DESIGN DATA				
Traffic	Average Daily			
Current	Pass: 0 vpd	Trucks: 0 vpd	Total: 0 vpd	
Forecast	Pass: 2,215 vpd	Trucks: 4,115 vpd	Total: 6,330 vpd	

Clear Zone Distance: 46 ft	Design Speed: 65 mph
Minimum Sight Dist. for Stopping: 645 ft	Bridges: HL-93 Design Loading
Sight Dist. for No Passing Zone: 1100 ft	
Pavement Design Life: 30 (years)	
Design Accumulated One-way AADTT: 888 (15,083,100 accumulated heavy trucks)	

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20027	1	1

JOB # 5
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

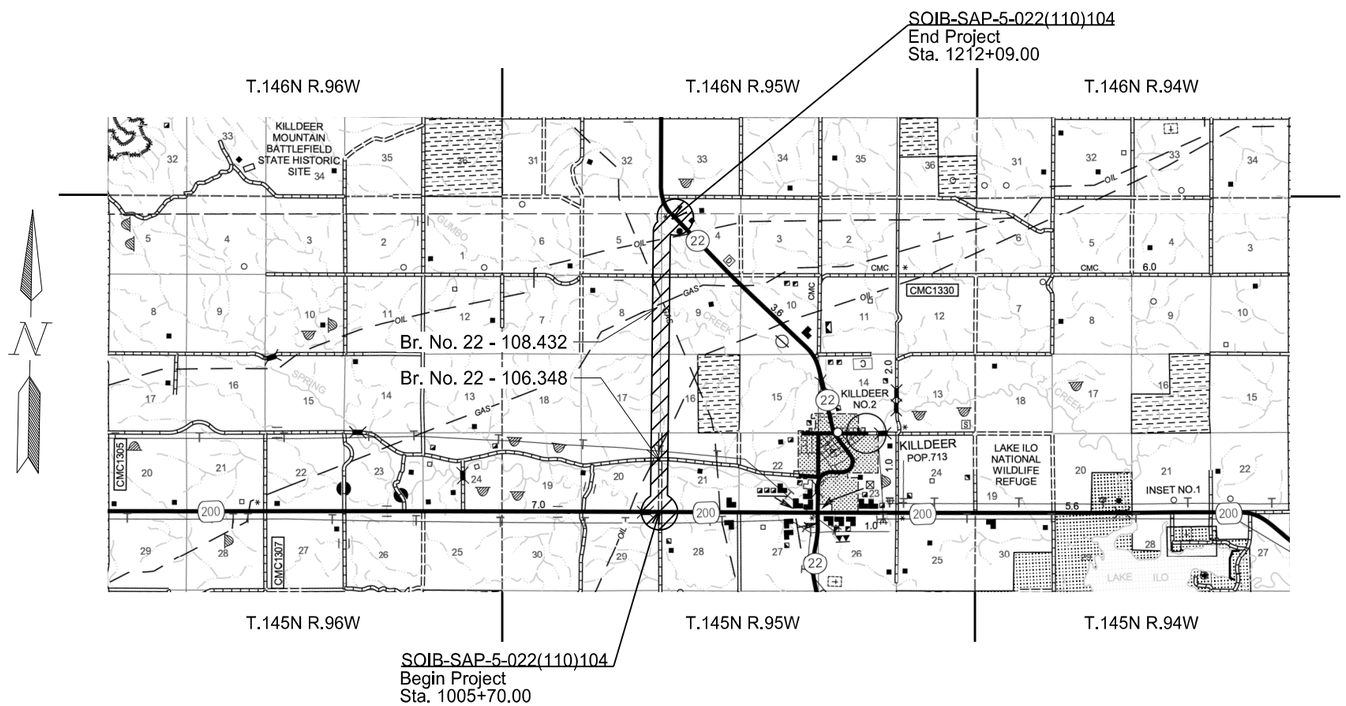
SOIB-SAP-5-022(110)104

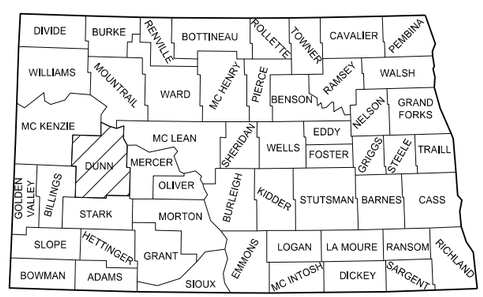
GOVERNING SPECIFICATIONS:
2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SOIB-SAP-5-022(110)104	3.909 Miles	3.909 Miles

Dunn County
ND 22 - Jct ND 200 to Jct ND 22 Business Loop - Killdeer, ND

Base Course, Grading, Box Culverts, PCC Pavement
Erosion Control, Pavement Marking, Lighting, Signing, and Incidentals





STATE COUNTY MAP

DESIGNERS

Craig Mizera, PE

Josh Hinds, PE, PTOE

T.J. Yerdon, PE

Brent Schiller, PE

Stacia Slowey

DISTRICT REVIEW

Rob Rayhorn, PE
DICKINSON DISTRICT

APPROVED DATE 06/10/15

Robert Fode, PE
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 06/08/15

Richard L. Stoppelmoor /s/
HDR ENGINEERING

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LIST OF SPECIAL PROVISIONS (SP)

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SP-0004(14)	Federal Migratory Bird Treaty Act
SP-54(14)	Concrete Final Surface Finish
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LIST OF STANDARD DRAWINGS

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D-101-02	NDDOT Abbreviations
D-101-03	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20	Line Styles
D-101-21	Line Styles
D-101-30	Symbols
D-101-31	Symbols
D-101-32	Symbols
D-203-08	Standard Rural Approaches
D-255-02	Erosion and Siltation Control – Erosion Control Blanket Installation
D-260-01	Erosion and Siltation Controls – Silt Fence
D-261-01	Erosion Control – Fiber Roll Placement Details
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D-550-05	Transverse Construction Joint
D-704-05	Contractor Sign Detail
D-704-07	Breakaway Systems for Construction Zone Signs – Perforated Tube
D-704-08	Breakaway Systems for Construction Zone Signs – U-Channel Post
D-704-09	Construction Sign Details - Terminal and Guide Signs
D-704-10	Construction Sign Details - Regulatory Signs
D-704-11	Construction Sign Details – Warning Signs
D-704-12	Shoulder Closure Tapers
D-704-13	Barricade and Channelizing Device Details
D-704-14	Construction Sign Punching and Mounting Details

LIST OF STANDARD DRAWINGS

Standard No.	Description
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D-704-21	Detour and Roadway Diversion Sign Layouts
D-704-25	Lane Closures on Urban Street Layouts
D-704-26	Miscellaneous Sign Layouts
D-704-27	Traffic Control Plan for Moving Operations
D-704-31	Construction Sign Layout – Non-Signalized Low Volume One Lane Closure
D-704-34	Sign Layout for One Lane Closure
D-704-50	Portable Sign Support Assembly
D-704-56	Mobile Operation – Grinding Shoulder Rumble Strips
D-708-06	Erosion and Siltation Controls – Median or Ditch Inlet Protection
D-714-01	Reinforced Concrete Pipe Culvert and End Sections (Round Pipe)
D-714-04	Round Corrugated Steel Pipe Culverts and End Sections
D-714-10	5’ X 7’ Precast Concrete Cattle Pass
D-714-11	Traversable End Sections for Corrugated Steel Pipe Culverts
D-714-22	Concrete Pipe or Precast Concrete Box Culvert Ties
D-714-25	Transverse Mainline Pipe Excavation and Installation Detail for Pipes More Than 4 Feet Below the Top of Proposed Subgrade
D-714-25M	Transverse Mainline Pipe Excavation and Installation Detail for Multiple Pipes More Than 4 Feet Below the Top of Proposed Subgrade
D-714-26	Transverse Mainline Pipe Excavation and Installation Detail for Pipes 4 Feet or Less Below the Top of the Proposed Subgrade
D-714-26M	Transverse Mainline Pipe Excavation and Installation Detail for Multiple Pipes 4 Feet or Less Below the Top of the Proposed Subgrade
D-720-01	Standard Monuments and Right of Way Markers
D-722-01B	Inlet – Special
D-722-02	Inlet – Type 2
D-722-05	Manhole Details
D-748-01	Curb & Gutter and Valley Gutter
D-750-02	Sidewalk
D-752-01	Standard Barbed Wire Fence
D-752-02	Chain Link Fence
D-752-04	Concrete Cattle & Stockpass Fencing Standard
D-754-09	Letter and Arrow Details for Variable Length Signs
D-754-19	(Conventional Use) Reference Markers
D-754-21	Reflectorized Delineators

LIST OF STANDARD DRAWINGS

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D-754-24	Mounting Details Perforated Tube
D-754-24A	Breakaway Coupler System for Perforated Tubes
D-754-25	Mounting Details Perforated Tube
D-754-26	Sign Punching, Stringer, and Support Location Details Regulatory, Warning, and Guide Signs
D-754-27	Sign Punching, Stringer, and Support Location Details Regulatory, Warning, and Guide Signs
D-754-29	Sign Punching, Stringer, and Support Location Details Regulatory, Warning, and Guide Signs
D-754-32	Sign Punching, Stringer, and Support Location Details Regulatory, Warning, and Guide Signs
D-754-45	Sign Punching, Stringer, and Support Location Details Regulatory, Warning, and Guide Signs
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D-754-51	Sign Punching, Stringer, and Support Location Details – Route Marker Signs
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D-754-57	Sign Punching, Stringer, and Support Location Details – Route Marker Signs
D-754-58	Sign Punching, Stringer, and Support Location Details – Route Marker Signs
D-754-82	Object Markers
D-754-83	Object Markers - Culverts
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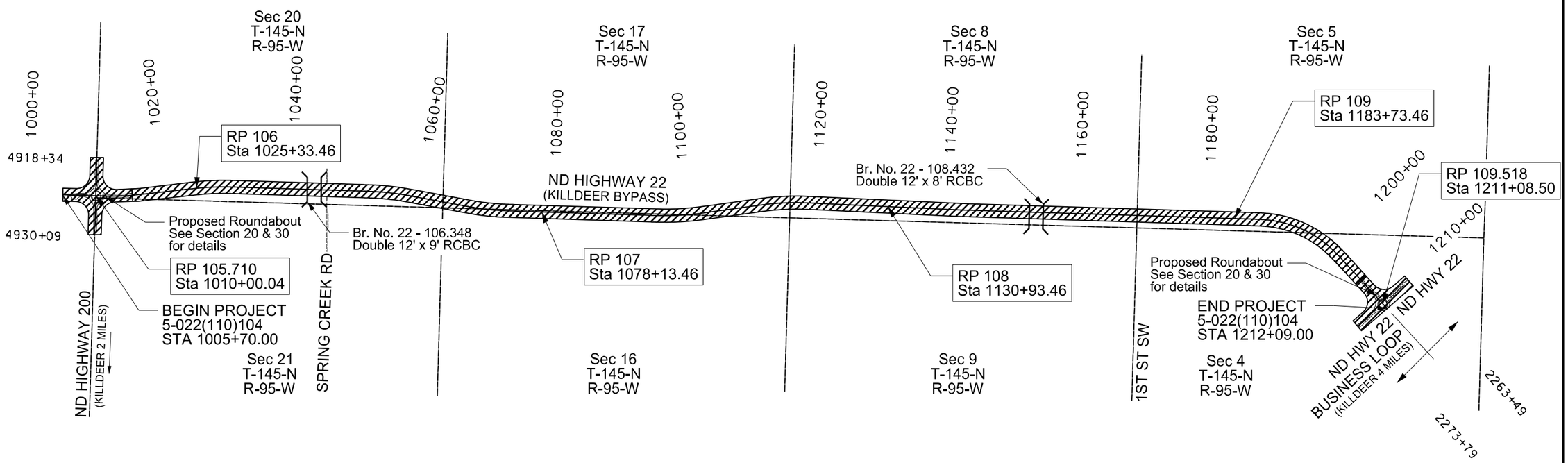
D-760-05	Saw Slotted Rumble Strips at Intersections
D-762-01	Pavement Marking Message Details
D-762-04	Pavement Marking
D-766-01	Mailbox Location Details
D-770-01	Concrete Foundations (Traffic Signals & Highway Lighting)
D-770-02	Feed Points (Roadway Lighting)
D-770-04	Lighting and Signal Details
D-770-05	Light Standard Details

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	4	1



ND Highway 22, 9" PCC

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Scope of Work

Sta 1005+70 to Sta 1212+09

ND Hwy 22

Killdeer Bypass

NOTES

GENERAL 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. Project Engineer
b. North Dakota Department of Transportation
c. Subcontractors
d. Affected Utility Companies

100-P02 WINTER SUSPENSION: Temporary tie-ins will not be accepted during the winter suspension

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

105-P01 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 for curb and gutter sections.

105-P02 HIGHWAY 200 COORDINATION: Coordinate construction activities and maintenance of traffic with the ND Highway 200 Reconstruction Project.

107-710 HAUL ROAD RESTRICTIONS: 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 AVOIDANCE AREAS: The Engineer will contact Robert Christensen (701-328-4539) of the Environmental and Transportation Services Division to coordinate any meetings needed to identify the limits of the avoidance area. The site is located at 1102+70 RT to 1104+72 RT. These avoidance areas within the right of way must not be disturbed and fenced prior to commencement of any construction. Provide the fence and fence posts, install the fence in the location designated by the Engineer, maintain the fence, and remove the fence upon completion of the project. All costs to provide, place, maintain, and remove the fence are included in the unit price bid for “Temporary Safety Fence”.

107-P02 MAINTAINING TRAFFIC: If public traffic is operating in an area with a drop-off greater than 2 inches, construct a temporary wedge composed of aggregate, embankment or salvaged material with a foreslope of 4:1 or flatter and install delineator drums along the edge of the driving lane.

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

If a traversable taper wedge cannot be provided, the Contractor provides 24-hour flagging and pilot car at their own expense.

200-P01 EROSION CONTROL: Unsupported silt fence placed in standing water will not be embedded, install in such a way that the fence meets the ground.

In areas with no standing water, an earthen berm may be used in place of silt fence. Topsoil and excavated soil may be used to create an earthen berm with a minimum height of 12 inches to prevent sediment transfer off the construction area. Shape the berm in such a way that it will not fail when pressure from stormwater is applied. Temporarily seed berm with Class II seed mix and mulch to stabilize. When the foreslope has reached final grade, remove the earthen berm and spread the material on the inslope before permanent seeding and mulching work is commenced. Include all costs associated with creating, maintaining, seeding, mulching, and removing the berm in the unit price bid for “Topsoil”.

To allow storm water to drain through the berm, weirs may be placed intermittently as needed throughout the length of the berm. No more than 5 foot wide weirs and have fiber rolls installed across the weir on the downslope side of the berm.

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NOTES

202-P01 ABUTTING PAVEMENT: Where the new pavement will abut existing pavement, make a full-depth vertical saw cut along the entire length of the butt joint. Remove the material without disturbing the material that is designated to remain. Sawing included in the unit price bid for “Remove Aggregate Base & Surfacing”.

202-P02 FENCE REMOVAL: Notify landowners in writing, with a copy to the Engineer, a minimum of 30 days in advance of fence removal. Just prior to removing fence, coordinate verbally with the adjacent landowners. Additional information, including the property owners’ contact information, will be available from the Engineer.

203-010 SHRINKAGE: 30 percent additional volume is included for shrinkage in earth embankment.

203-385 AVERAGE HAUL: No average haul has been computed for this project.

203-P01 TOPSOIL-PLACEMENT: “Track” the topsoil parallel to the slope prior to permanent seeding on slopes 4:1 or steeper and greater than 10 feet (vertical height). Avoid tracking in the areas where the installation of erosion control blanket will occur. Include the cost of “tracking” in the unit price bid for “Topsoil”.

203-P02 COMMON EXCAVATION-TYPE A: Include all costs associated with the construction of ditch blocks, intercepting ditches, and the removal of approaches in the unit price bid for “Common Excavation-Type A”.

Payment for wetland mitigation is incidental to the bid item “Common Excavation-Type A”.

203-P03 EXCAVATION AND FILL ELEVATIONS: All grades and contours (proposed and existing) are given at the top of the finished surface.

251-P01 SEEDING CLASS III: Place, spread and seed the wetland buffer areas as indicted in Section 77 of the plans with the following seed mixture:

Species	Scientific Name	Variety	Pure Live Seed (PLS) (pounds/acre)
Blue Grama	*Bouteloua gracilis*	Bad River	1.2
Green Needlegrass	Nassella viridula	Lordom	1.8
Sideoats Grama	*Bouteloua curtipendula*	Killdeer	3.6
Western Wheatgrass	*Pascopyrum smithii*	Rodan	6.0
Little Bluestem	Schizachyrium scoparium	Badlands	0.6
Canada Wildrye	*Elymus canadensis*	Mandan	1.95
Slender Wheatgrass	*Elymus trachycaulus*	Pryor	1.5

251-P02 WETLAND SEED: Place, spread, and seed the wetland areas with the following seed mixture:

Species	Scientific Name	Variety	Pure Live Seed (PLS) (pounds/acre)
Nuttall Alkaligrass	*Puccinellia nuttalliana*	Common	0.5
Prairie Cordgrass	*Spartina pectinata*	Red River	3.5
Canada Wildrye	*Elymus canadensis*	Mandan	1.0
Western Wheatgrass	*Pascopyrum smithii*	Rodan	1.2
Slender Wheatgrass	*Elymus trachycaulus*	Common	1.25
Switchgrass	*Panicum virgatum*	Dacotah	0.5
American Sloughgrass	*Beckmannia syzigachne*	Common	0.3

In addition to the seed mixture described, prairie cordgrass (Spartina pectinata) plugs will be planted along the perimeter of the created wetland at a 10 ft. interval.

Payment for seeding and placement of prairie cordgrass plugs is incidental to the bid item “Wetland Seed”.

260-P01 SILT FENCE: Zinc coating of the woven wire fence for the supported silt fence will be prohibited.

302-115 BASE COURSE: Trim base course as specified in 302.04 C.2, "Surface Tolerance Type C."

302-P01 TRIMMING BASE COURSE: Material removed from high points of the base course during the trimming operation will be reincorporated into other portions of the base.

550-P01 PAVEMENT REINFORCING: Provide and place reinforcing steel at the locations shown on the paving joint layout sheets. Include all costs to provide, place, and support the reinforcing steel in the price bid for concrete pavement items.

550-P02 CONTRACTOR CORING: Fill all core holes with AE-3 concrete. Cost for filling core holes included in the bid price for “9IN NON REINF CONCRETE PVMT CL AE-DOWELED”.

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NOTES

550-P03 NON-REINF CONCRETE PVMT CL AE-DOWELED – COLORED: Pave the truck apron with 12” Non-Reinforced doweled concrete and colored yellow.

Construct the concrete in accordance with Section 550 of the Standard Specifications. Mixing pigmented concrete and curing should meet the requirements of Section 750.04 of the Standard Specifications and ASTM C979, Specification for Pigments for Integrally Colored Concrete. Provide a pigment from a supplier below or provide an approved equal. Use the same supplier for all colored concrete placed under the contract.

1. Marigold, produced by Solomon Colors, Inc., 1-800-624-0261
2. Harvest Gold, produced by Davis Colors, 1-800-356-4848
3. R/M – St. Simon’s Tan by Southern Color N.A., Inc., 1-800-297-3063

If an approved equal is chosen, provide a mock up sample to be approved by the Engineer prior to installation.

Clean any colored concrete from the adjacent pavements by sandblasting.

All costs associated with the placement, coloring and finishing will be included in the price bid for “Non-Reinf. Concrete Pvmt. CL AE-Doweled-Colored”.

704-P01 TRAFFIC CONTROL DEVICES: The traffic control devices list has been developed using the layouts shown in the plans and the following layouts shown on the Standard Drawings.

1. D-704-12 Shoulder Closure Tapers
2. D-704-15 Road Closure Layouts - Layout Type A to be used any time conditions exist and Layout Type B will be the typical Layout
3. D-704-21 Detour and Roadway Diversion Sign Layouts
4. D-704-25 Lane Closures on Urban Streets Type V, Type W, and Type X Layouts
5. D-704-26 Layouts Type Z, BB, DD, EE, FF, and GG as needed
6. D-704-27 Layout for Pavement Marking
7. D-704-31 Construction Sign Layout – Non-Signalized Low Volume One Lane Closure
8. D-704-34 Sign Layout for One Lane Closure
9. Traffic Control Drawings in Section 100 of the plans.

706-P01 FIELD OFFICE: Provide a field office which meets the following requirements:

1. Field office with a minimum of 450 square feet.
2. Indoor bathroom facilities
3. Air Conditioner capable of maintaining a 75 degree room temperature.
4. Full size refrigerator
5. Lighting (lumens required 110 foot- candles)
6. Minimum of 3 phone jacks
7. Heat, electric, sewer, and water hookups to be furnished by Contractor, Contractor to pay utility bills.
8. Cabinet space of a minimum of 32 cubic feet.
9. Counter space of a minimum of 60 square feet.
10. The floor is to be free of protrusions so that it will accommodate office equipment.
11. Photocopy machine capable of 11x17 photocopies and toner to last the duration of the project.
12. Broadband internet service
13. Locate the field office on, or as close to the project as possible and approved by the Engineer. Contractor pays any rental fees.
14. Make the field office available for occupancy one week prior to the start of the project and remain available for two weeks after project completion.

All requirements of the Field Office are subject to approval by the Engineer.

708-P01 SMALL ROCK COVER: Wash the small landscape rock used in the center island to be free of dirt and debris and 1.5” to 2” in diameter with a depth of 4”. Place Geosynthetic Material – Type RR before the small rock cover is placed. All costs associated with the area prep work and placement are incidental to the unit price bid for “Small Rock Cover”.

714-P01 CENTERLINE AND APPROACH PIPES: All locations designated for centerline pipe and approach pipe installation, provide dewatering if necessary according to site conditions. Include all costs associated with dewatering in the price bid for centerline and approach pipe installation.

722-P01 STORM DRAIN INLETS AND MANHOLES: Fill the bottom of the inlet or manhole with AE-3 concrete up to the elevation that will accommodate the lowest invert elevation. Place and shape the concrete fill to eliminate trapping of debris and/or sediment. All costs to accomplish this work will be included in the price bid for the respective inlet or manhole.

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

Construct all inlet risers in the curb so top of riser is 1/2 inch below the top of aggregate base course to allow clearance for paving machine.

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NOTES

750-P01 CONCRETE MEDIAN PAVING: Saw or tool transverse and longitudinal joints as shown on Standard Drawing D-750-2. Saw or tool joints in a timely manner to prevent any uncontrolled random cracking. If random cracking occurs, the contractor is required to remove and replace all damaged panels at his own expense.

Payment will be made at the contract unit price for "Concrete Median Paving". This payment will be full compensation for all labor, equipment, and materials necessary to complete the work as required.

752-P01 FENCING: Place temporary/permanent fencing prior to removing existing fencing. Place temporary fencing around temporary construction easements where existing fence is removed until permanent fencing is in place. The cost to install and remove temporary fencing is included in the price bid for "Temporary Fence." Field fit temporary fencing in areas of deep draws or wooded areas, with the approval of the Engineer.

754-225 RESET SIGN PANEL: Remove sign panels from existing supports. Reinstall sign panels, angles, stringers, and steel channels on new supports.

Provide all necessary brackets and hardware to attach sign panels, angles, stringers, and steel channels on new supports.

The Engineer will measure the item "Reset Sign Panel" by the number of locations a sign or sign assembly has been reset.

754-226 RESET SIGN SUPPORT: The Engineer will measure the item "Reset Sign Support" by each leg of a sign support that has been reset.

754-P01 REMOVAL OF EXISTING SIGNS: All signs and supports removed from the project, which will not be reset, become the property of NDDOT. Deliver all signs and supports to the Killdeer Maintenance Yard. Any signs and supports deemed unusable by NDDOT become property of the Contractor.

All costs for removing and delivering signs are incidental to the price bid for "Mobilization".

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

766-P01 MAILBOXES: Existing mailboxes along the roadway will need to be temporarily relocated as work progresses. Existing mailbox assemblies that do not meet NCHRP 350 or MASH must be reset beyond the clear zone or replaced with an assembly that meets the requirements of Section 766 "Mailboxes" and Standard Drawing 766-01. Mailbox assemblies that meet NCHRP 350 or MASH requirements may be reset adjacent to the roadway.

Include the cost for temporarily relocating mailbox assemblies in the contract unit price for "Mailbox – All Types".

770-P01 PULL BOXES: Cleary mark the cover as "Lighting", as required. Duct seal all conduits entering and exiting pull boxes.

770-P02 LUMINAIRES: The light emitting diode fixtures are internal ballast-constant wattage, 120x240 voltage, operated on 240 volts.

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ENVIRONMENTAL COMMITMENTS

ENVIRONMENTAL COMMITMENTS: The North Dakota Department of Transportation has made several environmental commitments to secure approval of this project. The environmental commitments are as follows:

EC-1: Unavoidable impacts to wetlands will be mitigated onsite, adjacent to the project, or at a NDDOT approved mitigation site or bank.

ACTION REQUIRED /TAKEN: 1.00 acres of permanent impacts to jurisdictional waters and 0.37 acres of permanent impacts to *natural/non-jurisdictional* basin wetlands will require mitigation. The NDDOT proposes to mitigate 1.64 acres onsite and 0.37 acres at FHWA EO 11990 Mitigation Bank Vollrath 16/17 in the Red River Regional Service Area (see map in the Design Manual Reference and Forms). 1.37 acres of wetland creation (1:1 creation adjacent and 2:1 creation non-adjacent) and 1.37 acres of 50 ft. buffer (5:1) would be created, for a total mitigation area of 2.74 acres. Temporary wetland impacts will be restored to preconstruction contours.

Wetland Impact Table

Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size Ac.	Wetland Feature	USACE Jurisdictional Wetlands*	Wetland Impacts (acres)		USFWS Easement Impacts		Wetland Mitigation				
											Mitigation Required			Location; Acreage; Wetland#; Ratio	Onsite Mitigation Acres
							Temp. Ac.	Perm. Ac.	Temp.	Perm.	State Funded WL	USACE	USFWS		
#01	Sec. 27, T145N, R95W	PEMAx	Ditch	0.09	Artificial	N	0.00	0.00	NA	NA	N	N	NA	none	
#02a	Sec. 20 & 29, T145N, R95W	PEMC	Linear	0.38	Natural	Y	0.00	0.00	NA	NA	N	N	NA	none	
#02b	Sec. 20 & 29, T145N, R95W	PEMC	Linear	0.26	Natural	Y	0.00	0.00	NA	NA	N	N	NA	none	
#03	Sec. 20 & 21, T145N, R95W	PEMC	Basin	2.37	Natural	Y	0.67	0.36	NA	NA	N	Y	NA	Onsite 0.36 at WL3 (1:1)	1.64
#04	Sec. 21, T145N, R95W	PEMC	Basin	0.26	Natural	Y	0.00	0.00	NA	NA	N	N	NA	none	
#05	Sec. 21, T145N, R95W	PEMC	Basin	0.14	Natural	Y	0.00	0.00	NA	NA	N	N	NA	none	
#06	Sec. 21, T145N, R95W	PEMC	Basin	0.06	Natural	Y	0.00	0.00	NA	NA	N	N	NA	none	
#07	Sec. 20 & 21, T145N, R95W	PEMC	Linear	1.18	Natural	Y	0.07	0.19	NA	NA	N	Y	NA	Offsite 0.19 at WL3 (2:1)	
#08	Sec. 21, T145N, R95W	PUBFh	Basin	0.20	Artificial	N	0.00	0.00	NA	NA	N	N	NA	none	
#09	Sec. 17, T145N, R95W	PEMA	Slope	0.55	Natural	N	0.12	0.01	NA	NA	N	N	NA	none	
#10a	Sec. 8, 9, 17 & 18, T145N, R95W	PEMA	Slope	1.82	Natural	Y	0.05	0.17	NA	NA	N	Y	NA	Offsite 0.17 at WL3 (2:1)	
#10b	Sec. 9, T145N, R95W	PEMA	Slope	0.22	Natural	Y	0.00	0.00	NA	NA	N	N	NA	none	
#11	Sec. 8, T145N, R95W	PUBFh	Basin	0.6	Artificial	N	0.04	0.52	NA	NA	N	N	NA	none	
#12a	Sec. 9, T145N, R95W	PEMC	Linear	1.15	Natural	Y	0.00	0.00	NA	NA	N	N	NA	none	

ENVIRONMENTAL COMMITMENTS

Wetland Impact Table

Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size Ac.	Wetland Feature	USACE Jurisdictional Wetlands*	Wetland Impacts (acres)		USFWS Easement Impacts		Wetland Mitigation				
											Mitigation Required			Location; Acreage; Wetland#; Ratio	Onsite Mitigation Acres
							Temp. Ac.	Perm. Ac.	Temp.	Perm.	State Funded WL	USACE	USFWS		
#12b	Sec. 8, T145N, R95W	PEMC	Linear	0.52	Natural	Y	0.02	0.15	NA	NA	N	Y	N	Offsite 0.15 at WL3 (2:1)	
#13	Sec. 9, T145N, R95W	PEMAf	Basin	0.37	Natural	N	0.00	0.37	NA	NA	Y	N	NA	Offsite 0.37 @ Vollrath 16/17 mitigation bank	
#14	Sec. 4, T145N, R95W	PEMC	Basin	0.13	Natural	Y	0.03	0.07	NA	NA	N	N	NA	none	
#15	Sec. 4, T145N, R95W	PEMC	Basin	0.04	Natural	Y	0.01	0.01	NA	NA	N	N	NA	none	
#16	Sec. 4, T145N, R95W	PEMC	Linear	0.62	Natural	Y	0.03	0.13	NA	NA	N	Y	NA	Offsite 0.13 at WL3 (2:1)	
#17	Sec. 4, T145N, R95W	PEMC	Linear	0.55	Natural	Y	0.04	0.05	NA	NA	N	N	NA	none	
#18a	Sec. 4, T145N, R95W	PEMAx	Ditch	0.2	Artificial	N	0.00	0.20	NA	NA	N	N	NA	none	
#18b	Sec. 4, T145N, R95W	PEMAx	Ditch	0.03	Artificial	N	0.00	0.03	NA	NA	N	N	NA	none	
			Totals	**11.74**			**1.08**	**2.26**	**0.00**	**0.00**					**1.64**

* A Jurisdictional Determination from the U.S. Army Corps of Engineers was received October 16, 2014 (NWO-2013-0135-BIS).

Summary Impact Table

Total Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD	1.13	Temporary JD	0.92
Natural/Non-JD	0.38	Non-JD Temporary	0.16
Artificial/JD	0	Permanent JD > 0.10	1.00
Artificial /Non-JD	0.75	Permanent OW	0.00 ac / 0 ft.
Total	**2.26**	Temporary OW	0.00 ac. / 0 ft.

Compensation Requirements by Agency and Water Type

Water Type	USACE Mitigation	EO 11990 Mitigation
Natural/JD Wetland	> 0.1 acre	All
Natural/Non-JD Wetland	No mitigation required	All
Artificial/JD Wetland	> 0.1 acre	No mitigation required
Artificial/Non-JD Wetland	No mitigation required	No mitigation required
Deep Water (> than 6.6 feet)	No mitigation required	No mitigation required
Other Water	> 300 linear feet	No mitigation required
Preamble	No mitigation required	No mitigation required

ENVIRONMENTAL COMMITMENTS

EC-2: The contractor shall provide, place, maintain, and remove safety fence as directed by North Dakota Department of Transportation representatives. See plan note 107-P01 Avoidance Areas.

ACTION TAKEN/REQUIRED: During construction, the highway side of avoidance area sites 32DU1974, 32DU1945, 32DU1940 and 32DU41 will be fenced to insure there are no unanticipated impacts to the sites. The contractor shall provide, place, maintain, and remove safety fence as directed by North Dakota Department of Transportation representatives. See plan note 107-P01 Avoidance Areas.

If buried cultural sites are found during construction, project construction activities would be immediately halted and the ND SHPO would be notified immediately (within 48 hours of the discovery in accordance with 23 CFR Section 800.13(b)) so that an appropriate course of action can be determined.

EC-3: The project is located within the migration corridor of the endangered whopping 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 1st to October 31st.

ACTION TAKEN/REQUIRED: The contractor will notify the project engineer immediately in the event whooping cranes are identified within one mile of the project area. If detected, the project engineer will establish an avoidance area and immediately notify and coordinate with NDDOT, FHWA, and USFWS. The contractor will not resume work within the avoidance area until the project engineer has confirmed the birds have left the area. In addition, if above ground utility lines are moved, installed or raised as a result of this project, line markers (bird diverters) will be added at a ratio of 1:1 per linear foot to the relocated, installed, or raised utility lines. Refer to the Utility Conflict Plans regarding bird diverter information, and Relocation Utility Agreement.

EC-4: Potential Dakota skipper habitat is located in the Project Area.

ACTION TAKEN/REQUIRED: A native seed mix indicated by plan note 251-P01 will be utilized to restore disturbed areas within Dakota skipper habitat. The use of pesticides within the Dakota skipper habitat is prohibited.

EC-5: The Contractor shall prevent the introduction of Aquatic Nuisance Species (ANS) into North Dakota waters, or transport of aquatic vegetation to or from any waters of the state, or transport of any aquatic vegetation into the state.

ACTION TAKEN/REQUIRED: The contractor shall 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). Contractor shall 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. The NDGFD ANS Coordinator, Fred Ryckman, shall be contacted by phone (701.770.0920) or e-mail fryckman@nd.gov for equipment inspections, or any additional information regarding ANS prevention protocol.

NOTIFICATIONS TO BE FILED BY CONTRACTOR:

- North Dakota Department of Health SFN 17987 Asbestos Notification of Demolition and Renovation for bridges and boxes.
- Federal Aviation Administration Notice of Proposed Construction or Alteration Form 7460-1 (online at http://oeaaa.faa.gov)

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	8	1

Spec - Code	Item Description	Units	Qty
103 - 0100	CONTRACT BOND	L SUM	1
201 - 0330	CLEARING & GRUBBING	L SUM	1
202 - 0120	REMOVE AGGREGATE BASE & SURFACING	L SUM	1
202 - 0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	672
202 - 0312	REMOVE EXISTING FENCE	LF	16365
202 - 0350	REMOVAL OF TEMPORARY BYPASS	EA	3
203 - 0101	COMMON EXCAVATION-TYPE A	CY	293654
203 - 0109	TOPSOIL	CY	69189
203 - 0121	TOPSOIL - WETLAND	CY	2299
203 - 0138	COMMON EXCAVATION-SUBCUT	CY	2322
203 - 0140	BORROW - EXCAVATION	CY	91433
210 - 0050	BOX CULVERT EXCAVATION	EA	2
210 - 0210	FOUNDATION FILL	CY	714
210 - 0405	FOUNDATION PREPARATION - BOX CULVERT	EA	2
216 - 0100	WATER	M GAL	5650
230 - 0320	SUBGRADE PREPARATION - TYPE C - 12IN	STA	37.9
251 - 0200	SEEDING CLASS II	ACRE	83.6
251 - 0300	SEEDING CLASS III	ACRE	2.2
251 - 1000	WETLAND SEED	ACRE	2.44
251 - 2000	TEMPORARY COVER CROP	ACRE	85.8
253 - 0101	STRAW MULCH	ACRE	171.6
255 - 0103	ECB TYPE 3	SY	8679
256 - 0200	RIPRAP GRADE II	CY	181
260 - 0100	SILT FENCE UNSUPPORTED	LF	3059
260 - 0101	REMOVE SILT FENCE UNSUPPORTED	LF	3059
261 - 0112	FIBER ROLLS 12IN	LF	20680
261 - 0113	REMOVAL FIBER ROLLS 12IN	LF	10340
261 - 0120	FIBER ROLLS 20IN	LF	21648
261 - 0121	REMOVE FIBER ROLLS 20IN	LF	11382
302 - 0120	AGGREGATE BASE COURSE CL 5	TON	83701
302 - 0356	AGGREGATE SURFACE COURSE CL 13	TON	3504
550 - 0305	9IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	137833
550 - 0330	NON-REINF CONCRETE PVMT CL AE-DOWLED-COLORED	SY	1016
602 - 1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	798.2
612 - 0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	113842
702 - 0100	MOBILIZATION	L SUM	1
704 - 0100	FLAGGING	MHR	975
704 - 1000	TRAFFIC CONTROL SIGNS	UNIT	2651
704 - 1052	TYPE III BARRICADE	EA	42
704 - 1060	DELINEATOR DRUMS	EA	195
704 - 1067	TUBULAR MARKERS	EA	189
704 - 1080	STACKABLE VERTICAL PANELS	EA	374
706 - 0400	FIELD OFFICE	EA	1
706 - 0500	AGGREGATE LABORATORY	EA	1
706 - 0600	CONTRACTOR'S LABORATORY	EA	1
708 - 1200	SMALL ROCK COVER	TON	500
708 - 1540	INLET PROTECTION - SPECIAL	EA	26
708 - 1541	REMOVE INLET PROTECTION - SPECIAL	EA	26
709 - 0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	20509
709 - 0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	3118

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Quantities

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	8	2

Spec - Code	Item Description	Units	Qty
714 - 4101	PIPE CONDUIT 18IN - STORM DRAIN	LF	883
714 - 4106	PIPE CONDUIT 24IN - APPROACH	LF	760
714 - 4110	PIPE CONDUIT 30IN	LF	1,470
714-4113	PIPE CONDUIT 30IN-APPROACH	LF	52
714 - 4115	PIPE CONDUIT 36IN	LF	674
714 - 4122	PIPE CONDUIT 42IN - APPROACH	LF	68
714 - 4140	PIPE CONDUIT 66IN	LF	908
714 - 4218	PIPE CONDUIT ARCH 29IN X 18IN	LF	238
714 - 9200	CATTLE PASS CONC INTERMED SECTION	LF	130
714 - 9350	END SECTION CONC CATTLE PASS	EA	2
720 - 0110	RIGHT OF WAY MARKERS	EA	102
720 - 0115	RESET RIGHT OF WAY MARKERS	EA	12
720 - 0125	ALIGNMENT MONUMENTS	EA	214
720 - 0130	IRON PIN R/W MONUMENTS	EA	76
720 - 0135	IRON PIN REFERENCE MONUMENTS	EA	33
722 - 0107	MANHOLE 54IN	EA	1
722 - 3510	INLET - TYPE 2	EA	20
722 - 3520	INLET - TYPE 2 DOUBLE	EA	5
722 - 3701	INLET SPECIAL - TYPE 2 48IN	EA	1
748 - 0120	CURB & GUTTER MOUNTABLE - TYPE 1	LF	993
748 - 0140	CURB & GUTTER - TYPE 1	LF	9,172
750 - 0140	SIDEWALK CONCRETE 6IN	SY	270
750 - 0200	CONCRETE MEDIAN PAVING	SY	1,933
752 - 0320	FENCE BARBED WIRE 4 STRAND-STEEL POST	LF	24,582
752 - 0400	FENCE BARBED WIRE 5 STRAND	LF	2,751
752 - 0660	FENCE CHAIN LINK REMOVE & RESET	LF	98
752 - 0900	FENCE TEMPORARY INSTALL & REMOVE	LF	3,762
752 - 0911	TEMPORARY SAFETY FENCE	LF	244
752 - 2100	VEHICLE GATE	EA	7
752 - 3150	CORNER ASSEMBLY BARBED WIRE-WOOD POST	EA	53
752 - 4140	DOUBLE BRACE ASSEMBLY BARBED WIRE- WOOD POST	EA	18
754 - 0110	FLAT SHEET FOR SIGNS - TYPE XI REFL SHEETING	SF	389
754 - 0112	FLAT SHEET FOR SIGNS - TYPE IV REFL SHEETING	SF	469
754 - 0168	DELINEATORS - TYPE D	EA	55
754 - 0206	STEEL GALV POSTS - TELESCOPING PERFORATED TUBE	LF	1,660
754 - 0563	REFERENCE MARKER - TYPE C	EA	9
754 - 0592	RESET SIGN PANEL	EA	14
754 - 0593	RESET SIGN SUPPORT	EA	1
754 - 0805	OBJECT MARKERS - CULVERTS	EA	87
762 - 0103	PVMT MK PAINTED - MESSAGE	SF	47
762 - 0122	PREFORMED PATTERNED PVMT MK-MESSAGE (GROOVED)	SF	824
762 - 1104	PVMT MK PAINTED 4IN LINE	LF	3,937
762 - 1108	PVMT MK PAINTED 8IN LINE	LF	300
762 - 1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	111,222
762 - 1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	6,903
762 - 1315	PREFORMED PATTERNED PVMT MK 12IN LINE-GROOVED	LF	618
762 - 1500	OBLITERATION OF PVMT MK	SF	1,279
766 - 0100	MAILBOX-ALL TYPES	EA	1
770 - 0001	LIGHTING SYSTEM	EA	2
900 - 1000	TEMPORARY STREAM DIVERSION	EA	4
980 - 0170	CATTLE GUARD RESET	EA	1

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Quantities

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	10	1

Basis of Estimate - Mainline

		1017+37 to 1023+19 1032+64 to 1049+84 1059+65 to 1065+01 1074+82 to 1093+80 1104+29 to 1109+66 1120+74 to 1185+00 1203+66 to 1206+11 Length (Sta.) 119.44 3-Lane with Center Lane				1026+04 to 1029+79 1052+69 to 1056+80 1067+86 to 1071+97 1096+65 to 1101+44 1112+51 to 1117+89 Length (Sta.) 22.14 3-Lane on a 4% Superelevation				1189+33 to 1199+33 Length (Sta.) 10.00 3-Lane with 6% Superelevation				1015+50 to 1016+37 Length (Sta.) 0.87 3-Lane with 3% Superelevation				1016+37 to 1017+37 1023+19 to 1026+04 1029+79 to 1032+64 1049+84 to 1052+69 1056+80 to 1059+65 1065+01 to 1067+86 Length (Sta.) 15.25 Superelevation Transition				1071+97 to 1074+82 1093+80 to 1096+65 1101+44 to 1104+29 1109+66 to 1112+51 1117+89 to 1120+74 1185+00 to 1189+33 1199+33 to 1203+66 Length (Sta.) 22.91 Superelevation Transition				
Material	Unit	Width (ft)	Area (sf)	Quantity per Station	Total	Width (ft)	Area (sf)	Quantity per Station	Total	Width (ft)	Area (sf)	Quantity per Station	Total	Width (ft)	Area (sf)	Quantity per Station	Total	Width (ft)	Area (sf)	Quantity per Station	Total	Width (ft)	Area (sf)	Quantity per Station	Total	Mainline Total
Aggregate Base Course CL 5 @ 1.875 Ton/CY	Ton		41.90	290.97	34753.72		41.90	290.97	6442.13		41.90	290.97	2909.72		41.80	290.28	252.54		41.90	290.97	4437.33		41.90	290.97	6666.17	55462
9IN Non-Reinf Concrete Pvmt CL AE-Doweled	SY	56.00		622.22	74318.22	56.00		622.22	13776.00	56.00		622.22	6222.22	56.00		622.22	541.33	56.00		622.22	9488.89	56.00		622.22	14255.11	118602

Basis of Estimate - Approaches

	Approach Radius Return				Tie-In to Ex. Gravel Roadway			
	Aggregate Base Course CL 5 @1.875 Ton/CY		9IN Non-Reinf Concrete Pvmt CL AE-Doweled		Aggregate Base Course CL 5 @1.875 Ton/CY		Aggregate Surface Course CL 13 @ 1.875 Ton/CY	
Approach	Area (SF)	Total (TON)	Area (SF)	Total (SY)	Area (SF)	Total (TON)	Area (SF)	Total (TON)
Sta 1006+66 - Lt					5292	368		
Sta 1024+00 - Lt	2303	107	1887	210			38974	2707
Sta 1024+00 - Rt	2303	107	1887	210			11476	797
Sta 1045+24 - Lt	2353	109	1933	215	2351	163		
Sta 1045+24 - Rt	2353	109	1933	215	3639	253		
Sta 1063+00 - Lt	2303	107	1887	210	5168	359		
Sta 1063+00 - Rt	2303	107	1887	210	4829	335		
Sta 1132+00 - Lt	2303	107	1887	210	4148	288		
Sta 1132+00 - Rt	2303	107	1887	210	6764	470		
Sta 1168+88 - Lt	2303	107	1887	210	2788	194		
Sta 1168+88 - Rt	2303	107	1887	210	3370	234		
Sta 1183+00 - Lt	2303	107	1887	210	3128	217		
Sta 1183+00 - Rt	2303	107	1887	210	3128	217		
Sta 1197+00 - Lt	2230	103	1826	203	4518	314		
Sta 1197+00 - Rt	2382	110	1954	217	2416	168		
Sta 2260+00 - Lt	966	67			1366	95		
Sta 2260+00 - Rt	966	67			1210	84		
Total		1635		2950		3759		3504

Object Markers

Station	Quantity EA	Station	Quantity EA
1006+20 to 1007+44 Rt	4	1131+71 to 1132+27-Lt	2
1006+34 to 1007+01 Lt	2	1147+99-CL	2
1008+95-CL	4	1153+75-CL	4
1007+36-49' Lt	1	1168+58 to 1169+16-Lt	2
1007+63-41' Rt	1	1177+03-CL	2
4920+80-54' Rt	1	1186+81-CL	2
4920+71-42' Lt	1	1192+27-CL	2
4927+30-48' Rt	1	1199+50-CL	2
4927+28-48' Lt	1	1200+39-CL	4
1011+85-52' Rt	1	1201+00-CL	2
1013+50-CL	2	1206+00-CL	4
1013+85-43' Rt	1	1206+86-Rt	1
1014+68-43' Lt	1	1206+93-Lt	1
1035+25-CL	2	2259+75 to 2260+28-Lt	2
1043+75-CL	4	2259+84 to 2260+16-Rt	2
1044+84 to 1045+53-Lt	2	2265+75-Lt	1
1044+90 to 1045+55-Rt	2	2266+38-Rt	1
1062+67 to 1063+25-Lt	4	2267+62-Rt	1
1085+14-CL	2	2269+90-Lt	1
1115+55-CL	4	2270+97-Rt	1
1121+70-CL	2	2271+20-Lt	1
1124+47-CL	2	2273+20-Lt	1
1131+69 to 1132+33-Rt	2	2273+44-Rt	1
		Total	89

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Basis of Estimate

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	10	2

Basis of Estimate - HWY 200 Roundabout

Material	Unit	Driving Lane		Truck Apron		Transition from Splitter Islands to Driving Lane		Splitter Islands								Subtotal
								West Leg		South Leg		East Leg		North Leg		
		Area (sf)	Total	Area (sf)	Total	Area (sf)	Total	Area (sf)	Total	Area (sf)	Total	Area (sf)	Total	Area (sf)	Total	
Aggregate Base Course CL 5 @ 1.875 Ton/CY (8" Depth)	Ton	14.78	573.41	12.75	391.27	7108.03	329.08	22116.36	1023.91	21721.50	1005.63	22577.76	1045.27	21380.28	989.83	5358
Aggregate Base Course CL 5 @ 1.875 Ton/CY (4" Depth)	Ton							2848.10	65.93	1550.44	35.89	2801.06	64.84	3877.12	89.75	256
9IN Non-Reinf Concrete Pvmt CL AE-Doweled	SY	11309.73	1256.64			5272.38	585.82	17113.08	1901.45	18838.07	2093.12	17474.10	1941.57	16673.99	1852.67	9631
Non-Reinf. Concrete Pvmt CL-AE-Doweled-Colored	SY			4576.00	508.44											508
Sidewalk Concrete 6IN	SY			1213.00	134.78											135
Concrete Median Paving	SY							3591.80	399.09	1922.10	213.57	3548.10	394.23	3254.98	361.66	1369
Curb & Gutter Mountable - Type 1	LF		496													496
Curb & Gutter - Type 1	LF				417		381		1547		696		1537		1578	6156
Small Rock Cover @ 1.633 Ton/CY	Ton			12401.80	250.03											250
Geosynthetic Material Type RR	SY			12401.80	1377.98											1378

Basis of Estimate - HWY 22 Roundabout

Material	Unit	Driving Lane		Truck Apron		Transition from Splitter Islands to Driving Lane		Splitter Islands						Subtotal
								NorthWest Leg		SouthWest Leg		SouthEast Leg		
		Area (sf)	Total	Area (sf)	Total	Area (sf)	Total	Area (sf)	Total	Area (sf)	Total	Area (sf)	Total	
Aggregate Base Course CL 5 @ 1.875 Ton/CY (8" Depth)	Ton	14.78	573.41	12.75	391.27	5431.44	251.46	20719.77	959.25	18596.70	860.96	19234.57	890.49	3927
Aggregate Base Course CL 5 @ 1.875 Ton/CY (4" Depth)	Ton							2615.39	60.54	2915.29	67.48	2517.66	58.28	186
9IN Non-Reinf Concrete Pvmt CL AE-Doweled	SY	11309.73	1256.64			3586.85	398.54	16052.60	1783.62	14160.87	1573.43	14737.64	1637.52	6650
Non-Reinf. Concrete Pvmt. CL AE-Doweled-Colored	SY			4576.00	508.44									508
Sidewalk Concrete 6IN	SY			1213.00	134.78									135
Concrete Median Paving	SY							3349.40	372.16	3657.60	406.40	3261.86	362.43	1141
Curb & Gutter Mountable - Type 1	LF		497											497
Curb & Gutter - Type 1	LF		140		417		307		1442		1528		1456	5290
Small Rock Cover @ 1.633 Ton/CY	Ton			12401.80	250.03									250
Geosynthetic Material Type RR	SY			12401.80	1377.98									1378

Aggregate Summary

Location	Aggregate Base Course CL 5 TON	Aggregate Surface Course CL 13 TON
Mainline	55462	
Approaches	5394	3504
ND 200 Roundabout	5614	
ND 22 Roundabout	4113	
Temporary Bypass	8764	
Subcut - Backfill	4354	
Total	83701	3504

9" Non-Reinf Concrete Pvmt CL AE-Doweled

Location	SY
Mainline	118602
Approaches	2950
ND 200 Roundabout	9631
ND 22 Roundabout	6650
Total	137833

Water

25 Mgal/Mile for Dust Pallative

20 Gal/Ton for Aggregates

10 Gal/CY for Embankment

Mailboxes - All Types and Sizes

Station	Offset
1010+85	10' R

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Basis of Estimate

ND Hwy 22

Killdeer Bypass

ND HWY 22 (Killdeer Bypass) Earthwork and Topsoil Summary						
	Earthwork			Topsoil		
Spec and Code	203-0101		203-0140	203-0109	203-0121	
Earthwork Location	Common Excavation-Type A	Fill*	Borrow Excavation	Topsoil	Topsoil - Wetland	Topsoil Proposed
	(CY)	(CY)	(CY)	(CY)	(CY)	(CY)
ND HWY 22 (Killdeer Bypass)	285242	369079	-83837	65333	2138	63374
ND BUSINESS HWY 22	3060	7797	-4737	2190	161	2822
ND HWY 200	5352	8211	-2859	1745		2993
TOTALS	293654	385087	-91433	69268	2299	69189

*Volumes shown have been adjusted to account for 30% shrinkage

Subgrade Preparation-Type C-12IN		
Station	to Station	Quantity
1005+70	1006+50	0.80 Sta
1009+85	1010+15	0.30 Sta
1012+70	1015+20	2.50 Sta
1045+65	1046+30	0.65 Sta
1047+85	1051+85	4.00 Sta
1054+00	1054+70	0.70 Sta
1070+10	1071+80	1.70 Sta
1091+50	1092+30	0.80 Sta
1102+60	1103+60	1.00 Sta
1126+40	1127+70	1.30 Sta
1130+35	1131+10	0.75 Sta
1156+70	1157+70	1.00 Sta
1160+20	1164+20	4.00 Sta
1167+90	1168+20	0.30 Sta
4918+34	4923+20	4.90 Sta
4925+55	4930+09	4.54 Sta
2263+44	2267+80	4.36 Sta
2270+20	2274+46	4.26 Sta
	Total	37.9 Sta

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Data Tables

Earthwork Values

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	11	2

ND HWY 22 (Killdeer Bypass)

Station	Area (SF)		Volume (CY)						
	End Area Excavation	End Area Embankment	Excavation	Excavation (Other)	Embankment	Embankment (Other)	Topsoil Strip	Topsoil Fill	Mass Ordinate
1006+00.00	4	13	0		0				0
1007+00.00	16	176	38	99	454	235	69	118	-552
1008+00.00	9	442	46		1487		142	202	-1993
1009+00.00	126	984	250		3434		373	321	-5177
1010+00.00	0	0	0		0	8948			-14125
1011+00.00	121	773	9		85		11	8	-14201
1012+00.00	104	233	416		2422		378	350	-16207
1013+00.00	144	205	458		1056		259	333	-16805
1014+00.00	251	158	731	1858	874		179	340	-15090
1015+00.00	202	256	839		995		346	334	-15246
1016+00.00	129	253	613		1225		551	307	-15858
1017+00.00	191	240	592		1187		495	294	-16453
1018+00.00	257	282	828		1255		489	300	-16880
1019+00.00	230	363	901		1552		495	317	-17531
1020+00.00	181	401	761		1840		511	344	-18610
1021+00.00	148	439	609		2023		529	380	-20024
1022+00.00	110	448	477		2135		546	417	-21682
1023+00.00	73	462	339		2190		563	458	-23533
1024+00.00	9	634	152	5033	2638	12411	546	459	-33397
1025+00.00	20	495	53		2718		489	445	-36062
1026+00.00	32	441	96		2253		448	473	-38219
1027+00.00	19	568	96		2427		448	506	-40550
1028+00.00	44	461	117		2476		466	533	-42909
1029+00.00	95	371	259		2002		481	555	-44652
1030+00.00	114	379	387		1804		489	569	-46069
1031+00.00	81	317	361		1675		489	569	-47383
1032+00.00	20	395	188		1713		482	558	-48908
1033+00.00	20	319	75		1718		374	396	-50551
1034+00.00	27	317	87		1529		272	242	-51993
1035+00.00	0	448	50	5285	1839	67	234	184	-48564
1036+00.00	0	369	1		1966		191	121	-50529
1037+00.00	41	302	77		1617		128	158	-52069
1038+00.00	15	414	104		1725		155	199	-53690
1039+00.00	24	413	72		1992		244	201	-55610
1040+00.00	24	397	88		1950		245	202	-57472
1041+00.00	7	439	58		2012		244	200	-59426
1042+00.00	13	430	37		2092		249	207	-61481
1043+00.00	8	437	38		2086		258	221	-63529
1044+00.00	5	1006	23		3473		294	276	-66979
1045+00.00	220	356	415	125	3280	295	404	404	-70014
1046+00.00	760	1	1813		860		436	452	-69061
1047+00.00	1268	0	3755		2		381	406	-65308
1048+00.00	953	0	4114		0		372	393	-61194
1049+00.00	559	3	2800		7		367	385	-58401
1050+00.00	670	0	2275		7		356	366	-56133
1051+00.00	561	0	2279		0		343	348	-53854
1052+00.00	917	0	2737		0		345	353	-51117
1053+00.00	1677	0	4804		0		381	406	-46313
1054+00.00	975	0	4911		0		400	435	-41402
1055+00.00	139	147	2063		354		349	357	-39693
1056+00.00	8	343	271		1181		265	231	-40603
1057+00.00	3	390	21		1766		230	180	-42348
1058+00.00	3	396	11		1893		234	185	-44230

ND HWY 22 (Killdeer Bypass)

Station	Area (SF)		Volume (CY)						
	End Area Excavation	End Area Embankment	Excavation	Excavation (Other)	Embankment	Embankment (Other)	Topsoil Strip	Topsoil Fill	Mass Ordinate
1059+00.00	17	359	37		1817		234	186	-46010
1060+00.00	21	374	71		1764		236	188	-47703
1061+00.00	43	298	119		1618		237	191	-49202
1062+00.00	46	266	164		1359		237	190	-50397
1063+00.00	61	326	198	169	1426	1481	449	231	-52937
1064+00.00	116	210	328		1289		477	273	-53898
1065+00.00	121	147	439		858		291	271	-54317
1066+00.00	72	182	357		792		264	231	-54752
1067+00.00	88	220	294		969		245	202	-55427
1068+00.00	129	247	401		1124		257	220	-56150
1069+00.00	162	175	540		1015		262	227	-56625
1070+00.00	216	125	699		722		257	220	-56648
1071+00.00	692	0	1680		300		293	274	-55268
1072+00.00	229	155	1706		372		298	282	-53934
1073+00.00	184	186	765		819		261	226	-53988
1074+00.00	196	189	704		903		261	226	-54187
1075+00.00	162	207	664		955		259	223	-54478
1076+00.00	86	260	460		1124		250	210	-55142
1077+00.00	4	426	167		1650		242	198	-56625
1078+00.00	23	452	49		2113		243	199	-58689
1079+00.00	33	540	103		2388		259	224	-60974
1080+00.00	59	559	171		2646		278	251	-63449
1081+00.00	42	543	188		2652		281	256	-65913
1082+00.00	84	420	234		2319		279	252	-67998
1083+00.00	122	403	381		1982		282	258	-69599
1084+00.00	14	604	252		2424		286	264	-71771
1085+00.00	23	781	68		3333		291	272	-75036
1086+00.00	108	528	241		3151		291	271	-77946
1087+00.00	113	467	409		2395		289	268	-79932
1088+00.00	113	396	418		2076		284	261	-81590
1089+00.00	152	328	489		1743		279	253	-82844
1090+00.00	179	226	612		1334		296	279	-83566
1091+00.00	333	106	947		799		324	321	-83418
1092+00.00	832	0	2157		256		357	368	-81517
1093+00.00	1898	0	5054		0		413	451	-76463
1094+00.00	2905	0	8894		0		471	541	-67569
1095+00.00	3690	0	12214		0		498	581	-55355
1096+00.00	2987	0	12366		0		483	569	-42989
1097+00.00	2923	0	10945		0		467	545	-32044
1098+00.00	3307	0	11537		0		469	548	-20507
1099+00.00	3181	0	12015		0		469	549	-8492
1100+00.00	3013	0	11470		0		477	560	2978
1101+00.00	2382	0	9991		0		474	555	12969
1102+00.00	1448	0	7092		0		425	482	20061
1103+00.00	484	0	3578		0		351	371	23639
1104+00.00	84	165	1052		397		297	289	24294
1105+00.00	18	295	188		1107		273	255	23375
1106+00.00	0	428	33		1742		231	192	21666
1107+00.00	0	427	1		2058		194	136	19609
1108+00.00	0	447	1		2103		194	135	17507
1109+00.00	6	574	11		2459		221	176	15059
1110+00.00	23	447	54		2458		250	220	12655
1111+00.00	21	267	83		1718		236	198	11020

*EXCAVATION OTHER AND FILL (OTHER) REPRESENT VOLUME ADJUSTMENTS FOR THE FOLLOWING ITEMS:

APPROACH CONSTRUCTION
DRAINAGE DITCH EXCAVATION
WETLAND CREATION EXCAVATION

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Data Tables

Earthwork Values

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	11	3

ND HWY 22 (Killdeer Bypass)

Station	Area (SF)		Volume (CY)						
	End Area Excavation	End Area Embankment	Excavation	Excavation (Other)	Embankment	Embankment (Other)	Topsoil Strip	Topsoil Fill	Mass Ordinate
1112+00.00	41	227	116		1188		225	183	9948
1113+00.00	27	288	127		1238		232	193	8837
1114+00.00	17	419	82		1702		244	211	7217
1115+00.00	0	1748	32		5218		286	273	2031
1116+00.00	11	739	21		5988		316	319	-3936
1117+00.00	14	469	46		2908		295	287	-6798
1118+00.00	85	489	182		2306		282	267	-8922
1119+00.00	67	391	282		2117		283	270	-10757
1120+00.00	61	341	237		1761		268	246	-12281
1121+00.00	18	433	145		1863		255	226	-13999
1122+00.00	24	468	77		2168		255	227	-16090
1123+00.00	77	230	188		1679		250	221	-17581
1124+00.00	491	485	1053		1719		328	336	-18247
1125+00.00	582	788	1987		3062		434	496	-19322
1126+00.00	462	140	1932		2232		419	471	-19622
1127+00.00	704	0	2159		336		390	426	-17799
1128+00.00	1753	0	4551		0		426	481	-13248
1129+00.00	2904	0	8624		0		483	569	-4624
1130+00.00	1826	0	8758		0		478	561	4134
1131+00.00	411	31	4143		74		394	437	8203
1132+00.00	268	294	1258	963	782	712	568	401	8930
1133+00.00	82	278	648		1376		540	360	8202
1134+00.00	73	270	287		1318		289	279	7171
1135+00.00	74	253	272		1258		286	273	6185
1136+00.00	77	224	279		1149		282	267	5315
1137+00.00	93	193	315		1004		283	269	4626
1138+00.00	110	180	376		897		286	274	4105
1139+00.00	75	211	342		942		283	270	3505
1140+00.00	119	197	358		983		283	269	2880
1141+00.00	167	141	528		814		293	284	2594
1142+00.00	180	130	641		651		299	293	2584
1143+00.00	217	125	734		612		304	301	2706
1144+00.00	195	132	761		618		306	304	2849
1145+00.00	41	335	437		1125		292	283	2161
1146+00.00	25	463	122		1922		265	242	361
1147+00.00	19	515	81		2354		254	226	-1912
1148+00.00	10	900	54		3406		322	328	-5264
1149+00.00	21	582	57		3569		392	433	-8776
1150+00.00	61	318	151		2167		346	363	-10792
1151+00.00	36	350	180		1608		292	283	-12220
1152+00.00	96	284	245		1526		304	300	-13501
1153+00.00	13	517	201		1929		297	290	-15229
1154+00.00	29	588	76		2661		281	266	-17814
1155+00.00	16	501	83		2622		275	257	-20353
1156+00.00	175	188	354		1659		296	288	-21658
1157+00.00	511	1	1272		455		339	352	-20841
1158+00.00	1316	0	3384		2		378	410	-17459
1159+00.00	1669	0	5528		0		417	470	-11931
1160+00.00	1420	0	5720		0		433	494	-6211
1161+00.00	1142	0	4744		0		424	481	-1467
1162+00.00	1129	0	4205		0		407	455	2738
1163+00.00	937	0	3827		0		392	433	6565
1164+00.00	1079	0	3733		0		390	429	10298

ND HWY 22 (Killdeer Bypass)

Station	Area (SF)		Volume (CY)						
	End Area Excavation	End Area Embankment	Excavation	Excavation (Other)	Embankment	Embankment (Other)	Topsoil Strip	Topsoil Fill	Mass Ordinate
1165+00.00	1619	0	4995		0		402	447	15293
1166+00.00	1688	0	6123		0		409	459	21416
1167+00.00	1859	0	6568		0		413	464	27984
1168+00.00	806	0	4935		0		405	452	32919
1169+00.00	180	245	1826	397	590	777	196	415	33775
1170+00.00	128	260	571		1216		133	320	33130
1171+00.00	62	443	353		1692		267	245	31791
1172+00.00	43	447	195		2143		265	241	29843
1173+00.00	36	413	147		2070		257	230	27920
1174+00.00	18	475	100		2138		252	222	25882
1175+00.00	5	514	43		2381		251	221	23544
1176+00.00	12	517	31		2481		251	220	21094
1177+00.00	6	791	32		3148		289	278	17978
1178+00.00	8	559	26		3248		293	283	14756
1179+00.00	12	604	37		2800		260	235	11993
1180+00.00	7	558	34		2799		259	233	9228
1181+00.00	0	479	12		2498		228	186	6742
1182+00.00	11	336	20		1964		214	165	4798
1183+00.00	28	371	71	61	1704	887	409	260	2339
1184+00.00	0	331	51		1691		389	229	699
1185+00.00	0	470	1		1929		193	134	-1229
1186+00.00	0	708	1		2837		220	174	-4065
1187+00.00	0	947	1		3985		256	229	-8049
1188+00.00	0	619	1		3770		250	219	-11818
1189+00.00	0	539	1		2789		221	176	-14606
1190+00.00	0	499	1		2499		211	161	-17104
1191+00.00	5	464	10		2317		224	180	-19411
1192+00.00	9	645	26		2670		272	253	-22055
1193+00.00	23	433	60		2596		296	289	-24591
1194+00.00	24	416	88		2045		288	276	-26548
1195+00.00	62	362	159		1875		291	281	-28264
1196+00.00	39	373	187		1771		294	284	-29848
1197+00.00	34	605	135	73	2355	2387	461	341	-34382
1198+00.00	27	488	114		2630		466	349	-36898
1199+00.00	0	691	51		2838		269	247	-39685
1200+00.00	0	1265	1		4709		121	279	-44393
1201+00.00	10	1085	18		5658		182	374	-50033
1202+00.00	53	582	115		4014		344	364	-53932
1203+00.00	0	511	98		2632		272	252	-56466
1204+00.00	55	476	102		2378		271	251	-58742
1205+00.00	66	538	223		2443		342	358	-60962
1206+00.00	0	765	122		3138		295	314	-63978
1207+00.00	77	564	142		3201		298	331	-67037
1208+00.00	104	474	334		2500		351	390	-69203
1209+00.00	218	391	596		2083		349	389	-70690
1210+00.00	182	878	741		3055		266	430	-73004
1211+00.00	0	0	0		0	10833			-83837
TOTAL			271179	14063	330046	39033	65333	63374	

*EXCAVATION (OTHER) AND FILL (OTHER) REPRESENT VOLUME ADJUSTMENTS FOR THE FOLLOWING ITEMS:

APPROACH CONSTRUCTION
DRAINAGE DITCH EXCAVATION
WETLAND CREATION EXCAVATION

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Data Tables

Earthwork Values

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	11	4

ND HWY 22 BUSINESS									
Station	Area (SF)		Volume (CY)						
	End Area Excavation	End Area Embankment	Excavation	Excavation (Other)	Embankment	Embankment (Other)	Topsoil Strip	Topsoil Fill	Mass Ordinate
2260+00.00	0	0	0	57	0	849	0	0	-792
2263+50.00	41	17	0	0	0	0	0	0	-792
2264+00.00	80	64	111	0	98	0	88	128	-779
2265+00.00	134	63	395	0	306	0	231	327	-690
2266+00.00	145	42	515	0	253	0	230	331	-428
2267+00.00	81	117	417	0	384	0	237	338	-395
2267+77.00	110	837	271	0	1769	0	331	282	-1893
2269+77.00	129	880	13	0	124	0	16	12	-2004
2270+00.00	137	628	113	0	835	0	102	92	-2726
2271+00.00	55	132	356	0	1829	0	320	374	-4199
2272+00.00	66	141	225	0	656	0	239	350	-4630
2273+00.00	93	82	294	0	536	0	234	343	-4872
2273+77.00	113	3	293	0	158	0	162	245	-4737
TOTAL			3003	57	6948	849	2190	2822	

ND HWY 200								
Station	Area (SF)		Volume (CY)					
	End Area Excavation	End Area Embankment	Excavation	Excavation (Other)	Embankment	Topsoil Strip	Topsoil Fill	Mass Ordinate
4918+35.00	33	15	0	1229	0	0	0	1229
4919+00.00	189	35	267	0	78	91	120	1418
4920+00.00	149	82	624	0	283	227	309	1759
4921+00.00	164	66	579	0	356	177	308	1982
4922+00.00	182	93	640	0	382	192	334	2240
4923+00.00	111	588	543	0	1638	316	379	1145
4923+17.00	101	799	67	0	567	67	67	645
4925+17.00	130	889	13	0	122	9	12	536
4926+00.00	98	228	350	0	2233	129	316	-1347
4927+00.00	90	146	347	0	899	115	344	-1899
4928+00.00	68	134	292	0	673	117	319	-2280
4929+00.00	59	108	234	0	582	151	276	-2628
4930+00.00	28	44	159	0	365	144	196	-2834
4930+08.00	27	126	8	0	33	10	13	-2859
TOTAL			4123	1229	8211	1745	2993	

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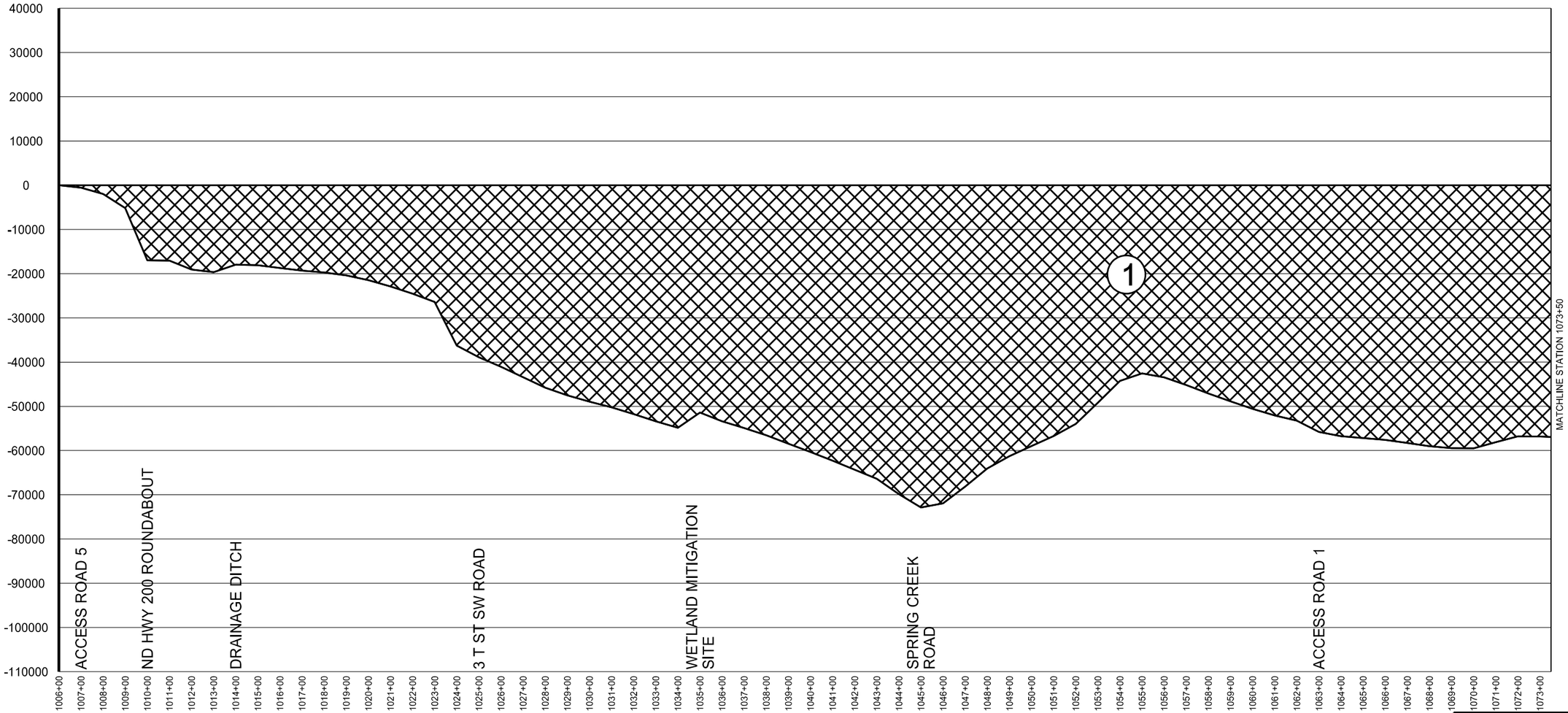
Data Tables

Earthwork Values

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	11	5



1	Excavation	= 161,404	CY
	Embankment	= 161,404	CY
	Topsoil	= 32,669	CY

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Earthwork Mass Diagram

Mass Haul Calculations

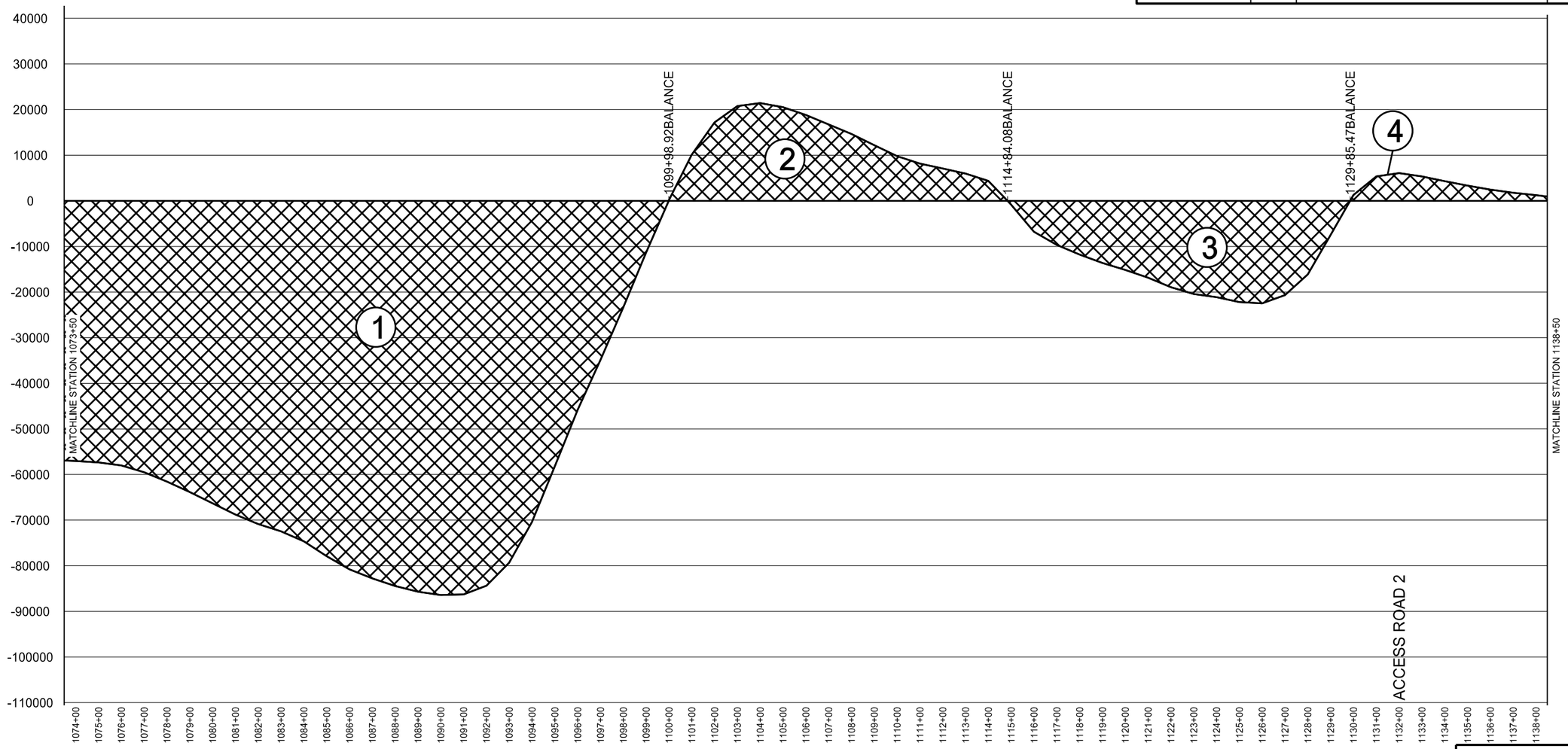
ND Hwy 22

Killdeer Bypass

Note:

-Mass Diagram includes roundabout, access road, drainage ditch, and wetland mitigation area earthwork quantities as labeled.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	11	6



① Excavation	= 161,404	CY	
Embankment	= 161,404	CY	
Topsoil	= 32,669	CY	

② Excavation	= 22,528	CY	
Embankment	= 22,528	CY	
Topsoil	= 4,324	CY	

③ Excavation	= 28,999	CY	
Embankment	= 28,999	CY	
Topsoil	= 4,970	CY	

④ Excavation	= 10,516	CY	
Embankment	= 10,516	CY	
Topsoil	= 3,972	CY	

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Earthwork Mass Diagram

Mass Haul Calculations

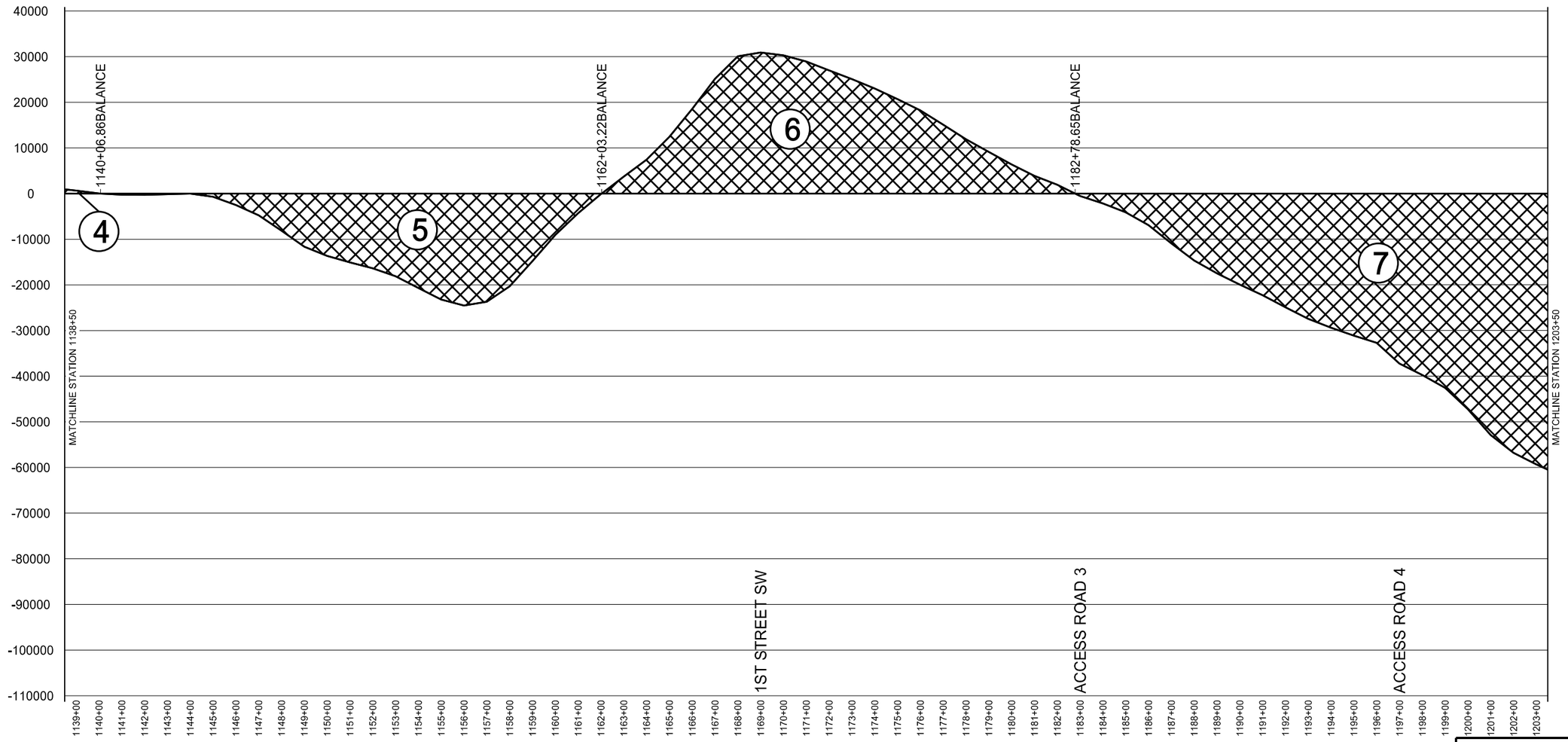
ND Hwy 22

Killdeer Bypass

Note:

-Mass Diagram includes roundabout, access road, drainage ditch, and wetland mitigation area earthwork quantities as labeled.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	11	7



4 Excavation	= 10,516	CY
Embankment	= 10,516	CY
Topsoil	= 3,972	CY

5 Excavation	= 29,679	CY
Embankment	= 29,679	CY
Topsoil	= 7,216	CY

6 Excavation	= 33,884	CY
Embankment	= 33,884	CY
Topsoil	= 5,826	CY

7 Excavation	= 6,644	CY
Embankment	= 98,077	CY
Topsoil	= 10,291	CY

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Note:

-Mass Diagram includes roundabout, access road, drainage ditch, and wetland mitigation area earthwork quantities as labeled.

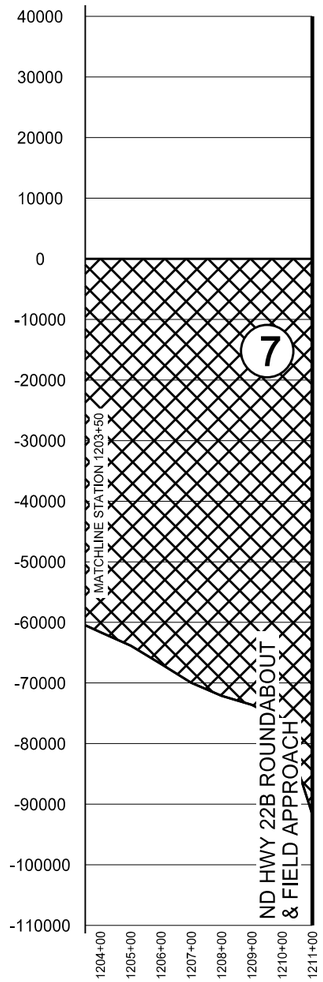
Earthwork Mass Diagram

Mass Haul Calculations

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	11	8



9	Excavation	= 6,644	CY
	Embankment	= 98,077	CY
	Topsoil	= 10,291	CY

PROJECT TOTAL		
Excavation	= 293,654	CY
Embankment	= 385,087	CY
Borrow	= 91,433	CY
Topsoil	= 69,268	CY

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Earthwork Mass Diagram

Mass Haul Calculations

ND Hwy 22

Killdeer Bypass

Note:

-Mass Diagram includes roundabout, access road, drainage ditch, and wetland mitigation area earthwork quantities as labeled.

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	1

P.C. Station 1011+05.85
P.I. Station 1013+88.57
Delta = 8° 11' 16.45" (LT)
Degree = 1° 27' 01.89"
Tangent = 282.7204
Length = 564.4782
Radius = 3,950.0000
External = 10.1049
P.T. Station 1016+70.33

Station	Left Slope	Right Slope
1014+46.12	-2.1	-2.1
1014+86.12	-2.1	0.0
1015+26.12	-2.1	2.1
1015+46.12	-3.0	3.0
1016+37.00	-3.0	3.0
1016+57.00	-2.1	2.1
1016+97.00	-2.1	0.0
1017+37.00	-2.1	-2.1

T.S. Station 1024+14.24
S.C. Station 1026+04.24

P.C. Station 1026+04.24
P.I. Station 1027+91.61
Delta = 5° 25' 53.95" (RT)
Degree = 1° 27' 01.89"
Tangent = 187.3708
Length = 374.4608
Radius = 3,950.0000
External = 4.4415
P.T. Station 1029+78.70

C.S. Station 1029+78.70
S.T. Station 1031+68.69

Station	Left Slope	Right Slope
1023+19.24	-2.1	-2.1
1024+14.24	0.0	-2.1
1025+13.99	2.1	-2.1
1026+04.24	4.0	-4.0
1029+78.70	4.0	-4.0
1030+68.95	2.1	-2.1
1031+68.69	0.0	-2.1
1032+63.69	-2.1	-2.1

T.S. Station 1050+79.28
S.C. Station 1052+69.28

P.C. Station 1052+69.28
P.I. Station 1054+74.77
Delta = 5° 57' 21.97" (RT)
Degree = 1° 27' 01.89"
Tangent = 205.4935
Length = 410.6168
Radius = 3,950.0000
External = 5.3417
P.T. Station 1056+79.89

C.S. Station 1056+79.89
S.T. Station 1058+69.88

Station	Left Slope	Right Slope
1049+84.28	-2.1	-2.1
1050+79.28	0.0	-2.1
1051+79.03	2.1	-2.1
1052+69.28	4.0	-4.0
1056+79.89	4.0	-4.0
1057+70.14	2.1	-2.1
1058+69.88	0.0	-2.1
1059+64.88	-2.1	-2.1

T.S. Station 1065+96.22
S.C. Station 1067+86.22

P.C. Station 1067+86.22
P.I. Station 1069+91.91
Delta = 5° 57' 42.56" (LT)
Degree = 1° 27' 01.89"
Tangent = 205.6912
Length = 411.0111
Radius = 3,950.0000
External = 5.3519
P.T. Station 1071+97.23

C.S. Station 1071+97.23
S.T. Station 1073+87.22

Station	Left Slope	Right Slope
1065+01.22	-2.1	-2.1
1065+96.22	-2.1	0.0
1066+95.97	-2.1	2.1
1067+86.22	-4.0	4.0
1071+97.23	-4.0	4.0
1072+87.48	-2.1	2.1
1073+87.22	-2.1	0.0
1074+82.22	-2.1	-2.1

T.S. Station 1094+75.20
S.C. Station 1096+65.20

P.C. Station 1096+65.20
P.I. Station 1099+04.67
Delta = 6° 56' 19.53" (LT)
Degree = 1° 27' 01.89"
Tangent = 239.4735
Length = 478.3615
Radius = 3,950.0000
External = 7.2525
P.T. Station 1101+43.56

C.S. Station 1101+43.56
S.T. Station 1103+33.55

Station	Left Slope	Right Slope
1093+80.20	-2.1	-2.1
1094+75.20	-2.1	0.0
1095+74.95	-2.1	2.1
1096+65.20	-4.0	4.0
1101+43.56	-4.0	4.0
1102+33.80	-2.1	2.1
1103+33.55	-2.1	0.0
1104+28.54	-2.1	-2.1

T.S. Station 1110+61.72
S.C. Station 1112+51.72

P.C. Station 1112+51.72
P.I. Station 1115+20.75
Delta = 7° 47' 33.63" (RT)
Degree = 1° 27' 01.89"
Tangent = 269.0303
Length = 537.2310
Radius = 3,950.0000
External = 9.1511
P.T. Station 1117+88.96

C.S. Station 1117+88.96
S.T. Station 1119+78.95

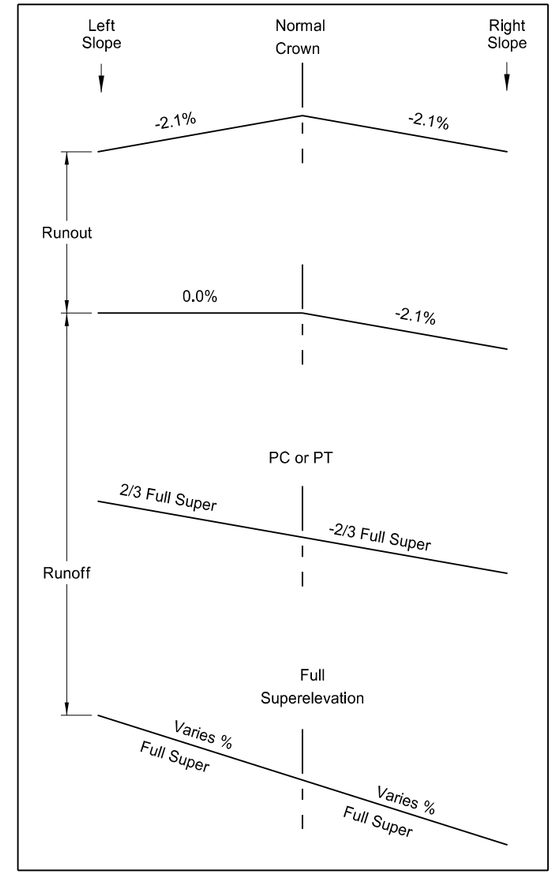
Station	Left Slope	Right Slope
1109+66.72	-2.1	-2.1
1110+61.72	0.0	-2.1
1111+61.47	2.1	-2.1
1112+51.72	4.0	-4.0
1117+88.96	4.0	-4.0
1118+79.20	2.1	-2.1
1119+78.95	0.0	-2.1
1120+73.94	-2.1	-2.1

T.S. Station 1186+08.48
S.C. Station 1189+33.48

P.C. Station 1189+33.48
P.I. Station 1194+48.85
Delta = 34° 29' 42.66" (RT)
Degree = 3° 27' 05.59"
Tangent = 515.3672
Length = 999.4105
Radius = 1,660.0000
External = 78.1609
P.T. Station 1199+32.89

C.S. Station 1199+32.89
S.T. Station 1202+57.87

Station	Left Slope	Right Slope
1185+13.48	-2.1	-2.1
1186+08.48	0.0	-2.1
1187+22.23	2.1	-2.1
1189+33.48	6.0	-6.0
1199+32.89	6.0	-6.0
1201+44.13	2.1	-2.1
1202+57.87	0.0	-2.1
1203+52.87	-2.1	-2.1



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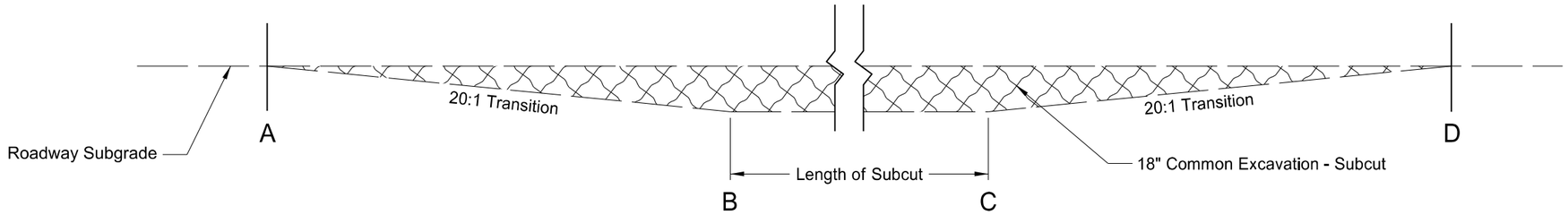
Note: Calculations based on AASHTO method five. A design speed of 65 mph and maximum superelevation of 6% were used.

Superelevation Table

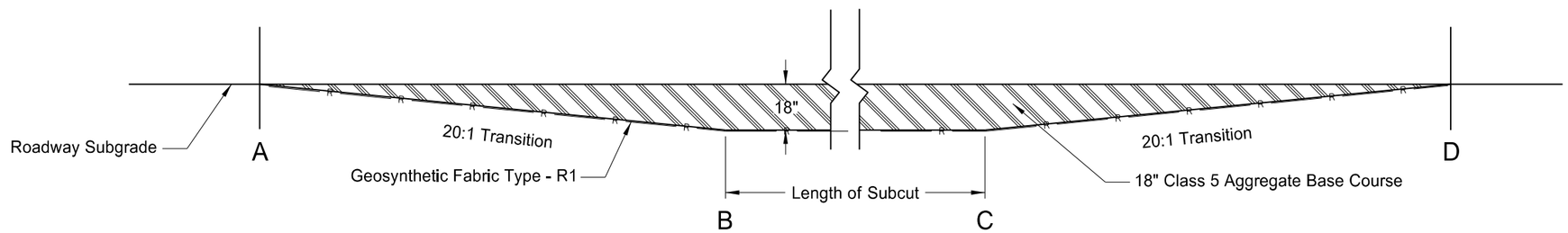
ND Hwy 22

Killdeer Bypass

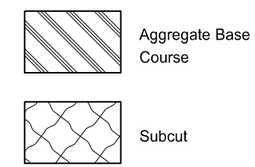
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	2



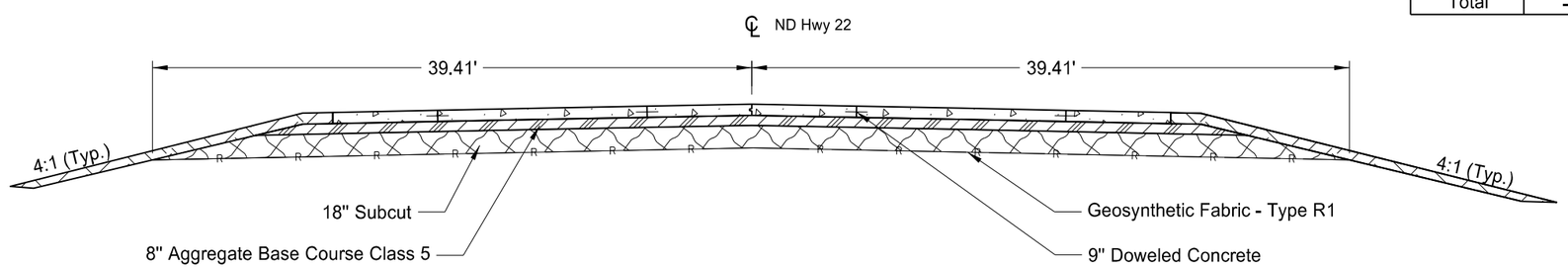
SUBCUT - REMOVAL



SUBCUT - BACKFILL



Discretionary Subcut Summary				
Number of Subcuts (1)	Length	Common Excavation - Subcut	Aggregate Base Course	Geosynthetic Fabric - Type R1
Unit	LF	CY	TON	SY
BC	500	2190	4107	4379
AB & CD	60	132	247	526
Total	-	2322	4354	4905



TYPICAL SECTION

NOTE: Discretionary subcut locations will be determined by the Engineer.

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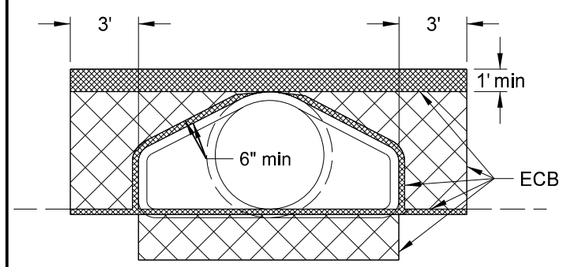
Details

Discretionary Subcut Detail

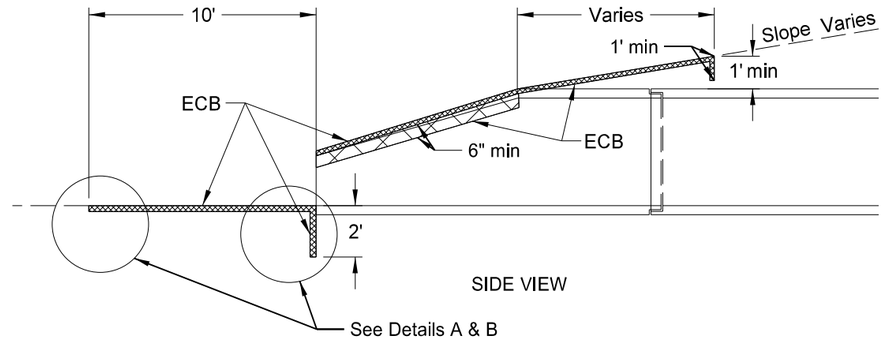
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	3

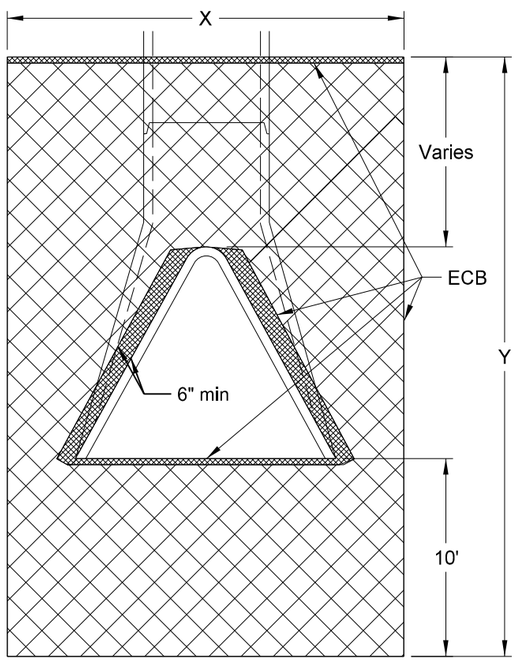


FRONT VIEW

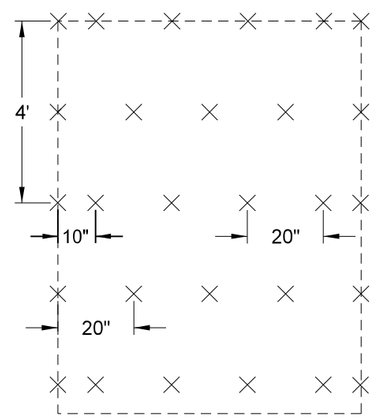


SIDE VIEW

Dia	X	Y	Surface area to be protected	ECB
In	Ft	Ft	SF	SY
18	9.5	20.7	190.7	22
24	10.5	21.6	214.1	24
30	11.6	22.5	241.5	27
36	12.7	23.3	268.8	30
42	13.3	23.3	279.7	31
48	13.8	24.0	293.2	33
66	15.6	24.0	325.6	37
72	16.0	24.5	340.6	38
29 A	10.5	21.6	214.1	24

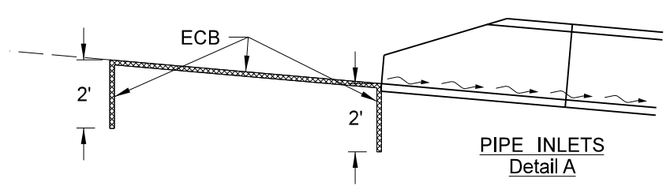


TOP VIEW

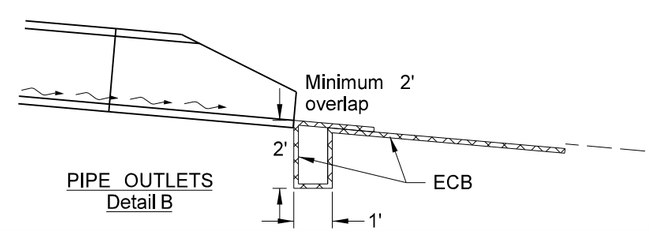


STAPLE PATTERN: 3.8 staples per square yard using 8-inch 11 gauge wire "u" staples

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



PIPE INLETS
Detail A



PIPE OUTLETS
Detail B

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Details

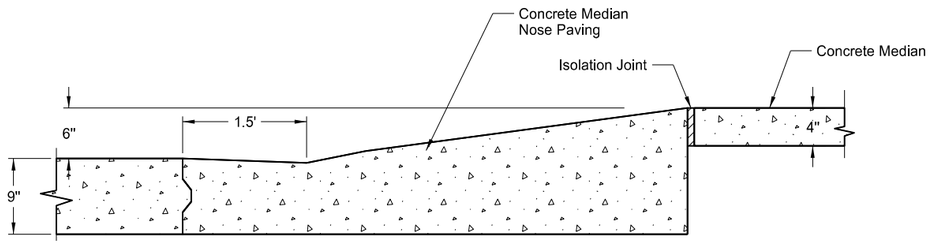
Erosion Control at Culvert Flared End Sections

ND Hwy 22

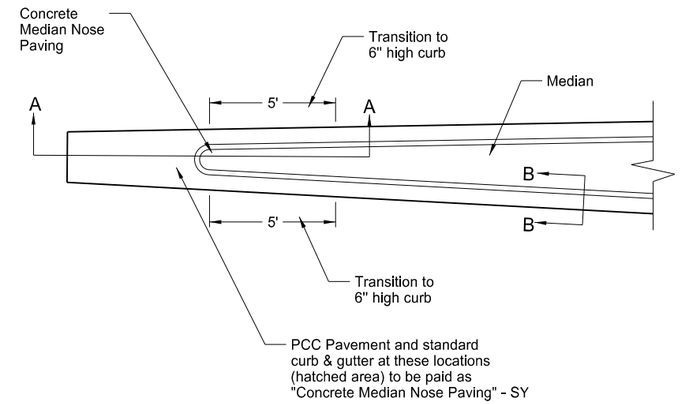
Killdeer Bypass

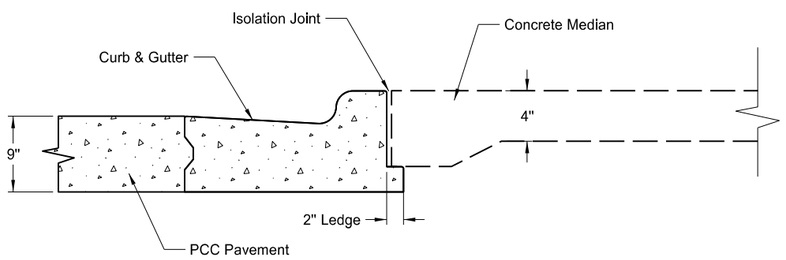
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	4

SNOWPLOW MEDIAN NOSE DETAIL

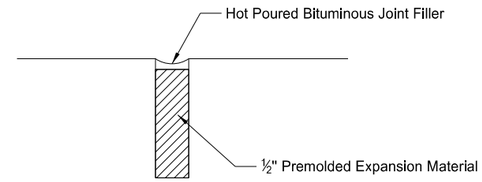


Section A - A



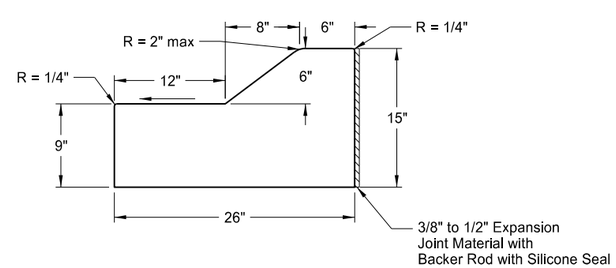


Section B - B



Isolation Joint

MOUNTABLE CURB & GUTTER FOR TRUCK APRON



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Details

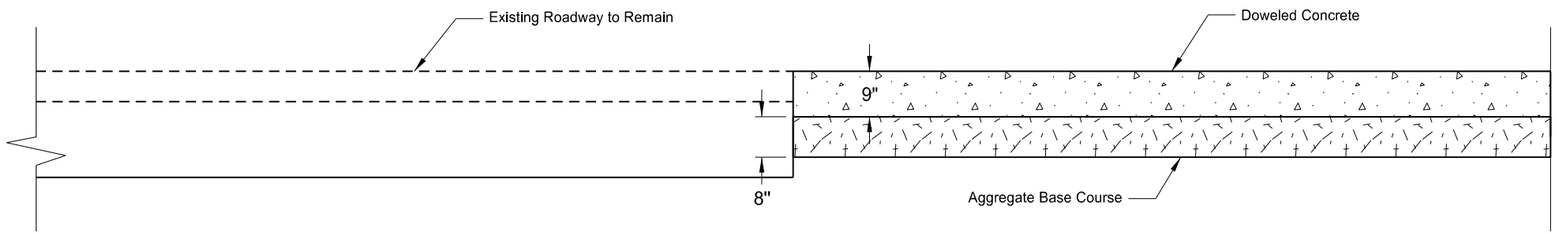
Curb and Gutter Details

ND Hwy 22

Kildeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	5

Paving Transitions from
Existing Pavement to
Proposed Pavement



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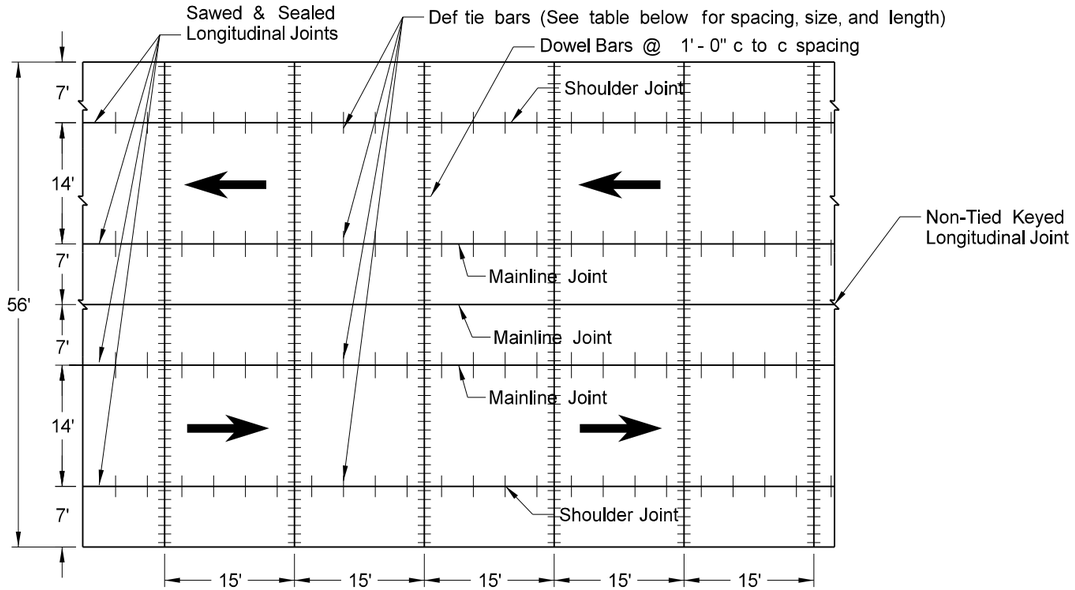
Details

Paving Transitions Detail

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	6

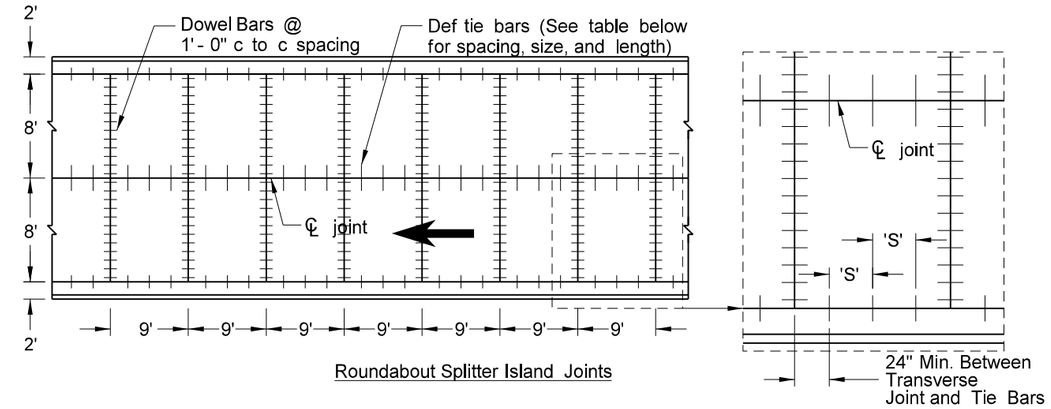


Mainline Joints - 3 Lanes

Longitudinal Joint Tie Bar Size, Length and Spacing

Location	Pavement Thickness	Steel Grade	Bar Size and Length	Spacing 'S'
Mainline	9"	60	#6 Bar x 48"	45"
8' Shoulder	9"	40	#4 Bar x 24"	36"
		60	#4 Bar x 36"	45"

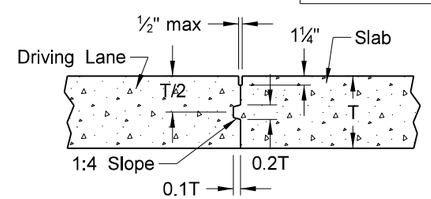
15' joint spacing



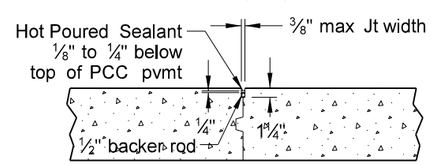
Roundabout Splitter Island Joints

Longitudinal Joint Tie Bar Size, Length and Spacing

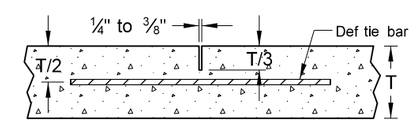
Location	Pavement Thickness	Steel Grade	Bar Size and Length	Spacing 'S'
8' Centerline	9"	40	#3 Bar x 30"	30"
Curb & Gutter	9"	60	#3 Bar x 18"	30"



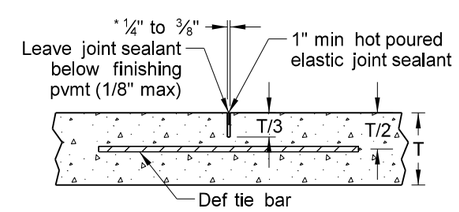
Longitudinal Construction Joint
(non-tied keyed joints)



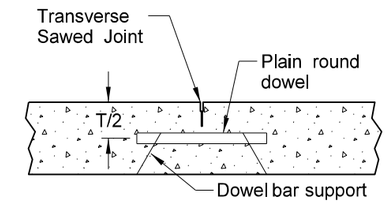
Longitudinal Joint Seal
(non-tied keyed joints)



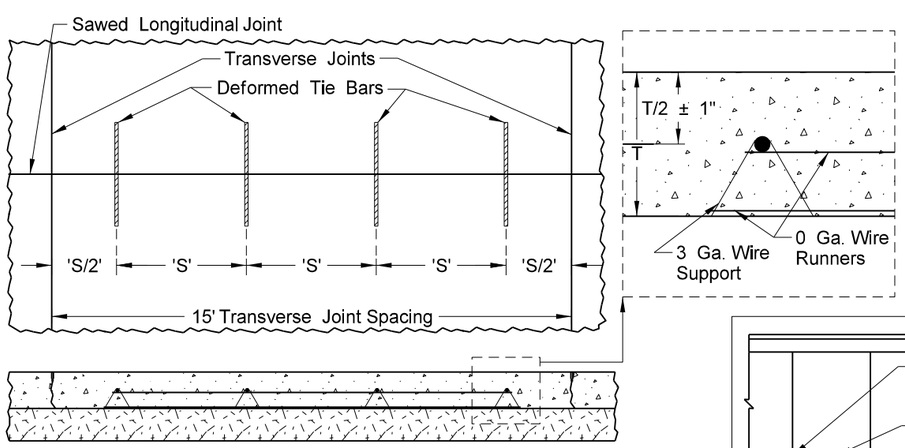
Joint Sawing Detail
(all sawed and tied joints)



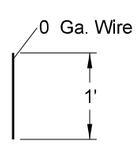
Joint Sealing Detail (all sawed and tied joints)
*Width requirement for top 1" only.
Bottom portion of saw cut may be narrower.



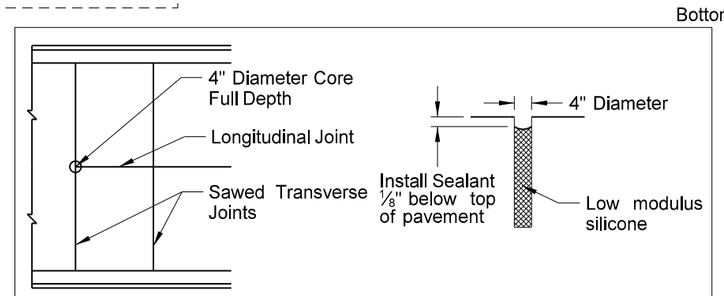
Doweled Transverse Joint



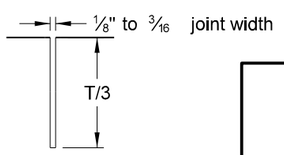
Mainline Longitudinal Tie Bar Assembly
(One unit shown)



Steel Stake
4/Unit



Core Detail



Transverse Joint Sawing

Notes:

1. T = Pavement Thickness
2. Dowel bars shall be 1¼" x 18" for T = 9".
3. 4" diameter core shall be the full depth of pavement and completed in the same time frame of sawed joints.

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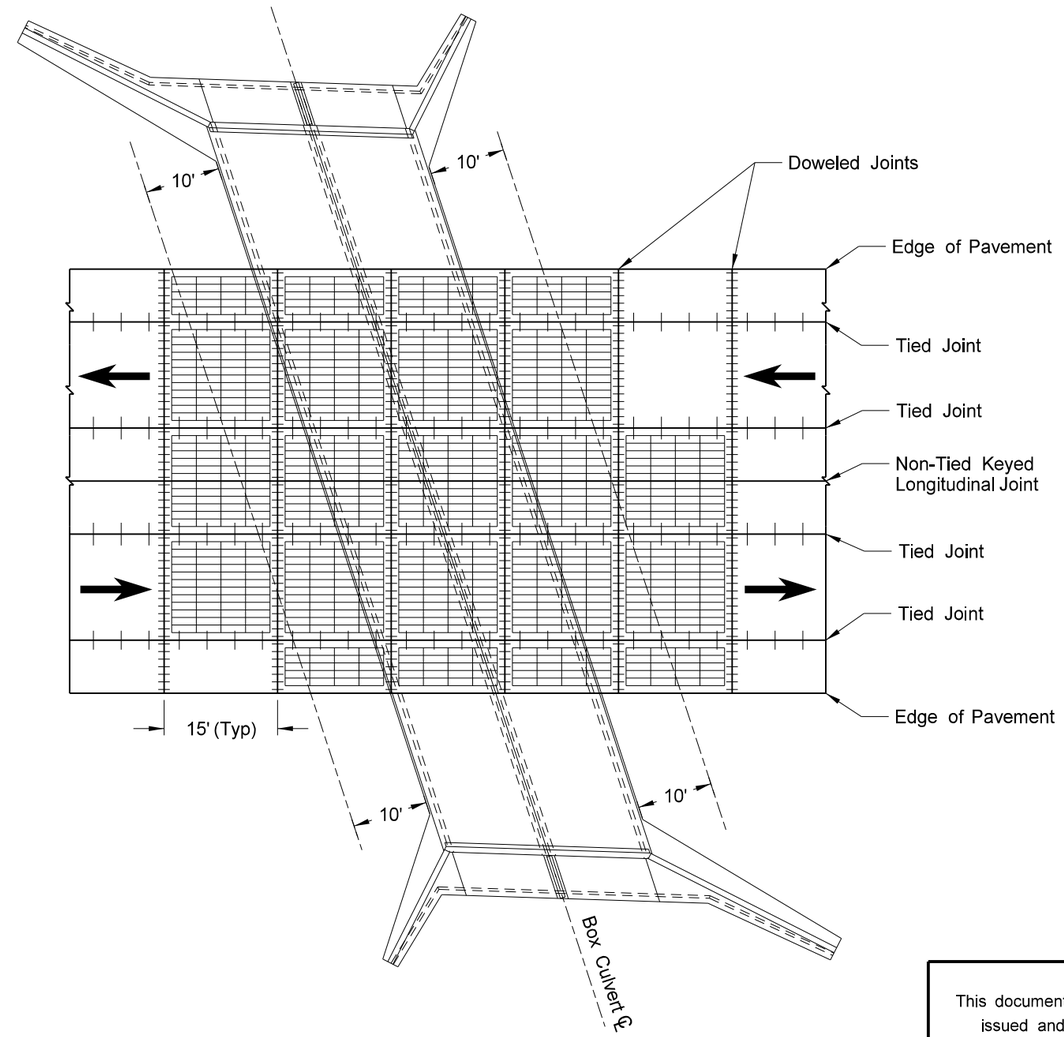
Details

PCC Pavement Joint Details

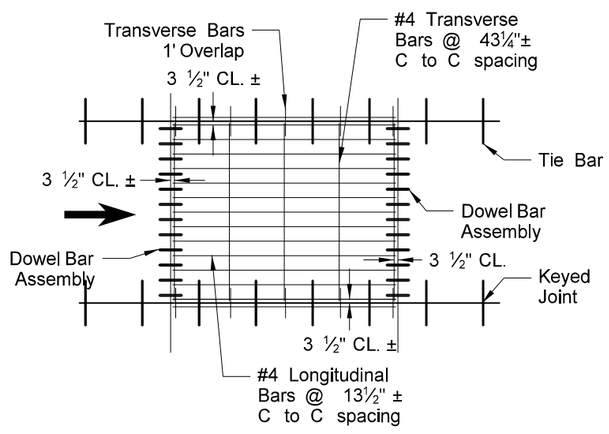
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	7



Pavement Reinforcing
See Detail A



Detail A
Reinforcing Layout

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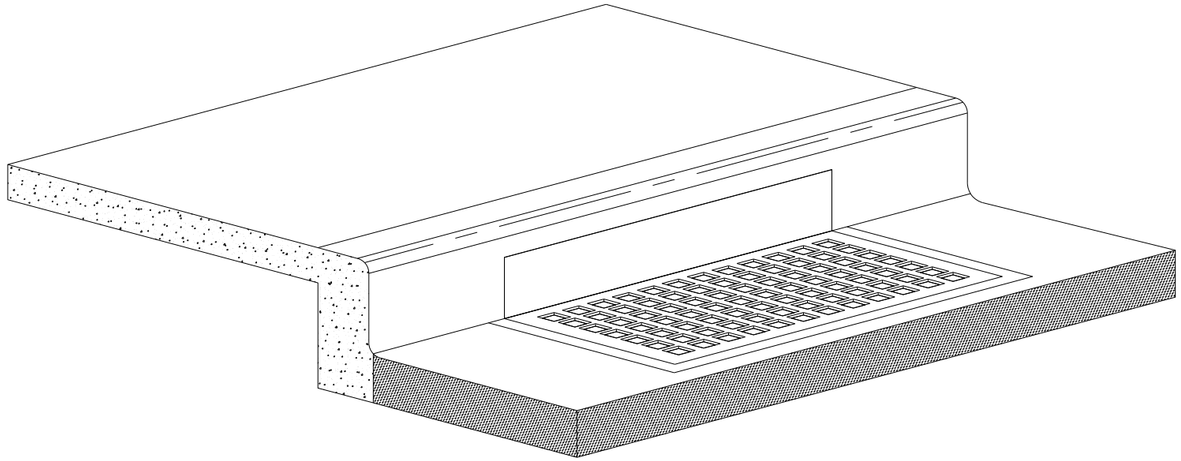
Details

Pavement Reinforcing at Box Culvert Locations

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	8



Inlet Protection Device

Installation Notes:

1. Place device tightly against drain opening and cover entire grate. The device should extend at least 2 inches past grate toward street.

2. Overlap the segments at longer openings.

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

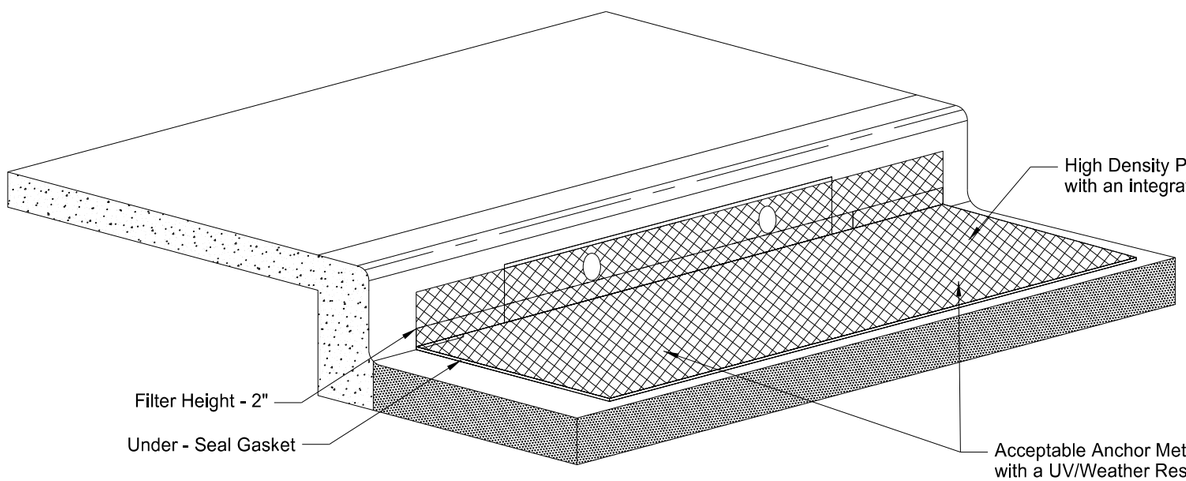
General Notes:

1. Inlet Protection shall be maintained or replaced at the direction of the engineer.

2. Manufactured alternatives may be substituted at the direction of the engineer.

3. When removing or maintaining inlet protection, care shall be taken so that fabric does not fall into the inlet. Any material falling into the inlet shall be removed immediately.

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



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

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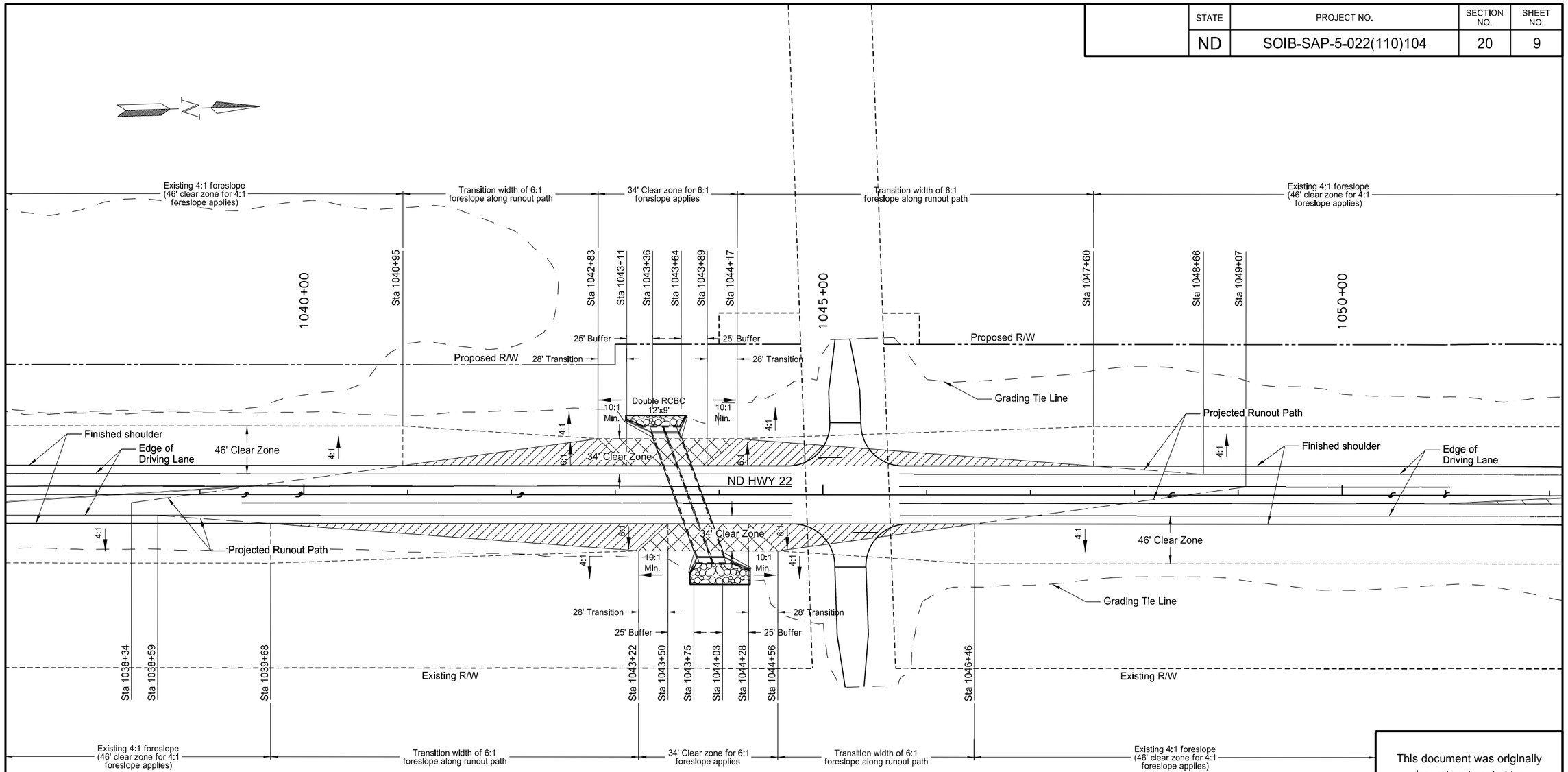
Details

Inlet Protection Device

ND Hwy 22

Kildeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	9



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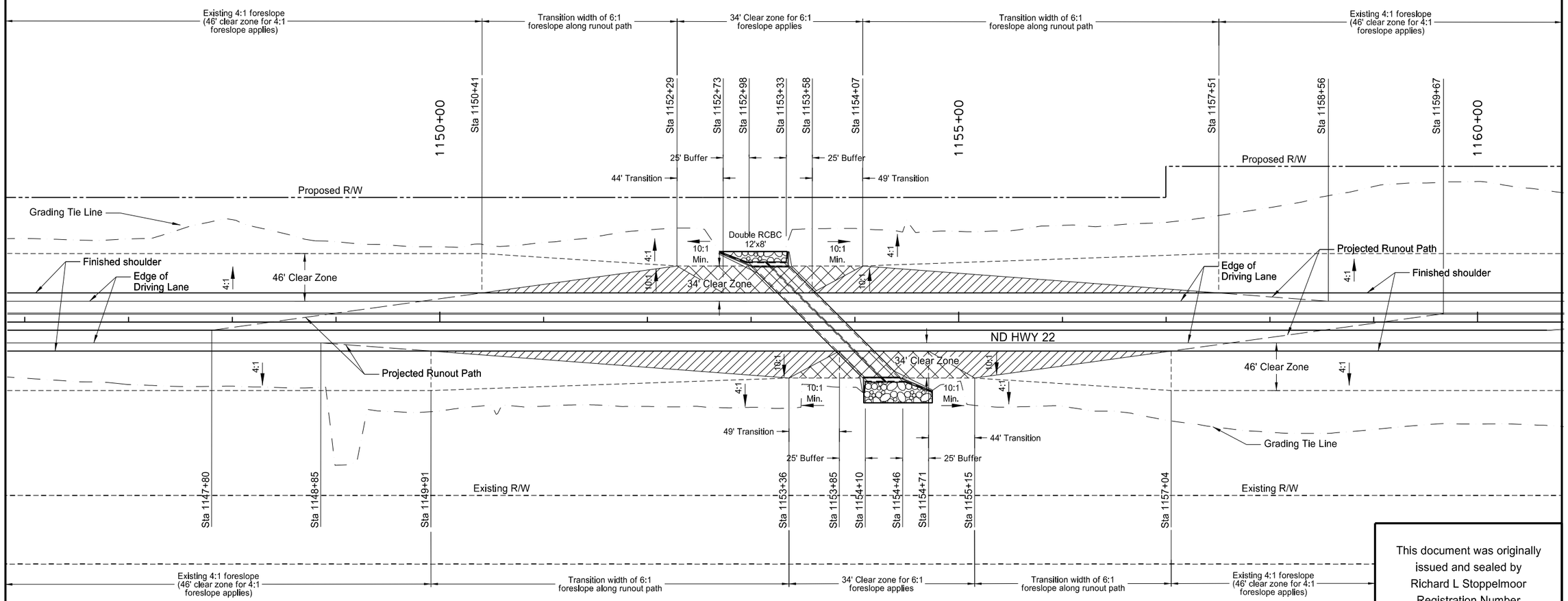
Details

Inslope Transition
Br. No 22 - 106.348
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	10



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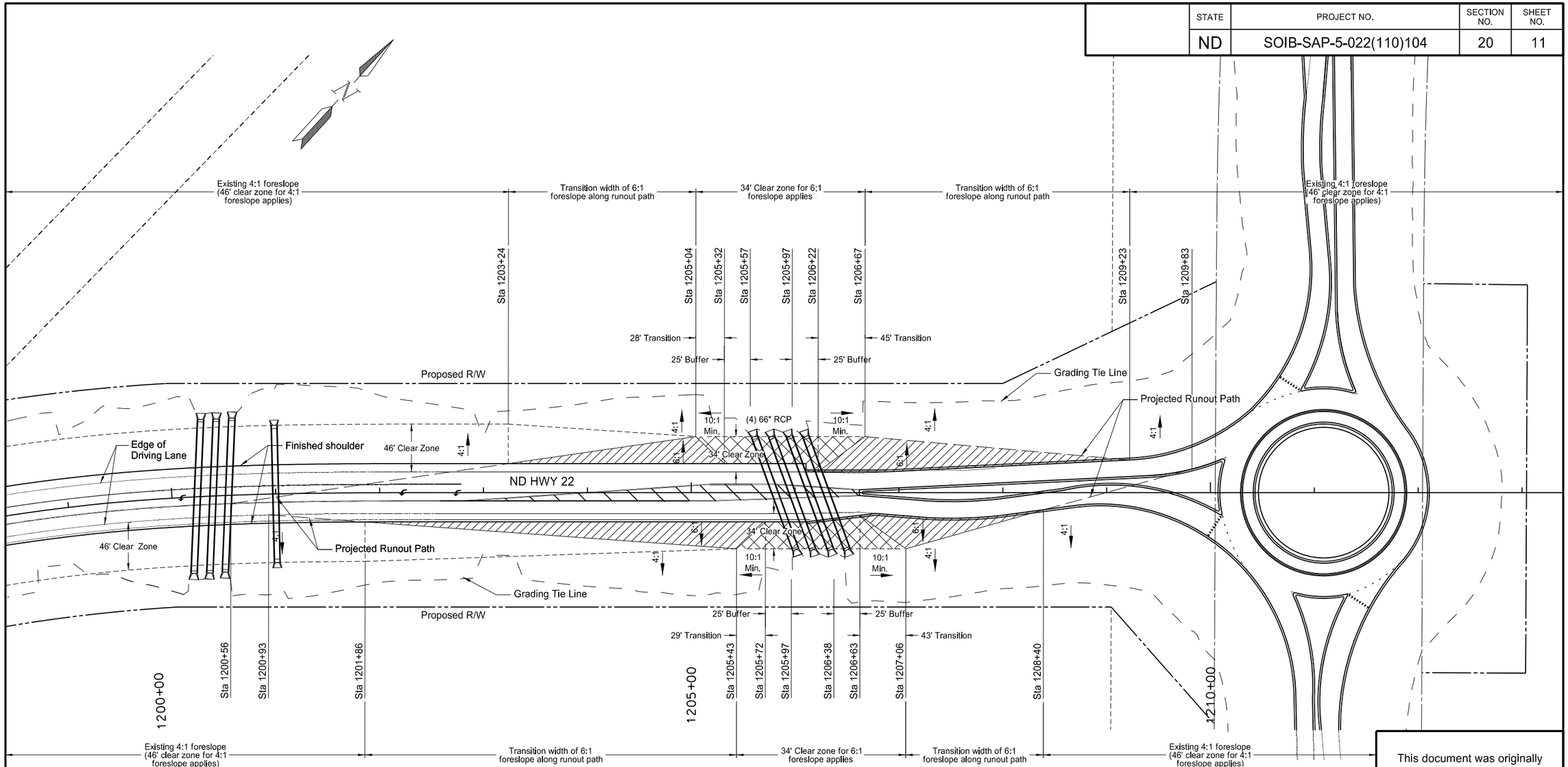
Details

Inslope Transition
Br. No 22 - 180.432
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	11



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Details

Inslope Transition
Sta 1205+15 to Sta 1207+03
ND Hwy 22

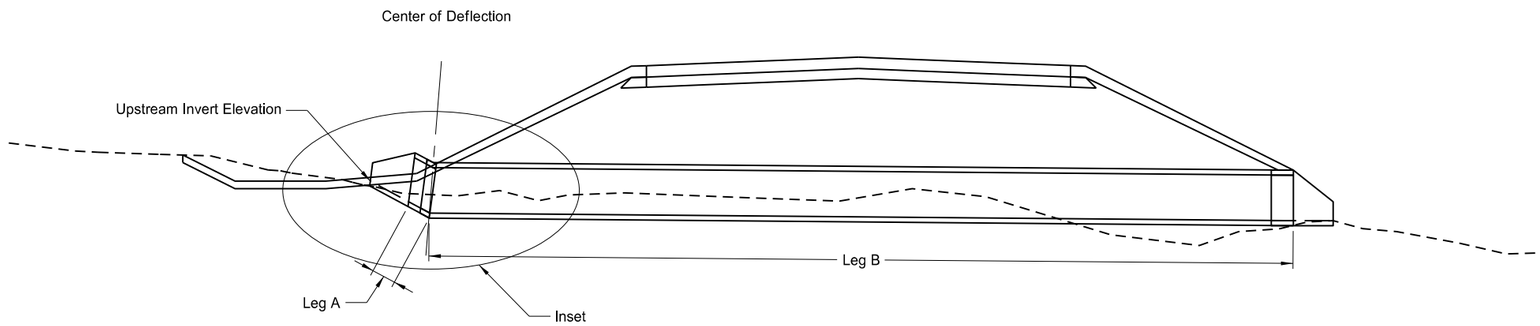
Killdeer Bypass

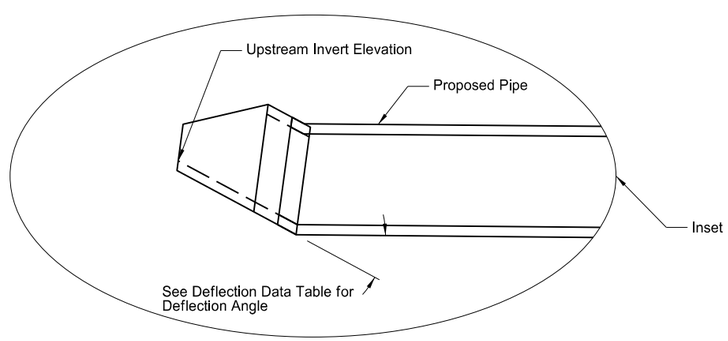
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	20	12

Deflection Data - New Centerline Culverts												
Allignment	Station	Pipe Diameter (Inches)	Downstream invert Elevation	Leg A Barrel Slope	Leg A Length (LF)	Center of Deflection Invert Elevation	Leg B Barrel Slope	Leg B Length (LF)	Upstream Invert Elevation	Overall Deflection (Degrees)	Proposed # of Joints to Delfect	Proposed Deflection per Joint (Degrees)
ND 22	1085+16	36	2316.40	13.17%	24.25	2316.40	0.00%	140.00	2319.53	7.50	1	7.50
ND 22	1114+97	36	2274.00	13.17%	19.14	2274.00	0.00%	158.00	2276.47	7.50	1	7.50
ND 22	1115+07	36	2274.00	13.17%	19.14	2274.00	0.00%	158.00	2276.47	7.50	1	7.50
ND 22	1121+59	30	2275.01	57.74%	3.01	2275.01	0.00%	124.00	2278.50	30.00	1	30.00
ND 22	1121+69	30	2275.01	57.74%	3.01	2275.01	0.00%	124.00	2278.50	30.00	1	30.00
ND 22	1124+46	36	2276.54	26.79%	2.97	2276.54	0.00%	148.00	2278.60	15.00	1	15.00
ND 22	1147+99	42	2264.20	26.79%	3.07	2264.20	0.00%	162.00	2266.31	15.00	1	15.00
ND 22	1177+01	30	2271.33	6.12%	12.32	2271.33	0.00%	122.00	2272.30	3.50	1	3.50

Note: All sections require pre-fabricated bend sections to accomplish deflection

Broken Back Detail
New Culvert





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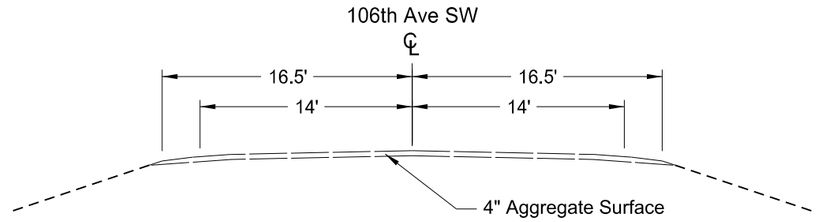
Details

Broken Back Culverts

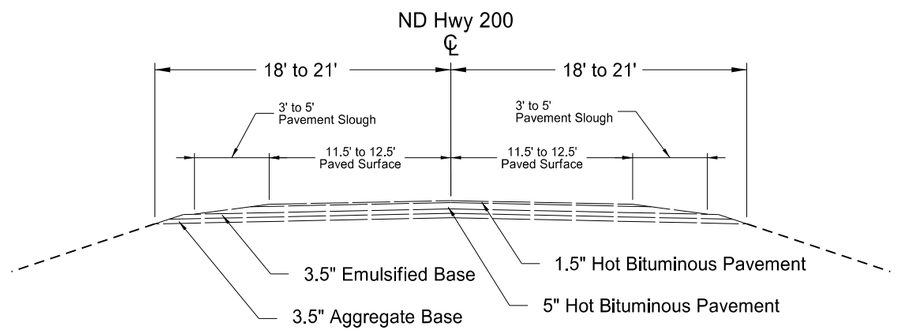
ND Hwy 22

Killdeer Bypass

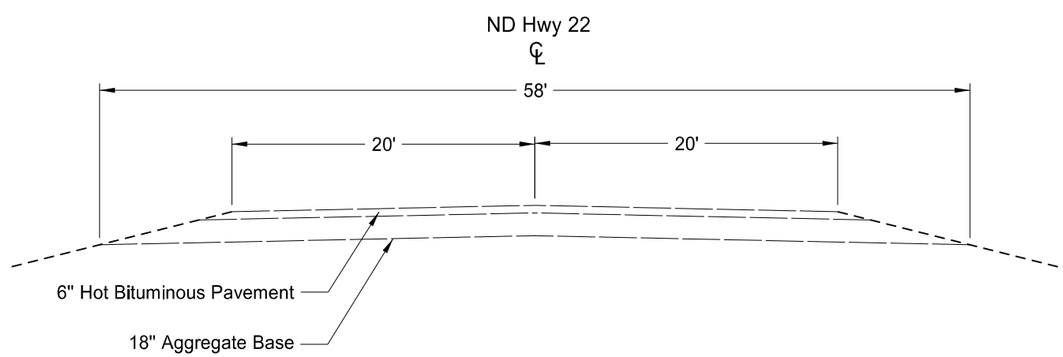
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	30	1



Existing 106th Avenue Typical Section
Sta 1004+82 to 1009+82
Sta 1010+00 to 1025+09



Existing ND 200 Typical Section
Sta 4918+34 to 4930+09



Existing ND 22 Typical Section
Sta 2263+49 to 2273+79

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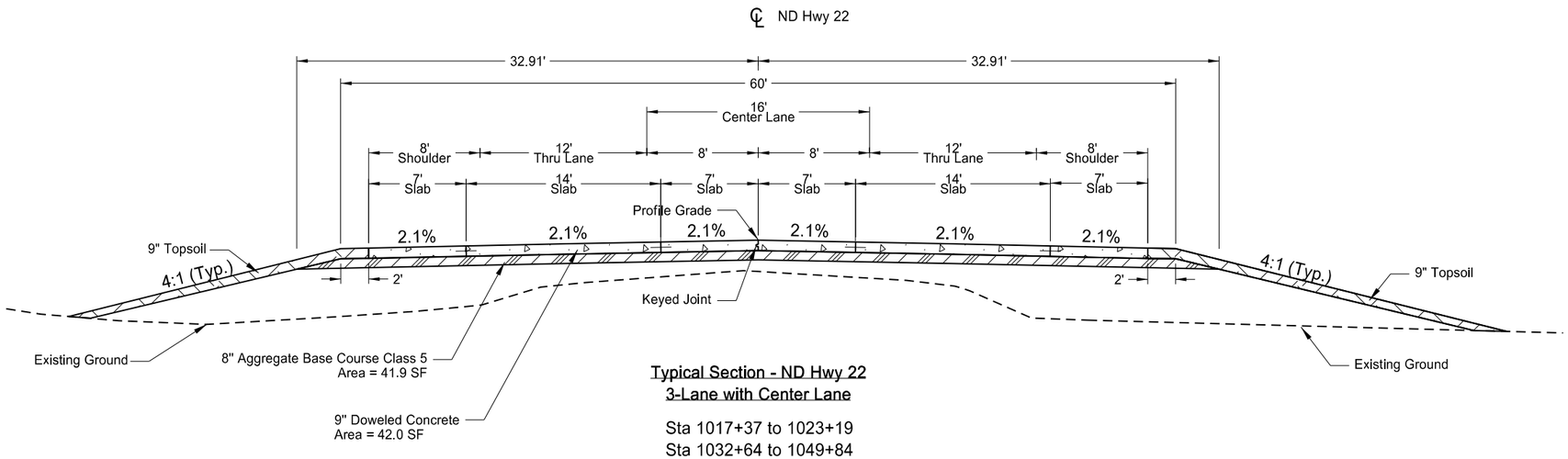
Existing Typical Sections

106th Ave SW, ND Hwy 22, & ND Hwy 200

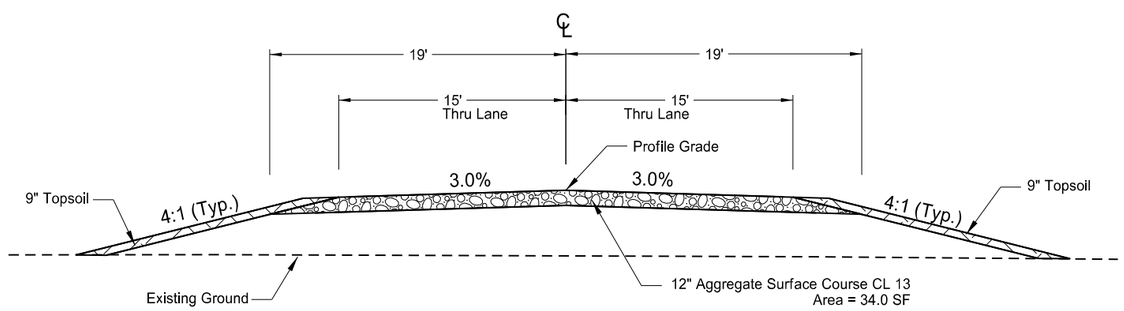
Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	30	2



Typical Section - ND Hwy 22
3-Lane with Center Lane

Sta 1017+37 to 1023+19
Sta 1032+64 to 1049+84
Sta 1059+65 to 1065+01
Sta 1074+82 to 1093+80
Sta 1104+29 to 1109+66
Sta 1120+74 to 1185+00
Sta 1203+66 to 1206+12



Typical Section - Frontage Road Access
2-Lane w/o Shoulder

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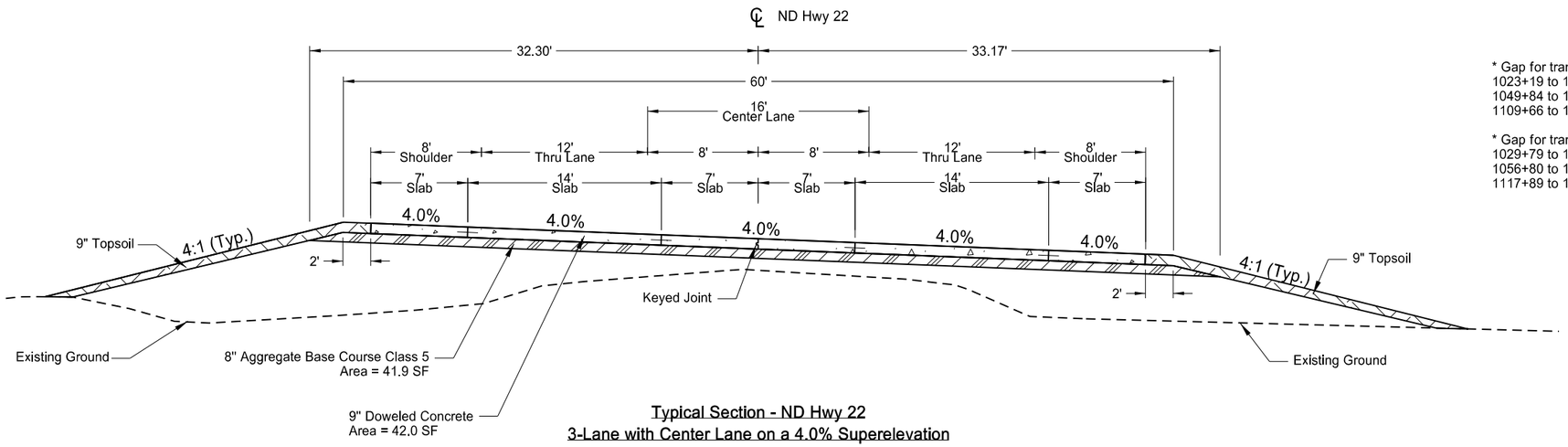
Typical Sections

ND Hwy 22 & Frontage Road

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	30	3

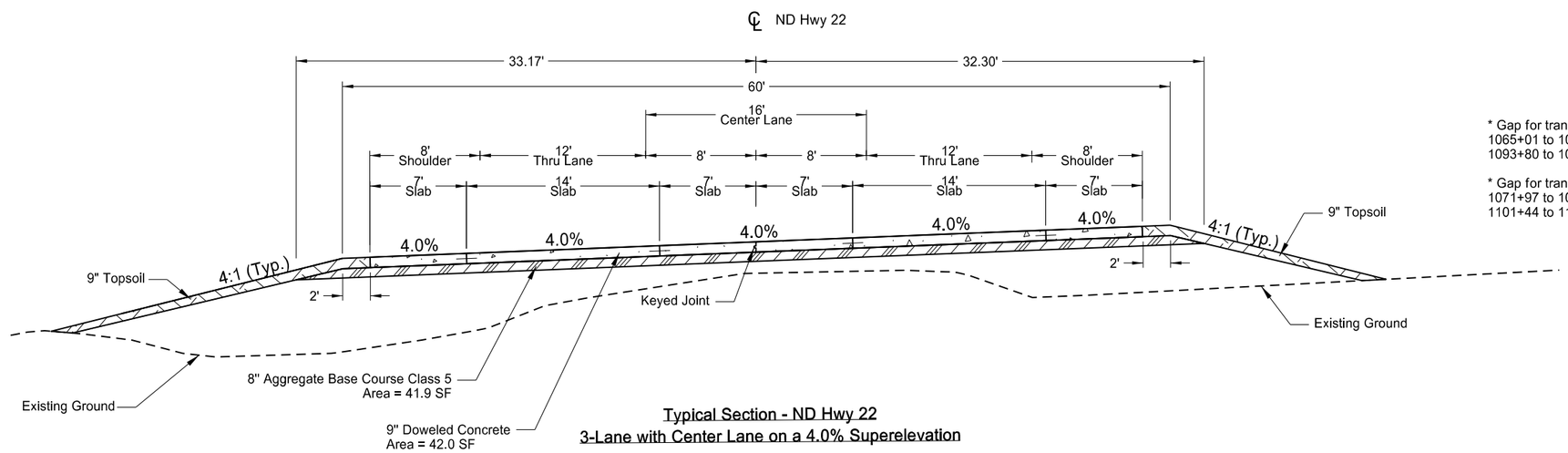


* Gap for transition from normal crown to full superelevation
1023+19 to 1026+04
1049+84 to 1052+69
1109+66 to 1112+51

* Gap for transition from full superelevation to normal crown
1029+79 to 1032+64
1056+80 to 1059+65
1117+89 to 1120+74

Typical Section - ND Hwy 22
3-Lane with Center Lane on a 4.0% Superelevation

Sta 1026+04 to 1029+79
Sta 1052+69 to 1056+80
Sta 1112+51 to 1117+89



* Gap for transition from normal crown to full superelevation
1065+01 to 1067+86
1093+80 to 1096+65

* Gap for transition from full superelevation to normal crown
1071+97 to 1074+82
1101+44 to 1104+29

Typical Section - ND Hwy 22
3-Lane with Center Lane on a 4.0% Superelevation

Sta 1067+86 to 1071+97
Sta 1096+65 to 1101+44

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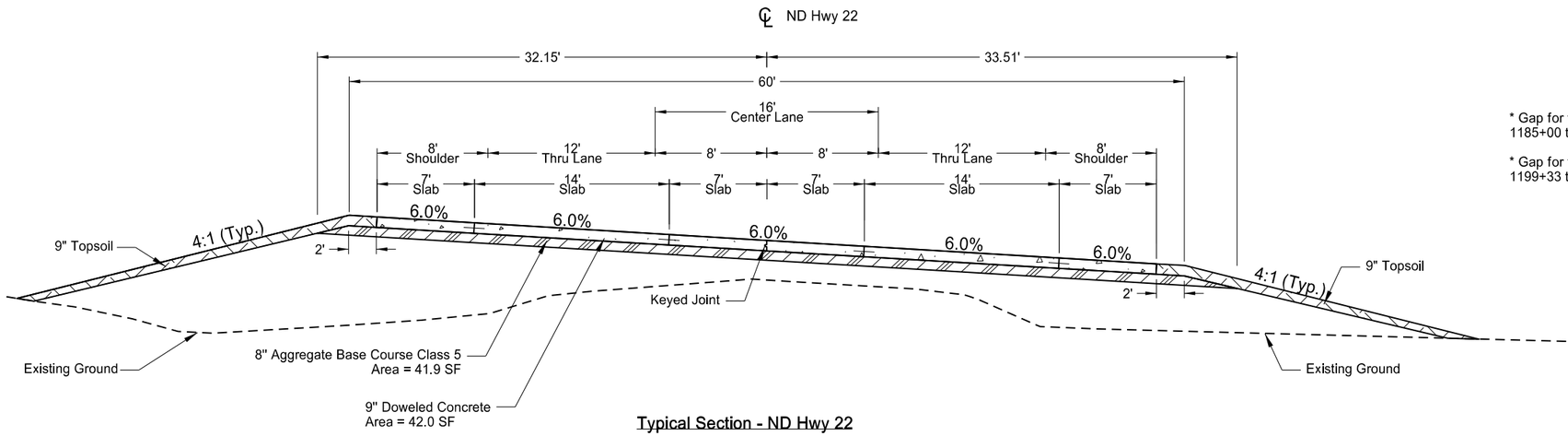
Typical Sections

Superelevations

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	30	4

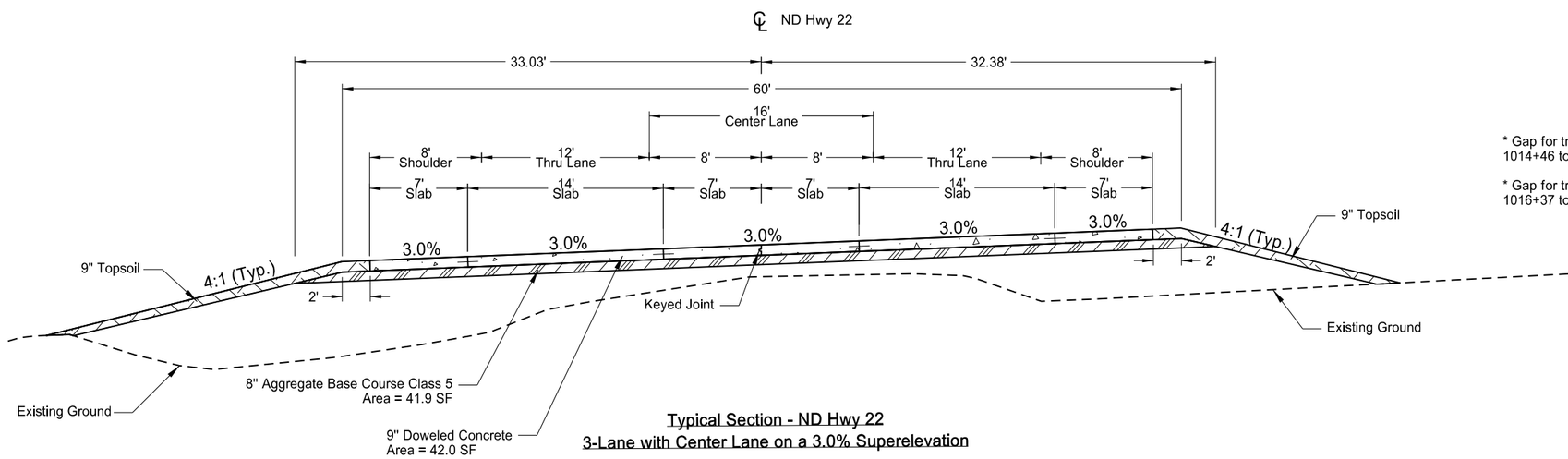


Typical Section - ND Hwy 22
3-Lane with Center Lane on a 6.0% Superelevation

Sta 1189+33 to 1199+33

* Gap for transition from normal crown to full superelevation 1185+00 to 1189+33

* Gap for transition from full superelevation to normal crown 1199+33 to 1203+66



Typical Section - ND Hwy 22
3-Lane with Center Lane on a 3.0% Superelevation

Sta 1015+46 to 1016+37

* Gap for transition from normal crown to full superelevation 1014+46 to 1015+46

* Gap for transition from full superelevation to normal crown 1016+37 to 1017+37

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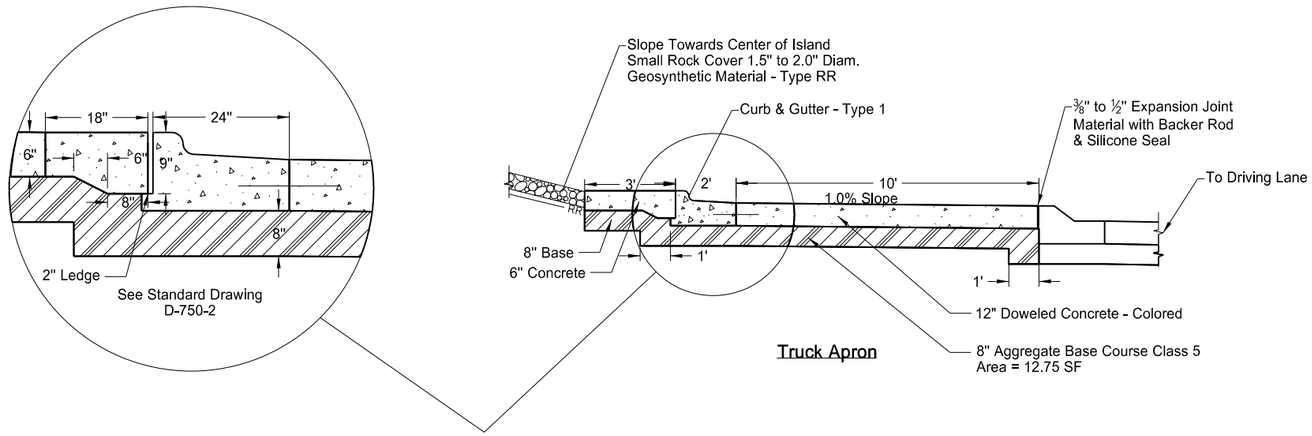
Typical Sections

Superelevations

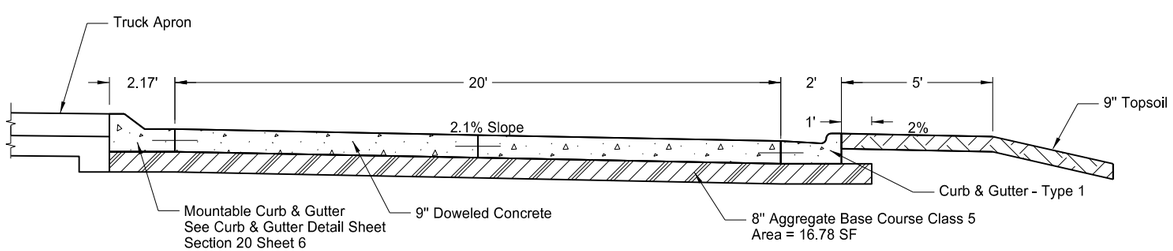
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	30	5



Truck Apron



Driving Lane

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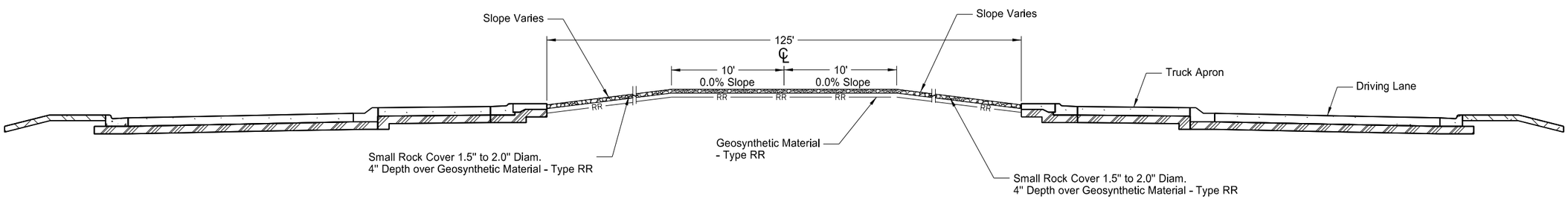
Typical Sections

Proposed Roundabout Typical Sections
Driving Lane and Truck Apron
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	30	6



Typical Island Section
Through Roundabout

ND Hwy 200 & ND Hwy 22
ND Hwy 22 & ND 22 Business Loop

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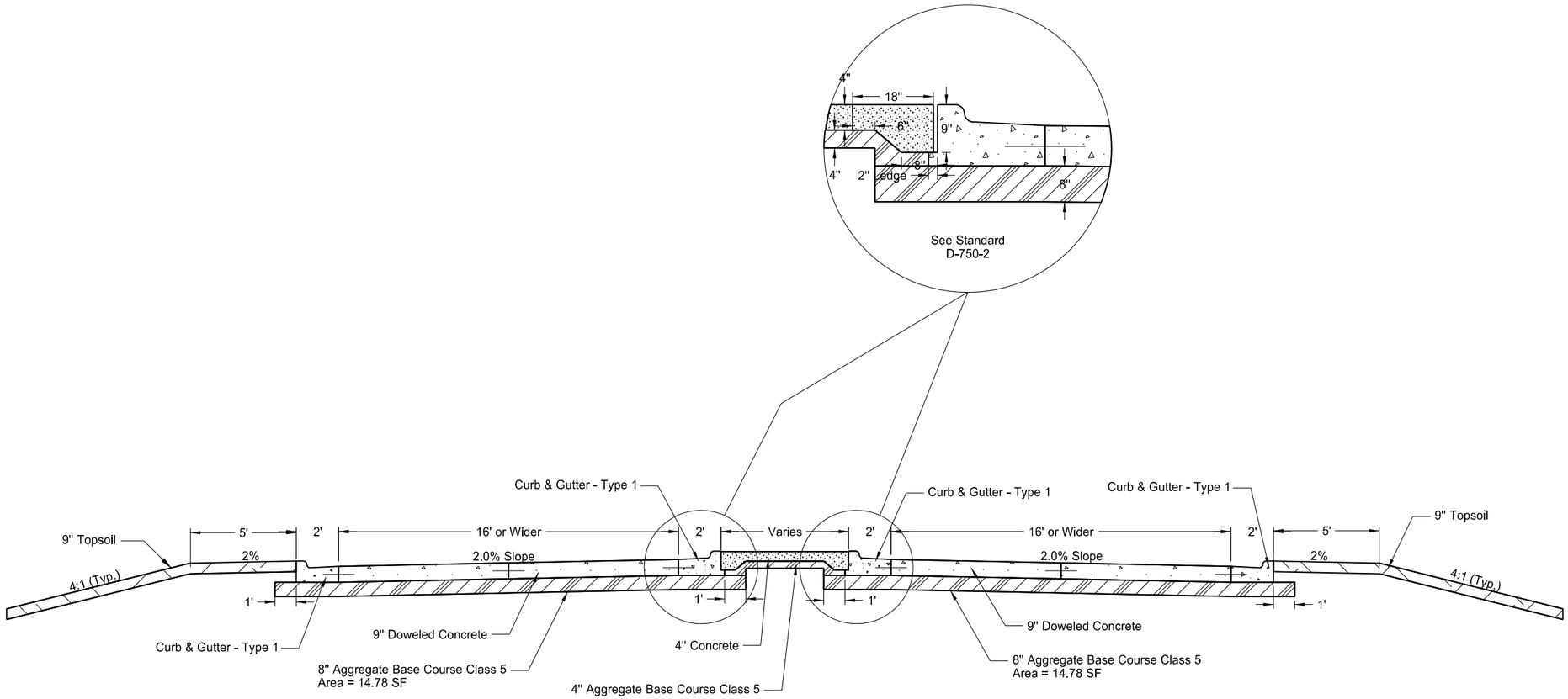
Typical Sections

Proposed Roundabout Typical Section
Center Island
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	30	7



Splitter Islands

Sta 1007+40 to 1009+00
Sta 1011+00 to 1014+46
Sta 1206+62 to 1210+09
Sta 4919+71 to 4923+17
Sta 4925+17 to 4928+66
Sta 2264+32 to 2267+77
Sta 2269+77 to 2273+25

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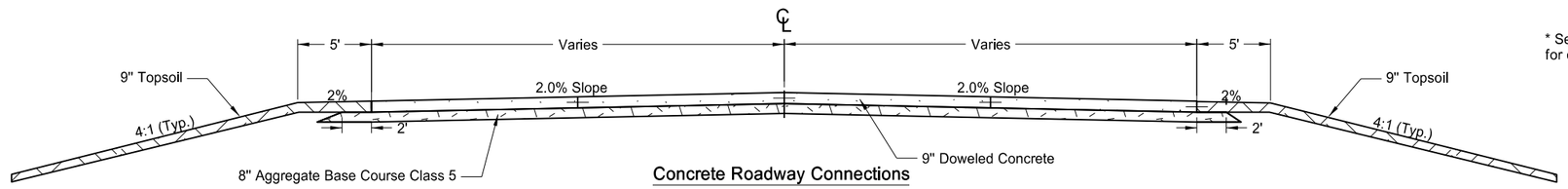
Typical Sections

Proposed Roundabout Typical Section
Splitter Island
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	30	8

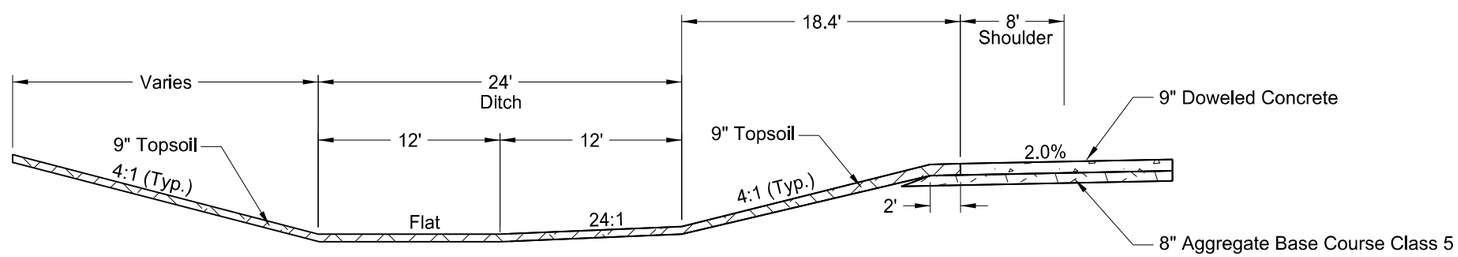


* See Section 90 Sheets 9-10 and Sheets 12-13 for curb and gutter to rural roadway transitions.

Concrete Roadway Connections

ND HWY 200
~Sta 4918+34
~Sta 4930+09

ND HWY 22
~Sta 2263+49
~Sta 2273+79



Typical Ditch Section - Rural

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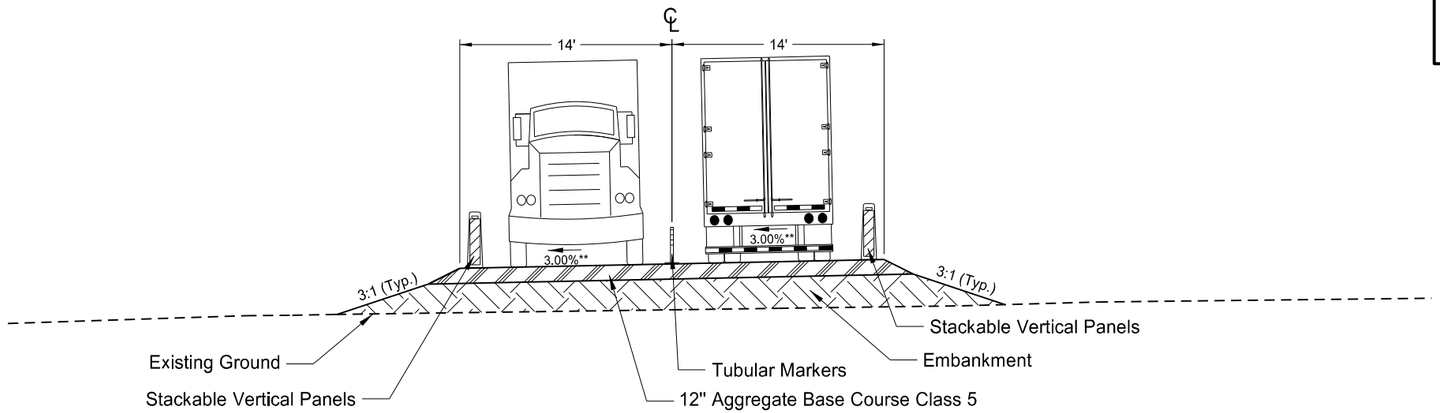
Typical Sections

Concrete and Asphalt Connections
Typical Ditch Section
ND Hwy 22

Killdeer Bypass

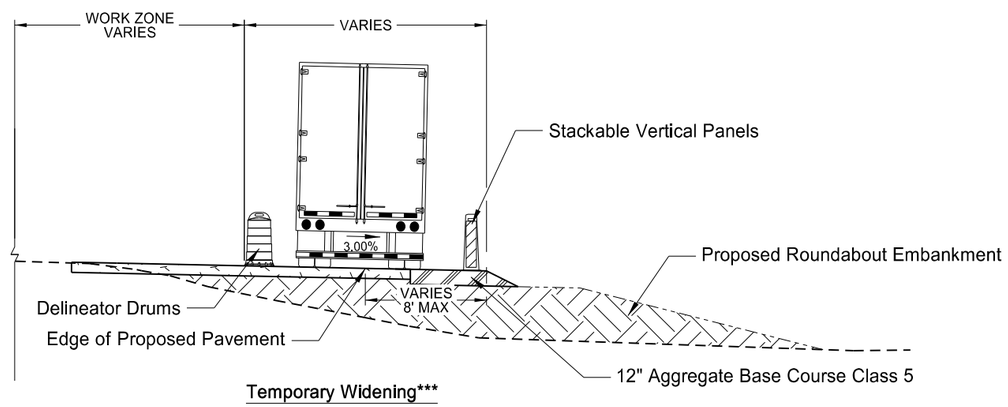
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	30	9

*Temporary Roadway Stationing (See Section 60 Sheets 39-41)
** Away from project site
***Roundabout Stationing (See Section 82 Sheet 9)
****Proposed ND HWY 22 Stationing



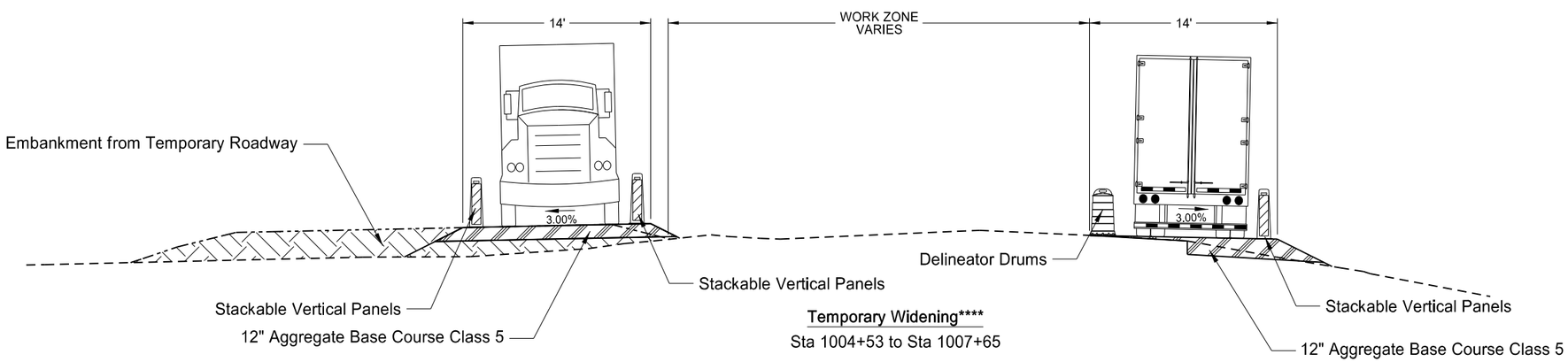
Temporary Bypass Roadways*

ND HWY 200: Sta 102+61 to Sta 113+96
ND HWY 22: Sta 202+22 to Sta 212+45
ND HWY 22 BUSINESS: Sta 301+93 to Sta 313+57



Temporary Widening***

S_RAB_NW: Sta 22+97 to Sta 26+35 (Phase 3A)
S_RAB_NE: Sta 14+24 to Sta 16+93 (Phase 3B)
S_RAB_SW: Sta 33+11 to Sta 34+95 (Phase 3B)



Temporary Widening****

Sta 1004+53 to Sta 1007+65

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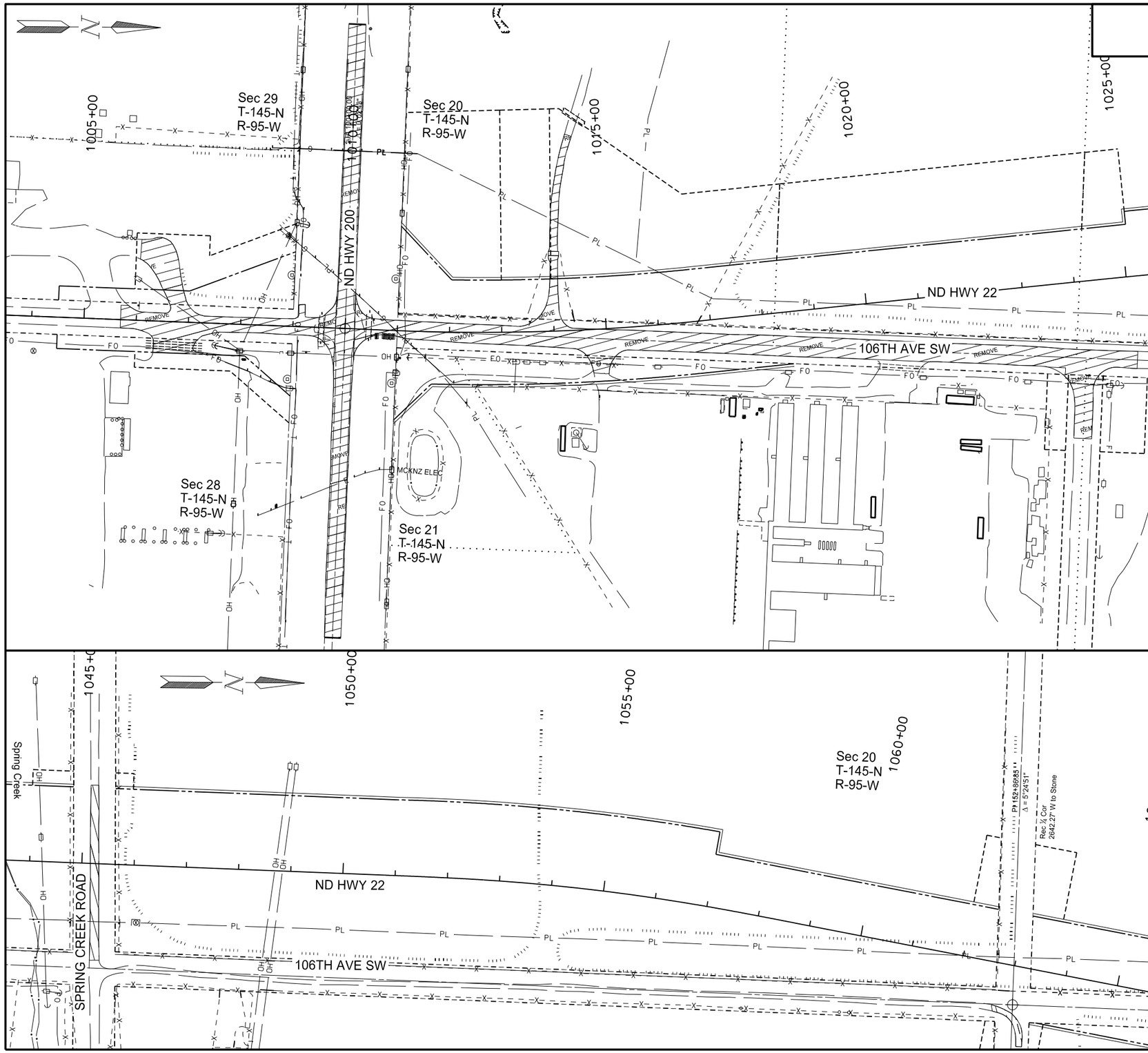
Typical Sections

Temporary Bypass Roadways

ND Hwy 200, ND Hwy 22 & ND Hwy 22 Business

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	40	1



REMOVE AGGREGATE BASE & SURFACING

Sta	1005+70	to	1009+82	2873 SY
Sta	1009+82	to	1010+19 Rt	4438 SY
Sta	1010+19	to	1025+06 Rt	7424 SY
Sta	1014+04 Lt	to	1014+44 Lt	351 SY
Sta	1045+16	to	1045+32	609 SY
Sta	1062+72 Rt	to	1063+42 Rt	130 SY
			Total=	15825 SY

* Quantities on this sheet are for informational purposes only

LEGEND

Remove Aggregate Base & Surfacing

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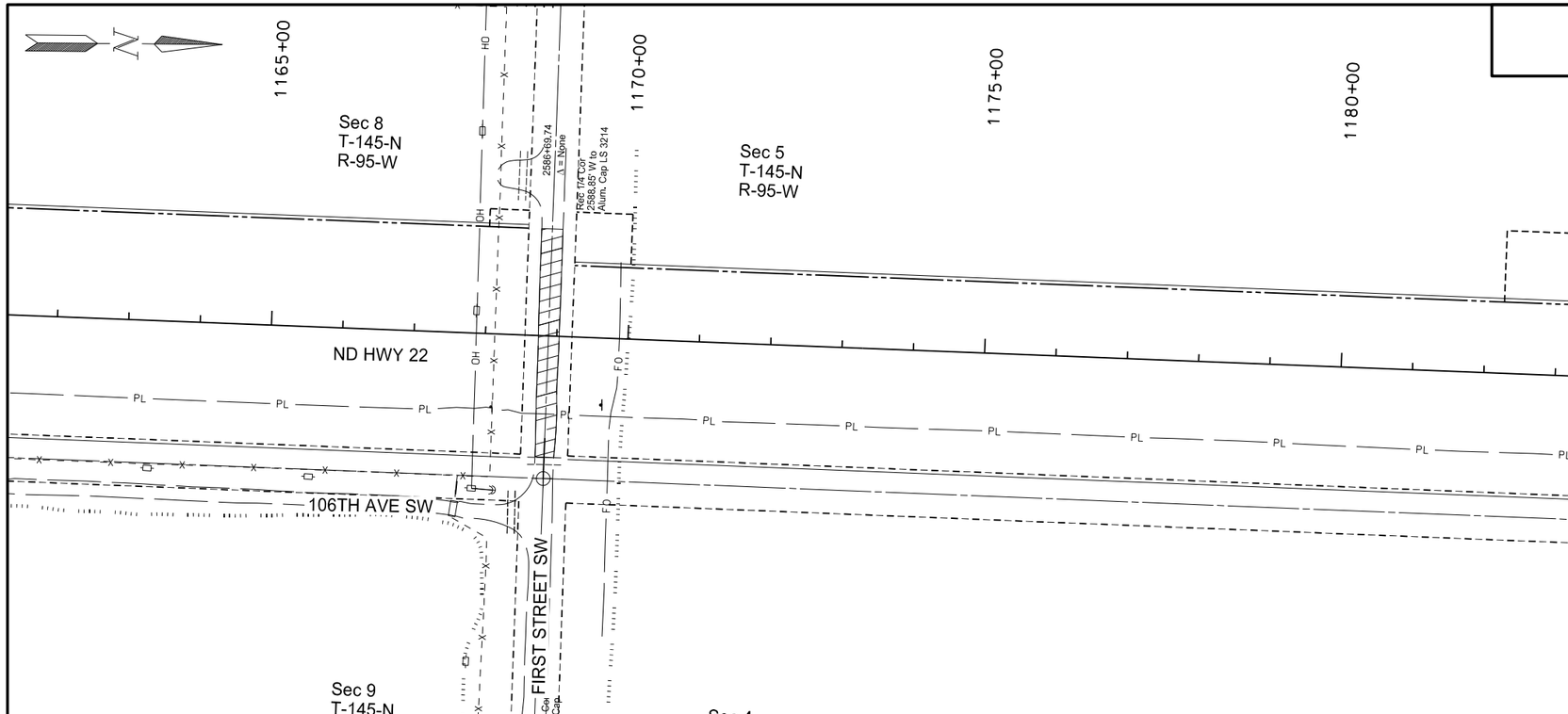
Removals

ND Hwy 22

Killdeer Bypass

6/8/2015 2:14:33 PM mmaslesa c:\pwworking\oma\d1342430\040RM_001.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	40	2



REMOVE AGGREGATE BASE & SURFACING

Sta 1168+73	to	1169+04	1030 SY
Sta 1210+82	to	1211+33	5430 SY
		Total=	6460 SY

* Quantities on this sheet are for informational purposes only

LEGEND

Remove Aggregate Base & Surfacing

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Removals

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	50	1

Structure	Size	Type	Grate Style	Station	Offset (ft)		Rim / Grate Elev. (ft)	Invert Direction	Invert Size	Invert Elev. (ft)	Base Elevation (ft)	Riser (ft)	H' Dist. (ft)
CB 2		Type 2 - Double	V	1007+36.86	27.6	LT	2278.91	W	18"	2273.66	2273.45		5.29
								N	18"	2273.76			
CB 1		Type 2	V	1007+42.36	27.8	LT	2278.97	S	18"	2273.76	2273.55		5.25
CB 3		Type 2 - Double	V	1007+38.80	29.1	RT	2278.73	E	18"	2273.70	2273.49		5.07
CB 4	48"	Special - Type 2	D	1009+00.18	8.1	LT	2281.71	W	30"	2272.84	2272.55	8.33	
								E	30"	2272.85			
CB 6		Type 2	D	4920+71.52	24.5	LT	2279.55	N	18"	2275.72	2275.51		3.87
CB 5		Type 2	D	4920+78.72	24.7	RT	2279.50	S	18"	2273.54	2273.33		6.00
CB 7		Type 2	D	4927+29.57	24.3	RT	2280.69	S	18"	2274.73	2274.52		6.00
CB 8		Type 2	D	4927+30.58	24.2	LT	2280.60	N	18"	2275.05	2274.84		5.59
CB 9		Type 2	D	1011+00.85	6.1	LT	2282.01	N	18"	2276.05	2275.84		6.00
Storm MH 9A	54"			1011+81.01	3.5	RT	2281.50	S	18"	2274.97	2274.66	5.17	
								W	18"	2274.97			
								E	18"	2274.87			
CB 11		Type 2	V	1011+79.42	21.5	LT	2280.41	E	18"	2275.19	2274.98		5.26
CB 10		Type 2	V	1011+82.69	26.4	RT	2280.38	E	18"	2274.57	2274.36		5.85
								W	18"	2274.67			
CB 12		Type 2	D	1013+84.81	20.8	RT	2279.32	E	18"	2274.40	2274.19		4.96
CB 13		Type 2	D	1014+69.90	21.6	LT	2279.04	W	18"	2274.11	2273.90		4.97
CB 14		Type 2	D	1206+89.93	22.0	RT	2267.52	SE	18"	2261.56	2261.35		6.00
CB 15		Type 2	D	1206+94.86	21.4	LT	2267.64	NW	18"	2262.90	2262.69		4.78
CB 16		Type 2	D	2265+75.62	27.3	LT	2268.82	NE	18"	2264.36	2264.15		4.50
								SW	18"	2264.46			
CB 17		Type 2	D	2265+89.73	1.3	RT	2269.38	NE	18"	2264.76	2264.55		4.66
CB 18		Type 2	D	2266+36.10	14.6	RT	2269.42	SW	18"	2264.04	2263.83		5.42
CB 19		Type 2	D	2267+76.22	0.6	RT	2271.22	SW	18"	2265.26	2265.05		6.00
CB 20		Type 2	D	2269+78.12	3.2	RT	2271.21	NE	18"	2265.25	2265.04		6.00
CB 21		Type 2	V	2270+95.97	25.9	RT	2268.89	SW	18"	2262.93	2262.72		6.00
CB 22		Type 2 - Double	V	2271+22.41	18.0	RT	2268.58	NE	18"	2262.62	2262.41		6.00
CB 23		Type 2	V	2273+17.23	27.6	LT	2267.36	SE	18"	2261.95	2261.74		5.45
CB 24		Type 2 - Double	V	2273+22.70	28.1	LT	2267.33	NE	18"	2261.85	2261.64		5.52
								NW	18"	2261.95			
CB 25		Type 2	V	2273+37.74	19.2	RT	2267.45	SE	18"	2262.26	2262.05		5.23
CB 26		Type 2 - Double	V	2273+43.24	19.0	RT	2267.42	SW	18"	2262.16	2261.95		5.30
								NW	18"	2262.26			

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Inlet and Manhole Summary

Sta 1000+00 to Sta 1214+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	50	2

Hydraulic data for Project SOIB-SAP-5-022(110)104 (A)

STATION	EXISTING PIPE	PROPOSED PIPE SIZE	DRAINAGE AREA (ACRES)	25-YEAR DATA				100-YEAR DATA	
				DESIGN DISCHARGE (CFS)	DESIGN HEADWATER (FT)	DESIGN VELOCITY (FPS)	DESIGN STAGE (NAVD 88)	100-YEAR DISCHARGE (CFS)	100-YEAR STAGE (NAVD 88)
1008+94	2-18" CMP	2-30"	50.4	33	2.12	5.88	2275.22	54	2276.06
1013+50	N/A	30"	19.1	14	2.00	5.65	2274.97	18	2275.29
1035+25	N/A	30"	41.7	21	2.58	6.55	2275.42	36	2276.86
1084+69	N/A	36 (C)	56.5	41	3.34	9.06	2322.87	66	2324.95
1115+53	N/A	2-36" (C)	246.5	118	4.74	9.44	2281.21	189	2285.56
1121+76	N/A	30" (C)	20.1	27	2.65	9.66	2281.15	34	2281.71
1124+47	N/A	36" (C)	77.0	47	3.46	8.34	2282.06	76	2284.31
1147+99	N/A	30" (C)	36.3	38	3.60	8.50	2269.91	48	2271.04
1177+02	N/A	30" (C)	35.3	39	4.16	8.84	2276.46	49	2277.91
1186+81	N/A	30"	48.7	29	3.06	9.85	2270.96	48	2273.34
1192+27	N/A	30"	23.9	22	2.59	6.67	2267.09	28	2267.54
1200+40	N/A	30"&3-66"	2049.0	361	4.54	8.59	2265.04	595	2266.80
1206+06	N/A	4-66"	3543.0	547	5.10	8.99	2264.67	899	2266.68

(A) Hydraulic data provided is for smooth-walled type conduits
(B) Culvert diameter given at this location is the NDDOT Policy minimum diameter and exceeds hydraulic requirements.
(C) Broken Back Culverts - see Cross Section for detail

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Inlet and Manhole Summary

Sta 1000+00 to Sta 1214+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	51	1

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)	(*) End Sections		Applicable Backfill Detail
														Begin	End	
				In	Bld Item	LF			In	Type		In	SY	EA	EA	
1006+20	48' Rt	1007+34	55' Rt	24	Pipe Conduit Arch 29IN X 18IN	114'	Reinforced Concrete Pipe - Class III	(barrel length = 108 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		30	P	2	0.109				
1006+20	41' Rt	1007+44	49' Rt	24	Pipe Conduit Arch 29IN X 18IN	124'	Reinforced Concrete Pipe - Class III	(barrel length = 118 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		30	P	2	0.109				
1006+34	54' Lt	1007+01	54' Lt	24	Pipe Conduit - Approach	68'	Reinforced Concrete Pipe - Class III	(barrel length = 62 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		24	P	2	0.079				
							Spiral Rib Steel Pipe		24	P	3/4, 1	0.079				
2		1007+36	49' Lt	18	Pipe Conduit - Storm Drain	22'	Reinforced Concrete Pipe - Class III	(barrel length = 18 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
3		1007+63	41' Rt	18	Pipe Conduit - Storm Drain	26'	Reinforced Concrete Pipe - Class III	(barrel length = 22 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
5		4920+80	54' Rt	18	Pipe Conduit - Storm Drain	29'	Reinforced Concrete Pipe - Class III	(barrel length = 25 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
6		4920+71	42' Lt	18	Pipe Conduit - Storm Drain	17'	Reinforced Concrete Pipe - Class III	(barrel length = 13 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
7		4927+30	48' Rt	18	Pipe Conduit - Storm Drain	23'	Reinforced Concrete Pipe - Class III	(barrel length = 20 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
8		4927+28	48' Lt	18	Pipe Conduit - Storm Drain	24'	Reinforced Concrete Pipe - Class III	(barrel length = 20 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
9		9A		18	Pipe Conduit - Storm Drain	78'	Reinforced Concrete Pipe - Class III	(barrel length = 78 LF	18				377			D-714-25
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
10		1011+85	52' Rt	18	Pipe Conduit - Storm Drain	25'	Reinforced Concrete Pipe - Class III	(barrel length = 21 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
9A		10		18	Pipe Conduit - Storm Drain	20'	Reinforced Concrete Pipe - Class III	(barrel length = 20 LF	18				102			D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
11		9A		18	Pipe Conduit - Storm Drain	22'	Reinforced Concrete Pipe - Class III	(barrel length = 22 LF	18				109			D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
12		1013+85	43' Rt	18	Pipe Conduit - Storm Drain	21'	Reinforced Concrete Pipe - Class III	(barrel length = 17' LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
13		1014+68	43' Lt	18	Pipe Conduit - Storm Drain	21'	Reinforced Concrete Pipe - Class III	(barrel length = 17' LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
1008+85	72' Rt	1008+92	86' Lt	30	Pipe Conduit	158'	Reinforced Concrete Pipe - Class III	(barrel length = 154 LF)	30				911	FES	FES	D-714-25M
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1008+96	82' Rt	1009+00	6' Lt	30	Pipe Conduit	88'	Reinforced Concrete Pipe - Class III	(barrel length = 86 LF)	30					FES		D-714-25M
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1009+00	10' Lt	1009+05	108' Lt	30	Pipe Conduit	98'	Reinforced Concrete Pipe - Class III	(barrel length = 96 LF)	30						FES	D-714-25M
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1013+50	44' Rt	1013+50	52' Lt	30	Pipe Conduit	96'	Reinforced Concrete Pipe - Class III	(barrel length = 92 LF)	30				643	FES	FES	D714-26
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1035+25	41' Lt	1035+25	43' Rt	30	Pipe Conduit	84'	Reinforced Concrete Pipe - Class III	(barrel length = 80 LF)	30				722	TES (4:1)	TES (4:1)	D714-26
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1045+53	85' Lt	1044+84	83' Lt	42	Pipe Conduit - Approach	68'	Reinforced Concrete Pipe - Class III	(barrel length = 62 LF)	42					FES	FES	N/A
							Corrugated Steel Pipe		48	P	2	0.138				
							Spiral Rib Steel Pipe		42	P	3/4, 1	0.138				

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

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

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

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

Allowable Pipe LIst

Sta 1000+00 to Sta 1063+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	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)	(*) End Sections		Applicable Backfill Detail
														Begin	End	
				In	Bid Item	LF			In	Type		In	SY	EA	EA	
1045+55	98' Rt	1044+90	98' Rt	24	Pipe Conduit - Approach	66'	Reinforced Concrete Pipe - Class III	(barrel length = 60 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		24	P	2	0.079				
							Spiral Rib Steel Pipe		24	P	3/4, 1	0.079				
1063+25	85' Lt	1062+67	79' Lt	24	Pipe Conduit - Approach	58'	Reinforced Concrete Pipe - Class III	(barrel length = 52 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		30	P	2	0.109				
							Spiral Rib Steel Pipe		24	P	3/4, 1	0.079				
1063+25	91' Lt	1062+67	85' Lt	24	Pipe Conduit - Approach	58'	Reinforced Concrete Pipe - Class III	(barrel length = 52 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		30	P	2	0.109				
							Spiral Rib Steel Pipe		24	P	3/4, 1	0.079				
1085+16	68' Lt	1085+05	53' Lt	36	Pipe Conduit	4'	Reinforced Concrete Pipe - Class III	(barrel length = 4 LF)	36				837			D714-25
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		36	P	3/4, 1	0.109				
1085+05	53' Lt	1084+23	68' Rt	36	Pipe Conduit	162'	Reinforced Concrete Pipe - Class III	(barrel length = 162 LF)	36							D714-25
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		36	P	3/4, 1	0.109				
1114+97	69' Lt	1115+05	58' Lt	36	Pipe Conduit	20'	Reinforced Concrete Pipe - Class III	(barrel length = 16 LF)	36				1483	FES		D714-25M
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		36	P	3, 5	0.109				
1115+05	58' Lt	1116+01	75' Rt	36	Pipe Conduit	158'	Reinforced Concrete Pipe - Class III	(barrel length = 154 LF)	36						FES	D714-25M
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		36	P	3, 5	0.109				
1115+07	74' Lt	1115+15	63' Lt	36	Pipe Conduit	20'	Reinforced Concrete Pipe - Class III	(barrel length = 16 LF)	36					FES		D714-25M
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		36	P	3, 5	0.109				
1115+15	63' Lt	1116+12	71' Rt	36	Pipe Conduit	158'	Reinforced Concrete Pipe - Class III	(barrel length = 154 LF)	36						FES	D714-25M
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		36	P	3, 5	0.109				
1121+59	67' Lt	1121+59	65' Lt	30	Pipe Conduit	4'	Reinforced Concrete Pipe - Class III	(barrel length = 2 LF)	30				722	FES		D714-25M
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1121+59	65' Lt	1121+81	57' Rt	30	Pipe Conduit	124'	Reinforced Concrete Pipe - Class III	(barrel length = 122 LF)	30						TES (4:1)	D714-25M
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1124+46	59' Lt	1124+46	57' Lt	36	Pipe Conduit	4'	Reinforced Concrete Pipe - Class III	(barrel length = 2 LF)	36				739	TES (4:1)		D714-25
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		36	P	3/4, 1	0.109				
1124+46	57' Lt	1124+48	92' Rt	36	Pipe Conduit	148'	Reinforced Concrete Pipe - Class III	(barrel length = 146 LF)	36						FES	D714-25
							Corrugated Steel Pipe		42	P	2	0.138				
							Spiral Rib Steel Pipe		36	P	3/4, 1	0.109				
1131+69	86' Rt	1132+33	87' Rt	24	Pipe Conduit - Approach	64'	Reinforced Concrete Pipe - Class III	(barrel length = 58 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		24	P	2	0.079				
							Spiral Rib Steel Pipe		24	P	3/4, 1	0.079				
1131+71	85' Lt	1132+27	84' Lt	24	Pipe Conduit - Approach	56'	Reinforced Concrete Pipe - Class III	(barrel length = 50 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		24	P	2	0.079				
							Spiral Rib Steel Pipe		24	P	3/4, 1	0.079				

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5 = 5"x1"

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

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

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Allowable Pipe LIst

Sta 1063+01 to Sta 1173+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	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)	(*) End Sections Begin	End	Applicable Backfill Detail
				In	Bid Item	LF			In	Type		In	SY	EA	EA	
1147+99	69' Lt	1147+99	65' Lt	30	Pipe Conduit	4'	Reinforced Concrete Pipe - Class III	(barrel length = 2 LF)	30				545	FES		D714-25
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1147+99	65' Lt	1147+99	54' Rt	30	Pipe Conduit	120'	Reinforced Concrete Pipe - Class III	(barrel length = 118 LF)	30						TES (4:1)	D714-25
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1168+58	86' Lt	1169+16	86' Lt	24	Pipe Conduit - Approach	58'	Reinforced Concrete Pipe - Class III	(barrel length = 52 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		24	P	2	0.079				
							Spiral Rib Steel Pipe		24	P	3/4, 1	0.079				
1177+01	68' Lt	1177+01	54' Lt	30	Pipe Conduit	14'	Reinforced Concrete Pipe - Class III	(barrel length = 12 LF)	30				757	FES		D714-26
							Corrugated Steel Pipe		48	P	2	0.138				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1177+01	54' Lt	1177+04	70' Rt	30	Pipe Conduit	122'	Reinforced Concrete Pipe - Class III	(barrel length = 120 LF)	30						FES	D714-26
							Corrugated Steel Pipe		48	P	2	0.138				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1186+40	70' Lt	1187+22	70' Rt	30	Pipe Conduit	162'	Reinforced Concrete Pipe - Class III	(barrel length = 158 LF)	30				768	FES	FES	D714-25
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3, 5	0.109				
1192+30	68' Lt	1192+23	68' Rt	30	Pipe Conduit	136'	Reinforced Concrete Pipe - Class III	(barrel length = 132 LF)	30				846	FES	FES	D714-26
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1199+47	78' Lt	1199+53	66' Rt	30	Pipe Conduit	146'	Reinforced Concrete Pipe - Class III	(barrel length = 144 LF)	30				782	TES (4:1)	TES (4:1)	D714-25
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
1200+31	74' Lt	1200+17	73' Rt	66	Pipe Conduit	148'	Reinforced Concrete Pipe - Class III	(barrel length = 144 LF)	66				1719	FES	FES	D714-26M
							Corrugated Steel Pipe		72	P	2	0.138				
							Spiral Rib Steel Pipe		66	P	3/4, 1	0.138				
1200+46	74' Lt	1200+33	74' Rt	66	Pipe Conduit	148'	Reinforced Concrete Pipe - Class III	(barrel length = 144 LF)	66					FES	FES	D714-26M
							Corrugated Steel Pipe		72	P	2	0.138				
							Spiral Rib Steel Pipe		66	P	3/4, 1	0.138				
1200+60	74' Lt	1200+49	73' Rt	66	Pipe Conduit	148'	Reinforced Concrete Pipe - Class III	(barrel length = 144 LF)	66					FES	FES	D714-26M
							Corrugated Steel Pipe		72	P	2	0.138				
							Spiral Rib Steel Pipe		66	P	3/4, 1	0.138				
1205+61	54' Lt	1206+01	55' Rt	66	Pipe Conduit	116'	Reinforced Concrete Pipe - Class III	(barrel length = 112 LF)	66				1479	FES	FES	D714-26M
							Corrugated Steel Pipe		78	P	2	0.138				
							Spiral Rib Steel Pipe		66	P	3/4, 1	0.138				
1205+78	54' Lt	1206+17	55' Rt	66	Pipe Conduit	116'	Reinforced Concrete Pipe - Class III	(barrel length = 112 LF)	66					FES	FES	D714-26M
							Corrugated Steel Pipe		78	P	2	0.138				
							Spiral Rib Steel Pipe		66	P	3/4, 1	0.138				
1205+94	54' Lt	1206+34	55' Rt	66	Pipe Conduit	116'	Reinforced Concrete Pipe - Class III	(barrel length = 112 LF)	66					FES	FES	D714-26M
							Corrugated Steel Pipe		78	P	2	0.138				
							Spiral Rib Steel Pipe		66	P	3/4, 1	0.138				
1206+11	54' Lt	1206+50	55' Rt	66	Pipe Conduit	116'	Reinforced Concrete Pipe - Class III	(barrel length = 112 LF)	66					FES	FES	D714-26M
							Corrugated Steel Pipe		78	P	2	0.138				
							Spiral Rib Steel Pipe		66	P	3/4, 1	0.138				
14		1206+86	68' Rt	18	Pipe Conduit - Storm Drain	45'	Reinforced Concrete Pipe - Class III	(barrel length = 42 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							

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

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

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

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

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Allowable Pipe LIst

Sta 1173+01 to Sta 1214+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	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)	(*) End Sections		Applicable Backfill Detail
														Begin	End	
				In	Bid Item	LF			In	Type		In	SY	EA	EA	
2259+75	62' Lt	2260+28	65' Lt	30	Pipe Conduit - Approach	52'	Reinforced Concrete Pipe - Class III	(barrel length = 48 LF)	30					FES	FES	N/A
							Corrugated Steel Pipe		36	P	2	0.109				
							Spiral Rib Steel Pipe		30	P	3/4, 1	0.109				
2259+84	56 'Rt	2260+16	60' Rt	24	Pipe Conduit - Approach	34'	Reinforced Concrete Pipe - Class III	(barrel length = 28 LF)	24					FES	FES	N/A
							Corrugated Steel Pipe		24	P	2	0.079				
							Spiral Rib Steel Pipe		24	P	3/4, 1	0.079				
15		1206+93	57' Lt	18	Pipe Conduit - Storm Drain	35'	Reinforced Concrete Pipe - Class III	(barrel length = 31 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
17		16		18	Pipe Conduit - Storm Drain	30'	Reinforced Concrete Pipe - Class III	(barrel length = 30 LF)	18				148			D-714-26
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
16		2265+75	47' Lt	18	Pipe Conduit - Storm Drain	19'	Reinforced Concrete Pipe - Class III	(barrel length = 16 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
18		2266+38	38' Rt	18	Pipe Conduit - Storm Drain	23'	Reinforced Concrete Pipe - Class III	(barrel length = 20 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
19		2267+62	71' Rt	18	Pipe Conduit - Storm Drain	71'	Reinforced Concrete Pipe - Class III	(barrel length = 68 LF)	18				387		FES	D-714-25
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
20		2269+90	78' Lt	18	Pipe Conduit - Storm Drain	81'	Reinforced Concrete Pipe - Class III	(barrel length = 78 LF)	18				210		FES	D-714-25
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
21		2270+97	52' Rt	18	Pipe Conduit - Storm Drain	26'	Reinforced Concrete Pipe - Class III	(barrel length = 22 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
22		2271+20	45' Lt	18	Pipe Conduit - Storm Drain	26'	Reinforced Concrete Pipe - Class III	(barrel length = 22 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
24		2273+20	49' Lt	18	Pipe Conduit - Storm Drain	20'	Reinforced Concrete Pipe - Class III	(barrel length = 16 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				
							High-Density Polyethlyne		18							
26		2273+44	42' Rt	18	Pipe Conduit - Storm Drain	23'	Reinforced Concrete Pipe - Class III	(barrel length = 20 LF)	18						FES	D-714-27
							Spiral Rib Steel Pipe		18	P	3/4, 1	0.079				

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

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

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

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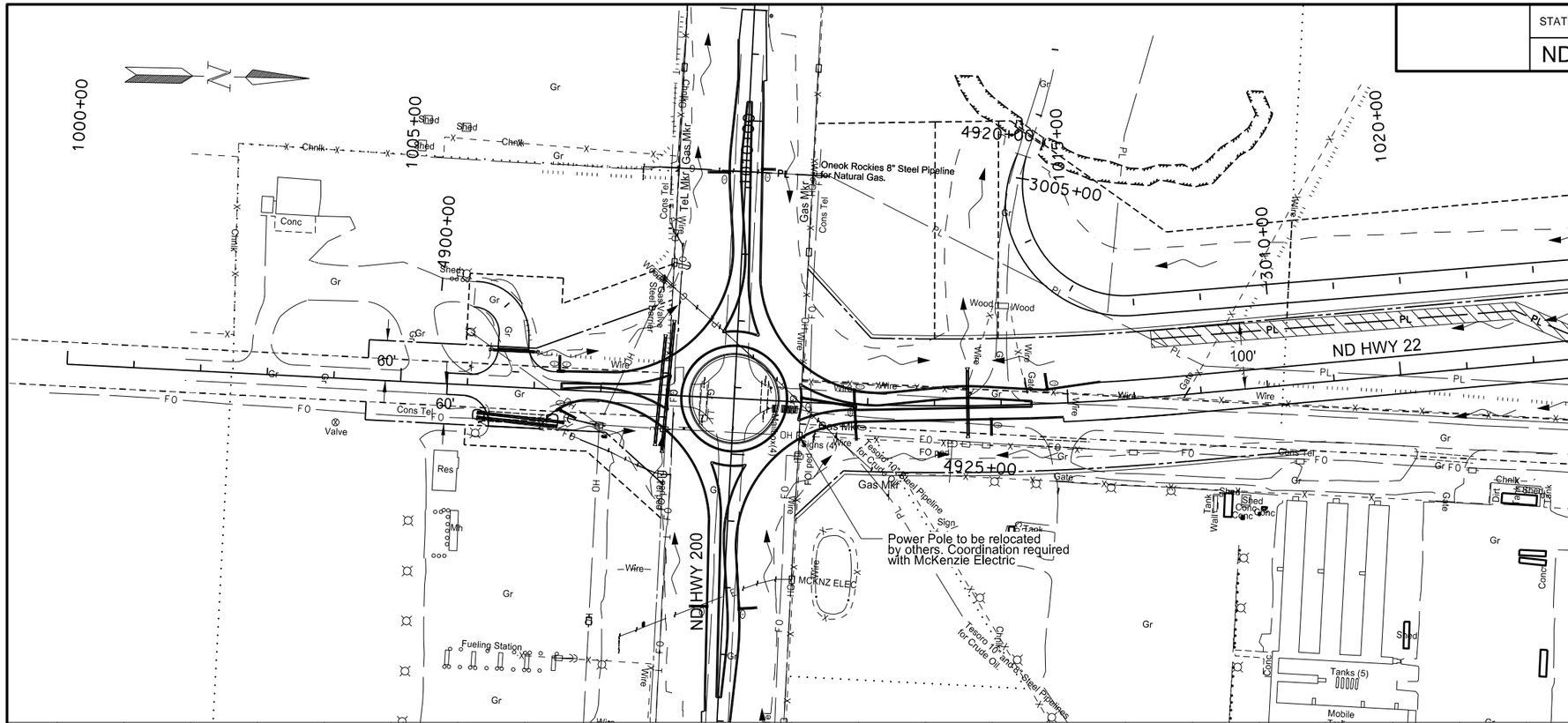
Allowable Pipe LIst

Sta 1173+01 to Sta 1214+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	1



202-0174 REMOVAL OF PIPE ALL TYPES AND SIZES

Sta	1006+20	-	47.77' Rt	to	Sta	1007+28	-	49.11' Rt	96 LF
Sta	1006+20	-	43.14' Rt	to	Sta	1007+28	-	44.43' Rt	96 LF
Sta	1009+56	-	23.78' Lt	to	Sta	1009+54	-	28.46' Rt	50 LF
Sta	1010+45	-	29.98' Lt	to	Sta	1010+45	-	18.76' Rt	48 LF
Sta	1014+40	-	56.70' Rt	to	Sta	1015+29	-	65.22' Rt	90 LF
Sta	1020+09	-	121.16' Rt	to	Sta	1020+97	-	136.57' Rt	90 LF
								Total =	470 LF

714-4105 PIPE CONDUIT 24IN-APPROACH

Sta	1006+34	-	54.45' Lt	to	Sta	1007+01	-	54.42' Lt	68 LF
								Total =	68 LF

714-4110 PIPE CONDUIT 30IN

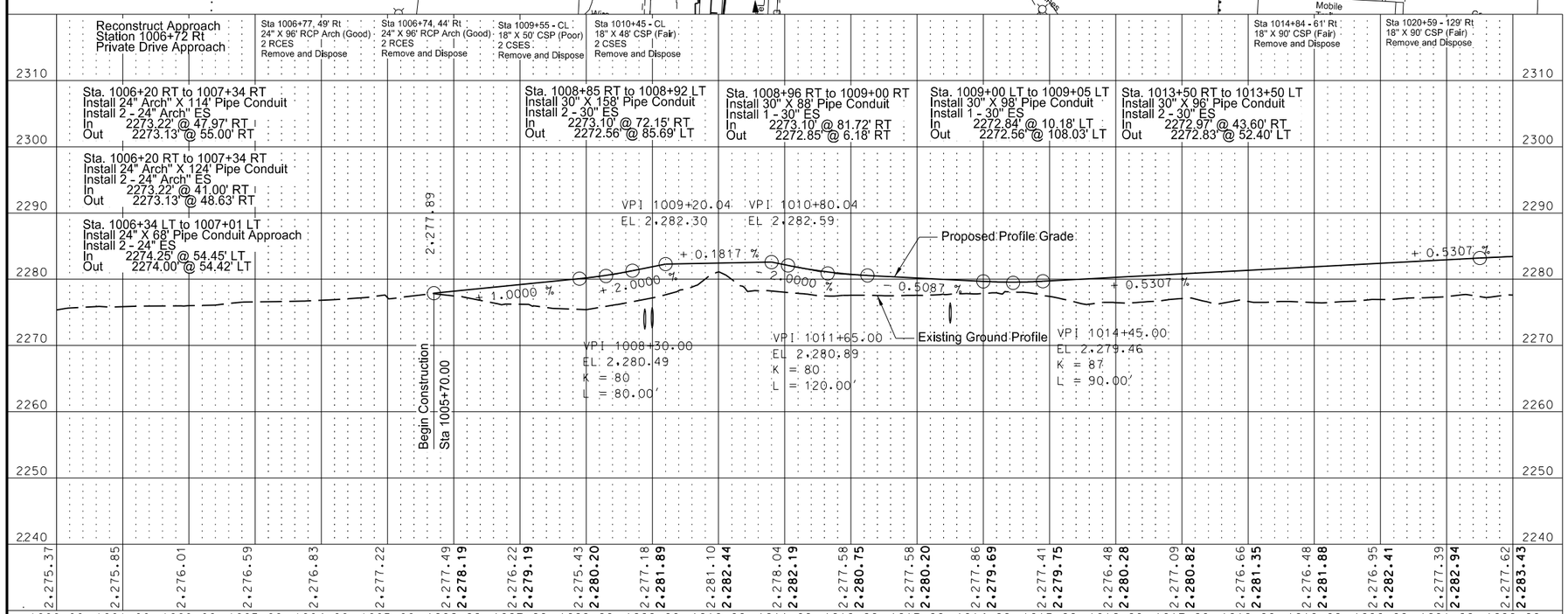
Sta	1008+85	-	72.15' Rt	to	Sta	1008+92	-	85.69' Lt	158 LF
Sta	1008+96	-	81.72' Rt	to	Sta	1009+00	-	6.18' Rt	88 LF
Sta	1009+00	-	10.18' Lt	to	Sta	1009+05	-	108.03' Lt	98 LF
Sta	1013+50	-	43.60' Rt	to	Sta	1013+50	-	52.40' Lt	96 LF
								Total =	440 LF

714-4218 PIPE CONDUIT ARCH 29IN X 18IN

Sta	1006+20	-	47.97' Rt	to	Sta	1007+34	-	55.00' Rt	114 LF
Sta	1006+20	-	41.00' Rt	to	Sta	1007+44	-	48.63' Rt	124 LF
								Total =	238 LF

LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)



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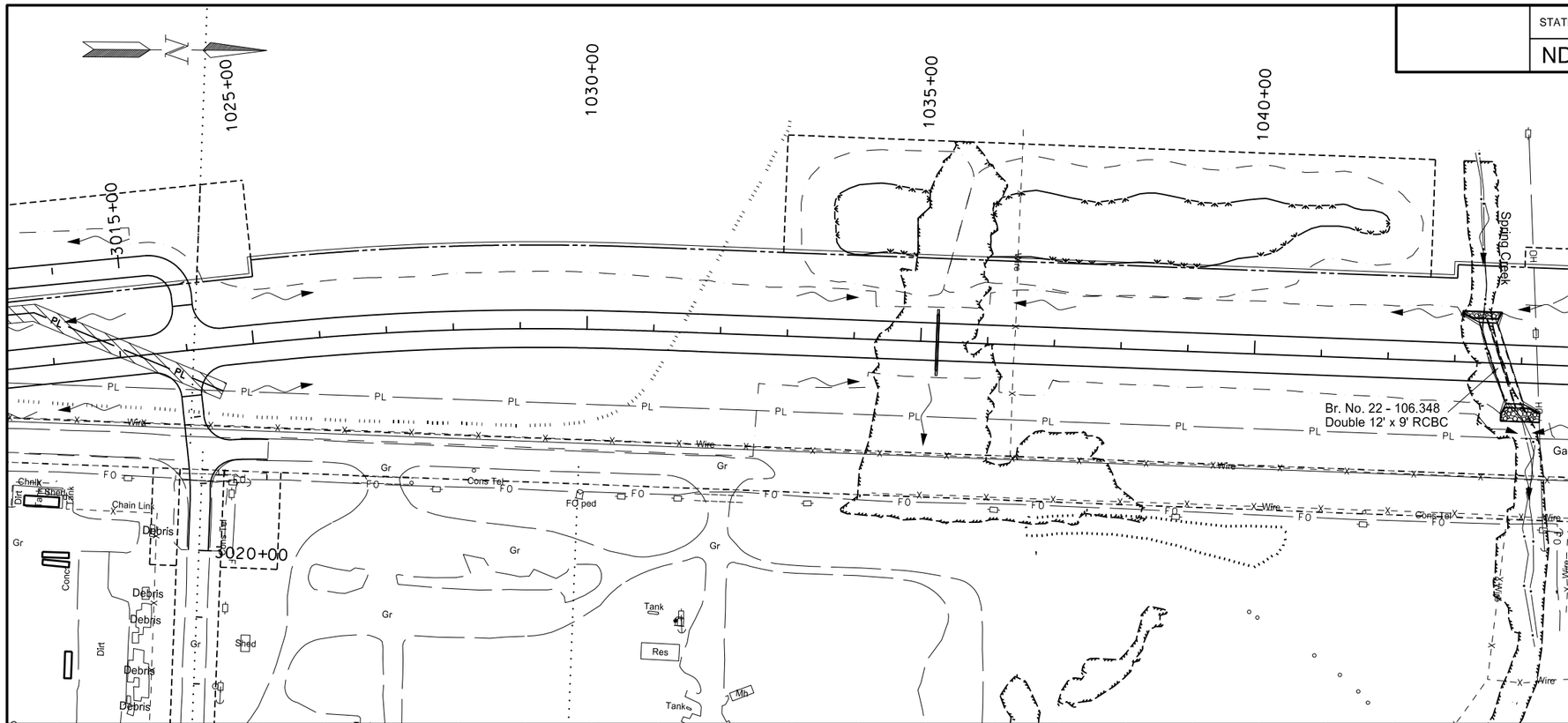
Plan and Profile Sheets

Sta 1005+00 to 1022+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	2



202-0174 REMOVAL OF PIPE ALL TYPES AND SIZES

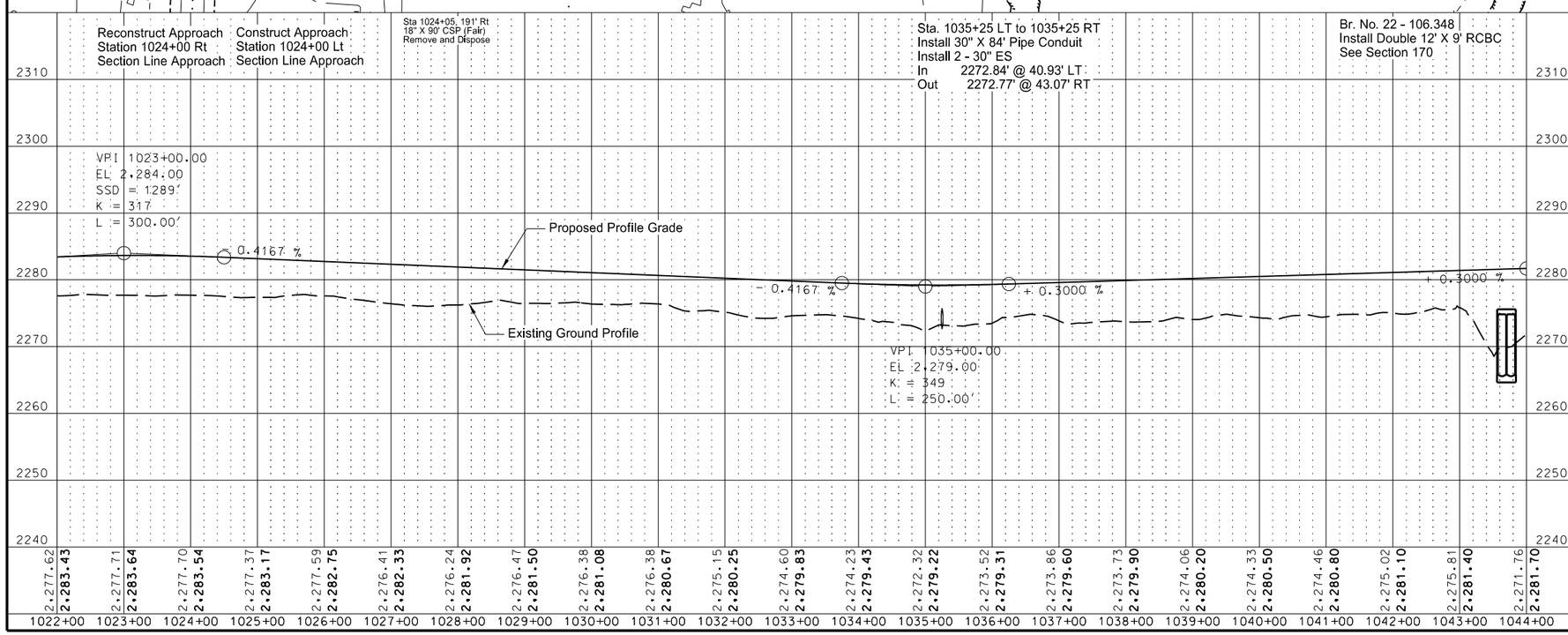
Sta 1023+63 - 185.74' Rt to Sta 1024+46 - 196.46' Rt	90 LF	
Total =	90 LF	

714-4110 PIPE CONDUIT 30IN

Sta 1035+25 - 40.93' Lt to Sta 1035+25 - 43.07' Rt	84 LF	
Total =	84 LF	

LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)



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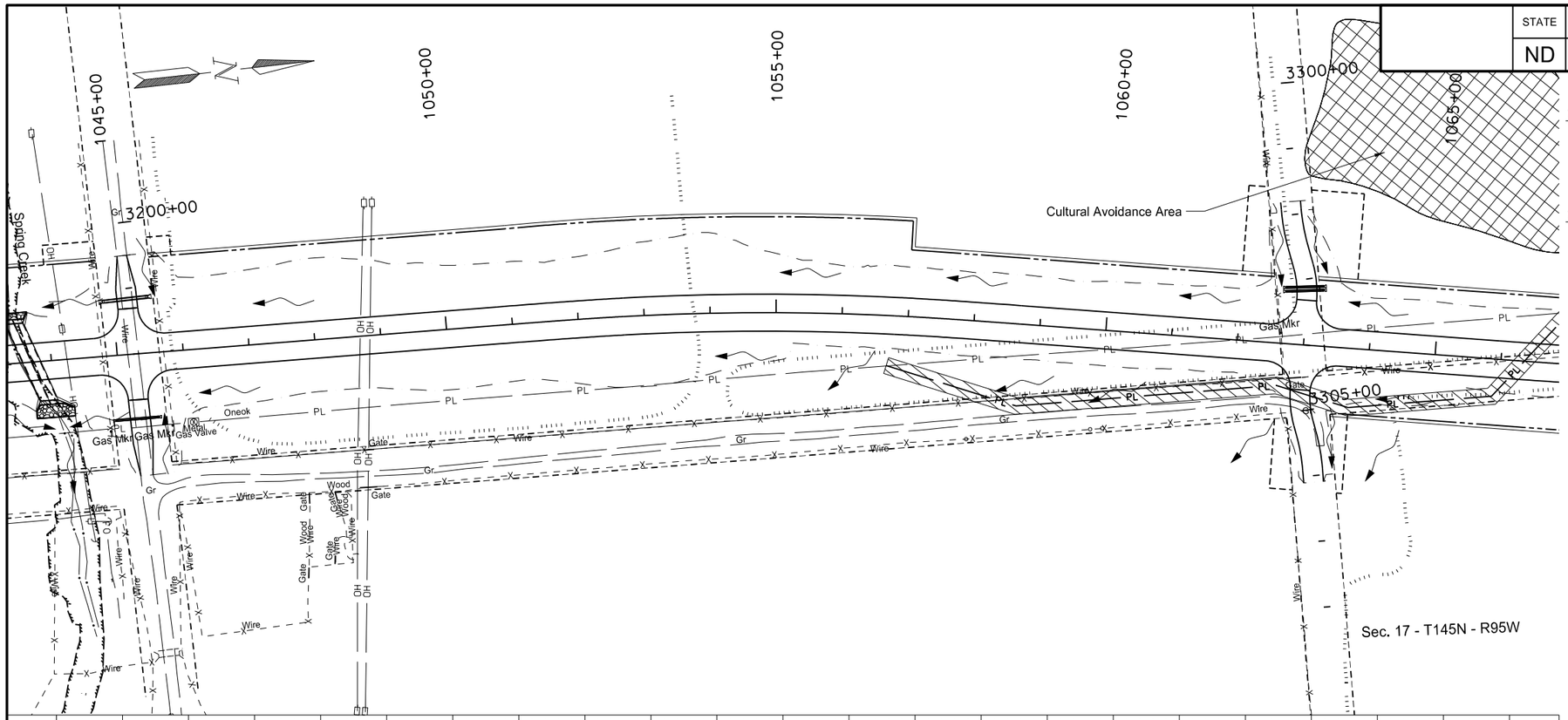
Plan and Profile Sheets

Sta 1022+00 to 1044+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	3



714-4105 PIPE CONDUIT 24IN-APPROACH

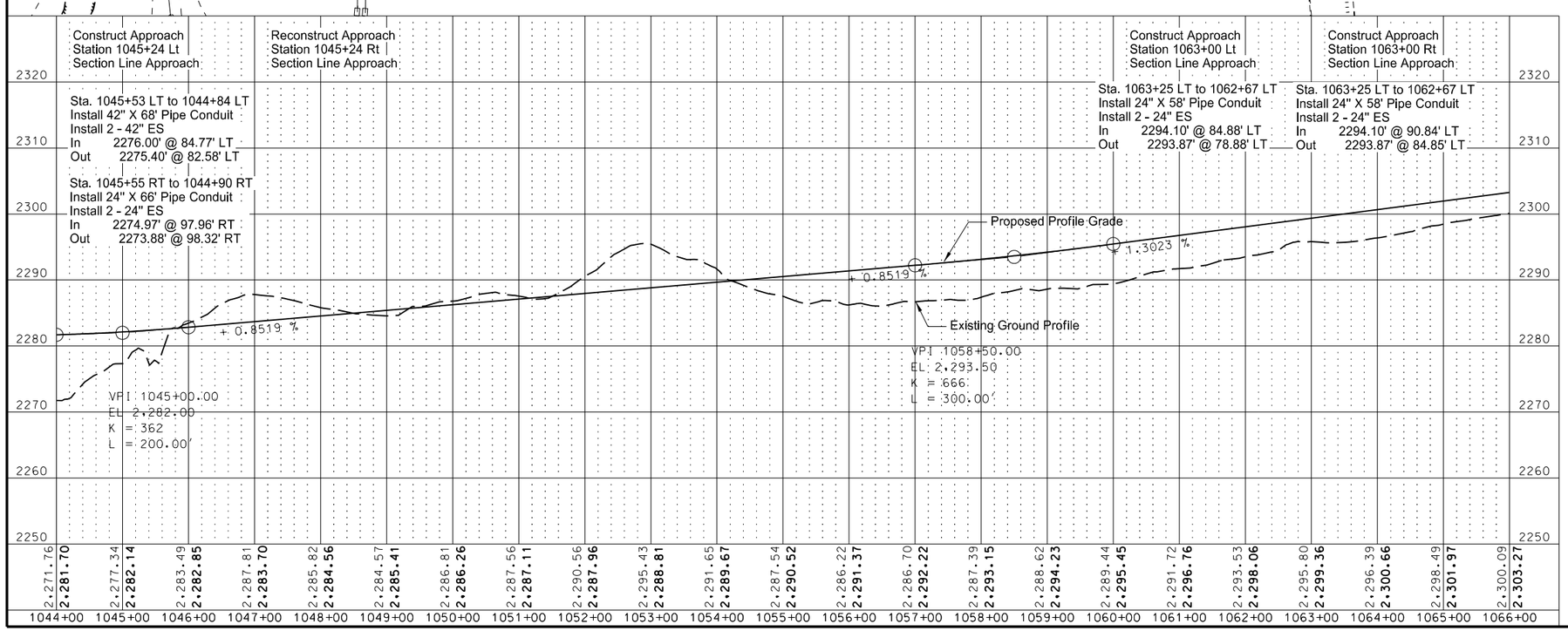
Sta 1045+55	-	97.96' Rt	to	Sta 1044+90	-	98.32' Rt	66 LF
Sta 1063+25	-	84.88' Lt	to	Sta 1062+67	-	78.88' Lt	58 LF
Sta 1063+25	-	90.84' Lt	to	Sta 1062+67	-	84.85' Lt	58 LF
						Total =	182 LF

714-4120 PIPE CONDUIT 42IN-APPROACH

Sta 1045+53	-	84.77' Lt	to	Sta 1044+84	-	82.58' Lt	68 LF
						Total =	68 LF

LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)



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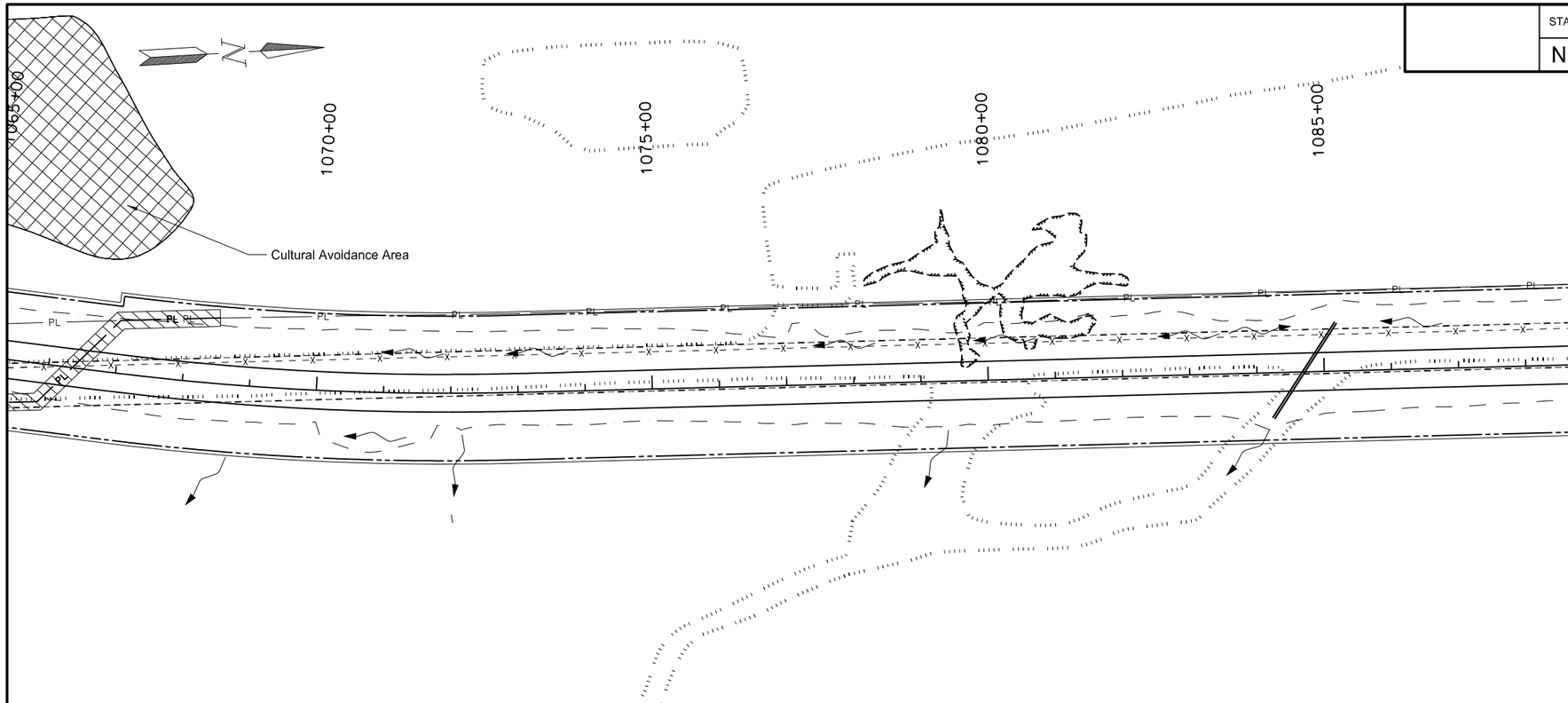
Plan and Profile Sheets

Sta 1044+00 to 1066+00

ND Hwy 22

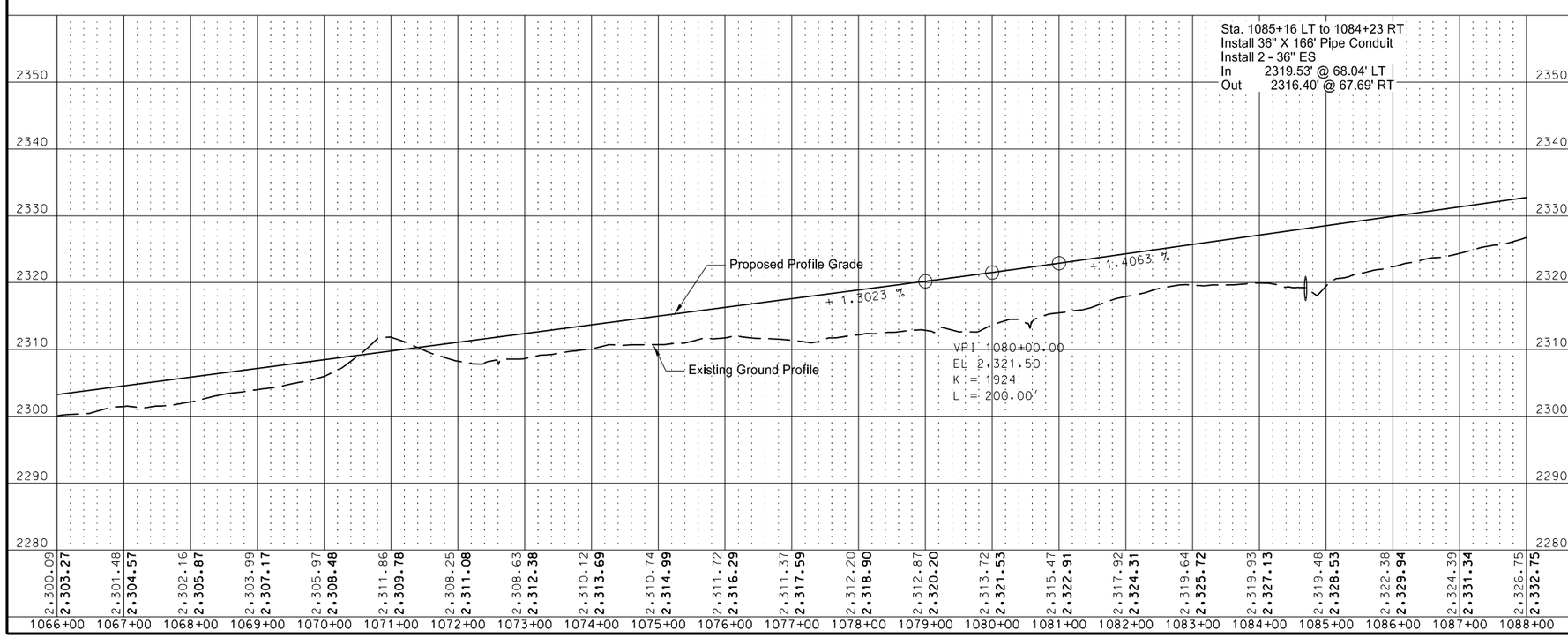
Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	4



714-4115 PIPE CONDUIT 36IN

Sta 1085+19	-	72.34' Lt	to	Sta 1085+05	-	52.72' Lt	26 LF
Sta 1085+05	-	52.72' Lt	to	Sta 1084+23	-	67.80' Rt	146 LF
						Total =	172 LF



LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)

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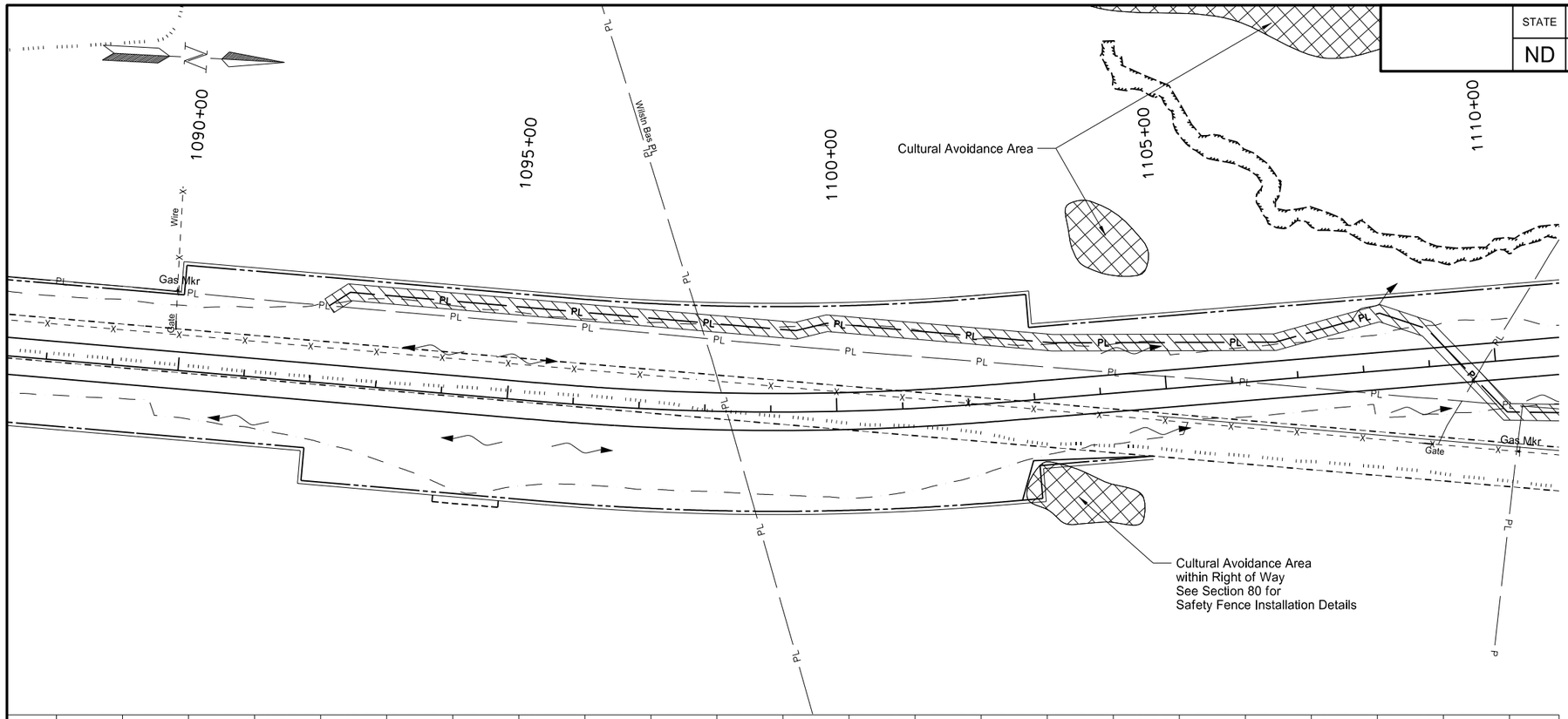
Plan and Profile Sheets

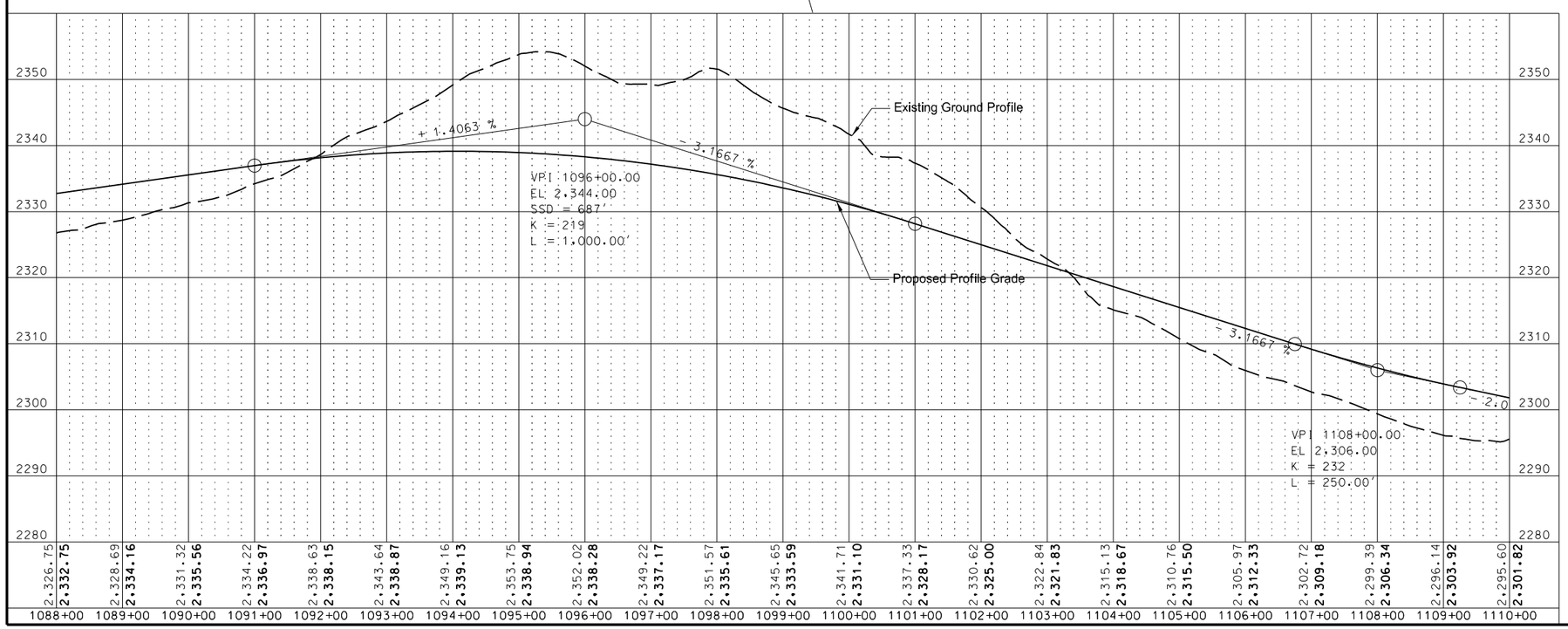
Sta 1066+00 to 1088+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	5





LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)

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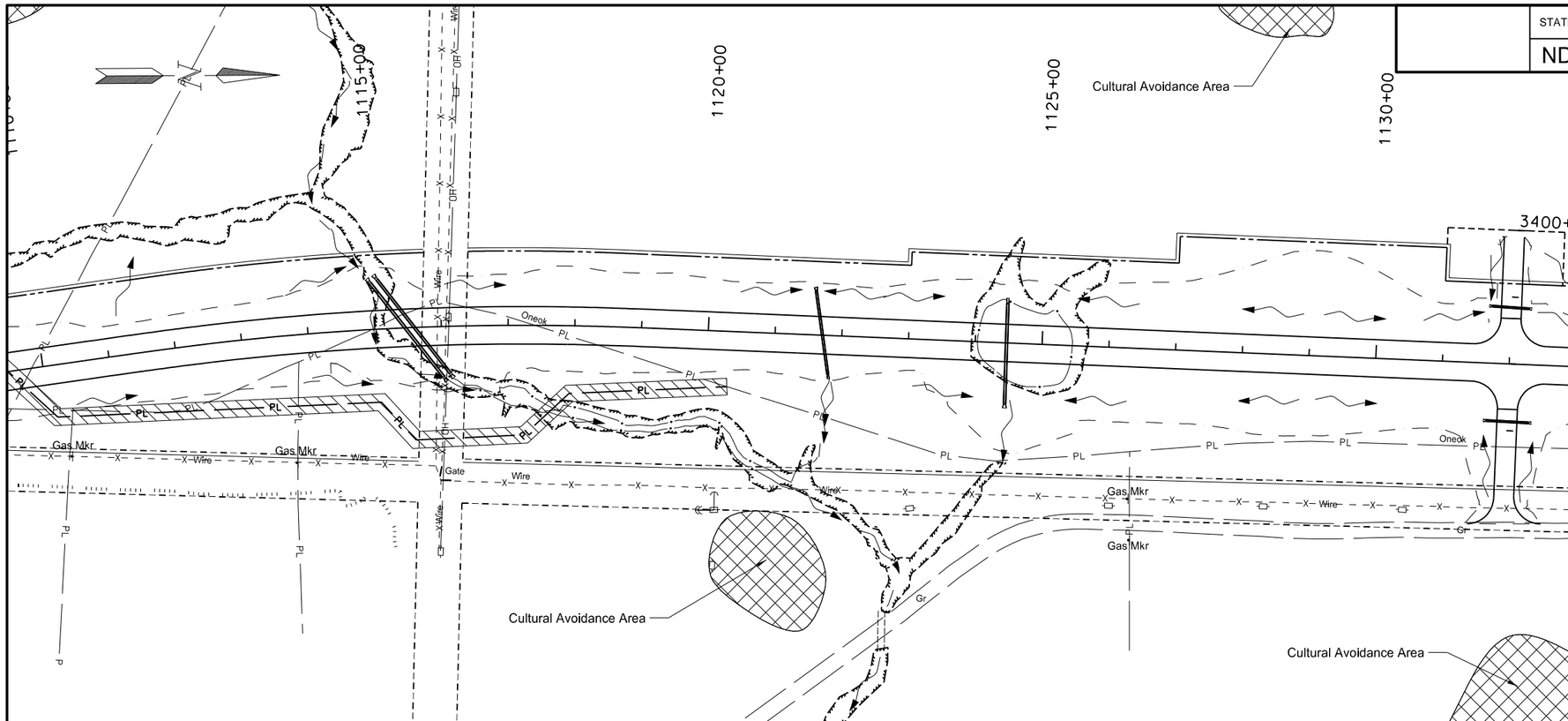
Plan and Profile Sheets

Sta 1088+00 to 1110+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	6



714-4105 PIPE CONDUIT 24IN-APPROACH

Sta	1131+69	-	86.06' Rt	to	Sta	1132+33	- 86.93' Rt	64 LF
Sta	1131+71	-	85.24' Lt	to	Sta	1132+27	- 83.60' Lt	56 LF
							Total =	120 LF

714-4110 PIPE CONDUIT 30IN

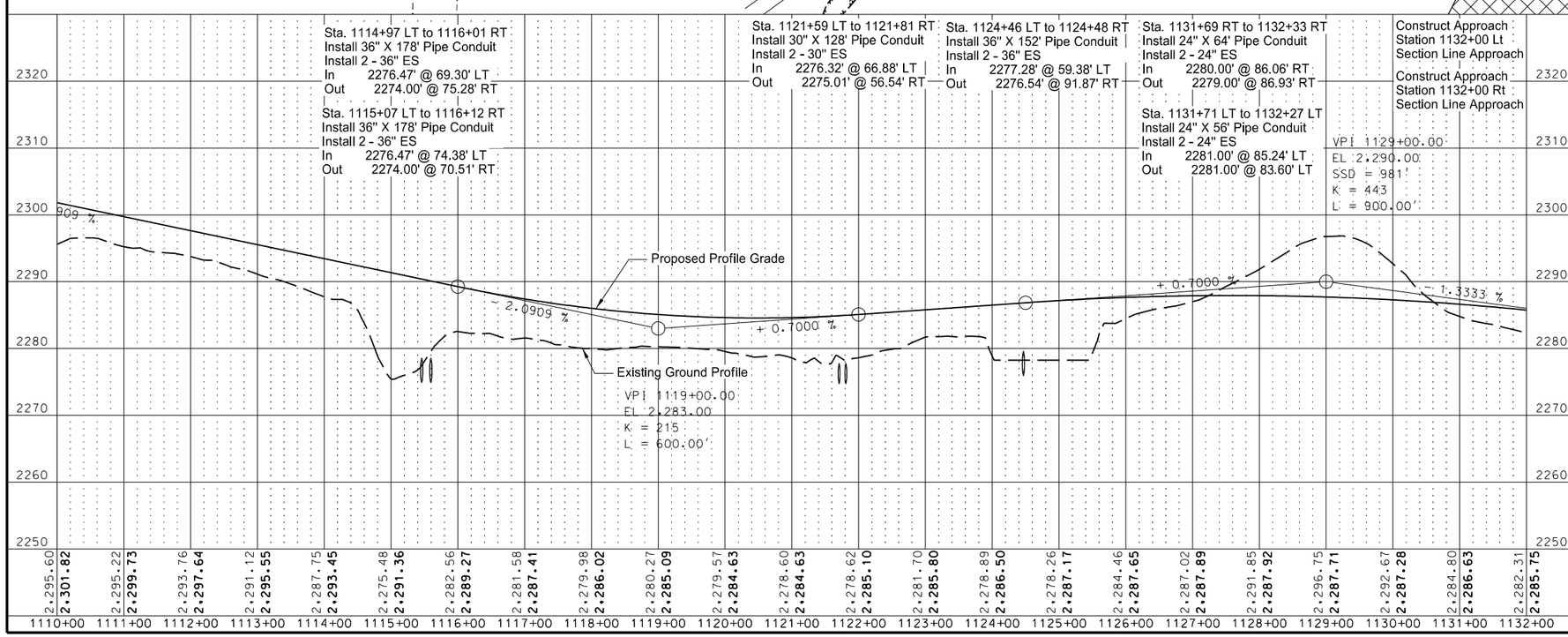
Sta	1121+59	-	66.88' Lt	to	Sta	1121+59	- 64.56' Lt	4 LF
Sta	1121+59	-	64.56' Lt	to	Sta	1121+81	- 56.54' Rt	124 LF
							Total =	128 LF

714-4115 PIPE CONDUIT 36IN

Sta	1114+97	-	69.30' Lt	to	Sta	1115+05	- 58.36' Lt	20 LF
Sta	1115+05	-	58.36' Lt	to	Sta	1116+01	- 75.28' Rt	158 LF
Sta	1115+07	-	74.38' Lt	to	Sta	1115+15	- 63.46' Lt	20 LF
Sta	1115+15	-	63.46' Lt	to	Sta	1116+12	- 70.51' Rt	158 LF
Sta	1124+46	-	59.38' Lt	to	Sta	1124+46	- 56.54' Lt	4 LF
Sta	1124+46	-	56.54' Lt	to	Sta	1124+48	- 91.87' Rt	148 LF
							Total =	508 LF

LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)



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Plan and Profile Sheets

Sta 1110+00 to 1132+00

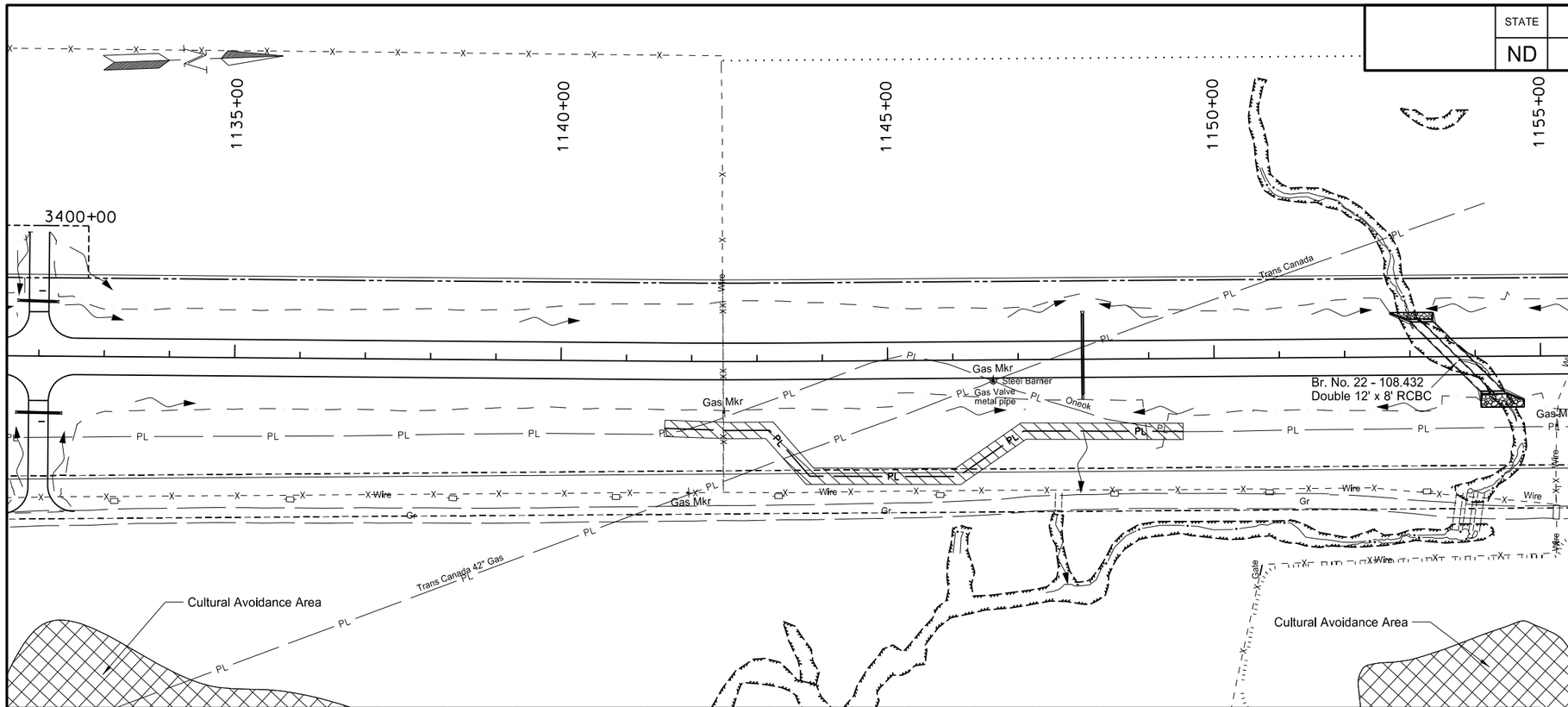
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	7

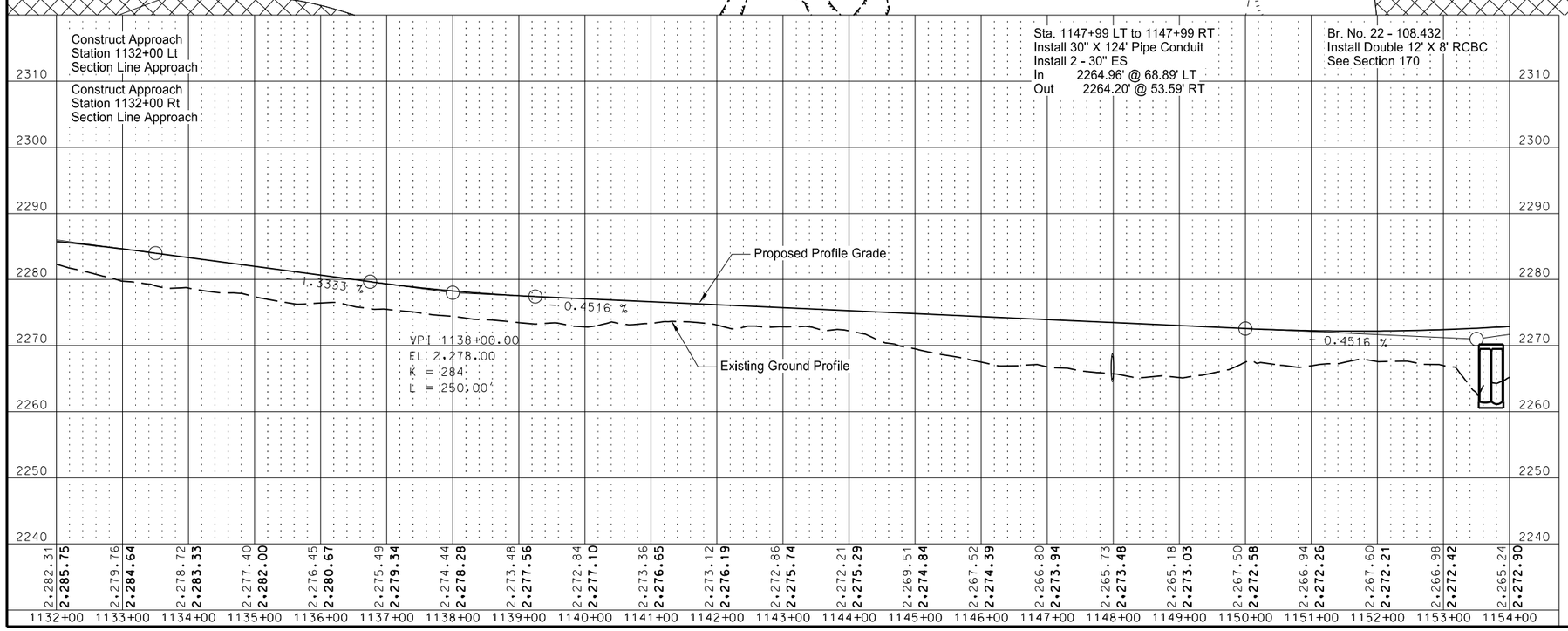
714-4110 PIPE CONDUIT 30IN

Sta	1147+99	-	68.89' Lt	to	Sta	1147+99	-	65.41' Lt	4 LF
Sta	1147+99	-	65.41' Lt	to	Sta	1147+99	-	53.59' Rt	120 LF
								Total =	124 LF



LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)



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Plan and Profile Sheets

Sta 1132+00 to 1154+00

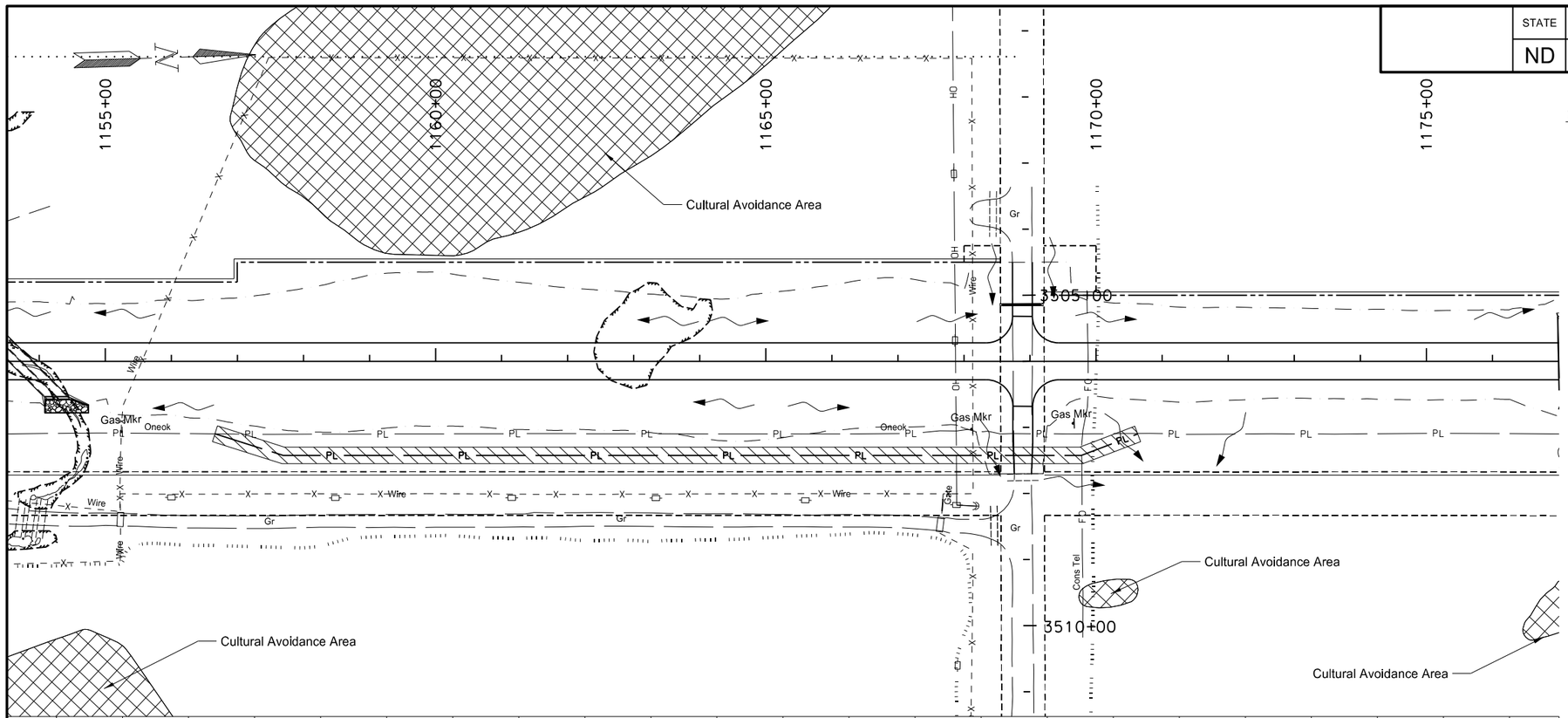
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	8

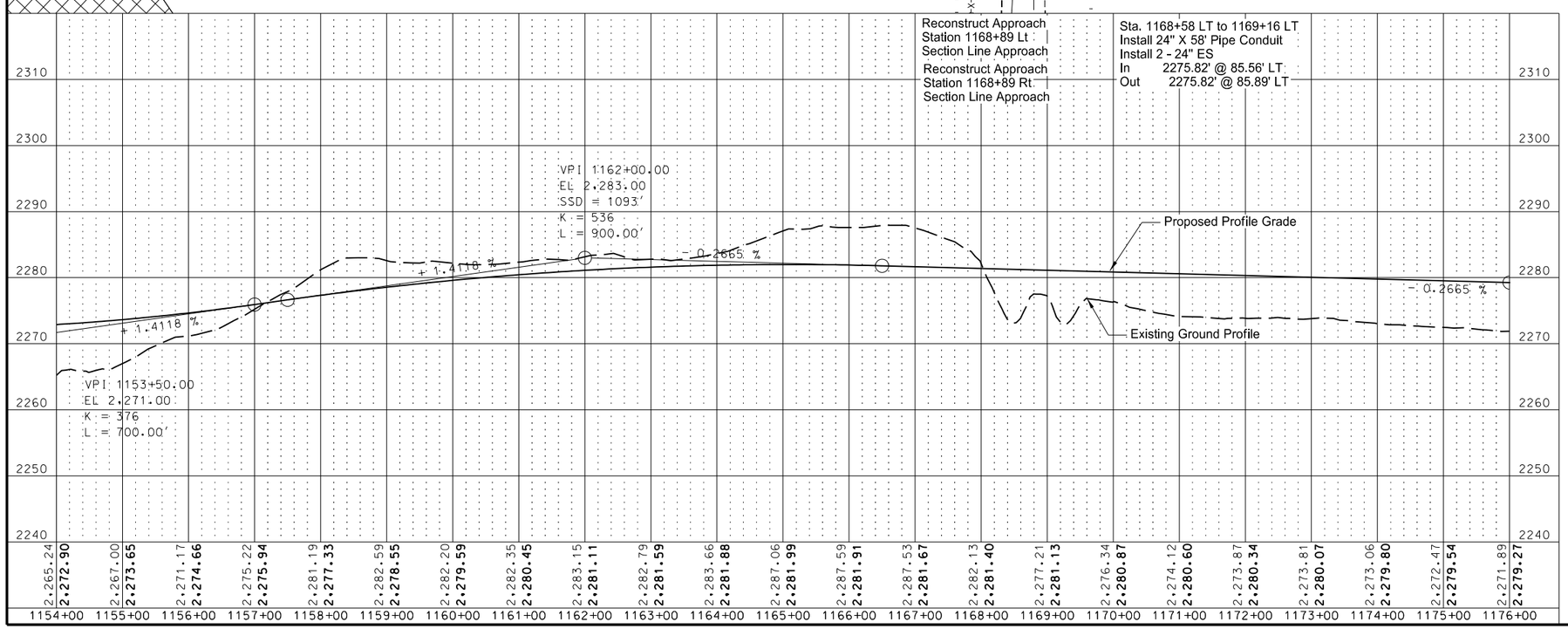
714-4105 PIPE CONDUIT 24IN-APPROACH

Sta	1168+58	-	85.56' Lt	to	Sta	1169+16	-	85.89' Lt 58 LF
								Total = 58 LF



Reconstruct Approach
Station 1168+89 Lt
Section Line Approach
Reconstruct Approach
Station 1168+89 Rt.
Section Line Approach

Sta. 1168+58 LT to 1169+16 LT
Install 24" X 58' Pipe Conduit
Install 2 - 24" ES
In 2275.82' @ 85.56' LT
Out 2275.82' @ 85.89' LT



LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)

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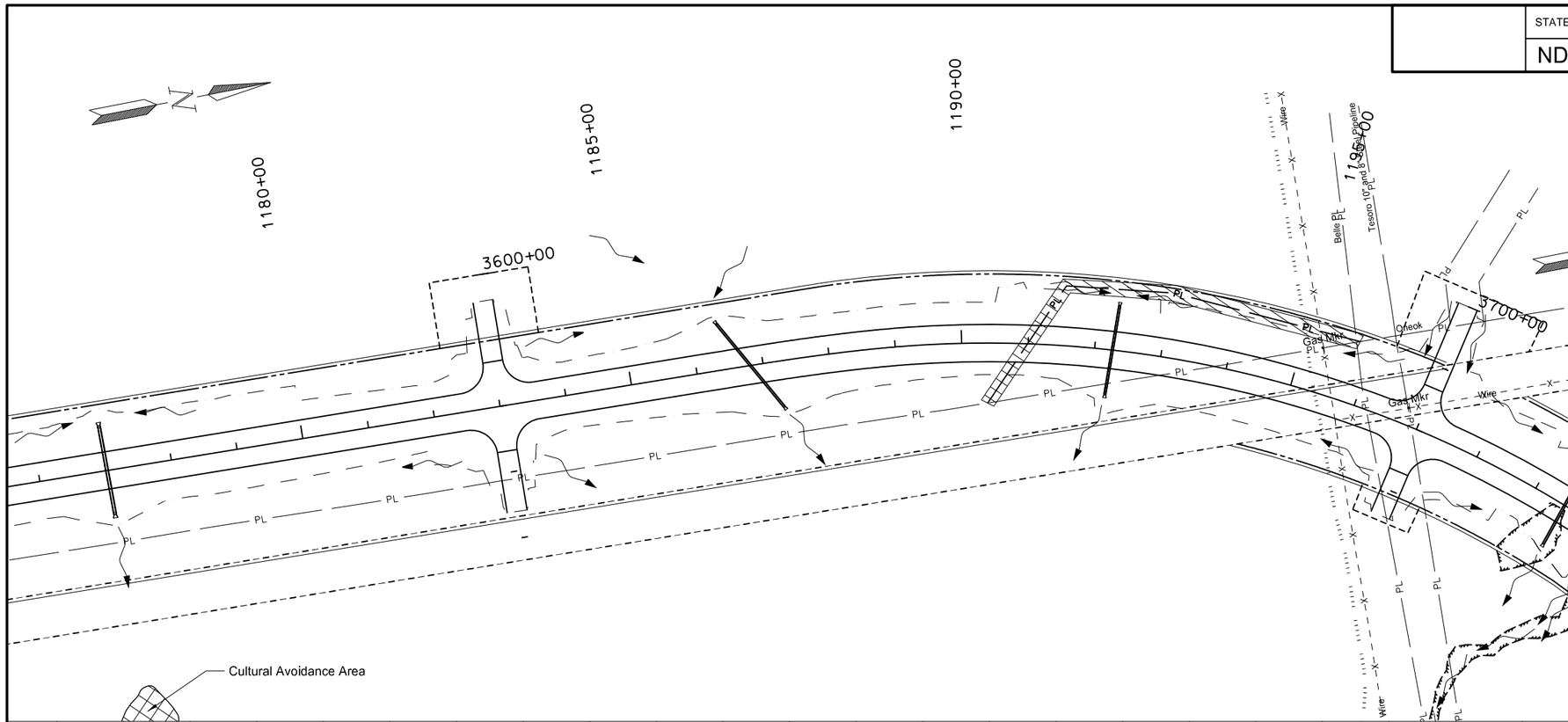
Plan and Profile Sheets

Sta 1154+00 to 1176+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	9

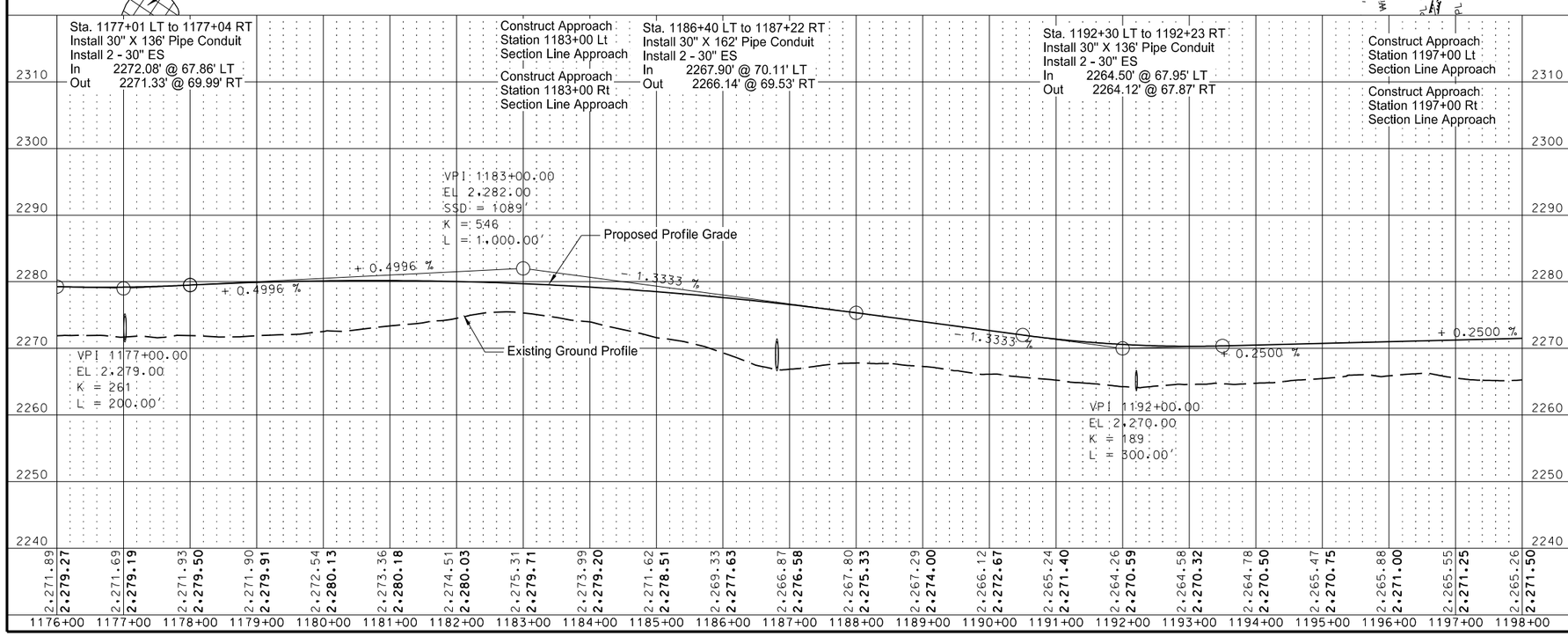


714-4110 PIPE CONDUIT 30IN

Sta 1177+01	- 67.86'	Lt	to	Sta 1177+01	- 54.41'	Lt	14 LF
Sta 1177+01	- 54.41'	Lt	to	Sta 1177+04	- 69.99'	Rt	122 LF
Sta 1186+40	- 70.11'	Lt	to	Sta 1187+22	- 69.53'	Rt	162 LF
Sta 1192+30	- 67.95'	Lt	to	Sta 1192+23	- 67.87'	Rt	136 LF
						Total =	434 LF

LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)



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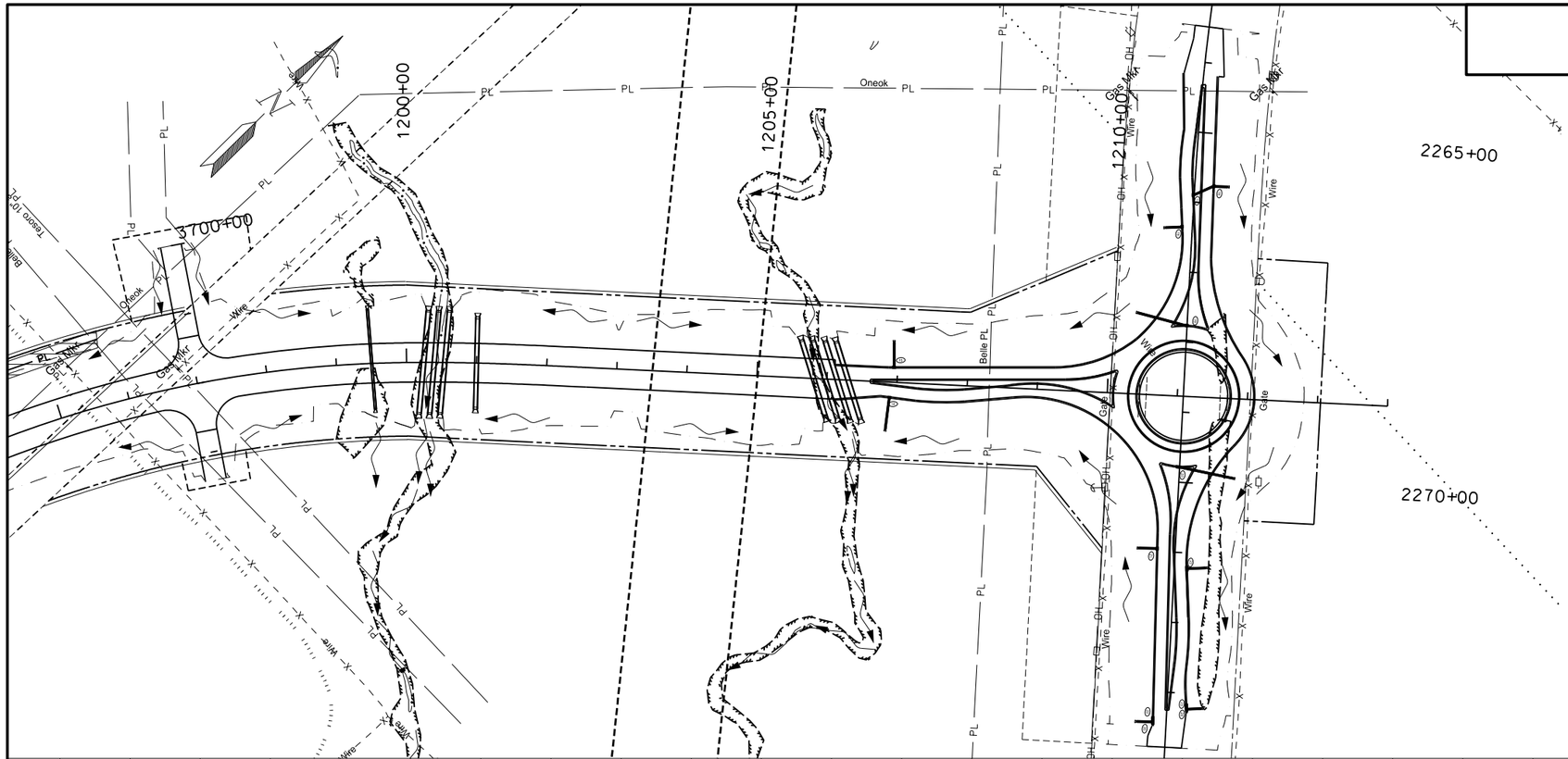
Plan and Profile Sheets

Sta 1176+00 to 1198+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	10



202-0174 REMOVAL OF PIPE ALL TYPES AND SIZES

Sta 1210+51	-	25.07' Lt	to	Sta 1210+51	-	33.03' Rt	58 LF
Sta 1211+66	-	23.61' Lt	to	Sta 1211+66	-	30.35' Rt	54 LF
						Total =	112 LF

714-4110 PIPE CONDUIT 30IN

Sta 1199+47	-	77.94' Lt	to	Sta 1199+53	-	66.00' Rt	146 LF
						Total =	146 LF

714-4140 PIPE CONDUIT 66IN

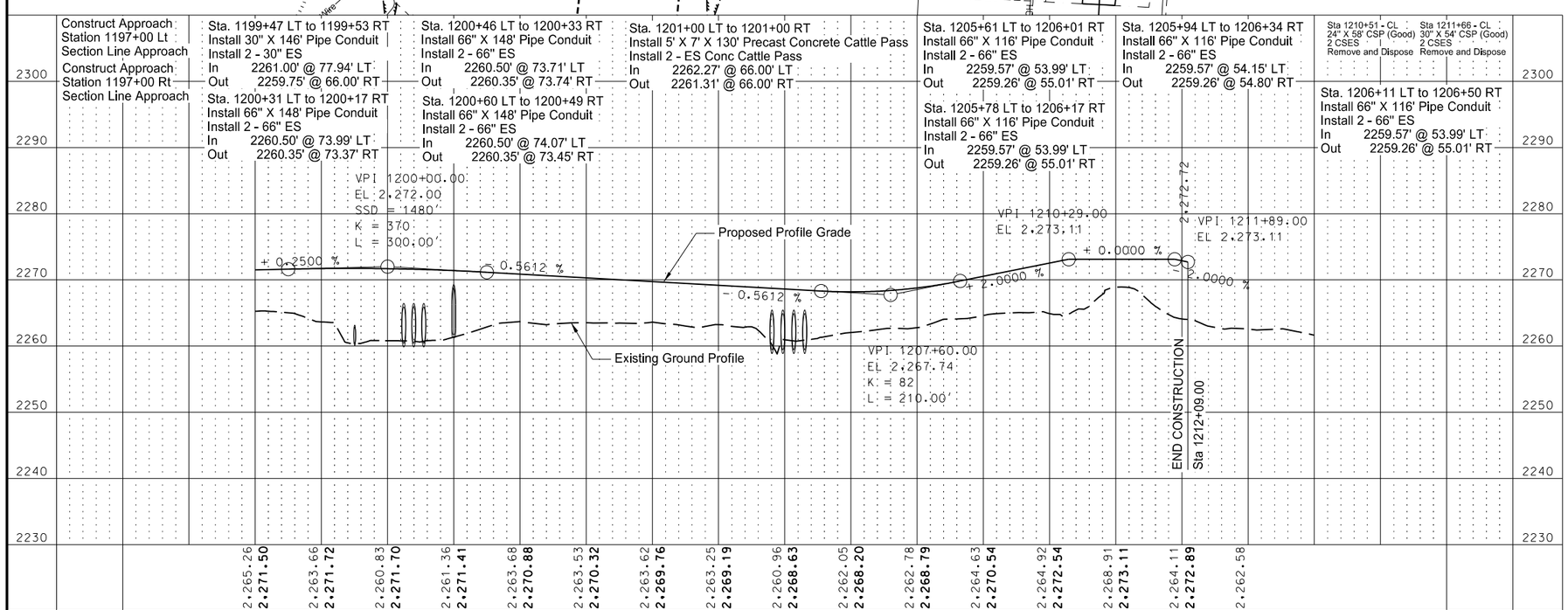
Sta 1200+31	-	73.99' Lt	to	Sta 1200+17	-	73.37' Rt	148 LF
Sta 1200+46	-	73.71' Lt	to	Sta 1200+33	-	73.74' Rt	148 LF
Sta 1200+60	-	74.07' Lt	to	Sta 1200+49	-	73.45' Rt	148 LF
Sta 1205+61	-	53.99' Lt	to	Sta 1206+01	-	55.01' Rt	116 LF
Sta 1205+78	-	53.99' Lt	to	Sta 1206+17	-	55.01' Rt	116 LF
Sta 1205+94	-	54.15' Lt	to	Sta 1206+34	-	54.80' Rt	116 LF
Sta 1206+11	-	53.99' Lt	to	Sta 1206+50	-	55.01' Rt	116 LF
						Total =	908 LF

714-9200 CATTLE PASS CONC INTERMED SECTION

Sta 1201+00	-	66.00' Lt	to	Sta 1201+00	-	66.00' Rt	130 LF
						Total =	130 LF

714-9350 END SECTION CONC CATTLE PASS

Sta 1201+00 - 66.00' Lt	1 EA
Sta 1201+00 - 66.00' Rt	1 EA
Total =	2 EA



LEGEND

Proposed 25' ONEOK Rockies Midstream Corridor (to be done by others)

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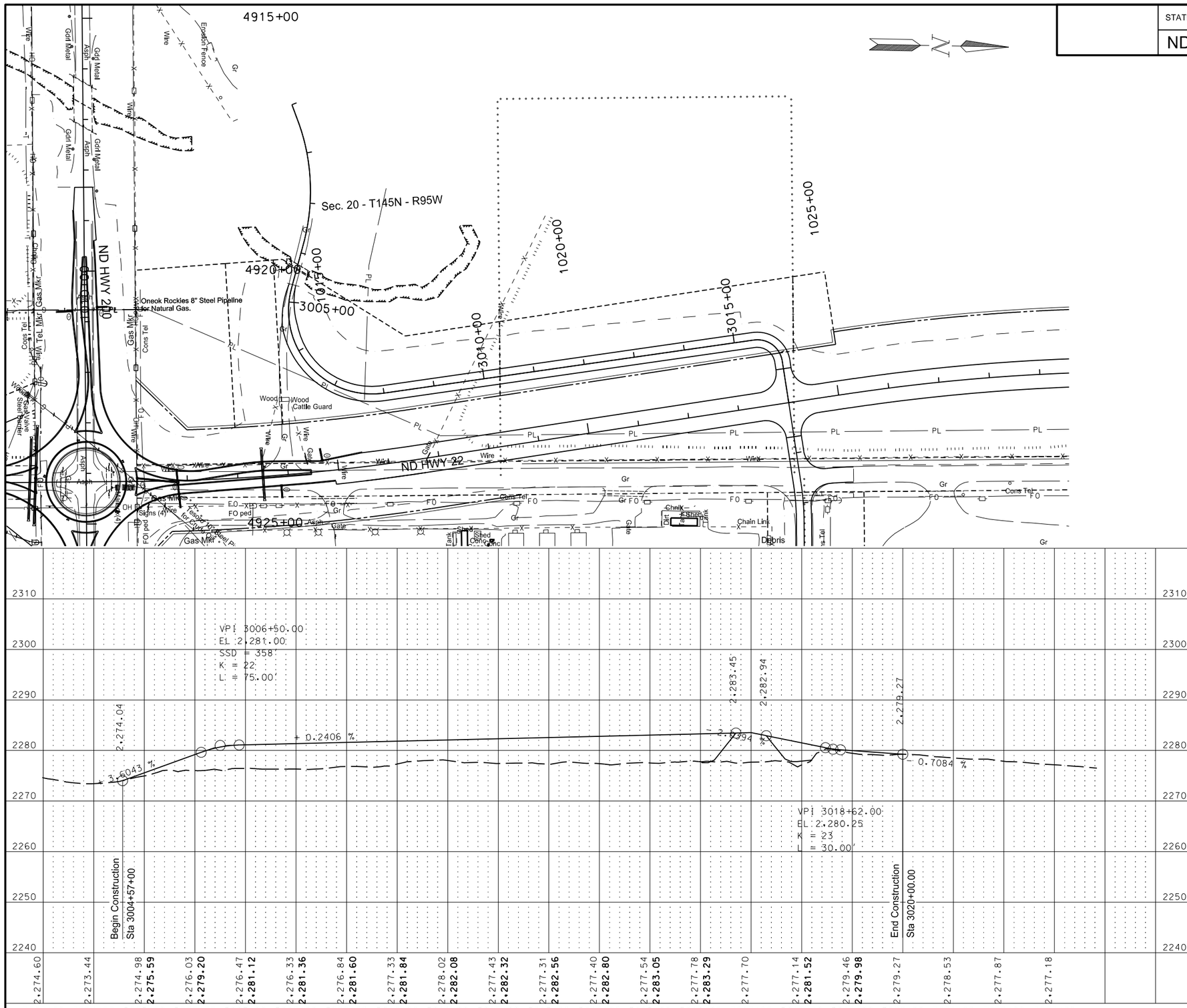
Plan and Profile Sheets

Sta 1198 to 1214+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	11



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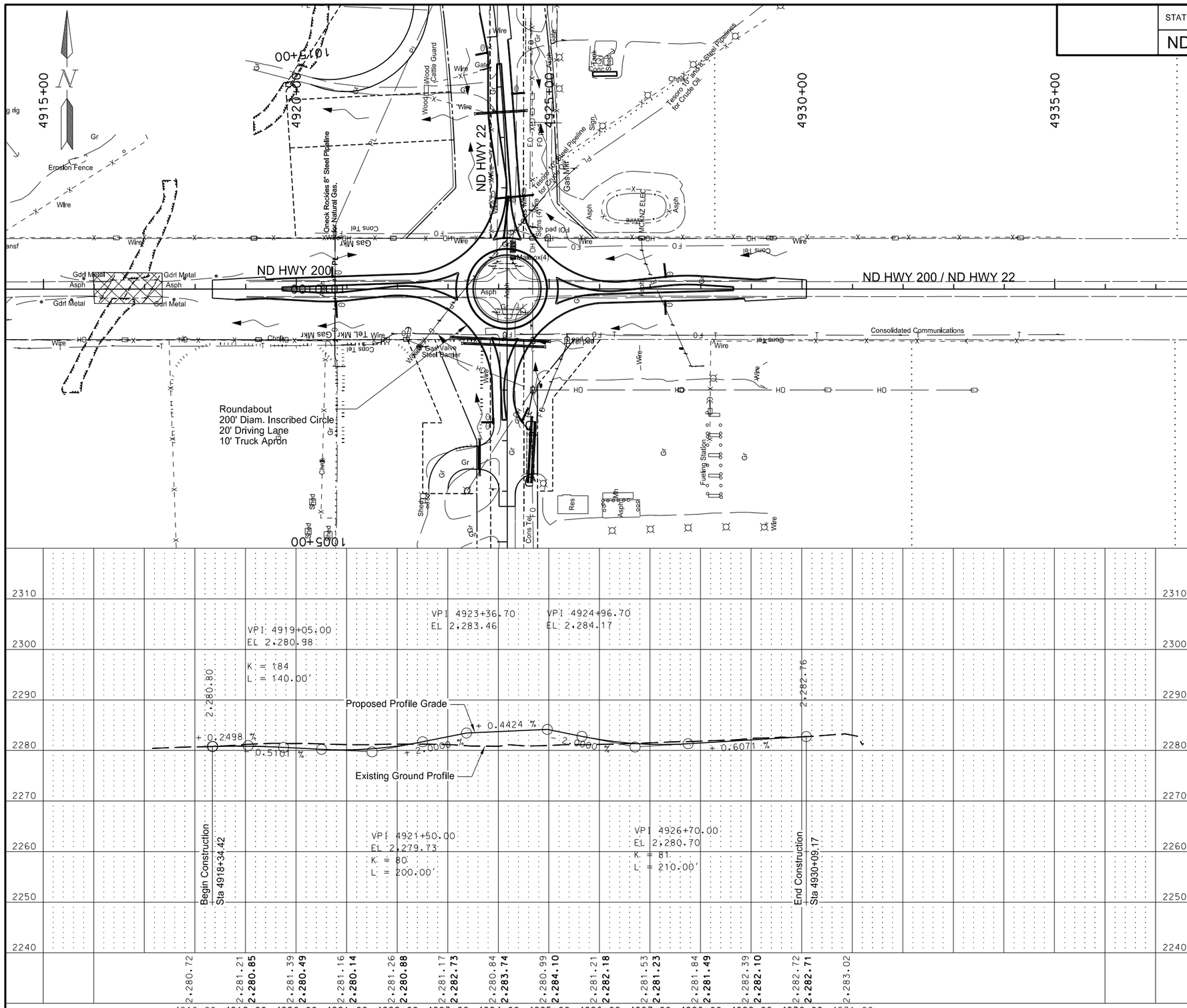
Plan and Profile Sheets

Sta 3003+00 to 3023+00

Frontage Road

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	12



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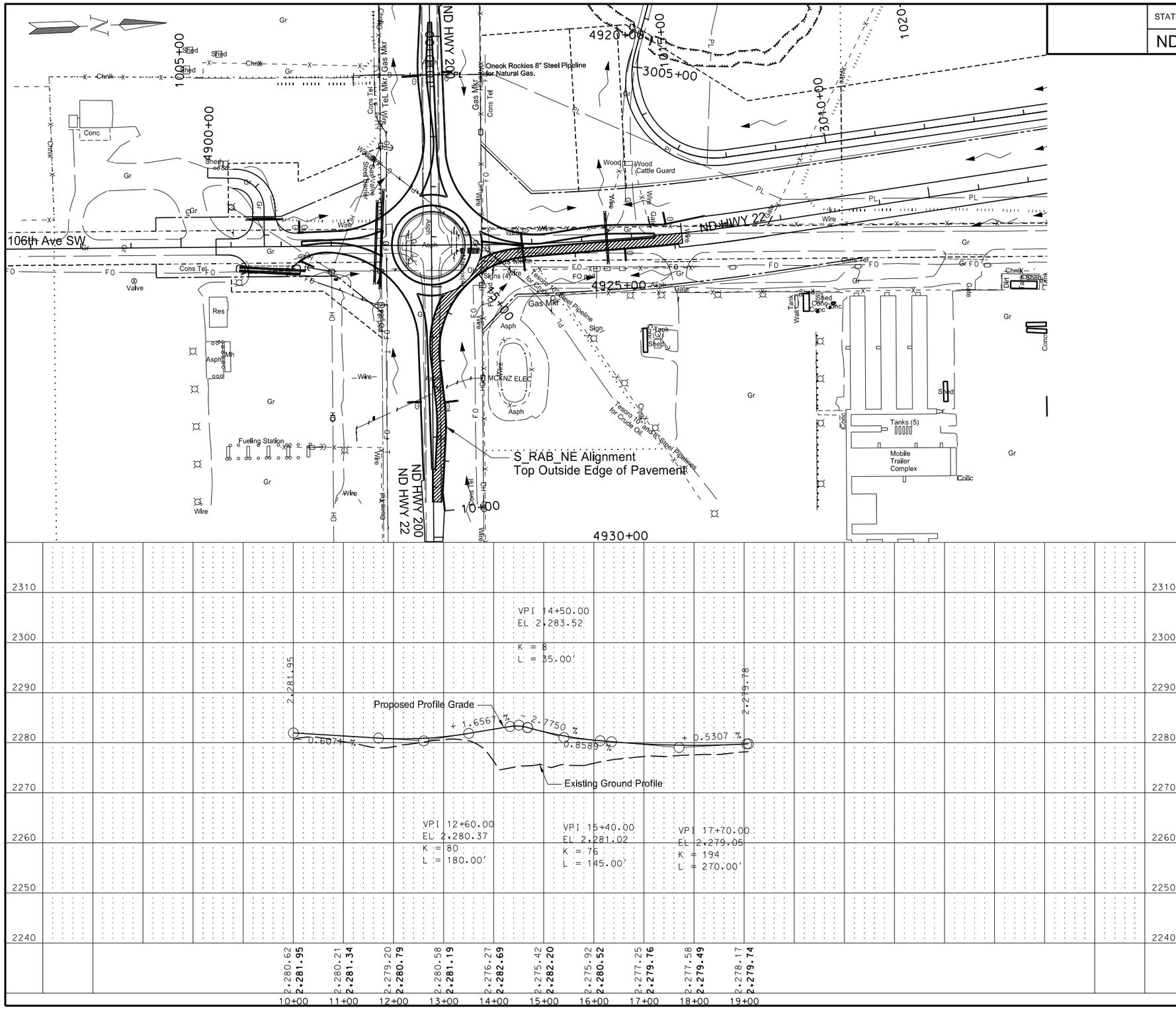
Roundabout Plan and Profile Sheets

Sta 4918+00 to 4931+00

ND Hwy 200

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	13



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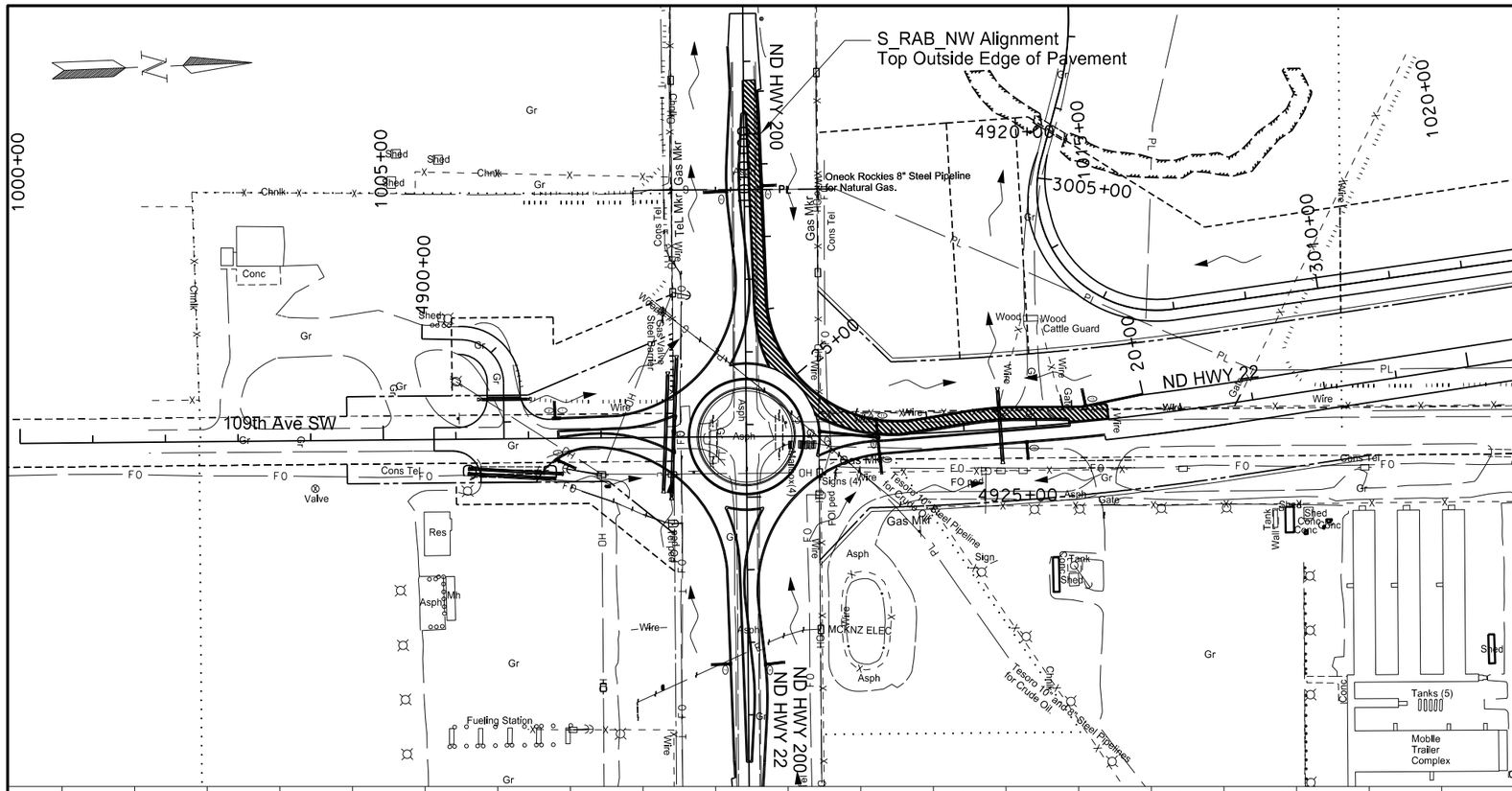
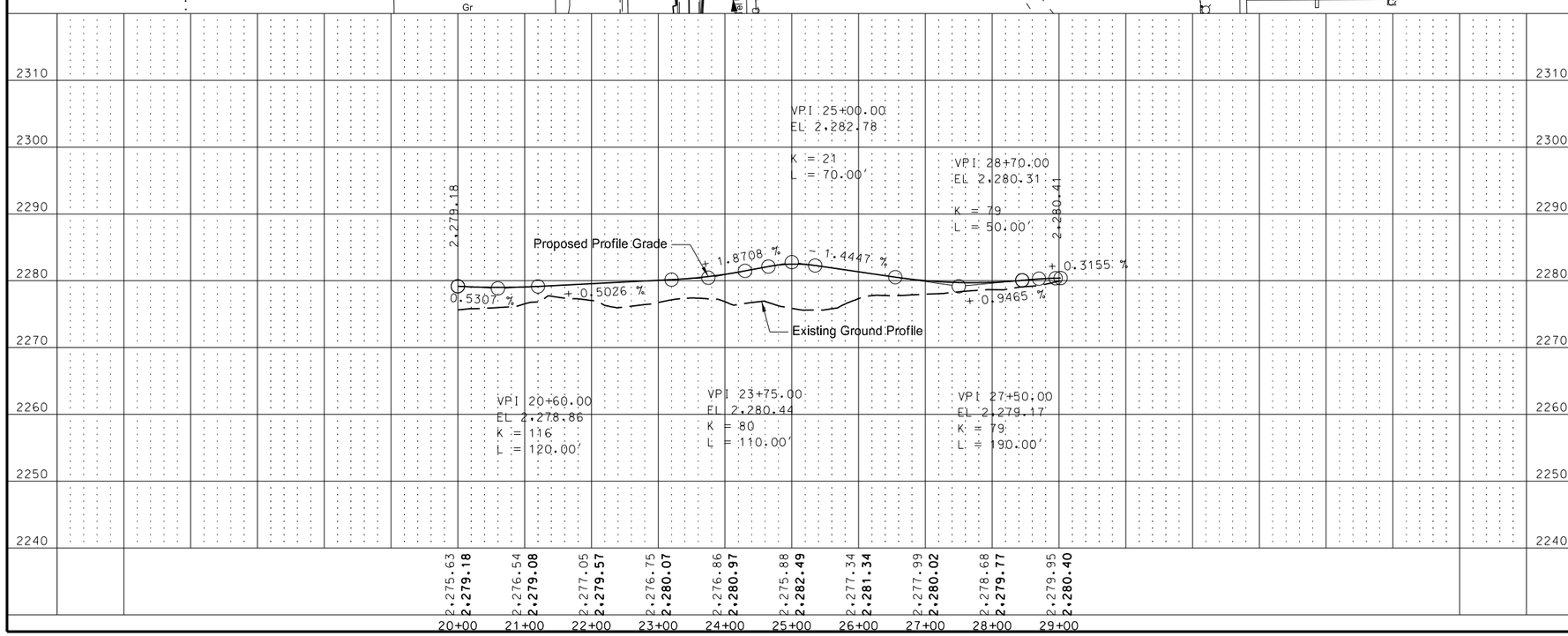
Roundabout Plan and Profile Sheets

Sta 10+00 to 18+00
NE Approach of ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	14





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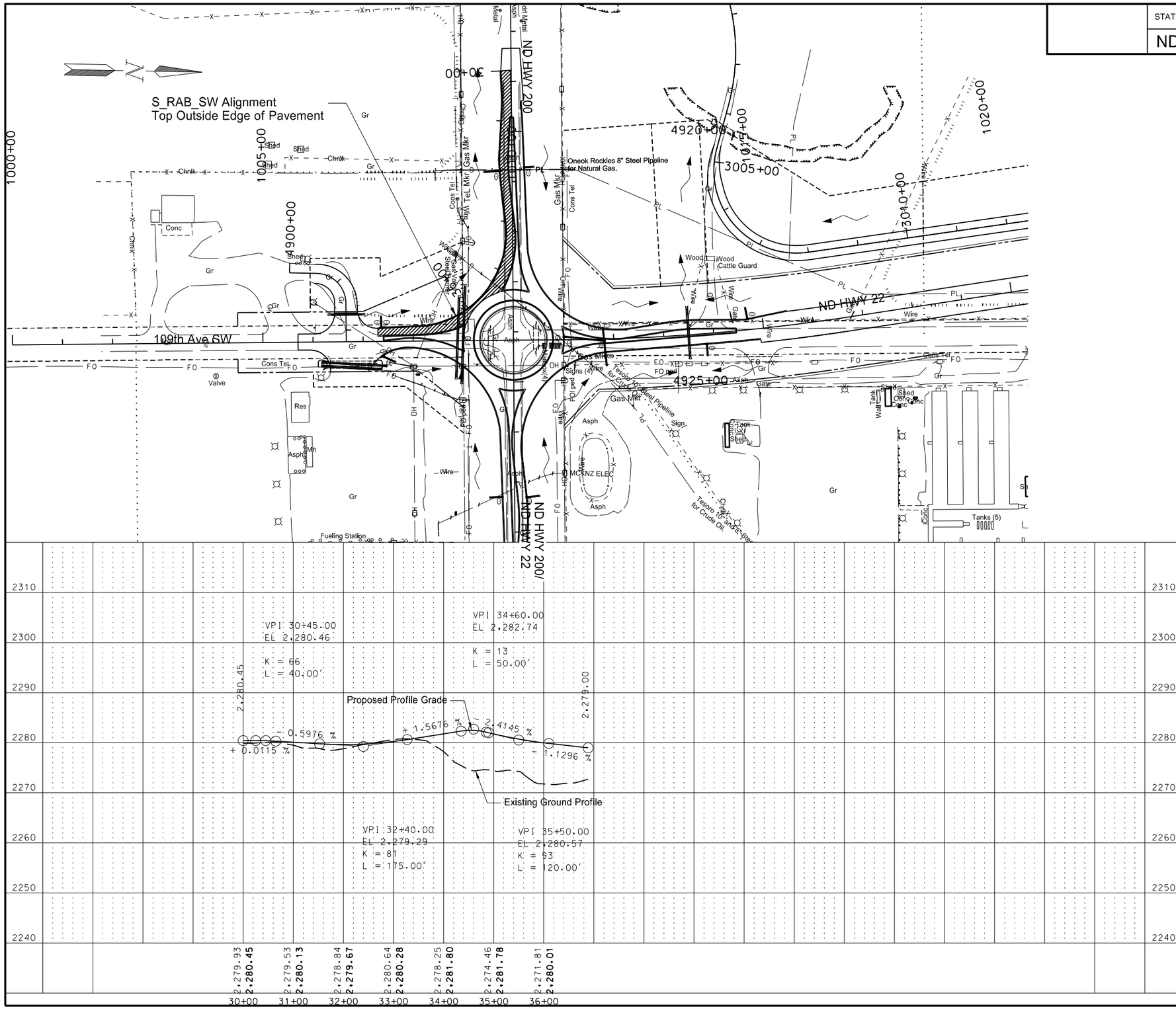
Roundabout Plan and Profile Sheets

Sta 20+00 to 28+00
NW Approach of ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	15



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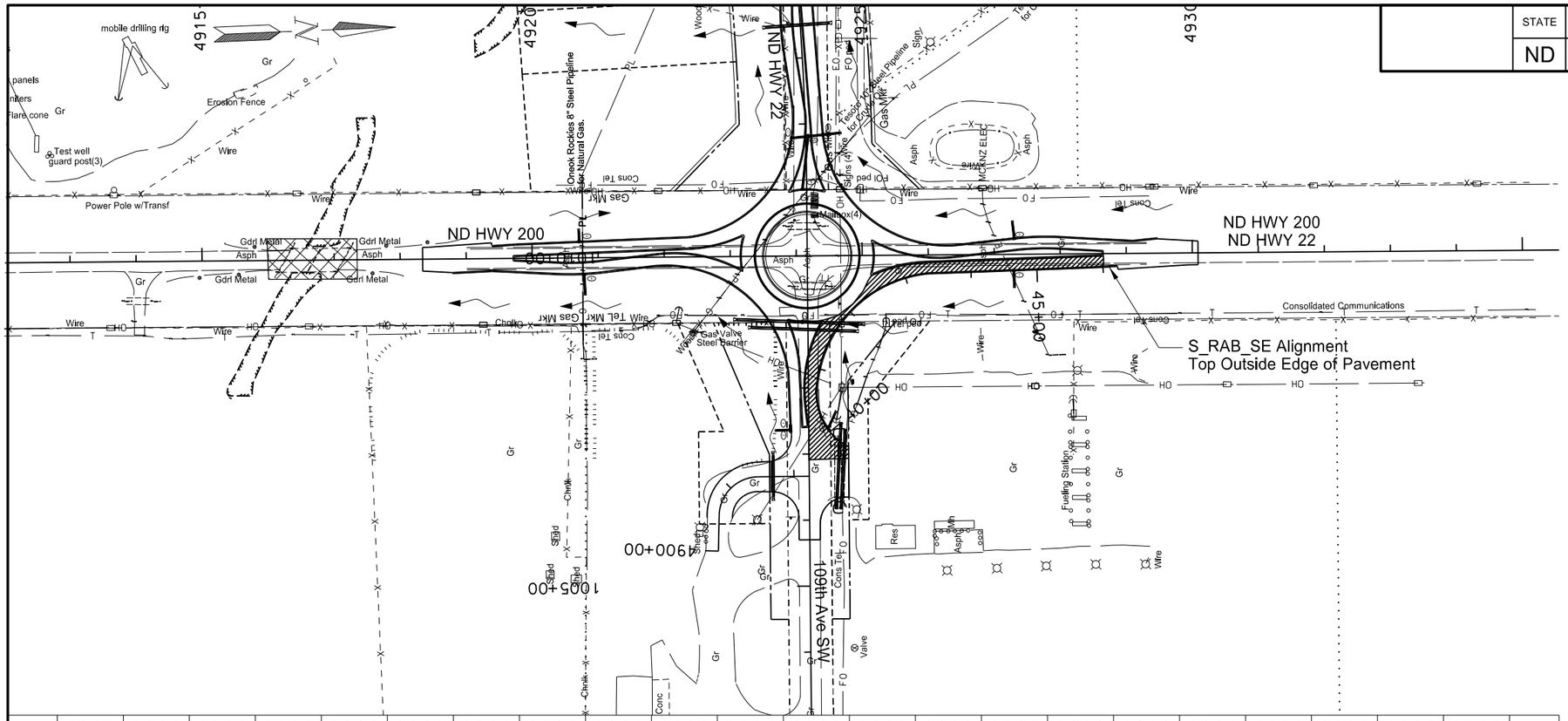
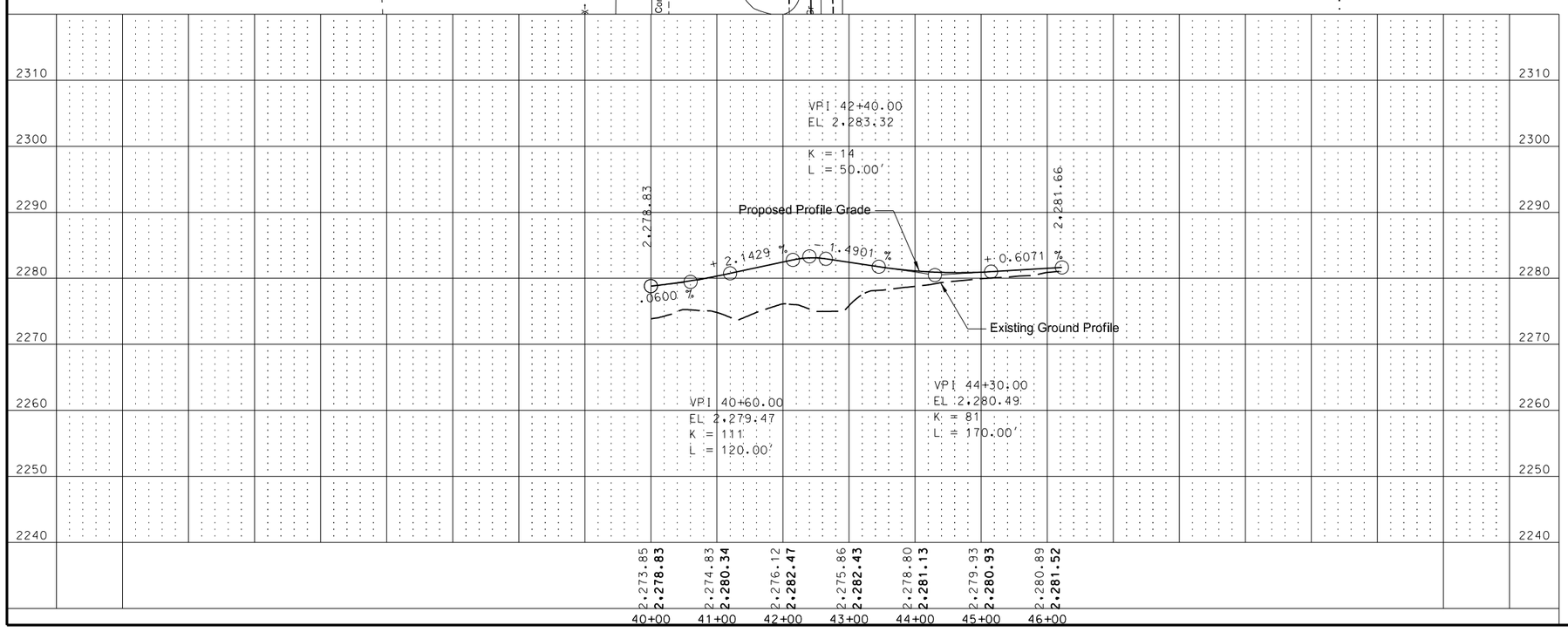
Roundabout Plan and Profile Sheets

Sta 30+00 to 39+00
SW Approach of ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	16





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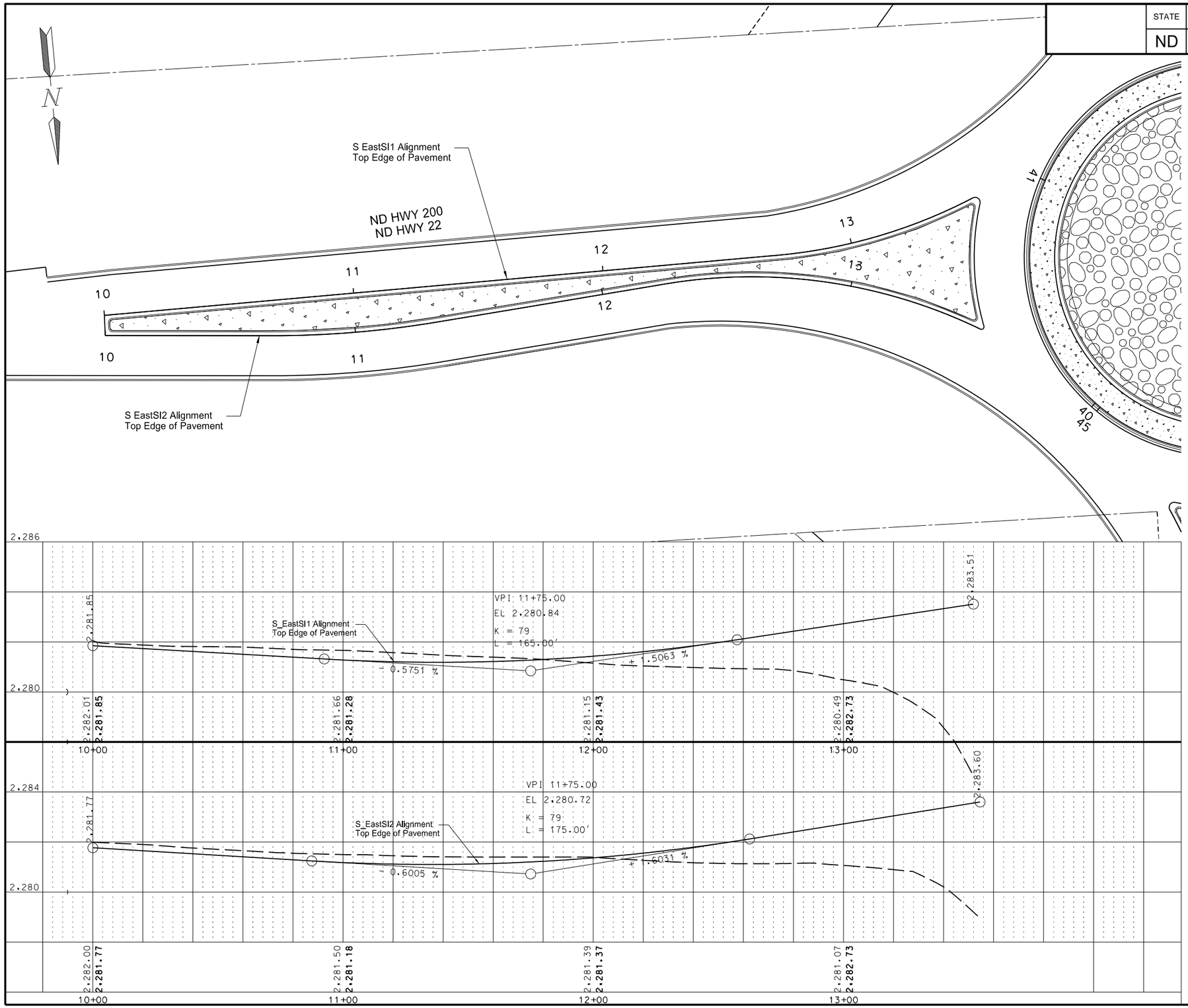
Roundabout Plan and Profile Sheets

Sta 40+00 to 49+00
SE Approach of ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	17



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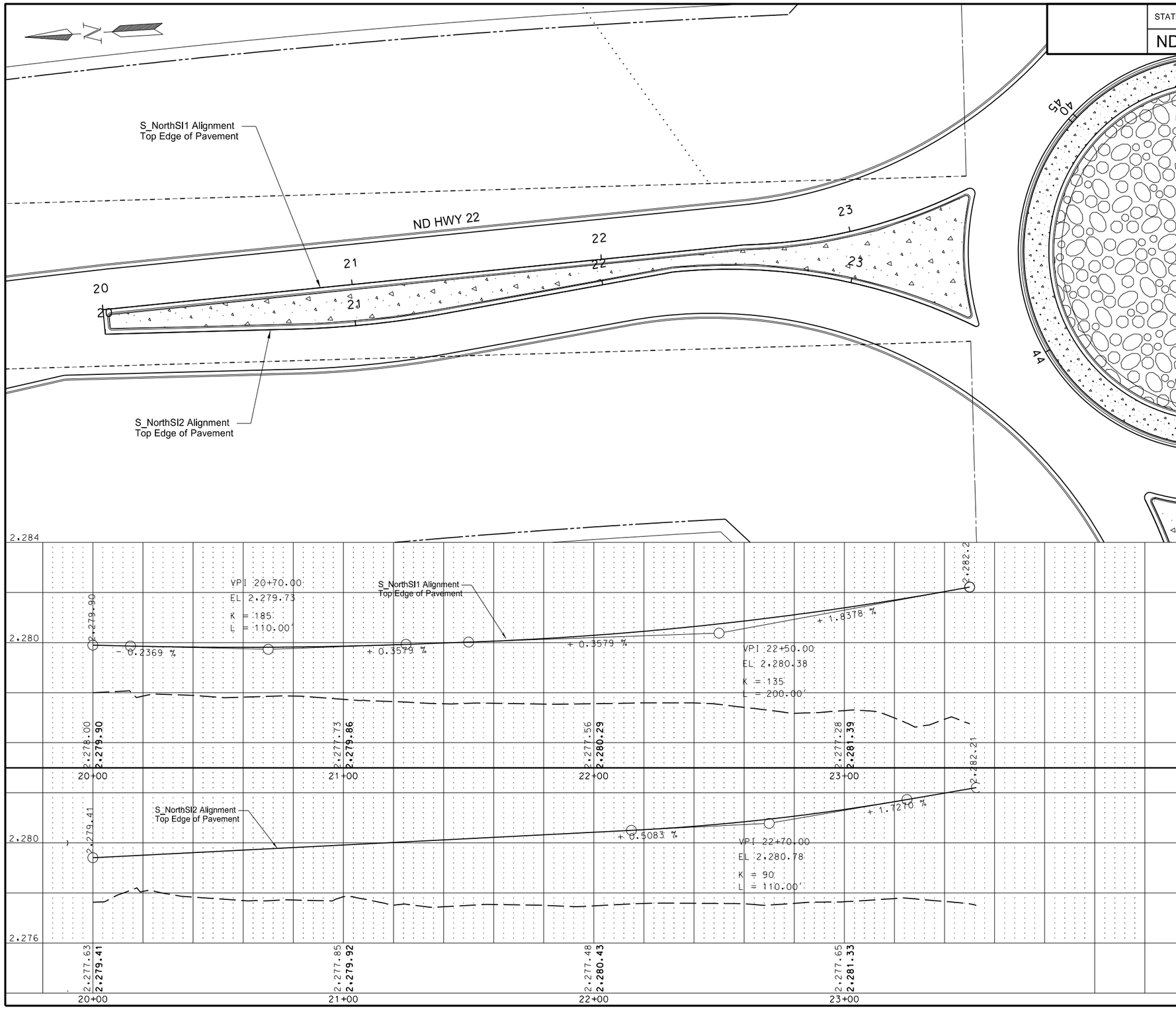
Roundabout Plan and Profile Sheets

Sta 10+00 to 13+00
E Splitter Island at ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	18



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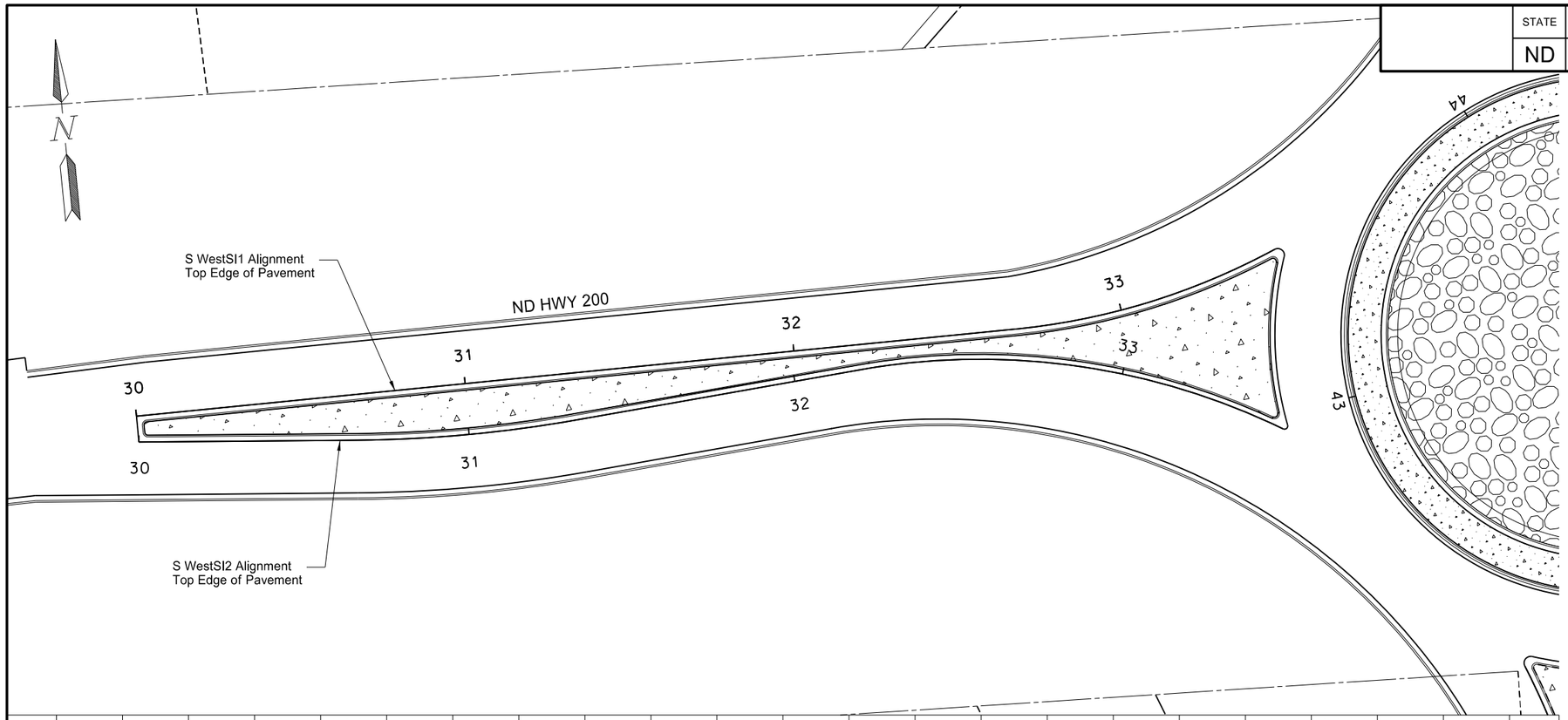
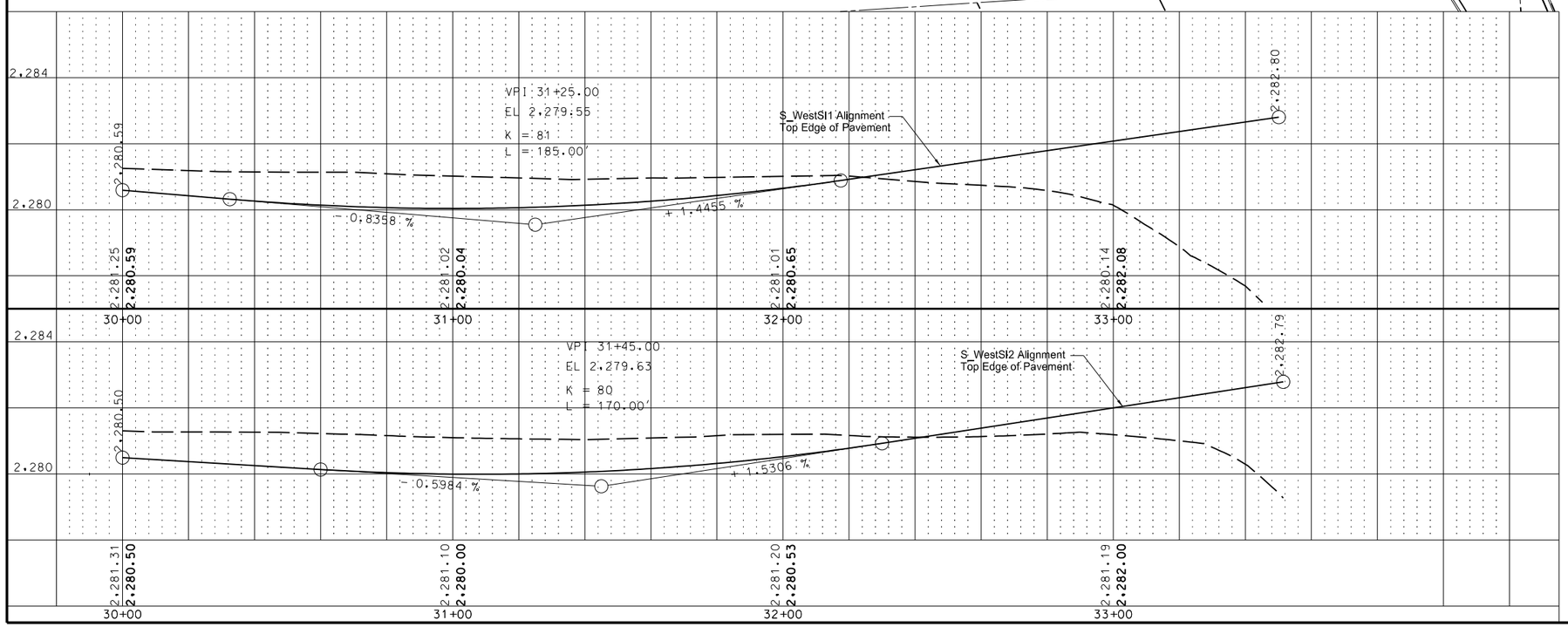
Roundabout Plan and Profile Sheets

Sta 20+00 to 23+00
N Splitter Island at ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	19





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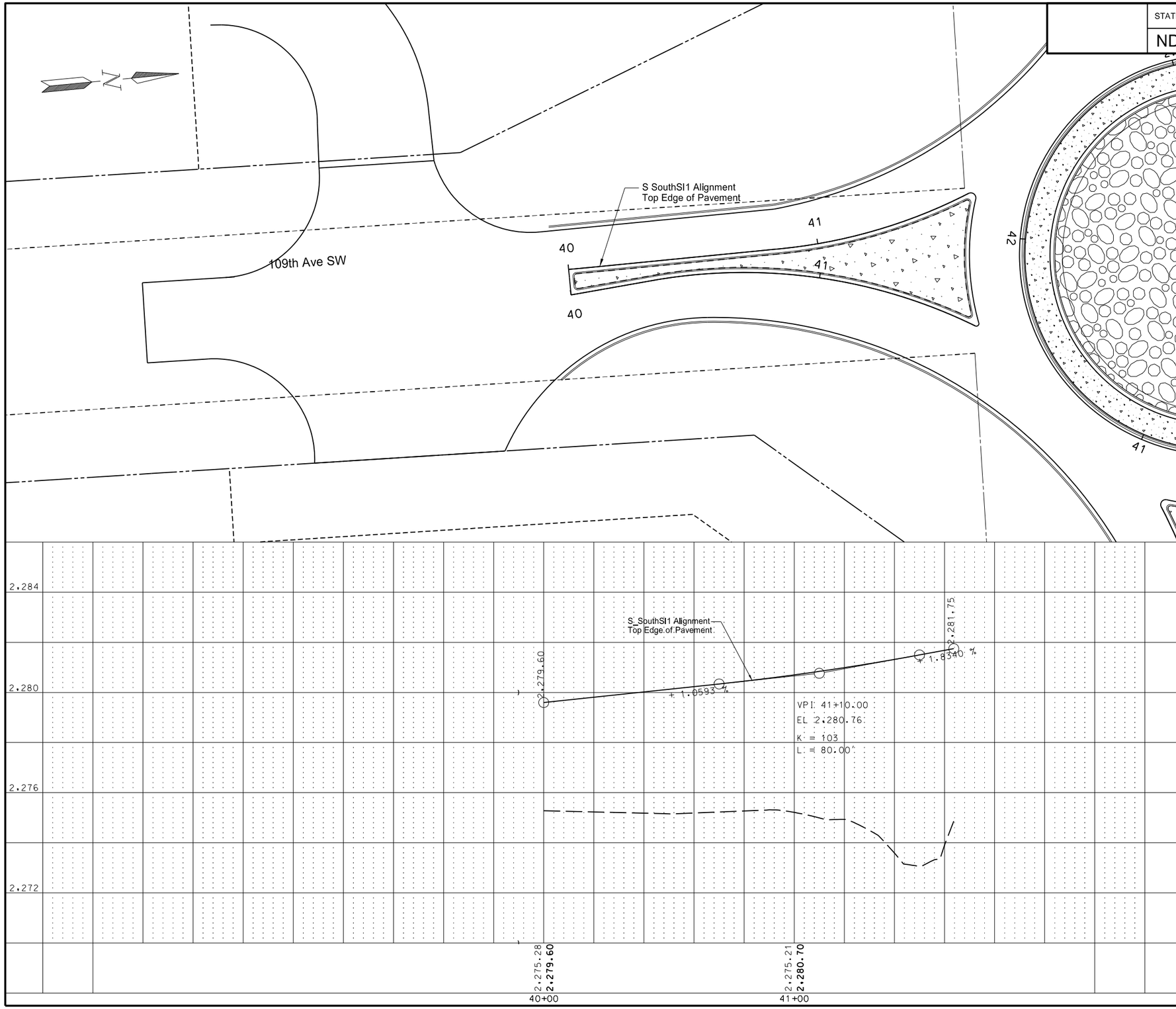
Roundabout Plan and Profile Sheets

Sta 30+00 to 33+00
W Splitter Island of ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	20



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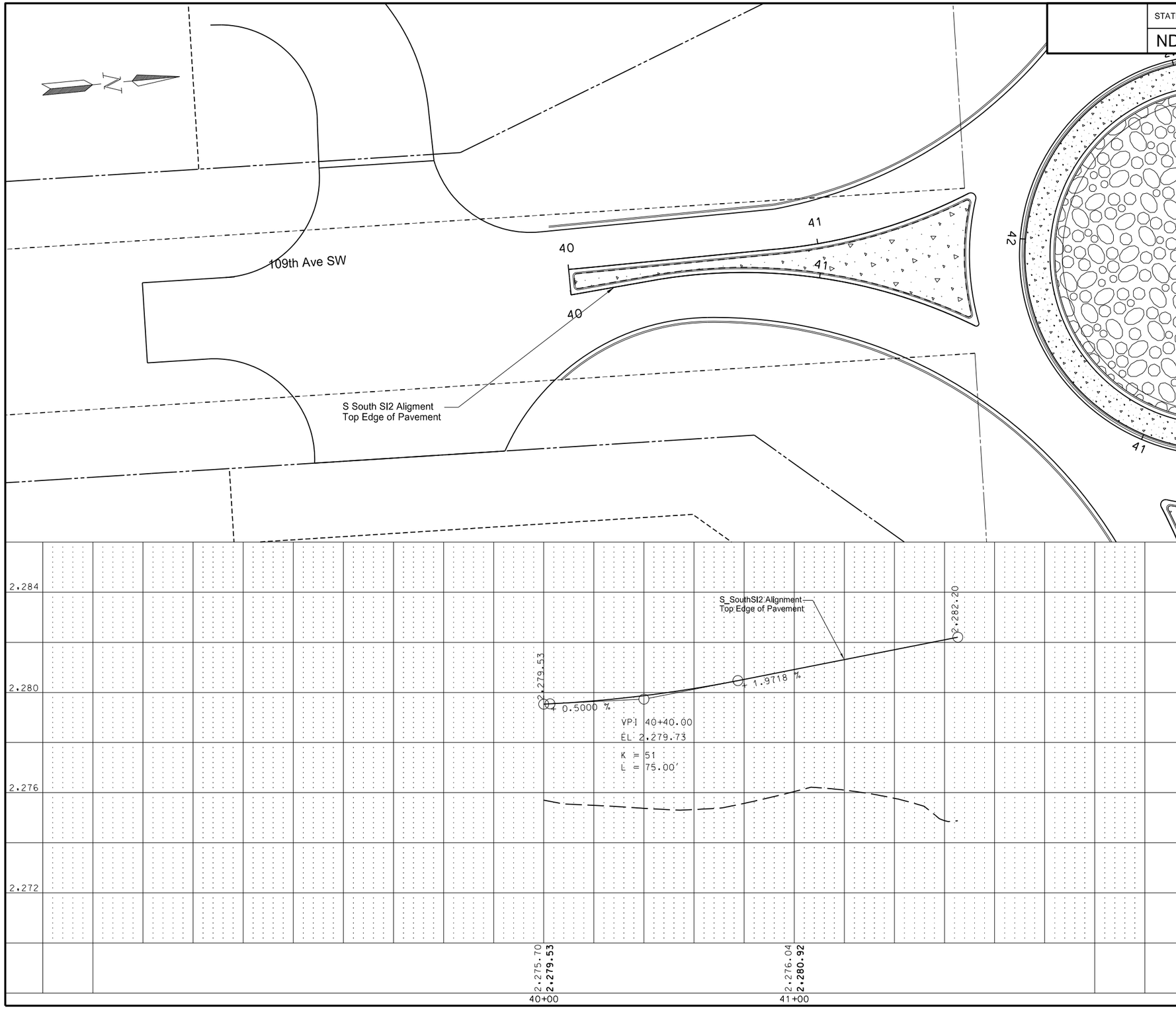
Roundabout Plan and Profile Sheets
Exit Lane Alignment
Sta 40+00 to 43+00
S Splitter Island of ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	21



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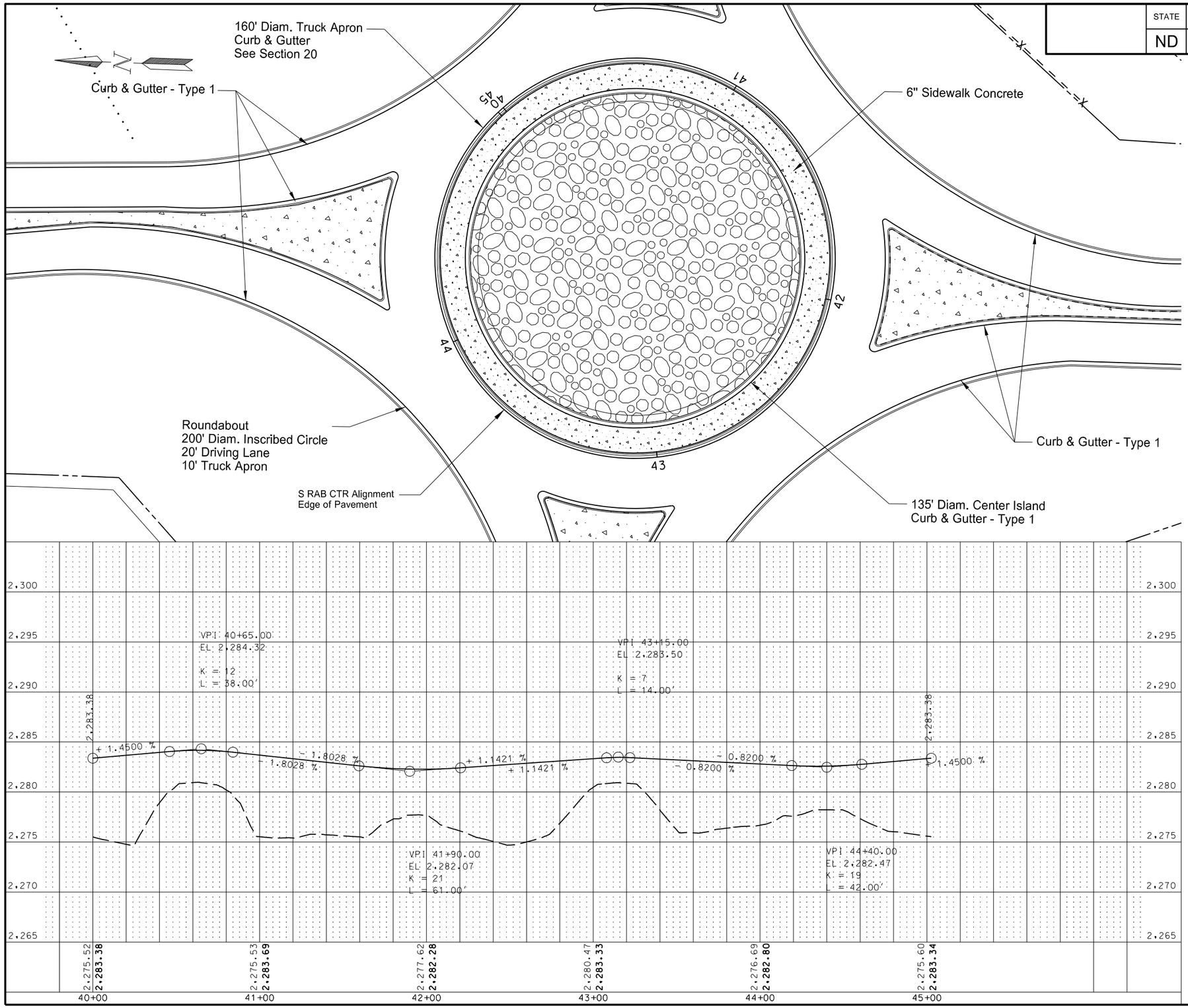
Roundabout Plan and Profile Sheets
Entrance Lane Alignment
Sta 40+00 to 43+00
S Splitter Island of ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	22



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Roundabout Plan and Profile Sheets

Sta 40+00 to 45+00
Center Island of ND 200 Roundabout
ND Hwy 22

Killdeer Bypass

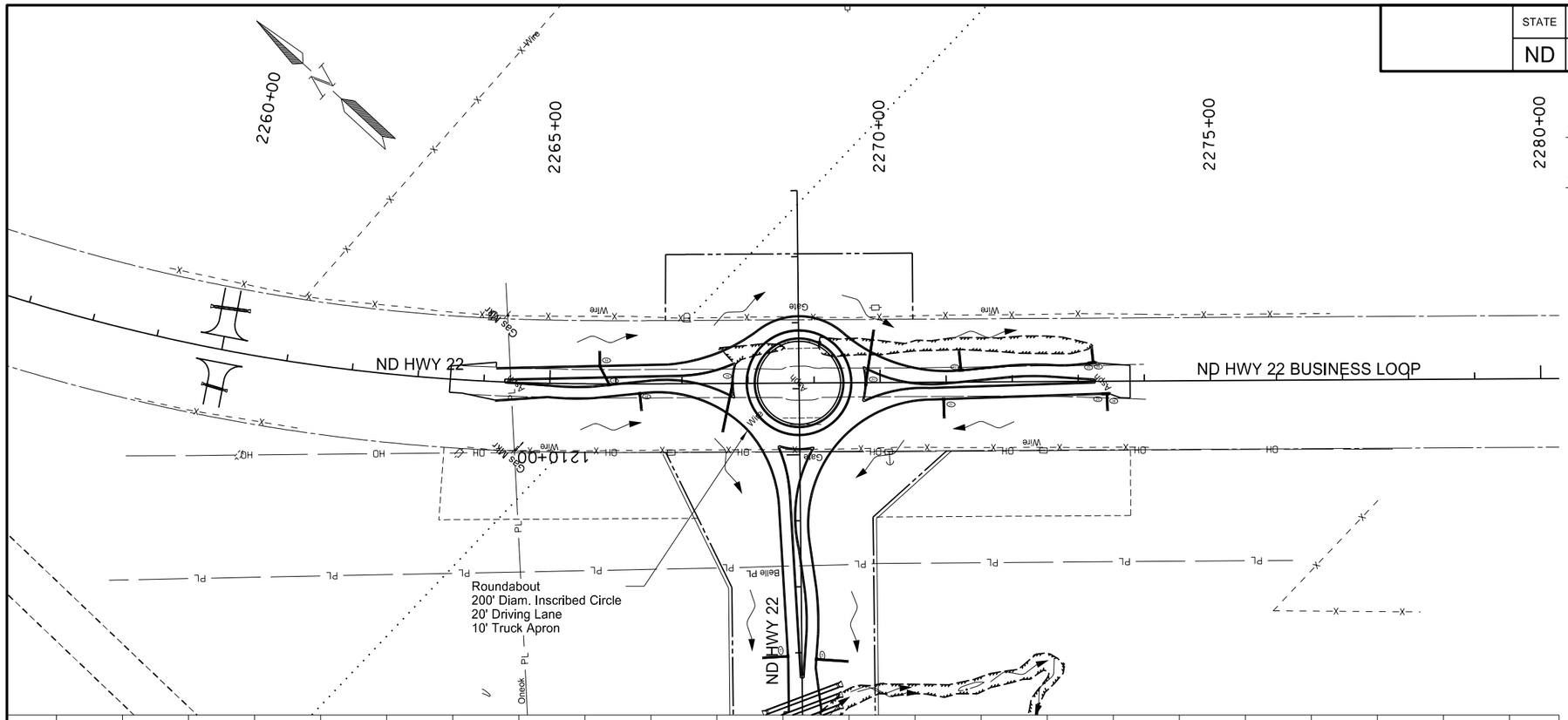
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	23

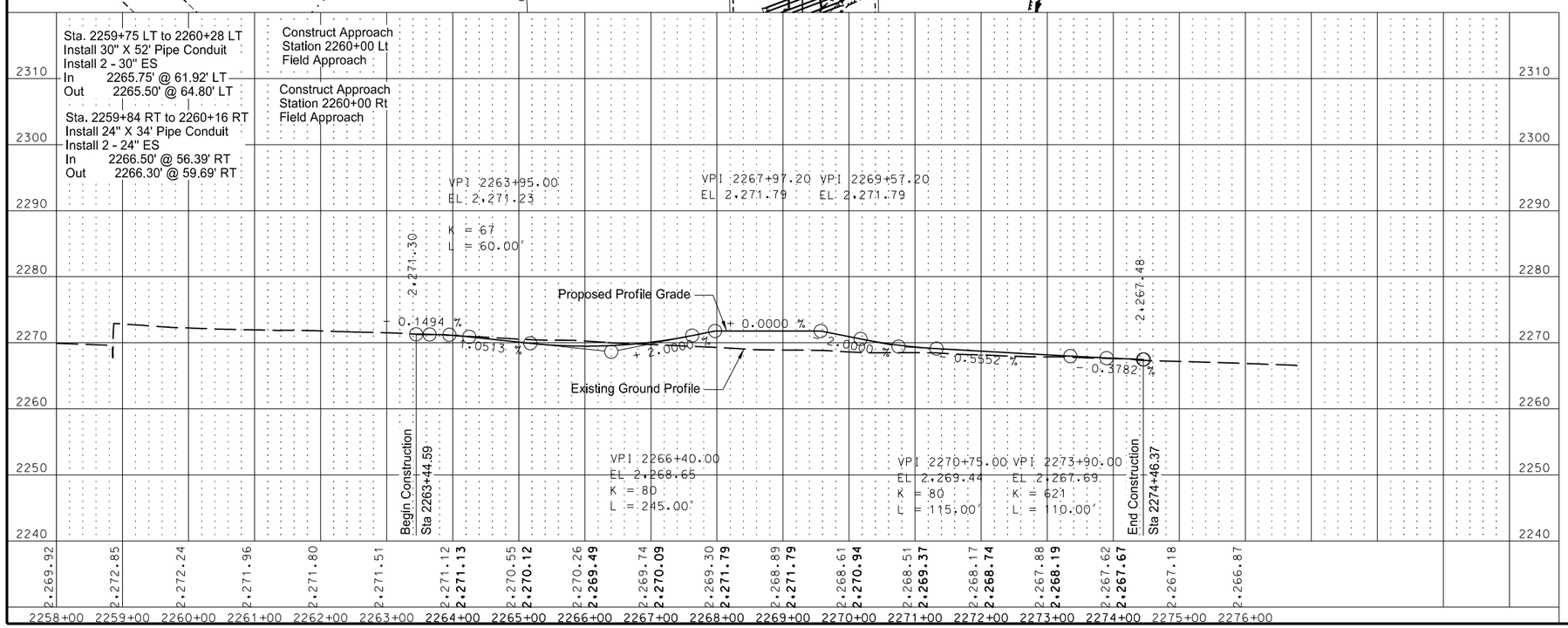
714-4105 PIPE CONDUIT 24IN-APPROACH

Sta 2259+84 - 56.40' Rt to Sta 2260+16 - 59.69' Rt			34 LF
		Total =	34 LF

714-4113 PIPE CONDUIT 30IN-APPROACH

Sta 2259+75 - 61.92' Lt to Sta 2260+28 - 64.80' Lt			52 LF
		Total =	52 LF





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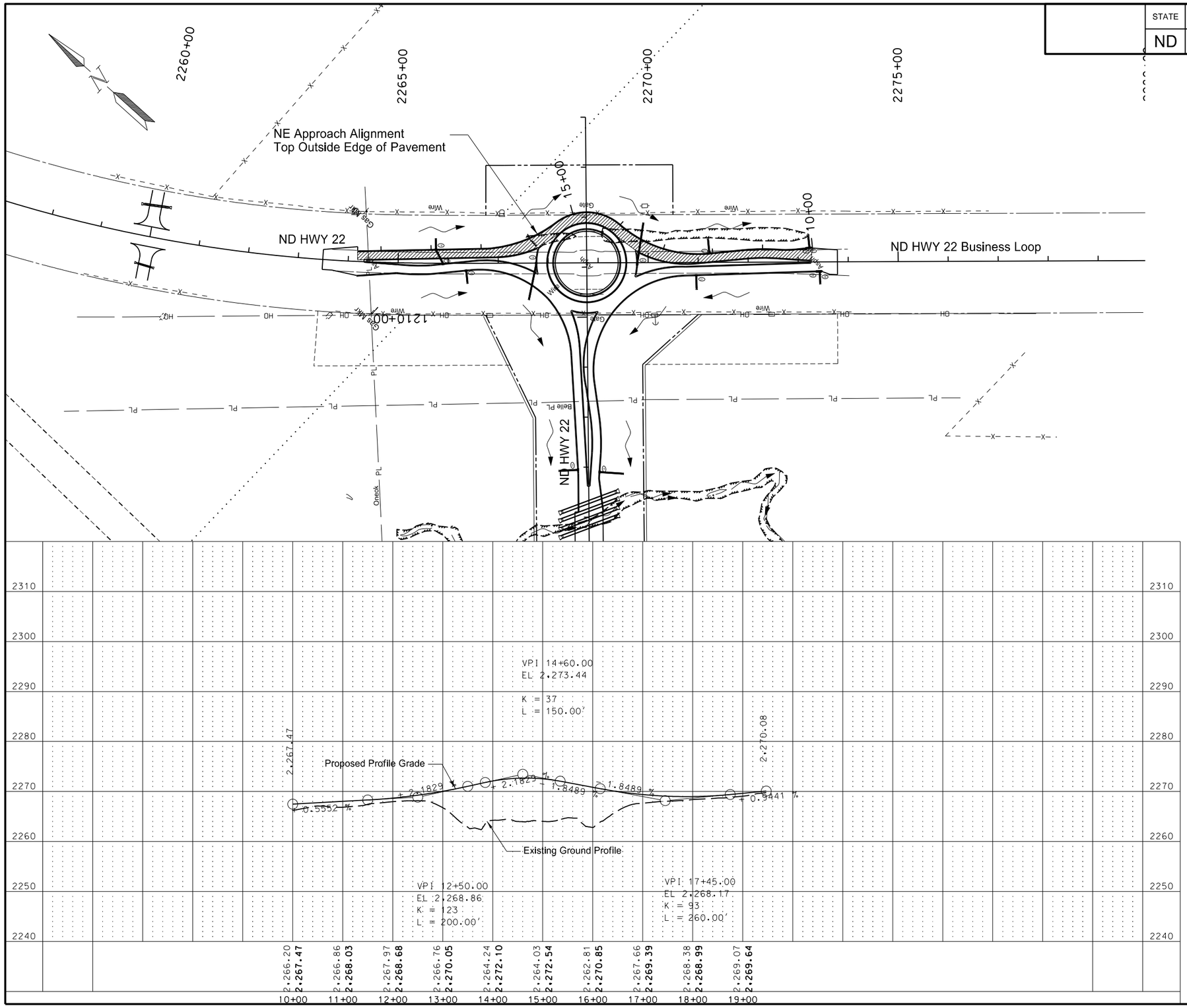
Roundabout Plan and Profile Sheets

Sta 2263+00 to 2276+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	24



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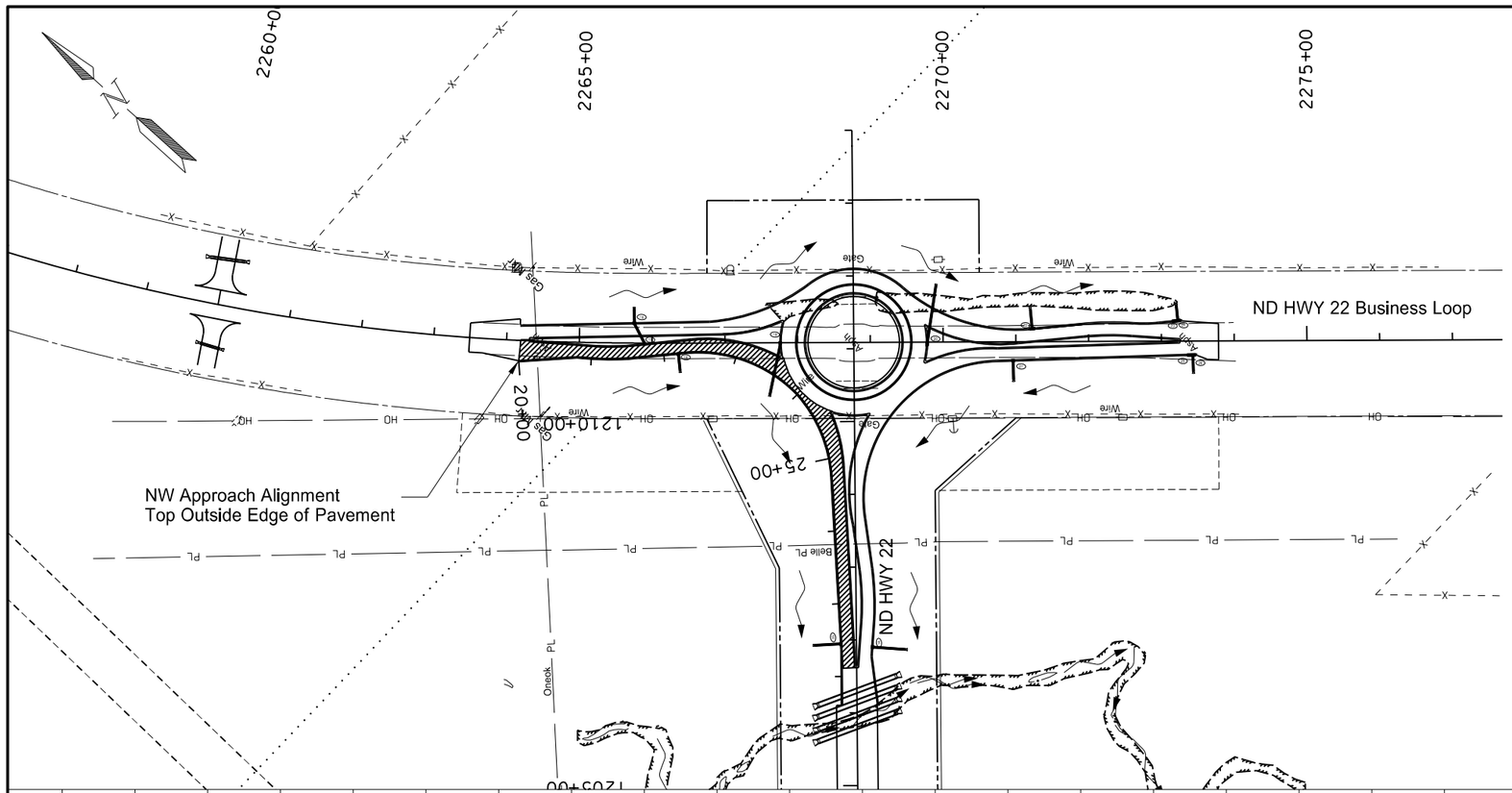
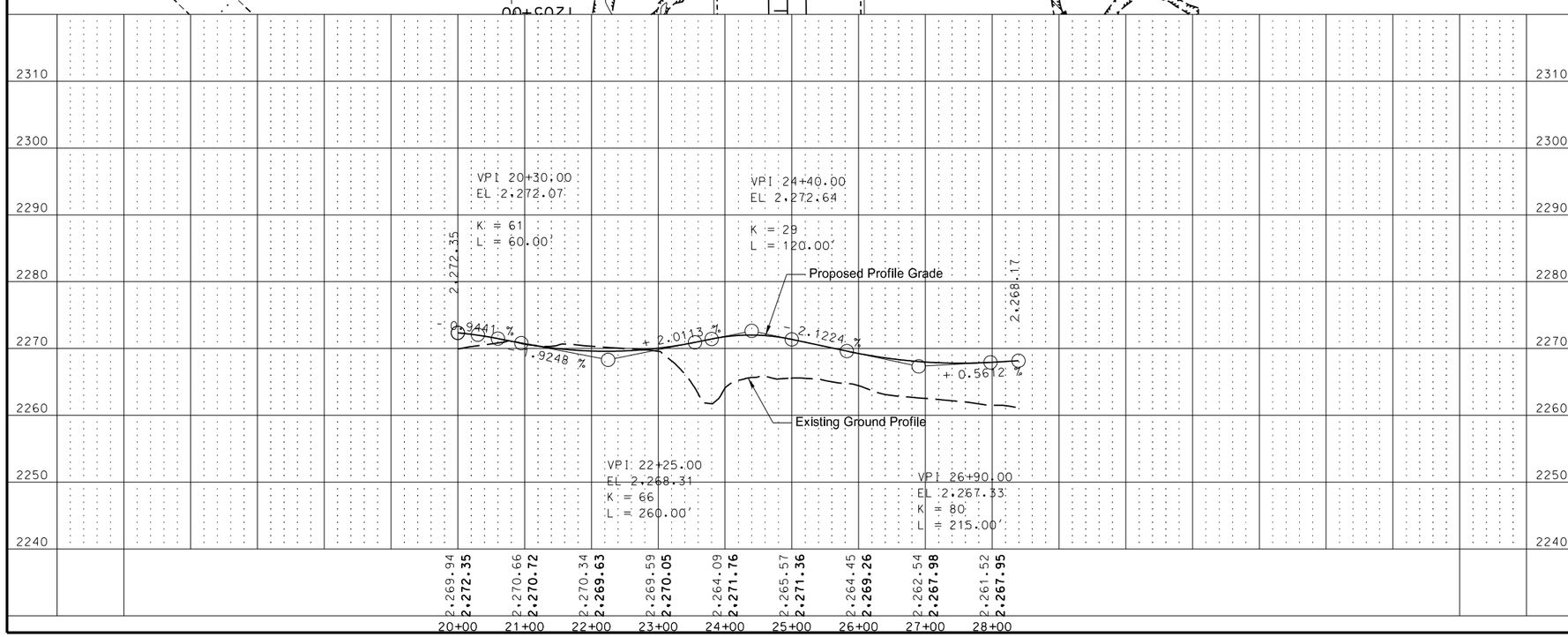
Roundabout Plan and Profile Sheets

Sta 10+00 to 21+00
NE Approach of ND 22 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	25





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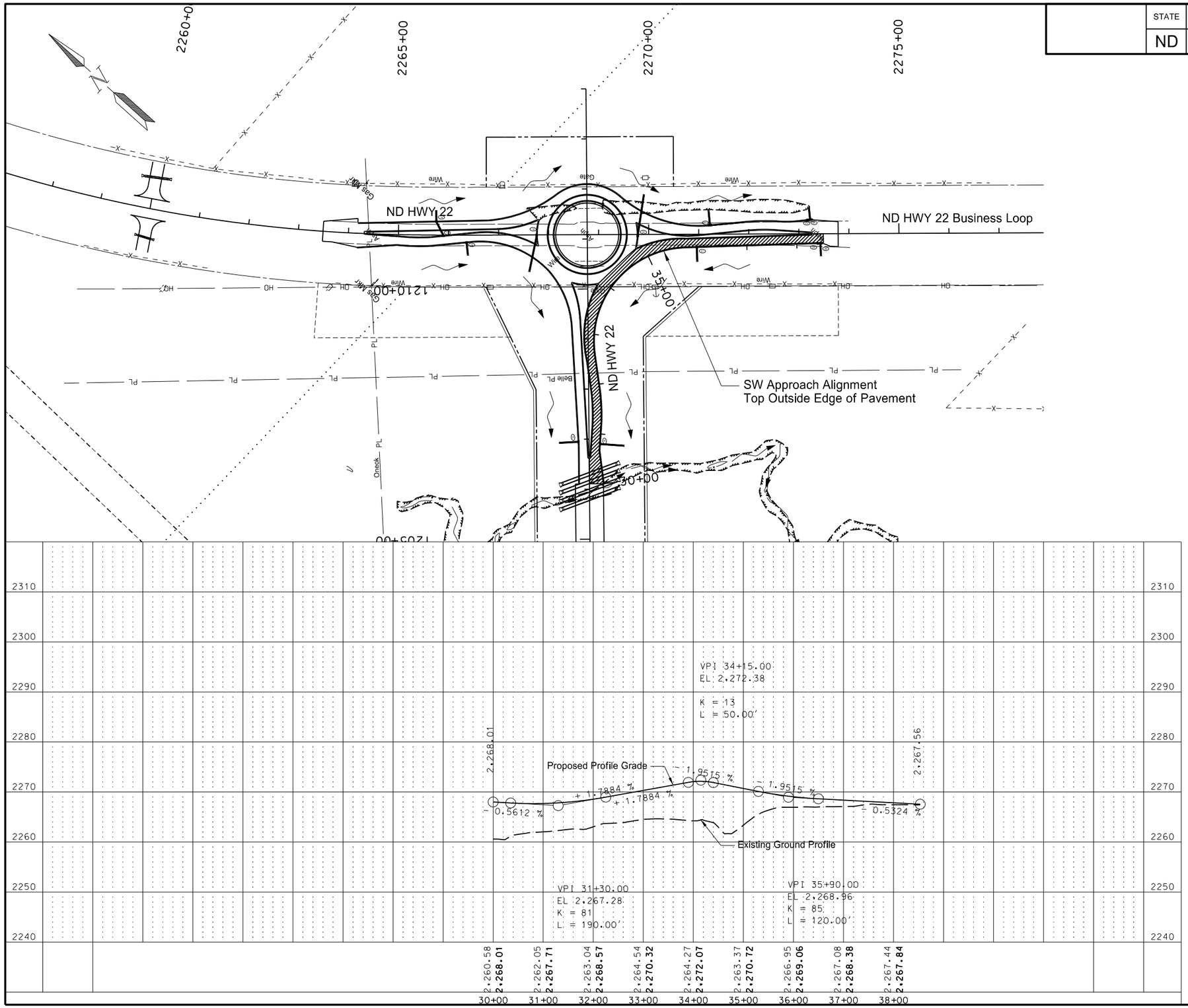
Roundabout Plan and Profile Sheets

Sta 20+00 to 28+00
NW Approach of ND 22 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	26



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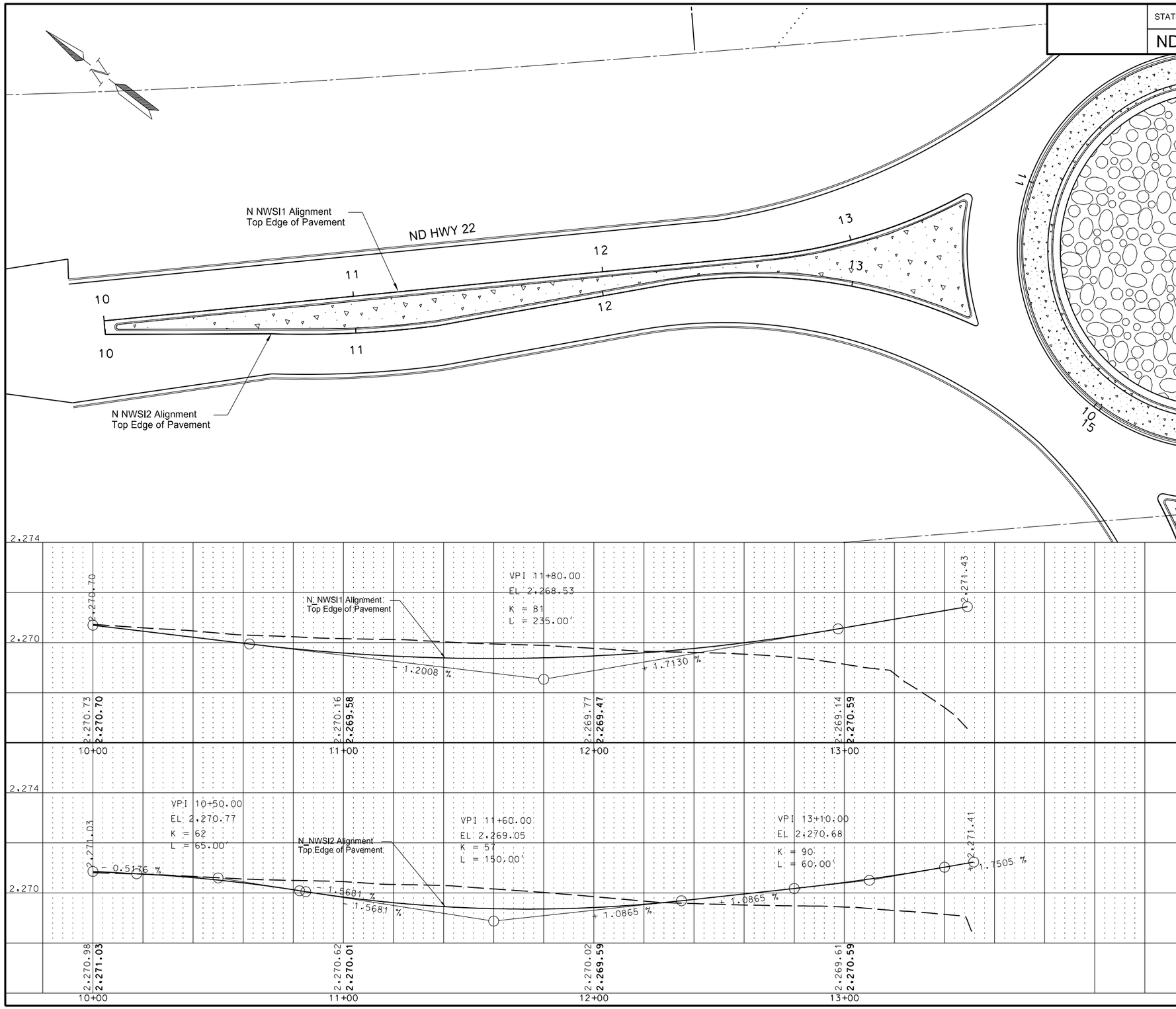
Roundabout Plan and Profile Sheets

Sta 30+00 to 39+00
SW Approach of ND 22 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	27



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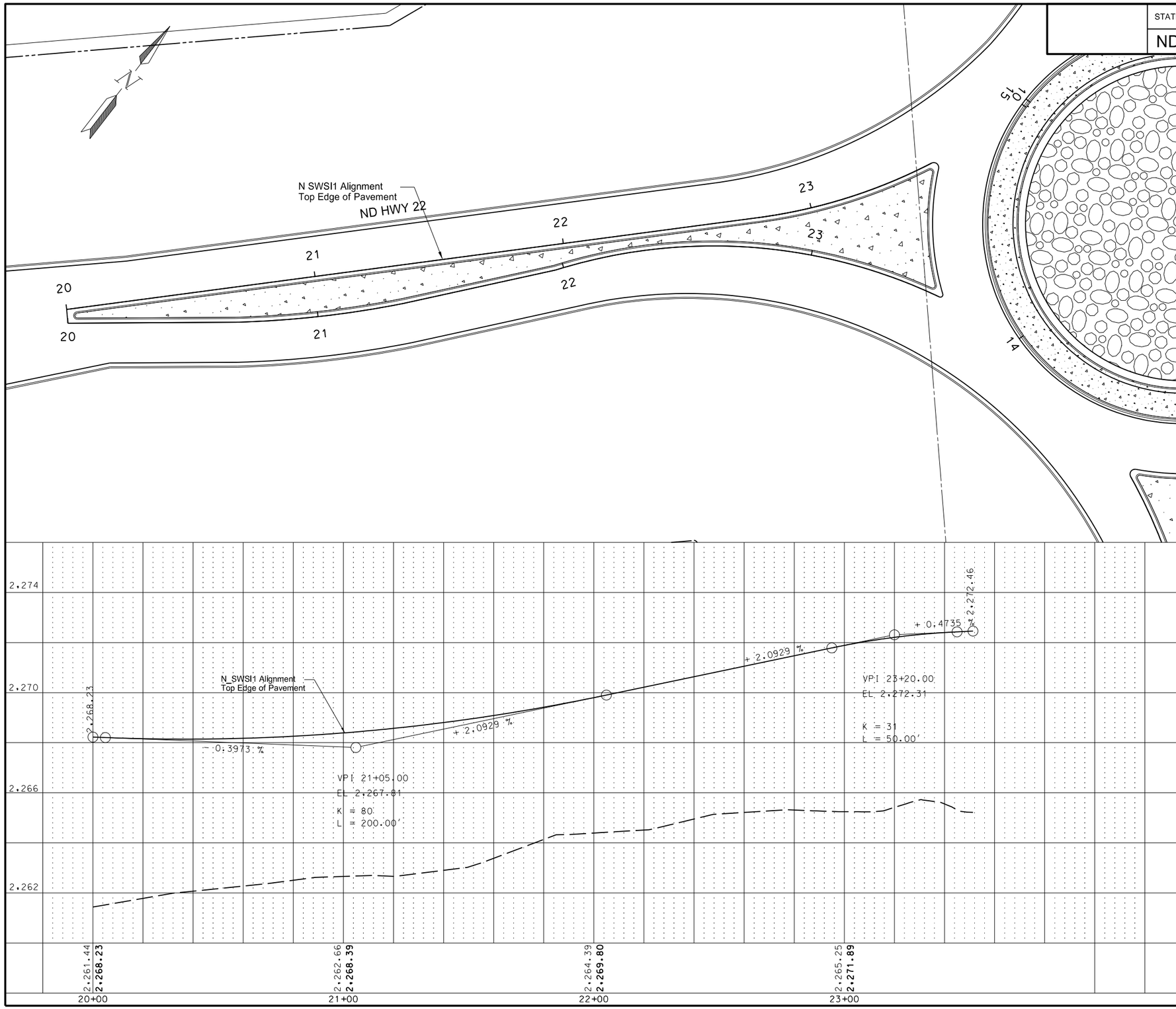
Roundabout Plan and Profile Sheets

Sta 10+00 to 13+00
NW Splitter Island of ND 22 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	28



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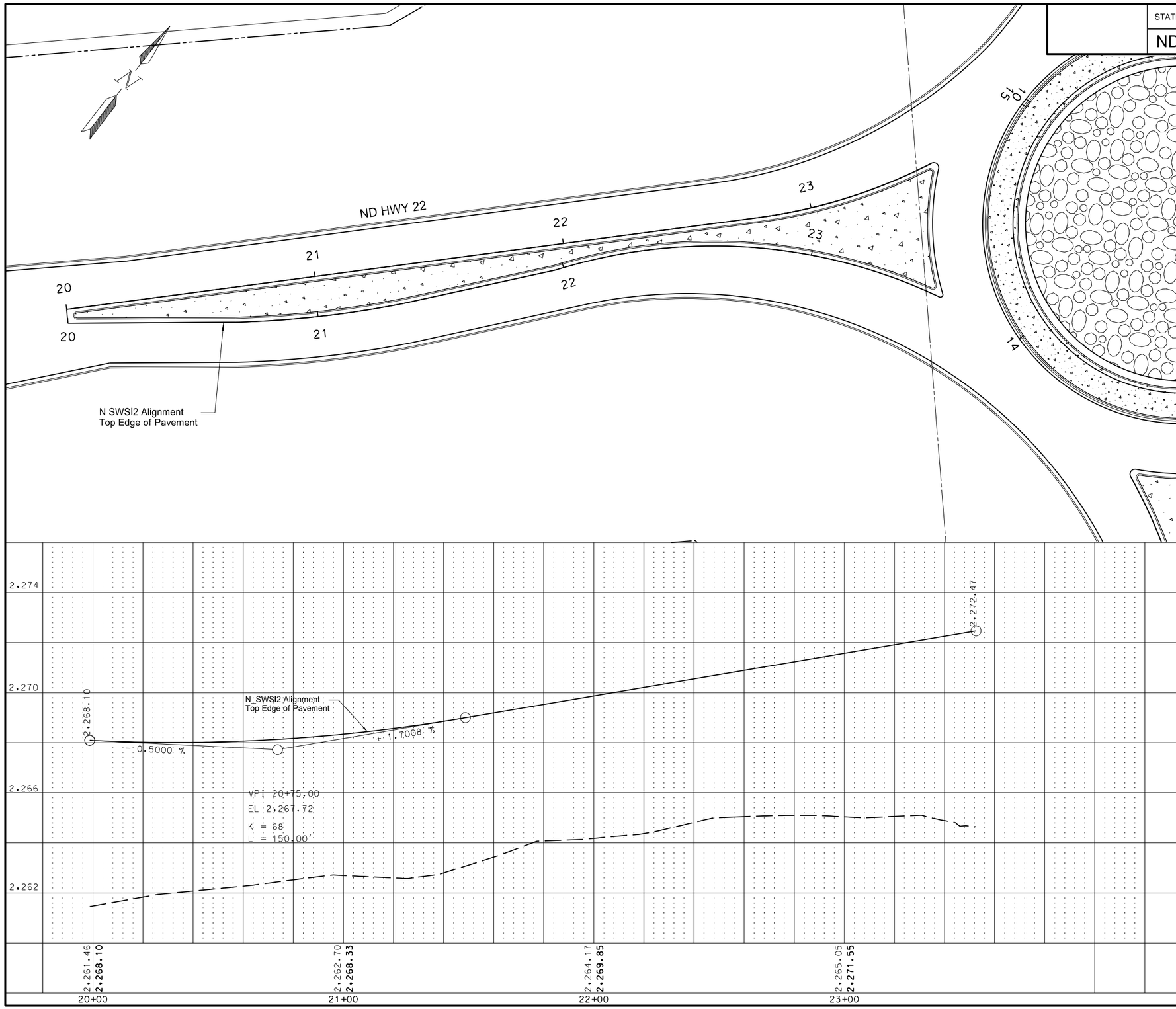
Roundabout Plan and Profile Sheets
Exit Lane Alignment
Sta 20+00 to 23+00
SW Splitter Island of ND 22 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	29



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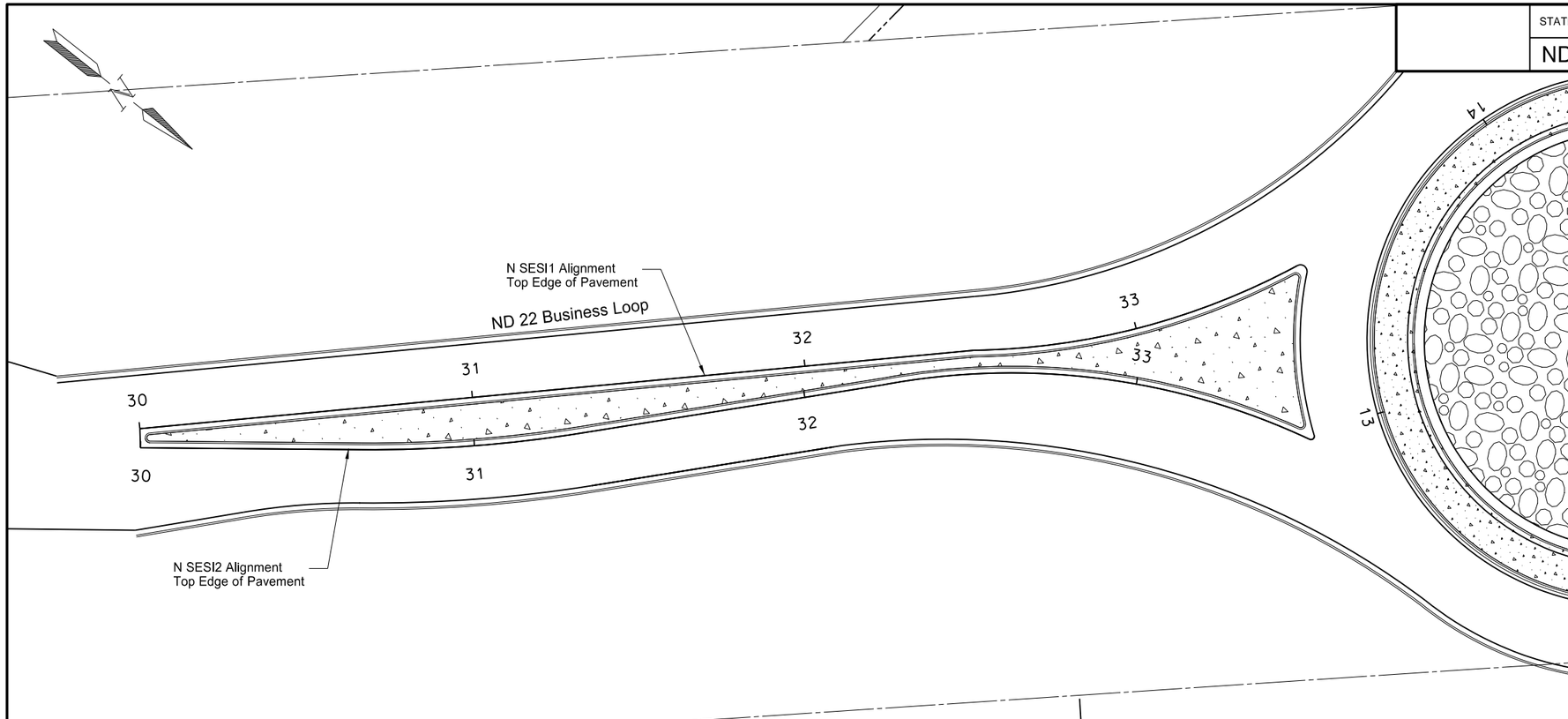
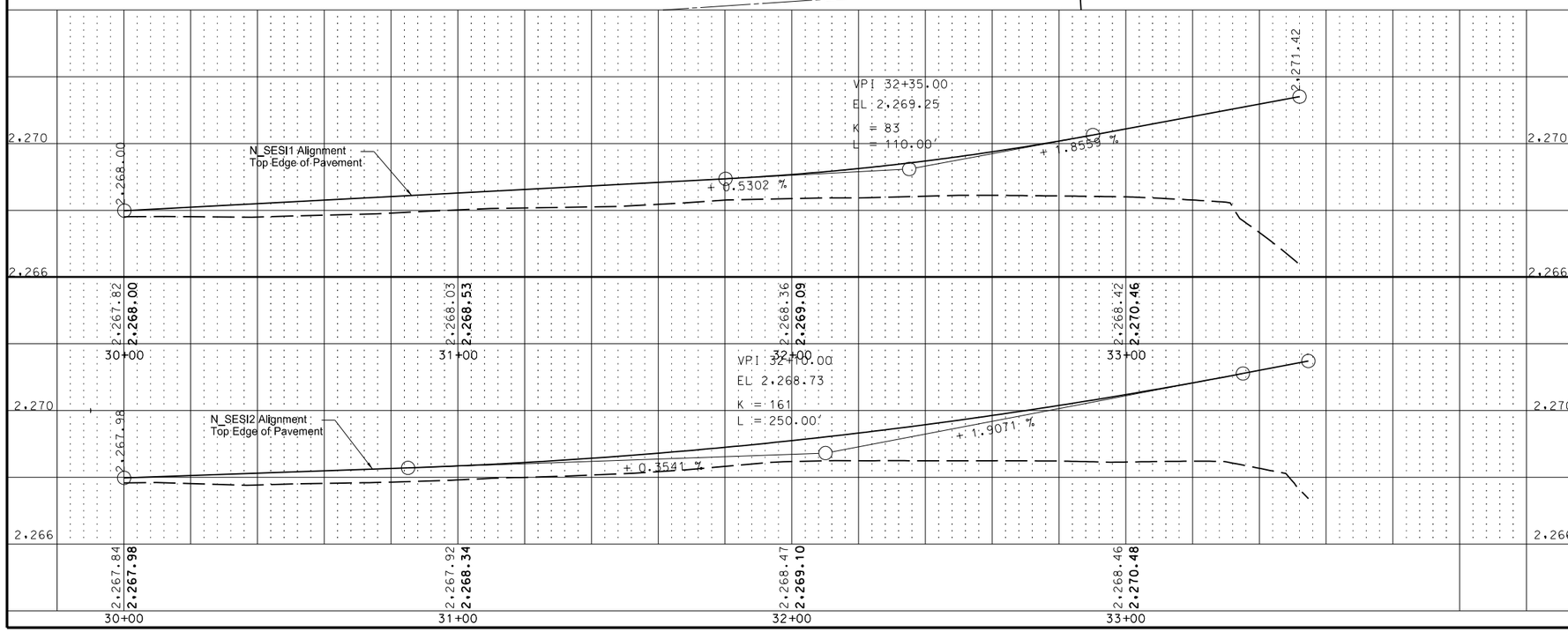
Roundabout Plan and Profile Sheets
Entrance Lane Alignment
Sta 20+00 to 23+00
SW Splitter Island of ND 22 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	30





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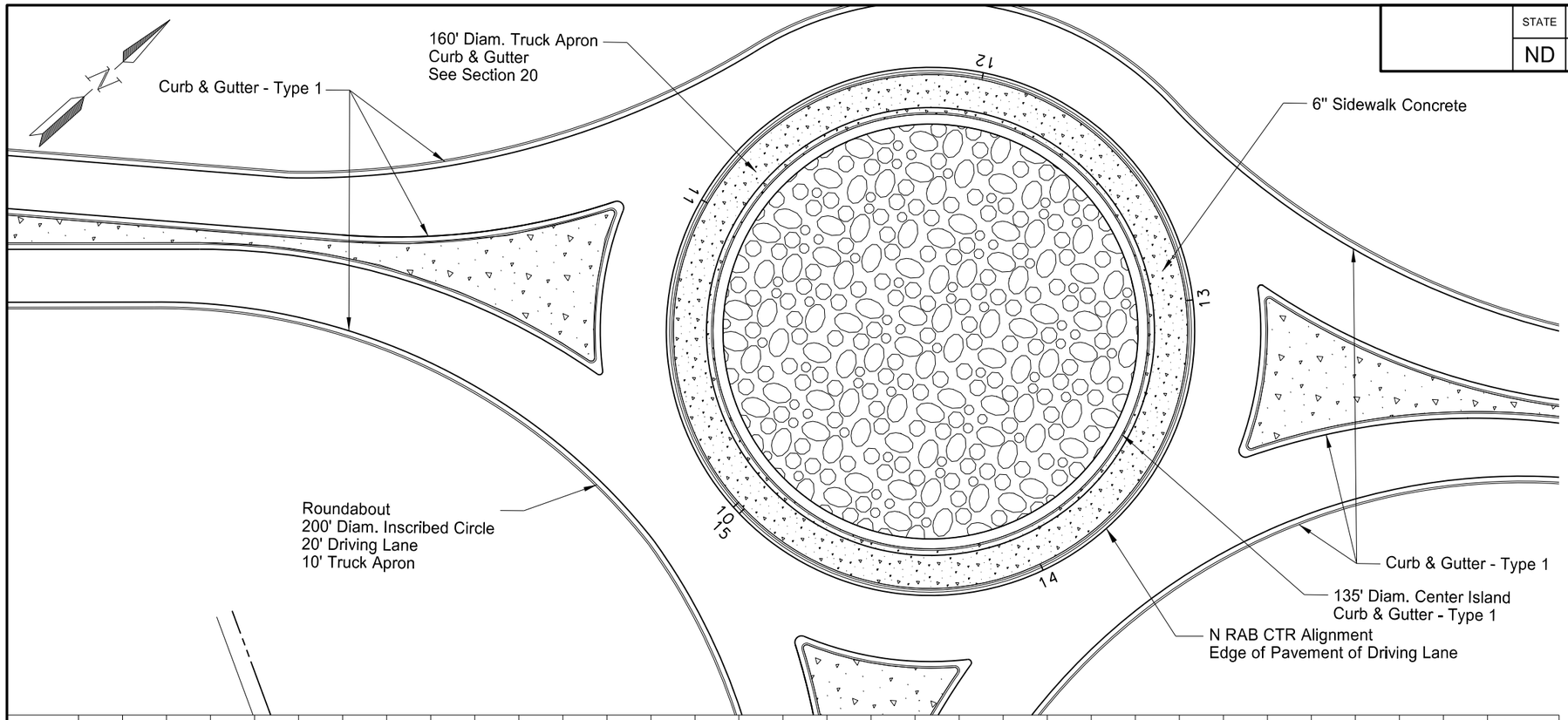
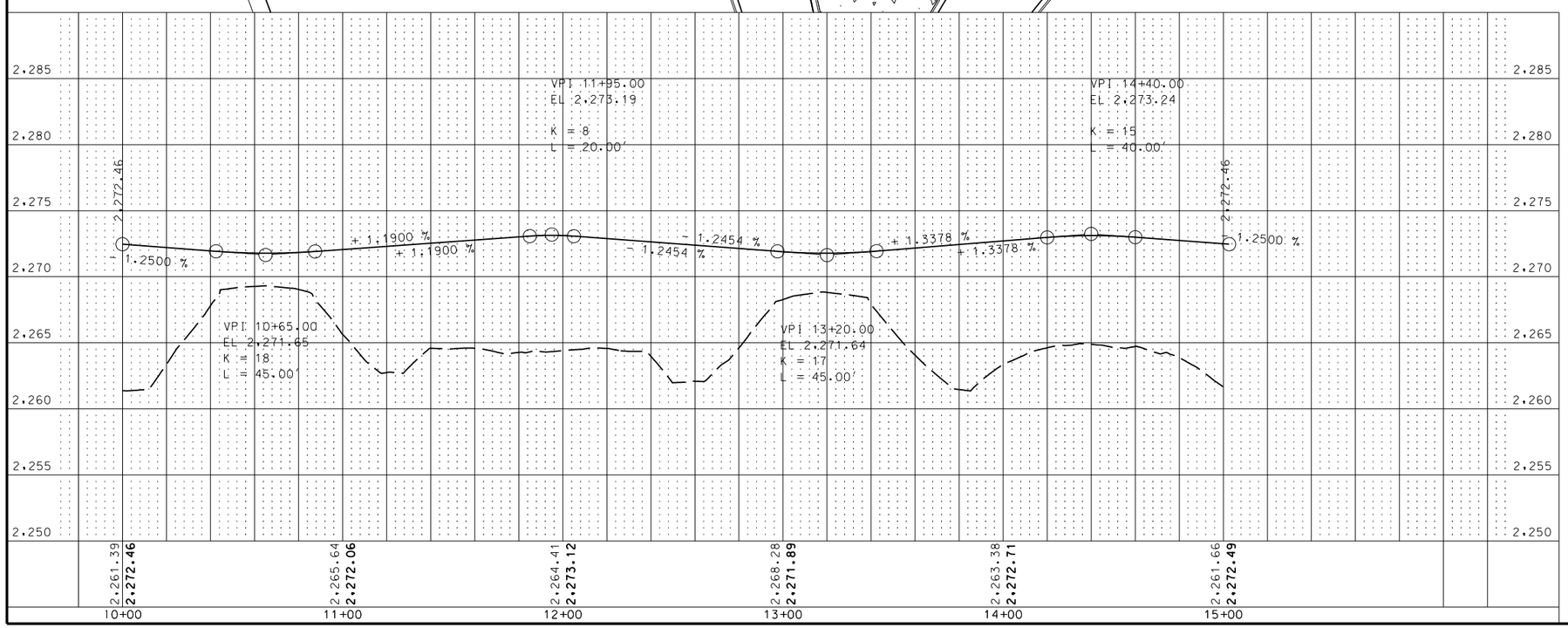
Roundabout Plan and Profile Sheets

Sta 30+00 to 33+00
SE Splitter Island of ND 22 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	31





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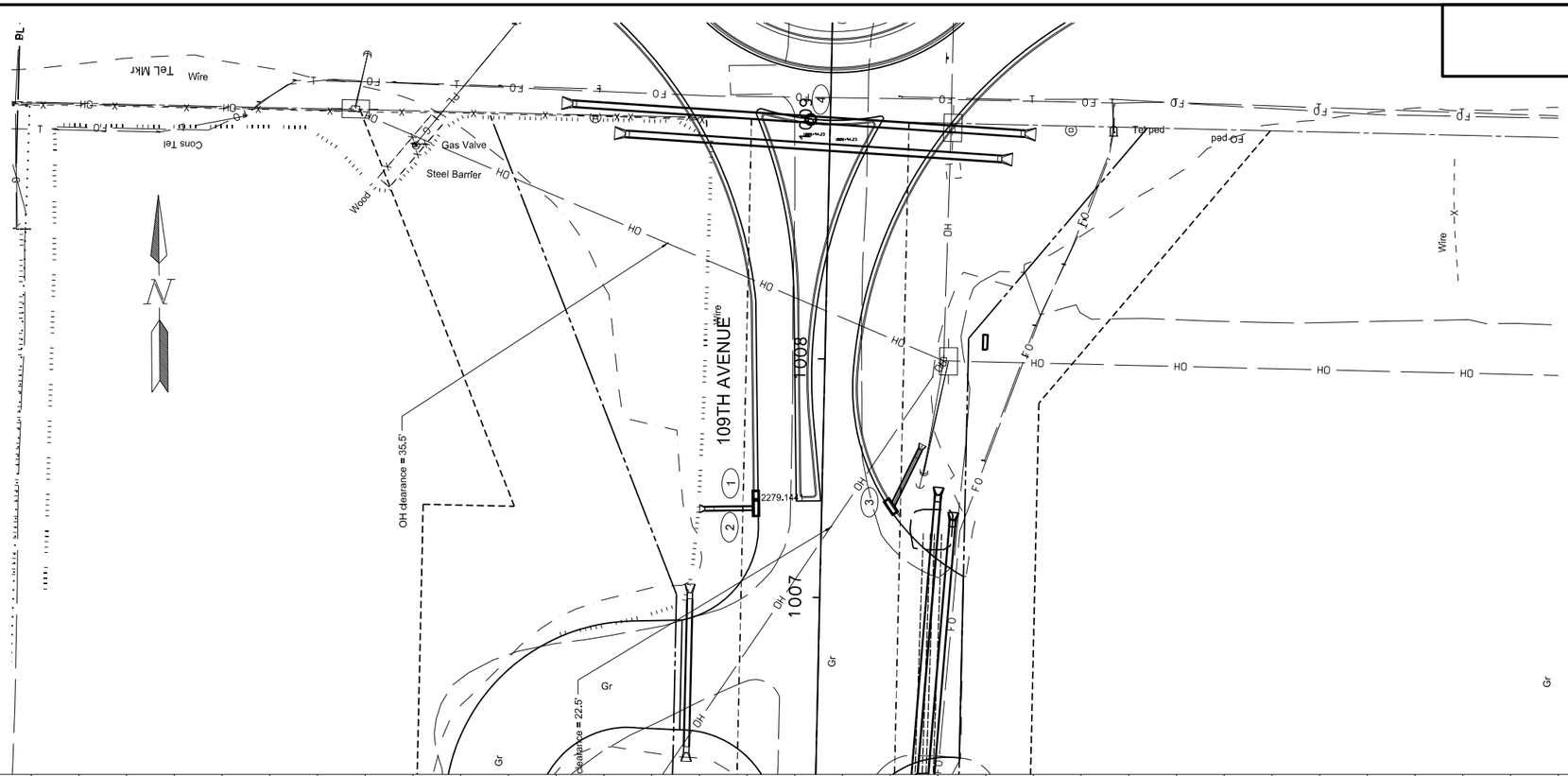
Roundabout Plan and Profile Sheets

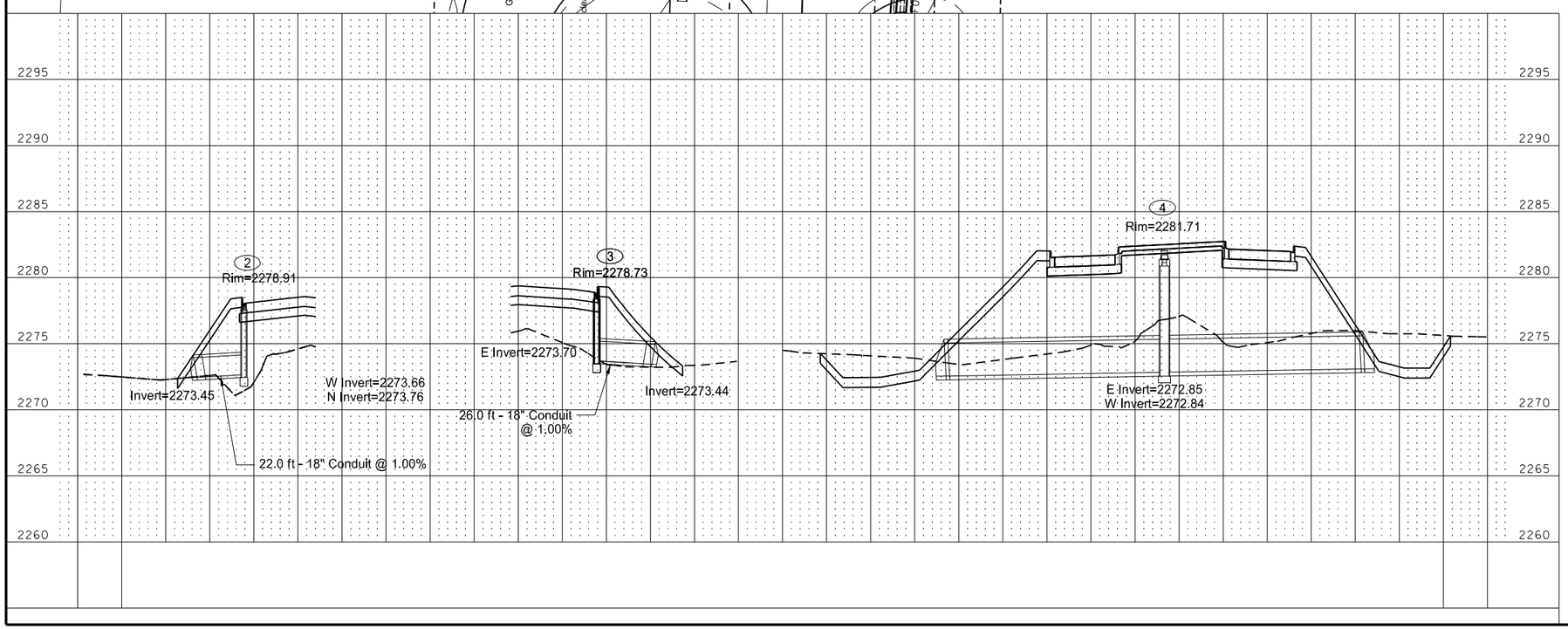
Sta 10+00 to 15+00
Center Island of ND 22 Roundabout
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	32



714 - 4101	PIPE CONDUIT 18IN-STORM DRAIN	
Sta	CB2 to 1007+36 - 49' Lt	22 LF
Sta	CB3 to 1007+63 - 41' Rt	26 LF
	Total=	48 LF
722-3510	INLET-TYPE 2	
Sta	CB 1 - 1007+42 - 27.8' Lt	1 EA
	Total=	1 EA
722-3520	INLET-TYPE 2 DOUBLE	
Sta	CB 2 - 1007+37 - 27.6' Lt	1 EA
Sta	CB 3 - 1007+39 - 29.1' Rt	1 EA
	Total=	2 EA
722-3701	INLET SPECIAL-TYPE 2 48IN	
Sta	CB 4 - 1009+00 - 8.1' Lt	1 EA
	Total=	1 EA



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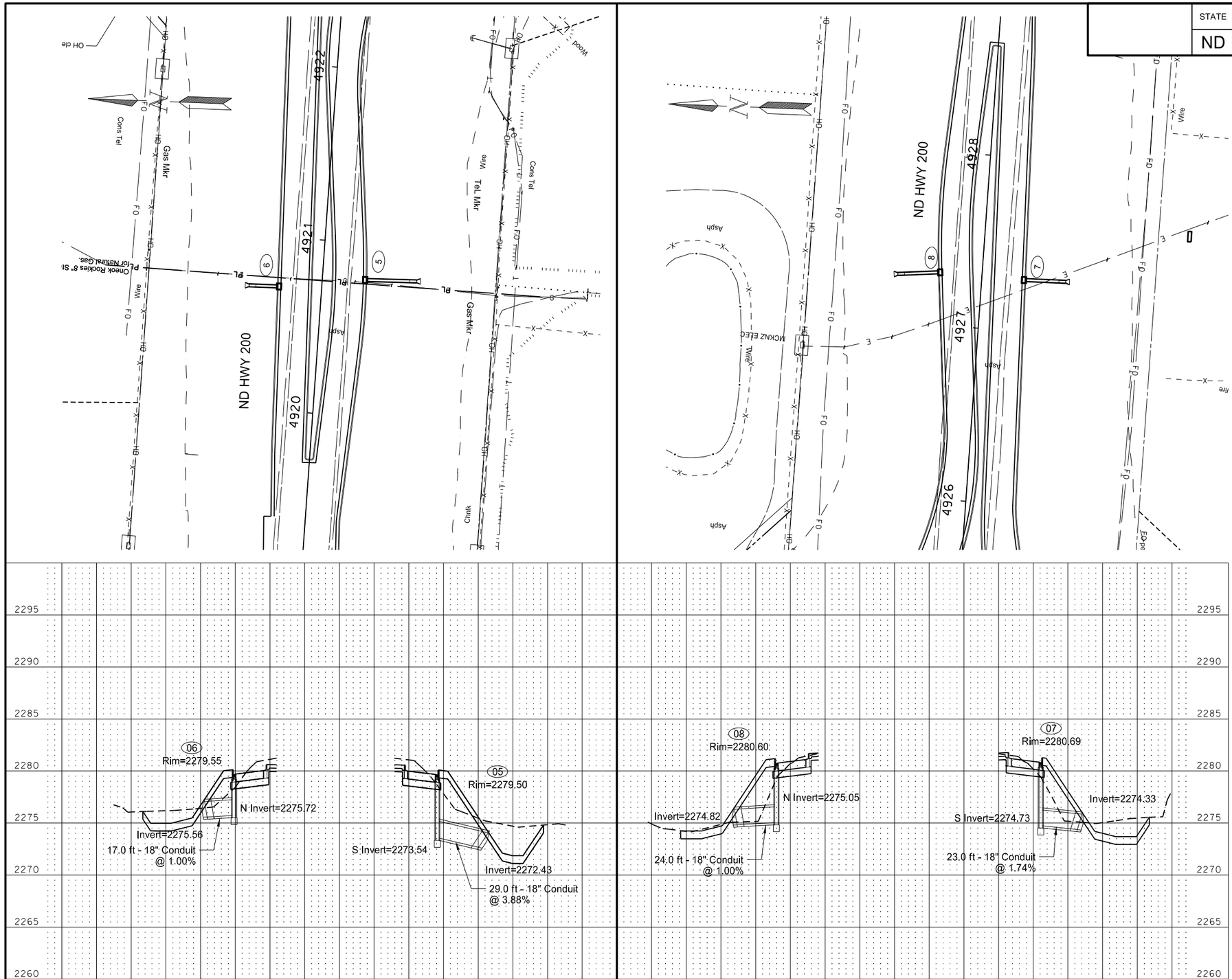
Plan and Profile Sheets

S Approach of ND 200 Roundabout

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	33



714 - 4101	PIPE CONDUIT 18IN-STORM DRAIN	
Sta	CB5 to 4920+80 - 54' Rt	29 LF
Sta	CB6 to 4920+71 - 42' Lt	17 LF
Sta	CB7 to 4927+30 - 48' Rt	23 LF
Sta	CB8 to 4927+28 - 48' Lt	24 LF
	Total=	93 LF
722-3510	INLET-TYPE 2	
Sta	CB 6 - 4920+72 - 24.5' Lt	1 EA
Sta	CB 5 - 4920+79 - 24.7' Rt	1 EA
Sta	CB 7 - 4927+30 - 24.3' Rt	1 EA
Sta	CB 8 - 4927+31 - 24.2' Lt	1 EA
	Total=	4 EA

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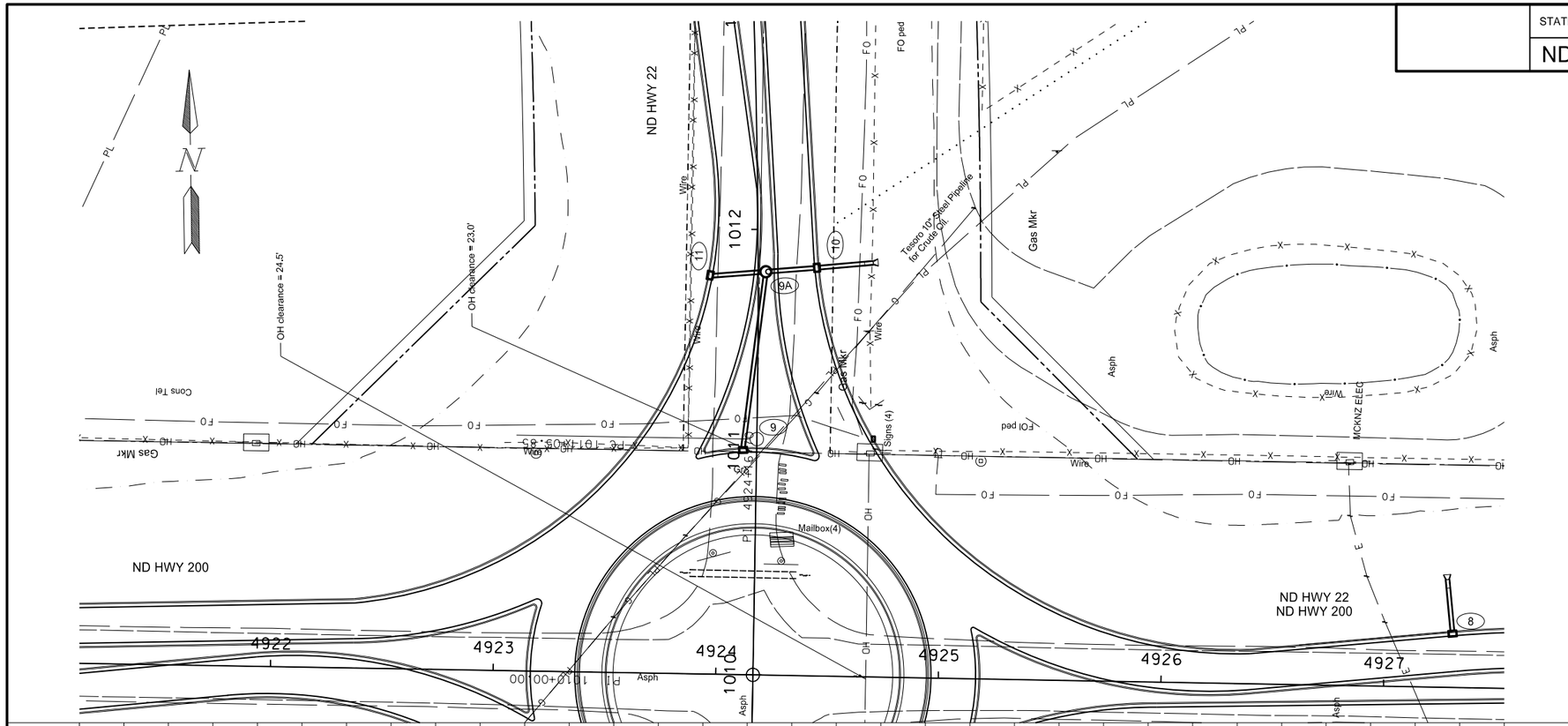
Plan and Profile Sheets

E & W Approach of ND 200 Roundabout

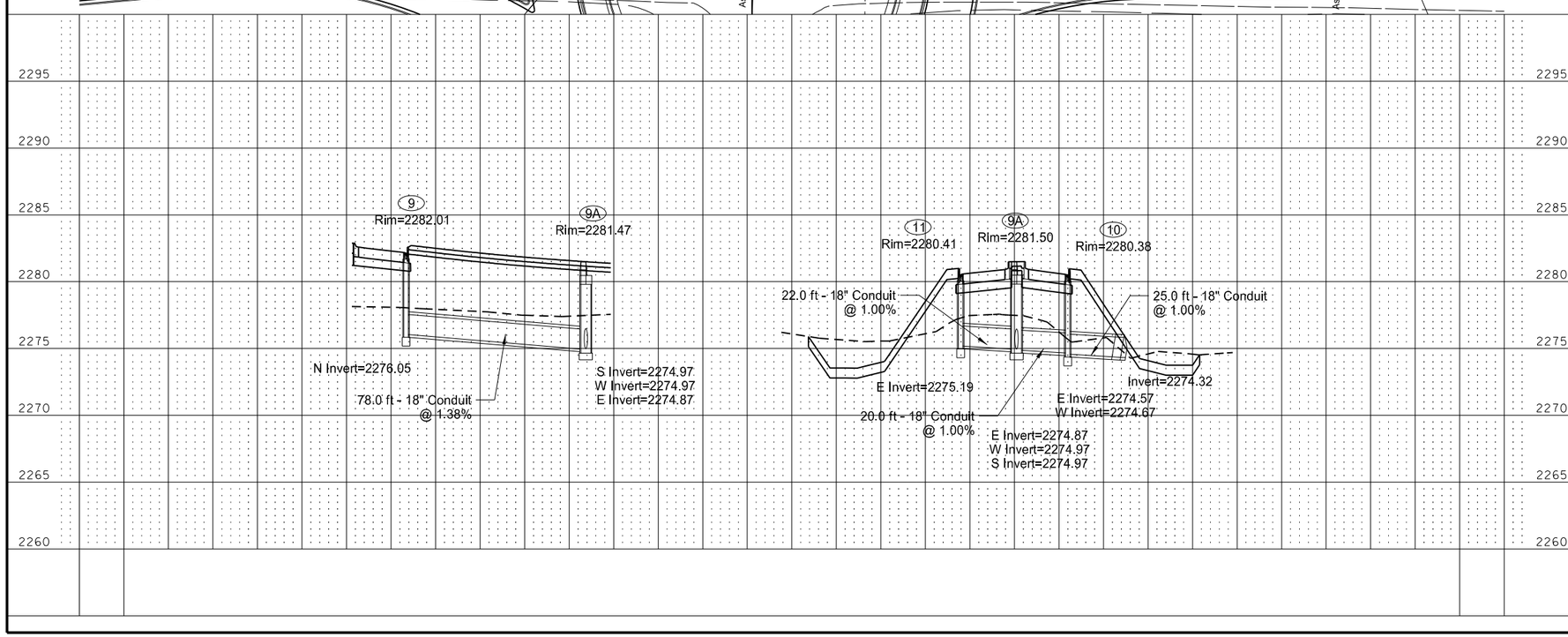
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	34



714 - 4101	PIPE CONDUIT 18IN-STORM DRAIN		
Sta	CB9 to MH9A		78 LF
Sta	CB10 to 1011+85 - 51.7' Rt		25 LF
Sta	CB11 to MH9A		22 LF
Sta	MH 9A to CB10		20 LF
		Total=	145 LF
722-0107	MANHOLE 54IN		
Sta	Storm MH 9A - 1011+81 - 3.5' Rt		1 EA
		Total=	1 EA
722-3510	INLET-TYPE 2		
Sta	CB 9 - 1011+01 - 6.1' Lt		1 EA
Sta	CB 11 - 1011+79 - 21.5' Lt		1 EA
Sta	CB 10 - 1011+83 - 26.4' Rt		1 EA
		Total=	3 EA



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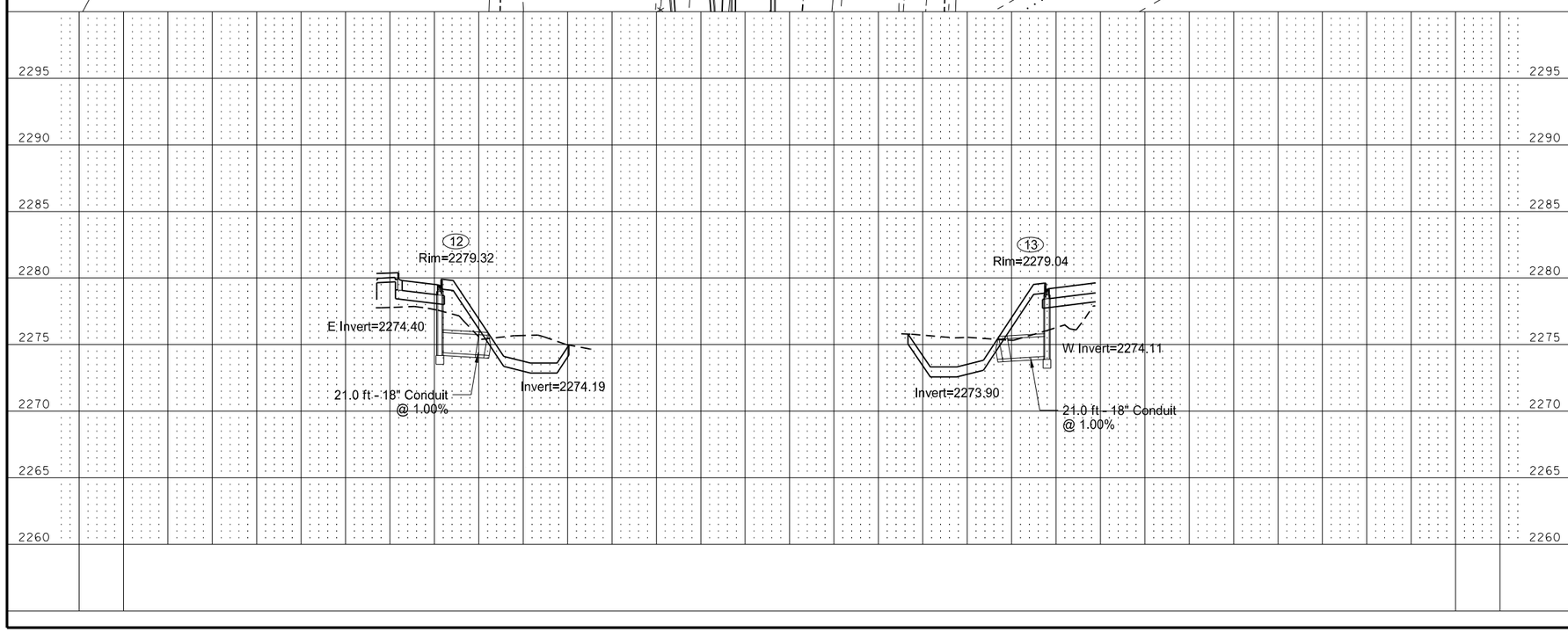
Plan and Profile Sheets

N Approach of ND 200 Roundabout

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	35



714 - 4101 PIPE CONDUIT 18IN-STORM DRAIN

Sta	CB12 to 1013+85 - 43' Rt		21 LF
Sta	CB13 to 1014+68 - 43' Lt		21 LF
		Total=	42 LF

722-3510 INLET-TYPE 2

Sta	CB 12 - 1013+85 - 20.8' Rt		1 EA
Sta	CB 13 - 1014+70 - 21.6' Lt		1 EA
		Total=	2 EA

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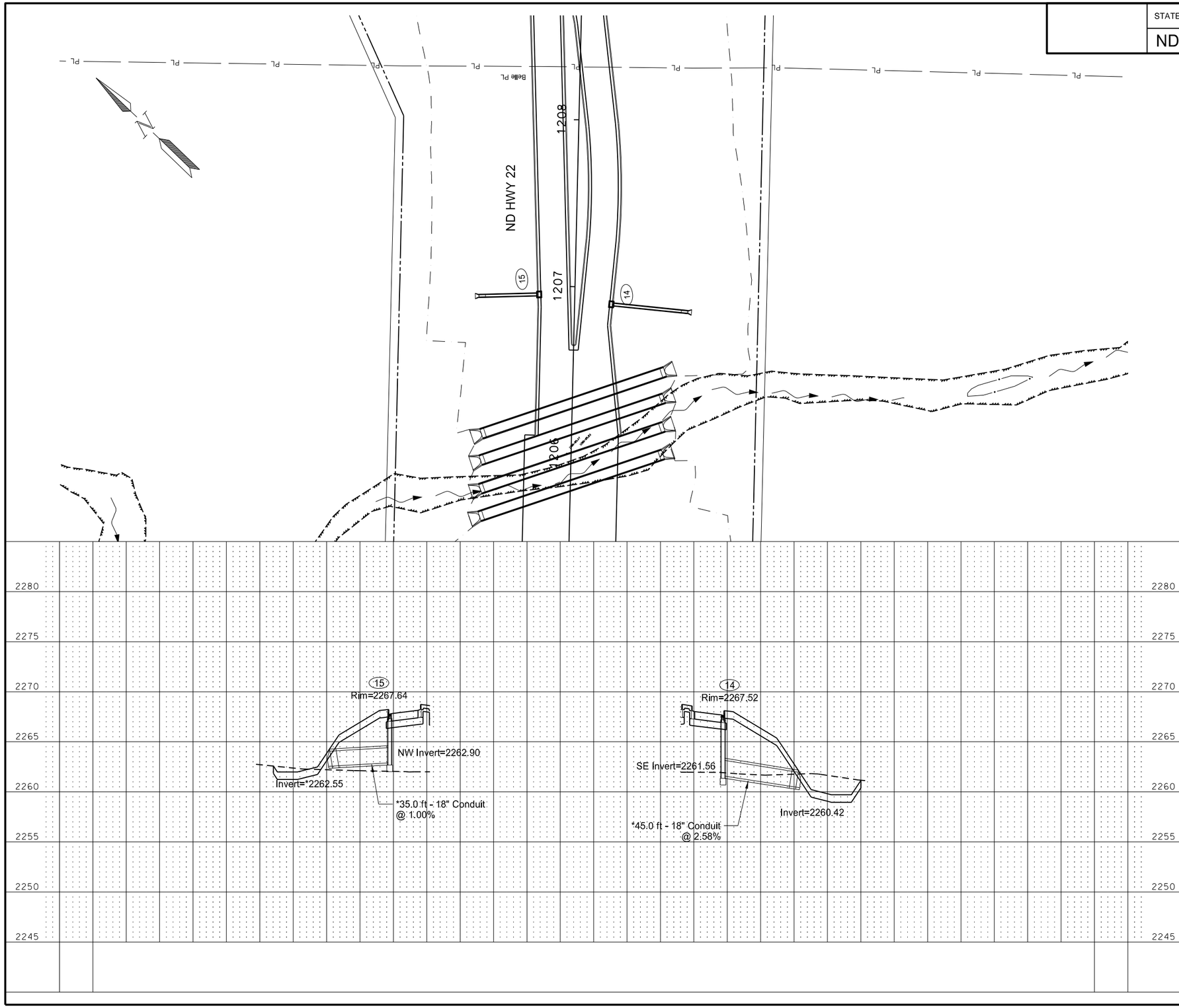
Plan and Profile Sheets

N Approach of ND 200 Roundabout

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	36



714 - 4101	PIPE CONDUIT 18IN-STORM DRAIN		
Sta	CB14 to 1206+86 - 68' Rt		45 LF
Sta	CB15 to 1206+93 - 57' Lt		35 LF
		Total=	80 LF
722-3510	INLET-TYPE 2		
Sta	CB 14 - 1206+90 - 22.0' Rt		1 EA
Sta	CB 15 - 1206+95 - 21.4' Lt		1 EA
		Total=	2 EA

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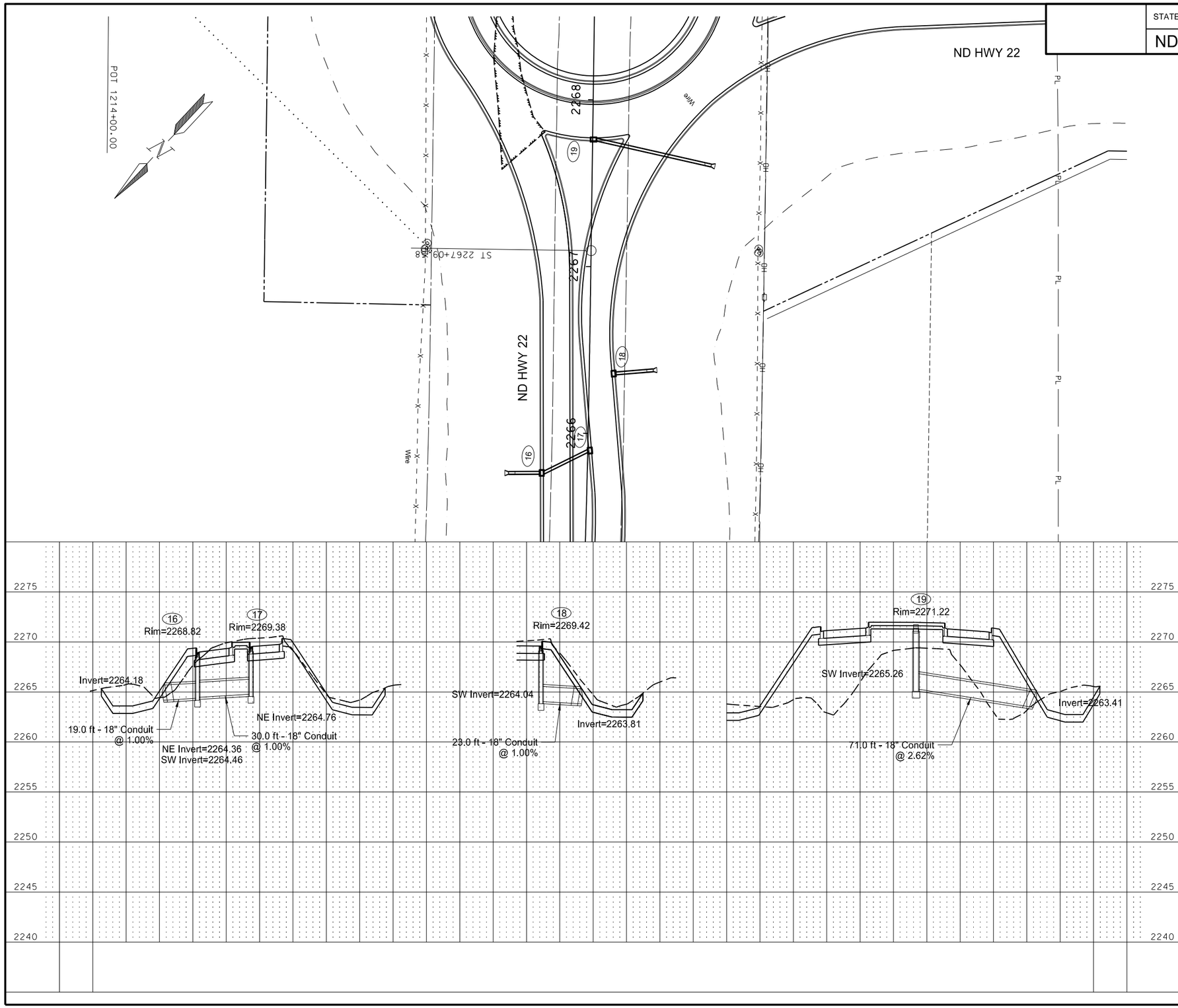
Plan and Profile Sheets

S Approach of ND 22 Roundabout

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	37



714 - 4101 PIPE CONDUIT 18IN-STORM DRAIN

Sta	CB 17 to CB 16	30 LF
Sta	CB16 to 2265+75 - 47' Lt	19 LF
Sta	CB18 to 2266+38 - 38' Rt	23 LF
Sta	CB19 to 2267+62 - 71' Rt	71 LF
	Total=	143 LF

722-3510 INLET-TYPE 2

Sta	CB 16 - 2265+76 - 27.3' Lt	1 EA
Sta	CB 17 - 2265+90 - 1.3' Rt	1 EA
Sta	CB 18 - 2266+36 - 14.6' Rt	1 EA
Sta	CB 19 - 2267+76 - 0.6' Rt	1 EA
	Total=	4 EA

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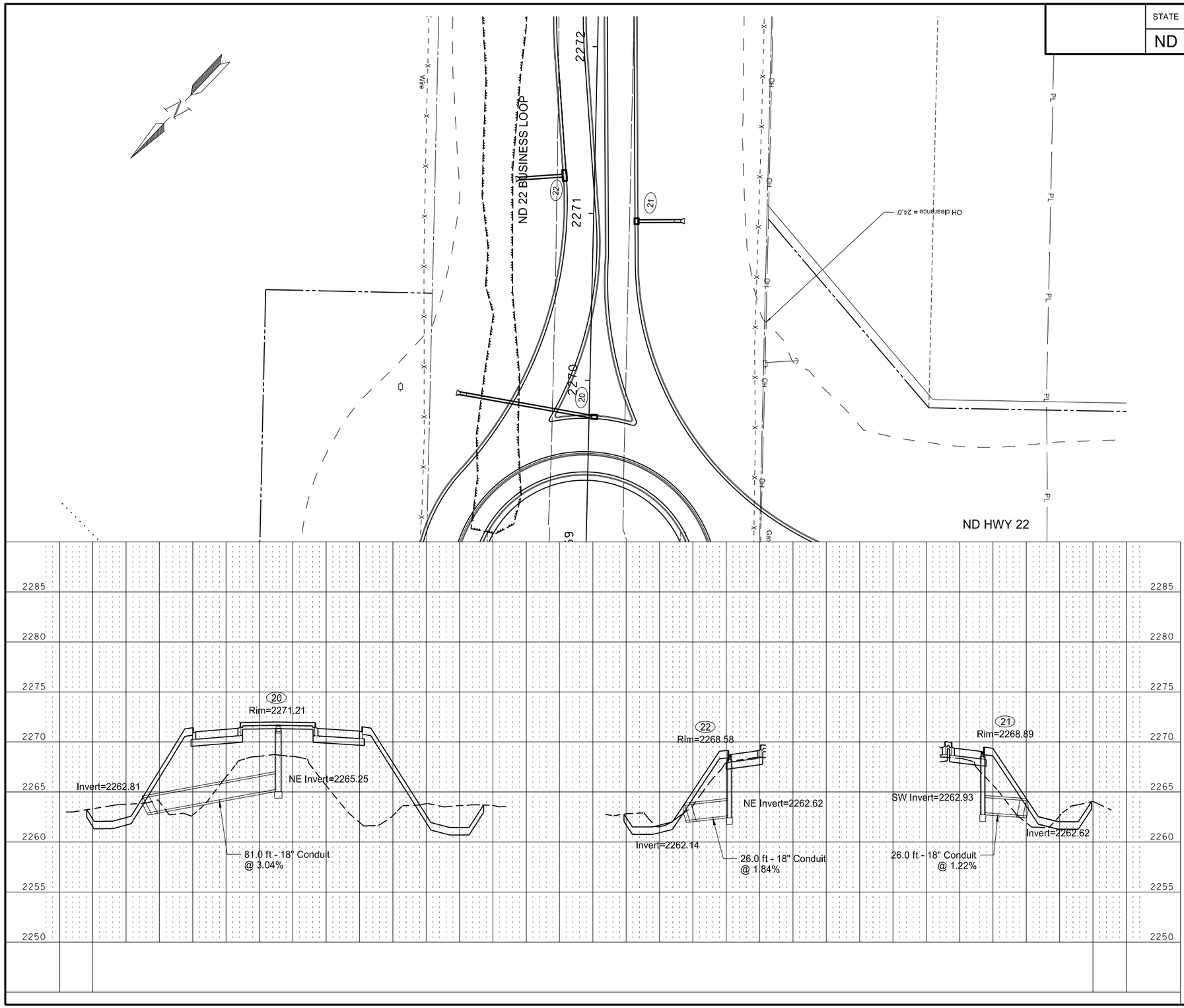
Plan and Profile Sheets

NW Approach of ND 22 Roundabout

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	38



714 - 4101	PIPE CONDUIT 18IN-STORM DRAIN		
Sta	CB20 to 2269+90 - 78' Lt		81 LF
Sta	CB21 to 2270+97 - 52' Rt		26 LF
Sta	CB22 to 2271+20 - 45' Lt		26 LF
		Total=	133 LF
722-3510	INLET-TYPE 2		
Sta	CB 20 - 2269+78 - 3.2' Rt		1 EA
Sta	CB 21 - 2270+96 - 25.9' Rt		1 EA
		Total=	2 EA
722-3520	INLET-TYPE 2 DOUBLE		
Sta	CB 22 - 2271+22 - 18.0' Rt		1 EA
		Total=	1 EA

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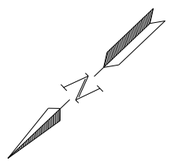
Plan and Profile Sheets

SE Approach of ND 22 Roundabout

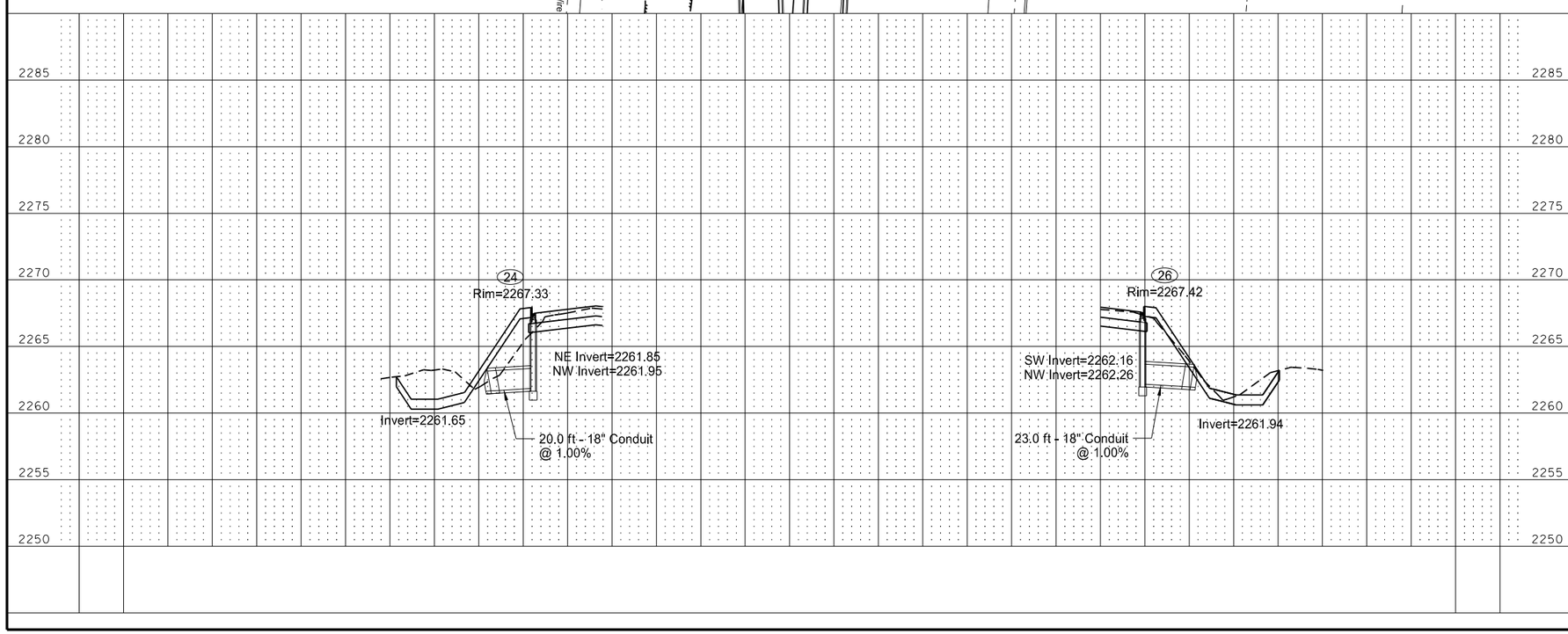
ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	39



714 - 4101	PIPE CONDUIT 18IN-STORM DRAIN		
Sta	CB24 to 2273+20 - 49' Lt		20 LF
Sta	CB26 to 2273+44 - 42' Rt		23 LF
		Total=	43 LF
722-3510	INLET-TYPE 2		
Sta	CB 23 - 2273+17 - 27.6' Lt		1 EA
Sta	CB 25 - 2273+38 - 19.2' Rt		1 EA
		Total=	2 EA
722-3520	INLET-TYPE 2 DOUBLE		
Sta	CB 24 - 2273+23 - 28.1' Lt		1 EA
Sta	CB 26 - 2273+43 - 19.0' Rt		1 EA
		Total=	2 EA



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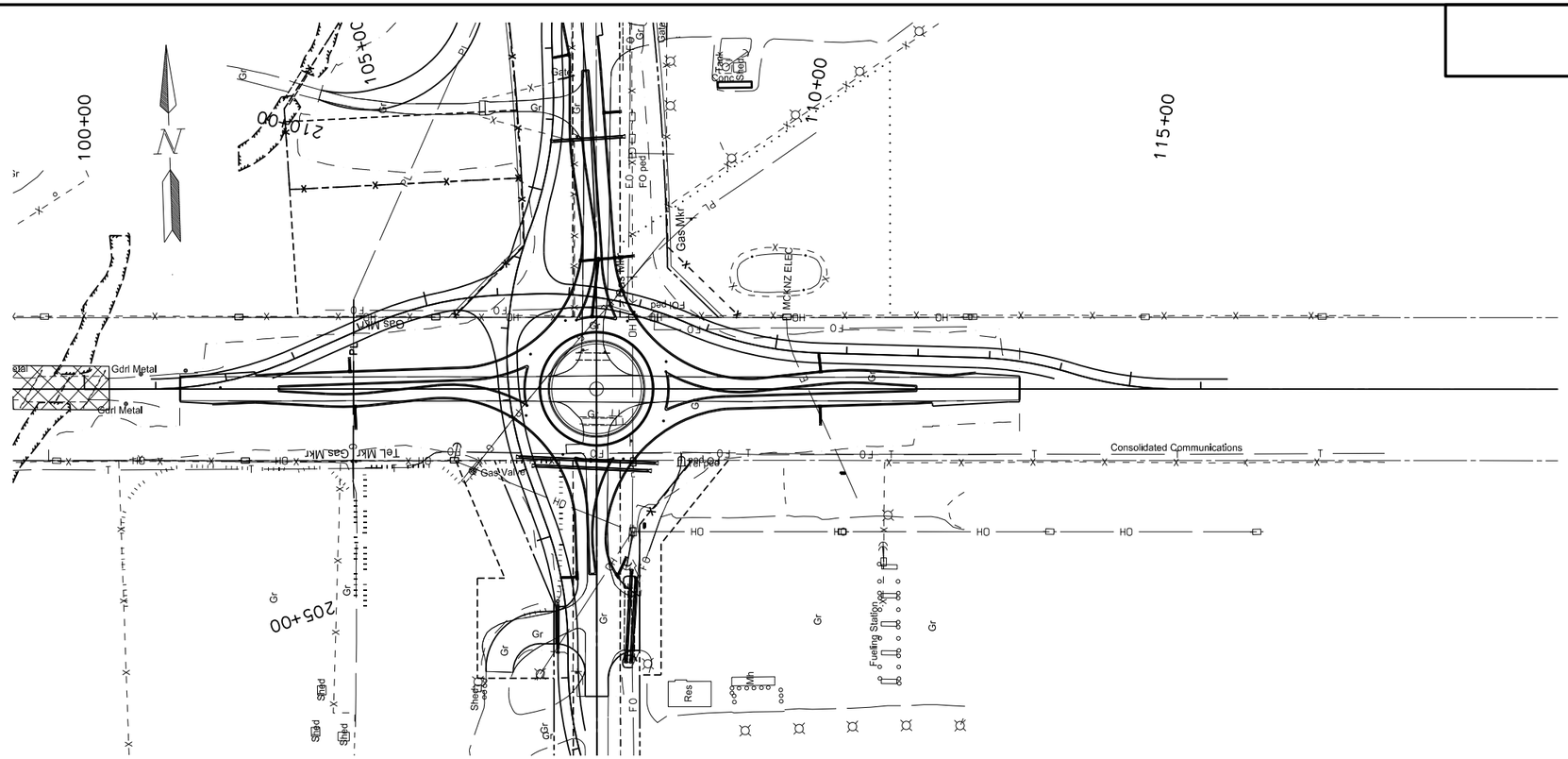
Plan and Profile Sheets

SE Approach of ND 22 Roundabout

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	40



CONSTRUCTION

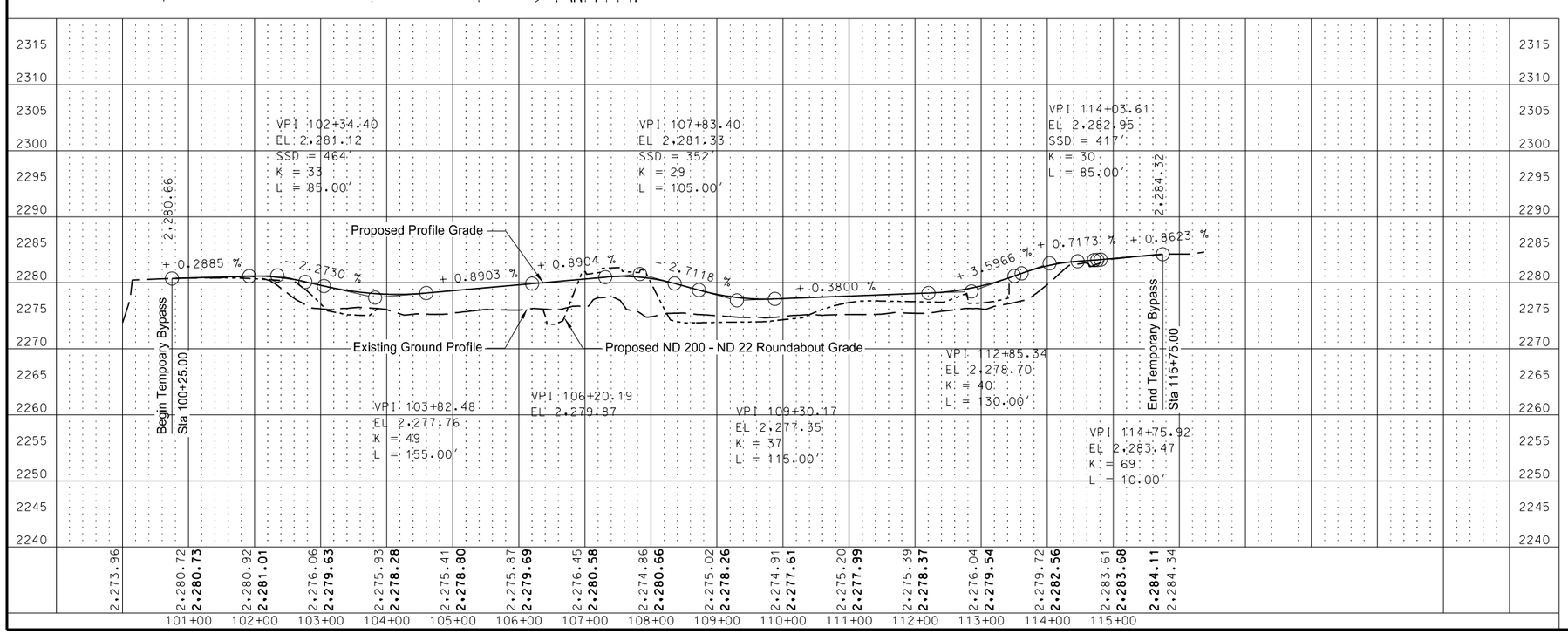
ND Hwy 200 Temporary Bypass Roadway	Sta 100+00 to Sta 115+00	
Aggregate Base Course CL 5	2993	TON
Common Excavation Type A	5723	CY
(Excavation - 97 CY)		
(Embankment 30% Shrinkage - 5150 CY)		

REMOVAL

ND Hwy 200 Temporary Bypass Roadway	Sta 100+00 to Sta 115+00	
Removal of Temporary Bypass	1	EA

NOTES:
These are estimated quantities for construction of the ND Hwy 200 Temporary Bypass Roadway. These quantities are included in the overall roadway quantities.

See Section 100 Sheets 1 and 3 for traffic control device layout and quantities.



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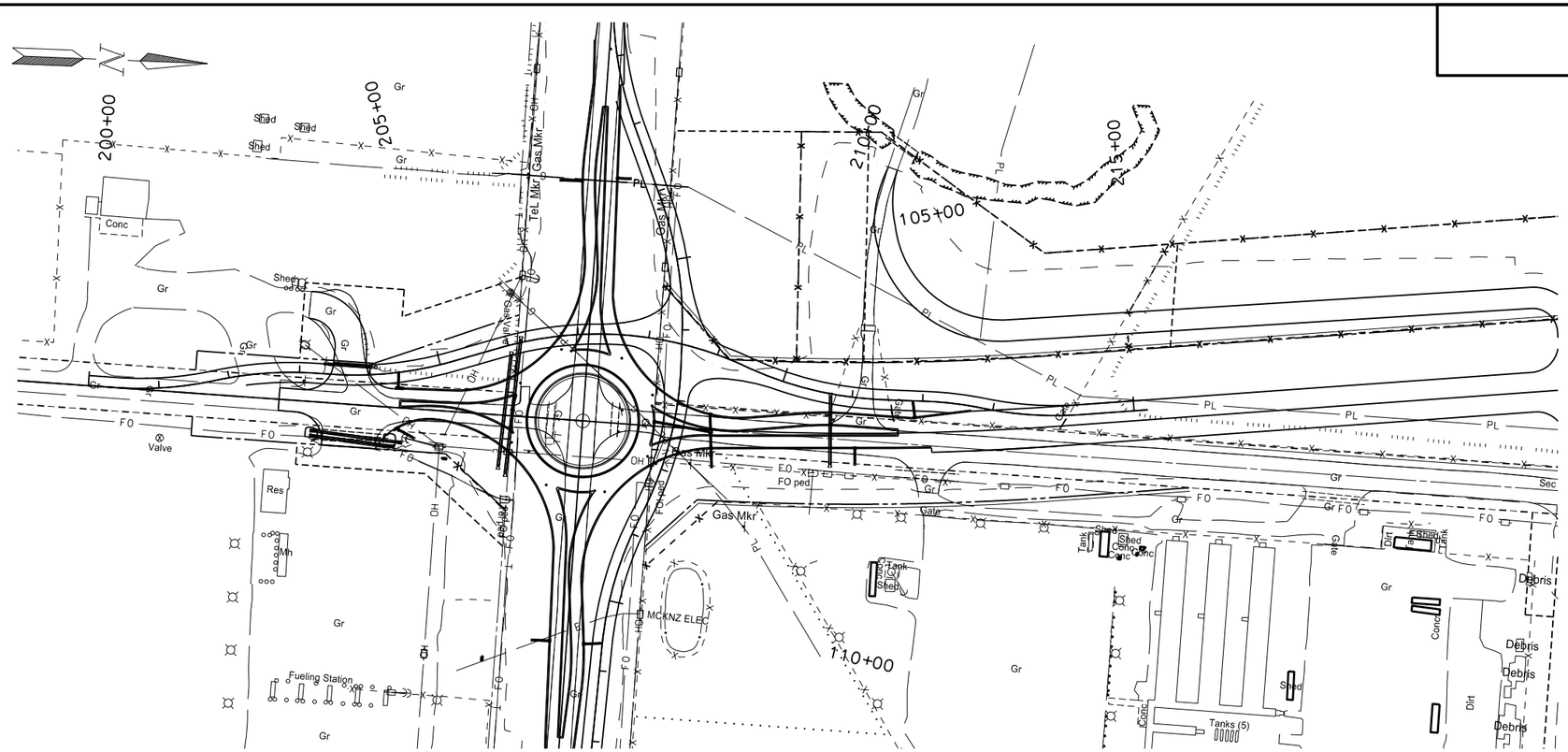
Plan And Profile Sheets

ND 200 Temporary Bypass Roadway

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	41



CONSTRUCTION

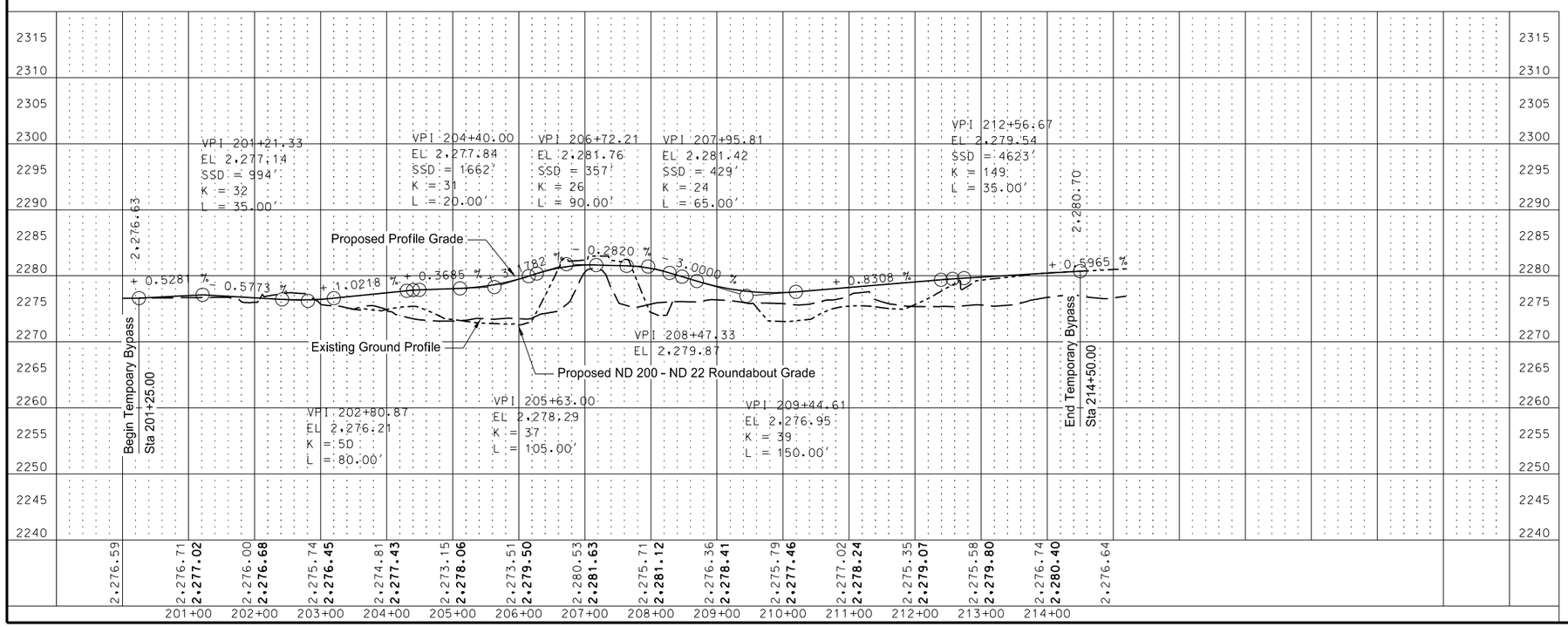
ND Hwy 22 Temporary Bypass Roadway	Sta 201+25 to Sta 214+50	
Aggregate Base Course CL 5	3059	TON
Common Excavation Type A	5790	CY
(Excavation - 31 CY)		
(Embankment 30% Shrinkage - 5283 CY)		

REMOVAL

ND Hwy 22 Temporary Bypass Roadway	Sta 201+25 to Sta 214+50	
Removal of Temporary Bypass	1	EA

NOTES:
These are estimated quantities for construction of the ND Hwy 22 Temporary Bypass Roadway. These quantities are included in the overall roadway quantities.

See Section 100 Sheets 1 and 3 for traffic control device layout and quantities.



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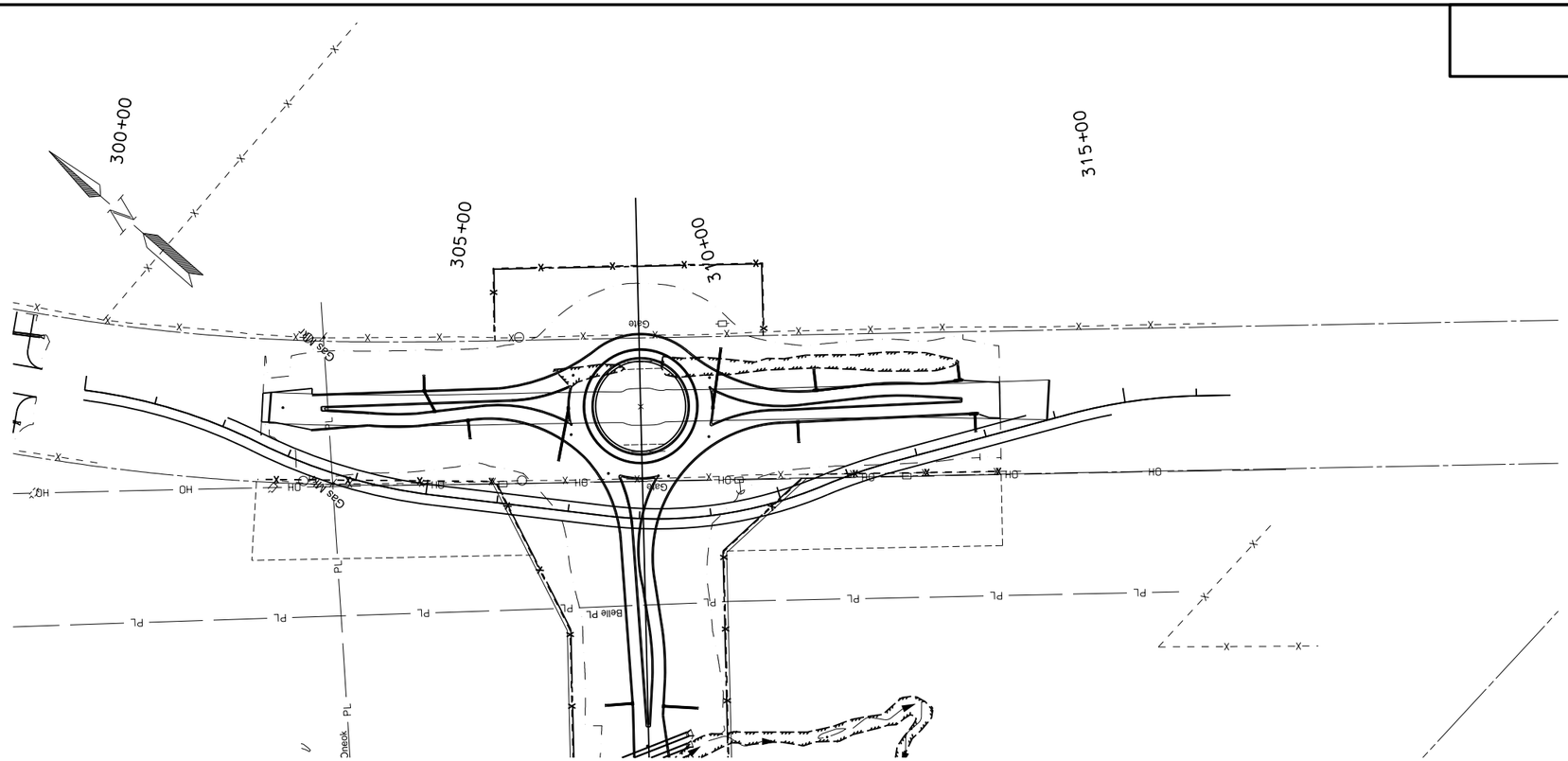
Plan and Profile Sheets

ND 22 Temporary Bypass Roadway

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	60	42



CONSTRUCTION

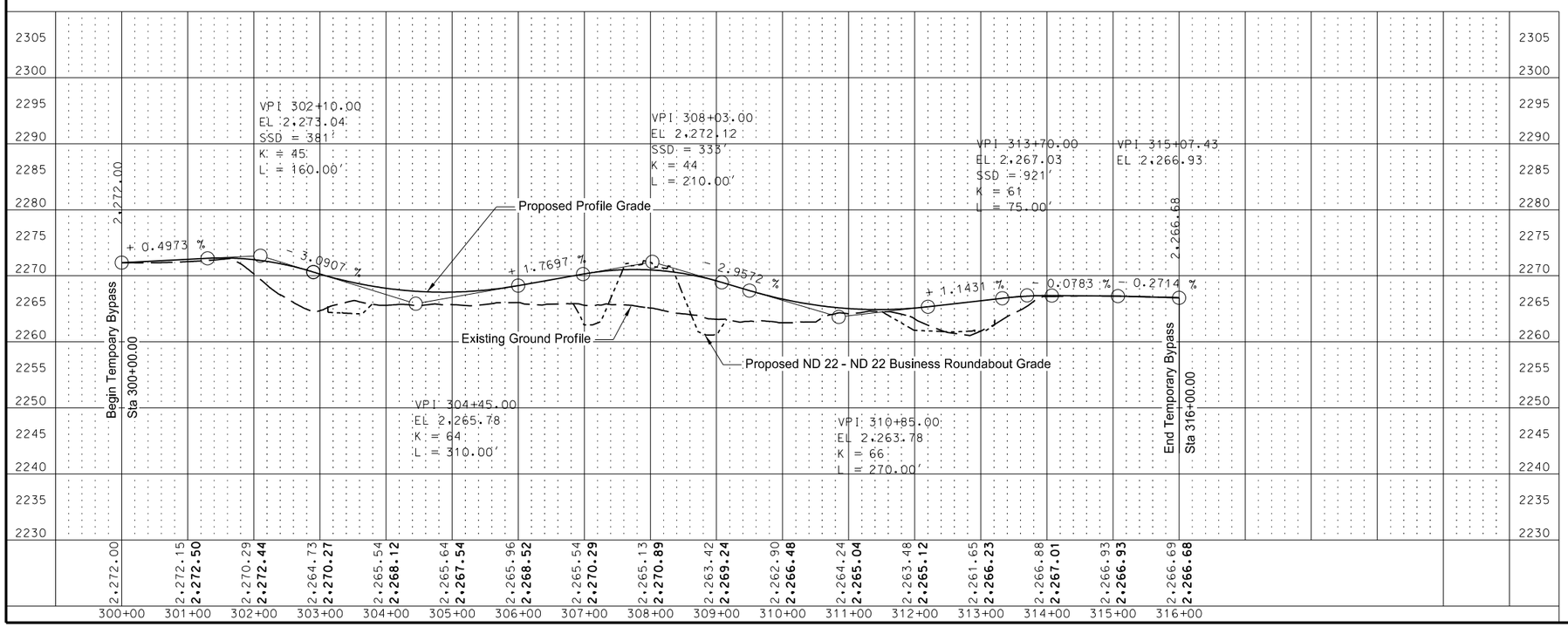
ND Hwy 22 Business Temporary Bypass Roadway	Sta 300+00 to Sta 316+00	
Aggregate Base Course CL 5	2712	TON
Common Excavation Type A	6680	CY
(Excavation - 36 CY)		
(Embankment 30% Shrinkage - 6644 CY)		

REMOVAL

ND Hwy 22 Business Temporary Bypass Roadway	Sta 300+00 to Sta 316+00	
Removal of Temporary Bypass	1	EA

NOTES:
These are estimated quantities for construction of the ND Hwy 22 Business Temporary Bypass Roadway. These quantities are included in the overall roadway quantities.

See Section 100 Sheets 1 and 10 for traffic control device layout and quantities.



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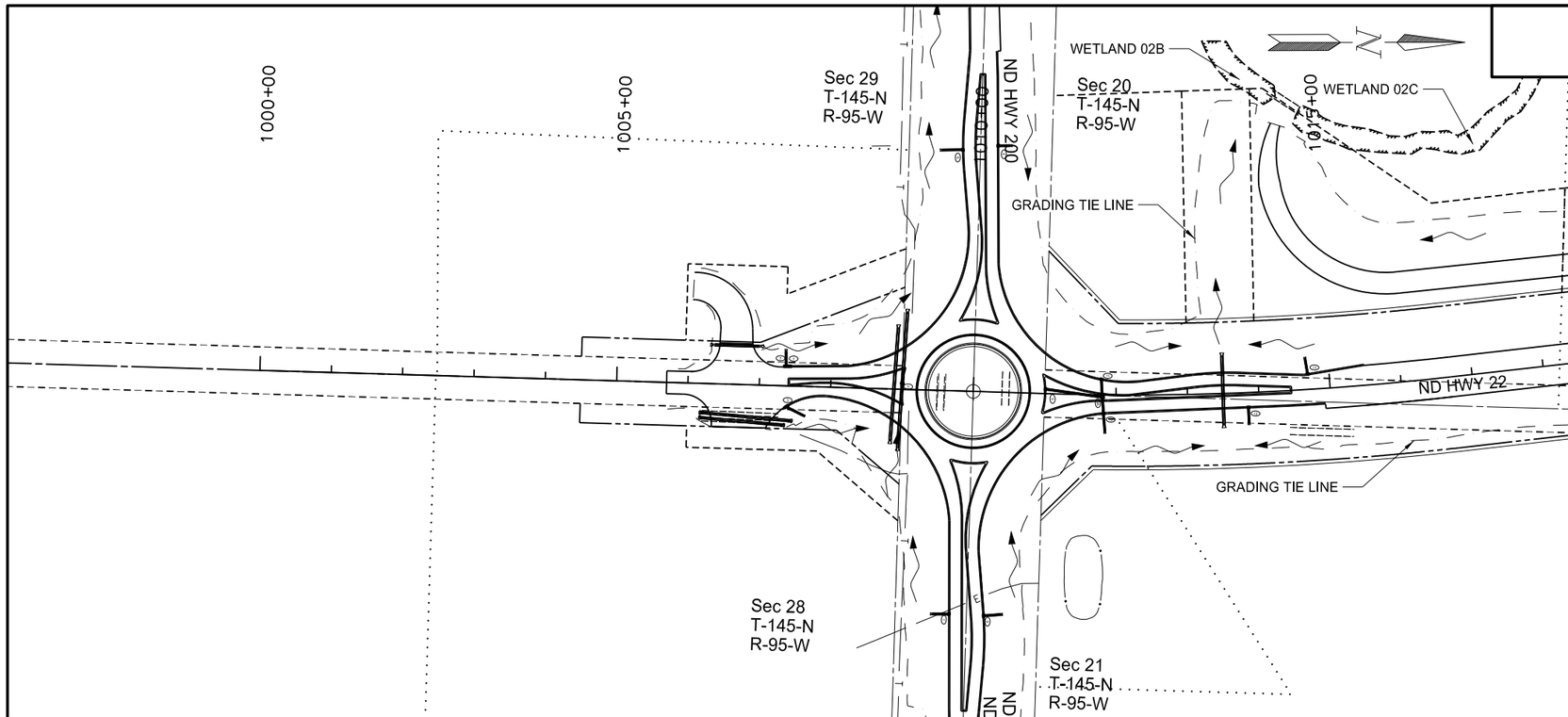
Plan and Profile Sheets

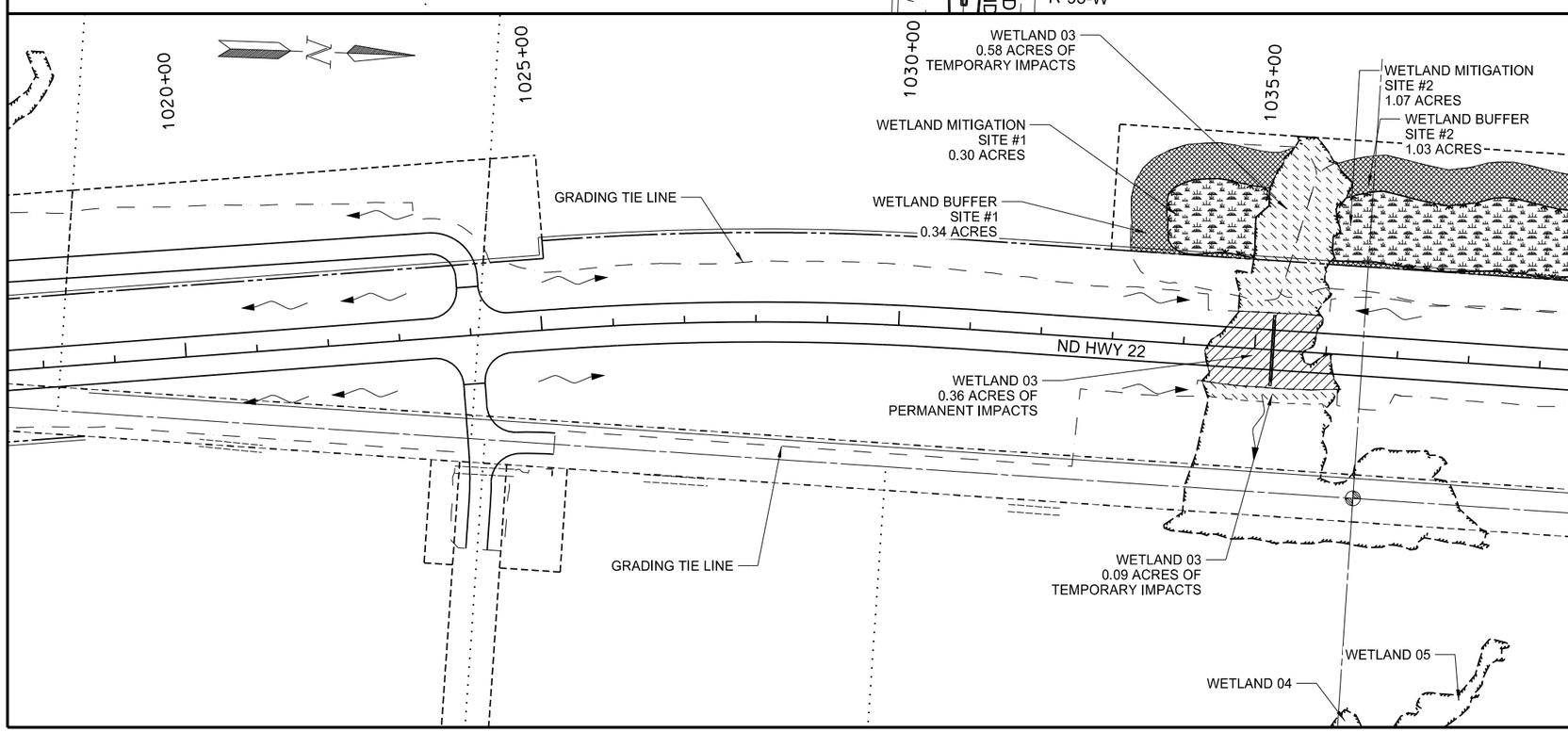
ND 22 Business Temporary Bypass Roadway

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	75	1





LEGEND

- Avoidance Area
- Delineated Wetland
- Permanent Wetland Impact
- Temporary Wetland Impact
- Wetland Creation
- Wetland Upland Buffer
- Riprap Grade II
- Flow Arrow

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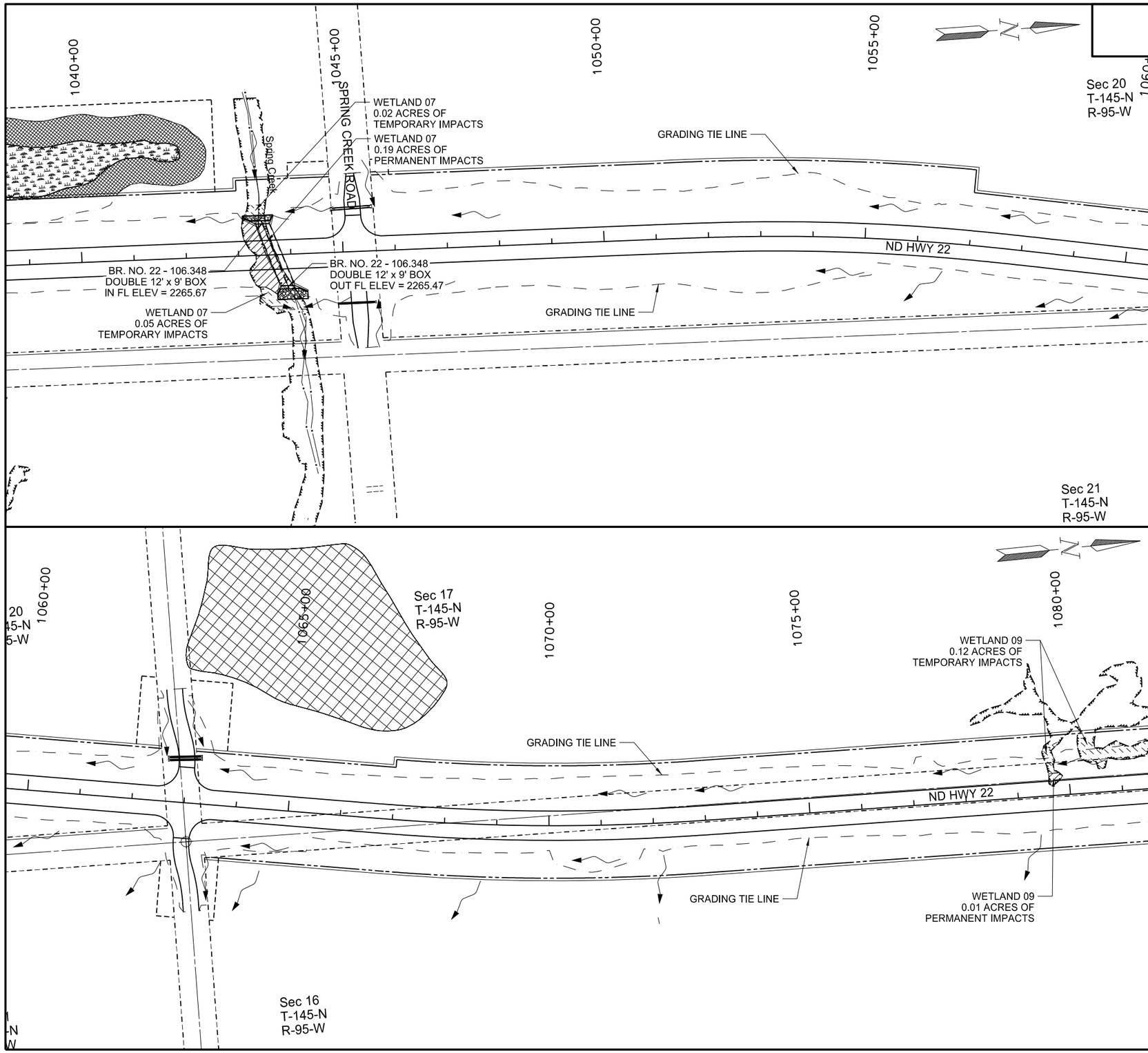
Wetlands

Sta 1000+00 to Sta 1039+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	75	2



LEGEND

- Avoidance Area
- Delineated Wetland
- Permanent Wetland Impact
- Temporary Wetland Impact
- Wetland Creation
- Wetland Upland Buffer
- Riprap Grade II
- Flow Arrow

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Wetlands

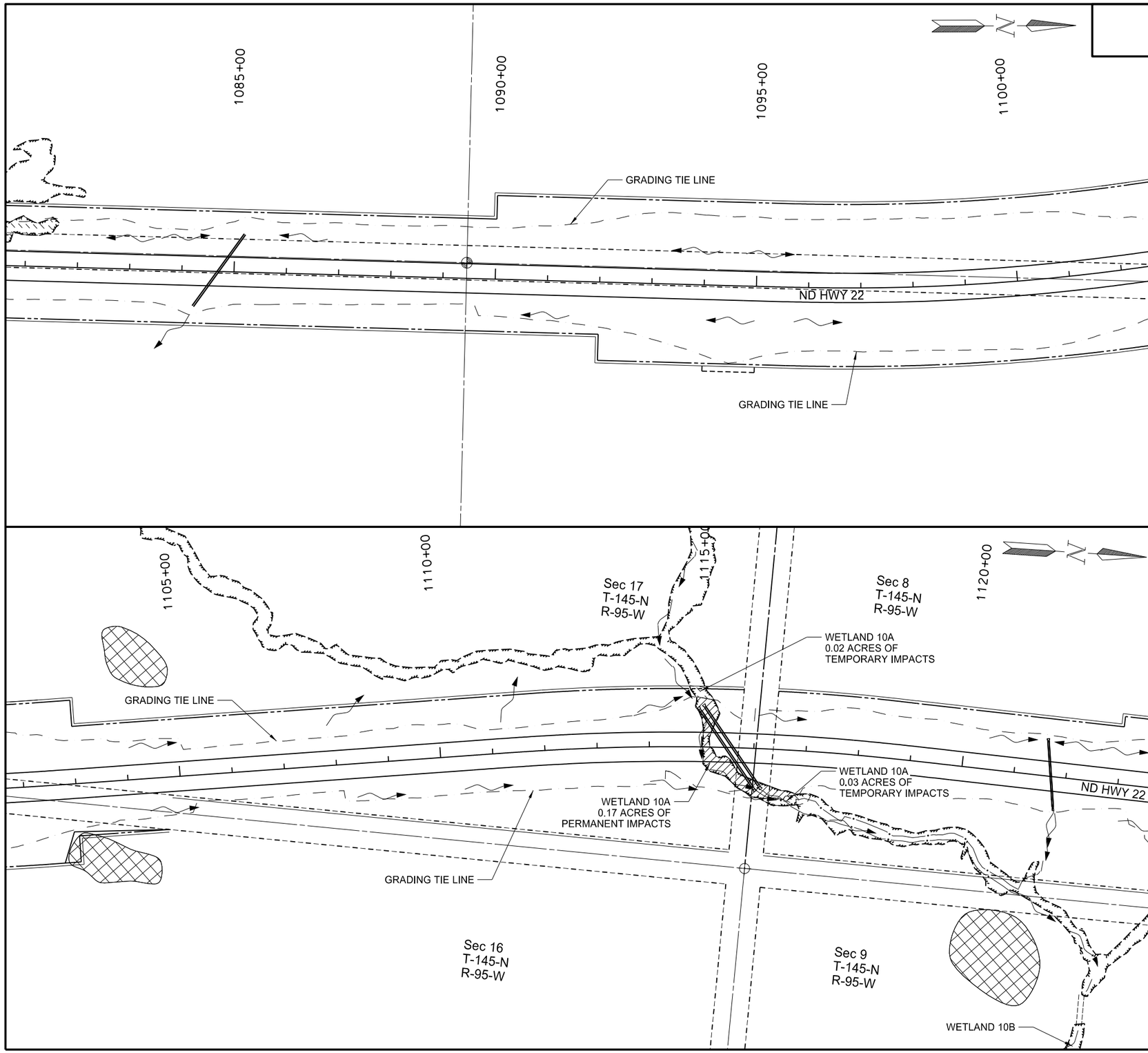
Sta 1039+00 to Sta 1081+00

ND Hwy 22

Killdeer Bypass

6/8/2015 2:18:39 PM mmaslesa c:\pwworking\oma\d1342430\075WL_002.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	75	3



LEGEND

- Avoidance Area
- Delineated Wetland
- Permanent Wetland Impact
- Temporary Wetland Impact
- Wetland Creation
- Wetland Upland Buffer
- Riprap Grade II
- Flow Arrow

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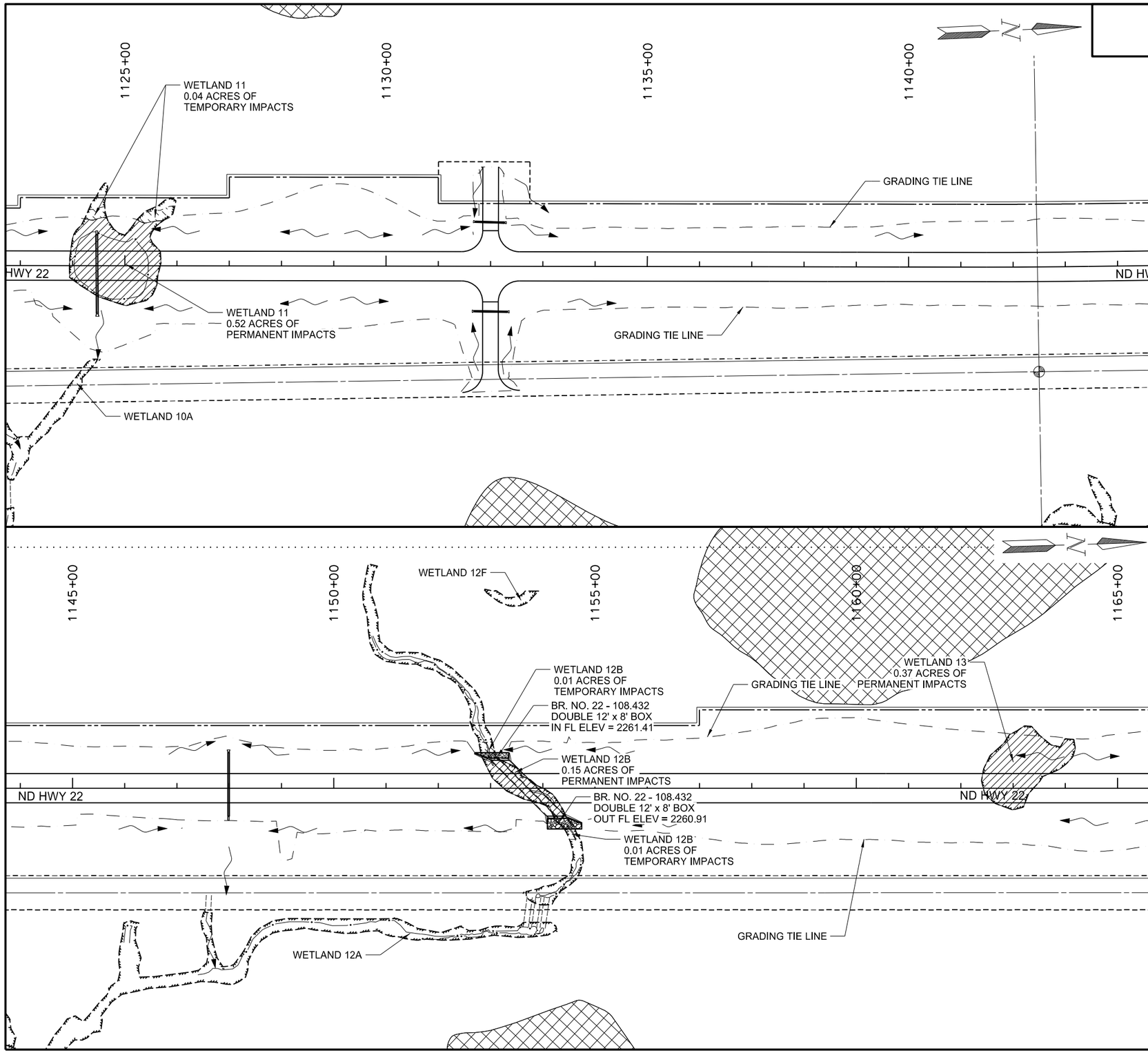
Wetlands

Sta 1081+00 to 1123+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	75	4



LEGEND

- Avoidance Area
- Delineated Wetland
- Permanent Wetland Impact
- Temporary Wetland Impact
- Wetland Creation
- Wetland Upland Buffer
- Riprap Grade II
- Flow Arrow

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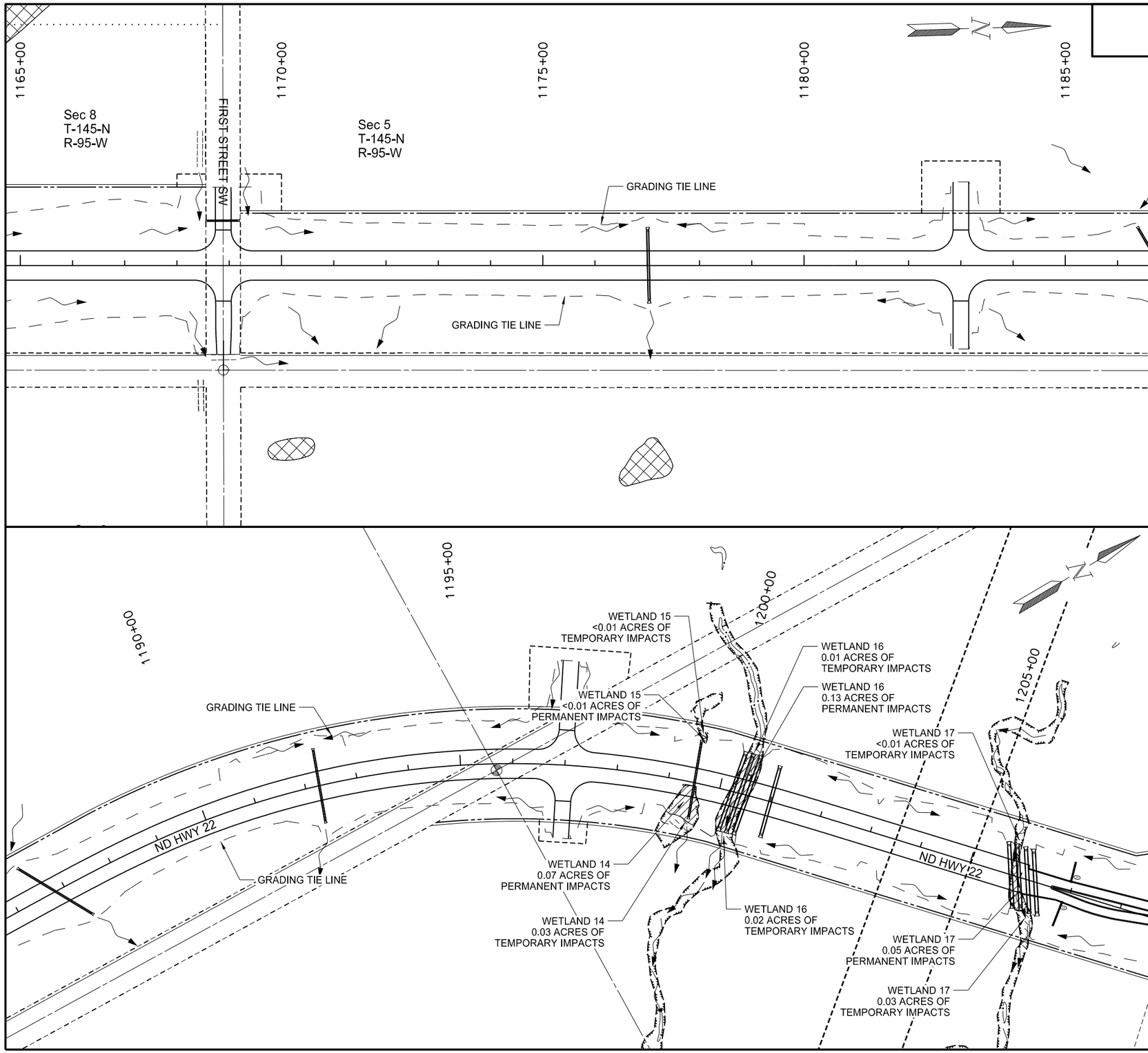
Wetlands

Sta 1123+00 to Sta 1165+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	75	5



LEGEND

- Avoidance Area
- Delineated Wetland
- Permanent Wetland Impact
- Temporary Wetland Impact
- Wetland Creation
- Wetland Upland Buffer
- Riprap Grade II
- Flow Arrow

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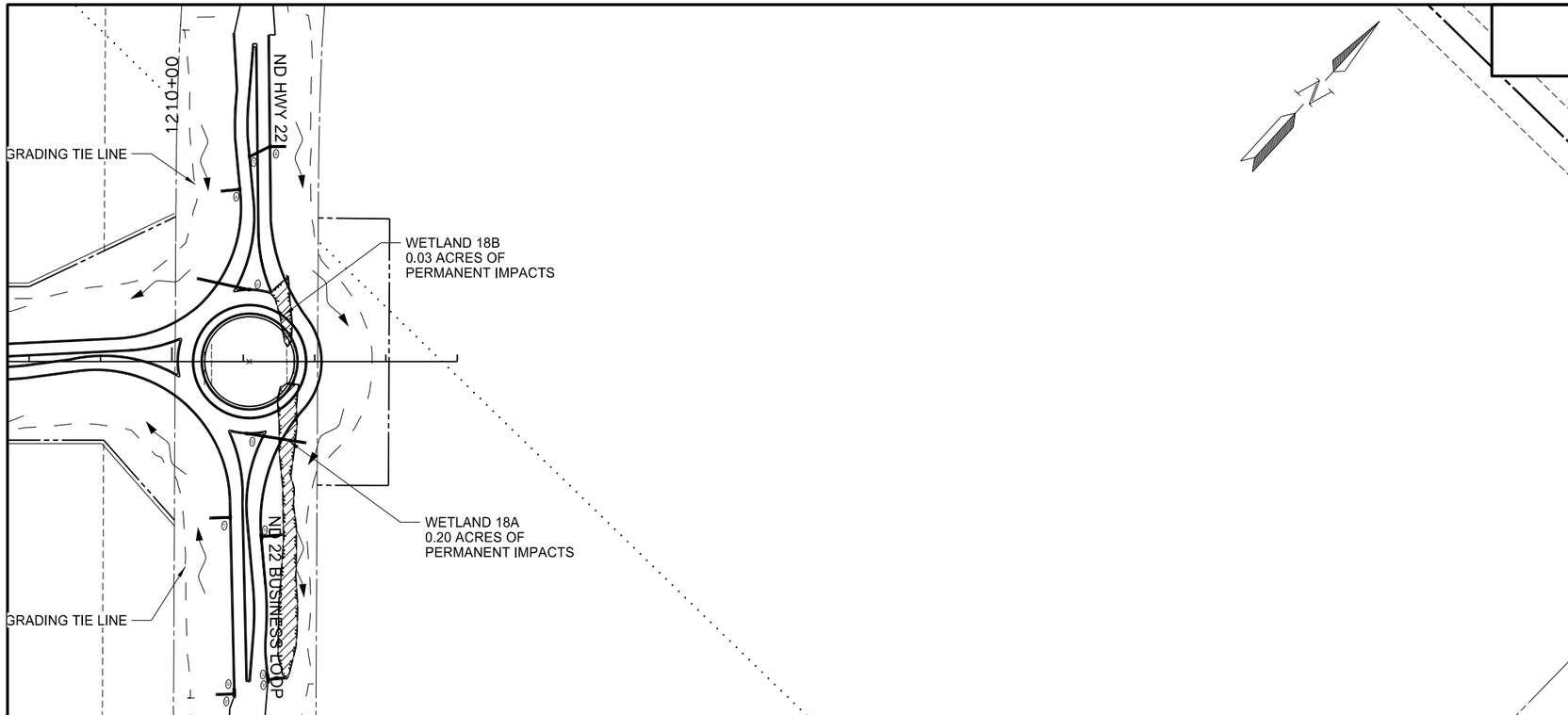
Wetlands

Sta 1165+00 to Sta 1208+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	75	6



LEGEND

- Avoidance Area
- Delineated Wetland
- Permanent Wetland Impact
- Temporary Wetland Impact
- Wetland Creation
- Wetland Upland Buffer
- Riprap Grade II
- Flow Arrow

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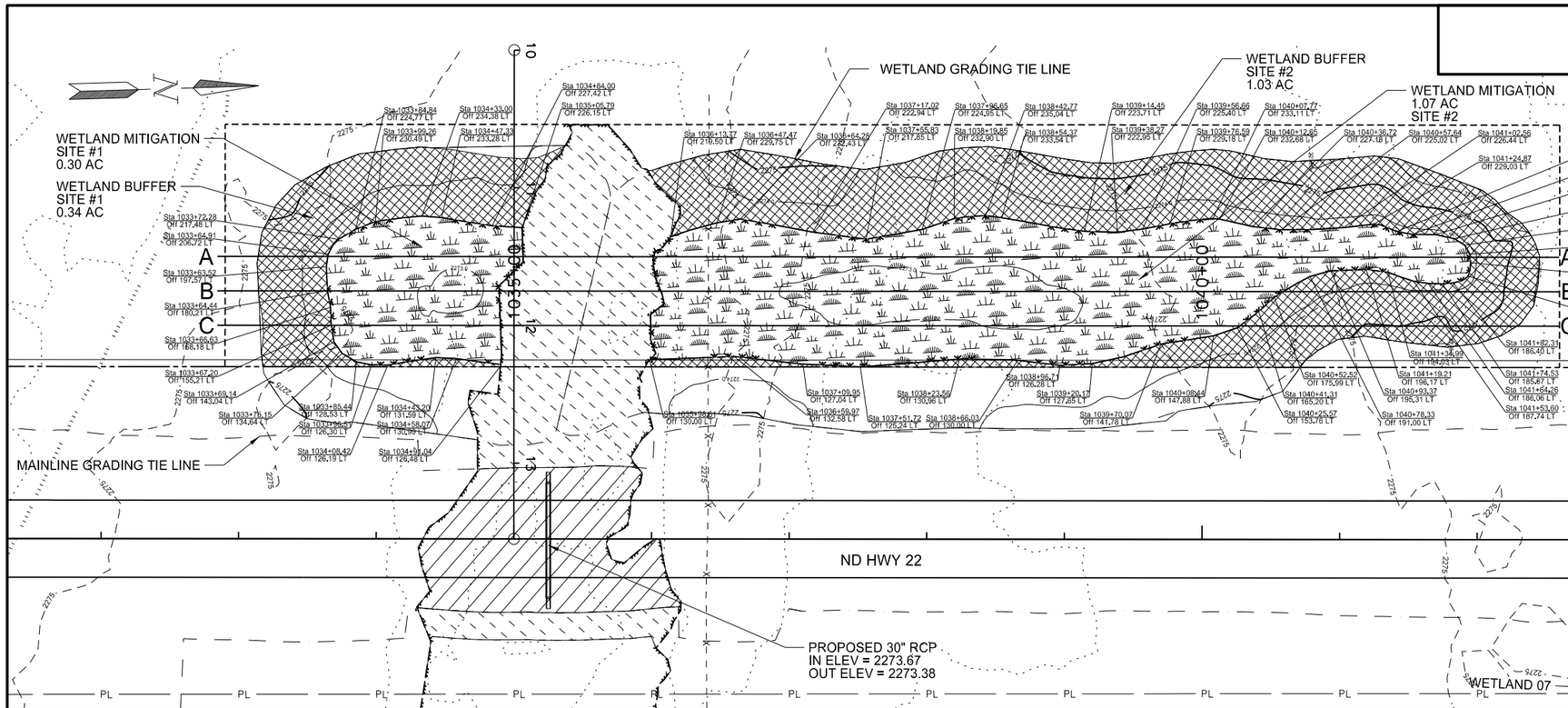
Wetlands

Sta 1208+00 to Sta 1214+00

ND Hwy 22

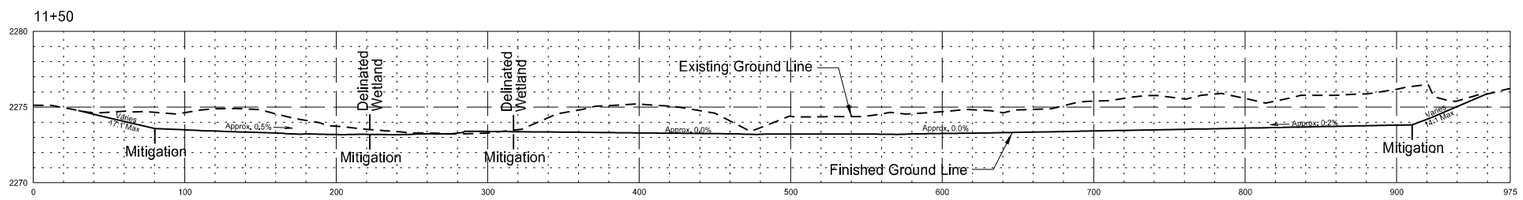
Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	75	7

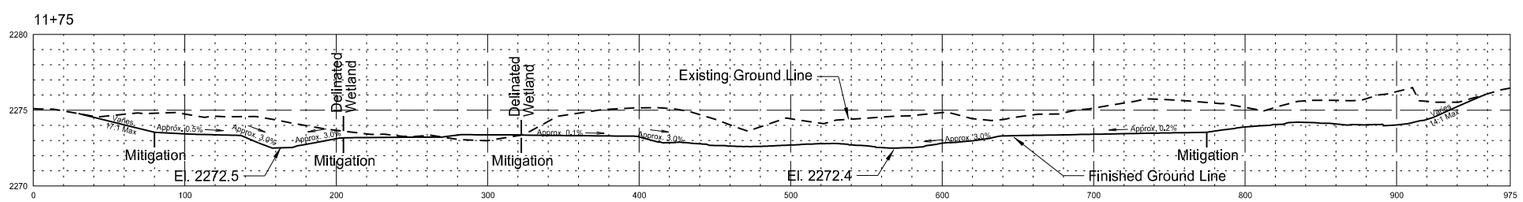


LEGEND

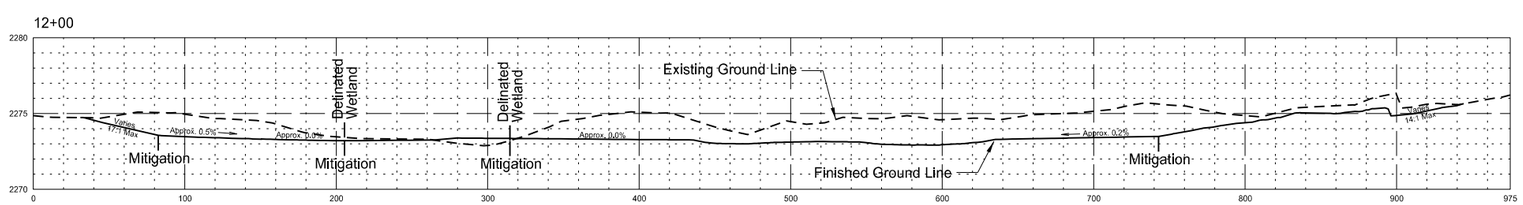
- Permanent Wetland Impact
- Temporary Wetland Impact
- Wetland Mitigation
- 50' Upland Wetland Buffer
- 2280 Proposed Contour
- 2280 Existing Contour
- Existing R/W (Non-State Owned)
- Proposed R/W
- Existing Fence
- Fiber Rolls
- Edge of Water
- Existing Wetland
- Drainage Easement



SECTION A-A (205' OFFSET FROM ND 22)



SECTION B-B (180' OFFSET FROM ND 22)



SECTION C-C (155' OFFSET FROM ND 22)

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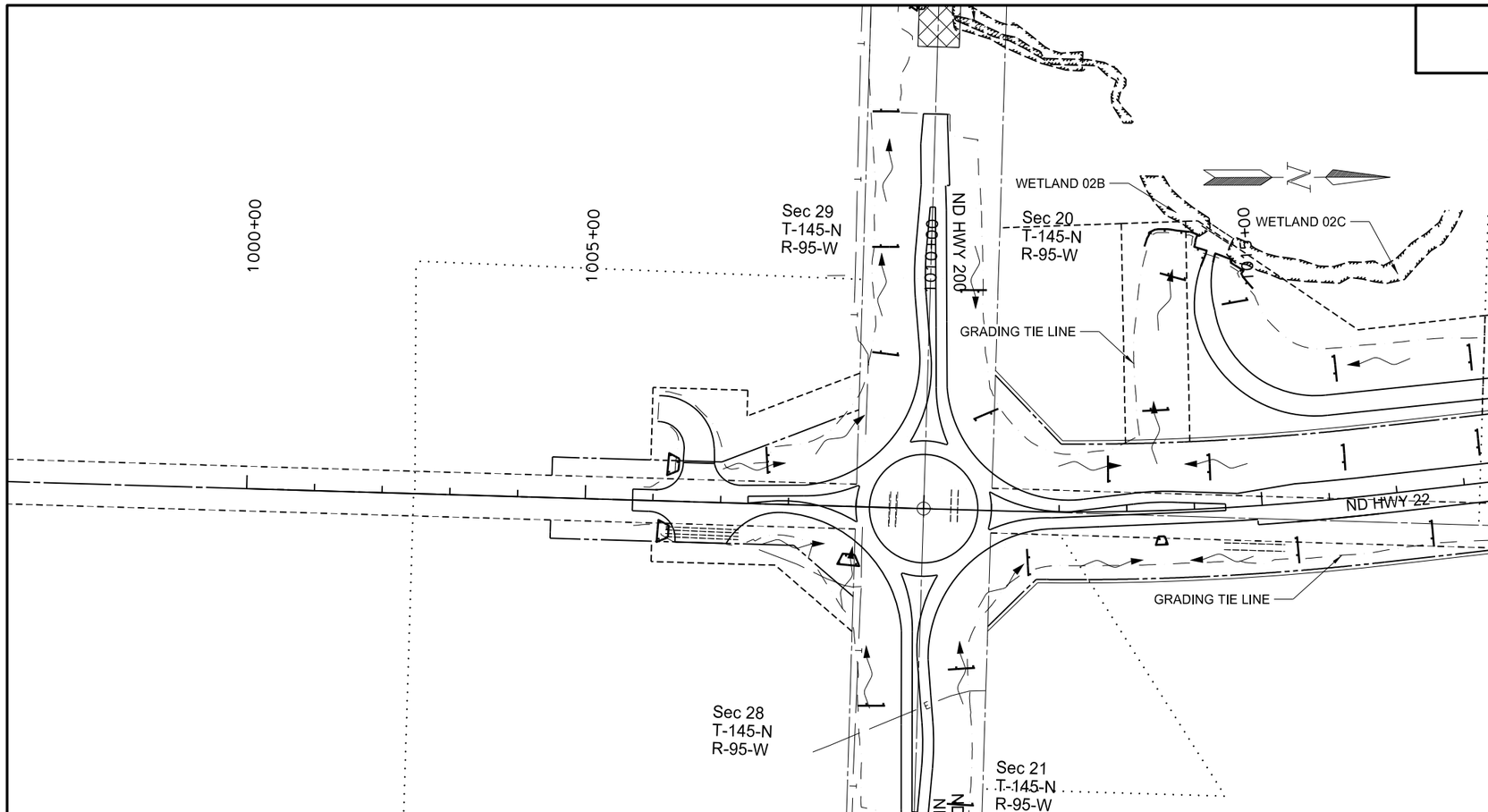
Wetlands

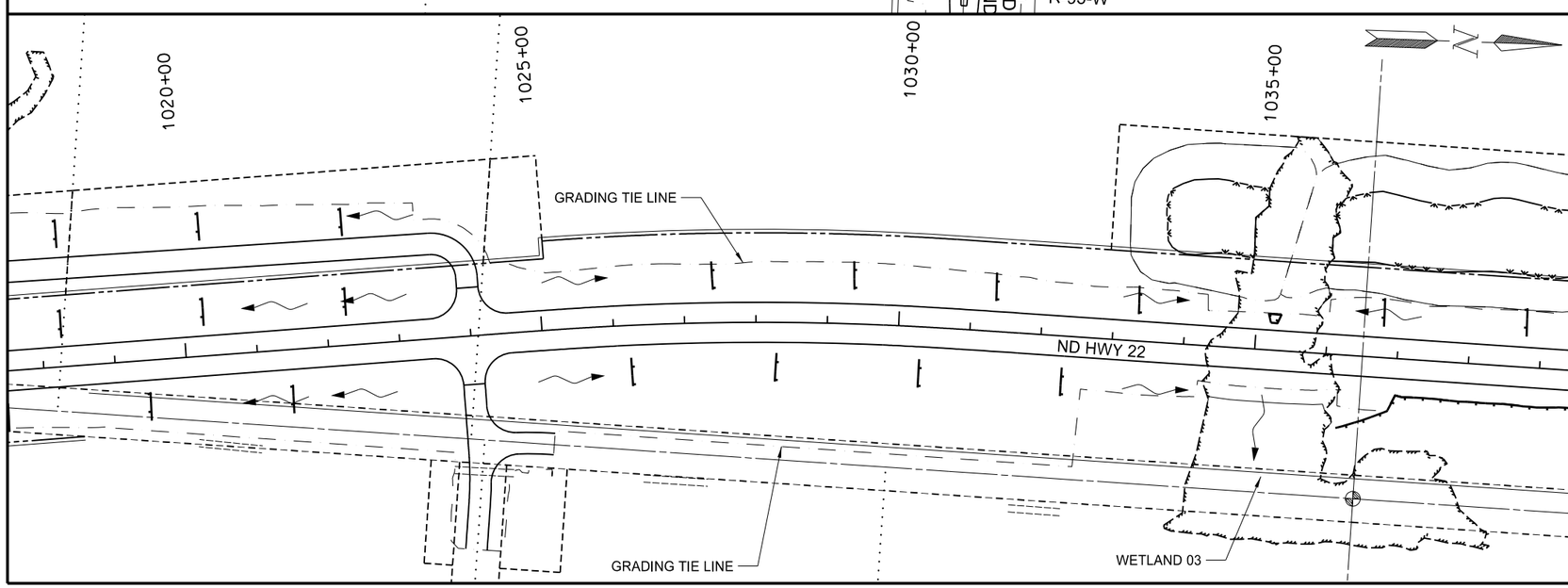
Wetland Mitigation Site - #1 & #2

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	76	1





251-2000 TEMPORARY COVER CROP

Sta	1000+00	to	1039+00	18.4 ACRE
			Total=	18.4 ACRE

253-0101 STRAW MULCH

Sta	1000+00	to	1039+00	18.4 ACRE
			Total=	18.4 ACRE

260-0100 SILT FENCE UNSUPPORTED

Sta	1034+77 LT	to	1039+00 LT	941 LF
Sta	1034+37 RT	to	1034+14 RT	220 LF
Sta	1035+48 LT	to	1039+00 LT	356 LF
			Total=	1517 LF

260-0101 REMOVE SILT FENCE UNSUPPORTED

Sta	1034+77 LT	to	1039+00 LT	941 LF
Sta	1034+37 RT	to	1034+14 RT	220 LF
Sta	1035+48 LT	to	1039+00 LT	356 LF
			Total=	1517 LF

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Flow Arrow
- Fiber Rolls
- Unsupported Silt Fence

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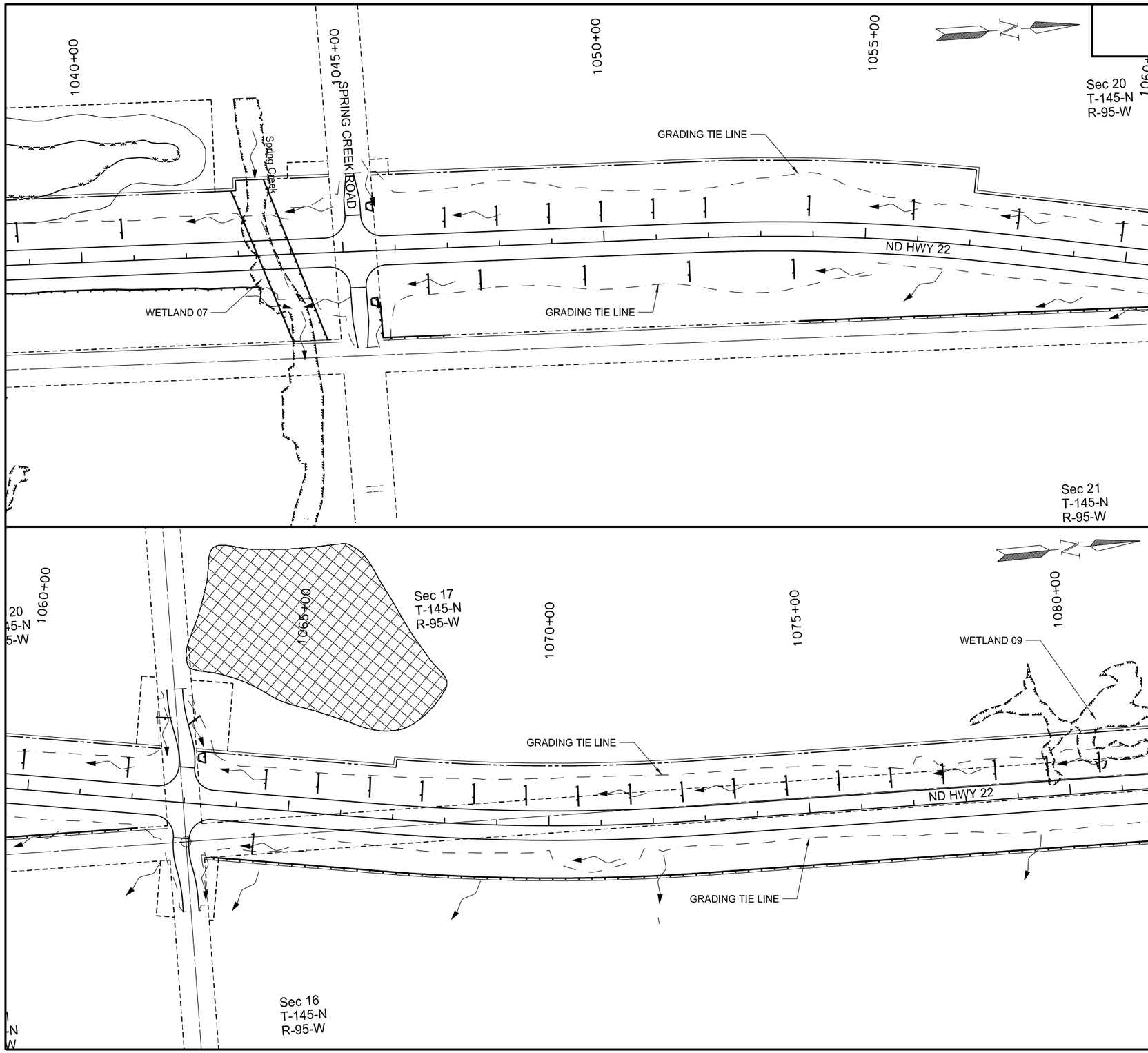
Temporary Erosion Control

Sta 1000+00 to Sta 1039+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	76	2



251-2000 TEMPORARY COVER CROP

Sta	1039+00	to	1081+00	16.5 ACRE
			Total=	16.5 ACRE

253-0101 STRAW MULCH

Sta	1039+00	to	1081+00	16.5 ACRE
			Total=	16.5 ACRE

260-0100 SILT FENCE UNSUPPORTED

Sta	1039+00 LT	to	1039+00 LT	784 LF
Sta	1043+98 RT	to	1044+66 RT	66 LF
Sta	1079+65 LT	to	1080+65 LT	100 LF
			Total=	950 LF

260-0101 REMOVE SILT FENCE UNSUPPORTED

Sta	1039+00 LT	to	1039+00 LT	784 LF
Sta	1043+98 RT	to	1044+66 RT	66 LF
Sta	1079+65 LT	to	1080+65 LT	100 LF
			Total=	950 LF

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Flow Arrow
- Fiber Rolls
- Unsupported Silt Fence

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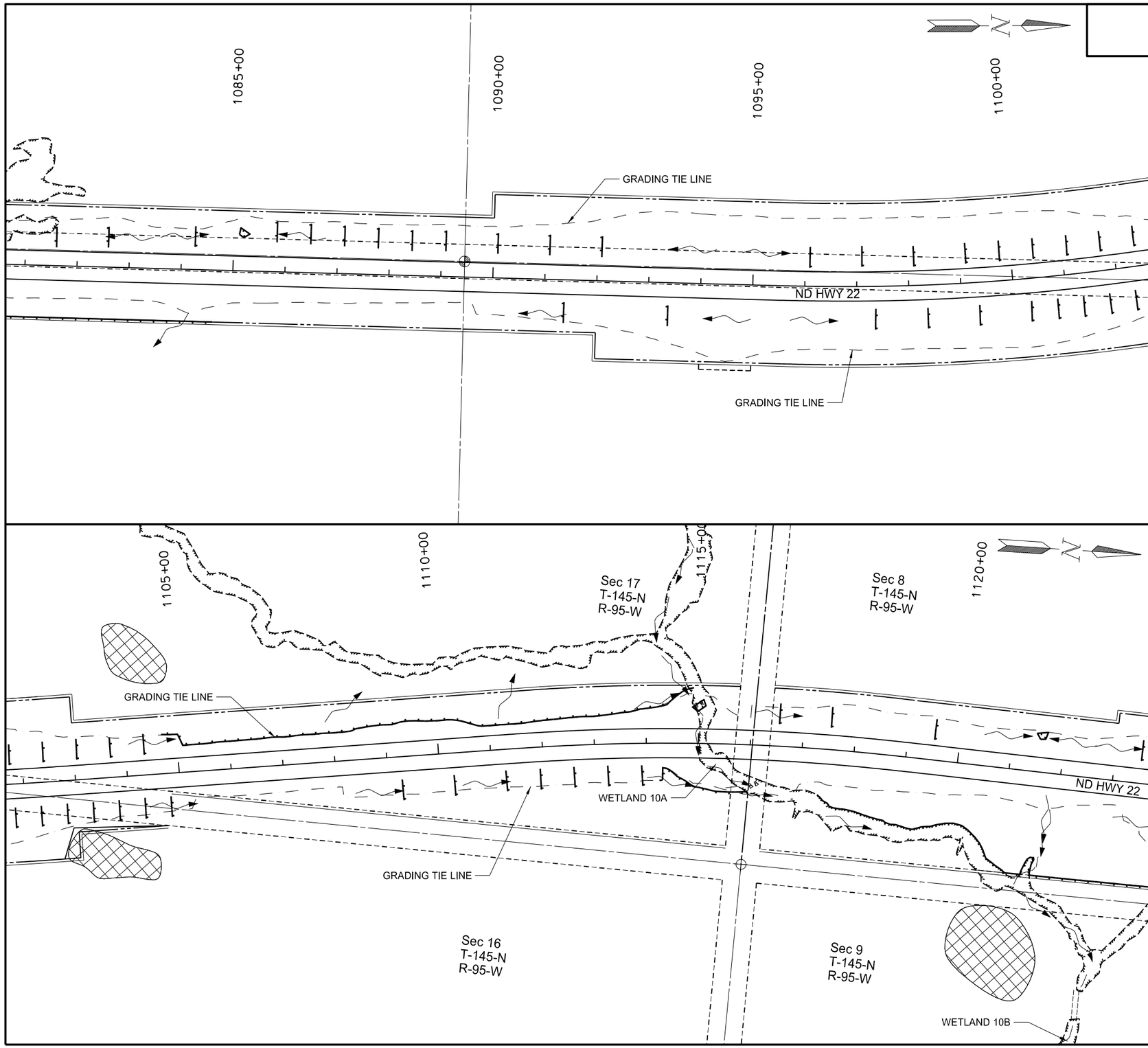
Temporary Erosion Control

Sta 1039+00 to Sta 1081+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	76	3



251-2000 TEMPORARY COVER CROP

Sta	1081+00	to	1123+00	13.5 ACRE
			Total=	13.5 ACRE

253-0101 STRAW MULCH

Sta	1081+00	to	1123+00	13.5 ACRE
			Total=	13.5 ACRE

260-0100 SILT FENCE UNSUPPORTED

Sta	1120+55 RT	to	1121+20 RT	65 LF
			Total=	65 LF

260-0101 REMOVE SILT FENCE UNSUPPORTED

Sta	1120+55 RT	to	1121+20 RT	65 LF
			Total=	65 LF

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Flow Arrow
- Fiber Rolls
- Unsupported Silt Fence

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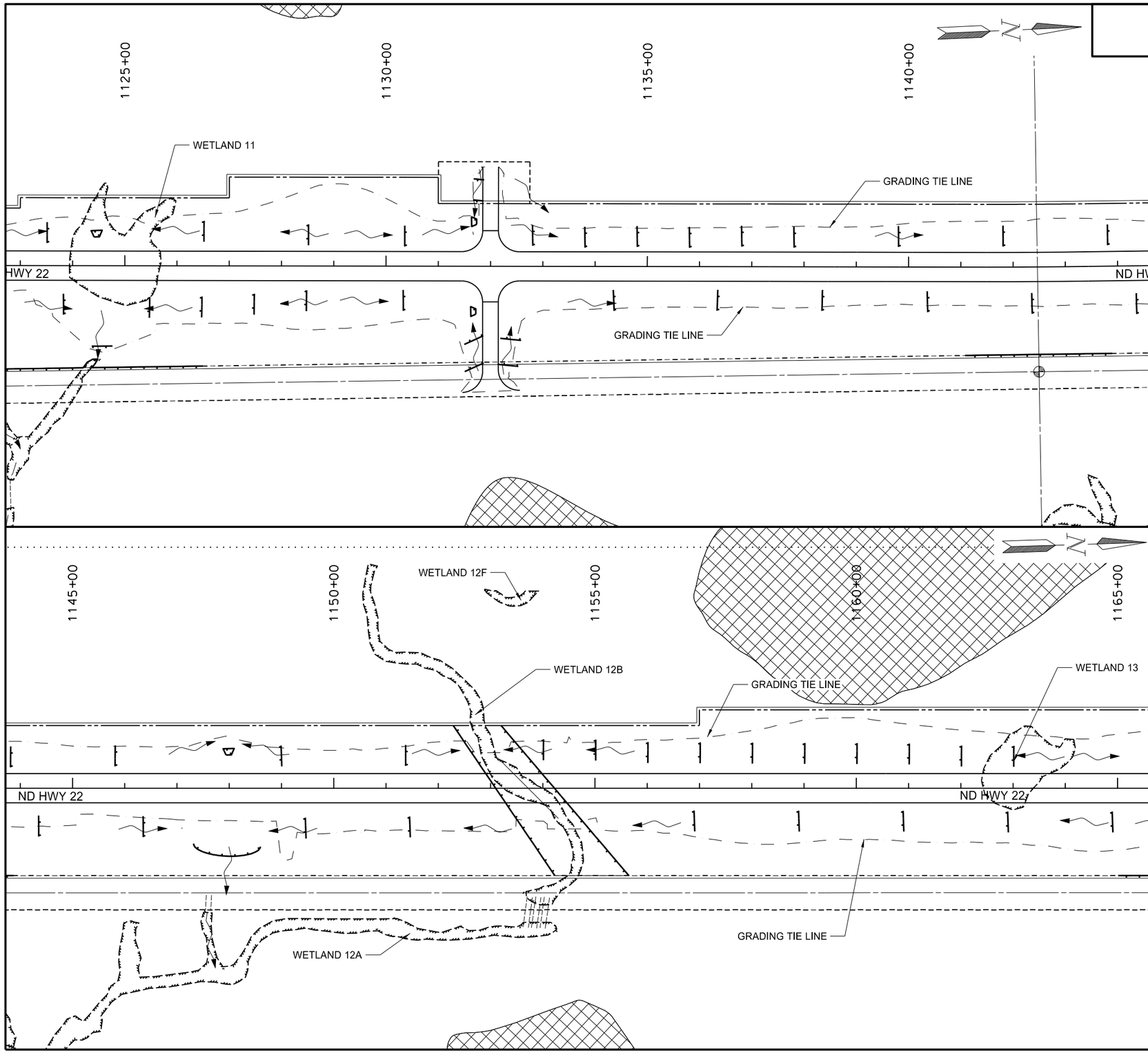
Temporary Erosion Control

Sta 1081+00 to 1123+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	76	4



251-2000 TEMPORARY COVER CROP

Sta	1123+00	to	1165+00	15.4 ACRE
			Total=	15.4 ACRE

253-0101 STRAW MULCH

Sta	1123+00	to	1165+00	15.4 ACRE
			Total=	15.4 ACRE

260-0100 SILT FENCE UNSUPPORTED

Sta	1154+23 RT	to	1155+65 RT	142 LF
			Total=	142 LF

260-0101 REMOVE SILT FENCE UNSUPPORTED

Sta	1154+23 RT	to	1155+65 RT	142 LF
			Total=	142 LF

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Flow Arrow
- Fiber Rolls
- Unsupported Silt Fence

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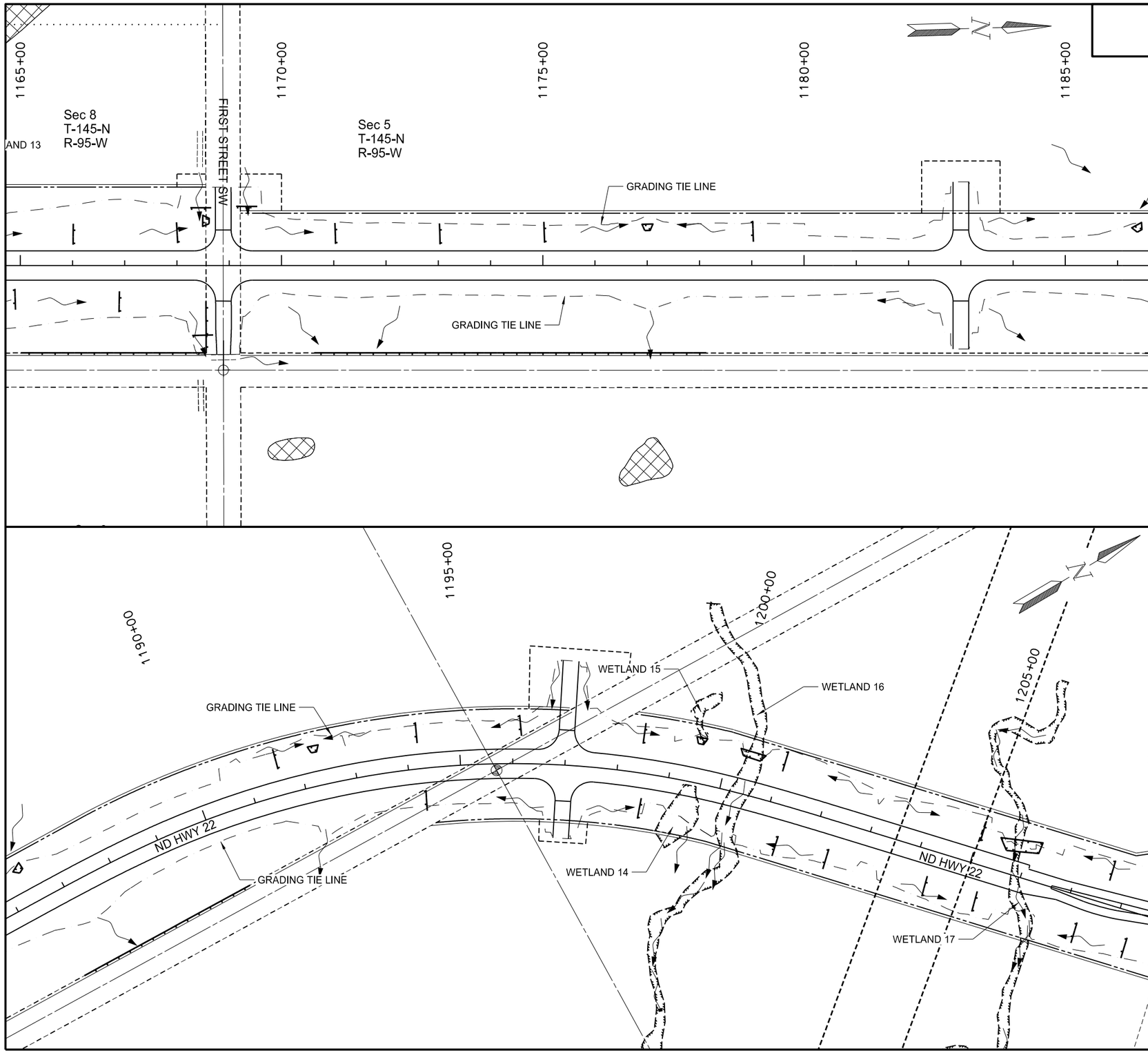
Temporary Erosion Control

Sta 1123+00 to Sta 1165+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	76	5



251-2000 TEMPORARY COVER CROP

Sta	1165+00	to	1208+00	18.1 ACRE
			Total=	18.1 ACRE

253-0101 STRAW MULCH

Sta	1165+00	to	1208+00	18.1 ACRE
			Total=	18.1 ACRE

260-0100 SILT FENCE UNSUPPORTED

Sta	1198+88 RT	to	1199+53 RT	60 LF
Sta	1200+22 RT	to	1200+69 RT	45 LF
Sta	1206+30 RT	to	1206+60 RT	30 LF
			Total=	135 LF

260-0101 REMOVE SILT FENCE UNSUPPORTED

Sta	1198+88 RT	to	1199+53 RT	60 LF
Sta	1200+22 RT	to	1200+69 RT	45 LF
Sta	1206+30 RT	to	1206+60 RT	30 LF
			Total=	135 LF

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Flow Arrow
- Fiber Rolls
- Unsupported Silt Fence

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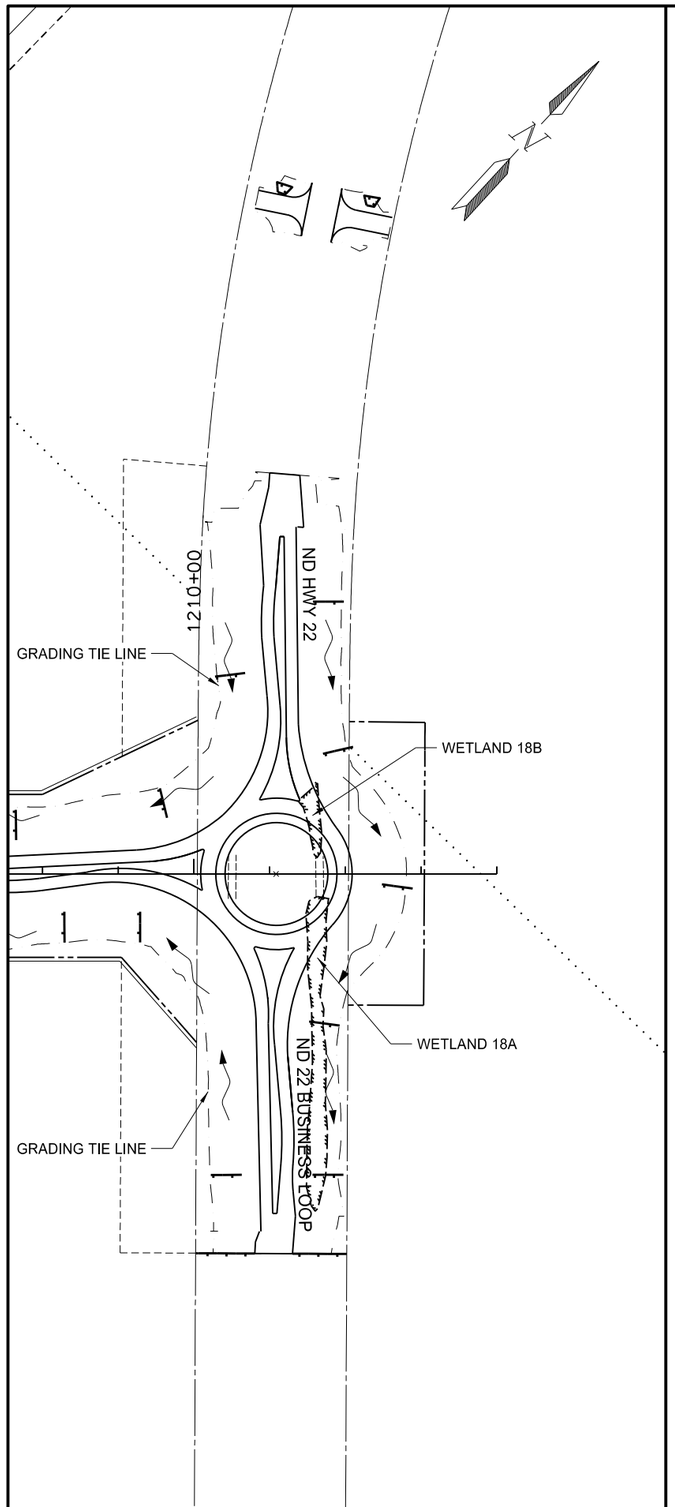
Temporary Erosion Control

Sta 1165+00 to Sta 1208+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	76	6



DITCH CHECKS

261-0112 FIBER ROLLS 12IN

STATION-OFFSET		QUANTITY		STATION-OFFSET		QUANTITY		STATION-OFFSET		QUANTITY		STATION-OFFSET		QUANTITY	
1007+67	LT	40	LF	1061+92	LT	40	LF	1102+99	LT	40	LF	1151+38	LT	40	LF
1009+27	LT	40	LF	1062+48	LT	30	LF	1103+38	RT	40	LF	1151+46	RT	40	LF
1009+32	LT	40	LF	1063+07	LT	30	LF	1103+64	LT	40	LF	1154+01	LT	40	LF
1009+32	RT	40	LF	1063+53	LT	40	LF	1103+88	RT	40	LF	1155+01	LT	40	LF
1009+37	LT	40	LF	1064+53	LT	40	LF	1104+29	LT	40	LF	1156+01	LT	40	LF
1010+63	RT	40	LF	1065+53	LT	40	LF	1104+38	RT	40	LF	1156+90	RT	40	LF
1010+64	LT	40	LF	1066+53	LT	40	LF	1104+88	RT	40	LF	1157+01	LT	40	LF
1010+67	RT	40	LF	1067+53	LT	40	LF	1109+27	RT	40	LF	1158+01	LT	40	LF
1010+88	LT	40	LF	1068+53	LT	40	LF	1110+27	RT	40	LF	1158+90	RT	40	LF
1011+55	RT	40	LF	1069+53	LT	40	LF	1111+27	RT	40	LF	1159+01	LT	40	LF
1012+73	LT	40	LF	1070+53	LT	40	LF	1111+92	RT	40	LF	1160+01	LT	40	LF
1013+48	LT	40	LF	1071+53	LT	40	LF	1112+57	RT	40	LF	1160+90	RT	40	LF
1013+82	LT	40	LF	1072+53	LT	40	LF	1113+22	RT	40	LF	1161+01	LT	40	LF
1014+26	LT	40	LF	1073+53	LT	40	LF	1113+87	RT	40	LF	1162+01	LT	40	LF
1014+80	LT	40	LF	1074+53	LT	40	LF	1116+54	LT	40	LF	1162+90	RT	40	LF
1015+46	RT	40	LF	1075+53	LT	40	LF	1117+54	LT	40	LF	1163+01	LT	40	LF
1016+26	LT	40	LF	1076+53	LT	40	LF	1119+54	LT	40	LF	1164+90	RT	40	LF
1016+30	LT	40	LF	1077+53	LT	40	LF	1123+51	LT	40	LF	1166+01	LT	40	LF
1017+46	RT	40	LF	1078+53	LT	40	LF	1123+83	RT	40	LF	1166+90	RT	40	LF
1018+26	LT	40	LF	1079+53	LT	40	LF	1124+57	RT	40	LF	1168+01	LT	40	LF
1018+30	LT	40	LF	1080+53	LT	40	LF	1125+48	RT	40	LF	1168+45	LT	40	LF
1019+46	RT	40	LF	1081+53	LT	40	LF	1126+48	RT	40	LF	1168+49	RT	40	LF
1020+26	LT	40	LF	1082+53	LT	40	LF	1126+52	LT	40	LF	1169+33	LT	40	LF
1020+30	LT	40	LF	1084+26	LT	40	LF	1127+48	RT	40	LF	1171+03	LT	40	LF
1021+46	RT	40	LF	1085+79	LT	40	LF	1128+48	RT	40	LF	1173+03	LT	40	LF
1022+26	LT	40	LF	1086+44	LT	40	LF	1128+52	LT	40	LF	1175+03	LT	40	LF
1022+30	LT	40	LF	1087+09	LT	40	LF	1130+33	RT	40	LF	1179+02	LT	40	LF
1026+24	RT	40	LF	1087+74	LT	40	LF	1130+36	LT	40	LF	1191+59	LT	40	LF
1027+39	LT	40	LF	1088+39	LT	40	LF	1131+68	RT	40	LF	1194+22	LT	40	LF
1028+24	RT	40	LF	1089+09	LT	40	LF	1131+69	RT	40	LF	1194+28	RT	40	LF
1029+39	LT	40	LF	1090+09	LT	40	LF	1131+76	LT	20	LF	1196+14	LT	40	LF
1030+24	RT	40	LF	1091+09	LT	40	LF	1131+78	LT	20	LF	1198+42	LT	40	LF
1031+39	LT	40	LF	1091+38	RT	40	LF	1132+34	RT	40	LF	1198+53	RT	40	LF
1032+24	RT	40	LF	1092+09	LT	40	LF	1132+39	RT	40	LF	1201+07	LT	40	LF
1033+39	LT	40	LF	1093+38	RT	40	LF	1132+81	LT	40	LF	1201+32	RT	40	LF
1036+78	LT	40	LF	1096+09	LT	40	LF	1133+81	LT	40	LF	1202+32	RT	40	LF
1038+78	LT	40	LF	1097+09	LT	40	LF	1134+36	RT	40	LF	1204+30	RT	40	LF
1040+78	LT	40	LF	1097+38	RT	40	LF	1134+81	LT	40	LF	1205+06	LT	40	LF
1046+61	RT	40	LF	1098+09	LT	40	LF	1135+81	LT	40	LF	1205+30	RT	40	LF
1046+97	LT	40	LF	1098+38	RT	40	LF	1136+36	RT	40	LF	1207+29	RT	40	LF
1047+61	RT	40	LF	1099+09	LT	40	LF	1136+81	LT	40	LF	1207+65	LT	40	LF
1047+97	LT	40	LF	1099+38	RT	40	LF	1137+81	LT	40	LF	1208+29	RT	40	LF
1048+97	LT	40	LF	1099+74	LT	40	LF	1138+36	RT	40	LF	1209+29	RT	40	LF
1049+61	RT	40	LF	1100+38	RT	40	LF	1139+81	LT	40	LF	1209+60	LT	40	LF
1049+97	LT	40	LF	1100+39	LT	40	LF	1140+36	RT	40	LF	1210+43	RT	40	LF
1050+97	LT	40	LF	1100+88	RT	40	LF	1141+81	LT	40	LF	1210+48	LT	40	LF
1051+61	RT	40	LF	1101+04	LT	40	LF	1142+36	RT	40	LF	1211+72	RT	40	LF
1051+97	LT	40	LF	1101+38	RT	40	LF	1143+81	LT	40	LF	1211+77	RT	40	LF
1053+64	RT	40	LF	1101+69	LT	40	LF	1144+36	RT	40	LF	1211+78	LT	40	LF
1053+92	LT	40	LF	1101+88	RT	40	LF	1145+81	LT	40	LF	1211+90	LT	40	LF
1055+92	LT	40	LF	1102+34	LT	40	LF	1146+36	RT	40	LF	1212+69	RT	40	LF
1057+92	LT	40	LF	1102+38	RT	40	LF	1149+00	LT	40	LF				
1059+92	LT	40	LF	1102+88	RT	40	LF	1149+46	RT	40	LF				

Total	8340	LF
Remove 12IN Temporary Fiber Roll	8340	LF

251-2000 TEMPORARY COVER CROP

Sta	1208+00	to	1214+00	3.9 ACRE
			Total=	3.9 ACRE

253-0101 STRAW MULCH

Sta	1208+00	to	1214+00	3.9 ACRE
			Total=	3.9 ACRE

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Flow Arrow
- Fiber Rolls
- Unsupported Silt Fence

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Temporary Erosion Control

Sta 1208+00 to Sta 1214+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	76	7

Inlet Protection of Pipe End			
Station	Offset	Fiber Roll 12IN (LF)	Fiber Roll 20IN (LF)
1006+20	RT	40	
1006+20	RT	40	
1006+34	LT	40	
1008+85	RT	40	
1008+96	RT	40	
1013+50	RT	40	
1035+25	LT	40	
1045+53	LT		40
1045+55	RT	40	
1063+25	LT	40	
1063+25	LT	40	
1085+16	LT	40	
1114+97	LT	40	
1115+07	LT	40	
1121+59	LT	40	
1124+46	LT	40	
1131+69	RT	40	
1131+71	LT	40	
1147+99	LT	40	
1168+58	LT	40	
1177+01	LT	40	
1186+40	LT	40	
1192+30	LT	40	
1199+47	LT	40	
1200+31	LT		40
1200+46	LT		40
1200+60	LT		40
1205+61	LT		40
1205+78	LT		40
1205+94	LT		40
1206+11	LT		40
2259+75	LT	40	
2259+84	RT	40	
	Total	1000	320
	Removal of 12IN	1000	
	Removal of 20IN		320

Runoff Protection			
Station	to Station	Offset	20IN Fiber Roll LF
1009+00	1009+70	LT	82
1013+37	1014+28	LT	158
1014+48	1015+10	LT	101
1036+20	1043+40	RT	753
1042+90	1043+97	L-R	311
1043+53	1044+64	L-R	332
1045+67	1046+99	RT	190
1053+75	1062+15	RT	832
1063+60	1084+63	RT	2118
1104+70	1114+90	LT	1058
1114+25	1116+00	RT	206
1117+35	1126+50	RT	1058
1141+08	1143+87	RT	282
1147+32	1148+60	RT	142
1152+29	1154+23	L-R	347
1153+20	1155+65	L-R	377
1165+00	1168+56	RT	453
1170+63	1178+13	RT	750
1186+53	1190+38	RT	362
1210+02	1210+80	RT	78
1211+30	1212+02	RT	72
		Total	10062
		Remove 20IN Fiber Roll	10062

Inlet Protection - Special			
Station	Offset	Type	Quantity (EA)
1007+37	LT	Type 2 - Double	1
1007+39	RT	Type 2 - Double	1
1007+42	LT	Type 2	1
1009+00	LT	Special - Type 2	1
4920+72	LT	Type 2	1
4920+78	RT	Type 2	1
4927+30	RT	Type 2	1
4927+31	LT	Type 2	1
1011+01	LT	Type 2	1
1011+80	LT	Type 2	1
1011+83	RT	Type 2	1
1013+85	RT	Type 2	1
1014+70	LT	Type 2	1
1206+90	RT	Type 2	1
1206+95	LT	Type 2	1
2265+76	LT	Type 2	1
2265+90	RT	Type 2	1
2266+36	RT	Type 2	1
2267+76	RT	Type 2	1
2269+78	RT	Type 2	1
2270+96	RT	Type 2	1
2271+22	RT	Type 2 - Double	1
2273+17	LT	Type 2	1
2273+23	LT	Type 2 - Double	1
2273+38	RT	Type 2	1
2273+43	RT	Type 2 - Double	1
		Inlet Protection - Special	26
		Remove Inlet Protection - Special	26

Project Totals			
	Fiber Rolls 12IN (LF)	Fiber Rolls 20IN (LF)	Silt Fence Unsupported (LF)
Ditch Checks	8340		
Inlet End Protection	1000	320	
Runoff Protection		10062	2809
Additional	1000	1000	250
Total	10340	11382	3059
Remove 12IN Fiber Roll	10340		
Remove 20IN Fiber Roll		11382	
Remove Silt Fence Unsupported			3059

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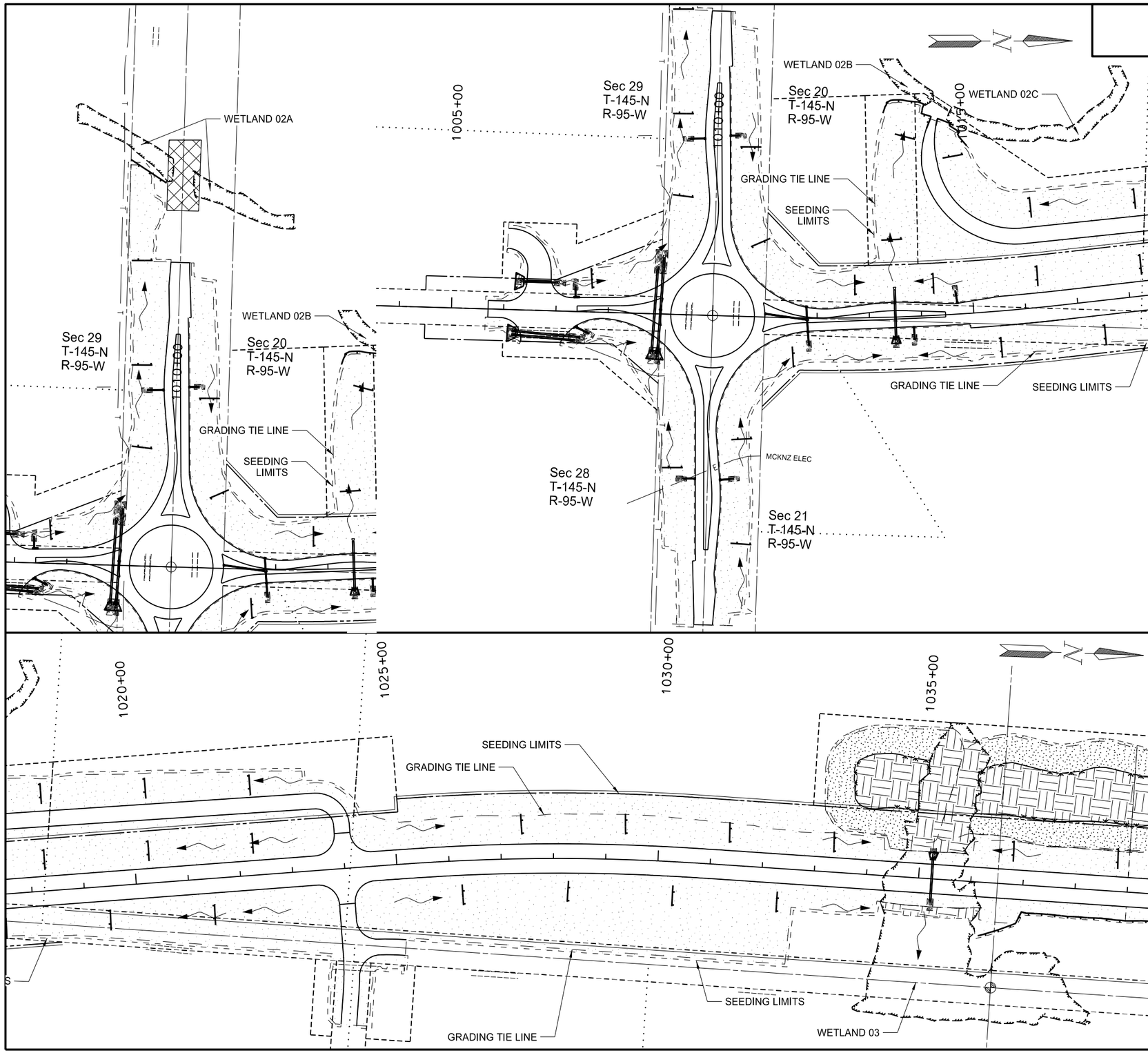
Temporary Erosion Control

Tables

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	77	1



251-0200 SEEDING CLASS II

Sta	1000+00	to	1039+00		17.1 ACRE
				Total=	17.1 ACRE

251-0300 SEEDING CLASS III

Sta	1033+13	Lt	to 1039+00	Lt	1.3 ACRE
				Total=	1.3 ACRE

251-1000 WETLAND SEED

Sta	1033+13	Lt	to 1039+00	Lt	1.52 ACRE
Sta	1034+29	Rt	to 1036+14	Rt	0.09 ACRE
				Total=	1.61 ACRE

253-0101 STRAW MULCH

Sta	1000+00	to	1039+00		18.4 ACRE
				Total=	18.4 ACRE

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Seeding Class II
- Wetland Seed
- Seeding Class III
- Flow Arrow
- Fiber Rolls
- Riprap Grade II
- ECB Type 3

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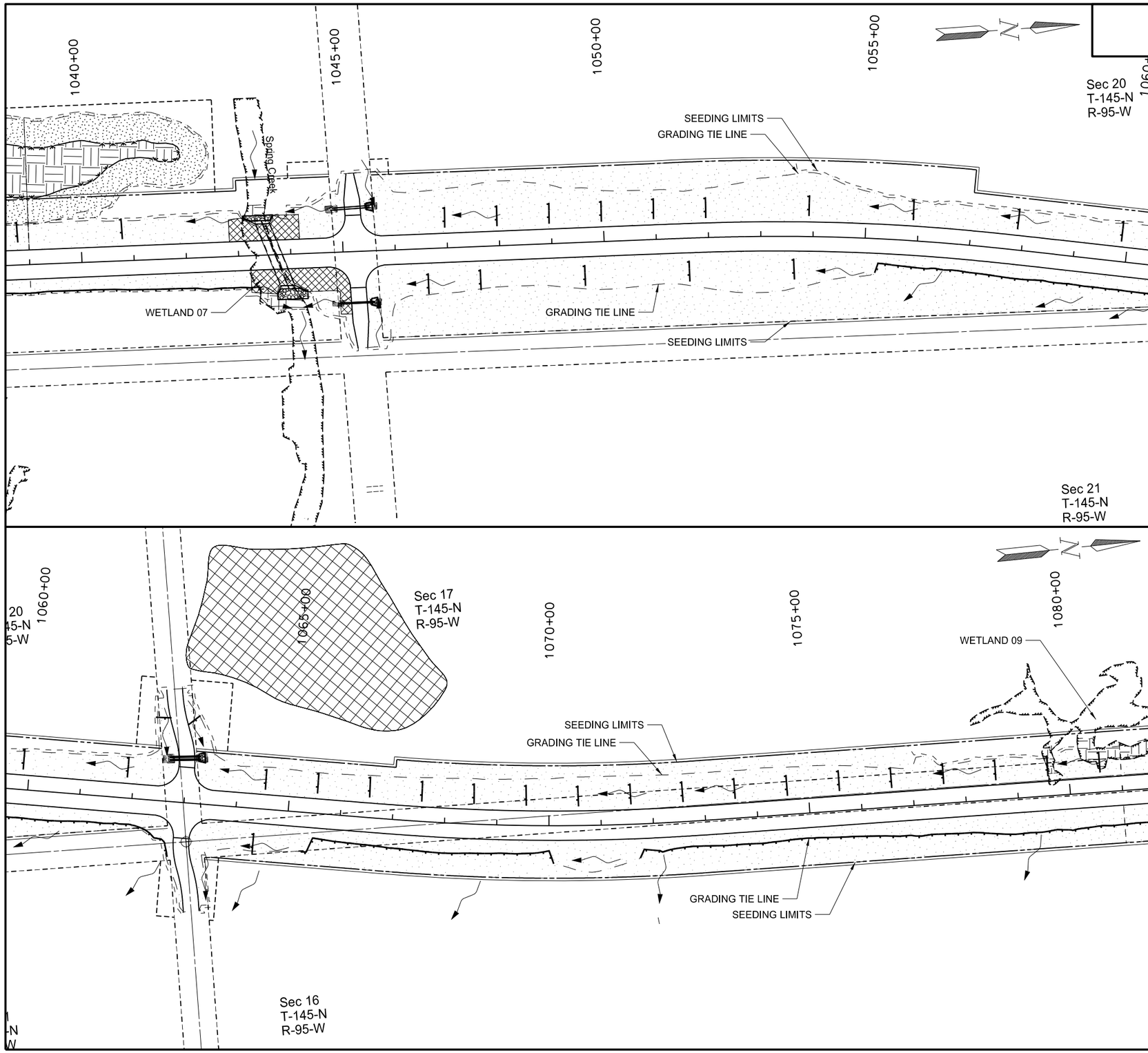
Permanent Erosion Control

Sta 1000+00 to Sta 1039+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	77	2



251-0200 SEEDING CLASS II

Sta	1039+00		to	1081+00		15.6 ACRE
					Total=	15.6 ACRE

251-0300 SEEDING CLASS III

Sta	1039+00	Lt	to	1042+25	Lt	0.90 ACRE
					Total=	0.90 ACRE

251-1000 WETLAND SEED

Sta	1039+00	Lt	to	1042+25	Lt	0.41 ACRE
Sta	1043+13	Lt	to	1043+55	Lt	0.02 ACRE
Sta	1043+26	Rt	to	1044+13	Rt	0.05 ACRE
Sta	1079+51	Lt	to	1079+77	Lt	0.02 ACRE
Sta	1080+20	Lt	to	1081+00	Lt	0.07 ACRE
					Total=	0.57 ACRE

253-0101 STRAW MULCH

Sta	1039+00		to	1081+00		16.5 ACRE
					Total=	16.5 ACRE

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Seeding Class II
- Wetland Seed
- Seeding Class III
- Flow Arrow
- Fiber Rolls
- Riprap Grade II
- ECB Type 3

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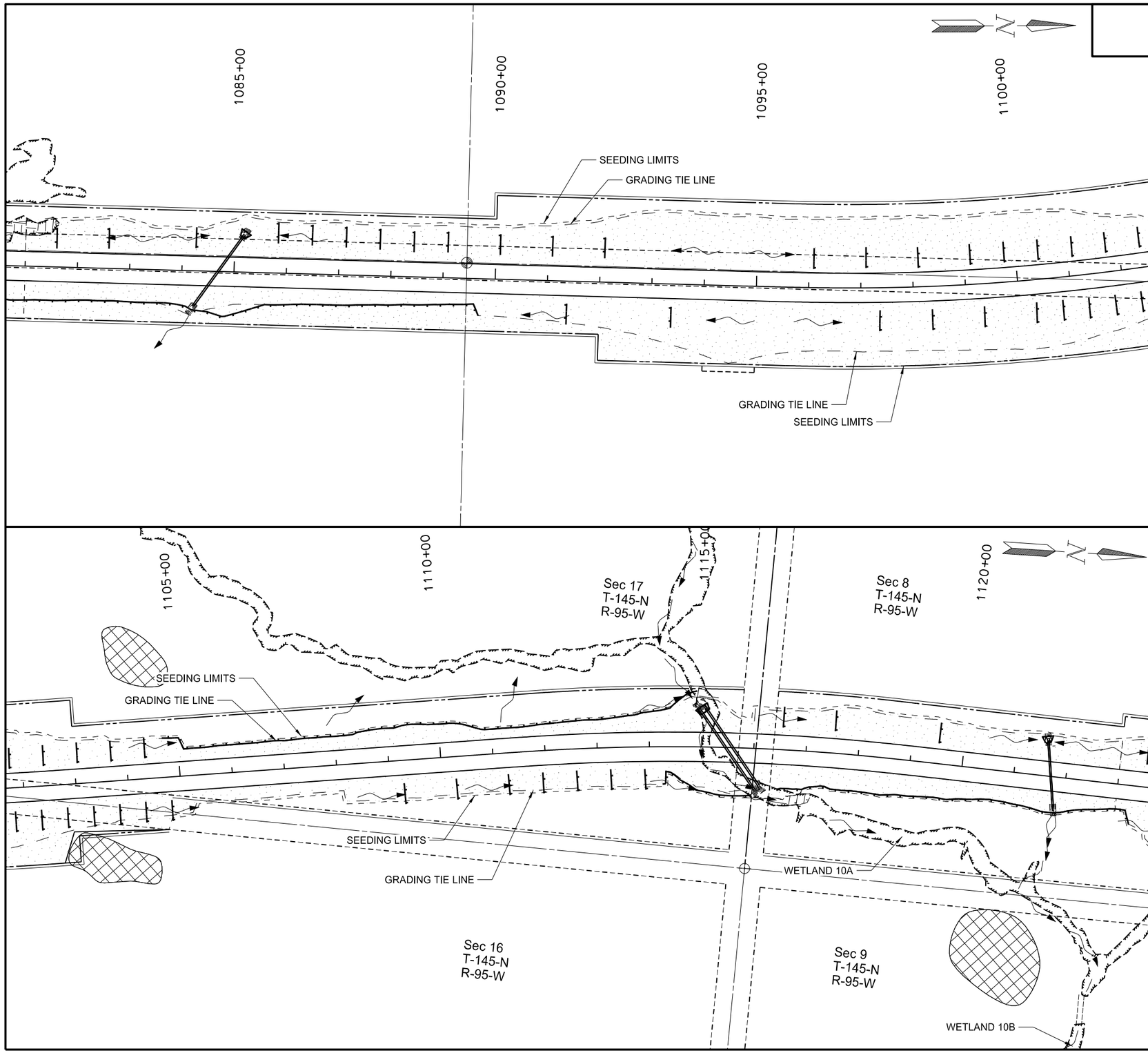
Permanent Erosion Control

Sta 1039+00 to Sta 1081+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	77	3



251-0200 SEEDING CLASS II

Sta	1081+00		to	1123+00		13.5 ACRE
					Total=	13.5 ACRE

251-1000 WETLAND SEED

Sta	1081+00	Lt	to	1081+65	Lt	0.03 ACRE
Sta	1114+80	Lt	to	1115+20	Lt	0.02 ACRE
Sta	1115+82	Rt	to	1117+14	Rt	0.03 ACRE
					Total=	0.08 ACRE

253-0101 STRAW MULCH

Sta	1081+00		to	1123+00		13.5 ACRE
					Total=	13.5 ACRE

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Seeding Class II
- Wetland Seed
- Seeding Class III
- Flow Arrow
- Fiber Rolls
- Riprap Grade II
- ECB Type 3

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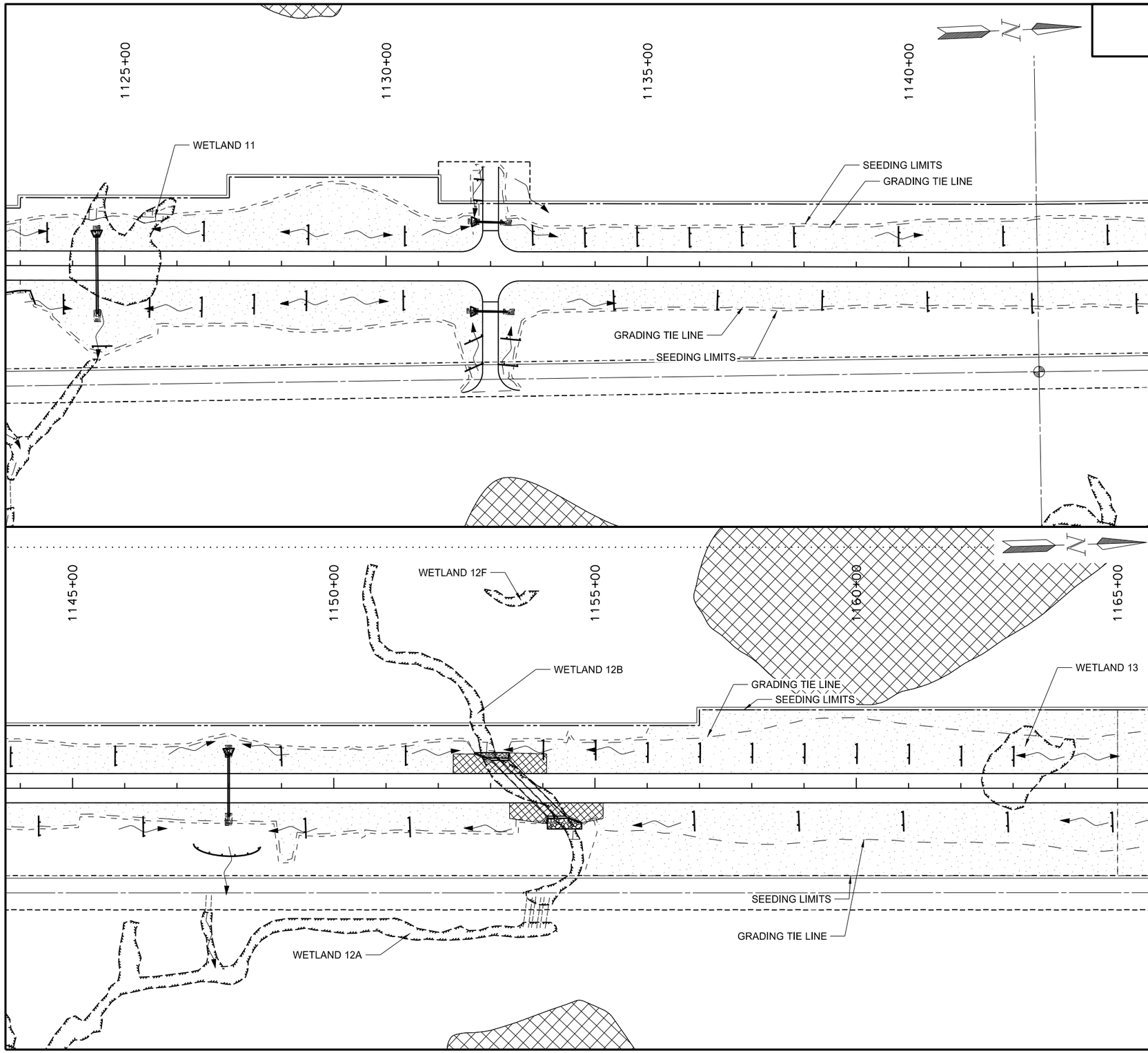
Permanent Erosion Control

Sta 1081+00 to 1123+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	77	4



251-0200 SEEDING CLASS II

Sta	1123+00		to	1165+00	15.4 ACRE
				Total=	15.4 ACRE

251-1000 WETLAND SEED

Sta	1124+23	Lt	to	1124+65	Lt	0.02 ACRE
Sta	1125+23	Lt	to	1125+95	Lt	0.03 ACRE
Sta	1152+79	Lt	to	1153+11	Lt	0.01 ACRE
Sta	1154+24	Rt	to	1154+63	Rt	0.01 ACRE
					Total=	0.07 ACRE

253-0101 STRAW MULCH

Sta	1123+00		to	1165+00	15.4 ACRE
				Total=	15.4 ACRE

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Seeding Class II
- Wetland Seed
- Seeding Class III
- Flow Arrow
- Fiber Rolls
- Riprap Grade II
- ECB Type 3

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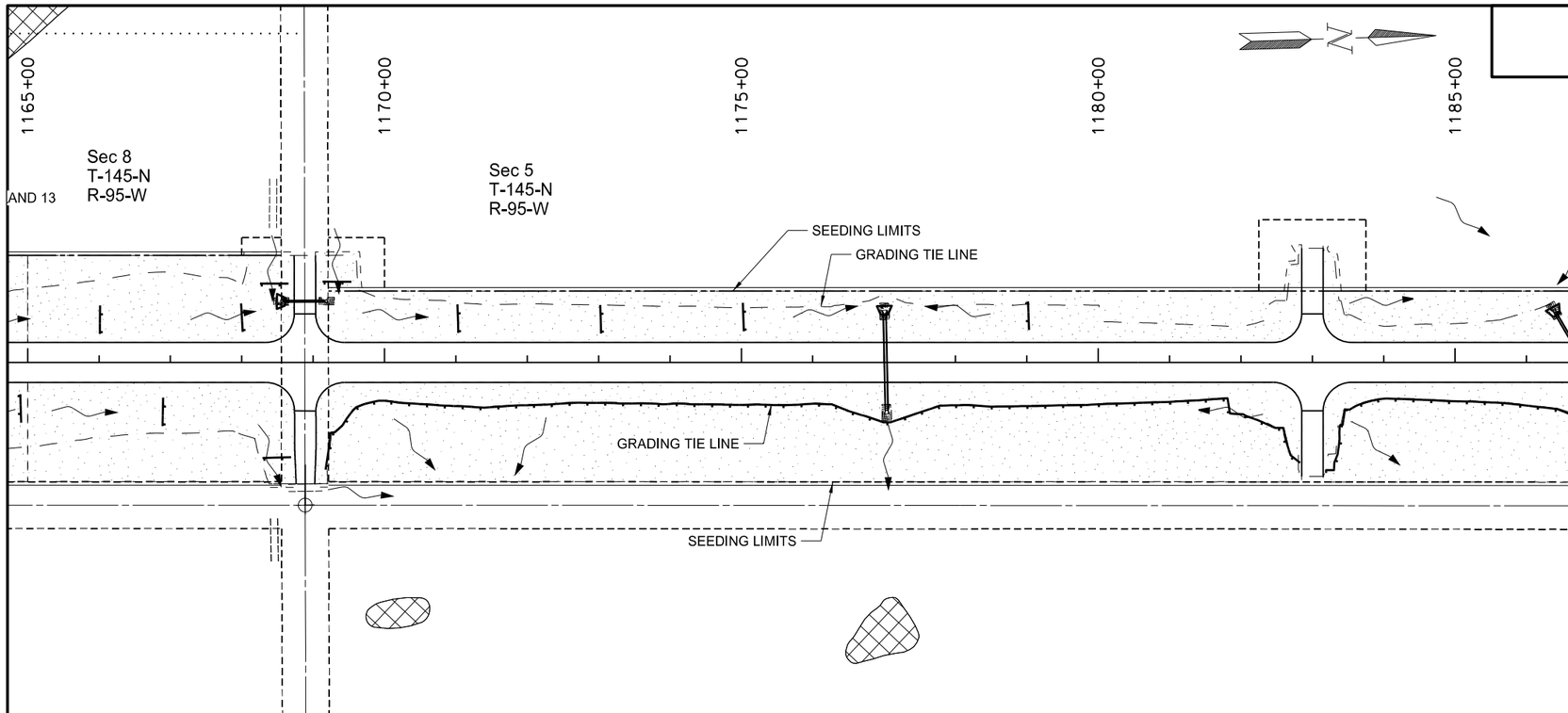
Permanent Erosion Control

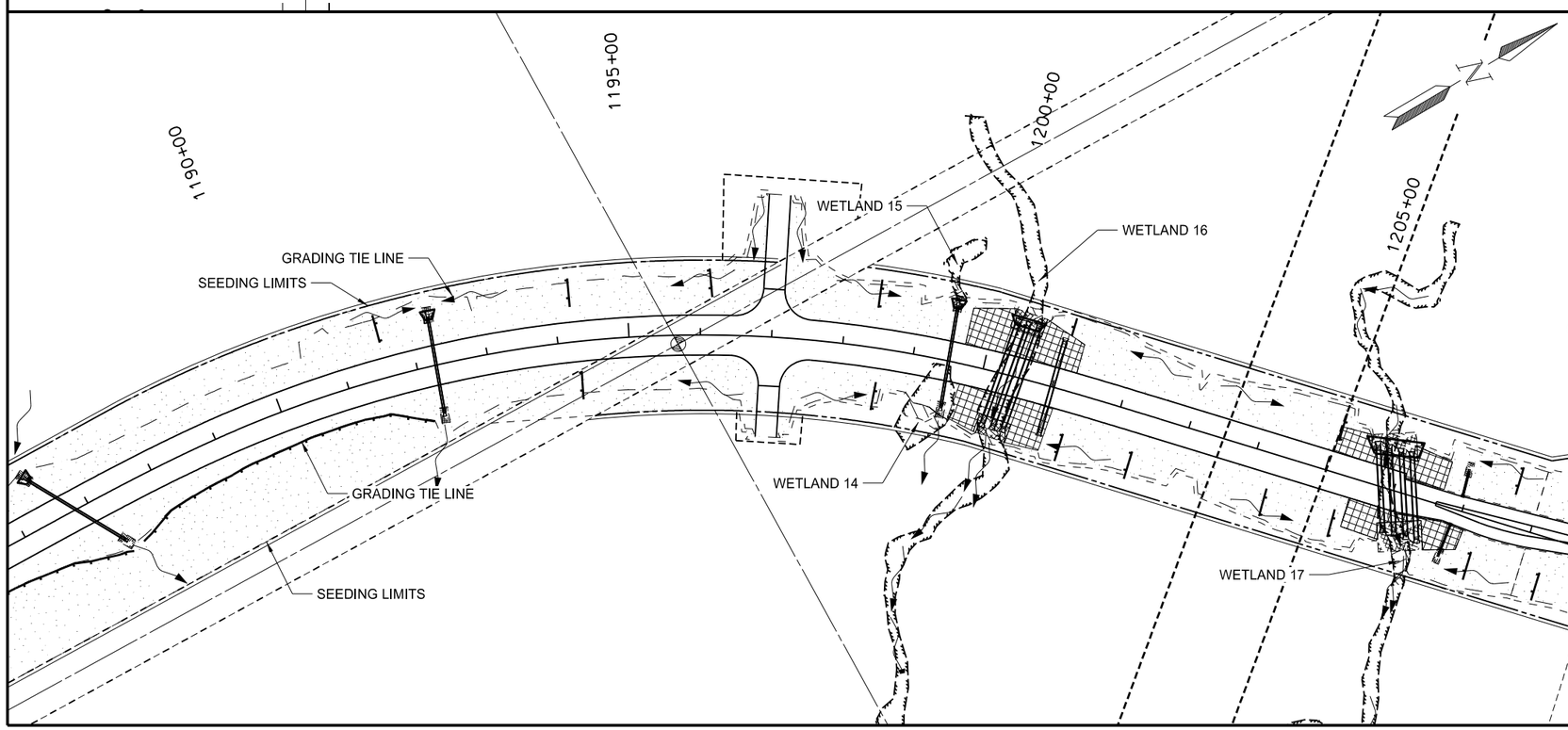
Sta 1123+00 to Sta 1165+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	77	5





251-0200 SEEDING CLASS II

Sta	1165+00		to	1208+00		18.1 ACRE
					Total=	18.1 ACRE

251-1000 WETLAND SEED

Sta	1199+00	Rt	to	1199+71	Rt	0.03 ACRE
Sta	1199+33	Lt	to	1199+56	Lt	0.01 ACRE
Sta	1200+14	Rt	to	1200+54	Rt	0.02 ACRE
Sta	1200+36	Lt	to	1200+67	Lt	0.01 ACRE
Sta	1205+67	Lt	to	1205+85	Lt	0.01 ACRE
Sta	1206+09	Rt	to	1206+47	Rt	0.03 ACRE
					Total=	0.11 ACRE

253-0101 STRAW MULCH

Sta	1165+00		to	1208+00		18.1 ACRE
					Total=	18.1 ACRE

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Seeding Class II
- Wetland Seed
- Seeding Class III
- Flow Arrow
- Fiber Rolls
- Riprap Grade II
- ECB Type 3

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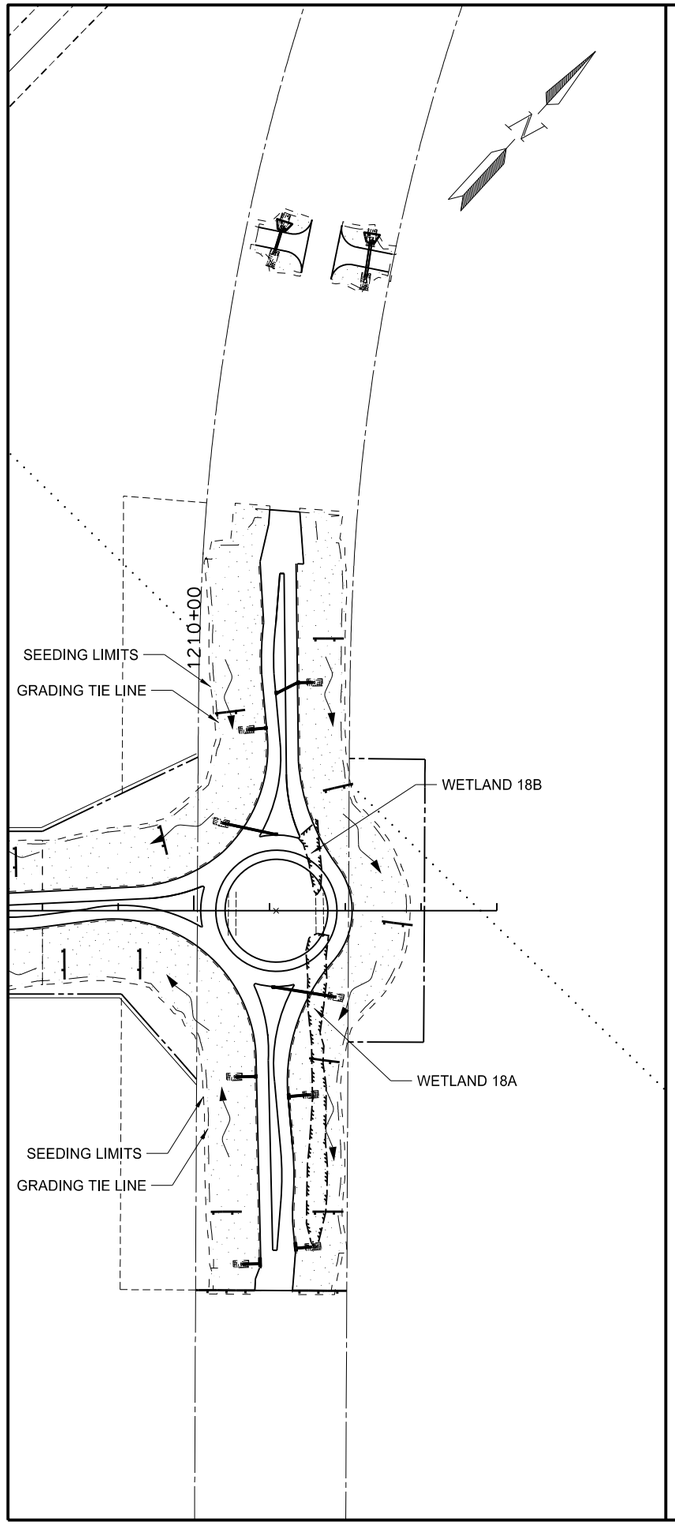
Permanent Erosion Control

Sta 1165+00 to Sta 1208+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	77	6



DITCH CHECKS

261-0112 FIBER ROLLS 12IN

STATION-OFFSET		QUANTITY		STATION-OFFSET		QUANTITY		STATION-OFFSET		QUANTITY		STATION-OFFSET		QUANTITY	
1007+67	LT	40	LF	1061+92	LT	40	LF	1102+99	LT	40	LF	1151+38	LT	40	LF
1009+27	LT	40	LF	1062+48	LT	30	LF	1103+38	RT	40	LF	1151+46	RT	40	LF
1009+32	LT	40	LF	1063+07	LT	30	LF	1103+64	LT	40	LF	1154+01	LT	40	LF
1009+32	RT	40	LF	1063+53	LT	40	LF	1103+88	RT	40	LF	1155+01	LT	40	LF
1009+37	LT	40	LF	1064+53	LT	40	LF	1104+29	LT	40	LF	1156+01	LT	40	LF
1010+63	RT	40	LF	1065+53	LT	40	LF	1104+38	RT	40	LF	1156+90	RT	40	LF
1010+64	LT	40	LF	1066+53	LT	40	LF	1104+88	RT	40	LF	1157+01	LT	40	LF
1010+67	RT	40	LF	1067+53	LT	40	LF	1109+27	RT	40	LF	1158+01	LT	40	LF
1010+88	LT	40	LF	1068+53	LT	40	LF	1110+27	RT	40	LF	1158+90	RT	40	LF
1011+55	RT	40	LF	1069+53	LT	40	LF	1111+27	RT	40	LF	1159+01	LT	40	LF
1012+73	LT	40	LF	1070+53	LT	40	LF	1111+92	RT	40	LF	1160+01	LT	40	LF
1013+48	LT	40	LF	1071+53	LT	40	LF	1112+57	RT	40	LF	1160+90	RT	40	LF
1013+82	LT	40	LF	1072+53	LT	40	LF	1113+22	RT	40	LF	1161+01	LT	40	LF
1014+26	LT	40	LF	1073+53	LT	40	LF	1113+87	RT	40	LF	1162+01	LT	40	LF
1014+80	LT	40	LF	1074+53	LT	40	LF	1116+54	LT	40	LF	1162+90	RT	40	LF
1015+46	RT	40	LF	1075+53	LT	40	LF	1117+54	LT	40	LF	1163+01	LT	40	LF
1016+26	LT	40	LF	1076+53	LT	40	LF	1119+54	LT	40	LF	1164+90	RT	40	LF
1016+30	LT	40	LF	1077+53	LT	40	LF	1123+51	LT	40	LF	1166+01	LT	40	LF
1017+46	RT	40	LF	1078+53	LT	40	LF	1123+83	RT	40	LF	1166+90	RT	40	LF
1018+26	LT	40	LF	1079+53	LT	40	LF	1124+57	RT	40	LF	1168+01	LT	40	LF
1018+30	LT	40	LF	1080+53	LT	40	LF	1125+48	RT	40	LF	1168+45	LT	40	LF
1019+46	RT	40	LF	1081+53	LT	40	LF	1126+48	RT	40	LF	1168+49	RT	40	LF
1020+26	LT	40	LF	1082+53	LT	40	LF	1126+52	LT	40	LF	1169+33	LT	40	LF
1020+30	LT	40	LF	1084+26	LT	40	LF	1127+48	RT	40	LF	1171+03	LT	40	LF
1021+46	RT	40	LF	1085+79	LT	40	LF	1128+48	RT	40	LF	1173+03	LT	40	LF
1022+26	LT	40	LF	1086+44	LT	40	LF	1128+52	LT	40	LF	1175+03	LT	40	LF
1022+30	LT	40	LF	1087+09	LT	40	LF	1130+33	RT	40	LF	1179+02	LT	40	LF
1026+24	RT	40	LF	1087+74	LT	40	LF	1130+36	LT	40	LF	1191+59	LT	40	LF
1027+39	LT	40	LF	1088+39	LT	40	LF	1131+68	RT	40	LF	1194+22	LT	40	LF
1028+24	RT	40	LF	1089+09	LT	40	LF	1131+69	RT	40	LF	1194+28	RT	40	LF
1029+39	LT	40	LF	1090+09	LT	40	LF	1131+76	LT	20	LF	1196+14	LT	40	LF
1030+24	RT	40	LF	1091+09	LT	40	LF	1131+78	LT	20	LF	1198+42	LT	40	LF
1031+39	LT	40	LF	1091+38	RT	40	LF	1132+34	RT	40	LF	1198+53	RT	40	LF
1032+24	RT	40	LF	1092+09	LT	40	LF	1132+39	RT	40	LF	1201+07	LT	40	LF
1033+39	LT	40	LF	1093+38	RT	40	LF	1132+81	LT	40	LF	1201+32	RT	40	LF
1036+78	LT	40	LF	1096+09	LT	40	LF	1133+81	LT	40	LF	1202+32	RT	40	LF
1038+78	LT	40	LF	1097+09	LT	40	LF	1134+36	RT	40	LF	1204+30	RT	40	LF
1040+78	LT	40	LF	1097+38	RT	40	LF	1134+81	LT	40	LF	1205+06	LT	40	LF
1046+61	RT	40	LF	1098+09	LT	40	LF	1135+81	LT	40	LF	1205+30	RT	40	LF
1046+97	LT	40	LF	1098+38	RT	40	LF	1136+36	RT	40	LF	1207+29	RT	40	LF
1047+61	RT	40	LF	1099+09	LT	40	LF	1136+81	LT	40	LF	1207+65	LT	40	LF
1047+97	LT	40	LF	1099+38	RT	40	LF	1137+81	LT	40	LF	1208+29	RT	40	LF
1048+97	LT	40	LF	1099+74	LT	40	LF	1138+36	RT	40	LF	1209+29	RT	40	LF
1049+61	RT	40	LF	1100+38	RT	40	LF	1139+81	LT	40	LF	1209+60	LT	40	LF
1049+97	LT	40	LF	1100+39	LT	40	LF	1140+36	RT	40	LF	1210+43	RT	40	LF
1050+97	LT	40	LF	1100+88	RT	40	LF	1141+81	LT	40	LF	1210+48	LT	40	LF
1051+61	RT	40	LF	1101+04	LT	40	LF	1142+36	RT	40	LF	1211+72	RT	40	LF
1051+97	LT	40	LF	1101+38	RT	40	LF	1143+81	LT	40	LF	1211+77	RT	40	LF
1053+64	RT	40	LF	1101+69	LT	40	LF	1144+36	RT	40	LF	1211+78	LT	40	LF
1053+92	LT	40	LF	1101+88	RT	40	LF	1145+81	LT	40	LF	1211+90	LT	40	LF
1055+92	LT	40	LF	1102+34	LT	40	LF	1146+36	RT	40	LF	1212+69	RT	40	LF
1057+92	LT	40	LF	1102+38	RT	40	LF	1149+00	LT	40	LF				
1059+92	LT	40	LF	1102+88	RT	40	LF	1149+46	RT	40	LF				
													Total	8340	LF

251-0200 SEEDING CLASS II

Sta	1208+00	to	1214+00	3.9 ACRE
			Total=	3.9 ACRE

253-0101 STRAW MULCH

Sta	1208+00	to	1214+00	3.9 ACRE
			Total=	3.9 ACRE

LEGEND

- Avoidance Area
- Delineated Wetland
- Wetland Mitigation
- Seeding Class II
- Wetland Seed
- Seeding Class III
- Flow Arrow
- Fiber Rolls
- Riprap Grade II
- ECB Type 3

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Permanent Erosion Control

Sta 1208+00 to Sta 1214+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	77	7

Inlet Protection of Pipe End											
Station	Offset	Culvert Size	Fiber Roll 12IN (LF)	Fiber Roll 20IN (LF)	ECB Type 3 (SY)	Station	Offset	Culvert Size	Fiber Roll 12IN (LF)	Fiber Roll 20IN (LF)	ECB Type 3 (SY)
1006+20	RT	29x18 A	40		27	1131+71	LT	24"	40		24
1006+20	RT	29x18 A	40		27	1132+33	RT	24"			24
1006+34	LT	24"	40		24	1132+27	LT	24"			24
1007+01	LT	24"			24	1147+99	LT	30"	40		27
1007+34	RT	29x18 A			27	1147+99	RT	30"			27
1007+36	LT	18"			22	1168+58	LT	24"	40		24
1007+44	RT	29x18 A			27	1169+16	LT	24"			24
1007+63	RT	18"			22	1177+01	LT	30"	40		27
4920+71	LT	18"			22	1177+04	RT	30"			27
4920+80	RT	18"			22	1186+40	LT	30"	40		27
4927+28	LT	18"			22	1187+22	RT	30"			27
4927+30	RT	18"			22	1192+23	RT	30"			27
1008+85	RT	30"	40		27	1192+30	LT	30"	40		27
1008+92	LT	30"			27	1199+47	LT	30"	40		27
1008+96	RT	30"	40		27	1199+53	RT	30"			27
1009+05	LT	30"			27	1200+17	RT	66"			37
1011+85	RT	18"			22	1200+31	LT	66"		40	37
1013+50	LT	30"			27	1200+33	RT	66"			37
1013+50	RT	30"	40		27	1200+46	LT	66"		40	37
1013+85	RT	18"			22	1200+49	RT	66"			37
1014+68	LT	18"			22	1200+60	LT	66"		40	37
1035+25	LT	30"	40		27	1205+61	LT	66"		40	37
1035+25	RT	30"			27	1205+78	LT	66"		40	37
1044+84	LT	42"			31	1205+94	LT	66"		40	37
1044+90	RT	24"			24	1206+01	RT	66"			37
1045+53	LT	42"		40	31	1206+11	LT	66"		40	37
1045+55	RT	24"	40		24	1206+17	RT	66"			37
1062+67	LT	24"			24	1206+34	RT	66"			37
1062+67	LT	24"			24	1206+50	RT	66"			37
1063+25	LT	24"	40		24	1206+86	RT	18"			22
1063+25	LT	24"	40		24	1206+93	LT	18"			22
1084+23	RT	36"			30	2259+75	LT	30"	40		27
1085+16	LT	36"	40		30	2259+84	RT	24"	40		24
1114+97	LT	36"	40		30	2260+16	RT	24"			24
1115+07	LT	36"	40		30	2260+28	LT	30"			27
1116+01	RT	36"			30	2265+75	LT	18"			22
1116+12	RT	36"			30	2266+38	RT	18"			22
1121+59	LT	30"	40		27	2267+62	RT	18"			22
1121+81	RT	30"			27	2269+90	LT	18"			22
1124+46	LT	36"	40		30	2270+97	RT	18"			22
1124+48	RT	36"			30	2271+20	LT	18"			22
1131+69	RT	24"	40		24	2273+20	LT	18"			22
						2273+44	RT	18"			22
								Total	1000	320	2324

Runoff & Slope Protection				
Station	to Station	Offset	20IN Fiber Roll LF	ECB Type 3 SY
1009+00	1009+70	LT	82	
1013+37	1014+28	LT	158	
1014+48	1015+10	LT	101	
1036+20	1043+40	RT	753	
1042+83	1044+17	LT		614
1043+22	1045+13	RT		950
1055+20	1062+76	RT	796	
1065+30	1070+09	RT	521	
1071+72	1089+69	RT	1835	
1104+70	1114+90	LT	1058	
1114+25	1116+00	RT	206	
1116+47	1123+29	RT	703	
1147+32	1149+60	RT	142	
1152+29	1154+07	LT		687
1153+36	1155+15	RT		639
1169+18	1182+83	RT	1494	
1183+18	1187+23	RT	489	
1187+44	1192+06	RT	458	
1199+69	1201+77	LT		861
1199+72	1201+04	RT		727
1205+04	1206+67	LT		595
1205+43	1207+06	RT		532
1210+02	1210+80	RT	78	
1211+30	1212+02	RT	72	
		Total	8946	5605

	Project Totals		
	Fiber Rolls 12IN (LF)	Fiber Rolls 20IN (LF)	ECB Type 3 (SY)
Ditch Checks	8340		
Inlet End Protection	1000	320	2324
Runoff Protection		8946	5605
Additional	1000	1000	750
Total	10340	10266	8679

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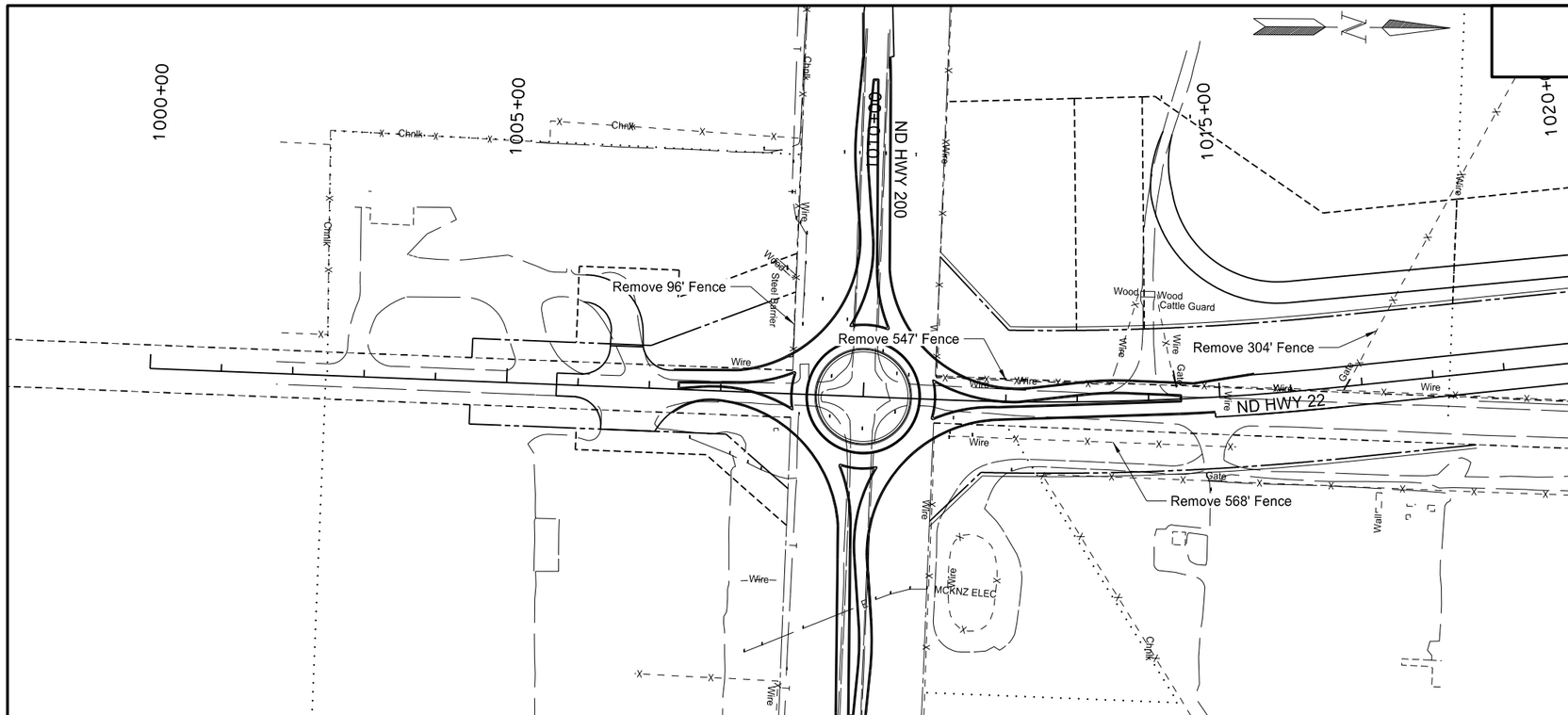
Permanent Erosion Control

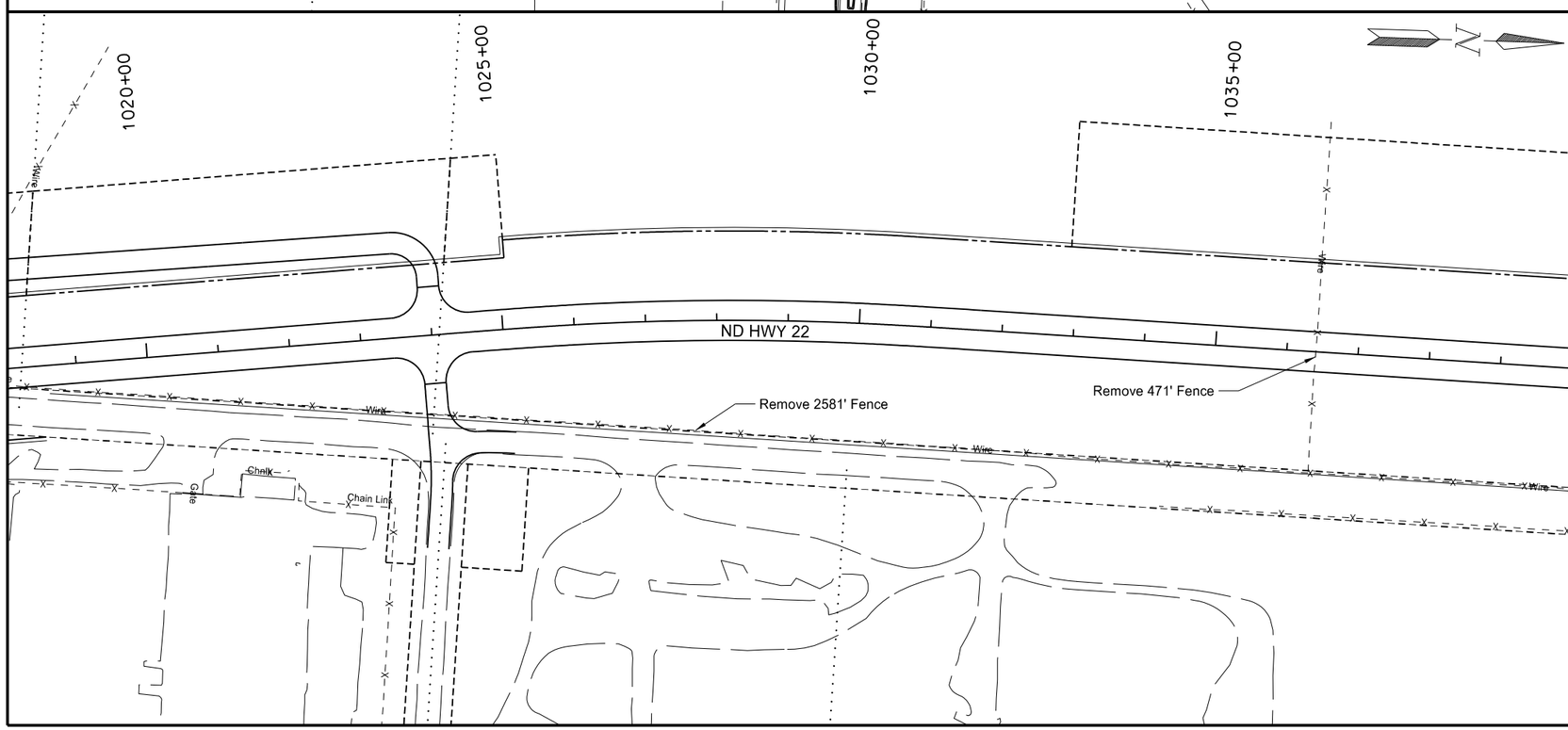
Tables

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	1





202-0312 REMOVE EXISTING FENCE

Sta	1008+94 Lt	to	1009+00 Lt	96 LF
Sta	1011+00 Lt	to	1013+91 Lt	547 LF
Sta	1011+00 Rt	to	1015+18 Rt	568 LF
Sta	1014+18 Lt	to	1039+00 Rt	2581 LF
Sta	1016+74 Rt	to	1018+46 Lt	304 LF
Sta	1036+40 Rt	to	1036+42 Lt	471 LF
			Total=	4567 LF

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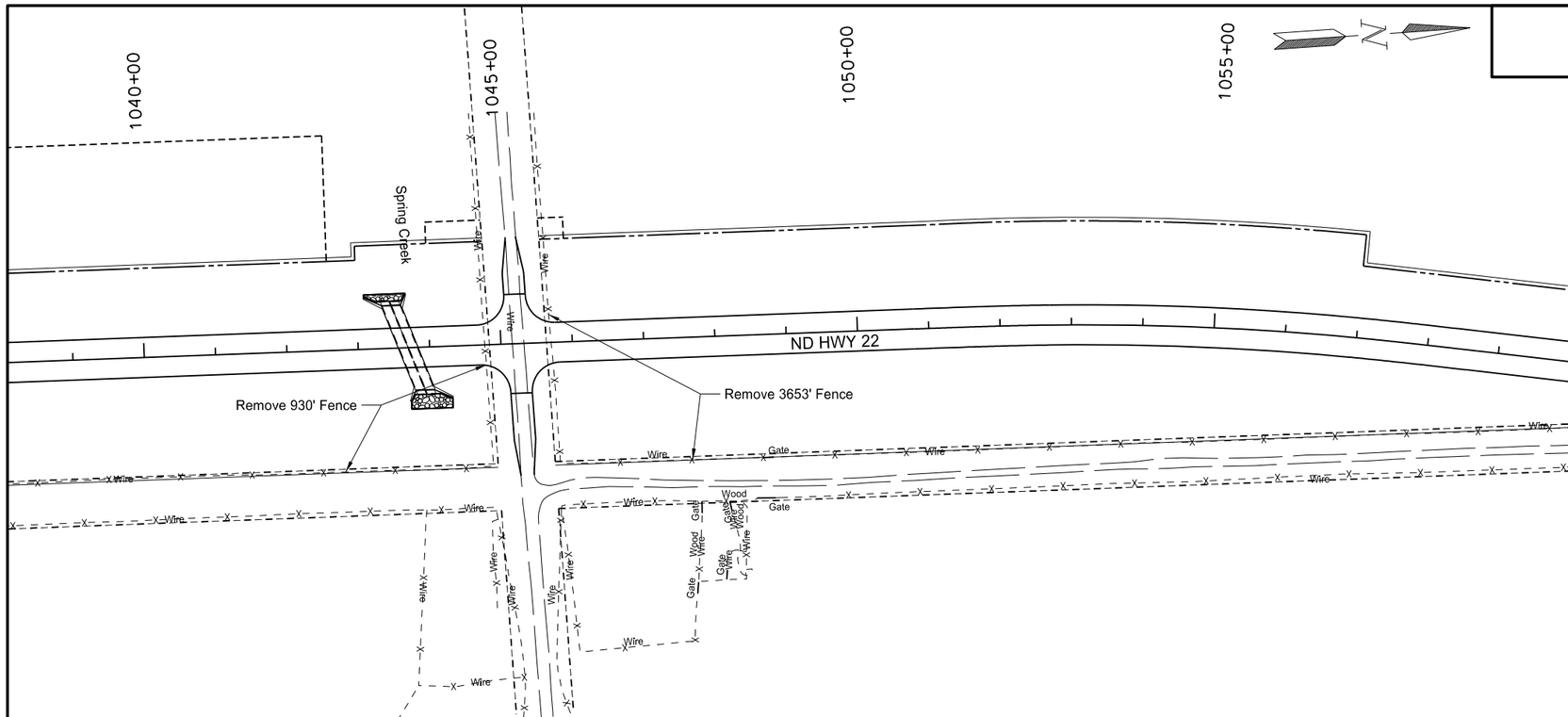
Fencing Removals

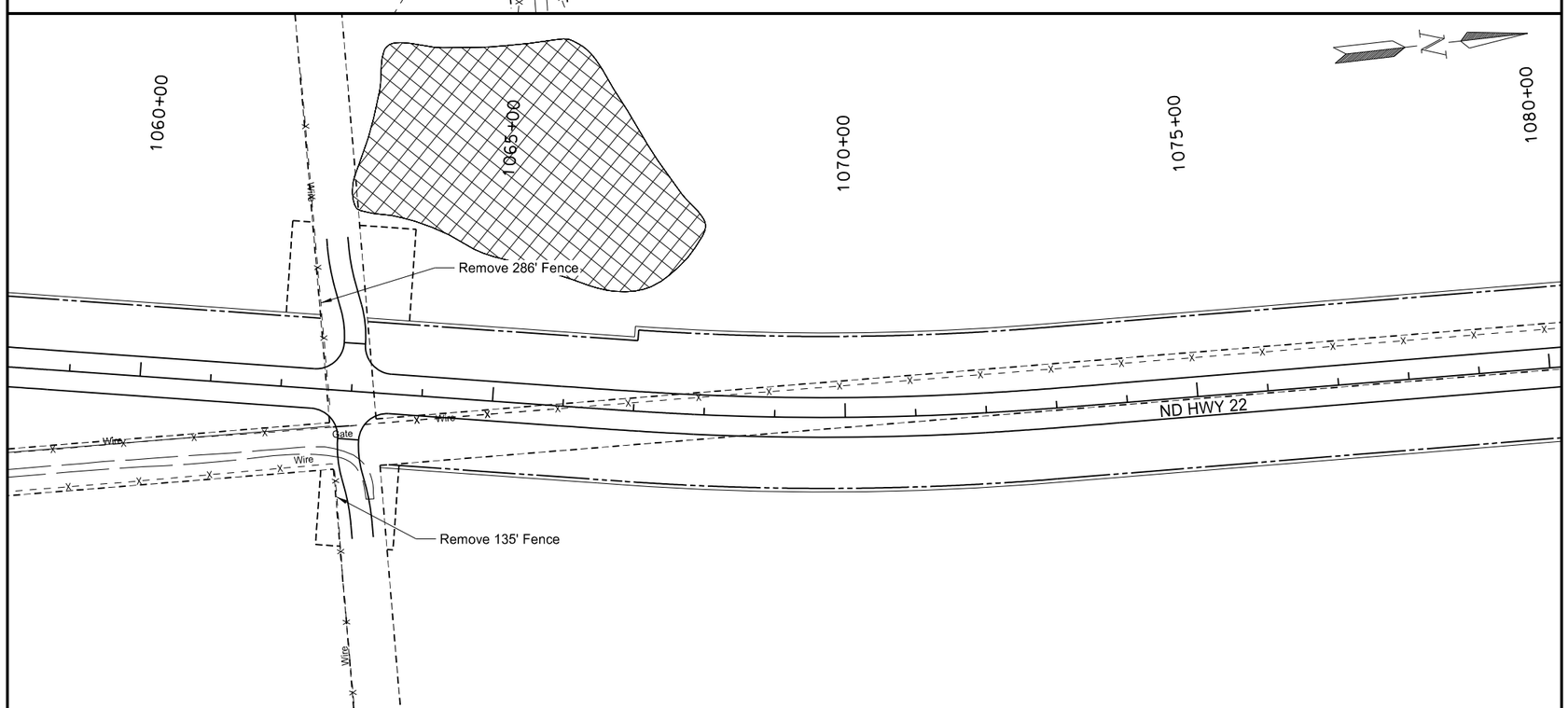
Sta 1000+00 to 1039+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	2





202-0312 REMOVE EXISTING FENCE

Sta	1039+00 Rt	to	1044+72 Lt	930 LF
Sta	1045+63 Lt	to	1079+00 Lt	3653 LF
Sta	1062+30 Lt	to	1062+71 Rt	286 LF
Sta	1062+64 Rt	to	1063+00 Rt	135 LF
			Total=	5004 LF

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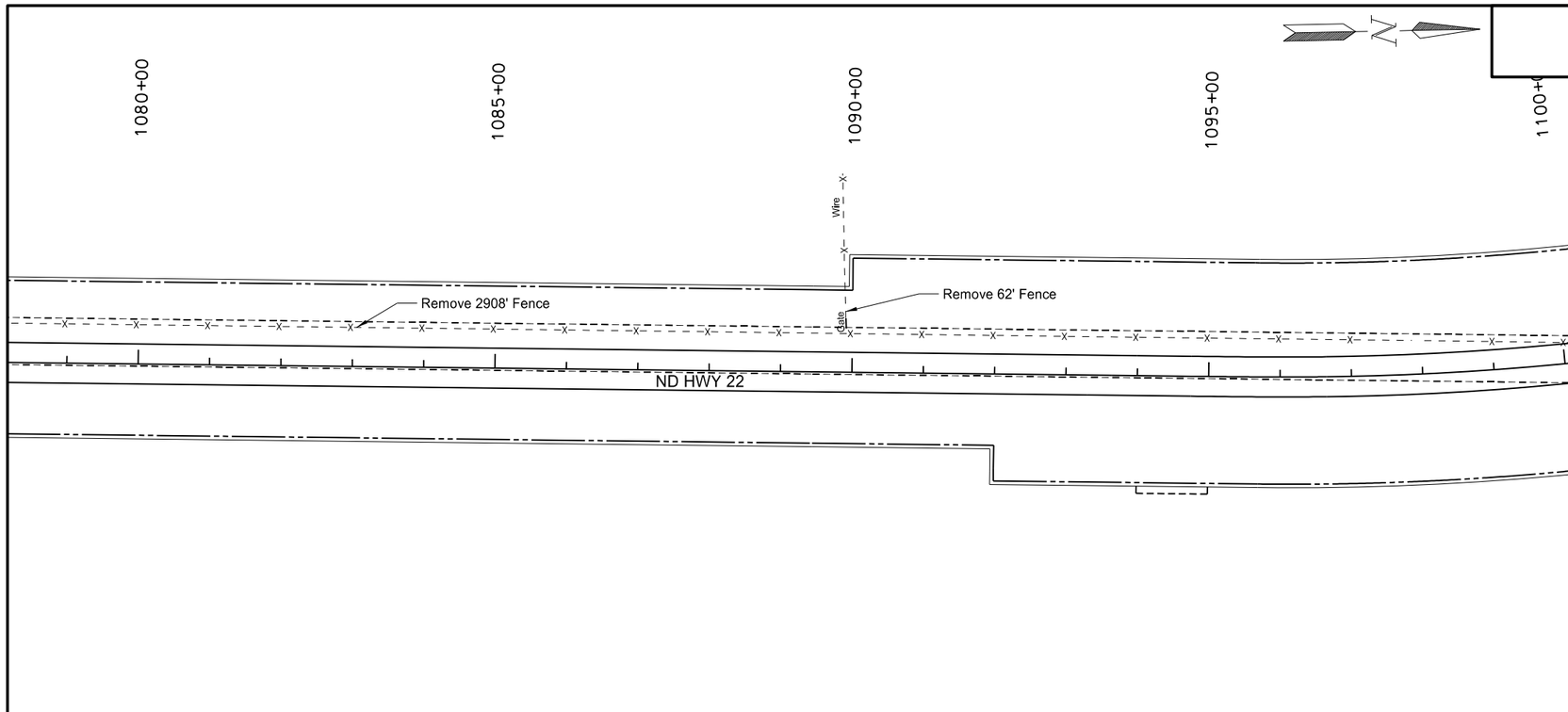
Fencing Removals

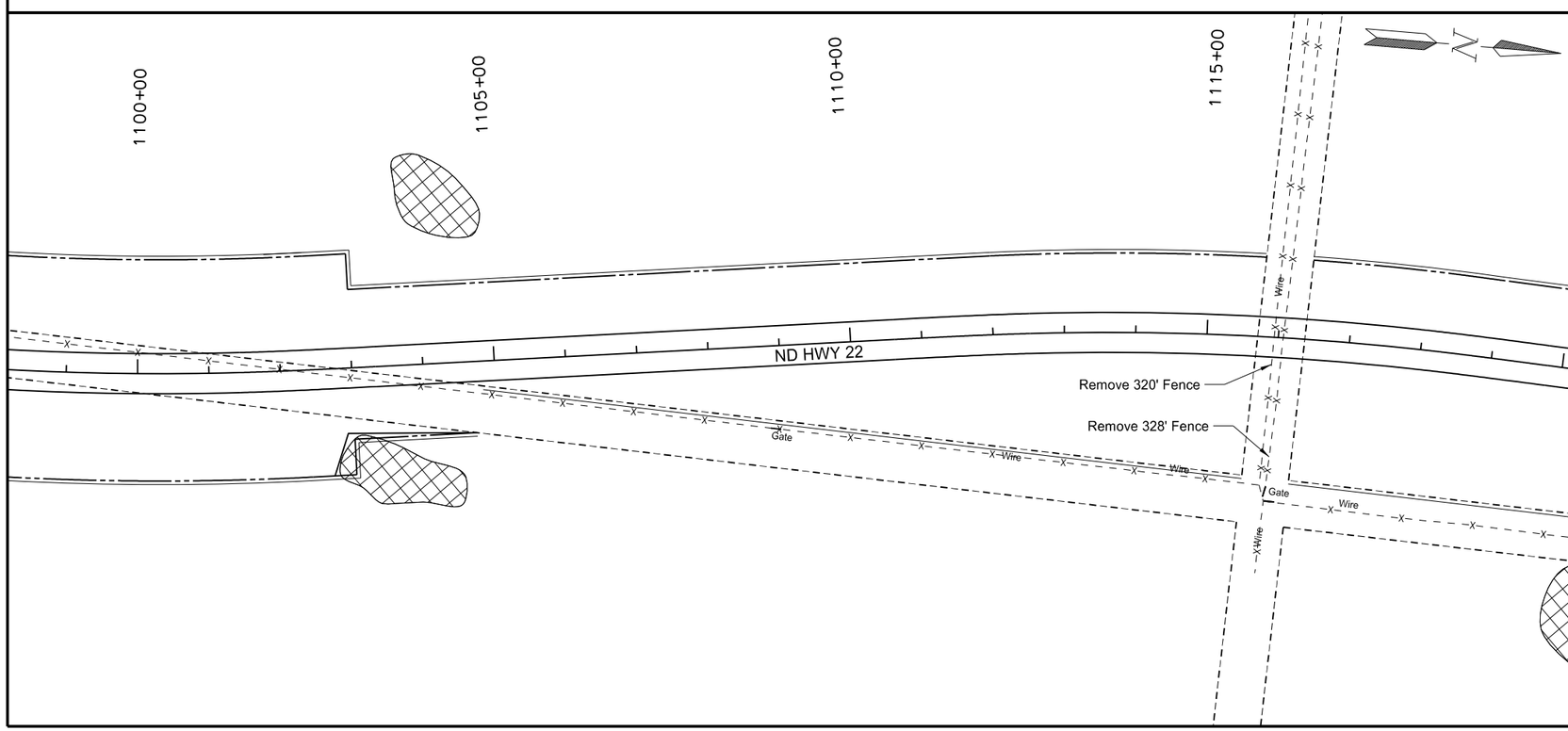
Sta 1039+00 to 1079+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	3





202-0312 REMOVE EXISTING FENCE

Sta	1079+00 Lt	to	1108+02 Rt	2908 LF
Sta	1089+89 Lt	to	1089+92 Lt	62 LF
Sta	1115+85 Rt	to	1115+99 Lt	320 LF
Sta	1115+90 Rt	to	1116+13 Lt	328 LF
			Total=	3618 LF

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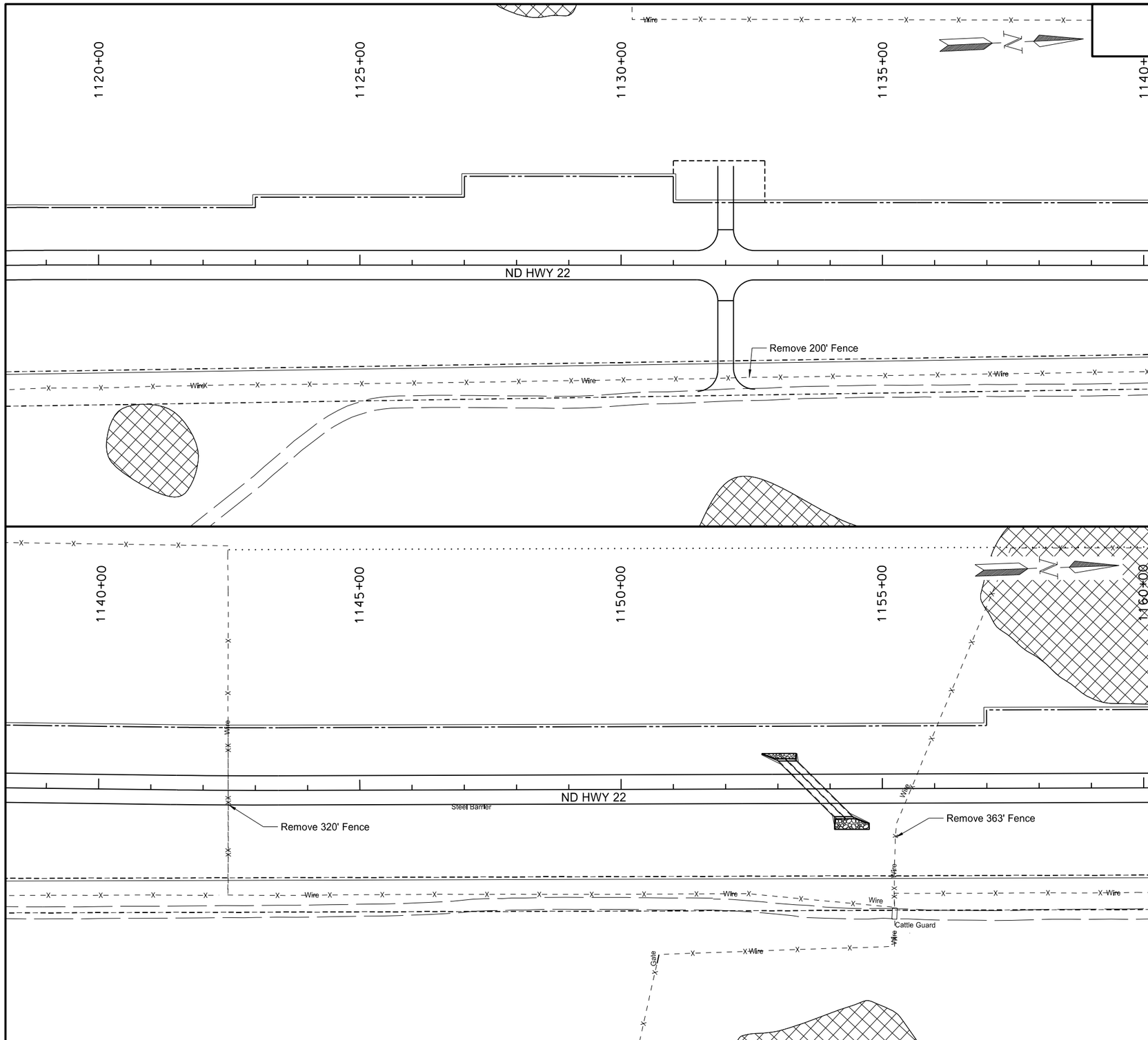
Fencing Removals

Sta 1079+00 to 1119+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	4



202-0312 REMOVE EXISTING FENCE

Sta 1131+01	Rt	to	1133+01 Rt	200 LF
Sta 1142+47	Lt	to	1142+49 Rt	320 LF
Sta 1155+22	Rt	to	1156+05 Lt	363 LF
			Total=	883 LF

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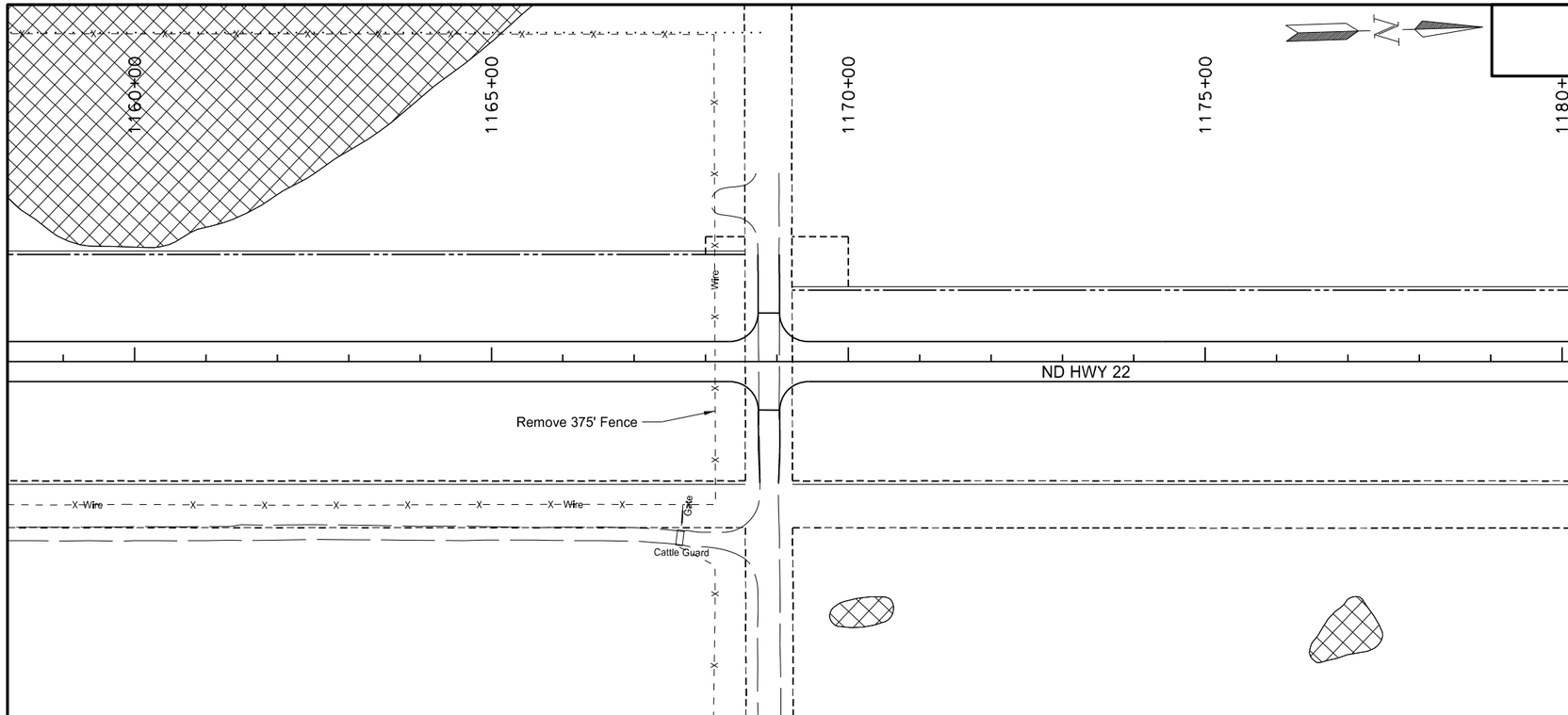
Fencing Removals

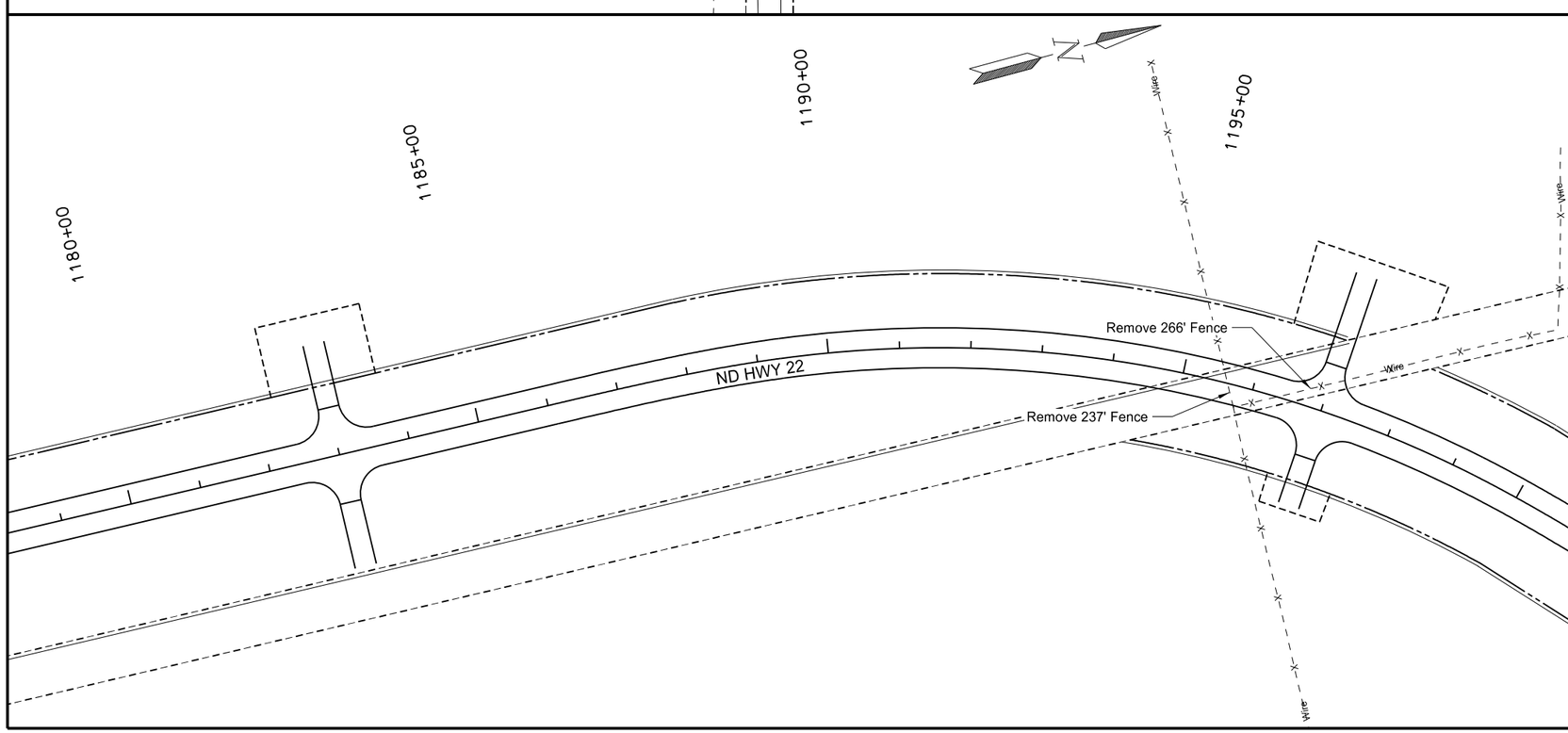
Sta 1119+00 to 1159+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	5





202-0312 REMOVE EXISTING FENCE

Sta	1168+13 Lt	to	1168+14 Rt	375 LF
Sta	1195+13 Lt	to	1196+15 Rt	237 LF
Sta	1195+80 Rt	to	1197+92 Lt	266 LF
			Total=	878 LF

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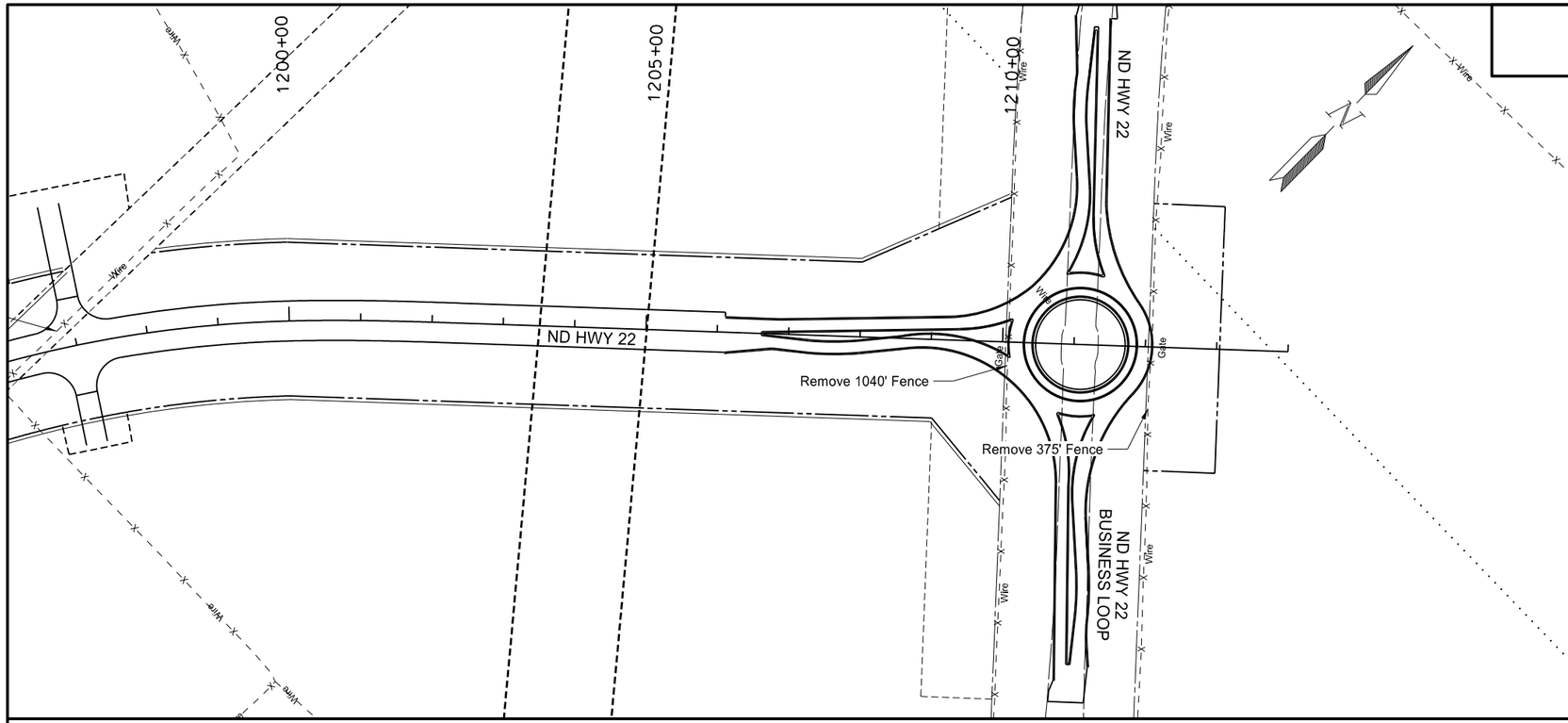
Fencing Removals

Sta 1159+00 to 1198+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	6



202-0312 REMOVE EXISTING FENCE

Sta 1210+06	Rt	to	1210+19	Lt	1040 LF
Sta 1212+07	Rt	to	1212+10	Lt	375 LF
				Total=	1415 LF

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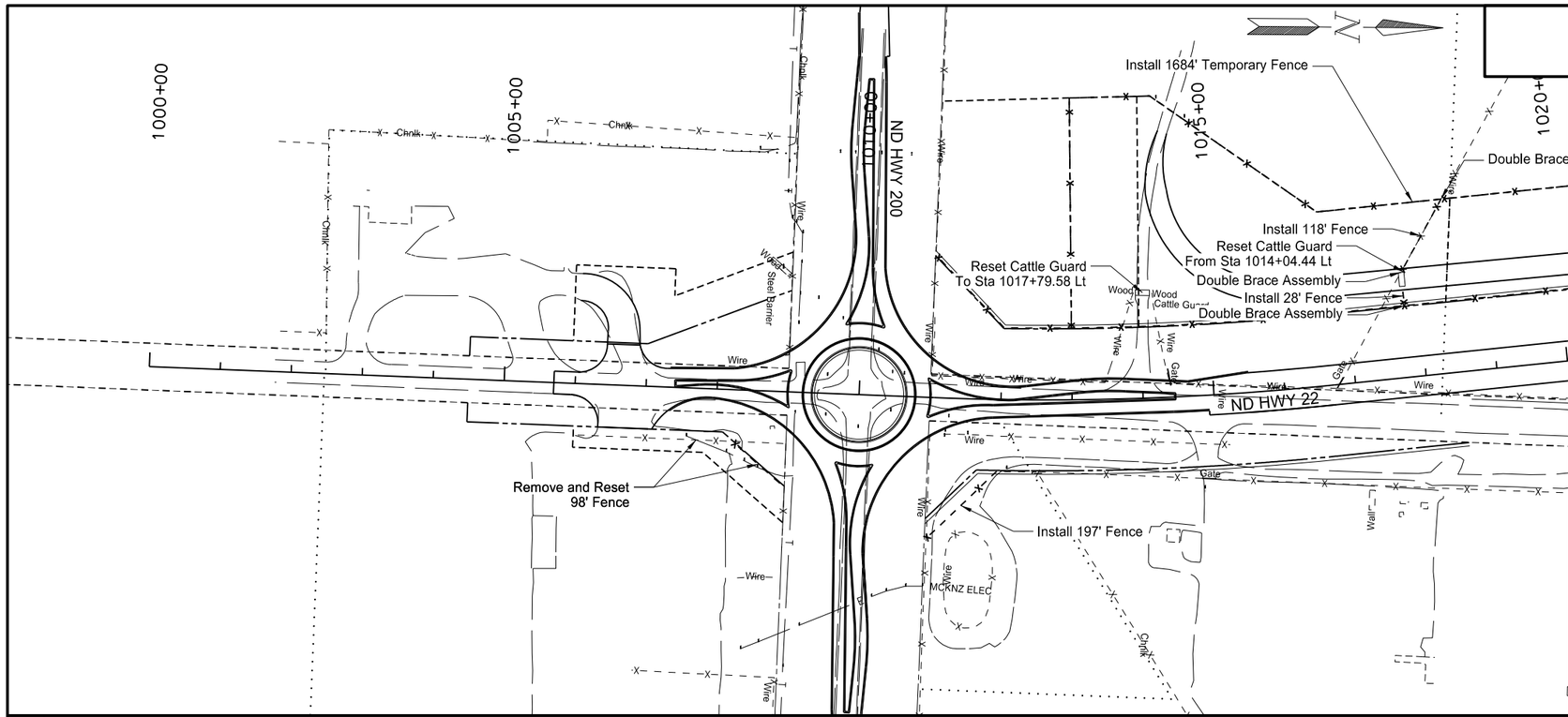
Fencing Removals

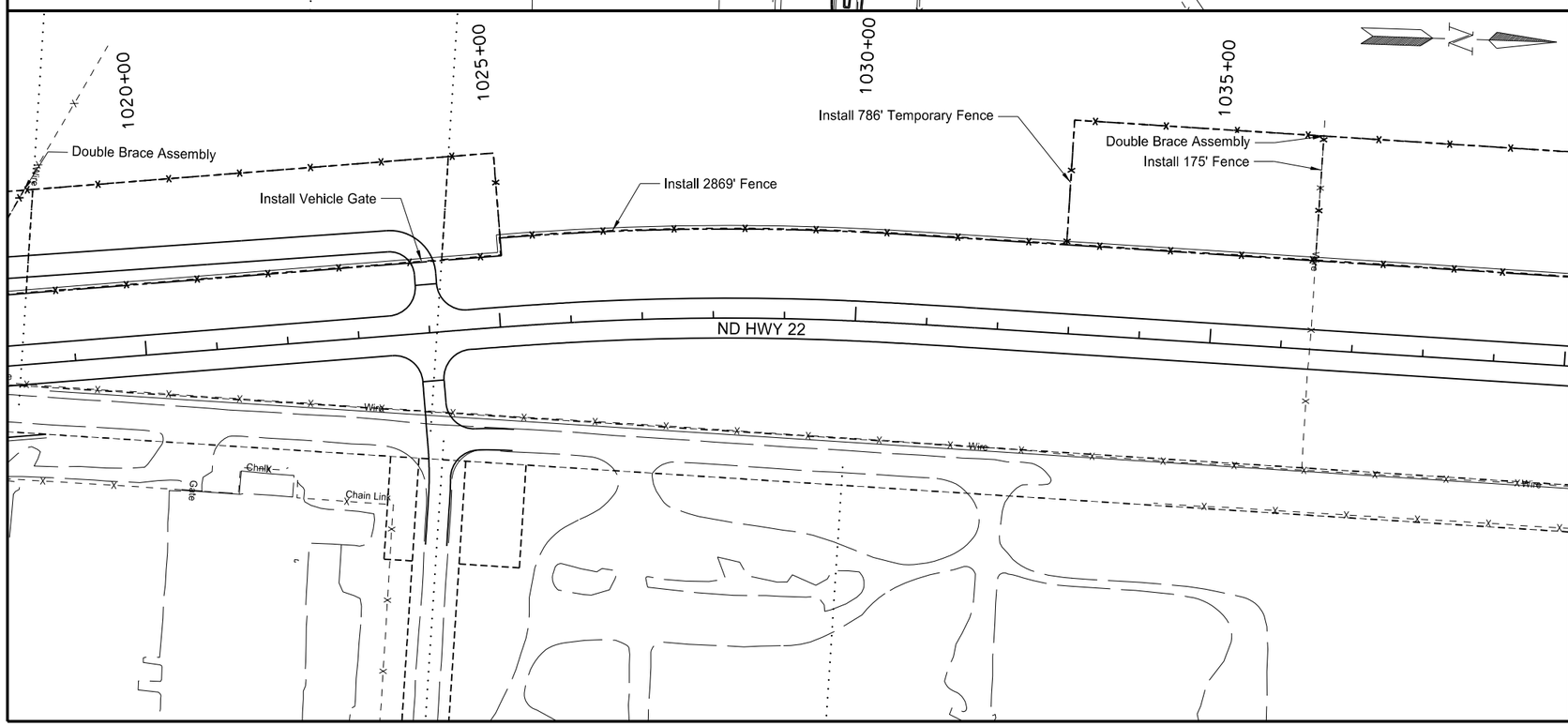
Sta 1198+00 to 1214+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	7





752-0320	FENCE BARBED WIRE 4 STRAND-STEEL POST			
	Sta 1011+00 Rt	to	1012+50 Rt	197 LF
	Sta 1011+01 Lt	to	1039+00 Lt	2869 LF
	Sta 1017+80 Lt	to	1017+80 Lt	28 LF
	Sta 1017+80 Lt	to	1018+46 Lt	118 LF
	Sta 1036+41 Lt	to	1036+42 Lt	175 LF
			Total=	3387 LF
752-0660	FENCE CHAIN LINK REMOVE & RESET			
	Sta 1008+24 Rt	to	1009+00 Rt	98 LF
			Total=	98 LF
752-0900	FENCE TEMPORARY INSTALL & REMOVE			
	Sta 1013+00 Lt	to	1025+09 Lt	1684 LF
	Sta 1032+90 Lt	to	1039+00 Lt	786 LF
			Total=	2470 LF
752-2100	GATE-VEHICLE			
	Sta 1023+96 Lt			1 EA
			Total=	1 EA
752-3150	CORNER ASSEMBLY BARBED WIRE-WOOD POST			
	Sta 1011+00 Rt			1 EA
	Sta 1011+01 Lt			1 EA
	Sta 1011+96 Rt			1 EA
	Sta 1012+03 Lt			1 EA
	Sta 1012+50 Rt			1 EA
	Sta 1017+80 Lt			1 EA
	Sta 1025+08 Lt			1 EA
	Sta 1025+08 Lt			1 EA
	Sta 1036+41 Lt			1 EA
			Total=	9 EA
752-4140	DOUBLE BRACE ASSEMBLY BARBED WIRE-WOOD POST			
	Sta 1017+80 Lt			1 EA
	Sta 1017+80 Lt			1 EA
	Sta 1018+46 Lt			1 EA
	Sta 1036+42 Lt			1 EA
			Total=	4 EA
980-0170	CATTLE GUARD RESET			
	Sta 1014+04 Lt			1 EA
			Total=	1 EA

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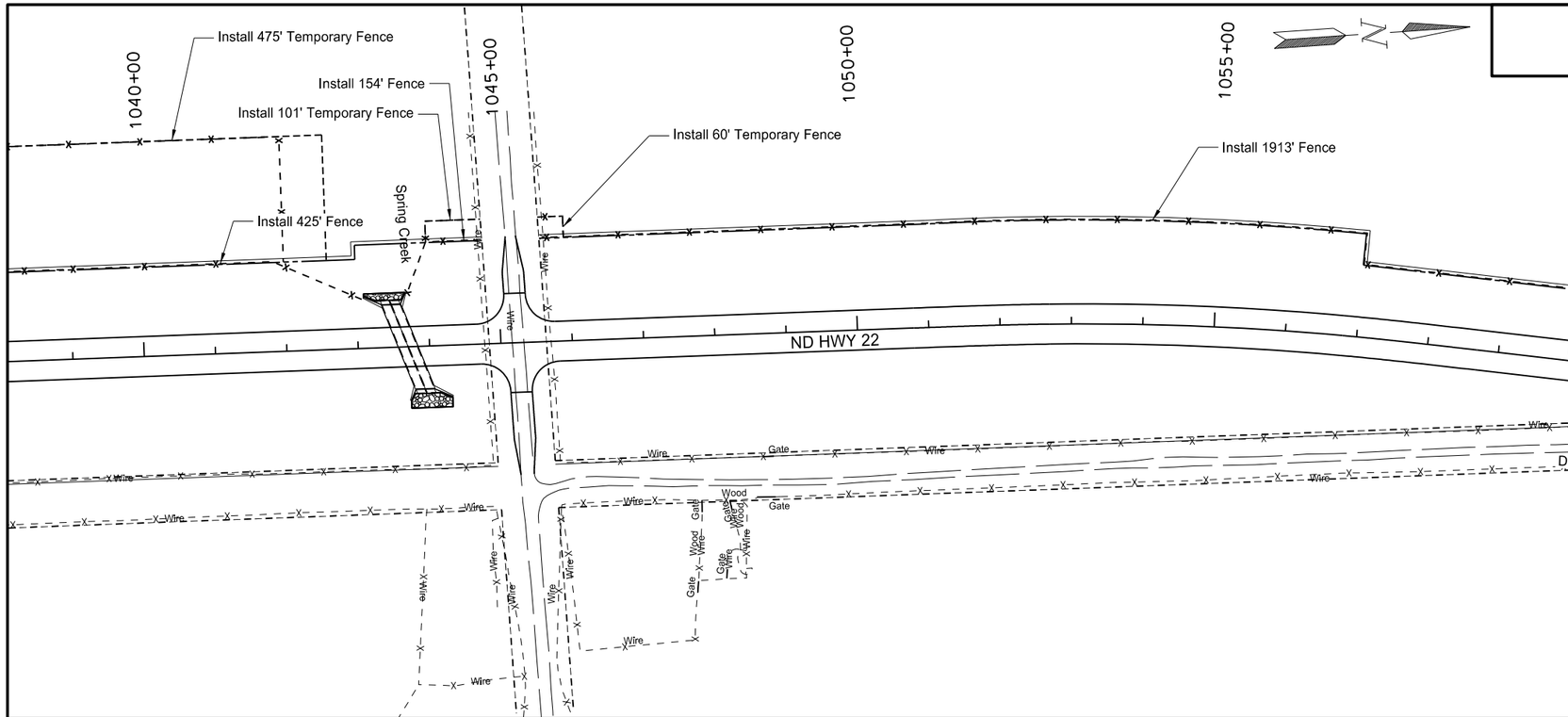
Fencing Layout

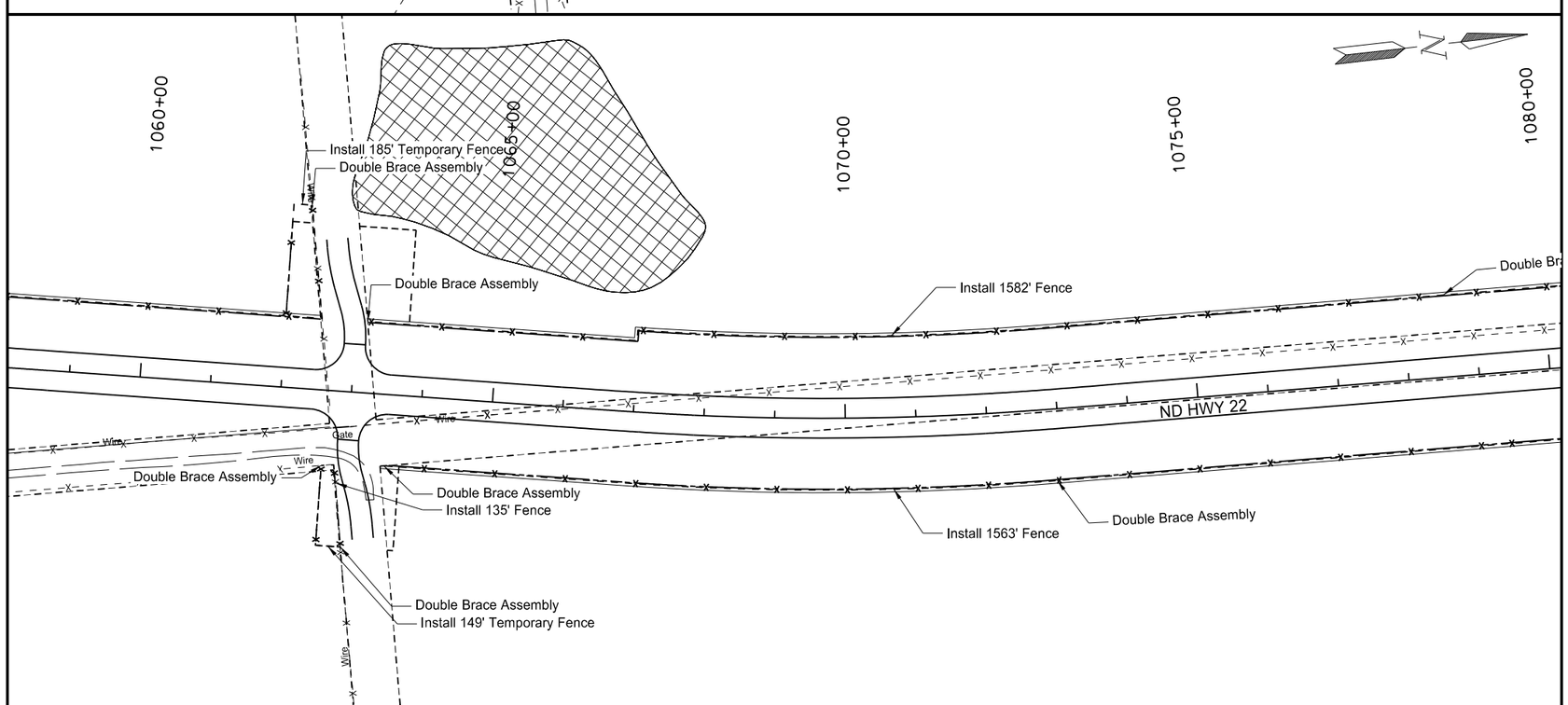
Sta 1000+00 to 1039+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	8





752-0320 FENCE BARBED WIRE 4 STRAND-STEEL POST

Sta	1039+00 Lt	to	1043+11 Lt	425 LF
Sta	1043+70 Lt	to	1044+72 Lt	154 LF
Sta	1045+65 Lt	to	1062+51 Lt	1913 LF
Sta	1062+64 Rt	to	1063+00 Rt	135 LF
Sta	1063+16 Lt	to	1079+00 Lt	1582 LF
Sta	1063+53 Rt	to	1079+00 Rt	1563 LF
			Total=	5772 LF

752-0900 FENCE TEMPORARY INSTALL & REMOVE

Sta	1039+00 Lt	to	1042+00 Lt	475 LF
Sta	1044+00 Lt	to	1044+72 Lt	101 LF
Sta	1045+63 Lt	to	1045+93 Lt	60 LF
Sta	1062+00 Lt	to	1062+24 Lt	185 LF
Sta	1062+64 Rt	to	1063+00 Rt	149 LF
			Total=	970 LF

752-3150 CORNER ASSEMBLY BARBED WIRE-WOOD POST

Sta	1041+85 Lt	1 EA
Sta	1043+11 Lt	1 EA
Sta	1043+70 Lt	1 EA
Sta	1044+00 Lt	1 EA
Sta	1044+72 Lt	1 EA
Sta	1045+65 Lt	1 EA
Sta	1057+01 Lt	1 EA
Sta	1057+01 Lt	1 EA
Sta	1062+51 Lt	1 EA
Sta	1062+82 Rt	1 EA
Sta	1066+99 Lt	1 EA
Sta	1066+99 Lt	1 EA
	Total=	12 EA

752-4140 DOUBLE BRACE ASSEMBLY BARBED WIRE-WOOD POST

Sta	1062+26 Lt	1 EA
Sta	1062+64 Rt	1 EA
Sta	1063+00 Rt	1 EA
Sta	1063+16 Lt	1 EA
Sta	1063+53 Rt	1 EA
Sta	1072+92 Rt	1 EA
Sta	1078+58 Lt	1 EA
	Total=	7 EA

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Fencing Layout

Sta 1039+00 to 1079+00

ND Hwy 22

Killdeer Bypass

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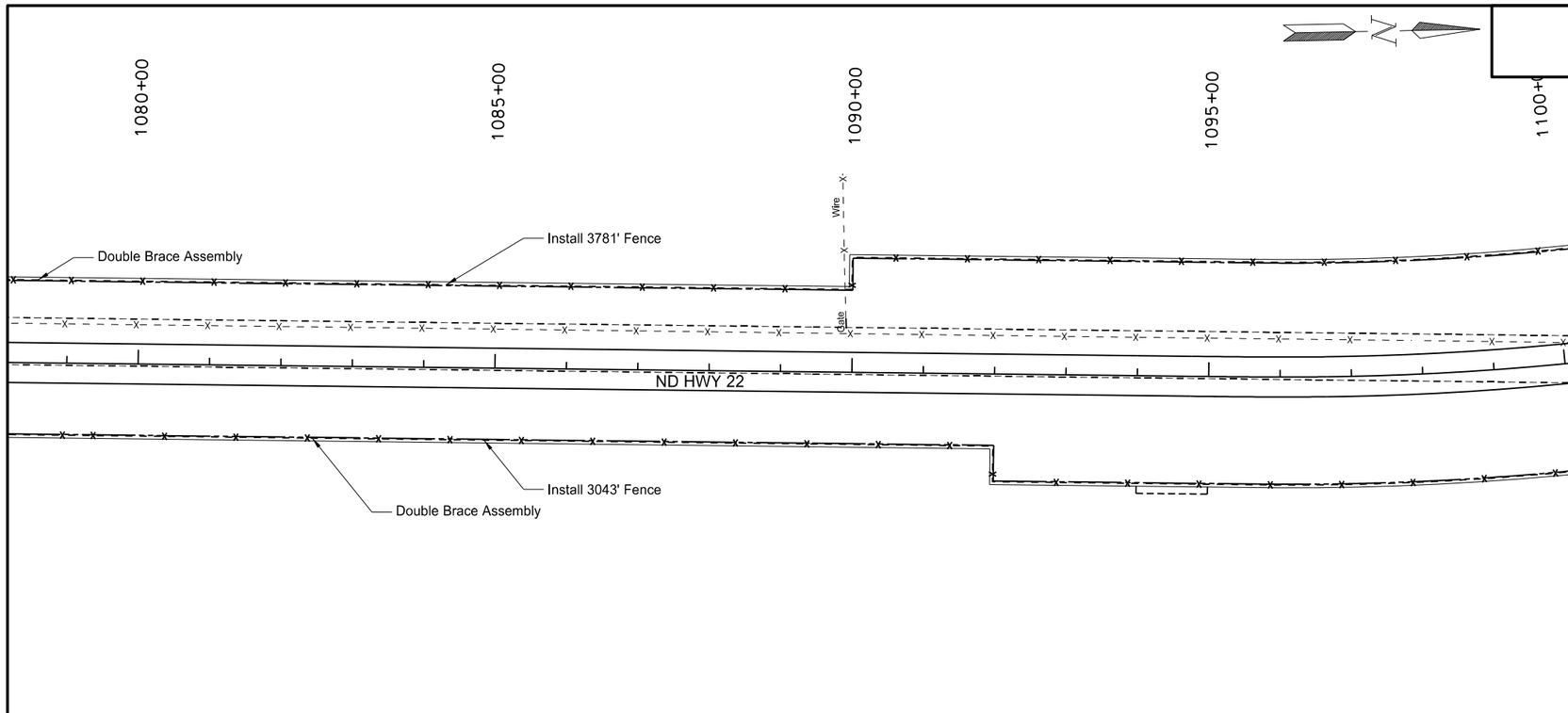
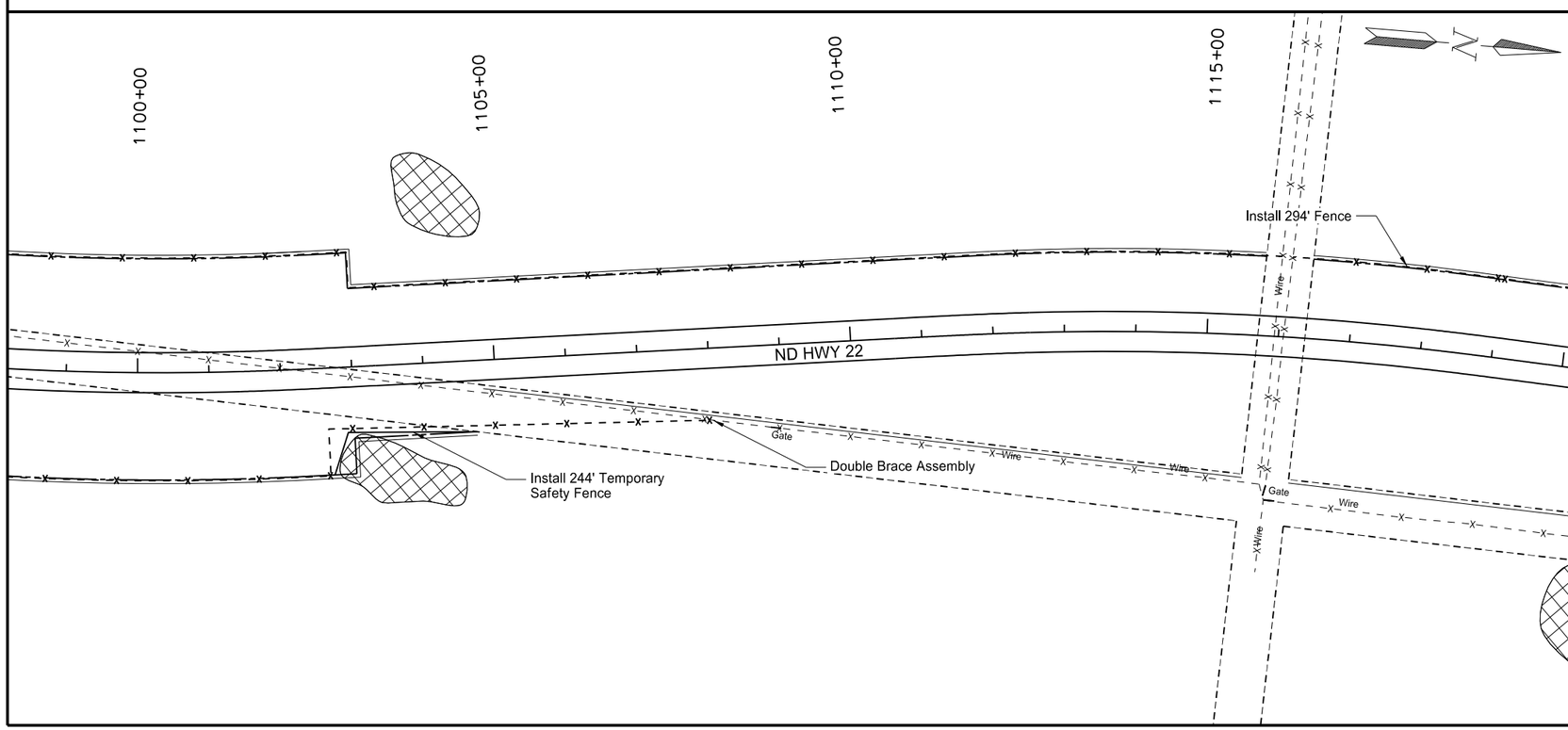
ND	SOIB-SAP-5-022(110)104	80	9





752-0320 FENCE BARBED WIRE 4 STRAND-STEEL POST

Sta	1079+00 Lt	to	1115+99 Lt	3781 LF
Sta	1079+00 Rt	to	1108+02 Rt	3043 LF
			Total=	6824 LF

752-0400 FENCE BARBED WIRE 5 STRAND

Sta	1116+13 Lt	to	1119+00 Lt	294 LF
			Total=	294 LF

752-0911 TEMPORARY SAFETY FENCE

Sta	1102+70 Rt	to	1104+72 Rt	244 LF
			Total=	244 LF

752-3150 CORNER ASSEMBLY BARBED WIRE-WOOD POST

Sta	1089+99 Lt	1 EA
Sta	1089+99 Lt	1 EA
Sta	1091+99 Rt	1 EA
Sta	1091+99 Rt	1 EA
Sta	1102+64 Rt	1 EA
Sta	1102+64 Rt	1 EA
Sta	1103+01 Lt	1 EA
Sta	1103+01 Lt	1 EA
Sta	1115+99 Lt	1 EA
Sta	1116+13 Lt	1 EA
	Total=	10 EA

752-4140 DOUBLE BRACE ASSEMBLY BARBED WIRE-WOOD POST

Sta	1082+45 Rt	1 EA
Sta	1108+02 Rt	1 EA
	Total=	2 EA

NOTE: FENCE BARBED WIRE 5 STRAND
to be installed with steel posts at 6' spacing

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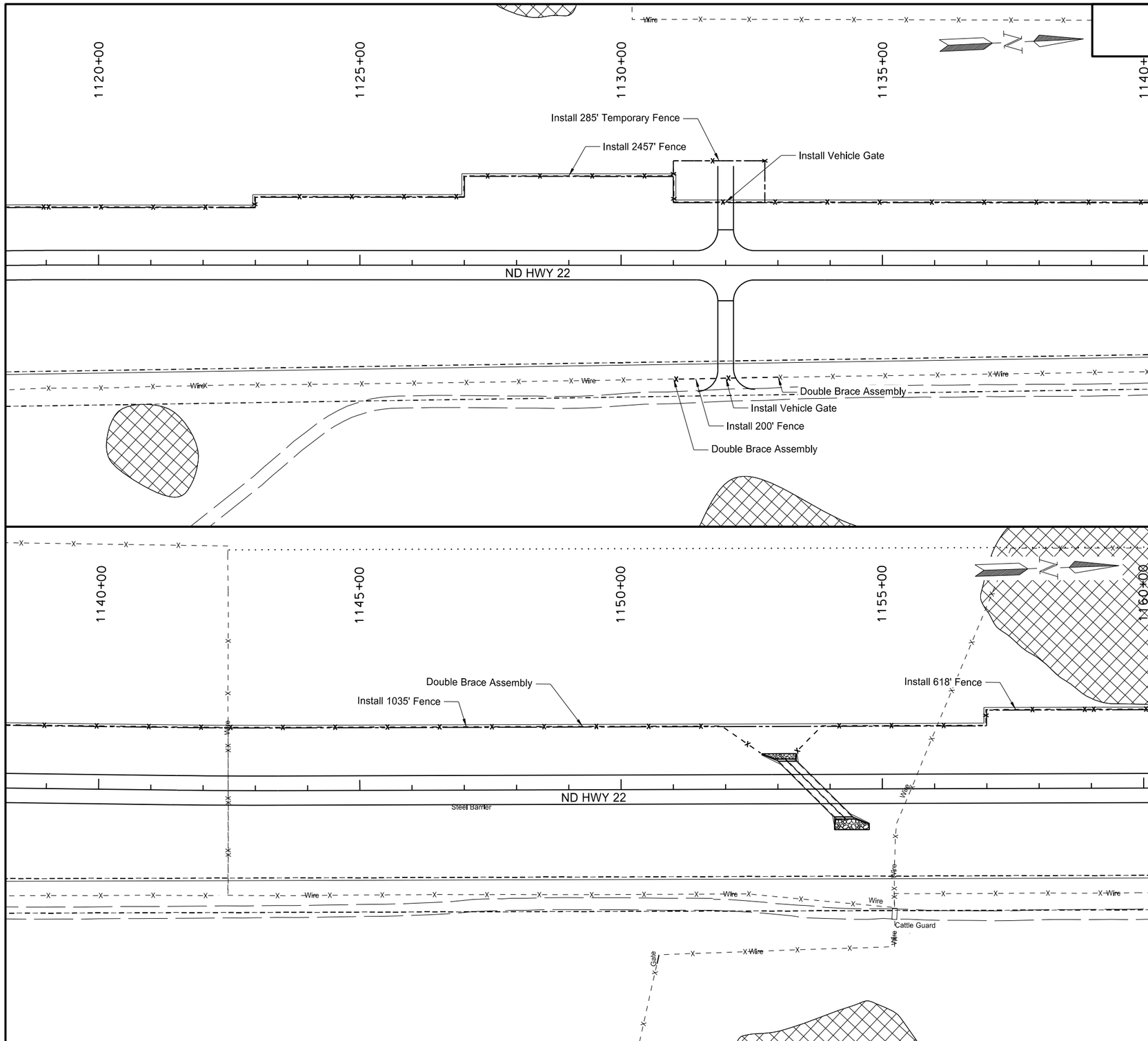
Fencing Layout

Sta 1079+00 to 1119+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	10



752-0320 FENCE BARBED WIRE 4 STRAND-STEEL POST

Sta	1131+01 Rt	to	1133+01 Rt	200 LF
Sta	1142+47 Lt	to	1152+67 Lt	1035 LF
Sta	1153+34 Lt	to	1159+00 Lt	618 LF
			Total=	1853 LF

752-0400 FENCE BARBED WIRE 5 STRAND

Sta	1119+00 Lt	to	1142+47 Lt	2457 LF
			Total=	2457 LF

752-0900 FENCE TEMPORARY INSTALL & REMOVE

Sta	1131+00 Lt	to	1132+75 Lt	285 LF
			Total=	285 LF

752-2100 GATE-VEHICLE

Sta	1132+00 Lt	1 EA
Sta	1132+01 Rt	1 EA
	Total=	2 EA

752-3150 CORNER ASSEMBLY BARBED WIRE-WOOD POST

Sta	1122+99 Lt	1 EA
Sta	1122+99 Lt	1 EA
Sta	1126+99 Lt	1 EA
Sta	1126+99 Lt	1 EA
Sta	1131+01 Lt	1 EA
Sta	1131+01 Lt	1 EA
Sta	1142+47 Lt	1 EA
Sta	1151+93 Lt	1 EA
Sta	1152+63 Lt	1 EA
Sta	1153+34 Lt	1 EA
Sta	1153+85 Lt	1 EA
Sta	1156+05 Lt	1 EA
Sta	1156+99 Lt	1 EA
Sta	1156+99 Lt	1 EA
	Total=	14 EA

752-4140 DOUBLE BRACE ASSEMBLY BARBED WIRE-WOOD POST

Sta	1131+01 Rt	1 EA
Sta	1133+01 Rt	1 EA
Sta	1149+27 Lt	1 EA
	Total=	3 EA

NOTE: FENCE BARBED WIRE 5 STRAND
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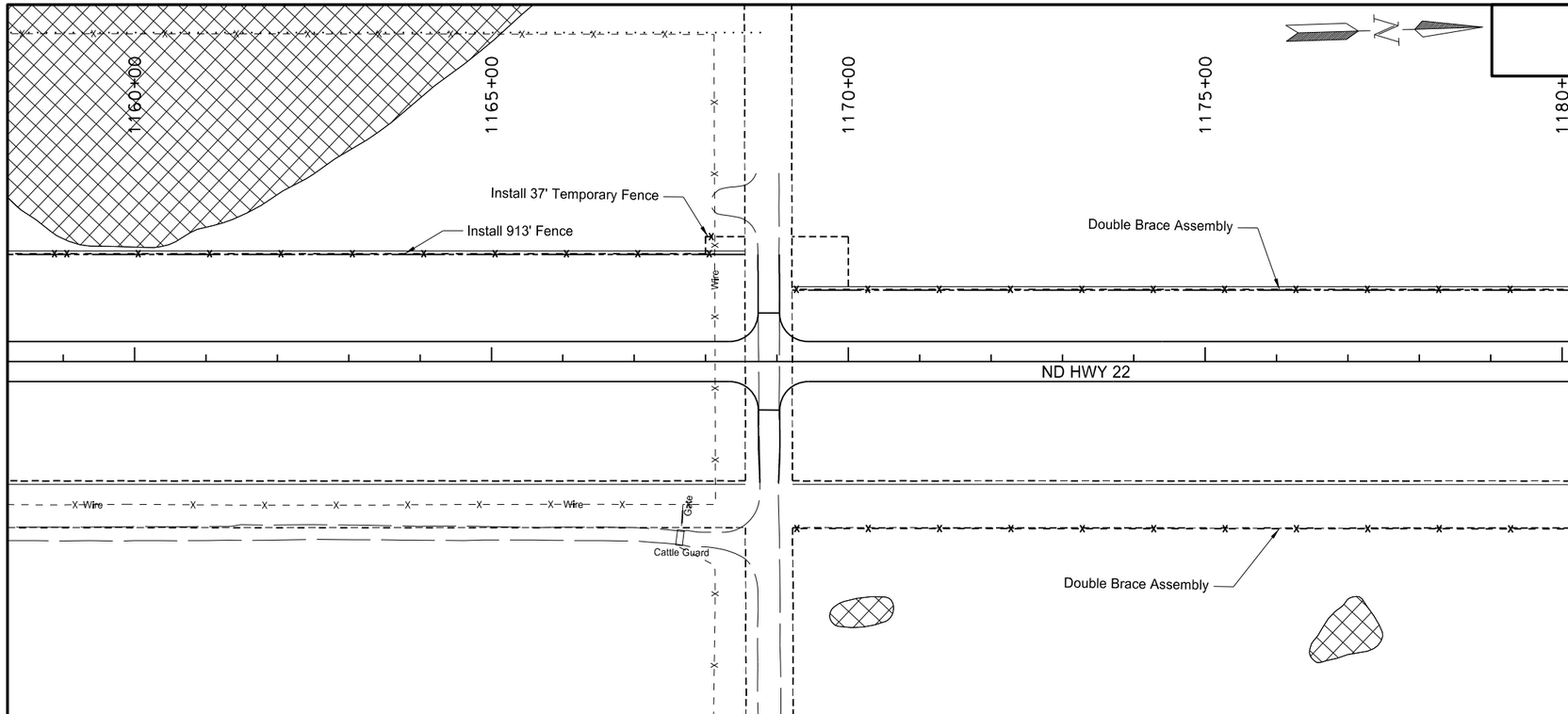
Fencing Layout

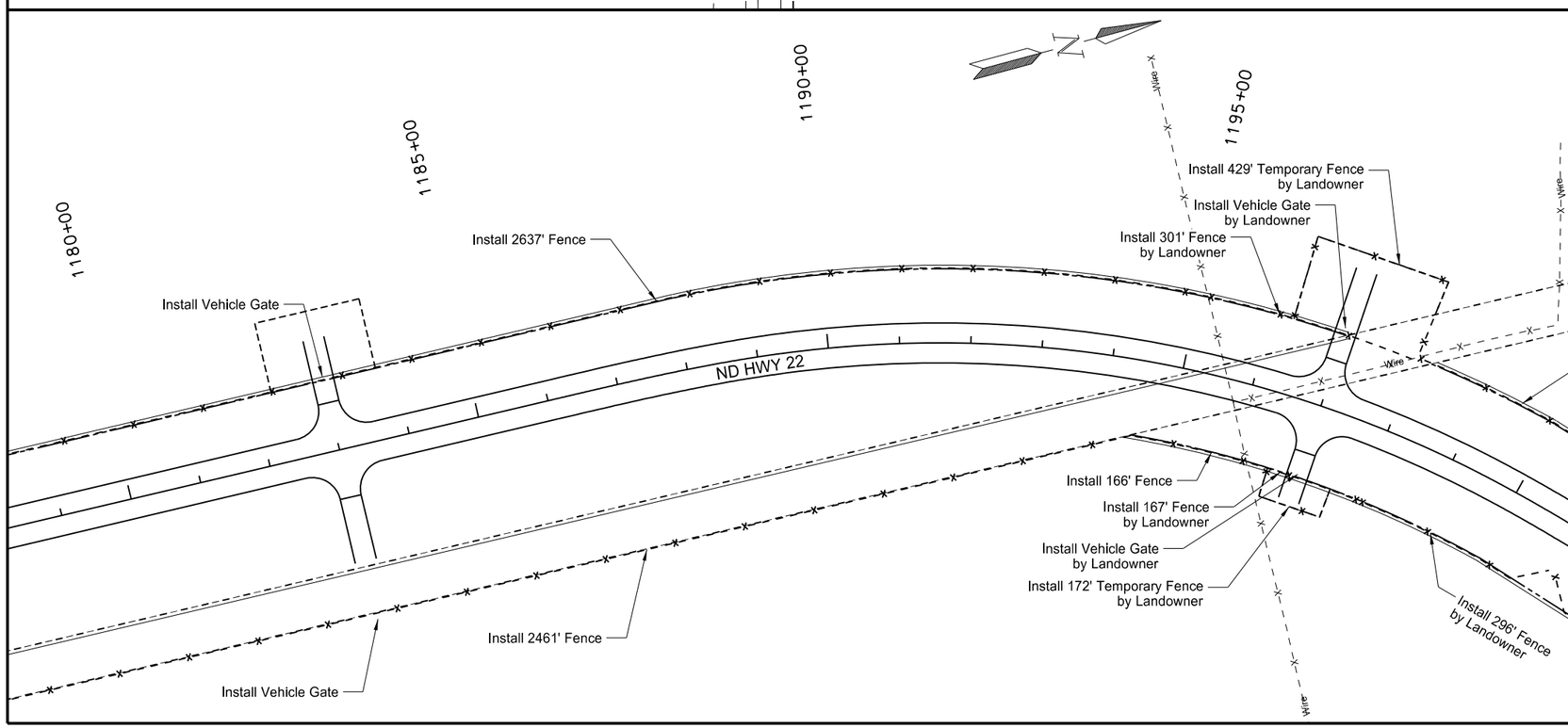
Sta 1119+00 to 1159+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	11





752-0320 FENCE BARBED WIRE 4 STRAND-STEEL POST

Sta	1159+00	Lt	to	1168+13	Lt	913 LF
Sta	1169+22	Lt	to	1195+13	Lt	2637 LF
Sta	1169+22	Rt	to	1194+41	Rt	2461 LF
Sta	1194+41	Rt	to	1196+21	Rt	166 LF
				Total=		6177 LF

752-0900 FENCE TEMPORARY INSTALL & REMOVE

Sta	1168+00	Lt	to	1168+13	Lt	37 LF
				Total=		37 LF

752-2100 GATE-VEHICLE

Sta	1183+00	Lt	1 EA
Sta	1183+00	Rt	1 EA
		Total=	2 EA

752-3150 CORNER ASSEMBLY BARBED WIRE-WOOD POST

Sta	1168+13	Lt	1 EA
Sta	1169+22	Lt	1 EA
Sta	1169+22	Rt	1 EA
Sta	1194+43	Rt	1 EA
		Total=	4 EA

752-4140 DOUBLE BRACE ASSEMBLY BARBED WIRE-WOOD POST

Sta	1176+04	Lt	1 EA
Sta	1176+04	Rt	1 EA
		Total=	2 EA

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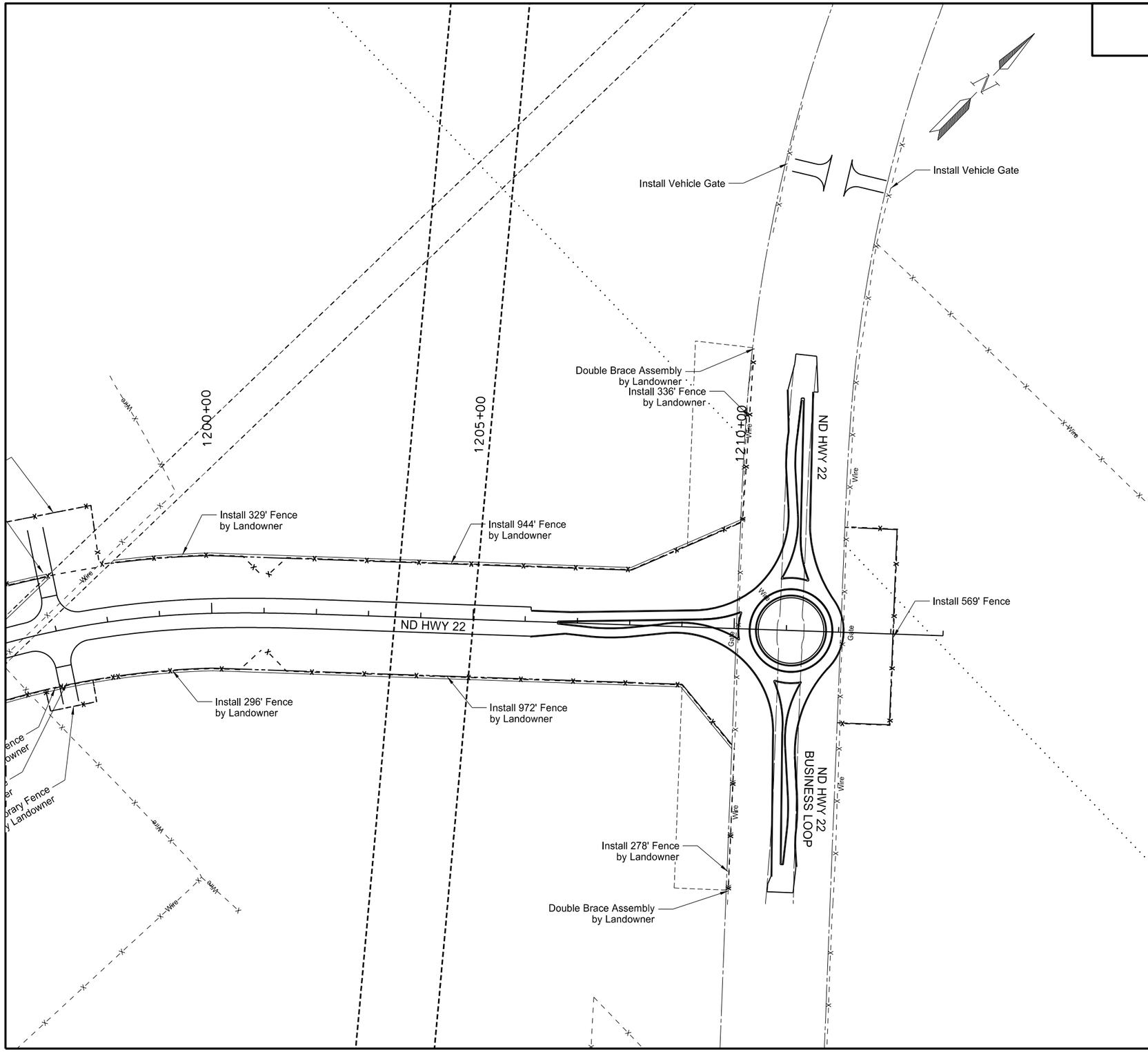
Fencing Layout

Sta 1159+00 to 1198+00

ND Hwy 22

Killdeer Bypass

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-SAP-5-022(110)104	80	12



752-0320 FENCE BARBED WIRE 4 STRAND-STEEL POST

Sta	1212+08 Rt to 1213+06 Lt		569 LF
		Total=	569 LF

752-2100 GATE-VEHICLE

Sta	2260+00 Lt		1 EA
Sta	2260+00 Rt		1 EA
		Total=	2 EA

752-3150 CORNER ASSEMBLY BARBED WIRE-WOOD POST

Sta	1212+08 Rt		1 EA
Sta	1212+10 Lt		1 EA
Sta	1213+04 Rt		1 EA
Sta	1213+06 Lt		1 EA
		Total=	4 EA

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Fencing Layout

Sta 1198+00 to 1214+00

ND Hwy 22

Killdeer Bypass