DESIGN DATA - ND 1806 / Old Red Trail				
Traffic	Average Daily			
Current 2018	Pass: 6,660	Trucks: 100	Total: 6,760	
Forecast 2038	Pass: 9,925	Trucks: 150	Total: 10,075	
Clear Zone Distance: 18 ft (4:1)		Design Speed: 35 mph		
Minimum Sight Dist. for Stopping: 250 ft		Bridges: N/A		
Sight Dist. for No Passing Zone: 550 ft				
Pavement Design Life 20 (years)				
Design Accumulated One-way Flexible ESALs: 266,056				

DESIGN DATA - ND 1806				
Traffic	Average Daily			
Current 2018	Pass: 4,540	Trucks: 35	Total: 4,575	
Forecast 2038	Pass: 6,765	Trucks: 55	Total: 6,820	
Clear Zone Distance: 28 ft (4:1)		Design Speed: 45		
Minimum Sight Dist. for Stopping: 360 ft		Bridges: N/A		
Sight Dist. for No Passing Zone: 700				
Pavement Design Life 20 (years)				
Design Accumulated One-way Flexible ESALs: 88,685				

DESIGN DATA - INTERSTATE 94				
Traffic	Average Daily			
Current 2018	Pass: 2,860	Trucks: 65	Total: 2,925	
Forecast 2038	Pass: 4,265	Trucks: 100	Total: 4,365	
Clear Zone Dist. 30 ft (6:1)		Design Speed: 60 mph		
Minimum Sight Dist. for Stopping: 570 ft		Bridges: N/A		
Full Control of Access, No Point of Access Other Than at Interchange Ramps				
Pavement Design Life 30 (years)				
Design Accumulated Heavy Trucks: 1,022,060				

DESIGNER
Scott Middaugh
DESIGNER
Joe Morrissette
DESIGNER
Kyle Huffman

JOB # 23
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

NHU-1-806(052)071
IM-1-094(200)153

Morton County
Insterstate 94 - Mandan Avenue Interchange
ND 1806 - Interstate 94 to 27th Street
Grading, Aggregate Base, PCC Pavement, Milling, Hot Mix Asphalt Pavement
CPR, Storm Sewer, Sanitary Sewer, Sidewalk, Lighting, Signing

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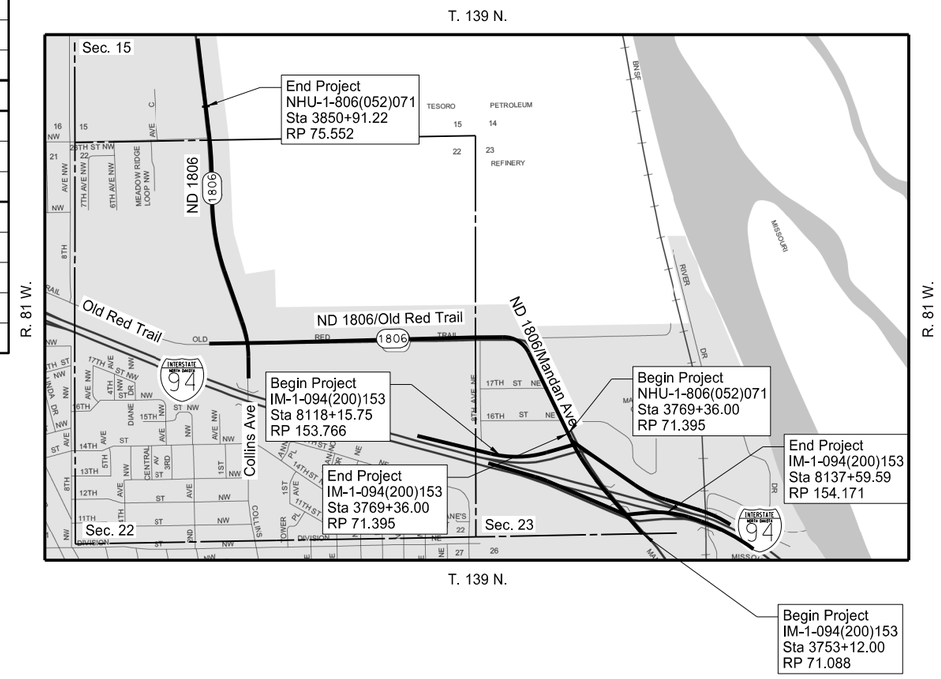
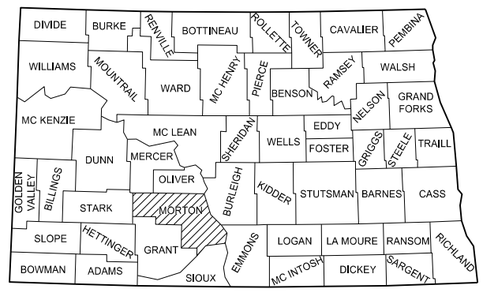
		IM-1-094(200)153	22182		

GOVERNING SPECIFICATIONS:
2020 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
NHU-1-806(052)071	1.545	1.545
IM-1-094(200)153	0.308	0.308
Total	1.853	1.853





STATE COUNTY MAP

CITY OF MANDAN
CITY ENGINEER
Justin Froseth /s/ 08/27/2020

ND DEPARTMENT OF TRANSPORTATION
OFFICE OF PROJECT DEVELOPMENT
Chad M. Orn /s/ 08/31/2020

KLJ

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R-81-W

Sec 22
T-139-N
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Sec 23
T-139-N
R-81-W

Sec Line

Exst R/W

Begin SW Ramp Reconstruction
Sta 8128+38.26 (SCL94)=
Sta 1013+50.00 (EX94SWR)

End NW Ramp Mill & Overlay
Sta 8118+18.51 (SCL94)=
Sta 4007+93.04 (EX94NWR)

Concrete Pavement Repair, Marking

Concrete Pavement Repair, Marking, Signing, Lighting

Begin Project
IM-1-094(200)153
Sta 3753+12.00

Begin Project
NHU-1-806(052)071
Sta 3769+36.00

Begin Reconstruction
Sta 3780+69.36

End Project
IM-1-094(200)153
Sta 3769+36.00

End SE Ramp Mill & Overlay
Sta 8137+56.30 (SCL94) =
Sta 2003+54.33 (EX94SER)

Begin NE Ramp Mill & Overlay
Sta 8135+55.92 (SCL94) =
Sta 3012+50.18 (EX94NER)

I-94 Eastbound Off Ramp
I-94 Eastbound
I-94 Westbound
I-94 Westbound On Ramp
I-94 Eastbound On Ramp
I-94 Westbound Off Ramp
16th St
17th St
ND 1806
Qtr Line

3755+00 3760+00 3765+00 3770+00 3775+00 3780+00 3785+00 3790+00
4005+00 4010+00 4015+00 4020+00 4000+00 1010+00 8125+00
1000+00 8115+00 1005+00 8120+00 8110+00
3010+00 2000+00 1015+00 8130+00 3005+00 2005+00 8140+00 2010+00

8" Non-Reinf Concrete Pvmt CL
AE-Doweled w/ 8" Aggregate Base

5" HMA Superpave on 15" Aggregate Base

5" HMA Superpave on 12" Aggregate Base

Concrete Pavement Repair

2.0" Mill with 2.0" HMA Overlay

N

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ND 1806

Scope of Work

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Begin Reconstruction
Sta 3780+69.36

Begin HMA Reconstruction
Sta 3785+00

Grading, Aggregate Base, HMA, Curb & Gutter
Sanitary Sewer, Storm Sewer, Lighting, Signing, Marking

Grading, Concrete, Aggregate Base, Curb & Gutter, Signing, Marking, Lighting

Sec 23 T-139-N R-81-W

Sec 22 T-139-N R-81-W

Sec Line

8th Ave

16th Ave

Qtr Line

Collins Ave

ND 1806

Old Red Trail

Begin Concrete Roundabout
Sta 3817+47.57

End Project
NHU-1-806(052)071
Sta 12+25.00 (EXCOL)

End Project
NHU-1-806(052)071
Sta 102+37.55 (EXORT)

Begin Mill, Overlay and Widening
Sta 3821+57.00

3780+00 3785+00 3790+00 3795+00 3800+00 3805+00 3810+00 3815+00 3820+00 3825+00 3830+00 3835+00 3840+00 3845+00 3850+00 3855+00

100+00 105+00 809+00

N

Grading, Mill, Overlay, HMA Widening,
Aggregate Base, Signing, Marking, Sanitary Sewer

NB Left Turn Lane and
SB Right Turn Lane at 27th St

27th St

Start Reconstruction
Sta 3845+70.00

End Reconstruction
Sta 3846+50.00

End Project
NHU-1-806(052)071
Sta 3850+91.22

Sec 15 T-139-N R-81-W

Aggregate Surface Course CL 5

8" Non-Reinf Concrete Pvmt CL
AE-Doweled w/ 8" Aggregate Base

Shared Use Path

5" HMA Superpave on 12" Aggregate Base

Concrete Pavement Repair

Widening & Overlay; 1" Mill with 2.5"
HMA Overlay / 4" HMA Superpave on
12" Aggregate Base

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ND 1806

Scope of Work

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NOTES

GENERAL NOTES

100-P01 COMPLETION DATES:

Interim Completion Date 1: Complete all pavement work along the Starion Sports Complex from station 3808+00 to the beginning of concrete roundabout, station 3817+47.57. This includes completing curb & gutter, valley gutter, asphalt pavement, and approaches within the statin range listed above. Temporary traffic control may be used to direct traffic through the work zone until pavement marking and signing items are complete.

Interim Completion Date 1 is August 14, 2021. Liquidated damages will be assessed per Section 108.07 B for each calendar day that expires after August 14, 2021.

Interim Completion Date 2: Complete all work on the Mandan Avenue Interchange ramps within 20 working days of the ramp construction beginning. This includes but is not limited to constructing and removing the temporary bypass on the I-94 eastbound offramp.

Interim Completion Date 2 is 20 working days after beginning construction on any of the Mandan Avenue Interchange ramps. Liquidated damages will be assessed at a rate of $1,400 per day until work is completed.

Final Completion Date: Complete all remaining work included in the contract.

Final Completion is October 30, 2021. Liquidated damages will be assessed per Section 108.07 B for each calendar day that expires after October 30, 2021.

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

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

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

105-200 UTILITY COORDINATION: A utility coordination meeting is required.

107-P01 MAINTAINING TRAFFIC –DROP-OFFS: If, at the end of the work-day, drop-offs greater than 2 inches and less than 18 inches or slopes steeper than 4:1 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 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 aggregate pay items.

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.

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

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

The public relations coordinator is responsible for providing the following:

1. Organizing, scheduling, and conducting the meeting specified in Note 108-100, "Weekly Planning/Reporting Meeting".
2. Advise the Engineer, NDDOT Bismarck District, and the City of Mandan of upcoming construction activities in regard to street closures and traffic detour routes so that city police, emergency services, schools, and other pertinent city agencies may be notified.
3. Provide news releases and necessary drawings to the media before and during construction. News releases should inform the public on construction activities, schedules, street closures, width or height restrictions to traffic, and traffic detour routes. Update news releases regarding construction activities every other week, at a minimum.
4. Be available for media interviews.
5. Work directly with property owners and businesses affected by construction activities. The coordinator must have sufficient knowledge and authority to resolve property owner and business concerns regarding scheduling, maintaining access, and construction operations.

201-P01 CLEARING & GRUBBING: All areas designated as Clearing & Grubbing are shown in Section 40 of the plans. Include all costs for tree and brush removals in the price bid for “Clearing & Grubbing”.

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.

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203-P01 PROOF ROLLING: In addition to density/moisture testing, perform a proof roll test to verify the uniformity of support and to identify unstable areas which will require correction. Perform a proof roll test on the finished subgrade surface located under the roadway in fill areas. Complete proof rolling by using a fully loaded tandem truck. Offset each trip of the proof roller by no more than one tire width. If the grade shows no signs of pumping, cracking, or rutting, the grade being tested is considered acceptable. Correct any defective areas discovered during proof rolling and proof roll again. Include all costs associated with performing the proof roll test and any corrective work in price bid for “Common Excavation-Type A” and “Borrow-Excavation.”

203-P02 EARTHWORK & CONSTRUCTION PHASING: Construction phasing will affect earthwork balance and haul distance. All costs associated with earthwork operations associated with construction phasing, and constructing and removing temporary roadway shall be included in the price bid for “Common Excavation-Type A” and “Borrow-Excavation.”

203-P03 COMMON EXCAVATION – APPROACHES: Removal of aggregate on gravel approaches is quantified and included in the bid item “Common Excavation - Type A”. Any removed aggregate can be reincorporated into the project as embankment or aggregate if it meets the required specifications.

203-P04 UNDERGROUND UTILITY COMPACTION AND DENSITY CONTROL: Compaction control frequency for underground utility trenches underneath the roadway are based on one (1) individual compaction test per 200 feet of trench per 12 inches of backfill.

203-P05 MAINTENANCE OF DRAINAGE: Maintain drainage such that water does not inundate driving lanes, sidewalk, shared use path, or adjacent properties by means of temporary grading, culverts, connections to existing storm drain structures, and/or pumping. Include all costs associated with Maintenance of Drainage in the bid price for “Common Excavation-Type A” and “Borrow-Excavation.”

251-P01 SEEDING CLASS III: Provide the following Class III Seed Mix:

Seeding Class III Seed Mixture	
Variety and Species of Seed	Pounds per Live Seed/Acre
LINCOLN Smooth Brome Grass (Rhizomatous Variety)	25
NORDAN Crested Wheat Grass	25
Total	50

302-110 BASE COURSE: Trim base course as specified in Section 302.04 C.1, "Surface Tolerance Type B."

302-P01 TRAFFIC SERVICE AGGREGATE: A additional quantity of 500 tons has been provided for traffic maintenance throughout the construction phasing. Use the material as directed by the Engineer in the field. Provide temporary service gravel that meets the requirements of Aggregate Base Course Cl 5. Include all costs associated with providing, placing, maintaining, and removing the material in the bid price for “Traffic Service Aggregate”.

Remove and replace aggregate as necessary for any additional applications for traffic maintenance. No additional payment for aggregate will be made to salvage and relay the material. Include all costs associated with providing, placing, maintaining, removing and replacing the material in the bid price for “Traffic Service Aggregate”.

550-P01 NON-REINF CONCRETE PVMT CL AE-DOWELED-COLORED: Develop a mix design per Section 550.04 B of the Standard Specifications.

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 908 Ultra Black, produced by Soloman Colors, Inc. http://www.solomoncolors.com/;
2. Number 8084 Graphite, produced by Davis Colors http:/www.daviscolors.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 and continue mixing between 50 and 100 revolutions.

Cure and seal concrete using curing compound that meets the requirements of ASTM C 309, Type 1 and include slip resistant additive. Include all costs in the price bid for “Non-Reinf Concrete Pvmt CL AE-Doweled Colored”.

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

704-200 PRECAST CONCRETE MEDIAN BARRIERS – STATE FURNISHED: Obtain 28 barriers from the Sterling Reloading site along Burleigh County Road 10 ¼ mile west of US 83. Return barriers to the same location where they were obtained.

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

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

704-P01 TRAFFIC CONTROL PHASING: The following traffic control phasing has been developed for this project:

Concrete pavement repair on Mandan Avenue and the mill and overlay on the Mandan Avenue Interchange ramps can be completed in coordination with any of the phases. Construct concrete pavement repair half at a time as shown in Section 100 Typical Section. Vertical panels, Type I Barricades, and Flexible Delineators have been provided to maintain two-way traffic. Construct so that all pavement is flush by the end of the working day.

Maintain traffic for the mill and overly on the interchange ramps with a flagging operation and utilize the temporary roadway for the subgrade repair section.

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Phase 1: Construct temporary widening at the beginning and end of the curve on Mandan Ave and Old Red Trail. Construct the two inner most lanes of the concrete curve from Sta 3780+69 to Sta 3786+51. While the curve is being constructed traffic will utilize the temporary widening.

Construct temporary widening on the south side of Old Red Trail from Sta 3786+51 to Sta 3816+30. Install the sanitary and storm sewer near the roundabout. At the cut locations shown below, grade the entire roadway and shift traffic to accommodate the grading operation. Utilize flagging and temporary bypasses as necessary. At the end of the day, all slopes must be 4:1 or flatter at all locations.

Sta 3784+82 to 3786+51	Sta 3790+91 to 3794+02	Sta 3803+66 to 3807+08
Sta 3786+51 to 3787+63	Sta 3797+38 to 3799+09	Sta 3810+42 to 3815+43

Construct temporary bypass around the proposed roundabout for traffic to run on in Phase 2. Complete placement of embankment and aggregate along ND 1806 Sta 3822+55 to Sta 3850+91.

The existing approaches into the Mandan Sports Complex (3812+50 and 3815+00) are to remain in place until after Mandan's graduation which is scheduled for May 30th, 2021. The project corridor needs to be open to one-lane of unimpeded traffic in both directions during the graduation weekend.

Phase 2: Complete concrete paving of outermost lane from Sta 3780+69 to Sta 3785+00 in two sub-phases. Sub-phase A will be paving from Sta 3780+69 to Sta 3783+97 along with the approach to Gate 1 of the refinery. Sub-phase B will be Sta 3783+97 to Sta 3785+00 along with the approach to Gate 2 of the refinery. Maintain access to the refinery at all times thru one of the gates.

Traffic will be shifted to run on the temporary widening installed in Phase 1 on the south side of Old Red Trail. Install the sanitary and storm sewer along Old Red Trail. Flagging and temporary bypasses may be utilized. Grading and placement of base material along Old Red Trail on the northern half. Overbuild the base by 2' as shown in Section 100 to allow traffic movement for subsequent phase.

At the roundabout, construct the circulatory roadway, truck apron, northbound entrance, southbound exit, and eastbound exit legs. Traffic will utilize the temporary bypass installed in Phase 1.

Phase 3: Traffic will be shifted to the northern half of Old Red Trail and drive on the base material placed in the previous phase. Grading, placement of base material, and curb and gutter will be constructed on the southern half of Old Red Trail. Complete storm sewer lateral installation. Flagging and bypasses may be utilized when installing storm sewer.

Construct southbound and eastbound entrance legs of the roundabout. Complete sliver widening along ND 1806 Sta 3852+55 to Sta 3850+91 by using flagging and pilot car operations.

Phase 4: Traffic will run on southern half of Old Red Trail while the Contractor is completing construction of curb and gutter on the northern half. Once complete, traffic will be shifted to accommodate paving operation. Complete all asphalt paving along Old Red Trail.

Construct the westbound entrance, northbound exit, and westbound exit legs at the roundabout.

Complete mill and overlay along ND1806 Sta 3822+55 to Sta 3850+91 by using flagging and pilot car operations.

Phase 5: Two-way traffic will run along ND 1806 from Sta 3780+00 to Sta 3817+47 and Sta 3821+57 to Sta 3850+91. Install curb and gutter and splitter islands at the roundabout. Complete shared used path, pavement markings, seeding, lighting, erosion control, etc. Maintain pedestrian walkway and signing through the work zone as work progresses.

704-P02 TRAFFIC CONTROL DEVICES: The traffic control devices list for each phase has been developed using traffic control sign layouts (shown in Section 100) and Standard Drawings as listed below:

D-704-22: Type K and L for construction trucks hauling material.

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

Provide an operator trained in the use of the PCMS.

The Engineer will determine the message to be displayed. The operator shall program the message within one hour of the Engineer's request to change the message.

Four PCMS will be placed 2 weeks prior to the start of construction to give notice of construction starting. One on Mandan Avenue for NB on the north side of the interchange ramps, Exit 153. One for NB traffic on Collins Avenue located on the north side of intersection of Collins Ave and 14th St. One for EB on Old Red Trail located on the west side of the intersection of Old Red Trail and Collins Avenue. One for SB traffic on ND 1806 located on the north side of the intersection of ND 1806 and 27th Street. See Section 100 for approximate locations.

704-P04 ROUTE MARKERS/STREET NAME SIGNS: Temporarily display route marker signs and street name signs during construction until they can be permanently installed. Existing signs can be utilized as temporary signs. Include all costs to furnish, install, maintain, relocate, replace, and remove the temporary signs in the contract unit price for "Traffic Control Signs".

704-P05 FLEXIBLE DELINEATOR: Install a minimum 8" x 8" butyl pad or hot melt butyl to anchor down the base. Drilled anchor bolts are not allowed. Remove butyl pad as close as possible to pavement surface. Include all costs for furnish install, maintain, and remove the butyl pad in the contract unit price for "Flexible Delineator".

704-P06 ATTENUATION DEVICE SPECIAL: Provide a MASH TL-2 compliant attenuation device that meets a minimum 25MPH design rating and can be mounted to the concrete barrier. Adjust the concrete barrier length to account for the length of the attenuation device so the device does not protrude into the driving lane. Maintain the pedestrian walkway as shown in Section 100.

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708-P01 INLET PROTECTION**:** Furnish, install, and maintain (clean) drainage inlet filter assemblies to collect sediment in surface storm water runoff. Dispose of debris or silt that has accumulated in the bag. Periodic cleaning of the filter as necessary.

Provide Wimco, Lange IPD, Flexstorm, Dandy CurbSack, or an approved equal.

Remove filters by November 15, or when the surrounding ground is frozen, whichever is sooner, if the surrounding surfaces are not stabilized by the approval of the Engineer. Prior to removal of the filters, ensure that surfaces surrounding the inlets are stabilized per the Standard Specifications. Reinstall filters on April 15, or when directed by the Engineer. Include the cost to reinstall or replace the filters in the unit price bid. Filter payment only paid once per each inlet location on the project no matter the number of filters required to provide adequate protection.

Keep filter in place until after the gradient surfaces are stabilized and the surrounding street is clean of debris. Include all costs related to the material, installation, maintenance, replacement and removal in the price bid for "Inlet Protection-Special".

714-P01 STORM DRAINS AND CULVERTS: Provide bell and spigot with rubber gasket joints for reinforced concrete pipe storm drain. Provide tongue and groove joints sealed with butyl mastic and wrapped joints for reinforced concrete pipe culverts.

Tie all joints on reinforced concrete pipe runs from drainage structure (i.e. inlet, manhole, etc.) to end section. Pipe ties are not required for concrete pipe placed from drainage structure to drainage structure.

Shoring may be required to install proposed underground utilities in areas to meet OSHA requirements. Include all costs for shoring in the price bid for other underground utility items.

722-P01 CASTINGS: Provide floating manhole castings for all new or existing manholes that lie within the limits of new concrete roadway, sidewalk, or shared-use path. Install casting as shown Section 20, Sheet 15. Position castings to avoid falling within a wheel path. Place flush all castings to within 1/8 inch below the pavement that lie in the roadway.

Provide the standard casting (see Section 20, Sheet 15) outfitted with an infiltration and inflow (I&I) barrier adhered to the manhole cover with the adjusting rings and casting set around the I&I barrier for all new manholes, adjusted manholes, or repaired manholes located outside of concrete.

722-P02 STORM DRAIN INLETS AND MANHOLES: All new inlets and manholes have a minimum 4.0-foot riser. Fill the bottom of the inlet or manhole with concrete up to the elevation that will accommodate the lowest invert elevation. Place and shape the concrete fill to eliminate trapping of debris and/or sediment. Backfill with suitable backfill all new inlets and manholes. Include all costs to accomplish this work in the price bid for the respective inlet or manhole.

Seal all barrel-to-barrel joints using a rubber gasketed joint.

Do not install steps in manholes or inlets.

Provide Neenah Foundry Company Type L grates and NDDOT style curb boxes or East Jordan Iron Works with Type M4 Vane Grate and Type T5 cur box or approved equal for all “Inlet-Type 2”, “Inlet-Type 2 Double” and Inlet – Special”.

722-P03 ADJUST MANHOLE: This bid item provides for the adjustment of various existing castings to the proper grade. Replace with new castings as stated in note 722-P01 with a maximum of 6 adjusting rings. Adding or removing adjusting rings will be paid by “Adjust Manhole”. In the event that the manhole cannot be adjusted to grade with 6 adjusting rings or less, the bid item “Manhole Repair” may be utilized. Include all labor, materials, and equipment necessary to complete the adjustment in the price bid for “Adjust Manhole”.

722-P04 MANHOLE REPAIR: This bid item provides for the adjustment and modification to bring existing manholes to grade. Replace with new castings as stated in note 722-P01 with a maximum of 6 adjusting rings. Adjustments requiring major reconstruction, beyond adding or removing adjusting rings will be paid by “Manhole Repair”. Include all labor, materials and equipment necessary to complete the modification to the existing manhole in the price bid for “Manhole Repair”.

722-P05 INLET SPECIAL: Include all costs for the manhole (base, riser, and cover), castings, grates, adjustment rings, trench excavation, aggregate base, and embankment in price bid for “Inlet Special – Type __ __IN.”

722-P06 ADJUST UTILITY APPURTENANCE: Install debris plugs into all existing gate valve boxes when they are adjusted. Include all labor, equipment and materials required to install the plugs in the price bid for “Adjust Utility Appurtenance.”

722-P07 ADJUST INLET: Adjust existing inlets to final grade by adding or removing adjusting rings. Include all labor, materials, and equipment necessary to complete the modification to the existing inlets in the price bid for “Adjust Inlet”.

724-P01 UTILITY ADJUSTMENT: Notify Mandan Public Works Department (701) 667- 3240 a minimum of 48 hours before each manhole, valve, or hydrant/watermain location is adjusted. Manholes, valves, watermains and hydrant relocations/adjustments will be inspected and accepted by the Engineer.

724-P02 WATERMAIN SHUTOFF: Notify Mandan Public Works Department (701) 667- 3240 a minimum of 48 hours prior to closing any gate valves within the project corridor. Operate newly installed valves until the project is accepted, but existing valves to be operated by City of Mandan representatives. Existing valves may not close tight enough to get a watertight closure. Work may be required without a total water shut off with no extra charge to the City of Mandan.

724-P03 SANITARY MANHOLE: Do not install steps in the sanitary manholes.

724-P04 SANITARY SEWER PIPE AND FITTINGS: For sanitary sewer less than 18”, provide and install pipe and fittings meeting PVC ASTM D3034 requirements for type PSM and have an SDR of 26, stamped on the pipe. For sanitary sewer 18” or greater, provide and install pipe and fittings meeting PVC ASTM F679-PS115 requirements. Install elastomeric gasket-type joint providing a watertight seal conforming to ASTM D3212 for all PVC sewer main line pipe and PVC sewer service pipe.

Furnish and install marking tape located 2 feet above the top of all sanitary sewer mains installed under the contract. Provide green tape of the non-detectable type and a minimum width of 5 inches with the words "CAUTION SEWER LINE BELOW" imprinted on the

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tape in black capital letters. Provide marking tape equal to that manufactured by Griffolyn Company, Inc. standard grade.

Flush all sanitary sewer pipe and manholes with clean water. Have the sewer main televised and recorded by a firm normally engaged in such type of work. Provide an electronic video format for each section of sewer main televised. Clearly mark recordings as to the project number and recording number. In the recordings, describe locations and conditions of the sewer and have a visual footage counter showing the distance of the camera from the manhole. After the recordings and report are submitted, they will be viewed by the Engineer for acceptance.

Include all costs for labor, materials and equipment necessary for the installation including: pipe, fittings, plugs, bedding material, marking tape, flushing and televising in the price bid for "(__)IN Sanitary Sewer Pipe".

724-P05 HYDRANTS: Manufacture hydrants in accordance with the requirements of AWWA C502. Equip hydrants with break-a-way type traffic flanges and two (2) 2½-inch hose connections with National Standard Threads and one (1) 4 1/2-inch pumper connection with National Standard Threads. Provide a 5¼-inch Waterous Pacer Model WB-67-250 as manufactured by American Flow Control or 5¼-inch American Darling Model B-62-B as manufactured by American Flow Control or 5¼-inch American AVK Model 2700 as manufactured by the American AVK Company or an approved equal for all 6-inch and 8-inch hydrants.

Have a minimum of 24 inches between the 2½-inch hose connection and the nominal ground line groove for all new or reset hydrants. Provide a bury depth of 8½ feet unless otherwise called for in place. Provide brass, Class 304 or 316 stainless steel, or have an epoxy coating as such to prevent corrosion for the life of the fire hydrant for all metal internal moving parts below ground. Provide stainless steel for all washers and barrel bolts below ground level. Provide hydrant lower rod with Class 304 or 316 stainless steel or have an epoxy coating as such to prevent corrosion for the life of the fire hydrant. Surround the hydrants with 1/2 cubic yards of subcut gravel so placed that it will readily take up all water from the drip valves. Set the hydrants on a concrete pad 6 inches thick and 18 inches square.

Furnish and install all new hydrants with a 48-inch Red FH800 American Series Fire Hydrant Marker manufactured by Flexstake Inc. of Fort Myers Florida, or an approved equal.

Mechanically restrain all non-terminal hydrants temporarily placed for future watermain extensions to tee.

724-P06 ADJUST HYDRANT: Adjust hydrant to final grade by adding or removing riser pipe. Install per manufacturer's recommendations. Provide a minimum distance between nozzle and ground of 24" and a maximum distance of 30". Wrap hydrant risers with 8-mil polyethylene plastic and securely tape. Include all costs associated with material, labor, and equipment necessary to complete the adjustments to the existing hydrants in the price bid for "Adjust Hydrant".

724-P07 REMOVE HYDRANT: Deliver all removed hydrants, unless marked for relocation, to the Mandan Public Works. Contact Mandan Public Works Department (701) 667- 3240 a minimum of 48 hours prior to delivery for the stockpile location at the Public Works yard.

724-P08 CONTROLLED DENSITY BACKFILL: Install controlled density backfill to provide special structural support at the existing water and proposed sanitary sewer crossings per plan locations.

Provide backfill with a blend of cement, water, pozzolanic materials, and fillers. Provide and install materials fluid on placement to flow around and fill voids around the pipe in the backfill area. Provide material able to support normal loads after six hours and have a compressive strength in the range of 80 psi to 130 psi at 28 days. Provide material such that it lends itself to easy removal with a tractor backhoe. If the mix design shown is used, no additional testing will be required. The mix design yields approximately one cubic yard of flowable mortar.

Mix Design	
Sand	2600 lbs
Water	70 gals
Fly Ash (Class C)	300 lbs
Cement	100 lbs

Excavate the lower crossing pipe to the top of pipe for the width of the upper crossing pipe trench and thoroughly compact the trench bottom by mechanical means, with care taken not to damage or disturb the lower crossing pipe. Fill the trench filled with controlled density backfill for 5 feet in either direction for a length of ten feet along the upper crossing pipe. Place the bedding material over the controlled density backfill after the controlled density backfill has adequately cured. Include the cost of the controlled density backfill in the price bid for "Pipe Conduit (_)IN-Storm Drain".

724-P09 WATERMAIN MODIFICATIONS: This bid item is for trench excavation and backfill required to install insulation over the existing watermain along ND 1806 from sta 3804+00 to sta 3806+00 LT. The price bid shall include all costs for labor, equipment, and materials required to locate the existing main, excavate, backfill, installation of new marking tape, and trench compaction. This work shall be included in the price bid for "Watermain Modifications." The costs for furnishing and installing the insulation will be paid at the contract unit price for "Insulation Board."

724-P10 SPRINKLER RELOCATION: Mandan Northwest Pipe Fittings, Inc. and the Starion Sports Complex properties have underground sprinkler systems that will be impacted by the project. Coordinate with each property owner to determine the quantity of sprinkler heads and hoses that will be impacted prior to construction. Replace the sprinkler heads and hoses with new materials matching the existing in locations that will provide sufficient water coverage.

If the work to replace the sprinkler heads and hoses requires access outside of the right-of-way or temporary construction easement, gain written access from the landowner to complete the work and submit a copy of the agreement to the Engineer.

Include all costs for this work in the bid price for "Sprinkler Relocation".

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744-P01 INSULATION BOARD: Furnish and install the insulation required to protect the water main. Provide insulation board meeting the following requirements:

- Thermal conductivity of not more than 0.28 BTU per hour per square foot per degree Fahrenheit per inch of thickness as tested in accordance with ASTM C177 is required.
- Not to absorb moisture to an extent greater than 2.5 percent by volume as tested in accordance with ASTM D2842.
- Compression strength greater than 20 psi as tested in accordance with ASTM D-1621.
- Density between 0.9 and 1.3 pounds per cubic feet as tested in accordance with ASTM D-1622.
- Specifically designed for protection of underground utilities. Install in accordance with the manufacturer's recommendations.

Minimum of 4-inches thick insulation is to be centered over the watermain. Install pipe bedding material between pipe and insulation.

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750-P01 PIGMENTED IMPRINTED 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/course aggregate ratio.

Provide a pigment from the list below or provide an approved equal for areas not abutting to existing pigmented concrete. To be considered an approved equal, pigments must meet the requirements of ASTM C 979.

3. Number 908 Ultra Black, produced by Soloman Colors, Inc. http://www.solomoncolors.com/;
4. Number 8084 Graphite, produced by Davis Colors http:/www.daviscolors.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.

Form a pattern in the concrete using a roller to create an Ashlar Slate pattern.

Cure and seal concrete using curing compound that meets the requirements of ASTM C 309, Type 1 and include slip resistant additive. Include all costs in the price bid for “Pigmented Imprinted Concrete”.

750-P02 DETECTABLE WARNING PANELS: Use unpainted ductile cast iron plates.

752-P01 FENCE CHAIN LINK: Furnish and install a 6’ chain link fence in the location shown on the plans. The new fence must be installed prior to the removal of the existing fence. The property must be secured at all times during the night with no gaps in fence. Include all costs for this work in the unit price bid for “Fence Chain Link.”

752-P02 FENCE CHAIN LINK-TYPE I: Furnish and install a 4’ black vinyl chain link fence. Coordinate with modular block wall installation to ensure fence post foundations will not conflict with wall tie backs. Include all costs for this work in the unit price bid for “Fence Chain Link-Type I.”

754-P01 PEDESTRIAN SIGNS: Signs W11-2-30 and W15-7P-24 at the roundabout are to be fluorescent yellow green in color.

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

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770-P01 LIGHTING SYSTEM A, B, C: Equipment and material quantities are shown for informational purposes only and will not be bid individually. Include all equipment, material, and labor required for the complete and functional lighting system in the lump sum prices bid for “LIGHTING SYSTEM A”, “LIGHTING SYSTEM B”, and “LIGHTING SYSTEM C”.

Install all conduits from station 3768+33.2 to 3780+98.0 via boring. It is unknown if any irrigation systems are installed within this station range. After installation of the lights and conduits in this area, grade the disturbed areas to match preconstruction conditions. Seed the disturbed areas with Class I seed and mulch with hydraulic mulch. Include all labor, materials, and equipment necessary to perform this described work in the contract unit price for “LIGHTING SYSTEM A”.

770-P02 LIGHT STANDARDS 6FT MA 40FT MT HT BREAKAWAY. Provide a steel, galvanized davit type, breakaway light standard with transformer base. Face hand holes in the opposite direction of roadway.

770-P03 LED LUMINAIRES: Provide LED luminaires according as shown in the table below:

LED Luminaire	Catalog Number
Eaton	NVN-AF-05-LED-U-T2 NVN-AF-05-LED-U-T3

The lighting system was designed using these values:

Roadway Classification: Principal Arterial - Commercial	
Average Maintained Illuminance	1.6 foot-candles
Average Maintained Illuminance – Roundabout	2.0 foot-candles
Illuminance Uniformity Ratio	3:1
Light Loss Factor	0.69

770-P04 FEED POINT TYPE II, IV PAD MOUNTED and FEED POINT TYPE I, POLE MOUNTED: Coordinate with the electric utility company (Montana-Dakota Utilities) to provide new electrical services for the new feed point cabinets. Coordinate the installation of new service conductors and conduit between the feed point and utility transformer.

Provide 2” conduit for the service conductors between the metersocket on the Feed Point cabinet to the utility transformer. Provide rigid steel conduit where exposed. Provide continuous conduit, at 24” below grade, between the utility transformer and the metersocket.

Orientate the feedpoint as shown on the plans and as directed by the Engineer. Install the photocell to face north.

770-P05 CONCRETE FOUNDATION HIGHWAY LIGHTING: Provide light standard foundations as shown in Section 140 and according to D-770-1. Bolt circle and projection to be verified with manufacturer specifications. Include spare conduit and cap end at all foundation located at end of a circuit.

770-P06 CONCRETE FOUNDATION-FEED POINT-TYPE B: Install top of concrete foundation level and at an elevation to prevent water inundation of cabinet. Duct seal all conduits with wire. Provide two spare 2” PVC conduits in the foundation. Provide conduit caps, with an oil-tight plug and wing nut on the spare conduit sweeps and label each as to the direction each sweep faces.

770-P07 REMOVE LIGHTING SYSTEM: Remove and salvage all light standards, mast arms, and luminaires designated in Section 140. Deliver the mast arms and standards to the City of Mandan Landfill (Address: 4103 CO RD 82; Phone: 667-0184). Remove all conductors, pull boxes, and foundations associated with the removed light standards. Remove all existing light foundations a minimum of 2-foot below the existing ground. Removed pull boxes and wire become the property of the Contractor. Upon removal, grade the disturbed areas to match preconstruction conditions. Seed the disturbed areas per with Class I seed and mulch with hydraulic mulch. Include all labor, materials, and equipment necessary to perform this described work in the contract unit price for “Remove Lighting System”.

770-P08 REVISE LIGHTING SYSTEM: The Starion Sports Complex sign at station 3812+80, LT has existing lighting for their sign. Prior to construction in that area, remove and salvage the existing lights, mounting hardware, and junction boxes. Upon completion, reinstall the lights and associated salvaged items to adequately illuminate the existing sign. Include all costs for this work including, removing and replacing all conductors and conduits in the bid price for “Revise Lighting System”.

Coordinate with the landowner prior to any of this work taking place.

770-P09 EXISTING UTILITIES: Pot-hole existing utilities prior to installation of proposed lighting foundations to ensure location and depths are not in conflict with the proposed lighting foundation locations. Coordinate with the Engineer to revise the proposed lighting foundation locations as necessary to eliminate conflict with existing utilities. Include all cost for equipment, material, and labor required to pot-hole existing utilities in the lump sum prices bid “LIGHTING SYSTEM A”, “LIGHTING SYSTEM B”, AND “LIGHTING SYSTEM C”. No additional payment will be made for revisions to proposed lighting foundation locations due to conflict with existing utilities.

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970-P01 LANDSCAPING – TREES AND PERENNIALS

1. Provide plant establishment period for a period of 1 year commencing on date of acceptance by Engineer/City Forester/City Arborist.

2. Notify the City of Mandan Forestry Department (701) 667-3240 Ext. 8 for an inspection of all plant material 1 week prior to installation.

3. Properly care for all plants from the time of planting until the contract plant establishment period expires. Proper care consists of watering, weeding, pruning, spraying, tightening of braces and guys, retying wrapping, remulching and other work as necessary to keep plants in a neat appearance and in a healthy growing condition.

   Furnish and install a 20-gallon slow release supplemental water bag for each deciduous tree. Perform complete waterings at 5 to 7-day intervals, which may be adjusted when weather conditions and soil moisture permit. Place a sufficient amount of water in each supplemental water bag at the time of each watering to keep trees in a moist condition, and to keep the trees in a healthy growing condition. Supplemental water bags will become the property of the City of Mandan following acceptance of trees. The City of Mandan will remove supplemental water bags and bracing and guying materials.

4. Furnish and install shredded hardwood wood mulch at a 3-inch depth and 6-foot diameter at the base of all trees unless otherwise noted. See detail for placement of wood mulch around trees. Furnish and install shredded wood mulch at a 3-inch depth and 1-foot diameter at the base of all perennials. Provide fibrous mulch, uniformly dark brown in color, free of large wood chunks, and substantially free of mold, dirt, sawdust, and foreign material. Mulch in an advanced state of decomposition will be rejected. Mulch containing chipped up manufactured boards or chemically treated wood, including but not limited to wafer board, particle board, and chromated copper arsenate (CCA) or penta-treated wood will be rejected.

5. Tree Planting: Remove topsoil and subsoil excavated in each planting hole and backfill all tree pits with native soil excavated from tree pit. Install trees so top of root ball is level with top of finished grade as shown in the details. Trees that are installed too deep or too shallow will not be accepted.

6. Water all trees and perennials within 2 hours of being planted to thoroughly saturate. Backfill and eliminate voids after settlement.

7. Within 24 hours of installation, stake trees in accordance with details.

8. Within 24 hours of installation, mulch all trees and perennials as detailed and specified.

9. Replace all plants that die or show evidence of dying, in the opinion of the Engineer/City Forester/City Arborist, during the plant establishment period at the earliest appropriate planting time after this condition becomes apparent.

10. Near the end of the applicable plant establishment period, an inspection of the planting will be made and only those plants found to be in a healthy growing condition will be accepted. Those plants not in a healthy growing condition will be replaced by the Contractor at the Contractor's expense.

11. Do not install plant material when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F. Do not install plant material when wind velocity exceeds 30 mph. Acceptable planting date ranges are as follows:

    Spring: April 15 – June 15
    Fall: September 15 – October 15

12. Include all costs for tree care maintenance, warranty, watering, wood mulch, tree guy anchoring/staking systems and other items necessary for completion of the tree plantings in the unit price bid for individual trees.

13. Include all costs for perennial care maintenance, warranty, watering, wood mulch and other items necessary for completion of the perennial plantings in the unit price bid for “970-6016 Daylilies-Container”.

14. Payment for Trees and Perennials will be made at specific intervals. Fifty percent (50%) will be paid after initial planting, twenty five percent (25%) on July 1, 2022 upon acceptance of proper plant care maintenance, and twenty five percent (25%) on September 15, 2022 upon acceptance of proper plant care maintenance and final acceptance. Keep detailed records of maintenance activities and notify the Engineer 24 hours in advance of maintenance activities in order to receive full payment for each period. Submit maintenance records to the Engineer prior to the partial payment dates listed above to receive payment.

This document was originally issued and sealed by Brett Gurholt, Landscape Architect Registration Number 40, on 08/21/20 and the original document is stored at the North Dakota Department of Transportation.

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970-P02 PLANTING SOIL: Provide planting soil mixture which consists of a mixture of peat moss, topsoil, and sand in a ratio of 1:1:1 by volume.

Provide peat moss with:

- at least 75% of partially decomposed stems and leaves of sphagnum, hypnum, polytrichum, and other mosses in which the fibrous and cellular structure is still recognizable.
- nearly free of decomposed colloidal residue, wood, and other foreign matter, and brown to black in color. Humus peat will not be acceptable.
- a moisture content not exceeding 60% by weight.
- ash content not exceeding 20%, based on the oven dry weight of the material.
- pH value not less than 3.2 nor greater than 7.0 at 25° C.
- water holding capacity not less than 400% by weight, on an oven dry basis.

Furnish a certificate stating the type of peat moss, brand name, and the place of origin. If packed in bales, provide certificate from marking on bales.

Provide sand that 100% passes a 3/8" sieve.

Include all work required to furnish, prepare, deliver, and install planting soil mixture to an 18-inch depth within the roundabout plant bed in the CY price bid for “970-0060 Planting Soil”.

970-P03 STONE MULCH: Furnish and install 3”-6” River Rock and 1½” River Rock in the Roundabout as shown in Section 85 of the plans. Include 5oz. woven, needle punched, polypropylene fabric designed for professional and commercial use under all areas receiving rock mulch. Plastic and other non-breathable material will not be accepted. Include all work necessary to provide and install rock mulch and weed barrier fabric in the unit price bid for “970-0070 Stone Mulch".

970-P04 LANDSCAPE BOULDERS: Furnish and install fieldstone boulders of local origin. See plans and details for the quantity and placement of the boulders. Provide individual boulders to achieve an individual size of approximately 3-foot by 3-foot by 3-foot. Include all costs associated with obtaining, hauling, and installing the boulders in the unit price bid for “970-0080 Landscape Boulders”.

970-P05 LANDSCAPE APPURTENANCE AREA: Refer to plan Sheet No. 6 and 10 of Section 85.

1. Inventory existing plant material, rock mulches, concrete landscape edging, and irrigation components within the grading tie line on the northwest corner of the Starion Sports Complex property (approximately Sta 3812+80). Coordinate work associated with removals and salvaged materials.
2. Reinstall topsoil within plant bed to a minimum depth of 12-inches.
3. Replace all plants removed from Landscape Appurtenance Area with the same species at a minimum size of:
    a. Ornamental Grasses: #2 Cont.
4. Salvage and reinstall (or replace) rock mulch to match type, size, color, and quantity in the approximate location removed. Ensure salvaged rock is cleaned of soil and mud. Install weed barrier fabric to match existing. Overlap weed barrier fabric over the existing fabric a minimum of 12-inches, and install landscape stables every 18” max.
5. Replace concrete landscape edging to match existing profile, style and color. Sawcut control joints to a depth of 1/3 the thickness of the edging and space joints to match existing.
6. Coordinate the removal and replace of the light fixtures, supports, and concrete pads per plan note 770-P08.
7. Salvage and reinstall (or replace) irrigation components disturbed by construction activities in the Landscape Appurtenance Area to match existing material, distribution, coverage and functionality, coordinate with other contractors working on site. Any damage to the existing irrigation system parts is the responsibility of the Contractor to replace. Install and test to ensure proper working order.
8. Include all costs to complete the work stated in items 1-7 of this note in the unit price bid “LANDSCAPE APPURTENANCES.”

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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.

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Estimated Quantities

SPEC	CODE	ITEM DESCRIPTION		UNIT	NHU-Federal Eligible	NHU-100% City Funds	IM-Federal Eligible		TOTAL
103	0100	CONTRACT BOND	Mainline	L SUM	0.9		0.1		1
201	0330	CLEARING & GRUBBING	Mainline	L SUM	1				1
202	0114	REMOVAL OF CONCRETE PAVEMENT	Mainline	SY	2702				2702
202	0130	REMOVAL OF CURB & GUTTER	Mainline	LF	2020		229		2249
202	0135	REMOVAL OF BITUMINOUS SURFACING	Mainline	TON	13033		1115		14148
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	Mainline	LF	1403				1403
202	0210	REMOVAL OF MANHOLES	Mainline	EA	3				3
202	0230	REMOVAL OF INLETS	Mainline	EA	4				4
202	0235	REMOVAL OF CATCH BASIN	Mainline	EA	1				1
202	0312	REMOVE EXISTING FENCE	Mainline	LF	1623				1623
203	0101	COMMON EXCAVATION-TYPE A	Mainline	CY	9325				9325
203	0109	TOPSOIL	Mainline	CY	8229		175		8404
203	0138	COMMON EXCAVATION-SUBCUT	Mainline	CY			894		894
203	0140	BORROW-EXCAVATION	Mainline	CY	19186				19186
216	0100	WATER	Mainline	M GAL	970		112		1082
251	0100	SEEDING CLASS I	Mainline	ACRE	0.965				0.965
251	0300	SEEDING CLASS III	Mainline	ACRE	10.533		0.6		11.133
251	2000	TEMPORARY COVER CROP	Mainline	ACRE	11.446		0.428		11.874
253	0201	HYDRAULIC MULCH	Mainline	ACRE	18.41		1.028		19.438
255	0101	ECB TYPE 1	Mainline	SY	21938				21938
260	0100	SILT FENCE UNSUPPORTED	Mainline	LF	2066		49		2115
260	0101	REMOVE SILT FENCE UNSUPPORTED	Mainline	LF	2066		49		2115
261	0112	FIBER ROLLS 12IN	Mainline	LF	8941		776		9717
261	0113	REMOVE FIBER ROLLS 12IN	Mainline	LF	6456		238		6694
302	0050	TRAFFIC SERVICE AGGREGATE	Mainline	TON	5289		399		5688
302	0120	AGGREGATE BASE COURSE CL 5	Mainline	TON	21061		2558		23619
302	0320	AGGREGATE SURFACE COURSE CL 5	Mainline	TON	527				527
401	0050	TACK COAT	Mainline	GAL	4076		531		4607
401	0060	PRIME COAT	Mainline	GAL	4505		208		4713
401	0160	BLOTTER MATERIAL CL 44	Mainline	TON	137		7		144
411	0100	MILLING PAVEMENT SURFACE	Mainline	TON	7498		5842		13340
430	0045	SUPERPAVE FAA 45	Mainline	TON	7010		756		7766
430	1000	CORED SAMPLE	Mainline	EA	74		10		84
430	5806	PG 58H-28 ASPHALT CEMENT	Mainline	TON	421		46		467
550	0300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	Mainline	SY	6052				6052
550	0330	NON-REINF CONCRETE PVMT CL AE-DOWELED-COLORED	Mainline	SY	642				642
570	0650	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED	Mainline	SY	593		344		937
570	0963	TRANSVERSE PCC JOINT CLEANING & SEALING	Mainline	LF	3080		240		3320
570	0965	LONGITUDINAL PCC JOINT CLEANING & SEALING	Mainline	LF	5284		445		5729
570	0966	RANDOM PCC CRACK CLEANING & SEALING	Mainline	LF	87		448		535
570	1512	SPALL REPAIR-PARTIAL DEPTH	Mainline	SF	146		185		331
702	0100	MOBILIZATION	Mainline	L SUM	0.9		0.1		1
704	0100	FLAGGING	Mainline	MHR	4500		48		4548
704	1000	TRAFFIC CONTROL SIGNS	Mainline	UNIT	4165		996		5161
704	1050	TYPE I BARRICADE	Mainline	EA	20				20
704	1052	TYPE III BARRICADE	Mainline	EA	16		2		18
704	1058	PEDESTRIAN WALKWAY	Mainline	LF	586				586

Estimated Quantities

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	8	2

IM-1-094(200)153

SPEC	CODE	ITEM DESCRIPTION		UNIT	NHU-Federal Eligible	NHU-100% City Funds	IM-Federal Eligible		TOTAL
704	1060	DELINEATOR DRUMS	Mainline	EA	201		38		239
704	1067	TUBULAR MARKERS	Mainline	EA	133		96		229
704	1072	FLEXIBLE DELINEATORS	Mainline	EA	49				49
704	1080	STACKABLE VERTICAL PANELS	Mainline	EA	349		23		372
704	1185	PILOT CAR	Mainline	HR	320				320
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	Mainline	EA	32				32
704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	Mainline	EA	4				4
706	0500	AGGREGATE LABORATORY	Mainline	EA	1				1
706	0550	BITUMINOUS LABORATORY	Mainline	EA	1				1
706	0600	CONTRACTOR'S LABORATORY	Mainline	EA	1				1
708	1531	INLET PROTECTION-FIBER ROLL 12IN	Mainline	EA	33		5		38
708	1533	REMOVAL INLET PROTECTION-FIBER ROLL 12IN	Mainline	EA	32		3		35
708	1540	INLET PROTECTION-SPECIAL	Mainline	EA	42				42
708	1541	REMOVE INLET PROTECTION-SPECIAL	Mainline	EA	42				42
709	0100	GEOSYNTHETIC MATERIAL TYPE G	Mainline	SY	28878	682	1718		31278
714	7036	PIPE PVC 18IN	Mainline	LF			564		564
720	0130	IRON PIN R/W MONUMENTS	Mainline	EA	51				51
720	0135	IRON PIN REFERENCE MONUMENTS	Mainline	EA	6				6
722	0100	MANHOLE 48IN	Mainline	EA	9				9
722	0110	MANHOLE 60IN	Mainline	EA	2				2
722	0120	MANHOLE 72IN	Mainline	EA	1				1
722	0300	MANHOLE SANITARY	Mainline	EA		12			12
722	1100	MANHOLE RISER 48IN	Mainline	LF	37.4	147.7			185.1
722	1110	MANHOLE RISER 60IN	Mainline	LF	10.3				10.3
722	1120	MANHOLE RISER 72IN	Mainline	LF	6.3				6.3
722	3410	MANHOLE REPAIR	Mainline	EA	4				4
722	3510	INLET-TYPE 2	Mainline	EA	22				22
722	3520	INLET-TYPE 2 DOUBLE	Mainline	EA	4				4
722	3701	INLET SPECIAL-TYPE 2 48IN	Mainline	EA	7				7
722	3720	INLET SPECIAL CATCH BASIN 6IN BEEHIVE 48IN	Mainline	EA	1				1
722	3761	INLET SPECIAL-TYPE 2 60IN	Mainline	EA	2				2
722	3766	INLET SPECIAL-TYPE 2 72IN	Mainline	EA	3				3
722	3768	INLET SPECIAL-TYPE 2 84IN	Mainline	EA	1				1
722	3900	INLET SLOTTED DRAIN 12IN	Mainline	LF	20				20
722	4010	INLET CATCH BASIN 6IN BEEHIVE	Mainline	EA	4				4
722	6140	ADJUST GATE VALVE BOX	Mainline	EA	12				12
722	6160	ADJUST INLET	Mainline	EA	2			1	3
722	6200	ADJUST MANHOLE	Mainline	EA	2				2
722	6240	ADJUST UTILITY APPURTENANCE	Mainline	EA	1				1
724	0310	GATE VALVE & BOX 8IN	Mainline	EA	1				1
724	0375	RELOCATE GATE VALVE & BOX	Mainline	EA	1				1
724	0412	8IN HYDRANT	Mainline	EA	1				1
724	0427	ADJUST HYDRANT	Mainline	EA	4				4
724	0430	REMOVE HYDRANT	Mainline	EA	1				1
724	0830	WATERMAIN 8IN PVC	Mainline	LF	9				9
724	0891	WATERMAIN MODIFICATIONS	Mainline	L SUM	1				1
724	1035	SPRINKLER RELOCATION	Mainline	L SUM	1				1

Estimated Quantities

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	8	3

IM-1-094(200)153

SPEC	CODE	ITEM DESCRIPTION		UNIT	NHU-Federal Eligible	NHU-100% City Funds	IM-Federal Eligible		TOTAL
724	1124	21IN SANITARY SEWER PIPE	Mainline	LF		3199			3199
724	7014	REMOVE GATE VALVE BOX	Mainline	EA	1				1
744	0050	INSULATION BOARD	Mainline	CF	433				433
748	0100	CURB & GUTTER	Mainline	LF	95		229		324
748	0140	CURB & GUTTER-TYPE I	Mainline	LF	10462				10462
748	0141	CURB & GUTTER-TYPE 1 SPECIAL	Mainline	LF	415				415
748	1020	VALLEY GUTTER 36IN	Mainline	SY	63				63
748	1030	VALLEY GUTTER 72IN	Mainline	SY	82				82
750	0030	PIGMENTED IMPRINTED CONCRETE	Mainline	SY	649				649
750	0115	SIDEWALK CONCRETE 4IN	Mainline	SY	2277				2277
750	0210	CONCRETE MEDIAN NOSE PAVING	Mainline	SY	60.5				60.5
750	1020	DRIVEWAY CONCRETE 8IN	Mainline	SY	784				784
750	2115	DETECTABLE WARNING PANELS	Mainline	SF	424				424
752	0600	FENCE CHAIN LINK	Mainline	LF	435				435
752	0610	FENCE CHAIN LINK-TYPE I	Mainline	LF	65				65
752	3100	CORNER ASSEMBLY CHAIN LINK	Mainline	EA	3				3
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	Mainline	SF	333		39		372
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	Mainline	SF	169		20		189
754	0170	FLEXIBLE DELINEATORS	Mainline	EA	20				20
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	Mainline	LF	951				951
754	0210	GALV STEEL POST-STANDARD PIPE	Mainline	LF			75		75
754	0214	GALV STEEL POSTS-W-SHAPE POSTS(TWO OR MORE)	Mainline	LF			57		57
754	0562	REFERENCE MARKER-TYPE B	Mainline	EA	1				1
754	0592	RESET SIGN PANEL	Mainline	EA	25		4		29
754	0593	RESET SIGN SUPPORT	Mainline	EA	1				1
754	0805	OBJECT MARKERS - CULVERTS	Mainline	EA	20				20
754	1100	CLASS AE CONCRETE-SIGN FOUNDATIONS	Mainline	CY			1		1
754	1104	REMOVE SIGN FOUNDATION	Mainline	EA			7		7
762	0112	EPOXY PVMT MK MESSAGE	Mainline	SF	464		32		496
762	0113	EPOXY PVMT MK 4IN LINE	Mainline	LF	20440		4775		25215
762	0115	EPOXY PVMT MK 8IN LINE	Mainline	LF	611		876		1487
762	0117	EPOXY PVMT MK 24IN LINE	Mainline	LF	224		56		280
762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	Mainline	SF	253		96		349
762	0436	SHORT TERM 24IN LINE-TYPE NR	Mainline	LF	80				80
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	Mainline	LF	4623		4534		9157
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	Mainline	LF			354		354
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	Mainline	LF	320		631		951
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	Mainline	LF	538		64		602
766	0120	RESET MAILBOX	Mainline	EA	3				3
770	0003	LIGHTING SYSTEM A	Mainline	EA	1				1
770	0004	LIGHTING SYSTEM B	Mainline	EA	1				1
770	0005	LIGHTING SYSTEM C	Mainline	EA	1				1
770	4525	REVISE LIGHTING SYSTEM	Mainline	EA	1				1
770	4567	REMOVE LIGHTING SYSTEM	Mainline	EA	1				1
930	9551	CONCRETE MODULAR BLOCK RETAINING WALL	Mainline	SF	128				128
970	0001	LANDSCAPING APPURTENANCES	Mainline	L SUM	1				1
970	0060	PLANTING SOIL	Mainline	CY	157				157

Estimated Quantities

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	8	4

IM-1-094(200)153

SPEC	CODE	ITEM DESCRIPTION		UNIT	NHU-Federal Eligible	NHU-100% City Funds	IM-Federal Eligible		TOTAL
970	0070	STONE MULCH	Mainline	SF	2827				2827
970	0080	LANDSCAPE BOULDERS	Mainline	TON	34				34
970	2014	EMBERS AMUR MAPLE - TREE FORM	Mainline	EA	51				51
970	2032	AUTUMN SPLENDOR BUCKEYE	Mainline	EA	4				4
970	2194	RED SPLENDOR CRABAPPLE	Mainline	EA	7				7
970	2202	SPRING SNOW CRABAPPLE	Mainline	EA	6				6
970	2215	PRINCESS KAY PLUM	Mainline	EA	53				53
970	2330	BUR OAK	Mainline	EA	4				4
970	2405	JAPANESE TREE LILAC	Mainline	EA	36				36
970	2456	PRAIRIE EXPEDITION AMERICAN ELM	Mainline	EA	4				4
970	6016	DAYLILIES-CONTAINER	Mainline	EA	32				32
709	0100	GEOSYNTHETIC MATERIAL TYPE G	Bid Option - 1	SY	5409				5409
714	4091	PIPE CONDUIT 12IN-APPROACH	Bid Option - 1	LF	64				64
714	4096	PIPE CONDUIT 15IN-APPROACH	Bid Option - 1	LF	120				120
714	4097	PIPE CONDUIT 15IN-STORM DRAIN	Bid Option - 1	LF	1458				1458
714	4099	PIPE CONDUIT 18IN-APPROACH	Bid Option - 1	LF	198				198
714	4101	PIPE CONDUIT 18IN-STORM DRAIN	Bid Option - 1	LF	1971				1971
714	4106	PIPE CONDUIT 24IN-APPROACH	Bid Option - 1	LF	100				100
714	4107	PIPE CONDUIT 24IN-STORM DRAIN	Bid Option - 1	LF	847				847
714	4112	PIPE CONDUIT 30IN-STORM DRAIN	Bid Option - 1	LF	415				415
714	4115	PIPE CONDUIT 36IN	Bid Option - 1	LF	66				66
709	0100	GEOSYNTHETIC MATERIAL TYPE G	Bid Option - 2	SY	5380				5380
714	0110	PIPE CONC REINF 12IN CL III	Bid Option - 2	LF	64				64
714	0205	PIPE CONC REINF 15IN CL III	Bid Option - 2	LF	120				120
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	Bid Option - 2	LF	1458				1458
714	0310	PIPE CONC REINF 18IN CL III	Bid Option - 2	LF	198				198
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	Bid Option - 2	LF	1971				1971
714	0615	PIPE CONC REINF 24IN CL III	Bid Option - 2	LF	100				100
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	Bid Option - 2	LF	847				847
714	0825	PIPE CONC REINF 30IN CL III-STORM DRAIN	Bid Option - 2	LF	415				415
714	0905	PIPE CONC REINF 36IN CL III	Bid Option - 2	LF	66				66

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	10	1
		IM-1-094(200)153		

SPEC	CODE	BID ITEM	QTY	UNIT
430	1000	CORED SAMPLE		
		NHU-1-806(052)071	74	EA
		IM-1-094(200)153	10	EA
720	0130	IRON PIN R/W MONUMENTS		
		NHU-1-806(052)071	51	EA
720	0135	IRON PIN REFERENCE MONUMENTS		
		NHU-1-806(052)071	6	EA
754	0805	OBJECT MARKERS - CULVERTS		
		NHU-1-806(052)071	25	EA
766	0120	RESET MAILBOX		
		NHU-1-806(052)071	3	EA

Approach Removal Estimate

Approach Station	Lt/Rt	Pavement Depth	Aggr. Depth
3783+34	Rt	6"	0"
3784+50	Rt	7.5"	2"
3789+08	Rt	7.5"	2"
3801+27	Rt	5"	6"
3809+43	Lt	5"	6"
3812+48	Lt	5"	6"
3812+96	Rt	5"	6"
3814+87	Rt	5"	6"
3815+00	Lt	5"	6"
3822+06	Rt	6"	1.5"
3823+71	Rt	6"	1.5"
3823+87	Lt	6"	1.5"
3825+70	Lt	6"	1.5"
3832+16	Rt	6"	1.5"
3833+65	Lt	6"	1.5"
3846+50	Lt	6"	1.5"
3849+54	Lt	6"	1.5"

766-0120 RESET MAILBOX

Station	Offset
3814+80	66' Lt
3846+70	92' Lt
3849+39	24' Lt

754 0805 OBJECT MARKERS - CULVERTS

Station	Quantity (EA)
3800+95	1
3801+55	1
3801+69	1
3807+07	1
3809+30	1
3815+50	1
3815+88	1
3821+63	1
3823+62	1
3824+08	1
3825+11	1
3825+43	1
3825+97	1
3826+21	1
3833+25	1
3834+12	1
3843+37	2
3843+41	2
3846+10	2
3849+20	1
3849+80	1
13+07 (EXCOL)	1
Total	25

Iron Pin R/W Monuments

Station	Offset	Northing	Easting	Description	Iron Pin R/W Monument	Iron Pin Reference Monument
3782+25.44	40.0	429271.06	1874165.36	EXST R/W	X	
3782+25.44	-40.0	429235.90	1874093.50	PPSD R/W	X	
3784+74.06	40.0	429416.78	1873928.10	EXST R/W	X	
3784+74.06	-40.0	429336.78	1873929.24	PPSD R/W	X	
3788+74.79	-40.0	429330.77	1873507.73	EXST R/W	X	
3788+80.73	40.0	429410.67	1873500.64	EXST R/W	X	
3789+46.67	45.0	429414.73	1873434.64	PPSD R/W	X	
3789+47.79	-40.0	429329.72	1873434.73	EXST R/W	X	
3791+65.00	45.0	429411.63	1873216.33	PPSD R/W	X	
3791+65.00	40.0	429406.63	1873216.41	EXST R/W	X	
3801+70.00	40.0	429392.32	1872211.51	EXST R/W	X	
3801+70.00	45.0	429397.32	1872211.44	PPSD R/W	X	
3803+30.00	45.0	429395.05	1872051.45	PPSD R/W	X	
3803+30.00	40.0	429390.05	1872051.52	EXST R/W	X	
3807+75.00	40.0	429383.71	1871606.57	EXST R/W	X	
3807+75.00	45.0	429388.71	1871606.50	PPSD R/W	X	
3810+35.00	45.0	429385.01	1871346.52	PPSD R/W	X	
3810+35.00	40.0	429380.01	1871346.60	EXST R/W	X	
3815+00.00	40.0	429373.39	1870881.64	EXST R/W	X	
3815+00.00	55.0	429388.39	1870881.43	PPSD R/W	X	
3815+35.00	-40.0	429292.90	1870847.78	EXST R/W	X	
3815+35.00	-50.0	429282.91	1870847.93	PPSD R/W	X	
3815+52.48	55.0	429387.65	1870828.96	PPSD R/W		X
3815+52.51	-50.0	429282.66	1870830.39	PPSD R/W		X
3817+88.82	55.0	429384.42	1870592.67	PPSD R/W	X	
3818+05.00	-50.0	429279.21	1870577.92	PPSD R/W	X	
3818+05.00	-40.0	429289.21	1870577.79	EXST R/W	X	
3818+44.18	-40.0	429288.68	1870538.60	EXST R/W	X	
3818+44.99	-77.0	429251.67	1870538.31	PPSD R/W	X	
3818+73.50	-77.0	429251.28	1870509.79	EXST R/W	X	
3820+12.32	-206.7	429364.55	1870235.07	EXST R/W	X	
3820+21.69	-205.1	429372.75	1870234.96	PPSD R/W	X	
3820+73.02	-65.0	429450.94	1870360.08	EXST R/W	X	
3820+99.53	70.0	429511.95	1870483.40	PPSD R/W	X	
3821+86.63	70.0	429599.08	1870455.98	PPSD R/W	X	
3821+86.63	-65.0	429554.66	1870328.50	EXST R/W	X	
3822+25.00	70.0	429635.31	1870443.36	PPSD R/W	X	
3822+25.00	50.0	429628.73	1870424.47	EXST R/W	X	
3829+02.75	60.0	430272.05	1870210.95	EXST R/W	X	
3829+02.75	50.0	430268.76	1870201.50	EXST R/W	X	
3829+02.75	-65.0	430230.92	1870092.90	EXST R/W	X	
3837+99.46	60.0	431132.47	1870055.50	EXST R/W	X	
3837+99.46	-65.0	431129.69	1869930.53	EXST R/W	X	
3839+00.00	60.0	431232.98	1870053.27	PPSD R/W	X	
3839+00.00	50.0	431232.76	1870043.27	EXST R/W	X	
3841+50.00	50.0	431482.70	1870037.71	EXST R/W	X	
3841+50.00	65.0	431483.03	1870052.71	PPSD R/W	X	
3842+11.82	65.0	431544.83	1870051.33	PPSD R/W	X	
3842+11.82	-65.0	431541.94	1869921.36	EXST R/W	X	
3845+68.33	65.0	431904.82	1870032.11	PPSD R/W		X
3845+87.13	-65.0	431912.37	1869900.97	EXST R/W		X
3846+93.63	60.0	432030.43	1870015.07	PPSD R/W		X
3847+33.46	-75.0	432055.18	1869876.52	EXST R/W		X
3847+78.59	60.0	432115.72	1870005.33	PPSD R/W	X	
3847+78.59	-75.0	432099.40	1869871.32	EXST R/W	X	
3850+66.00	60.0	432401.03	1869970.59	PPSD R/W	X	
3850+66.00	50.0	432399.82	1869960.66	EXST R/W	X	

MANHOLES IN ASPHALT/CONCRETE/GRASS

Manhole	Station	Offset	Casting Code	Loocation Type
Storm MH 201	3782+95.3	43.3 Rt	(Y)	Grass
EX. San MH	3783+54.6	65.6 Rt	(Z)	Asphalt
Storm MH 202	3783+87.3	32.0 Rt	(Y)	Grass
Storm MH 203	3785+64.0	12.0 Rt	(Z)	Asphalt
Storm MH 204	3786+28.0	12.0 Rt	(Z)	Asphalt
EX. San MH	3786+33.0	25.2 Rt	(Y)	Grass
Storm MH 205	3787+08.0	12.0 Rt	(Z)	Asphalt
Storm MH 206	3788+69.0	12.0 Rt	(Z)	Asphalt
Storm MH 207	3788+96.0	12.0 Rt	(Z)	Asphalt
Storm MH 208	3789+64.0	12.0 Rt	(Z)	Asphalt
EX. San MH	3790+81.4	26.6 Rt	(Y)	Grass
Storm MH 210	3793+64.0	12.0 Rt	(Z)	Asphalt
Storm MH 211	3797+64.0	12.0 Rt	(Z)	Asphalt
San MH 8	3801+21.8	110.7 Lt	(Y)	Grass
San MH 9	3801+60.8	31.0 Rt	(Y)	Grass
Storm MH 212	3801+64.0	12.0 Rt	(Z)	Asphalt
Storm MH 213	3804+40.0	12.0 Rt	(Z)	Asphalt
San MH 10	3805+21.8	31.0 Rt	(Y)	Grass
San MH 11	3809+21.8	31.0 Rt	(Y)	Grass
EX. Water MH	3810+70.1	32.6 Lt	(Y)	Grass
San MH 12	3812+47.7	31.0 Rt	(Y)	Grass
San MH 13	3816+28.6	31.0 Rt	(Y)	Grass
Ex. Water MH	3817+78.9	18.0 Lt	(Z)	Concrete
San MH 14	3817+84.3	34.0 Rt	(Y)	Grass
San MH 15	3820+95.5	60.9 Rt	(Y)	Grass
San MH 16	3821+39.4	55.0 Lt	(Y)	Grass
San MH 17	3824+48.8	55.0 Lt	(Y)	Grass
San MH 18	3828+48.8	55.0 Lt	(Y)	Grass
San MH 19	3832+43.4	55.0 Lt	(Y)	Grass

Code	Manhole Casting Style Frame
(Y)	Neenah R-1733
	East Jordan 1205
(Z)	Neenah R-1955-1
	East Jordan 3025 SELFLEVEL

*Or Approved Equal

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

Pavement
Prime Coat @ 0.25 Gal/SY
Blotter Material CL 44 @ 15 Lbs/SY
Aggregate Base Course Cl 5 @ 1.875 Ton/CY
Tack Coat @ 0.05 Gal/SY
FAA 45 @ 2 Ton/CY

Removals
Aggregate Base @ 1.875 Ton/CY
Hot Mix Asphalt @ 2 Ton/CY
Concrete @ 2 Ton/CY

430 1000 CORED SAMPLE

Specification Section	A Distance (ft) / 2000	B Lanes	C LIfts	D Sublots (A x B x C)	430.04 I.2.b(1), "General" (D x 2)	430.04 I.2.b(2), "Pavement Thickness DetermInatIon	Unit
430.04 I.2.b(1), "General"							
ND 1806 Sta 3785+00.00 to Sta 3817+47.57	2	3	2	12	24	N/A	EA
ND 1806 Sta 3821+57.00 to Sta 3850+91.22	2	3	1	6	12	N/A	EA
NE Ramp Sta 3012+50.18 to Sta 3023+41.87	1	1	1	1	2	N/A	EA
NW Ramp Sta 4000+82.14 to Sta 4007+93.04	1	1	1	1	2	N/A	EA
SW Ramp Sta 1013+50.00 to Sta 1016+86.04	1	1	2	2	4	N/A	EA
SE Ramp Sta 2001+39.31 to Sta 2003+54.33	1	1	1	1	2	N/A	EA
SSP 4 LongItudInal JoInt DensIty In HMA Pavements (CenterlIne)							
ND 1806 Sta 3785+00.00 to Sta 3817+47.57	2	3	2	12	24	N/A	EA
ND 1806 Sta 3821+57.00 to Sta 3850+91.22	2	3	1	6	12	N/A	EA
430.04 I.2.b(2), "Pavement Thickness Determination Cores"							
ND 1806 Sta 3785+00.00 to Sta 3817+47.57	-	-	-	-	N/A	1	EA
ND 1806 Sta 3821+57.00 to Sta 3850+91.22	-	-	-	-	N/A	1	EA
NHU-1-806(052)071 Project Total					74		EA
IM-1-094(200)153 Project Total					10		EA

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ND 1806

Basis of Estimate

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	11	1

NHU-1-806(052)071 Earthwork Summary					
LOCATION	EARTHWORK SUMMARY				TOPSOIL SUMMARY
	Excavation	Embankment①	203 0101 COMMON EXCAVATION-TYPE A	203 0140 BORROW-EXCAVATION	203 0109 TOPSOIL
	(CY)	(CY)	(CY)	(CY)	(CY)
	A	B	C = A	D = B - A	E
ND 1806					
Sta 3780+69.36 to Sta 3817+47.57 (PR1806)	6,805	5,134	6,805	-1,671	2,424
ND 1806 Roundabout					
Roundabout - Sta 3817+47.57 to Sta 3822+54.55 (PR1806)	441	7,431	441	6,990	1,025
ND 1806 Overlay/Sliver Widening					
Overlay Left - Sta 3822+54.55 to Sta 3850+91.22 (PR1806)	326	4,489	326	4,163	1,682
Overlay Right - Sta 3822+54.55 to Sta 3850+91.22 (PR1806)	634	4,838	634	4,204	1,664
Approaches					
Private Drive (PRA3781+28)	14	-	14	-14	2
Private Drive (PRA3783+45)	48	202	48	154	28
Private Drive (PRA3784+62)	21	3	21	-18	15
Private Drive (PRA3787+42)	23	5	23	-18	6
Private Drive (PRA3789+08)	3	28	3	25	8
8th Street (PRA3789+16)	36	23	36	-13	25
16th Street (PRA3801+22)	2	123	2	121	64
Private Drive (PRA3801+27)	5	19	5	14	15
Private Drive (PRA3809+43)	13	28	13	15	13
Private Drive (PRA3812+48)	454	-	454	-454	48
Private Drive (PRA3812+96)	43	-	43	-43	5
Private Drive (PRA3814+87)	11	-	11	-11	6
Private Drive (PRA3815+00)	173	-	173	-173	21
Private Drive (PRA3815+88)	4	1,154	4	1,150	175
Private Drive (PRA3817+27)	13	1	13	-12	5
Private Drive (PRA3823+87)	31	89	31	58	51
Private Drive (PRA3825+70)	21	144	21	123	54
Private Drive (PRA3825+70R)	2	3,297	2	3,295	507
Field Drive (PRA3832+16)	2	420	2	418	89
Field Drive (PRA3833+65)	10	500	10	490	108
Field Drive (PRA3841+18)	1	270	1	269	74
27th Ave (PRA3846+50)	67	25	67	-42	38
Private Drive (PRA3846+75)	96	41	96	-55	17
Private Drive (PRA3849+54)	26	247	26	221	60
TOTAL =	9,325	28,511	9,325	19,186	8,229

Notes:
This computation report is not a balance sheet. Contractor to balance their own materials.
Quantities do not include material for temporary roads and roadway widening, storm sewer, sanitary sewer, water lines, or retaining walls.
① Additional 25% volume included for shrinkage.

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ND 1806

Earthwork Summary

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	20	1

NHU-1-806(052)071 Concrete Pavement Repair

Begin Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Gate Valve Box (3) (EA)	Adjust Inlet (3) (EA)	Adjust Manhole (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)						
3769+79	LT	0				2	2	4						
3770+07	LT	0				2	2	4						
3770+35	LT	0				2	2	4						
3770+53	LT	12	28	8	24.9				28					
3770+53	LT	0	38	12	50.7									
3770+74	RT	12				3	2	6						
3770+77	RT	12				2	2	4						
3770+81	LT	0	10	12	13.3									
3770+88	RT	20							6					
3771+00	RT	0	29	12	38.7									
3771+52	RT	0				2	2	4						
3771+52	RT	12				2	4	8						
3771+67	LT/RT	0	19	40	84.4					38	38	1	1	
3771+80	LT	12	15	10	16.7									
3772+09	LT	0				2	2	4						
3772+22	RT	12				2	2	4						
3772+31	LT	41				2	2	4						
3772+36	LT	12				2	2	4						
3772+76	LT	12				3	2	6						
3773+47	RT	12				2	4	8						
3774+03	RT	12				2	2	4						
3774+33	RT	12	8	12	10.7									
3774+34	RT	0	62	12	82.7									1
3774+35	LT	12				2	2	4						
3774+62	RT	12				4	2	8						
3775+05	LT	0				2	2	4						
3775+90	RT	0				2	2	4						
3776+16	LT	0	38	12	50.7									
3776+30	RT	2				2	2	4						
3776+30	LT	12	31	8	27.6									
3776+30	LT	20								38	38			
3776+32	RT	9				3	3	9						
3776+32	RT	2				2	4	8						
3776+44	RT	0	45	12	60.0									
3776+50	LT	20	10	12	13.3									
3776+53	RT	12							10					
3776+93	LT	12	42	8	37.3									
3776+93	LT	20	10	12	13.3									
3777+00	LT	12				2	2	4						
3777+01	RT	0				2	2	4						
3777+01	RT	12				2	2	4						
3777+25	LT	0	11	12	14.7									
3777+41	LT	20							35	10	10		1	
3778+03	RT	20				2	2	4						
3778+45	RT	12				2	4	8						
Subtotal					539.0			133	79	86	86	1	2	1
Additional 10%					53.9			13	8	9	9			
Total					592.9			146	87	95	95	1	2	1

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"

(1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitidunal Length of One Panel or More)" Details in Section 20

(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20

(3) See Section 6 for Further Information

LONGITUDINAL PCC JOINT CLEANING & SEALING				
Begin Station	End Station	Joints	Length	Total Length (LF)
3769+36	3779+40	5	1004	5020
3779+40	3780+72	2	132	264
			Total	5284

TRANSVERSE PCC JOINT CLEANING & SEALING				
Begin Station	End Station	Joint Spacing	Width	Total Length (LF)
3769+36	3779+40	14	40	2880
3779+40	3780+72	14	20	200
			Total	3080

SPEC	CODE	BID ITEM	QTY	UNIT
202	0130	REMOVAL OF CURB & GUTTER		
		NHU-1-806(052)071	95	LF
570	0650	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED		
		NHU-1-806(052)071	593	SY
570	0963	TRANSVERSE PCC JOINT CLEANING & SEALING		
		NHU-1-806(052)071	3,080	LF
570	0965	LONGITUDINAL PCC JOINT CLEANING & SEALING		
		NHU-1-806(052)071	5,284	LF
570	0966	RANDOM PCC CRACK CLEANING & SEALING		
		NHU-1-806(052)071	87	LF
570	1512	SPALL REPAIR-PARTIAL DEPTH		
		NHU-1-806(052)071	146	SF
722	6160	ADJUST INLET		
		NHU-1-806(052)071	2	EA
722	6200	ADJUST MANHOLE		
		NHU-1-806(052)071	1	EA
722	6240	ADJUST UTILITY APPURTENANCE		
		NHU-1-806(052)071	1	EA
748	0100	CURB & GUTTER		
		NHU-1-806(052)071	95	LF

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Concrete Pavement Repair

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(200)153	20	2

IM-1-094(200)153 Concrete Pavement Repair

Station	Side	Start Offset	Concrete Pavement Repair Full Depth-Doweled (1)			Spall Repair (2)			Random PCC Crack Cleaning & Sealing (2) (LF)	Removal of Curb & Gutter (LF)	Curb & Gutter (LF)	Adjust Inlet (3) (EA)
			Length (FT)	Width (FT)	Area (SY)	Length (FT)	Width (FT)	Area (SF)				
3753+12	LT	20				3	2	6	21			
3753+12	LT	3							10			
3755+42	RT	54								54	54	
3755+45	RT	95							23			
3756+86	LT	17				2	3	6				
3756+86	RT	4				2	2	4				
3757+31	LT	47				20	2	40	153			
3758+00	LT	81	25	30	83.3					49	49	
3758+39	LT	53								49	49	
3758+58	RT	15							28			
3759+19	LT	0							12			
3759+70	LT	12				3	2	6				
3760+28	LT	0							12			
3760+40	LT	0	6	12	8.0							
3760+90	LT/RT	0	8	24	21.3							
3760+94	RT	15							5			
3760+97	LT	15							7			
3761+38	RT	18				2	2	4				
3761+64	LT/RT	0	10	24	26.7							
3763+10	RT	2				2	8	16				
3763+10	RT	12				2	2	4				
3764+85	LT	16							13			
3765+12	LT	12				2	4	8				
3765+16	LT	16							8			
3765+73	LT	20				2	3	6				
3767+36	LT	32								12	12	
3767+68	RT	12				2	2	4				
3767+82	LT	20				4	2	8				
3767+83	LT	53				6	2	12	107			
3768+25	RT	20								44	44	1
3768+25	LT/RT	0	29	40	128.9							
3768+57	RT	12							8			
3768+64	RT	12				18	2	36				
3768+89	LT/RT	0	10	40	44.4							
3769+22	LT	12				2	4	8				
Subtotal					312.6			162	386	208	208	1
Additional 10%					31.3			16	39	21	21	
Total					**344.0**			**178**	**425**	**229**	**229**	**1**

Note: Removal of existing concrete and all dowel bars are to be included in the bid item "Concrete Pavement Repair-Full Depth-Doweled"

(1) Refer to "Transverse Joint Dowel & Tie Bar Placement Full Depth Concrete Pavement Repair Perpendicular Joints (Longitudinal Joints Less than One Panel) & (Longitidunal Length of One Panel or More)" Details in Section 20

(2) Refer to "Spall Repair & Random Crack Sealing" Detail in Section 20

(3) See Section 6 for Further Information

SPEC	CODE	BID ITEM	QTY	UNIT
202	0130	REMOVAL OF CURB & GUTTER		
		IM-1-094(200)153	229	LF
570	0650	CONCRETE PAVEMENT REPAIR-FULL DEPTH-DOWELED		
		IM-1-094(200)153	344	SY
570	0963	TRANSVERSE PCC JOINT CLEANING & SEALING		
		IM-1-094(200)153	240	LF
570	0965	LONGITUDINAL PCC JOINT CLEANING & SEALING		
		IM-1-094(200)153	445	LF
570	0966	RANDOM PCC CRACK CLEANING & SEALING		
		IM-1-094(200)153	448	LF
570	1512	SPALL REPAIR-PARTIAL DEPTH		
		IM-1-094(200)153	185	SF
722	6160	ADJUST INLET		
		IM-1-094(200)153	1	EA
748	0100	CURB & GUTTER		
		IM-1-094(200)153	229	LF

LONGITUDINAL PCC JOINT CLEANING & SEALING

Begin Station	End Station	Joints	Length	Total Length (LF)
3768+47	3769+36	5	89	445
			Total	445

TRANSVERSE PCC JOINT CLEANING & SEALING

Begin Station	End Station	Joint Spacing	Width	Total Length (LF)
3768+47	3769+36	14	40	240
			Total	240

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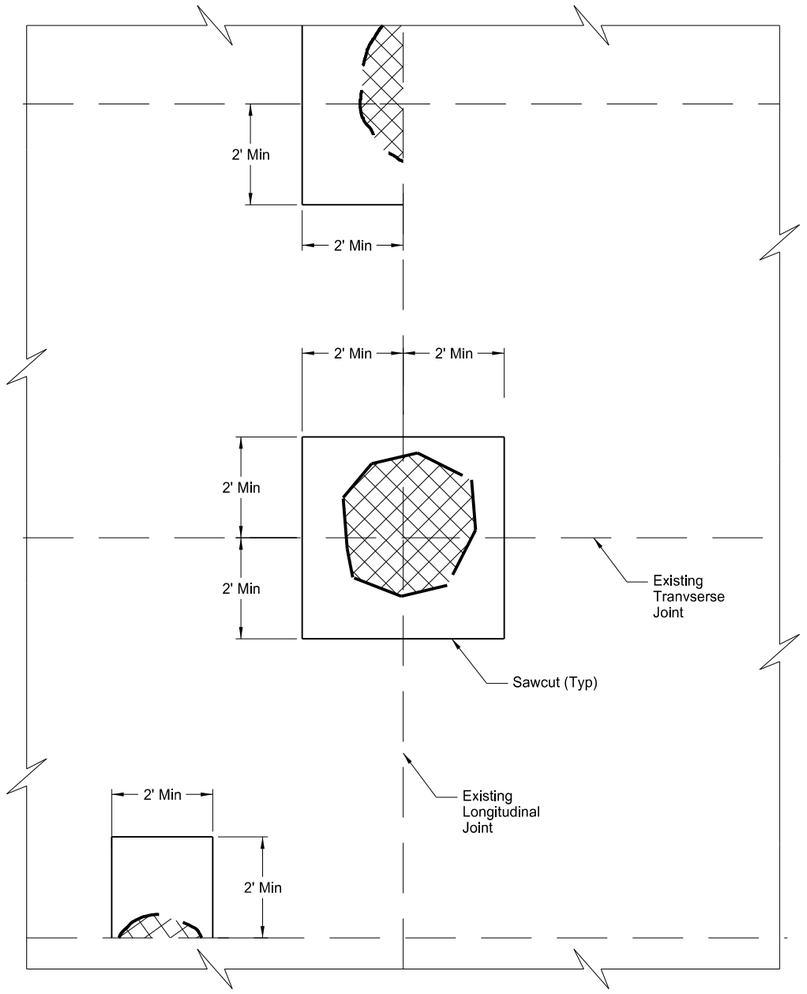
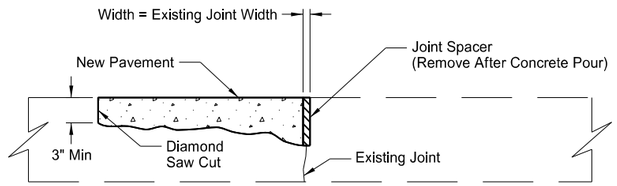
ND 1806 Interchange

Concrete Pavement Repair

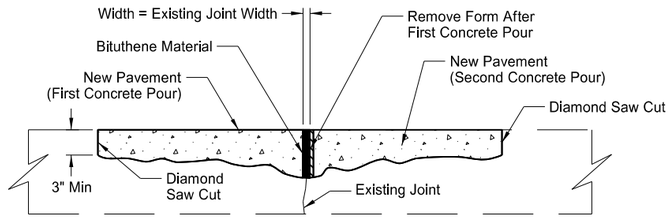
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	3
		IM-1-094(200)153		



Spall Repair Detail
Plan View



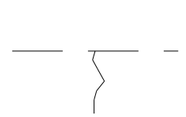
Repair Area on One Side of Transverse Joint
Cross Section View



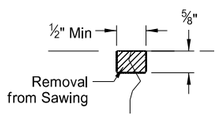
Repair Area on BothSide of Transverse Joint
Cross Section View

Notes:

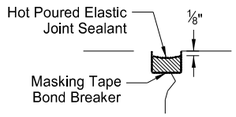
1. Place a spacer material on the transverse joint face to maintain the joint during repair. The spacer material to have the capability of maintaining a width equal to that of the existing joint and being easily removed after the pour. A bituthene waterproofing material may be used for this purpose. Provide a minimum of 260 mil (approximately ¼") thick or equal to the width of the existing joint, whichever is greater. Cut it to fit over the entire face of the existing joint to provide for expansion and prevent water from entering the existing joint through the sides or bottom. Press it into place to conform to the face of the existing joint.
2. Diamond saw cut not mandatory when using milling machine for spall repair removals.



Existing Random Crack



Random Crack Sawing



Random Crack Sealing

Spall

Concrete Removal Area

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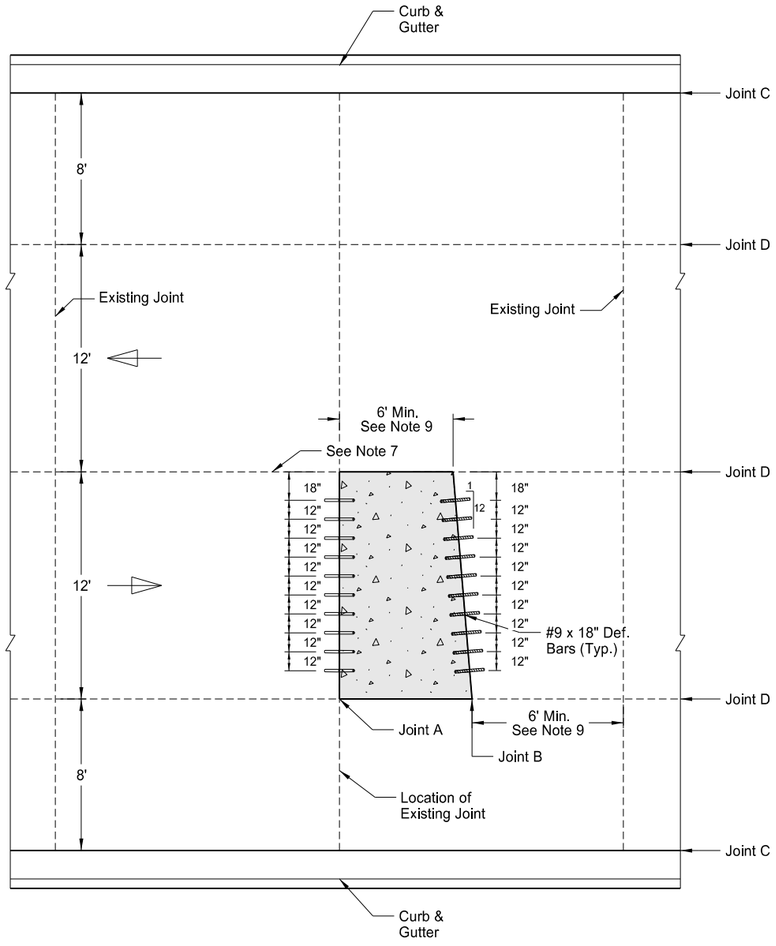
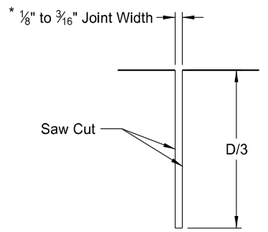
ND 1806

Spall Repair &
Random Crack Sealing

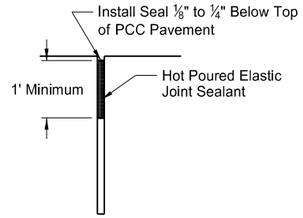
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	4
		IM-1-094(200)153		



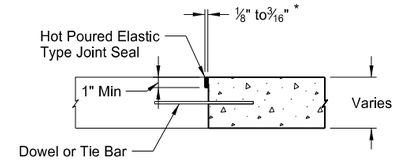
Perpendicular Transverse Joints



Joint Sawing

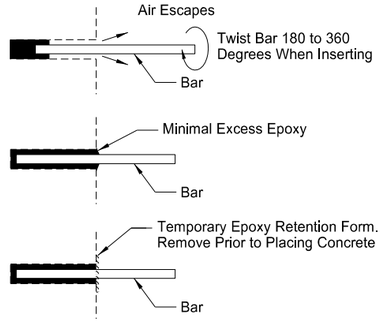


Joint Sealing

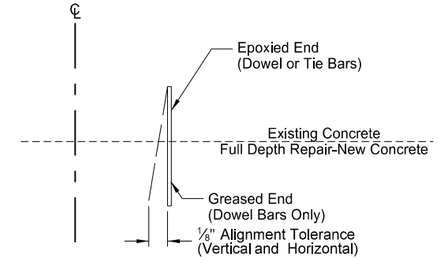


Longitudinal Construction Joint
(10' shoulder - keyed and tied)

T = Thickness of PCC Pavement
A = One-Third Thickness of PCC Pavement
* Width Requirement for Top 1" Only, Bottom Portion of Sawcut May Be Narrower



Epoxy and Bar Installation
(Dowel or Tie Bars)



Bar Alignment Tolerance

NOTES:

1. Align tie bars parallel to the roadway surface and perpendicular to the joint face.
2. Align dowel bars parallel to the roadway centerline and pavement surface (at vertical midpoint of slab.)
3. Place no tie bar within 15" of a transverse joint.
4. Construct Joint A (fixed joint) with the shortest distance to the next transverse joint or working random crack. Make the saw cut at a 1 to 12 skew.
5. Construct Joint B (free joint) with the greatest distance to the next transverse joint or working random crack.
6. Construct Joint B (free joint) on the approach side of the repair when the distance to the next transverse joint or working random crack is equal for both new joints.
7. Drill & Epoxy tie bars into adjacent pavement or curb and gutter to match the existing.

   C = Existing tie bars are No. 3 x 18" spaced @ 4' - 0" C to C
   D = Existing tie bars are No. 5 x 30" spaced @ 4' - 0" C to C
8. Refer to Detail "Jointed Concrete Pavement Repair Full-Depth, Non-Reinforced PCC Pavement (Longitudinal Length Less than One Panel)
9. Minimum 6' from existing joints or on next transverse joint

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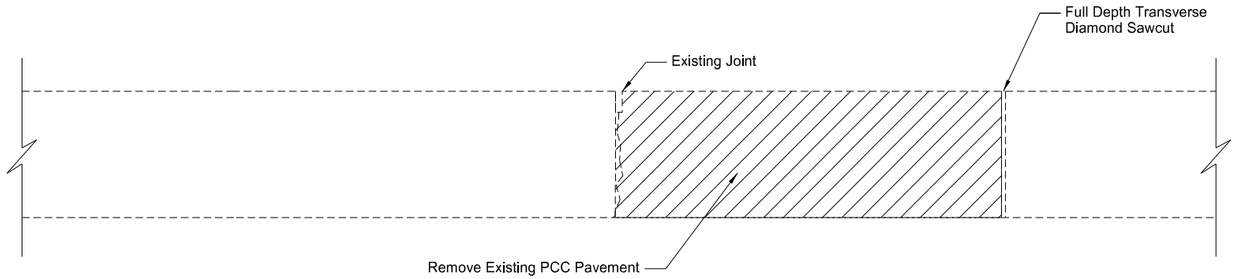
ND 1806

Transverse Joint Dowel and Tie Bar Placement
Full Depth Concrete Pavement Repair-Perp Jts
(Longidtudinal Length Less than One Panel)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	5
		IM-1-094(200)153		



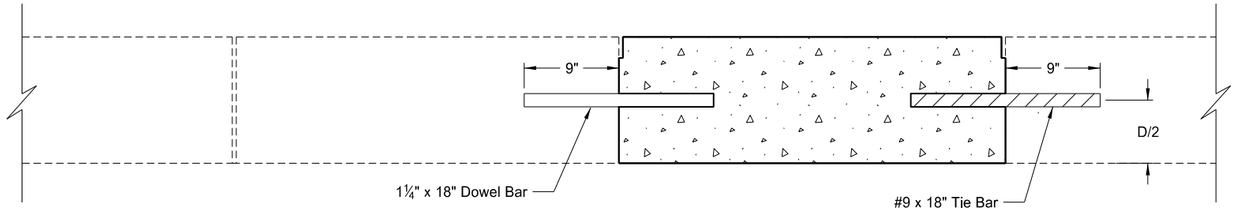
Full Depth Pavement Removal

PCC Pavement Removal

Notes:

1.Variables: D = Depth of Pavement

2.Removal and replacement also applies to full depth repairs at cracks.



Full Depth Pavement Replacement

PCC Pavement Placement

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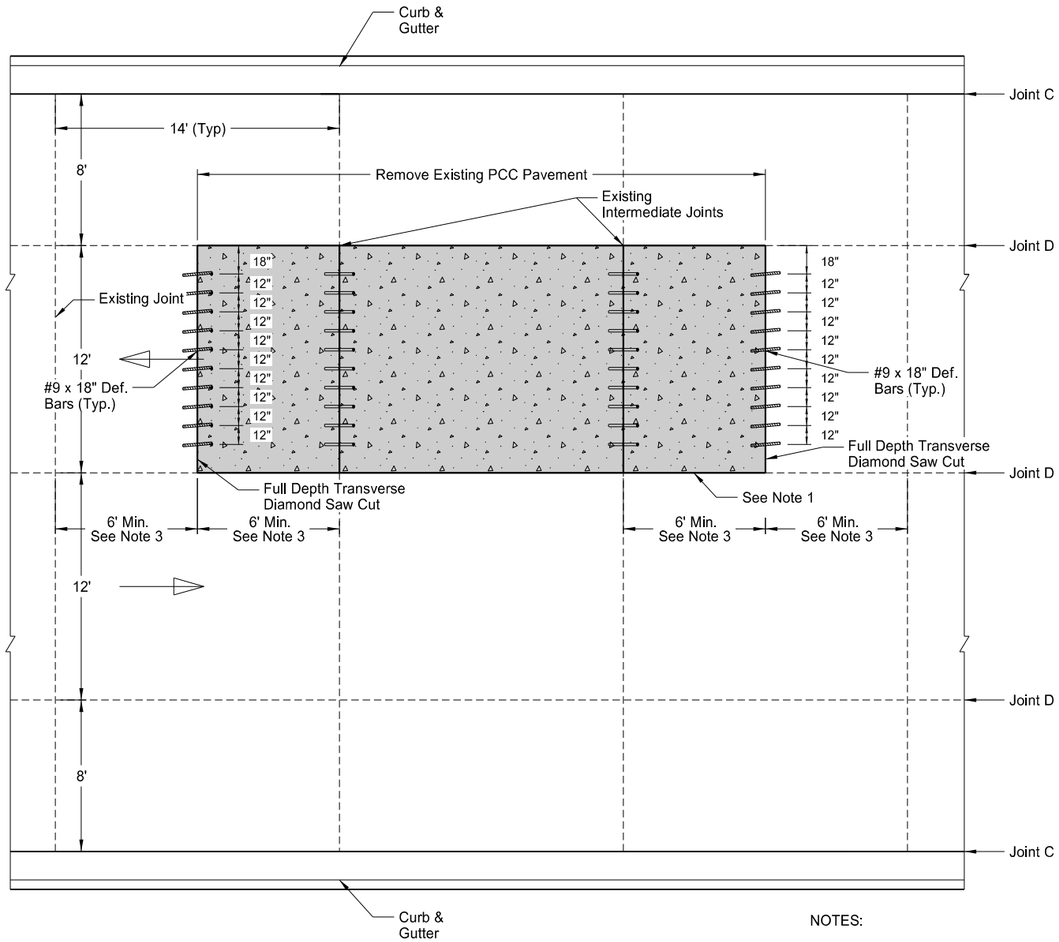
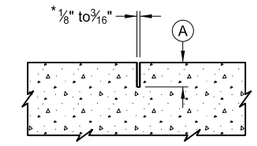
ND 1806

Jointed Concrete Pavement Repair
Full-Depth, Non-Reinforced PCC Pavement
(Longitudinal Length Less Than One Panel)

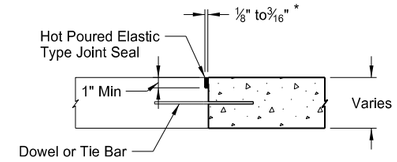
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	6
		IM-1-094(200)153		



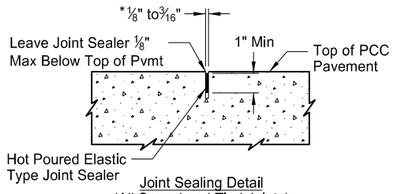
Perpendicular Transverse Joints



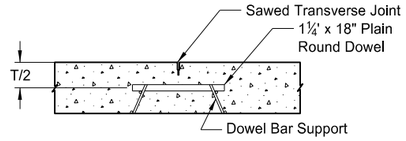
Sawed, Tied, Longitudinal Joints



Longitudinal & Transverse Construction Joint



Joint Sealing Detail
(All Sawed and Tied Joints)



Doweled Transverse Joint

T = Thickness of PCC Pavement
A = One-Third Thickness of PCC Pavement
* Width Requirement for Top 1" Only, Bottom Portion of Sawcut May Be Narrower

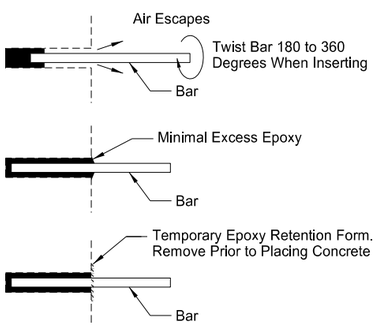
NOTES:

1. Drill & Epoxy tie bars into adjacent pavement or curb and gutter to match the existing.

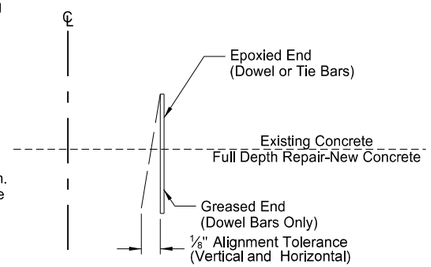
   C = Existing tie bars are No. 3 x 18" spaced @ 4' - 0" C to C
   D = Existing tie bars are No. 5 x 30" spaced @ 4' - 0" C to C

2. See Jointed Concrete Pavement Repair Full Depth, Non-Reinforced PCC Pavement (Longitudinal Length of One Panel Or Longer)

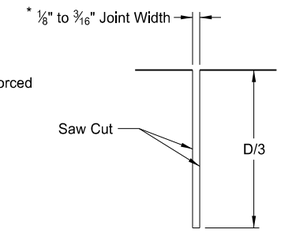
3. Minimum 6' from existing joints or on next transverse joint



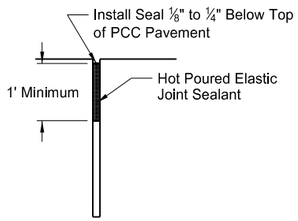
Epoxy and Bar Installation
(Dowel or Tie Bars)



Bar Alignment Tolerance



Joint Sawing



Joint Sealing

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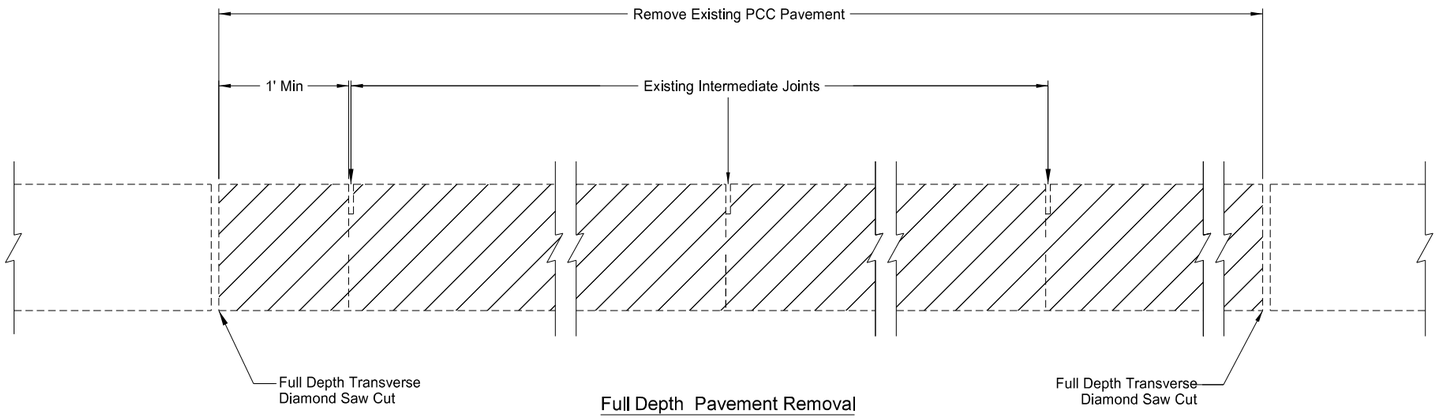
ND 1806

Transverse Joint Dowel and Tie Bar Placement
Full Depth Concrete Pavement Repair-Perp Jts
(Longidtudinal Length One Panel or More)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	7
		IM-1-094(200)153		



Full Depth Pavement Removal

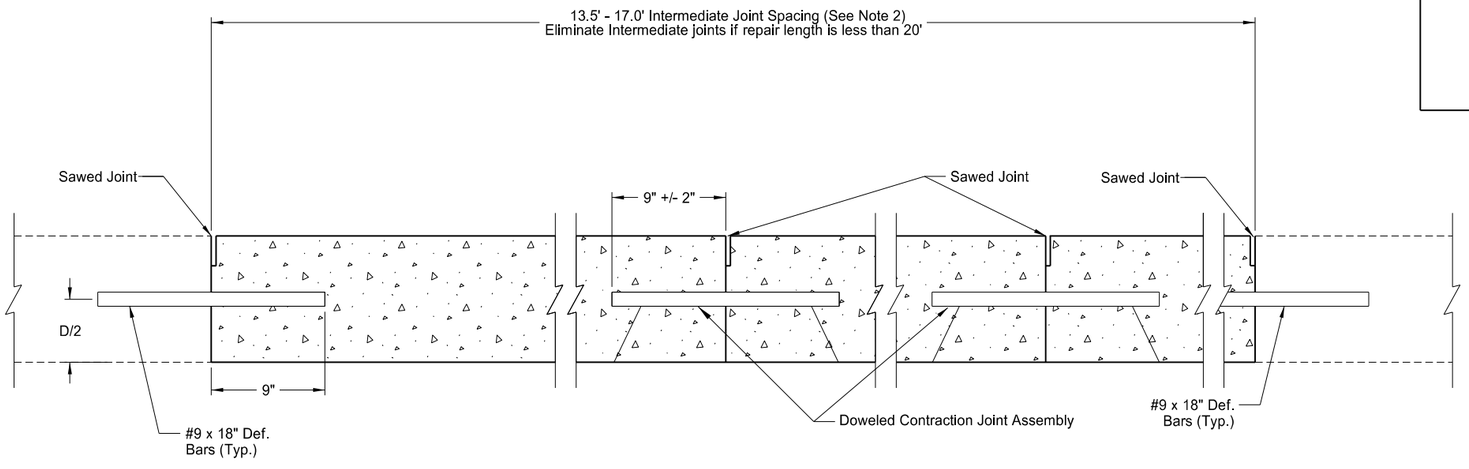
PCC Removal

Notes:

1.Variables: D = Pavement Depth

2.Space joints 13.5' to 17.0'. Use a 10 foot minimum spacing when repair length requires.

3.Place new joints to match existing joints when repair widths are less than PCC pavement width.



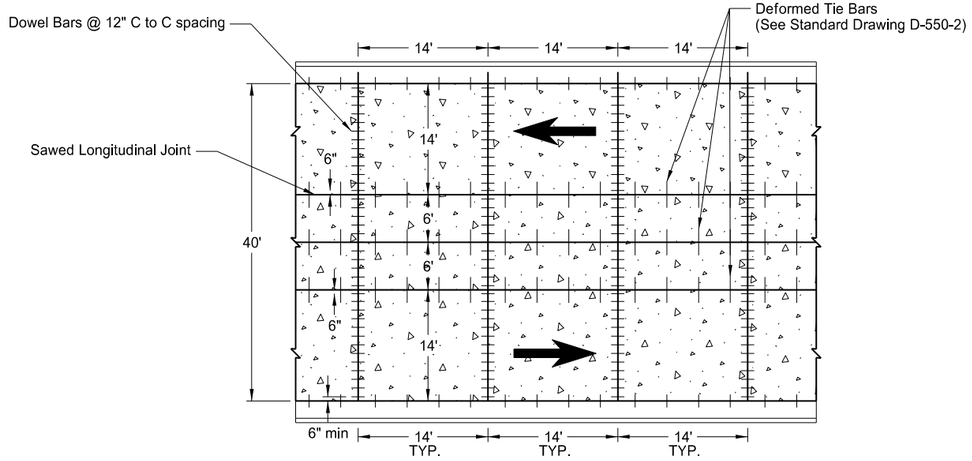
Full Depth Pavement Replacement

PCC Removal

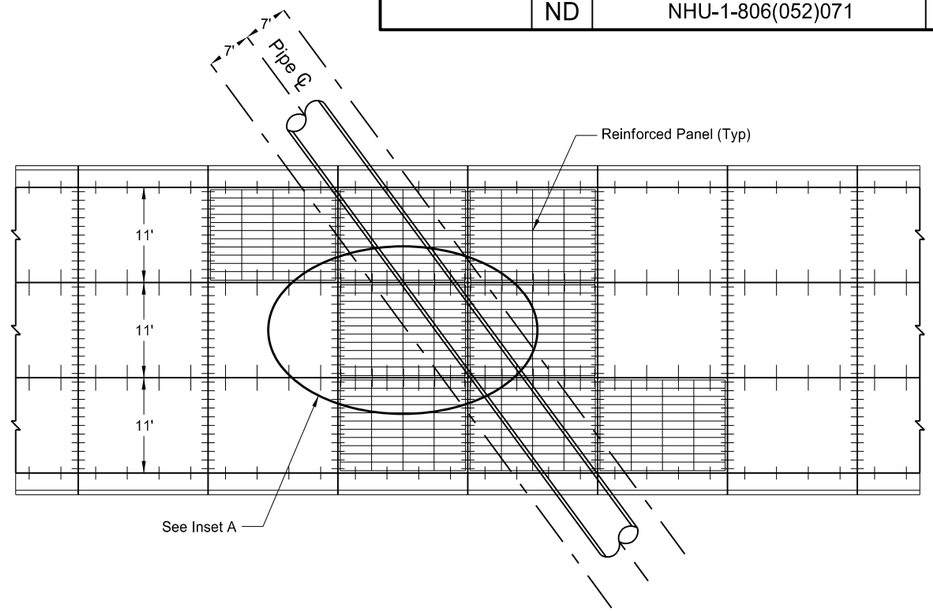
ND 1806

Jointed Concrete Pavement Repair
Full-Depth, Non-Reinforced PCC Pavement
(Longitudinal Length One Panel or Longer)

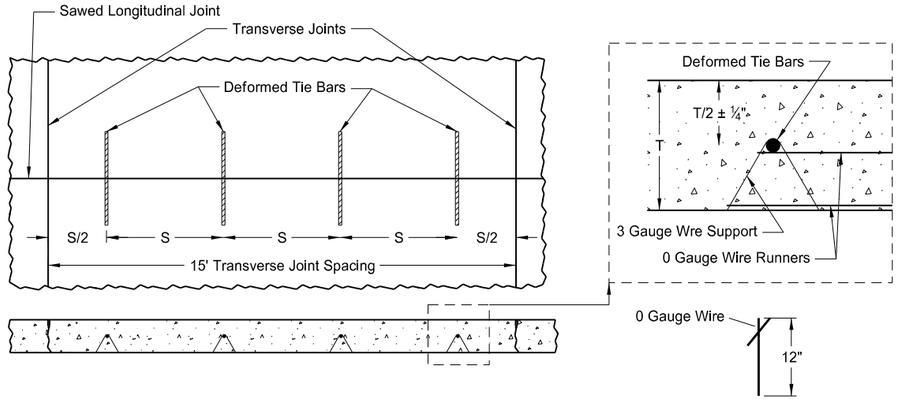
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	8



ND 1806
8" Non-Reinf Concrete Pvmt Cl AE-Doweled

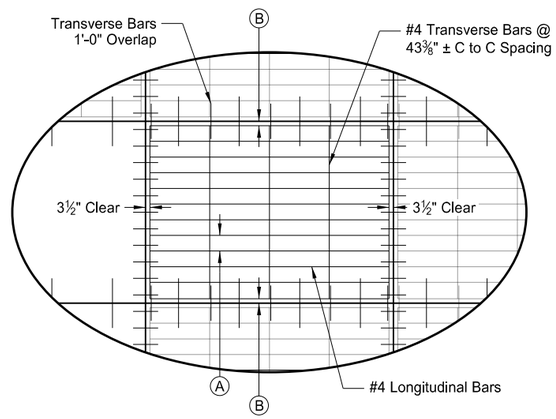


Pavement Reinforcement Detail
(Plan View)



Longitudinal Tie Bar Assembly
(One Unit Shown)

Steel Stake
(Min 4 Stakes / Unit)



Inset A

REINFORCEMENT BAR SPACINGS		
Panel Width	Longitunial Bar Spacing (A)	Bar Clearance From Longitudinal Joint (B)
11'	11 3/8"	3 3/16"
12'	11 3/8"	3 1/2"
13'	11 1/2"	3"
14'	11 1/2"	3 1/4"
16'	11 1/2"	3 3/4"

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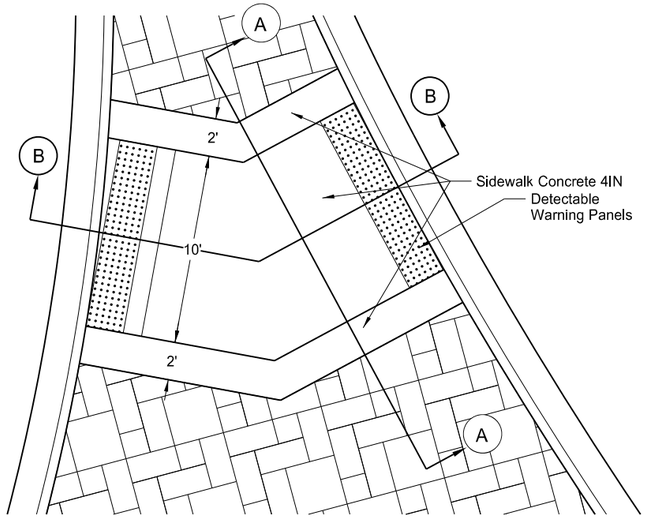
Jointing Notes:
1. S = Tiebar spacing
2. T = Pavement thickness
3. Provide 1¼" x 18" dowel bars
4. Place no tie bar within 15" of a transverse joint
5. Core the full pavement depth in the same time frame as joint sawing
6. See Section 90 for joint spacing in transition areas and widened sections
7. All longitudinal construction joints designated to be tied will be keyed and tied
8. See Sec 90 for longitudinal tie bar size, length, and spacing

Reinforcement Panel Notes:
1. T = Pavement Thickness
2. Place Reinforcing Steel Above Dowel Bars, Above Longitudinal Centerline Tie Bars, and Under Shoulder Tie Bars
3. Provide a 1-Foot Minimum Overlap of Transverse Reinforcing Steel Across the Longitudinal Tied Joints
4. Gap Transverse Reinforcing Steel Across Keyed Joints a Minimum of 6 Inches (3 Inches on Each Side of Joint)
5. Reinforce the Complete Panel if any Part of the Panel Lies Within 7 Feet of the Pipe Centerline
6. Place dowel bars at the vertical midpoint of the existing PCC pavement
7. Include All Costs to Furnish and Install the Reinforcing Steel as Shownin the Price Bid Items "__IN NON-REINF CONCRETE PVMT CL AE-DOWELED"

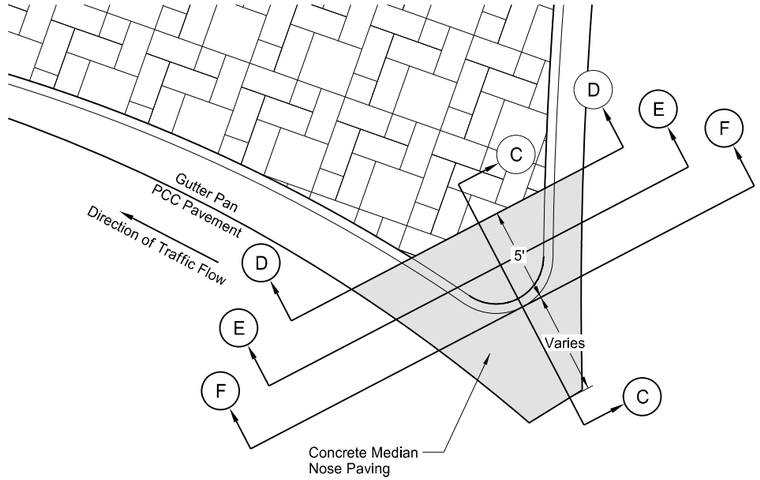
ND 1806

PCC Pavement Joint Details

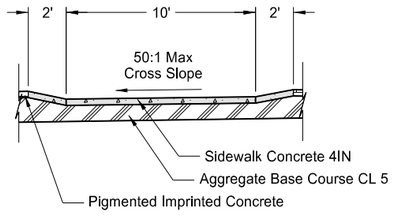
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	9



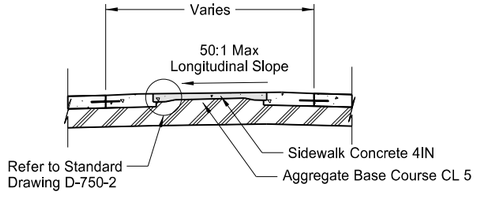
Refuge Island Detail



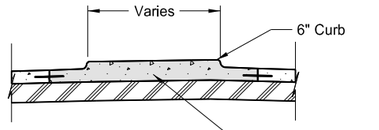
Median Nose Detail



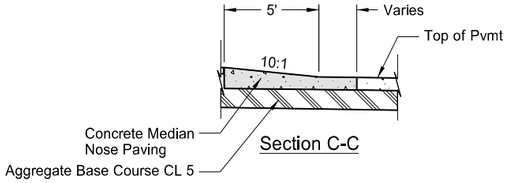
Section A-A



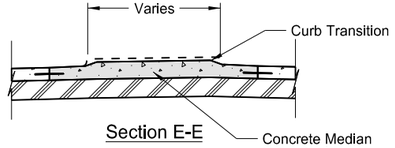
Section B-B



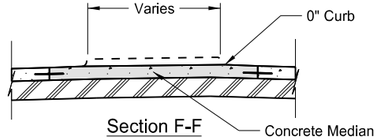
Section D-D



Section C-C



Section E-E



Section F-F

Note:
See Sec 90 for
Median Nose loactions

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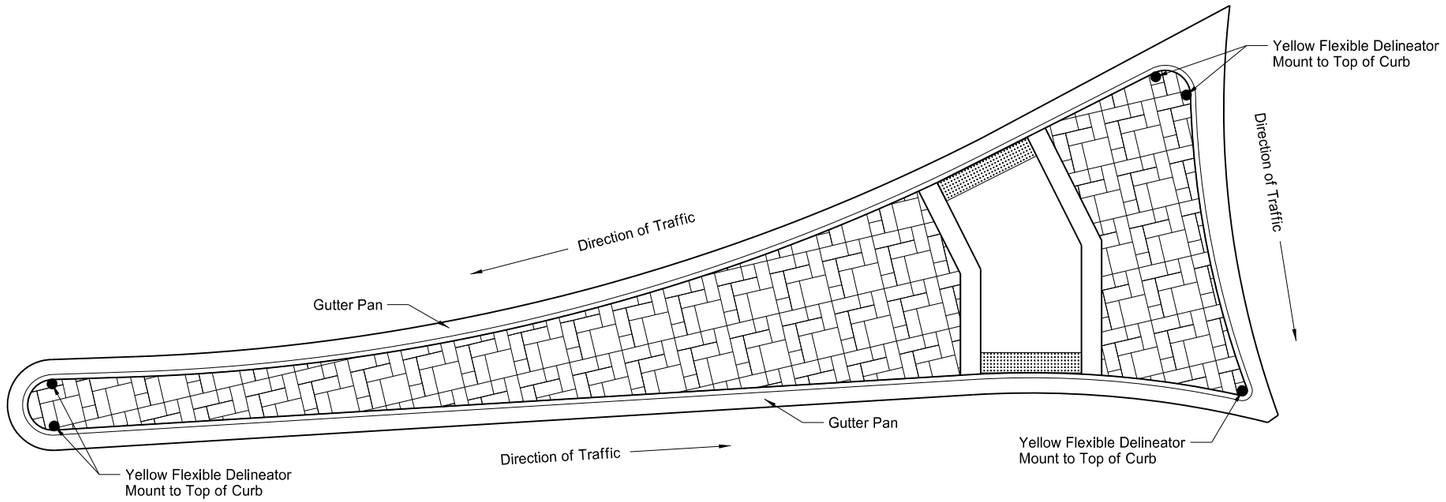
ND 1806

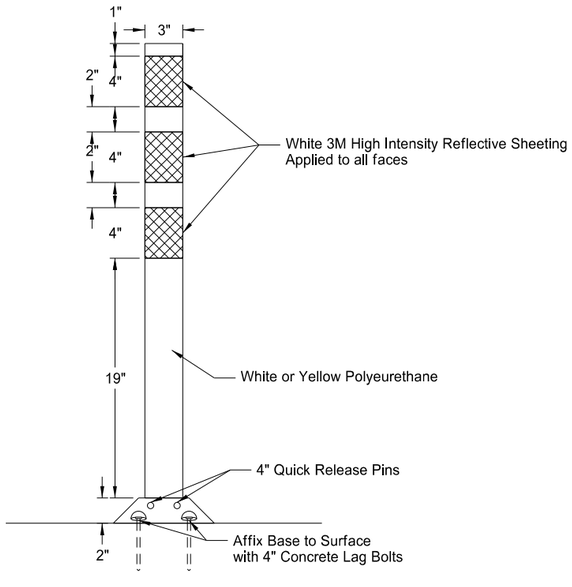
Median Nose & Refuge Island Details

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	10

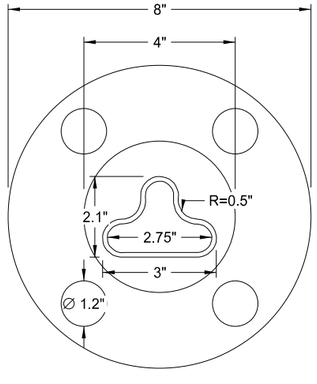


Flexible Delineator Placement Detail
Roundabout Splitter Island

754 0170 FLEXIBLE DELINEATORS			
Roadway	Station	Offset	Yellow (EA)
NHU-1-806(052)071			
West Splitter Island (Chain EXORT)	102+78.7	2.6' Lt	1
	102+79.0	1.6' Rt	1
	103+87.4	34.9' Lt	1
	103+90.5	33.1' Lt	1
	103+96.5	4.0' Lt	1
North Splitter Island (Chain PR1806)	3820+56.8	20.3' Lt	1
	3820+54.5	9.5' Rt	1
	3820+57.2	11.9' Rt	1
	3821+53.0	1.1' Lt	1
	3821+53.0	2.1' Lt	1
East Splitter Island (Chain PR1806)	3817+64.0	1.2' Lt	1
	3817+64.0	1.2' Rt	1
	3818+58.0	7.5' Rt	1
	3818+60.2	10.0' Rt	1
	3818+58.3	28.4' Rt	1
South Splitter Island (Chain EXCOL)	13+48.6	6.1 Lt	1
	13+49.1	3.0' Lt	1
	14+42.0	30.5' Lt	1
	14+44.7	28.3' Lt	1
	14+45.8	3.2' Lt	1
GRAND TOTAL =			20



Flexible Delineator Detail
(Profile View)



Flexible Delineator Detail
(Enlarged Top View)

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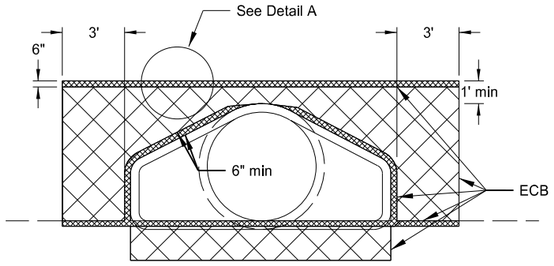
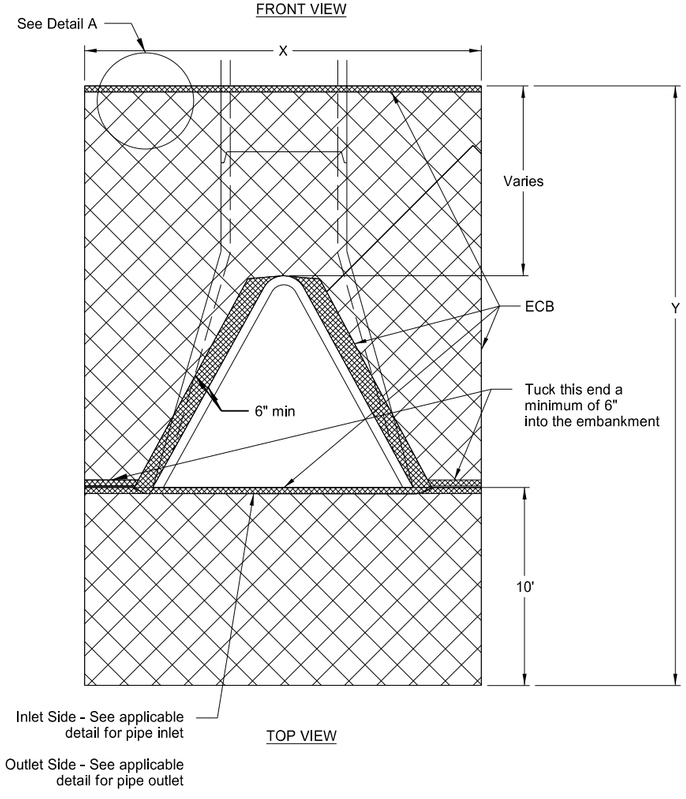
ND 1806

Median Nose Delineators

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	11
		IM-1-094(200)153		

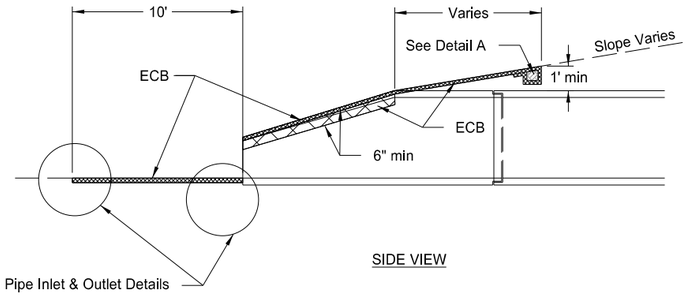


FRONT VIEW

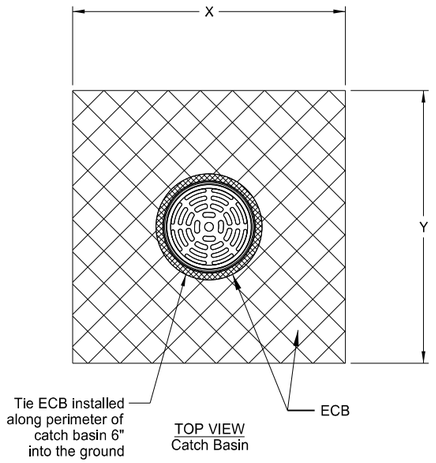


TOP VIEW

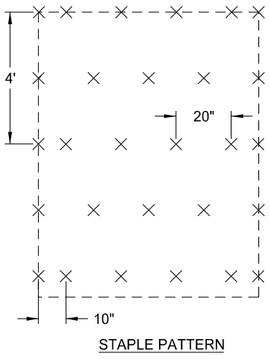
NOTE: Tuck the ECB a minimum of 6" into the embankment (against the flared end section) around the opening of the flared end section.



SIDE VIEW



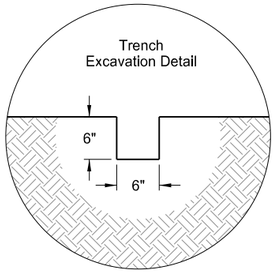
TOP VIEW
Catch Basin

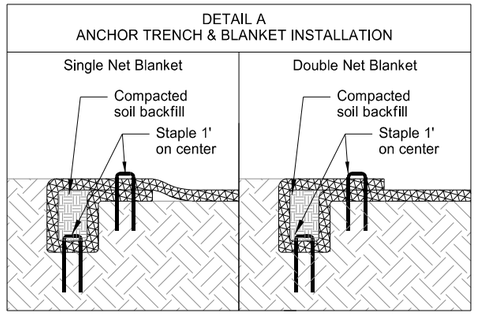


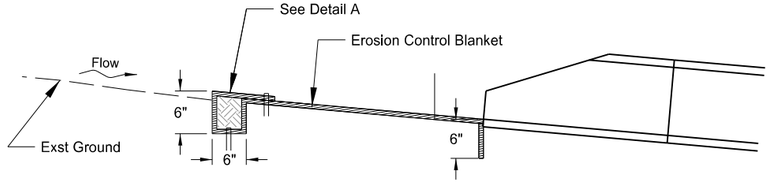
STAPLE PATTERN

255 0103 ECB TYPE 3								
Location of Surface Area to be Protected Manhole / Inlet No. or Station / Offset		Alignment	Pipe Diameter (IN)	No.	X (FT)	Y (FT)	Unit Quantity (SY)	Total Quantity (SY)
NHU-1-802(052)071								
202A		-	Catch Basin	1	9.0	9.0	9	9
202B		-	Catch Basin	1	9.0	9.0	9	9
207C		-	Catch Basin	1	9.0	9.0	9	9
3801+27	Rt	PR1806	15	2	9.5	16.7	19	38
3801+69	Lt	PR1806	15	1	9.5	16.7	19	19
3807+07	Rt	PR1806	18	1	9.5	16.7	19	19
3809+29	Rt	PR1806	18	1	9.5	16.7	19	19
3815+49	Rt	PR1806	24	1	10.5	17.6	20	20
3815+88	Lt	PR1806	18	1	9.5	16.7	19	19
217A		-	Catch Basin	1	9.0	9.0	9	9
3821+63	Lt	PR1806	24	1	10.5	17.6	20	20
3823+87	Lt	PR1806	24	2	10.5	17.6	20	40
3825+70	Lt	PR1806	24	2	10.5	17.6	20	40
3825+70	Rt	PR1806	18	2	9.5	16.7	19	38
3833+65	Lt	PR1806	18	2	9.5	16.7	19	38
3843+37	Rt	PR1806	12	2	9.0	16.5	16.5	33
3843+41	Rt	PR1806	12	2	9.0	16.5	16.5	33
3846+10	Lt & Rt	PR1806	36	2	12.7	19.2	24	48
3846+90	Lt	PR1806	15	1	9.5	16.7	19	19
3849+54	Lt	PR1806	15	2	9.5	16.7	19	38
3850+64	Lt	PR1806	15	1	9.5	16.7	19	19
13+08	Lt	EXCOL	30	1	11.6	18.5	22	22
IM-1-094(200)153								
1016+67	Lt & Rt	EX94SWR	24	2	10.5	17.6	20	40

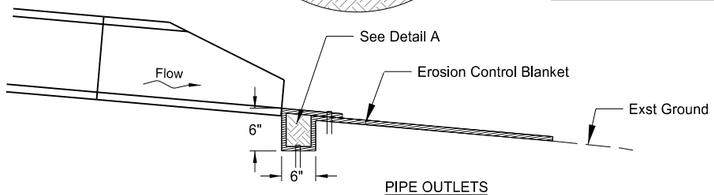
Note: See Sec 77 for quantites.







PIPE INLETS



PIPE OUTLETS

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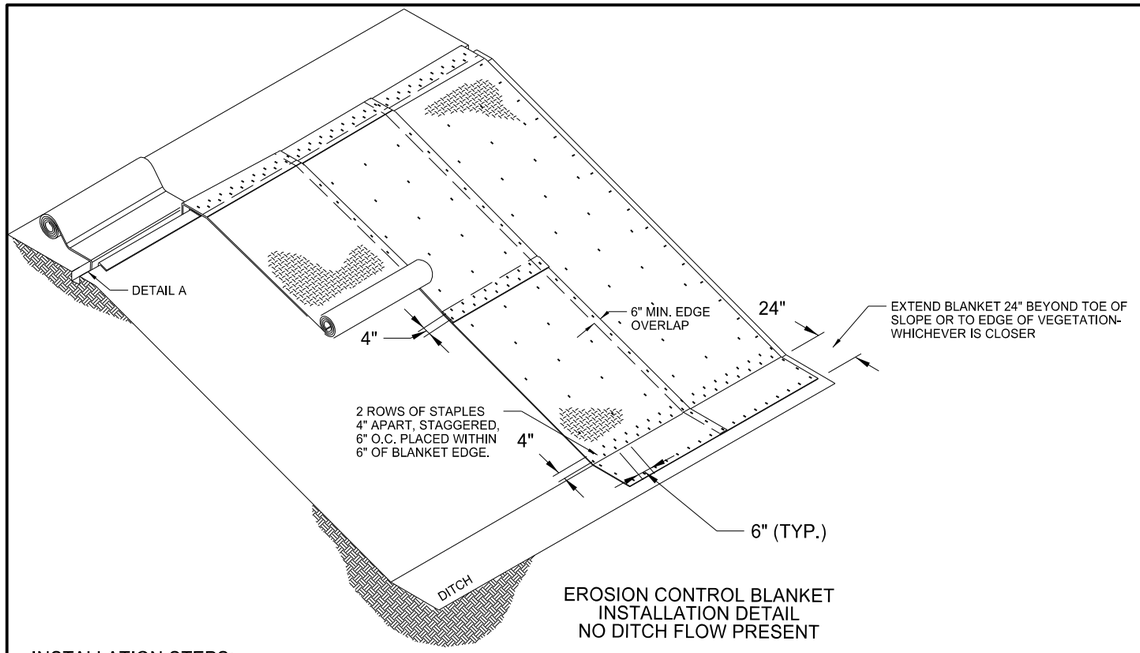
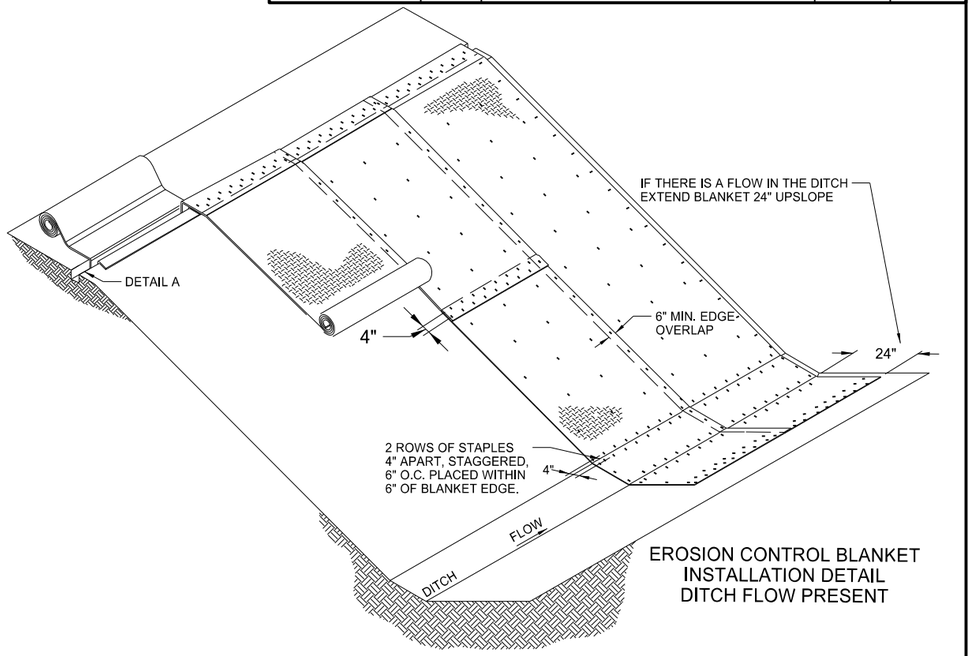
ND 1806

Erosion Control at Culvert Flared End Sections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	12



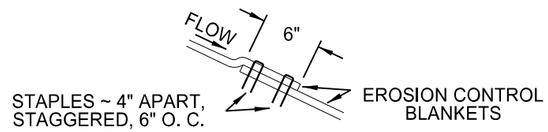
EROSION CONTROL BLANKET
INSTALLATION DETAIL
NO DITCH FLOW PRESENT



EROSION CONTROL BLANKET
INSTALLATION DETAIL
DITCH FLOW PRESENT

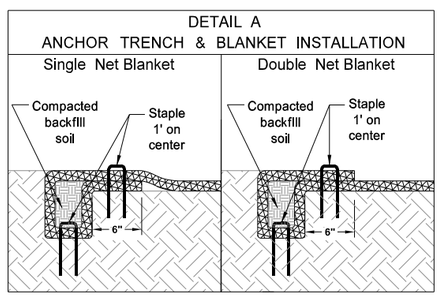
INSTALLATION STEPS:

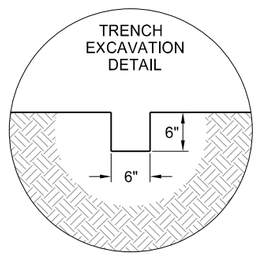
1. Prepare smooth slope per spec. section 255
2. Amend soil and seed, as specified.
3. Dig anchor trench. Set aside native soil removed from trench.
4. Secure blanket in anchor trench, staking or stapling blanket as shown.
5. Replace native soil previously removed from trench.
6. Staple blanket as shown so there are no gaps between the blanket and the soil. Staple while unrolling blanket to minimize walking on blanket.
7. Install splices a minimum 24 inches prior to toe of slope.



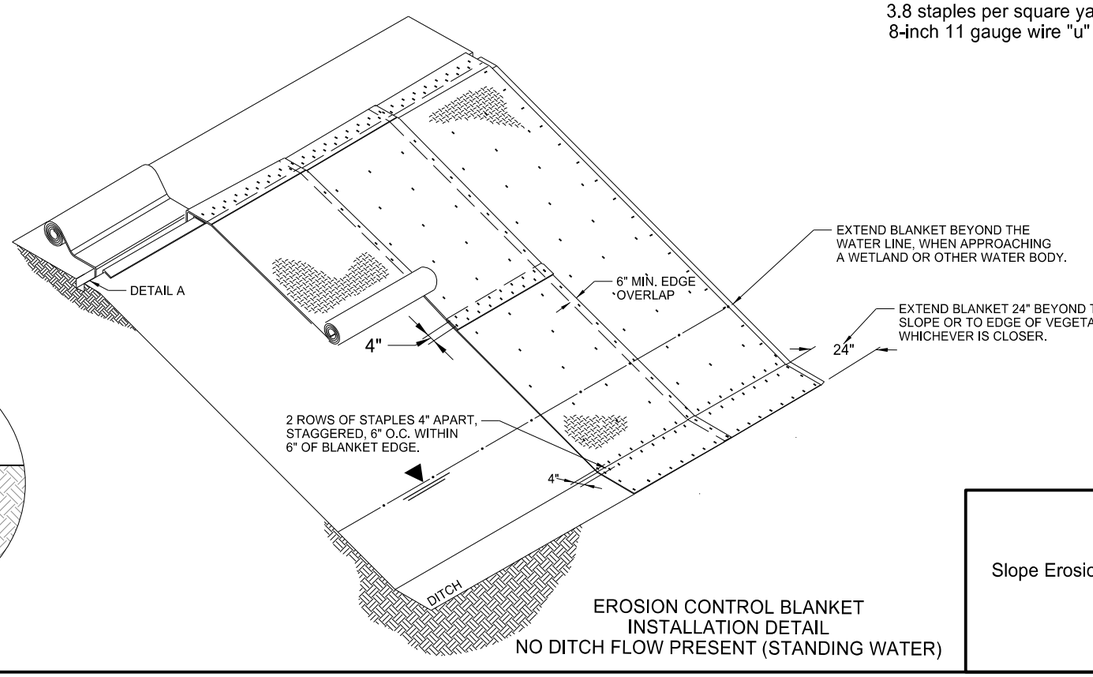
STAPLES ~ 4" APART, STAGGERED, 6" O. C.

EROSION CONTROL BLANKETS

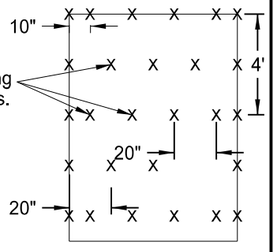




NOTE:
Install Single Net Blanket with netting on top of installed blanket.



EROSION CONTROL BLANKET
INSTALLATION DETAIL
NO DITCH FLOW PRESENT (STANDING WATER)



3.8 staples per square yard using 8-inch 11 gauge wire "u" staples.

STAPLE PATTERN

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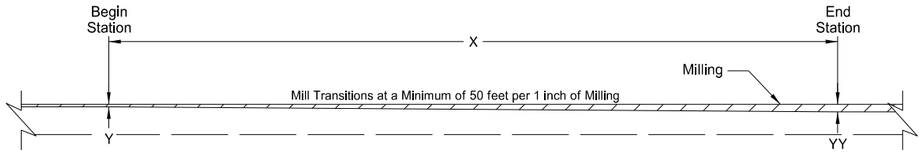
ND 1806

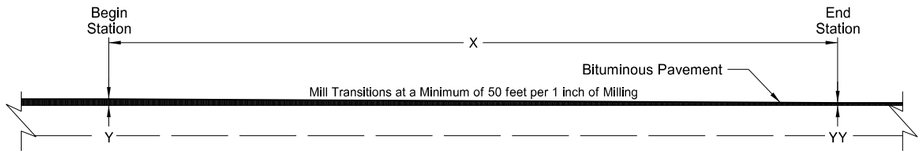
Slope Erosion Control Blanket Installation Details

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	13



Milling Transition

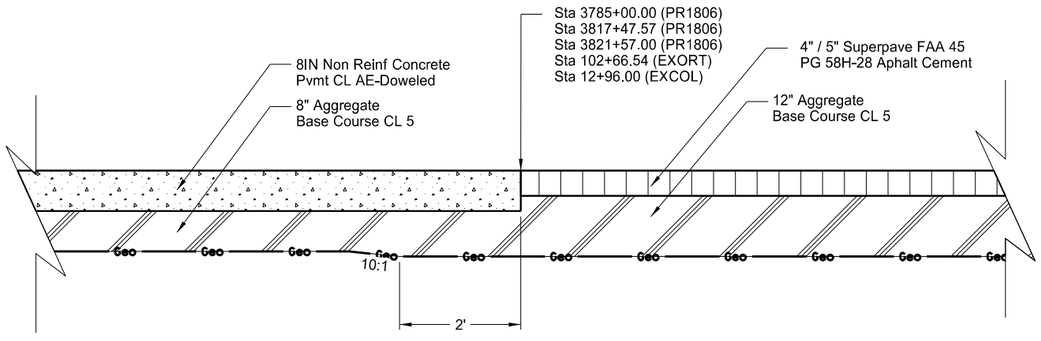
Milling Transition						
X	**Begin Station**	**Chain**	**Y**	**End Station**	**Chain**	**YY**
75 ft	3850+16.22	PR1806	1 in	3850+91.22	PR1806	2.5 in



Paving Transition

*Drawing Not To Scale

Paving Transition						
X	**Begin Station**	**Chain**	**Y**	**End Station**	**Chain**	**YY**
75 ft	3850+16.22	PR1806	2.5 in	3850+91.22	PR1806	2.5 in



Concrete to HMA Transition Detail

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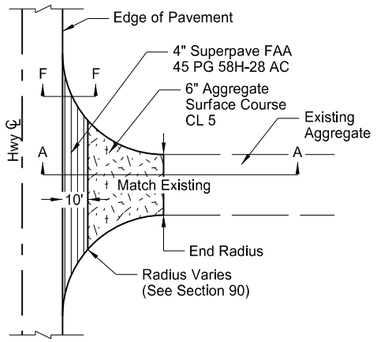
ND 1806

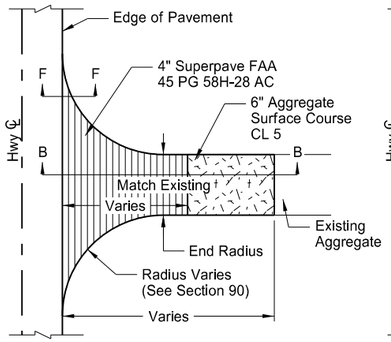
Milling and Paving Transitions

Concrete to HMA Paving Transition

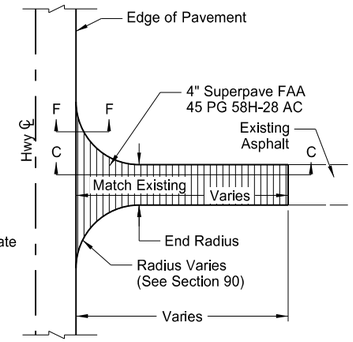
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	14



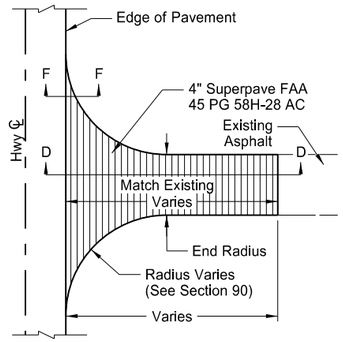
Field Drive
Sta 3832+16 Rt (PR1806)
Sta 3833+65 Lt (PR1806)
Sta 3841+18 Rt (PR1806)



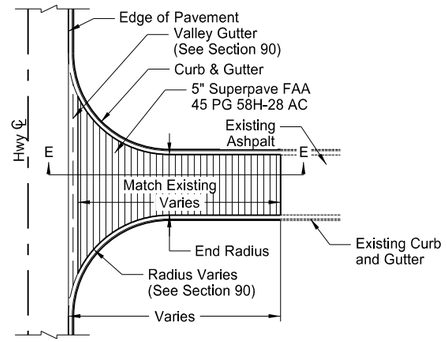
Gravel Private Drive Approach
Sta 3825+70 Rt (PR1806)



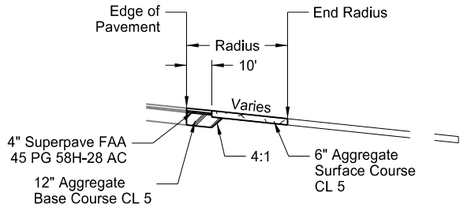
Asphalt Prive Drive Approach
Sta 3823+87 Lt (PR1806)
Sta 3825+70 Lt (PR1806)
Sta 3849+54 Lt (PR1806)



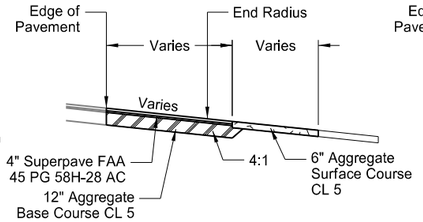
Asphalt Street Approach
Sta 3846+50 Lt (PR1806)
Sta 3846+75 Rt (PR1806)



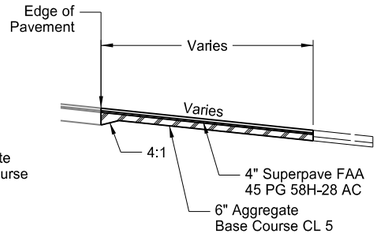
Ashpalt Street Approach with Curb and Gutter
Sta 3789+16 Lt (PR1806)
Sta 3801+22 Lt (PR1806)
Sta 3809+43 Lt (PR1806)
Sta 3812+48 Lt (PR1806)
Sta 3815+00 Lt (PR1806)



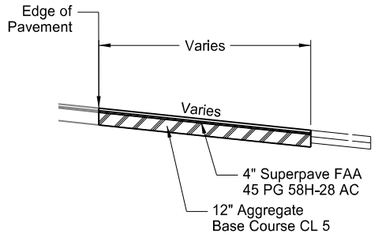
Section A-A
Not to Scale



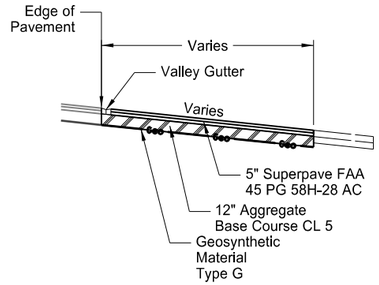
Section B-B
Not to Scale



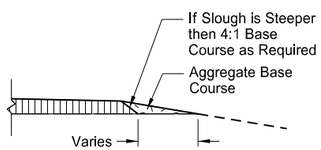
Section C-C
Not to Scale



Section D-D
Not to Scale



Section E-E
Not to Scale



Section F-F
Not to Scale

NOTES:

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

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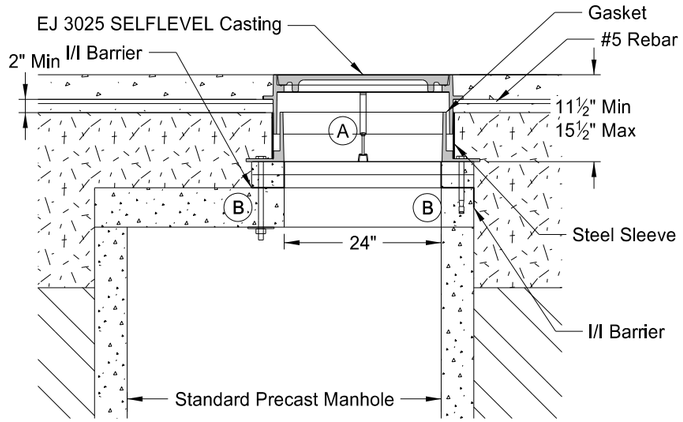
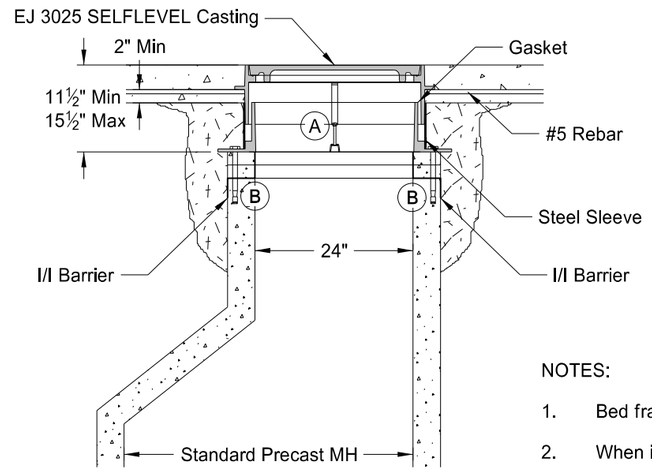
ND 1806

Approach Details

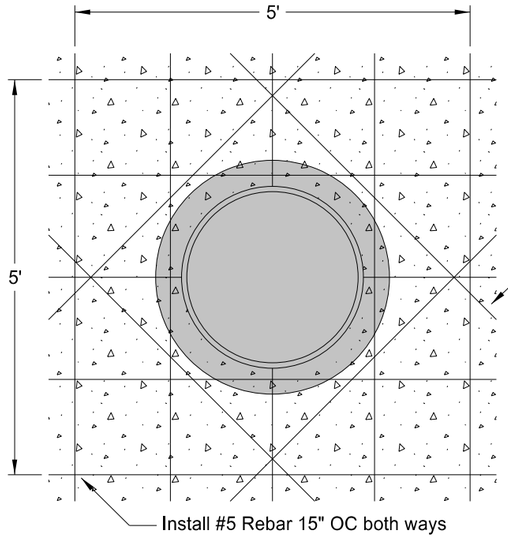
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	15



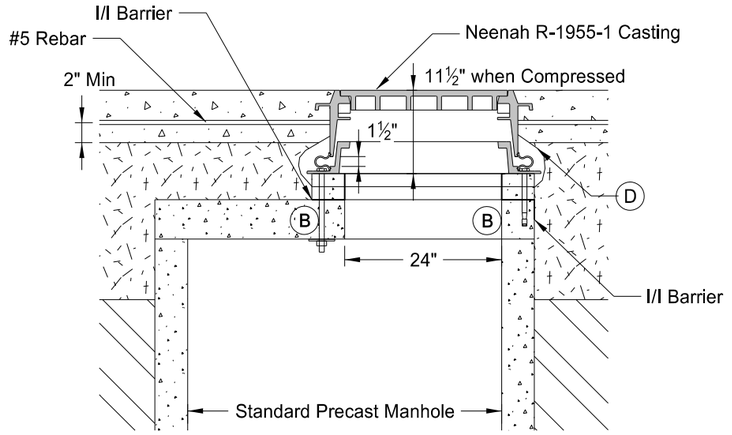
ELEVATION VIEW OF CONNECTION TO
STANDARD PRECAST MANHOLE - TYPICAL



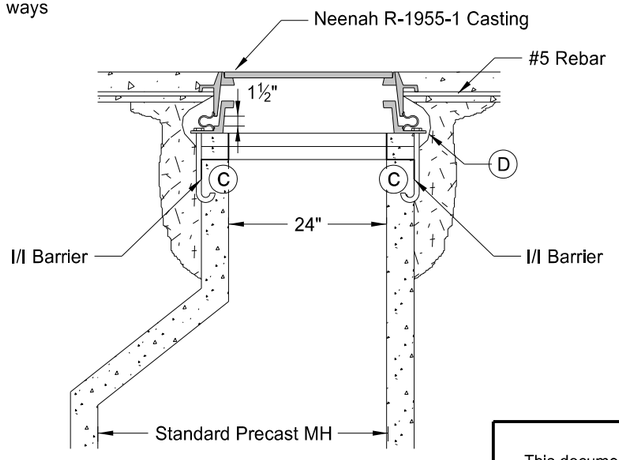
ELEVATION VIEW OF CONNECTION TO
CONICAL MANHOLE - TYPICAL



REBAR LAYOUT



ELEVATION VIEW OF CONNECTION TO
STANDARD PRECAST MANHOLE - TYPICAL



ELEVATION VIEW OF CONNECTION TO
CONICAL MANHOLE - TYPICAL

NOTES:

1. Bed frame in mortar, install precast two-inch rings, and plaster inside and out with mortar.
2. When installing an existing box out, drill 20" - #5 rebar into existing pavement 6" deep - 15" OC.
3. The length of anchor bolts varies with the number of adjusting rings.
4. Include installation costs at existing locations in the unit price bid for "MANHOLE CASTING TYPE ___."
5. Include installation costs at new manhole locations in the unit price bid for "MANHOLE ____ IN."

(A) (3) 6" full thread adjusting bolt and bracket (To be removed after concrete cures.)

(B) Provide ¾" diameter stainless steel bolts, nut assemblies, and ½"x4"x4" plates to extend through the manhole cover, or provide anchor bolts to extend a minimum of 4" into the MH cover. Provide 4 bolts per casting.

(C) Provide ¾" diameter stainless steel bolts with nuts to extend 5" below the adjusting rings. Provide 4 bolts per casting.

(D) Wrap and tape 6 mil polyethelene on casting above the rubber gasket and tape to adjusting rings below the gasket.

KEY:

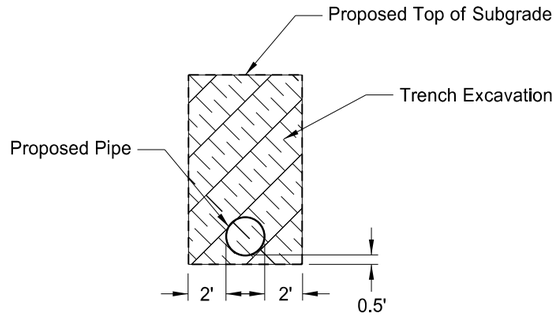
Portland Cement Concrete Pavement

Granular Backfill

ND 1806

Floating Manhole Details

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	16



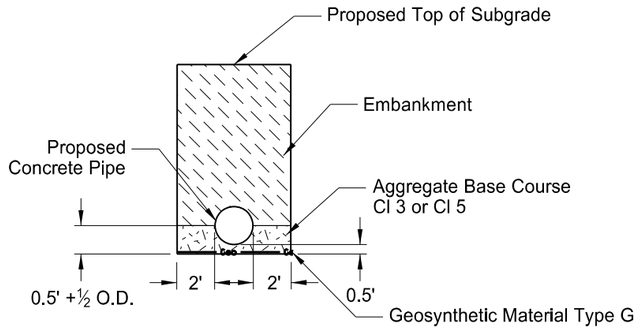
EXCAVATION DETAIL

Pay Items
1) Pipe*
2) Geosynthetic Material Type G
3) Removal of Pipe (if required)

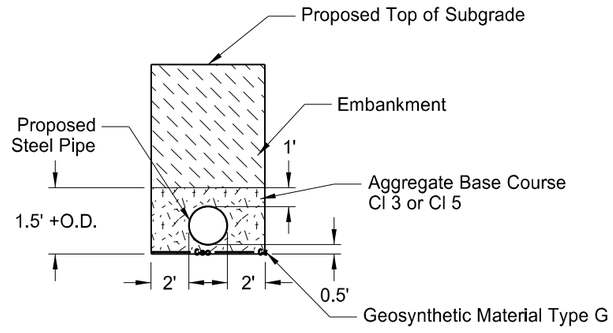
*Included in Pipe Pay Item
1) Pipe
2) Trench Excavation
3) Aggregate Base Course Cl 3 or Cl 5
4) Embankment

NOTES:

1) Embankment is required to be Common Excavation - Type A. Common Excavation - Type A is required to be the material excavated during trench excavation (excluding any granular or bedding material that may be present around any existing pipe).



INSTALLATION DETAIL-
LONGITUDINAL CONCRETE PIPE



INSTALLATION DETAIL-
LONGITUDINAL STEEL/PVC PIPE

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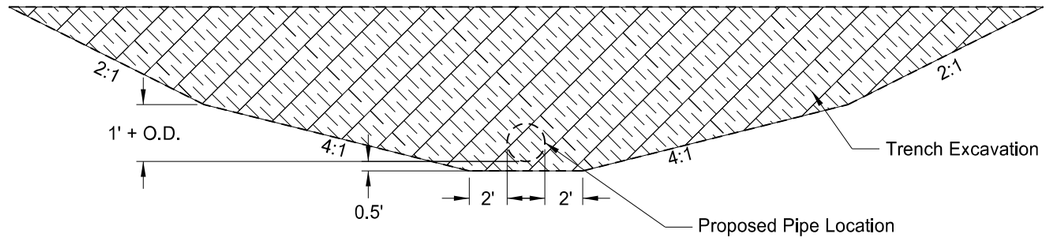
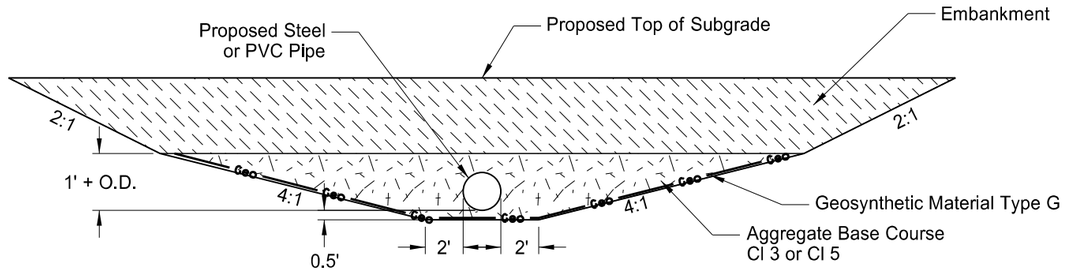
ND 1806

Pipe Backfill Detail
for Longitudinal
Concrete/Steel/PVC Pipe

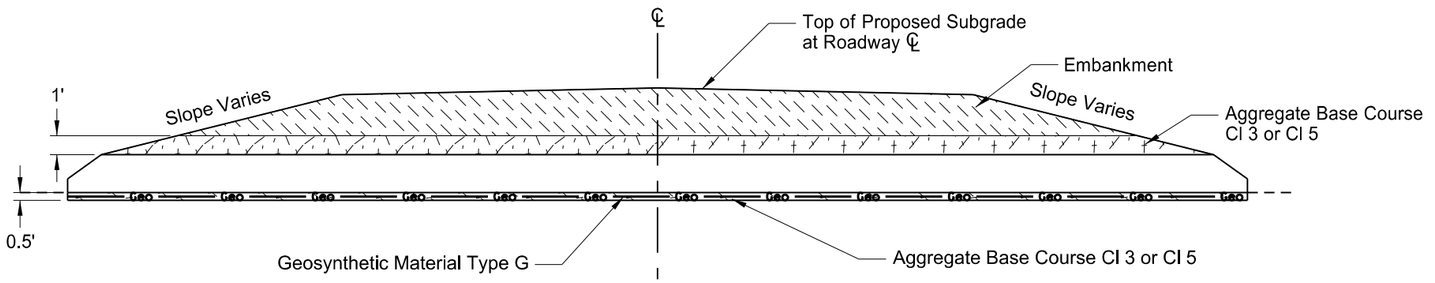
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	17



EXCAVATION DETAIL



INSTALLATION DETAIL



CROSS SECTION

Pay Items
1) Pipe*
2) Geosynthetic Material Type G
3) Removal of Pipe (if required)

*Included in Pipe Pay Item
1) Pipe
2) Trench Excavation
3) Aggregate Base Course Cl 3 or Cl 5
4) Embankment

NOTES:

1) Embankment is required to be Common Excavation - Type A. Common Excavation - Type A is required to be the material excavated during trench excavation (excluding any granular or bedding material that may be present around any existing pipe).

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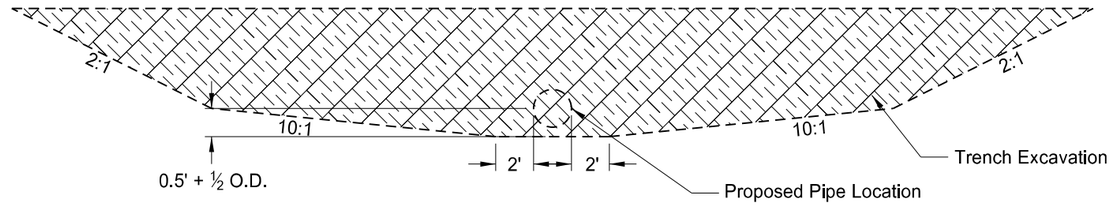
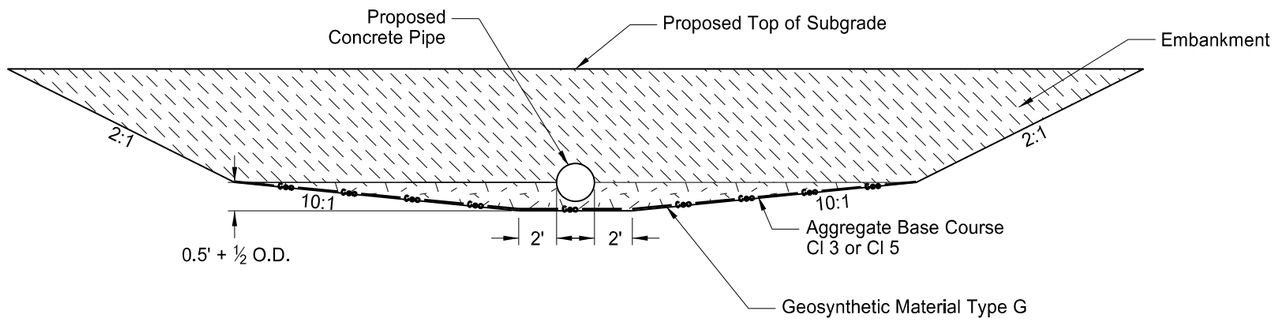
ND 1806

Pipe Backfill Detail for Steel/PVC Pipe Crossing Roadway

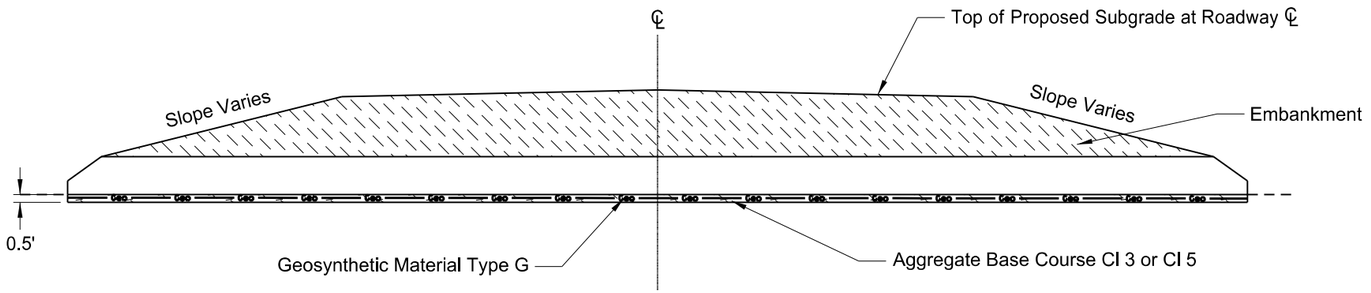
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	18



EXCAVATION DETAIL



INSTALLATION DETAIL



CROSS SECTION

Pay Items
1) Pipe*
2) Geosynthetic Material Type G
3) Removal of Pipe (if required)

*Included in Pipe Pay Item
1) Pipe
2) Trench Excavation
3) Aggregate Base Course Cl 3 or Cl 5
4) Embankment

NOTES:

1) Embankment is required to be Common Excavation - Type A. Common Excavation - Type A is required to be the material excavated during trench excavation (excluding any granular or bedding material that may be present around any existing pipe).

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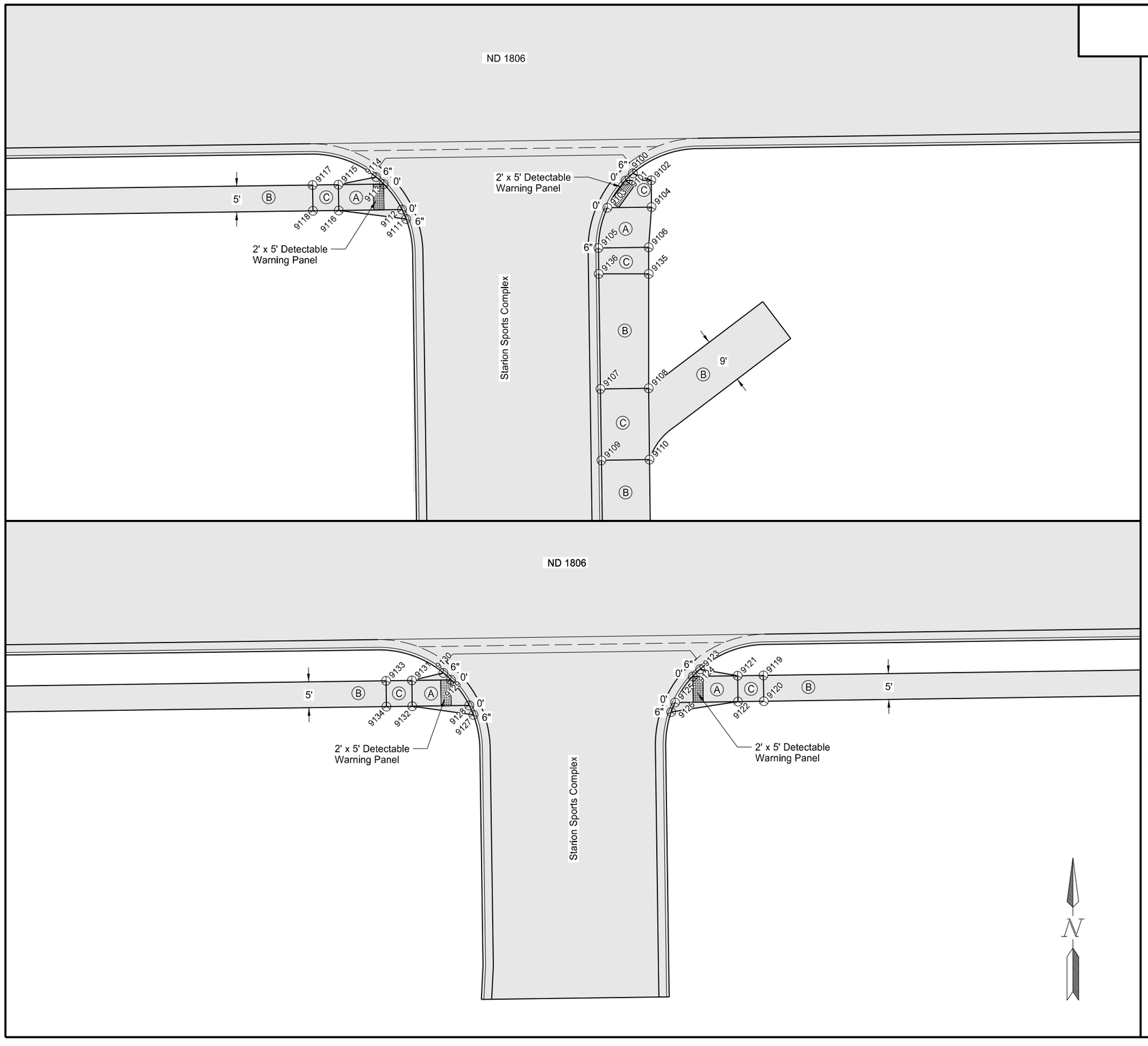
ND 1806

Pipe Backfill Detail for Concrete Pipe Crossing Roadway

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	20	19



Point	Northing	Easting	Description
9100	429310.72	1871159.71	ADA
9101	429309.32	1871158.28	ADA
9102	429309.40	1871163.28	ADA
9103	429304.07	1871154.77	ADA
9104	429304.19	1871163.32	ADA
9105	429296.25	1871153.04	ADA
9106	429296.39	1871162.78	ADA
9107	429268.95	1871153.42	ADA
9108	429269.08	1871162.78	ADA
9109	429255.13	1871153.62	ADA
9110	429255.26	1871162.93	ADA
9111	429301.88	1871115.78	ADA
9112	429303.71	1871114.97	ADA
9113	429308.66	1871111.43	ADA
9114	429310.01	1871109.95	ADA
9115	429308.53	1871102.65	ADA
9116	429303.53	1871102.72	ADA
9117	429308.46	1871097.65	ADA
9118	429303.46	1871097.72	ADA
9119	429305.94	1870920.19	ADA
9120	429300.94	1870920.26	ADA
9121	429305.86	1870915.19	ADA
9122	429300.87	1870915.26	ADA
9123	429307.13	1870907.92	ADA
9124	429305.74	1870906.48	ADA
9125	429300.69	1870903.07	ADA
9126	429298.84	1870902.32	ADA
9127	429298.29	1870863.98	ADA
9128	429300.12	1870863.18	ADA
9129	429305.07	1870859.63	ADA
9130	429306.42	1870858.15	ADA
9131	429304.97	1870852.06	ADA
9132	429299.97	1870852.13	ADA
9133	429304.90	1870847.06	ADA
9134	429299.90	1870847.13	ADA
9135	429291.25	1871162.78	ADA
9136	429291.25	1871153.11	ADA

(A) Ramp
8.33% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
15' Maximum Ramp Length

(B) 5'/10' Sidewalk
5% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope

(C) Landing
2% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
4'x4' Minimum, Match Width of Shared Use Path

Notes:

1. Dimensions shown may vary from actual. Field adjust if maximum slopes cannot be met with dimensions shown.
2. See Standard Drawing D-750-3 for more details.
3. All form grades to be approved by engineer prior to placing concrete.

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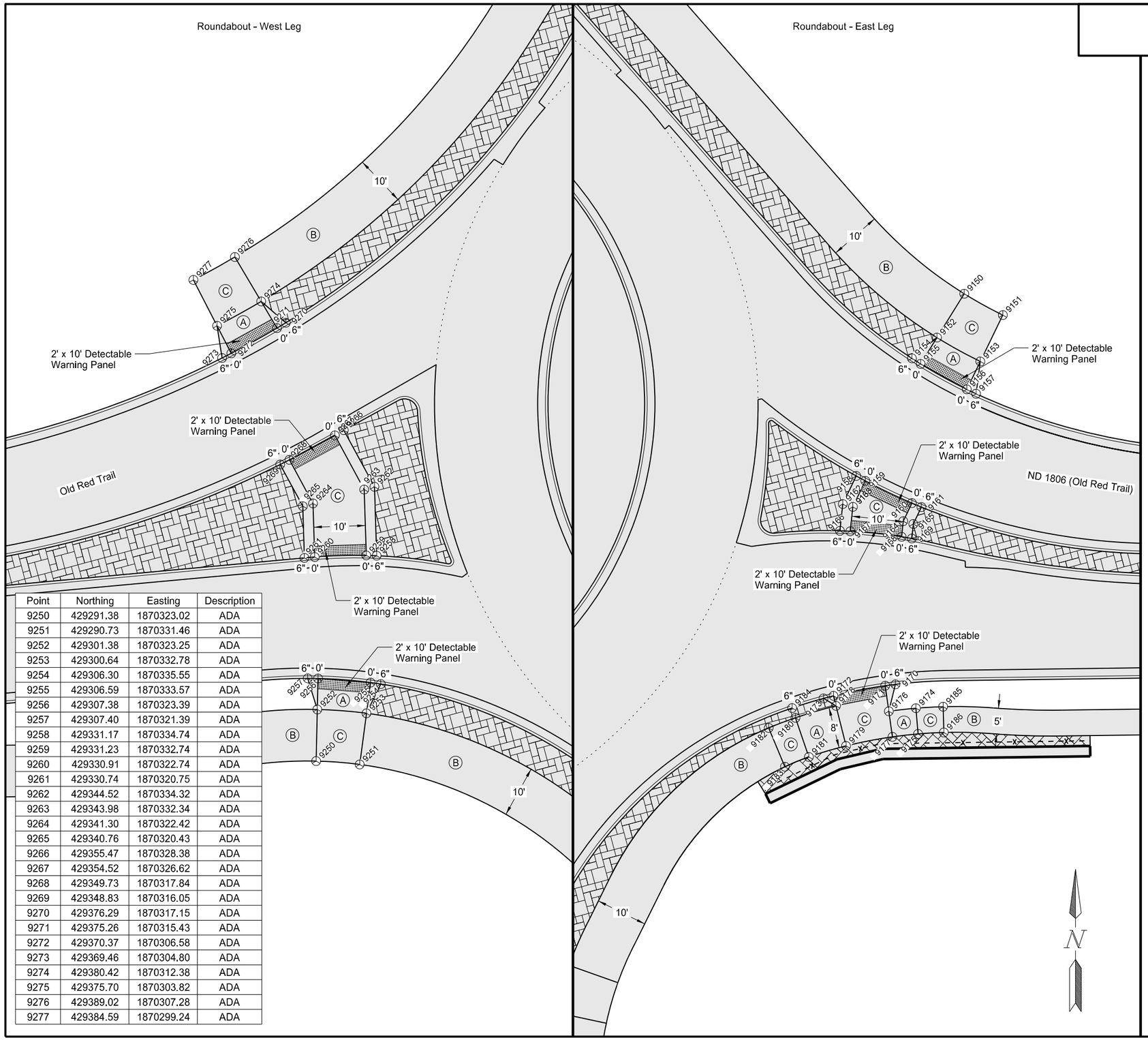
ND 1806

General Details

ADA Layouts

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	20	20



Point	Northing	Easting	Description
9150	429381.91	1870560.90	ADA
9151	429377.79	1870568.38	ADA
9152	429373.42	1870555.62	ADA
9153	429368.79	1870564.01	ADA
9154	429369.40	1870550.77	ADA
9155	429368.32	1870552.45	ADA
9156	429363.39	1870561.39	ADA
9157	429362.54	1870563.20	ADA
9158	429346.62	1870539.97	ADA
9159	429345.67	1870541.73	ADA
9160	429341.36	1870550.76	ADA
9161	429340.59	1870552.60	ADA
9162	429341.18	1870537.37	ADA
9163	429340.63	1870539.33	ADA
9164	429337.86	1870549.09	ADA
9165	429337.31	1870551.04	ADA
9166	429335.99	1870536.82	ADA
9167	429335.90	1870538.82	ADA
9168	429334.84	1870548.76	ADA
9169	429334.50	1870550.74	ADA
9170	429306.24	1870547.57	ADA
9171	429305.98	1870545.59	ADA
9172	429304.03	1870535.57	ADA
9173	429303.52	1870533.63	ADA
9174	429301.63	1870551.53	ADA
9175	429296.64	1870551.95	ADA
9176	429301.03	1870546.29	ADA
9177	429296.08	1870546.99	ADA
9178	429302.08	1870536.05	ADA
9179	429294.32	1870537.99	ADA
9180	429299.76	1870528.20	ADA
9181	429292.19	1870530.80	ADA
9182	429297.81	1870523.01	ADA
9183	429290.29	1870526.15	ADA
9184	429301.65	1870527.55	ADA
9185	429301.92	1870556.81	ADA
9186	429296.92	1870556.94	ADA

Point	Northing	Easting	Description
9250	429291.38	1870323.02	ADA
9251	429290.73	1870331.46	ADA
9252	429301.38	1870323.25	ADA
9253	429300.64	1870332.78	ADA
9254	429306.30	1870335.55	ADA
9255	429306.59	1870333.57	ADA
9256	429307.38	1870323.39	ADA
9257	429307.40	1870321.39	ADA
9258	429331.17	1870334.74	ADA
9259	429331.23	1870332.74	ADA
9260	429330.91	1870322.74	ADA
9261	429330.74	1870320.75	ADA
9262	429344.52	1870334.32	ADA
9263	429343.98	1870332.34	ADA
9264	429341.30	1870322.42	ADA
9265	429340.76	1870320.43	ADA
9266	429355.47	1870328.38	ADA
9267	429354.52	1870326.62	ADA
9268	429349.73	1870317.84	ADA
9269	429348.83	1870316.05	ADA
9270	429376.29	1870317.15	ADA
9271	429375.26	1870315.43	ADA
9272	429370.37	1870306.58	ADA
9273	429369.46	1870304.80	ADA
9274	429380.42	1870312.38	ADA
9275	429375.70	1870303.82	ADA
9276	429389.02	1870307.28	ADA
9277	429384.59	1870299.24	ADA

Ⓐ Ramp
8.33% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
15' Maximum Ramp Length

Ⓑ 5'/10' Sidewalk
5% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope

Ⓒ Landing
2% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
4'x4' Minimum, Match Width of Shared Use Path

Notes:

1. Dimensions shown may vary from actual. Field adjust if maximum slopes cannot be met with dimensions shown.
2. See Standard Drawing D-750-3 for more details.
3. All form grades to be approved by engineer prior to placing concrete.

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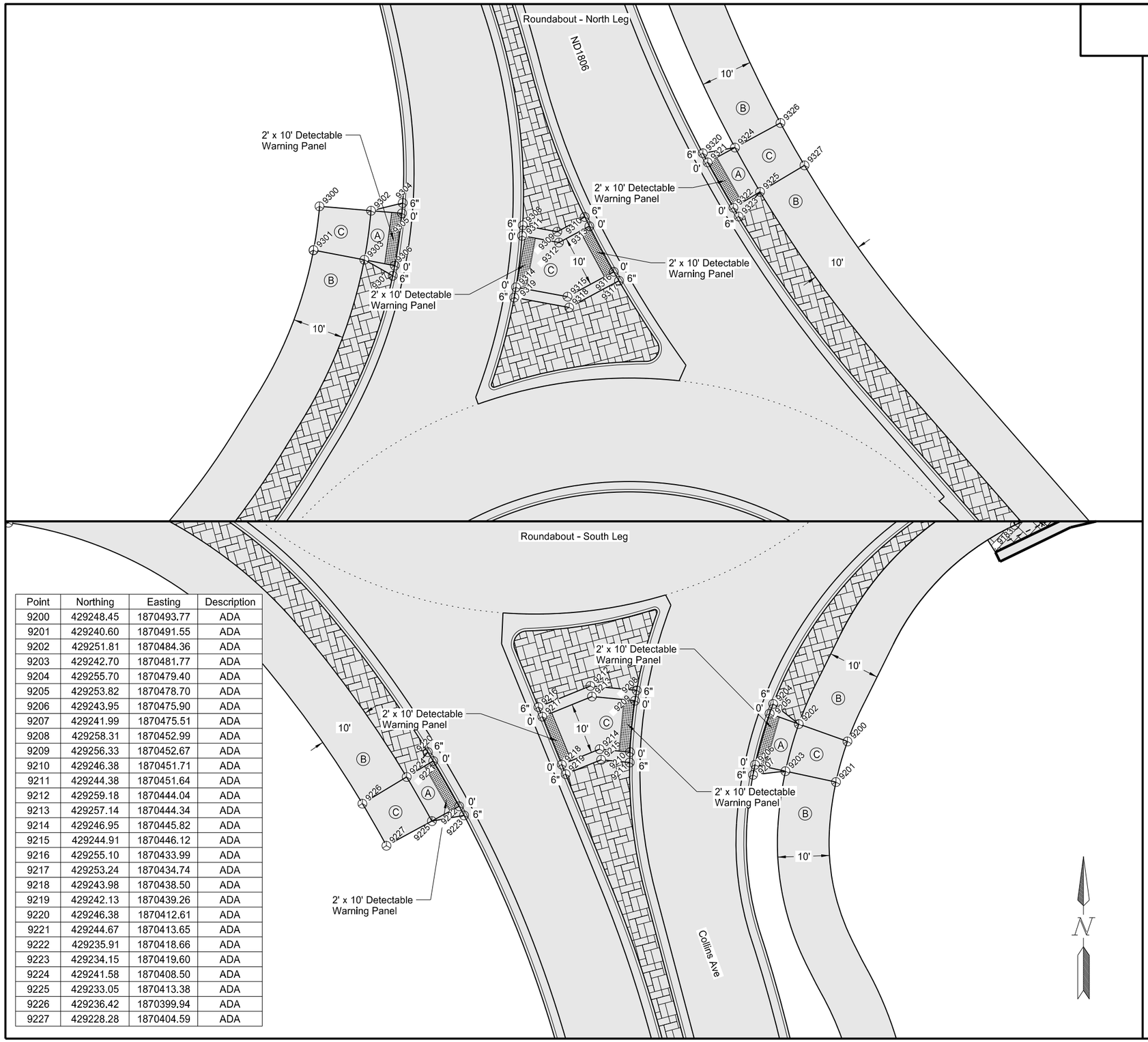
ND 1806

General Details

ADA Layouts

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	20	21



Point	Northing	Easting	Description
9300	429481.28	1870373.58	ADA
9301	429472.82	1870372.42	ADA
9302	429480.44	1870383.54	ADA
9303	429470.95	1870382.24	ADA
9304	429481.93	1870389.67	ADA
9305	429479.94	1870389.52	ADA
9306	429469.82	1870388.14	ADA
9307	429467.86	1870387.74	ADA
9308	429477.60	1870412.89	ADA
9309	429476.38	1870419.57	ADA
9310	429479.24	1870424.89	ADA
9311	429475.59	1870412.76	ADA
9312	429474.29	1870419.90	ADA
9313	429477.44	1870425.77	ADA
9314	429465.64	1870411.59	ADA
9315	429463.82	1870421.54	ADA
9316	429468.63	1870430.50	ADA
9317	429466.90	1870431.49	ADA
9318	429461.73	1870421.87	ADA
9319	429463.67	1870411.25	ADA
9320	429491.55	1870447.72	ADA
9321	429489.79	1870448.66	ADA
9322	429481.02	1870453.64	ADA
9323	429479.31	1870454.67	ADA
9324	429492.64	1870453.94	ADA
9325	429484.09	1870458.80	ADA
9326	429497.41	1870462.73	ADA
9327	429489.21	1870467.39	ADA

Point	Northing	Easting	Description
9200	429248.45	1870493.77	ADA
9201	429240.60	1870491.55	ADA
9202	429251.81	1870484.36	ADA
9203	429242.70	1870481.77	ADA
9204	429255.70	1870479.40	ADA
9205	429253.82	1870478.70	ADA
9206	429243.95	1870475.90	ADA
9207	429241.99	1870475.51	ADA
9208	429258.31	1870452.99	ADA
9209	429256.33	1870452.67	ADA
9210	429246.38	1870451.71	ADA
9211	429244.38	1870451.64	ADA
9212	429259.18	1870444.04	ADA
9213	429257.14	1870444.34	ADA
9214	429246.95	1870445.82	ADA
9215	429244.91	1870446.12	ADA
9216	429255.10	1870433.99	ADA
9217	429253.24	1870434.74	ADA
9218	429243.98	1870438.50	ADA
9219	429242.13	1870439.26	ADA
9220	429246.38	1870412.61	ADA
9221	429244.67	1870413.65	ADA
9222	429235.91	1870418.66	ADA
9223	429234.15	1870419.60	ADA
9224	429241.58	1870408.50	ADA
9225	429233.05	1870413.38	ADA
9226	429236.42	1870399.94	ADA
9227	429228.28	1870404.59	ADA

Ⓐ Ramp
8.33% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
15' Maximum Ramp Length

Ⓑ 5'/10' Sidewalk
5% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope

Ⓒ Landing
2% Maximum Longitudinal Slope
2% Maximum Cross Slope
1.5% Typical Cross Slope
4'x4' Minimum, Match Width of Shared Use Path

Notes:

1. Dimensions shown may vary from actual. Field adjust if maximum slopes cannot be met with dimensions shown.
2. See Standard Drawing D-750-3 for more details.
3. All form grades to be approved by engineer prior to placing concrete.

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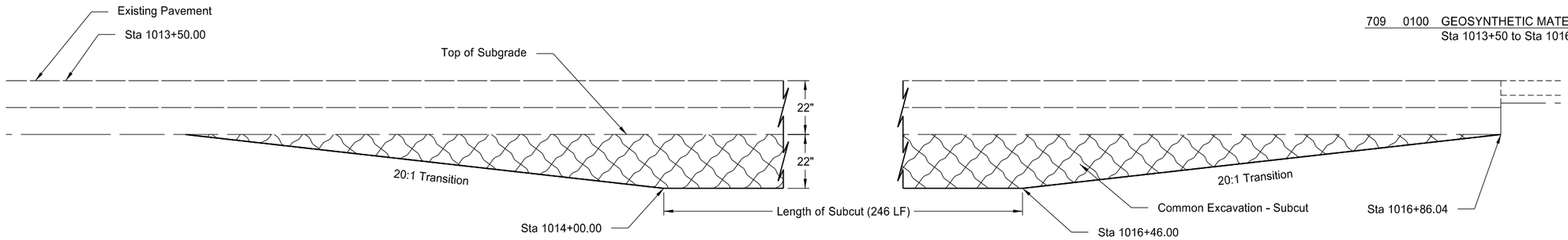
ND 1806

General Details

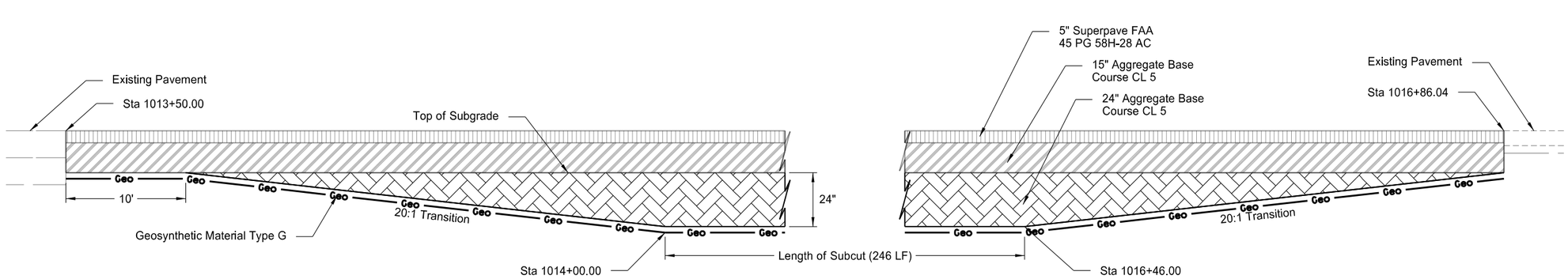
ADA Layouts

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-1-094(200)153	20	22

SPEC	CODE	BID ITEM	QTY	UNIT
203	0109	TOPSOIL		
		Sta 1013+50 to Sta 1016+86.04	175	CY
203	0138	COMMON EXCAVATION-SUBCUT		
		Sta 1013+50 to Sta 1016+86.04	894	CY
302	0120	AGGREGATE BASE COURSE CL 5		
		Sta 1013+50 to Sta 1016+86.04	1,828	TON
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		Sta 1013+50 to Sta 1016+86.04	1,718	SY



Subcut - Removal
(Not to Scale)



Subcut - Backfill
(Not to Scale)

Notes:
Quantites based on typical sections for the Southwest ramp

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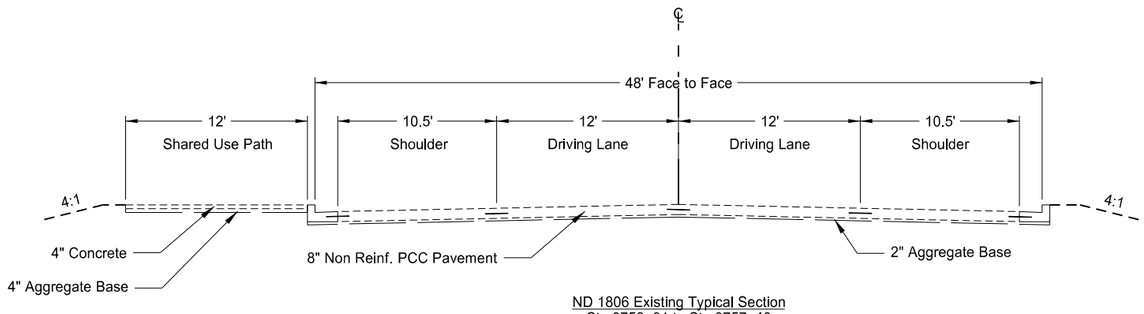
ND 1806 Interchange

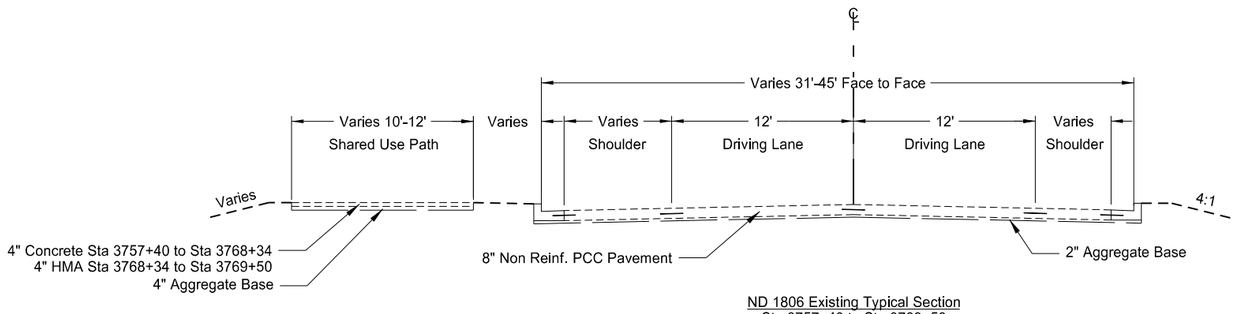
Subcut Detail

Southwest Ramp

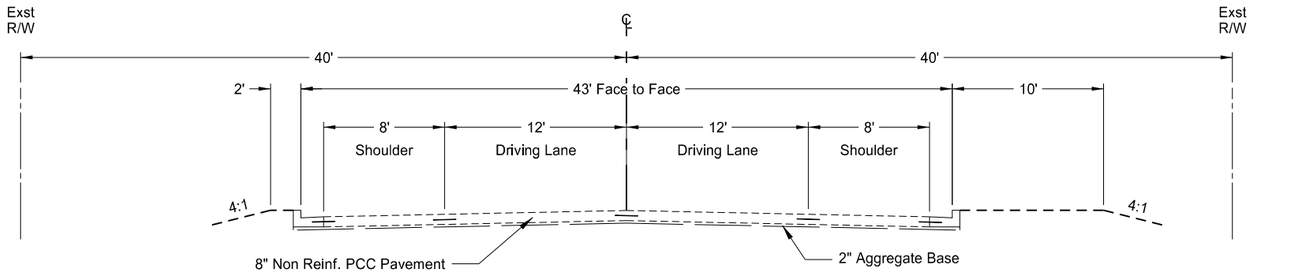
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	30	1



ND 1806 Existing Typical Section
Sta 3752+91 to Sta 3757+40



ND 1806 Existing Typical Section
Sta 3757+40 to Sta 3769+50



Transition from Sta 3785+42 to Sta 3786+04

ND 1806 Existing Typical Section
Sta 3769+50 to Sta 3785+63

Note:
1. Stationing based on Alignment PR1806

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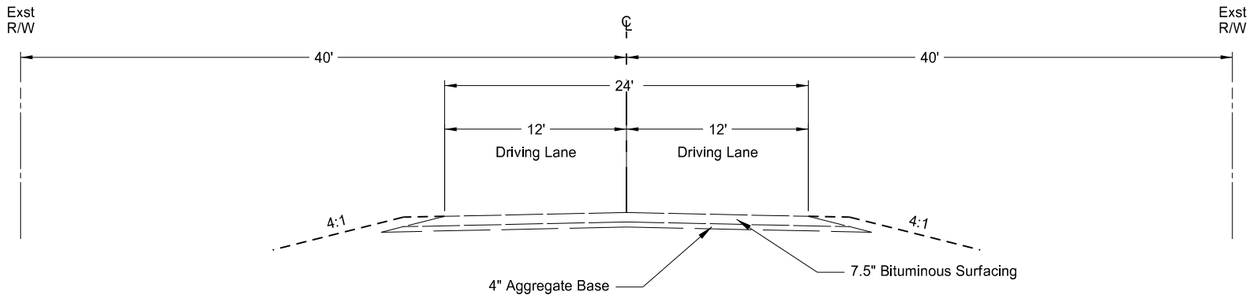
ND 1806

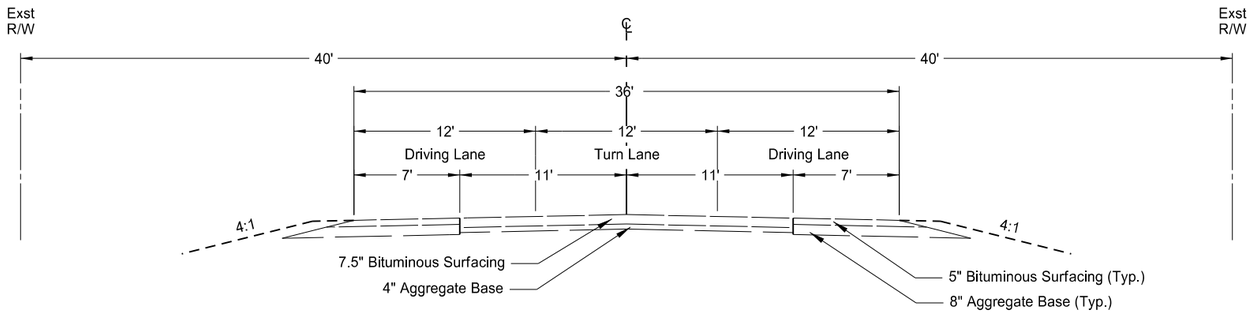
Existing Typical Sections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	30	2



ND 1806 Existing Typical Section
Sta 3785+63 to Sta 3797+23

Transition from Sta 3797+23 to Sta 3798+02



ND 1806 Existing Typical Section
Sta 3797+23 to Sta 3819+30

Core	Asphalt Thickness	Approx. Sta
1	7"	3814+00
2	8"	3800+80
3	7.5"	3787+60

Note:
1. Stationing based on Alignment PR1806

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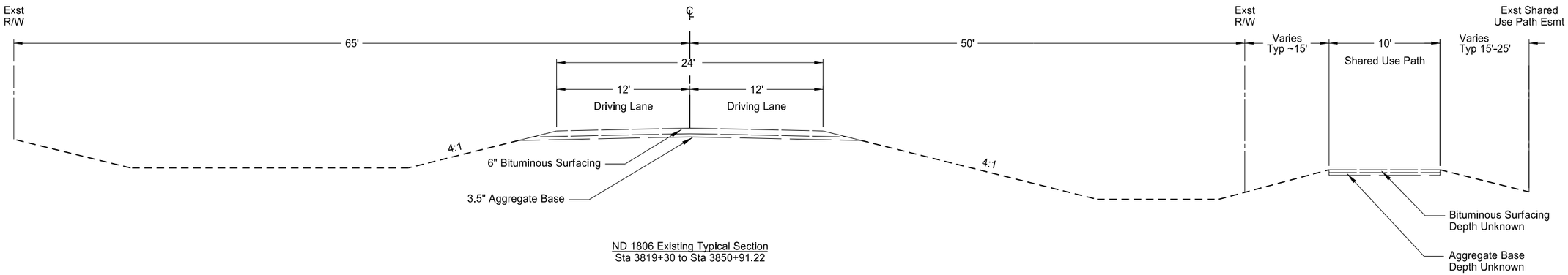
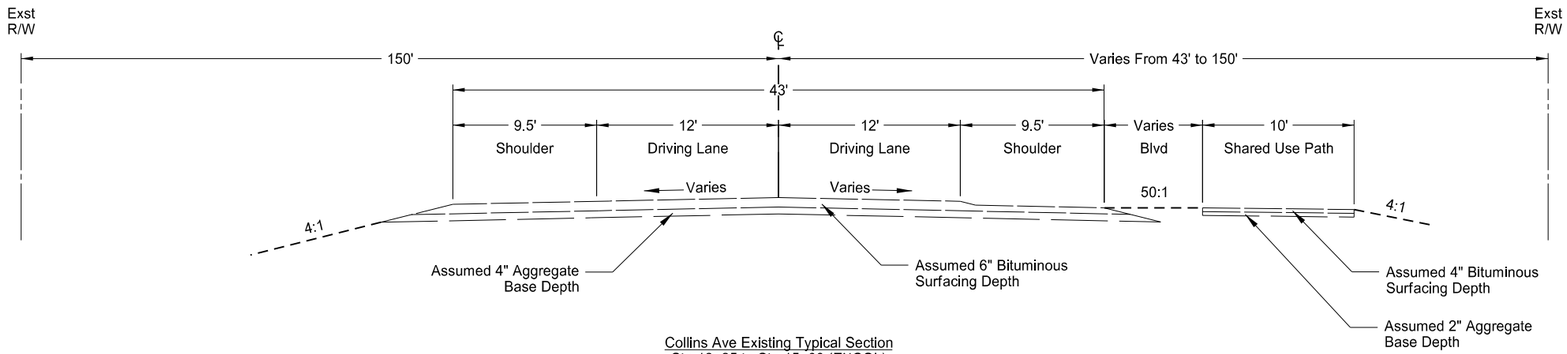
ND 1806

Existing Typical Sections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	30	3



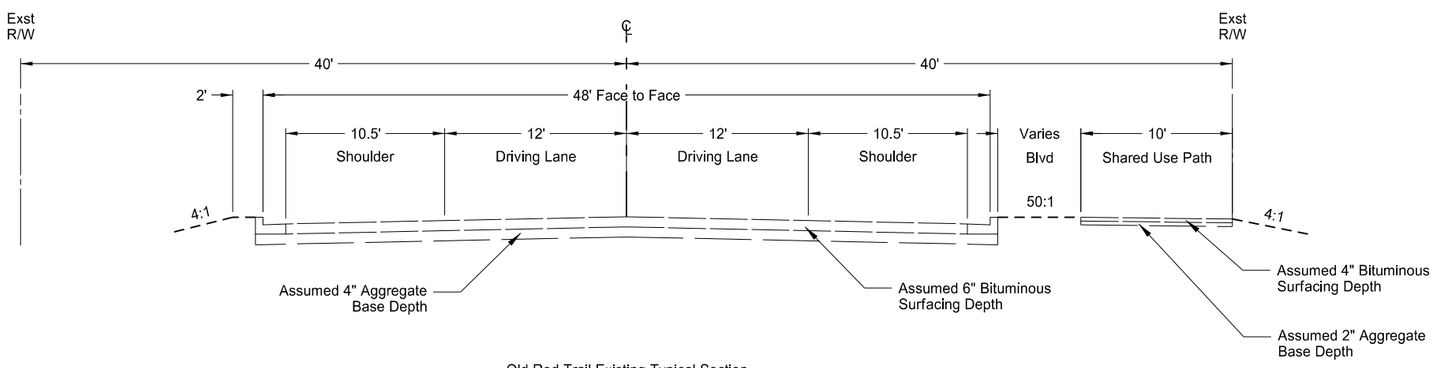
ND 1806 Existing Typical Section
Sta 3819+30 to Sta 3850+91.22



Collins Ave Existing Typical Section
Sta 12+25 to Sta 15+00 (EXCOL)

Core	Asphalt Thickness	Approx. Sta
4	8"	3819+80
5	7"	3833+00
6	6"	3846+10
7	6"	3859+45
8	5"	3872+65

Note:
1. Stationing based on Alignment PR1806



Old Red Trail Existing Typical Section
Sta 102+38 to Sta 105+00(EXORT)

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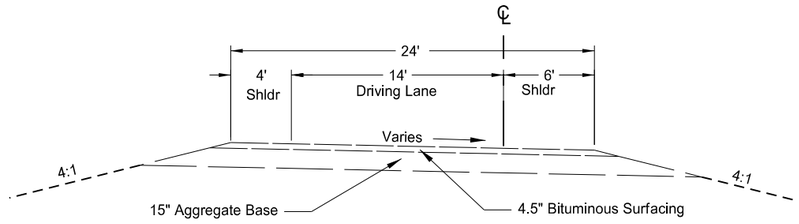
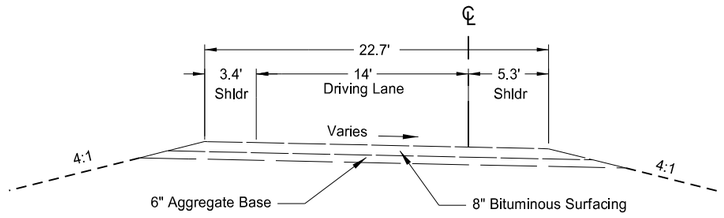
ND 1806

Existing Typical Sections

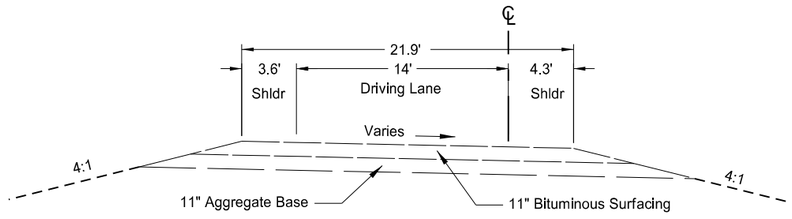
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-1-094(200)153	30	4



ND 1806 Interchange Existing Typical Section
Sta 2001+39.31 to Sta 2004+44.24 (EX94SER)



ND 1806 Interchange Existing Typical Section
Sta 4000+82.14 to Sta 4008+99.85 (EX94NWR)
Sta 3011+41.72 to 3023+41.87 (EX94NER)



ND 1806 Interchange Existing Typical Section
Sta 1008+70.46 to Sta 1016+86.04 (EX94SWR)

Core	Asphalt Thickness	Aggregate Thickness	Approx. Sta
9	10"	10"	1010+86
10	11"	11"	1012+86
11	11"	11"	1014+86
12	11"	11"	1015+86

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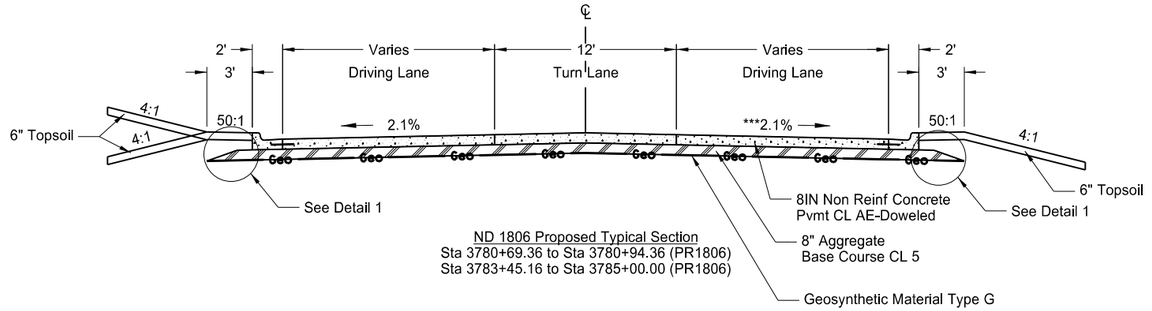
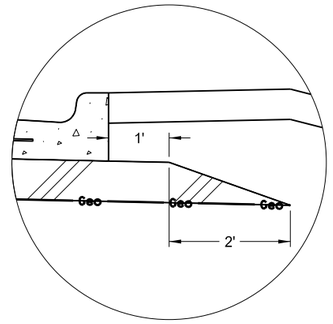
ND 1806 Interchange

Existing Typical Sections

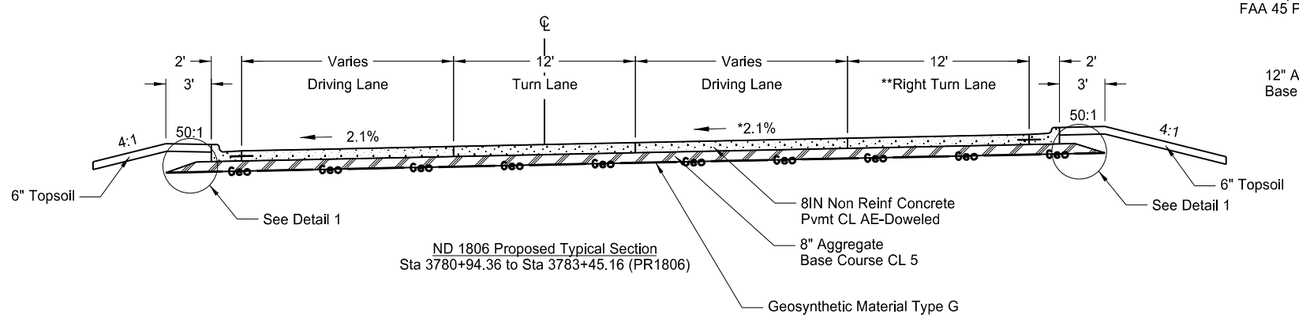
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	30	5



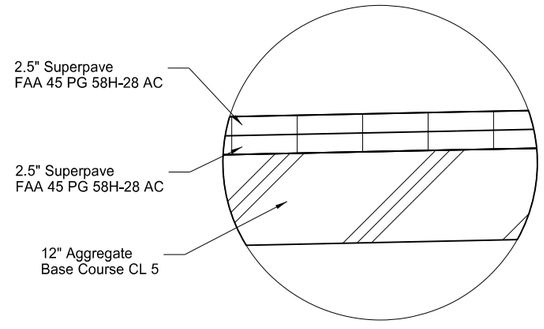
ND 1806 Proposed Typical Section
Sta 3780+69.36 to Sta 3780+94.36 (PR1806)
Sta 3783+45.16 to Sta 3785+00.00 (PR1806)



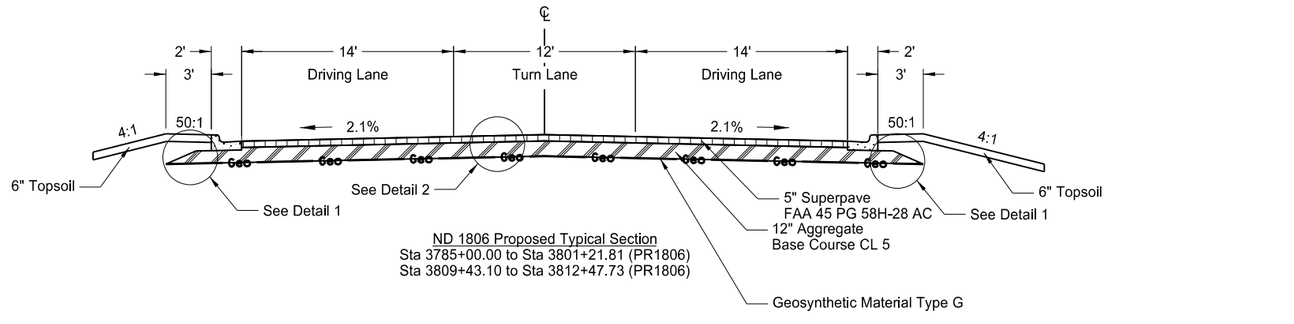
Detail 1



ND 1806 Proposed Typical Section
Sta 3780+94.36 to Sta 3783+45.16 (PR1806)



Detail 2



ND 1806 Proposed Typical Section
Sta 3785+00.00 to Sta 3801+21.81 (PR1806)
Sta 3809+43.10 to Sta 3812+47.73 (PR1806)

*Cross Slope Transition From
Normal Crown (2.1%) to Reverse Crown
Sta 3781+35.21 to Sta 3782+43.27

**Right Turn Transition From 0' to 12'
Sta 3780+94.36 to Sta 3782+11.66

***Cross Slope Transition From
Reverse Crown to Normal Crown (2.1%)
Sta 3784+56.23 to Sta 3785+64.29

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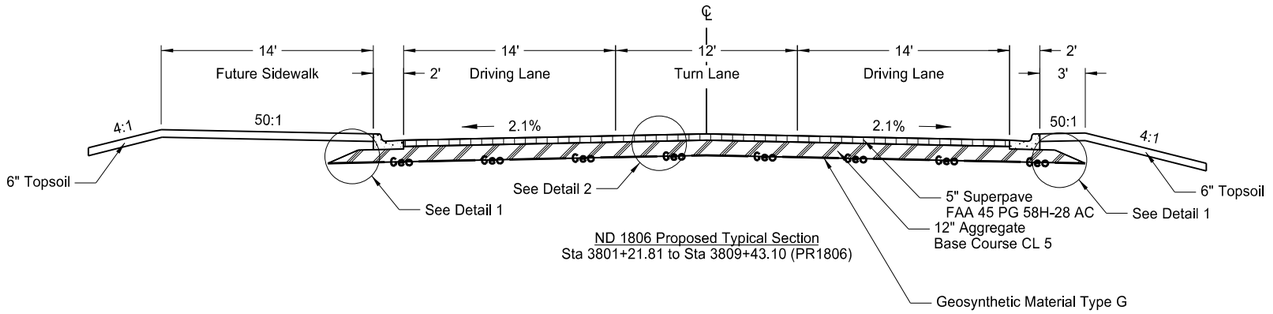
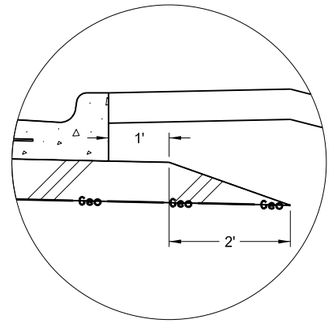
ND 1806

Proposed Typical Sections

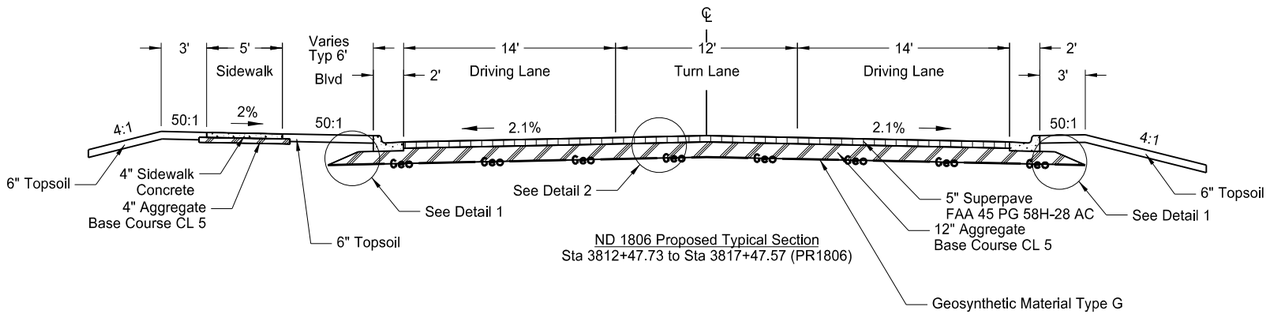
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	30	6



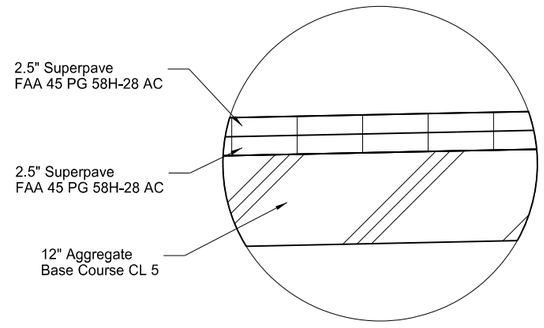
ND 1806 Proposed Typical Section
Sta 3801+21.81 to Sta 3809+43.10 (PR1806)



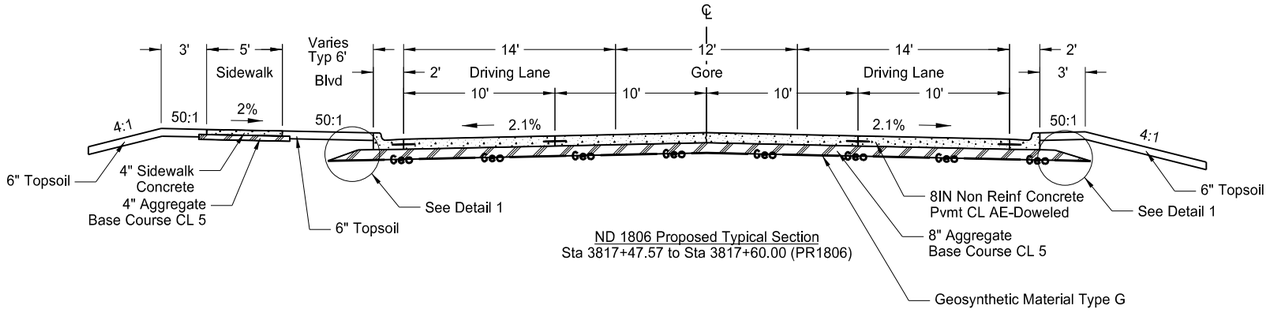
Detail 1



ND 1806 Proposed Typical Section
Sta 3812+47.73 to Sta 3817+47.57 (PR1806)



Detail 2



ND 1806 Proposed Typical Section
Sta 3817+47.57 to Sta 3817+60.00 (PR1806)

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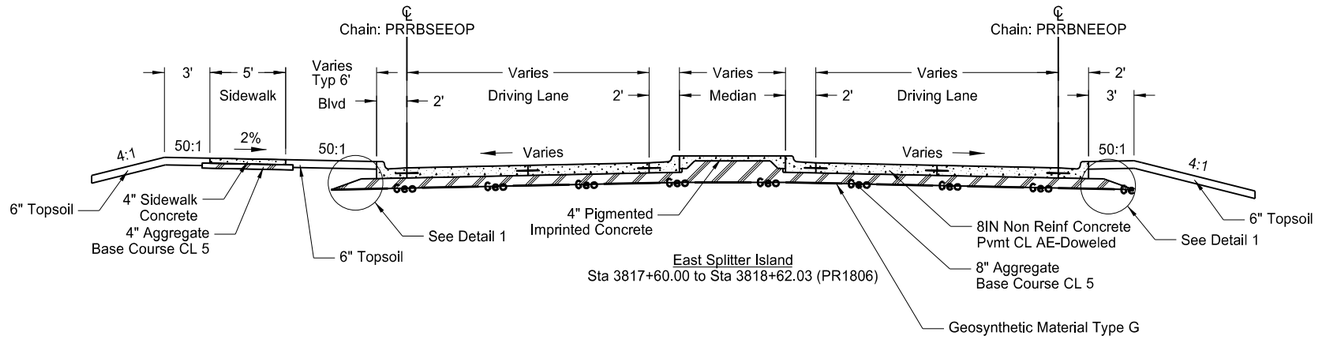
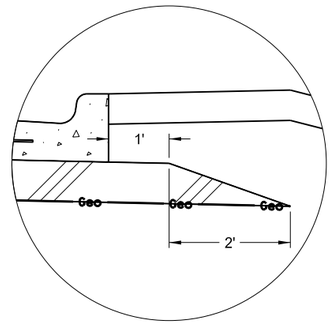
ND 1806

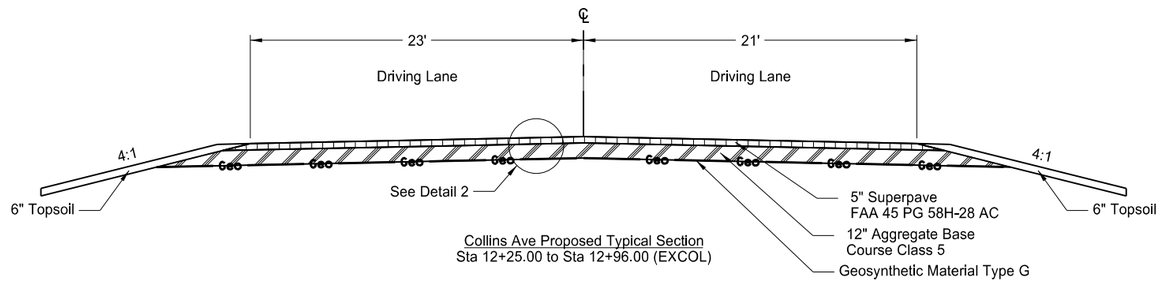
Proposed Typical Sections

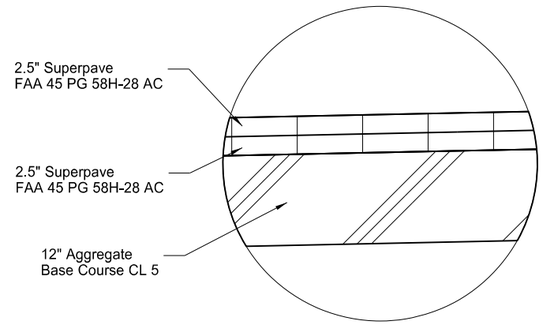
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	30	7



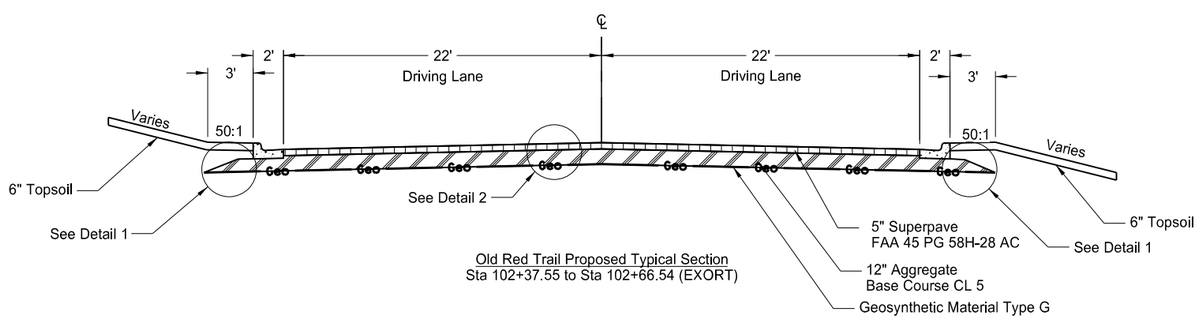


Detail 1





Detail 2



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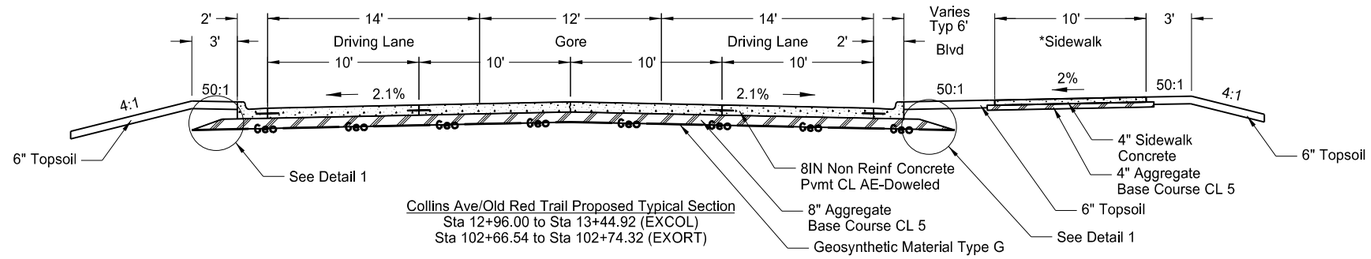
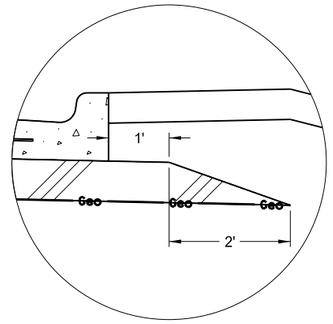
ND 1806

Proposed Typical Sections

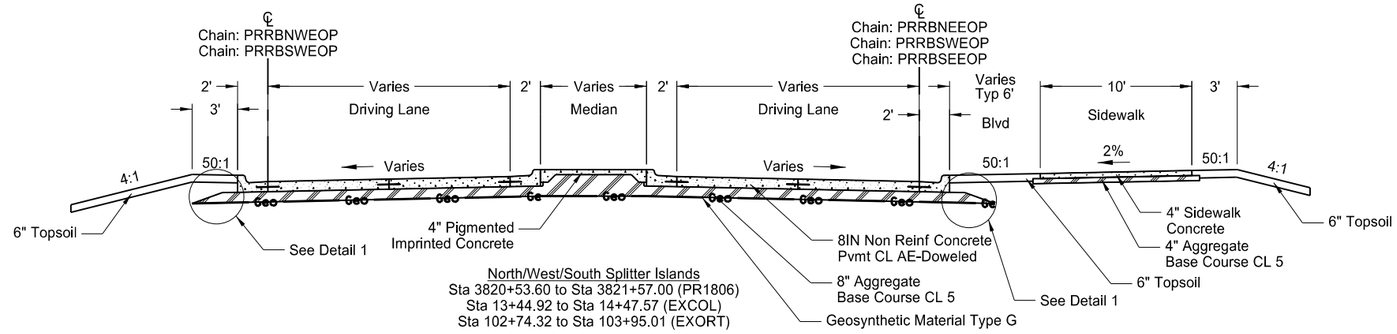
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	30	8



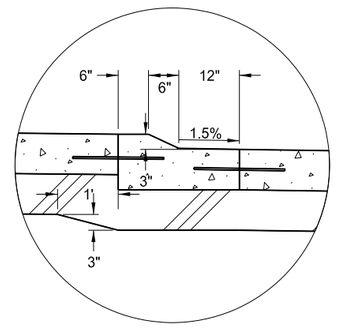
Collins Ave/Old Red Trail Proposed Typical Section
Sta 12+96.00 to Sta 13+44.92 (EXCOL)
Sta 102+66.54 to Sta 102+74.32 (EXORT)



Detail 1

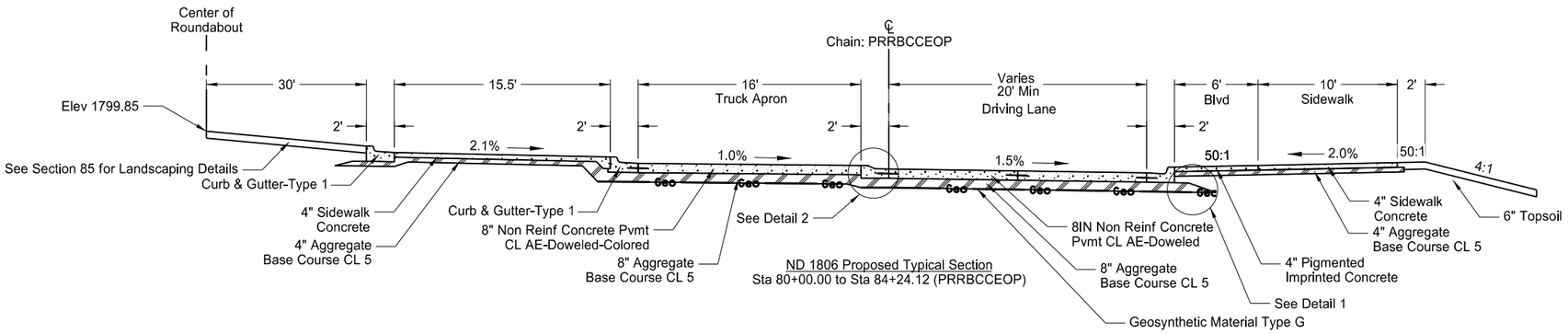


North/West/South Splitter Islands
Sta 3820+53.60 to Sta 3821+57.00 (PR1806)
Sta 13+44.92 to Sta 14+47.57 (EXCOL)
Sta 102+74.32 to Sta 103+95.01 (EXORT)



Detail 2

*Sidewalk Begins
Sta 12+96.00 (EXCOL)
and Sta 102+80.56 (EXORT)

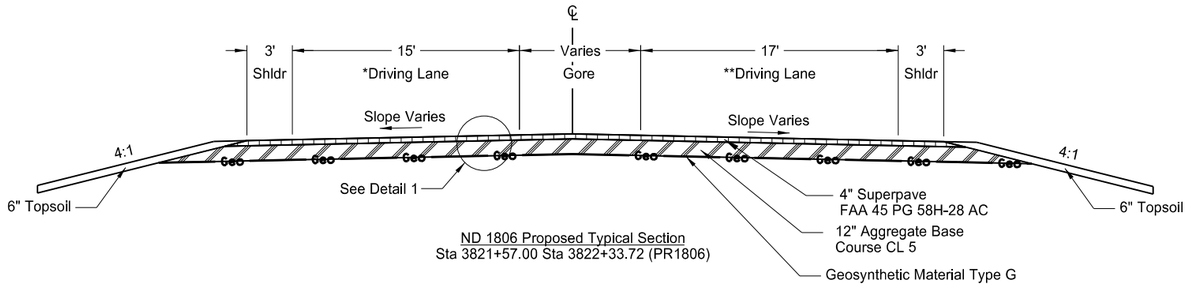


ND 1806 Proposed Typical Section
Sta 80+00.00 to Sta 84+24.12 (PRRBCCEOP)

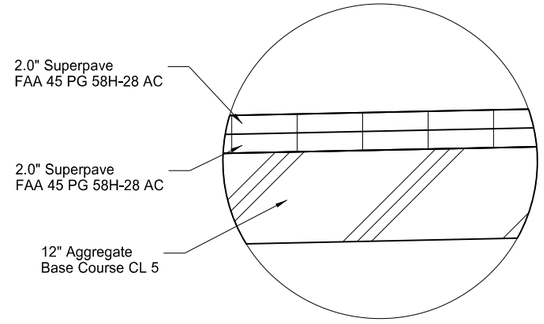
ND 1806

Proposed Typical Sections

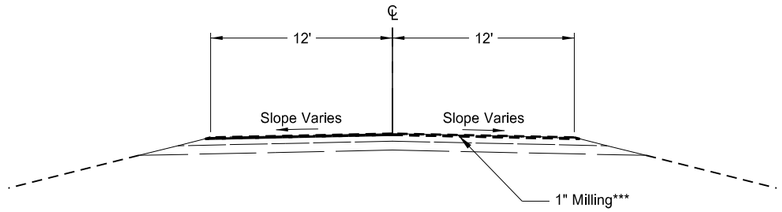
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	30	9



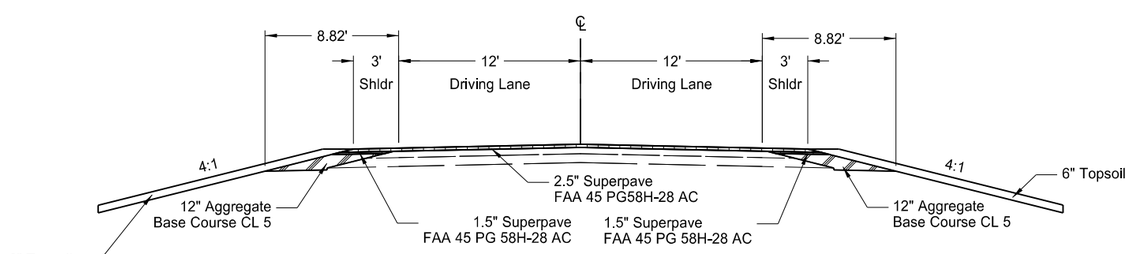
ND 1806 Proposed Typical Section
Sta 3821+57.00 Sta 3822+33.72 (PR1806)



Detail 1



ND 1806 Proposed Typical Section
Sta 3822+33.72 to Sta 3845+70.00 (PR1806)
Sta 3846+50.00 to Sta 3850+91.22 (PR1806)



ND 1806 Proposed Typical Section
Sta 3822+33.72 to Sta 3838+98.00 (PR1806)

*Left Driving Lane Transition From 15' to 12'
Sta 3821+57.00 to Sta 3822+59.47
**Right Driving Lane Transition From 17' to 12'
Sta 3821+57.00 to Sta 3822+59.47
***Milling Transition From 1" to 2.5"
Sta 3850+16.22 to Sta 3850+91.22
See Section 20 detail

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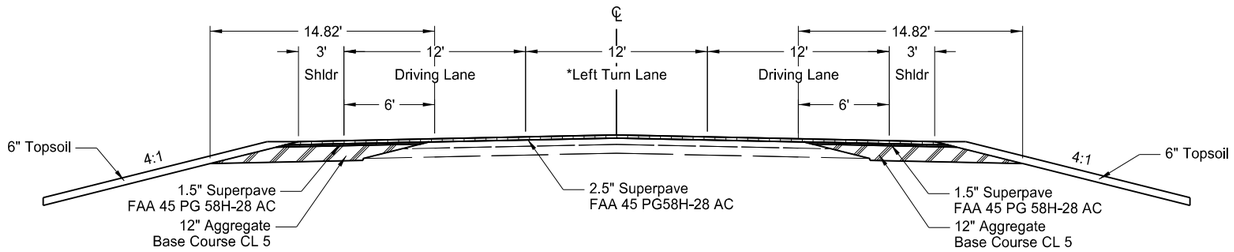
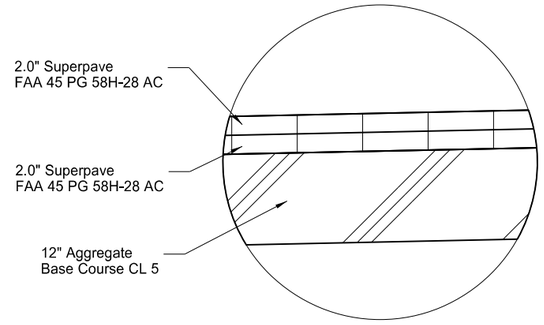
ND 1806

Proposed Typical Sections

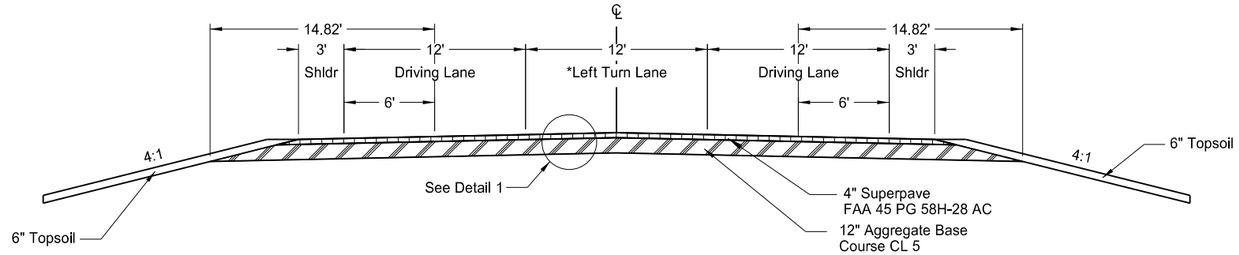
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	30	10



ND 1806 Proposed Typical Section
Sta 3838+98.00 to Sta 3845+70.00 (PR1806)

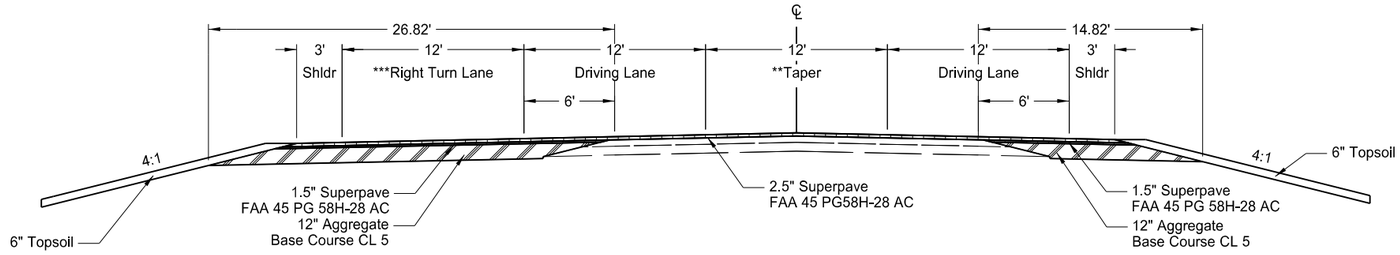


Detail 1



ND 1806 Proposed Typical Section
Sta 3845+70.00 to Sta 3846+50.00 (PR1806)

*Left Turn Lane Transition From 0' to 12'
Sta 3838+98.00 to Sta 3841+68.00
**Taper Lane Transition From 12' to 0'
Sta 3847+12.00 to Sta 3849+82.00
***Right Turn Lane Transition From 12' to 0'
Sta 3849+12.00 to Sta 3850+56.00



ND 1806 Proposed Typical Section
Sta 3846+50.00 to Sta 3850+56.00 (PR1806)

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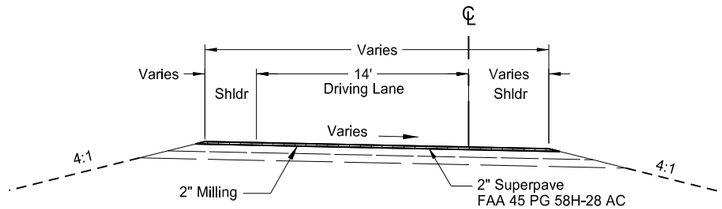
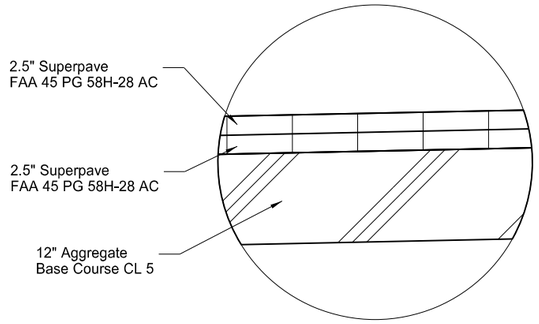
ND 1806

Proposed Typical Sections

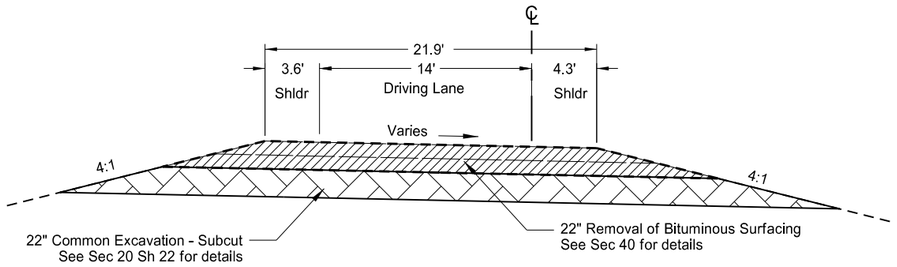
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-1-094(200)153	30	11



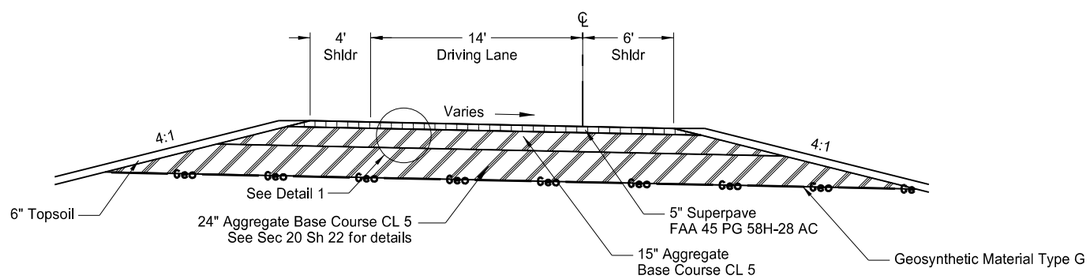
ND 1806 Interchange Proposed Typical Section
Sta 3012+50.18 to Sta 3023+41.87 (EX94NER)
Sta 4000+82.14 to Sta 4007+93.04 (EX94NWR)
Sta 2001+39.31 to Sta 2003+54.33 (EX94SER)



Detail 1



ND 1806 Interchange Proposed Typical Section
Sta 1013+50.00 to Sta 1016+86.04 (EX94SWR)



ND 1806 Interchange Proposed Typical Section
Sta 1013+50.00 to Sta 1016+86.04 (EX94SWR)

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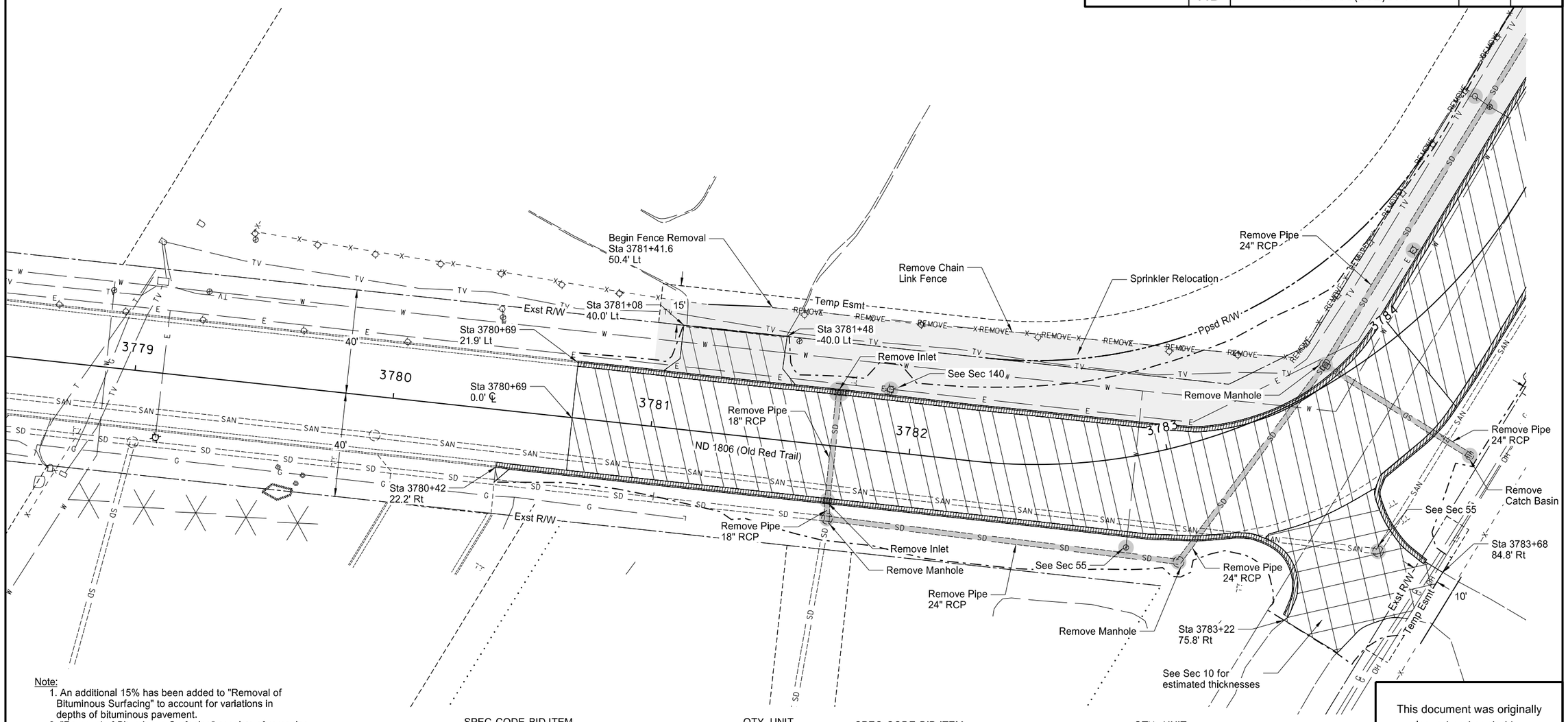
ND 1806 Interchange

Proposed Typical Sections

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	1



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Sta 3779+40 to Sta 3784+00	1,641	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 3780+42 Rt to Sta 3783+22 Rt	332	LF
		Sta 3780+69 Lt to Sta 3784+00 Lt	327	LF
		Sta 3783+66 Rt to Sta 3784+00 Rt	79	LF
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		Sta 3779+00 to Sta 3784+00	96	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
		Sta 3781+71~21' Rt to Sta 3781+71~21' Lt	43	LF
		Sta 3781+71~28' Rt to Sta 3781+71~21' Rt	7	LF
		Sta 3781+71~28' Rt to Sta 3782+95~43' Rt	137	LF
		Sta 3782+95~43' Rt to Sta 3783+70~7' Lt	95	LF
		Sta 3783+70~7' Lt to Sta 3783+94~53' Rt	66	LF
		Sta 3783+70~7' Lt to Sta 3784+00~19' Lt	31	LF

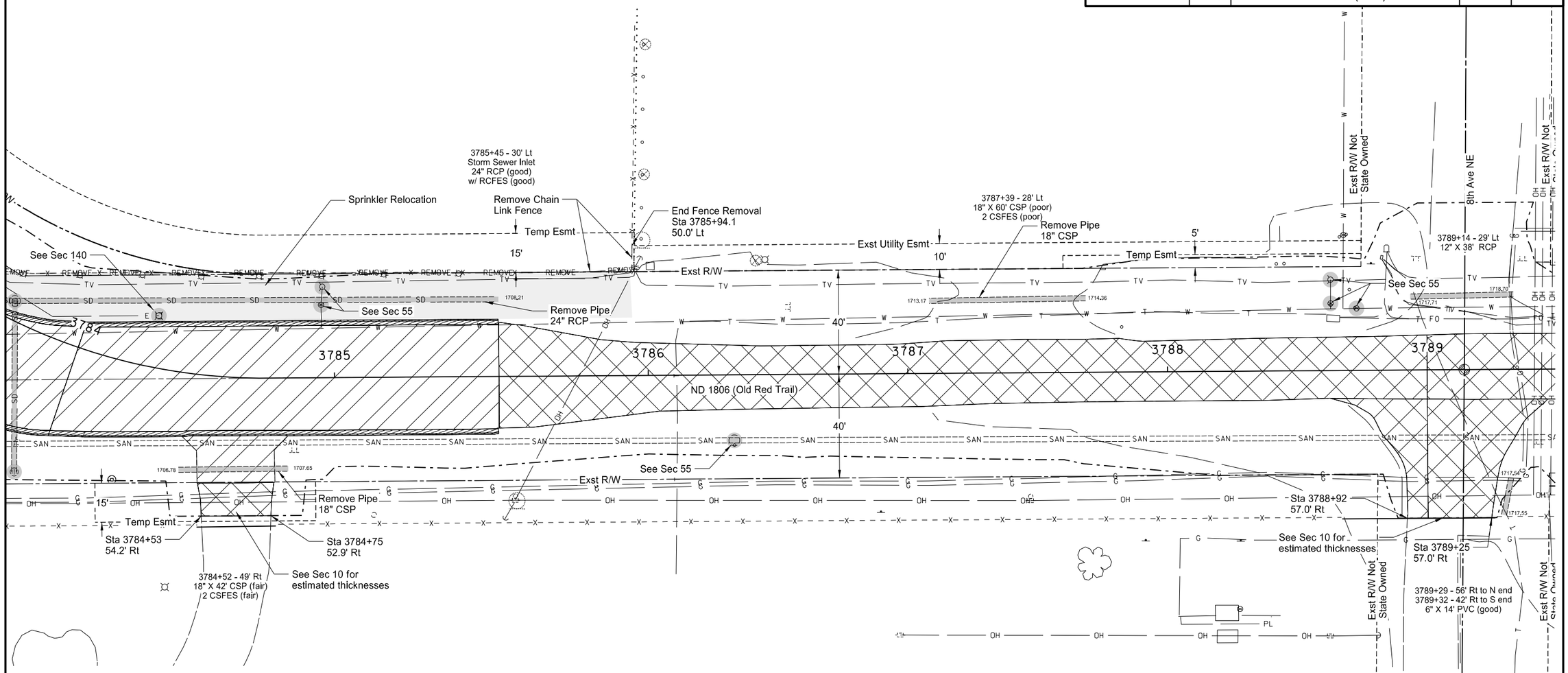
SPEC	CODE	BID ITEM	QTY	UNIT
202	0210	REMOVAL OF MANHOLES		
		Sta 3781+71~28' Rt	1	EA
		Sta 3782+95~43' Rt	1	EA
		Sta 3783+70~7' Lt	1	EA
202	0230	REMOVAL OF INLETS		
		Sta 3781+71~21' Rt	1	EA
		Sta 3781+71~21' Lt	1	EA
202	0235	REMOVAL OF CATCH BASIN		
		Sta 3783+94~53' Rt	1	EA
202	0312	REMOVE EXISTING FENCE		
		Sta 3781+41.6~50.4' Lt to Sta 3784+00~30' Lt	240	LF
724	1035	SPRINKLER RELOCATION		
		Sta 3780+99 Lt to Sta 3785+94 Lt	0.5	L SUM

ND 1806

Removals

Sta 3779+00 to Sta 3784+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	2



Note:

1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Sta 3784+00 to Sta 3789+00	807	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 3784+00 Lt to Sta 3785+63 Lt	159	LF
		Sta 3784+00 Rt to Sta 3785+63 Rt	174	LF
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		Sta 3784+00 to Sta 3789+00	756	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
		Sta 3784+00~19' Lt to Sta 3785+63~30' Lt	156	LF
		Sta 3784+45~37' Rt to Sta 3784+82~35' R	42	LF
		Sta 3787+08~28' Lt to Sta 3787+69~29' Lt	60	LF
202	0312	REMOVE EXISTING FENCE		
		Sta 3784+00~30' Lt to Sta 3785+94.1~50.0' Lt	213	LF

N

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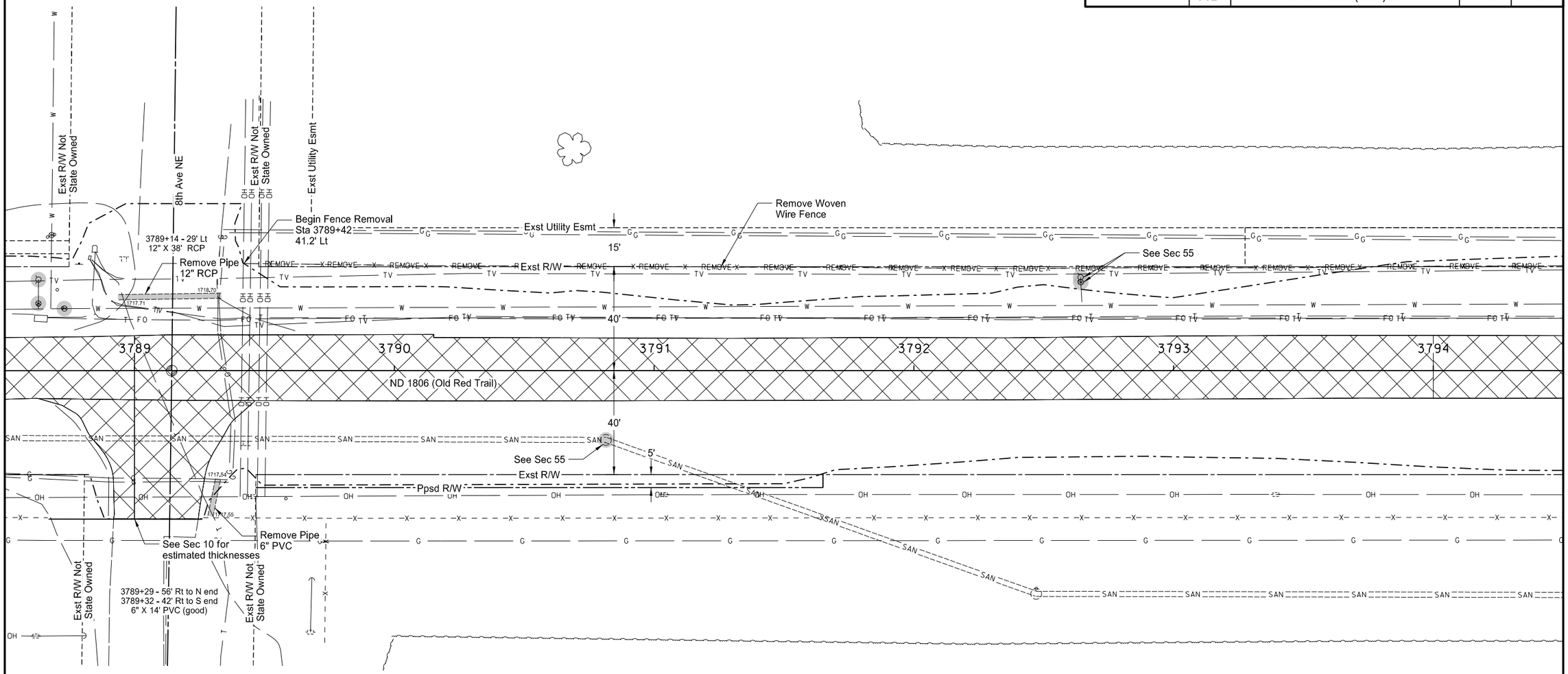
ND 1806

Removals

Sta 3784+00 to Sta 3789+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	3



Note:

1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		Sta 3789+00 to Sta 3794+00	1,015	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
		Sta 3788+94~28' Lt to Sta 3789+33~29' Lt	38	LF
		Sta 3789+29~56' Rt to Sta 3789+32~42' R	14	LF
202	0312	REMOVE EXISTING FENCE		
		Sta 3789+42~41.2' Lt to Sta 3794+00~40.2' Lt	459	LF

N

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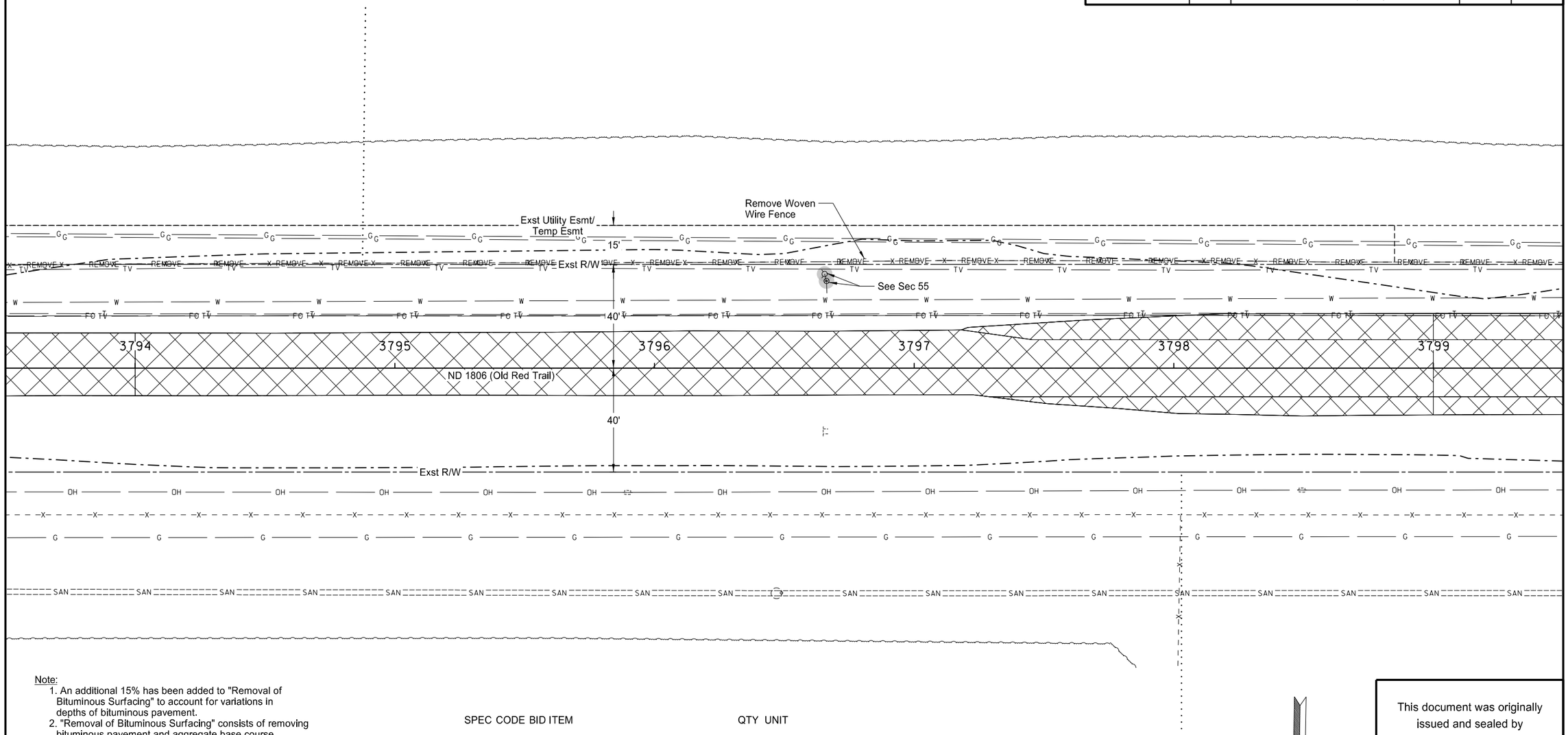
ND 1806

Removals

Sta 3789+00 to Sta 3794+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	4



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

SPEC	CODE	BID ITEM	QTY	UNIT
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		Sta 3794+00 to Sta 3799+00	1,121	TON
202	0312	REMOVE EXISTING FENCE		
		Sta 3794+00~40.2' Lt to Sta 3799+00~40.9' Lt	500	LF

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

N

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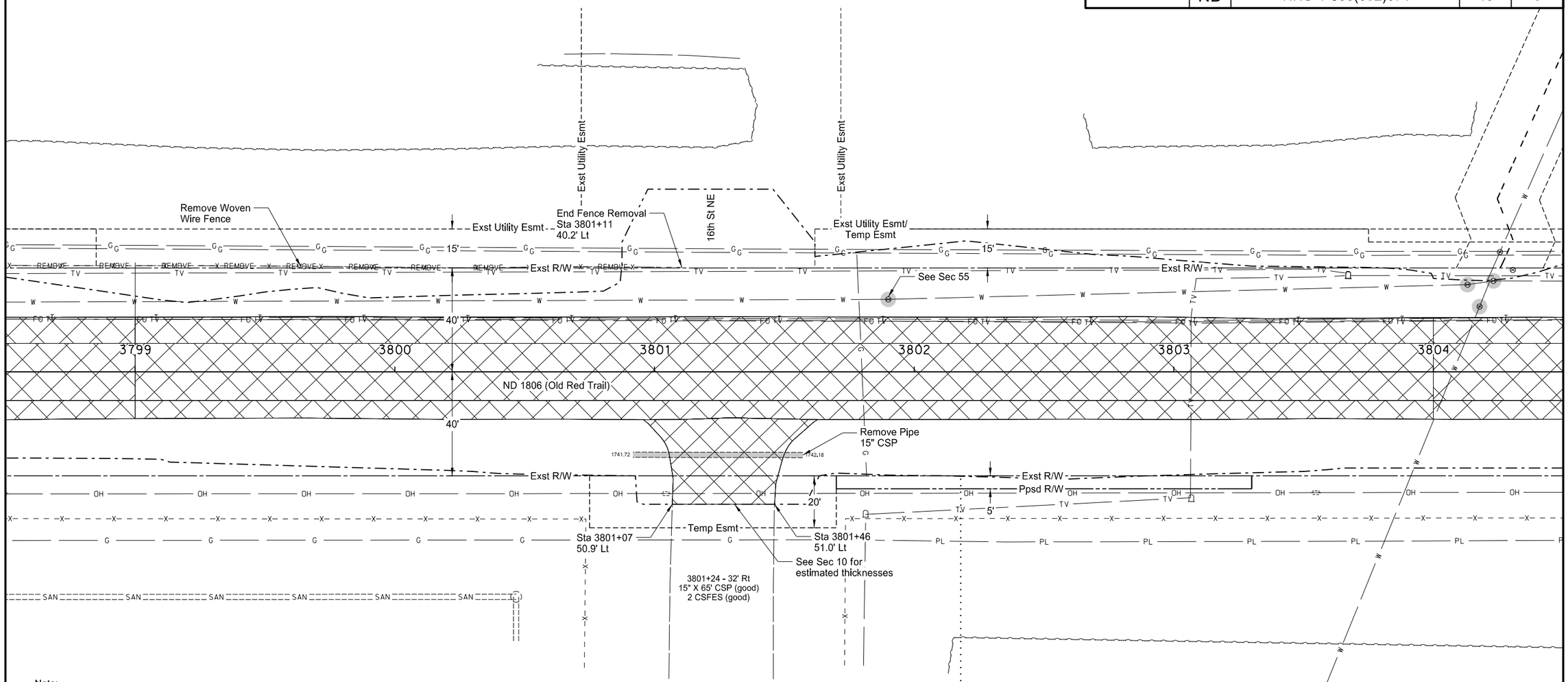
ND 1806

Removals

Sta 3794+00 to Sta 3799+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	5



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0135	REMOVAL OF BITUMINOUS SURFACING Sta 3799+00 to Sta 3804+00	1,646	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 3800+92~32' Rt to Sta 3801+57~32' Rt	65	LF
202	0312	REMOVE EXISTING FENCE Sta 3799+00~40.9' Lt to Sta 3801+10.5~40.2' Lt	211	LF

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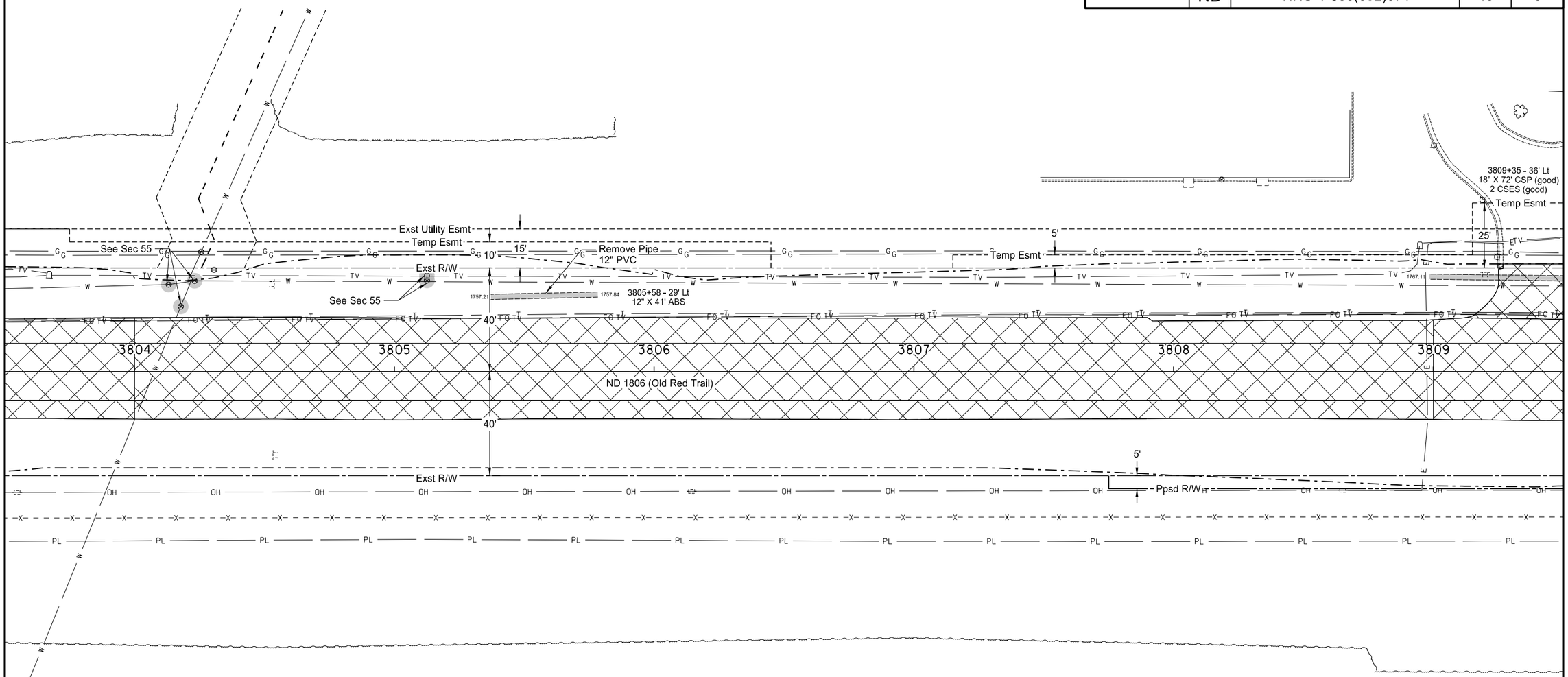
Removals

Sta 3799+00 to Sta 3804+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	6



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0135	REMOVAL OF BITUMINOUS SURFACING Sta 3804+00 to Sta 3809+00	1,514	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 3805+37~29' Lt to Sta 3805+78~30' Lt	41	LF

N

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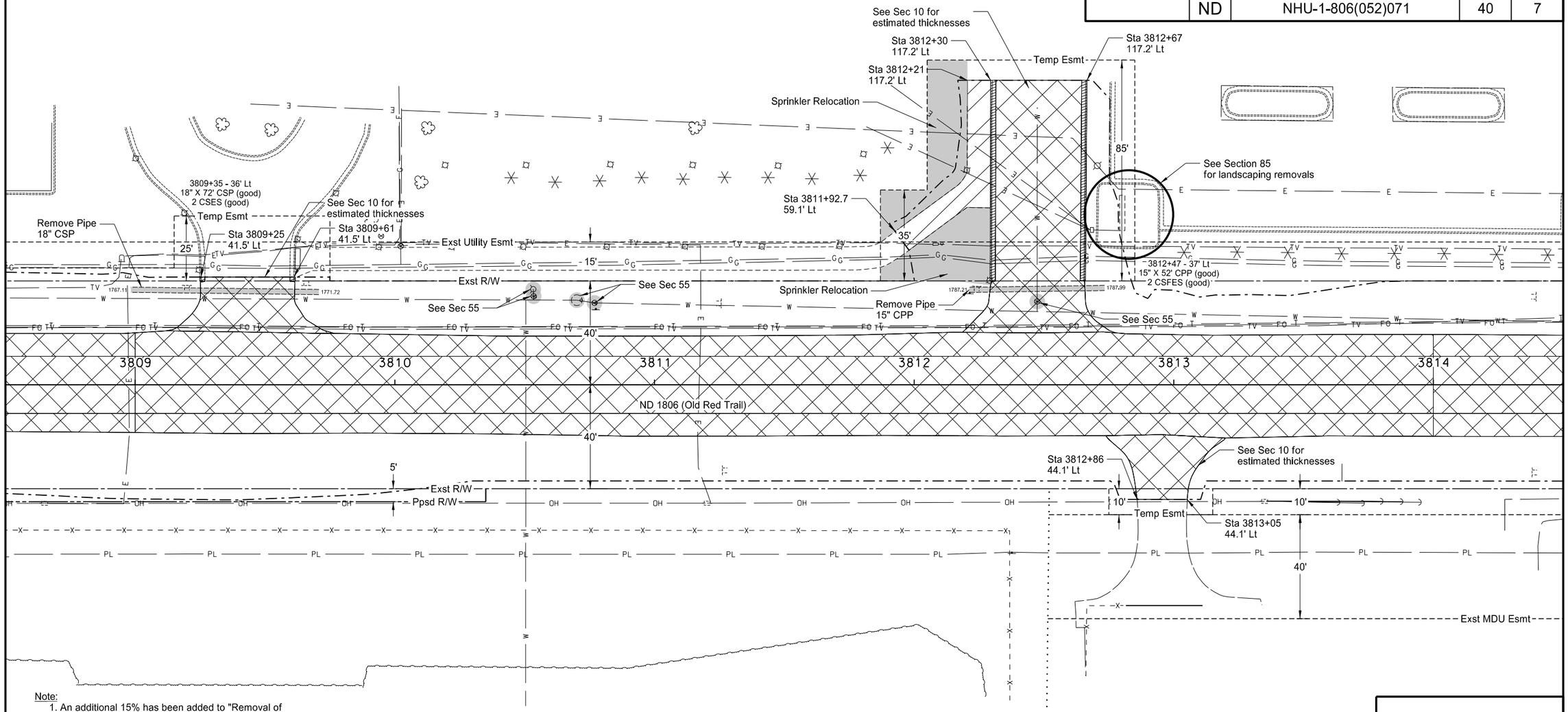
ND 1806

Removals

Sta 3804+00 to Sta 3809+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	7



Note:
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2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Sta 3812+15 Lt to Sta 3812+29 Lt	80	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 3809+25 Lt to Sta 3809+25 Lt	2	LF
		Sta 3809+61 Lt to Sta 3809+61 Lt	2	LF
		Sta 3812+30 Lt to Sta 3812+30 Lt	78	LF
		Sta 3812+66 Lt to Sta 3812+66 Lt	78	LF
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		Sta 3809+00 to Sta 3814+00	1,887	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
		Sta 3808+98~37' Lt to Sta 3809+71~36' Lt	72	LF
		Sta 3812+21~37' Lt to Sta 3812+73~37' Lt	52	LF
724	1035	SPRINKLER RELOCATION		
		Sta 3810+00 Lt to Sta 3812+30 Lt	0.5	L SUM

N

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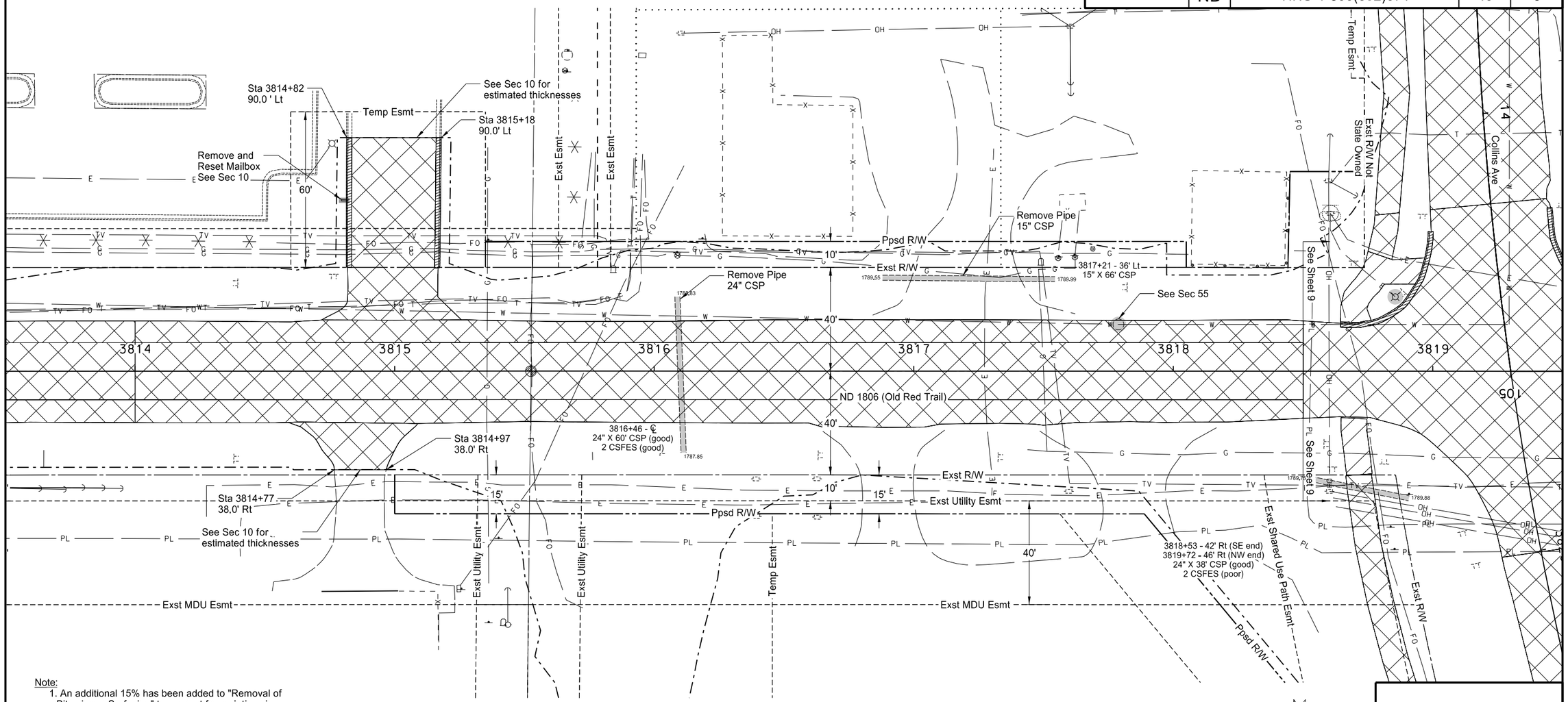
ND 1806

Removals

Sta 3809+00 to Sta 3814+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	8



Note:
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2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 3814+81 Lt to Sta 3814+82 Lt	50	LF
		Sta 3815+17 Lt to Sta 3815+18 Lt	51	LF
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		Sta 3814+00 to Sta 3818+50	1,612	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
		Sta 3816+09~29' Lt to Sta 3816+11~31' Rt	60	LF
		Sta 3816+88~36' Lt to Sta 3817+54~36' Lt	66	LF

N

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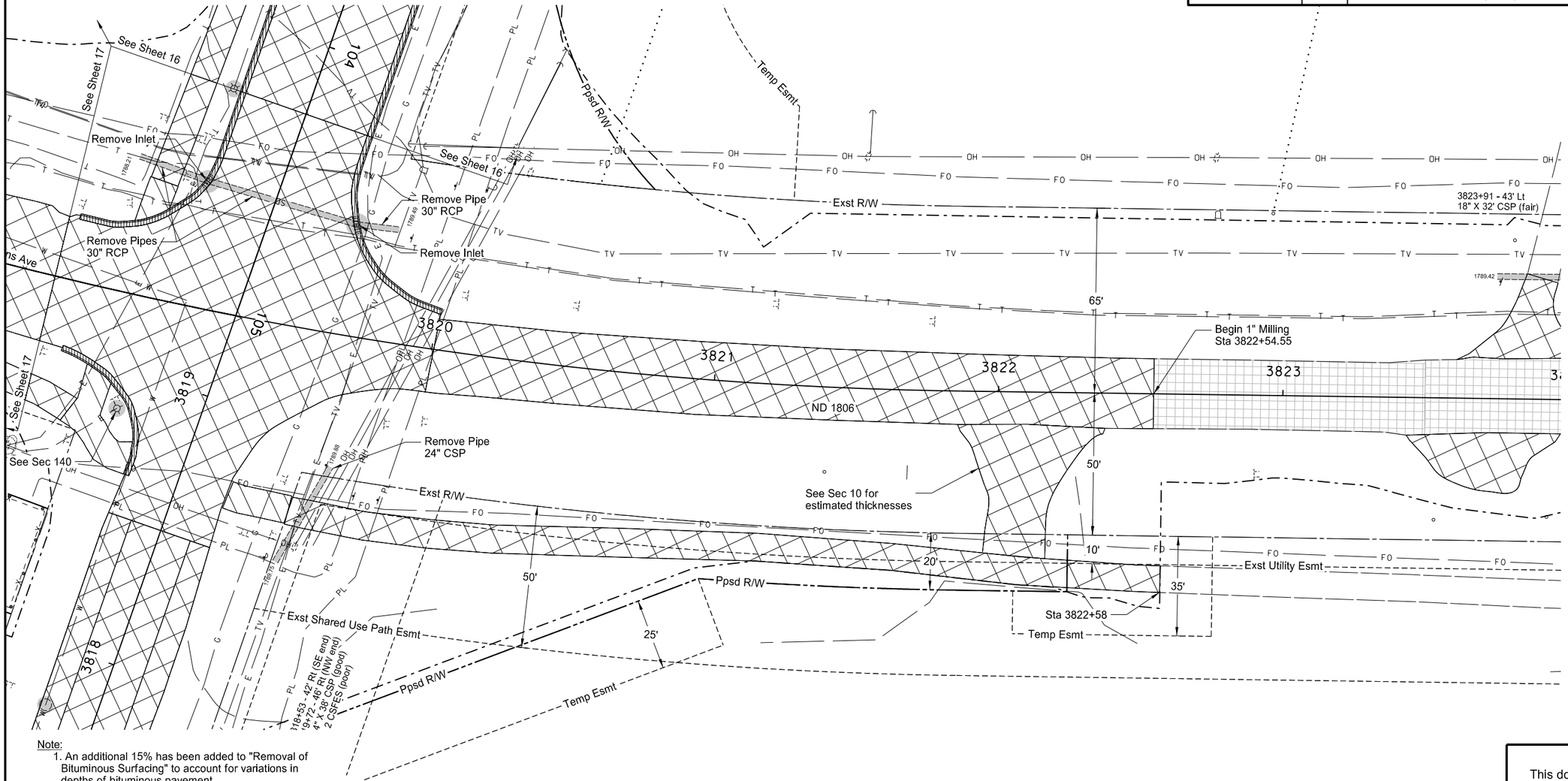
ND 1806

Removals

Sta 3814+00 to Sta 3818+50 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	9



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3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT		
		Sta 3818+50 to Sta 3823+50	84	SY
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 104+25 Rt to Sta 104+84 Rt	83	LF
		Sta 104+25 Lt to Sta 104+74 Lt	77	LF
		Sta 3818+65 Lt to Sta 3818+98 Lt	57	LF
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		Sta 3818+50 to Sta 3822+55	1,352	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
		Sta 104+53~44' Lt to Sta 104+56~30' Lt	15	LF
		Sta 104+56~30' Lt to Sta 104+59~25' Rt	55	LF
		Sta 104+59~25' Rt to Sta 104+58~50 Rt	26	LF
		Sta 3818+53~42' Rt to Sta 3819+72~46' Rt	38	LF

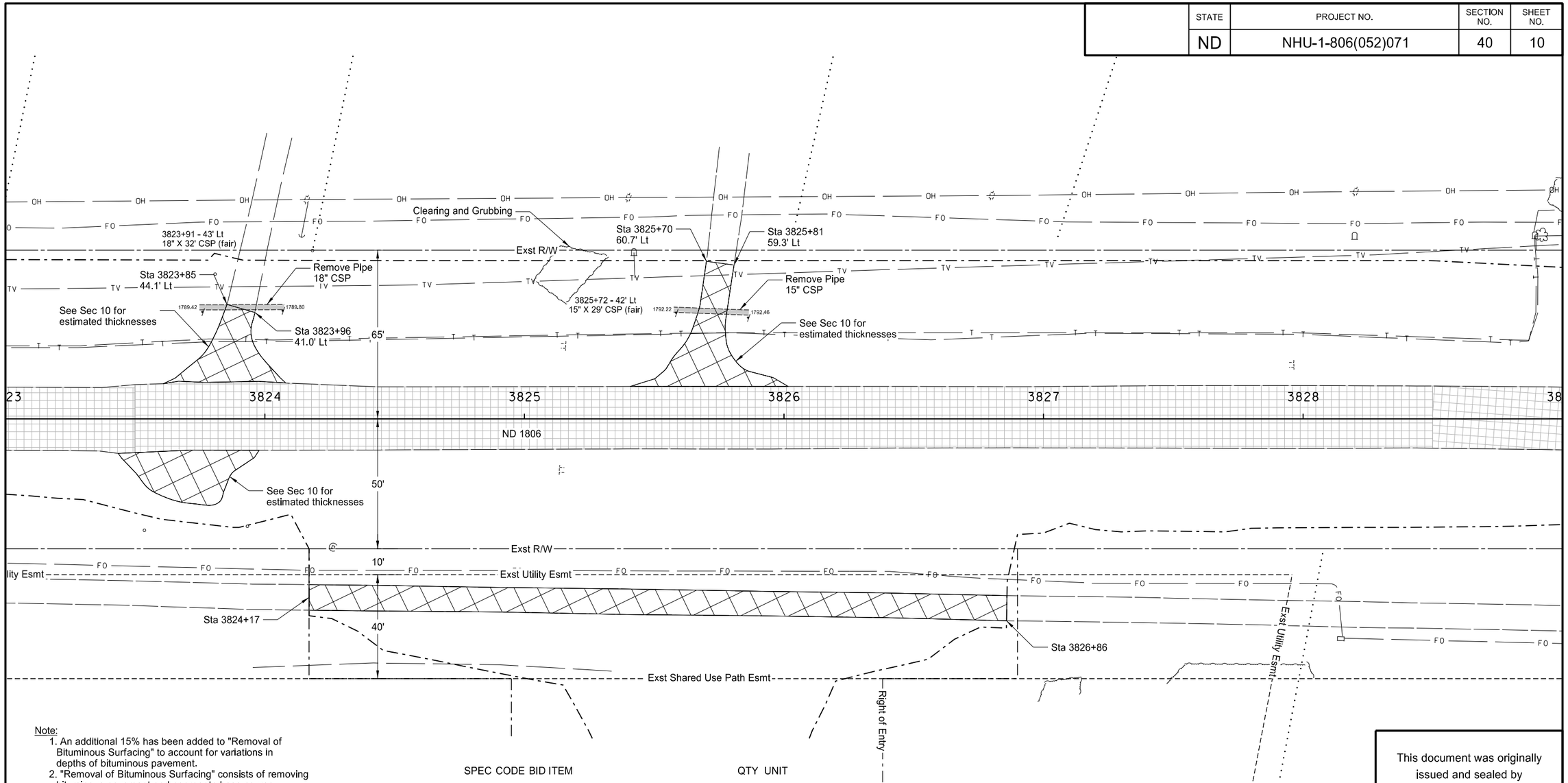
SPEC	CODE	BID ITEM	QTY	UNIT
202	0230	REMOVAL OF INLETS		
		Sta 104+56~30' Lt	1	EA
		Sta 104+59~25' Rt	1	EA
411	0105	MILLING PAVEMENT SURFACE		
		Sta 3822+55 to Sta 3823+50	259	SY

ND 1806

Removals

Sta 3818+50 to Sta 3823+50 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	40	10



Note:

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2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		Sta 3823+50 to Sta 3828+50	240	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES		
		Sta 3823+75~43' Lt to Sta 3824+07~43' Lt	32	LF
		Sta 3825+57~42' Lt to Sta 3825+87~41' Lt	29	LF
411	0105	MILLING PAVEMENT SURFACE		
		Sta 3823+50 to Sta 3828+50	1,352	SY

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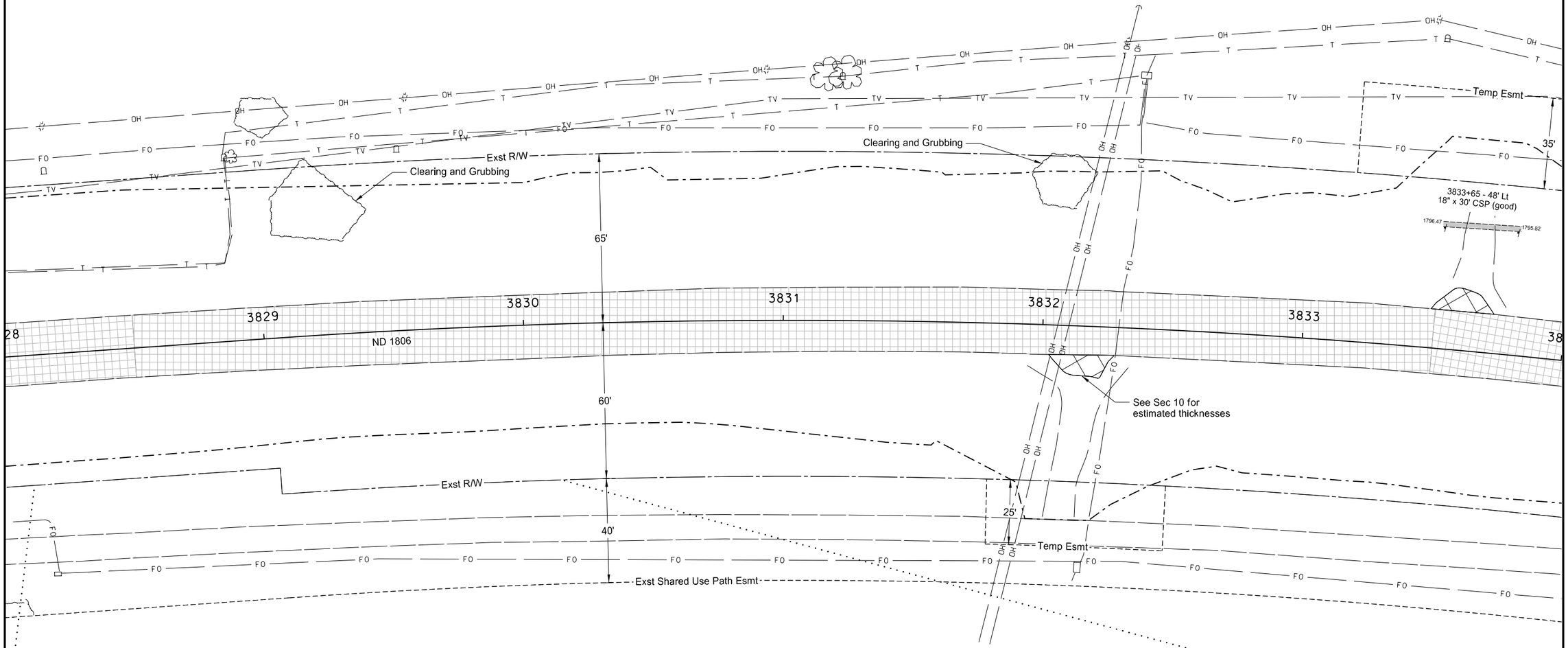
ND 1806

Removals

Sta 3823+50 to Sta 3828+50 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	11



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

SPEC	CODE	BID ITEM	QTY	UNIT
202	0135	REMOVAL OF BITUMINOUS SURFACING Sta 3828+50 to Sta 3833+50	11	TON
411	0105	MILLING PAVEMENT SURFACE Sta 3828+50 to Sta 3833+50	1,369	SY

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

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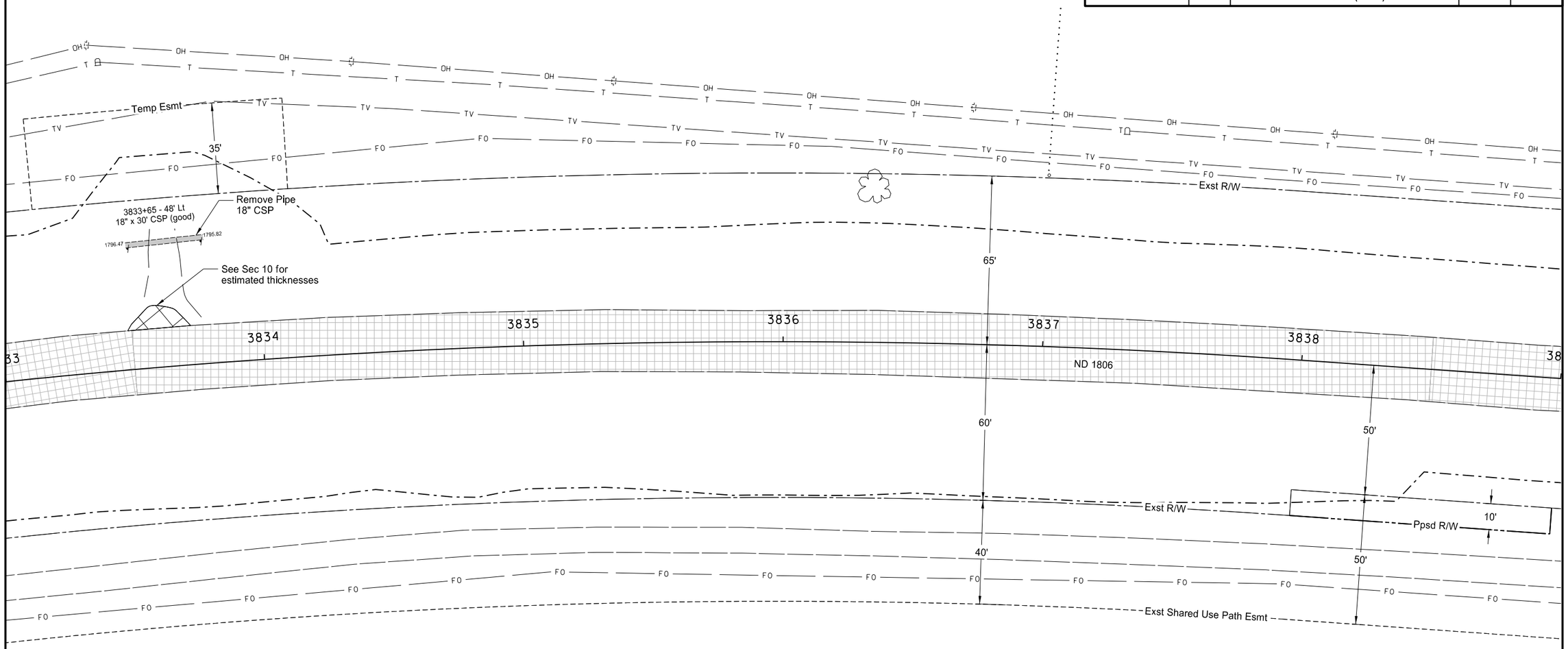
ND 1806

Removals

Sta 3828+50 to Sta 3833+50 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	12



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE
  1" MILLING DEPTH

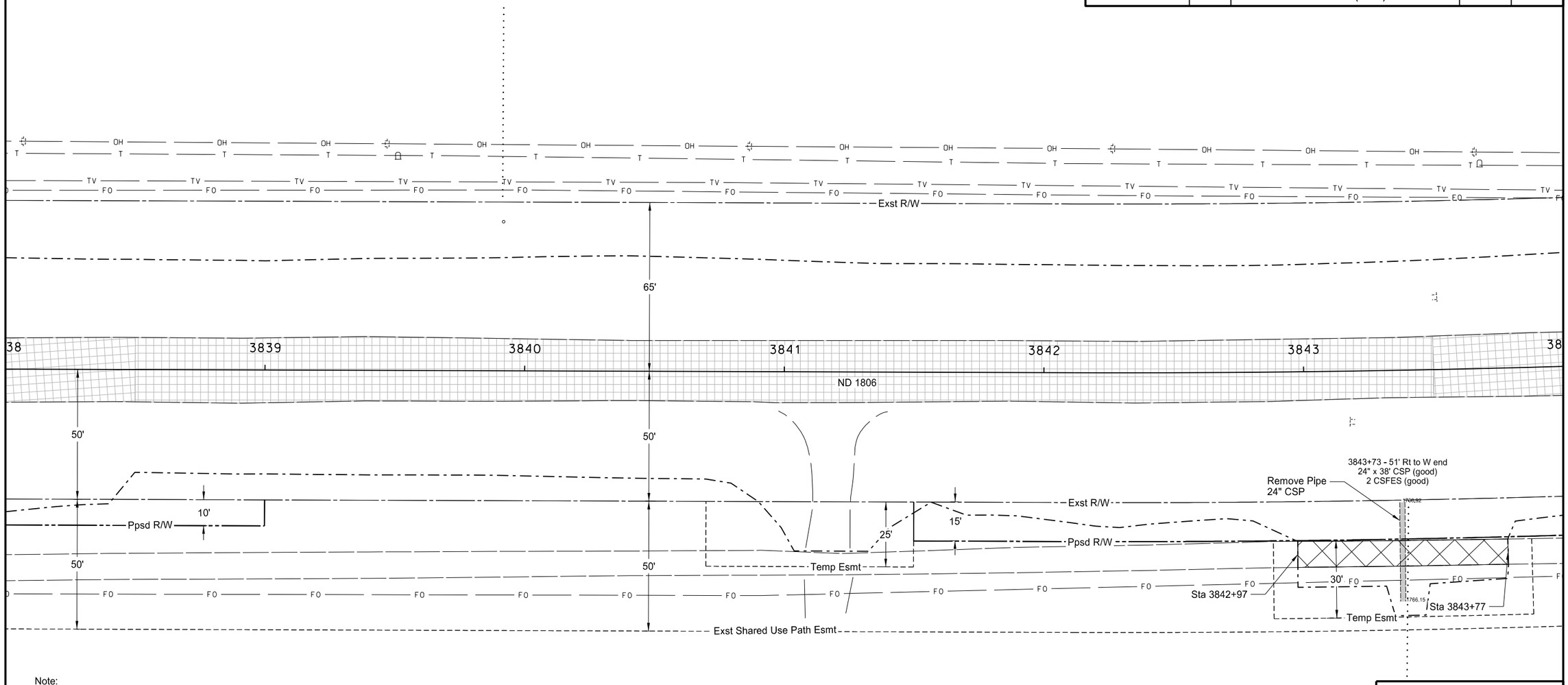
SPEC	CODE	BID ITEM	QTY	UNIT
202	0135	REMOVAL OF BITUMINOUS SURFACING Sta 3833+50 to Sta 3838+50	10	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 3833+50~48' Lt to Sta 3833+80~49' Lt	30	LF
411	0105	MILLING PAVEMENT SURFACE Sta 3833+50 to Sta 3838+50	1,356	SY

ND 1806

Removals

Sta 3833+50 to Sta 3838+50 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	13



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

SPEC	CODE	BID ITEM	QTY	UNIT
202	0135	REMOVAL OF BITUMINOUS SURFACING Sta 3842+97 Rt to Sta 3843+77 Rt	34	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 3843+37~51' Rt to Sta 3843+37~89' Rt	38	LF
411	0105	MILLING PAVEMENT SURFACE Sta 3838+50 to Sta 3843+50	1,329	SY

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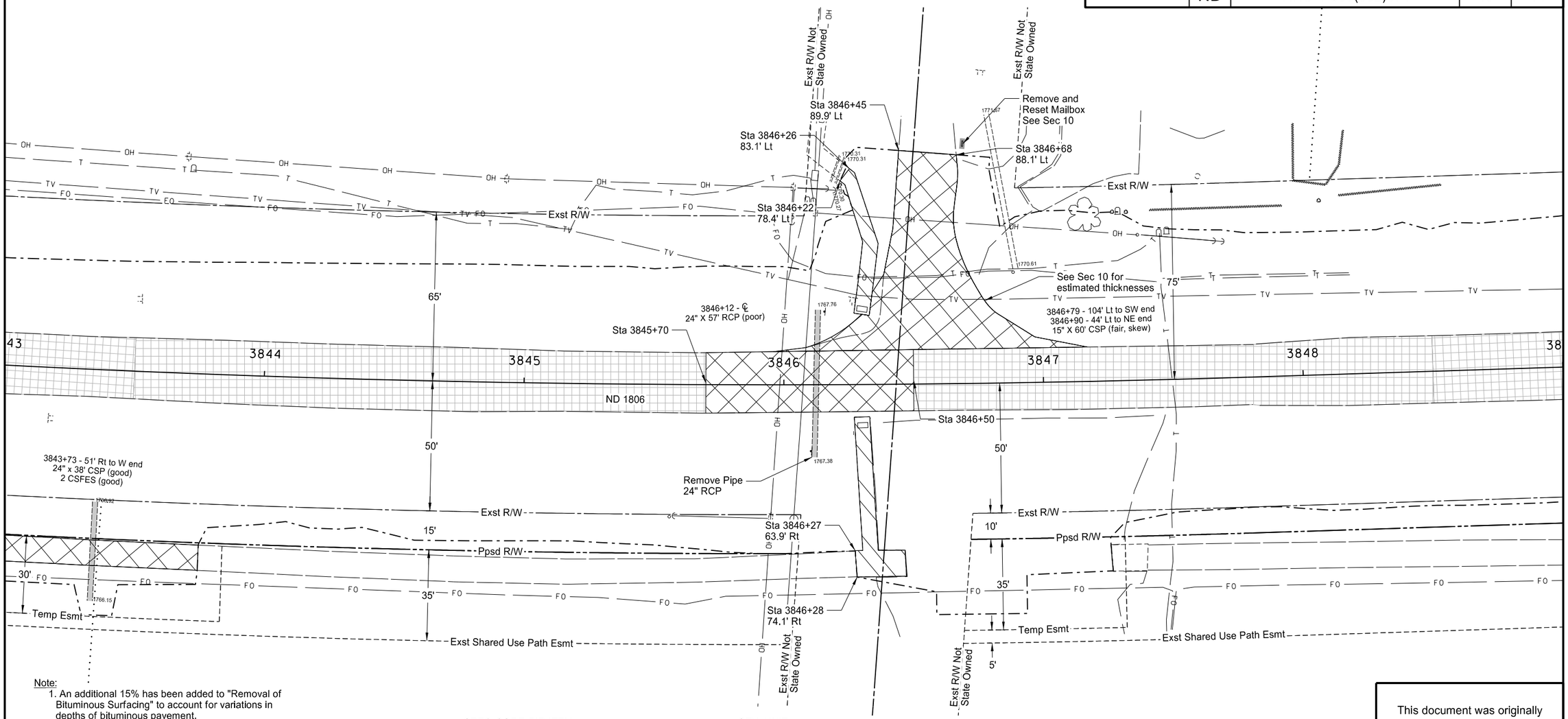
ND 1806

Removals

Sta 3838+50 to Sta 3843+50 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	14



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

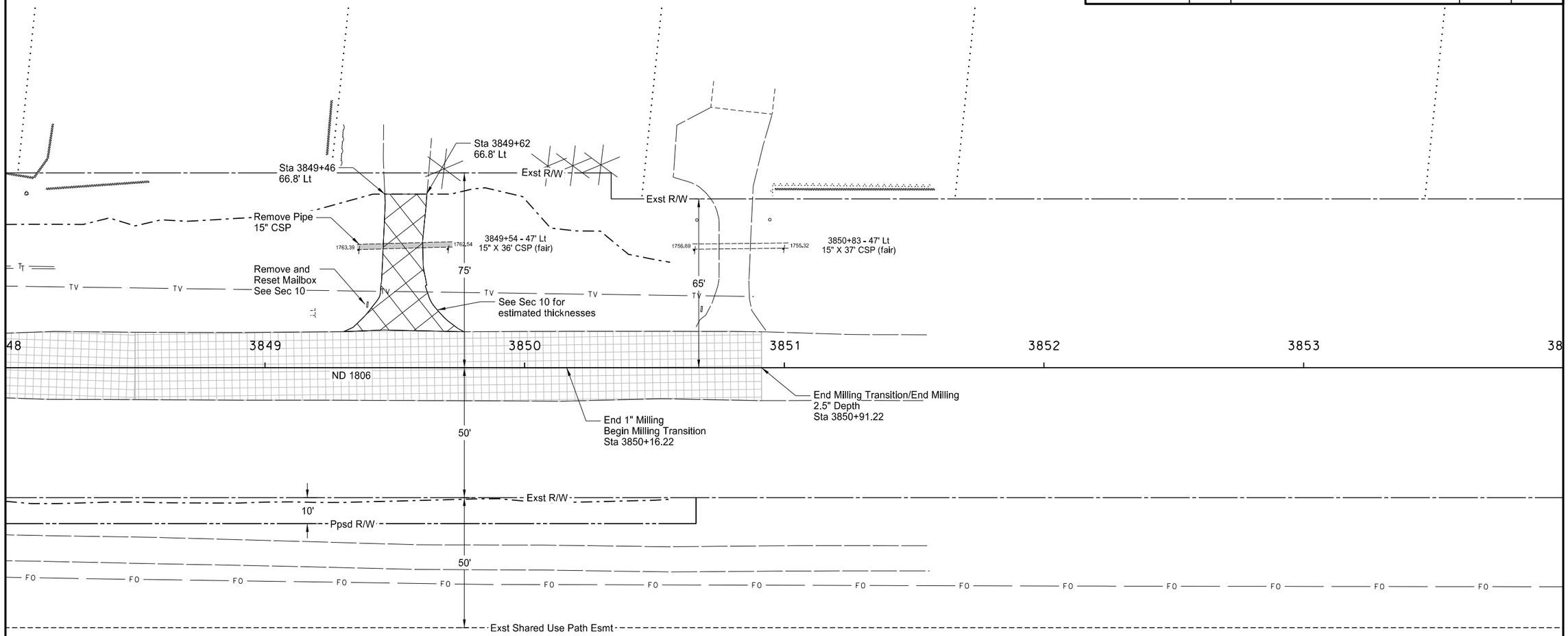
SPEC	CODE	BID ITEM	QTY	UNIT
202	0114	REMOVAL OF CONCRETE PAVEMENT Sta 3843+50 to Sta 3848+50	90	SY
202	0135	REMOVAL OF BITUMINOUS SURFACING Sta 3843+50 to Sta 3848+50	262	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 3846+12~28' Rt to Sta 3846+13~29' Lt	57	LF
411	0105	MILLING PAVEMENT SURFACE Sta 3843+50 to Sta 3848+50	1,126	SY

ND 1806

Removals

Sta 3843+50 to Sta 3848+50 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	15



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

SPEC	CODE	BID ITEM	QTY	UNIT
202	0135	REMOVAL OF BITUMINOUS SURFACING Sta 3848+50 to Sta 3850+91	63	TON
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES Sta 3849+35~46' Lt to Sta 3849+72~48' Lt	38	LF
411	0105	MILLING PAVEMENT SURFACE Sta 3848+50 to Sta 3850+91	707	SY

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

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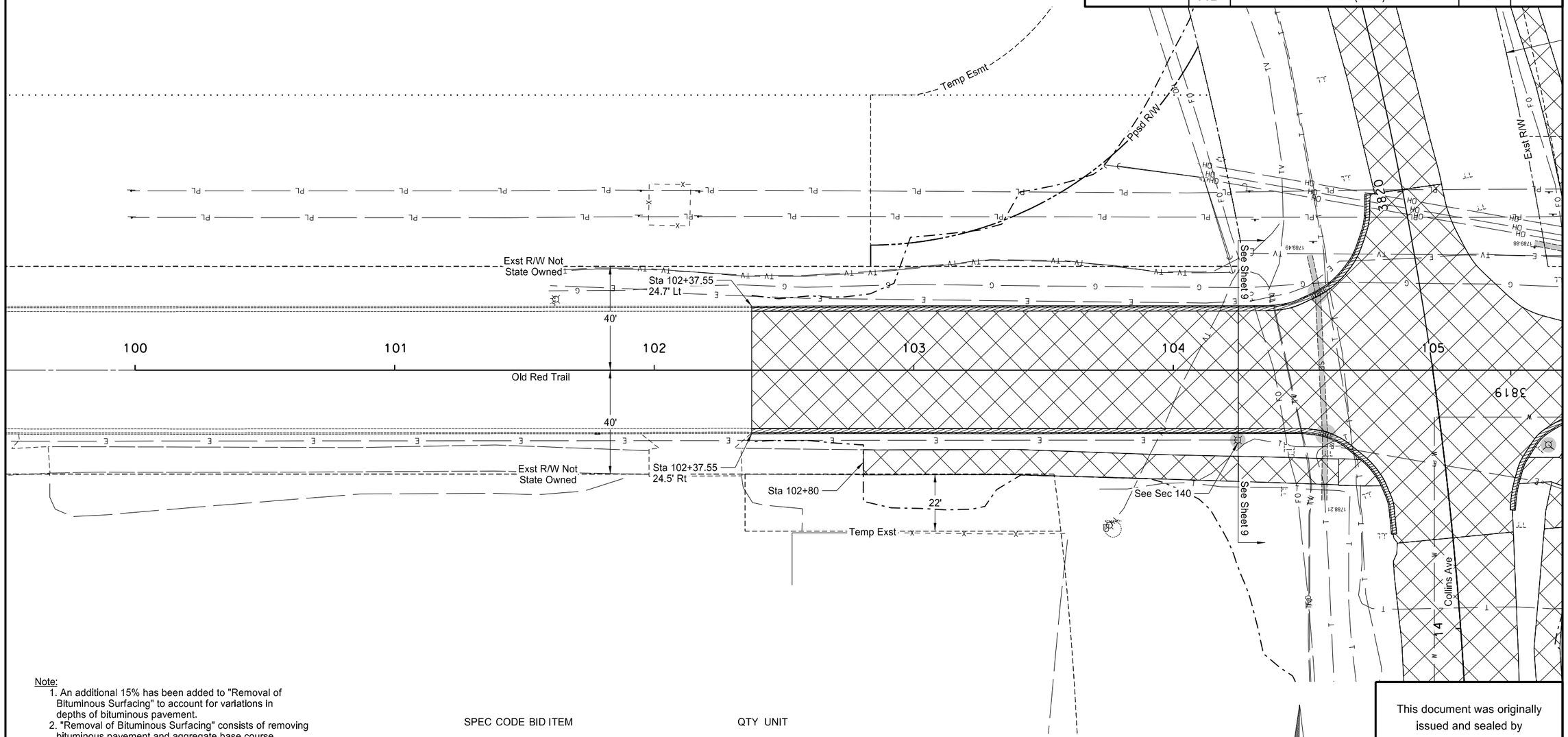
ND 1806

Removals

Sta 3848+50 to Sta 3853+50 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	16



Note:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

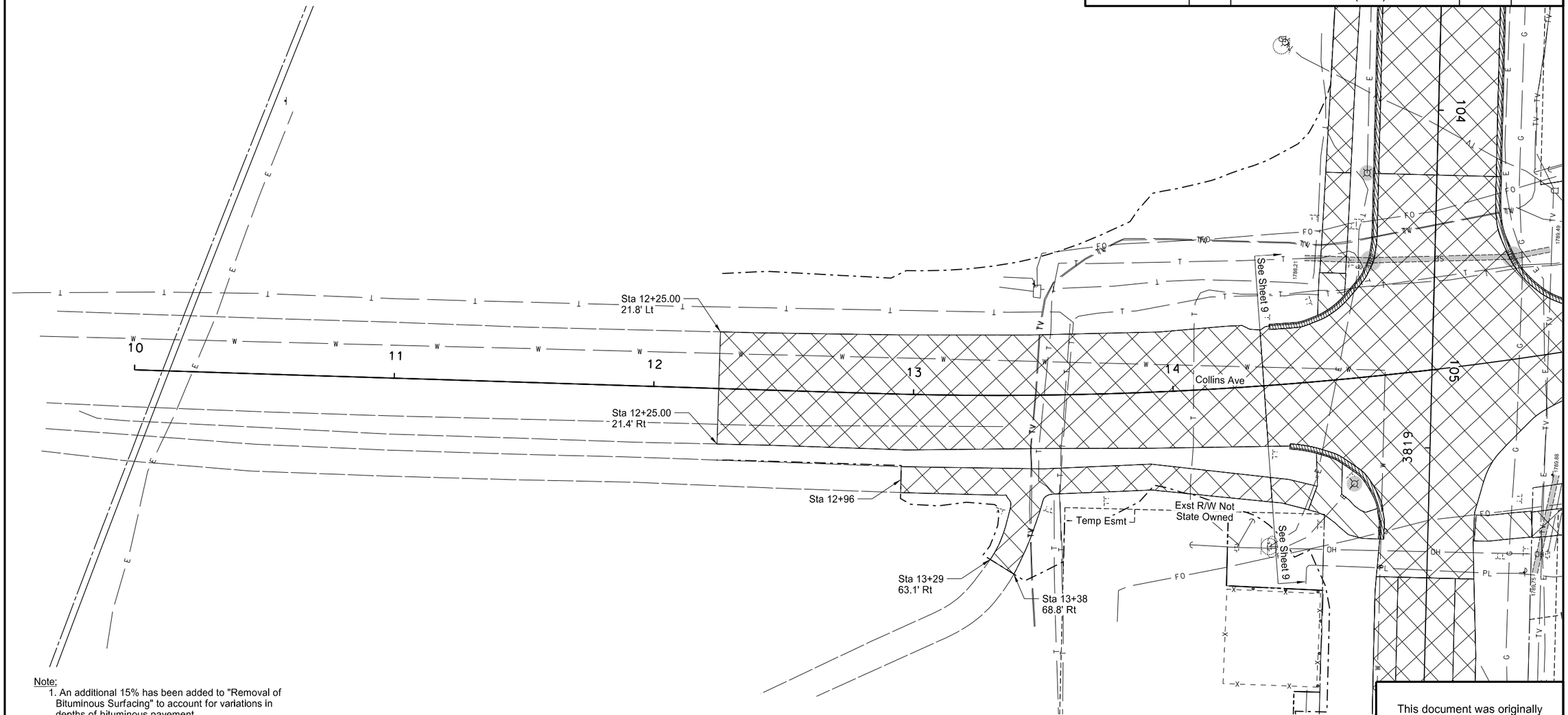
SPEC	CODE	BID ITEM	QTY	UNIT
202	0130	REMOVAL OF CURB & GUTTER		
		Sta 102+38 Lt to Sta 104+25 LT	188	LF
		Sta 102+38 Rt to Sta 104+25 Rt	188	LF
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		Sta 102+38 to Sta 104+25	645	TON

ND 1806

Removals

Sta 100+00 to Sta 104+25 (EXORT)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	40	17



Note;
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.
3. Bottom 2" of aggregate base included in quantity for "Common Excavation - Type A".

SPEC CODE	BID ITEM	QTY	UNIT
202 0135	REMOVAL OF BITUMINOUS SURFACING		
	Sta 12+25 to Sta 14+35	769	TON

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 1" MILLING DEPTH

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ND 1806

Removals

Sta 10+00 to Sta 14+35 (EXCOL)

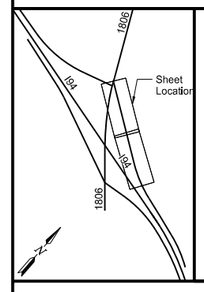
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(200)153	40	18

SPEC CODE	BID ITEM	QTY	UNIT
411 0105	MILLING PAVEMENT SURFACE		
	Sta 3012+50.12 to Sta 3023+42	3,425	SY

Notes:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 2" MILLING DEPTH



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ND 1806 Interchange

Removals

Northeast Ramp
Sta 3011+50 to Sta 3023+84.76 (EX94NER)

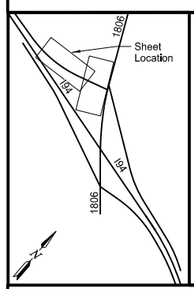
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(200)153	40	19

SPEC	CODE	BID ITEM	QTY	UNIT
411	0105	MILLING PAVEMENT SURFACE		
		Sta 4000+81 to Sta 4007+93.04	1,863	SY

Notes:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 2" MILLING DEPTH



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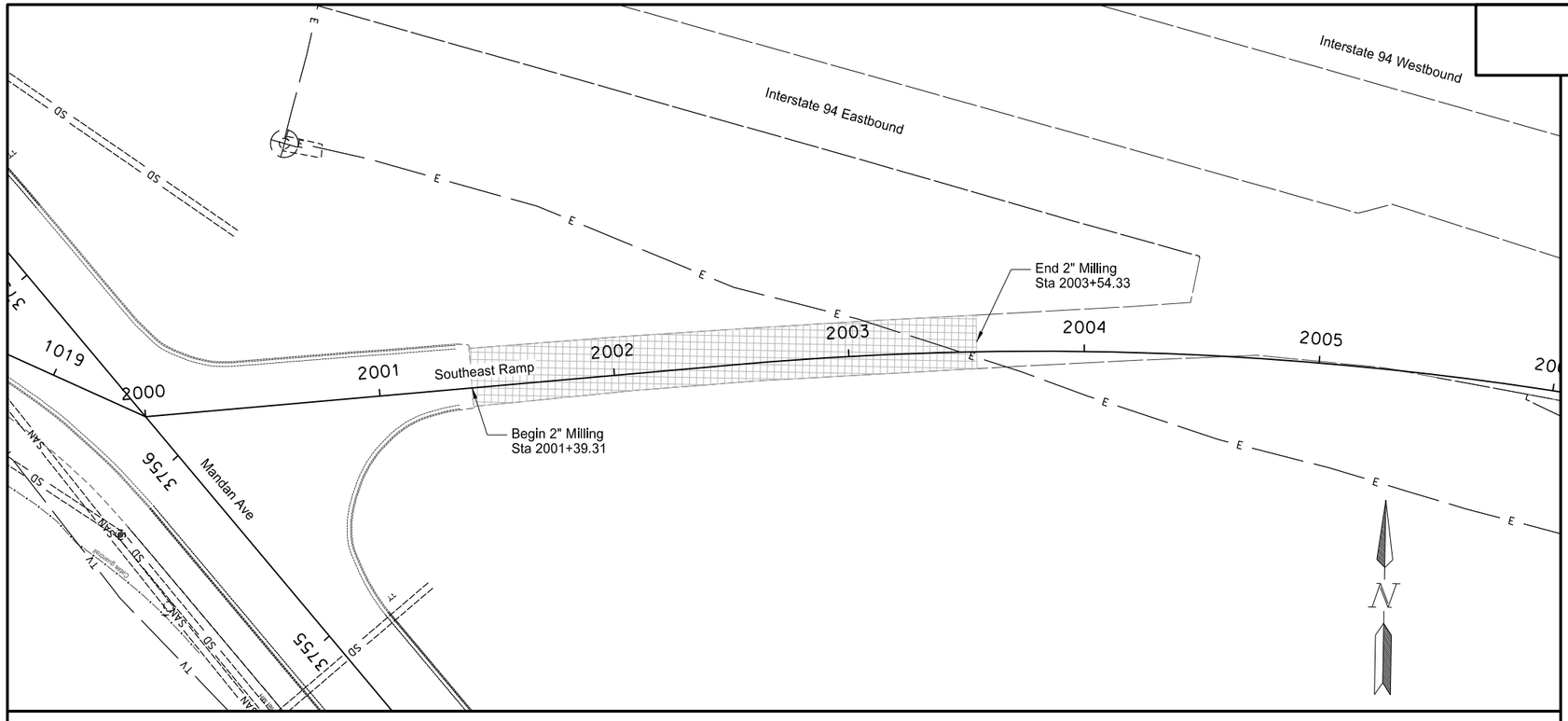
ND 1806 Interchange

Removals

Northwest Ramp
Sta 4000+50 to Sta 4009+00 (EX94NWR)



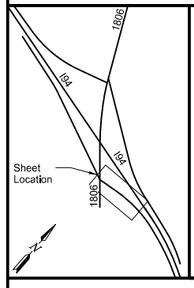
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(200)153	40	20

SPEC CODE	BID ITEM	QTY	UNIT
411 0105	MILLING PAVEMENT SURFACE		
	Sta 2001+39.31 to Sta 2003+54.33	554	SY

Notes:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 2" MILLING DEPTH



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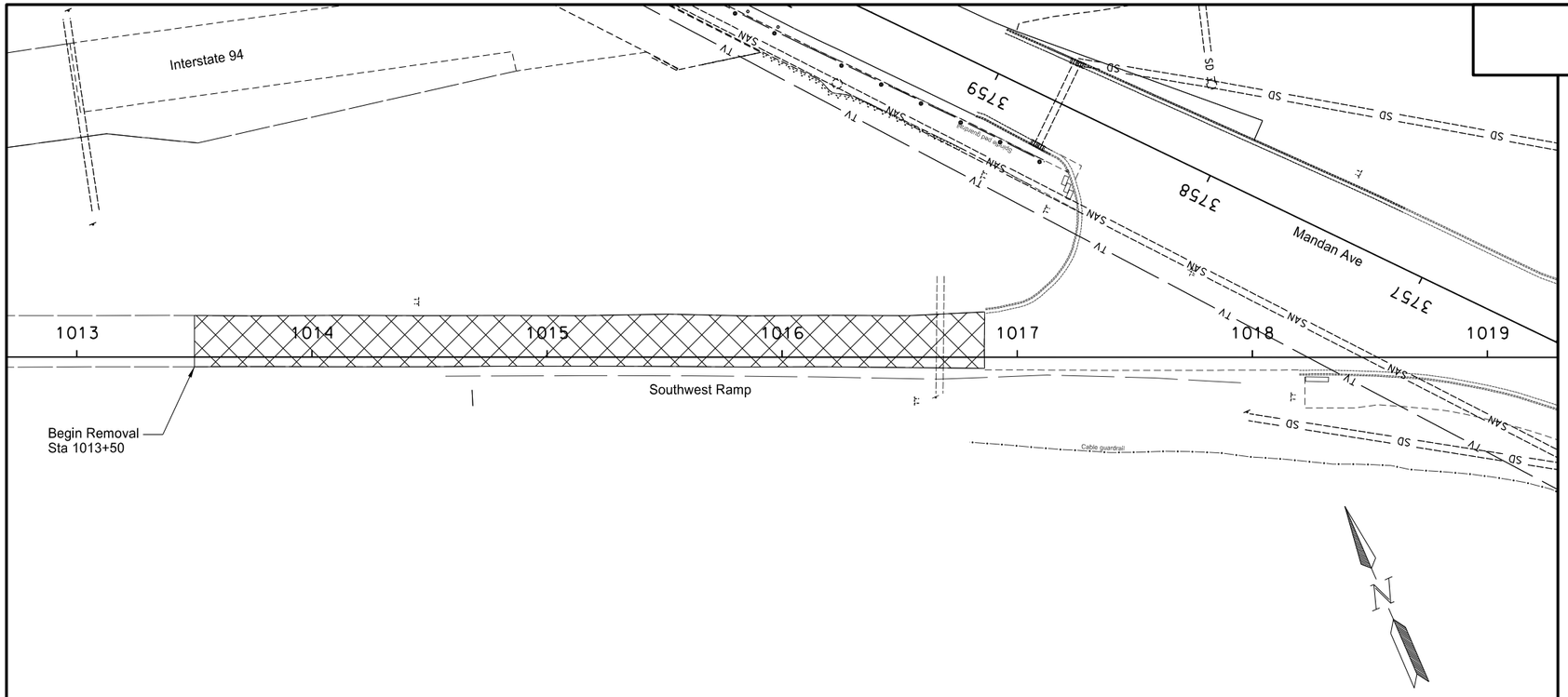
ND 1806 Interchange

Removals

Southeast Ramp
Sta 2000+00 to Sta 2005+50 (EX94SER)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	IM-1-094(200)153	40	21



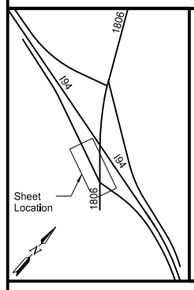
SPEC CODE BID ITEM QTY UNIT

202 0135 REMOVAL OF BITUMINOUS SURFACING
Sta 1013+50 to Sta 1016+86 1,115 TON

Notes:
1. An additional 15% has been added to "Removal of Bituminous Surfacing" to account for variations in depths of bituminous pavement.
2. "Removal of Bituminous Surfacing" consists of removing bituminous pavement and aggregate base course.

LEGEND

- PIPE REMOVAL
- REMOVAL OF CURB & GUTTER
- REMOVAL OF BITUMINOUS SURFACING & AGGREGATE BASE
- REMOVAL OF CONCRETE
- MILLING PAVEMENT SURFACE 2" MILLING DEPTH



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ND 1806 Interchange

Removals

Southwest Ramp
Sta 1013+00 to Sta 1019+00 (EX94SWR)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	50	1

HYDRAULIC DATA FOR NHU-1-806(052)071 (A)														
LOCATION	BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	EXISTING PIPE	PROPOSED PIPE SIZE	DRAINAGE AREAS (ACRES)	25-YEAR DATA				100-YEAR DATA	
								DESIGN DISCHARGE (CFS)	DESIGN HEADWATER (FT)	DESIGN VELOCITY (FPS)	DESIGN STAGE (NAVD 88)	DISCHARGE (CFS)	STAGE (NAVD 88)
N 1806 CL Culvert	3846+10.00	32.24' LT	3846+10.00	32.57' RT	24" x 57' RCP	36" (B)	54.97	51.00	4.07	8.69	1773.37	65.50	1774.69

(A) Hydraulic data provided is for smooth-walled type conduits
(B) Culvert diameter given at this location is the NDDOT Policy minimum diameter and exceeds hydraulic requirements

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ND 1806

Hydraulic Data

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	50	2

INLET NO. . . . 200A (w/ 10 LF 12" SD)
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3780+93.0~21.0' Lt ①
GRATE ELEV 1705.06
BASE ELEV. 1698.86
INVERT ELEV. 1699.07
'H' DIST. . . . . 5.50 FT

15 IN CONDUIT	NW	1699.07

INLET NO. . . . 201A
TYPE. . . . . INLET SPCL-TYPE 2 48IN
GRATE STYLE. . . . L or V
STA. . . . . 3783+09.0~24.3' Lt ①
GRATE ELEV 1705.49
BASE ELEV. 1700.29
INVERT ELEV. 1701.85
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	NE	1701.85
15 IN CONDUIT	NW	1701.85

INLET NO. . . . 203A
TYPE. . . . . INLET-TYPE 2 DBL
GRATE STYLE. . . . L or V
STA. . . . . 3785+64.0~21.0' Lt ①
GRATE ELEV 1711.00
BASE ELEV. 1706.30
INVERT ELEV. 1706.99
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1706.99

MH NO. . . . 206 48 IN
STA. . . . . 3788+69.0~12.0' Rt ①
RIM ELEV 1718.91
BASE ELEV. 1712.61
INVERT ELEV. 1712.88
RISER (48 IN) . . . . . 4.40 FT
CASTING STYLE. . . (Z)

24 IN CONDUIT	E	1712.88
24 IN CONDUIT	W	1712.88
15 IN CONDUIT	S	1713.63

MH NO. . . . 208 48 IN
STA. . . . . 3789+64.0~12.0' Rt ①
RIM ELEV 1722.20
BASE ELEV. 1716.30
INVERT ELEV. 1716.98
RISER (48 IN) . . . . . 4.00 FT
CASTING STYLE. . . (Z)

18 IN CONDUIT	E	1716.98
18 IN CONDUIT	W	1716.98
15 IN CONDUIT	S	1717.23
15 IN CONDUIT	N	1717.78

INLET NO. . . . 200B
TYPE. . . . . INLET SPCL-TYPE 2 72IN
GRATE STYLE. . . . D
STA. . . . . 3781+35.2~27.5' Rt ①
GRATE ELEV 1704.83
BASE ELEV. 1695.73
INVERT ELEV. 1696.07
'H' DIST. . . . . 7.70 FT

27 IN CONDUIT	SE	1696.07
27 IN CONDUIT	NW	1696.07

INLET NO. . . . 201B (w/ 10 LF 12" SD)
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3784-07.0~24.0' Lt ①
GRATE ELEV 1707.25
BASE ELEV. 1702.55
INVERT ELEV. 1703.82
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	SE	1703.82

INLET NO. . . . 203B
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3785+64.0~21.0' Rt ①
GRATE ELEV 1711.00
BASE ELEV. 1706.30
INVERT ELEV. 1706.80
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	S	1706.80

INLET NO. . . . 206A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3788+69.0~21.0' Lt ①
GRATE ELEV 1718.68
BASE ELEV. 1713.98
INVERT ELEV. 1714.73
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1714.73

INLET NO. . . . 208A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3789+64.0~21.0' Lt ①
GRATE ELEV 1721.98
BASE ELEV. 1717.28
INVERT ELEV. 1718.84
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1718.84

INLET NO. . . . 200C
TYPE. . . . . INLET SPCL-TYPE 2 72IN
GRATE STYLE. . . . L or V
STA. . . . . 3781+71.0~28.0' Rt ①
GRATE ELEV 1705.07
BASE ELEV. 1695.87
INVERT ELEV. 1696.19
'H' DIST. . . . . 7.80 FT

27 IN CONDUIT	SE	1696.19
30 IN CONDUIT	NW	1696.19
18 IN CONDUIT	E	1696.19
18 IN CONDUT	W	1696.81

MH NO. . . . 202 60 IN
STA. . . . . 3783+87.3~32.0' Rt ①
RIM ELEV 1707.96
BASE ELEV. 1699.96
INVERT ELEV. 1700.25
RISER (60 IN) . . . . . 6.30 FT
CASTING STYLE. . . (Y)

30 IN CONDUIT	SE	1700.25
24 IN CONDUIT	W	1700.75
18 IN CONDUIT	N	1701.06

MH NO. . . . 204 48 IN
STA. . . . . 3786+28.0~12.0' Rt ①
RIM ELEV 1713.23
BASE ELEV. 1707.13
INVERT ELEV. 1707.39
RISER (48 IN) . . . . . 4.20 FT
CASTING STYLE. . . (Z)

24 IN CONDUIT	E	1707.39
24 IN CONDUIT	W	1707.39
15 IN CONDUIT	S	1708.14

MH NO. . . . 207 48 IN
STA. . . . . 3788+96.0~12.0' Rt ①
RIM ELEV 1719.68
BASE ELEV. 1713.68
INVERT ELEV. 1713.96
RISER (48 IN) . . . . . 4.10 FT
CASTING STYLE. . . (Z)

24 IN CONDUIT	E	1713.96
18 IN CONDUIT	W	1714.46
18 IN CONDUIT	S	1714.46

INLET NO. . . . 208B
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3789+64.0~21.0' Rt ①
GRATE ELEV 1721.98
BASE ELEV. 1717.28
INVERT ELEV. 1718.23
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	S	1718.23

INLET NO. . . . 200D
TYPE. . . . . INLET-TYPE 2 DBL
GRATE STYLE. . . . D
STA. . . . . 3781+89.0~21.0' Lt ①
GRATE ELEV 1704.81
BASE ELEV. 1697.11
INVERT ELEV. 1697.32
'H' DIST. . . . . 7.00 FT

18 IN CONDUIT	E	1697.32
18 IN CONDUIT	SW	1697.32
15 IN CONDUIT	SE	1697.57

INLET NO. . . . 202A
TYPE.INLET SPCL-CB-6IN BEEHIVE 48IN
GRATE STYLE. . . . 6IN BEEHIVE
STA. . . . . 3783+93.7~53.4' Rt ①
GRATE ELEV 1704.98
BASE ELEV. 1699.48
INVERT ELEV. 1701.27
'H' DIST. . . . . 4.00 FT

18 IN CONDUIT	S	1701.27
15 IN CONDUIT	W	1701.52

INLET NO. . . . 204A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3786+28.0~21.0' Lt ①
GRATE ELEV 1712.99
BASE ELEV. 1708.29
INVERT ELEV. 1709.05
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1709.05

INLET NO. . . . 207A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3788+96.6~43.5' Lt ①
GRATE ELEV 1719.99
BASE ELEV. 1714.69
INVERT ELEV. 1714.97
'H' DIST. . . . . 4.60 FT

18 IN CONDUIT	N	1714.97
18 IN CONDUIT	W	1715.07

MH NO. . . . 210 48 IN
STA. . . . . 3793+64.0~12.0' Rt ①
RIM ELEV 1738.50
BASE ELEV. 1732.60
INVERT ELEV. 1733.20
RISER (48 IN) . . . . . 4.00 FT
CASTING STYLE. . . (Z)

18 IN CONDUIT	E	1733.20
18 IN CONDUIT	W	1733.30
15 IN CONDUIT	S	1733.45
15 IN CONDUIT	N	1733.89

INLET NO. . . . 200E
TYPE. . . . . INLET-CB-6IN BEEHIVE
GRATE STYLE. . . . 6IN BEEHIVE
STA. . . . . 3781+89.0~30.0' Lt ①
GRATE ELEV 1704.10
BASE ELEV. 1697.20
INVERT ELEV. 1697.42
'H' DIST. . . . . 5.90 FT

18 IN CONDUIT	NE	1697.42

INLET NO. . . . 202B
TYPE. . . . . INLET-CB-6IN BEEHIVE
GRATE STYLE. . . . 6IN BEEHIVE
STA. . . . . 3784+92.0~36.0' Rt ①
GRATE ELEV 1708.33
BASE ELEV. 1703.33
INVERT ELEV. 1704.00
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	E	1704.00

MH NO. . . . 205 48 IN
STA. . . . . 3787+08.0~12.0' Rt ①
RIM ELEV 1715.11
BASE ELEV. 1708.91
INVERT ELEV. 1709.21
RISER (48 IN) . . . . . 4.30 FT
CASTING STYLE. . . (Z)

24 IN CONDUIT	E	1709.21
24 IN CONDUIT	W	1709.21
15 IN CONDUIT	S	1709.96

INLET NO. . . . 207B
TYPE. . . . . INLET SPCL-TYPE 2 48IN
GRATE STYLE. . . . L or V
STA. . . . . 3789+35.6~43.5' Lt ①
GRATE ELEV 1721.13
BASE ELEV. 1715.03
INVERT ELEV. 1715.26
'H' DIST. . . . . 4.90 FT

18 IN CONDUIT	E	1715.26
15 IN CONDUIT	NW	1715.51

INLET NO. . . . 210A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3793+64.0~21.0' Lt ①
GRATE ELEV 1738.26
BASE ELEV. 1733.56
INVERT ELEV. 1734.32
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1734.32

MH NO. . . . 201 72 IN
STA. . . . . 3782+95.3~43.3' Rt ①
RIM ELEV 1705.99
BASE ELEV. 1697.99
INVERT ELEV. 1698.36
RISER (72 IN) . . . . . 6.30 FT
CASTING STYLE. . . (Y)

30 IN CONDUIT	SE	1698.36
30 IN CONDUIT	NW	1698.46
15 IN CONDUIT	SW	1701.50

MH NO. . . . 203 60 IN
STA. . . . . 3785+64.0~12.0' Rt ①
RIM ELEV 1711.23
BASE ELEV. 1705.13
INVERT ELEV. 1705.45
RISER (60 IN) . . . . . 4.00 FT
CASTING STYLE. . . (Z)

24 IN CONDUIT	E	1705.45
24 IN CONDUIT	W	1705.45
15 IN CONDUIT	S	1706.20
15 IN CONDUIT	N	1706.37

INLET NO. . . . 205A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3787+08.0~21.0' Lt ①
GRATE ELEV 1714.87
BASE ELEV. 1710.17
INVERT ELEV. 1710.93
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1710.93

INLET NO. . . . 207C
TYPE. . . . . INLET-CB-6IN BEEHIVE
GRATE STYLE. . . . 6IN BEEHIVE
STA. . . . . 3789+48.0~32.9' Lt ①
GRATE ELEV 1720.08
BASE ELEV. 1715.08
INVERT ELEV. 1715.73
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	SE	1715.73

INLET NO. . . . 210B
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3793+64.0~21.0' Rt ①
GRATE ELEV 1738.26
BASE ELEV. 1733.56
INVERT ELEV. 1734.31
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	S	1734.31

Chain	No.
PR1806	①
PRRBNEEOP	②
PRRBNWEOP	③
PRRBSWEOP	④
PRRBSEEOP	⑤
PRSD218-221	⑥

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ND 1806

Inlet and Manhole Summary

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	50	3

MH NO. . . . 211 48 IN
STA. . . . . 3797+64.0~12.0' Rt ①
RIM ELEV 1742.07
BASE ELEV. 1736.17
INVERT ELEV. 1736.83
RISER (48 IN) . . . . . 4.00 FT
CASTING STYLE. . . (Z)

18 IN CONDUIT	E	1736.83
18 IN CONDUIT	W	1736.83
15 IN CONDUIT	S	1737.08
15 IN CONDUIT	N	1737.45

INLET NO. . . . 211A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3797+64.0~21.0' Lt ①
GRATE ELEV 1741.83
BASE ELEV. 1737.13
INVERT ELEV. 1737.88
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1737.88

INLET NO. . . . 211B
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3797+64.0~21.0' Rt ①
GRATE ELEV 1741.83
BASE ELEV. 1737.13
INVERT ELEV. 1737.88
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	S	1737.88

MH NO. . . . 212 48 IN
STA. . . . . 3801+64.0~12.0' Rt ①
RIM ELEV 1746.08
BASE ELEV. 1739.78
INVERT ELEV. 1740.06
RISER (48 IN) . . . . . 4.40 FT
CASTING STYLE. . . (Z)

18 IN CONDUIT	E	1740.06
18 IN CONDUIT	W	1740.16
15 IN CODNUIT	N	1741.67
15 IN CONDUIT	S	1741.76

INLET NO. . . . 212A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3801+64.0~21.0' Lt ①
GRATE ELEV 1745.84
BASE ELEV. 1741.14
INVERT ELEV. 1742.70
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1742.70
15 IN CONDUIT	SW	1742.70

INLET NO. . . . 212B
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3801+64.0~21.0' Rt ①
GRATE ELEV 1745.84
BASE ELEV. 1741.14
INVERT ELEV. 1742.09
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	S	1742.09

MH NO. . . . 213 48 IN
STA. . . . . 3804+40.0~12.0' Rt ①
RIM ELEV 1752.44
BASE ELEV. 1746.54
INVERT ELEV. 1746.93
RISER (48 IN) . . . . . 4.00 FT
CASTING STYLE. . . (Z)

18 IN CONDUIT	E	1746.93
15 IN CONDUIT	S	1747.18
15 IN CONDUIT	N	1747.18

INLET NO. . . . 213A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3804+40.0~21.0' Lt ①
GRATE ELEV 1752.21
BASE ELEV. 1747.51
INVERT ELEV. 1748.52
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1748.52

INLET NO. . . . 213B
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3804+40.0~21.0' Rt ①
GRATE ELEV 1752.21
BASE ELEV. 1747.41
INVERT ELEV. 1747.63
'H' DIST. . . . . 4.10 FT

15 IN CONDUIT	S	1747.63

INLET NO. . . . 214A
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3807+14.0~21.0' Lt ①
GRATE ELEV 1762.02
BASE ELEV. 1757.32
INVERT ELEV. 1759.02
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1759.02

INLET NO. . . . 214B
TYPE. . . . . INLET SPCL-TYPE 2 48IN
GRATE STYLE. . . . L or V
STA. . . . . 3807+14.0~21.0' Rt ①
GRATE ELEV 1762.02
BASE ELEV. 1756.82
INVERT ELEV. 1758.81
'H' DIST. . . . . 4.00 FT

18 IN CONDUIT	NE	1758.81
15 IN CONDUIT	S	1758.81

INLET NO. . . . 215A
TYPE. . . . . INLET SPCL-TYPE 2 48IN
GRATE STYLE. . . . L or V
STA. . . . . 3809+39.0~21.0' Rt ①
GRATE ELEV 1772.57
BASE ELEV. 1767.37
INVERT ELEV. 1768.32
'H' DIST. . . . . 4.00 FT

18 IN CONDUIT	NE	1768.32
15 IN CONDUIT	W	1768.57

INLET NO. . . . 215B
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3811+64.0~21.0' Rt ①
GRATE ELEV 1783.49
BASE ELEV. 1778.29
INVERT ELEV. 1778.55
'H' DIST. . . . . 4.50 FT

15 IN CONDUIT	E	1778.55
15 IN CONDUIT	S	1778.55

INLET NO. . . . 215C
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 3811+64.0~21.0' Lt ①
GRATE ELEV 1783.49
BASE ELEV. 1778.79
INVERT ELEV. 1780.04
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1780.04

INLET NO. . . . 216A
TYPE. . . . . INLET SPCL-TYPE 2 48IN
GRATE STYLE. . . . L or V
STA. . . . . 3815+88.0~21.0' Lt ①
GRATE ELEV 1791.60
BASE ELEV. 1786.40
INVERT ELEV. 1788.53
'H' DIST. . . . . 4.00 FT

18 IN CONDUIT	NE	1788.53
18 IN CONDUIT	S	1788.53

INLET NO. . . . 216B
TYPE. . . . . INLET SPCL-TYPE 2 72IN
GRATE STYLE. . . . L or V
STA. . . . . 3815+64.0~21.0' Rt ①
GRATE ELEV 1791.43
BASE ELEV. 1786.03
INVERT ELEV. 1786.81
'H' DIST. . . . . 4.00 FT

24 IN CONDUIT	NE	1786.81
18 IN CONDUIT	SW	1787.31
15 IN CONDUIT	W	1787.56

INLET NO. . . . 217A
TYPE. . . . . INLET-CB-6IN BEEHIVE
GRATE STYLE. . . . 6IN BEEHIVE
STA. . . . . 3817+76.9~43.4' Lt ①
GRATE ELEV 1791.63
BASE ELEV. 1786.63
INVERT ELEV. 1788.98
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	NE	1788.98

INLET NO. . . . 217B
TYPE. . . . . INLET SPCL-TYPE 2 48IN
GRATE STYLE. . . . L or V
STA. . . . . 3817+54.0~21.0' Lt ①
GRATE ELEV 1792.76
BASE ELEV. 1787.56
INVERT ELEV. 1788.82
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	N	1788.82
15 IN CONDUIT	SW	1788.82

INLET NO. . . . 217C
TYPE. . . . . INLET-TYPE 2 DBL
GRATE STYLE. . . . L or V
STA. . . . . 3817+54.0~21.0' Rt ①
GRATE ELEV 1792.76
BASE ELEV. 1788.06
INVERT ELEV. 1788.51
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	E	1788.51
15 IN CONDUIT	S	1788.61

INLET NO. . . . 218A
TYPE. . . . . INLET-TYPE 2 DBL
GRATE STYLE. . . . L or V
STA. . . . . 50+73.5~1.0' Lt ⑤
GRATE ELEV 1789.69
BASE ELEV. 1784.99
INVERT ELEV. 1786.50
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	W	1786.50

INLET NO. . . . 218B
TYPE. . . . .INLET SPCL-TYPE 2 DBL 84IN
GRATE STYLE. . . . L or V
STA. . . . . 104+02.6~0.0' Lt ⑥
GRATE ELEV 1789.57
BASE ELEV. 1784.17
INVERT ELEV. 1785.00
'H' DIST. . . . . 4.00 FT

30 IN CONDUIT	SW	1785.00
30 IN CONDUIT	NW	1785.10
15 IN CONDUIT	E	1785.27

INLET NO. . . . 219A
TYPE. . . . . INLET SPCL-TYPE 2 60IN
GRATE STYLE. . . . L or V
STA. . . . . 102+55.5~0.0' Lt ⑥
GRATE ELEV 1795.57
BASE ELEV. 1786.07
INVERT ELEV. 1786.36
'H' DIST. . . . . 8.10 FT

30 IN CONDUIT	SE	1786.36
24 IN CONDUIT	N	1786.87
18 IN CONDUIT	W	1788.91

INLET NO. . . . 220A
TYPE. . . . . INLET SPCL-TYPE 2 48IN
GRATE STYLE. . . . L or V
STA. . . . . 50+90.4~1.0' Lt ④
GRATE ELEV 1800.00
BASE ELEV. 1794.80
INVERT ELEV. 1795.20
'H' DIST. . . . . 4.00 FT

18 IN CONDUIT	E	1795.20
15 IN CONDUIT	N	1795.55

INLET NO. . . . 220B
TYPE. . . . . INLET-TYPE 2
GRATE STYLE. . . . L or V
STA. . . . . 52+94.0~1.0' Lt ③
GRATE ELEV 1800.03
BASE ELEV. 1795.33
INVERT ELEV. 1796.01
'H' DIST. . . . . 4.00 FT

15 IN CONDUIT	S	1796.01

Chain	No.
PR1806	①
PRRBNEEOP	②
PRRBNWEOP	③
PRRBSWEOP	④
PRRBSEEOP	⑤
PRSD218-221	⑥

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ND 1806

Inlet and Manhole Summary

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	51	1

STORM DRAIN																
BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	PIPE INSTALLATION PAY ITEM (IN)	(BID ITEM)	(LF)	ALLOWABLE MATERIAL	REQUIRED DIAMETER (IN)	STEEL PIPE COATINGS (TYPE)	STEEL PIPE CORRUGATIONS OF SPIRAL RIBS	MINIMUM THICKNESS (IN)	**Geosythetic Material - Type G (PAY ITEM) (SY)	***Geosythetic Material - Type G (PAY ITEM) (SY)	*END SECTIONS BEGIN (EA)	*END SECTIONS END (EA)	APPLICABLE BACKFILL DETAIL
NHU-1-806(052)071																
200A		200D		15	Pipe Conduit Storm Drain	96	Reinforced Concrete Pipe - Class III (Barrel Length = 96 LF)	15				56	56	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
200E		200D		18	Pipe Conduit Storm Drain	9	Reinforced Concrete Pipe - Class III (Barrel Length = 9 LF)	18				6	6	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
200D		200C		18	Pipe Conduit Storm Drain	52	Reinforced Concrete Pipe - Class III (Barrel Length = 52 LF)	18				177	175	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
201		200C		30	Pipe Conduit Storm Drain	137	Reinforced Concrete Pipe - Class III (Barrel Length = 137 LF)	30				99	99	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	30	A	2	0.109					
							Corrugated Steel Pipe	30	P	2	0.064					
							Spiral Rib Steel Pipe	30	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064					
202		201		30	Pipe Conduit Storm Drain	107	Reinforced Concrete Pipe - Class III (Barrel Length = 107 LF)	30				77	77	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	30	A	2	0.109					
							Corrugated Steel Pipe	30	P	2	0.064					
							Spiral Rib Steel Pipe	30	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064					
201A		201		15	Pipe Conduit Storm Drain	69	Reinforced Concrete Pipe - Class III (Barrel Length = 69 LF)	15				214	214	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
201B		201A		15	Pipe Conduit Storm Drain	87	Reinforced Concrete Pipe - Class III (Barrel Length = 87 LF)	15				51	51	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
202A		202		18	Pipe Conduit Storm Drain	23	Reinforced Concrete Pipe - Class III (Barrel Length = 23 LF)	18				15	15	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
202B		202A		15	Pipe Conduit Storm Drain	116	Reinforced Concrete Pipe - Class III (Barrel Length = 116 LF)	15				68	68	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
203		202		24	Pipe Conduit Storm Drain	187	Reinforced Concrete Pipe - Class III (Barrel Length = 187 LF)	24				125	125	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	24	A	2	0.109					
							Corrugated Steel Pipe	24	P	2	0.064					
							Spiral Rib Steel Pipe	24	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064					
203A		203		15	Pipe Conduit Storm Drain	33	Reinforced Concrete Pipe - Class III (Barrel Length = 33 LF)	15				102	102	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
203B		203		15	Pipe Conduit Storm Drain	9	Reinforced Concrete Pipe - Class III (Barrel Length = 9 LF)	15				28	28	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					

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

Corr 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"

(*) End sections are measured and paid for separately for pipe extensions.
(**) Bid Option 1
(***) Bid Option 2
FES = Flared End Section
TES = Traversable End Section

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ND 1806

Allowable Pipe List

Storm Sewer

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	51	2

STORM DRAIN																
BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	PIPE INSTALLATION PAY ITEM (IN)	(BID ITEM)	(LF)	ALLOWABLE MATERIAL	REQUIRED DIAMETER (IN)	STEEL PIPE COATINGS (TYPE)	STEEL PIPE CORRUGATIONS OF SPIRAL RIBS	MINIMUM THICKNESS (IN)	**Geosythetic Material - Type G (PAY ITEM) (SY)	***Geosythetic Material - Type G (PAY ITEM) (SY)	*END SECTIONS BEGIN (EA)	*END SECTIONS END (EA)	APPLICABLE BACKFILL DETAIL
NHU-1-806(052)071																
204		203		24	Pipe Conduit Storm Drain	85	Reinforced Concrete Pipe - Class III (Barrel Length = 85 LF)	24				57	57	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	24	A	2	0.109					
							Corrugated Steel Pipe	24	P	2	0.064					
							Spiral Rib Steel Pipe	24	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064					
204A		204		15	Pipe Conduit Storm Drain	33	Reinforced Concrete Pipe - Class III (Barrel Length = 33 LF)	15				102	102	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
205		204		24	Pipe Conduit Storm Drain	80	Reinforced Concrete Pipe - Class III (Barrel Length = 80 LF)	24				53	53	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	24	A	2	0.109					
							Corrugated Steel Pipe	24	P	2	0.064					
							Spiral Rib Steel Pipe	24	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064					
205A		205		15	Pipe Conduit Storm Drain	33	Reinforced Concrete Pipe - Class III (Barrel Length = 33 LF)	15				102	102	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
206		205		24	Pipe Conduit Storm Drain	161	Reinforced Concrete Pipe - Class III (Barrel Length = 161 LF)	24				107	107	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	24	A	2	0.109					
							Corrugated Steel Pipe	24	P	2	0.064					
							Spiral Rib Steel Pipe	24	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064					
206A		206		15	Pipe Conduit Storm Drain	33	Reinforced Concrete Pipe - Class III (Barrel Length = 33 LF)	15				102	102	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
207		206		24	Pipe Conduit Storm Drain	27	Reinforced Concrete Pipe - Class III (Barrel Length = 27 LF)	24				19	19	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	24	A	2	0.109					
							Corrugated Steel Pipe	24	P	2	0.064					
							Spiral Rib Steel Pipe	24	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064					
207C		207B		15	Pipe Conduit Storm Drain	16	Reinforced Concrete Pipe - Class III (Barrel Length = 16 LF)	15				9	9	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
207B		207A		18	Pipe Conduit Storm Drain	39	Reinforced Concrete Pipe - Class III (Barrel Length = 39 LF)	18				24	24	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
207A		207		18	Pipe Conduit Storm Drain	56	Reinforced Concrete Pipe - Class III (Barrel Length = 56 LF)	18				191	188	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
208		207		18	Pipe Conduit Storm Drain	68	Reinforced Concrete Pipe - Class III (Barrel Length = 68 LF)	18				41	41	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
208A		208		15	Pipe Conduit Storm Drain	33	Reinforced Concrete Pipe - Class III (Barrel Length = 33 LF)	15				102	102	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					

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

Corr 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"

(*) End sections are measured and paid for separately for pipe extensions.
(**) Bid Option 1
(***) Bid Option 2
FES = Flared End Section
TES = Traversable End Section

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ND 1806

Allowable Pipe List

Storm Sewer

STORM DRAIN																		
BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	PIPE INSTALLATION PAY ITEM (IN)	(BID ITEM)	(LF)	ALLOWABLE MATERIAL	REQUIRED DIAMETER (IN)	STEEL PIPE COATINGS (TYPE)	STEEL PIPE CORRUGATIONS OF SPIRAL RIBS	MINIMUM THICKNESS (IN)	**Geosythetic Material - Type G (PAY ITEM) (SY)	***Geosythetic Material - Type G (PAY ITEM) (SY)	*END SECTIONS BEGIN (EA)	END (EA)	APPLICABLE BACKFILL DETAIL
NHU-1-806(052)071																		
208B		208		15	Pipe Conduit Storm Drain	9	Reinforced Concrete Pipe - Class III (Barrel Length = 9 LF)	15				28	28	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
210		208		18	Pipe Conduit Storm Drain	400	Reinforced Concrete Pipe - Class III (Barrel Length = 400 LF)	18				244	244	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
210A		210		15	Pipe Conduit Storm Drain	33	Reinforced Concrete Pipe - Class III (Barrel Length = 33 LF)	15				102	102	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
210B		210		15	Pipe Conduit Storm Drain	9	Reinforced Concrete Pipe - Class III (Barrel Length = 9 LF)	15				28	28	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
211		210		18	Pipe Conduit Storm Drain	400	Reinforced Concrete Pipe - Class III (Barrel Length = 400 LF)	18				244	244	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
211A		211		15	Pipe Conduit Storm Drain	33	Reinforced Concrete Pipe - Class III (Barrel Length = 33 LF)	15				102	102	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
211B		211		15	Pipe Conduit Storm Drain	9	Reinforced Concrete Pipe - Class III (Barrel Length = 9 LF)	15				28	28	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
212		211		18	Pipe Conduit Storm Drain	400	Reinforced Concrete Pipe - Class III (Barrel Length = 400 LF)	18				244	244	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
3801+69.0	37.5' Lt	212A		15	Pipe Conduit Storm Drain	17	Reinforced Concrete Pipe - Class III (Barrel Length = 14 LF)	15				10	10	FES	-	Section 20, Sheet 16
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
212A		212		15	Pipe Conduit Storm Drain	33	Reinforced Concrete Pipe - Class III (Barrel Length = 33 LF)	15				102	102	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
212B		212		15	Pipe Conduit Storm Drain	9	Reinforced Concrete Pipe - Class III (Barrel Length = 9 LF)	15				28	28	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
213		212		18	Pipe Conduit Storm Drain	276	Reinforced Concrete Pipe - Class III (Barrel Length = 276 LF)	18				169	169	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					

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

(*) End sections are measured and paid for separately for pipe extensions.
(**) Bid Option 1
(***) Bid Option 2
FES = Flared End Section
TES = Traversable End Section

ND 1806

Allowable Pipe List

Storm Sewer

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	51	4

STORM DRAIN																	
BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	PIPE INSTALLATION PAY ITEM (IN)	(BID ITEM)	(LF)	ALLOWABLE MATERIAL	REQUIRED DIAMETER (IN)	STEEL PIPE COATINGS (TYPE)	STEEL PIPE CORRUGATIONS OF SPIRAL RIBS	MINIMUM THICKNESS (IN)	**Geosythetic Material - Type G (PAY ITEM) (SY)	***Geosythetic Material - Type G (PAY ITEM) (SY)	*END SECTIONS BEGIN (EA)	*END SECTIONS END (EA)	APPLICABLE BACKFILL DETAIL
NHU-1-806(052)071																	
213A		213		15	Pipe Conduit Storm Drain	33	Reinforced Concrete Pipe - Class III (Barrel Length = 33 LF)	15				102	102	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
213B		213		15	Pipe Conduit Storm Drain	9	Reinforced Concrete Pipe - Class III (Barrel Length = 9 LF)	15				28	28	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
214A		214B		15	Pipe Conduit Storm Drain	42	Reinforced Concrete Pipe - Class III (Barrel Length = 42 LF)	15				130	130	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
214B		3807+07.0	33.1' Rt	18	Pipe Conduit Storm Drain	14	Reinforced Concrete Pipe - Class III (Barrel Length = 12 LF)	18				9	9	-	TES	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
215C		215B		15	Pipe Conduit Storm Drain	42	Reinforced Concrete Pipe - Class III (Barrel Length = 42 LF)	15				130	130	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
215B		215A		15	Pipe Conduit Storm Drain	225	Reinforced Concrete Pipe - Class III (Barrel Length = 225 LF)	15				131	131	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
215A		3809+29.8	38.7' Rt	18	Pipe Conduit Storm Drain	20	Reinforced Concrete Pipe - Class III (Barrel Length = 18 LF)	18				12	12	-	TES	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
3815+88.0	42.2' Lt	216A		18	Pipe Conduit Storm Drain	21	Reinforced Concrete Pipe - Class III (Barrel Length = 18 LF)	18				13	13	FES	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
216A		216B		18	Pipe Conduit Storm Drain	48	Reinforced Concrete Pipe - Class III (Barrel Length = 48 LF)	18				163	161	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
216B		3815+49.6	46.1' Rt	24	Pipe Conduit Storm Drain	29	Reinforced Concrete Pipe - Class III (Barrel Length = 28 LF)	24				19	19	-	TES	Section 20, Sheet 16
							Corrugated Steel Pipe	24	A	2	0.109					
							Corrugated Steel Pipe	24	P	2	0.064					
							Spiral Rib Steel Pipe	24	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064					
217A		217B		15	Pipe Conduit Storm Drain	32	Reinforced Concrete Pipe - Class III (Barrel Length = 32 LF)	15				19	19	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
217B		217C		15	Pipe Conduit Storm Drain	42	Reinforced Concrete Pipe - Class III (Barrel Length = 42 LF)	15				130	130	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					

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P = Polymeric (over Zinc or Aluminum)

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

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ND 1806

Allowable Pipe List

Storm Sewer

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	51	5

STORM DRAIN																	
BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	PIPE INSTALLATION PAY ITEM (IN)	(BID ITEM)	(LF)	ALLOWABLE MATERIAL	REQUIRED DIAMETER (IN)	STEEL PIPE COATINGS (TYPE)	STEEL PIPE CORRUGATIONS OF SPIRAL RIBS	MINIMUM THICKNESS (IN)	**Geosythetic Material - Type G (PAY ITEM) (SY)	***Geosythetic Material - Type G (PAY ITEM) (SY)	*END SECTIONS BEGIN (EA)	*END SECTIONS END (EA)	APPLICABLE BACKFILL DETAIL
NHU-1-806(052)071																	
217C		216B		15	Pipe Conduit Storm Drain	190	Reinforced Concrete Pipe - Class III (Barrel Length = 190 LF)	15				111	111	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
218A		218B		15	Pipe Conduit Storm Drain	42	Reinforced Concrete Pipe - Class III (Barrel Length = 42 LF)	15				130	130	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
218B		54+04.1	22.0' Rt	30	Pipe Conduit Storm Drain	24	Reinforced Concrete Pipe - Class III (Barrel Length = 22 LF)	30				17	17	-	FES	Section 20, Sheet 16
							Corrugated Steel Pipe	30	A	2	0.109					
							Corrugated Steel Pipe	30	P	2	0.064					
							Spiral Rib Steel Pipe	30	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064					
219A		218B		30	Pipe Conduit Storm Drain	147	Reinforced Concrete Pipe - Class III (Barrel Length = 147 LF)	30				106	106	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	30	A	2	0.109					
							Corrugated Steel Pipe	30	P	2	0.064					
							Spiral Rib Steel Pipe	30	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064					
220A		219A		18	Pipe Conduit Storm Drain	145	Reinforced Concrete Pipe - Class III (Barrel Length = 145 LF)	18				89	89	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	18	A	2	0.109					
							Corrugated Steel Pipe	18	P	2	0.064					
							Spiral Rib Steel Pipe	18	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064					
220B		220A		15	Pipe Conduit Storm Drain	47	Reinforced Concrete Pipe - Class III (Barrel Length = 47 LF)	15				146	146	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
221B		219A		24	Pipe Conduit Storm Drain	256	Reinforced Concrete Pipe - Class III (Barrel Length = 256 LF)	24				171	171	-	-	Section 20, Sheet 16
							Corrugated Steel Pipe	24	A	2	0.109					
							Corrugated Steel Pipe	24	P	2	0.064					
							Spiral Rib Steel Pipe	24	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064					
221A		221B		15	Pipe Conduit Storm Drain	44	Reinforced Concrete Pipe - Class III (Barrel Length = 44 LF)	15				136	137	-	-	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	15	A	2	0.109					
							Corrugated Steel Pipe	15	P	2	0.064					
							Spiral Rib Steel Pipe	15	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064					
50+11.1	21.0' Rt	221B		24	Pipe Conduit Storm Drain	22	Reinforced Concrete Pipe - Class III (Barrel Length = 20 LF)	24				15	15	TES	-	Section 20, Sheet 16
							Corrugated Steel Pipe	24	A	2	0.109					
							Corrugated Steel Pipe	24	P	2	0.064					
							Spiral Rib Steel Pipe	24	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064					

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P = Polymeric (over Zinc or Aluminum)

Corr 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"

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ND 1806

Allowable Pipe List

Storm Sewer

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	51	6

CENTERLINE CULVERTS

BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	PIPE INSTALLATION PAY ITEM (IN)	(BID ITEM)	(LF)	ALLOWABLE MATERIAL	REQUIRED DIAMETER (IN)	STEEL PIPE COATINGS (TYPE)	STEEL PIPE CORRUGATIONS OF SPIRAL RIBS	MINIMUM THICKNESS (IN)	**Geosythetic Material - Type G (PAY ITEM) (SY)	***Geosythetic Material - Type G (PAY ITEM) (SY)	*END SECTIONS BEGIN (EA)	*END SECTIONS END (EA)	APPLICABLE BACKFILL DETAIL
NHU-1-806(052)071																
3846+10.0	32.2' Lt	3846+10.0	32.6' Rt	36	PIPE CONDUIT	66	Reinforced Concrete Pipe - Class III (Barrel Length = 62 LF)	36				346	323	TES	TES	Section 20, Sheet 17 & 18
							Corrugated Steel Pipe	36	A	2	0.109					
							Corrugated Steel Pipe	36	P	2	0.064					
							Spiral Rib Steel Pipe	36	A	3/4, 1	0.109					
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064					

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

Corr 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"

(*) End sections are measured and paid for separately for pipe extensions.
(**) Bid Option 1
(***) Bid Option 2
FES = Flared End Section
TES = Traversable End Section

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ND 1806

Allowable Pipe List

Centerline Culverts

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	51	7

APPROACH CULVERTS

BEGIN STATION	BEGIN OFFSET	END STATION	END OFFSET	PIPE INSTALLATION PAY ITEM (IN)	(BID ITEM)	(LF)	ALLOWABLE MATERIAL	REQUIRED DIAMETER (IN)	STEEL PIPE COATINGS (TYPE)	STEEL PIPE CORRUGATIONS OF SPIRAL RIBS	MINIMUM THICKNESS (IN)	*END SECTIONS BEGIN (EA)	*END SECTIONS END (EA)	APPLICABLE BACKFILL DETAIL
NHU-1-806(052)071														
3800+95.0	38.6' Rt	3801+55.0	38.6' Rt	15	Pipe Conduit - Approach	60	Reinforced Concrete Pipe - Class III (Barrel Length = 54 LF)	15				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	15	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	15	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	15						
							Polypropylene Pipe (AASHTO M330, Type S)	15						
3823+62.3	42.9' Lt	3824+08.3	43.1' Lt	24	Pipe Conduit - Approach	46	Reinforced Concrete Pipe - Class III (Barrel Length = 42 LF)	24				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	24	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	24	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	24						
							Polypropylene Pipe (AASHTO M330, Type S)	24						
3825+11.2	47.7' Rt	3826+21.2	49.1' Rt	18	Pipe Conduit - Approach	110	Reinforced Concrete Pipe - Class III (Barrel Length = 104 LF)	18				FES	FES	Specification 714.04 A
							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						
3825+42.6	42.6' Lt	3825+96.6	40.6' Lt	24	Pipe Conduit - Approach	54	Reinforced Concrete Pipe - Class III (Barrel Length = 50 LF)	24				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	24	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	24	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	24						
							Polypropylene Pipe (AASHTO M330, Type S)	24						
3833+25.2	47.5' Lt	3834+11.6	49.9' Lt	18	Pipe Conduit - Approach	88	Reinforced Concrete Pipe - Class III (Barrel Length = 82 LF)	18				FES	FES	Specification 714.04 A
							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						
3843+37.0	59.7' Rt	3843+37.0	91.2' Rt	12	Pipe Conduit - Approach	32	Reinforced Concrete Pipe - Class III (Barrel Length = 24 LF)	12				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	12	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	12	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	12						
							Polypropylene Pipe (AASHTO M330, Type S)	12						
3843+41.0	59.7' Rt	3843+41.0	91.3' Rt	12	Pipe Conduit - Approach	32	Reinforced Concrete Pipe - Class III (Barrel Length = 24 LF)	12				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	12	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	12	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	12						
							Polypropylene Pipe (AASHTO M330, Type S)	12						
3849+19.9	46.0' Lt	3849+79.8	47.7' Lt	15	Pipe Conduit - Approach	60	Reinforced Concrete Pipe - Class III (Barrel Length = 54 LF)	15				FES	FES	Specification 714.04 A
							Corrugated Steel Pipe	15	Z, A, P	2	0.064			
							Spiral Rib Steel Pipe	15	Z, A, P	3/4, 1	0.064			
							High-Density Polyethylene	15						
							Polypropylene Pipe (AASHTO M330, Type S)	15						

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

Corr 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"

(*) End sections are measured and paid for separately for pipe extensions.
(**) Bid Option 1
(***) Bid Option 2
FES = Flared End Section
TES = Traversable End Section

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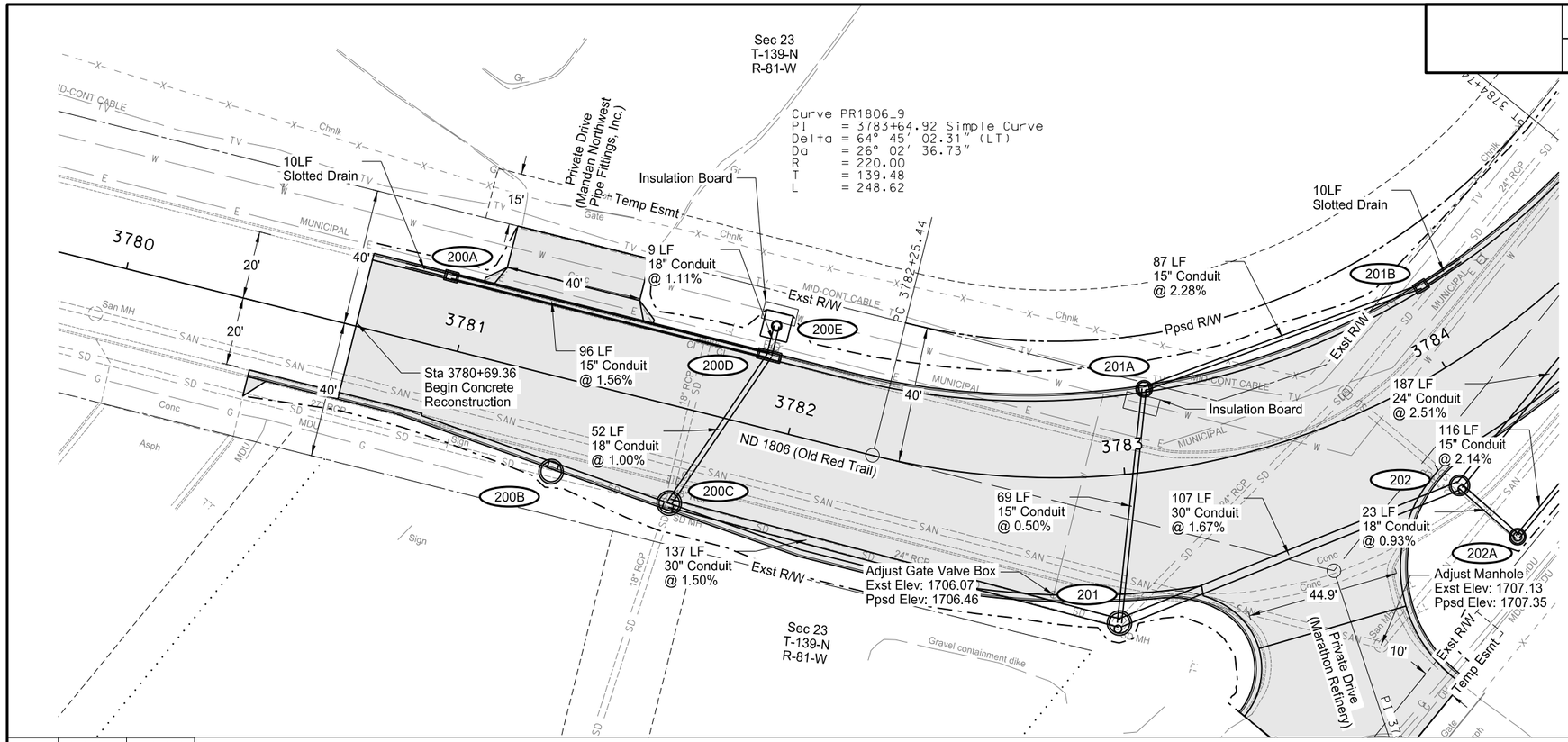
ND 1806

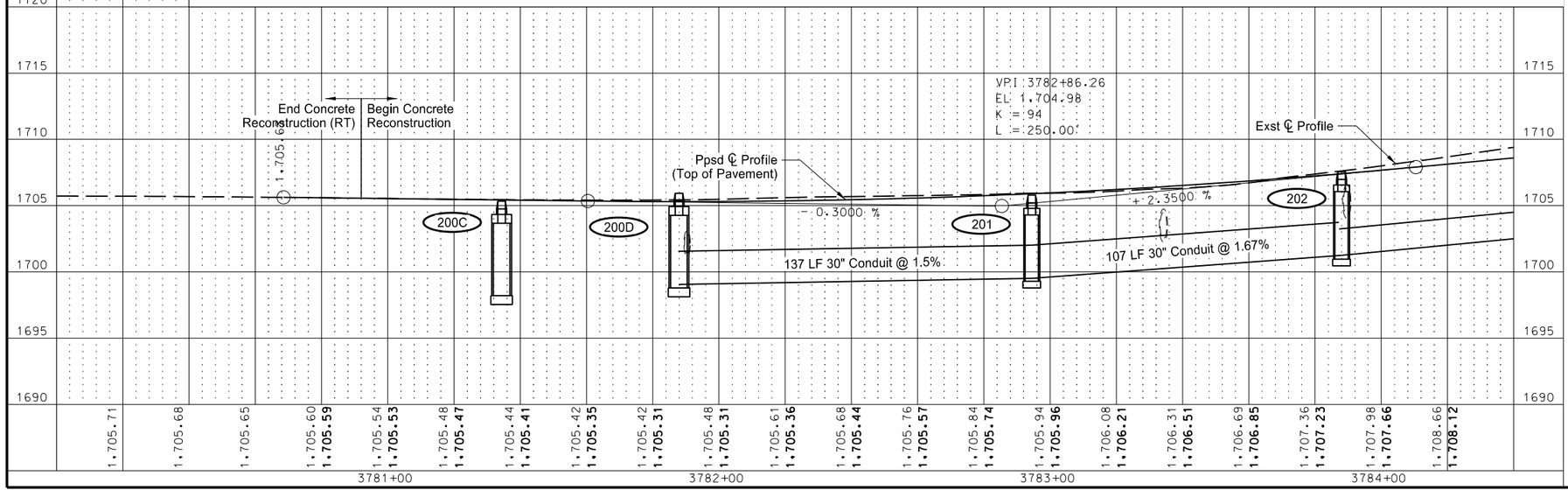
Allowable Pipe List

Approach Culverts

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	1



SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		200A to 200D	96	LF
		201B to 201A	87	LF
		Sta 3784+00.0~50.6' Rt to 202A	8	LF
		201A to 201	69	LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		200E to 200D	9	LF
		200D to 200C	52	LF
		202A to 202	23	LF
714	4107	PIPE CONDUIT 24IN-STORM DRAIN		
		Sta 3784+00.0~26.3' Rt to 202	16	LF
714	4112	PIPE CONDUIT 30IN-STORM DRAIN		
		202 to 201	107	LF
		201 to 200D	137	LF
722	0110	MANHOLE 60IN		
		202	1	EA
722	0120	MANHOLE 72IN		
		201	1	EA
722	1110	MANHOLE RISER 60IN		
		202	6.3	LF
722	1120	MANHOLE RISER 72IN		
		201	6.3	LF
722	3510	INLET-TYPE 2		
		200A	1	EA
		201B	1	EA
722	3520	INLET-TYPE 2 DOUBLE		
		200D	1	EA
722	3701	INLET SPECIAL-TYPE 2 48IN		
		201A	1	EA
722	3720	INLET SPECIAL CATCH BASIN 6IN BEEHIVE 48IN		
		202A	1	EA
722	3766	INLET SPECIAL-TYPE 2 72IN		
		200B	1	EA
		200C	1	EA
722	3900	INLET SLOTTED DRAIN 12IN		
		Sta 3780+79.2~21.0' Lt to 200A	10	LF
		Sta 3784+22.5~23.6' Lt to 201B	10	LF
722	4010	INLET CATCH BASIN 6IN BEEHIVE		
		200E	1	EA
722	6140	ADJUST GATE VALVE BOX		
		Sta 3782+79.2~34.3' Rt	1	EA
722	6200	ADJUST MANHOLE		
		Sta 3783+54.6~65.6' Rt	1	EA
744	0050	INSULATION BOARD		
		Sta 3781+84.1~33.7' Lt to 3781+94.1~33.7' Lt	11	CF
		Sta 3783+02.4~21.8' Lt to 3783+12.6~18.2 Lt	11	CF



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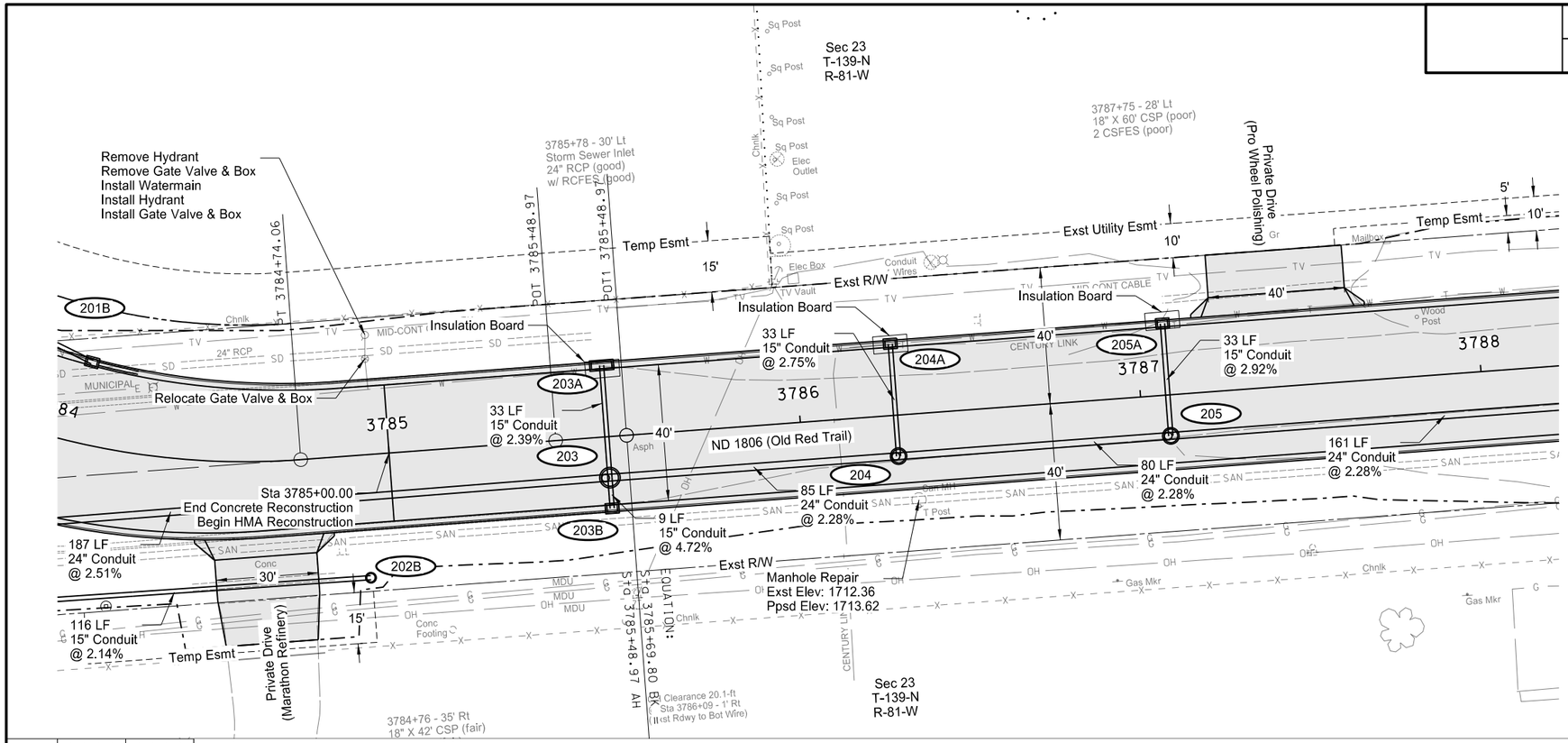
ND 1806

Storm Drain

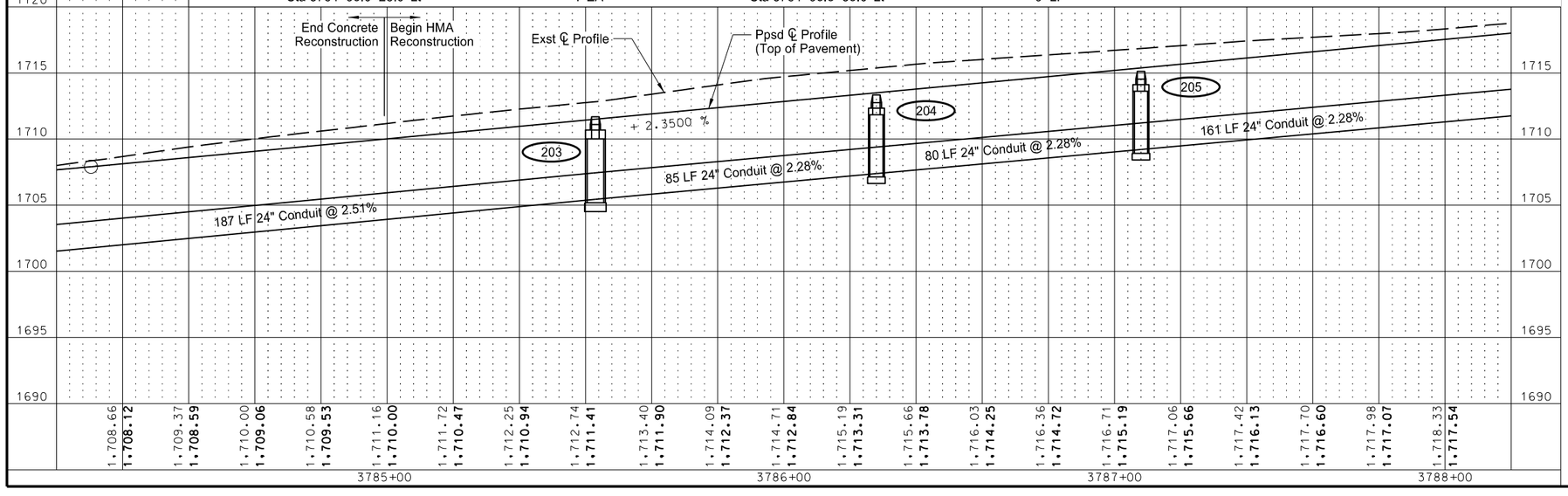
ND 1806
Sta 3780+00 to 3784+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	55	2



SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		203A to 203	33	LF
		203B to 203	9	LF
		204A to 204	33	LF
		205A to 205	33	LF
		202B to Sta 3784+00.0~50.6' Rt	108	LF
714	4107	PIPE CONDUIT 24IN-STORM DRAIN		
		203 to Sta 3784+00.0~26.3' Rt	171	LF
		204 to 203	85	LF
		205 to 204	80	LF
		Sta 3788+00.0~12' Rt to 205	92	LF
722	0100	MANHOLE 48IN		
		204	1	EA
		205	1	EA
722	0110	MANHOLE 60IN		
		203	1	EA
722	1100	MANHOLE RISER 48IN		
		204	4.2	LF
		205	4.3	LF
722	1110	MANHOLE RISER 60IN		
		203	4.0	LF
722	3410	MANHOLE REPAIR		
		Sta 3786+33.0~25.2' Rt	1	EA
722	3510	INLET-TYPE 2		
		203B	1	EA
		204A	1	EA
		205A	1	EA
722	3520	INLET-TYPE 2 DOUBLE		
		203A	1	EA

SPEC	CODE	BID ITEM	QTY	UNIT
722	4010	INLET CATCH BASIN 6IN BEEHIVE		
		202B	1	EA
724	0310	GATE VALVE & BOX 8IN		
		Sta 3784+95.5~35.0' Lt	1	EA
724	0375	RELOCATE GATE VALVE & BOX		
		Sta 3784+95.0~28.0' Lt	1	EA
724	0412	8IN HYDRANT		
		Sta 3784+95.5~35.0' Lt	1	EA
724	0430	REMOVE HYDRANT		
		Sta 3784+95.5~35.0' Lt	1	EA
724	0830	WATERMAIN 8IN PVC		
		Sta 3784+95.5~35.0' Lt	9	LF
724	7014	REMOVE GATE VALVE BOX		
		Sta 3784+95.5~35.0' Lt	1	EA
744	0050	INSULATION BOARD		
		Sta 3785+59.1~19.8' Lt to 3785+69.1~19.9' Lt	11	CF
		Sta 3786+23.0~20.8' Lt to 3786+33.0~21.0 Lt	11	CF



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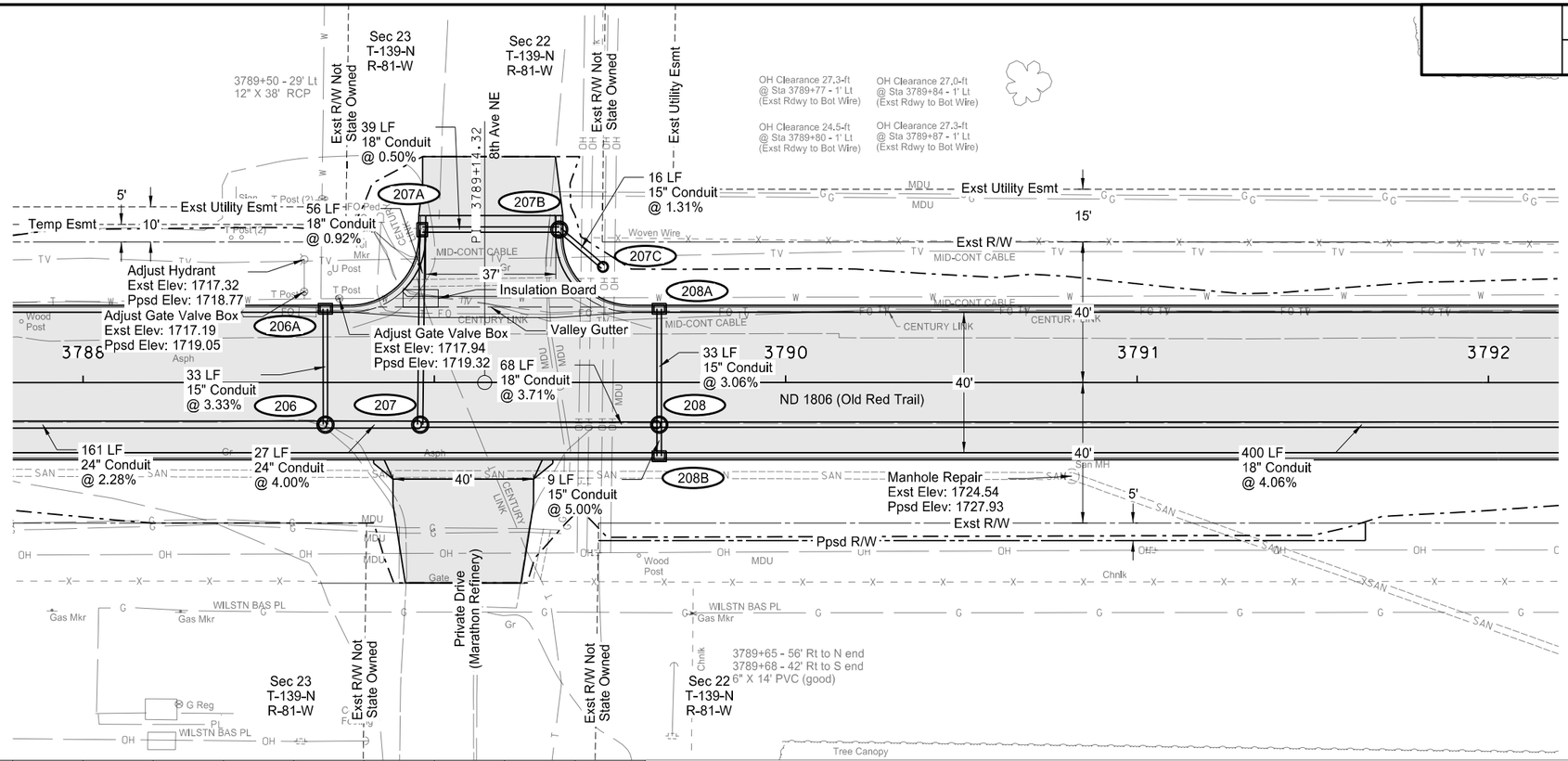
ND 1806

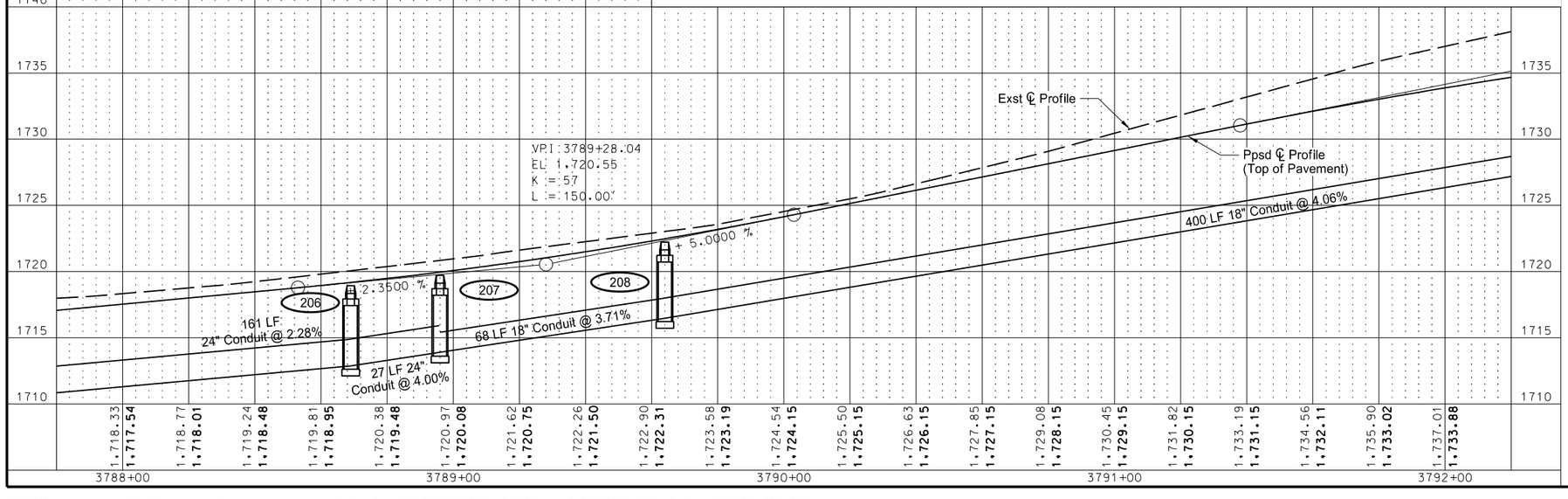
Storm Drain

ND 1806
Sta 3784+00 to 3788+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	3



SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		206A to 206	33	LF
		207C to 207B	16	LF
		208A to 208	33	LF
		208B to 208	9	LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		207B to 207A	39	LF
		207A to 207	56	LF
		208 to 207	68	LF
		Sta 3792+00.0~12.0' Rt to 208	236	LF
714	4107	PIPE CONDUIT 24IN-STORM DRAIN		
		206 to Sta 3788+00.0~12.0' Rt	69	LF
		207 to 206	27	LF
722	0100	MANHOLE 48IN		
		206	1	EA
		207	1	EA
		208	1	EA
722	1100	MANHOLE RISER 48IN		
		206	4.4	LF
		207	4.1	LF
		208	4.0	LF
722	3410	MANHOLE REPAIR		
		Sta 3790+81.5~ 26.7' Rt	1	EA
722	3510	INLET-TYPE 2		
		206A	1	EA
		207A	1	EA
		208A	1	EA
		208B	1	EA
722	3701	INLET SPECIAL-TYPE 2 48IN		
		207B	1	EA
722	4010	INLET CATCH BASIN 6IN BEEHIVE		
		207C	1	EA
722	6140	ADJUST GATE VALVE BOX		
		Sta 3788+63.0~25.8' Lt	1	EA
		Sta 3788+73.0~23.9' Lt	1	EA
724	0427	ADJUST HYDRANT		
		Sta 3788+63.0~35.0' Lt	1	EA
744	0050	INSULATION BOARD		
		Sta 3788+91.1~23.9' Lt to 3789+01.1~23.9' Lt	11	CF



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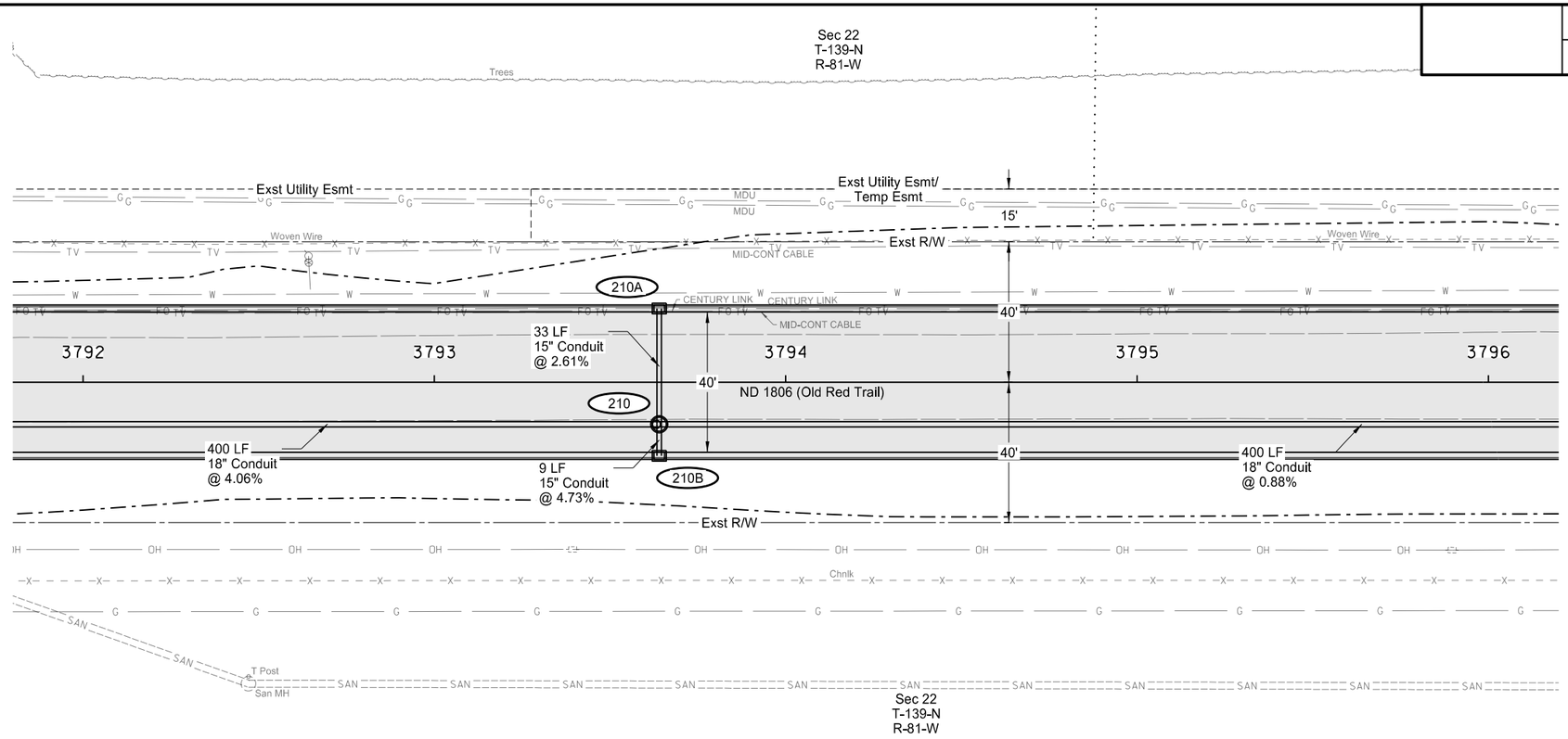
ND 1806

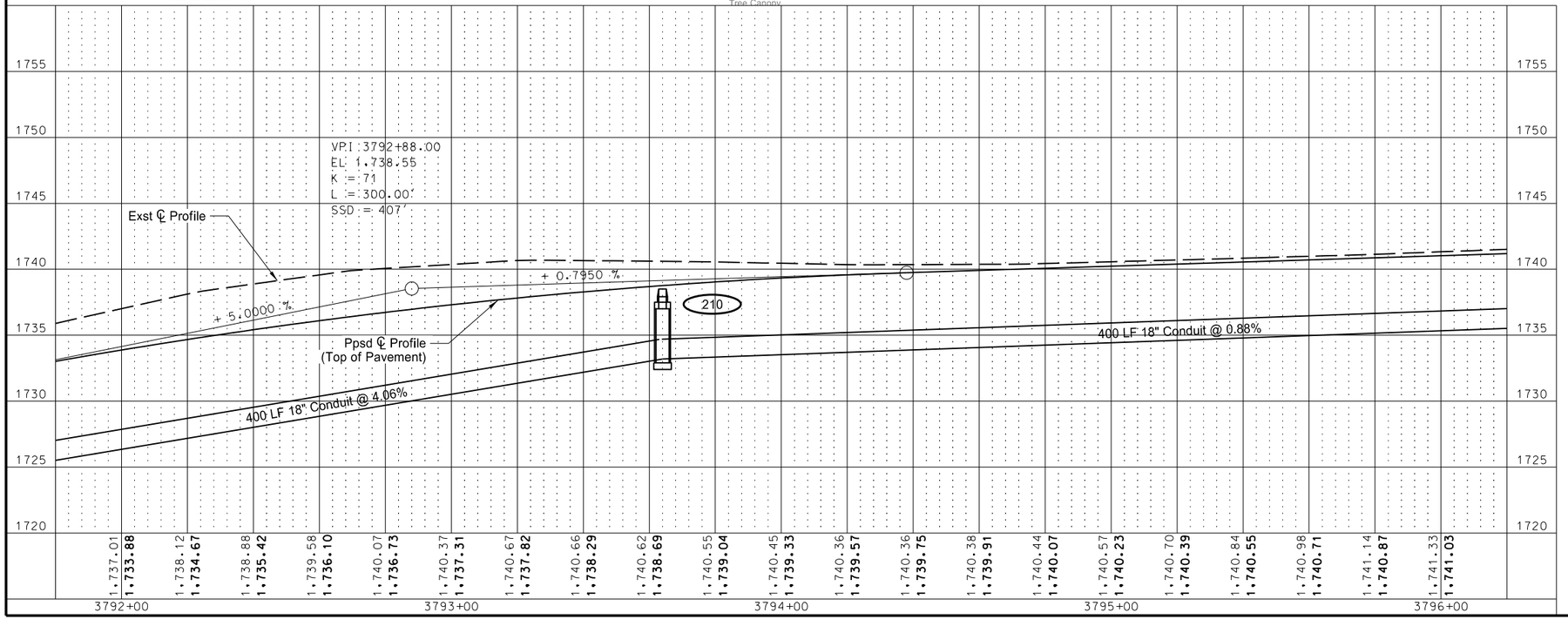
Storm Drain

ND 1806
Sta 3788+00 to 3792+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	4

SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		210A to 210	33	LF
		210B to 210	9	LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		210 to Sta 3792+00.0~12.0' Rt	164	LF
		Sta 3796+00.0~12.0' Rt to 210	236	LF
722	0100	MANHOLE 48IN		
		210	1	EA
722	1100	MANHOLE RISER 48IN		
		210	4.0	LF
722	3510	INLET-TYPE 2		
		210A	1	EA
		210B	1	EA





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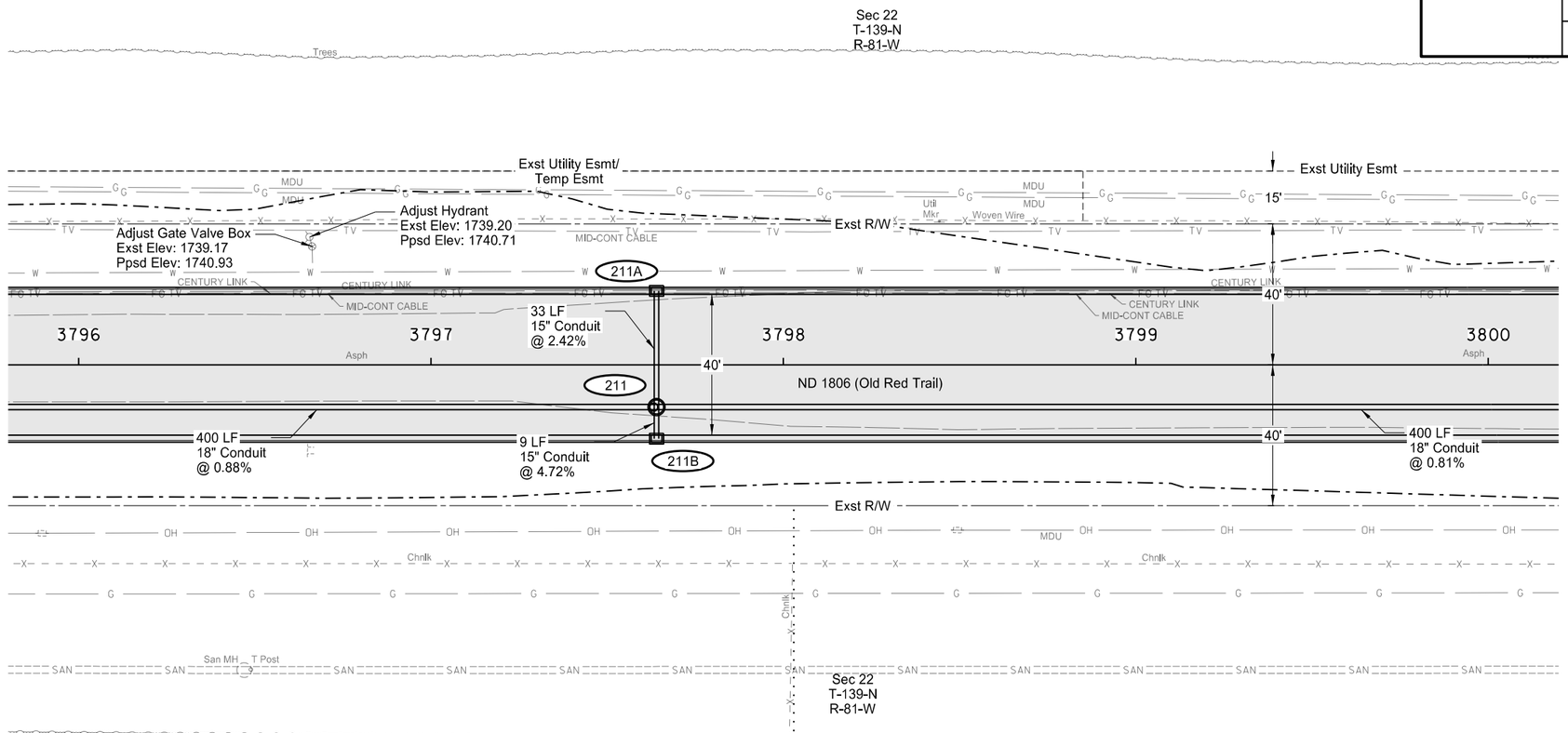
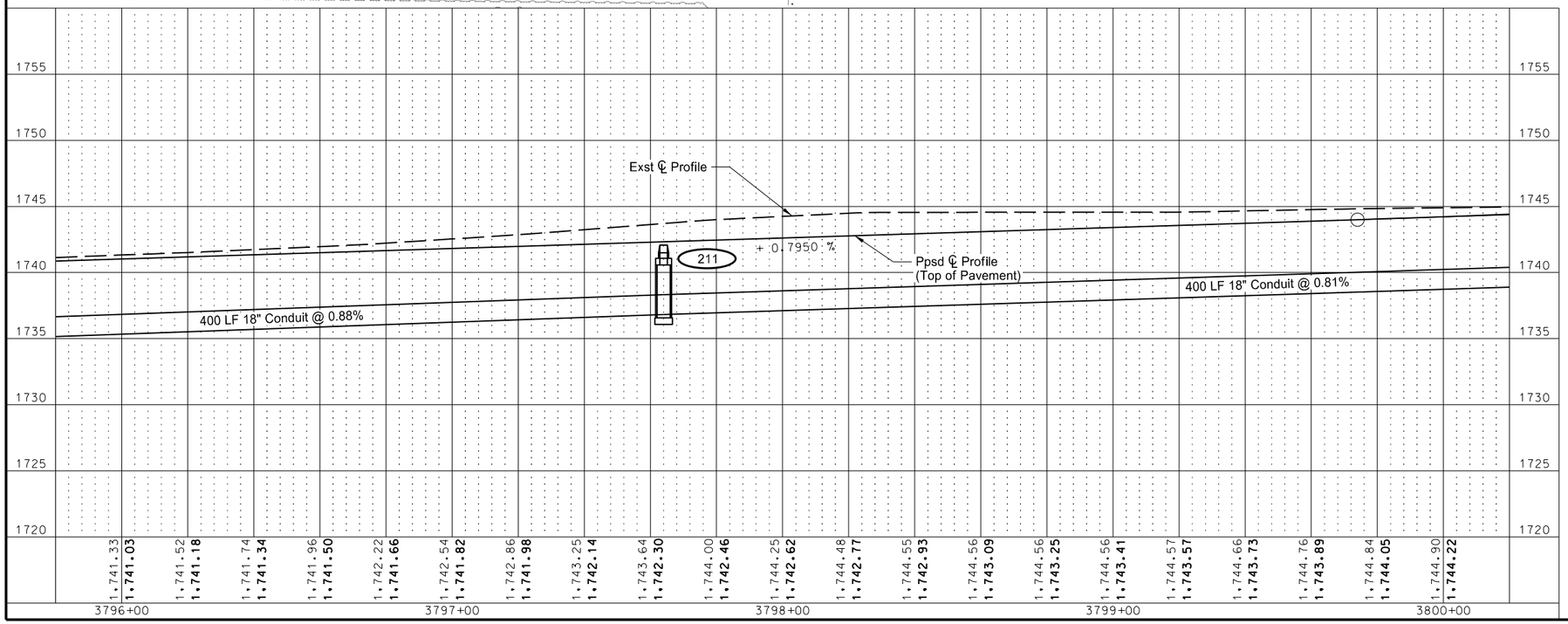
ND 1806

Storm Drain

ND 1806
Sta 3792+00 to 3796+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	5





SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		211A to 211	33	LF
		211B to 211	9	LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		211 to Sta 3796+00.0~12.0' Rt	164	LF
		Sta 3800+00.0~12.0' Rt to 211	236	LF
722	0100	MANHOLE 48IN		
		211	1	EA
722	1100	MANHOLE RISER 48IN		
		211	4.0	LF
722	3510	INLET-TYPE 2		
		211A	1	EA
		211B	1	EA
722	6140	ADJUST GATE VALVE BOX		
		Sta 3796+66.3~33.6' Lt	1	EA
724	0427	ADJUST HYDRANT		
		Sta 3796+65.5~36.3' Lt	1	EA

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ND 1806

Storm Drain

ND 1806
Sta 3796+00 to 3800+00 (PR1806)

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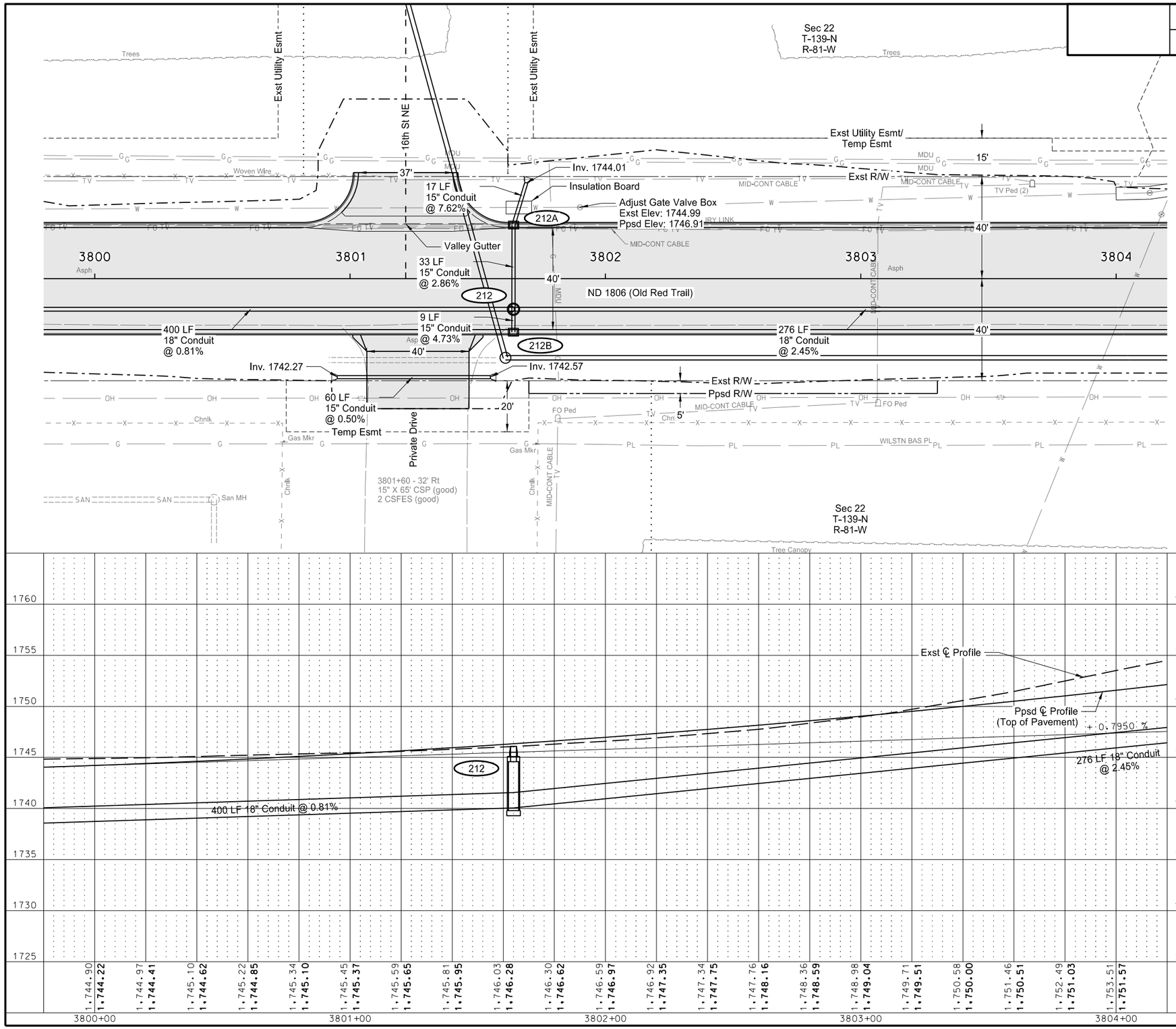
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	6



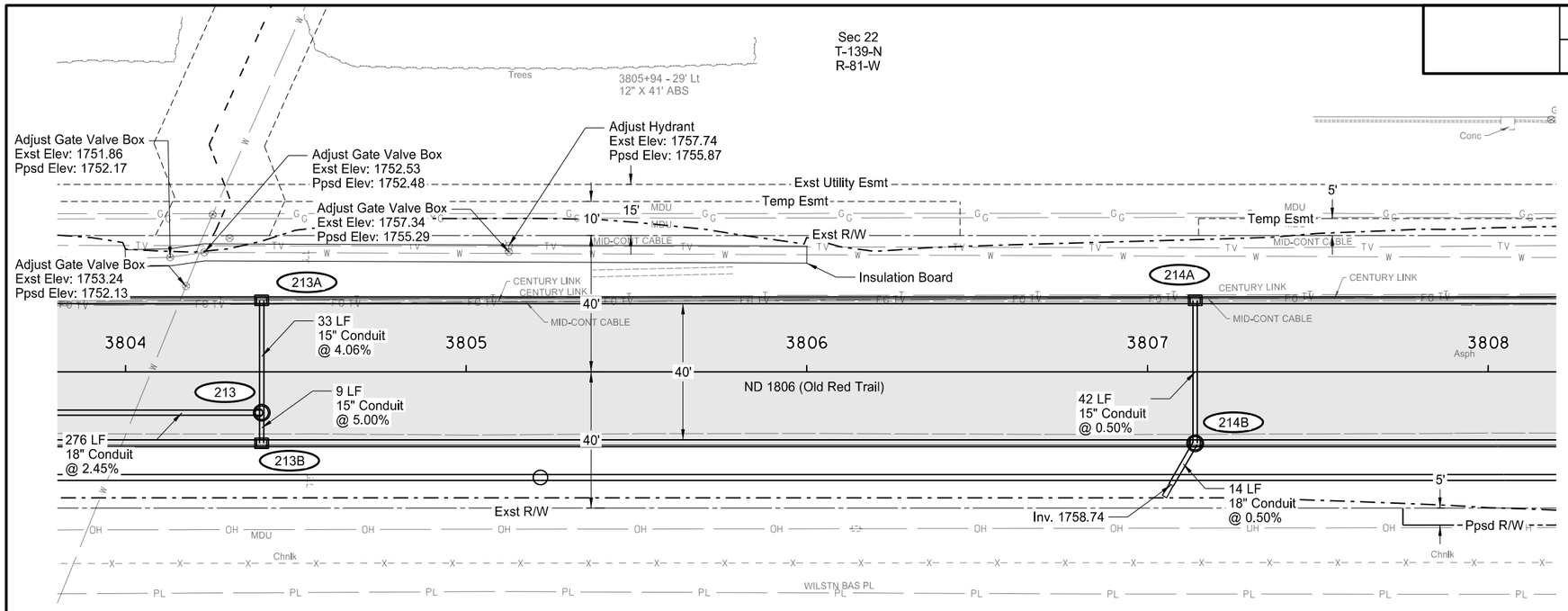
SPEC	CODE	BID ITEM	QTY	UNIT
714	4096	PIPE CONDUIT 15IN-APPROACH		
		Sta 3800+95.0~38.6' Rt to 3801+55.0~38.6' Rt	60	LF
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		3801+69.0~37.5'Lt to 212A	17	LF
		212A to 212	33	LF
		212B to 212	9	LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		212 to Sta 3800+00.0~12.0' Rt	164	LF
		Sta 3804+00.0~12.0' Rt to 212	236	LF
722	0100	MANHOLE 48IN		
		212	1	EA
722	1100	MANHOLE RISER 48IN		
		212	4.4	LF
722	3510	INLET-TYPE 2		
		212A	1	EA
		212B	1	EA
722	6140	ADJUST GATE VALVE BOX		
		Sta 3801+90.0~27.9' Lt	1	EA
744	0050	INSULATION BOARD		
		Sta 3801+61.1~27.8' Lt to 3801+71.1~27.8' Lt	11	CF

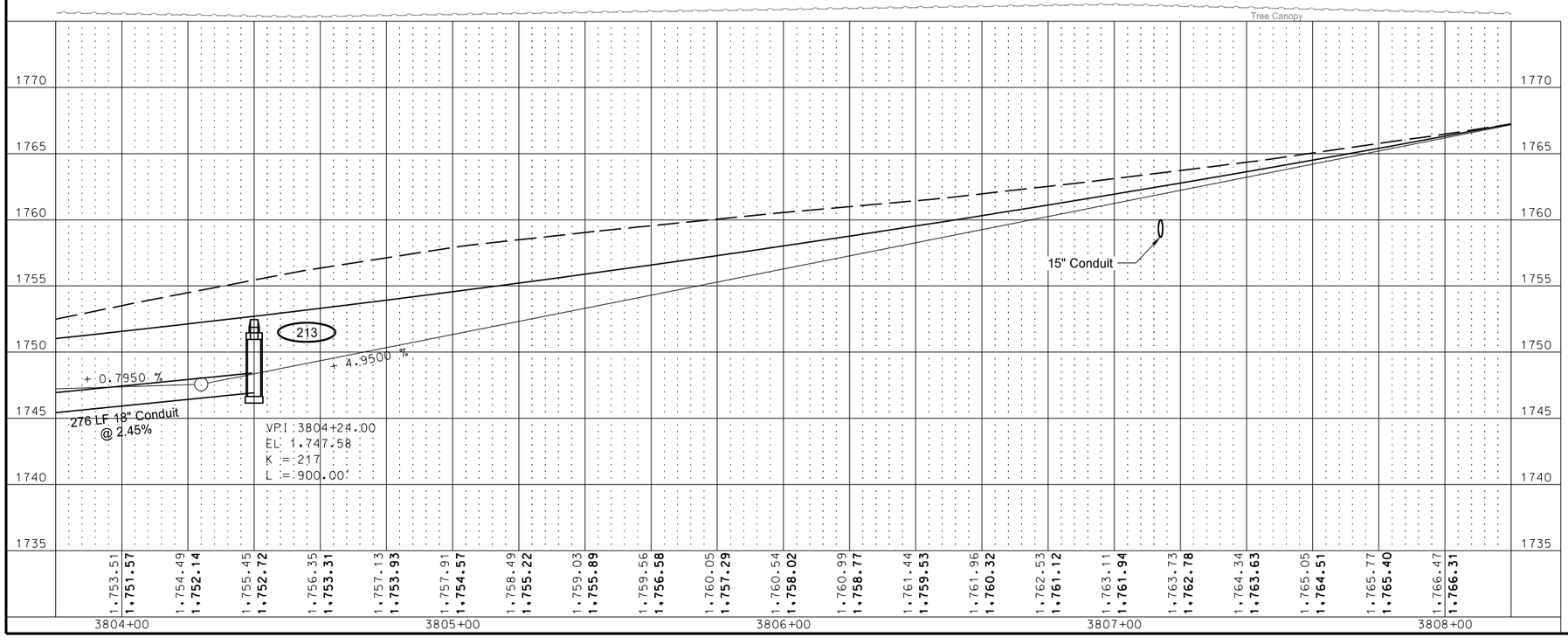
ND 1806

Storm Drain

ND 1806
Sta 3800+00 to 3804+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	55	7





SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		213A to 213	33	LF
		213B to 213	9	LF
		214A to 214B	42	LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		213 to Sta 3804+00.0~12.0' Rt	40	LF
		214B to Sta 3807+07.0~33.1' Rt	14	LF
722	0100	MANHOLE 48IN		
		213	1	EA
722	1100	MANHOLE RISER 48IN		
		213	4.0	LF
722	3510	INLET-TYPE 2		
		213A	1	EA
		213B	1	EA
		214A	1	EA
722	3701	INLET SPECIAL-TYPE 2 48IN		
		214B	1	EA
722	6140	ADJUST GATE VALVE BOX		
		Sta 3804+13.1~33.6' Lt	1	EA
		Sta 3804+17.8~25.1' Lt	1	EA
		Sta 3804+23.1~35.0' Lt	1	EA
		Sta 3805+12.6~35.2' Lt	1	EA
724	0427	ADJUST HYDRANT		
		Sta 3805+12.5~36.9' Lt	1	EA
744	0050	INSULATION BOARD		
		Sta 3804+00.0~33.2' Lt to 3806+00.0~34.4' Lt	334	CF

N

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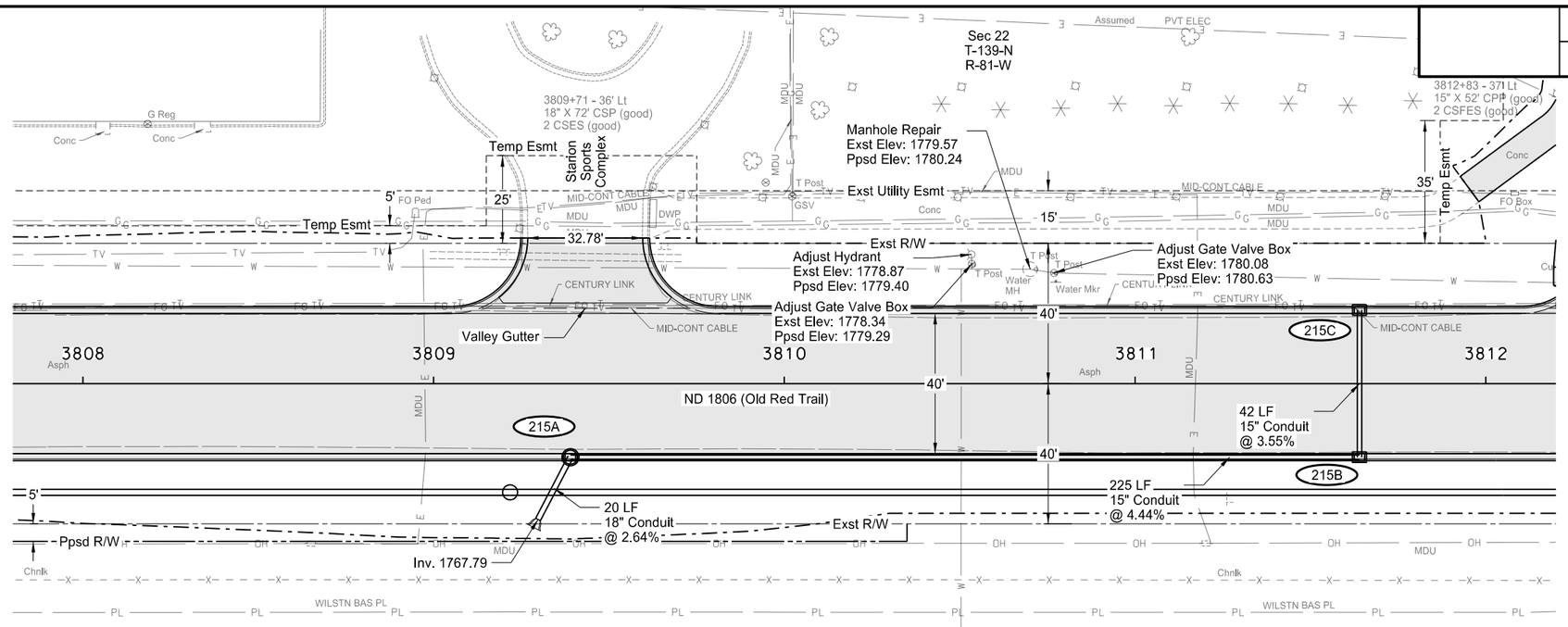
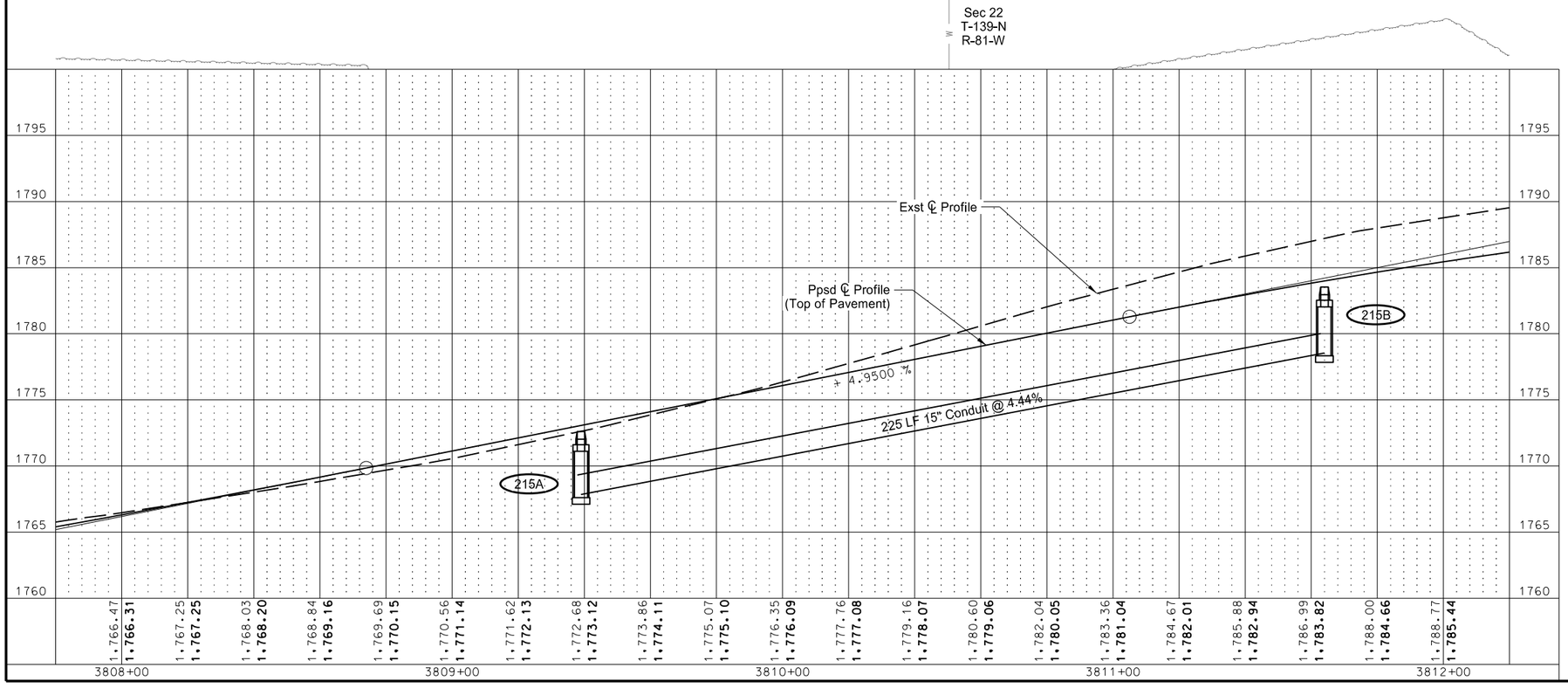
ND 1806

Storm Drain

ND 1806
Sta 3804+00 to 3808+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	8





SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		215C to 215B	42	LF
		215B to 215A	225	LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		215A to 3809+29.8~38.7' Rt	20	LF
722	3410	MANHOLE REPAIR		
		Sta 3810+70.1~32.6' Lt	1	EA
722	3510	INLET-TYPE 2		
		215B	1	EA
		215C	1	EA
722	3701	INLET SPECIAL-TYPE 2 48IN		
		215A	1	EA
722	6140	ADJUST GATE VALVE BOX		
		Sta 3810+53.5~34.1' Lt	1	EA
		Sta 3810+76.9~31.5' Lt	1	EA
724	0427	ADJUST HYDRANT		
		Sta 3810+53.3~36.8' Lt	1	EA

N

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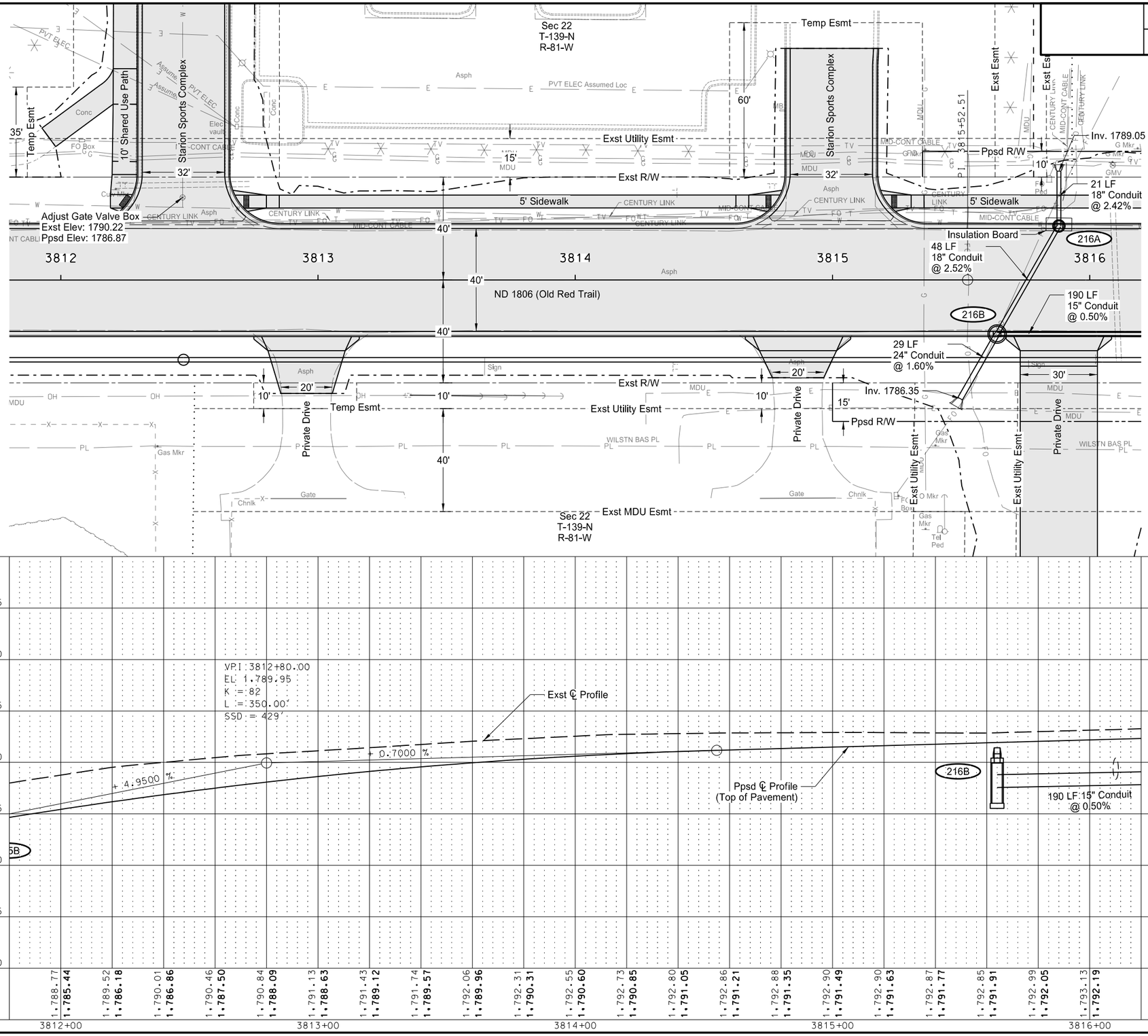
ND 1806

Storm Drain

ND 1806
Sta 3808+00 to 3812+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	9

SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN Sta 3816+00~21.0' Rt to 216B	36	LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN Sta 3815+88.0~42.2' Lt to 216A 216A to 216B	21 48	LF LF
714	4107	PIPE CONDUIT 24IN-STORM DRAIN 216B to Sta 3815+49.6~46.1' Rt	29	LF
722	3701	INLET SPECIAL-TYPE 2 48IN 216A	1	EA
722	3766	INLET SPECIAL-TYPE 2 72IN 216B	1	EA
722	6140	ADJUST GATE VALVE BOX Sta 3812+47.4~32.1' Lt	1	EA
744	0050	INSULATION BOARD Sta 3815+83.0~21.7' Lt to 3815+93.0~21.5' Lt	11	CF



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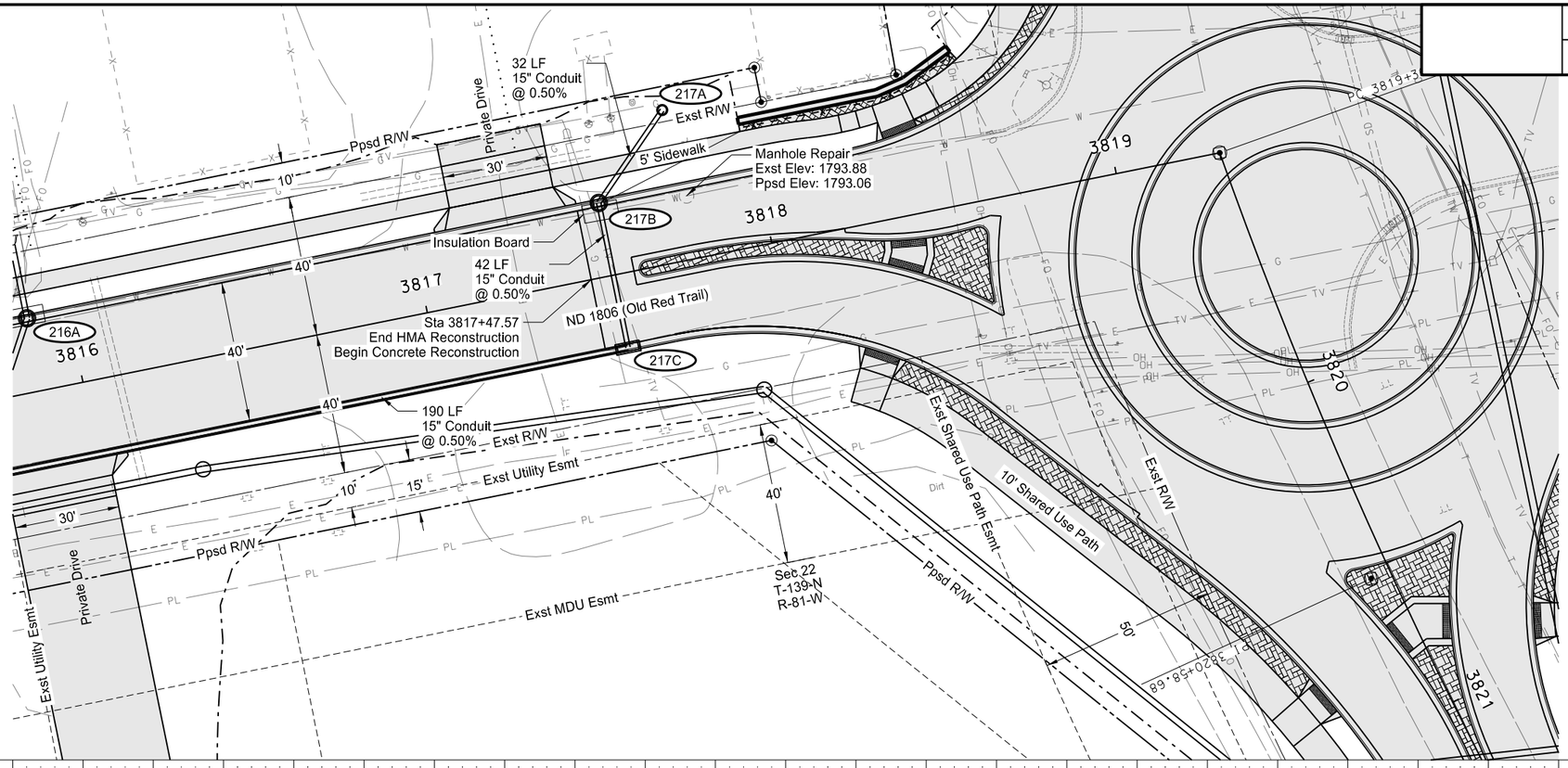
ND 1806

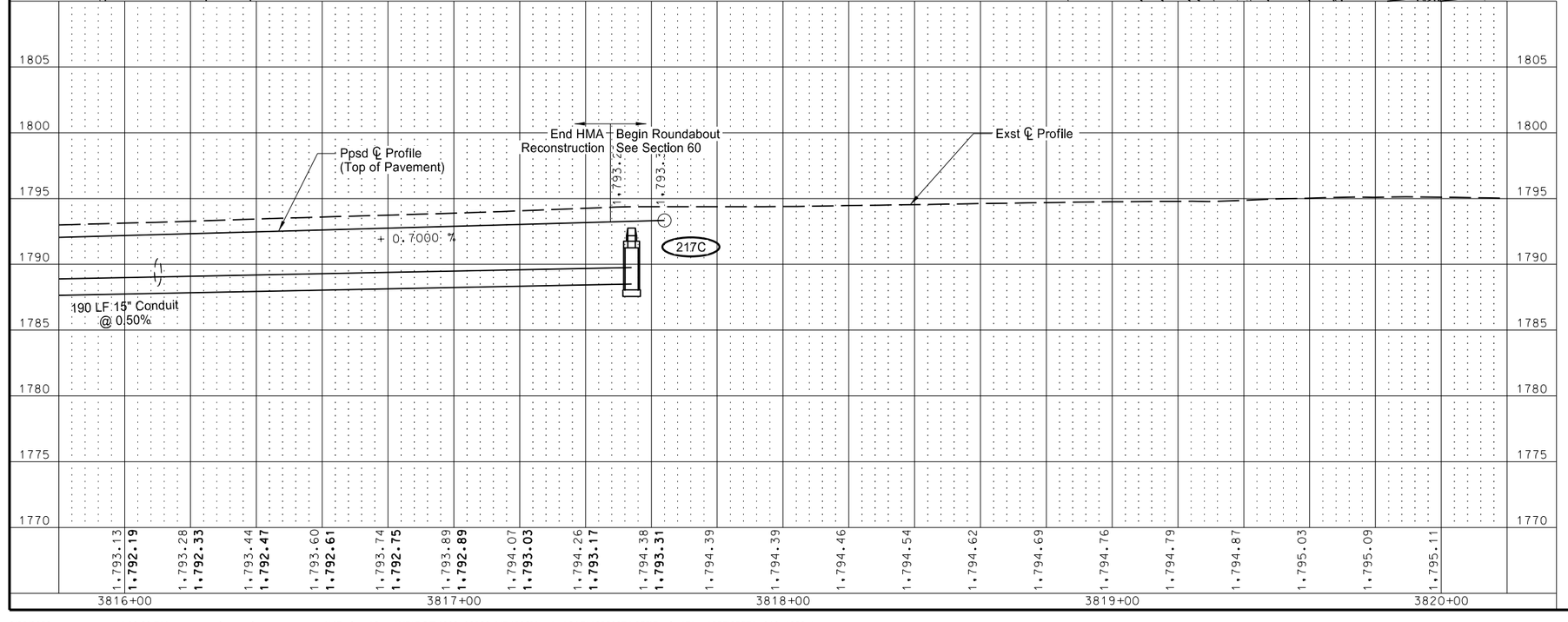
Storm Drain

ND 1806
Sta 3812+00 to 3816+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	10

SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		217A to 217B	32	LF
		217B to 217C	42	LF
		217C to Sta 3816+00~21.0' Rt	154	LF
722	3410	MANHOLE REPAIR		
		Sta 3817+78.9~18.0' Lt	1	EA
722	3520	INLET-TYPE 2 DOUBLE		
		217C	1	EA
722	3701	INLET SPECIAL-TYPE 2 48IN		
		217B	1	EA
722	4010	INLET CATCH BASIN 6IN BEEHIVE		
		217A	1	EA
744	0050	INSULATION BOARD		
		Sta 3817+49.0~18.6' Lt to 3817+59.0~18.4' Lt	11	CF





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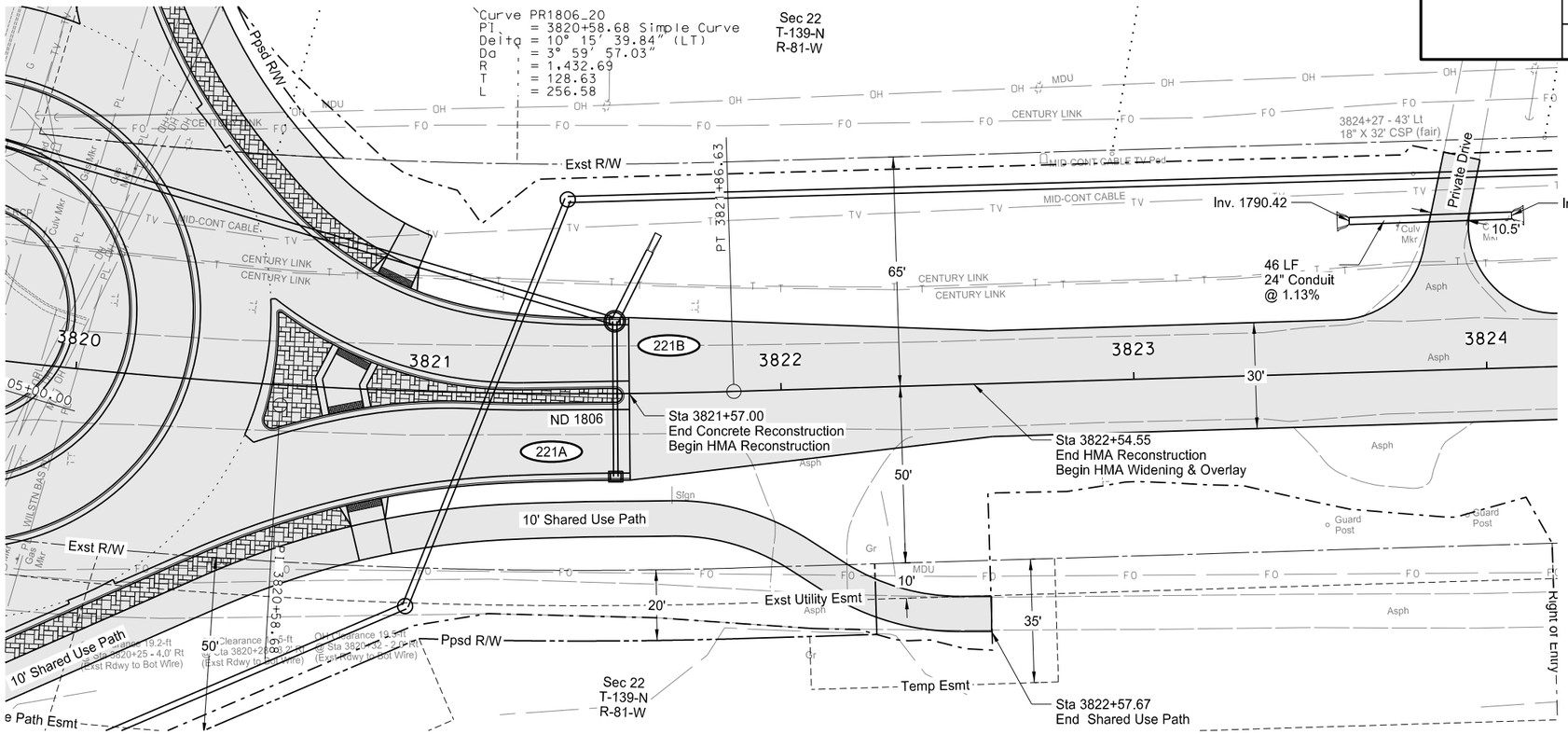
ND 1806

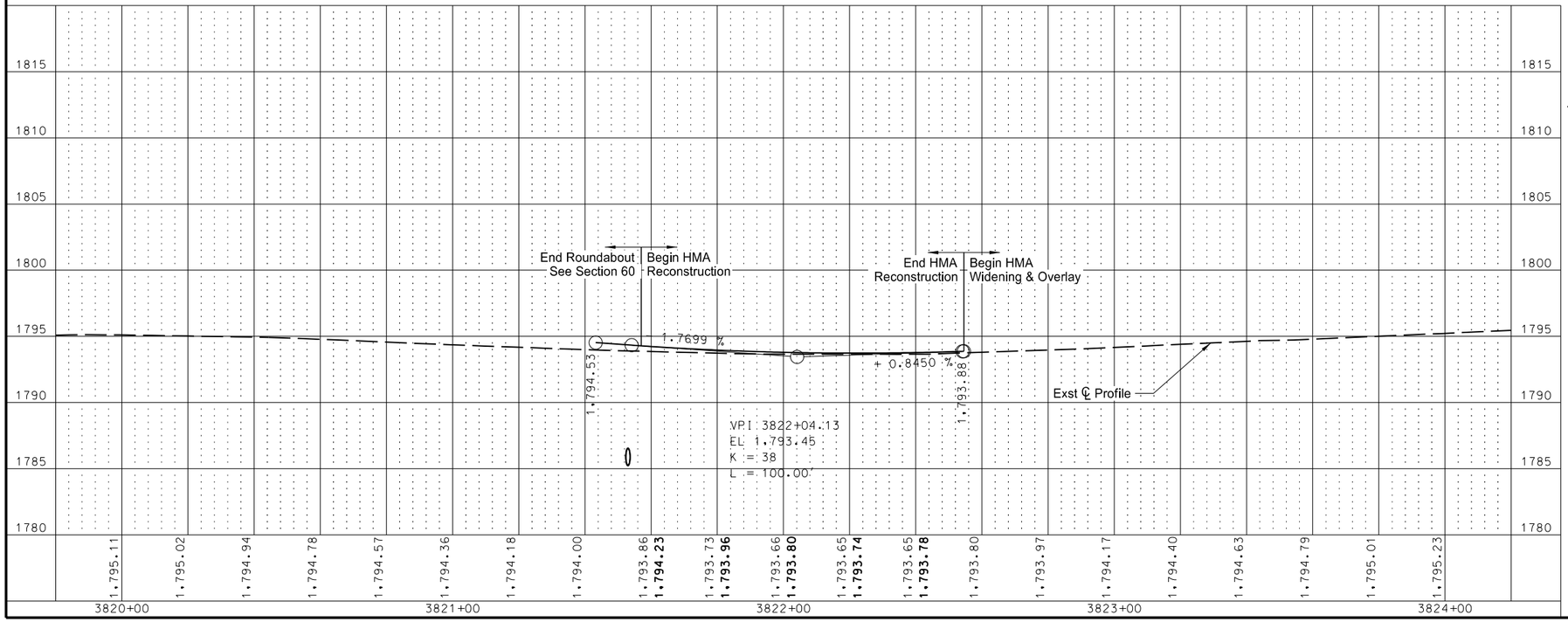
Storm Drain

ND 1806
Sta 3816+00 to 3817+47.57 PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	11

SPEC CODE	BID ITEM	QTY	UNIT
714 4106	PIPE CONDUIT 24IN-APPROACH		
	Sta 3823+62.3~42.9' Lt to 3824+08.3~43.1' Lt	46	LF





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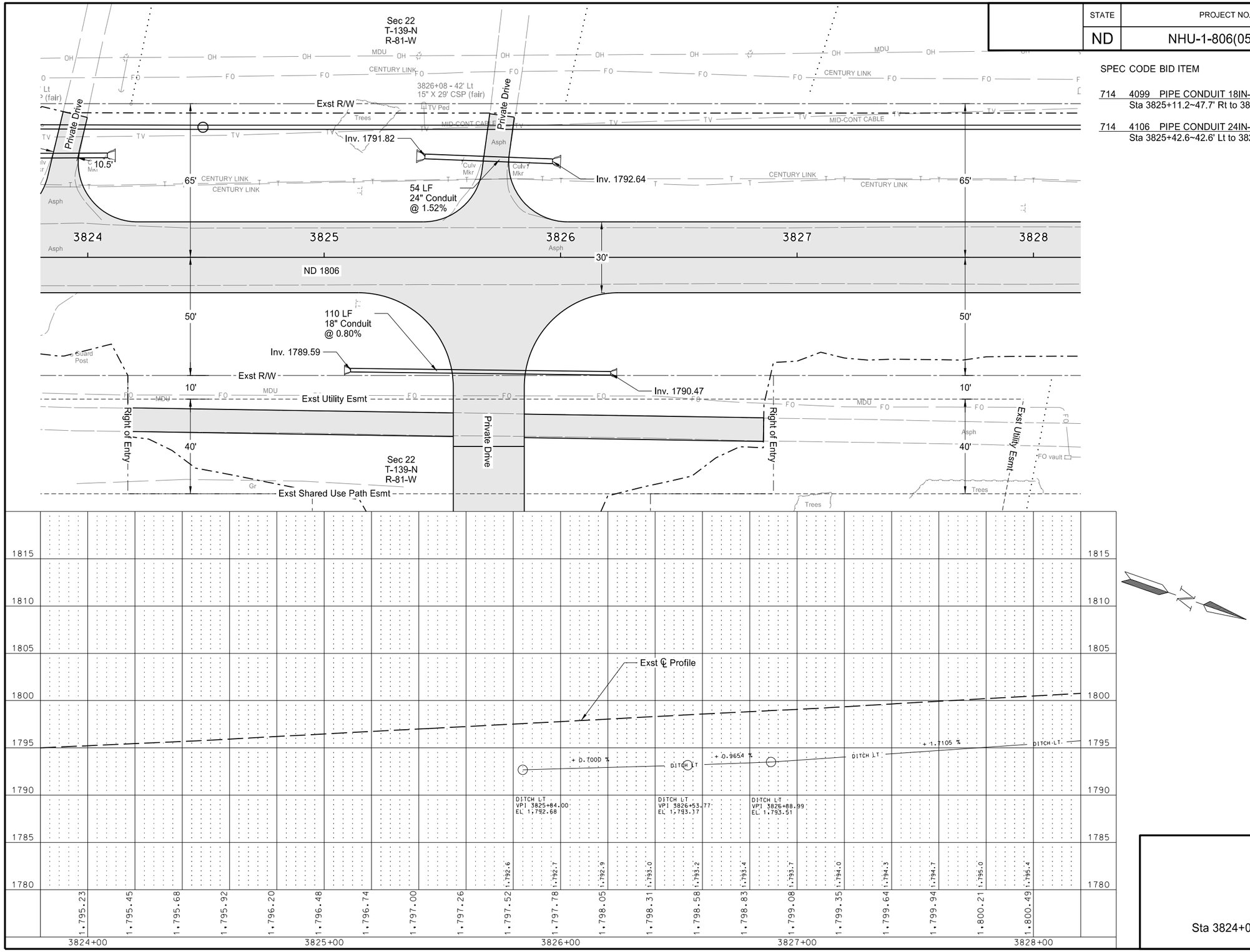
ND 1806

Storm Drain

ND 1806
Sta 3821+57.00 to 3824+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	12

SPEC	CODE	BID ITEM	QTY	UNIT
714	4099	PIPE CONDUIT 18IN-APPROACH		
		Sta 3825+11.2~47.7' Rt to 3826+21.2~49.1' Rt	110	LF
714	4106	PIPE CONDUIT 24IN-APPROACH		
		Sta 3825+42.6~42.6' Lt to 3825+96.6~40.6' Lt	54	LF



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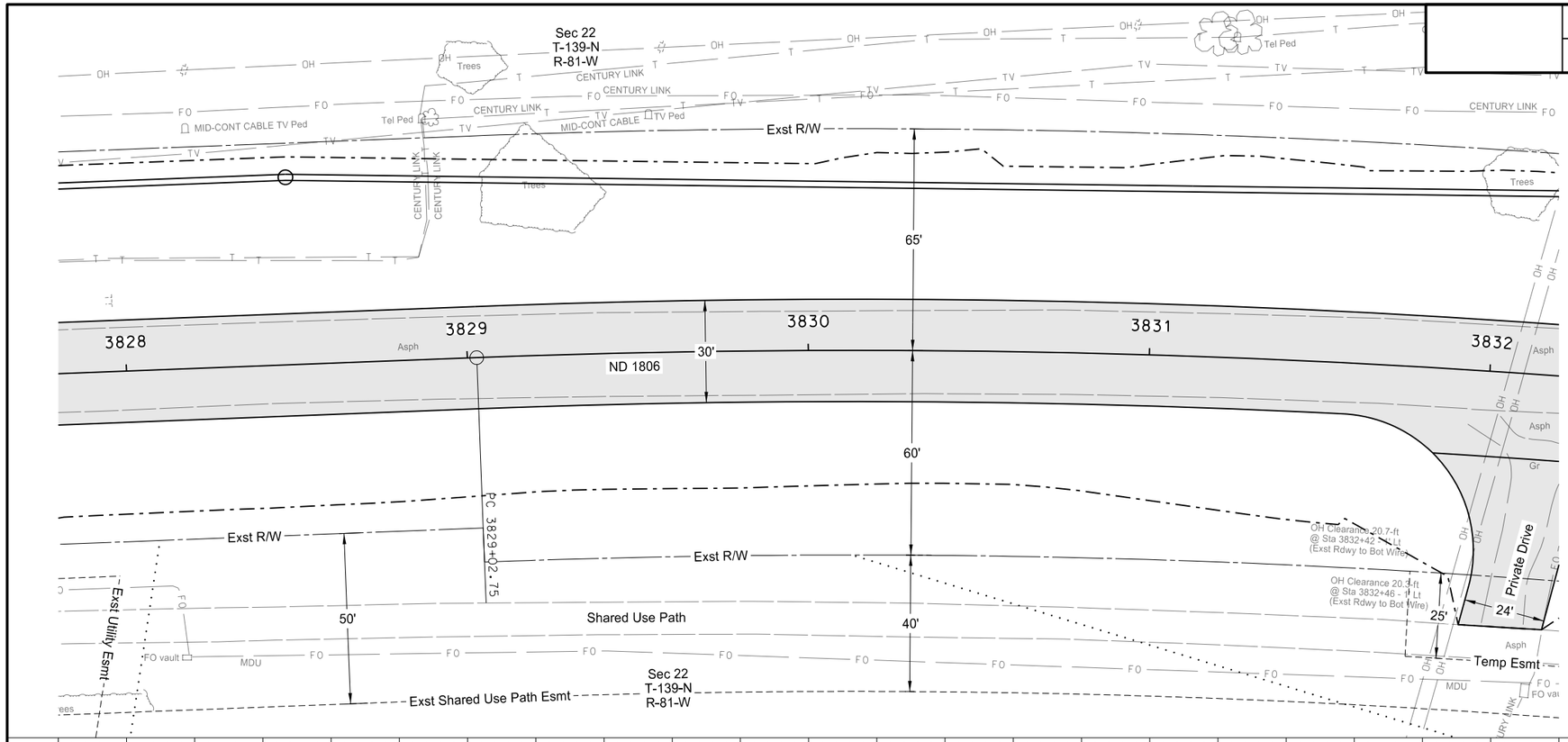
ND 1806

Storm Drain

ND 1806
Sta 3824+00 to 3828+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	55	13



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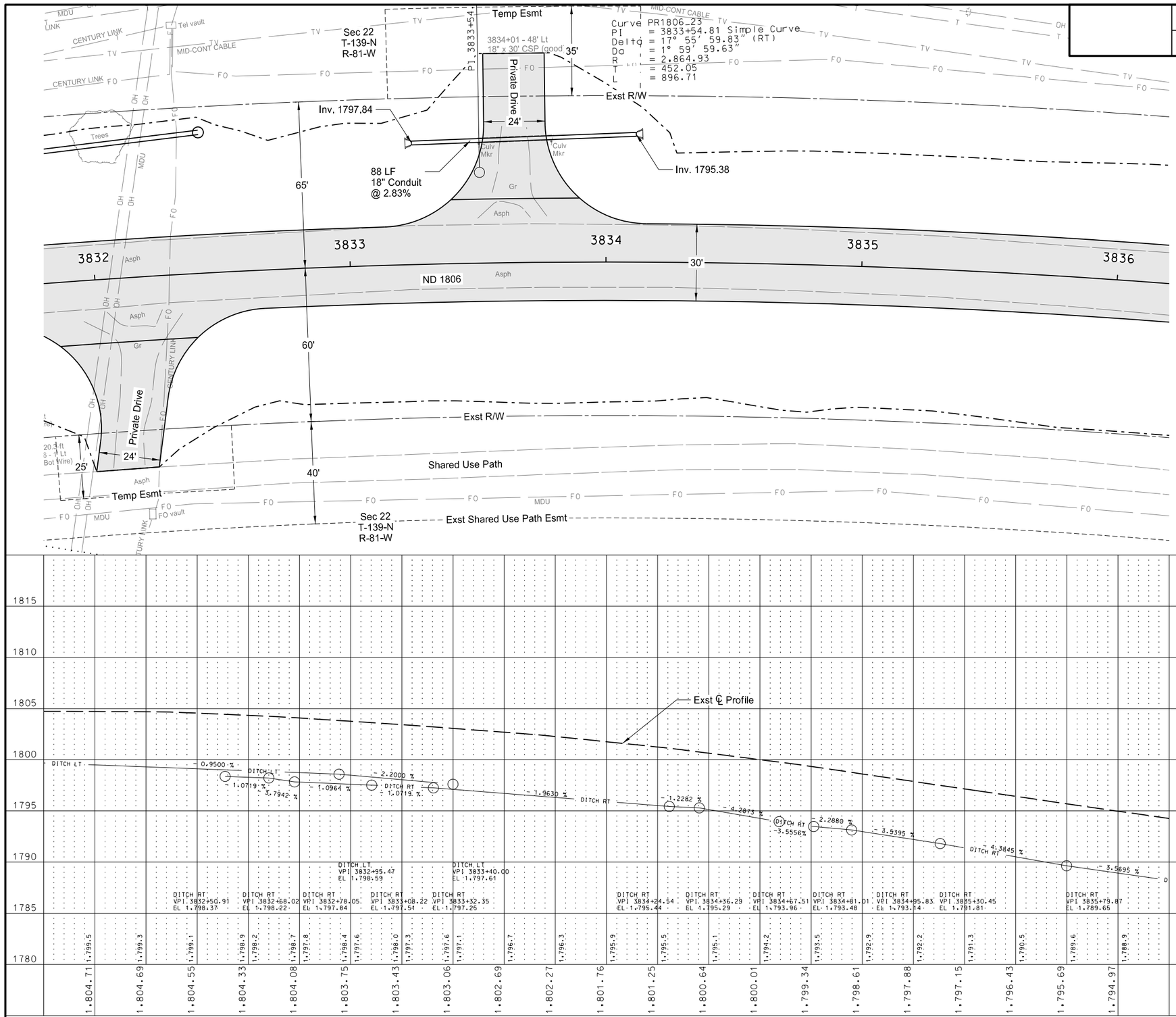
ND 1806

Storm Drain

ND 1806
Sta 3828+00 to 3832+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	14

SPEC CODE	BID ITEM	QTY	UNIT
714	4099 PIPE CONDUIT 18IN-APPROACH		
	Sta 3833+25.2~47.5' Lt to 3834+11.6~49.9' Lt	88	LF



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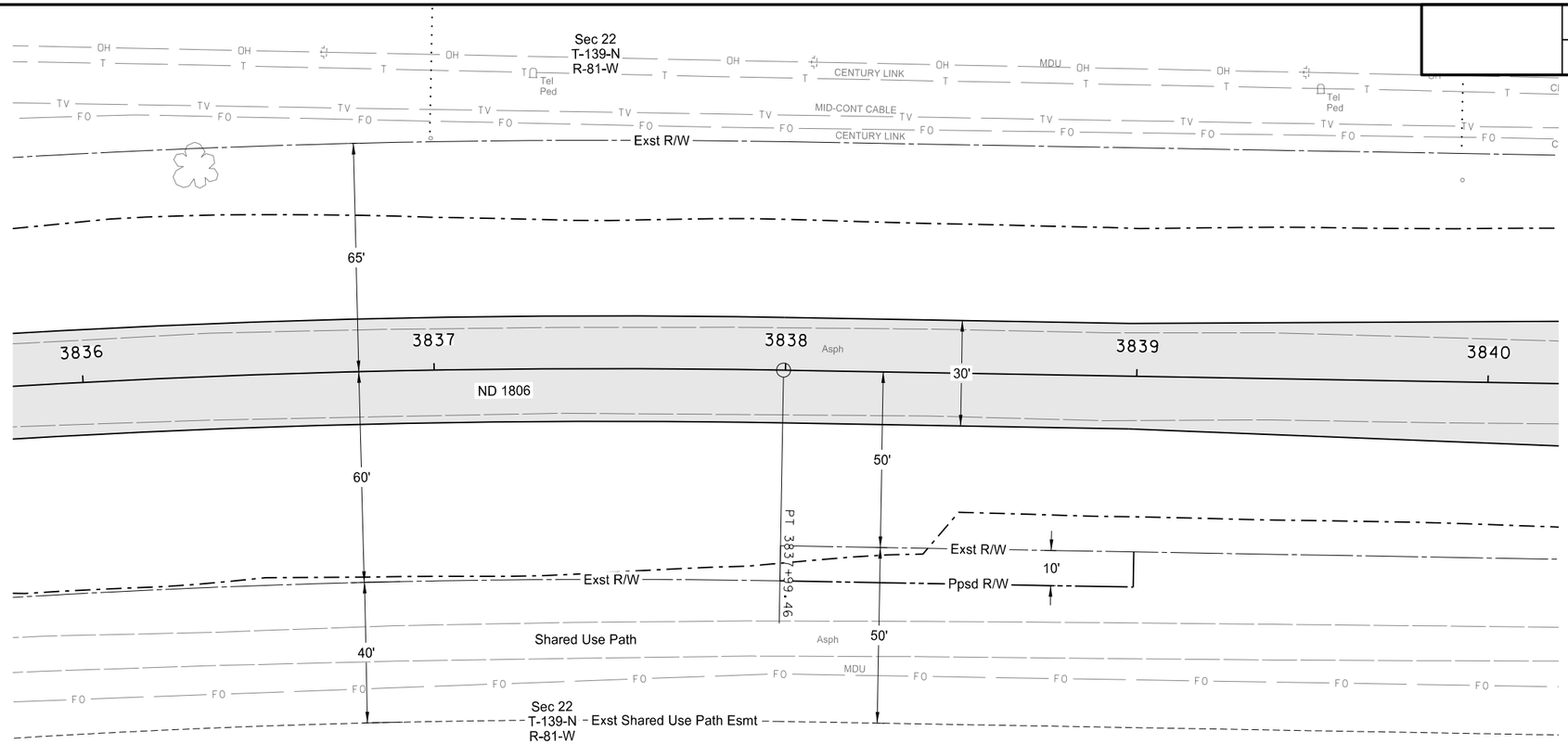
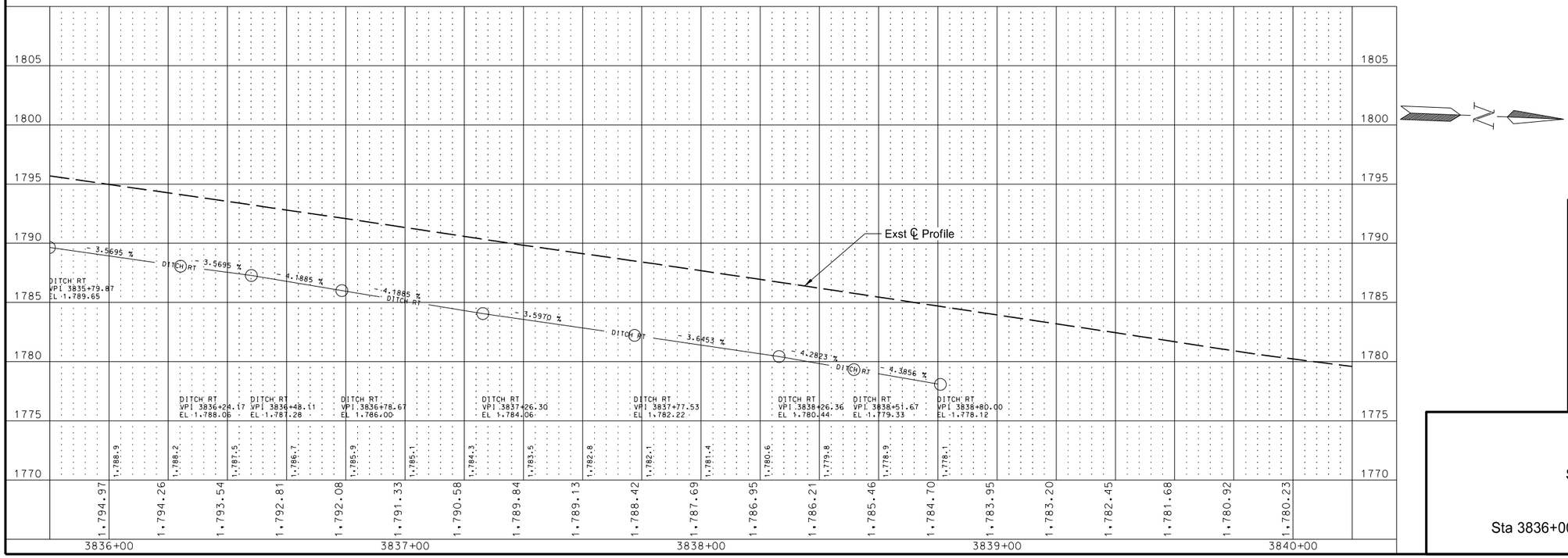
ND 1806

Storm Drain

ND 1806
Sta 3832+00 to 3836+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	15





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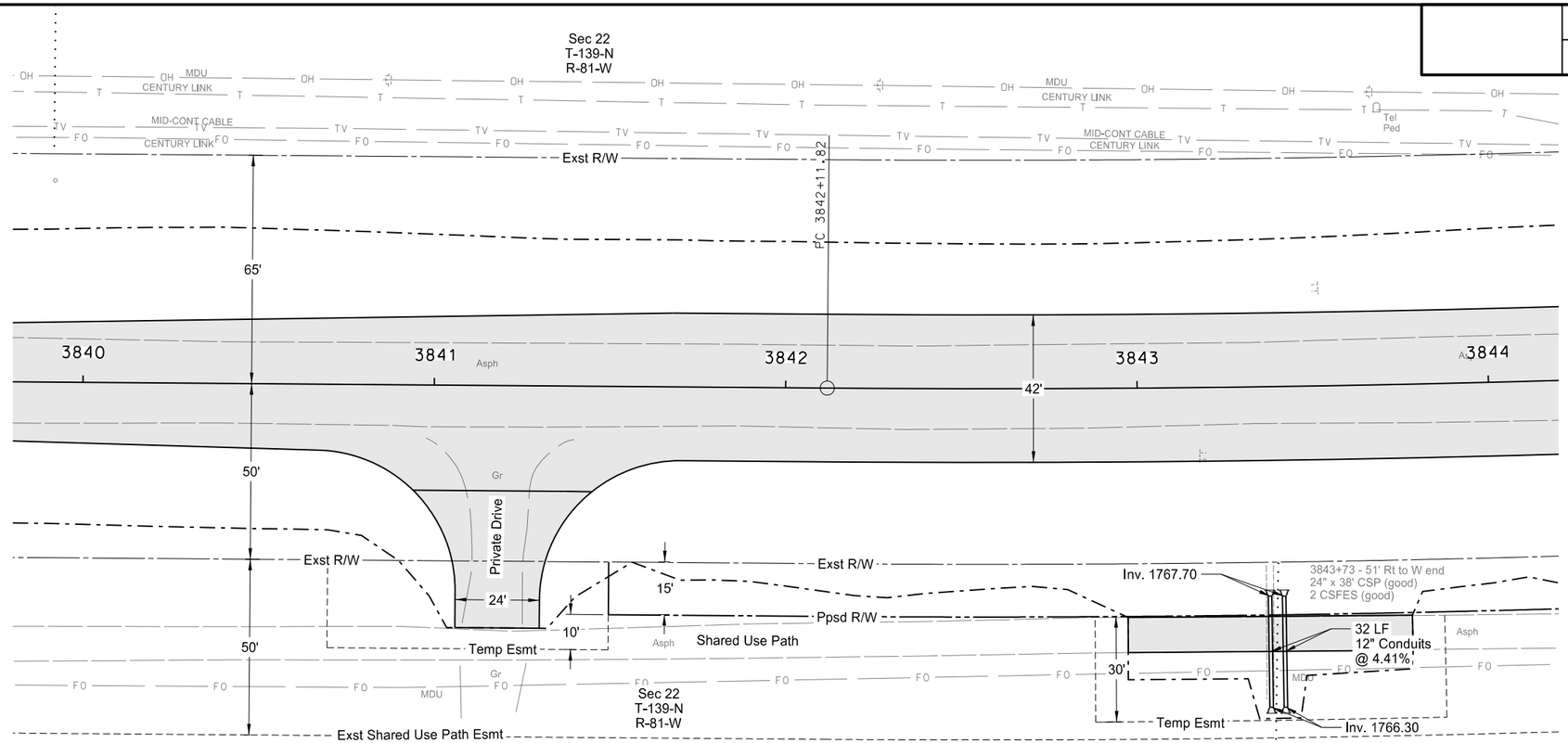
ND 1806

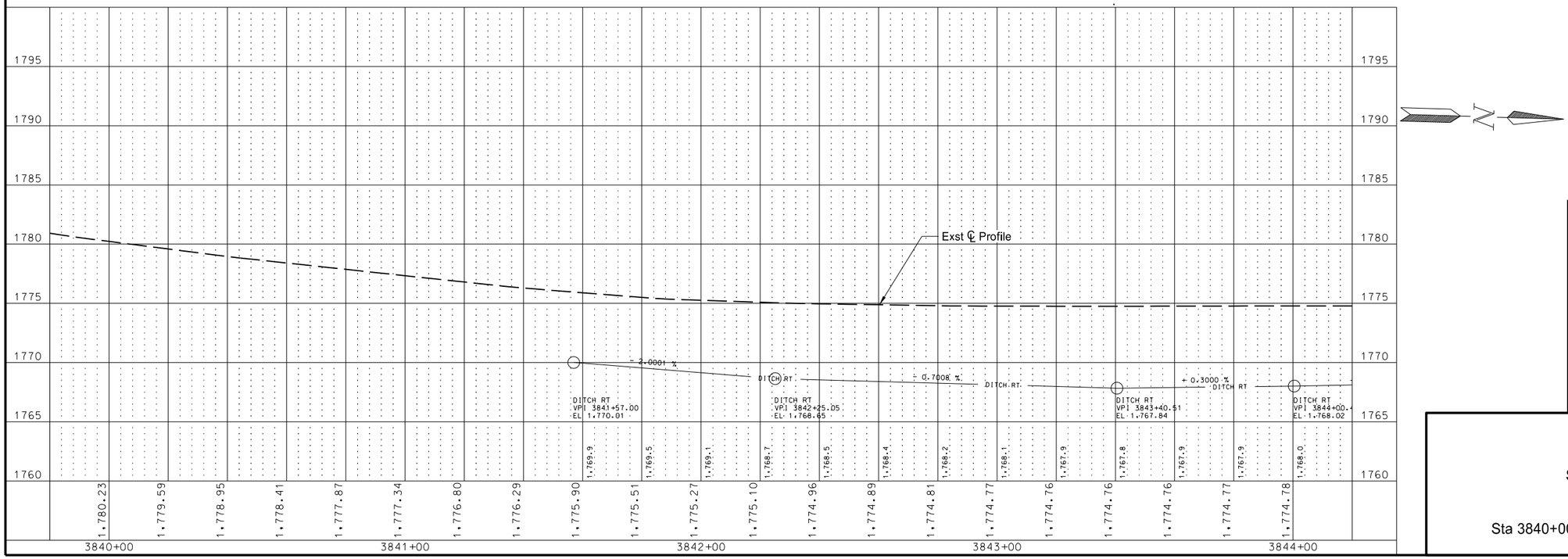
Storm Drain

ND 1806
Sta 3836+00 to 3840+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	16

SPEC	CODE	BID ITEM	QTY	UNIT
714	4091	PIPE CONDUIT 12IN-APPROACH		
		Sta 3843+37.0~59.7' Rt to 3843+37.0~91.2' Rt	32	LF
		Sta 3843+41.0~59.7' Rt to 3843+41.0~91.3' Rt	32	LF





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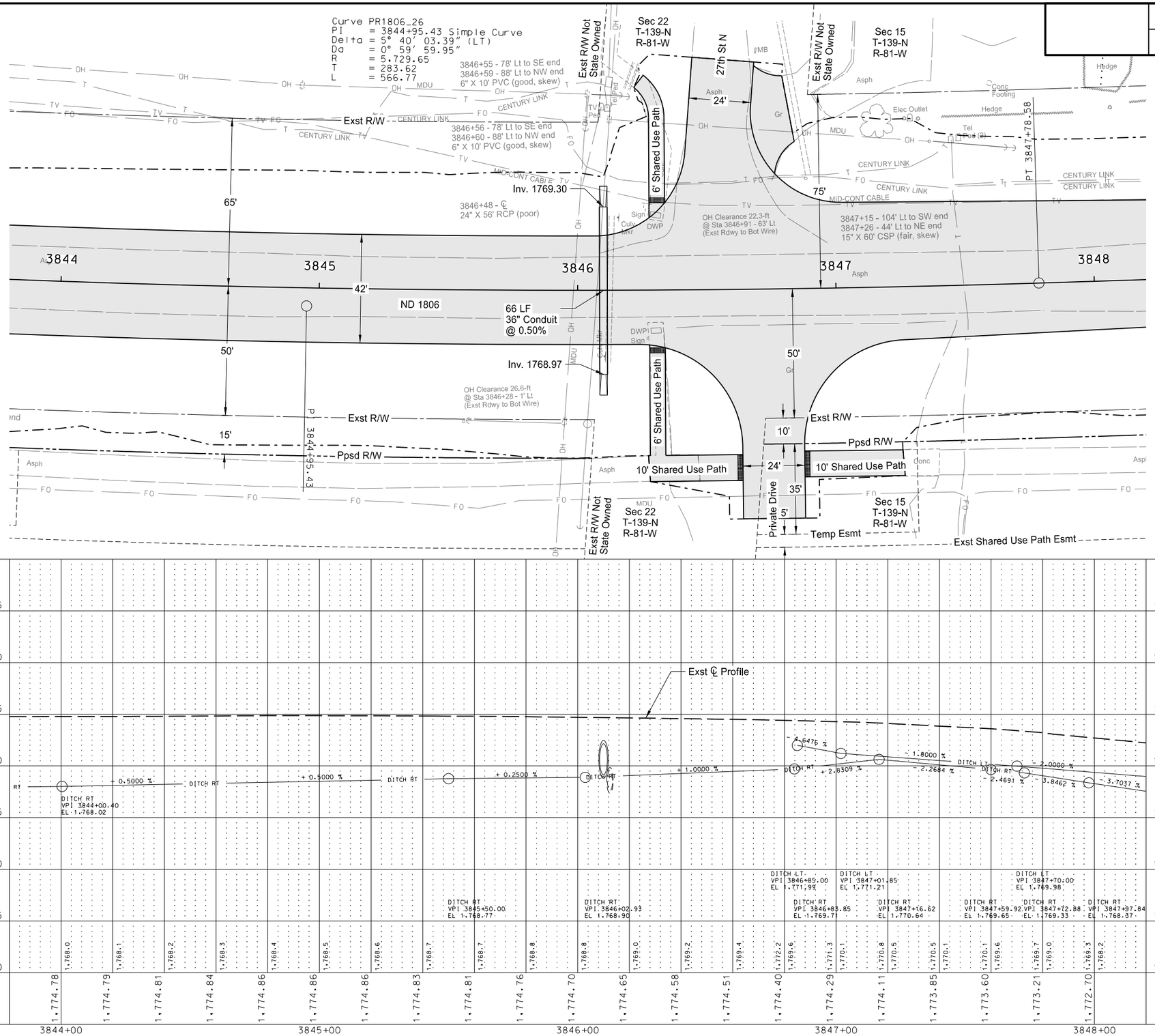
ND 1806

Storm Drain

ND 1806
Sta 3840+00 to 3844+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	17

SPEC CODE	BID ITEM	QTY	UNIT
714 4115	PIPE CONDUIT 36IN		
	Sta 3846+10.0~32.2' Lt to 3846+10.0~32.6' Rt	66	LF



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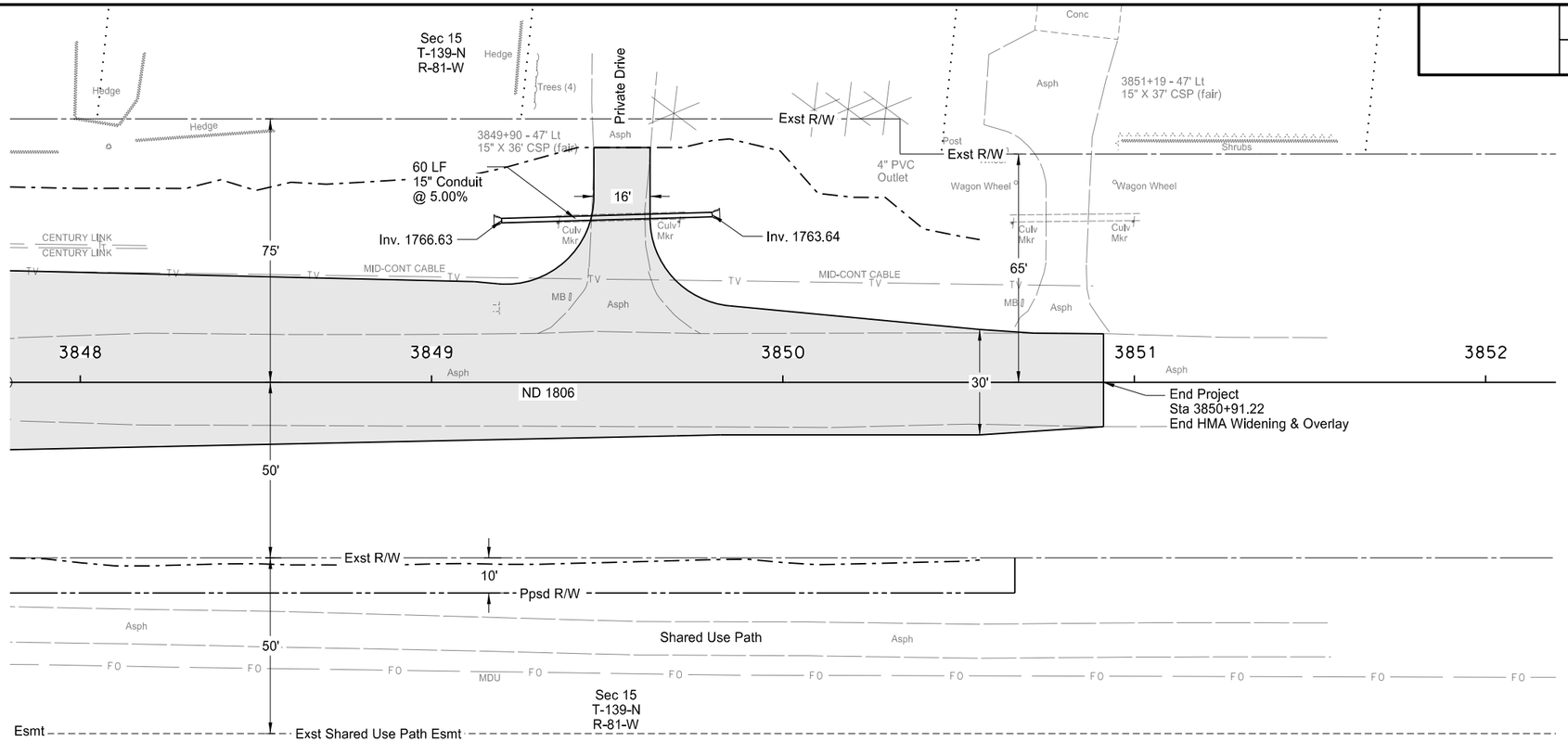
ND 1806

Storm Drain

ND 1806
Sta 3844+00 to 3848+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	18

SPEC CODE	BID ITEM	QTY	UNIT
714 4096	PIPE CONDUIT 15IN-APPROACH		
	Sta 3849+19.9~46.0' Lt to 3849+79.8~47.7' Lt	60	LF



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ND 1806

Storm Drain

ND 1806
Sta 3848+00 to 3852+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	19

SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN 218A to 218B	42	LF
722	3520	INLET-TYPE 2 DOUBLE 218A	1	EA

Curve PRRBSEEOP_3
PI = 50+43.40 Simple Curve
Delta = 0° 32' 35.13" (LT)
Da = 3° 56' 48.60"
R = 1,451.69
T = 6.88
L = 13.76

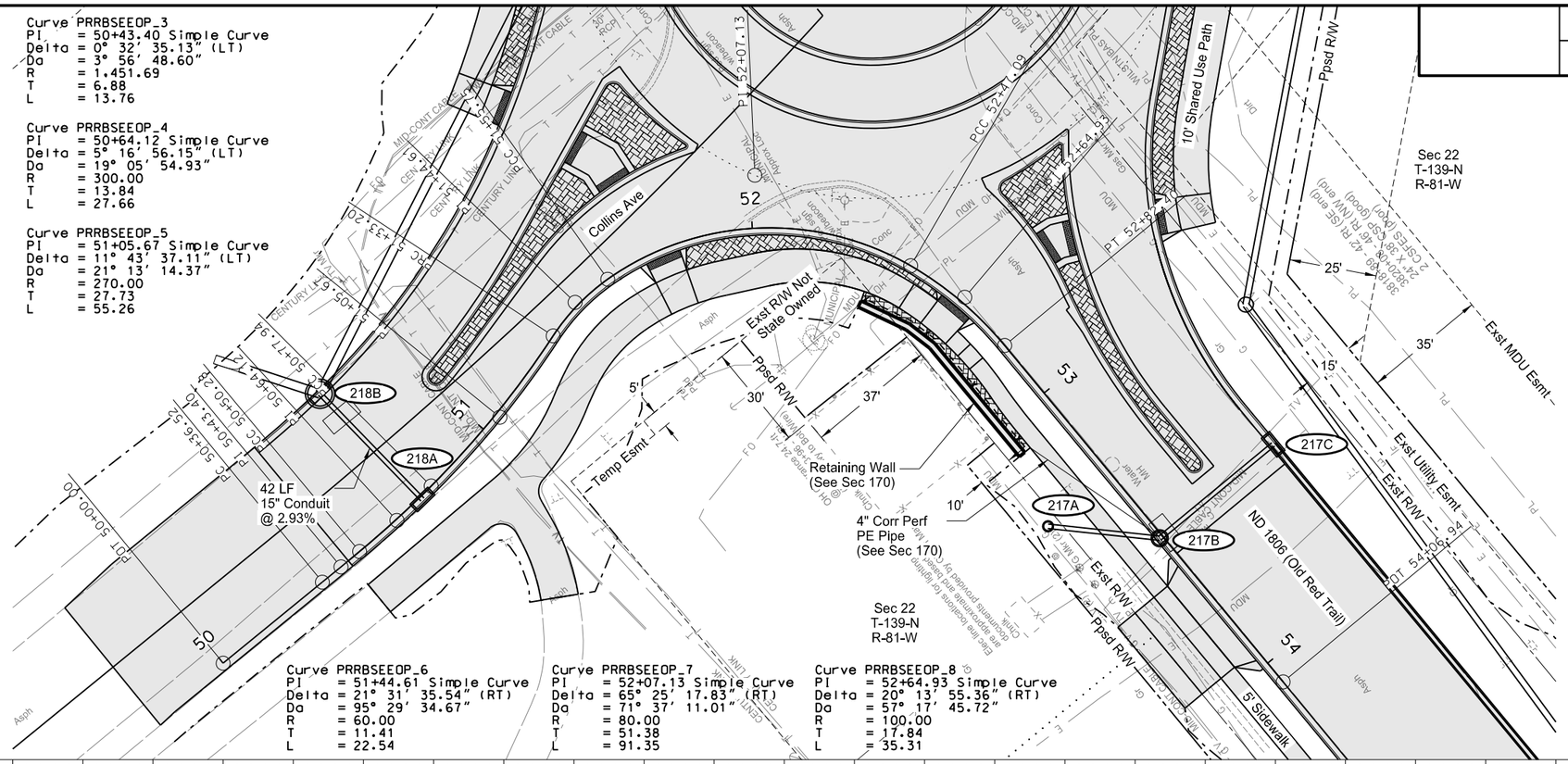
Curve PRRBSEEOP_4
PI = 50+64.12 Simple Curve
Delta = 5° 16' 56.15" (LT)
Da = 19° 05' 54.93"
R = 300.00
T = 13.84
L = 27.66

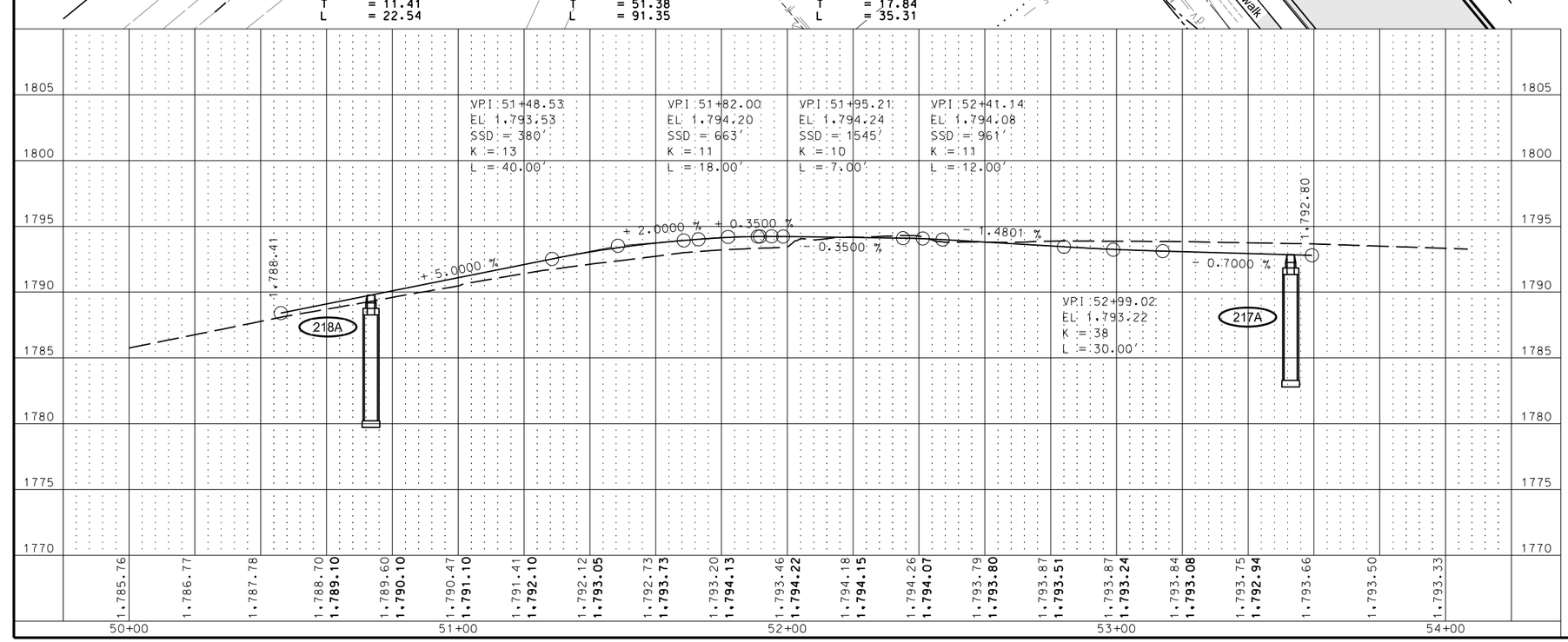
Curve PRRBSEEOP_5
PI = 51+05.67 Simple Curve
Delta = 11° 43' 37.11" (LT)
Da = 21° 13' 14.37"
R = 270.00
T = 27.73
L = 55.26

Curve PRRBSEEOP_6
PI = 51+44.61 Simple Curve
Delta = 21° 31' 35.54" (RT)
Da = 95° 29' 34.67"
R = 60.00
T = 11.41
L = 22.54

Curve PRRBSEEOP_7
PI = 52+07.13 Simple Curve
Delta = 65° 25' 17.83" (RT)
Da = 71° 37' 11.01"
R = 80.00
T = 51.38
L = 91.35

Curve PRRBSEEOP_8
PI = 52+64.93 Simple Curve
Delta = 20° 13' 55.36" (RT)
Da = 57° 17' 45.72"
R = 100.00
T = 17.84
L = 35.31





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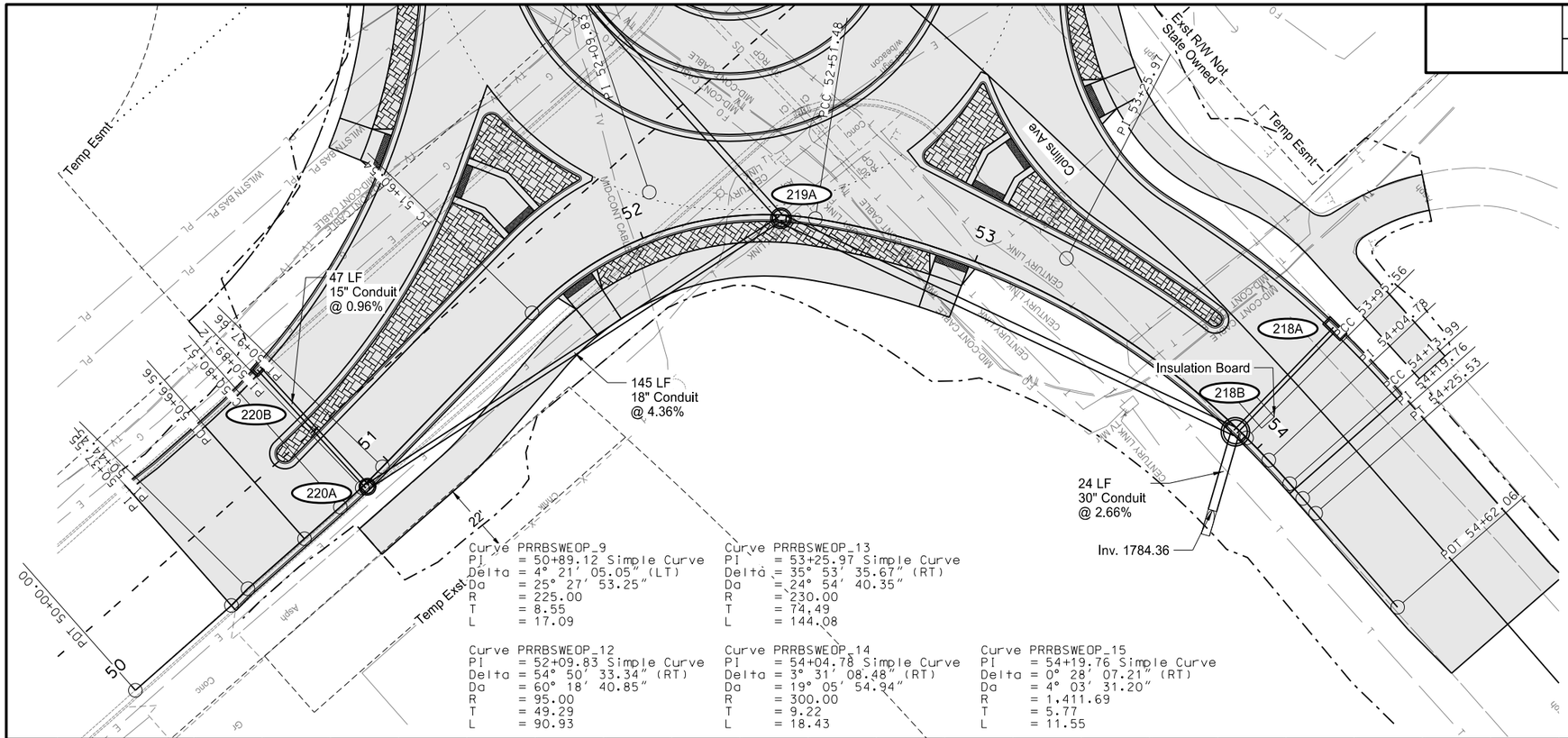
ND 1806

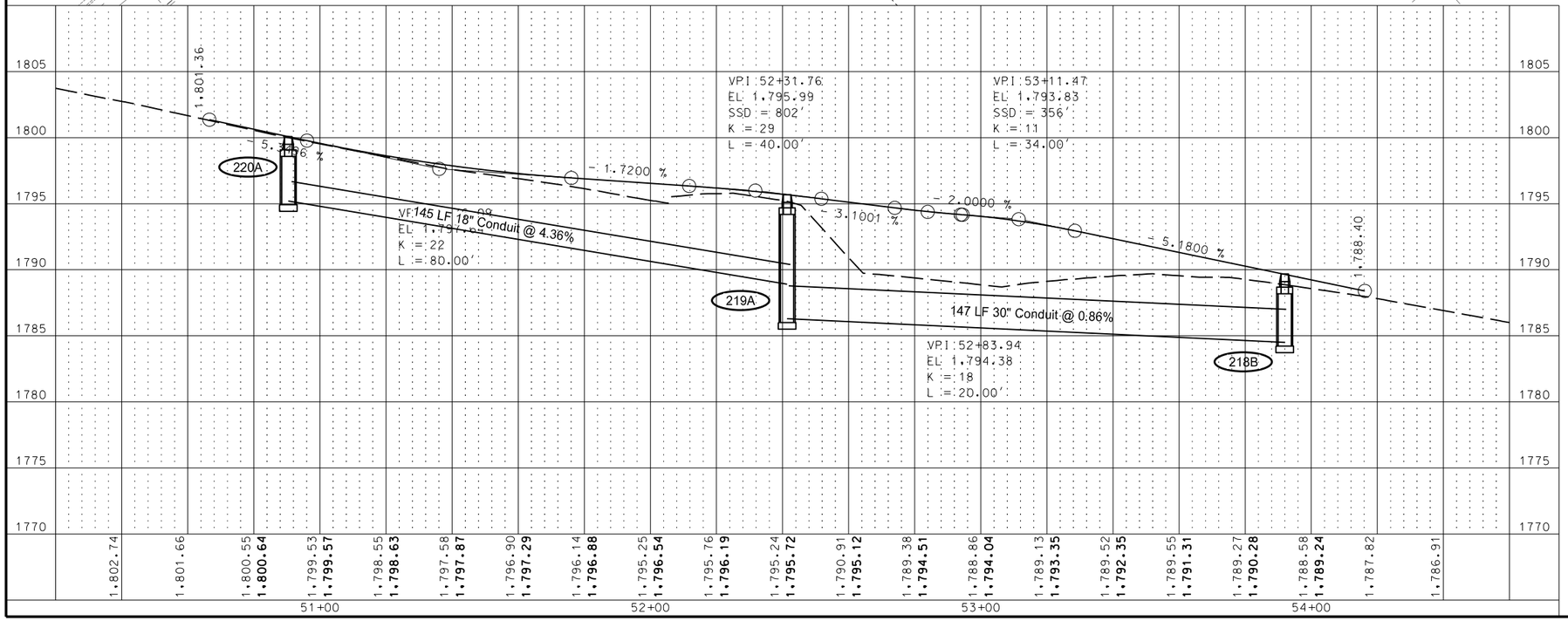
Storm Drain

Roundabout - Southeast EOP
Sta 50+00 to 54+06.94 (PRRBSEEOP)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	20

SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN 220B to 220A	47	LF
714	4101	PIPE CONDUIT 18IN-STORM DRAIN 220A to 219A	145	LF
714	4112	PIPE CONDUIT 30IN-STORM DRAIN 218B to Sta 54+04.1~22.0' Rt	24	LF
722	3701	INLET SPECIAL-TYPE 2 48IN 220A	1	EA
744	0050	INSULATION BOARD Sta 53+87.2~8.4' Lt to 53+96.8~7.6' Lt	11	CF





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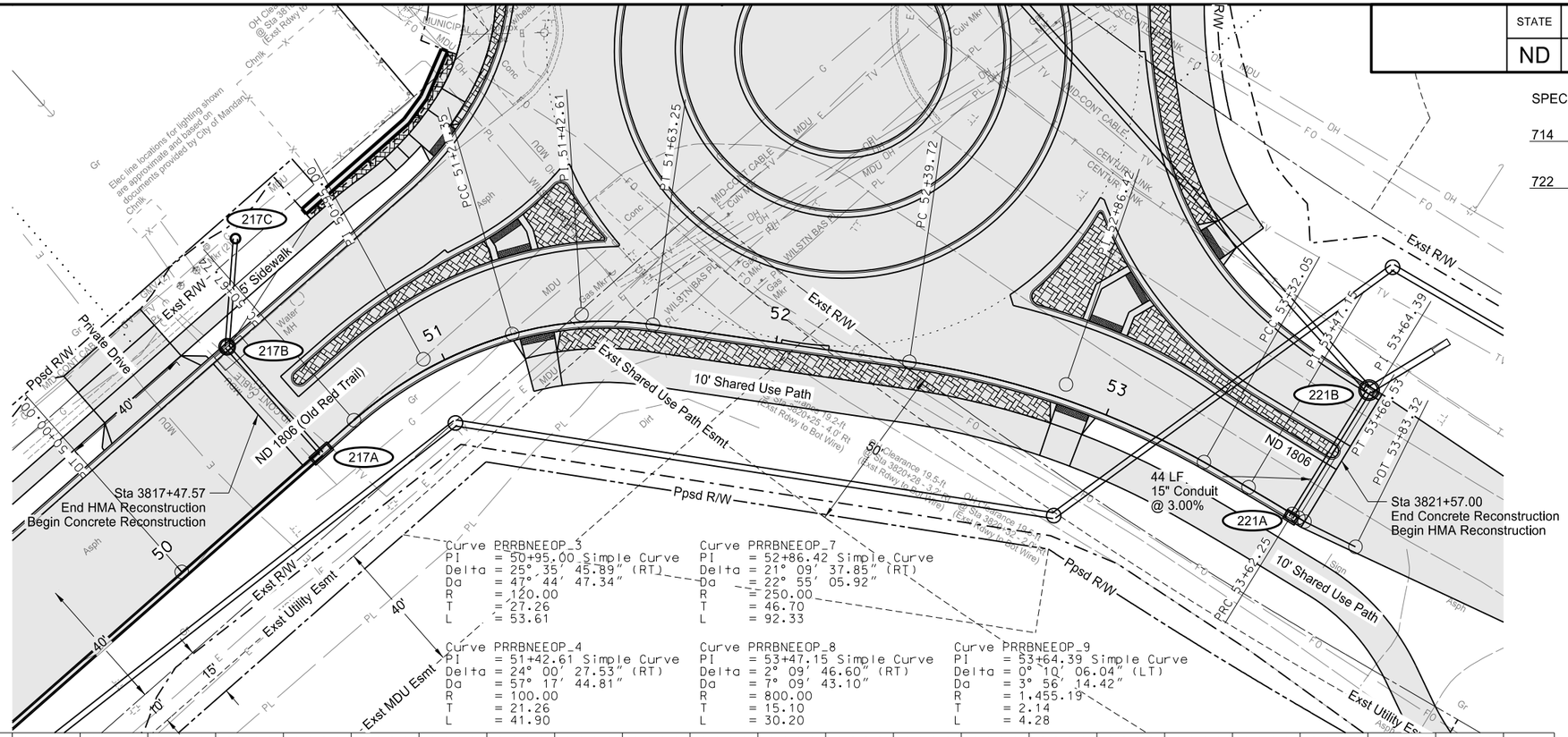
ND 1806

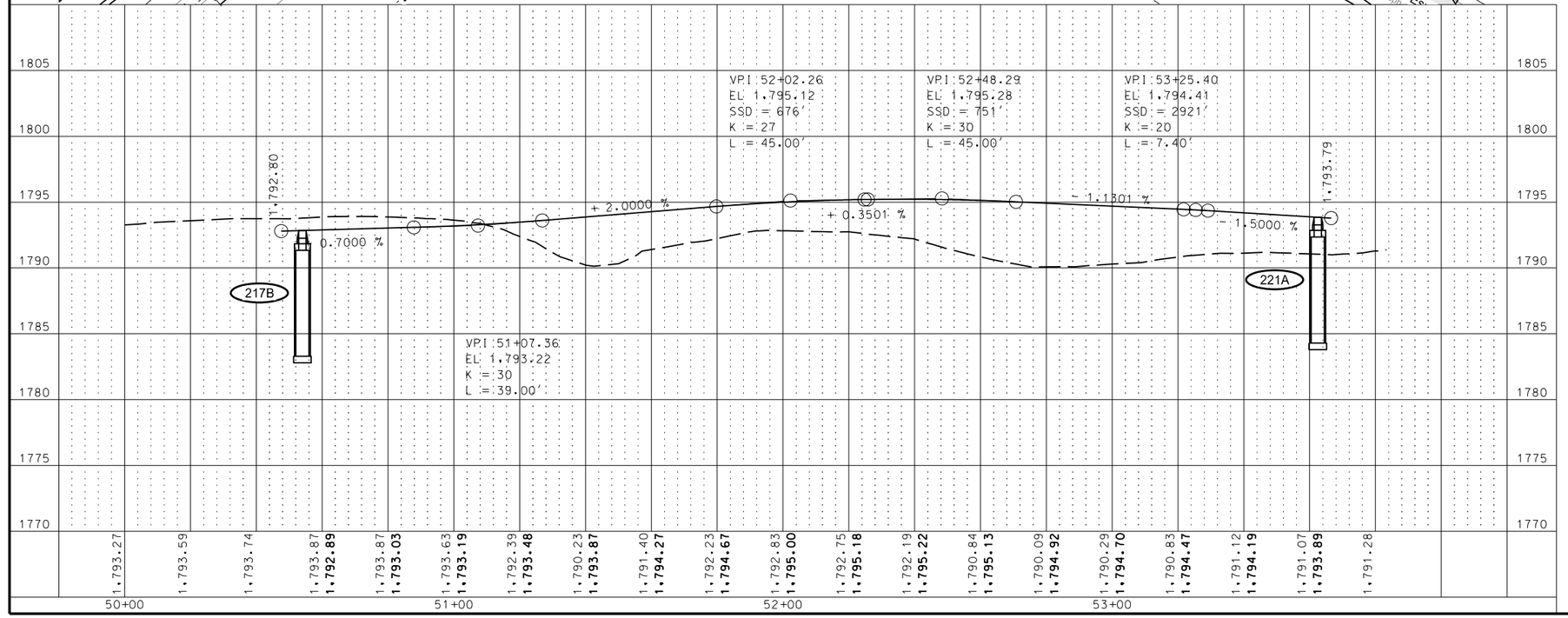
Storm Drain

Roundabout - Southwest EOP
Sta 50+00 to 54+62.06 (PRRBSWEOP)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	21

SPEC	CODE	BID ITEM	QTY	UNIT
714	4097	PIPE CONDUIT 15IN-STORM DRAIN 221A to 221B	44	LF
722	3510	INLET-TYPE 2 221A	1	EA





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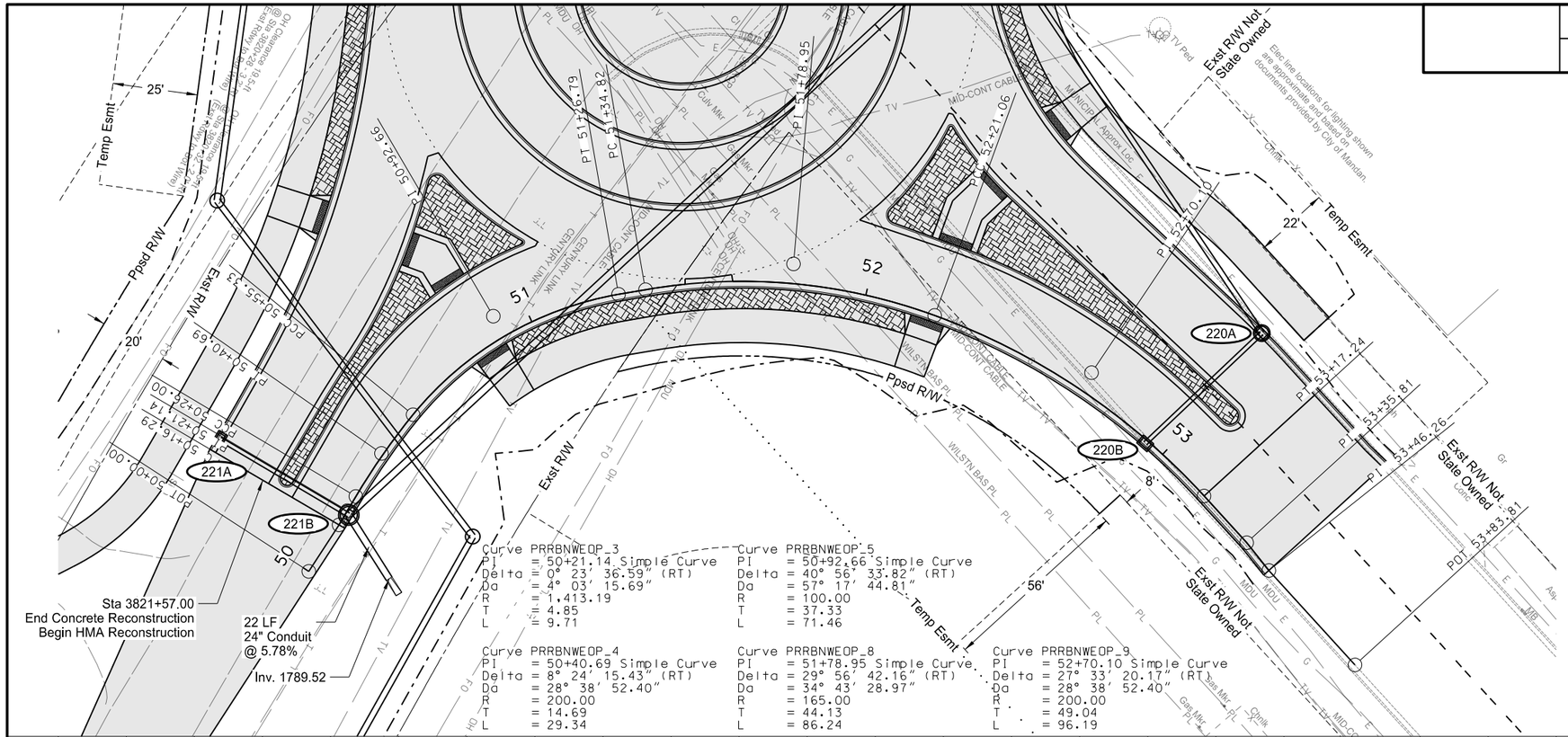
ND 1806

Storm Drain

Roundabout - Northeast EOP
Sta 50+00 to 53+83.32 (PRRBNEEOP)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	22

SPEC	CODE	BID ITEM	QTY	UNIT
714	4107	PIPE CONDUIT 24IN-STORM DRAIN Sta 50+11.1~21.0' Rt to 221B	22	LF
722	3510	INLET-TYPE 2 220B	1	EA



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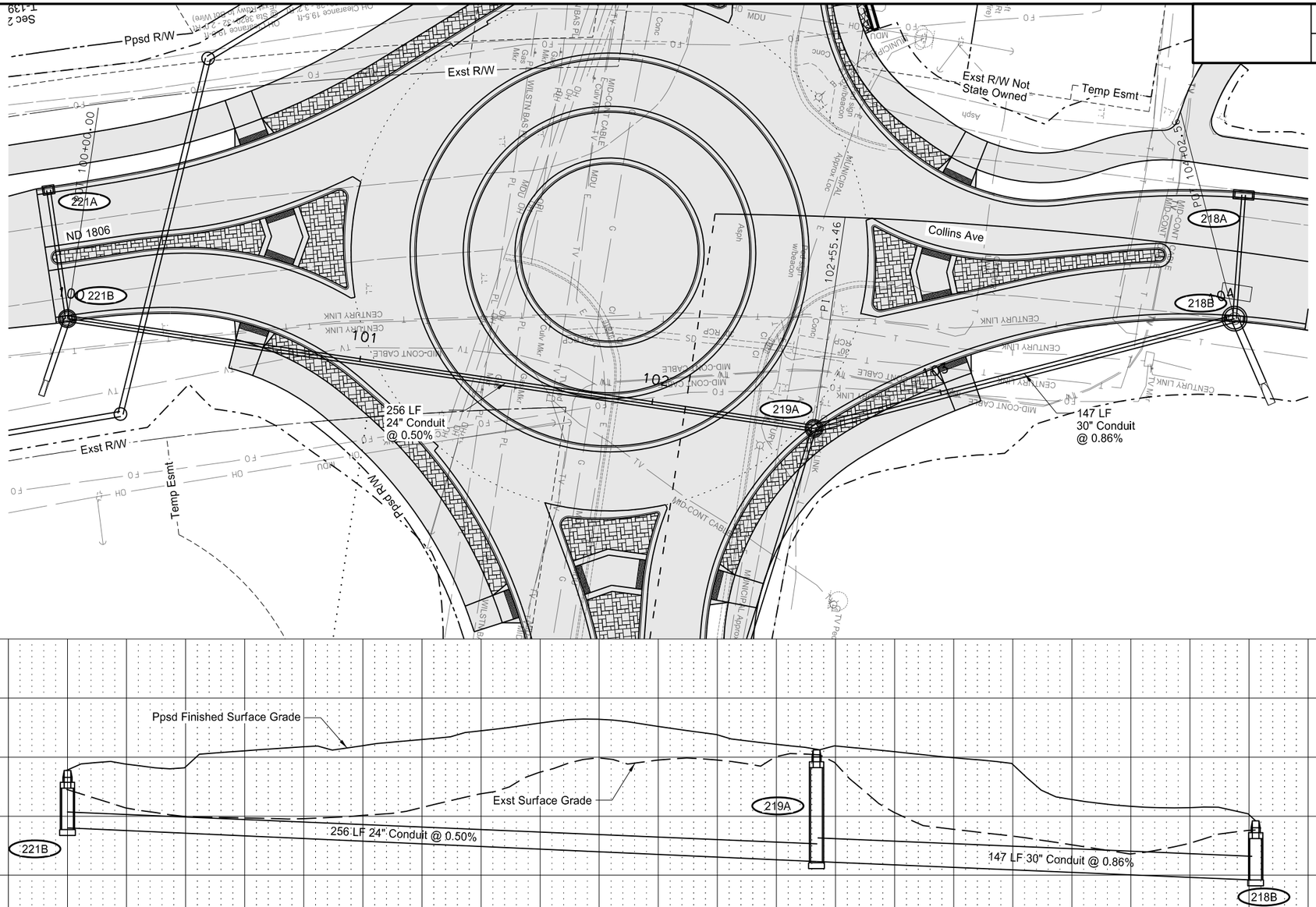
ND 1806

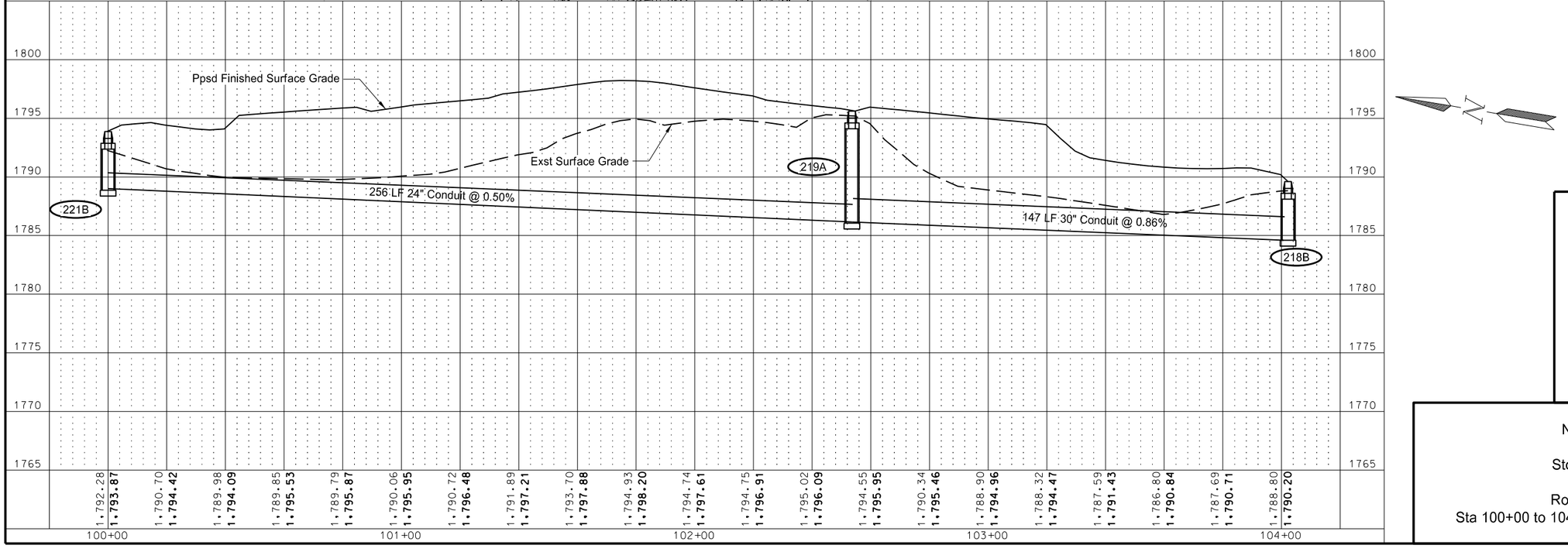
Storm Drain

Roundabout - Northwest EOP
Sta 50+00 to 53+83.81 (PRRBNWEOP)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	55	23

SPEC	CODE	BID ITEM	QTY	UNIT
714	4107	PIPE CONDUIT 24IN-STORM DRAIN		
		221B to 219A	256	LF
714	4112	PIPE CONDUIT 30IN-STORM DRAIN		
		219A to 218B	147	LF
722	3761	INLET SPECIAL-TYPE 2 60IN		
		219A	1	EA
		221B	1	EA
722	3768	INLET SPECIAL-TYPE 2 84IN		
		218B	1	EA





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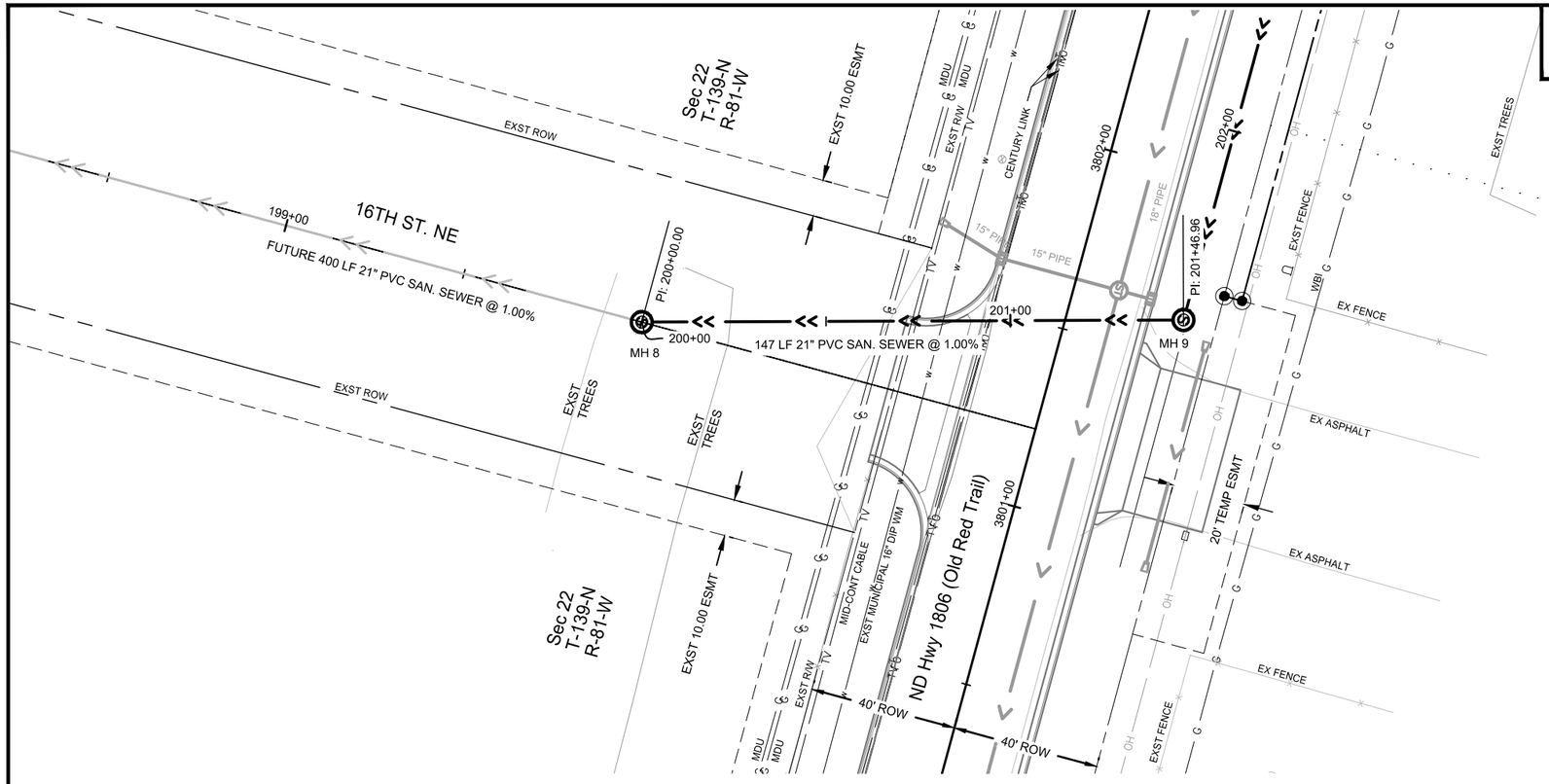
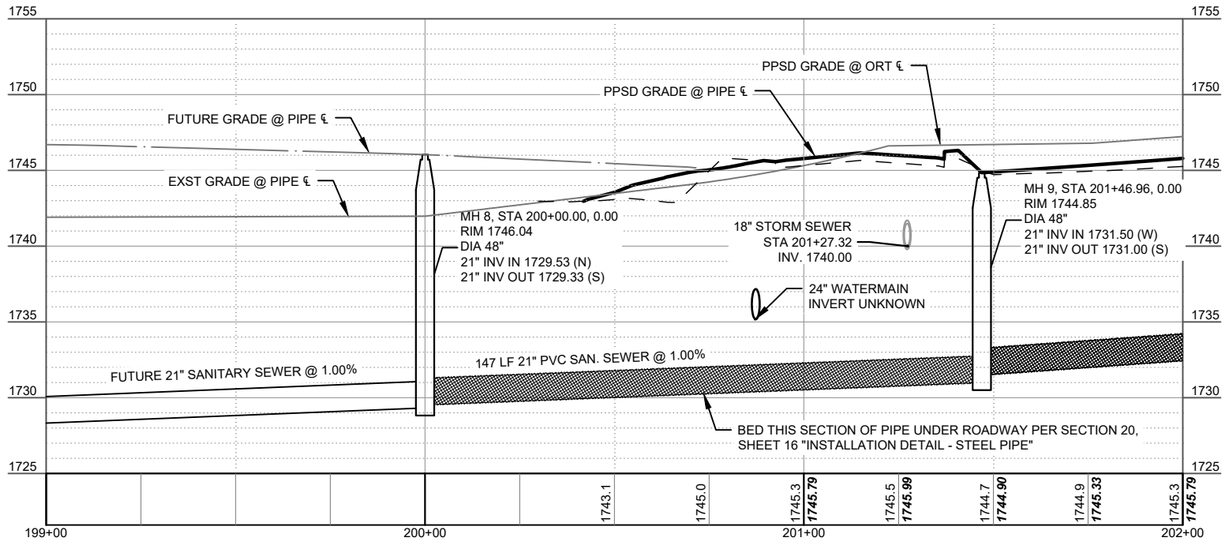
ND 1806

Storm Drain

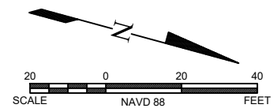
Roundabout
Sta 100+00 to 104+81.30 (PRSD218-221)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	57	1





SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		STA 200+00 TO STA 201+47	31.3	SY
722	0300	MANHOLE SANITARY		
		STA 200+00	1	EA
		STA 201+47	1	EA
722	1100	MANHOLE RISER 48IN		
		STA 200+00	14.8	LF
		STA 201+47	11.9	LF
724	1124	21 IN SANITARY SEWER PIPE		
		STA 200+00 TO STA 201+47	147	LF



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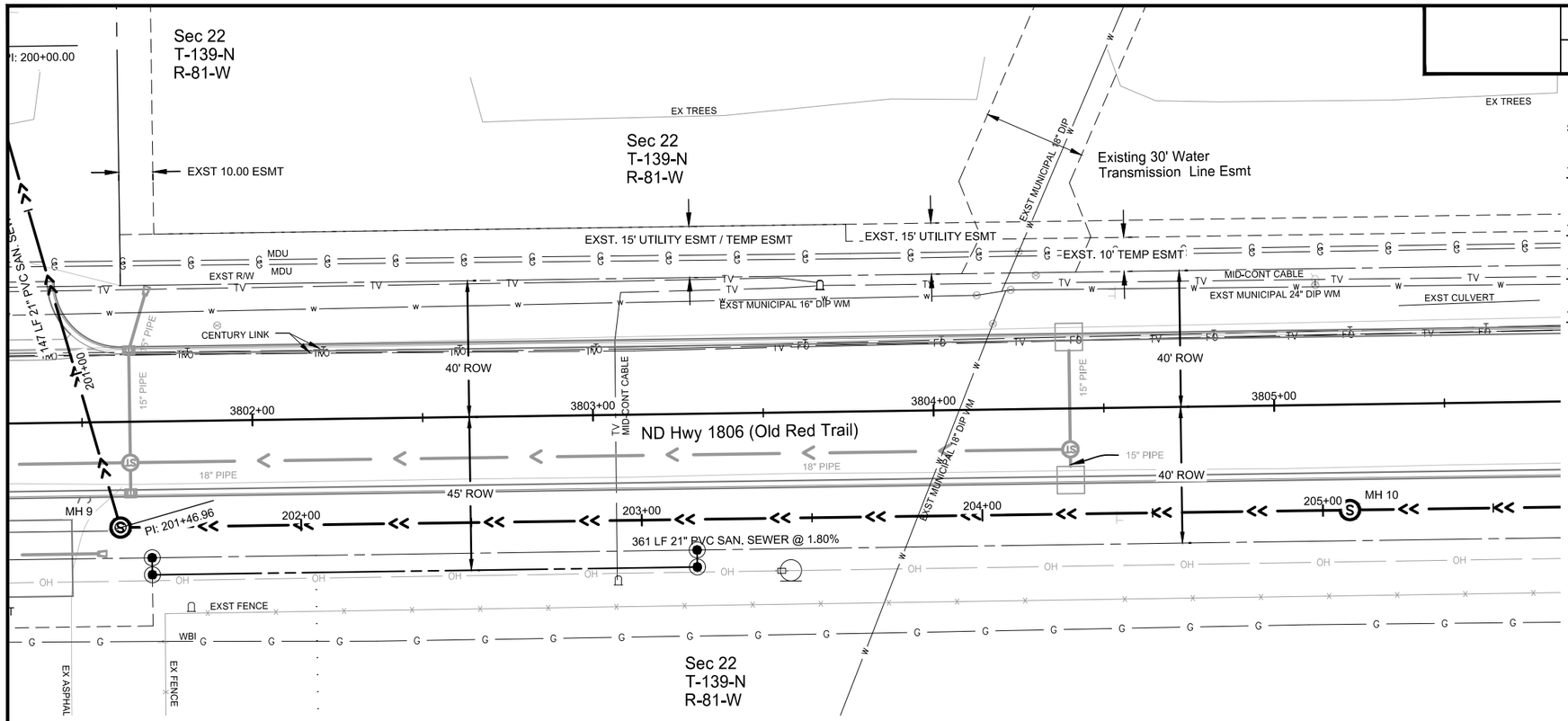
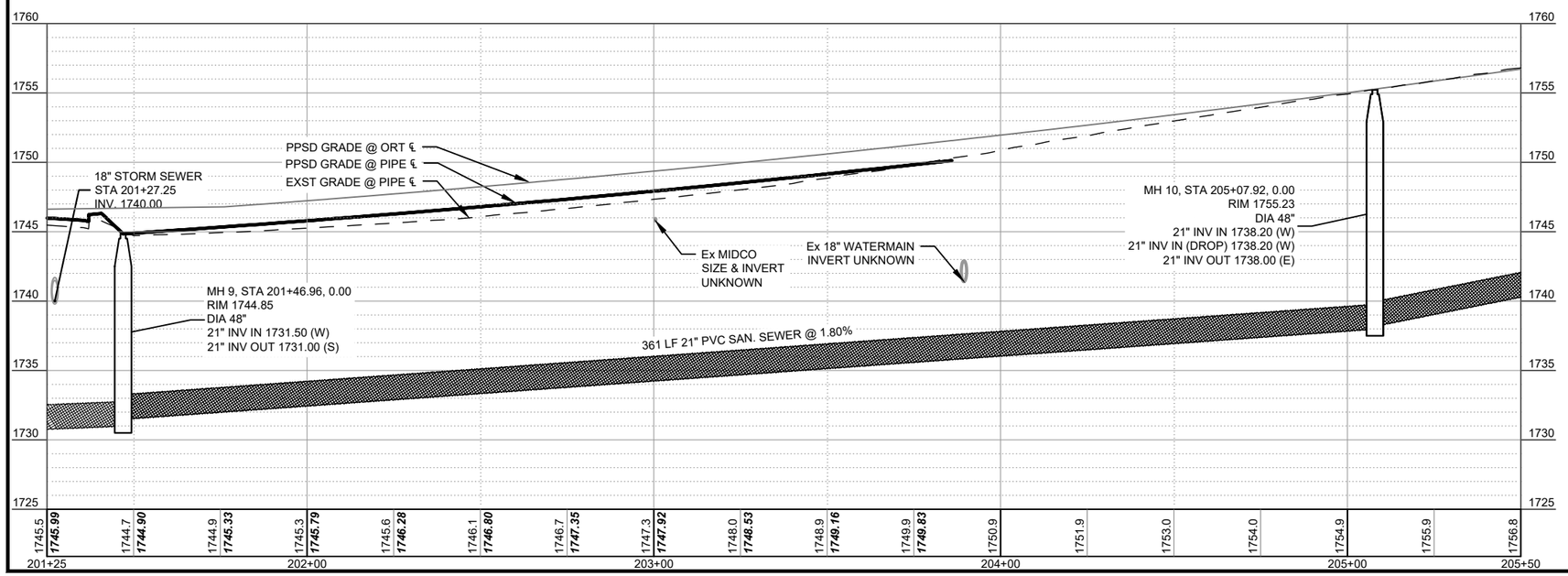
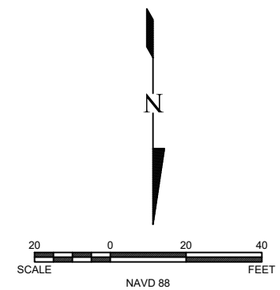
ND 1806
SANITARY SEWER PLAN & PROFILE
STA 200+00 TO STA 201+47

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	57	2





SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		STA 201+47 TO STA 205+08	76.9	SY
		STA 205+08 TO STA 205+50	8.9	SY
722	0300	MANHOLE SANITARY		
		STA 205+08	1	EA
722	1100	MANHOLE RISER 48IN		
		STA 205+08	15.3	LF
724	1124	21 IN SANITARY SEWER PIPE		
		STA 201+47 TO STA 205+08	361	LF
		STA 205+08 TO STA 205+50	42	LF



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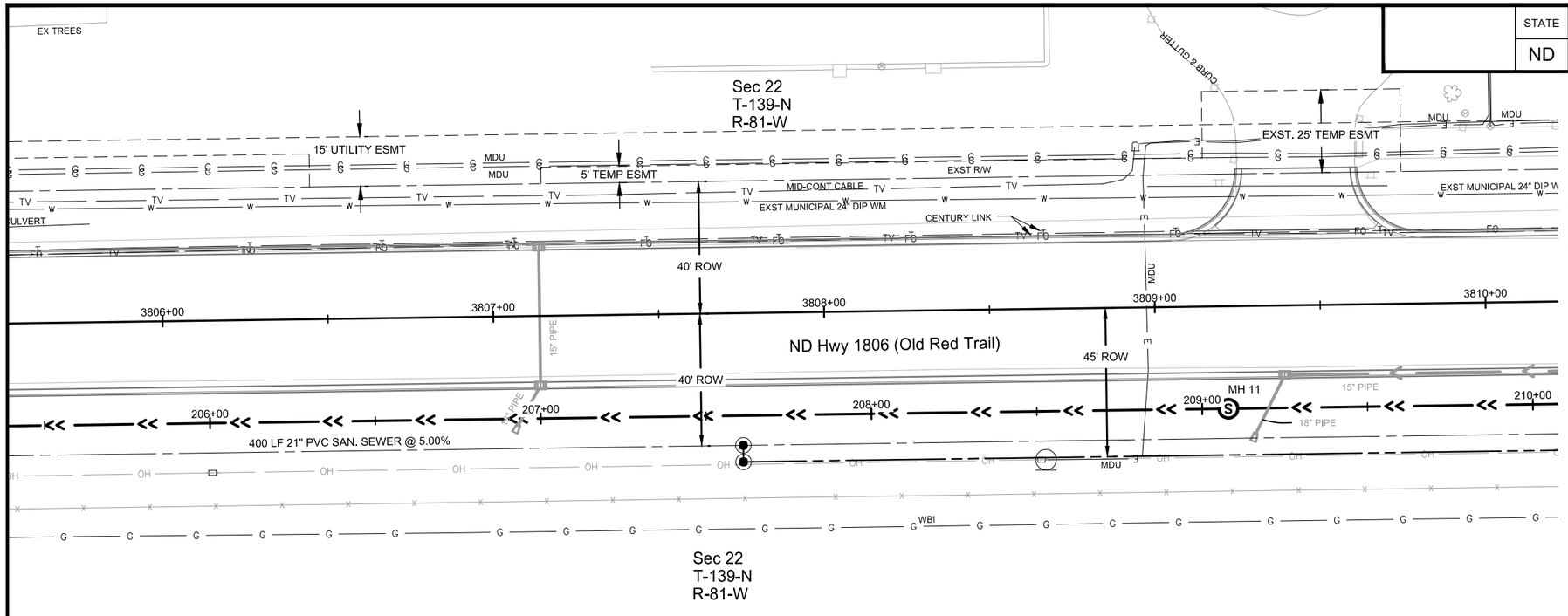
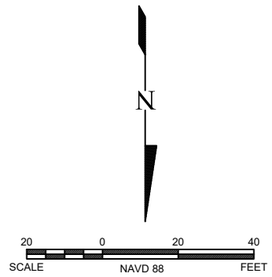
ND 1806
SANITARY SEWER PLAN & PROFILE
STA 201+47 TO STA 205+50

Jul 22, 2020 - 12:38pm - K:\Projects\State\ND\DOT\1802_00662_ND1806Mandan\CAD\10806071.052\Design\Plans\057\057San-001.dwg

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	57	3



SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		STA 205+50 TO STA 209+08	76.2	SY
		STA 209+08 TO STA 210+00	19.6	SY
722	0300	MANHOLE SANITARY		
		STA 209+08	1	EA
722	1100	MANHOLE RISER 48IN		
		STA 209+08	10.7	LF
724	1124	21 IN SANITARY SEWER PIPE		
		STA 205+50 TO STA 209+08	358	LF
		STA 209+08 TO STA 210+00	92	LF



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ND 1806
SANITARY SEWER PLAN & PROFILE
STA 205+50 TO STA 210+00

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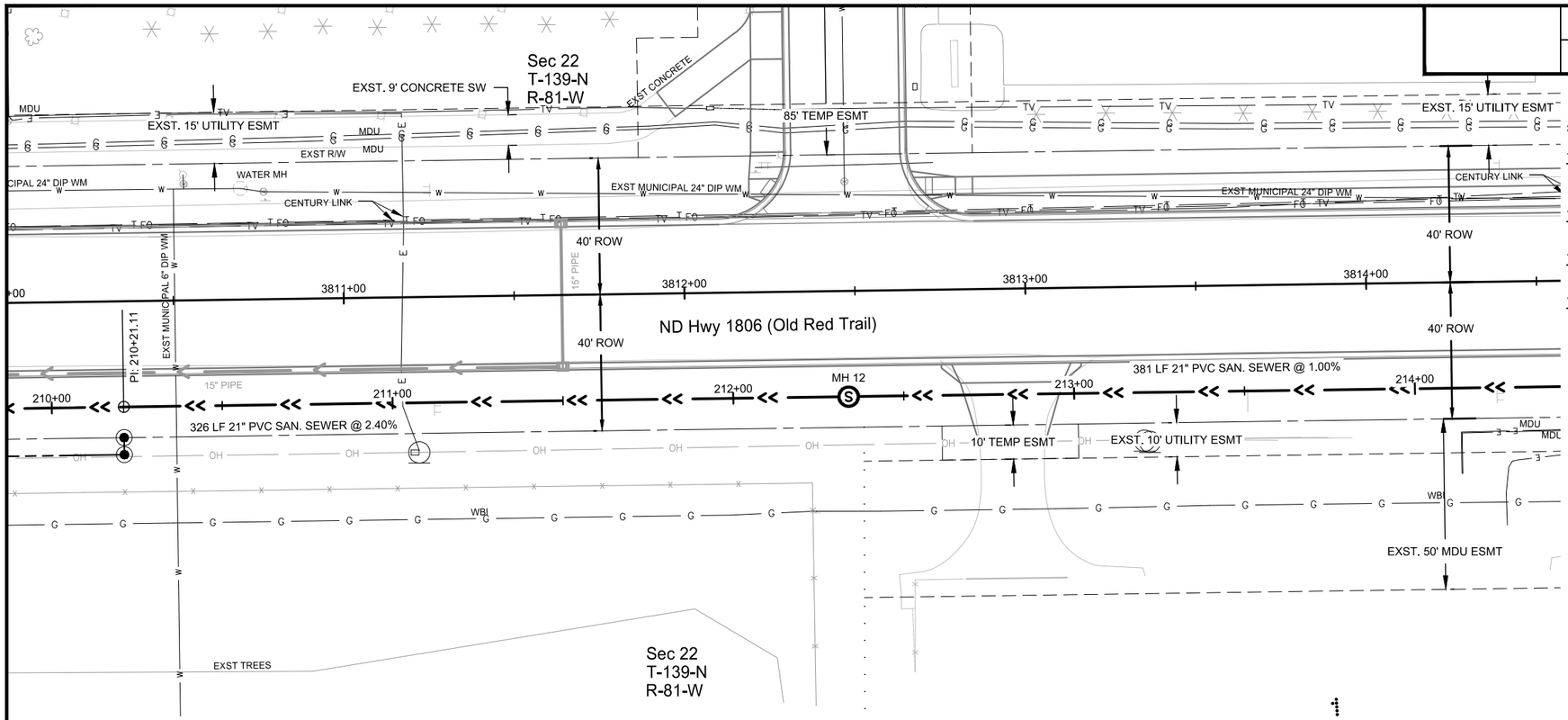
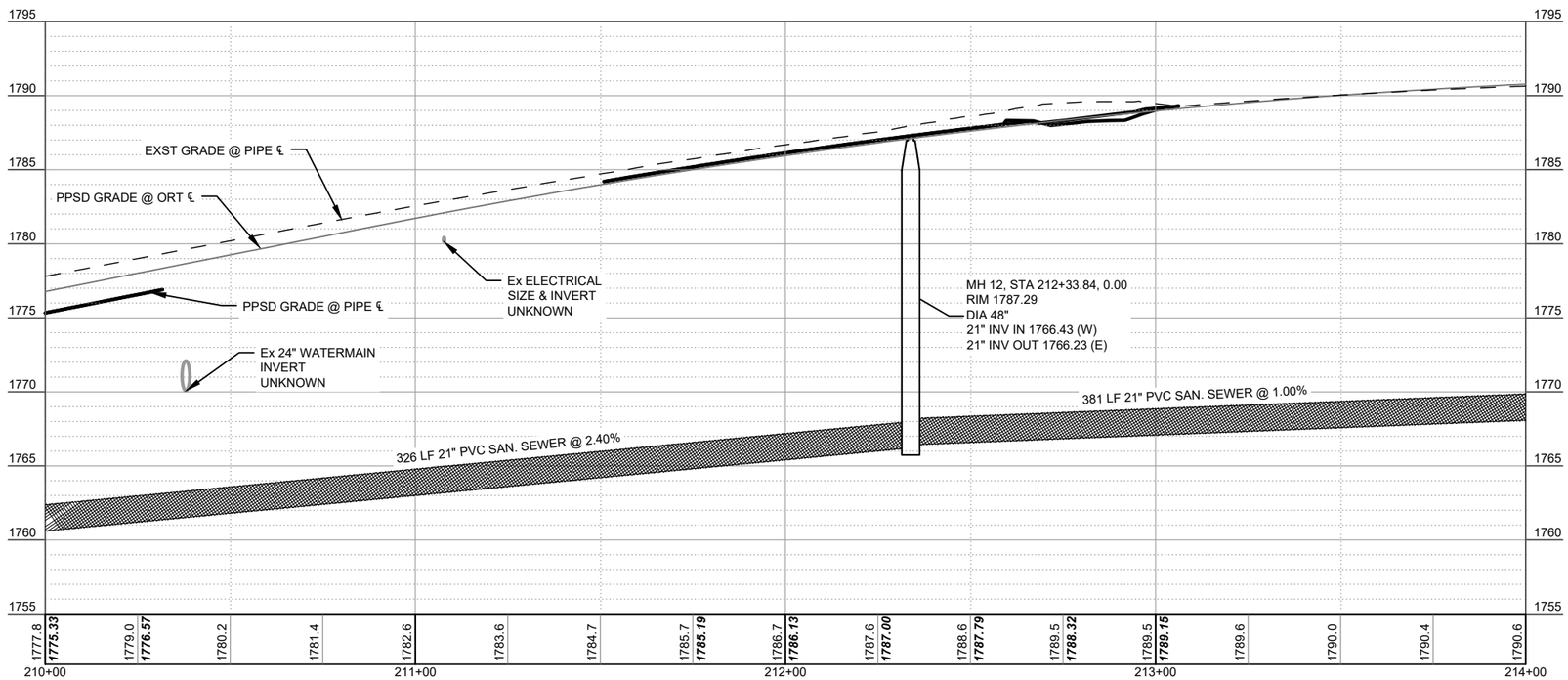
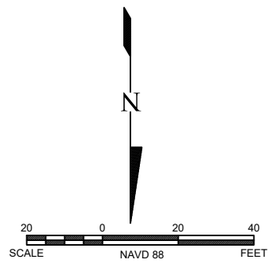
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	57	4





SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		STA 210+00 TO STA 212+34	49.8	SY
		STA 212+34 TO STA 214+00	35.4	SY
722	0300	MANHOLE SANITARY		
		STA 212+34	1	EA
722	1100	MANHOLE RISER 48IN		
		STA 212+34	19.2	LF
724	1124	21 IN SANITARY SEWER PIPE		
		STA 210+00 TO STA 212+34	234	LF
		STA 212+34 TO STA 214+00	166	LF



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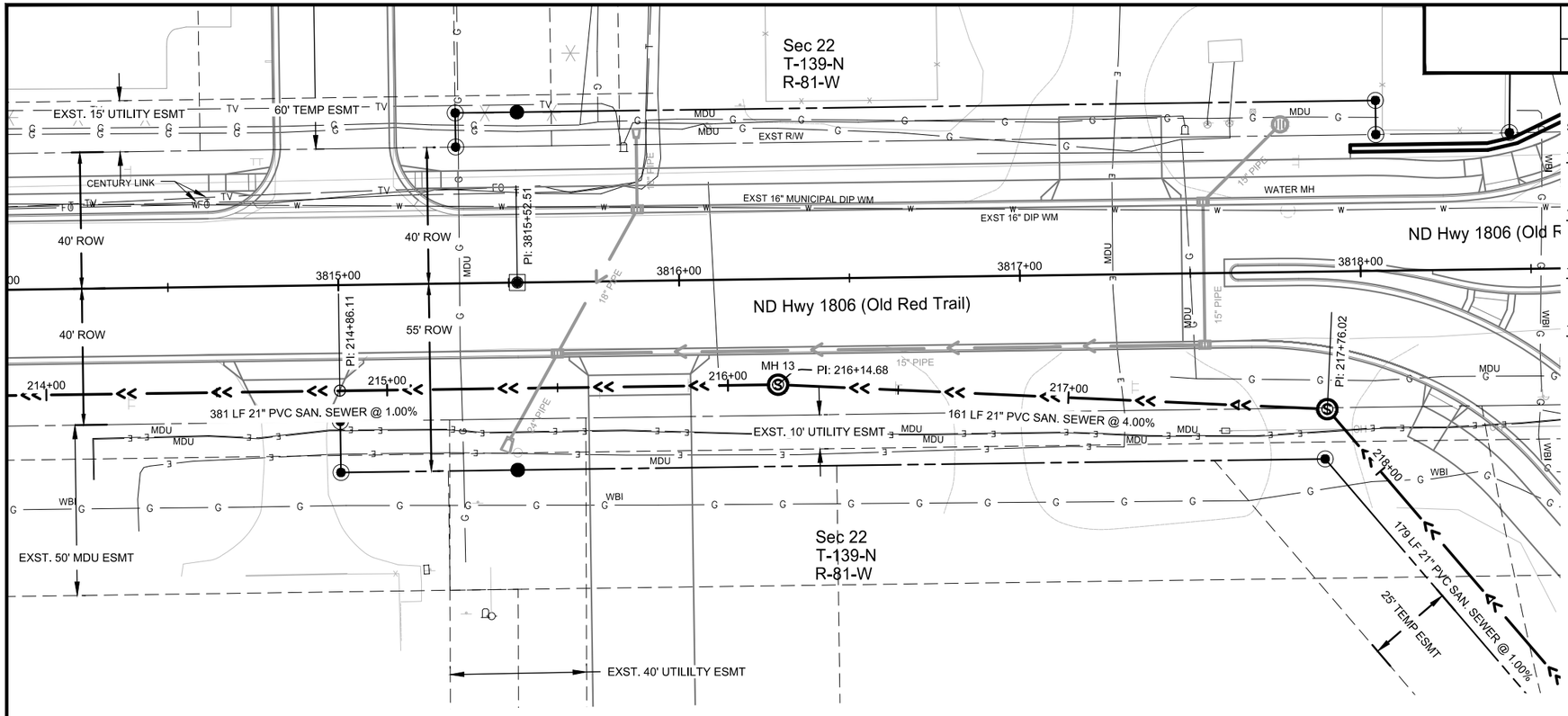
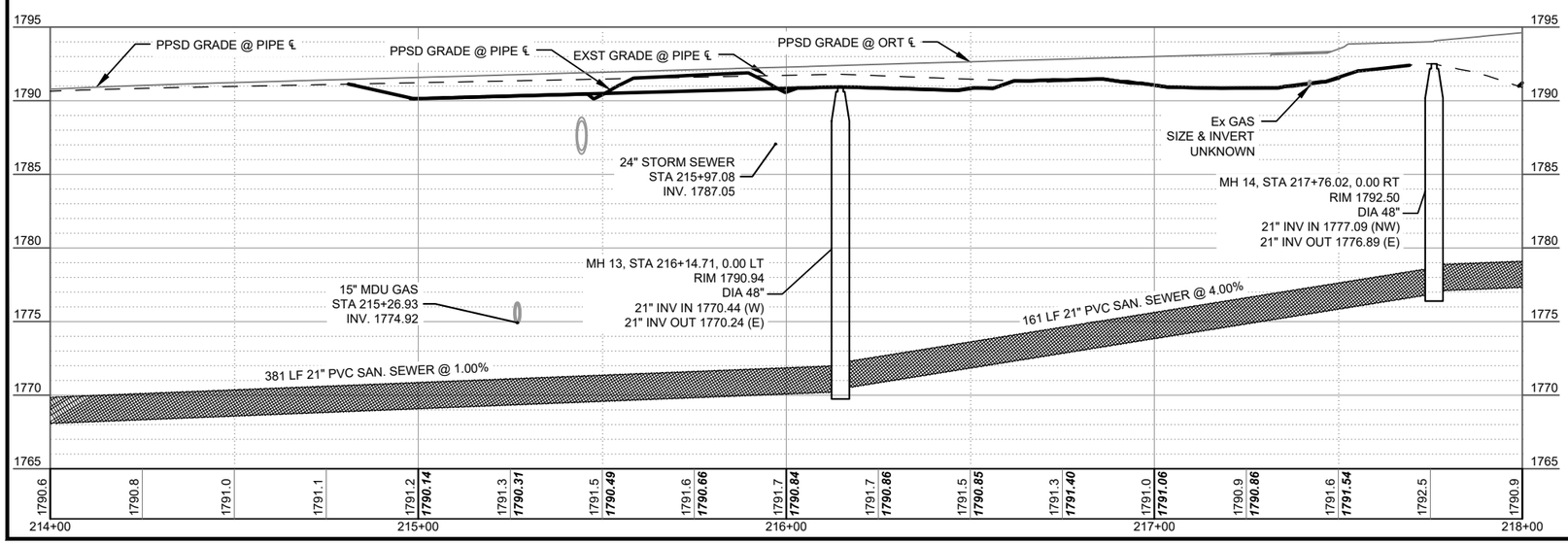
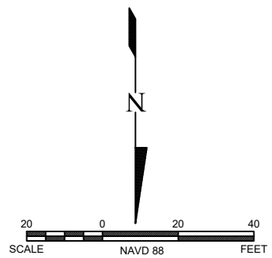
ND 1806
SANITARY SEWER PLAN & PROFILE
STA 210+00 TO STA 214+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	57	5



SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		STA 214+00 TO STA 216+15	45.8	SY
		STA 216+15 TO STA 217+76	34.3	SY
722	0300	MANHOLE SANITARY		
		STA 216+15	1	EA
		STA 217+76	1	EA
722	1100	MANHOLE RISER 48IN		
		STA 216+15	18.8	LF
		STA 217+76	13.7	LF
724	1124	21 IN SANITARY SEWER PIPE		
		STA 214+00 TO STA 216+15	215	LF
		STA 216+15 TO STA 217+76	161	LF





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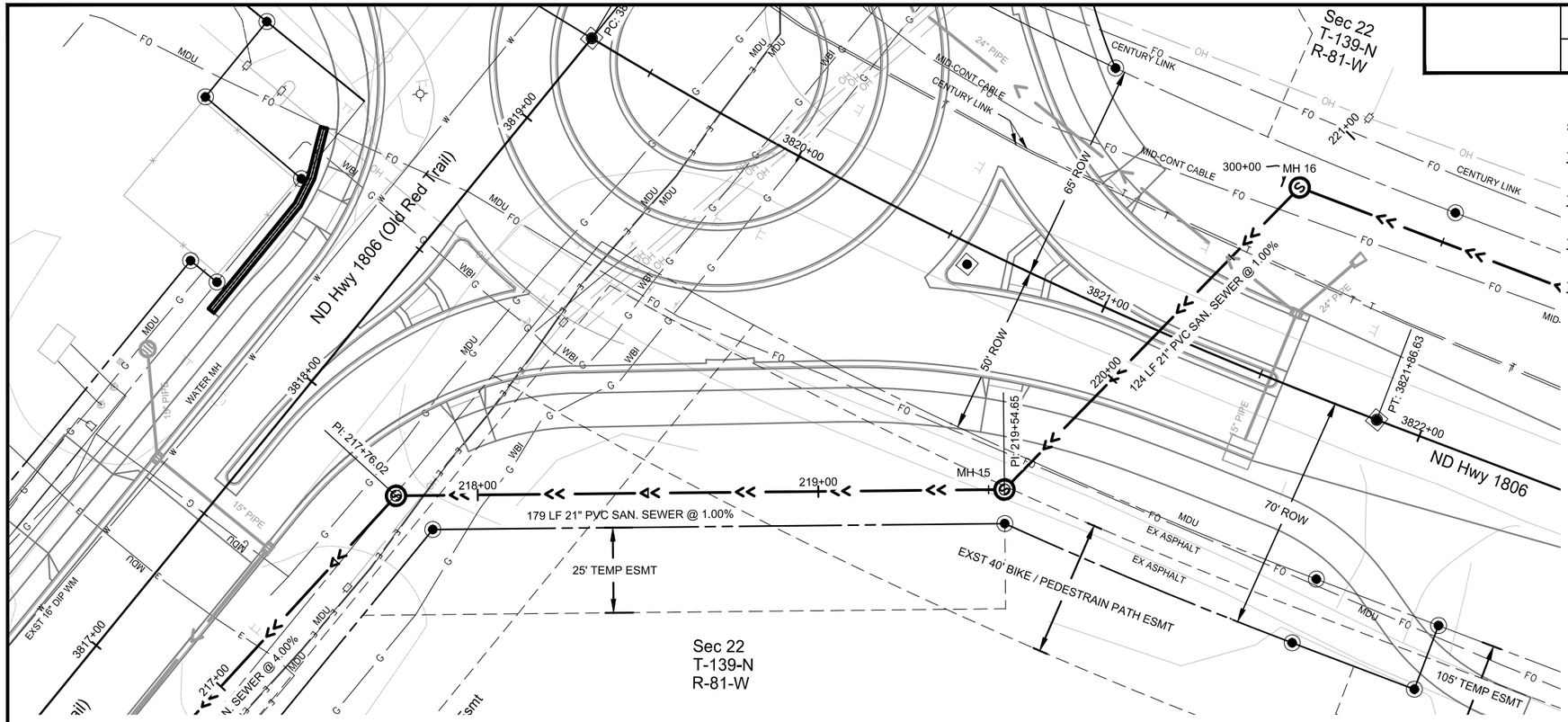
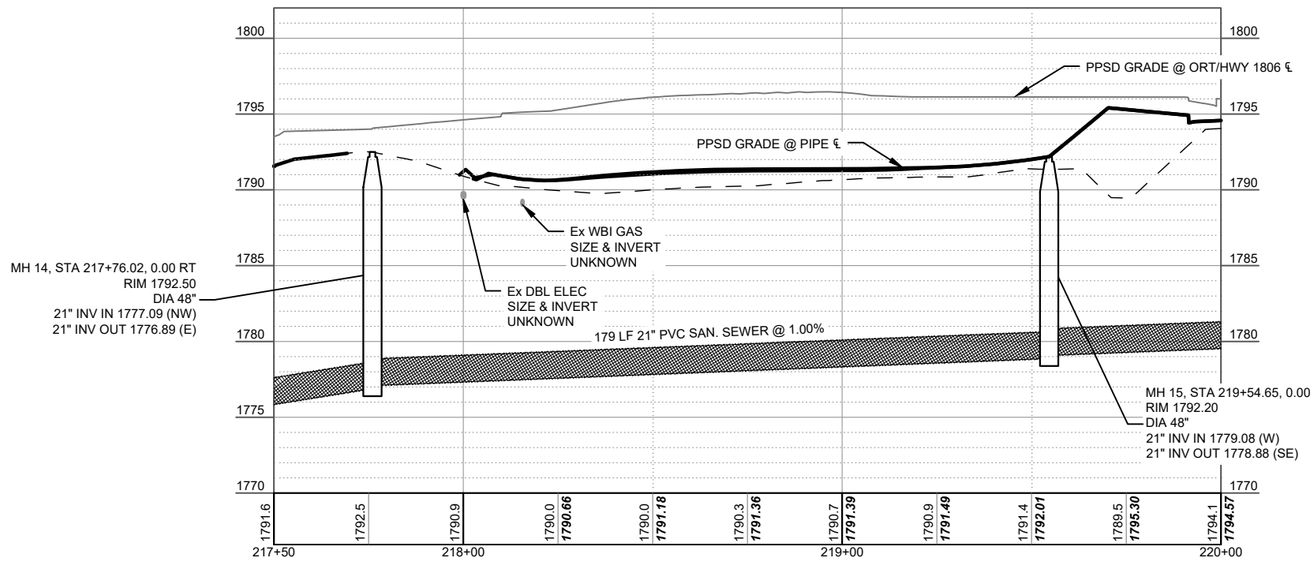
ND 1806
SANITARY SEWER PLAN & PROFILE
STA 214+00 TO STA 217+76

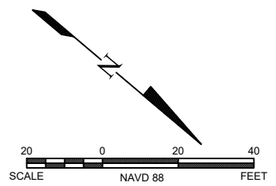
Jul 22, 2020 - 12:39pm - K:\Projects\State\ND\DOT\1802_00662_ND1806Mandan\CAD\10806071.052\Design\Plans\057\057San-001.dwg

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	57	6

SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G STA 217+76 TO STA 219+55	38.1	SY
722	0300	MANHOLE SANITARY STA 219+55	1	EA
722	1100	MANHOLE RISER 48IN STA 219+55	11.4	LF
724	1124	21 IN SANITARY SEWER PIPE STA 217+76 TO STA 219+55	179	LF







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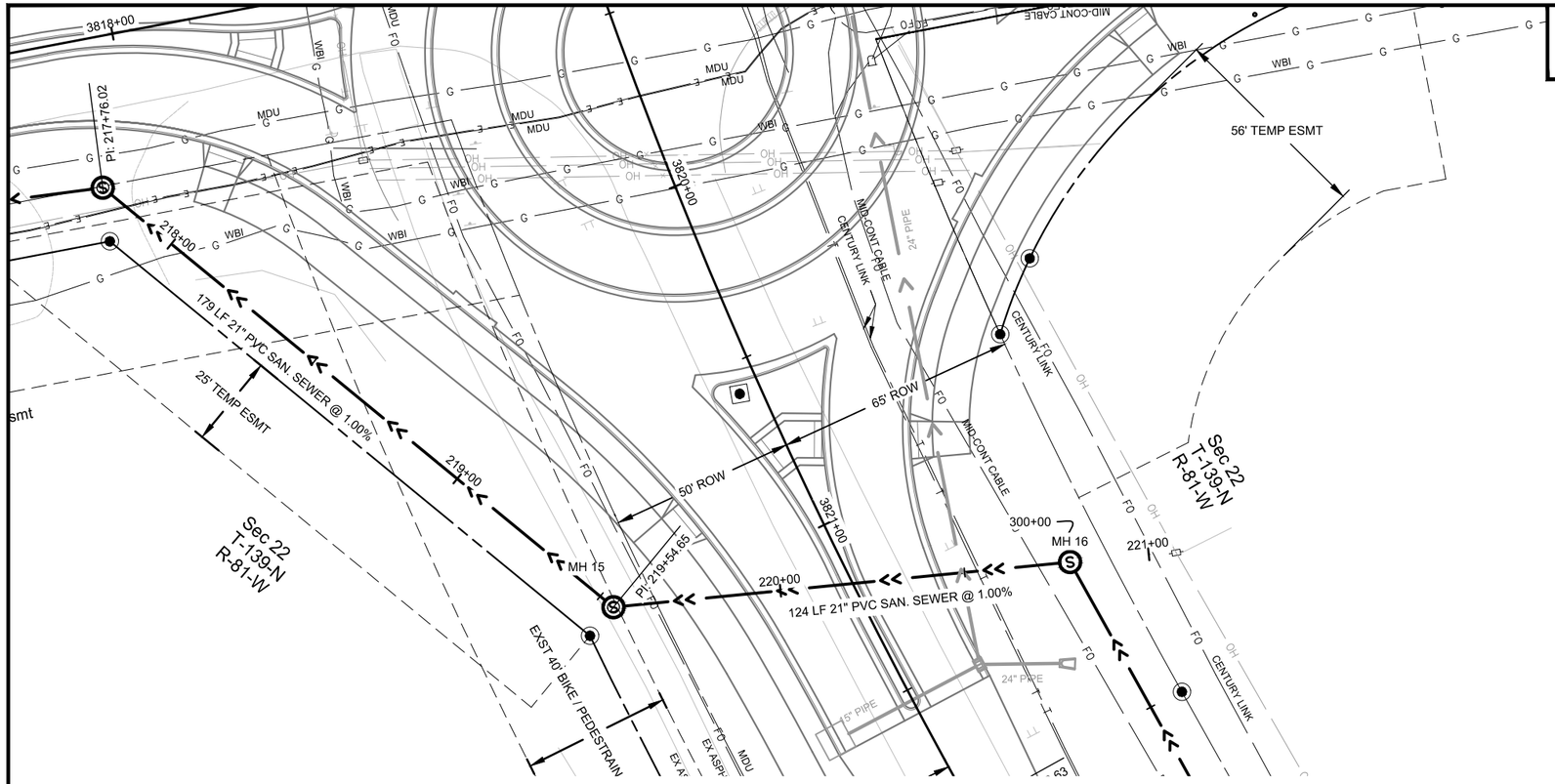
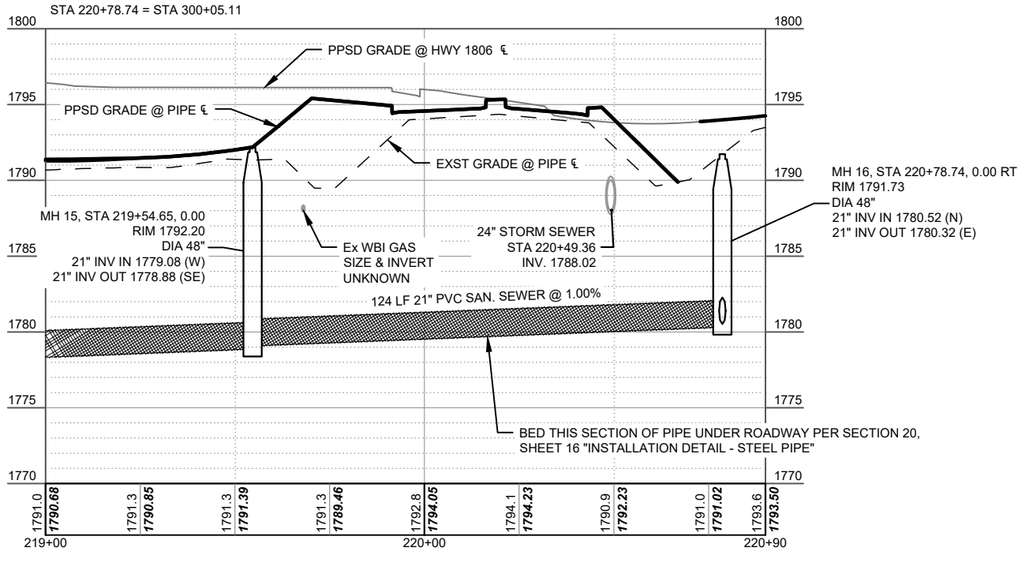
ND 1806
SANITARY SEWER PLAN & PROFILE
STA 217+76 TO STA 219+55

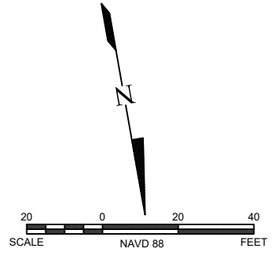
Aug 14, 2020 - 2:26pm - C:\Users\huntervolk\appdata\local\temp\AcPublish_18180\Unsaved Drawing1.dwg

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	57	7

SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		STA 219+55 TO STA 220+90	28.8	SY
722	0300	MANHOLE SANITARY		
		STA 220+90	1	EA
722	1100	MANHOLE RISER 48IN		
		STA 220+90	9.5	LF
724	1124	21 IN SANITARY SEWER PIPE		
		STA 219+55 TO STA 220+90	135	LF







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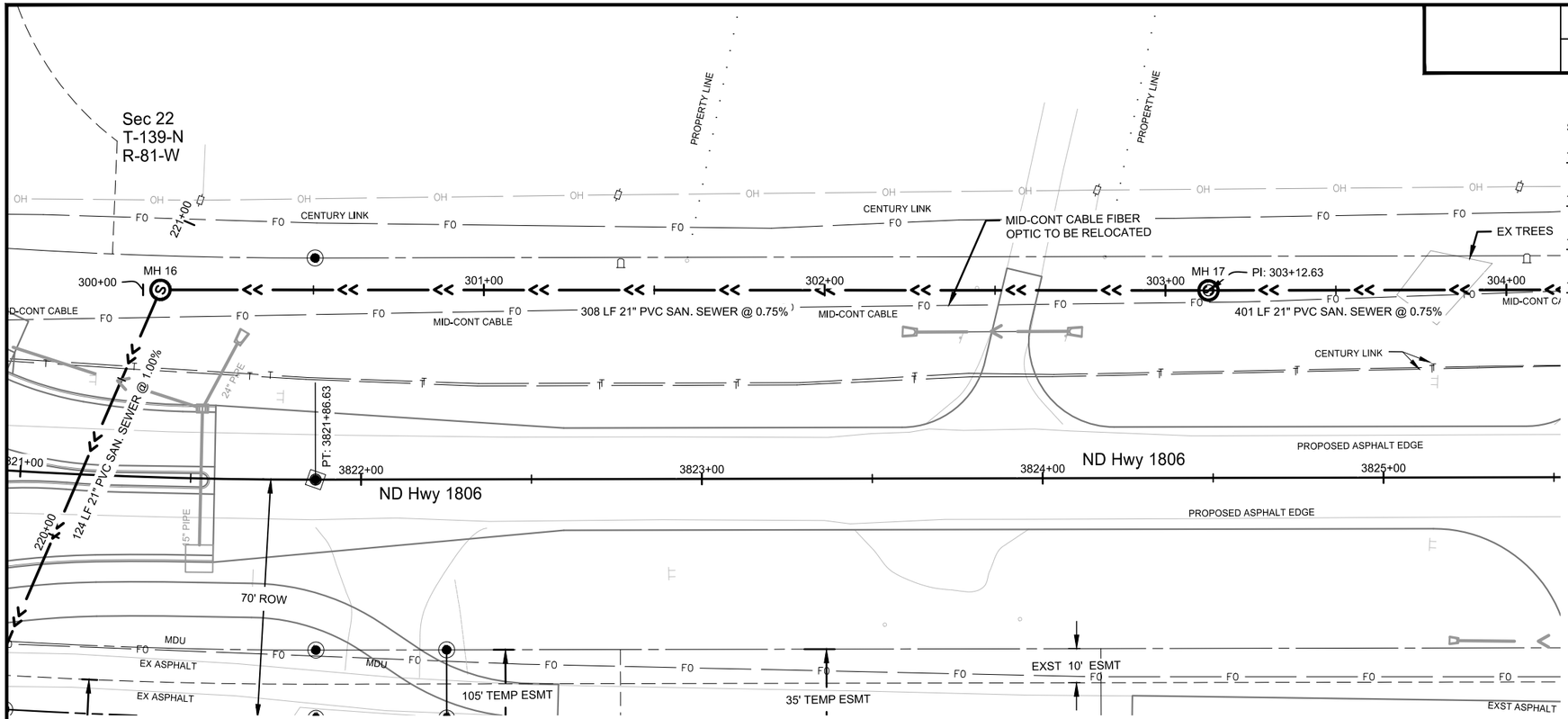
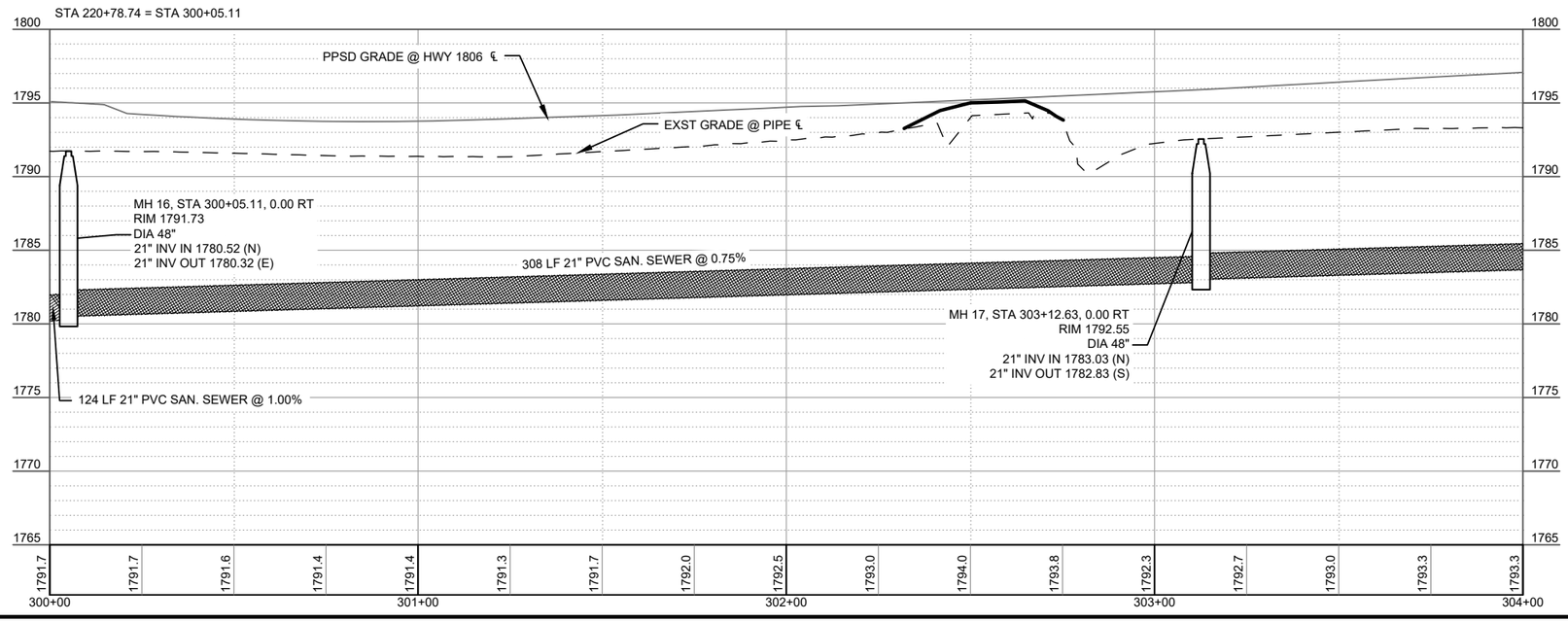
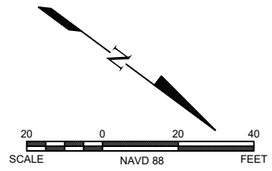
ND 1806
SANITARY SEWER PLAN & PROFILE
STA 219+55 TO STA 220+90

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	57	8



SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		STA 300+05 TO STA 303+50	73.5	SY
722	0300	MANHOLE SANITARY		
		STA 303+30	1	EA
722	1100	MANHOLE RISER 48IN		
		STA 303+30	7.8	LF
724	1124	21 IN SANITARY SEWER PIPE		
		STA 300+05 TO STA 303+50	345	LF





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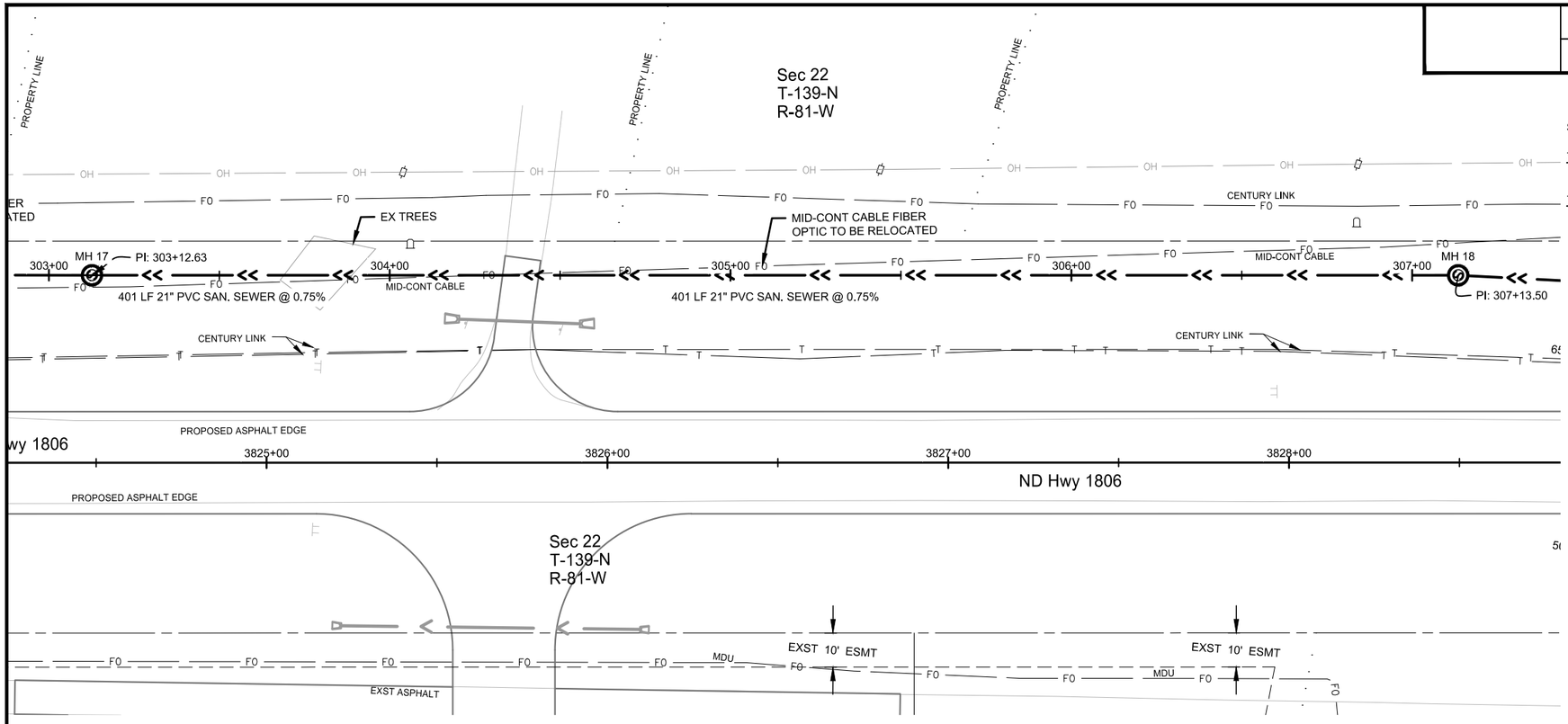
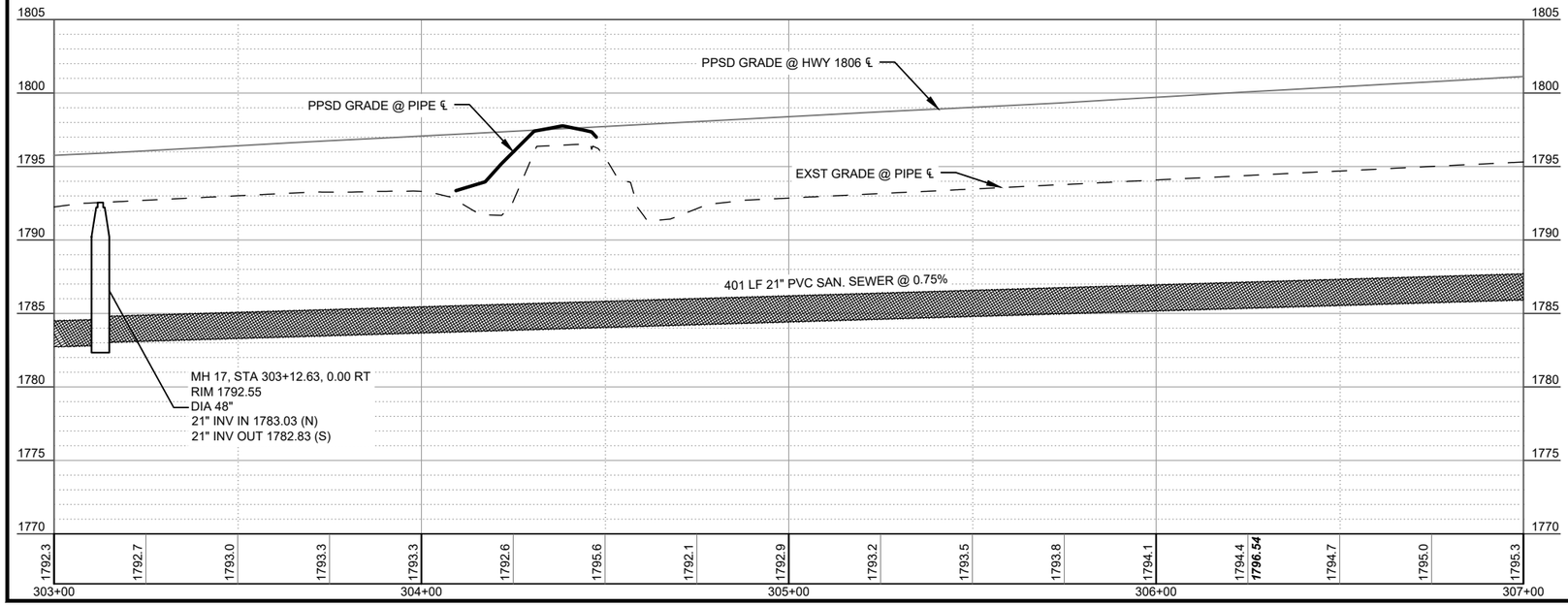
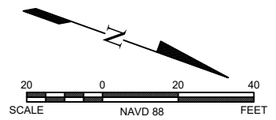
ND 1806
SANITARY SEWER PLAN & PROFILE
STA 305+00 TO STA 303+50

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	57	9



SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G STA 303+50 TO STA 307+00	74.5	SY
724	1124	21 IN SANITARY SEWER PIPE STA 303+50 TO STA 307+00	350	LF





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ND 1806
SANITARY SEWER PLAN & PROFILE
STA 303+50 TO STA 307+00

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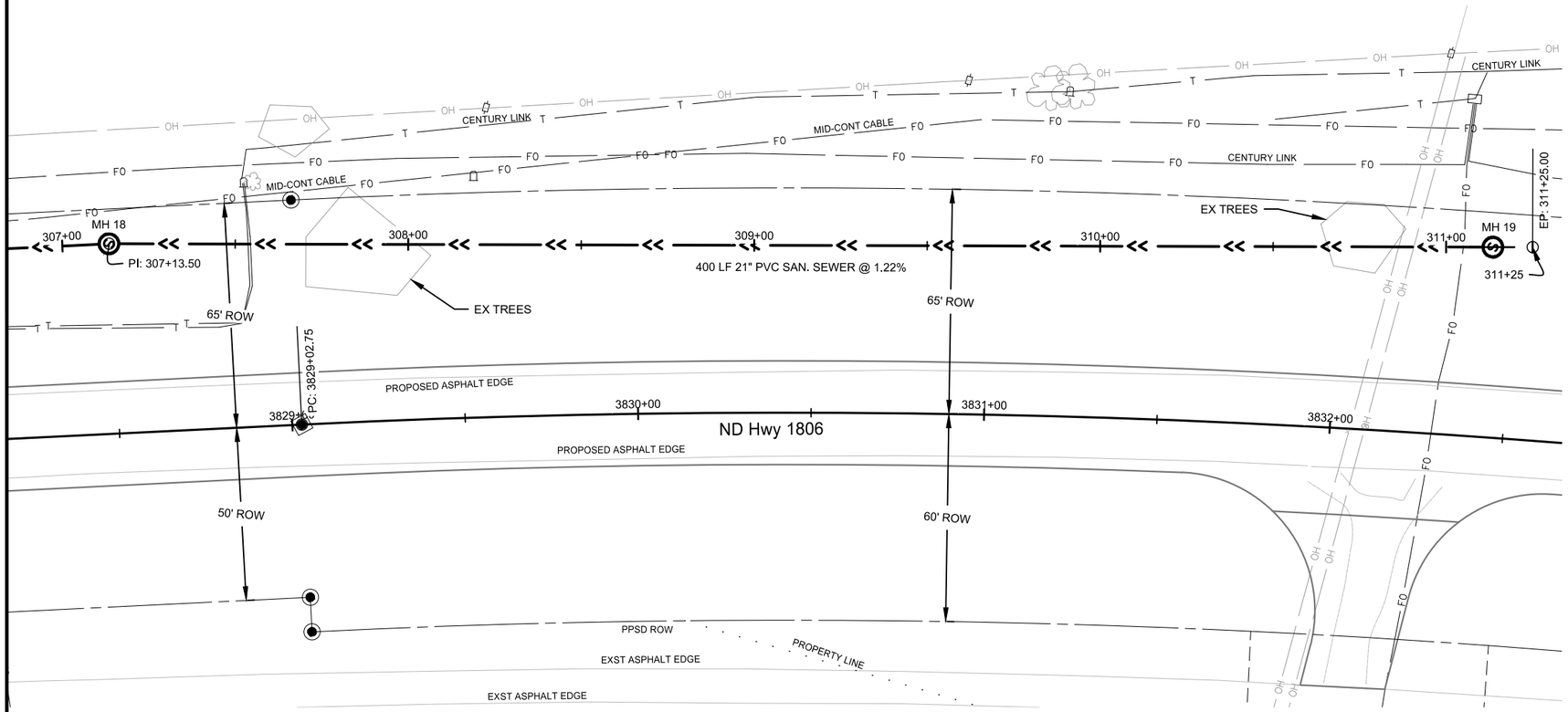
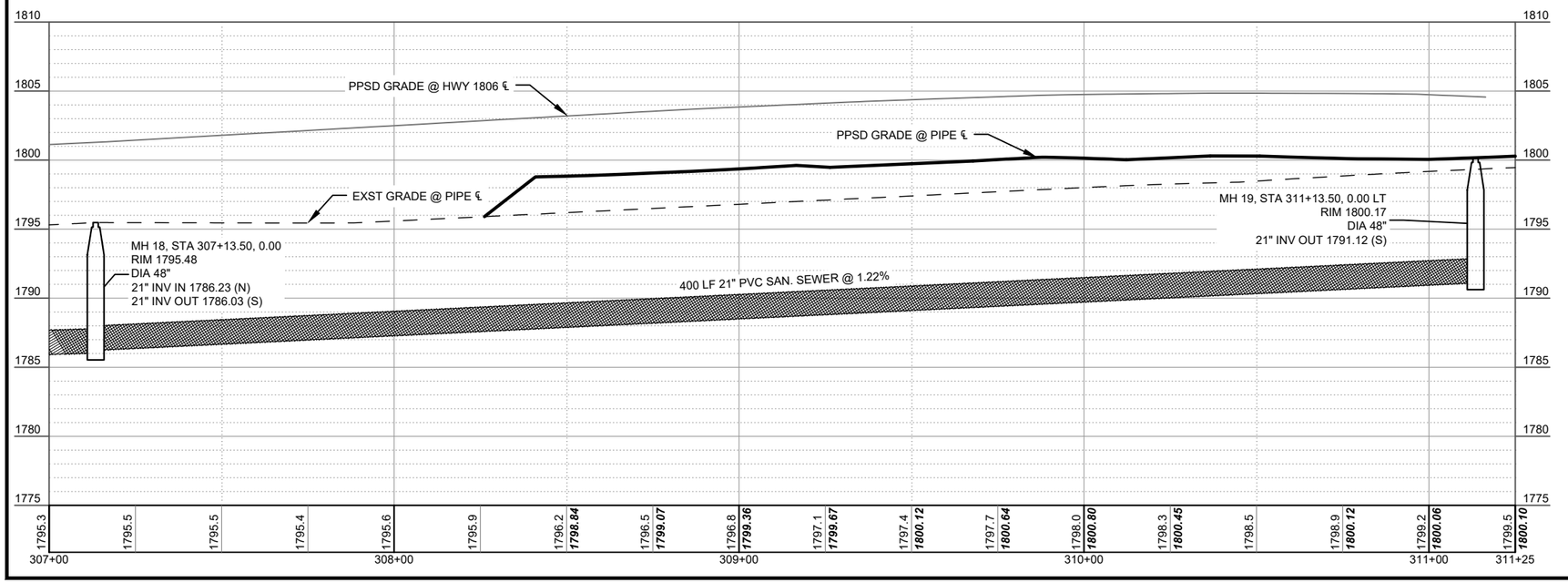
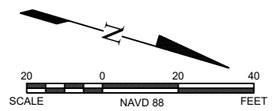
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	57	10





SPEC	CODE	BID ITEM	QTY	UNIT
709	0100	GEOSYNTHETIC MATERIAL TYPE G		
		STA 307+00 TO STA 307+141	3	SY
		STA 307+14 TO STA 311+14	85.2	SY
722	0300	MANHOLE SANITARY		
		STA 307+14	1	EA
		STA 311+14	1	EA
722	1100	MANHOLE RISER 48IN		
		STA 307+14	7.5	LF
		STA 311+14	7.1	LF
724	1124	21 IN SANITARY SEWER PIPE		
		STA 307+00 TO STA 307+141	14	LF
		STA 307+14 TO STA 311+14	400	LF



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ND 1806
SANITARY SEWER PLAN & PROFILE
STA 307+00 TO STA 311+25

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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	57	11

SANITARY STRUCTURE TABLE

MH No.	MH 8		
MH Size	48 In. MH		
Sta. Offset	200+00.00 - 0.0' T	Connected Pipes	
Rim Elev.	1746.04	(N) 21" PVC INV IN = 1729.53	
Top Base Elev.	1729.33	(S) 21" PVC INV OUT = 1729.33	
Riser Top Elev.	1744.17		
Riser Height	14.8		
MH No.	MH 9		
MH Size	48 In. MH		
Sta. Offset	201+46.96 - 0.0' T	Connected Pipes	
Rim Elev.	1744.85	(W) 21" PVC INV IN = 1731.50	
Top Base Elev.	1731.00	(S) 21" PVC INV OUT = 1731.00	
Riser Top Elev.	1742.97		
Riser Height	11.9		
MH No.	MH 10		
MH Size	48 In. MH		
Sta. Offset	205+07.92 - 0.0' T	Connected Pipes	
Rim Elev.	1755.23	(W) 21" PVC INV IN = 1738.20	
Top Base Elev.	1738.00	(E) 21" PVC INV OUT = 1738.00	
Riser Top Elev.	1753.36		
Riser Height	15.3		
MH No.	MH 11		
MH Size	48 In. MH		
Sta. Offset	209+07.92 - 0.0' T	Connected Pipes	
Rim Elev.	1770.78	(W) 21" PVC INV IN = 1758.40	
Top Base Elev.	1758.20	(E) 21" PVC INV OUT = 1758.20	
Riser Top Elev.	1768.90		
Riser Height	10.7		
MH No.	MH 12		
MH Size	48 In. MH		
Sta. Offset	212+33.84 - 0.0' T	Connected Pipes	
Rim Elev.	1787.29	(W) 21" PVC INV IN = 1766.43	
Top Base Elev.	1766.18	(E) 21" PVC INV OUT = 1766.23	
Riser Top Elev.	1785.42		
Riser Height	19.2		
MH No.	MH 13		
MH Size	48 In. MH		
Sta. Offset	216+14.71 - 0.0' LT	Connected Pipes	
Rim Elev.	1790.94	(W) 21" PVC INV IN = 1770.44	
Top Base Elev.	1770.19	(E) 21" PVC INV OUT = 1770.24	
Riser Top Elev.	1789.07		
Riser Height	18.8		
MH No.	MH 14		
MH Size	48 In. MH		
Sta. Offset	217+76.02 - 0.0' RT	Connected Pipes	
Rim Elev.	1792.50	(NW) 21" PVC INV IN = 1777.09	
Top Base Elev.	1776.89	(E) 21" PVC INV OUT = 1776.89	
Riser Top Elev.	1790.63		
Riser Height	13.7		
MH No.	MH 15		
MH Size	48 In. MH		
Sta. Offset	219+54.65 - 0.0' T	Connected Pipes	
Rim Elev.	1792.20	(W) 21" PVC INV IN = 1779.08	
Top Base Elev.	1778.88	(SE) 21" PVC INV OUT = 1778.88	
Riser Top Elev.	1790.32		
Riser Height	11.4		
MH No.	MH 16		
MH Size	48 In. MH		
Sta. Offset	300+05.11 - 0.0' RT	Connected Pipes	
Rim Elev.	1791.73	(N) 21" PVC INV IN = 1780.52	
Top Base Elev.	1780.32	(E) 21" PVC INV OUT = 1780.32	
Riser Top Elev.	1789.85		
Riser Height	9.5		
MH No.	MH 17		
MH Size	48 In. MH		
Sta. Offset	303+12.63 - 0.0' RT	Connected Pipes	
Rim Elev.	1792.55	(N) 21" PVC INV IN = 1783.03	
Top Base Elev.	1782.83	(S) 21" PVC INV OUT = 1782.83	
Riser Top Elev.	1790.67		
Riser Height	7.8		
MH No.	MH 18		
MH Size	48 In. MH		
Sta. Offset	307+13.50 - 0.0' T	Connected Pipes	
Rim Elev.	1795.48	(N) 21" PVC INV IN = 1786.23	
Top Base Elev.	1786.03	(S) 21" PVC INV OUT = 1786.03	
Riser Top Elev.	1793.60		
Riser Height	7.5		
MH No.	MH 19		
MH Size	48 In. MH		
Sta. Offset	311+13.50 - 0.0' LT	Connected Pipes	
Rim Elev.	1800.17	(S) 21" PVC INV OUT = 1791.12	
Top Base Elev.	1791.12		
Riser Top Elev.	1798.30		
Riser Height	7.1		

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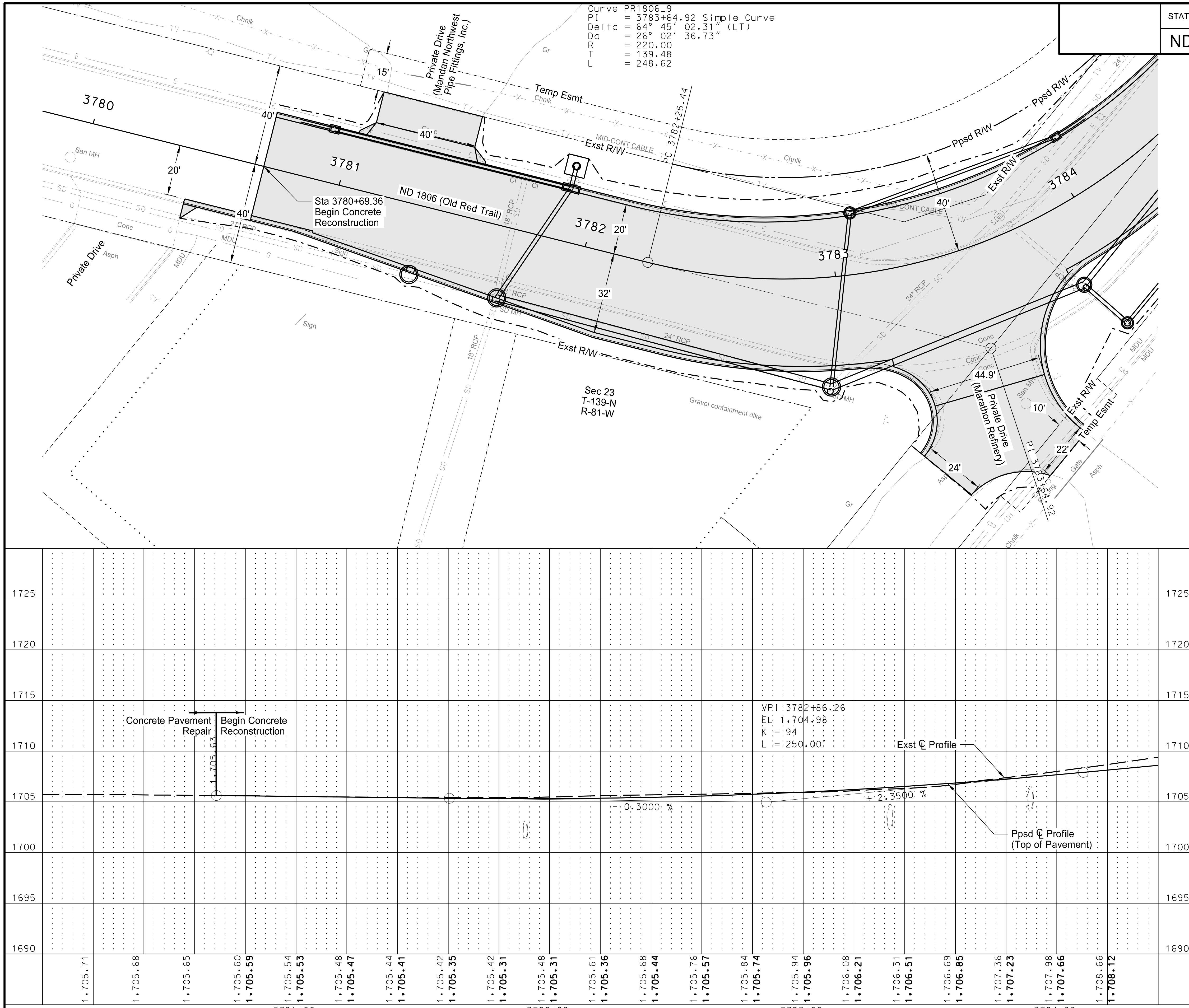
ND 1806
STRUCTURE TABLE

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	1



Curve PR1806_9
PI = 3783+64.92 Simple Curve
Delta = 64° 45' 02.31" (LT)
Da = 26° 02' 36.73"
R = 220.00
T = 139.48
L = 248.62
Private Drive (Mendan Northwest Pipe Fittings, Inc.)
Temp Esmt
Exst R/W
Ppsd R/W
PC 3782+25.44
Sta 3780+69.36
Begin Concrete
Reconstruction
ND 1806 (Old Red Trail)
3780
3781
3782
3783
3784
Private Drive
Sec 23
T-139-N
R-81-W
Gravel containment dike
Private Drive (Marathon Refinery)
PI 3783+64.92
VPI 3782+86.26
EL 1,704.98
K = 94
L = 250.00'
Concrete Pavement Repair
Begin Concrete Reconstruction
1,705.63
Exst ℄ Profile
Ppsd ℄ Profile (Top of Pavement)
- 0.3000 %
+ 2.3500 %
3781+00
3782+00
3783+00
3784+00

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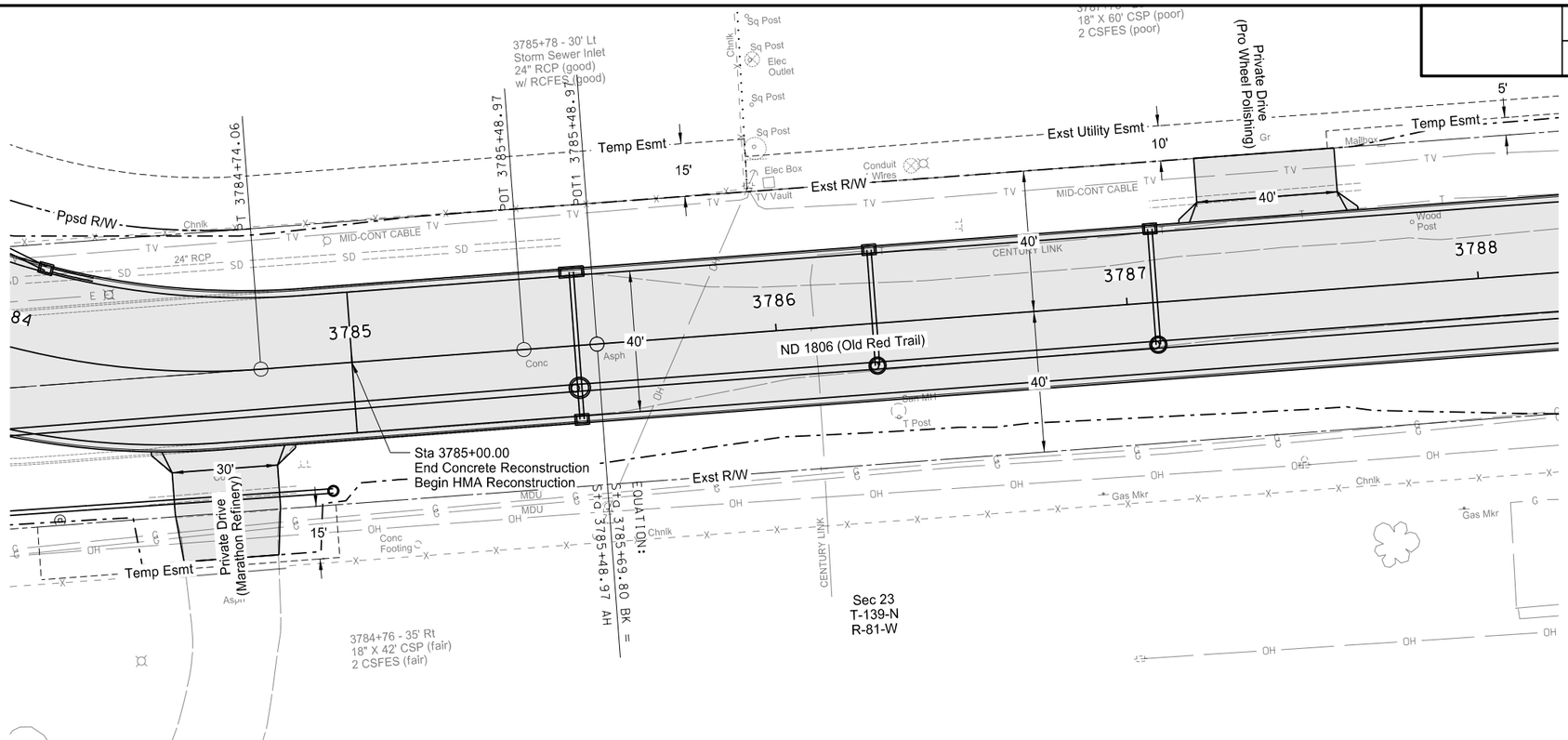
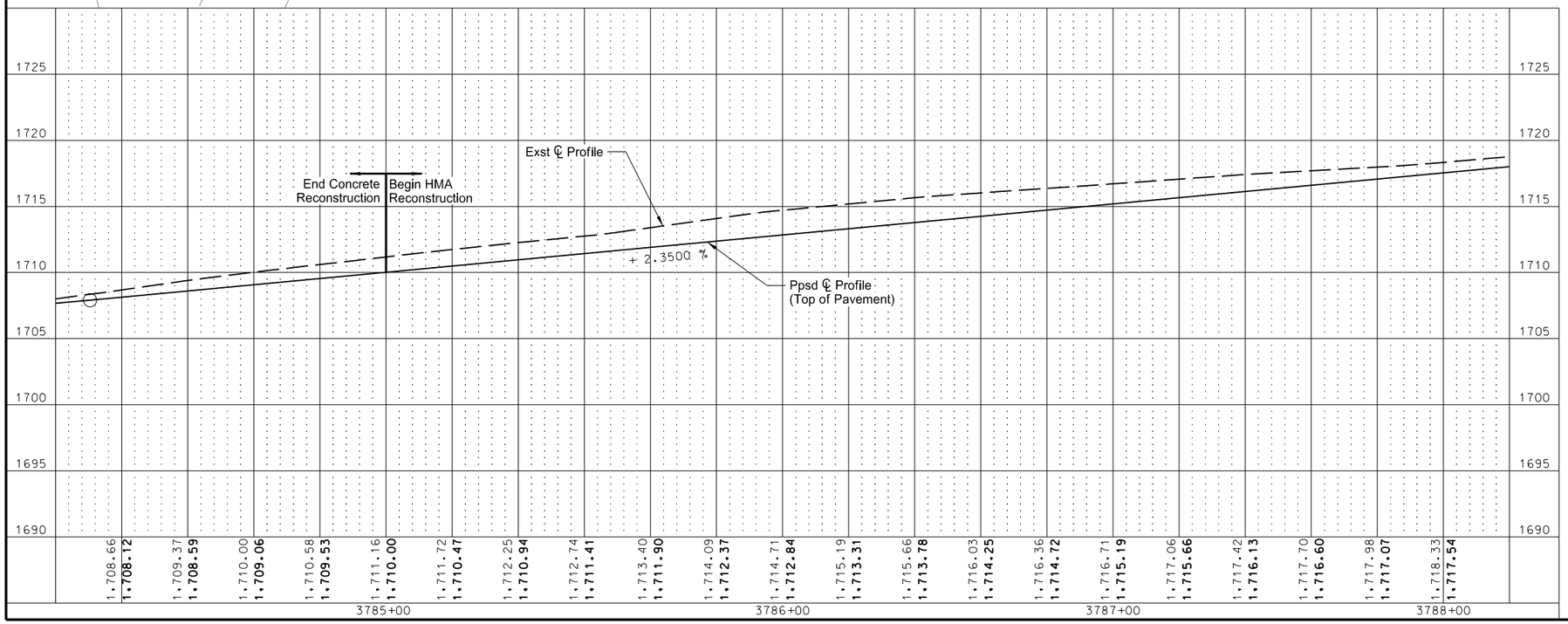
ND 1806

Plan & Profile

ND 1806
Sta 3780+00 to 3784+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	2





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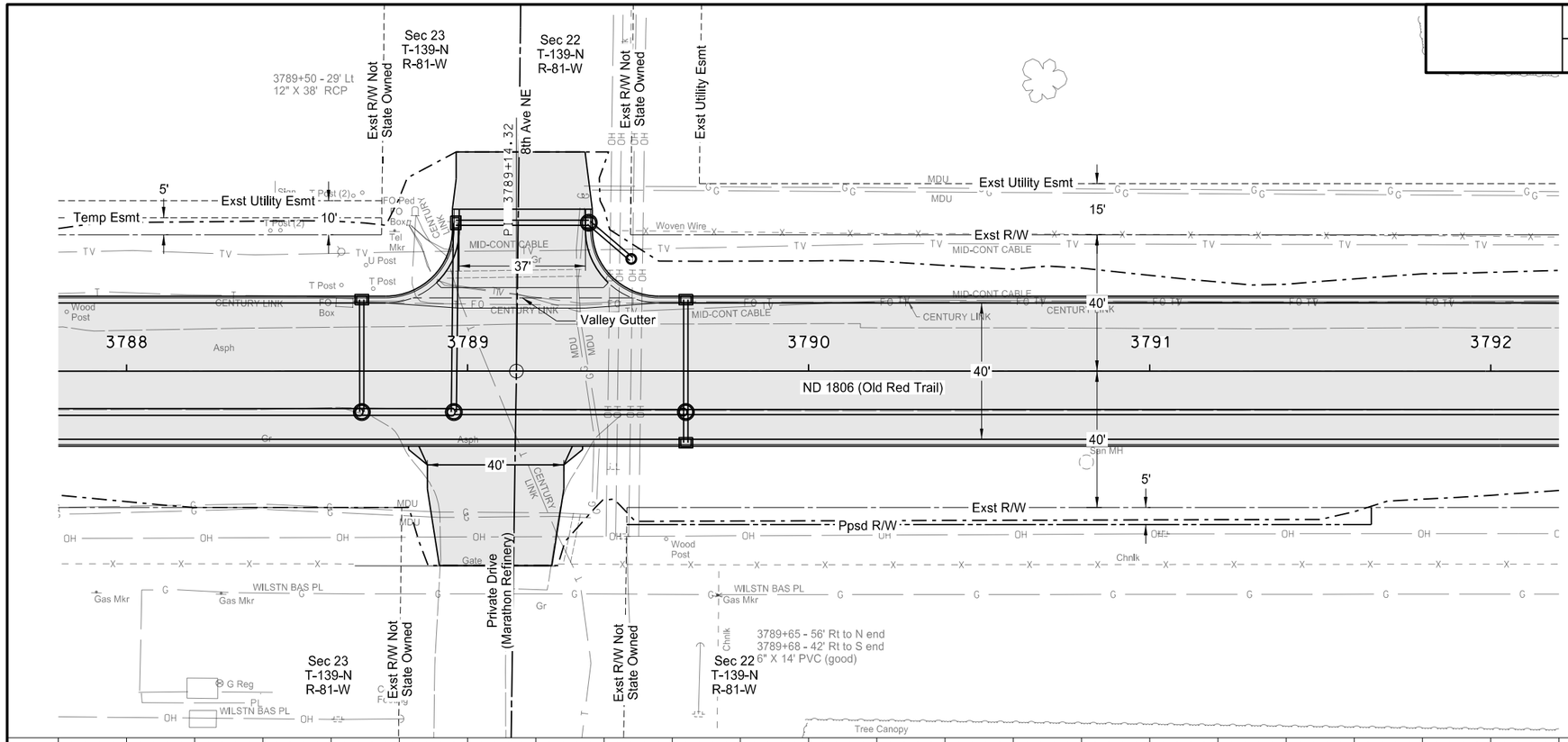
ND 1806

Plan & Profile

ND 1806
Sta 3784+00 to 3788+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	3



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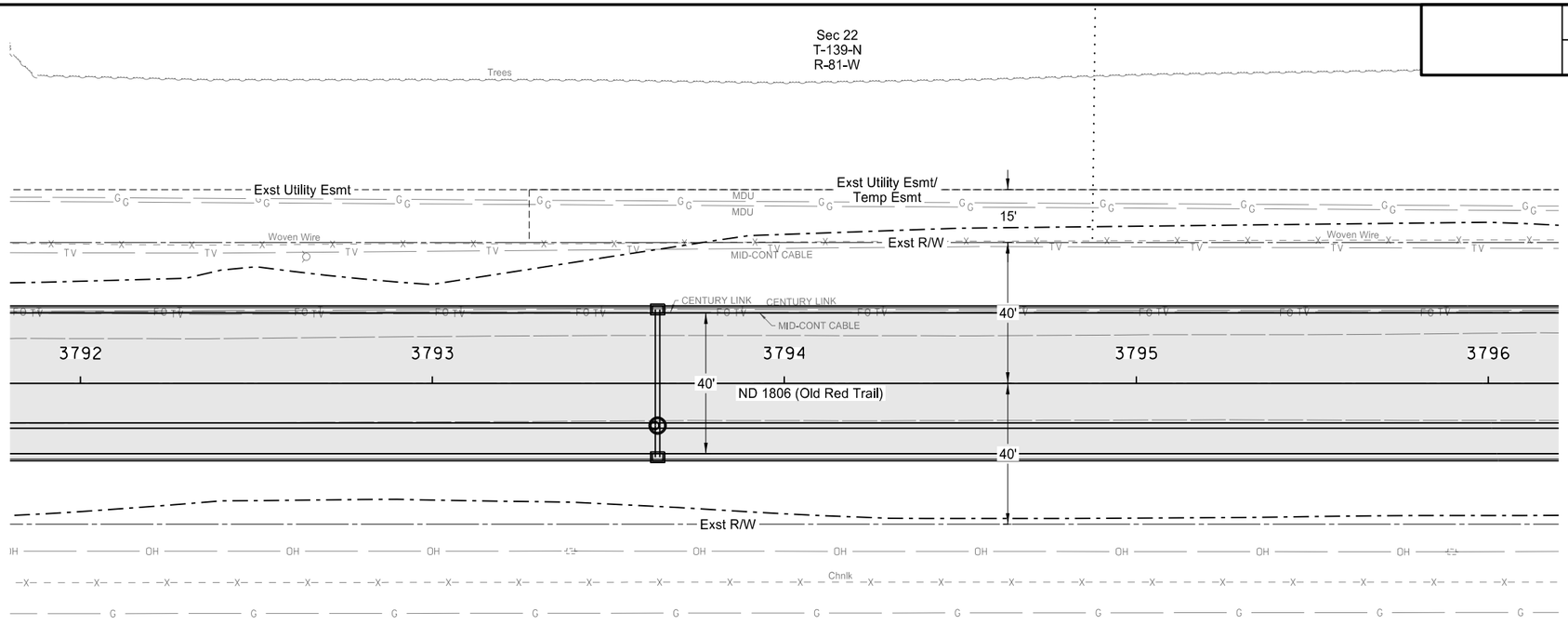
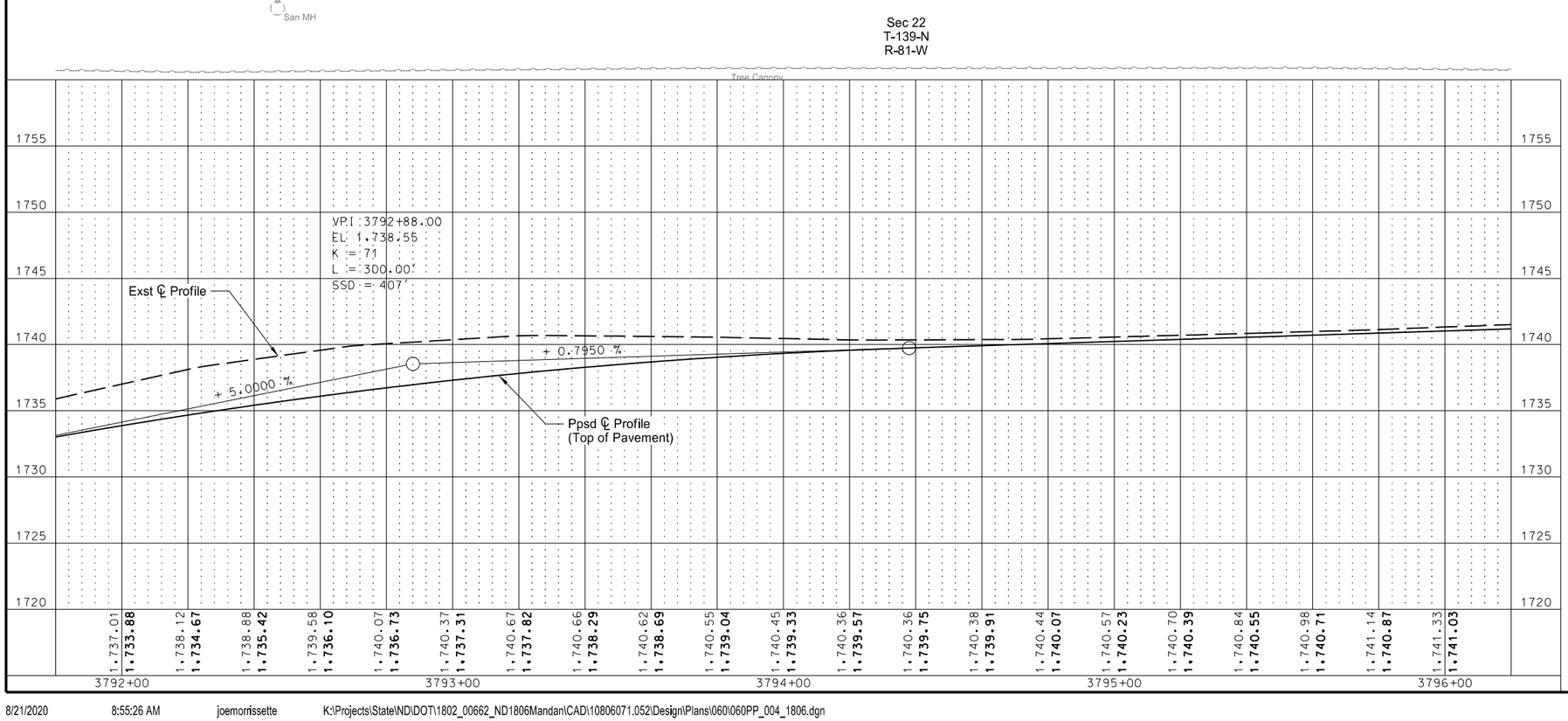
ND 1806

Plan & Profile

ND 1806
Sta 3788+00 to 3792+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	4





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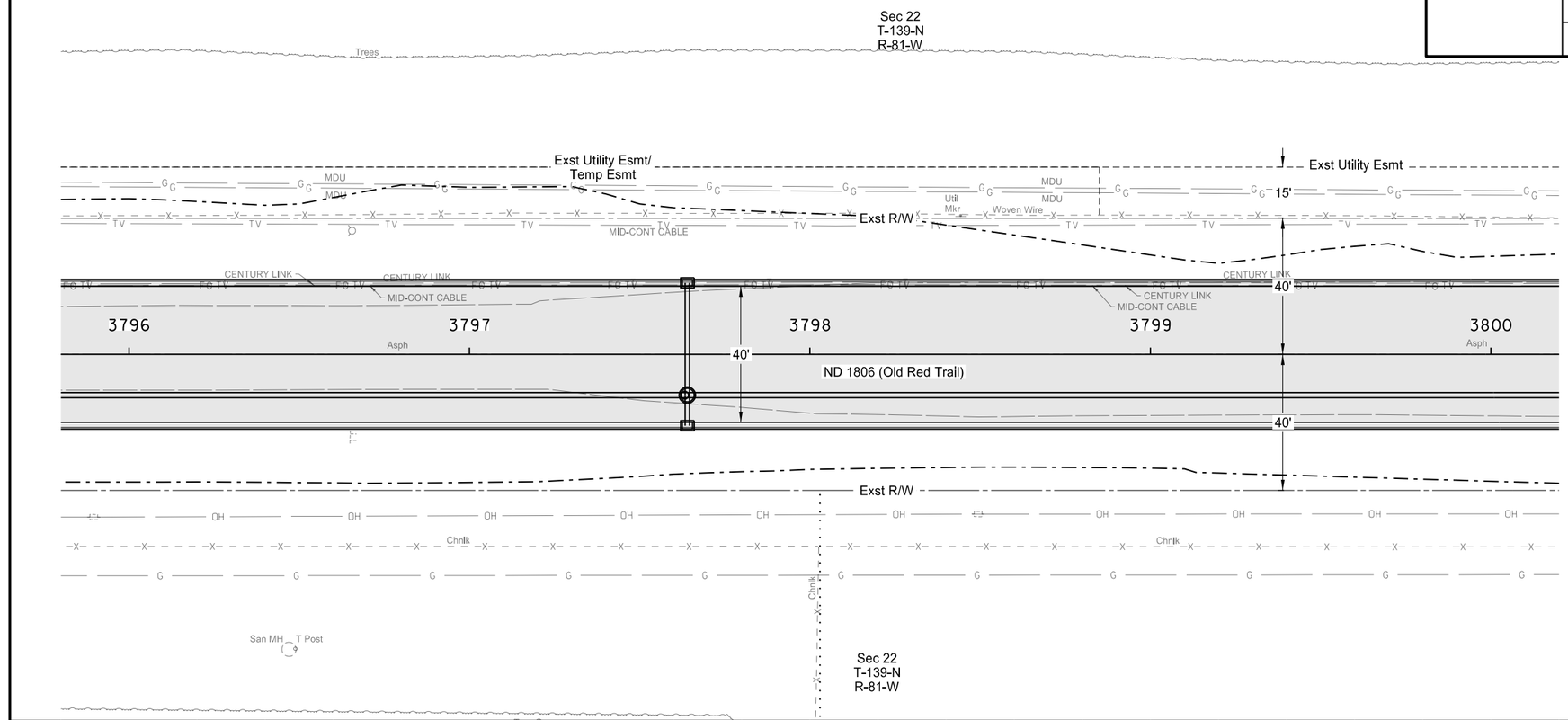
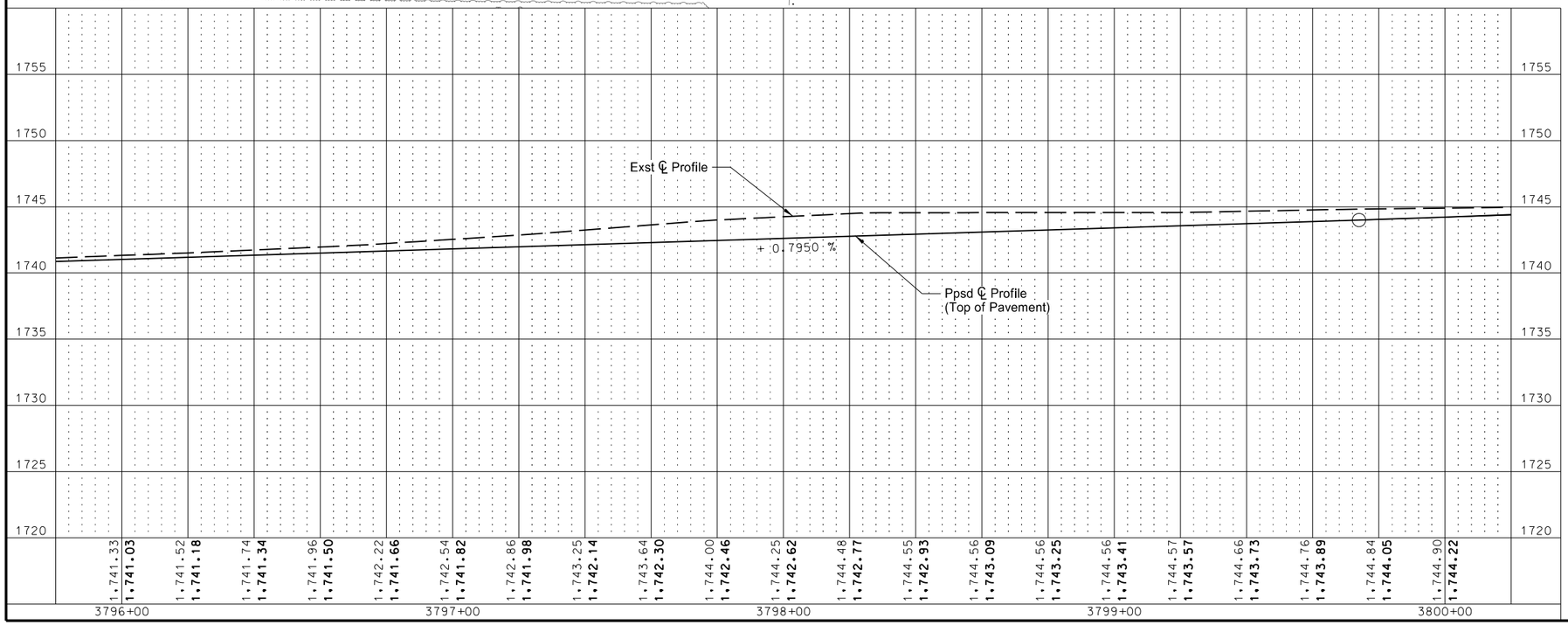
ND 1806

Plan & Profile

ND 1806
Sta 3792+00 to 3796+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	5





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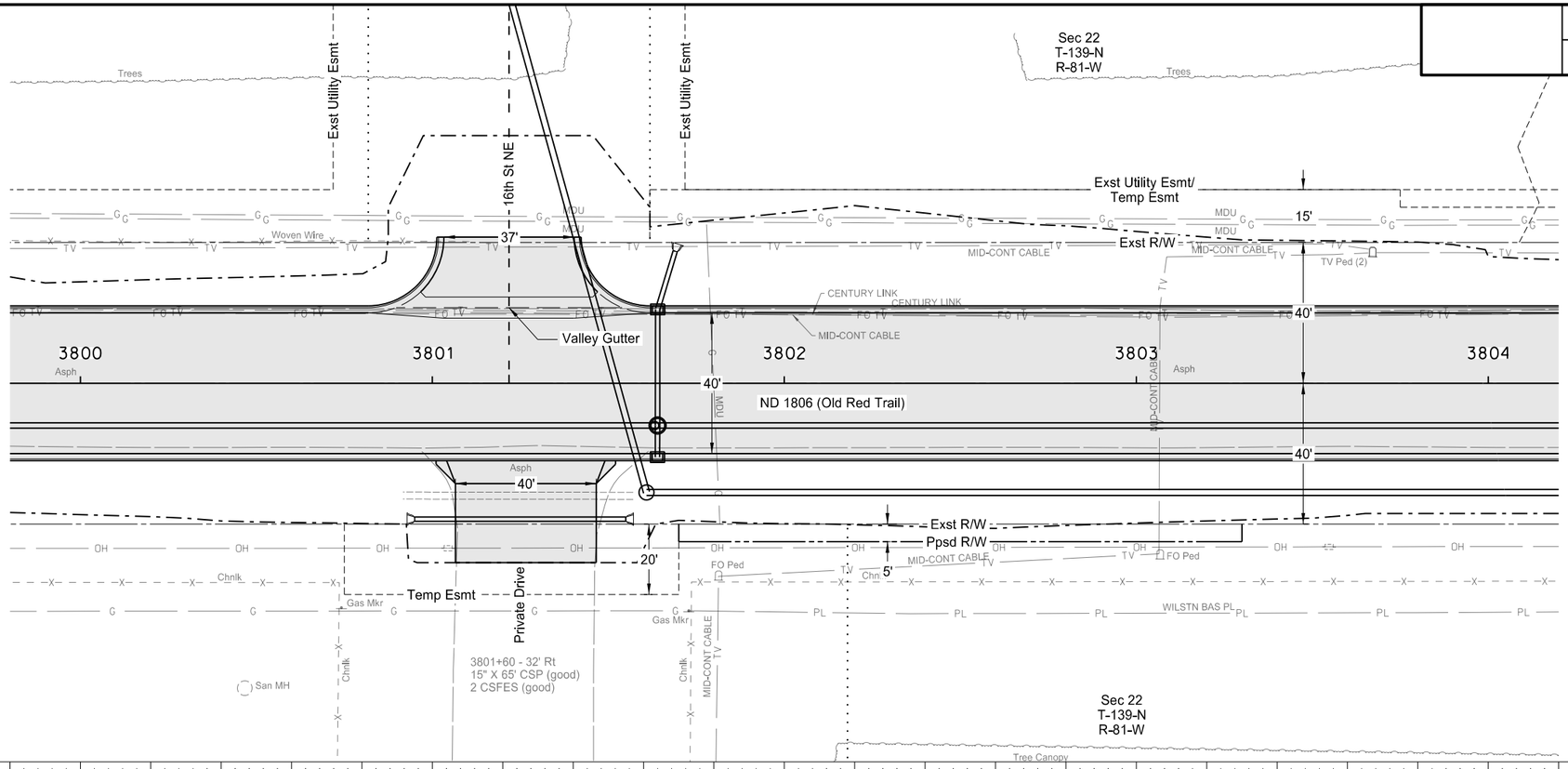
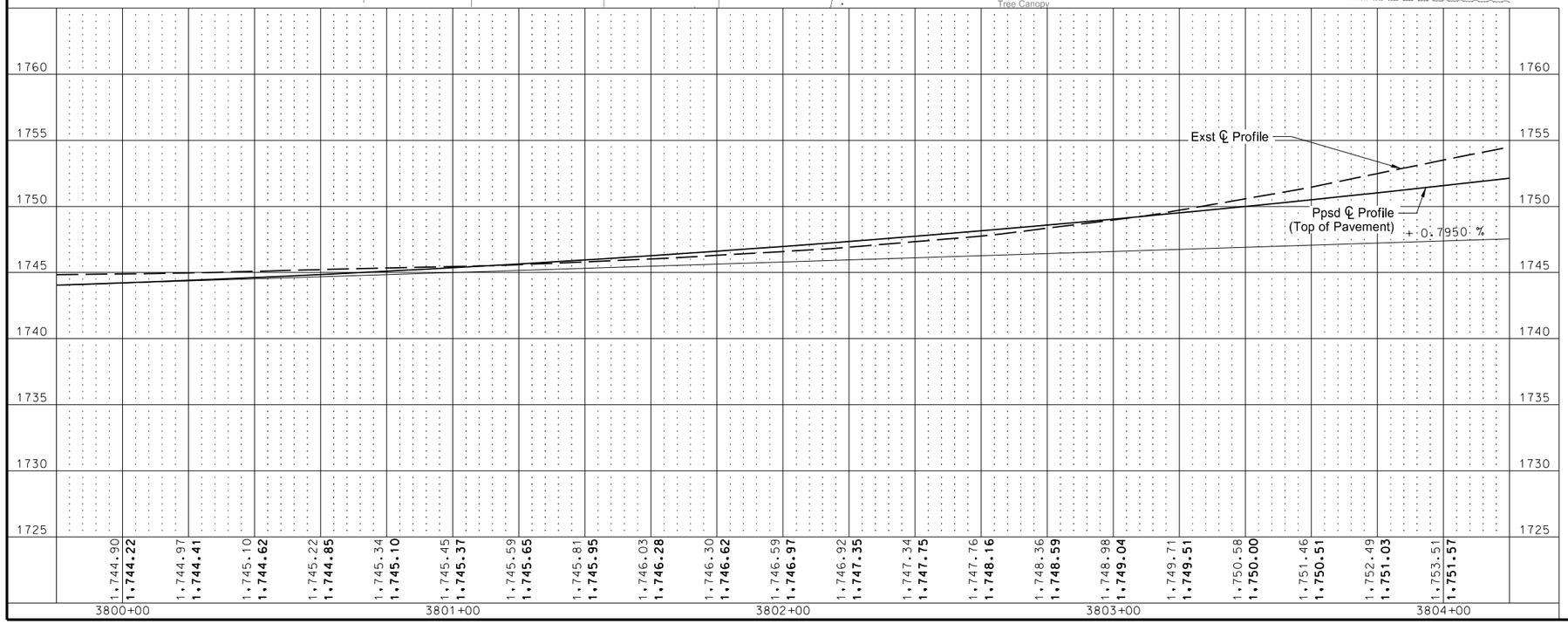
ND 1806

Plan & Profile

ND 1806
Sta 3796+00 to 3800+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	6





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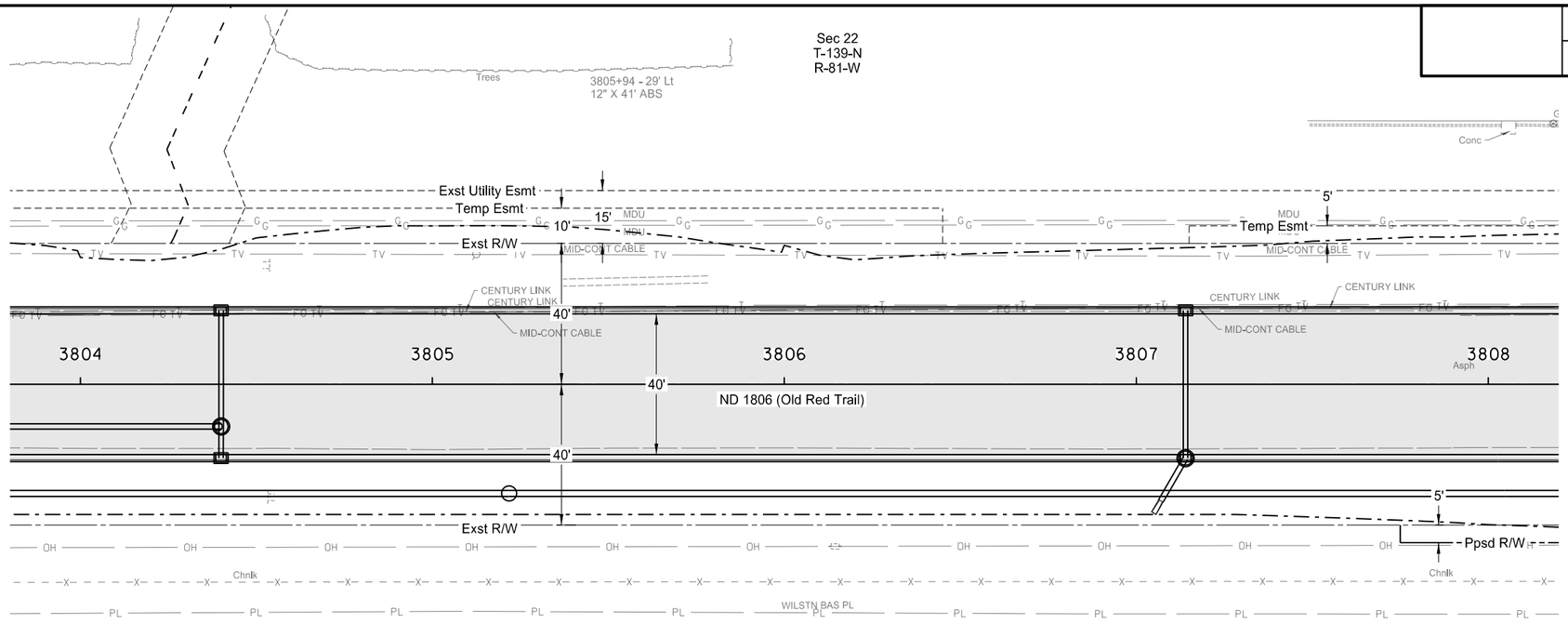
ND 1806

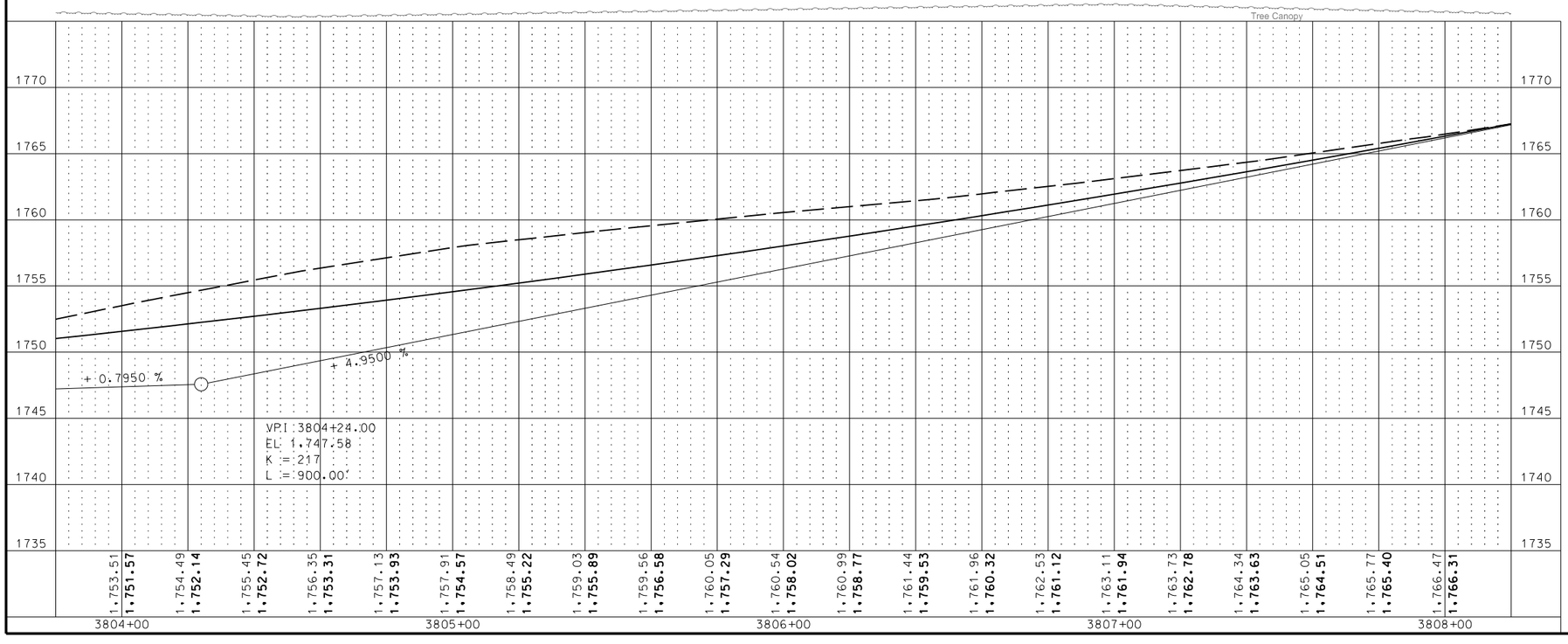
Plan & Profile

ND 1806
Sta 3800+00 to 3804+00 (PR1806)

8/21/2020 8:55:32 AM joemorrissette K:\Projects\State\ND\DOT\1802_00662_ND1806Mandan\CAD\10806071.052\Design\Plans\060\060PP_006_1806.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	7





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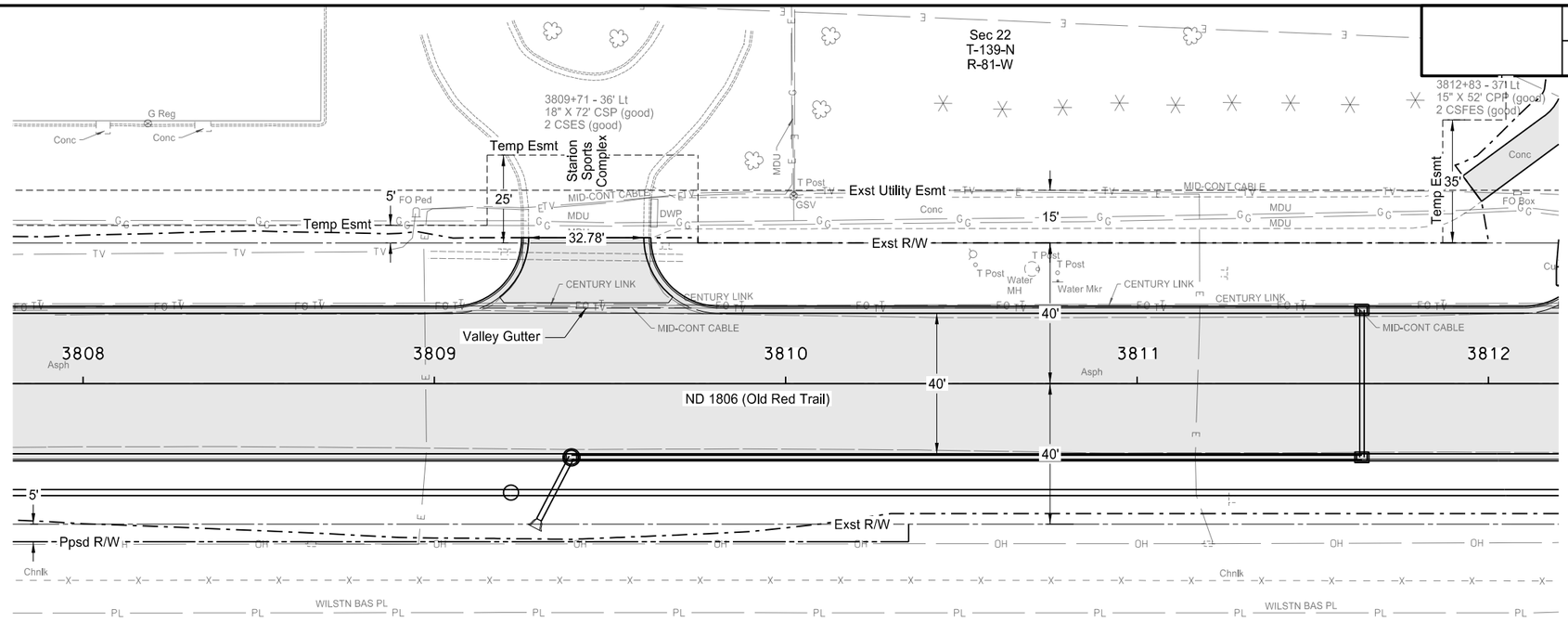
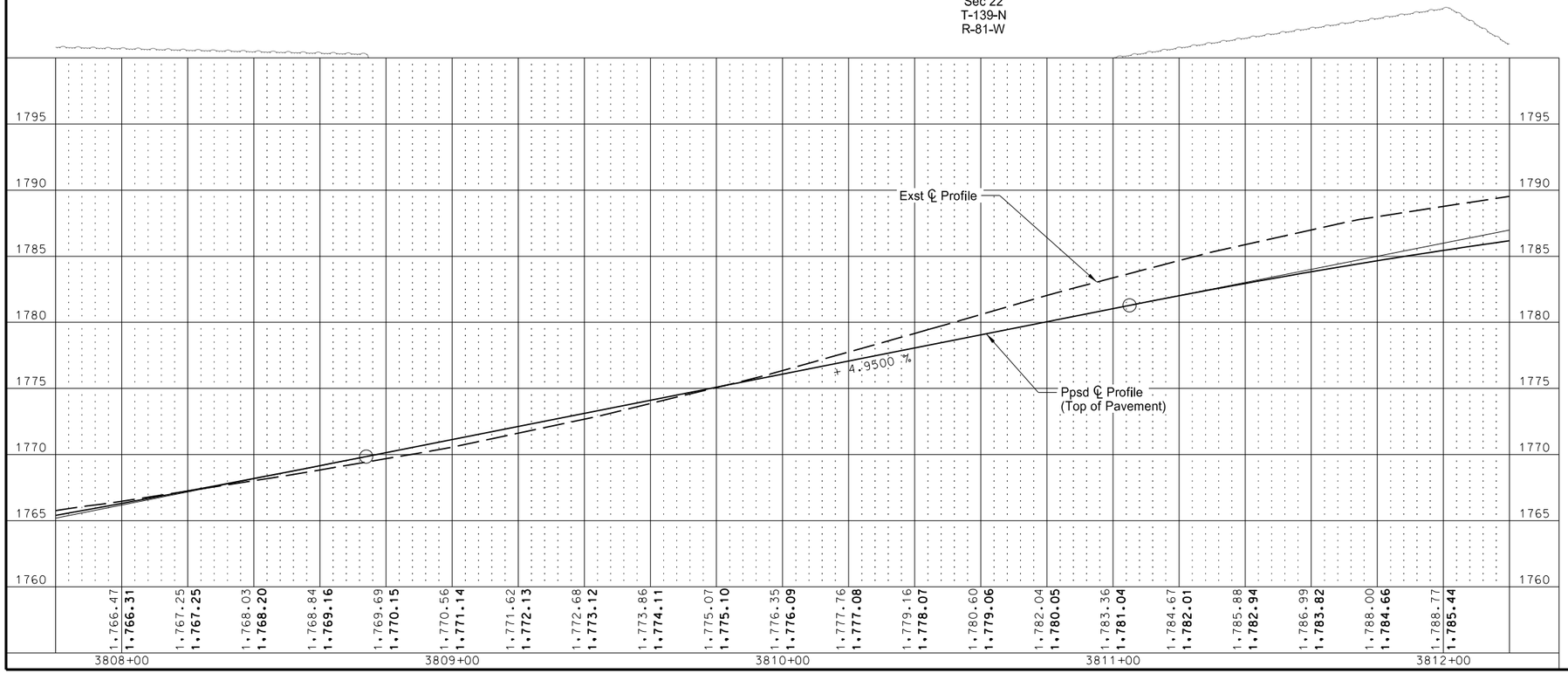
ND 1806

Plan & Profile

ND 1806
Sta 3804+00 to 3808+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	8





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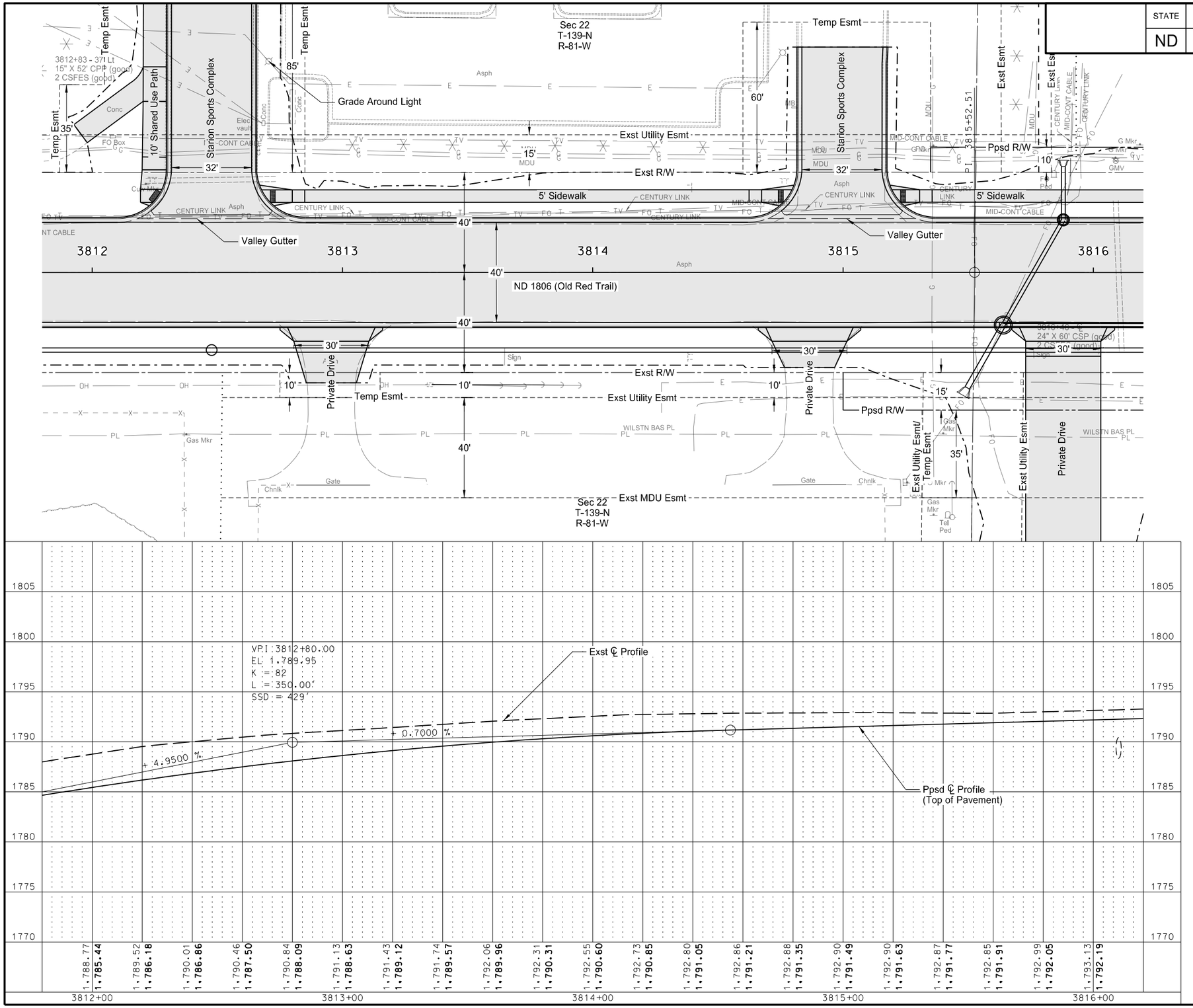
ND 1806

Plan & Profile

ND 1806
Sta 3808+00 to 3812+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	9



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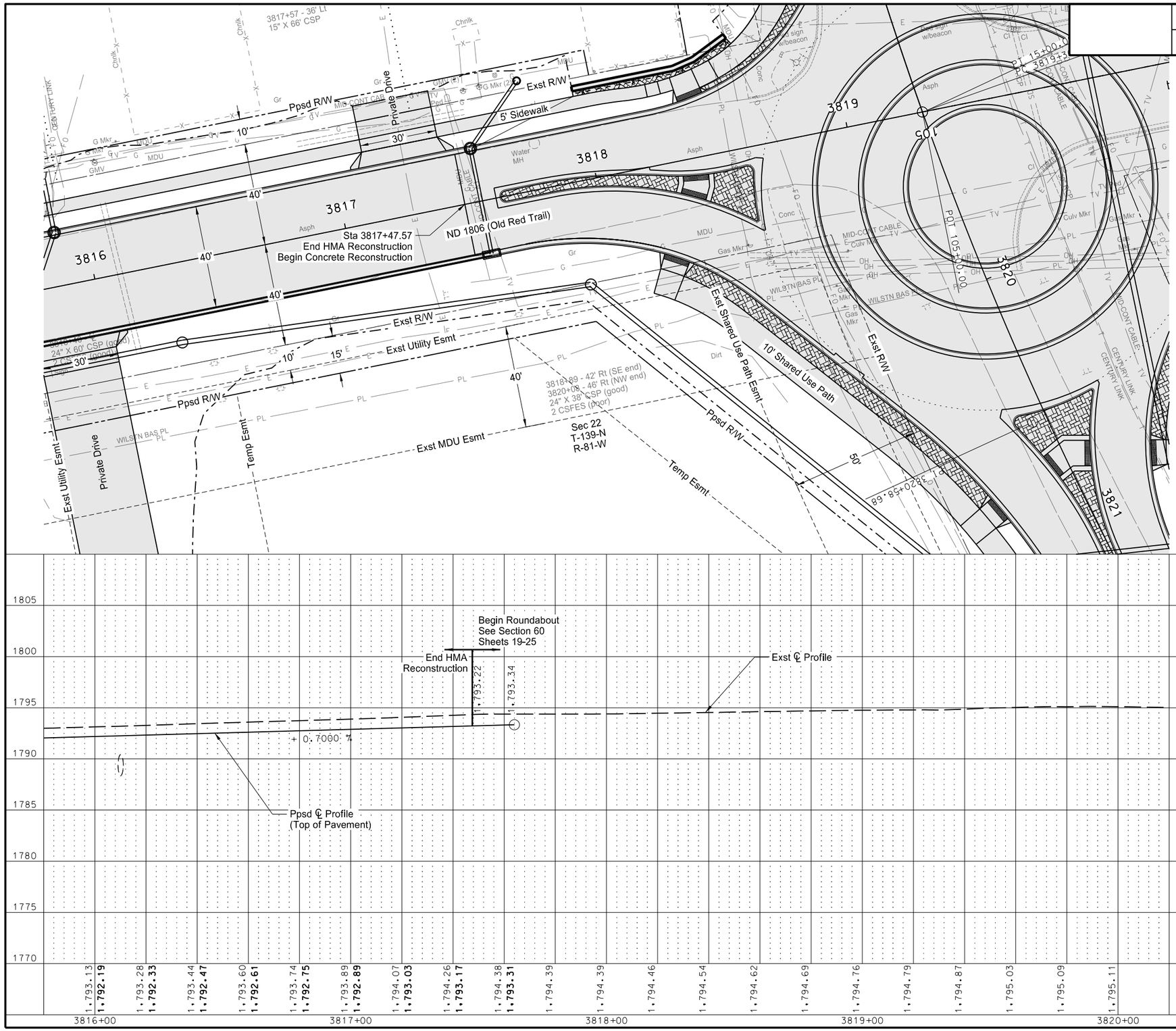
ND 1806

Plan & Profile

ND 1806
Sta 3812+00 to 3816+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	10



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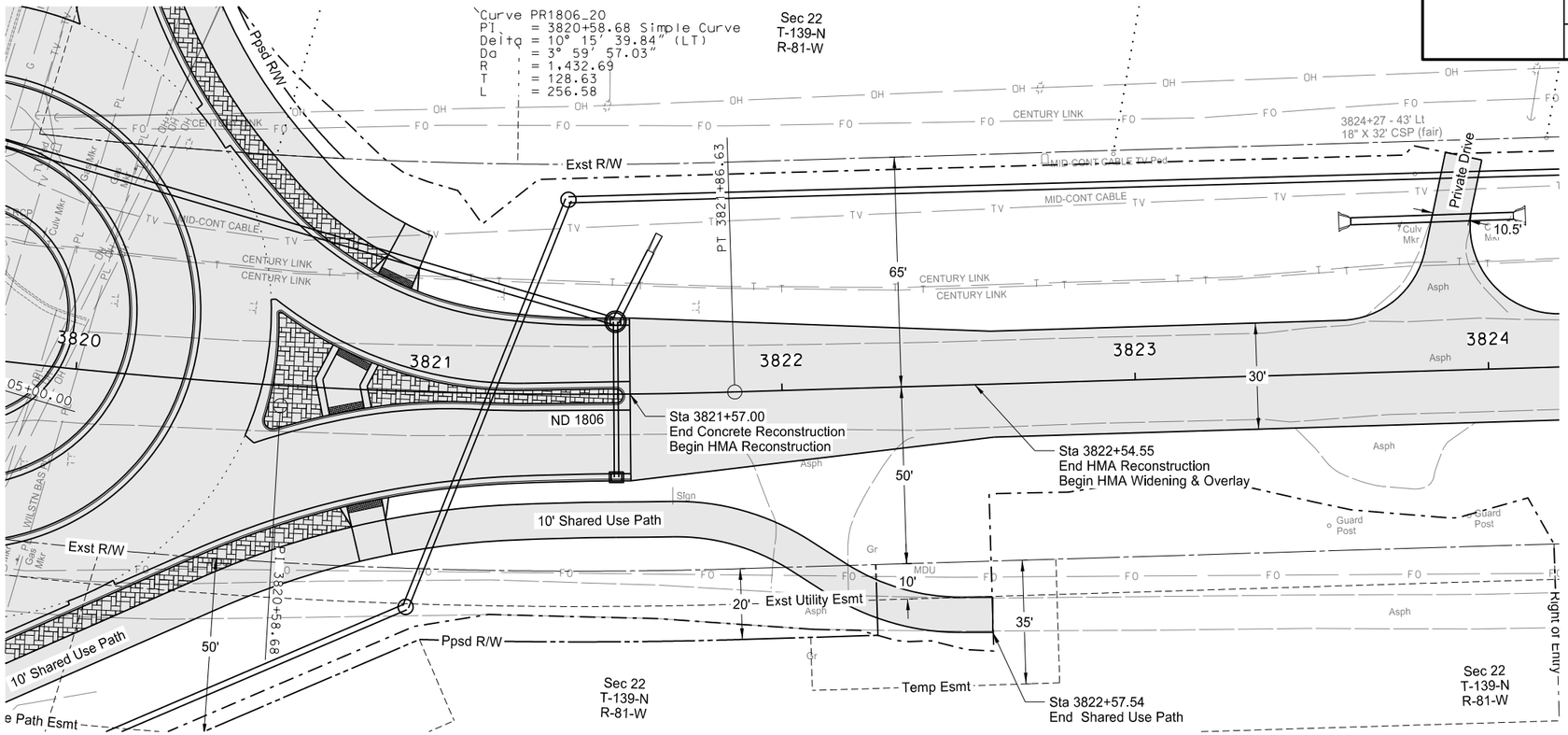
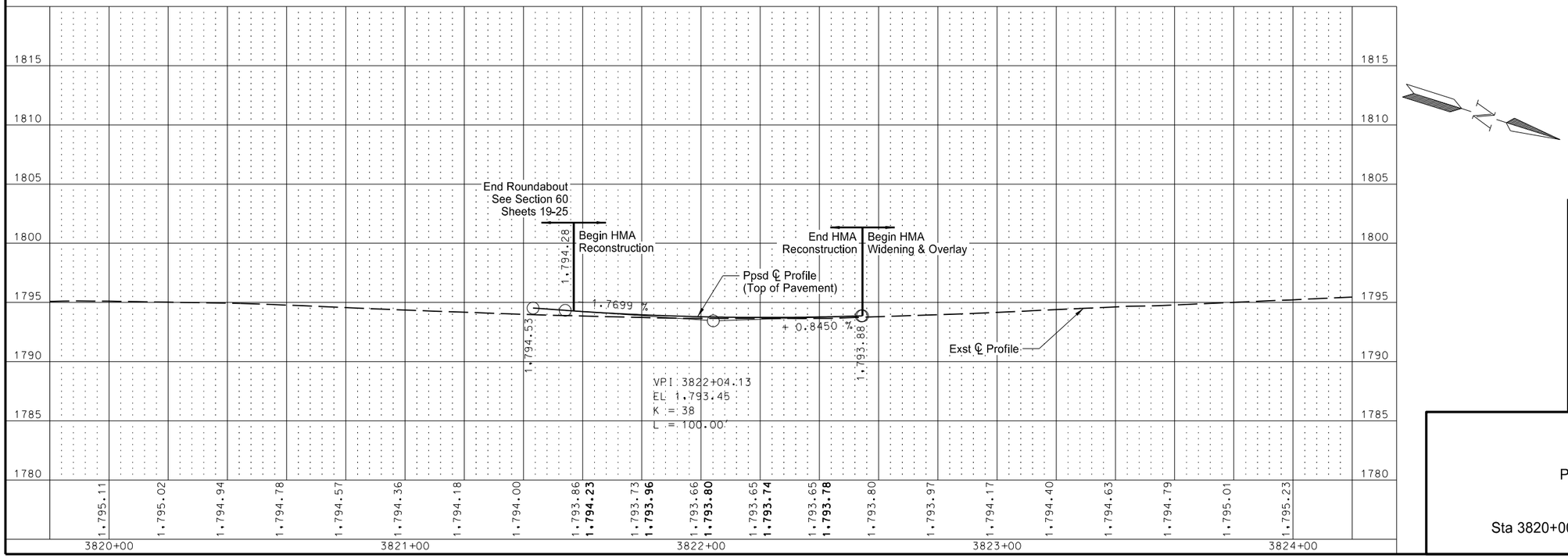
ND 1806

Plan & Profile

ND 1806
Sta 3816+00 to 3817+47.57 PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	11





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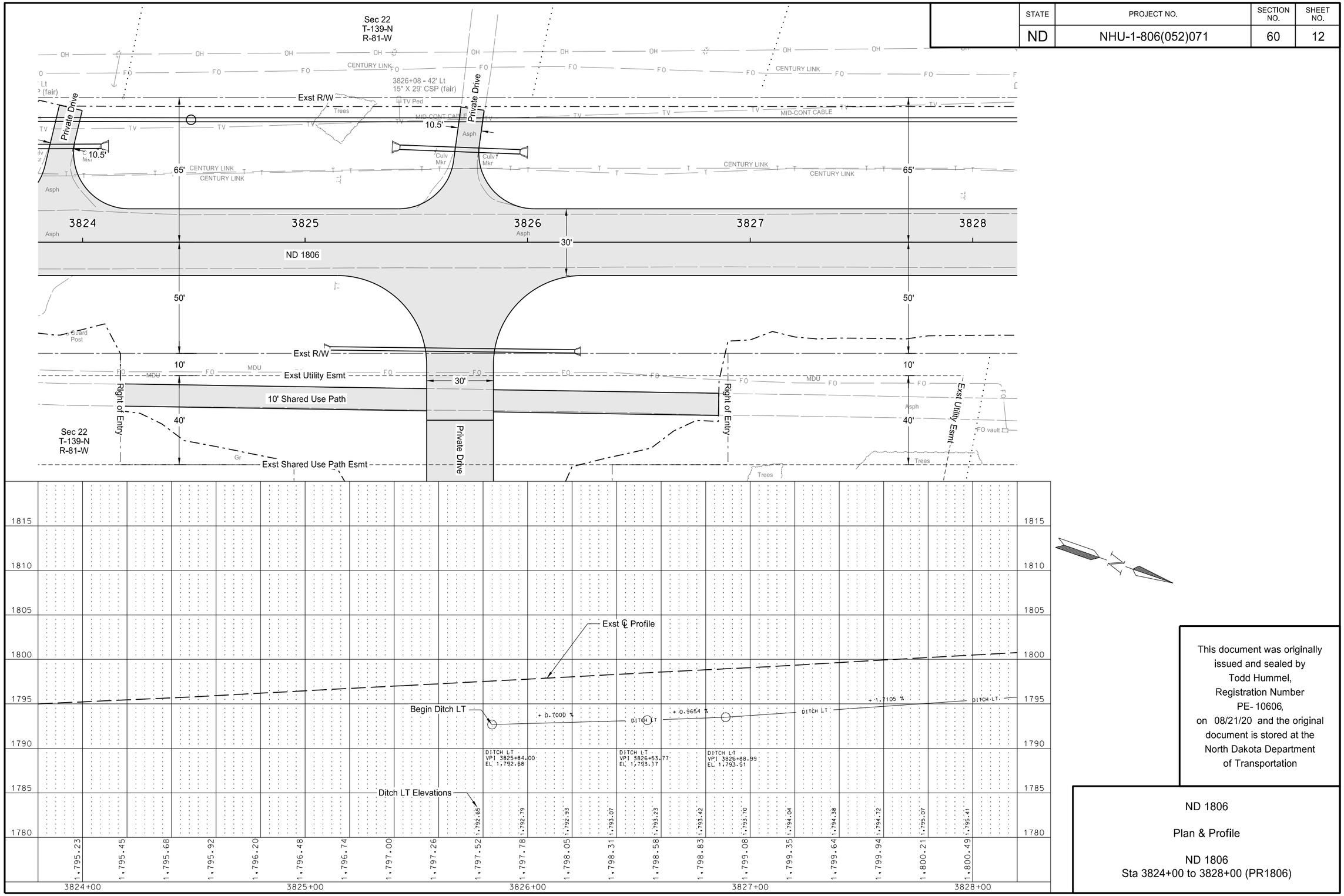
ND 1806

Plan & Profile

ND 1806
Sta 3820+00 to 3824+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	12



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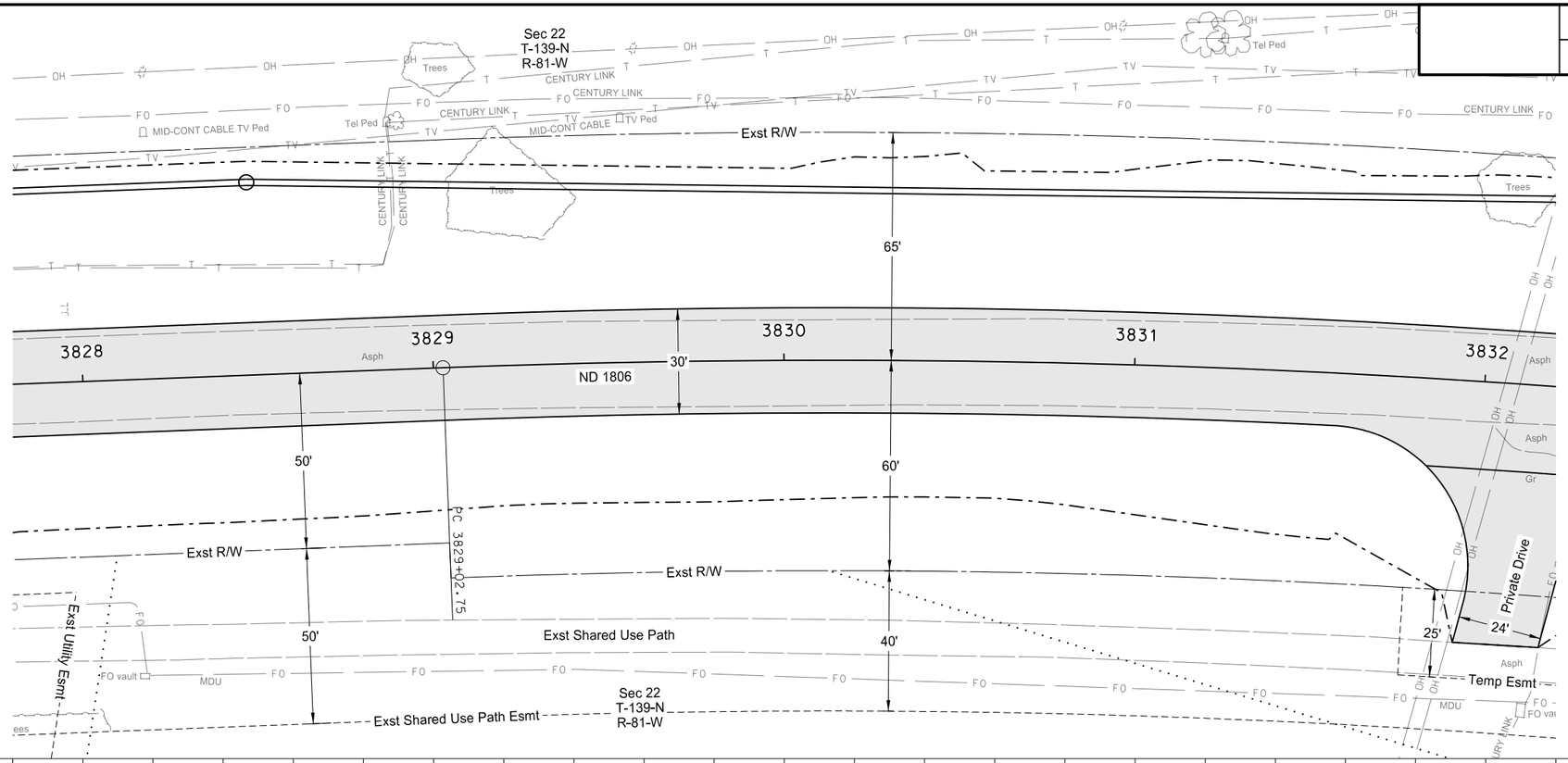
ND 1806

Plan & Profile

ND 1806
Sta 3824+00 to 3828+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	13



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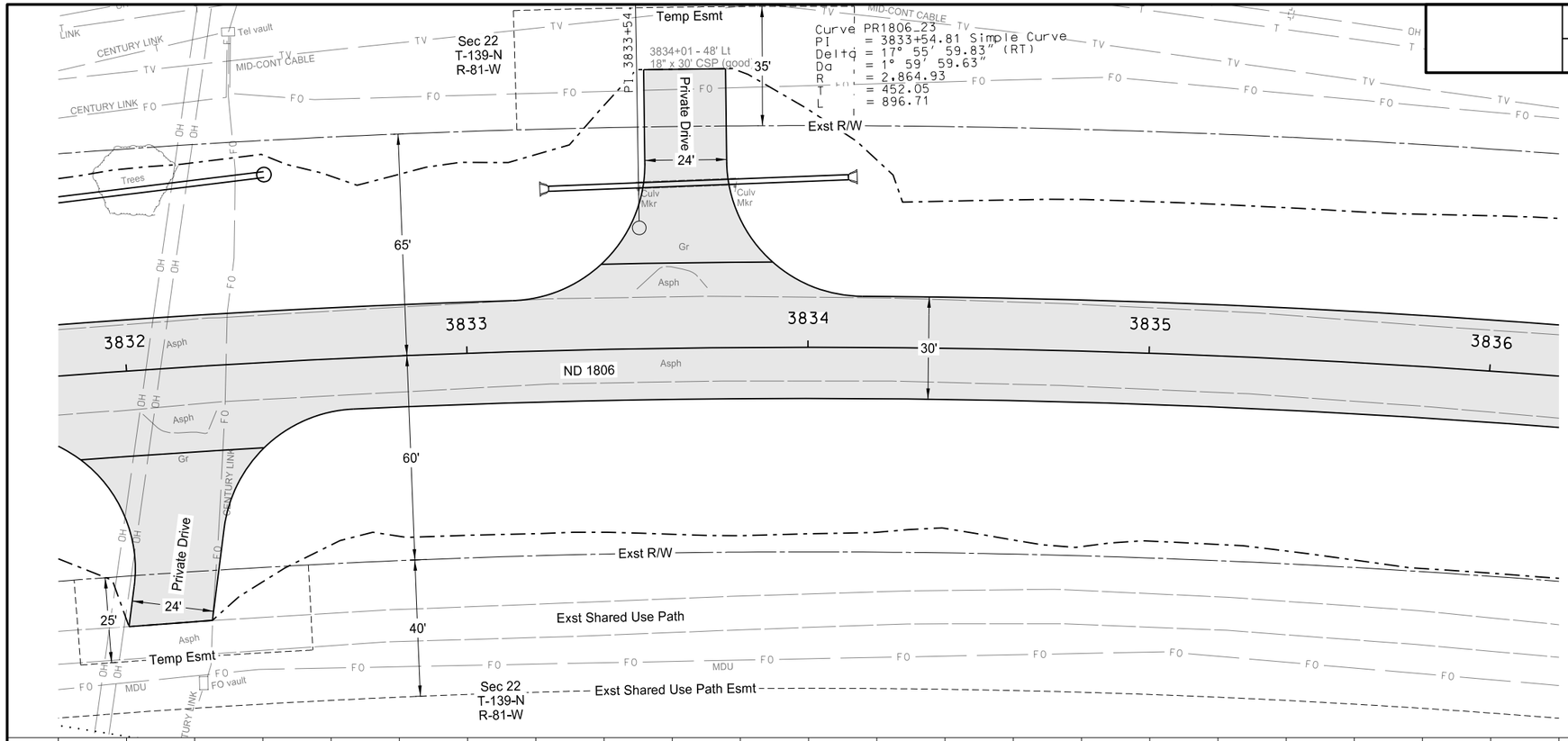
ND 1806

Plan & Profile

ND 1806
Sta 3828+00 to 3832+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	14



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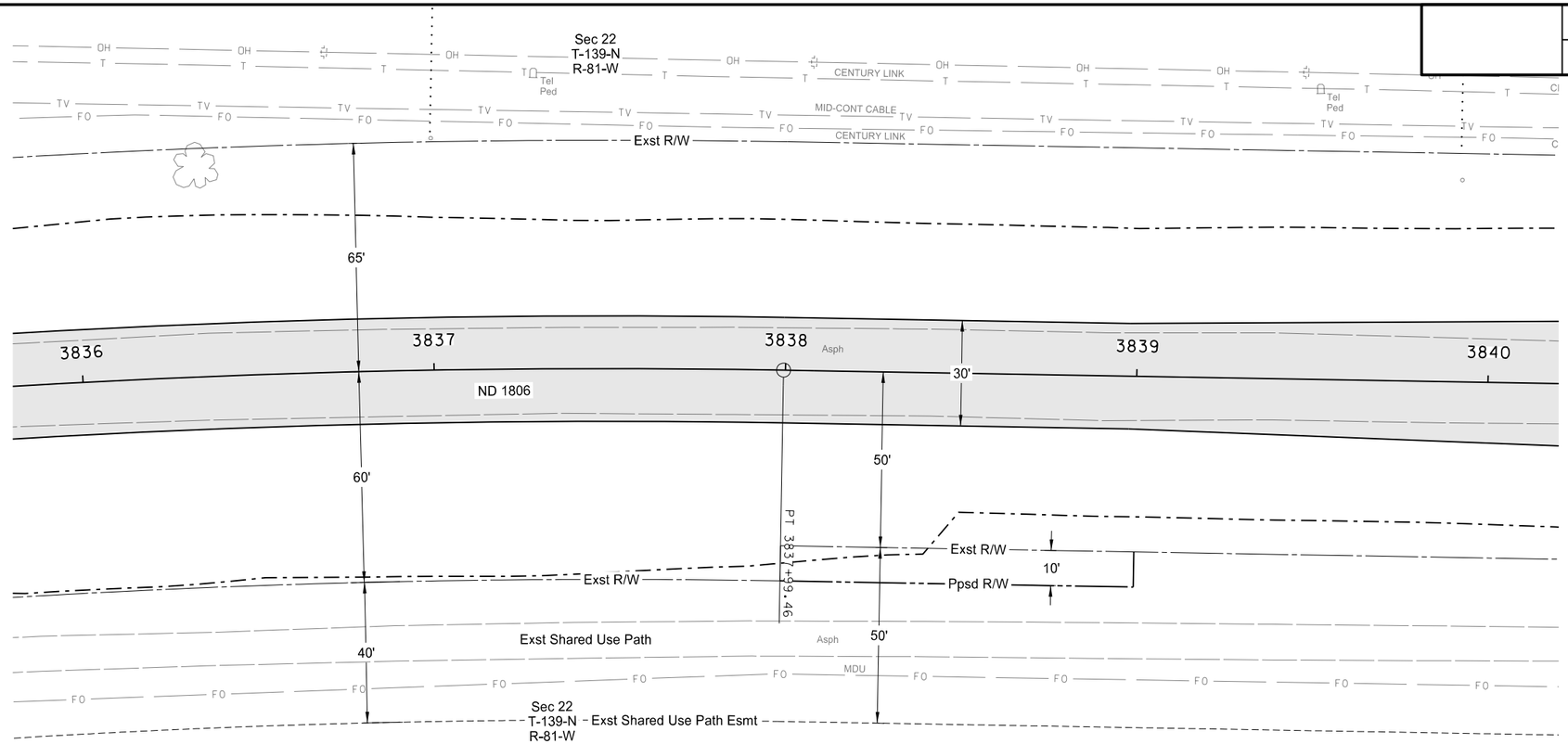
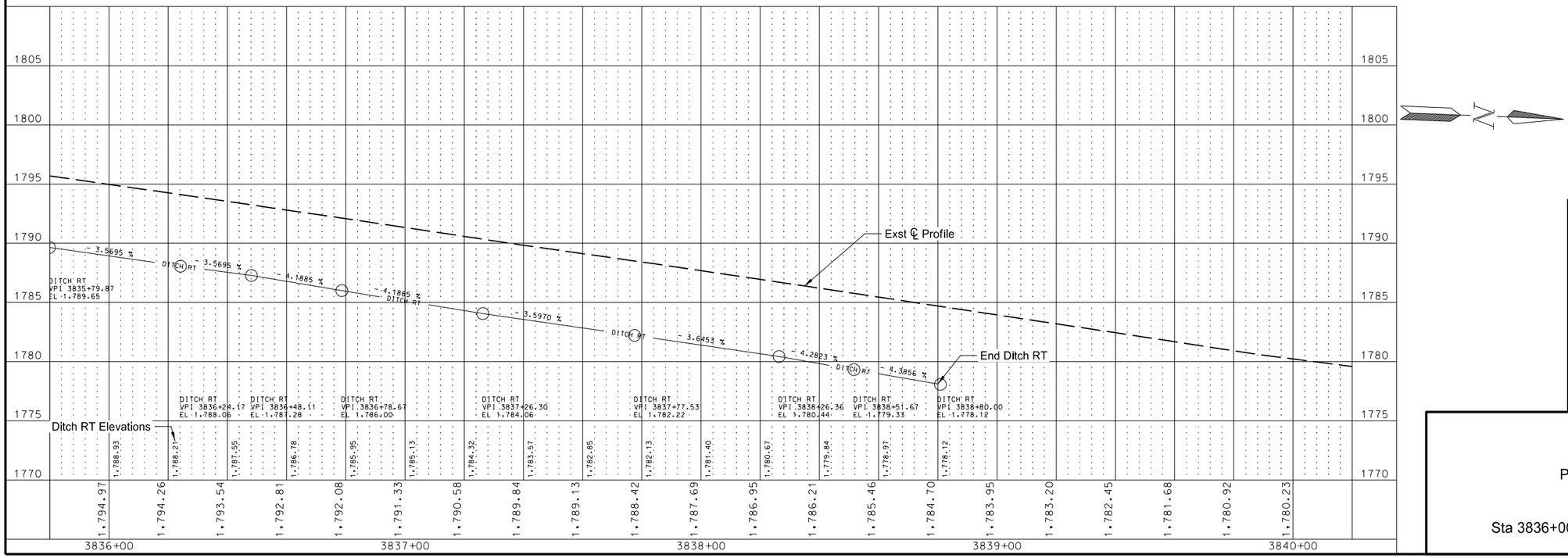
ND 1806

Plan & Profile

ND 1806
Sta 3832+00 to 3836+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	15





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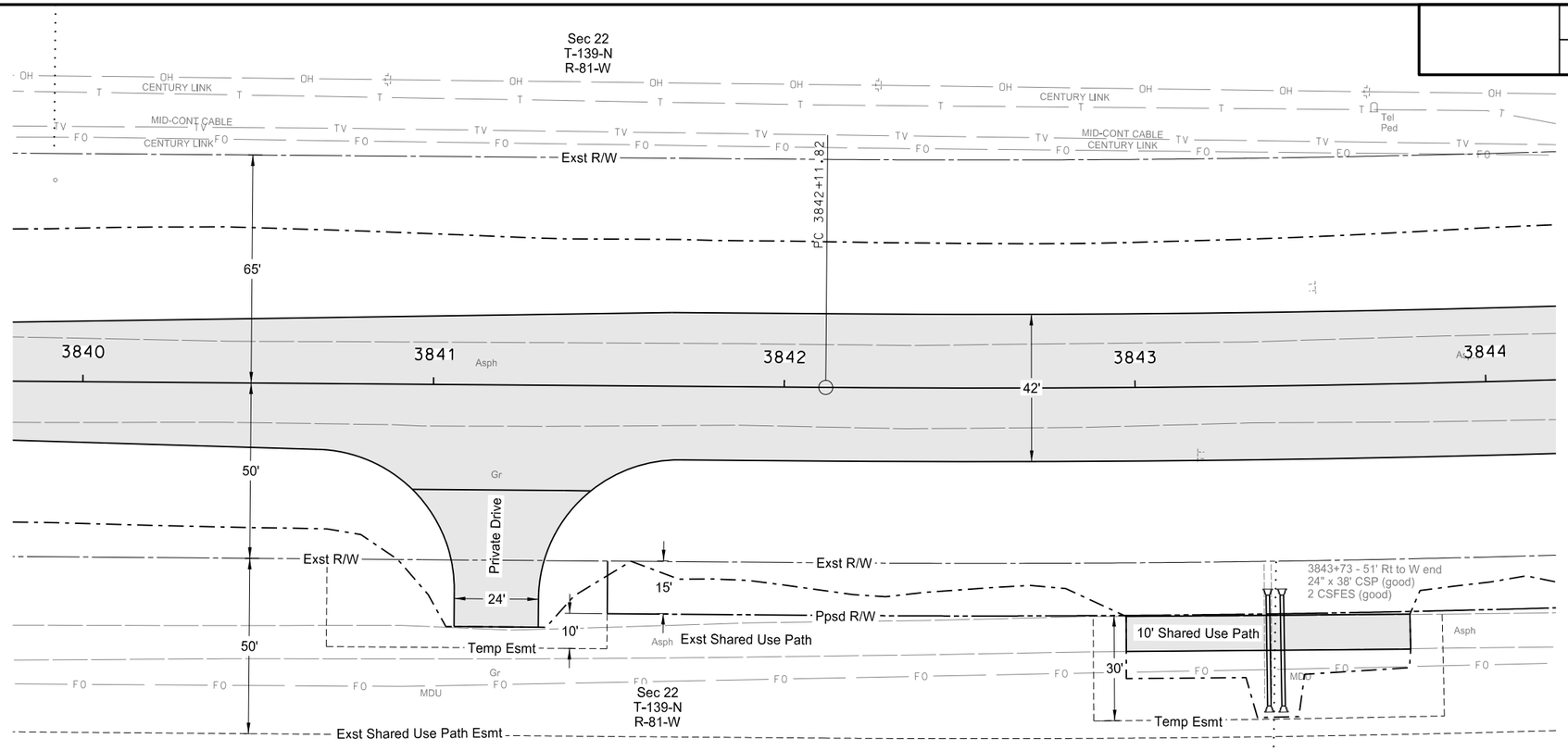
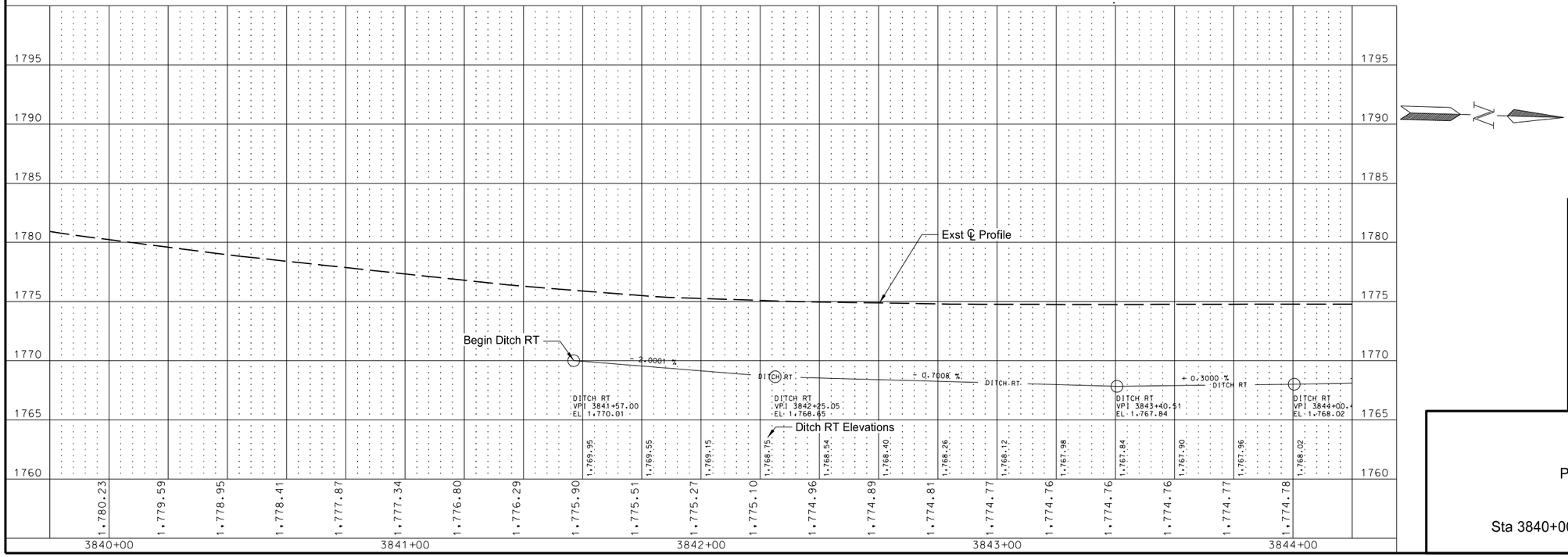
ND 1806

Plan & Profile

ND 1806
Sta 3836+00 to 3840+00 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	16





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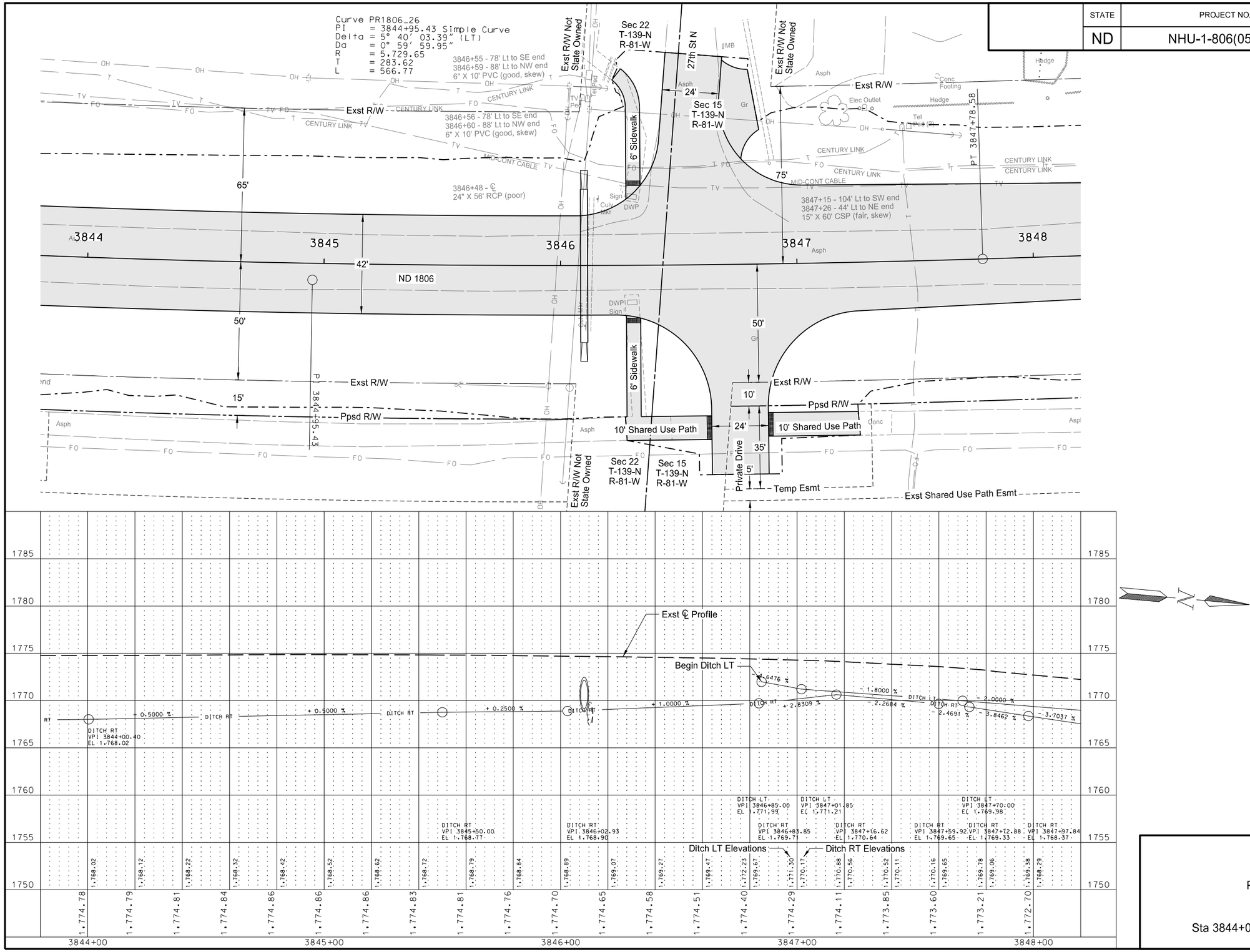
ND 1806

Plan & Profile

ND 1806
Sta 3840+00 to 3844+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	17



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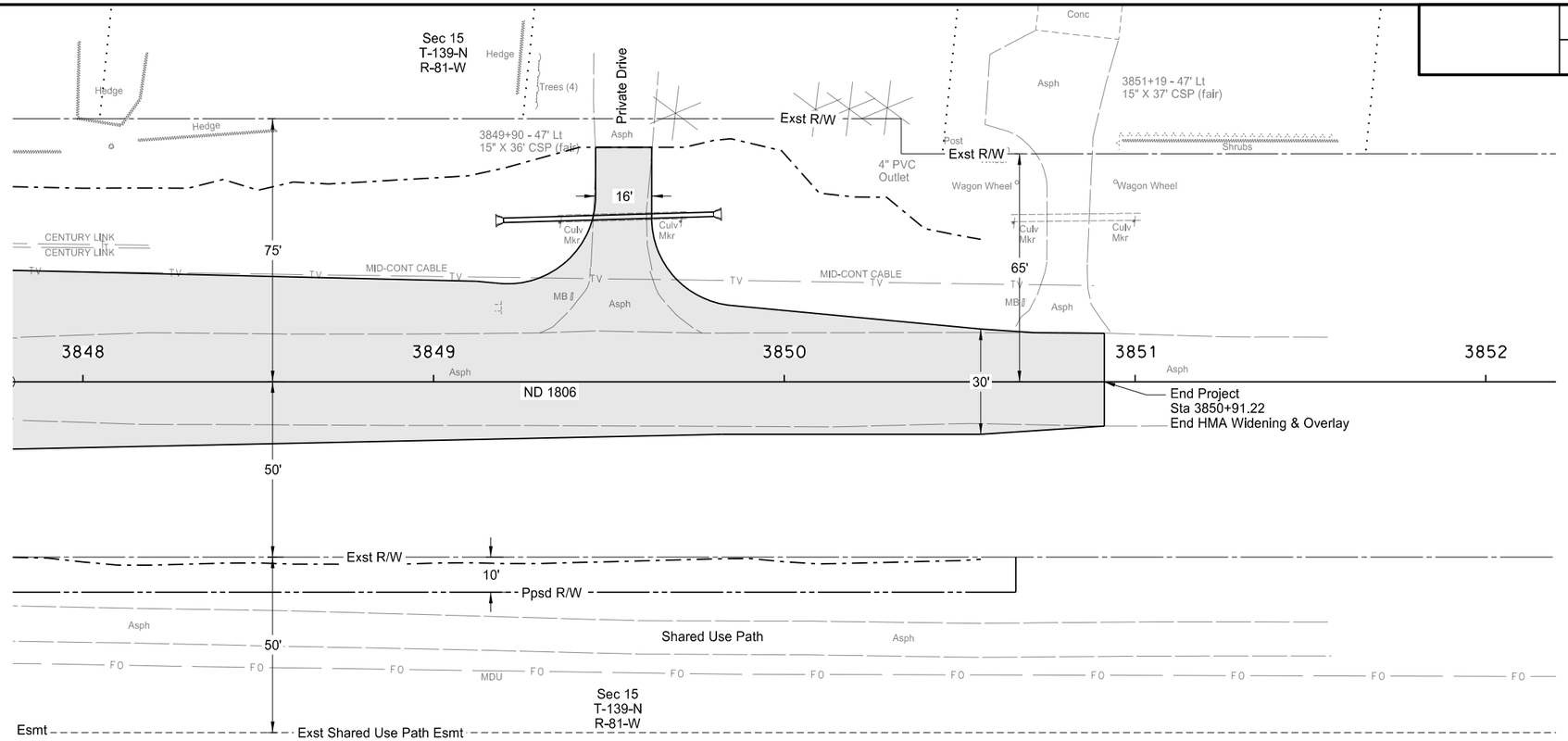
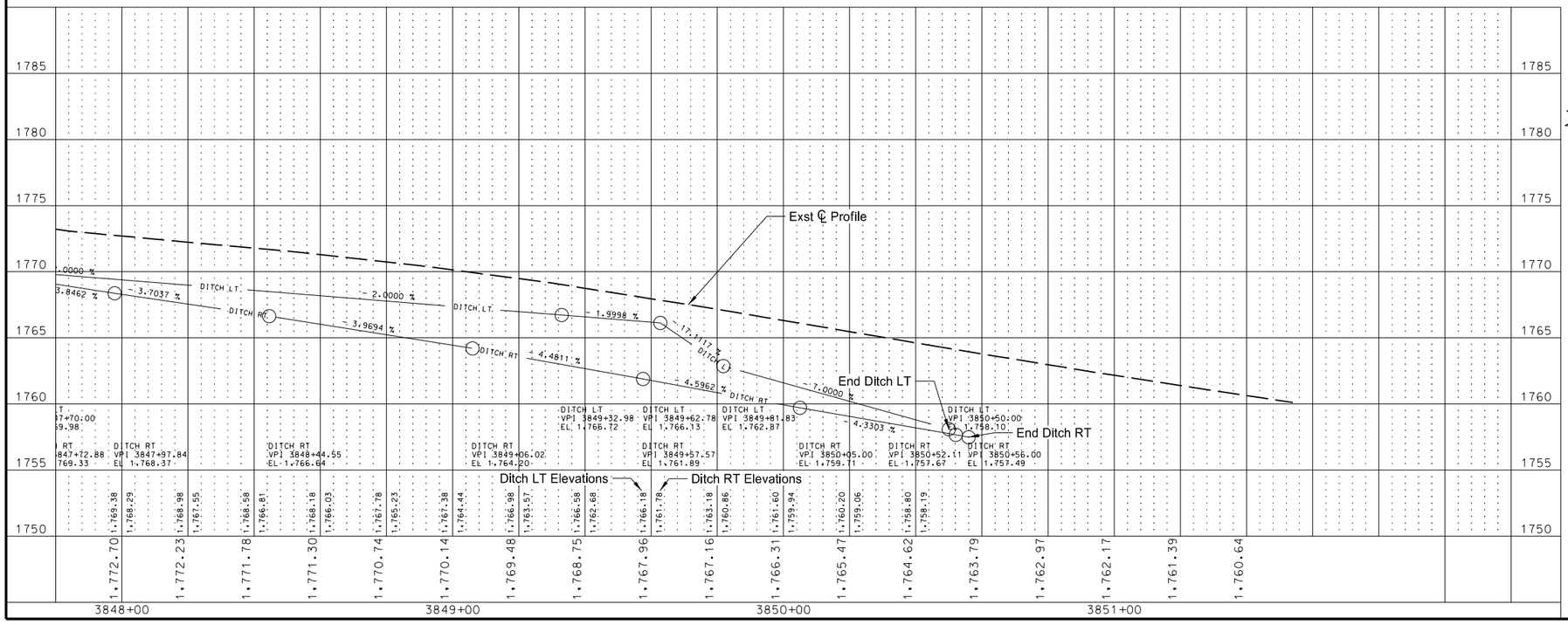
ND 1806

Plan & Profile

ND 1806
Sta 3844+00 to 3848+00 (PR1806)

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	18





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ND 1806

Plan & Profile

ND 1806
Sta 3848+00 to 3850+91.22 (PR1806)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	19

Curve PRRBSEEOP_3
PI = 50+43.40 Simple Curve
Delta = 0° 32' 35.13" (LT)
Da = 3° 56' 48.60"
R = 1,451.69
T = 6.88
L = 13.76

Curve PRRBSEEOP_4
PI = 50+64.12 Simple Curve
Delta = 5° 16' 56.15" (LT)
Da = 19° 05' 54.93"
R = 300.00
T = 13.84
L = 27.66

Curve PRRBSEEOP_5
PI = 51+05.67 Simple Curve
Delta = 11° 43' 37.11" (LT)
Da = 21° 13' 14.37"
R = 270.00
T = 27.73
L = 55.26

Curve PRRBSEEOP_6
PI = 51+44.61 Simple Curve
Delta = 21° 31' 35.54" (RT)
Da = 95° 29' 34.67"
R = 60.00
T = 11.41
L = 22.54

Curve PRRBSEEOP_7
PI = 52+07.13 Simple Curve
Delta = 65° 25' 17.83" (RT)
Da = 71° 37' 11.01"
R = 80.00
T = 51.38
L = 91.35

Curve PRRBSEEOP_8
PI = 52+64.93 Simple Curve
Delta = 20° 13' 55.36" (RT)
Da = 57° 17' 45.72"
R = 100.00
T = 17.84
L = 35.31

Sec 22
T-139-N
R-81-W

Sta 50+45.13 (PRRBSEEOP)
Sta 12+96.00 (EXCOL)
End HMA Reconstruction
Begin Concrete Reconstruction

Sta 53+59.37 (PRRBSEEOP)
Sta 3817+47.57 (PR1806)
Begin HMA Reconstruction
End Concrete Reconstruction

Collins Ave
10' Shared Use Path
Temp Esmt
Exst R/W Not State Owned
5' Sidewalk
Exst R/W
Ppsd R/W
Exst Utility Esmt
Exst MDU Esmt
ND 1806 (Old Red Trail)

VP.I 51+48.53
EL 1,793.53
SSD = 380'
K = 13
L = 40.00'

VP.I 51+82.00
EL 1,794.20
SSD = 663'
K = 11
L = 18.00'

VP.I 51+95.21
EL 1,794.24
SSD = 1545'
K = 10
L = 7.00'

VP.I 52+41.14
EL 1,794.08
SSD = 961'
K = 11
L = 12.00'

VP.I 52+99.02
EL 1,793.22
K = 38
L = 30.00'

End HMA Reconstruction
Begin Roundabout
End Roundabout
Begin HMA Reconstruction

+ 5.0000 %
+ 2.0000 %
+ 0.3500 %
- 0.3500 %
- 1.4801 %
+ 0.7000 %

Exst Ground Profile
Ppsd Alignment Profile (Top of Pavement)

1,788.41
1,792.80

50+00	51+00	52+00	53+00	54+00
1,785.76	1,786.77	1,787.78	1,788.70 **1,789.10**	1,789.60 **1,790.10**
1,790.47 **1,791.10**	1,791.41 **1,792.10**	1,792.12 **1,793.05**	1,792.73 **1,793.73**	1,793.20 **1,794.13**
1,793.46 **1,794.22**	1,794.18 **1,794.15**	1,794.26 **1,794.07**	1,793.79 **1,793.80**	1,793.87 **1,793.51**
1,793.87 **1,793.24**	1,793.84 **1,793.08**	1,793.75 **1,792.94**	1,793.66	1,793.50
1,793.33				

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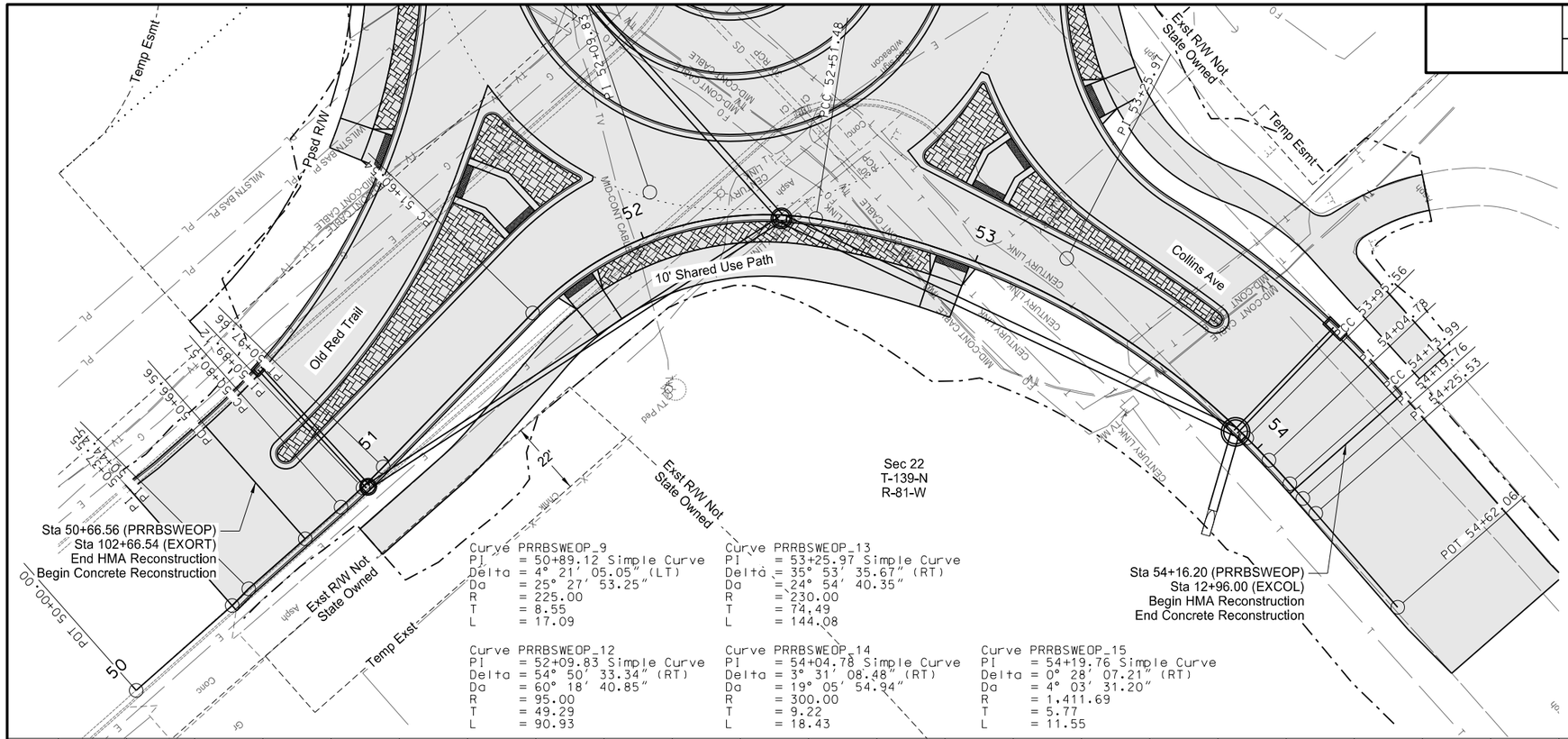
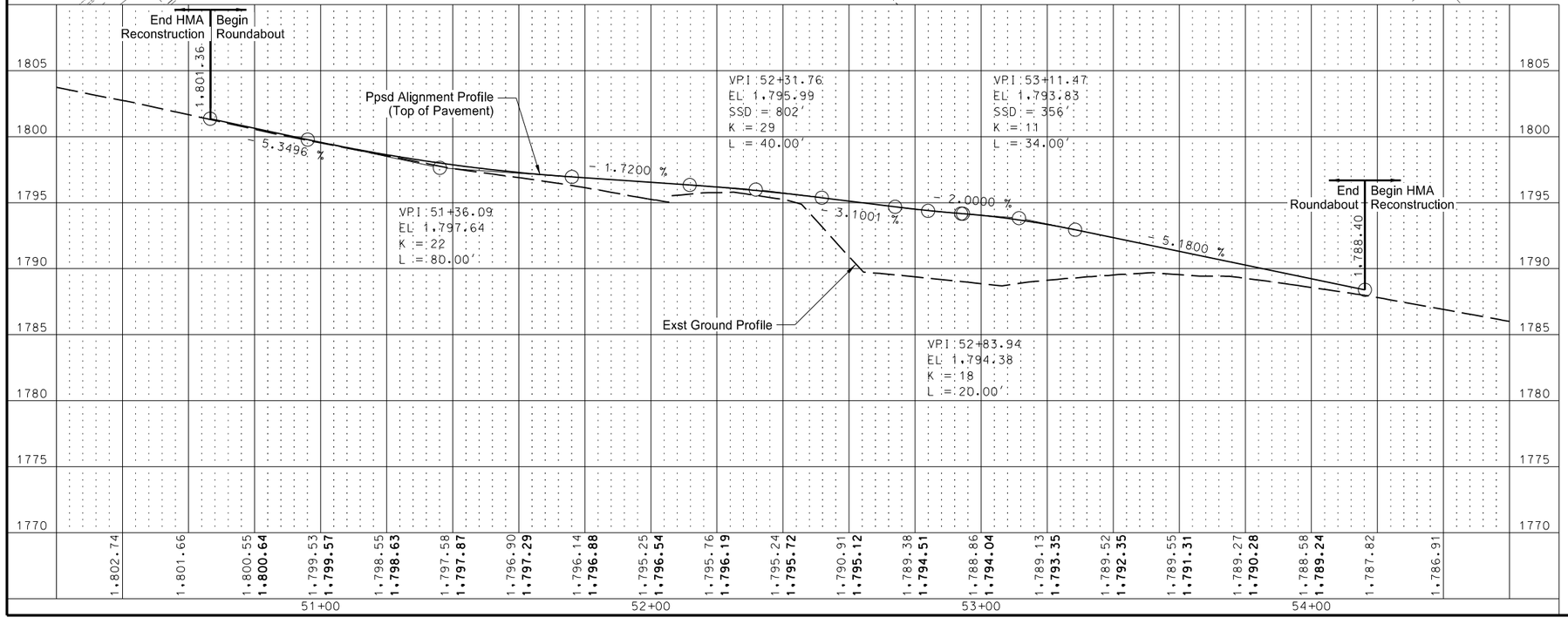
ND 1806

Plan & Profile

Roundabout - Southeast EOP

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	20





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ND 1806

Plan & Profile

Roundabout - Southwest EOP

8/21/2020 8:56:11 AM joemorrissette K:\Projects\State\ND\DOT\1802_00662_ND1806Mandan\CAD\10806071.052\Design\Plans\060\060PP_020_RBSWEOP.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	21

Sec 22
T-139-N
R-81-W

Ppsd R/W
Exst R/W
5' Sidewalk
Private Drive
10' Shared Use Path
Exst Shared Use Path Esmt
Ppsd R/W
Exst R/W
Exst Utility Esmt
Temp Esmt
Exst MDU Esmt
Exst Utility Esmt
Ppsd R/W
Exst R/W
ND 1806 (Old Red Trail)
ND 1806

Sta 50+47.57 (PRRBNEEOP)
Sta 3817+47.57 (PR1806)
End HMA Reconstruction
Begin Concrete Reconstruction

Sta 53+66.53 (PRRBNEEOP)
Sta 3821+57.00 (PR1806)
Begin HMA Reconstruction
End Concrete Reconstruction

PCC 51+42.61
PT 51+63.25
PC 52+39.72
PRC 52+86.42
PT 53+32.05
PC 53+41.15
PT 53+64.39
POT 53+66.53
PT 53+83.32
PRC 53+62.25

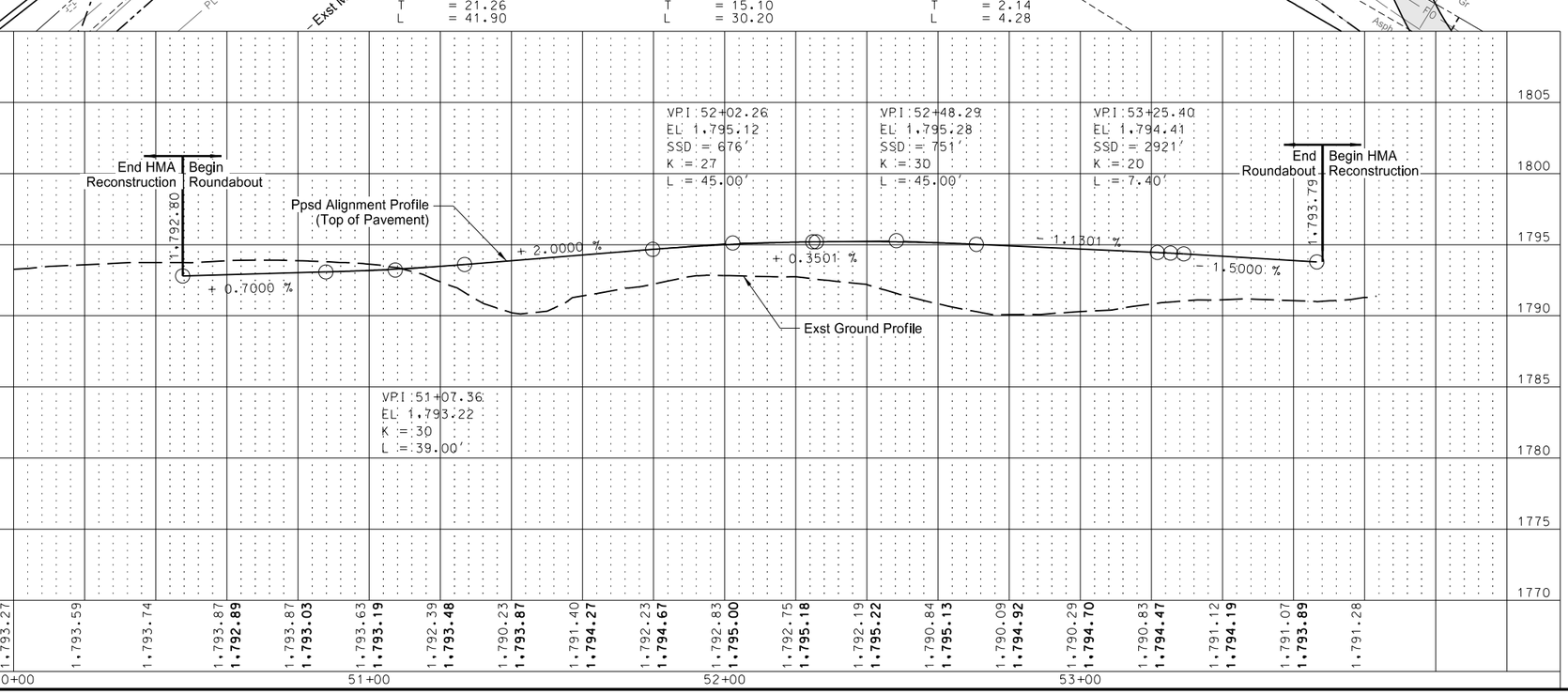
Curve PRRBNEEOP_3
PI = 50+95.00 Simple Curve
Delta = 25° 35' 45.89" (RT)
Da = 47° 44' 47.34"
R = 120.00
T = 27.26
L = 53.61

Curve PRRBNEEOP_4
PI = 51+42.61 Simple Curve
Delta = 24° 00' 27.53" (RT)
Da = 57° 17' 44.81"
R = 100.00
T = 21.26
L = 41.90

Curve PRRBNEEOP_7
PI = 52+86.42 Simple Curve
Delta = 21° 09' 37.85" (RT)
Da = 22° 55' 05.92"
R = 250.00
T = 46.70
L = 92.33

Curve PRRBNEEOP_8
PI = 53+47.15 Simple Curve
Delta = 2° 09' 46.60" (RT)
Da = 7° 09' 43.10"
R = 800.00
T = 15.10
L = 30.20

Curve PRRBNEEOP_9
PI = 53+64.39 Simple Curve
Delta = 0° 10' 06.04" (LT)
Da = 3° 56' 14.42"
R = 1,455.19
T = 2.14
L = 4.28



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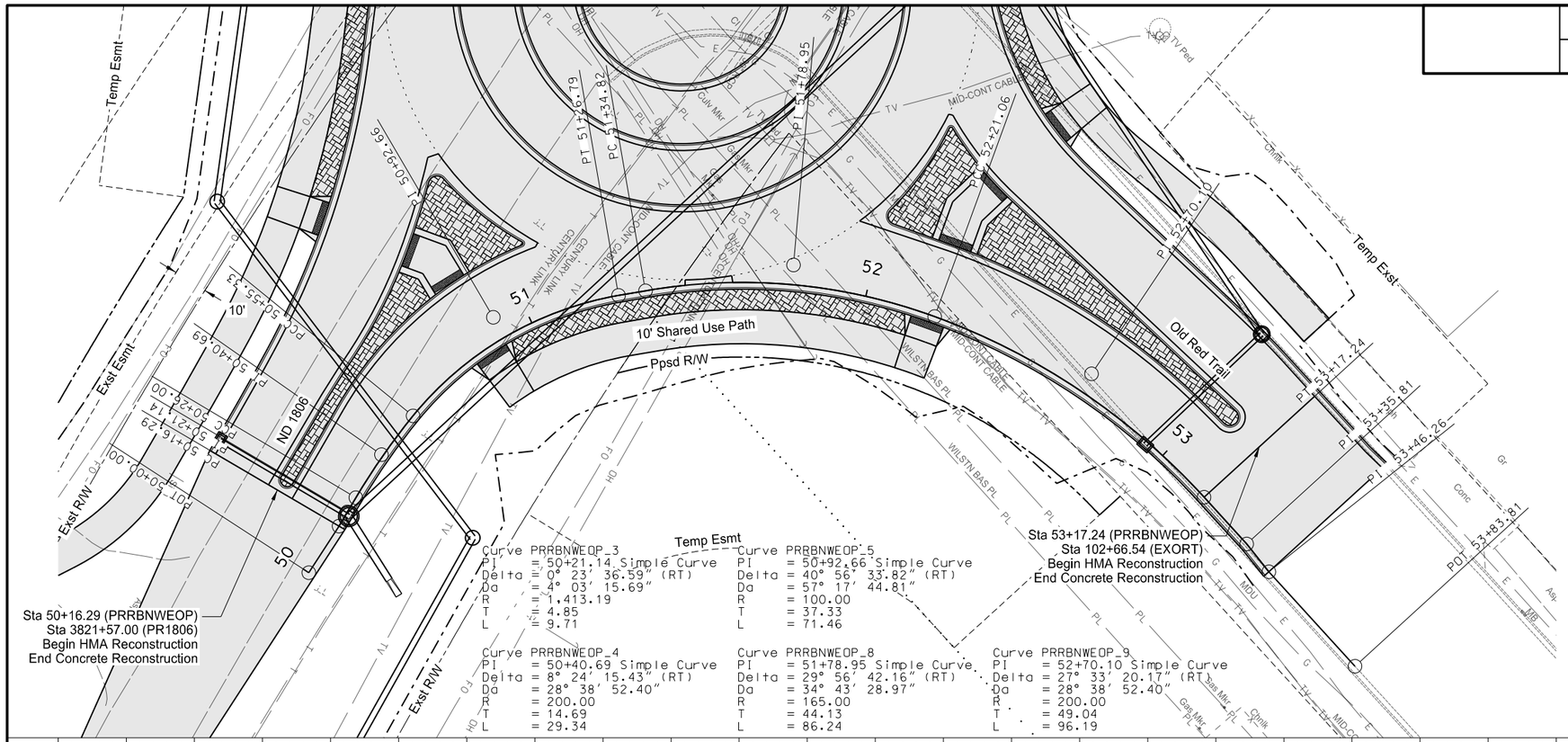
ND 1806

Plan & Profile

Roundabout - Northeast EOP

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	22



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ND 1806

Plan & Profile

Roundabout - Northwest EOP

8/21/2020 8:56:17 AM joemorrissette K:\Projects\State\ND\DOT\1802_00662_ND1806Mandan\CAD\10806071.052\Design\Plans\060\060PP_022_RBNWEOP.dgn

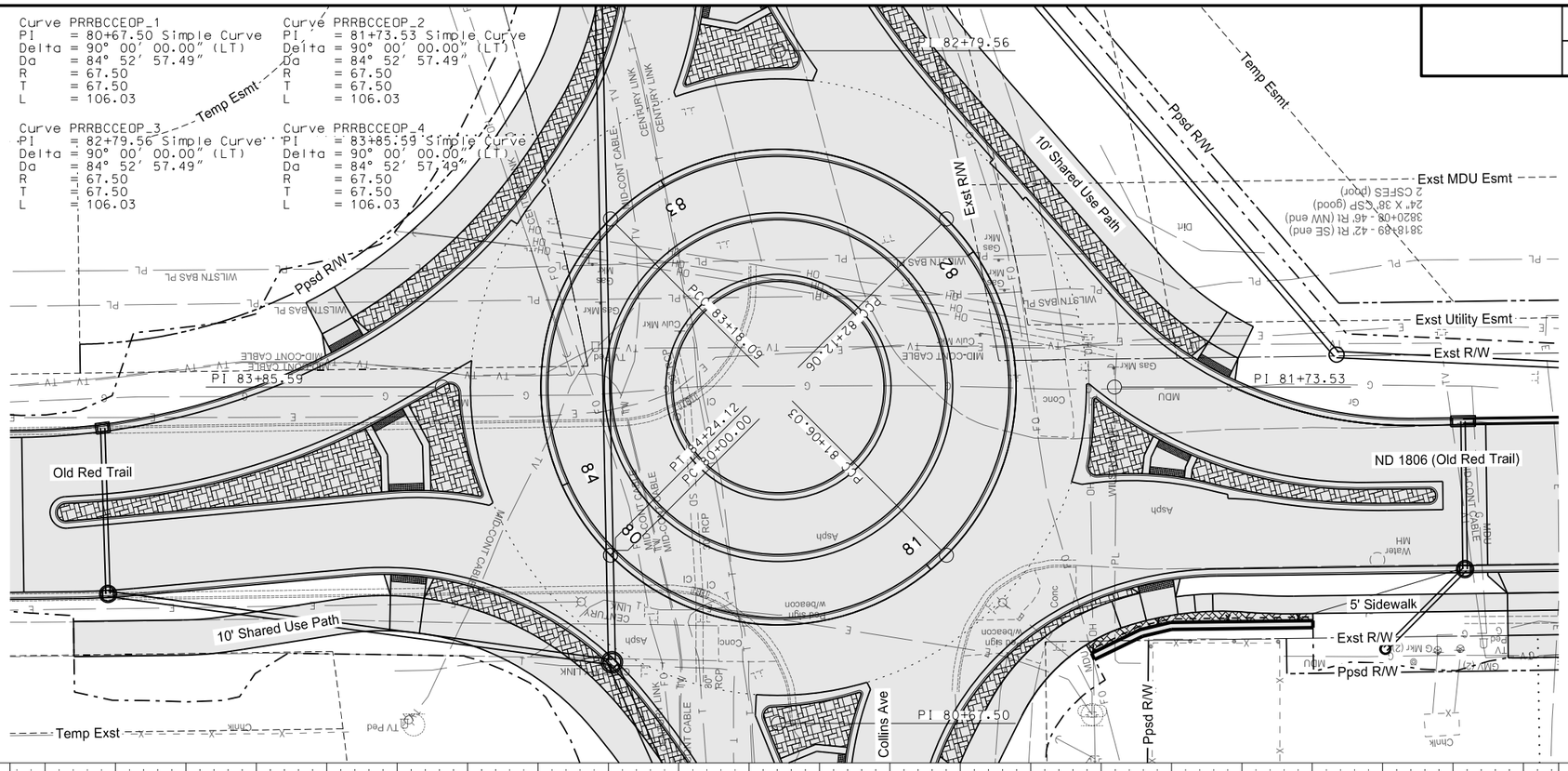
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	23

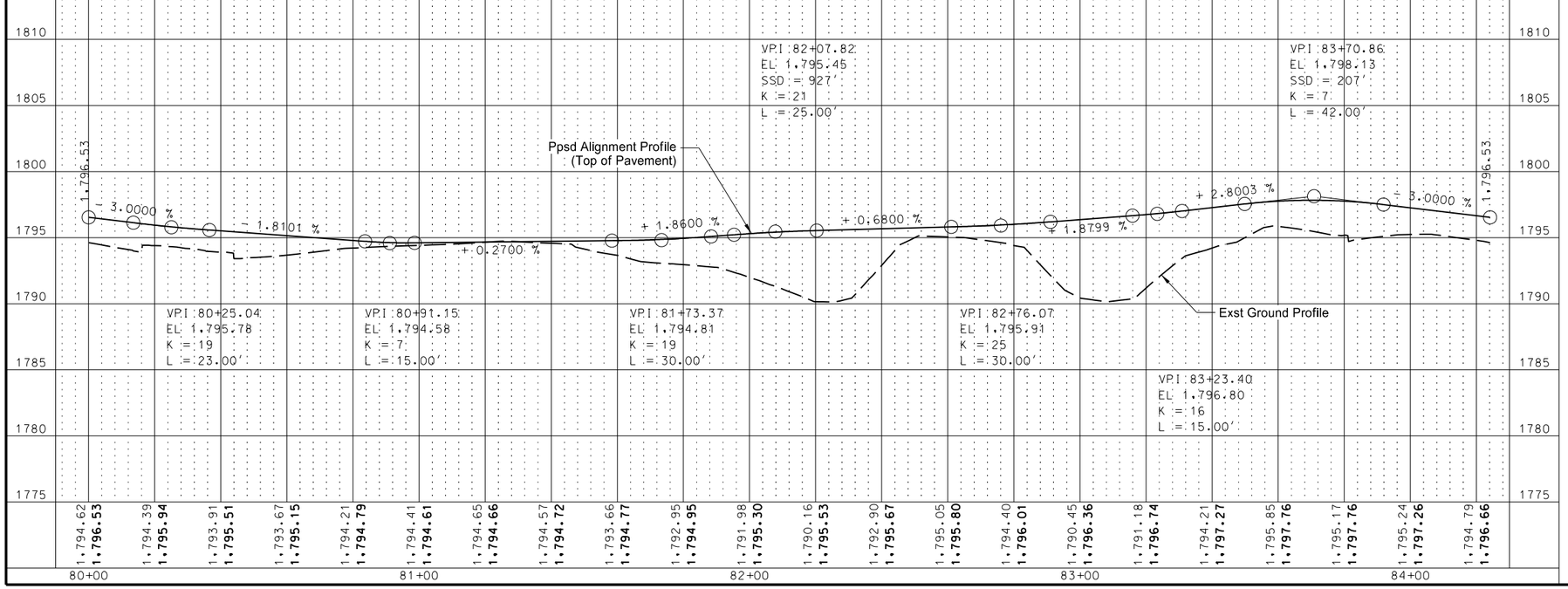
Curve PRRBCCEOP_1
PI = 80+67.50 Simple Curve
Delta = 90° 00' 00.00" (LT)
Da = 84° 52' 57.49"
R = 67.50
T = 67.50
L = 106.03

Curve PRRBCCEOP_2
PI = 81+73.53 Simple Curve
Delta = 90° 00' 00.00" (LT)
Da = 84° 52' 57.49"
R = 67.50
T = 67.50
L = 106.03

Curve PRRBCCEOP_3
PI = 82+79.56 Simple Curve
Delta = 90° 00' 00.00" (LT)
Da = 84° 52' 57.49"
R = 67.50
T = 67.50
L = 106.03

Curve PRRBCCEOP_4
PI = 83+85.59 Simple Curve
Delta = 90° 00' 00.00" (LT)
Da = 84° 52' 57.49"
R = 67.50
T = 67.50
L = 106.03





N

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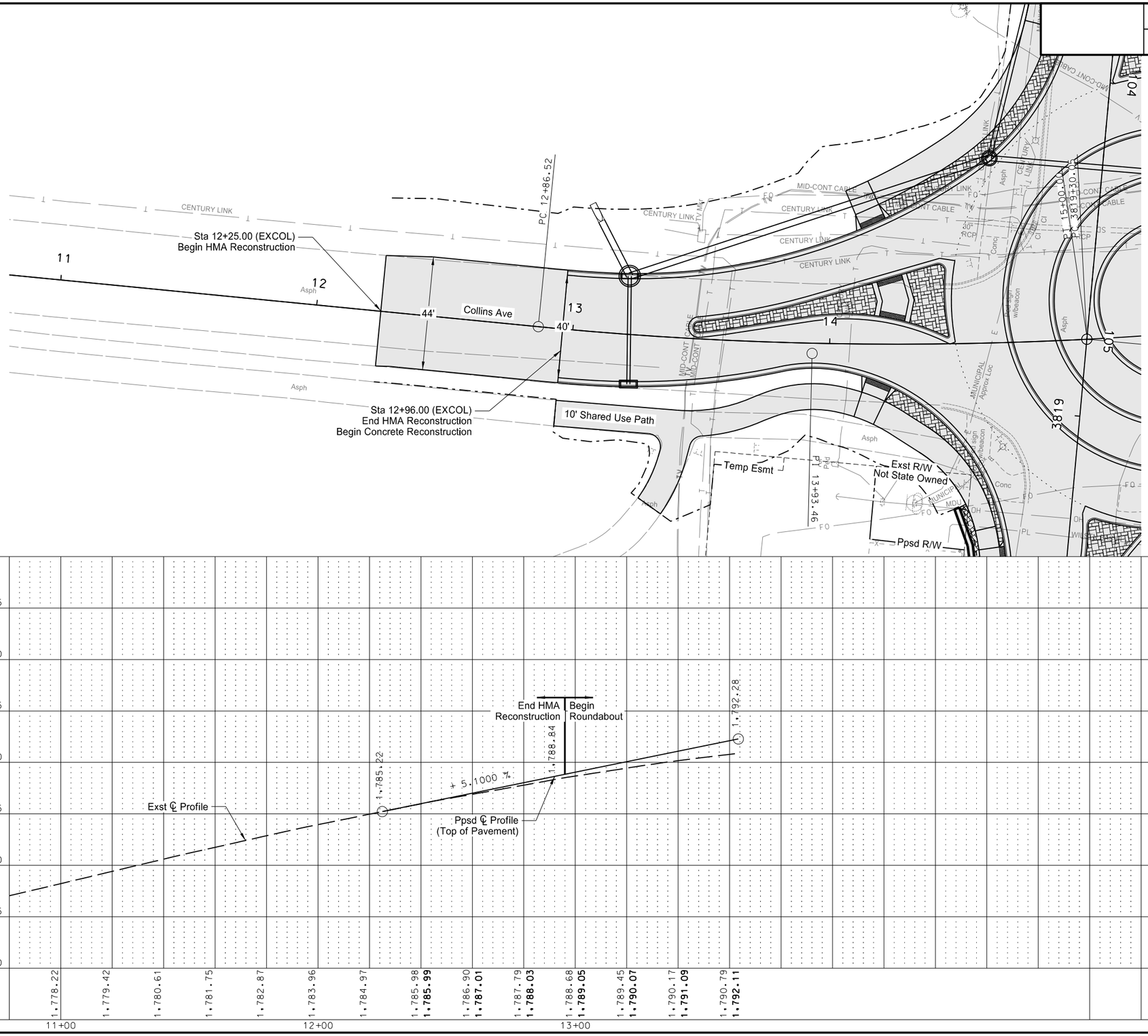
ND 1806

Plan & Profile

Roundabout - Center Circler EOP

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	24



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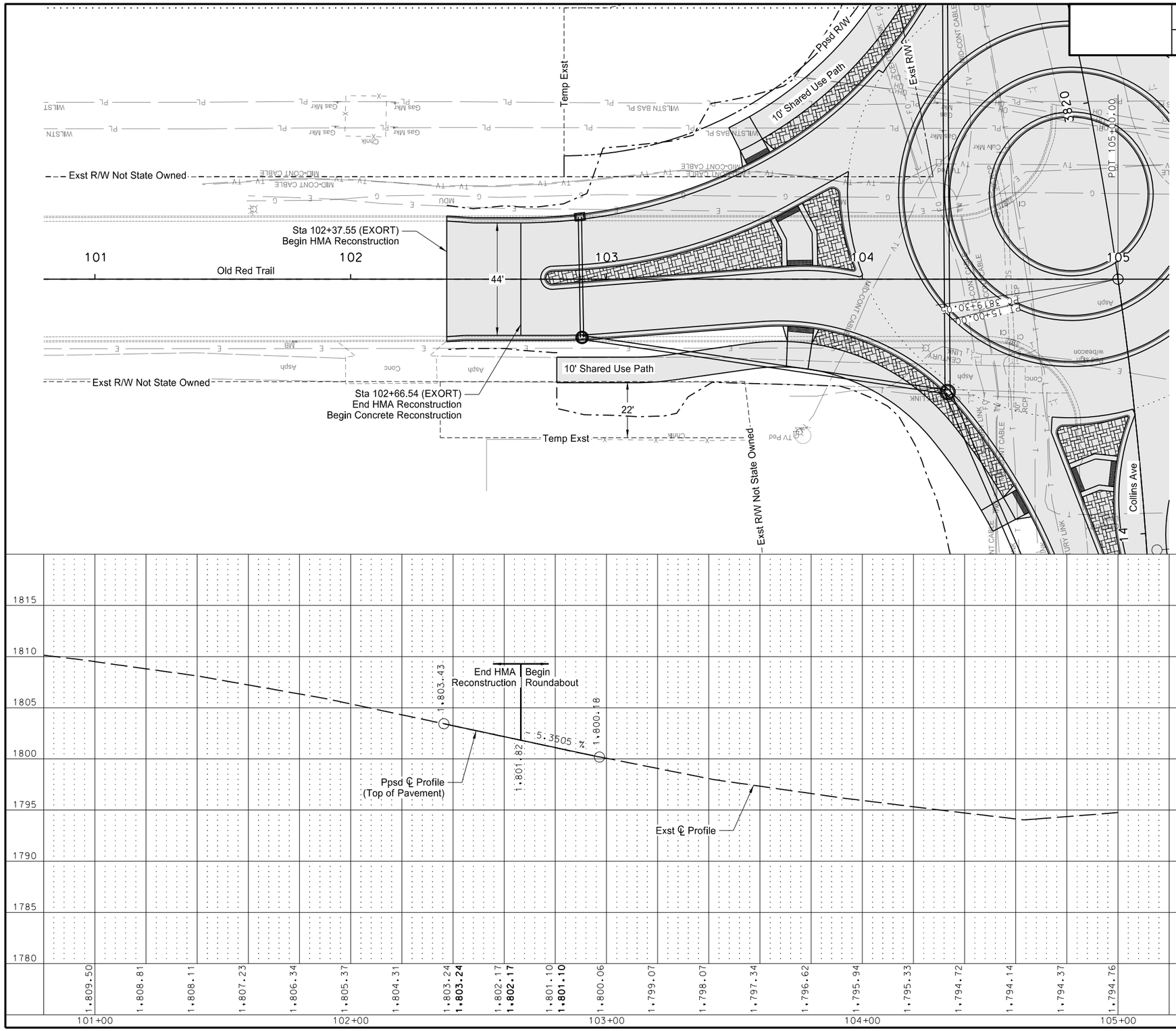
Roundabout - Collins Avenue

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	25



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Plan & Profile

Roundabout - Old Red Trail

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	26

Sec 23
T-139-N
R-81-W

POT 10+00.00

POT 11+15.00

24'

22'

10'

Temp Esmt

Exst R/W

Private Drive
(Marathon Refinery)

10

11

ND 1806 (Old Red Trail)

Ppsd R/W

Temp Esmt

Exst R/W

3783

3784

VPI 10+64.08
EL 1,707.35
K = 21
L = 20.00'
SSD = 1122'

Ppsd ℄ Profile
(Top of Pavement)

Exst ℄ Profile

1,707.10

+ 0.4700 %

- 0.5000 %

1,707.20

1,707.08	1,707.05	**1,707.15**	1,706.65	**1,707.24**	1,706.77	**1,707.32**	1,706.57	**1,707.27**	1,707.26
		10+00					11+00		

1725 1720 1715 1710 1705 1700 1695 1690

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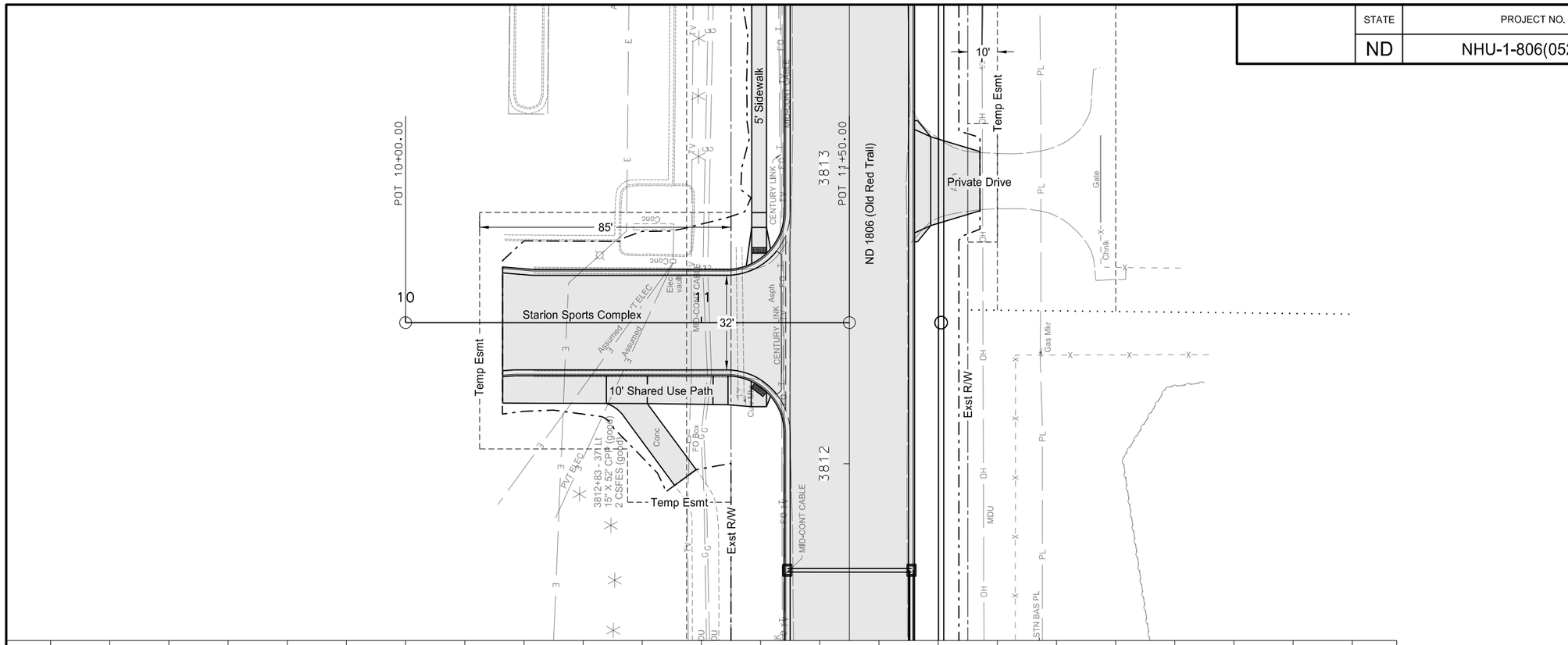
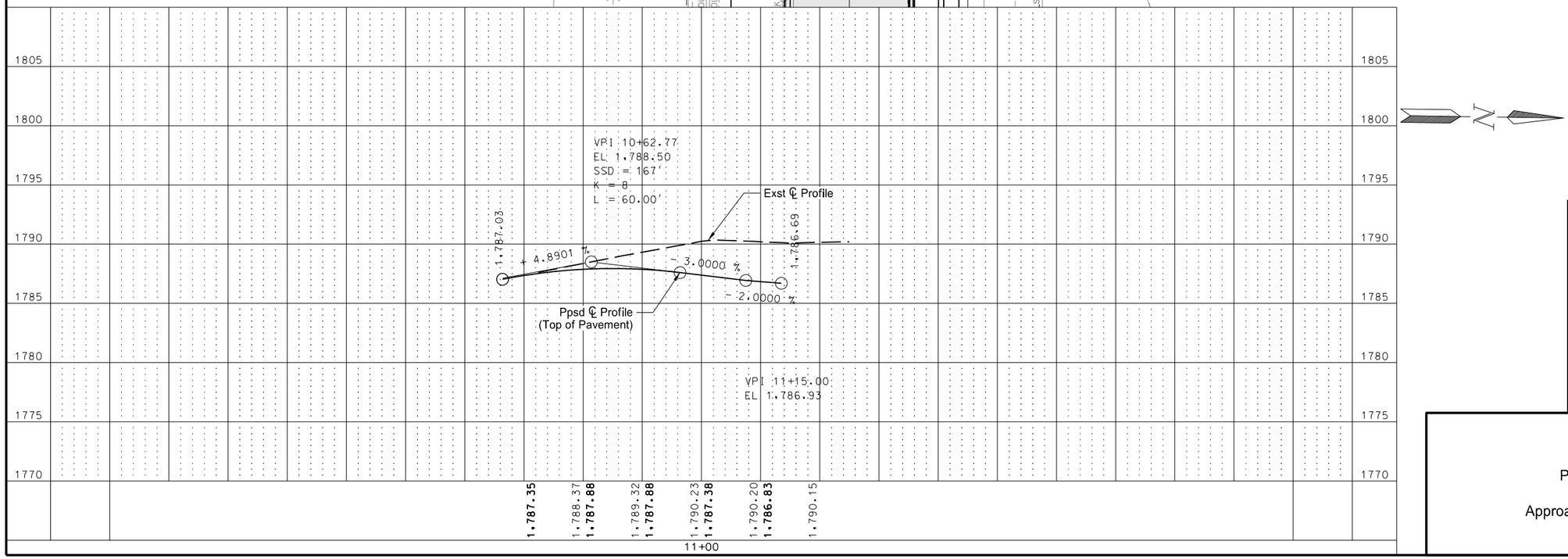
ND 1806

Plan & Profile

Approach - Sta 3783+34

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	27





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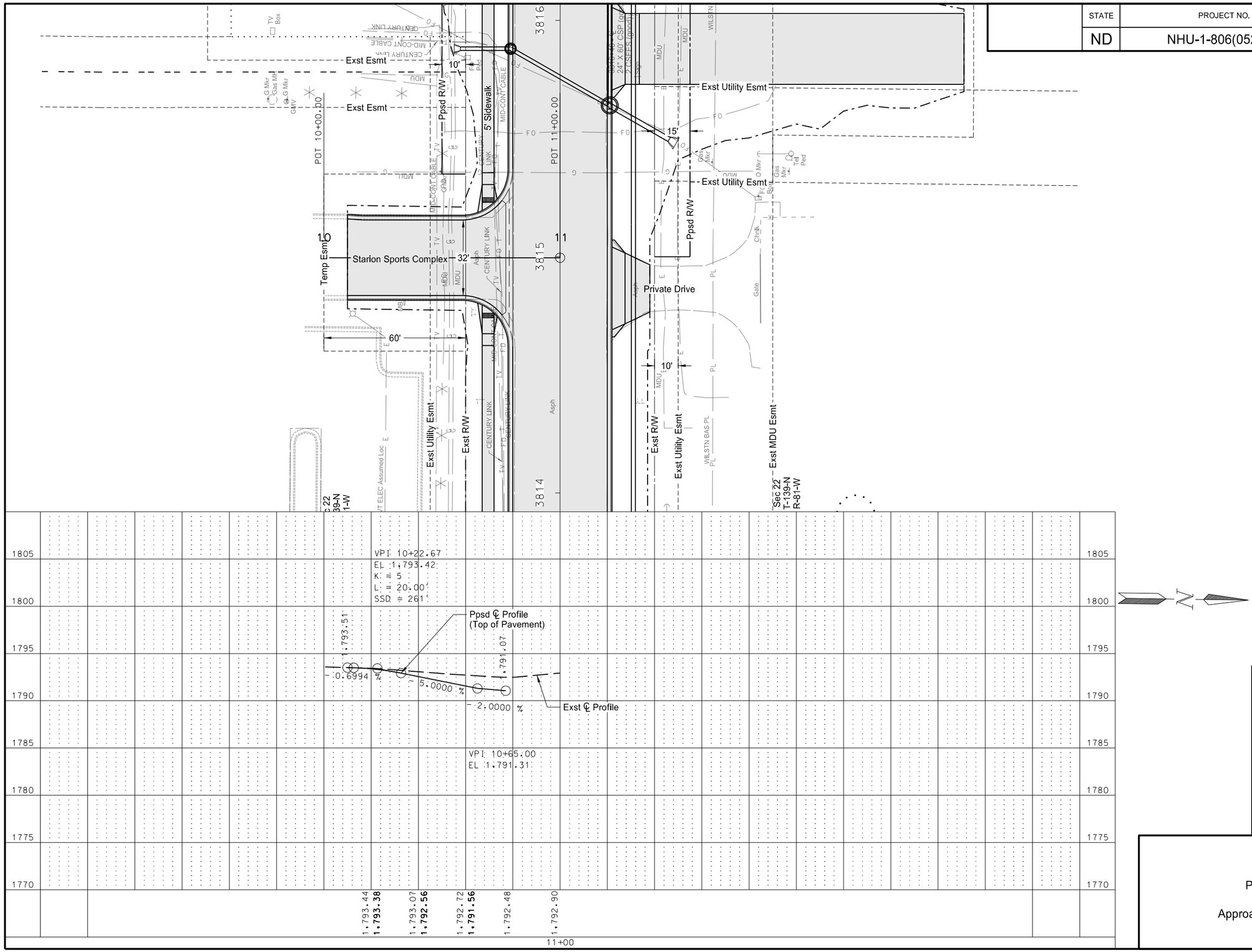
ND 1806

Plan & Profile

Approach - Sta 3812+48

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	28



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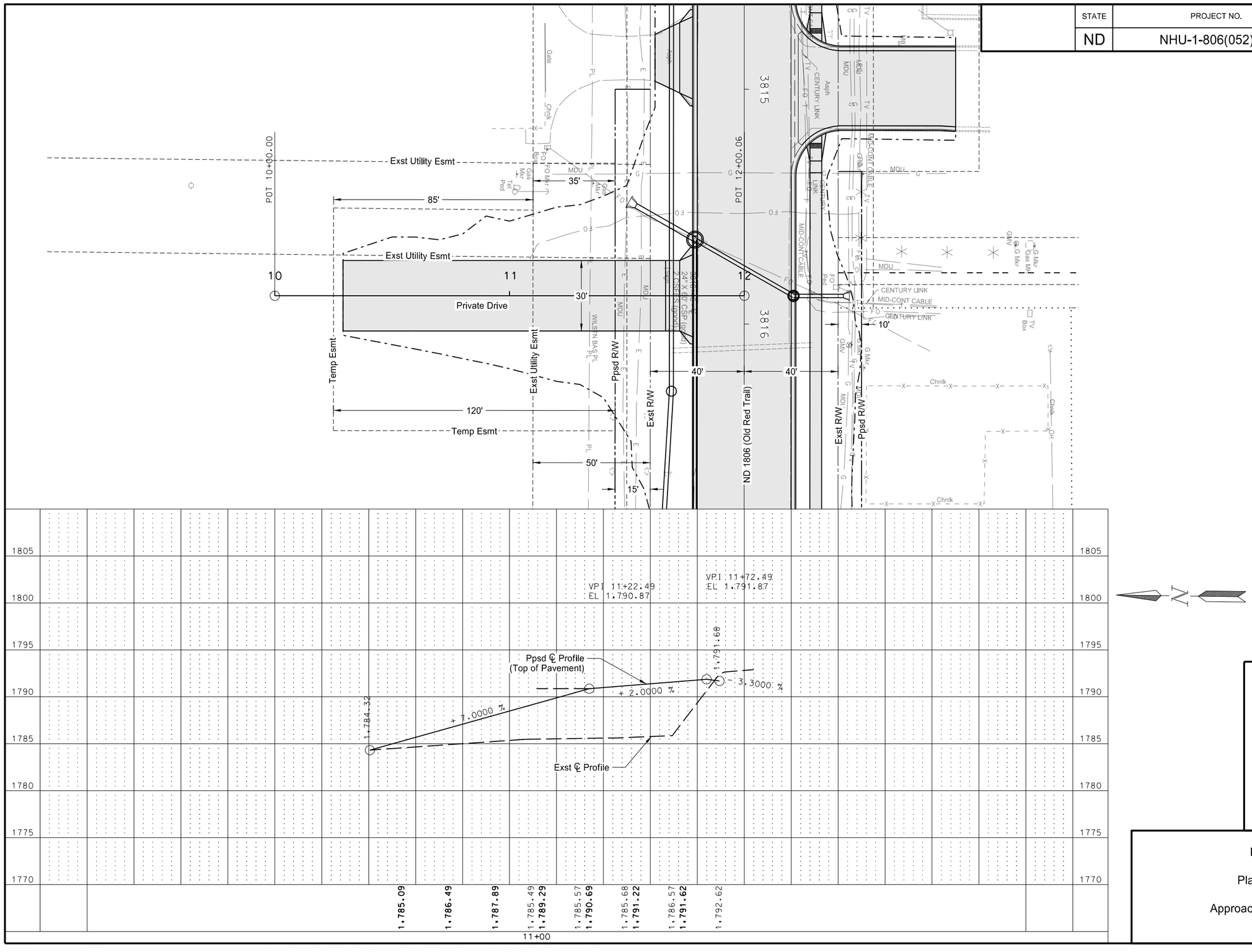
ND 1806

Plan & Profile

Approach - Sta 3815+00

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-806(052)071	60	29



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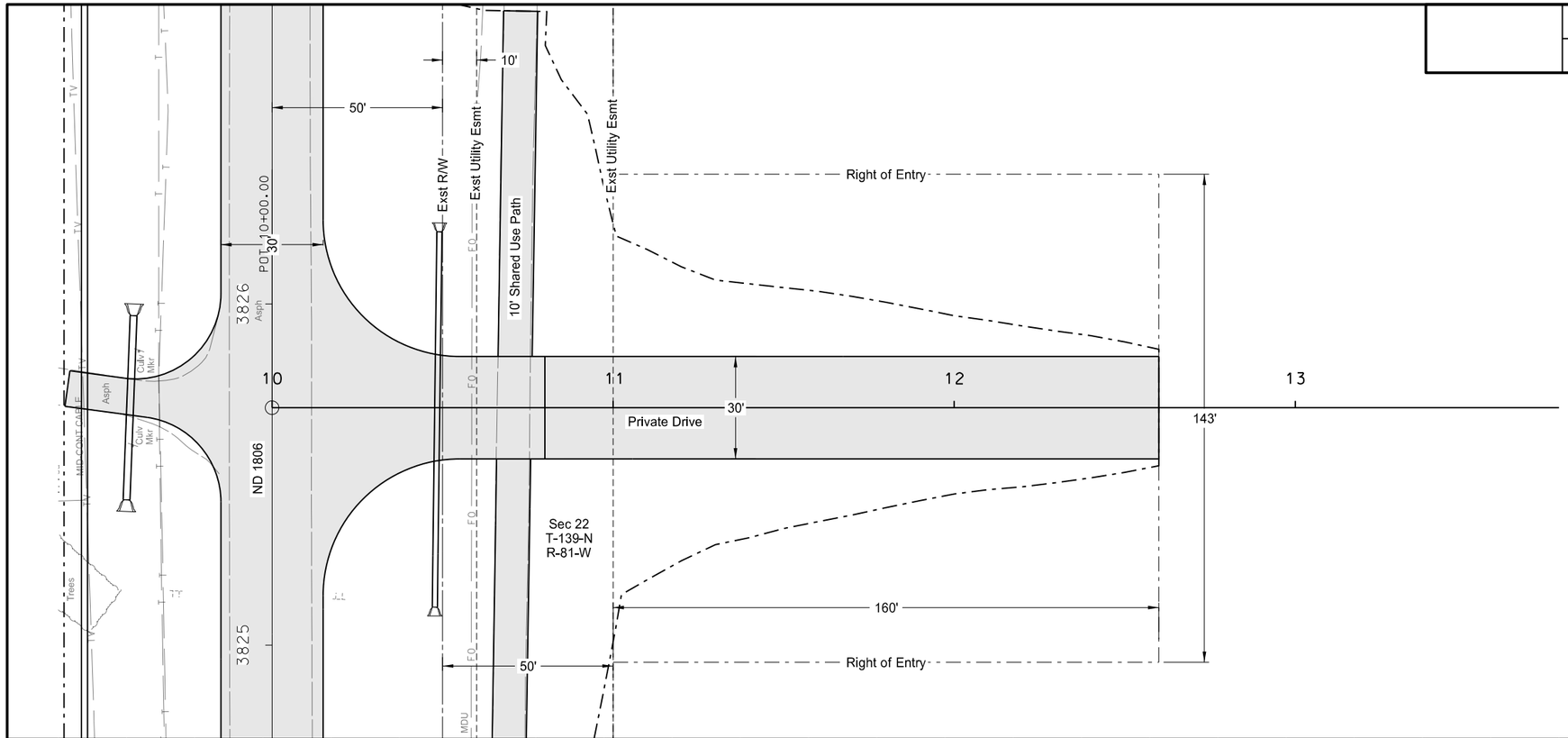
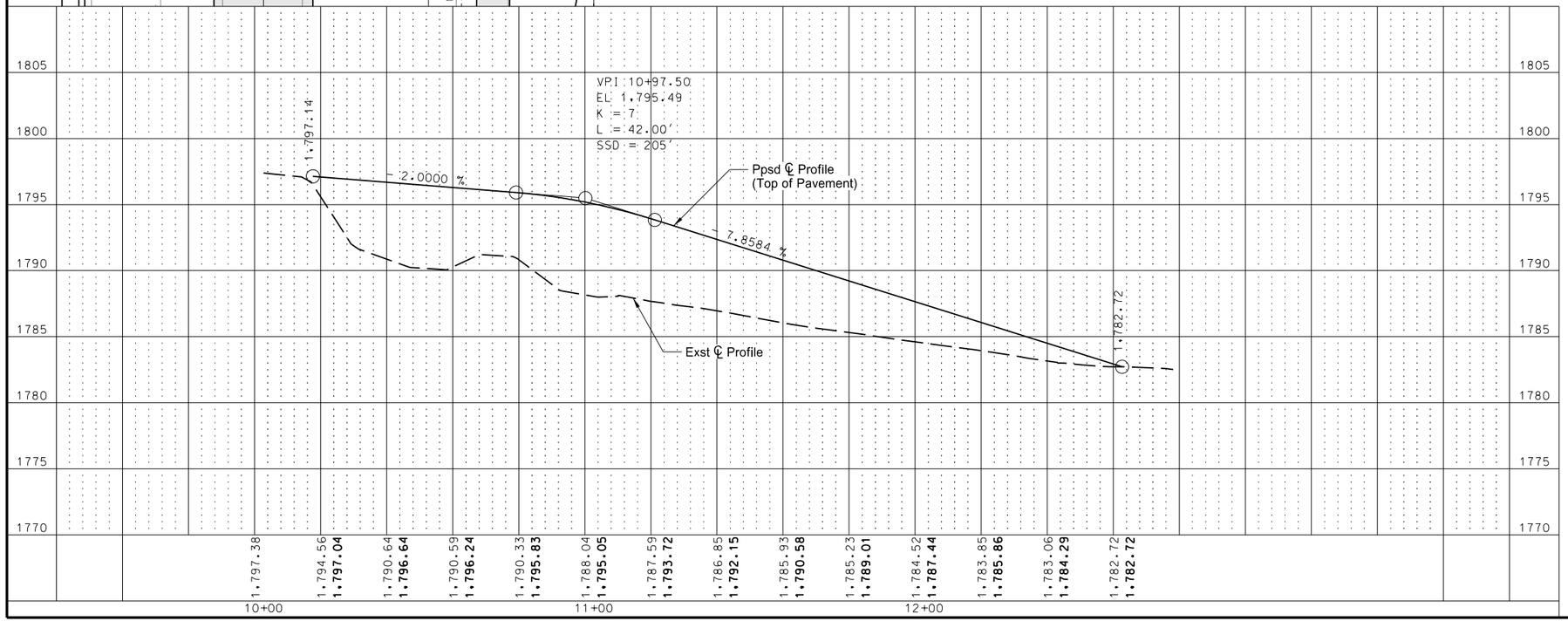
ND 1806

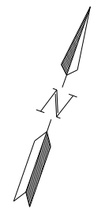
Plan & Profile

Approach - Sta 3815+78

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-806(052)071	60	30







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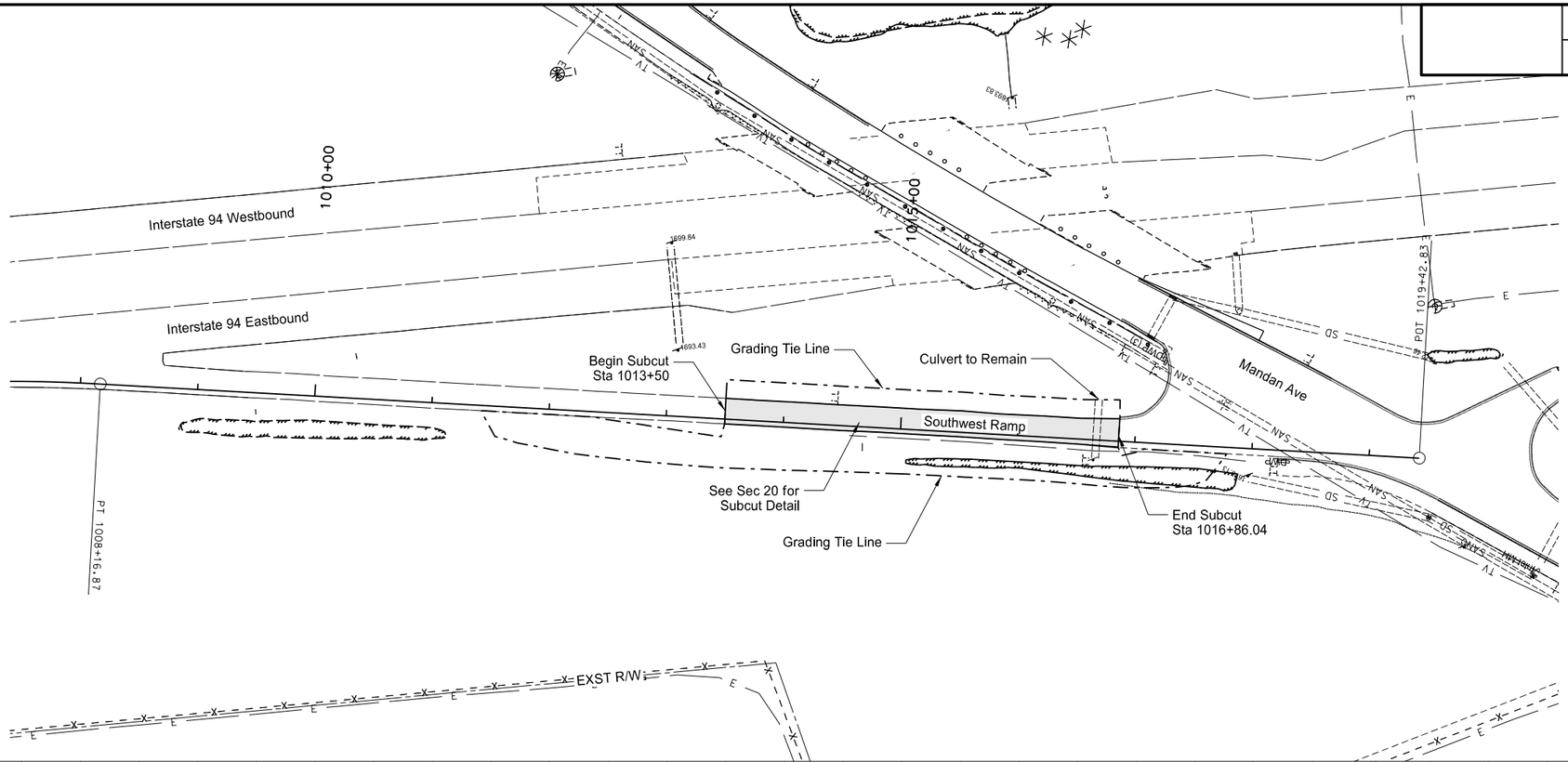
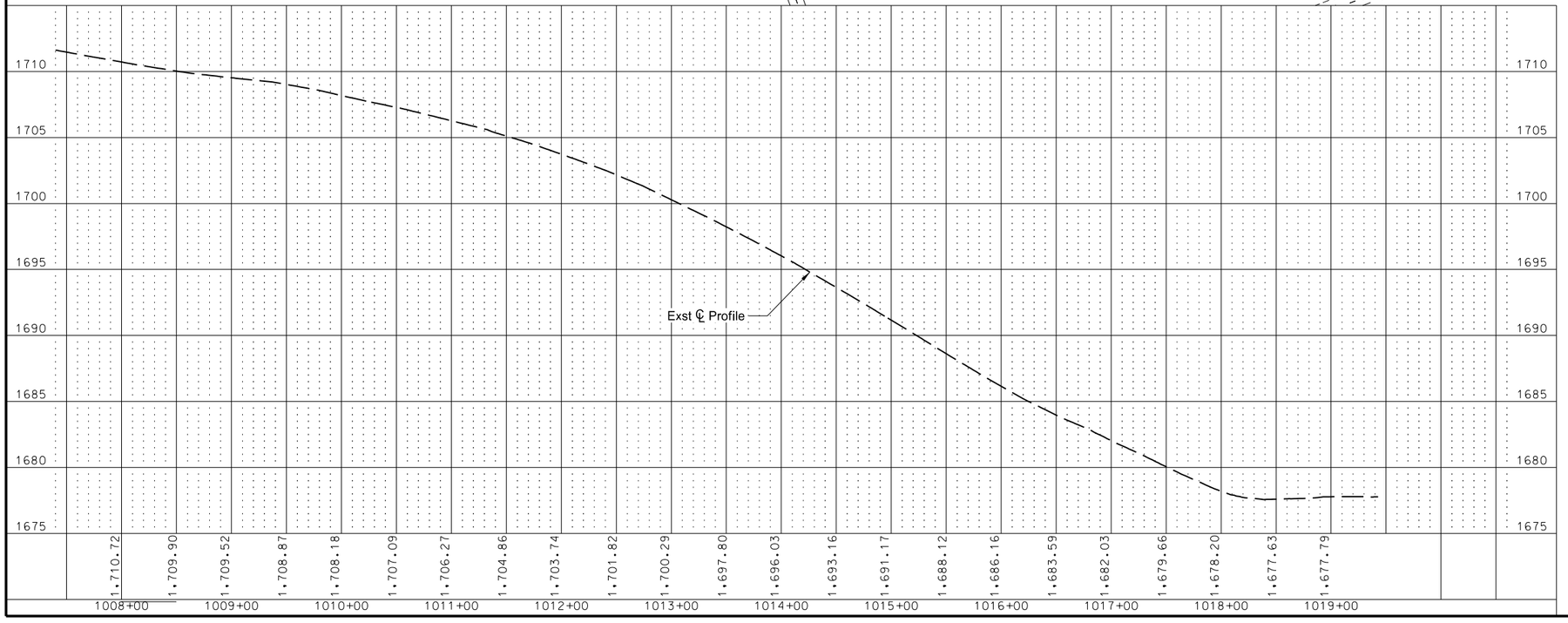
ND 1806

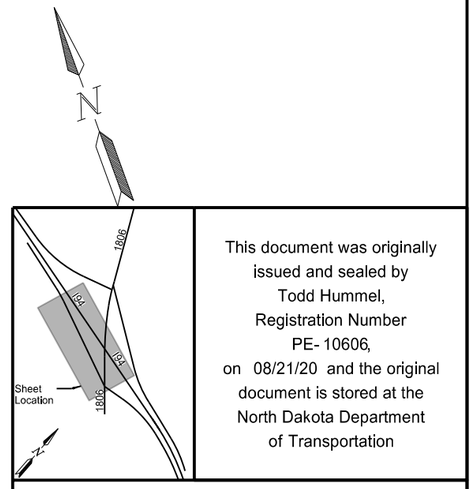
Plan & Profile

Approach - Sta 3825+70

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	IM-1-094(200)153	60	31







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ND 1806 Interchange

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Southwest Ramp
Sta 1013+50 to 1016+86.04 (EX94SWR)

8/21/2020 8:56:44 AM joemorrissette K:\Projects\State\ND\DOT\1802_00662_ND1806Mandan\CAD\10806071.052\Design\Plans\060\060PP_031_SWR.dgn