 16567+96.86 (End Rdwy Construction on New Alignment)



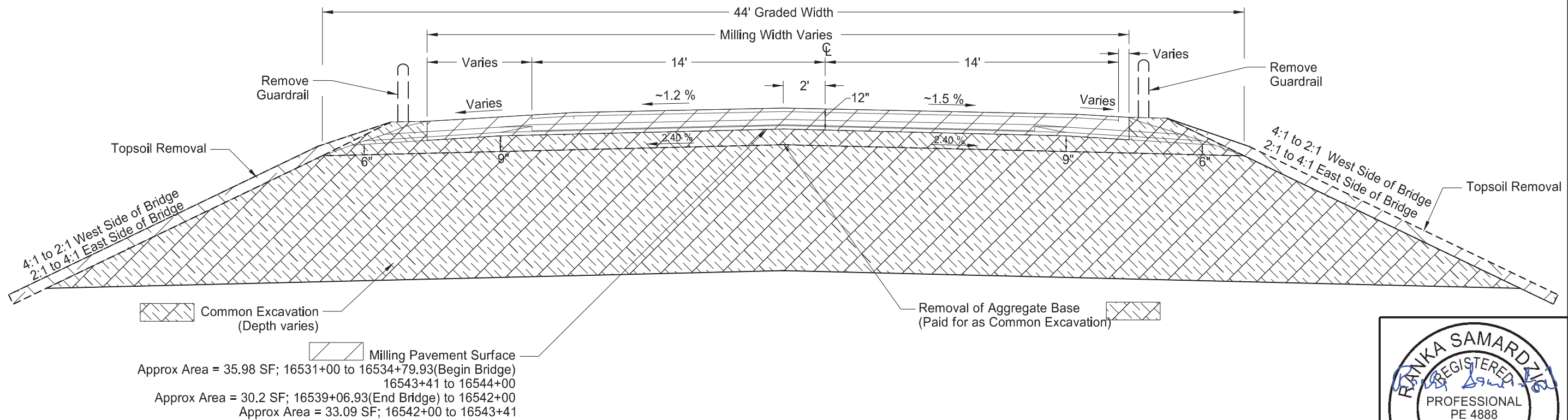
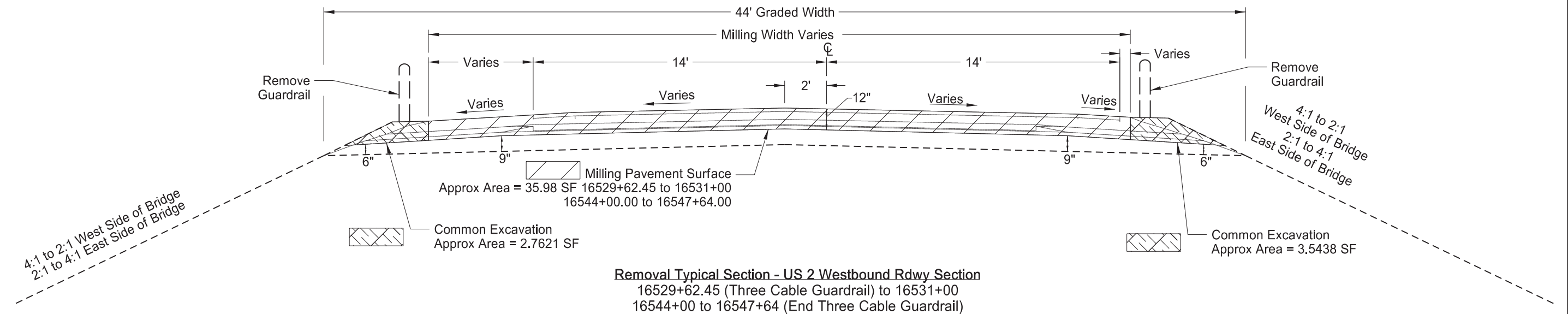
Removal Typical Section - US 2 Westbound Rdwy Section
16525+62.52 to 16528+38.45
16547+64 (End Three Cable Guardrail) to 16554+24.85



Removal Typical Sections
US 2 Westbound Rdwy

Bridge Replacement; Roadway Realignment;
Roadway New Construction; Roadway Obliteration;
Removal of Structure; Median Crossovers
1 mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	30	4

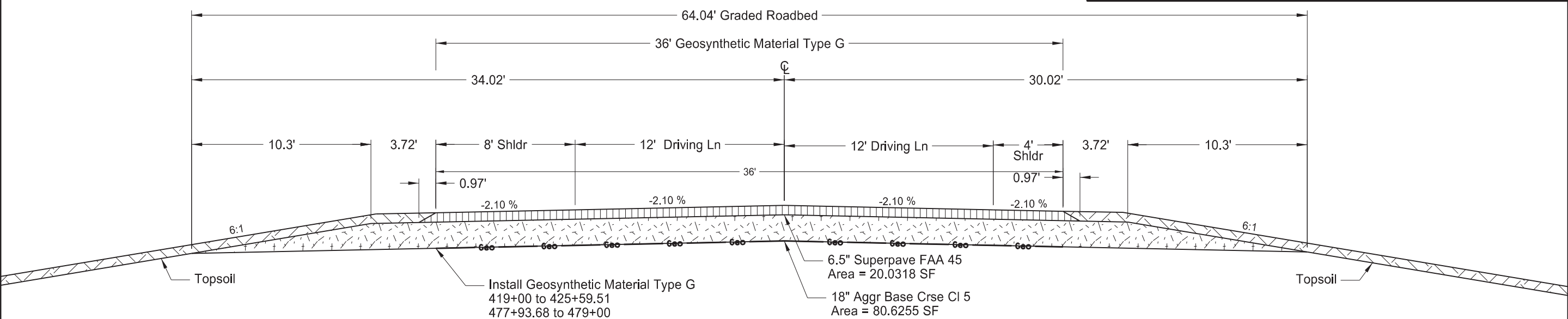


NOTE:
Complete Topsoil Removal and Common Excavation from:
16534+79.93 (Begin Bridge) to 16534+14 (West of BNSF RR Tracks)
16538+65 (East of BNSF RR Tracks) to 16539+06.93 (End Bridge)

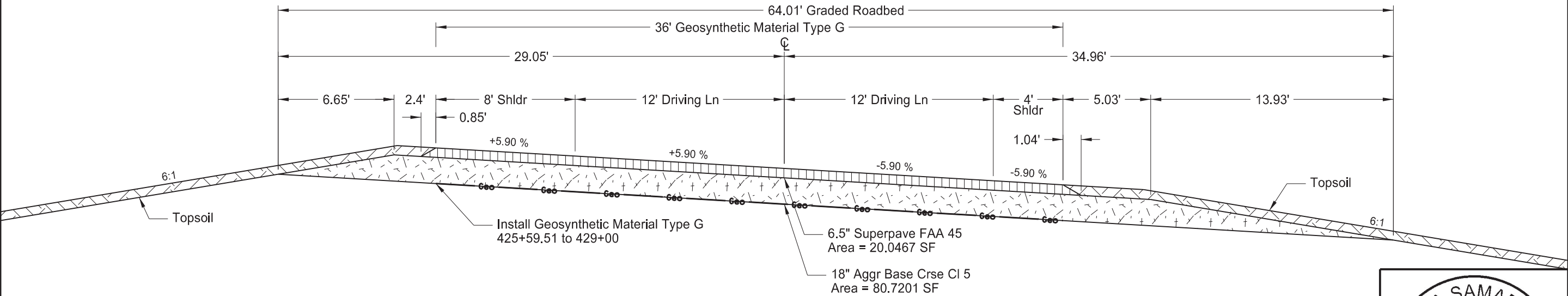
Removal Typical Sections
US 2 Westbound Rdwy

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	30	5



Tangent Section
419+00 (Begin Construction) to 422+81.54
437+30.23 to 438+03.91
460+48.47 (End New WB Bridge Approach Slab) to 463+65.75
477+93.68 to 479+00 (End Construction)



Curve #1 Section
425+59.51 to 434+52.26

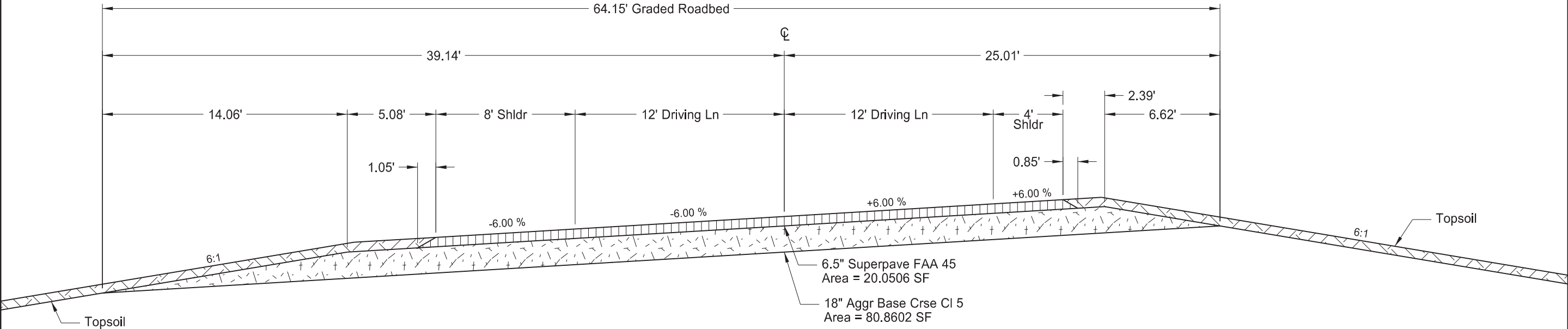


Proposed Typical Sections
US 2 New Westbound Roadway

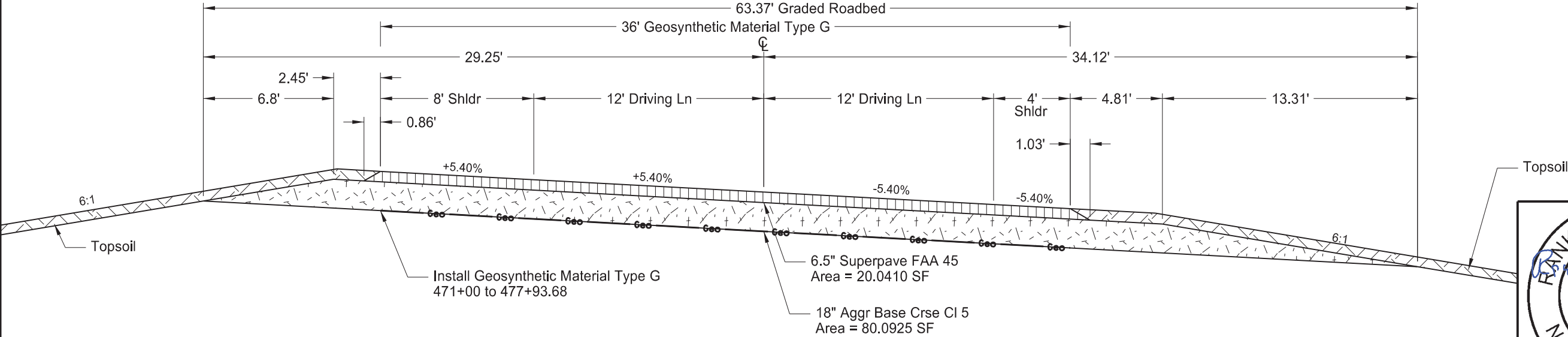
Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 mile East of ND 32 South
Nelson County

Note:
Superelevation Transition Curve #1 Beginning: 422+81.54 to 425+59.51
Superelevation Transition Curve #1 Ending: 434+52.26 to 437+30.23

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	30	6



Curve #2 Section
440+46.91 to 455+07.10



Curve #3 Section
466+71.31 to 474+88.12

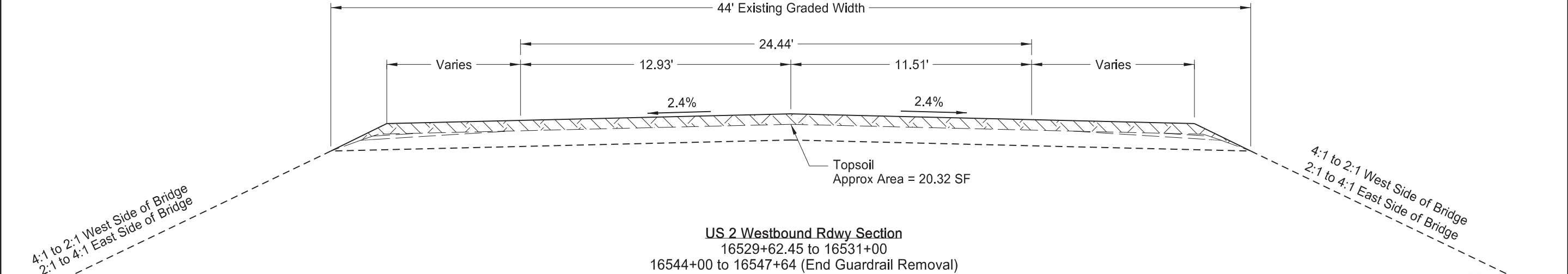
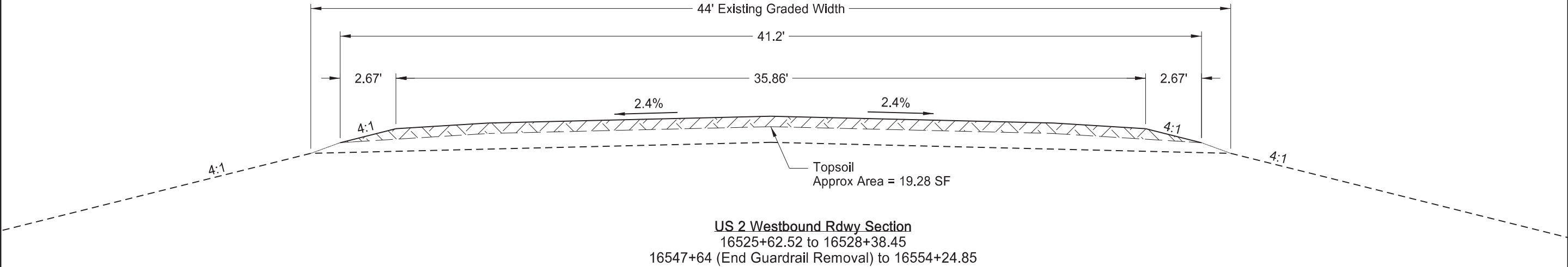


Note:
Superelevation Transition Curve #2 Beginning: 438+03.91 to 440+46.91
Superelevation Transition Curve #2 Ending: 455+07.10 to 456+71.91 (Begin New WB Bridge Approach Slab) to 457+50.10 (End Transition on New WB Bridge Deck)
Superelevation Transition Curve #3 Beginning: 463+65.75 to 466+71.31
Superelevation Transition Curve #3 Ending: 474+88.12 to 477+93.68

Proposed Typical Sections
US 2 New Westbound Roadway

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 mile East of ND 32 South
Nelson County

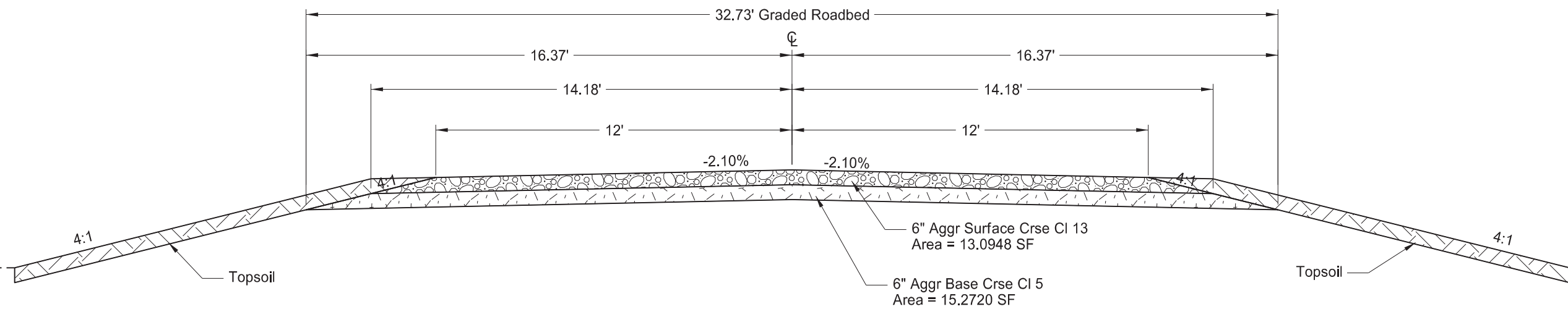
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	30	7



Proposed Typical Sections
US 2 Existing Westbound Rdwy

Bridge Replacement; Roadway Realignment;
Roadway New Construction; Roadway Obliteration;
Removal of Structure; Median Crossovers
1 mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	30	8

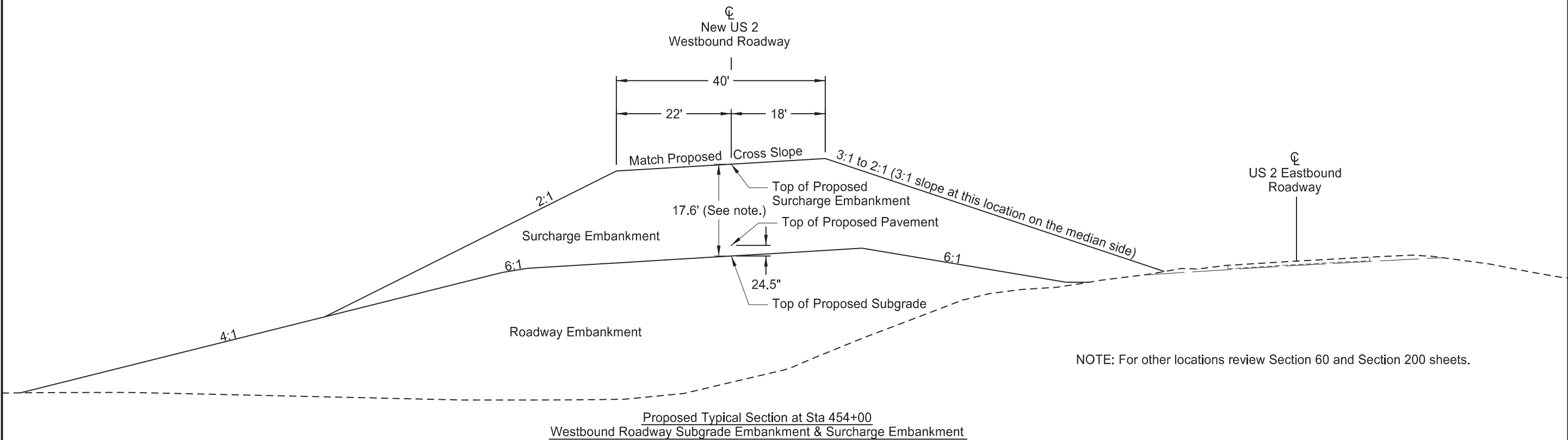


122nd Ave NE
23+76.50 to 27+56.00



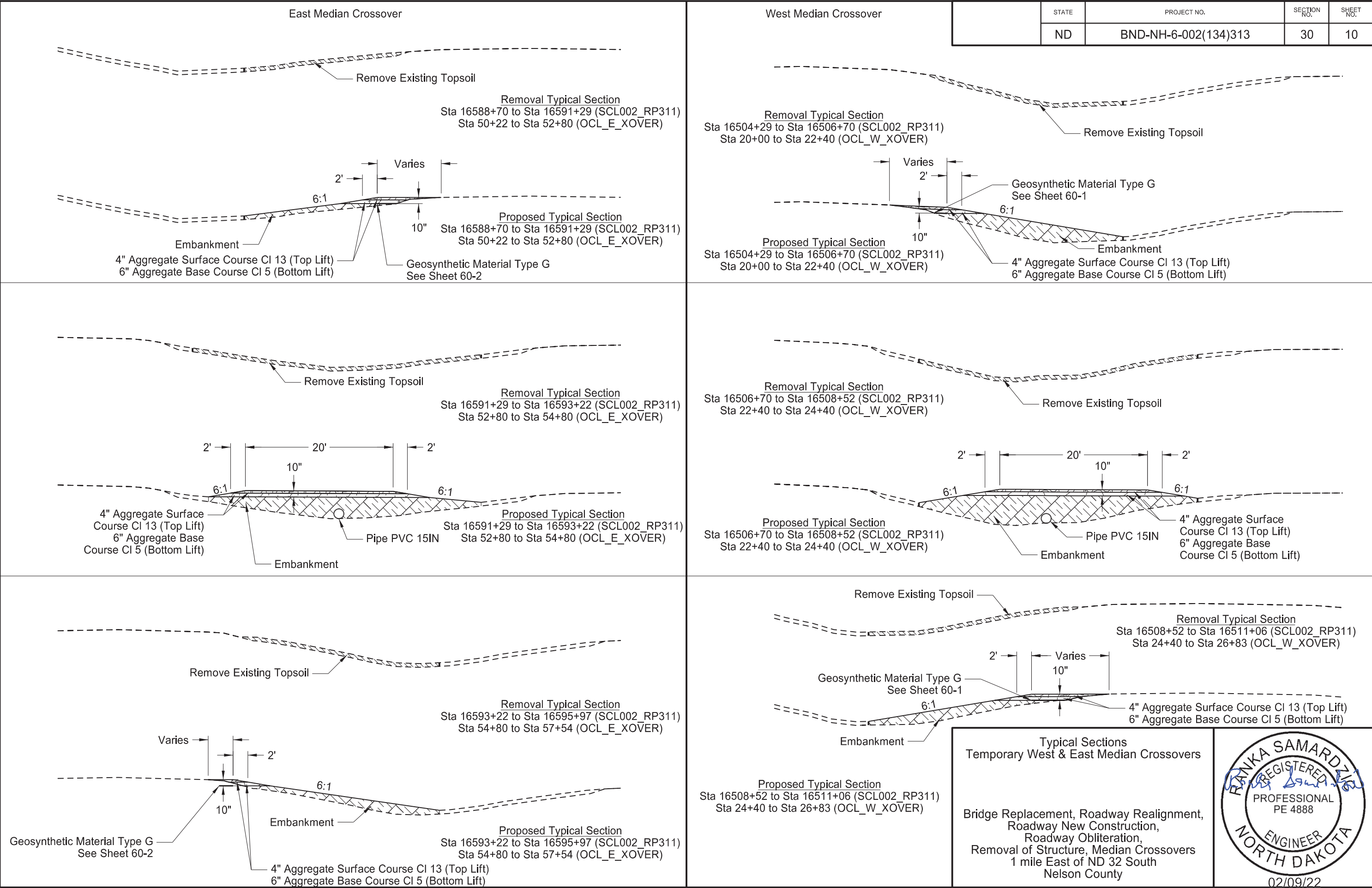
Proposed Typical Section
122nd Ave NE
Bridge Replacement; Roadway Realignment;
Roadway New Construction; Roadway Obliteration;
Removal of Structure; Median Crossovers
1 mile East of ND 32 South
Nelson County

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	30	9

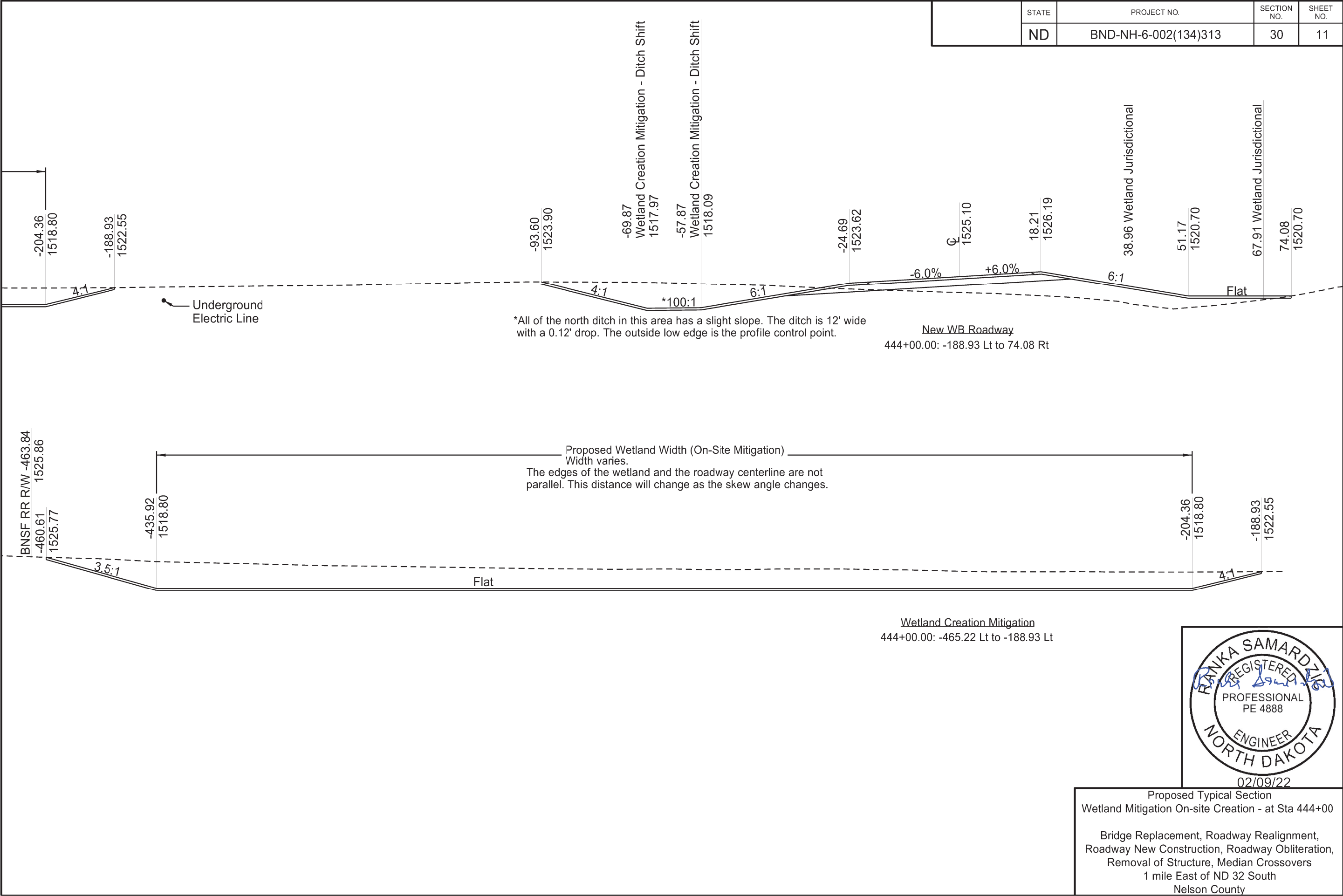


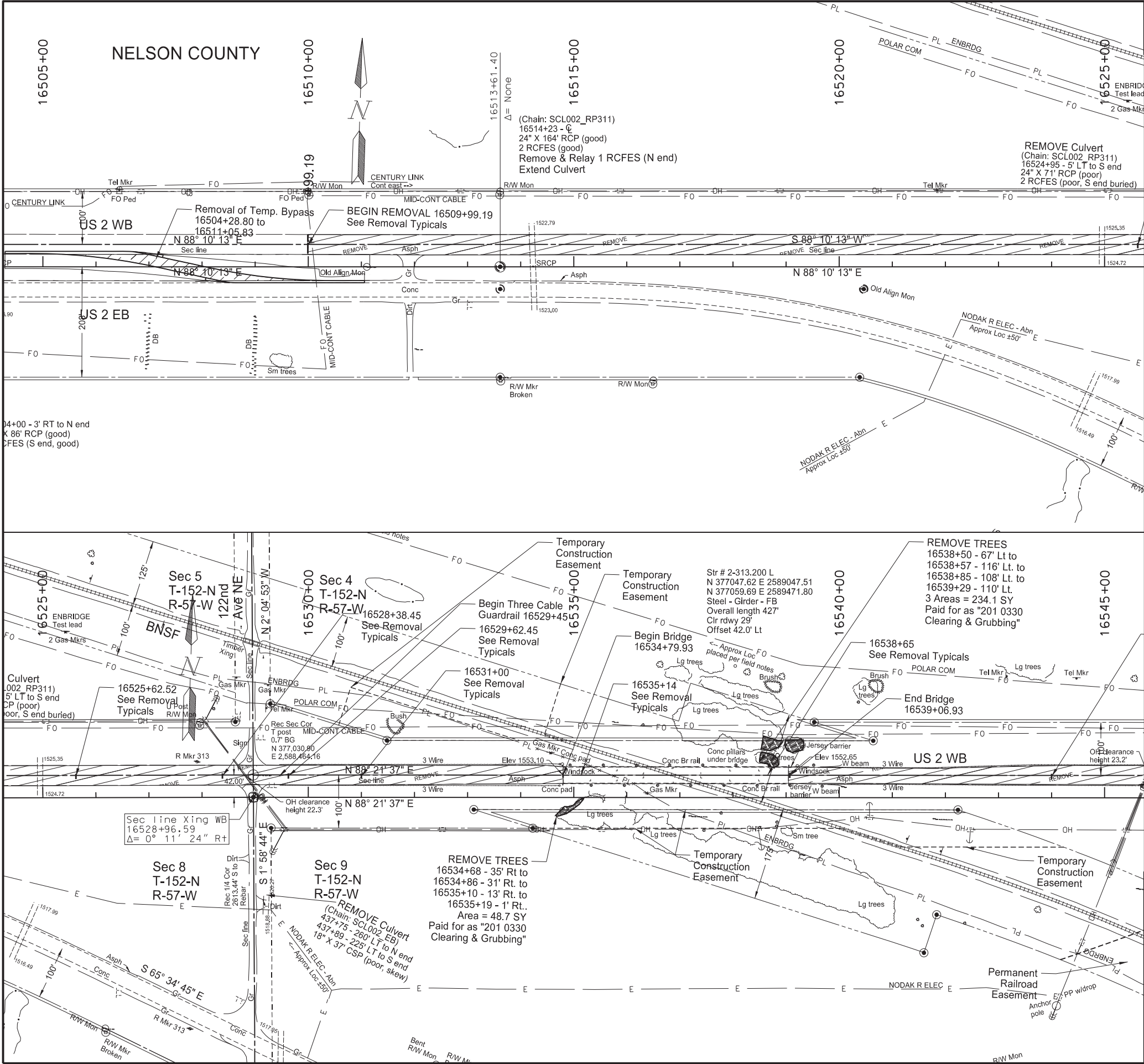
Proposed Typical Section
Surcharge Embankment

Bridge Replacement, Roadway Realignment,
Roadway New Construction, Roadway Obliteration,
Removal of Structure, Median Crossovers
1 mile East of ND 32 South
Nelson County



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	30	11





			STATE	PROJECT NO.	SECTION NO.	SHEET NO.
			ND	BND-NH-6-002(134)313	40	1
SPEC	CODE	BID ITEM	UNIT	QUANTITY		
202	0170	REMOVAL OF CULVERTS ALL TYPES AND SIZES				
		16524+95 - LT	LF	72		
202	0350	REMOVAL OF TEMPORARY BYPASS				
		16504+28.80 to 16511+05.83 Lt. & Rt.	EA	1		
411	0100	MILLING PAVEMENT SURFACE				
		16509+99.19 to 16529+45.00(Beg Gdrl)	Ton	5483.6		
		16529+45.00(Beg Gdrl) to 16534+79.33(Beg Br)	Ton	1424.0		
		16539+06.93(End Br) to 16545+00.00	Ton	1424.9		

Pavement Removals

Sta 16509+99.19 to Sta 16545+00

US Hwy 2 Westbound Roadway

1 Mile East of ND 32 South

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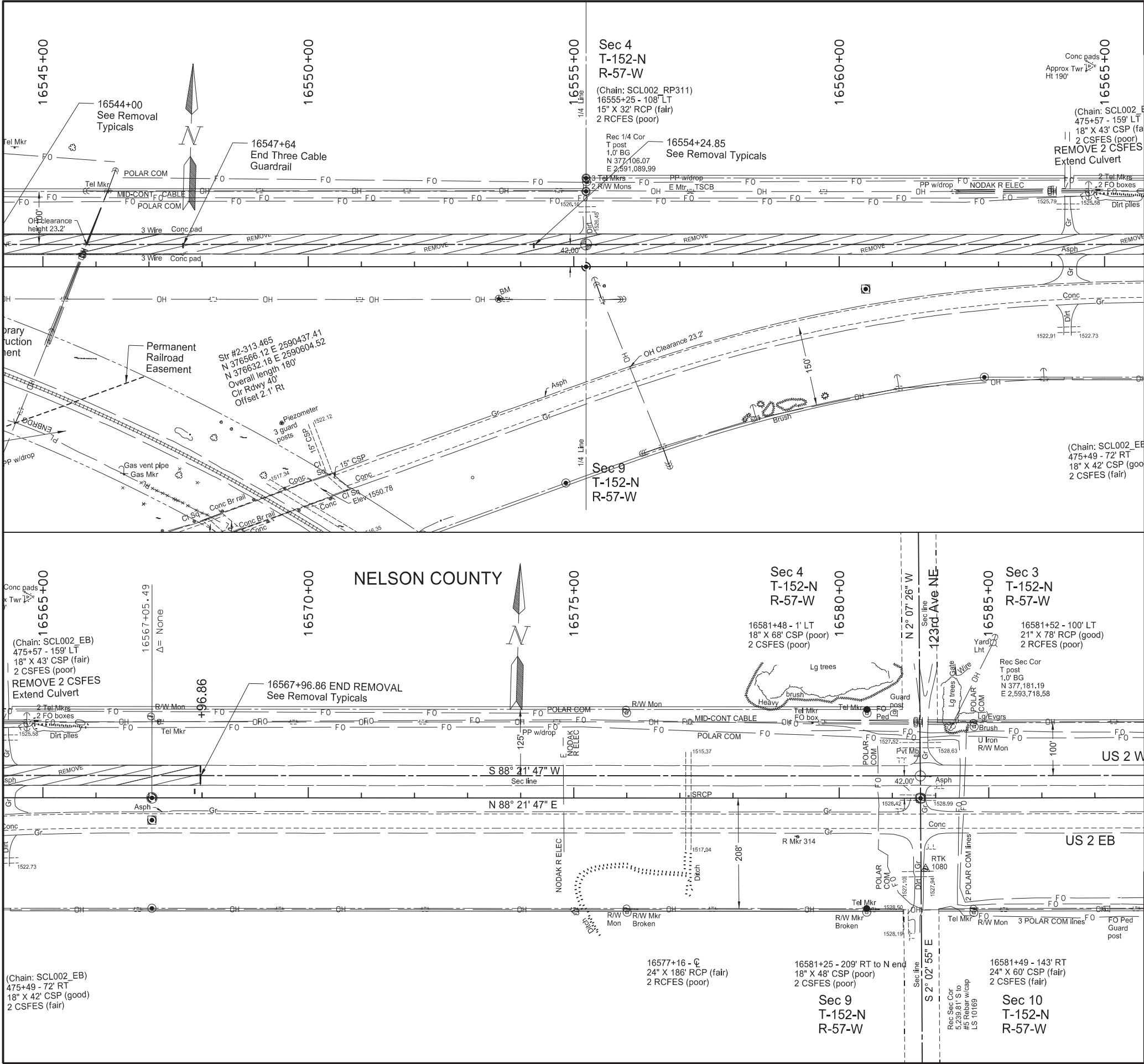
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02/09/22



		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	40	2
SPEC	CODE	BID ITEM		UNIT	QUANTITY
202	0169	REMOVAL OF END SECTIONS - ALL TYPES AND SIZES			
		16564+09 - 113.2 Lt.		EA	1
		16564+53 - 113.4 Lt.		EA	1
411	0100	MILLING PAVEMENT SURFACE			
		16545+00.00 to 16567+96.86		Ton	6472.9

Pavement Removals

Sta 16545+00 to Sta 16567+96.86

US Hwy 2 Westbound Roadway

1Mile East of ND 32 South

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02/09/22

HYDRAULIC DATA FOR BND-NH-6-002(134)313 (A)									
STATION	EXISTING PIPE	PROPOSED PIPE SIZE	DRAINAGE AREA (ACRES)	25-YEAR DATA				100-YEAR DATA	
				DESIGN DISCHARGE (CFS)	DESIGN HEADWATER (FT)	DESIGN VELOCITY (FPS)	DESIGN STAGE (NAVD 88)	100-YEAR DISCHARGE (CFS)	100-YEAR STAGE (NAVD 88)
431+00	N/A	24"	1.5	4.2	0.98	6.90	1524.98	5.0	1525.10
434+80	24"	30"	11.2	34.1	3.57	10.52	1523.07	44.5	1524.40
437+80	N/A	24"	1.1	2.1	0.68	4.89	1521.18	2.4	1521.23
439+30	24"	24"	12.5	23.4	3.52	8.99	1522.79	30.2	1524.45
451+00	N/A	30"	1.6	10.9	1.49	16.06	1531.49	13.4	1531.71
452+65	30"	30"	13.5	36.6	4.40	8.50	1521.00	48.0	1523.54
468+00	N/A	30"	1.4	7.8	1.20	14.33	1539.51	9.4	1539.66
473+00	N/A	24"	1.7	9.3	1.62	8.19	1530.12	11.4	1530.34
(A) Hydraulic data provided is for smooth-walled (Manning's n=0.012) type conduits.									



Culvert Hydraulic Data

US 2

1 Mile East of ND 32 South

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	Geosynthetic Material - Type G (Pay Item)	(***) End Sections		Applicable Backfill
				In	Bid Item	LF							Begin	End	
*21+52	30.5' Rt	*24+79	27.2' Lt	15	Pipe PVC 15IN	328	Polyvinyl Chloride (PVC)	15							N/A
423+21.4	42.3' Lt	423+21.4	62' Lt	24	Pipe Conc. Reinf. CL III (Extension)	20	Reinforced Concrete Pipe - Class III (barrel length = 20 LF)	24						Remove & Relay End	Section 20 Sheet 1
431+00	34' Rt	431+00	56' Lt	24	Pipe Conduit	94	Reinforced Concrete Pipe - Class III (barrel length = 90 LF)	24				69	TES	FES	D-714-28
434+80	146' Rt	434+80	160' Rt	30	Pipe Conduit	16	Reinforced Concrete Pipe - Class III (barrel length = 14 LF)	30						FES	D-714-28
434+80	146' Rt	434+80	60' Rt	30	Pipe Conduit -Jacked or Bored	86	Reinforced Concrete Pipe - Class IV (barrel length = 86 LF)	30							Section 20 Sheet 2
							Smooth Walled Steel	30			0.406				
434+80	60' Rt	434+80	64' Lt	30	Pipe Conduit	126	Reinforced Concrete Pipe - Class III (barrel length = 124 LF)	30				98		FES	D-714-28
434+60	48' Rt	434+80	48' Rt	18	Pipe Conduit	18	Reinforced Concrete Pipe - Class III (barrell length = 16 LF)	18					TES		D-714-28
437+80	36' Rt	437+65	58' Lt	24	Pipe Conduit	100	Reinforced Concrete Pipe - Class III (barrell length = 96 LF)	24				69	TES	FES	D-714-28
437+86.5	79.3 Lt	438+93.4	59.8' Lt	30	Pipe Conduit -Approach	114	Reinforced Concrete Pipe - Class III (barrell length = 110 LF)	30					FES	FES	Specification 714.04A
							Corrugated Steel Pipe	30	Z, A, P	2	0.064				
439+30	52' Lt	439+53.2	60.7' Rt	24	Pipe Conc. Reinf. CL III (Extension)	116	Reinforced Concrete Pipe - Class III (barrell length = 116' LF)	24				85	***FES		D-714-28
439+51.5	54 Rt	439+62	52' Rt	18	Pipe Conduit	10	Reinforced Concrete Pipe - Class III (barrell length = 10 LF)	18						TES	D-714-28
451+00	48' Rt	451+00	92' Lt	30	Pipe Conduit	144	Reinforced Concrete Pipe - Class IV (barrell length = 140 LF)	30				105	TES	FES	D-714-28
452+65	120' Lt	452+65	11.8' Rt	30	Pipe Conc. Reinf. CL V (Extension)	132	Reinforced Concrete Pipe - Class V (barrell length = 132 LF)	30				105	Remove & Relay End		D-714-28
465+75	128.6' Lt	469+97.90	4.1' Lt.	18	Pipe PVC 18IN	450	Polyvinyl Chloride (PVC)	18							N/A
468+00	46' Rt	468+00	100' Lt	30	Pipe Conduit	150	Reinforced Concrete Pipe - Class III (barrell length = 146 LF)	30				108	TES	FES	D-714-28
473+00	38' Rt	473+00	58' Lt	24	Pipe Conduit	100	Reinforced Concrete Pipe - Class III (barrell length = 96 LF)	24				73	TES	FES	D-714-28
474+95	75.7' Lt	475+15	75.1' Lt	18	Pipe Corr. Steel (Extension)	20	Corrugated Steel Pipe	18	Z, A, P	2	0.064		***FES		Specification 714.04A
475+57	74.3' Lt	475+77	74.1' Lt	18	Pipe Corr. Steel (Extension)	20	Corrugated Steel Pipe	18	Z, A, P	2	0.064			***FES	Specification 714.04A
**52+79	21.8' Lt	**55+31	25.9' Rt	15	Pipe PVC 15IN	254	Polyvinyl Chloride (PVC)	15							N/A

Note: *Stationing from West Median Temporary Crossover alignment; See Sheet 60-1. **Stationing from East Median Temporary Crossover alignment; See Sheet 60-2. All other Stationing referenced from the alignment for the New Westbound Roadway; See Sheets 60-3 thru 6.

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

Coatings: Z = Zinc

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

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

3 = 3"x1"

A = Aluminum

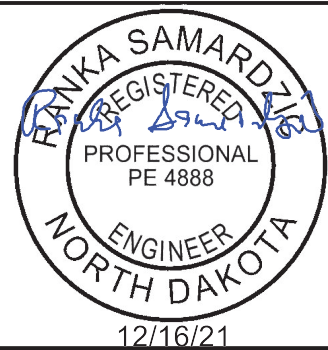
1 = 3/4"x1"@11-1/2"

FES = Flared End Section

5 = 5"x1"

P = Polymeric (over Zinc or Aluminum)

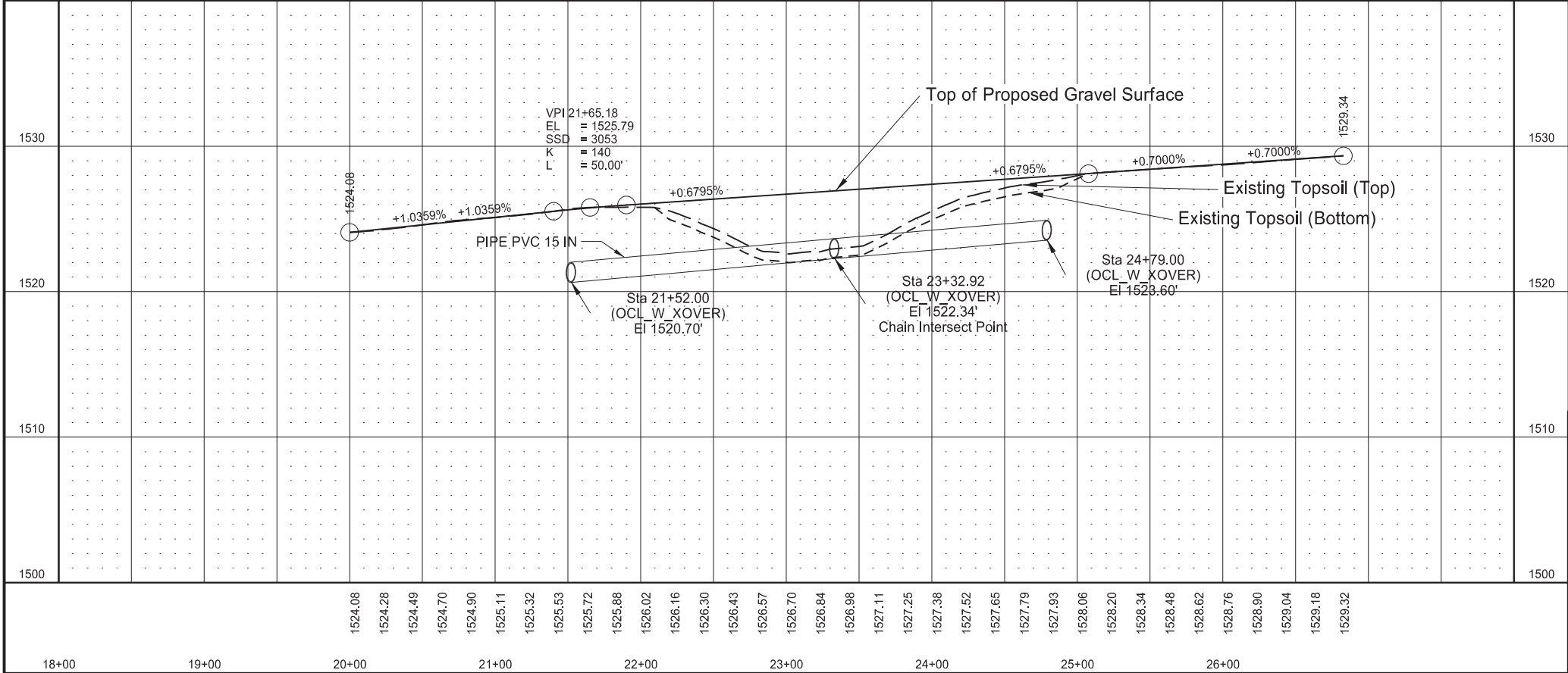
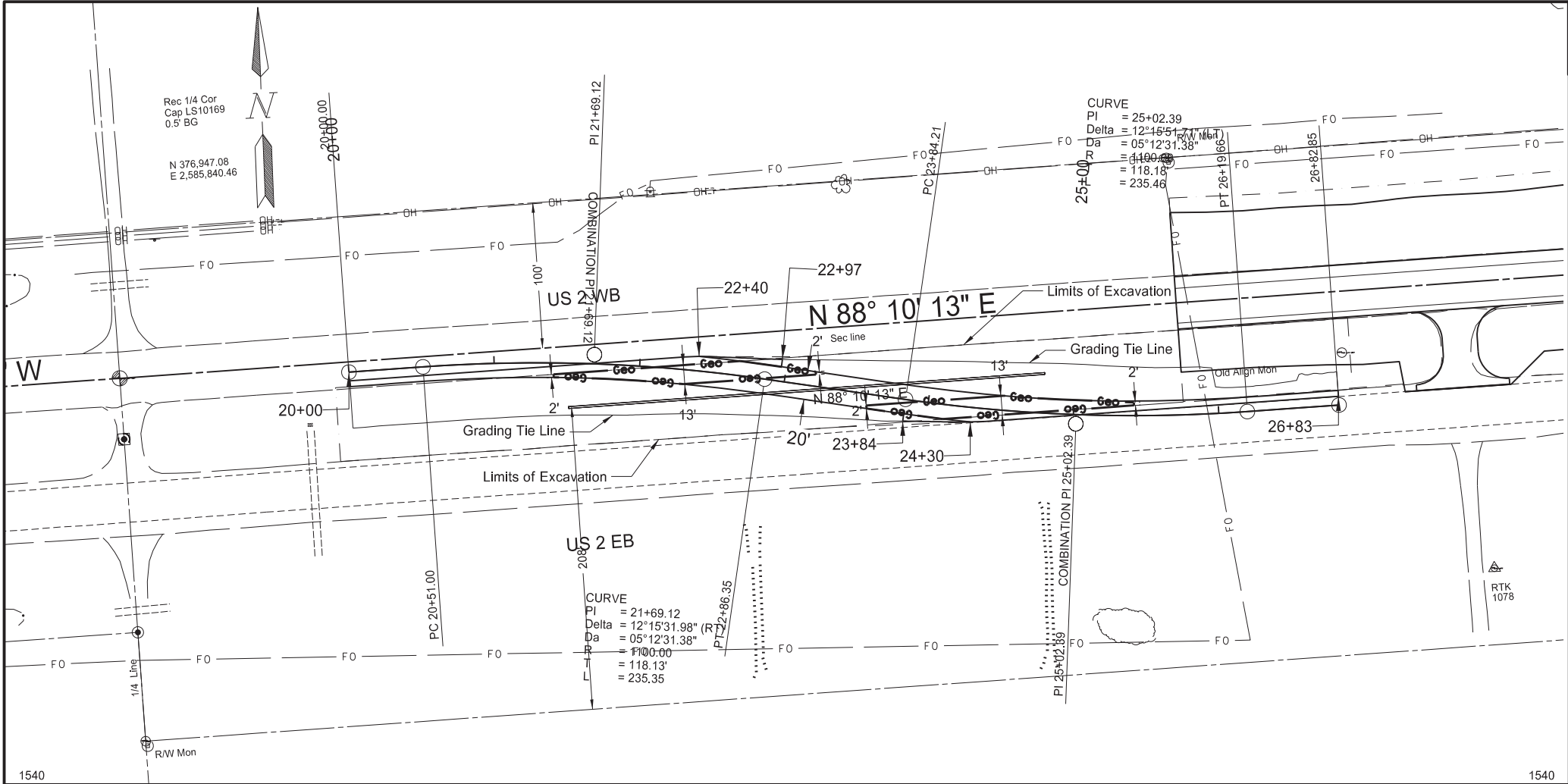
TES = Traversable End Section



12/16/21

Allowable Pipe List

US Hwy 2 Westbound Roadway:
Bridge Replacement on New Alignment,
Median Crossovers, Roadway Realignment,
Removal of Structure, Crossovers & Old Roadway
1 mile East of ND 32 South
Nelson County



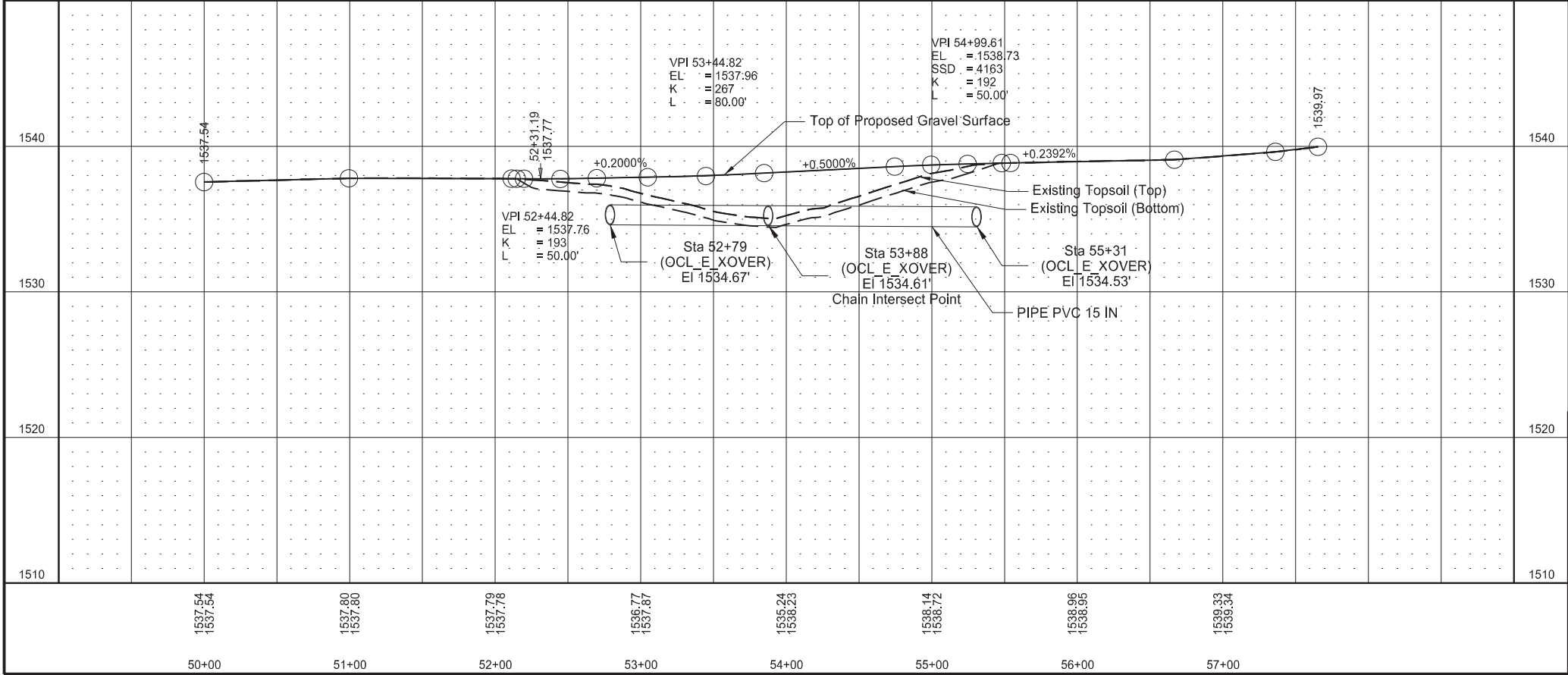
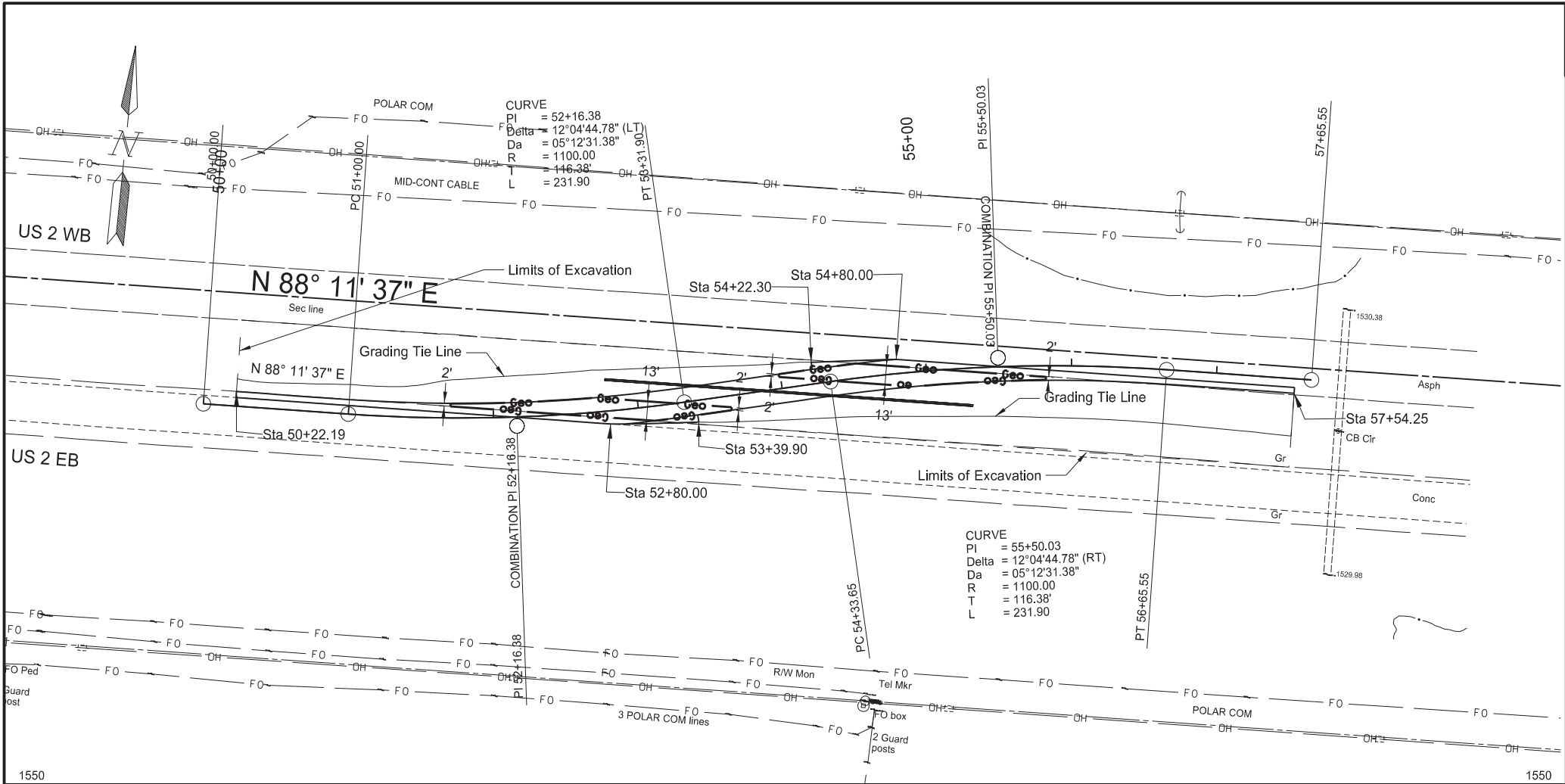
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	60	1
SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0120	AGGREGATE BASE COURSE CL 5 West Crossover	TON	272
302	0356	AGGREGATE SURFACE COURSE CL 13 West Crossover	TON	181
709	0100	GEOSYNTHETIC MATERIAL TYPE G Sta. 21+41 - 8' Rt. to Sta 23+21 - 8' Lt. Sta. 23+58 - 8' Rt. to Sta 25+42 - 7' Lt.	SY SY	169 177
714	7033	PIPE PVC 15IN Sta. 21+52 to Sta. 24+79	LF	328

Plan & Profile
West Crossover

1 Mile East of ND 32 South
Nelson County

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		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	60	2
SPEC	CODE	BID ITEM		UNIT	QUANTITY
302	0120	AGGREGATE BASE COURSE CL 5			
		East Crossover		TON	278
302	0356	AGGREGATE SURFACE COURSE CL 13			
		East Crossover		TON	186
709	100	GEOSYNTHETIC MATERIAL TYPE G			
		Sta. 50+70 - 8' Lt. to Sta. 53+64 - 8' Rt.		SY	179
		Sta. 53+99 - 8' Lt. to Sta. 55+83 - 8' Rt.		SY	174
714	7033	PIPE PVC 15IN			
		Sta. 52+79 to Sta. 55+31		LF	254

Plan & Profile
East Crossover

1 Mile East of ND 32 South
Nelson County

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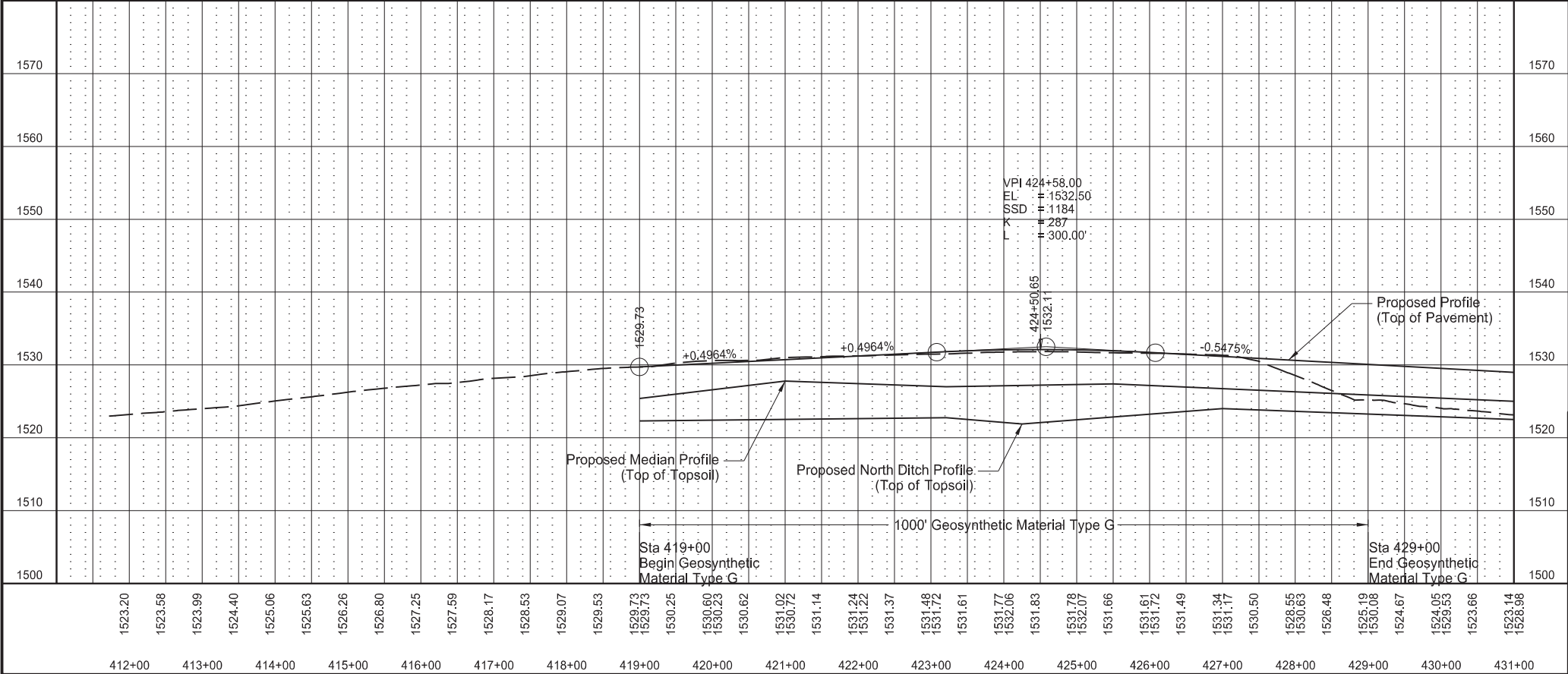
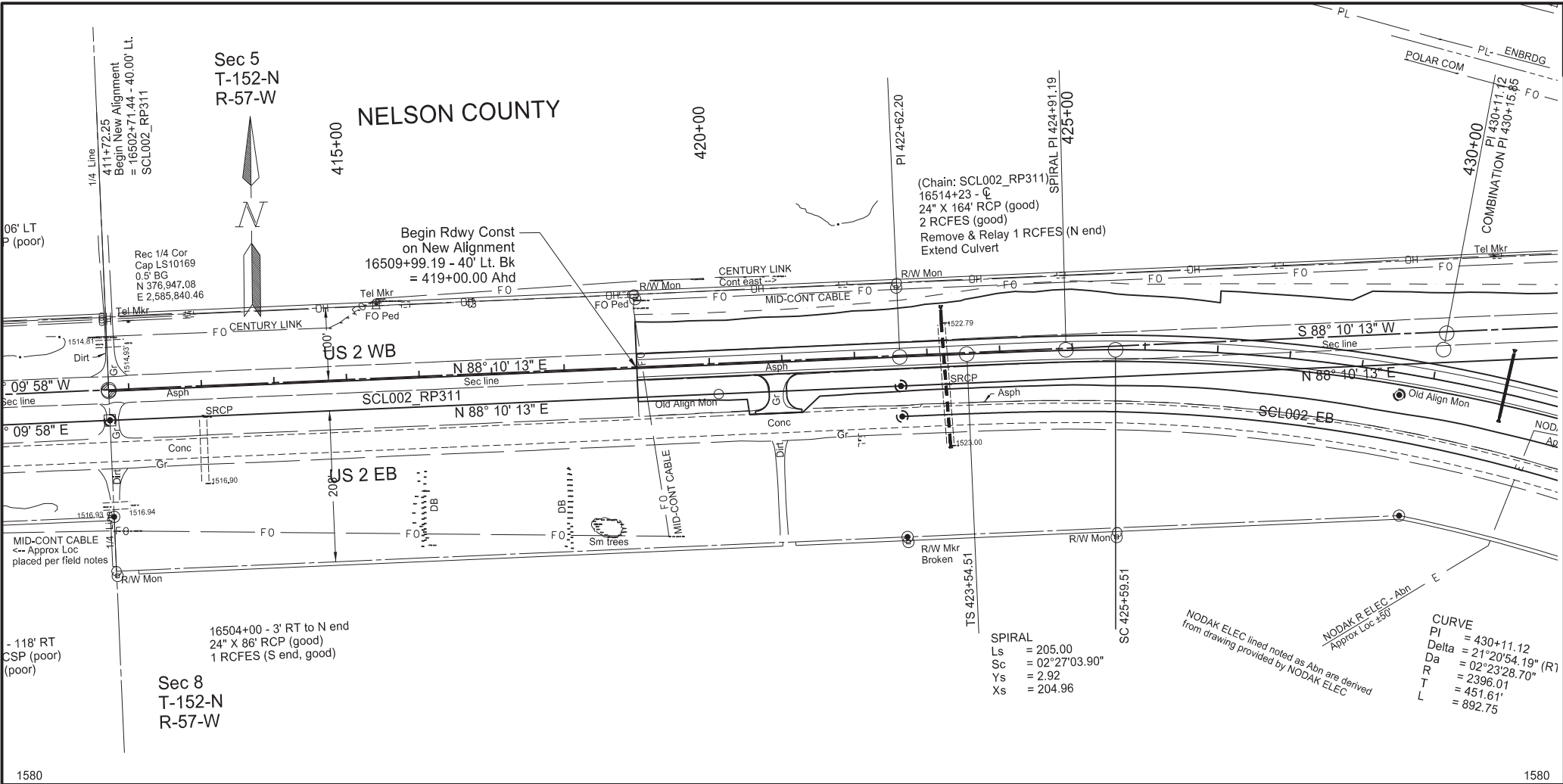
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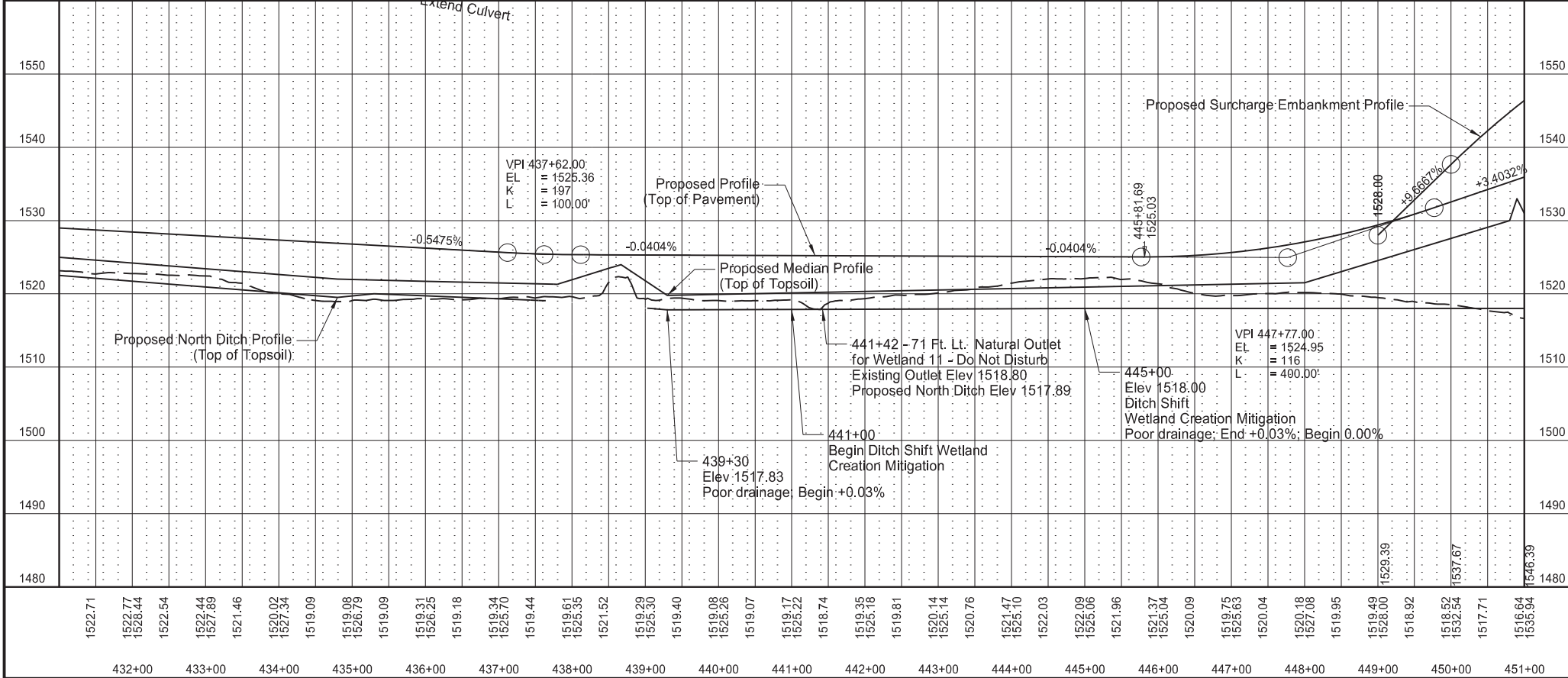
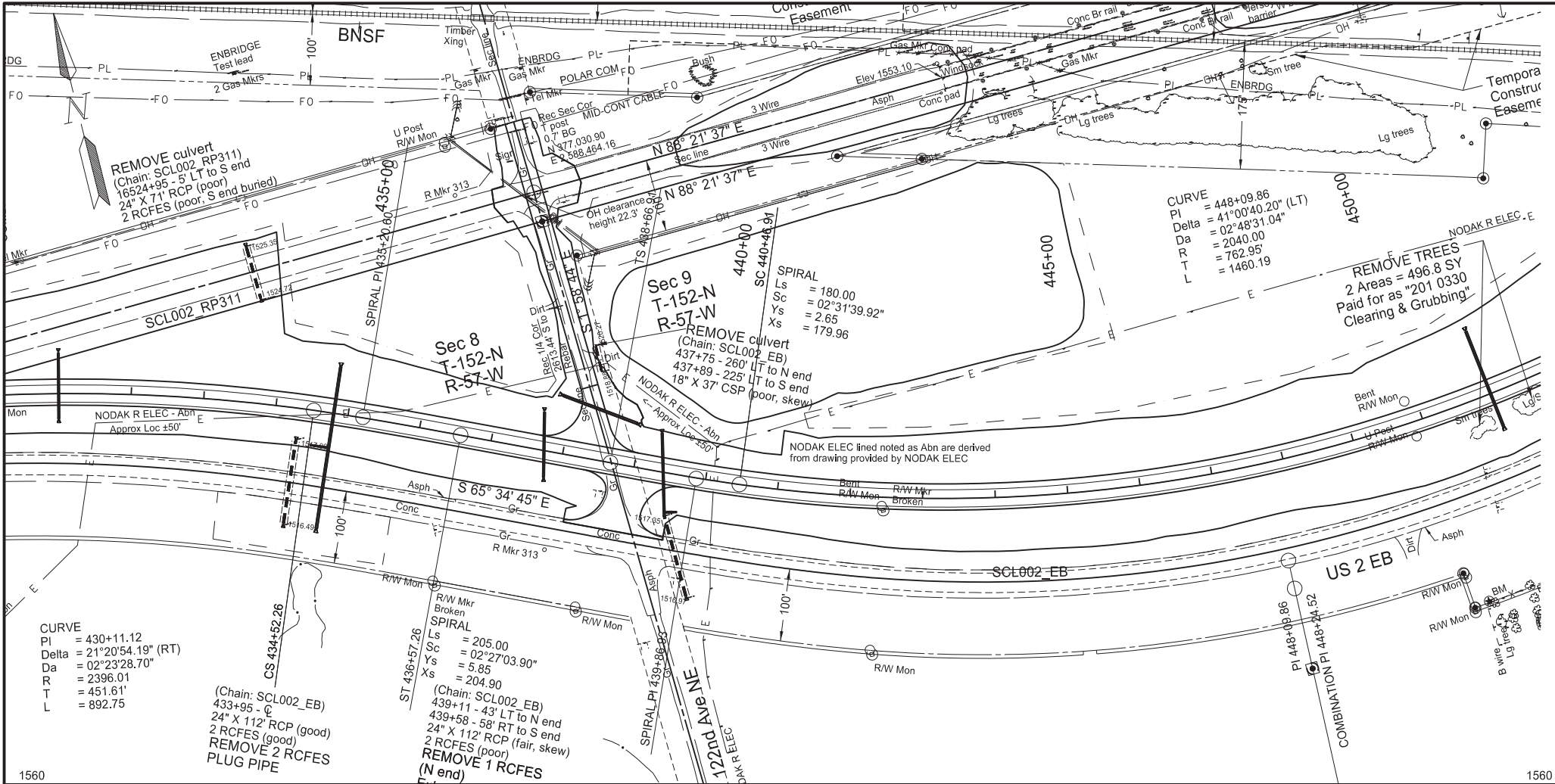
		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	60	3
SPEC	CODE	BID ITEM	UNIT	QUANTITY	
709	0100	GEOSYNTHETIC MATERIAL TYPE G			
		Sta 419+00 to 429+00 (Roadbed)	SY	4000	
		Sta. 431+00 Rt to Lt (Culvert)	SY	69	
714	0615	PIPE CONC REINF 24IN CL III			
		Sta. 423+21.4 - 42.3' Lt to 62' Lt	LF	20	
714	4105	PIPE CONDUIT 24IN			
		Sta. 431+00 34'Rt to 56' Lt	LF	94	
714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES			
		Sta 423+21.4 - 42.3' Lt.	EA	1	

Plan & Profile
US 2 New Westbound Roadway
419+00 to 431+00

1 Mile East of ND 32 South
Nelson County

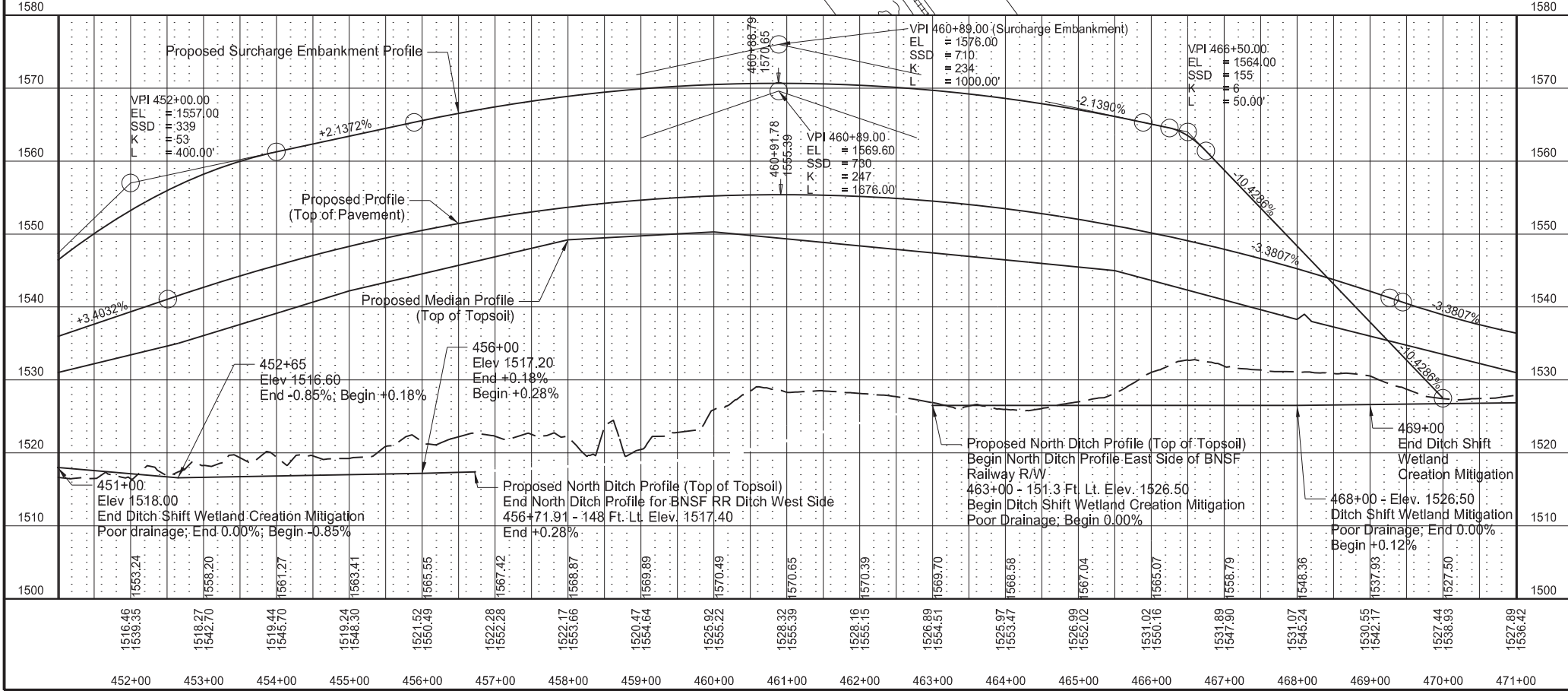
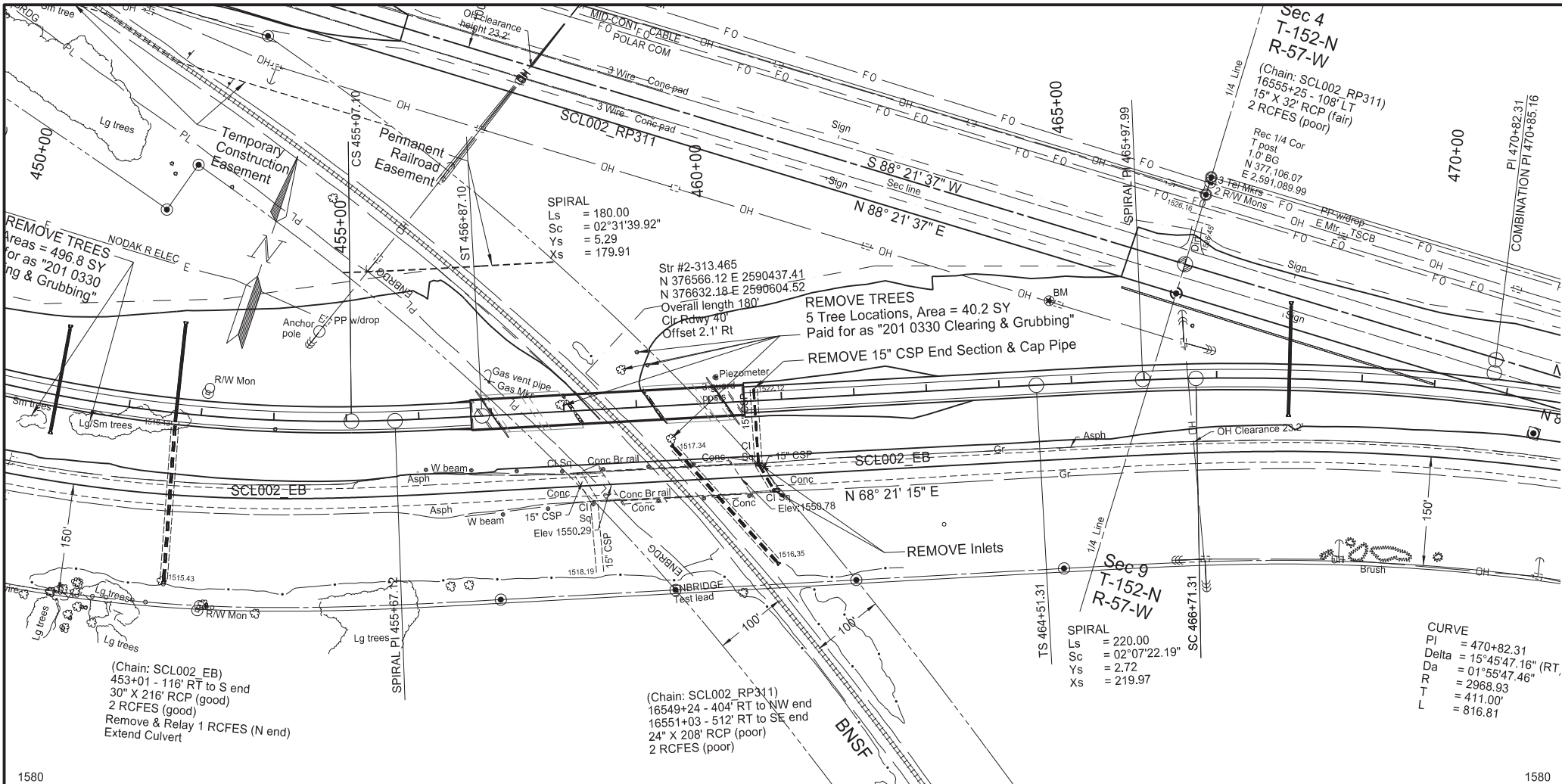
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		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	60	4
SPEC	CODE	BID ITEM		UNIT	QUANTITY
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES			
		Sta 434+33.10 - 43 Rt & 161.9 Rt		EA	2
		Sta 439+52.18 - 58.5' Rt		EA	1
202	0170	REMOVAL OF CULVERTS ALL TYPES AND SIZES			
		Sta 438+32.41- 121.46 Lt (122nd Ave NE Appr 18" CSP Culvert)		LF	37
709	0100	GEOSYNTHETIC MATERIAL TYPE G			
		Sta. 434+80 Lt & Rt		SY	98
		Sta. 437+80 Rt To 437+65 Lt		SY	69
		Sta. 439+30 Lt to 439+53.2 Rt		SY	85
714	0615	PIPE CONC REINF 24IN CL III			
		Sta. 439+30 - 52' Lt to 439+53.2- 60.7' Rt		LF	116
		(Includes: 1- 2 ft long 15° bend and 1- 6 ft long Tee Section 24" to 18")			
714	3020	END SECT-CONC REINF 24IN			
		Sta. 439+30 - 54.45' Lt "C" Dist.		EA	1
714	4100	PIPE CONDUIT 18IN			
		Sta. 434+60 Rt To 434+80 Rt		LF	18
		Sta. 439+51.5 Rt to 439+62 Rt		LF	10
714	4105	PIPE CONDUIT 24IN			
		Sta. 437+80 -36' Rt to 437+65 -58' Lt		LF	100
714	4110	PIPE CONDUIT 30IN			
		Sta. 434+80 -146' Rt to 160' Rt		LF	16
		Sta 434+80 - 60' Rt to 64' Lt		LF	126
		(Includes: 1- 6 ft long Tee Section 30" to 18")			
714	4113	PIPE CONDUIT 30IN-APPROACH			
		Sta. 437+86.5 - 79.3 Lt to 438+93.4 - 59.8 Lt		LF	114
714	4166	PIPE CONDUIT 30IN-JACKED OR BORED			
		Sta. 434+80 146' Rt to 60' Rt		LF	86
910	0565	CONTROLLED DENSITY BACKFILL			
		Sta 434+33.10 Rt (EB Rdwy 24" CL Culvert Abandonment)		CY	13.00

<div>Plan & Profile</div> <div>US 2 New Westbound Roadway</div> <div>431+00 to 451+00</div> <div>1 Mile East of ND 32 South</div> <div>Nelson County</div>	<div><div><div>RANKA SAMARDZI</div><div>REGISTERED</div><div>PROFESSIONAL</div><div>PE 4888</div><div>ENGINEER</div><div>NORTH DAKOTA</div></div><div>02/10/22</div></div>
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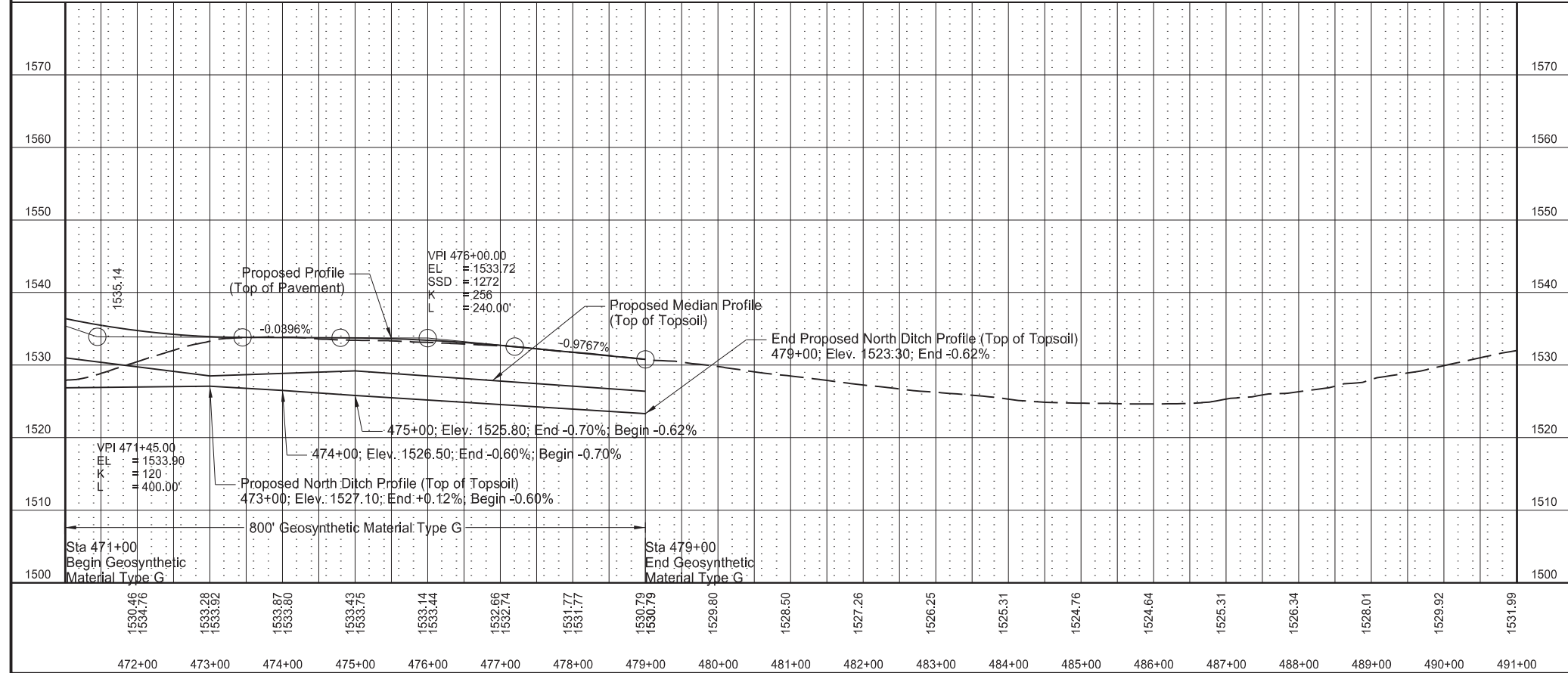
		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	60	5
SPEC	CODE	BID ITEM	UNIT	QUANTITY	
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES Sta 460+63.4 Rt (EB Rdwy 15" CSES for Outlet Culvert)	EA	1	
202	0170	REMOVAL OF CULVERTS ALL TYPES AND SIZES Sta. 465+75 - 128.6' Lt to 469+97.90 - 4.1' Lt (PIPE PVC 18")	LF	450	
202	0230	REMOVAL OF INLETS Sta 460+63.4 - 86.2' Rt (EB Rdwy) Sta 460+83.5 - 126.3' Rt (EB Rdwy)	EA EA	1 1	
**		REMOVAL OF CURB & GUTTER Sta 460+60 - 88' Rt to 460+67 - 88' Rt (NE Inlet Removal) Sta 460+81 - 125' Rt to 460+90 -125' Rt (SE Inlet Removal)	LF LF	7 9	
(** Not A Pay Item. Included in the price bid for 202 0230 REMOVAL OF INLETS)					
**		REMOVAL OF CONCRETE PAVEMENT Sta 460+60 - 90' Rt to 460+67 - 90' Rt (NE Inlet Removal) Sta 460+81 - 123' Rt to 460+90 -123' Rt (SE Inlet Removal)	SY SY	1.6 2.0	
(** Not A Pay Item. Included in the price bid for 202 0230 REMOVAL OF INLETS)					
709	0100	GEOSYNTHETIC MATERIAL TYPE G Sta. 451+00 - 48'Rt to 92' Lt Sta. 452+65 - 120' Lt to 11.8' Rt Sta. 468+00 - 46' Rt to 100' Lt	SY SY SY	105 105 108	
714	0840	PIPE CONC REINF 30IN CL V Sta. 452+65 - 120' Lt to 11.8' Rt	LF	132	
714	4110	PIPE CONDUIT 30IN Sta. 451+00 - 48'Rt to 92' Lt Sta. 468+00 - 46' Rt to 100' Lt	LF LF	144 150	
714	7036	PIPE PVC 18IN Sta. 465+75 - 128.6' Lt to 469+97.90 - 4.1' Lt	LF	450	
714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES Sta 452+65 - 11.8' Rt	EA	1	
910	0565	CONTROLLED DENSITY BACKFILL Sta 460+63.4 Rt (EB Rdwy 15" CSP Outlet Culvert) Sta 460+63.4 Rt (EB Rdwy NE Curb Inlet) Sta 460+72.2 Rt.(EB Rdwy 15" CSP CL Pipe) Sta 460+83.5 Rt.(EB Rdwy SE Curb Inlet)	CY CY CY CY	4.59 0.91 2.00 0.73	

Plan & Profile
US 2 New Westbound Roadway
451+00 to 471+00

1 Mile East of ND 32 South
Nelson County

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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	60	6

SPEC	CODE	BID ITEM	UNIT	QUANTITY
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 471+00 to Sta 479+00 (Roadbed)	SY	3200
		Sta. 473+00 - 38' Rt to 58' Lt (Culvert)	SY	73
714	4105	PIPE CONDUIT 24IN		
		Sta. 473+00 - 38' Rt to 58' Lt	LF	100
714	5015	PIPE CORR STEEL .064IN 18IN		
		Sta. 474+95 -75.7' Lt to 475+15 -75.1' Lt	LF	20
		Sta. 475+57 -74.3' Lt to 475+77 -74.1' Lt	LF	20
714	5810	END SECT CORR STEEL .064IN 18IN		
		Sta 474+95 - 75.7' Lt	EA	1
		Sta 475+77 - 74.1' Lt	EA	1

Plan & Profile
US 2 New Westbound Roadway
471+00 to 479+00

1 Mile East of ND 32 South
Nelson County

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02/10/22

Wetland Impact Table																				
Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)			USFWS Easement Impacts Acre(s)		Wetland Mitigation										
										Mitigation Required			USACE/11990 Bank		USFWS Bank		Onsite			
					Temp.	Perm. (Fill/Drain)		Temp.	Perm.	EO 11990	USACE	USFWS	Location	Acre(s)	Location	Acre(s)	Mitigation Location; Ratio	Onsite Acre(s)	Ditch Shift Acre(s)	Constructed Size Acre(s)
1a	Sec 8 T159N R87W	Ditch	Created	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
1b	Sec 8 T159N R87W	Ditch	Created	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
1c	Sec 5 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
1d	Sec 5 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
1e	Sec 5 T159N R87W	Ditch	Created	Yes	0.05	0.02		-	-	No	Yes	No	-	-	-	-	Site 1; 1:1	0.02	-	-
1f	Sec 5 T159N R87W	Basin	Natural	Yes	0.11	0.22		-	-	Yes	Yes	No	-	-	-	-	Site 1; 1:1	0.22	-	-
2	Sec 8 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
3	Sec 8 T159N R87W	Ditch	Created	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
4	Sec 8 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
5	Sec 8 T159N R87W	Basin	Natural	Yes	0.13	-		-	-	No	No	No	-	-	-	-	-	-	-	-
6 (See footnote 2)	Sec 8 T159N R87W	Basin	Natural	Yes	-	-		0.08	0.81	Yes	Yes	Yes	-	-	Vollrath 15/21 USFWS Esmt Bank	0.92	-	-	-	-
7a	Sec 9 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
7b	Sec 9 T159N R87W	Ditch	Created	Yes	0.00	0.69		-	-	No	Yes	No	-	-	-	-	Ditch Shift	-	0.26	-
7c	Sec 9 T159N R87W	Basin	Natural	Yes	0.46	2.14		-	-	Yes	Yes	No	-	-	-	-	Site 1; 1:1	2.14	-	-
7d	Sec 9 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
8	Sec 9 T159N R87W	Basin	Natural	Yes	0.21	-		-	-	No	No	No	-	-	-	-	-	-	-	-
9	Sec 4 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
10	Sec 9 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-

Wetland Impact Table

1 Mile East of ND 32 South Nelson County

02/09/22

Wetland Impact Table																				
Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts Acre(s)			USFWS Easement Impacts Acre(s)		Wetland Mitigation										
										Mitigation Required			USACE/11990 Bank		USFWS Bank		Onsite			
					Temp.	Perm. (Fill/Drain)		Temp.	Perm.	EO 11990	USACE	USFWS	Location	Acre(s)	Location	Acre(s)	Mitigation Location; Ratio	Onsite Acre(s)	Ditch Shift Acre(s)	Constructed Size Acre(s)
11	Sec 9 T159N R87W	Basin	Natural	Yes	0.32	-		-	-	No	No	No	-	-	-	-	Mitigation Site #1	-	-	2.62
12	Sec 9 T159N R87W	Basin	Natural	Yes	0.05	-		-	-	No	No	No	-	-	-	-	-	-	-	-
13	Sec 9 T159N R87W	Basin	Natural	Yes	0.10	0.00		-	-	No	No	No	-	-	-	-	-	-	-	-
14	Sec 9 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
15	Sec 4 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
16	Sec 4 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
17	Sec 9 T159N R87W	Ditch	Created	Yes	0.00	0.16		-	-	No	Yes	No	-	-	-	-	Ditch Shift	-	0.16	-
18	Sec 4 T159N R87W	Ditch	Created	Yes	0.04	0.00		-	-	No	No	No	-	-	-	-	-	-	-	-
19a	Sec 9 T159N R87W	Ditch	Created	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
19b	Sec 9 T159N R87W	Ditch	Created	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
20a	Sec 4 T159N R87W	Ditch	Created	Yes	0.02	0.01		-	-	No	Yes	No	-	-	-	-	Site 1; 1:1	0.01	-	-
20b	Sec 4 T159N R87W	Ditch	Created	Yes	0.03	0.02		-	-	No	Yes	No	-	-	-	-	Site 1; 1:1	0.02	-	-
21	Sec 9 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
22	Sec 4 T159N R87W	Basin	Natural	Yes	-	-		-	-	No	No	No	-	-	-	-	-	-	-	-
				Totals	1.52	3.27		0.08	0.81					0		0.92		2.41	0.43	2.62

¹ A wetland Jurisdictional Determination was issued by the USACE on 6/3/2020; NWO-2020-00918-BIS.

² Wetland 6. Permanent fill impact equals 0.86 acre. 0.92 acre mitigation shown is for the removal of the entire basin of the USFWS Easement .

Impact Summary Table			
Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD (Fill/Drain)	2.36	Temporary JD	1.52
Natural/Non-JD (Fill/Drain)	0.00	Non-JD Temporary	0.00
Artificial/JD (Fill/Drain)	0.90	Permanent JD > 0.10	3.23
Artificial /Non-JD (Fill/Drain))	0.00	Permanent OW	0
Total	3.26	Temporary OW	0

Mitigation Summary Table					
	Location	Onsite Acre(s)	11990 Bank Acre(s)	USACE/11990 Bank Acre(s)	USFWS Bank Acre(s)
USACE Only					
EO 11990 Only					
USACE/11990	Mitigation Site #1	2.41		0	
USFWS	Vollrath 15/21 USFWS Esmt Bank				0.92
	Total	2.41	0	0	0.92

Wetland Impact Table

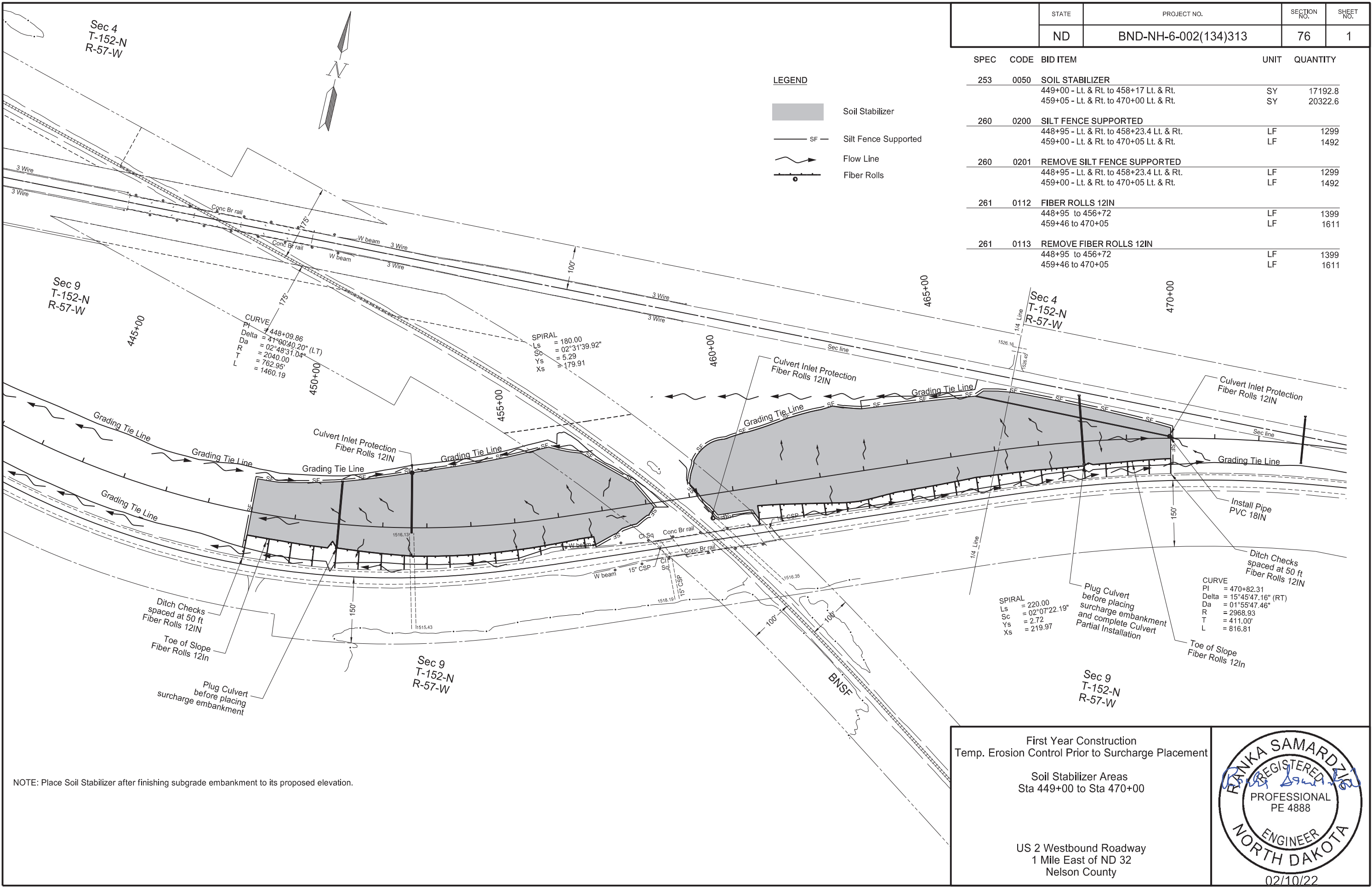
1 Mile East of ND 32 South Nelson County

FRANKA SAMARDZIC

REGISTERED PROFESSIONAL PE 4888

ENGINEER NORTH DAKOTA

02/09/22



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	76	1

SPEC	CODE	BID ITEM	UNIT	QUANTITY
253	0050	SOIL STABILIZER		
		449+00 - Lt. & Rt. to 458+17 Lt. & Rt.	SY	17192.8
		459+05 - Lt. & Rt. to 470+00 Lt. & Rt.	SY	20322.6
260	0200	SILT FENCE SUPPORTED		
		448+95 - Lt. & Rt. to 458+23.4 Lt. & Rt.	LF	1299
		459+00 - Lt. & Rt. to 470+05 Lt. & Rt.	LF	1492
260	0201	REMOVE SILT FENCE SUPPORTED		
		448+95 - Lt. & Rt. to 458+23.4 Lt. & Rt.	LF	1299
		459+00 - Lt. & Rt. to 470+05 Lt. & Rt.	LF	1492
261	0112	FIBER ROLLS 12IN		
		448+95 to 456+72	LF	1399
		459+46 to 470+05	LF	1611
261	0113	REMOVE FIBER ROLLS 12IN		
		448+95 to 456+72	LF	1399
		459+46 to 470+05	LF	1611

LEGEND

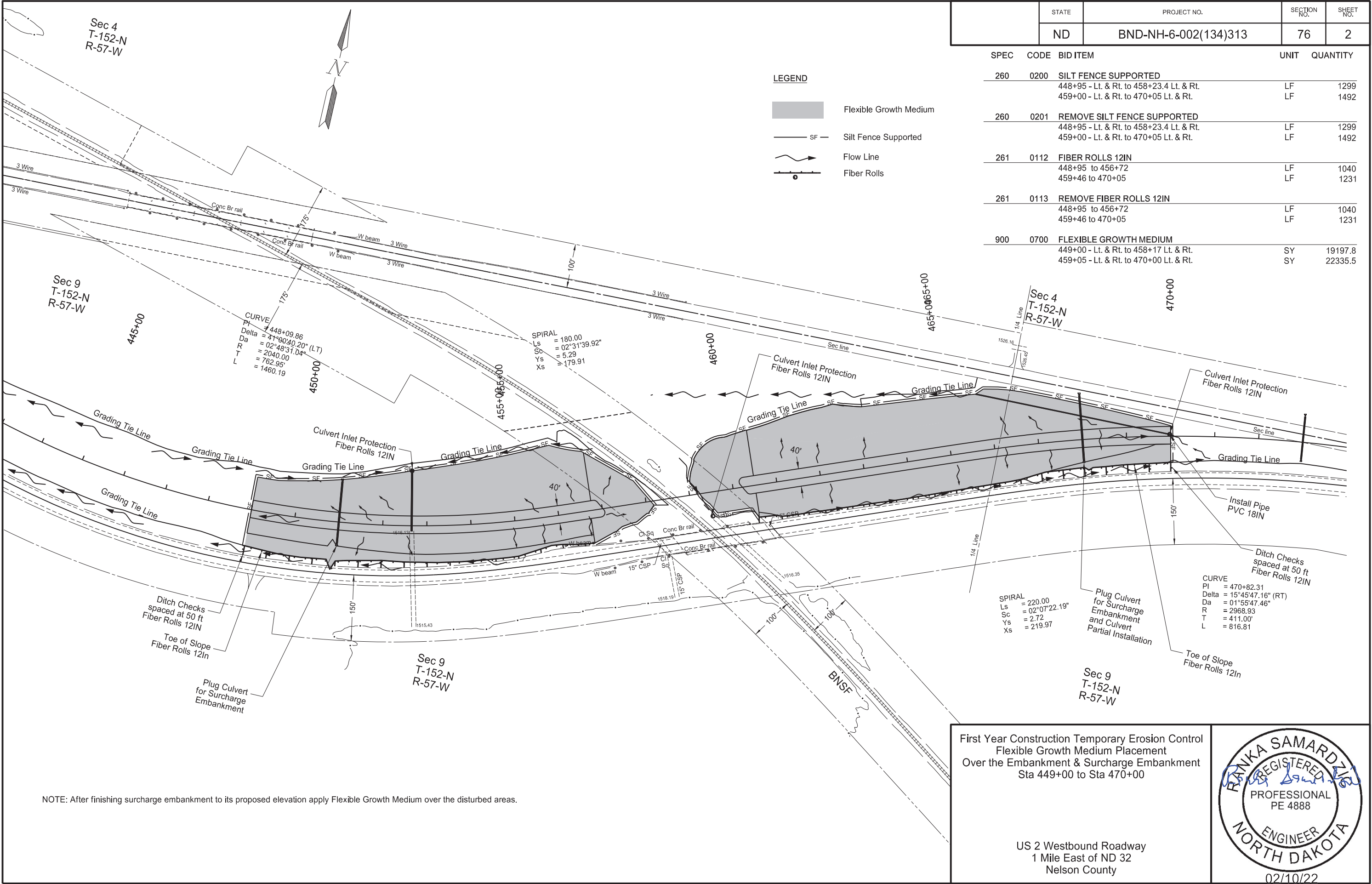
- Soil Stabilizer
- SF Silt Fence Supported
- Flow Line
- Fiber Rolls

First Year Construction
Temp. Erosion Control Prior to Surcharge Placement

Soil Stabilizer Areas
Sta 449+00 to Sta 470+00

US 2 Westbound Roadway
1 Mile East of ND 32
Nelson County



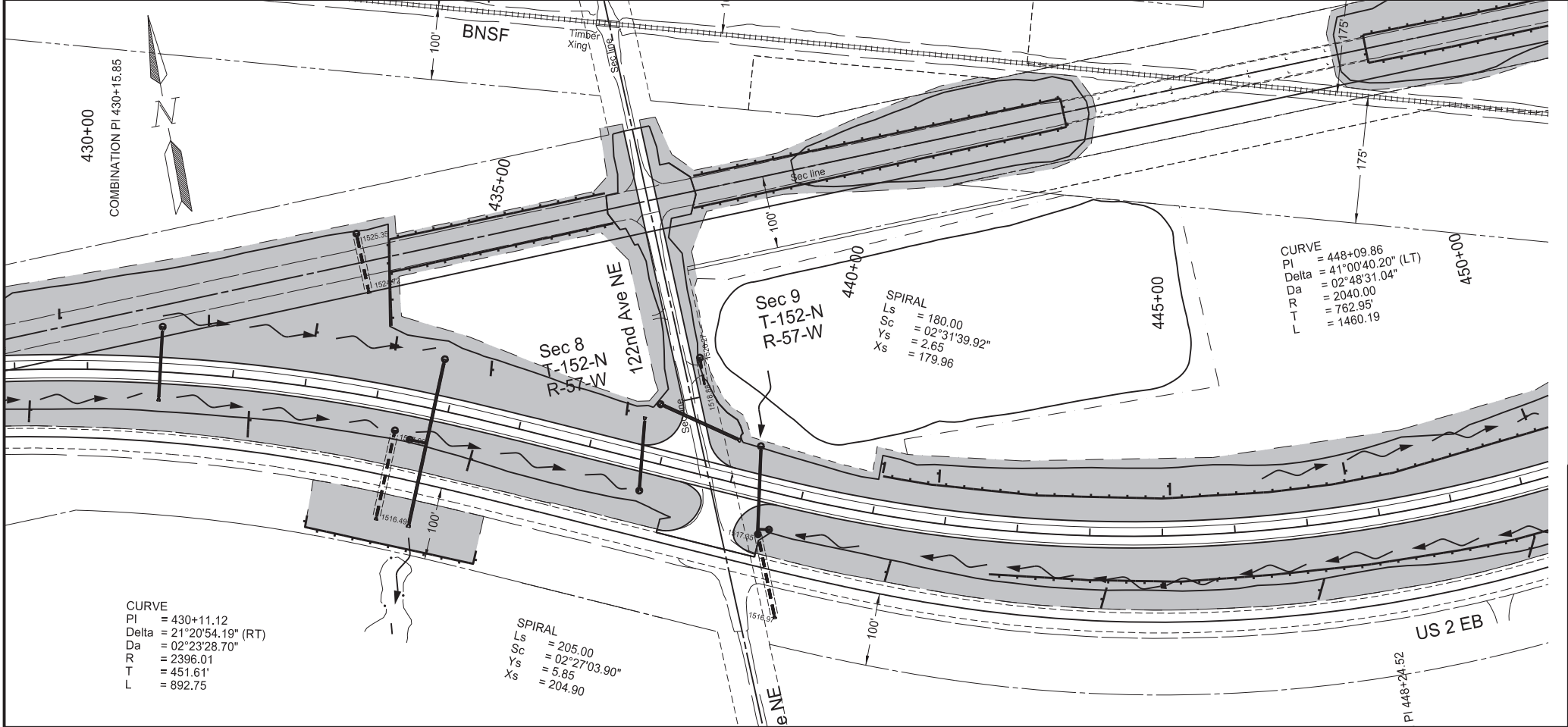
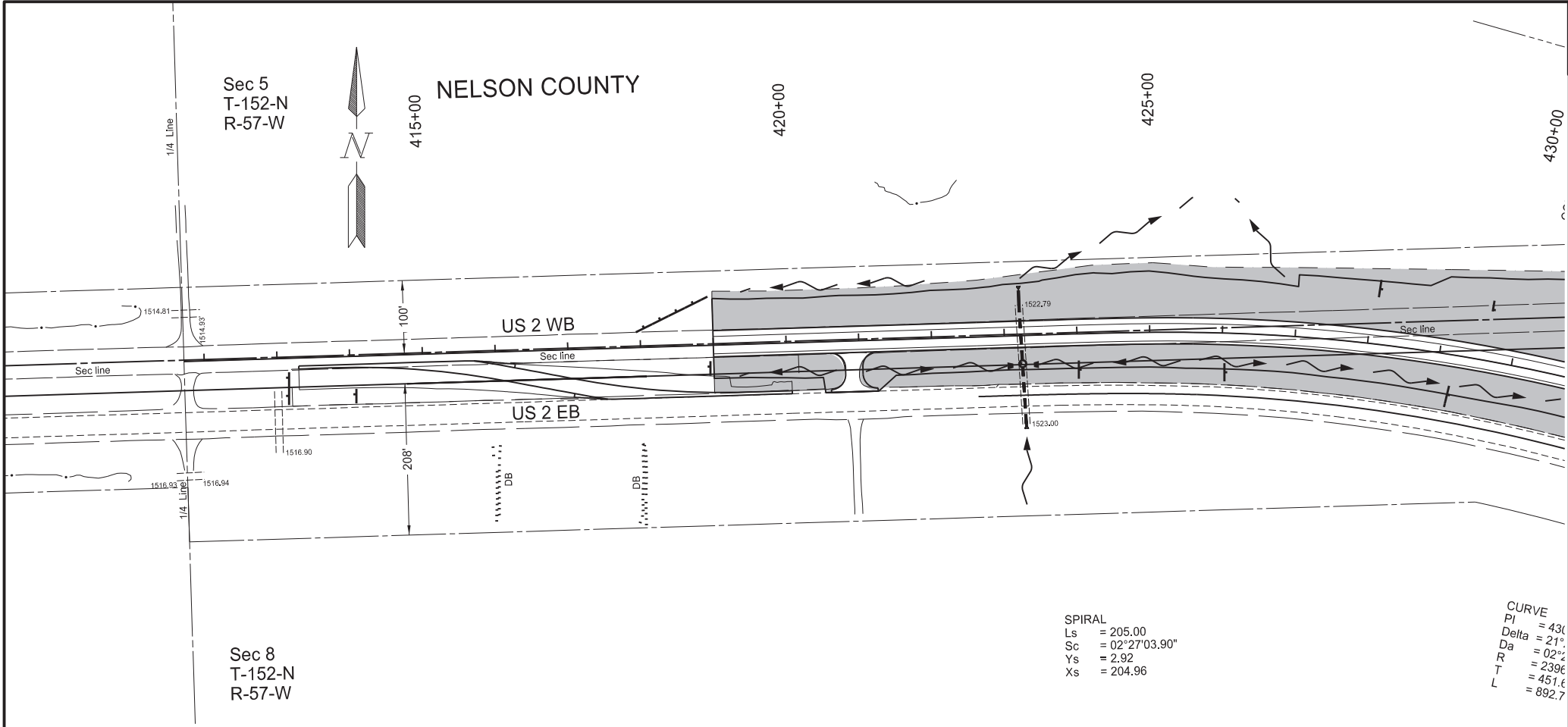


NOTE: After finishing surcharge embankment to its proposed elevation apply Flexible Growth Medium over the disturbed areas.

First Year Construction Temporary Erosion Control
Flexible Growth Medium Placement
Over the Embankment & Surcharge Embankment
Sta 449+00 to Sta 470+00

US 2 Westbound Roadway
1 Mile East of ND 32
Nelson County





		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	76	3
SPEC	CODE	BID ITEM		UNIT	QUANTITY
251	2000	TEMPORARY COVER CROP		ACRE	13.46
		419+00 to 450+00			
253	0101	STRAW MULCH		ACRE	13.46
		419+00 to 450+00			
261	0112	FIBER ROLLS 12IN		LF	4605
		413+16 to 450+00			
261	0113	REMOVE FIBER ROLLS 12IN		LF	4605
		413+16 to 450+00			

LEGEND

Temporary Cover Crop; Straw Mulch

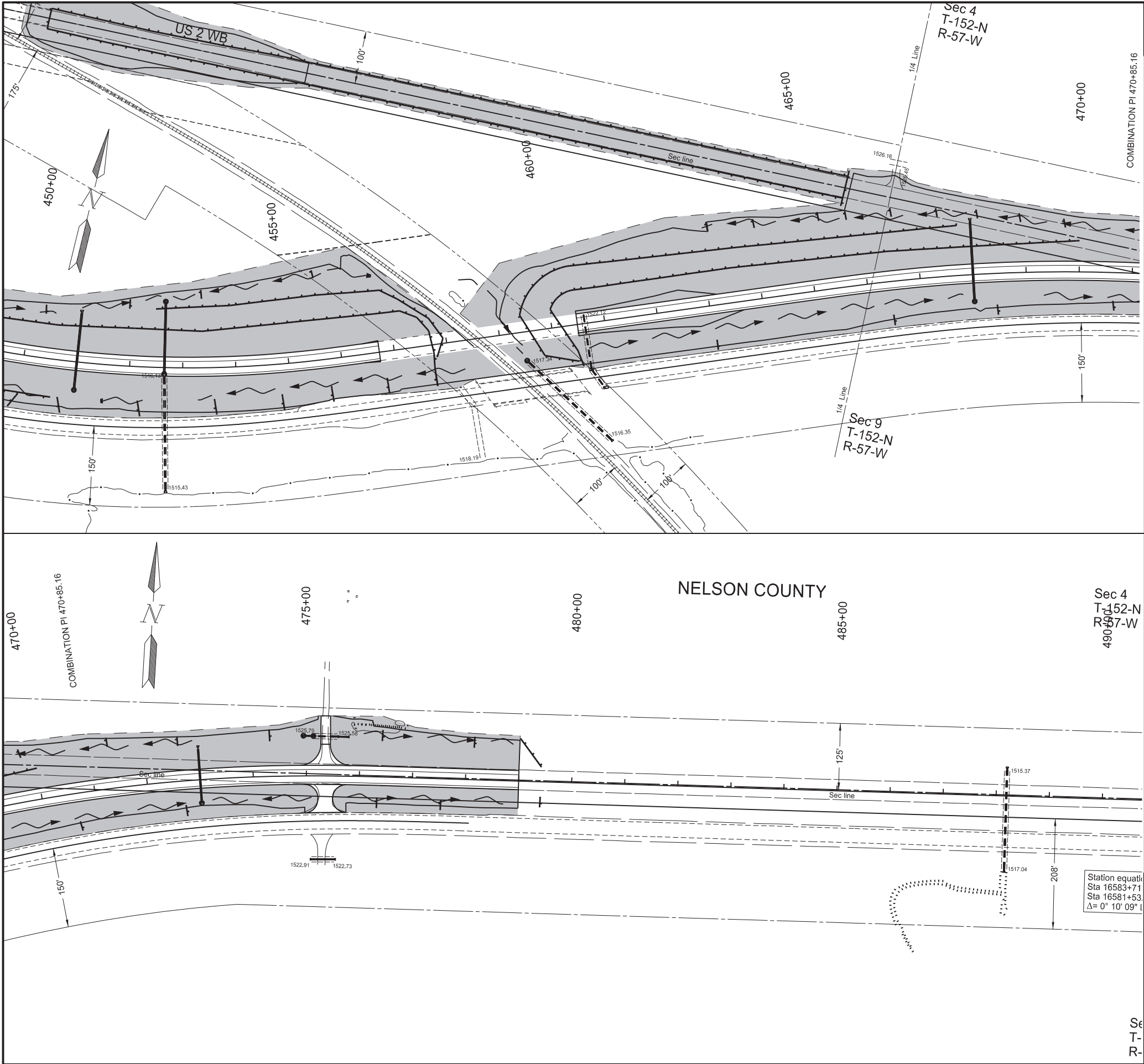
Fiber Rolls 12IN

Flow Line

Second Year Construction
Temporary Erosion Control
US Hwy 2 Westbound Roadway

1 Mile East of ND 32 South
Nelson County

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		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	76	4
SPEC	CODE	BID ITEM		UNIT	QUANTITY
251	2000	TEMPORARY COVER CROP		ACRE	14.85
		450+00 to 479+00			
253	0101	STRAW MULCH		ACRE	14.85
		450+00 to 479+00			
261	0112	FIBER ROLLS 12IN		LF	7951
		450+00 to 479+42			
261	0113	REMOVE FIBER ROLLS 12IN		LF	7951
		450+00 to 479+42			

LEGEND

Temporary Cover Crop; Straw Mulch

Fiber Rolls 12IN

Flow Line

Second Year Construction Temp. Erosion Control

US Hwy 2 Westbound Roadway

1 mile East of ND 32 South Nelson County

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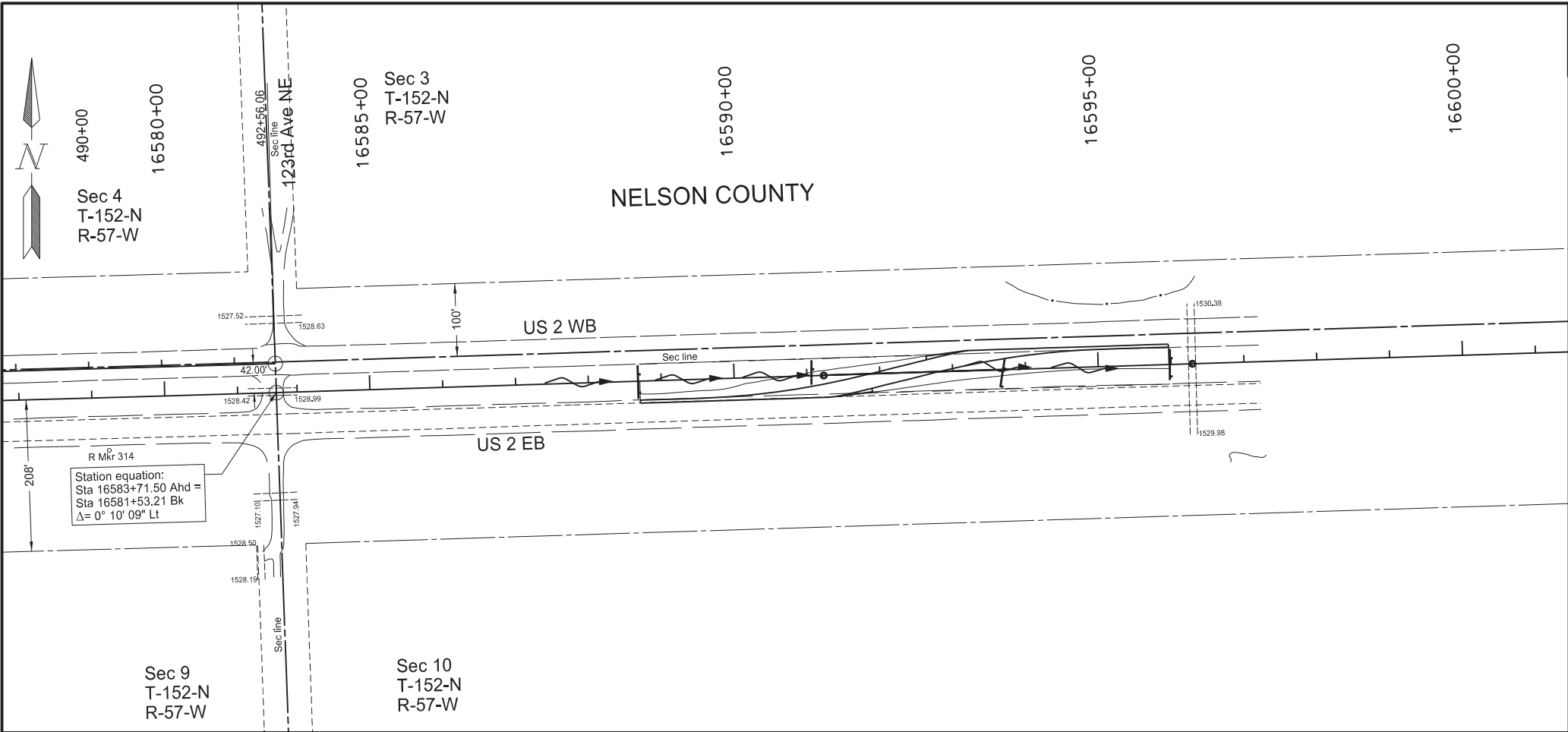
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		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	76	5

SPEC	CODE	BID ITEM	UNIT	QUANTITY
261	0112	FIBER ROLLS 12IN 16588+68 to 16596+29	LF	186
261	0113	REMOVE FIBER ROLLS 12IN 16588+68 to 16596+29	LF	186

LEGEND

—•— Fiber Rolls 12IN

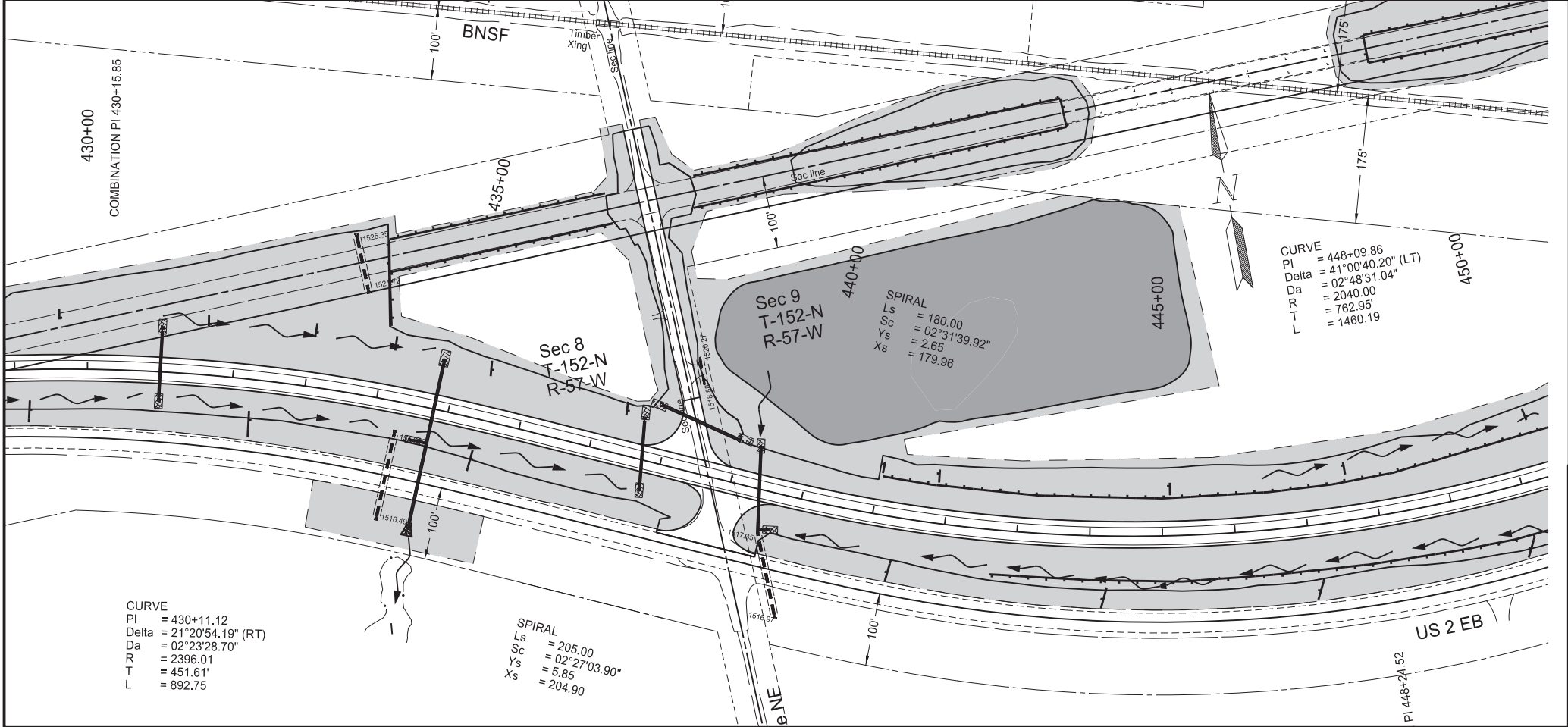
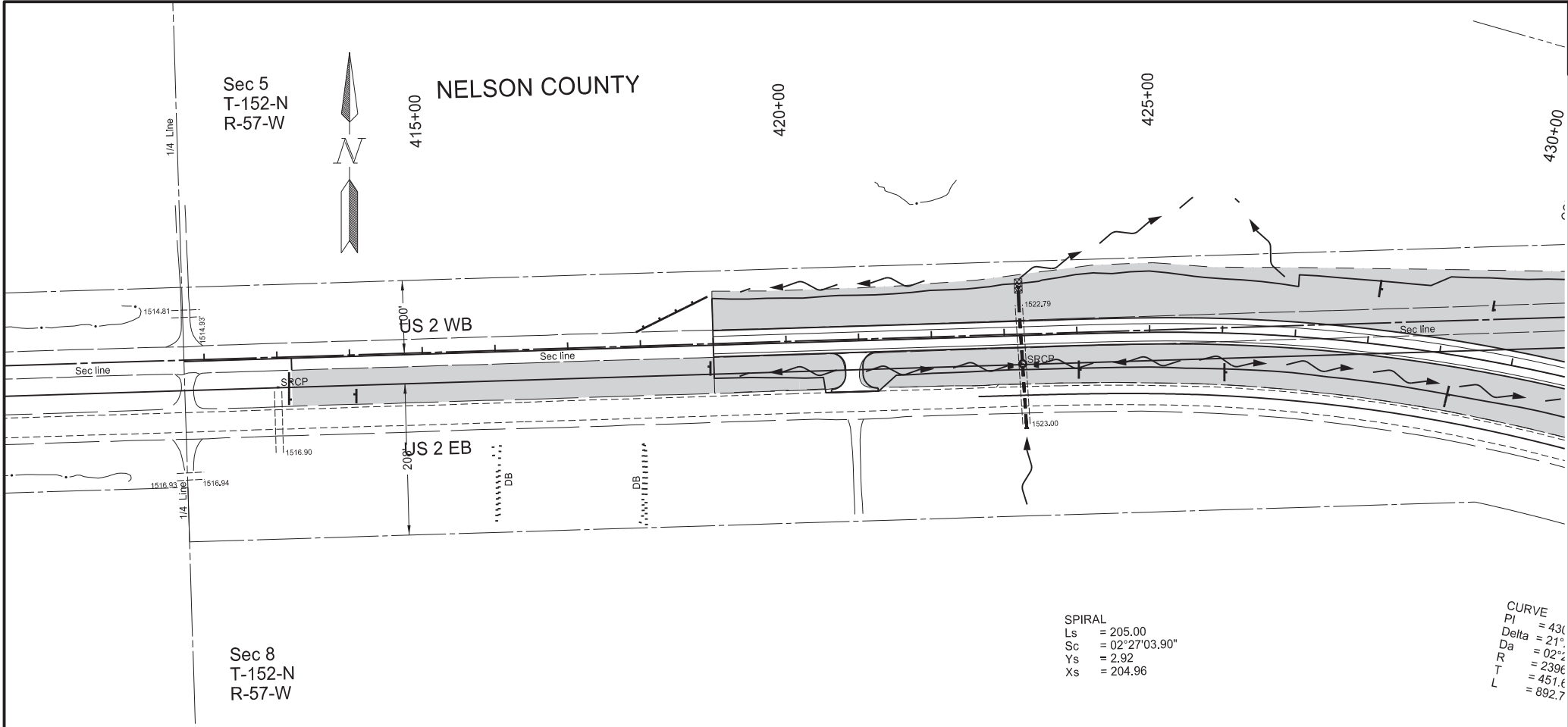
~> Flow Line

Second Year Construction Temp. Erosion Control
for Temporary East Median Crossover

US Hwy 2 Westbound Roadway

1 mile East of ND 32 South
Nelson County

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		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	77	1
SPEC	CODE	BID ITEM	UNIT	QUANTITY	
251	0200	SEEDING CLASS II			
		413+20 to 450+00	ACRE	18.22	
251	1000	WETLAND SEED			
		438+30 Lt. to 445+51 Lt.	ACRE	3.48	
253	0101	STRAW MULCH			
		413+20 to 450+00	ACRE	18.22	
255	0102	ECB TYPE 2			
		423+21.42 Lt. (24" RCP)	SY	22	
		431+00 Lt. & Rt. (24" RCP)	SY	44	
		434+40 Rt. (18" RCP Med. T)	SY	22	
		434+80 Lt. (30" RCP)	SY	25	
		437+65 Lt. & Rt. (24" RCP)	SY	44	
		438+41.73 Bk. & Ahd. (Appr 24" RCP)	SY	48	
		439+30 Lt. (24" RCP)	SY	22	
		439+62 Rt. (18" RCP Med. T)	SY	22	
256	0100	RIPRAP GRADE I			
		434+80 Rt. (30" RCP Outlet)	CY	12	
261	0112	FIBER ROLLS 12IN			
		413+15 to 450+00	LF	5506	

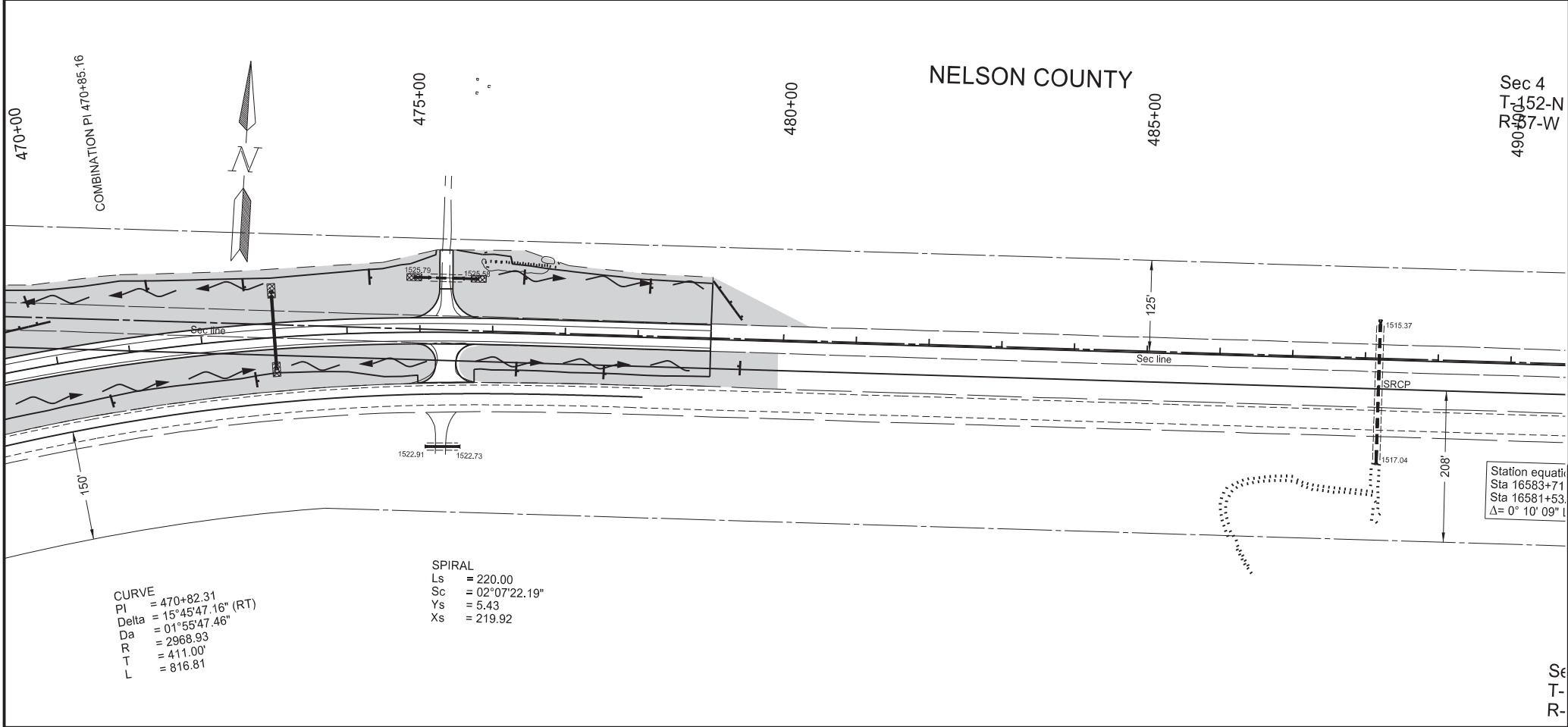
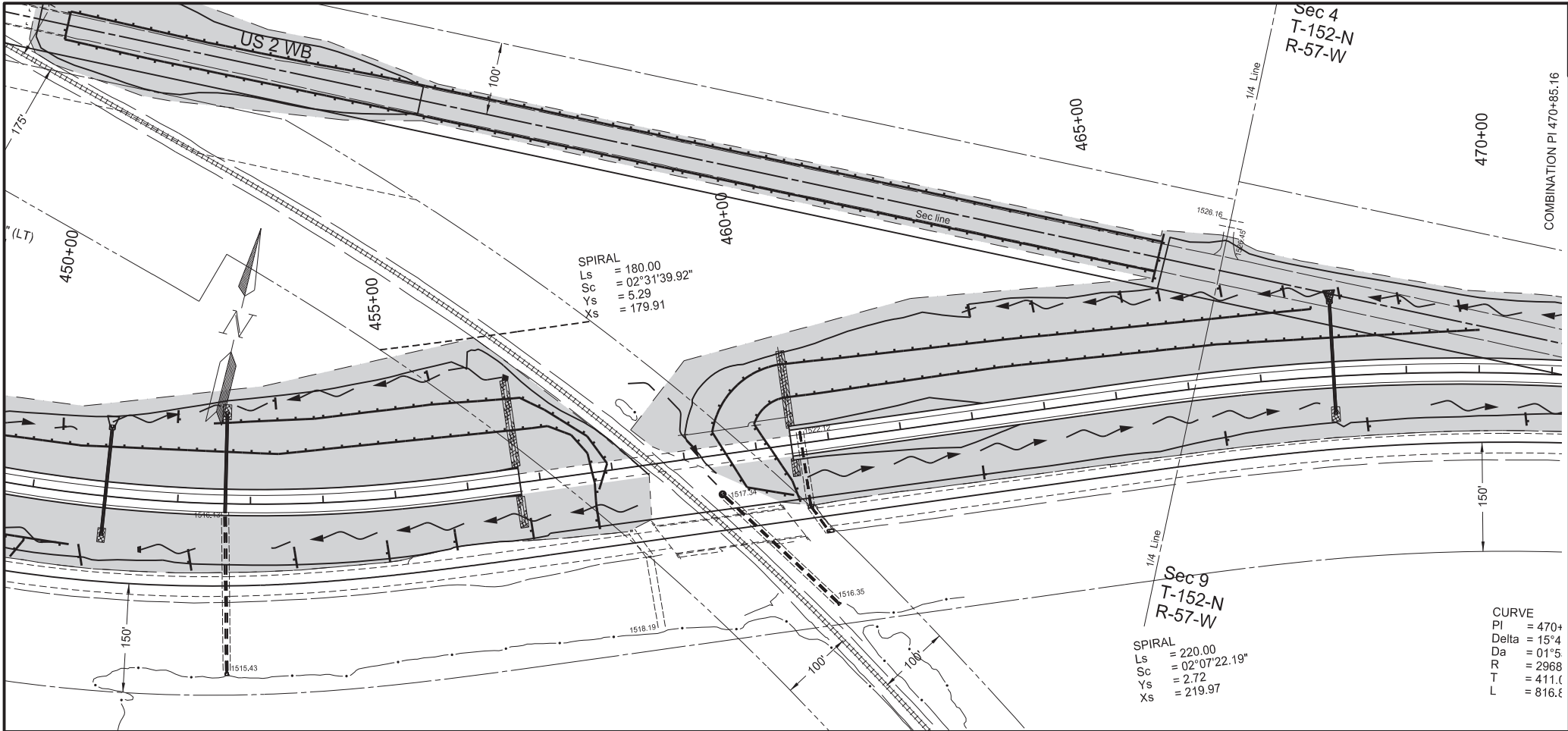
LEGEND

- Seeding Class II; Straw Mulch
- Wetland Seed
- Fiber Rolls 12IN
- ECB Type 2
- Riprap Grade I
- Flow Line

Permanent Erosion Control
US Hwy 2 Westbound Roadway

1 mile East of ND 32 South
Nelson County

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02/10/22



		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	BND-NH-6-002(134)313	77	2
SPEC	CODE	BID ITEM		UNIT	QUANTITY
251	0200	SEEDING CLASS II			
		450+00 to 480+38		ACRE	11.68
253	0101	STRAW MULCH			
		450+00 to 480+38		ACRE	11.68
255	0102	ECB TYPE 2			
		451+00 Rt. (30" RCP)		SY	25
		452+65.39 Lt. (30" RCP)		SY	22
		468+00 Rt. (30" RCP)		SY	25
		473+00 Lt. & Rt. (24" RCP)		SY	44
		475+37 Bk. & Ahd. (Appr. 18" CSP)		SY	44
255	0202	TRM TYPE 2			
		456+71.91 Lt.		SY	147
		456+71.91 Rt.		SY	54
		460+48.47 Lt.		SY	128
		460+48.47 Rt.		SY	26
256	0100	RIPRAP GRADE I			
		451+00 Lt. (30" RCP Outlet)		CY	12
		468+00 Lt. (30" RCP Outlet)		CY	12
261	0112	FIBER ROLLS 12IN			
		450+00 to 479+30		LF	6276

LEGEND

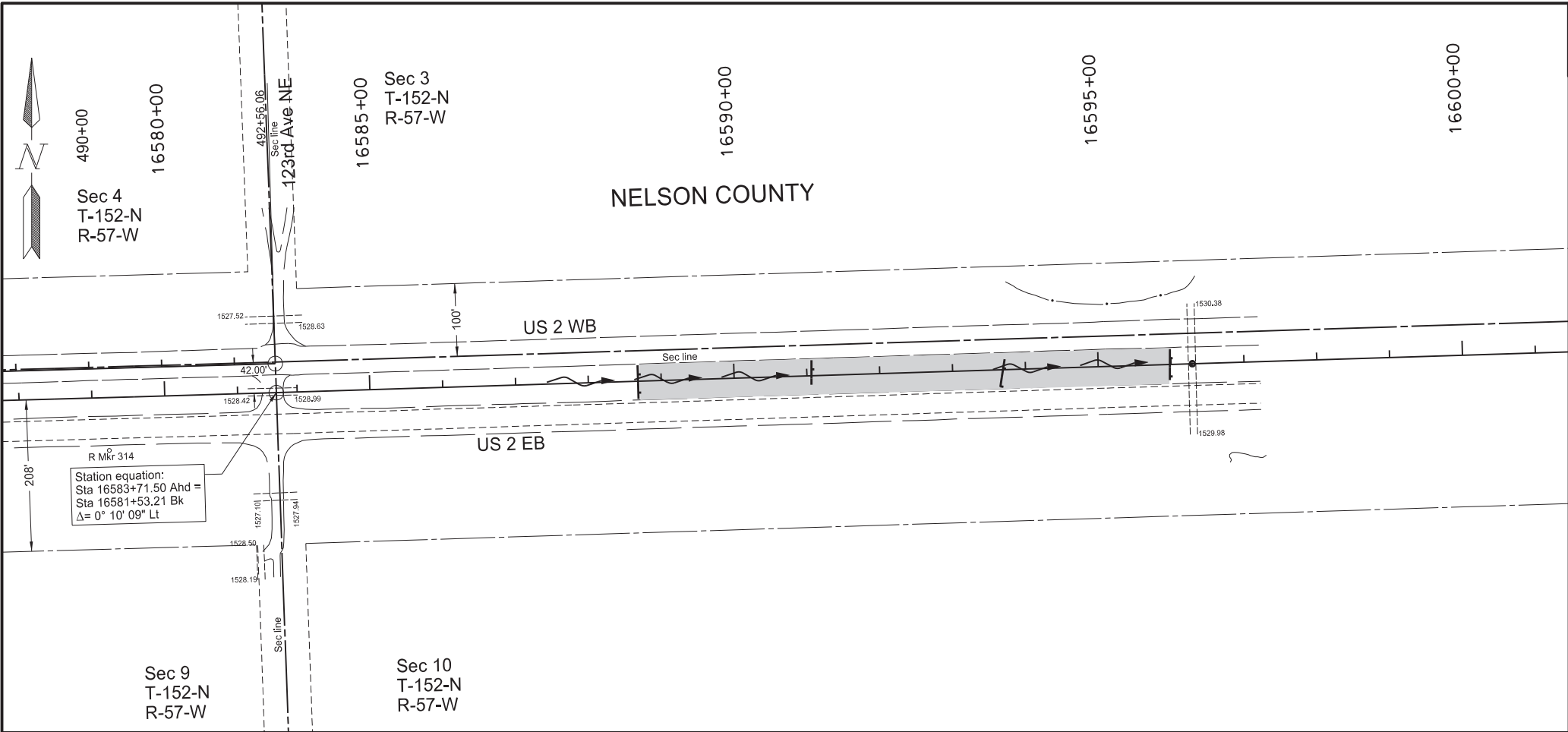
- Seeding Class II; Straw Mulch
- Fiber Rolls 12IN
- ECB Type 2
- TRM Type 2
- Riprap Grade I
- Flow Line

Permanent Erosion Control

US Hwy 2 Westbound Roadway

1 mile East of ND 32 South Nelson County

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02/10/22



STATE		PROJECT NO.	SECTION NO.	SHEET NO.
ND		BND-NH-6-002(134)313	77	3

SPEC	CODE	BID ITEM	UNIT	QUANTITY
251	0200	SEEDING CLASS II 16588+71 to 16595+97	ACRE	0.82
253	0101	STRAW MULCH 16588+71 to 16595+97	ACRE	0.82
261	0112	FIBER ROLLS 12IN 16588+68 to 16596+29	LF	184


LEGEND

- Seeding Class II; Straw Mulch
- Fiber Rolls 12IN
- Flow Line

Permanent Erosion Control
for Temporary East Median Crossover
US Hwy 2 Westbound Roadway

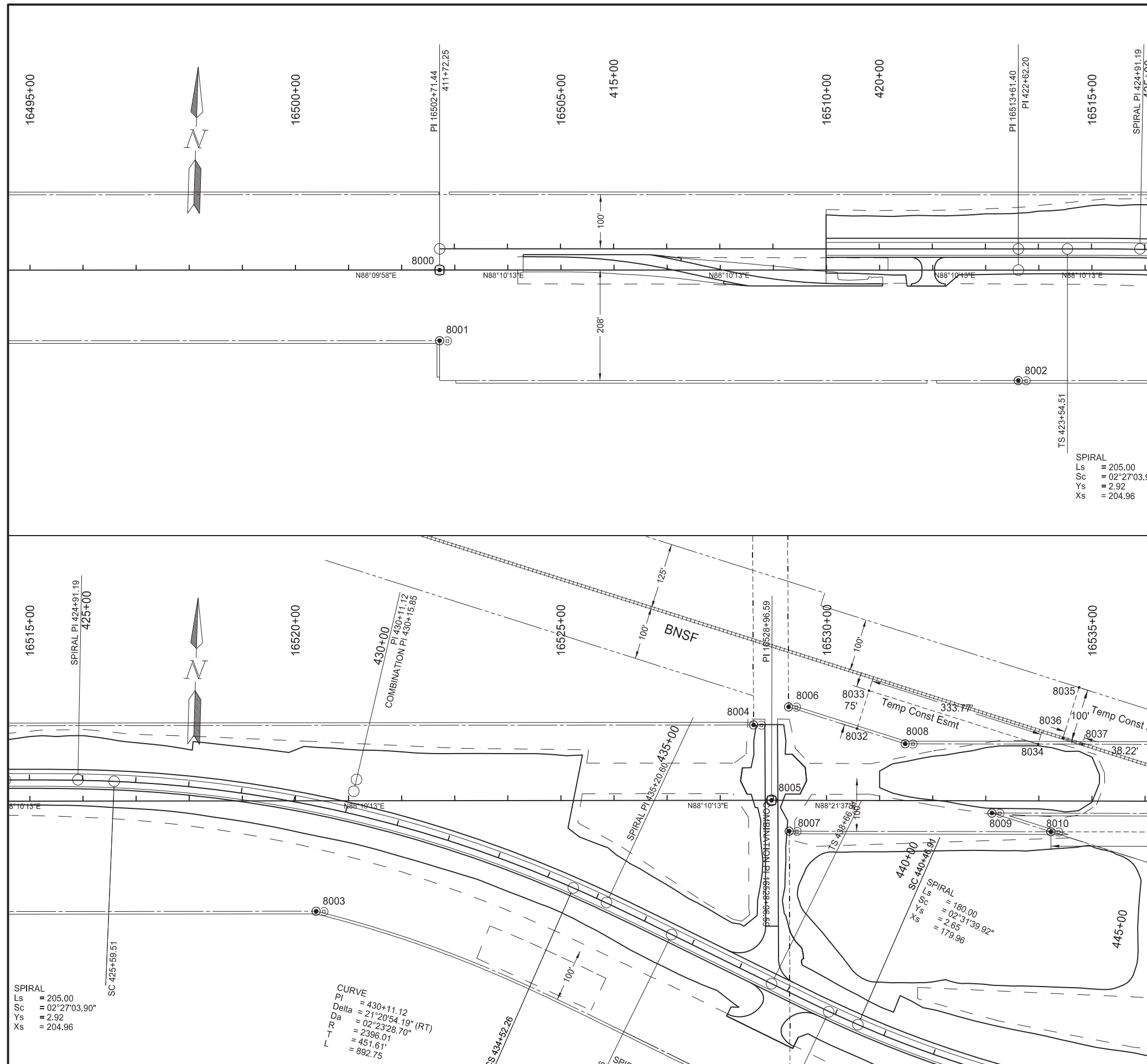
1 mile East of ND 32 South
Nelson County

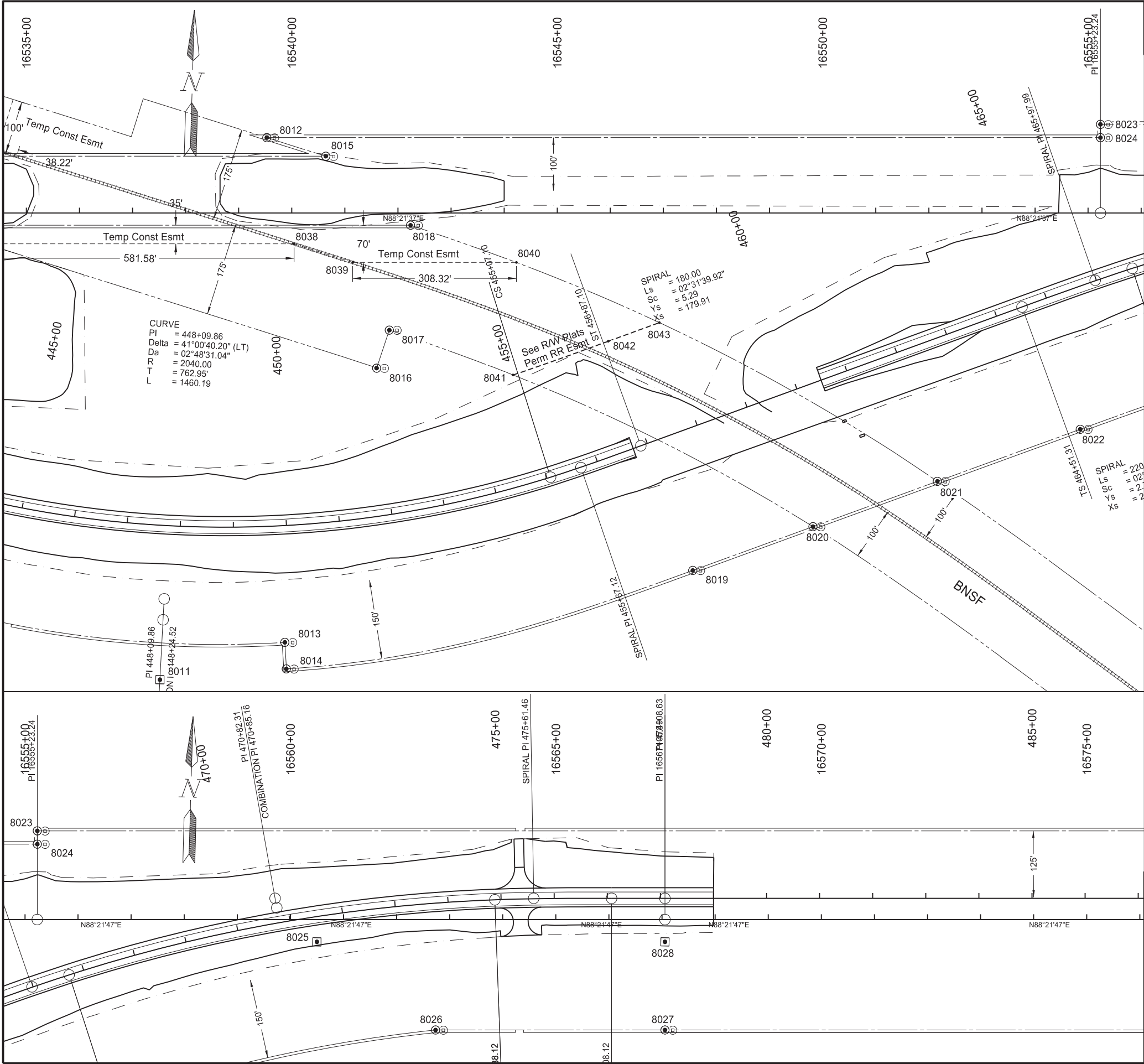
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PRELIMINARY SURVEY COORDINATE AND CURVE DATA - 1 mile East of ND 32 South											STATE	PROJECT NO.			SECTION NO.	SHEET NO.
										ND		BND-NH-6-002(134)313			81	1
HORIZONTAL ALIGNMENT				CURVE DATA		US PUBLIC LAND SURVEY DATA				SURVEY CONTROL POINTS						
PNT	STATION	NORTHING	EASTING	ARC DEFINITION		CORNER	IRN	NORTHING	EASTING	PNT	NORTHING	EASTING	ELEV	STATION	OFFSET	
US 2 Westbound (Chain: SCL002_RP311)				C21017		T-152-N R-57-W				MONUMENT DESCRIPTION						
Begin	16415+33.67	378,829.88	2,577,668.28	PI STA = 16422+43.13		NW Cor Sec 6	1-A	382,328.26	2,577,891.67							
PC	16415+34.22	378,829.66	2,577,668.78	Delta = 21° 15' 22" RT		W 1/4 Cor Sec 6	1-B	379,255.10	2,577,996.83	PRIMARY CONTROL (Stationing based on US WB, Chain SCL002_RP311)						
PI C21017	16422+43.13	378,538.23	2,578,315.02	D _a = 1° 31' 00"		NW Cor Sec 7	1-C	376,619.00	2,578,086.93	GPS 1	377,033.41	2,580,528.18	1,523.06	16449+50	86' Rt	
PT	16429+35.75	378,032.34	2,578,811.65	R = 3,777.83'		NW Cor Sec 5	3-A	382,487.62	2,583,000.74	18" Rebar, uncapped						
TS	16431+71.43	377,864.16	2,578,976.76	T = 708.91'		NW Cor Sec 8	3-C	376,862.36	2,583,194.50							
SC	16435+71.43	377,588.57	2,579,266.42	L = 1,401.53'		W 1/4 Cor Sec 8	3-D	374,209.35	2,583,284.49	SECONDARY CONTROL (Stationing based on US WB, Chain SCL002_RP311)						
PI SCS801	16440+59.88	377,230.15	2,579,599.15			NW Cor Sec 20	3-G	366,277.57	2,583,548.56	CP 21445	382,460.08	2,582,935.31	1,525.44	16467+04	5585' Lt	
CS	16444+93.14	377,186.37	2,580,086.25	SCS801		S 1/4 Cor Sec 5	4-C	376,947.08	2,585,840.46	RTK 1078	376,779.55	2,586,779.21	1,526.19	16512+04	155' Rt	
ST	16448+93.14	377,125.94	2,580,481.47	PI STA = 16440+59.88		NW Cor Sec 4	5-A	382,648.66	2,588,259.57	RTK 1079	377,517.09	2,588,427.78	1,535.43	16528+76	529' Lt	
PC	16470+93.22	376,867.90	2,582,666.36	Delta = 38° 47' 37" LT		W 1/4 Cor Sec 4	5-B	379,667.88	2,588,368.33	RTK 1476	377,150.27	2,589,140.80	1,529.01	16535+76	142' Lt	
PI C802	16475+25.65	376,817.18	2,583,095.81	D _a = 2° 56' 06"		NW Cor Sec 9	5-C	377,030.90	2,588,464.16	RTK 50545	376,977.27	2,589,291.79	1,530.68	16537+22	35' Rt	
Station equation US 2 (Chain SCL002_RP311) & ND 32 (EX_32)				R = 1,952.08'		W 1/4 Cor Sec 9	5-D	374,377.04	2,588,555.85	RTK 50542	376,985.36	2,589,751.38	1,523.36	16541+82	40' Rt	
US 2	16476+23.36	376,829.97	2,583,194.95	L _s = -400.00'		NE Cor Sec 20	5-G	366,450.10	2,588,823.01	RTK 1455	376,412.17	2,589,840.75	1,532.87	16542+55	616' Rt	
ND 32	8380+93.68	376,829.97	2,583,194.95	S _c = 5° 52' 13"		S 1/4 Cor Sec 4	6-C	377,106.07	2,591,089.99	RTK 1457	376,341.54	2,590,017.45	1,539.06	16544+29	692' Rt	
Sec line Xing	100.17' from PI (Ahd Tan)	376,820.38	2,583,195.92	T _s = 888.45'		NW Cor Sec 3	7-A	382,822.42	2,593,507.48	RTK 50534	376,864.95	2,590,138.15	1,520.73	16545+65	172' Rt	
PT	16479+56.48	376,831.02	2,583,528.02	L 921.71'		W 1/4 Cor Sec 3	7-B	379,836.59	2,593,620.10	RTK 1454	376,567.77	2,590,299.04	1,544.57	16547+17	473' Rt	
1/4 Line Xing	16502+71.44	376,905.10	2,585,841.80			NW Cor Sec 10	7-C	377,181.19	2,593,718.58	RTK 1472	376,724.58	2,590,453.12	1,521.92	16548+76	321' Rt	
POT	16513+61.40	376,939.90	2,586,931.20	C802		SE Cor Sec 9	7-E	371,902.76	2,593,907.39	RTK 1456	376,531.25	2,590,468.66	1,545.15	16548+86	515' Rt	
Sec line Xing	16528+96.59	376,988.92	2,588,465.61	PI STA = 16475+25.65		S 1/4 Cor Sec 3	8-C	377,264.24	2,596,351.97	RTK 1471	376,406.57	2,590,968.08	1,519.38	16553+81	654' Rt	
1/4 Line Xing	16555+23.24	377,064.09	2,591,091.19	Delta = 8° 34' 11" LT		NW Cor Sec 11	9-C	377,347.91	2,598,993.00	RTK 1080	377,006.38	2,593,733.40	1,532.59	16583+81	133' Rt	
POT	16567+05.49	377,097.86	2,592,272.96	D _a = 0° 59' 34"						RTK 150004	377,155.28	2,597,361.55	1,565.26	16620+12	99' Rt	
Station equation US 2 / Sec line Xing				R = 5,771.65'												
US 2 Bk	16581+53.21	377,139.22	2,593,720.08	T = 432.44'												
US 2 Ahd	16583+71.50	377,139.22	2,593,720.08	L = 863.26'												
1/4 Line Xing	16610+06.02	377,222.26	2,596,353.29													
End/ Sec line Xing	16636+48.39	377,305.93	2,598,994.33													
NOTES: Sheet 1 of 2 SCL002_RP311: Follows NDDOT ROW Plat F146(5) 1955 and F-6-002(18)295 1982 SCL002_EB: Follows NDDOT ROW Plat F-6-002(18)295 1982 EX_32: Follows NDDOT ROW Plat F-349(7) 1963				Date Survey Completed 09/01/2019		<input type="checkbox"/> Assumed Coordinates <input checked="" type="checkbox"/> All coordinates on this sheet are Nelson County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota North Zone Combination Factor (cf) = 0.9998685				All coordinates and measurements on this document derived from the International Foot definition.			<div></div>			
										INITIALIZING BENCH MARK NDGPS Stations (OPUS)(VRS)						
										<input checked="" type="checkbox"/> NAVD-88 <input type="checkbox"/> _____						
										<input checked="" type="checkbox"/> GEOID12B <input type="checkbox"/> _____ <input type="checkbox"/> GEOID18						

				STATE		PROJECT NO.		SECTION NO.		SHEET NO.																																																																																																																																																																																																																																																																				
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<div>Alignment Name: PR_WB104OS</div> <div>Alignment Description:</div> <div>Alignment Style: Alignment\Horizontal\Large Scale\Alignment 4</div> <table><thead><tr><th></th><th>Station</th><th>Northing</th><th>Easting</th></tr></thead><tbody><tr><td rowspan="3">Element: Linear START COMBINATION</td><td>() 411+72.25 R1</td><td>376945.0832</td><td>2585840.5270</td></tr><tr><td>() 422+62.20 R1</td><td>376979.8842</td><td>2586929.9250</td></tr><tr><td>Tangential Direction: N88°10'13"E</td><td></td><td></td></tr><tr><td colspan="4">Tangential Length: 1089.9544</td></tr><tr><td rowspan="3">Element: Linear COMBINATION TS</td><td>() 422+62.20 R1</td><td>376979.8842</td><td>2586929.9250</td></tr><tr><td>() 423+54.51 R1</td><td>376982.8313</td><td>2587022.1810</td></tr><tr><td>Tangential Direction: N88°10'13"E</td><td></td><td></td></tr><tr><td colspan="4">Tangential Length: 92.3029</td></tr><tr><td rowspan="3">Element: Clothoid TS SPI SC</td><td>() 423+54.51 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colspan="4">Tangent Direction: S89°22'43"E</td></tr><tr><td rowspan="3">Element: Circular SC COMBINATION CC CS</td><td>() 425+59.51 R1</td><td>376986.4541</td><td>2587227.1330</td></tr><tr><td>() 430+11.12 R1</td><td>376981.5562</td><td>2587678.7200</td></tr><tr><td>() 434+52.26 R1</td><td>376812.5998</td><td>2588097.5370</td></tr><tr><td colspan="4">Radius: 2396.01</td></tr><tr><td colspan="4">Delta: 21°20'54" Right</td></tr><tr><td colspan="4">Degree of Curvature (Arc): 02°23'29"</td></tr><tr><td colspan="4">Length: 892.7525</td></tr><tr><td colspan="4">Tangent: 451.6132</td></tr><tr><td colspan="4">Chord: 887.5972</td></tr><tr><td colspan="4">Middle Ordinate: 41.4598</td></tr><tr><td colspan="4">External: 42.1898</td></tr><tr><td colspan="4">Tangent Direction: S89°22'43"E</td></tr><tr><td colspan="4">Radial Direction: S00°37'17"W</td></tr><tr><td colspan="4">Chord Direction: S78°42'16"E</td></tr><tr><td colspan="4">Radial Direction: S21°58'11"W</td></tr><tr><td colspan="4">Tangent 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colspan="4">Chord Direction: S66°23'46"E</td></tr><tr><td colspan="4">Radial Direction: S24°25'15"W</td></tr><tr><td colspan="4">Tangent Direction: S65°34'45"E</td></tr><tr><td rowspan="3">Element: Linear ST TS</td><td>() 436+57.26 R1</td><td>376730.5223</td><td>2588285.3710</td></tr><tr><td>() 438+66.91 R1</td><td>376643.8440</td><td>2588476.2670</td></tr><tr><td>Tangential Direction: S65°34'45"E</td><td></td><td></td></tr><tr><td colspan="4">Tangential Length: 209.6536</td></tr></tbody></table>					Station	Northing	Easting	Element: Linear START COMBINATION	() 411+72.25 R1	376945.0832	2585840.5270	() 422+62.20 R1	376979.8842	2586929.9250	Tangential Direction: N88°10'13"E			Tangential Length: 1089.9544				Element: Linear COMBINATION TS	() 422+62.20 R1	376979.8842	2586929.9250	() 423+54.51 R1	376982.8313	2587022.1810	Tangential Direction: N88°10'13"E			Tangential Length: 92.3029				Element: Clothoid TS SPI SC	() 423+54.51 R1	376982.8313	2587022.1820	() 424+91.19 R1	376987.1953	2587158.7920	() 425+59.51 R1	376986.4541	2587227.1330	Entrance Radius: 0				Exit Radius: 2396.01				Length: 205				Angle: 02°27'04" Right				Constant: 700.8438				Long Tangent: 136.6798				Short Tangent: 68.3452				Long Chord: 204.9833				Xs: 204.9625				Ys: 2.9229				P: 0.7308				K: 102.4937				Tangent Direction: N88°10'13"E				Radial Direction: S01°49'47"E				Chord Direction: N88°59'14"E				Radial Direction: S00°37'17"W				Tangent Direction: S89°22'43"E				Element: Circular SC COMBINATION CC CS	() 425+59.51 R1	376986.4541	2587227.1330	() 430+11.12 R1	376981.5562	2587678.7200	() 434+52.26 R1	376812.5998	2588097.5370	Radius: 2396.01				Delta: 21°20'54" Right				Degree of Curvature (Arc): 02°23'29"				Length: 892.7525				Tangent: 451.6132				Chord: 887.5972				Middle Ordinate: 41.4598				External: 42.1898				Tangent Direction: S89°22'43"E				Radial Direction: S00°37'17"W				Chord Direction: S78°42'16"E				Radial Direction: S21°58'11"W				Tangent Direction: S68°01'49"E				Element: Clothoid CS SPI ST	() 434+52.26 R1	376812.5998	2588097.5370	() 435+20.60 R1	376787.0307	2588160.9190	() 436+57.26 R1	376730.5223	2588285.3710	Entrance Radius: 2396.01				Exit Radius: 0				Length: 205				Angle: 02°27'04" Right				Constant: 700.8438				Long Tangent: 136.6798				Short Tangent: 68.3452				Long Chord: 204.9833				Xs: 204.9625				Ys: 2.9229				P: 0.7308				K: 102.4937				Tangent Direction: S68°01'49"E				Radial Direction: S21°58'11"W				Chord Direction: S66°23'46"E				Radial Direction: S24°25'15"W				Tangent Direction: S65°34'45"E				Element: Linear ST TS	() 436+57.26 R1	376730.5223	2588285.3710	() 438+66.91 R1	376643.8440	2588476.2670	Tangential Direction: S65°34'45"E			Tangential Length: 209.6536				<div>Element: Clothoid</div> <div>TS SPI SC</div> <div>() 438+66.91 R1 376643.8440 2588476.2670 () 439+86.93 R1 376594.2266 2588585.5420 () 440+46.91 R1 376571.8499 2588641.2260</div> <div>Entrance Radius: 0 Exit Radius: 2040 Length: 180 Angle: 02°31'40" Left Constant: 605.9703 Long Tangent: 120.0122 Short Tangent: 60.0111 Long Chord: 179.9844 Xs: 179.965 Ys: 2.6467 P: 0.6617 K: 89.9942</div> <div>Tangent Direction: S65°34'45"E Radial Direction: S24°25'15"W Chord Direction: S66°25'18"E Radial Direction: S21°53'35"W Tangent Direction: S68°06'25"E</div> <div>Element: Circular</div> <div>SC COMBINATION CC CS</div> <div>() 440+46.91 R1 376571.8499 2588641.2260 () 448+09.86 R1 376287.3634 2589349.1540 () 455+07.10 R1 376537.2419 2590070.0250</div> <div>Radius: 2040 Delta: 41°00'40" Left Degree of Curvature (Arc): 02°48'31" Length: 1460.191</div> <div>Tangent: 762.9513 Chord: 1429.2185 Middle Ordinate: 129.2584 External: 138.0025 Tangent Direction: S68°06'25"E Radial Direction: S21°53'35"W Chord Direction: S88°36'45"E Radial Direction: S19°07'05"E Tangent Direction: N70°52'55"E</div> <div>Element: Clothoid</div> <div>CS SPI ST</div> <div>() 455+07.10 R1 376537.2419 2590070.0250 () 455+67.12 R1 376556.8965 2590126.7260 () 456+87.10 R1 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109.995</div> <div>Tangent Direction: N86°14'24"E Radial Direction: S03°45'36"E Chord Direction: N87°39'19"E Radial Direction: S01°38'13"E Tangent Direction: N88°21'47"E</div> <div>Element: Linear</div> <div>ST COMBINATION</div> <div>() 477+08.12 R1 377134.9711 2592171.3380 () 478+08.63 R1 377137.8427 2592271.8150</div> <div>Tangential Direction: N88°21'47"E Tangential Length: 100.5180</div> <div>Element: Linear</div> <div>COMBINATION END</div> <div>() 478+08.63 R1 377137.8427 2592271.8150 () 492+56.06 R1 377179.1919 2593718.6500</div> <div>Tangential Direction: N88°21'47"E Tangential Length: 1447.4260</div>	<div>Office Location Alignment for New US Hwy 2 Westbound Roadway Alignment Name: PR_WB104OS</div> <div>US Hwy 2 Westbound Roadway 1 mile East of ND 32 South Nelson County</div>	<div><div>ANKA SAMARDZI REGISTERED PROFESSIONAL PE 4888 ENGINEER NORTH DAKOTA</div><div>12/16/21</div></div>
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colspan="3">2638.7248</td></tr></tbody></table>					Station	Northing	Easting	Element: Linear				START	()	0+00.00	374377.0370 2588555.8470	COMBINATION	()	26+55.44	377030.8970 2588464.1570	Tangential Direction:	N01°58'44"W			Tangential Length:	2655.4435			Element: Linear				COMBINATION	()	26+55.44	377030.8970 2588464.1570	END	()	52+94.17	379667.8810 2588368.3250	Tangential Direction:	N02°04'53"W			Tangential Length:	2638.7248			<div>Alignment Name: OCL_W_Xover1 Alignment Description: Alignment Style: Alignment\Horizontal\Large Scale\Alignment 3</div> <table><thead><tr><th></th><th>Station</th><th>Northing</th><th>Easting</th></tr></thead><tbody><tr><td>Element: Linear</td><td></td><td></td><td></td></tr><tr><td>START</td><td>()</td><td>20+00.00 R1</td><td>376945.1104 2585997.9638</td></tr><tr><td>PC</td><td>()</td><td>20+51.00 R1</td><td>376946.7338 2586048.9335</td></tr><tr><td>Tangential Direction:</td><td colspan="3">N88°10'33"E</td></tr><tr><td>Tangential Length:</td><td 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2586283.1757	PC	()	23+84.21 R1	376911.3764 2586379.4135	Tangential Direction:	S79°33'55"E			Tangential Length:	97.8561			Element: Circular				PC	()	23+84.21 R1	376911.3764 2586379.4135	COMBINATION	()	25+02.39 R1	376889.9721 2586495.6400	CC	()		377993.1847 2586578.6391	PT	()	26+19.66 R1	376893.7455 2586613.7608	Radius:	1100			Delta:	12°15'52" Left			Degree of Curvature (Arc):	05°12'31"			Length:	235.4589			Tangent:	118.181			Chord:	235.0096			Middle Ordinate:	6.2941			External:	6.3303			Tangent Direction:	S79°33'55"E			Radial Direction:	S10°26'05"W			Chord Direction:	S85°41'51"E			Radial Direction:	S01°49'47"E			Tangent Direction:	N88°10'13"E			Element: Linear				PT	()	26+19.66 R1	376893.7455 2586613.7608	END	()	26+82.85 R1	376895.7631 2586676.9189	Tangential Direction:	N88°10'13"E			Tangential Length:	63.1903			<div>Alignment Name: OCL_E_XOVER Alignment Description: Alignment Style: Alignment\Horizontal\Large Scale\Alignment 2</div> 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2594527.1471	Radius:	1100			Delta:	12°04'45" Left			Degree of Curvature (Arc):	05°12'31"			Length:	231.9022			Tangent:	116.3825			Chord:	231.4729			Middle Ordinate:	6.1055			External:	6.1396			Tangent Direction:	N88°11'37"E			Radial Direction:	S01°48'23"E			Chord Direction:	N82°09'15"E			Radial Direction:	S13°53'07"E			Tangent Direction:	N76°06'53"E			Element: Linear				PT	()	53+31.90 R1	377153.0166 2594527.1471	PC	()	54+33.65 R1	377177.4332 2594625.9180	Tangential Direction:	N76°06'53"E			Tangential Length:	101.7441			Element: Circular				PC	()	54+33.65 R1	377177.4332 2594625.9180	COMBINATION	()	55+50.03 R1	377205.3627 2594738.8995	CC	()		376109.5776 2594889.8963	PT	()	56+65.55 R1	377209.0311 2594855.2241	Radius:	1100			Delta:	12°04'45" Right			Degree of Curvature (Arc):	05°12'31"			Length:	231.9022			Tangent:	116.3825			Chord:	231.4729			Middle Ordinate:	6.1055			External:	6.1396			Tangent Direction:	N76°06'53"E			Radial Direction:	S13°53'07"E			Chord Direction:	N82°09'15"E			Radial 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COMBINATION	()	25+02.39 R1	376889.9721 2586495.6400																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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COMBINATION	()	52+16.38 R1	377125.0871 2594414.1656																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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<div>Office Location Alignments for 122nd Ave NE, West Median Crossover, and East Median Crossover</div> <div>US Hwy 2 Westbound Roadway 1 mile East of ND 32 South Nelson County</div>				<div><div>FRANKA SAMARDZIC REGISTERED PROFESSIONAL PE 4888 ENGINEER NORTH DAKOTA</div><div>12/16/21</div></div>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							





STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	82	2

Point	Northing	Easting	Station	Offset
8011	376134.96	2589345.46	16537+51.64	878.8
8012	377161.09	2589517.48	16539+52.95	-142.0
8013	376212.00	2589578.62	16539+86.91	808.5
8014	376162.12	2589582.89	16539+89.75	858.4
8015	377129.29	2589629.57	16540+64.09	-107.0
8016	376733.10	2589736.65	16541+59.79	292.1
8017	376805.40	2589758.54	16541+83.74	220.4
8018	377003.91	2589792.87	16542+23.73	23.0
8019	376369.39	2590342.83	16547+55.31	673.0
8020	376458.28	2590566.82	16549+81.75	590.6
8021	376550.25	2590798.57	16552+16.04	505.3
8022	376655.89	2591064.77	16554+85.15	407.3
8023	377231.02	2591086.41	16555+23.24	-167.0
8024	377206.03	2591087.13	16555+23.24	-142.0
8025	377037.15	2591618.82	16560+49.89	42.0
8026	376877.60	2591847.03	16562+73.45	208.0
8027	376889.94	2592278.90	16567+05.49	208.0
8028	377055.88	2592274.16	16567+05.49	42.0
8038	376962.65	2589574.65	16540+04.42	58.0
8039	376930.82	2589685.92	16541+14.74	93.0
8040	376939.64	2589994.12	16544+23.06	93.0
8041	376727.62	2589994.01	16544+16.88	304.9
8042	376796.95	2590173.15	16545+97.93	240.8
8043	376834.07	2590266.68	16546+92.49	206.3

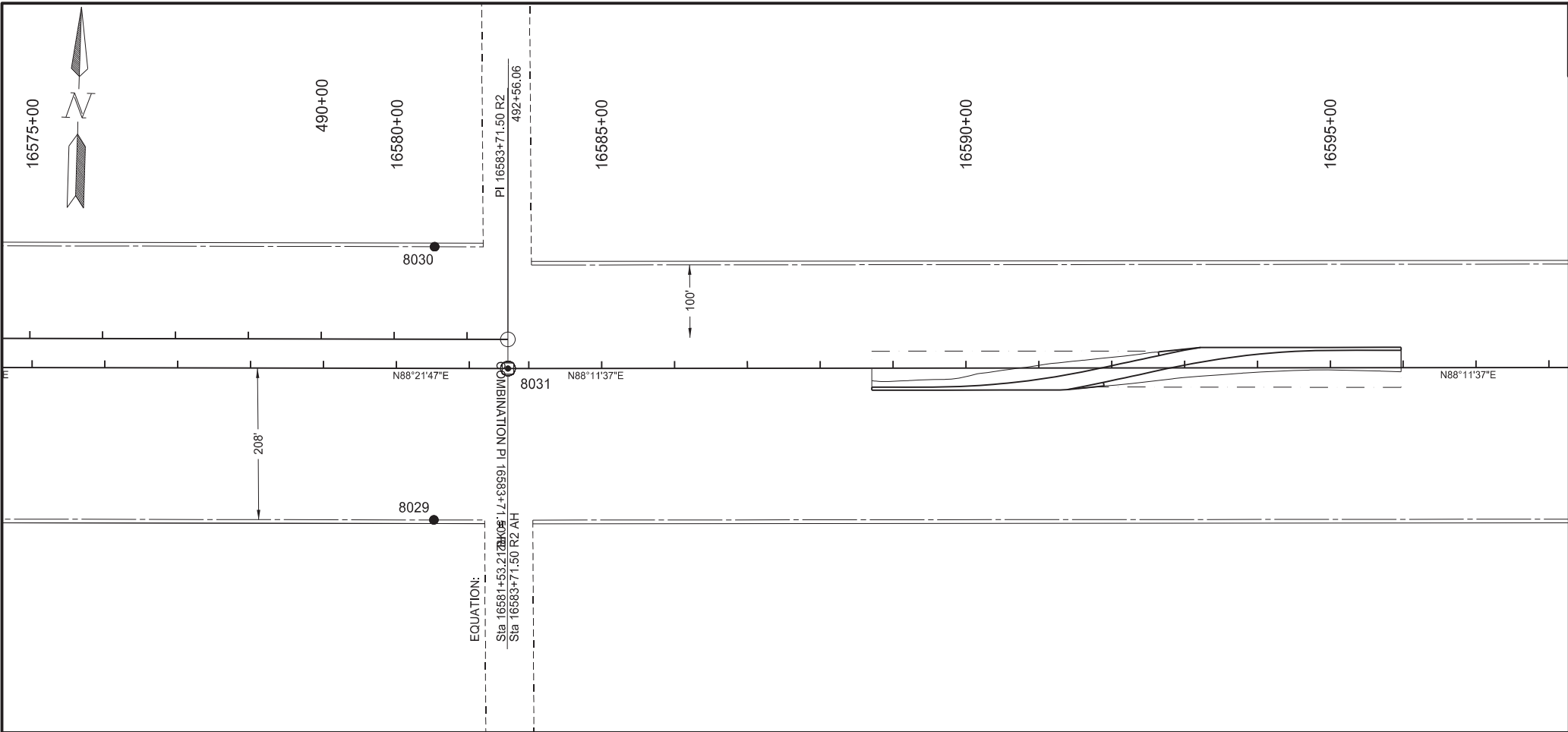
Point	Iron Pin R/W Monument	Iron Pin Reference Monument	R/W Marker (Witness Post)	Alignment Monument	Chain Name
8011				X	SCL002_RP311
8012	X		X		SCL002_RP311
8013	X		X		SCL002_RP311
8014	X		X		SCL002_RP311
8015	X		X		SCL002_RP311
8016	X		X		SCL002_RP311
8017	X		X		SCL002_RP311
8018	X		X		SCL002_RP311
8019	X		X		SCL002_RP311
8020	X		X		SCL002_RP311
8021	X		X		SCL002_RP311
8022	X		X		SCL002_RP311
8023	X		X		SCL002_RP311
8024	X		X		SCL002_RP311
8025				X	SCL002_RP311
8026	X		X		SCL002_RP311
8027	X		X		SCL002_RP311
8028				X	SCL002_RP311

- LEGEND
- Iron Pin Reference Monument
 - Alignment Monument
 - ⊙ R/W Marker (witness post)
 - Iron Pin R/W Monument

RW Monuments & Markers

US Hwy 2 Westbound Roadway
1 mile East of ND 32 South
Nelson County





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	82	3

Point	Northing	Easting	Station	Offset
8029	376928.49	2593624.75	16580+51.89	207.9
8030	377303.16	2593614.33	16580+52.19	-166.9
8031	377139.22	2593720.08	16583+71.50	0.0

Point	Iron Pin R/W Monument	Iron Pin Reference Monument	R/W Marker (Witness Post)	Alignment Monument	Chain Name
8029		X			SCL002_RP311
8030		X			SCL002_RP311
8031				X	SCL002_RP311

- LEGEND
- Iron Pin Reference Monument
 - ⊕ R/W Marker (witness post)
 - Alignment Monument
 - Iron Pin R/W Monument

RW Monuments & Markers

US Hwy 2 Westbound Roadway
1 mile East of ND 32 South
Nelson County



02/10/22

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	100	1

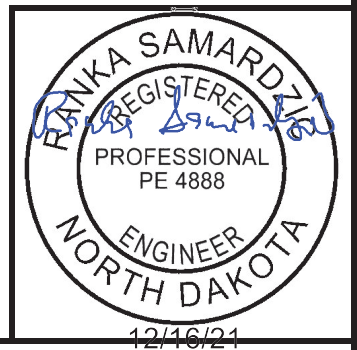
SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
			BY PHASE NO.				
			1	2			
E5-1-48	48"x48"	EXIT GORE				35	
G20-1-60	60"x24"	ROAD WORK NEXT _ MILES	4	4	4	28	112
G20-1b-60	60"x24"	NO WORK IN PROGRESS (Sign and installation only)	4	4	4	18	72
G20-2-48	48"x24"	END ROAD WORK	6	6	6	26	156
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)				18	
G20-10-108	108"x48"	CONTRACTOR SIGN	2	2	2	70	140
G20-50a-72	72"x36"	ROAD WORK NEXT _ MILES RT & LT ARROWS				43	
G20-52a-72	72"x24"	ROAD WORK NEXT _ MILES RT or LT ARROW	1	1	1	36	36
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$80 WHEN WORKERS PRESENT	4	4	4	59	236
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)				10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)				10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)				10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)				7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)				7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)				7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)				7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)				7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT				15	
M4-10-48	48"x18"	DETOUR (INSIDE ARROW) RIGHT or LEFT (Mounted on barricade)				7	
M5-1-21	21"x15"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)				7	
M5-1-30	30"x21"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)				9	
M6-1-21	21"x15"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)				7	
M6-1-30	30"x21"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)				9	
M6-3-21	21"x15"	DIRECTIONAL ARROW UP (Mounted on route marker post)				7	
R1-1-48	48"x48"	STOP		2	2	32	64
R1-2-60	60"x60"	YIELD		4	4	29	116
R2-1-36	36"x48"	SPEED LIMIT _ (Portable only)	2	4	4	30	120
R2-1-48	48"x60"	SPEED LIMIT _	8	16	16	39	624
R2-1aP-24	24"x18"	MINIMUM FEE \$80 (Mounted on Speed Limit post)	6	10	10	10	100
R3-2-48	48"x48"	NO LEFT TURN				35	
R4-1-36	36"x48"	DO NOT PASS (Portable only)		2	2	30	60
R4-1-48	48"x60"	DO NOT PASS		2	2	39	78
R4-7-48	48"x60"	KEEP RIGHT				39	
R5-1-48	48"x48"	DO NOT ENTER				35	
R6-1-54	54"x18"	ONE WAY RIGHT or LEFT (Mounted on STOP or DO NOT ENTER post)				14	
R7-1-12	12"x18"	NO PARKING ANY TIME				11	
R10-6-24	24"x36"	STOP HERE ON RED				16	
R11-2-48	48"x30"	ROAD CLOSED (Mounted on barricade)	6		6	12	72
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)				12	
R11-3a-60	60"x30"	ROAD CLOSED _ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)				15	
R11-3c-60	60"x30"	STREET CLOSED _ MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)				15	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC (Mounted on barricade)				15	
W1-3-48	48"x48"	REVERSE TURN RIGHT or LEFT				35	
W1-4-48	48"x48"	REVERSE CURVE RIGHT or LEFT		2	2	35	70
W1-4b-48	48"x48"	TWO LANE REVERSE CURVE RIGHT or LEFT				35	
W1-6-48	48"x24"	ONE DIRECTION LARGE ARROW		1	1	26	26
W1-6-60	60"x30"	ONE DIRECTION LARGE ARROW				31	
W3-1-48	48"x48"	STOP AHEAD				35	
W3-3-48	48"x48"	SIGNAL AHEAD				35	
W3-4-48	48"x48"	BE PREPARED TO STOP	3	3	3	35	105
W3-5-48	48"x48"	SPEED REDUCTION AHEAD	4	6	6	35	210
W4-2-48	48"x48"	LANE ENDS RIGHT or LEFT	6	4	6	35	210
W5-1-48	48"x48"	ROAD NARROWS				35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE	1	4	4	35	140
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW	1	4	4	35	140
W6-3-48	48"x48"	TWO WAY TRAFFIC		2	2	35	70
W8-1-48	48"x48"	BUMP		2	2	35	70
W8-3-48	48"x48"	PAVEMENT ENDS		1	1	35	35
W8-7-48	48"x48"	LOOSE GRAVEL				35	
W8-11-48	48"x48"	UNEVEN LANES		2	2	35	70
W8-12-48	48"x48"	NO CENTER LINE				35	
W8-17-48	48"x48"	SHOULDER DROP-OFF SYMBOL				35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY				35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or _ FT or _ MILE	4	4	4	35	140
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or _ FT or _ MILE	2	2	2	35	70
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY	4	4	4	35	140
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL				35	
W12-2-48	48"x48"	LOW CLEARANCE				35	
W13-1P-30	30"x30"	_ MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)				14	
W14-3-64	64"x48"	NO PASSING ZONE				28	
W16-2P-30	30"x24"	_ FEET PLAQUE (Mounted on warning sign post)	2	2	2	10	20
W20-1-48	48"x48"	ROAD WORK AHEAD or _ FT or _ MILE	6	4	6	35	210
W20-2-48	48"x48"	DETOUR AHEAD or _ FT or _ MILE		4	4	35	140
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or _ FT or _ MILE				35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or _ FT or _ MILE				35	
W20-5-48	48"x48"	RIGHT or CENTER or LEFT LANE CLOSED AHEAD or _ FT or _ MILE	10	4		35	350
W20-7-48	48"x48"	FLAGGER	3	4	4	35	140
W20-8-18	18"x18"	STOP - SLOW PADDLE Back to Back	3	8	8	5	40
W20-52P-54	54"x12"	NEXT _ MILES (Mounted on warning sign post)		2	2	12	24
W21-1-48	48"x48"	WORKERS				35	
W21-2-48	48"x48"	FRESH OIL		2	2	35	70
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or _ FT or _ MILE	4	4	4	35	140

[illegible][illegible]

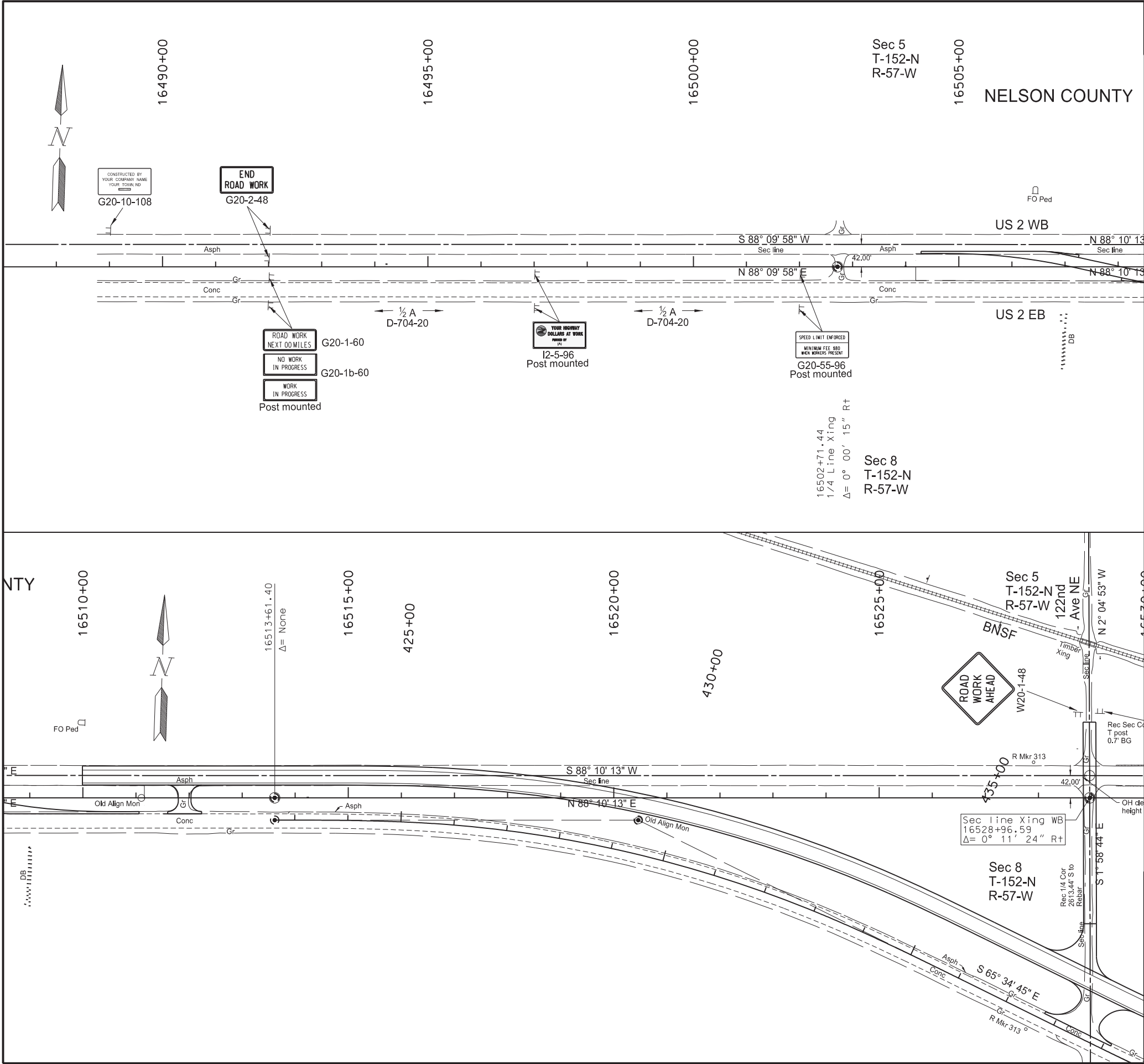
SPEC & CODE			
704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	4887

[illegible]

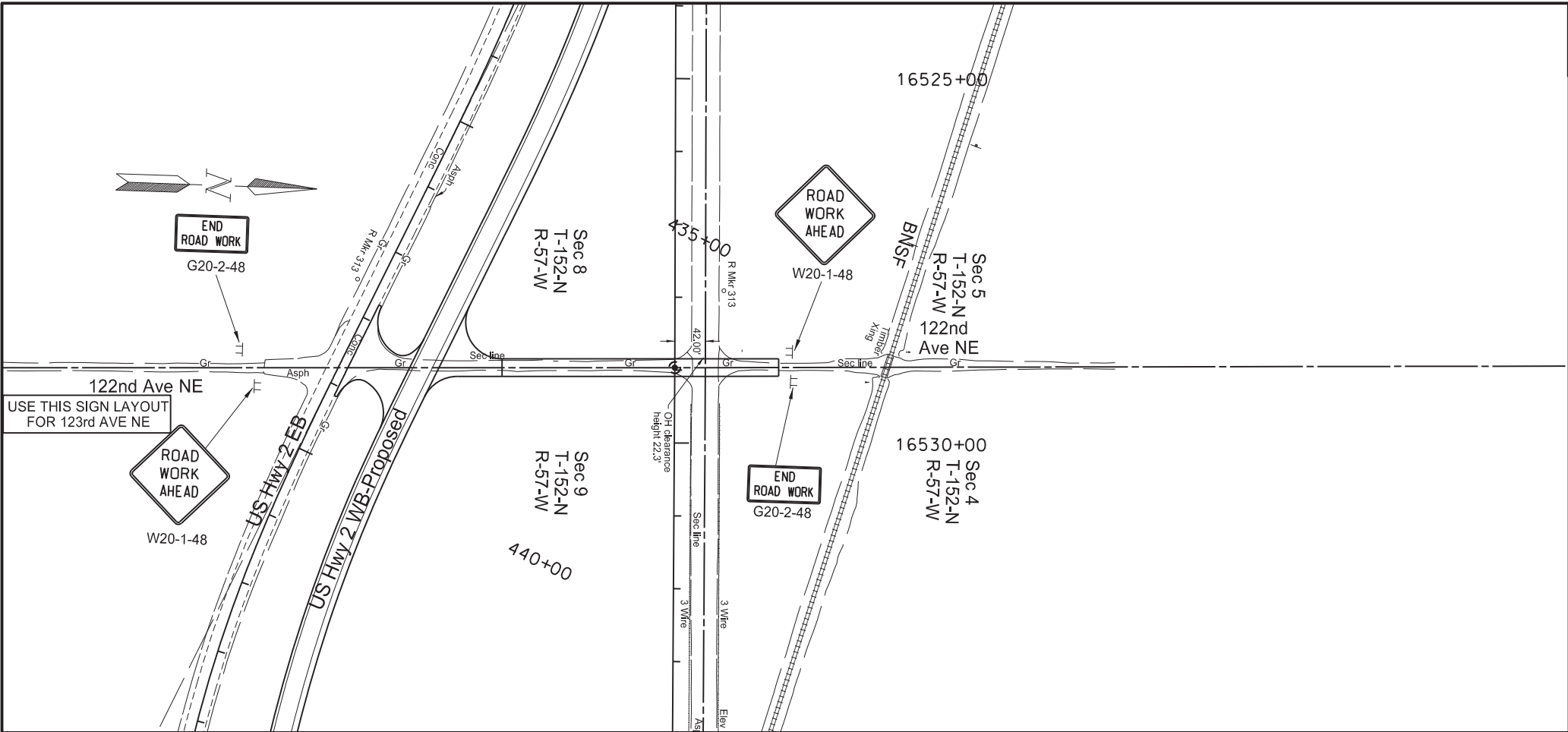
NOTE:
If additional signs are required, units will be calculated using the formula from Section III-18.06 of the Design Manual.
<http://www.dot.nd.gov/>



Traffic Control Devices List
Phase 1 is Year 1; Phase 2 is Year 2
US 2 Westbound Roadway
1 mile East of ND South
Nelson County



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	100	2
NELSON COUNTY			
US 2 WB			
US 2 EB			
Sec 5 T-152-N R-57-W			
Sec 8 T-152-N R-57-W			
16502+71.44 1/4 Line Xing $\Delta = 0^\circ 00' 15''$ R+			
16528+96.59 Sec line Xing WB $\Delta = 0^\circ 11' 24''$ R+			
Workzone Traffic Control US Hwy 2 Westbound Roadway		<div>FRANKA SAMARDZIC REGISTERED PROFESSIONAL PE 4888 ENGINEER NORTH DAKOTA 12/16/21</div>	
1 mile East of ND 32 South Nelson County			

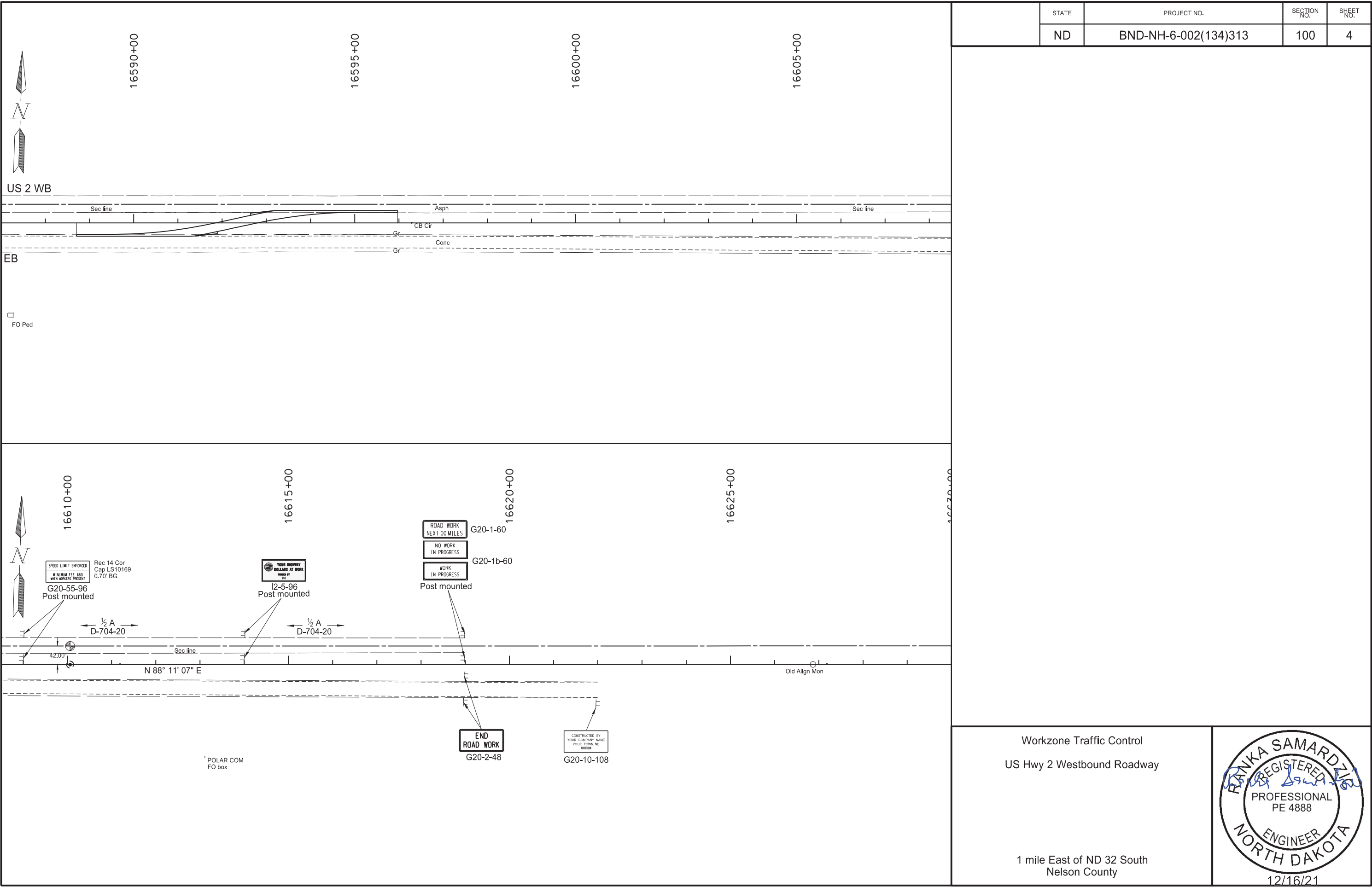


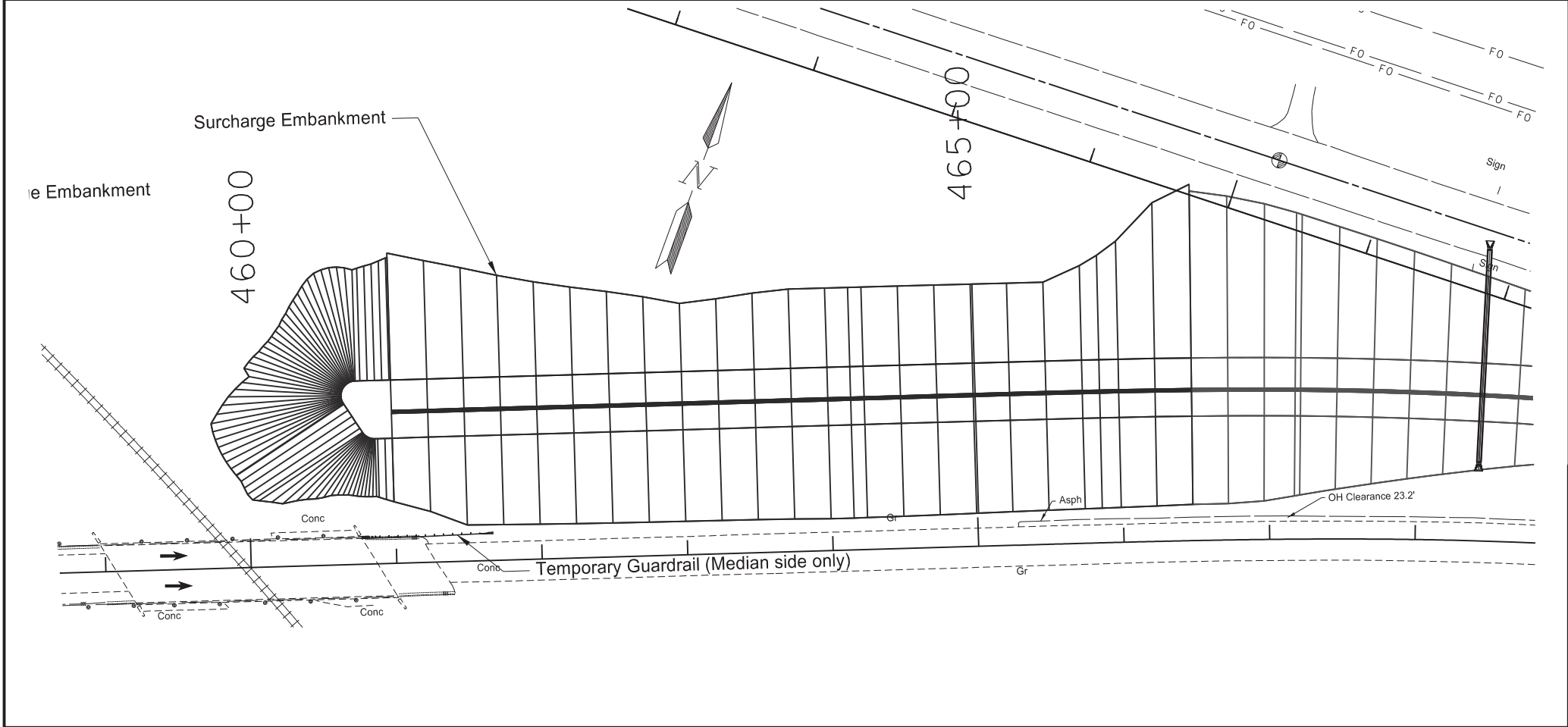
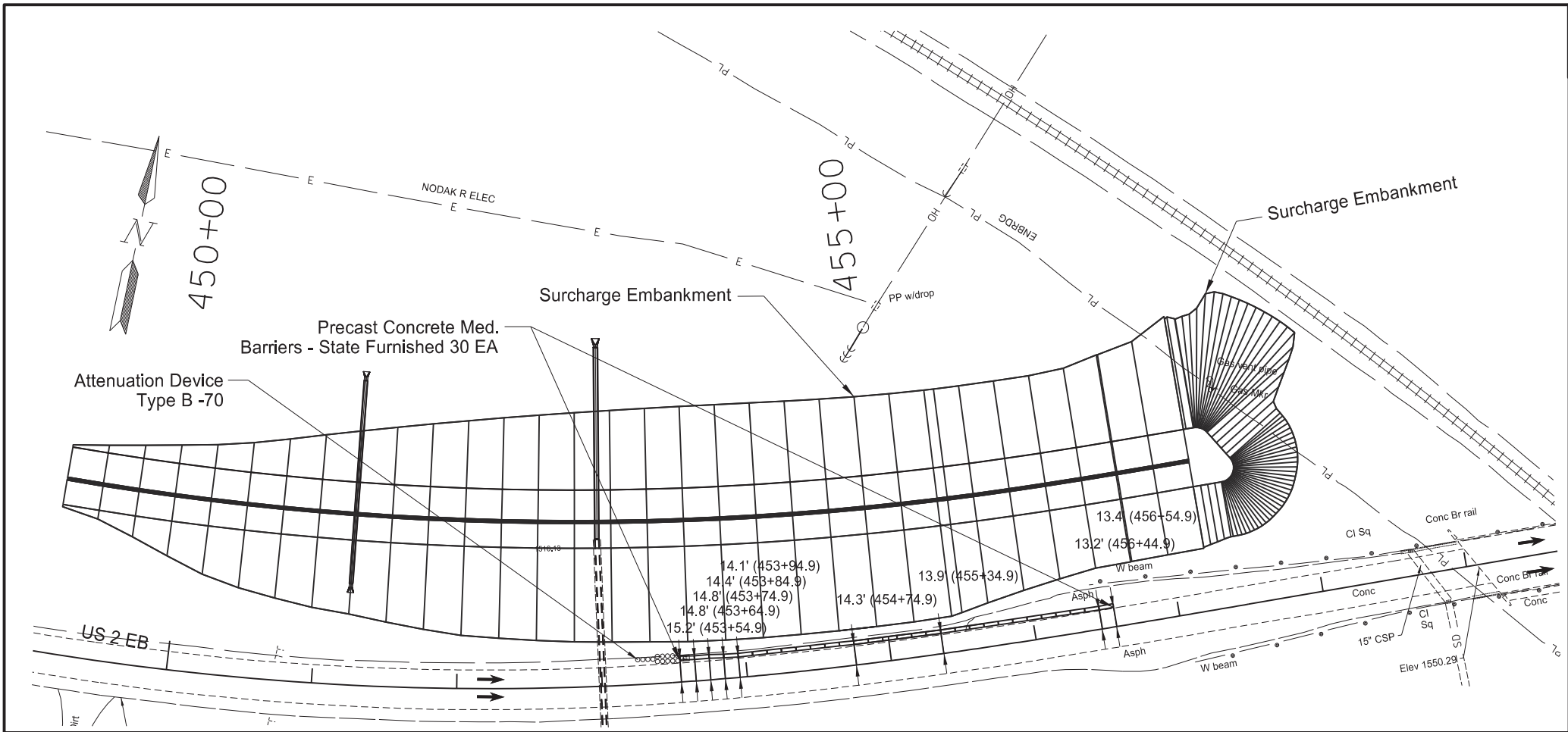
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	100	3

Workzone Traffic Control
US Hwy 2 Westbound Roadway

1 mile East of ND 32 South
Nelson County







STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	100	5

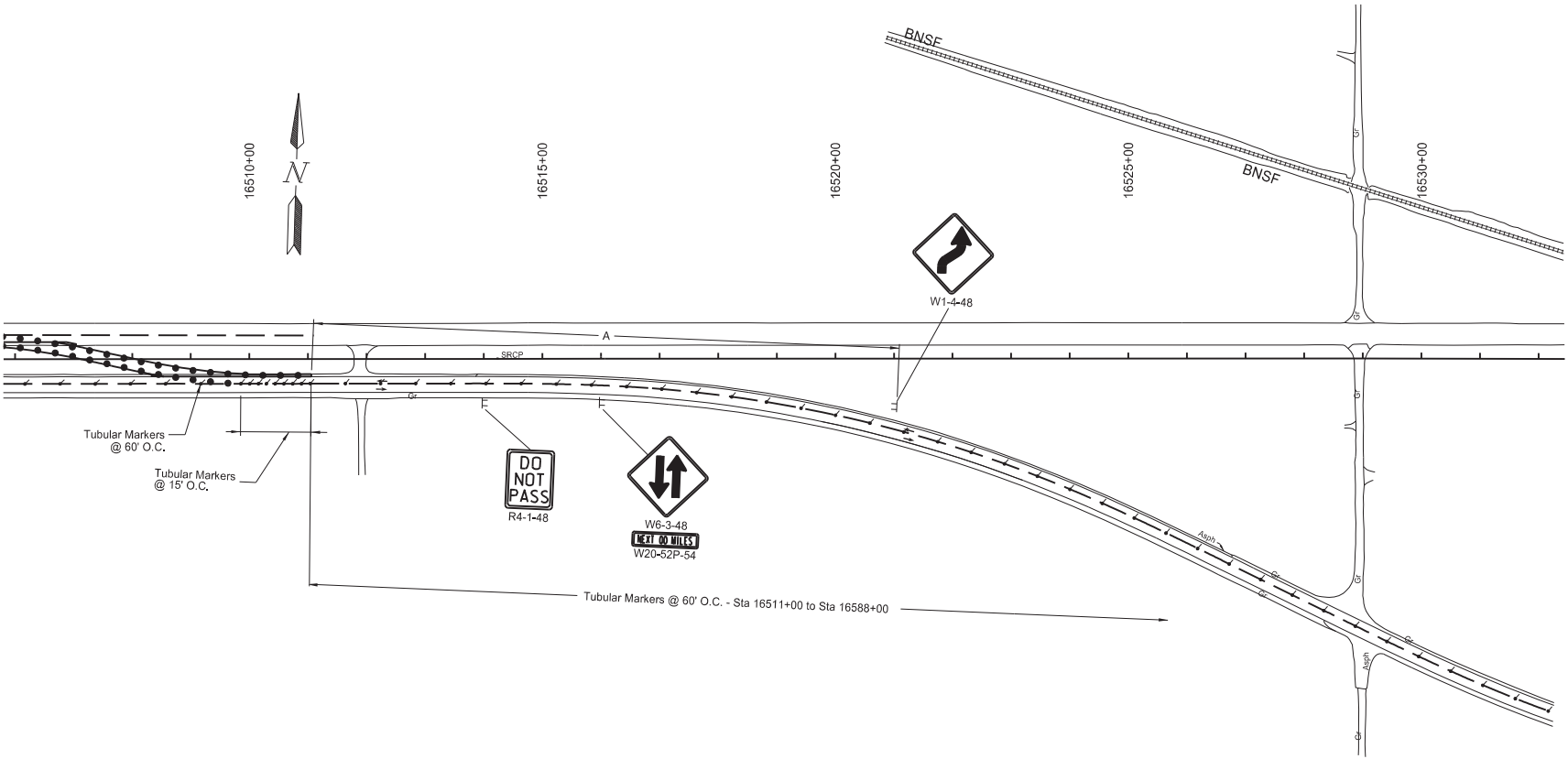
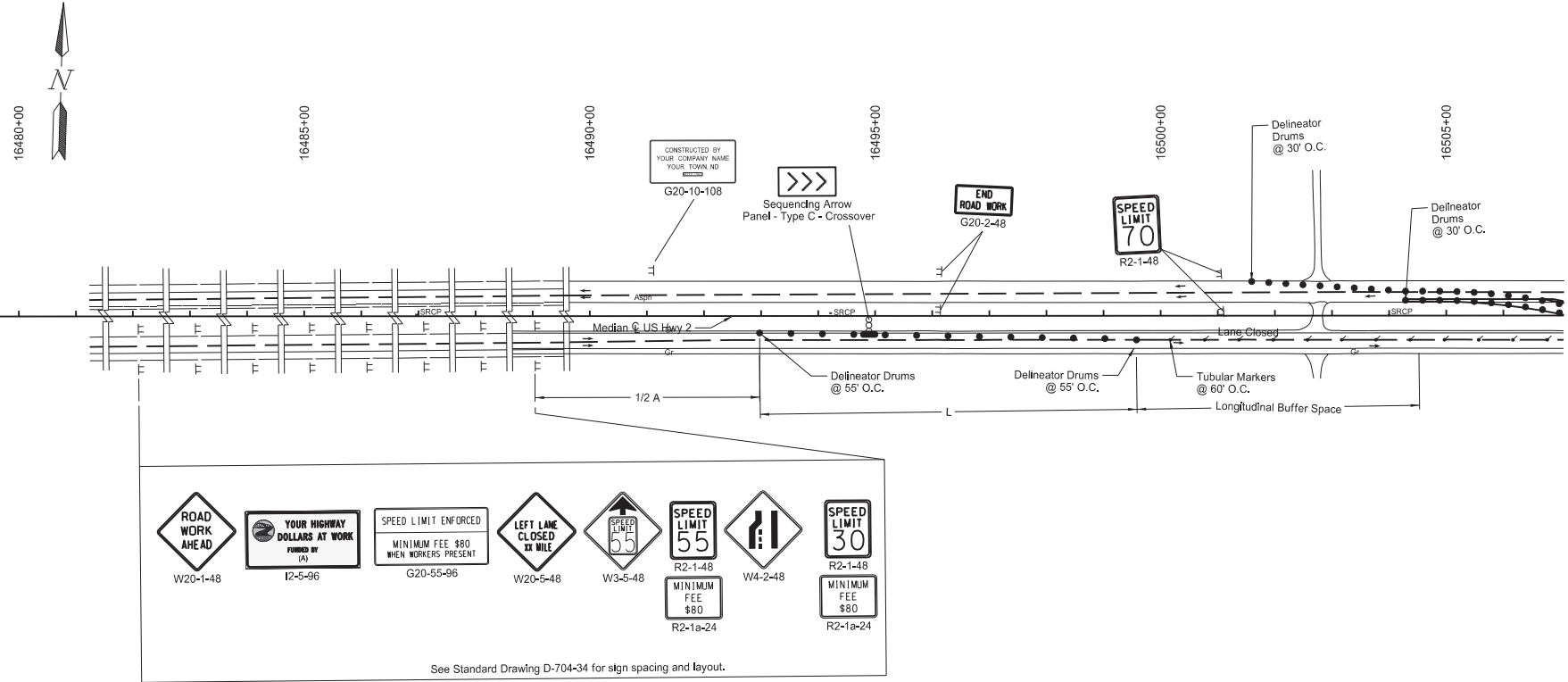
NOTE: After removal of surcharge embankment remove Barrel Attenuation Device Type B-70 and Precast Concrete Median Barriers.

Workzone Traffic Control
Precast Concrete Median Barriers
& Barrel Attenuation Device Type B-70
Layout

1 mile East of ND 32 South
Nelson County

RANKA SAMARDZIC
REGISTERED
PROFESSIONAL
PE 4888
ENGINEER
NORTH DAKOTA
12/16/21

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	100	6

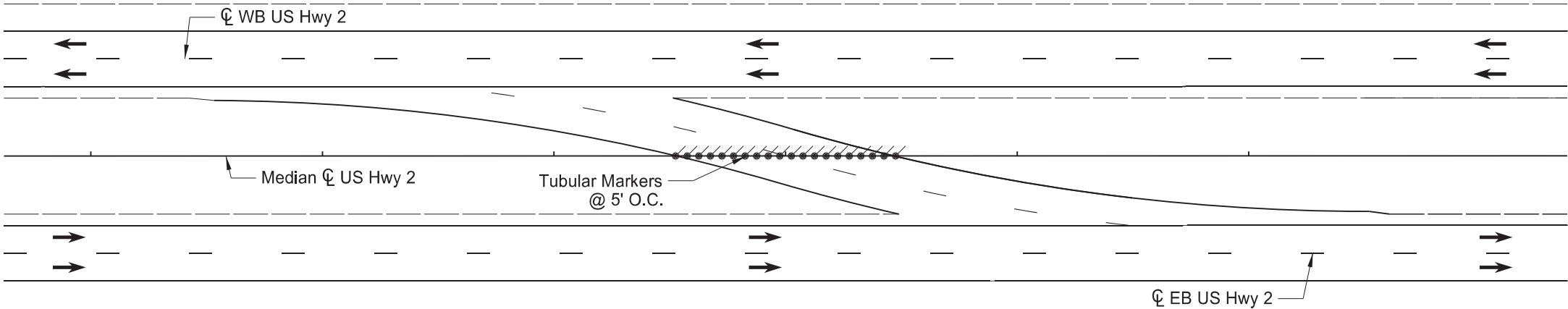
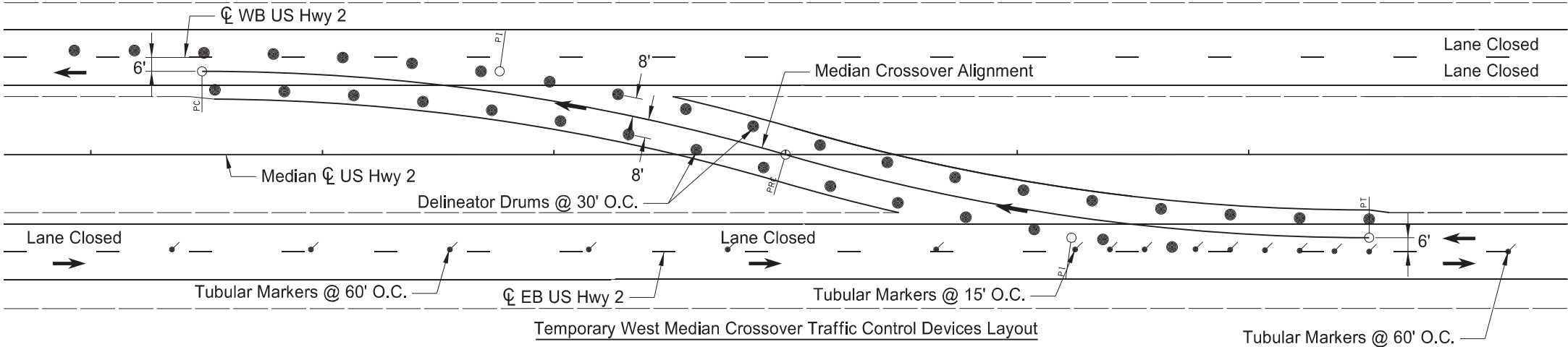


West Temporary Median Crossover
Workzone Traffic Control

1 Mile East of ND 32 South
Nelson County

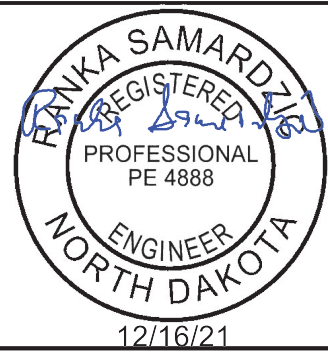


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	100	7



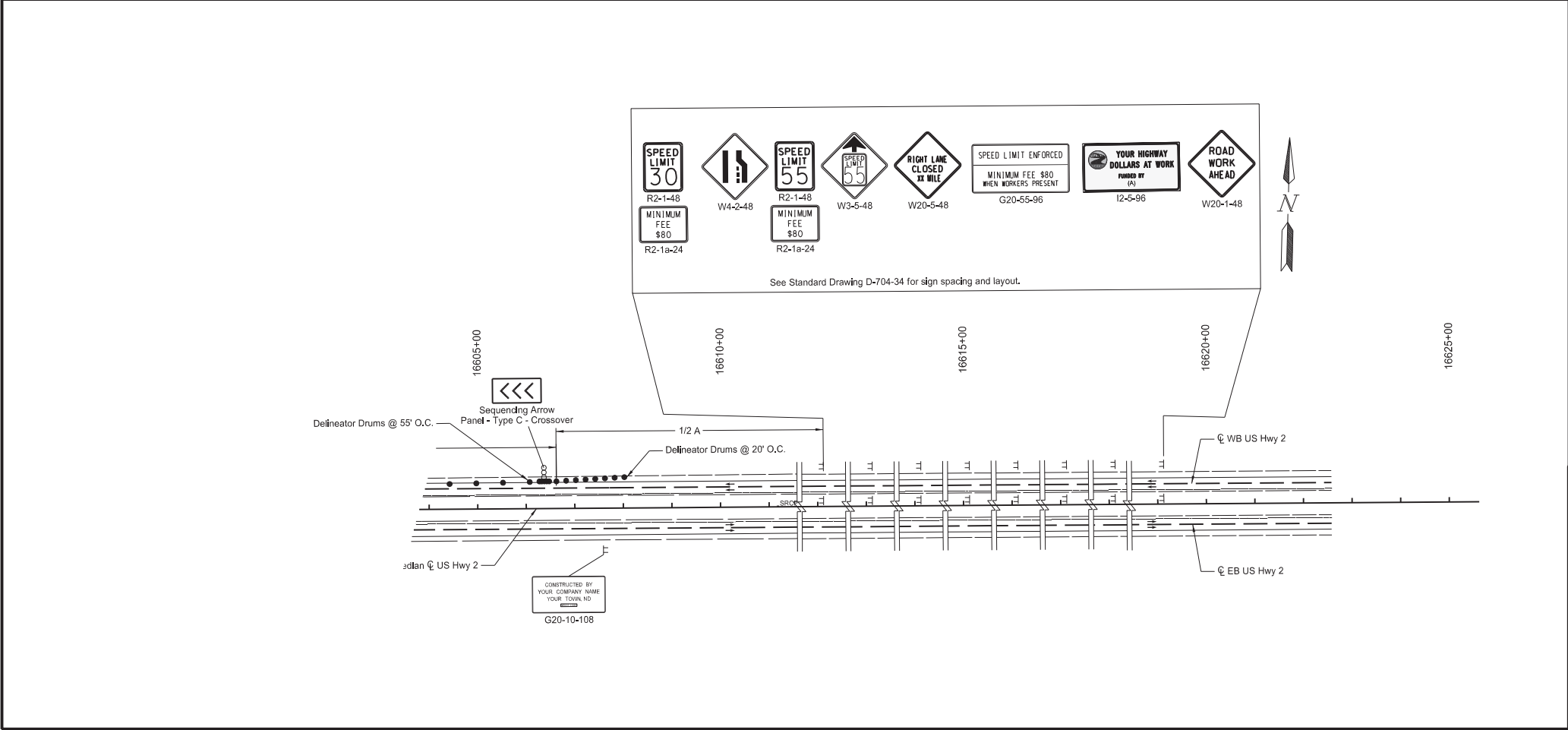
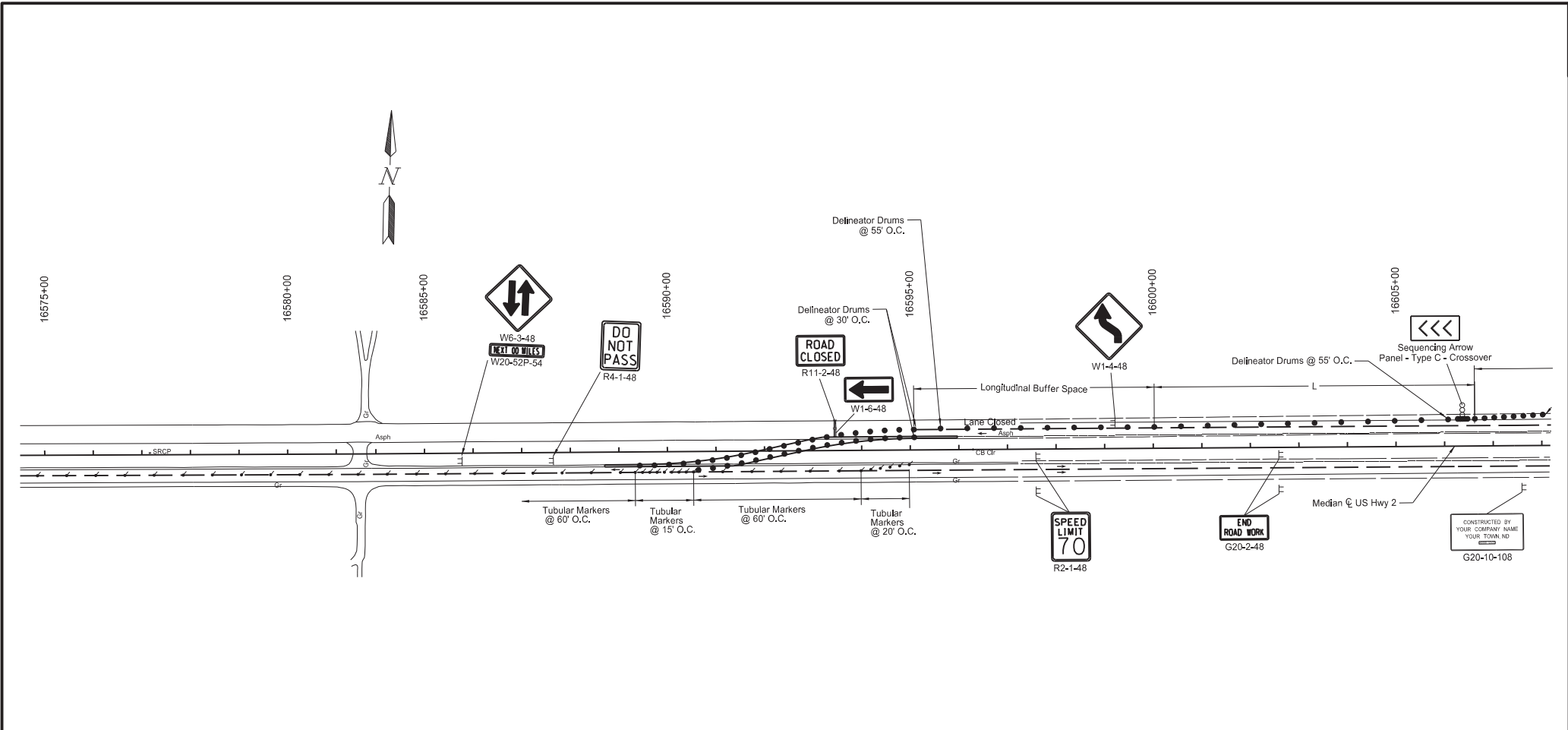
Typical West Crossover Layout when Crossover Not in Use
(Devices shown to be installed after completion of crossover and when crossover is not in use.)

Note: See Traffic Control Layouts for additional details and signing.



Workzone Traffic Control
Temporary West Median Crossover

1 Mile East of ND 32 South
Nelson County

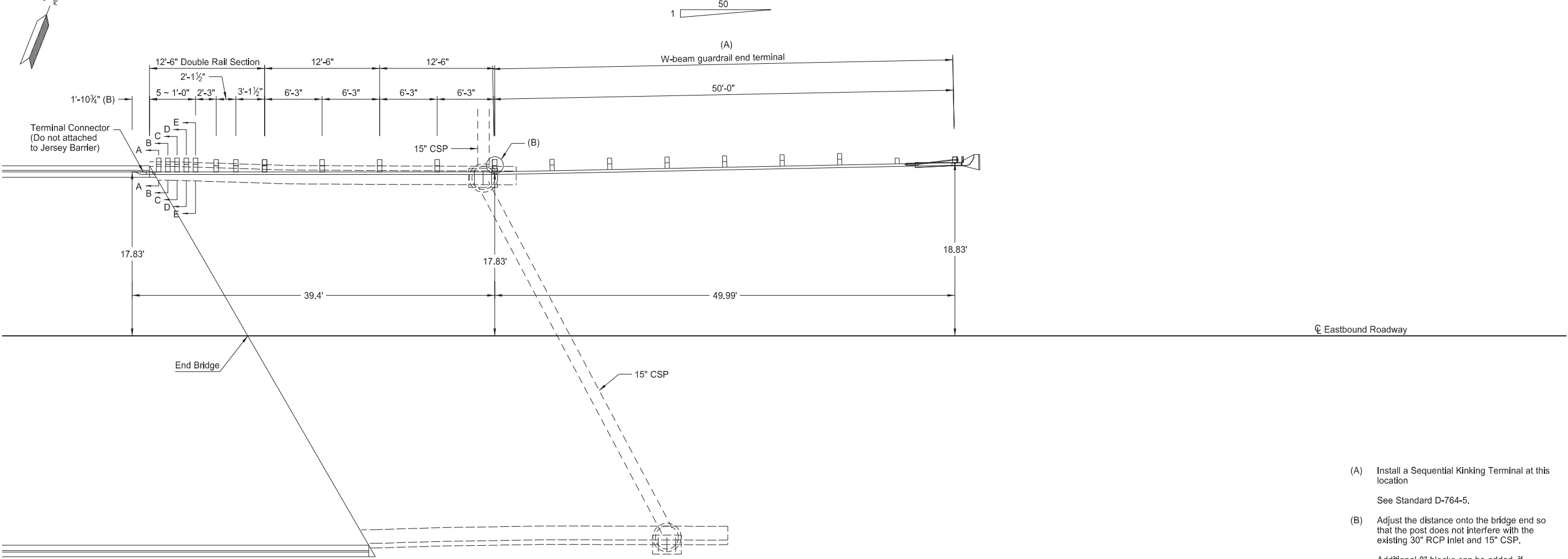


STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	100	8

East Temporary Median Crossover
Workzone Traffic Control

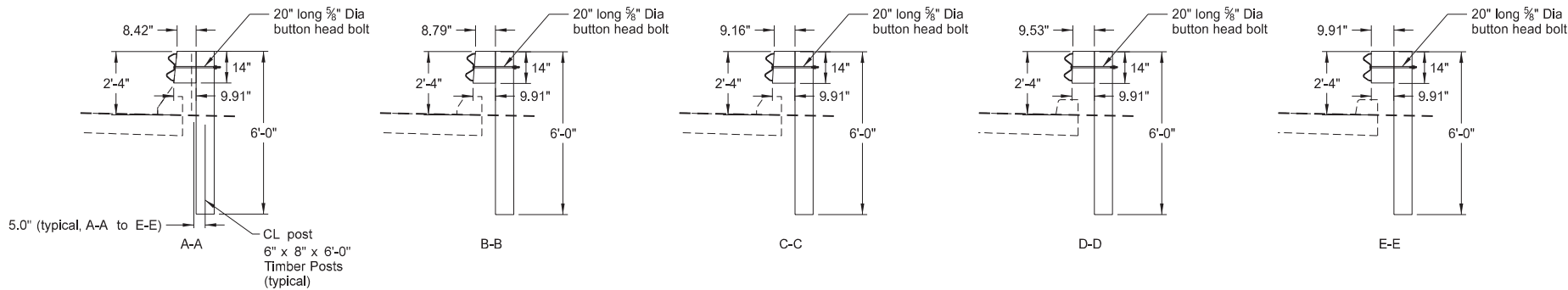
1 Mile East of ND 32 South
Nelson County





- (A) Install a Sequential Kinking Terminal at this location
See Standard D-764-5.
- (B) Adjust the distance onto the bridge end so that the post does not interfere with the existing 30" RCP inlet and 15" CSP.
Additional 8" blocks can be added, if required, up to a total block width of 36" at this post only.

SPEC	CODE	BID ITEM	QTY	UNIT
764	0145	W-BEAM GUARDRAIL END TERMINAL	1	EA

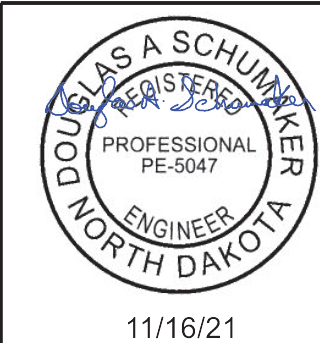
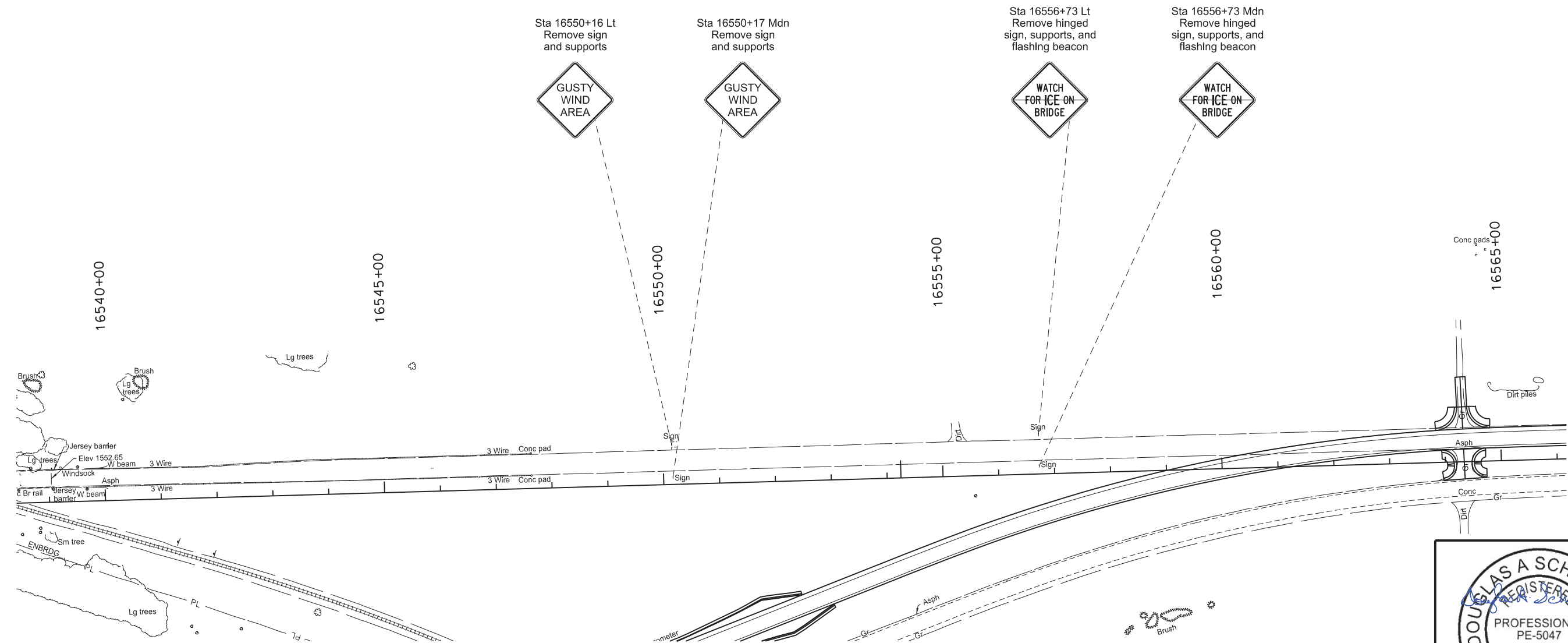


11/16/21

W-Beam Guardrail End Terminal
For Surcharge Embankment & Two-Way Traffic

BNSF RR Separation ~ East of Petersburg
RP 313.465
Eastbound Roadway
US 2

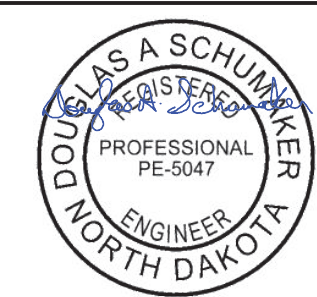
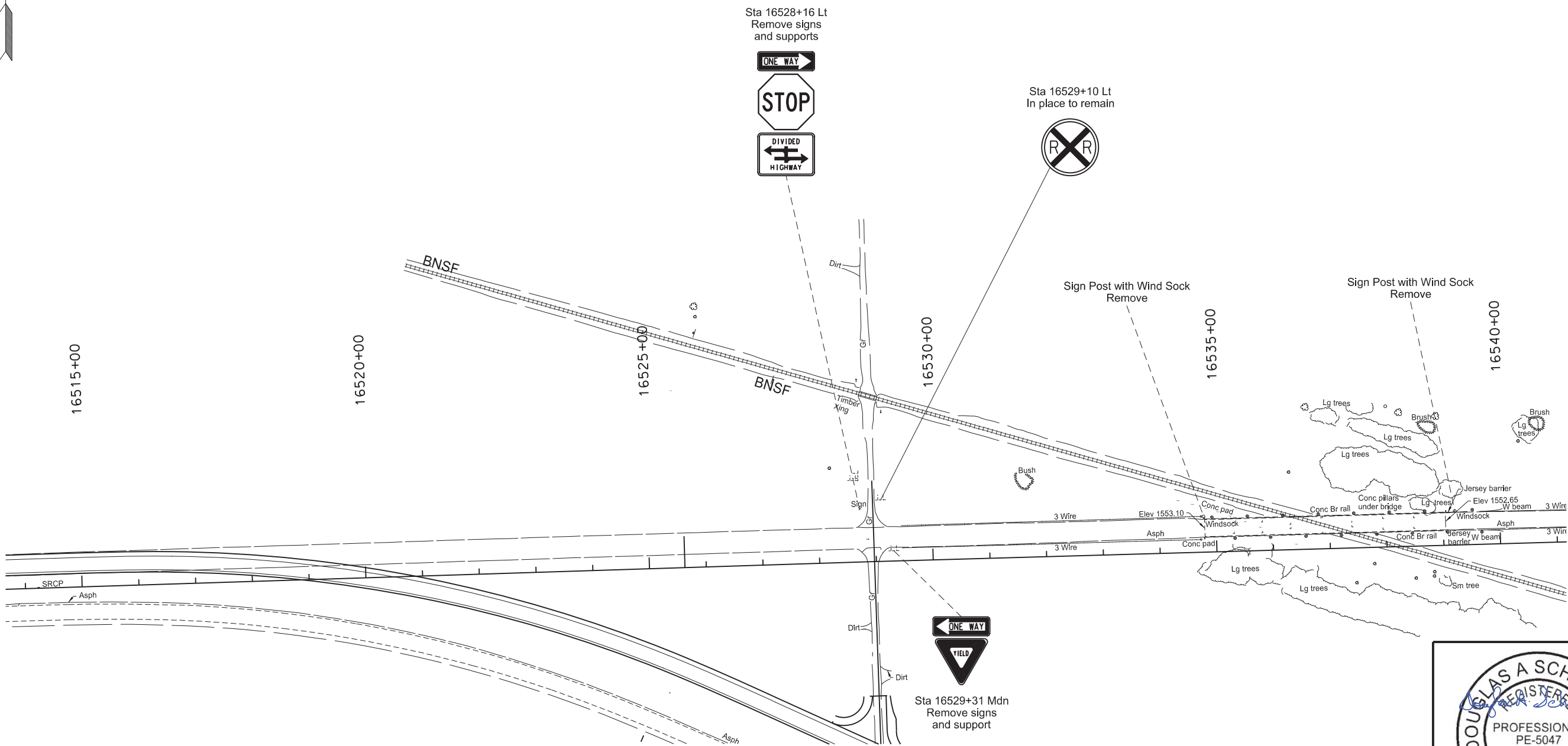
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	110	2



11/16/21

Sign Layout
WB Stationing
Sta 16540+00 to Sta 16565+00
US 2 Westbound (to be abandoned)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	110	3



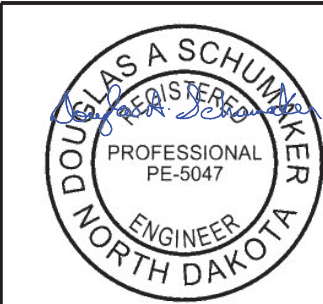
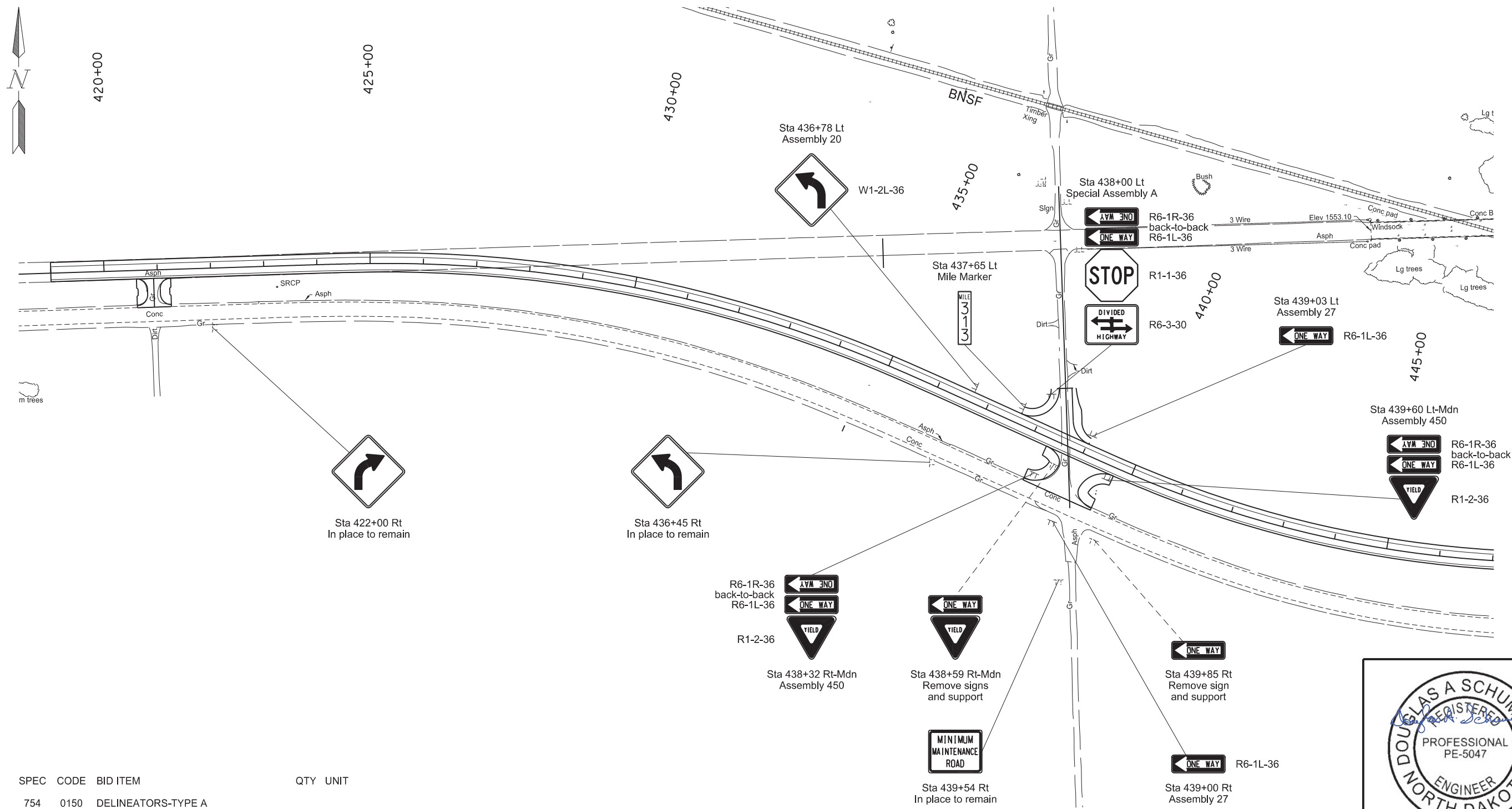
11/16/21

Sign Layout

WB Stationing
Sta 16515+00 to Sta 16540+00

US 2 Westbound (to be abandoned)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	110	4



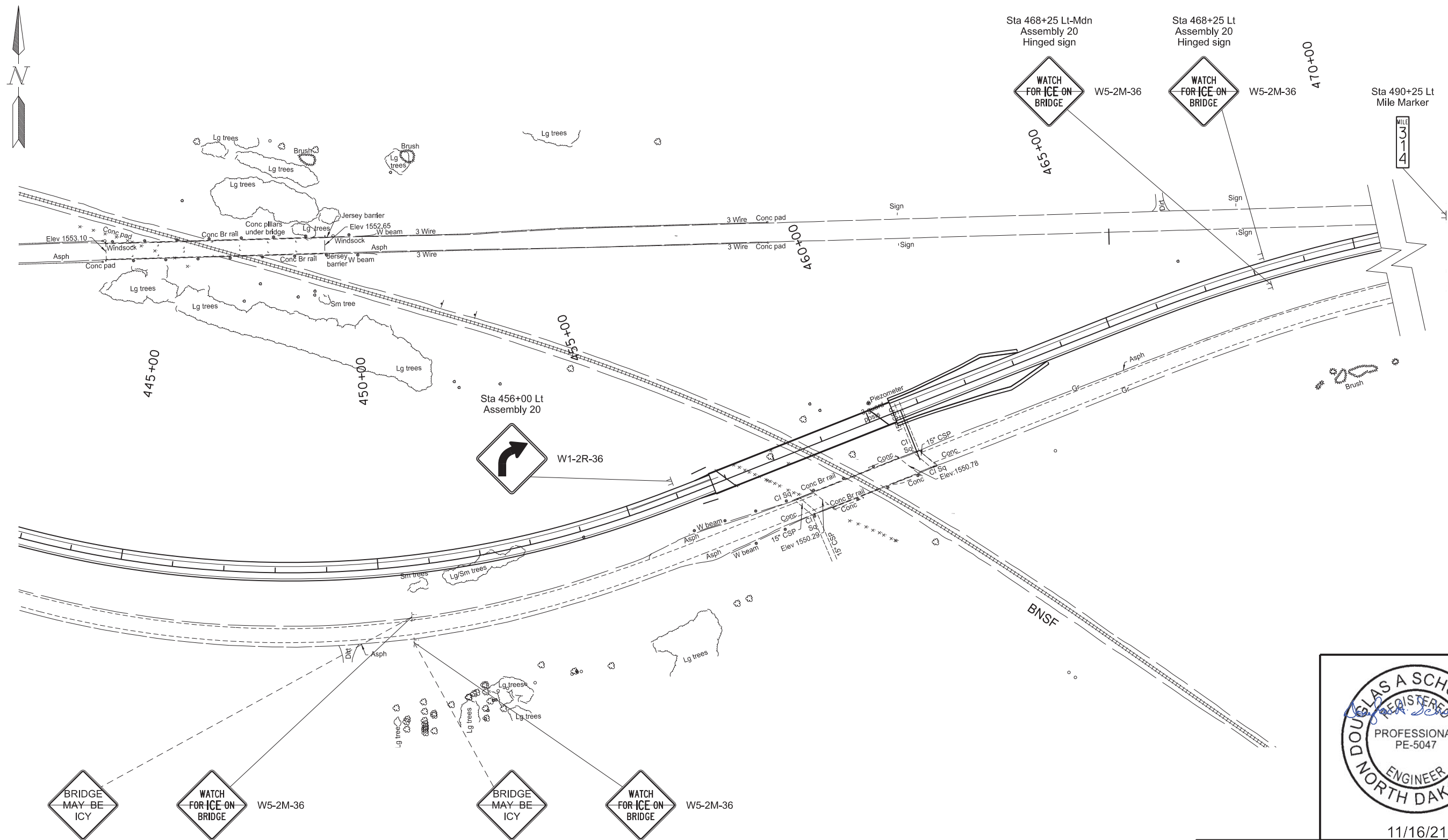
11/16/21

Sign Layout

EB Stationing
Sta 420+00 to Sta 445+00

US 2 Eastbound - existing
US 2 Westbound - new

SPEC	CODE	BID ITEM	QTY	UNIT
754	0150	DELINEATORS-TYPE A For the new WB Roadway	17	EA
754	0168	DELINEATORS-TYPE D For the new Median Crossover Approach	2	EA
754	0557	INTERSTATE MILE POSTS-TYPE C Sta 437+65 Lt	1	EA



DOUGLAS A SCHUMAKER

REGISTERED

PROFESSIONAL

PE-5047

ENGINEER

NORTH DAKOTA

11/16/21

- Sta 450+54 Rt-Mdn
Remove signs
and supports

Sta 450+54 Rt-Mdn
Assembly 20
Hinged sign

Sta 450+54 Rt
Remove signs
and supports

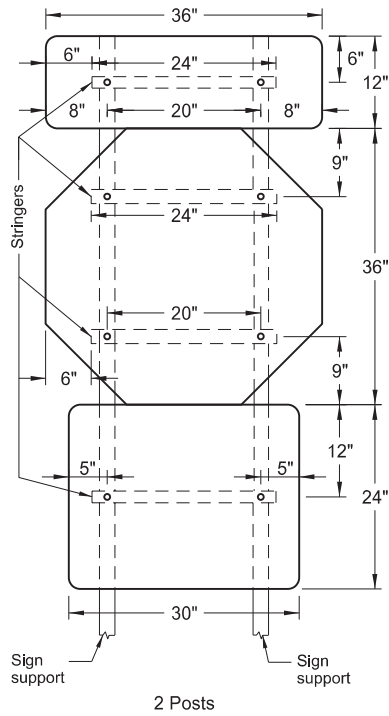
Sta 450+54 Rt
Assembly 20
Hinged sign

SPEC	CODE	BID ITEM	QTY	UNIT
754	0557	INTERSTATE MILE POSTS-TYPE C		
		Sta 490+25 Lt	1	EA

Sign Layout
EB Stationing
Sta 445+00 to Sta 490+25

US 2 Eastbound - existing
US 2 Westbound - new

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	110	6



SPECIAL ASSEMBLY A
(back to back one way signs)

Sta 438+00 Lt

AREA: 15.46 SF



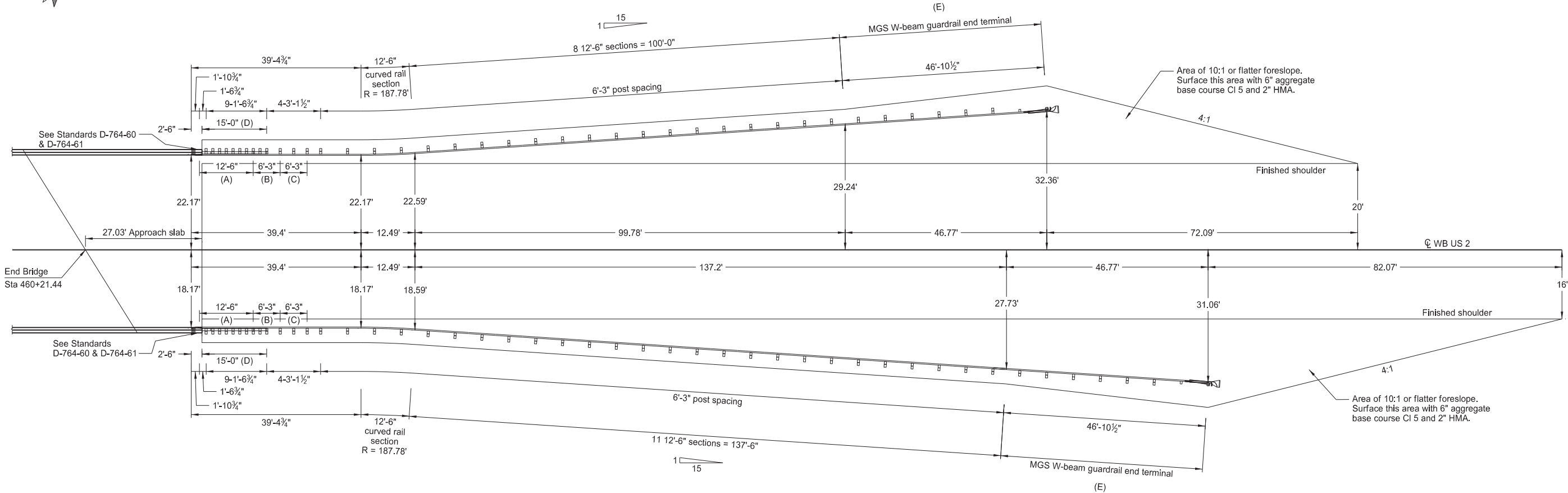
11/16/21

Special Assembly
1 East of ND 32 South

US 2

23 USC § 409 Documents
NDDOT Reserves All Objections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	130	1



11/16/21

- (A) Thrie beam rail section (double thickness)
- (B) Thrie beam rail section
- (C) Asymmetrical W-Thrie beam transition section
- (D) Curb & gutter - type 1 special. Install in accordance with Standard Drawing D-748-1, except for transitions on each end as shown on Standard Drawing D-764-60.
- (E) Install an MGS FLEAT end terminal at this location. See Standard D-764-38.

Thrie/MGS W-Beam Guardrail Layout

BNSF RR Separation ~ East of Petersburg
RP 313.399
Westbound Roadway

US 2

23 USC § 409 Documents
NDDOT Reserves All Objections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	130	2

MGS W-BEAM GUARDRAIL SUMMARY OF QUANTITIES

THRIE/MGS W-BEAM GUARDRAIL AT BRIDGE ENDS

LOCATION	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
	5/8" Ø x 18" LONG GUARD- RAIL BOLT	6" x 8" x 6'-0" TIMBER POST	6" x 8" x 14" TIMBER BLOCK	5/8" Ø x 1 1/4" LONG GUARD- RAIL BOLT	12'- 6" STRAIGHT W-BEAM RAIL SECTION	12'- 6" CURVED W-BEAM RAIL SECTION	REFL- ECTOR- IZED PLATES	6" x 8" x 7' WOOD POST	6" x 8" x 19" WOOD OFF- SET BLOCK	6'-3" W-THRIE BEAM TRANS- ITION SECTION	6'-3" THRIE BEAM SECTION	12'-6" DOUBLE THRIE BEAM SECTION	2'-6" THRIE BEAM TERM- INAL CON- NECTOR	7/8" Ø x 15" LONG HEX HEAD BOLT	SINGLE SLOPE TO THRIE BEAM CONN- ECTOR PLATE
	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH	EACH
Sta 460+45.97 to 462+35.06 Lt Mdn	50	33	27	148	12	1	11	6	12	1	1	1	1	5	1
Sta 460+45.97 to 461+97.64 Lt	44	27	21	124	9	1	9	6	12	1	1	1	1	5	1
TOTAL	94	60	48	272	21	2	20	12	24	2	2	2	2	10	2

- (A) Include these items in the contract unit price bid for "W-Beam Guardrail".
- (B) Remove from existing westbound US 2 after the roadway is closed to traffic.

SPEC	CODE	BID ITEM	QTY	UNIT	SPEC	CODE	BID ITEM	QTY	UNIT
748	0141	CURB & GUTTER - TYPE 1 SPECIAL			764	2080	REMOVE 3-CABLE GUARDRAIL & POSTS		
		Sta 460+48.47 to 460+63.47 Lt Mdn	15	LF			Sta 16529+60.53 to 1529+60.53 Lt Mdn	500	LF
		Sta 460+48.47 to 460+63.47 Lt	15	LF			Sta 16529+60.53 to 1529+60.53 Lt	500	LF
		Total	30	LF			Sta 16539+81.55 to 16547+69.84 Lt Mdn	788.3	LF
							Sta 16539+81.55 to 16547+65.14 Lt	783.6	LF
764	0131	W-BEAM GUARDRAIL					Total	2571.9	LF
		Sta 460+45.97 to 462+35.06 Lt Mdn	189.4	LF					
		Sta 460+45.97 to 461+97.64 Lt	151.9	LF	764	2081	REMOVE END TREATMENT & TRANSITION		
		Total	341.3	LF			Sta 16539+69.33 to 16540+06.55 Lt Mdn	1	Ea
							Sta 16539+69.33 to 16540+06.55 Lt	1	Ea
764	0145	W-BEAM GUARDRAIL END TERMINAL					Total	2	Ea
		Sta 462+35.06 to 462+81.83 Lt Mdn	1	Ea					
		Sta 461+97.64 to 462+44.41 Lt	1	Ea					
		Total	2	Ea					
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS							
		Sta 16539+17.43 to 16539+69.33 Lt Mdn	51.9	LF					
		Sta 16539+17.43 to 16539+69.33 Lt	51.9	LF					
		Total	103.8	LF					

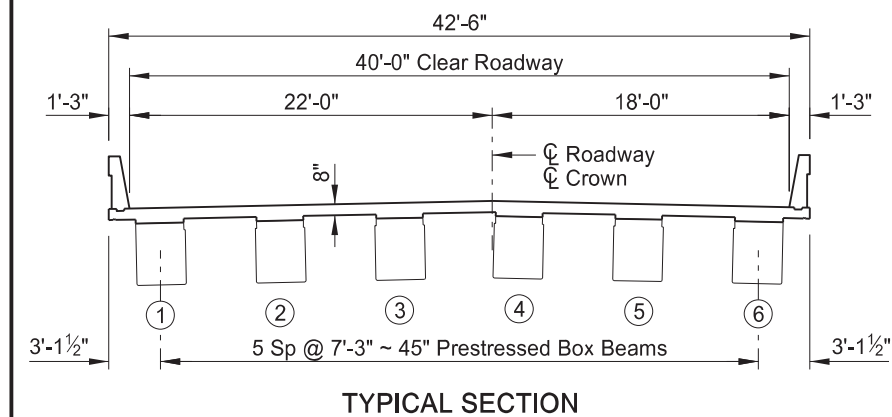


11/16/21

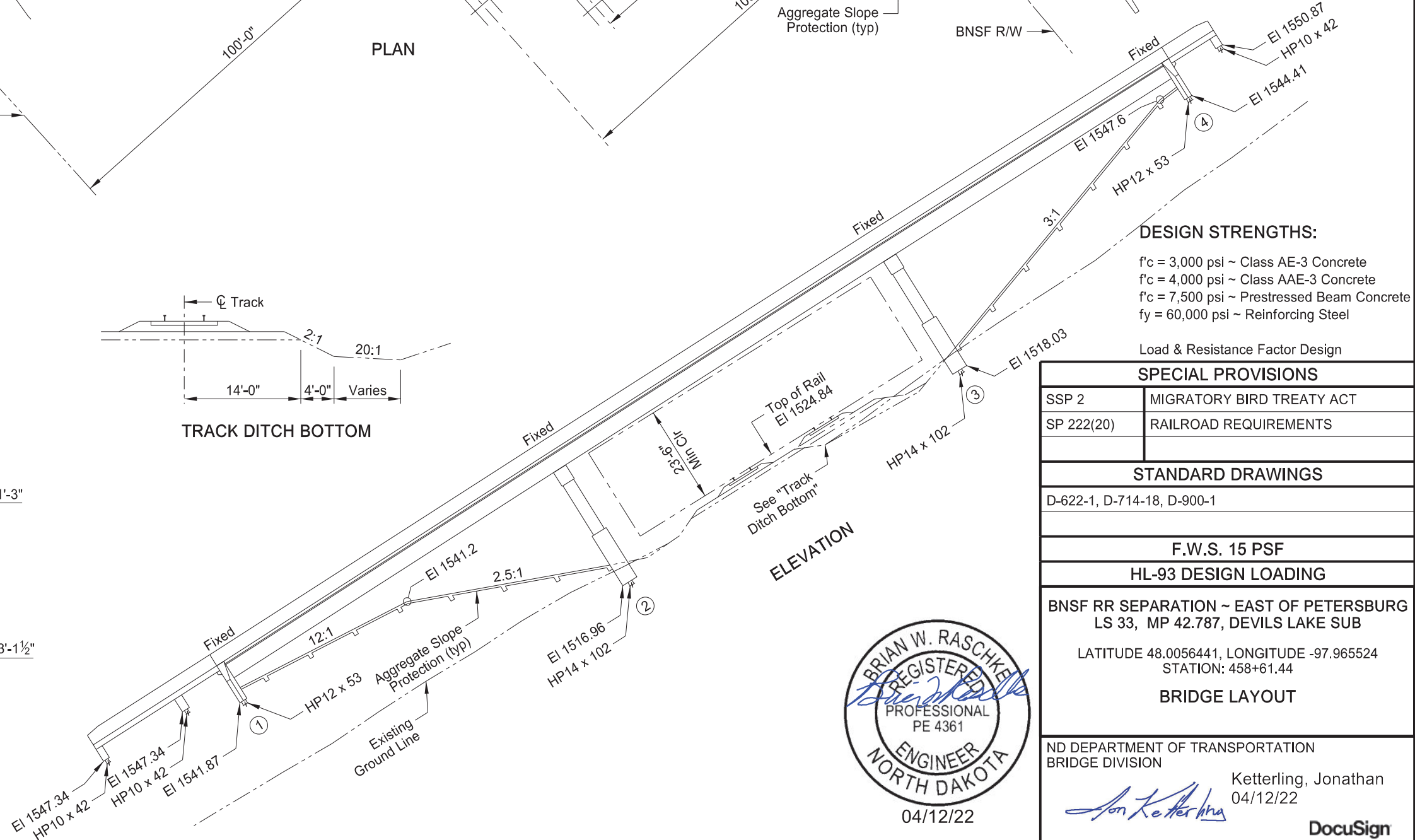
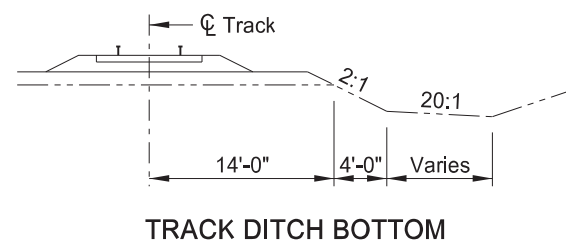
Thrie/MGS W-Beam Guardrail Quantities

**BNSF Railroad Separation ~ E of Petersburg
RP 313.414
Westbound Roadway**

US 2



SURVEY CONTROL POINTS			
POINT	NORTHING	EASTING	ELEVATION
RTK 1454	376,567.77	2,590,299.04	1,544.57
RTK 1472	376,724.58	2,590,453.12	1,521.92



18.03	<p> $f'c = 3,000 \text{ psi} \sim \text{Class AE-3 Concrete}$ $f'c = 4,000 \text{ psi} \sim \text{Class AAE-3 Concrete}$ $f'c = 7,500 \text{ psi} \sim \text{Prestressed Beam Concrete}$ $f_y = 60,000 \text{ psi} \sim \text{Reinforcing Steel}$ </p> <p style="text-align: center;">Load & Resistance Factor Design</p>
SPECIAL PROVISIONS	
SSP 2	MIGRATORY BIRD TREATY ACT
SP 222(20)	RAILROAD REQUIREMENTS
STANDARD DRAWINGS	
D-622-1, D-714-18, D-900-1	
F.W.S. 15 PSF	
HL-93 DESIGN LOADING	
BSNF RR SEPARATION ~ EAST OF PETERSBURG LS 33, MP 42.787, DEVILS LAKE SUB	
LATITUDE 48.0056441, LONGITUDE -97.965524 STATION: 458+61.44	
BRIDGE LAYOUT	
ND DEPARTMENT OF TRANSPORTATION BRIDGE DIVISION	
Ketterling, Jonathan 04/12/22	

		23 U.S.C. 407 NDDOT Reserves All Objections	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
			ND	BND-NH-6-002(134)313	170	2
<div>NOTES</div>						
100	SCOPE OF WORK: This project consists of building a new 3-span prestressed concrete spread box beam bridge with an overall bridge length of 320'-0" and a clear roadway width of 40'-0".	210	EXCAVATION: Include the excavation costs at the abutments and approach slab footings, as shown in the "Detail at Abutment", and the excavation costs at the piers in the lump sum bid item, "Class 1 Excavation."			
100	GENERAL: Include the cost of furnishing and placing preformed expansion joint filler, concrete inserts, rebar couplers, deck drains, silicone sealant, waterproof membrane, and other miscellaneous items in the price bid for Class AE-3 and AAE-3 concrete.	602	CLASS AE-3 AND AAE-3 CONCRETE: The strength requirements of Section 802.01 A.2 "Class AE and AAE Mixes" are revised to develop a design compressive strength of 3,000 psi (AE-3) and 4,000 psi (AAE-3) at 28 days.			
105	BRIDGE CONSTRUCTION: Do not begin bridge construction activities including excavation at the abutments, piers or approach slabs, or any pile driving operations until all surcharge embankment has been removed according to note "203-P04" on Section 6 Sheet 3.	602	DIAPHRAGMS AND ENDWALLS: Place the intermediate diaphragm concrete before the deck concrete and allow the diaphragms to cure at least 72 hours before deck placement. Place the pier diaphragm and endwall concrete at the same time as the deck concrete.			
105	BNSF FOURTH QUARTER CONSTRUCTION MORATORIUM: BNSF has the right to shut down all construction activities on BNSF property during the fourth quarter of each year (October 1 to December 26) to accommodate BNSF's peak holiday shipping season. However, the Contractor can request a waiver (sent to the BNSF Project Engineer assigned to the project) from this moratorium by identifying the type of work to be performed, distance from BNSF track(s), and work timeframe. BNSF can choose to waive some or all of the moratorium (construction shut down during November 1 to December 26 only, for example) if BNSF determines that the construction activities will not have any impacts on BNSF peak train traffic. Minor work is often permitted adjacent to BNSF track(s), but major work (e.g. overhead bridge work) is typically not permitted by BNSF during the fourth quarter construction moratorium.	602	DECK PLACEMENT: Place the deck concrete at a minimum rate of 45 CY per hour. Place the deck concrete starting at End Bridge (east end) and ending at Begin Bridge (west end).			
		602	BRIDGE DECK AND APPROACH SLAB CURING: Do not cover the wet cure burlap with a waterproof material such as polyethylene during the curing period.			
		602	BARRIERS: Use conventional forming for the barriers. Slipforming of the barriers according to 602.04 G.3 will not be allowed.			
		602	CRACK SEALING: After the penetrating water repellent has been applied and is dry, the Engineer will perform a visual inspection of the bridge deck, approach slabs, and barriers to determine the need for crack sealing. Mark and repair all visible cracks appearing on the top surface 0.007" or greater in width at its widest segment or as directed by the Engineer. Immediately before applying the sealer, clean the cracks by removing all dust and debris with compressed air. Seal the cracks with a two-part epoxy in accordance with the manufacturer's recommendations. Chase crack with the sealant application to limits of crack, including those portions that are narrower than 0.007" wide. Use Paulco TE-2501 (Viking Paints, Inc.), Dural 50 LM (Euclid Chemical Co.), TK-9000 or TK-2110 (TK Products), or an approved equal epoxy sealer. Include all work and materials associated with the bridge deck, approach slab, and barrier crack sealing in the price bid for the Class AAE-3 concrete and approach slab bid items.			
107	HAZARDOUS MATERIAL: The existing structural steel is painted with lead-based paint. Remove and dispose of any loose and peeling paint found on the existing structural steel according to the North Dakota Department of Health's management of lead-based paint debris.	602	SURFACE FINISH "D": Apply Surface Finish "D" to all surfaces of the bridge and approach slab barriers. Use gray surface finish, color number 36424 meeting Aerospace Material Specification (AMS) Standard 595.			
202	REMOVAL OF STRUCTURE: The existing structure is an 8-span steel girder bridge, 427'-0" long with a clear roadway width of 30'-0", and concrete substructures. The substructures are supported on treated timber piling. Remove all substructures as directed by railroad up to 5 feet below final ground surface. Remove Pier 4, Pier 5, and Pier 6 substructures so there is no movement of railroad track ballast as determined by the railroad. Refer to note "105-P01 UTILITIES" on Section 6 Sheet 1 for removal of substructures near the Enbridge pipeline. Include all costs for the removal of the bridge in the contract unit price for "Removal of Structure." Provide a minimum 4 week notice prior to the removal of substructures within the railroad right-of-way to: Dan Peltier Manager Engineering 763-782-3495 Daniel.Peltier@BNSF.com	602	WEATHER LIMITATIONS: All requests in accordance with 602.04 C.4 "Weather Limitations" require approval from the NDDOT Bridge Division.			



NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	3

- 604 PRESTRESSED BEAMS: Set prestressed beams on bearing seats without field bending substructure or beam reinforcing steel.
- 622 PREBORING: Bore pilot holes for the west abutment and approach slab piling to an elevation of 1518 feet and for the east abutment and approach slab piling to an elevation of 1522 feet before driving piling. Do not bore pilot holes until all of the surcharge embankment has been removed. Bore pilot holes to a diameter of 20 inches for the abutment piling and 18 inches for the approach slab piling. Prior to pile driving, backfill the pilot holes with polymer free sodium bentonite slurry. Mix the slurry at a ratio of 100 gallons of water per 120 pounds of bentonite. Use powdered bentonite to mix the slurry. Do not use bentonite chips. Place the slurry in the pilot hole from the bottom up using a tremie pipe. Check the hole after 24 hours for settlement of the slurry and top off the hole with slurry mixed at the previously specified ratio. Repeat this process until no observed settlement of the slurry occurs. Include all costs associated with boring pilot holes and backfilling with bentonite in the price bid for HP10 x 42 and HP12 x 53 piling.
- 622 PILING: Drive pier piling with a diesel hammer with an operational energy of at least 140,756 foot-pound-tons (minimum ram weight of 6,500 pounds) computed by the formula:
- $W(E-30,800) + 0.914E$
- Drive abutment and approach slab piling with a diesel hammer with an operational energy of at least 52,092 foot-pound-tons (minimum ram weight of 4,000 pounds) computed by the formula:
- $W(E-16,016) + 0.651E$
- W = Weight of the ram (tons)
E = Operational hammer energy
- Run the hammer at an energy that produces a penetration at bearing between ½" and 3 inches in the last 10 blows.
- 930 ROADWAY CANOPY: Construct a canopy above the railroad under the existing structure and under the new structure to protect traffic from falling material. The canopy is an added safeguard and does not relieve the Contractor from any responsibility for the safety of the public.
- Submit the canopy details, including materials that will be used, to the Engineer for review. Provide a canopy under the existing structure and under the new structure with a minimum vertical clearance of 22'-0" above the railroad tracks. Extend the canopy a minimum distance of 5'-0" beyond the outside edge of deck of the structure and a minimum distance of 5'-0" beyond the edge of the railroad tracks beneath the structure.
- The canopy must be in place before installing forming for the new deck and remain in place until after the new superstructure is complete. The canopy may be supported from

the ground or suspended from the beams. Complete the installation of the canopy in a minimum amount of time and with the least inconvenience to the public.

Remove the canopy after the bridge superstructure is completed. Construct the canopy for the existing structure before removing the concrete superstructure. Include all costs for construction, maintenance, and removal of the canopy system for the new structure and existing structure in the contract unit price for "Roadway Canopy."

- 930 AGGREGATE SLOPE PROTECTION: Place aggregate slope protection on the embankment slopes as shown. Clear the subgrade of rubbish and vegetation before placing the aggregate slope protection. Thoroughly compact all loose material. Excavate or backfill as required to obtain the plan cross-section or lines and grades established in the field.

The gradation of the material used to form the slope protection is given in the following chart:

Sieve Size	% Passing
2"	100%
¾"	5-35%
#4	0-5%

The minimum fractured face requirement of the aggregate is 50% by weight on the portion of the aggregate retained on the No. 4 sieve. To be considered fractured the rock must have at least one fractured face.

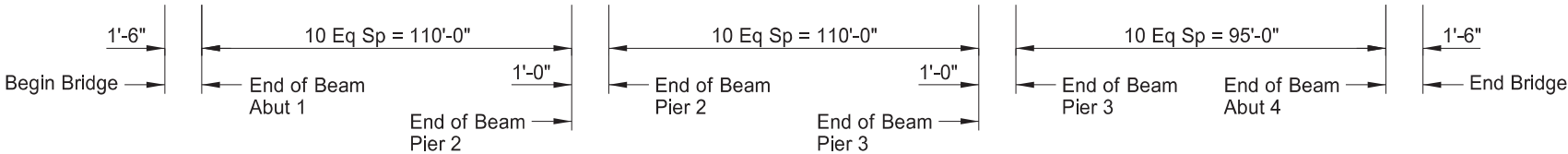
Deposit, spread, consolidate, and shape the aggregate by mechanical or hand methods to provide a uniform depth and density and produce a uniform surface appearance. Apply MC-250 that meets the requirements of Section 818.02 C, "Medium-Curing Cutback Asphalt" at an approximate rate of 1.8 gallons per square yard. Emulsified asphalts grade CSS-1, CSS-1H, RS-1, or CRS-2 that meet the requirements of Section 818.02 E, "Cationic Emulsified Asphalt," or Section 818.02 F "Anionic Emulsified Asphalt", applied at 2.5 gallons per square yard, can be substituted for MC-250. The bituminous materials are to penetrate to a depth of not less than one-half the required thickness of the aggregate. Protect adjacent structure surfaces against bituminous splatter.

Include all costs for labor, materials, and equipment to complete this work in the unit price bid for "Aggregate Slope Protection."



	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	170	4

℄ BEAM 6	℄ BEAM 5	℄ BEAM 4	℄ BEAM 3	℄ BEAM 2	℄ BEAM 1
1552.29	1552.35	1552.31	1552.13	1551.91	1551.68
1552.32	1552.37	1552.34	1552.16	1551.93	1551.71
1552.56	1552.56	1552.57	1552.40	1552.18	1551.96
1552.70	1552.75	1552.80	1552.63	1552.41	1552.19
1552.91	1552.96	1553.00	1552.85	1552.63	1552.41
1553.01	1553.10	1553.18	1553.04	1552.82	1552.61
1553.16	1553.26	1553.35	1553.20	1552.99	1552.77
1553.29	1553.39	1553.48	1553.34	1553.13	1552.91
1553.40	1553.49	1553.59	1553.45	1553.24	1553.03
1553.48	1553.58	1553.67	1553.53	1553.33	1553.12
1553.54	1553.64	1553.74	1553.60	1553.40	1553.19
1553.59	1553.69	1553.79	1553.66	1553.45	1553.25
1553.60	1553.70	1553.80	1553.67	1553.47	1553.26
1553.79	1553.89	1554.00	1553.86	1553.66	1553.46
1553.97	1554.07	1554.18	1554.05	1553.85	1553.65
1554.13	1554.23	1554.34	1554.21	1554.02	1553.82
1554.26	1554.37	1554.48	1554.35	1554.16	1553.96
1554.37	1554.48	1554.59	1554.47	1554.27	1554.08
1554.45	1554.56	1554.68	1554.55	1554.36	1554.17
1554.51	1554.62	1554.74	1554.62	1554.43	1554.24
1554.54	1554.65	1554.77	1554.65	1554.47	1554.28
1554.55	1554.67	1554.79	1554.67	1554.49	1554.30
1554.55	1554.67	1554.79	1554.68	1554.49	1554.31
1554.55	1554.68	1554.80	1554.68	1554.50	1554.32
1554.66	1554.78	1554.90	1554.79	1554.61	1554.43
1554.75	1554.87	1555.00	1554.89	1554.71	1554.53
1554.83	1554.96	1555.08	1554.97	1554.80	1554.62
1554.89	1555.02	1555.15	1555.04	1554.87	1554.69
1554.94	1555.08	1555.21	1555.10	1554.93	1554.75
1554.98	1555.11	1555.24	1555.14	1554.97	1554.79
1555.00	1555.13	1555.26	1555.16	1554.99	1554.82
1555.00	1555.14	1555.27	1555.17	1555.00	1554.83
1554.99	1555.13	1555.27	1555.17	1555.00	1554.83
1554.97	1555.11	1555.25	1555.16	1554.99	1554.82
1554.98	1555.12	1555.26	1555.16	1555.00	1554.83



Beam 1 is the north beam.

SCREED ELEVATIONS

BRIDGE BID ITEMS					
SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY	
107	0100	RAILWAY PROTECTION INSURANCE	L SUM	1	
107	0140	RAILROAD COORDINATION	L SUM	1	
107	0145	RAILROAD FLAGGING	DAY	1,500	
202	0105	REMOVAL OF STRUCTURE	L SUM	1	
210	0099	CLASS 1 EXCAVATION	L SUM	1	
210	0201	FOUNDATION PREPARATION	EA	1	
602	0130	CLASS AAE-3 CONCRETE	CY	500.2	
602	1130	CLASS AE-3 CONCRETE	CY	343.2	
602	1134	PILE SUPPORTED APPROACH SLAB	SY	267.0	
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	1,994	
604	9645	PRESTRESSED BOX BEAM-45IN	LF	1,890.0	
612	0115	REINFORCING STEEL-GRADE 60	LBS	35,139	
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	101,925	
622	0020	STEEL PILING HP 10 X 42	LF	1,260	
622	0040	STEEL PILING HP 12 X 53	LF	1,190	
622	0070	STEEL PILING HP 14 X 102	LF	1,080	
930	3000	BRIDGE BENCH MARKS	SET	1	
930	7012	ROADWAY CANOPY	L SUM	1	
930	8686	AGGREGATE SLOPE PROTECTION	SY	1,217	
930	9537	ABUTMENT UNDERDRAIN SYSTEM	EA	2	

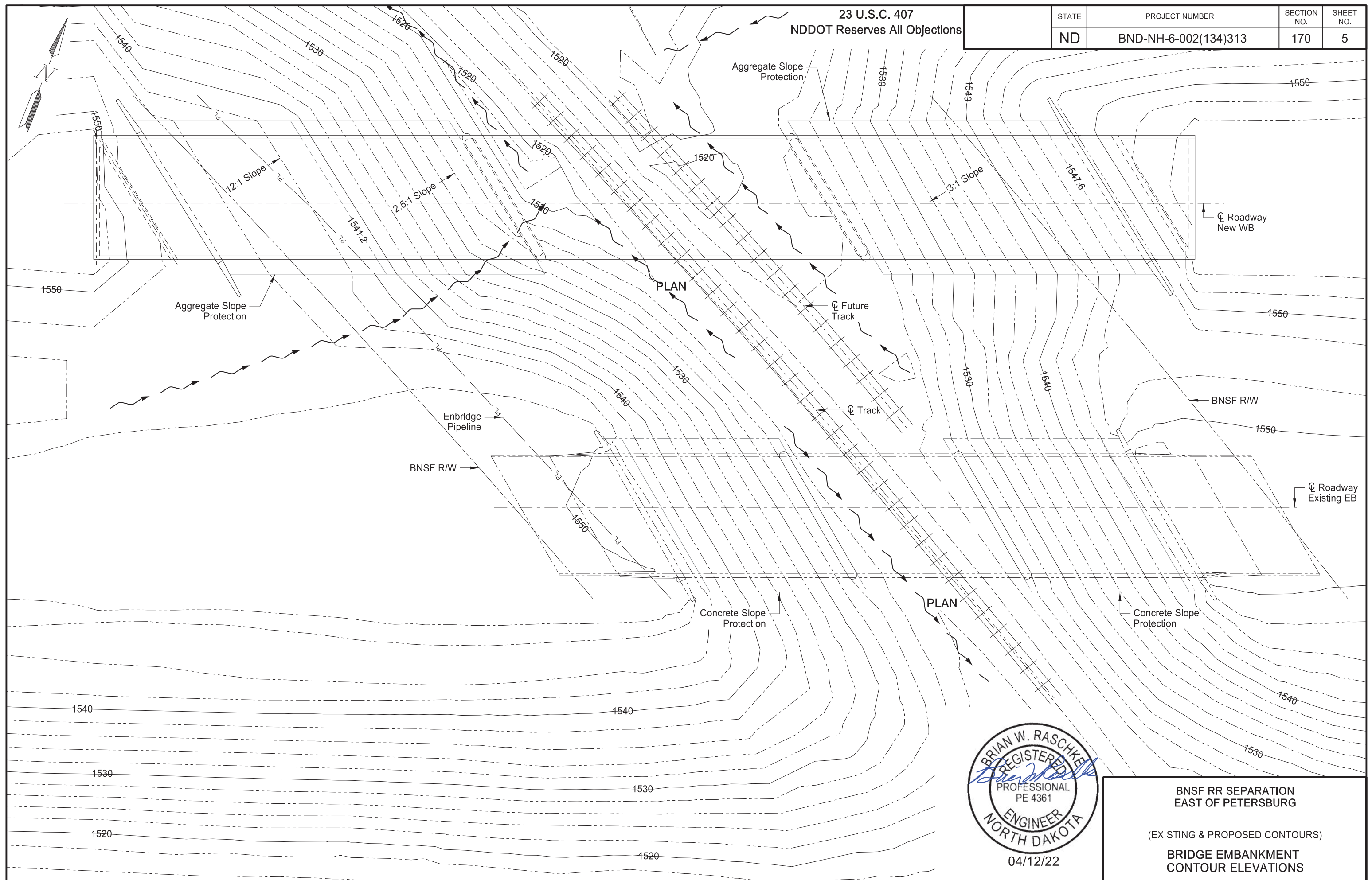


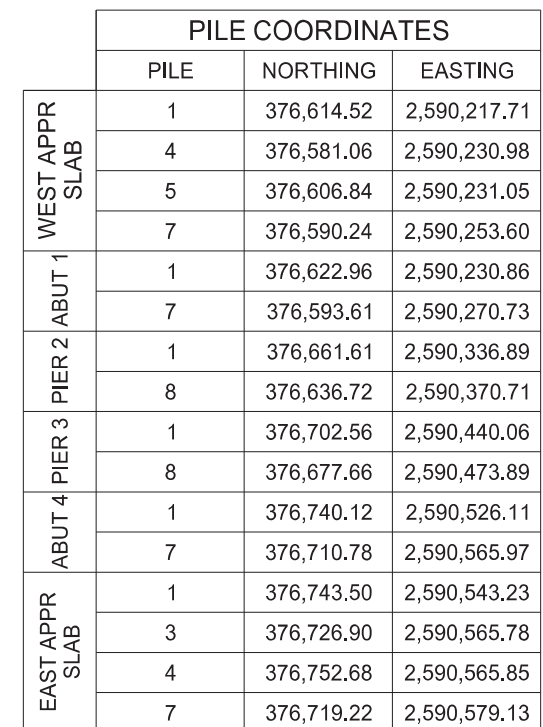
04/12/22

BNSF RR SEPARATION
EAST OF PETERSBURG

SCREED ELEVATIONS &
BID ITEM QUANTITIES

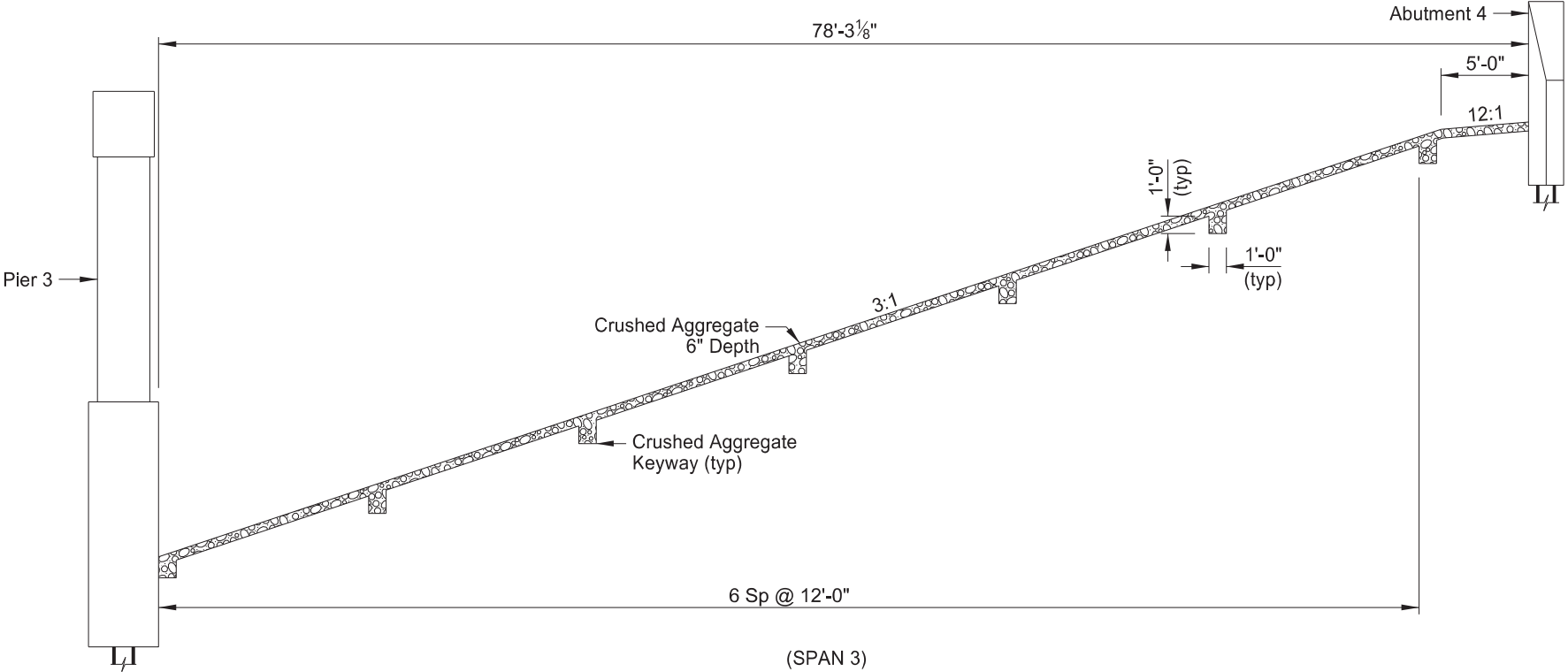
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	5



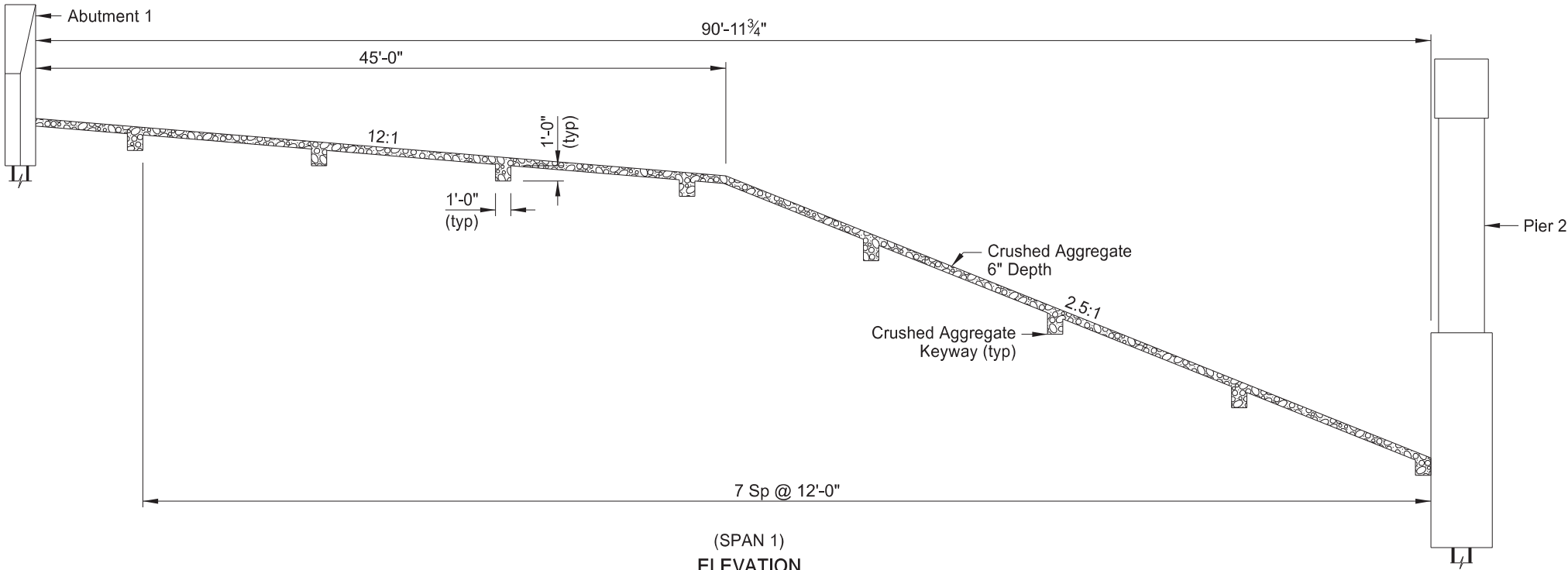


PILING LAYOUT & BEARING ELEVATIONS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	7



(SPAN 3)
ELEVATION
AGGREGATE SLOPE PROTECTION DETAIL



(SPAN 1)
ELEVATION
AGGREGATE SLOPE PROTECTION DETAIL



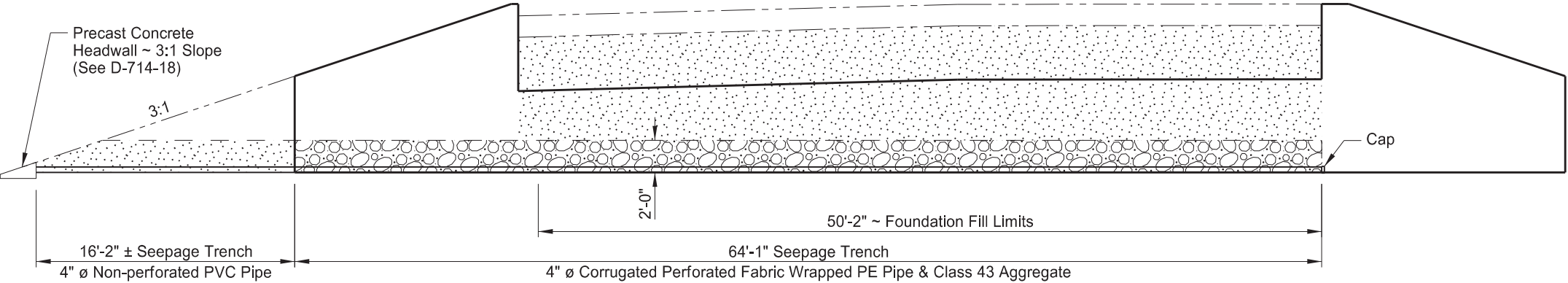
BNSF RR SEPARATION
EAST OF PETERSBURG
AGGREGATE SLOPE PROTECTION DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	8

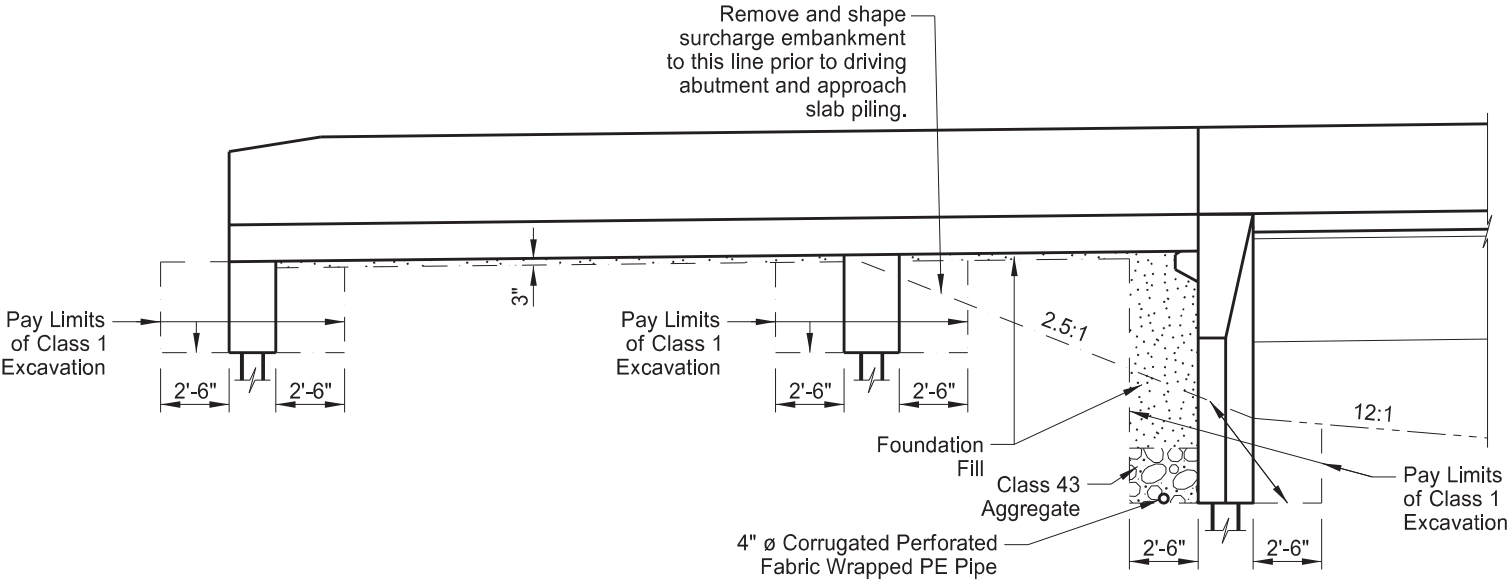
NOTES:

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

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



BACK FACE OF ABUTMENT



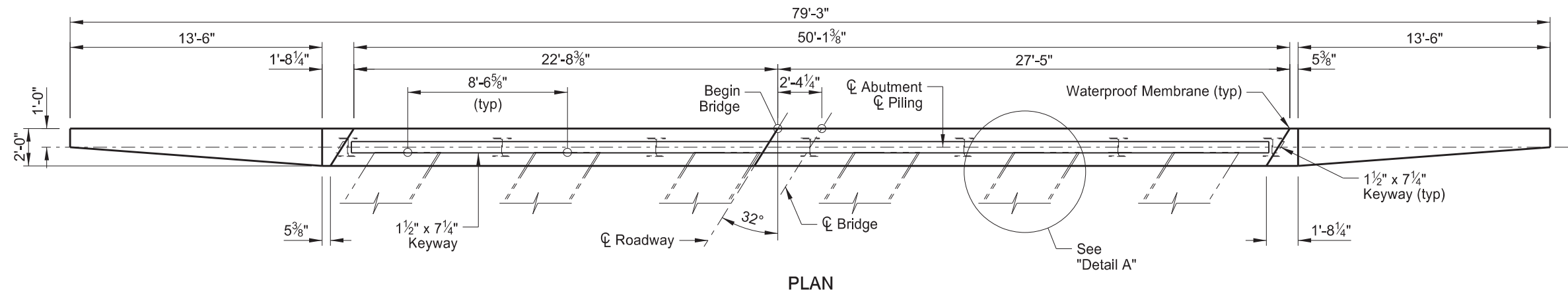
DETAIL AT ABUTMENT



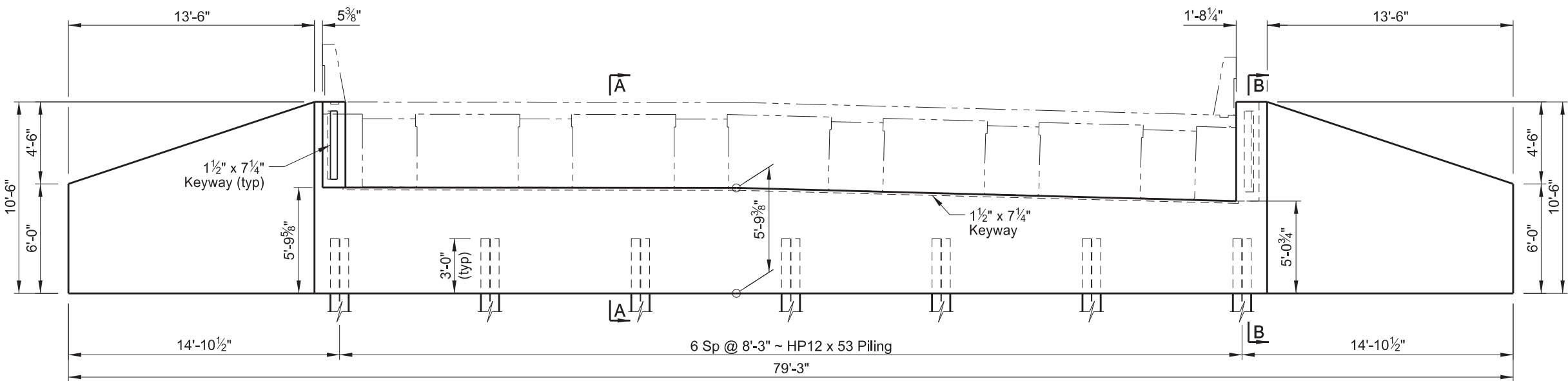
BNSF RR SEPARATION
EAST OF PETERSBURG

ABUTMENT UNDERDRAIN &
EXCAVATION DETAILS

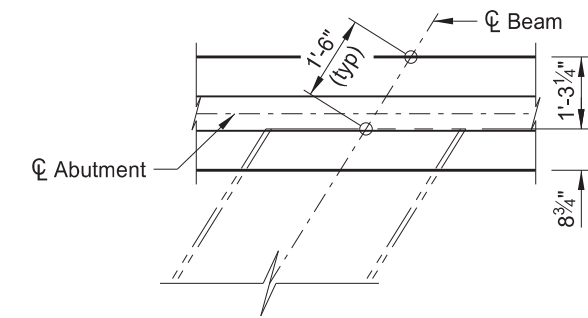
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	9



PLAN



ELEVATION



DETAIL A

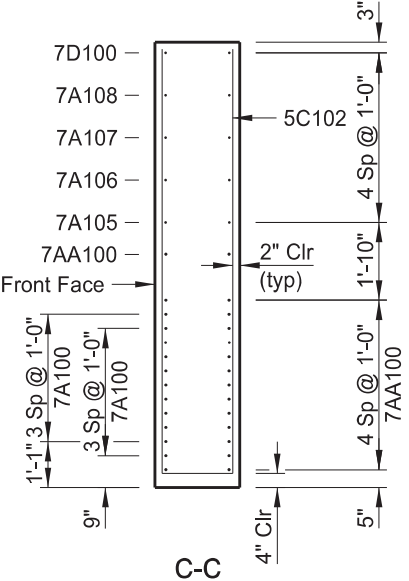
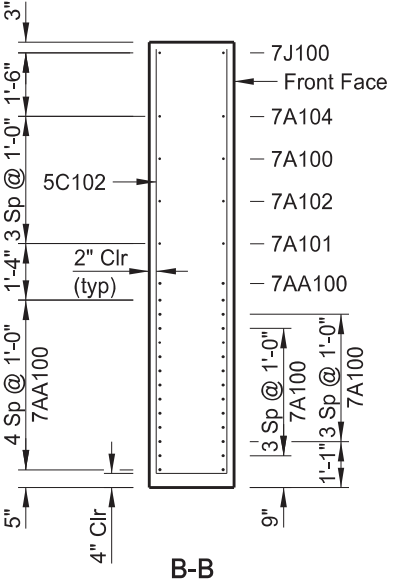
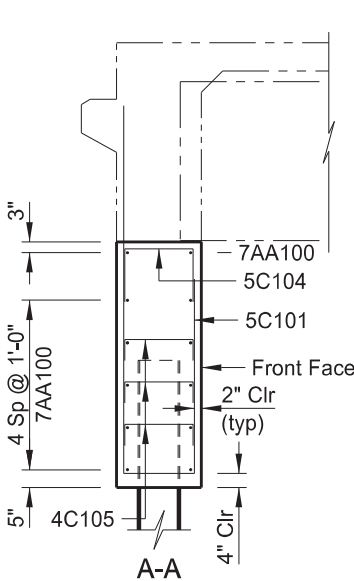
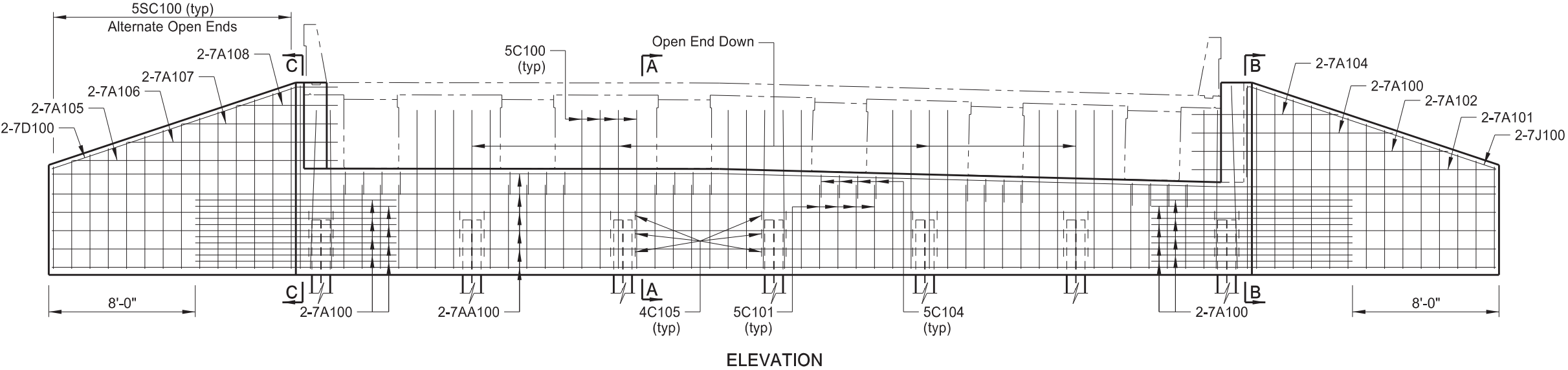
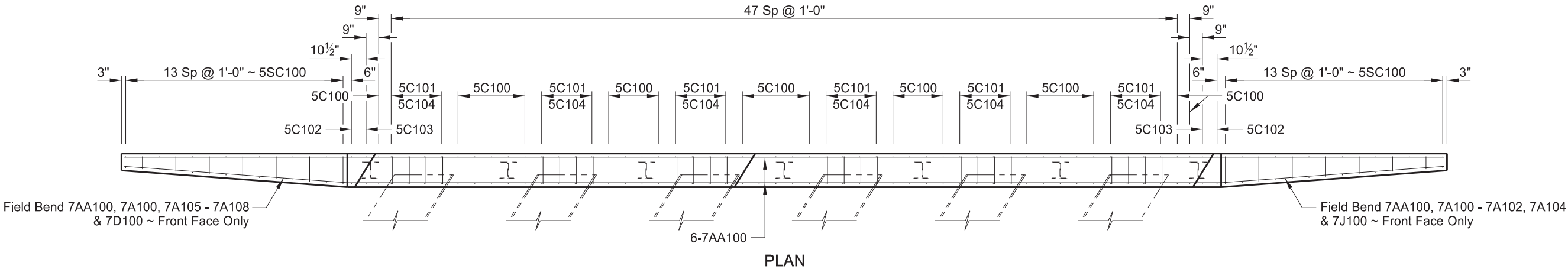
NOTE:

Use waterproof membrane that meets the requirements of Section 602.03 B. Center the waterproof membrane (1'-0" minimum width) on the joint.



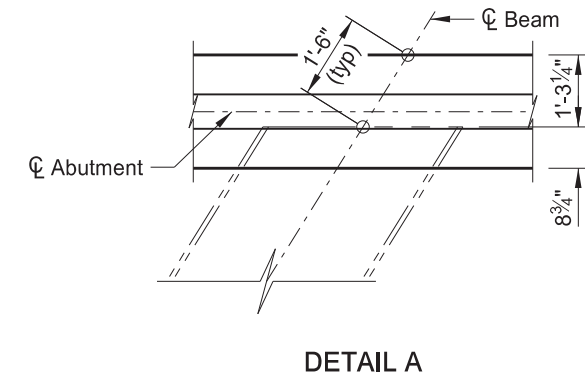
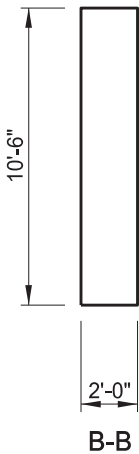
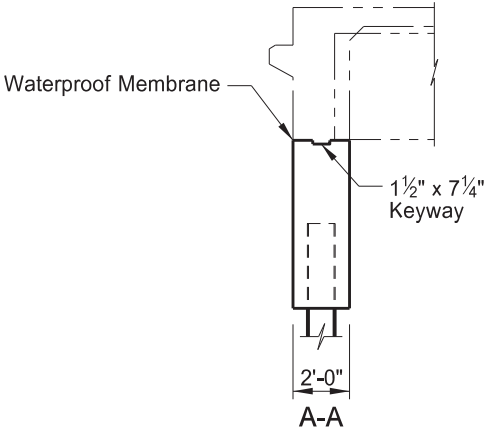
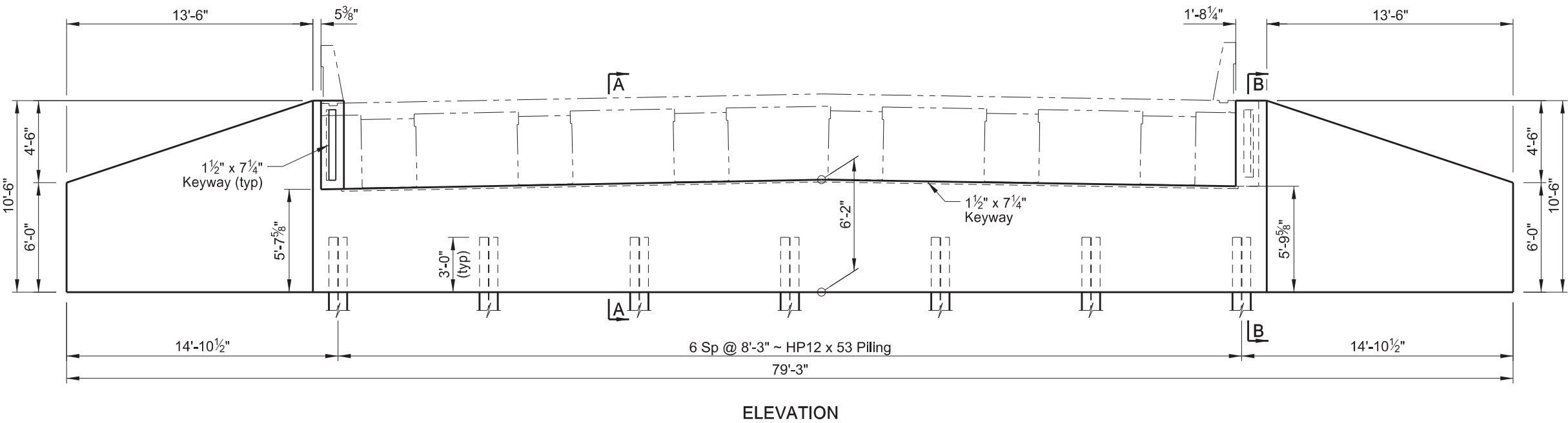
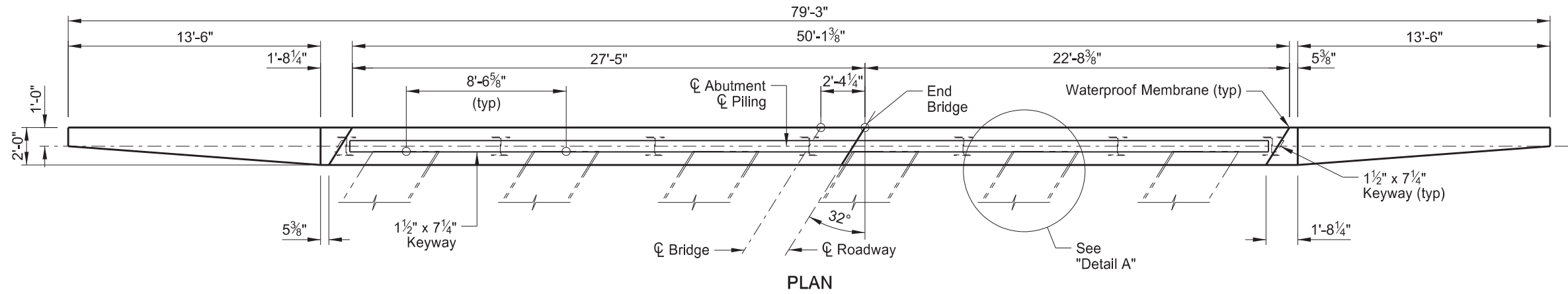
QUANTITIES
SEE DWG 2-313.399L-10
BNSF RR SEPARATION EAST OF PETERSBURG (SHOWING DIMENSIONS) ABUTMENT 1 DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	10



QUANTITIES	
CLASS AE-3 CONCRETE	35.2 CY
REINFORCING STEEL	4,907 LBS
BNSF RR SEPARATION EAST OF PETERSBURG (SHOWING REINFORCING) ABUTMENT 1 DETAILS	

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	11



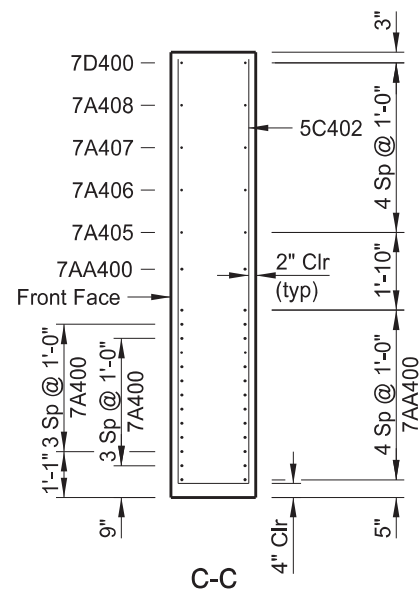
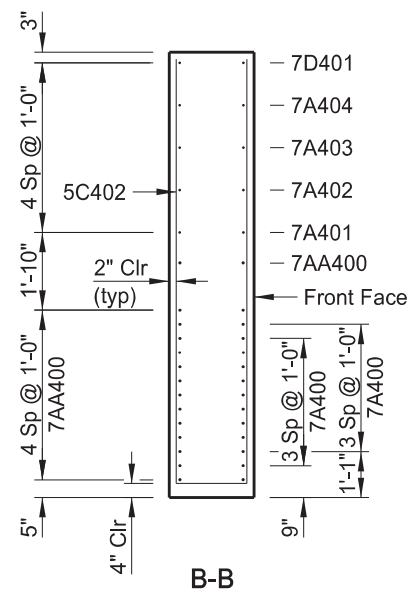
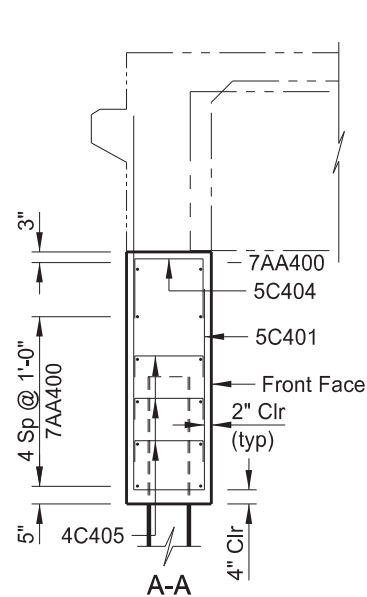
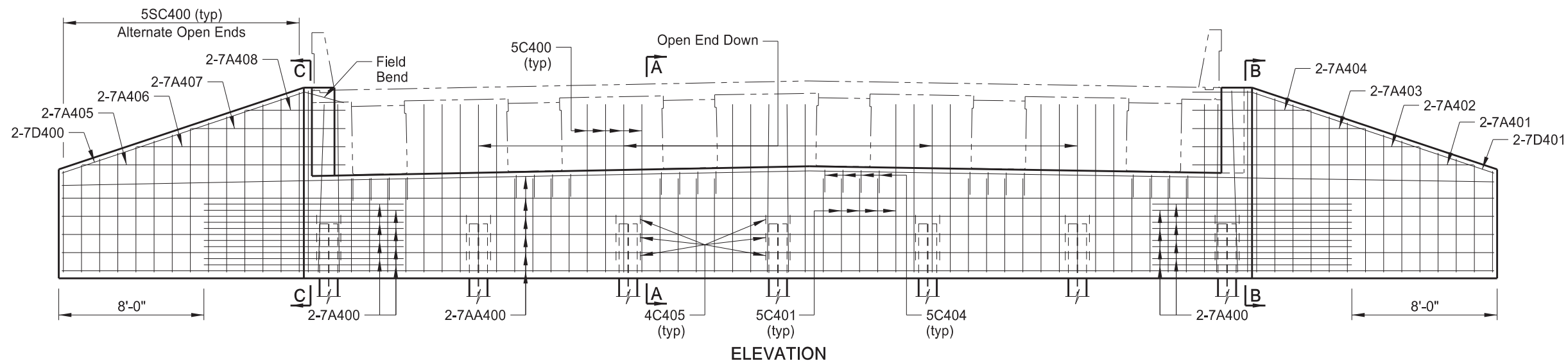
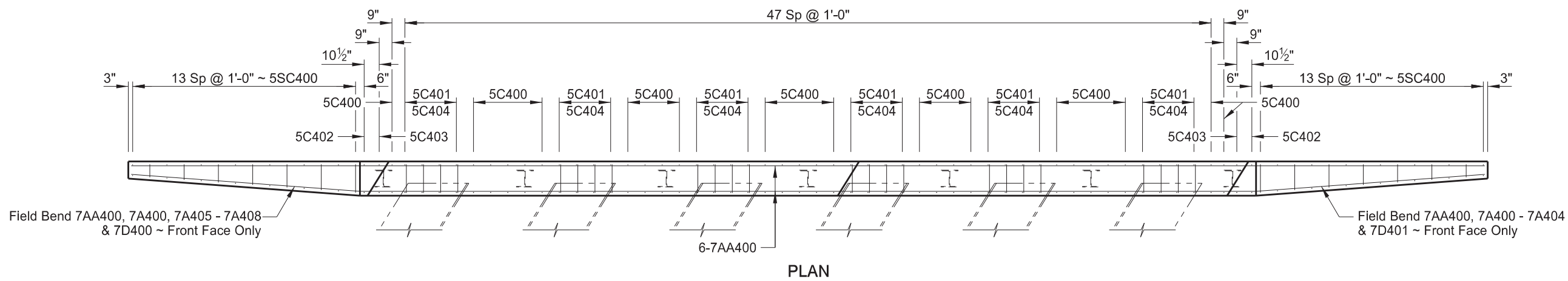
NOTE:

Use waterproof membrane that meets the requirements of Section 602.03 B. Center the waterproof membrane (1'-0" minimum width) on the joint.



QUANTITIES
SEE DWG 2-313.399L-12
BNSF RR SEPARATION EAST OF PETERSBURG (SHOWING DIMENSIONS) ABUTMENT 4 DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	12

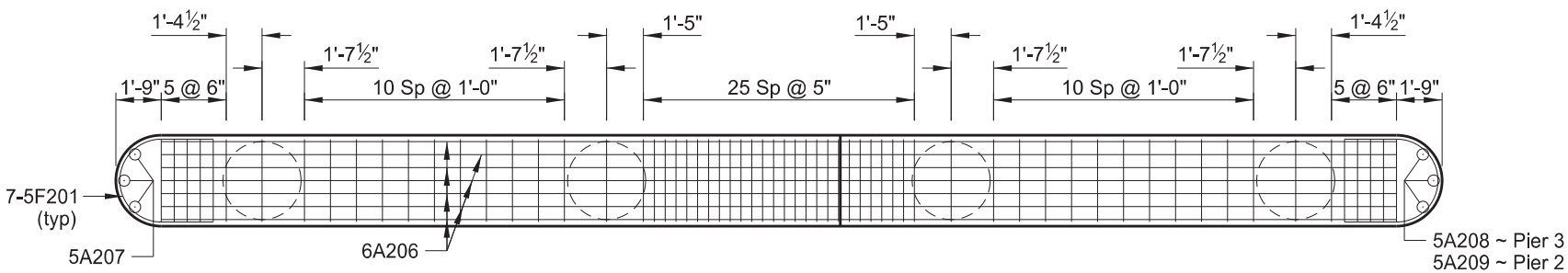


QUANTITIES	
CLASS AE-3 CONCRETE	36.5 CY
REINFORCING STEEL	4,938 LBS
BNSF RR SEPARATION EAST OF PETERSBURG (SHOWING REINFORCING) ABUTMENT 4 DETAILS	

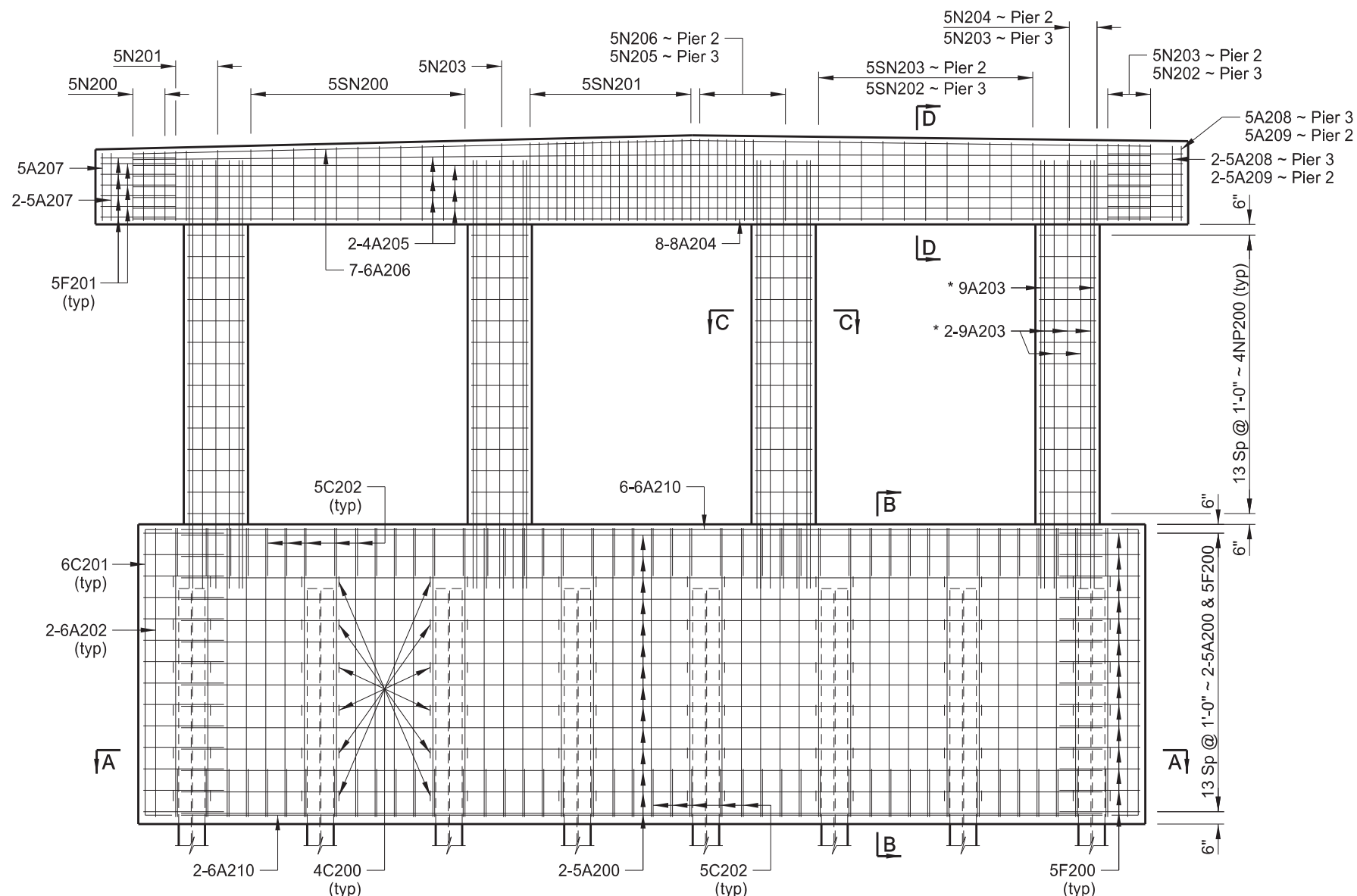


QUANTITIES
SEE DWG 2-313.399L-14
BNSF RR SEPARATION EAST OF PETERSBURG
(SHOWING DIMENSIONS)
PIER DETAILS

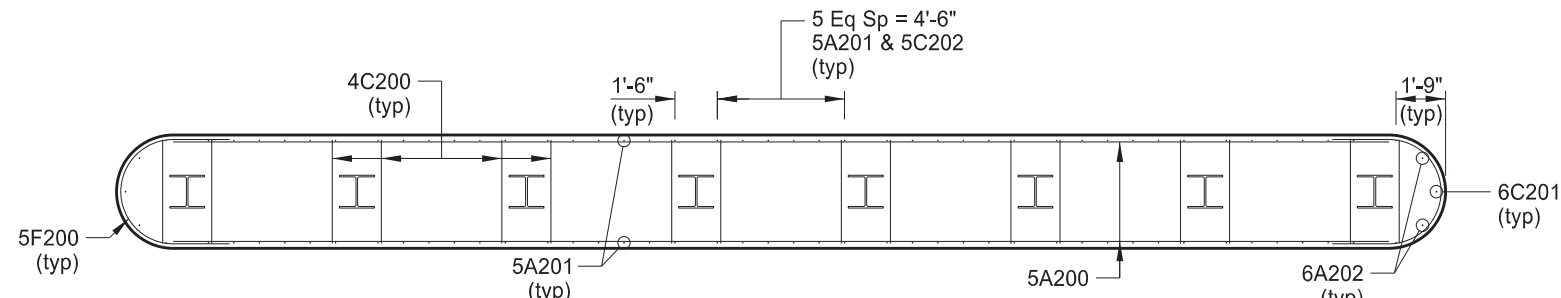
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	14



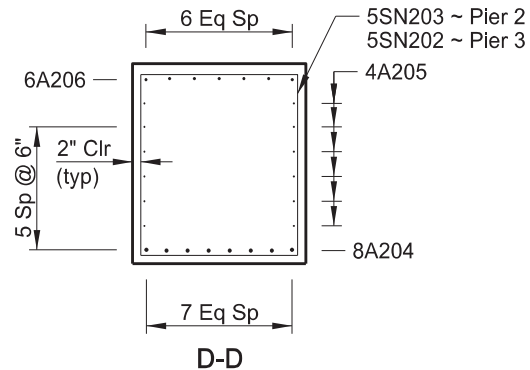
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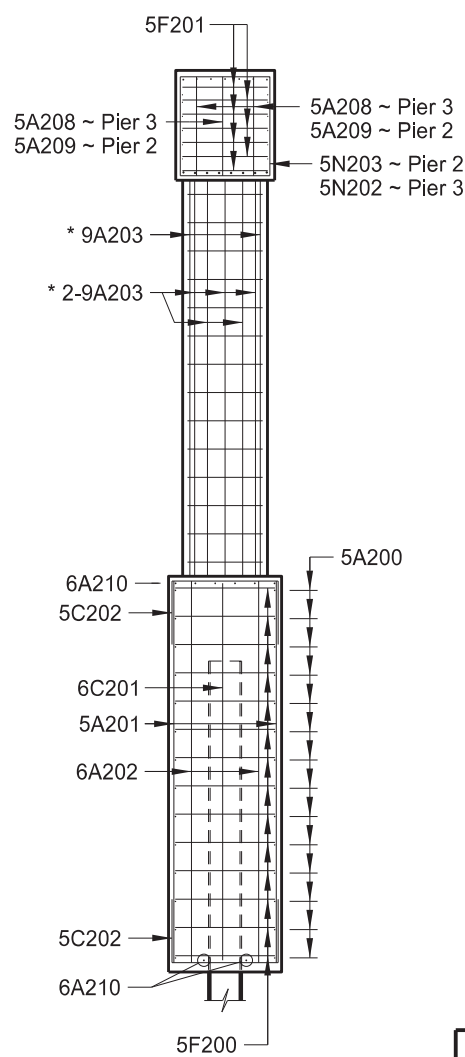
ELEVATION



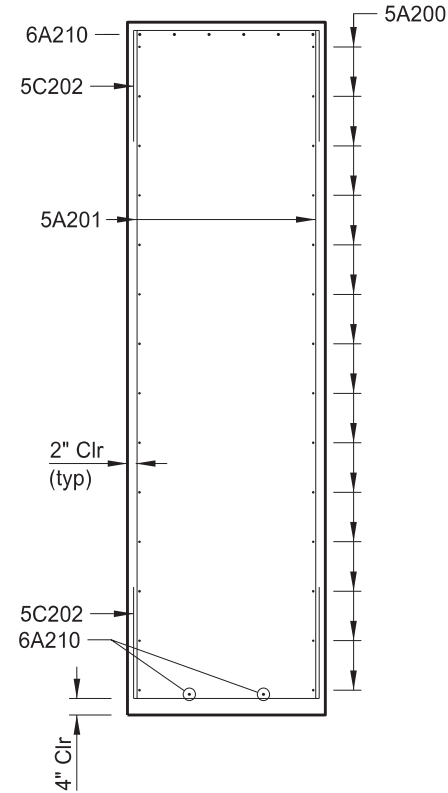
A-A



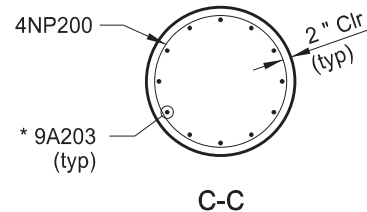
D-D



END VIEW



B-B



C-C

* Embed the 9A203 bars
3'-0" into the pile cap wall.

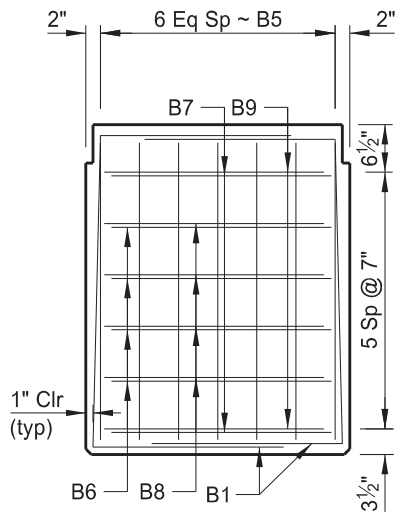


QUANTITIES		
PIER 2	CLASS AE-3 CONCRETE	135.9 CY
	REINFORCING STEEL	11,119 LBS
PIER 3	CLASS AE-3 CONCRETE	135.6 CY
	REINFORCING STEEL	11,114 LBS

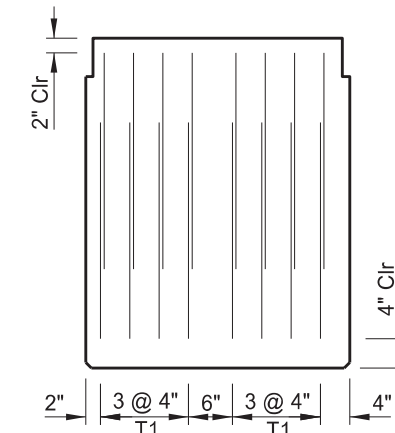
BNSF RR SEPARATION
EAST OF PETERSBURG

(SHOWING REINFORCING)

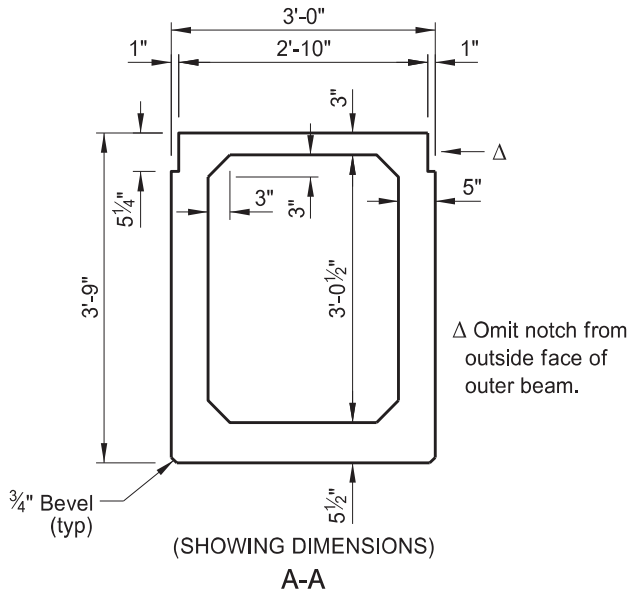
PIER DETAILS



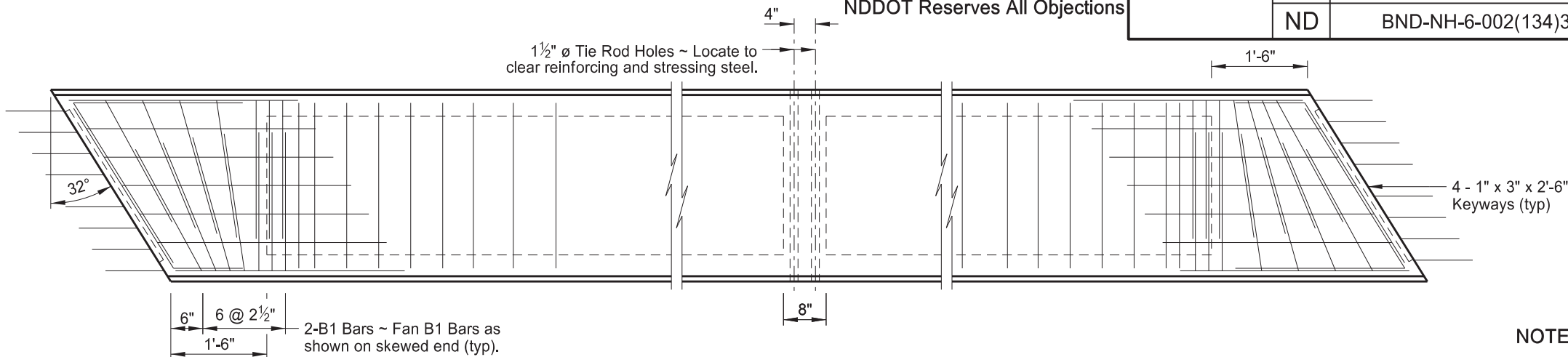
B-B



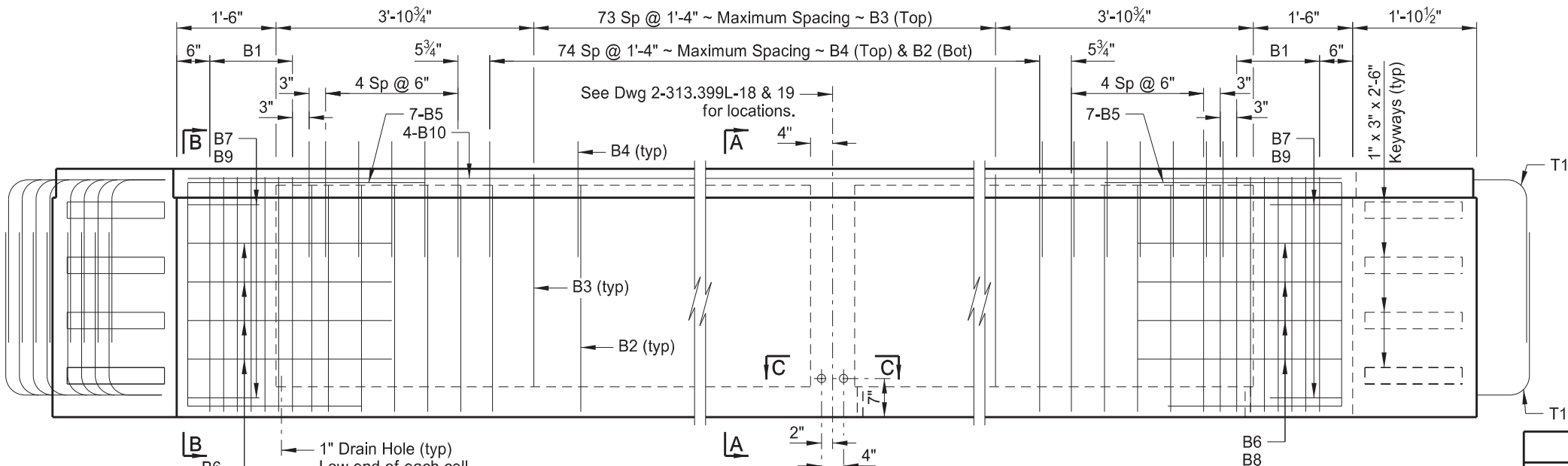
END VIEW



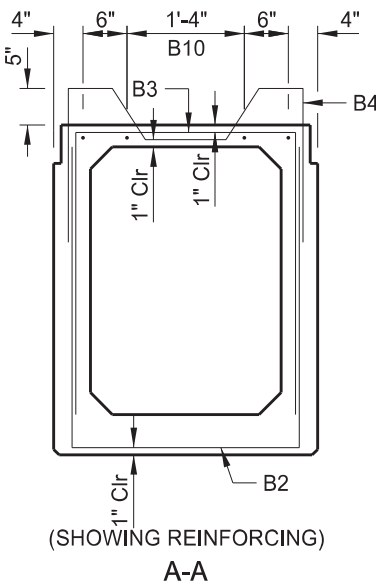
A-A



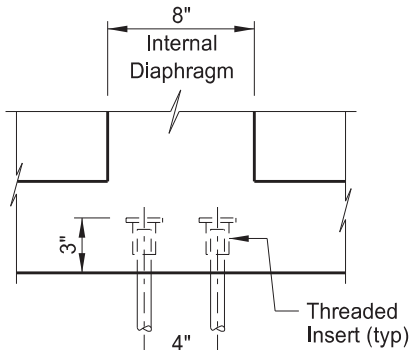
PLAN



ELEVATION



A-A



(OUTER BEAMS ONLY)
DIAPHRAGM BAR INSERT

C-C



NOTE:

Provide diaphragm tie rod holes and inserts on the Span 2 beams only.

BAR LIST ~ ONE BEAM

MARK	SIZE	NO.	LENGTH	SHAPE
B1	4	28	7'-11"	BENT
B2	4	87	9'-5"	BENT
B3	4	74	9'-0"	BENT
B4	4	87	6'-9"	BENT
B5	5	14	9'-7"	BENT
B6	4	8	6'-0"	BENT
B7	4	4	4'-0"	BENT
B8	4	8	7'-7"	BENT
B9	4	4	5'-7"	BENT
B10	4	16	29'-8"	STR
T1	4	32	5'-3"	STR

QUANTITIES

(ONE BEAM)

BEAM LENGTH

110.0 LF

BEAM SECTION DATA

WT = 730.3 LBS/FT + 6221 LBS

CROSS SECTIONAL AREA = 678.5 IN²

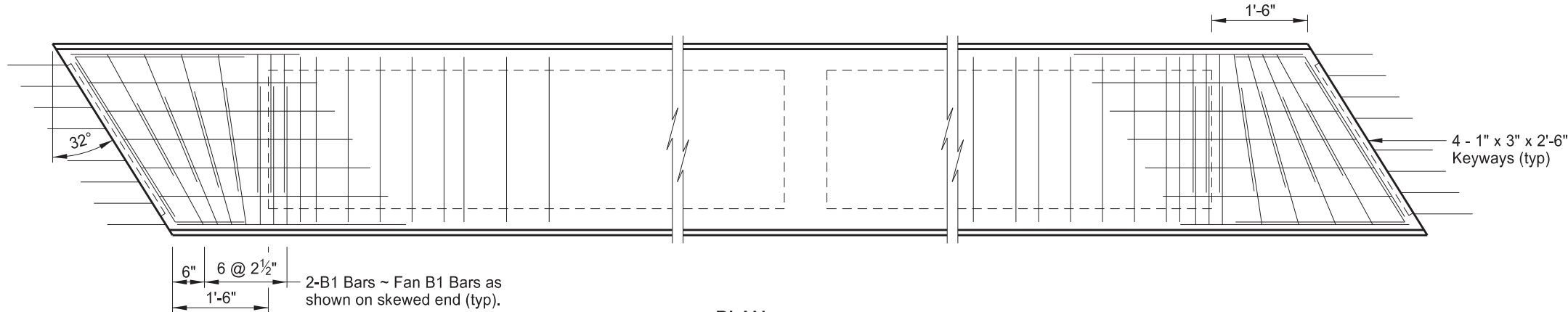
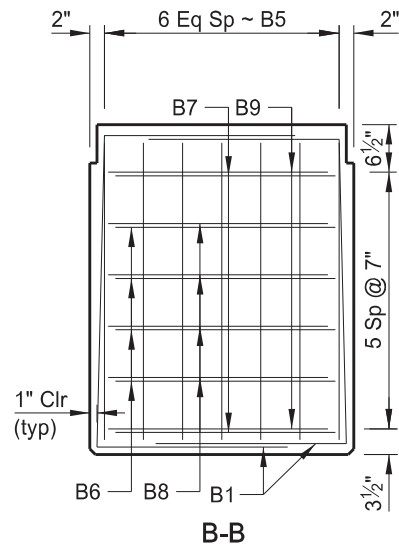
C.G. (FROM BOTTOM) = 20.48 IN

I = 164,979 IN⁴

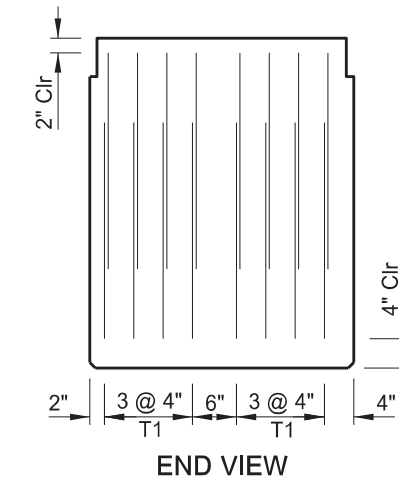
S_B = 8,056 IN³

BNSF RR SEPARATION
EAST OF PETERSBURG

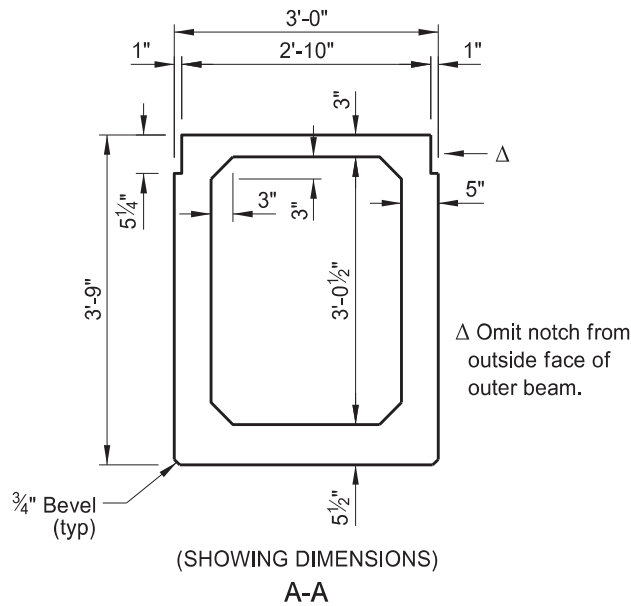
PRE-TENSIONED 45" x 36"
PRESTRESSED SPREAD BOX BEAM



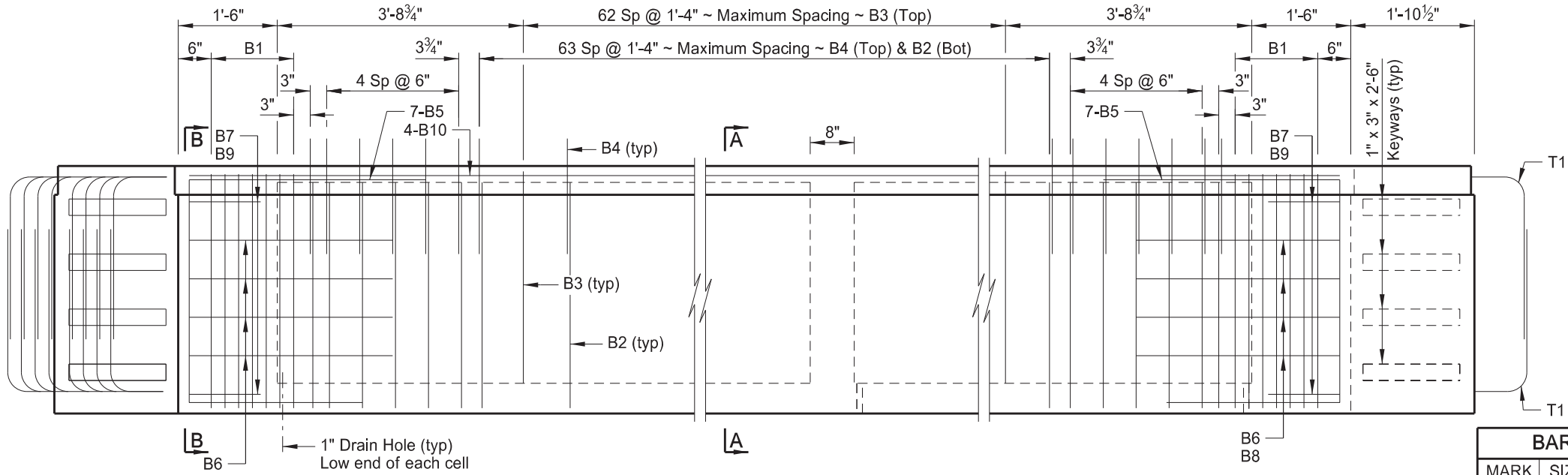
PLAN



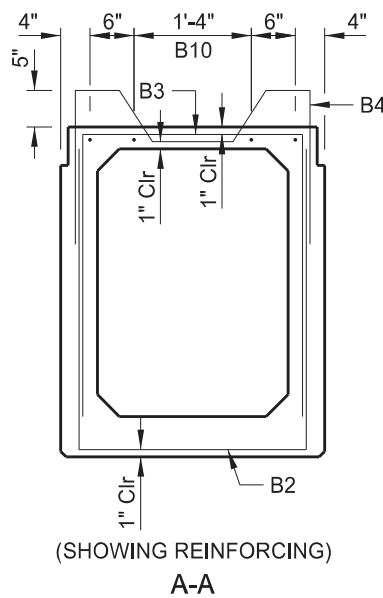
END VIEW



A-A



ELEVATION



A-A

** 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.



BAR LIST ~ ONE BEAM				
MARK	SIZE	NO.	LENGTH	SHAPE
B1	4	28	7'-11"	BENT
B2	4	76	9'-5"	BENT
B3	4	63	9'-0"	BENT
B4	4	76	6'-9"	BENT
B5	5	14	9'-7"	BENT
B6	4	8	6'-0"	BENT
B7	4	4	4'-0"	BENT
B8	4	8	7'-7"	BENT
B9	4	4	5'-7"	BENT
B10	4	12	33'-7"	STR
T1	4	32	5'-3"	STR

QUANTITIES		(ONE BEAM)
BEAM LENGTH	95.0 LF	

BEAM SECTION DATA	
WT =	730.3 LBS/FT + 6221 LBS
CROSS SECTIONAL AREA =	678.5 IN ²
C.G. (FROM BOTTOM) =	20.48 IN
I =	164,979 IN ⁴
S _B =	8,056 IN ³

BNSF RR SEPARATION EAST OF PETERSBURG
PRE-TENSIONED 45" x 36" PRESTRESSED SPREAD BOX BEAM

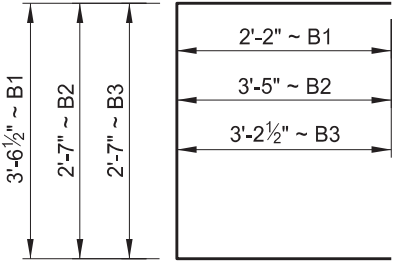
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	17

NOTES:

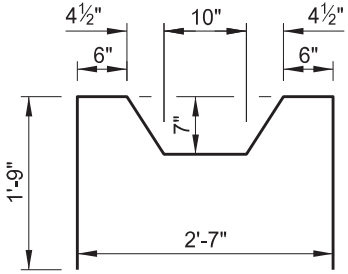
Select the final prestress force (remaining after all losses have been accounted for) and its corresponding center of gravity from those on a curve determined by the three values shown in the "Prestressing Data" table.

Provide holes and inserts in the beams at locations shown to accommodate the diaphragm bars.

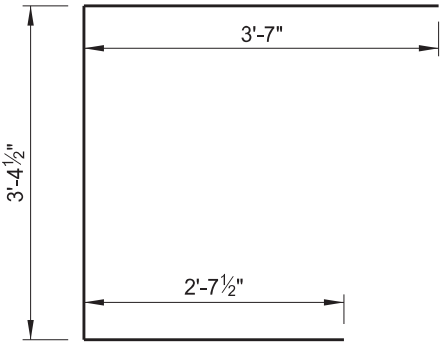
Minor changes to the shape of the beam and to reinforcing steel may be made to accommodate the forms of various contractors and their construction methods with the approval of the Engineer.



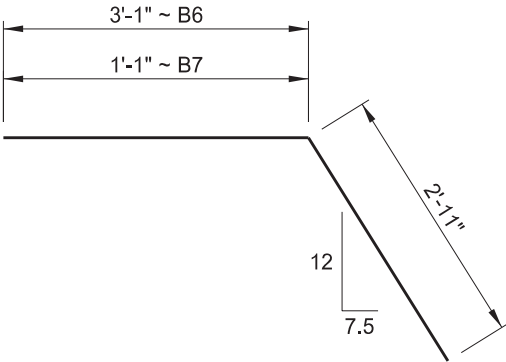
B1, B2 & B3



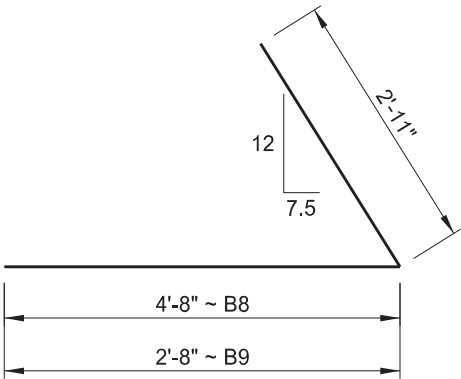
B4



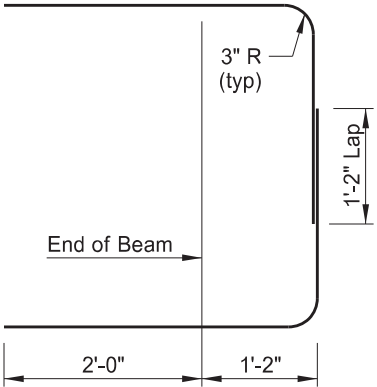
B5



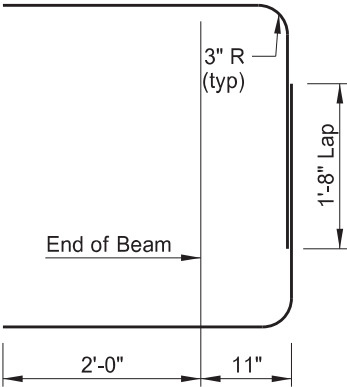
B6 & B7



B8 & B9



(AT ABUTMENTS)

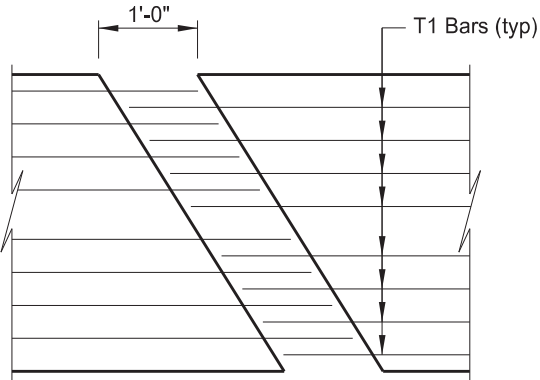


(AT PIERS)

T1

(DIMENSIONS SHOWN ARE OUT TO OUT)

BENT BAR DETAILS



BEAM END PLAN AT PIER

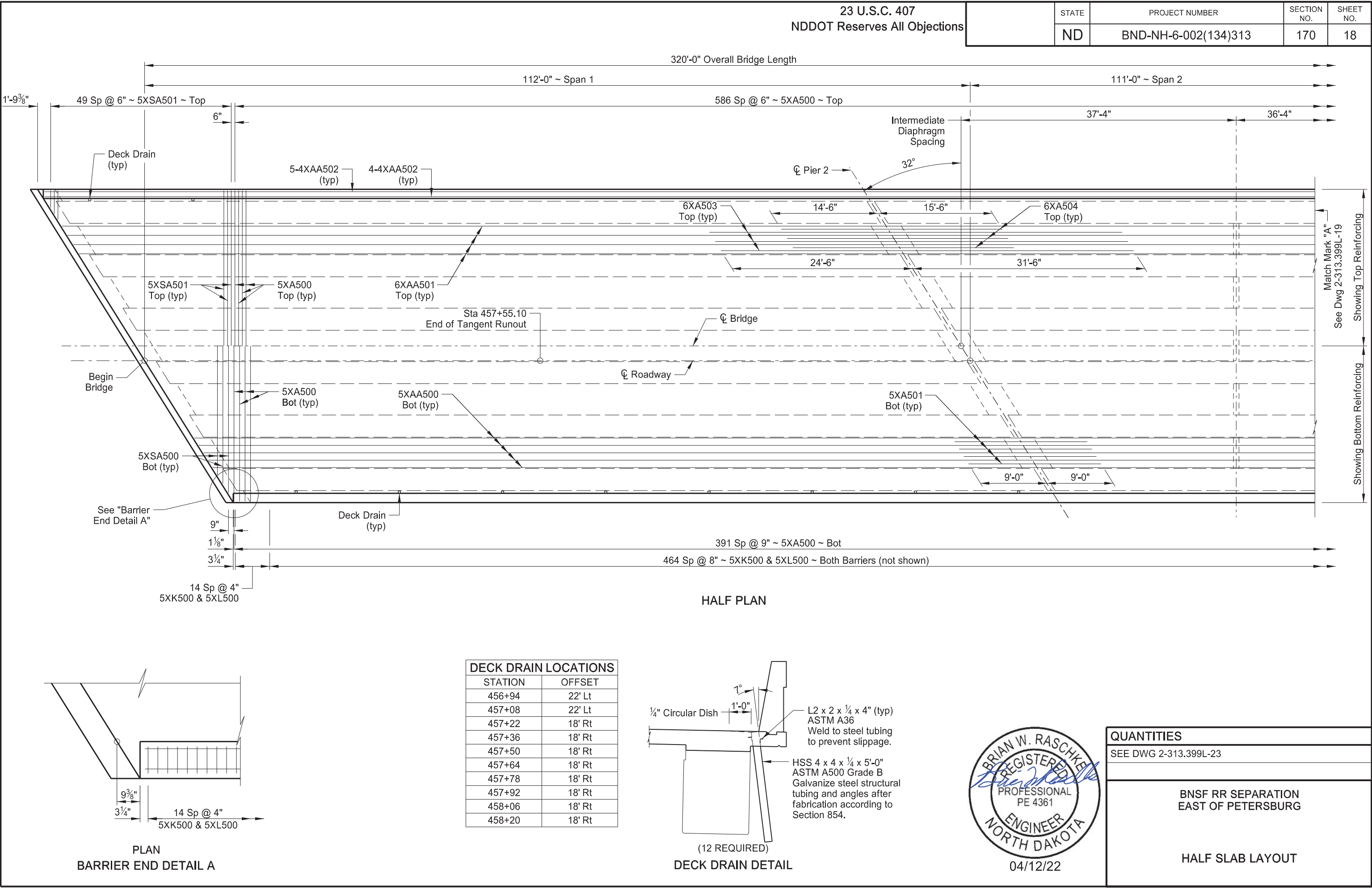
PRESTRESSING DATA					
C.G.	FINAL FORCE	DETENSION STRENGTH	ACCEPTANCE STRENGTH	WEIGHT (TONS)	BEAM LENGTH
3.00"	1304.7 k	7,500 psi (Min)	7,500 psi (Min)	43.3	110'-0"
3.25"	1315.9 k				
3.50"	1327.3 k				
2.50"	931.8 k	7,500 psi (Min)	7,500 psi (Min)	37.8	95'-0"
2.75"	939.7 k				
3.00"	947.7 k				



04/12/22

BNSF RR SEPARATION
EAST OF PETERSBURG

PRE-TENSIONED 45" x 36"
PRESTRESSED SPREAD BOX BEAM



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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	18

HALF PLAN

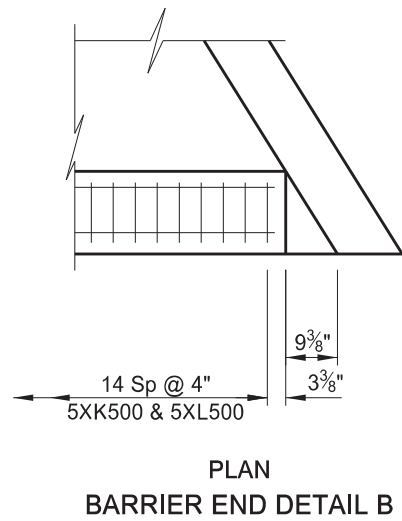
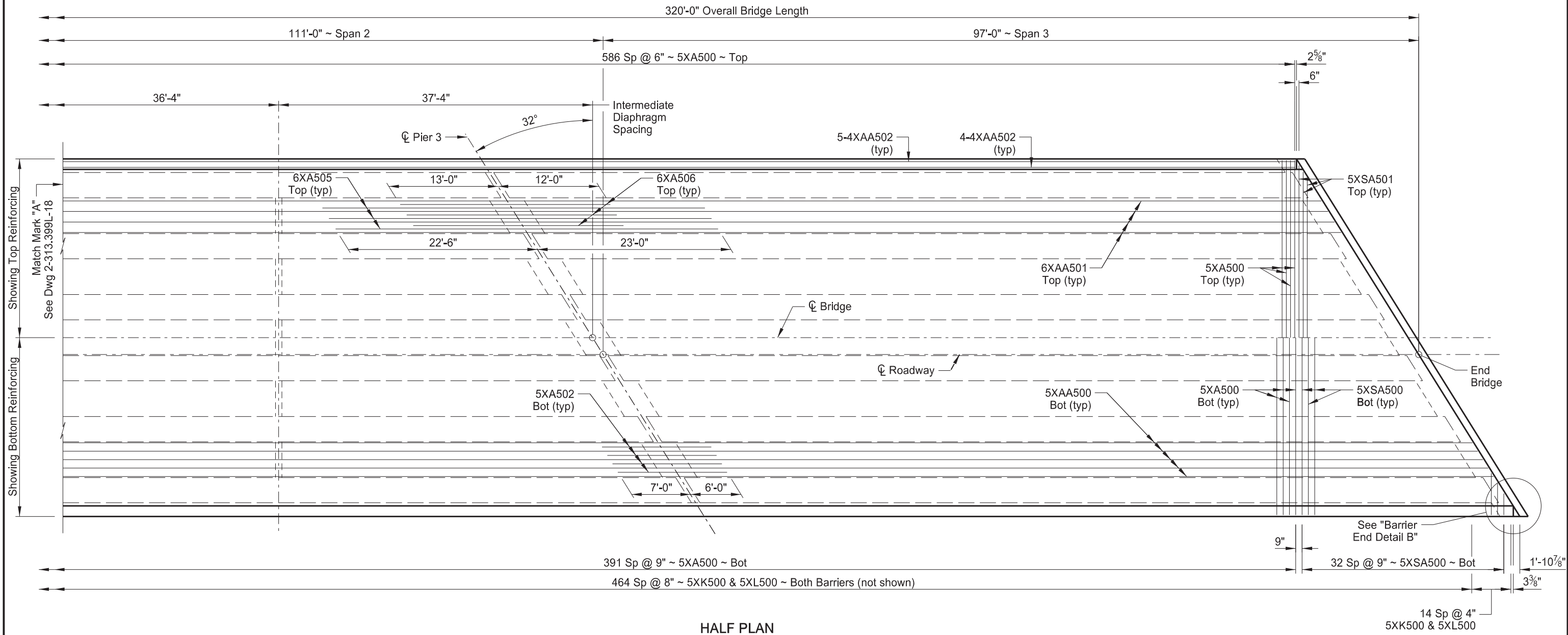
PLAN
BARRIER END DETAIL A

DECK DRAIN LOCATIONS	
STATION	OFFSET
456+94	22' Lt
457+08	22' Lt
457+22	18' Rt
457+36	18' Rt
457+50	18' Rt
457+64	18' Rt
457+78	18' Rt
457+92	18' Rt
458+06	18' Rt
458+20	18' Rt

DECK DRAIN DETAIL

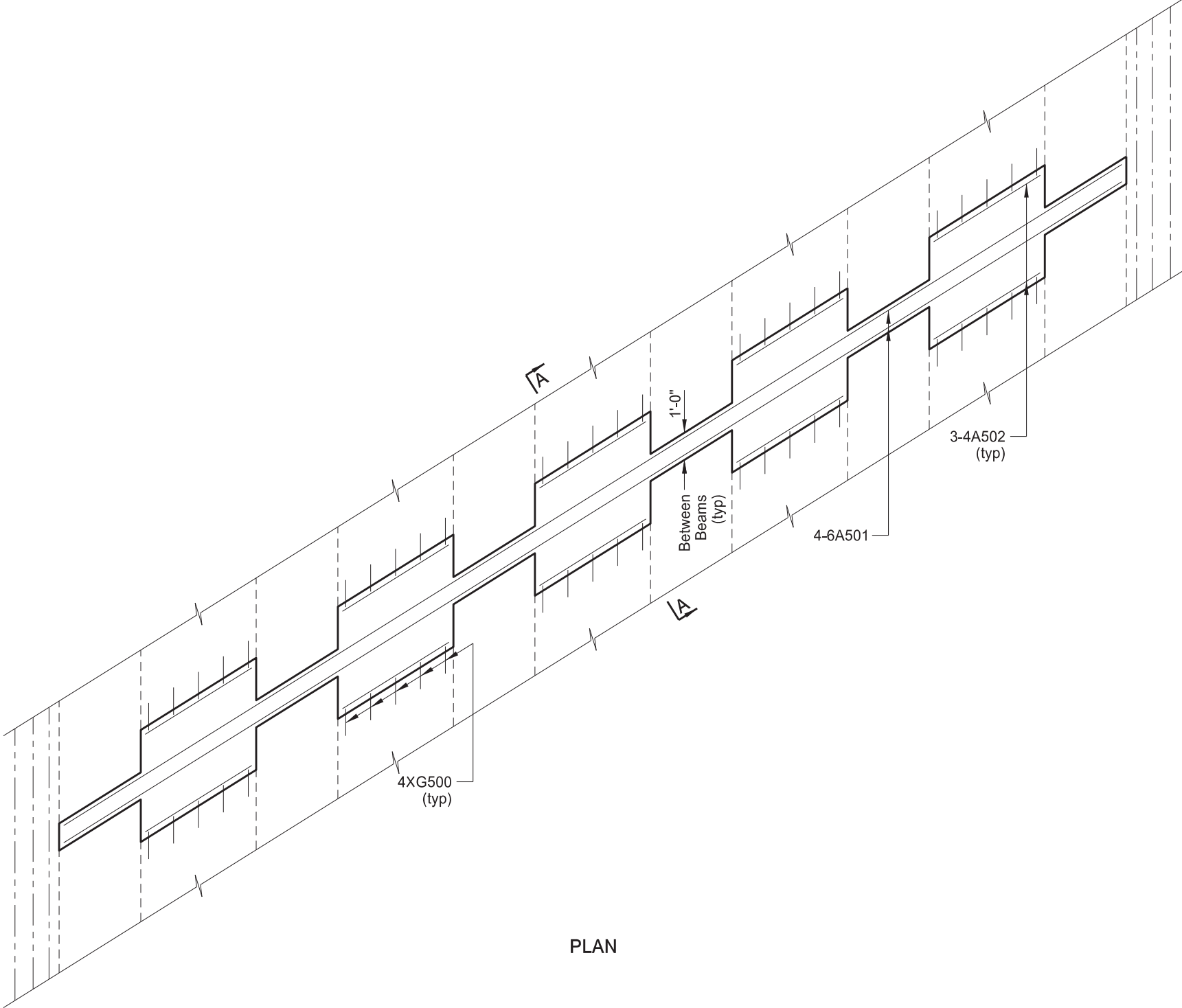
QUANTITIES	
SEE DWG 2-313.399L-23	
BNSF RR SEPARATION EAST OF PETERSBURG	
HALF SLAB LAYOUT	

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	19

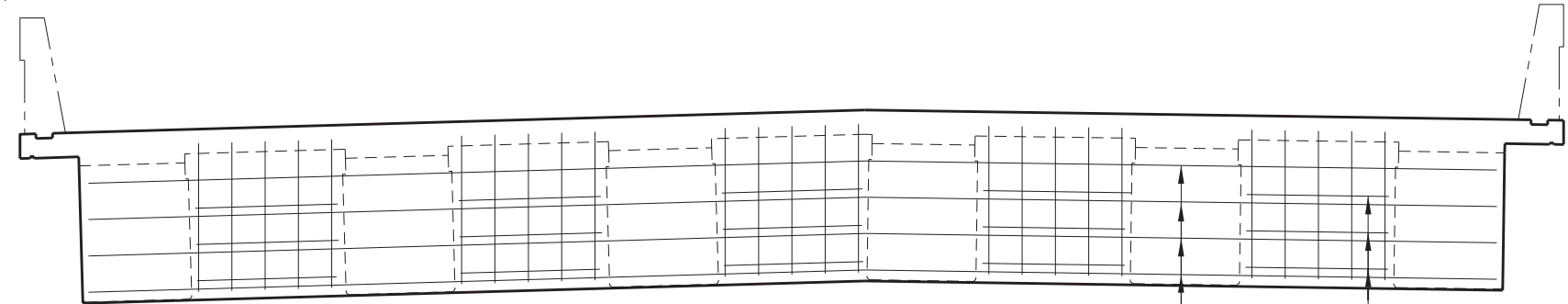


QUANTITIES
SEE DWG 2-313.399L-23
BNSF RR SEPARATION EAST OF PETERSBURG
HALF SLAB LAYOUT

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	20

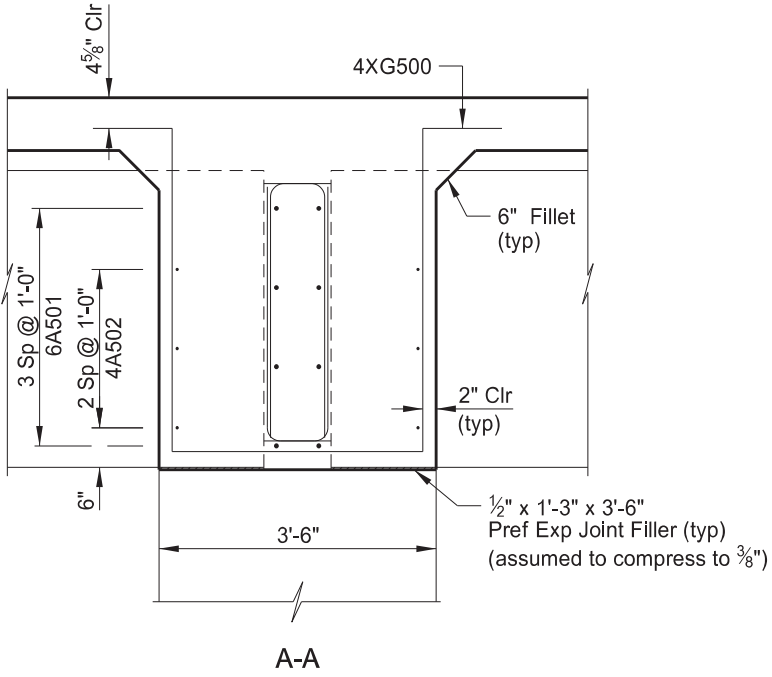


PLAN



3 1/2" | 4 Sp @ 11" | 3 1/2"
4XG500 (typ)

ELEVATION

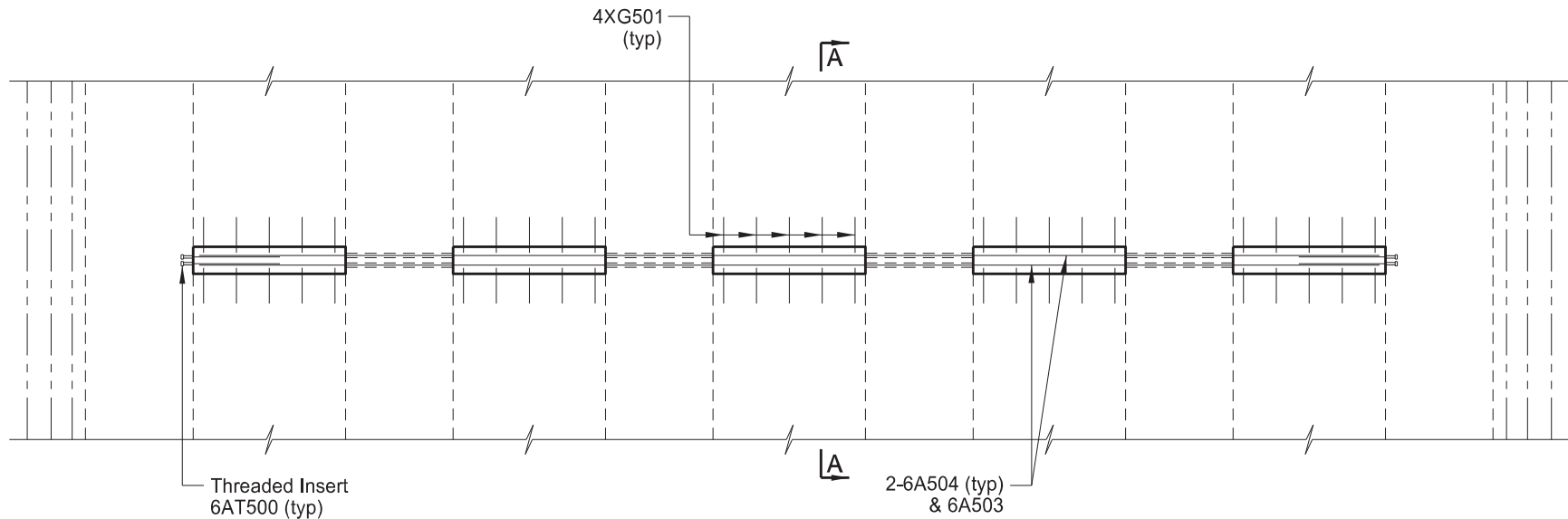


A-A

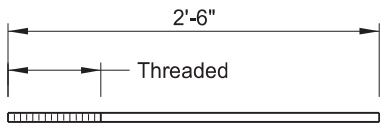
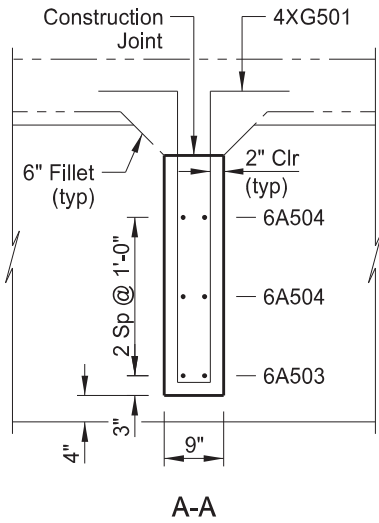


QUANTITIES
SEE DWG 2-313.399L-23
BNSF RR SEPARATION EAST OF PETERSBURG
PIER DIAPHRAGM DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	21

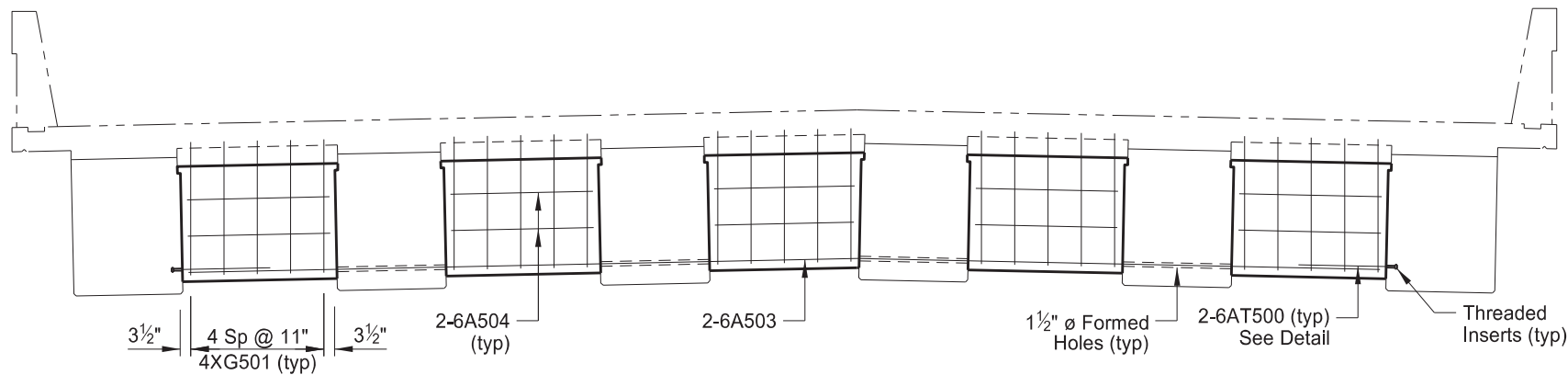


PLAN



No. 6 Reinforcing Steel ~ Include
in the Prestressed Beam bid item.

6AT500 DETAIL

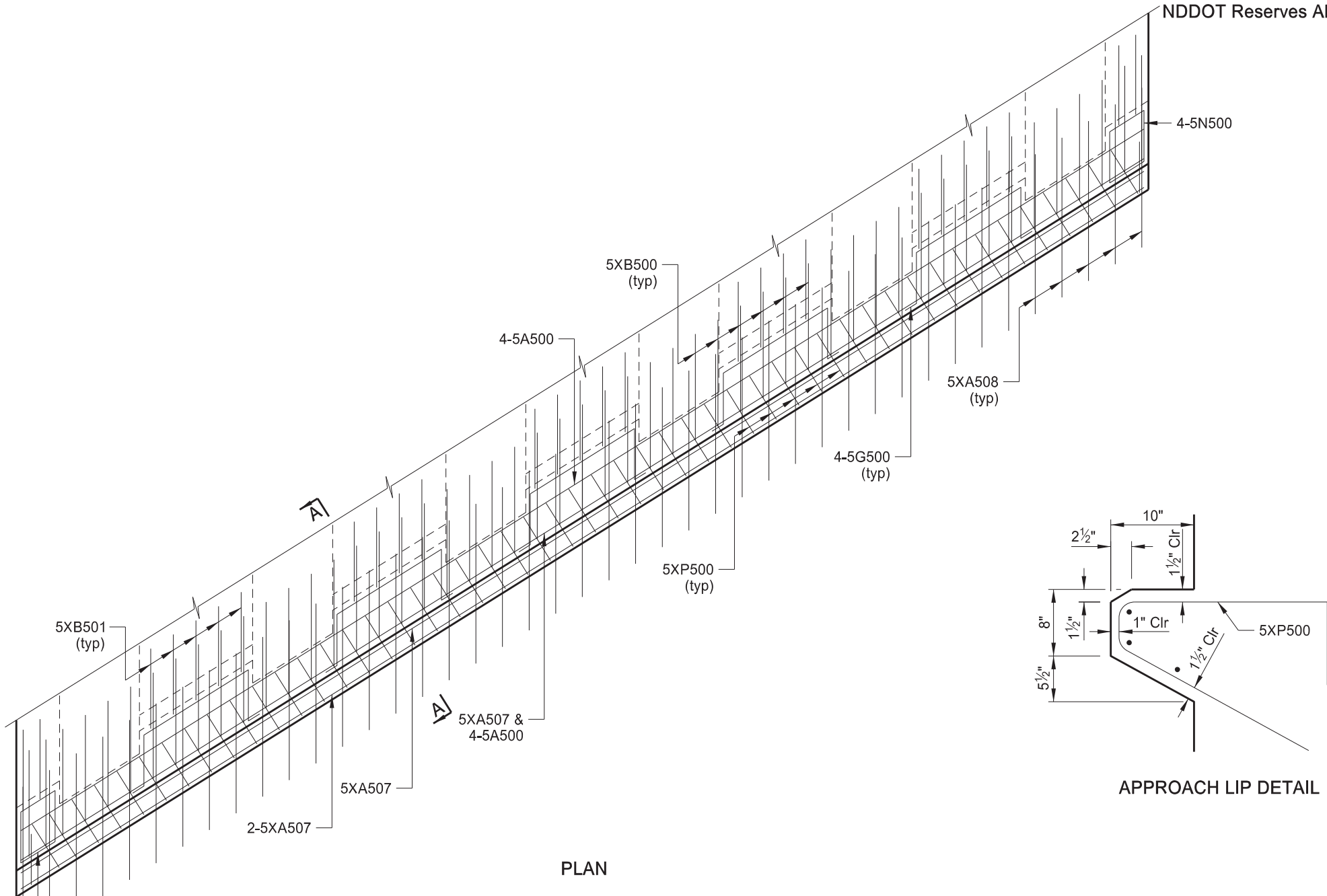


ELEVATION

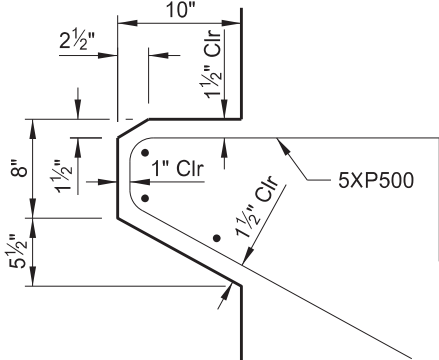


QUANTITIES
SEE DWG 2-313.399L-23
BNSF RR SEPARATION EAST OF PETERSBURG
INTERMEDIATE DIAPHRAGM DETAILS

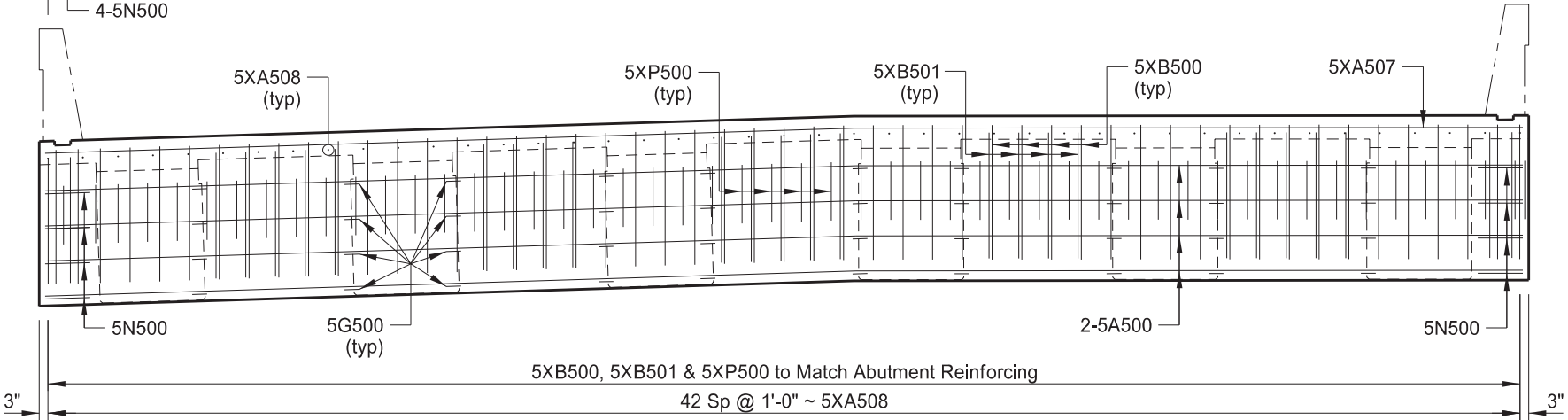
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	22



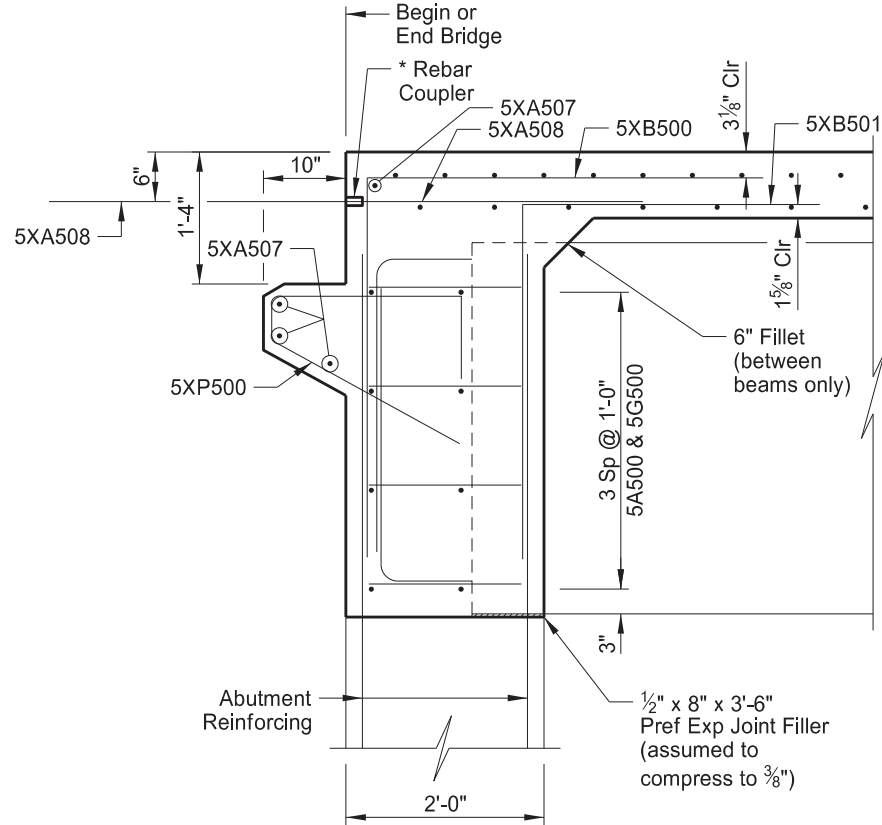
PLAN



APPROACH LIP DETAIL



(APPROACH LIP NOT SHOWN)
ELEVATION



A-A

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

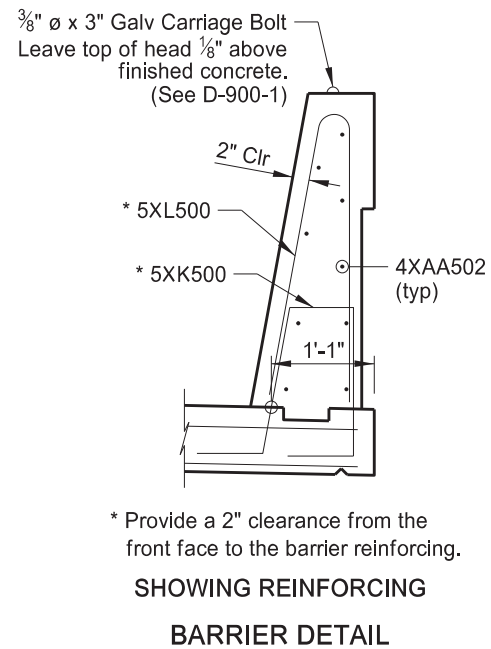
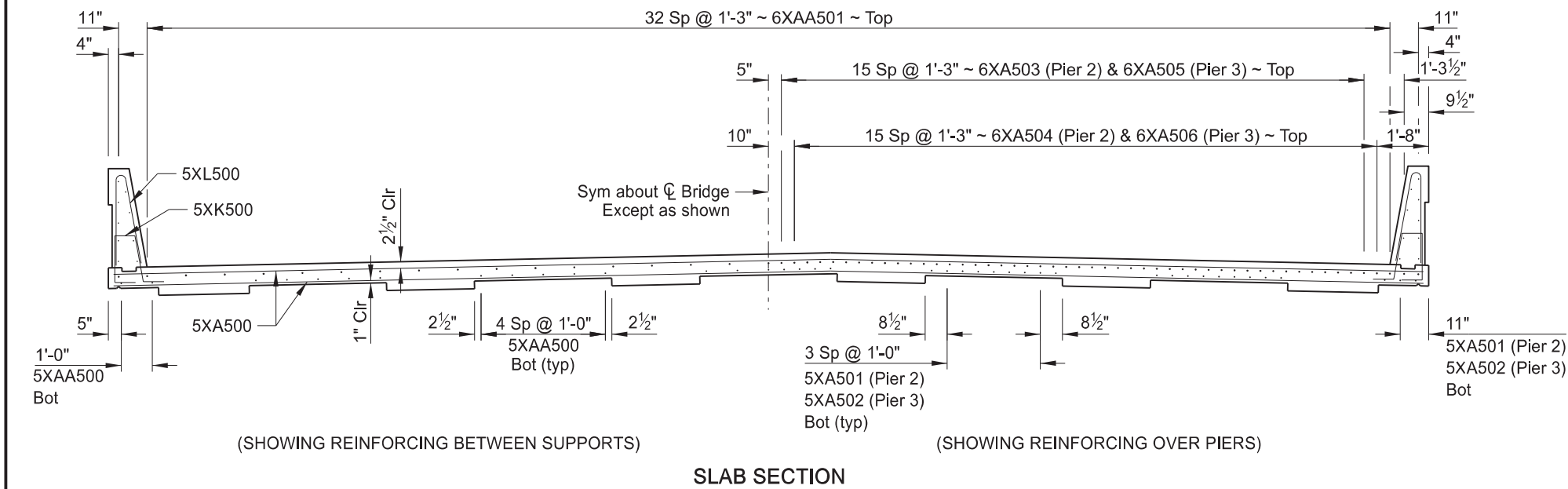
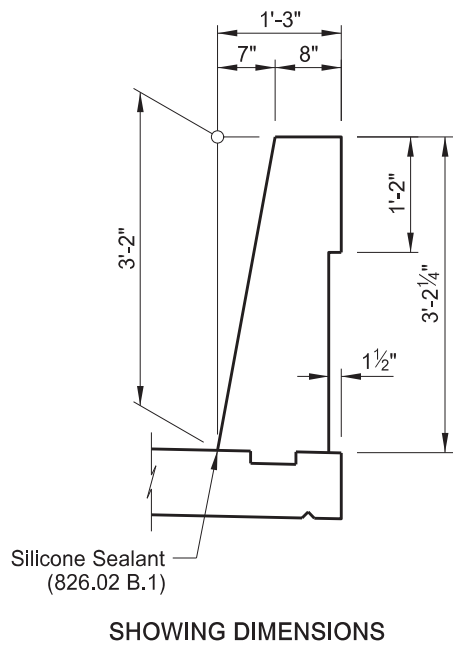
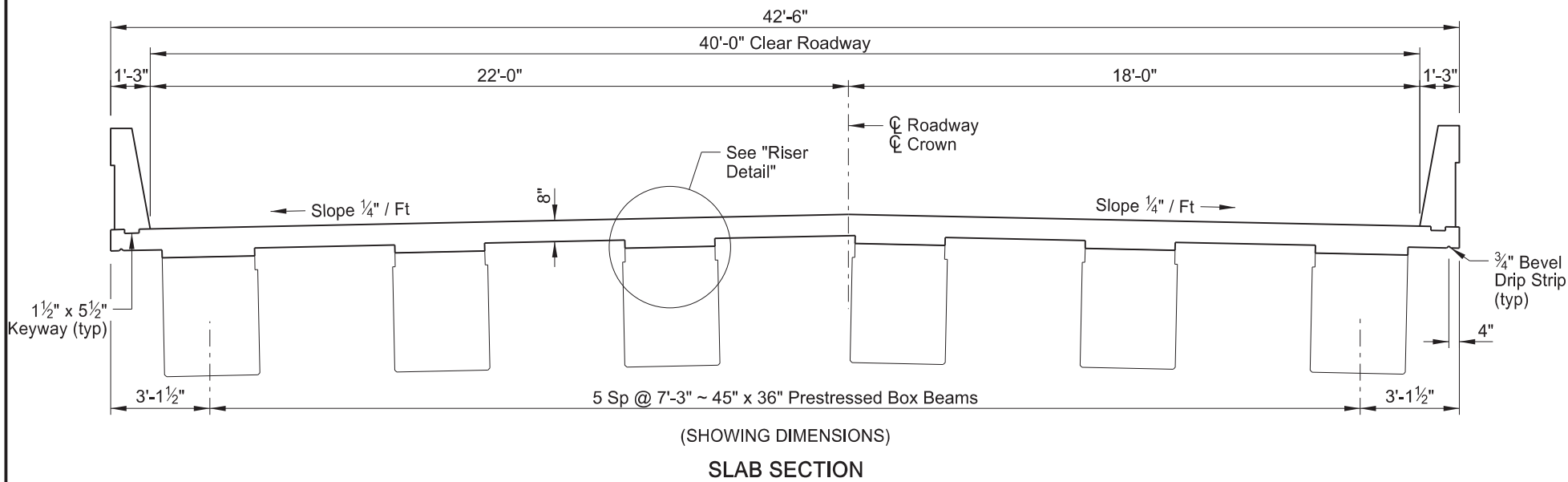
NOTE:

Do not install the 5XA508 bars into the approach slab until all of the foundation fill is in place.

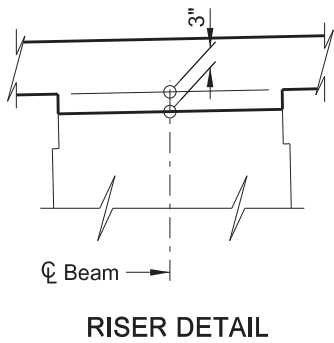


QUANTITIES
SEE DWG 2-313.399L-23
BNSF RR SEPARATION EAST OF PETERSBURG
ENDWALL DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	23

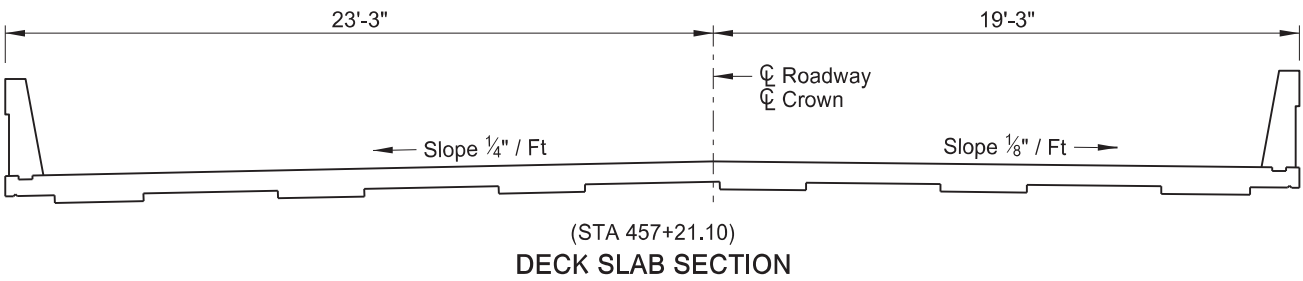
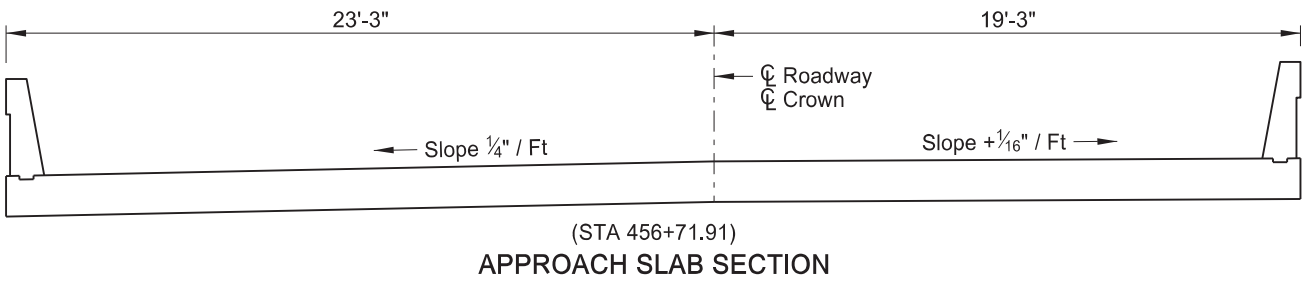
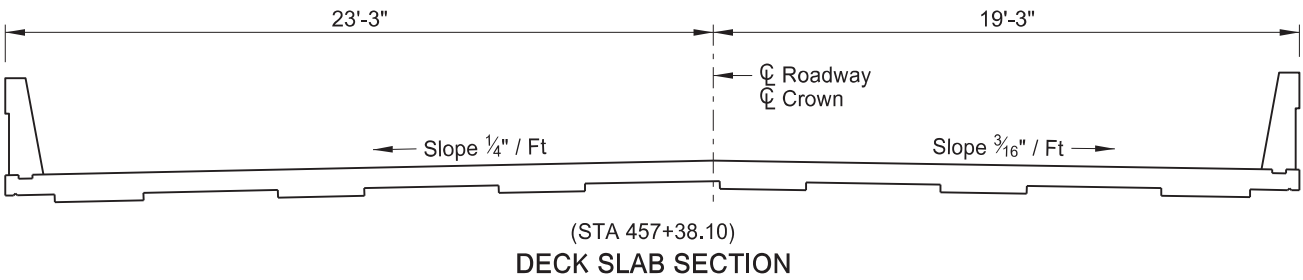
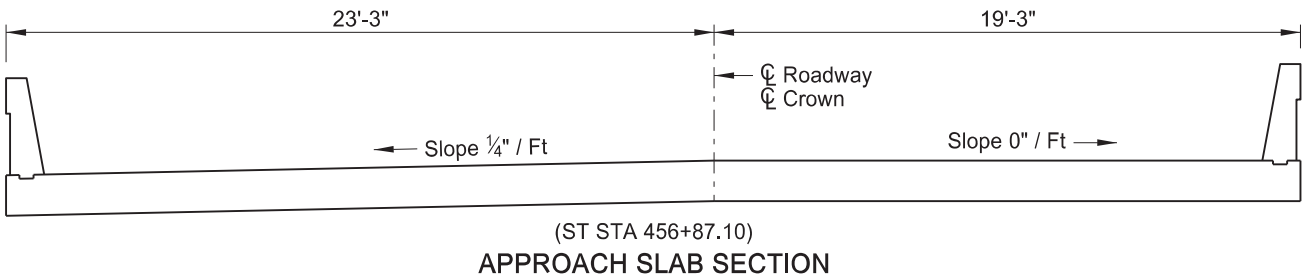
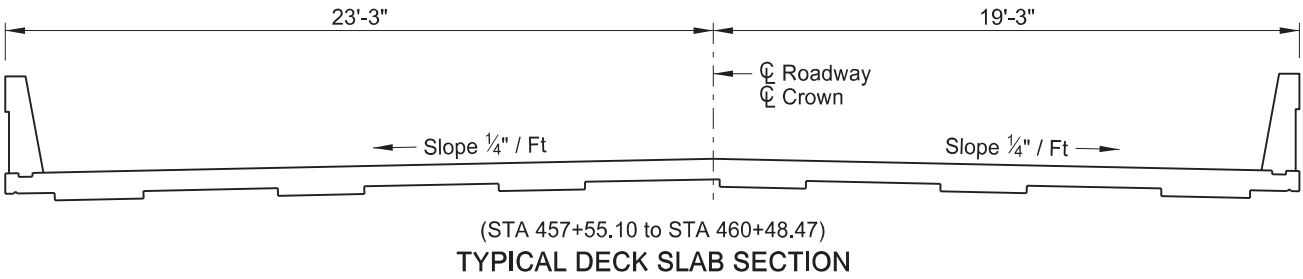
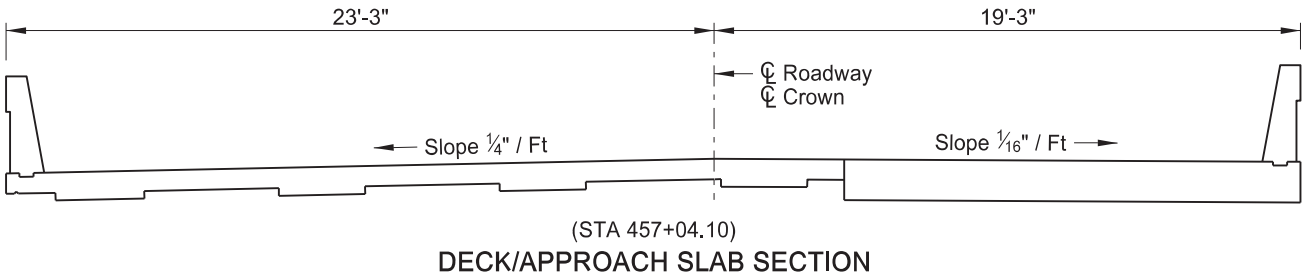


The 3" dimension shown is located at the supports. The anticipated midspan riser for Spans 1 & 2 is 3/4". The anticipated midspan riser for Span 3 is 2 1/4". Adjust the riser to maintain the 8" slab thickness.



QUANTITIES	
CLASS AAE-3 CONCRETE	500.2 CY
REINFORCING STEEL	3,061 LBS
REINFORCING STEEL (EPOXY)	101,925 LBS
BNSF RR SEPARATION EAST OF PETERSBURG	
SLAB SECTION	

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	24

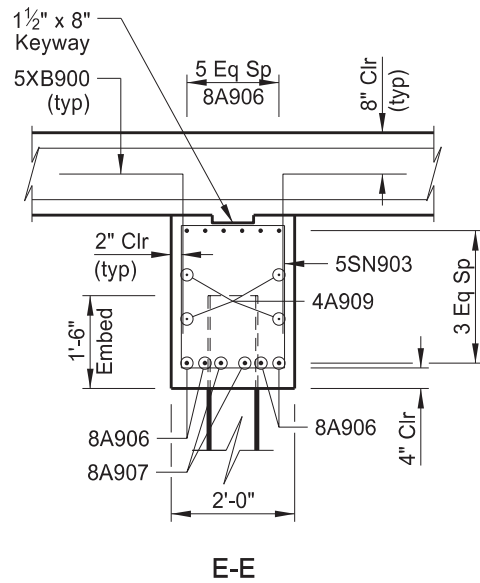
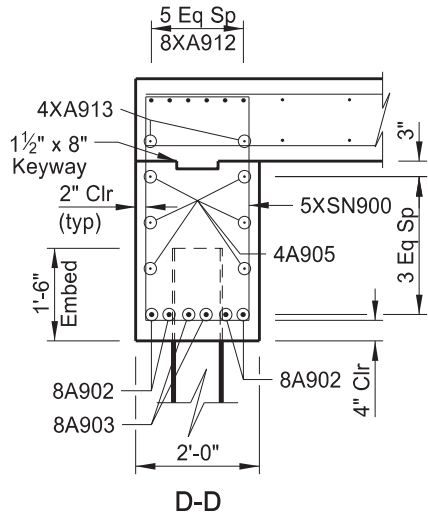
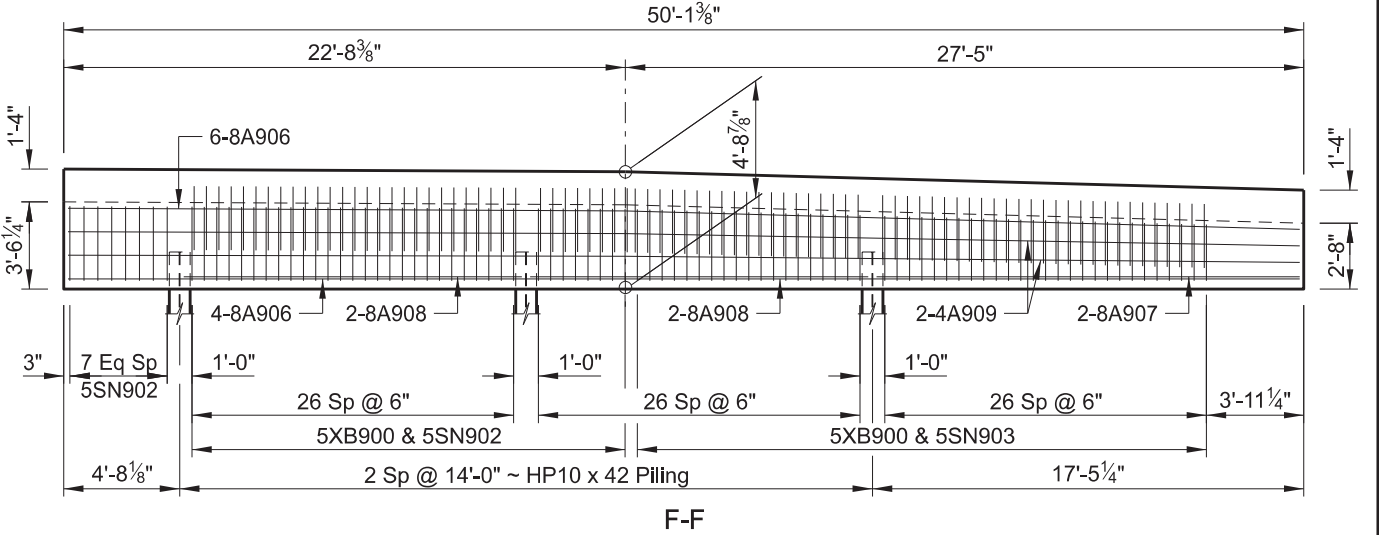
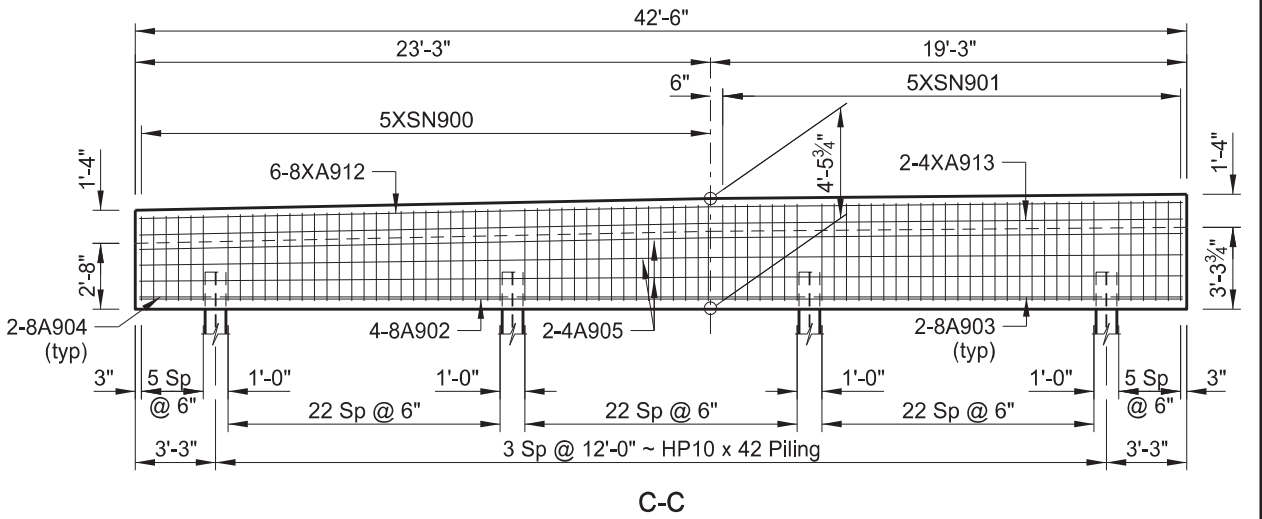
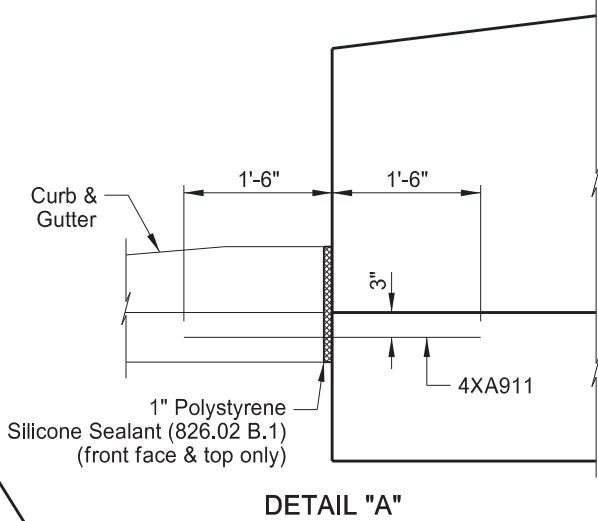
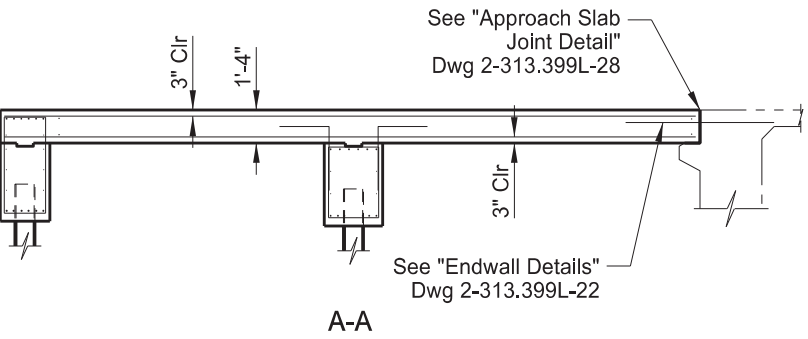
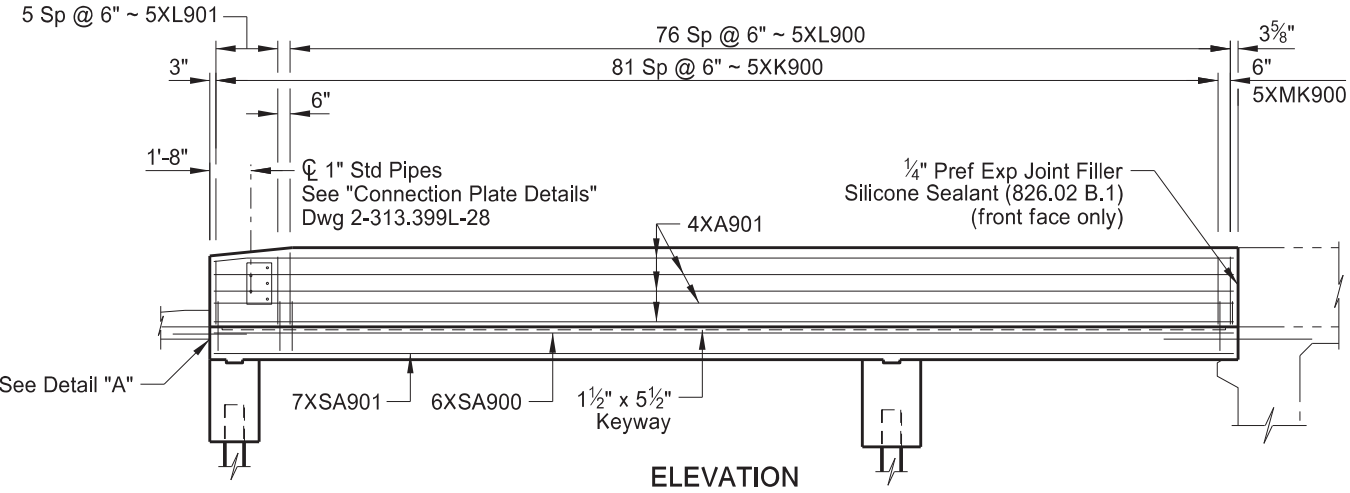
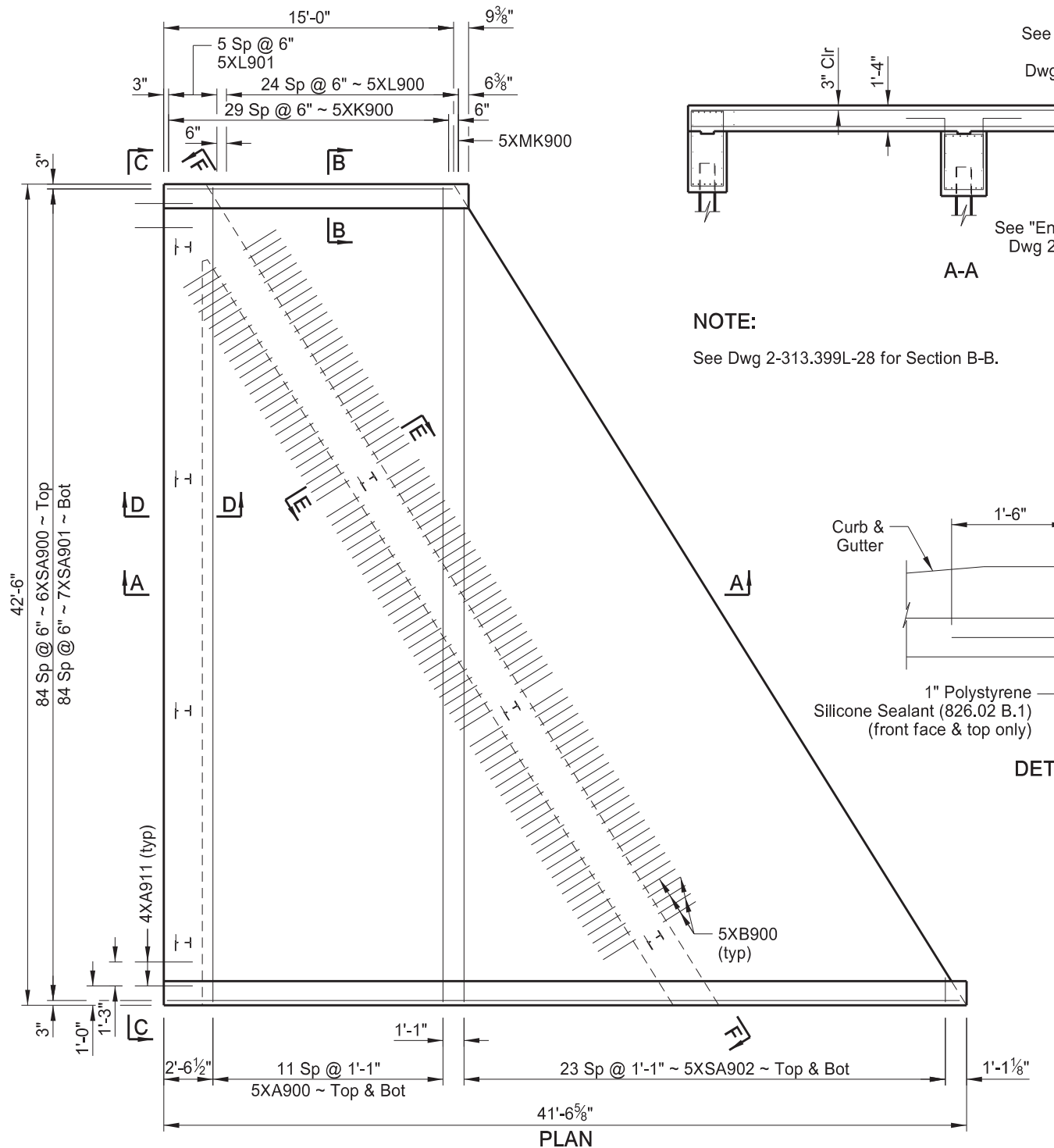


BNSF RR SEPARATION
EAST OF PETERSBURG
(CROSS SLOPES THRU TANGENT RUNOUT)
DECK & APPROACH SLAB SECTIONS

23 U.S.C. 407 NDDOT Reserves All Objections																	STATE	PROJECT NUMBER			SECTION NO.	SHEET NO.																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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BILL OF REINFORCING STEEL, GRADE 60																									NOTES:																																																																																																																																																																																																																																																																																																																																																																																																																																																												
LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
LOCA-TION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS								LOCA-TION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS								1. Verify the quantity, size, and shape of the bar reinforcement against the structure drawings and immediately notify the Engineer of any discrepancies. Discrepancies in the bar list will not be cause for adjustment of the contract unit price.				2. All dimensions are out to out of bars.				3. Nominal length of each bent bar or cut bar is the sum total of the detailing dimensions for that bar, unless otherwise noted.				4. Turn adjacent "AA" bars end for end so that the splice locations are staggered.				5. The "f" dimension indicates the inside radius unless otherwise noted.				6. An "X" preceding a bar designation indicates an epoxy coated bar.																																																																																																																																																																																																																																																																																																																																																																																																																																							
					a	b	c	d	e	f	g	h	k						a	b	c	d	e	f	g																									h	k																																																																																																																																																																																																																																																																																																																																																																																																																																		
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STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	27

NOTE:
See Dwg 2-313.399L-28 for Section B-B.



QUANTITIES

SEE DWG 2-313.399L-28

BNSF RR SEPARATION
EAST OF PETERSBURG

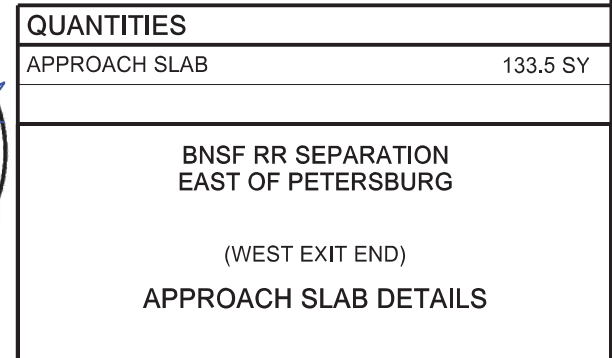
(WEST EXIT END)

APPROACH SLAB DETAILS

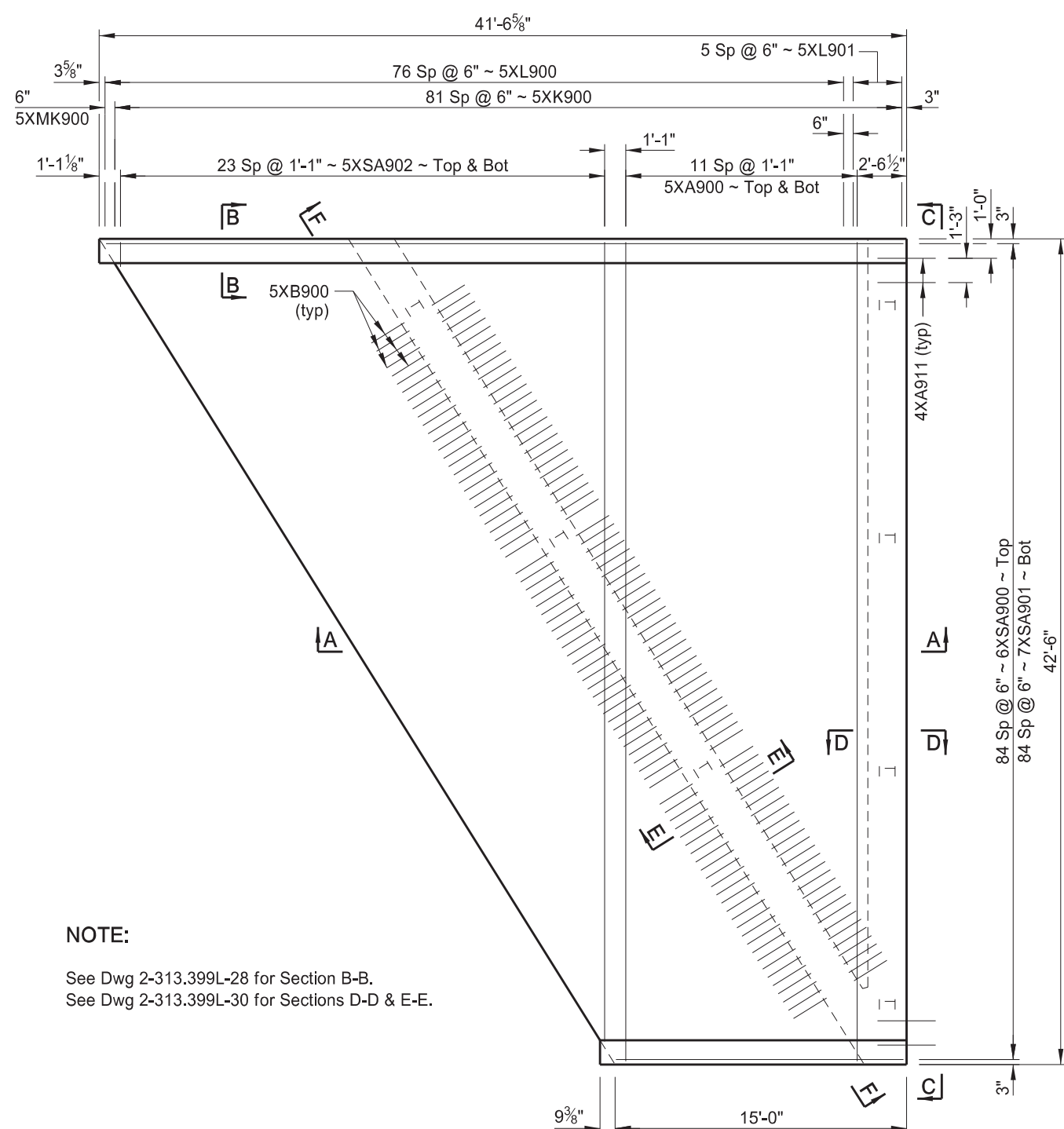


APPROACH SLAB JOINT DETAIL

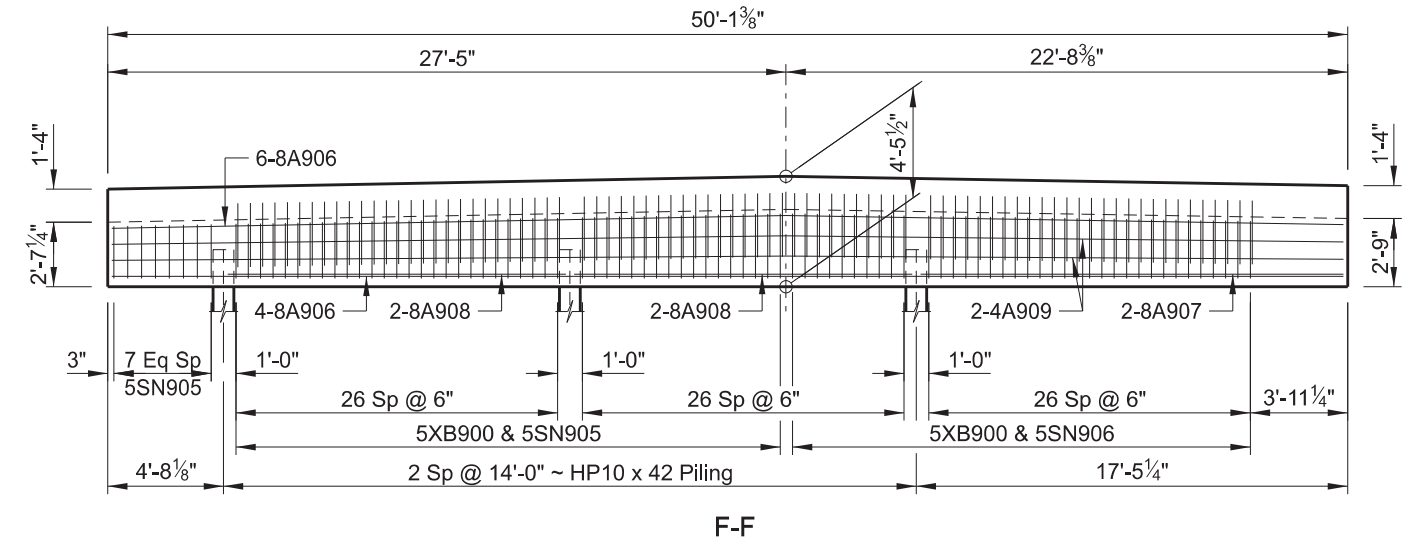
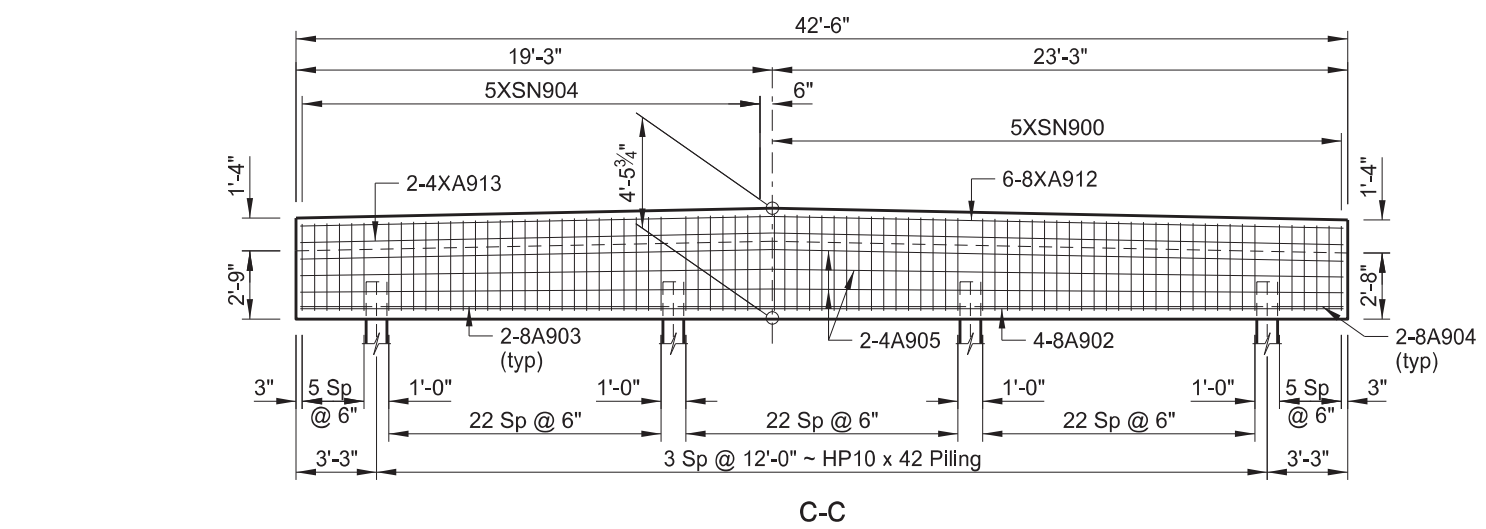
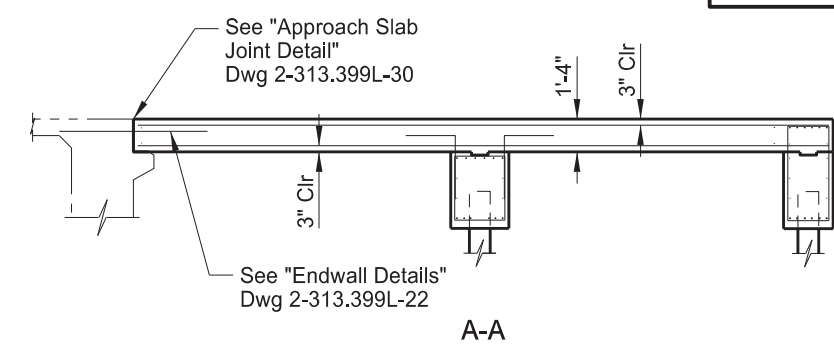
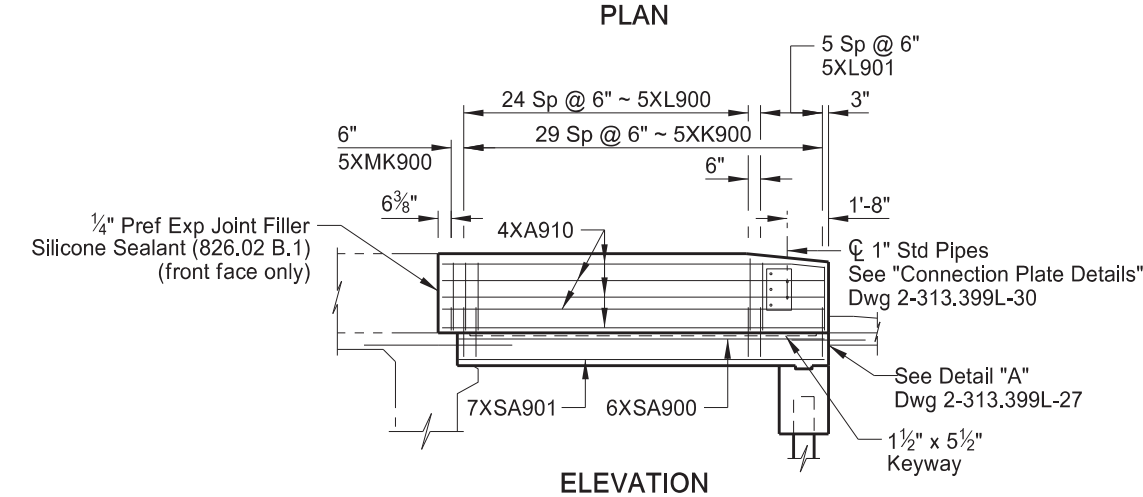
REINFORCING STEEL (LBS)	CONCRETE (CY)
18,206	86.9



STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	29



NOTE:
See Dwg 2-313.399L-28 for Section B-B.
See Dwg 2-313.399L-30 for Sections D-D & E-E.



QUANTITIES
SEE DWG 2-313.399L-30
BNSF RR SEPARATION EAST OF PETERSBURG (EAST ENTRANCE END) APPROACH SLAB DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	BND-NH-6-002(134)313	170	30

NOTE:
See Dwg 2-313.399L-29 for location of Sections D-D & E-E.

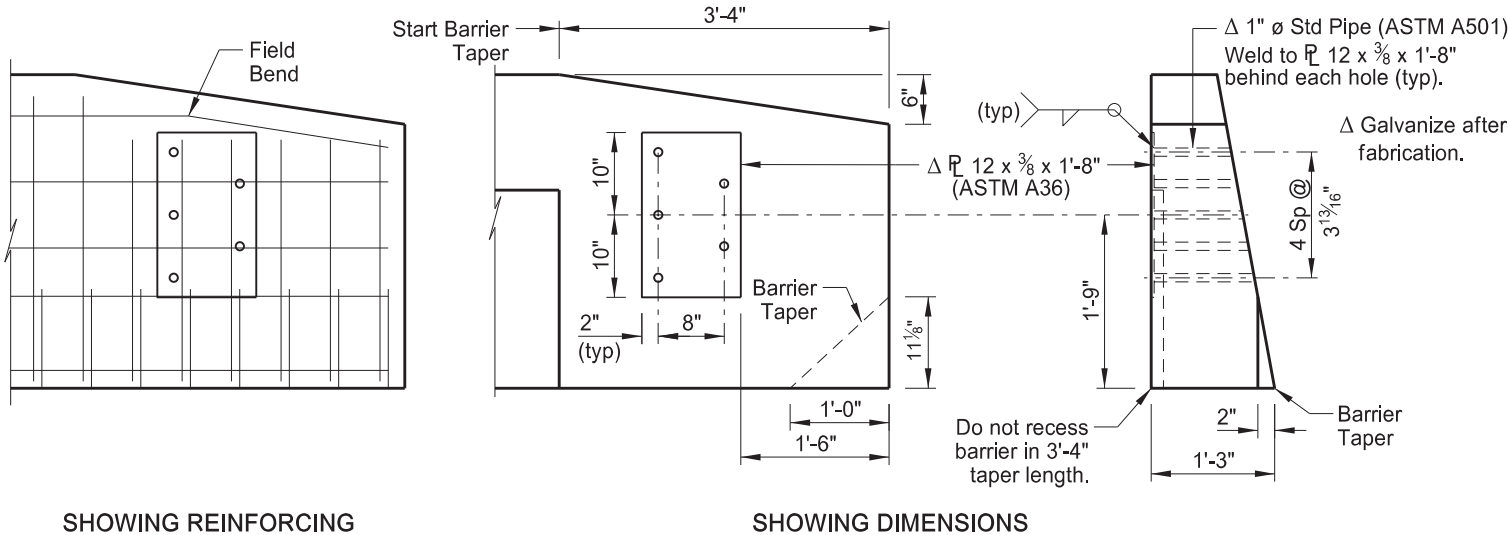
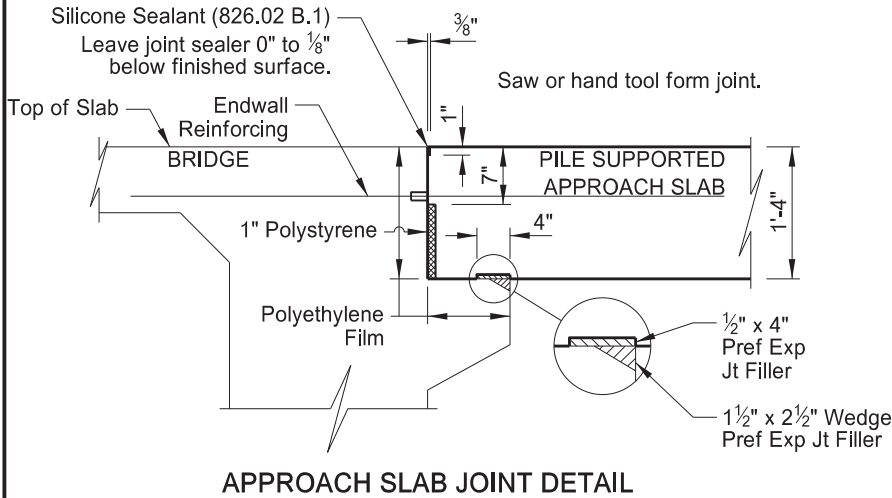
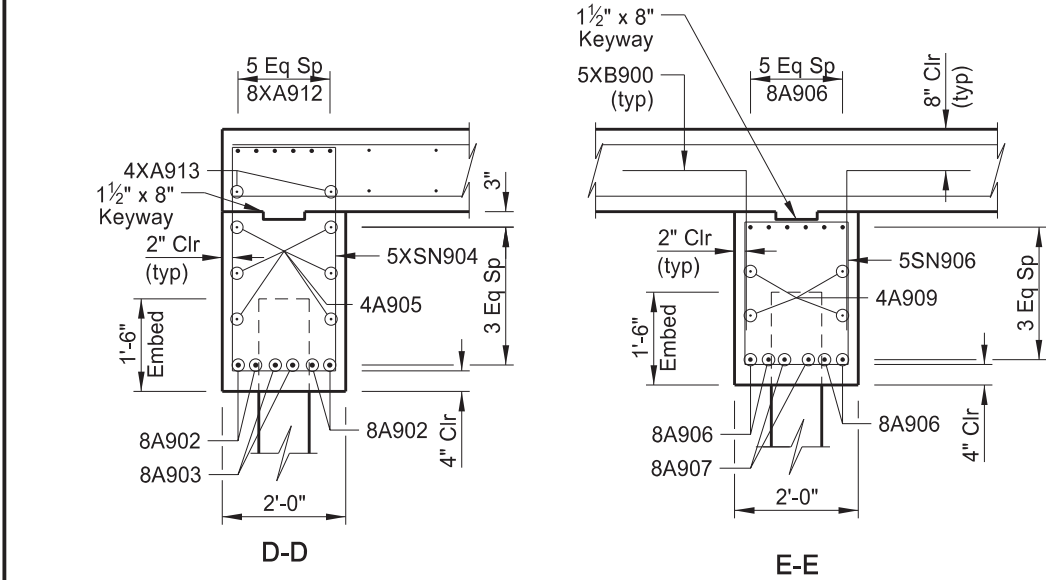
NOTES:
The estimated material quantities shown are for information purposes only. Include the concrete, reinforcing bars, polyethylene film, preformed joint filler, polystyrene, silicone sealant, connection plates and pipes, and labor required to build the approach slabs and barriers in the pay item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

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

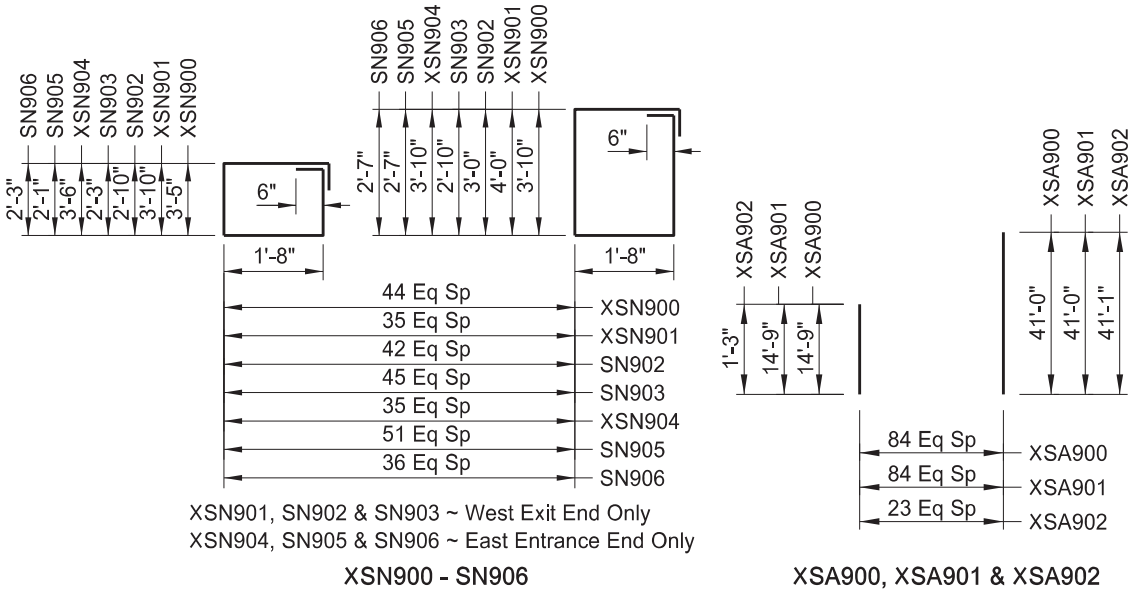
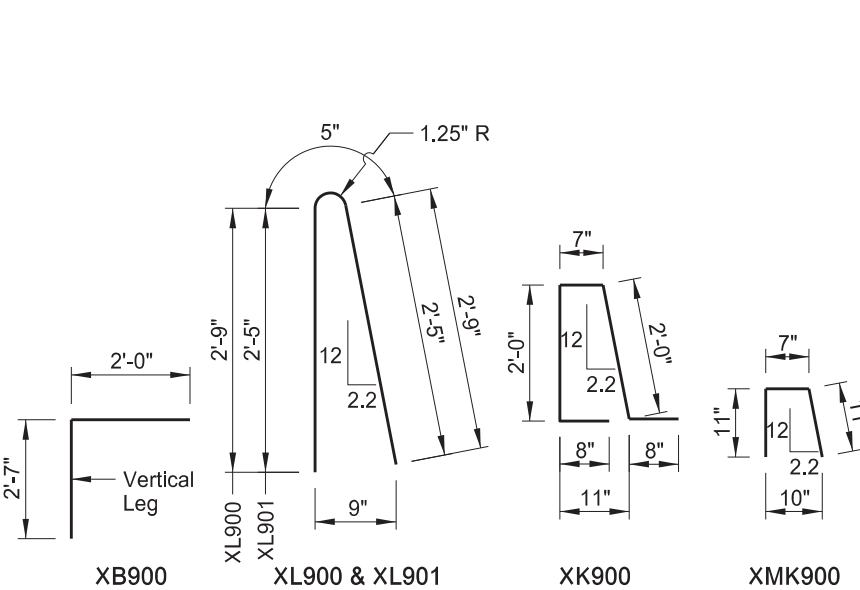
SKEW ANGLE = 32°			
BAR LIST			
SIZE	MARK	NO.	LENGTH
5	XA900	24	42'-2"
4	XA901	9	41'-2"
8	A902	4	42'-2"
8	A903	6	11'-8"
8	A904	4	2'-11"
4	A905	6	42'-2"
8	A906	10	49'-8"
8	A907	2	17'-5"
8	A908	4	13'-8"
4	A909	4	49'-8"
4	XA910	9	15'-5"
4	XA911	4	3'-0"
8	XA912	6	42'-2"
4	XA913	2	42'-2"
5	XB900	162	4'-7"
5	XK900	112	5'-11"
5	XL900	102	5'-11"
5	XL901	12	5'-3"
5	XMK900	2	2'-5"
6	XSA900	1	2369'-5"
7	XSA901	1	2369'-5"
5	XSA902	2	508'-0"
5	XSN900	1	521'-3"
5	XSN904	1	420'-0"
5	SN905	1	468'-0"
5	SN906	1	339'-2"

ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL (LBS)	CONCRETE (CY)
18,122	85.3

QUANTITIES	
APPROACH SLAB	133.5 SY
BNSF RR SEPARATION EAST OF PETERSBURG (EAST ENTRANCE END) APPROACH SLAB DETAILS	



(SHOWING BACK FACE)
CONNECTION PLATE DETAILS



PROJECT NUMBER BND-NH-6-002(134)313 DATE STARTED 9/3/19 COMPLETED 9/3/19

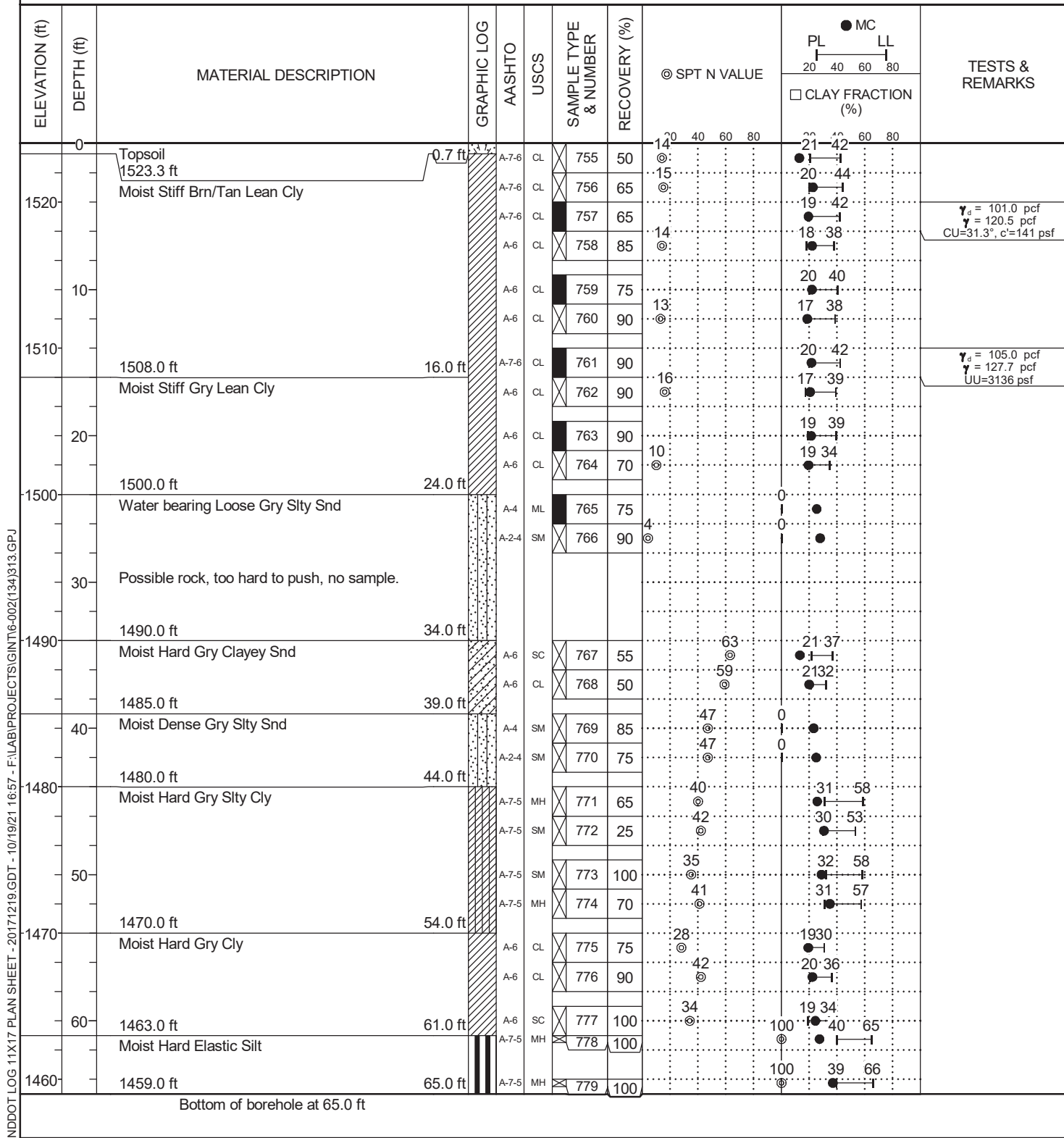
PCN 22278 ELEVATION 1524 ft

LOCATION Nelson County Northing 5317329.38 ft Easting 577581.01 ft

DRILLED BY Dallan LOGGED BY Jamie DRILLING METHOD _____

ENGINEER _____

NOTES East Side



Boring Log 1



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
300 AIRPORT ROAD
BISMARCK, ND 58504

LOG OF BORING SB - 2

PAGE 1 OF 1

PROJECT NUMBER BND-NH-6-002(134)313 DATE STARTED 10/30/19 COMPLETED 10/30/19

PCN 22278 ELEVATION 1519 ft

LOCATION Nelson County Northing 5317295.47 ft Easting 577487.60 ft

DRILLED BY Dallan LOGGED BY Jamie DRILLING METHOD _____

ENGINEER _____

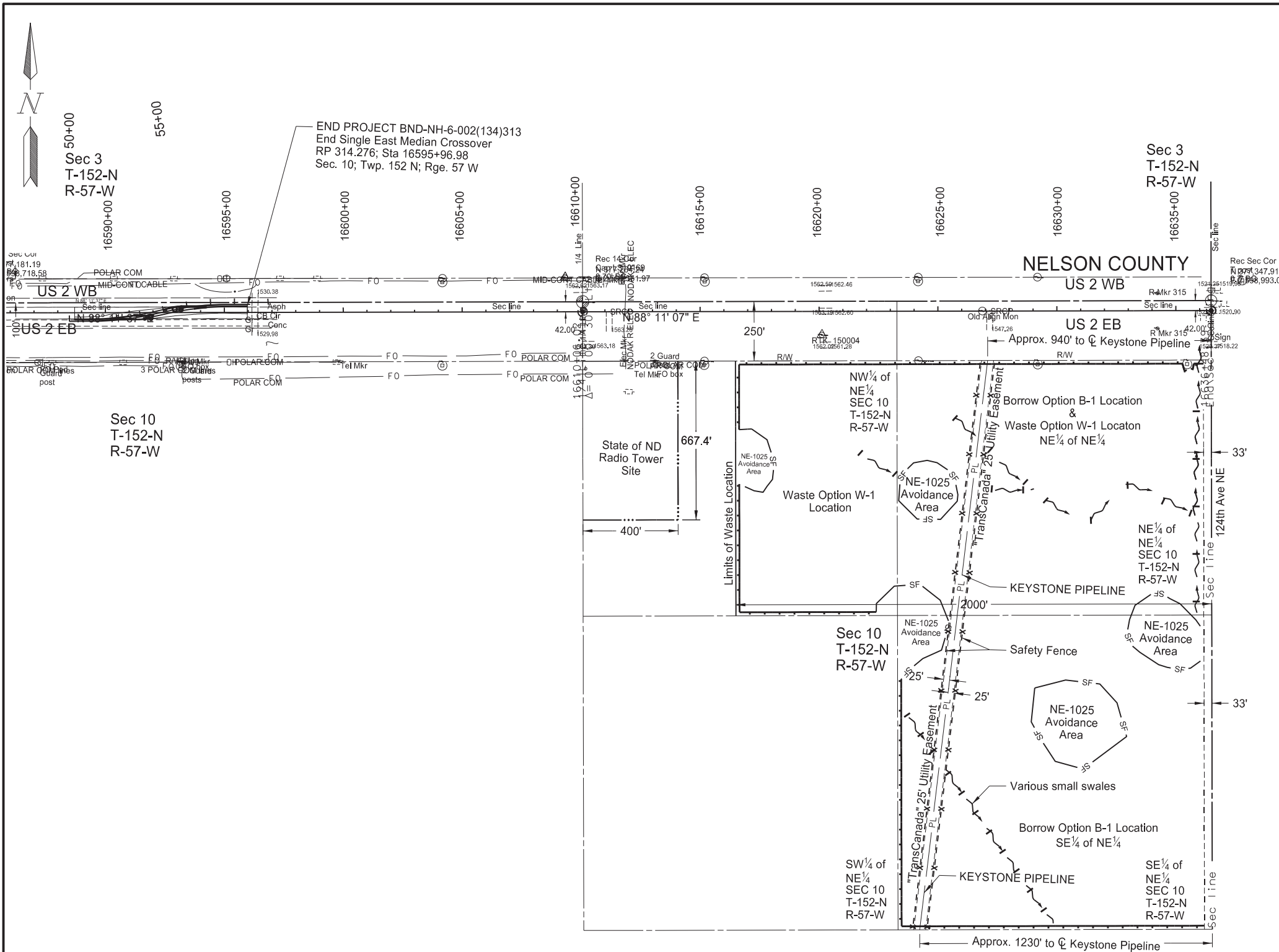
NOTES West Side

NDDOT LOG 11X17 PLAN SHEET - 20171219.GDT - 10/19/21 16:57 - F:\LAB\PROJECTS\GINT6-002(134)313.GPJ

ELEVATION (ft)	DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	AASHTO	USCS	SAMPLE TYPE & NUMBER	RECOVERY (%)	SPT N VALUE	MC		TESTS & REMARKS
									PL	LL	
								20 40 60 80	20 40 60 80	CLAY FRACTION (%)	
	0	Topsoil	0.5 ft								
	1518.5 ft	Moist Medium Stiff Brn Lean Cly									
				A-6	CL	1079	75		18	37	
				A-6	CL	1080	50		19	38	
1510	10			A-7-6	CL	1081	75		20	43	
		1506.0 ft	13.0 ft	A-7-6	CL	1082	85		20	42	Con-33-19
		Moist Medium Stiff Gry Lean Cly		A-6	CL	1083	85		19	38	Con-34-19 UU=1369 psf
				A-6	CL	1084	100		17	37	
1500	20			A-6	CL	1085	85		18	37	CU=29.5%, c'=166 psf
				A-6	CL	1086	75		18	36	
		1493.0 ft	26.0 ft	A-6	CL	1087	100		21	35	Con-35-19 UU=1781 psf
		Water Bearing Loose Silty Snd		A-4	SM	1088	75				
1490	30	1489.0 ft	30.0 ft	A-4	SM	1089	100				UU=3887 psf
		Moist Hard Gry Silty Cly		A-7-5	ML	1090	75				
				A-6	CL	1091	75		20	40	
				A-7-5	MH	1092	70		32	56	
1480	40	1480.0 ft	39.0 ft								
		Water Bearing Hard Gry Silty Snd		A-4	ML	1093	75				
		1478.0 ft	41.0 ft	A-6	CL	1094	90		20	40	
		Moist Very Stiff to Hard Gry Silty Cly		A-7-6	CH	1095	75		28	51	
				A-7-5	MH	1096	90		42	64	
1470	50			A-7-5	MH	1097	85		40	67	
				A-7-5	SM	1098	75		35	62	
		1463.0 ft	56.0 ft	A-7-6	CH	1099	85		29	55	
		Moist Hard Gry Elastic Silt		A-7-5	MH	1100	100		39	64	
1460	60			A-7-5	MH	1101	100		42	66	
		1457.0 ft	62.0 ft	A-7-5	MH	1102	100		40	62	
Bottom of borehole at 62.0 ft											



Boring Log 2



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	BND-NH-6-002(134)313	180	1

SPEC	CODE	BID ITEM	UNIT	QUANTITY
203	0122	TOPSOIL-DEPT OPTION BORROW AREA		
		Borrow & Waste Sites	CY	114751
260	0100	SILT FENCE UNSUPPORTED		
		Borrow & Waste Sites	LF	4127
260	0101	REMOVE SILT FENCE UNSUPPORTED		
		Borrow & Waste Sites	LF	4127
261	0112	FIBER ROLLS 12IN		
		Borrow & Waste Sites	LF	6542
261	0113	REMOVE FIBER ROLLS 12IN		
		Borrow & Waste Sites	LF	6542
265	0100	STABILIZED CONSTRUCTION ACCESS		
		Borrow & Waste Sites	EA	2
265	0101	REMOVE STABILIZED CONSTRUCTION ACCESS		
		Borrow & Waste Sites	EA	2
752	0911	TEMPORARY SAFETY FENCE		
		TransCanada Energy Keystone Pipeline Location Lt & Rt	LF	4820

LEGEND

- PL "TransCanada Energy" KEYSTONE PIPELINE
- TransCanada 25 ft Utility Easement
- SF Silt Fence Unsupported
- Fiber Rolls 12IN
- Flow Line
- Temporary Safety Fence
- NE-1025: NDDOT Materials Source Certificate of Approval #NE-1025 Wetland Avoidance Areas

Note: See Borrow Site Report for further avoidance areas.

Borrow Option B-1 Location and
Waste Option W-1 Location Information

1 Mile East of ND 32 South
Nelson County

