STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20890	1	1

JOB # 2
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SOIB-7-804(054)312

Williams County
131st Ave NW to Temp NE TRR

PCC Reconstruction, Box Culvert, Guardrail
Signals, Lighting, HMA, Grading
Culverts, Aggregate Base, & Incidentals

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

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
7-804(054)312	3.761	3.761

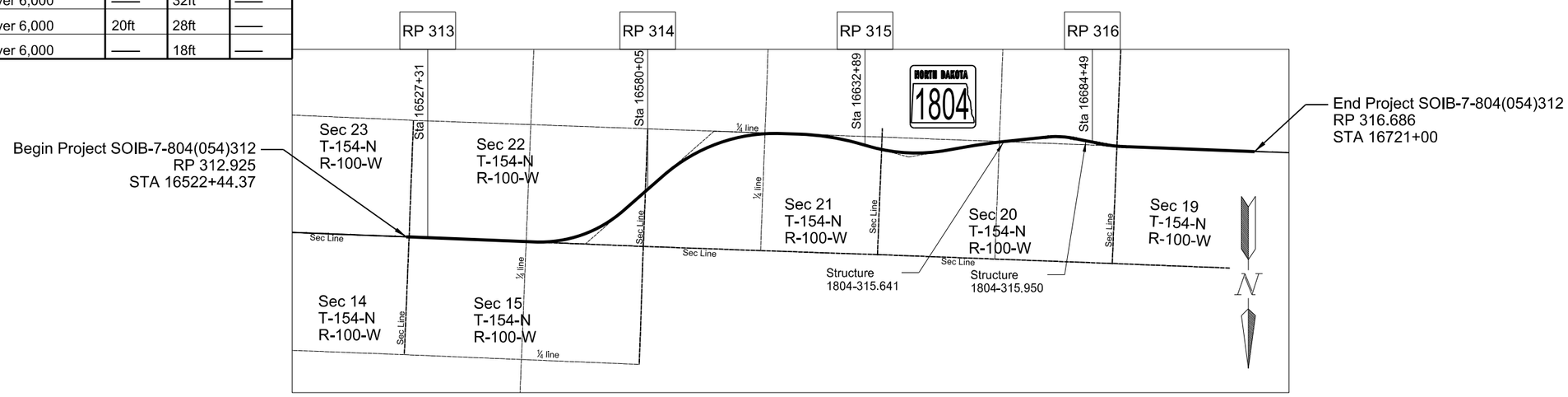
DESIGN DATA

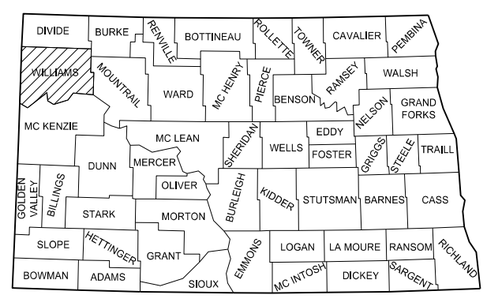
Traffic	Average Daily: RP 312.925 to 314.400			
Current 2015	Pass: 3,450	Trucks: 865	Total: 4,315	
Forecast 2037	Pass: 6,385	Trucks: 1,600	Total: 7,985	
Traffic	Average Daily: RP 314.400 to 316.686			
Current 2015	Pass: 8,810	Trucks: 1,935	Total: 10,745	
Forecast 2037	Pass: 13,305	Trucks: 2,925	Total: 16,230	

Clear Zone Distance: See Table	Design Speed: 30, 45, 55, 65 (mph)
Minimum Sight Dist. for Stopping: (mph)	Bridges: HL - 93
65=645', 55=495', 45=360', 30=200'	
Limited Access Control	
Pavement Design Life 30 (years)	
Design Accumulated One-way Rigid ESALs: 2,799,027 - RP 304.736 to RP 314.400	
Design Accumulated One-way Rigid ESALs: 5,643,155 - RP 314.400 to RP 316.686	

CLEAR ZONE DISTANCE

Design Speed	Design ADT	Foreslope		
		Flat	IV:4H	IV:5H
65 mph	Over 6,000	——	46ft	38ft
55 mph	Over 6,000	——	32ft	——
45 mph	Over 6,000	20ft	28ft	——
≤ 40 mph	Over 6,000	——	18ft	——





STATE COUNTY MAP

DESIGNERS

Adam McGill, Mathew Hedger, Chris Smith

Matt Von Haden, John Duncan

Eric Milliken, Jeremy Salle

Scott Little, Nate Perius, Curtis Huffman

Greg Gabel, Matt Mettler, Adam Pierce

APPROVED DATE 7/20/16

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

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

APPROVED DATE 6/30/2016

Adam McGill /s/
DOWL

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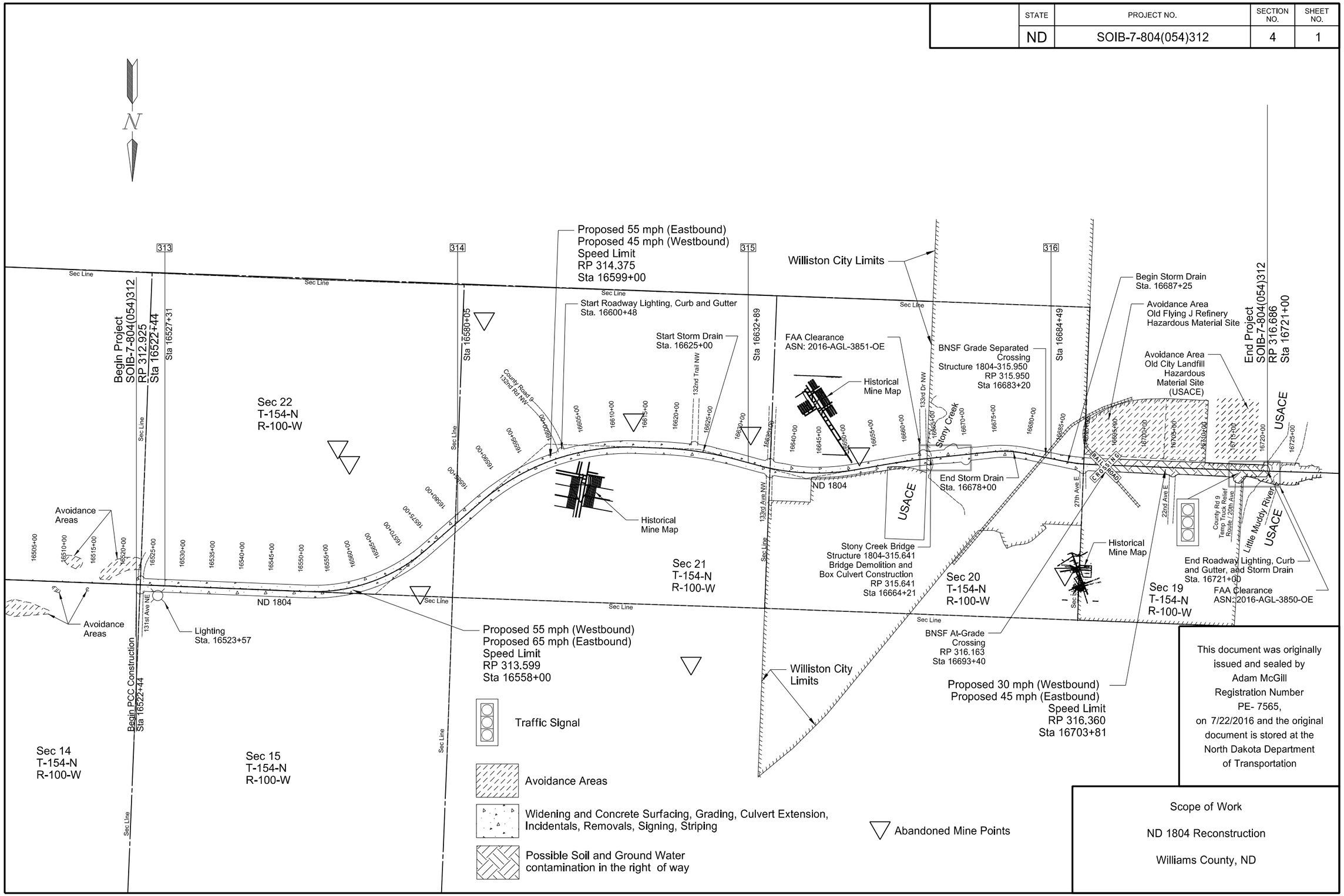

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Scope of Work

ND 1804 Reconstruction

Williams County, ND

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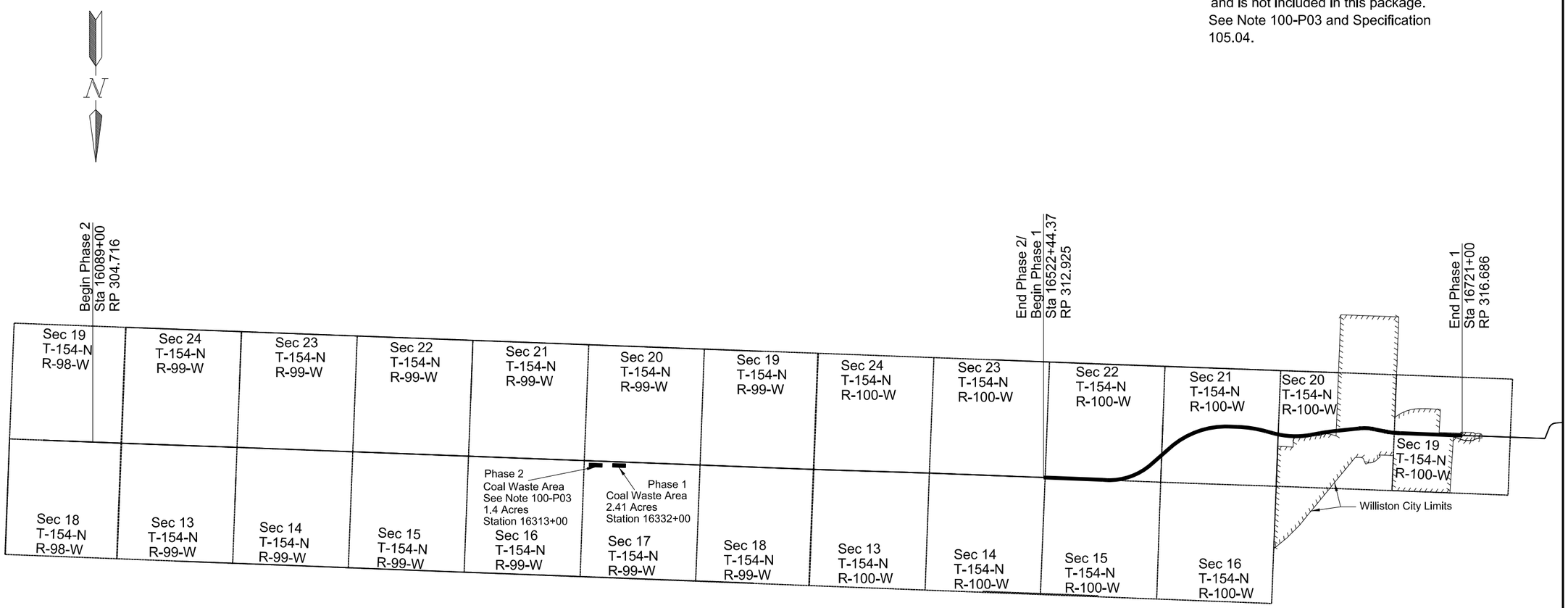
Note: Phase 2 construction will be bid separately and is not included in this package. See Note 100-P03 and Specification 105.04.



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Scope of Work

ND 1804 Reconstruction

Williams County, ND

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NOTES

100-P01 WEEKLY PLANNING/REPORTING MEETING: Organize a weekly meeting to coordinate efforts between subcontractors, utilities, local authorities, and others.

Send a knowledgeable representative to conduct the weekly reporting/planning meeting. Prepare minutes for each meeting and make the appropriate distribution of the minutes. Have the minutes approved by the Engineer before distribution.

Provide a written schedule of the next week's work and a tentative schedule of the following week. Include a discussion of problems encountered during the current week; also include information of interest to local authorities, subcontractors, and utilities.

Invite interested agencies to the meeting. Include the following agencies and any other agencies that are necessary:

a. North Dakota Department of Transportation (NDDOT)
b. Local Government Agencies
c. USACE Garrison - Riverdale
d. Police department
e. Fire department
f. Ambulance service
g. Telephone Co.
h. Power Co.
i. Cable T.V.
j. Gas Co.
k. Railroad Co.
l. Subcontractors
m. Chamber of Commerce

100-P02 PUBLIC RELATIONS COORDINATOR: Provide a public relations and information coordinator. The coordinator should not 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 100-P01, "Weekly Planning/Reporting Meeting".
2. Advise the City of Williston, City Engineering Office, PH: 701-577-6368; in addition contact Emergency Dispatch at the non-emergency number PH: 701-577-1212, to notify of upcoming construction activities 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, and width or height restrictions to traffic. 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.

100-P03 COORDINATION OF PROJECTS: Another project in the vicinity of this project may be under contract during the 2017 construction season. This project is SOIB-7-804(058)304, PCN 21594 and is located east of 131st Avenue NW to 123rd Avenue NW.

100-P04 CONTAMINATED AREA CONSTRUCTION PHASING: The known contaminated area of the project extends from station 16693+00 to 16706+20 at a depth of approximately 4 feet or greater. See special provision 290(14) “Contaminated Work Area” for more information. Construct the storm drain within the contaminated area in the following phasing:

1. Construct the proposed storm sewer downstream of contaminated zone up to and including trench plug 6 (see sheet 55-29). Do not excavate beyond trench plug 6 until it is fully in place and ready to intercept groundwater flows.
2. Continue pipe construction to each subsequent trench plug (Plugs 5 through 1), but do not progress past it until the trench plug is in place and ready to intercept groundwater flows. Do not allow contaminated water to flow into a non-contaminated part of the project or into the new storm sewer during construction.
3. Use the existing storm drain trunk line to divert clean storm water runoff from the north around the construction zone. Construct the upstream structures 63 A-D and have them ready for operation before extending the new storm sewer through the existing storm sewer at station 16704+60. Complete connection of new storm sewer within one day of the removal of the existing storm sewer.
4. Remove the north curb line and create a swale with a stabilized surface to route the upstream storm water around the storm sewer construction to the nearest downstream manhole between stations 16694+00 and 16704+60. See 20-15 (Temporary Drainage Swale) and 75-10 for more information.
5. Backfill trenching operations as the pipe construction progresses to limit the open trench to 100 feet or less at one time to minimize seepage of groundwater into the trench. Anticipate an estimated 2,900 gallons per day of groundwater seepage into the trench with 100 feet of open trench within the contaminated area. Seepage rate is based on a trench excavation that matches the standard drawings (6.5 feet wide x 2 feet deep below pipe). Excavations and the resulting increased groundwater infiltration beyond what is described in the standard drawings will not be compensated for. The estimate of quantities is based on completing construction in the contaminated area in 15 days.

Backfill all trenching operations at the end of each day. Open trenches are not allowed in the contaminated area overnight.

100-P05 USACE LAND: The US Army Corp of Engineer (USACE) has not given approval to perform roadway work on their land. No earth disturbing activities will be allowed before March 2017 on the USACE land between stations 16710+45 and 16721+00, south and west of the ¼ lines in Section 19, T154N, R100W.

105-110 PAVEMENT SWEEPING: Sweep paved areas that were used by construction traffic before opening these areas to public traffic. Sweep all newly constructed pavement no more than 24 hours before a scheduled final inspection. Use a vacuum or pick-up type sweeper to perform this work.

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

105-P01 RAILROAD CONSTRUCTION COORDINATION: Provide the BNSF ten working days advance notice of construction to be done within fifty feet of their tracks. Coordinate phasing of the roadway traffic control with the railroad traffic control to maintain two-way traffic at all times.

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NOTES

105-P02 UTILITY RELOCATIONS: Not all utilities will be relocated prior to the beginning of construction. Work directly with and coordinate schedules with all utility companies which have utilities to be relocated once construction has begun. Provide a minimum of two week notice to the utility companies of work to be done. Special coordination items of note are as follows:

1) Leave a 10 foot radius mound of dirt with 3:1 (desired, 2:1 minimum) side slopes, undisturbed around overhead utility poles that are in cut sections until such time that the utility company relocates the impacted poles. The known utility poles in cut sections are: Fill up to the following utility poles in fill sections. Prior to fill being placed coordinate wrapping of these poles with Mountrail Williams Electric (MWE). Provide MWE 14 calendar days of notice before the work is to be done. The following poles require wrapping:
2) The design cuts around the utility poles at station 16549+62 LT and 16550+00 RT are approved by MWE without relocation of the utility poles. Cuts up to two feet around the guy anchors are approved by MWE. Provide MWE a minimum of 14 calendar days of notice for cuts greater than two feet and provide phasing of construction as required for MWE to relocate guy anchors. Construction phasing may include grading an adjacent area to finished grade, installing a guy pole, removing existing guy anchors, grading the existing guy anchor area to finished grade, and installing permanent guy anchors at finished grade.
3) The MWE underground electric line running east-west, north of ND 1804 is noted as an

   16531+19 LT 16537+51 LT
   16534+48 LT 16635+73 RT

   abandoned electric line. When grading is required to impact this line, cut the electric line back past the grading limits to provide 2 feet of cover over the end of the abandoned line to finished grade.

   16522+73 LT 16542+59 LT
   16525+53 LT 16545+43 LT
4) Work around utilities in conflict which are in the proposed roadway ditches, if the utility relocations have not taken place by the time roadway construction progresses to that location. Complete final grading after the utilities have been relocated if completed before the final acceptance of the project.
5) The MDU gas line on the north side of ND 1804 from station 16694+50 to 16721+00 is a high priority gas line. This line is noted as being a possible conflict from station 16716+00 to 16721+00 on the conflict plan sheets. Notify MDU immediately if this line is exposed. Direct all notifications to MDU contact, Paul Riley, at 701-516-4357. See sheet 60-20 for further instructions.
6) Locations are anticipated that will have an existing crossing utility in the storm sewer trench bedding. Protect in place any existing utility exposed in the storm sewer trench, not in direct conflict with the storm sewer pipe or manholes. Immediately notify the Engineer and Utility if a utility is found in direct conflict.
7) Fiber optic lines from station 16711+00 LT to 16721+00 LT may be in direct conflict with the storm sewer outfalls. Immediately notify Nemont if lines are found in direct conflict. Protect these fiber optic lines in place until Nemont relocates.

Complete all earthwork grading resulting from the completion of utility relocations before the final completion. Include the cost for this grading work in the contract unit price for “COMMON EXCAVATION – TYPE A”. The utility companies will complete earthwork grading resulting from utility relocations completed after the final completion of the project.

105-P03 UTILITY RELOCATION PHASING: High priority conflicts have been identified for the utility companies. These conflicts will be the first conflicts that the utility companies relocate. Conflicts identified as “high priority” include: FEC3, FEC5, FEC7, FEC9, FEC46, FEC62, FEC63, FEC64, FEC65, MWE25, and MWE26 shown in the utility conflict plans and summary (reference conflict summary for station and offset information). Once the priority conflicts are relocated, coordinate the order of importance of the remaining conflicts with the respective utility companies.

105-P04 REMOVE APPROACH AND TEMPORARY FENCE: Remove existing approach on ND 1804 and establish the new approach on 27th Avenue East to the Winfield Solutions property by October 31, 2016.

Remove fencing from station 16692+00 RT to 16692+70 RT and install temporary chain link fence as noted on the plans to secure the property. Include the cost for removal and installation of the temporary chain link fence in the contract unit price for “FENCE CHAIN LINK”. Remove existing and install the new fencing by October 31, 2016.

105-P05 PIPE CONC – STORM DRAIN PHASING: Complete the construction of the storm sewer trunk line between stations 16695+00 to 16712+00 by November 18th, 2016. Follow the traffic control phasing identified on sheets 100-29 through 100-32.

107-115 RAILROAD PROTECTIVE LIABILITY INSURANCE: This project crosses the BNSF Railway Company at RP 315.966 and 316.165. The type of work that will be performed within the railroad right of way is pavement surfacing, storm drain improvements, pavement markings, etc. Direct inquiries regarding protective liability insurance to:

Rosa Martinez
Marsh USA Inc.
4400 Comerica Bank Tower
1717 Main Street
Dallas, TX 75201-7357, USA
214-303-8519
Rosa.M.Martinez@marsh.com

Obtain information regarding crossing number DOT 093398A from the Federal Railroad Administration website: http://safetydata.fra.dot.gov/Officeofsafety/

107-710 HAUL ROADS: Before submitting a proposal, contact the appropriate State, County, Township, or City officials to determine if there are any roadways that will be designated as "no haul routes.”

107-P01 MULTI-USE TRAIL: Maintain access on the multi-use trail from station 16715+50 RT to 16721+00 RT by constructing the relocated trail before removal of the existing trail.

107-P02 POST BID RAILROAD COORDINATION MEETING: Host a post-bid railroad coordination meeting that is to include the following entities: Contractor, Engineer, NDDOT, and BNSF. BNSF contact information:

KRISTOPHER SWANSON, PE
Manager Public Projects
BNSF Railway Company
763-782-3492 office
Kristopher.Swanson@BNSF.com

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NOTES

107-P03 ABANDONED MINES: The Public Service Commission identified abandoned mines in the vicinity of the proposed roadway. The abandoned mine locations are based on historical records. Actual locations, and extents of potential underground facilities connected to these mines are unknown. Approximate entrance locations of the identified mines are noted on the Scope of Work in Section 4. Other abandoned mines may exist in the area. See abandoned mines memorandum dated April 20, 2016 for more information.

107-P04 AVOIDANCE AREAS: Provide written notification to the Engineer 10 days prior to any earth disturbing activity between station 16522+44.37 and 16525+50. The avoidance areas are shown in Section 60.

The Engineer will contact Jeani Borchert (PH: 701-328-4378) of the Environmental and Transportation Services Division at least 1 week prior to earth disturbing work within the stationing listed above.

Work within the avoidance areas is prohibited except as defined below. The following work within avoidance buffer zones will be allowed under coordination with the Engineer's Archaeologist and Tribal Traditional Cultural Specialist:

- Removal of existing ROW fence;
- Installation of temporary safety fence and permanent ROW fencing; and
- Locating an appropriate reroute and monitoring placement of the new fiber optic and telephone lines.

107-P05 CULTURAL RESOURCE CONSTRUCTION MONITORING: The Engineer will hire a North Dakota permitted archaeologist, along with a Tribal Traditional Cultural Specialist (TCS) from the NDDOT's consulting tribes list, to monitor earth disturbing activities between station 16522+44.37 and 16525+50 (see Environmental Notes EN-2 and EN-3 of Section 6 of the Plans for more information). The archaeologist will notify Jeani Borchert who the TCS is, prior to any field work.

The archaeological firm will provide an Archaeologist and a Tribal Traditional Cultural Specialist to

- Oversee removal and placement of permanent ROW fencing near cultural resource avoidance areas,
- Oversee placement of temporary avoidance fencing around the landforms that extend into the ROW of these avoidance areas,
- Monitor earthmoving construction activities within the existing and newly designed ditch bottom and backslope areas between stations 16508+50 and 16525+50 including areas near and within 300' on either side of the avoidance areas, and
- Assist in finding a route and monitoring placement of a rerouted fiber optic and telephone lines within the established ROW on the north and south sides of the highway in the vicinity of the avoidance areas.

The Archaeological firm will prepare weekly updates of monitoring when monitoring is longer than 1 week. The firm will also prepare a final report of monitoring findings delivered to NDDOT Cultural Resource Section.

107-P06 PALEONTOLOGICAL MONITORING: Notify the Engineer 10 days in advance of excavation beginning between stations 16527+00 and 16540+00. The Engineer will contact Bob Christensen (PH: 701-328-4539) of the Environmental and Transportation Services Division one week prior to any excavation within this station range. The Engineer will hire a North Dakota Geological Survey (NDGS) permitted paleontologist to monitor all earthwork cuts within this station range.

202-P01 SAW BITUMINOUS SURFACING: Include the cost of the full depth vertical saw cuts adjacent to pavement removal areas, specified in Section 202.04 A "General", in the contract unit price for REMOVE AND SALVAGE BITUMINOUS SURFACING.

202-P02 REMOVE EXISTING FENCE: Install permanent fence prior to the removal of existing fence, to maintain closure of lands.

202-P03 REMOVE & RESET INLET: Remove inlet as per 202.04 E and reset inlet to proper grade as shown in the plans. Replace inlet if any damage to inlet box occurs during construction.

202-P04 REMOVAL OF RIPRAP – LOOSE ROCK: Remove concrete rubble or other non-hazardous construction materials encountered near the Little Muddy River Bridge as needed to perform the work specified in the plans. Dispose of the concrete rubble at a contractor furnished disposal site. If paint is found on the concrete, test it for lead. If lead is found, dispose of it in accordance with state and federal regulations.

See section 40 for location of rubble. See supplemental data, Environmental Site Assessment, March 2016, Appendix C-4 for more discussion. Include the cost for removal of the concrete rubble disposed of in the contract unit price for "REMOVAL OF RIPRAP – LOOSE ROCK". The estimated quantity is based on an average depth of 5 feet of rubble to be removed. The actual volume of rubble may vary.

202-P05 REMOVAL OF BITUMINOUS SURFACING: The "REMOVAL OF BITUMINOUS SURFACING" quantity includes only the asphalt surfacing. Salvaging of the base material is not included in this quantity. Salvage bituminous surfacing for use in "SALVAGED BASE COURSE".

203-010 SHRINKAGE: 20 percent additional volume is included for shrinkage in earth embankment.

203-P01 COMMON EXCAVATION - WASTE: Common Excavation - Waste consists of coal. Dispose of coal removed from the common excavation areas at the coal disposal site shown in Section 4. Place a minimum of 2 feet of compacted soil and 6" of topsoil over the coal disposal site. Compact the cover material in accordance with section 203.04.E.4. Dispose of the excavated soil from the coal waste site at a contractor furnished waste site. Include the costs for labor, materials, and equipment necessary for coal removal and disposal along with the 2 feet of cover material in the contract unit price for "COMMON EXCAVATION – WASTE". The quantity of topsoil for the coal waste site is included in the contract unit price for "TOPSOIL". Include the cost for clean dirt excavation and disposal at the coal waste site in the contract unit price for "Common Excavation - Type A.

203-P02 EXCESS EXCAVATION: Dispose of Common Excavation – Type A not needed for embankment at a contractor furnished waste site. Include the cost for disposal in the contract unit price for "COMMON EXCAVATION-TYPE A".

203-P03 TOPSOIL: Scrape and set to one side all topsoil within the temporary construction easement, between stations 16548+99.29 RT and 16549+45.06 RT. Replace topsoil after easement work has been completed. If additional topsoil is needed, take it ONLY from a location on this property. Notify the property owner a minimum of 7 days in advance of the work to coordinate the location it will be taken from. Dispose of all rocks with a diameter 3 inches or greater following dirt work. Include the cost for topsoil handing and rock removal in accordance with this note in the contract unit price for "TOPSOIL".

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203-P04 CONTRACTOR FURNISHED WASTE AREA: All waste areas are contractor furnished. The waste discussed in this note is excess excavation as noted in 203-P02. Dispose of coal waste in accordance with note 203-P01. The following land owner is interested in having excess excavation wasted on his property. A Class III Cultural Resources Investigation has been performed on this site for the areas within 250 feet from the centerline of the ND 1804. A report of the findings and any avoidance areas or monitoring requirements is available for review.

Mr. Don Eide
NE ¼ Sec 22, T154N, R100W

203-P05 DITCH BLOCKS: Include the cost for ditch blocks in the contract unit price for "COMMON EXCAVATION –TYPE A." See sheet 20-12 for more information.

251-P01 SEEDING: Use the following seed mix for all permanent seeding. Include the cost for Seeding in the contract unit price for "SEEDING CLASS III".

			Mix A	Mix B
	Species	Variety	PLS/Ac	PLS/Ac
Grasses	Blue Grama	Bad River	0.90	0.60
	Green Needlegrass	Lordom	2.70	3.15
	Sideoats Grama	Killdeer	3.60	1.35
	Western Wheatgrass	Rodan	6.00	6.00
	Canada Wildrye		2.00	2.93
	Little Bluestem	Badlands	2.40	0.60
	Slender Wheatgrass		1.50	2.25
	Switchgrass	Dacotah	0.53	0.26
Forbs	Black-eyed Susan		0.02	0.02
	Blue aster		0.11	0.11
	Purple prairieclover		0.29	0.29
	Stiff Sunflower		0.08	0.08
	Western Yarrow		0.01	0.01
	Wild bergamont		0.03	0.03
	Lewis Flax		0.29	0.29
	Prairie (Yellow) Coneflower		0.11	0.11
	Shell-leaf Penstemon		0.3	0.3

If any of the varieties are not available, contact the Environmental and Transportation Services (ETS) Section II for a replacement. Seed mix "A" must be planted between April 20th and June 15th. If seeding will not take place within this time frame, seed mix "B" may be used after November 1st, and before the ground freezes. Between June 15 and November 1st use a temporary crop cover of oats. Seed mix B will then be seeded directly into the crop cover after November 1st.

255-P01 ECB TYPE 1: Install the erosion control blanket from D-255-2 so that it extends up the foreslope and backslope of the ditch, a minimum of one foot, so that the edge of the blanket is not in the ditch bottom.

256-P01 RIPRAP-SALVAGED: Riprap is available for salvage from under the Stony Creek Bridge. Salvaged riprap incorporated into the project will meet the gradation requirements outlined in specification section 256.03C. Include the cost of savaging riprap in the contract unit price for "RIPRAP GRADE I".

302-115 BASE COURSE: Trim base course as specified in Section 302.04 C.1, "Surface Tolerance Type C."

430-P01 BOX CULVERT SETTLEMENT: Install temporary asphalt at finished grade over the box culvert to allow settlement of the box culvert before finished surfacing is installed. Keep the temporary asphalt in place for a minimum of 60 days, starting from the date that the temporary asphalt installation is complete. Once the 60 day period is complete, remove the temporary asphalt, perform necessary grading, and place final concrete surfacing.

Include the cost for the temporary asphalt in the contract unit price for "COMMERCIAL GRADE HOT MIX ASPHALT". Include the cost for removal of temporary asphalt in the contract unit price for "REMOVE & SALVAGE BITUMINOUS SURFACING".

550-001 CORRECTIVE ACTION: The Engineer will apply liquidated damages of $1,500 for each trip required after the second profile for areas needing further corrective action.

550-P01 RIDE QUALITY: Construct all concrete surfaces to comply with "Tolerance in Surface and Ride Quality" (Section 550.04 M) for speeds greater than 45 MPH.

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

704-200 PRECAST CONCRETE MEDIAN BARRIERS – STATE FURNISHED: Obtain barriers from the US Highway 2 storage area near Reference Point 12. Return barriers to the same location.

Some 4 inch x 4 inch boards are available at the return location. Provide any additional 4 inch x 4 inch boards necessary to stack barriers. The boards will become property of the Department. Include the cost for boards in the contract unit price for PRECAST CONCRETE MEDIAN BARRIER - STATE FURNISHED.

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

Place the following sign assembly at the locations listed below.

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

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

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

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

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

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704-P01 STATE ROUTE MARKERS: Provide State Route Marker signs for temporary traffic control. State Route Markers may be either the old design or the new state outlined design; however, all Route Marker signs provided must be of the same type.

Upon project completion, the State Route Marker sign panels will become property of the State. Stockpile sign panels within the project limits. The Engineer will arrange to have the stockpiled panels removed from the project limits.

Include the cost of furnishing, installing, maintaining, stockpiling, and other incidentals in the contract unit price for "Traffic Control Signs".

704-P02 TRAFFIC CONTROL: Implement traffic control to allow for 2 way traffic at all times unless otherwise approved by the Engineer.

704-P03 TEMPORARY EMBANKMENT: Include the cost for additional embankment needed beyond the typical section, to maintain two way traffic at all times, in the contract unit price for "Common Excavation-Type A". No measurement will be made of the temporary embankment.

714-P01 PIPE CONC XXIN-STORM DRAIN: Complete the following work on the storm sewer in the contaminated area as defined in SP 290(14).

Install rubber gaskets that meet the following criteria, on all reinforced concrete pipe (RCP):

- Meeting the requirements of ASTM C 443,
- Solid gaskets of circular cross section.

Grout all tie bar penetrations through the pipe walls.

Before the RCP is placed in the trench, coat the exterior surface with a masonry waterproofing paint that is designed for the following:

- A minimum water pressure of 12 PSI when tested according to ASTM D 7088;
- Designed for below grade exterior foundation walls; and
- Resistant to gasoline and diesel fuels.

Prepare the surface and apply the paint according to the paint manufacturer's recommendations.

Conduct the following tests on the RCP.

- ASTM C1214M - Standard Test Method for Concrete Pipe Sewer Lines by Negative Air Pressure (Vacuum) Test Method (Metric).
- ASTM Designation C 361 Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.

If tests fail, repair the leaks and retest the pipe until the tests are passed.

Include the cost for gaskets, grout, surface coating, and testing in the contract unit price "PIPE CONC XXIN-STORM DRAIN".

714-P02 STORM SEWER: The storm sewer pipe to be installed will either be constructed with Reinforced Concrete Pipe (RCP) or Pipe Conduit in accordance with SP 314(14). The section 55 plan and Profile sheets were prepared with the pay items of Pipe Conduit. If the project is constructed with RCP, the corresponding RCP pay item will be used in place of the pay item of pipe conduit.

714-P03 PIPE CONDUIT - STORM DRAIN - VERTICAL ELBOWS: Install prefabricated vertical elbow sections in the storm drain conduits at the following locations as shown in the plans.

STATION	PIPE DIAMETER (Inches)	Vertical Deflection Angle
16658+23	18	11° 50' 00"
16665+58	18	8° 39' 00"
16668+05	18	11° 01' 00"
16669+12	18	13° 45' 00"
16670+54	18	14° 23' 00"
16674+00	18	15° 11' 00"
16678+00	18	16° 00' 00"
16687+25	18	13° 22' 00"

The prefabricated elbows will be measured for payment by the lineal foot of the length of pipe bend section installed.

Include all costs to furnish and install the prefabricated bend sections in the contract unit price for the corresponding size of "Pipe Conduit - Storm Drain."

722-100 INLETS AND MANHOLES: Inlets and manholes were designed with a minimum 4 foot riser height. Fill the bottom of each drainage structure with concrete, up to the lowest invert elevation.

722-P01 ABANDON STORM SEWER SYSTEM: Abandon portions of the storm sewer by covering the pipe penetrations in the storm sewer manholes with plywood and filling the bottom of the manhole with slurry to the crown of the pipe. Eight cubic yards of slurry is anticipated to abandon the storm sewer system. Use slurry that meets ASTM C 928 R1. Remove the manhole barrel to a minimum of 1 foot below the roadway base coarse and fill with embankment, compacted per subgrade specifications. Plug and abandon outlet pipes as called out in section 40. Remove end section of outlet pipe before plugging and bury plugged outlet to match adjacent grading. Include the cost for plywood, concrete slurry, plugging, removal of concrete barrel, and embankment in the contract unit price for "ABANDON STORM SEWER SYSTEM".

722-P02 MANHOLE CASTINGS: Use a floating manhole casting (D-722-5A) for all manhole castings within the concrete pavement. Use a standard manhole casting compliant with D-722-5 for all manholes outside of the concrete pavement.

748-P01 CURB & GUTTER – TYPE 1: Align all joints in the curb and gutter with the joint in the concrete pavement.

752-P01 FENCE BARBED WIRE 3 STRAND-STEEL POST: Install the 3 strand barbed wire fence in accordance with standard drawing D-752-1. Maintain the wire distance, shown in Standard Drawing D-752-1, from the top of the post to the top wire and from the ground to the bottom wire. Evenly space the third wire in between the top and bottom wires.

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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764-P01 REMOVE BOX BEAM GUARDRAIL: Salvage and deliver the box beam rail to the NDDOT Williston District Maintenance yard; all other parts will be disposed as specified in Section 107.17. Coordinate delivery of salvaged materials with Rick Sigvaldsen at 701-774-2738. Include the cost for salvage and delivery in the contract unit price for “REMOVE BOX BEAM GUARDRAIL”.

772-009 PADLOCKS: Obtain padlocks for feed points from the City of Williston.

772-P01 EMERGENCY VEHICLE PRE-EMPTION: Provide3M Opticom Emergency Vehicle Pre-emption (EVP) equipment. Mount the confirmation light at the same location on the mast arm as the EVP detector.

772-P02 REMOVE TRAFFIC SIGNAL SYSTEM: Remove the Traffic Signal System and deliver to the City of Williston. Contact Neil Bakken, City of Williston, at (701)577-6368, 2 day before delivering the Traffic Signals System to the City of Williston Public Works Storage yard at 809 5th Street E.

772-P03 TEMPORARY TRAFFIC SIGNAL: Include all costs to use portable trailer mounted traffic signals during the signal replacement, in the contract unit price for “TEMPORARY TRAFFIC SIGNALS”.

885-001 CAST IRON DETECTABLE WARNING PANELS: If cast iron detectable warning panels are used, provide cast iron panels with a minimum thickness of 0.2 inches.

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770-P01 LIGHT STANDARDS: Use the transformer base type for all light standard bases.

770-P02 FEED POINT: Meet the requirements of the local utility companies for the meter trim for all lighting and traffic signals. Include the cost for the meter trim in the contract unit price for other items. Use stainless steel feed point cabinets.

770-P03 CONDUIT: Use schedule 40 pvc below grade conduit. Use schedule 80 pvc Below grade conduit at street and driveway crossings. Use galvanized rigid steel for all above grade conduit. Provide all required fittings as necessary for a complete and working system.

770-P04 LOW VOLTAGE POWER CONDUCTORS AND CABLE: Provide copper conductor as called out in section 140. Use Anaconda, Cyprus Wire and Cable Company (Rome), General Electric Company, Pirelli, or equal manufacturer.

770-P05 LIGHT STANDARD FOUNDATION: Construct the light standard foundations 24 inches in diameter and 8 feet deep. See Standard D-770-1 for additional foundation information.

770-P06 REMOVE LIGHT STANDARD: Remove the standards and deliver to the City of Williston. Contact Neil Bakken, City of Williston, at (701)577-6368, 2 day before delivering the light standards to the City of Williston Public Works Storage yard at 809 5th Street E.

770-P07 LUMINAIRE REQUIREMENTS: Provide luminaires that meet the following:

Light Source	LED
Light Output	30,000 Delivered Lumens (Minimum)
Driver	1000mA
Wattage	274 W (Maximum)
Color Temperature	4000K ±300K
Operating Temperature Range	-40°C to +40°C
Luminaire Housing	Die Cast Aluminum
Vibration Testing	ANSI/NEMA C136.31 Level 2, 3 G
Surge Suppression Rating	ANSI/IEEE C62.41 Cat C
Outdoor rating for housing, wiring, and drivers	ANSI C136.25 IP-65
Photo Control on each luminaire	No
Tool-less Access	Yes
Qualified with Design Lights Consortium	Yes

Ensure the Effective Projective Area of the luminaire does not exceed the capacity of the light standard.

The lighting system was designed using these values:

Roadway Classification	Minor Arterial - Intermediate
Average Maintained Illuminance	1.0 foot-candles
Illuminance Uniformity Ratio	4.0:1
Minimum Illuminance	0.2 foot-candles
Light Loss Factor	0.69

Provide one of the luminaires listed or an approved equal.

Company	Catalog Number
American Electric Lighting	Autobahn series ATB2
Cooper Streetworks	Navion Series
Hubbell Lighting	RL Roadway series

Include all cost associated with the LED lighting system in the contract unit price for “LIGHTING SYSTEM”.

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ENVIRONMENTAL NOTES

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

EN-1 TEMPORARY WETLAND IMPACT: Temporary impact areas within wetlands and or other waters are incorporated into the plans for this project. 0.14 acres of temporary wetland impacts will result from construction activities. Remove temporary fill placed and sedimentation in wetlands or other waters. Restore these wetlands to preconstruction contours.

EN-2 AVOIDANCE AREAS: During construction, the highway side of avoidance area sites will be fenced to ensure there are no unanticipated impacts to the site(s). Provide, place, maintain, and remove safety fence as directed by the NDDOT representatives. See plan note 107-P04 Avoidance Areas.

EN-3 AVOIDANCE BUFFER ZONES: Avoidance of effect to sensitive areas as shown on plan sheets in Section 40 sheets 1 and 3 along with other corresponding sections in the plans. The Engineer shall hire a permitted archaeologist, with a tribal monitor from the NDDOT consulting tribes list, to monitor three avoidance areas. The monitoring effort will include placement and removal of existing ROW fence, placement of new ROW fence, placement of temporary buffer zone avoidance fence, construction activities within the existing and newly designed backslope areas near and for 300' either side of the avoidance areas, and placement of rerouted fiber optic and telephone lines north and south of the highway in the vicinity of the avoidance areas to ensure placement does not impact the marked avoidance area.

EN-4 WHOOPING CRANE: The project is located within the migration corridor of the endangered whooping crane, and suitable stopover habitat for the whooping crane is present. The migration periods of the whooping crane are April 1st to May 15th and September 10 to October 31.

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

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

EN-5 AQUATIC NUISANCE SPECIES (ANS): Follow the North Dakota Game and Fish Department's (NDGFD) Administrative Rules 30-3-06 for compliance with ND Century Code Chapter 20.1-17 on Aquatic Nuisance Species (ANS). Notify the NDGFD at least 72 hours prior to the placement IN or ON the waters of the State of North Dakota of any and all vehicles, vessels, pumps and equipment that will be used in the project, to allow the NDGFD sufficient time to inspect any and all such equipment for ANS. Contact the NDGFD ANS Coordinator, Jessica Howell, by phone (701)368-8368 or e-mail jmhowell@nd.gov for equipment inspections, or any additional information regarding ANS prevention protocol. Supply the inspection report to the engineer prior to work taking place in the water.

EN-6 CONTAMINATED MATERIALS: Contaminated materials exist within the project limits. The Contractor shall dispose of any contaminated materials in a location approved by the North Dakota Department of Health (NDDOH). See special provision 290(14) "Contaminated Work Area" for more information.

EN-7 BOX CULVERT AS-BUILTS: The Engineer will provide a copy of the as-built drawings for the Stony Creek box culvert to the U.S. Coast Guard in 8 ½ by 11 inch format, when the project is completed.

US Department of Homeland Security
United States Coast Guard
Attn: Eric Washburn, Bridge Administrator
1222 Spruce Street
St. Louis MO 63103-2832

EN-8 PALEONTOLOGICAL RESOURCES: All earthwork cuts greater than ten feet shall be monitored by a North Dakota Geological Survey (NDGS) permitted paleontologist. See plan note 107-P06 "PALEONTOLOGICAL MONITORING" for more information.

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ESTIMATE OF QUANTITIES

Spec	Code	Description	Unit	Quantity
103	0100	CONTRACT BOND	L SUM	1
103	0200	ESCROW OF BID DOCUMENTATION	L SUM	1
107	0100	RAILWAY PROTECTION INSURANCE	L SUM	1
201	0300	CLEARING & GRUBBING	ACRE	41
202	0105	REMOVAL OF STRUCTURE	L SUM	1
202	0114	REMOVAL OF CONCRETE PAVEMENT	SY	30
202	0130	REMOVAL OF CURB & GUTTER	LF	7,323
202	0135	REMOVAL OF BITUMINOUS SURFACING	TON	39,995
202	0152	REMOVAL OF BRIDGE RAIL	L SUM	1
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	1,818
202	0210	REMOVAL OF MANHOLES	EA	2
202	0230	REMOVAL OF INLETS	EA	14
202	0231	REMOVE & RESET INLETS	EA	1
202	0288	EXCAVATION & DISPOSAL OF CONTAMINATED SOIL	CY	1100
202	0289	REMOVE APPROACH	EA	3
202	0312	REMOVE EXISTING FENCE	LF	16,348
202	0400	REMOVAL OF RIPRAP - LOOSE ROCK	CY	1,470
202	0812	DISPOSAL OF CONTAMINATED WATER	GAL	43,500
203	0101	COMMON EXCAVATION-TYPE A	CY	234,150
203	0109	TOPSOIL	CY	40,851
203	0113	COMMON EXCAVATION-WASTE	CY	22,629
203	0138	COMMON EXCAVATION-SUBCUT	CY	6,683
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0212	FLOWABLE FILL	CY	75
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
216	0100	WATER	M GAL	4,443
230	0165	SUBGRADE PREPARATION-TYPE A-12IN	STA	199
251	0300	SEEDING CLASS III	ACRE	48.34
251	2000	TEMPORARY COVER CROP	ACRE	46.73
253	0101	STRAW MULCH	ACRE	78.95
255	0101	ECB TYPE 1	SY	80,417
256	0100	RIPRAP GRADE I	CY	416
256	0200	RIPRAP GRADE II	CY	132
260	0200	SILT FENCE SUPPORTED	LF	10971
260	0201	REMOVE SILT FENCE SUPPORTED	LF	10971
261	0112	FIBER ROLLS 12IN	LF	26,063
261	0113	REMOVE FIBER ROLLS 12IN	LF	25,007
265	0100	STABILIZED CONSTRUCTION ACCESS	EA	1
265	0101	REMOVE STABILIZED CONSTRUCTION ACCESS	EA	1
302	0050	TRAFFIC SERVICE AGGREGATE	TON	6,969
302	0100	SALVAGED BASE COURSE	TON	100,331
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	4,714
550	0310	10IN NON REINF CONCRETE PVMT CL AE-DOWELED	SY	117,871

Spec	Code	Description	Unit	Quantity
602	1208	CONCRETE BRIDGE BARRIER	LF	80
702	0100	MOBILIZATION	L SUM	1
704	0100	FLAGGING	MHR	2,000
704	1000	TRAFFIC CONTROL SIGNS	UNIT	2,881
704	1035	ATTENUATION DEVICE-TYPE B-25	EA	6
704	1052	TYPE III BARRICADE	EA	20
704	1060	DELINEATOR DRUMS	EA	405
704	1067	TUBULAR MARKERS	EA	350
704	1080	STACKABLE VERTICAL PANELS	EA	350
704	1081	VERTICAL PANELS-BACK TO BACK	EA	36
704	1086	SEQUENCING ARROW PANEL-TYPE B	EA	1
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	1
704	3510	PRECAST CONCRETE MED BARRIER-STATE FURNISHED	EA	40
706	0500	AGGREGATE LABORATORY	EA	1
706	0600	CONTRACTOR'S LABORATORY	EA	1
708	1010	RIPRAP-GROUTED JOINT	SY	60
708	1540	INLET PROTECTION-SPECIAL	EA	88
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	89
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	18,090
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	18,788
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	1,231
709	0161	GEOSYNTHETIC MATERIAL TYPE S1	SY	15,167
709	0162	GEOSYNTHETIC MATERIAL TYPE S2	SY	1,361
714	0115	PIPE CONC REINF 12IN CL III-STORM DRAIN	LF	16
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	900
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	61
714	0500	PIPE CONC REINF 24IN CL II-45DEG BEND	EA	3
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF	221
714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	318
714	4099	PIPE CONDUIT 18IN-APPROACH	LF	188
714	4101	PIPE CONDUIT 18IN-STORM DRAIN	LF	682
714	4106	PIPE CONDUIT 24IN-APPROACH	LF	495
714	4107	PIPE CONDUIT 24IN-STORM DRAIN	LF	187
714	4112	PIPE CONDUIT 30IN-STORM DRAIN	LF	1,786
714	4115	PIPE CONDUIT 36IN	LF	88
714	4116	PIPE CONDUIT 36IN-APPROACH	LF	295
714	4117	PIPE CONDUIT 36IN-STORM DRAIN	LF	734
714	4120	PIPE CONDUIT 42IN	LF	170
714	4122	PIPE CONDUIT 42IN-APPROACH	LF	102
714	9200	CATTLE PASS CONC INTERMED SECTION	LF	150
714	9611	REMOVE & RELAY CONC CATTLE PASS END SECTION	EA	4
714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES	EA	2
714	9680	PLUG PIPE-ALL TYPES & SIZES	EA	2

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714	9685	TRENCH PLUG	EA	6
720	0110	RIGHT OF WAY MARKERS	EA	168
720	0125	ALIGNMENT MONUMENTS	EA	28
720	0130	IRON PIN R/W MONUMENTS	EA	149
720	0135	IRON PIN REFERENCE MONUMENTS	EA	19
722	0100	MANHOLE 48IN	EA	7
722	0107	MANHOLE 54IN	EA	6
722	0110	MANHOLE 60IN	EA	4
722	0115	MANHOLE 66IN	EA	1.00
722	0130	MANHOLE 84IN	EA	2
722	0315	MANHOLE CASTING	EA	2
722	1100	MANHOLE RISER 48IN	LF	50
722	1106	MANHOLE RISER 54IN	LF	11
722	1110	MANHOLE RISER 60IN	LF	39
722	1115	MANHOLE RISER 66IN	LF	6
722	1120	MANHOLE RISER 72IN	LF	4
722	1130	MANHOLE RISER 84IN	LF	15
722	2490	MANHOLE STORM CONNECTION	EA	1
722	3296	ABANDON STORM SEWER SYSTEM	LSUM	1
722	3510	INLET-TYPE 2	EA	101
722	3520	INLET-TYPE 2 DOUBLE	EA	5
722	3701	INLET SPECIAL-TYPE 2 48IN	EA	5
722	3761	INLET SPECIAL-TYPE 2 60IN	EA	2
722	3766	INLET SPECIAL-TYPE 2 72IN	EA	1
722	3910	INLET SLOTTED DRAIN 15IN	LF	315
722	4565	MEDIAN DRAIN PRECAST CONCRETE-TYPE A	EA	1
722	6140	ADJUST GATE VALVE BOX	EA	11
722	6160	ADJUST INLET	EA	2
724	0314	GATE VALVE & BOX 12IN	EA	2
724	0420	HYDRANT-RELOCATE	EA	4
748	0140	CURB & GUTTER-TYPE I	LF	24,320
748	1000	VALLEY GUTTER 36IN	LF	248
750	0115	SIDEWALK CONCRETE 4IN	SY	45
750	1000	DRIVEWAY CONCRETE	SY	379
750	2115	DETECTABLE WARNING PANELS	SF	53
752	0110	FENCE BARBED WIRE 3 STRAND-STEEL POST	LF	10,159
752	0320	FENCE BARBED WIRE 4 STRAND-STEEL POST	LF	4,603
752	0600	FENCE CHAIN LINK	LF	581
752	0700	FENCE WOVEN WIRE	LF	1,173
752	0995	FENCE TERMINAL-WOOD POSTS	EA	20
752	2100	VEHICLE GATE	EA	2

Spec	Code	Description	Unit	Quantity
752	2120	REMOVE VEHICLE GATE	EA	1
752	3100	CORNER ASSEMBLY CHAIN LINK	EA	4
752	3120	CORNER ASSEMBLY WOVEN WIRE	EA	2
752	3140	CORNER ASSEMBLY BARBED WIRE	EA	42
752	4100	DOUBLE BRACE ASSEMBLY BARBED WIRE	EA	7
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	253
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	189
754	0150	DELINEATORS-TYPE A	EA	4
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	496
754	0472	3 1/2IN STEEL GALV MULTI-DIRECT BREAKAWAY BASES	EA	15
754	0563	REFERENCE MARKER-TYPE C	EA	8
754	0592	RESET SIGN PANEL	EA	25
754	0805	OBJECT MARKERS - CULVERTS	EA	20
760	0003	RUMBLE STRIPS - CONCRETE CENTERLINE	MILE	1
760	0005	RUMBLE STRIPS - ASPHALT SHOULDER	MILE	2
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	70,627
762	1280	PREFORMED THERMO PLASTIC PVMT MK MESSAGE	SF	1,764
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	72,312
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	6,587
762	1315	PREFORMED PATTERNED PVMT MK 12IN LINE-GROOVED	LF	420
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	134
764	0131	W-BEAM GUARDRAIL	LF	474
764	0145	W-BEAM GUARDRAIL END TERMINAL	EA	6
764	0151	REMOVE W-BEAM GUARDRAIL & POSTS	LF	116
764	2020	REMOVE 3-CABLE GUARDRAIL & POSTS	LF	263
764	2080	REMOVE BOX BEAM GUARDRAIL	LF	596
764	2081	REMOVE END TREATMENT & TRANSITION	EA	10
766	0100	MAILBOX-ALL TYPES	EA	26
770	0001	LIGHTING SYSTEM	EA	1
770	4560	REMOVE LIGHT STANDARD	EA	13
772	0001	TRAFFIC SIGNALS SYSTEM	EA	1
772	2810	TEMPORARY TRAFFIC SIGNALS	EA	4
772	3125	REMOVE TRAFFIC SIGNAL SYSTEM	EA	1
772	3180	REMOVE WOOD POLE	EA	4
900	1000	TEMPORARY STREAM DIVERSION	EA	1
910	0480	TRASH RACK	EA	2
920	1233	HEALTH AND SAFETY PLAN	L SUM	1
930	8230	SHORING	EA	4
930	9647	BARRIER END MODIFICATION	EA	4
980	0170	CATTLE GUARD RESET	EA	2

ESTIMATE OF QUANTITIES

STORM DRAIN

Option 1: Pipe Conduit Storm Sewer (See Section 51 for Allowable Materials)

Spec	Code	Description	Unit	Quantity
714	4097	PIPE CONDUIT 15IN - STORM DRAIN	LF	990.00
714	4101	PIPE CONDUIT 18IN - STORM DRAIN	LF	847.00
714	4107	PIPE CONDUIT 24IN - STORM DRAIN	LF	610.00
714	4112	PIPE CONDUIT 30IN - STORM DRAIN	LF	108.00
714	4113	PIPE CONDUIT 30IN - APPROACH	LF	218.00
714	4116	PIPE CONDUIT 36IN - APPROACH	LF	33.00

Option 2: Reinforced Concrete Pipe Storm Sewer

Spec	Code	Description	Unit	Quantity
714	0210	PIPE CONC REINF 15IN CL III - STORM DRAIN	LF	990.00
714	0315	PIPE CONC REINF 18IN CL III - STORM DRAIN	LF	847.00
714	0620	PIPE CONC REINF 24IN CL III - STORM DRAIN	LF	610.00
714	0820	PIPE CONC REINF 30IN CL III	LF	218.00
714	0825	PIPE CONC REINF 30IN CL III - STORM DRAIN	LF	108.00
714	0905	PIPE CONC REINF 36IN CL III	LF	33.00

BOX CULVERT

Alternative A: Cast-In-Place Box Culvert

Spec	Code	Description	Unit	Quantity
210	0210	FOUNDATION FILL	CY	966.30
210	0225	FOUNDATION FILL - TYPE 1	CY	874.50
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	810.40
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	108,494.00

Alternative B: Precast Box Culvert

Spec	Code	Description	Unit	Quantity
210	0210	FOUNDATION FILL	CY	962.50
210	0225	FOUNDATION FILL - TYPE 1	CY	888.80
606	3112	DBL 11FTx12FT PRECAST RCB CULVERT	LF	284.00
606	7112	DBL 11FTx12FT PRECAST RCB END SECTION	EA	2.00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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BASIS OF ESTIMATE

RUMBLE STRIPS		
Location	RUMBLE STRIPS ASPHALT SHOULDER (MILE)	RUMBLE STRIPS CONCRETE CENTERLINE (MILE)
16522+44 to 16575+10	2.0	1.0

TEMPORARY TRAFFIC CONTROL SURFACING				
Station	**Station**	**TEMPORARY TRAFFIC SURFACE AGGREGATE (8")**	**COMMERCIAL GRADE HOT MIX ASPHALT (4")**	**SALVAGED BASE COURSE (12")**
		(CY)	**(TON)**	**(TON)**
		302-0314	**430-0500**	**302-0100**
16508+50	16511+00	141	0	0
16511+00	16519+50	94	582	1771
16519+50	16525+50	320	235	833
16525+50	16540+00	161	992	3021
16540+00	16632+00	5207	0	0
16632+00	16655+00	1046	0	0
16659+00	16668+00	0	756	2128
	Total	**6969**	**2565***	**7753**

* Quantity included in “Removal of Bituminous Surfacing”.

SALVAGED BASE COURSE CALCULATION

			% Breakdown
Total Bituminous Removed	21331	CY	98.3%
Total Concrete Removed	358	CY	1.7%
Total Removals	21689	CY	100.0%
5% Less in Removals	1084	CY	
Total Material Available from Removals	**20604**	**CY**	
Subtract Required Salvage Base Course	53510	CY	
Additional Material needed for Salvaged Base Course	**32906**	**CY**	

MATERIALS		
Material Description	Material Use	Rate
Water	Aggregates	20 Gal/Ton
	Embankment	10 Gal/CY
	Dust Palliative	25 MGal/Mile
	Subgrade Preparation	25 MGal/Mile
Remove & Salvage Bituminous Surfacing	Base	1.875 Ton/CY
Salvaged Base Course	Base	1.875 Ton/CY
Commercial Grade Hot Mix Asphalt	Surfacing	2 Ton/CY

SUBGRADE PREPARATION - TYPE A - 12IN

Location	Length (Station)
Sta. 16522+44 to 16721+00	199

SEEDING

Within Highway R/W	Quantity (Acres)
Class III	48.34
Temporary Cover Crop	46.73

MULCHING

Within Highway R/W	Quantity (Acres)
Grass, Hay, or Straw	78.95

RIPRAP-SALVAGED

Location	Quantity (CY)
Stony Creek Bridge	531 *

*Quantity based on an existing riprap thickness of 1.5’

This document was originally issued and sealed by Adam McGill, Registration Number PE-7565, on 8/11/2016 and the original document is stored at the North Dakota Department of Transportation.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	1

MONUMENTS

Station	Offset	Northing	Easting	Description	Type	R/W Marker
16521+02.35	100' LT	435469.45	1232442.92	ROW MONUMENT	IRON PIN	YES
16521+02.35	120' LT	435449.46	1232442.14	ROW MONUMENT	IRON PIN	YES
16521+92.47	120' LT	435452.96	1232352.10	REFERENCE MONUMENT	IRON PIN	YES
16522+12.47	100' RT	435673.57	1232340.66	REFERENCE MONUMENT	IRON PIN	YES
16522+79.32	100' RT	435676.17	1232273.86	ROW MONUMENT	IRON PIN	YES
16522+79.35	120' LT	435456.34	1232265.28	ROW MONUMENT	IRON PIN	YES
16523+12.47	CL	435577.53	1232236.85	ALIGNMENT PI/SC	IRON PIN	NO
16523+45.18	130' LT	435448.95	1232198.95	ROW MONUMENT	IRON PIN	YES
16523+45.44	105.01' RT	435683.78	1232208.11	ROW MONUMENT	IRON PIN	YES
16524+25.71	112.96' RT	435694.94	1232128.22	REFERENCE MONUMENT	IRON PIN	YES
16524+42.14	130' LT	435452.84	1232102.07	REFERENCE MONUMENT	IRON PIN	YES
16530+52.43	175' RT	435782.07	1231504.50	ROW MONUMENT	IRON PIN	YES
16530+52.42	205' RT	435812.04	1231505.71	ROW MONUMENT	IRON PIN	YES
16538+01.58	205' RT	435842.09	1230757.15	ROW MONUMENT	IRON PIN	YES
16540+96.04	110' RT	435758.98	1230459.12	ROW MONUMENT	IRON PIN	YES
16546+54.36	130' LT	435541.56	1229891.62	ROW MONUMENT	IRON PIN	YES
16546+54.36	145' LT	435526.57	1229891.02	ROW MONUMENT	IRON PIN	YES
16547+51.52	130' LT	435545.46	1229794.55	ROW MONUMENT	IRON PIN	YES
16547+51.52	145' LT	435530.47	1229793.94	ROW MONUMENT	IRON PIN	YES
16549+45.04	125' RT	435808.01	1229611.41	ROW MONUMENT	IRON PIN	YES
16549+45.06	CL	435683.11	1229606.37	ALIGNMENT PI/QS.LINE	IRON PIN	NO
16549+45.03	110' LT	435573.20	1229601.99	ROW MONUMENT	IRON PIN	YES
16549+45.06	130' LT	435553.22	1229601.16	ROW MONUMENT	IRON PIN	YES
16549+45.04	110' RT	435793.03	1229610.80	ROW MONUMENT	IRON PIN	YES
16550+95.61	109.78' RT	435798.88	1229460.37	ROW MONUMENT	IRON PIN	YES
16550+95.61	125' RT	435814.09	1229460.99	ROW MONUMENT	IRON PIN	YES
16551+31.83	CL	435690.65	1229419.76	ALIGNMENT PC	IRON PIN	NO
16551+31.83	110' LT	435580.74	1229415.32	ROW MONUMENT	IRON PIN	YES
16551+31.84	110' RT	435800.56	1229424.19	ROW MONUMENT	IRON PIN	YES
16557+85.07	110' RT	435750.75	1228749.17	ROW MONUMENT	IRON PIN	YES
16561+21.06	100' RT	435656.20	1228414.01	ROW MONUMENT	IRON PIN	YES
16562+19.56	219.67' RT	435736.77	1228277.49	ALIGNMENT PI	PRECAST	NO
16563+35.37	100' LT	435396.01	1228279.28	ROW MONUMENT	IRON PIN	YES
16563+39.91	110' LT	435385.10	1228278.93	ROW MONUMENT	IRON PIN	YES
16570+00.00	100' RT	435255.31	1227601.46	ROW MONUMENT	IRON PIN	YES
16570+00.00	110' RT	435263.50	1227595.72	ROW MONUMENT	IRON PIN	YES
16573+07.29	CL	434983.83	1227417.27	ALIGNMENT PT	IRON PIN	NO
16573+07.29	100' LT	434908.59	1227483.13	ROW MONUMENT	IRON PIN	YES
16573+07.29	110' RT	435066.60	1227344.82	ROW MONUMENT	IRON PIN	YES
16577+50.91	110' RT	434774.43	1227011.01	ROW MONUMENT	IRON PIN	YES
16579+18.28	90' RT	434649.14	1226898.23	ROW MONUMENT	IRON PIN	YES
16579+57.84	CL	434555.36	1226927.75	ALIGNMENT SC	IRON PIN	NO
16579+57.84	90' RT	434623.09	1226868.47	REFERENCE MONUMENT	IRON PIN	YES
16579+57.84	100' LT	434480.12	1226993.61	REFERENCE MONUMENT	IRON PIN	YES
16580+06.84	100' LT	434447.85	1226956.74	ROW MONUMENT	IRON PIN	YES
16580+97.59	100' LT	434388.08	1226888.45	ROW MONUMENT	IRON PIN	YES
16584+87.21	110' LT	434123.93	1226601.85	ROW MONUMENT	IRON PIN	YES
16584+87.21	100' LT	434131.46	1226595.27	ROW MONUMENT	IRON PIN	YES
16584+98.10	CL	434199.54	1226521.22	ALIGNMENT PC	IRON PIN	NO
16584+98.10	90' RT	434267.26	1226461.94	ROW MONUMENT	IRON PIN	YES
16584+98.10	110' LT	434116.77	1226593.67	ROW MONUMENT	IRON PIN	YES
16585+57.50	105' LT	434080.67	1226544.13	ROW MONUMENT	IRON PIN	YES
16585+57.50	110' LT	434076.87	1226547.37	ROW MONUMENT	IRON PIN	YES
16588+00.81	100' LT	433929.17	1226345.47	ROW MONUMENT	IRON PIN	YES
16588+00.81	105' LT	433925.16	1226348.45	ROW MONUMENT	IRON PIN	YES
16592+07.94	100' LT	433698.07	1225997.66	ROW MONUMENT	IRON PIN	YES
16592+35.33	100' RT	433856.84	1225872.99	ROW MONUMENT	IRON PIN	YES
16592+35.42	90' RT	433848.15	1225877.93	ROW MONUMENT	IRON PIN	YES
16593+04.66	90' LT	433657.45	1225906.69	ROW MONUMENT	IRON PIN	YES
16598+45.76	90' LT	433423.24	1225405.31	ROW MONUMENT	IRON PIN	YES
16598+45.76	100' LT	433413.91	1225408.89	ROW MONUMENT	IRON PIN	YES

MONUMENTS

Station	Offset	Northing	Easting	Description	Type	R/W Marker
16599+38.24	288.55' LT	433203.37	1225383.10	ALIGNMENT PI	IRON PIN	NO
16600+66.77	100' LT	433338.87	1225194.90	ROW MONUMENT	IRON PIN	YES
16601+77.75	196.88' LT	433212.76	1225112.61	ROW MONUMENT	IRON PIN	YES
16606+27.77	75' LT	433229.68	1224631.51	ROW MONUMENT	IRON PIN	YES
16609+99.21	100' RT	433361.69	1224244.10	REFERENCE MONUMENT	IRON PIN	YES
16610+10.90	17.75' LT	433243.46	1224239.94	ALIGNMENT QS.LINE	IRON PIN	NO
16610+16.32	75' LT	433185.97	1224237.92	REFERENCE MONUMENT	IRON PIN	YES
16613+48.50	100' RT	433355.41	1223904.14	ROW MONUMENT	IRON PIN	YES
16613+48.61	84.89' RT	433340.30	1223903.61	ROW MONUMENT	IRON PIN	YES
16613+78.39	CL	433256.37	1223871.53	ALIGNMENT PT	IRON PIN	NO
16613+78.39	75' LT	433181.42	1223868.91	ROW MONUMENT	IRON PIN	YES
16613+78.39	85' RT	433341.32	1223874.51	ROW MONUMENT	IRON PIN	YES
16616+48.91	85' RT	433350.80	1223604.16	ROW MONUMENT	IRON PIN	YES
16617+13.92	100' RT	433368.07	1223539.71	ROW MONUMENT	IRON PIN	YES
16617+71.62	CL	433270.15	1223478.54	ALIGNMENT PC	IRON PIN	NO
16617+71.62	75' LT	433195.20	1223475.92	ROW MONUMENT	IRON PIN	YES
16617+71.62	100' RT	433370.09	1223482.05	ROW MONUMENT	IRON PIN	YES
16619+00.00	85' RT	433360.95	1223355.18	ROW MONUMENT	IRON PIN	YES
16619+00.00	100' RT	433375.92	1223356.04	ROW MONUMENT	IRON PIN	YES
16622+46.96	85' RT	433390.89	1223014.74	ROW MONUMENT	IRON PIN	YES
16623+14.26	85' RT	433399.09	1222948.95	ROW MONUMENT	IRON PIN	YES
16624+34.51	38.56' LT	433293.49	1222813.10	ALIGNMENT PI	IRON PIN	NO
16625+71.65	75' LT	433279.97	1222670.52	ROW MONUMENT	IRON PIN	YES
16625+71.65	90' LT	433265.19	1222667.92	ROW MONUMENT	IRON PIN	YES
16627+80.59	90' LT	433305.88	1222459.64	ROW MONUMENT	IRON PIN	YES
16628+34.40	100' LT	433307.83	1222404.06	ROW MONUMENT	IRON PIN	YES
16629+33.37	85' RT	433510.50	1222349.58	ROW MONUMENT	IRON PIN	YES
16629+34.40	90' RT	433515.59	1222349.78	ROW MONUMENT	IRON PIN	YES
16630+97.39	CL	433468.80	1222170.73	ALIGNMENT PT	IRON PIN	NO
16630+97.39	90' RT	433555.63	1222194.43	ROW MONUMENT	IRON PIN	YES
16630+97.39	100' LT	433372.33	1222144.40	ROW MONUMENT	IRON PIN	YES
16632+82.36	75' LT	433445.15	1221972.53	ROW MONUMENT	IRON PIN	YES
16632+83.16	100' LT	433421.24	1221965.18	ROW MONUMENT	IRON PIN	YES
16634+40.76	CL	433559.21	1221839.48	ALIGNMENT PC	IRON PIN	NO
16634+40.76	75' LT	433486.86	1221819.73	ROW MONUMENT	IRON PIN	YES
16634+40.76	90' RT	433646.03	1221863.17	ROW MONUMENT	IRON PIN	YES
16635+47.42	80' RT	433663.59	1221755.10	ROW MONUMENT	IRON PIN	YES
16635+49.40	90' RT	433673.78	1221755.50	ROW MONUMENT	IRON PIN	YES
16635+87.84	80' RT	433673.13	1221714.95	REFERENCE MONUMENT	IRON PIN	YES
16635+93.05	75' LT	433523.29	1221674.95	REFERENCE MONUMENT	IRON PIN	YES
16636+19.39	75' LT	433528.99	1221649.77	ROW MONUMENT	IRON PIN	YES
16636+46.60	80' RT	433686.23	1221656.41	ROW MONUMENT	IRON PIN	YES
16636+66.58	CL	433612.20	1221619.99	ALIGNMENT S.LINE	IRON PIN	NO
16636+81.80	110' LT	433507.56	1221582.88	ROW MONUMENT	IRON PIN	YES
16637+11.78	74.46' RT	433694.27	1221590.17	ROW MONUMENT	IRON PIN	YES
16637+33.53	75' RT	433699.05	1221568.51	REFERENCE MONUMENT	IRON PIN	YES

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Right-of Way Markers and Monuments

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	2

MONUMENTS

Station	Offset	Northing	Easting	Description	Type	R/W Marker
16638+06.18	110.15' LT	433529.88	1221464.17	REFERENCE MONUMENT	IRON PIN	YES
16638+76.86	75' RT	433723.92	1221424.51	ROW MONUMENT	IRON PIN	YES
16638+76.86	90' RT	433738.75	1221426.78	ROW MONUMENT	IRON PIN	YES
16640+78.30	90' RT	433764.64	1221222.26	ROW MONUMENT	IRON PIN	YES
16640+78.30	110' RT	433784.54	1221224.24	ROW MONUMENT	IRON PIN	YES
16641+50.00	90' LT	433591.83	1221134.64	ROW MONUMENT	IRON PIN	YES
16641+68.54	90' RT	433772.73	1221130.24	ROW MONUMENT	IRON PIN	YES
16641+68.54	110' RT	433792.67	1221131.76	ROW MONUMENT	IRON PIN	YES
16642+83.01	94.77' RT	433784.63	1221013.52	ALIGNMENT PI	IRON PIN	NO
16643+71.04	90' RT	433782.97	1220923.24	ROW MONUMENT	IRON PIN	YES
16643+71.32	75' RT	433767.98	1220922.62	ROW MONUMENT	IRON PIN	YES
16644+35.27	75' LT	433618.92	1220856.51	ROW MONUMENT	IRON PIN	YES
16644+35.27	90' LT	433603.92	1220856.42	ROW MONUMENT	IRON PIN	YES
16649+16.95	75' LT	433592.05	1220385.36	ROW MONUMENT	IRON PIN	YES
16649+17.76	80' LT	433586.99	1220385.18	ROW MONUMENT	IRON PIN	YES
16651+25.25	CL	433635.95	1220170.36	ALIGNMENT PT	IRON PIN	NO
16651+25.25	75' RT	433709.81	1220157.34	ROW MONUMENT	IRON PIN	YES
16651+25.25	80' LT	433557.16	1220184.26	ROW MONUMENT	IRON PIN	YES
16652+51.29	75' RT	433687.92	1220033.22	ROW MONUMENT	IRON PIN	YES
16652+51.29	85' RT	433697.77	1220031.49	ROW MONUMENT	IRON PIN	YES
16654+67.82	80' LT	433497.67	1219846.89	ROW MONUMENT	IRON PIN	YES
16654+67.82	85' RT	433660.16	1219818.24	ROW MONUMENT	IRON PIN	YES
16654+67.82	100' LT	433477.98	1219850.36	ROW MONUMENT	IRON PIN	YES
16654+67.82	100.74' RT	433675.67	1219815.50	ROW MONUMENT	IRON PIN	YES
16655+97.90	CL	433553.87	1219704.90	ALIGNMENT PC	IRON PIN	NO
16655+97.90	100' RT	433652.35	1219687.53	ROW MONUMENT	IRON PIN	YES
16655+97.90	100' LT	433455.39	1219722.27	ROW MONUMENT	IRON PIN	YES
16659+66.91	100' RT	433594.63	1219326.34	ROW MONUMENT	IRON PIN	YES
16659+99.37	7.04' LT	433484.12	1219309.37	ALIGNMENT PI	IRON PIN	NO
16661+61.90	168.17' RT	433636.48	1219126.26	REFERENCE MONUMENT	IRON PIN	YES
16661+84.82	100' LT	433367.54	1219136.85	ROW MONUMENT	IRON PIN	YES
16661+84.82	122.06' LT	433345.65	1219139.56	ROW MONUMENT	IRON PIN	YES
16662+99.92	236.49' RT	433688.17	1218983.51	ROW MONUMENT	IRON PIN	YES
16663+16.37	130' RT	433580.54	1218979.39	ROW MONUMENT	IRON PIN	YES
16664+00.84	CL	433442.23	1218909.92	ALIGNMENT PT	IRON PIN	NO
16664+00.84	120' LT	433322.88	1218922.44	ROW MONUMENT	IRON PIN	YES
16664+00.84	130' RT	433571.52	1218896.36	ROW MONUMENT	IRON PIN	YES
16664+56.06	120' LT	433317.13	1218867.52	REFERENCE MONUMENT	IRON PIN	YES
16664+66.06	130' RT	433564.72	1218831.51	REFERENCE MONUMENT	IRON PIN	YES
16669+14.35	130' RT	433517.97	1218385.66	ROW MONUMENT	IRON PIN	YES
16669+14.35	180' RT	433567.69	1218380.45	ROW MONUMENT	IRON PIN	YES
16673+43.19	CL	433343.95	1217972.72	ALIGNMENT TS	IRON PIN	NO
16673+43.19	120' LT	433224.61	1217985.23	ROW MONUMENT	IRON PIN	YES
16673+43.19	180' RT	433522.97	1217953.94	ROW MONUMENT	IRON PIN	YES
16673+90.46	120.06' LT	433219.63	1217937.77	ROW MONUMENT	IRON PIN	YES
16674+01.55	130' RT	433467.34	1217901.82	ROW MONUMENT	IRON PIN	YES
16674+01.55	179.89' RT	433516.99	1217896.90	ROW MONUMENT	IRON PIN	YES
16676+85.55	245.86' LT	433081.07	1217623.03	ROW MONUMENT	IRON PIN	YES
16676+85.61	150' LT	433176.86	1217626.12	ROW MONUMENT	IRON PIN	YES
16677+11.90	22.59' LT	433305.26	1217603.73	ALIGNMENT PI	IRON PIN	NO
16680+80.61	CL	433378.18	1217239.96	ALIGNMENT ST	IRON PIN	NO
16680+80.61	130' RT	433505.64	1217265.50	ROW MONUMENT	IRON PIN	YES
16680+80.61	150' LT	433231.10	1217210.48	ROW MONUMENT	IRON PIN	YES
16685+25.60	CL	433465.63	1216803.64	ALIGNMENT TS	IRON PIN	NO
16685+25.60	125' RT	433588.19	1216828.21	ROW MONUMENT	IRON PIN	YES
16685+25.60	150' LT	433318.56	1216774.16	ROW MONUMENT	IRON PIN	YES
16688+28.05	150' LT	433371.36	1216484.50	REFERENCE MONUMENT	IRON PIN	YES
16688+91.30	125' RT	433652.28	1216458.71	REFERENCE MONUMENT	IRON PIN	YES
16689+03.47	10.40' RT	433540.01	1216432.58	ALIGNMENT PI	IRON PIN	NO
16689+50.77	125' RT	433659.23	1216397.04	ROW MONUMENT	IRON PIN	YES
16689+60.77	150' LT	433386.60	1216359.67	ROW MONUMENT	IRON PIN	YES

MONUMENTS

Station	Offset	Northing	Easting	Description	Type	R/W Marker
16690+02.43	4.30' LT	433535.38	1216332.54	ALIGNMENT S.LINE	IRON PIN	NO
16690+32.16	100' LT	433442.30	1216295.79	ROW MONUMENT	IRON PIN	YES
16690+44.48	57.69' RT	433600.47	1216295.09	ROW MONUMENT	IRON PIN	YES
16690+63.71	53.03' RT	433597.15	1216275.30	REFERENCE MONUMENT	IRON PIN	YES
16690+93.27	100' LT	433446.27	1216236.36	REFERENCE MONUMENT	IRON PIN	YES
16692+81.35	CL	433554.67	1216054.41	ALIGNMENT ST	IRON PIN	NO
16692+81.35	41.33' RT	433595.96	1216056.01	ROW MONUMENT	IRON PIN	YES
16692+81.35	98.90' LT	433455.84	1216050.58	ROW MONUMENT	IRON PIN	YES
16694+52.97	41.22' RT	433602.50	1215884.52	ROW MONUMENT	IRON PIN	YES
16694+52.97	51.22' RT	433612.50	1215884.90	ROW MONUMENT	IRON PIN	YES
16701+47.13	50.79' RT	433638.95	1215191.25	ROW MONUMENT	IRON PIN	YES
16701+47.13	60.79' RT	433648.94	1215191.63	ROW MONUMENT	IRON PIN	YES
16704+33.43	60.61' RT	433659.85	1214905.55	ROW MONUMENT	IRON PIN	YES
16704+73.61	100.58' RT	433701.35	1214866.94	ROW MONUMENT	IRON PIN	YES
16705+39.61	100.54' RT	433703.87	1214800.99	ROW MONUMENT	IRON PIN	YES
16705+89.61	50.51' RT	433655.81	1214749.09	ROW MONUMENT	IRON PIN	YES
16709+84.84	100.26' RT	433720.84	1214356.08	ROW MONUMENT	IRON PIN	YES
16709+84.86	50.26' RT	433670.88	1214354.13	ROW MONUMENT	IRON PIN	YES
16710+45.75	100' LT	433523.08	1214287.46	ROW MONUMENT	IRON PIN	YES
16710+45.77	49.77' LT	433573.27	1214289.39	ROW MONUMENT	IRON PIN	YES
16715+85.46	99.89' RT	433743.73	1213755.90	ROW MONUMENT	IRON PIN	YES
16717+00.00	CL	433648.34	1213637.57	ALIGNMENT PI	IRON PIN	NO
16717+04.64	100.05' RT	433748.48	1213636.00	ROW MONUMENT	IRON PIN	YES
16717+61.96	100.51' RT	433750.70	1213578.72	ROW MONUMENT	IRON PIN	YES

MONUMENTS

Station	Offset	Northing	Easting	Description	Type	R/W Marker
16326+00.00	75' RT	434928.08	1251938.71	ROW MONUMENT	IRON PIN	YES
16326+00.00	250' RT	435102.96	1251945.27	ROW MONUMENT	IRON PIN	YES
16332+00.00	75' RT	434950.59	1251339.13	ROW MONUMENT	IRON PIN	YES
16332+00.00	250' RT	435125.47	1251345.69	ROW MONUMENT	IRON PIN	YES

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Right-of Way Markers and Monuments

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	3

CURVE 17

P.C. Station		16551+31.83
P.I. Station		16562+75.02
Delta	=	43° 30' 26" (LT)
Degree	=	2° 00' 00"
Tangent	=	1,143.20
Length	=	2,175.47
Radius	=	2,864.93
External	=	219.67
P.T. Station		16573+07.29

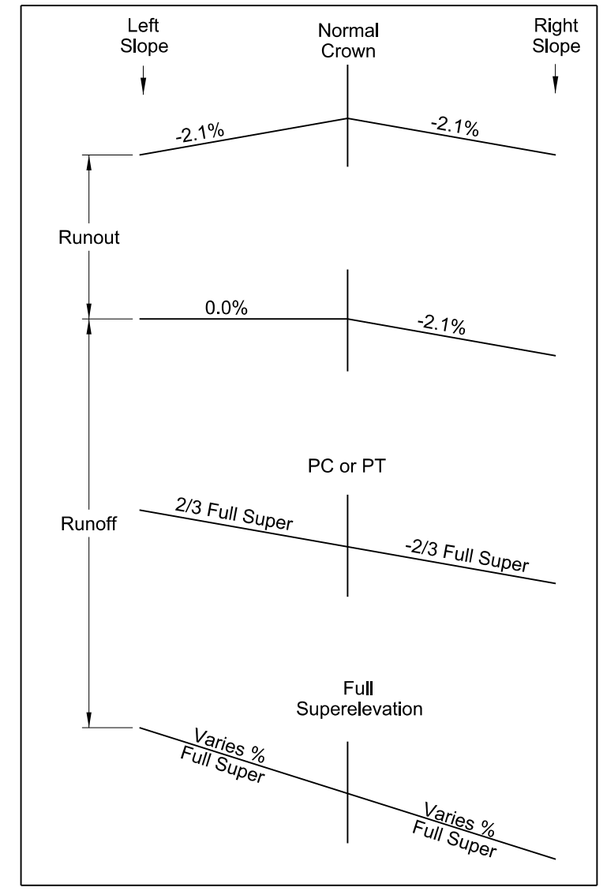
Station	Left Slope	Right Slope
16550+29.77	-2.1	-2.1
16550+74.61	-2.1	0.0
16551+19.44	-2.1	2.1
16551+60.01	-4.0	4.0
16572+79.11	-4.0	4.0
16573+19.67	-2.1	2.1
16573+64.51	-2.1	0.0
16574+09.34	-2.1	-2.1

CURVE 18

P.C. Station		16584+98.10
P.I. Station		16600+10.59
Delta	=	43° 12' 11" (RT)
Degree	=	1° 30' 00"
Tangent	=	1,512.50
Length	=	2,880.29
Radius	=	3,819.83
External	=	288.55
P.T. Station		16613+78.39

Station	Left Slope	Right Slope
16584+13.65	-2.1	-2.1
16584+54.79	0.0	-2.1
16584+95.92	2.1	-2.1
16585+19.43	3.3	-3.3
16613+27.06	3.3	-3.3
16613+83.06	2.1	-2.1
16614+81.06	0.0	-2.1
16615+79.06	-2.1	-2.1

SIMPLE CURVE



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Superelevation Tables

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	4

ND 1804 Reconstruction							
Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16508+50.00	24.7	119.1	0	0	0	0	0
16509+00.00	28.6	58.8	49	198	51	60	-149
16510+00.00	41.5	115.6	130	388	104	111	-407
16510+74.37	77.8	106.5	164	367	103	105	-610
16511+00.00	90.6	100.9	80	118	39	38	-648
16512+00.00	194.2	3.1	527	231	152	141	-352
16513+00.00	249.4	0.9	822	9	156	145	461
16514+00.00	338	1.7	1088	6	183	166	1543
16515+00.00	366.2	4	1305	13	202	190	2835
16516+00.00	445.6	0	1503	9	212	206	4329
16517+00.00	430.7	0.1	1623	0	223	224	5952
16518+00.00	463.1	3.9	1655	9	231	221	7598
16518+54.37	252.5	23	720	32	117	107	8286
16519+00.00	99.5	89.4	298	114	79	77	8470
16520+00.00	3.9	450.3	191	1199	187	185	7462
16521+00.00	0	900	7	3001	241	234	4468
16522+00.00	0	1012.1	0	4249	252	240	219
16522+44.37	0	991.5	0	1975	107	99	-1754
16522+72.91	0	1014.2	0	1272	72	65	-3028
16523+00.00	6.3	566.7	3	952	73	48	-3977
16523+18.88	6.2	334.4	4	378	48	18	-4351
16524+00.00	0	840	9	2117	191	119	-6459
16525+00.00	56.2	474.1	104	2920	249	230	-9275
16525+53.27	129.1	361.5	183	989	143	132	-10081
16526+00.00	195.5	208.3	281	592	123	114	-10392
16527+00.00	867.5	0	1968	463	254	234	-8887
16528+00.00	1954.9	0	5227	0	294	275	-3660
16529+00.00	2331.5	0	7938	0	343	323	4278
16530+00.00	2888.3	0	9666	0	367	346	13944
16531+00.00	3542.7	0	11909	0	389	369	25853
16531+18.86	3710.3	0	2533	0	78	74	28386
16532+00.00	4220.9	0	11918	0	348	332	40304
16533+00.00	4480.1	0	16113	0	438	417	56417
16534+00.00	4550.8	0	16724	0	446	425	73141
16534+48.36	4555.7	0	8155	0	221	212	81296
16535+00.00	4403.9	0	8568	0	236	226	89864
16536+00.00	3713.1	0	15032	0	444	425	104896
16537+00.00	3062.1	0	12547	0	437	417	117443
16537+50.83	2922	0	5633	0	224	213	123076
16538+00.00	2425.8	0	4870	0	211	202	127946
16539+00.00	1287.2	0	6876	0	392	372	134822
16540+00.00	759.2	17	3790	38	336	314	138574
16541+00.00	49	386.6	1497	897	285	264	139174
16542+00.00	7.4	927.6	104	2920	263	243	136358
16542+58.55	0.8	1008.6	9	2519	155	143	133848
16543+00.00	0.2	835.4	1	1699	110	102	132150
16544+00.00	0	753.8	0	3532	274	254	128618
16545+00.00	0	725.6	0	3288	279	260	125330
16545+43.35	0	839.7	0	1508	122	114	123822
16546+00.00	0	1116.3	0	2463	169	157	121359
16547+00.00	0	1742.5	0	6353	328	308	115006
16547+35.33	0	1624.1	0	2643	121	114	112363
16548+00.00	1.3	521.2	2	3083	178	165	109282
16549+00.00	282.2	119.8	525	1424	230	209	108383
16549+23.35	386.6	54.6	289	90	65	41	108582
16549+62.57	434.4	77.9	596	115	117	77	109063
16550+00.00	401.8	90.6	580	140	105	98	109503
16550+29.77	320.3	35.6	398	83	89	59	109818
16550+33.45	322.5	36.2	44	6	12	5	109856
16550+74.61	216	123	410	146	114	73	110120
16551+00.00	149.4	187.9	172	175	60	56	110117
16551+19.44	121.7	243.5	98	186	47	43	110029
16551+31.82	100.8	257.7	51	138	30	27	109942
16551+50.00	76.7	272.5	60	214	42	39	109788
16551+60.01	69.7	272.8	27	121	23	21	109694
16552+00.00	58.5	287.9	95	498	90	81	109291
16552+50.00	51.1	286	101	638	110	100	108754

ND 1804 Reconstruction Earthwork and Topsoil Summary

	Earthwork								Topsoil	
Spec and Code			203-0101				203-0113	203-0138	203-0109	
Earthwork Location	Total Excavation	Mainline Excavation	Common Excavation - Type A	Coal Waste Site (4) Excess Excavation	Fill (1)	Excess Excavation (3)	Common Excavation - Waste (Coal) (2)	Common Excavation - Subcut	Topsoil (Mainline)	Topsoil (Coal Waste)
	A = B + D + H	B = E + F + G	C = D + E + F	D	E	F	G	H		
	(CY)	(CY)	(CY)	(CY)	(CY)	(CY)	(CY)	(CY)	(CY)	(CY)
TOTALS	239583	212990	234150	20000	179889	10472	22629	6683	39347	1504

(1) Volumes shown have been adjusted to account for 20% shrinkage
(2) See Coal Waste table
(3) See Note 203-P02
(4) See Note 203-PO1

COAL WASTE (2)	
Location	Quantity (CY)
16527+00 to 16531+00	9556
16531+00	931
16532+00	1889
16533+00	1919
16534+00	1917
16535+00	2111
16536+00	2222
16537+00	1667
16538+00	417
Total	22629

Note; Coal quantities are estimated and will vary in the field. Estimates are based on information presented in the "Phase I Linear Survey and Recomendations", dated January 2016

Differences in quantities will be paid for at the contract unit price for the respective bid item.

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Earthwork Mass Summary

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	5

ND 1804 Reconstruction							
Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16553+00.00	0.7	313.1	48	666	97	87	108136
16553+50.00	10.6	399.4	11	792	94	84	107355
16554+00.00	0	528.2	10	1031	100	91	106334
16554+50.00	0	722.4	0	1390	110	100	104944
16555+00.00	0	555.2	0	1420	112	103	103524
16555+50.00	64.3	364.7	59	1022	104	95	102561
16556+00.00	169.5	278.2	217	714	107	97	102064
16556+50.00	188.5	232.7	331	568	113	103	101827
16557+00.00	142.7	237.5	306	522	113	103	101611
16557+50.00	81.8	280.6	208	576	110	100	101243
16558+00.00	23.8	318	98	665	106	96	100676
16558+50.00	13.8	316.4	35	705	103	92	100006
16559+00.00	12.3	295.7	24	680	98	88	99350
16559+50.00	13	294	23	655	95	85	98718
16560+00.00	14.1	314	25	676	96	87	98067
16560+50.00	23.4	304.3	35	687	99	89	97415
16561+00.00	73	269	89	637	98	88	96867
16561+50.00	124	253	183	580	99	89	96470
16562+00.00	126.3	258	232	568	101	90	96134
16562+50.00	121.2	257.4	230	573	99	89	95791
16563+00.00	129.2	252.2	232	566	104	95	95457
16563+50.00	110	276.2	222	587	106	96	95092
16564+00.00	49.9	333.5	148	677	104	94	94563
16564+50.00	25	359.7	69	770	105	95	93862
16565+00.00	50.6	345.4	70	783	105	96	93149
16565+50.00	66	317.8	108	737	108	98	92520
16566+00.00	53.7	313.1	111	701	107	97	91930
16566+50.00	46.3	297.1	93	678	104	94	91345
16567+00.00	56.2	282.1	95	644	100	90	90796
16567+50.00	83.9	265.9	130	609	99	89	90317
16568+00.00	99.9	281	170	608	103	93	89879
16568+50.00	77.3	323.1	164	671	107	98	89372
16569+00.00	7.1	387	79	789	105	96	88662
16569+50.00	4.2	388.3	10	861	97	88	87811
16570+00.00	6.7	312.9	10	779	87	77	87042
16570+50.00	95	243.2	94	618	96	86	86518
16571+00.00	192.9	220.1	267	515	115	106	86270
16571+50.00	66.6	14.7	240	261	112	55	86249
16571+59.65	85.7	5.2	27	4	21	0	86272
16572+00.00	231.4	190.8	237	176	96	46	86333
16572+50.00	178.5	242.2	380	481	122	113	86232
16572+79.11	145.6	258.3	174	324	69	63	86082
16573+00.00	133.7	262.2	108	242	48	44	85948
16573+07.29	130.5	262.1	35	85	16	15	85898
16573+19.67	126.1	260.6	59	144	28	26	85813
16573+64.51	135.9	238.5	218	497	102	93	85534
16574+00.00	137.4	221.5	179	363	81	74	85350
16574+09.34	138.2	216.2	48	91	22	19	85307
16575+00.00	90.4	206.2	384	851	203	185	84840
16576+00.00	85.3	219.7	325	946	209	189	84219
16577+00.00	178.1	198.1	488	928	207	186	83779
16578+00.00	119.1	189.5	550	861	218	198	83468
16579+00.00	56.8	245.3	326	966	209	190	82828
16580+00.00	24.1	310	150	1234	192	172	81744
16580+51.94	21.4	389.5	44	807	101	91	80981
16581+00.00	55.8	113.2	69	537	89	78	80513
16582+00.00	64.7	183.7	223	660	185	161	80076
16583+00.00	107	196.4	317	845	205	185	79548
16584+00.00	112.1	183	406	843	209	189	79111
16584+13.65	110.9	182	57	111	28	24	79057
16584+54.79	83.6	197.6	148	347	75	68	78858
16584+95.92	162.7	220.2	188	382	80	72	78664
16584+98.09	160.3	221.1	13	21	5	4	78656
16585+00.00	158.1	221.8	12	19	3	4	78649
16585+19.43	139.4	232.4	107	196	41	38	78560
16585+50.00	140.7	229	158	313	69	63	78405
16586+00.00	128.1	221.2	249	500	113	103	78154

ND 1804 Reconstruction							
Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16586+50.00	133.6	218.9	242	489	112	103	77907
16587+00.00	135	202.2	249	468	114	104	77688
16587+37.37	120	114.8	176	263	81	60	77601
16587+50.00	198.3	114.9	75	64	27	20	77612
16588+00.00	136.1	210.1	309	361	113	101	77560
16588+50.00	118.2	220.8	235	479	111	102	77316
16589+00.00	98.9	217	201	486	110	101	77031
16589+50.00	78.3	231.9	164	499	110	100	76696
16590+00.00	55.2	255.6	124	542	109	99	76278
16590+50.00	35.4	265.1	84	579	107	96	75783
16591+00.00	35.5	266.1	66	590	98	89	75259
16591+50.00	33.8	262.7	64	588	92	83	74735
16592+00.00	23	262.1	52	583	90	79	74204
16592+50.00	26.7	236.3	46	554	87	75	73696
16592+66.40	39.3	157.5	20	143	34	19	73573
16593+00.00	30.5	195.1	43	263	69	38	73353
16593+50.00	37.5	232.9	63	476	86	73	72940
16594+00.00	41.2	246.1	72	532	88	73	72480
16594+50.00	49.2	253	84	555	87	73	72009
16595+00.00	64.1	245.3	105	554	90	74	71560
16595+50.00	70.6	245.6	125	545	94	76	71140
16596+00.00	91.6	241.1	151	541	95	78	70750
16596+50.00	113.5	210.9	190	502	95	77	70438
16597+00.00	138.7	205.5	233	463	100	79	70208
16597+50.00	169	194.9	285	445	107	84	70048
16597+91.56	187.7	183.5	274	349	93	71	69973
16598+00.00	191.7	183.8	59	69	20	15	69963
16598+50.00	215.5	203.4	377	430	115	86	69910
16598+71.57	214.6	213.3	172	200	51	37	69882
16599+00.00	230.5	215.4	234	271	68	46	69845
16599+50.00	225.9	224.1	423	488	122	74	69780
16600+00.00	178	254.9	374	532	122	78	69622
16600+31.62	152.6	273.6	194	371	76	51	69445
16600+50.00	131	274.4	97	224	43	28	69318
16601+00.00	20.8	224.8	141	555	104	65	68904
16601+17.07	48.8	152.7	22	143	33	21	68783
16601+50.00	20.1	184.9	42	247	63	39	68578
16602+00.00	35.8	276.2	52	512	93	56	68118
16602+20.72	31.9	304.7	26	267	40	26	67877
16602+25.00	32.5	305.1	6	58	8	6	67825
16602+50.00	30.9	317.5	29	346	49	33	67508
16602+75.00	23.4	351.4	25	372	51	35	67161
16603+00.00	16.9	415.8	19	426	50	34	66754
16603+25.00	14.6	458.8	15	486	48	33	66283
16603+50.00	12.5	478.9	13	521	49	33	65775
16603+75.00	9.2	493.2	10	540	49	34	65245
16604+00.00	7.8	494.8	8	549	52	36	64704
16604+20.72	9.4	482	7	450	45	32	64261
16604+25.00	10.6	477	2	91	9	7	64172
16604+50.00	19	425.2	13	501	54	39	63684
16604+75.00	24.6	377.2	20	446	54	39	63258
16605+00.00	28.9	341.6	25	399	52	39	62884
16605+25.00	29.7	313.5	27	364	50	38	62547
16605+50.00	23.7	285.6	25	333	48	37	62239
16605+64.72	22	271.1	13	182	27	21	62070
16605+75.00	21.6	269.8	8	124	19	15	61954
16606+00.00	18.7	270.5	19	300	45	35	61673
16606+25.00	20.2	254.5	18	292	43	33	61399
16606+50.00	17.9	244.8	18	277	43	33	61140
16606+75.00	18.8	254.6	17	277	42	32	60880
16607+00.00	18.7	255.7	17	283	42	32	60614
16607+25.00	20	247.5	18	280	42	32	60352
16607+50.00	23.6	237.4	20	269	41	31	60103
16607+75.00	25	231.5	23	261	43	33	59865
16608+00.00	28.7	223.4	25	253	44	34	59637
16608+25.00	35.7	215.2	29	244	43	33	59422
16608+50.00	41.3	212.2	36	237	42	32	59221

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Earthwork Mass Diagram

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	6

ND 1804 Reconstruction

Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16608+75.00	48.1	209.9	42	235	43	32	59028
16609+00.00	52.3	204.2	46	230	42	32	58844
16609+25.00	56.9	205.6	51	228	42	33	58667
16609+50.00	62.5	209.6	55	231	46	36	58491
16609+75.00	70.7	187.5	62	221	48	39	58332
16610+00.00	88.9	116.2	74	169	50	40	58237
16610+25.00	119.8	24.6	96	78	56	31	58255
16610+33.83	59.8	17.6	30	8	21	4	58277
16610+50.00	132.7	28.1	58	16	39	7	58319
16610+75.00	62.1	141.1	90	94	56	31	58315
16611+00.00	78.9	213.1	65	197	51	41	58183
16611+25.00	105.3	235.3	85	249	54	43	58019
16611+50.00	100.5	236.7	96	262	52	42	57853
16611+75.00	86.6	239.7	86	265	49	39	57674
16612+00.00	65.3	246.5	71	270	49	38	57475
16612+25.00	47.9	250.3	53	276	47	37	57252
16612+50.00	31.3	258.2	37	283	46	36	57006
16612+75.00	18	267.6	23	292	45	35	56737
16613+00.00	12.7	271.2	14	299	43	34	56452
16613+25.00	10.6	274.6	11	303	43	34	56160
16613+27.06	59.7	189.1	3	21	4	3	56142
16613+50.00	6	286	28	242	40	31	55928
16613+75.00	4	291.6	5	321	43	33	55612
16613+83.06	48.7	201.6	8	88	14	11	55532
16614+00.00	6.4	287.6	18	184	29	22	55366
16614+25.00	9.6	277.3	7	314	43	33	55059
16614+50.00	9.4	268.4	9	303	43	33	54765
16614+75.00	13.2	255.6	11	291	43	33	54485
16614+81.06	14.9	254.1	3	69	10	8	54419
16615+00.00	17.1	243.2	11	209	32	24	54221
16615+25.00	18.9	238.9	17	268	42	32	53970
16615+50.00	19.1	236.4	18	264	42	32	53724
16615+75.00	20.1	229.4	18	259	41	31	53483
16615+79.06	21.1	228	3	41	6	5	53445
16616+00.00	25.6	227.5	18	212	34	26	53251
16616+25.00	36	213.9	28	245	41	31	53034
16616+50.00	73.1	119.7	50	185	43	22	52899
16616+62.59	87.1	113.3	37	65	21	7	52871
16616+75.00	149.2	111.9	54	62	21	12	52863
16617+00.00	93.1	208.7	113	178	45	36	52798
16617+25.00	70.6	223.2	76	240	47	37	52634
16617+50.00	62.6	232.7	62	253	46	36	52443
16617+75.00	53.5	254.6	54	271	43	33	52226
16618+00.00	53.3	269	49	291	42	31	51984
16618+25.00	51.2	235	48	280	42	32	51752
16618+50.00	50.2	185.3	47	234	41	30	51565
16618+75.00	55.1	174.5	49	200	43	32	51414
16619+00.00	51.9	170.2	50	192	45	35	51272
16619+25.00	50.8	168.2	47	188	42	32	51131
16619+50.00	47	169.3	46	187	39	29	50990
16619+75.00	42.7	174.5	42	191	39	29	50841
16620+00.00	36.9	189.1	37	202	39	29	50676
16620+25.00	28.3	203.7	30	218	40	29	50488
16620+50.00	21.8	217.9	23	234	39	29	50277
16620+75.00	15.2	240.2	18	255	39	29	50040
16621+00.00	10.6	270.9	12	284	38	29	49768
16621+25.00	6.4	300.5	8	317	39	29	49459
16621+50.00	1.5	332.5	4	352	39	28	49111
16621+75.00	0	362.3	1	386	36	26	48726
16622+00.00	0	383.4	0	414	34	24	48312
16622+25.00	0	388.2	0	429	35	24	47883
16622+50.00	0	356.1	0	413	35	25	47470
16622+75.00	0	279.1	0	353	34	24	47117
16622+82.48	0	275.6	0	92	10	7	47025
16623+00.00	0	272.3	0	213	24	16	46812
16623+25.00	0	335.9	0	338	36	25	46474
16623+50.00	7	207.4	3	302	43	19	46175

ND 1804 Reconstruction

Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16623+75.00	19.1	279	12	270	46	20	45917
16624+00.00	22.6	326	19	336	44	29	45600
16624+25.00	24.5	207.5	22	296	46	30	45326
16624+50.00	26.4	297.4	23	281	46	30	45068
16624+75.00	29.4	280.6	25	321	46	30	44772
16625+00.00	26.4	268.3	25	305	46	30	44492
16625+25.00	25.7	251	24	289	46	30	44227
16625+50.00	24.8	238.7	23	272	46	30	43978
16625+75.00	23.4	230.2	22	261	45	29	43739
16626+00.00	37.3	223	28	252	49	33	43515
16626+00.52	37.4	222.9	1	5	1	1	43511
16626+25.00	40.6	212.2	36	237	50	36	43310
16626+50.00	50	201.6	42	230	51	36	43122
16626+75.00	57.8	189	50	217	50	36	42955
16627+00.00	65.9	173.5	58	201	49	36	42812
16627+25.00	72.6	153.4	64	182	47	37	42694
16627+44.52	75.6	144.8	54	129	38	29	42619
16627+50.00	77.5	143.3	15	35	10	8	42599
16627+75.00	88.5	133.2	77	154	49	39	42522
16628+00.00	93.6	134.8	84	149	50	40	42457
16628+25.00	101.1	132.5	90	149	51	41	42398
16628+50.00	110.8	131.8	98	147	52	41	42349
16628+75.00	120.2	131.1	107	146	52	41	42310
16629+00.00	130.4	131.2	116	146	52	42	42280
16629+25.00	135.3	133.4	123	147	52	42	42256
16629+50.00	145.3	131.6	129	147	52	42	42238
16629+75.00	150.6	123.8	137	142	52	42	42233
16630+00.00	159.6	121.6	144	136	52	42	42241
16630+25.00	157.3	121.6	147	135	52	42	42253
16630+50.00	159.5	120.4	147	134	54	43	42266
16630+75.00	171.1	122.2	153	135	55	45	42284
16631+00.00	162	125.2	154	137	57	47	42301
16631+25.00	153.2	128	146	141	56	47	42306
16631+50.00	162	123.8	146	140	57	46	42312
16631+75.00	304.1	72.7	216	109	57	46	42419
16632+00.00	184.8	109.6	226	101	57	46	42544
16632+25.00	174.8	120.8	166	128	57	47	42582
16632+50.00	169.8	121.7	160	135	57	47	42607
16632+75.00	97.2	149.9	124	151	51	41	42580
16633+00.00	97.1	138.6	90	160	44	34	42510
16633+25.00	102.7	133.7	92	151	43	32	42451
16633+50.00	109.4	126.6	98	145	43	32	42404
16633+75.00	164	5.6	126	73	39	28	42457
16633+84.36	185.7	2.8	61	2	13	8	42516
16633+86.39	189.4	2.4	14	0	3	2	42530
16634+00.00	159.3	45.3	88	14	21	15	42604
16634+25.00	130.3	100.4	135	81	43	33	42658
16634+50.00	135.7	106.9	123	115	43	33	42666
16634+75.00	133.6	107.7	125	119	43	33	42672
16635+00.00	129	109.6	122	121	43	33	42673
16635+25.00	134.4	104.9	122	119	43	33	42676
16635+50.00	138.9	96.6	126	112	43	33	42690
16635+75.00	147.3	87.6	132	102	43	33	42720
16636+00.00	150.1	71.6	138	88	43	33	42770
16636+25.00	167.8	34	147	59	41	29	42858
16636+50.00	467.4	1.7	294	20	49	37	43132
16636+75.00	154.4	8.5	288	6	56	26	43414
16637+00.00	143.5	82.8	138	51	47	16	43501
16637+25.00	327.6	80	218	90	52	37	43629
16637+50.00	312.2	86.1	296	92	61	45	43833
16637+75.00	300.9	87.8	284	97	60	44	44020
16638+00.00	293	94.7	275	101	60	44	44194
16638+25.00	282.5	99.4	266	108	60	44	44352
16638+50.00	274.1	100.2	257	111	59	44	44498
16638+75.00	295.2	79.4	263	100	59	44	44661
16639+00.00	284.8	62.3	269	79	58	34	44851
16639+03.34	281.7	62.9	35	9	7	3	44877

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Earthwork Mass Diagram

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	7

ND 1804 Reconstruction							
Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16639+25.00	279.2	61.7	225	60	49	30	45042
16639+50.00	189.3	102.6	216	91	55	41	45167
16639+75.00	180.9	116.6	172	122	50	37	45217
16640+00.00	168.6	150.3	162	148	50	38	45231
16640+25.00	152.6	132.9	149	157	53	41	45223
16640+47.34	129.5	132.8	116	132	46	37	45207
16640+50.00	128	134.1	12	16	5	4	45203
16640+75.00	115.5	173.7	113	171	50	41	45145
16641+00.00	95.8	204	98	210	51	43	45033
16641+25.00	94.9	218.6	88	235	53	46	44886
16641+50.00	111.3	186.4	95	225	54	47	44756
16641+58.36	117.7	169.7	35	66	17	15	44725
16641+75.00	124.5	146.6	74	117	33	28	44682
16642+00.00	126.3	128.4	116	153	47	41	44645
16642+25.00	121	114.4	115	135	44	40	44625
16642+50.00	100.1	109.5	103	124	44	38	44604
16642+70.00	74.1	105	64	95	33	29	44573
16642+75.00	70.9	104.9	14	23	8	7	44564
16643+00.00	51.9	104.3	57	116	36	32	44505
16643+25.00	56.8	103.9	50	116	34	30	44439
16643+50.00	71.7	109.3	60	118	36	32	44381
16643+75.00	66.6	107.1	64	120	37	32	44325
16644+00.00	96.1	51.5	75	88	37	32	44312
16644+13.19	62.2	27.1	39	23	17	11	44328
16644+25.00	46.6	43.2	24	18	11	7	44334
16644+50.00	30.3	157.8	36	112	27	22	44258
16644+75.00	32.1	141.6	29	166	28	23	44121
16645+00.00	73.7	122.9	49	147	35	19	44023
16645+08.11	86.2	121.4	24	44	14	5	44003
16645+25.00	101.8	114	59	88	29	10	43974
16645+50.00	24.7	122.8	59	132	35	19	43901
16645+75.00	23.5	143.7	22	148	26	22	43775
16646+00.00	18.1	167.7	19	173	27	22	43621
16646+25.00	15.8	175.8	16	191	28	23	43446
16646+50.00	14.3	173.9	14	194	29	24	43266
16646+75.00	10	182.2	11	198	28	23	43079
16647+00.00	8.6	192.4	9	208	27	22	42880
16647+25.00	7.7	199.6	8	218	28	23	42670
16647+50.00	5.3	198.3	6	221	26	22	42455
16647+75.00	6.2	197.4	5	220	26	21	42240
16648+00.00	4.6	193.1	5	217	25	21	42028
16648+25.00	5	193.5	4	215	25	21	41817
16648+50.00	4.8	198.9	5	218	25	21	41604
16648+75.00	7.1	197.8	6	220	26	22	41390
16649+00.00	9	185.2	7	213	26	22	41184
16649+25.00	10	182.3	9	204	27	22	40989
16649+50.00	11.1	174.5	10	198	28	23	40801
16649+75.00	12.7	164	11	188	28	23	40624
16650+00.00	11.7	114.3	11	155	25	20	40480
16650+25.00	13.3	143.9	12	143	25	20	40349
16650+50.00	46	151.5	27	164	32	28	40212
16650+75.00	17	173.3	29	180	33	29	40061
16651+00.00	12.5	188.6	14	201	31	26	39874
16651+25.00	28.4	216.1	18	225	35	30	39667
16651+50.00	34.7	218	30	241	40	36	39456
16651+75.00	32.8	154.4	31	207	43	37	39280
16652+00.00	43	152.7	35	171	41	37	39144
16652+16.44	28.8	201.8	22	130	27	24	39036
16652+25.00	43.6	216.9	12	80	14	13	38968
16652+50.00	67	173.9	51	217	44	39	38802
16652+75.00	35	181.1	47	197	45	39	38652
16653+00.00	14.8	184.2	23	203	40	34	38472
16653+25.00	5.2	193.9	9	210	37	30	38271
16653+50.00	8.9	183.6	7	210	35	28	38068
16653+75.00	13.6	177.2	10	200	36	29	37878
16654+00.00	27.5	149.7	19	182	39	31	37715
16654+25.00	28.3	142.6	25	162	42	34	37578

ND 1804 Reconstruction							
Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16654+50.00	32.8	116.4	28	144	39	30	37462
16654+75.00	39.8	103.8	34	122	36	28	37374
16654+86.44	40.7	104.9	17	53	17	13	37338
16655+00.00	16.6	98.4	14	61	17	16	37291
16655+25.00	26.1	77.2	20	98	27	31	37213
16655+50.00	37.8	66.3	30	80	27	31	37163
16655+75.00	46.9	57	39	69	28	30	37133
16656+00.00	53.5	57.7	46	64	27	30	37115
16656+25.00	49.6	59.6	48	65	28	30	37098
16656+30.44	45.7	60.2	9	14	6	7	37093
16656+50.00	38.7	67	30	55	21	24	37068
16656+75.00	24.6	88.1	29	86	28	30	37011
16657+00.00	15.2	86.1	18	97	25	28	36932
16657+25.00	12.9	90	13	98	25	28	36847
16657+50.00	13.9	92.5	12	101	27	30	36758
16657+75.00	13.9	90.9	13	102	26	29	36669
16658+00.00	9.4	92.7	11	102	25	28	36578
16658+25.00	4.1	94.1	6	104	24	27	36480
16658+50.00	1.5	73.1	3	93	22	25	36390
16658+63.80	12.8	89.9	4	50	17	10	36344
16658+75.00	0.3	79	3	42	14	8	36305
16659+00.00	2.3	91.2	1	95	21	24	36211
16659+25.00	1.5	123.3	2	119	24	27	36094
16659+50.00	4.5	124.1	3	137	28	31	35960
16659+75.00	4.9	125.4	4	139	28	31	35825
16660+00.00	3.6	133.1	4	144	28	31	35685
16660+25.00	2.2	136.7	3	150	28	30	35538
16660+50.00	3.7	131.1	3	149	27	30	35392
16660+75.00	4.8	129.6	4	145	27	30	35251
16661+00.00	6.4	137.6	5	148	28	30	35108
16661+25.00	6.9	144.1	6	156	28	31	34958
16661+50.00	5.8	149.9	6	163	29	31	34801
16661+75.00	4.4	139.8	5	161	29	31	34645
16662+00.00	2	135.7	3	153	28	30	34495
16662+25.00	5.3	115.9	3	140	28	28	34358
16662+50.00	39.2	26.1	21	79	28	27	34300
16662+75.00	56.2	19.7	44	25	39	19	34319
16662+80.65	66.6	18.1	13	5	12	3	34327
16663+00.00	72.2	20	50	16	39	9	34361
16663+25.00	15	53.5	40	41	39	18	34360
16663+50.00	0.3	173.3	7	126	30	27	34241
16663+75.00	1.5	294.8	1	260	35	33	33982
16664+00.00	1	602.3	1	498	19	32	33485
16664+25.00	1	573.6	1	653	0	27	32833
16664+50.00	1	550	1	624	0	27	32210
16664+75.00	106.8	124.3	50	375	21	33	31885
16665+00.00	115.1	110.9	103	131	42	40	31857
16665+25.00	100.3	112.3	100	124	42	40	31833
16665+50.00	89.2	115.8	87	127	41	38	31793
16665+75.00	80.2	112.8	78	127	39	37	31744
16666+00.00	86.4	102.1	77	119	39	36	31702
16666+25.00	91.8	86.2	83	105	37	34	31680
16666+50.00	95.4	75.7	87	90	36	33	31677
16666+75.00	130.2	36.6	104	62	37	34	31719
16667+00.00	297.3	13	198	28	40	37	31889
16667+25.00	145.7	13.8	205	15	37	25	32079
16667+33.57	128.7	14.7	43	5	12	4	32117
16667+50.00	112.3	15.2	74	11	22	7	32180
16667+75.00	81	26.7	89	23	39	10	32246
16668+00.00	115.1	42.1	91	38	43	23	32299
16668+25.00	80.1	97.1	90	77	39	36	32312
16668+50.00	65.8	116.3	67	119	37	34	32260
16668+75.00	59	135.6	58	140	34	31	32178
16669+00.00	68.7	151.2	59	159	33	29	32078
16669+25.00	81.9	151.6	70	168	35	32	31980
16669+50.00	122.6	154	95	170	39	36	31905
16669+75.00	167.2	163.8	135	177	42	40	31863

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Earthwork Mass Diagram

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	8

ND 1804 Reconstruction

Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16669+83.64	140.7	170.6	49	64	19	11	31848
16670+00.00	161.6	181.7	91	128	38	22	31811
16670+03.93	150	182.4	23	32	6	7	31802
16670+25.00	93.4	170.2	95	165	34	33	31732
16670+50.00	89.6	167.3	85	188	41	40	31629
16670+75.00	101.6	129.7	88	165	41	40	31552
16671+00.00	104	97.2	95	126	36	37	31521
16671+25.00	106.6	75.1	97	96	43	44	31522
16671+47.93	115.5	24.7	94	51	34	35	31565
16671+50.00	116	25.4	9	2	1	2	31572
16671+75.00	124.4	27.9	111	30	27	30	31653
16672+00.00	127.2	28.3	116	31	32	34	31738
16672+25.00	124.4	13.1	116	23	22	25	31831
16672+50.00	123.9	90.8	115	58	37	40	31888
16672+75.00	114.6	111	111	112	62	65	31887
16673+00.00	114.1	72.5	106	102	53	55	31891
16673+25.00	121.5	70	109	79	42	45	31921
16673+50.00	119.9	54.7	111	69	44	46	31963
16674+00.00	134.7	8.6	236	70	63	68	32129
16674+25.00	142.6	4.6	128	7	18	21	32250
16674+50.00	150.7	6.5	136	6	17	19	32380
16674+75.00	151.9	9.1	140	9	16	19	32511
16675+00.00	152.5	30.8	141	22	26	29	32630
16675+25.00	181.4	26	154	32	35	37	32752
16675+50.00	175.2	37.5	165	35	36	38	32882
16675+75.00	160.1	44.9	155	46	37	40	32991
16676+00.00	141.8	55	140	56	37	41	33075
16676+20.98	134.5	68.5	107	58	33	35	33124
16676+25.00	132.9	69.2	20	12	6	7	33132
16676+50.00	124.4	64.8	120	74	41	43	33178
16676+75.00	103.9	69.9	105	75	41	44	33208
16677+00.00	87.5	86.4	89	87	42	45	33210
16677+25.00	73	107.4	74	108	43	46	33176
16677+50.00	50.8	120.1	58	126	44	47	33108
16677+64.98	48.8	123.4	27	81	26	29	33054
16677+75.00	54.3	120.4	19	54	19	20	33019
16678+00.00	61.1	111.2	54	129	47	50	32944
16678+25.00	57.2	99.8	55	117	47	51	32882
16678+50.00	56.9	88.4	53	105	46	51	32830
16678+75.00	67.1	78.5	58	93	47	52	32795
16679+00.00	72.2	61.7	65	78	47	53	32782
16679+25.00	77	56.8	69	66	44	51	32785
16679+50.00	78.1	112.8	72	94	45	51	32763
16679+75.00	71	205.5	69	177	50	54	32655
16680+00.00	63.2	287.9	62	274	53	54	32443
16680+25.00	47.5	264.6	51	307	53	54	32187
16680+34.98	42.4	252.9	17	115	20	21	32089
16680+50.00	35.3	233.4	22	162	32	32	31949
16680+75.00	19.5	196.2	25	239	52	54	31735
16681+00.00	5.5	300.4	12	276	72	74	31471
16681+25.00	1	315	3	342	92	94	31132
16681+50.00	0	297.8	0	340	90	93	30792
16681+75.00	0	491.5	0	439	88	92	30353
16682+00.00	0	0	0	0	0	0	30353
16682+25.00	0	0	0	0	0	0	30353
16682+50.00	0	0	0	0	0	0	30353
16682+75.00	0	0	0	0	0	0	30353
16683+00.00	0	0	0	0	0	0	30353
16683+25.00	0	0	0	0	0	0	30353
16683+50.00	0	0	0	0	0	0	30353
16683+75.00	0	0	0	0	0	0	30353
16684+00.00	0	0	0	0	0	0	30353
16684+25.00	0	0	0	0	0	0	30353
16684+50.00	0	0	0	0	0	0	30353
16684+75.00	20.9	760.6	10	696	89	88	29667
16685+00.00	34	402.8	25	646	90	85	29046
16685+25.00	51.8	126.3	40	294	69	63	28792

ND 1804 Reconstruction

Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16685+50.00	68.7	44.2	55	95	41	32	28752
16685+75.00	112.5	35.9	84	44	31	26	28792
16685+81.31	118.3	35.2	27	10	8	7	28809
16686+00.00	132.9	34.4	87	29	24	19	28867
16686+25.00	155.3	33.4	133	38	31	23	28962
16686+50.00	165.9	23.5	149	32	30	21	29079
16686+75.00	180.6	5.3	160	16	29	19	29223
16687+00.00	179.3	63.1	166	38	30	22	29351
16687+25.00	182	99	167	90	33	26	29428
16687+25.31	182.3	99.4	2	1	0	0	29429
16687+50.00	193	104.9	171	112	34	25	29488
16687+75.00	190.8	117	178	123	34	25	29543
16688+00.00	180.1	116.4	172	130	33	23	29585
16688+25.00	174.7	113.4	164	128	32	22	29621
16688+50.00	164.2	98.8	157	118	30	20	29660
16688+75.00	157.7	138.6	149	132	37	26	29677
16689+00.00	149.6	74.2	143	118	41	31	29702
16689+25.00	147.3	22.2	138	54	31	20	29786
16689+50.00	221.9	0	171	12	30	20	29945
16689+75.00	310	0	246	0	40	30	30191
16689+93.54	331.9	0	220	0	32	25	30411
16690+00.00	333	0	79	0	12	9	30490
16690+25.00	255.6	0	273	0	44	35	30763
16690+50.00	138.8	25.2	182	14	39	30	30931
16690+75.00	131.3	24.7	125	28	33	25	31028
16691+00.00	127.1	12.8	119	21	30	24	31126
16691+25.00	95.4	7.1	103	11	21	16	31218
16691+50.00	84.9	27.3	84	19	22	8	31283
16691+75.00	82.4	6.2	77	19	22	8	31341
16692+00.00	77.9	4.3	74	6	12	7	31409
16692+25.00	68.8	2.1	68	4	10	6	31473
16692+50.00	58.4	0.1	59	1	8	3	31531
16692+75.00	58.6	0.1	54	0	7	2	31585
16693+00.00	57.8	0.7	54	0	7	3	31639
16693+25.00	65.5	0.5	57	1	7	3	31695
16693+50.00	71.5	0.1	64	0	7	3	31759
16693+75.00	62.1	1.3	62	1	8	3	31820
16694+00.00	54.2	4.7	54	3	9	4	31871
16694+25.00	44.1	5.5	46	6	10	5	31911
16694+50.00	37.1	7.7	38	7	11	6	31942
16694+75.00	33.6	8.6	32	9	12	7	31965
16695+00.00	29.2	8.9	29	10	12	7	31984
16695+25.00	21.4	10.1	23	11	12	7	31996
16695+50.00	23	12.7	21	13	11	7	32004
16695+75.00	16.3	9.5	18	12	11	7	32010
16696+00.00	13.6	12	14	12	11	6	32012
16696+25.00	12.5	11.3	12	13	10	6	32011
16696+50.00	12.2	11.4	11	13	10	5	32009
16696+75.00	10.4	13.4	10	14	9	5	32005
16697+00.00	8.6	16.7	9	17	9	5	31997
16697+25.00	7.1	27.5	7	25	10	5	31979
16697+50.00	6.4	37.6	6	36	10	5	31949
16697+75.00	5.5	38.4	6	42	10	5	31913
16698+00.00	4.3	42	5	45	10	5	31873
16698+25.00	3.1	41.3	3	46	10	5	31830
16698+50.00	3.5	42.8	3	47	10	6	31786
16698+75.00	4.8	40.1	4	46	11	6	31744
16699+00.00	6.8	28.1	5	38	10	6	31711
16699+25.00	10.3	15.3	8	24	10	6	31695
16699+50.00	13.2	12	11	15	9	5	31691
16699+75.00	16.5	7.7	14	11	9	5	31694
16700+00.00	18.8	4.9	16	7	9	5	31703
16700+25.00	24.9	4.1	20	5	9	4	31718
16700+75.00	45	2	65	7	17	7	31776
16700+89.19	49.9	1.8	25	1	4	1	31800
16701+00.00	54.2	1.6	21	1	3	1	31820
16701+25.00	62.4	0.8	54	1	8	2	31873

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Earthwork Mass Diagram

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	9

ND 1804 Reconstruction							
Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16701+50.00	64.6	1.5	59	1	8	2	31931
16701+75.00	61.1	1.6	59	2	10	3	31988
16702+00.00	73.8	0.5	62	1	12	3	32049
16702+25.00	78.7	0	70	0	12	3	32119
16702+33.19	81	0	25	0	4	1	32144
16702+50.00	89.3	0.3	53	0	9	3	32197
16702+75.00	95.9	0.2	86	0	14	4	32283
16703+00.00	86.4	1.4	84	1	15	4	32366
16703+25.00	88.7	0.7	81	1	14	4	32446
16703+50.00	91.5	1.1	83	1	16	5	32528
16703+75.00	89.4	1.3	84	1	15	5	32611
16704+00.00	85.6	2.2	81	2	16	5	32690
16704+25.00	86.2	1.3	80	2	16	6	32768
16704+50.00	60.2	2.8	68	2	16	6	32834
16704+75.00	76.8	1.9	63	3	15	4	32894
16705+00.00	73.3	1.2	70	2	14	4	32962
16705+25.00	77.9	1.7	70	2	14	4	33030
16705+50.00	94	1.7	79	2	15	5	33107
16705+75.00	97.6	1.3	89	2	13	5	33194
16706+00.00	93.2	1	88	1	10	4	33281
16706+25.00	94.7	0.6	87	1	8	3	33281
16706+50.00	93.8	0	87	0	7	2	33454
16706+75.00	96.8	0	88	0	7	2	33542
16707+00.00	93.9	0	88	0	7	2	33630
16707+25.00	89.7	0	85	0	7	3	33715
16707+50.00	84.4	0	81	0	7	3	33796
16707+75.00	88.8	0	80	0	7	3	33876
16708+00.00	93.5	0	85	0	7	3	33961
16708+25.00	91	0.4	85	0	8	3	34046
16708+50.00	87.8	1.2	83	1	9	4	34128
16708+75.00	89.5	0.1	82	1	9	4	34209
16709+00.00	106.4	0.6	90	0	10	3	34299
16709+25.00	91.6	1.5	91	1	11	3	34389
16709+50.00	91.2	2.3	84	2	9	4	34471
16709+75.00	86.6	4.3	83	4	9	4	34550
16710+00.00	76.3	5.4	75	5	10	5	34620
16710+25.00	77.3	0	71	3	8	3	34688
16710+50.00	79.4	0	72	0	7	2	34760
16710+75.00	122.2	0	94	0	14	2	34854
16711+00.00	127.6	0	116	0	21	1	34970
16711+25.00	97	0	104	0	13	2	35074
16711+50.00	115.7	11.7	98	7	17	12	35165
16711+75.00	116.7	12.8	108	14	25	21	35259
16712+00.00	118.2	13	109	14	26	21	35354
16712+00.71	118.2	13.2	3	0	0	1	35357
16712+25.00	120.1	19.4	107	18	26	21	35446
16712+50.00	109.3	25.3	107	25	29	23	35528
16712+75.00	100.6	32.3	97	32	30	23	35593
16713+00.00	93.2	46	90	44	33	25	35639
16713+25.00	87.9	63.7	84	61	38	29	35662
16713+44.88	83.4	80.7	63	64	34	27	35661
16713+50.00	81.8	89.3	16	19	9	7	35658
16713+75.00	73.5	99	72	105	44	34	35658
16714+00.00	66	114.8	65	119	44	34	35571
16714+25.00	59.4	127.5	58	135	44	34	35494
16714+50.00	50.2	133.5	51	145	45	34	35400
16714+75.00	40.3	133.6	42	148	45	35	35294
16715+00.00	25.1	120.5	30	141	45	35	35183
16715+25.00	14	127.9	18	138	45	35	35063
16715+50.00	11.7	131.2	12	144	45	35	34931
16715+75.00	11.5	139.3	11	150	44	34	34792
16716+00.00	14.5	137.1	12	154	42	33	34650
16716+25.00	80.1	48.8	43	103	53	31	34590
16716+50.00	73.4	12.5	71	34	66	15	34627
16716+75.00	21.6	81.4	44	52	55	17	34619
16717+00.00	16.9	133.5	18	119	45	34	34518
16717+25.00	23.1	145.4	19	155	46	34	34382

ND 1804 Reconstruction							
Station	Area (SF)		Volume (CY)				
	End Area Excavation	End Area Embankment	Excavation	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
16717+50.00	28.5	172.1	24	176	45	34	34230
16717+75.00	32.4	187.1	28	200	43	34	34058
16718+00.00	37.1	146.8	32	186	42	33	33904
16718+25.00	46.8	155.4	39	168	42	32	33775
16718+50.00	53	159.5	46	175	42	33	33646
16718+75.00	60.3	140.9	52	167	42	32	33531
16718+94.38	58.1	146	43	124	33	24	33450
16719+00.00	60.9	130.4	12	35	10	7	33427
16719+25.00	50.5	150.4	52	156	46	31	33323
16719+50.00	39.2	136.5	41	159	48	32	33205
16719+75.00	46.1	117.7	39	141	47	31	33103
16719+90.38	57.8	82.6	29	68	28	19	33064
16720+00.00	70.3	78.4	23	34	16	12	33053
16720+25.00	76.9	74.4	68	85	41	27	33036
16720+50.00	80.2	59.7	72	75	35	24	33033
16720+75.00	61.3	0.9	66	34	22	15	33065
16720+80.38	59	1.4	12	0	2	1	33077
16720+92.25	53.7	2.6	25	1	5	3	33101

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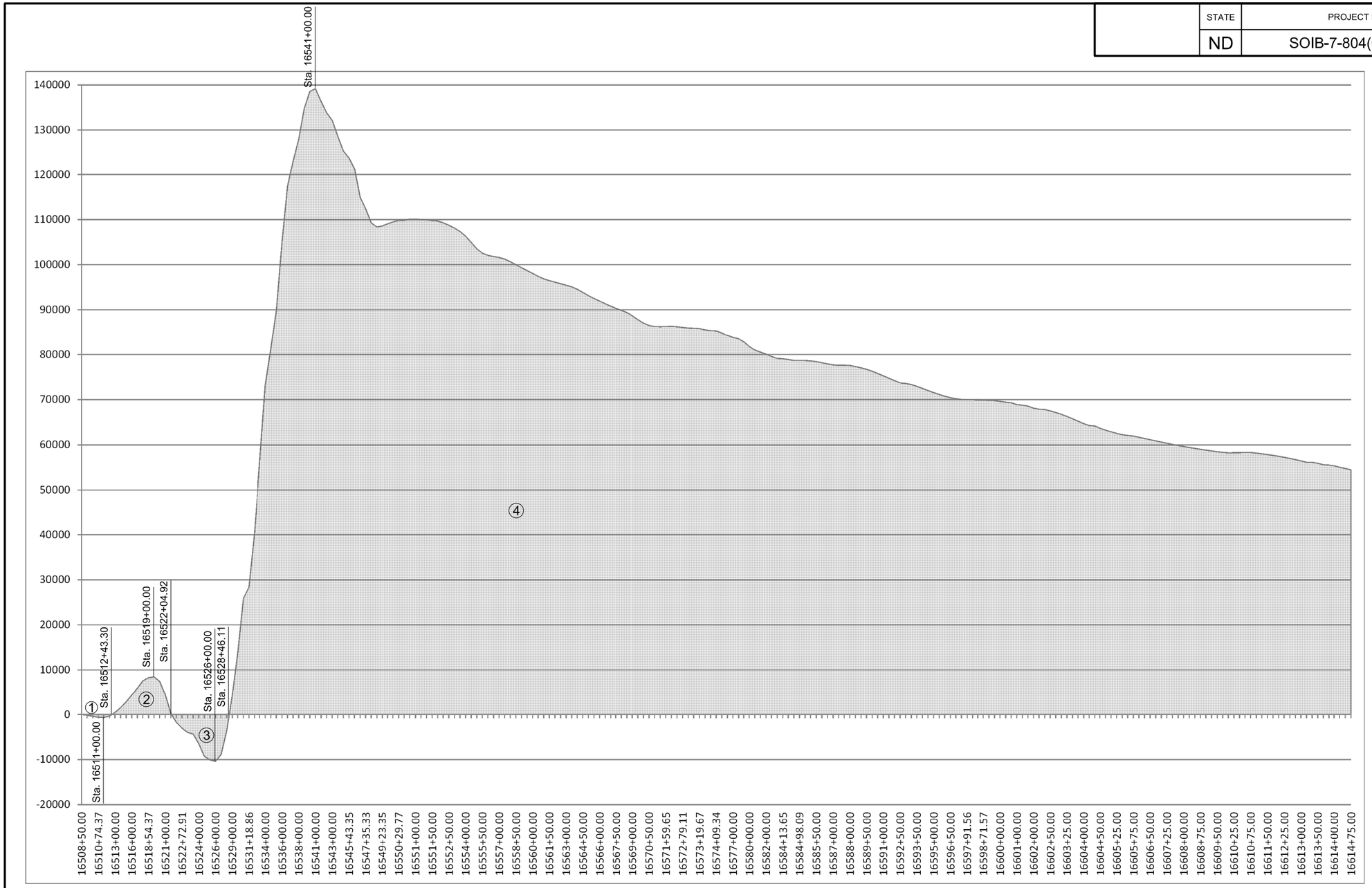
Earthwork Mass Diagram

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	10



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① Sta. 16512+43.30			
Excavation	=	1,306	CY
Embankment	=	1,306	CY
Topsoil	=	516	CY
CY Stationing	=	1,355	CY
AVG Haul	=	648	CY
	=	2.09	STA

② Sta. 16522+04.92			
Excavation	=	8,856	CY
Embankment	=	8,856	CY
Topsoil	=	2,028	CY
CY Stationing	=	43,160	CY
AVG Haul	=	8,470	CY
	=	5.10	STA

③ Sta. 16528+46.11			
Excavation	=	11,439	CY
Embankment	=	11,439	CY
Topsoil	=	1,700	CY
CY Stationing	=	40,867	CY
AVG Haul	=	10,392	CY
	=	3.93	STA

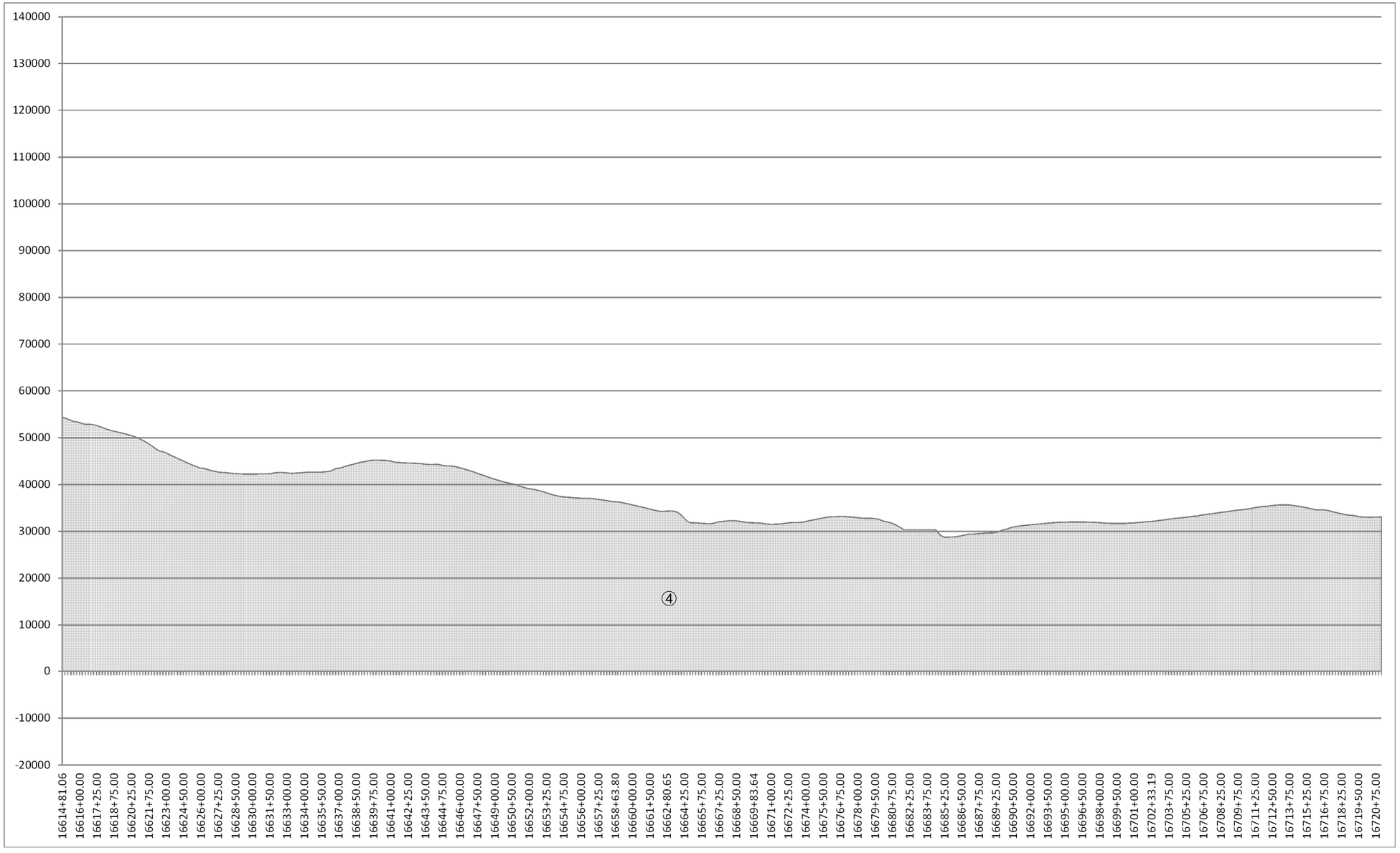
④ Sta. 16720+92.25			
Excavation	=	191,389	CY
Embankment	=	158,288	CY
Wast (Coal)	=	22,629	CY
Excess Exc	=	10,472	CY
Topsoil	=	35,103	CY
CY Stationing	=	11,284,336	CY
AVG Haul	=	139,174	CY
	=	81.08	STA

Earthwork Mass Diagram

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	11	11



PROJECT TOTAL			
Excavation	=	212,990	CY
Embankment	=	179,889	CY
Waste Coal	=	22,629	CY
Excess Exc	=	10,472	CY
Topsoil	=	39,347	CY
CY Stationing	=	11,369,718	CY
AVG Haul	=	158,684	CY
	=	71.65	STA

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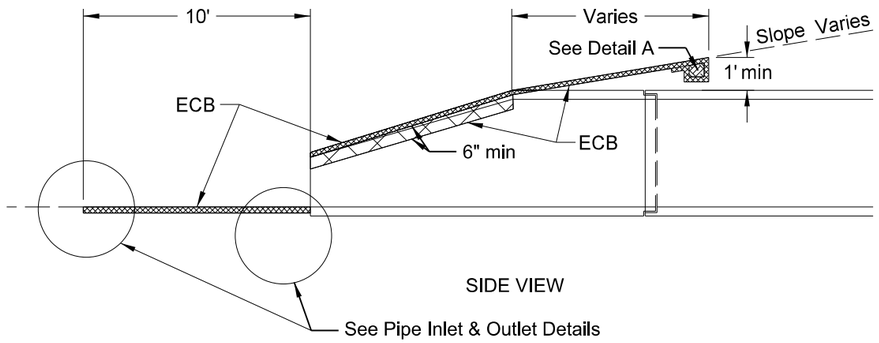
Earthwork Mass Diagram

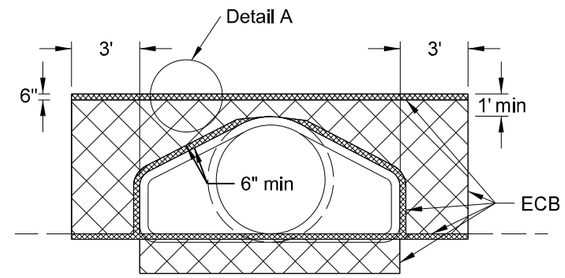
ND 1804 Reconstruction

Williams County, ND

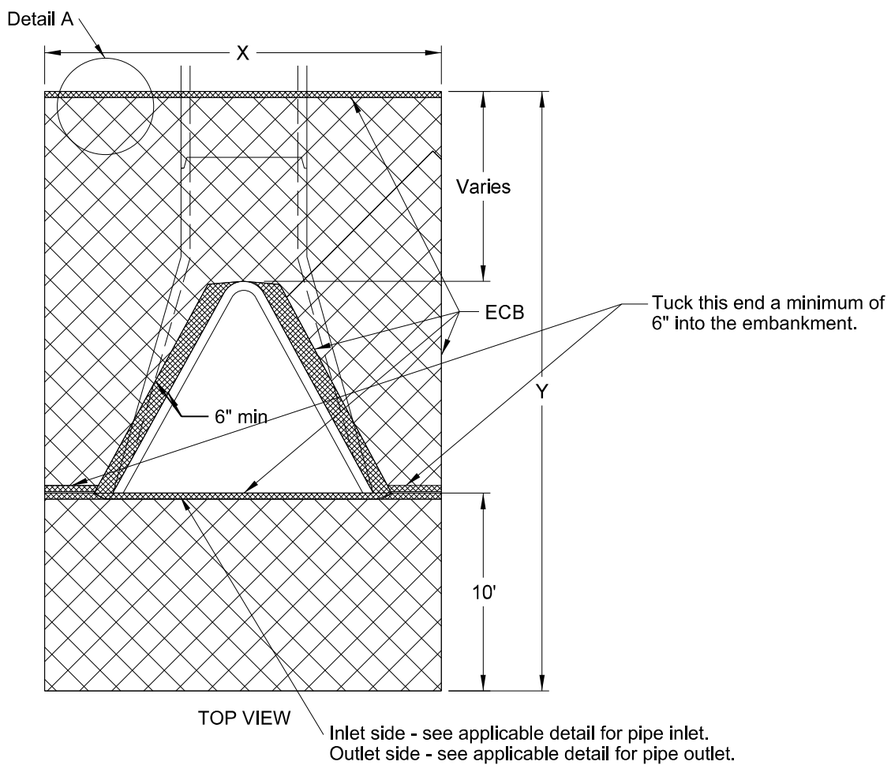
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	1



SIDE VIEW

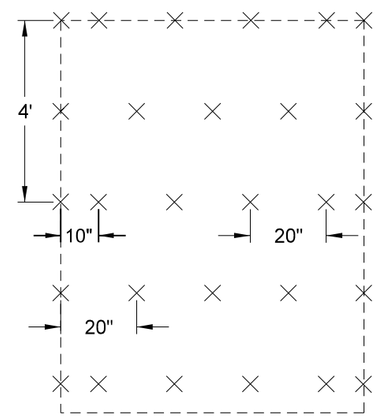


FRONT VIEW

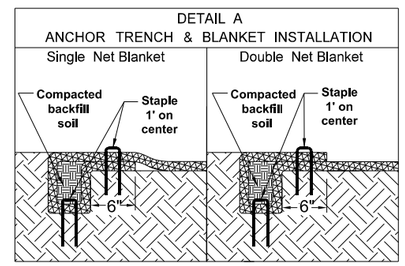


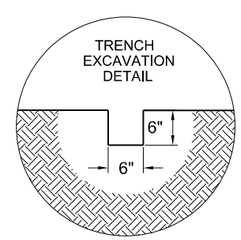
TOP VIEW

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



STAPLE PATTERN

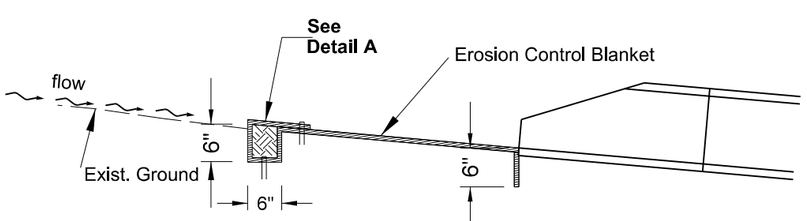




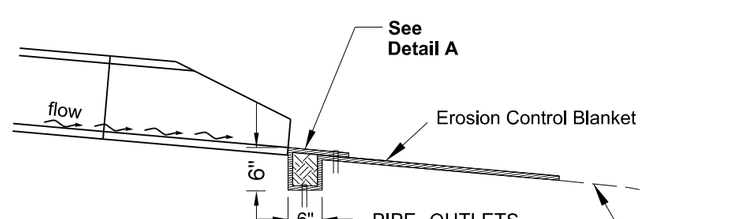
CENTERLINE CULVERTS				
DIA	X	Y	Surface area to be protected	ECB
Ft	Ft	Ft	SF	SY
1	8.3	15.4	124.0	14
1.25	8.9	20.1	171.7	19
1.5	9.5	20.1	181.5	20
2.0	10.5	17.6	172.1	20
2.5	11.6	18.5	195.1	22
3.0	12.7	19.2	216.7	24
3.5	13.3	19.2	225.2	25
Note: Quantities based on 4:1 slope				

APPROACH CULVERTS				
DIA	X	Y	Surface area to be protected	ECB
Ft	Ft	Ft	SF	SY
1.5	9.5	20.7	190.7	22
2.0	10.5	21.6	214.1	24
2.5	11.6	22.5	241.5	27
3.0	12.7	23.3	268.8	30
3.5	13.8	24.5	296.2	33
Note: Quantities based on 8:1 slope.				

CATTLE PASS				
DIA	X	Y	Surface area to be protected	ECB
Ft	Ft	Ft	SF	SY
4x6	16.2	22.8	303.3	34
Note: Quantities based on 4:1 slope				



PIPE INLETS



PIPE OUTLETS

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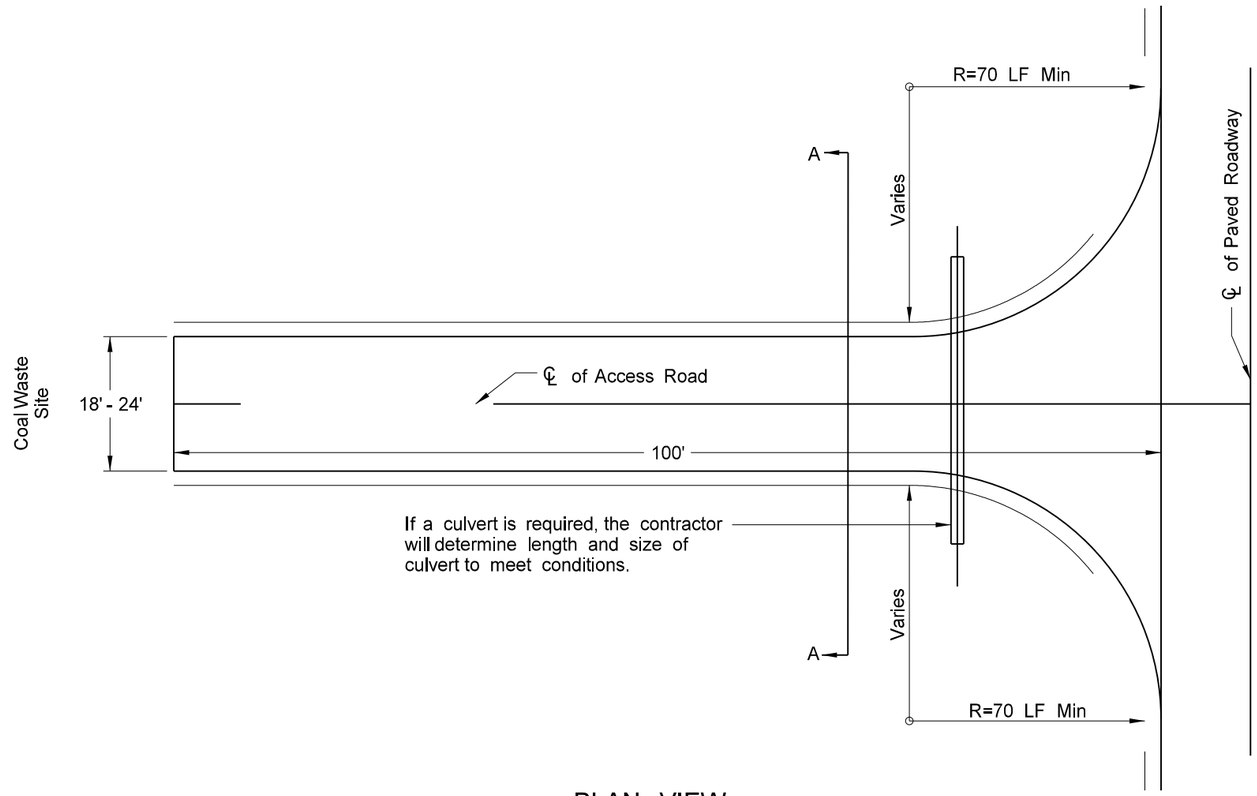
General Details
Erosion Control at Culvert Flared End Sections

ND 1804 Reconstruction

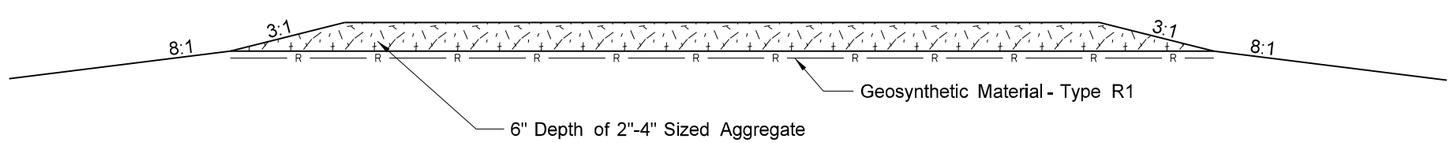
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	2

Note: Stabilized Construction Access is for use at the Coal Waste Site.



PLAN VIEW



A - A Cross Section

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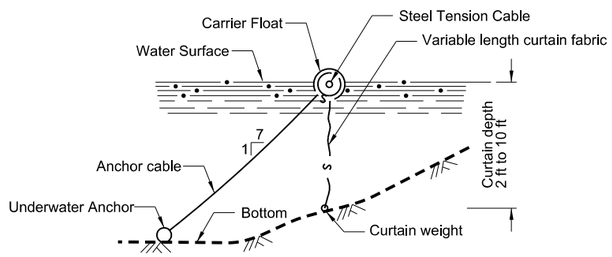
General Details
Stabilized Construction Access

ND 1804 Reconstruction

Williams County, ND

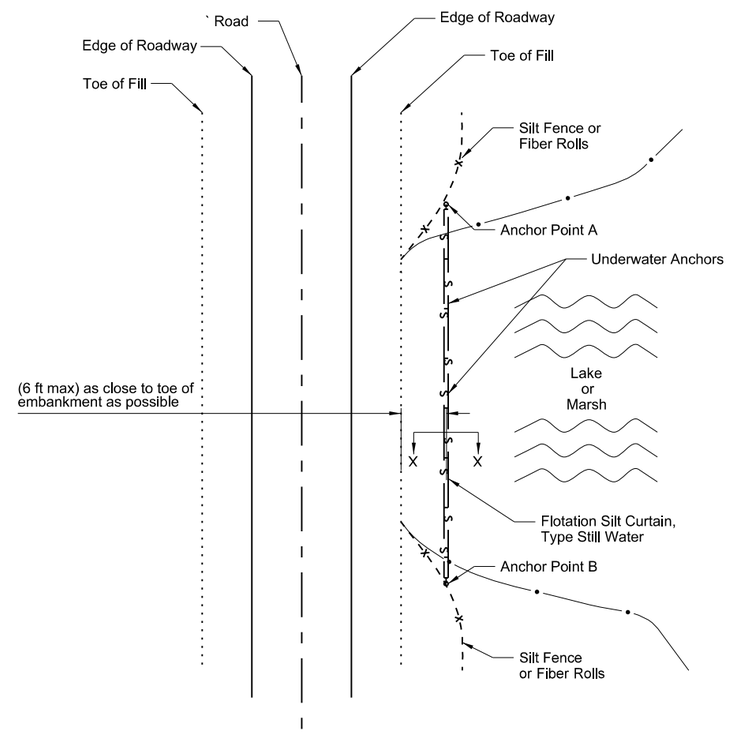
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	3

TYPICAL INSTALLATIONS
May vary with conditions



SECTION X-X
FLOTATION SILT CURTAINS

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



PLAN VIEW
FLOTATION SILT CURTAIN - TYPE STILL WATER
The silt curtain shall extend onto shore and shall also be anchored there.

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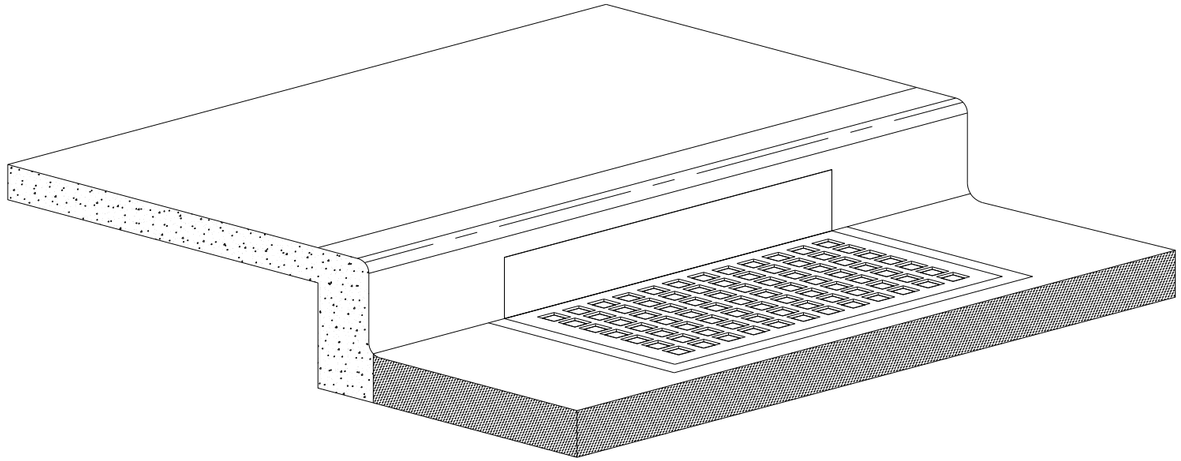
General Details
Temporary Erosion Control - Flotation Silt Curtain

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	4



Inlet Protection Device

Installation Notes:

1. Place device tightly against drain opening and cover entire grate. Extend the device at least 2 inches past the grate toward the street.

2. Overlap the segments at longer openings.

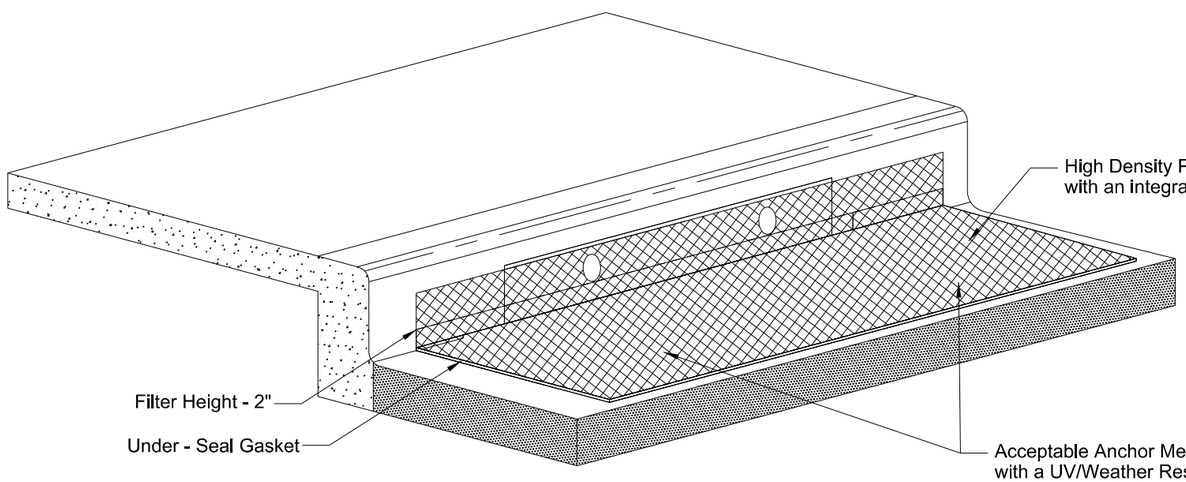
3. Anchor the device so that water cannot flow behind it.

General Notes:

1. Submit proposed substitutions to the Engineer for approval.

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

3. Inlet protection is to be used (and reused) as needed to prevent material from entering inlets as the work progresses through the project.



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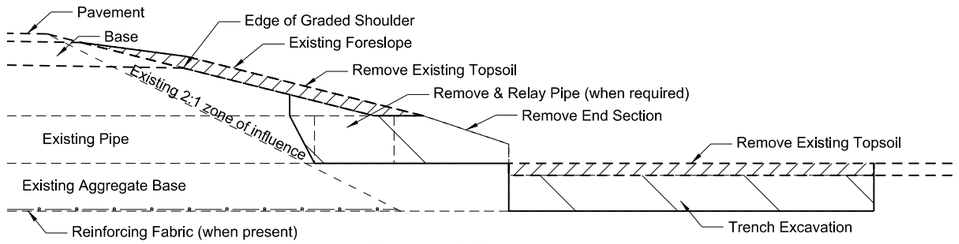
General Details
Inlet Protection Device

ND 1804 Reconstruction

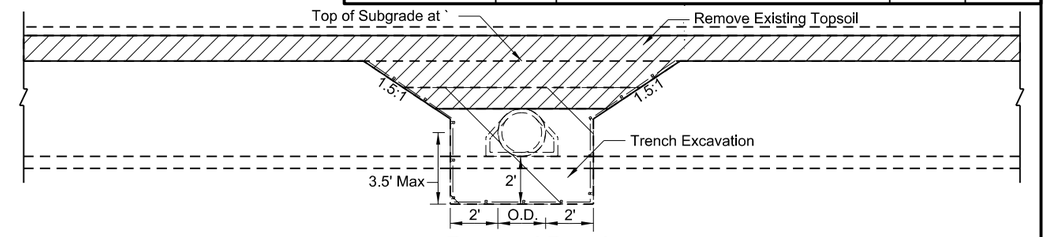
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	5



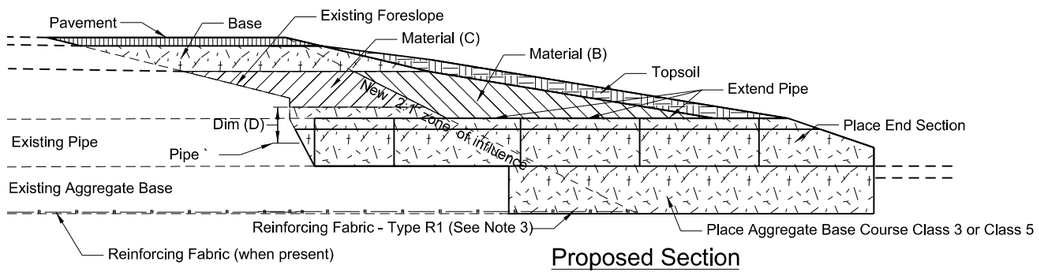
Removal Section

Cross Section View



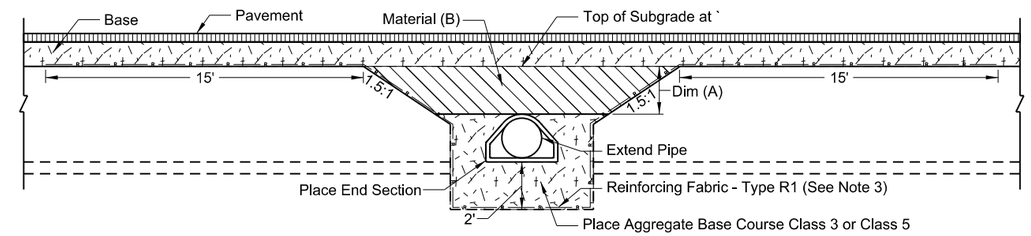
Removal Detail

Side View



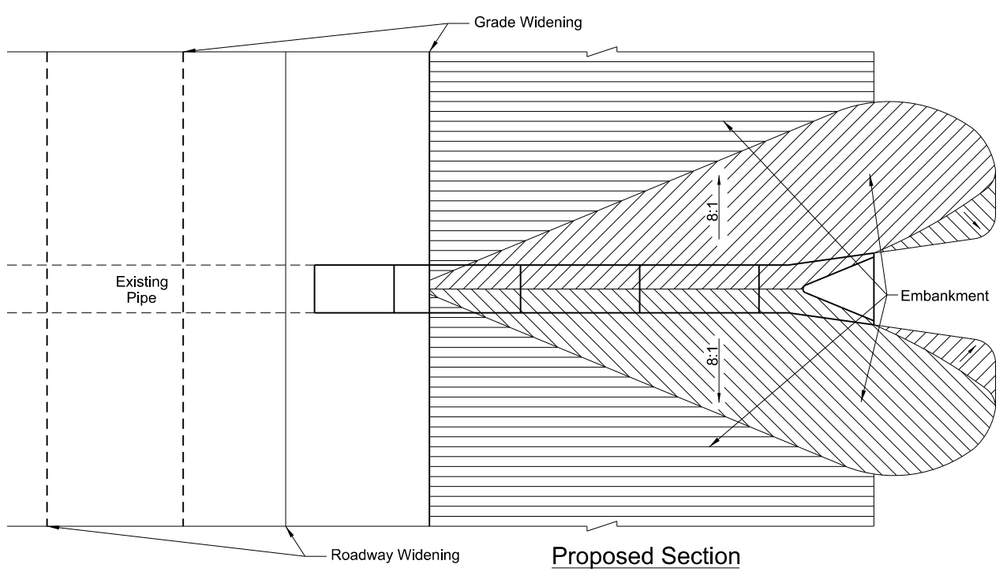
Proposed Section

Cross Section View



Backfill Detail

Side View (Topsoil not shown)



Proposed Section

Plan View

Pay Items
1) Pipe*
2) Remove & Relay Pipe - All Types & Sizes (when required)
3) Remove & Reset End Section or
   Remove End Section and Place New End Section
4) Reinforcement Fabric - Type R1
5) Borrow Excavation (Compaction Control Type A) or
   Common Excavation-Type A
6) Topsoil
7) Seeding
8) Mulching

*Included in Pipe Pay Item
1) Pipe
2) Trench excavation
3) Aggregate Base Course Class 3 or Class 5

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

NOTES:
1. Embankment may be either Borrow Excavation (Compaction Control - Type A) or Common Excavation - Type A
2. Aggregate may be either Class 3 or Class 5 Aggregate Base Course.
3. When Reinforcing Fabric is provided in the plans at pipe extensions, expose the edge of the existing fabric and connect the new fabric. This may require the removal and resetting of additional sections of pipe. Reinforcing Fabric is not required outside the 2:1 zone of influence.

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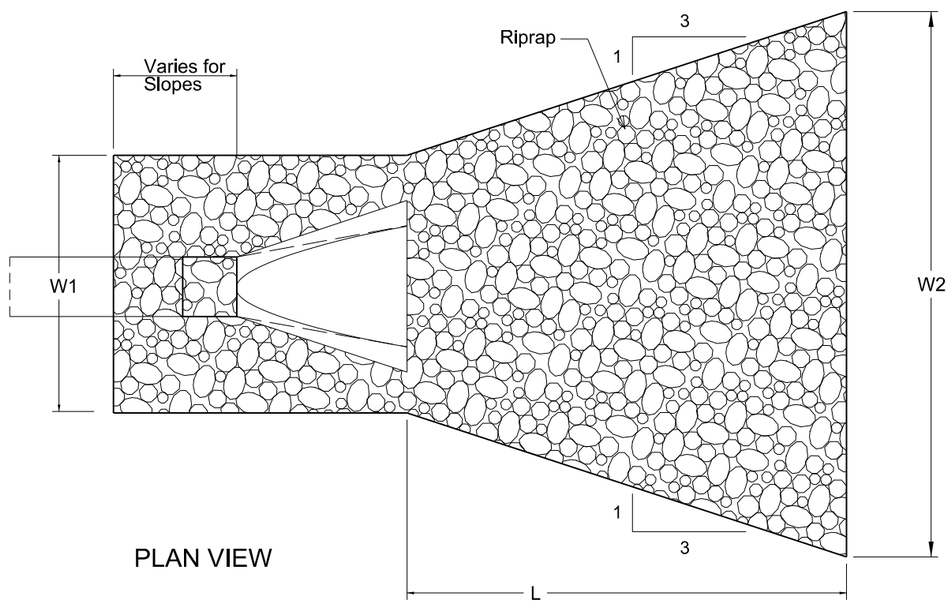
General Details
Mainline Pipe Extension Detail For Adding a Lane

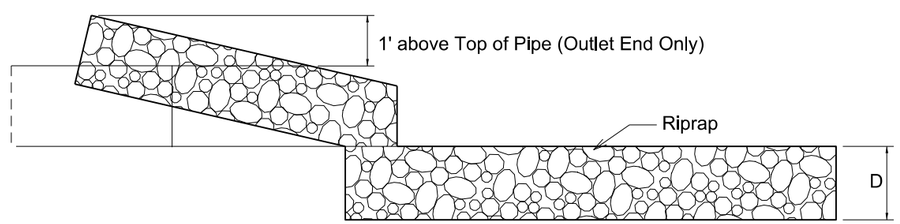
ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	6



PLAN VIEW



PROFILE VIEW

GRADE I RIPRAP									
End Station / Location	End Offset	Culvert Dia. Or Span	Width of Apron At Culvert W_1	Length of Apron L	Riprap Thickness D	Width of Apron End W_2	Grade 1 Riprap	RR Fabric	S
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	CY	SY	__
16523+89	116' LT	2.0	7.5	12.5	2.75	15.8	27.0	50.0	3
16524+00	90.3' LT	3.5	10.5	21.0	2.75	24.5	62.0	98.0	3
16547+36	117.1' LT	3.0	9.0	12.0	2.75	17.0	29.0	52.0	3
16593+13	60' LT	2.0	7.5	12.5	2.75	15.8	27.0	50.0	3
16601+73	74' LT	3.5	10.5	21.0	2.75	24.5	62.0	98.0	3
16610+66	66' LT	3.0	9.0	12.0	2.75	17.0	29.0	52.0	3
16617+98	58.5' RT	3.0	9.0	12.0	2.75	17.0	29.0	52.0	3
16636+91	72.1' LT	3.0	9.0	12.0	2.75	17.0	29.0	52.0	3
*16663+51	89.1' LT	3.0	9.0	17.0	2.75	17.0	62.0	98.0	3

*Connect riprap to Stony Creek RCB outlet riprap pad.

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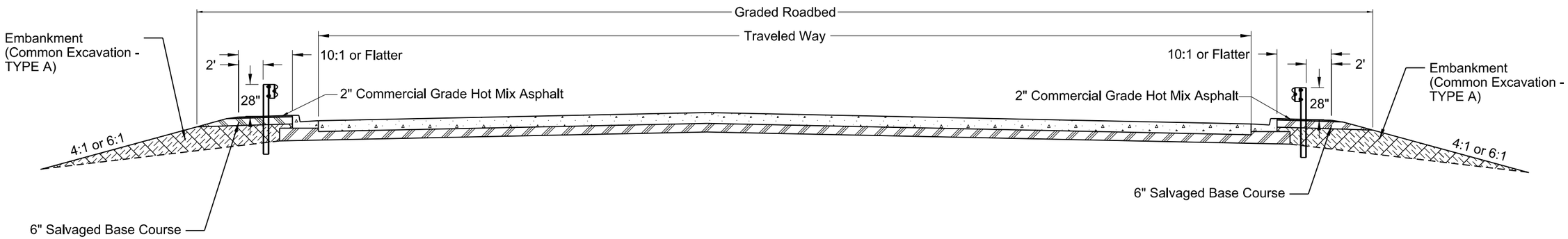
General Details
Riprap at Pipe Outlets

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	7



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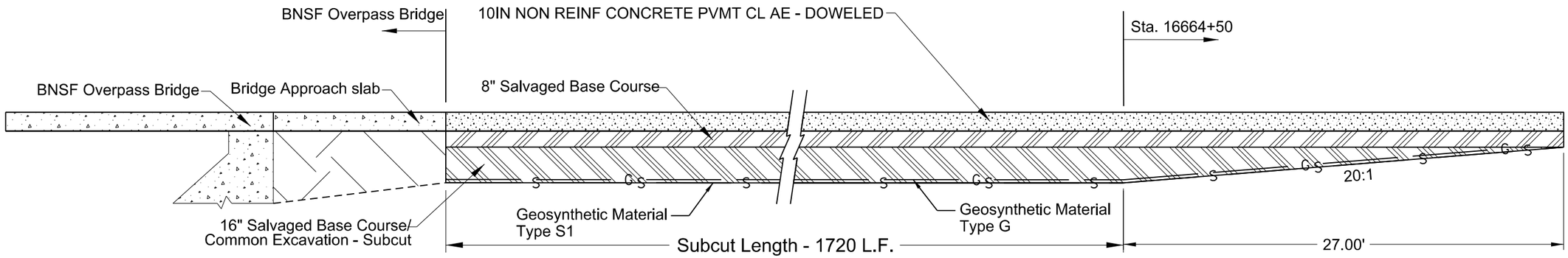
General Details
Typical Surfacing at Bridge Ends with Guardrail

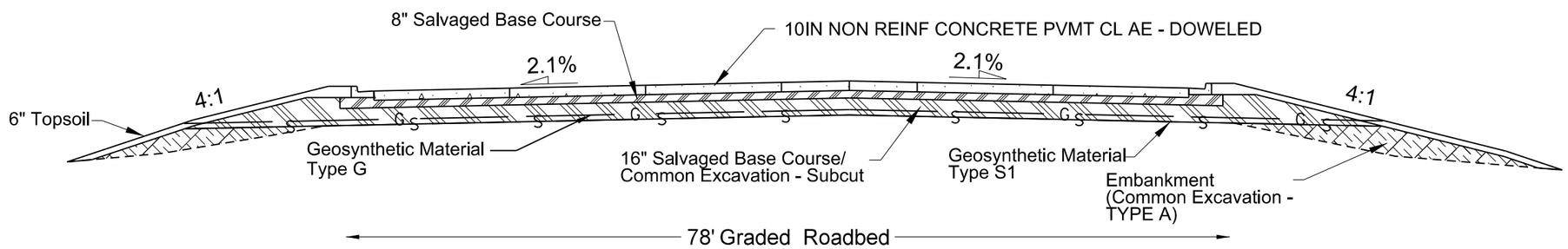
ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	8



Subcut Repair Section - Profile View



Subcut Repair Section - Crossection View

Spec	Code	Bid Item	Unit	Quantity
203	0138	COMMON EXCAVATION-SUBCUT		
		Subcut Repair Section	CY	6683
302	0100	SALAVAGED BASE COURSE		
		Subcut Repair Section	TON	12531
709	0100	GEOSYTHETIC MATERIAL TYPE G		
		Subcut Repair Section	SY	15167
709	0161	GEOSYNTHETIC MATERIAL TYPE S1		
		Subcut Repair Section	SY	15167

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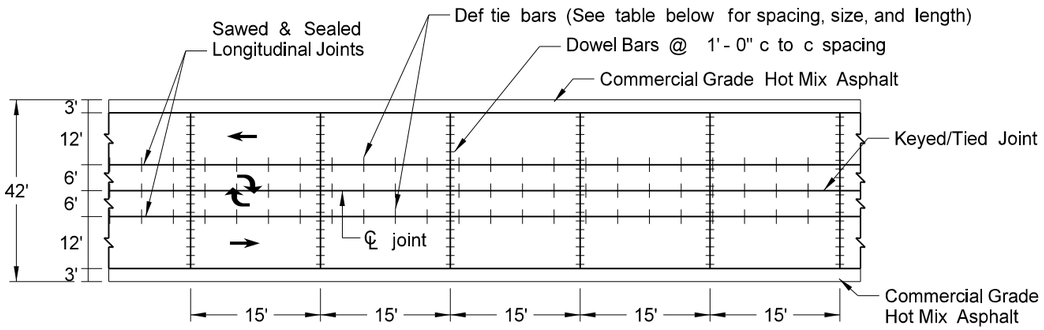
General Details
Subcut Repair Details

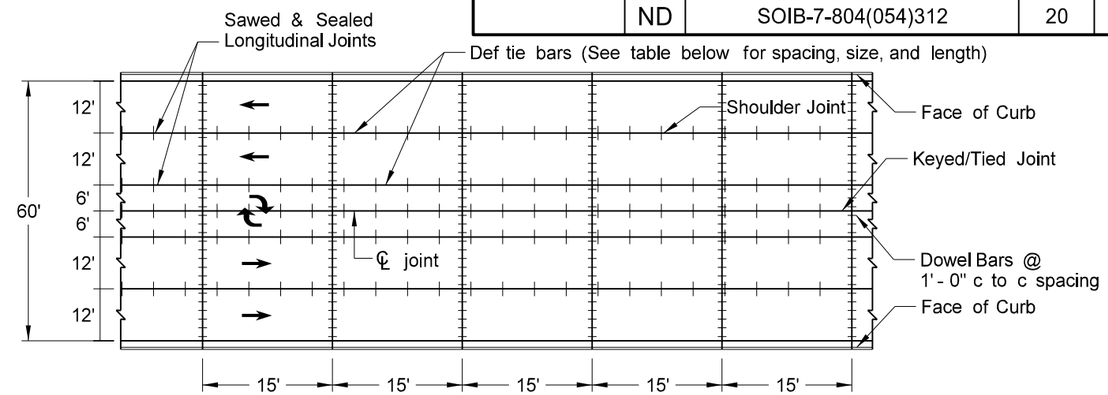
ND 1804 Reconstruction

Williams County, ND

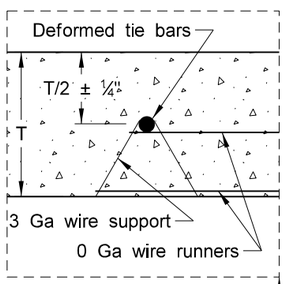
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	9

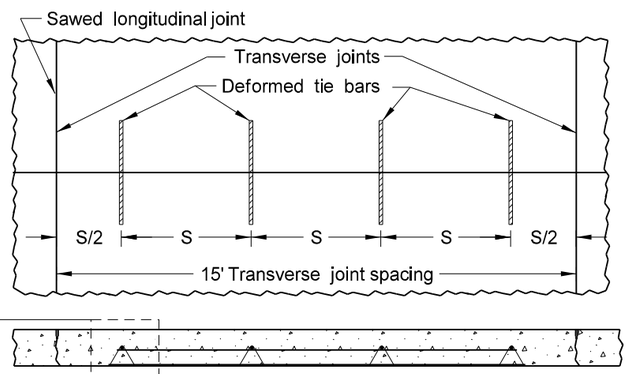


Mainline Joints - Rural
15' joint spacing

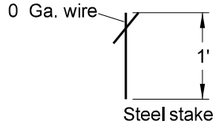


Mainline Joints - Urban
15' joint spacing

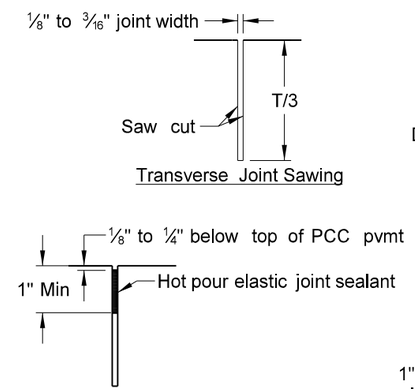




Longitudinal Tie Bar Assembly
(One unit shown)

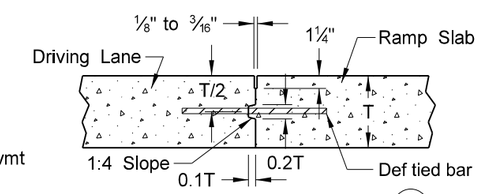


Steel stake

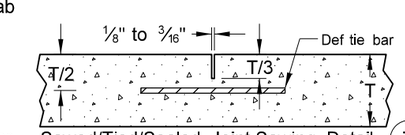


Transverse Joint Sawing

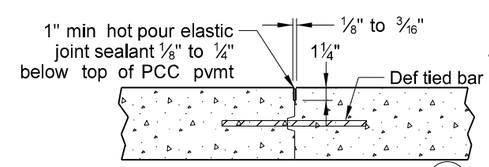
Transverse Joint Sealing



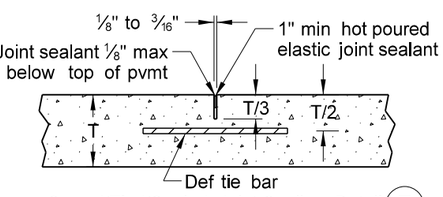
Keyed/Tied Joint Sawing Detail (K)
Longitudinal



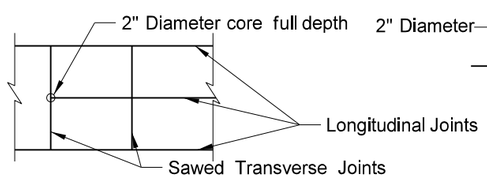
Sawed/Tied/Sealed Joint Sawing Detail (T)
(Longitudinal)

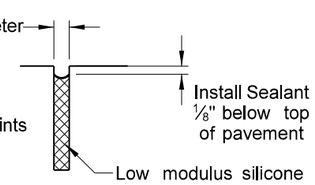


Keyed/Tied Joint Sealing Detail (K)
Longitudinal



Sawed/Tied/Sealed Joint Sealing Detail (T)
(Longitudinal)



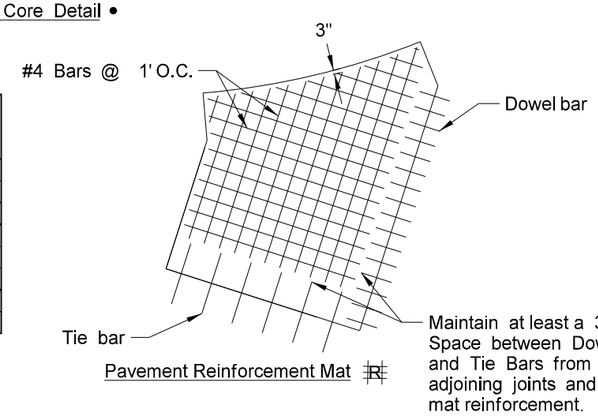


2" Diameter Core Detail •

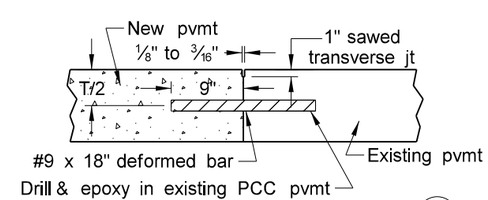
Notes:

1. S = Tiebar spacing
2. T = Pavement thickness
3. Place dowels in ramp tapers also.
4. Place no tie bar within 15" of a transverse joint.
5. 2" diameter core shall be the full depth of pavement and completed in the same time frame of sawed joints.

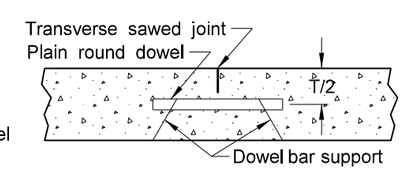
Longitudinal Joint Tie Bar Size, Length, and Spacing		
	Grade 40	Grade 60
Pavement Depth	10"	10"
CL ML		
Bar Size x Length (S=30")	#5 Bar x 30"	#4 Bar x 36"
Bar Size x Length (S=45")	#6 Bar x 36"	#5 Bar x 42"
Shoulder		
Bar Size x Length (S=30")	#4 Bar x 24"	#3 Bar x 30"
Bar Size x Length (S=45")	#5 Bar x 30"	#4 Bar x 36"



Pavement Reinforcement Mat (R)



Deformed Bar Installation (2'-0" c to c) (D)
(Transverse Joints)



Doweled Transverse Joint

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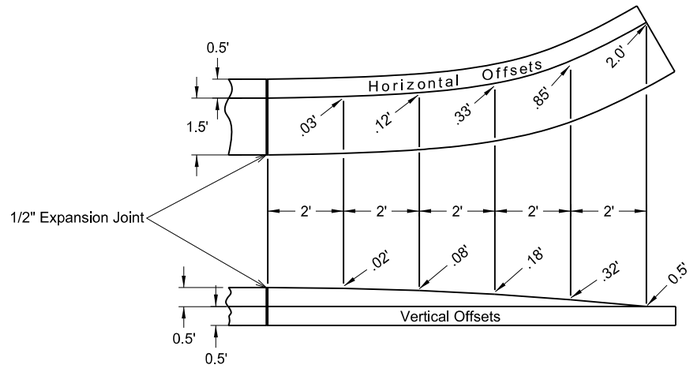
General Details
PCC Pavement Joint Details

ND 1804 Reconstruction

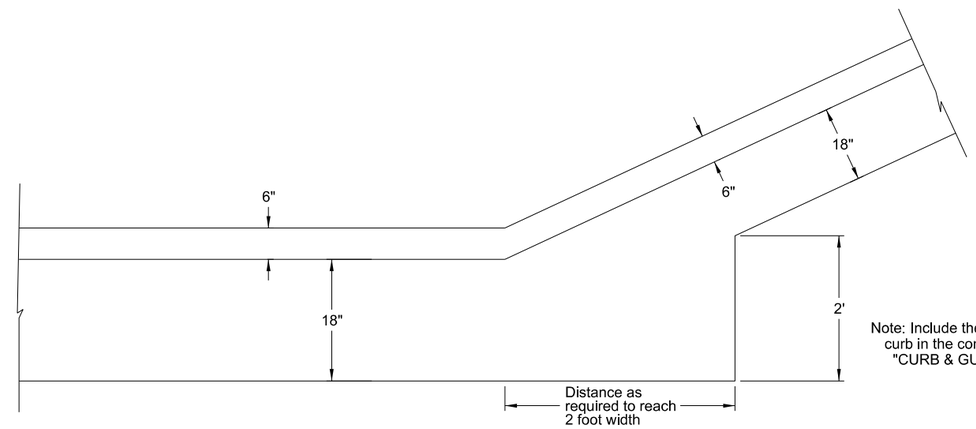
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	10



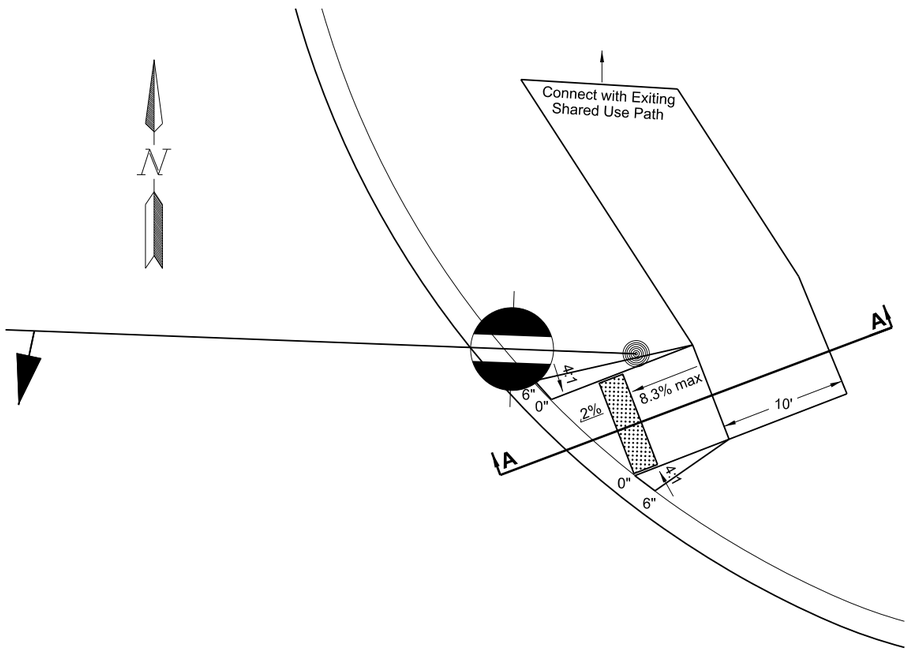
Note: Include the cost for the Termination Transition In the contract unit price for "CURB & GUTTER - TYPE 1"

CURB and GUTTER
TERMINATION TRANSITIONS

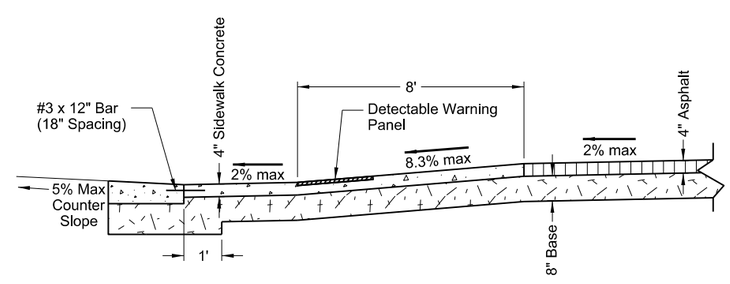


Note: Include the cost for extra width curb in the contract unit price for "CURB & GUTTER - TYPE 1"

Extra Width Curb



CURB RAMP DETAIL at 20TH AVE E
1" = 12'



SECTION A-A

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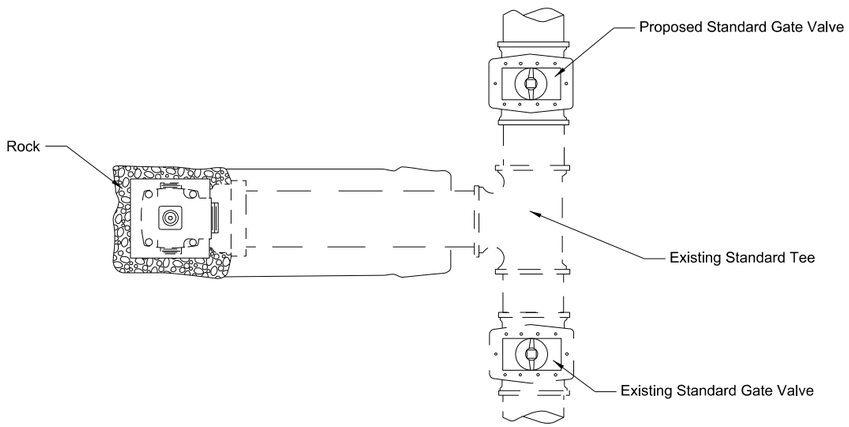
General Details
Curb and Gutter Details

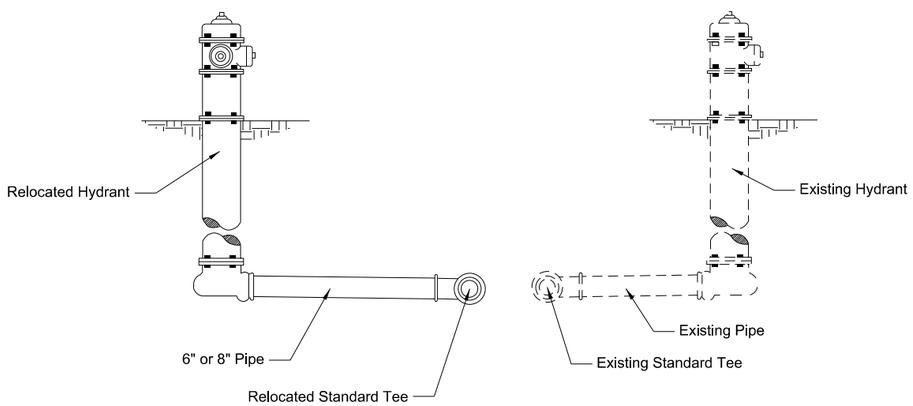
ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	11



STANDARD FIRE HYDRANT & CONNECTION



LAYOUT FOR RELOCATION OF HYDRANTS

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General Details
Hydrant Details

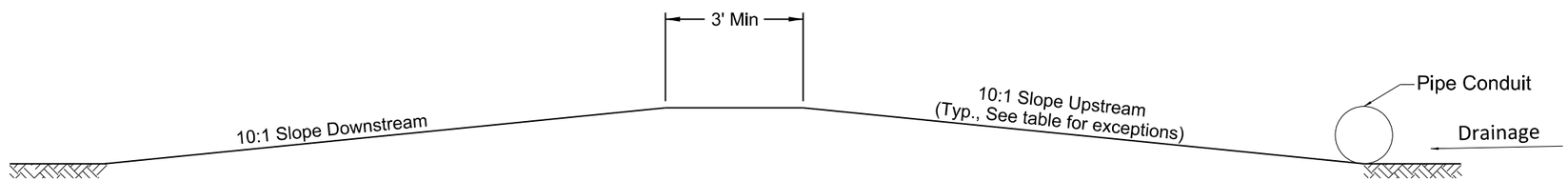
ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	12

DITCH BLOCKS			
Station (ft)	**Elevation (ft)**	**Upstream Slope (H:V)**	**Downstream Slope (H:V)**
*16550+19 LT	2074.50	4:1	10:1
16600+87 LT	2018.00	10:1	10:1
16632+94 LT	1964.00	10:1	10:1
**16648+74 LT	1936.41	7:1	10:1
16648+91 RT	1935.43	10:1	10:1
16653+24 RT	1910.44	10:1	10:1

* Outside of clear zone.
** Upstream slope ties into manhole lid.



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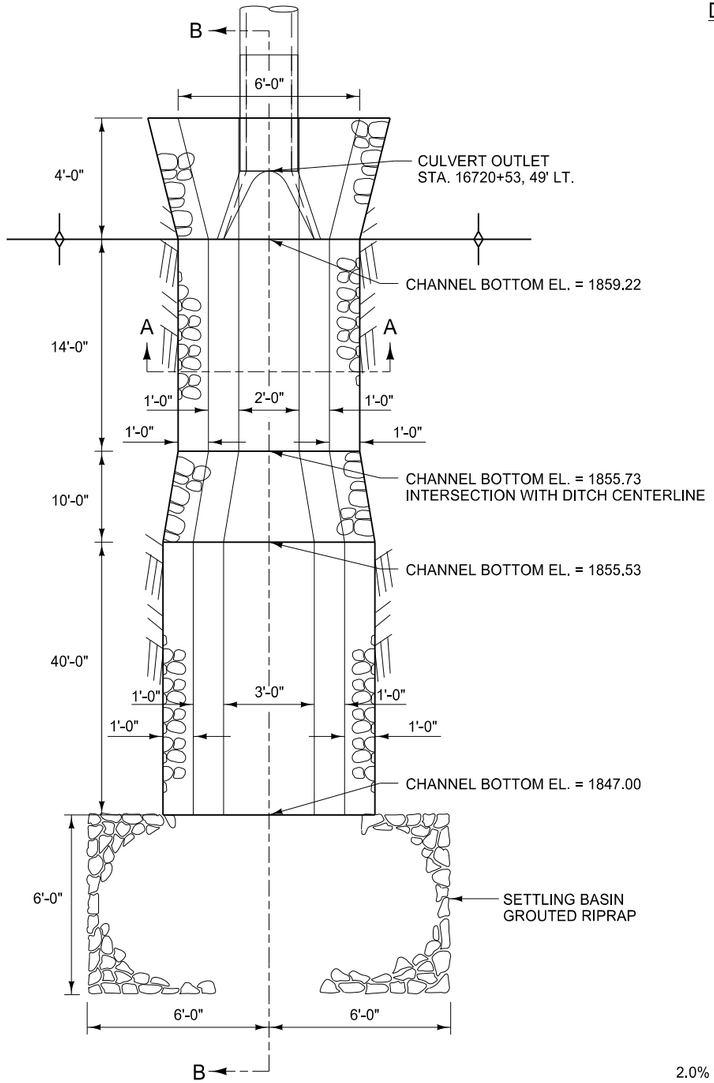
General Details
Ditch Block Detail

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	13

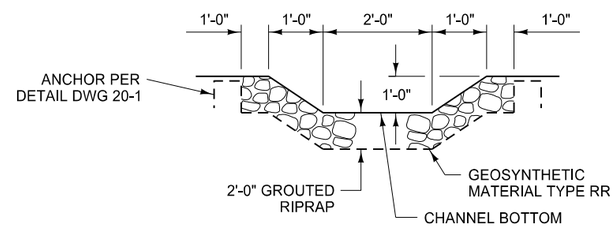
RIPRAP DRAINAGE CHUTE



PLAN VIEW

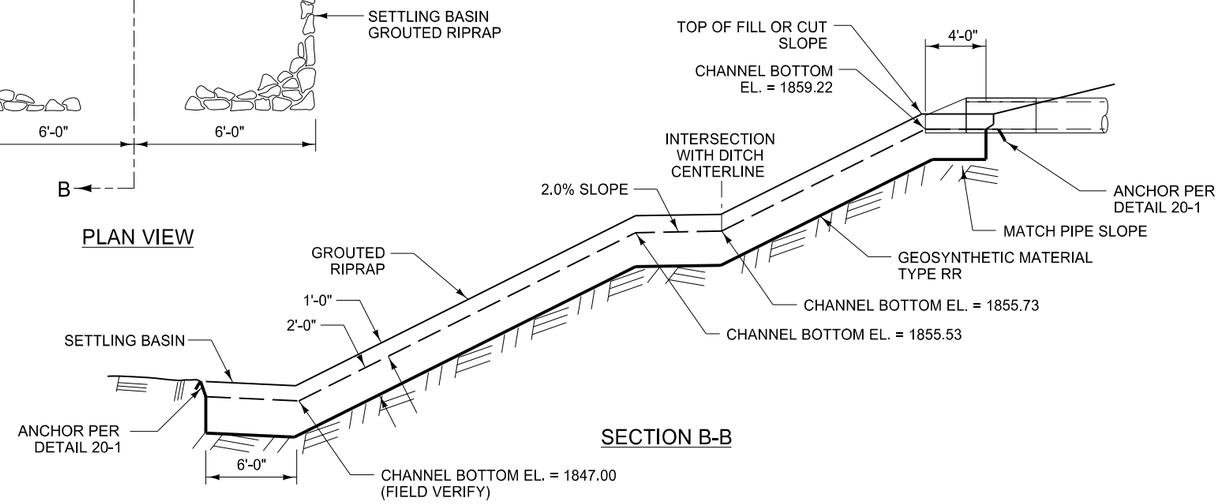
DRAINAGE CHUTE					
End Station /Location	End Offset	Culvert Dia. or Span	Riprap Grade 1	Grout for Riprap	Geosynthetic Material Type RR
(ft)	(ft)	(ft)	CY	SY	SY
16720+53	49' LT	1.5	60.0	60.0	75.0

Note: Include the cost for Riprap Grout in the contract unit price for Riprap Grade 1.



SECTION A-A

RIPRAP CHUTE



SECTION B-B

*NOTE: ALL RIPRAP IS GRADE 1

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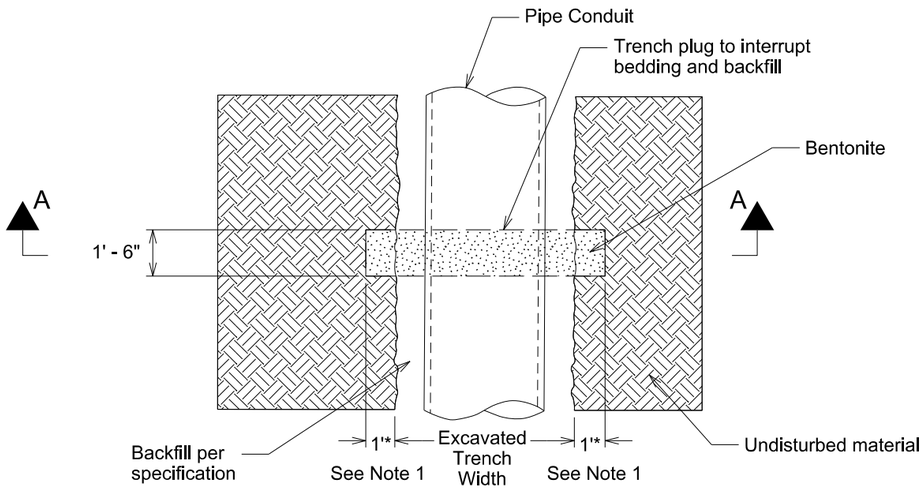
General Details
Drainage Chute Detail

ND 1804 Reconstruction

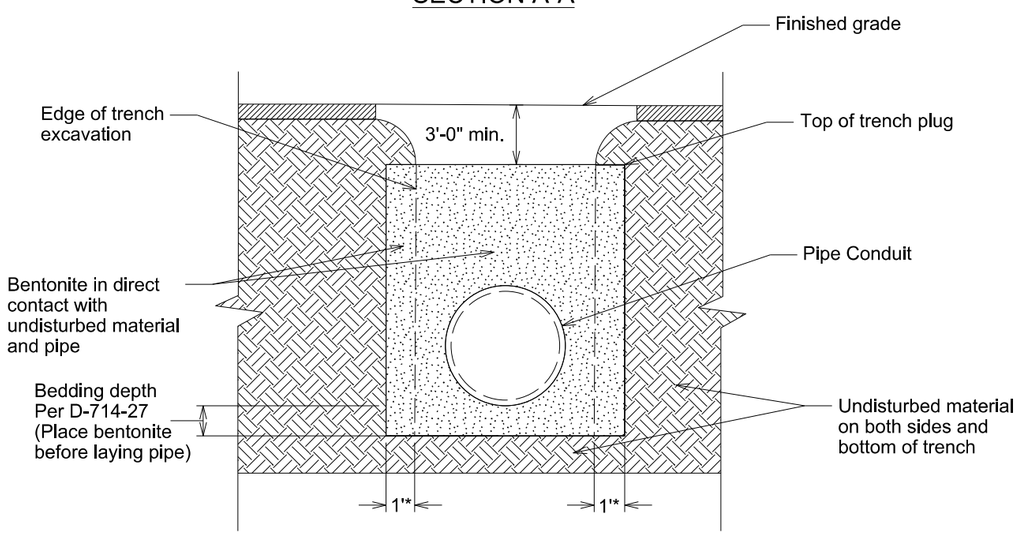
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	14

PLAN



SECTION A-A



NOTES:

1. Extend trench plug key a minimum of 1'-0" beyond undisturbed material (excavated trench width).
2. Install trench plugs as indicated on the contract drawings or as directed by the engineer.
3. See "Trench Plug" Special Provision for more information.

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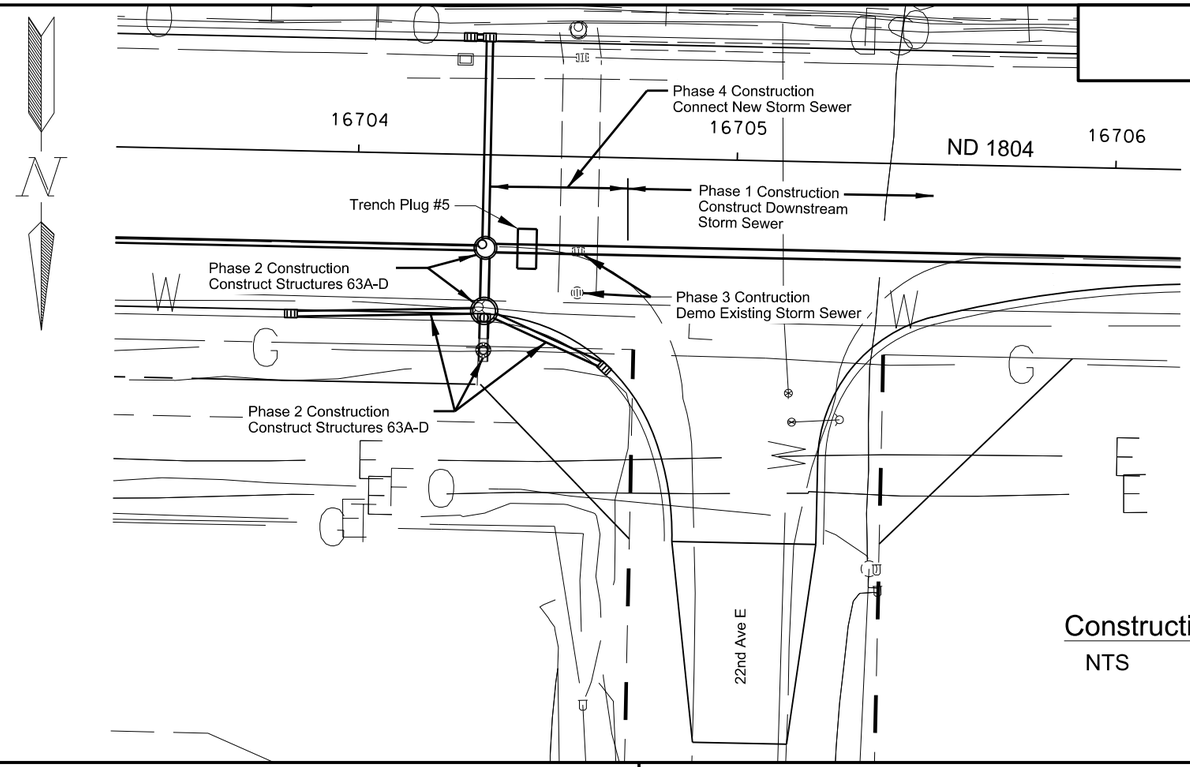
General Details
Trench Plug Detail

ND 1804 Reconstruction

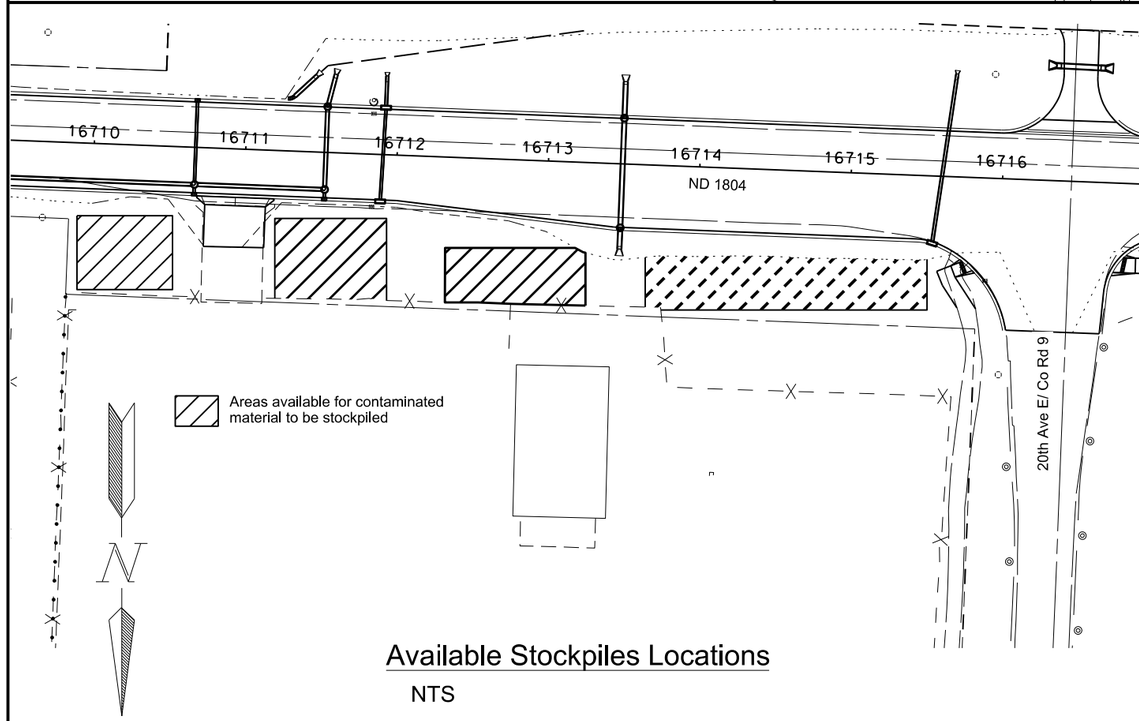
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	15



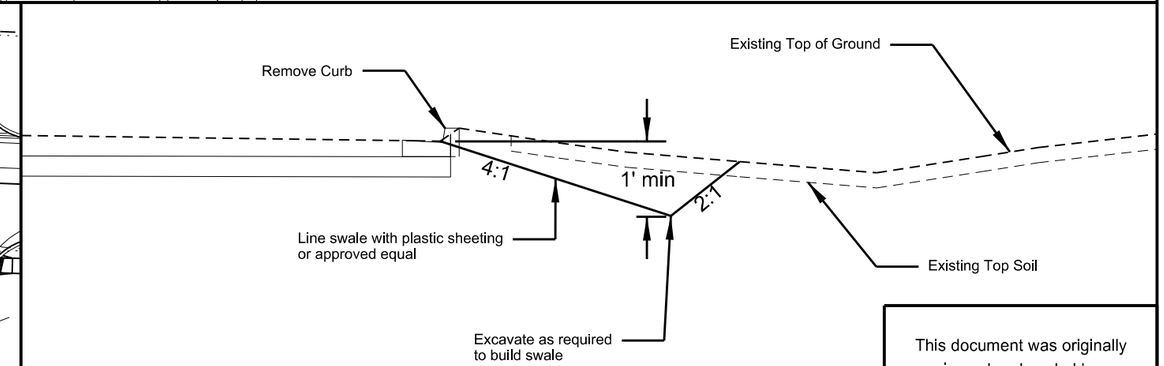
Construction Phasing

NTS



Available Stockpiles Locations

NTS



Temporary Drainage Swale
Sta 16694+00 to Sta 16704+60

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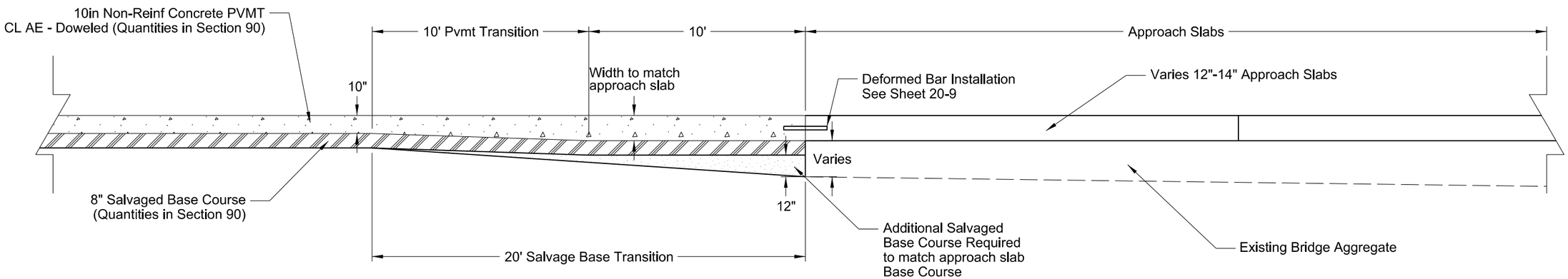
Storm Sewer Construction Phasing

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	16



Spec	Code	Bid Item	Unit	Quantity
302	0100	SALVAGED BASE COURSE		
		Additional Material Required	TON	139

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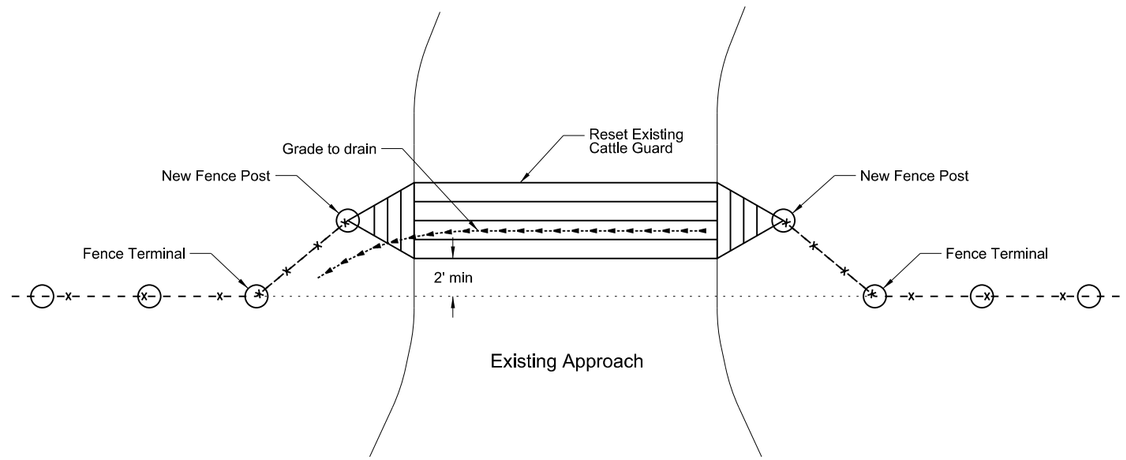
Backfill Detail
at Structure Approach

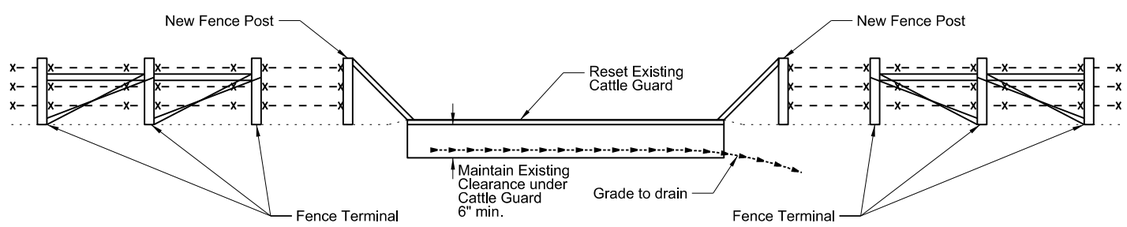
ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	20	17



Locations	
Station	Offset
16571+46	RT
16587+38	RT



CATTLE GUARD RESET

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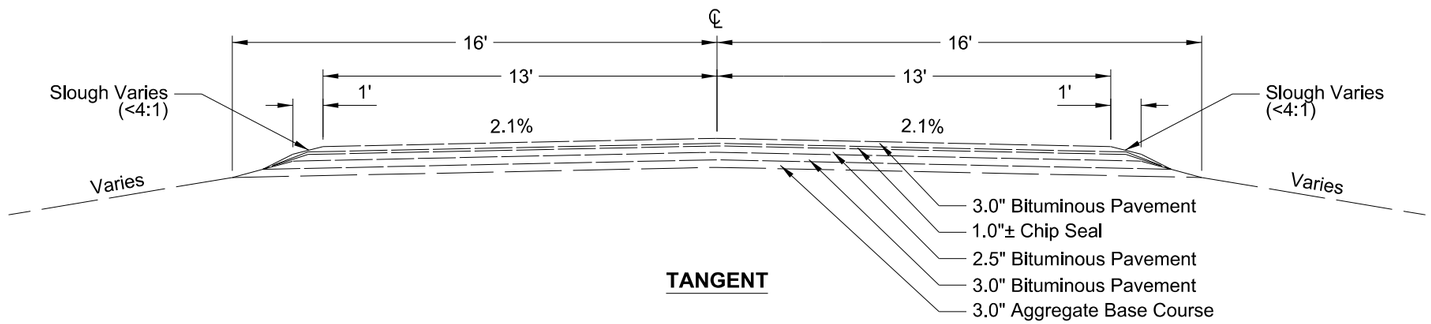
General Details
Cattle Guard Details

ND 1804 Reconstruction

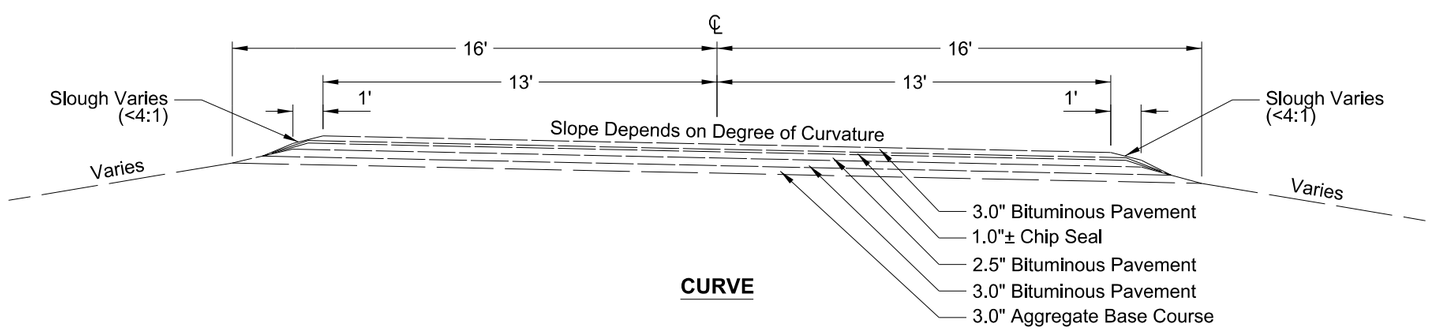
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	1

EXISTING TYPICAL SECTIONS
Sta 16522+44 to Sta 16653+00



TANGENT



CURVE

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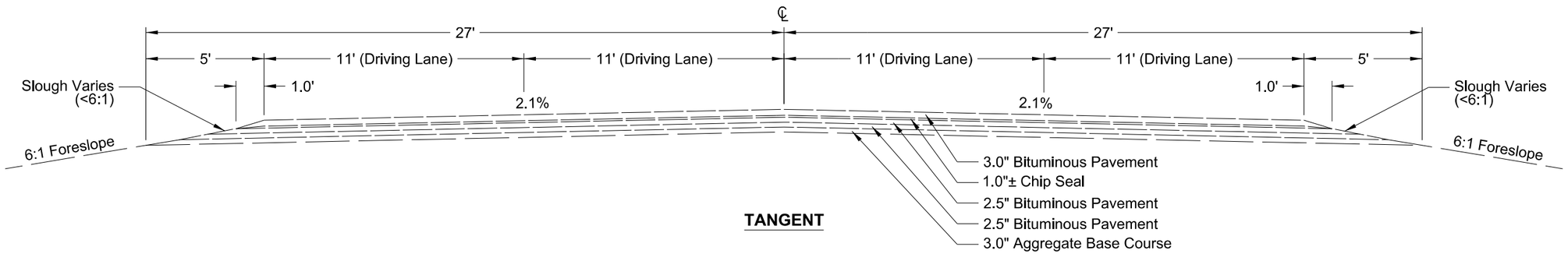
Existing Typical Sections

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	2

EXISTING TYPICAL SECTIONS
Sta 16653+00 to Sta 16681+00



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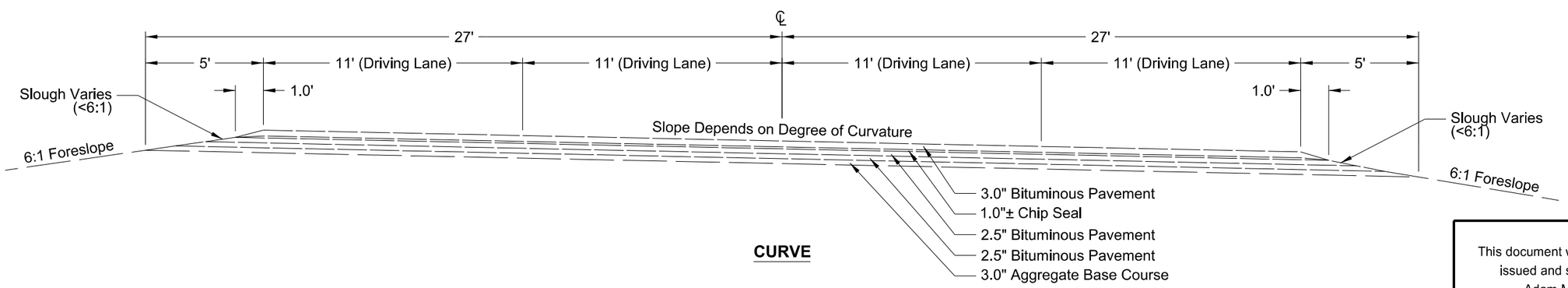

CURVE

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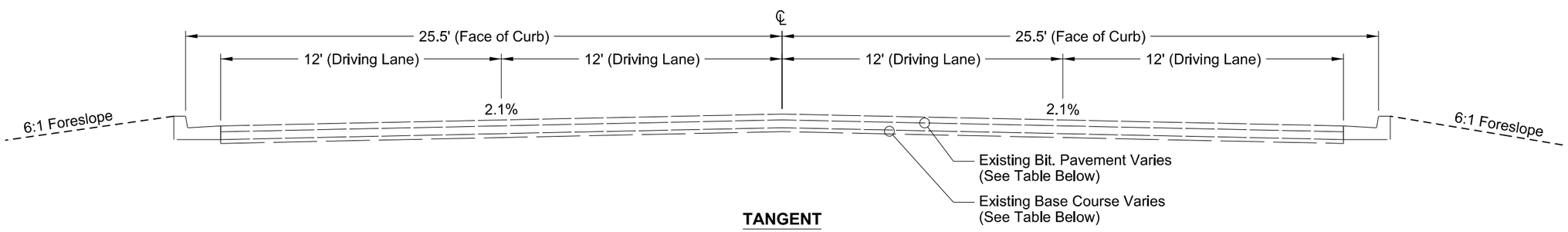
Existing Typical Sections

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	3

EXISTING TYPICAL SECTIONS
Sta 16681+00 to Sta 16721+00



TYPICAL SURFACING THICKNESSES			
Begin Station	End Station	Bituminous Pavement (in.)	Aggregate Base Course (in.)
16681+00	16690+85	7.0	2.0
16690+85	16696+65	6.5	18.0
16696+65	16721+00	7.0	2.0

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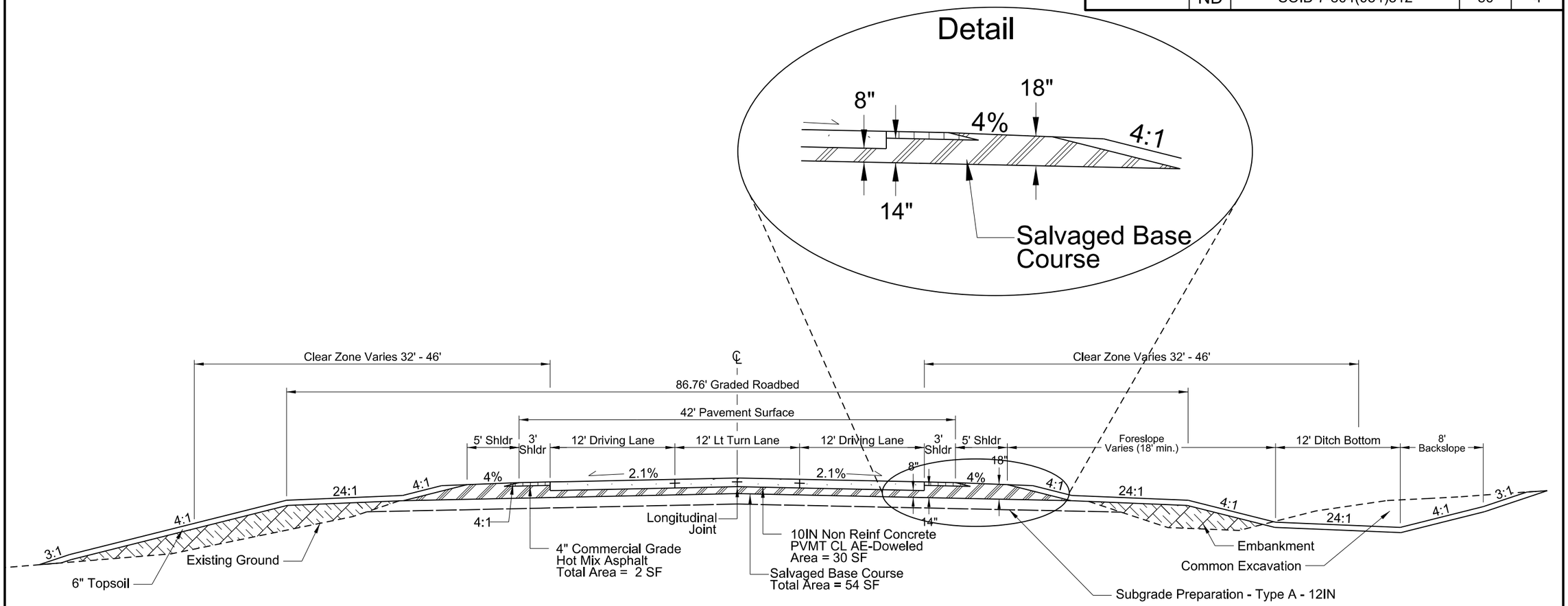
Existing Typical Sections

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	4



RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER TURN LANE

Sta 16522+44.37 to Sta 16550+29.77

Sta 16574+09.34 to Sta 16584+13.65

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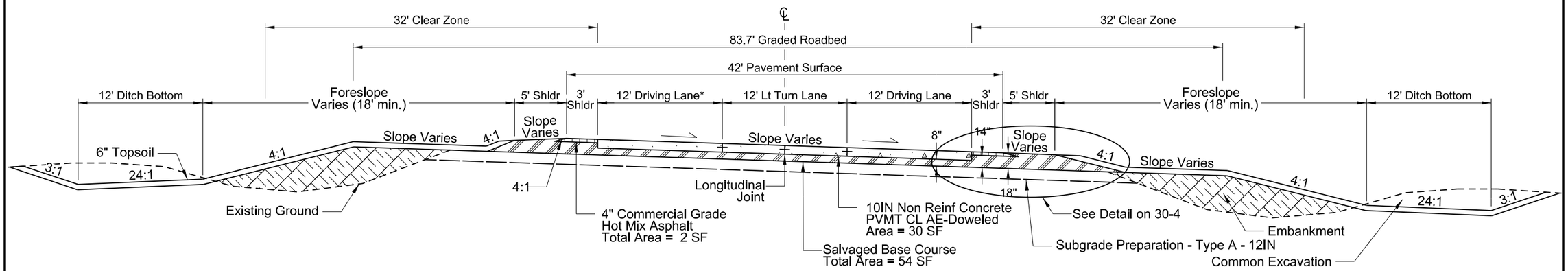
Proposed Typical Sections

ND 1804 Reconstruction

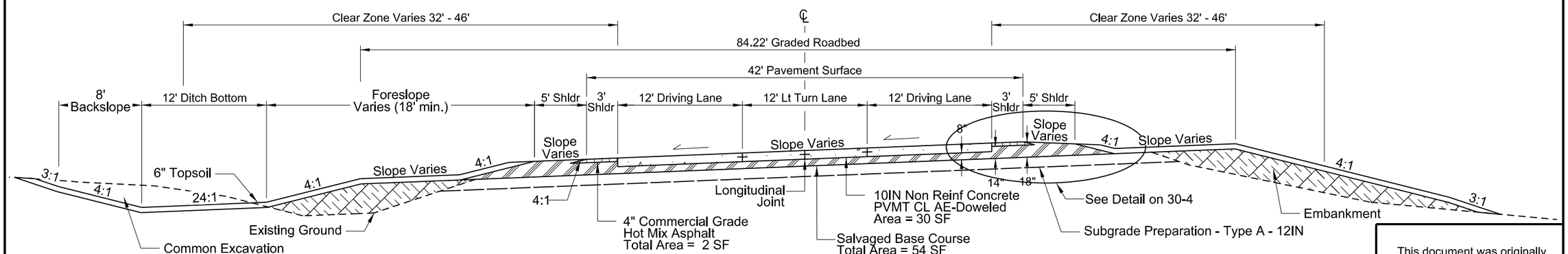
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	5



* Driving lane width varies from Sta 16591+31.56 to Sta 16596+52.78

RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER TURN LANE
Sta 16584+13.65 to Sta 16596+52.78



RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER TURN LANE
Sta 16550+29.77 to Sta 16574+09.34

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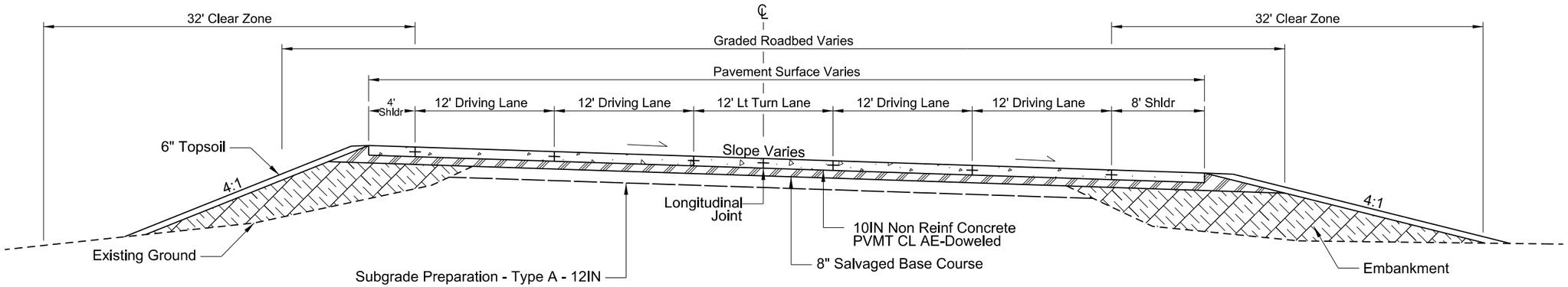
Proposed Typical Sections

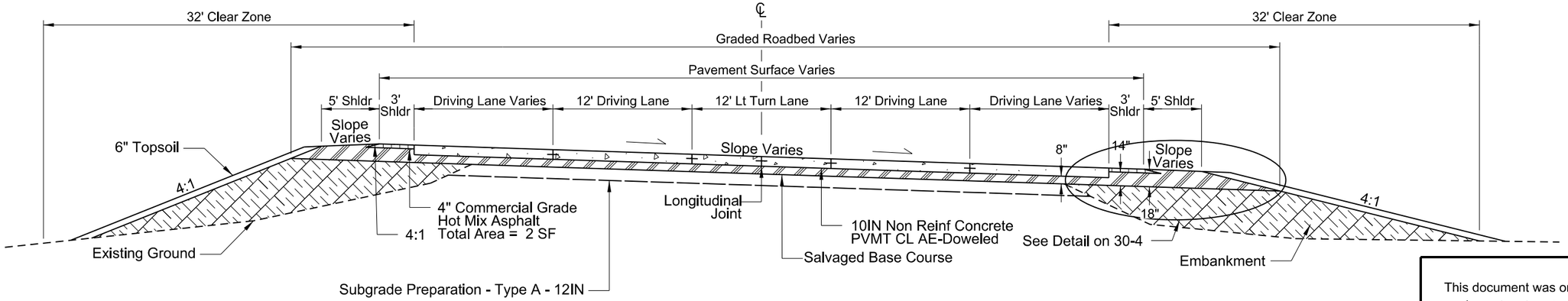
ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	6



RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER TURN LANE
Sta 16599+82.78 to Sta 16601+49.00



RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER TURN LANE
Sta 16596+52.78 to Sta 16599+82.78

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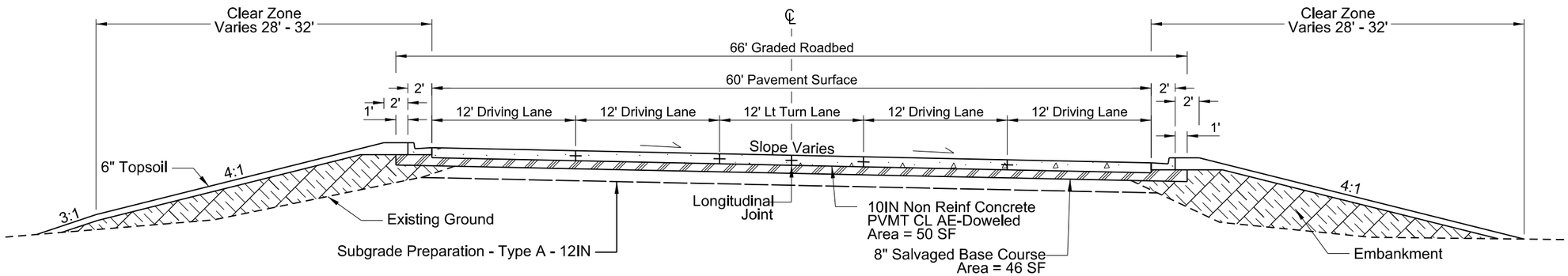
Proposed Typical Sections

ND 1804 Reconstruction

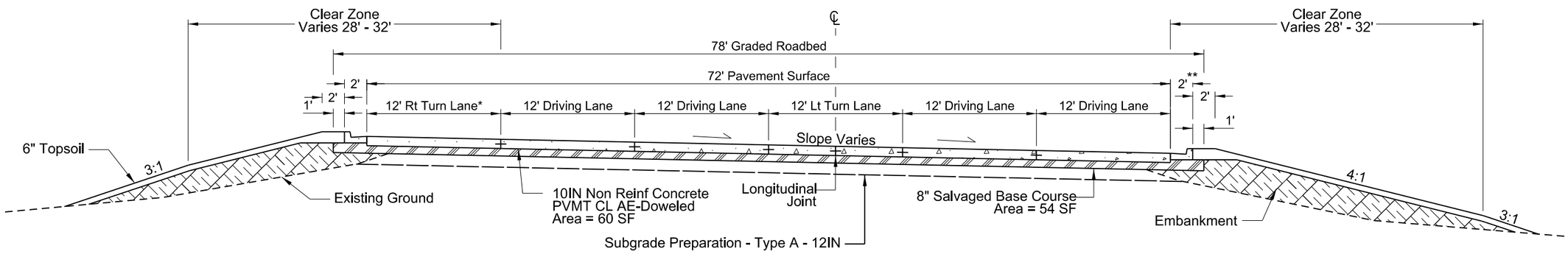
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	7



RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER TURN LANE

Sta 16605+64.72 to Sta 16615+79.06



RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER AND EAST BOUND TURN LANE

Sta 16601+49.00 to Sta 16605+64.72

* Right turn lane width varies from Sta 16604+20.72 to Sta 16605+64.72

** 8' shoulder replaces the curb line from Sta 16601+49.00 to Sta 16602+20.72

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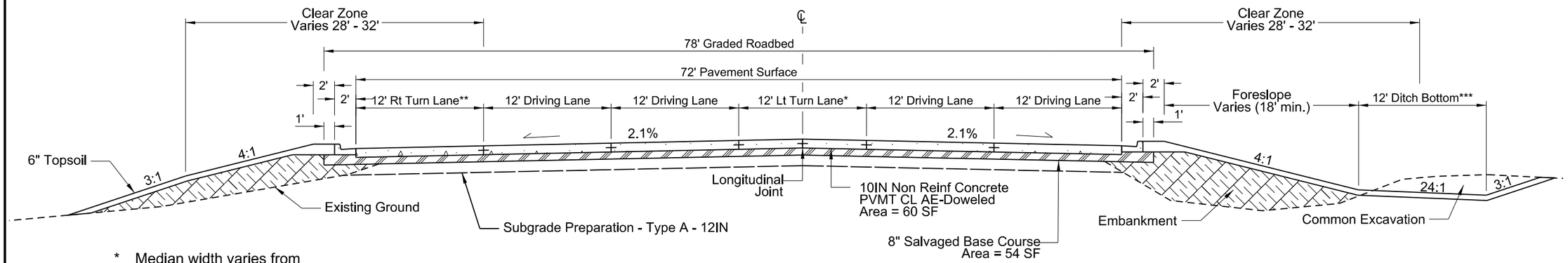
Proposed Typical Sections

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	8



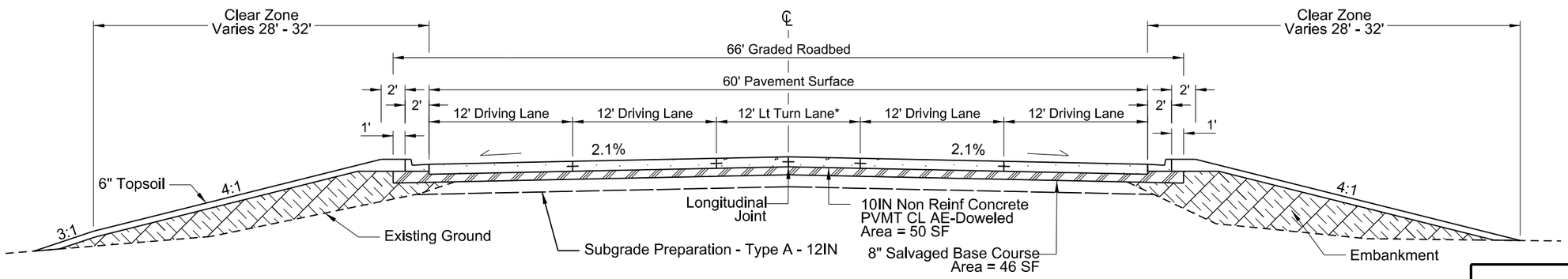
* Median width varies from
Sta 16640+00.00 to Sta 16640+47.34

** Right turn lane width varies from
Sta 16626+00.52 to Sta 16627+44.52
Sta 16639+03.34 to Sta 16640+47.34
Sta 16670+03.93 to Sta 16671+47.93

*** Right ditch bottom is 7.0' wide from
Sta 16637+00.00 to Sta 16639+00.00

RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER AND EAST BOUND TURN LANE

Sta 16623+49.04 to Sta 16627+44.52
Sta 16636+62.40 to Sta 16640+47.34
Sta 16662+81.18 to Sta 16671+47.93



* Median width varies from
Sta 16640+47.34 to Sta 16642+70.00
Sta 16652+16.44 to Sta 16656+30.44
Sta 16676+20.98 to Sta 16680+34.98
Sta 16685+55.60 to Sta 16685+81.31
Sta 16718+94.38 to Sta 16720+80.38

RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER TURN LANE

Sta 16615+79.06 to Sta 16623+49.04
Sta 16627+44.52 to Sta 16636+62.40 (Note: See Detail 2 sheet 30-9)
Sta 16640+47.34 to Sta 16642+70.00
Sta 16652+16.44 to Sta 16662+81.18 (Note: See Detail 2 sheet 30-9)
Sta 16671+47.93 to Sta 16680+34.98
Sta 16685+55.60 to Sta 16685+81.31
Sta 16689+81.35 to Sta 16700+89.19
Sta 16705+03.87 to Sta 16712+00.71 (Note: See Detail 1 sheet 30-9)
Sta 16716+37.50 to Sta 16720+80.38 (Note: See Detail 1 sheet 30-9)

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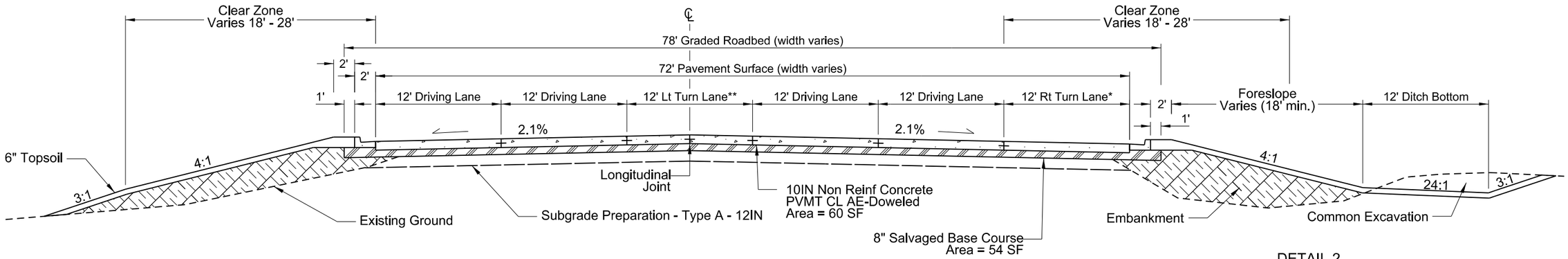
Proposed Typical Sections

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	9



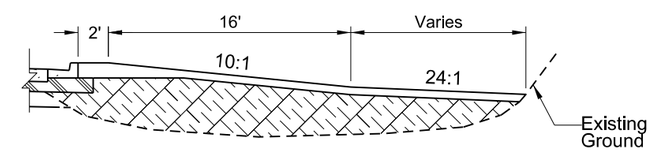
RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE, CENTER, EAST AND WEST BOUND TURN LANE

Sta 16685+81.31 to Sta 16689+81.35
Sta 16700+89.19 to Sta 16705+03.87
Sta 16712+00.71 to Sta 16716+37.50 (Note: See Detail 1)

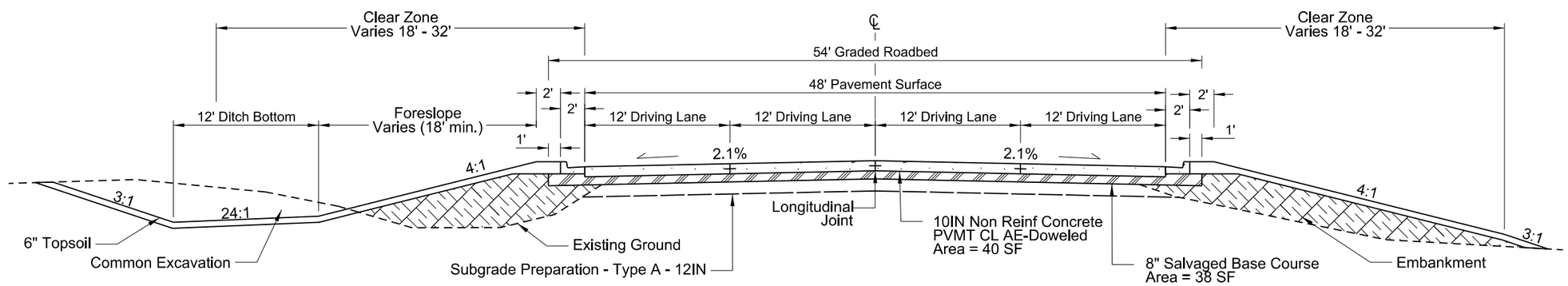
* Right turn lane width varies from
Sta 16685+81.31 to Sta 16687+25.31
Sta 16700+89.19 to Sta 16702+33.19
Sta 16712+00.71 to Sta 16713+44.88

** Median width varies from
Sta 16685+81.31 to Sta 16688+25.60

DETAIL 2



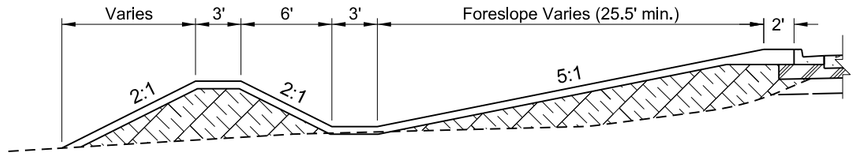
Sta 16632+75.00 (LT) to Sta 16636+25.00 (LT)
Sta 16644+25.00 (LT) to Sta 16650+25.00 (LT)
Sta 16645+50.00 (RT) to Sta 16652+25.00 (RT)



RECONSTRUCTION - EAST AND WEST BOUND DRIVING LANE

Sta 16642+70.00 to Sta 16652+16.44 (Note: See Detail 2)
Sta 16680+34.98 to Sta 16685+55.60 (Bridge Exception Sta 16682+15.00 to Sta 16684+29.00)
Sta 16720+80.38 to Sta 16721+00.00

DETAIL 1



Sta 16711+50.00 to Sta 16720+25.00

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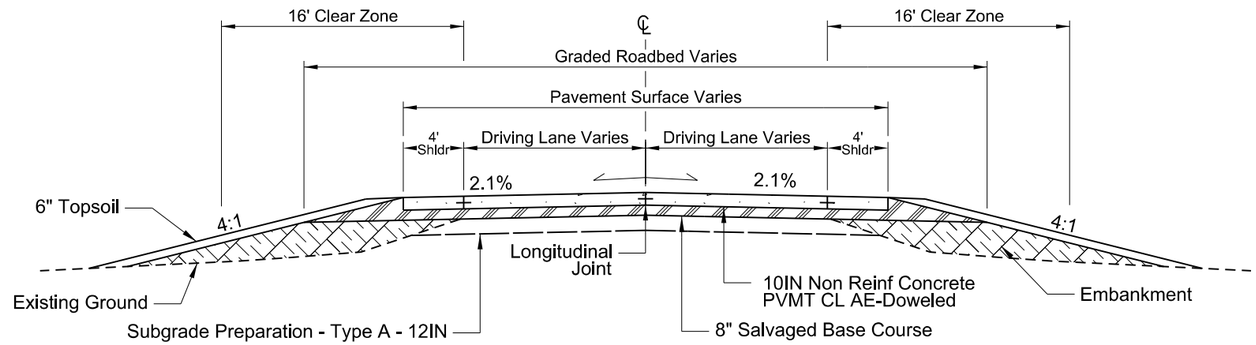
Proposed Typical Sections

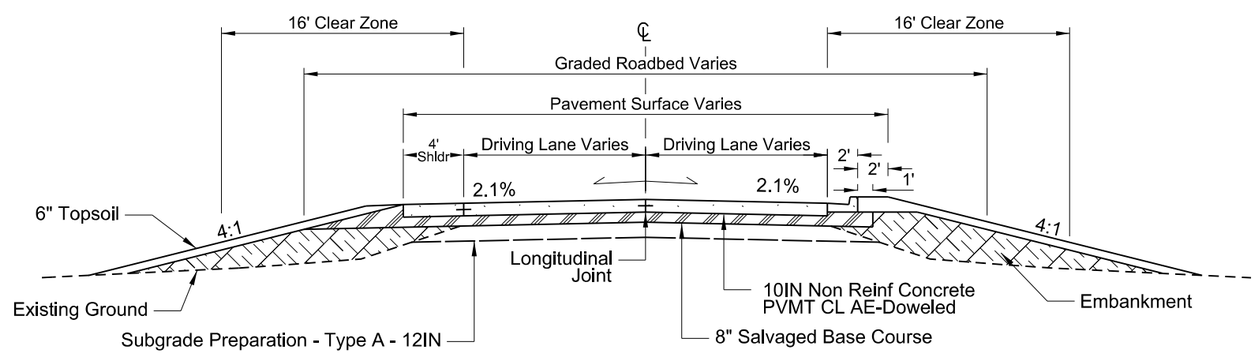
ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	10



RECONSTRUCTION - 132ND RD NW
Sta 16602+03.29 to Sta 16603+26.80



RECONSTRUCTION - 132ND RD NW
Sta 16601+40.59 to Sta 16602+03.29

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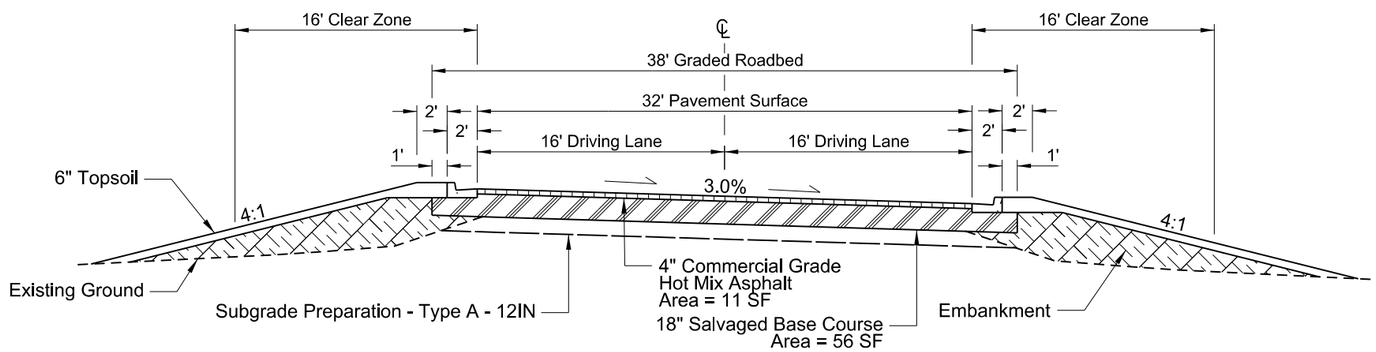
Proposed Typical Sections

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	30	11



RECONSTRUCTION - 133RD AVE NW

Sta 16636+91.79 to Sta 16638+86.94

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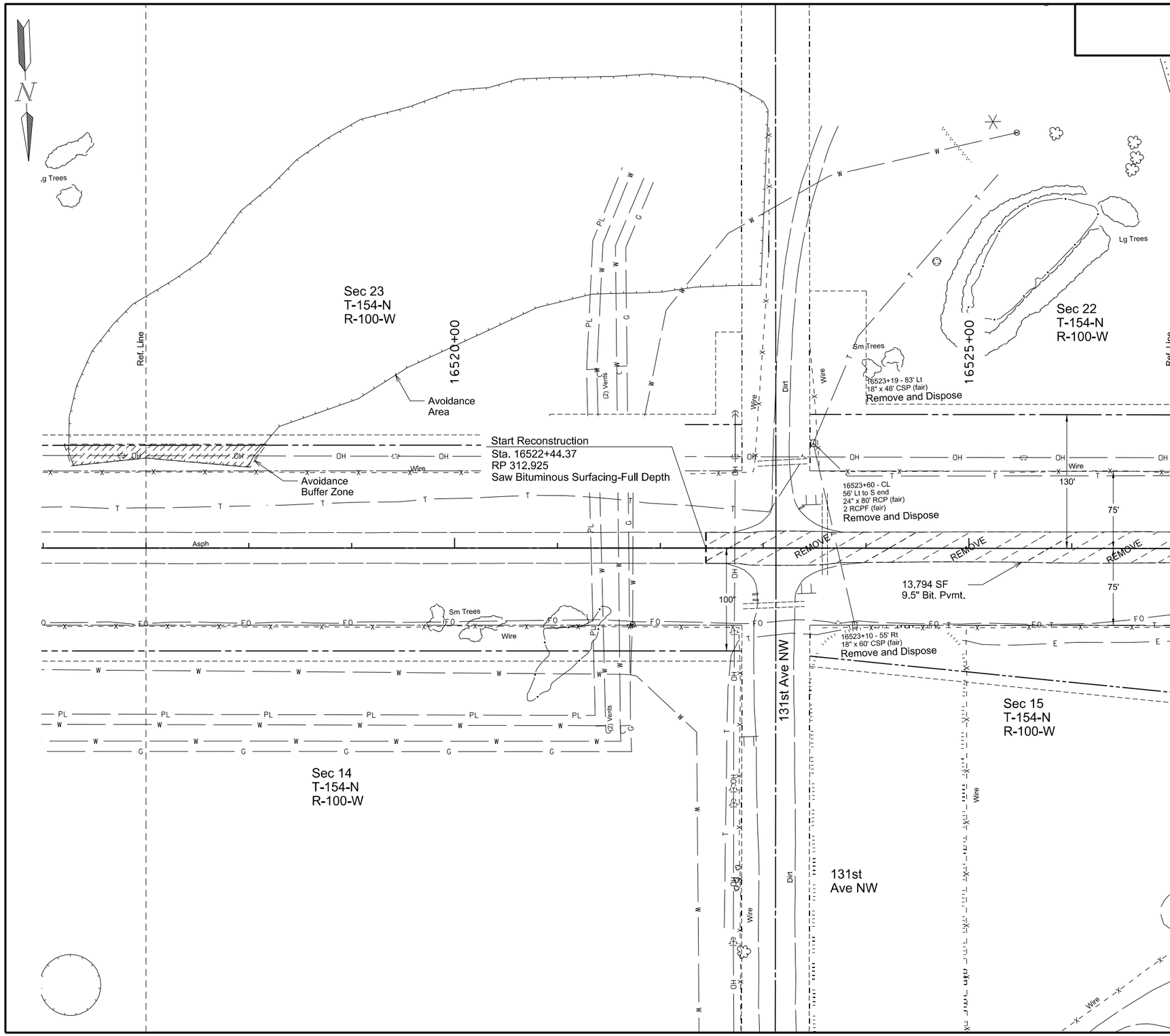
Proposed Typical Sections

ND 1804 Reconstruction

Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	1



Spec Code	Bid Item	Unit	Quantity
202 0135	REMOVAL OF BITUMINOUS SURFACING		
	16522+44 to 16527+00 (Mainline)	TON	760
202 0174	REMOVAL OF PIPES ALL TYPES AND SIZES		
	16523+10, RT (18" CSP)	LF	60
	16523+19, LT (18" CSP)	LF	48
	16523+60, CL (24" RCP)	LF	80
	Total	LF	188

REMOVE Removal of Bituminous Surfacing

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Removals

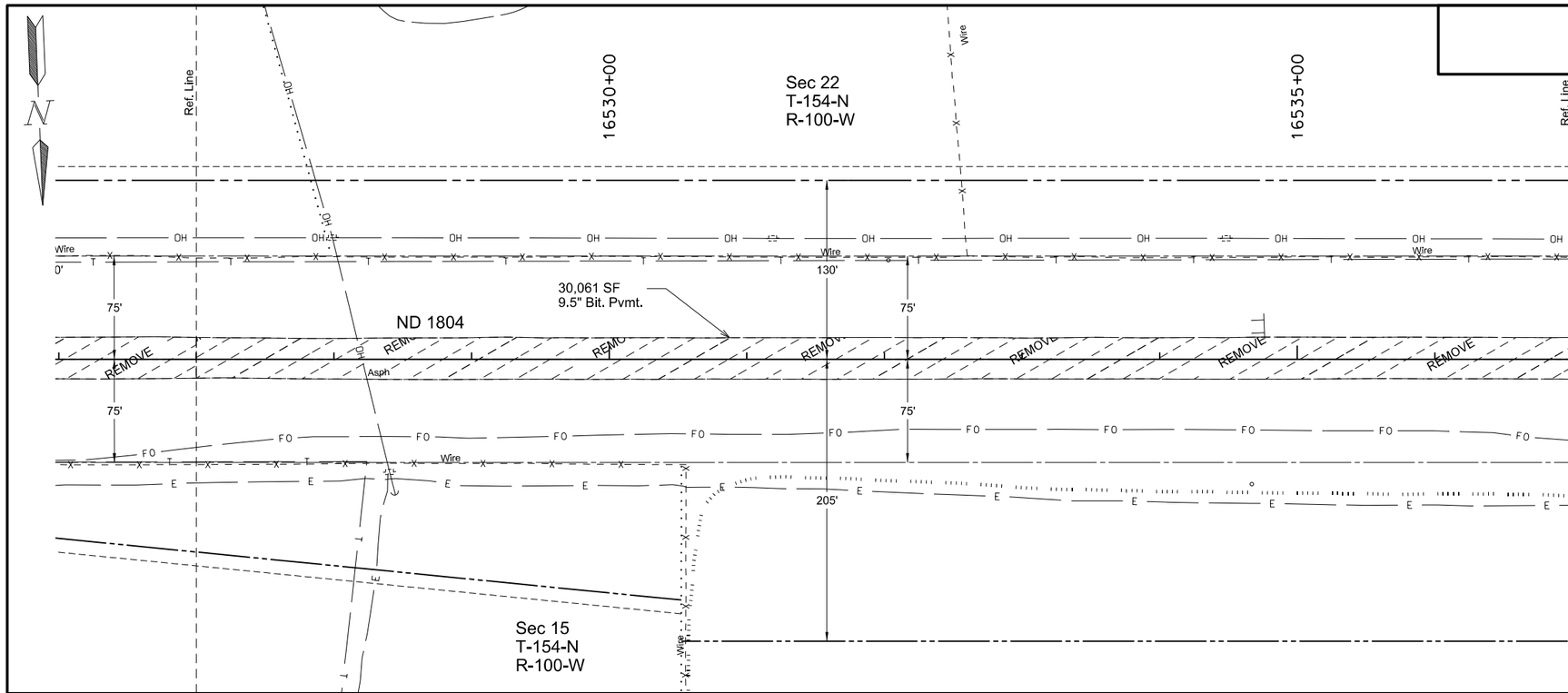
ND 1804 Reconstruction

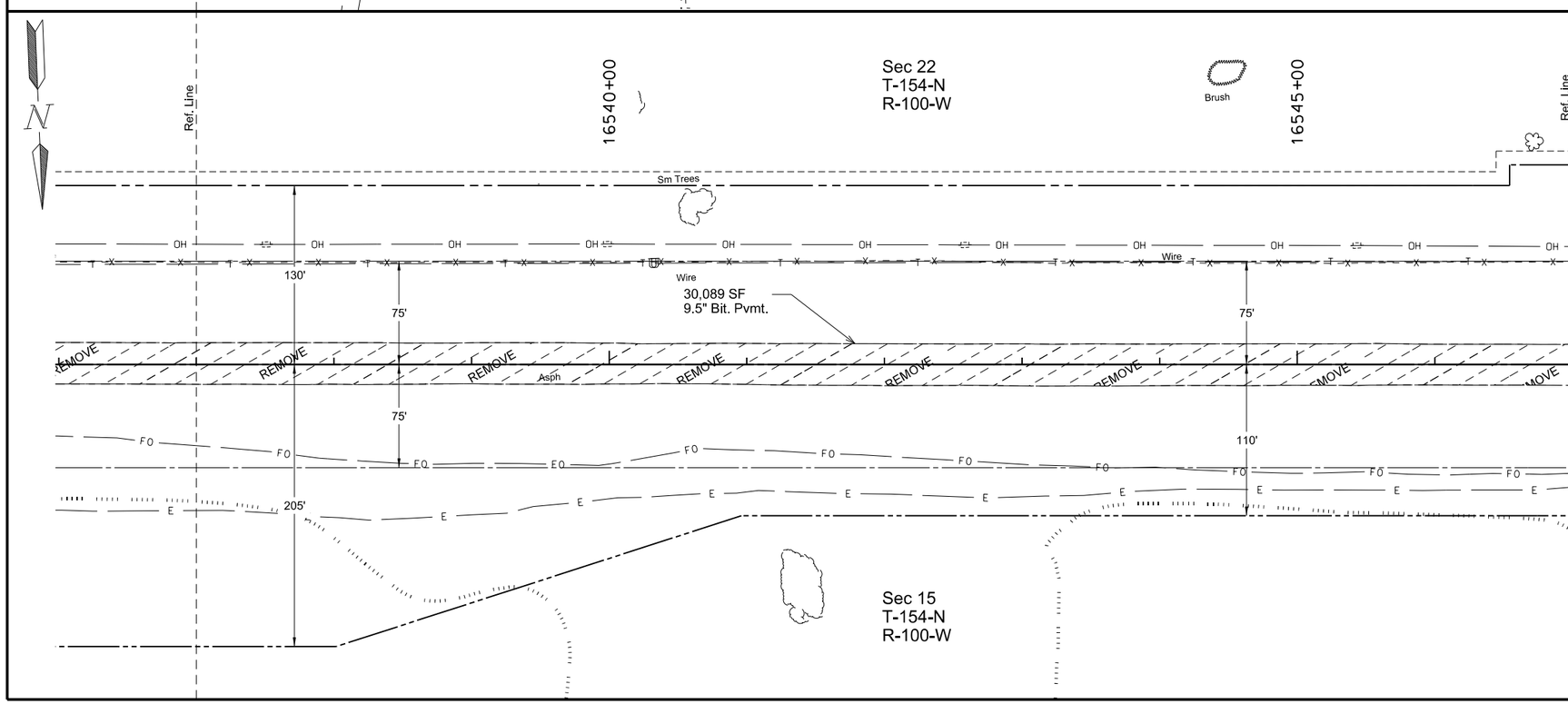
Williams County, ND

Sta 16517+00 to 16527+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	2

Spec Code	Bid Item	Unit	Quantity
202 0135	REMOVAL OF BITUMINOUS SURFACING		
	16527+00 to 16547+00 (Mainline)	TON	3310





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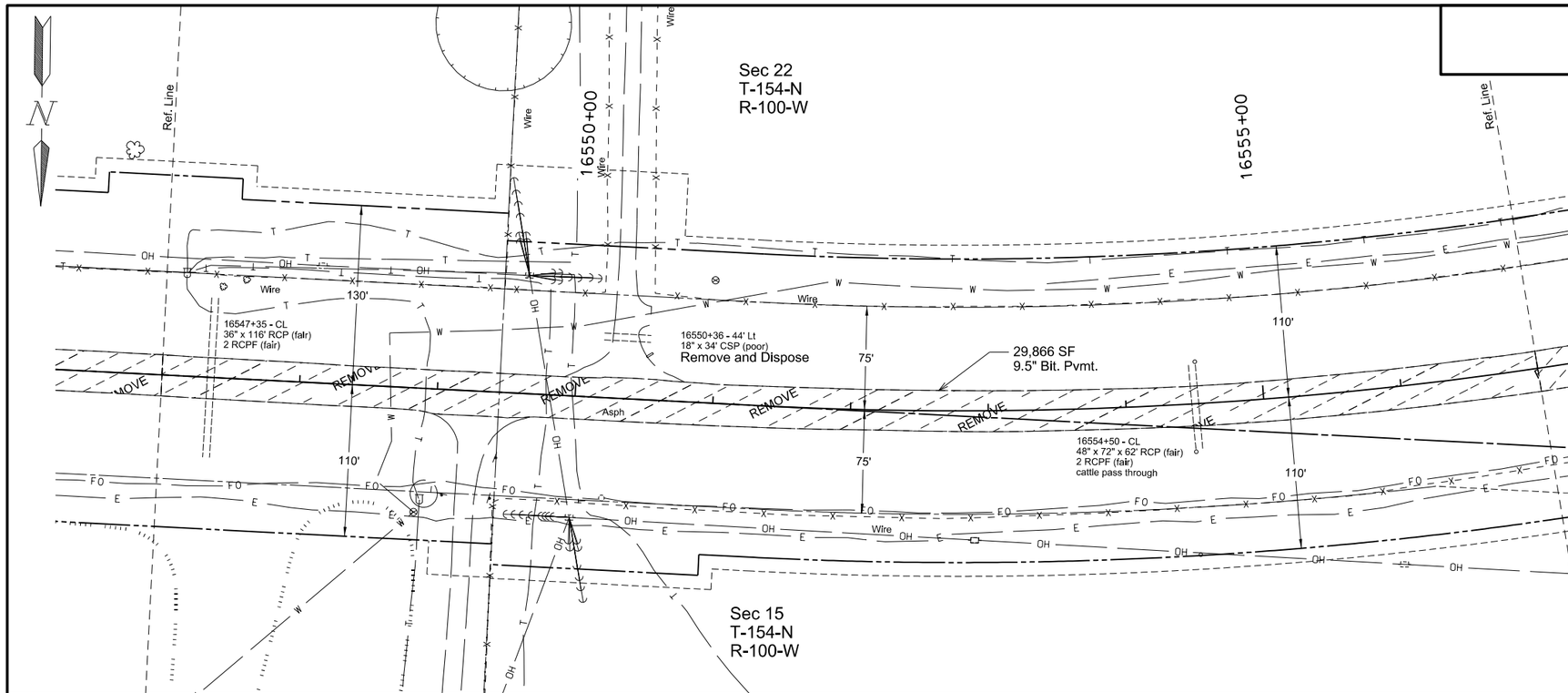
Removals

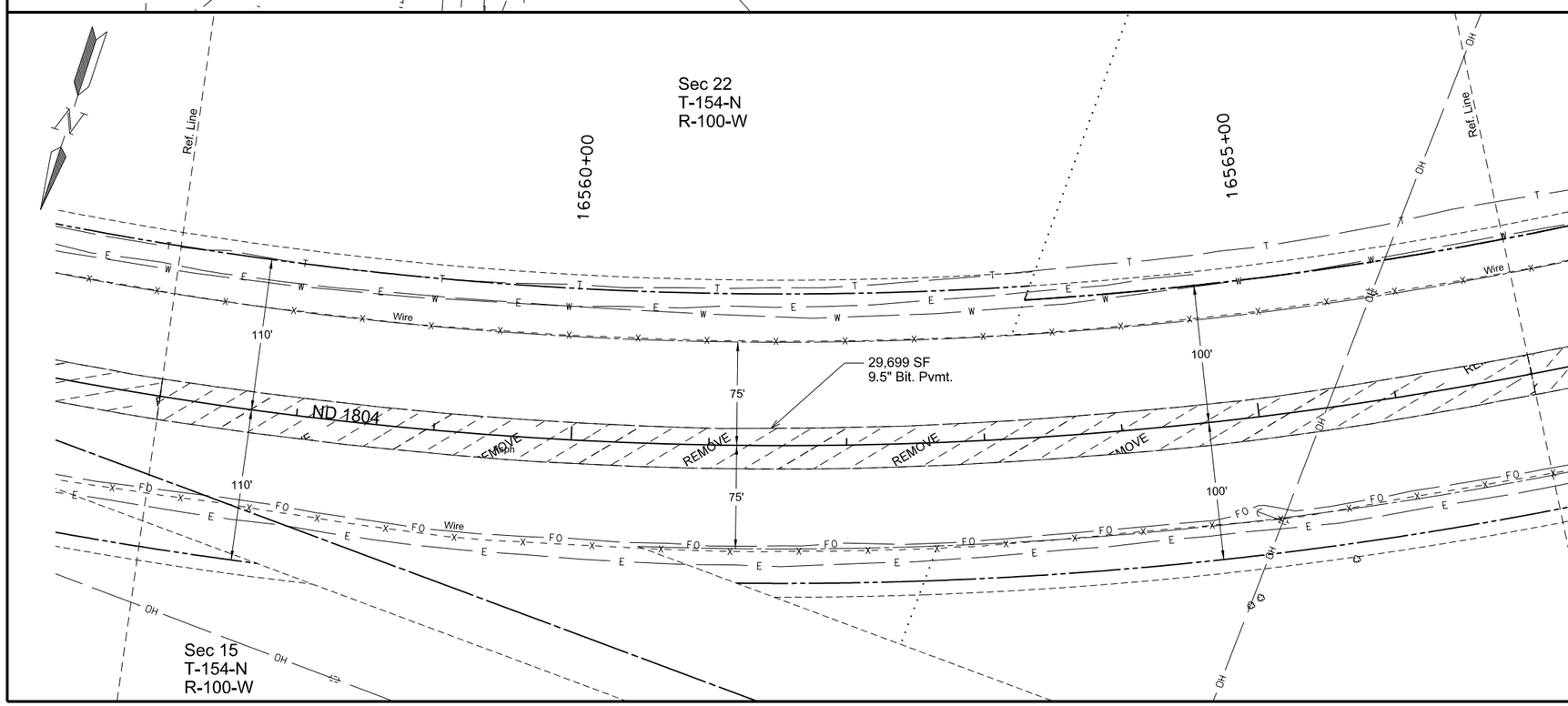
ND 1804 Reconstruction

Williams County, ND

Sta 16527+00 to Sta 16547+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	3





Spec Code	Bid Item	Unit	Quantity
202 0135	REMOVAL OF BITUMINOUS SURFACING		
	16547+00 to 16567+00 (Mainline)	TON	3280
202 0174	REMOVAL OF PIPES ALL TYPES & SIZES		
	16550+36, LT (18" CSP)	LF	34

REMOVE — Removal of Bituminous Surfacing

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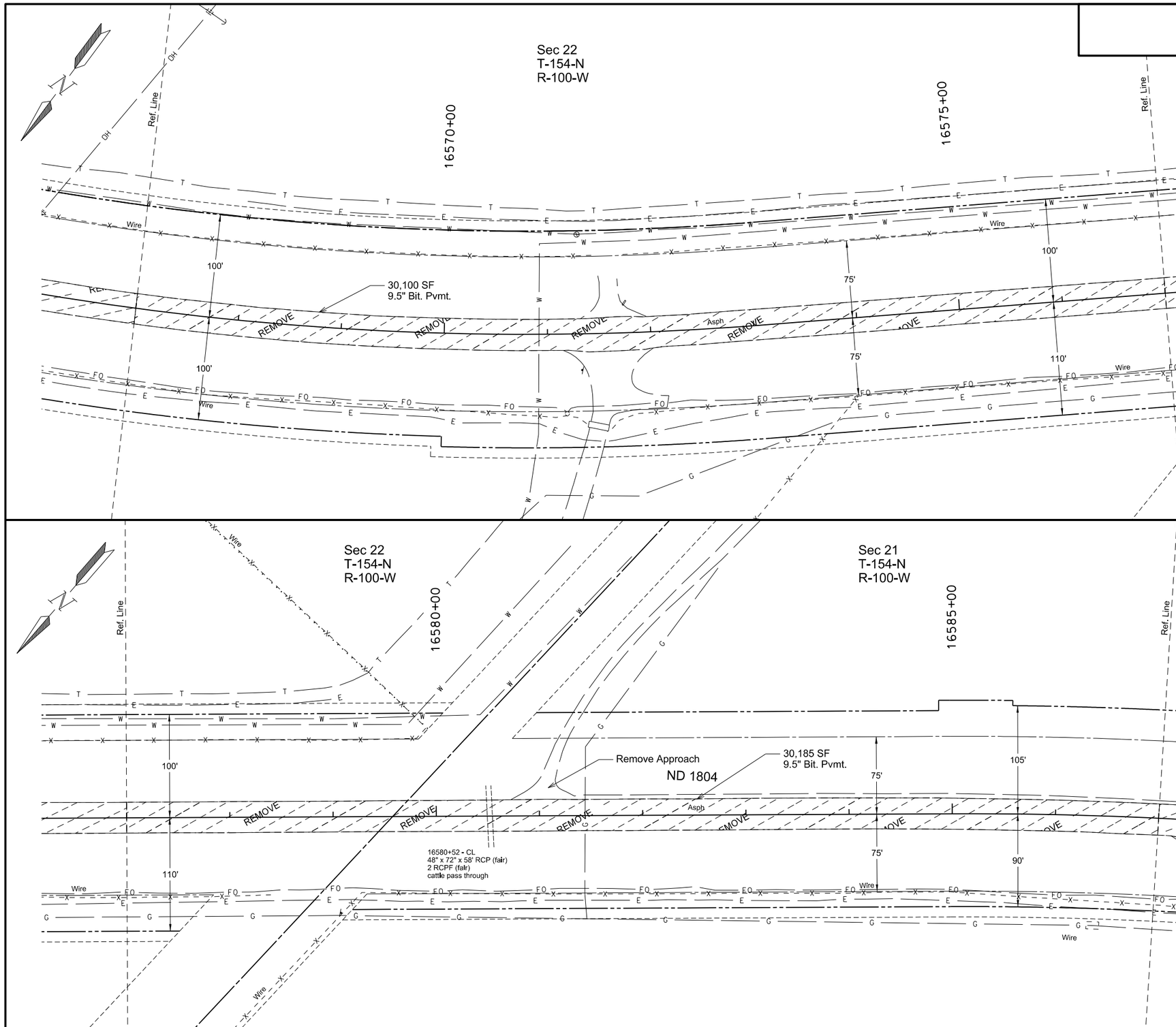
Removals

ND 1804 Reconstruction

Williams County, ND

Sta 16547+00 to Sta 16567+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	4



Spec Code	Bid Item	Unit	Quantity
202 0135	REMOVAL OF BITUMINOUS SURFACING		
	16567+00 to 16587+00 (Mainline)	TON	3320
202 0289	REMOVE APPROACH		
	16581+07, LT	EA	1

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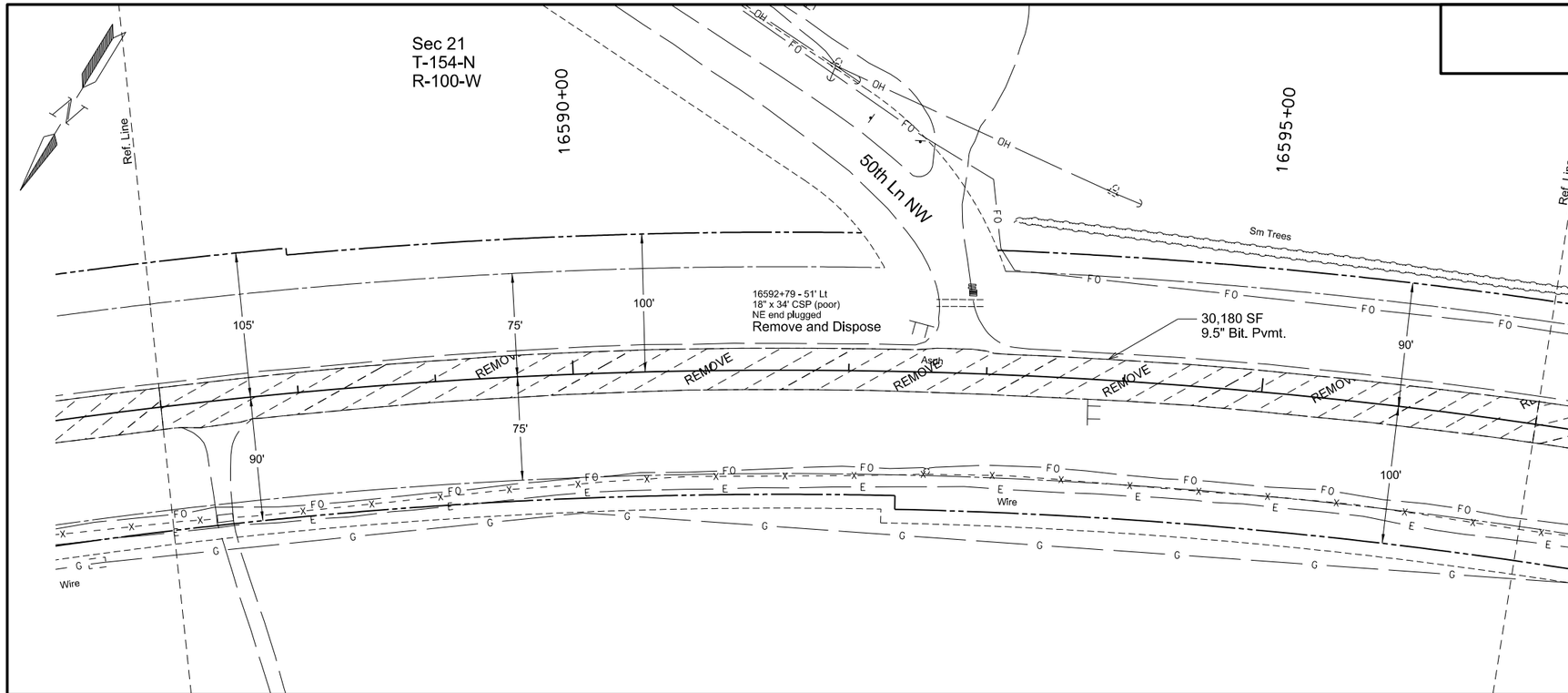
Removals

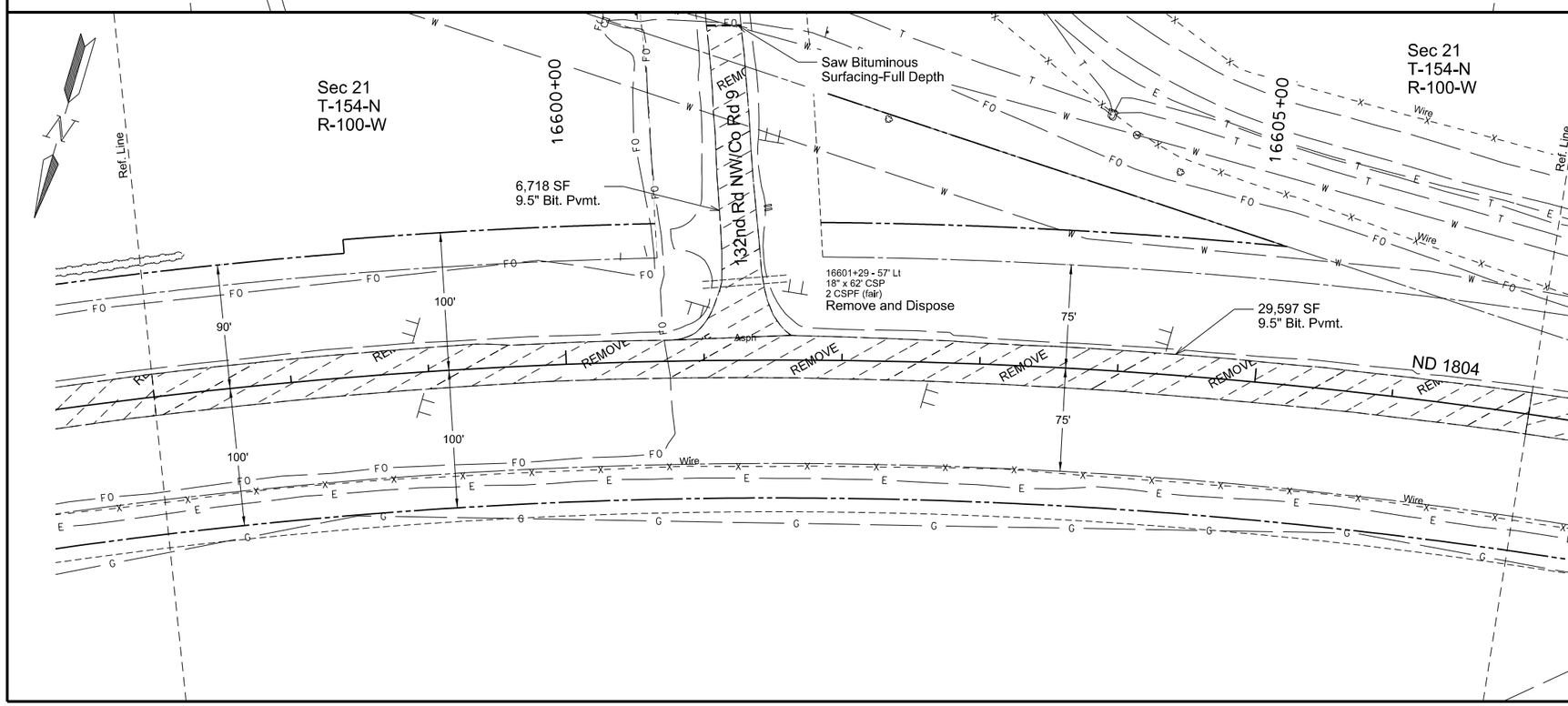
ND 1804 Reconstruction

Williams County, ND

Sta 16567+00 to Sta16587+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	5





Spec	Code	Bid Item	Unit	Quantity
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		16587+00 to 16607+00 (Mainline)	TON	3290
		16601+20, LT (132nd Rd NW)	TON	370
		Total	TON	3660
202	0174	REMOVAL OF PIPES ALL TYPES AND SIZES		
		16592+79, LT (18" CSP)	LF	34
		16601+29, LT (18" CSP)	LF	62
		Total	LF	96

REMOVE Removal of Bituminous Surfacing

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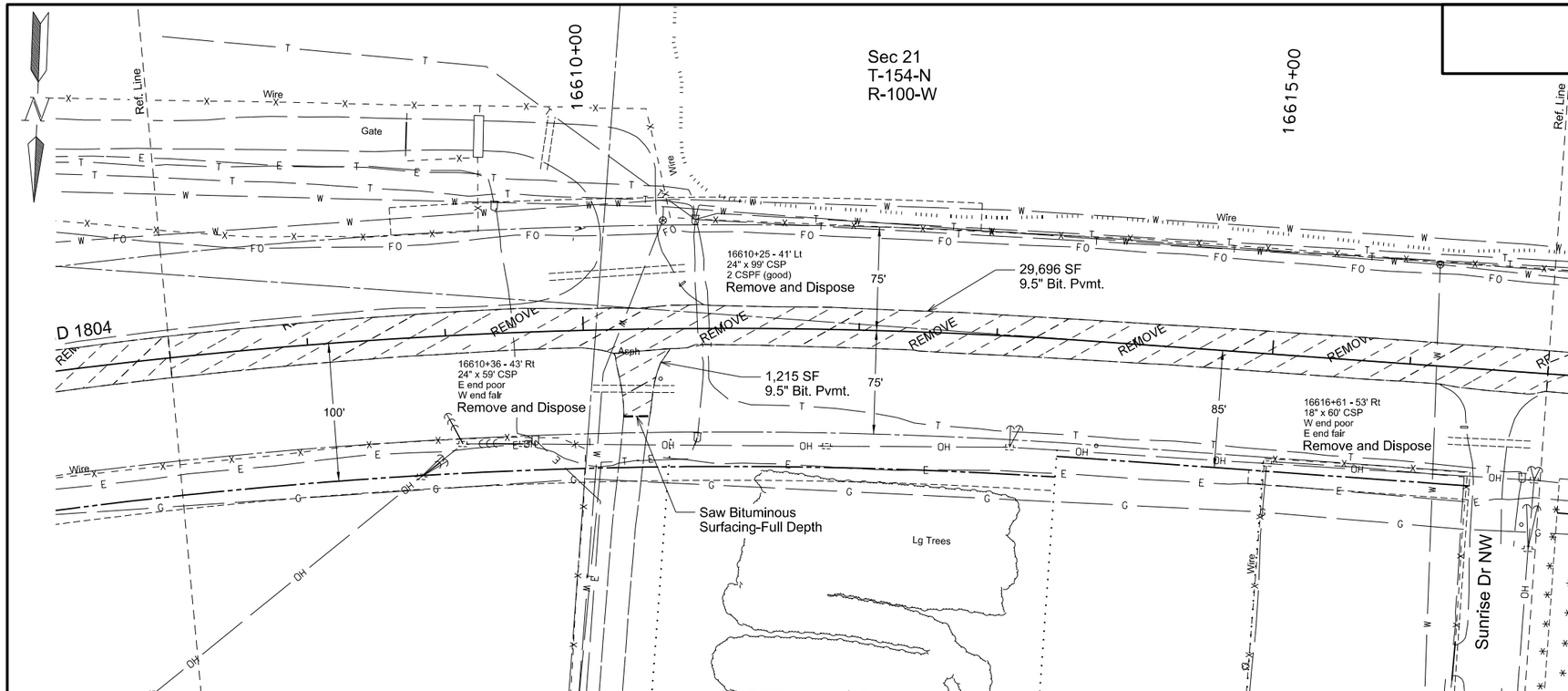
Removals

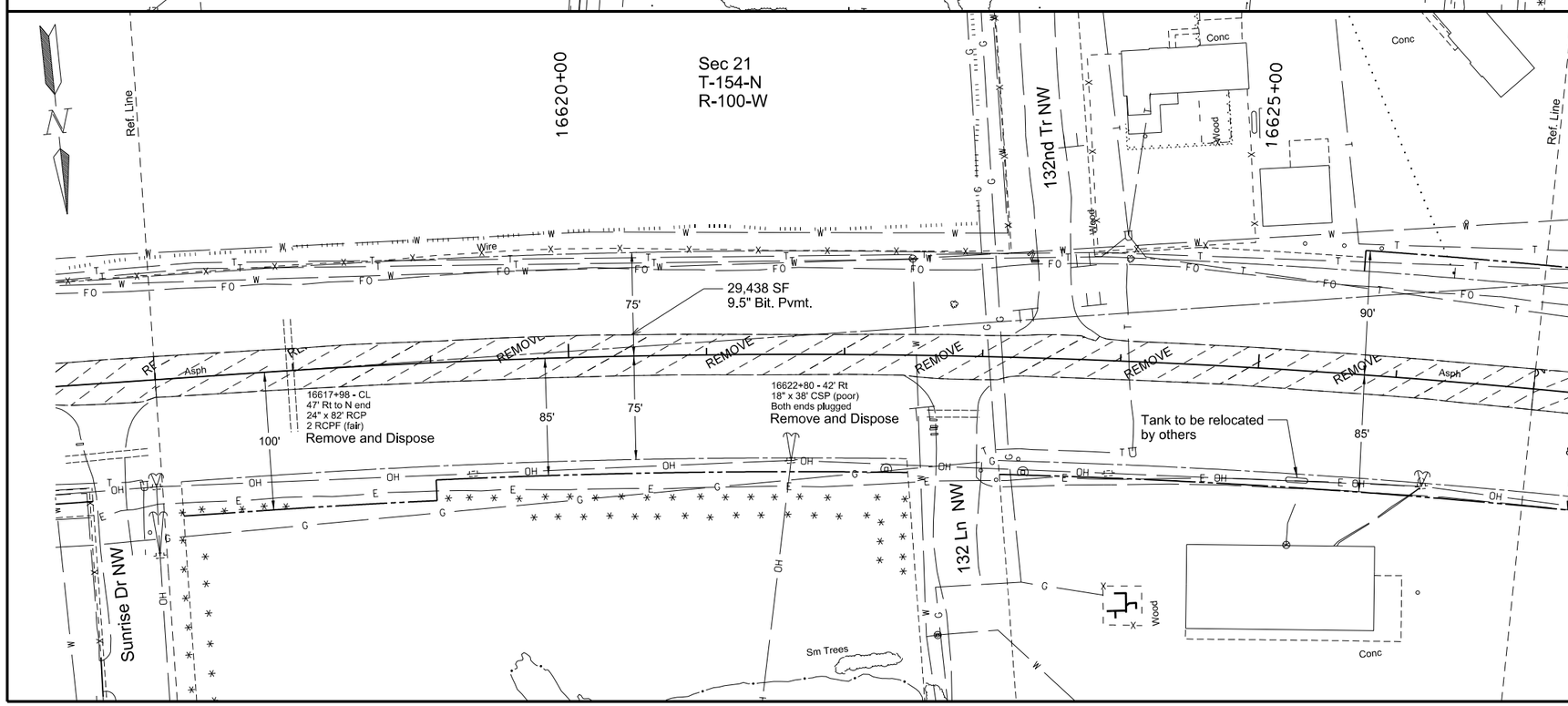
ND 1804 Reconstruction

Williams County, ND

Sta 16587+00 to Sta 16607+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	6





Spec	Code	Bid Item	Unit	Quantity
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		16607+00 to 16627+00 (Mainline)	TON	3260
		16610+42, RT (Driveway)	TON	70
		Total	TON	3330
202	0174	REMOVAL OF PIPES ALL TYPES AND SIZES		
		16610+25, LT (24" CSP)	LF	99
		16610+36, RT (24" RCP)	LF	59
		16616+61, RT (18" CSP)	LF	60
		16617+98, CL (24" RCP)	LF	82
		16622+80, RT (18" CSP)	LF	38
		Total	LF	338

REMOVE Removal of Bituminous Surfacing

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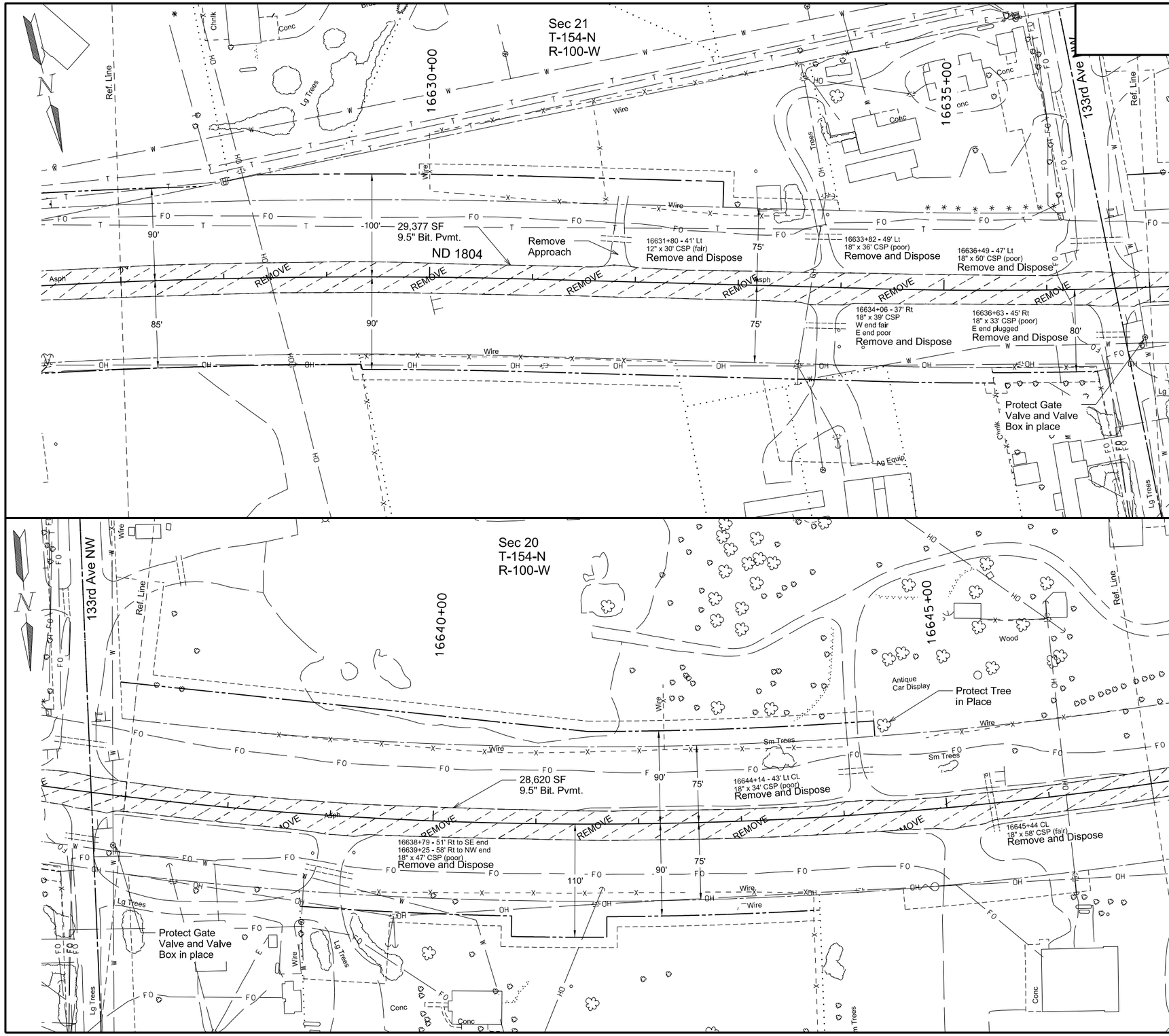
Removals

ND 1804 Reconstruction

Williams County, ND

Sta 16607+00 to Sta 16627+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	7



Spec Code	Bid Item	Unit	Quantity
202 0135	REMOVAL OF BITUMINOUS SURFACING		
	16627+00 to 16647+00 (Mainline)	TON	3190
202 0174	REMOVAL OF PIPES ALL TYPES AND SIZES		
	16631+80, LT (12" CSP)	LF	30
	16633+82, LT (18" CSP)	LF	36
	16634+06, RT (18" CSP)	LF	39
	16636+49, LT (18" CSP)	LF	50
	16636+63, RT (18" CSP)	LF	33
	16638+79 to 16639+25, RT (18" CSP)	LF	47
	16644+14, LT (18" CSP)	LF	34
	16645+44, CL (18" CSP)	LF	58
	Total	LF	327
202 0289	REMOVE APPROACH		
	16631+83, LT	EA	1

REMOVE Removal of Bituminous Surfacing

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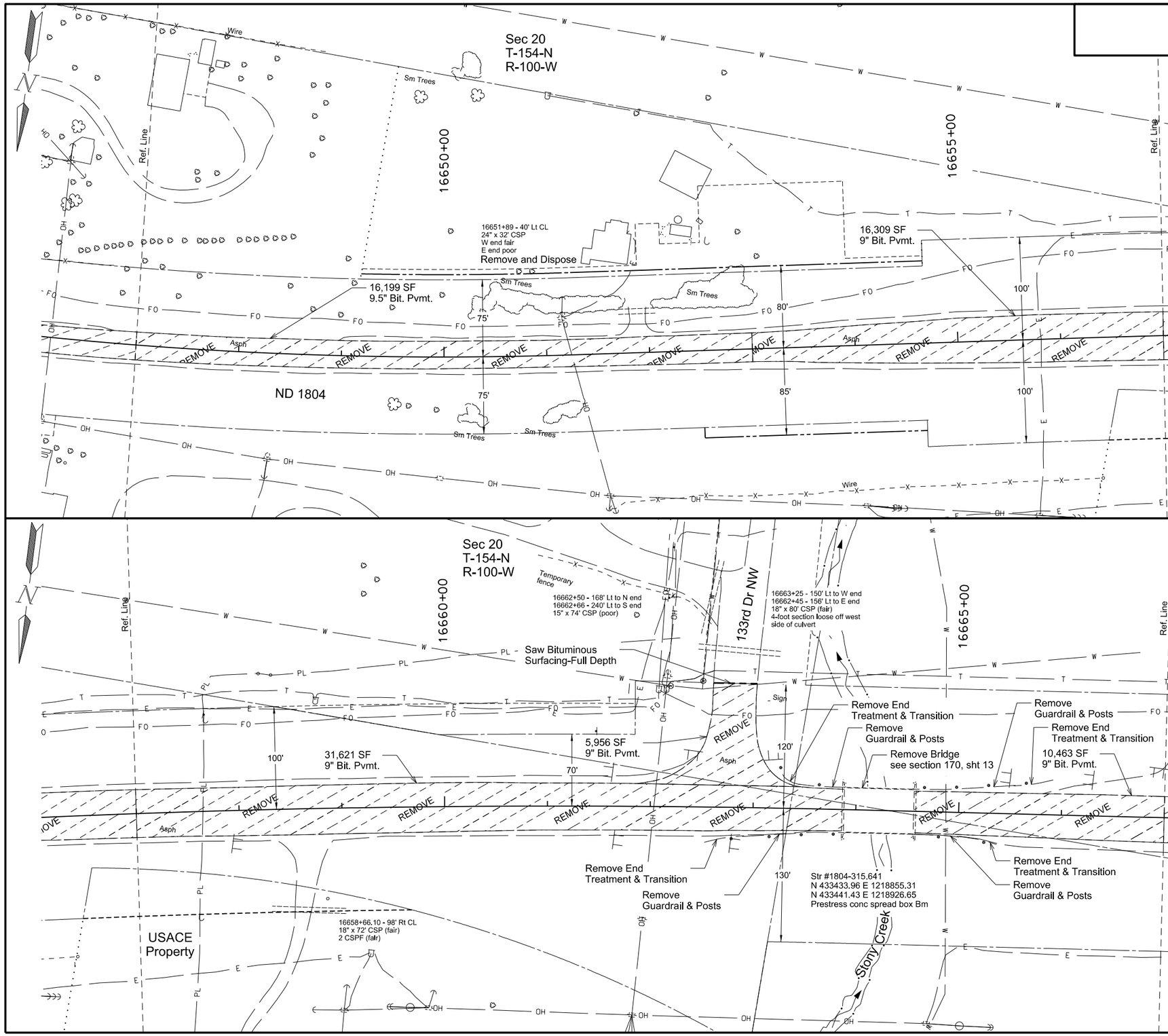
Removals

ND 1804 Reconstruction

Williams County, ND

Sta 16627+00 to Sta 16647+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	8



Spec	Code	Bid Item	Unit	Quantity
202	0135	REMOVAL OF BITUMINOUS SURFACING		
		16647+00 to 16663+88 (Mainline)	TON	3390
		16664+56 to 16667+00 (Mainline)	TON	550
		16662+66, LT (133rd Dr NW)	TON	320
		Total	TON	4260
202	0174	REMOVAL OF PIPES ALL TYPES AND SIZES		
		16651+89, LT (24" CSP)	LF	32
764	2080	REMOVE BOX BEAM GUARDRAIL		
		16662+90, RT to 16663+90, RT	LF	102
		16663+61, LT to 16663+90, LT	LF	38
		16664+55, LT to 16665+54, LT	LF	102
		16664+55, RT to 16665+01, RT	LF	48
		Total	LF	290
764	2081	REMOVE END TREATMENT & TRANSITION		
		16662+70, RT	EA	1
		16663+40, LT	EA	1
		16665+20, RT	EA	1
		16665+70, LT	EA	1
		Total	EA	4

REMOVE — Removal of Bituminous Surfacing

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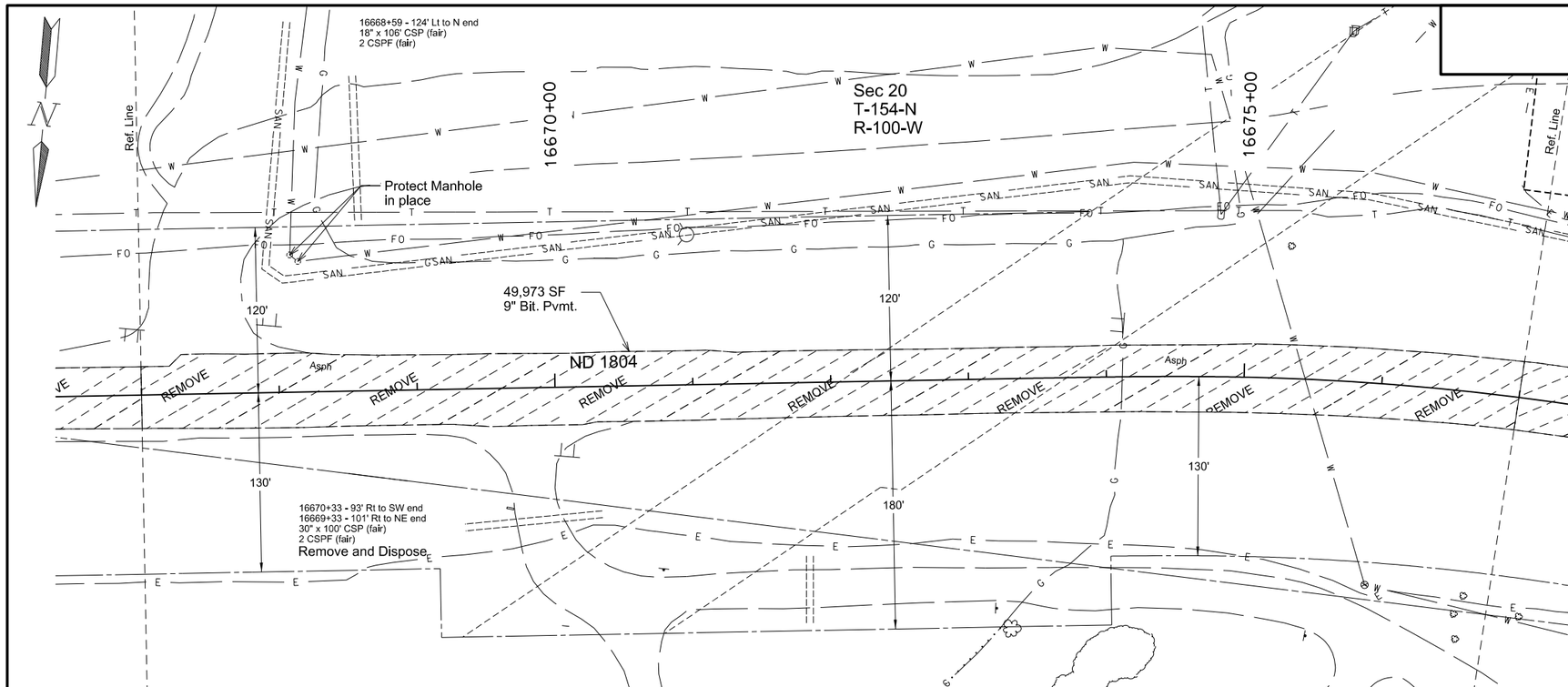
Removals

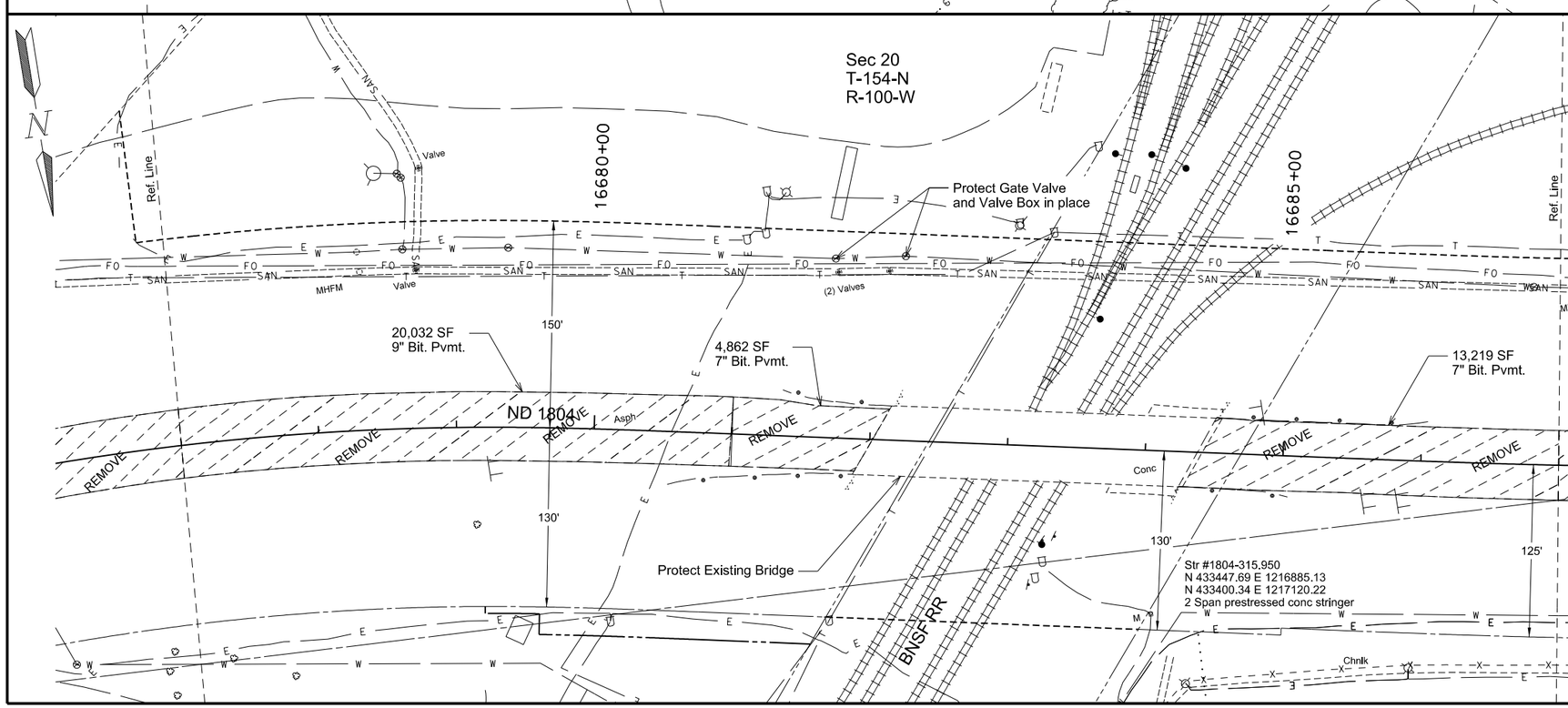
ND 1804 Reconstruction

Williams County, ND

Sta 16647+00 to Sta 16667+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	9





Spec Code Bid Item	Unit	Quantity
202 0135 REMOVAL OF BITUMINOUS SURFACING		
16667+00 to 16682+02 (Mainline)	TON	3850
16684+38 to 16687+00 (Mainline)	TON	540
Total	TON	4390
202 0130 REMOVAL OF CURB & GUTTER		
16684+25, RT to 16687+00, RT	LF	276
16684+51, LT to 16687+00, LT	LF	248
Total	LF	524
202 0174 REMOVAL OF PIPES ALL TYPES AND SIZES		
16669+33, RT to 16670+33, RT (30" CSP)	LF	100

REMOVE — Removal of Bituminous Surfacing

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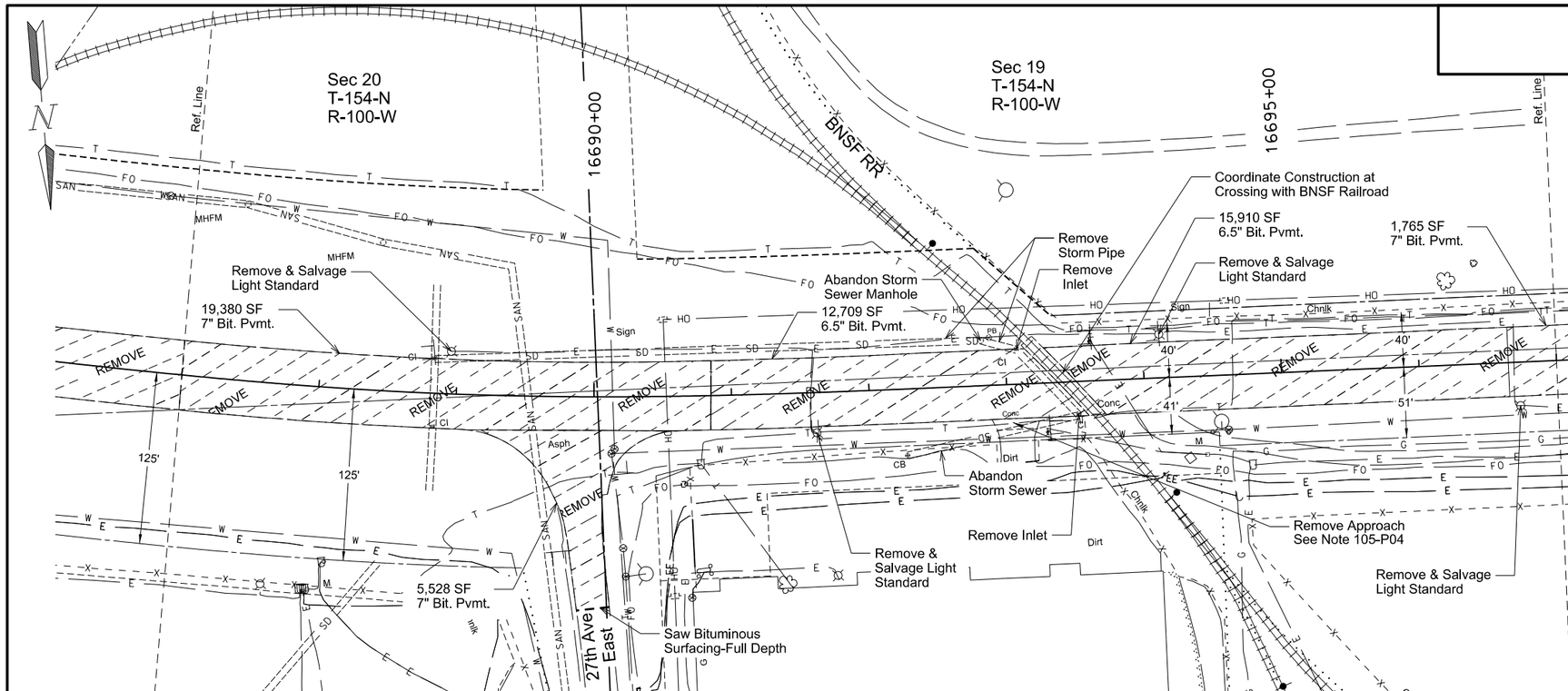
Removals

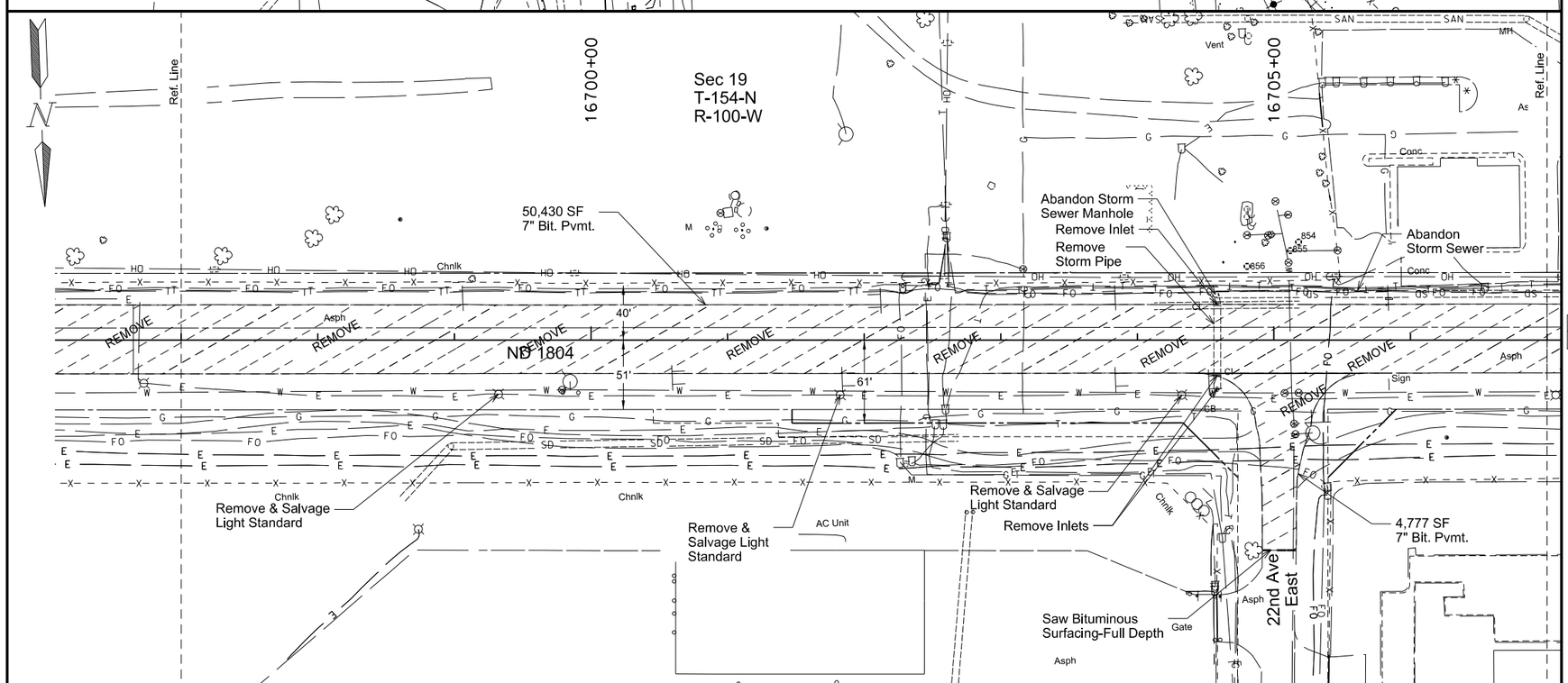
ND 1804 Reconstruction

Williams County, ND

Sta 16667+00 to 16687+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	10





Spec Code Bid Item	Unit	Quantity
202 0135 REMOVAL OF BITUMINOUS SURFACING		
16687+00 to 16693+37 (Mainline)	TON	1270
16689+84, RT (27th Ave E)	TON	230
16693+51 to 16707+00 (Mainline)	TON	2720
16705+07, RT (22nd Ave E)	TON	200
Total	TON	4420
202 0130 REMOVAL OF CURB & GUTTER		
16687+00, RT to 16689+79, RT	LF	313
16687+00, LT to 16693+14, LT	LF	612
16690+06, RT to 16693+59, RT	LF	398
16693+28, LT to 16697+03, LT	LF	375
16693+72, RT to 16697+01, RT	LF	329
16697+01, RT to 16704+87, RT	LF	808
16697+03, LT to 16707+00, LT	LF	997
16705+27, RT to 16707+00, RT	LF	193
Total	LF	4025
202 0174 REMOVAL OF PIPE ALL TYPES AND SIZES		
16692+50, LT to 16693+08, LT	LF	59
16704+58, RT to 16704+59, LT	LF	70
Total	LF	129
202 0230 REMOVAL OF INLETS		
16693+08, LT	EA	1
16693+52, RT	EA	1
16704+58, RT	EA	2
16704+59, LT	EA	1
Total	EA	5
202 0289 REMOVE APPROACH		
16693+05, RT	EA	1
770 4560 REMOVE LIGHT STANDARD		
16688+95, LT	EA	1
16691+61, RT	EA	1
16694+12, LT	EA	1
16696+73, RT	EA	1
16701+82, RT	EA	1
16704+33, RT	EA	1
Total	EA	7

REMOVE — Removal of Bituminous Surfacing

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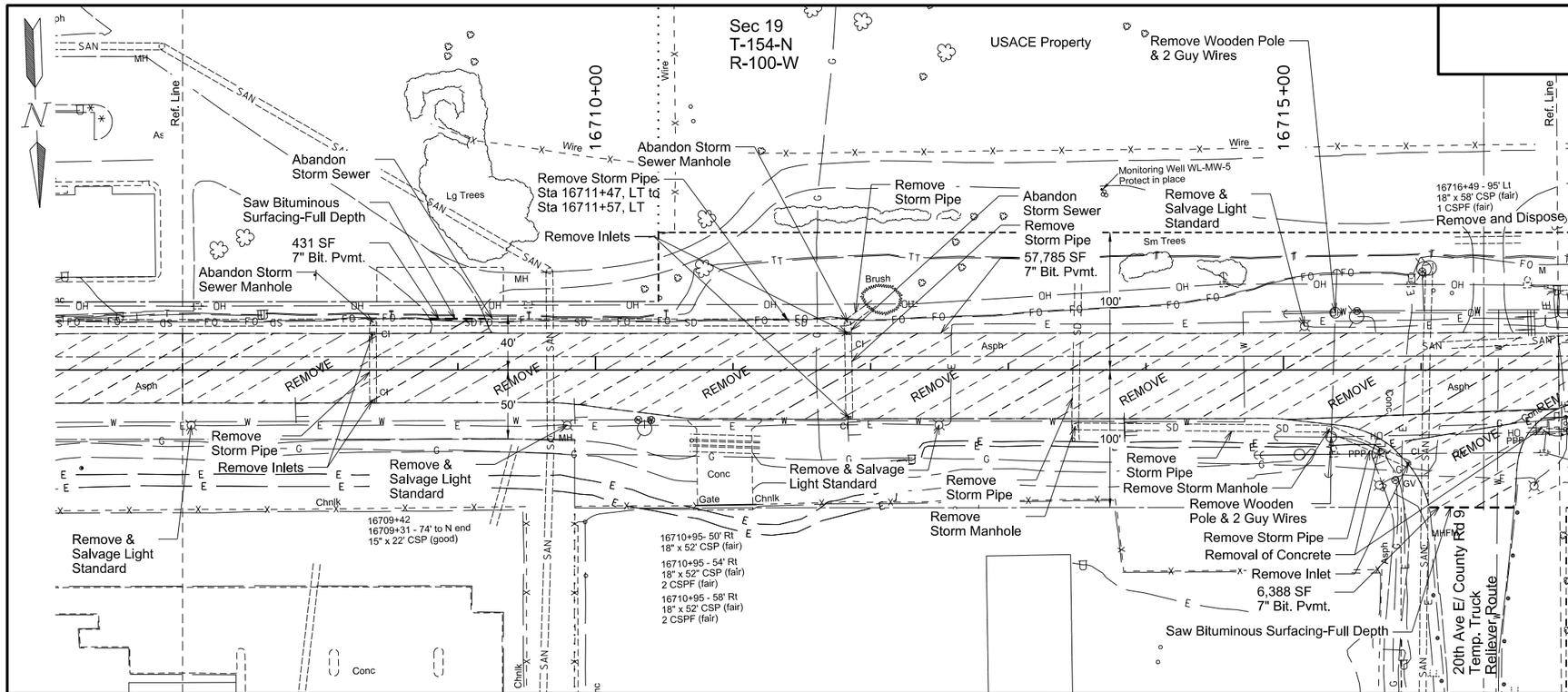
Removals

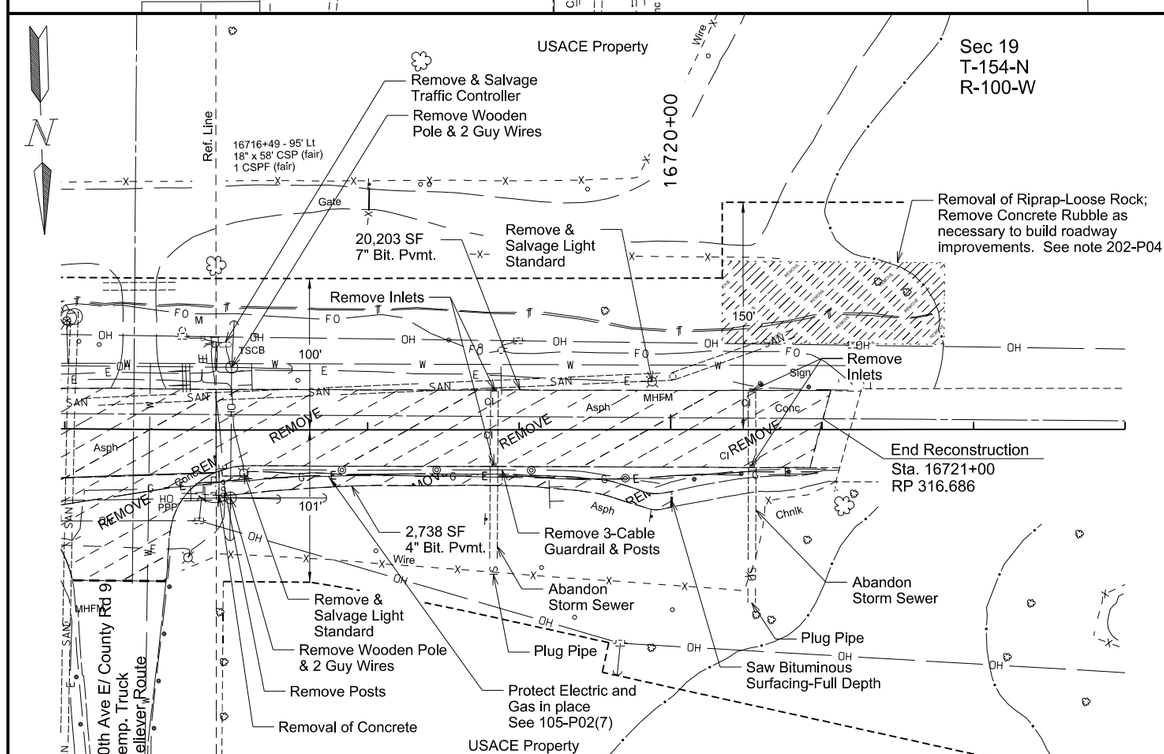
ND 1804 Reconstruction

Williams County, ND

Sta 16687+00 to 16707+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	40	11





Spec Code Bid Item	Unit	Quantity
764 2020 REMOVE 3-CABLE GUARDRAIL & POSTS		
16717+31, RT to 16719+93, RT	LF	263
770 4560 REMOVE LIGHT STANDARD		
16707+06, RT	EA	1
16709+79, RT	EA	1
16715+15, LT	EA	1
16717+18, RT	EA	1
16719+88, LT	EA	1
Total	EA	6
772 3125 REMOVE TRAFFIC SIGNAL SYSTEM		
16717+06, LT	EA	1
772 3180 REMOVE WOOD POLE		
16715+35, RT	EA	1
16715+38, LT	EA	1
16717+09, RT	EA	1
16717+10, LT	EA	1
Total	EA	4

Spec Code Bid Item	Unit	Quantity
202 0114 REMOVAL OF CONCRETE PAVEMENT		
16715+72, RT (Curb Ramp)	SY	8
16716+95, RT (Curb Ramp)	SY	22
Total	SY	30
202 0135 REMOVAL OF BITUMINOUS SURFACING		
16707+00 to 16721+00 (Mainline)	TON	3160
16709+02, LT (Driveway)	TON	20
16716+31, RT (20th Ave E)	TON	260
16717+02, RT to 16720+01 (Shared Use Path)	TON	70
Total	TON	3510
202 0130 REMOVAL OF CURB & GUTTER		
16707+00, LT to 16708+80, LT	LF	180
16707+00, RT to 16716+06, RT	LF	936
16709+25, LT to 16721+06, LT	LF	1181
16716+68, RT to 16720+92, RT	LF	477
Total	LF	2774
202 0174 REMOVAL OF PIPE ALL TYPES AND SIZES		
16708+38, RT to 16708+38, LT	LF	58
16711+47, LT to 16711+57, LT	LF	10
16711+82, LT to 16712+02, LT	LF	24
16711+84, RT to 16711+84, LT	LF	61
16713+49, RT to 16713+49, LT	LF	115
16713+49, RT to 16715+34, RT	LF	185
16715+34, RT to 16715+91, RT	LF	63
16716+49, LT (18" CSP)	LF	58
Total	LF	574
202 0210 REMOVAL OF MANHOLES		
16713+49, RT	EA	1
16715+34, RT	EA	1
Total	EA	2
202 0230 REMOVAL OF INLETS		
16708+38, LT & RT	EA	2
16711+84, LT & RT	EA	2
16715+91, RT	EA	1
16718+83, RT & RT	EA	2
16720+54, LT & RT	EA	2
Total	EA	9
202 0400 REMOVAL OF RIPRAP - LOOSE ROCK		
16720+34, LT to 16721+81, LT	CY	1470
714 9680 PLUG PIPE-ALL TYPES & SIZES		
16718+83, RT	EA	1
16720+53, RT	EA	1
Total	EA	2
722 3296 ABANDON STORM SEWER SYSTEM		
	LSUM	1

Removal of Concrete

REMOVE — Removal of Bituminous Surfacing

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Removals

ND 1804 Reconstruction

Williams County, ND

Sta 16707+00 to Sta 16723+00

HYDRAULIC DATA FOR Project SOIB-7-804(054)312 (A)

STATION	EXISTING PIPE	PROPOSED PIPE SIZE	DRAINAGE AREA (ACRES)	Design-25-YEAR DATA				100-YEAR DATA	
				DESIGN DISCHARGE (CFS)	DESIGN HEADWATER (FT)	DESIGN VELOCITY (FPS)	DESIGN STAGE (NAVD 88)	100-YEAR DISCHARGE (CFS)	100-YEAR STAGE (NAVD 88)
16524+00	24" RCP	42"	49.1	76.8	4.77	21.88	2,133.56'	122.3	2,137.43'
16547+35	36" RCP	36" RCP	53.6	29.5	2.60	16.84	2,072.14'	48.2	2,073.34'
16554+50	4' x 6' RCB Cattle Pass	4' x 6' RCB Cattle Pass	22.2	45.6	2.66	13.74	2,064.59'	62.2	2,065.20'
16580+52	4' x 6' RCB Cattle Pass	4' x 6' RCB Cattle Pass	48.9	24.6	1.76	11.83	2,063.92'	40.0	2,064.59'
16617+98	24" RCP	36"	173.0	47.0	3.75	13.21	1,970.70'	75.7	1973.46'

(A) Hydraulic data provided is for smooth-walled type conduits.

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Culvert Hydraulic Data

ND 1804 Reconstruction
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	50	2

INLET AND MANHOLE SUMMARY

Inlet No.	1A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16604+00	31.00' RT
Grate Elev.	2003.83	
Base Elev.	1999.49	
Invert Elev.	2000.03	
H' Dist.	4	

Inlet No.	2A	
Type	Inlet - Type 2	With 20 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16605+78	31.00' RT
Grate Elev.	1996.41	
Base Elev.	1992.06	
Invert Elev.	1992.59	
H' Dist.	4	

Inlet No.	3A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16608+61	31.00' RT
Grate Elev.	1985.22	
Base Elev.	1980.29	
Invert Elev.	1980.82	
H' Dist.	4	

Inlet No.	4A	
Type	Inlet - Type 2	With 20 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16609+86	31.00' RT
Grate Elev.	1980.26	
Base Elev.	1975.77	
Invert Elev.	1976.45	
H' Dist.	4	

Inlet No.	5A	
Type	Inlet - Type 2	With 10 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16611+40	31.00' RT
Grate Elev.	1976.85	
Base Elev.	1972.52	
Invert Elev.	1973.04	
H' Dist.	4	

Inlet No.	6A	
Type	Inlet - Type 2	With 10 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16612+24	31.00' RT
Grate Elev.	1975.9	
Base Elev.	1971.57	
Invert Elev.	1972.09	
H' Dist.	4	

Inlet No.	7A	
Type	Inlet - Type 2	With 10 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16613+29	31.00' RT
Grate Elev.	1975.36	
Base Elev.	1971.01	
Invert Elev.	1971.54	
H' Dist.	4	

Inlet No.	8A	
Type	Inlet - Type 2	With 10 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16614+36	31.00' RT
Grate Elev.	1975.17	
Base Elev.	1970.84	
Invert Elev.	1971.36	
H' Dist.	4	

Inlet No.	9A	
Type	Inlet - Type 2	With 10 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16616+06	31.00' RT
Grate Elev.	1974.33	
Base Elev.	1970.00	
Invert Elev.	1970.51	
H' Dist.	4	

Inlet No.	10A	
Type	Inlet- Type 2	With 10 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16616+06	31.00' LT
Grate Elev.	1974.33	
Base Elev.	1969.00	
Invert Elev.	1969.29	
H' Dist.	5.00	

Inlet No.	11A	
Type	Inlet Special - Type 2 60in	
Grate Style	Type D	
Sta., Off. Inlet	16617+99.5	31.00' RT
Sta., Off. Manhole	16617+98.2	31.00' RT
Grate Elev.	1973.49	
Base Elev.	1964.87	
Invert Elev.	1965.20	
	36 in. Conduit N	1965.20
	15 in. Conduit E	1967.19
	15 in. Conduit W	1967.19
	36 in. Conduit S	1965.30
H' Dist.	7.62	

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Inlet & Manhole Summary

ND 1804 Reconstruction
Williams County, ND

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INLET AND MANHOLE SUMMARY

Inlet No.	11B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16617+56	31.00' RT
Grate Elev.	1973.58	
Base Elev.	1969.25	
Invert Elev.	1969.43	
H' Dist.	4	

Inlet No.	11C	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16618+52	31.00' RT
Grate Elev.	1973.62	
Base Elev.	1969.29	
Invert Elev.	1969.47	
H' Dist.	4	

Inlet No.	12A	
Type	Inlet Special - Type 2 60in	
Grate Style	Type D	
Sta., Off. Inlet	16617+99.5	31.00' LT
Sta., Off. Manhole	16617+98.2	31.00' LT
Grate Elev.	1973.49	
Base Elev.	1966.19	
Invert Elev.	1966.52	
	36 in. Conduit N	1966.52
	15 in. Conduit E	1968.51
	15 in. Conduit W	1968.51
	36 in. Conduit S	1966.62
H' Dist.	6.3	

Inlet No.	12B	
Type	Inlet- Type 2	
Grate Style	Type V	
Sta., Off.	16617+56	31.00' LT
Grate Elev.	1973.58	
Base Elev.	1969.25	
Invert Elev.	1969.43	
H' Dist.	4	

Inlet No.	12C	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16618+52	31.00' LT
Grate Elev.	1973.62	
Base Elev.	1969.29	
Invert Elev.	1969.47	
H' Dist.	4	

Inlet No.	13A	
Type	Inlet - Type 2	With 25 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16620+00	31.00' LT
Grate Elev.	1974.35	
Base Elev.	1970.02	
Invert Elev.	1970.22	
H' Dist.	4	

Inlet No.	14A	
Type	Inlet - Type 2	With 20 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16620+00	31.00' RT
Grate Elev.	1974.35	
Base Elev.	1970.02	
Invert Elev.	1970.54	
H' Dist.	4	

Inlet No.	15A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16625+00	31.00' RT
Grate Elev.	1971.77	
Base Elev.	1967.44	
Invert Elev.	1967.64	
H' Dist.	4	

Inlet No.	16A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16625+00	43.00' LT
Grate Elev.	1971.52	
Base Elev.	1967.19	
Invert Elev.	1967.39	
H' Dist.	4.00	

Inlet No.	17A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16626+69	31.00' RT
Grate Elev.	1969.49	
Base Elev.	1965.16	
Invert Elev.	1965.36	
H' Dist.	4	

Inlet No.	18A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16626+69	37.29' LT
Grate Elev.	1969.36	
Base Elev.	1965.03	
Invert Elev.	1965.23	
H' Dist.	4	

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Inlet No.	19A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16628+05	31.00' RT
Grate Elev.	1967.99	
Base Elev.	1963.66	
Invert Elev.	1963.85	
H' Dist.	4	

Inlet No.	20A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16628+05	31.00' LT
Grate Elev.	1967.99	
Base Elev.	1963.66	
Invert Elev.	1963.85	
H' Dist.	4	

Inlet No.	21A	
Type	Inlet- Type 2	
Grate Style	Type V	
Sta., Off.	16629+72	31.00' RT
Grate Elev.	1966.73	
Base Elev.	1962.40	
Invert Elev.	1962.60	
H' Dist.	4	

Inlet No.	22A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16629+72	31.00' LT
Grate Elev.	1966.73	
Base Elev.	1962.40	
Invert Elev.	1962.60	
H' Dist.	4	

Inlet No.	23A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16631+41	31.00' RT
Grate Elev.	1965.46	
Base Elev.	1961.13	
Invert Elev.	1961.33	
H' Dist.	4	

Inlet No.	24A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16631+41	31.00' LT
Grate Elev.	1965.46	
Base Elev.	1961.13	
Invert Elev.	1961.33	
H' Dist.	4	

Inlet No.	25A	
Type	Inlet - Type 2	With 30 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16633+50	31.00' RT
Grate Elev.	1963.89	
Base Elev.	1959.38	
Invert Elev.	1959.59	
H' Dist.	4.18	

Manhole No.	MH-26 60 in.	
Sta., Off.	16633+50	37.90' LT
Top Elev.	1964.00	
Base Elev.	1957.97	
Invert Elev.	1958.30	
	15 in. Conduit N	1960.40
	36 in. Conduit E	1958.40
	36 in. Conduit W	1958.30
H' Dist.	4.36	

Inlet No.	26A	
Type	Inlet - Type 2	With 30 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16633+50	31.00' LT
Grate Elev.	1963.88	
Base Elev.	1959.55	
Invert Elev.	1960.51	
H' Dist.	4	

Inlet No.	27A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16635+87	31.00' RT
Grate Elev.	1962.10	
Base Elev.	1957.77	
Invert Elev.	1957.97	
H' Dist.	4	

Manhole No.	MH-28 84 in.	
Sta., Off.	16635+90.5	38.00' LT
Top Elev.	1962.40	
Base Elev.	1956.73	
Invert Elev.	1957.20	
	15 in. Conduit N	1959.30
	36 in. Conduit E	1957.30
	30 in. Conduit S	1957.80
	36 in. Conduit W	1957.20
H' Dist.	4	

Inlet No.	28A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16635+87	31.00' LT
Grate Elev.	1962.10	
Base Elev.	1957.77	
Invert Elev.	1959.40	
H' Dist.	4	

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Inlet No.	29A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16637+59	31.00' RT
Grate Elev.	1960.81	
Base Elev.	1956.38	
Invert Elev.	1956.58	
H' Dist.	4	

Inlet No.	30A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16637+59	43.00' LT
Grate Elev.	1960.56	
Base Elev.	1956.23	
Invert Elev.	1956.74	
H' Dist.	4	

Inlet No.	31A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16638+60	31.00' RT
Grate Elev.	1960.05	
Base Elev.	1955.72	
Invert Elev.	1955.92	
H' Dist.	4	

Inlet No.	32A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16638+60	43.00' LT
Grate Elev.	1959.80	
Base Elev.	1955.47	
Invert Elev.	1955.96	
H' Dist.	4	

Inlet No.	33A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16640+16	30.64' RT
Grate Elev.	1958.88	
Base Elev.	1952.00	
Invert Elev.	1952.21	
H' Dist.	6.55	

Inlet No.	34A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16640+16	33.26' LT
Grate Elev.	1958.83	
Base Elev.	1954.50	
Invert Elev.	1954.70	
H' Dist.	4	

Inlet No.	35A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16642+00	26.56' RT
Grate Elev.	1957.58	
Base Elev.	1951.75	
Invert Elev.	1951.96	
H' Dist.	5.5	

Inlet No.	36A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16642+00	26.56' LT
Grate Elev.	1957.58	
Base Elev.	1953.25	
Invert Elev.	1953.46	
H' Dist.	4	

Manhole No.	MH-37 60 in.	
Sta., Off.	16644+62	32.75' LT
Top Elev.	1953.59	
Base Elev.	1947.27	
Invert Elev.	1947.60	
	15 in. Conduit N	1949.78
	36 in. Conduit E	1947.70
	30 in. Conduit W	1947.60
H' Dist.	4.65	

Inlet No.	37A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16644+62	25.00' RT
Grate Elev.	1953.48	
Base Elev.	1949.15	
Invert Elev.	1950.82	
H' Dist.	4	

Inlet No.	37B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16644+62	25.00' LT
Grate Elev.	1953.48	
Base Elev.	1949.15	
Invert Elev.	1949.88	
	15 in. Conduit N	1949.98
	15 in. Conduit S	1949.88
H' Dist.	4	

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Manhole No.	MH-38 60 In.	
Sta., Off.	16648+77	40.6' LT
Top Elev.	1936.24	
Base Elev.	1927.81	
Invert Elev.	1928.1	
	24 in. Conduit N	1931.90
	30 In. Conduit E	1928.20
	24 in. Conduit S	1931.90
	30 In. Conduit W	1928.10
H' Dist.	8.63	
Inlet No.	38A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16648+77	25.00' RT
Grate Elev.	1936.15	
Base Elev.	1932.13	
Invert Elev.	1932.46	
	24 in. Conduit N	1932.56
	24 in. Conduit S	1932.46
H' Dist.	4	
Inlet No.	38B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16648+77	25.00' LT
Grate Elev.	1936.15	
Base Elev.	1932.79	
Invert Elev.	1932.12	
	24 in. Conduit N	1932.22
	24 In. Conduit S	1932.12
H' Dist.	4	

Manhole No.	MH-39 66 in.	
Sta., Off.	16652+88	40.00' LT
Top Elev.	1913.04	
Base Elev.	1905.87	
Invert Elev.	1906.16	
	24 in. Conduit N	1906.26
	30 in. Conduit E	1906.26
	24 in. Conduit S	1906.26
	30 in. Conduit W	1906.16
H' Dist.	5.5	
Inlet No.	39A	
Type	Inlet - Type 2	With 20 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16652+88	26.59' RT
Grate Elev.	1912.44	
Base Elev.	1906.45	
Invert Elev.	1906.66	
	24 in. Conduit N	1906.76
	24 in. Conduit S	1906.66
H' Dist.	5.66	
Inlet No.	39B	
Type	Inlet - Type 2	With 20 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16652+88	26.04' LT
Grate Elev.	1912.45	
Base Elev.	1906.00	
Invert Elev.	1906.31	
	24 in. Conduit N	1906.41
	24 in. Conduit S	1906.31
H' Dist.	6.15	

Manhole No.	MH-40 48 in.	
Sta., Off.	16655+56.80	34.12' LT
Top Elev.	1897.45	
Base Elev.	1891.78	
Invert Elev.	1892.11	
	30 In. Conduit E	1892.21
	30 In. Conduit W	1892.11
H' Dist.	4	
Inlet No.	41A	
Type	Inlet - Type 2	With 25 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16658+23	31.00' RT
Grate Elev.	1883.03	
Base Elev.	1878.70	
Invert Elev.	1878.90	
H' Dist.	4	
Manhole No.	MH-42 54 in.	
Sta., Off.	16658+23	37.45' LT
Top Elev.	1882.75	
Base Elev.	1877.08	
Invert Elev.	1877.47	
	15 in. Conduit N	1878.92
	30 in. Conduit E	1877.57
	30 in. Conduit W	1877.47
H' Dist.	4	
Inlet No.	42A	
Type	Inlet - Type 2	With 25 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16658+23	31.00' LT
Grate Elev.	1883.03	
Base Elev.	1878.70	
Invert Elev.	1879.04	
H' Dist.	4	

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Inlet No.	43A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16661+56	31.00' RT
Grate Elev.	1871.64	
Base Elev.	1865.81	
Invert Elev.	1866.12	
H' Dist.	5.5	
Manhole No.	MH-44 84 In.	
Sta., Off.	16662+25	48.00' LT
Top Elev.	1869.07	
Base Elev.	1857.77	
Invert Elev.	1858.10	
	15 In. Conduit N	1865.52
	30 In. Conduit E	1859.75
	30 In. Conduit S	1859.75
	36 In. Conduit W	1858.10
H' Dist.	10.26	
Inlet No.	44A	
Type	Inlet - Type 2	With 20 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16661+56	31.00' LT
Grate Elev.	1871.64	
Base Elev.	1867.21	
Invert Elev.	1867.51	
H' Dist.	4.13	

Inlet No.	44B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16662+25	41.07' LT
Grate Elev.	1869.91	
Base Elev.	1865.58	
Invert Elev.	1865.72	
	15 in. Conduit E	1865.82
	15 in. Conduit S	1865.72
H' Dist.	4	
Inlet No.	45A	
Type	Inlet - Type 2	With 20 LF of 15" Slotted Drain
Grate Style	Type V	
Sta., Off.	16663+45	31.00' RT
Grate Elev.	1868.15	
Base Elev.	1863.82	
Invert Elev.	1864.02	
H' Dist.	4	
Inlet No.	46A	
Type	Inlet - Special Type 2 48 in.	
Grate Style	Type D	
Sta., Off.	16665+58	43.00' LT
Grate Elev.	1866.53	
Base Elev.	1860.70	
Invert Elev.	1860.90	
	15 in. Conduit E	1862.50
	15 in. Conduit W	1862.50
	18 in. Conduit S	1860.90
H' Dist.	5.5	

Inlet No.	46B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16664+68	43.00' LT
Grate Elev.	1866.78	
Base Elev.	1862.45	
Invert Elev.	1863.03	
H' Dist.	4	
Inlet No.	46C	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16665+26	43.00' LT
Grate Elev.	1866.56	
Base Elev.	1862.23	
Invert Elev.	1862.65	
	15 in. Conduit E	1862.75
	15 in. Conduit W	1862.65
H' Dist.	4	
Inlet No.	46D	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16665+87	43.00' LT
Grate Elev.	1866.56	
Base Elev.	1862.23	
Invert Elev.	1862.63	
H' Dist.	4	

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Inlet No.	47A	
Type	Inlet Special - Type 2 48"	
Grate Style	Type D	
Sta., Off.	16665+58	31.00' RT
Grate Elev.	1866.78	
Base Elev.	1862.45	
Invert Elev.	1862.65	
	15 in. Conduit E	1862.75
	15 in. Conduit W	1862.75
	18 in. Conduit N	1862.65
H' Dist.	4	

Inlet No.	47B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16665+26	31.00' RT
Grate Elev.	1866.81	
Base Elev.	1862.48	
Invert Elev.	1862.90	
H' Dist.	4	

Inlet No.	47C	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16665+87	31.00' RT
Grate Elev.	1866.81	
Base Elev.	1862.48	
Invert Elev.	1862.88	
H' Dist.	4	

Inlet No.	48A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16668+05	43.00' LT
Grate Elev.	1868.36	
Base Elev.	1861.53	
Invert Elev.	1861.73	
H' Dist.	6.5	

Inlet No.	49A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16668+05	31.00' RT
Grate Elev.	1868.61	
Base Elev.	1864.28	
Invert Elev.	1864.58	
H' Dist.	4	

Inlet No.	50A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16669+12	43.00' LT
Grate Elev.	1870.29	
Base Elev.	1865.96	
Invert Elev.	1866.26	
H' Dist.	4	

Inlet No.	51A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16670+60	31.00' RT
Grate Elev.	1874.35	
Base Elev.	1870.02	
Invert Elev.	1870.84	
H' Dist.	4	

Inlet No.	51B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16670+54	31.00' RT
Grate Elev.	1874.17	
Base Elev.	1869.84	
Invert Elev.	1870.64	
	15 in. Conduit W	1870.74
	15 in. Conduit S	1870.64
H' Dist.	4	

Inlet No.	51C	
Type	Inlet- Type 2	
Grate Style	Type V	
Sta., Off.	16670+60	38.33' LT
Grate Elev.	1874.20	
Base Elev.	1869.87	
Invert Elev.	1870.40	
H' Dist.	4	

Inlet No.	51D	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16670+54	38.83' LT
Grate Elev.	1874.00	
Base Elev.	1869.67	
Invert Elev.	1870.20	
	15 in. Conduit N	1870.30
	15 in. Conduit W	1870.30
	18 in. Conduit S	1870.20
H' Dist.	4	

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Inlet No.	52A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16674+06	31.00' LT
Grate Elev.	1887.65	
Base Elev.	1883.32	
Invert Elev.	1884.20	
H' Dist.	4	

Inlet No.	52B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16674+00	31.00' LT
Grate Elev.	1887.40	
Base Elev.	1883.07	
Invert Elev.	1884.00	
	15 in. Conduit W	1884.10
	15 in. Conduit N	1884.00
H' Dist.	4	

Inlet No.	52C	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16674+06	31.00' RT
Grate Elev.	1887.65	
Base Elev.	1883.32	
Invert Elev.	1883.80	
H' Dist.	4	

Inlet No.	52D	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16674+00	31.00' RT
Grate Elev.	1887.40	
Base Elev.	1883.07	
Invert Elev.	1883.60	
	15 in. Conduit W	1883.70
	15 in. Conduit S	1883.70
	18 in. Conduit N	1883.60
H' Dist.	4	

Inlet No.	53A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16678+00	30.21' LT
Grate Elev.	1903.12	
Base Elev.	1898.79	
Invert Elev.	1899.79	
H' Dist.	4	

Inlet No.	53B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16678+00	28.41' RT
Grate Elev.	1903.15	
Base Elev.	1898.82	
Invert Elev.	1899.40	
	15 in. Conduit S	1899.50
	18 in. Conduit N	1899.40
H' Dist.	4	

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Inlet No.	54A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16687+25	40.63' RT
Grate Elev.	1906.68	
Base Elev.	1902.35	
Invert Elev.	1902.56	
H' Dist.	4	

Inlet No.	55A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16687+25	28.88' LT
Grate Elev.	1906.93	
Base Elev.	1902.60	
Invert Elev.	1902.81	
H' Dist.	4	

Inlet No.	(EX) MH-56 48 in.	
Sta., Off.	16688+83.76	25.25 RT
Top Elev.	1903.21	
Base Elev.	1889.55	
Invert Elev.	1889.80	
	(EX) 24 in. Conduit N	1889.80
	(EX) 24 in. Conduit S	1889.80
H' Dist.	12.16	

Manhole No.	(EX) MH-57 48 in.	
Sta., Off.	16688+83.26	25.00' LT
Top Elev.	1903.23	
Base Elev.	1887.64	
Invert Elev.	1887.89	
	(EX)24 in. Conduit N	1887.89
	(EX) 24 in. Conduit S	1887.89
	15 in. Conduit S	1900.03
	(EX) 15in. Conduit W	1887.89
H' Dist.	14.09	

Inlet No.	57A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16688+83.26	31.00' LT
Grate Elev.	1902.96	
Base Elev.	1898.63	
Invert Elev.	1900.14	
H' Dist.	4	

Inlet No.	58A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16689+20	43.00' RT
Grate Elev.	1901.79	
Base Elev.	1897.46	
Invert Elev.	1897.74	
H' Dist.	4	

Inlet No.	58B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16689+25	43.00' RT
Grate Elev.	1901.67	
Base Elev.	1895.34	
Invert Elev.	1895.65	
	18 in. Conduit N	1895.65
	15 in. Conduit E	1897.64
H' Dist.	6	

Inlet No.	59A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16689+25	31.00' LT
Grate Elev.	1901.92	
Base Elev.	1896.09	
Invert Elev.	1896.29	
H' Dist.	5.5	

Manhole No.	MH-60 54 in.	
Sta., Off.	16692+50	33.09' LT
Top Elev.	1894.79	
Base Elev.	1888.98	
Invert Elev.	(EX) 1889.21	
	15 in. Conduit N	1889.23
	15 in. Conduit W	1889.31
	(EX) 15 in. Conduit E	1889.21
H' Dist.	5.81	

Inlet No.	(EX) 60A	
Type	Inlet - Catch Basin	
Grate Style	Type A	
Sta., Off.	16692+26.10	48.34' RT
Grate Elev.	1893.22	
Base Elev.	1888.64	
Invert Elev.	1889.85	
H' Dist.	4	

Inlet No.	60B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16692+45	31.00' RT
Grate Elev.	1894.29	
Base Elev.	1889.43	
Invert Elev.	1889.63	
	15 in. Conduit NE	1889.73
	15 in. Conduit W	1889.63
H' Dist.	4.86	

Inlet No.	60C	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16692+50	31.00' RT
Grate Elev.	1894.20	
Base Elev.	1889.06	
Invert Elev.	1889.52	
	15 in. Conduit E	1889.62
	15 in. Conduit S	1889.52
H' Dist.	4.81	

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Inlet No.	60D	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16693+57	31.00' RT
Grate Elev.	1893.21	
Base Elev.	1888.88	
Invert Elev.	1890.38	
H' Dist.	4	

Inlet No.	60E	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16693+03	31.00' LT
Grate Elev.	1893.57	
Base Elev.	1889.24	
Invert Elev.	1889.88	
	15 in. RCP CL III N	1889.98
	15 in. Conduit E	1889.88
H' Dist	4	

Inlet No.	60F	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16692+86	31.00' LT
Grate Elev.	1893.73	
Base Elev.	1889.40	
Invert Elev.	1889.63	
	15 in. Conduit W	1889.73
	15 in. Conduit E	1889.63
H' Dist	4.33	

Manhole No.	MH-61 48 in.	
Sta., Off.	16697+00	24.58' RT
Top Elev.	1886.02	
Base Elev.	1881.52	
Invert Elev.	1881.73	
	15 in. RCP CL III N	1881.83
	15 in. RCP CL III W	1881.73
	15 in. RCP CL III S	1881.83
H' Dist.	4.50	

Inlet No.	61A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16697+00	31.00' RT
Grate Elev.	1885.73	
Base Elev.	1881.40	
Invert Elev.	1881.93	
H' Dist.	4	

Inlet No.	61B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16697+00	31.00' LT
Grate Elev.	1885.73	
Base Elev.	1881.40	
Invert Elev.	1882.96	
H' Dist.	4	

Manhole No.	MH-62 48 in.	
Sta., Off.	16700+40	24.58' RT
Top Elev.	1878.36	
Base Elev.	1874.16	
Invert Elev.	1874.36	
	15 in. RCP CL III N	1874.65
	15 in. RCP CL III E	1874.46
	15 in. RCP CL III W	1874.36
	15 in. RCP CL III S	1874.65
H' Dist.	3.18	

Inlet No.	62A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16700+35	31.00' RT
Grate Elev.	1878.15	
Base Elev.	1873.82	
Invert Elev.	1874.95	
H' Dist.	4	

Inlet No.	62B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16700+40	31.00' RT
Grate Elev.	1878.08	
Base Elev.	1873.75	
Invert Elev.	1874.75	
	15 in. RCP CL III E	1874.85
	15 in. RCP CL III S	1874.75
H' Dist.	4	

Inlet No.	62C	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16700+35	31.00' LT
Grate Elev.	1878.15	
Base Elev.	1873.82	
Invert Elev.	1875.38	
H' Dist.	4	

Inlet No.	62D	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16700+40	31.00' LT
Grate Elev.	1878.08	
Base Elev.	1873.75	
Invert Elev.	1875.18	
	15 in. RCP CL III N	1875.18
	15 in. RCP CL III E	1875.28
H' Dist.	4	

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Inlet No.	63A	
Type	Inlet Special- Type 2 72 in.	
Grate Style	Type V	
Sta., Off.	16704+34	43.00' RT
Grate Elev.	1868.69	
Base Elev.	1863.19	
Invert Elev.	1863.96	
	24 in. RCP CL III N	1864.09
	15 in. RCP CL III E	1864.89
	15 in. RCP CL III W	1864.06
	24 in. RCP CL III S	1863.96
H' Dist.	4	

Inlet No.	63B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16703+83	43.00' RT
Grate Elev.	1869.97	
Base Elev.	1865.64	
Invert Elev.	1865.83	
H' Dist.	4	

Inlet No.	63C	
Type	Precast Concrete Median Drain	
Grate Style	Type A	
Sta., Off.	16704+34	51.58' RT
Grate Elev.	1868.12	
Base Elev.	1863.79	
Invert Elev.	1864.11	
H' Dist.	4	

Inlet No.	63D	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16704+66	55.61' RT
Grate Elev.	1866.98	
Base Elev.	1862.65	
Invert Elev.	1864.21	
H' Dist.	4	

Manhole No.	MH-64 60 in.	
Sta., Off.	16704+34	24.58' RT
Top Elev.	1869.22	
Base Elev.	1863.47	
Invert Elev.	1863.72	
	24 in. RCP CL III N	1863.82
	15 in. RCP CL III E	1864.47
	24 in. RCP CL III W	1863.72
	18 in. RCP CL III S	1864.22
H' Dist.	4.25	

Inlet No.	64A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16704+29	31.00' LT
Grate Elev.	1869.05	
Base Elev.	1864.72	
Invert Elev.	1865.1	
H' Dist.	4	

Inlet No.	64B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16704+34	31.00' LT
Grate Elev.	1868.94	
Base Elev.	1864.61	
Invert Elev.	1864.82	
	18 in. RCP CL III N	1864.82
	15 in. RCP CL III E	1865.00
H' Dist.	4	

Manhole No.	MH-65 48 in.	
Sta., Off.	16706+22	24.58' RT
Top Elev.	1866.38	
Base Elev.	1861.78	
Invert Elev.	1862.03	
	15 in. Conduit N	1862.80
	24 in. RCP CL III E	1862.13
	24 in. Conduit W	1862.03
	15 in. Conduit S	1862.80
H' Dist.	3.10	

Inlet No.	65A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16706+22	31.12' RT
Grate Elev.	1866.09	
Base Elev.	1861.76	
Invert Elev.	1862.90	
H' Dist.	4	

Inlet No.	65B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16706+22	31.00' LT
Grate Elev.	1866.10	
Base Elev.	1861.77	
Invert Elev.	1863.33	
H' Dist.	4	

Manhole No.	MH-66 48 in.	
Sta., Off.	16707+67	24.58' RT
Top Elev.	1865.63	
Base Elev.	1861.02	
Invert Elev.	1861.27	
	15 in. Conduit N	1862.04
	24 in. Conduit E	1861.37
	24 in. Conduit W	1861.27
	15 in. Conduit S	1862.04
H' Dist.	3.11	

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Inlet No.	66A	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16707+67	31.00' RT
Grate Elev.	1865.34	
Base Elev.	1861.01	
Invert Elev.	1862.14	
H' Dist.	4	

Inlet No.	66B	
Type	Inlet - Type 2	
Grate Style	Type V	
Sta., Off.	16707+67	31.00' LT
Grate Elev.	1865.34	
Base Elev.	1861.01	
Invert Elev.	1862.57	
H' Dist.	4	

Manhole No.	MH-67 48 in.	
Sta., Off.	16709+30	24.58' RT
Top Elev.	1864.80	
Base Elev.	1860.20	
Invert Elev.	1860.45	
	15 in. Conduit N	1861.22
	24 in. Conduit E	1860.55
	24 in. Conduit W	1860.45
	15 in. Conduit S	1861.22
H' Dist.	3.10	

Inlet No.	67A	
Type	Inlet- Type 2	
Grate Style	Type V	
Sta., Off.	16709+30	31.00' RT
Grate Elev.	1864.52	
Base Elev.	1860.19	
Invert Elev.	1861.32	
H' Dist.	4	

Inlet No.	67B	
Type	Inlet- Type 2	
Grate Style	Type V	
Sta., Off.	16709+30	31.00' LT
Grate Elev.	1864.52	
Base Elev.	1860.19	
Invert Elev.	1861.75	
H' Dist.	4	

Manhole No.	MH-68 48 in.	
Sta., Off.	16710+67	24.58' RT
Top Elev.	1864.12	
Base Elev.	1859.52	
Invert Elev.	1859.77	
	15 in. Conduit N	1860.54
	24 in. Conduit E	1859.87
	24 in. Conduit W	1859.77
	15 in. Conduit S	1860.54
H' Dist.	3.10	

Inlet No.	68A	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16710+67	31.00' RT
Grate Elev.	1863.84	
Base Elev.	1859.51	
Invert Elev.	1860.64	
H' Dist.	4	

Inlet No.	68B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16710+67	31.00' LT
Grate Elev.	1863.84	
Base Elev.	1859.51	
Invert Elev.	1861.07	
H' Dist.	4	

Manhole No.	MH-69 48 in.	
Sta., Off.	16711+53	24.58' RT
Top Elev.	1863.69	
Base Elev.	1859.09	
Invert Elev.	1859.34	
	15 in. Conduit N	1860.11
	24 in. Conduit E	1859.44
	24 in. Conduit S	1859.34
H' Dist.	3.10	

Inlet No.	69A	
Type	Inlet Special- Type 2 54 in.	
Grate Style	Type V	
Sta., Off.	16711+53	31.00' LT
Grate Elev.	1863.41	
Base Elev.	1858.21	
Invert Elev.	1858.98	
	24 in. Conduit N	1859.08
	24 in. Conduit S	1858.98
H' Dist.	4	

Inlet No.	69B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16711+53	31.00' RT
Grate Elev.	1863.41	
Base Elev.	1859.08	
Invert Elev.	1860.64	
H' Dist.	4	

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Inlet No.	70A	
Type	Inlet-Type 2	Double
Grate Style	Type D	
Sta., Off.	16711+90.0	31.00' RT
Grate Elev.	1863.35	
Base Elev.	1859.02	
Invert Elev.	1859.32	
H' Dist.	4	

Inlet No.	70B	
Type	Inlet-Type 2	Double
Grate Style	Type D	
Sta., Off.	16711+91.5	31.00' LT
Grate Elev.	1863.34	
Base Elev.	1858.04	
Invert Elev.	1858.92	
H' Dist.	4.42	

Inlet No.	71A	
Type	Inlet Special- Type 2 48 in.	
Grate Style	Type V	
Sta., Off.	16713+49	43.00' RT
Grate Elev.	1864.16	
Base Elev.	1859.33	
Invert Elev.	1859.62	
	30 in. Conduit N	1859.72
	30 in. Conduit S	1859.62
H' Dist.	4.00	

Inlet No.	72A	
Type	Inlet Special- Type 2 48 in.	
Grate Style	Type V	
Sta., Off.	16713+49	31.00' LT
Grate Elev.	1864.42	
Base Elev.	1858.4	
Invert Elev.	1858.69	
	30 in. Conduit N	1858.79
	30 in. Conduit S	1858.69
H' Dist.	5.19	

Inlet No.	73A	
Type	Inlet-Type 2	Double
Grate Style	Type D	
Sta., Off.	16715+55.13	44.49' RT
Grate Elev.	1865.29	
Base Elev.	1858.22	
Invert Elev.	1858.43	
H' Dist.	7	

Inlet No.	74A	
Type	Inlet- Type 2	
Grate Style	Type V	
Sta., Off.	16717+53	34.5' RT
Grate Elev.	1864.48	
Base Elev.	1858.94	
Invert Elev.	1859.17	
H' Dist.	6	

Inlet No.	74B	
Type	Inlet-Type 2	
Grate Style	Type V	
Sta., Off.	16717+53	31.00' LT
Grate Elev.	1864.55	
Base Elev.	1857.35	
Invert Elev.	1857.58	
	15 in. Conduit N	1858.55
	18 in. Conduit S	1857.58
H' Dist.	7	

Inlet No.	75A	
Type	Inlet-Type 2	Double
Grate Style	Type D	
Sta., Off.	16718+90	34.5' RT
Grate Elev.	1863.88	
Base Elev.	1859.55	
Invert Elev.	1859.00	
H' Dist.	4	

Inlet No.	75B	
Type	Inlet-Type 2	Double
Grate Style	Type D	
Sta., Off.	16718+90	31.00' LT
Grate Elev.	1863.95	
Base Elev.	1857.62	
Invert Elev.	1857.85	
	15 in. Conduit N	1858.38
	18 in. Conduit S	1857.85
H' Dist.	6	

Inlet No.	76A	
Type	Inlet-Type 2	
Grate Style	Type D	
Sta., Off.	16720+53	25.44' RT
Grate Elev.	1863.30	
Base Elev.	1858.97	
Invert Elev.	1859.94	
H' Dist.	4	

Inlet No.	76B	
Type	Inlet-Type 2	
Grate Style	Type D	
Sta., Off.	16720+53	25.80' LT
Grate Elev.	1863.30	
Base Elev.	1858.97	
Invert Elev.	1859.34	
	15 in. Conduit N	1859.44
	18 in. Conduit S	1859.34
H' Dist.	4	

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Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	Riprap Loose Rock (Pay Item)	RR Fabric (Pay Item)	(*) End Sections		Applicable Backfill Detail
															Begin	End	
				In	Bid Item	LF		In	Type		In	SY	CY	SY	EA	EA	
16522+52	70' RT	16523+66	70' RT	36	Pipe Conduit - Approach	115	Reinforced Concrete Pipe - Class II**(barrel length = 112 LF)**	36							TES (Traversable) 6:1	TES (Traversable) 6:1	Spec. 714.04A
							Corrogated Steel Pipe	42	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	36	Z, A, P	3/4, 1	0.064						
							High-Density Polyethylene	36									
16522+67	108' LT	16523+89	116' LT	24	Pipe Conduit - Approach	123	Reinforced Concrete Pipe - Class III**(barrel length = 118 LF)**	24					27	50	FES	FES	Spec. 714.04A
							Corrogated 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									
16524+00	77' RT	16524+00	90' LT	42	Pipe Conduit	170	Reinforced Concrete Pipe - Class III**(barrel length = 164 LF)**	42				1101	62	98	FES	FES	Standard D-714-25
							Corrogated Steel Pipe	42	Z	2	0.168						
							Corrogated Steel Pipe	42	A	2	0.138						
							Corrogated Steel Pipe	42	P	2	0.064						
							Spiral Rib Steel Pipe	42	P	3/4, 1	0.064						
16547+35	91' RT	16547+35	61' RT	36	Pipe Conc. Reinf. CL IV (Extension)	31	Reinforced Concrete Pipe - Class IV**(barrel length = 28 LF)**	36							Remove & Relay		Section 20 Sheet 5
16547+36	61'LT	16547+36	117' LT	36	Pipe Conc. Reinf. CL IV (Extension)	57	Reinforced Concrete Pipe - Class IV**(barrel length = 54 LF)**	36					29	52.0		Remove & Relay	Section 20 Sheet 5
16550+13	68' LT	16550+56	62' LT	18	Pipe Conduit - Approach	45	Reinforced Concrete Pipe - Class III**(barrel length = 44 LF)**	18							TES (Traversable) 6:1	TES (Traversable) 6:1	Spec. 714.04A
							Corrogated 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									
16554+49	77' LT	16554+49	31' LT	48x72	Pipe Conc. Reinf. CL III Arch (Extension)	46	Reinforced Concrete Pipe - Class III**(barrel length = 44 LF)** **RCPA Arch - Cattlepass**	48x72 Arch							Remove & Relay		Section 20 Sheet 5
16554+51	36' RT	16554+53	77' RT	48x72	Pipe Conc. Reinf. CL III Arch (Extension)	42	Reinforced Concrete Pipe - Class III**(barrel length = 40 LF)** **RCPA Arch - Cattlepass**	48x72 Arch								Remove & Relay	Section 20 Sheet 5
16580+49	63' LT	16580+51	32' LT	48x72	Pipe Conc. Reinf. CL III Arch (Extension)	32	Reinforced Concrete Pipe - Class III**(barrel length = 30 LF)** **RCPA Arch - Cattlepass**	48x72 Arch							Remove & Relay		Section 20 Sheet 5
16580+53	33' RT	16580+55	62' RT	48x72	Pipe Conc. Reinf. CL III Arch (Extension)	30	Reinforced Concrete Pipe - Class III**(barrel length = 28 LF)** **RCPA Arch - Cattlepass**	48x72 Arch								Remove & Relay	Section 20 Sheet 5
16587+09	68' RT	16587+66	68' RT	18	Pipe Conduit - Approach	58	Reinforced Concrete Pipe - Class III**(barrel length = 50 LF)**	18							FES	FES	Spec. 714.04A
							Corrogated 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									
16592+30	62' LT	16593+13	60' LT	24	Pipe Conduit - Approach	84	Reinforced Concrete Pipe - Class III**(barrel length = 82 LF)**	24					27	50	TES (Traversable) 6:1	TES (Traversable) 6:1	Spec. 714.04A
							Corrogated 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									
16600+75	75' LT	16601+73	74' LT	42	Pipe Conduit - Approach	102	Reinforced Concrete Pipe - Class III**(barrel length = 96 LF)**	42					62	98	FES	FES	Spec. 714.04A
							Corrogated Steel Pipe	42	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	42	Z, A, P	3/4, 1	0.064						
							High-Density Polyethylene	42									
16600+89	184' LT	16600+89	222' LT	18	Pipe Conduit - Approach	40	Reinforced Concrete Pipe - Class III**(barrel length = 32 LF)**	18							FES	FES	Spec. 714.04A
							Corrogated Steel Pipe	24	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	18	Z, A, P	3/4, 1	0.064						
							High-Density Polyethylene	18									
16600+92	68' RT	16601+57	68' RT	24	Pipe Conduit - Approach	66	Reinforced Concrete Pipe - Class III**(barrel length = 60 LF)**	24							FES	FES	Spec. 714.04A
							Corrogated 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									
16604+00	32' RT	16604+00	46' RT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class III**(barrel length = 14 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16605+78	32' RT	16605+78	46' RT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class III**(barrel length = 14 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Poylethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16608+61	32' RT	16608+61	46' RT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class III**(barrel length = 14 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16609+86	32' RT	16609+86	46' RT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class III**(barrel length = 14 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						

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

Corrug **2** = 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"

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

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

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Allowable Pipe List

ND 1804 Reconstruction
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	51	2

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	Riprap Loose Rock (Pay Item)	RR Fabric (Pay Item)	(*) End Sections		Applicable Backfill Detail
															Begin	End	
				In	Bid Item	LF		In	Type		In	SY	CY	SY	EA	EA	
16610+03	65' LT	16610+66	66' LT	36	Pipe Conduit - Approach	66	Reinforced Concrete Pipe - Class **III(barrel length = 60 LF)**	36					29	52	FES	FES	Spec. 714.04A
							Corrugated Steel Pipe	42	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
							High-Density Polyethylene	36									
16610+17	64' RT	16610+57	64' RT	36	Pipe Conduit - Approach	42	Reinforced Concrete Pipe - Class **III(barrel length = 36 LF)**	36							FES	FES	Spec. 714.04A
							Corrugated Steel Pipe	42	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
							High-Density Polyethylene	36									
16611+40	32' RT	16611+40	46' RT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class **III(barrel length = 14 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Poylethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16612+24	32' RT	16612+24	46' RT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class **III(barrel length = 14 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16613+29	32' RT	16613+29	46' RT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class **III(barrel length = 14 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16614+36	32' RT	16614+36	46' RT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class **III(barrel length = 14 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16616+06	32' RT	16616+06	46' RT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class **III(barrel length = 14 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16616+06	32' LT	16616+06	54' LT	18	Pipe Conduit - Storm Drain	23	Reinforced Concrete Pipe - Class **III(barrel length = 22 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16616+32	63' RT	16617+02	63' RT	36	Pipe Conduit - Approach	72	Reinforced Concrete Pipe - Class **III(barrel length = 66 LF)**	36							FES	FES	Spec. 714.04A
							Corrugated Steel Pipe	42	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
							High-Density Polyethylene	36									
16617+57	31' RT	16617+96	31' RT	15	Pipe Conduit - Storm Drain	40	Reinforced Concrete Pipe - Class **III(barrel length = 40 LF)**	15				181					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16617+57	31' LT	16617+96	31' LT	15	Pipe Conduit - Storm Drain	40	Reinforced Concrete Pipe - Class **III(barrel length = 40 LF)**	15				181					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16617+98.17	49.3' LT	16617+98.17	33.5' LT	36	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class **II(barrel length = 16 LF)**	36				111			TES (Traversable) 4:1		Standard D-714-25
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
16617+98.17	28.5' LT	16617+98.17	28.5' RT	36	Pipe Conduit - Storm Drain	58	Reinforced Concrete Pipe - Class **II(barrel length = 58 LF)**	36				380					Standard D-714-25
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
16617+98.17	33.5' RT	16617+98.17	58.5' RT	36	Pipe Conduit - Storm Drain	27	Reinforced Concrete Pipe - Class **II(barrel length = 24 LF)**	36				164	29	52		FES	Standard D-714-25
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
16618+01	31' LT	16618+51	31' LT	15	Pipe Conduit - Storm Drain	52	Reinforced Concrete Pipe - Class **III(barrel length = 52 LF)**	15				237					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16618+01	31' RT	16618+51	31' RT	15	Pipe Conduit - Storm Drain	50	Reinforced Concrete Pipe - Class **III(barrel length = 50 LF)**	15				237					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16620+00	32' RT	16620+00	48' RT	18	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class **III(barrel length = 16 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16620+00	32' LT	16620+00	48' LT	18	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class **III(barrel length = 16 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16622+44	70' RT	16623+21	70' RT	24	Pipe Conduit - Approach	77	Reinforced Concrete Pipe - Class **III(barrel length = 72 LF)**	18							FES	FES	Spec. 714.04A
							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									
16625+00	32' RT	16625+00	50' RT	18	Pipe Conduit - Storm Drain	19	Reinforced Concrete Pipe - Class **III(barrel length = 18 LF)**	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16625+00	44' LT	16625+00	60' LT	18	Pipe Conduit - Storm Drain	18	Reinforced Concrete Pipe - Class **III(barrel length = 14 LF)**	18								FES	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						

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3 = 3"x1"
5 = 5"x1"

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

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

ND 1804 Reconstruction
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	51	3

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	Riprap Loose Rock (Pay Item)	RR Fabric (Pay Item)	(*) End Sections		Applicable Backfill Detail
															Begin	End	
				In	Bid Item	LF		In	Type		In	SY	CY	SY	EA	EA	
16626+69	38' LT	16626+69	54' LT	18	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class III(**barrel length = 16 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16626+69	32' RT	16626+69	50' RT	18	Pipe Conduit - Storm Drain	19	Reinforced Concrete Pipe - Class III(**barrel length = 18 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16628+05	32' LT	16628+05	48' LT	18	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class III(**barrel length = 16 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16628+05	32' RT	16628+05	50' RT	18	Pipe Conduit - Storm Drain	19	Reinforced Concrete Pipe - Class III(**barrel length = 18 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16629+72	32' RT	16629+72	50' RT	18	Pipe Conduit - Storm Drain	19	Reinforced Concrete Pipe - Class III(**barrel length = 18 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16629+72	32' LT	16629+72	48' LT	18	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class III(**barrel length = 16 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16631+41	32' RT	16631+41	50' RT	18	Pipe Conduit - Storm Drain	19	Reinforced Concrete Pipe - Class III(**barrel length = 18 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16631+41	32' LT	16631+41	48' LT	18	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class III(**barrel length = 16 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16632+61.7	61.9' LT	16633+47.8	38.5' LT	36	Pipe Conduit - Storm Drain	91	Reinforced Concrete Pipe - Class III(**barrel length = 88 LF**)	36							FES		Standard D-714-27M
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
							High Density Polyethylene	36									
16633+50	32' LT	16633+50	35.7' LT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(**barrel length = 4 LF**)	15									Standard D-714-27
							High Density Polyethylene	15									
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16633+50	32' RT	16633+50	50' RT	18	Pipe Conduit - Storm Drain	19	Reinforced Concrete Pipe - Class III(**barrel length = 18 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16633+52.3	38' LT	16635+86.9	38' LT	36	Pipe Conduit - Storm Drain	234	Reinforced Concrete Pipe - Class III(**barrel length = 234 LF**)	36									Standard D-714-27
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
							High Density Polyethylene	36									
16633+68	70' RT	16634+06	70' RT	24	Pipe Conduit - Approach	39	Reinforced Concrete Pipe - Class III(**barrel length = 34 LF**)	24							FES	FES	Spec. 714.04A
							Corrogated 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									
16635+87	32' RT	16635+87	50' RT	18	Pipe Conduit - Storm Drain	19	Reinforced Concrete Pipe - Class III(**barrel length = 18 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16635+87.5	32' LT	16635+88.9	34.8' LT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(**barrel length = 4 LF**)	15									Standard D-714-27
							High Density Polyethylene	15									
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16635+88.7	58.2' LT	16635+90.2	41.4' LT	30	Pipe Conduit - Storm Drain	18	Reinforced Concrete Pipe - Class III(**barrel length = 16 LF**)	30							FES		Standard D-714-27M
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						
							High Density Polyethylene	30									
16635+93.8	39.1' LT	16636+90.6	72' LT	36	Pipe Conduit - Storm Drain	103	Reinforced Concrete Pipe - Class III(**barrel length = 100 LF**)	36					29	52.0		FES	Standard D-714-27
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
16636+44	69' RT	16636+99	66' RT	24	Pipe Conduit - Approach	57	Reinforced Concrete Pipe - Class III(**barrel length = 52 LF**)	24							FES	FES	Spec. 714.04A
							Corrogated Steel Pipe	30	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	24	Z, A, P	3/4, 1	0.064						
							High-Density Polyethylene	24									
16637+59	32' RT	16637+59	48' RT	18	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class III(**barrel length = 16 LF**)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						

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Corrug **2** = 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"

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

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

ND 1804 Reconstruction
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	51	4

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	Riprap Loose Rock (Pay Item)	RR Fabric (Pay Item)	(*) End Sections		Applicable Backfill Detail
															Begin	End	
				In	Bid Item	LF		In	Type		In	SY	CY	SY	EA	EA	
16637+59	44' LT	16637+59	58' LT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class III(barrel length = 14 LF)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16638+60	44' LT	16638+60	58' LT	18	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class III(barrel length = 14 LF)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16638+60	32' RT	16638+60	50' RT	18	Pipe Conduit - Storm Drain	19	Reinforced Concrete Pipe - Class III(barrel length = 18 LF)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16638+75	65' RT	16639+22	70' RT	24	Pipe Conduit - Approach	49	Reinforced Concrete Pipe - Class III(barrel length = 44 LF)	24							FES	FES	Spec. 714.04A
							Corroguated Steel Pipe	30	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	24	Z, A, P	3/4, 1	0.064						
							High Density Polyethylene	24									
16640+16	34.3' LT	16640+16	50.3' LT	18	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class III(barrel length = 16 LF)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16640+16	31.6' RT	16640+16	63.5' RT	18	Pipe Conduit - Storm Drain	34	Reinforced Concrete Pipe - Class III(barrel length = 30 LF)	18								FES	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16642+00	27.6' RT	16642+00	53.5' RT	18	Pipe Conduit - Storm Drain	28	Reinforced Concrete Pipe - Class III(barrel length = 24 LF)	18								FES	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16642+00	27.6' LT	16642+00	43.6' LT	18	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class III(barrel length = 16 LF)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16644+62	24' RT	16644+62	24' LT	15	Pipe Conduit - Storm Drain	48	Reinforced Concrete Pipe - Class III(barrel length = 48 LF)	15				220					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16644+62	26' LT	16644+62	31' LT	15	Pipe Conduit - Storm Drain	6	Reinforced Concrete Pipe - Class III(barrel length = 6 LF)	15									Standard D-714-27
							High Density Polyethylene	15									
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16643+88.9	52.5' LT	16644+59.8	33.4' LT	36	Pipe Conduit - Storm Drain	74	Reinforced Concrete Pipe - Class III(barrel length = 72 LF)	36							TES (Traversable) 6:1		Standard D-714-27
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
16644+64.3	32.9' LT	16648+74.5	40.6' LT	30	Pipe Conduit - Storm Drain	408	Reinforced Concrete Pipe - Class III(barrel length = 408 LF)	30									Standard D-714-27
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						
16648+62.8	48.8' LT	16648+76.9	43.1 LT	24	Pipe Conduit - Storm Drain	17	Reinforced Concrete Pipe - Class III(barrel length = 14 LF)	24							FES		Standard D-714-27
							High Density Polyethylene	24									
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16648+77	26' LT	16648+77	38.1 LT	24	Pipe Conduit - Storm Drain	14	Reinforced Concrete Pipe - Class III(barrel length = 14 LF)	24									Standard D-714-27
							High Density Polyethylene	24									
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16648+77	24' RT	16648+77	24' LT	24	Pipe Conduit - Storm Drain	48	Reinforced Concrete Pipe - Class III(barrel length = 48 LF)	24				250					Standard D-714-26
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16648+77	39.9' RT	16648+77	26' RT	24	Pipe Conduit - Storm Drain	15	Reinforced Concrete Pipe - Class III(barrel length = 14 LF)	24								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	24									
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16648+79.5	40.7' LT	16652+85.5	40.1' LT	30	Pipe Conduit - Storm Drain	404	Reinforced Concrete Pipe - Class III(barrel length = 404 LF)	30									Standard D-714-27
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						
16652+88	47.6' RT	16652+88	27.6' RT	24	Pipe Conduit - Storm Drain	21	Reinforced Concrete Pipe - Class III(barrel length = 20 LF)	24							TES (Traversable) 4:1		Standard D-714-27
							High Density Polyethylene	24									
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16652+88	42.5' LT	16652+88	50.5' LT	24	Pipe Conduit - Storm Drain	9	Reinforced Concrete Pipe - Class III(barrel length = 8 LF)	24							TES (Traversable) 4:1		Standard D-714-27
							High Density Polyethylene	24									
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16652+88	25.6' RT	16652+88	25.0' LT	24	Pipe Conduit - Storm Drain	52	Reinforced Concrete Pipe - Class III(barrel length = 52 LF)	24				278					Standard D-714-26
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16652+88	27' LT	16652+88	37.5' LT	24	Pipe Conduit - Storm Drain	12	Reinforced Concrete Pipe - Class III(barrel length = 12 LF)	24									Standard D-714-27
							High Density Polyethylene	24									
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16652+90.5	40' LT	16655+54.6	34' LT	30	Pipe Conduit - Storm Drain	266	Reinforced Concrete Pipe - Class III(barrel length = 266 LF)	30									Standard D-714-27
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						

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Corrug **2** = 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"
3/4 = 3/4"x3/4"@7-1/2"

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

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

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Allowable Pipe List

ND 1804 Reconstruction
Williams County,ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	51	5

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	Riprap Loose Rock (Pay Item)	RR Fabric (Pay Item)	(*) End Sections		Applicable Backfill Detail
				In	Bid Item	LF		In	Type		In	SY	CY	SY	Begin EA	End EA	
16653+07.2	61.3' LT	16653+50.8	54.9' LT	18	Pipe Conduit - Approach	45	Reinforced Concrete Pipe - Class III(barrel length = 40 LF)	18							FES	TES (Traversable) 6:1	Spec. 714.04A
							Corroguated Steel Pipe	24	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	18	Z, A, P	3/4, 1	0.064						
							High Density Polyethylene	18									
16655+59	34.1' LT	16658+20.8	37.4' LT	30	Pipe Conduit - Storm Drain	264	Reinforced Concrete Pipe - Class III(barrel length = 264 LF)	30									Standard D-714-27
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						
16658+23	32' LT	16658+23	35.2' LT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15									Standard D-714-27
							High Density Polyethylene	15									
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16658+23	32' RT	16658+23	90.7' RT	18	Pipe Conduit - Storm Drain	62	Reinforced Concrete Pipe - Class III(barrel length = 58 LF)	18								FES	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16658+25.2	37.5' LT	16662+22	47.9' LT	30	Pipe Conduit - Storm Drain	400	Reinforced Concrete Pipe - Class III(barrel length = 400 LF)	30									Standard D-714-27
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						
16661+57.2	31.2' LT	16662+23.8	40.9' LT	15	Pipe Conduit - Storm Drain	68	Reinforced Concrete Pipe - Class III(barrel length = 68 LF)	15									Standard D-714-27
							High Density Polyethylene	15									
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16661+56	32' RT	16661+56	56' RT	18	Pipe Conduit - Storm Drain	25	Reinforced Concrete Pipe - Class III(barrel length = 24 LF)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16662+25	42.1' LT	16662+25	45' LT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15									Standard D-714-27
							High Density Polyethylene	15									
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16662+22.5	75.4' LT	16662+24.7	51.5' LT	30	Pipe Conduit - Storm Drain	26	Reinforced Concrete Pipe - Class III(barrel length = 24 LF)	30							FES		Standard D-714-27
							High Density Polyethylene	30									
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						
16662+28.3	49' LT	16663+51.2	89' LT	36	Pipe Conduit - Storm Drain	130	Reinforced Concrete Pipe - Class III(barrel length = 128 LF)	36				595	62	98		FES	Standard D-714-25
							Spiral Rib Steel Pipe	36	P	3/4, 1	0.064						
16663+45	32' RT	16663+45	50' RT	18	Pipe Conduit - Storm Drain	19	Reinforced Concrete Pipe - Class III(barrel length = 18 LF)	18								TES (Traversable) 4:1	Standard D-714-27
							High Density Polyethylene	18									
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16664+69.4	43' LT	16665+24.6	43' LT	15	Pipe Conduit - Storm Drain	56	Reinforced Concrete Pipe - Class III(barrel length = 56 LF)	15				256					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16665+27.4	43' LT	16665+56	42.3' LT	15	Pipe Conduit - Storm Drain	30	Reinforced Concrete Pipe - Class III(barrel length = 30 LF)	15				110					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16665+27.4	31' RT	16665+56	30.3' RT	15	Pipe Conduit - Storm Drain	30	Reinforced Concrete Pipe - Class III(barrel length = 30 LF)	15				110					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16665+58	32.1' RT	16665+58	80.1' RT	18	Pipe Conduit - Storm Drain	50	Reinforced Concrete Pipe - Class III(barrel length = 46 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16665+58	44' LT	16665+58	68' LT	18	Pipe Conduit - Storm Drain	26	Reinforced Concrete Pipe - Class III(barrel length = 22 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16665+60	30.3' RT	16665+85.6	31' RT	15	Pipe Conduit - Storm Drain	26	Reinforced Concrete Pipe - Class III(barrel length = 26 LF)	15				110					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16665+60	42.3' LT	16665+85.6	43' LT	15	Pipe Conduit - Storm Drain	26	Reinforced Concrete Pipe - Class III(barrel length = 26 LF)	15				110					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16667+99	93' LT	16666+85	91' LT	30	Pipe Conduit - Approach	116	Reinforced Concrete Pipe - Class III(barrel length = 112 LF)	30							FES	FES	Spec. 714.04A
							Corroguated Steel Pipe	30	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	30	Z, A, P	3/4, 1	0.064						
							High Density Polyethylene	30									
16668+05	32' RT	16668+05	97.2' RT	18	Pipe Conduit - Storm Drain	68	Reinforced Concrete Pipe - Class III(barrel length = 64 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16668+05.3	44' LT	16668+14.3	74.7' LT	18	Pipe Conduit - Storm Drain	34	Reinforced Concrete Pipe - Class III(barrel length = 30 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16669+12	44' LT	16669+12	86.2' LT	18	Pipe Conduit - Storm Drain	46	Reinforced Concrete Pipe - Class III(barrel length = 42 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16670+38	96' RT	16669+38	101' RT	30	Pipe Conduit - Approach	102	Reinforced Concrete Pipe - Class II(barrel length =98 LF)	30							FES	FES	Spec. 714.04A
							Corroguated Steel Pipe	30	Z, A, P	2	0.064						
							Spiral Rib Steel Pipe	30	Z, A, P	3/4, 1	0.064						
							High Density Polyethylene	30									
16670+54	39.8' LT	16670+54	94.3' LT	18	Pipe Conduit - Storm Drain	58	Reinforced Concrete Pipe - Class III(barrel length = 54 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						

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5 = 5"x1"

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

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

ND 1804 Reconstruction
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	51	6

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	Riprap Loose Rock (Pay Item)	RR Fabric (Pay Item)	(*) End Sections		Applicable Backfill Detail
															Begin	End	
				In	Bid Item	LF		In	Type		In	SY	CY	SY	EA	EA	
16670+54	30' RT	16670+54	37.8' LT	15	Pipe Conduit - Storm Drain	68	Reinforced Concrete Pipe - Class III(barrel length = 68 LF)	15				380					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16670+55.4	31' RT	16670+58.6	31' RT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16670+55.4	38.7' LT	16670+58.6	38.4' LT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16674+00	30' LT	16674+00	30' RT	15	Pipe Conduit - Storm Drain	60	Reinforced Concrete Pipe - Class III(barrel length = 60 LF)	15				340					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16674+00	32' RT	16673+88.9	103.4' LT	18	Pipe Conduit - Storm Drain	76	Reinforced Concrete Pipe - Class III(barrel length = 72 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16674+01.4	31' LT	16674+04.6	31' LT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16674+01.4	31' RT	16674+04.6	31' RT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16678+00	29.2' LT	16678+00	27.4' RT	15	Pipe Conduit - Storm Drain	58	Reinforced Concrete Pipe - Class III(barrel length = 58 LF)	15				360					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16678+00	29.4' RT	16678+00	120.5' RT	18	Pipe Conduit - Storm Drain	96	Reinforced Concrete Pipe - Class III(barrel length = 92 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16687+25	30' LT	16687+25	61.9' LT	18	Pipe Conduit - Storm Drain	34	Reinforced Concrete Pipe - Class III(barrel length = 30 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16687+25	41.6' RT	16687+25	97.7' RT	18	Pipe Conduit - Storm Drain	60	Reinforced Concrete Pipe - Class III(barrel length = 56 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16688+83.2	87.1' RT	16688+88.3	70.7' RT	24	Pipe Conc Reinf CL III - Storm Drain	19	Reinforced Concrete Pipe - Class III(barrel length = 16 LF)	24							FES		Standard D-714-27
16688+83.3	26.3' LT	16688+83.3	30' LT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16689+21.4	43' LT	16689+23.6	43' LT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16689+25	32' LT	16689+25	60' LT	18	Pipe Conduit - Storm Drain	30	Reinforced Concrete Pipe - Class III(barrel length = 26 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16689+25	44' RT	16689+25	74' RT	18	Pipe Conduit - Storm Drain	32	Reinforced Concrete Pipe - Class III(barrel length = 28 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16692+27.1	47.6' RT	16692+44.4	31.5' RT	15	Pipe Conduit - Storm Drain	24	Reinforced Concrete Pipe - Class III(barrel length = 24 LF)	12									Standard D-714-27
							High Density Polyethylene	12									
16692+46.4	31' RT	16692+48.5	31' RT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	18				18					Standard D-714-26
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16692+50	30' RT	16692+50	30.9 LT	15	Pipe Conduit - Storm Drain	62	Reinforced Concrete Pipe - Class III(barrel length = 62 LF)	15				353					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16692+84.6	31' LT	16692+52.3	33' LT	15	Pipe Conduit - Storm Drain	34	Reinforced Concrete Pipe - Class III(barrel length = 34 LF)	15				110					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16692+87	31' LT	16693+01.6	31' LT	15	Pipe Conduit - Storm Drain	16	Reinforced Concrete Pipe - Class III(barrel length = 16 LF)	15				80					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16693+03.7	30' LT	16693+08.3	25' LT	12	Pipe Conc Reinf CL III - Storm Drain	8	Reinforced Concrete Pipe - Class III(barrel length = 8 LF)	12				39					Standard D-714-26
16693+51.7	24.6' RT	16693+56.2	30' RT	12	Pipe Conc Reinf CL III - Storm Drain	8	Reinforced Concrete Pipe - Class III(barrel length = 8 LF)	12				39					Standard D-714-26
16697+00	30' RT	16697+00	26.6' RT	15	Pipe Conc Reinf CL III - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15				18					Standard D-714-26
16697+00	22.6' RT	16697+00	30' LT	15	Pipe Conc Reinf CL III - Storm Drain	54	Reinforced Concrete Pipe - Class III(barrel length = 54 LF)	15				222					Standard D-714-26
16697+02	24.58' RT	16700+38	24.6' RT	15	Pipe Conc Reinf CL III - Storm Drain	338	Reinforced Concrete Pipe - Class III(barrel length = 338 LF)	15				1800					Standard D-714-26
16700+36.5	31' RT	16700+38.5	31' RT	15	Pipe Conc Reinf CL III - Storm Drain	2	Reinforced Concrete Pipe - Class III(barrel length = 2 LF)	15				18					Standard D-714-26
16700+40	30' RT	16700+40	26.6' RT	15	Pipe Conc Reinf CL III - Storm Drain	4	Reinforced Concrete Pipe - Class III(barrel length = 4 LF)	15				18					Standard D-714-26
16700+36.5	31' LT	16700+38.5	31' LT	15	Pipe Conc Reinf CL III - Storm Drain	2	Reinforced Concrete Pipe - Class III(barrel length = 2 LF)	15				18					Standard D-714-26
16700+40	30' LT	16700+40	22.6' RT	15	Pipe Conc Reinf CL III - Storm Drain	54	Reinforced Concrete Pipe - Class III(barrel length = 54 LF)	15				222					Standard D-714-26
16700+42	24.6' RT	16704+32	24.6' RT	15	Pipe Conc Reinf CL III - Storm Drain	392	Reinforced Concrete Pipe - Class III(barrel length = 392 LF)	15				2094					Standard D-714-26
16703+84.5	43' RT	16704+31.5	41.8' RT	15	Pipe Conc Reinf CL III - Storm Drain	48	Reinforced Concrete Pipe - Class III(barrel length = 48 LF)	15				189					Standard D-714-26

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3 = 3"x1"
5 = 5"x1"

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

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

ND 1804 Reconstruction
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	51	7

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	Riprap Loose Rock (Pay Item)	RR Fabric (Pay Item)	(*) End Sections		Applicable Backfill Detail
															Begin	End	
				In	Bid Item	LF		In	Type		In	SY	CY	SY	EA	EA	
16704+30.5	31' LT	16704+32.5	31' LT	15	Pipe Conc Reinf CL III - Storm Drain	2	Reinforced Concrete Pipe - Class III(**barrel length = 2 LF**)	15				18					Standard D-714-26
16704+34	30' LT	16704+34	22.6' RT	18	Pipe Conc Reinf CL III - Storm Drain	54	Reinforced Concrete Pipe - Class III(**barrel length = 54 LF**)	18				228					Standard D-714-26
16704+34	48.6' RT	16704+34	44.2' RT	24	Pipe Conc Reinf CL III - Storm Drain	6	Reinforced Concrete Pipe - Class III(**barrel length = 6 LF**)	24				30					Standard D-714-26
16704+34	38.2' RT	16704+34	27.1' RT	24	Pipe Conc Reinf CL III - Storm Drain	12	Reinforced Concrete Pipe - Class III(**barrel length = 12 LF**)	24				35					Standard D-714-26
16704+34	42.7' RT	16704+64.9	54.6' RT	15	Pipe Conc Reinf CL III - Storm Drain	32	Reinforced Concrete Pipe - Class III(**barrel length = 32 LF**)	15				100					Standard D-714-26
16704+36	24.6' RT	16706+20	24.6 RT	24	Pipe Conc Reinf CL III - Storm Drain	184	Reinforced Concrete Pipe - Class III(**barrel length = 184 LF**)	24				1026					Standard D-714-26
16706+22	30.1' RT	16706+22	26.6 RT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(**barrel length = 4 LF**)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16706+22	22.6' RT	16706+22	30' LT	15	Pipe Conduit - Storm Drain	54	Reinforced Concrete Pipe - Class III(**barrel length = 54 LF**)	15				222					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16706+24	24.6' RT	16707+65	24.6' RT	24	Pipe Conduit - Storm Drain	142	Reinforced Concrete Pipe - Class III(**barrel length = 142 LF**)	24				768					Standard D-714-26
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16707+67	30' RT	16707+67	26.6' RT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(**barrel length = 4 LF**)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16707+67	22.6' RT	16707+67	30' LT	15	Pipe Conduit - Storm Drain	54	Reinforced Concrete Pipe - Class III(**barrel length = 54 LF**)	15				222					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16707+69	24.6' RT	16709+28	24.6' RT	24	Pipe Conduit - Storm Drain	160	Reinforced Concrete Pipe - Class III(**barrel length = 160 LF**)	24				882					Standard D-714-26
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16709+30	30' RT	16709+30	26.6' RT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(**barrel length = 4 LF**)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16709+30	22.6' RT	16709+30	30' LT	15	Pipe Conduit - Storm Drain	54	Reinforced Concrete Pipe - Class III(**barrel length = 54 LF**)	15				222					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16709+32	24.6' RT	16710+65	24.6' RT	24	Pipe Conduit - Storm Drain	134	Reinforced Concrete Pipe - Class III(**barrel length = 134 LF**)	24				726					Standard D-714-26
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16710+67	30' RT	16710+67	26.6' RT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III (**barrel length = 4 LF**)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16710+67	22.6' RT	16710+67	30' LT	15	Pipe Conduit - Storm Drain	54	Reinforced Concrete Pipe - Class III(**barrel length = 54 LF**)	15				222					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16710+69	24.6' RT	16711+51	24.6' RT	24	Pipe Conduit - Storm Drain	82	Reinforced Concrete Pipe - Class III(**barrel length = 82 LF**)	24				414					Standard D-714-26
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16711+37.1	36.4' LT	16711+47.6	51' LT	24	Pipe Conduit - Storm Drain	18	Reinforced Concrete Pipe - Class III(**barrel length = 16 LF**)	24								FES	Standard D-714-27
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16711+53	30' RT	16711+53	26.6' RT	15	Pipe Conduit - Storm Drain	4	Reinforced Concrete Pipe - Class III(**barrel length = 4 LF**)	15				18					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16711+53	32.1' LT	16711+57.8	51.6' LT	24	Pipe Conduit - Storm Drain	20	Reinforced Concrete Pipe - Class III(**barrel length = 18 LF**)	15								FES	Standard D-714-27
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16711+53	22.6' RT	16711+53	28.2' LT	24	Pipe Conduit - Storm Drain	52	Reinforced Concrete Pipe - Class III(**barrel length = 52 LF**)	24				370					Standard D-714-26
							Spiral Rib Steel Pipe	24	P	3/4, 1	0.064						
16711+90	30' RT	16711+91.5	30' LT	15	Pipe Conduit - Storm Drain	60	Reinforced Concrete Pipe - Class III(**barrel length = 60 LF**)	15				260					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16711+91.5	32' LT	16711+91.5	52' LT	18	Pipe Conduit - Storm Drain	22	Reinforced Concrete Pipe - Class III(**barrel length = 18 LF**)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16713+49	56.2' RT	16713+44.2	44' RT	30	Pipe Conduit - Storm Drain	14	Reinforced Concrete Pipe - Class III(**barrel length = 12 LF**)	30							FES		Standard D-714-27
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						
16713+49	40.2' RT	16713+49	28.2' LT	30	Pipe Conduit - Storm Drain	70	Reinforced Concrete Pipe - Class III(**barrel length = 70 LF**)	30				408					Standard D-714-26
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						
16713+49	32.2' LT	16713+49	54.2' LT	30	Pipe Conduit - Storm Drain	24	Reinforced Concrete Pipe - Class III(**barrel length = 22 LF**)	30								FES	Standard D-714-27
							Spiral Rib Steel Pipe	30	P	3/4, 1	0.064						
16715+55.2	43.5' RT	16715+67.5	67.9' LT	18	Pipe Conduit - Storm Drain	114	Reinforced Concrete Pipe - Class III(**barrel length = 110 LF**)	18				667				FES	Standard D-714-26
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						

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

Corrug **2** = 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"

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

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

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Allowable Pipe List

ND 1804 Reconstruction
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	51	8

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Pipe Installation (Pay Item)			Allowable Material	Required Diameter	Steel Pipe Coatings	Steel Pipe Corrugations or Spiral Ribs	Steel Pipe Minimum Thickness	R1 Fabric (Pay Item)	Riprap Loose Rock (Pay Item)	RR Fabric (Pay Item)	(*) End Sections		Applicable Backfill Detail
															Begin	End	
				In	Bid Item	LF		In	Type		In	SY	CY	SY	EA	EA	
16716+33	76' LT	16716+65	75' LT	36	Pipe Conduit - Approach	33	Reinforced Concrete Pipe - Class III(barrel length = 28 LF)	36							FES	FES	Spec. 714.04A
							Spiral Rib Steel Pipe	36	Z, A, P	3/4, 1	0.064						
							High Density Polyethylene	36									
16717+53	33.5' RT	16717+53	30' LT	15	Pipe Conduit - Storm Drain	64	Reinforced Concrete Pipe - Class III(barrel length = 64 LF)	15				267					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16717+53	32' LT	16717+53	66' LT	18	Pipe Conduit - Storm Drain	36	Reinforced Concrete Pipe - Class III(barrel length = 32 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16718+90	33.5' RT	16718+90	30' LT	15	Pipe Conduit - Storm Drain	64	Reinforced Concrete Pipe - Class III(barrel length = 64 LF)	15				267					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16718+90.9	32' LT	16719+18.2	63.8 LT	18	Pipe Conduit - Storm Drain	44	Reinforced Concrete Pipe - Class III(barrel length = 40 LF)	18								FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						
16720+53	24.4' RT	16720+53	24.5 LT	15	Pipe Conduit - Storm Drain	50	Reinforced Concrete Pipe - Class III(barrel length = 50 LF)	15				206					Standard D-714-26
							Spiral Rib Steel Pipe	15	P	3/4, 1	0.064						
16720+53	27' LT	16720+53	49' LT	18	Pipe Conduit - Storm Drain	24	Reinforced Concrete Pipe - Class III(barrel length = 20 LF)	18					60	75		FES	Standard D-714-27
							Spiral Rib Steel Pipe	18	P	3/4, 1	0.064						

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

Corrug **2 =** 2-2/3"x1/2"
3 = 3"x1"
5 = 5"x1"

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

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

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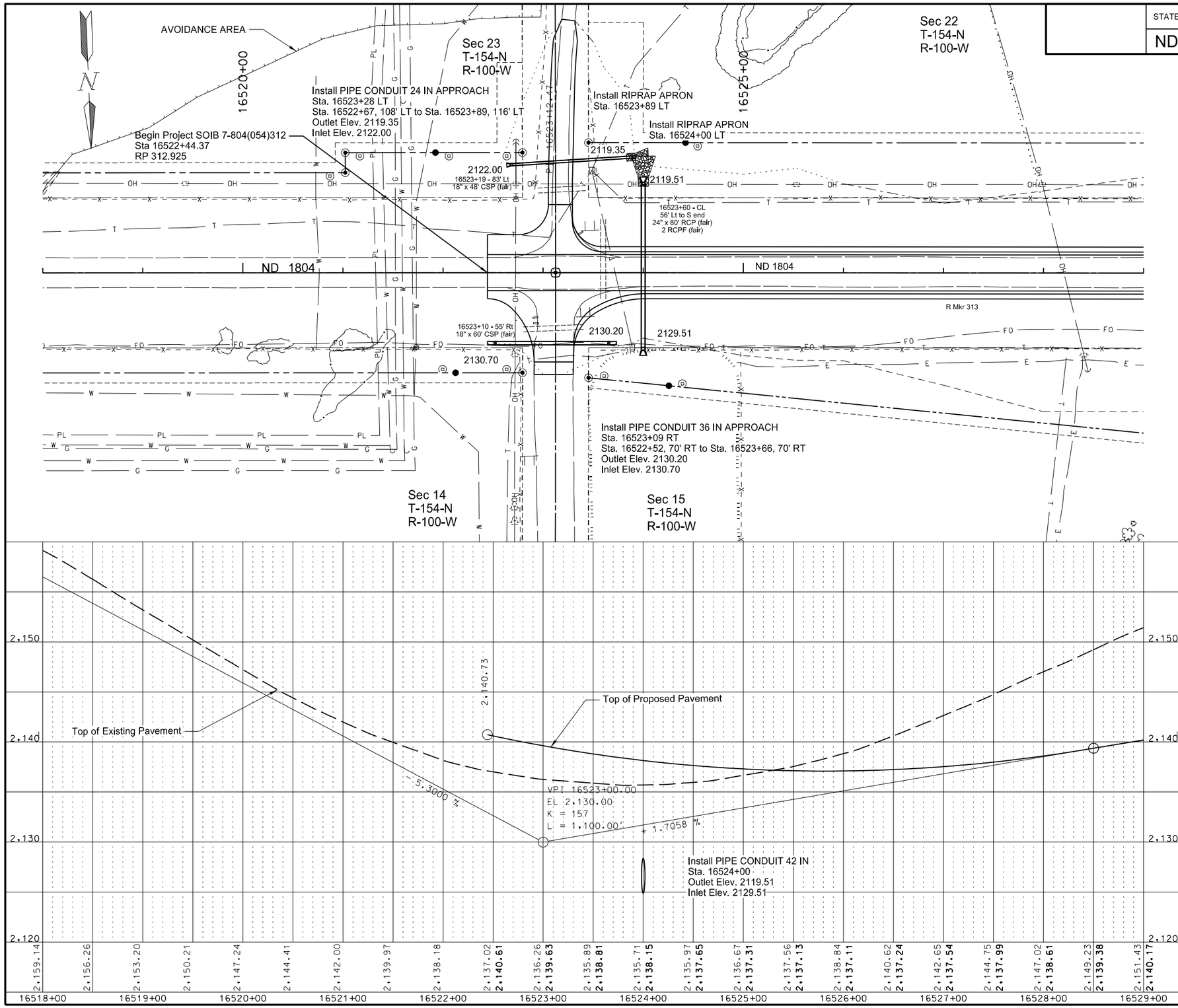
Allowable Pipe List

ND 1804 Reconstruction
Williams County, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	1



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16524+00, CL	SY	1101
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		16524+00, CL (Culvert Outlet)	SY	98
		16523+89, 116' LT (Outlet)	SY	50
714	4106	PIPE CONDUIT 24IN-APPROACH		
		16523+28, LT (inc. 2 End Secs)	LF	123
714	4116	PIPE CONDUIT 36IN-APPROACH		
		16523+09, RT (inc. 2 Traversable End Secs)	LF	115
714	4120	PIPE CONDUIT 42IN		
		16524+00, CL (inc. 2 End Secs)	LF	170

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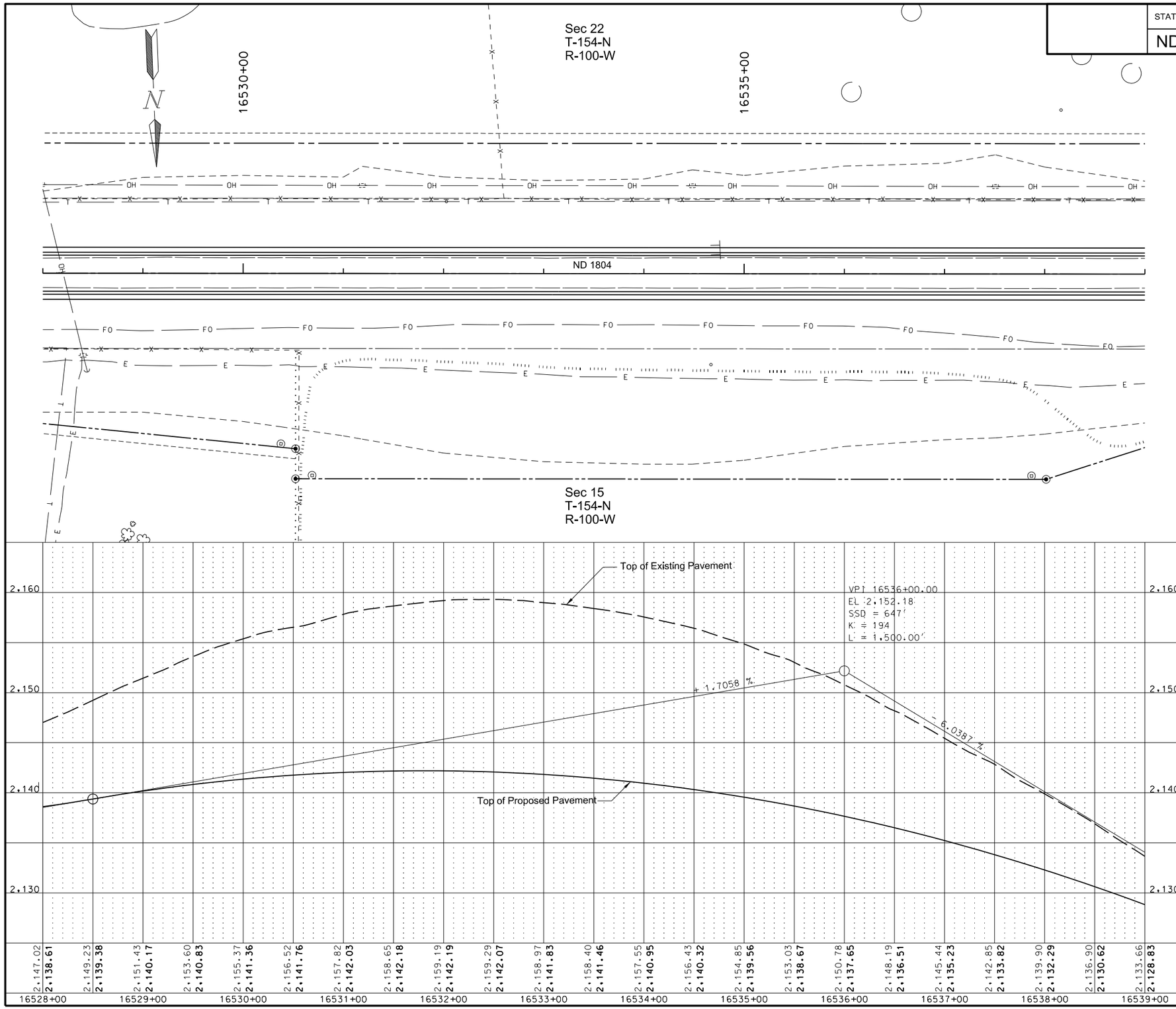
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta 16522+44 to Sta 16529+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	2



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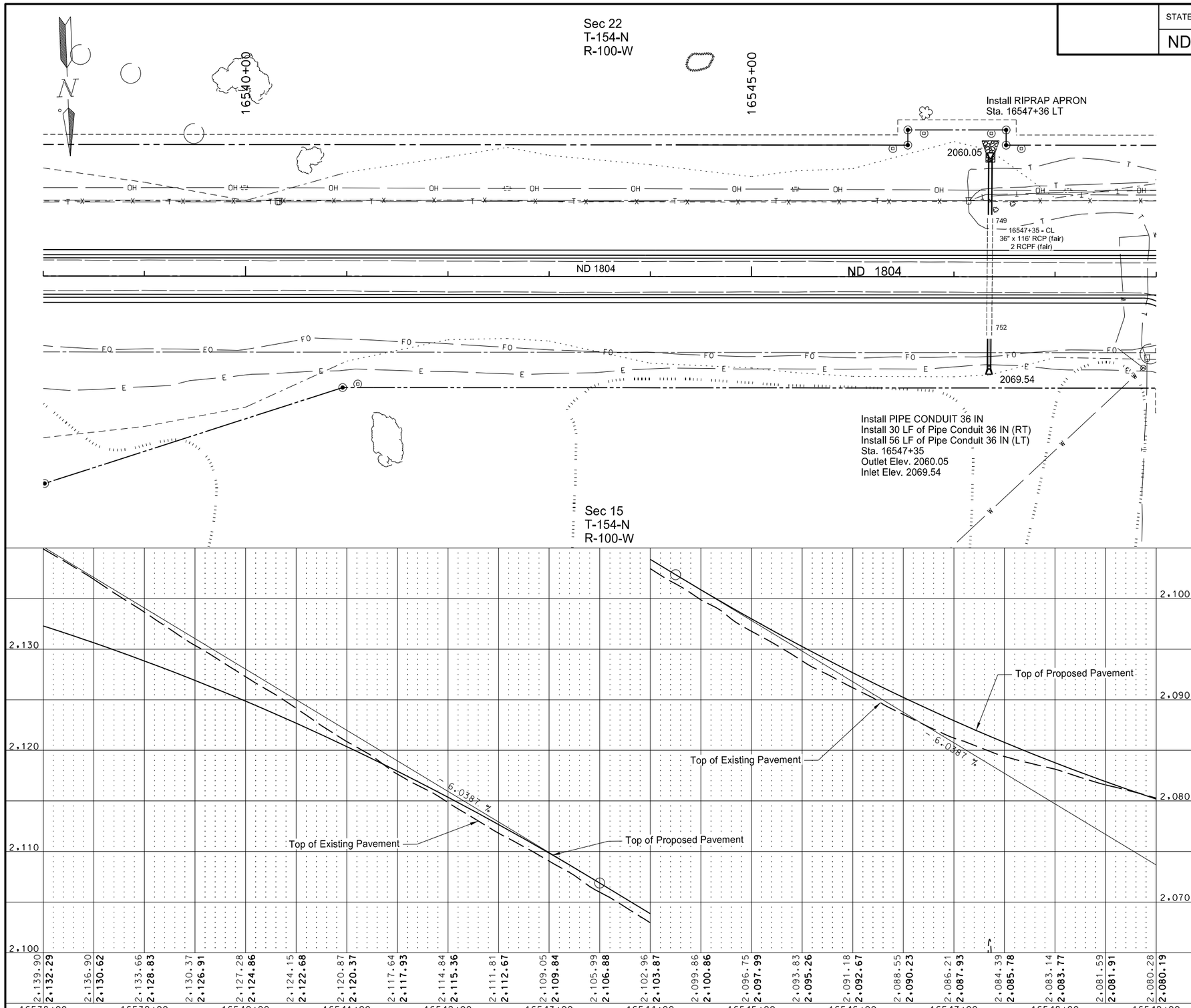
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta 16528+00 to Sta 16539+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	3



Spec	Code	Bid Item	Unit	Quantity
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		16547+36, 117' LT (Culvert Outlet)	SY	52
714	4115	PIPE CONDUIT 36IN		
		16547+35, 91' RT	LF	31
		16547+36, 117' LT	LF	57
714	9660	REMOVE & RELAY END SECTION-ALL TYPE & SIZES		
		16547+35, 91' RT	EA	1
		16547+36, 117' LT	EA	1

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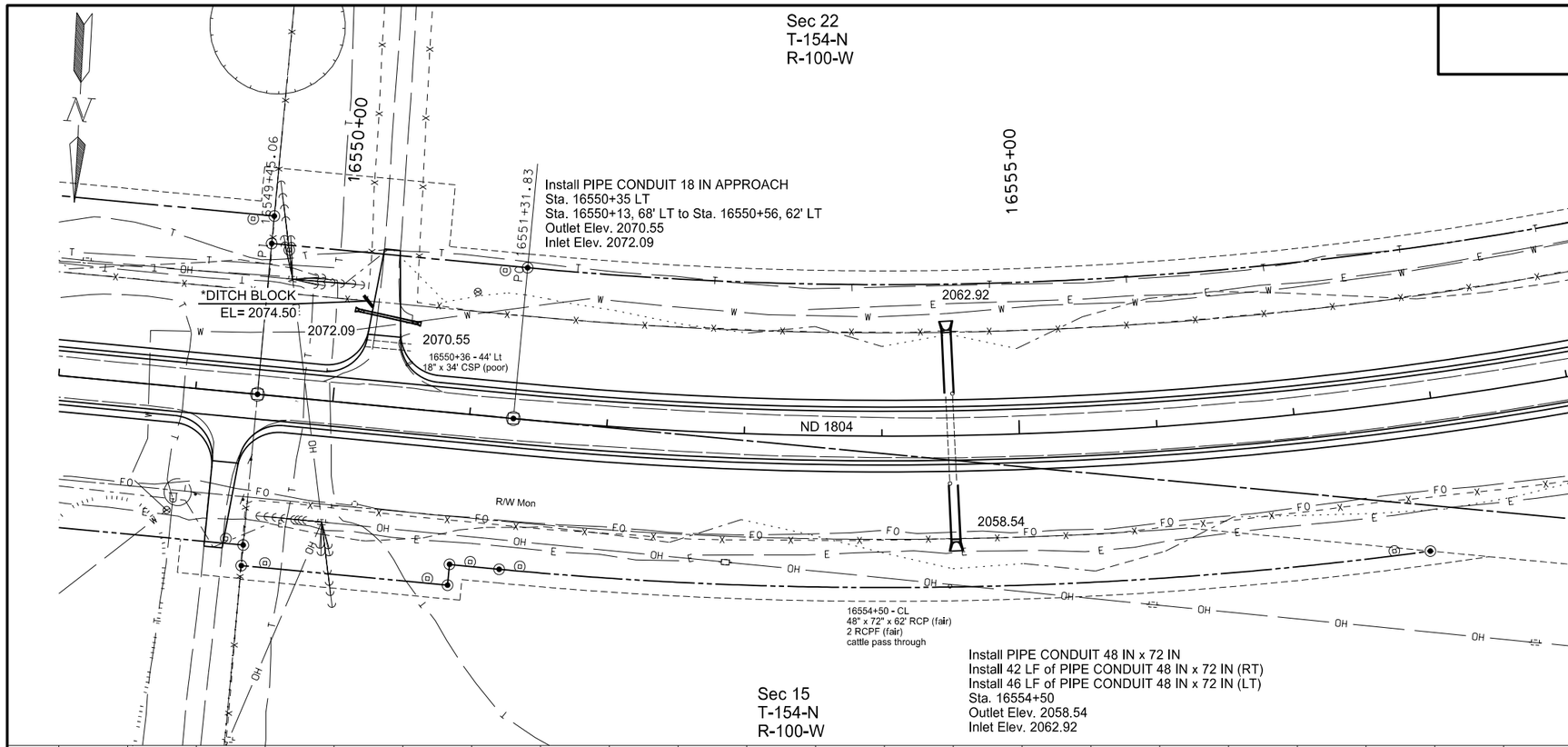
Drainage Plan and Profile

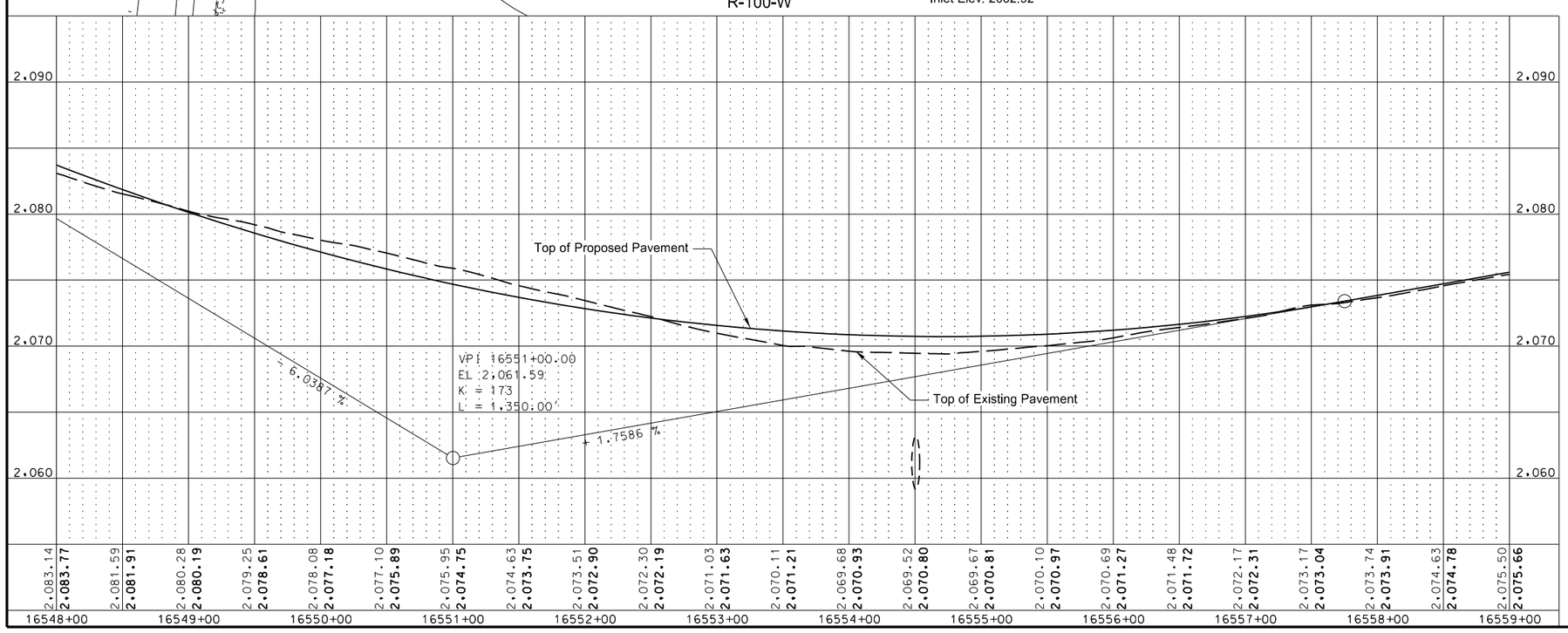
ND 1804 Reconstruction

Williams County, ND
Sta 16538+00 to Sta 16549+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	4



Spec	Code	Bid Item	Unit	Quantity
714	4099	PIPE CONDUIT 18IN-APPROACH		
		16550+35, LT (inc. 2 Traversable End Secs)	LF	45
714	9200	CATTLE PASS CONC INTERMED SECTION		
		16554+50, LT	LF	46
		16554+50, RT	LF	42
714	9611	REMOVE & RELAY CONC CATTLE PASS END SECTION		
		16554+50, LT	EA	1
		16554+50, RT	EA	1



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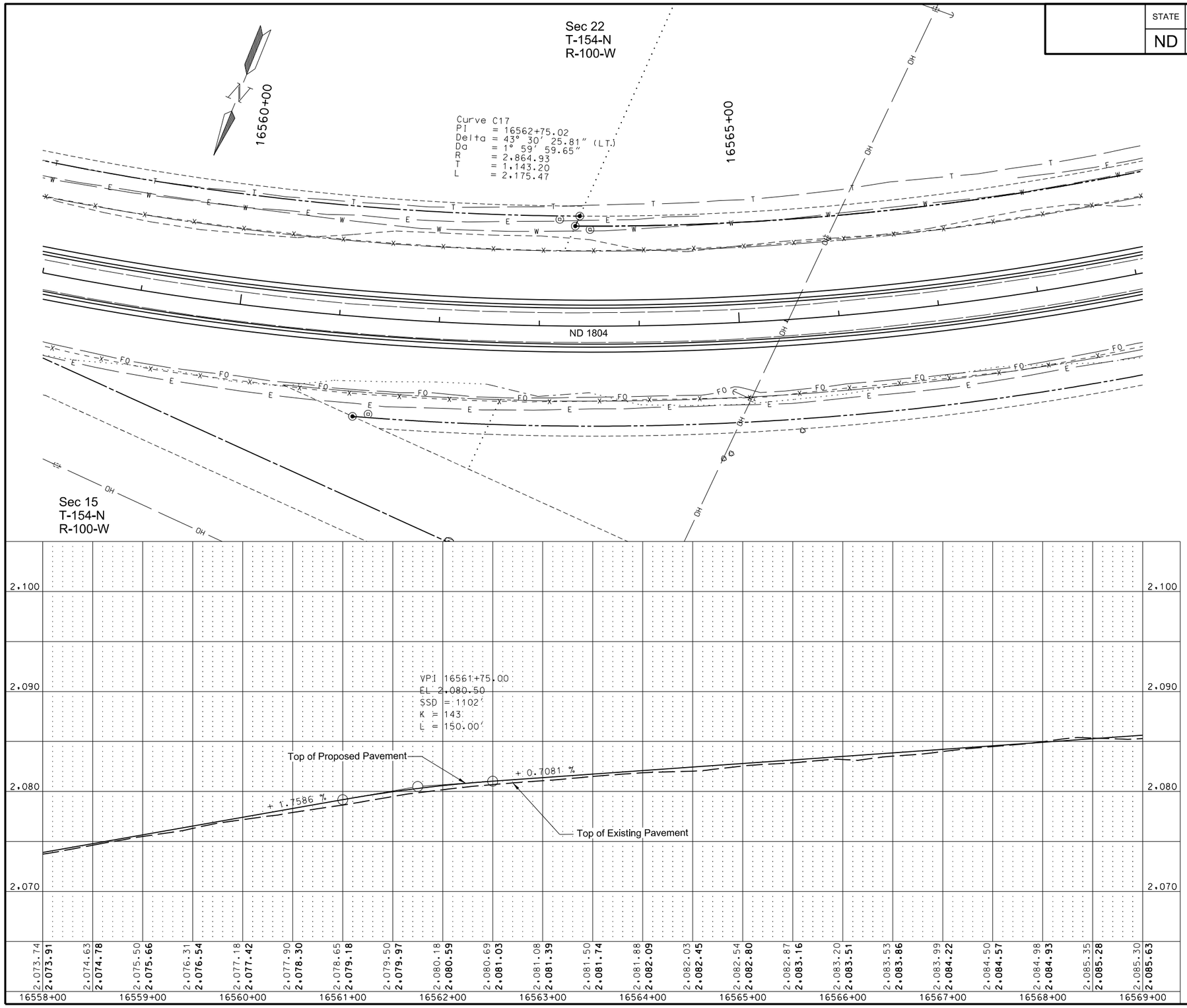
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta 16548+00 to Sta 16559+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	5



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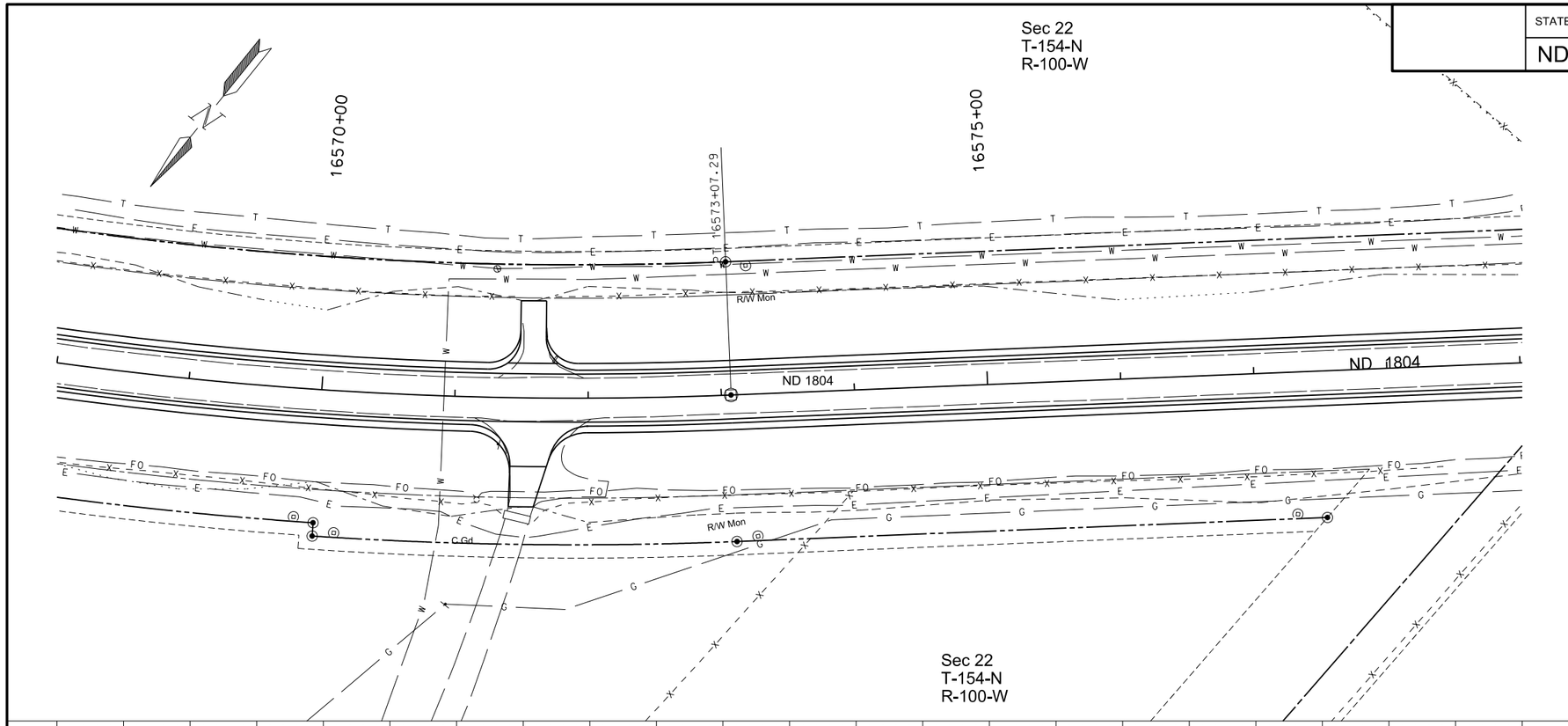
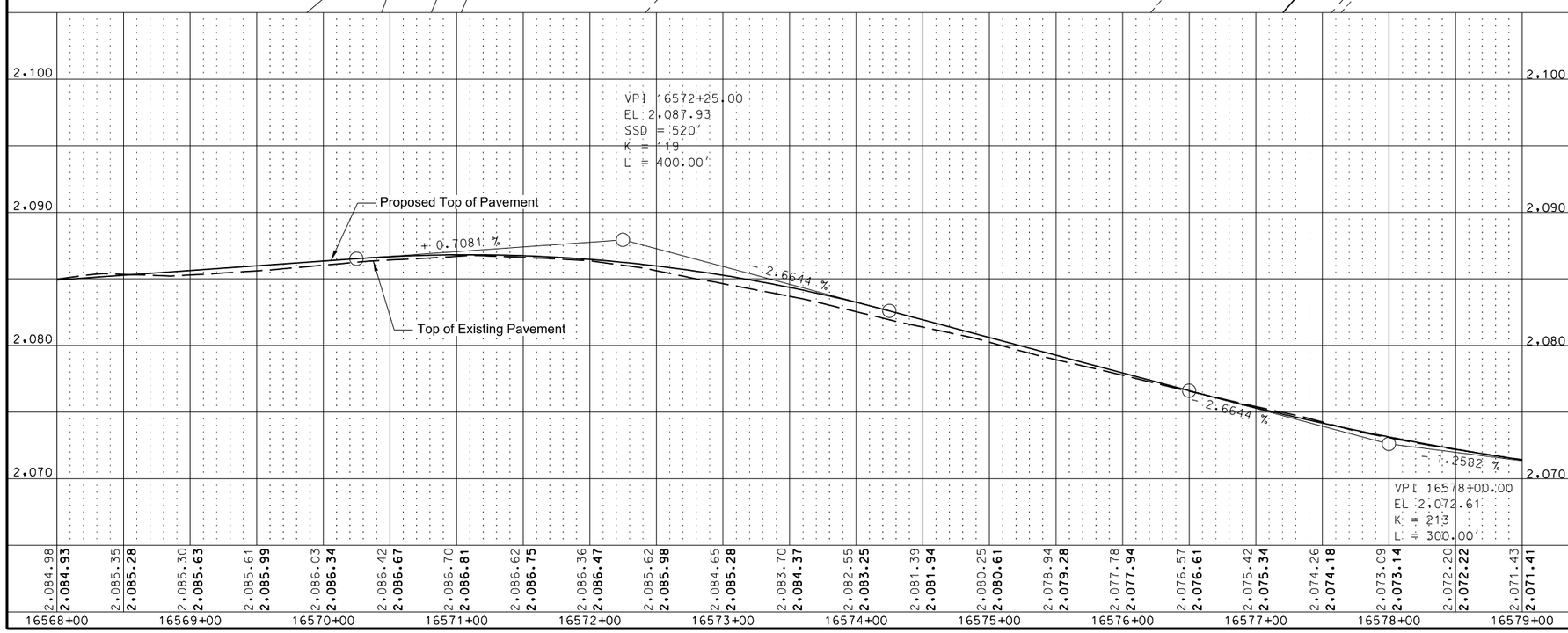
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta 16558+00 to Sta 16569+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	6





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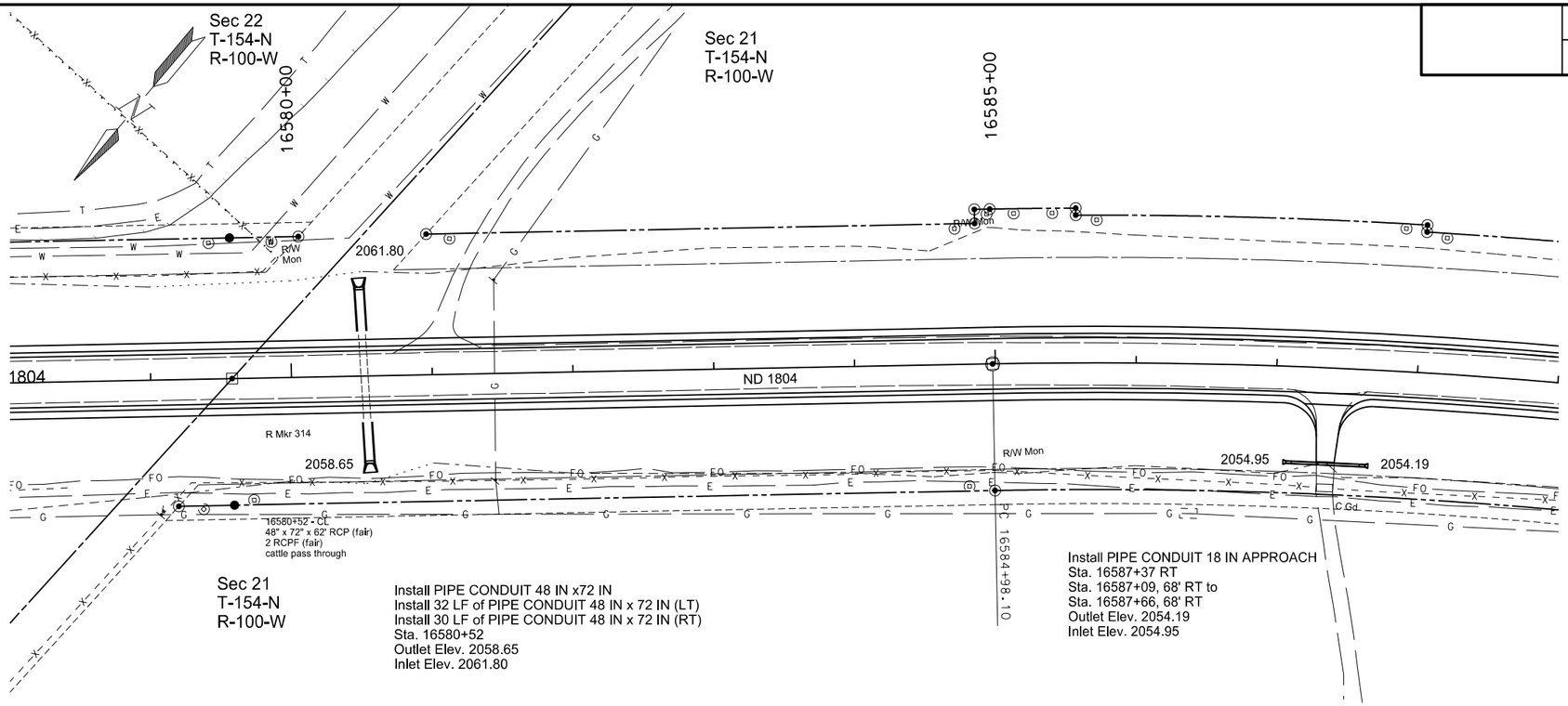
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16568+00 to Sta. 16579+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	7



714 4099 PIPE CONDUIT 18IN-APPROACH

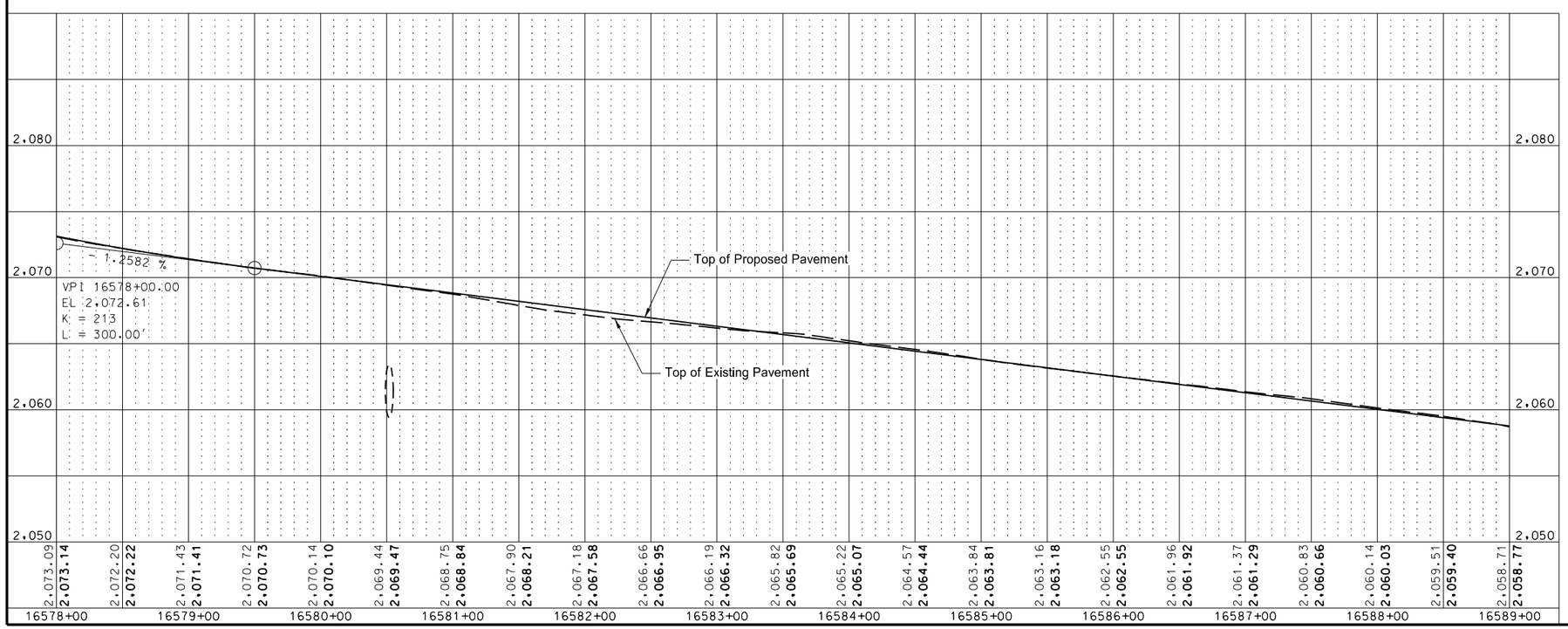
16587+37, RT (inc. 2 End Secs)	LF	58

714 9200 CATTLE PASS CONC INTERMED SECTION

16580+52, LT	LF	32
16580+52, RT	LF	30

714 9611 REMOVE & RELAY CONC CATTLE PASS END SECTION

16580+52, LT	EA	1
16580+52, RT	EA	1



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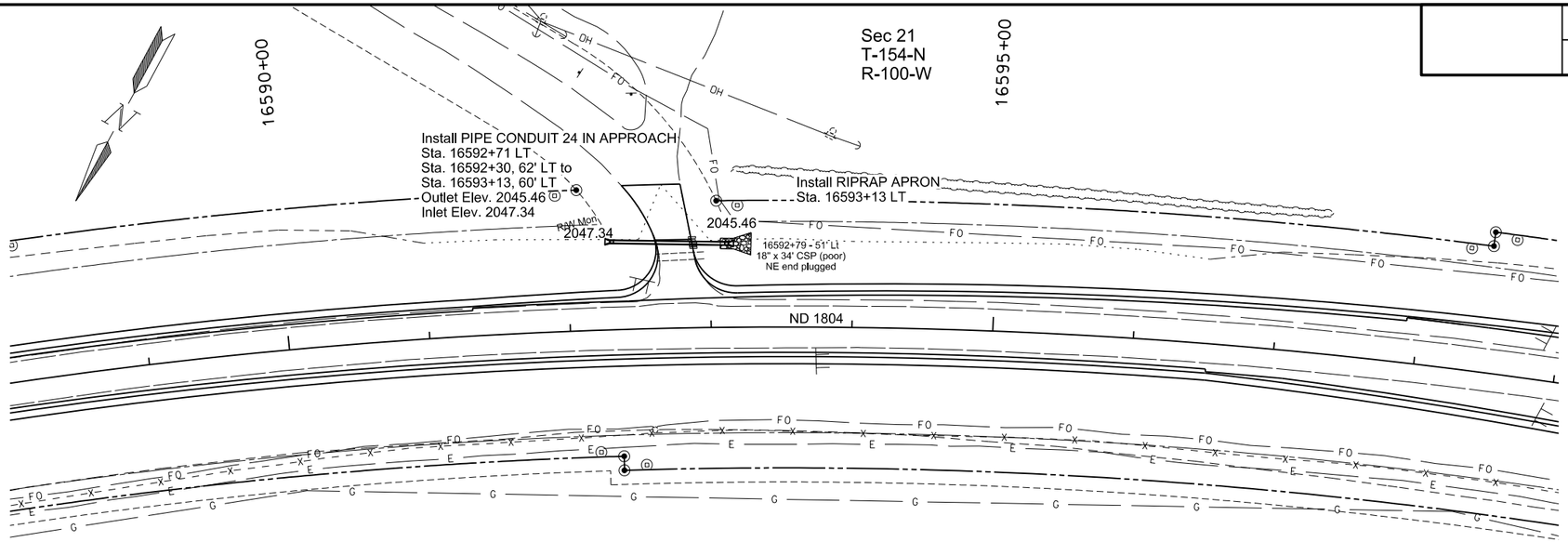
Drainage Plan and Profile

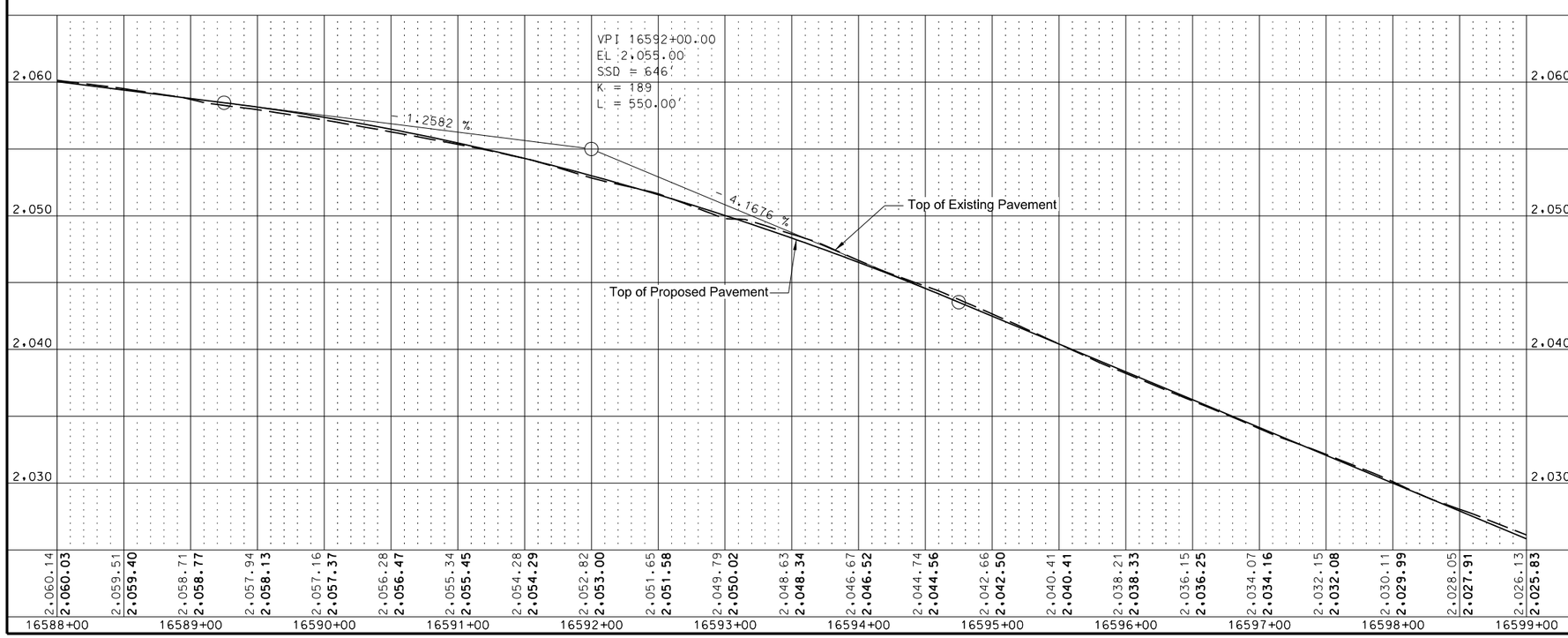
ND 1804 Reconstruction

Williams County, ND
Sta. 16578+00 to Sta. 16589+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	8



Spec	Code	Bid Item	Unit	Quantity
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		16592+71, LT (Outlet)	SY	50
714	4106	PIPE CONDUIT 24IN-APPROACH		
		16592+71, LT (inc. 2 Traversable End Secs)	LF	84



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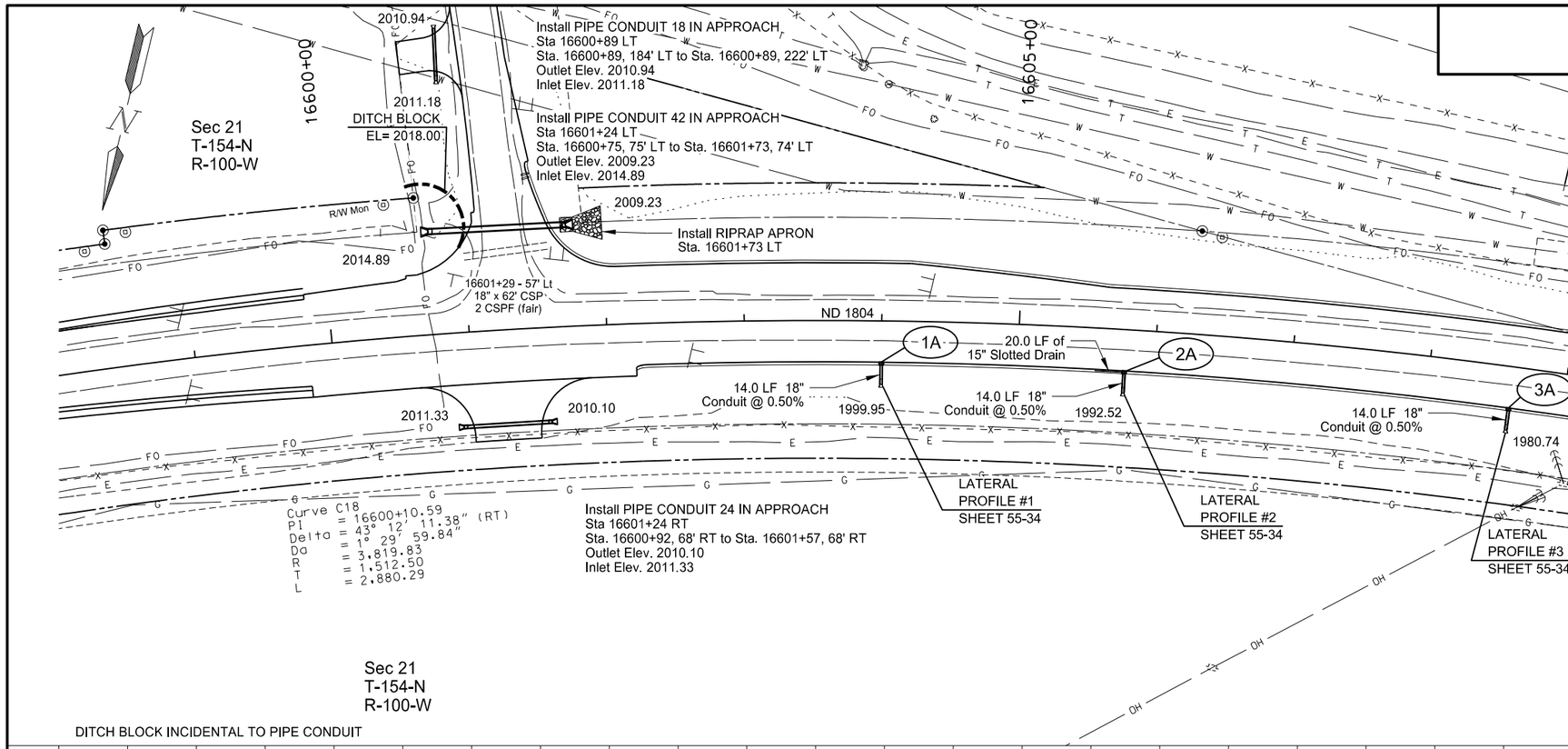
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16588+00 to Sta. 16599+00

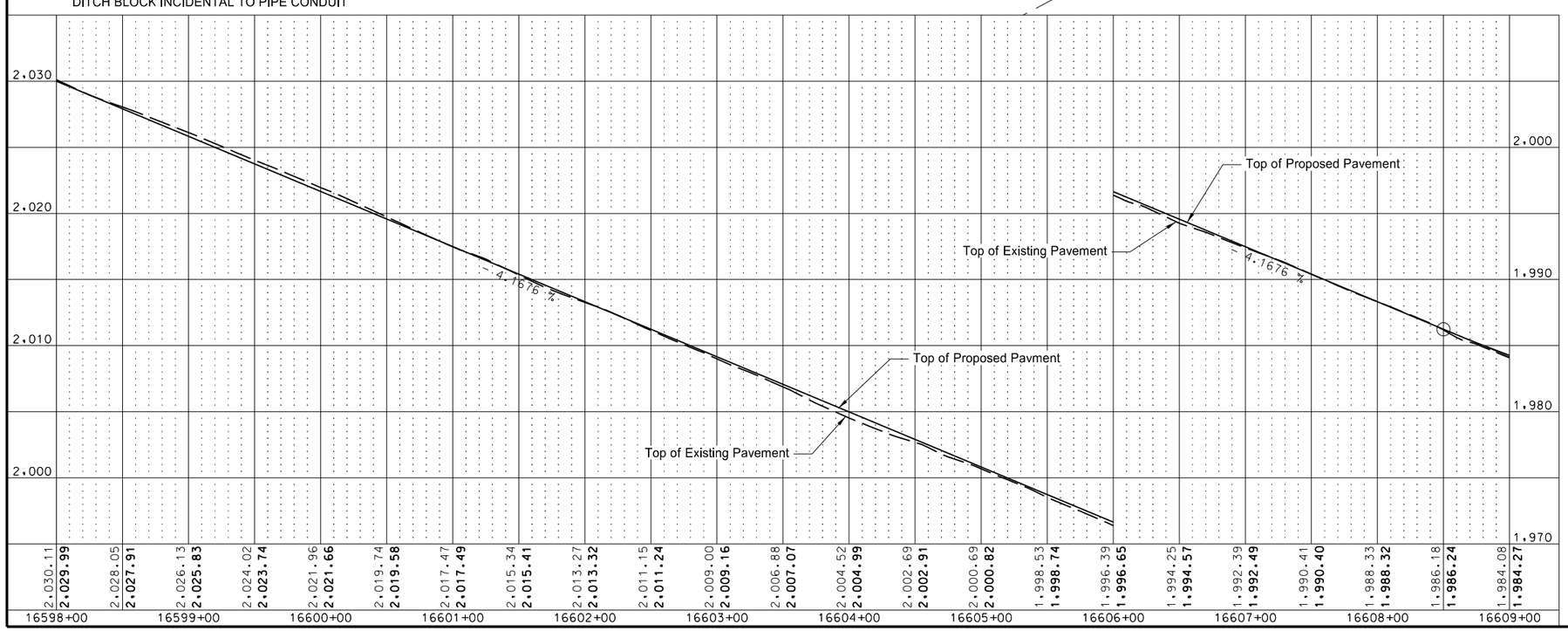
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	9



Spec	Code	Bid Item	Unit	Quantity
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		16601+24, LT (Outlet)	SY	98
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16604+00, 32' RT to 16604+00, 46' RT (inc. 1 Traversable End Sec)	LF	15
		16605+78, 32' RT to 16605+78, 46' RT (inc. 1 Traversable End Sec)	LF	15
		16608+61, 32' RT to 16608+61, 46' RT (inc. 1 Traversable End Sec)	LF	15
714	4099	PIPE CONDUIT 18IN-APPROACH		
		16600+89, LT (inc. 2 End Secs)	LF	40
714	4106	PIPE CONDUIT 24IN-APPROACH		
		16601+24, RT (inc. 2 End Secs)	LF	66
714	4122	PIPE CONDUIT 42IN-APPROACH		
		16601+24, LT (inc. 2 End Secs)	LF	102
722	3510	INLET-TYPE 2		
		16604+00, 31' RT	EA	1
		16605+78, 31' RT	EA	1
		16608+61, 31' RT	EA	1

Sec 21
T-154-N
R-100-W

DITCH BLOCK INCIDENTAL TO PIPE CONDUIT



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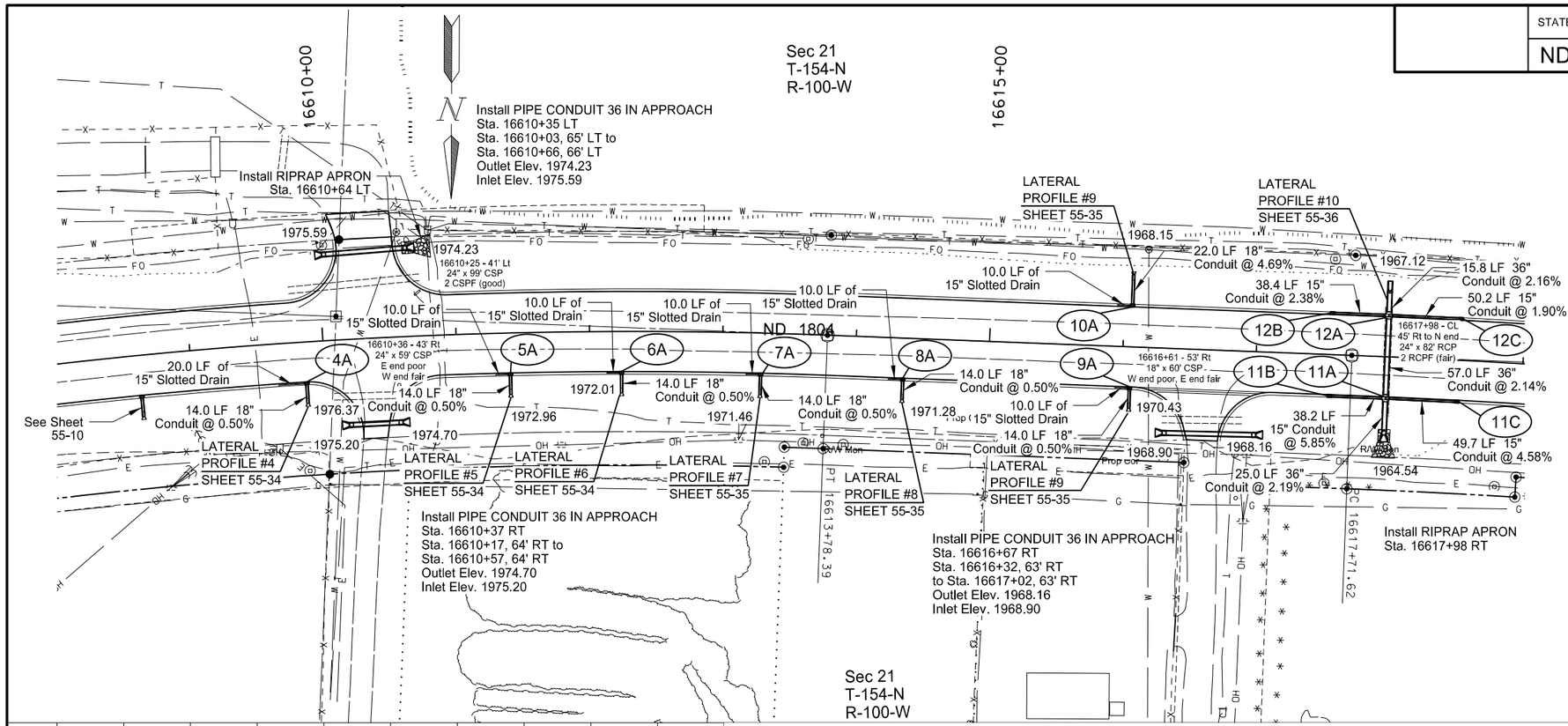
Drainage Plan and Profile

ND 1804 Reconstruction

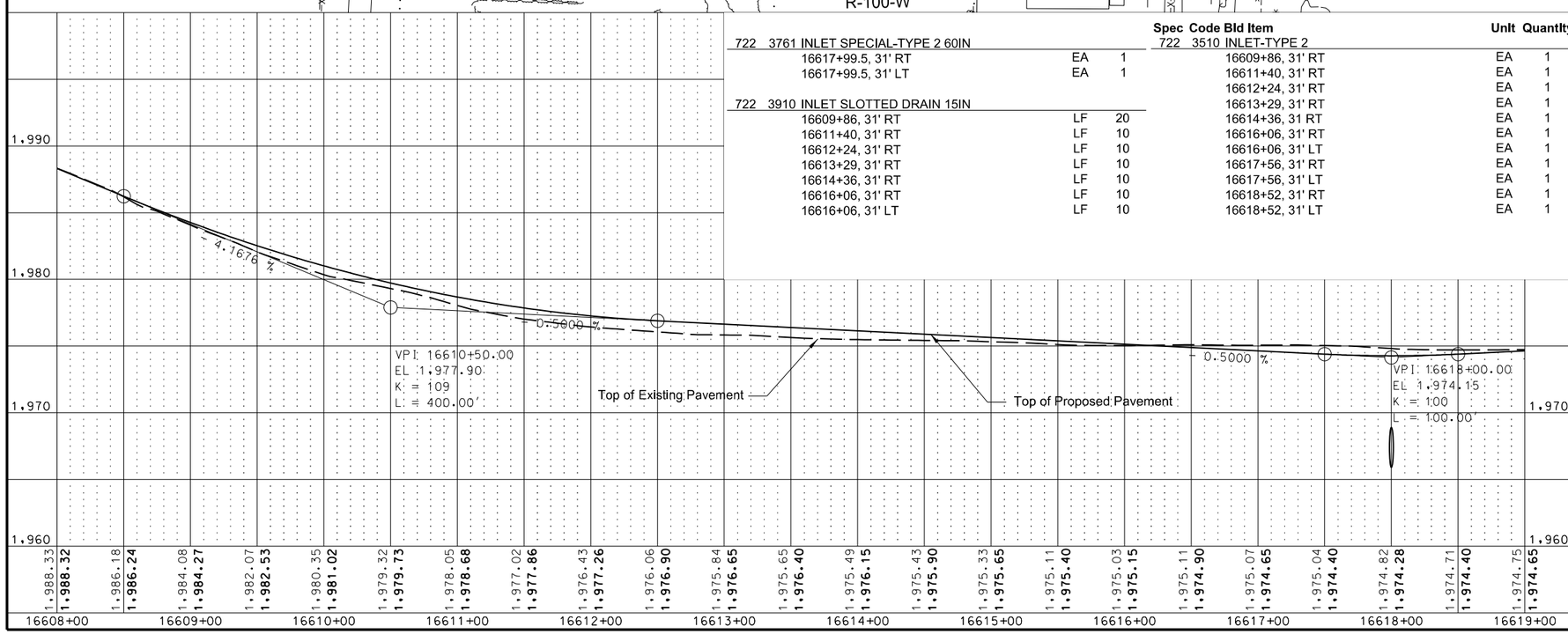
Williams County, ND
Sta. 16598+00 to Sta. 16609+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	10



Spec	Code	Bid Item	Unit	Quantity
722	3761	INLET SPECIAL-TYPE 2 60IN		
		16617+99.5, 31' RT	EA	1
		16617+99.5, 31' LT	EA	1
722	3910	INLET SLOTTED DRAIN 15IN		
		16609+86, 31' RT	LF	20
		16611+40, 31' RT	LF	10
		16612+24, 31' RT	LF	10
		16613+29, 31' RT	LF	10
		16614+36, 31' RT	LF	10
		16616+06, 31' RT	LF	10
		16616+06, 31' LT	LF	10

Spec	Code	Bid Item	Unit	Quantity
722	3510	INLET-TYPE 2		
		16609+86, 31' RT	EA	1
		16611+40, 31' RT	EA	1
		16612+24, 31' RT	EA	1
		16613+29, 31' RT	EA	1
		16614+36, 31 RT	EA	1
		16616+06, 31' RT	EA	1
		16616+06, 31' LT	EA	1
		16617+56, 31' RT	EA	1
		16617+56, 31' LT	EA	1
		16618+52, 31' RT	EA	1
		16618+52, 31' LT	EA	1



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16617+98.17, LT	SY	111
		16617+98.17, CL	SY	380
		16617+98.17, RT	SY	164
		16617+57 31' RT	SY	181
		16617+57, 31' LT	SY	181
		16618+01, 31' LT	SY	237
		16618+01, 31' RT	SY	238
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		16617+98.17, RT (Outlet)	SY	52
		16610+35, LT (Outlet)	SY	52
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16617+57, 31' RT to 16617+96, 31' RT	LF	40
		16617+57, 31' LT to 16617+96, 31' LT	LF	40
		16618+01, 31' RT to 16618+51, 31' RT	LF	50
		16618+01, 31' LT to 16618+51, 31' LT	LF	52
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16611+40, 32' RT to 16611+40, 46' RT (inc. 1 Traversable End Sec)	LF	15
		16609+86, 32' RT to 16609+86, 46' RT (inc. 1 Traversable End Sec)	LF	15
		16612+24, 32' RT to 16612+24, 46' RT (inc. 1 Traversable End Sec)	LF	15
		16613+29, 32' RT to 16613+29, 46' RT (inc. 1 Traversable End Sec)	LF	15
		16614+36, 32' RT to 16613+36, 46' RT (inc. 1 Traversable End Sec)	LF	15
		16616+06, 32' RT to 16616+06, 46' RT (inc. 1 Traversable End Sec)	LF	15
		16616+06, 32' LT to 16616+06, 54' LT (inc. 1 Traversable End Sec)	LF	23
714	4116	PIPE CONDUIT 36IN-APPROACH		
		16610+37, RT (inc. 2 End Secs)	LF	42
		16616+67, RT (inc. 2 End Secs)	LF	72
		16610+35, LT (inc. 2 End Secs)	LF	66
714	4117	PIPE CONDUIT 36IN-STORM DRAIN		
		16617+98.17, 49.24' LT to 16617+98.17, 33.5' LT (inc. 1 Traversable End Sec)	LF	17
		16617+98.17, 28.5' LT to 16617+98.17, 28.5' RT	LF	58
		16617+98.17, 33.5' RT to 16617+98.17, 58.5' RT (inc. 1 End Sec)	LF	27
722	1110	MANHOLE RISER 60IN		
		16617+98.17, 31' RT	LF	8
		16617+98.17, 31' LT	LF	7

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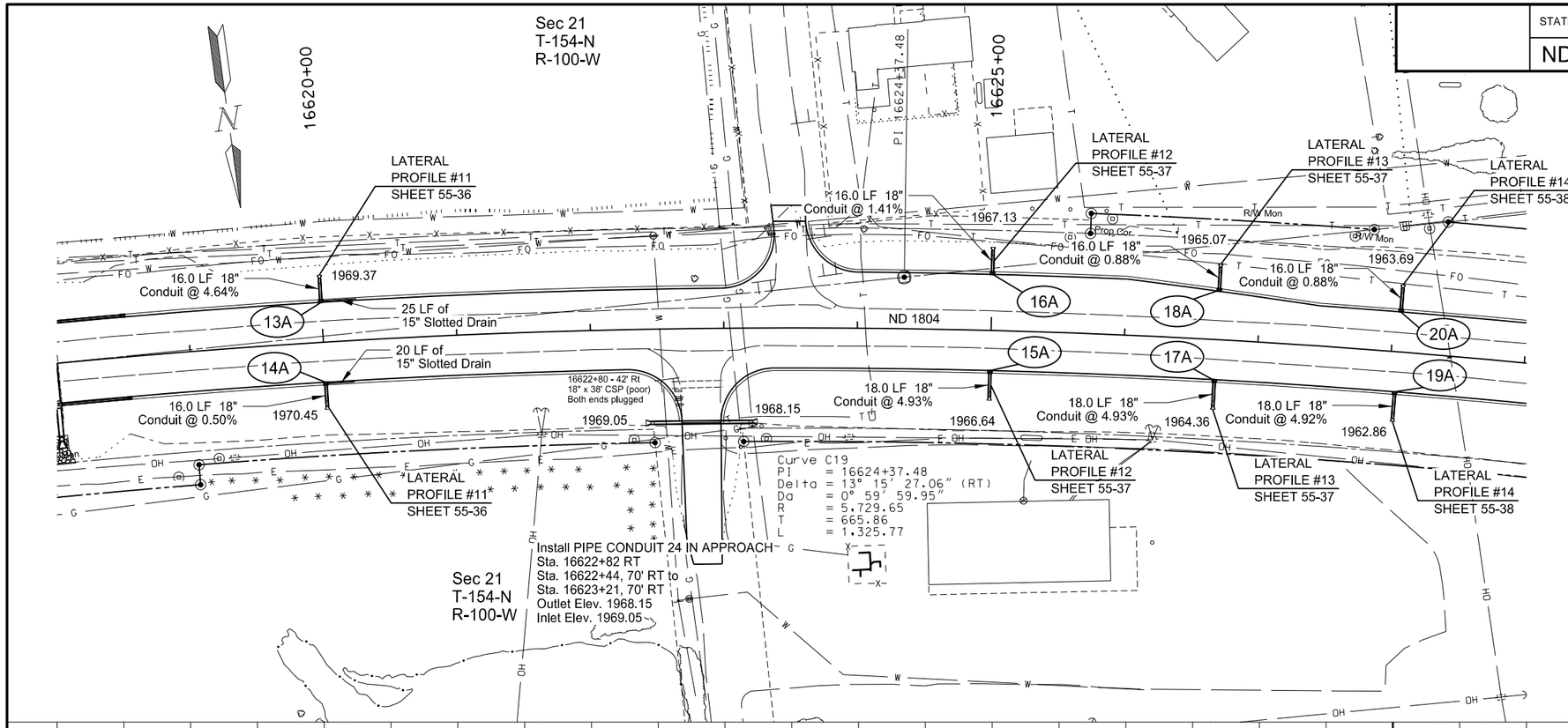
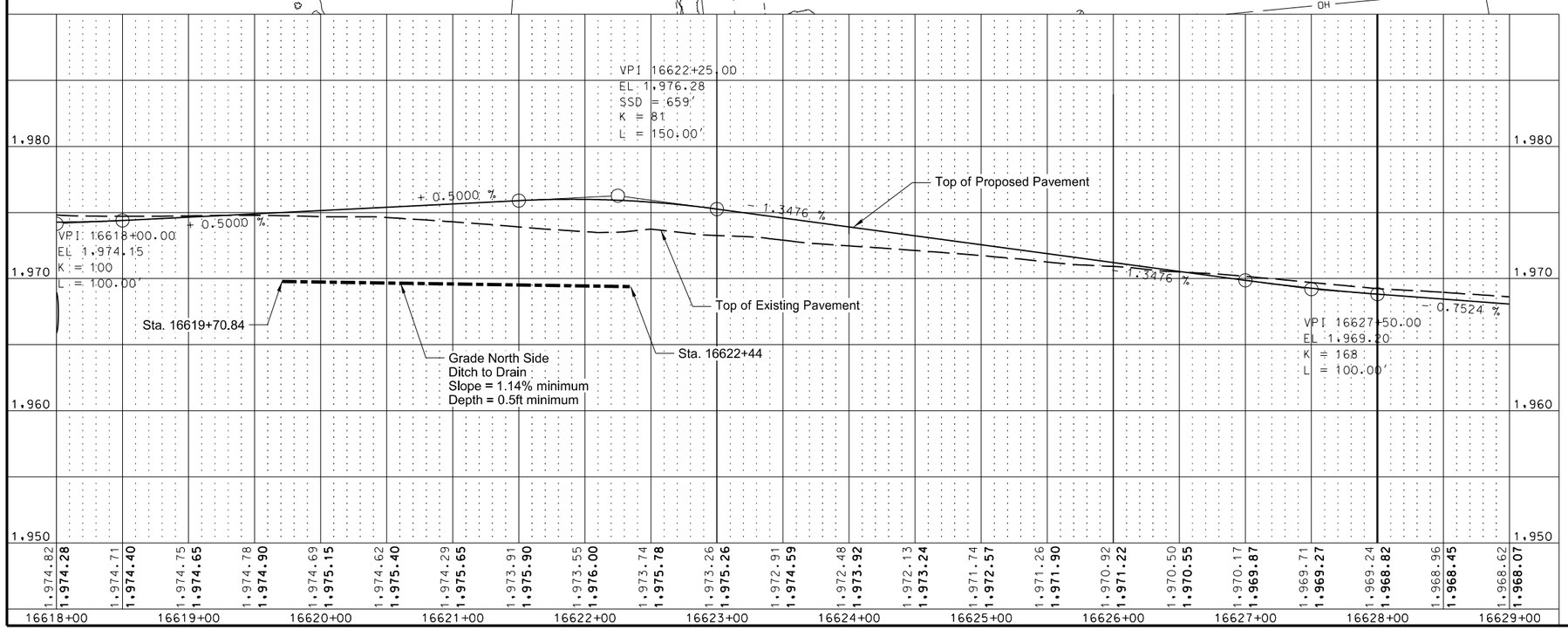
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16608+00 to Sta. 16619+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	11





Spec	Code	Bid Item	Unit	Quantity
714	4106	PIPE CONDUIT 24IN-APPROACH		
		16622+82, 70' RT (inc. 2 End Secs)	LF	77
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16620+00, 32' LT to 16620+00, 48' LT (inc. 1 Traversable End Sec)	LF	17
		16620+00, 32' RT to 16620+00, 48' RT (inc. 1 Traversable End Sec)	LF	17
		16625+00, 32' RT to 16625+00, 50' RT (inc. 1 Traversable End Sec)	LF	19
		16625+00, 44' LT to 16625+00, 60' LT (inc. 1 End Sec)	LF	18
		16626+69, 38' LT to 16626+69, 54' LT (inc. 1 Traversable End Sec)	LF	17
		16626+69, 32' RT to 16626+69, 50' RT (inc. 1 Traversable End Sec)	LF	19
		16628+05, 32' RT to 16628+05, 50' RT (inc. 1 Traversable End Sec)	LF	19
		16628+05, 32' LT to 16628+05, 48' LT (inc. 1 Traversable End Sec)	LF	17
722	3510	INLET-TYPE 2		
		16620+00, 31' RT	EA	1
		16620+00, 31' LT	EA	1
		16625+00, 31' RT	EA	1
		16625+00, 43' LT	EA	1
		16626+69, 37' LT	EA	1
		16626+69, 31' RT	EA	1
		16628+05, 31' RT	EA	1
		16628+05, 31' LT	EA	1
722	3910	INLET SLOTTED DRAIN 15IN		
		16620+00, 31' RT	LF	20
		16620+00, 31' LT	LF	25

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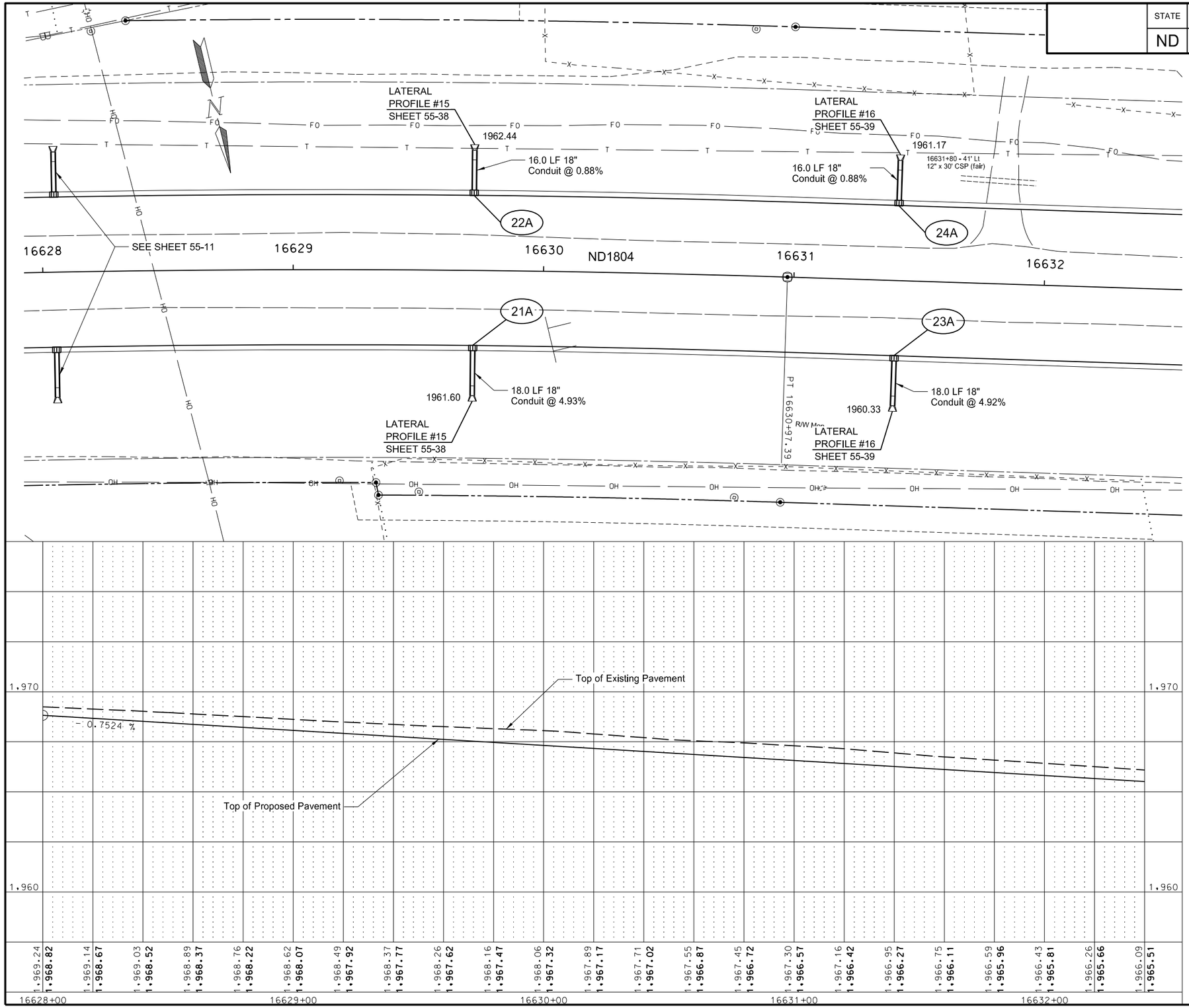
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16618+00 to Sta. 16629+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	12



Spec	Code	Bid Item	Unit	Quantity
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16629+72, 32' RT to 16629+72, 50' RT (inc. 1 Traversable End Sec)	LF	19
		16629+72, 32' LT to 16629+72, 48' LT (inc. 1 Traversable End Sec)	LF	17
		16631+41, 32' RT to 16631+41, 50' RT (inc. 1 Traversable End Sec)	LF	19
		16631+41, 32' LT to 16631+41, 48' LT (inc. 1 Traversable End Sec)	LF	17
722	3510	INLET-TYPE 2		
		16629+72, 31' RT	EA	1
		16629+72, 31' LT	EA	1
		16631+41, 31' RT	EA	1
		16631+41, 31' LT	EA	1

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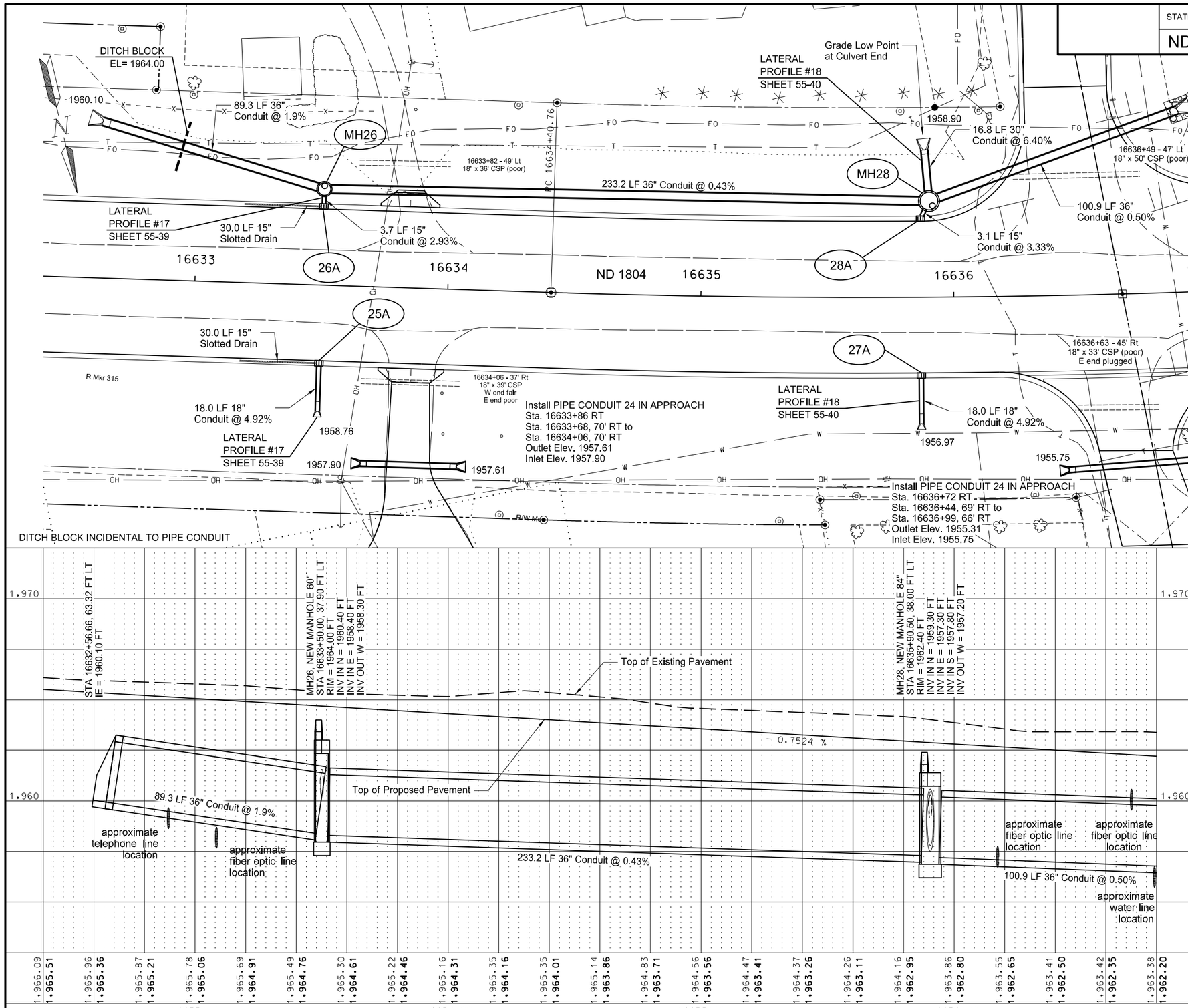
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16628+00 to Sta. 16632+40

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	13



Spec	Code	Bid Item	Unit	Quantity
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16633+50, 32' LT to 16633+50,35.7' LT	LF	4
		16635+87.5, 32' LT to 16635+88.9, 34.8' LT	LF	4
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16633+50, 32' RT to 16633+50, 50' RT (inc. 1 Traversable End Sec)	LF	19
		16635+87, 32' RT to 16635+87, 50' RT (inc. 1 Traversable End Sec)	LF	19
714	4106	PIPE CONDUIT 24IN-APPROACH		
		16633+86, RT (inc. 2 End Secs)	LF	39
		16636+69, RT (inc. 2 End Secs)	LF	57
714	4112	PIPE CONDUIT 30IN-STORM DRAIN		
		16635+88.7, 58.2' LT to 16635+90.2, 41.4' LT (inc. 1 End Sec)	LF	18
714	4117	PIPE CONDUIT 36IN-STORM DRAIN		
		16632+61.7, 61.9' LT to 16633+47.8, 38.5' LT (inc. 1 End Sec)	LF	91
		16633+52.3, 38' LT to 16635+86.9, 38' LT	LF	234
		16635+93.8, 39.1' LT to 16636+90.6, 72' LT (inc. 1 End Sec)	LF	103
722	0110	MANHOLE 60IN		
		16633+50, 37.9' LT	EA	1
722	0130	MANHOLE 84IN		
		16635+90.5, 38' LT	EA	1
722	1110	MANHOLE RISER 60IN		
		16633+50, 37.9' LT	LF	5
722	1130	MANHOLE RISER 84IN		
		16635+90.5, 38' LT	LF	4
722	3510	INLET-TYPE 2		
		16633+50, 31' RT	EA	1
		16633+50, 31' LT	EA	1
		16635+87, 31' LT	EA	1
		16635+87, 31' RT	EA	1
722	3910	INLET SLOTTED DRAIN 15IN		
		16633+50, 31' RT	LF	30
		16633+50, 31' LT	LF	30

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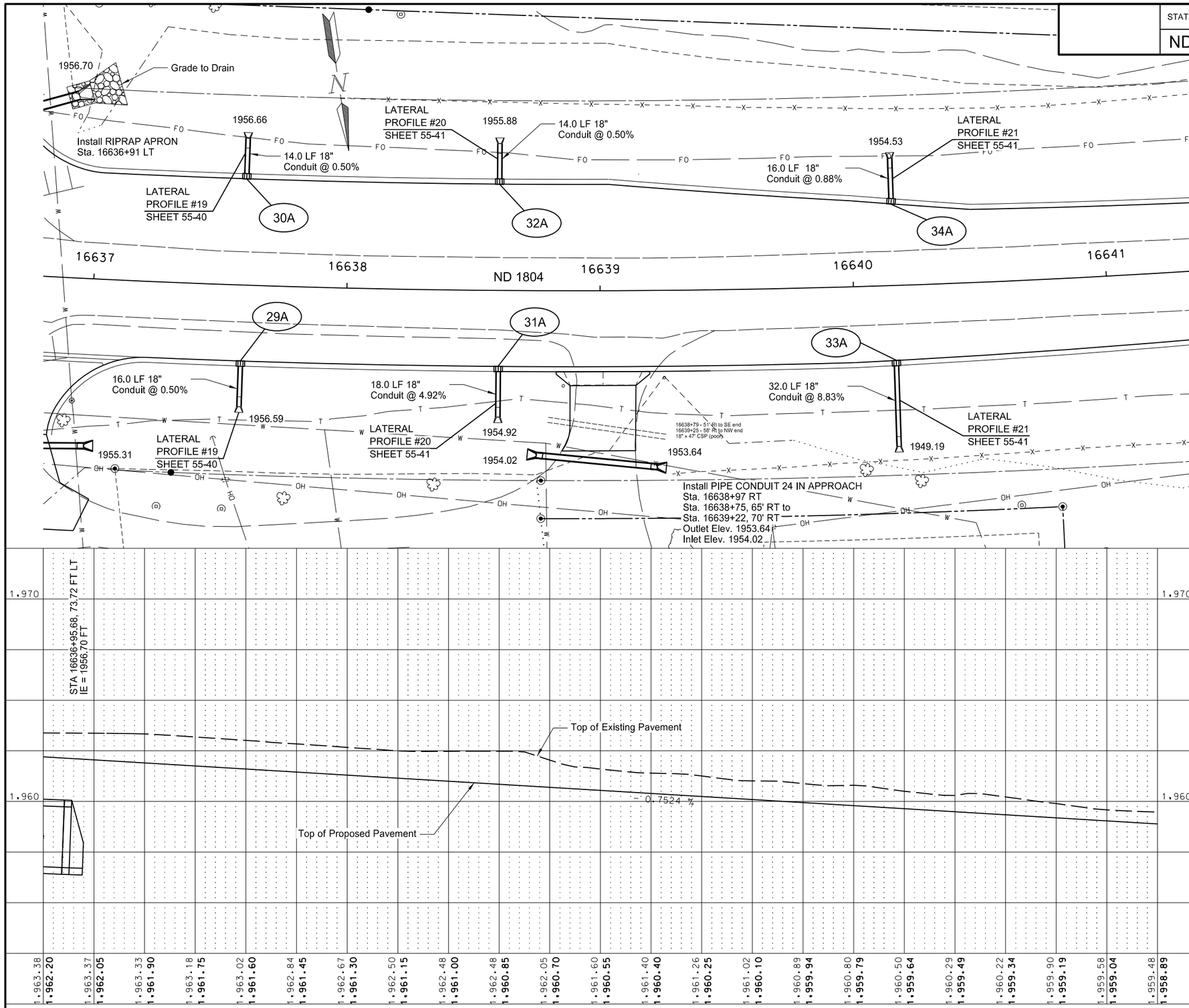
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16632+40 to Sta. 16636+80

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	14



Spec	Code	Bid Item	Unit	Quantity
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		16636+95, 73.7' LT (Outlet)	SY	52
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16637+59, 32' RT to 16637+59, 48' RT (inc. 1 Traversable End Sec)	LF	17
		16637+59, 44' LT to 16637+59, 58' LT (inc. 1 Traversable End Sec)	LF	15
		16638+60, 44' LT to 16638+60, 58' LT (inc. 1 Traversable End Sec)	LF	15
		16638+60, 32' RT to 16638+60, 50' RT (inc. 1 Traversable End Sec)	LF	19
		16640+16, 34.3' LT to 16640+16, 50.3' LT (inc. 1 Traversable End Sec)	LF	17
		16640+16, 31.6' RT to 16640+16, 63.5' RT (inc. 1 End Sec)	LF	34
714	4106	PIPE CONDUIT 24IN-APPROACH		
		16638+97, RT (inc. 2 End Secs)	LF	49
722	3510	INLET-TYPE 2		
		16637+59, 31' RT	EA	1
		16637+59, 43' LT	EA	1
		16638+60, 31' RT	EA	1
		16638+60, 43' LT	EA	1
		16640+16, 31' RT	EA	1
		16640+16, 33' LT	EA	1

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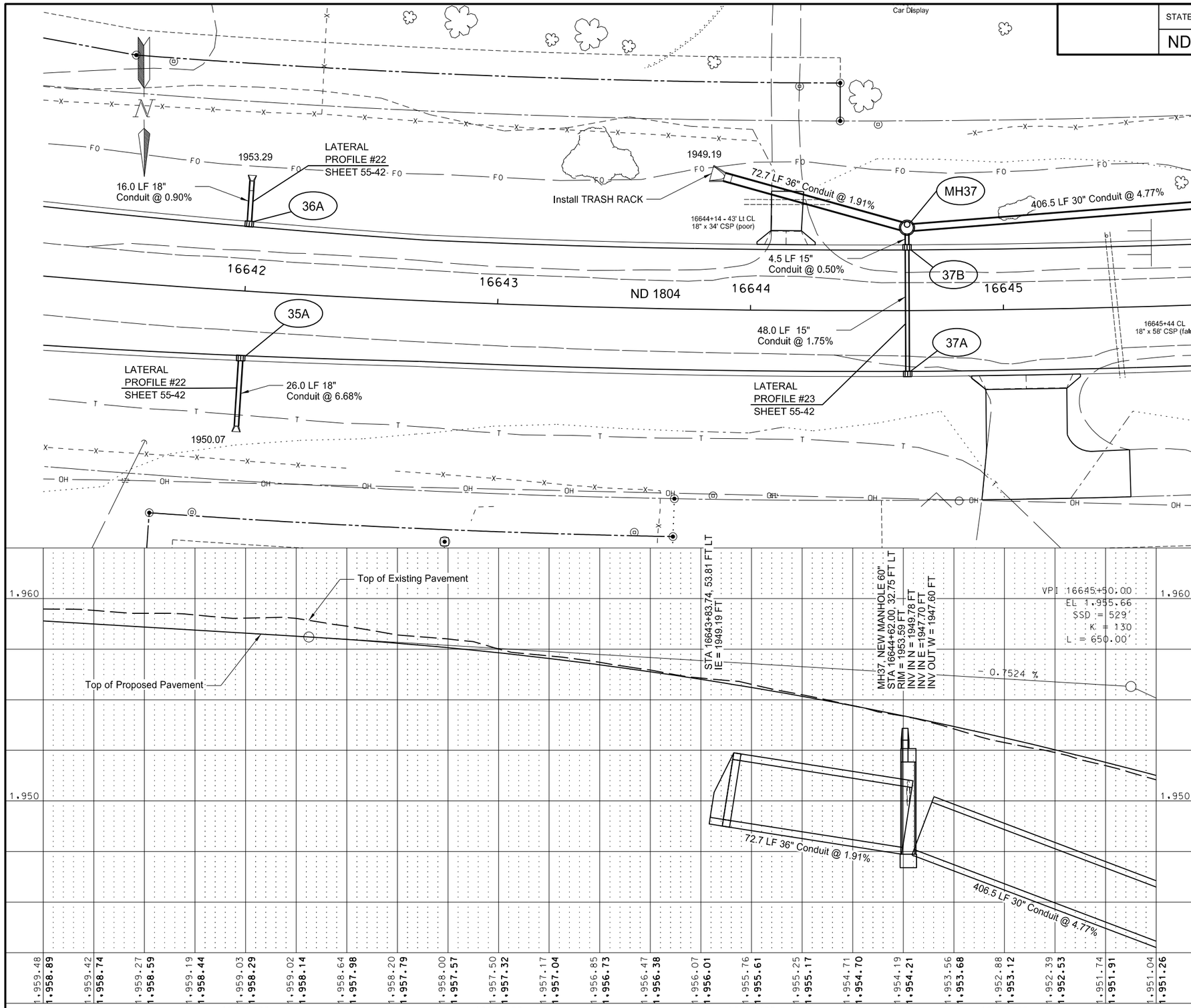
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16636+80 to Sta. 16641+20

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	15



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16644+62, CL	SY	300
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16644+62, 24' RT to 16644+62, 24' LT	LF	48
		16644+62, 26' LT to 16644+62, 31' LT	LF	6
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16642+00, 27.6' RT to 16642+00, 53.5' RT (inc. 1 End Sec)	LF	28
		16642+00, 27.6' LT to 16642+00, 43.6' LT (inc. 1 Traversable End Sec)	LF	17
714	4117	PIPE CONDUIT 36IN-STORM DRAIN		
		16643+88.9, 52.5' LT to 16644+59.8, 33.4' LT (inc. 1 Traversable End Sec)	LF	74
722	0110	MANHOLE 60IN		
		16644+62, 32.75' LT	EA	1
722	1110	MANHOLE RISER 60IN		
		16644+62, 32.75' LT	LF	5
722	3510	INLET-TYPE 2		
		16642+00, 26.5' RT	EA	1
		16642+00, 26.5' LT	EA	1
		16644+62, 25' LT	EA	1
		16644+62, 25' RT	EA	1
910	0480	TRASH RACK		
		16643+83.7, 53.8' LT	EA	1

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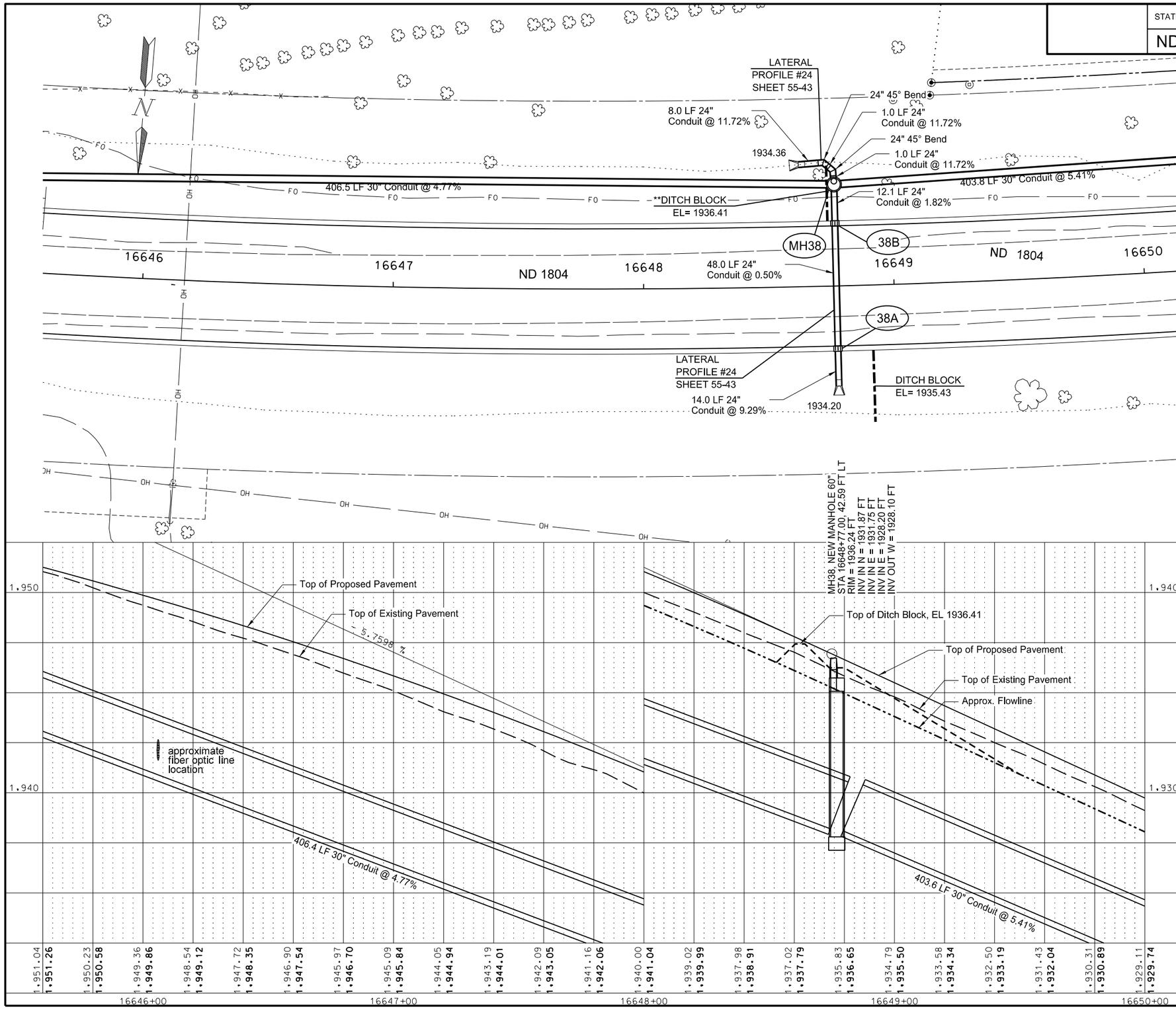
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16641+20 to Sta. 16645+60

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	16



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16648+77, CL	SY	250
714	4107	PIPE CONDUIT 24IN-STORM DRAIN		
		16648+77, 39.9' RT to 16648+77, 26' RT (inc. 1 Traversable End Sec)	LF	15
		16648+77, 24' RT to 16648+77, 24' LT	LF	48
		16648+77, 26' LT to 16648+77, 38.1' LT	LF	13
		16648+62.8, 48.8' LT to 16648+76.9, 43.1' LT (inc. 1 End Sec)	LF	17
714	4112	PIPE CONDUIT 30IN-STORM DRAIN		
		16644+64.3, 32.9' LT to 16648+74.5, 40.6' LT	LF	408
722	0110	MANHOLE 60IN		
		16648+77, 40.6' LT	EA	1
722	1110	MANHOLE RISER 60IN		
		16648+77, 40.6' LT	LF	9
722	3510	INLET-TYPE 2		
		16648+77, 25' RT	EA	1
		16648+77, 25' LT	EA	1
714	0500	PIPE CONC REINF 24IN CL II-45DEG BEND		
		16648+76.7, 46.1' LT	EA	1
		16648+72.89, 49.4 LT	EA	1

** Upstream slope ties into manhole lid.

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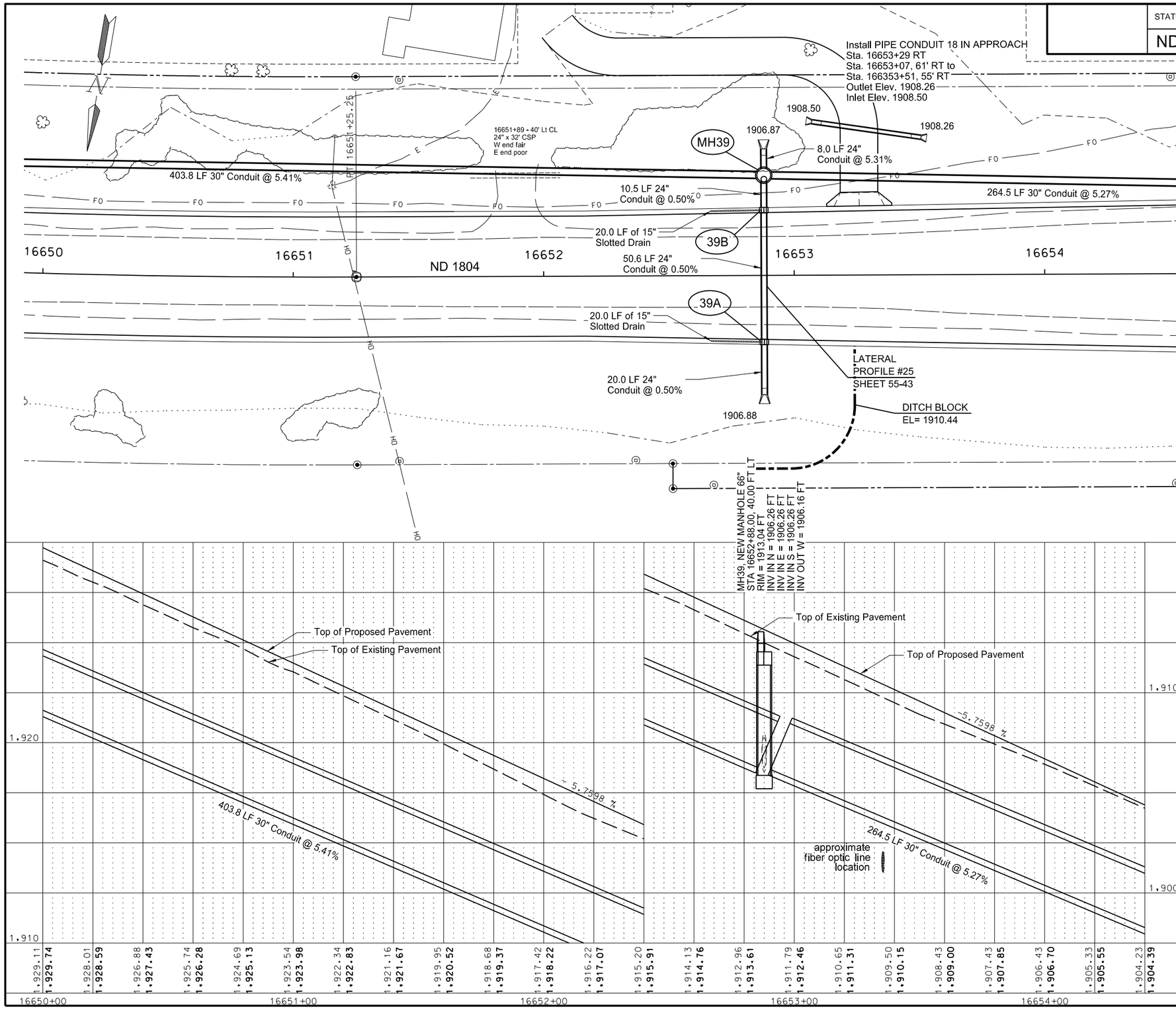
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16645+60 to Sta. 16650+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	17



714 4097 PIPE CONDUIT 15IN-STORM DRAIN			
	16664+69.4, 43' LT to 16665+24.6, 43' LT	LF	56
	16665+27.4, 43' LT to 16665+56, 42.3' LT	LF	30
	16665+27.4, 31' RT to 16665+56, 30.3' RT	LF	30
	16665+60, 30.3' RT to 16665+85.6, 31' RT	LF	26
	16665+60, 42.3' LT to 16665+85.6, 43' LT	LF	26
714 4101 PIPE CONDUIT 18IN-STORM DRAIN			
	16663+45, 32' RT to 16663+45, 50' RT (inc. 1 Traversable End Sec)	LF	19
	16665+58, 32.1' RT to 16665+58, 80.1' RT (inc. 1 End Sec) (inc. 1 Miter Joint)	LF	50
	16665+58, 44' LT to 16665+58, 68' LT (inc. 1 End Sec)	LF	26
714 4113 PIPE CONDUIT 30IN-APPROACH			
	16667+42, LT (inc. 2 End Secs)	LF	116
722 1100 MANHOLE RISER 48IN			
	16665+58, 43' LT	LF	6
	16665+58, 31' RT	LF	4
722 3510 INLET-TYPE 2			
	16663+45, 31' RT	EA	1
	16664+68, 43' LT	EA	1
	16665+26, 43' LT	EA	1
	16665+26, 31' RT	EA	1
	16665+87, 43' LT	EA	1
	16665+87, 31' RT	EA	1
722 3701 INLET SPECIAL-TYPE 2 48IN			
	16665+58, 43' LT	EA	1
	16665+58, 31' RT	EA	1
722 3910 INLET SLOTTED DRAIN 15IN			
	16663+45, 31' RT	LF	20

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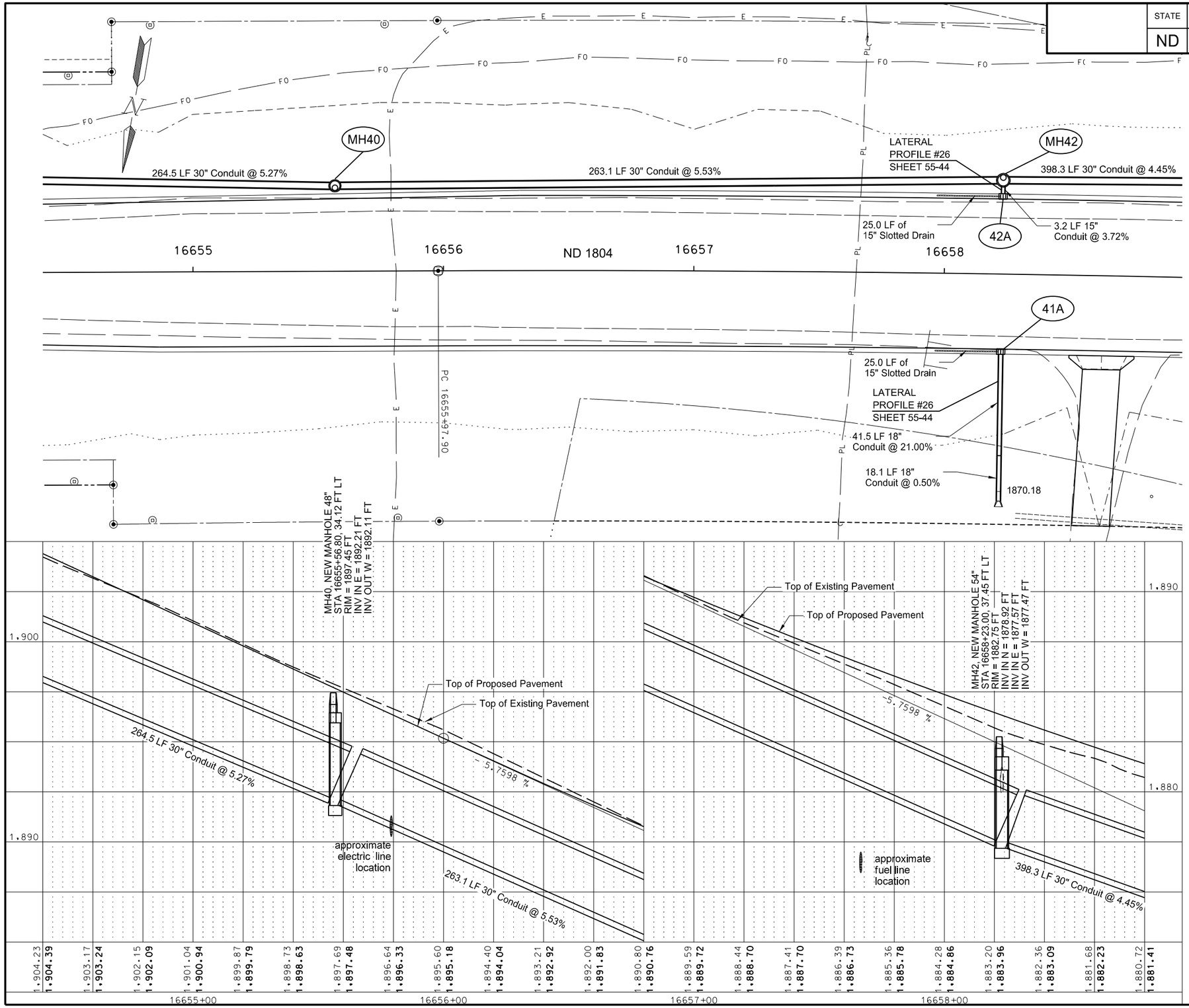
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16650+00 to Sta. 16654+40

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	18



Spec	Code	Bid Item	Unit	Quantity
714	3510	PIPE CONDUIT 15IN-STORM DRAIN		
		16658+23, 32' LT to 16658+23, 35.2' LT	LF	4
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16658+23, 32' RT to 16658+23, 90.7' RT (inc. 1 End Sec) (inc. 1 Miter Joint)	LF	62
714	4112	PIPE CONDUIT 30IN-STORM DRAIN		
		16652+90.5, 40' LT to 16655+54.6,34' LT	LF	266
		16655+59, 34.1' LT to 16658+20.8, 37.4' LT	LF	264
722	0100	MANHOLE 48IN		
		16655+56.8, 34.12' LT	EA	1
722	0107	MANHOLE 54IN		
		16658+23, 37.45' LT	EA	1
722	1100	MANHOLE RISER 48IN		
		16655+56.8, 34.12' LT	LF	4
722	1106	MANHOLE RISER 54IN		
		16658+23, 37.45' LT	LF	4
722	3510	INLET-TYPE 2		
		16658+23, 31' LT	EA	1
		16658+23, 31' RT	EA	1
722	3910	INLET SLOTTED DRAIN 15IN		
		16658+23, 31' LT	LF	25
		16658+23, 31' RT	LF	25

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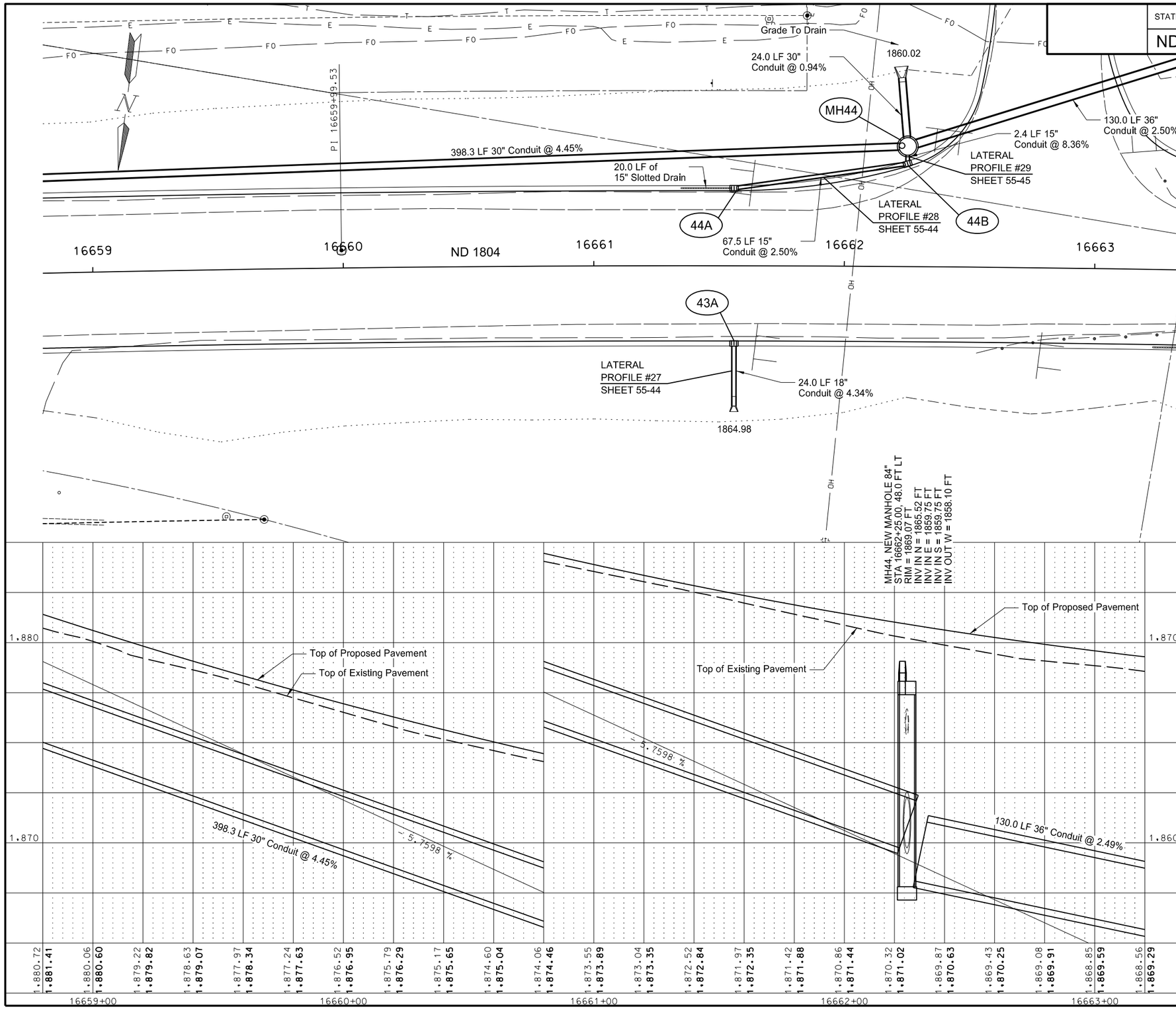
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16654+40 to Sta. 16658+80

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	19



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16662+80, 66' LT	SY	595
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16661+57.2, 31.2' LT to 16662+23.8, 40.9' LT	LF	68
		16662+25, 42.1' LT to 16662+25, 45' LT	LF	4
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16661+56, 32' RT to 16661+56, 56' RT (inc. 1 Traversable End Sec) (inc. 1 Miter Joint)	LF	25
714	4112	PIPE CONDUIT 30IN-STORM DRAIN		
		16658+25.2, 37.5' LT to 16662+22, 47.9' LT	LF	400
		16662+22.57, 75.4' LT to 16662+24.69, 51.5' LT (Inc. 1 End Sec)	LF	26
714	4117	PIPE CONDUIT 36IN-STORM DRAIN		
		16662+28.3, 49' LT to 16663+51.2, 89' LT (inc. 1 End Sec)	LF	130
722	0130	MANHOLE 84IN		
		16662+25, 48' LT	EA	1
722	1130	MANHOLE RISER 84IN		
		16662+25, 48' LT	LF	11
722	3510	INLET-TYPE 2		
		16661+56, 31' LT	EA	1
		16661+56, 31' RT	EA	1
		16662+25, 41.07 LT	EA	1
722	3910	INLET SLOTTED DRAIN 15IN		
		16661+56, 31' LT	LF	20

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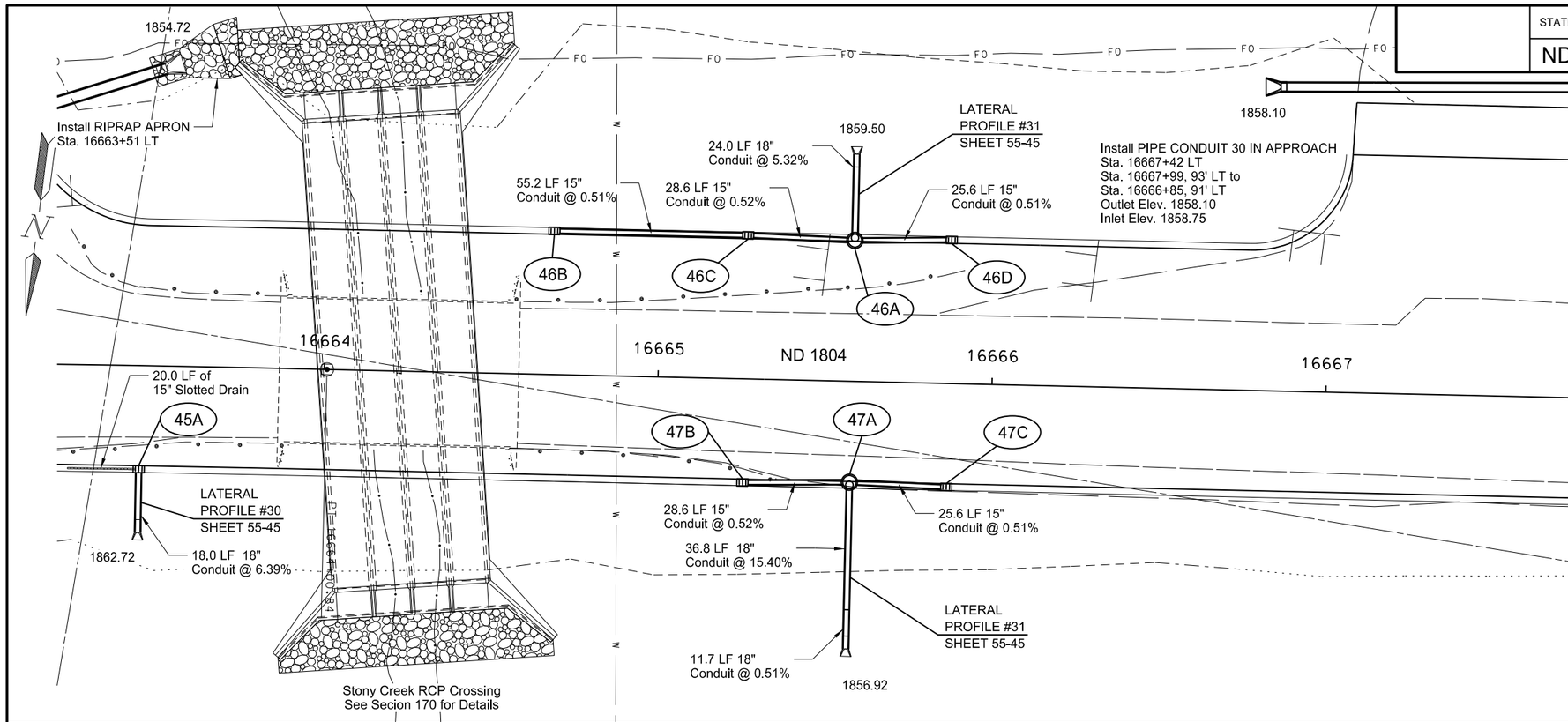
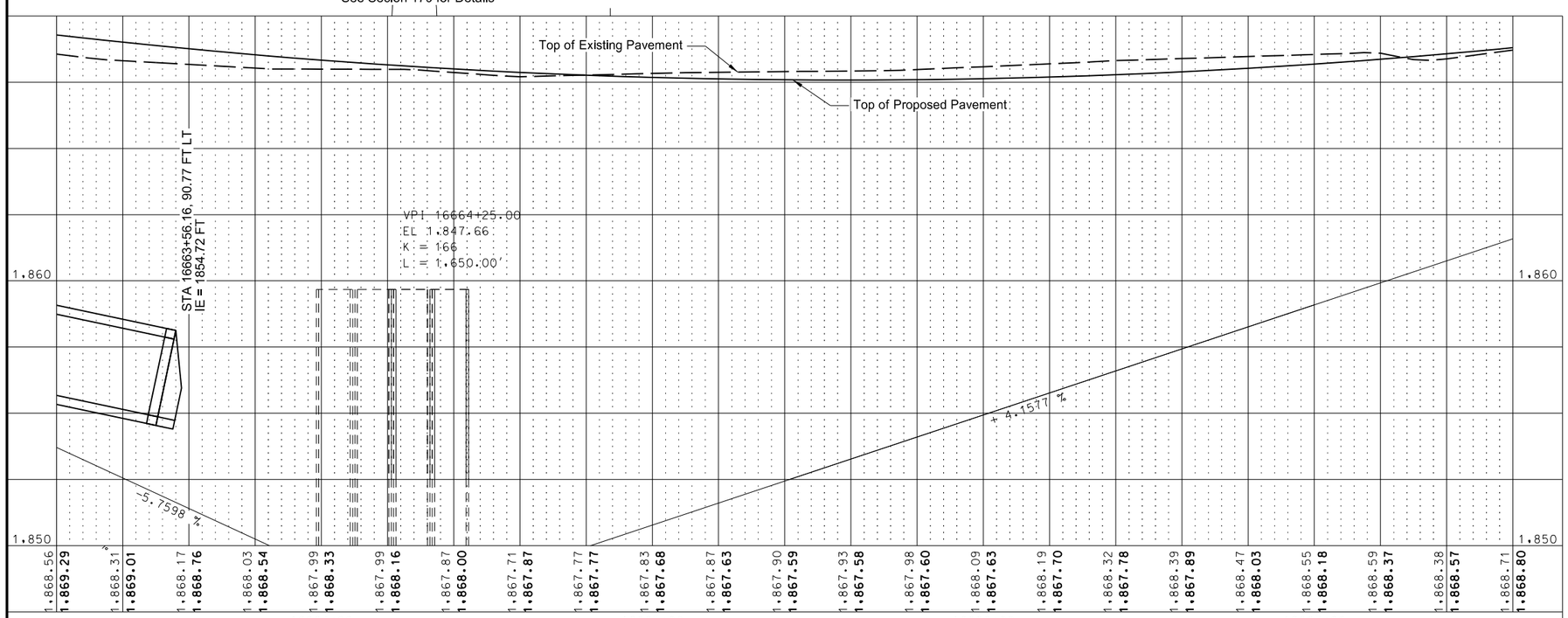
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16658+80 to Sta. 16663+20

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	20





Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16664+69.4, 43' LT	SY	256
		16665+27.4, 43' LT	SY	110
		16665+27.4, 31' RT	SY	110
		16665+60, 30.3' RT	SY	110
		16665+60, 42.3' LT	SY	110
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		16663+47, LT (Outlet)	SY	98
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16664+69.4, 43' LT to 16665+24.6, 43' LT	LF	56
		16665+27.4, 43' LT to 16665+56, 42.3' LT	LF	30
		16665+27.4, 31' RT to 16665+56, 30.3' RT	LF	30
		16665+60, 30.3' RT to 16665+85.6, 31' RT	LF	26
		16665+60, 42.3' LT to 16665+85.6, 43' LT	LF	26
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16663+45, 32' RT to 16663+45, 50' RT (inc. 1 Traversable End Sec)	LF	19
		16665+58, 32.1' RT to 16665+58, 80.1' RT (inc. 1 End Sec) (inc. 1 Miter Joint)	LF	50
		16665+58, 44' LT to 16665+58, 68' LT (inc. 1 End Sec)	LF	26
714	4113	PIPE CONDUIT 30IN-APPROACH		
		16667+42, LT (inc. 2 End Secs)	LF	116
722	1100	MANHOLE RISER 48IN		
		16665+58, 43' LT	LF	6
		16665+58, 31' RT	LF	4
722	3510	INLET-TYPE 2		
		16663+45, 31' RT	EA	1
		16664+68, 43' LT	EA	1
		16665+26, 43' LT	EA	1
		16665+26, 31' RT	EA	1
		16665+87, 43' LT	EA	1
		16665+87, 31' RT	EA	1
722	3701	INLET SPECIAL-TYPE 2 48IN		
		16665+58, 43' LT	EA	1
		16665+58, 31' RT	EA	1
722	3910	INLET SLOTTED DRAIN 15IN		
		16663+45, 31' RT	LF	20

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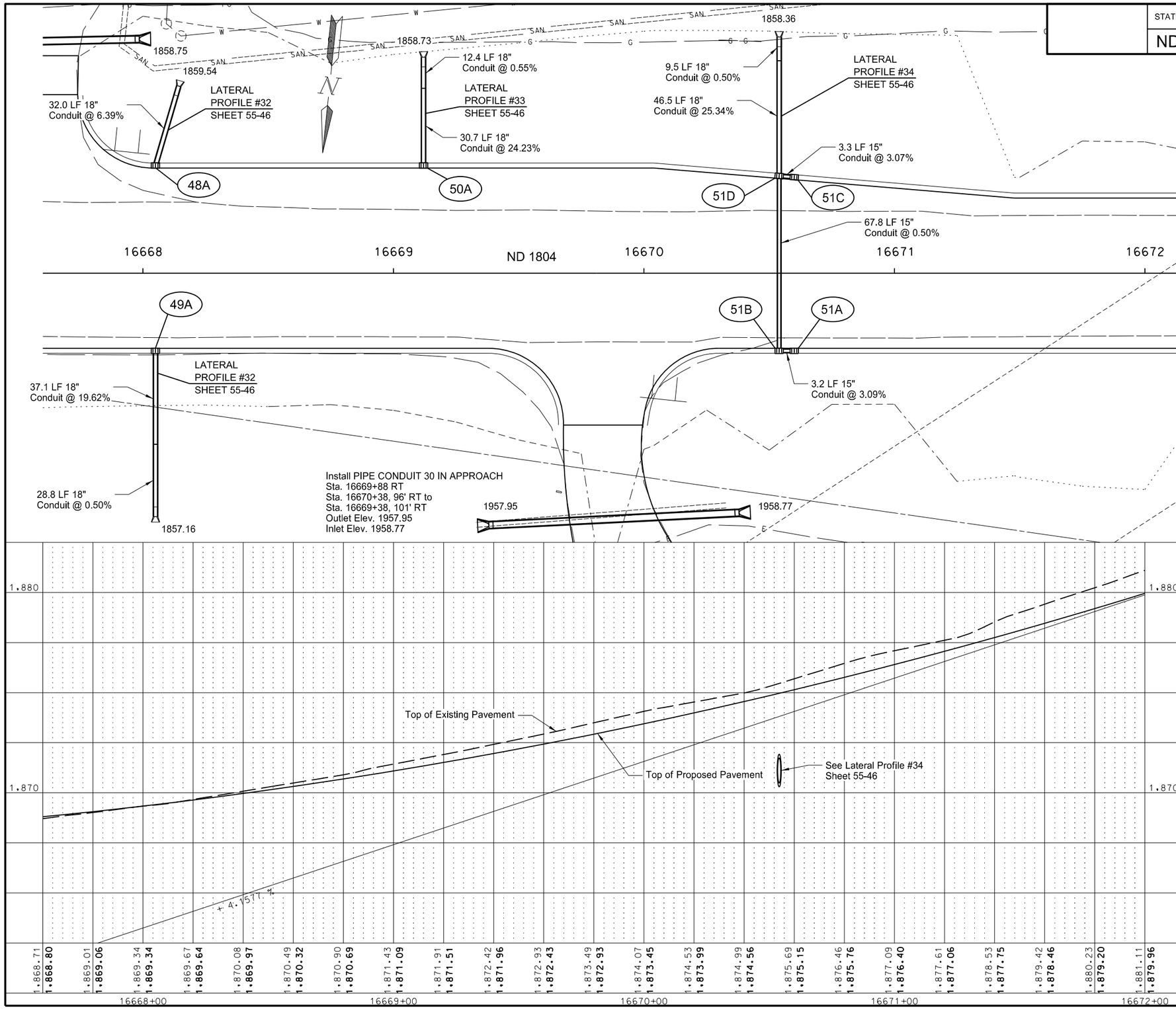
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16663+20 to Sta. 16667+60

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	21



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16670+54, CL	SY	380
		16670+55.4, 38.7' LT	SY	18
		16670+55.4, 31' RT	SY	18
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16670+54, 30' RT to 16670+54, 37.8' LT	LF	68
		16670+55.4, 31' RT to 16670+58.6, 31' RT	LF	4
		16670+55.4, 38.7 LT to 16670+58.6, 38.4' LT	LF	4
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16668+05.3, 44' LT to 16668+14.3, 74.7' LT(inc. 1 End Sec)	LF	34
		16668+05, 32' RT to 16668+05, 97.2' RT (inc. 1 End Sec) (inc. 1 Miter Joint)	LF	68
		16669+12, 44' LT to 16669+12, 86.2' LT (inc. 1 End Sec) (inc. 1 Miter Joint)	LF	46
		16670+54, 39.8' LT to 16670+54, 94.3' LT (inc. 1 End Sec) (inc. 1 Miter Joint)	LF	58
714	4113	PIPE CONDUIT 30IN-APPROACH		
		16669+88, RT (inc. 2 End Secs)	LF	102
722	3510	INLET-TYPE 2		
		16668+05, 43' LT	EA	1
		16668+05, 31' RT	EA	1
		16669+12, 43' LT	EA	1
		16670+54, 38.8' LT	EA	1
		16670+54, 31' RT	EA	1
		16670+60, 31' RT	EA	1
		16670+60, 38.8' LT	EA	1

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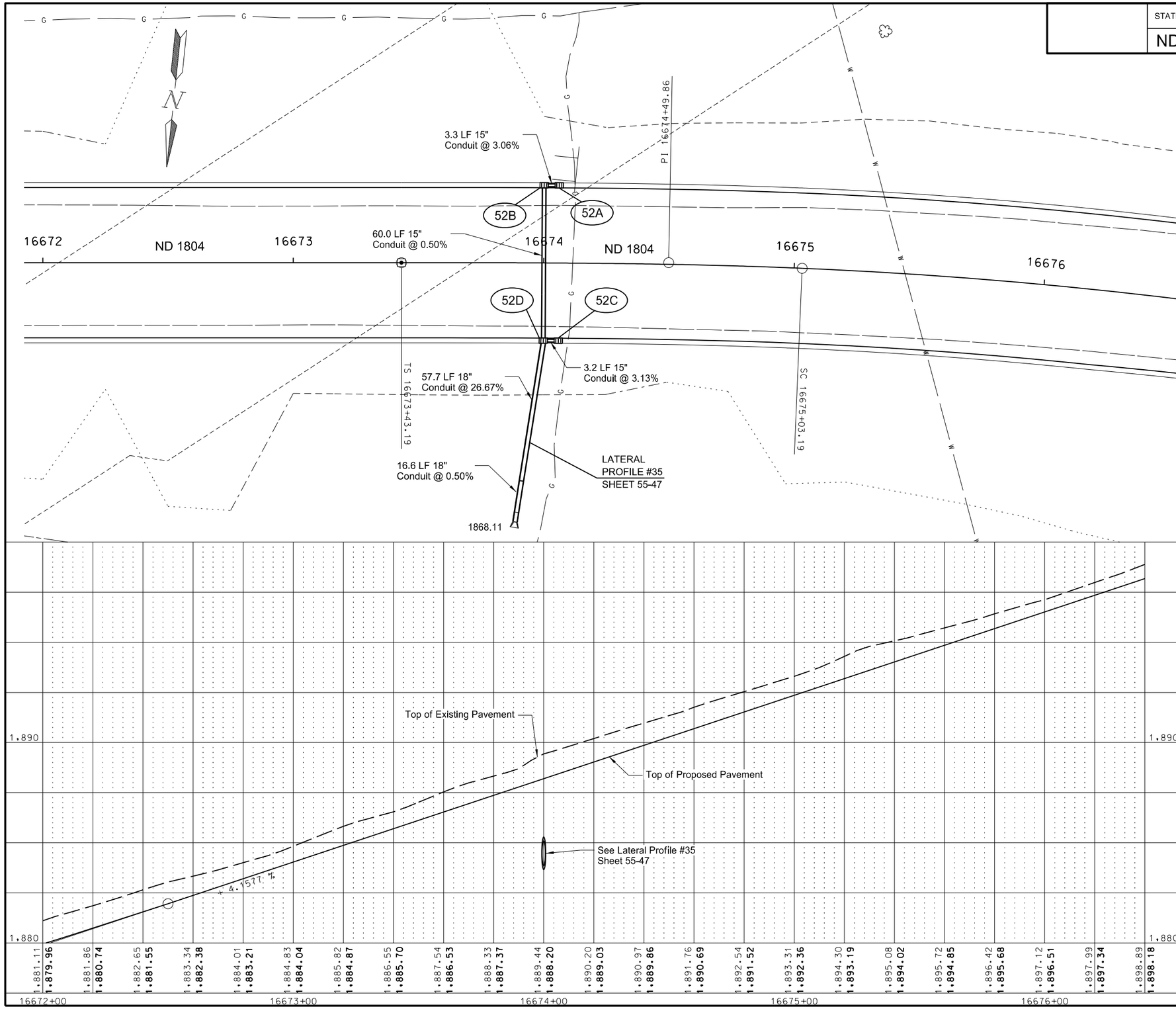
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16667+60 to Sta. 16672+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	22



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16674+00, CL	SY	340
		16674+01.4, 31' RT	SY	18
		16674+01.4, 31' LT	SY	18
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16674+00, 30' LT to 16674+00, 30' RT	LF	60
		16674+01.4, 31' RT to 16674+04.6, 31' RT	LF	4
		16674+01.4, 31' LT to 16674+04.6, 31' LT	LF	4
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16674+00, 32' RT to 16673+88.9, 103.4' RT (inc. 1 End Sec) (inc. 1 Miter Joint)	LF	76
722	3510	INLET-TYPE 2		
		16674+00, 31' RT	EA	1
		16674+06, 31' RT	EA	1
		16674+00, 31' LT	EA	1
		16674+06, 31' LT	EA	1

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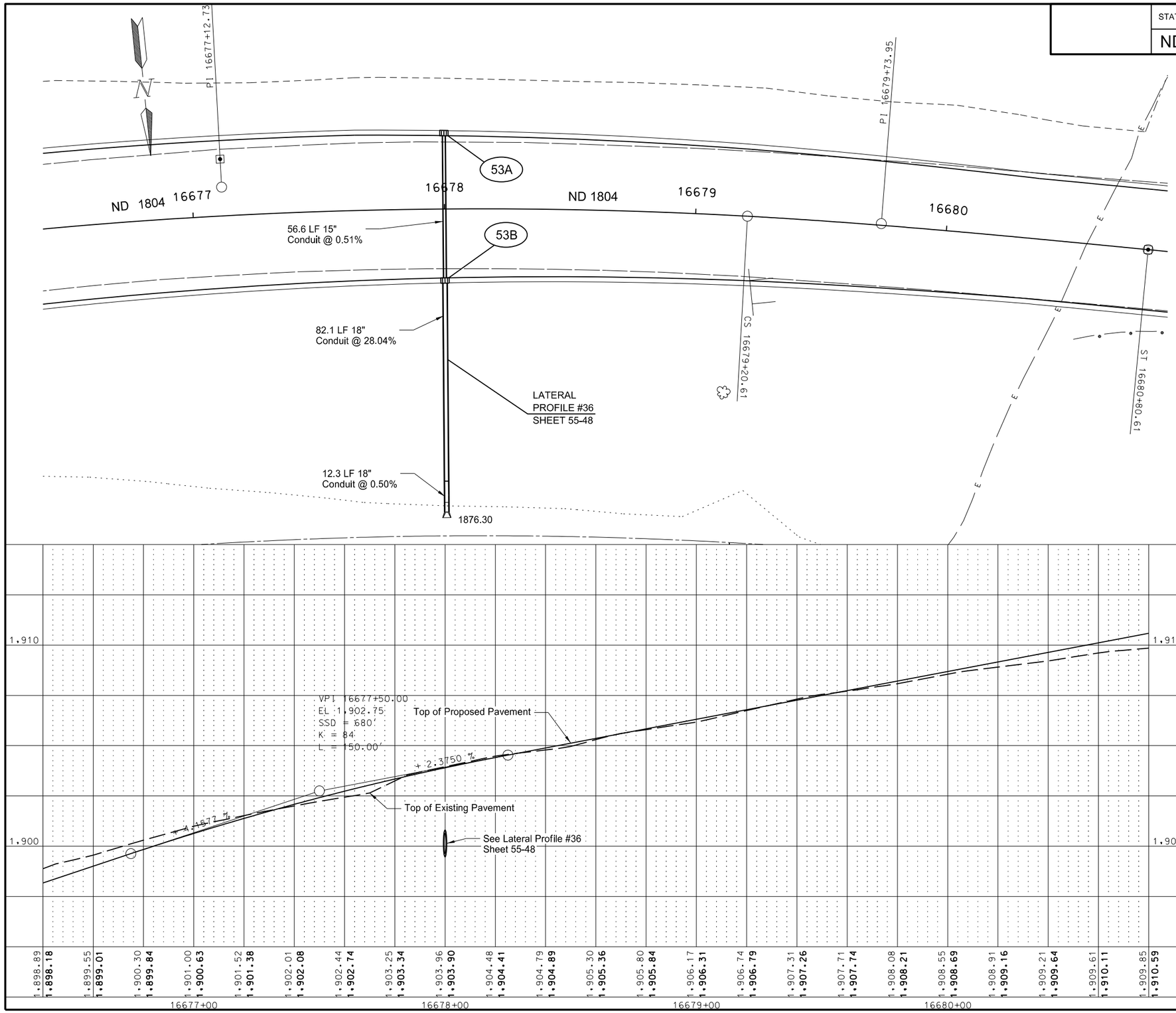
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16672+00 to Sta. 16676+40

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	23



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16678+00, CL	SY	360
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16678+00, 29.2' LT to 16678+00, 27.4' RT	LF	58
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16678+00, 29.4' RT to 16678+00, 120.5' RT (inc. 1 End Sec) (inc. 1 Miter Joint)	LF	96
722	3510	INLET-TYPE 2		
		16678+00, 28.41' RT	EA	1
		16678+00, 30.2' LT	EA	1

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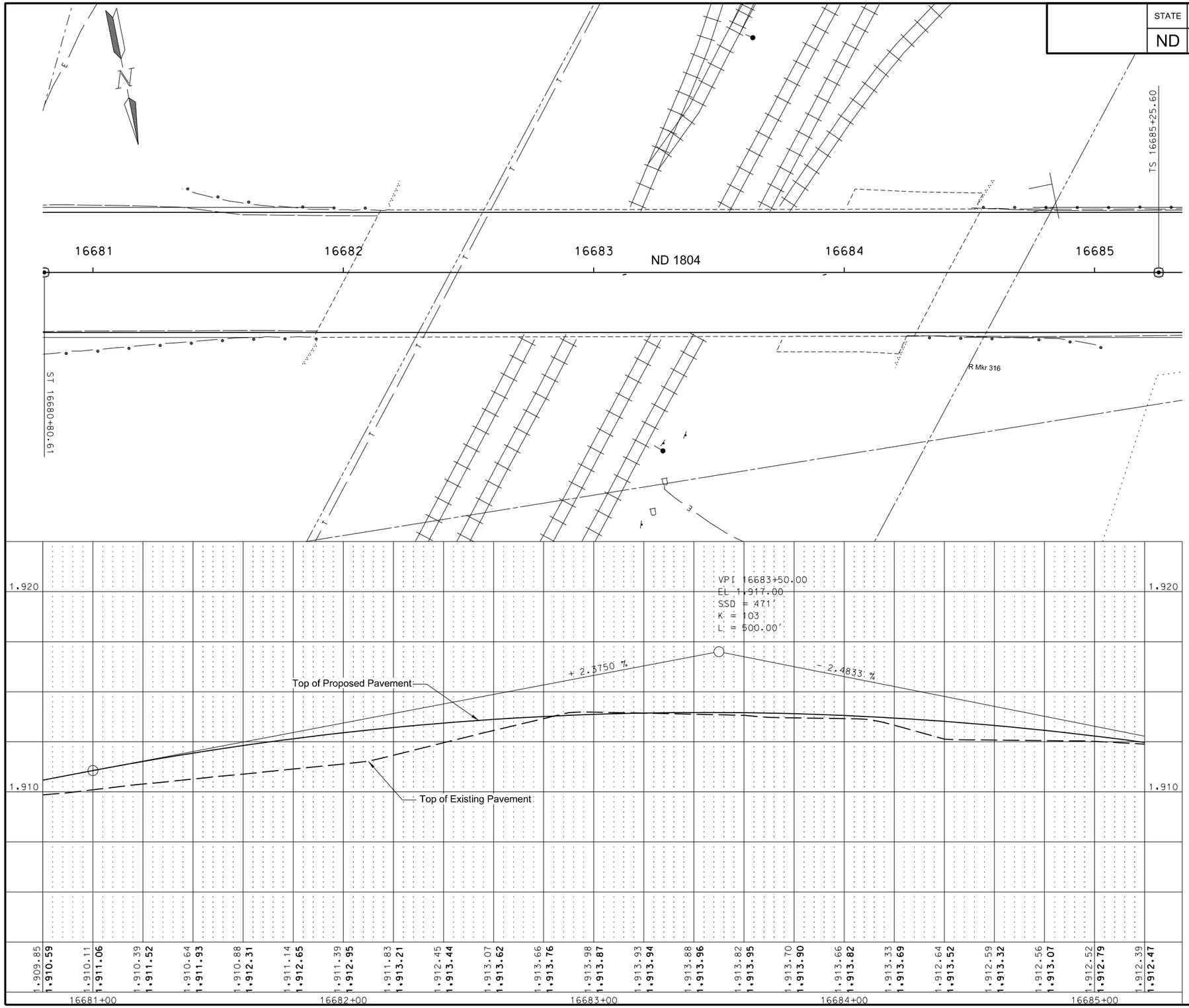
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16676+40 to Sta. 16680+80

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	24



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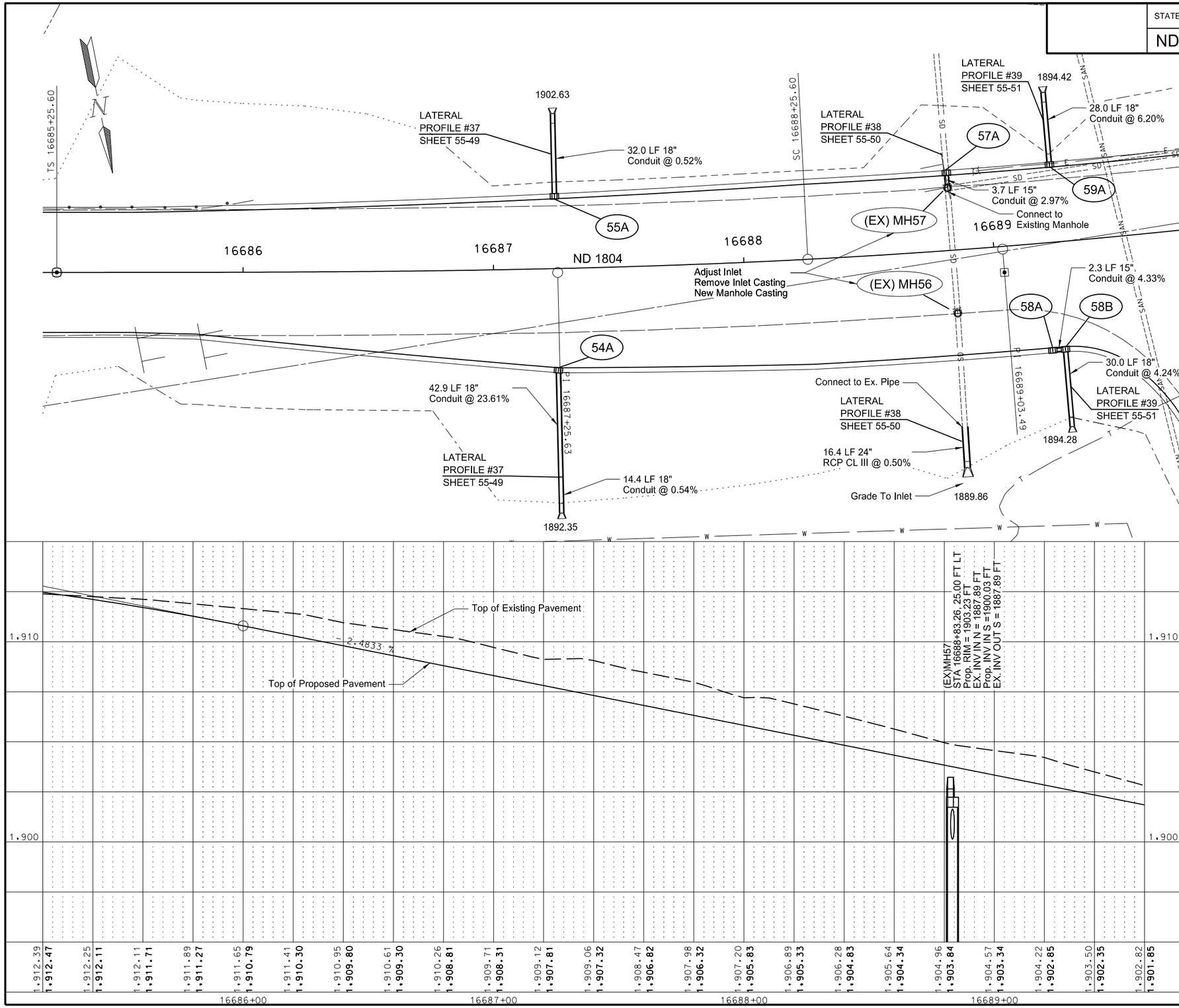
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16680+80 to Sta. 16685+20

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	25



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16688+83, 26.3' LT	SY	18
		16689+21.4' RT	SY	18
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN		
		16688+83.2, 87.1' RT to 16688+83.3, 70.7' RT (inc. 1 End Sec)	LF	19
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16688+83.3, 26.3' LT to 16688+83.3, 30' LT	LF	4
		16689+21.4, 43' RT to 16689+23.6, 43' RT	LF	4
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16687+25, 30' LT to 16687+ 25, 61.9' LT (inc. 1 End Sec)	LF	34
		16687+25, 41.6' RT to 16687+25, 97.7' RT (inc. 1 End Sec) (inc. 1 Miter Joint)	LF	60
		16689+25, 32' LT to 16689+25, 60' LT (inc. 1 End Sec)	LF	30
		16689+25, 44' RT to 16689+25, 74' RT (inc. 1 End Sec)	LF	32
722	0315	MANHOLE CASTING		
		16688+83.26, 25' LT	EA	1
		16688+83.76, 25.25' RT	EA	1
722	2490	MANHOLE STORM CONNECTION		
		16688+83.26, 25.80' LT	EA	1
722	3510	INLET-TYPE 2		
		16687+25, 40.63' RT	EA	1
		16687+25, 28.88' LT	EA	1
		16688+83.26, 31' LT	EA	1
		16689+20, 43' RT	EA	1
		16689+25, 43' RT	EA	1
		16689+25, 31' LT	EA	1
722	6160	ADJUST INLET		
		16688+83.26, 25' LT	EA	1
		16688+83.76, 25.25' RT	EA	1

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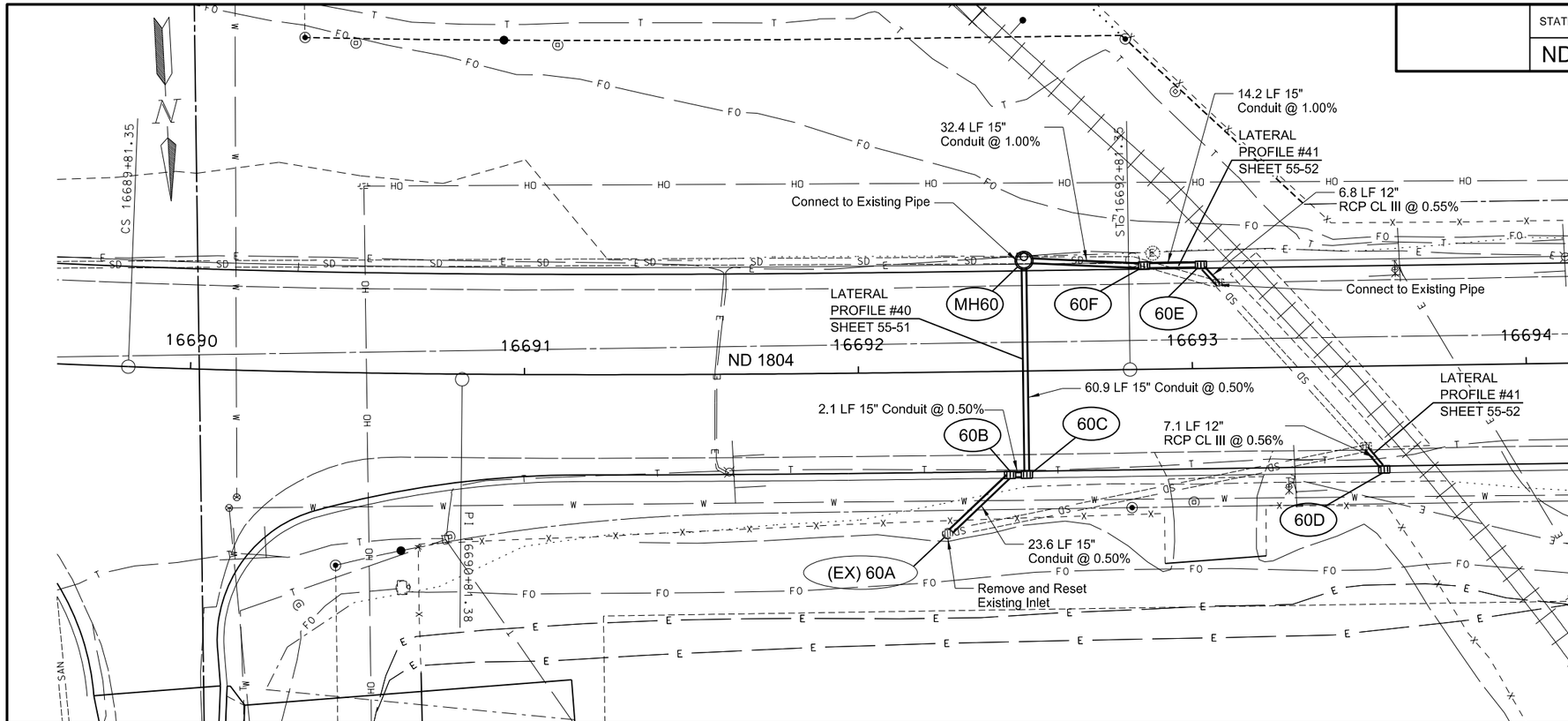
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16685+20 to Sta. 16689+60

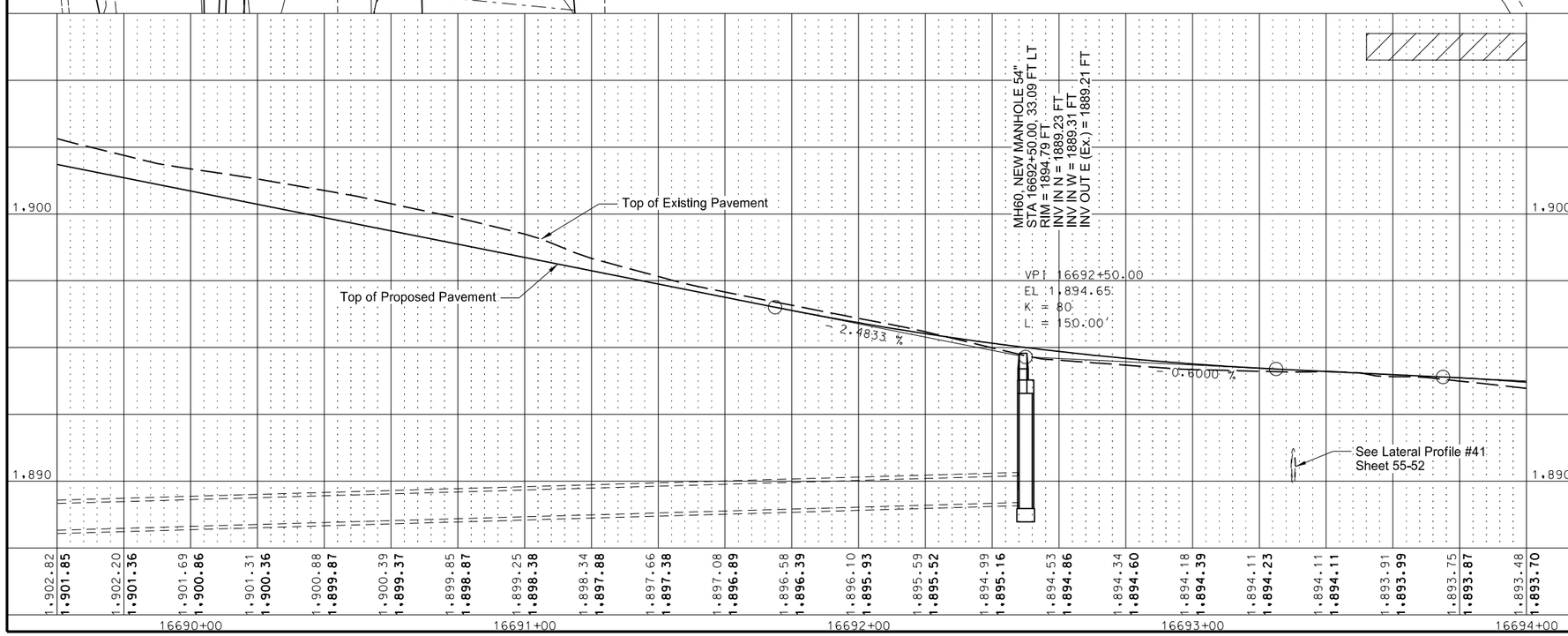
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	26



Spec	Code	Bid Item	Unit	Quantity
202	0231	REMOVE & RESET INLETS		
		16692+26.1, 48.34' RT	EA	1
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16692+50, CL	SY	353
		16692+84.6, 31' LT	SY	110
		16693+08, 25' LT	SY	39
		16693+56, 30' RT	SY	39
		16692+46.4, 31' RT	SY	18
		16692+87, 31' LT	SY	80
714	0115	PIPE CONC REINF 12IN CL III-STORM DRAIN		
		16693+03.7, 30' LT to 16693+08.3, 25' LT	LF	8
		16693+51.7,24.6' RT to 16693+56.2, 30' RT	LF	8
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16692+46.4, 31' RT to 16692+48.5, 31' RT	LF	4
		16692+27.1, 47.6' RT to 16692+44.4, 31.5' RT	LF	24
		16692+84.6, 31' LT to 16692+52.3, 33' LT	LF	34
		16692+87, 31' LT to 16693+01.6, 31' LT	LF	16
		16692+50, 30' RT to 16692+50, 30.9' LT	LF	62
722	0107	MANHOLE 54IN		
		16692+50, 33' LT	EA	1
722	1106	MANHOLE RISER 54IN		
		16692+50, 33' LT	LF	6
722	3510	INLET-TYPE 2		
		16692+45, 31' RT	EA	1
		16692+50, 31' RT	EA	1
		16692+86, 31' RT	EA	1
		16693+03, 31' LT	EA	1

Approximate Zone of Contaminated Soil

Note: See SP 290(14) "Contaminated Work Area", Supplemental Information, & Sections 6 and 20 for more information.



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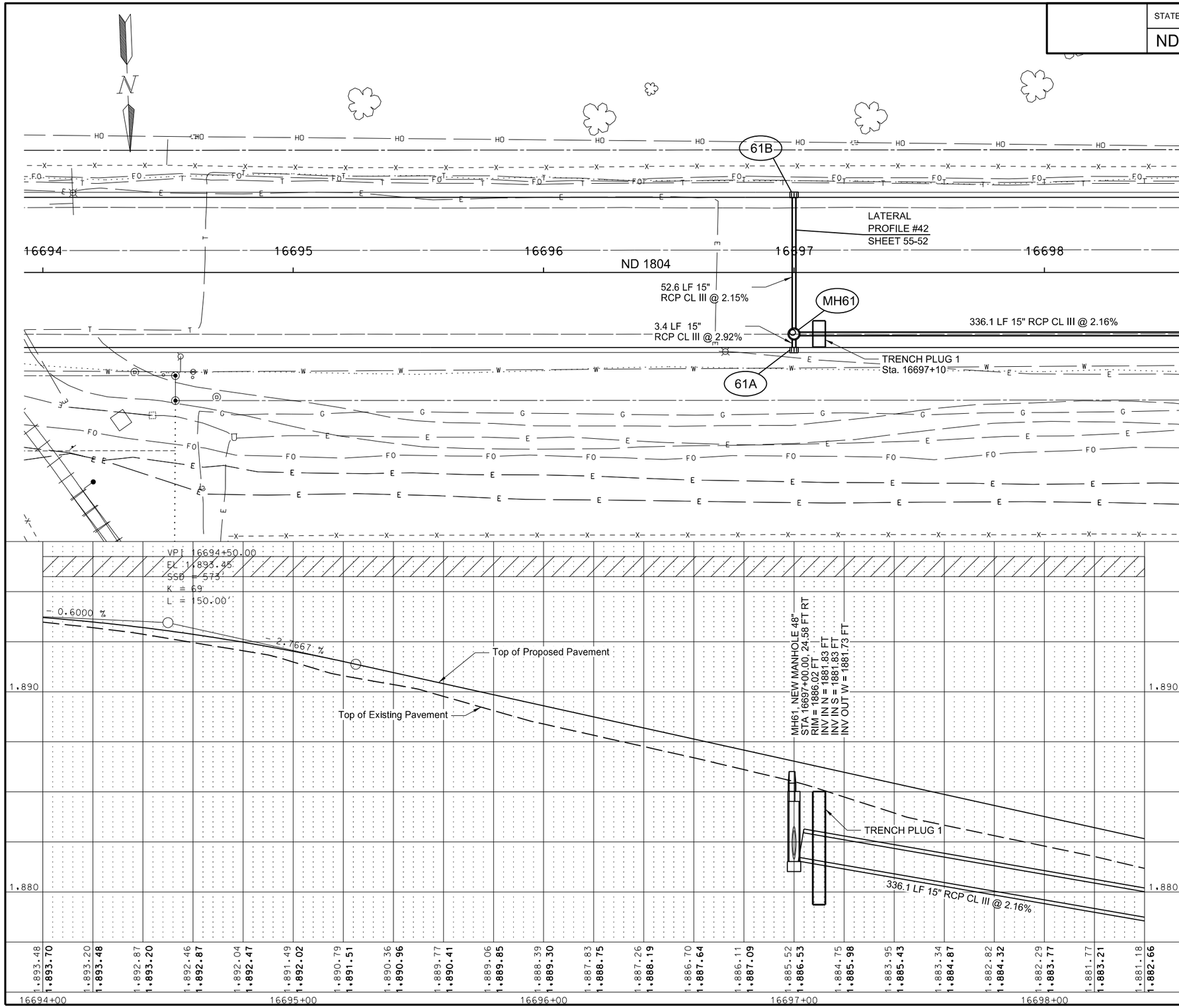
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16689+60 to Sta. 16694+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	27



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16697+00, 30' RT	SY	18
		16697+00, CL	SY	222
		16698+00, 24.6' RT	SY	1800
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		16697+00, 30' RT to 16697+00, 26.6' RT	LF	4
		16697+00, 22.6' RT to 16697+00, 30' LT	LF	54
		16697+02, 24.6' RT to 16700+38, 24.6' RT	LF	338
714	9685	TRENCH PLUG		
		16697+10, RT	EA	1
722	0100	MANHOLE 48IN		
		16697+00, 24.58' RT	EA	1
722	1100	MANHOLE RISER 48IN		
		16697+00, 24.58' RT	LF	3
722	3510	INLET-TYPE 2		
		16697+00, 31' RT	EA	1
		16697+00, 31' LT	EA	1

Approximate Zone of Contaminated Soil

Note: See SP 290(14) "Contaminated Work Area", Supplemental Information, & Sections 6 and 20 for more information.

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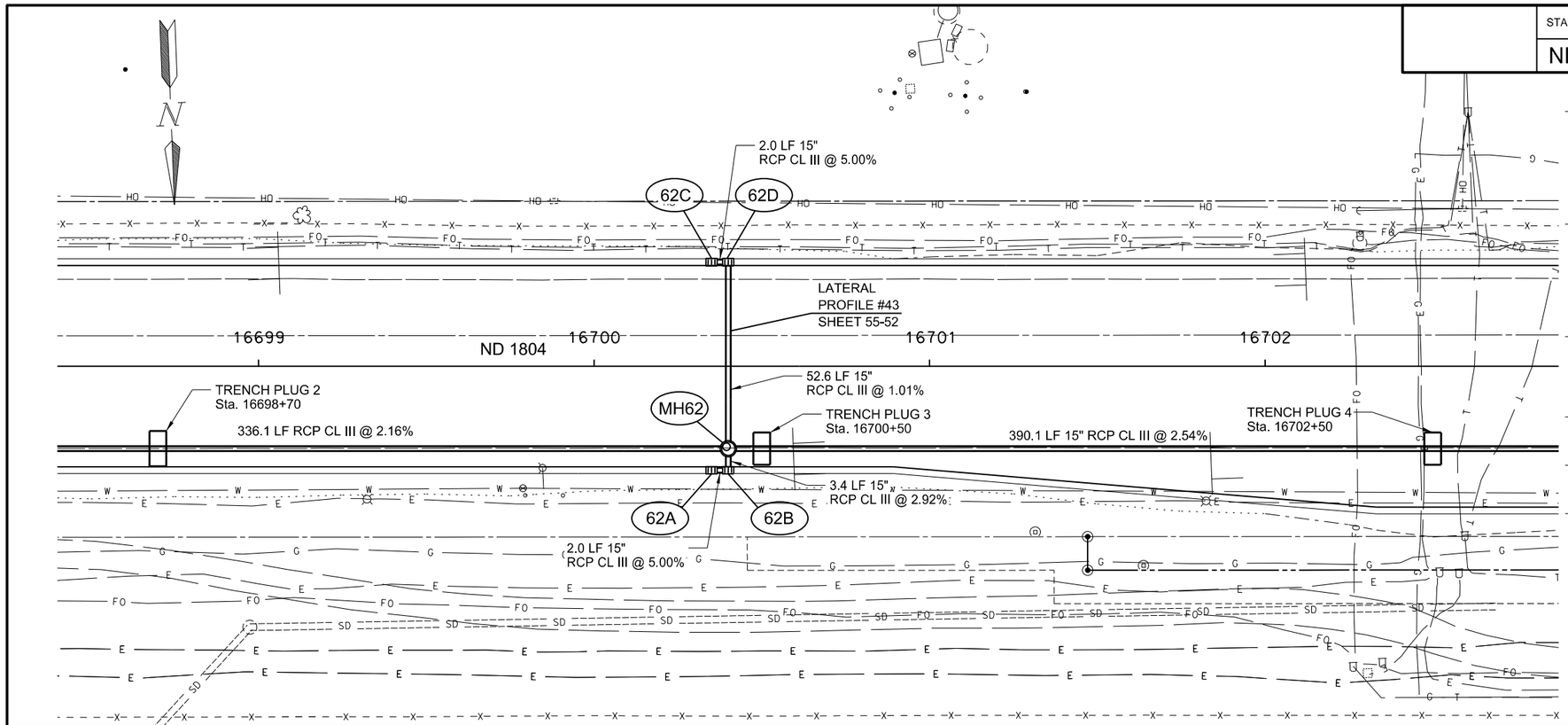
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16694+00 to Sta. 16698+40

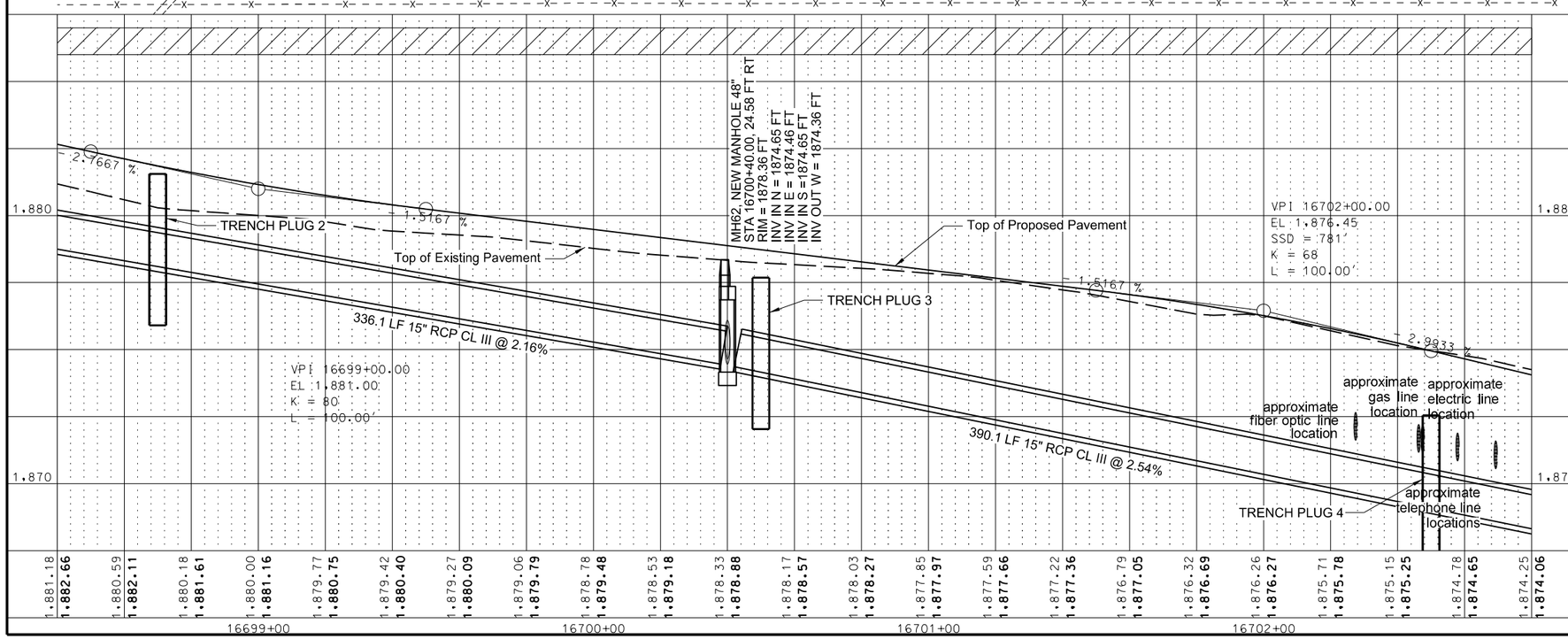
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	28



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16700+36.5, 31' RT	SY	18
		16700+40, 30' RT	SY	18
		16700+36.5, 31' LT	SY	18
		16700+40 CL	SY	222
		16702+00, 24.6' RT	SY	2094
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		16700+42, 24.6' RT to 16704+32, 24.6' RT	LF	392
		16700+36.5, 31' RT to 16700+38.5, 31' RT	LF	2
		16700+40, 30' RT to 16700+40, 26.6' RT	LF	4
		16700+36.5, 31' LT to 16700+38.5, 31' LT	LF	2
		16700+40, 30' LT to 16700+40, 22.6' RT	LF	54
714	9685	TRENCH PLUG		
		16698+70, RT	EA	1
		16700+50, RT	EA	1
		16702+50, RT	EA	1
722	0100	MANHOLE 48IN		
		16700+40, 24.58' RT	EA	1
722	1100	MANHOLE RISER 48IN		
		16700+40, 24.58' RT	LF	3
722	3510	INLET-TYPE 2		
		16700+35, 31' RT	EA	1
		16700+35, 31' LT	EA	1
		16700+40, 31' RT	EA	1
		16700+40, 31' LT	EA	1

Approximate Zone of Contaminated Soil

Note: See SP 290(14) "Contaminated Work Area", Supplemental Information, & Sections 6 and 20 for more information.



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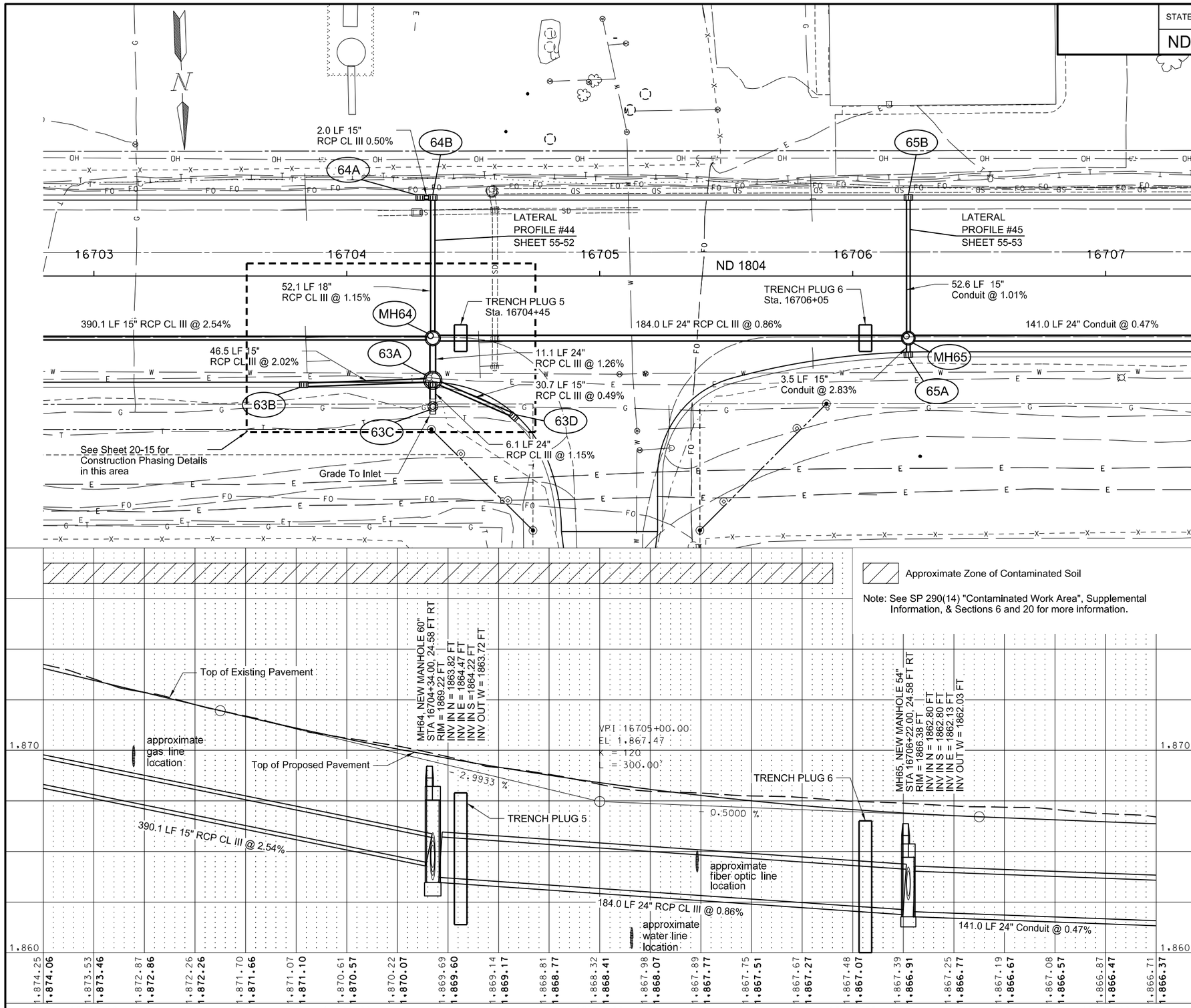
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16698+40 to Sta. 16702+80

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	29



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16703+84.5, 43' RT	SY	189
		16704+30.5, 31' LT	SY	18
		16704+36.3, 42.7' RT	SY	100
		16706+22, 30.1' RT	SY	18
		16706+22, 22.6' RT	SY	222
		16704+34, 30' LT	SY	228
		16704+34, 50.3' RT	SY	30
		16705+00, 24.6' RT	SY	1026
		16707+00, 24.6' RT	SY	768
		16704+34, 39.2' RT	SY	35
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN		
		16703+84.5, 43' RT to 16704+31.5, 41.8' RT	LF	48
		16704+30.5, 31' LT to 16704+32.5, 31' LT	LF	2
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN		
		16704+34, 30' LT to 16704+34, 22.6' RT	LF	54
		16704+34, 50.3' RT to 16704+34, 44.3' RT	LF	7
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN		
		16704+36, 24.6' RT to 16706+20, 24.6' RT	LF	184
		16704+34, 48.6' RT to 1607+34, 44.2' RT	LF	6
		16704+34, 38.2' RT to 16704+34, 27.1' RT	LF	12
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16706+22, 30.1' RT to 16706+22, 26.6' RT	LF	4
		16706+22, 22.6' RT to 16706+22, 30' LT	LF	54
714	4107	PIPE CONDUIT 24IN-STORM DRAIN		
		16706+24, 24.6' RT to 16707+65, 24.6' RT	LF	142
714	9685	TRENCH PLUG		
		16704+45, RT	EA	1
		16706+05, RT	EA	1
722	0110	MANHOLE 60IN		
		16704+34, 24.58' RT	EA	1
722	1110	MANHOLE RISER 60IN		
		16704+34, 24.58' RT	LF	5
722	0107	MANHOLE 54IN		
		16706+22, 24.58' RT	LF	4
722	1106	MANHOLE RISER 54IN		
		16706+22, 24.58' RT	EA	1
722	1120	MANHOLE RISER 72IN		
		16704+34, 43' RT	LF	4
722	3510	INLET-TYPE 2		
		16703+83, 43' RT	EA	1
		16704+29, 31' LT	EA	1
		16704+34, 31' LT	EA	1
		16704+66, 55.61' RT	EA	1
		16706+22, 31.12' RT	EA	1
		16706+22, 31' LT	EA	1
722	3766	INLET-SPECIAL-TYPE 2 72IN		
		16704+34, 43' RT	EA	1
722	4565	MEDIAN DRAIN PRECAST CONCRETE-TYPE A		
		16704+34, 51.58' RT	EA	1

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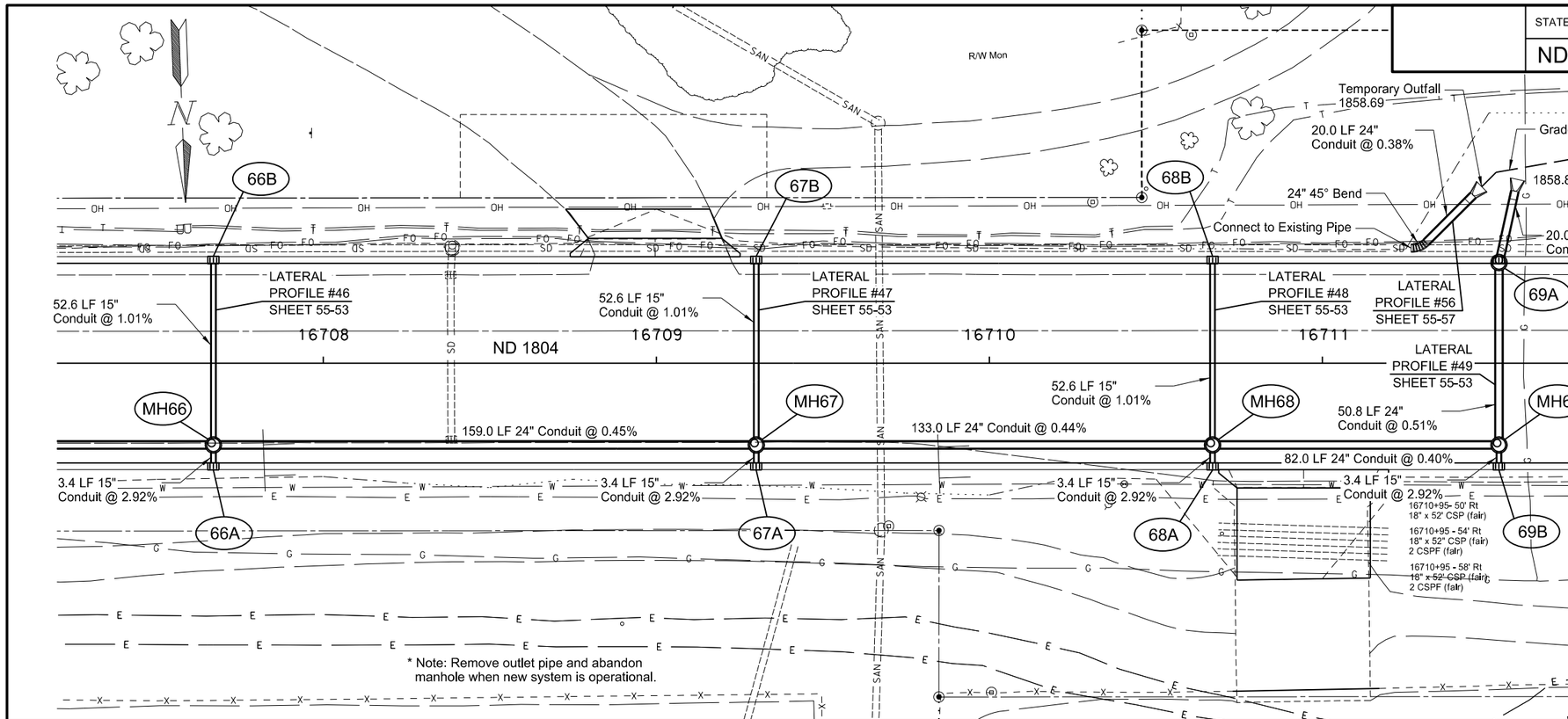
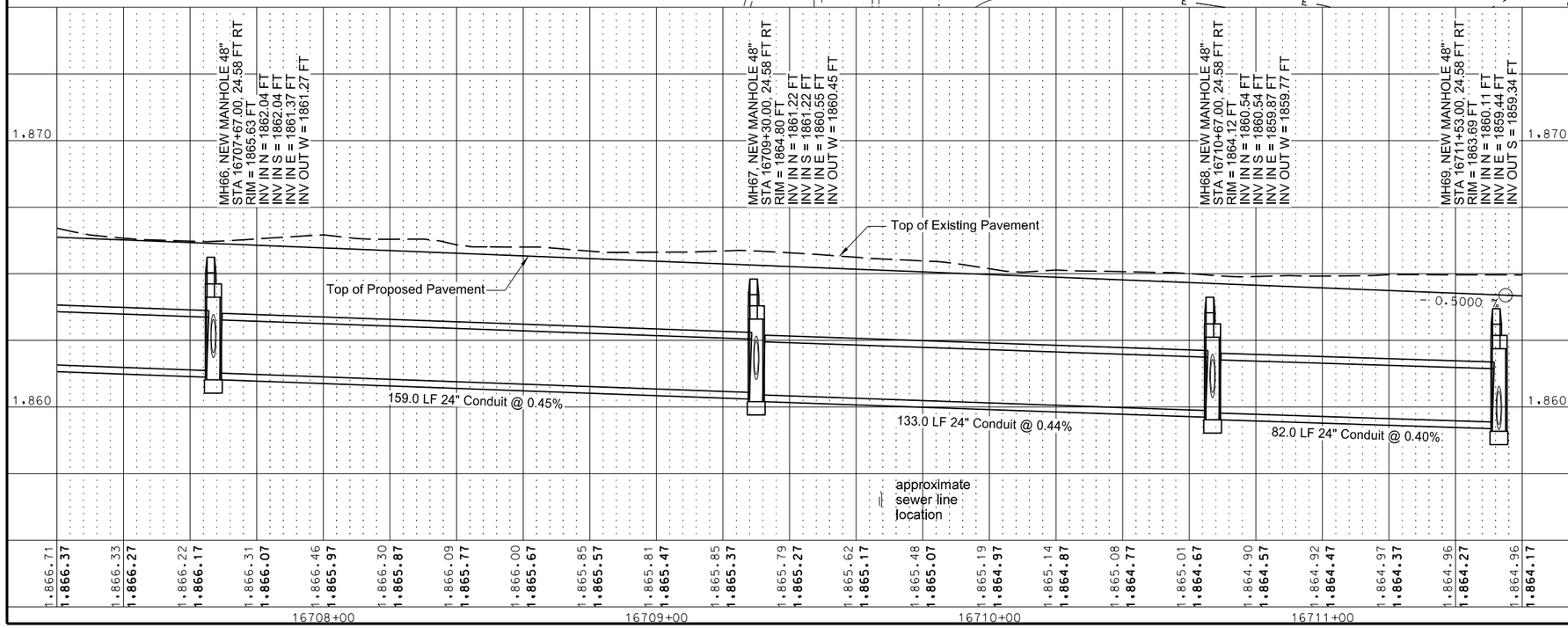
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16702+80 to Sta. 16707+20

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	30





Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16707+67, 30' RT	SY	18
		16707+67, 22.6' RT	SY	222
		16708+00, 24.6' RT	SY	882
		16709+30' 30' RT	SY	18
		16709+30, 22.6' RT	SY	222
		16710+00, 24.6' RT	SY	726
		16710+67, 30' RT	SY	18
		16710+67, 22.6' RT	SY	222
		16711+53, 30' RT	SY	18
		16711+53, 22.6' RT	SY	370
		16711+00, 24.6' RT	SY	414
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16707+67, 30' RT to 16707+67, 26.6' RT	LF	4
		16707+67, 22.6' RT to 16707+67, 30' LT	LF	54
		16709+30, 30' RT to 16709+30, 26.6' RT	LF	4
		16709+30, 22.6' RT to 16709+30, 30' LT	LF	54
		16710+67, 30' RT to 16710+67, 26.6' RT	LF	4
		16710+67, 22.6' RT to 16710+67, 30' LT	LF	54
		16711+53, 30' RT to 16711+53, 26.6' RT	LF	4
714	4107	PIPE CONDUIT 24IN-STORM DRAIN		
		16707+69, 24.6' RT to 16709+28, 24.6' RT	LF	160
		16709+32, 24.6' RT to 16710+65, 24.6' RT	LF	134
		16710+69, 24.6' RT to 16711+51, 24.6' RT	LF	82
		16711+31.1, 36.3' LT to 16711+45.3, 50.4' LT (inc. 1 End Sec)	LF	20
		16711+53, 22.6' RT to 16711+53, 28.2' LT	LF	52
		16711+53.5, 32.1' LT to 16711+57.8, 51.6' LT (inc. 1 End Sec)	LF	20
722	0100	MANHOLE 48IN		
		16707+67, 24.58' RT	EA	1
		16709+30, 24.58' RT	EA	1
		16710+67, 24.58' RT	EA	1
		16711+35.82, 34.55' LT	EA	1
722	1100	MANHOLE RISER 48IN		
		16707+67, 24.58' RT	LF	4
		16709+30, 24.58' RT	LF	4
		16710+67, 24.58' RT	LF	4
		16711+53, 31' LT	LF	4
		16711+35.82, 34.55' LT	LF	4
714	0500	PIPE CONC REINF 24IN CL II-45DEG BEND		
		16711+28.6, 34.8' LT	EA	1
722	3701	INLET SPECIAL-TYPE 2 48IN		
		16711+53, 31' LT	EA	1
722	3510	INLET-TYPE 2		
		16707+67, 31' RT	EA	1
		16707+67, 31' LT	EA	1
		16709+30, 31' RT	EA	1
		16709+30, 31' LT	EA	1
		16710+67, 31' RT	EA	1
		16710+67, 31' LT	EA	1
		16711+53, 31' RT	EA	1

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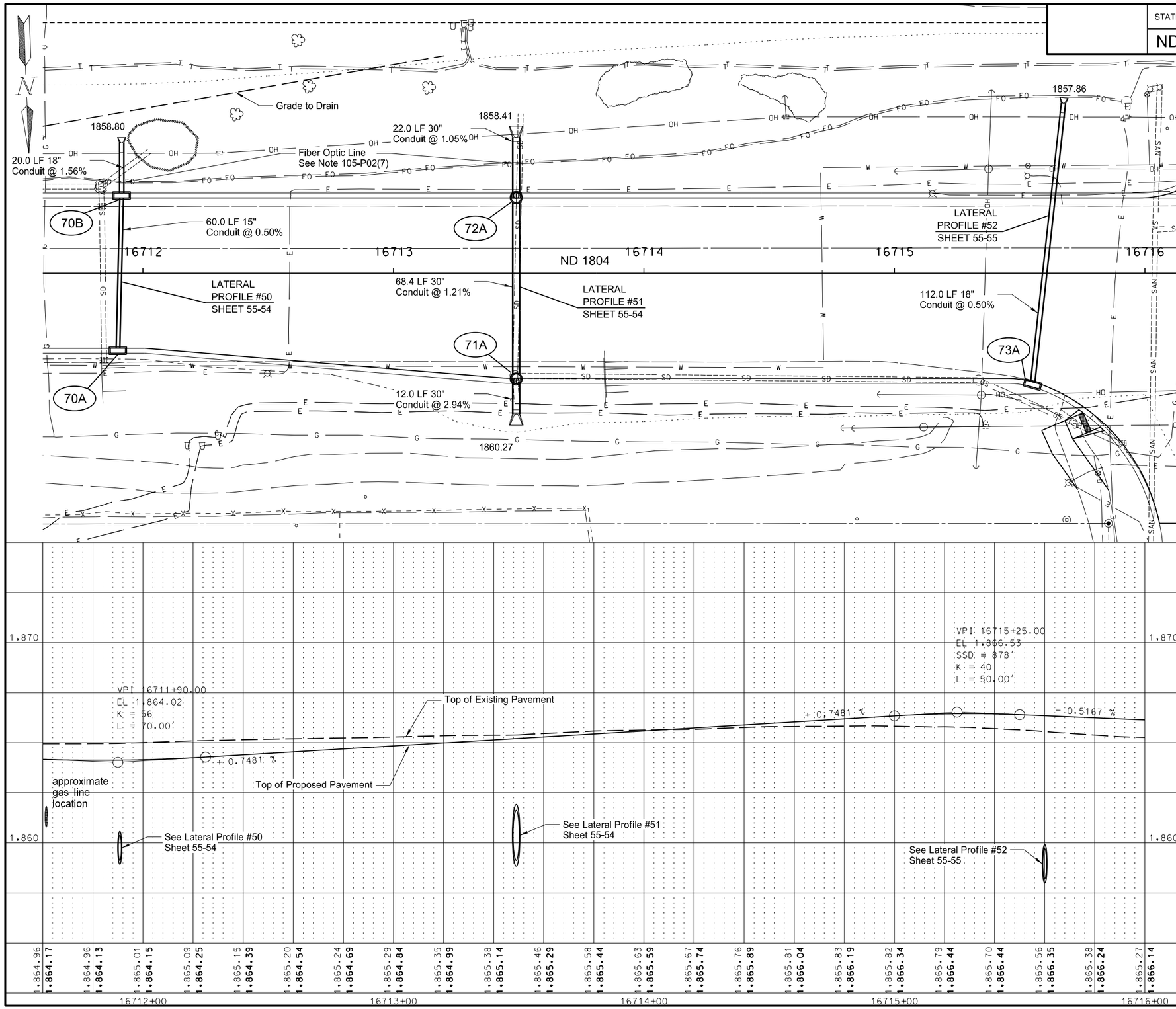
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16707+20 to Sta. 16711+60

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	31



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16715+55.2, 43.5' RT	SY	667
		16713+49, 39.2' RT	SY	408
		16711+90, 30' RT	SY	260
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16711+90, 30' RT to 16711+91.5, 30' LT	LF	60
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16711+91.5, 32' LT to 16711+91.5, 52' LT (inc. 1 End Sec)	LF	22
		16715+55.2, 43.5' RT to 16715+67.5, 67.9' LT (inc. 1 End Sec)	LF	114
714	4112	PIPE CONDUIT 30IN-STORM DRAIN		
		16713+49, 56.2' RT to 16713+49, 44.2' RT (inc. 1 End Sec)	LF	14
		16713+49, 40.2' RT to 16713+49, 28.2' LT	LF	70
		16713+49, 32.2' LT to 16713+49, 54.2' LT (inc. 1 End Sec)	LF	24
722	1100	MANHOLE RISER 48IN		
		16713+49, 43' RT	LF	4
		16713+49, 31' LT	LF	6
722	3520	INLET-TYPE 2 DOUBLE		
		16711+90, 31' RT	EA	1
		16711+91.5, 31' LT	EA	1
		16715+55.1, 44.49' RT	EA	1
722	3701	INLET SPECIAL-TYPE 2 48IN		
		16713+49, 43' RT	EA	1
		16713+49, 31' LT	EA	1

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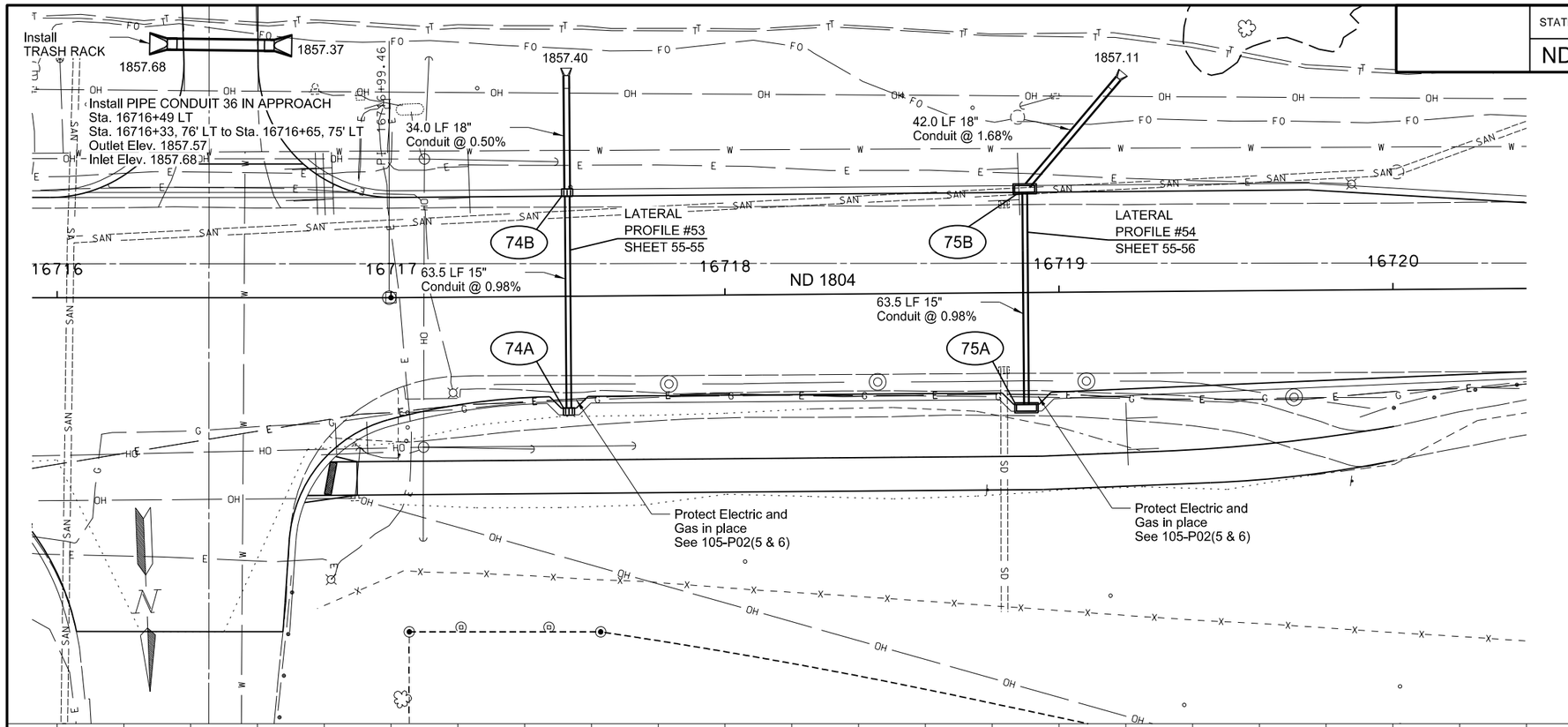
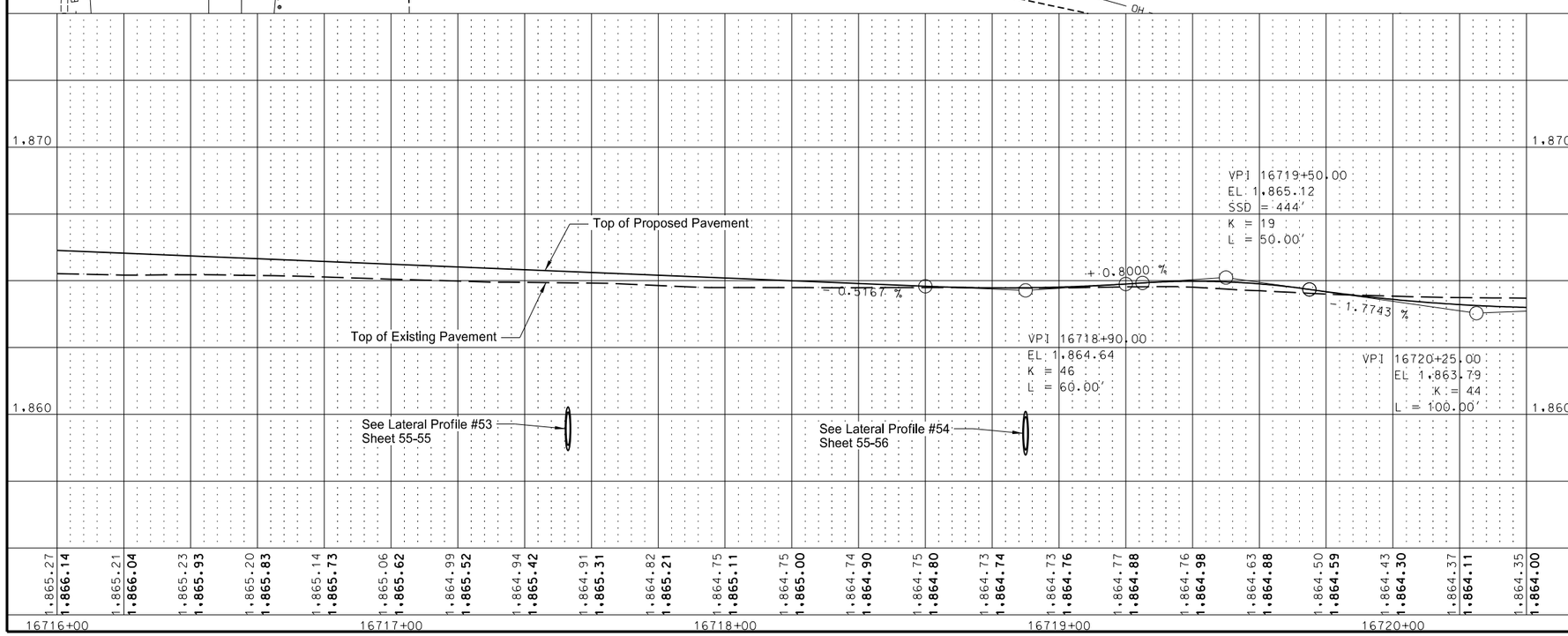
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta. 16711+60 to Sta. 16716+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	32





Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16717+53 CL	SY	267
		16718+90 CL	SY	267
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16717+53, 33.5' RT to 16717+53, 30' LT	LF	64
		16718+90, 33.5' RT to 16718+90, 30' LT	LF	64
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16717+53, 32' LT to 16717+53, 66' LT (inc. 1 End Sec)	LF	36
		16718+90.9, 32' LT to 16719+18.3, 63.8' LT (inc. 1 End Sec)	LF	44
714	4116	PIPE CONDUIT 36IN-APPROACH		
		16716+49, LT (inc. 2 End Secs)	LF	33
722	3510	INLET-TYPE 2		
		16717+53, 31' RT	EA	1
		16717+53, 31' LT	EA	1
722	3520	INLET-TYPE 2 DOUBLE		
		16718+90, 31' RT	EA	1
		16718+90, 31' LT	EA	1
910	0480	TRASH RACK		
		16716+49, LT (Inlet)	EA	1

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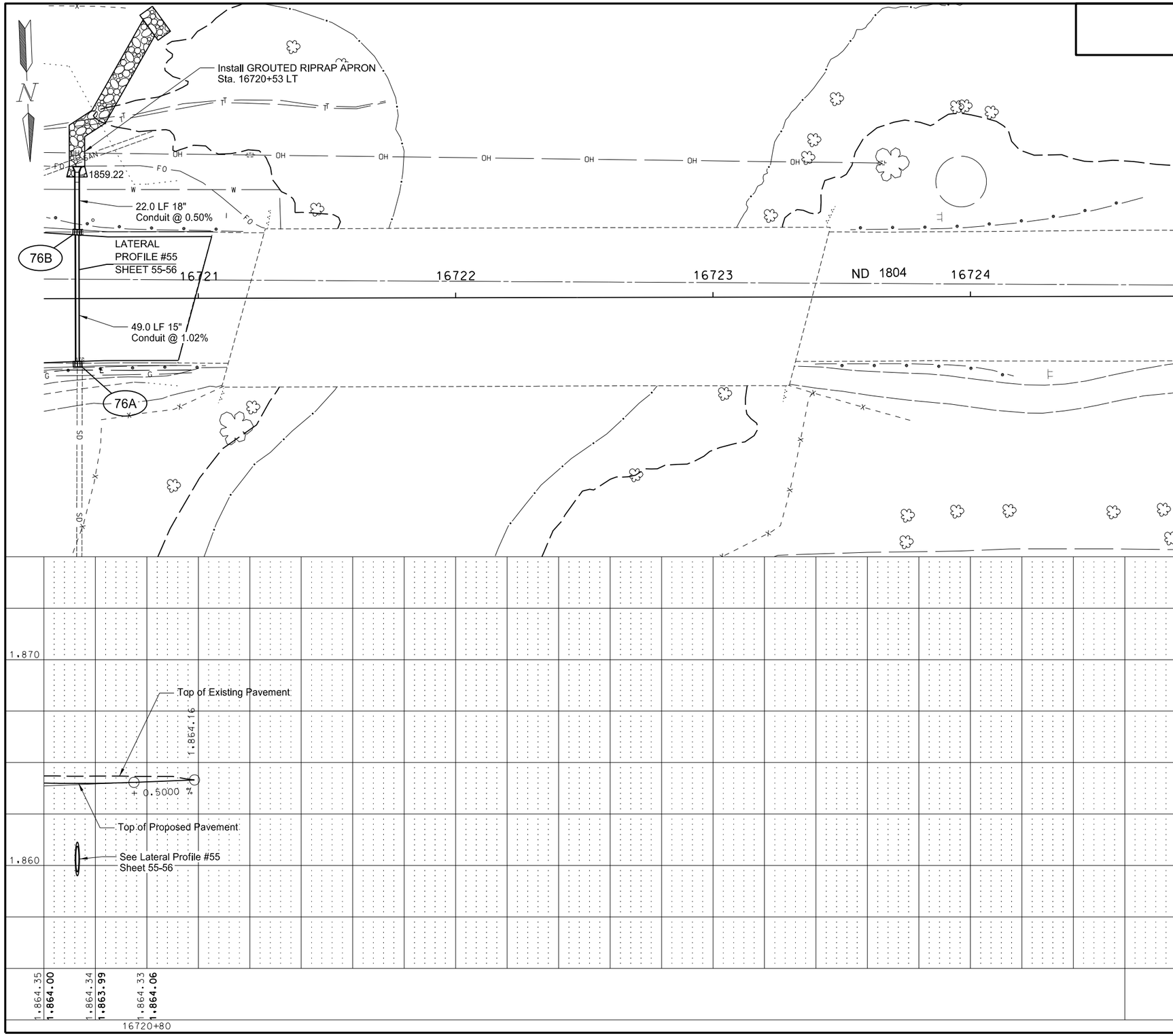
Drainage Plan and Profile

ND 1804 Reconstruction

Williams County, ND
Sta 16716+00 to Sta. 16720+40

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	33



Spec	Code	Bid Item	Unit	Quantity
709	0151	GEOSYNTHETIC MATERIAL TYPE R1		
		16720+53, CL	SY	206
709	0155	GEOSYNTHETIC MATERIAL TYPE RR		
		16720+53, 49' LT (Outlet)	SY	75
714	4097	PIPE CONDUIT 15IN-STORM DRAIN		
		16720+53, 24.4' RT to 16720+53, 24.5' LT	LF	50
714	4101	PIPE CONDUIT 18IN-STORM DRAIN		
		16720+53, 27' LT to 16720+53, 49' LT (inc., 1 End Sec)	LF	24
722	3510	INLET-TYPE 2		
		16720+53, 25.44' RT	EA	1
		16720+53, 25.80' LT	EA	1

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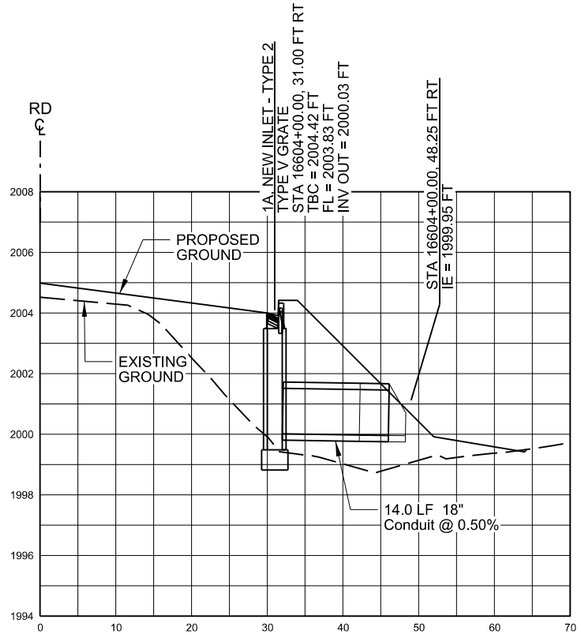
Drainage Plan and Profile

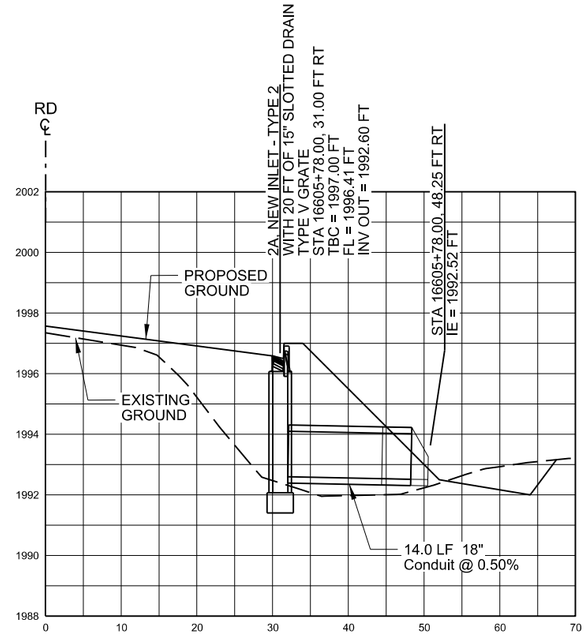
ND 1804 Reconstruction

Williams County, ND
Sta 16720+40 to Sta. 16721+00

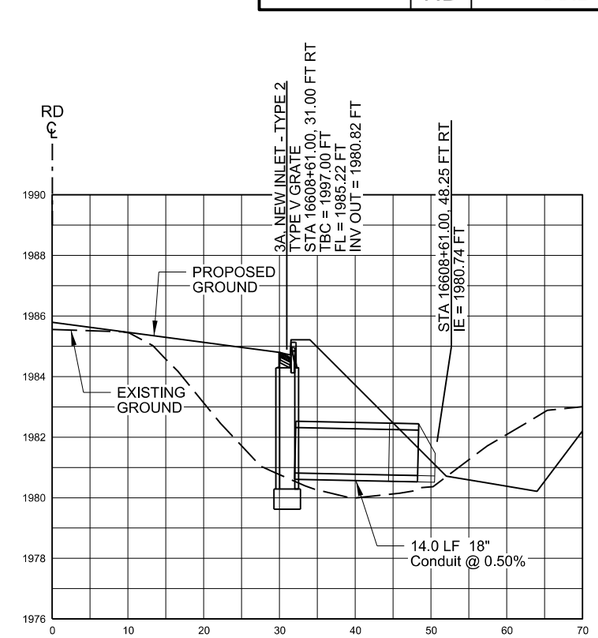
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	34



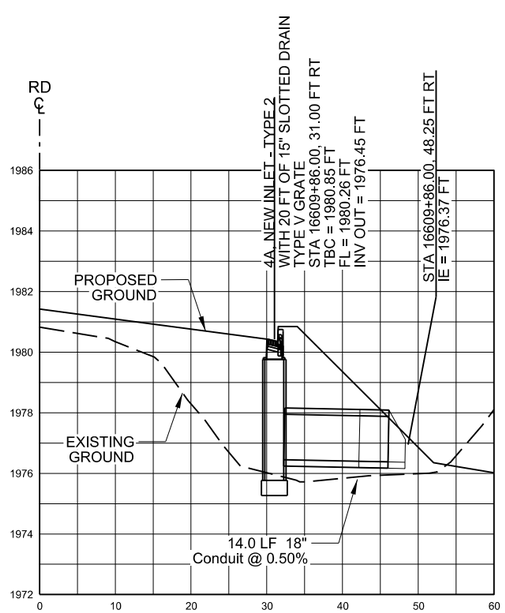
LATERAL PROFILE #1
STA 16604+00.00



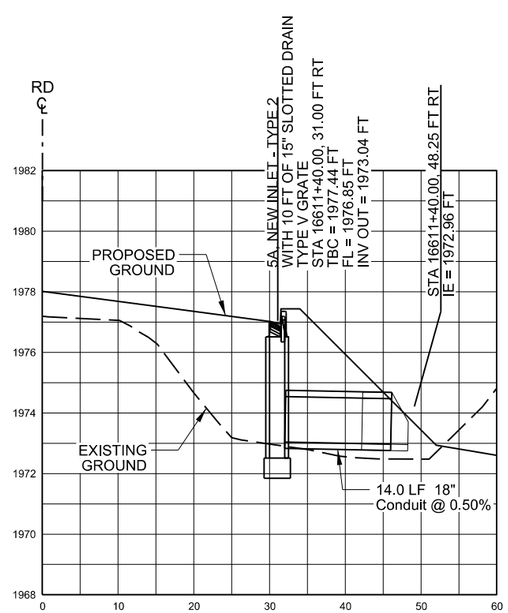
LATERAL PROFILE #2
STA 16605+78.00



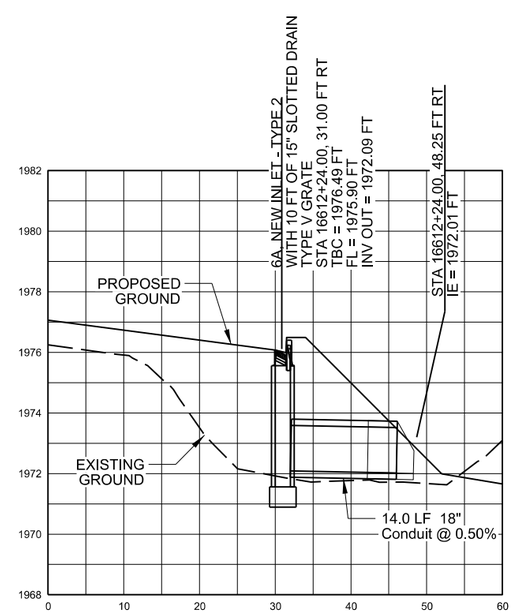
LATERAL PROFILE #3
STA 16608+61.00



LATERAL PROFILE #4
STA 16609+86.00



LATERAL PROFILE #5
STA 16611+40.00



LATERAL PROFILE #6
STA 16612+24.00

NOTE:
PIPE LENGTH BASED ON FULL BARREL LENGTH, NOT INCLUDING END SECTION.
PIPE SLOPE INCLUDES LENGTH OF END SECTION.

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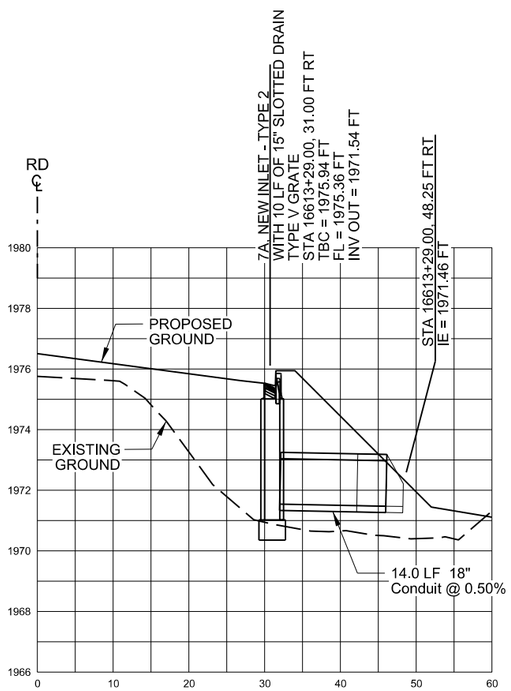
Storm Drain Details

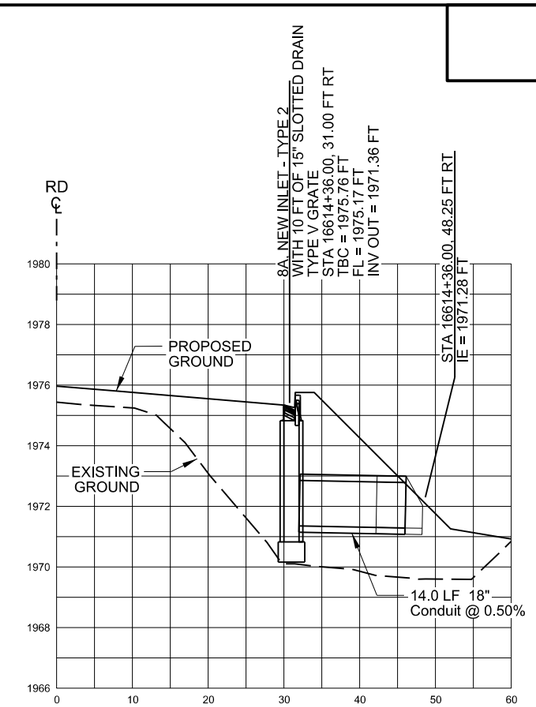
ND 1804 Reconstruction
Williams County

Lateral Profiles #1 - #6

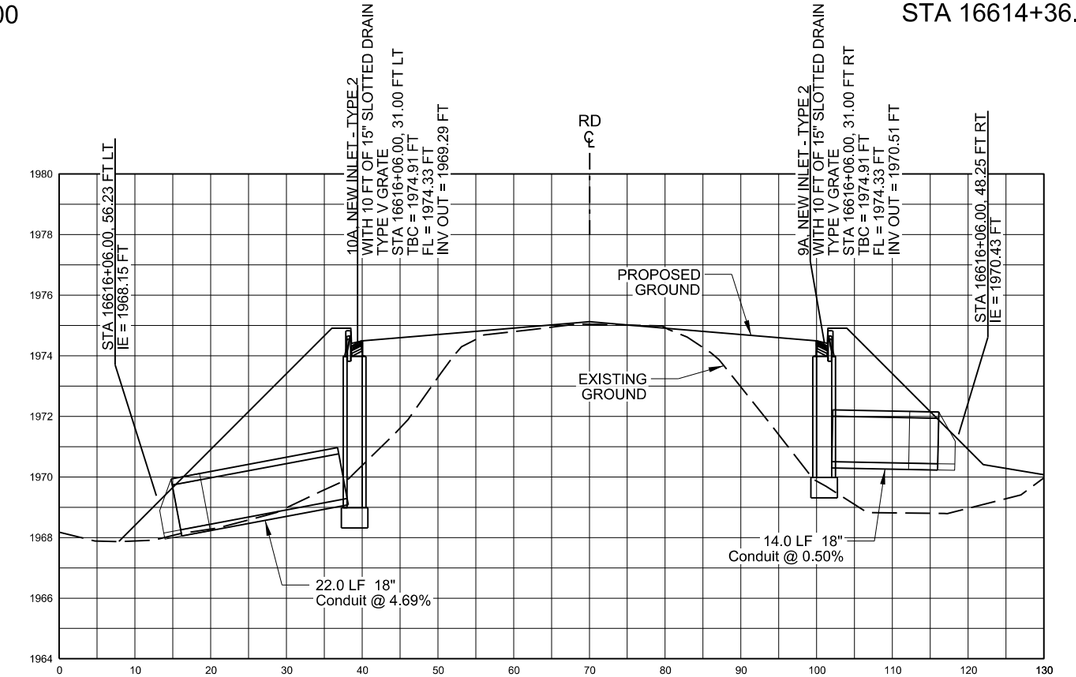
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	35



LATERAL PROFILE #7
STA 16613+29.00



LATERAL PROFILE #8
STA 16614+36.00



LATERAL PROFILE #9
STA 16616+06.00

NOTE:
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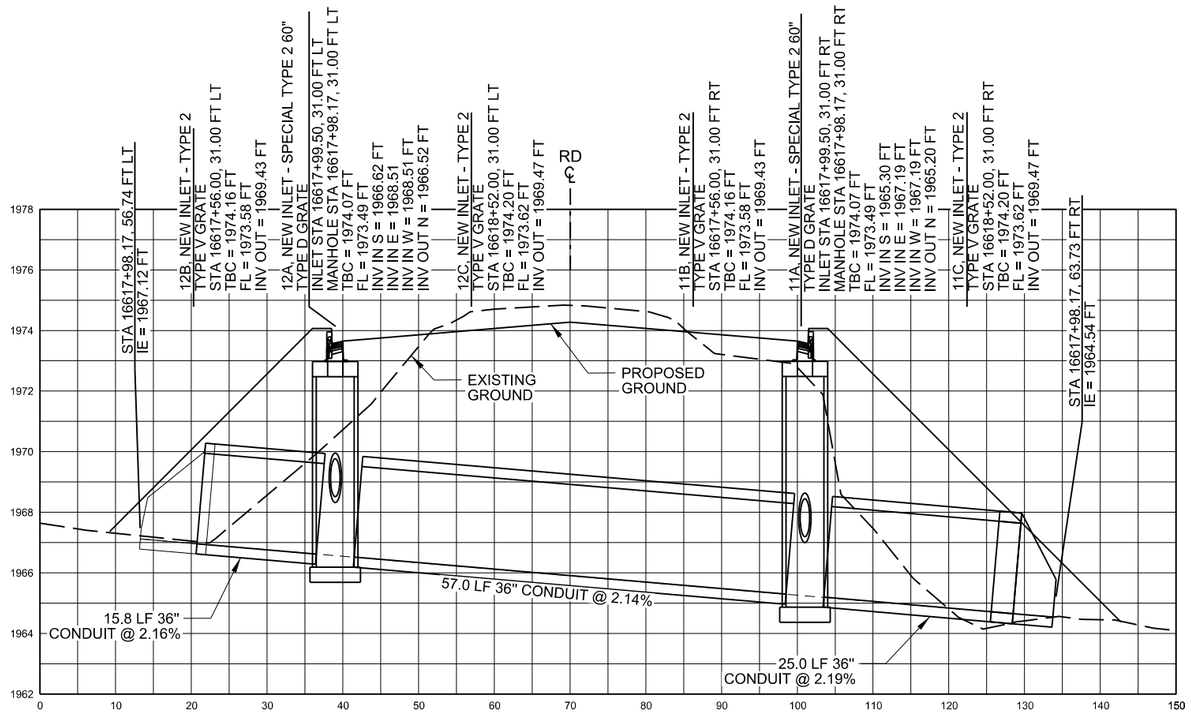
Storm Drain Details

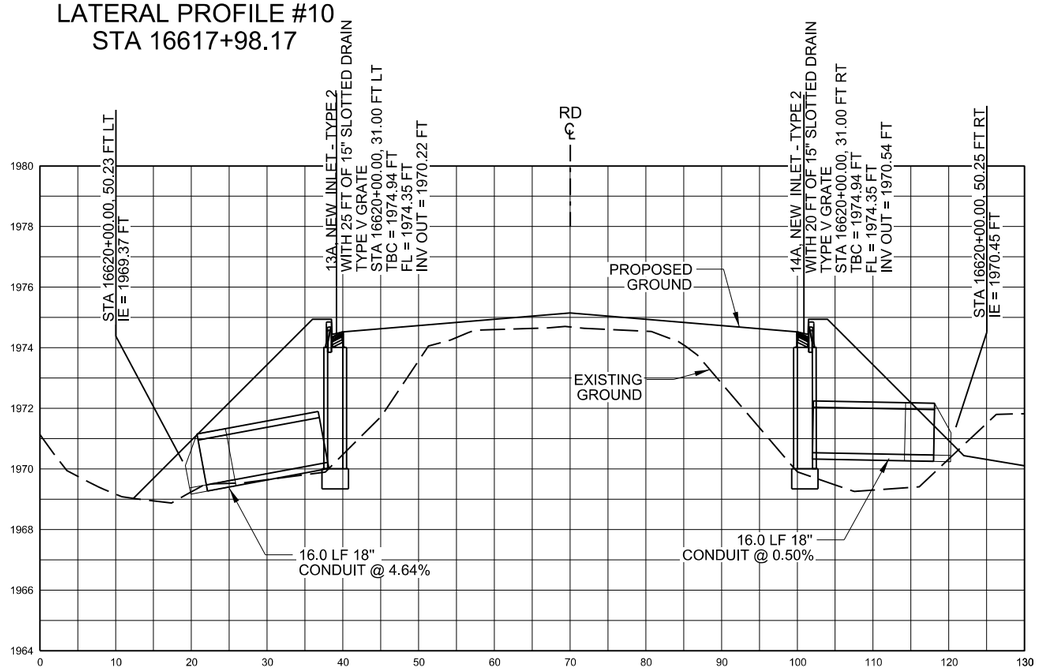
ND 1804 Reconstruction
Williams County

Lateral Profiles #7 - #9

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	36



LATERAL PROFILE #10
STA 16617+98.17



LATERAL PROFILE #11
STA 16620+00.00

NOTE:
PIPE LENGTH BASED ON FULL BARREL LENGTH, NOT INCLUDING END SECTION.
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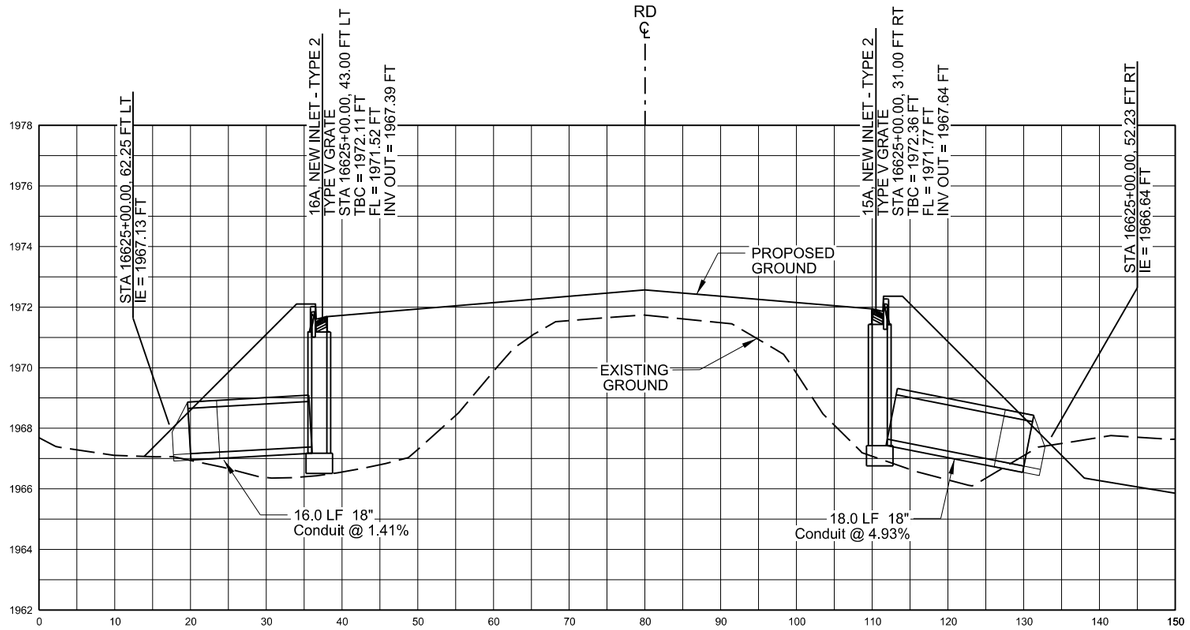
Storm Drain Details

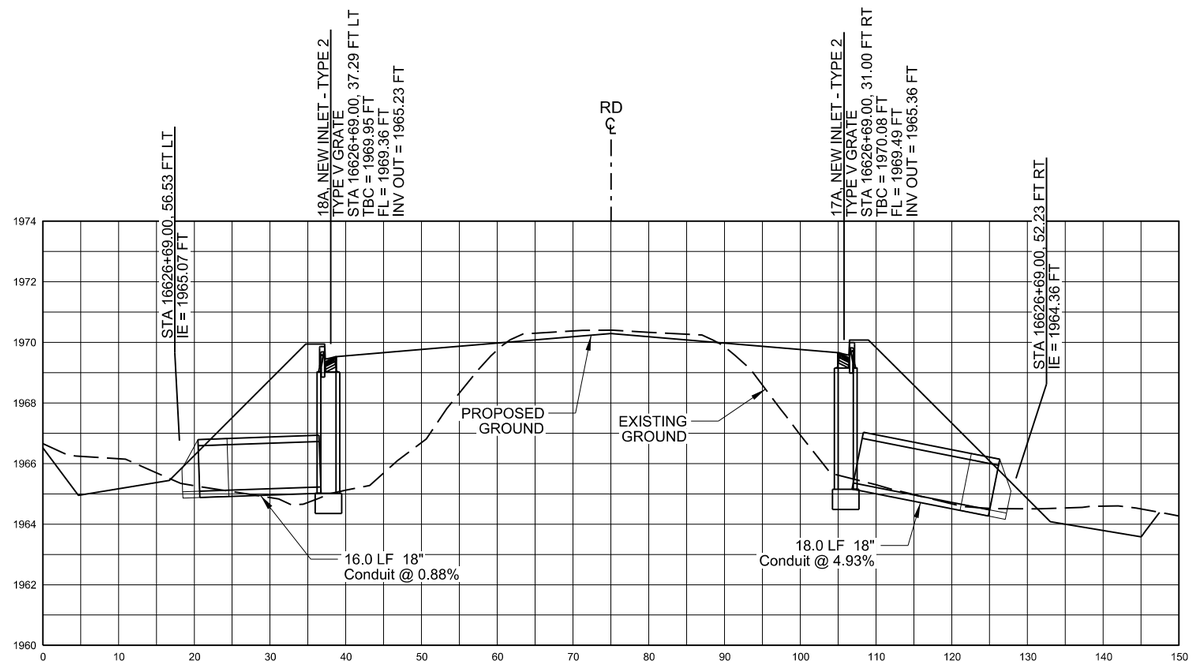
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #10 - #11

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	37



LATERAL PROFILE #12
STA 16625+00.00



LATERAL PROFILE #13
STA 16626+69.00

NOTE:
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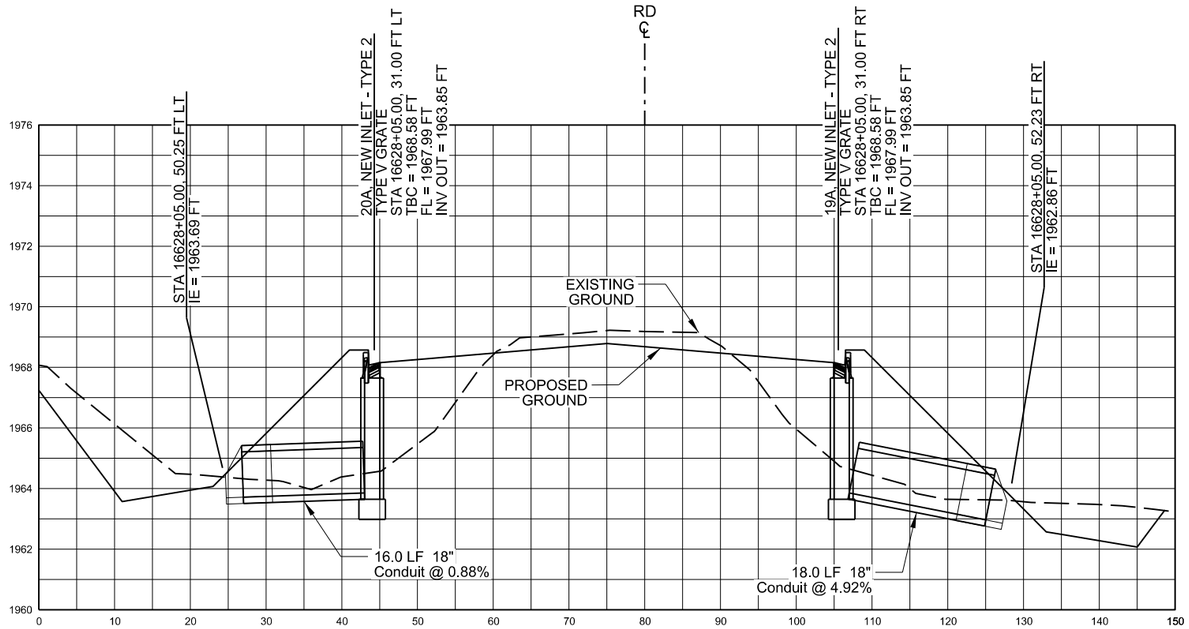
Storm Drain Details

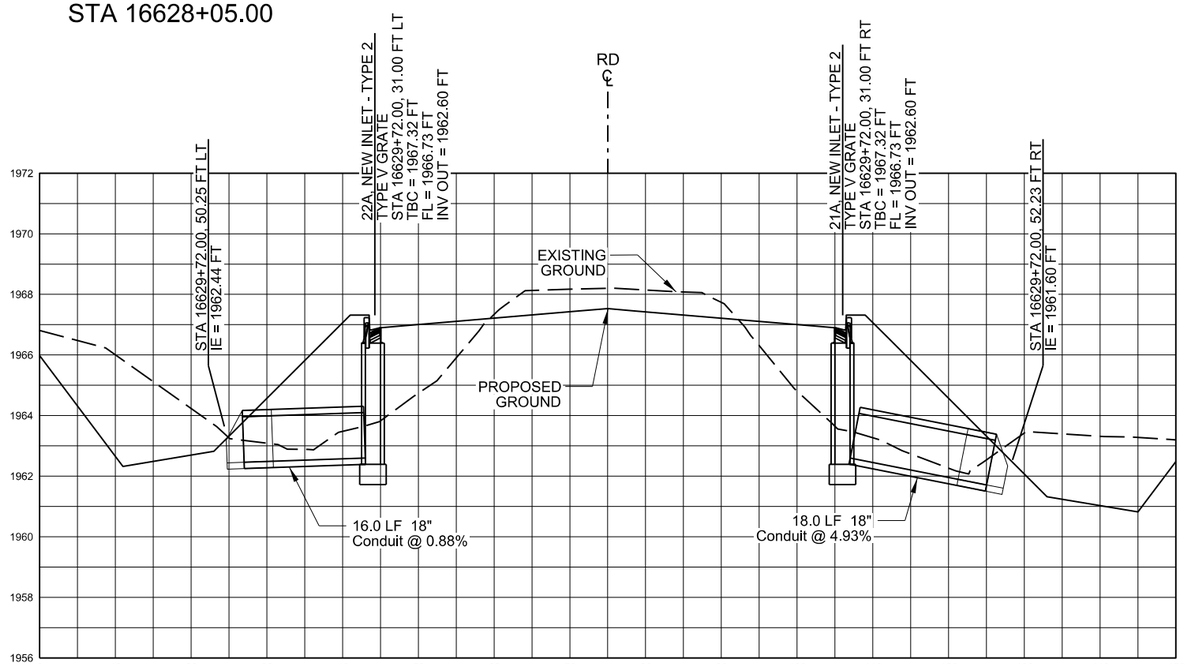
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #12 - #13

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	38



LATERAL PROFILE #14
STA 16628+05.00



LATERAL PROFILE #15
STA 16629+72.00

NOTE:
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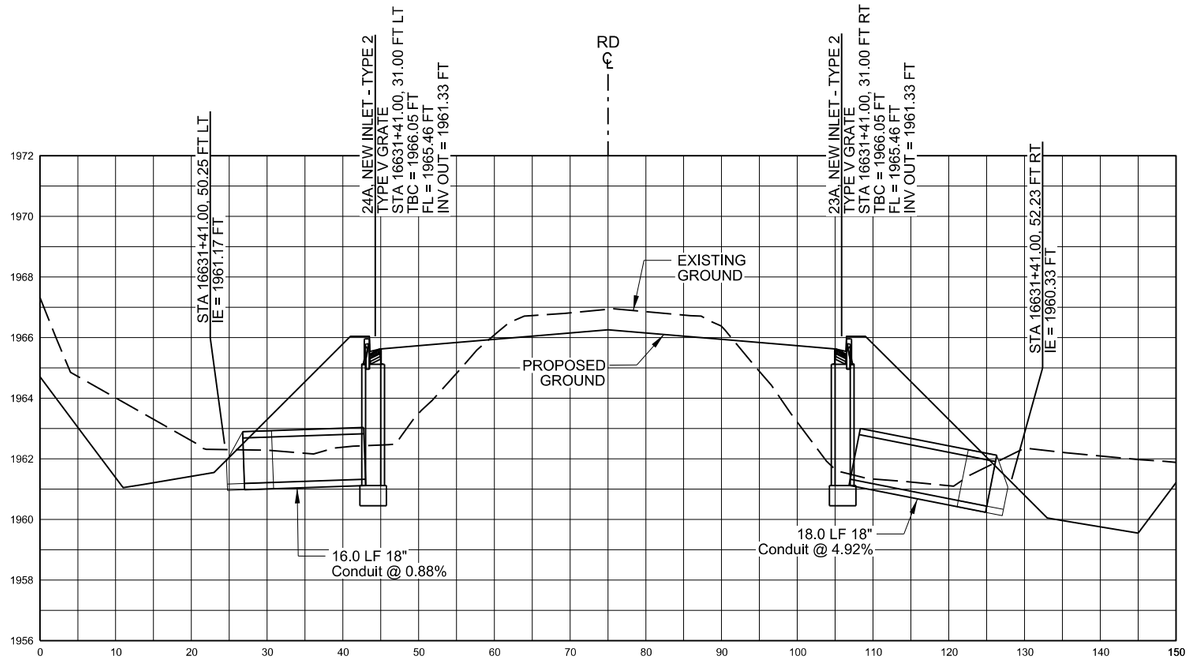
Storm Drain Details

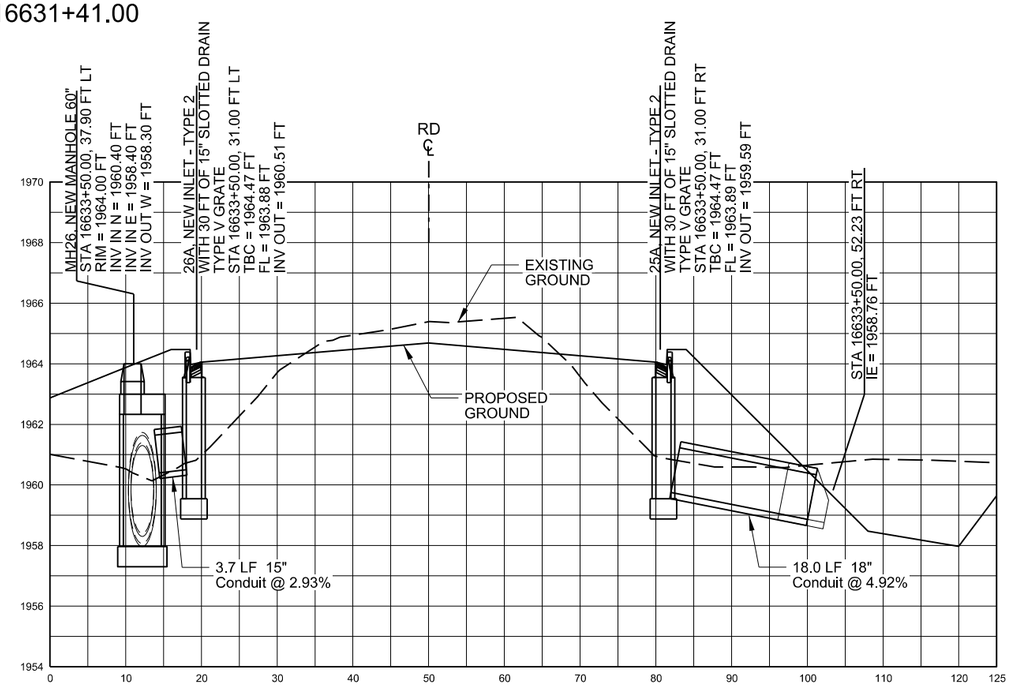
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #14 - #15

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	39



LATERAL PROFILE #16
STA 16631+41.00



LATERAL PROFILE #17
STA 16633+50.00

NOTE:
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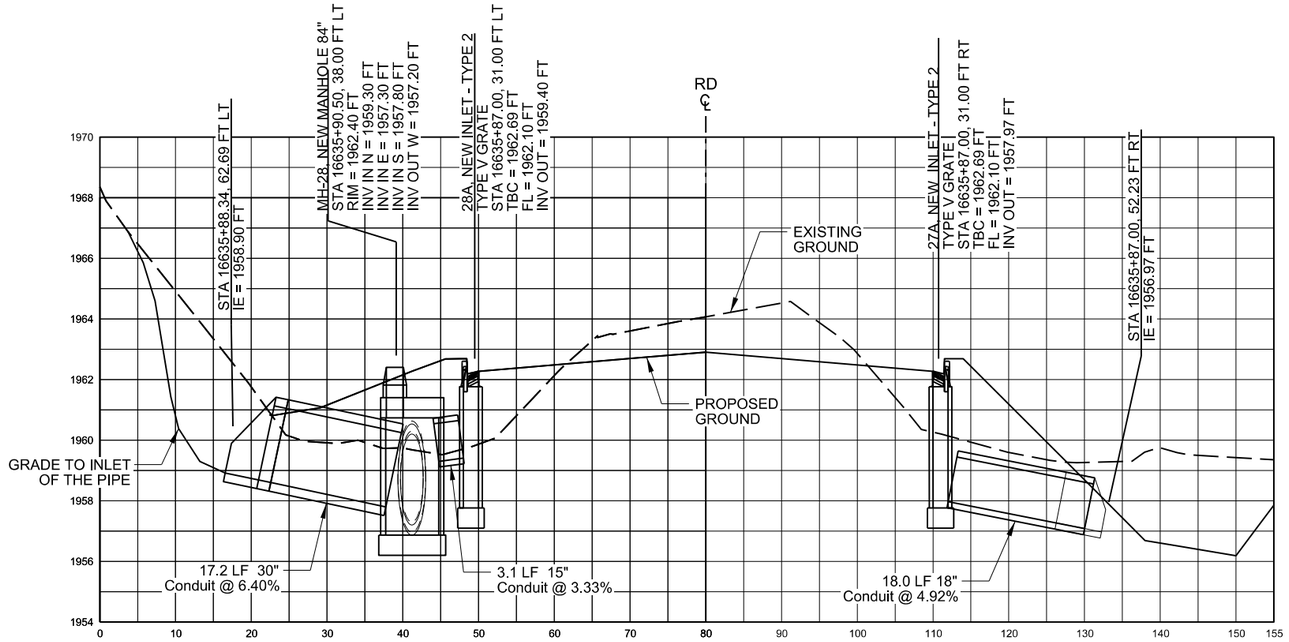
Storm Drain Details

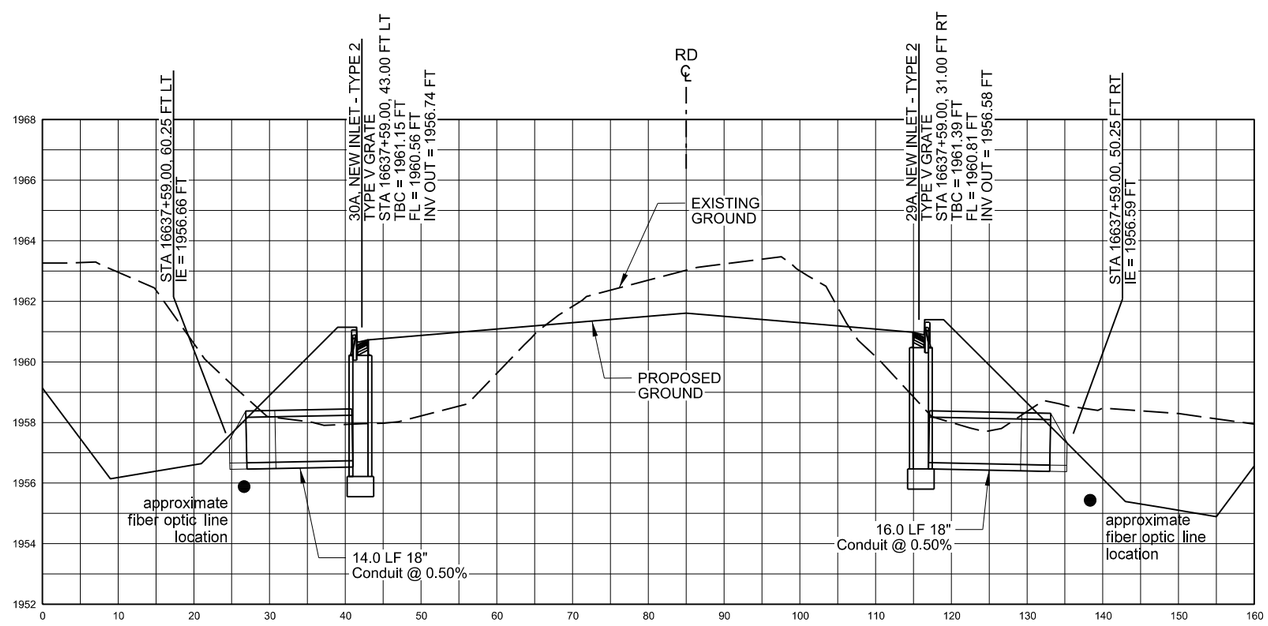
ND 1804 Reconstruction
Williams County,ND

Lateral Profiles #16 - #17

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	40



LATERAL PROFILE #18
STA 16635+87.00



LATERAL PROFILE #19
STA 16637+59.00

NOTE:
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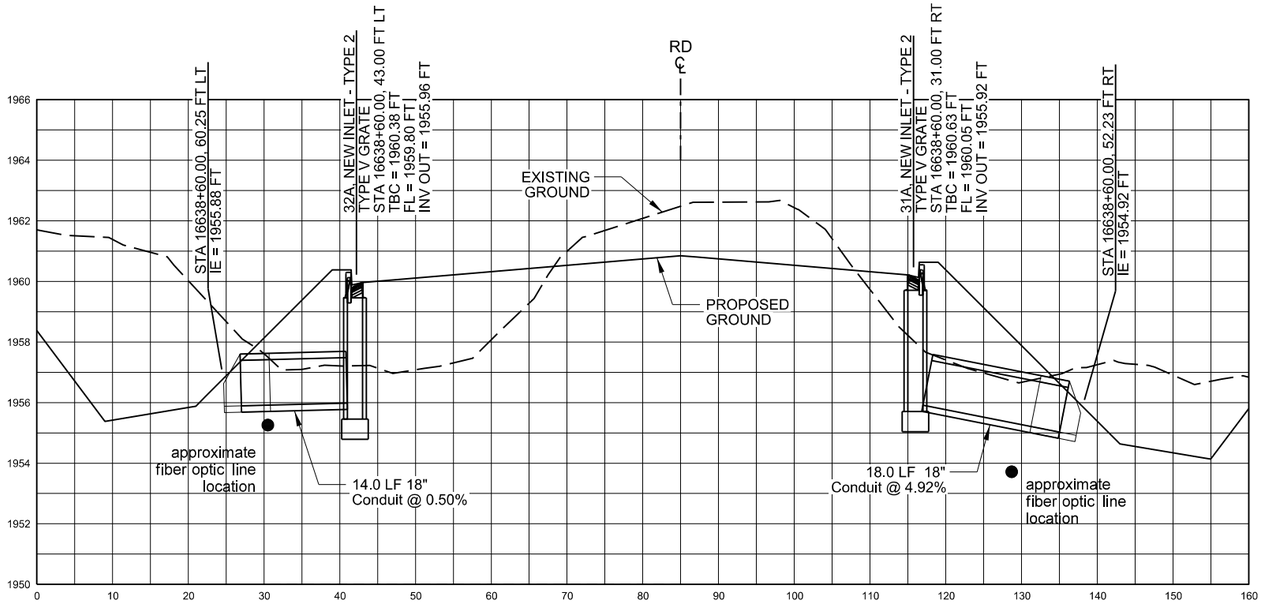
Storm Drain Details

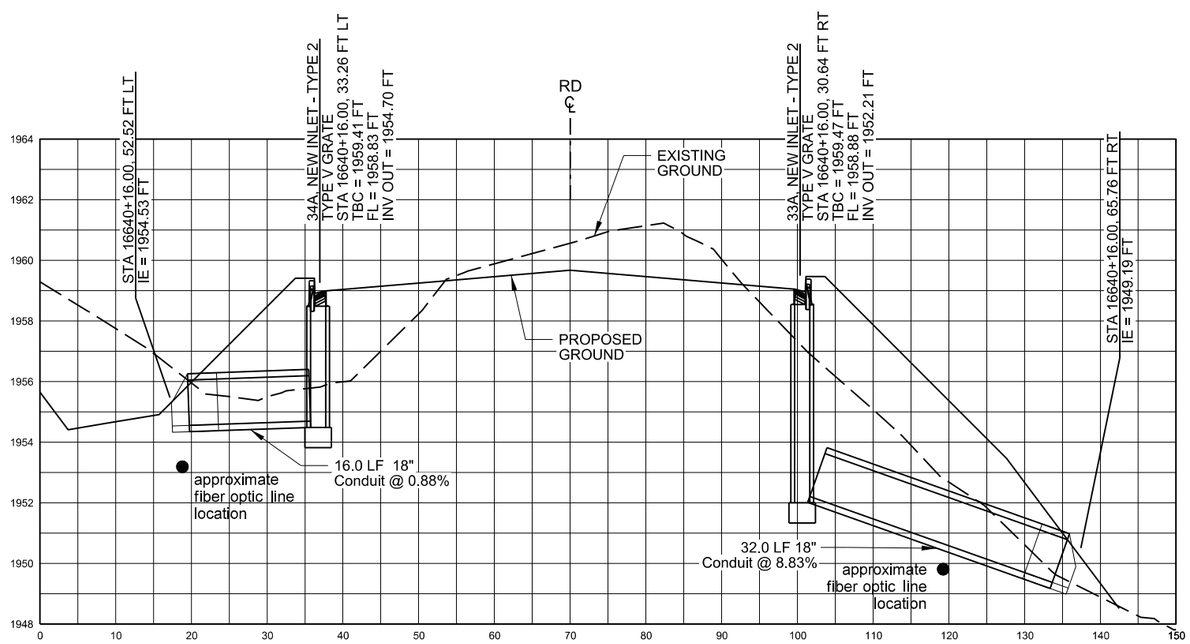
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #18 - #19

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	41



LATERAL PROFILE #20
STA 16638+60.00



LATERAL PROFILE #21
STA 16640+16.00

NOTE:
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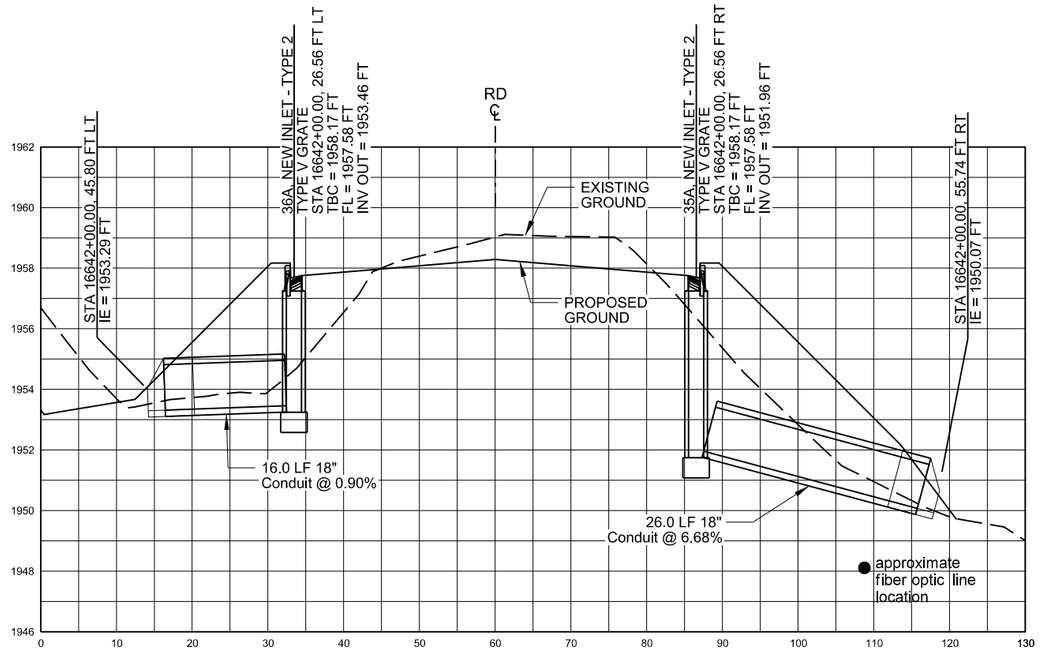
Storm Drain Details

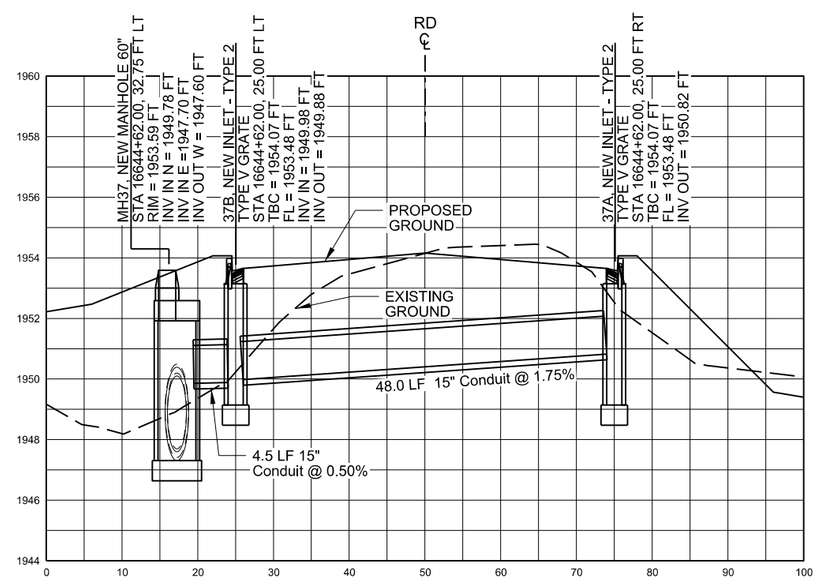
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #20 - #21

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	42



LATERAL PROFILE #22
STA 16642+00.00



LATERAL PROFILE #23
STA 16644+62.00

NOTE:
PIPE LENGTH BASED ON FULL BARREL LENGTH, NOT INCLUDING END SECTION.
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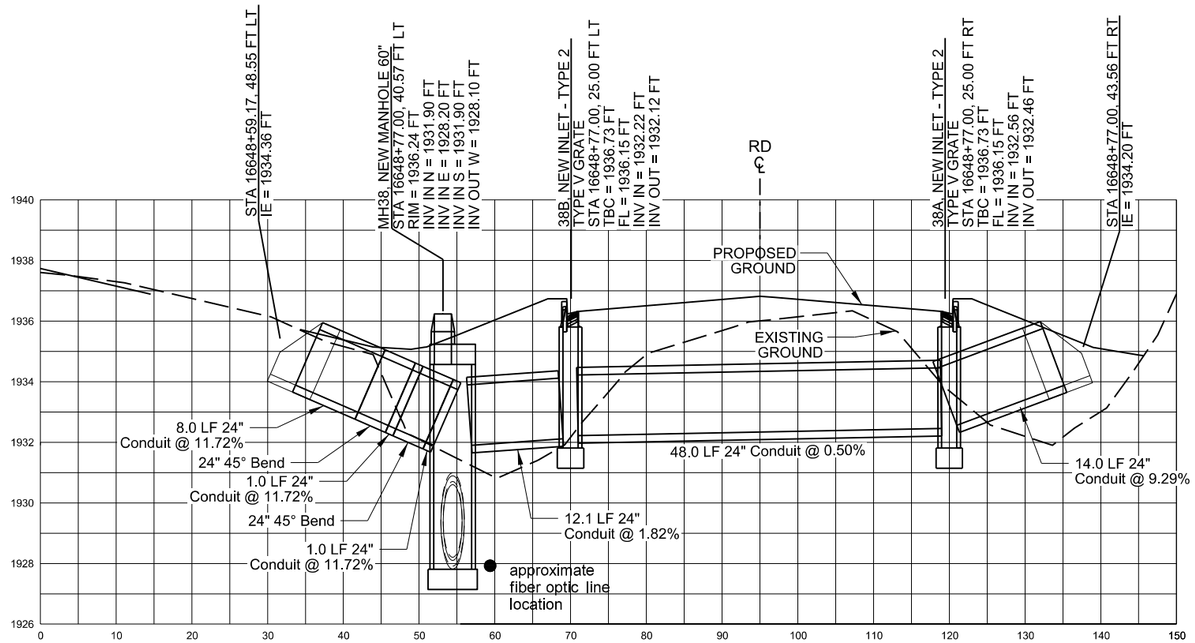
Storm Drain Details

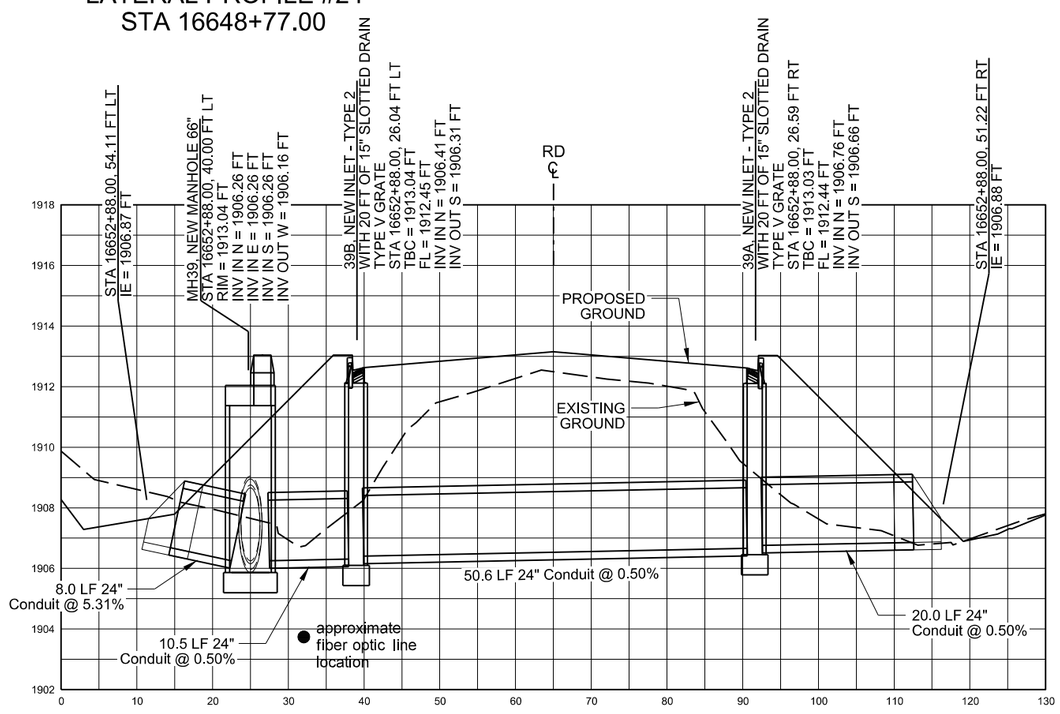
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #22 - #23

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	43



LATERAL PROFILE #24
STA 16648+77.00



LATERAL PROFILE #25
STA 16652+88.00

NOTE:
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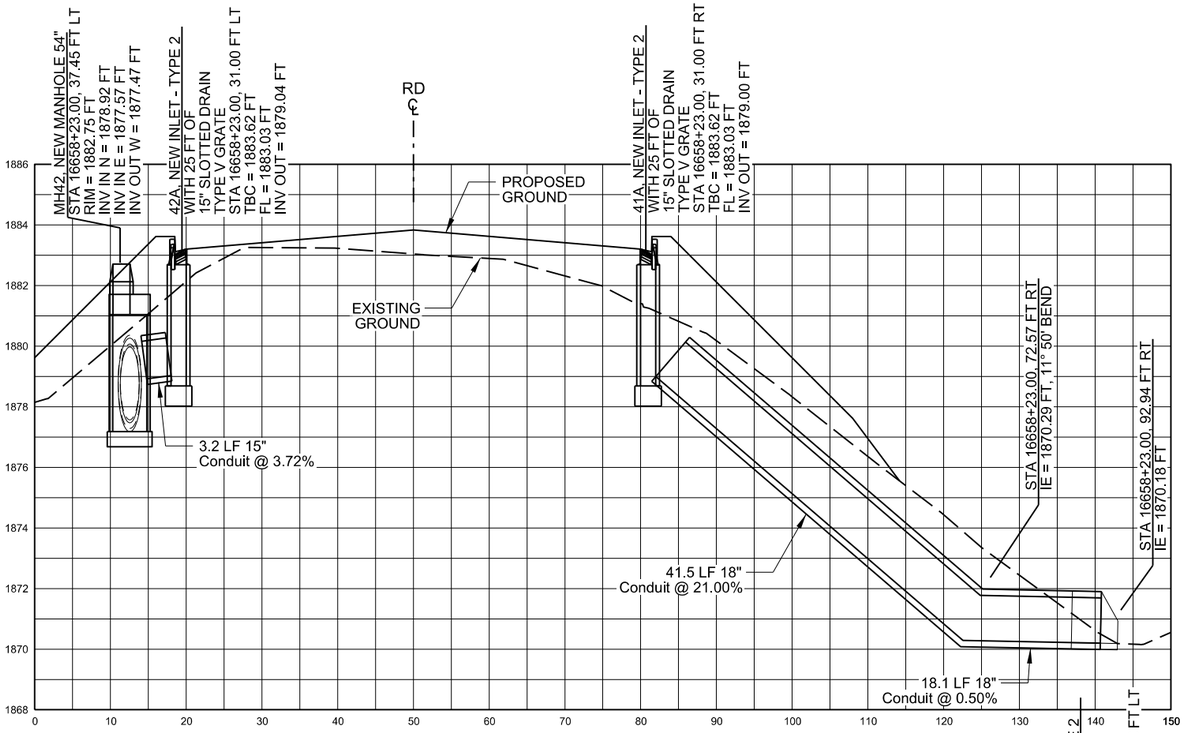
Storm Drain Details

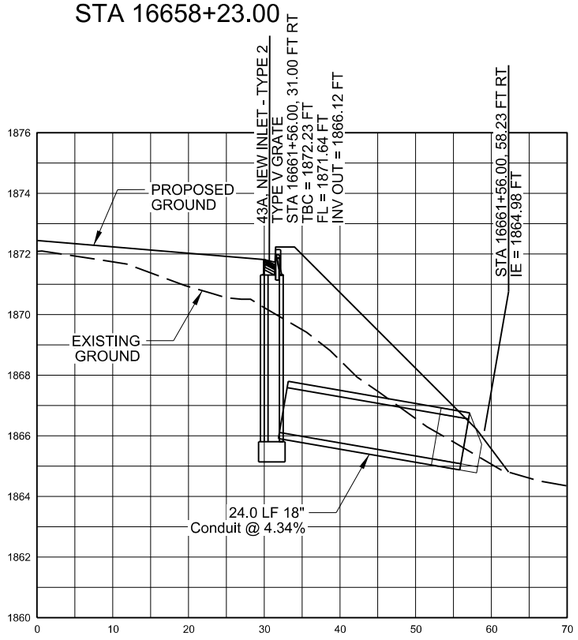
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #24 - #25

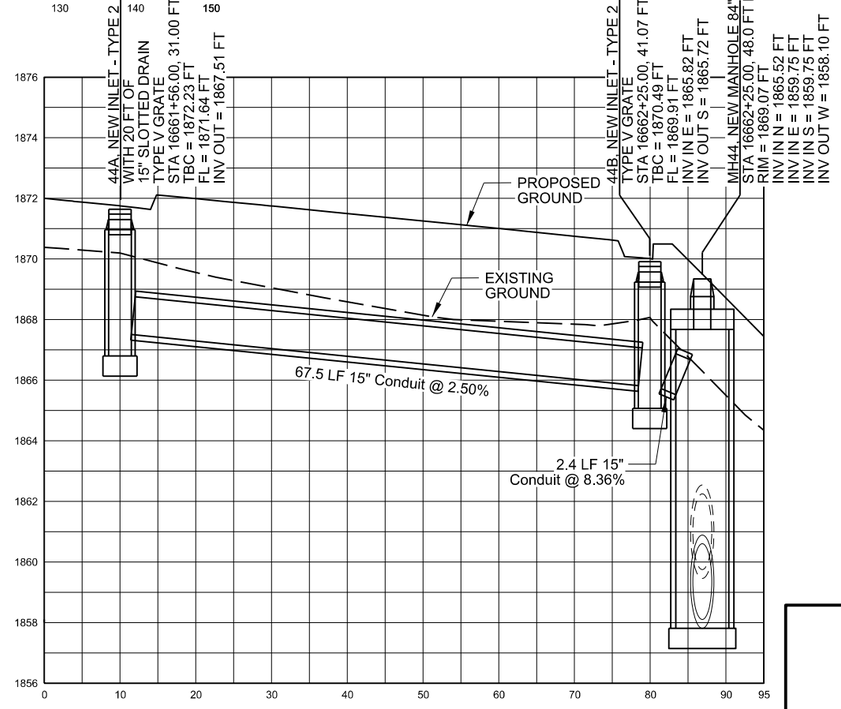
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	44



LATERAL PROFILE #26
STA 16658+23.00



LATERAL PROFILE #27
STA 16661+56.00



LATERAL PROFILE #28
STA 16661+56.00

NOTE:
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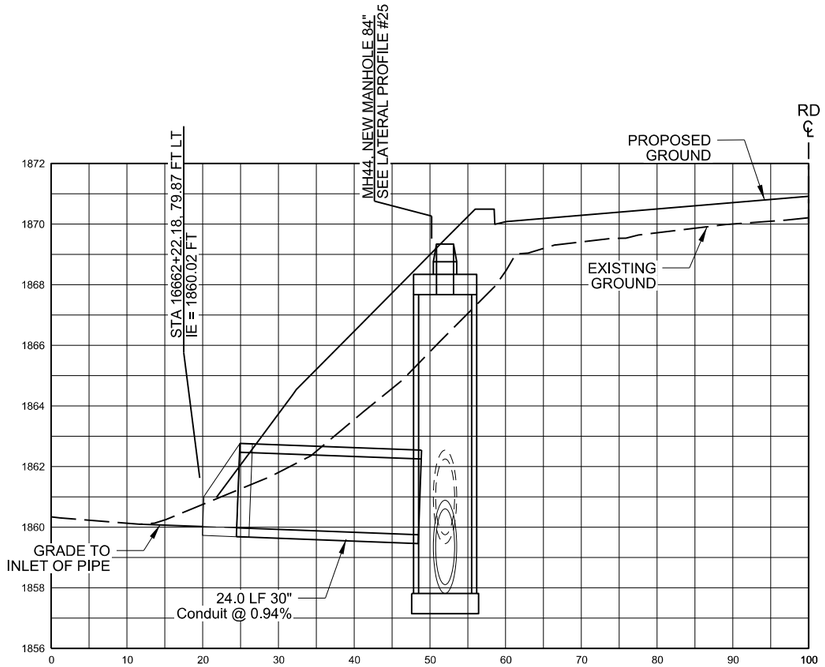
Storm Drain Details

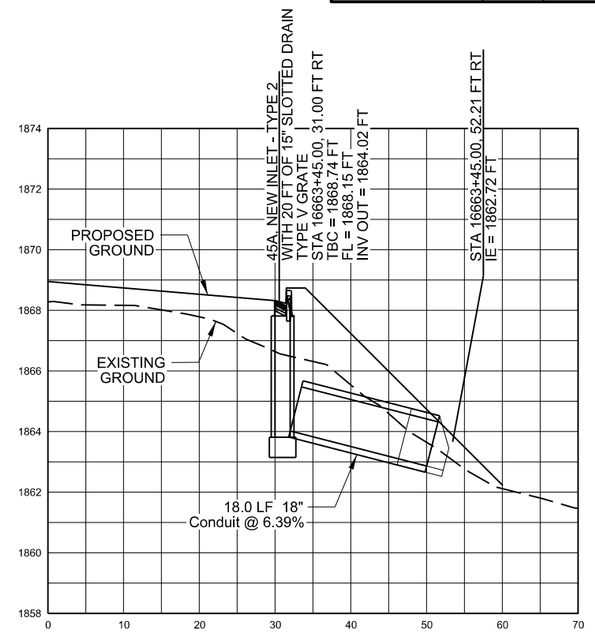
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #26 - #28

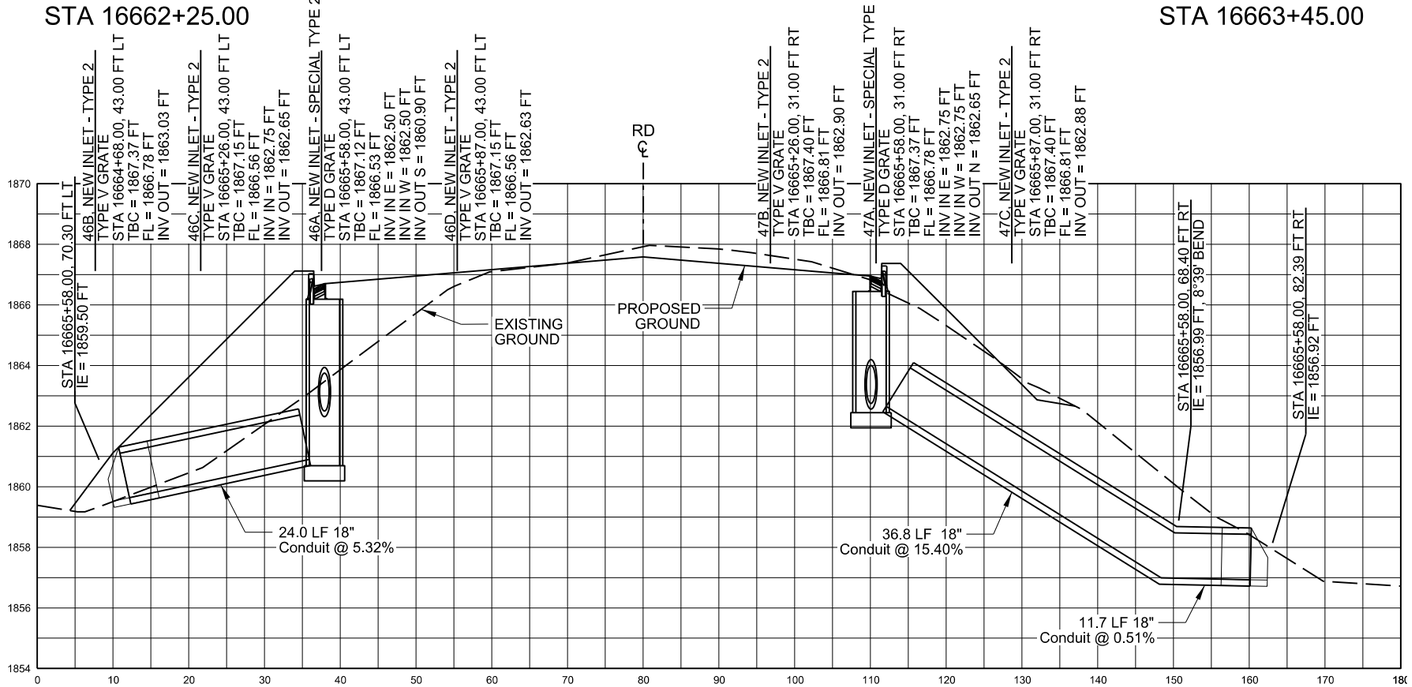
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	45



LATERAL PROFILE #29
STA 16662+25.00



LATERAL PROFILE #30
STA 16663+45.00



LATERAL PROFILE #31
STA 16665+58.00

NOTE:
PIPE LENGTH BASED ON FULL BARREL LENGTH, NOT INCLUDING END SECTION.
PIPE SLOPE INCLUDES LENGTH OF END SECTION.

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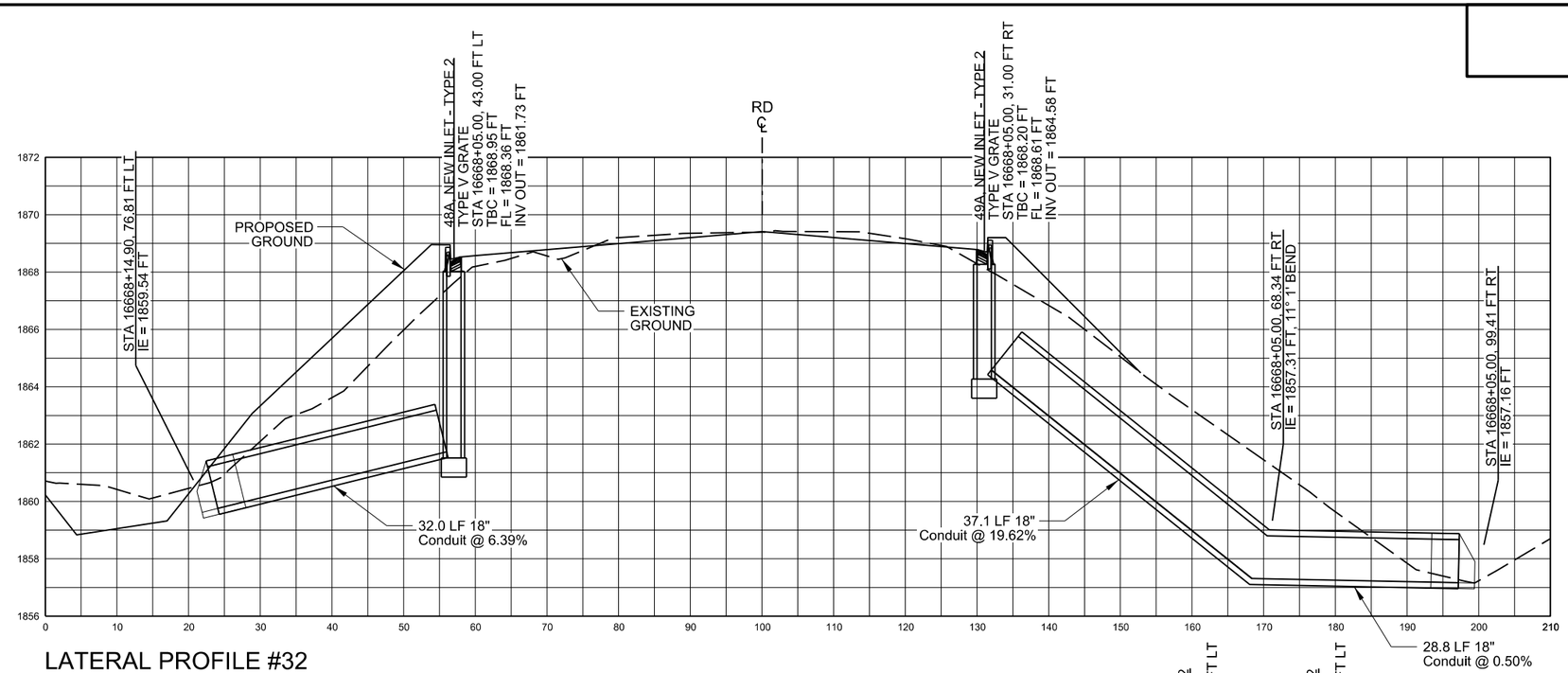
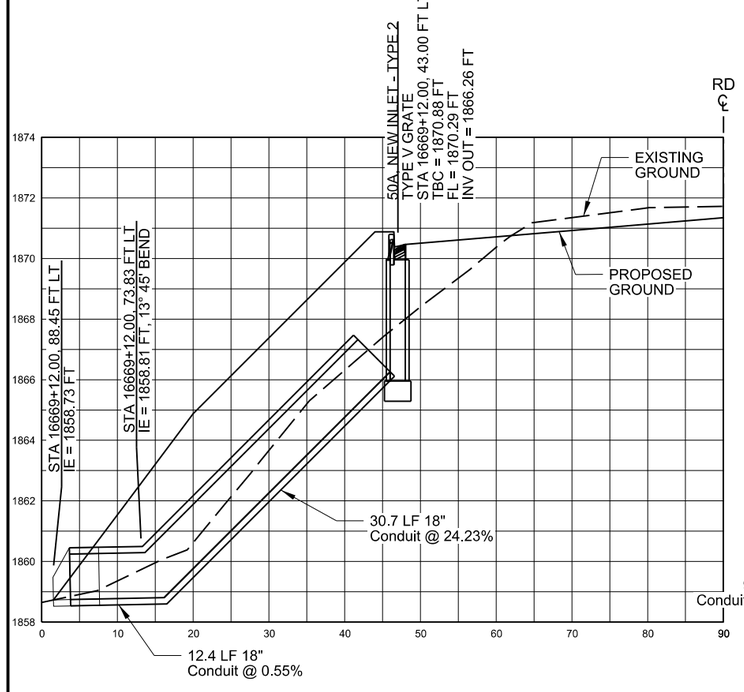
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #29 - #31

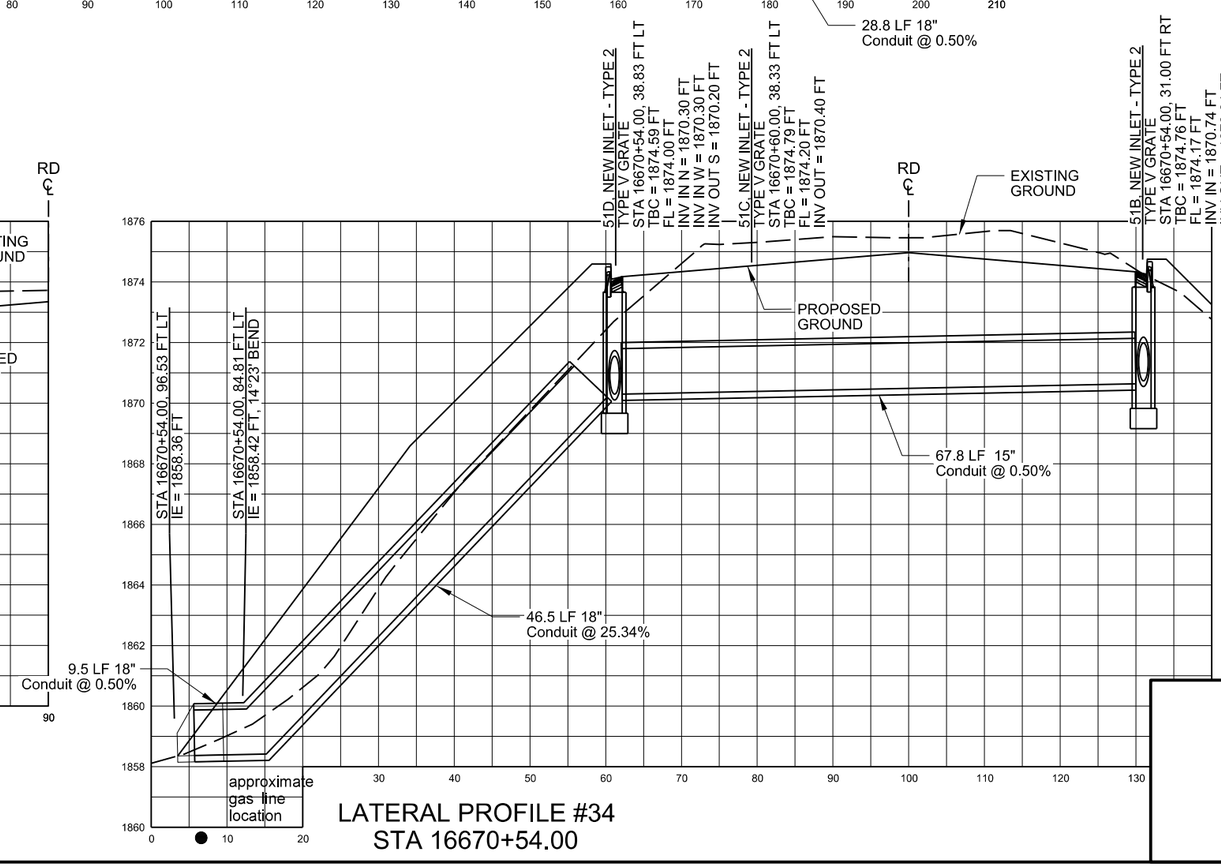
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	46



LATERAL PROFILE #32
STA 16668+05.00



LATERAL PROFILE #33
STA 16669+12.00



LATERAL PROFILE #34
STA 16670+54.00

NOTE:
PIPE LENGTH BASED ON FULL BARREL LENGTH, NOT INCLUDING END SECTION.
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ND 1804 Reconstruction
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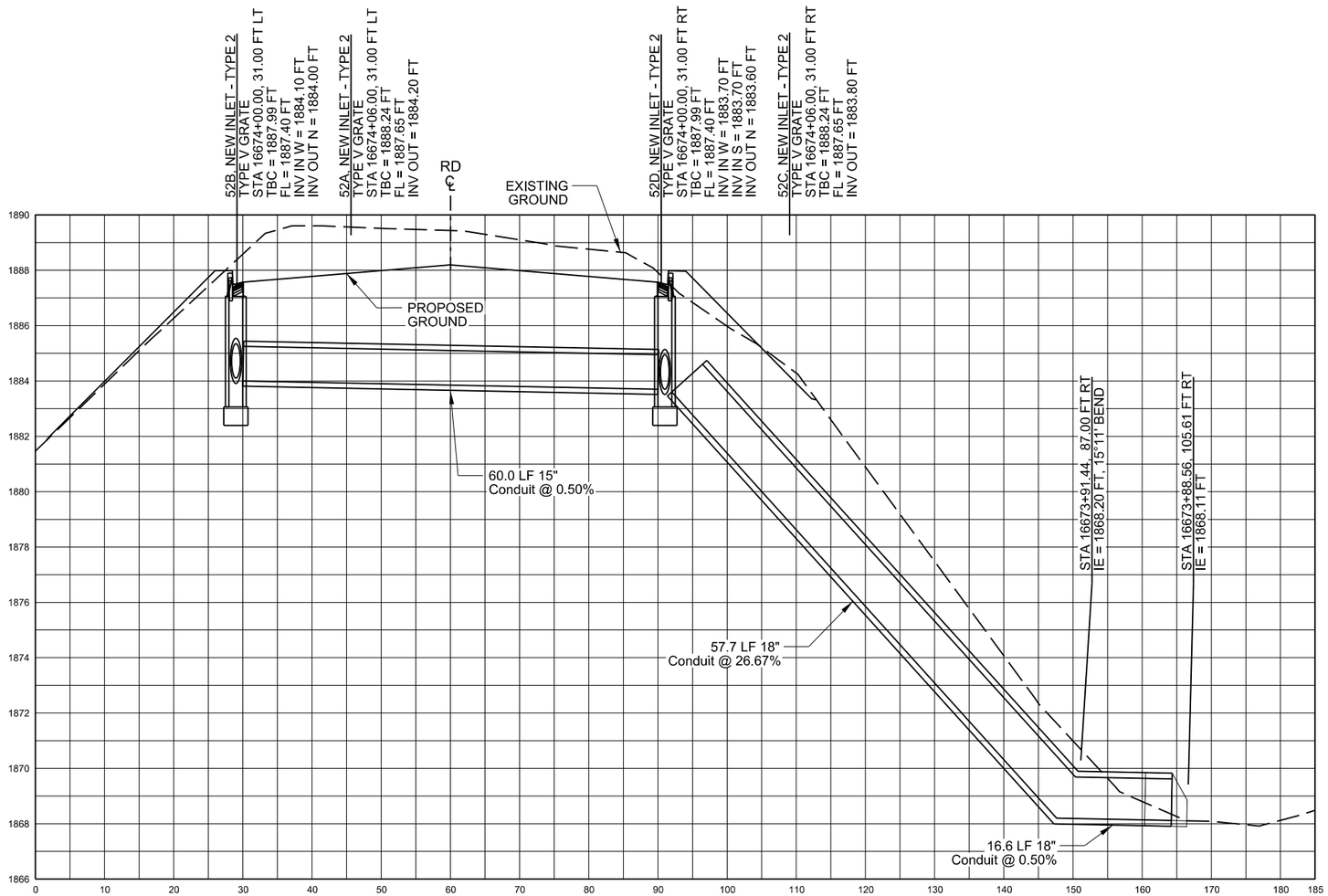
Lateral Profiles #32 - #34

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	47



LATERAL PROFILE #35
STA 16674+00.00

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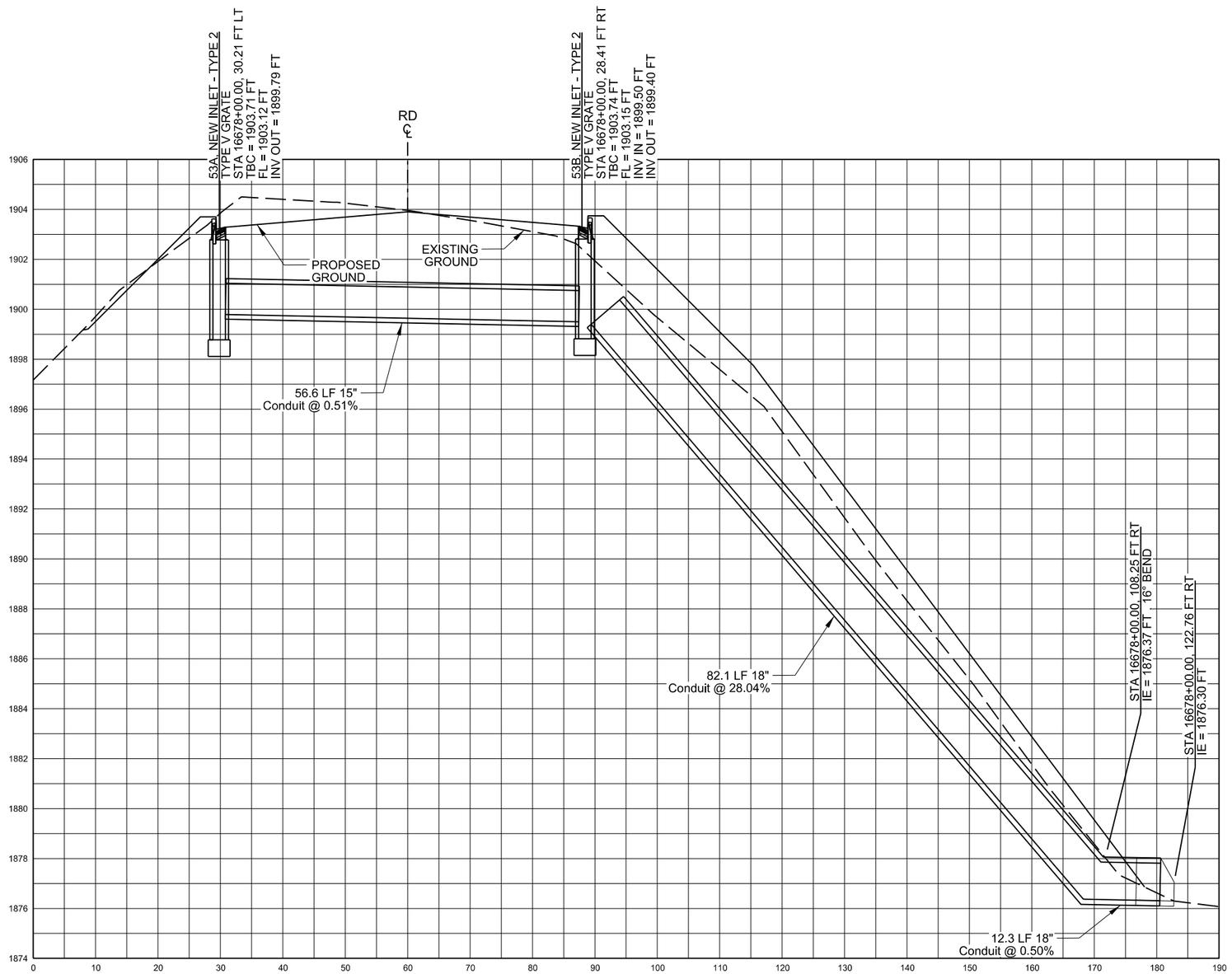
Storm Drain Details

ND 1804 Reconstruction
Williams County, ND

Lateral Profile #35

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	48



LATERAL PROFILE #36
STA 16678+00.00

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NOTE:
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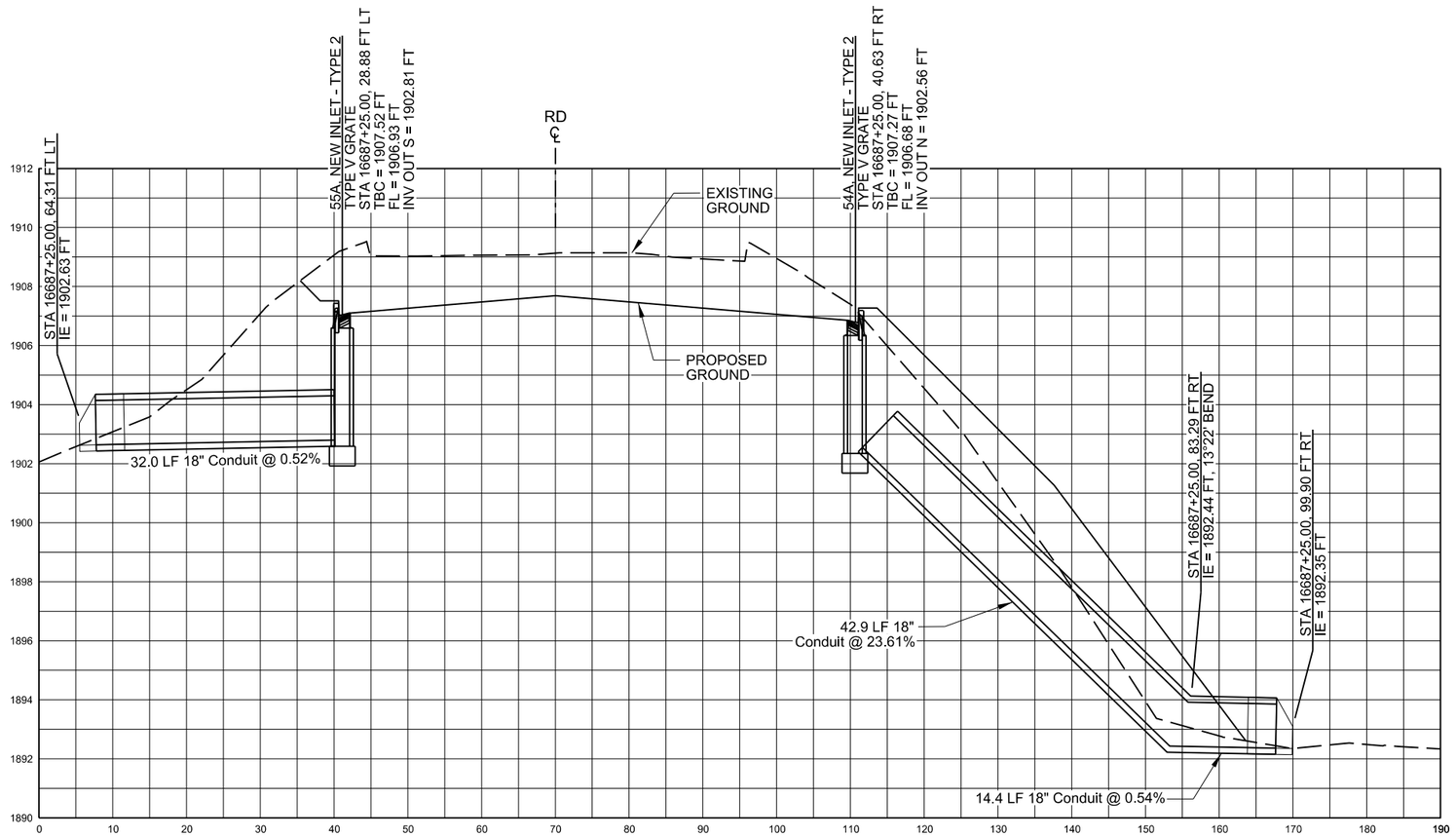
Storm Drain Details

ND 1804 Reconstruction
Williams County, ND

Lateral Profile #36

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	49



LATERAL PROFILE #37
STA 16687+25.00

NOTE:
PIPE LENGTH BASED ON FULL BARREL LENGTH, NOT INCLUDING END SECTION.
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ND 1804 Reconstruction
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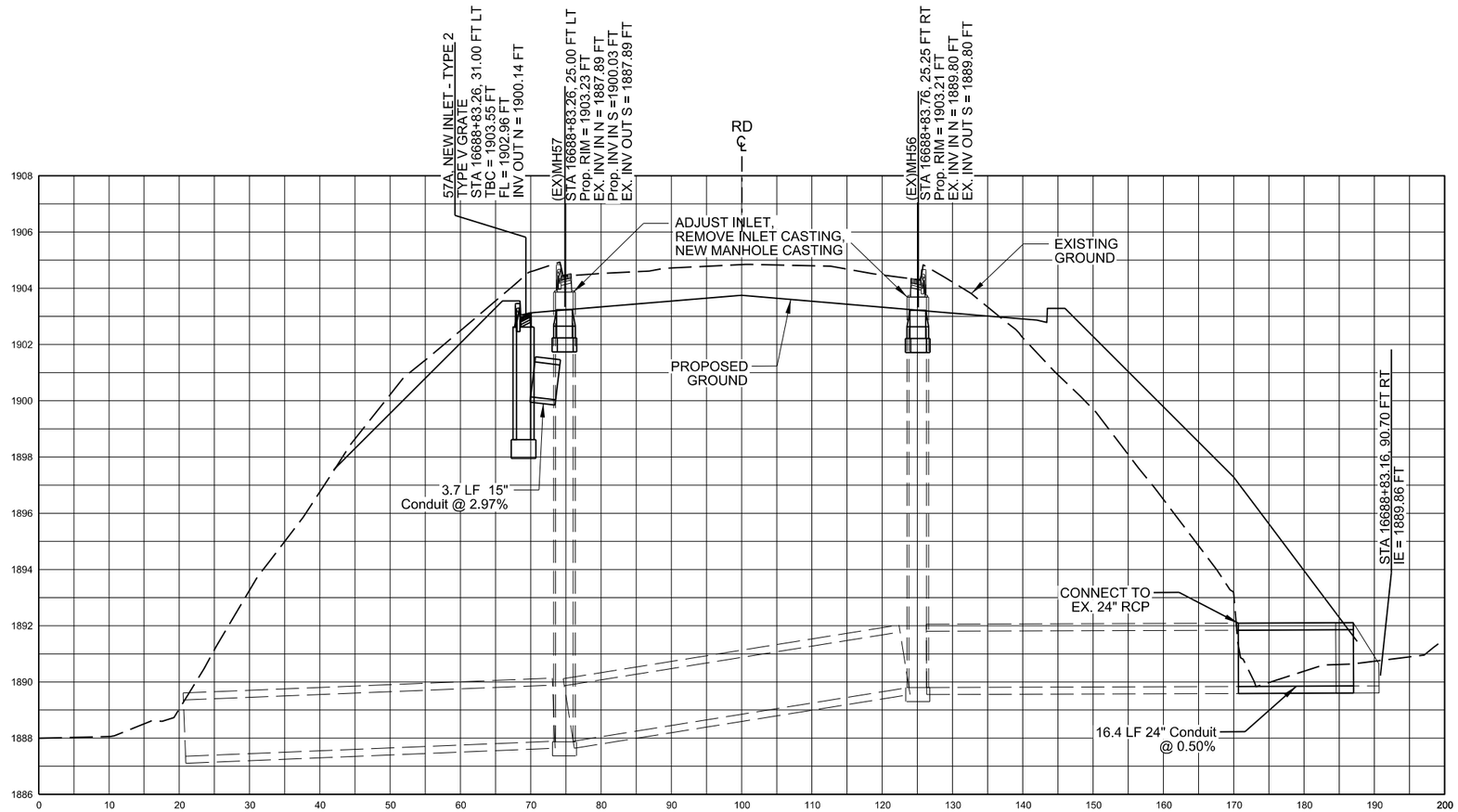
Lateral Profile #37

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	50



LATERAL PROFILE #38
STA 16688+83.26

NOTE:
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ND 1804 Reconstruction
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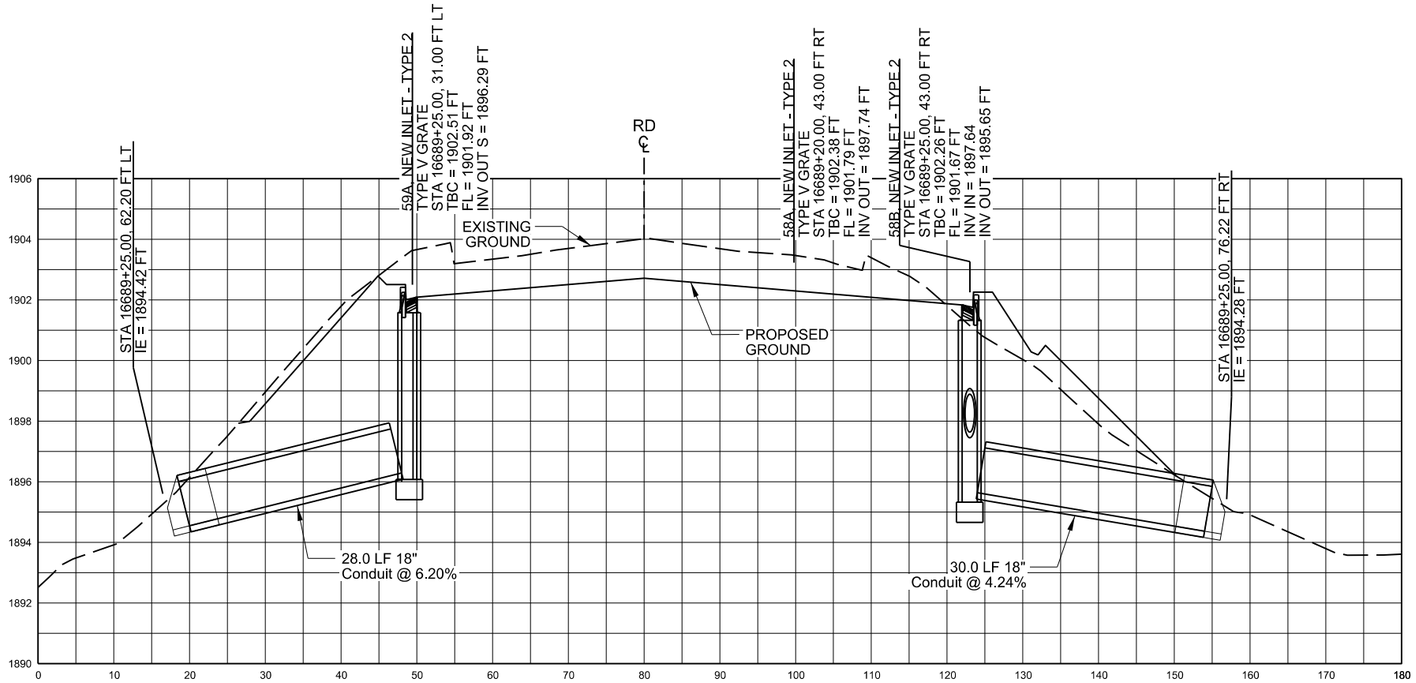
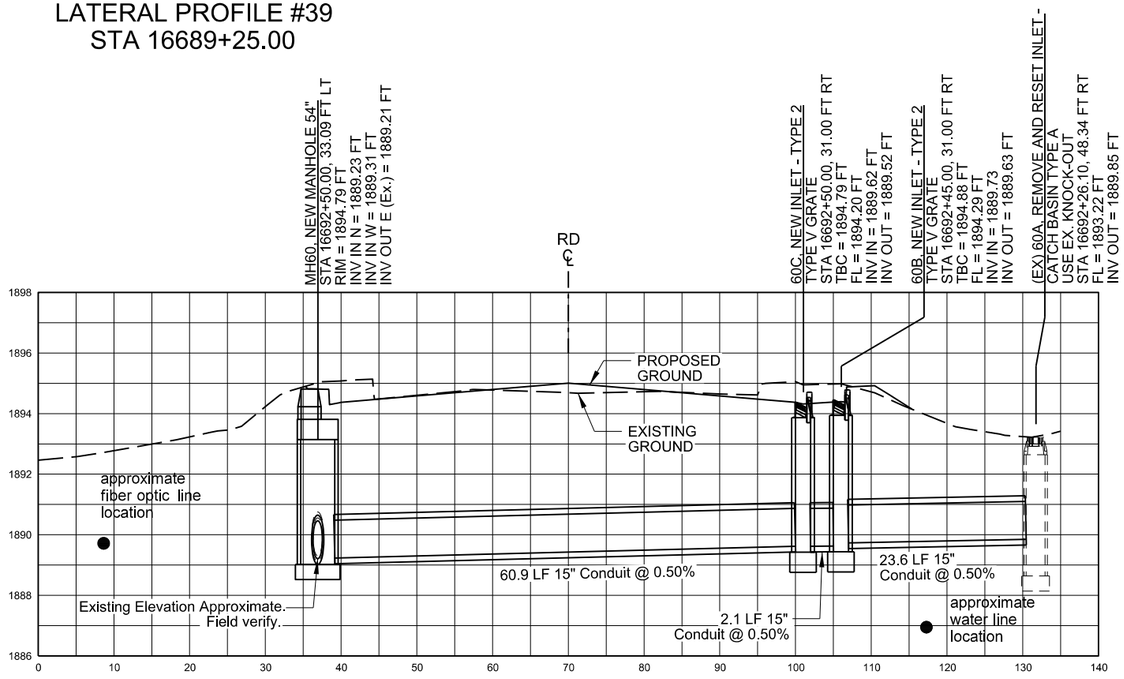
Lateral Profile #38

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	51



LATERAL PROFILE #39
STA 16689+25.00



LATERAL PROFILE #40
STA 16692+50.00

NOTE:
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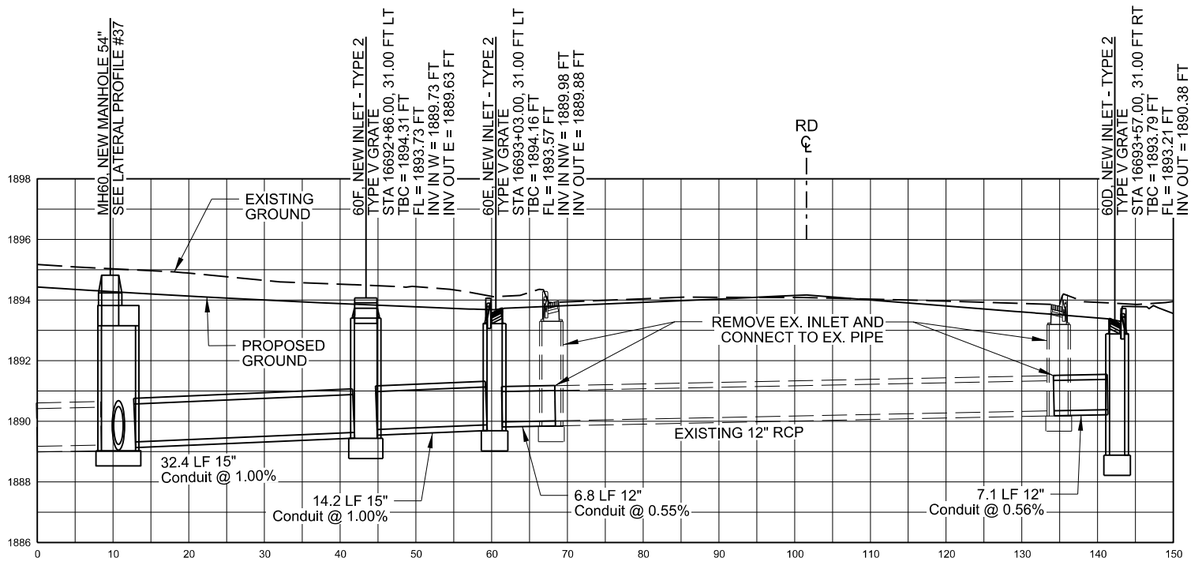
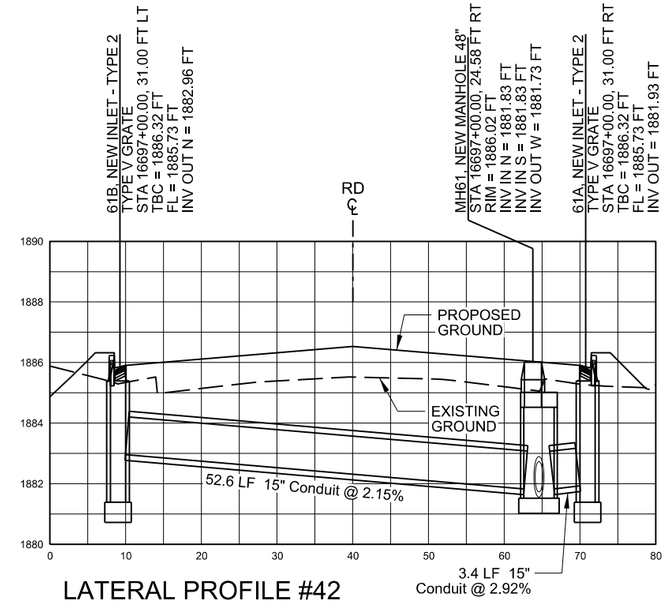
Lateral Profiles #39 - #40

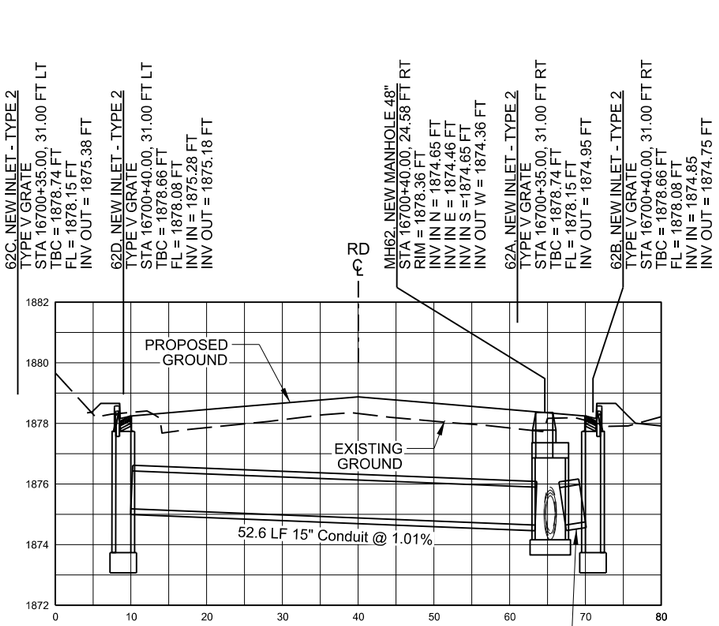
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	52



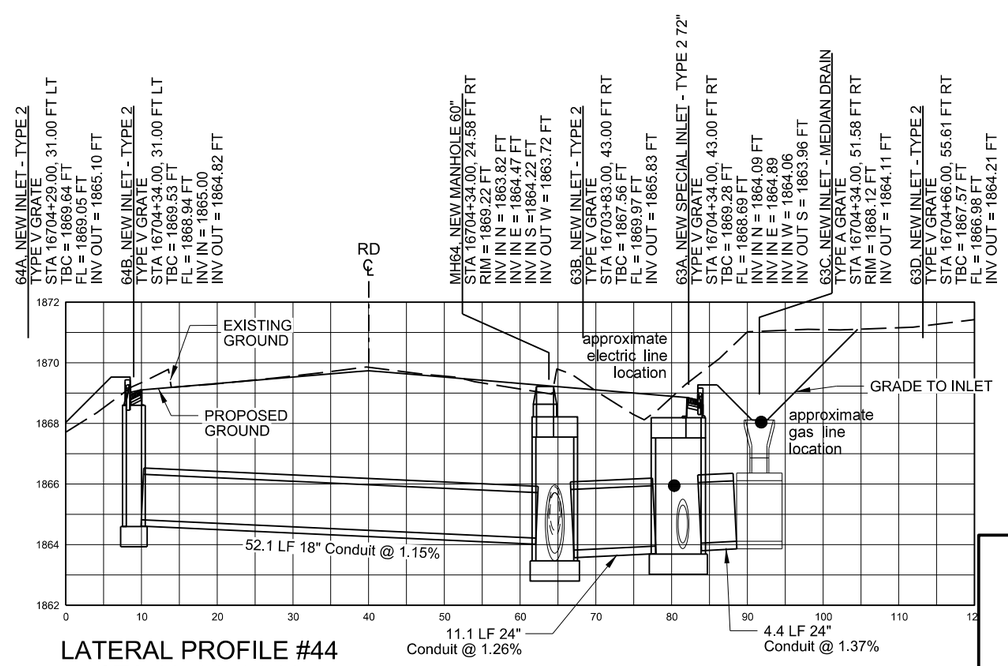
LATERAL PROFILE #41
STA 16693+30.18



LATERAL PROFILE #42
STA 16697+00.00



LATERAL PROFILE #43
STA 16700+40.00



LATERAL PROFILE #44
STA 16704+34.00

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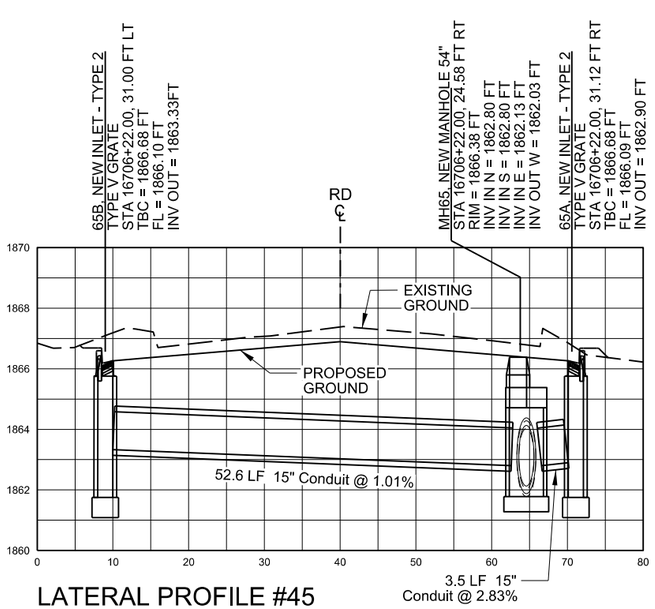
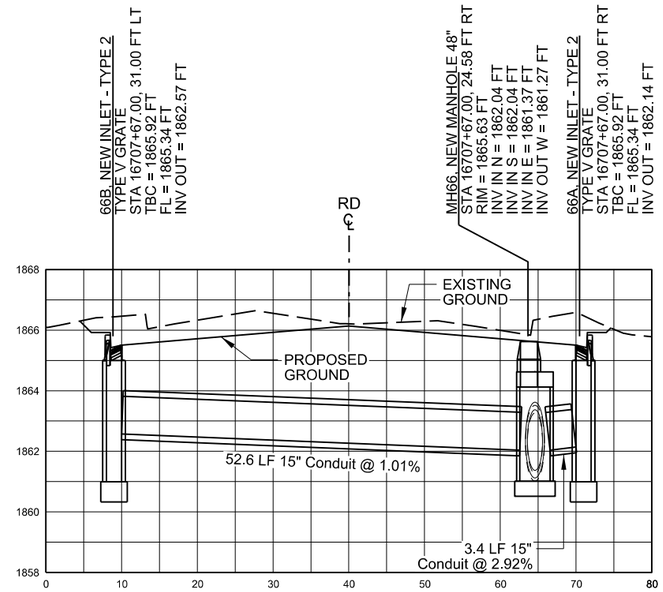
Lateral Profiles #41 - #44

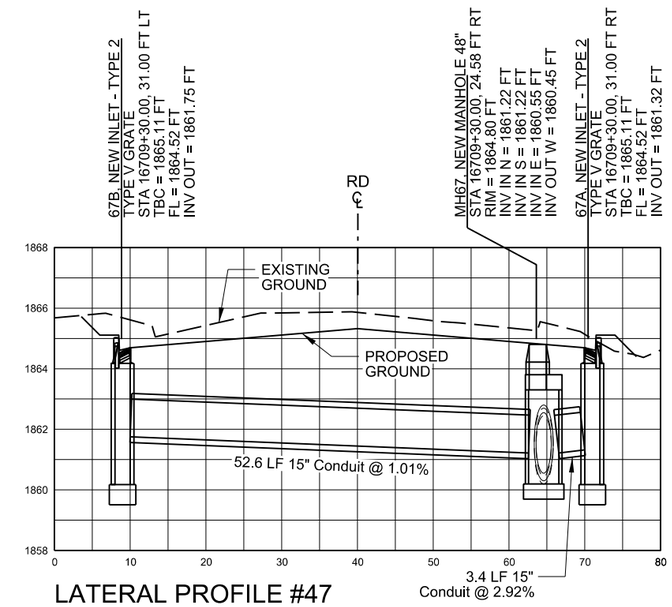
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	53



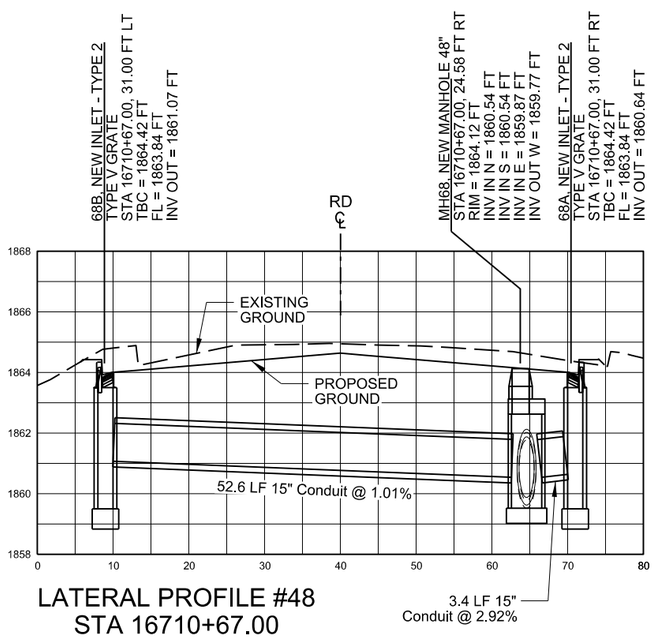
LATERAL PROFILE #45
STA 16706+22.00



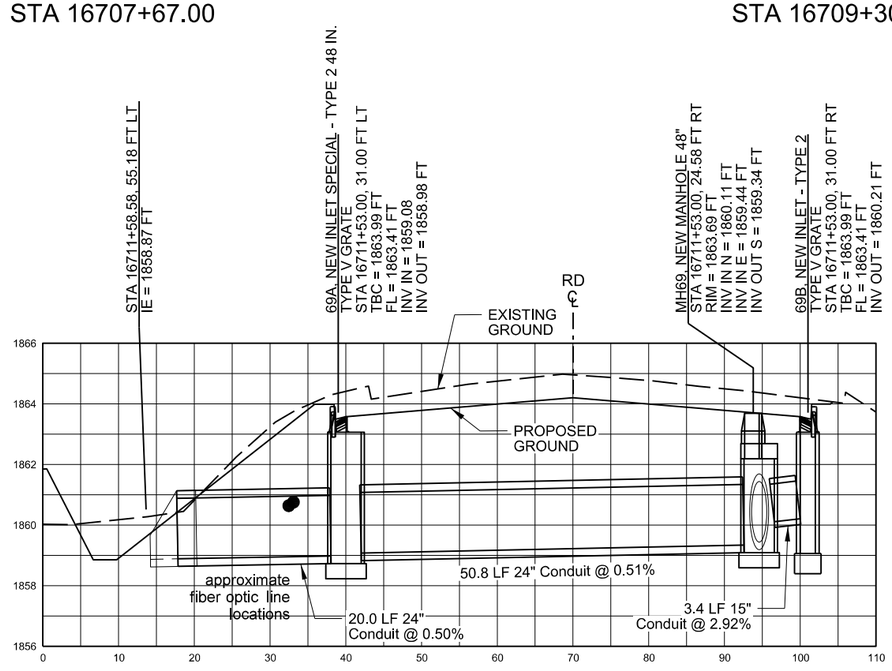
LATERAL PROFILE #46
STA 16707+67.00



LATERAL PROFILE #47
STA 16709+30.00



LATERAL PROFILE #48
STA 16710+67.00



LATERAL PROFILE #49
STA 16711+53.00

NOTE:
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ND 1804 Reconstruction
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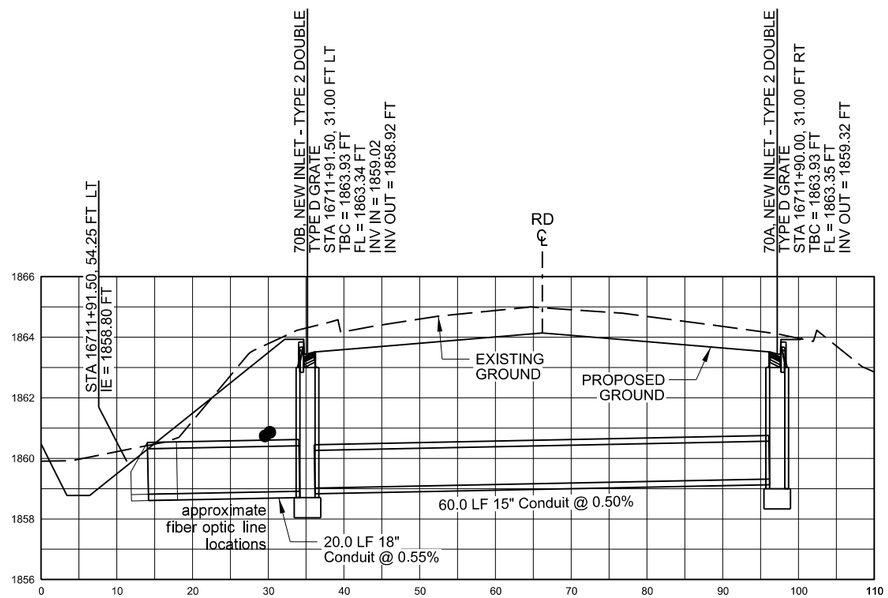
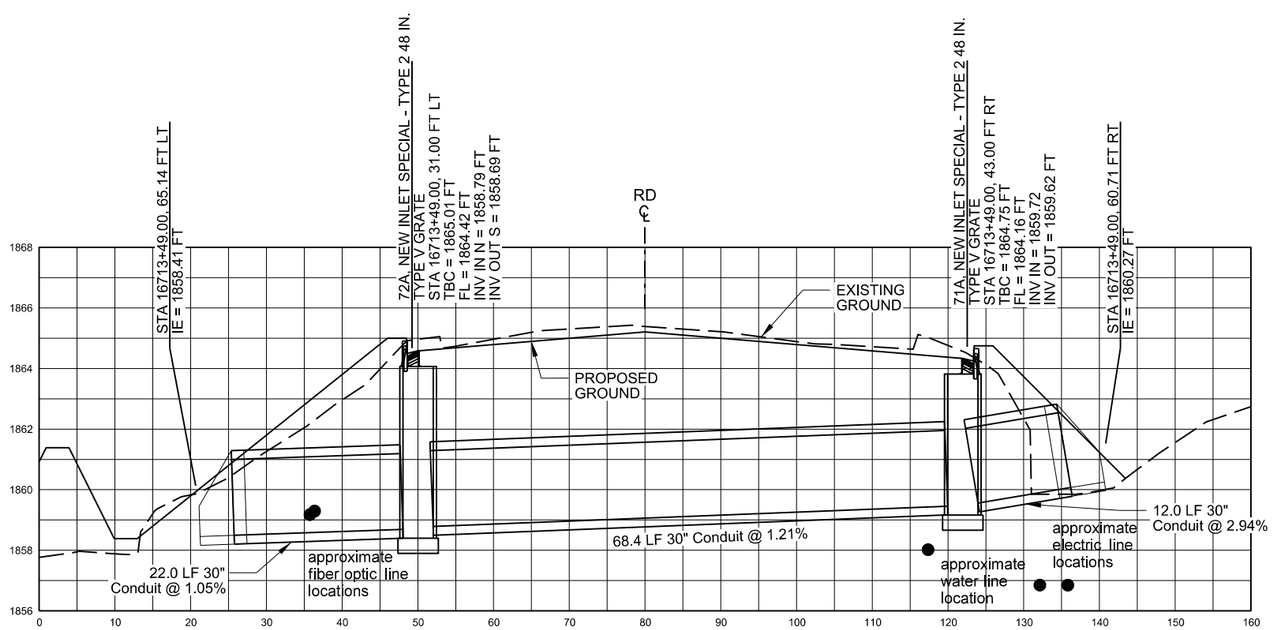
Lateral Profiles #45 - #49

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	54



LATERAL PROFILE #50
STA 16711+90.75



LATERAL PROFILE #51
STA 16713+49.00

NOTE:
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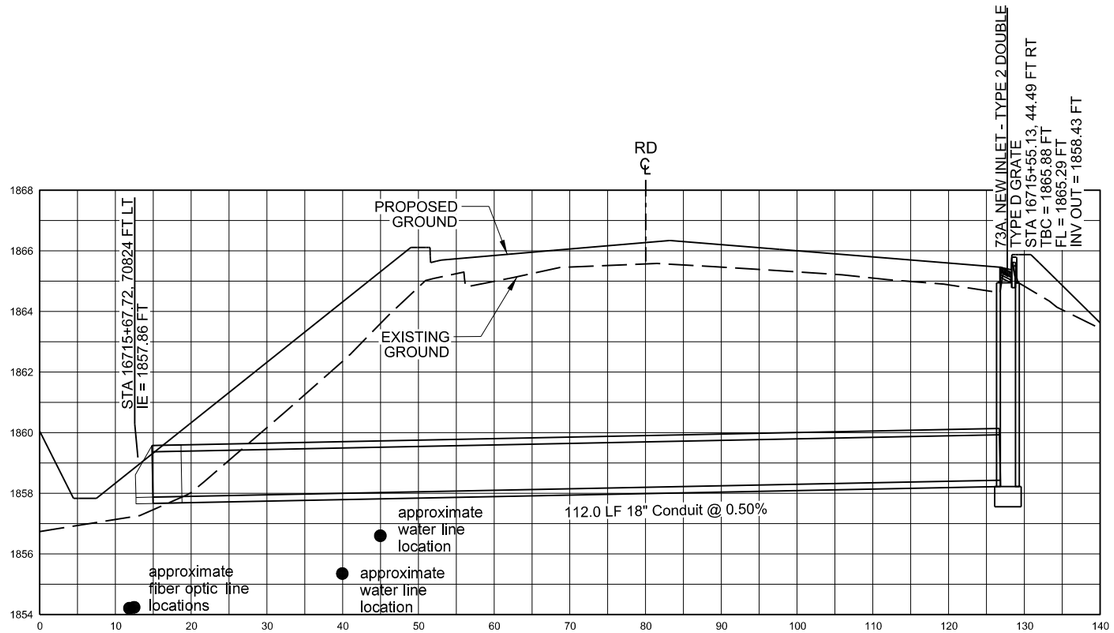
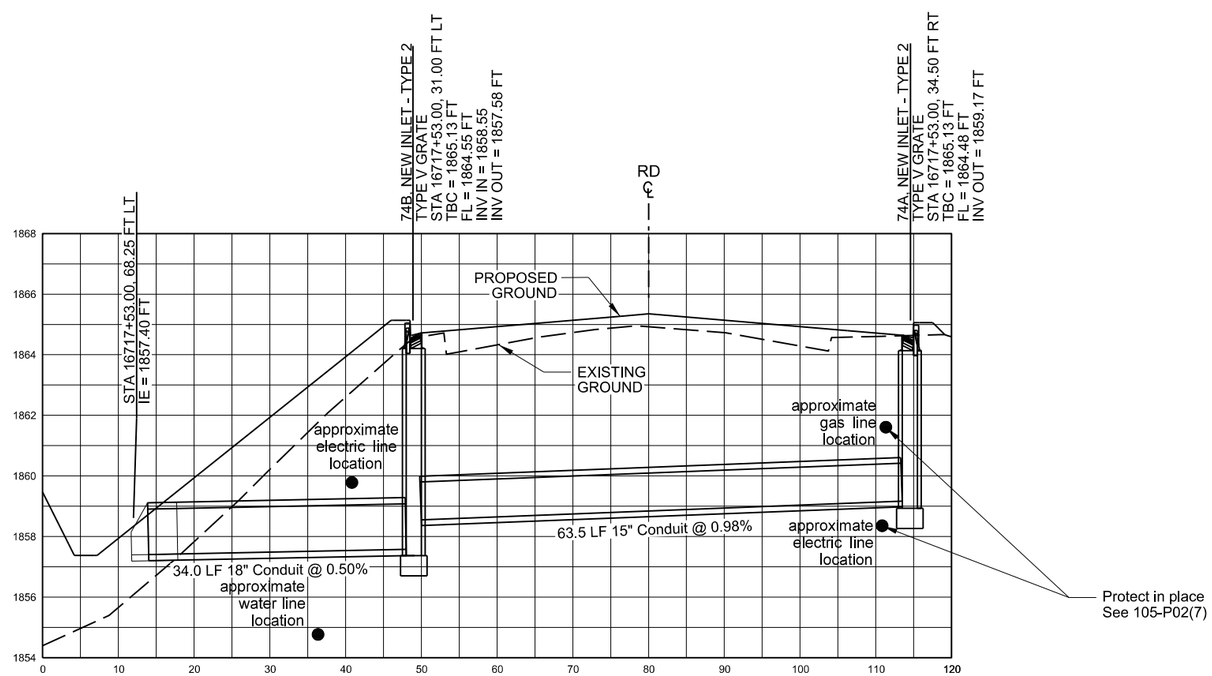
Lateral Profiles #50 - #51

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	55



LATERAL PROFILE #52
STA 16715+60.02



LATERAL PROFILE #53
STA 16717+53.00

NOTE:
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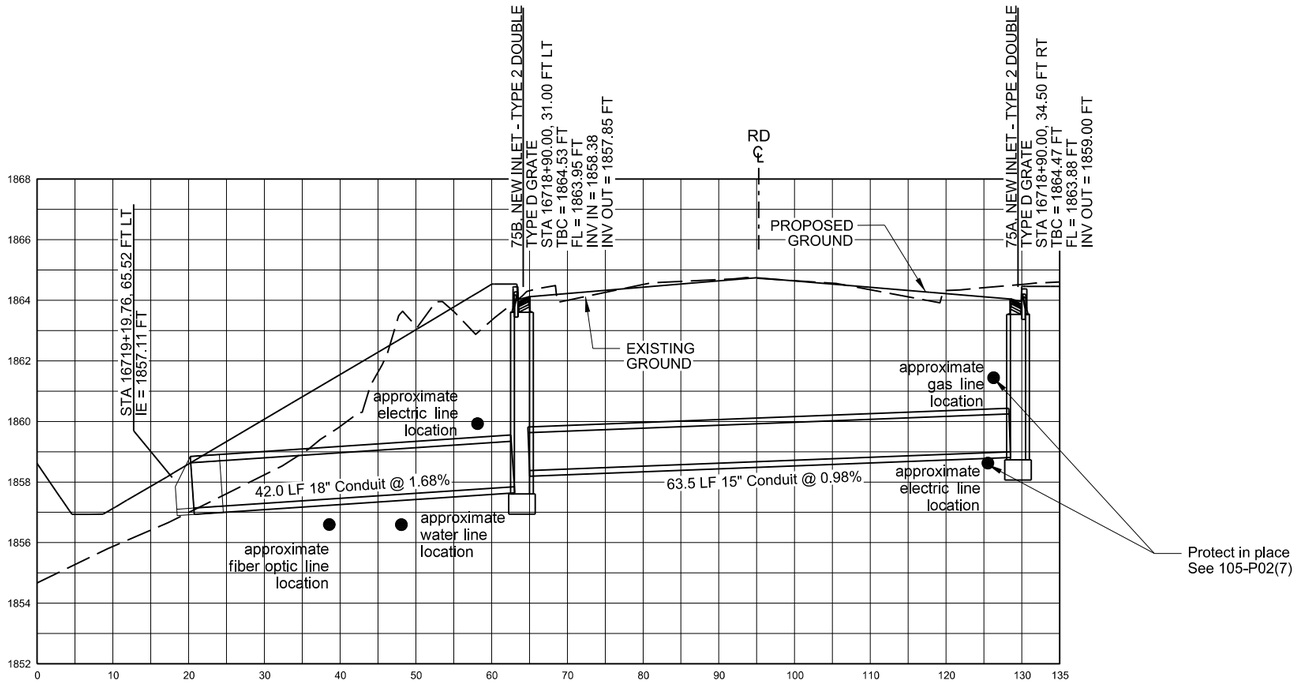
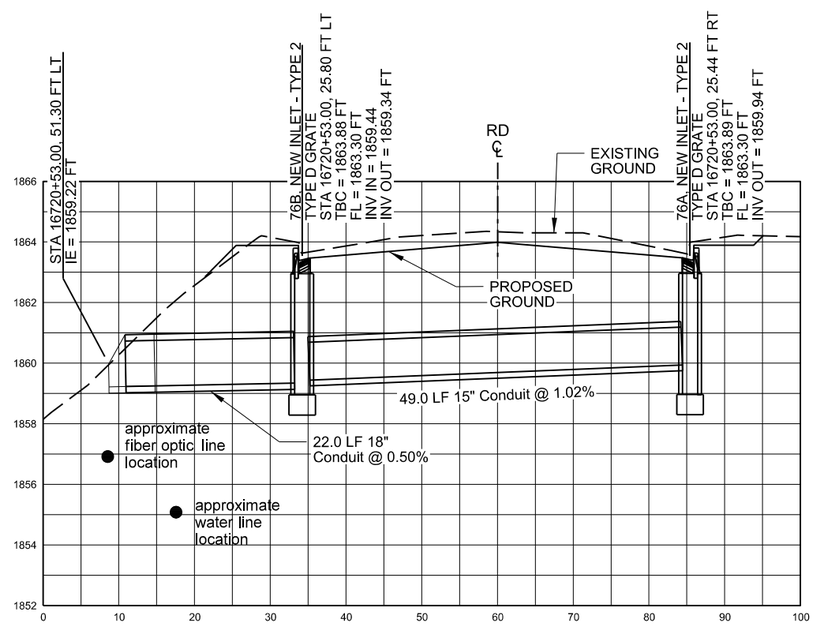
Williams County, ND

Lateral Profiles #52 - #53

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	56



LATERAL PROFILE #54
STA 16718+90.00



LATERAL PROFILE #55
STA 16720+53.00

NOTE:
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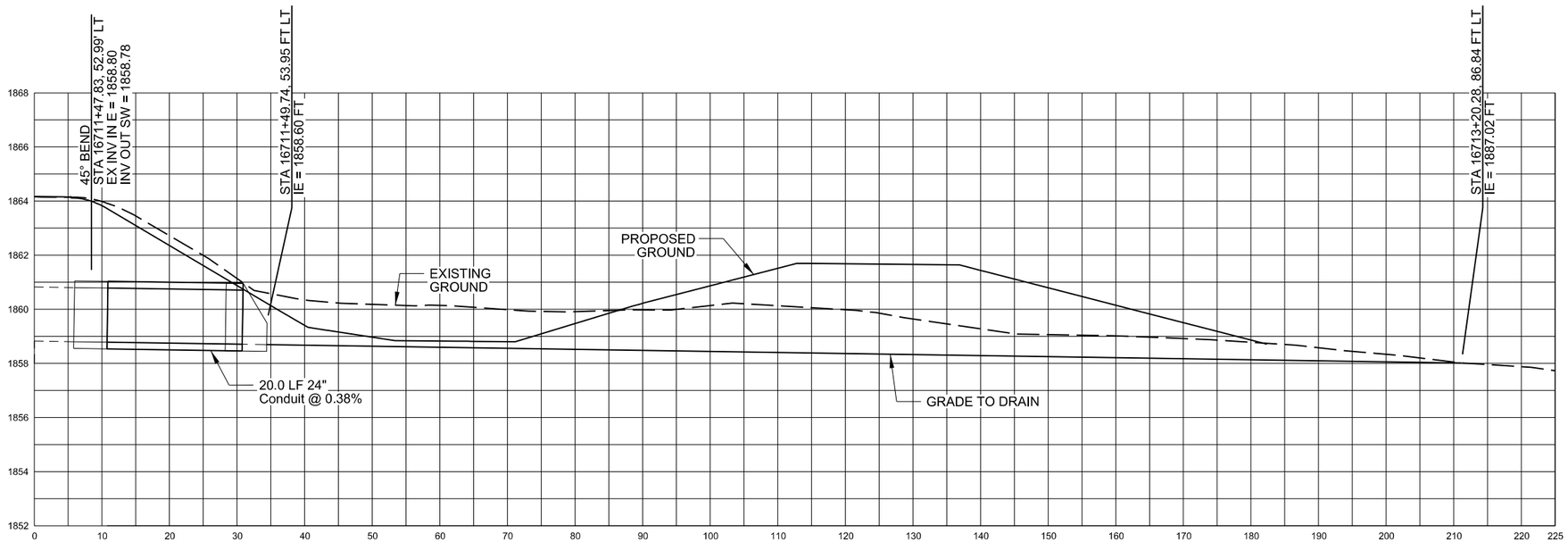
ND 1804 Reconstruction
Williams County, ND

Lateral Profiles #54 - #56

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-804(054)312	55	57



LATERAL PROFILE #56
STA 16711+35.82

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Storm Drain Details

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Williams County, ND

Lateral Profile #57