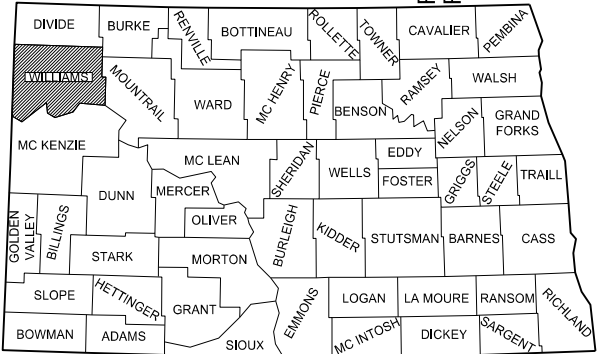


DESIGN DATA (RP 22.400 to RP 25.674) - EB LANES ONLY				
Traffic	Average Daily			
Current 2017	Pass: 7,315	Trucks: 2,205	Total: 9,520	
Forecast 2037	Pass: 8,935	Trucks: 2,430	Total: 11,355	
Clear Zone Distance: 20'		Design Speed: 40 / 55		
Minimum Sight Dist. for Stopping: 305' / 495'		Bridges: N/A		
Limited Access Control				
Pavement Design Life 20 (years)				
Design Accumulated Trucks: 17,571,700				
DESIGN DATA (RP 25.674 to RP 32.441) - EB LANES ONLY				
Traffic	Average Daily			
Current 2017	Pass: 4,295	Trucks: 2,350	Total: 6,645	
Forecast 2037	Pass: 5,240	Trucks: 2,870	Total: 8,110	
Clear Zone Distance: 20'		Design Speed: 70		
Minimum Sight Dist. for Stopping: 730'		Bridges: N/A		
Limited Access Control				
Pavement Design Life 20 (years)				
Design Accumulated One-way Flexible ESALs: 15,832,865				

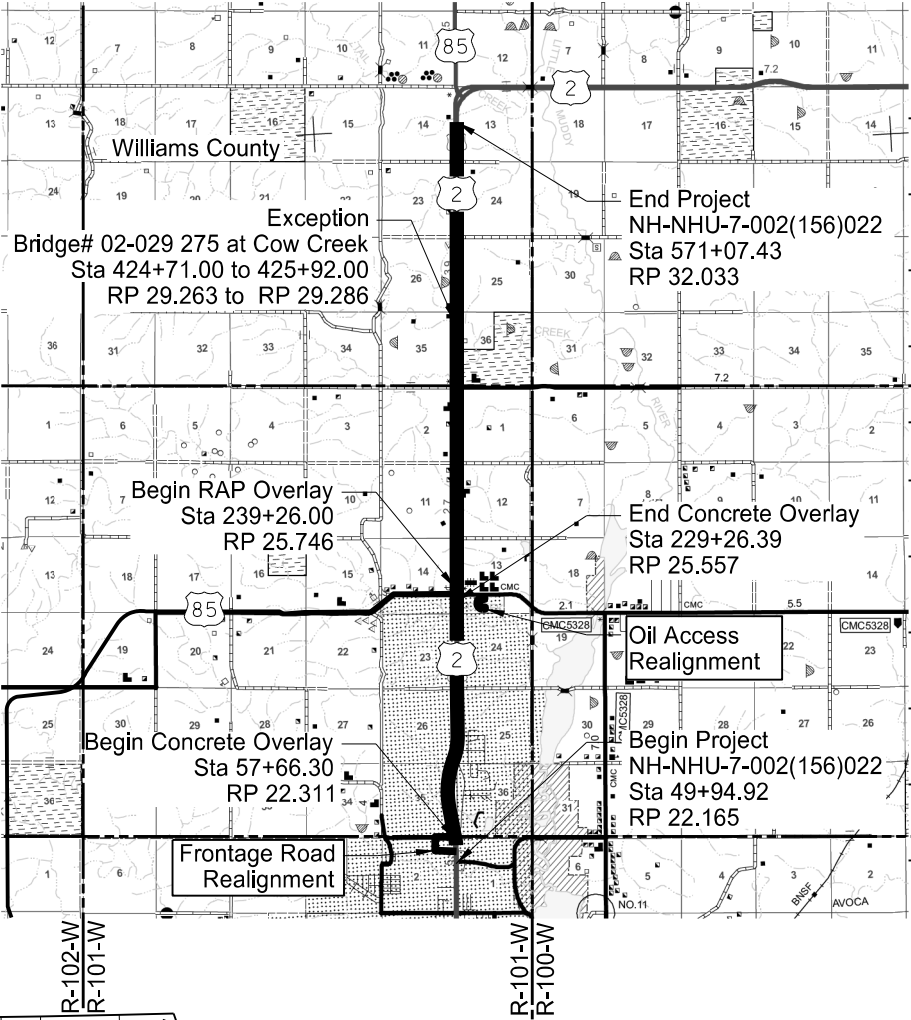


STATE COUNTY MAP

JOB # 42
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

NH-NHU-7-002(156)022

Williams County
2 Mi N Williston N to 63rd St NW (EB)
Concrete Overlay, RAP Overlay, Milling, Salvaged Base Course,
Storm Drain, Curb & Gutter, Lighting, Signals, Guardrail, Pavement Marking



T-156-N
T-155-N

T-155-N
T-154-N

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	20845	1	1

GOVERNING SPECIFICATIONS:
2014 Standard Specifications adopted by the North Dakota
Department of Transportation and the Supplemental Specifications
effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
NH-NHU-7-002(156)022	9.845 Miles	9.868 Miles

DESIGNERS

Dawn Michel, PE

Alex Ausk, PE

Levi Heller, PE

Brent Muscha, PE

Sarah Mohl

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 08/02/2017

Derek Anderson /s/
Apex Engineering Group, Inc.

This document was originally issued and sealed by
Derek Anderson,
Registration Number
PE- 7107 ,
on 08/02/17 and the original document is stored at the
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of Transportation

APPROVED DATE 08/10/2017

Roger Weigel /s/
OFFICE OF PROJECT DEVELOPMENT
ND DEPARTMENT OF TRANSPORTATION

TABLE OF CONTENTS

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	2	1

PLAN SECTIONS

Section	Page(s)	Description
1	1	Title Sheet
2	1 - 2	Table of Contents
4	1 - 4	Scope of Work
6	1 - 8	Notes
8	1	Quantities
10	1 - 6	Basis of Estimate
11	1	Data Tables
20	1 - 18	General Details
30	1 - 10	Typical Sections
40	1 - 14	Removals
50	1	Hydraulic Data
51	1 - 2	Allowable Pipe List
60	1 - 33	Plan & Profile
75	1 - 14	Wetland Impacts
76	1 - 14	Temporary Erosion Control
77	1 - 14	Permanent Erosion Control
81	1 - 4	Survey Coordinate and Curve Data
82	1 - 9	Survey Data Layouts
90	1 - 5	Paving Layouts
100	1 - 20	Work Zone Traffic Control
110	1 - 21	Signing
120	1 - 15	Pavement Marking
130	1	Guardrail
140	1 - 23	Lighting
150	1 - 25	Signals
180	1 - 4	Pit Plats and Borrow Areas
200	1 - 99	Cross Sections

SPECIAL PROVISIONS

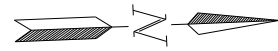
Number	Description
SP 003(14)	Temporary Erosion and Sediment Best Management Practices
SP 482(14)	Concrete Overlay
SP 5167(14)	Permits and Environmental Considerations
SP 520(14)	Conditions of Contract Award

TABLE OF CONTENTS
LIST OF STANDARD DRAWINGS

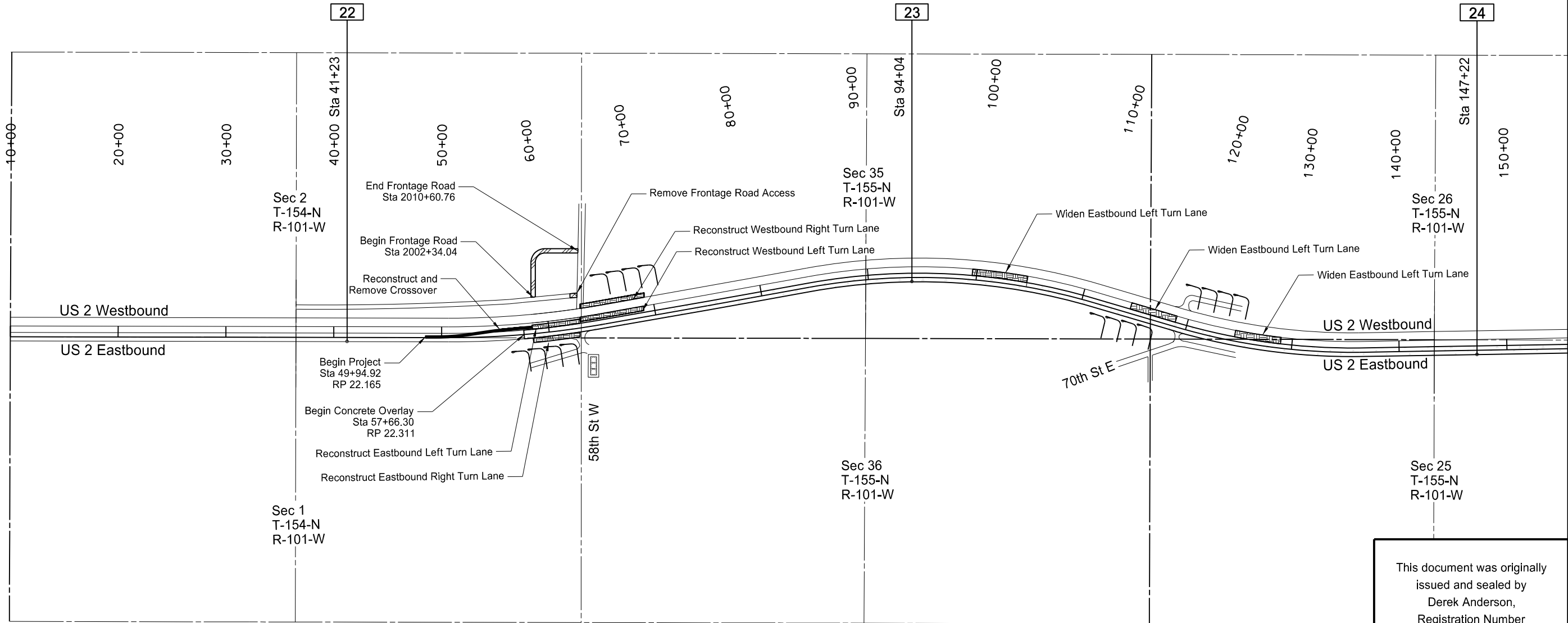
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	2	2

Number	Description
D-101-1, 2, 3	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20, 21	Line Styles
D-101-30, 31, 32	Symbols
D-255-2	Erosion And Siltation Control - Erosion Control Blanket Installation
D-256-1	Erosion And Siltation Controls
D-260-1	Erosion And Siltation Controls - Silt Fence
D-261-1	Erosion Control - Fiber Roll Placement Details
D-550-2	Longitudinal Joint Details
D-550-3	Transverse Contraction Joint Details
D-550-4	Transverse Expansion Joint Detail
D-550-5	Transverse Construction Joint
D-704-1	Attenuation Device
D-704-2	Traffic Control For Coring Of Hot Bituminous Pavement
D-704-5	Contractor Sign Detail
D-704-7	Breakaway Systems For Construction Zone Signs - Perforated Tube
D-704-9	Construction Sign Details - Terminal And Guide Signs
D-704-10	Construction Sign Details - Regulatory Signs
D-704-11	Construction Sign Details - Warning Signs
D-704-13	Barricade And Channelizing Device Details
D-704-14	Construction Sign Punching And Mounting Details
D-704-22	Construction Truck And Temporary Detour Layouts
D-704-23	Short Term Urban Detour And Lane Closure On A Divided Highway Layouts
D-704-24	Shoulder Closures And Bridge Painting Layouts
D-704-26	Miscellaneous Sign Layouts
D-704-27	Traffic Control Plan For Moving Operations
D-704-34	Sign Layout For One Lane Closure
D-704-38, 39	Traffic Control System-Median Crossover (800 Ft Transition)-55 Mph Speed Limit Or Greater
D-704-50	Portable Sign Support Assembly
D-704-51	Portable Precast Concrete Median Barrier (Temporary Usage)
D-704-56	Mobile Operation - Grinding Shoulder Rumble Strips
D-704-63	One Road Closure Four-Lane Divided Highway – For Access To Two-Way Two-Lane Roadway
D-706-1	Bituminous Laboratory
D-714-1	Reinforced Concrete Pipe Culverts And End Sections (Round Pipe)
D-714-4	Round Corrugated Steel Pipe Culverts And End Sections
D-714-22	Concrete Pipe Or Precast Concrete Box Culvert Ties
D-714-26	Transverse Mainline Pipe Installation Detail for Pipes 4 Feet or Less Below Top of the Proposed Subgrade
D-714-27	Pipe Installation Detail for Longitudinal Mainline Pipe or Pipe Not Under the Roadway
D-722-2	Inlet - Type 2
D-722-3A	Inlet - Slotted Drain
D-722-5	Manhole Details
D-748-1	Curb & Gutter And Valley Gutter
D-750-1	Concrete Driveway - Urban

Number	Description
D-754-9	Letter And Arrow Details For Variable Length Signs
D-754-18	Barricade And Advance Signs For Forward Roadway Termination
D-754-23	Perforated Tube Assembly Details
D-754-24, 25	Mounting Details Perforated Tube
D-754-24A	Breakaway Coupler System For Perforated Tubes
D-754-26, 27,28,29,39	Sign Punching, Stringer And Support Location Details Regulatory, Warning, And Guide Signs
D-754-49	Sign Punching, Stringer And Support Location Details For Variable Length Signs
D-754-83	Object Markers - Culverts
D-754-87	Sign Punching, Stringer And Support Location Details For Street Name Signs And 911 Signs
D-760-2	Rumble Strips Divided Highways (Non-Interstate)
D-762-1	Pavement Marking Message Details
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-764-6	Flared Energy Absorbing Terminal
D-764-11	W-Beam Transition To In Place Concrete Safety Shape Transition
D-764-21	Short Term End Treatment For Bridges (Guardrail Method)
D-764-22	Typical Grading At Bridge Ends With W-Beam Guardrail
D-770-1	Concrete Foundations (Traffic Signals & Highway Lighting)
D-770-2	Feed Points (Roadway Lighting)
D-770-2A	Combination Feed Point Details
D-770-3	Pull Box Details
D-770-4	Lighting And Signal Details
D-770-5	Light Standard Details
D-772-2	Traffic Signal Standards
D-772-3	Traffic Signal Standards (Mast Arm Type)
D-772-4	Traffic Signal Head Mounting
D-772-6	Span Wire Mounted Traffic Signals
D-772-7	Flashing Beacon



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	4	1

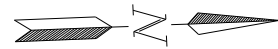


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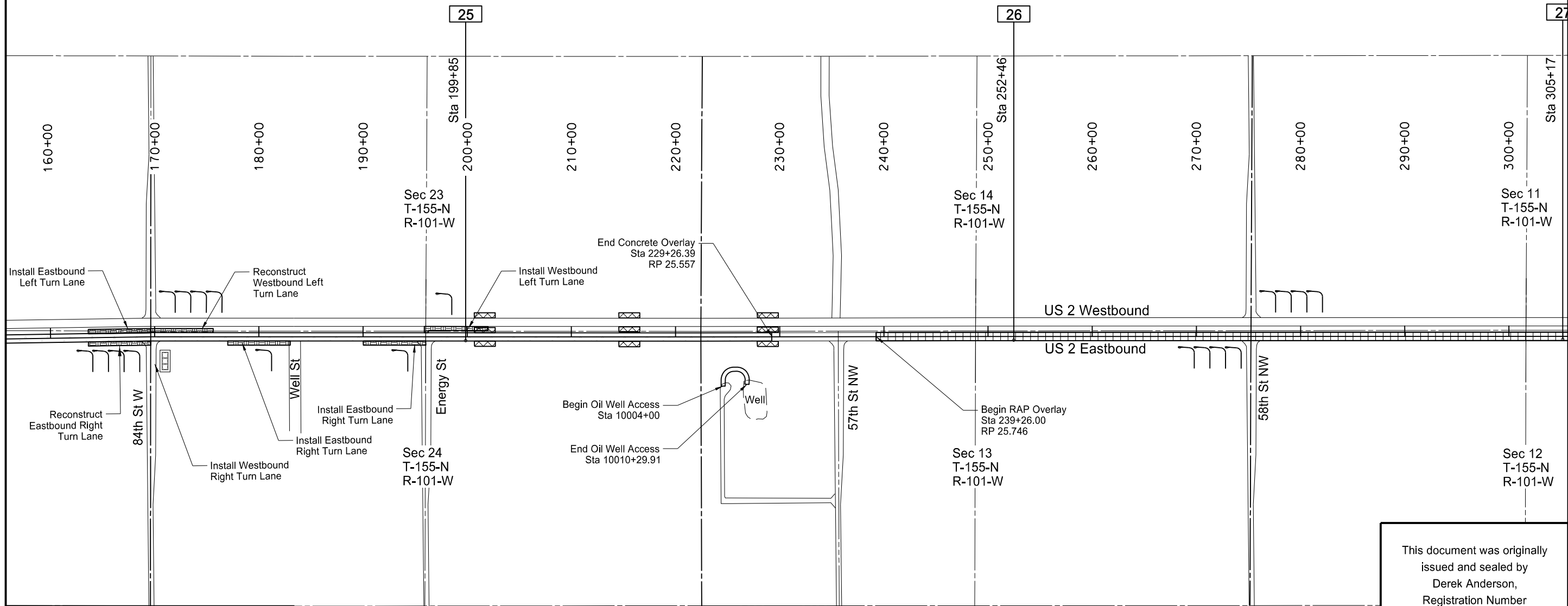
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- 3" Mill & Concrete Overlay
- 2" Mill & RAP Overlay
- Turn Lane Reconstruction
- Access Road Reconstruction
- Access Removal
- Signal Installation
- Lighted Intersection
- Destination Lighting

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Scope of Work
US 2



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ND	NH-NHU-7-002(156)022	4	2

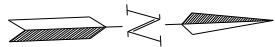


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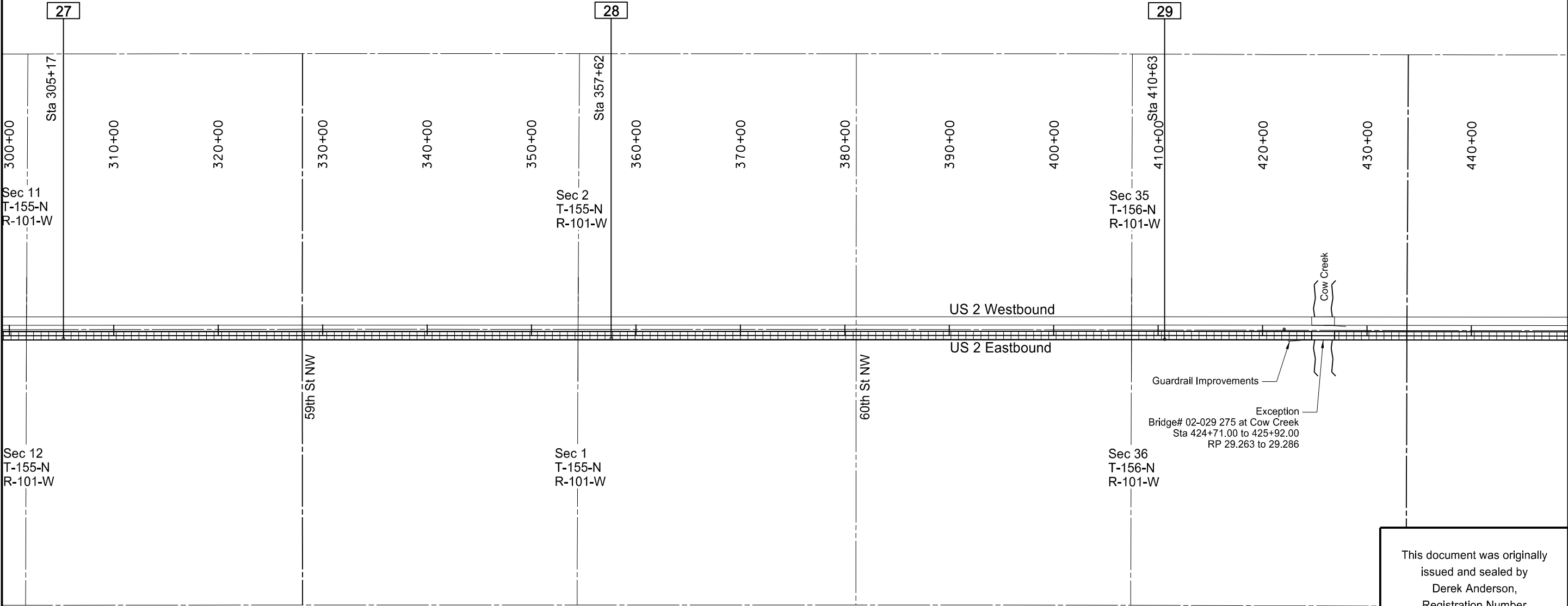
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Scope of Work
US 2



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	ND	NH-NHU-7-002(156)022	4	3

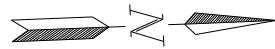


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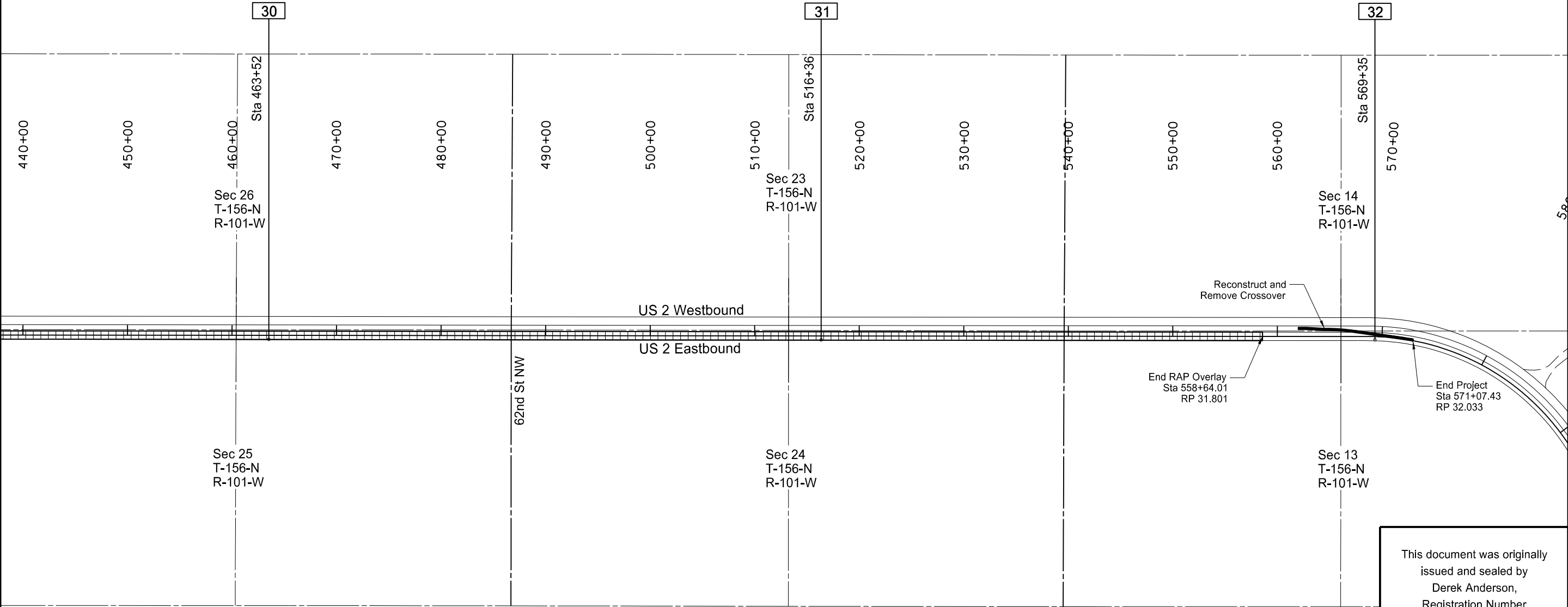
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Scope of Work
US 2



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	4	4



LEGEND

- Frontage Road Realignment
- Mill & Concrete Overlay
- Mill & RAP Overlay
- Turn Lane Reconstruction
- Access Road Reconstruction
- Access Removal
- Signal Installation
- Lighted Intersection
- Destination Lighting

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Scope of Work
US 2

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	6	1

NOTES

GENERAL NOTES

- 100-P01 COORDINATION OF PROJECTS: The following project is planned for the 2018 construction season.
- SS-9-999(396) – Automatic Traffic Recorder (ATR) Maintenance. An existing ATR site is located on US Highway 2 at RP 27.63. Loops and sensors are located in both westbound and eastbound roadways. The loops and sensors will be disconnected before paving operations begin on this project. New loops and sensors will be installed in the roadway after the paving operations are completed.
- Ensure road work and traffic control are coordinated with this project.
- 105-200 UTILITY COORDINATION: A utility coordination meeting is required.
- 105-P01 UTILITY AVOIDANCE AND COORDINATION: Some utility relocations will be done concurrently with this project. Coordinate with utilities to avoid time delays during construction.
- 107-P01 APPROACH ROADWAYS: Maintain at least one lane of traffic on all section line and private drive approaches where work is to be performed. This includes (but is not limited to) the installation of approach pipe, grading, and paving. Any temporary widening or aggregate surfacing that is required to accommodate this work will not be paid for separately but will be included in the price bid for other items.
- If the Contractor wishes to eliminate the need for maintaining one lane of traffic or leave out sections for public roads, contact the local roadway authority or affected private landowner(s). Notify the Engineer of closures and provided them with all agreements. If the timeframe for closure changes, immediately inform the local roadway authority or affected landowner(s) and Engineer of the change. Provide approval in writing of a new time frame for closure.
- 107-P02 CONSTRUCTION ACCESS ROUTE: The Contractor is permitted to haul material on the westbound (southbound) lanes of US 2 during head to head traffic. The Contractor is not permitted to widen the shoulder or build a temporary access route adjacent to the roadway.
- 107-P03 CONSTRUCTION TRAFFIC: Limit construction traffic to access at intersections only. Do not operate in the median or accessing one roadway to the other roadway, through the median. Submit any traffic control requests to the engineer for approval.
- 107-P04 MAINLINE LEAVEOUTS: Provide access to all adjacent properties during construction. Coordinate with the adjacent properties for access to their facilities. Final details on location of access points and construction procedures will be approved by the Engineer.
- Mainline leave out restrictions are listed as follows,

- Sta 84+42 Rt - Residential property, construct a leaveout to provide property access
- Sta 104+45 Rt - Commercial property, construct a leaveout to provide property access
- Sta 119+50 Rt & 143+26 Rt - Mixed commercial and residential property, construct a leaveout at one or the other location to provide property access
- Sta 151+70 Rt - Commercial property / man camp, construct a leaveout and median access to provide property access
- Sta 157+50 Rt - R/C aircraft field, coordinate with landowner to determine if a leaveout is required
- 169+61 Rt (84th St W) & 196+01 Rt (Energy St) - Multiple commercial properties, construct a leaveout at each location to provide property access

- 107-P05 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 or pilot car operations.

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”.

Install stackable vertical panels that meet the requirements of Section 704.03 H, “Stackable Vertical Panels”, along the edge of the driving lane closest to the wedge.

The Engineer will measure stackable vertical panels as specified in Section 704.05, “Method of Measurement” and will pay for panels as specified in Section 704.06, “Basis of Payment”.

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 “Common Excavation–Type A”.

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

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.
- 202-P01 REMOVAL OF EXISTING CROSSEOVERS: The “Common Excavation – Type A” and “Salvage & Relay Aggregate Surface Course” on the crossover removals shown in Section 20 of the plans will be paid at plan quantity.

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NOTES

- 202-P02

REMOVAL OF NEW CROSSTOPS: Remove the traffic control crossover(s) when no longer needed for traffic control. This work will consist of:

1.

Remove and dispose of all asphalt surfacing, salvaged base and embankment used to construct the crossover.

2.

Remove the temporary culvert.

3.

Protect the edge of existing concrete during removal and replace safety slope with millings.

4.

Shape the median inslopes to original condition.

5.

Re-spread topsoil install permanent erosion control.

All costs for this work will be included in the pay item "Removal of Temporary Bypass".
- 203-010

SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.
- 203-385

AVERAGE HAUL: No average haul has been computed for this project.
- 203-P01

COMMON EXCAVATION - TYPE A: Determine the optimum moisture and density, as specified in ND T 180, for each type of material encountered that requires compaction control. Perform a multi-point test using a minimum of 4 points. Submit the results to the Engineer along with a split sample of each material.

The Engineer will perform comparison tests using the same procedure on the split sample. The Engineer's results will be used for determining in place density of material.
- 203-P02

COMMON EXCAVATION - TYPE A: Dispose 1,892 CY of waste excavation outside of NDDOT right of way. All costs for this work will be included in "Common Excavation-Type A".
- 411-P01

MILLING / CONCRETE PAVING CONTROL SYSTEM: Erect a string line to establish the grade reference for control of milling depth, concrete overlay depth and transverse slopes. The Engineer will provide the proposed profile grades, spaced every 50 feet for tangent sections and 25 feet for curve sections, for the erected string line. Maintain the string line for both the milling and concrete paving operations. For estimating purposes, calculations were based on a 3" milled depth at centerline. The milling depth will vary in order to correct profile and cross slope.

All costs for this work will be included in the pay item "Milling Pavement Surface".
- 411-P02

MILLING PAVEMENT SURFACE: Any excess millings produced by the Contractor's operation not used for RAP, milling safety slopes, or any other item outlined in the plans will become the property of the Contractor. All costs for this work will be included in the pay item "Milling Pavement Surface".
- 411-P03

TEMPORARY ASPHALT WEDGES: Place temporary asphalt or milled material wedges at the milled straight vertical edge locations to allow for a smooth passage of vehicles. All costs for this work will be included in the pay item "Milling Pavement Surface".
- 411-P04

RELAYING MILLED MATERIAL: Construct 4:1 milling safety slope out of millings salvaged from the milling operation and constructed as shown in the typical sections. Stockpile the millings at a location approved by the engineer for later use constructing the milling safety slope. Weigh millings prior to placement. All costs for this work will be included in the pay item "Relaying Milled Material".
- 411-P05

SURFACE TOLERANCE: Construct the finished surface of the mainline profile milling to within 0.04 feet of the proposed elevation.
- 550-P01

LEAVE OUTS: A leave out will consist of only paving a portion of a crossroad intersection and allowing through traffic on the portion left out. The portion will not be paved until the concrete overlay has attained a flexural strength of 450 psi or a compressive strength of 3,000 psi. All costs for this work will be included in the pay items "Concrete Overlay" & "Concrete Placement - Doweled".
- 550-P02

JOINT SAWING: Saw longitudinal joints in conjunction with transverse sawing operations.
- 550-P03

CONCRETE PAVEMENT: Construct the overlay portion of the project half at a time. If the Contractor chooses to overlay the entire roadway at one time, the Engineer will waive the requirement to place the reinforcing steel, tie bars and dowel assemblies a minimum of 2,000 feet ahead of the paving operation as stated in Sections 550.04 E.1 and 550.04 G.2 and allow the use of the roadway as a haul road provided the following conditions are met:
 - Repair all damaged areas
 - Construct the finished surface to the specified surface tolerance prior to the placement of the reinforcing steel, tie bars and dowel bar assemblies.
 - Place the reinforcing steel and tie bars on approved supports securely, properly and accurately in advance of the paving operation.The Contractor is not allowed to build a temporary access road adjacent to the roadway to be used as a haul road.
- 550-P04

KEYED JOINT: Provide a keyed joint at centerline if concrete overlay is placed half at a time.
- 704-100

TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	6	3

NOTES

704-200 PRECAST CONCRETE MEDIAN BARRIERS - STATE FURNISHED: Obtain 69 barriers from US 2 RP 12 Storage Area. Return barriers to US 2 RP 12 Storage Area.

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

704-255 TRAFFIC CONTROL FOR SHOULDER DROP-OFF: If the shoulder and adjacent driving lane are not even at the end of the day, the following criteria will apply:

Place the following sign assembly at the locations listed below.

Sign Assembly: Sign No. W8-9a-48 "Shoulder Drop Off" and supplemental plate Sign No. W20-52-54 to identify the distance.

Locations:

- In advance of the drop off;
- Spaced at each mile from the advance sign; and
- At major intersections (CMC routes, state and US highways, and Interstate Ramps).

If the difference in elevation between the shoulder and the driving lane is 2" or greater, construct a slough on the driving lane that is 4:1 or flatter.

If the difference in elevation between the shoulder and driving lane is less than 2", no slough is required.

Sign assemblies will be measured and paid for according to Section 704 "Temporary Traffic Control".

704-300 FLASHING BEACON: Provide solar powered flashing beacons that meet the requirements of the MUTCD and ITE. Provide beacons that are visible for a distance of 0.25 miles (1,320 feet) and 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 "Flashing Beacon-Post Mounted".

704-301 SEQUENCING ARROW PANEL – TYPE C – CROSSOVER: 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 – Type C – Crossover".

704-510 OBLITERATION OF PAVEMENT MARKINGS: Masking of pavement markings designated for obliteration is allowed. Choose to remove or mask marking as specified in Section 704.04 N, "Obliteration of Pavement Markings".

704-P01 TRAFFIC CONTROL DEVICES: Traffic control devices shall comply with the following Standard Drawings:

D-704-22 and D-704-26, Layouts Type K, Type L, and Type Y for Construction Truck Hauling Material.

D-704-23: Short Term Urban Detour and Lane Closure on a Divided Highway Layouts

D-704-24: Layout Type T and Type U for Placing Topsoil, Embankment Placement at Intersections, and Seeding.

D-704-26: Layouts Type BB, & CC

D-704-34: Sign Layout for One Lane Closure

D-704-38 & 39: Traffic Control System - Median Crossover (800 ft. Transition) - 55 MPH Speed Limit or Greater

D-704-63: One Lane Closure Four-Lane Divided Highway (For Access to Two-Way Two-Lane Roadway)

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

704-P02 WORK ZONE TRAFFIC CONTROL:

PHASE 1 Install traffic control devices on Westbound Hwy 2 per Standard Drawing D-704-34 for installation of "Short Term End Treatment for Bridges." Install the W-beam Guardrail End Terminals for Two-Way Traffic Operation on the south side of the bridge located at Sta 424+71.

Install traffic control devices on the Eastbound and Westbound Hwy 2 per Standard Drawing D-704-34 for installation of Single Traffic Control Crossover located at Sta. 52+00 & Sta 566+00.

Install traffic control devices on Westbound Hwy 2 per Standard Drawing D-704-34 for the installation of turn lanes located at 84th St W & Energy St. These intersections are combined in one closure.

Install traffic control devices on the Eastbound and Westbound Hwy 2 per Standard Drawing D-704-34 for construction of Phase 1A & 1B of the median area of 58th St W intersection. Include the removal of the existing median on the east side of US 2 in this Phase.

Submit a Traffic Control Plan to the Engineer for approval two weeks prior to commencing the work.

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		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
<u>NOTES</u>		ND	NH-NHU-7-002(156)022	6	4
PHASE 2	<p>Install traffic control devices for head to head traffic. Install the crossover at Sta 52+00 and 566+00 per Standard Drawing D-704-38 and Section 100.</p> <p>Paint over the inside yellow edge marking with a 4 inch temporary white marking.</p> <p>Maintain traffic on intersections along the highway and sign per Standard Drawing D-704-63. Construct RAP-Superpave FAA 45 overlay transitions from the concrete overlay in such a way as to allow for traffic crossing or turning movements.</p> <p>Install traffic control devices in the intersection of 58th St W to complete Phase 2C & 2D construction of the intersection in halves.</p> <p>Submit a Traffic Control Plan to the Engineer for approval two weeks prior to commencing the work.</p>				
PHASE 3	<p>A single lane closure has been provided for the installation of the grooved epoxy pavement markings. The quantities for this were based on 3 mile lane closure. At the completion of work at the end of the day, remove the lane closure to allow for unimpeded traffic overnight. The contractor is responsible for determining the marking schedule at the approval of the engineer. Remove any and all striping remaining after grooving operations.</p> <p>Install traffic control devices on the Eastbound and Westbound Hwy 2 per Standard Drawing D-704-34 for the removal of the temporary Traffic Control Crossover and Short Term End Treatment of Bridges.</p>				
PHASE 4	<p>Traffic control devices for the construction of the frontage road and oil access road are quantified in Phase 4. These areas can be constructed in any phase of the project. Traffic control phasing for the frontage road is shown in Section 100 Sheet 18 & 19. Close the frontage road only when necessary until the new roadway is open. Maintain access to adjacent property owners at all times.</p>				
706-P01	<p>FIELD OFFICE: Provide a field office for the Engineer that meets the following requirements:</p> <ol style="list-style-type: none"> 1. Minimum total area of 450 square feet 2. Minimum cabinet space of 32 cubic feet 3. Minimum counter space of 40 square feet 4. Air conditioner with a minimum of 20,000 BTU's 5. Lighting with a minimum of 110 foot-candles 6. Minimum of 3 phone jacks 7. Color Laser Photocopy machine capable of 11x17 photocopies, 11x17 tray feeder and toner to last the duration of the project. The Engineer will be responsible to furnish the paper. 8. Hookups for heat, electricity, sewer, and water. The Contractor will be responsible to pay the utility bill for these services. 				
	<p>9. Indoor bathroom facilities</p> <p>Place the field office on the project, or as close to the project as possible. The Engineer must approve the location and condition of the field office. If there are any rental fees, the Contractor will be responsible to pay any rental fees.</p> <p>The field office will be available for occupancy at the start of the project and remain available to project completion. The Engineer will be responsible to furnish the office equipment.</p> <p>The Contractor will be responsible to furnish and pay the utility bill for the following services:</p> <ol style="list-style-type: none"> 1. Telephone 2. Broadband internet service with wireless capabilities <p>All requirements of the Field Office are subject to approval by the Engineer. Payment for the field office will be under the bid item "Field Office".</p>				
706-P02	<p>LABORATORIES: Supply a telephone with service, broadband internet service with wireless capabilities and a copy machine with reduction capabilities for both the Aggregate and Bituminous Laboratories. No thermal-type paper allowed. All costs for the work described above is included in the price bid for the items "AGGREGATE LABORATORY," and "BITUMINOUS LABORATORY."</p>				
708-P01	<p>INLET PROTECTION SPECIAL: Keep all installed devices in place until the turf has been established. If the turf has not been established by November 1st, remove all installed devices in the street section that have potential to cause damage to snow removal equipment. Reinstall these devices in the spring as directed by the Engineer. No additional compensation will be provided as this work is considered normal maintenance. Include all costs for furnishing, installing, maintaining (cleaning), and replacing damaged devices in the bid price for "Inlet Protection Special".</p>				
714-P01	<p>PIPE CONDUIT: No field cutting of spiral rib pipe will be allowed.</p>				
722-100	<p>INLETS AND MANHOLES: Inlets and manholes were designed with a minimum 4 foot riser height. Fill the bottom of each drainage structure with concrete, up to the lowest invert elevation.</p>				
		<p>This document was originally issued and sealed by Derek Anderson, Registration Number PE-7107, on 08/18/17 and the original document is stored at the North Dakota Department of Transportation.</p>			

NOTES

750-P01 PIGMENTED CONCRETE: Develop a mix design using any size coarse aggregate specified in Section 802.01 C.2, "Coarse Aggregate" and with a 60-40 fine aggregate-coarse aggregate ratio.

Provide a pigment from the list below or provide an approved equal. To be considered an approved equal, pigments must meet the requirements of ASTM C 979.

- 1. Number 366 Natural Red, produced by Soloman Colors, Inc.
<http://www.solomoncolors.com/>;
- 2. Brick Red pigment Number 160, produced by Davis Colors
<http://www.daviscolors.com/>; or
- 3. Pigment R/M – Brick Red, produced by Southern Color Company
<http://www.southerncolor.com/>.

Use the same supplier for all colored concrete placed under the contract.

Add pigment at the ratio recommended by the manufacturer directly into the mixer along with the aggregate, cement, and water. Add pigment while the mixer is operating at mixing speed. Continue mixing for 5 to 10 minutes or between 50 and 100 revolutions.

Cure concrete using curing compound that meets the requirements of ASTM C 309, Type 1.

764-P01 W-BEAM GUARDRAIL END TERMINALS FOR TWO-WAY TRAFFIC: Two W-beam guardrail end terminals are required for protection on the westbound roadway during two-way traffic operation.

At the westbound Cow Creek Bridge, bridge end protection will consist of 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 two-way traffic will remain the property of the contractor and will be removed when no longer needed for 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 will include all materials, including W- beam terminal connectors, W-beam rail sections, and all necessary posts, blocks, hardware, equipment, and labor.

770-P01 RELOCATE LIGHT STANDARD: Remove and re-install existing breakaway light standards in the new location as shown on the plans. Remove the existing high pressure sodium light fixture and turned over to the NDDOT Williston District. Remove and dispose of the existing concrete foundation in its entirety. Store pole in an area to protect from damage until new light standard locations are ready for installation. Provide new 1" x 36" x 4" anchor bolts meeting the existing pole manufacturer requirements. Utilize the existing light standard locations to verify anchor bolt installation template for relocated light standard. Provide new LED

luminaire as shown. Provide all new fuse holders, fuses, connectors and wiring within the existing light standard.

770-P02 REVISE HIGHWAY LIGHTING FEEDPOINT: Revise the existing Combination Lighting and Signal –Type 1 feed point to a Type 2 feed point with two highway lighting circuits. Provide a new 50/2 circuit breaker in existing load center (field verify loadcenter manufacturer), control relay and circuitry as required. Core drill existing concrete housekeeping pad in order to install a new 2" conduit out of cabinet. Exposed, above ground conduit into the side of the existing feedpoint enclosure will not be acceptable.

770-P03 LED LUMINAIRE: Provide LED luminaires capable of producing a minimum of 22,300 delivered lumens with a color temperature of 3000K. The luminaire will have a multi-voltage driver and operate at 240 volts. The maximum fixture wattage shall not exceed 208 watts.

LED Luminaire basis of design and approved for this project will be American Electric Lighting, Model ATB2 60BLED10 MVOLT R3 3K NR.

770-P04 DESTINATION LIGHTING: Provide destination lightning for US Highway 2 intersections at Wells Street and Energy Street. The plans call for the use of Multiple Underground Cable and Conduit between Wells Street and Energy Street. In lieu of the Multiple Underground Cable, the contractor may furnish and install rigid conduit and single RHW conductors of the same size shown in the plans for Multiple Underground Cable.

All costs associated with the work as shown on the plans will be included in the bid item "Destination Lighting".

770-P05 ADDITIONAL CONDUIT: At each light standard location that only has one conduit shown entering the standard base, provide a second spare 2" conduit stubbed out of the base for future use. The spare conduit will be stubbed out at 180 degrees from the other conduit entering the base. Provide conduit cap to seal end of conduit. The cost for the additional conduits will be included in the bid item "Concrete Foundation – Highway Lighting".

990-P01 PIPE CLEANOUT: The pipe at Station 64+01 from the median inlet to the west outlet has silt and/or debris partially or fully plugging the structure. Remove silt and/or debris from the pipe and dispose of all material including sediment, rocks, and miscellaneous debris according to Section 107.17, "Removed Material."

Include the cost of pipe cleaning in the contract unit price for "Pipe Cleanout."

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NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	6	6

SECTION 150

- 772-P01 REMOVE TRAFFIC SIGNAL SYSTEM: The Contractor is responsible for removing the existing span wire traffic signal system at the US 2/58th St intersection after the installation of the new signal system is completed and the signal system is operational. Deliver to the City of Williston Engineering Department all the items in which the City deems salvageable. The remaining items become the property of the Contractor. All remaining above ground traffic signal components will be disposed of in accordance with Section 107.17 Removed Materials. Abandon all underground cable and conduit. Include in the price bid for "Traffic Signal System – Site 1" all labor and equipment necessary to remove the existing traffic signal system.
- 772-P02 TRAFFIC SIGNALS SYSTEMS: Include in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2" all labor and equipment necessary for each signal system to be fully operational as shown in the plans upon construction completion. This includes, but is not limited to, the installation of the following features where applicable; traffic signal standards and foundations, vehicular heads, video detection system, traffic signal controller and all ancillary controller hardware (conflict monitor, load switch, flasher, etc.), controller cabinet and foundation, all cable, conduit, junction boxes, advance flashing beacons and appurtenances to install the traffic signals completely.
- 772-P03 TRAFFIC SIGNAL STANDARDS BASE: Provide "T" transformer base type standards for all traffic signal standards. Include all costs for labor, materials and equipment necessary for furnishing and installing this item in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2".
- 772-P04 SIGNAL STANDARD PAINT COLOR: Paint all traffic signal system components in accordance with the following:
Transformer base – traffic signal green
Mast arm - traffic signal green
Signal head mounting hardware - traffic signal green
Shaft - traffic signal green
Signal housing - traffic signal green
Luminaire mounted on signal standard – galvanized
- 772-P05 SIGNAL MOUNTING HEIGHT: All signals mounted above the roadway shall have a mounting height between 20.5' and 21.5' from the roadway to the bottom of the signal ssembly (including backplates).
- 772-P06 EMERGENCY VEHICLE PREEMPTION: Provide Opticom emergency vehicle preemption systems for compatibility with other EVPs in Williston. All indicator lamps shall be LED. Provide all labor and equipment necessary for the emergency vehicle preemption systems to be fully operational. Notify City of Williston fire chief when the EVP systems are tested and operable. All costs, labor, materials and equipment necessary for furnishing and installing this item shall be included in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2".

- 772-P07 NEMA ATC CONTROLLER: Provide McCain ATC eX2 NEMA controllers. Construct the concrete foundation as shown on standard drawing D-770-1. Include all costs for labor, materials and equipment required to install the new controllers in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2". This includes but is not limited to the cabinet, detector amplifiers (furnished and installed), other ancillary signal components (such as load switches, conflict monitors, etc.), concrete foundation, and controller cabinet components connected as required to make the new controllers equipment operational with the proposed signal equipment. This also includes any programming and data entry (i.e. signal timing plans) necessary to provide a fully functional traffic signal controller.
- 772-P08 VIDEO DETECTION SYSTEM: Provide PEEK Videotrak IQ Video Detection Equipment for the video detection systems. A representative from the manufacturer to provide all cable connections, camera aiming and system set-up, including programming detection zones and verification of reliable operation. The location of cameras in the plans are for reference only. Install the cable, camera and provide all labor and equipment necessary for the video detection system to be fully operational. Include at each site a spare video detection camera, interface panel, and processor card. Also, install a monitor in each cabinet to view the video detection systems. Include all costs for labor, materials and equipment necessary for furnishing and installing this item in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2."
- 772-P09 CONDUIT: Install conduit at the location shown on the plans.
- Seal all conduit with duct seal at the controller cabinet, traffic signal standard foundations and pull boxes. Install one spare 2" conduit sweep in each traffic signal standard base and two spare 2" conduit sweeps in each controller foundation. Cap the spare conduits with an oil-tight plug with wing nut and labeled as to which direction they face.

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NOTES

772-P10 LABEL ALL FIELD CABLES: All labeling materials shall be approved by the City. Labels shall be readable without moving the cables. All field cables installed by the Contractor shall be labeled with the cable designations:

TYPE	LABEL	LABEL LOCATION
Video detection cable	Approach Detection (i.e. NW, SW, etc.)	Within 6" of terminals
Control cable	Cable number & location (i.e. NW, SW, etc.)	Within 12" of conduit
Opticom cable	Pre-empt number/location (i.e. NW, SW, etc.)	Within 6" of terminal

Use a heat-shrink labeling system. Do not strip back from the connection more than 12 to 18 inches. This work is not a separate pay item and include costs in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2."

772-P11 CONTROLLER CABINET WIRING DIAGRAM: Label the following items on the cabinet wiring diagram, in addition to information required by NDDOT Standard Specification.

- A. The camera number (i.e., D2-1) from the plan shall be labeled on the detector panel drawing adjacent to the point for termination.
- B. The field wire terminals for the vehicle head control cables shall be labeled with the phase number and direction (i.e., Ø2, SB).
- C. The field wire terminal for the pre-empt indicator lamps shall be labeled with the pre-empt number and direction (i.e., P.E. #1, NB).
- D. Provide an intersection diagram on cabinet door showing phasing of intersection and camera numbering and detection zone numbering
- E. Provide a CAD drawing file of the as-built cabinet wiring diagram.

772-P12 SIGNAL STANDARD CONDUCTORS: Install one cable from each signal transformer base to each traffic signal head. Daisy chaining from head to head is not allowed.

772-P13 FEED POINT-FLASHING BEACON: Install the pipe stand feed points at the locations indicated on the plans. Provide a feed point that is pipe stand type and constructed as shown on the plan details. Refer to Section 150 and the standard specifications for additional requirements.

772-P14 FLASHING BEACONS: Provide a connection between the traffic signal controllers and the flashing beacon controllers located on US 2 in advance of the US 2 & 58th and US 2 & 84th St intersections. Program the flashing beacons to begin flashing 8 seconds prior to the yellow indications being displayed for traffic at the US 2 & 58th St and US 2 & 84th St intersections.

772-P15 BATTERY BACK-UP: Equip each traffic controller with an "on-line" type Uninterruptible Power Supply (UPS) that provides power conditioning in both normal and backup mode. Size it to provide backup power to the system for a minimum of 2 hours in full signalized operation and a minimum of 8 hours in flash operation. Provide the UPS with aux contacts to put the system into flash operation. Incorporate full power management and diagnostic function into the UPS.

Provide the UPS with features to automatically provide battery back-up power to the controller system with no interruption when the electric utility power supply de-energizes. Provide a UPS that operates such that it does not provide power to the de-energized incoming electric utility service conductors.

Install the UPS in a temperature and humidity controlled environment. Install the UPS in a separate enclosure on the same pad as the signal controller cabinet. Extend the controller cabinet pad mount foundation to provide a minimum of 3" of clearance from the outside edge of the cabinets to the outside edge of the foundation on any side, even if the battery back-up cabinet is mounted on the controller cabinet and not the foundation. Include all costs for materials, labor and equipment necessary to furnish and install the battery back-up in the price bid for "Traffic Signal System – Site 1" and "Traffic Signal System – Site 2."

772-P16 TEMPORARY TRAFFIC SIGNALS: Install a temporary span wire traffic signal system at the intersection of US 2 & US 85 Truck Bypass as shown in Section 150.

Remove the temporary traffic signal at the direction of the Engineer, after full operations are resumed on US 2.

Modify the existing span wire traffic signal at the intersection of US 2 & 58th to accommodate head-to-head traffic in the west lanes of US 2. Modify the existing span wire system per the direction of the Engineer.

Include all costs for installation, modifications and removal of the temporary traffic signal systems in the price bid for "Temporary Traffic Signal".

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	6	8

ENVIRONMENTAL NOTES

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

EN-1 TEMPORARY WETLAND IMPACT: Temporary impact areas within wetlands and or other waters are incorporated into the plans for this project. Remove temporary fill placed and sedimentation in wetlands or other waters. Restore these wetlands to preconstruction contours.

NOTIFICATIONS TO BE FILED BY CONTRACTOR:
EN-2 Notification is required for work within 3 nautical miles of the airport. Complete the Federal Aviation Administration Notice of Proposed Construction or Alteration Form 7460-1 in accordance with 14 CFR 77.7 and 77.9 (at least 45 days before the start date of the proposed construction or alteration or the date an application for a construction permit is filed, whichever is earliest) (online at <http://oeaaa.faa.gov>).

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											STATE	PROJECT NO.		SECTION NO.	SHEET NO.
											ND	NH-NHU-7-002(156)022		8	1

ESTIMATE OF QUANTITIES							
SPEC	CODE	ITEM DESCRIPTION	UNIT	US 2	FRONTAGE ROAD	SIGNALS & LIGHTING	TOTAL
103	0100	CONTRACT BOND	L SUM	1	-	-	1
201	0330	CLEARING & GRUBBING	L SUM	1	-	-	1
202	0114	REMOVAL OF CONCRETE PAVEMENT	SY	2,165	25	-	2,190
202	0130	REMOVAL OF CURB & GUTTER	LF	568	250	-	818
202	0132	REMOVAL OF BITUMINOUS SURFACING	SY	7,318	434	-	7,752
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	460	-	-	460
202	0235	REMOVAL OF CATCH BASIN	EA	1	-	-	1
202	0289	REMOVE APPROACH	EA	6	-	-	6
202	0350	REMOVAL OF TEMPORARY BYPASS	EA	2	-	-	2
202	0400	REMOVAL OF RIPRAP - LOOSE ROCK	CY	-	465	-	465
203	0101	COMMON EXCAVATION-TYPE A	CY	7,104	2,000	-	9,104
203	0109	TOPSOIL	CY	6,051	90	-	6,141
203	0119	TOPSOIL-IMPORTED	CY	608	58	-	666
203	0140	BORROW-EXCAVATION	CY	163	-	-	163
203	0180	ROADWAY OBLITERATION	LF	360	-	-	360
216	0100	WATER	M GAL	739	-	-	739
230	0165	SUBGRADE PREPARATION-TYPE A-12IN	STA	-	8.27	-	8.27
251	0200	SEEDING CLASS II	ACRE	7.83	0.15	-	7.98
251	2000	TEMPORARY COVER CROP	ACRE	7.20	-	-	7.20
253	0201	HYDRAULIC MULCH	ACRE	15.03	0.15	-	15.18
255	0103	ECB TYPE 3	SY	91	22	-	113
260	0200	SILT FENCE SUPPORTED	LF	521	-	-	521
260	0201	REMOVE SILT FENCE SUPPORTED	LF	521	-	-	521
261	0112	FIBER ROLLS 12IN	LF	7,358	2,060	-	9,418
261	0113	REMOVE FIBER ROLLS 12IN	LF	3,494	1,030	-	4,524
302	0100	SALVAGED BASE COURSE	TON	12,936	2,615	-	15,551
302	0356	AGGREGATE SURFACE COURSE CL 13	TON	625	521	-	1,146
302	0405	SALVAGE & RELAY AGGREGATE SURFACE COURSE	CY	1,873	-	-	1,873
401	0050	TACK COAT	GAL	24,599	266	-	24,865
401	0060	PRIME COAT	GAL	1,455	666	-	2,121
411	0105	MILLING PAVEMENT SURFACE	SY	191,655	-	-	191,655
411	0132	RELAYING MILLED MATERIAL	TON	1,056	-	-	1,056
430	0145	RAP - SUPERPAVE FAA 45	TON	57,626	666	-	58,292
430	1000	CORED SAMPLE	EA	246	9	-	255
430	5809	PG 58V-28 ASPHALT CEMENT	TON	2,477	29	-	2,506
550	0300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	9,581	-	-	9,581
550	0355	CONCRETE OVERLAY	CY	13,423	-	-	13,423
550	0365	CONCRETE PLACEMENT - DOWELED	SY	54,915	-	-	54,915
550	3005	CONCRETE MEDIAN PAVEMENT	SY	30	-	-	30
702	0100	MOBILIZATION	L SUM	1	-	-	1
704	0100	FLAGGING	MHR	2,350	-	-	2,350
704	1000	TRAFFIC CONTROL SIGNS	UNIT	9,571	189	-	9,760
704	1041	ATTENUATION DEVICE-TYPE B-55	EA	1	-	-	1
704	1043	ATTENUATION DEVICE-TYPE B-65	EA	1	-	-	1
704	1052	TYPE III BARRICADE	EA	34	8	-	42
704	1060	DELINEATOR DRUMS	EA	290	57	-	347
704	1065	TRAFFIC CONES	EA	76	42	-	118
704	1067	TUBULAR MARKERS	EA	130	-	-	130
704	1072	FLEXIBLE DELINEATORS	EA	795	-	-	795
704	1080	STACKABLE VERTICAL PANELS	EA	50	-	-	50
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	8	-	-	8
704	1088	SEQUENCING ARROW PANEL-TYPE C-CROSSOVER	EA	2	-	-	2
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	16,246	-	-	16,246
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	69	-	-	69
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
708	1540	INLET PROTECTION-SPECIAL	EA	1	9	-	10
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	1	9	-	10
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	3,375	-	-	3,375
714	0615	PIPE CONC REINF 24IN CL III	LF	12	-	-	12
714	0820	PIPE CONC REINF 30IN CL III	LF	8	-	-	8
714	3023	END SECT-TRAVERSABLE REINF. CONC.24IN	EA	1	-	-	1
714	4099	PIPE CONDUIT 18IN-APPROACH	LF	50	-	-	50

ESTIMATE OF QUANTITIES							
SPEC	CODE	ITEM DESCRIPTION	UNIT	US 2	FRONTAGE ROAD	SIGNALS & LIGHTING	TOTAL
714	5015	PIPE CORR STEEL .064IN 18IN	LF	10	-	-	10
714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES	EA	1	-	-	1
722	0100	MANHOLE 48IN	EA	-	4	-	4
722	0110	MANHOLE 60IN	EA	-	1	-	1
722	3510	INLET-TYPE 2	EA	1	4	-	5
722	3520	INLET-TYPE 2 DOUBLE	EA	-	5	-	5
722	3800	INLET SPECIAL CATCH BASIN-TYPE A 60IN	EA	1	-	-	1
722	3910	INLET SLOTTED DRAIN 15IN	LF	20	-	-	20
722	6140	ADJUST GATE VALVE BOX	EA	1	-	-	1
722	6200	ADJUST MANHOLE	EA	1	-	-	1
748	0120	CURB & GUTTER MOUNTABLE-TYPE I	LF	-	50	-	50
748	0140	CURB & GUTTER-TYPE I	LF	1,018	1,747	-	2,765
748	1000	VALLEY GUTTER 36IN	LF	-	182	-	182
750	0020	PIGMENTED CONCRETE	SY	579	-	-	579
750	1020	DRIVEWAY CONCRETE 8IN	SY	-	104	-	104
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	444	34	-	478
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	151	-	-	151
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	1,097	76	-	1,173
754	0592	RESET SIGN PANEL	EA	6	-	-	6
754	0805	OBJECT MARKERS - CULVERTS	EA	2	1	-	3
760	0001	RUMBLE STRIPS - CONCRETE SHOULDER	MILE	6.236	-	-	6.236
760	0005	RUMBLE STRIPS - ASPHALT SHOULDER	MILE	12.098	-	-	12.098
762	0112	EPOXY PVMT MK MESSAGE	SF	1,808	-	-	1,808
762	0113	EPOXY PVMT MK 4IN LINE	LF	210,672	-	-	210,672
762	0115	EPOXY PVMT MK 8IN LINE	LF	4,498	-	-	4,498
762	0200	RAISED PAVEMENT MARKERS	EA	21,385	-	-	21,385
762	0420	SHORT TERM 4IN LINE-TYPE R	LF	50,037	-	-	50,037
762	0426	SHORT TERM 24IN LINE-TYPE R	LF	29	-	-	29
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	17,079	-	-	17,079
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	13,701	-	-	13,701
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	351	-	-	351
764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	2	-	-	2
764	0150	REMOVE & RESET GUARDRAIL	LF	491.3	-	-	491.3
764	1059	RESET W-BEAM GUARDRAIL END TERMINAL	EA	2	-	-	2
764	2081	REMOVE END TREATMENT & TRANSITION	EA	2	-	-	2
766	0100	MAILBOX-ALL TYPES	EA	1	-	-	1
770	0007	DESTINATION LIGHTING	EA	-	-	1	1
770	0020	CONCRETE FOUNDATION-HIGHWAY LIGHTING	EA	-	-	34	34
770	0060	CONCRETE FOUNDATION-FEED POINT-TYPE B	EA	-	-	2	2
770	0330	2IN DIAMETER RIGID CONDUIT	LF	-	-	6,293	6,293
770	0503	UNDERGROUND CONDUCTOR NO2-TYPE RHW	LF	-	-	486	486
770	0505	UNDERGROUND CONDUCTOR NO6-TYPE RHW	LF	-	-	13,134	13,134
770	0605	UNDERGROUND CONDUCTOR NO6-TYPE THW	LF	-	-	6,567	6,567
770	0735	FEED POINT-TYPE II-PAD MOUNTED	EA	-	-	2	2
770	1778	LT STD 10FT MA 42FT MT HT BREAKAWAY	EA	-	-	28	28
770	4210	LED LUMINAIRE	EA	-	-	41	41
770	4523	REVISE HIGHWAY LIGHTING FEED POINT	EA	-	-	1	1
770	4540	RELOCATE LIGHT STANDARD	EA	-	-	9	9
772	2110	FLASHING BEACON-POST MOUNTED	EA	2	-	-	2
772	2810	TEMPORARY TRAFFIC SIGNALS	EA	-	-	1	1
772	9811	TRAFFIC SIGNAL SYSTEM - SITE 1	EA	-	-	1	1
772	9812	TRAFFIC SIGNAL SYSTEM - SITE 2	EA	-	-	1	1
990	0400	PIPE CLEANOUT	EA	1	-	-	1

OPTION 1: REINFORCED CONCRETE PIPE							
SPEC	CODE	ITEM DESCRIPTION	UNIT	US 2	FRONTAGE ROAD	SIGNALS & LIGHTING	TOTAL
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	-	585	-	585
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	-	168	-	168

OPTION 2: FLEXIBLE PIPE (SEE SECTION 51 FOR ALLOWABLE MATERIALS)							
SPEC	CODE	ITEM DESCRIPTION	UNIT	US 2	FRONTAGE ROAD	SIGNALS & LIGHTING	TOTAL
714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	-	585	-	585
714	4101	PIPE CONDUIT 18IN-STORM DRAIN	LF	-	168	-	168

Estimate of Quantities

US 2
Frontage Road
Signals & Lighting

MATERIALS

Salvaged Base Course @ 1.875 Ton/CY
Aggregate Base Course Class 13 @ 1.875 Ton/CY
Milled Material @ 2 Ton/CY
RAP Superpave FAA 45 @ 2.0 Ton/CY
PG 58V-28 Asphalt Cement @ 4.3% of RAP Superpave FAA 45
Tack Coat @ 0.05 Gal/SY

WATER

25 MGal/Mile for Dust Palliative
20 Gal/Ton for Base Course
10 Gal/CY for Embankment

REMOVAL OF PAVEMENT

Concrete @ 2.0 Ton/CY
Bituminous Pavement @ 1.875 Ton/CY
Base Material @ 1.875 Ton/CY

RUMBLE STRIPS

RUMBLE STRIPS - CONCRETE SHOULDER			
Begin Station	End Station	Basis	Quantity (Mile)
63+62	228+26	10,560 LF/Mile	6.236
Total:			6.236 Mile

RUMBLE STRIPS - ASPHALT SHOULDER			
Begin Station	End Station	Basis	Quantity (Mile)
239+26	558+64	10,560 LF/Mile	12.098
Total:			12.098 Mile

SHORT TERM PAVEMENT MARKING

Short Term Pavement Marking Details Summary						
Begin Sta	End Sta	Spec	Code	Bid Item	Basis	Quantity
43+05	57+50	762	0200	RAISED PAVEMENT MARKERS - EACH	Crossover - South (Raised White)	252
49+50	57+50	762	0200	RAISED PAVEMENT MARKERS - EACH	Crossover - South (Raised Yellow)	193
562+80	580+07	762	0200	RAISED PAVEMENT MARKERS - EACH	Crossover - North (Raised White)	346
562+80	581+86	762	0200	RAISED PAVEMENT MARKERS - EACH	Crossover - North (Raised Yellow)	579
57+50	562+80	762	0200	RAISED PAVEMENT MARKERS - EACH	Head to Head Traffic (Raised Yellow)	20,015
57+50	562+80	762	0420	SHORT TERM 4 IN LINE - TYPE R (LF)	4 IN Edge Line for Head to Head Traffic	50,037
62+37		762	0426	SHORT TERM 24 IN LINE - TYPE R (LF)	Stop Bar	12
234+33		762	0426	SHORT TERM 24 IN LINE - TYPE R (LF)	Stop Bar	17

CORED SAMPLE

HBP Cored Samples										
Specification Section	Location	Begin Station	End Station	A	B	C	D	430 1000 CORED SAMPLE		Unit
				Distance (Ft)÷2000	Lanes	Lifts	Sublots (A × B × C)	Quantity (D × 2)	Quantity (1 per mile)	
430.04 I.2.b(1), "General"	US2 EB	99+59	104+70	1	1	4	4	8	N/A	EA
		114+54	119+73	1	1	4	4	8	N/A	EA
		124+58	129+67	1	1	4	4	8	N/A	EA
		138+14	143+57	1	2	4	8	16	N/A	EA
		179+20	183+16	1	1	4	4	8	N/A	EA
		239+26	558+64	16	2	3	96	192	N/A	EA
	Frontage Road	2002+33	2010+60	1	2	2	4	8	N/A	EA
430.04 I.2.b(2), "Pavement Thickness Determination Cores"	US2 EB	239+26	558+64					N/A	6	EA
	Frontage Road	2002+33	2010+60					N/A	1	EA
							Total	248	7	EA

SALVAGED AGGREGATE SUMMARY

SALVAGED AGGREGATE SUMMARY		
	TON	TON
Removal Of Concrete Pavement	730	
Removal Of Bituminous Surfacing	1,615	
Milling Pavement Surface	24,121	
Subtotal	26,466	
5% Less for Crushing and Handling	1323	
Total Salvaged Material Available		25,143
Salvaged Material needed for Relaying Milled Material		1,056
Aggregate needed for Salvaged Base Course	15,551	
Salvaged Material Needed to Achieve 50% Blend		7,776
Virgin Material Needed for Salvaged Base Course	7776	
RAP Superpave 45	58,292	
Salvaged Material Needed to Achieve 25% Blend		14,573
Excess Salvage Material		1,738

Note: This is not a balance sheet. The contractor must balance their own materials. Material may not be available when needed.

Quantities have been estimated using the following:
3" HBP Milling from Station 55+16 to 229+26
2" HBP Milling from Station 239+26 to 558+64
6" Removal of Concrete Pavement
4" Removal of Bituminous Surfacing

EXISTING CORING INFORMATION

Reference Point	Depth
22.386	7.50
22.500	14.00
22.750	10.50
23.000	10.25
23.250	10.50
23.500	9.50
23.750	9.25
24.000	7.75
24.250	9.50
24.500	9.25
24.750	9.50
25.000	8.75
25.250	9.25
25.500	14.00
25.750	9.25
26.000	8.75
26.250	9.00
26.500	9.25
26.750	9.25
27.000	9.75
27.250	8.75
27.500	9.50
27.750	9.25
28.000	9.00
28.250	10.00
28.500	7.50
28.750	9.25
29.000	8.75
29.250	9.25
29.500	9.50
29.750	10.25
30.000	9.50
30.250	8.50
30.500	8.75
30.750	7.50
31.000	9.25
31.250	9.75

OBJECT MARKERS - CULVERTS

OBJECT MARKERS - CULVERTS			
Station		Offset	Quantity (EA)
168+85	US2 EB	Rt	1
2063+90	US2 WB	Lt	1
2001+67	Frontage Rd	Rt	1
Total:			3 EA

MAILBOXES - ALL TYPES

MAILBOX - ALL TYPES		
Station	Offset	Quantity
339+38	Rt	1
Total:		1

SUBGRADE PREPARATION TYPE A - 12IN

SUBGRADE PREPARATION - TYPE A - 12 IN			
Begin Station	End Station	Basis	Quantity
2002+33	2010+60	100 LF/Sta	8.27 STA
Total:			8.27 STA

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Basis of Estimate

US 2

Mainline Paving Table 1 of 7

		US Hwy 2																						
		Typical 1 (Section 30, Sheet 4) 78.5' Paved Width				Typical 2 (Section 30, Sheet 4) 33' Paved Width				Typical 3 (Section 30, Sheet 5) 46.2' Paved Width				Typical 4 (Section 30, Sheet 5) 52.8' Paved Width				Typical 5 (Section 30, Sheet 5) 42.2' Paved Width						
		Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta			
		60+54	to	63+74	3.20	63+74	to	97+79	34.05	99+59	to	104+70	5.11	114+54	to	119+73	5.19	138+14	to	139+00	0.86			
						104+70	to	112+74	8.04	124+58	to	129+67	5.09											
						119+73	to	122+78	3.05															
						129+67	to	136+32	6.65															
						143+57	to	162+80	19.23															
						169+67	to	177+73	8.06															
				183+16	to	190+42	7.26																	
				196+03	to	229+26	33.24																	
Total =				3.20	Total =				119.57	Total =				10.20	Total =				5.19	Total =				0.86
Material	Unit	Area (SF) or Width (LF)	Quantity per Station	Area (SF) or Width (LF)	Quantity per Station	Area (SF) or Width (LF)	Quantity per Station	Area (SF) or Width (LF)	Quantity per Station	Area (SF) or Width (LF)	Quantity per Station	Area (SF) or Width (LF)	Quantity per Station	Area (SF) or Width (LF)	Quantity per Station									
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	56.03	389.10	-	-	17.00	118.06	17.00	118.06						-									
302 0356 AGGREGATE SURFACE COURSE CL 13	Ton																							
401 0050 TACK COAT @ 0.05 Gal/SY	Gal		-	7.70	17.11	23.70	52.67	29.70	66.00	19.10	42.44													
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal		-		-	12.90	35.83	12.90	35.83		-				-									
411 0132 RELAYING MILLED MATERIAL @ 2.0 Ton/CY	Ton		-	1.00	7.41		-		-		-				-									
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton		-	3.97	29.41	13.71	101.56	17.92	132.74	10.77	79.78													
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton		-		1.26		4.37		5.71		3.43													
550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	39.20	435.56	-		-		-																
550 0355 CONCRETE OVERLAY	CY	19.20	71.11	19.20	71.11	19.20	71.11	19.20	71.11	19.20	71.11													
550 0365 CONCRETE PLACEMENT - DOWELED	SY	28.80	320.00	28.80	320.00	28.80	320.00	28.80	320.00	28.80	320.00													

Mainline Paving Table 2 of 7

		US Hwy 2																			
		Typical 6 (Section 30, Sheet 6) 48' Paved Width				Typical 7 (Section 30, Sheet 6) 56' Paved Width				Typical 8 (Section 30, Sheet 6) 44.4' Paved Width				Typical 9 (Section 30, Sheet 7) 42.8' Paved Width				Typical 10 (Section 30, Sheet 7) 32.8' Paved Width			
		Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta
		140+00	to	143+57	3.57	164+60	to	169+67	5.07	179+20	to	183+16	3.96	191+89	to	196+03	4.14	239+26	to	268+50	29.24
																		275+53	to	320+10	44.57
																		328+31	to	357+36	29.05
																		367+54	to	371+67	4.13
																		381+38	to	424+71	43.33
																		425+92	to	480+35	54.43
																		486+88	to	507+30	20.42
Material	Unit	Quantity per Station	Quantity per Station	Quantity per Station	Quantity per Station	Quantity per Station	Quantity per Station	Quantity per Station	Quantity per Station	Quantity per Station	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station								
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton		-	41.86	290.69	19.57	135.90	19.58	135.97		-										
302 0356 AGGREGATE SURFACE COURSE CL 13	Ton																				
401 0050 TACK COAT @ 0.05 Gal/SY	Gal	25.00	55.56		-	16.90	37.56		-		37.10	61.83									
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal		-		-	12.90	143.33		-		-										
411 0132 RELAYING MILLED MATERIAL @ 2.0 Ton/CY	Ton		-	1.00	7.41	1.00	7.41	1.00	7.41		-										
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	14.64	108.44		-	10.31	76.37		-		19.18	142.07									
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton		4.66		-		3.28		-			6.11									
550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY			27.20	302.22			14.00	155.56												
550 0355 CONCRETE OVERLAY	CY	19.20	71.11	19.20	71.11	19.20	71.11	19.20	71.11		-										
550 0365 CONCRETE PLACEMENT - DOWELED	SY	28.80	320.00	28.80	320.00	28.80	320.00	28.80	320.00												

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Basis of Estimate

US 2

Mainline Paving Table 3 of 7

		US Hwy 2																			
		Typical 11 (Section 30, Sheet 7) 38.6' Paved Width				Typical 12 (Section 30, Sheet 8) 40.8' Paved Width				Typical 13 (Section 30, Sheet 8) 48' Paved Width				Typical 14 (Section 30, Sheet 8) 44.4 Paved Width				Typical 15 (Section 30, Sheet 8) 52.4 Paved Width			
		Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta
		271+07	to	275+53	4.46	321+32	to	328+31	6.99	374+16	to	381+38	7.22	359+25	to	367+54	8.29	509+40	to	513+40	4.00
		482+50	to	486+88	4.38									526+00	to	530+70	4.70				
		535+57	to	539+96	4.39																
		Total =			13.23	Total =			6.99	Total =			7.22	Total =			12.99	Total =			4.00
Material	Unit	Area (SF) or Width (LF)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station								
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton		-		-		-		-		-		-								
302 0356 AGGREGATE SURFACE COURSE CL 13	Ton																				
401 0050 TACK COAT @ 0.05 Gal/SY	Gal	43.70	72.83	45.90	76.50	53.00	88.33	48.70	81.17	45.10	75.17										
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal		-		-		-		-		-		-								
411 0132 RELAYING MILLED MATERIAL @ 2.0 Ton/CY	Ton		-		-		-		-		-		-								
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	31.16	230.81	25.28	187.26	29.47	218.30	25.98	192.44	24.13	178.74										
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	-	9.92		8.05		9.39		8.27		7.69										
550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY																				
550 0355 CONCRETE OVERLAY	CY		-		-		-		-		-		-								
550 0365 CONCRETE PLACEMENT - DOWELED	SY		-		-		-		-		-		-								

Mainline Paving Table 4 of 7

		US Hwy 2										Oil Well Access				Frontage Road								
		Typical 16 (Section 30, Sheet 9) 76.8' Total Width				Typical 17 (Section 30, Sheet 9) 46.2' Total Width				Typical 18 (Section 30, Sheet 9) 46.2' Total Width				Typical 19 (Section 30, Sheet 10) 24' Aggregate Width				Typical 20/21 (Section 30, Sheet 10) 29' Paved Width						
		Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta			
		2063+64	to	2065+72	2.08	2170+09	to	2174+44	4.35	2196+54	to	2200+89	4.35	10003+50	to	10010+30	6.80	2002+33	to	2010+60	8.27			
																		to						
		Total =		2.08			Total =		4.35			Total =		4.35			Total =		6.80			Total =		8.27
Material	Unit	Area (SF) or Width (LF)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station					
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	56.42	391.81	25.81	179.24	27.68	192.22									44.00	305.56							
302 0356 AGGREGATE SURFACE COURSE CL 13	Ton							13.24	91.94															
401 0050 TACK COAT @ 0.05 Gal/SY	Gal		-		-		-		-		-		-		-	29.00	32.22							
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal		-		-		-		-		-		-		-	29.00	80.56							
411 0132 RELAYING MILLED MATERIAL @ 2.0 Ton/CY	Ton		-		-		-		-		-		-		-		-							
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton		-		-		-		-		-		-		-	10.88	80.59							
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	-	-		-		-		-		-		-		-		3.47							
550 0300 8IN NON-REINF CONCRETE PVMT CLAE-DOWELED	SY	41.00	455.56	15.00	166.67	16.50	183.33																	
550 0355 CONCRETE OVERLAY	CY				-		-		-		-		-		-		-		-					
550 0365 CONCRETE PLACEMENT - DOWELED	SY				-		-		-		-		-		-		-		-					

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Basis of Estimate

US 2

Mainline Paving Table 5 of 7

		US Hwy 2 - Transitions																			
		Transition from Typical 2 to 1				Transition from Typical 2 to 3				Transition from Typical 2 to 4				Transition from Typical 2 to 5				Transition from Typical 5 to 6			
		Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta
		57+66	to	60+54	2.88	97+79	to	99+59	1.80	112+74	to	114+54	1.80	136+32	to	138+14	1.82	139+00	to	140+00	1.00
						122+78	to	124+58	1.80												
		Total =		2.88	Total =		3.60	Total =		1.80	Total =		1.82	Total =		1.00					
Material	Unit	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station						
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	28.02	194.58	8.50	59.03	8.50	59.03	-	-	-	-	-	-	-	-						
302 0356 AGGREGATE SURFACE COURSE CL 13	Ton	-		-		-		-		-		-		-							
401 0050 TACK COAT @ 0.05 Gal/SY	Gal	3.85	8.56	15.70	34.89	18.70	41.56	13.40	29.78	22.05	49.00	22.05	49.00	22.05	49.00						
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal	-	-	6.45	17.92	6.45	17.92	-	-	-	-	-	-	-	-						
411 0132 RELAYING MILLED MATERIAL @ 2.0 Ton/CY	Ton	0.50	3.70	0.50	3.70	0.50	3.70	0.50	3.70	-	-	-	-	-	-						
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	1.99	14.74	8.84	65.48	10.95	81.11	7.37	54.59	12.71	94.15	12.71	94.15	12.71	94.15						
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	-	0.63	-	2.82	-	3.49	-	2.35	-	4.05	-	4.05	-	4.05						
550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	19.60		-		-		-		-		-		-							
550 0355 CONCRETE OVERLAY	CY	19.20	71.11	19.20	71.11	19.20	71.11	19.20	71.11	19.20	71.11	19.20	71.11	19.20	71.11						
550 0365 CONCRETE PLACEMENT - DOWELED	SY	28.80	320.00	28.80	320.00	28.80	320.00	28.80	320.00	28.80	320.00	28.80	320.00	28.80	320.00						

Mainline Paving Table 6 of 7

		US Hwy 2 Transitions																			
		Transition from Typical 2 to 7				Transition from Typical 2 to 8				Transition from Typical 2 to 9				Transition from Typical 10 to 11				Transition from Typical 10 to 12			
		Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta	Stations			# of Sta
		162+80	to	164+60	1.80	177+73	to	179+20	1.47	190+42	to	191+89	1.47	268+50	to	271+07	2.57	320+10	to	321+32	1.22
														480+35	to	482+50	2.15				
												533+57	to	535+57	2.00						
Total =			1.80	Total =			1.47	Total =			1.47	Total =			6.72	Total =			1.22		
Material	Unit	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station	Area (SF) or Width (FT)	Quantity per Station						
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	20.93	145.35	9.79	67.99	9.79	67.99	-	-	-	-	-	-	-	-						
302 0356 AGGREGATE SURFACE COURSE CL 13	Ton	-		-		-		-		-		-		-							
401 0050 TACK COAT @ 0.05 Gal/SY	Gal	3.85	8.56	12.30	27.33	3.85	8.56	40.40	67.33	41.50	69.17	41.50	69.17	41.50	69.17						
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal	-	-	6.45	17.92	-	-	-	-	-	-	-	-	-	-						
411 0132 RELAYING MILLED MATERIAL @ 2.0 Ton/CY	Ton	1.00	7.41	1.00	7.41	1.00	7.41	-	-	-	-	-	-	-	-						
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	1.99	14.74	7.14	52.89	1.99	14.74	25.17	186.44	22.23	164.67	22.23	164.67	22.23	164.67						
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	-	0.63	-	2.27	-	0.63	-	8.02	-	7.08	-	7.08	-	7.08						
550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	13.60	151.11	-	-	7.00	77.78	-	-	-	-	-	-	-	-						
550 0355 CONCRETE OVERLAY	CY	19.20	71.11	19.20	71.11	19.20	71.11	-	-	-	-	-	-	-	-						
550 0365 CONCRETE PLACEMENT - DOWELED	SY	28.80	320.00	28.80	320.00	28.80	320.00	-	-	-	-	-	-	-	-						

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Basis of Estimate
US 2

Mainline Paving Table 7 of 7

		US Hwy 2 Transitions											
		Transition from Typical 10 to 13				Transition from Typical 10 to 14				Transition from Typical 10 to 15			
		Stations		# of Sta		Stations		# of Sta		Stations		# of Sta	
		371+67	to 374+16	2.49		357+36	to 359+25	1.89		507+30	to 509+40	2.10	
						524+45	to 526+00	1.55					
		Total =		2.49		Total =		3.44		Total =		2.10	
Material	Unit	Area (SF) or Width (FT)		Quantity per Station		Area (SF) or Width (FT)		Quantity per Station		Area (SF) or Width (FT)		Quantity per Station	
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	-		-		-		-		28.21		195.90	
302 0356 AGGREGATE SURFACE COURSE CL 13	Ton	-				-				-			
401 0050 TACK COAT @ 0.05 Gal/SY	Gal	45.05		75.08		42.90		71.50		-		-	
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal	-		-		-		-		-		-	
411 0132 RELAYING MILLED MATERIAL @ 2.0 Ton/CY	Ton	-		-		-		-		-		-	
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	24.33		180.22		22.58		167.26		-		-	
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	-		7.75		-		7.19		-		-	
550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	-		-		-		-		20.50		227.78	
550 0355 CONCRETE OVERLAY	CY	-		-		-		-		-		-	
550 0365 CONCRETE PLACEMENT - DOWELED	SY	-		-		-		-		-		-	

Summary Table (1 of 5): Subtotals from Mainline Paving Tables 1-7		
Material	Unit	Total
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	12,835
302 0356 AGGREGATE SURFACE COURSE CL 13	Ton	625
401 0050 TACK COAT @ 0.05 Gal/SY	Gal	24,512
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal	1,908
411 0132 RELAYING MILLED MATERIAL @ 2.0 Ton/CY	Ton	1,056
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	55,994
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	2,407
550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	7,398
550 0355 CONCRETE OVERLAY	CY	12,203
550 0365 CONCRETE PLACEMENT - DOWELED	SY	54,915

Summary Table (2 of 5): Subtotals from Approach Paving Tables 1-2		
Material	Unit	Total
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	2,313
401 0050 TACK COAT @ 0.05 Gal/SY	Gal	284
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	1,264
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	55
550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	2184
750 0020 PIGMENTED CONCRETE	SY	579

Summary Table (3 of 5): Additional Material required for Guard Rail		
Material	Unit	Total
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	315
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal	213
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	103
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	4

Summary Table (4 of 5): Transition Sta 55+16.3 to 57+66.3		
Material	Unit	Total
401 0050 TACK COAT @ 0.05 Gal/SY	Gal	69
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	191
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	8

Summary Table (5 of 5): Additional Material Required for variations in profile and surface irregularities		
Material	Unit	Total
550 0355 CONCRETE OVERLAY (Surface Irregularities)	CY	610
550 0355 CONCRETE OVERLAY (Variation in profile)	CY	610

Cumulative Paving Summary Table: Summation of Summary Tables 1-5		
Material	Unit	Total
302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	15,463
302 0356 AGGREGATE SURFACE COURSE CL 13	Ton	625
401 0050 TACK COAT @ 0.05 Gal/SY	Gal	24,865
401 0060 PRIME COAT @ 0.25 Gal/SY	Gal	2,121
411 0132 RELAYING MILLED MATERIAL @ 2.0 Ton/CY	Ton	1,056
430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	57,552
430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	2,474
550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	9,581
550 0355 CONCRETE OVERLAY	CY	12,813
550 0365 CONCRETE PLACEMENT - DOWELED	SY	54,915
750 0020 PIGMENTED CONCRETE	SY	579

Notes: Additional Material for Crossovers included in Section 20
Additional Material for Frontage Road Approaches included in Section 60

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Basis of Estimate

US 2

Approach Paving Table 1 of 2

			Approaches							
Material		Unit	(1)	(2)	(3)	(4)	(5)	Median Approaches		
			Paved Section Line, County Road or Street Approach	Gravel Section Line, County Road or Street Approach	Paved Private Drive Approach	Gravel Private Drive Approach	Field Drive Approach			
			104+42	513+20	84+40	310+36	157+55	84+42	76+77	530+27
			119+47		151+70	353+44	251+28	285+50	104+42	
			143+23			416+38	460+36	297+50	119+41	
			275+26			433+69		317+20	129+40	
			328+06					340+00	143+27	
			381+08					370+25	275+26	
			486+58					157+55	367+10	
			539+65					251+28	381+08	
								310+36	486+58	
								328+06	539+65	
								353+44		
								416+38		
								433+69		
								460+36		
								513+20		
Quantity per each type	302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton					29.0			
	401 0050 TACK COAT @ 0.05 Gal/SY	Gal	7.0	5.6	5.1	5.3	1.5	5.2	7.3	10.8
	430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	31.0	25.0	23.0	24.0	7.0	23.0	32.0	48.0
	430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	1.3	1.1	1.0	1.0	0.3	1.0	1.4	2.1
		EA	8	1	2	6	3	15	10	1
Total Quantity per type	302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton					87			
	401 0050 TACK COAT @ 0.05 Gal/SY	Gal	56	6	10	32	4	79	73	11
	430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton	248	25	46	144	21	345	320	48
	430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton	10	1	2	6	1	15	14	2

Approach Paving Table 2 of 2

			Approaches						
Material		Unit	Paved Section Line, County Road or Street Approach (not included in mainline paving)						
			58th Street	58th Street	84th Street	84th Street	Wells Street	Energy Street	Energy Street
			Rt	Lt	Rt	Lt	Rt	Lt	Rt
Quantity per each	302 0100 SALVAGED BASE COURSE @ 1.875 Ton/CY	Ton	183	592	720			402	329
	401 0050 TACK COAT @ 0.05 Gal/SY	Gal					13		
	430 0145 RAP - SUPERPAVE FAA 45 @ 2 Ton/CY	Ton					67		
	430 5809 PG 58V-28 ASPHALT CEMENT @ 4.3%	Ton					3		
	550 0300 8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	234	179	698	308		408	356
	750 0020 PIGMENTED CONCRETE	SY		579					

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Basis of Estimate
US 2

Earthwork Summary

Location	203 0101 COMMON EXCAVATION- TYPE A (CY)	Embankment (CY)	Waste	203 0109 TOPSOIL (CY) (Available)	TOPSOIL Required (CY)	202 0119 IMPORTED TOPSOIL (CY)
	A	B	C = B - A	D	E	F = E - D
US2_EB Sta 57+66 to 63+74 (58th Street)	614	1,039	-425	357	388	31
US2_EB Sta 97+79 to 104+70	216	223	-7	319	302	-17
US2_EB Sta 112+78 to 119+73	246	375	-129	267	269	2
US2_EB Sta 122+78 to 129+67	101	285	-184	312	299	-13
US2_EB Sta 163+93 to 169+67 (84th Street)	334	974	-640	843	860	17
US2_EB Sta 177+73 to 183+16 (Wells Street)	110	408	-298	323	296	-27
US2_EB Sta 190+42 to 196+96 (Energy Street)	84	636	-552	315	338	23
US2_EB Sta 215+00 to 216+10 (Access Removals)	525		525	195	240	45
US2_EB Sta 228+15 to 229+20 (Access Removals)	925		925	310	390	80
US2_WB Sta 2063+00 to 2068+60 (58th Street)	806	432	374	429	301	-128
US2_WB Sta 2170+09 to 2176+24 (84th Street)	429	45	384	430	490	60
US2_WB Sta 2196+54 to 2202+68 (Energy Street)	181	866	-685	365	450	85
US2_WB Sta 2202 to 2203+00 Lt (Access Removal)	525		525	240	195	-45
Frontage Road	1,930	270	1,660	90	90	0
Frontage Road (Access Removal)	70		70	0	58	58
Oilfield Access Rd	1,512	1,163	349	951	912	-39
South Crossover Restoration				145	371	226
North Crossover Restoration				250	558	308
TOTAL	8,608	6,716	1,892	6,141	6807	666

Notes:

1. This computation report is not a balance sheet. The Contractor shall calculate their own balance of materials.
2. An additional volume of 25% to allow for shrinkage is included in all embankment volumes.
3. Additional volumes for Crossover Removal included in Section 20.
4. Existing aggregate base is included in Common Excavation.

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Data Table
US 2

PC Station	84+53.58
PI Station	98+11.38
Delta	Delta = 26° 47' 50.82" (RT)
Degree	Da = 1° 00' 18.68"
Tangent	1,357.80
Length	2,665.91
Radius	5,700.00
PT Station	111+19.50

Station		Left Slope	Right Slope
83+39.58	-114	-2.1	-2.1
84+04.58	-49	0.0	-2.1
84+69.58	16	2.1	-2.1
84+78.58	25	2.4	-2.4
110+94.50	-25	2.4	-2.4
111+03.50	-16	2.1	-2.1
111+68.50	49	0.0	-2.1
112+33.50	114	-2.1	-2.1

Note: Calculations based on AASHTO method five. A design speed of 55 mph and maximum superelevation of 6% were used.
Left Turn Lane Cross Slope = -2.1%
Right Turn Lane Cross Slope = -2.4%

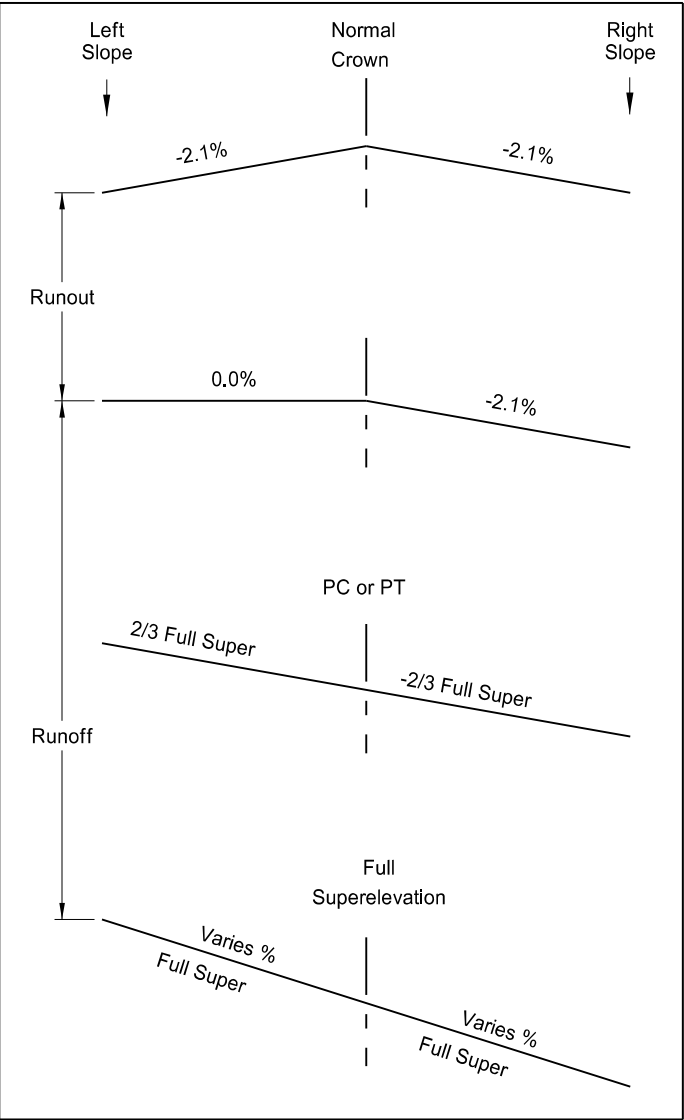
PC Station	119+18.63
PI Station	127+79.90
Delta	Delta = 16° 53' 34.08" (LT)
Degree	Da = 0° 59' 16.29"
Tangent	861.27
Length	1,710.04
Radius	5,800.00
PT Station	136+28.68

Station		Left Slope	Right Slope
118+04.63	-114	-2.1	-2.1
118+69.63	-49	-2.1	0.0
119+34.63	16	-2.1	2.1
119+43.63	25	-2.4	2.4
136+03.68	-25	-2.4	2.4
136+12.68	-16	-2.1	2.1
136+77.68	49	-2.1	0.0
137+42.68	114	-2.1	-2.1

Note: Calculations based on AASHTO method five. A design speed of 55 mph and maximum superelevation of 6% were used.
Left Turn Lane Cross Slope = -2.4%
Right Turn Lane Cross Slope = -2.1%

Match Existing transition and Superelevation Data		
PC Station	10005+16.78	
PI Station	127+79.90	
Delta	Delta = 16° 53' 34.08" (LT)	
Degree	Da = 0° 59' 16.29"	
Tangent	861.27	
Length	1,710.04	
Radius	125.00	
PT Station	10009+43.22	

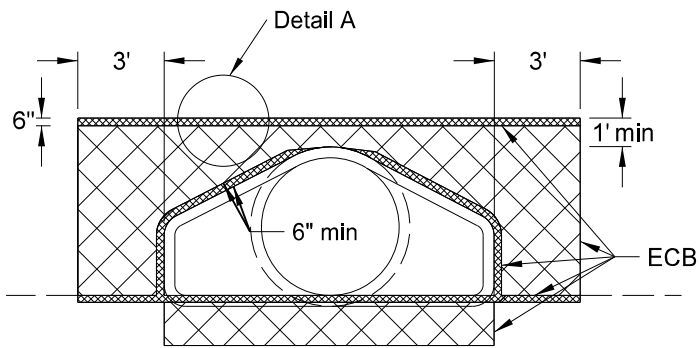
Station		Left Slope	Right Slope
10003+75.00		7.0	2.0
10004+00.00		-2.0	-2.0
10004+49.78	-67	-2.0	-2.0
10004+90.78	-26	0.0	-2.0
10005+31.78	15	2.0	-2.0
10009+28.22	-15	2.0	-2.0
10009+69.22	26	0.0	-2.0
10010+10.22	67	-2.0	-2.0
10010+29.91		-2.0	-2.0



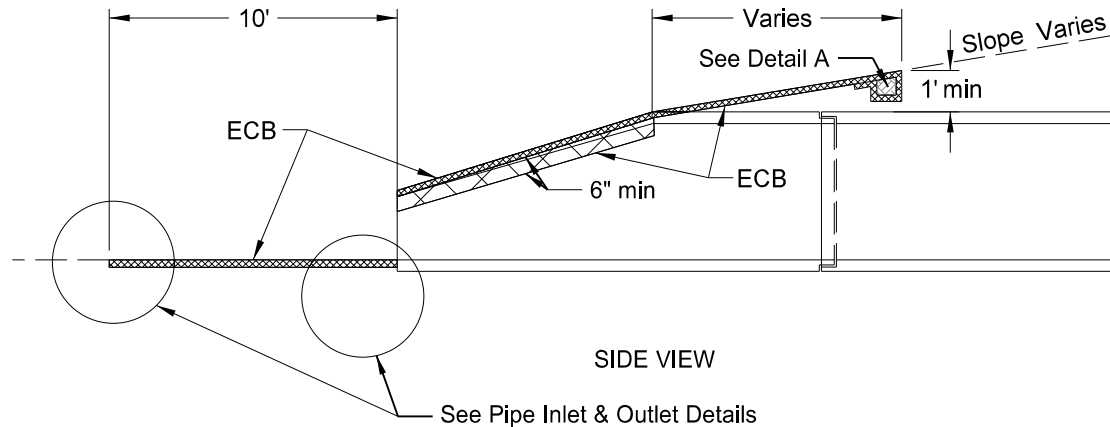
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Superelevation Table
US 2

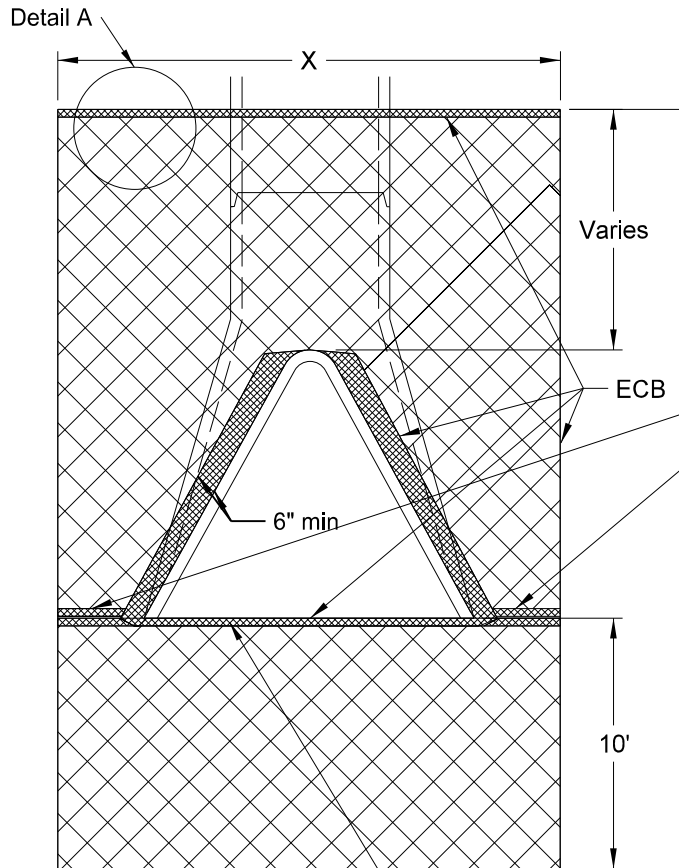
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FRONT VIEW



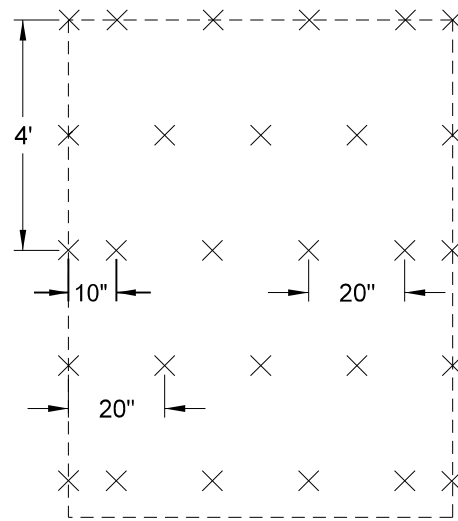
SIDE VIEW



TOP VIEW

Inlet side - see applicable detail for pipe inlet.
Outlet side - see applicable detail for pipe outlet.

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



STAPLE PATTERN

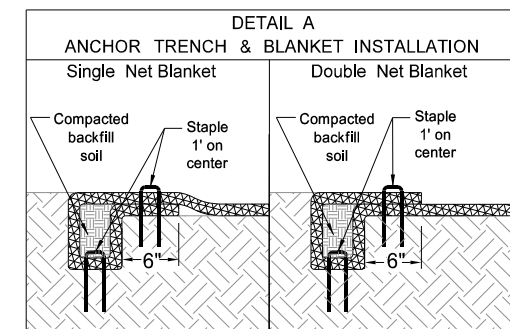
APPROACH CULVERTS				
DIA	X	Y	Surface area to be protected	ECB
In	Ft	Ft	SF	SY
15	9.0	20.0	176.0	20
18	9.5	20.7	190.7	22
21	9.5	21.0	190.9	22
24	10.5	21.6	214.1	24
27	11.0	22.0	226.3	25
30	11.6	22.5	241.5	27
36	12.7	23.3	268.8	30
42	13.3	23.3	279.7	31
48	13.8	24.0	293.2	33
54	14.5	23.4	300.6	34
60	15.0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

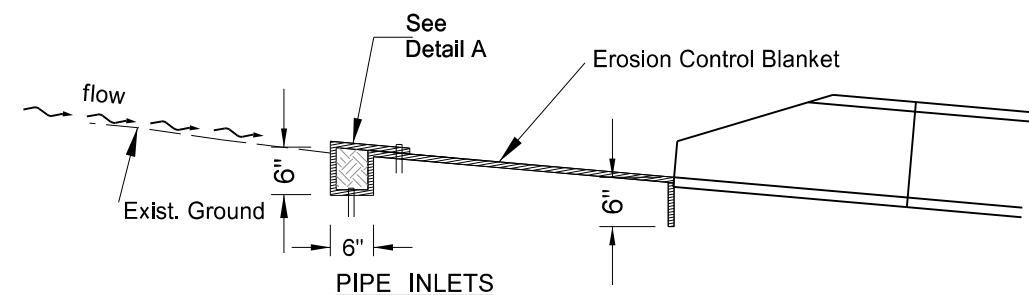
Erosion Control Blanket (ECB)				
Location of Surface Area to be Protected	Pipe Diam (Inch)	No	Unit Quantity (SY)	Total Quantity Type 3 (SY)
168+84 Rt	30	1	27	25
195+64 Lt	18	1	22	22
2001+84 Rt	18	1	22	22
10004+43 Lt	18	1	22	22
10004+71 Rt	18	1	22	22
Total (SYs)				113 SY

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

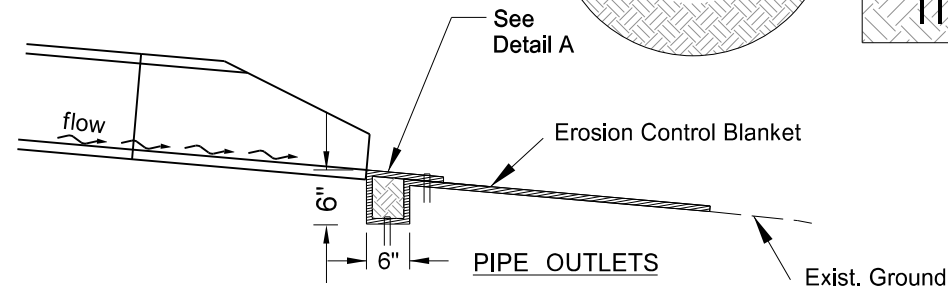
Note: Quantities based on 6:1 slope.



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PIPE INLETS

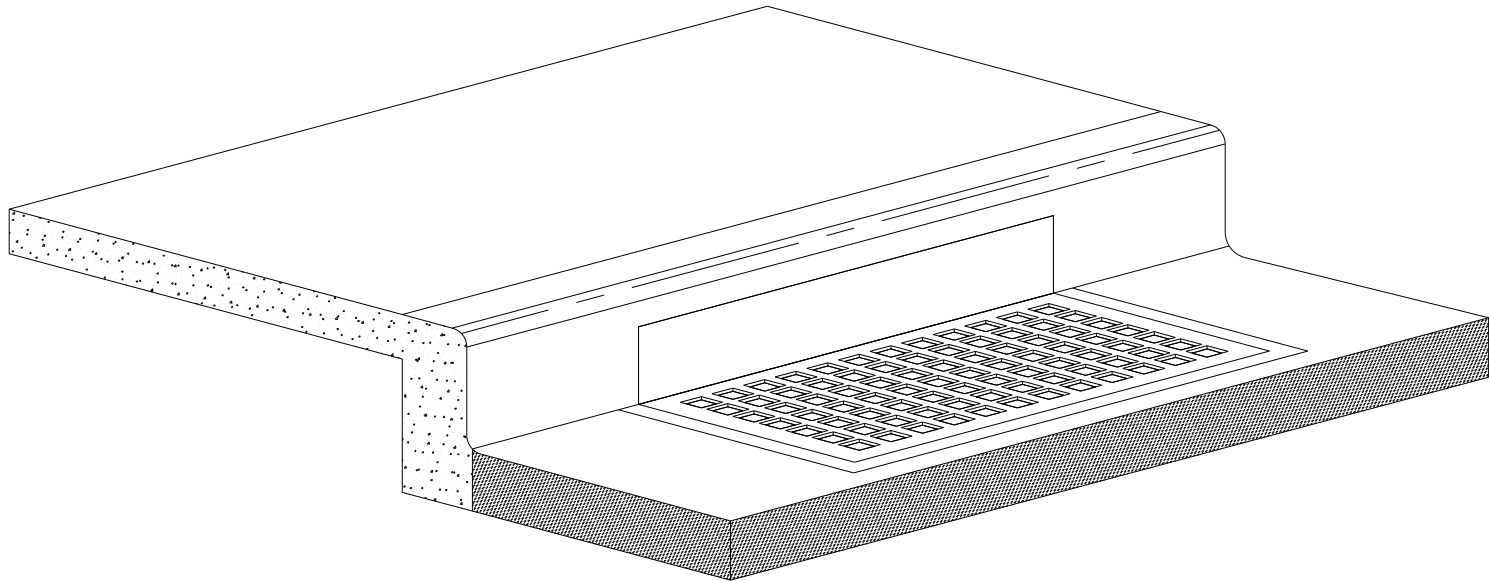


PIPE OUTLETS

Erosion Control at Culvert Flared End Sections

US 2

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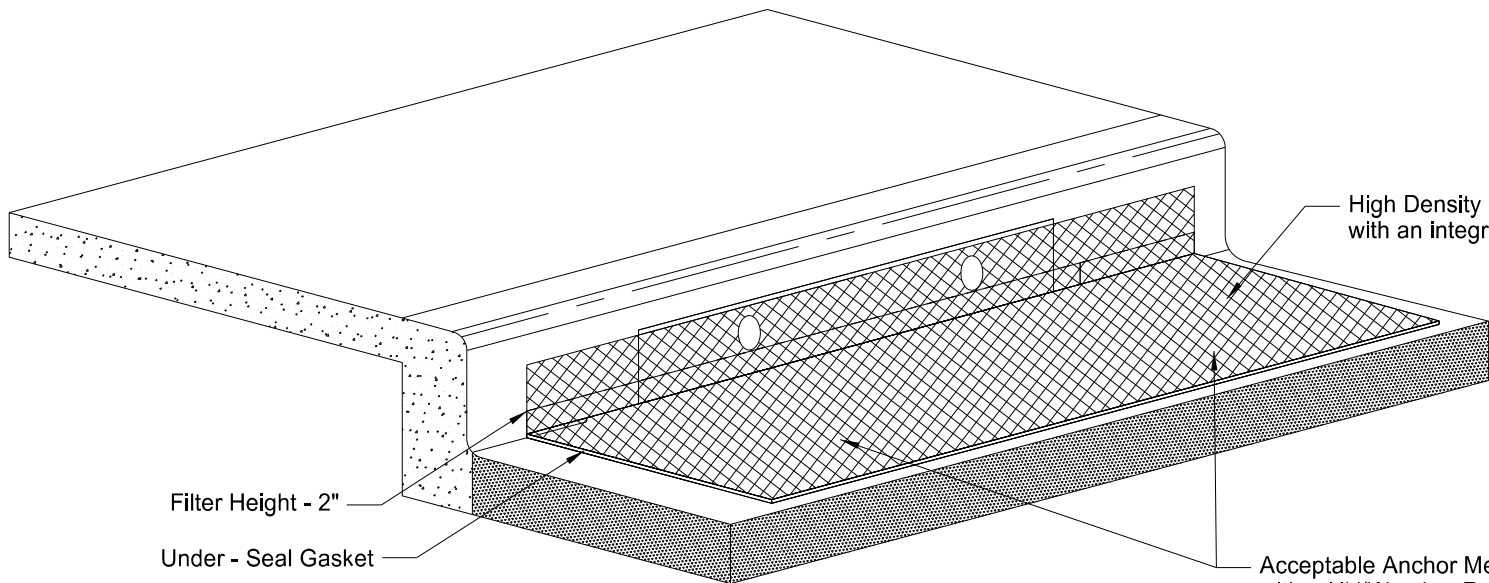
Inlet Protection Device

Installation Notes:

1. Place device tightly against drain opening and cover entire grate. Extend the device at least 2 inches past the grate toward the street.
2. Overlap the segments at longer openings.
3. Anchor the device so that water cannot flow behind it.

General Notes:

1. Remove material that falls into the inlet during maintenance or removal of the device.



High Density Polyethylene (HDPE) high flow jacket filter (8,000 opening per SY) with an integrated 425 um (micron meter) fine filter particle mesh

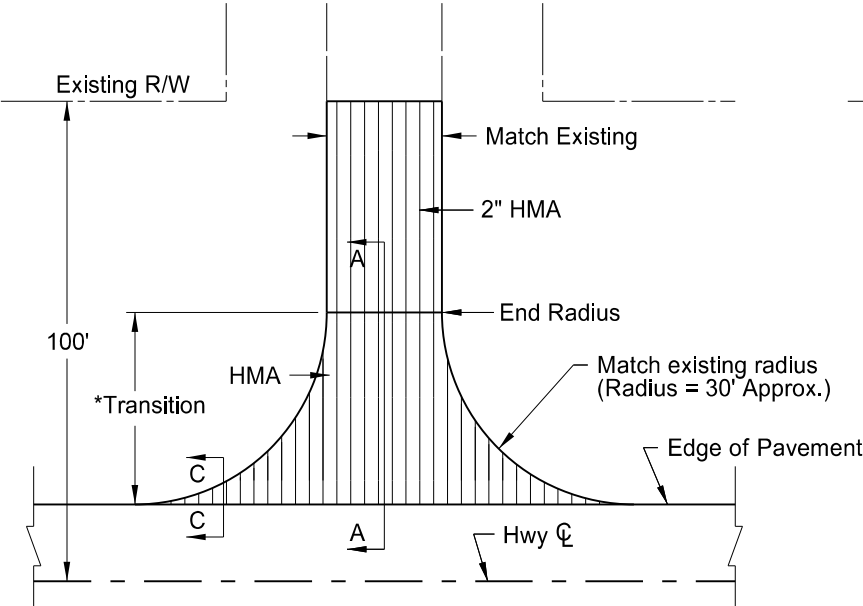
Filter Height - 2"
Under - Seal Gasket

Acceptable Anchor Method: Fasten to inlet casting grate with a UV/Weather Resistant Plastic Cable Zip Ties - 16 to 24 in. Install zip ties at each corner of the inlet near the perimeter and two additional zip ties near the middle of the casting. Punch hole through filter and run cable tie downward around grate and back up to fasten.

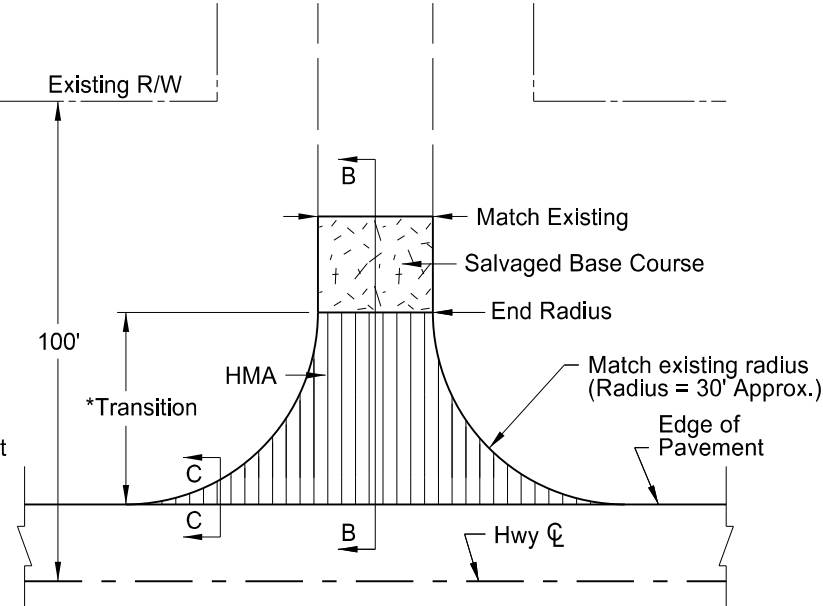
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Inlet Protection Device
US 2

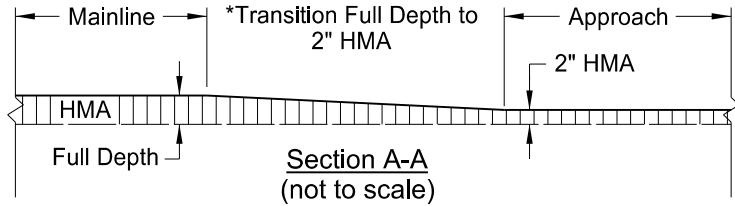
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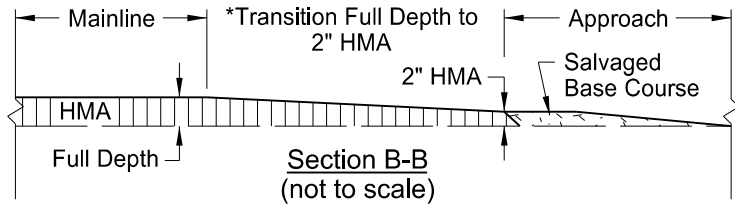
(1) Paved Section Line, County Road, or Street Approach



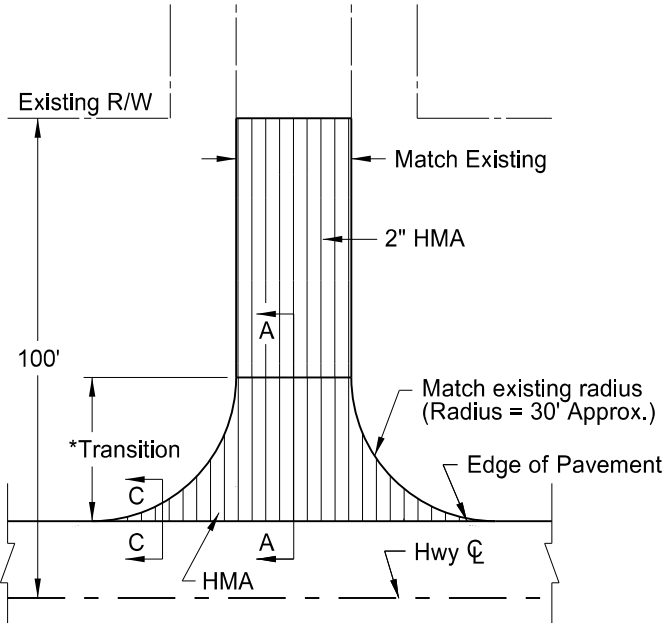
(2) Gravel Section Line, County Road, or Street Approach



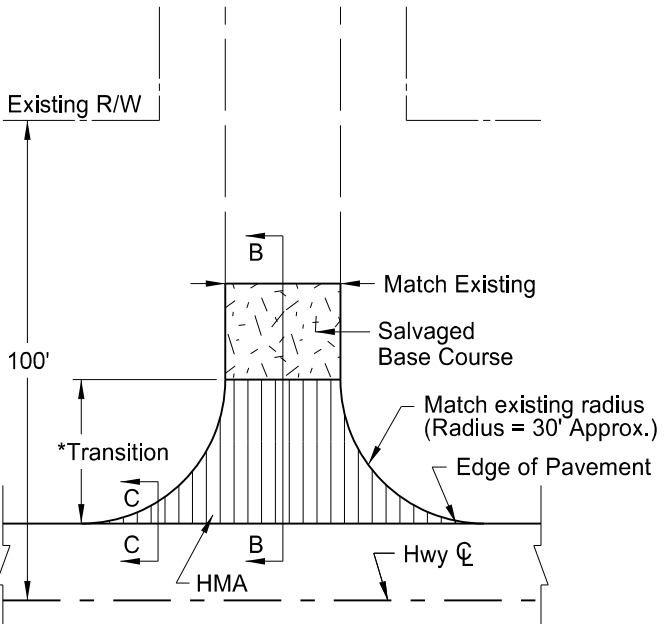
Section A-A
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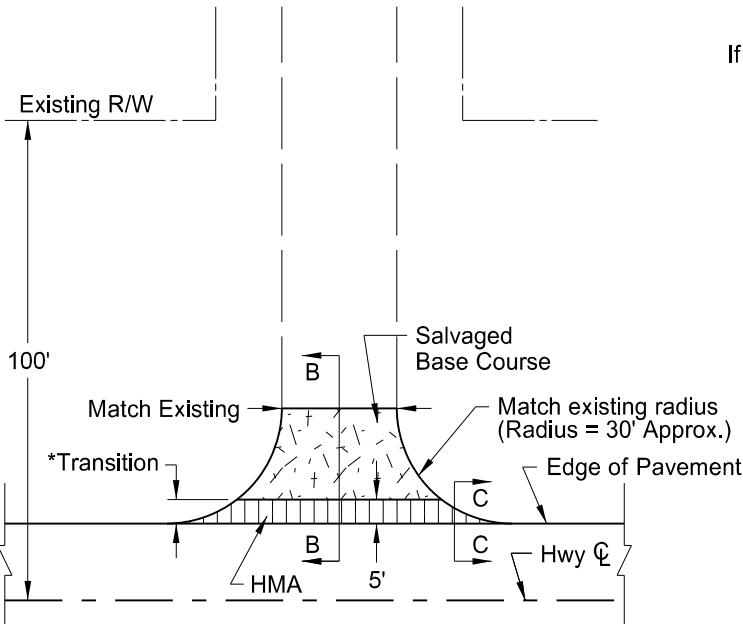
Section B-B
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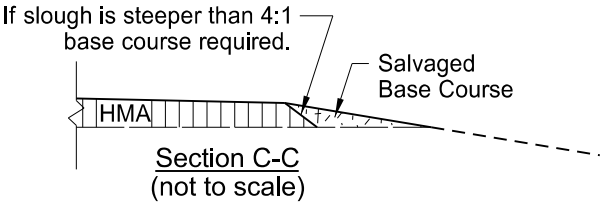
(3) Paved Private Drive Approach



(4) Gravel Private Drive Approach



(5) Field Drive Approach



Section C-C
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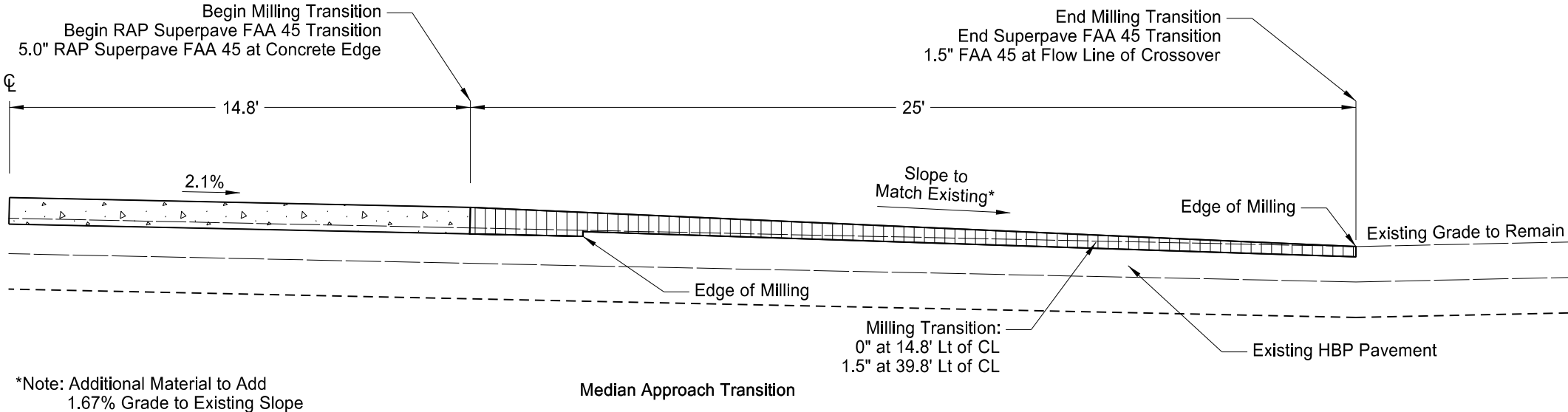
Approach Paving Details

US 2

Notes:

- Actual HMA paving and aggregate base course locations may vary in the field, as approved by the Engineer.
- Quantity totals have been included in the bid items of the "Estimate of Quantities" of the plans. See Section 10 for Individual Approach Quantities.
- Salvaged base course has been provided in the quantities to fill in around the radii. This material will be required when sloughs are steeper than 4:1 (see section C-C)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	20	5

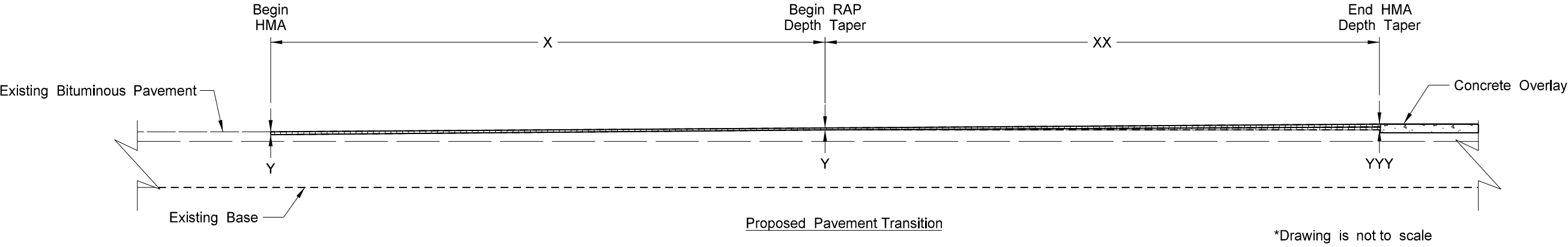
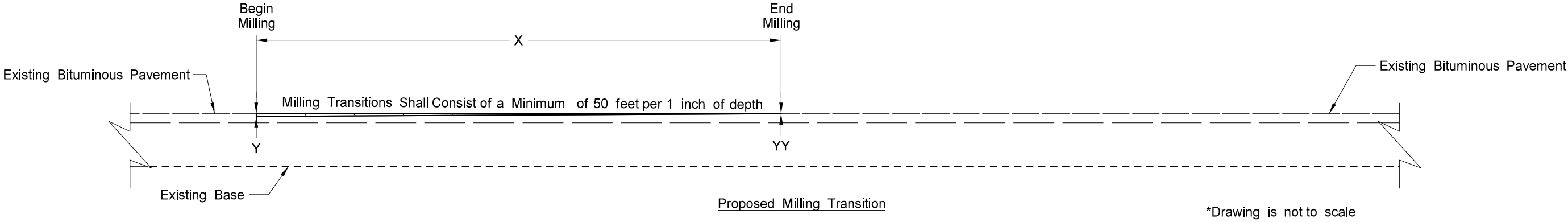


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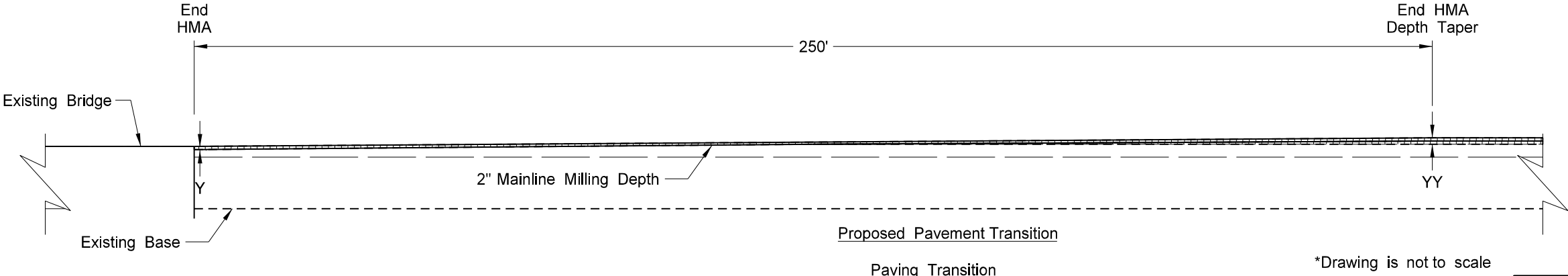
Median Approach Transition
US 2

Milling Transition					
Location	X	Begin Milling Station	Y	YY	End Milling Station
Beginning of Project	125 ft	55+16	2.5 in	0 in	56+41

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	20	6



Paving Transition							
Location	X	Begin Paving Station	Y	YY	XX	YYY	End Paving Station
Beginning of Project	125 ft	55+16	2.5 in	2.5 in	125 ft	5.0 in	57+66

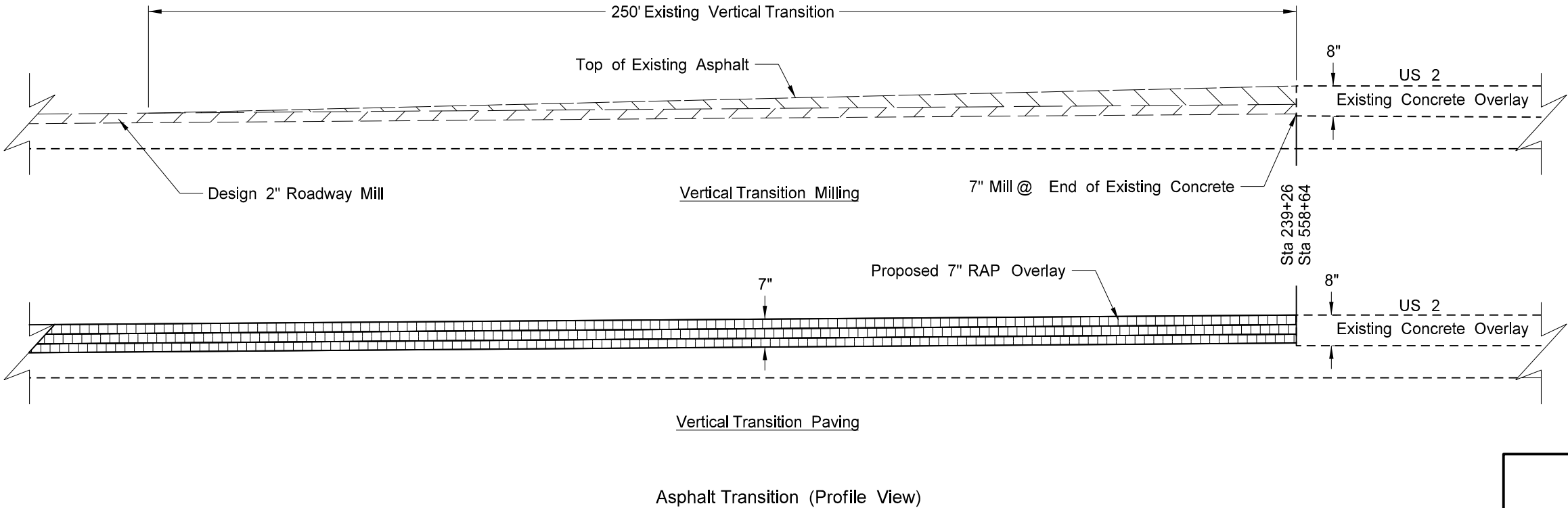
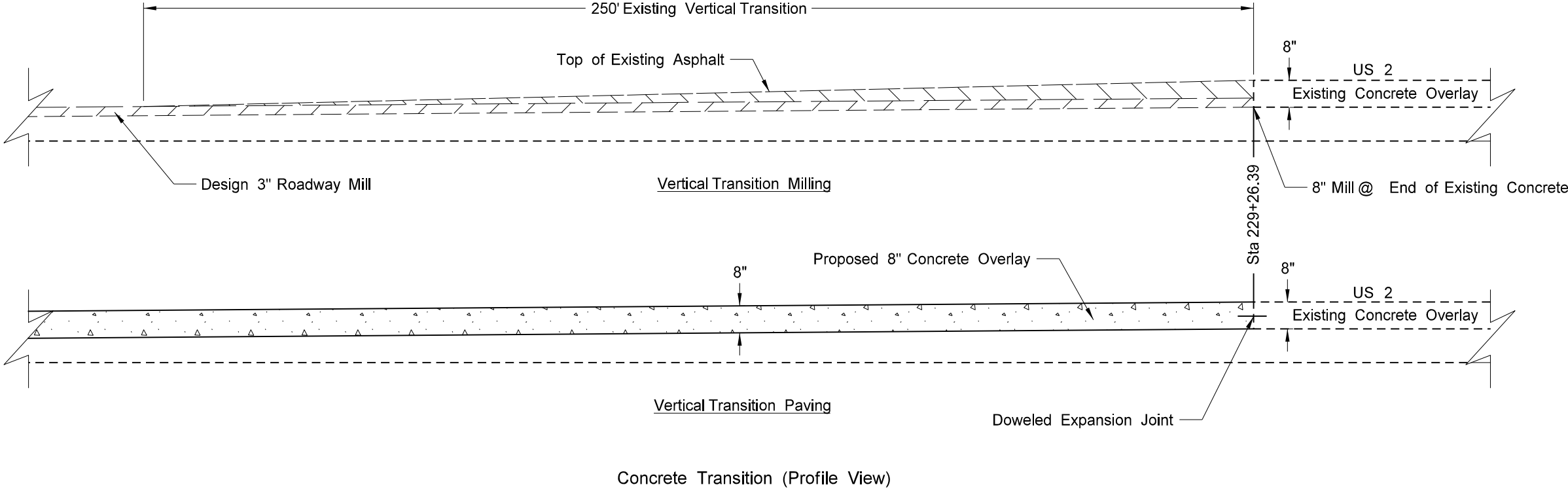


Location	X	Begin Paving Station	Y	YY	End Paving Station
Cow Creek Bridge	250 ft	424+71	2.0 in	7 in	422+21
Cow Creek Bridge	250 ft	425+92	2.0 in	7 in	428+42

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Milling and Paving End Transitions
US 2

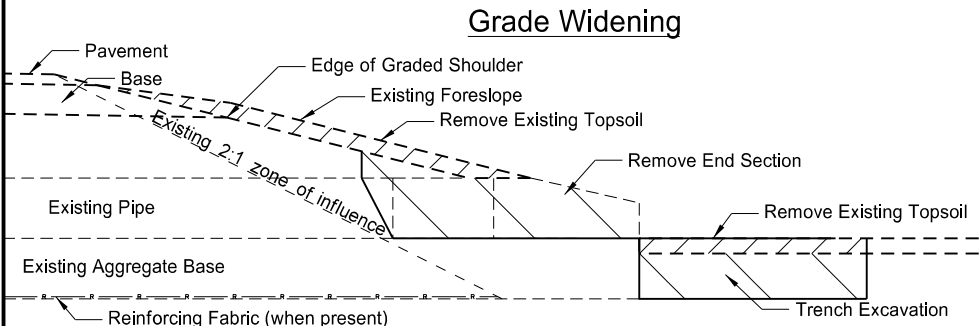
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	20	7



*Drawing is not to scale

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Concrete Connection Detail
US 2



Removal Section

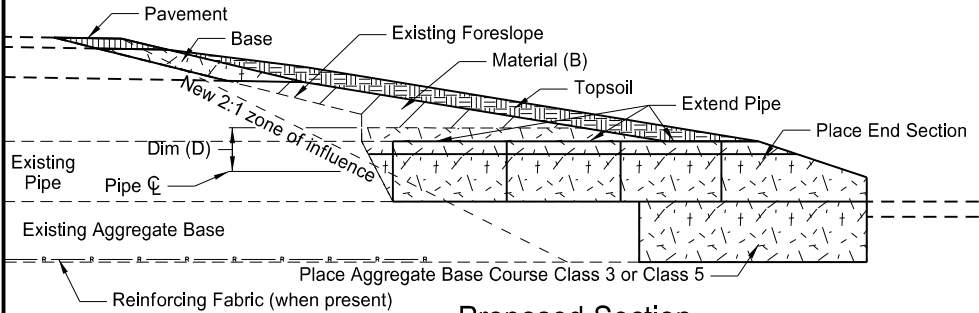
Cross Section View

Pay Items

- 1) Pipe*
- 2) Remove & Relay Pipe - All Types & Sizes (when required)
- 3) Remove & Reset End Section or new End Section
- 4) Borrow Excavation (Compaction Control Type A) or Common Excavation-Type A
- 5) Topsoil
- 6) Seeding
- 7) Mulching

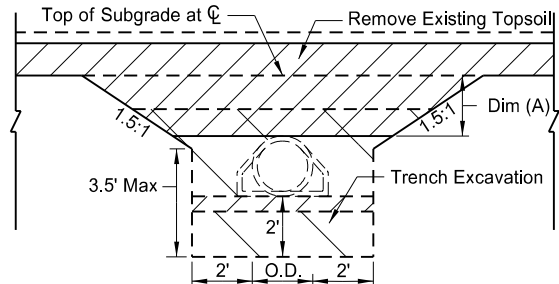
***Included in Pipe Pay Item**

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



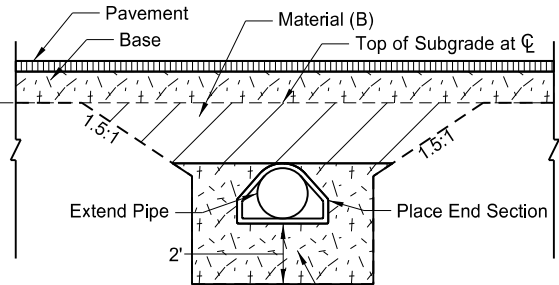
Proposed Section

Cross Section View



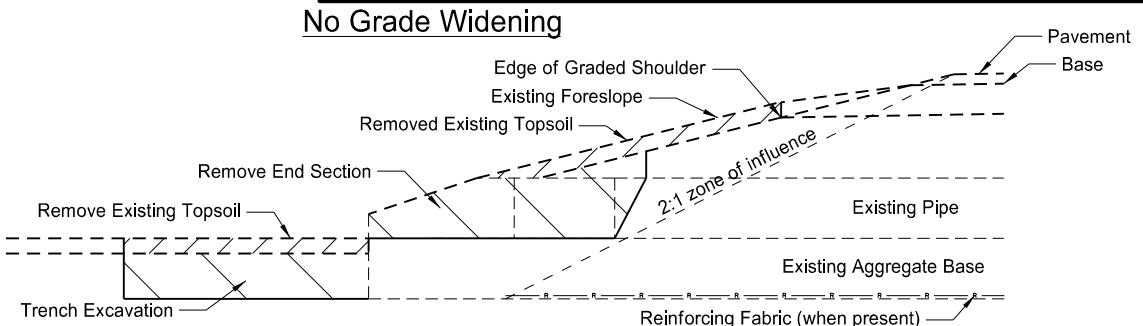
Removal Detail

Side View



Backfill Detail

Side View (Topsoil not shown)



Removal Section

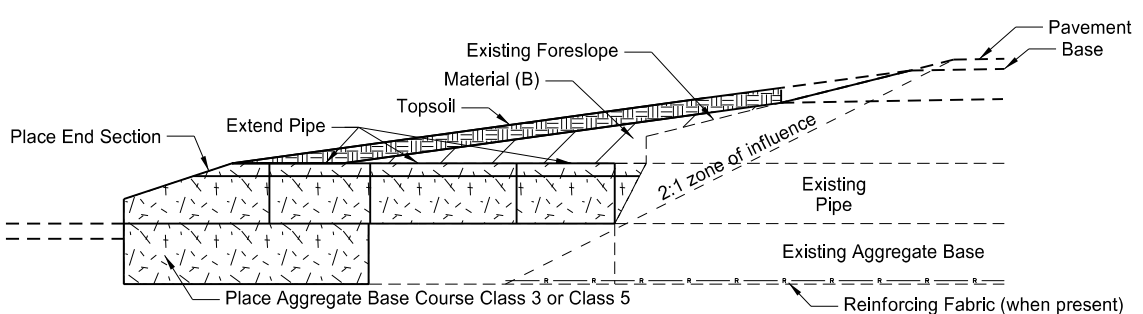
Cross Section View

Pay Items

- 1) Pipe*
- 2) Remove & Reset End Section or Remove End Section and Place New End Section

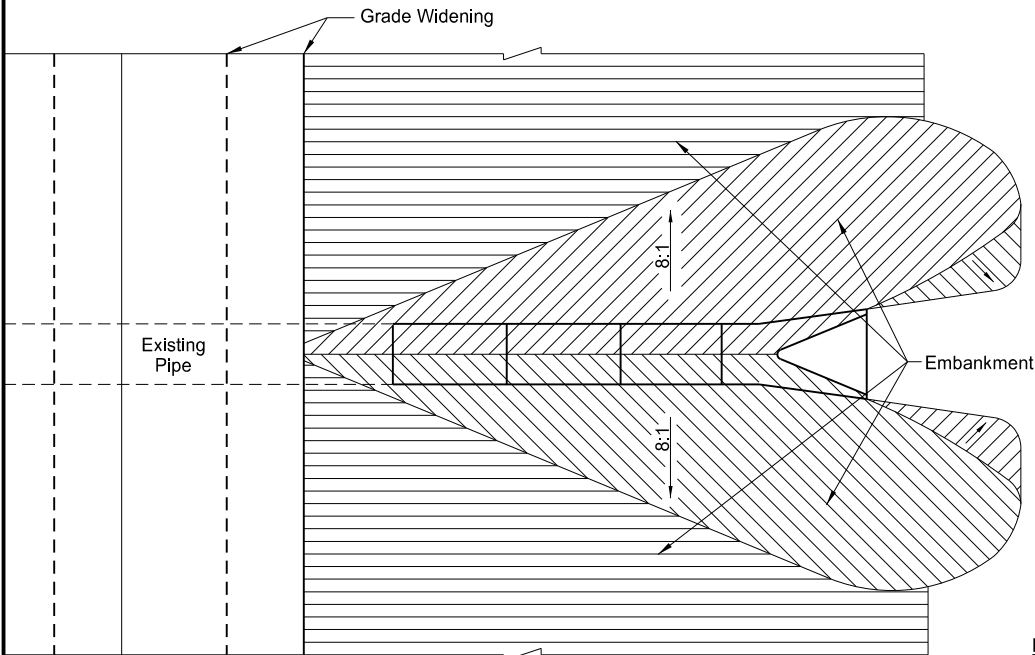
***Included in Pipe Pay Item**

- 1) Pipe
- 2) Trench excavation
- 3) Aggregate Base Course Class 3 or Class 5
- 4) Embankment (Compaction Control Type A)
- 5) Topsoil
- 6) Seeding
- 7) Mulch



Proposed Section

Cross Section View



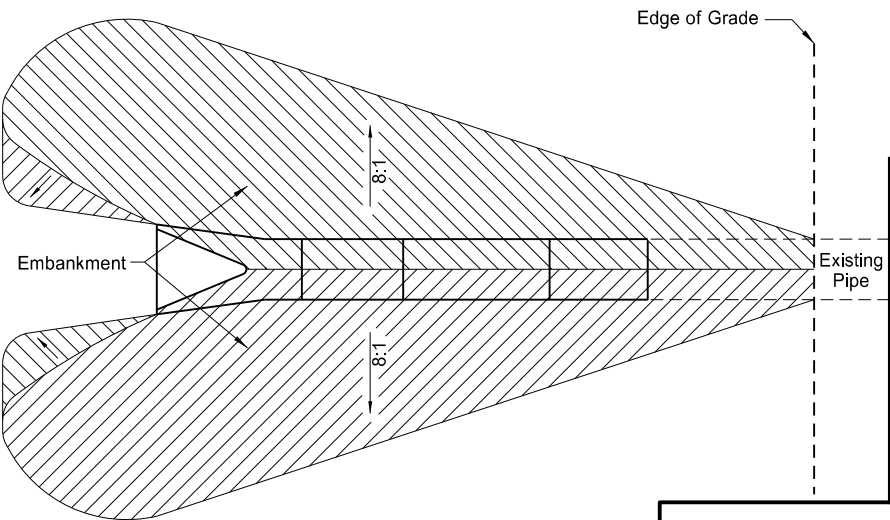
Proposed Section

Plan View

Pipe Materials	Dim (A) <= 4 Feet	Backfill Dimension
Concrete	Material (B)	Dim (D)
Metal and Plastic	Embank or Aggr	0.5 O.D.

Pipe Materials	Dim (A) > 4 Feet	Backfill Dimension
Concrete	Material (B)	Dim (D)
Metal and Plastic	Embankment	0.5 O.D.

- NOTES:**
1. Embankment may be either Borrow Excavation (Compaction Control - Type A) or Common Excavation - Type A.
 2. Aggregate may be either Class 3 or Class 5 Aggregate Base Course.



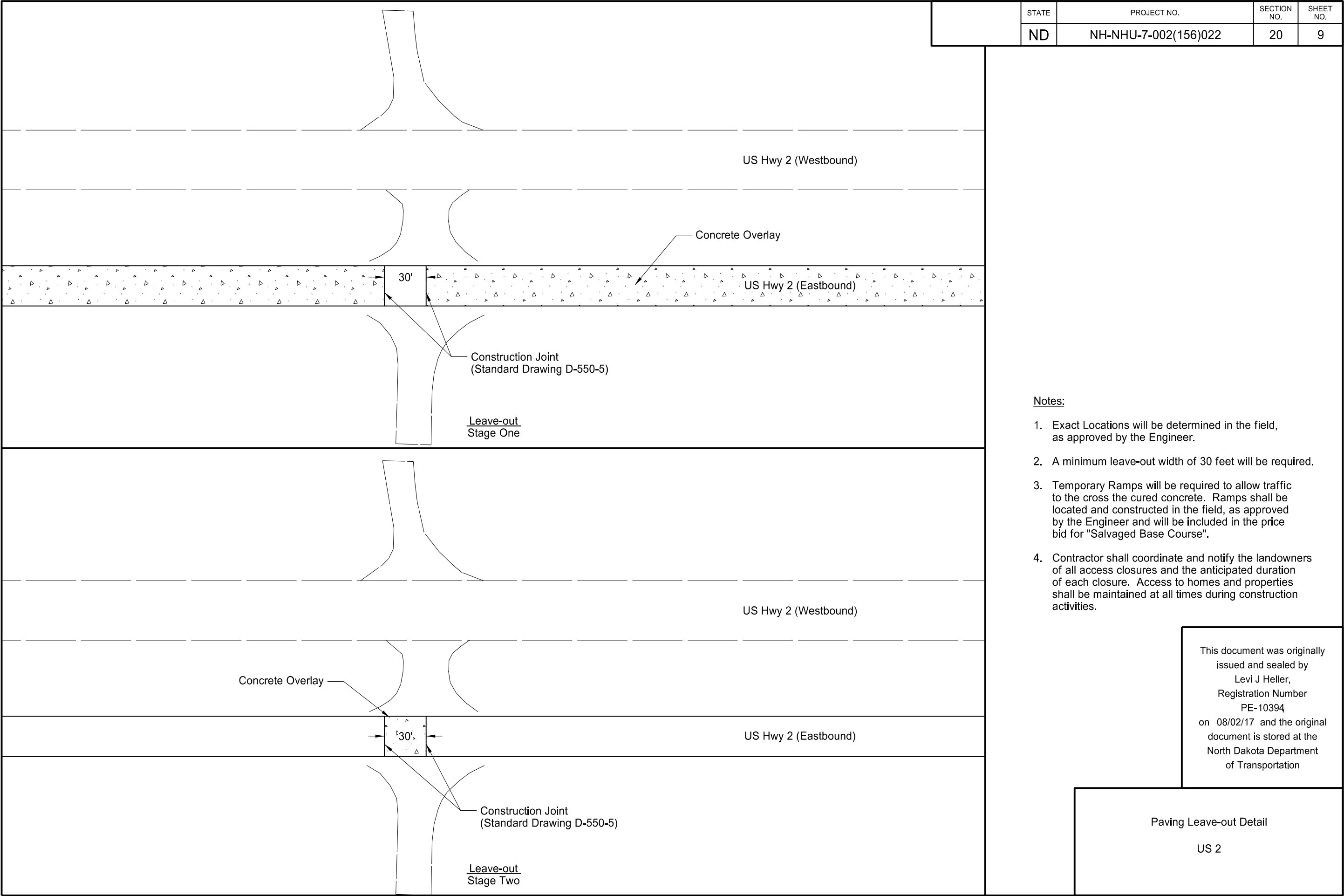
Proposed Section

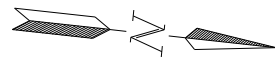
Plan View

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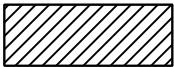
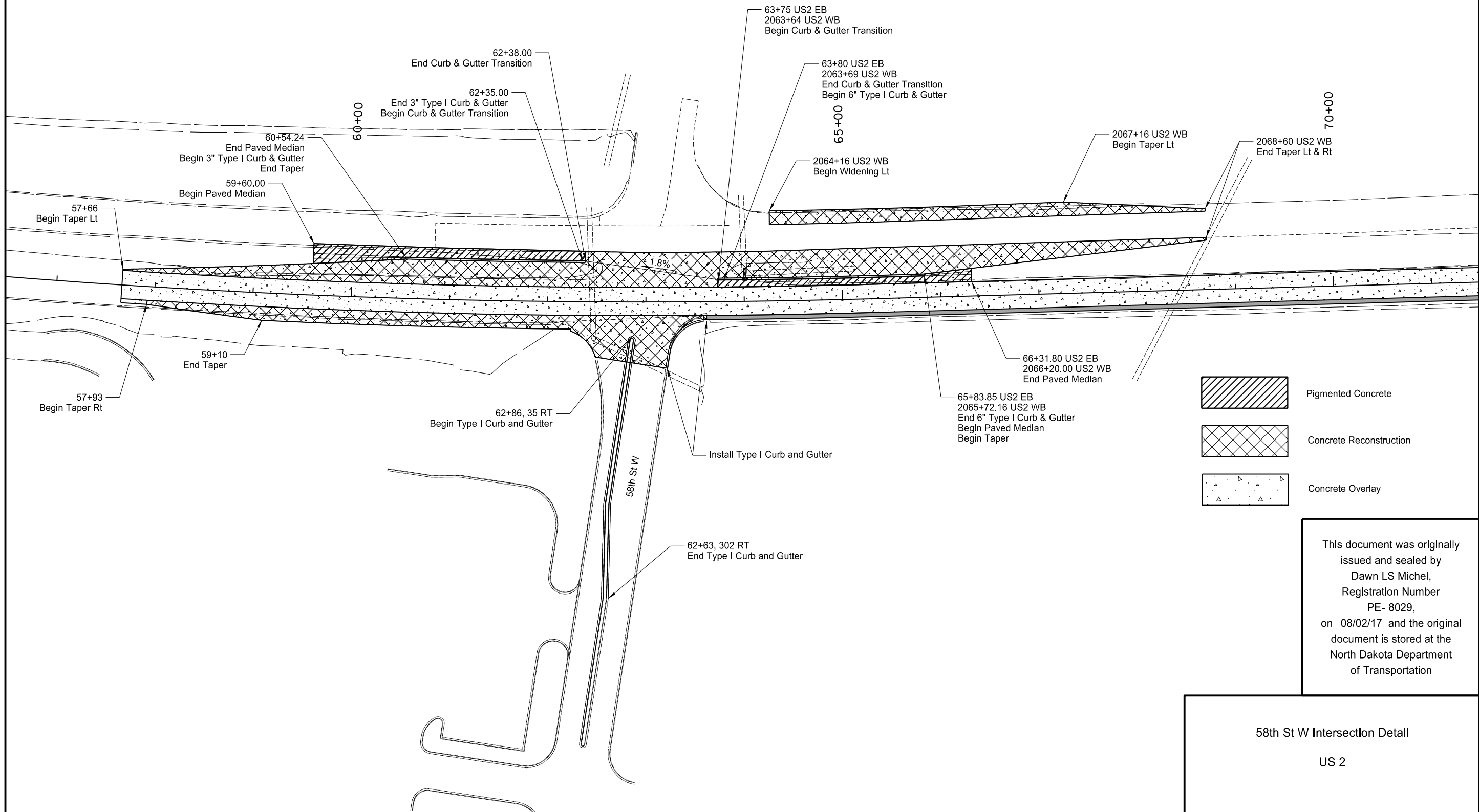
Mainline C Pipe Extension Detail

US 2





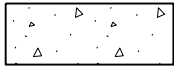
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	20	10



Pigmented Concrete



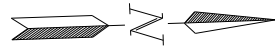
Concrete Reconstruction



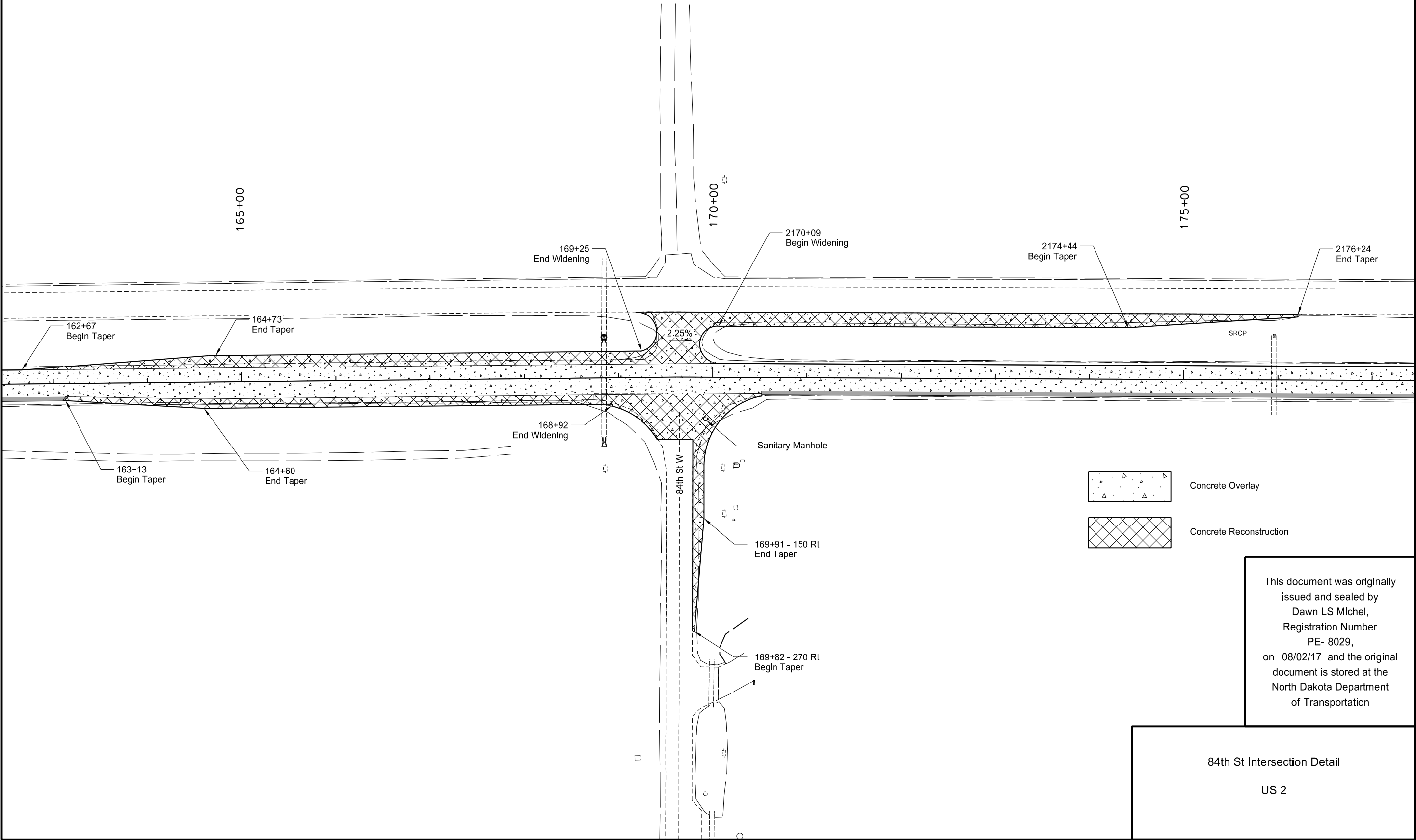
Concrete Overlay



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58th St W Intersection Detail
US 2



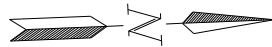
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	20	11



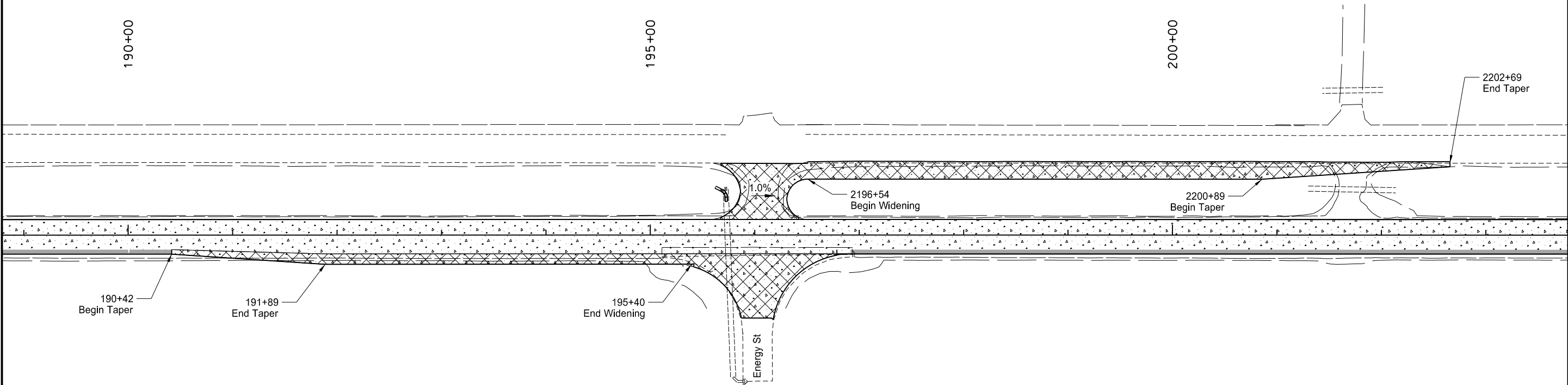
-  Concrete Overlay
-  Concrete Reconstruction

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84th St Intersection Detail
US 2



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	20	12



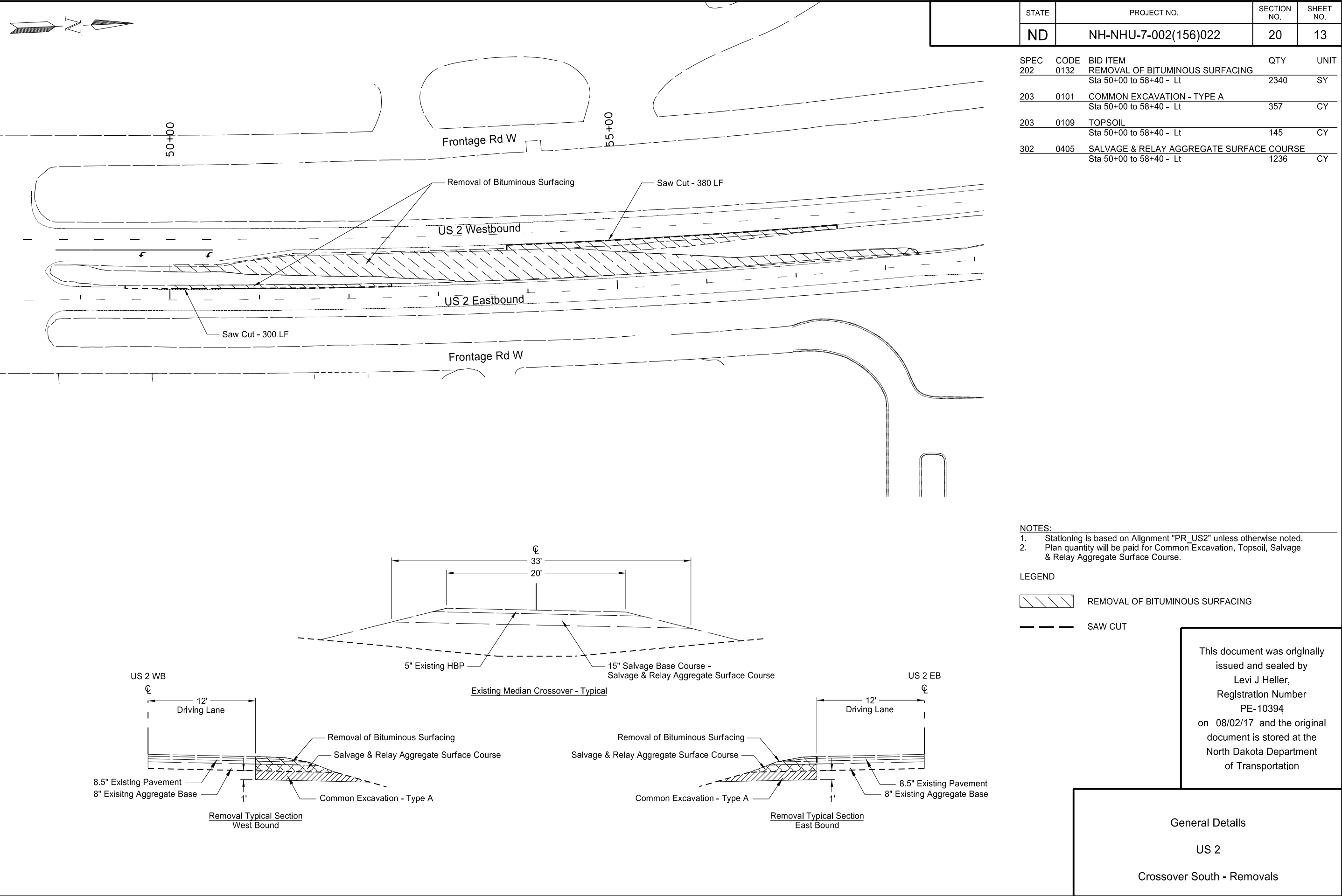
Concrete Overlay

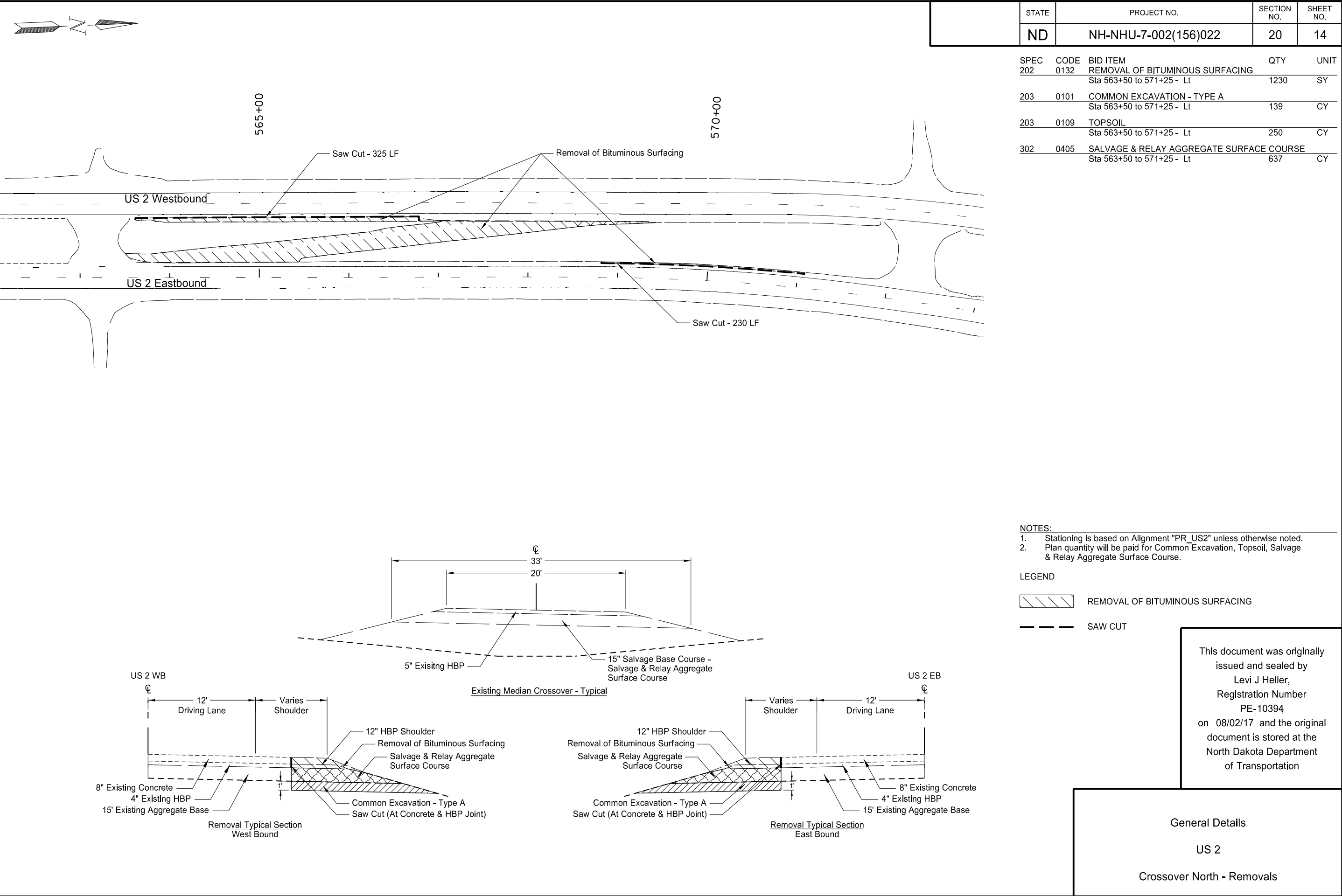


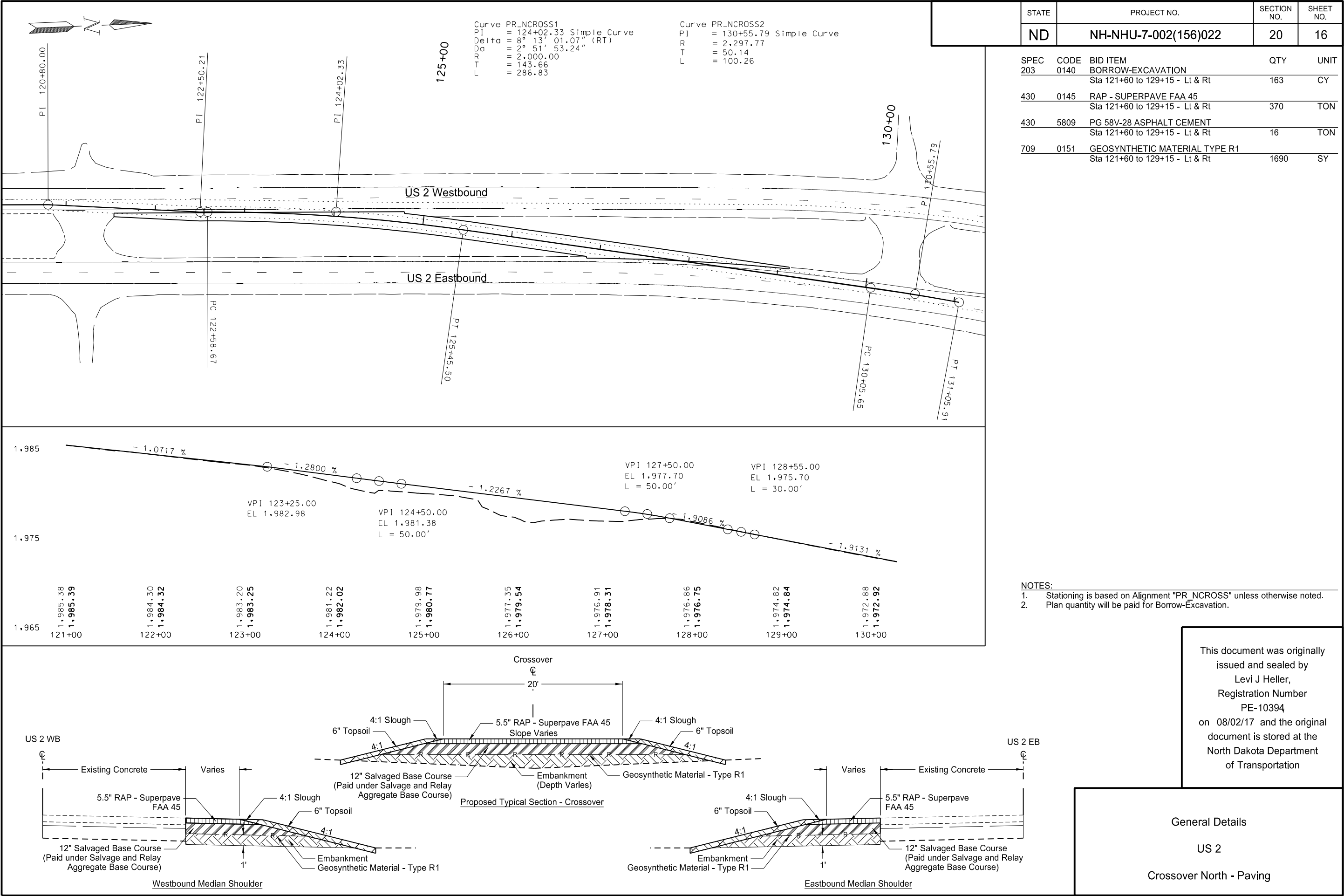
Concrete Reconstruction

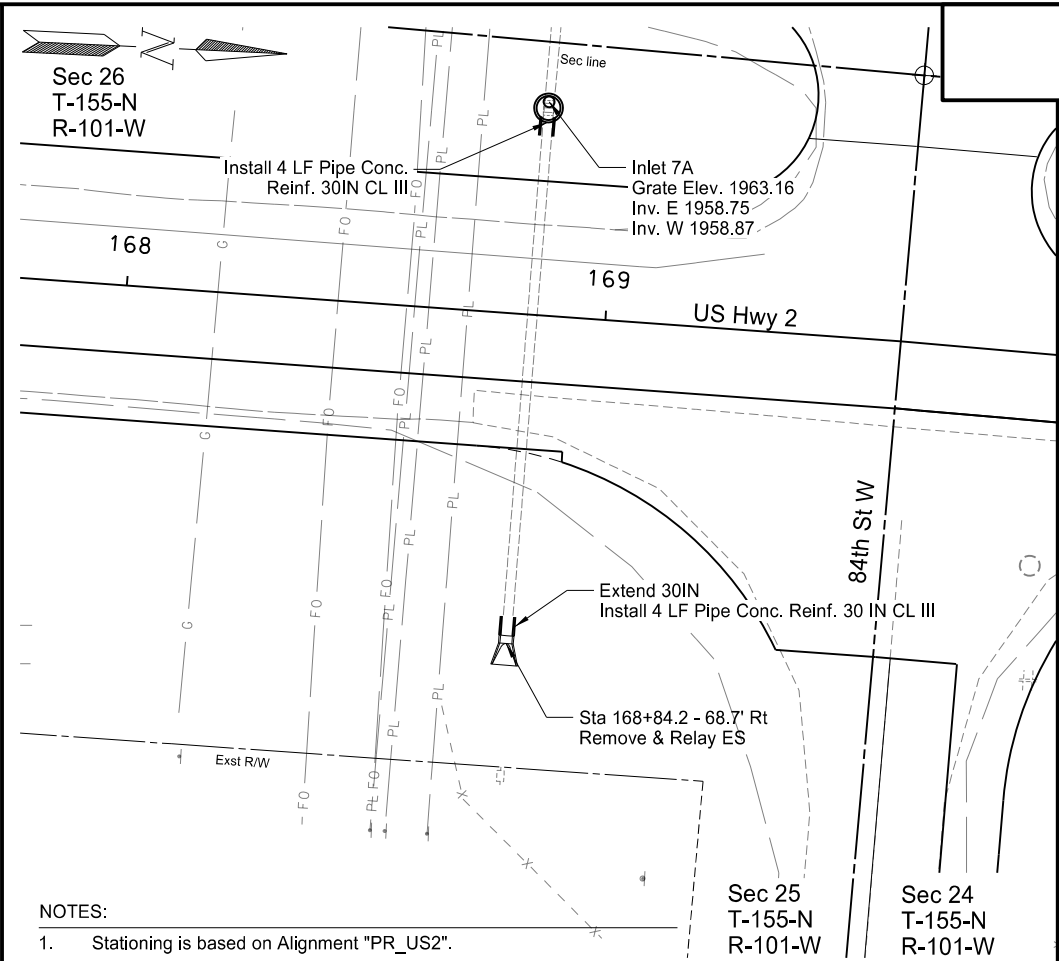
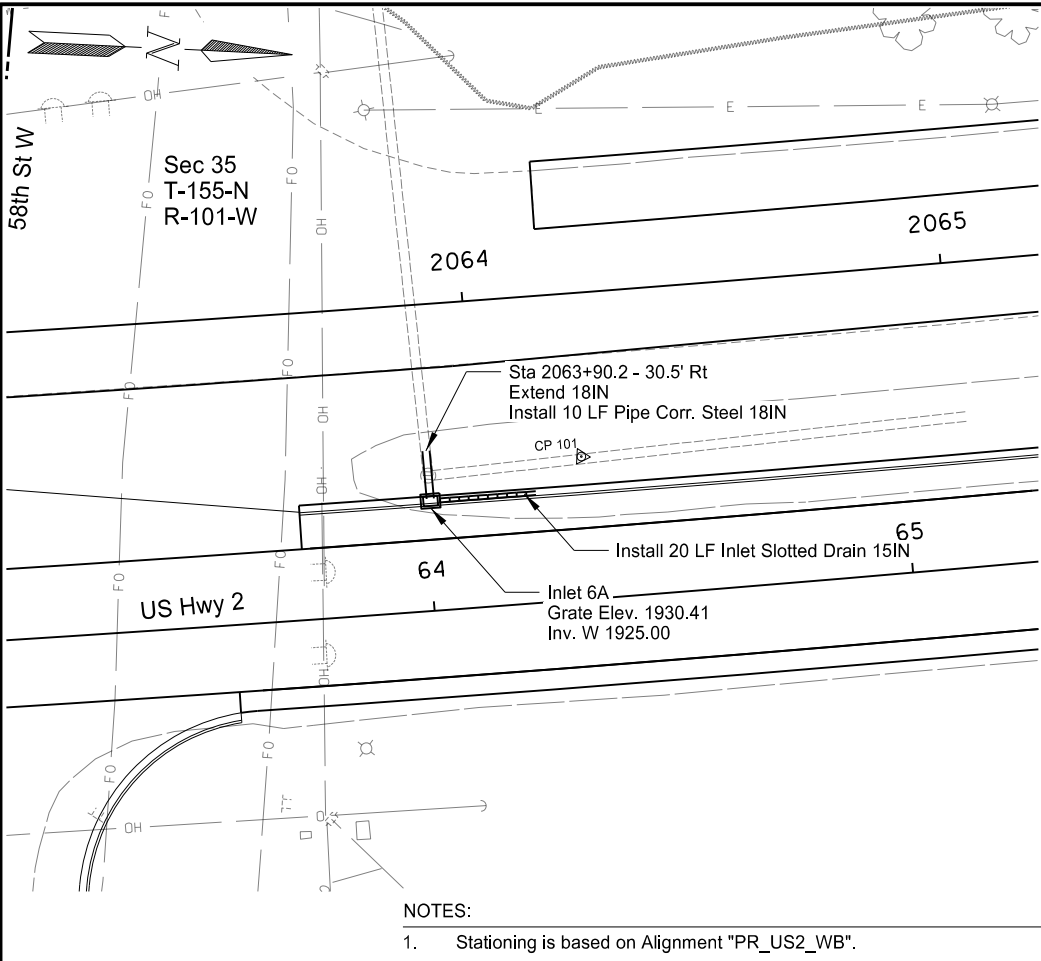
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Energy St Intersection Detail
US 2



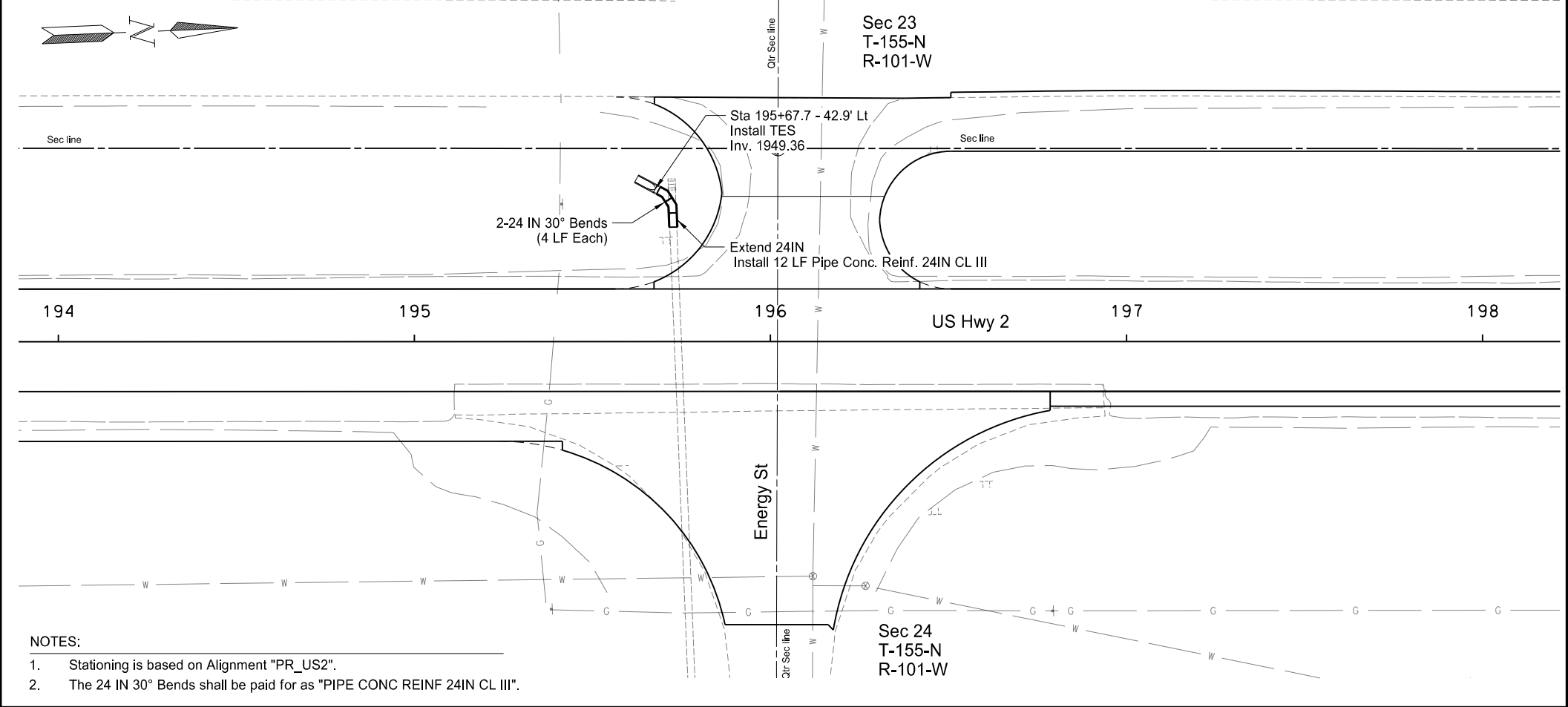






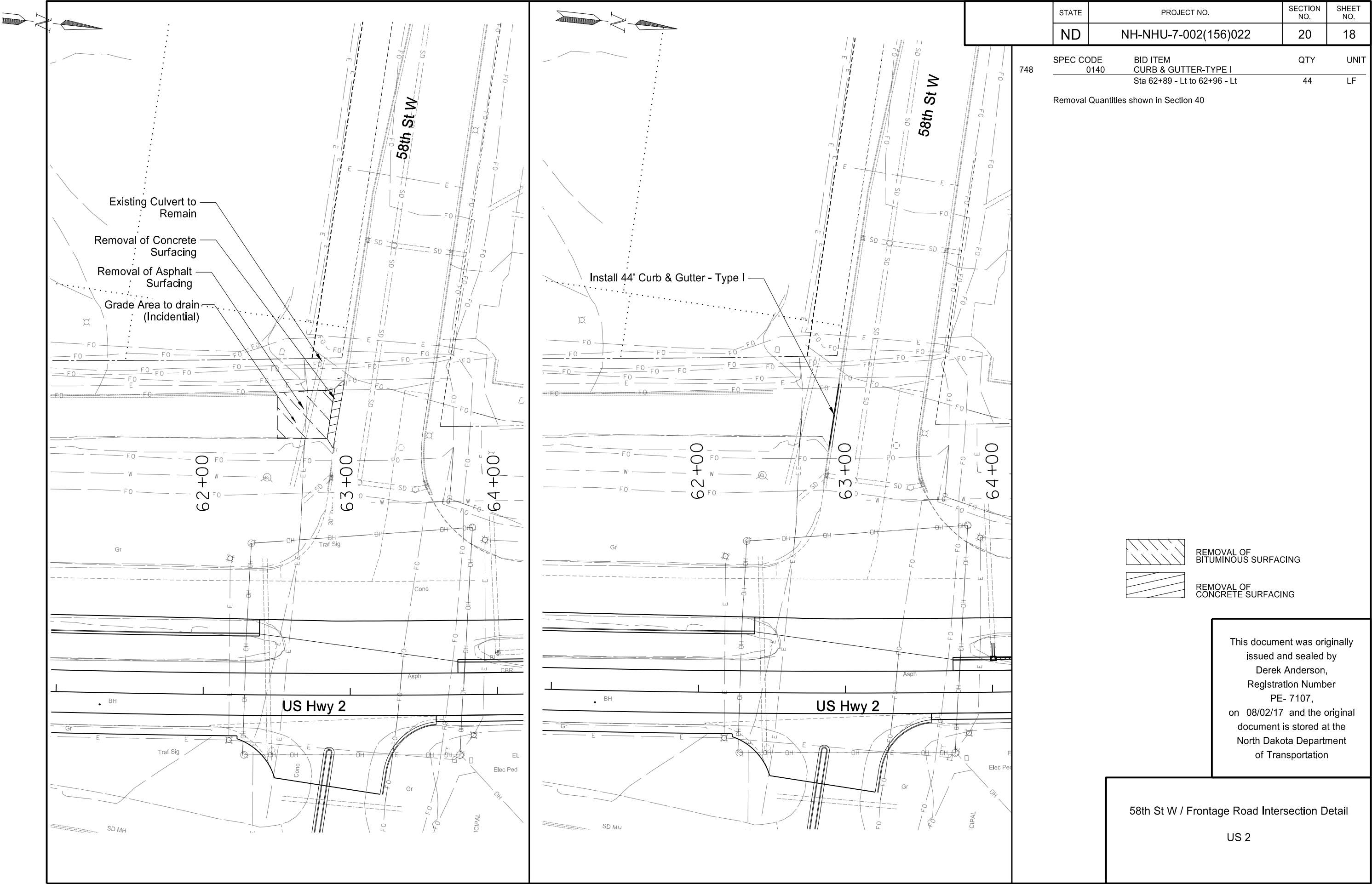
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	20	17

SPEC CODE	BID ITEM	QTY	UNIT
714 0615	PIPE CONC. REINF. 24 IN CL III Sta 195+67.7 - 42.9' Lt to 195+72.7 - 32.2' Lt	12	LF
714 0820	PIPE CONC. REINF. 30 IN CL III Sta 168+84.2 - 63.1' Rt to 168+84.2 - 67.1' Rt Inlet 7A to 168+84.9 - 37.3' Lt	4 4	LF LF
714 3023	END SECT-TRAVERSABLE REINF. CONC. 24IN Sta 195+67.7 - 42.9' Lt	1	EA
714 5015	PIPE CORR STEEL 0.064 IN 18 IN Sta 2063+90.2 - 30.5' Rt to Inlet 6A	10	LF
714 9660	REMOVE AND RELAY END SECTIONS - ALL TYPES & SIZES Sta 168+84.2 - 68.7' Rt	1	EA
722 3510	INLET - TYPE 2 Inlet 6A	1	EA
722 3800	INLET SPECIAL CATCH BASIN - TYPE A 60IN Inlet 7A	1	EA
722 3910	INLET SLOTTED DRAIN 15 IN Inlet 6A to Sta 2064+12.3 - 41.0' Rt	20	LF

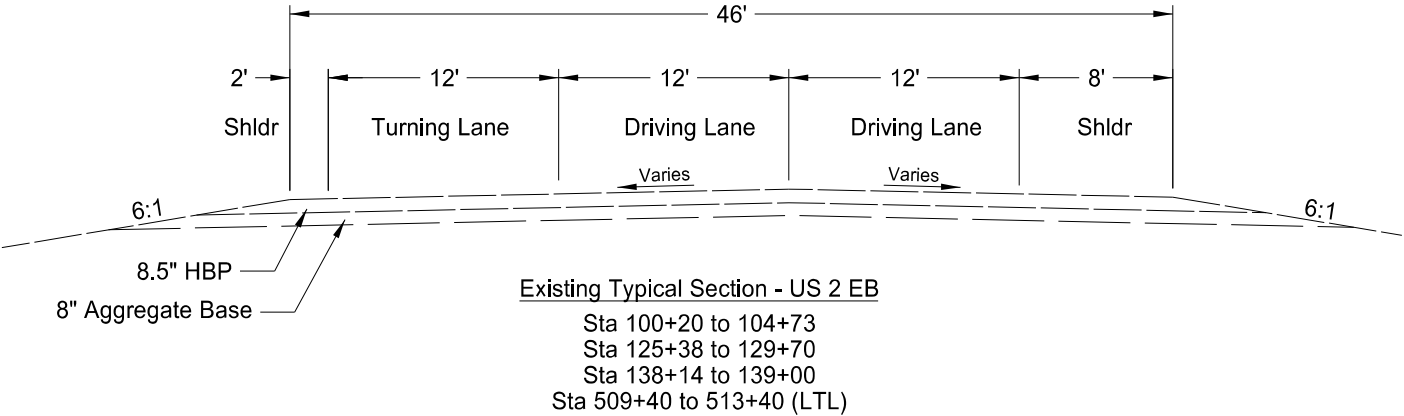
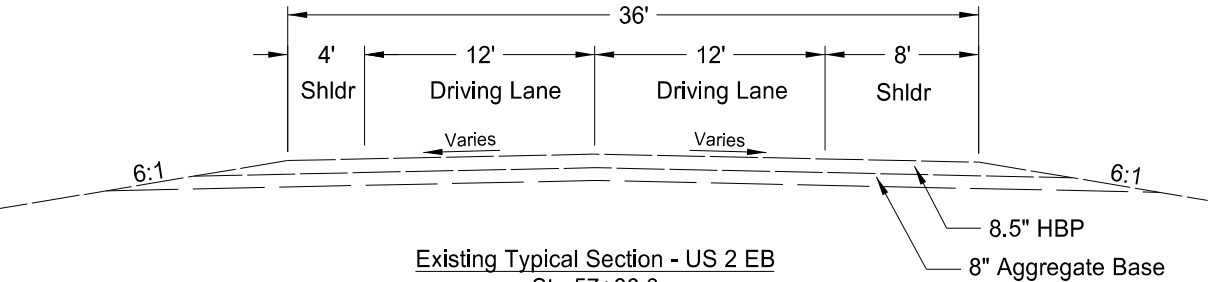
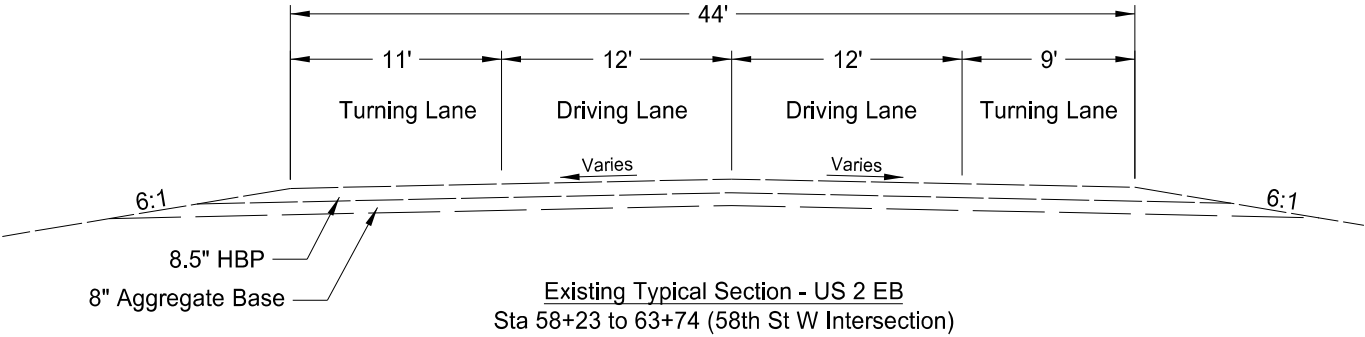


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Pipe Extension Details
US 2
58th St W, 56th St NW & Energy St



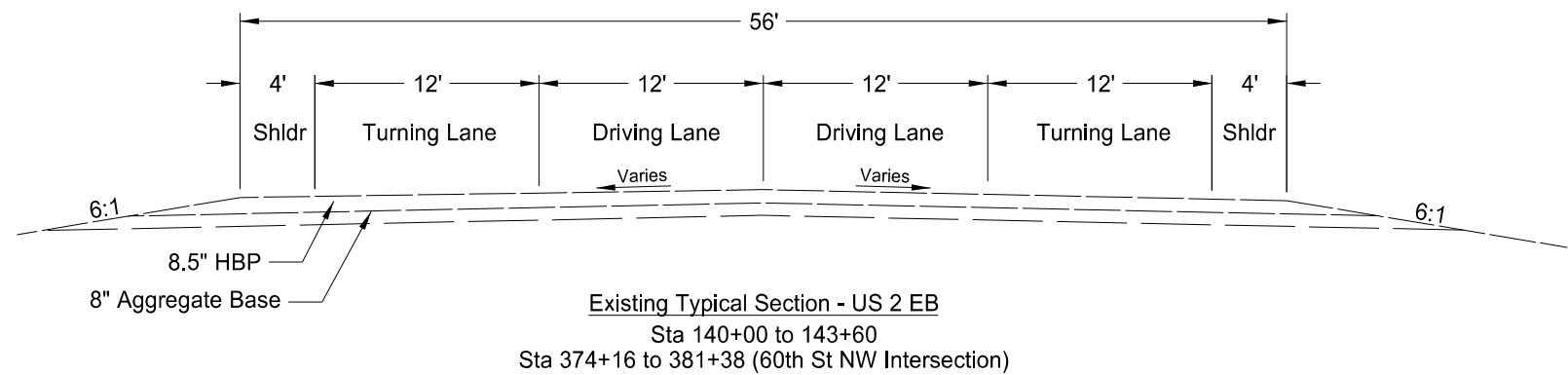
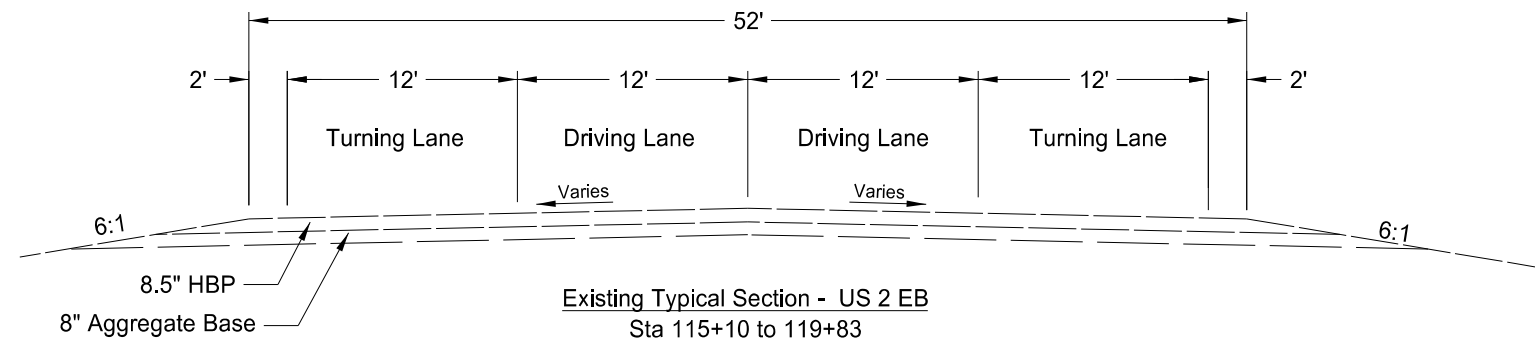
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	30	1



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Existing Typical Sections
US 2

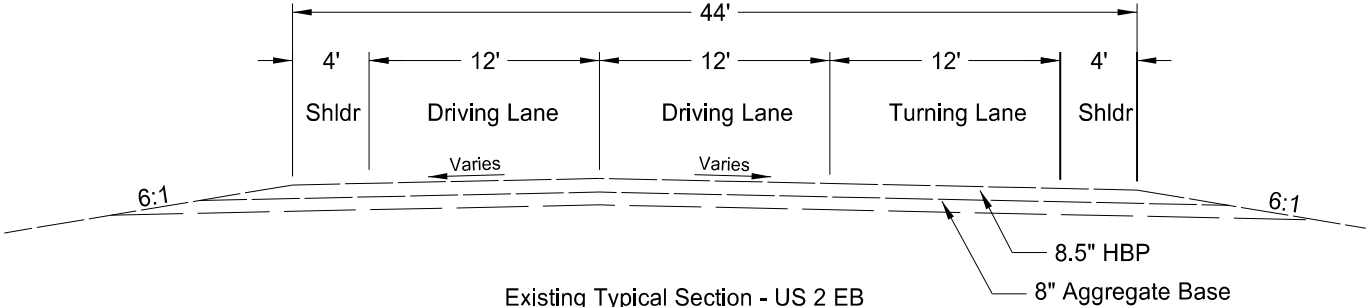
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	ND	NH-NHU-7-002(156)022	30	2



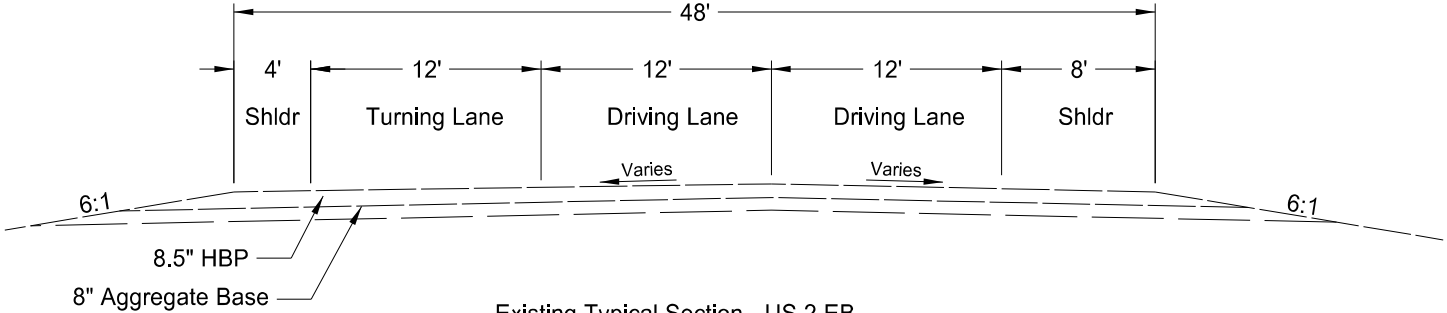
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Existing Typical Sections
US 2

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	30	3



Existing Typical Section - US 2 EB
Sta 165+40 to 169+67 (84th St W Intersection)
Sta 275+53 to 320+10 (58th St NW Intersection)
Sta 321+32 to 328+31 (59th St NW Intersection)
Sta 482+50 to 486+88 (62nd St NW Intersection)
Sta 535+57 to 539+96 (63rd St NW Intersection)



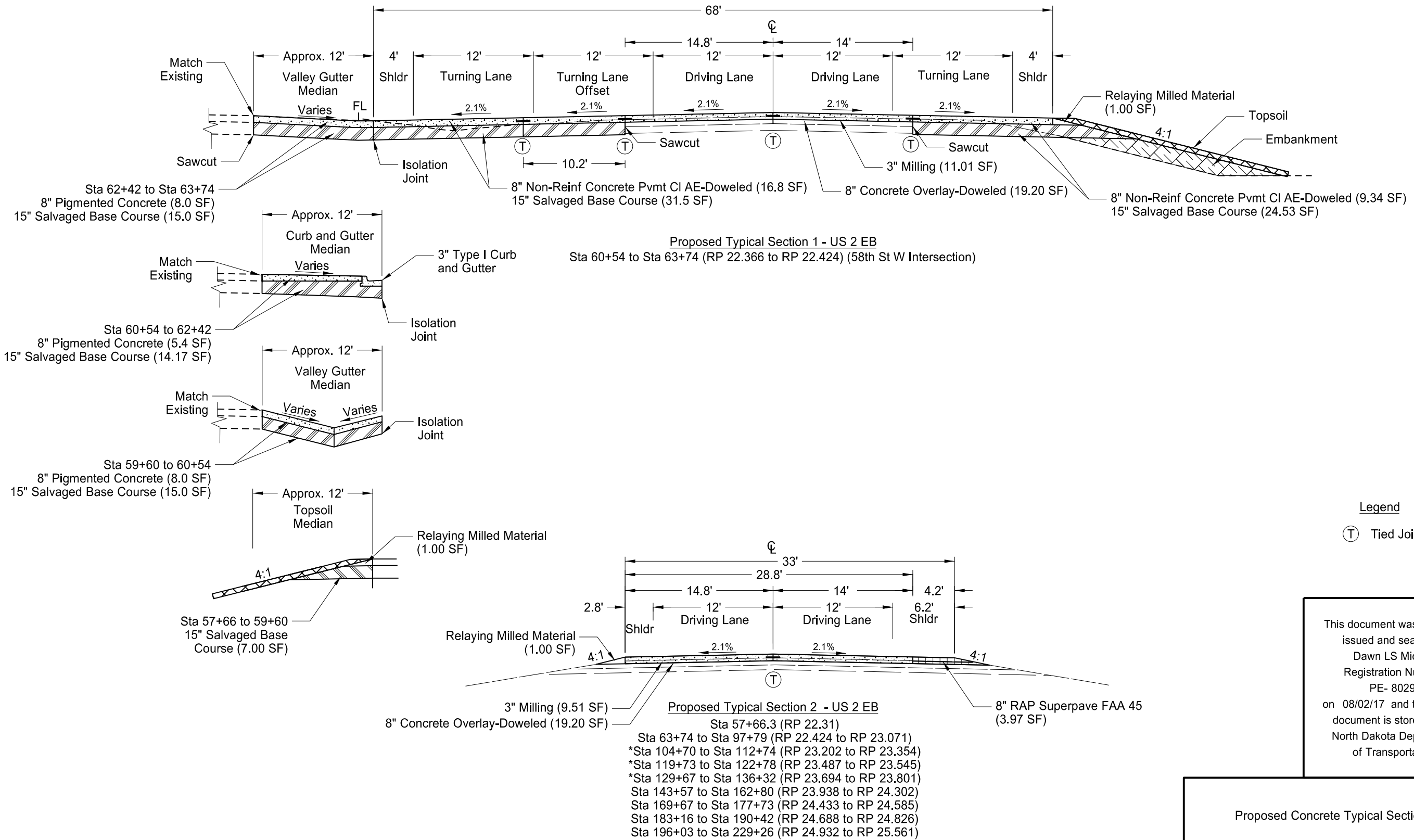
Existing Typical Section - US 2 EB
Sta 359+25 to 367+54
Sta 526+00 to 530+70

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Existing Typical Sections
US 2

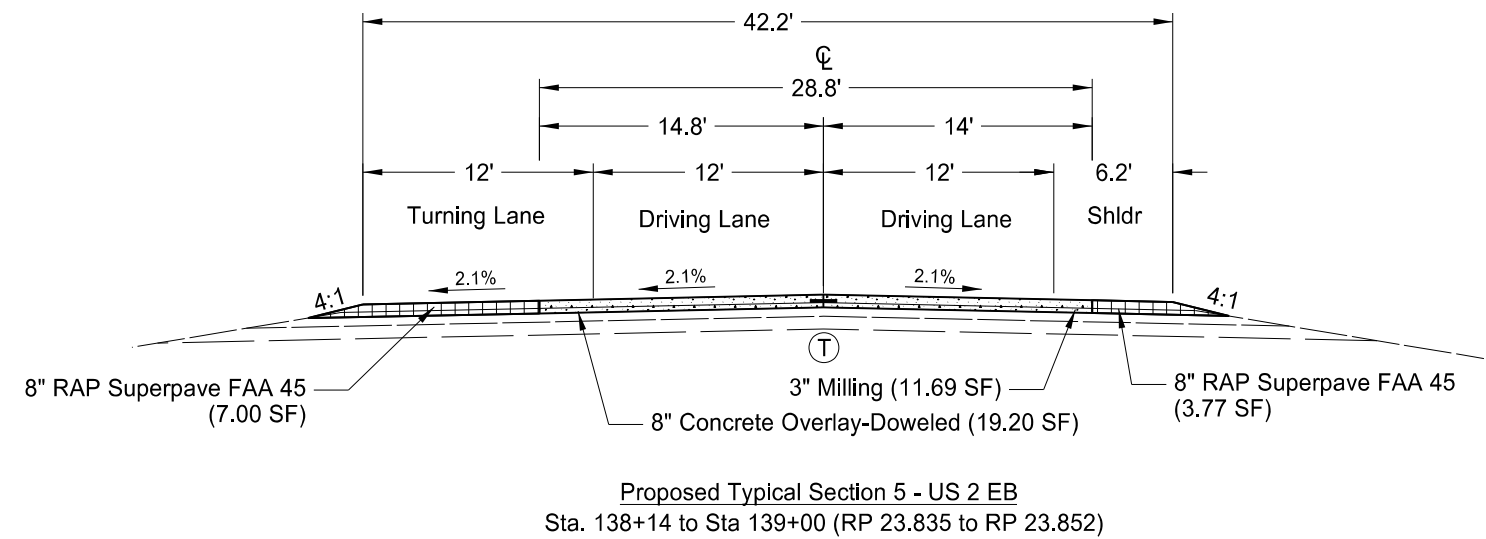
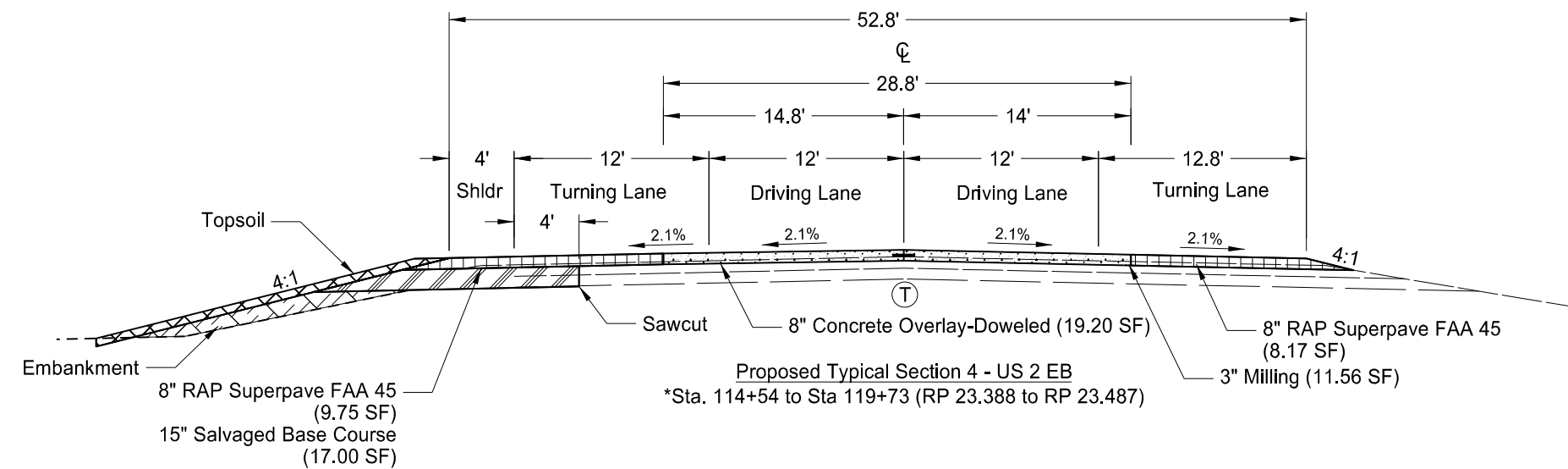
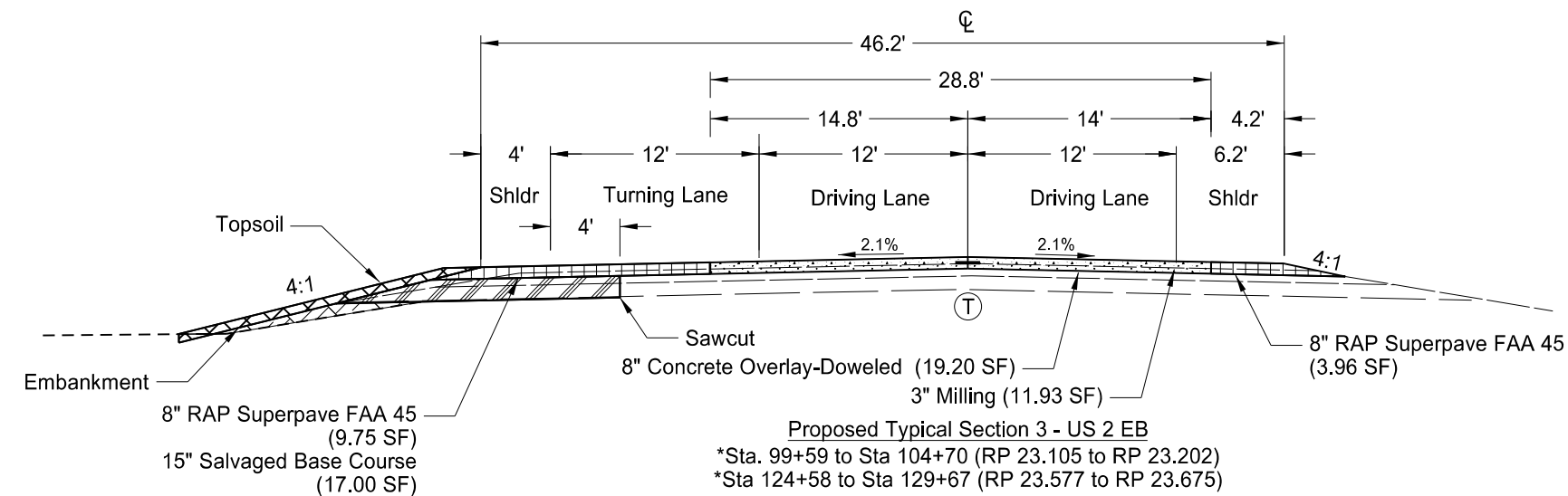
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	30	4

Note: * See Section 20 for Superelevation Details



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	30	5

Note: * See Section 20 for Superelevation Details



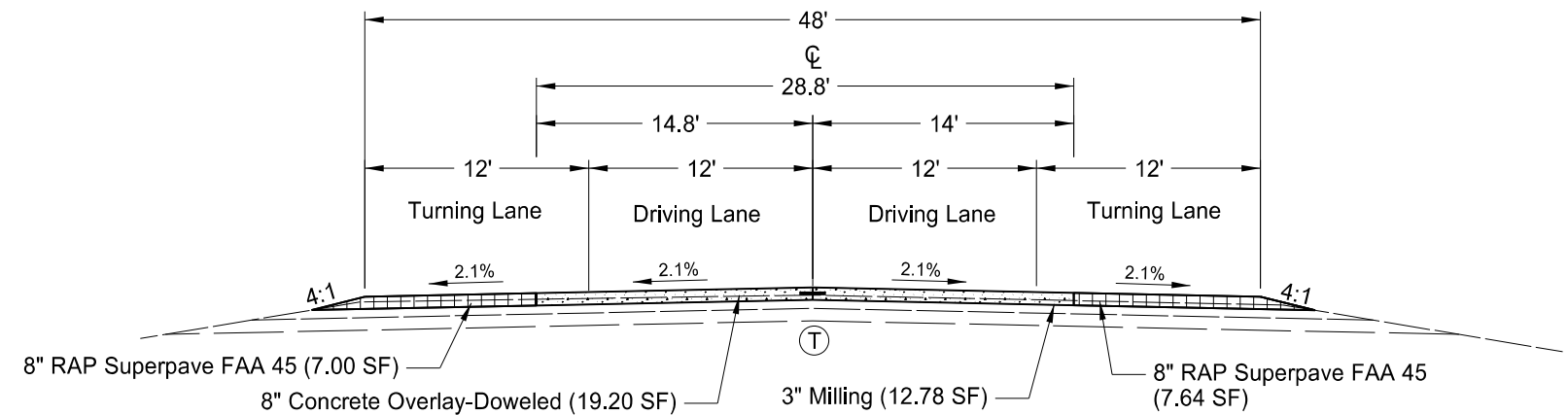
Legend

Ⓣ Tied Joint

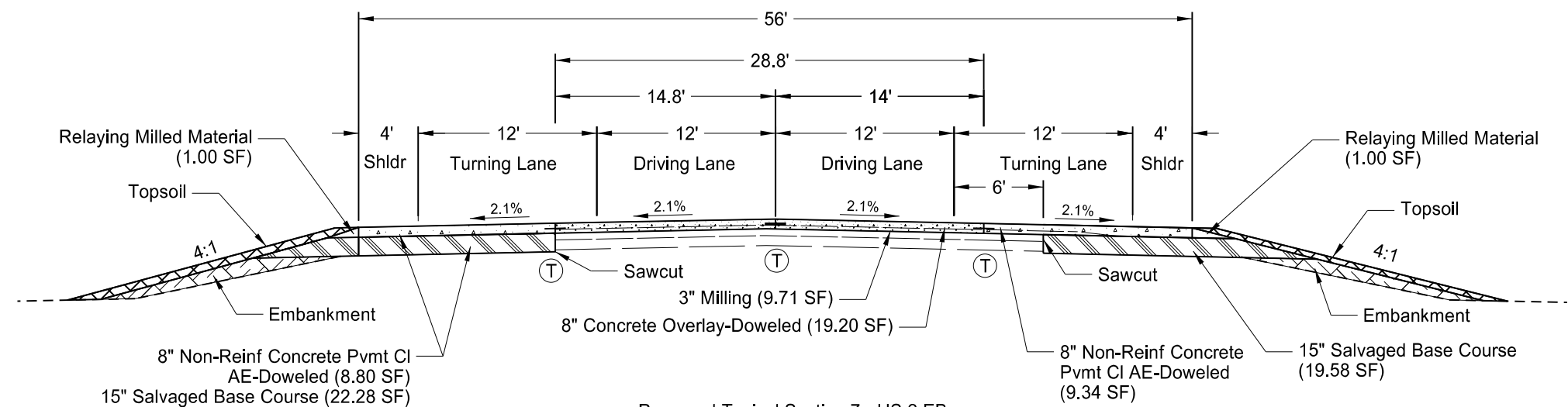
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Proposed Concrete Typical Sections
US 2

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	30	6



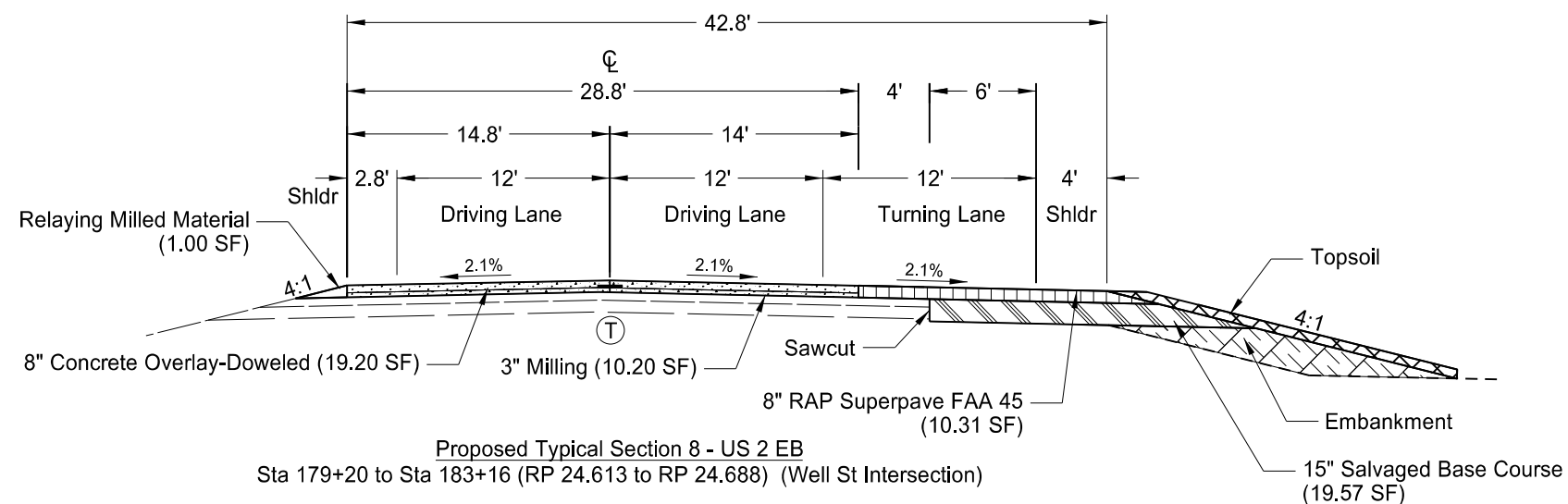
Proposed Typical Section 6 - US 2 EB
Sta. 140+00 to Sta 143+57 (RP 23.838 to RP 23.936)



Proposed Typical Section 7 - US 2 EB
Sta 164+60 to Sta 169+67 (RP 24.337 to RP 24.433) (84th St W Intersection)

Legend

Ⓣ Tied Joint

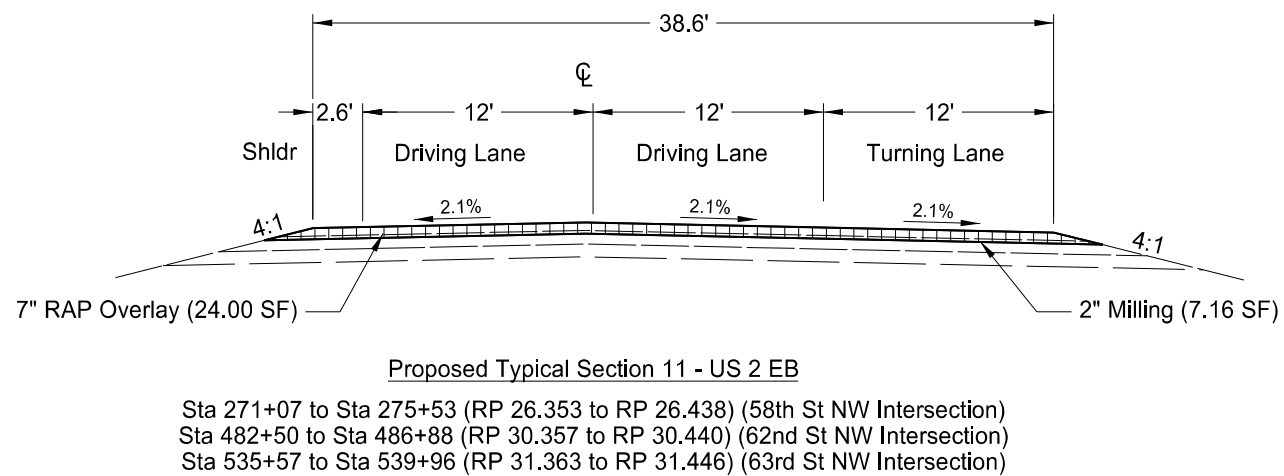
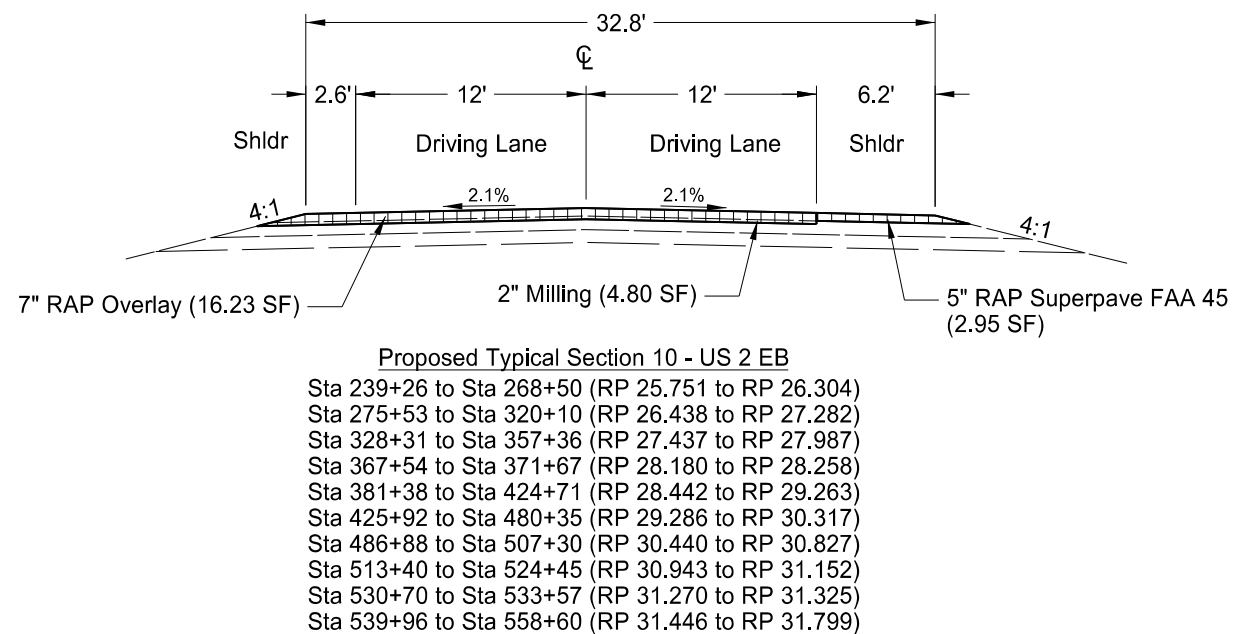
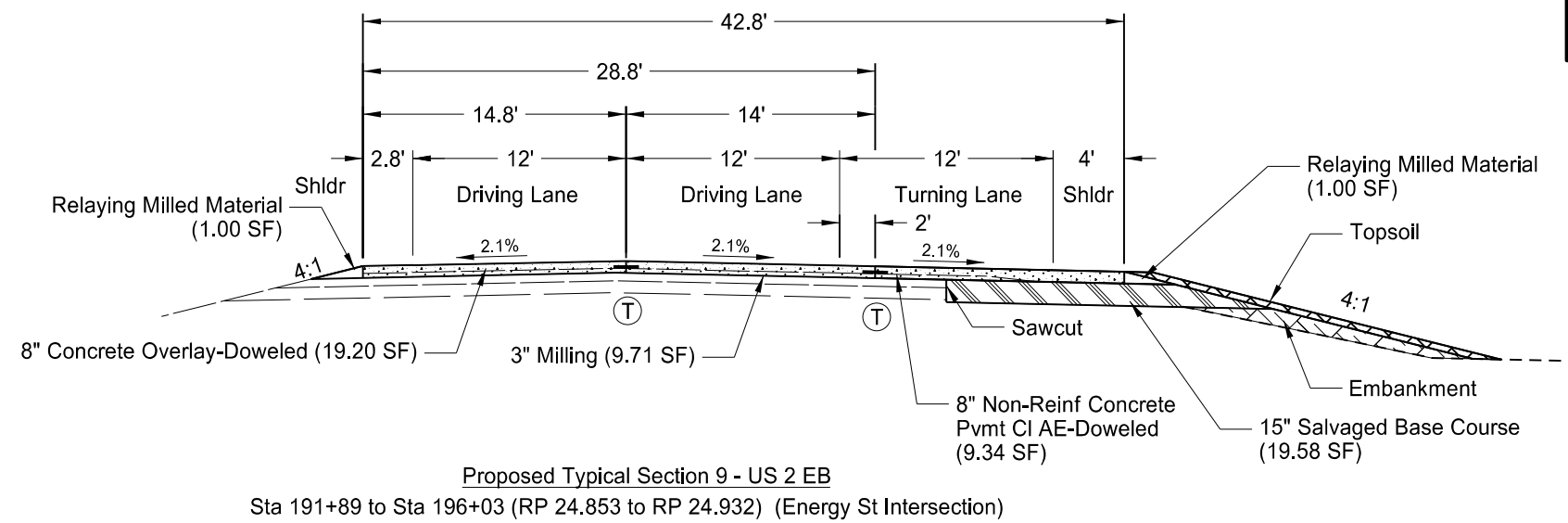


Proposed Typical Section 8 - US 2 EB
Sta 179+20 to Sta 183+16 (RP 24.613 to RP 24.688) (Well St Intersection)

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Proposed Concrete Typical Sections
US 2

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	30	7

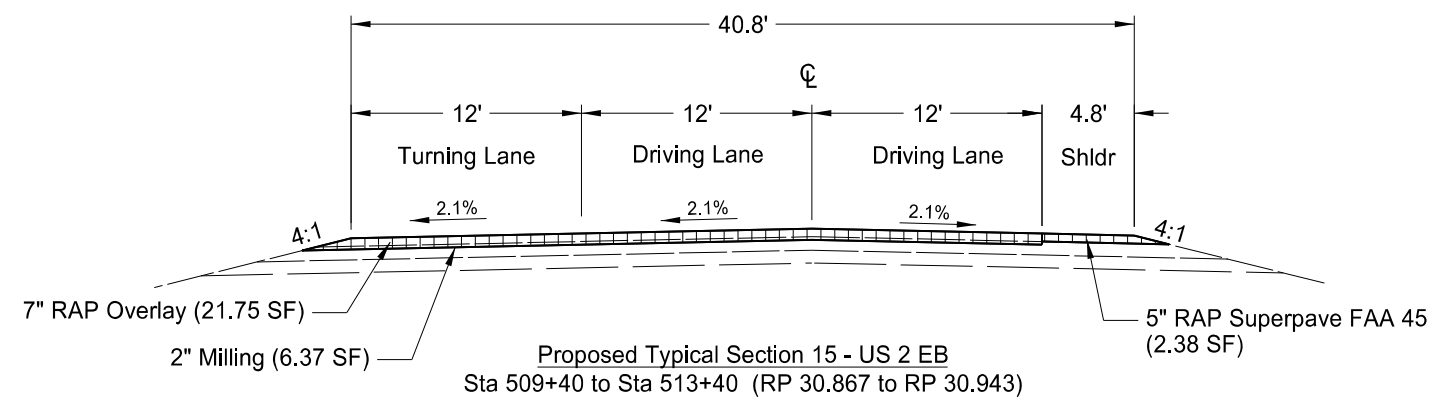
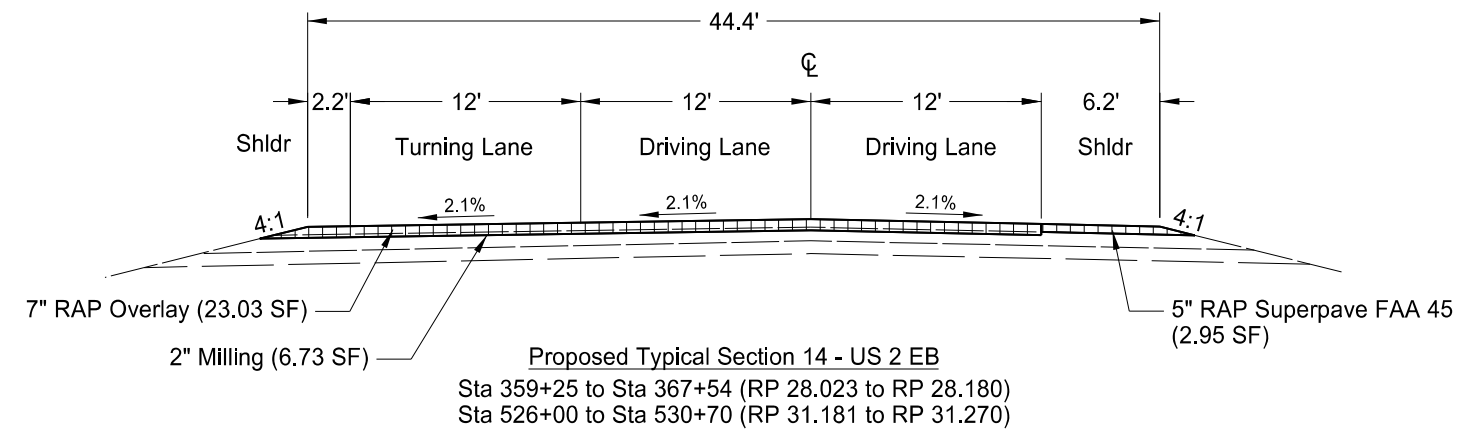
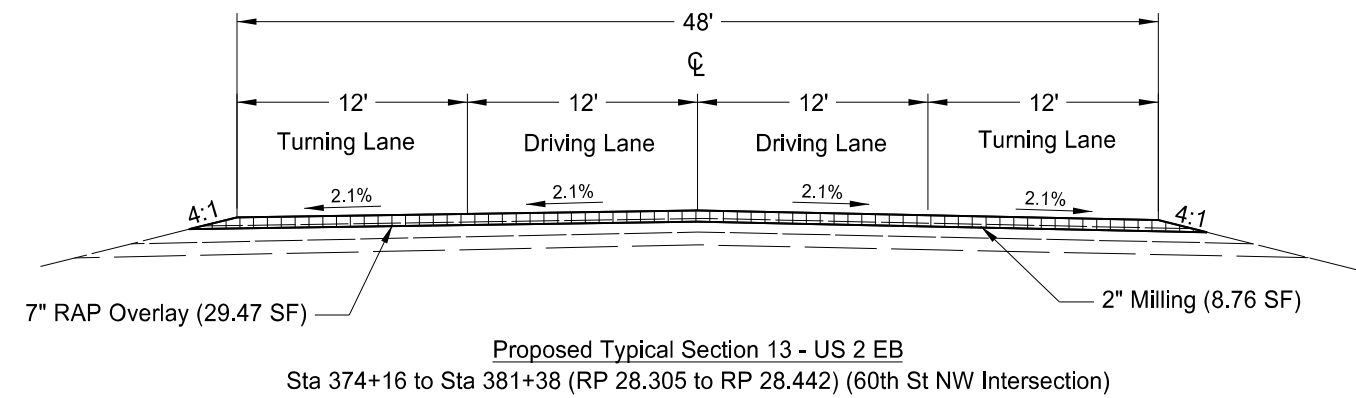
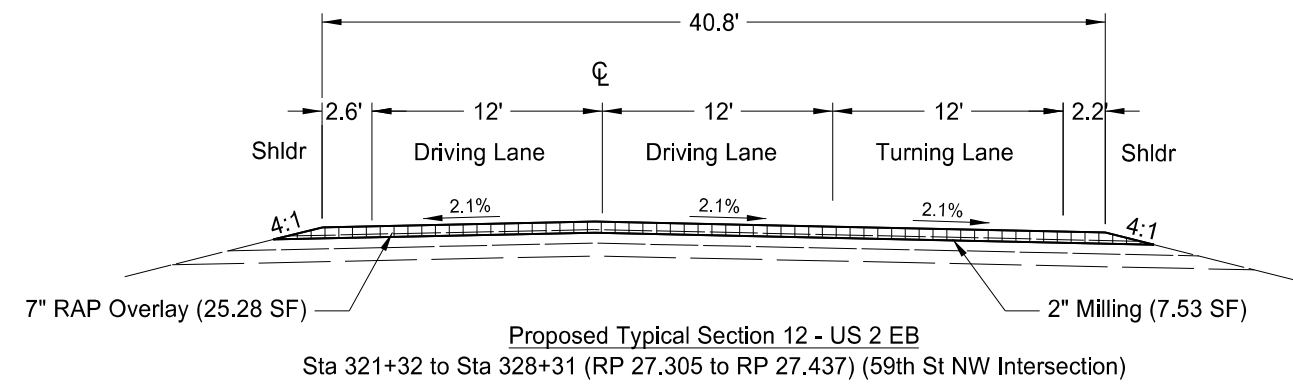


Legend
Ⓟ Tied Joint

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Proposed Typical Sections
US 2

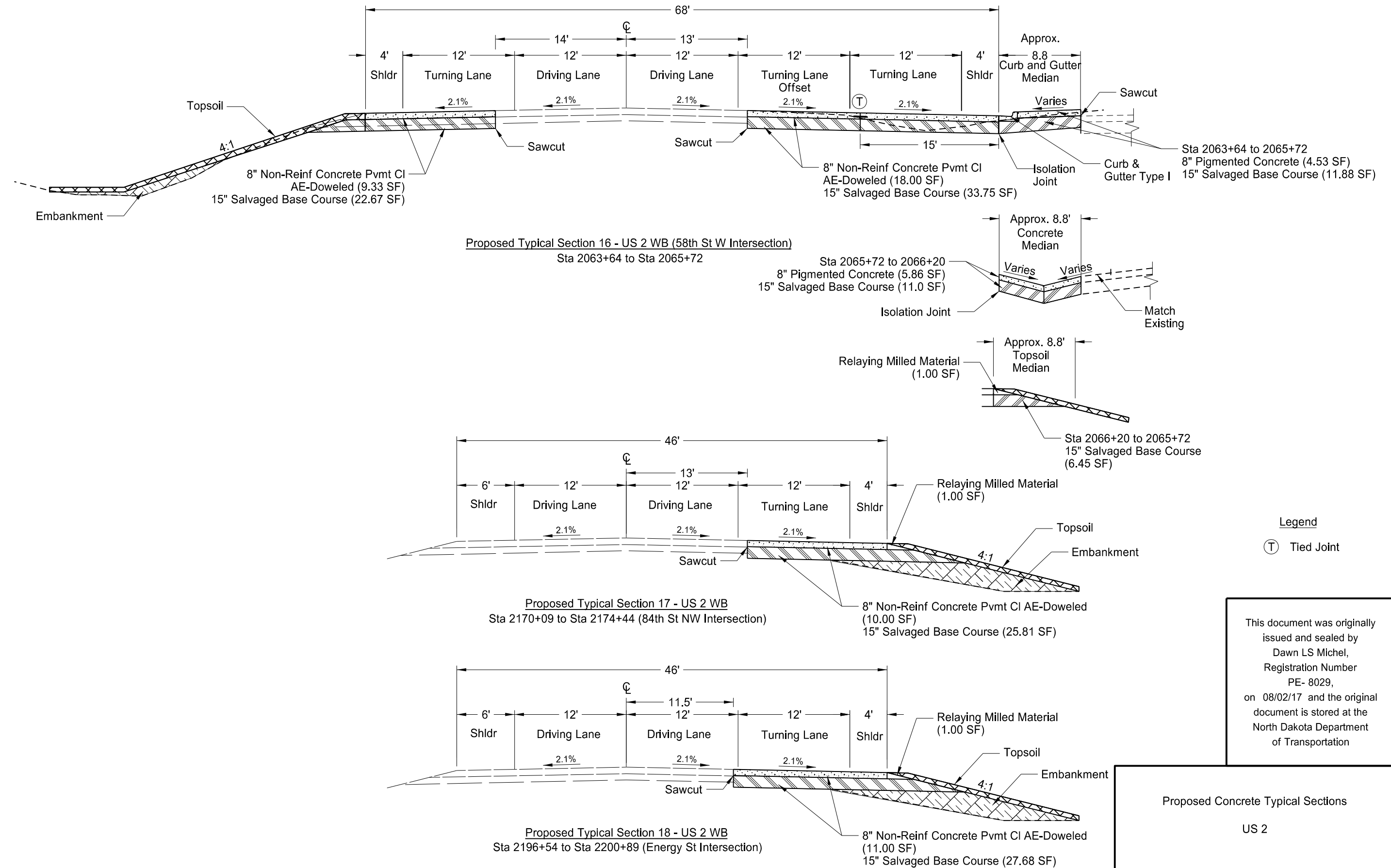
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	ND	NH-NHU-7-002(156)022	30	8



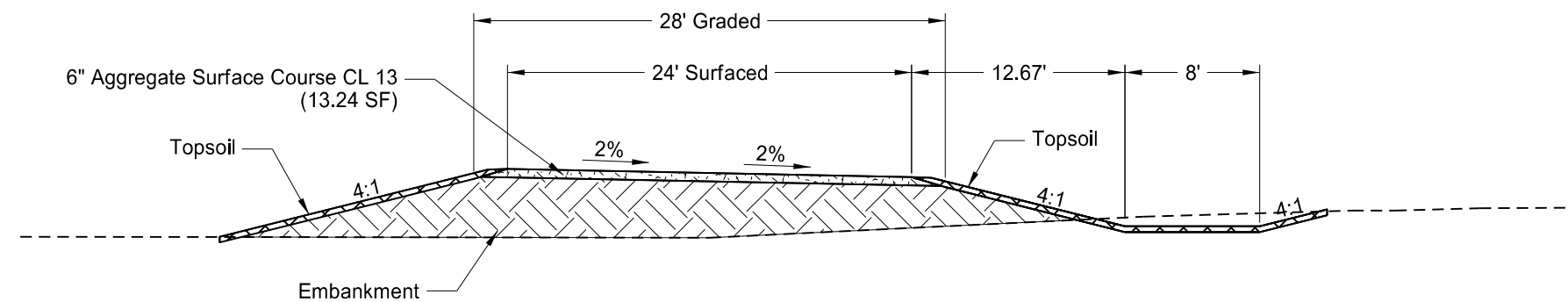
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Proposed RAP Typical Sections
US 2

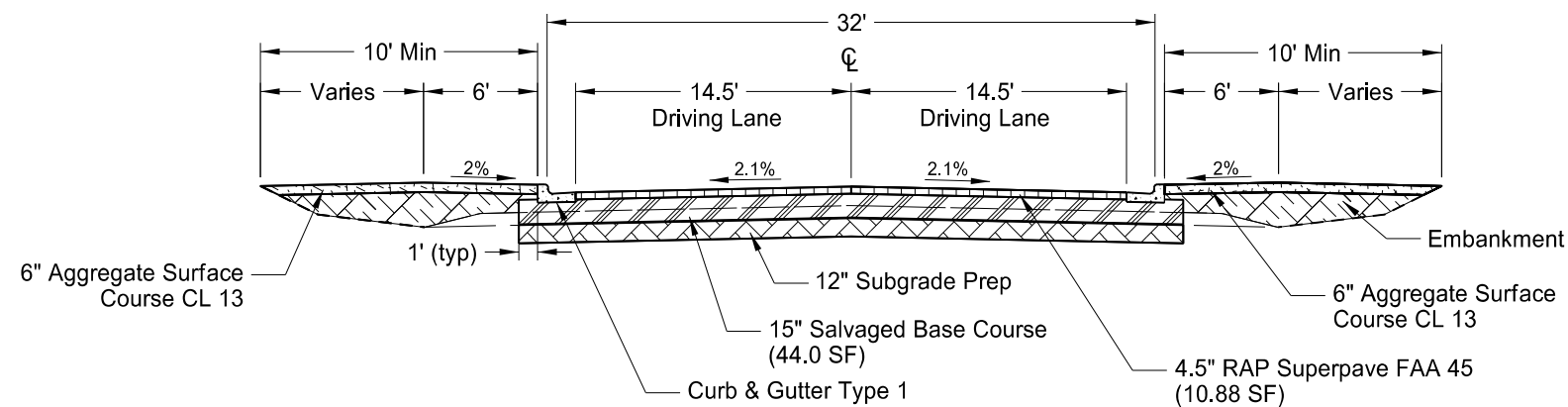
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	30	9



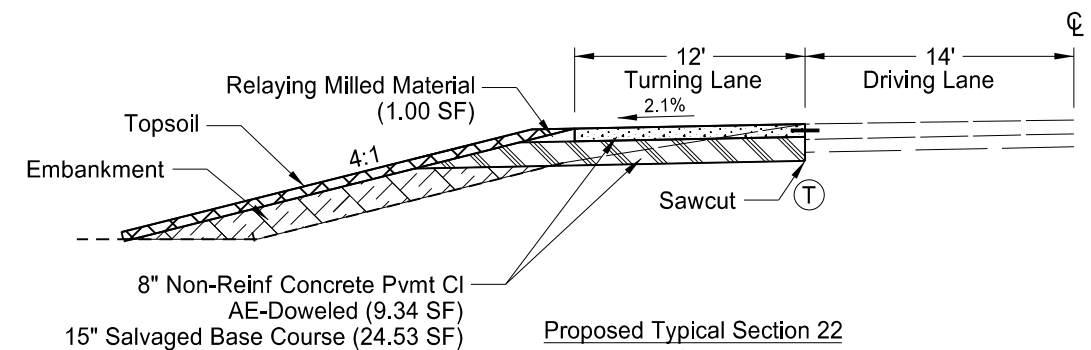
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	30	10



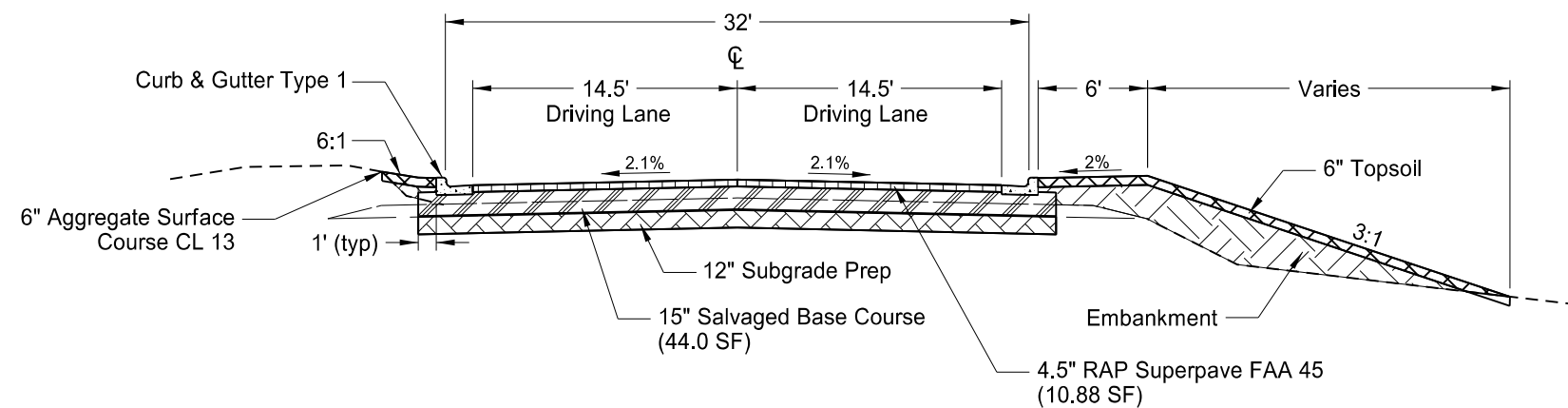
Proposed Typical Section 19 - Oil Well Access
Sta 10003+50 to Sta 10010+30



Proposed Typical Section 20 - Frontage Road
Sta 2002+33 to Sta 2008+75



Proposed Typical Section 22
84th Street W



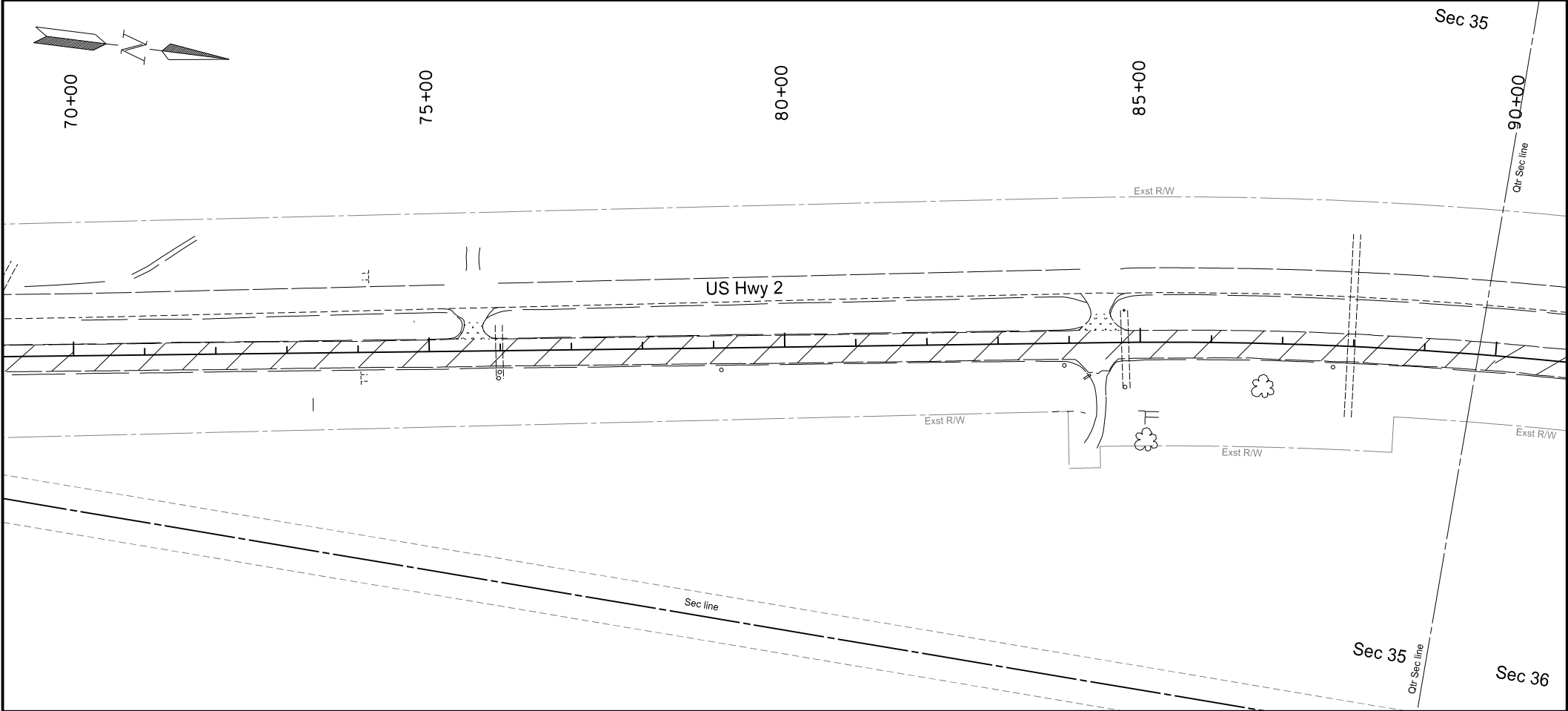
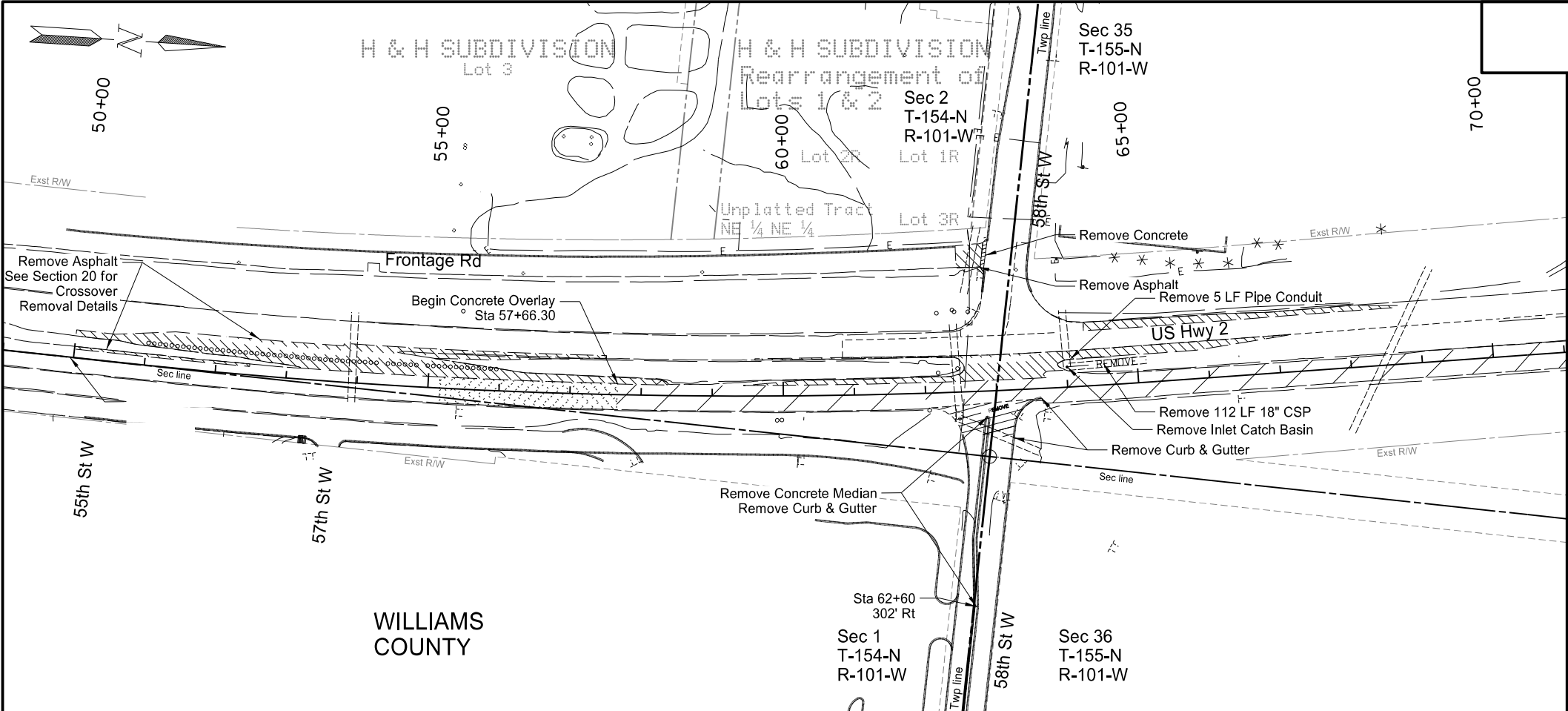
Proposed Typical Section 21 - Frontage Road
Sta 2008+75 to Sta 2010+60

Legend

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Proposed Typical Sections
Oil Well Access, Frontage Road



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	40	1

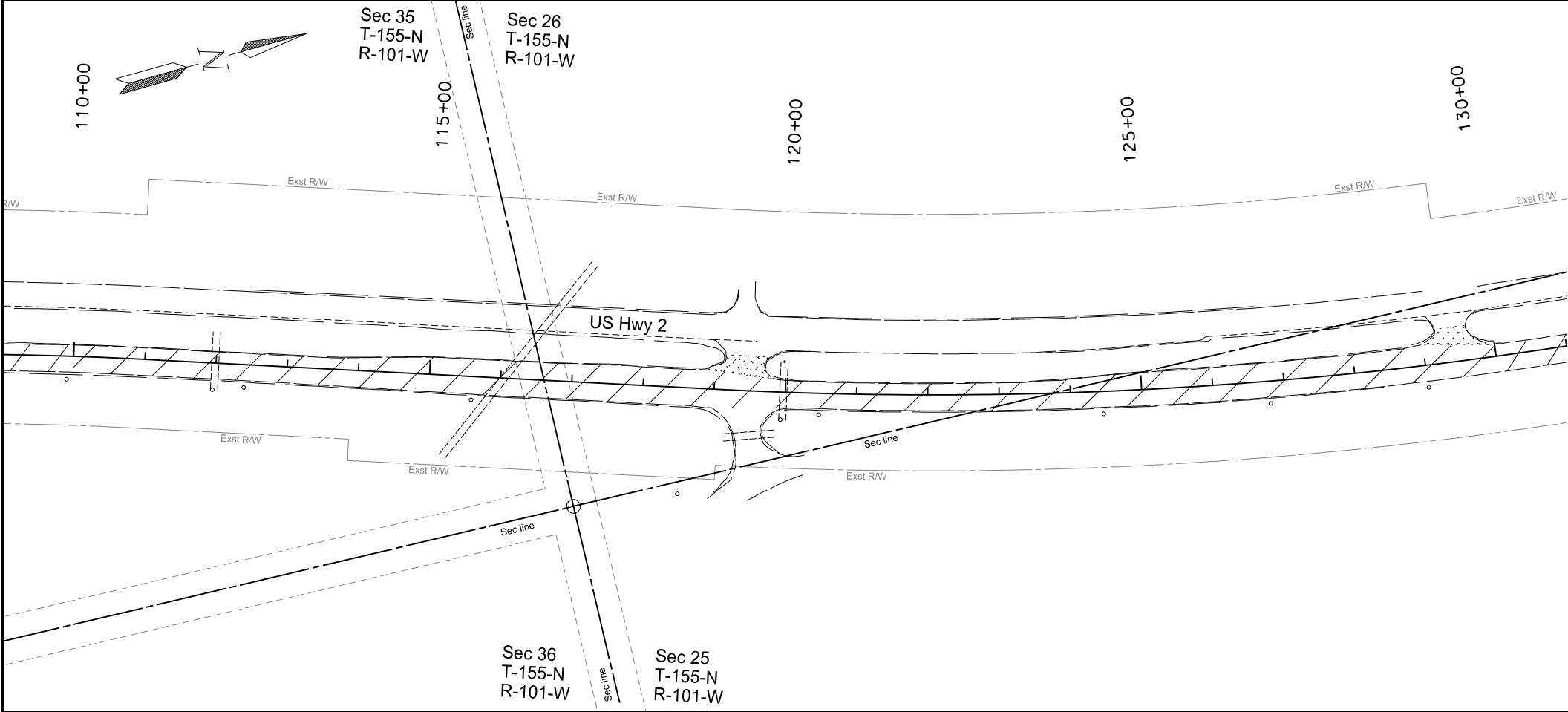
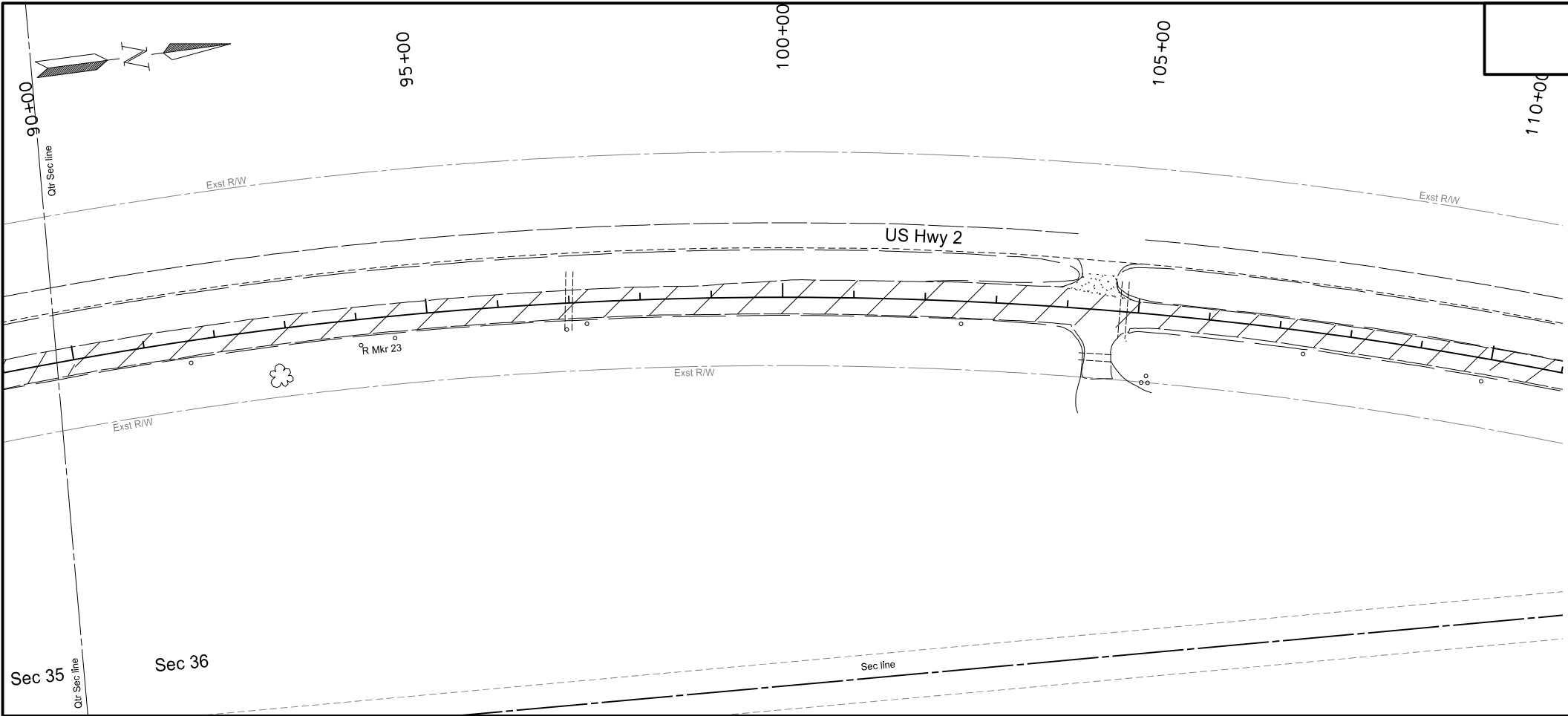
SPEC CODE	BID ITEM	QTY	UNIT
202 0114	REMOVAL OF CONCRETE PAVEMENT		
	Sta 62+90 - Rt	470	SY
	Sta 62+86 - 36' Rt to 62+57 - 302' Rt	267	SY
	Sta 62+88 - 168' Lt to 62+89 - 208' Lt	25	SY
202 0130	REMOVAL OF CURB & GUTTER		
	Sta 62+86 - 36' Rt to 62+57 - 302' Rt	523	LF
	Sta 63+20 - 67' Rt to 63+62 - 13' Rt	45	LF
202 0132	REMOVAL OF BITUMINOUS SURFACING		
	Sta 59+60 - 51' Lt to 67+22 - 53' Lt	1159	SY
	Sta 64+27 - 90' Lt to 68+72 - 80' Lt	435	SY
	Sta 62+65 - 175' Lt to 62+88 - 175' Lt	68	SY
202 0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
	Sta 64+01 - 28' Rt to 65+13 - 31' Rt	112	LF
	Sta 64+01 - 28' Rt to 33' Rt	5	LF
202 0235	REMOVAL OF CATCH BASIN		
	Sta 64+01 - 28' Rt	1	EA
411 0105	MILLING PAVEMENT SURFACE		
	Sta 55+16 to 57+66 - C (Transition)	1020	SY
	Sta 57+66 to 90+00 - C (3" Depth)	13465	SY
	Sta 76+77 - Lt (Transition)	83	SY
	Sta 84+42 - Lt (Transition)	102	SY

NOTES:
1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

LEGEND	
	REMOVAL OF CONCRETE SURFACING
	REMOVAL OF BITUMINOUS SURFACING
	REMOVAL OF PIPE ALL TYPES AND SIZES
	REMOVE APPROACH
	REMOVAL OF RIPRAP-LOOSE ROCK
	ROADWAY OBLITERATION
	MILLING TRANSITION
	MILLING PAVEMENT SURFACE

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Removals
US 2
Sta 55+16.30 to 90+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	40	2

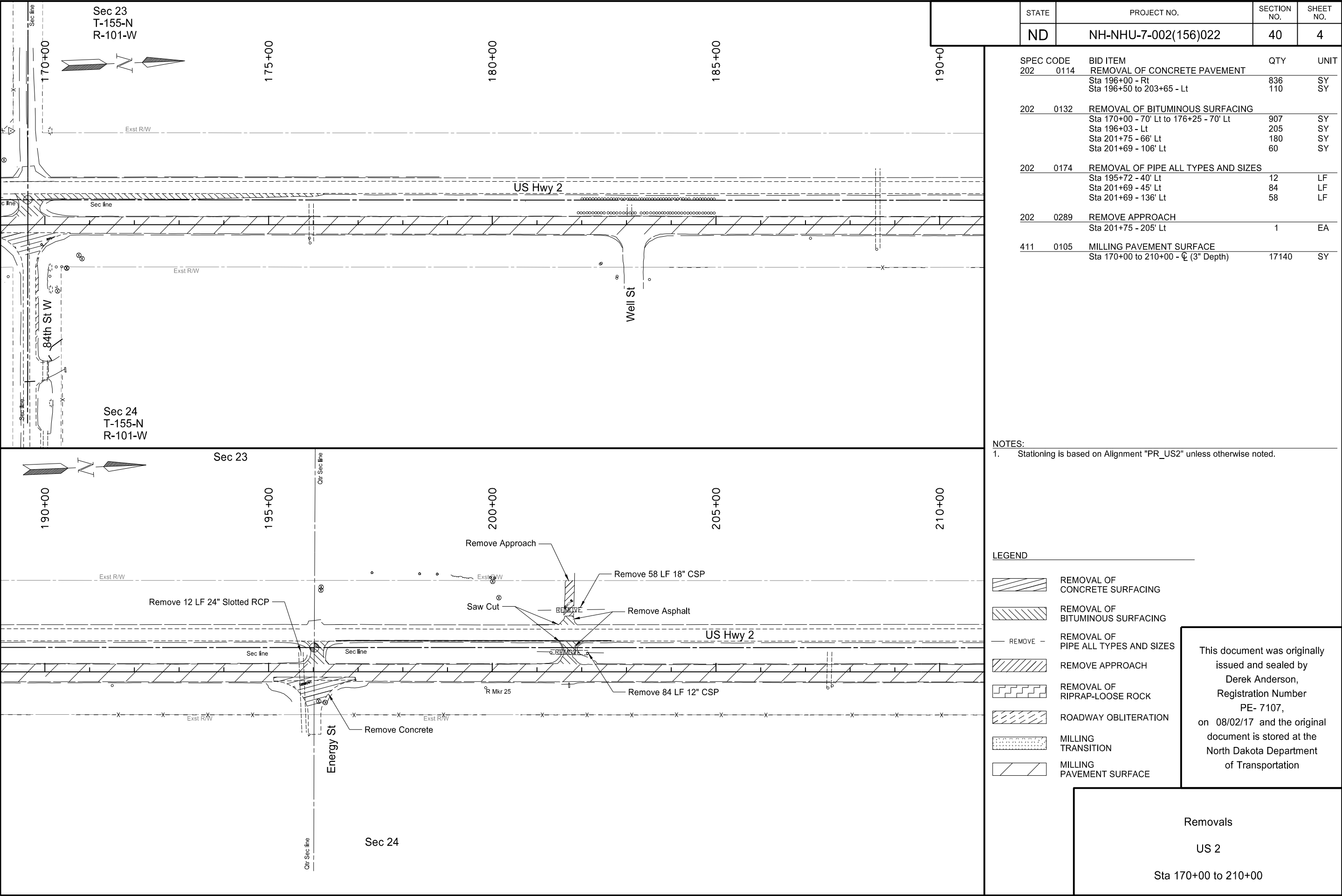
SPEC CODE	BID ITEM	QTY	UNIT
411 0105	MILLING PAVEMENT SURFACE		
	Sta 90+00 to 130+00 - 3" (3" Depth)	19863	SY
	Sta 104+42 - Lt (Transition)	186	SY
	Sta 119+41 - Lt (Transition)	198	SY
	Sta 129+40 - Lt (Transition)	161	SY

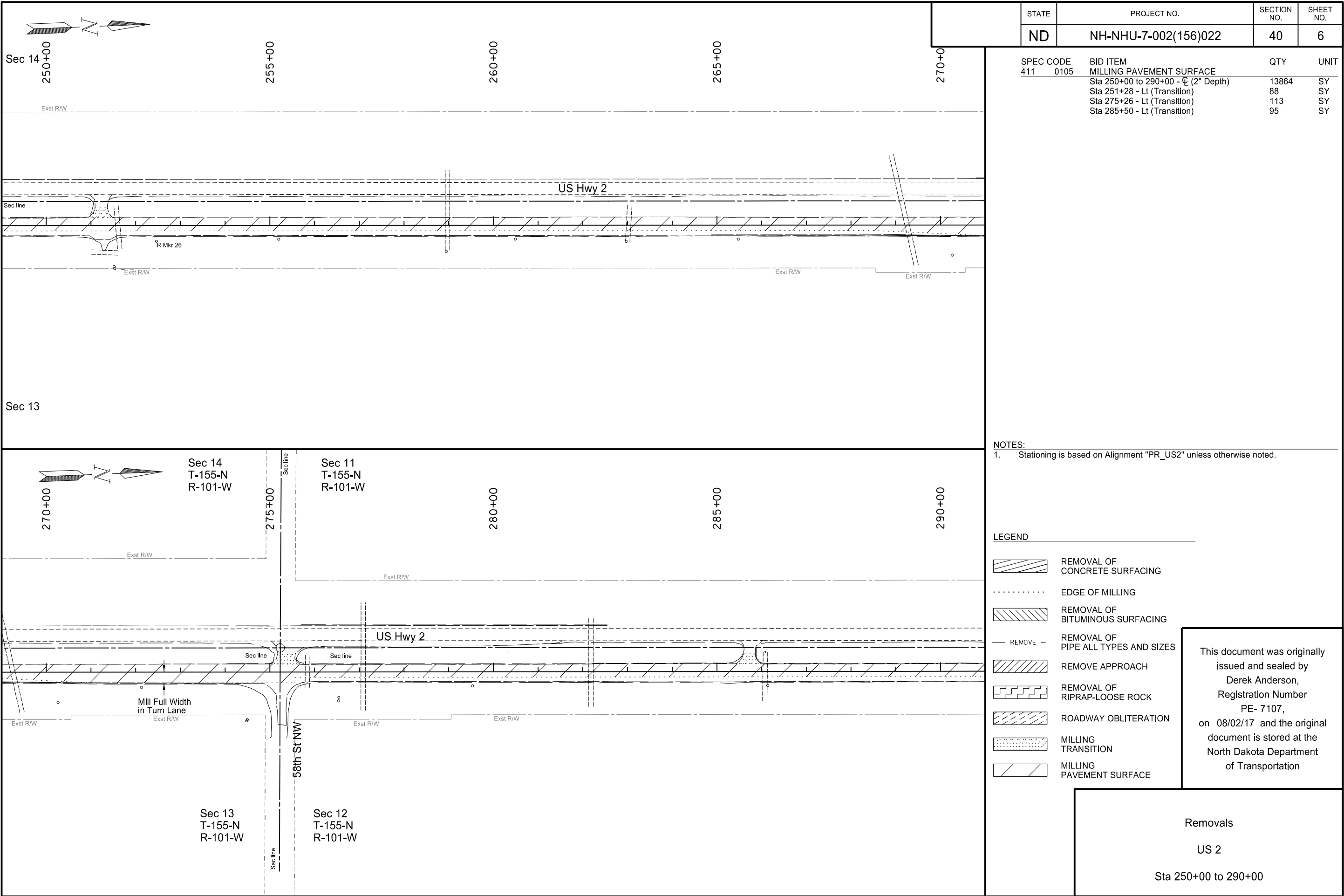
NOTES:
1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

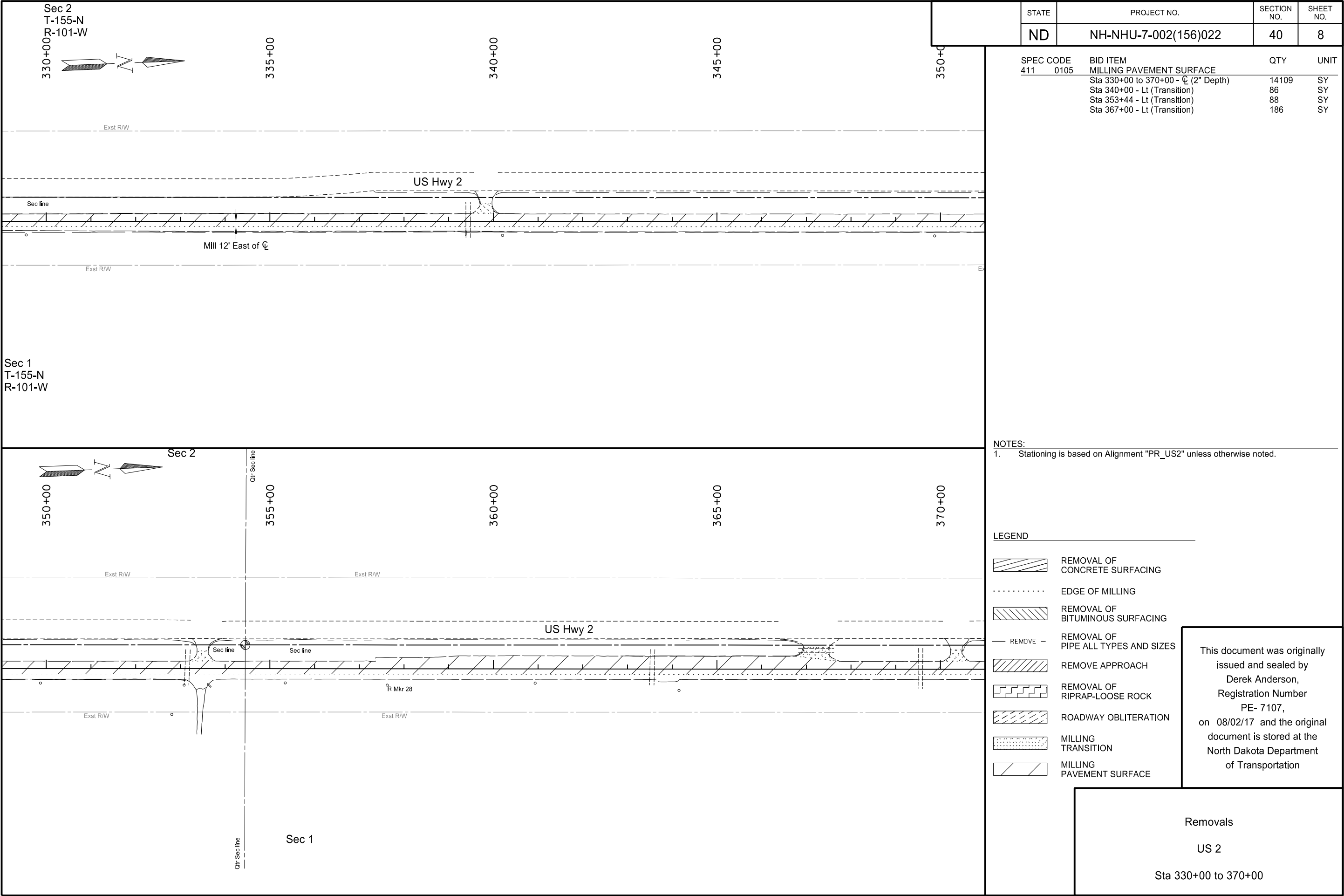
LEGEND	
	REMOVAL OF CONCRETE SURFACING
	REMOVAL OF BITUMINOUS SURFACING
	REMOVAL OF PIPE ALL TYPES AND SIZES
	REMOVE APPROACH
	REMOVAL OF RIPRAP-LOOSE ROCK
	ROADWAY OBLITERATION
	MILLING TRANSITION
	MILLING PAVEMENT SURFACE

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Removals
US 2
Sta 90+00 to 130+00







STATE

ND

PROJECT NO.

NH-NHU-7-002(156)022

SECTION NO.

40

SHEET NO.

8

SPEC CODE

411 0105

BID ITEM

MILLING PAVEMENT SURFACE

QTY

14109

UNIT

SY

Sta 330+00 to 370+00 - C (2" Depth)

86

SY

Sta 340+00 - Lt (Transition)

88

SY

Sta 353+44 - Lt (Transition)

186

SY

Sta 367+00 - Lt (Transition)

NOTES:

1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

LEGEND

REMOVAL OF CONCRETE SURFACING

REMOVAL OF BITUMINOUS SURFACING

REMOVAL OF PIPE ALL TYPES AND SIZES

REMOVAL OF RIPRAP-LOOSE ROCK

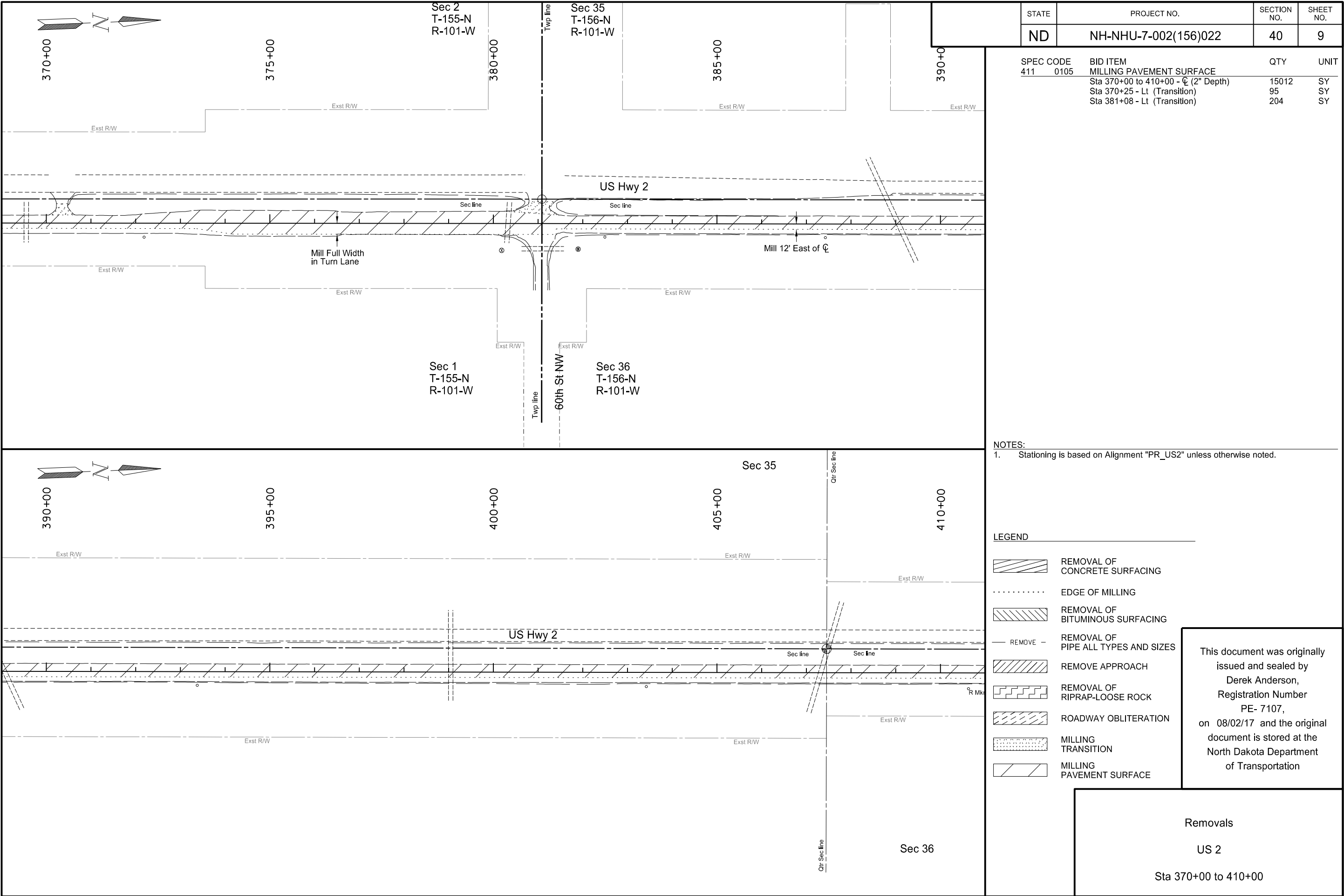
ROADWAY OBLITERATION

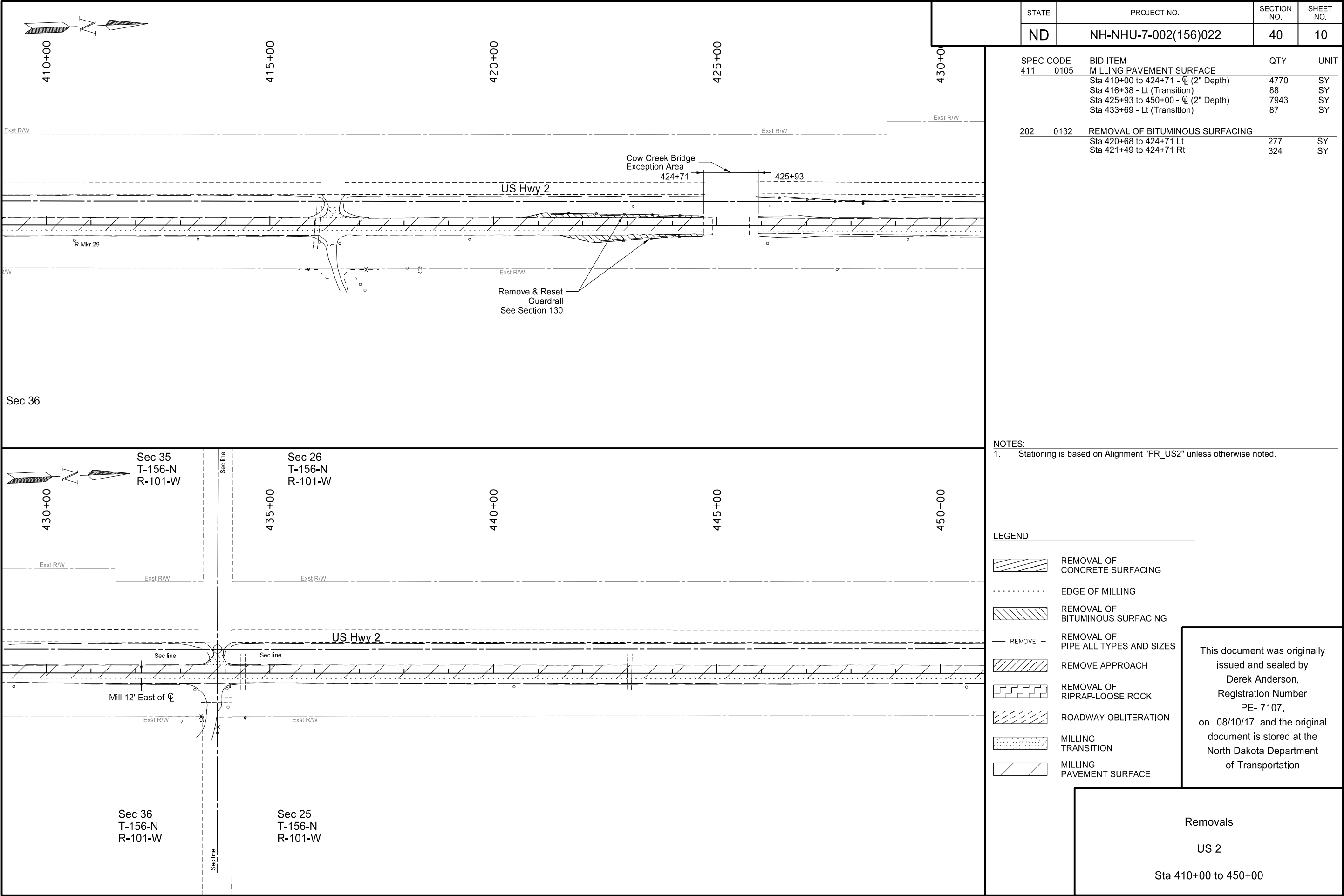
MILLING TRANSITION

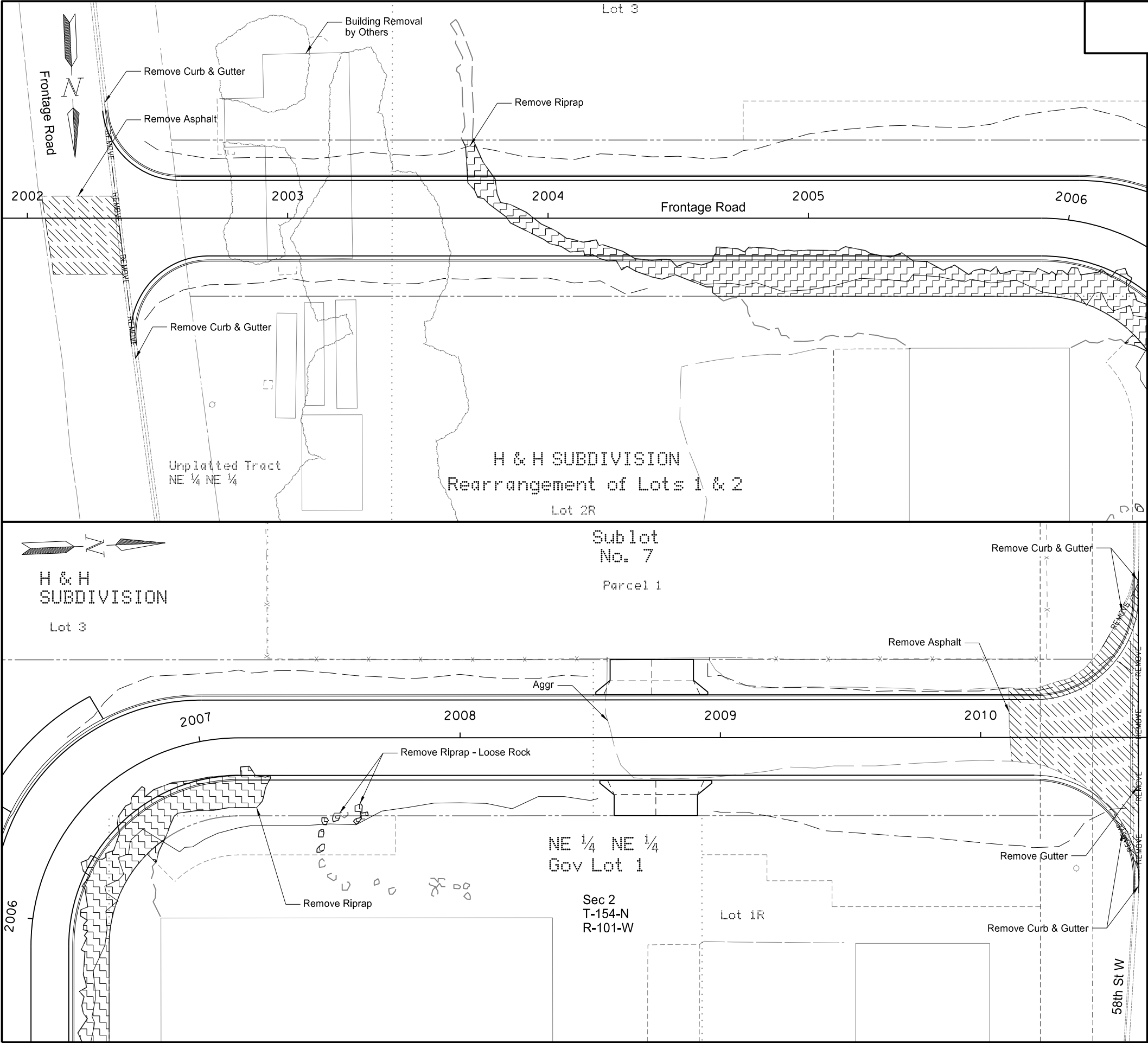
MILLING PAVEMENT SURFACE

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Removals
US 2
Sta 330+00 to 370+00







STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	40	14

SPEC CODE	BID ITEM	QTY	UNIT
202 0130	REMOVAL OF CURB & GUTTER		
	Sta 2002+22 - 46' Lt to 2002+35 - 54' Rt	100	LF
	Sta 2010+61 - 60' Lt to 2010+61 - 57' Rt	150	LF
202 0132	REMOVAL OF BITUMINOUS SURFACING		
	Sta 2002+07 - 2002+35 - C	93	SY
	Sta 2010+11 - C to 2010+61 - C	273	SY
202 0400	REMOVAL OF RIPRAP-LOOSE ROCK		
	Sta 2003+70 - 28' Lt to 2007+65 - 19' Rt	465	CY

LEGEND	
	REMOVAL OF CONCRETE SURFACING
	REMOVAL OF CURB & GUTTER
	REMOVAL OF BITUMINOUS SURFACING
	REMOVE APPROACH
	REMOVAL OF RIPRAP-LOOSE ROCK
	ROADWAY OBLITERATION
	MILLING TRANSITION

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Removals
US 2
Frontage Road

Manhole No.	1	
Type	Manhole - 48IN	
Casting Style	Standard	
Sta.	2002+73.0	- 0.0'
Rim Elev.	1922.40	
Base Elev.	1916.90	
Riser Dist.	4.00 ft	
Invert N:	1917.90	15 IN
Invert E:	1917.80	18 IN
Invert S:	1917.90	15 IN
Invert W:	1917.90	18 IN

Manhole No.	2	
Type	Manhole - 48IN	
Casting Style	Standard	
Sta.	2003+57.0	- 0.0'
Rim Elev.	1923.09	
Base Elev.	1917.59	
Riser Dist.	4.00 ft	
Invert N:	1918.70	15 IN
Invert E:	1918.60	18 IN
Invert W:	1918.70	15 IN

Manhole No.	3	
Type	Manhole - 60IN	
Casting Style	Standard	
Sta.	2005+69.0	- 0.0'
Rim Elev.	1927.13	
Base Elev.	1921.46	
Riser Dist.	4.00 ft	
Invert N:	1922.20	15 IN
Invert E:	1922.10	15 IN
Invert S:	1922.20	15 IN
Invert W:	1922.20	15 IN

Manhole No.	4	
Type	Manhole - 48IN	
Casting Style	Standard	
Sta.	2006+77.1	- 14.6' Lt
Rim Elev.	1929.48	
Base Elev.	1923.98	
Riser Dist.	4.00 ft	
Invert N:	1924.30	15 IN
Invert E:	1924.20	15 IN

Manhole No.	5	
Type	Manhole - 48IN	
Casting Style	Standard	
Sta.	2008+38.7	- 0.0'
Rim Elev.	1933.02	
Base Elev.	1927.52	
Riser Dist.	4.00 ft	
Invert E:	1927.90	15 IN
Invert S:	1927.80	15 IN
Invert W:	1927.90	15 IN

Inlet No.	1A	
Type	Inlet - Type 2 Double	
Grate Style	V	
Sta.	2002+73.0	- 15.5' Rt
Grate Elev.	1921.92	
Base Elev.	1917.17	
"H" Dist.	4.00 ft	
Invert S:	1918.10	15 IN

Inlet No.	2A	
Type	Inlet - Type 2 Double	
Grate Style	V	
Sta.	2003+57.0	- 15.5' Rt
Grate Elev.	1922.62	
Base Elev.	1917.87	
"H" Dist.	4.00 ft	
Invert S:	1918.90	15 IN
Invert W:	1919.00	15 IN

Inlet No.	3A	
Type	Inlet - Type 2	
Grate Style	V	
Sta.	2005+69.0	- 15.5' Rt
Grate Elev.	1926.63	
Base Elev.	1921.88	
"H" Dist.	4.00 ft	
Invert S:	1922.40	15 IN

Inlet No.	5A	
Type	Inlet - Type 2	
Grate Style	V	
Sta.	2008+38.7	- 15.5' Rt
Grate Elev.	1932.54	
Base Elev.	1927.79	
"H" Dist.	4.00 ft	
Invert W:	1928.20	15 IN

Inlet No.	1B	
Type	Inlet - Type 2	
Grate Style	V	
Sta.	2002+73.0	- 15.5' Lt
Grate Elev.	1921.92	
Base Elev.	1917.17	
"H" Dist.	4.00 ft	
Invert N:	1918.10	15 IN

Inlet No.	2B	
Type	Inlet - Type 2 Double	
Grate Style	V	
Sta.	2003+66.0	- 15.5' Rt
Grate Elev.	1922.69	
Base Elev.	1917.94	
"H" Dist.	4.00 ft	
Invert E:	1919.10	15 IN

Inlet No.	3B	
Type	Inlet - Type 2	
Grate Style	V	
Sta.	2005+69.0	- 15.5' Lt
Grate Elev.	1926.63	
Base Elev.	1921.88	
"H" Dist.	4.00 ft	
Invert N:	1922.40	15 IN

Inlet No.	5B	
Type	Inlet - Type 2 Double	
Grate Style	V	
Sta.	2008+38.7	- 15.5' Lt
Grate Elev.	1932.54	
Base Elev.	1927.79	
"H" Dist.	4.00 ft	
Invert N:	1928.30	15 IN
Invert E:	1928.20	15 IN

Inlet No.	6A	
Type	Inlet - Type 2	
Grate Style	V & 20 LF 15IN Slotted Drain	
Sta.	2063+90.4	- 41.0' Rt
Grate Elev.	1930.41	
Base Elev.	1924.96	
"H" Dist.	4.70 ft	
Invert W:	1925.00	18 IN CSP

*Alignment PR_US2_WB

Inlet No.	7A	
Type	Inlet Special Catch Basin - 60IN	
Grate Style	Type A	
Sta.	168+85.0	- 43.2' Lt
Grate Elev.	1963.16	
Base Elev.	1957.74	
"H" Dist.	4.00 ft	
Invert E:	1958.75	30 IN RCP
Invert W:	1958.87	30 IN RCP

*Alignment PR_US2

Inlet No.	5C	
Type	Inlet - Type 2 Double	
Grate Style	V	
Sta.	2008+47.7	- 15.5' Lt
Grate Elev.	1932.71	
Base Elev.	1927.96	
"H" Dist.	4.00 ft	
Invert S:	1928.40	15 IN

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Inlet and Manhole Summary

US 2

- NOTES:
1. Stationing is based on Alignment "PR_FRONTAGE" unless otherwise noted.

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	(*) End Sections		Applicable Backfill
											Begin	End	
				In	Bid Item	LF	In	Type		In	EA	EA	
Alignment PR_FRONTAGE				18	Pipe Conduit - Storm Drain	87	Reinforced Concrete Pipe - Class III (barrel length = 84 LF)				FES		Standard D-714-27
2001+84.7	0	MH 1					Spiral Rib Steel Pipe		P	3/4, 1			
Inlet 1B		MH 1		15	Pipe Conduit - Storm Drain	14	Reinforced Concrete Pipe - Class III (barrel length = 14 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
MH 1		Inlet 1A		15	Pipe Conduit - Storm Drain	14	Reinforced Concrete Pipe - Class III (barrel length = 14 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
MH 1		MH 2		18	Pipe Conduit - Storm Drain	81	Reinforced Concrete Pipe - Class III (barrell length = 82 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
MH 2		Inlet 2A		15	Pipe Conduit - Storm Drain	14	Reinforced Concrete Pipe - Class III (barrel length = 14 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
Inlet 2A		Inlet 2B		15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III (barrel length = 4 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
MH 2		MH 3		15	Pipe Conduit - Storm Drain	209	Reinforced Concrete Pipe - Class III (barrel length = 210 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
Inlet 3B		MH 3		15	Pipe Conduit - Storm Drain	13	Reinforced Concrete Pipe - Class III (barrell length = 14 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
MH 3		Inlet 3A		15	Pipe Conduit - Storm Drain	13	Reinforced Concrete Pipe - Class III (barrell length = 14 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
MH 3		MH 4		15	Pipe Conduit - Storm Drain	108	Reinforced Concrete Pipe - Class III (barrel length = 108 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
MH 4		MH 5		15	Pipe Conduit - Storm Drain	164	Reinforced Concrete Pipe - Class III (barrel length = 164 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
Inlet 5B		MH 5		15	Pipe Conduit - Storm Drain	14	Reinforced Concrete Pipe - Class III (barrel length = 14 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
MH 5		Inlet 5A		15	Pipe Conduit - Storm Drain	14	Reinforced Concrete Pipe - Class III (barrel length = 14 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			
Inlet 5B		Inlet 5C		15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III (barrel length = 4 LF)						Standard D-714-27
							Spiral Rib Steel Pipe		P	3/4, 1			

Coatings: Z = Zinc

A = Aluminum

P = Polymeric (over Zinc or Aluminum)

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

3 = 3"x1"

5 = 5"x1"

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

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

(*) The price bid for "Pipe Conduit" bid items includes end sections. Pipe Extensions shall pay for end sections separately.

FES = Flared End Section

TES = Traversable End Section

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Allowable Pipe List

US 2

Frontage Road

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	(*) End Sections		Applicable Backfill
												Begin	End	
				In	Bid Item	LF		In	Type		In	EA	EA	
Alignment PR_US2_WB				18	Pipe Corr. Steel (Extension)	10	Corrugated Steel Pipe	18	Z, A, P	2	0.064			Standard D-714-26
2063+90.2	30.5 Rt	Inlet 6A												
Alignment PR_US2				30	Pipe Conc. Reinf. (Extension)	4	Reinforced Concrete Pipe - Class III (barrel length = 4 LF)	30					Remove & Relay	Section 20
168+84.2	63.1 Rt	168+84.2	67.1 Rt											
Alignment PR_US2				30	Pipe Conc. Reinf. (Extension)	4	Reinforced Concrete Pipe - Class III (barrel length = 4 LF)	30						Standard D-714-27
Inlet 7A		168+84.9	37.3 Lt											
Alignment PR_US2				24	Pipe Conc. Reinf. (Extension)	12	4 LF RCP & 2- 30° Bends (4 LF EA) Reinforced Concrete Pipe - Class III (barrel length = 12 LF)	24				TES		Standard D-714-27
195+67.7	42.9 Lt	195+72.7	32.2 Lt											
Alignment PR_OILFIELD1				18	Pipe Conduit - Approach	50	Reinforced Concrete Pipe - Class III (barrell length = 44 LF)	18				FES	FES	Specification 714.04 A
10004+43.1	20.4 Lt	10004+71.4	20.9 Rt				Corrugated Steel Pipe	18	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	18	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	18						
							Polypropylene Pipe (AASHTO M330, Type S)	18						

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

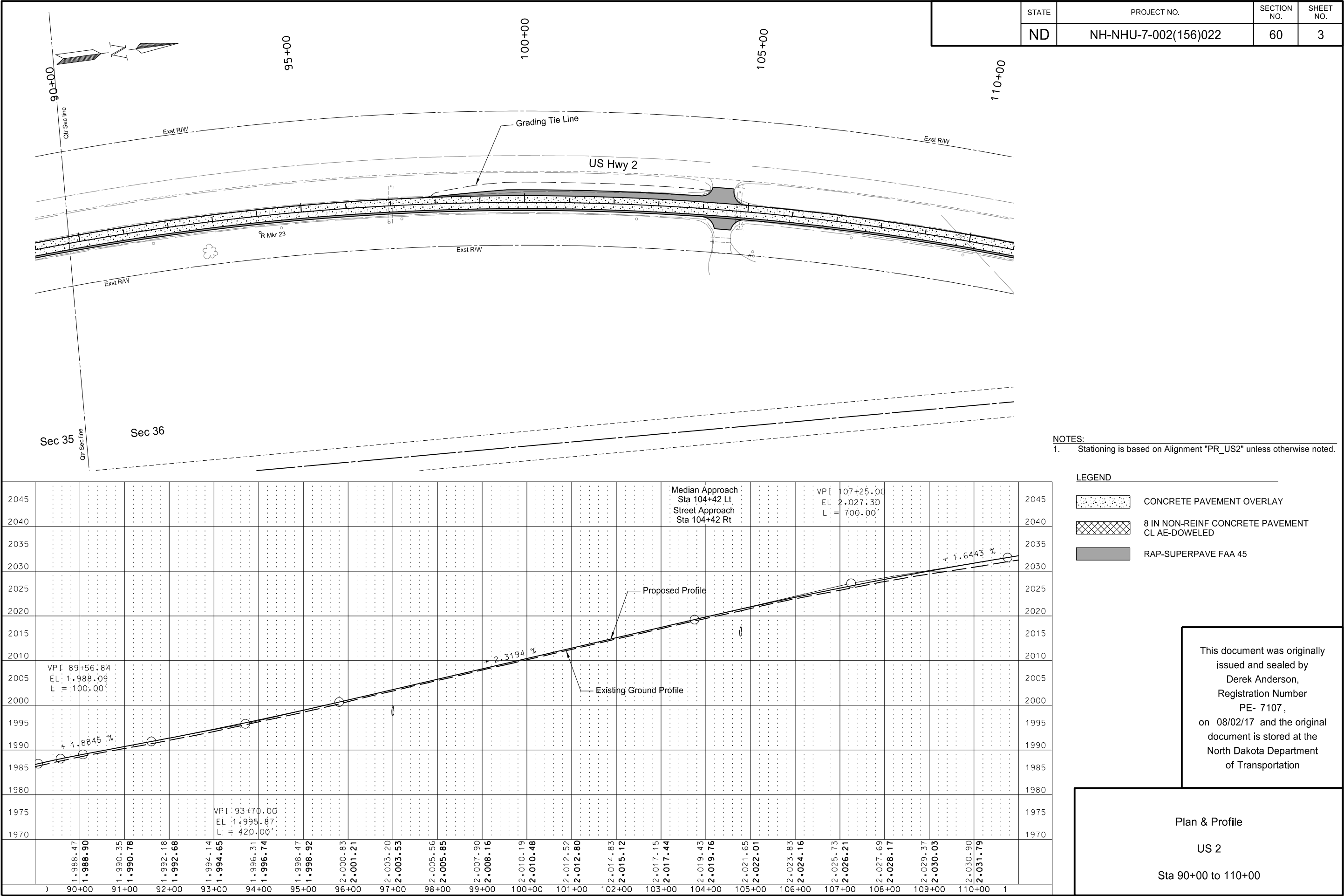
Corrugations: 2 = 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"

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

(*) The price bid for "Pipe Conduit" bid items includes end sections. Pipe Extensions shall pay for end sections separately.
FES = Flared End Section
TES = Traversable End Section

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Allowable Pipe List
US 2

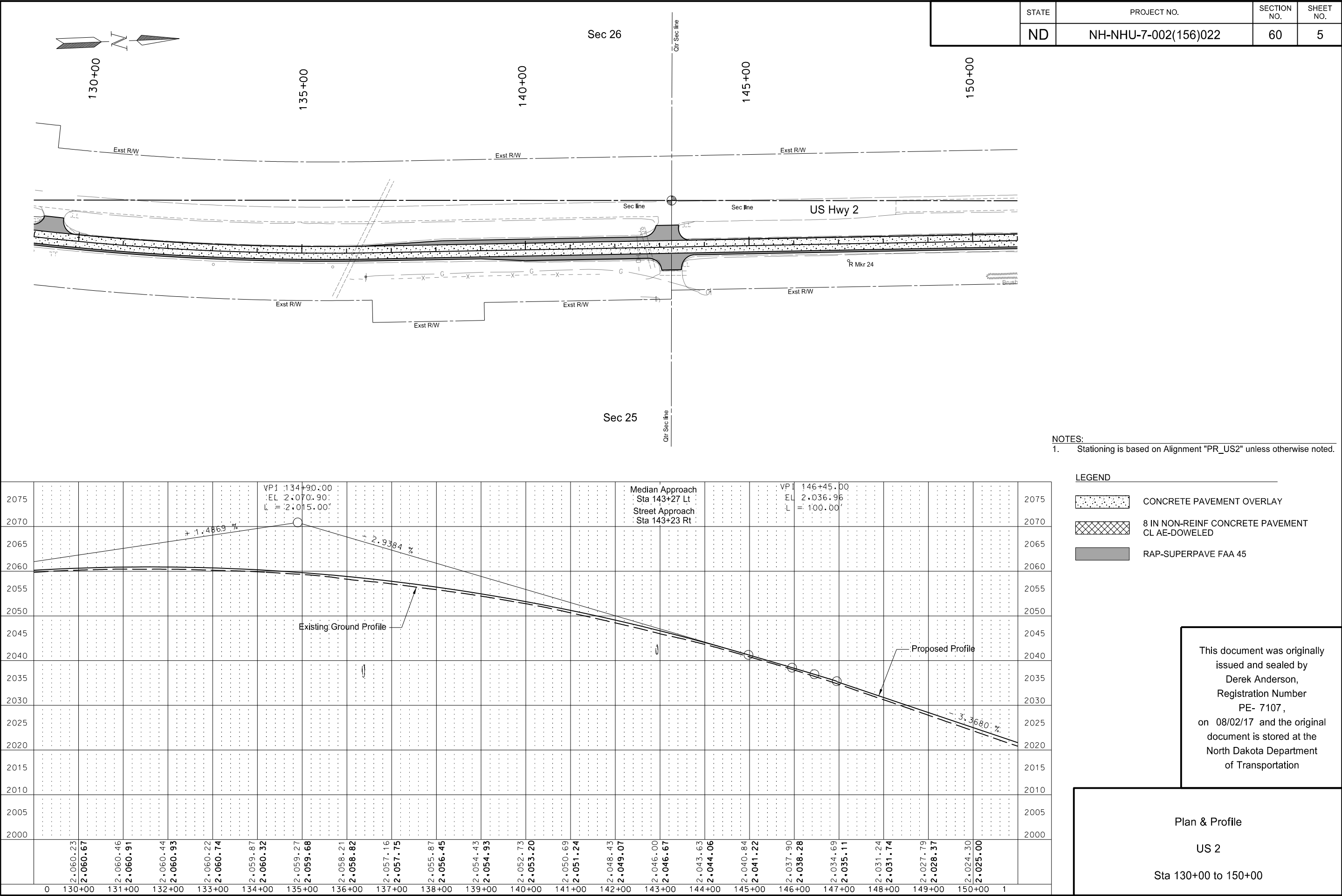


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derek.anderson

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LEGEND

CONCRETE PAVEMENT OVERLAY

8 IN NON-REINF CONCRETE PAVEMENT
CL AE-DOWELED

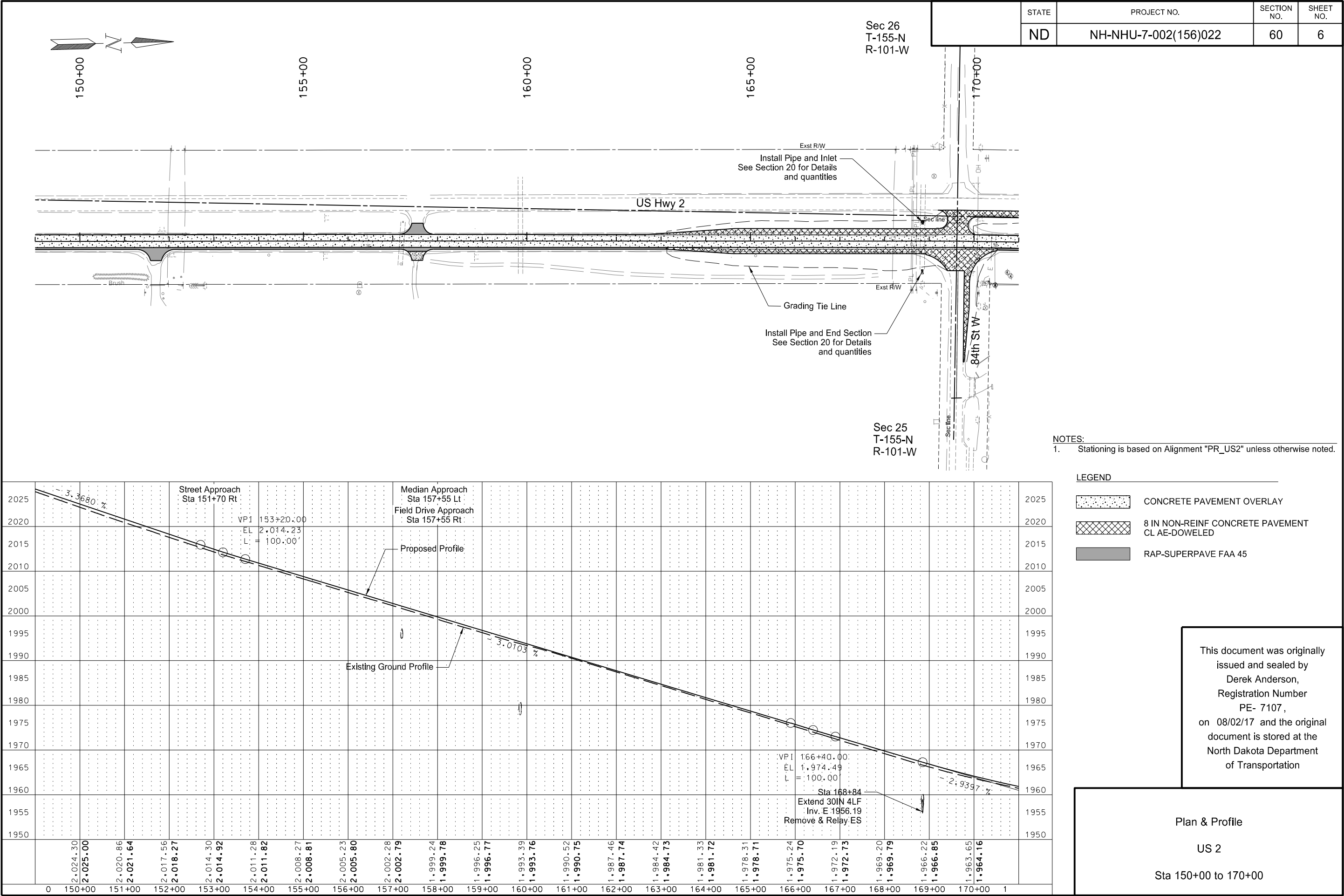
RAP-SUPERPAVE FAA 45

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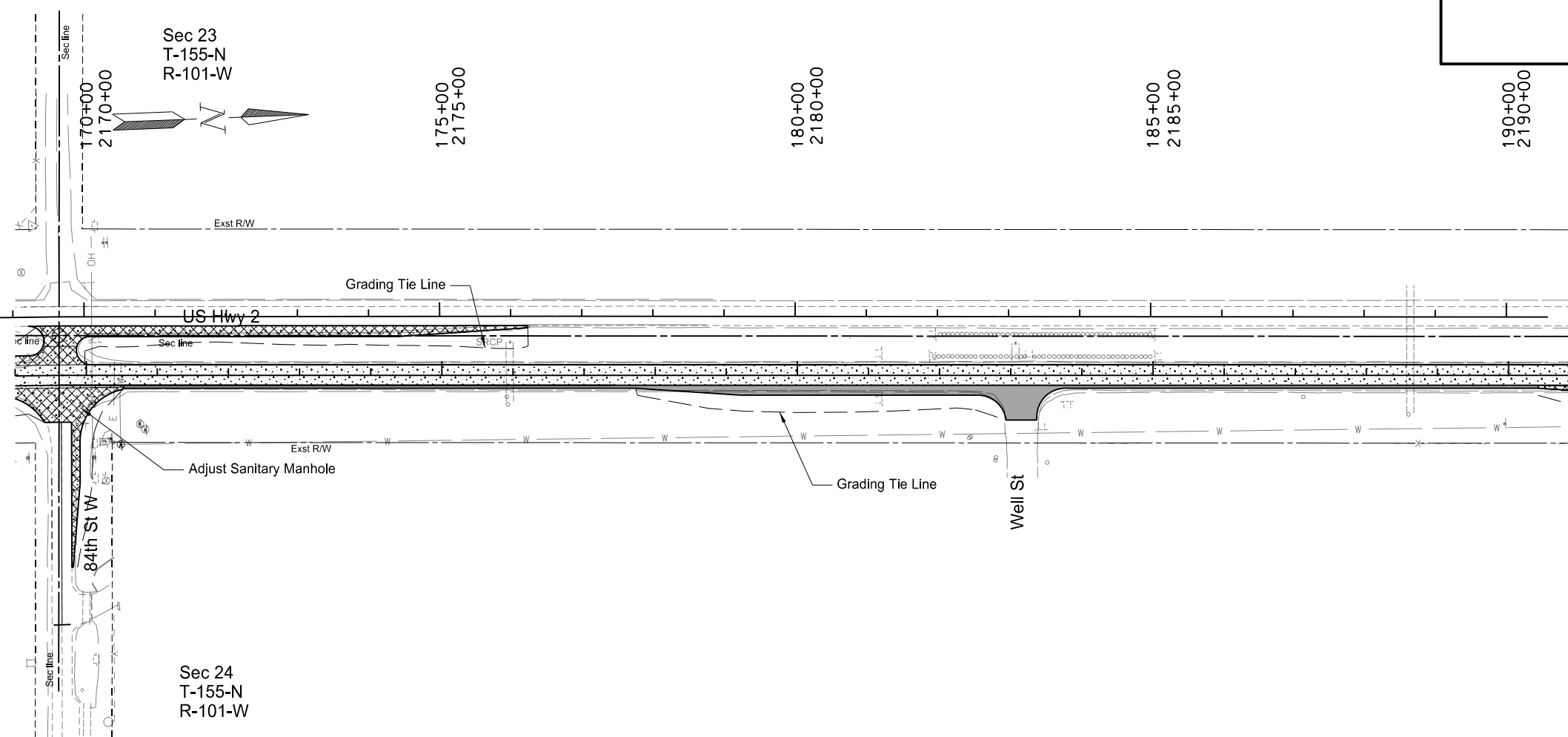
Plan & Profile

US 2

Sta 130+00 to 150+00



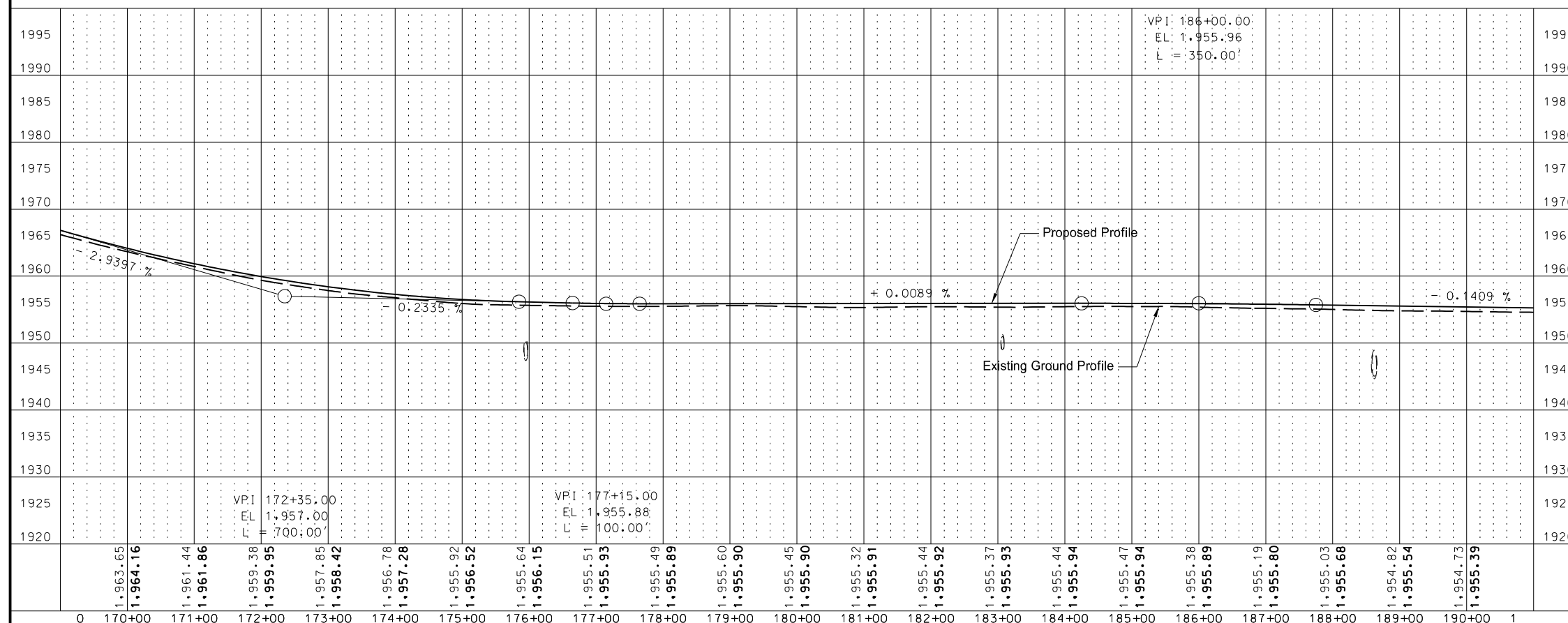
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-NHU-7-002(156)022	60	7
0+00 90+00	SPEC CODE	BID ITEM	QTY	UNIT
	722 6200	ADJUST MANHOLE Sta 169+92.57 - 50' Rt	1	EA



NOTES:

- NOTES:
1. Stationing is based on Alignment "PR_US2" unless otherwise noted.
 2. Stationing from 2170+00 to 2190+00 is based on Alignment "PR_US2_WB".

LEGEND

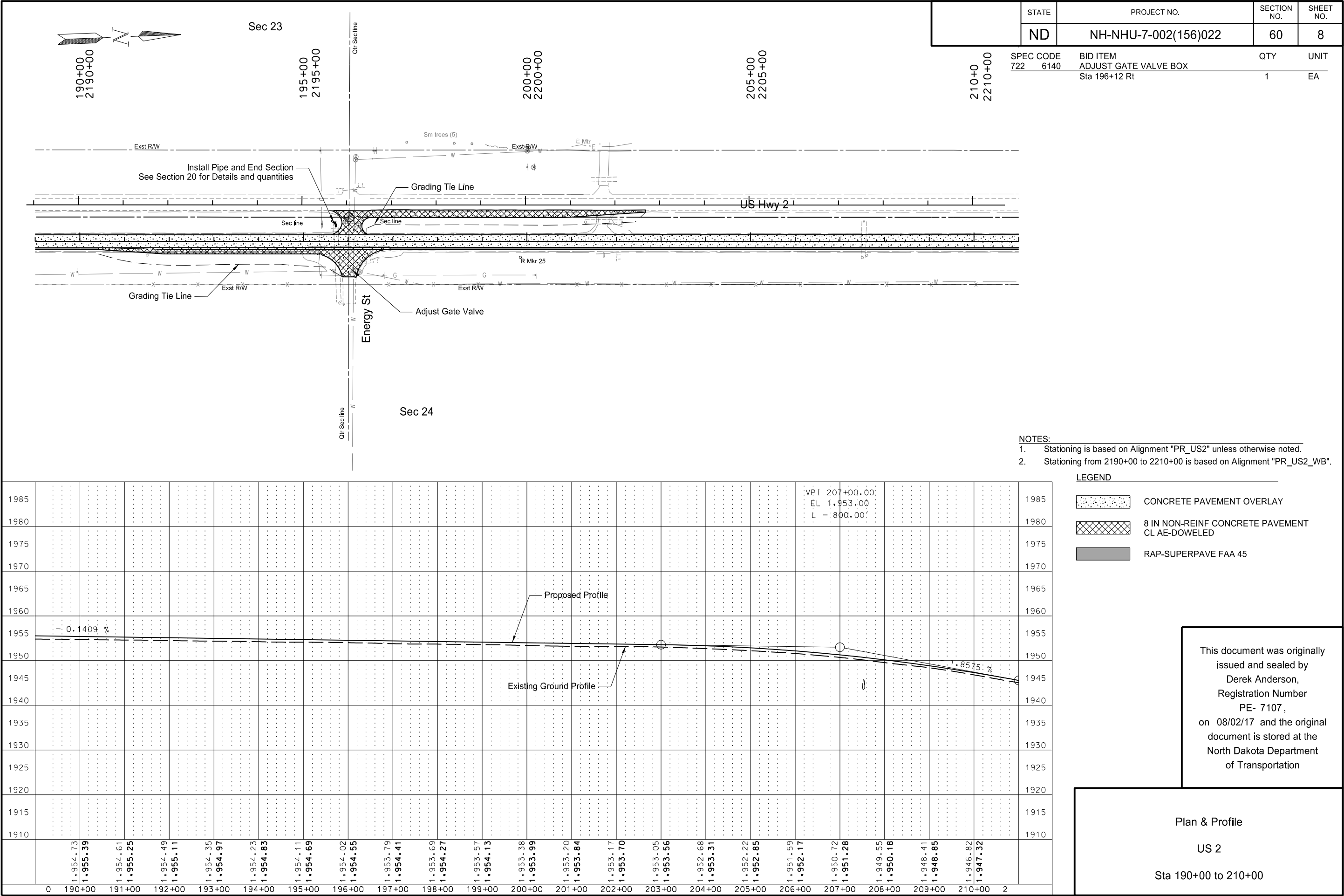


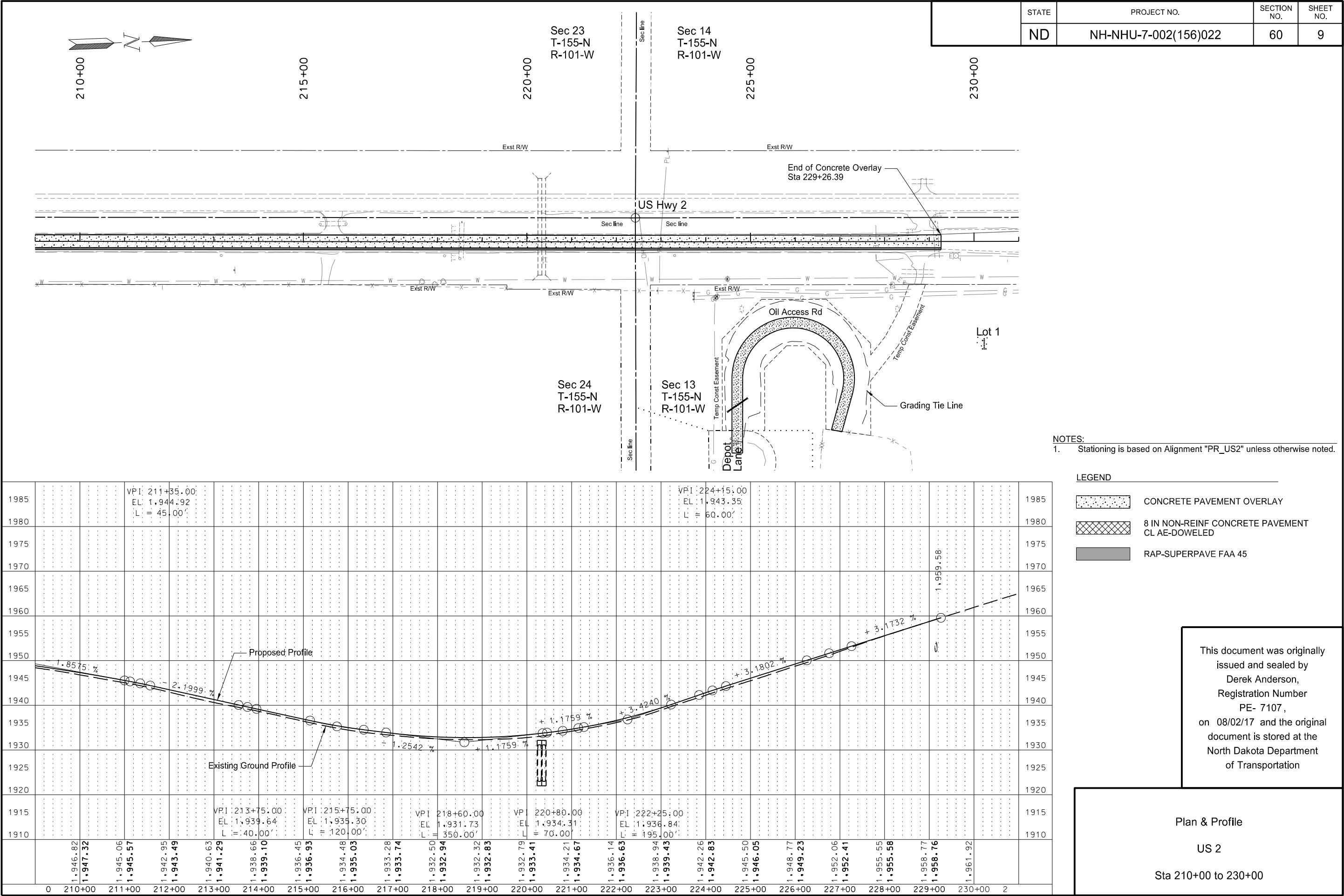
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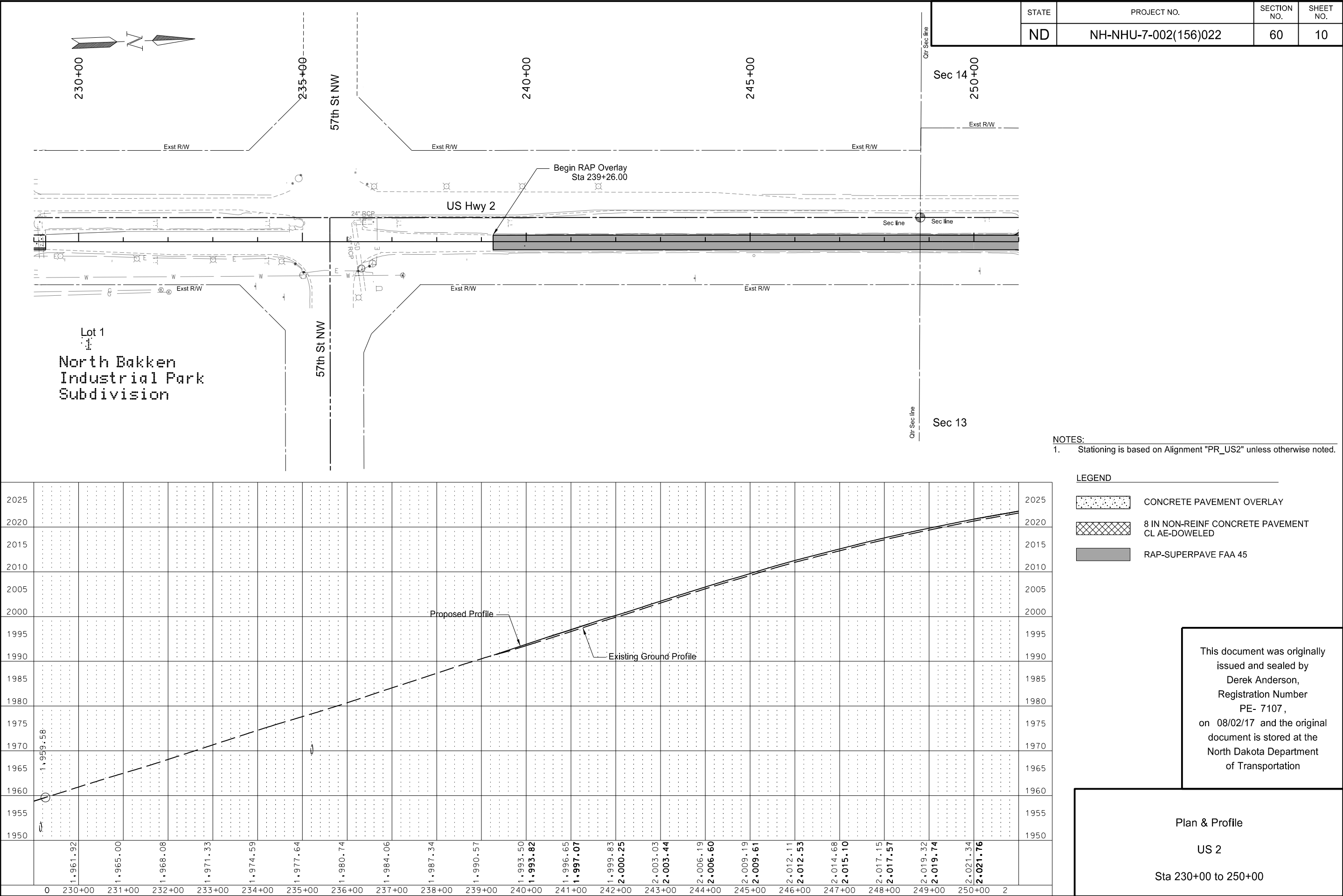
Plan & Profile

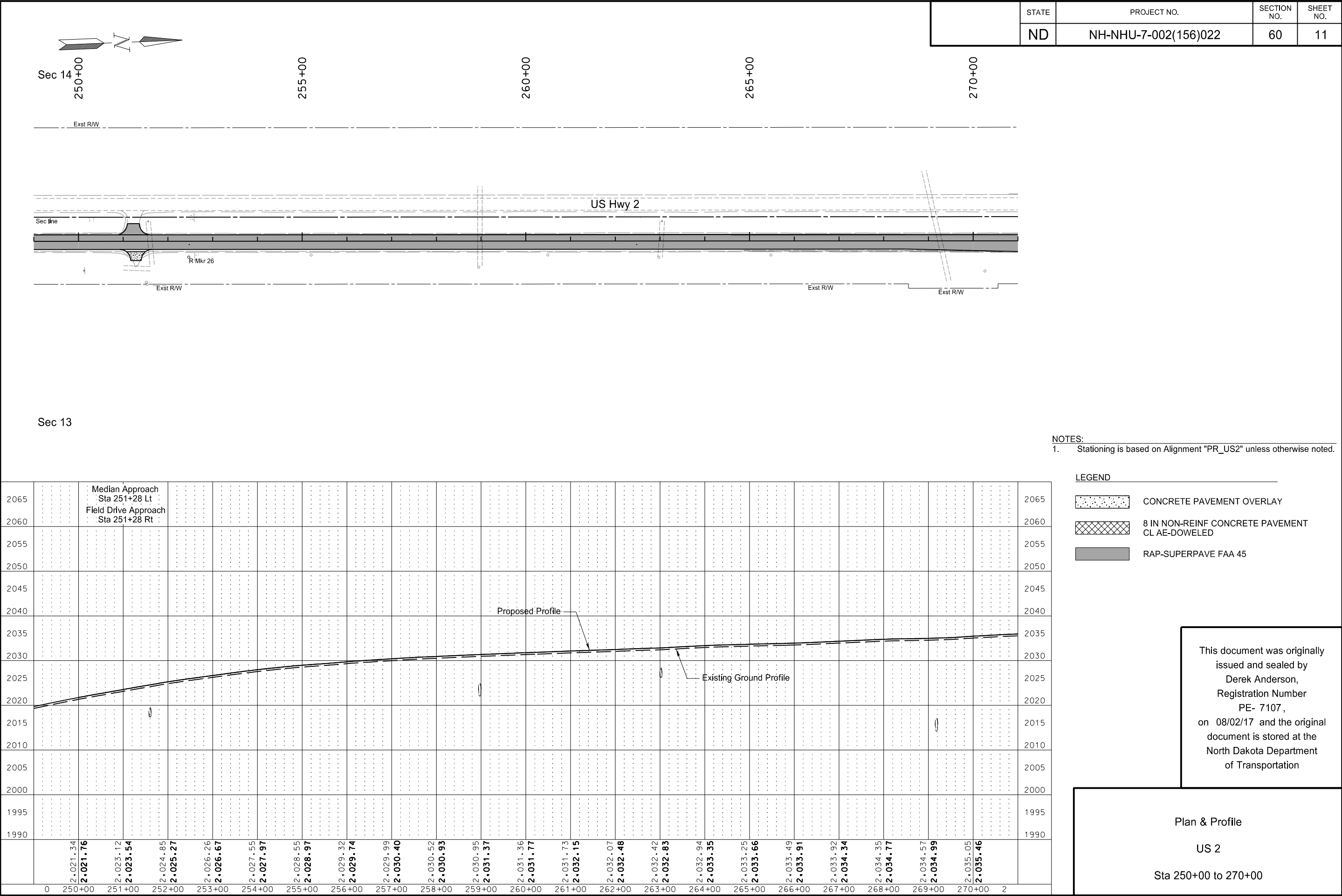
US 2

Sta 170+00 to 190+00









LEGEND

CONCRETE PAVEMENT OVERLAY

8 IN NON-REINF CONCRETE PAVEMENT
CL AE-DOWELED

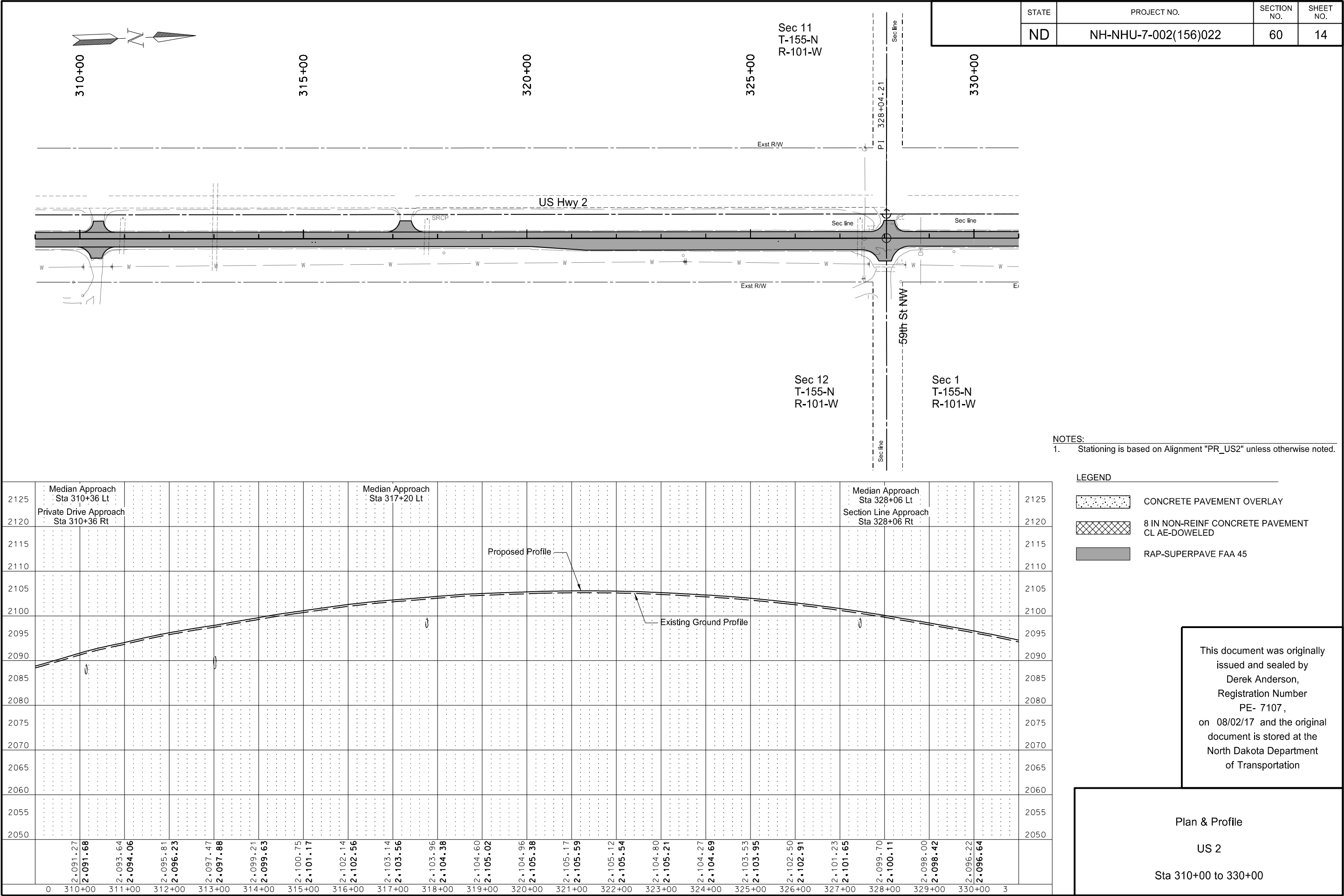
RAP-SUPERPAVE FAA 45

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Plan & Profile

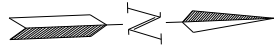
US 2

Sta 250+00 to 270+00



Sec 2
T-155-N
R-101-W

330+00



335+00

340+00

345+00

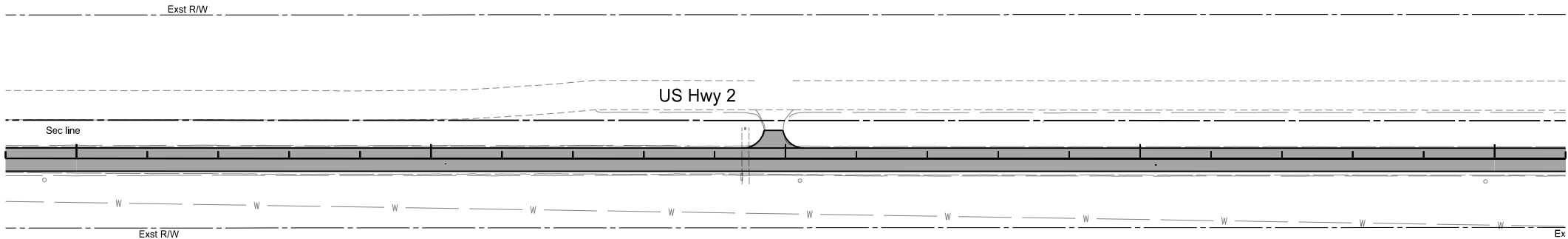
350+00

STATE
ND

PROJECT NO.
NH-NHU-7-002(156)022

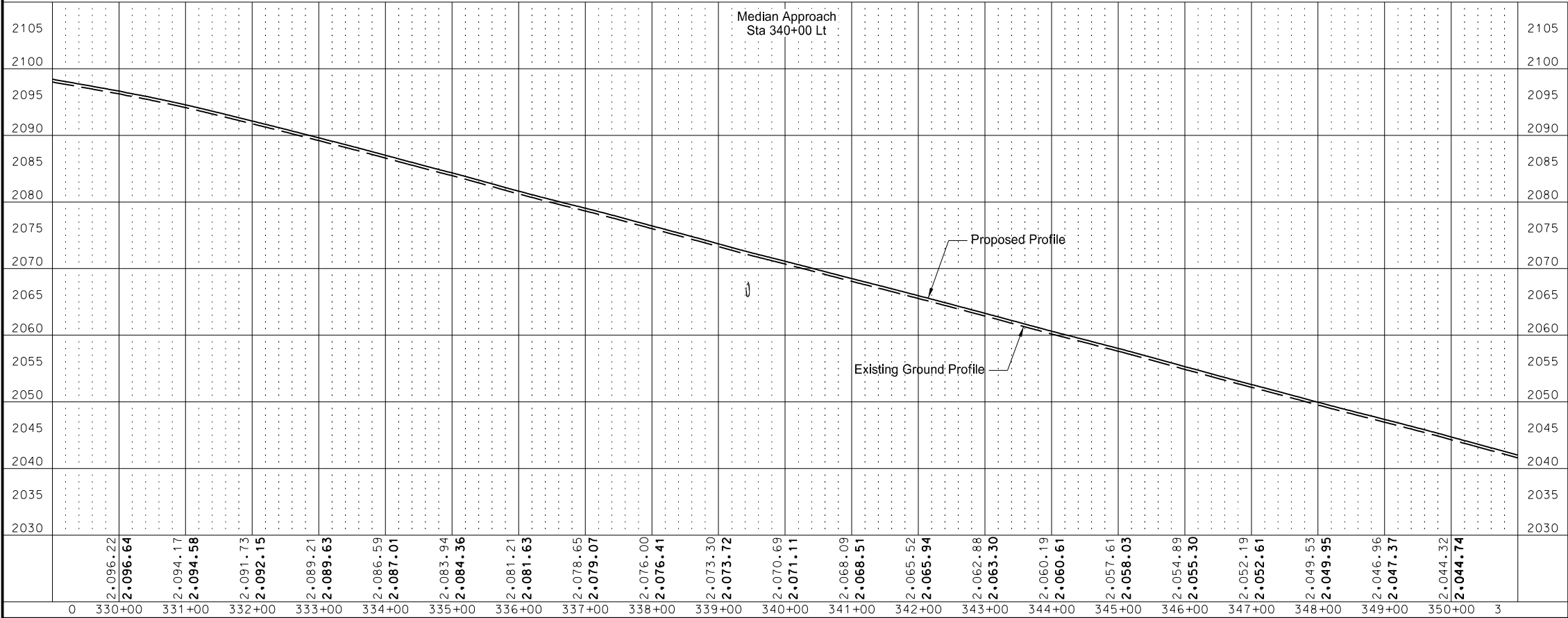
SECTION NO.
60

SHEET NO.
15



Sec 1
T-155-N
R-101-W

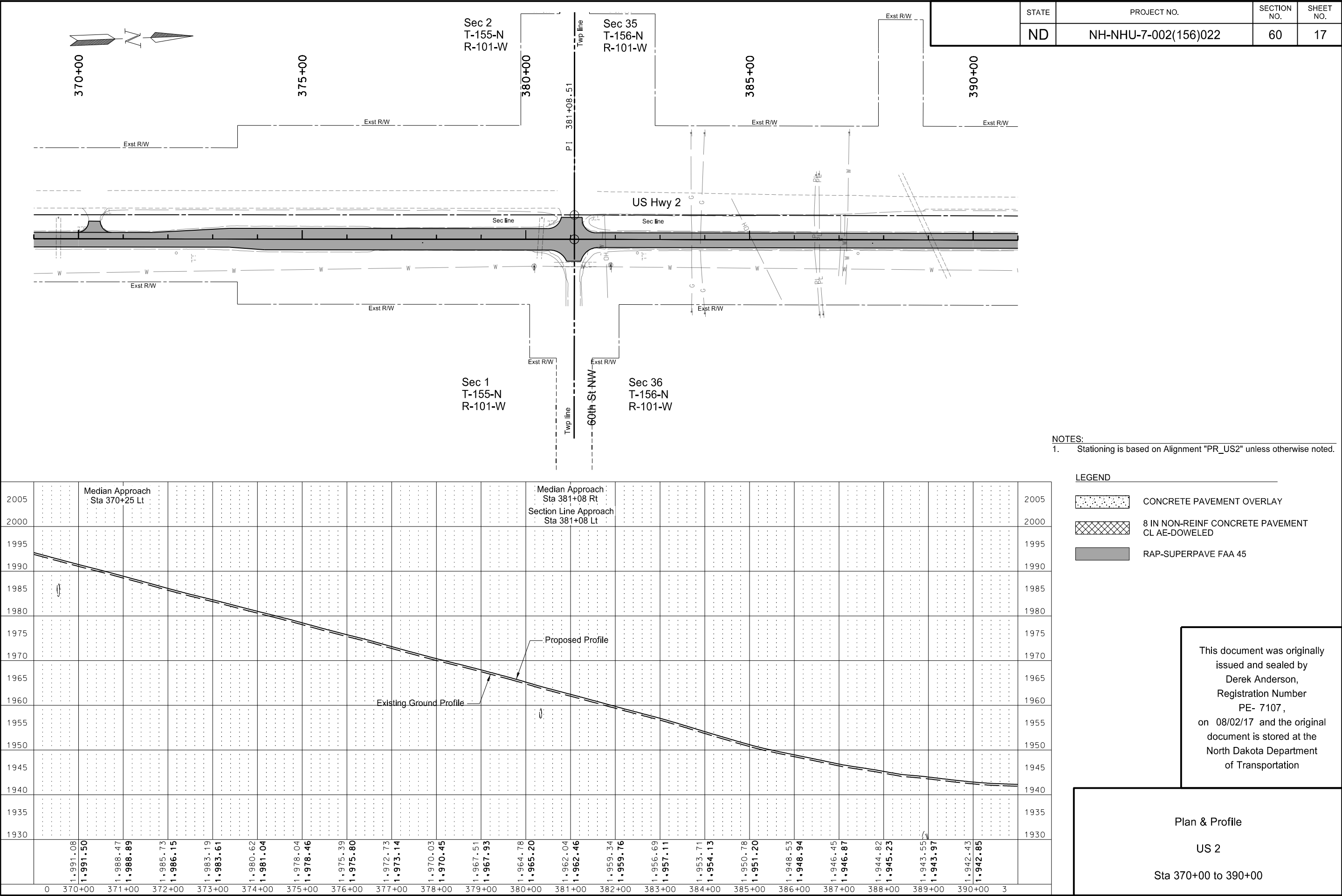
NOTES:
1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

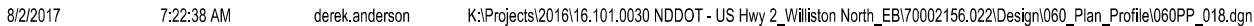


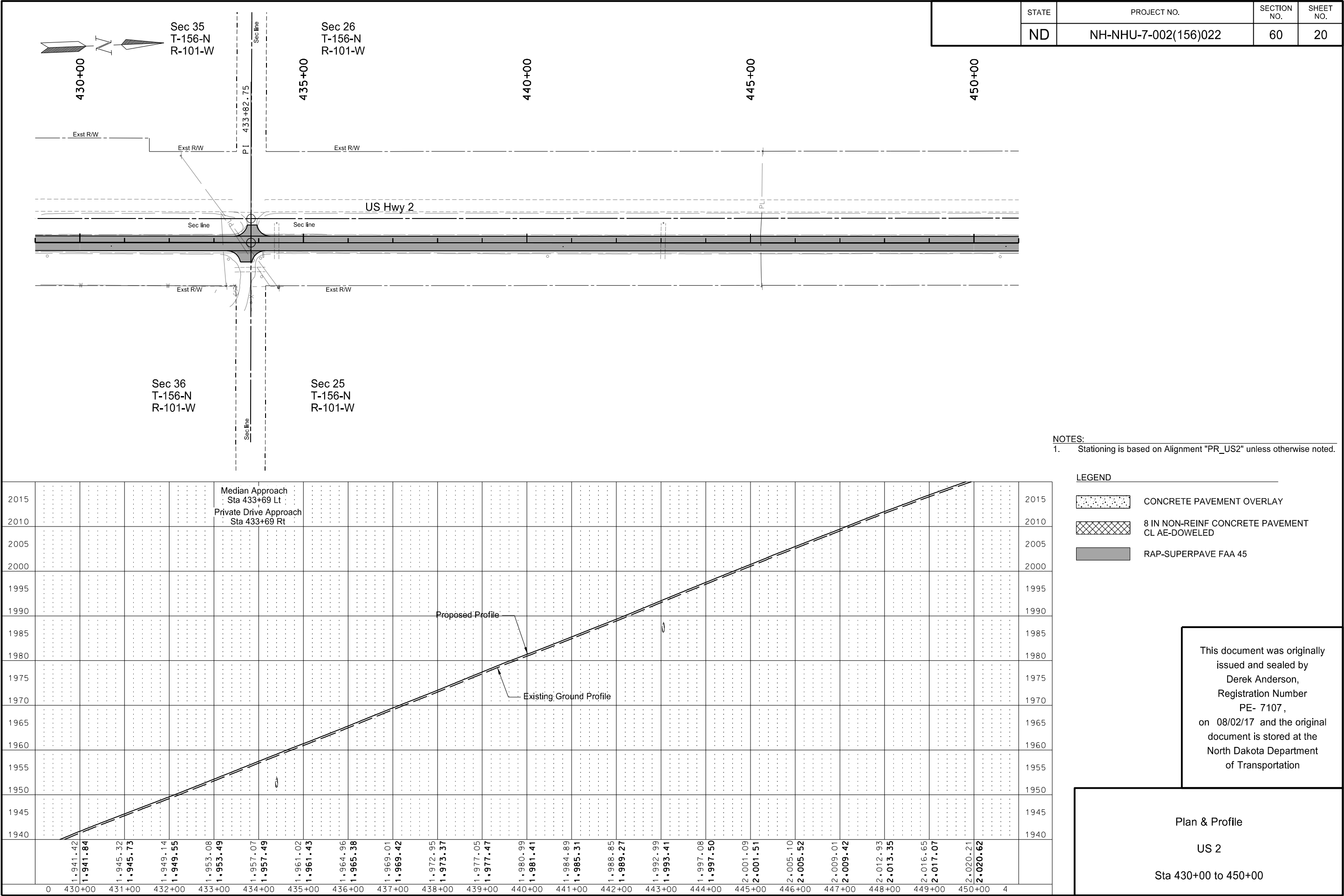
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	CONCRETE PAVEMENT OVERLAY
	8 IN NON-REINF CONCRETE PAVEMENT
	CL AE-DOWELED
	RAP-SUPERPAVE FAA 45

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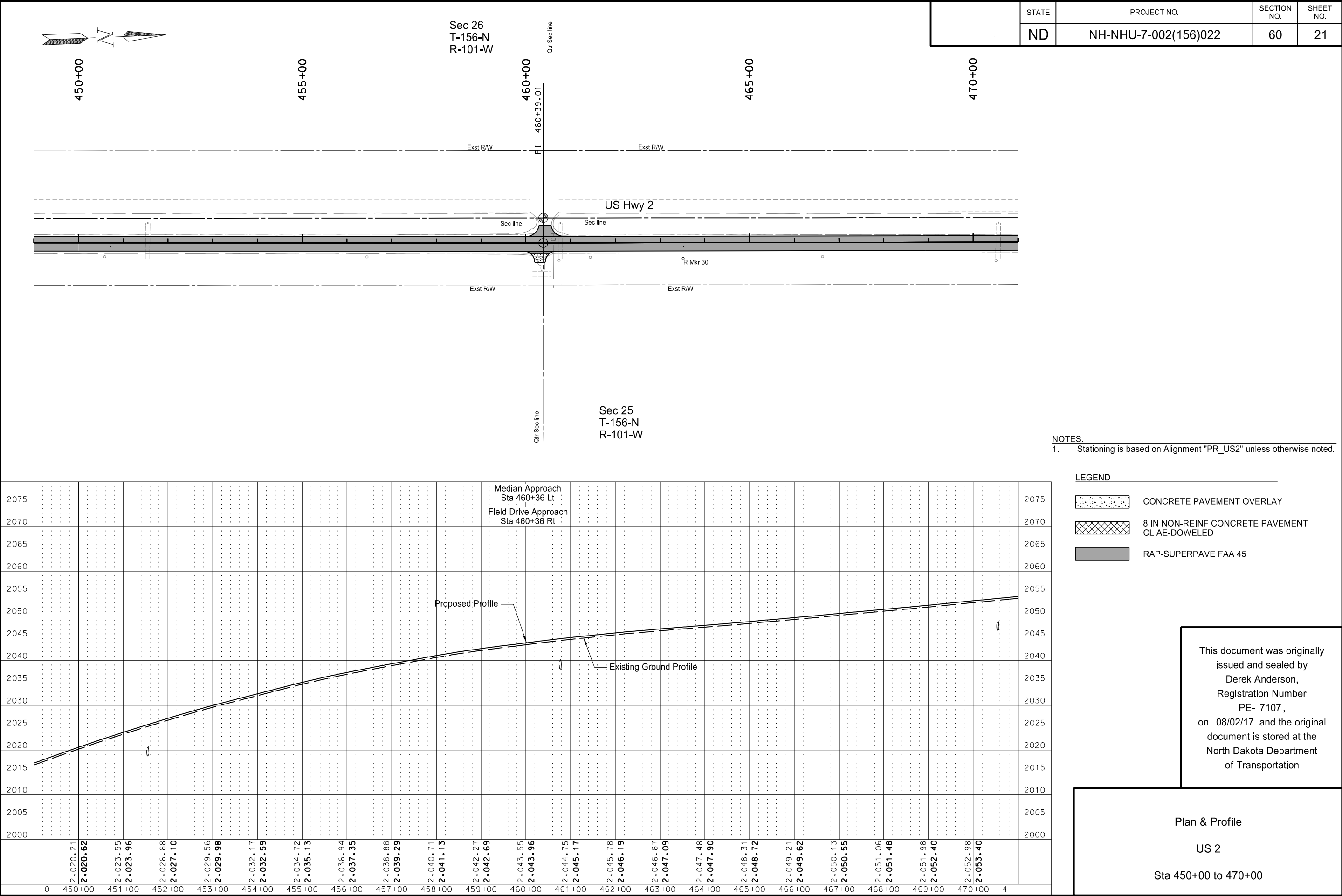
Plan & Profile
US 2
Sta 330+00 to 350+00

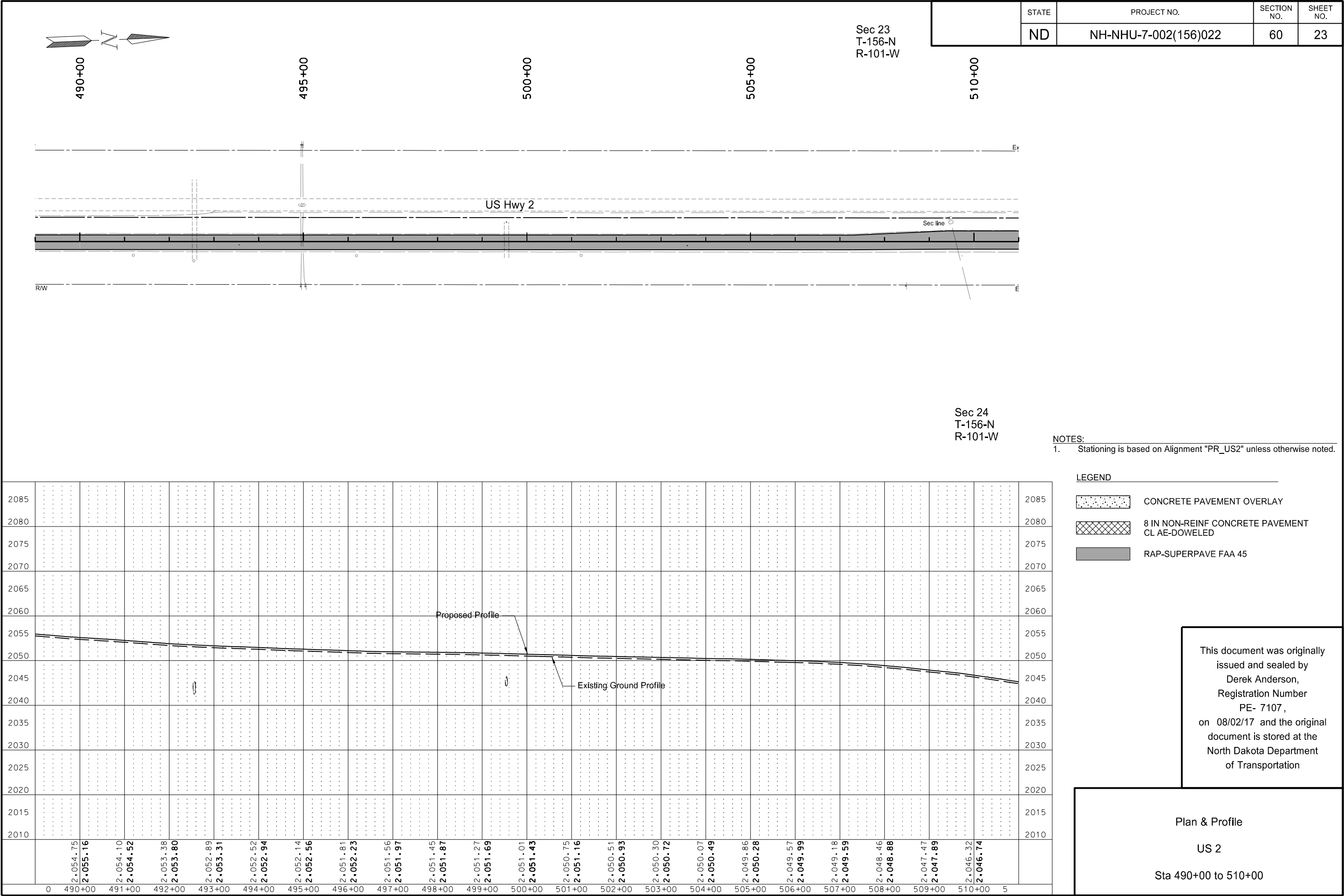


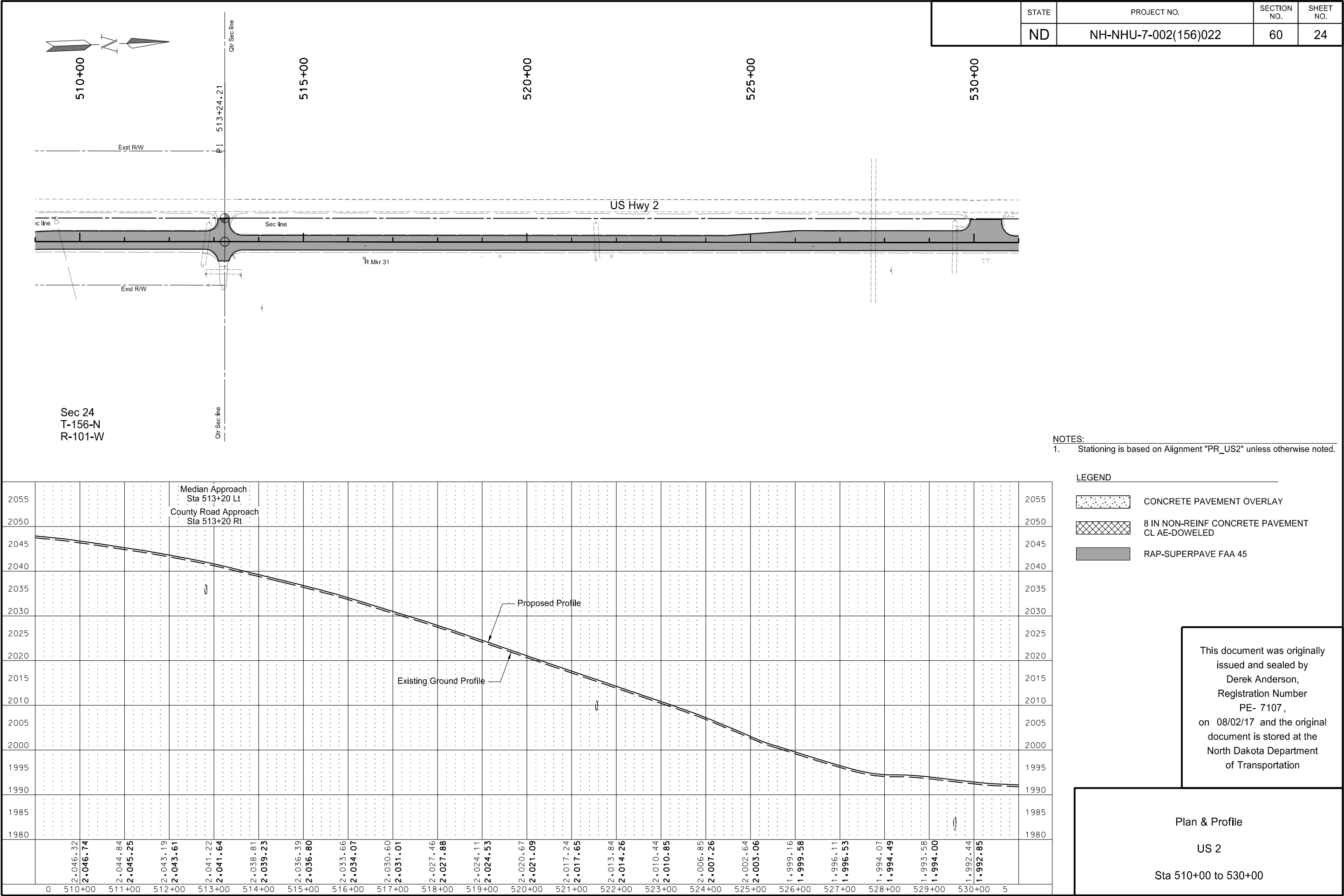




NOTES:
1. Stationing is based on Alignment "PR_US2" unless otherwise noted.







STATE

ND

PROJECT NO.

NH-NHU-7-002(156)022

SECTION NO.

60

SHEET NO.

24

NOTES:

1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

LEGEND

CONCRETE PAVEMENT OVERLAY

8 IN NON-REINF CONCRETE PAVEMENT
CL AE-DOWELED

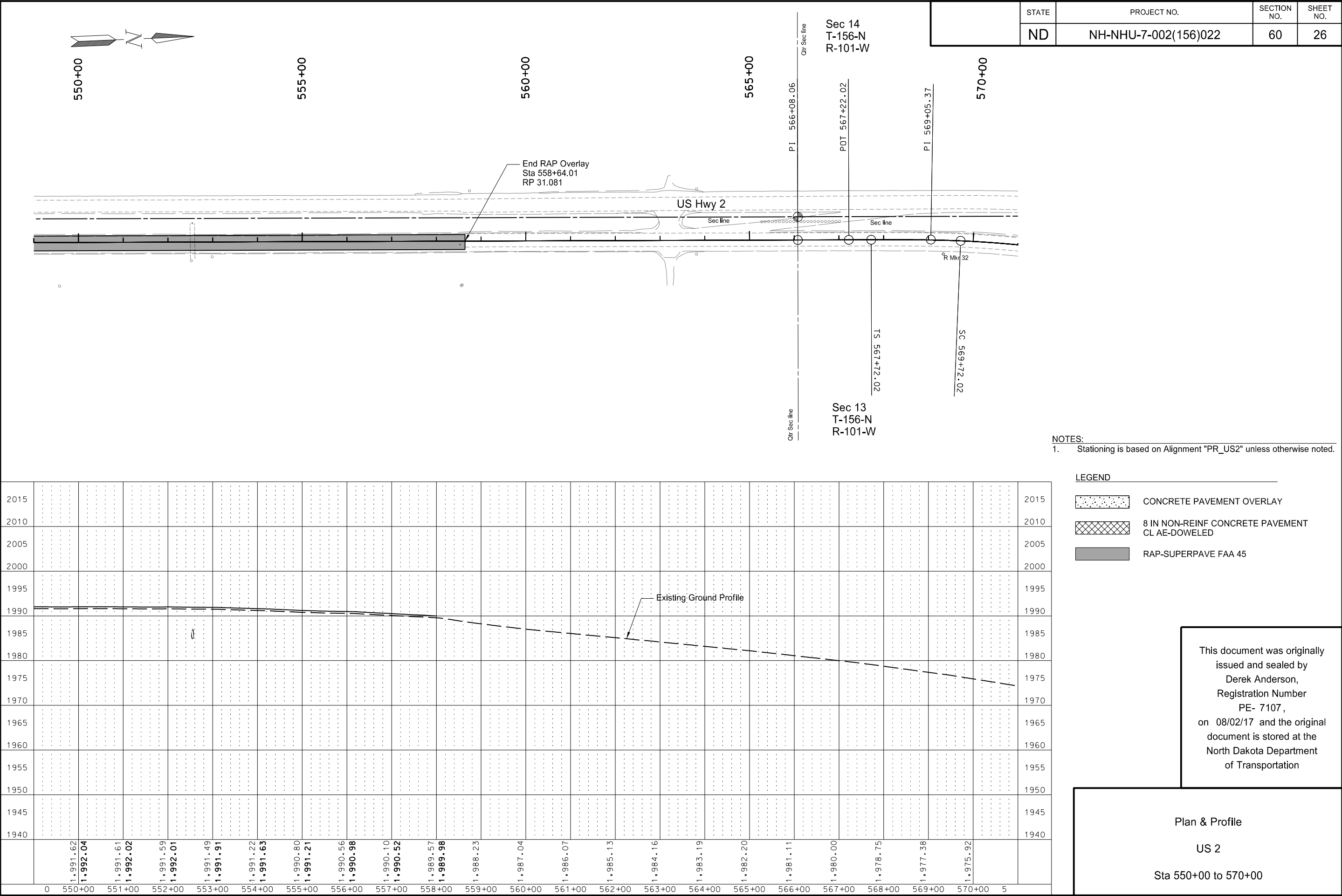
RAP-SUPERPAVE FAA 45

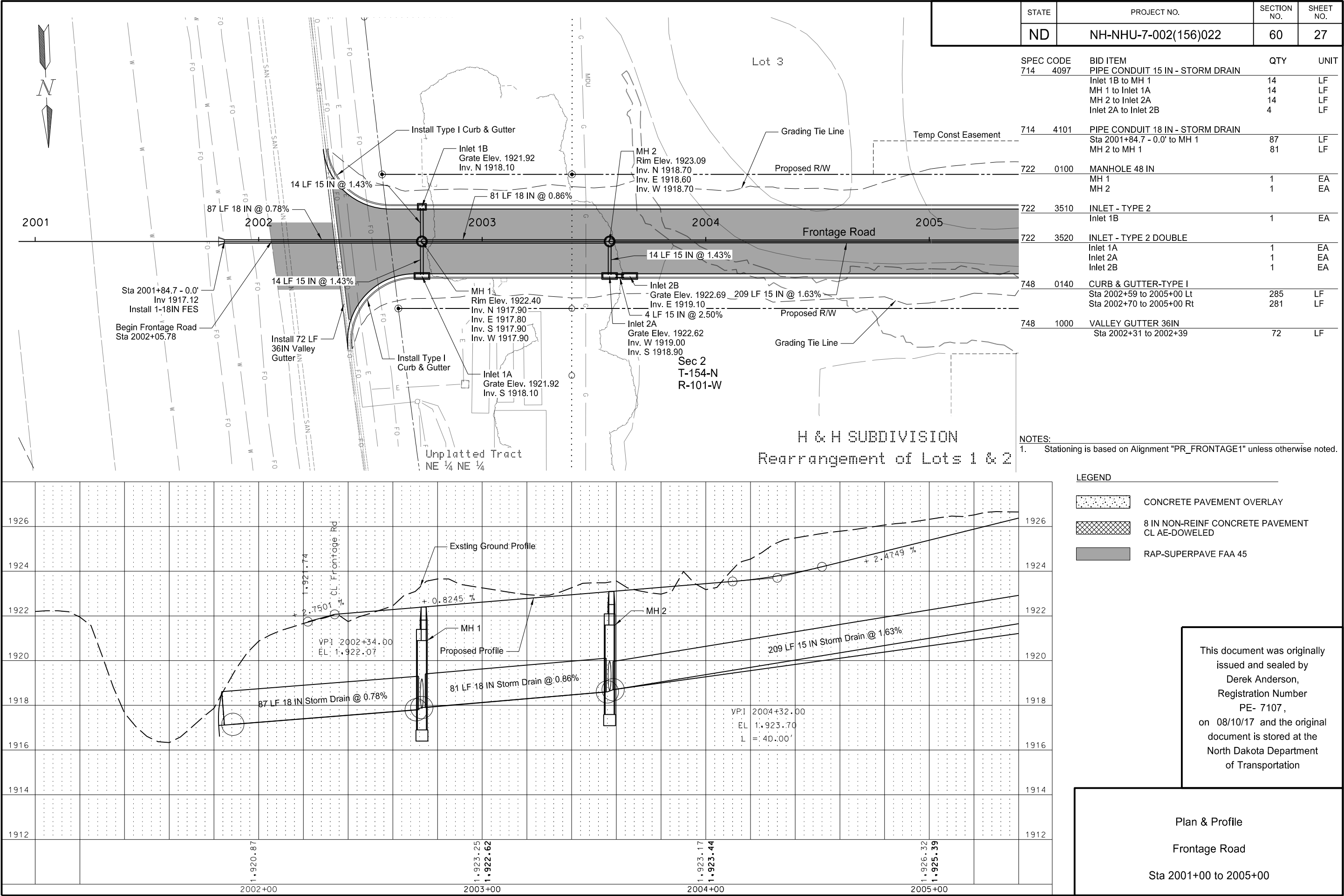
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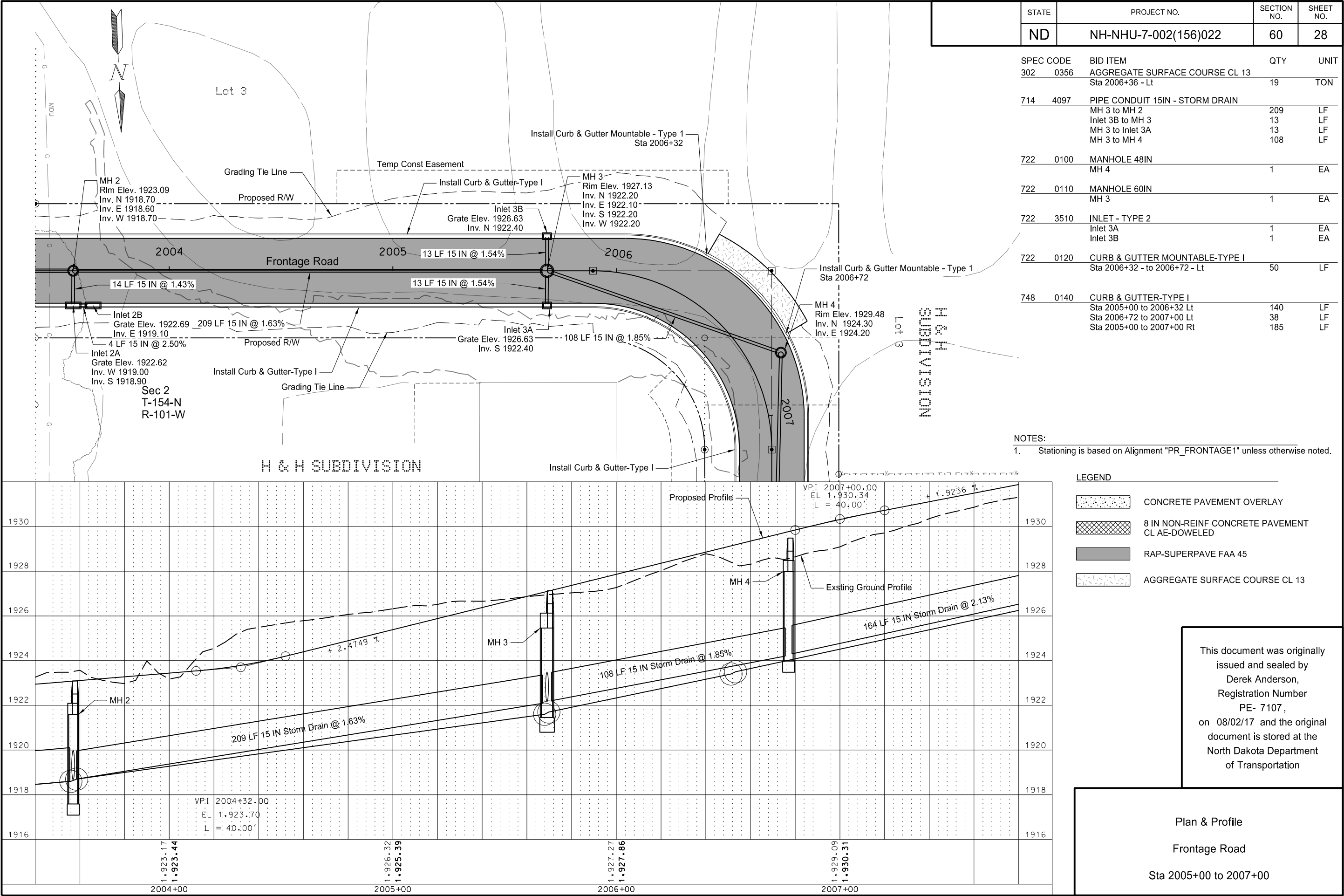
Plan & Profile

US 2

Sta 510+00 to 530+00







NOTES:

1. Stationing is based on Alignment "PR_FRONTAGE1" unless otherwise noted.

CONCRETE PAVEMENT OVERLAY

8 IN NON-REINF CONCRETE PAVEMENT
CL AE-DOWELED

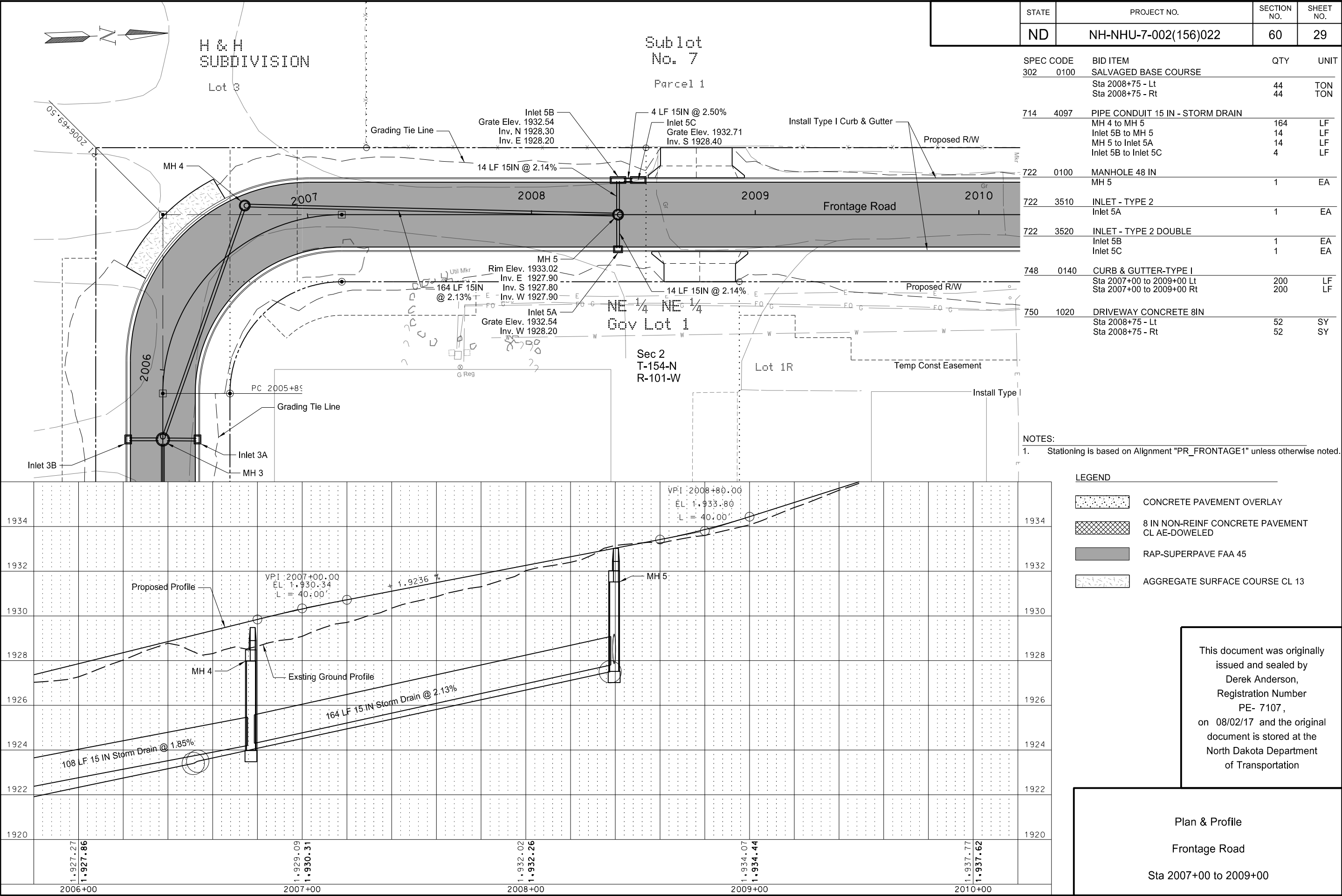
RAP-SUPERPAVE FAA 45

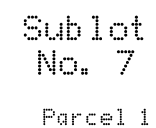
AGGREGATE SURFACE COURSE CL 13

Plan & Profile

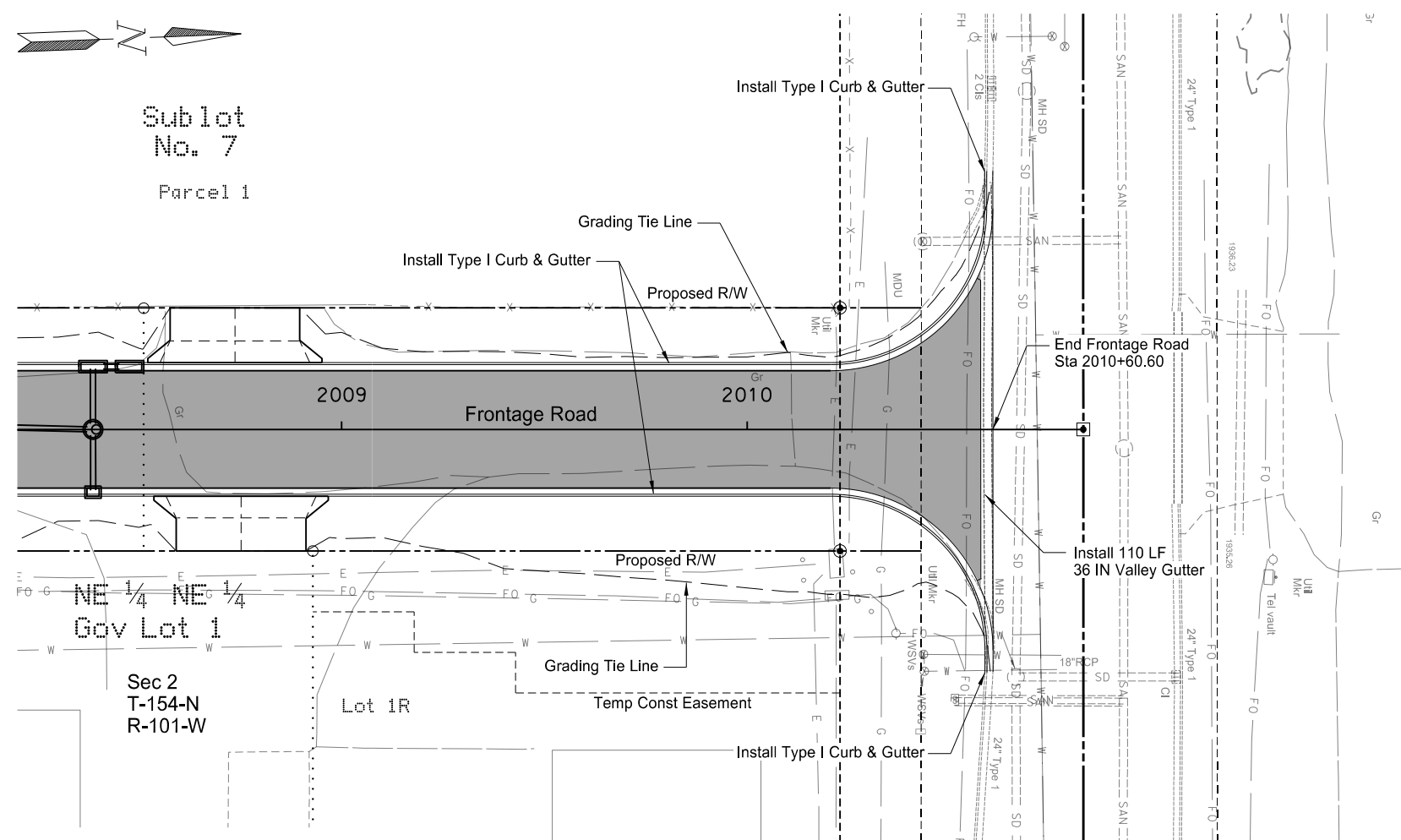
Frontage Road

Sta 2005+00 to 2007+00



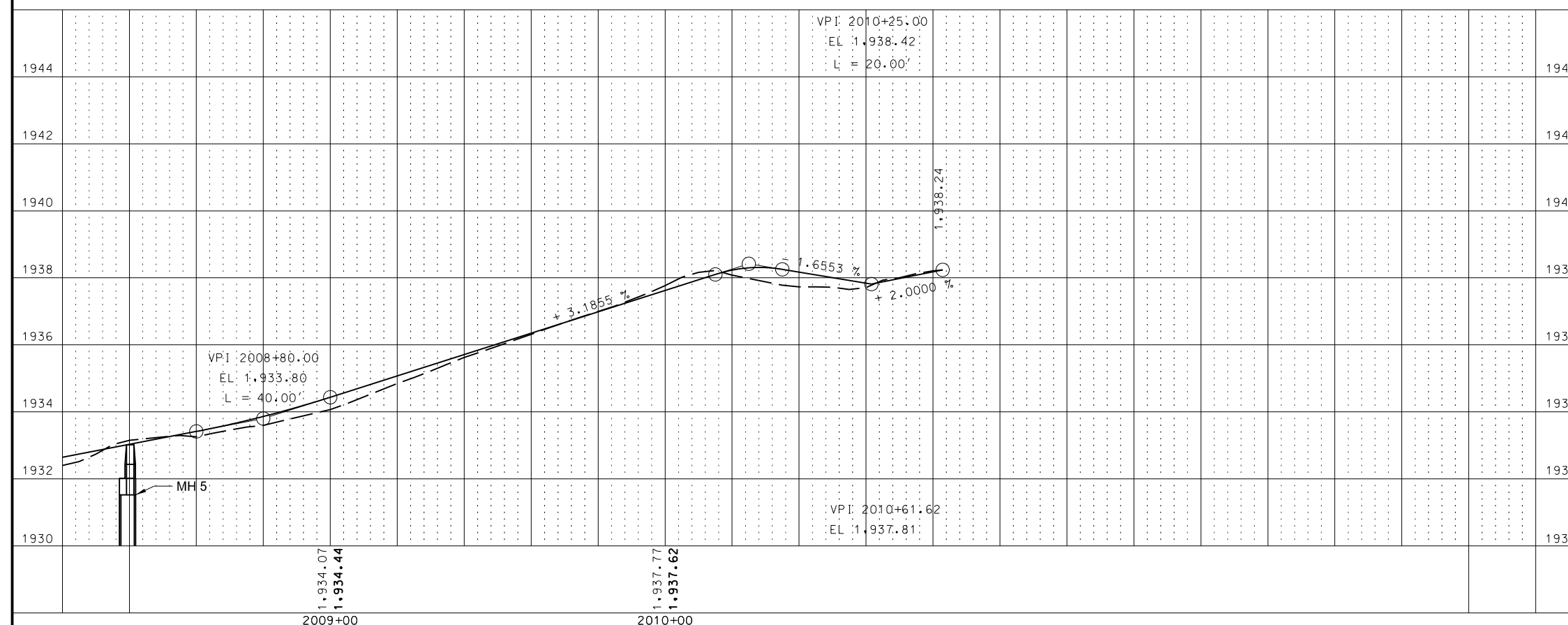


SPEC CODE	BID ITEM	QTY	UNIT
748 0140	CURB & GUTTER-TYPE I		
	Sta 2009+00 to 2010+60 Lt	189	LF
	Sta 2009+00 to 2010+60 Rt	185	LF
748 1000	VALLEY GUTTER 36IN		
	Sta 2010+60.60 - 55' Rt to - 55' Lt	110	LF






NOTES:

1. Stationing is based on Alignment "PR FRONTAGE1" unless otherwise noted.

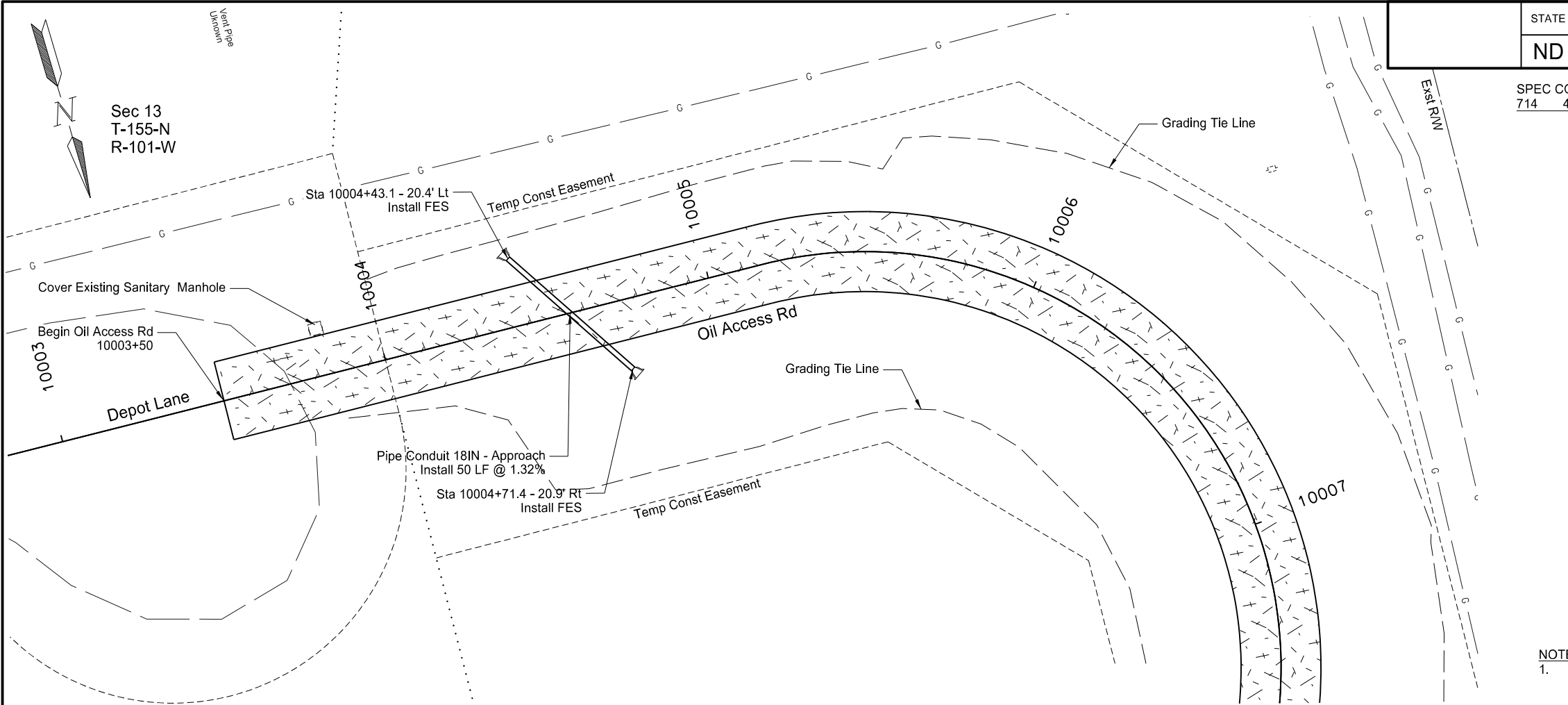


LEGEND

	CONCRETE PAVEMENT OVERLAY
	8 IN NON-REINF CONCRETE PAVEMENT CL AE-DOWELED
	RAP-SUPERPAVE FAA 45

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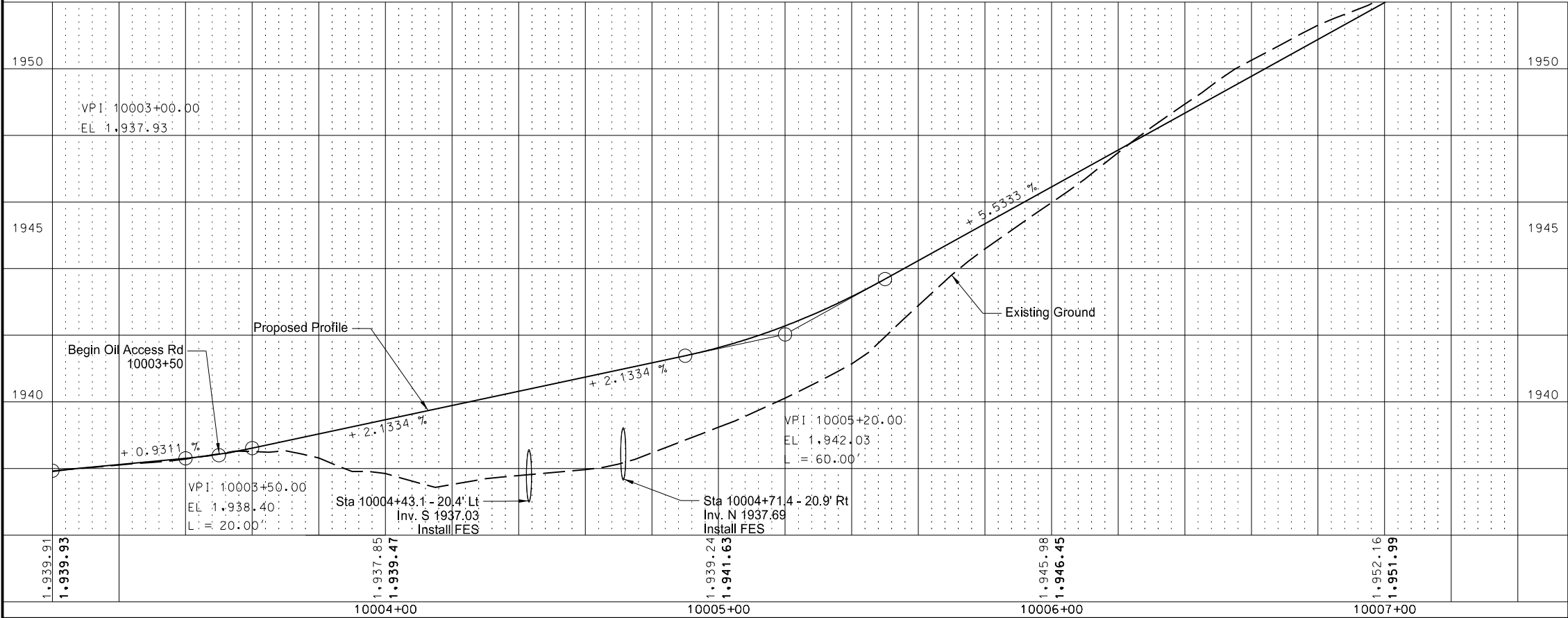
Plan & Profile
Frontage Road
Sta 2009+00 to 2100+50



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	60	31

SPEC CODE	BID ITEM	QTY	UNIT
714 4099	PIPE CONDUIT - 18 IN APPROACH Sta 10004+43.1 - 20.4' Lt to 10004+71.4 - 20.9' Rt	50	LF

NOTES:
1. Stationing is based on Alignment "PR_Oilfield1" unless otherwise noted.



LEGEND	
	CONCRETE PAVEMENT OVERLAY
	8 IN NON-REINF CONCRETE PAVEMENT CL AE-DOWELED
	RAP-SUPERPAVE FAA 45
	AGGREGATE SURFACE COURSE CL 13

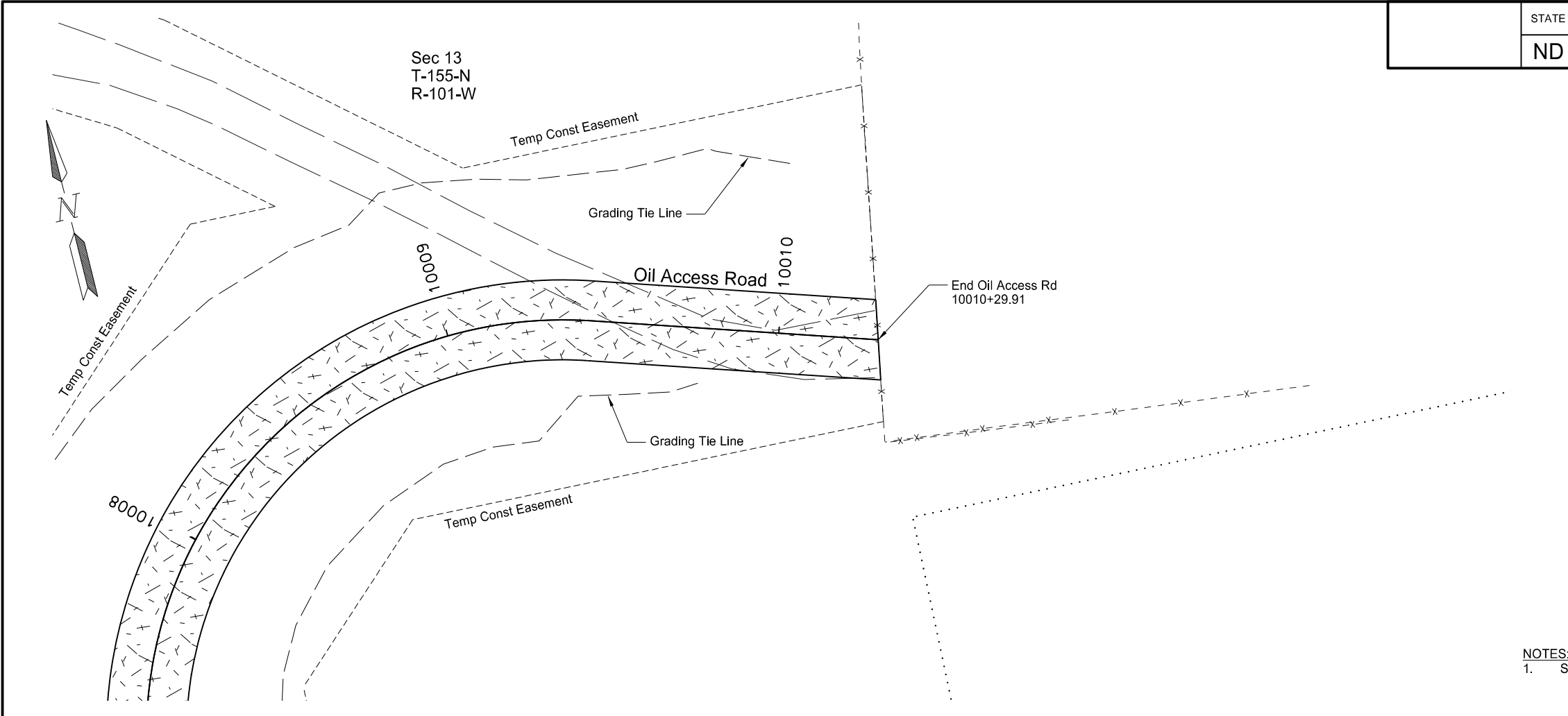
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Plan & Profile

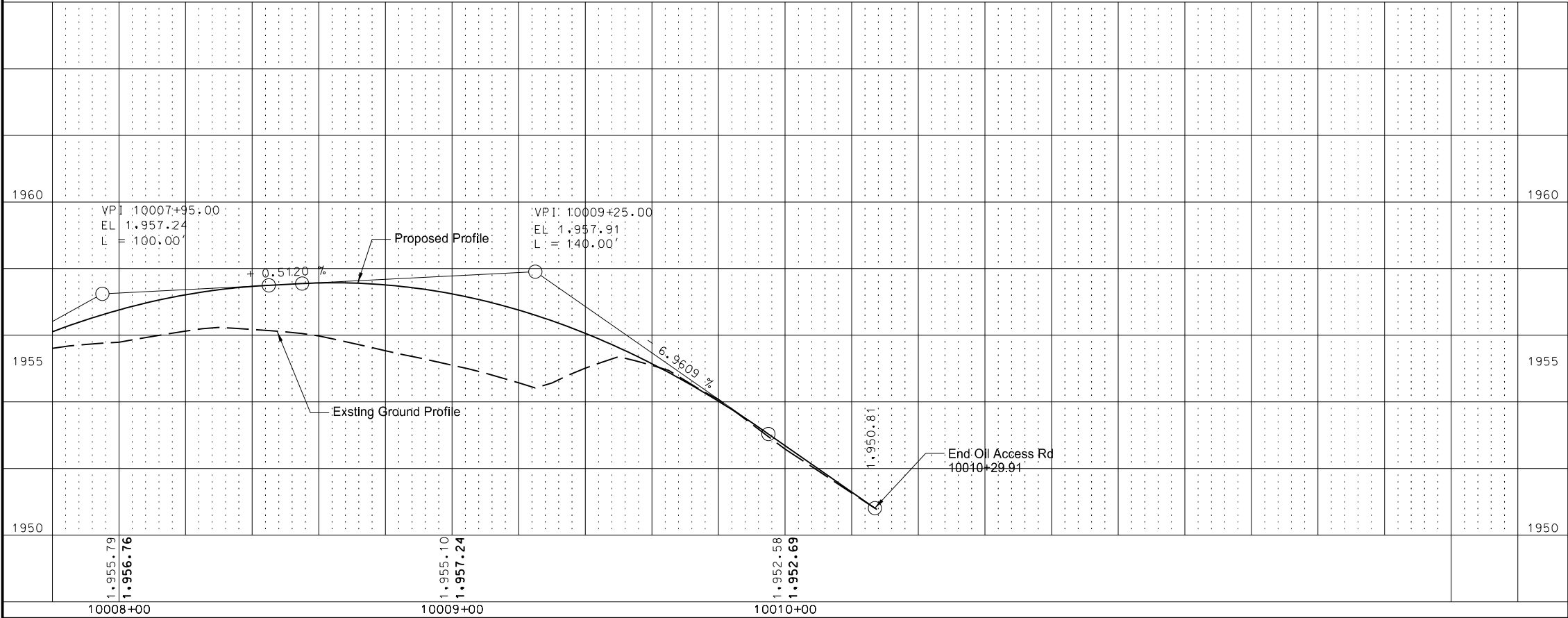
Oil Access

Sta 10003+70.70 to 10007+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	60	33



NOTES:
1. Stationing is based on Alignment "PR_Oilfield1" unless otherwise noted.



LEGEND	
	CONCRETE PAVEMENT OVERLAY
	8 IN NON-REINF CONCRETE PAVEMENT CL AE-DOWELED
	RAP-SUPERPAVE FAA 45
	AGGREGATE SURFACE COURSE CL 13

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Plan & Profile

Oil Access

Sta 710+00 to 730+00

Wetland Impact Table											
Wetland Number	Location	Wetland Type	Wetland Feature	USACE Jurisdictional Wetlands¹	Wetland Impacts Acre(s)		USFWS Easement Impacts Acre(s)		Wetland Mitigation		
									Mitigation Required		
					Temp.	Perm.	Temp.	Perm.	EO 11990	USACE	USFWS
1	Sec 5, T155N, R101W	Slope	Natural	Y	0	0	0	0	N	N	N
2	Sec 35, T155N, R101W	Ditch	Artifical	Y	0.03	0.02	0	0	N	N	N
3	Sec 2, T154N, R101W	Ditch	Artifical	N	0	0	0	0	N	N	N
4	Sec 2, T154N, R101W	Ditch	Artifical	N	0	0	0	0	N	N	N
5	Sec 35, T156N, R101W	Riverine	Natural	Y	0	0	0	0	N	N	N
6	Sec 23, T155N, R101W	Riverine	Natural	Y	0	0	0	0	N	N	N
7	Sec 24, T155N, R101W	Basin	Natural	Y	0	0	0	0	N	N	N
8	Sec 24, T155N, R101W	Basin	Natural	Y	0	0	0	0	N	N	N
9	Sec 25, T155N, R101W	Riverine	Natural	Y	0	0	0	0	N	N	N
10	Sec 13, T155N, R101W	Ditch	Artifical	N	0	0	0	0	N	N	N
Totals					0.03	0.02					

Other Waters Impact Table										
Number	Location	Local Waterway Name	Size		Feature	USACE Jurisdictional ¹	Impacts to Other Waters			
			Acre(s)	Linear Feet			Acre(s)		Linear Feet	
							Temp	Perm	Temp	Perm
OW 5	Sec 35, T156N, R101W	Cow Creek	0.39	200	Natural	Y	0.00	0.00	0.00	0.00
			0.39	200			0.00	0.00	0.00	0.00

¹ A wetland Jurisdictional Determination was issued by the USACE on 12/29/2016; NWO-2016-2128-BIS.

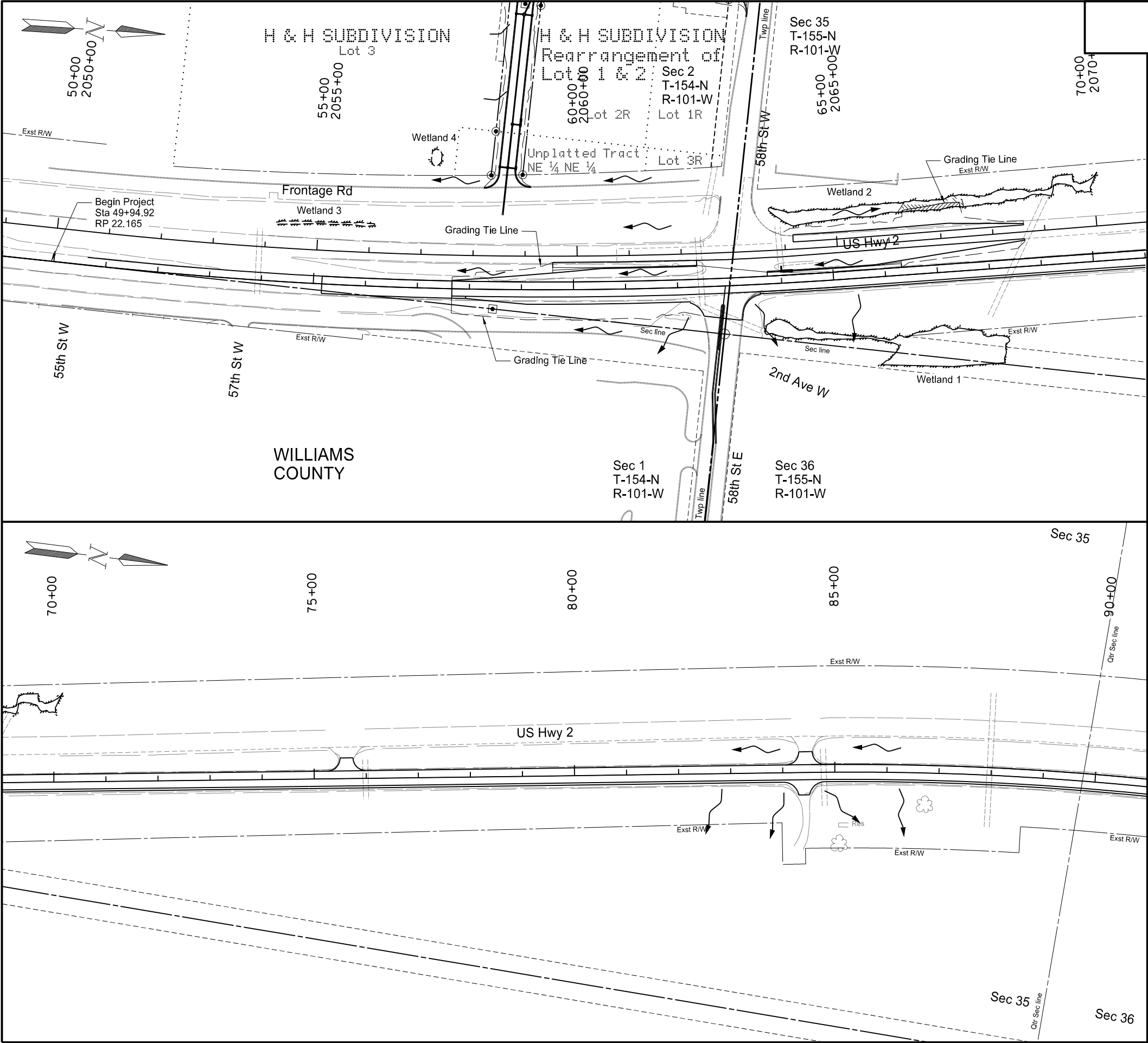
² 1199 Mitigation requirements - All impacts to natural wetlands (natural/jurisdictional and natural/non-jurisdictional), regardless of size, as well as impacts greater than 0.10 acre to wetlands require mitigation. USACE Mitigation Requirements – All jurisdictional impacts greater than 0.10 acre to each resource (cumulative. eg 1a ,1b,1c.. etc) requires mitigation. Other Water impact greater than 300 linear feet requires mitigation.

³ All artificial/non-jurisdictional, deep water (impacts greater than 6.6 feet), Other Waters less than 300 linear feet (determined by the USACE on a case by case), and temporary impacts do not require mitigation.

Impact Summary Table			
Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD		Temporary JD	0.03
Natural/Non-JD		Non-JD Temporary	
Artificial/JD	0.02	Permanent JD > 0.10	
Artificial /Non-JD		Permanent OW	
Total	0.02	Temporary OW	

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Wetlands Mitigation and Environmental



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	75	2

Wetland Impacts Sta 50+00 to 90+00		
Wetland #	Temporary Wetland Impact	Permanent Wetland Impact
Wetland 2	0.03 Ac	0.02 Ac

Notes:

- Stationing is based on Alignment "PR_US2" unless otherwise noted.

Legend

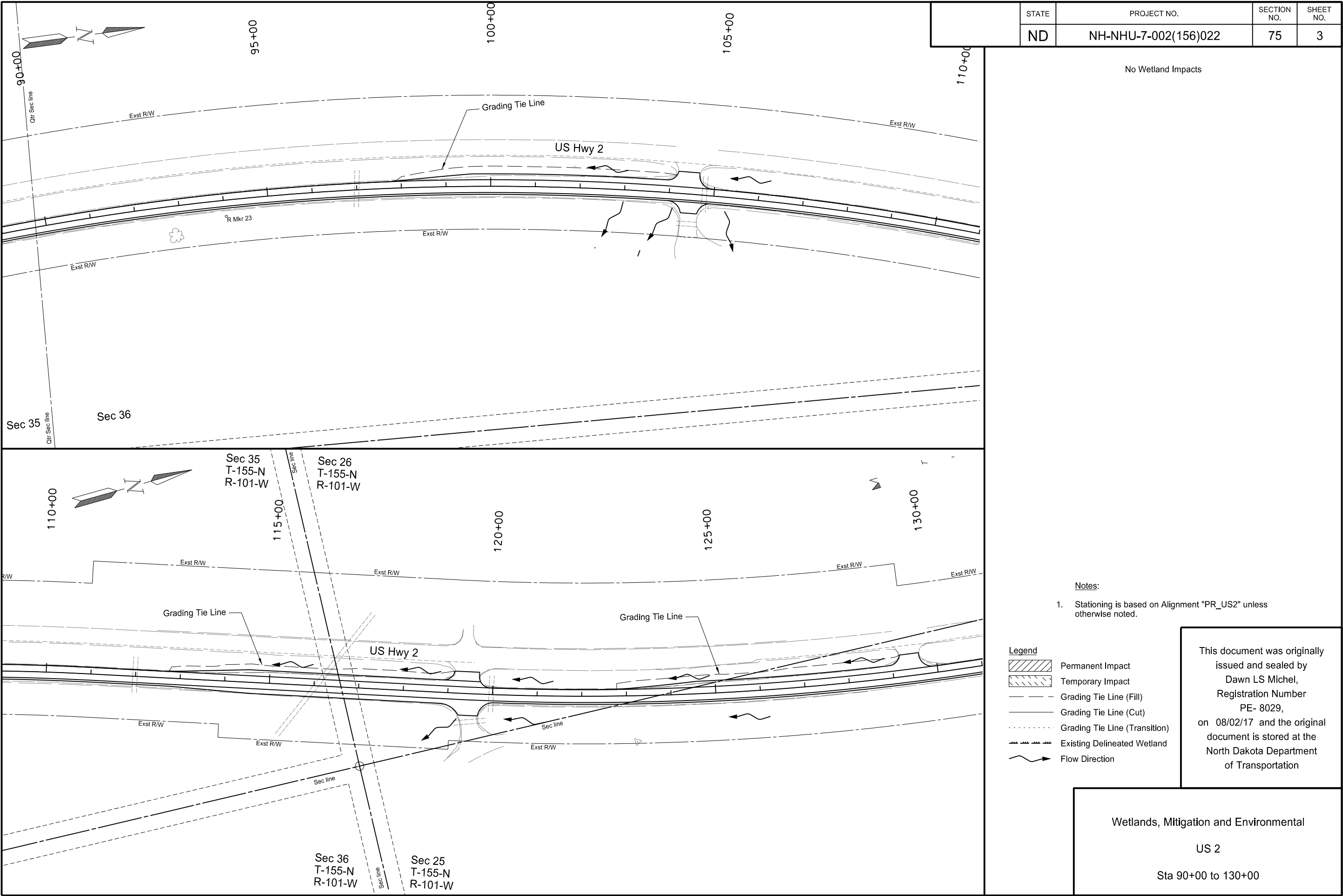
- Permanent Impact
- Temporary Impact
- Grading Tie Line (Fill)
- Grading Tie Line (Cut)
- Grading Tie Line (Transition)
- Existing Delineated Wetland
- Flow Direction

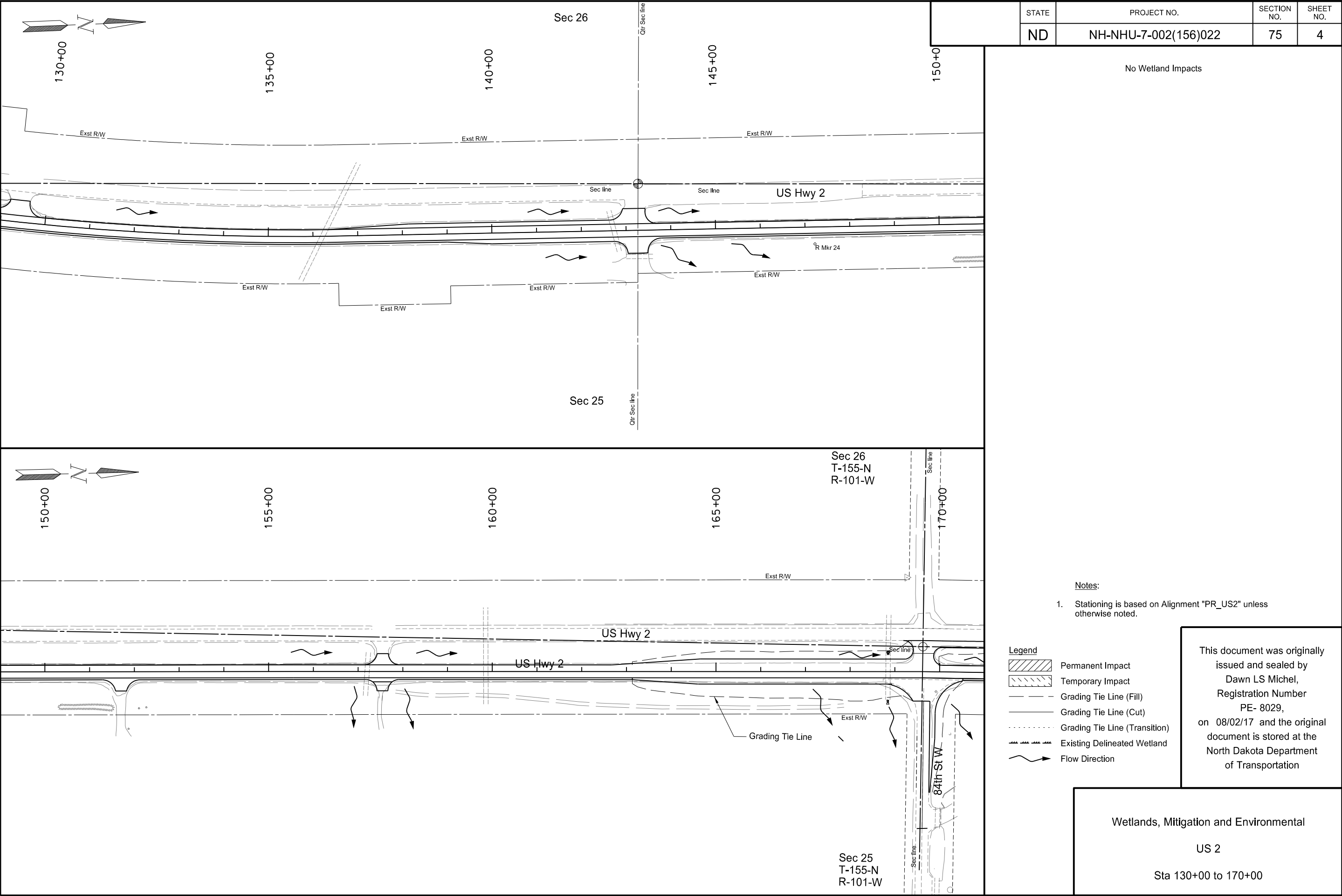
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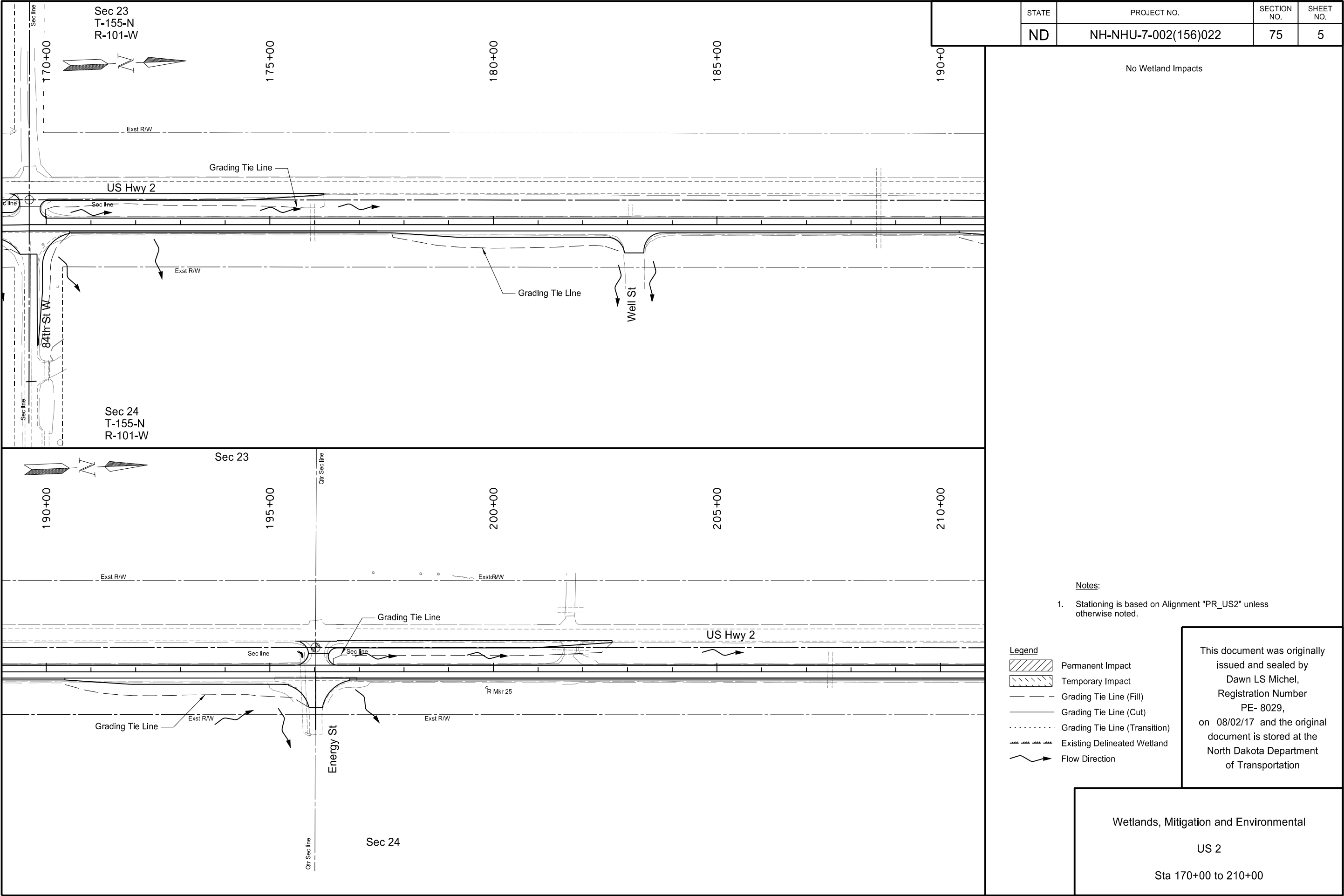
Wetlands, Mitigation and Environmental

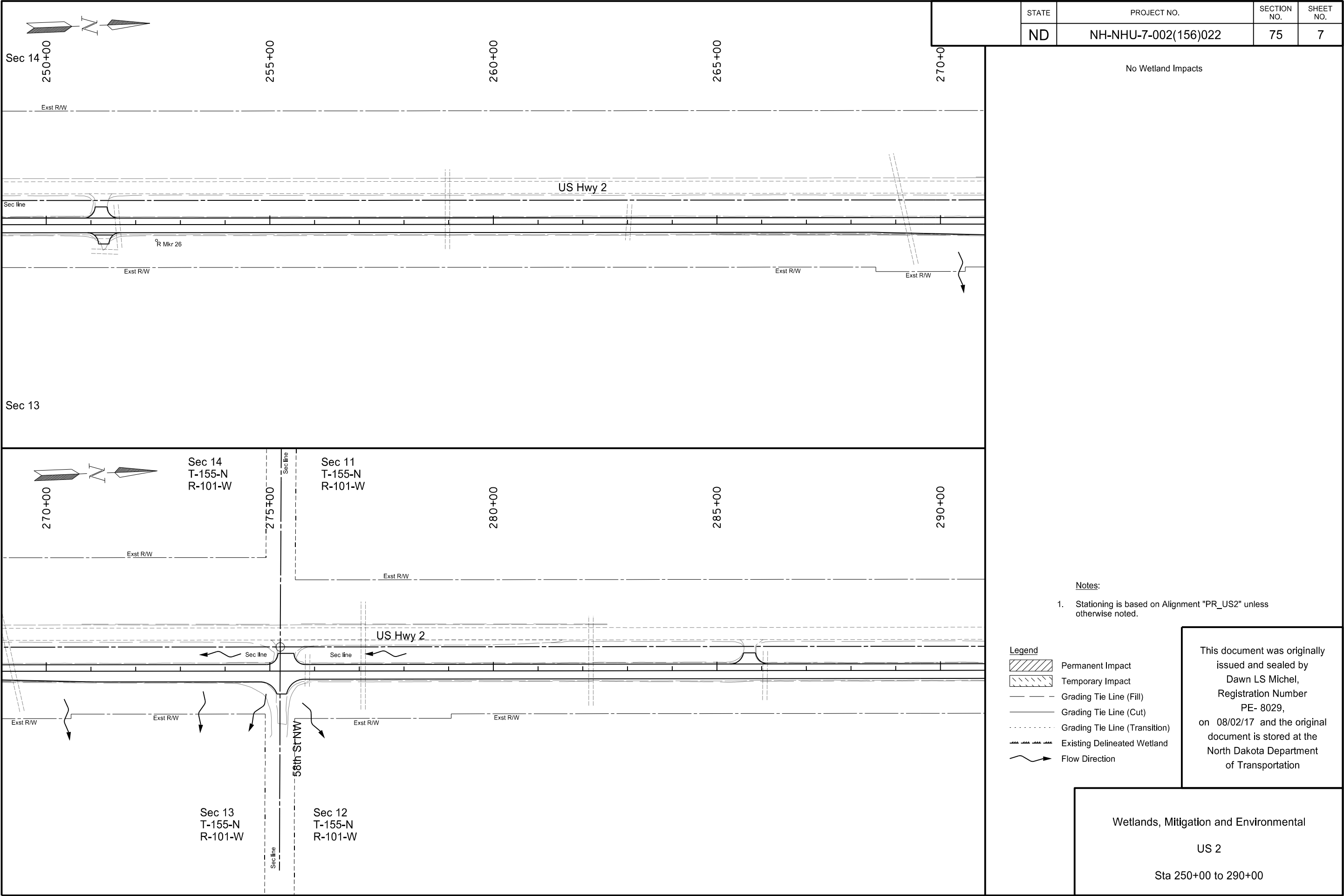
US 2

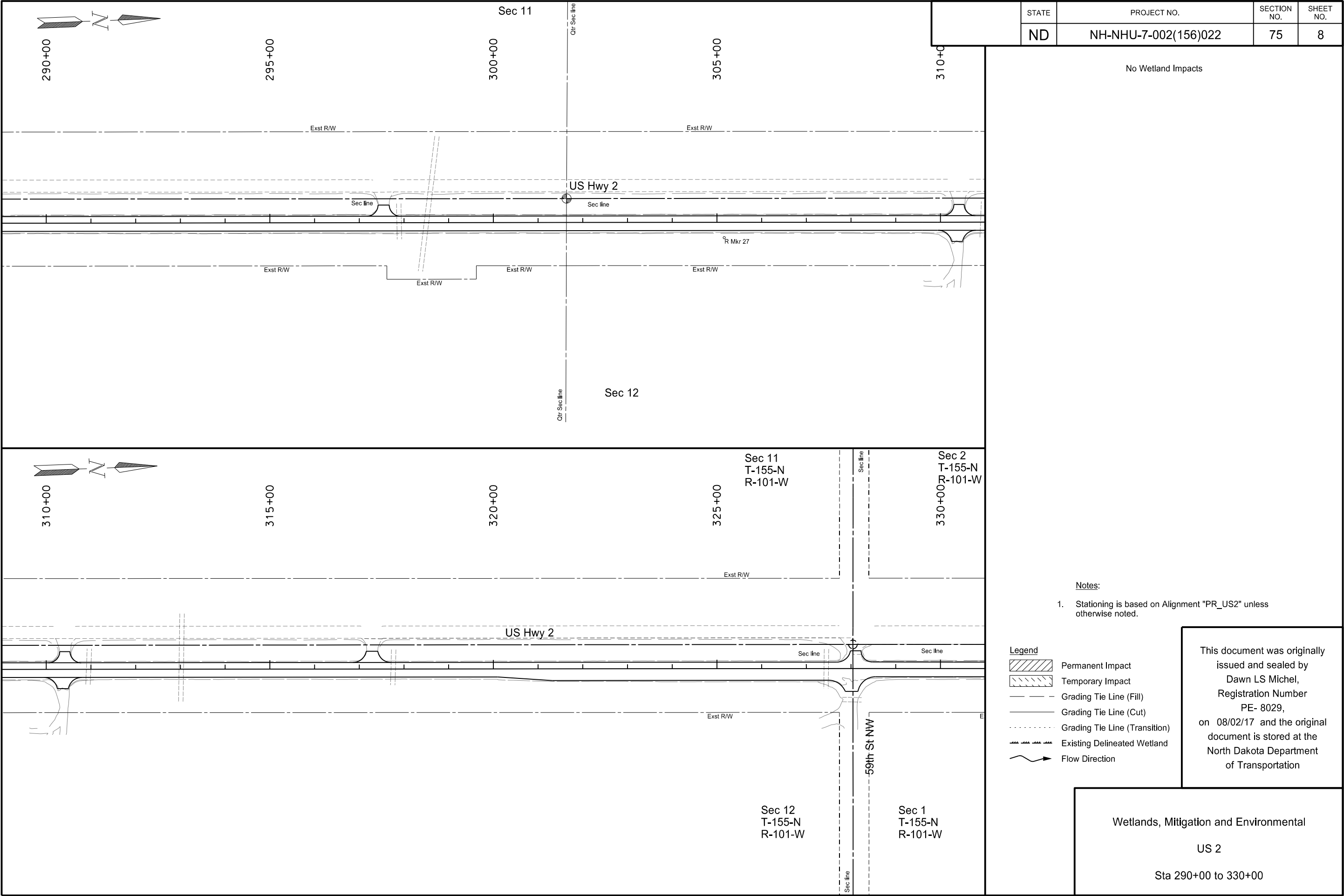
Sta 50+00 to 90+00

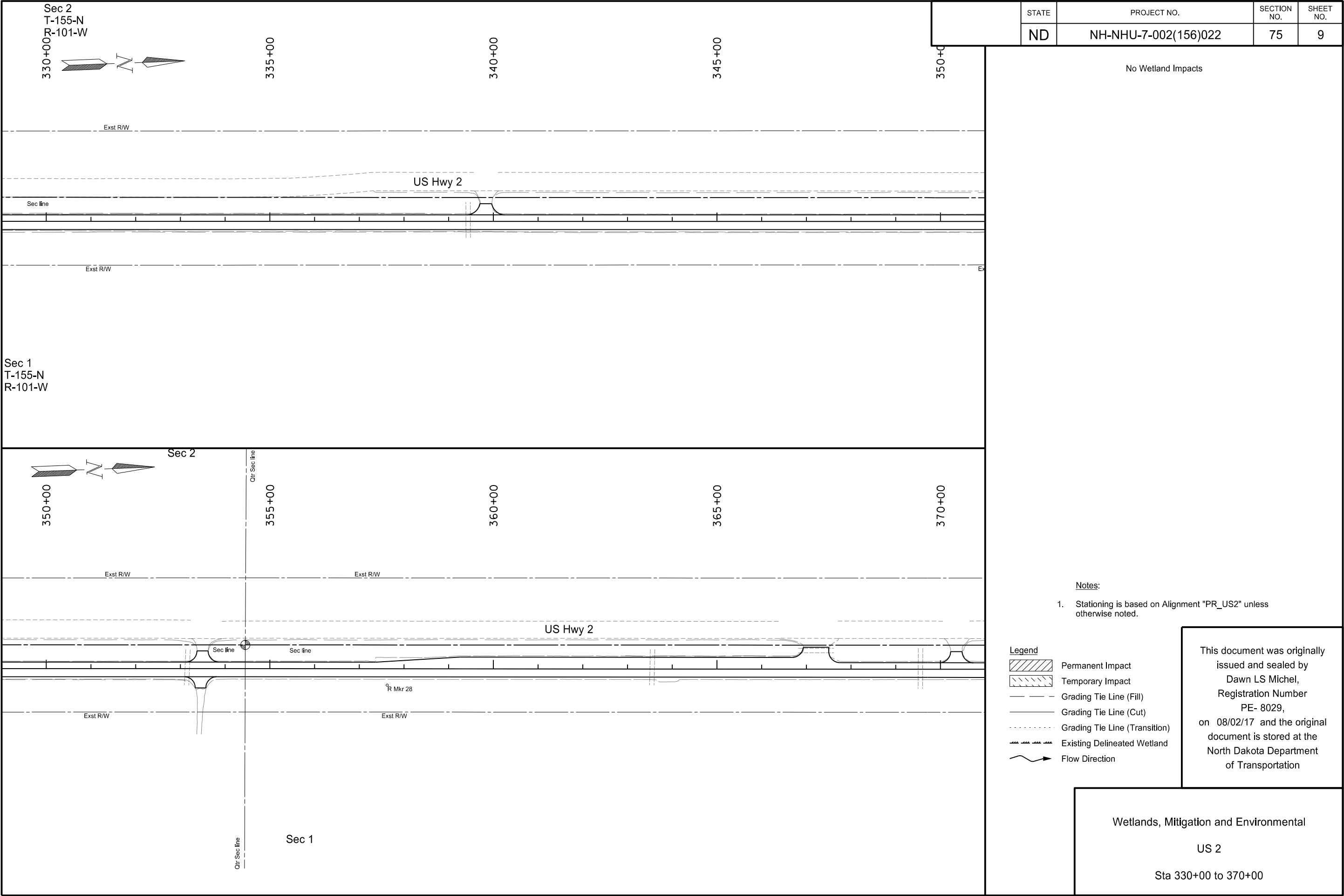


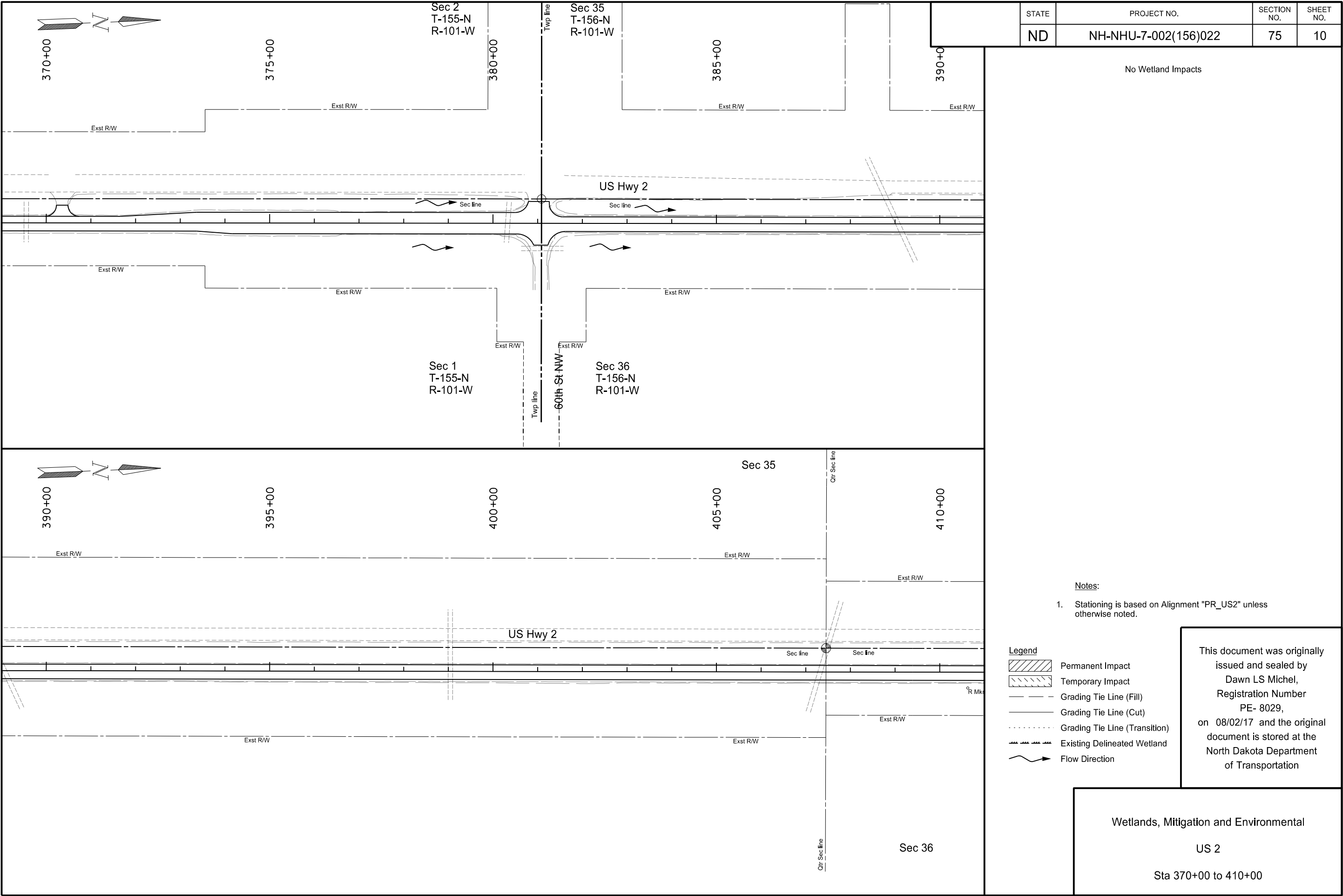


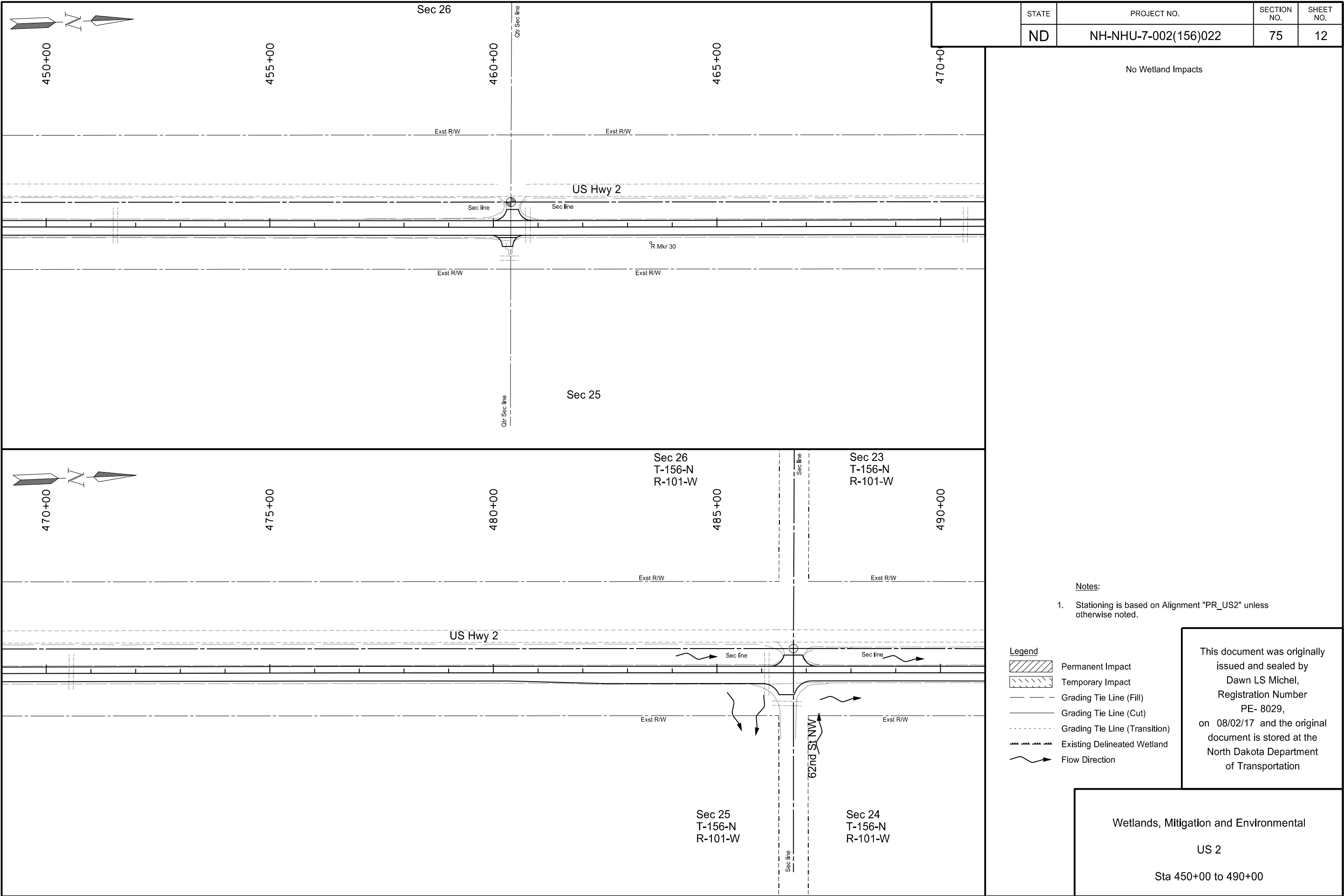


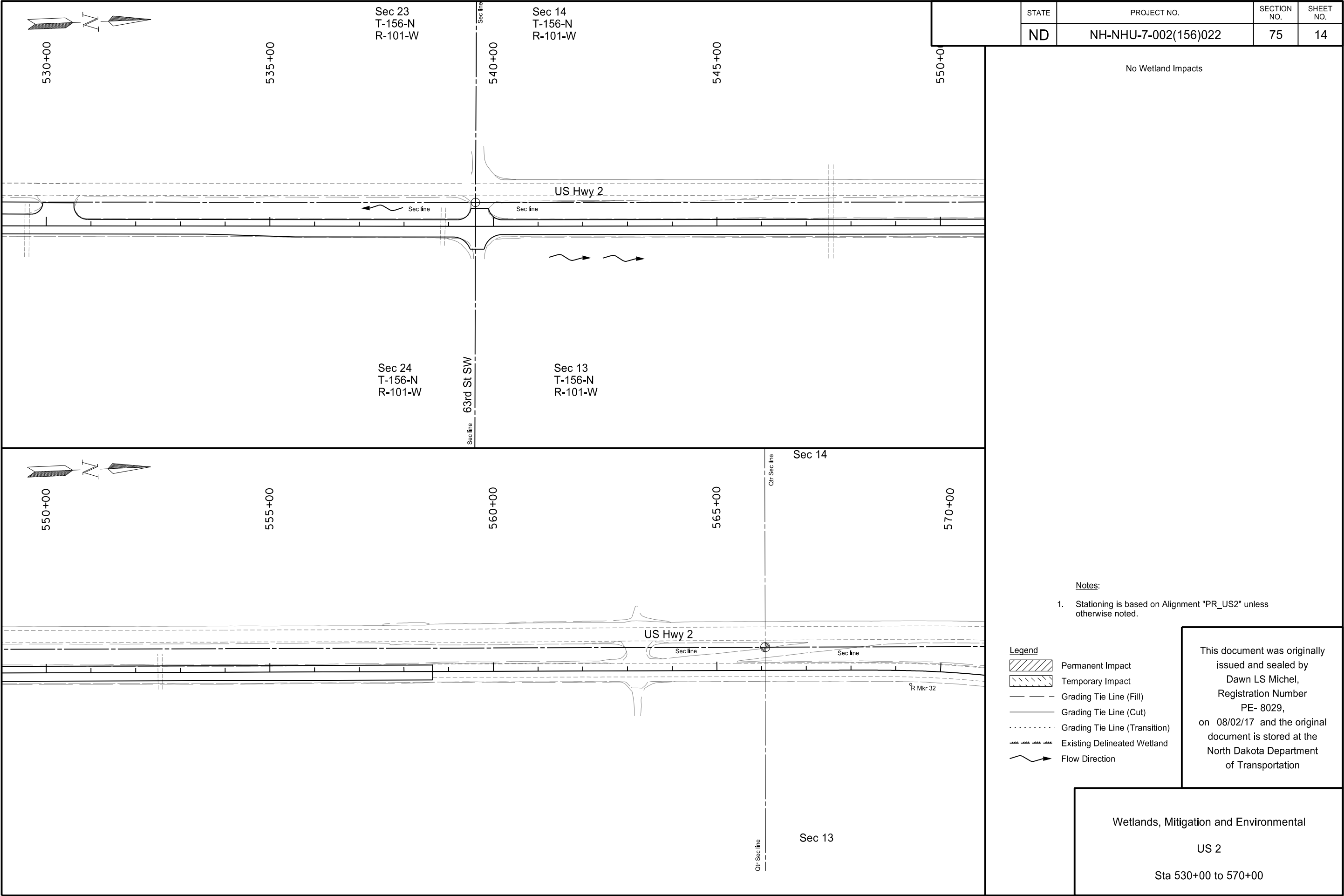


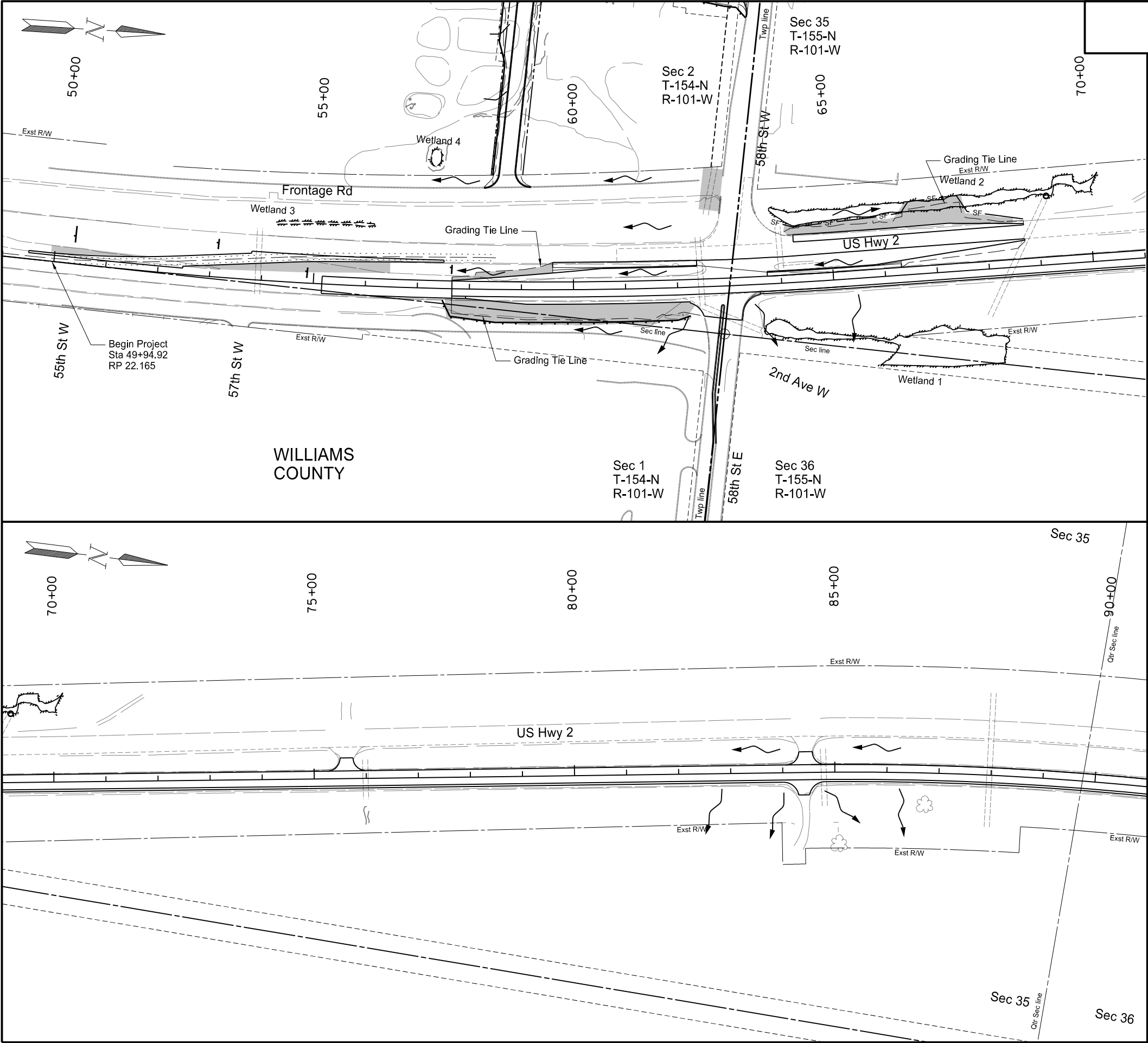












STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	76	1

SPEC CODE	BID ITEM	QTY	UNIT
251 2000	TEMPORARY COVER CROP		
Sta 57+66 to 90+00 Lt		0.55	Ac
Sta 57+66 to 90+00 Rt		0.42	Ac
253 0201	HYDRAULIC MULCH		
Sta 57+66 to 90+00 Lt		0.55	Ac
Sta 57+66 to 90+00 Rt		0.42	Ac
260 0200	SILT FENCE SUPPORTED		
Sta 63+55 to 68+89 Lt		521	LF
260 0201	REMOVE SILT FENCE SUPPORTED		
Sta 63+55 to 68+89 Lt		521	LF
261 0112	FIBER ROLLS 12IN		
Sta 50+38 Lt		30	LF
Sta 53+06 Lt		20	LF
Sta 54+85 Lt		20	LF
Sta 57+65 Lt		20	LF
Sta 57+48 to 62+54 Rt		500	LF
Sta 68+18 Lt		32	LF
261 0113	REMOVE FIBER ROLLS 12IN		
Sta 50+38 Lt		30	LF
Sta 53+06 Lt		20	LF
Sta 54+85 Lt		20	LF
Sta 57+65 Lt		20	LF
Sta 57+48 to 62+54 Rt		500	LF
Sta 68+18 Lt		32	LF
708 1540	INLET PROTECTION-SPECIAL		
Sta 64+00 Lt		1	EA
708 1541	REMOVE INLET PROTECTION-SPECIAL		
Sta 64+00 Lt		1	EA

Notes:

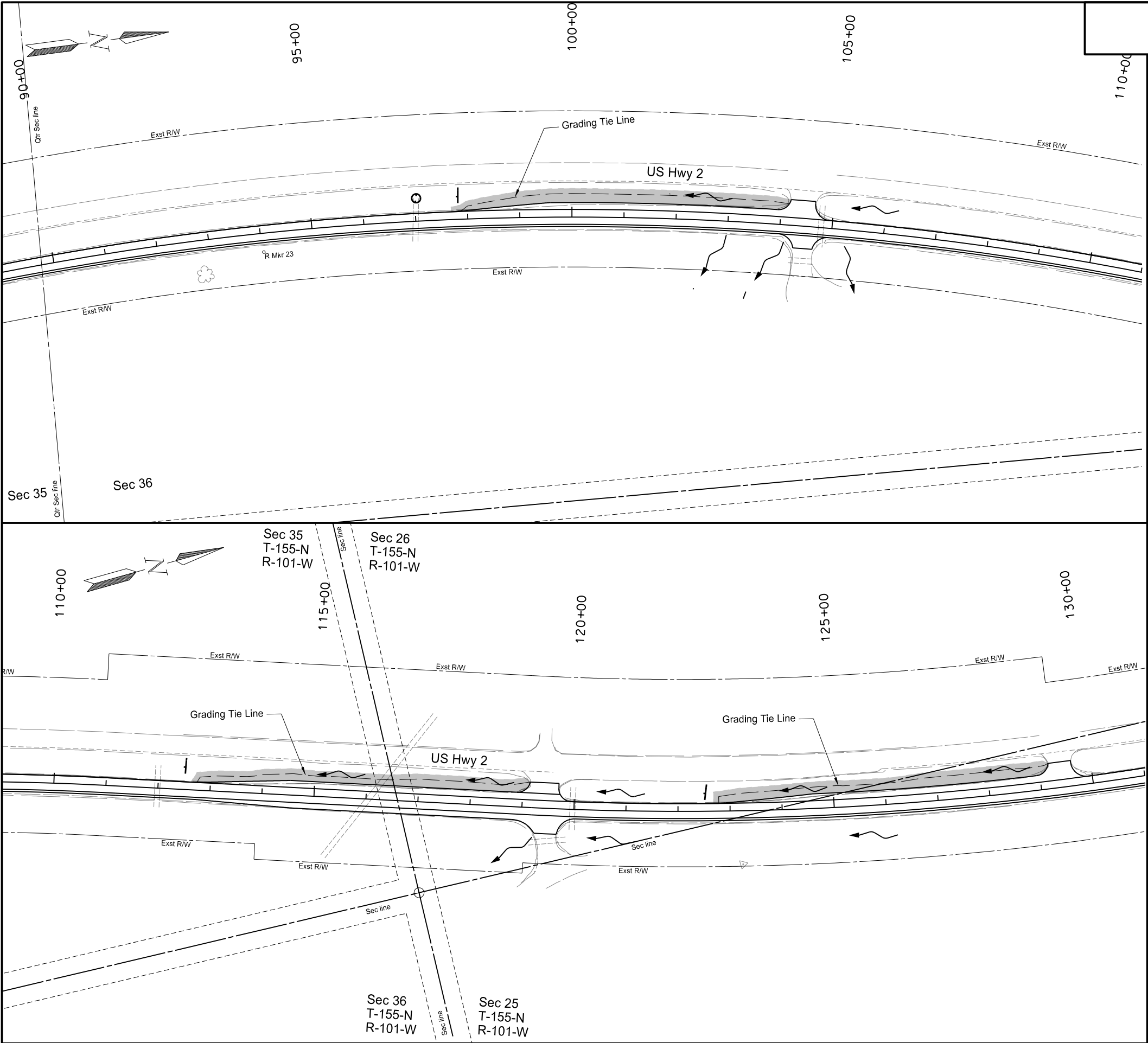
1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

Legend

- Fiber Rolls 12IN or 20IN
- SF Silt Fence Supported
- Grading Tie Line (Fill)
- Grading Tie Line (Cut)
- Grading Tie Line (Transition)
- Existing Delineated Wetland
- Flow Direction
- Temp Cover / Hydraulic Mulch

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Temporary Sediment and Erosion Control
US 2
Sta 50+00 to 90+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	76	2

SPEC CODE	BID ITEM	QTY	UNIT
251 2000	TEMPORARY COVER CROP		
Sta 90+00 to 130+00 Lt		1.08	Ac
253 0201	HYDRAULIC MULCH		
Sta 90+00 to 130+00 Lt		1.08	Ac
261 0112	FIBER ROLLS 12IN		
Sta 97+01 Lt		32	LF
Sta 97+81 Lt		30	LF
Sta 112+52 Lt		30	LF
Sta 122+51 Lt		30	LF
261 0113	REMOVE FIBER ROLLS 12IN		
Sta 97+01 Lt		32	LF
Sta 97+81 Lt		30	LF
Sta 112+52 Lt		30	LF
Sta 122+51 Lt		30	LF

Notes:

1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

Legend

Fiber Rolls 12IN or 20IN

Silt Fence Supported

Grading Tie Line (Fill)

Grading Tie Line (Cut)

Grading Tie Line (Transition)

Existing Delineated Wetland

Flow Direction

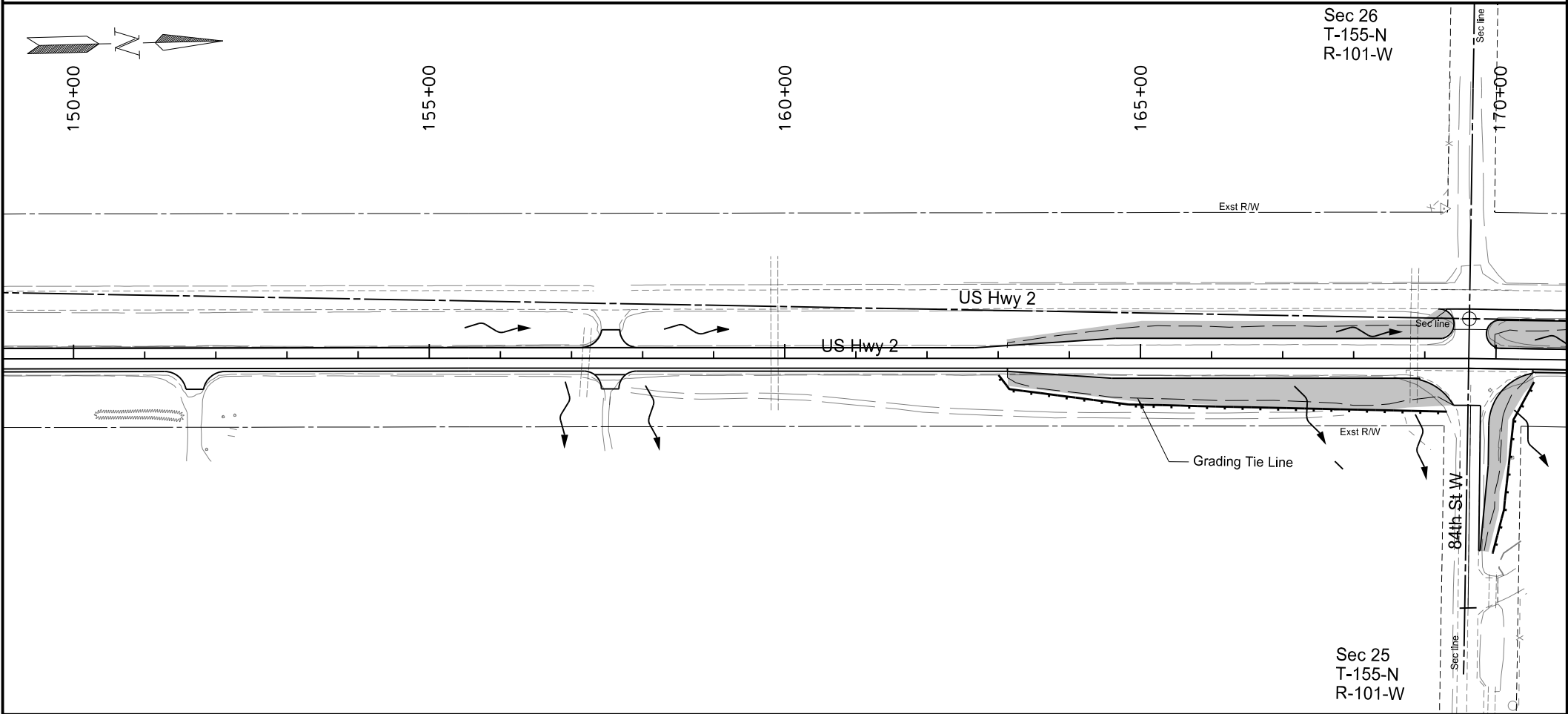
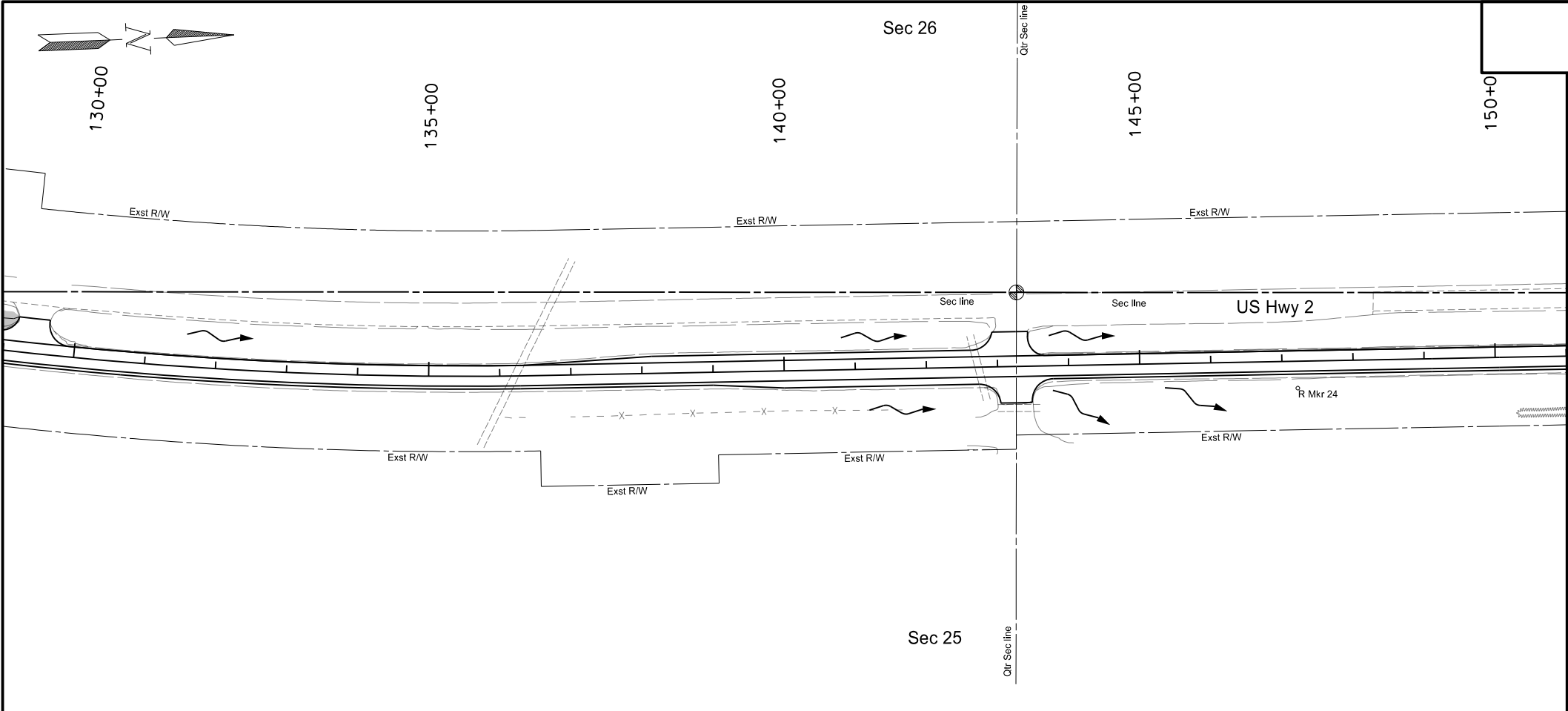
Temp Cover / Hydraulic Mulch

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Temporary Sediment and Erosion Control

US 2

Sta 90+00 to 130+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	76	3

SPEC CODE	BID ITEM	QTY	UNIT
251 2000	TEMPORARY COVER CROP		
Sta 130+00 to 170+00 Rt		0.63	Ac
Sta 130+00 to 170+00 Lt		0.32	Ac
253 0201	HYDRAULIC MULCH		
Sta 130+00 to 170+00 Rt		0.63	Ac
Sta 130+00 to 170+00 Lt		0.32	Ac
261 0112	FIBER ROLLS 12IN		
Sta 163+01 169+17 Rt		634	LF
261 0113	REMOVE FIBER ROLLS 12IN		
Sta 163+01 to 169+17 Rt		634	LF

Notes:

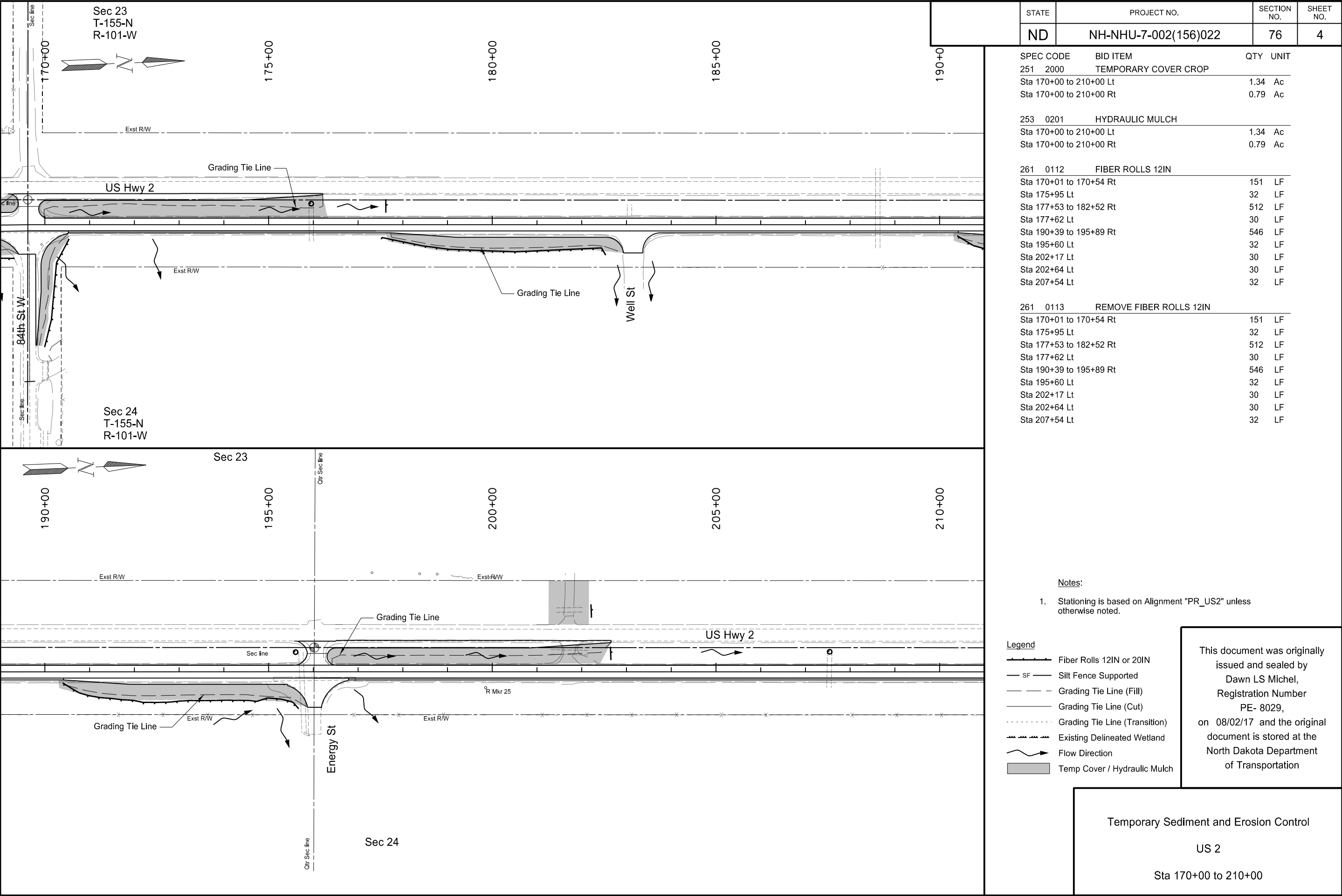
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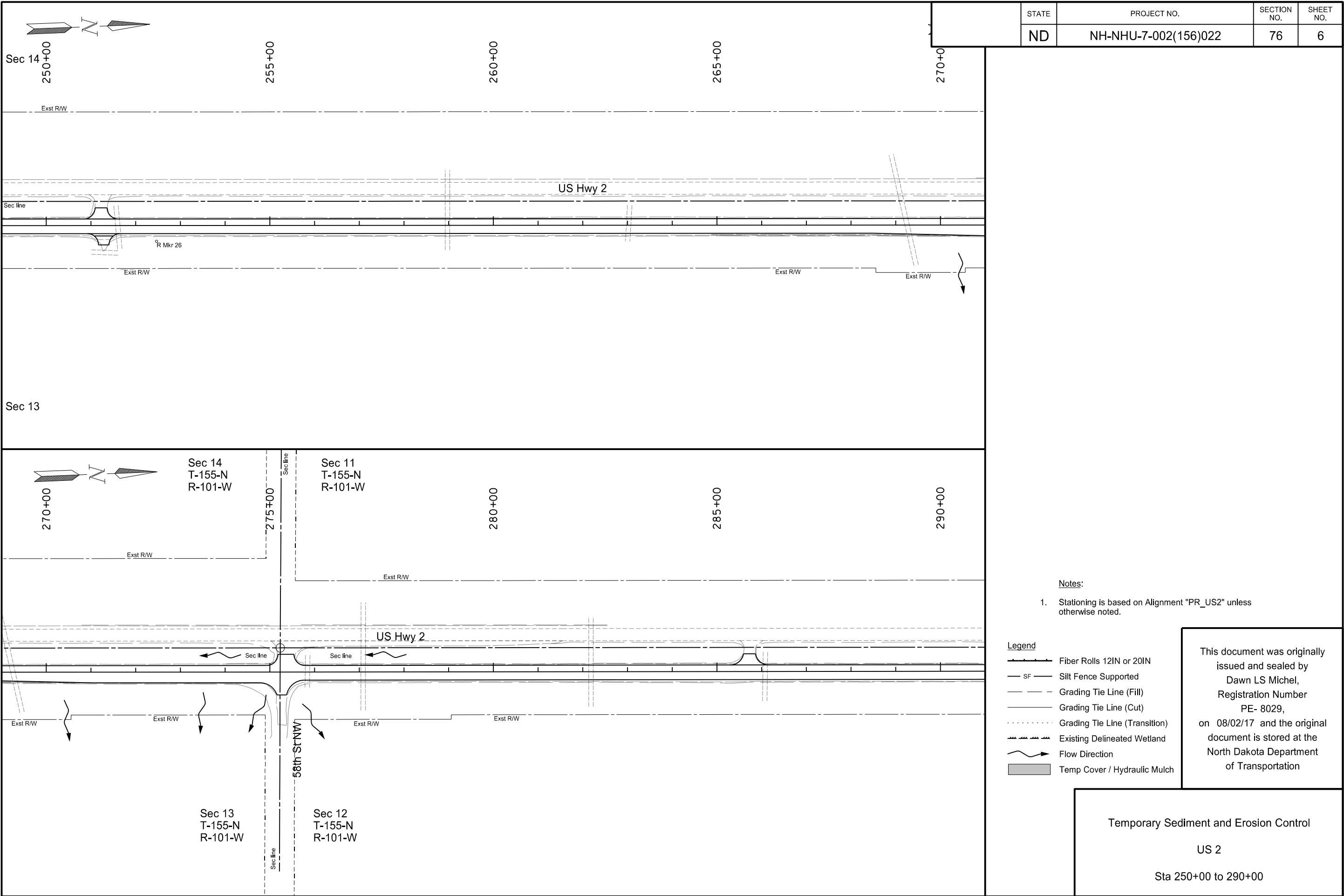
Legend

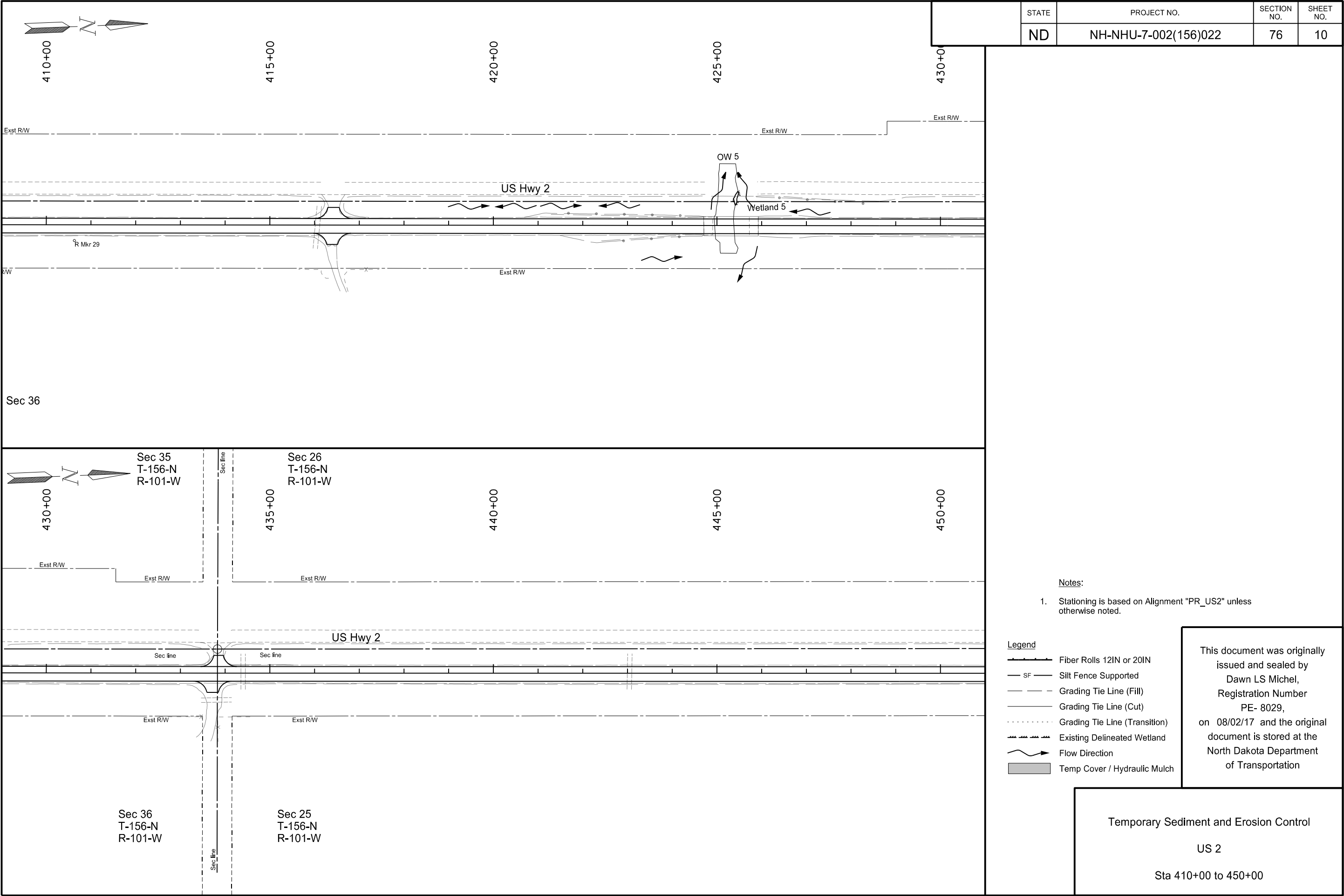
- Fiber Rolls 12IN or 20IN
- SF Silt Fence Supported
- Grading Tie Line (Fill)
- Grading Tie Line (Cut)
- Grading Tie Line (Transition)
- Existing Delineated Wetland
- Flow Direction
- Temp Cover / Hydraulic Mulch

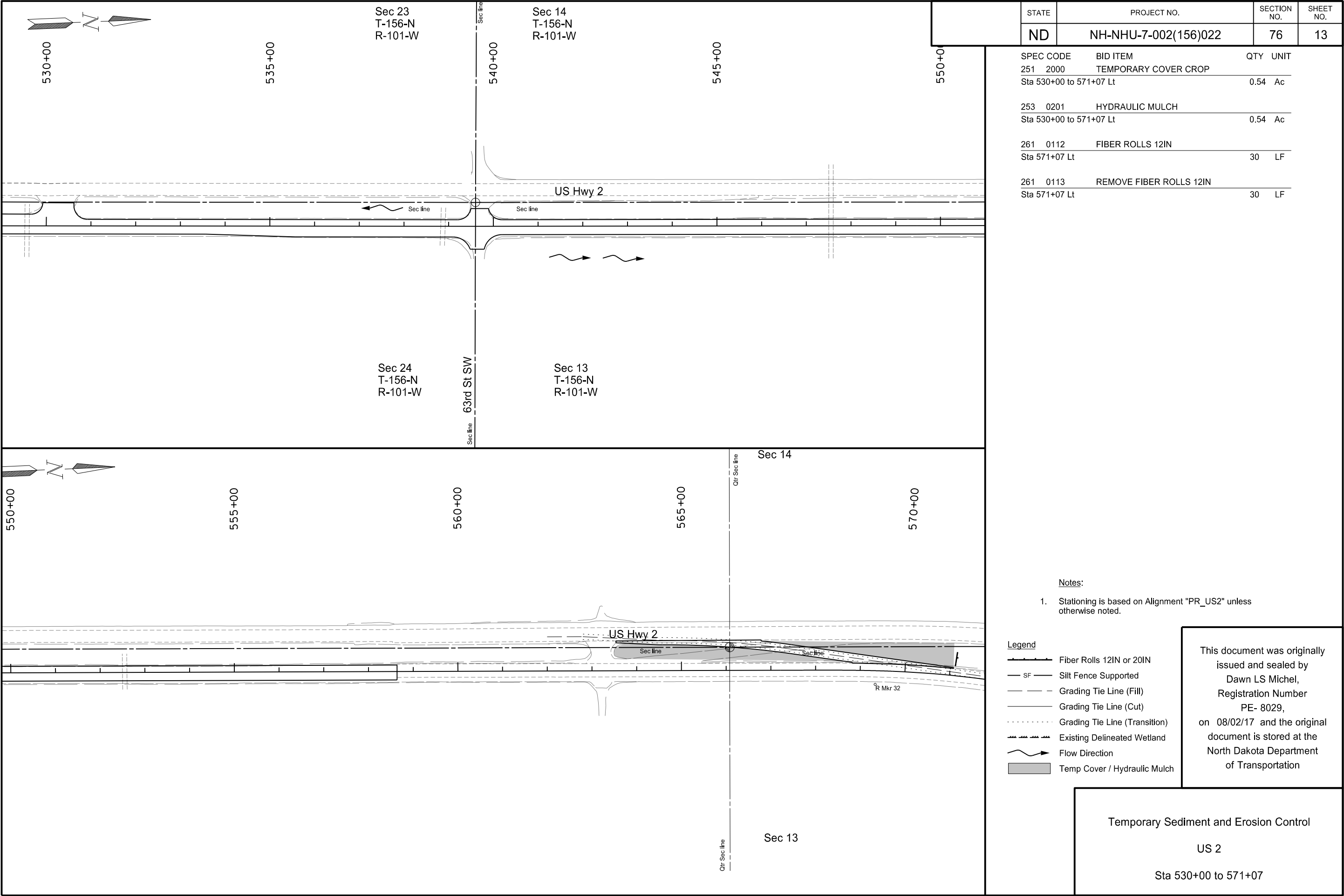
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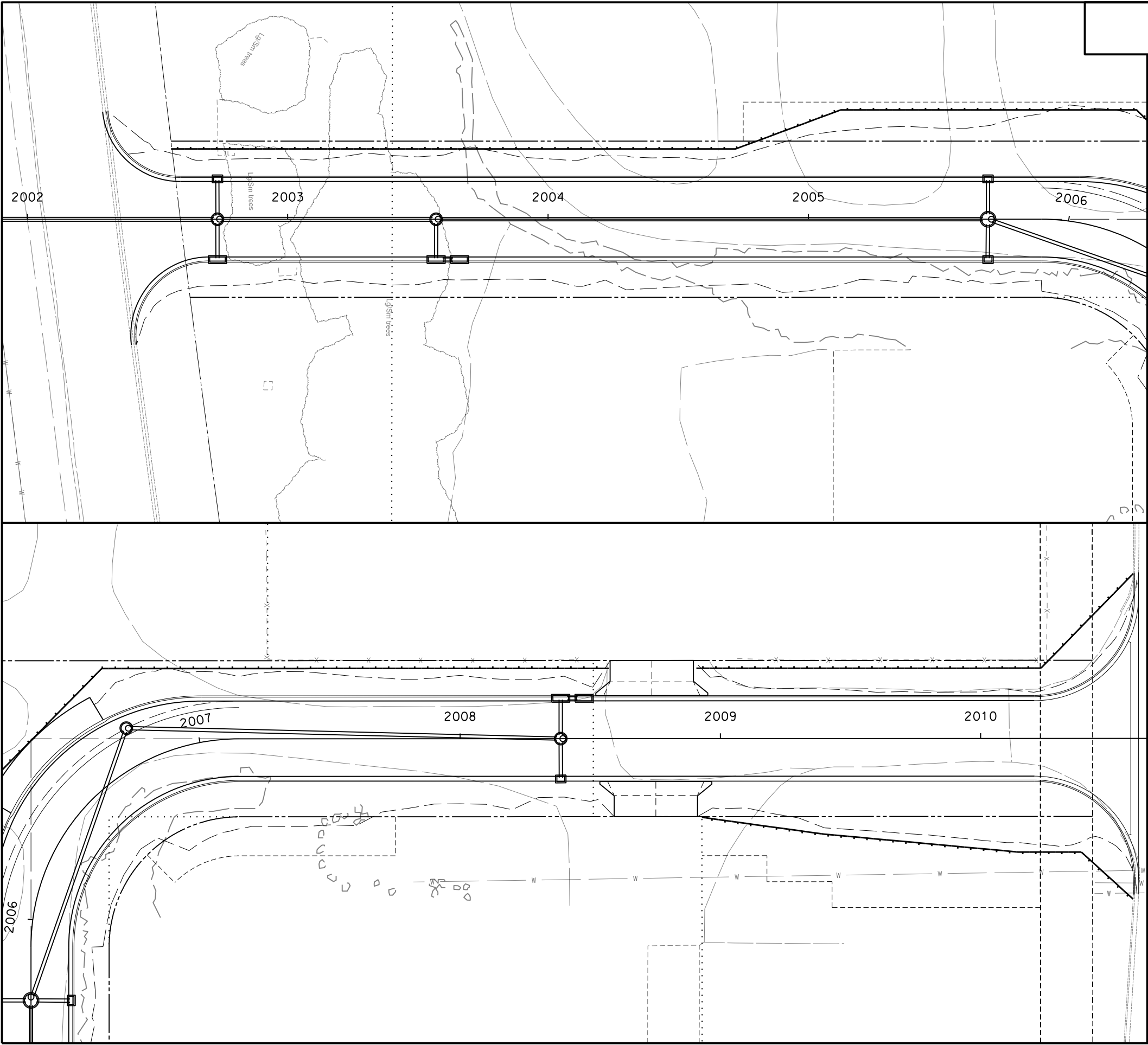
Temporary Sediment and Erosion Control
US 2
Sta 130+00 to 170+00











STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	76	14

SPEC CODE	BID ITEM	QTY	UNIT
261 0112	FIBER ROLLS 12IN		
Sta 2002+55 - 2010+60 Lt		858	LF
Sta 2008+69 - 2010+61 Rt		172	LF
261 0113	REMOVAL FIBER ROLLS 12IN		
Sta 2002+55 - 2010+60 Lt		858	LF
Sta 2008+69 - 2010+61 Rt		172	LF
708 1540	INLET PROTECTION - SPECIAL		
Inlet Locations		9	EA
708 1541	REMOVE INLET PROTECTION - SPECIAL		
Inlet Locations		9	EA

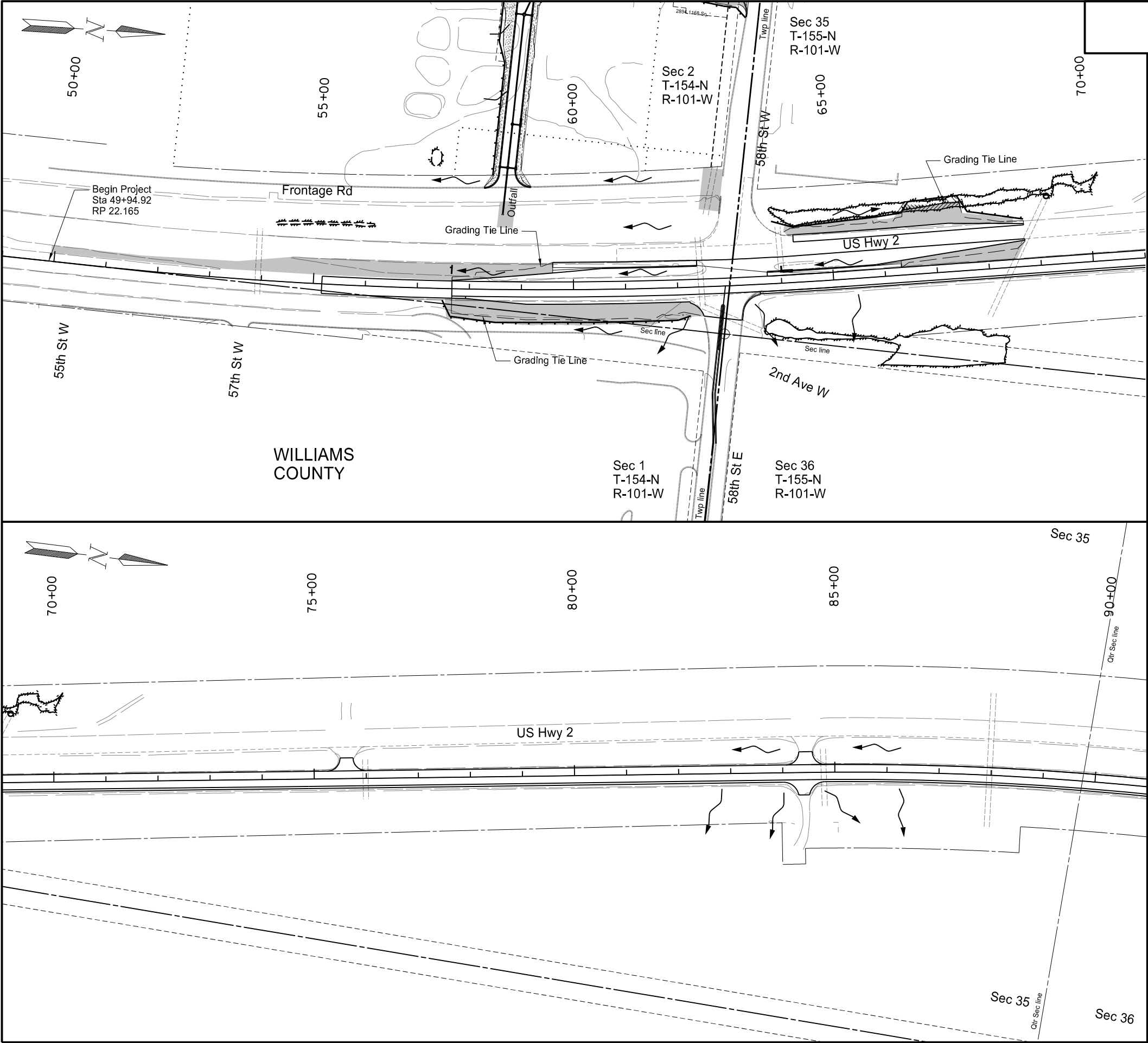
- Legend
- Fiber Rolls 12IN or 20IN
 - SF Silt Fence Supported
 - Grading Tie Line (Fill)
 - Grading Tie Line (Cut)
 - Grading Tie Line (Transition)
 - Existing Delineated Wetland
 - Flow Direction

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Temporary Sediment and Erosion Control

US 2

Frontage Road



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	77	1

SPEC CODE	BID ITEM	QTY	UNIT
251 0200	SEEDING CLASS II		
Sta 57+66 to 90+00 Lt		0.83	AC
Sta 57+66 to 90+00 Rt		0.42	AC
253 0201	HYDRAULIC MULCH		
Sta 57+66 to 90+00 Lt		0.83	AC
Sta 57+66 to 90+00 Rt		0.42	AC
261 0112	FIBER ROLLS 12IN		
Sta 50+38 Lt		30	LF
Sta 53+06 Lt		20	LF
Sta 54+85 Lt		20	LF
Sta 57+65 Lt		20	LF
Sta 57+48 to 62+54 Rt		500	LF
Sta 63+55 to 68+89 Lt		521	LF
Sta 68+18 Lt		32	LF

Notes:

1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

Legend

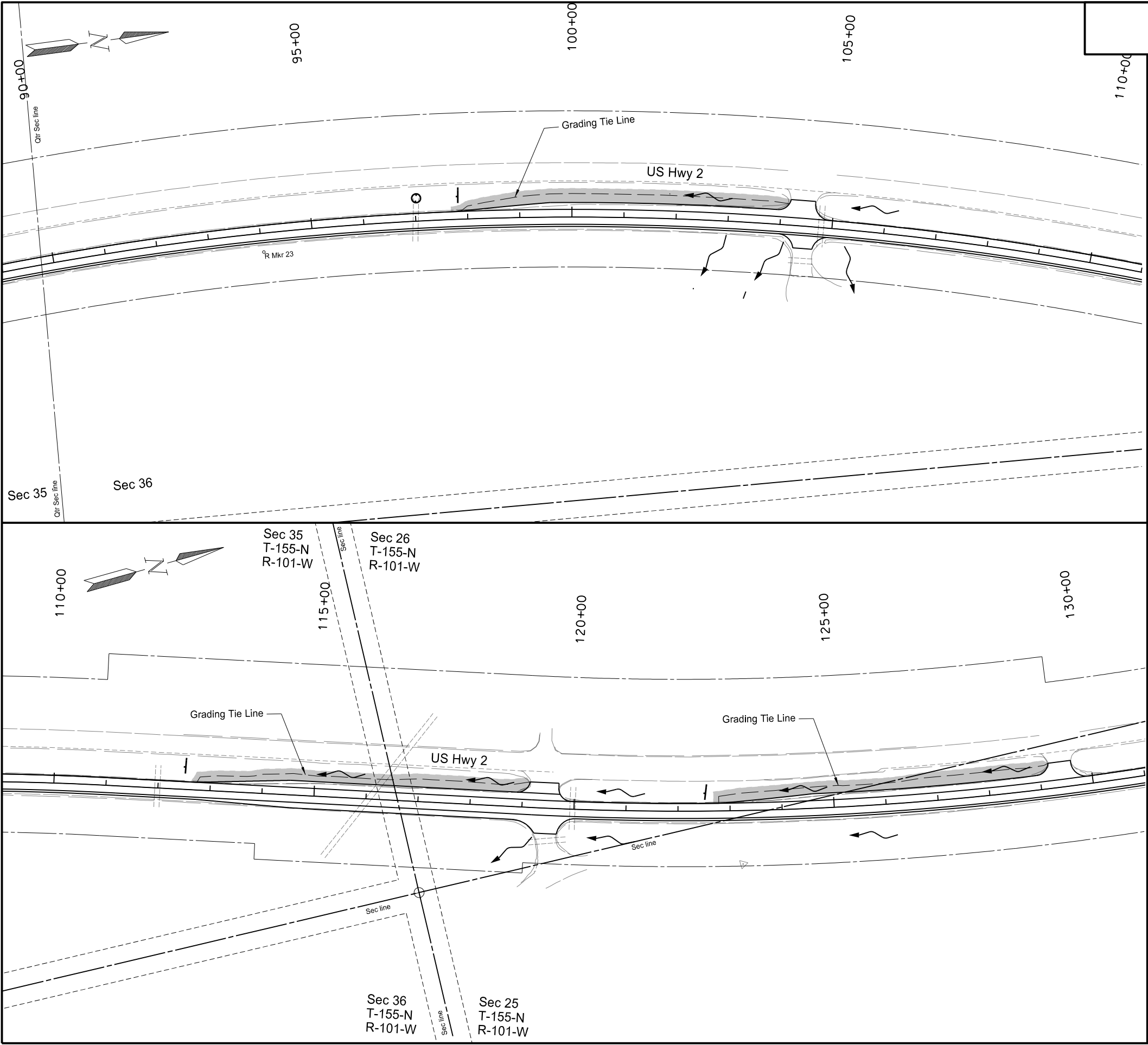
- Fiber Rolls 12IN or 20 IN
- SF Silt Fence Supported
- Grading Tie Line (Fill)
- Grading Tie Line (Cut)
- Grading Tie Line (Transition)
- Existing Delineated Wetland
- Flow Direction
- Seeding Class II / Mulch
- Aggregate Surface Course CL 13

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Permanent Sediment and Erosion Control

US 2

Sta 50+00 to 90+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	77	2

SPEC CODE	BID ITEM	QTY	UNIT
251 0200	SEEDING CLASS II		
Sta 90+00 to 130+00 Lt		1.08	AC
253 0201	HYDRAULIC MULCH		
Sta 90+00 to 130+00 Lt		1.08	AC
261 0112	FIBER ROLLS 12IN		
Sta 97+01 Lt		32	LF
Sta 97+81 Lt		30	LF
Sta 112+52 Lt		30	LF
Sta 122+51 Lt		30	LF

- Notes:
1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

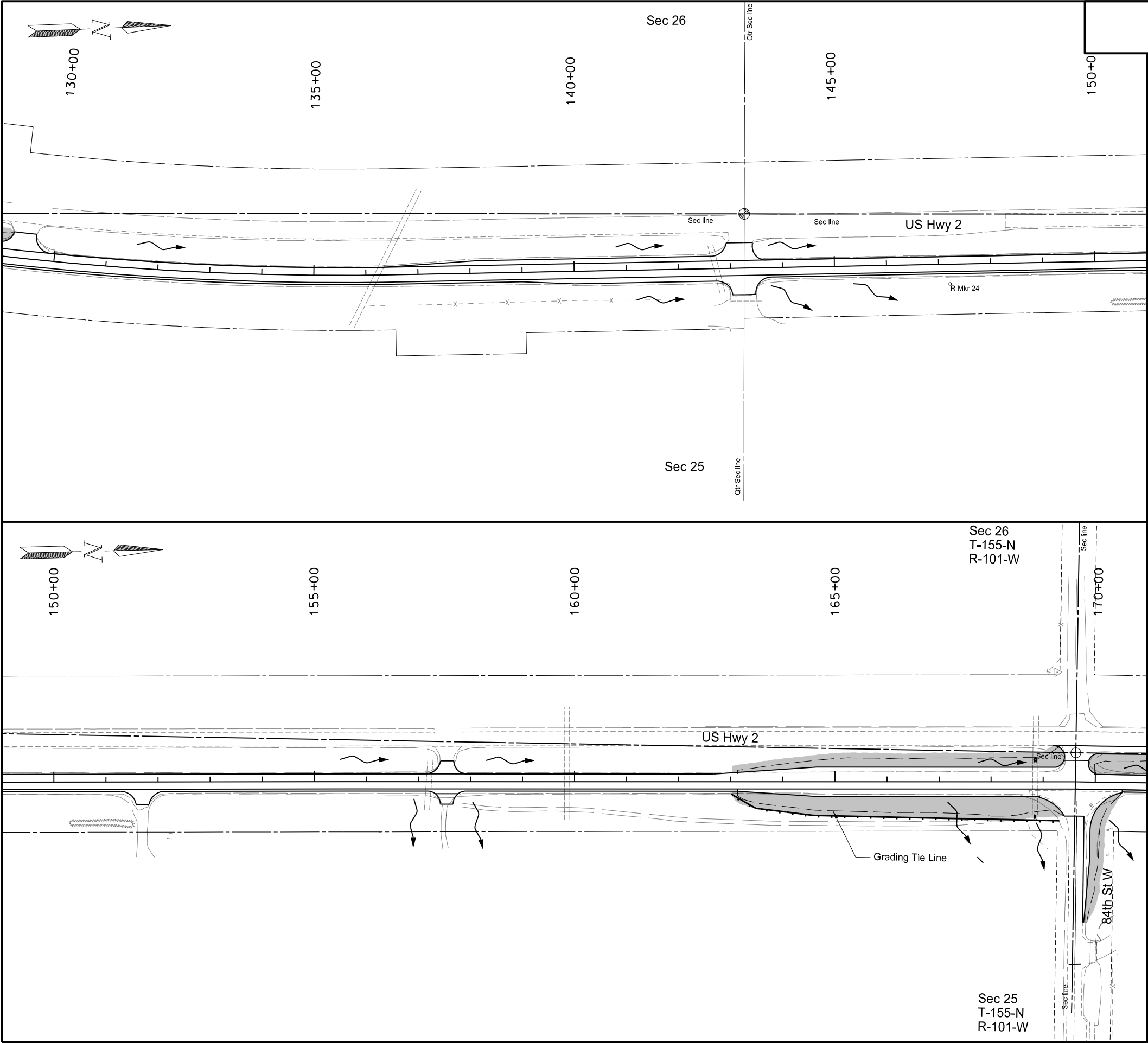
- Legend
- Fiber Rolls 12IN or 20 IN
 - SF Silt Fence Supported
 - Grading Tie Line (Fill)
 - Grading Tie Line (Cut)
 - Grading Tie Line (Transition)
 - Existing Delineated Wetland
 - Flow Direction
 - Seeding Class II / Mulch
 - Aggregate Surface Course CL 13

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Permanent Sediment and Erosion Control

US 2

Sta 90+00 to 130+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-NHU-7-002(156)022	77	3

SPEC CODE	BID ITEM	QTY	UNIT
251 0200	SEEDING CLASS II		
Sta 130+00 to 170+00 Lt		0.32	AC
Sta 130+00 to 170+00 Rt		0.63	AC
253 0201	HYDRAULIC MULCH		
Sta 130+00 to 170+00 Lt		0.32	AC
Sta 130+00 to 170+00 Rt		0.63	AC
261 0112	FIBER ROLLS 12IN		
Sta 163+01 to 169+17 Rt		634	LF

Notes:

1. Stationing is based on Alignment "PR_US2" unless otherwise noted.

Legend

- Fiber Rolls 12IN or 20 IN
- SF Silt Fence Supported
- Grading Tie Line (Fill)
- Grading Tie Line (Cut)
- Grading Tie Line (Transition)
- Existing Delineated Wetland
- Flow Direction
- Seeding Class II / Mulch
- Aggregate Surface Course CL 13

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Permanent Sediment and Erosion Control
US 2
Sta 130+00 to 170+00

