STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	21178	1	1

JOB # 10
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SOIB-7-002(163)019

DESIGN DATA - Jct. US Hwy 2 / US Hwy 2B (SB Right Turn Lane)				
Traffic	Average Daily			
Current 2016	Pass: 4,925	Trucks: 470	Total: 5,395	
Forecast 2036	Pass: 7,340	Trucks: 700	Total: 8,040	
Clear Zone Distance: 18 ft.		Design Speed: 40 mph		
Minimum Sight Dist. for Stopping: 305 ft.		Bridges: None		
Limited Access Control N/A				
Pavement Design Life 20 (years)				
Design Accumulated One-way 470 AADTT ESALs: 4,085,690				

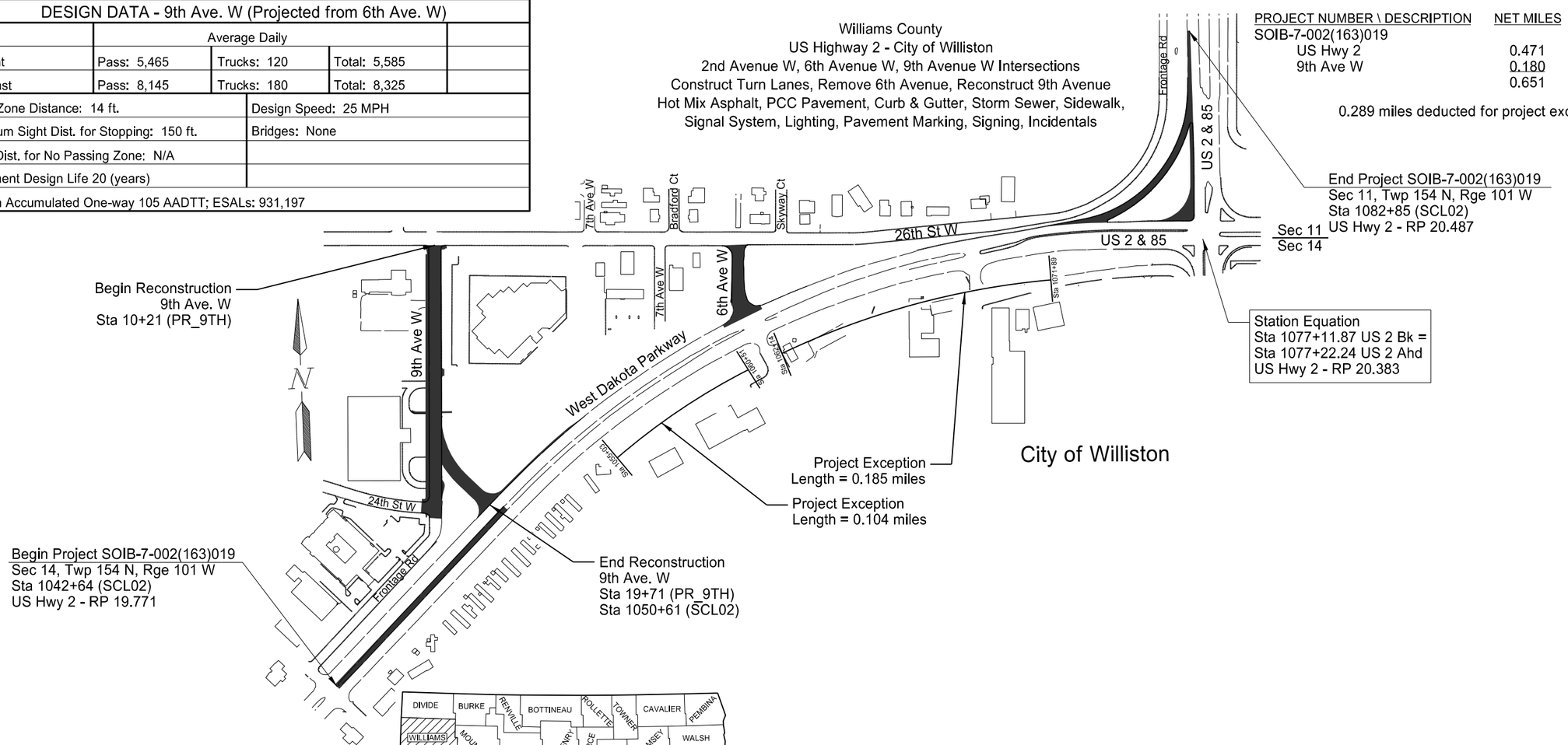
DESIGN DATA - 9th Ave. W (Projected from 6th Ave. W)				
Traffic	Average Daily			
Current	Pass: 5,465	Trucks: 120	Total: 5,585	
Forecast	Pass: 8,145	Trucks: 180	Total: 8,325	
Clear Zone Distance: 14 ft.		Design Speed: 25 MPH		
Minimum Sight Dist. for Stopping: 150 ft.		Bridges: None		
Sight Dist. for No Passing Zone: N/A				
Pavement Design Life 20 (years)				
Design Accumulated One-way 105 AADTT; ESALs: 931,197				

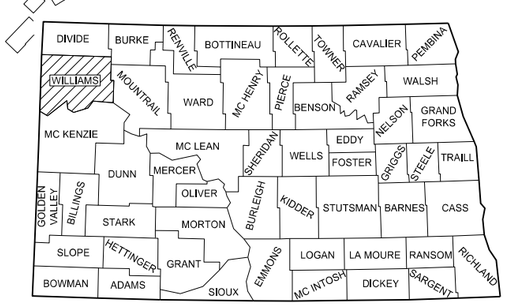
Williams County
US Highway 2 - City of Williston
2nd Avenue W, 6th Avenue W, 9th Avenue W Intersections
Construct Turn Lanes, Remove 6th Avenue, Reconstruct 9th Avenue
Hot Mix Asphalt, PCC Pavement, Curb & Gutter, Storm Sewer, Sidewalk,
Signal System, Lighting, Pavement Marking, Signing, Incidentals

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

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SOIB-7-002(163)019		
US Hwy 2	0.471	0.760
9th Ave W	0.180	0.180
	0.651	0.940

0.289 miles deducted for project exceptions





STATE COUNTY MAP

DESIGNERS

Travis Brossart /s/

Darell Arne /s/

Blaine Johanneson /s/

APPROVED DATE 4-14-16

Roger Weigel /s/
for 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 4-14-16

James Douglas Rath /s/
NDDOT DESIGN

This document was originally issued and sealed by James Douglas Rath, Registration Number PE- 4288, on 04/14/16 and the original document is stored at the North Dakota Department of Transportation

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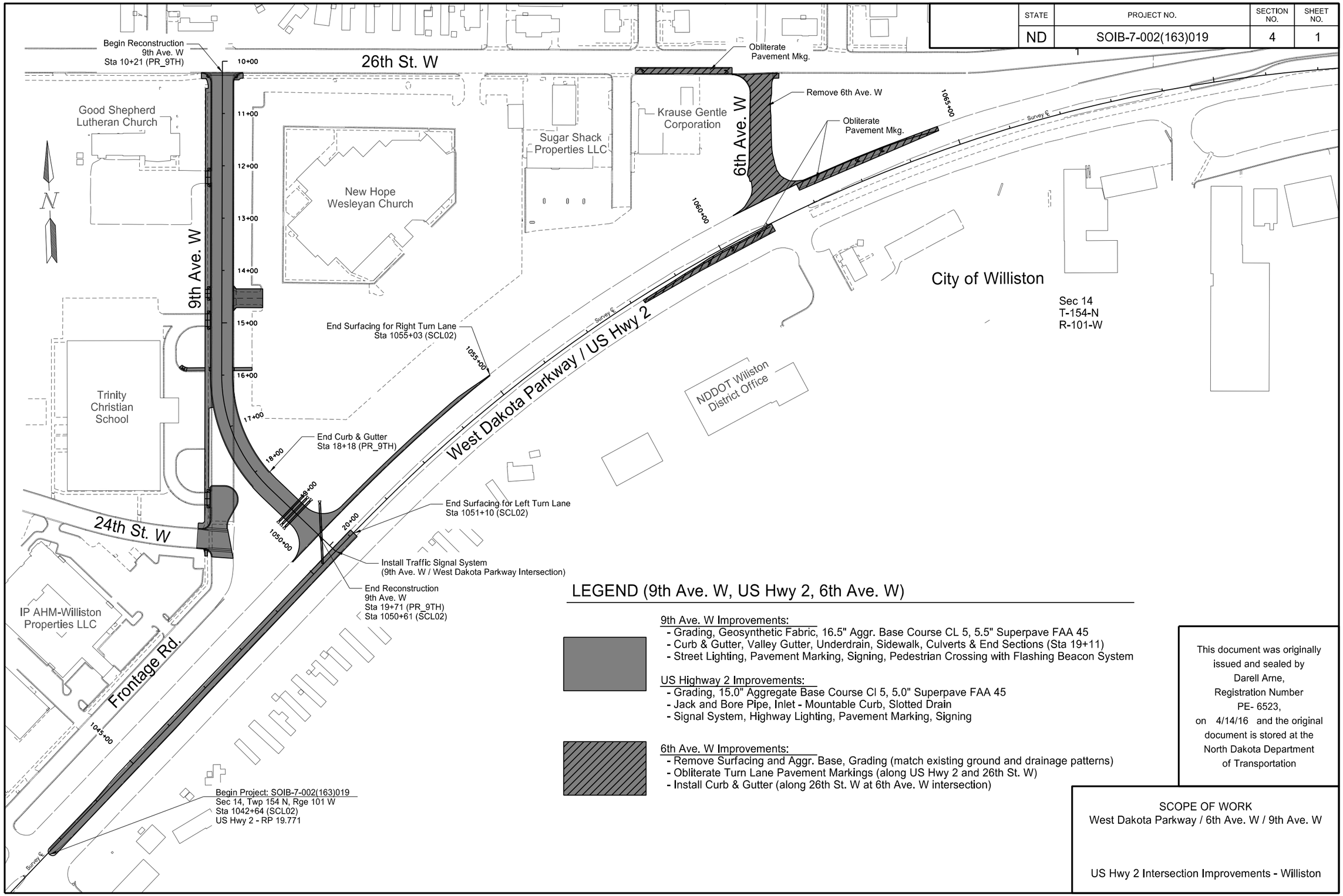

LEGEND (9th Ave. W, US Hwy 2, 6th Ave. W)

9th Ave. W Improvements:
- Grading, Geosynthetic Fabric, 16.5" Aggr. Base Course CL 5, 5.5" Superpave FAA 45
- Curb & Gutter, Valley Gutter, Underdrain, Sidewalk, Culverts & End Sections (Sta 19+11)
- Street Lighting, Pavement Marking, Signing, Pedestrian Crossing with Flashing Beacon System

US Highway 2 Improvements:
- Grading, 15.0" Aggregate Base Course Cl 5, 5.0" Superpave FAA 45
- Jack and Bore Pipe, Inlet - Mountable Curb, Slotted Drain
- Signal System, Highway Lighting, Pavement Marking, Signing

6th Ave. W Improvements:
- Remove Surfacing and Aggr. Base, Grading (match existing ground and drainage patterns)
- Obliterate Turn Lane Pavement Markings (along US Hwy 2 and 26th St. W)
- Install Curb & Gutter (along 26th St. W at 6th Ave. W intersection)

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SCOPE OF WORK
West Dakota Parkway / 6th Ave. W / 9th Ave. W

US Hwy 2 Intersection Improvements - Williston

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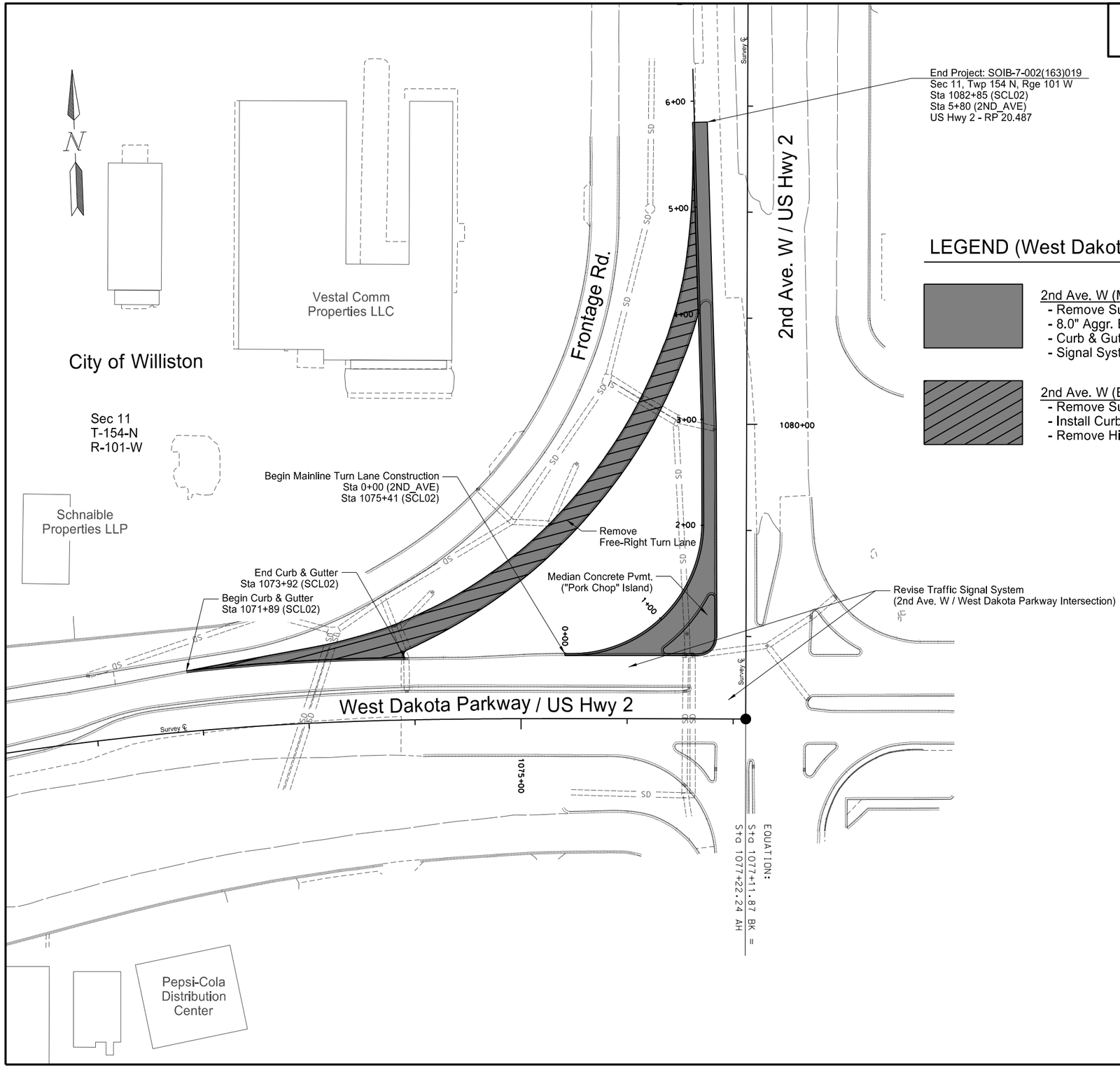

LEGEND (West Dakota Parkway / 2nd Ave. W Intersection)

2nd Ave. W (Mainline Roadway) Improvements:
- Remove Surfacing and Aggr. Base, Grading
- 8.0" Aggr. Base Course CL 5, 8.0" Non-Reinf Conc. Pavement CL AE - Doweled
- Curb & Gutter, Concrete Median Pavement, Storm Sewer
- Signal System Modification, Relocate Highway Lighting, Pavement Marking & Signing

2nd Ave. W (Existing SB Free Right Turn Lane) Improvements:
- Remove Surfacing and Aggr. Base, Grading (match existing ground and drainage patterns)
- Install Curb & Gutter (along West Dakota Parkway), Storm Sewer Modification
- Remove Highway Lighting

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SCOPE OF WORK
West Dakota Parkway / 2nd Ave. West Intersection

US Hwy 2 Intersection Improvements - Williston

NOTES

100-P01 COORDINATION OF PROJECTS: A number of projects within the vicinity of this project will be under contract during the 2016 construction season. It is the contractor's responsibility to coordinate his activities, schedules and traffic control with all other contractors working within the highway right of way. Projects known to be occurring in the vicinity of this project include:

- Reconstruction of REC Road (58th Street W) from 137th Ave NW to 6th Ave W.
- Reconstruction of 1st Ave. W. to 4th Ave. E. from 42nd St E. to 34th St E.
- Reconstruction of Frontage Road that ties into 24th St. W.

100-P02 WEEKLY PLANNING/REPORTING MEETING: Organize a weekly meeting to coordinate efforts between subcontractors, utilities, local authorities, and others.

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

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

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

a. North Dakota Department of Transportation
b. City of Williston
c. Emergency Services
d. Utilities
e. Subcontractors

105-P01 ORDER OF OPERATION - 9th AVE WEST AND 6th AVE WEST: Keep 6th Ave W. open to traffic until 9th Ave W. is reconstructed and open to traffic.

Reconstruct 9th Ave segment from the intersection with 26th St. W to Sta 17+00. Place the curb and gutter and bituminous surfacing. Reconstruct the sidewalk from 26th St. W to 24th St. W. Reconstruct the corner of 24th St and Frontage Road. Finish all work listed in this paragraph before September 6, 2016.

105-P02 ORDER OF OPERATION - INTERSECTION OF WEST DAKOTA PARKWAY AND 2nd AVE WEST: Keep the free right turn lane open to traffic until a new single right turn lane is constructed.

107-700 HAUL ROADS: The Engineer will not designate paved roads off the state system as haul roads.

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

202-P01 REMOVAL OF PAVEMENT: Removal of pavement consists of removing bituminous and concrete pavement, sidewalks, driveways, curb and gutter and aggregate base. The tonnage of "Removal of Pavement" is based on the existing typical sections shown in Section 30. The tonnage includes the entire concrete, bituminous surfacing and the aggregate base, except the bottom two inches of aggregate base. The bottom two inches of aggregate base is considered unsuitable and will be paid for as "Common Excavation – Type A."

Include the cost of the full depth vertical saw cuts adjacent to pavement removal areas, specified in Section 202.04 A "General", in the contract unit price for "Removal of Pavement."

203-010 SHRINKAGE: 25 percent additional volume is included for shrinkage in earth embankment.

203-P01 COMMON EXCAVATION: Common Excavation-Type A includes the bottom 2 inches of aggregate and earth below. Common Excavation will not be measured, but paid for as plan quantity.

203-P02 EXCAVATION: Perform all excavations under the proposed roadway with a backhoe with a smooth-cutting edge to minimize disturbance to underlying soils. Construction equipment will not be allowed to travel over the subgrade.

No scarification or compaction will be allowed on the bottom of subgrade.

203-P03 EXCESS EXCAVATION: Include costs for hauling and disposal of 2,056 CY of excess excavation resulting from the roadway regrading in the price bid for "Common Excavation – Type A."

Include costs for hauling and disposal of 936 CY of excess excavation resulting from removal of 6th Ave and 2nd Ave existing ramp in the price bid for "Common Excavation – Waste."

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

704-P01 TRAFFIC CONTROL: Provide traffic control consisting of a single lane closure and flagging. Provide additional devices at no additional cost to the Department.

- Traffic Control Phasing Layouts
- D-704-20, Layout Type G as the basis of the construction signing layout
- D-704-22, layouts Type K and L for construction trucks entering and exiting the roadway as needed
- D-704-25, Type V, W and X for traffic signal installation
- D-704-34, for one lane closures.

714-P01 PIPE POLYETHYLENE CORRUGATED PERFORATED 6IN DRAIN: Include all costs for the fabric, connections, pipe, labor, materials, and equipment in the unit price bid for "Pipe Polyethylene Corr Perf 6IN Drain."

722-P01 INLETS AND MANHOLES: All new inlets and manholes have been specified with a minimum 4-foot riser height. At inlets 3A and at manhole 4 the lowest pipe invert elevation is higher than the (RCP) pipe wall thickness above the base elevation of the structure. Fill void between inlet or manhole base and bottom of lowest pipe with Class AE-3 concrete, and then slope the inlet or manhole bottom to drain using either Class AE-3 concrete or mortar in accordance with the details shown on standard drawings D-722-2 and

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NOTES

D-722-5. Include the costs to accomplish this work in the unit price bid for the respective inlet or manhole pay item.

722-P02 ADJUST SPRINKLER SYSTEM: Use care to preserve the existing sprinkler system along 9th Ave W. The sprinkler system will be impacted by construction activities due to the placement of a new sidewalk, street illumination, pedestrian flashing beacon, and minor grading work. Repair the sprinkler system after the roadway work is done. Include all costs to repair the sprinkler system in the price bid for “Adjust Sprinkler System”.

There is an existing sprinkler system in the area between 2nd Ave W. and the existing slip ramp. Coordinate with the City to cap off sprinkler heads that are no longer needed.

Any additional repairs to the underground sprinkler system due to the negligence of the contractor will be at the contractor’s expense.

722-P03 CASTING CATCH BASIN – TYPE A: Remove the existing beehive casting located at Sta 1+07 (2ND_AVE chain) 26 LF right and replace it with the casting Type-A.

Include all equipment, materials, and labor necessary to remove the existing casting, install new casting, and adjust it to the final grade in the unit price bid for “Casting Catch Basin – Type A.”

722-P04 CASTING CATCH BASIN 6IN BEEHIVE: Remove the existing curb inlet castings located at Sta 1075+28 (SCL02 chain) 183 LF left and at Sta 3+22 (2nd_AVE chain) 57 LF left and replace them with the 6IN beehive castings.

Include all equipment, materials, and labor necessary to remove the existing casting, install new casting, and adjust it to the final grade in the unit price bid for “Casting Catch Basin 6IN Beehive.”

752-P01 TEMPORARY SAFETY FENCE: Provide 5’ wide ADA compliant pedestrian access in front of Trinity Christian School connecting it to the New Hope Church parking lot. Install a temporary safety fence to protect pedestrian access as directed by the engineer.

Include the cost of installing, maintaining, and removing temporary safety fence and temporary access in the contract unit price for “Temporary Safety Fence.”

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

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

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NOTES

SECTION 140

770-100 CONCRETE FOUNDATIONS: Install and tighten anchor bolts as specified in section 754.04 D.5, “Overhead Sign Structures”.

770-P01 LED LUMINAIRE: Provide luminaires that meet the following:

Light Source	LED
Light Output	15,000 lm to 19,000 lm
Driver	500 mA to 900 mA
Wattage	130W to 170W
Color Temperature	4000K ±350K
Operating Temperature Range	-40°C to +40°C
Luminaire Housing	Die Cast Aluminum
Vibration Testing	ANSI/NEMA C136.31 Level 2, 3 G
Surge Suppression Rating	ANSI/IEEE C62.41 Cat C
Outdoor rating for housing, wiring, and drivers	ANSI C136.25 IP-65
Photo Control on each luminaire	No
Tool-less Access	Yes
Qualified with DesignLights Consortium	Yes

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

The lighting system on US 2 (Dakota Parkway) was designed using these values:

Roadway Classification	Principal Arterial–Residential
Average Maintained Illuminance	0.8 foot-candles
Illuminance Uniformity Ratio (avg/min)	3.0:1
Minimum Illuminance	As uniformity ratio allows
Light Loss Factor	0.69

The lighting system on 9th Ave W was designed using these values:

Roadway Classification	Collector–Intermediate
Average Maintained Illuminance	0.8 foot-candles
Illuminance Uniformity Ratio (avg/min)	4.0:1
Minimum Illuminance	As uniformity ratio allows
Light Loss Factor	0.69

Provide one of the luminaires listed or an approved equal at the following intersections:

Company	Catalog Number
American Electric Lighting	ATB2 60BLEDE70 MVOLT R3
Philips	RFL-145W64LED4K-T-R3M-UNIV
GE Lighting	ERS2 18G140

Include all cost associated with the LED luminaire in the bid price for “Lighting System”.

770-P02 LIGHT STANDARD: Design the light standard base with a minimum of 4 anchor bolts. Install davit type galvanized light standards with 6’ mast arms.

SECTION 150

772-P01 VIDEO DETECTION SYSTEM: Provide a Peek Video Trak-IQ video detection system.

Include a video monitor in the controller cabinet for viewing the video.

Provide a spare video detection camera, video detection processor, and camera interface panel. Deliver the spare equipment to the City of Williston.

Include the cost of the video detection system, video monitor, and spare equipment in the item “Traffic Signals System”.

772-P02 CONTROLLER: Provide a Peek ATC-1000 controller. The traffic counting capability of the controller shall be fully operational.

Include the cost of the ATC controller in the item “Traffic Signals System”.

772-P03 ADDITIONAL CONDUIT: Install one additional 2-inch diameter conduit in the new controller foundation. Face the conduit northeast. Cap the conduit underground and cap the conduit in the controller cabinet with a 2” expandable metal plug and label which direction the conduit is facing. Include the cost of the additional conduit in the item “Traffic Signals System”.

772-P04 EMERGENCY VEHICLE PRE-EMPTION: The EVP equipment shall be fully compatible with the other EVP equipment used within the City of Williston. Supply a white confirmation light at the same location on the mast arm as the EVP detector.

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NOTES

772-P05 BATTERY BACK-UP: The signal controller shall be equipped with an "on-line" type Uninterruptible Power Supply (UPS) that provides power conditioning in both normal and backup mode. It shall be sized to provide backup power to the system for a minimum of 2 hours in full signalized operation and a minimum of 8 hours in flash operation. The UPS shall have aux contacts to put the system into flash operation. The UPS shall incorporate full power management and diagnostic function. The UPS shall be installed in a temperature and humidity controlled environment. All materials, labor and equipment necessary to furnish and install the battery back-up shall be included in the item "Traffic Signals System".

772-P06 PAINT / FINISH: Provide traffic signal components painted / finished in accordance with the following:

Transformer base – green
Pole – green
Mast arm - green
Luminaire extension – galvanized
Signal head mounting hardware – green
Signal housing – green

The green color is 14036 of the Federal standard No. 595.

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ENVIRONMENTAL COMMITMENTS

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

EC-1: Unavoidable permanent impacts will be mitigated onsite, adjacent to the project, or at a NDDOT approved mitigation site or bank in accordance with the mitigation guidance[2, 3].

ACTION REQUIRED /TAKEN: 0.00 acres of permanent USACE impacts to jurisdictional waters and 0.00 acres of permanent impacts to EO11990 wetlands will require mitigation. 0.07 acres of temporary impacts will result from construction. Temporary impact areas will be graded to preconstruction contours.

Wetland Impact Table

Wetland Number	Location	Cowardin Class.	Wetland Type	Wetland Size (acres)	Wetland Feature	USACE Jurisdictional Wetlands[1]	Wetland Impacts (acres)		USFWS Easement Impacts (acres)		Wetland Mitigation								
											Mitigation Required			Bank		Onsite			
							Temp.	Perm.	Temp.	Perm.	EO 11990	USACE	USFWS	Location	acres	Mitigation Location; Ratio	acres	Constructed Site #	Constructed size (acres)
1a	Sec. 35, T155N, R101W	PEMCx	Ditch	0.32	Artificial	Yes					N	N	N						
1b	Sec. 35, T155N, R101W	PEMC	Basin	0.16	Natural	Yes					N	N	N						
1c	Sec. 35, T155N, R101W	PEMCx	Ditch	0.1	Artificial	Yes					N	N	N						
2	Sec. 2, T154N, R101W	PEMAx	Ditch	0.36	Artificial	No					N	N	N						
3	Sec. 11, T154N, R101W	PEMAx	Ditch	0.12	Artificial	No					N	N	N						
4	Sec. 11, T154N, R101W	PEMCx	Ditch	0.03	Artificial	Yes					N	N	N						
5a	Sec. 14, T154N, R101W	PEMCx	Ditch	0.18	Artificial	No					N	N	N						
5b	Sec. 14, T154N, R101W	PEMCx	Ditch	0.17	Artificial	No					N	N	N						
5c	Sec. 14, T154N, R101W	PEMCx	Ditch	0.1	Artificial	Yes					N	N	N						
5d	Sec. 14, T154N, R101W	PEMCx	Ditch	0.91	Artificial	No	0.07	0.07			N	N	N						
			Totals	**2.45**			**0.07**	**0.07**	**0**	**0**					**0**		**0**		0

ENVIRONMENTAL COMMITMENTS

[1] A wetland Jurisdictional Determination was issued by the USACE on 1/25/2016; NWO-2016-0064-BIS.

[2] All impacts to natural wetlands (natural/jurisdictional and natural/non-jurisdictional), regardless of size, as well as impacts greater than 0.10 acre to artificial/jurisdictional wetlands require mitigation.

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

Summary Impact Table			
Total Permanent Impact Summary		Temporary Impacts and additional information	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD	0.00	Temporary JD	0.00
Natural/Non-JD	0.00	Non-JD Temporary	0.07
Artificial/JD	0.00	Permanent JD > 0.10	0.00
Artificial /Non-JD	0.07	Permanent OW	0
Total	**0.07**	Temporary OW	0

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE STATE FUNDS	MAINLINE CITY FUNDS	TOTAL
103	0100	CONTRACT BOND	L SUM	0.68		0.68
202	0136	REMOVAL OF PAVEMENT	TON	4,605		4,605
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	145		145
202	0230	REMOVAL OF INLETS	EA	5		5
203	0101	COMMON EXCAVATION-TYPE A	CY	4,318		4,318
203	0109	TOPSOIL	CY	2,309		2,309
203	0113	COMMON EXCAVATION-WASTE	CY	936		936
203	0119	TOPSOIL-IMPORTED	CY	472		472
203	0140	BORROW-EXCAVATION	CY	709		709
216	0100	WATER	M GAL	190		190
251	0100	SEEDING CLASS I	ACRE	2.98		2.98
253	0201	HYDRAULIC MULCH	ACRE	5.96		5.96
255	0102	ECB TYPE 2	SY	154		154
261	0112	FIBER ROLLS 12IN	LF	1,015		1,015
261	0113	REMOVE FIBER ROLLS 12IN	LF	475		475
302	0120	AGGREGATE BASE COURSE CL 5	TON	7,717		7,717
401	0050	TACK COAT	GAL	935		935
401	0060	PRIME COAT	GAL	1,760		1,760
430	0045	SUPERPAVE FAA 45	TON	2,107		2,107
430	1000	CORED SAMPLE	EA	12		12
430	6428	PG 64-28 ASPHALT CEMENT	TON	127		127
550	0300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	851		851
702	0100	MOBILIZATION	L SUM	0.68		0.68
704	0100	FLAGGING	MHR	1,000		1,000
704	1000	TRAFFIC CONTROL SIGNS	UNIT	3,112		3,112
704	1050	TYPE I BARRICADE	EA	2		2
704	1052	TYPE III BARRICADE	EA	22		22
704	1060	DELINEATOR DRUMS	EA	132		132
704	1067	TUBULAR MARKERS	EA	146		146
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	3		3
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	1,634		1,634
708	1530	INLET PROTECTION-FIBER ROLL 6IN	EA	6		6

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	8	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE STATE FUNDS	MAINLINE CITY FUNDS	TOTAL
708	1532	REMOVAL INLET PROTECTION-FIBER ROLL 6IN	EA	4		4
708	1540	INLET PROTECTION-SPECIAL	EA	7		7
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	7		7
709	0100	GEOSYNTHETIC MATERIAL TYPE G	SY	4,073		4,073
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	442		442
714	3151	HEADWALL-PRECAST CONCRETE 6IN	EA	2		2
714	4097	PIPE CONDUIT 15IN-STORM DRAIN	LF	40		40
714	4110	PIPE CONDUIT 30IN	LF	252		252
714	4166	PIPE CONDUIT 30IN-JACKED OR BORED	LF	70		70
714	6581	PIPE POLYETHYLENE CORR PERF 6IN DRAIN	LF	810		810
714	6590	PIPE PVC 6IN DRAIN	LF	60		60
720	0125	ALIGNMENT MONUMENTS	EA	2		2
720	0130	IRON PIN R/W MONUMENTS	EA	12		12
722	0100	MANHOLE 48IN	EA	1		1
722	1100	MANHOLE RISER 48IN	LF	4		4
722	3470	CASTING CATCH BASIN-TYPE A	EA	1		1
722	3475	CASTING CATCH BASIN 6IN BEEHIVE	EA	2		2
722	3510	INLET-TYPE 2	EA	2		2
722	3520	INLET-TYPE 2 DOUBLE	EA	1		1
722	3713	INLET SPECIAL MOUNTABLE-TYPE B 48IN	EA	1		1
722	3910	INLET SLOTTED DRAIN 15IN	LF	30		30
722	6160	ADJUST INLET	EA	3		3
722	6200	ADJUST MANHOLE	EA	4		4
722	6240	ADJUST UTILITY APPURTENANCE	EA	9		9
722	6241	ADJUST SPRINKLER SYSTEM	L SUM	1		1
748	0140	CURB & GUTTER-TYPE I	LF	2,952		2,952
748	1020	VALLEY GUTTER 36IN	SY	7		7
748	1030	VALLEY GUTTER 72IN	SY	97		97
750	0110	SIDEWALK BRICK PATTERN	SY	136		136
750	0115	SIDEWALK CONCRETE 4IN	SY	780		780
750	0200	CONCRETE MEDIAN PAVING	SY	150		150
750	1000	DRIVEWAY CONCRETE	SY	357		357

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	8	3

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE STATE FUNDS	MAINLINE CITY FUNDS	TOTAL
750	2115	DETECTABLE WARNING PANELS	SF	74		74
752	0911	TEMPORARY SAFETY FENCE	LF	190		190
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	201		201
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	23		23
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	378		378
754	0592	RESET SIGN PANEL	EA	2		2
754	0805	OBJECT MARKERS - CULVERTS	EA	8		8
762	0112	EPOXY PVMT MK MESSAGE	SF	294		294
762	0113	EPOXY PVMT MK 4IN LINE	LF	6,366		6,366
762	0114	EPOXY PVMT MK 6IN LINE	LF	77		77
762	0115	EPOXY PVMT MK 8IN LINE	LF	1,981		1,981
762	0117	EPOXY PVMT MK 24IN LINE	LF	285		285
766	0100	MAILBOX-ALL TYPES	EA	1		1
770	0001	LIGHTING SYSTEM	EA	1		1
770	4525	REVISE LIGHTING SYSTEM	EA	1		1
772	0001	TRAFFIC SIGNALS SYSTEM	EA	1		1
772	2120	FLASHING BEACON-POST MOUNTED-SCHOOL	EA		1	1
772	2904	REVISE TRAFFIC SIGNAL SYSTEM	EA	1		1

MATERIALS

AGGREGATE BASE COURSE CL 5 @ 1.875 TON/CY
TACK COAT @ 0.05 GAL/SY per lift
PRIME COAT @ 0.25 GAL/SY
SUPERPAVE FAA 45 @ 2 TON/CY
PG 64-28 ASPHALT CEMENT @ 6.0% SUPERPAVE FAA 45

WATER

25 MGAL/MILE for Dust Palliative
20 GAL/TON for Aggregate Base Course Cl 5
10 GAL/CY for Embankment

REMOVAL OF PAVEMENT

Concrete @ 2.0 TON/CY
Bituminous Pavement @ 2.0 TON/CY
Base Material @ 1.875 TON/CY
Curb & Gutter removal based on 1.32 SF cross sectional area @ 2.0 TON/CY

SPEC	CODE	BID ITEM	UNIT	QUANTITY
754	0805	**OBJECT MARKERS - CULVERTS**		
		Sta 18+98 to 19+14 (PR_9TH) - Triple 30" CL	EA	4
		Sta 1050+66 (SCL02) - 30" CL Outlet	EA	1
		Sta 1075+28 (SCL02) - New BI (183' Lt)	EA	1
		Sta 1080+03 (SCL02) - Existing BI (65' Lt)	EA	1
		Sta 1080+25 (SCL02) - New BI (99' Lt)	EA	1

766-0100 MAILBOX - ALL TYPES

Station	Type	Work
12+39 - Rt (PR_9TH)	Single	Replace

430-1000 CORED SAMPLE

Specification Section	A Distance (Ft) ÷ 2000	B Lanes	C Lifts	D Sublots (A x B x C)	Quantity (D x 2)	Quantity (1 per mile)	Unit
430.04 I.2.b(1). "General"							
9TH AVENUE Mainline - Sta 10+21 to Sta 19+71	1	2	3	6	12	N/A	EA
430.04 I.2.b(2) "Pavement Thickness Determination Cores"					N/A	0	EA
				Total	**12**	**0**	**EA**

OBLITERATION OF PAVEMENT MARKING

704-1500 OBLITERATION OF PAVEMENT MARKING

Location - US 2	Type	Quantity	Unit
Eastbound Median Edgeline - Sta 1042+57 to Sta 1051+10	4" yellow edge line	285	SF
Westbound Median Edgeline - Sta 1042+57 to Sta 1051+10	4" yellow edge line	285	SF
Westbound Outside Edgeline - Sta 1049+89 to Sta 1055+75	4" white edge line	196	SF
Eastbound Median Edgeline - Sta 1058+00 to Sta 1062+20	4" yellow edge line	140	SF
Eastbound Median Channel Line - Sta 1059+45 to Sta 1061+06	8" channel line	108	SF
Eastbound Median ONLY Message - Sta 1059+70	ONLY Message	22	SF
Eastbound Median Arrow Message - Sta 1060+20	Left Arrow	16	SF
Westbound Outside Edgeline - Sta 1060+00 to Sta 1065+00	4" white edge line	167	SF
Westbound Outside Channel Line - Sta 1061+84 to Sta 1063+61	8" channel line	118	SF
Westbound Outside Arrow Message - Sta 1063+06	Right Arrow	16	SF
Westbound Outside Arrow Message - Sta 1063+56	Right Arrow	16	SF
Southbound Outside Edgeline - Sta 1082+85 to Sta 1084+30	4" white edge line	49	SF
TOTAL		**1,418**	**SF**
Location - 26th Street	Type	Quantity	Unit
Eastbound Lane Line - Sta 20+51 to Sta 27+15	4" white lane line (10' line, 30' skip)	56	SF
Eastbound Channel Line - Sta 27+86 to Sta 29+68	8" channel line	122	SF
Eastbound Outside Arrow Message - Sta 28+04	Right Arrow	16	SF
Eastbound Outside Arrow Message - Sta 29+64	Right Arrow	16	SF
TOTAL		**210**	**SF**
Location - 9th Avenue	Type	Quantity	Unit
New Hope Church Parking Lot - Sta 15+88 Lt	4" yellow line (parking space)	6	SF
TOTAL		**6**	**SF**

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BASIS OF ESTIMATE

US Hwy 2 Intersection Improvements - Williston

AGGREGATE BASE COURSE CL 5 SUMMARY

Location	Removal of Aggregate (TON)	Removal of HBP (TON)	Removal of Concrete (TON)	Removal of Curb & Gutter (TON)	Material (Aggr., Bit., Conc. & Curb) to be removed (TON) Pay Item	Aggregate Base Course Cl 5 Required (TON) Pay Item
	A	B	C	D	E	F
9TH AVENUE - Sta 10+21 to Sta 19+50 (PR_9TH)	891	950	202	162	2,205	4,533
*9TH AVENUE - SOUTH SCHOOL EXIT	0	0	0	0	0	658
US 2 LEFT TURN LANE - Sta 1042+64 to Sta 1051+10 (SCL02)	83	81	0	0	164	1,345
US 2 RIGHT TURN LANE - Sta 1049+89 to Sta 1055+03 (SCL02)	28	28	0	0	56	687
6TH AVENUE REMOVAL AREA	474	434	0	23	931	0
2ND AVENUE - Sta 1071+89 to Sta 1082+85 (SCL02)	557	95	414	183	1,249	494
TOTAL	2,033	1,588	616	368	**4,605**	**7,717**

Note: This is not a balance sheet. The contractor must balance their own materials. Material may not be available when needed.
*The removal quantites in this area are included in the 9TH AVENUE mainline location.

EARTHWORK SUMMARY

Location	Common Excavation - Type A (CY) Pay Item	Embankment (CY) *	Excess Excavation (CY)	Common Excavation - Waste (CY) Pay Item	Borrow - Excavation (CY) Pay Item	Topsoil from Stripping (CY) Pay Item	Topsoil Imported (CY) Pay Item
	A	B	C = A - B (if > 0)	D = A - B (if > 0)	E = B - A (if > 0)	F	G
9TH AVENUE - Sta 10+21 to Sta 19+50	1882.2	866.4	1016	0	0	586	0
9TH AVENUE - SOUTH SCHOOL EXIT	275.0	0.0	275	0	0	82	0
US 2 LEFT TURN LANE - Sta 1042+64 to Sta 1051+10	450.1	0.2	450	0	0	243	0
US 2 RIGHT TURN LANE - Sta 1049+89 to Sta 1055+03	93.1	801.9	0	0	709	382	0
6TH AVENUE REMOVAL - Sta 0+25 to Sta 1+60	609.9	11.5	0	598	0	182	217
2ND AVENUE EXISTING RAMP REMOVAL AREA (~550 LF)	564.5	227.4	0	337	0	538	255
2ND AVENUE - Sta 0+00 to Sta 5+80	443.5	128.9	315	0	0	296	0
TOTALS =	**4,318**	2,036	2,056	**936**	**709**	**2,309**	**472**

*Includes 25% Shrinkage in Earth Embankment.

Note: This is not a balance sheet. The contractor must balance their own materials.

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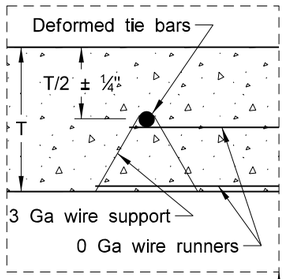
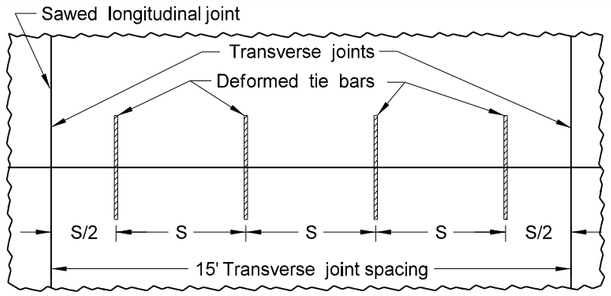
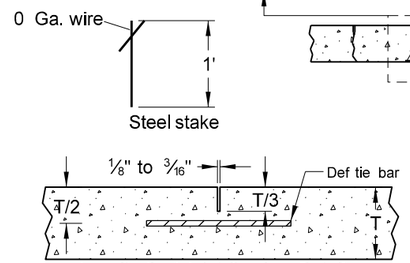
AGGREGATE BASE COURSE CL 5
& EARTHWORK SUMMARY TABLES

US Hwy 2 Intersection Improvements - Williston

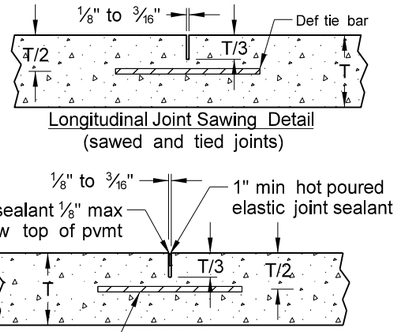
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	20	1



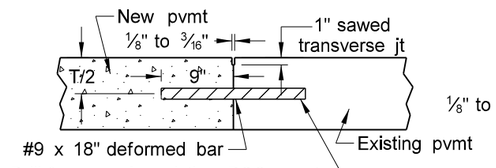




Longitudinal Tie Bar Assembly
(One unit shown)

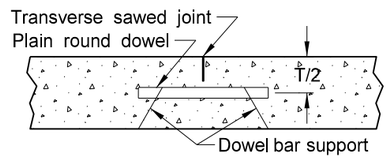


Longitudinal Joint Sawing Detail
(sawed and tied joints)

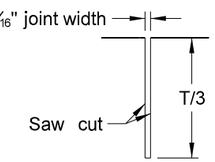


Deformed Bar Installation (2'-0" c to c)
(Transverse Joints)

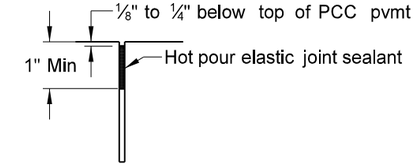
Longitudinal Joint Sealing Detail
(sawed and tied joints)



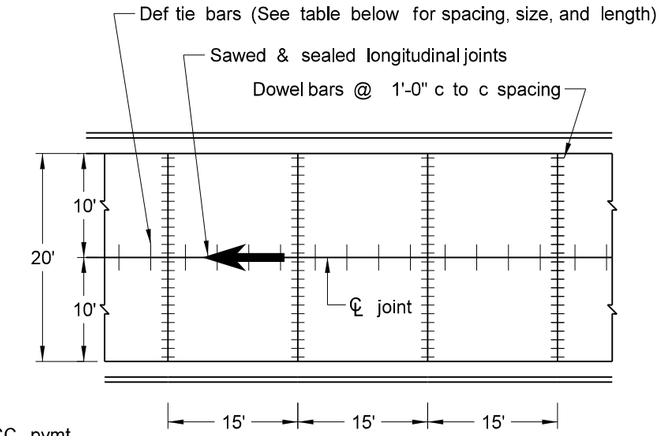
Doweled Transverse Joint



Transverse Joint Sawing



Transverse Joint Sealing



Right Turn Lane Joints
15' joint spacing

Notes:

1. S = Tiebar spacing
2. T = Pavement thickness
3. Place dowels in ramp tapers also.
4. Place no tie bar within 15" of a transverse joint.

Grade 40 Longitudinal Joint Tie Bars															
PCC Depth	8"	8 1/2"	9"	9 1/2"	10"	10 1/2"	11"	11 1/2"	12"	12 1/2"	13"	13 1/2"	14"	14 1/2"	15"
Right Turn Lane Centerline															
Bar Size x Length (S=30")	#5 x 30"							#6 x 36"							
Bar Size x Length (S=45")	#6 x 36"								Grade 60 Required						

Grade 60 Longitudinal Joint Tie Bars															
PCC Depth	8"	8 1/2"	9"	9 1/2"	10"	10 1/2"	11"	11 1/2"	12"	12 1/2"	13"	13 1/2"	14"	14 1/2"	15"
Right Turn Lane Centerline															
Bar Size x Length (S=30")	#4 x 36"						#5 x 42"								
Bar Size x Length (S=45")	#5 x 42"								#6 x 48"						

Transverse Joint Dowel Bars

Joint Location	Dia X Length
Right Turn Lane	1.25" X 18"

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PCC Pavement - Perpendicular Joints@15' Spacing

US Hwy 2 Intersection Improvements - Williston

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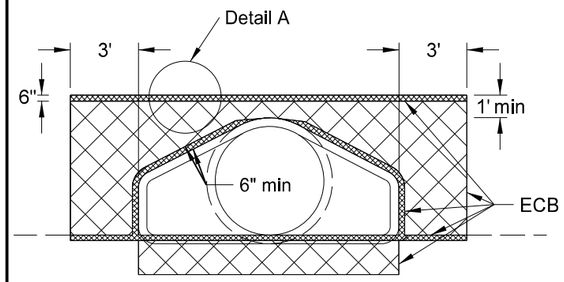
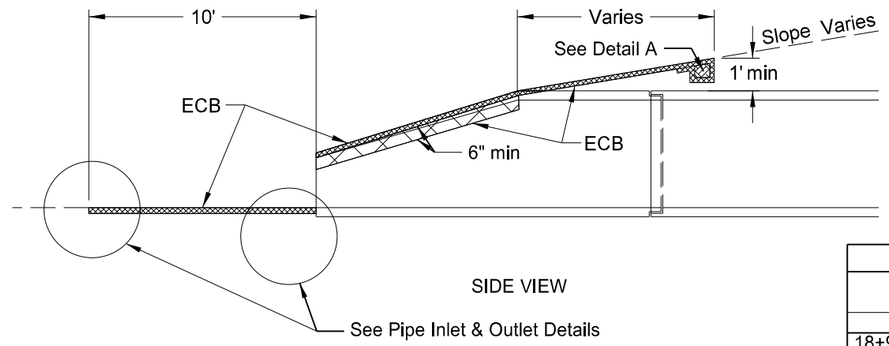
ND	SOIB-7-002(163)019	20	2

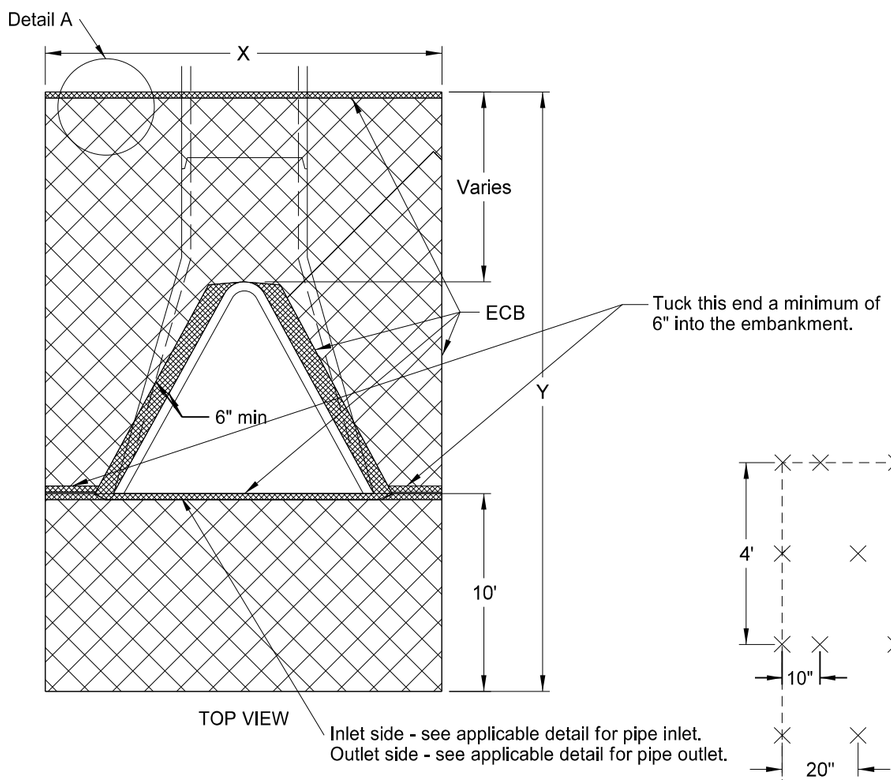


FRONT VIEW



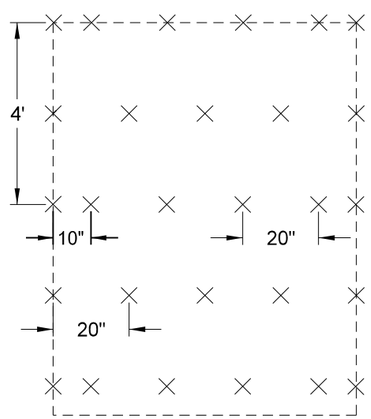
SIDE VIEW

Erosion Control Blanket (ECB)								
Location to be Protected	Culvert Type	Pipe Diam	No	Unit Quantity	Total Quantity			
					Type 1	Type 2	Type 3	Type 4
Station	Appr/CL	(Inch)		(SY)	(SY)	(SY)	(SY)	(SY)
18+98 - PR_9TH	CL	30	2	22		44		
19+06 - PR_9TH	CL	30	2	22		44		
19+14 - PR_9TH	CL	30	2	22		44		
1050+66 - SCL02	CL - Skewed	30	1	22		22		
	Total (SYs)					154		



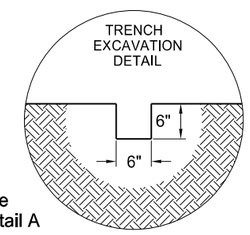
TOP VIEW

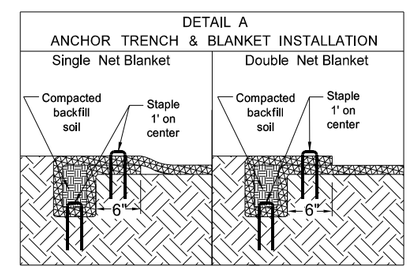
NOTE: Tuck the ECB a minimum of 6" into the embankment (against the flared end section) around the opening of the flared end section.



STAPLE PATTERN

CENTERLINE CULVERTS									
DIA	X	Y	Surface area to be protected	ECB	DIA	X	Y	Surface area to be protected	ECB
In	Ft	Ft	SF	SY	In	Ft	Ft	SF	SY
24	10.5	19.6	193.1	22	24	10.5	27.6	172.1	20
27	11.0	20.0	204.3	23	27	11.0	18.0	182.3	21
30	11.6	20.5	218.3	25	30	11.6	18.5	195.1	22
36	12.7	21.2	242.1	27	36	12.7	19.2	216.7	24
42	13.3	21.2	251.8	28	42	13.3	19.2	225.2	25
48	13.8	22.0	265.6	30	48	13.8	20.0	238.0	27
54	14.5	21.5	273.7	31	54	14.5	19.5	244.7	28
60	15.0	21.0	278.3	31	60	15.0	19.0	248.3	28
66	15.6	22.0	295.7	33	66	15.6	20.0	264.5	30
72	16.2	22.5	309.2	35	72	16.2	20.5	276.8	31
Note: Quantities based on 6:1 slope.					Note: Quantities based on 4:1 slope.				





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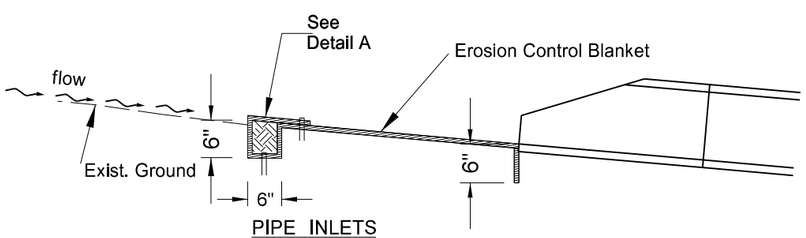
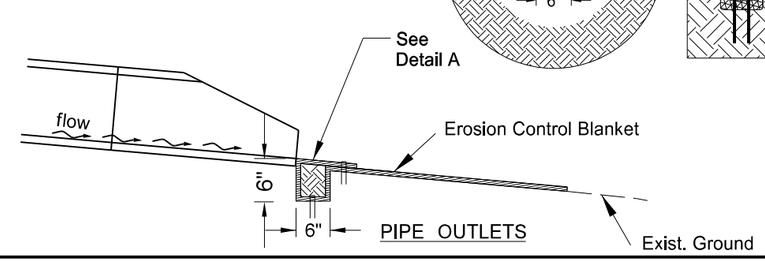


PIPE INLETS



PIPE OUTLETS

Erosion Control at Culvert Flared End Sections

US Hwy 2 Intersection Improvements - Williston

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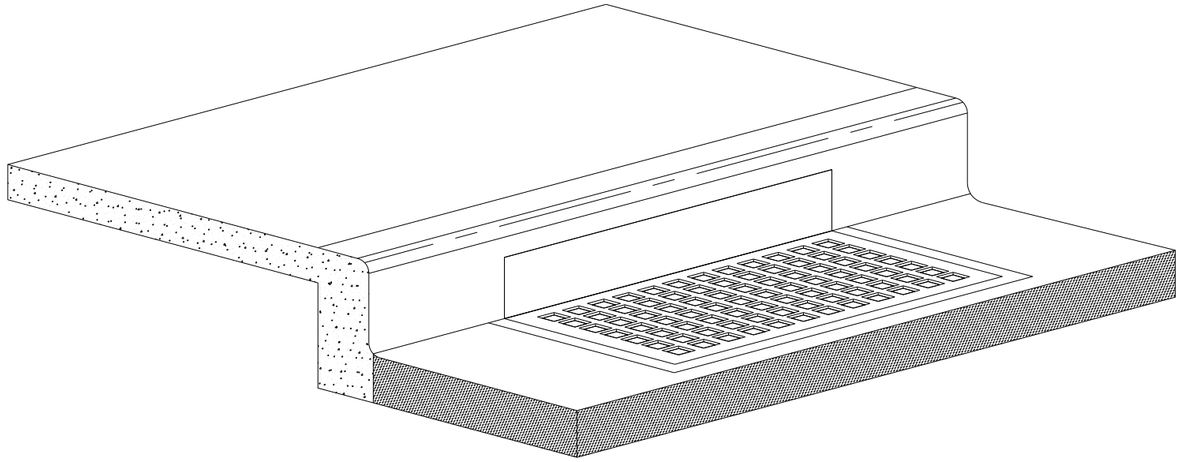
ND	SOIB-7-002(163)019	20	3



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.

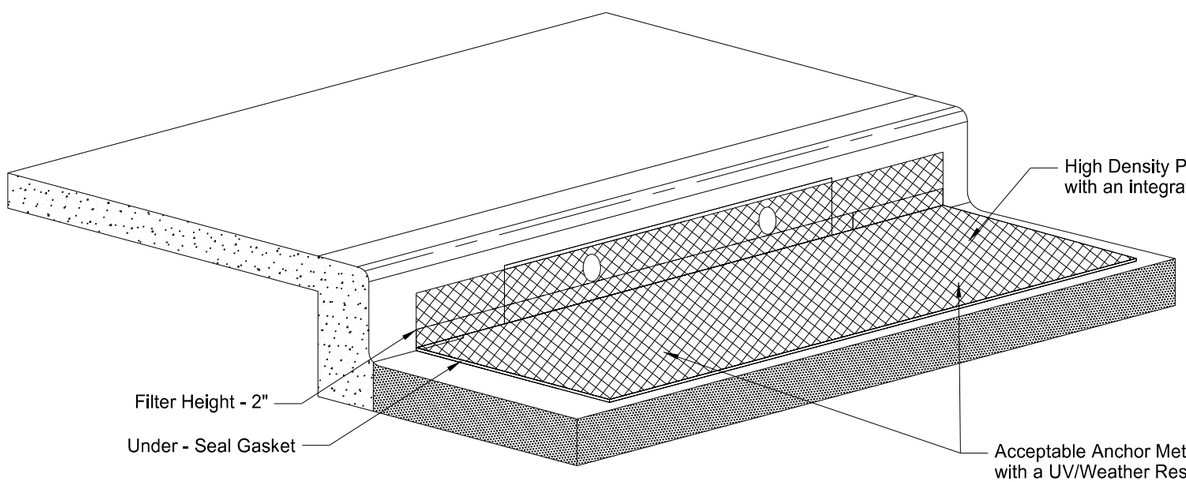
3. Anchor the device so that water cannot flow behind it.

General Notes:

1. Manufactured alternatives may be substituted with the approval of the Engineer.

2. No material should fall into the inlet when removing or maintaining the inlet protection. Remove any material that falls into the inlet immediately.

3. Use (and reuse) inlet protection as needed to prevent material from entering inlets as the work progresses through the project.



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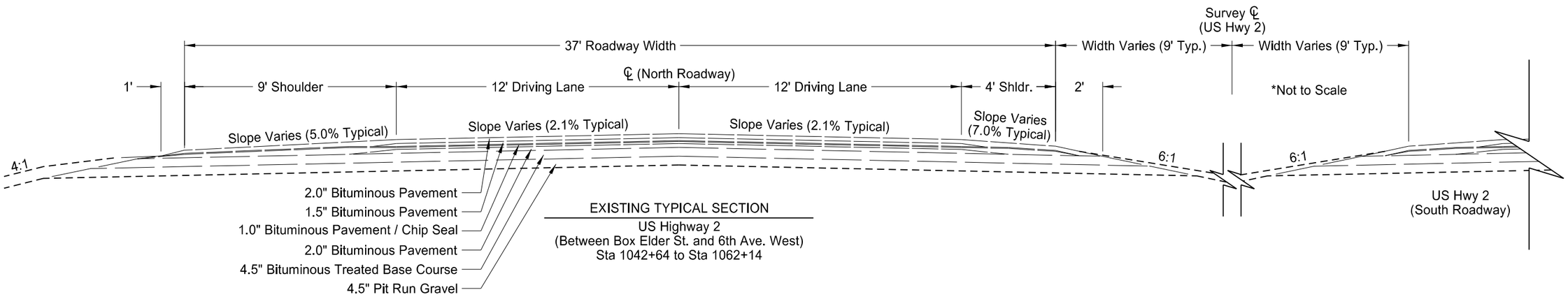
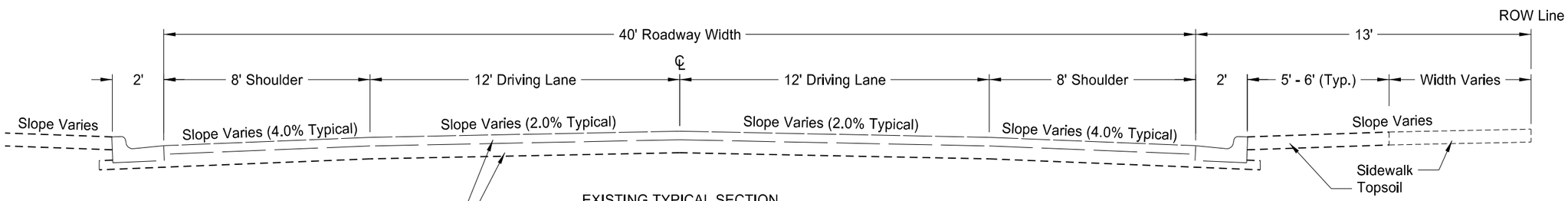
Inlet Protection Device

US Hwy 2 Intersection Improvements - Williston

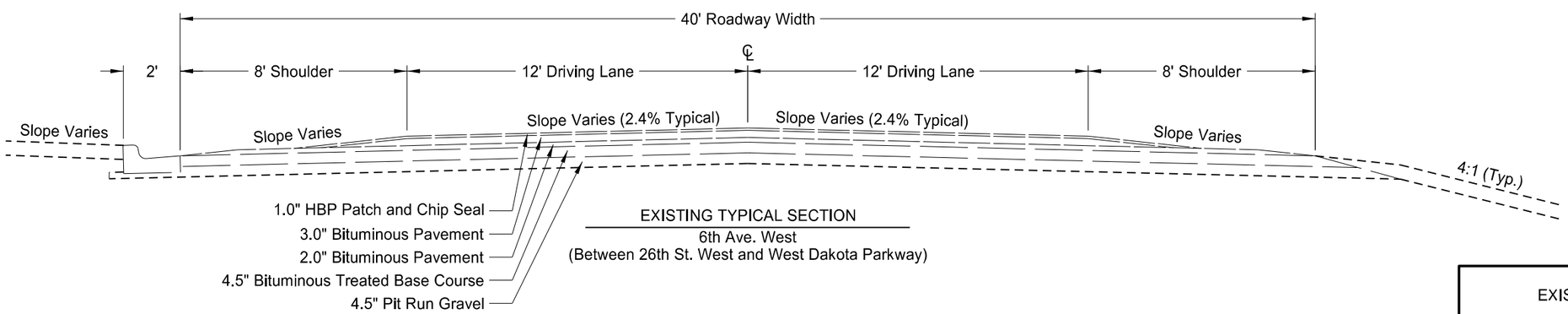
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	30	1



EXISTING TYPICAL SECTION
US Highway 2
(Between Box Elder St. and 6th Ave. West)
Sta 1042+64 to Sta 1062+14



EXISTING TYPICAL SECTION
9th Ave. West
(Between 26th St. West and 24th St. West)
Sta 10+21 to Sta 18+85



EXISTING TYPICAL SECTION
6th Ave. West
(Between 26th St. West and West Dakota Parkway)

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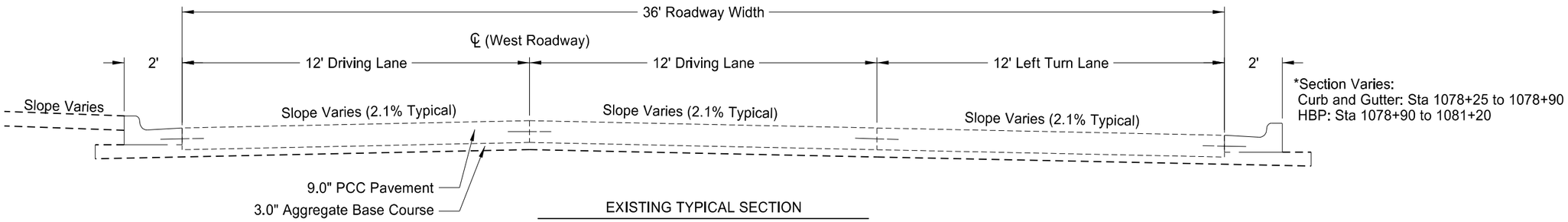
EXISTING TYPICAL SECTIONS

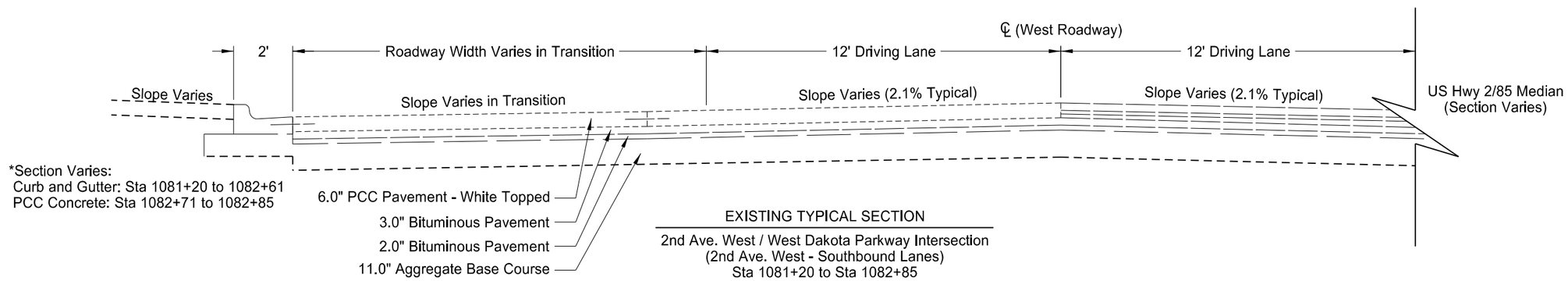
US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	30	2



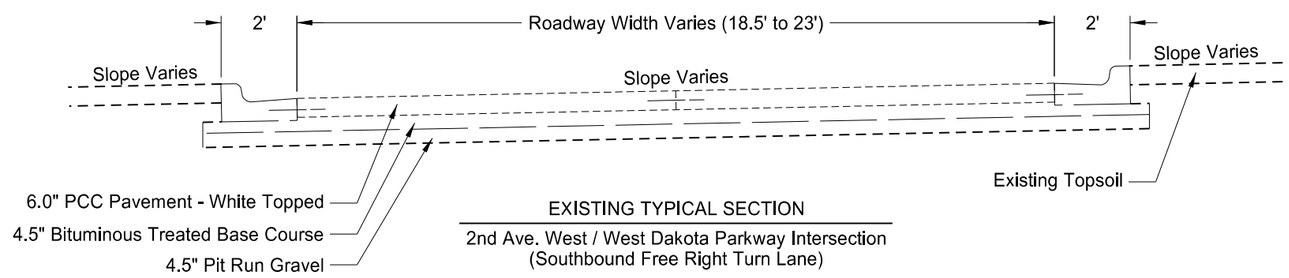
EXISTING TYPICAL SECTION

2nd Ave. West / West Dakota Parkway Intersection
(2nd Ave. West - Southbound Lanes)
Sta 1078+00+ to Sta 1081+20



EXISTING TYPICAL SECTION

2nd Ave. West / West Dakota Parkway Intersection
(2nd Ave. West - Southbound Lanes)
Sta 1081+20 to Sta 1082+85



EXISTING TYPICAL SECTION

2nd Ave. West / West Dakota Parkway Intersection
(Southbound Free Right Turn Lane)

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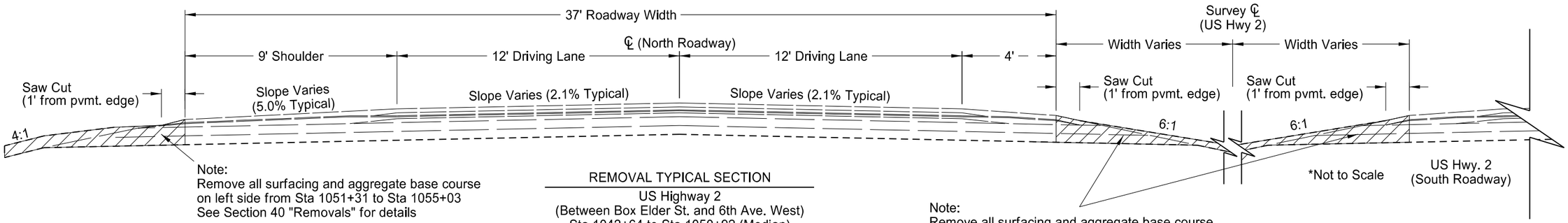
EXISTING TYPICAL SECTIONS

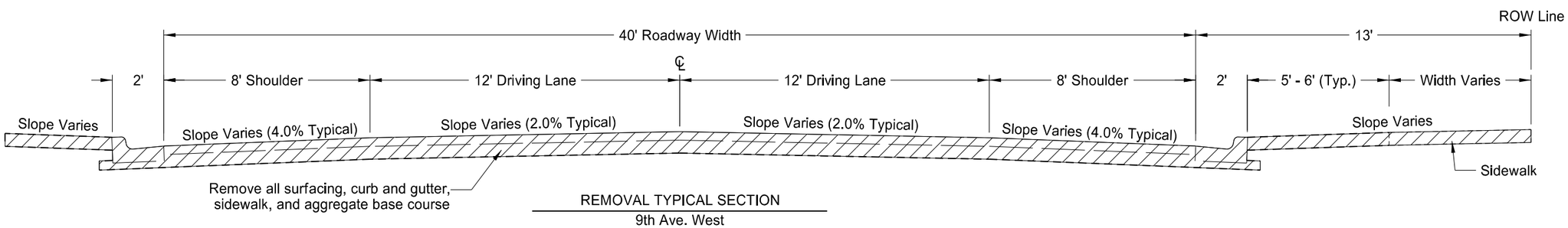
US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	30	3



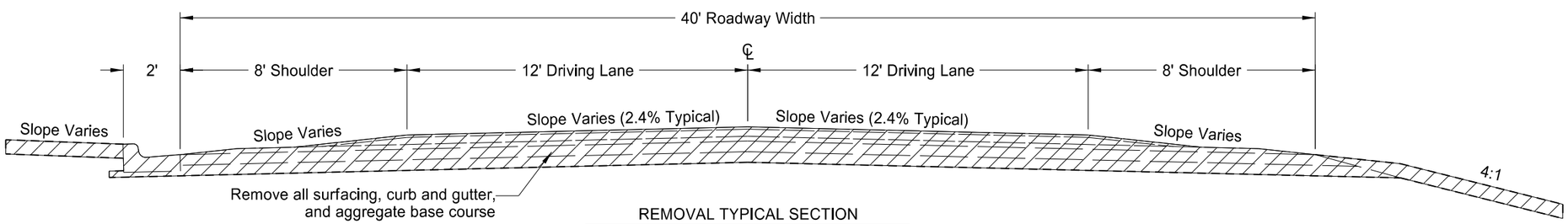
REMOVAL TYPICAL SECTION

US Highway 2
(Between Box Elder St. and 6th Ave. West)
Sta 1042+64 to Sta 1050+92 (Median)
Sta 1049+89 to Sta 1055+03 (LT)



REMOVAL TYPICAL SECTION

9th Ave. West
(Between 26th St. West and 24th St. West)
Sta 10+21 to Sta 18+85



REMOVAL TYPICAL SECTION

6th Ave. West
(Between 26th St. West and West Dakota Parkway)

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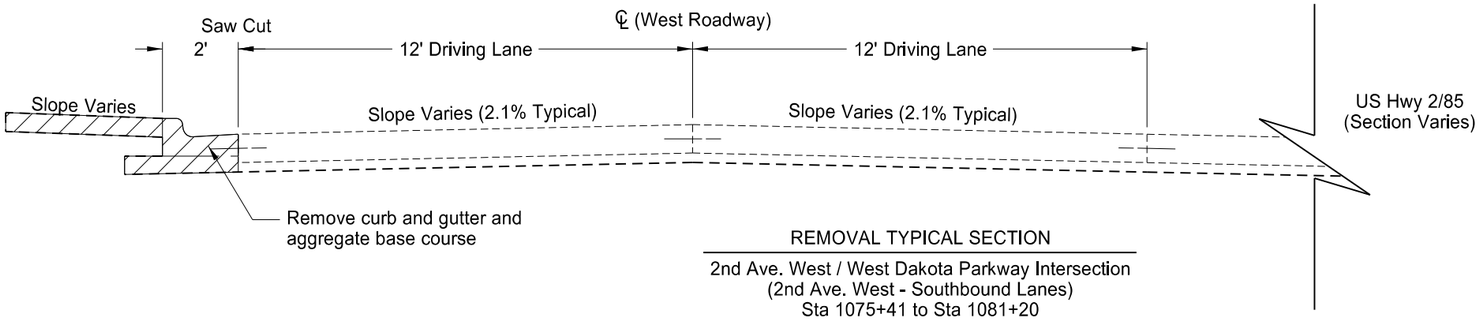
REMOVAL TYPICAL SECTIONS

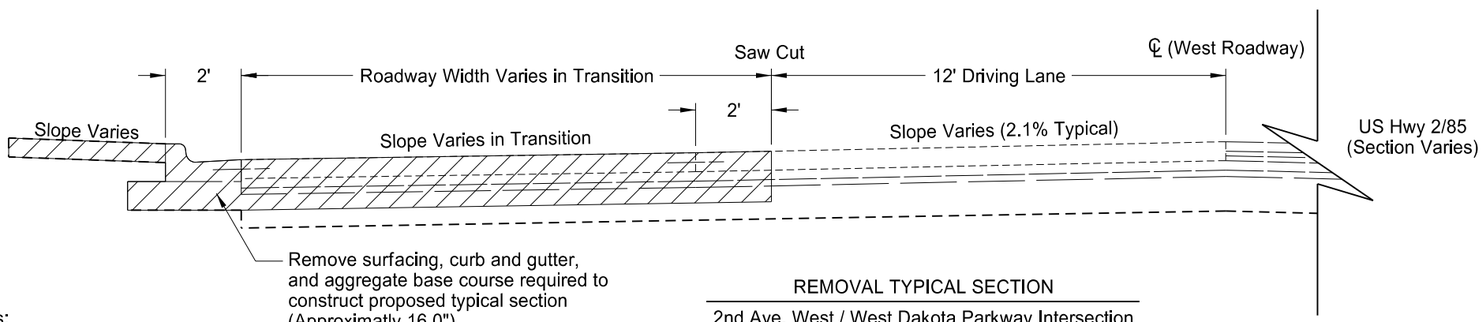
US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	30	4



REMOVAL TYPICAL SECTION

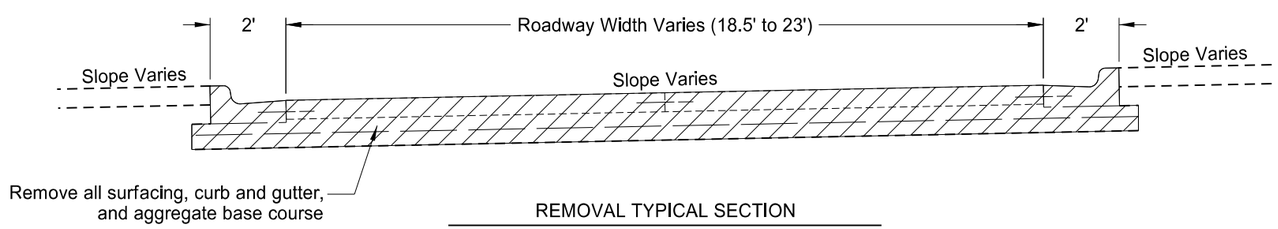
2nd Ave. West / West Dakota Parkway Intersection
(2nd Ave. West - Southbound Lanes)
Sta 1075+41 to Sta 1081+20



*Section Varies:
Curb and Gutter: Sta 1081+20 to 1082+61
PCC Concrete: Sta 1082+71 to 1082+85
See Section 40 "Removals" for details

REMOVAL TYPICAL SECTION

2nd Ave. West / West Dakota Parkway Intersection
(2nd Ave. West - Southbound Lanes)
Sta 1081+20+ to Sta 1082+85



REMOVAL TYPICAL SECTION

2nd Ave. West / West Dakota Parkway Intersection
(Southbound Free Right Turn Lane)

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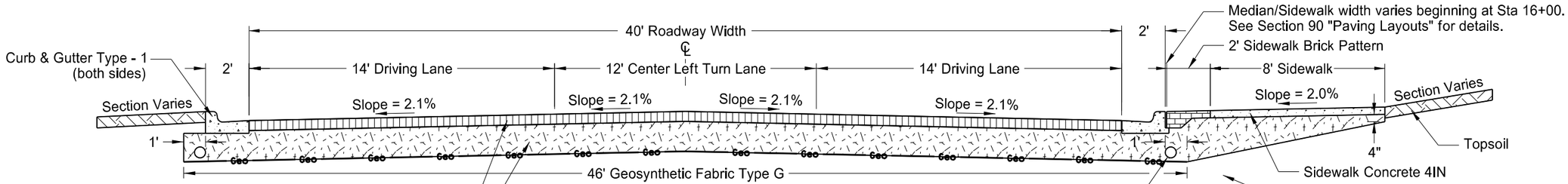
REMOVAL TYPICAL SECTIONS

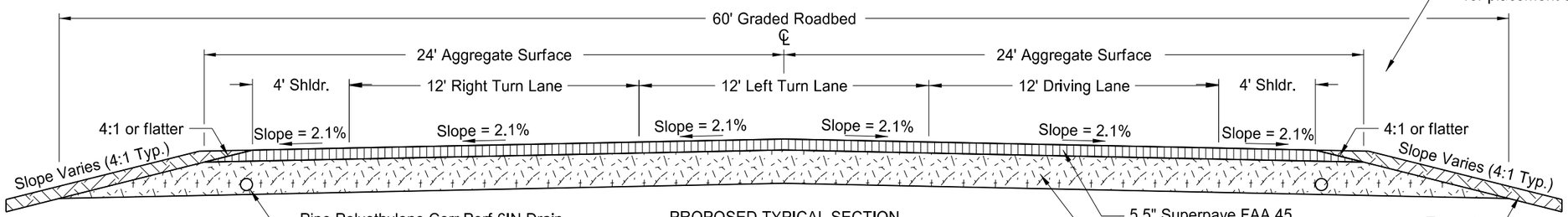
US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	30	5

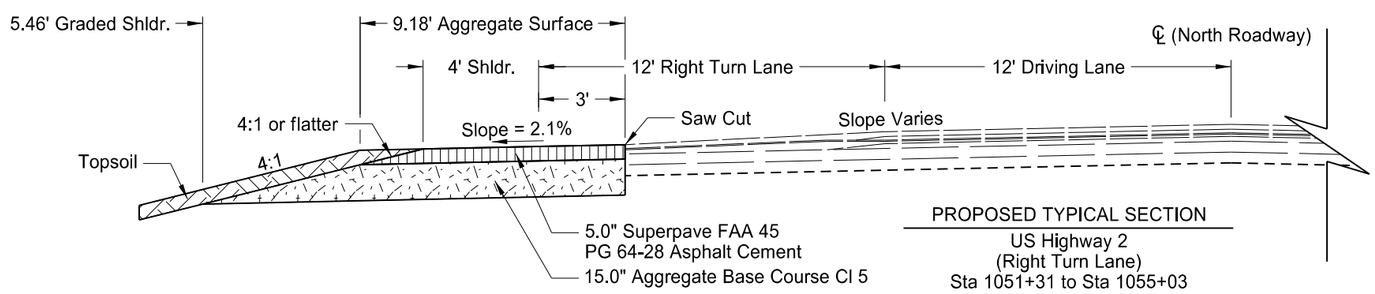


PROPOSED TYPICAL SECTION
9th Ave. West
(Between 26th St. West and 24th St. West)
Sta 10+21 to Sta 18+18

*Note:
Install underdrain on both sides of roadway from Sta 14+15 LT and Sta 15+15 RT to US Hwy 2 ditch bottom. See Section 60 "Plan and Profile" for placement details.

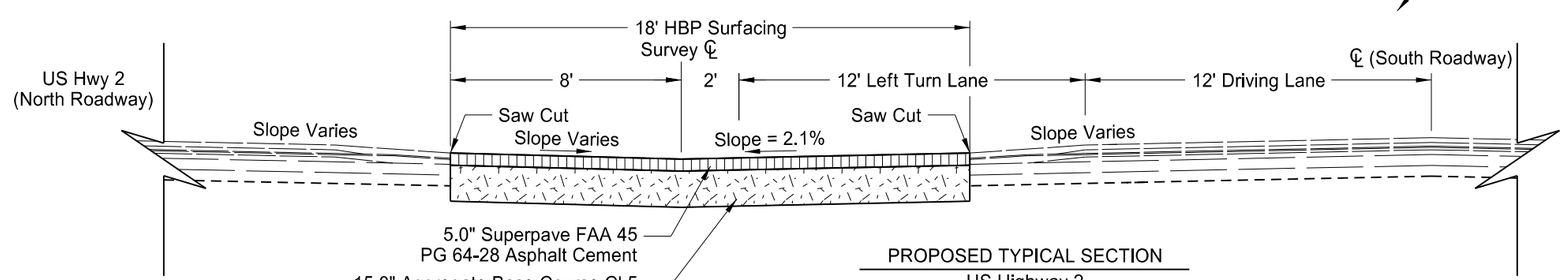


PROPOSED TYPICAL SECTION
9th Ave. West
(Between 26th St. West and 24th St. West)
Sta 18+18 to Sta 19+14



PROPOSED TYPICAL SECTION
US Highway 2
(Right Turn Lane)
Sta 1051+31 to Sta 1055+03

*Note:
Turn lane typicals are shown at full width. See Section 90 "Paving Layouts" for turn lane pavement taper details.



PROPOSED TYPICAL SECTION
US Highway 2
(Left Turn Lane)
Sta 1042+64 to Sta 1051+10

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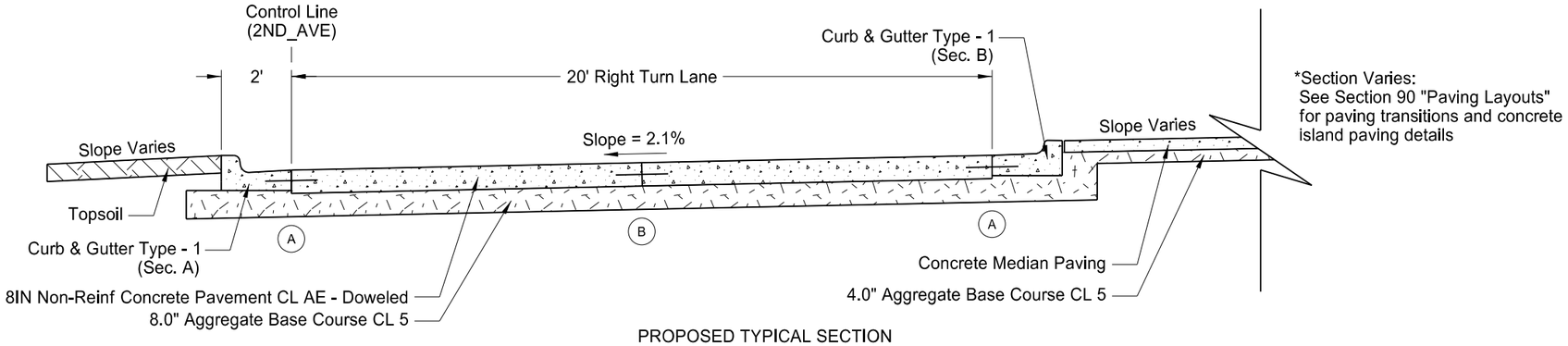
PROPOSED TYPICAL SECTIONS

US Hwy 2 Intersection Improvements - Williston

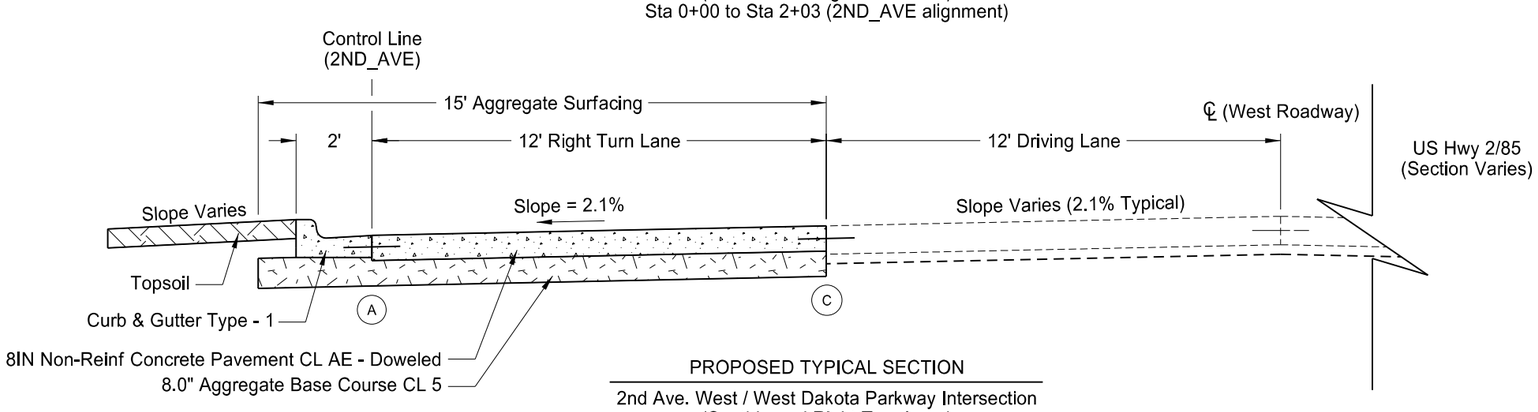
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	30	6



*Section Varies:
See Section 90 "Paving Layouts" for paving transitions and concrete island paving details

PROPOSED TYPICAL SECTION

2nd Ave. West / West Dakota Parkway Intersection
(Southbound Right Turn Lane)
Sta 0+00 to Sta 2+03 (2ND_AVE alignment)



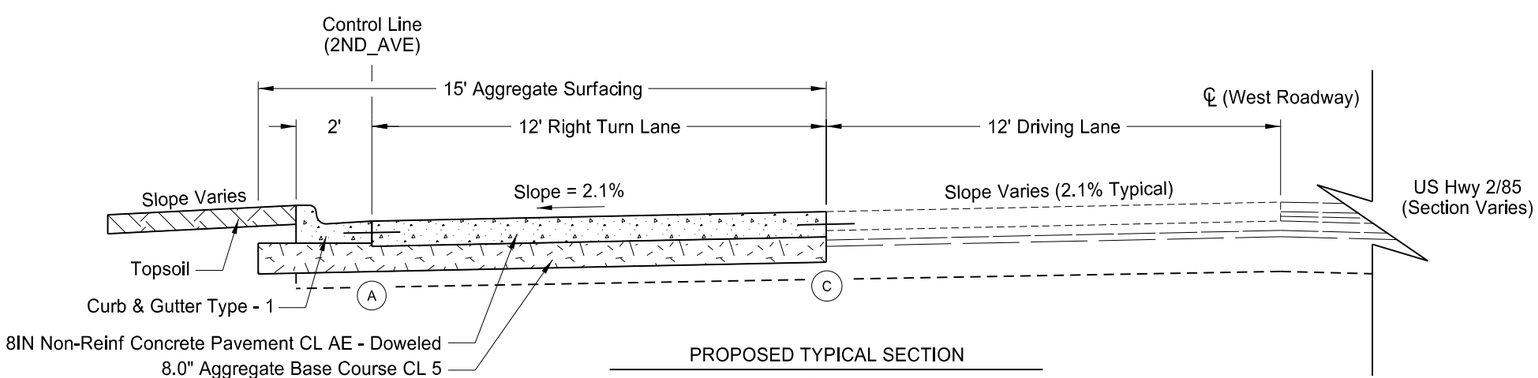
PROPOSED TYPICAL SECTION

2nd Ave. West / West Dakota Parkway Intersection
(Southbound Right Turn Lane)
Sta 2+03 to Sta 4+14 (2ND_AVE alignment)

(A) No. 3 x 18" Tie Bars @ 4 ft. center to center

(B) Tied Joint (Sawed)

(C) Tied Joint (No. 5 x 30" Tie Bars). Drill holes for the bars and secure the bars in the holes using epoxy.



PROPOSED TYPICAL SECTION

2nd Ave. West / West Dakota Parkway Intersection
(Southbound Right Turn Lane)
Sta 4+14 to Sta 5+80 (2ND_AVE alignment)

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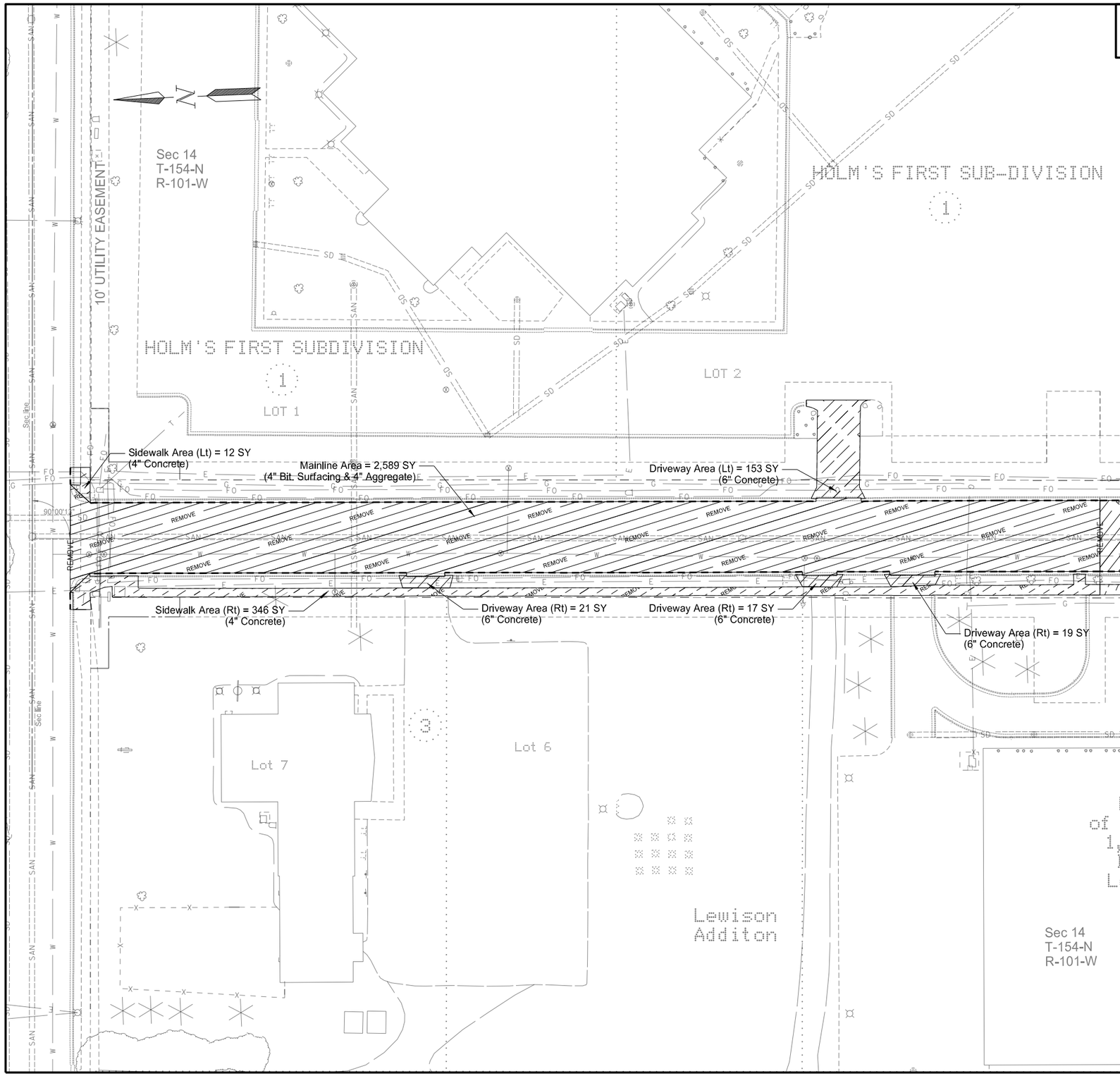
PROPOSED TYPICAL SECTIONS

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	40	1



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0136	**REMOVAL OF PAVEMENT**		
		Bituminous Pavement		
		10+21 to 16+00 (ML)	TON	575
		Concrete Pavement		
		10+21 to 10+33 (Sidewalk Left)	TON	3
		10+21 to 16+00 (Sidewalk Right)	TON	77
		12+21 (Driveway Right)	TON	7
		14+42 (Driveway Right)	TON	6
		14+53 (Driveway Left)	TON	51
		14+95 (Driveway Right)	TON	6
		10+21 to 16+00 (C&G Lt - 552 LF)	TON	54
		10+21 to 16+00 (C&G Rt - 511 LF)	TON	50
		Base Material		
		10+21 to 16+00 (ML)	TON	539

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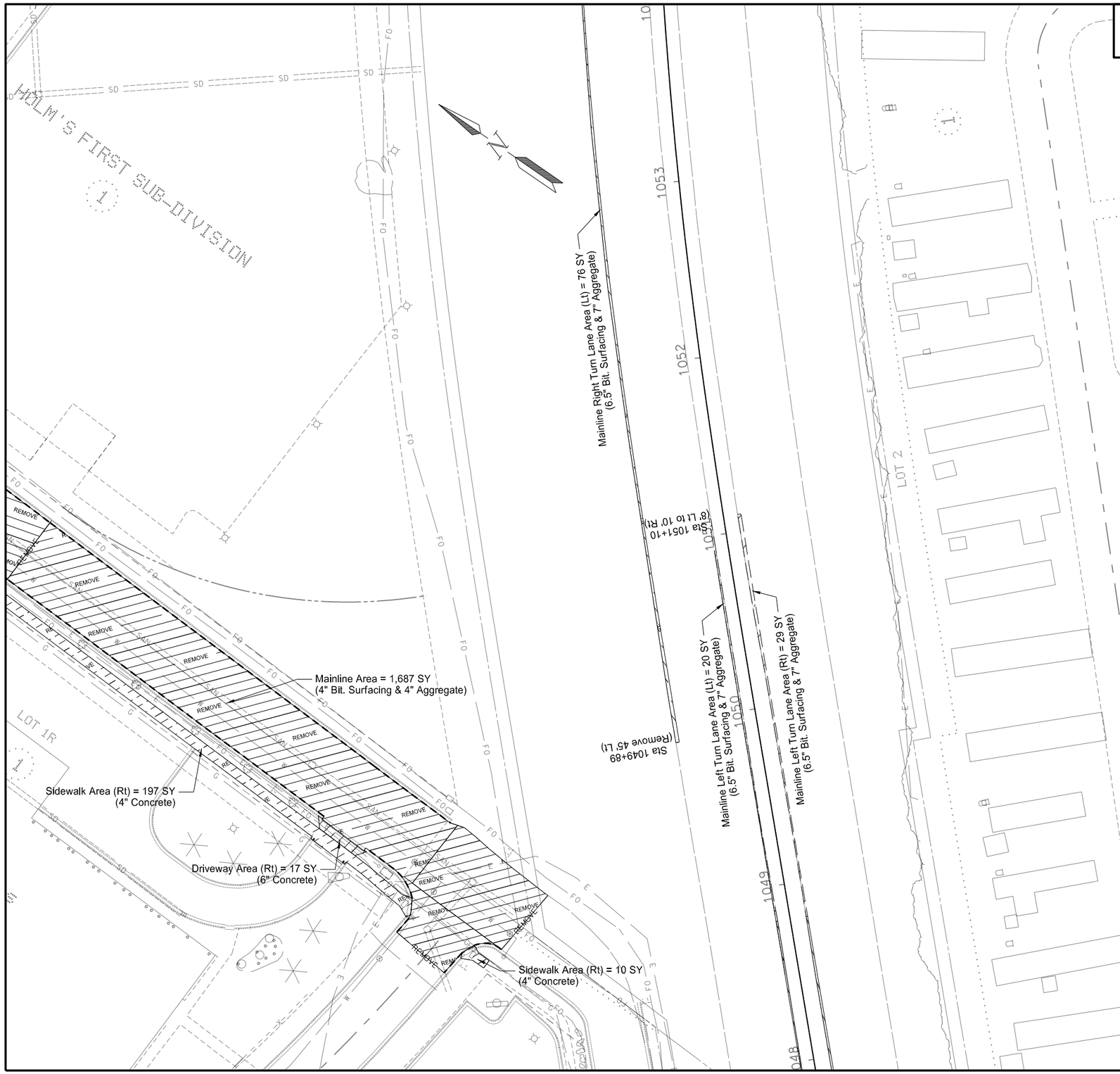
REMOVALS
9th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	40	2



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0136	**REMOVAL OF PAVEMENT**		
		Bituminous Pavement		
		16+00 to 18+68 (ML)	TON	375
		Concrete Pavement		
		16+00 to 18+18 (Sidewalk Right)	TON	44
		17+89 (Driveway Right)	TON	6
		18+35 to 18+43 (Sidewalk Right)	TON	2
		16+00 to 18+38 (C&G Lt - 282 LF)	TON	28
		16+00 to 18+52 (C&G Rt - 308 LF)	TON	30
		Base Material		
		16+00 to 18+68 (ML)	TON	352

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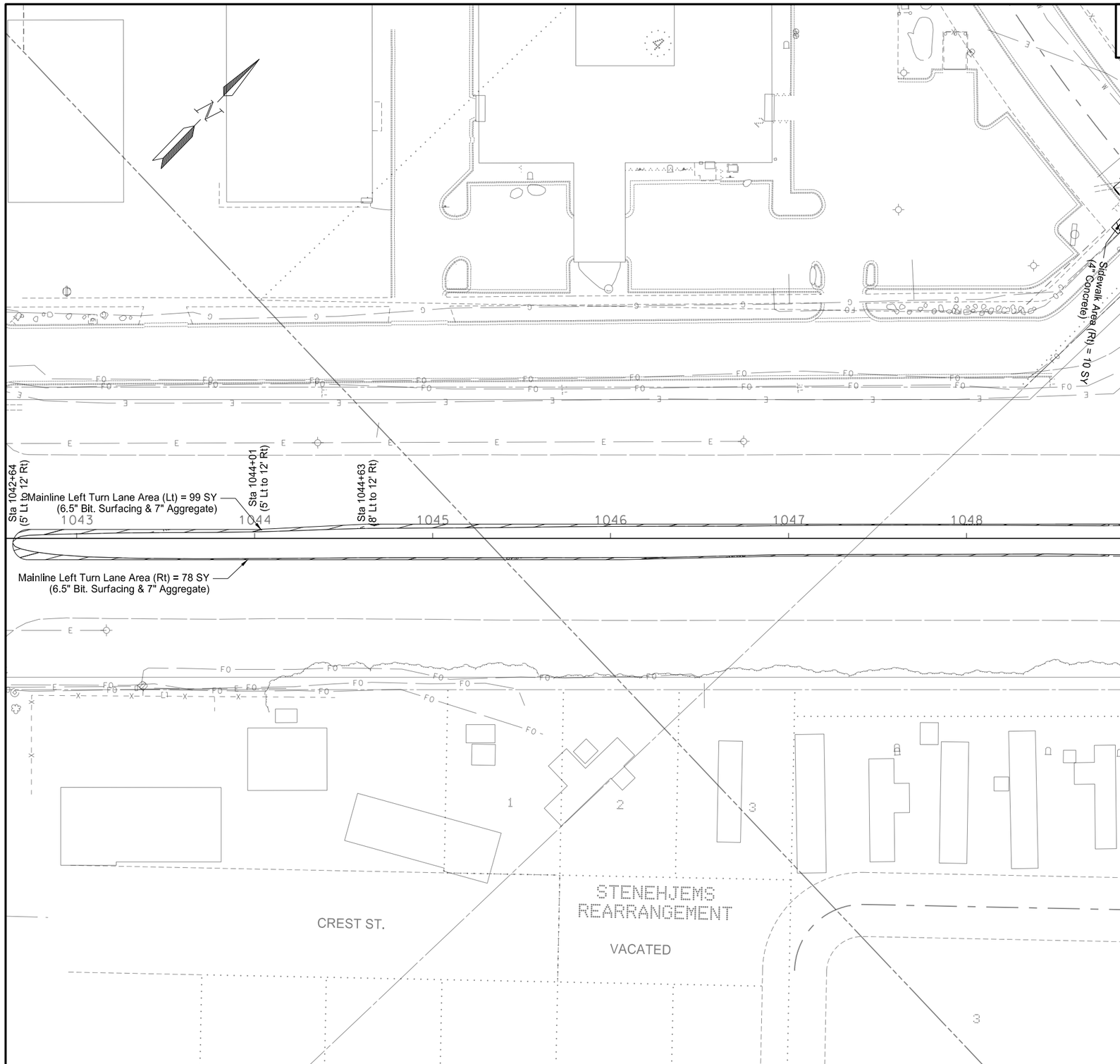
REMOVALS
9th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	40	3



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0136	**REMOVAL OF PAVEMENT**		
		Bituminous Pavement		
		1042+64 to 1048+80 (Left Turn Lane - Left)	TON	36
		1042+64 to 1048+80 (Left Turn Lane - Right)	TON	28
		Base Material		
		1042+64 to 1048+80 (Left Turn Lane - Left)	TON	36
		1042+64 to 1048+80 (Left Turn Lane - Right)	TON	29

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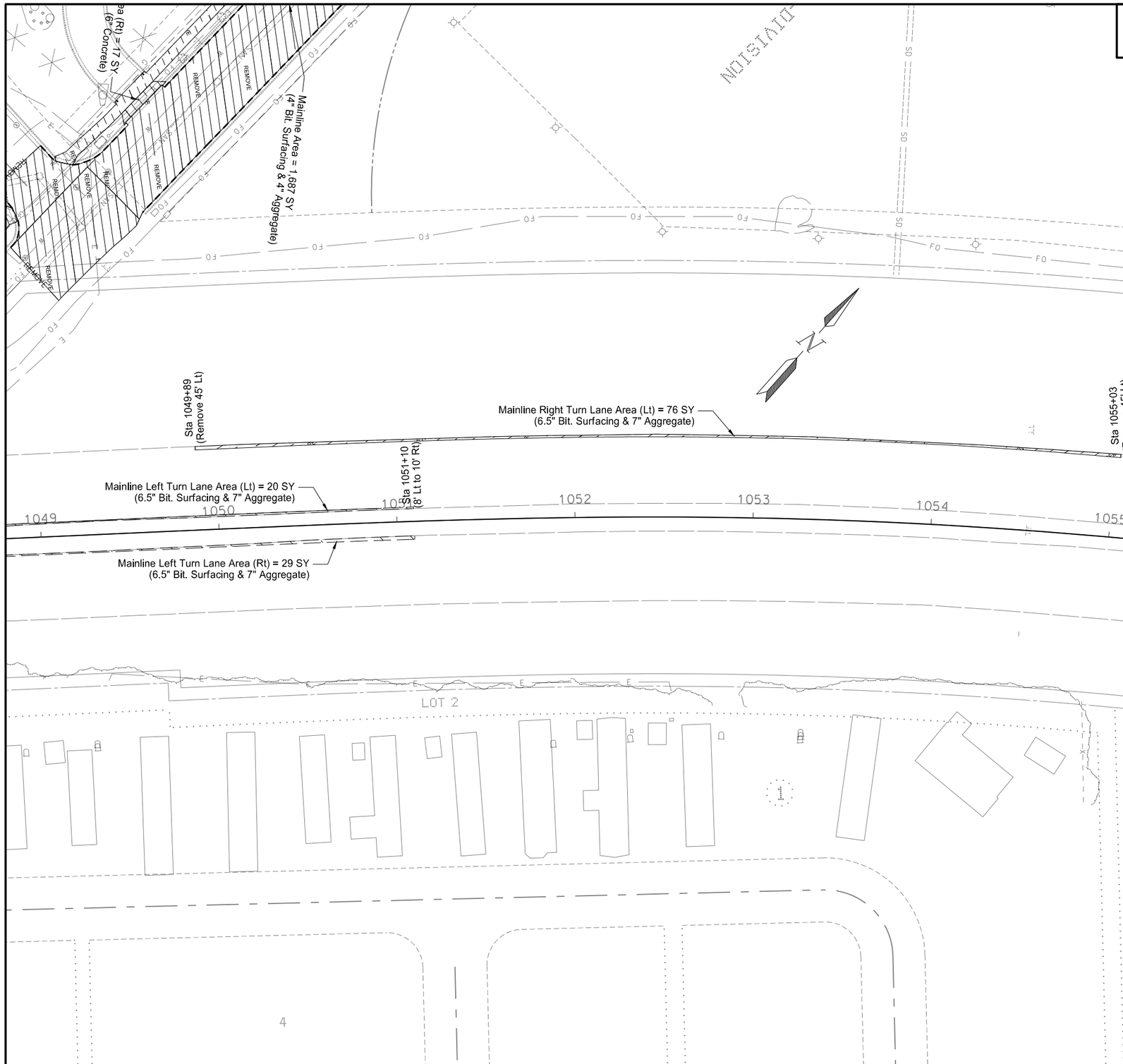
REMOVALS
9th Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	40	4



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0136	**REMOVAL OF PAVEMENT**		
		Bituminous Pavement		
		1048+80 to 1051+10 (Left Turn Lane - Left)	TON	7
		1048+80 to 1051+10 (Left Turn Lane - Right)	TON	10
		1049+89 to 1055+03 (Right Turn Lane - Left)	TON	28
		Base Material		
		1048+80 to 1051+10 (Left Turn Lane - Left)	TON	7
		1048+80 to 1051+10 (Left Turn Lane - Right)	TON	11
		1049+89 to 1055+03 (Right Turn Lane - Left)	TON	28

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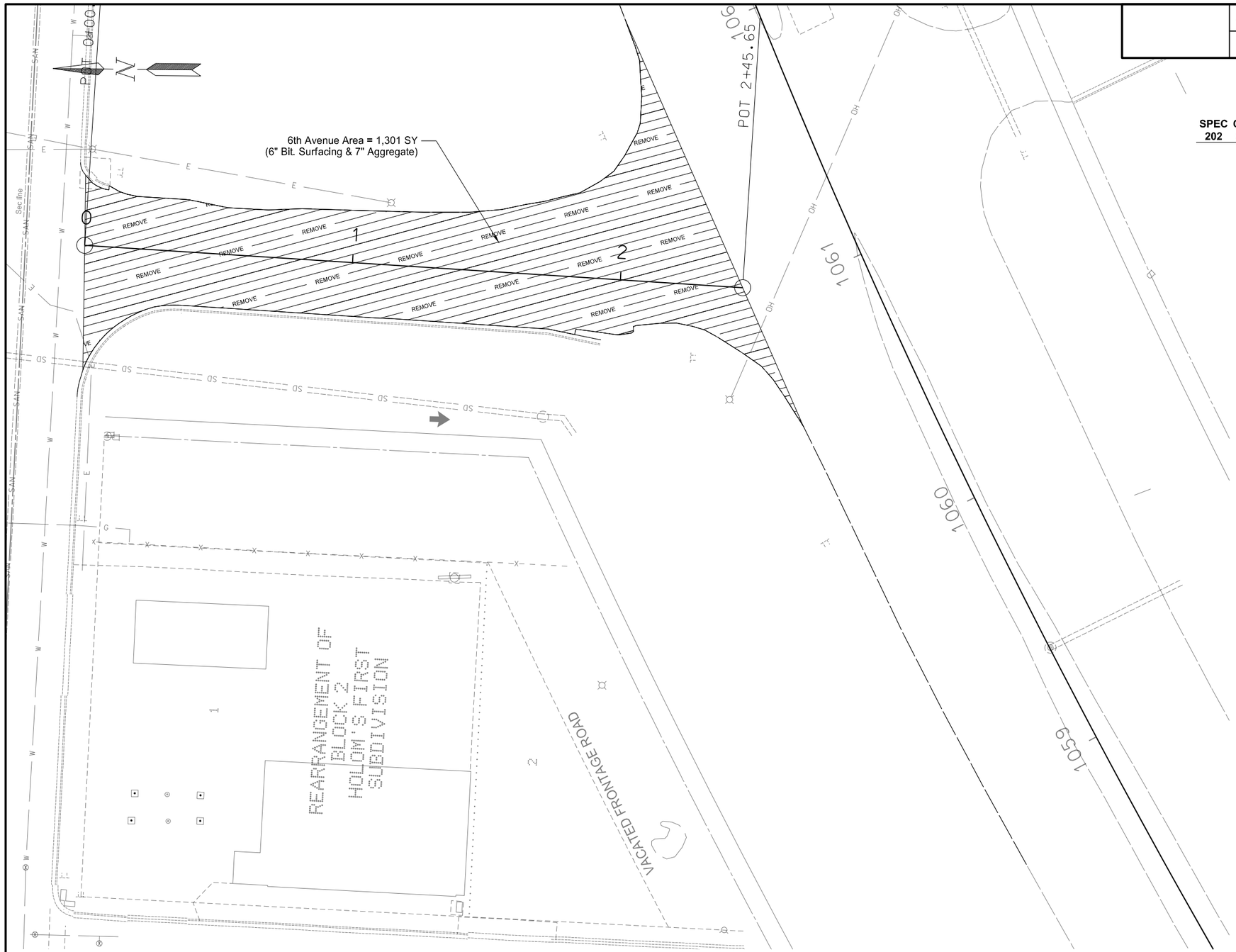
REMOVALS
9th Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	40	5



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0136	**REMOVAL OF PAVEMENT**		
		Bituminous Pavement		
		6th Avenue	TON	434
		Concrete Pavement		
		6th Avenue (C&G - 230 LF)	TON	23
		Base Material		
		6th Avenue	TON	474

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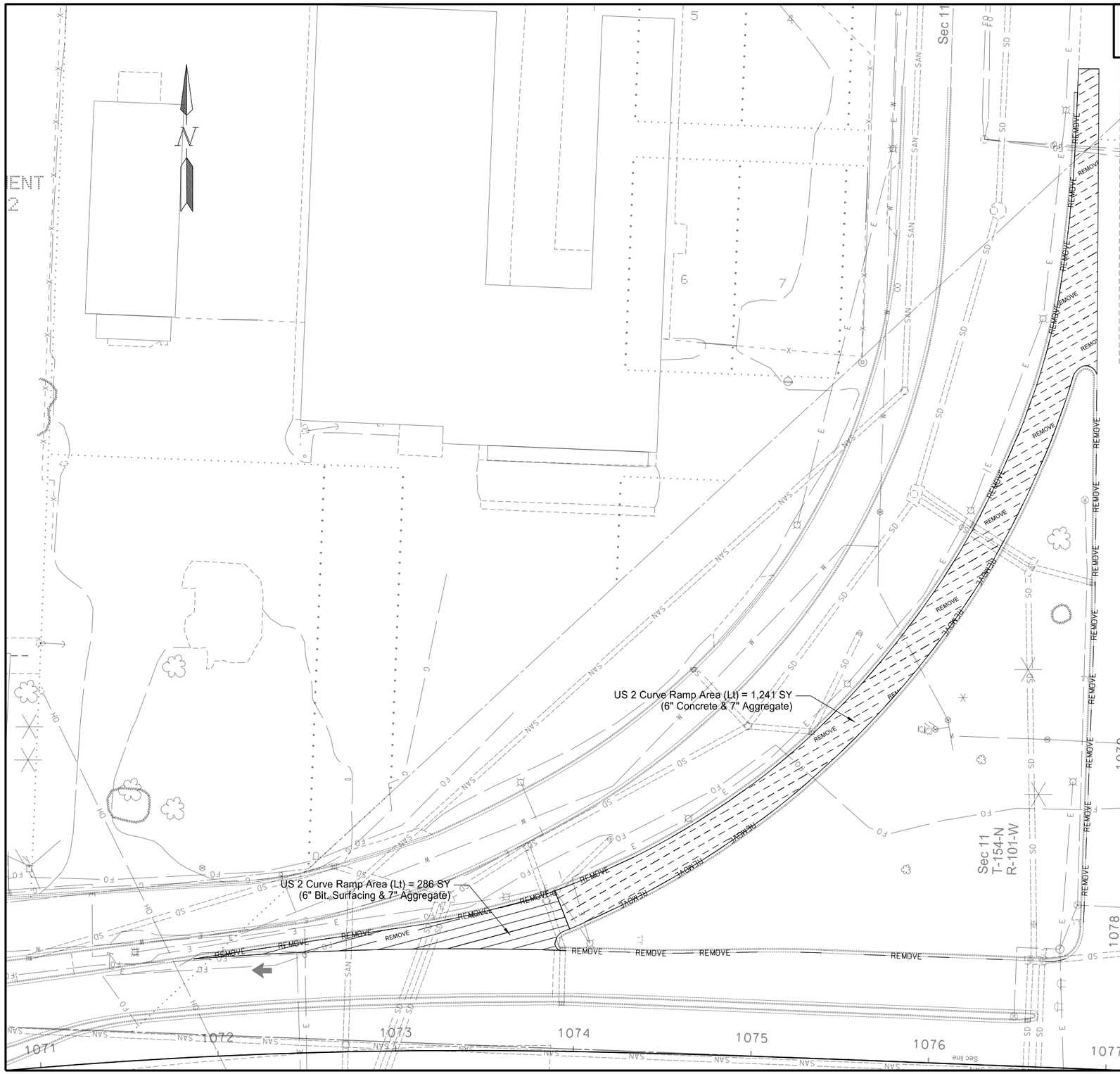
REMOVALS
6th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	40	6



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0136	**REMOVAL OF PAVEMENT**		
		Bituminous Pavement		
		1071+89 to 1073+93 (US 2 Lt - Curve Ramp)	TON	95
		Concrete Pavement		
		1073+93 to 1082+85 (US 2 Lt - Curve Ramp)	TON	414
		1071+89 to 1082+71 (Curve Ramp C&G - 1246 LF)	TON	122
		1073+92 to 1081+13 (US 2 Lt - ML C&G - 623 LF)	TON	61
		Base Material		
		1071+89 to 1073+93 (US 2 Lt - Curve Ramp)	TON	104
		1073+93 to 1082+85 (US 2 Lt - Curve Ramp)	TON	453

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REMOVALS
2nd Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

INLET AND MANHOLE SUMMARY

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	50	1

Inlet No. 1A
Type Inlet Special-Mountable Type B-48 In. With 10 LF of 15″ Slotted Drain
Sta. 1050+26.95 1.76' LT
Grate Elev. 1901.91
Base Elev. 1896.62
Invert Elev. 1896.91
H’ Dist. 4.00 Ft.

Inlet No. 2A
Type Inlet - Type 2 With 10 LF of 15″ Slotted Drain
Grate Style V
Sta. 1073+93.01 57.81' LT
Grate Elev. 1874.34
Base Elev. 1869.63
Invert Elev. 1869.82
H’ Dist. 4.38 Ft.
---
15 In. Conduit N 1869.92
15 In. Conduit S 1869.82

Inlet No. 3A
Type Inlet - Type 2 - Double
Grate Style DR/DL
Sta. 1078+43.69 58.31' LT
Grate Elev. 1873.02
Base Elev. 1868.69
Invert Elev. 1869.93
H’ Dist. 4.00 Ft.

Manhole No. 4 - 48 In.
Sta. 1080+01.44 56.51' LT
Top Elev. 1874.65
Base Elev. 1869.15
Invert Elev. 1869.78
Riser 4.00 Ft.
---
15 In. Conduit NE 1869.78
15 In. Conduit W 1869.78

Inlet No. 4A
Type Inlet - Type 2 With 10 LF of 15″ Slotted Drain
Grate Style V
Sta. 1080+33.22 42.83' LT
Grate Elev. 1874.75
Base Elev. 1869.99
Invert Elev. 1870.18
H’ Dist. 4.43 Ft.

Note: All stationing is based off of chain SCL02 unless otherwise stated.

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	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
													Begin	End	
				In	Bid Item	LF		In	Type		In	SY	EA	EA	
18+98 - PR_9TH	33' Lt	18+98 - PR_9TH	31' Rt	30	Pipe Conduit	68	Reinforced Concrete Pipe - Class III**(barrel length = 64 LF)**	30					FES (4:1)	FES (4:1)	Standard D-714-26M
19+06 - PR_9TH	33' Lt	19+06 - PR_9TH	31' Rt	30	Pipe Conduit	68	Reinforced Concrete Pipe - Class III**(barrel length = 64 LF)**	30				442	FES (4:1)	FES (4:1)	Standard D-714-26M
19+14 - PR_9TH	35' Lt	19+06 - PR_9TH	31' Rt	30	Pipe Conduit	70	Reinforced Concrete Pipe - Class III**(barrel length = 66 LF)**	30					FES (4:1)	FES (4:1)	Standard D-714-26M
1050+27 - SCL02	2' Lt	1050+74 - SCL02	53' Lt	30	Pipe Conduit - Jacked or Bored	70	Reinforced Concrete Pipe - Class III**(barrel length = 70 LF)**	30							Standard D-714-16
1050+74 - SCL02	53' Lt	1051+04 - SCL02	85' Lt	30	Pipe Conduit	46	Reinforced Concrete Pipe - Class III**(barrel length = 44 LF)**	30						FES (4:1)	Standard D-714-26
1073+81 - SCL02	92' Lt	1073+83 - SCL02	87' Lt	15	Pipe Conduit - Storm Drain	6	Reinforced Concrete Pipe - Class III**(barrel length = 6 LF)**	15							Standard D-714-27
2+97 - 2ND_AVE	16' Lt	3+29 - 2ND_AVE	1' Lt	15	Pipe Conduit - Storm Drain	34	Reinforced Concrete Pipe - Class III**(barrel length = 34 LF)**	15							Standard D-714-27

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

Corrug **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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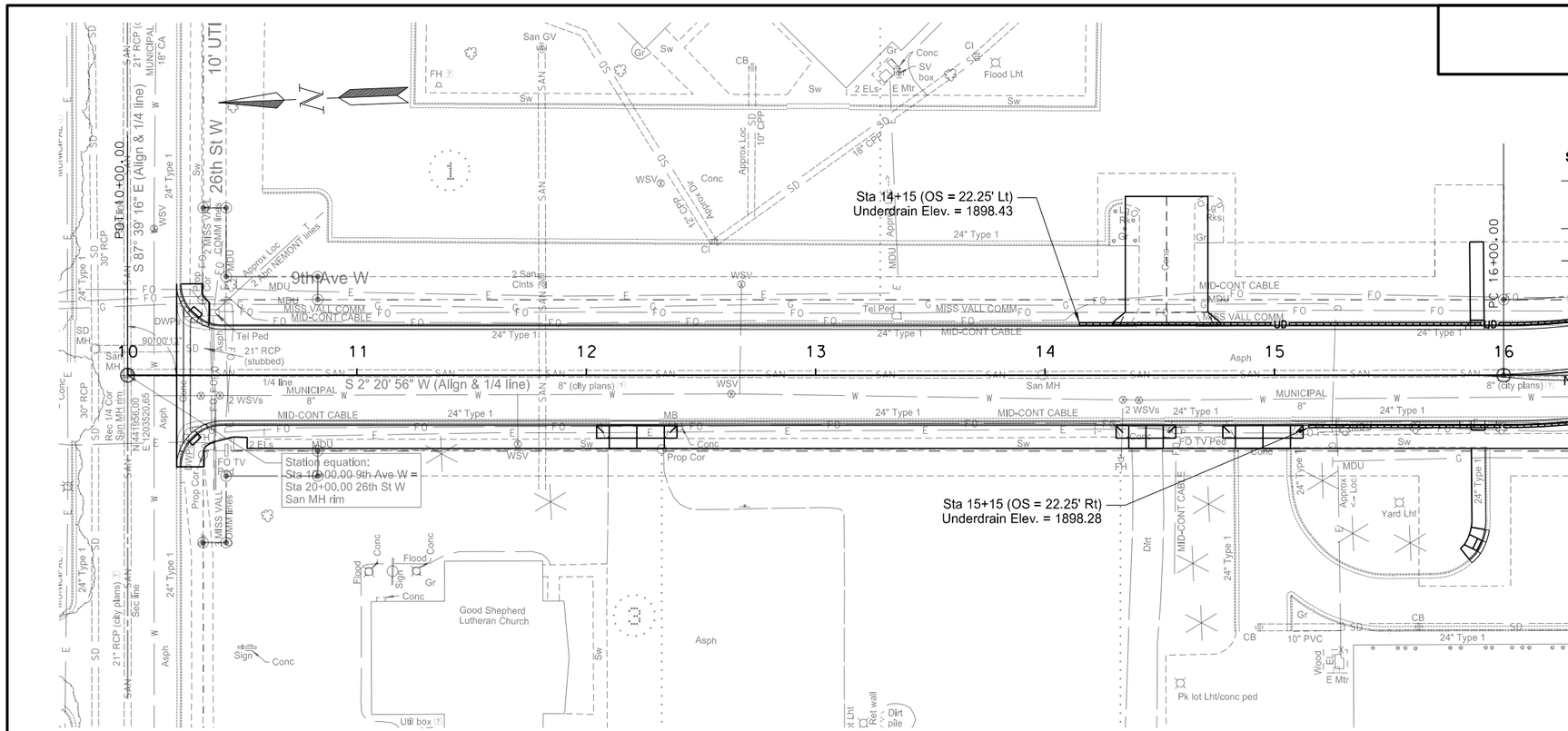
ALLOWABLE PIPE LIST

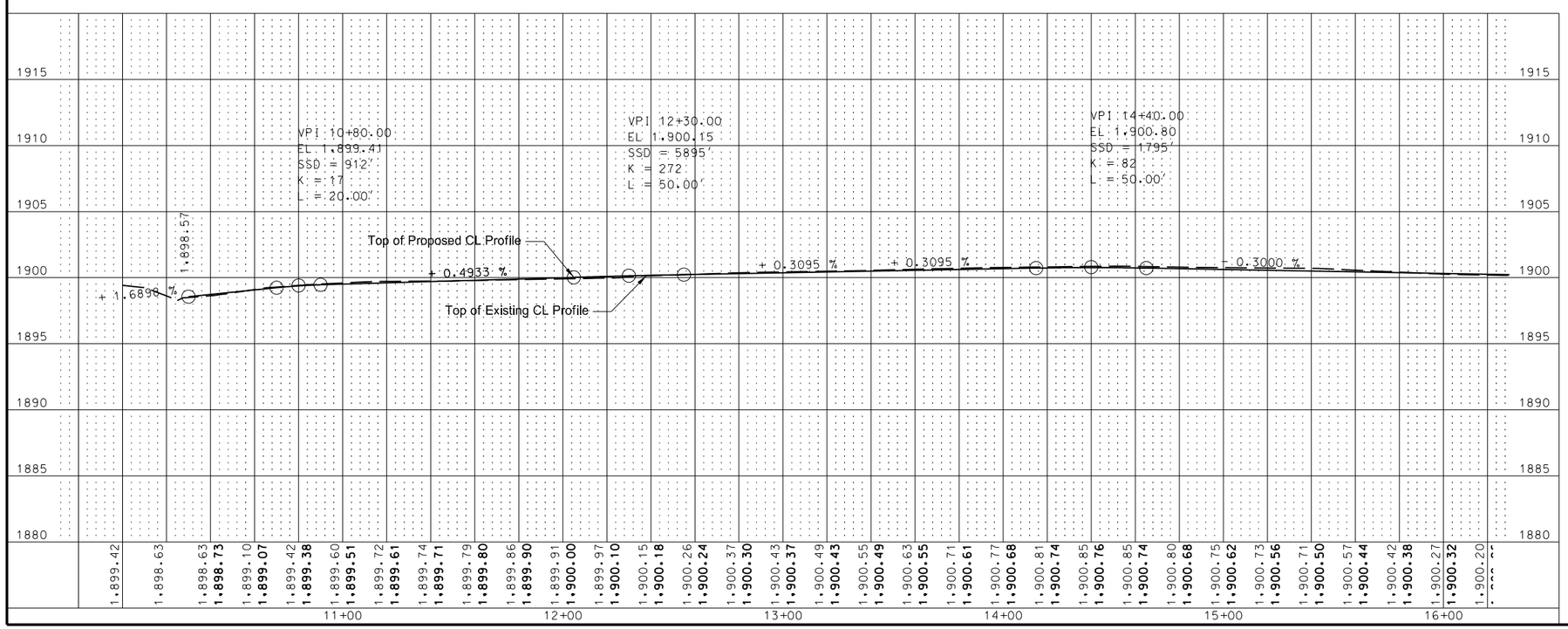
US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	60	1



SPEC	CODE	BID ITEM	UNIT	QUANTITY
714	6581	**PIPE POLYETHYLENE CORR PERF 6IN DRAIN**		
		Sta 14+15 to Sta 16+00 - Lt	LF	185
		Sta 15+15 to Sta 16+00 - Rt	LF	85
722	6200	**ADJUST MANHOLE**		
		Sta 13+99 (Sanitary - .1' Lt)	EA	1
722	6240	**ADJUST UTILITY APPURTENANCE**		
		Sta 10+32 (WSV - 9.0' Rt)	EA	1
		Sta 10+40 (WSV - 8.9' Rt)	EA	1
		Sta 11+70 (WSV - 30.0' Rt)	EA	1
		Sta 12+63 (WSV - 8.2' Rt)	EA	1
		Sta 14+34 (WSV - 10.7' Rt)	EA	1
		Sta 14+41 (WSV - 10.9' Rt)	EA	1

Note: All stationing is based off of chain PR_9TH unless otherwise stated.



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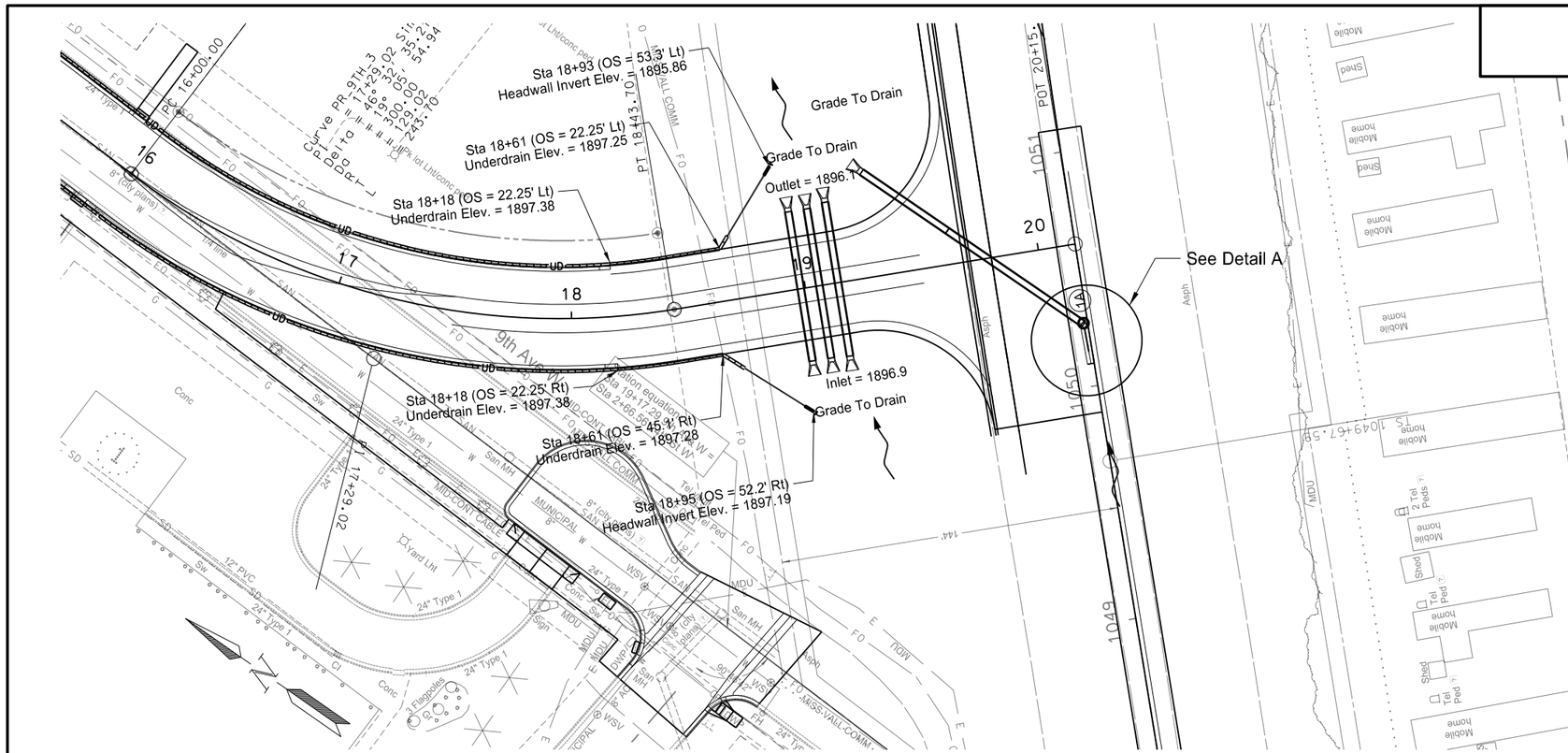
PLAN AND PROFILE
9th Avenue W

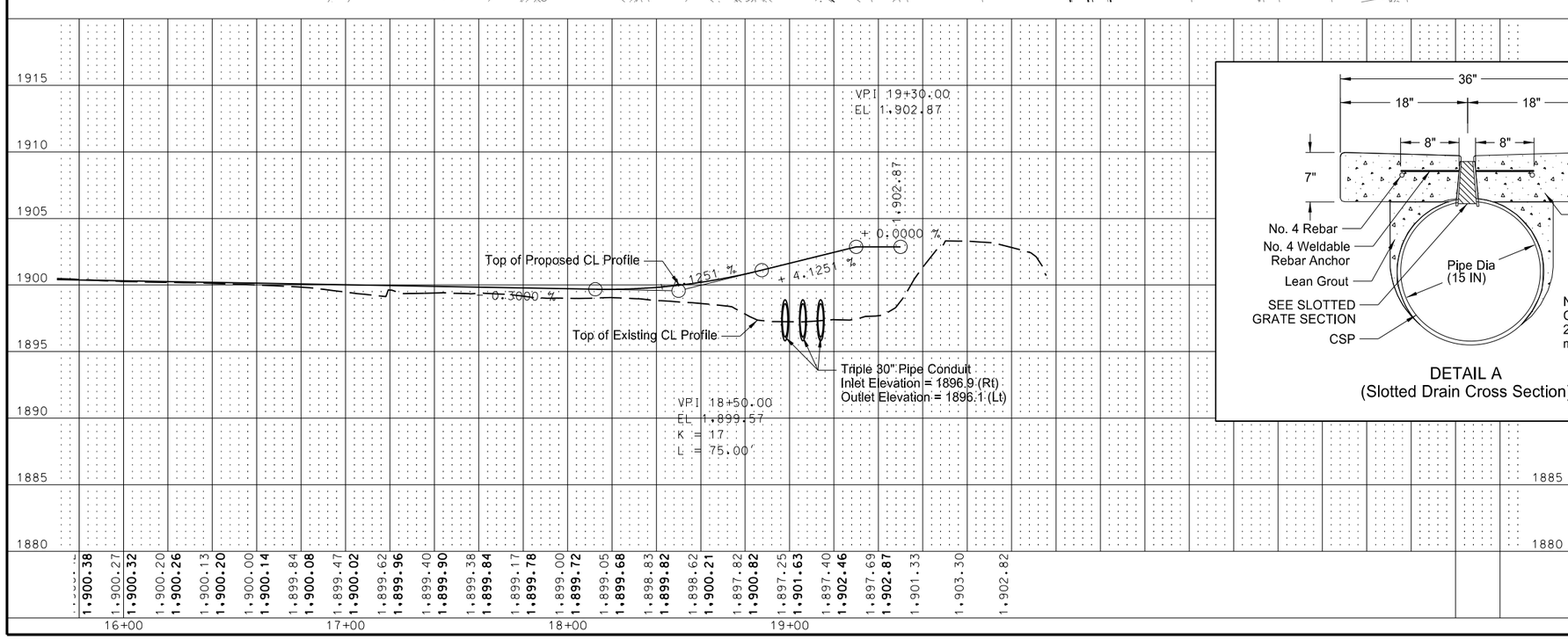
US Hwy 2 Intersection Improvements - Williston

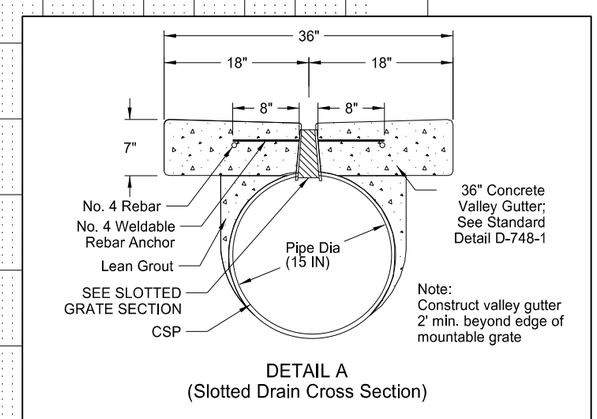
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	60	2



SPEC	CODE	BID ITEM	UNIT	QUANTITY
709	0151	**GEOSYNTHETIC MATERIAL TYPE R1**		
		Sta 18+98 to Sta 19+14 - Triple 30" CL	SY	442
714	3151	**HEADWALL - PRECAST CONCRETE 6IN**		
		Sta 18+93 - Lt	EA	1
		Sta 18+95 - Rt	EA	1
714	4110	**PIPE CONDUIT 30IN**		
		Sta 18+98 - CL	LF	68
		Sta 19+06 - CL	LF	68
		Sta 19+14 - CL	LF	70
		Sta 1050+74 - Sta 1051+05 (SCL02) - Skewed	LF	46
714	4166	**PIPE CONDUIT 30IN - JACKED OR BORED**		
		Sta 1050+27 - Sta 1050+74 (SCL02) - Skewed	LF	70
714	6581	**PIPE POLYETHYLENE CORR PERF 6IN DRAIN**		
		Sta 16+00 to Sta 18+71 - Lt	LF	255
		Sta 16+00 to Sta 18+69 - Rt	LF	285
714	6590	**PIPE PVC 6IN DRAIN**		
		Sta 18+71 to Sta 18+90 - Lt	LF	30
		Sta 18+69 to Sta 18+90 - Rt	LF	30
722	3713	**INLET SPECIAL MOUNTABLE-TYPE B 48IN**		
		Inlet 1A	EA	1
722	3910	**INLET SLOTTED DRAIN 15IN**		
		Inlet 1A	LF	10
722	6200	**ADJUST MANHOLE**		
		Sta 17+77 (Sanitary - 59.2' Rt)	EA	1
		Sta 18+23 (Sanitary - 153.6' Rt)	EA	1
		Sta 18+43 (Sanitary - 130.5' Rt)	EA	1
722	6240	**ADJUST UTILITY APPURTENANCE**		
		Sta 18+21 (WSV - 114.9' Rt)	EA	1
		Sta 18+27 (WSV - 132.8' Rt)	EA	1
		Sta 18+59 (WSV - 162.5' Rt)	EA	1

Note: All stationing is based off of chain PR_9TH unless otherwise stated.





DETAIL A
(Slotted Drain Cross Section)

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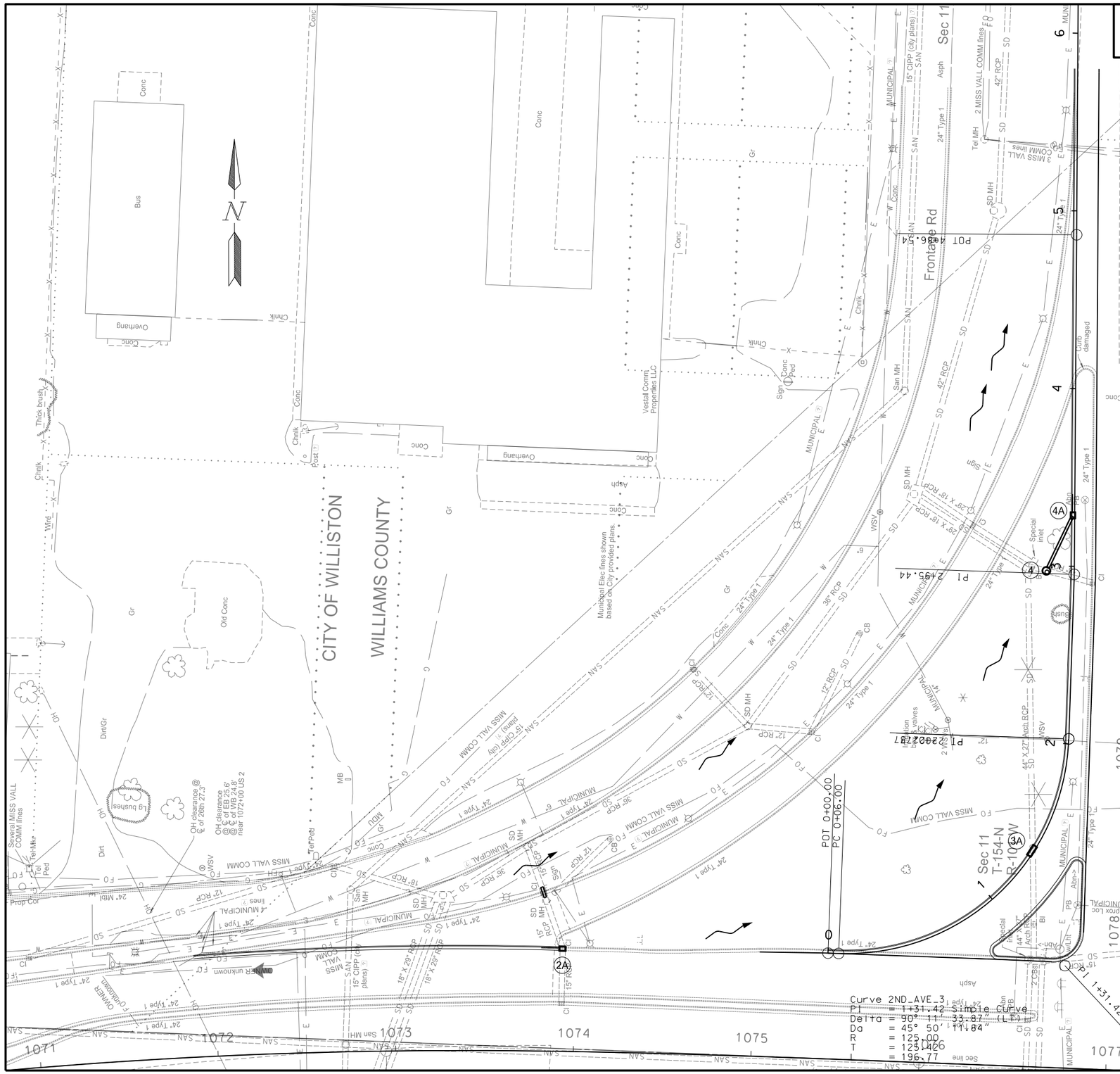
PLAN AND PROFILE
9th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	60	3



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	0174	**REMOVAL OF PIPE ALL TYPES & SIZES**		
		Sta 1073+81 (92' Lt) to Sta 1073+83 (87' Lt) (Existing 15" RCP - SCL02)	LF	6
		Sta 1073+84 (85' Lt) to Sta 1074+18 (120' Lt) (Existing 12" RCP - SCL02)	LF	50
		Sta 1075+28 (184' Lt) to Sta 1079+62 (160' Lt) (Existing 12" RCP - SCL02)	LF	62
		Sta 2+91 (11' Rt) to Sta 2+97 (16' Lt) (Existing 15" RCP - 2ND_AVE)	LF	27
202	0230	**REMOVAL OF INLETS**		
		Sta 1073+82 - SCL02 (89' Lt) (Approx. 3.83' H-dist to be removed)	EA	1
		Sta 1073+93 - SCL02 (57' Lt) (Approx. 4.32' H-dist to be removed)	EA	1
		Sta 1074+18 - SCL02 (120' Lt) (Approx. 2.42' H-dist to be removed)	EA	1
		Sta 2+90 - 2ND_AVE (11' Rt) (Approx. 5.19' H-dist to be removed)	EA	1
		Sta 1079+62 - SCL02 (160' Lt) (Approx. 2.54' H-dist to be removed)	EA	1
714	4097	**PIPE CONDUIT 15IN - STORM DRAIN**		
		Sta 1073+81 to Sta 1073+83 (Connect 2 Pipes)	LF	6
		Sta 2+97 (16' Lt) to Sta 3+29 (1' Lt) (2ND_AVE)	LF	34
722	0100	**MANHOLE 48IN**		
		Manhole 4	EA	1
722	1100	**MANHOLE RISER 48IN**		
		Manhole 4	LF	4
722	3470	**CASTING CATCH BASIN - TYPE A**		
		Sta 1+07 - 2ND_AVE (26' Rt)	EA	1
722	3475	**CASTING CATCH BASIN 6IN BEEHIVE**		
		Sta 1075+28 - SCL02 (183' Lt)	EA	1
		Sta 3+22 - 2ND_AVE (57' Lt)	EA	1
722	3510	**INLET TYPE 2**		
		Inlet 2A	EA	1
		Inlet 4A	EA	1
722	3520	**INLET - TYPE 2 DOUBLE**		
		Inlet 3A	EA	1
722	3910	**INLET SLOTTED DRAIN 15IN**		
		Inlet 2A	LF	10
		Inlet 4A	LF	10
722	6160	**ADJUST INLET**		
		Sta 0+95 - 2ND_AVE (40' Rt)	EA	1
		Sta 0+99 - 2ND_AVE (44' Rt)	EA	1
		Sta 2+99 - 2ND_AVE (24' Lt)	EA	1

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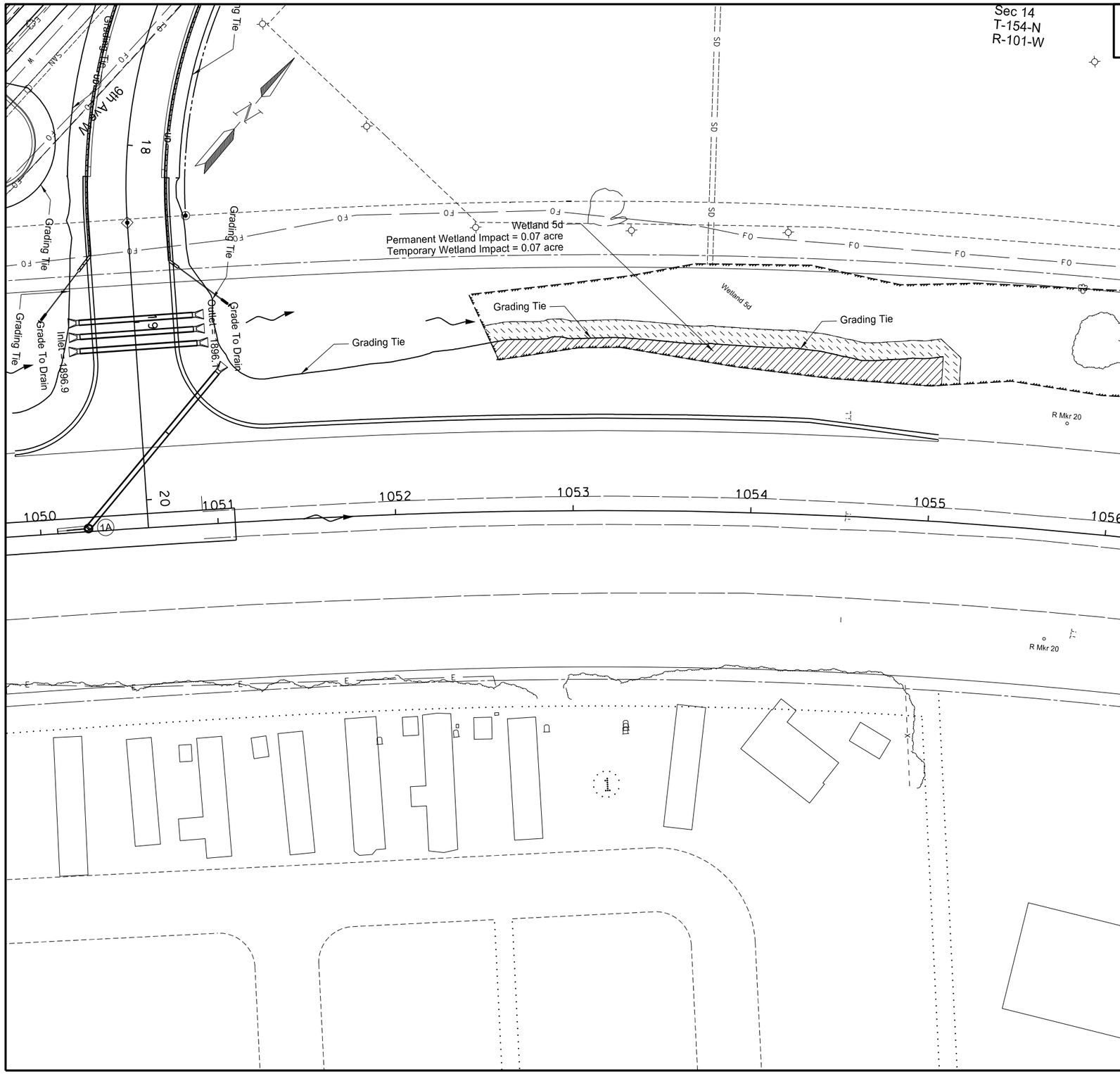
PLAN AND PROFILE
2nd Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	75	1



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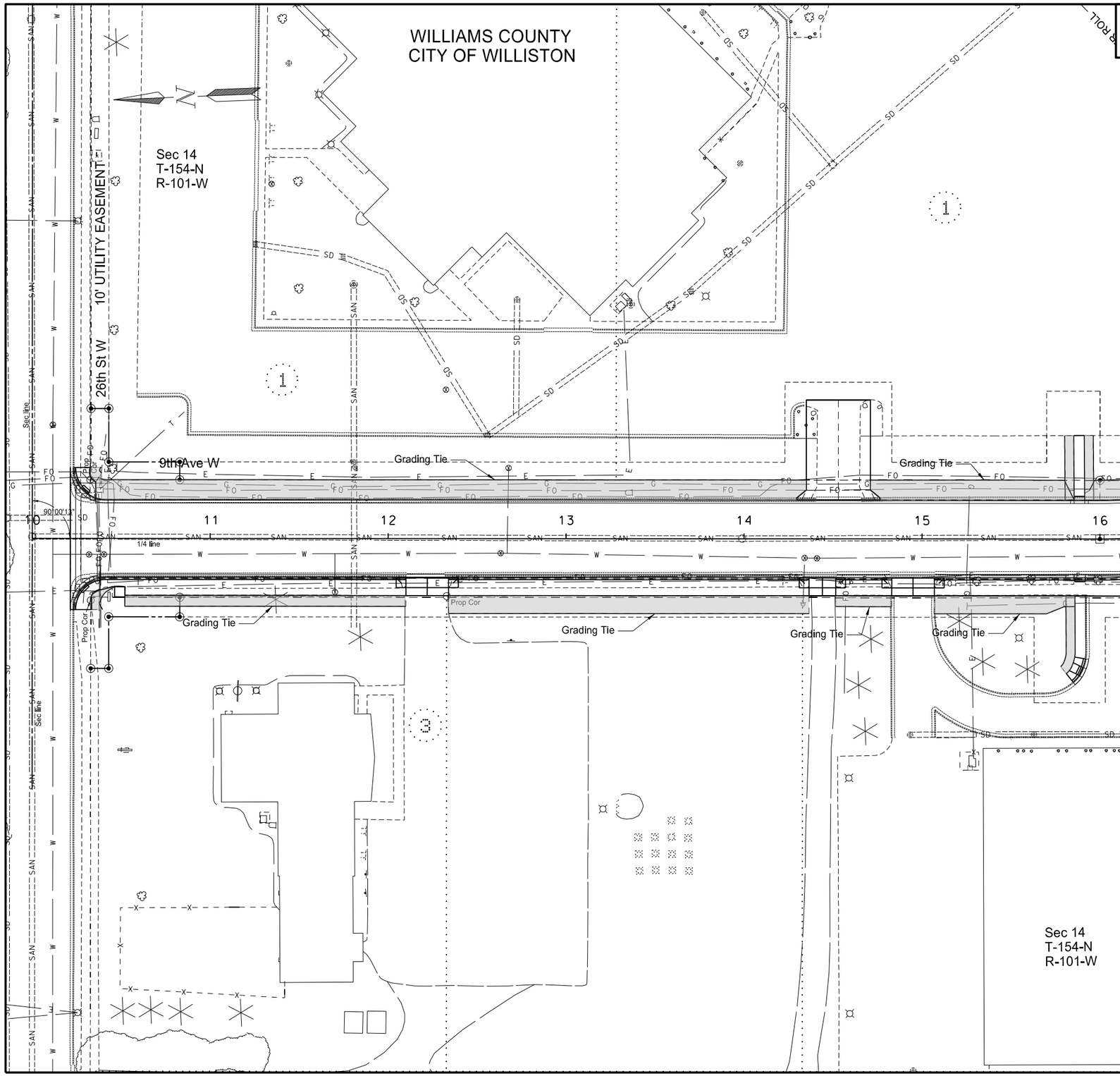
WETLAND IMPACTS - SCL02

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	76	1



SPEC	CODE	BID ITEM	UNIT	QUANTITY
253	0201	HYDRAULIC MULCH		
		Sta 10+21 to Sta 16+00 - Lt	ACRE	0.15
		Sta 10+21 to Sta 16+00 - Rt	ACRE	0.10

LEGEND

Fiber Rolls

Hydraulic Mulch

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TEMPORARY EROSION CONTROL
9th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	76	2

SPEC	CODE	BID ITEM	UNIT	QUANTITY
253	0201	HYDRAULIC MULCH		
		Sta 16+00 to Sta 19+32 - Lt	ACRE	0.09
		Sta 16+00 to Sta 19+36 - Rt	ACRE	0.40
		South School Exit	ACRE	0.11

LEGEND

Fiber Rolls

Hydraulic Mulch

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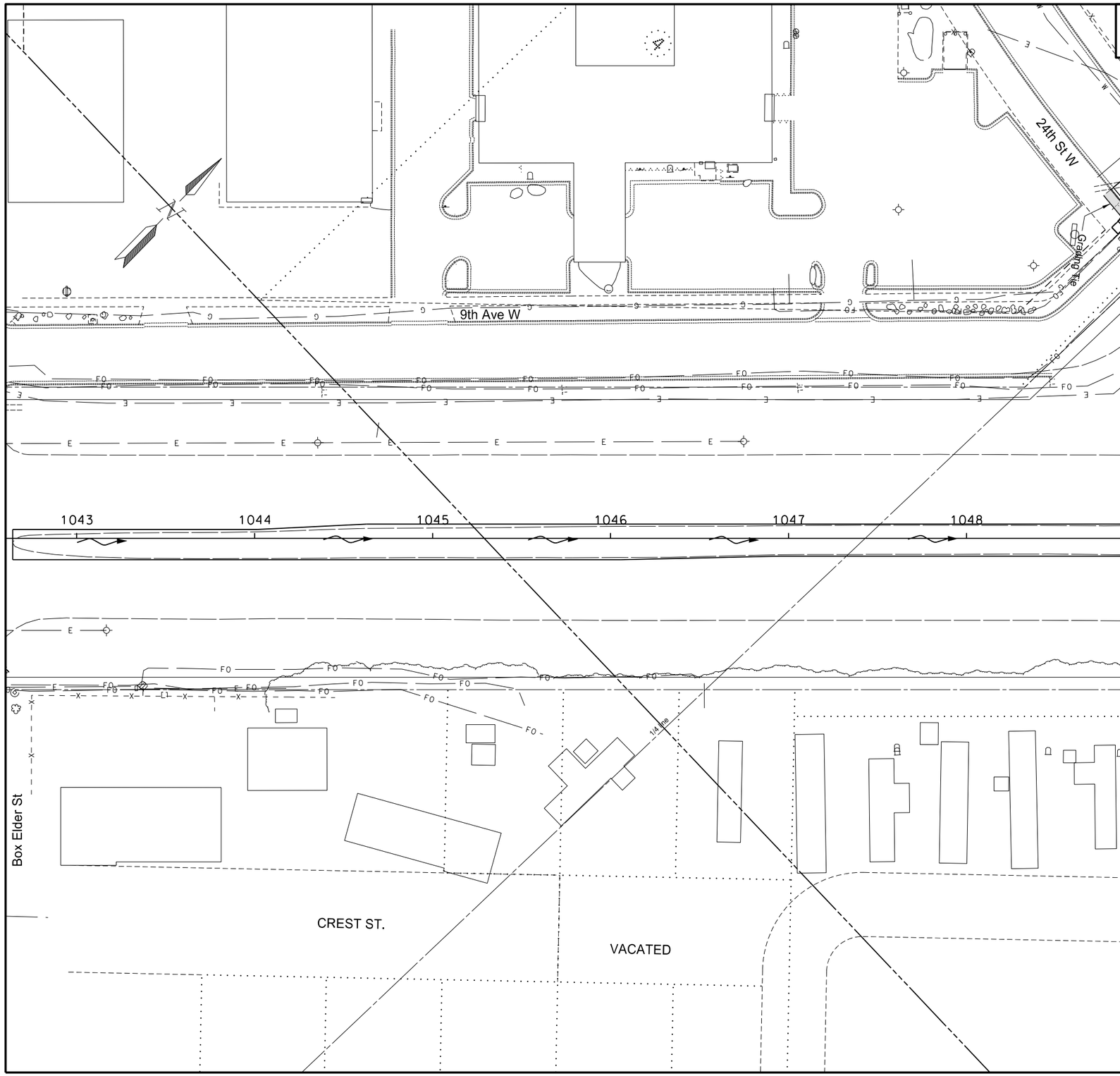
TEMPORARY EROSION CONTROL
9th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	76	3



LEGEND

Fiber Rolls

Hydraulic Mulch

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TEMPORARY EROSION CONTROL
9th Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	76	4

SPEC	CODE	BID ITEM	UNIT	QUANTITY
253	0201	**HYDRAULIC MULCH**		
		9TH Ave & US 2 Intersection	ACRE	0.43
261	0112	**FIBER ROLLS 12IN**		
		Sta 1052+14 to Sta 1055+13 - SCL02 Lt (Protecting Wetland 5d)	LF	330
261	0113	**REMOVE FIBER ROLLS 12IN**		
		Sta 1052+14 to Sta 1055+13 - SCL02 Lt (Protecting Wetland 5d)	LF	330

LEGEND

Fiber Rolls

Hydraulic Mulch

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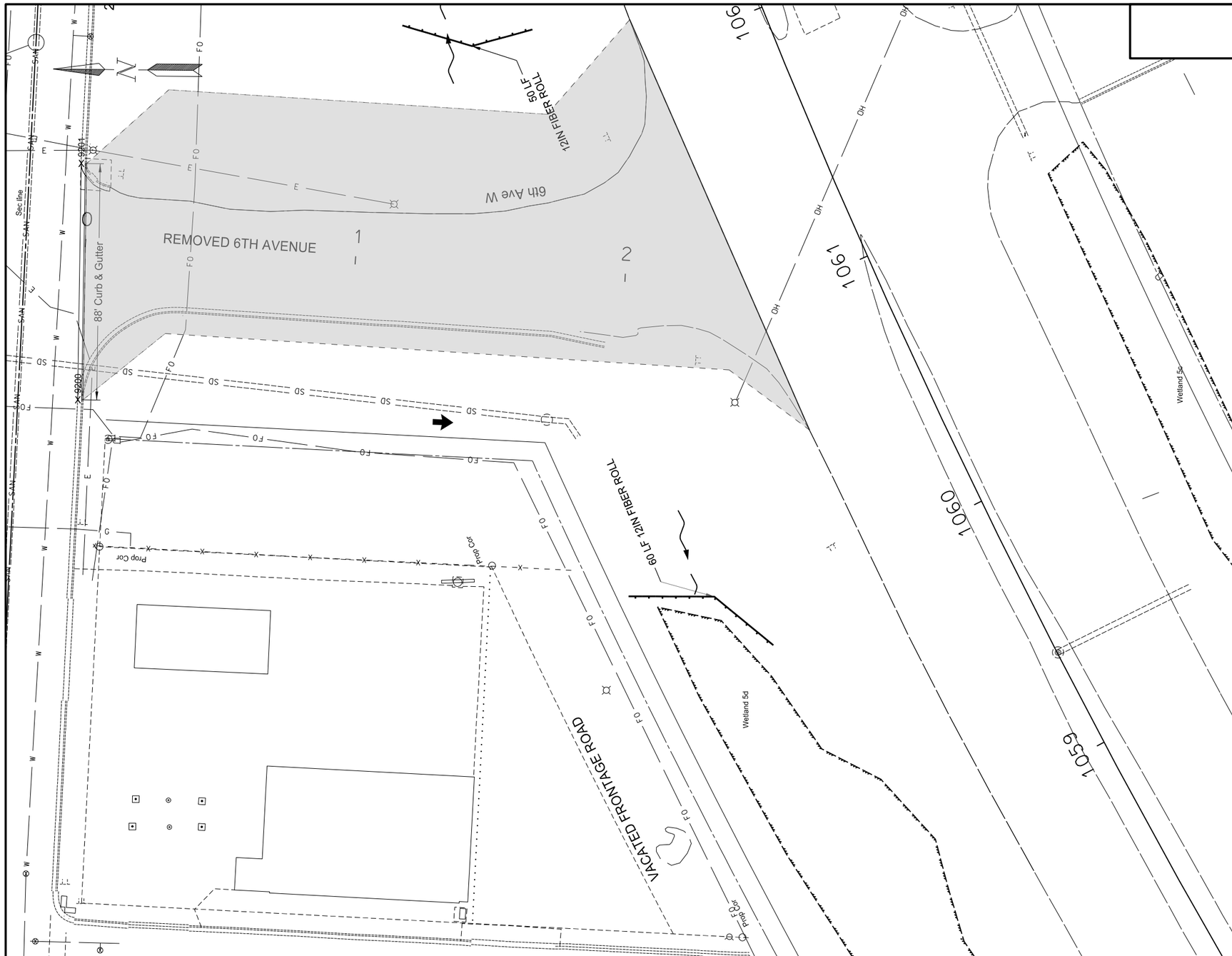
TEMPORARY EROSION CONTROL
9th Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	76	5



SPEC	CODE	BID ITEM	UNIT	QUANTITY
253	0201	**HYDRAULIC MULCH**		
		6TH Ave & US 2 Intersection	ACRE	0.52
261	0112	**FIBER ROLLS 12IN**		
		Sta 1060+11 - SCL02 Lt (Protecting Wetland 5d)	LF	60
		~ Sta 1062+26 - SCL02 Lt (Protecting Leaving Project Site)	LF	50
261	0113	**REMOVE FIBER ROLLS 12IN**		
		Sta 1060+11 - SCL02 Lt (Protecting Wetland 5d)	LF	60
		~ Sta 1062+26 - SCL02 Lt (Protecting Leaving Project Site)	LF	50

LEGEND

Fiber Rolls

Hydraulic Mulch

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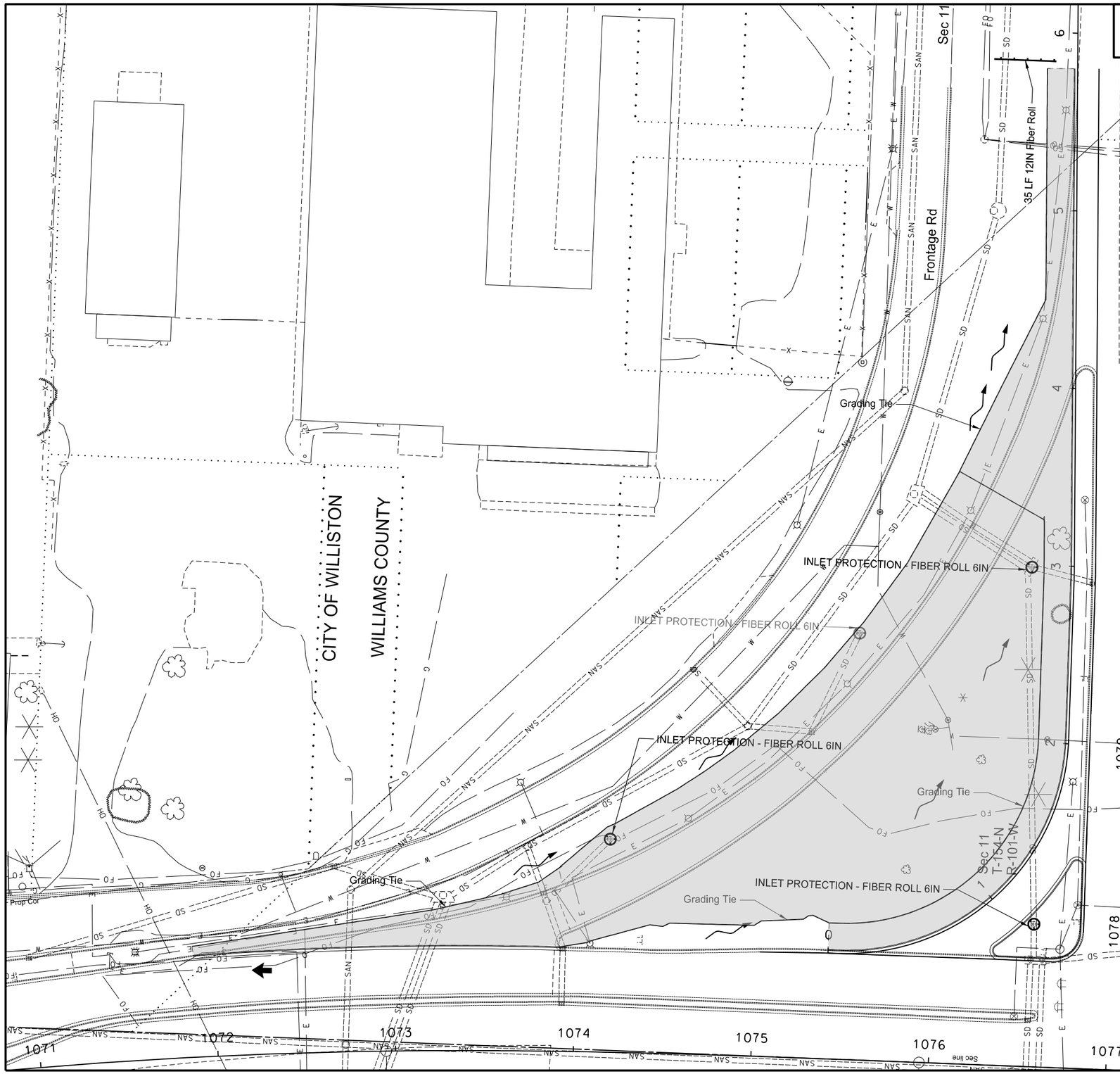
TEMPORARY EROSION CONTROL
6th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	76	6



SPEC	CODE	BID ITEM	UNIT	QUANTITY
253	0201	**HYDRAULIC MULCH**		
		2ND Ave & US 2 Intersection	ACRE	1.18
261	0112	**FIBER ROLLS 12IN**		
		Sta 1082+88 - SCL02 Lt	LF	35
		(Protecting Leaving Project Site)		
261	0113	**REMOVE FIBER ROLLS 12IN**		
		Sta 1082+88 - SCL02 Lt	LF	35
		(Protecting Leaving Project Site)		
708	1530	**INLET PROTECTION - FIBER ROLL 6IN**		
		Sta 1074+18 - SCL02 120' Lt	EA	1
		Sta 1+07 - 2ND_AVE 26' Rt	EA	1
		Sta 2+58 - 2ND_AVE 120' Lt	EA	1
		Sta 2+99 - 2ND_AVE 24' Lt	EA	1
708	1532	**REMOVE INLET PROTECTION - FIBER ROLL 6IN**		
		Sta 1074+18 - SCL02 120' Lt	EA	1
		Sta 1+07 - 2ND_AVE 26' Rt	EA	1
		Sta 2+58 - 2ND_AVE 120' Lt	EA	1
		Sta 2+99 - 2ND_AVE 24' Lt	EA	1
708	1540	**INLET PROTECTION - SPECIAL**		
		Sta 1073+82 - SCL02 89' Lt	EA	1
		Sta 1073+93 - SCL02 57' Lt	EA	1
		Sta 1075+28 - SCL02 183' Lt	EA	1
		Sta 0+95 - 2ND_AVE 40' Rt	EA	1
		Sta 0+99 - 2ND_AVE 44' Rt	EA	1
		Sta 2+90 - 2ND_AVE 11' Rt	EA	1
		Sta 3+22 - 2ND_AVE 57' Lt	EA	1
708	1541	**REMOVE INLET PROTECTION - SPECIAL**		
		Sta 1073+82 - SCL02 89' Lt	EA	1
		Sta 1073+93 - SCL02 57' Lt	EA	1
		Sta 1075+28 - SCL02 183' Lt	EA	1
		Sta 0+95 - 2ND_AVE 40' Rt	EA	1
		Sta 0+99 - 2ND_AVE 44' Rt	EA	1
		Sta 2+90 - 2ND_AVE 11' Rt	EA	1
		Sta 3+22 - 2ND_AVE 57' Lt	EA	1

LEGEND

Fiber Rolls

Hydraulic Mulch

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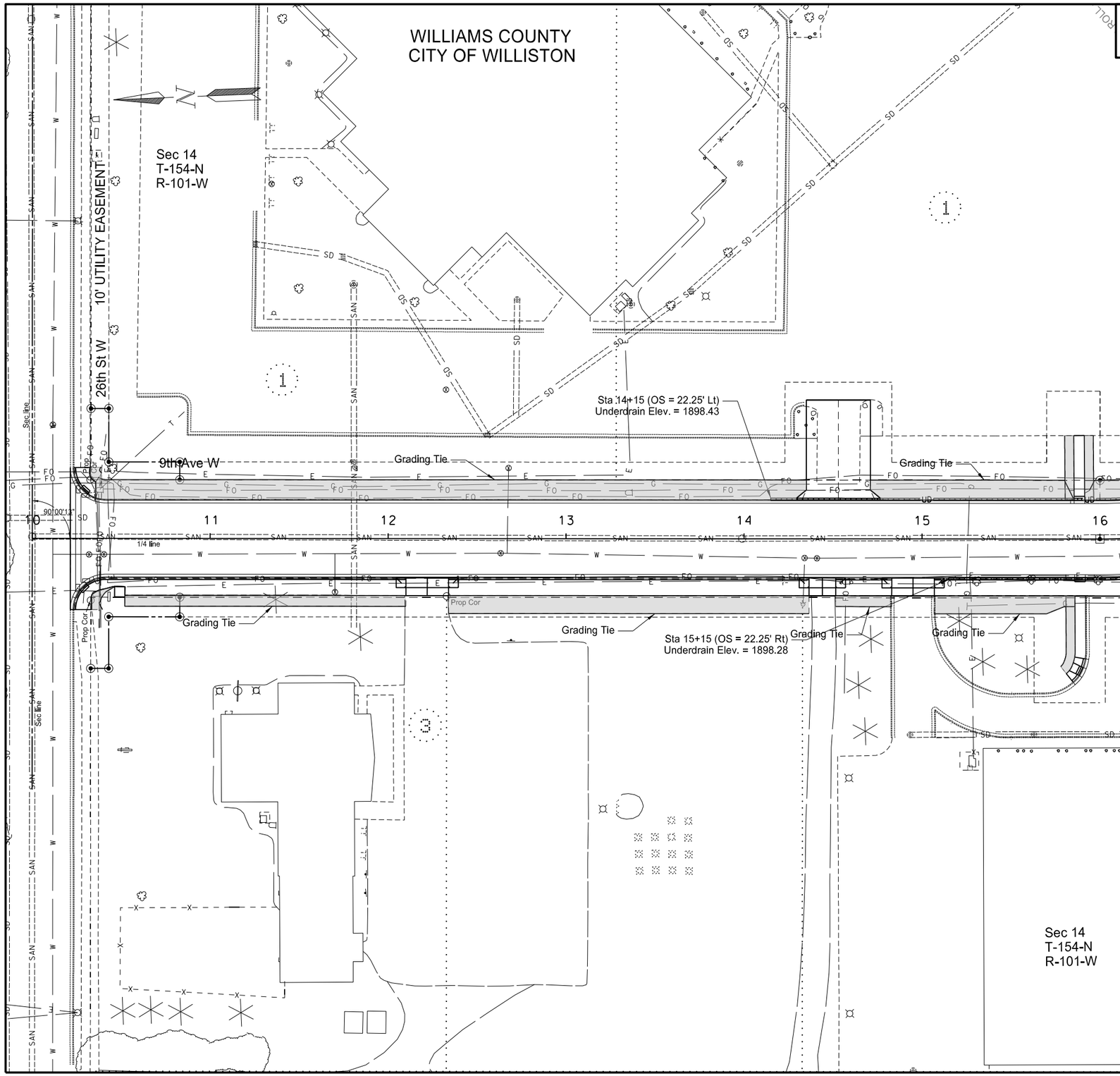
TEMPORARY EROSION CONTROL
2nd Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	77	1



SPEC	CODE	BID ITEM	UNIT	QUANTITY
251	0100	**SEEDING CLASS I**		
		Sta 10+21 to Sta 16+00 - Lt	ACRE	0.15
		Sta 10+21 to Sta 16+00 - Rt	ACRE	0.10
253	0201	**HYDRAULIC MULCH**		
		Sta 10+21 to Sta 16+00 - Lt	ACRE	0.15
		Sta 10+21 to Sta 16+00 - Rt	ACRE	0.10

LEGEND

Fiber Rolls

Seeding Class I
& Hydraulic Mulch

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PERMANANT EROSION CONTROL

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	77	2

SPEC	CODE	BID ITEM	UNIT	QUANTITY
251	0100	**SEEDING CLASS I**		
		Sta 16+00 to Sta 19+32 - Lt	ACRE	0.09
		Sta 16+00 to Sta 19+36 - Rt	ACRE	0.40
		South School Exit	ACRE	0.11
253	0201	**HYDRAULIC MULCH**		
		Sta 16+00 to Sta 19+32 - Lt	ACRE	0.09
		Sta 16+00 to Sta 19+36 - Rt	ACRE	0.40
		South School Exit	ACRE	0.11
255	0102	**ECB TYPE 2**		
		Sta 18+98 - CL Pipe (Lt & Rt)	SY	44
		Sta 19+06 - CL Pipe (Lt & Rt)	SY	44
		Sta 19+14 - CL Pipe (Lt & Rt)	SY	44
261	0112	**FIBER ROLLS 12IN**		
		Sta 18+98 to Sta 19+14 - Triple 30" Pipe Inlet	LF	65

LEGEND

Fiber Rolls

Seeding Class I & Hydraulic Mulch

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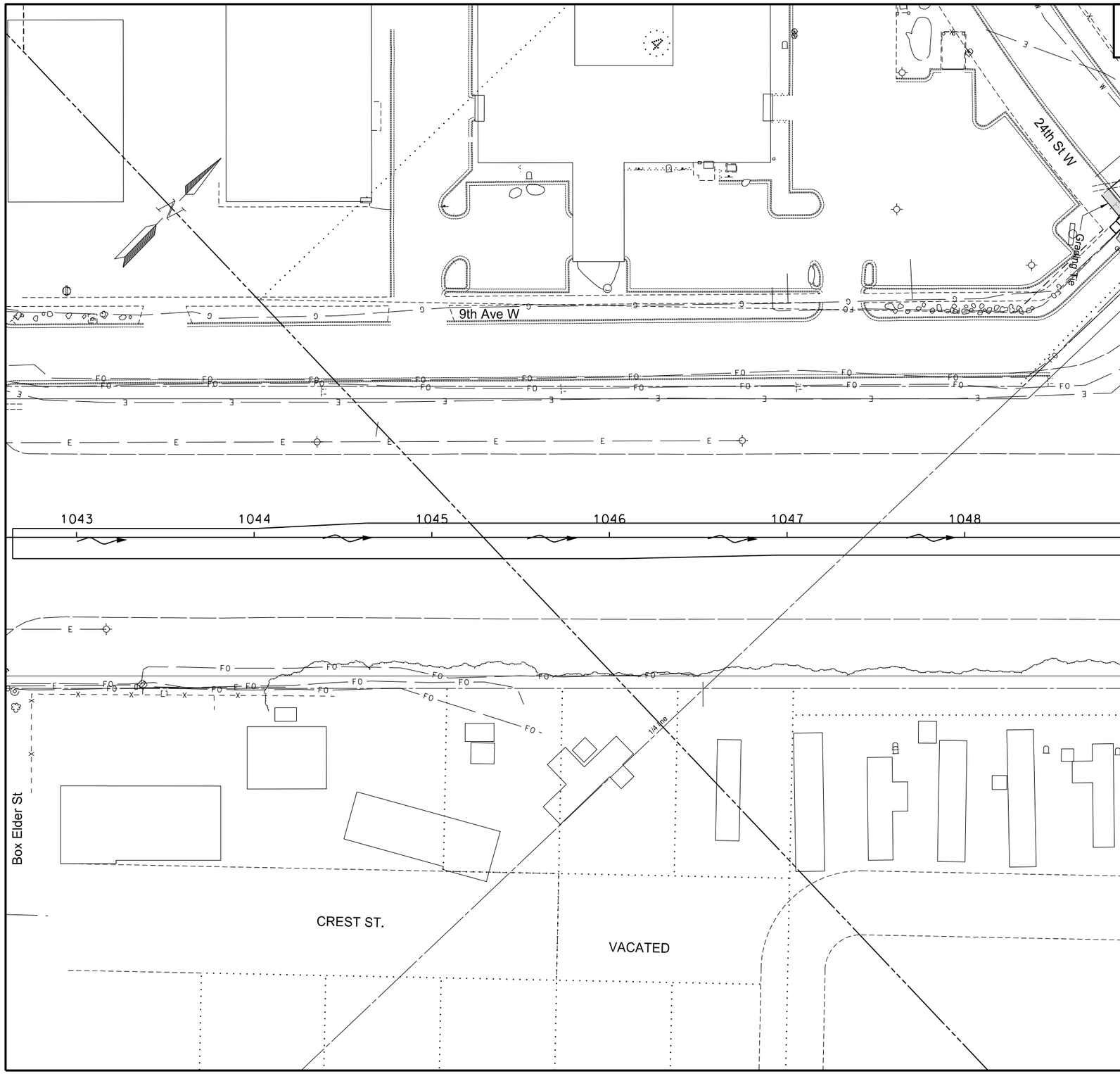
PERMANANT EROSION CONTROL

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	77	3



LEGEND

Fiber Rolls

Seeding Class I
& Hydraulic Mulch

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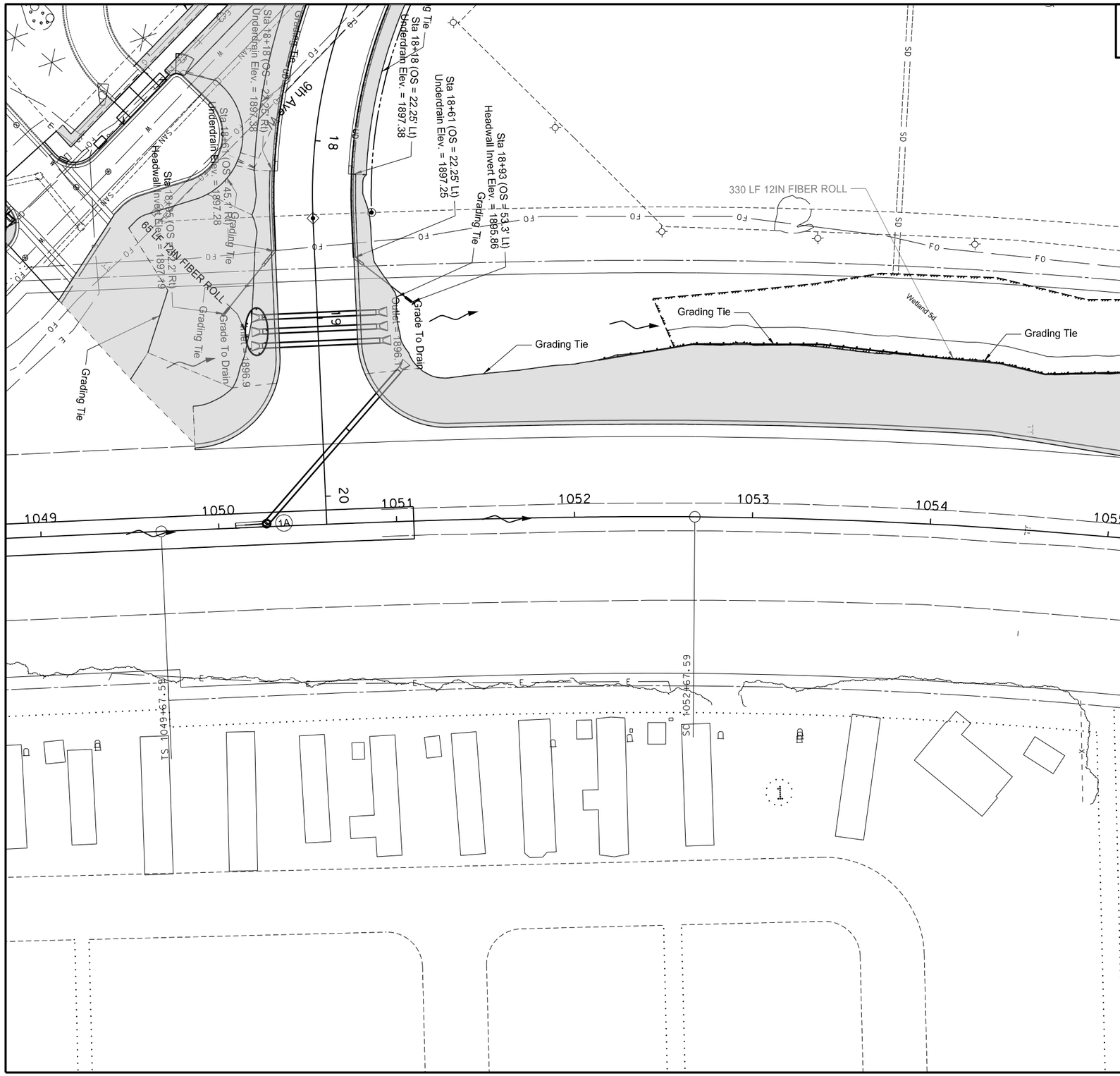
PERMANANT EROSION CONTROL

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	77	4



SPEC	CODE	BID ITEM	UNIT	QUANTITY
251	0100	**SEEDING CLASS I**		
		9TH Ave & US 2 Intersection	ACRE	0.43
253	0201	**HYDRAULIC MULCH**		
		9TH Ave & US 2 Intersection	ACRE	0.43
255	0102	**ECB TYPE 2**		
		Sta 1050+66 - Skewed CL Pipe (Lt)	SY	22
261	0112	**FIBER ROLLS 12IN**		
		Sta 1052+14 to Sta 1055+15 - SCL02 Lt (Protecting Wetland 5d)	LF	330

LEGEND

Fiber Rolls

Seeding Class I & Hydraulic Mulch

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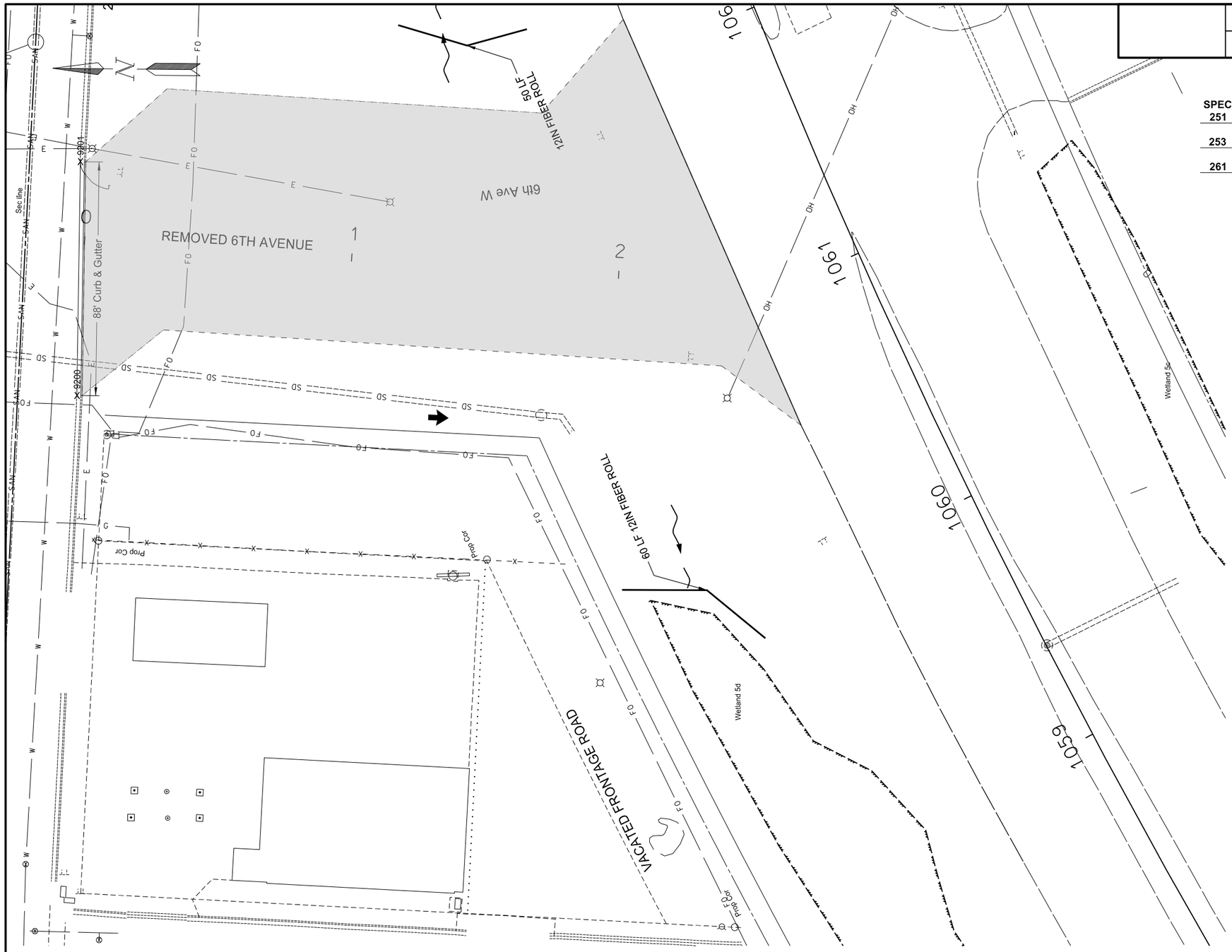
PERMANANT EROSION CONTROL

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	77	5



SPEC	CODE	BID ITEM	UNIT	QUANTITY
251	0100	**SEEDING CLASS I**		
		6TH Ave & US 2 Intersection	ACRE	0.52
253	0201	**HYDRAULIC MULCH**		
		6TH Ave & US 2 Intersection	ACRE	0.52
261	0112	**FIBER ROLLS 12IN**		
		Sta 1060+11 - SCL02 Lt (Protecting Wetland 5d)	LF	60
		~ Sta 1062+26 - SCL02 Lt (Protecting Leaving Project Site)	LF	50

LEGEND

Fiber Rolls

Seeding Class I & Hydraulic Mulch

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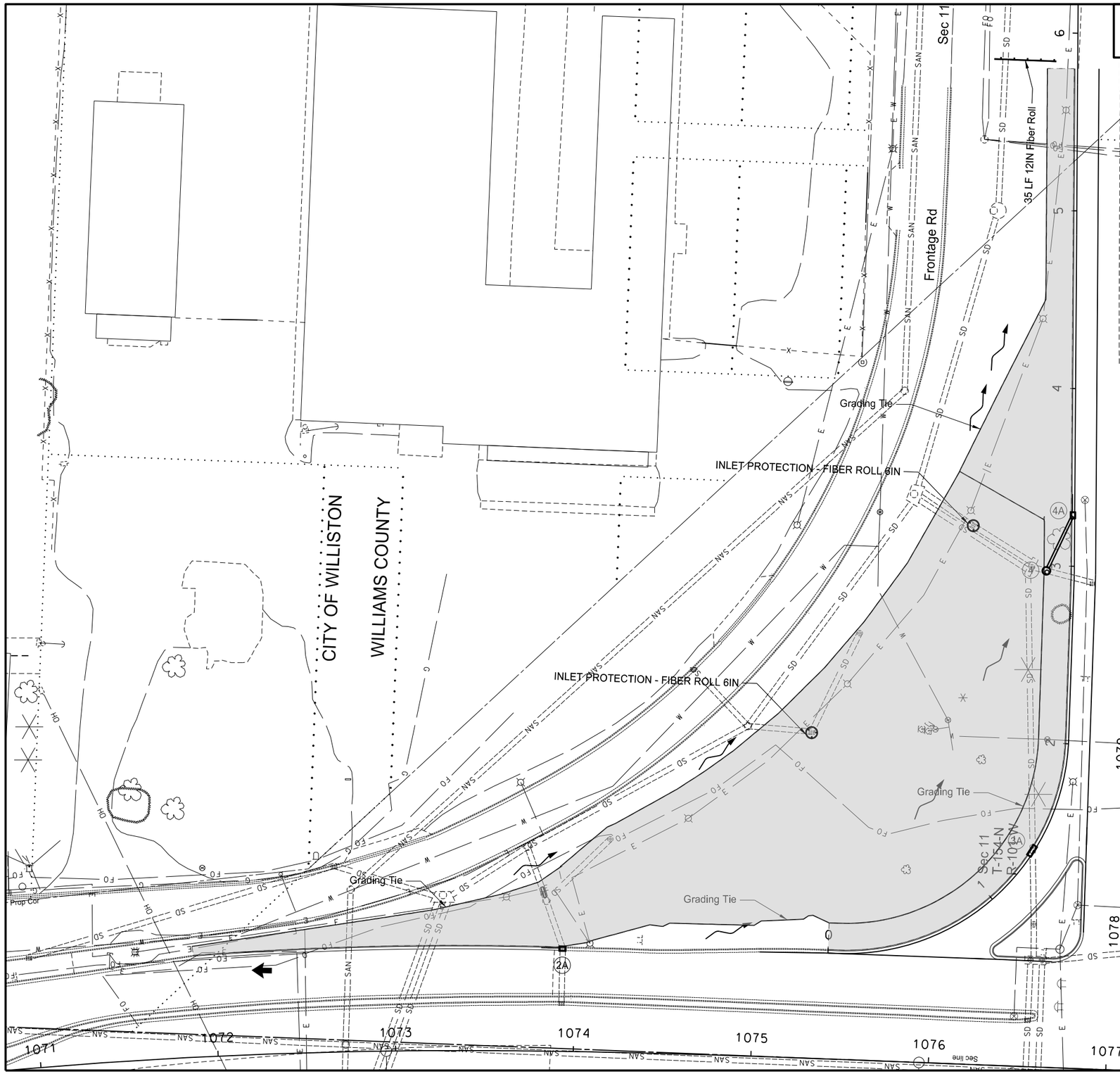
PERMANANT EROSION CONTROL
6th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	77	6



SPEC	CODE	BID ITEM	UNIT	QUANTITY
251	0100	**SEEDING CLASS I**		
		2ND Ave & US 2 Intersection	ACRE	1.18
253	0201	**HYDRAULIC MULCH**		
		2ND Ave & US 2 Intersection	ACRE	1.18
261	0112	**FIBER ROLLS 12IN**		
		Sta 1082+88 - SCL02 Lt (Protecting Leaving Project Site)	LF	35
708	1530	**INLET PROTECTION - FIBER ROLL 6IN**		
		Sta 1075+28 - SCL02 183' Lt	EA	1
		Sta 3+22 - 2ND_AVE 57' Lt	EA	1

LEGEND

Fiber Rolls

Seeding Class I & Hydraulic Mulch

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PERMANANT EROSION CONTROL
2nd Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - Williston, Intersection of US 2 & 9th Ave W

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	81	1

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
US 2 & 85 (Chain: SCL02)			
BEG	1027+07.34	439371.37	1202013.26
TS	1049+67.59	440946.97	1203633.82
SC	1052+67.59	441152.29	1203852.51
PI SCS307	1063+50.18	441910.77	1204625.12
CS	1072+94.68	441861.23	1205706.67
ST	1075+94.68	441854.19	1206006.55
PI	1077+22.24	441849.39	1206123.64
END	1130+09.41	447131.91	1206345.33
9th Ave W (Chain: SCL9TH)			
Station equation: 9th ave W (SCL9TH) and 26th St W (SCL26TH)			
9Th Ave W	10+00.00	441956.00	1203520.65
26th St W	20+00.00	441956.00	1203520.65
Station equation: 9th ave W (SCL9TH) and 24th St W (SCL24TH)			
9Th Ave W	19+17.29	441039.48	1203483.05
24th St W	2+66.56	441039.48	1203483.05
PI	20+13.87	440942.98	1203479.09
END	28+76.29	440341.80	1202860.76
24th St W (Chain: SCL24TH)			
PC	0+00.00	441090.18	1203222.21
PI C321	1+34.12	441046.80	1203349.13
PT/ 9th St W	2+66.56	441039.48	1203483.05
26th St W (Chain: SCL26TH)			
9th Ave W (SCL9TH)	20+00.00	441956.00	1203520.65
END	31+05.40	441910.77	1204625.12

CURVE DATA

ARC DEFINITION

SCS307	
PI STA	= 1063+50.18
Delta	= 46° 32' 22" RT
D_a	= 2° 00' 00"
R	= 2864.93'
L_s	= 300.00'
S_c	= 3° 00' 00"
T_s	= 1382.59'
L	= 2027.09'
C321	
PI STA	= 1+34.12
Delta	= 15° 44' 28" LT
D_a	= 5° 54' 19"
R	= 970.24'
T	= 134.12'
L	= 266.56'

US PUBLIC LAND SURVEY DATA

DESC.	SEC-TWP-RGE	NORTHING	EASTING
SW Cor Sec 14 T-154-N R-101-W		436563.36	1205944.06
S 1/4 Cor Sec 14 T-154-N R-101-W		436673.42	1203303.95
E 1/4 Cor Sec 14 T-154-N R-101-W		439205.65	1206051.33
W 1/4 Cor Sec 14 T-154-N R-101-W		439422.29	1200772.58
NW Cor Sec 14 T-154-N R-101-W		441847.96	1206158.61
N 1/4 Cor Sec 14 T-154-N R-101-W		441956.00	1203520.65
NW Cor Sec 11 T-154-N R-101-W		447130.47	1206380.30

REFERENCE MARKERS

R Mkr #	NORTHING	EASTING	STATION	OFFSET	ALIGNMENT
20	441391	1204058	1055+73	61' Lt	SCL02
20	441290	1204126	1055+71	61' Rt	SCL02

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	STATION	O/S	ALIGN
CONTROL POINT DESCRIPTION						
PRIMARY CONTROL						
GPS 1	441444.06	1204601.73	1890.07	1060+81	166' Rt	SCL02
#6 Rebar with Alum cap stamped "NDDOT LS 3047"						
SECONDARY CONTROL						
RTK 410	439023.20	1200627.96	1905.23	N/A	N/A	N/A
RTK 50002	438724.39	1200986.95	1912.78	N/A	N/A	N/A

All coordinates and measurements on this document derived from the International Foot definition.

☐ Assumed Coordinates

☒ All coordinates on this sheet are Williams County ground coordinates. They are derived from the NAD83(2011) reference frame; North Dakota North Zone Combination Factor (cf) = 0.9998445

INITIALIZING BENCH MARK
NDGPS Stations (OPUS)

☒ NAVD-88
☐ NGVD-29
☐ GEOID 09 ☐ _____
☒ GEOID 12A

NOTES: Sheet 1 of 1

Date Survey Completed 1/11/16

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	82	1

Chain PR_9TH contains:
59 CUR PR_9TH_3 60

Beginning chain PR_9TH description
Feature: Alignment 1 S
==========

Point 59 N 441,956.0039 E 1,203,520.6472 Sta 10+00.00

Course from 59 to PC PR_9TH_3 S 2° 20' 56.46" W Dist 600.0000 600.0000

Curve Data
——

Curve PR_9TH_3
P.I. Station 17+29.02 N 441,227.5926 E 1,203,490.7670
Delta = 46° 32' 35.21" (LT) (LT)
Degree = 19° 05' 54.94" 54.94"
Tangent = 129.0239
Length = 243.6992
Radius = 300.0000
External = 26.5688
Long Chord = 237.0537
Mid. Ord. = 24.4072
P.C. Station 16+00.00 N 441,356.5081 E 1,203,496.0552
P.T. Station 18+43.70 N 441,135.0847 E 1,203,580.7084
C.C. N 441,344.2121 E 1,203,795.8031
Back = S 2° 20' 56.46" W W
Ahead = S 44° 11' 38.75" E E
Chord Bear = S 20° 55' 21.14" E E

Course from PT PR_9TH_3 to 60 S 44° 11' 38.75" E Dist 172.0538 172.0538

Point 60 N 441,011.7252 E 1,203,700.6456 Sta 20+15.75

==========
Ending chain PR_9TH description

Chain 2ND_AVE contains:
61 CUR 2ND_AVE_3 62 63 64 65

Beginning chain 2ND_AVE description
Feature: Alignment 1 S
==========

Point 61 N 441,915.8567 E 1,205,955.4731 Sta 0+00.00

Course from 61 to PC 2ND_AVE_3 S 87° 45' 43.33" E Dist 6.0000 6.0000

Curve Data
——

Curve 2ND_AVE_3
P.I. Station 1+31.42 N 441,910.7247 E 1,206,086.7941
Delta = 90° 11' 33.87" (LT) (LT)
Degree = 45° 50' 11.84" 11.84"
Tangent = 125.4212
Length = 196.7700
Radius = 125.0000
External = 52.0748
Long Chord = 177.0738
Mid. Ord. = 36.7604
P.C. Station 0+06.00 N 441,915.6224 E 1,205,961.4685
P.T. Station 2+02.77 N 442,036.0660 E 1,206,091.2702
C.C. N 442,040.5270 E 1,205,966.3498
Back = S 87° 45' 43.33" E E
Ahead = N 2° 02' 42.80" E E
Chord Bear = N 47° 08' 29.73" E E

Course from PT 2ND_AVE_3 to 62 N 2° 02' 42.67" E Dist 0.1032 0.1032

Point 62 N 442,036.1692 E 1,206,091.2738 Sta 2+02.87

Course from 62 to 63 N 2° 02' 42.80" E Dist 92.5682 92.5682

Point 63 N 442,128.6784 E 1,206,094.5774 Sta 2+95.44

Course from 63 to 64 N 0° 30' 34.41" E Dist 191.0991 191.0991

Point 64 N 442,319.7699 E 1,206,096.2769 Sta 4+86.54

Course from 64 to 65 N 0° 30' 34.41" E Dist 144.0000 144.0000

Point 65 N 442,463.7642 E 1,206,097.5576 Sta 6+30.54

==========
Ending chain 2ND_AVE description

Chain RAMP_REMOVAL contains:
96 97 98 99 131 132 133 134 135 136 137 138 139 140 141

Beginning chain RAMP_REMOVAL description
Feature: Grnd
==========

Point 96 N 441,914.5574 E 1,205,596.3587 Sta 0+00.00

Course from 96 to 97 N 81° 33' 28.63" E Dist 111.0684 111.0684

Point 97 N 441,930.8632 E 1,205,706.2237 Sta 1+11.07

Course from 97 to 98 N 81° 11' 03.32" E Dist 29.1396 29.1396

Point 98 N 441,935.3291 E 1,205,735.0191 Sta 1+40.21

Course from 98 to 99 N 77° 08' 55.08" E Dist 38.6754 38.6754

Point 99 N 441,943.9314 E 1,205,772.7257 Sta 1+78.88

Course from 99 to 131 N 72° 13' 27.45" E Dist 38.0289 38.0289

Point 131 N 441,955.5413 E 1,205,808.9391 Sta 2+16.91

Course from 131 to 132 N 66° 35' 19.96" E Dist 39.4797 39.4797

Point 132 N 441,971.2276 E 1,205,845.1687 Sta 2+56.39

Course from 132 to 133 N 61° 04' 14.57" E Dist 40.9406 40.9406

Point 133 N 441,991.0318 E 1,205,881.0006 Sta 2+97.33

Course from 133 to 134 N 57° 02' 35.27" E Dist 20.5221 20.5221

Point 134 N 442,002.1959 E 1,205,898.2203 Sta 3+17.85

Course from 134 to 135 N 54° 35' 47.65" E Dist 20.0300 20.0300

Point 135 N 442,013.7999 E 1,205,914.5466 Sta 3+37.88

Course from 135 to 136 N 50° 26' 04.87" E Dist 34.9559 34.9559

Point 136 N 442,036.0653 E 1,205,941.4940 Sta 3+72.84

Course from 136 to 137 N 45° 20' 34.14" E Dist 38.1746 38.1746

Point 137 N 442,062.8968 E 1,205,968.6485 Sta 4+11.02

Course from 137 to 138 N 40° 47' 54.77" E Dist 36.2234 36.2234

Point 138 N 442,090.3183 E 1,205,992.3170 Sta 4+47.24

Course from 138 to 139 N 36° 26' 47.28" E Dist 42.5488 42.5488

Point 139 N 442,124.5451 E 1,206,017.5940 Sta 4+89.79

Course from 139 to 140 N 29° 51' 24.67" E Dist 69.5685 69.5685

Point 140 N 442,184.8799 E 1,206,052.2276 Sta 5+59.36

Course from 140 to 141 N 21° 58' 18.61" E Dist 19.9761 19.9761

Point 141 N 442,203.4051 E 1,206,059.7017 Sta 5+79.33

==========
Ending chain RAMP_REMOVAL description

Chain EX_6TH contains:
8000 8001

Beginning chain EX_6TH description
==========

Point 8000 N 441,891.7728 E 1,204,549.6598 Sta 0+00.00

Course from 8000 to 8001 S 3° 06' 40.65" W Dist 245.6498 245.6498

Point 8001 N 441,646.4851 E 1,204,536.3270 Sta 2+45.65

==========
Ending chain EX_6TH description

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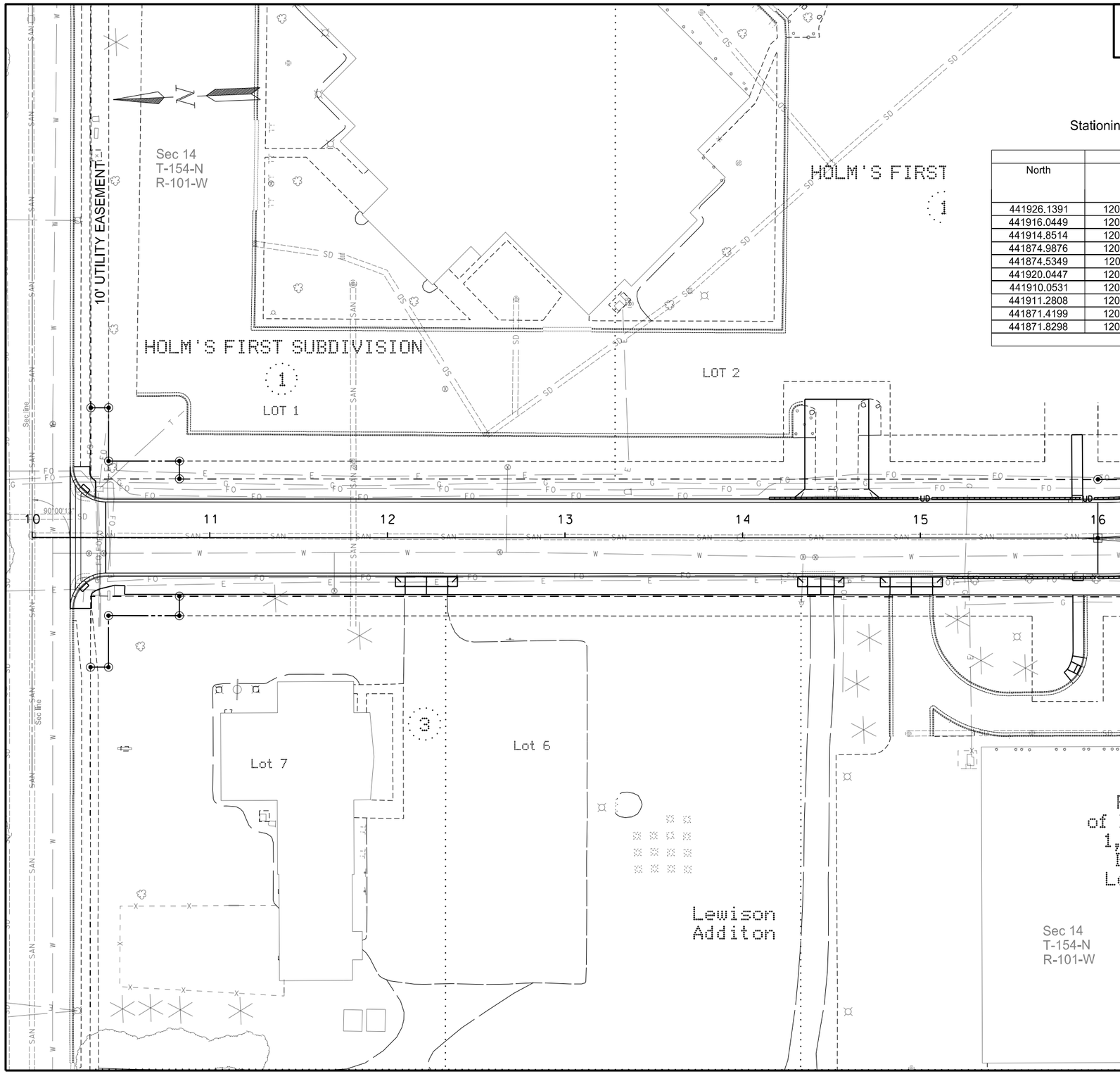
ALIGNMENT DESCIPTIONS

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	82	2



Stationing and Offsets are from Centerline Chain PR_9TH

		Right of Way / Reference Monuments and Markers				
North	East	Station	Offset	Iron Pin R/W monument	R/W Marker (witness post)	Alignment Monument
441926.1391	1203446.3614	10+32.88	72.9993	X		
441916.0449	1203445.9473	10+42.99	72.9993	X		
441914.8514	1203474.9227	10+42.99	43.9993	X		
441874.9876	1203473.2875	10+82.89	43.9993	X		
441874.5349	1203484.2781	10+82.89	32.9993	X		
441920.0447	1203592.2335	10+32.99	-73.0000	X		
441910.0531	1203591.8243	10+42.99	-73.0007	X		
441911.2808	1203561.8494	10+43.00	-43.0007	X		
441871.4199	1203560.2143	10+82.89	-43.0007	X		
441871.8298	1203550.2227	10+82.89	-33.0007	X		
			Page Total	10	0	0

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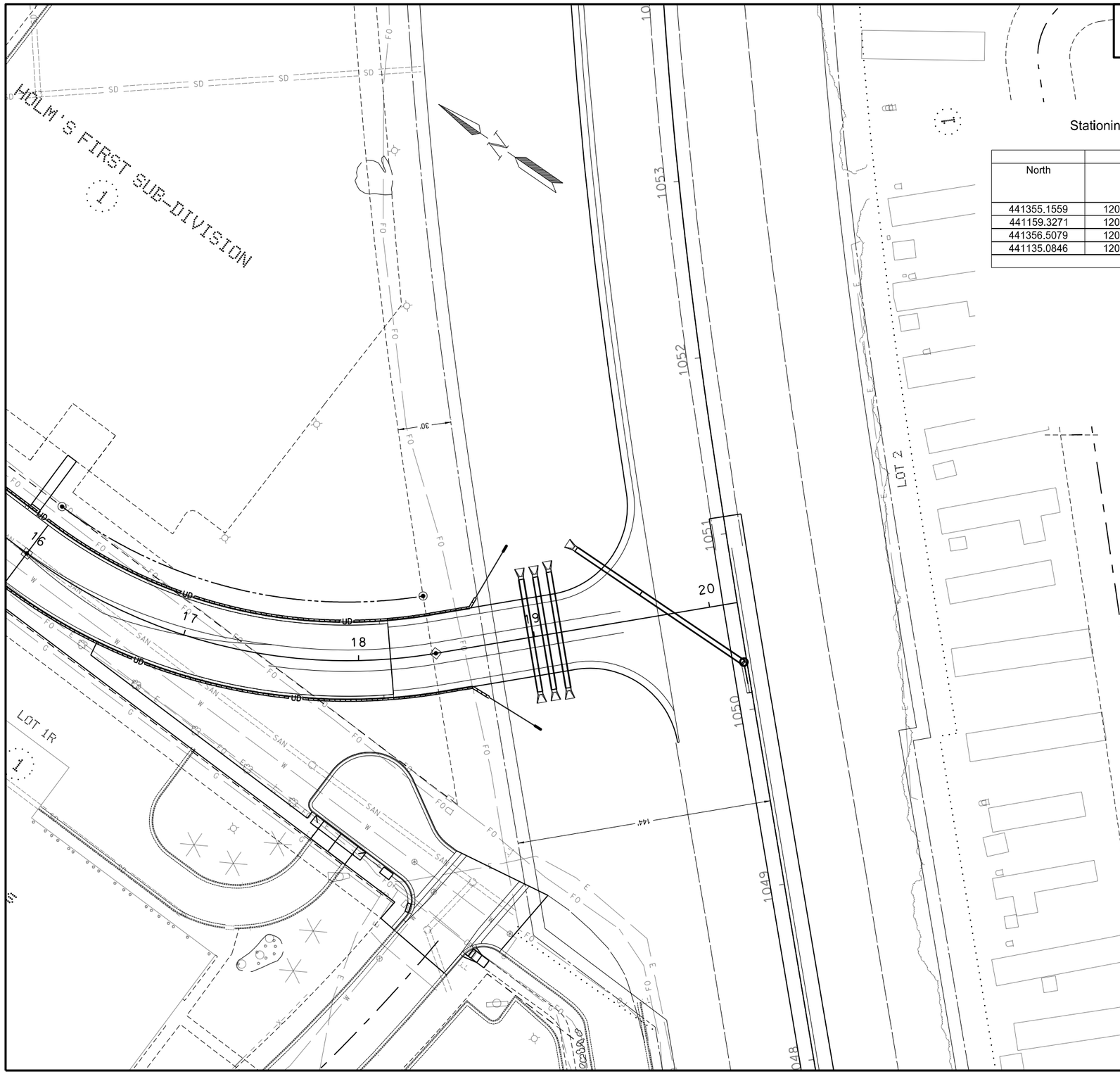
R/W MARKERS AND MONUMENTS LAYOUT
9th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	82	3



Stationing and Offsets are from Centerline Chain PR_9TH

		Right of Way / Reference Monuments and Markers				
North	East	Station	Offset	Iron Pin R/W monument	R/W Marker (witness post)	Alignment Monument
441355.1559	1203529.0282	16+00.00	-33.0007	X		
441159.3271	1203603.1735	18+41.77	-33.0007	X		
441356.5079	1203496.0553	16+00.00	0.0000			X
441135.0846	1203580.7085	18+43.70	0.0001			X
			Page Total	2	0	2

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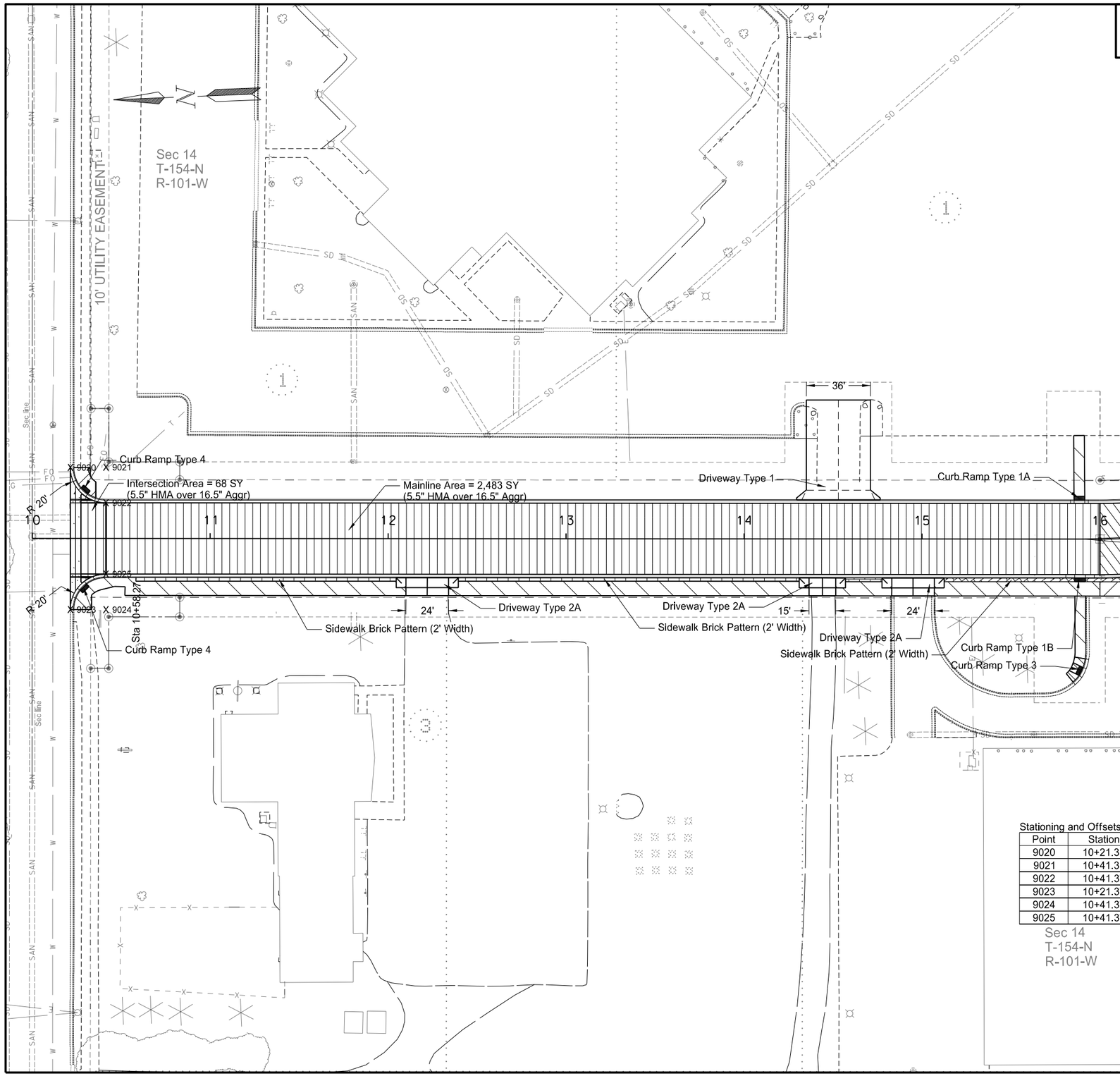
R/W MARKERS AND MONUMENTS LAYOUT
9th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	90	1



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	**0120**	**AGGREGATE BASE COURSE CL 5**		
		10+21 to 10+41 (9th Ave & 26th St Intersection)	TON	102
		10+41 to 16+00 (ML)	TON	2433
		10+23 to 10+36 (Sidewalk Left)	TON	3
		10+23 to 16+00 (Sidewalk Right)	TON	418
		12+22 (Driveway Right)	TON	7
		14+44 (Driveway Right)	TON	5
		14+53 (Driveway Left)	TON	47
		14+95 (Driveway Right)	TON	7
		15+85 to 15+91 (SW to Church Parking Lot)	TON	5
401	**0050**	**TACK COAT**		
		10+21 to 10+41 (9th Ave & 26th St Intersection)	GAL	10
		10+41 to 16+00 (ML - 3 Lifts)	GAL	372
401	**0060**	**PRIME COAT**		
		10+21 to 10+41 (9th Ave & 26th St Intersection)	GAL	17
		10+41 to 16+00 (ML)	GAL	621
430	**0045**	**SUPERPAVE FAA 45**		
		10+21 to 10+41 (9th Ave & 26th St Intersection)	TON	21
		10+41 to 16+00 (ML)	TON	759
430	**6428**	**PG 64-28 ASPHALT CEMENT**		
		10+21 to 10+41 (9th Ave & 26th St Intersection)	TON	1.3
		10+41 to 16+00 (ML)	TON	45.5
709	**0100**	**GEOSYNTHETIC MATERIAL TYPE G**		
		10+21 to 16+00 (ML)	SY	2959
748	**0140**	**CURB & GUTTER - TYPE I**		
		10+21 to 16+00 (Left)	LF	590
		10+21 to 16+00 (Right)	LF	590
		15+86 to 15+91 (Right to School Parking Lot)	LF	16
748	**1030**	**VALLEY GUTTER 72IN**		
		10+21 to 10+27 (ML)	SY	40
750	**0110**	**SIDEWALK BRICK PATTERN**		
		10+58 to 12+04 (Right)	SY	32
		12+39 to 14+31 (Right)	SY	43
		14+57 to 14+77 (Right)	SY	5
		15+12 to 15+86 (Right)	SY	16
750	**0115**	**SIDEWALK CONCRETE 4IN**		
		10+23 to 10+36 (Left)	SY	15
		10+23 to 12+10 (Right)	SY	165
		12+34 to 14+36 (Right)	SY	176
		14+51 to 14+83 (Right)	SY	24
		15+07 to 16+00 (Right)	SY	82
		15+85 to 15+91 (Left to Church Parking Lot)	SY	24
		15+86 to 15+92 (Right to School Parking Lot)	SY	32
750	**1000**	**DRIVEWAY CONCRETE**		
		12+22 (Right)	SY	33
		14+44 (Right)	SY	23
		14+53 (Left)	SY	228
		14+95 (Right)	SY	33
750	**2115**	**DETECTABLE WARNING PANELS**		
		9TH Ave & 26TH St Intersection - SW	SF	10
		9TH Ave & 26TH St Intersection - SE	SF	10
		15+88 (Left - Proposed Crosswalk)	SF	12
		15+89 (Right - Proposed Crosswalk)	SF	12
		15+89 (Right - School Parking Lot)	SF	10

Stationing and Offsets are from PR_9TH chain.

Point	Station	Offset	North	East
9020	10+21.35	-39.8200	441933.0435	1203559.5589
9021	10+41.35	-40.0000	441913.0538	1203558.9190
9022	10+41.37	-20.0000	441913.8446	1203538.9346
9023	10+21.37	39.9631	441936.2854	1203479.8416
9024	10+41.37	40.0000	441916.3038	1203478.9850
9025	10+41.37	20.0000	441915.4841	1203498.9682

Sec 14
T-154-N
R-101-W

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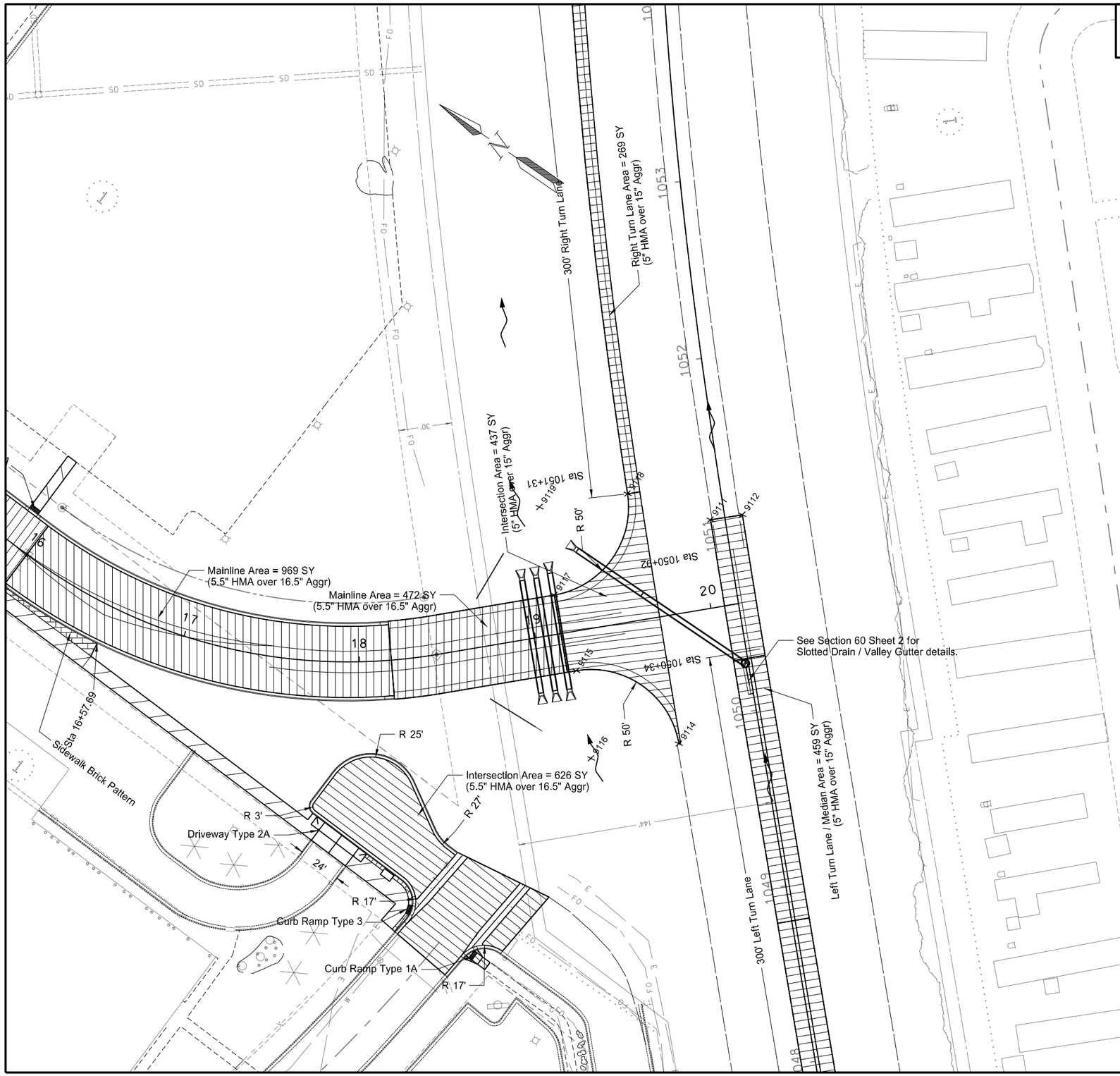
PAVING LAYOUTS
9th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	90	2



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0120	**AGGREGATE BASE COURSE CL 5**		
		16+00 to 18+18 (ML)	TON	945
		18+18 to 19+14 (ML)	TON	453
		15+92 to 16+58 (Sidewalk Right)	TON	63
		16+58 to 18+45 (Sidewalk Right)	TON	45
		17+78 to 18+83 (South School Exit)	TON	650
		17+86 (Driveway Right)	TON	8
401	0050	**TACK COAT**		
		16+00 to 18+18 (ML - 3 Lifts)	GAL	145
		18+18 to 19+14 (ML - 3 Lifts)	GAL	71
		17+78 to 18+83 (South School Exit - 3 Lifts)	GAL	94
401	0060	**PRIME COAT**		
		16+00 to 18+18 (ML)	GAL	242
		18+18 to 19+14 (ML)	GAL	118
		17+78 to 18+83 (South School Exit)	GAL	156
430	0045	**SUPERPAVE FAA 45**		
		16+00 to 18+18 (ML)	TON	296
		18+18 to 19+14 (ML)	TON	151
		17+78 to 18+83 (South School Exit)	TON	191
430	6428	**PG 64-28 ASPHALT CEMENT**		
		16+00 to 18+18 (ML)	TON	17.8
		18+18 to 19+14 (ML)	TON	9.1
		17+78 to 18+83 (South School Exit)	TON	11.5
709	0100	**GEOSYNTHETIC MATERIAL TYPE G**		
		16+00 to 18+18 (ML)	SY	1114
748	0140	**CURB & GUTTER - TYPE I**		
		16+00 to 18+18 (Left)	LF	203
		16+00 to 18+18 (Right)	LF	233
		17+78 to 18+83 (South School Exit)	LF	264
748	1030	**VALLEY GUTTER 72IN**		
		North Approach of 24th St.	SY	27
		South Approach of 24th St.	SY	30
750	0110	**SIDEWALK BRICK PATTERN**		
		15+92 to 16+58 (Right)	SY	30
		18+00 to 18+17 (Right - South School Exit)	SY	10
750	0115	**SIDEWALK CONCRETE 4IN**		
		16+00 to 17+81 (Right)	SY	200
		17+93 to 18+17 (North Side of 24th St.)	SY	54
		18+35 to 18+45 (South Side of 24th St.)	SY	8
750	1000	**DRIVEWAY CONCRETE**		
		17+86 (Right)	SY	40
750	2115	**DETECTABLE WARNING PANELS**		
		North Side of 24th Street - NW	SF	10
		South Side of 24th Street - SW	SF	10

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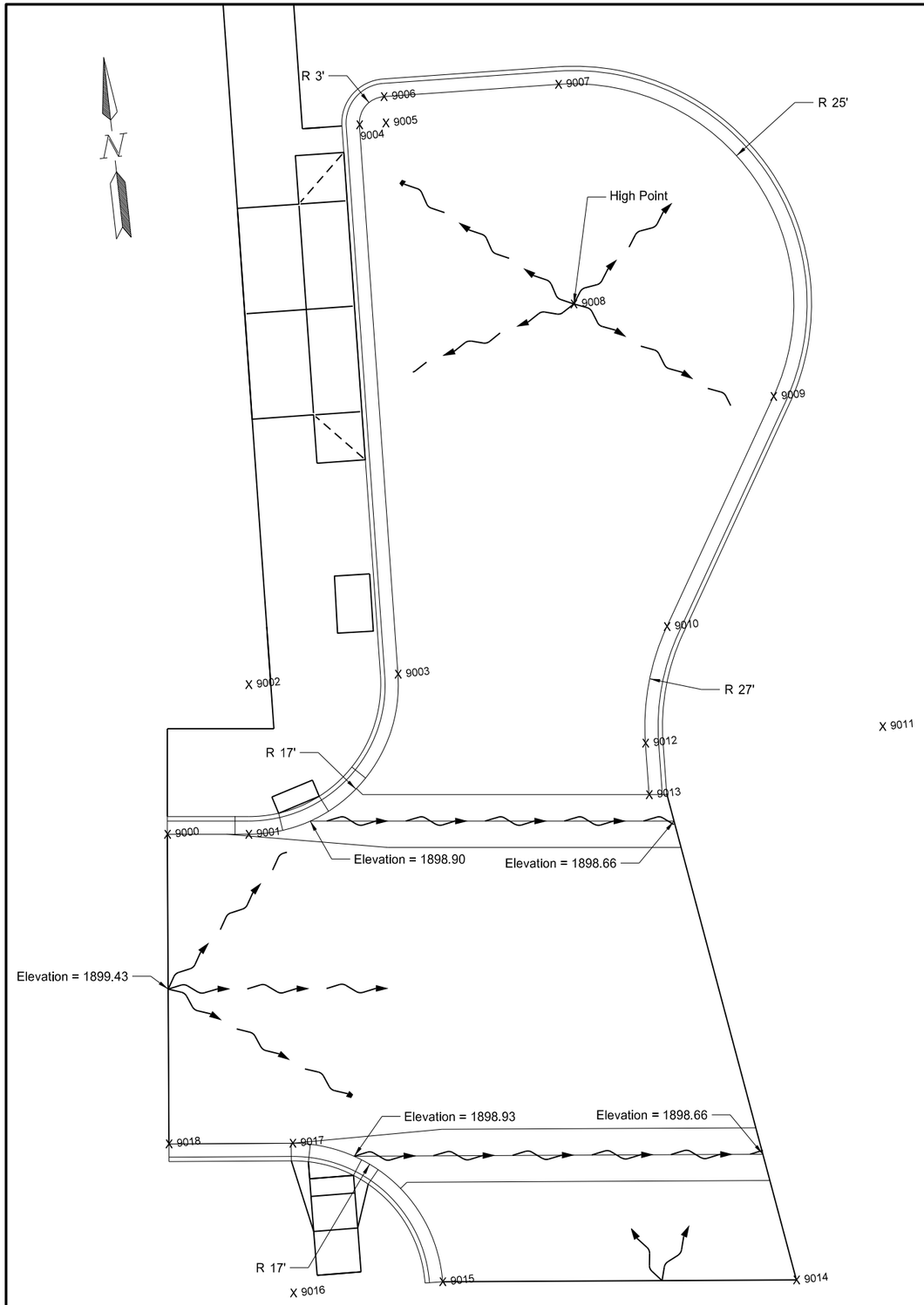
PAVING LAYOUTS
9th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	90	3



Stationing and Offsets are from PR_9TH chain.

Point	Station	Offset	North	East	Elevation
9000	18+12.10	153.6250	441063.9459	1203439.1149	1898.9600
9001	18+16.44	147.0876	441062.9228	1203448.2925	1898.9100
9002	18+08.20	135.1577	441079.8181	1203450.1761	
9003	18+15.93	122.2301	441079.1213	1203467.1618	1899.0200
9004	17+79.08	83.8897	441141.6173	1203469.7255	1899.3900
9005	17+80.41	81.4122	441141.4944	1203472.7229	1899.4300
9006	17+78.45	79.7230	441144.4919	1203472.8459	1899.3600
9007	17+87.65	63.4375	441143.6775	1203492.6980	1899.2600
9008	18+03.71	78.6176	441118.6985	1203491.6734	1899.6200
9009	18+22.49	69.8856	441105.7417	1203513.0537	1899.0000
9010	18+29.45	97.2877	441081.1061	1203498.1242	1898.8600
9011	18+50.96	90.0384	441067.1128	1203521.2150	
9012	18+34.64	108.7954	441068.2194	1203494.2377	1898.7900
9013	18+37.67	112.9529	441062.3552	1203493.9972	1898.7600
9014	18+83.34	144.8011	441005.7208	1203504.5244	1899.7400
9015	18+52.43	170.4891	441009.9772	1203464.5582	1899.0100
9016	18+41.49	182.2571	441010.5881	1203447.5691	
9017	18+34.49	169.3907	441027.4925	1203449.3694	1898.9700
9018	18+27.89	178.8187	441028.9812	1203435.3912	1899.0400

Legend

Direction of Flow

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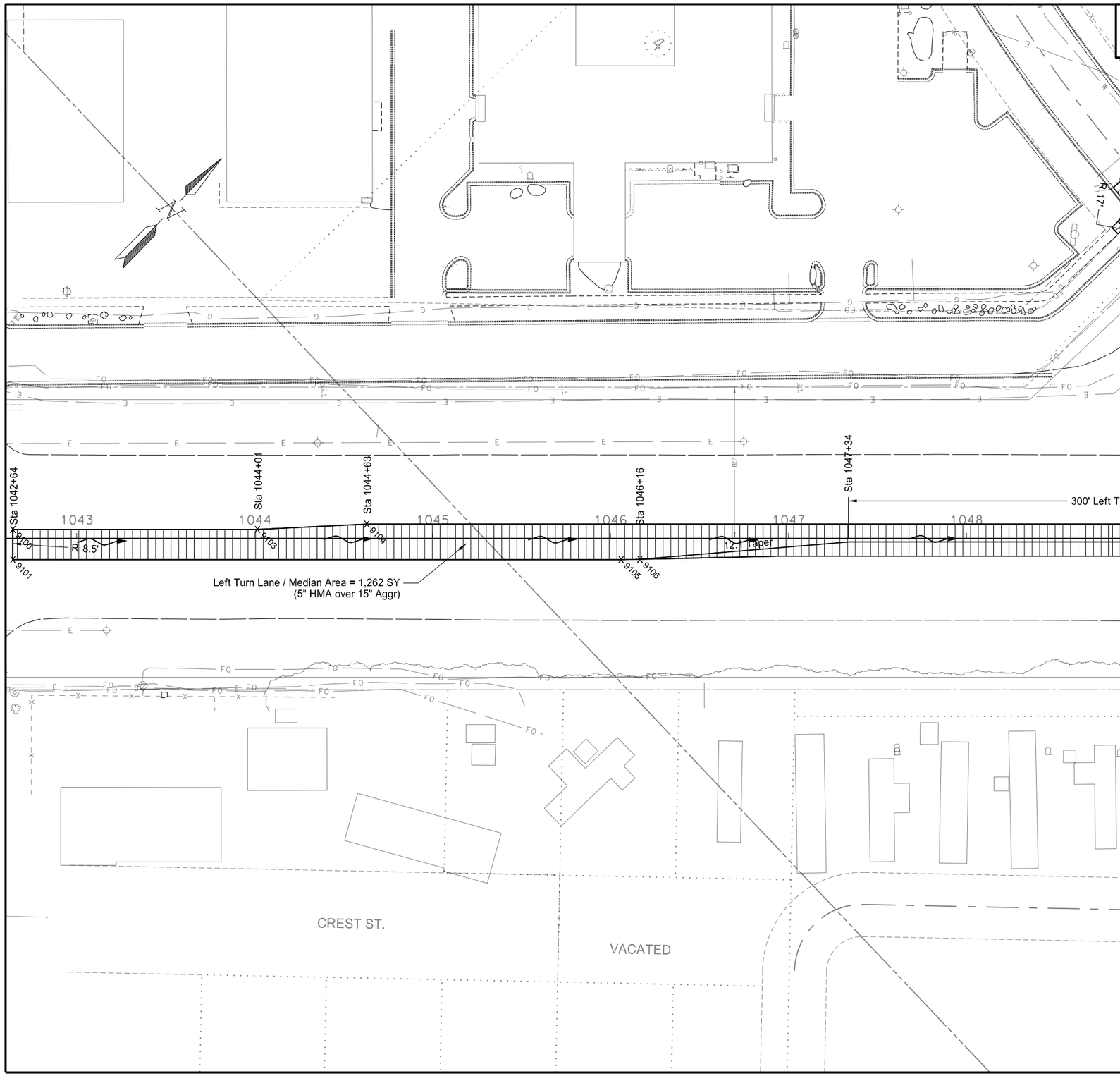
PAVING LAYOUTS
9th Avenue W
Trinity Christian School Entrance

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	90	4



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0120	**AGGREGATE BASE COURSE CL 5**		
		1042+64 to 1048+80 (ML- Median)	TON	986
401	0050	**TACK COAT**		
		1042+64 to 1048+80 (ML- Median)	GAL	126
401	0060	**PRIME COAT**		
		1042+64 to 1048+80 (ML- Median)	GAL	315
430	0045	**SUPERPAVE FAA 45**		
		1042+64 to 1048+80 (ML- Median)	TON	350
430	6428	**PG 64-28 ASPHALT CEMENT**		
		1042+64 to 1048+80 (ML- Median)	TON	21

Stationing and Offsets are from SCL02 chain.

Point	North	East	Station	Offset
9100	440460.1010	1203125.8843	1042+64.01	-4.9999
9101	440447.9123	1203137.7349	1042+64.01	12.0001
9103	440555.9172	1203224.4346	1044+01.47	-4.9999
9104	440600.8971	1203266.3945	1044+62.91	-7.9999
9105	440686.2180	1203382.8406	1046+05.87	12.0001
9106	440693.7590	1203390.2564	1046+16.45	11.7629

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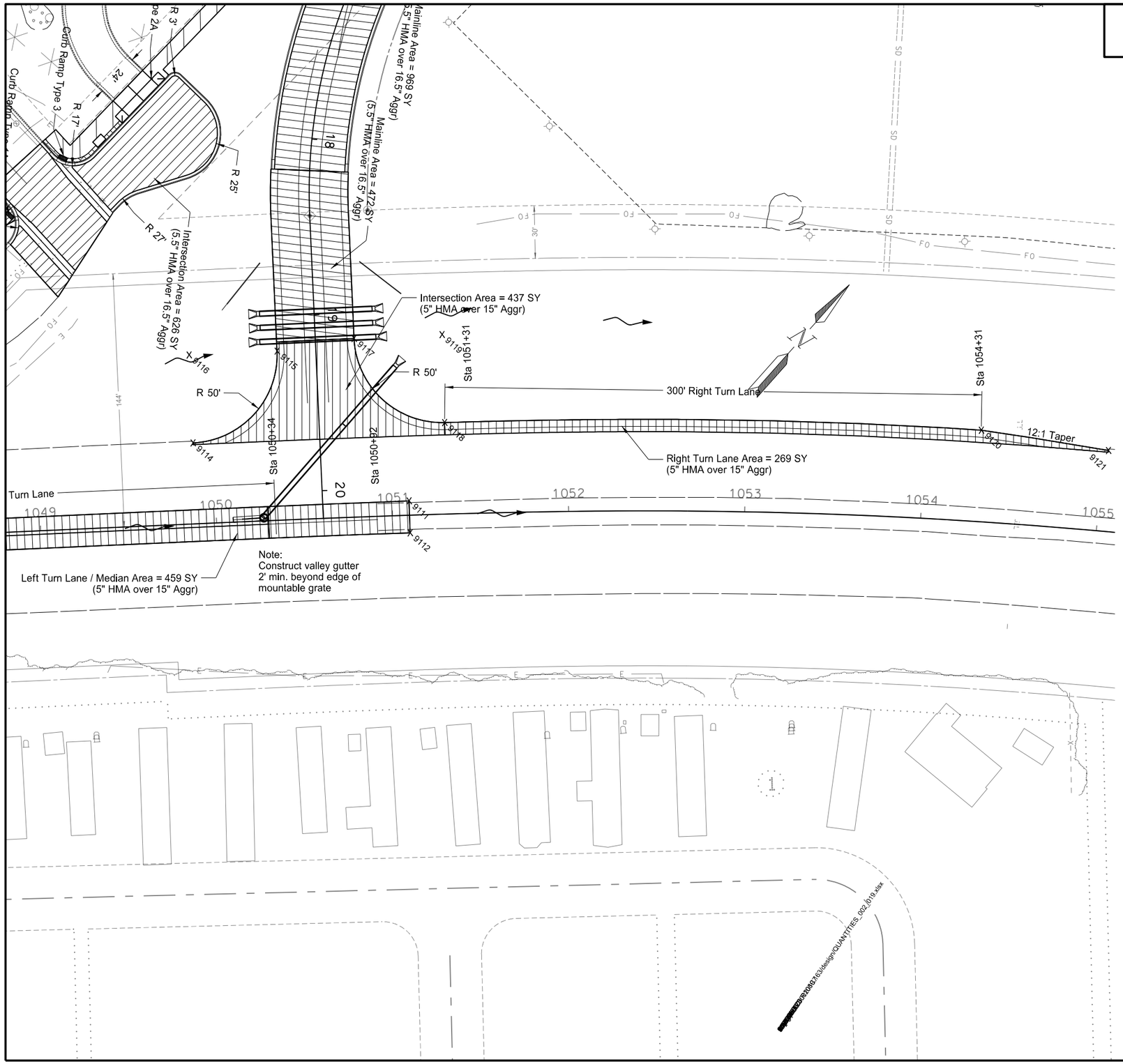
PAVING LAYOUTS
9th Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	90	5



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0120	**AGGREGATE BASE COURSE CL 5**		
		1048+80 to 1051+10 (ML - Median)	TON	359
		9TH Ave & US 2 Intersection	TON	381
		1051+31 to 1055+03 (ML - Right Turn Lane)	TON	306
401	0050	**TACK COAT**		
		1048+80 to 1051+10 (ML - Median)	GAL	46
		9TH Ave & US 2 Intersection	GAL	44
		1051+31 to 1055+03 (ML - Right Turn Lane)	GAL	27
401	0060	**PRIME COAT**		
		1048+80 to 1051+10 (ML - Median)	GAL	115
		9TH Ave & US 2 Intersection	GAL	109
		1051+31 to 1055+03 (ML - Right Turn Lane)	GAL	67
430	0045	**SUPERPAVE FAA 45**		
		1048+80 to 1051+10 (ML - Median)	TON	128
		9TH Ave & US 2 Intersection	TON	125
		1051+31 to 1055+03 (ML - Right Turn Lane)	TON	86
430	6428	**PG 64-28 ASPHALT CEMENT**		
		1048+80 to 1051+10 (ML - Median)	TON	7.7
		9TH Ave & US 2 Intersection	TON	7.5
		1051+31 to 1055+03 (ML - Right Turn Lane)	TON	5.2
748	1020	**VALLEY GUTTER 36IN**		
		US Hwy 2 Median	SY	7
		1050+10 to 1050+30 (SCL02 - Median)		

Stationing and Offsets are from SCL02 chain.

Point	North	East	Station	Offset
9111	441051.4776	1203730.4337	1051+09.62	-8.1366
9112	441038.3248	1203742.9414	1051+09.63	10.0140
9114	440994.6176	1203616.8399	1049+88.62	-45.9999
9115	441065.3302	1203617.8436	1050+38.36	-96.0672
9116	441030.4756	1203581.9945	1049+88.62	-95.9999
9117	441099.6893	1203645.8061	1050+81.87	-101.4329
9118	441098.1572	1203715.9482	1051+31.06	-51.9999
9119	441134.5438	1203681.6552	1051+31.06	-101.9999
9120	441297.3741	1203946.6759	1054+31.13	-51.9027
9121	441336.6907	1204008.2716	1055+02.75	-45.9688

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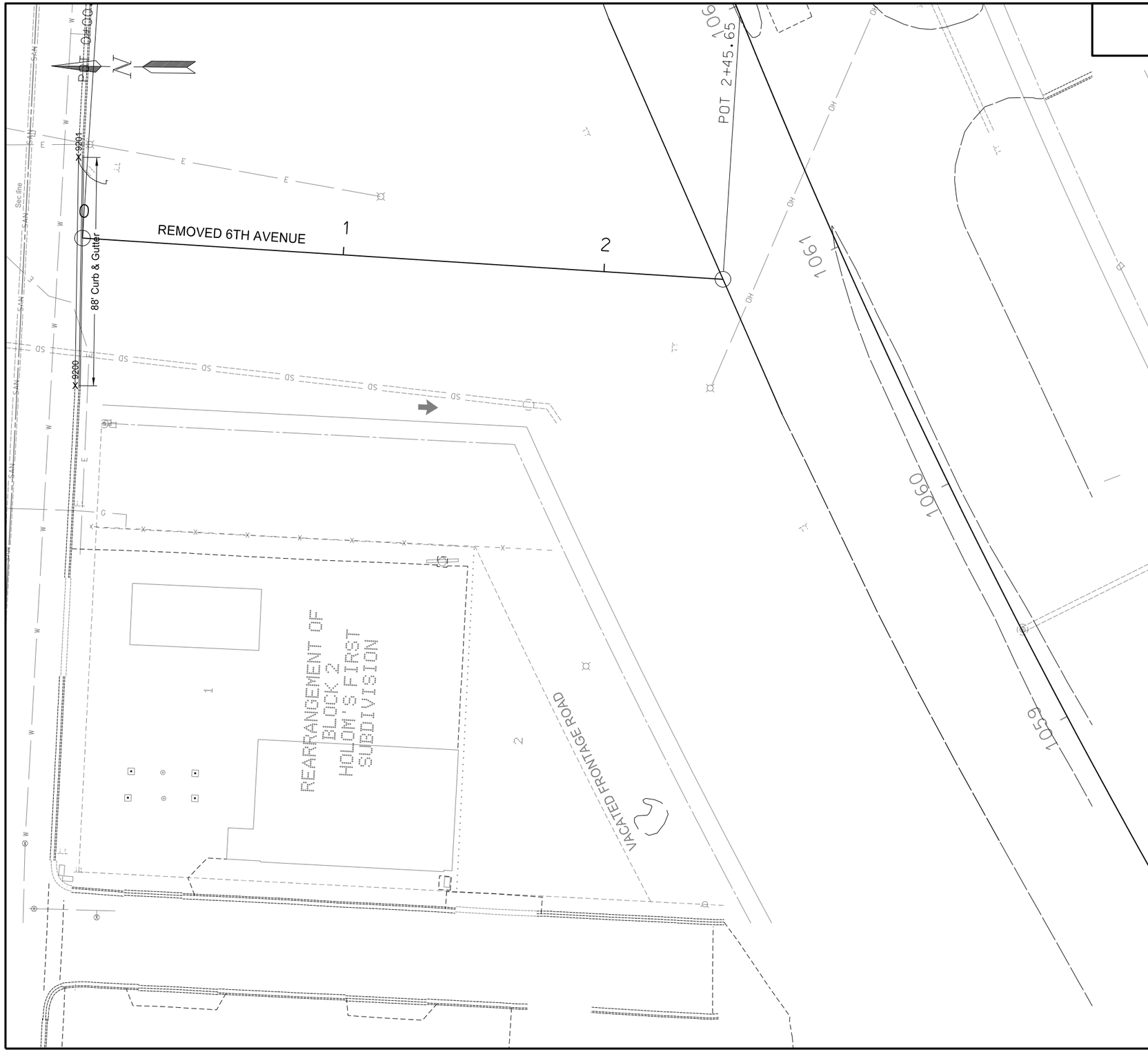
PAVING LAYOUTS
9th Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	90	6



SPEC	CODE	BID ITEM	UNIT	QUANTITY
748	0140	CURB & GUTTER - TYPE I		
		6TH Avenue	LF	88

Stationing and Offsets are from SCL02 chain.

Point	North	East	Station	Offset
9200	441894.0416	1204493.1557	1061+63.73	-289.2626
9201	441893.6259	1204580.5615	1062+37.31	-255.3753

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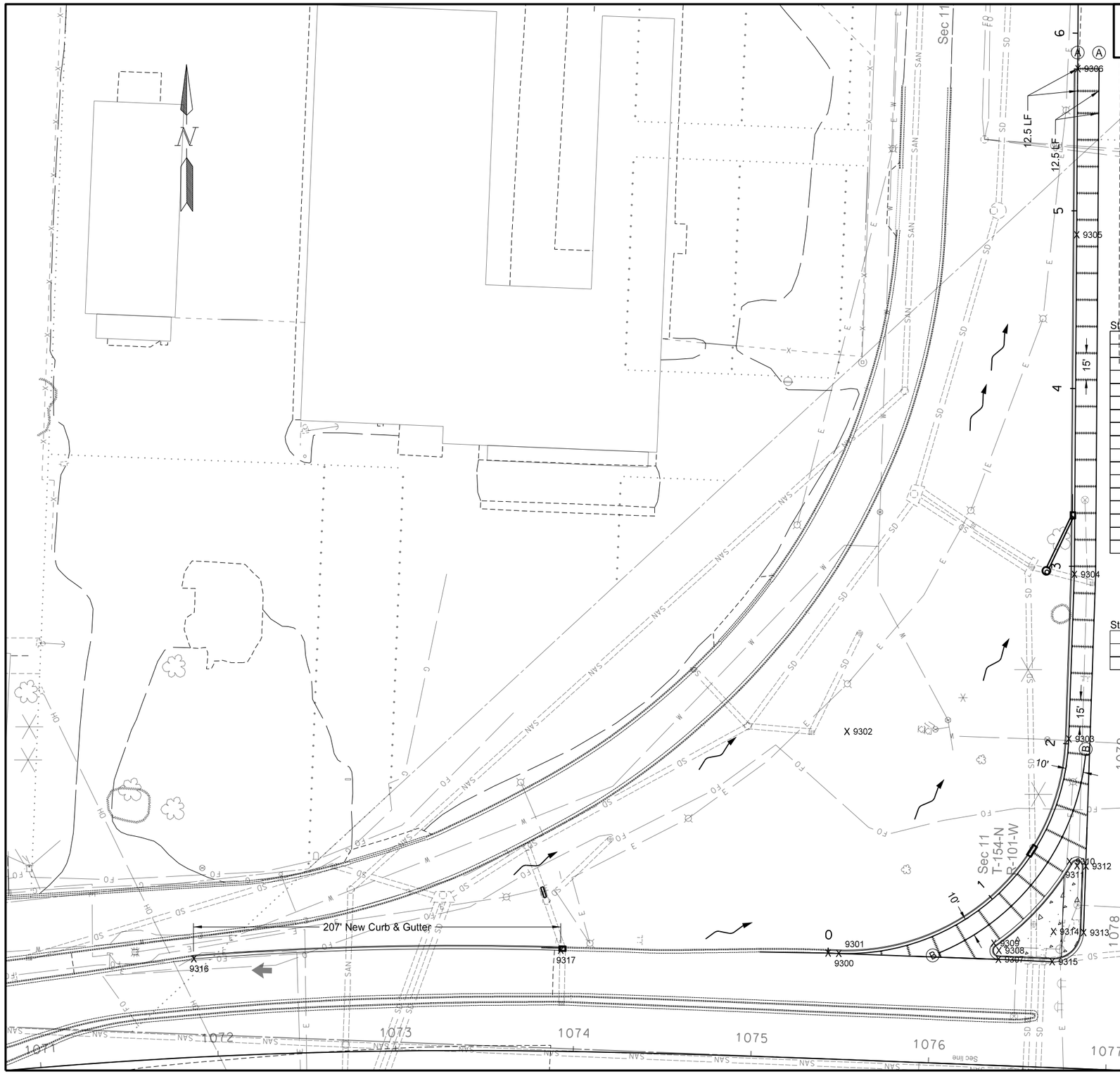
PAVING LAYOUTS
6th Avenue W

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	90	7



SPEC	CODE	BID ITEM	UNIT	QUANTITY
302	0120	**AGGREGATE BASE COURSE CL 5**		
		0+00 to 5+80 (2ND_AVE)	TON	444
		2nd Avenue Median Island	TON	50
550	0300	**8IN NON-REINF CONCRETE PAVEMENT CL AE - DOWELED**		
		0+00 to 5+80 (2ND_AVE)	SY	851
748	0140	**CURB & GUTTER - TYPE I**		
		1071+89 to 1073+92 (SCL - Left)	LF	207
		0+00 to 5+80 (2ND_AVE CL)	LF	578
		2nd Avenue Median Island	LF	183
750	0200	**CONCRETE MEDIAN PAVING**		
		2nd Avenue Median Island	SY	150

Stationing and Offsets are from 2ND_AVE chain.

Point	Station	Offset	North	East	Elevation
9300	0+00.00	0.0000	441915.8567	1205955.4731	1874.0500
9301	0+06.00	0.0000	441915.6224	1205961.4685	1874.0400
9302	0+06.00	-125.0000	442040.5270	1205966.3498	
9303	2+02.77	0.0000	442036.0660	1206091.2702	1874.2600
9304	2+95.44	0.0000	442128.6784	1206094.5774	1874.8400
9305	4+86.54	0.0000	442319.7699	1206096.2769	1876.0600
9306	5+80.00	0.0000	442413.2257	1206097.1081	1876.9000
9307	0+83.98	29.0064	441912.1094	1206051.3609	1873.8000
9308	0+86.44	25.0000	441917.1039	1206051.5949	1874.1600
9309	0+86.44	20.0000	441921.2180	1206048.7534	1873.7300
9310	1+40.90	20.0000	441967.1459	1206091.4106	1873.7900
9311	1+40.90	25.0000	441964.6155	1206095.7230	1874.5000
9312	1+42.83	29.4183	441964.4371	1206100.7199	1874.1400
9313	1+18.96	49.8473	441927.0673	1206099.3853	1873.9200
9314	1+10.80	36.8721	441927.6740	1206082.3962	1873.9500
9315	1+01.63	48.6080	441910.6926	1206081.6006	1873.7600

Stationing and Offsets are from SCL02 chain.

Point	Station	Offset	North	East
9316	1071+89.02	-55.3322	441913.3420	1205598.3877
9317	1073+92.00	-56.8316	441917.6897	1205804.9519

Note: Transverse joints spaced at 15' unless shown otherwise.

(A) No. 3 x 18" Tie Bars @ 4' c to c

(B) Tied Joint (Sawed)

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PAVING LAYOUTS
2nd Avenue W / West Dakota Parkway Intersection

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	100	1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2	3		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)						6	
G20-1-60	60"x24"	ROAD WORK NEXT __ MILES						34	
G20-1b-60	60"x24"	WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only)						26	
G20-2-48	**48"x24"**	**END ROAD WORK**	**2**	**4**	**4**		**4**	**19**	**76**
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)						18	
G20-10-108	108"x48"	CONTRACTOR SIGN						64	
G20-50a-72	72"x36"	ROAD WORK NEXT __ MILES RT & LT ARROWS						37	
G20-52a-72	72"x24"	ROAD WORK NEXT __ MILES RT or LT ARROW						30	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE $80 WHEN WORKERS PRESENT						59	
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)						10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)						10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)						10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)						7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)						7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)						7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)						7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)						7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT						15	
M4-10-48	48"x18"	DETOUR ARROW RIGHT or LEFT						23	
M5-1-21	21"x15"	ARROW AHD AND RT or LT(Mounted on route marker post)						7	
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)						7	
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)						7	
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)						7	
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)						7	
R1-1-48	**48"x48"**	**STOP**	**2**	**2**	**3**		**3**	**32**	**96**
R1-1a-18	**18"x18"**	**STOP and SLOW PADDLE Back to Back**	**2**	**2**	**3**		**3**	**5**	**15**
R1-2-60	60"x60"	YIELD						29	
R2-1-48	**48"x60"**	**SPEED LIMIT __**	**4**	**8**	**8**		**8**	**39**	**312**
R2-1a-24	**24"x18"**	**MINIMUM FEE $80 (Mounted on Speed Limit post)**	**2**	**4**	**4**		**4**	**10**	**40**
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT						35	
R4-1-48	48"x60"	DO NOT PASS						39	
R4-7-48	48"x60"	KEEP RIGHT SYMBOL						39	
R5-1-48	48"x48"	DO NOT ENTER						35	
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT						13	
R7-1-12	12"x18"	NO PARKING						11	
R9-9-24	**24"x12"**	**SIDEWALK CLOSED**	**2**				**2**	**7**	**14**
R10-6-24	24"x36"	STOP HERE ON RED						16	
R11-2-48	48"x30"	ROAD CLOSED						28	
R11-2a-48	**48"x30"**	**STREET CLOSED**	**1**				**1**	**28**	**28**
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY						31	
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY						31	
R11-4a-60	**60"x30"**	**STREET CLOSED TO THRU TRAFFIC**	**1**				**1**	**31**	**31**
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW						35	
W1-4-48	48"x48"	RIGHT or LEFT REVERSE CURVE ARROW						35	
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW						35	
W1-6-48	**48"x24"**	**LARGE ARROW**		**1**			**1**	**26**	**26**
W3-1-48	48"x48"	STOP AHEAD SYMBOL						35	
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL						35	
W3-4-48	**48"x48"**	**BE PREPARED TO STOP**	**2**	**2**	**2**		**2**	**35**	**70**
W3-5-48	**48"x48"**	**SPEED REDUCTION AHEAD**	**2**	**4**	**4**		**4**	**35**	**140**
W4-2-48	**48"x48"**	**RIGHT or LEFT LANE TRANSITION SYMBOL**	**2**	**4**	**4**		**4**	**35**	**140**
W5-1-48	48"x48"	ROAD NARROWS						35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE						35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW						35	
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL						35	
W8-1-48	**48"x48"**	**BUMP**	**2**	**2**			**2**	**35**	**70**
W8-3-48	48"x48"	PAVEMENT ENDS						35	
W8-7-48	48"x48"	LOOSE GRAVEL						35	
W8-9a-48	**48"x48"**	**SHOULDER DROP-OFF**	**2**	**2**			**2**	**35**	**70**
W8-11-48	48"x48"	UNEVEN LANES						35	
W8-12-48	48"x48"	NO CENTER STRIPE						35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY						35	
W8-54-48	**48"x48"**	**TRUCKS ENTERING AHEAD or __ FT.**	**2**	**2**	**2**		**2**	**35**	**70**
W8-55-48	**48"x48"**	**TRUCKS CROSSING AHEAD or __ FT.**	**2**	**2**	**2**		**2**	**35**	**70**
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY						35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL						35	
W12-2-48	48"x48"	LOW CLEARANCE SYMBOL						35	
W13-1-24	24"x24"	__ MPH ADVISORY SPEED PLATE (Mounted on warning sign post)						11	
W13-4-48	48"x60"	RAMP ARROW						39	
W14-3-48	48"x36"	NO PASSING ZONE						23	
W16-2-30	**24"x18"**	**XX FEET (plaque)**			**2**		**2**	**8**	**16**
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**4**	**4**	**6**		**6**	**35**	**210**
W20-2-48	48"x48"	DETOUR AHEAD or __ FT						35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT.						35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or __ FT.						35	
W20-5-48	**48"x48"**	**RIGHT or LEFT LANE CLOSED AHEAD or __ FT.**	**2**	**4**	**4**		**4**	**35**	**140**
W20-7a-48	**48"x48"**	**FLAGGING SYMBOL**	**2**	**2**	**3**		**3**	**35**	**105**
W20-7k-24	24"x18"	__ FEET (Mounted on warning sign post)						10	
W20-8-48	48"x48"	STREET CLOSED						35	
W20-51-48	48"x48"	EQUIPMENT WORKING						35	
W20-52-54	54"x12"	NEXT __ MILES (Mounted on warning sign post)						12	
W21-1a-48	**48"x48"**	**WORKERS SYMBOL**			**1**		**1**	**35**	**35**

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2	3		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-2-48	48"x48"	FRESH OIL						35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or __ FT						35	
W21-5-48	**48"x48"**	**SHOULDER WORK**	**2**	**2**	**2**		**2**	**35**	**70**
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED						35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT.						35	
W21-6a-48	48"x48"	SURVEY CREW AHEAD						35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT.						35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY						35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK						35	
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)						11	

SPECIAL SIGNS

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-19.06 of the Design Manual.
http://www.dot.nd.gov/

SPEC & CODE

704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS**	**1844**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO. 1	2	3		TOTAL QUANTITY
704-0100	**FLAGGING**	MHR	**200**	**200**	**200**		**600**
704-1041	ATTENUATION DEVICE-TYPE B-55	EACH					
704-1043	ATTENUATION DEVICE-TYPE B-65	EACH					
704-1044	ATTENUATION DEVICE-TYPE B-70	EACH					
704-1050	**TYPE I BARRICADES**	EACH	**2**				**2**
704-1051	TYPE II BARRICADES	EACH					
704-1052	**TYPE III BARRICADES**	EACH	**17**	**2**	**8**		**17**
704-1060	**DELINEATOR DRUMS**	EACH	**17**	**65**	**50**		**65**
704-1065	TRAFFIC CONES	EACH					
704-1067	**TUBULAR MARKERS**	EACH	**35**	**78**	**39**		**78**
704-1070	DELINEATOR	EACH					
704-1072	FLEXIBLE DELINEATORS	EACH					
704-1081	VERTICAL PANELS - BACK TO BACK	EACH					
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH					
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH					
704-1087	**SEQUENCING ARROW PANEL - TYPE C**	EACH	**1**	**2**	**2**		**2**
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH					
704-1095	TYPE B FLASHERS	EACH					
704-1500	OBLITERATION OF PVMT MK	SF					
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF					
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH					
762-0200	RAISED PAVEMENT MARKERS	EACH					
762-0420	SHORT TERM 4IN LINE - TYPE R	LF					
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF					
772-2110	FLASHING BEACON - POST MOUNTED	EACH					

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Traffic Control Devices List

WORK ZONE TRAFFIC CONTROL

WZTC Device List

6th Ave W, 9th Ave W, US Hwy 2

US Hwy 2 Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	100	2

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
D3-36	36"x6"	STREET NAME SIGN (Sign and installation only)					6	
G20-1-60	60"x24"	ROAD WORK NEXT __ MILES					34	
G20-1b-60	60"x24"	WORK IN PROGRESS/ NO WORK IN PROGRESS (Sign and installation only)					26	
G20-2-48	**48"x24"**	**END ROAD WORK**	**2**	**2**		**2**	**19**	**38**
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)					18	
G20-10-108	108"x48"	CONTRACTOR SIGN					64	
G20-50a-72	72"x36"	ROAD WORK NEXT __ MILES RT & LT ARROWS					37	
G20-52a-72	72"x24"	ROAD WORK NEXT __ MILES RT or LT ARROW					30	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE $80 WHEN WORKERS PRESENT					59	
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)					10	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)					10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)					10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)					7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)					7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)					7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)					7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)					7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT					15	
M4-10-48	48"x18"	DETOUR ARROW RIGHT or LEFT					23	
M5-1-21	21"x15"	ARROW AHD AND RT or LT(Mounted on route marker post)					7	
M5-2-21	21"x15"	ARROW AHD UP & RT or LT (Mounted on route marker post)					7	
M6-1-21	21"x15"	ARROW RT or LT (Mounted on route marker post)					7	
M6-2-21	21"x15"	ARROW UP & RT or LT (Mounted on route marker post)					7	
M6-3-21	21"x15"	ARROW AHD (Mounted on route marker post)					7	
R1-1-48	**48"x48"**	**STOP**	**2**	**2**		**2**	**32**	**64**
R1-1a-18	**18"x18"**	**STOP and SLOW PADDLE Back to Back**	**2**	**2**		**2**	**5**	**10**
R1-2-60	**60"x60"**	**YIELD**		**2**		**2**	**29**	**58**
R2-1-48	**48"x60"**	**SPEED LIMIT __**	**6**	**6**		**6**	**39**	**234**
R2-1a-24	**24"x18"**	**MINIMUM FEE $80 (Mounted on Speed Limit post)**	**4**	**4**		**4**	**10**	**40**
R3-7-48	48"x48"	LEFT or RIGHT LANE MUST TURN LEFT or RIGHT					35	
R4-1-48	48"x60"	DO NOT PASS					39	
R4-7-48	48"x60"	KEEP RIGHT SYMBOL					39	
R5-1-48	48"x48"	DO NOT ENTER					35	
R6-1-36	36"x12"	ONE WAY RIGHT or LEFT					13	
R7-1-12	12"x18"	NO PARKING					11	
R9-9-24	24"x12"	SIDEWALK CLOSED					7	
R10-6-24	24"x36"	STOP HERE ON RED					16	
R11-2-48	**48"x30"**	**ROAD CLOSED**		**1**		**1**	**28**	**28**
R11-2a-48	48"x30"	STREET CLOSED					28	
R11-3a-60	60"x30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY					31	
R11-3c-60	60"x30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY					31	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC					31	
W1-3-48	48"x48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW					35	
W1-4-48	48"x48"	RIGHT or LEFT REVERSE CURVE ARROW					35	
W1-4b-48	48"x48"	DOUBLE RIGHT or LEFT REVERSE CURVE ARROW					35	
W1-6-48	**48"x24"**	**LARGE ARROW**		**1**		**1**	**26**	**26**
W3-1-48	48"x48"	STOP AHEAD SYMBOL					35	
W3-3-48	48"x48"	SIGNAL AHEAD SYMBOL					35	
W3-4-48	**48"x48"**	**BE PREPARED TO STOP**	**2**	**2**		**2**	**35**	**70**
W3-5-48	**48"x48"**	**SPEED REDUCTION AHEAD**	**2**	**2**		**2**	**35**	**70**
W4-2-48	**48"x48"**	**RIGHT or LEFT LANE TRANSITION SYMBOL**	**2**	**2**		**2**	**35**	**70**
W5-1-48	48"x48"	ROAD NARROWS					35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE					35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW					35	
W6-3-48	48"x48"	TWO WAY TRAFFIC SYMBOL					35	
W8-1-48	48"x48"	BUMP					35	
W8-3-48	48"x48"	PAVEMENT ENDS					35	
W8-7-48	48"x48"	LOOSE GRAVEL					35	
W8-9a-48	48"x48"	SHOULDER DROP-OFF					35	
W8-11-48	48"x48"	UNEVEN LANES					35	
W8-12-48	48"x48"	NO CENTER STRIPE					35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY					35	
W8-54-48	**48"x48"**	**TRUCKS ENTERING AHEAD or __ FT.**	**2**	**2**		**2**	**35**	**70**
W8-55-48	**48"x48"**	**TRUCKS CROSSING AHEAD or __ FT.**	**2**	**2**		**2**	**35**	**70**
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY					35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL					35	
W12-2-48	48"x48"	LOW CLEARANCE SYMBOL					35	
W13-1-24	24"x24"	__ MPH ADVISORY SPEED PLATE (Mounted on warning sign post)					11	
W13-4-48	48"x60"	RAMP ARROW					39	
W14-3-48	48"x36"	NO PASSING ZONE					23	
W16-2-30	24"x18"	XX FEET (plaque)					8	
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**6**	**6**		**6**	**35**	**210**
W20-2-48	48"x48"	DETOUR AHEAD or __ FT					35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or __ FT.					35	
W20-4-48	48"x48"	ONE LANE ROAD AHEAD or __ FT.					35	
W20-5-48	**48"x48"**	**RIGHT or LEFT LANE CLOSED AHEAD or __ FT.**	**2**	**2**		**2**	**35**	**70**
W20-7a-48	**48"x48"**	**FLAGGING SYMBOL**	**2**	**2**		**2**	**35**	**70**
W20-7k-24	24"x18"	__ FEET (Mounted on warning sign post)					10	
W20-8-48	48"x48"	STREET CLOSED					35	
W20-51-48	48"x48"	EQUIPMENT WORKING					35	
W20-52-54	54"x12"	NEXT __ MILES (Mounted on warning sign post)					12	
W21-1a-48	48"x48"	WORKERS SYMBOL					35	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W21-2-48	48"x48"	FRESH OIL					35	
W21-3-48	48"x48"	ROAD MACHINERY AHEAD or __ FT					35	
W21-5-48	**48"x48"**	**SHOULDER WORK**	**2**	**2**		**2**	**35**	**70**
W21-5a-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED					35	
W21-5b-48	48"x48"	RIGHT or LEFT SHOULDER CLOSED AHEAD or __ FT.					35	
W21-6a-48	48"x48"	SURVEY CREW AHEAD					35	
W21-50-48	48"x48"	BRIDGE PAINTING AHEAD or __ FT.					35	
W21-51-48	48"x48"	MATERIAL ON ROADWAY					35	
W22-8-48	48"x48"	FRESH OIL LOOSE ROCK					35	
	24"x24"	TAKE TURNS (6" D letters) (Mounted on stop sign post)					11	

SPECIAL SIGNS

SPEC & CODE

704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS**	**1268**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO. 1	2		TOTAL QUANTITY
704-0100	**FLAGGING**	MHR	**200**	**200**		**400**
704-1041	ATTENUATION DEVICE-TYPE B-55	EACH				
704-1043	ATTENUATION DEVICE-TYPE B-65	EACH				
704-1044	ATTENUATION DEVICE-TYPE B-70	EACH				
704-1050	TYPE I BARRICADES	EACH				
704-1051	TYPE II BARRICADES	EACH				
704-1052	**TYPE III BARRICADES**	EACH	**3**	**5**		**5**
704-1060	**DELINEATOR DRUMS**	EACH	**67**	**55**		**67**
704-1065	TRAFFIC CONES	EACH				
704-1067	**TUBULAR MARKERS**	EACH	**58**	**68**		**68**
704-1070	DELINEATOR	EACH				
704-1072	FLEXIBLE DELINEATORS	EACH				
704-1081	VERTICAL PANELS - BACK TO BACK	EACH				
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH				
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH				
704-1087	**SEQUENCING ARROW PANEL - TYPE C**	EACH	**1**	**1**		**1**
704-1088	SEQUENCING ARROW PANEL - TYPE C - CROSSOVER	EACH				
704-1095	TYPE B FLASHERS	EACH				
704-1500	OBLITERATION OF PVMT MK	SF				
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF				
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH				
762-0200	RAISED PAVEMENT MARKERS	EACH				
762-0420	SHORT TERM 4IN LINE - TYPE R	LF				
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF				
772-2110	FLASHING BEACON - POST MOUNTED	EACH				

NOTE:
If additional signs are required, units will be calculated using the formula from Section III-19.06 of the Design Manual.
http://www.dot.nd.gov/

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Traffic Control Devices List

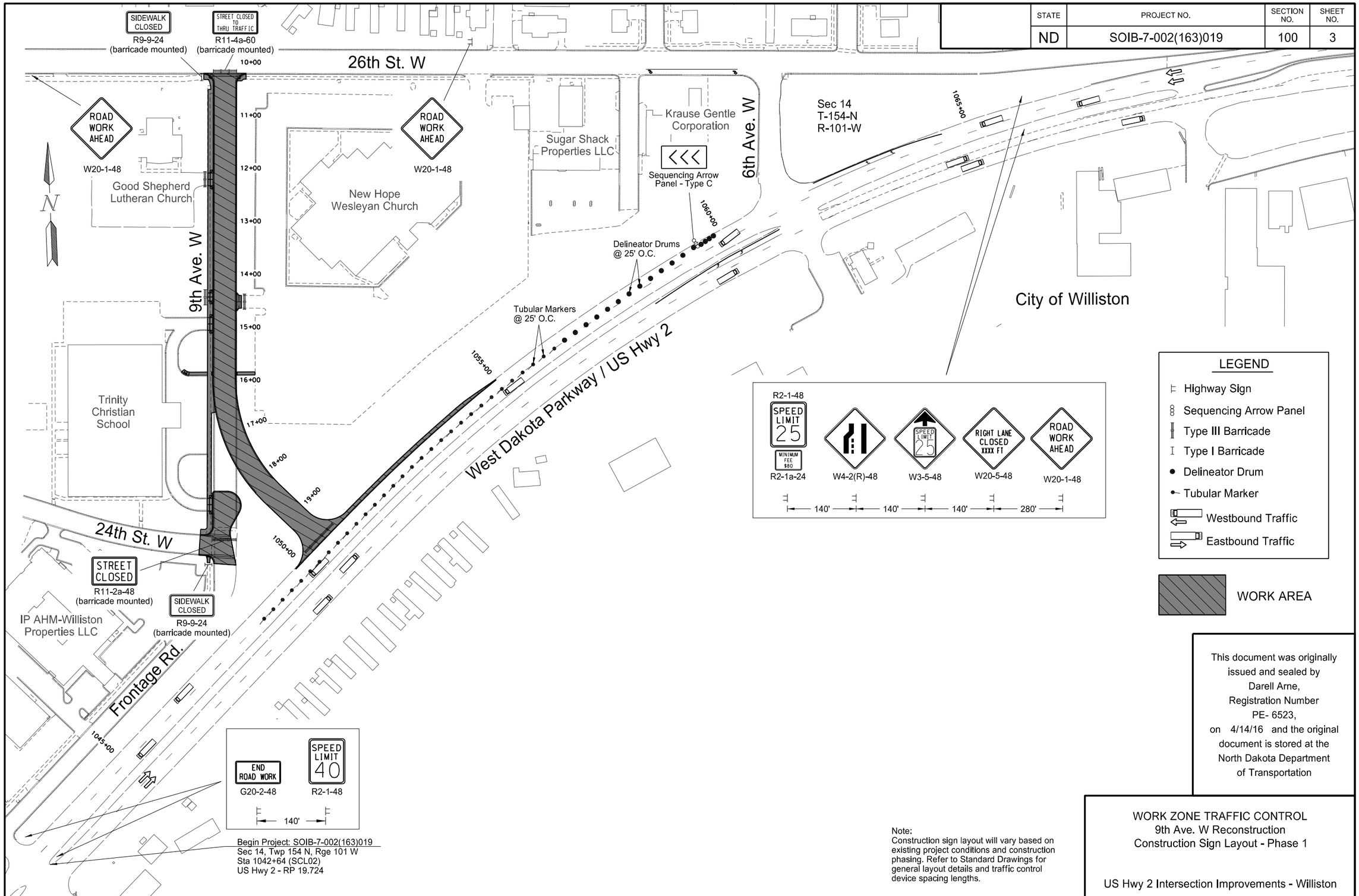
WORK ZONE TRAFFIC CONTROL

WZTC Device List

2nd Ave W / W Dakota Pkwy Intersection

US Hwy 2 Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	100	3



Begin Project: SOIB-7-002(163)019
Sec 14, Twp 154 N, Rge 101 W
Sta 1042+64 (SCL02)
US Hwy 2 - RP 19.724

Note:
Construction sign layout will vary based on existing project conditions and construction phasing. Refer to Standard Drawings for general layout details and traffic control device spacing lengths.

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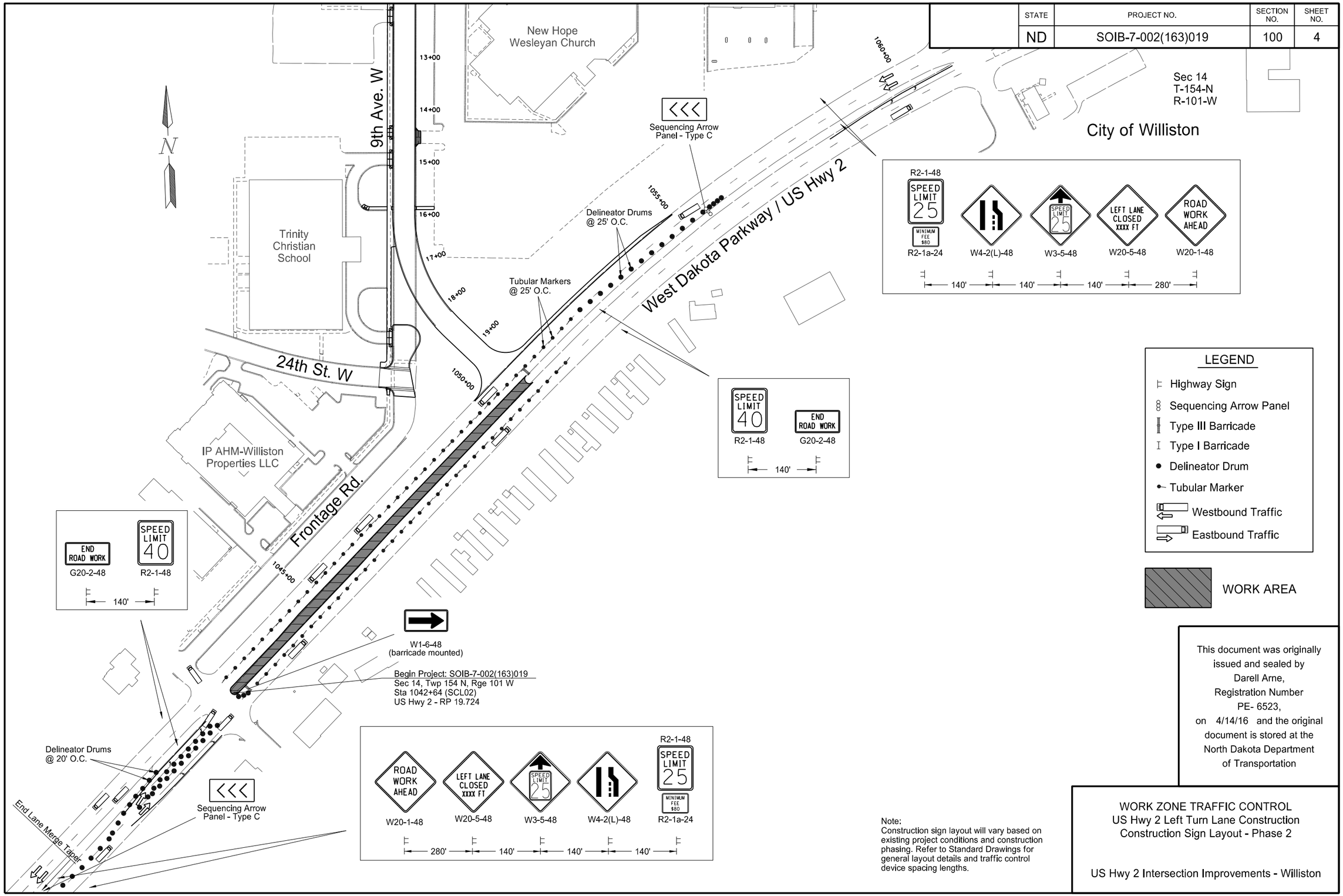
WORK ZONE TRAFFIC CONTROL
9th Ave. W Reconstruction
Construction Sign Layout - Phase 1

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	100	4



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Note:
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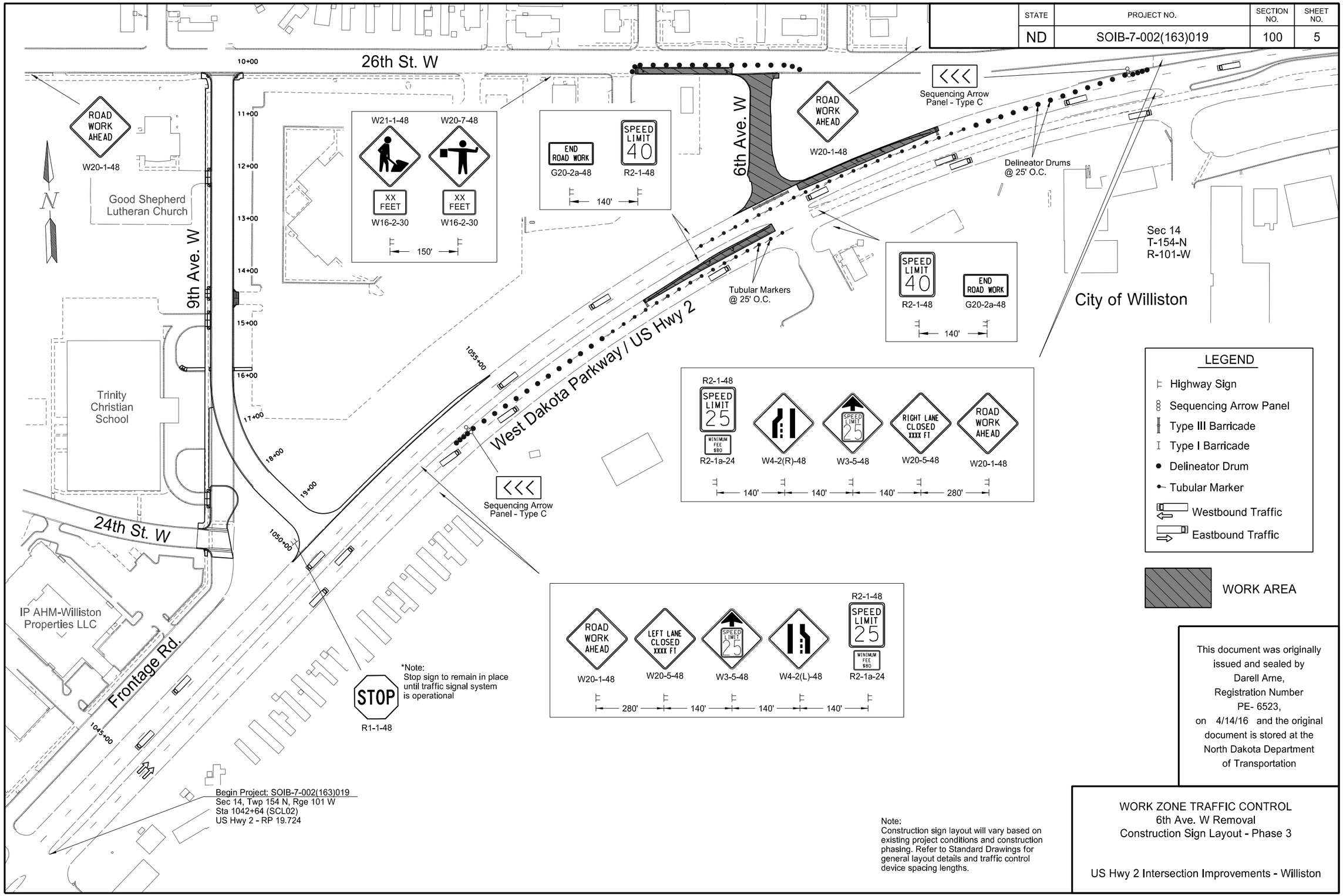
WORK ZONE TRAFFIC CONTROL
US Hwy 2 Left Turn Lane Construction
Construction Sign Layout - Phase 2

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	100	5



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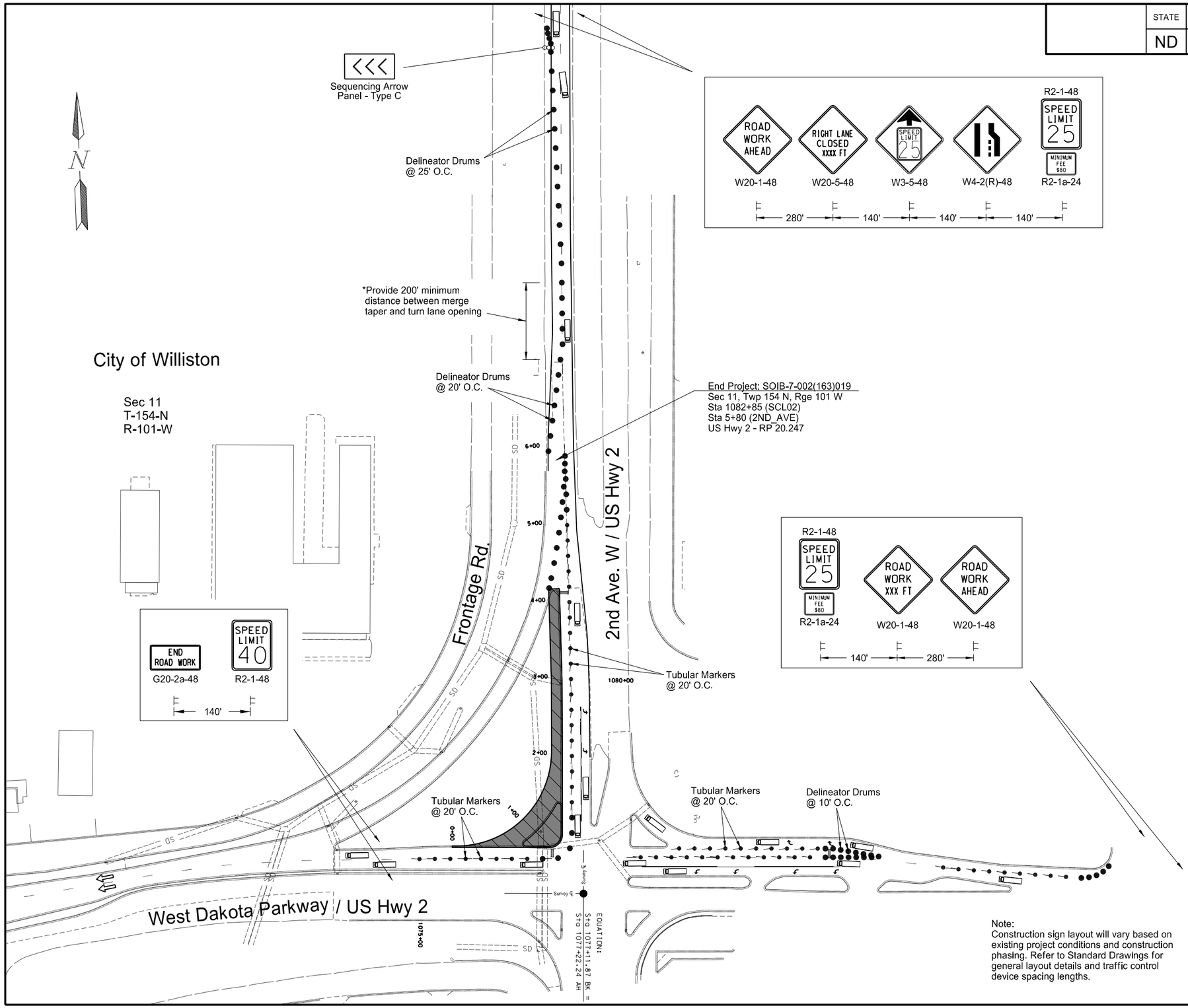
Note:
Construction sign layout will vary based on existing project conditions and construction phasing. Refer to Standard Drawings for general layout details and traffic control device spacing lengths.

WORK ZONE TRAFFIC CONTROL
6th Ave. W Removal
Construction Sign Layout - Phase 3

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	100	6



LEGEND

- Highway Sign
- Sequencing Arrow Panel
- Type III Barricade
- Type I Barricade
- Delineator Drum
- Tubular Marker
- Westbound Traffic
- Eastbound Traffic

WORK AREA

Note:
Construction sign layout will vary based on existing project conditions and construction phasing. Refer to Standard Drawings for general layout details and traffic control device spacing lengths.

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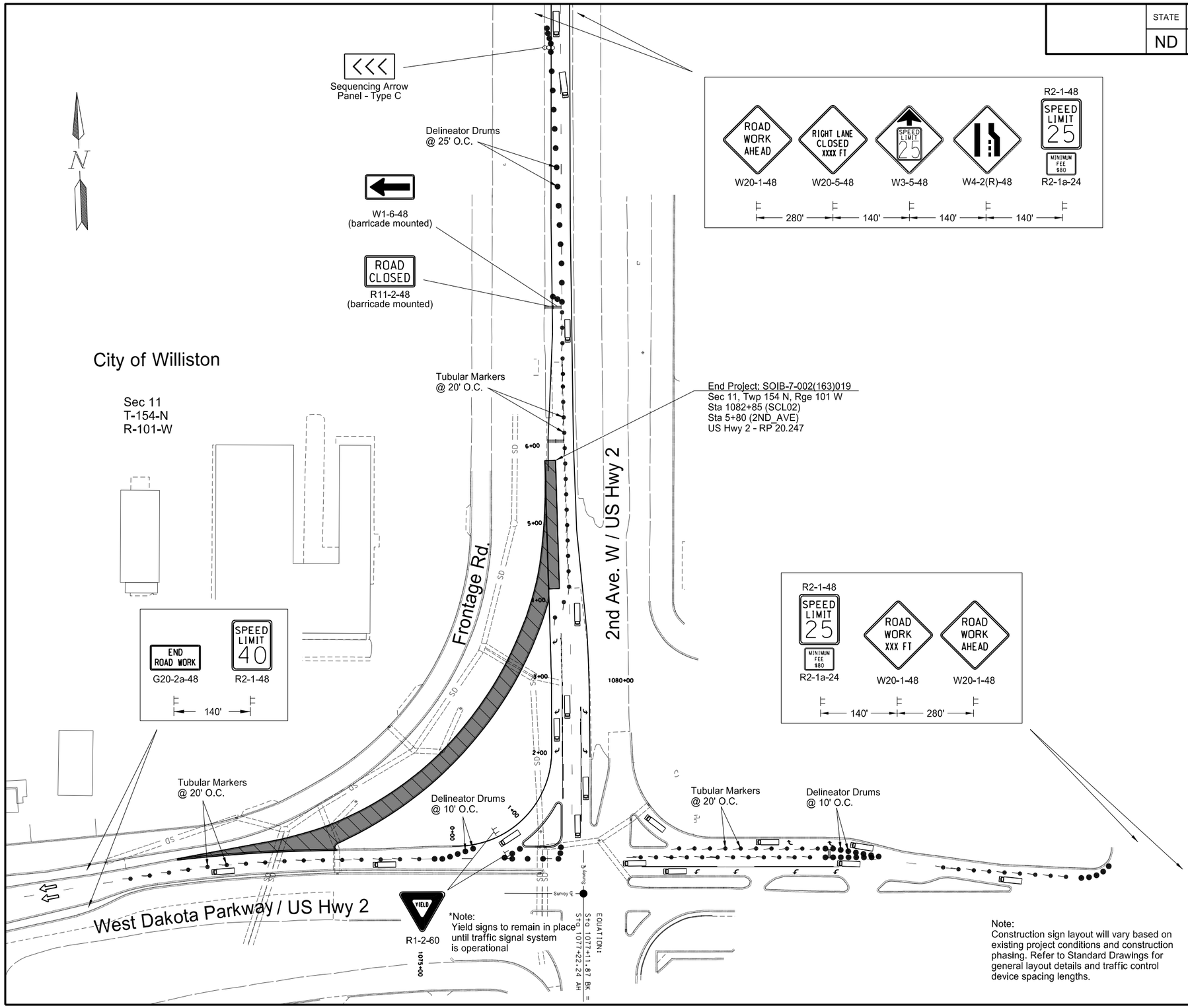
WORK ZONE TRAFFIC CONTROL
West Dakota Parkway / 2nd Ave. West Intersection
Construction Sign Layout - Phase 1

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	100	7



LEGEND

- Highway Sign
- Sequencing Arrow Panel
- Type III Barricade
- Type I Barricade
- Delineator Drum
- Tubular Marker
- Westbound Traffic
- Eastbound Traffic
- WORK AREA

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WORK ZONE TRAFFIC CONTROL
West Dakota Parkway / 2nd Ave. West Intersection
Construction Sign Layout - Phase 2

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	SOIB-7-002(163)019	110	1

Sta/RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	Sign Support Length 2nd LF	Sign Support Length 3rd LF	Sign Support Length 4th LF	Support Size	Max Post Len LF	Sleeve Length 1st LF	Sleeve Length 2nd LF	Sleeve Length 3rd LF	Sleeve Length 4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
24th St W																						
0+50 Rt		19		6.3	8.2				2 x 2 12 ga	8.9						1	4	2.25 x 2.25 12 ga				
2+29 Rt		14		4.0	9.2				2 x 2 12 ga	13.0						1	4	2.25 x 2.25 12 ga				
Sub Total			0.0	10.3		**Total**	17.4									**Total**	8		0	0	0	
Frontage Rd																						
18+82 Rt	SA A			11.4	9.2				2.5 x 2.5 10 ga	10.1						1	4	3 x 3 7 ga			1	
18+92 Lt		15		6.3	9.7				2.25 x 2.25 12 ga	11.6						1	4	2.5 x 2.5 12 ga				
19+15 Lt		34		8.0	12.3				2.5 x 2.5 10 ga	13.6						1	4	3 x 3 7 ga			1	
19+98 Lt		10		7.5	13.2				2.5 x 2.5 10 ga	15.9						1	4	3 x 3 7 ga			1	
Sub Total			0.0	33.2		**Total**	44.4									**Total**	16		0	0	3	
9th Ave W																						
10+25 Rt	SA E			7.0	10.2				2.25 x 2.25 12 ga	11.3						1	4	2.5 x 2.5 12 ga				
10+27 Rt		15																				Mount on Light Standard
10+28 Rt		15																				Mount on Light Standard
10+37 Lt	SA E			7.0	10.2				2.25 x 2.25 12 ga	11.3						1	4	2.5 x 2.5 12 ga				
11+00 Rt		9			9.7				2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga				
12+50 Lt		9			9.7				2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga				
12+50 Rt		22			10.2				2.25 x 2.25 12 ga	12.9						1	4	2.5 x 2.5 12 ga				
13+25 Rt	SA B			8.8	11.2				2.5 x 2.5 12 ga	12.1						1	4	3 x 3 7 ga				
14+22 Rt		9			9.7				2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga				
15+30 Lt		22			10.2				2.25 x 2.25 12 ga	12.9						1	4	2.5 x 2.5 12 ga				
16+39 Rt		9			9.7				2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga				
17+00 Lt		9			9.7				2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga				
17+39 Rt	SN 1			6.0	7.2				2 x 2 12 ga	9.0						1	4	2.25 x 2.25 12 ga				
18+00 Lt	SA B			8.8	11.2				2.5 x 2.5 12 ga	12.1						1	4	3 x 3 7 ga				
Sub Total			0.0	37.6		**Total**	118.5									**Total**	48		0	0	0	
26th St W																						
20+00 Lt	SA E			7.0	10.2				2.25 x 2.25 12 ga	11.3						1	4	2.5 x 2.5 12 ga				
20+45 Lt	SA E			7.0	10.2				2.25 x 2.25 12 ga	11.3						1	4	2.5 x 2.5 12 ga				
Sub Total			0.0	14.0		**Total**	20.3									**Total**	8		0	0	0	

Basis of Estimate
Sign Support Lengths

The sign support lengths have been calculated
using the following vertical clearances:

Areas where parking and/or pedestrian movement will occur - 84"
Urban/rural expressway and freeway - 84" (Offset - 60")
Rural Roadway - 60"
Bike route - 60"

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Sign Summary
Perforated Tube

Williston Intersection - US 2 and 9th Ave W
Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	SOIB-7-002(163)019	110	2

Sta/RP	Sign No.	Assembly No.	Flat Sheet For Signs IV SF	Flat Sheet For Signs XI SF	Sign Support Length 1st LF	Sign Support Length 2nd LF	Sign Support Length 3rd LF	Sign Support Length 4th LF	Support Size	Max Post Len LF	Sleeve Length 1st LF	Sleeve Length 2nd LF	Sleeve Length 3rd LF	Sleeve Length 4th LF	Sleeve Size	Anchor EA	Anchor LF	Anchor Size	Reset Sign Panel EA	Reset Sign Support EA	Break-Away EA	Comments
US 2 & 85																						
1049+83 Lt	SN 3			16.0																		Mount on Mast Arm
1050+27 Rt	SN 4			26.0																		Mount on Mast Arm
1051+36 Rt	SN 3			16.0																		Mount on Mast Arm
1051+36. Rt	SN 2			16.0																		Mount on Mast Arm
1061+41 Lt		27		3.0	11.3				2 x 2 12 ga	13.2						1	4	2.25 x 2.25 12 ga				
1061+74 Rt				3.0																		Mount on Existing Supports
1067+49 Lt		371	6.0		8.2				2 x 2 12 ga	10.0						1	4	2.25 x 2.25 12 ga				
1075+59 Lt	SN 4			26.0																		Mount on Mast Arm
1084+56 Lt			2.2		11.3				2 x 2 12 ga	18.2						1	4	2.25 x 2.25 12 ga				
1087+04 Lt		437	8.4		14.2				2.5 x 2.5 10 ga	15.2						1	4	3 x 3 7 ga			1	
1088+61 Lt mdn	SA C		4.2		15.3				2.5 x 2.5 12 ga	15.7	5.2				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga	1		1	
1089+34 Lt	SA D		2.2		12.9				2.25 x 2.25 12 ga	14.6						1	4	2.5 x 2.5 12 ga	1			
Sub Total			23.0	106.0		**Total**	73.2									**Total**	24		2	0	2	
Grand Total			23.0	201.1		**Total**	273.8									**Total**	104		2	0	5	

Basis of Estimate
Sign Support Lengths

The sign support lengths have been calculated
using the following vertical clearances:

Areas where parking and/or pedestrian movement will occur - 84"
Urban/rural expressway and freeway - 84" (Offset - 60")
Rural Roadway - 60"
Bike route - 60"

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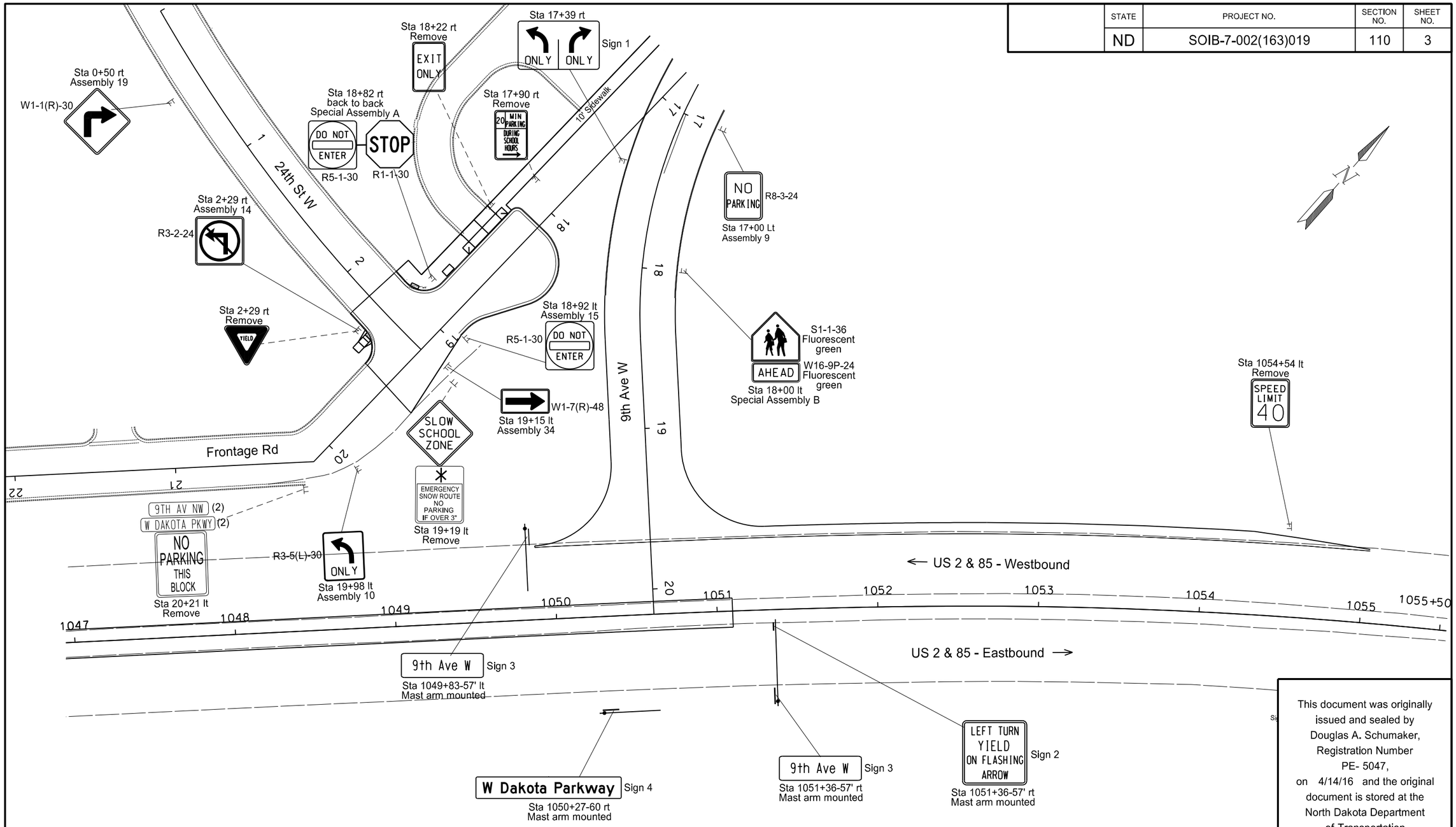
Sign Summary
Perforated Tube

Williston Intersection - US 2 and 9th Ave W
Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	110	3



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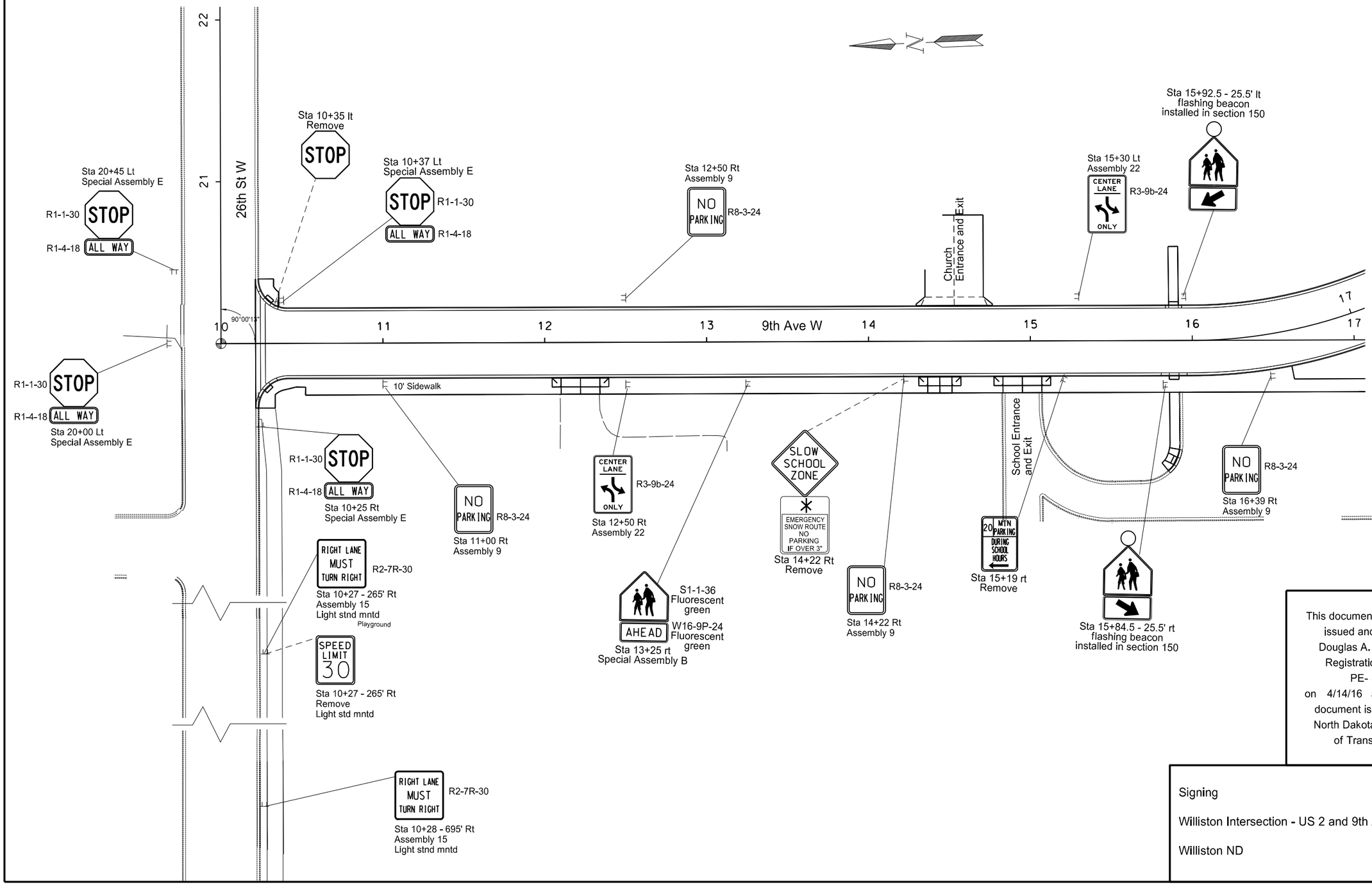
Signing

Williston Intersection - US 2 and 9th Ave W

Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	110	4



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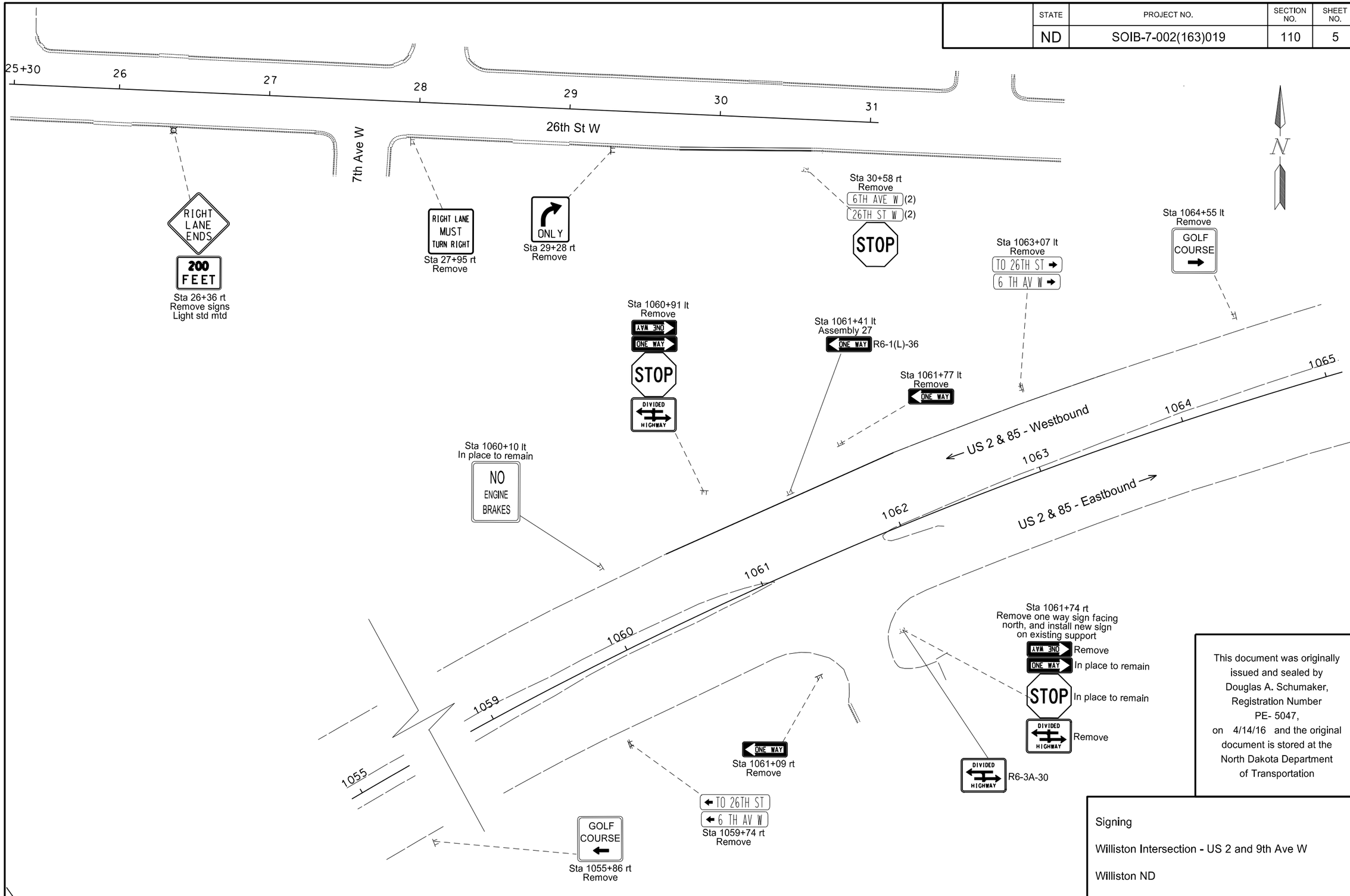
Signing

Williston Intersection - US 2 and 9th Ave W

Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	110	5



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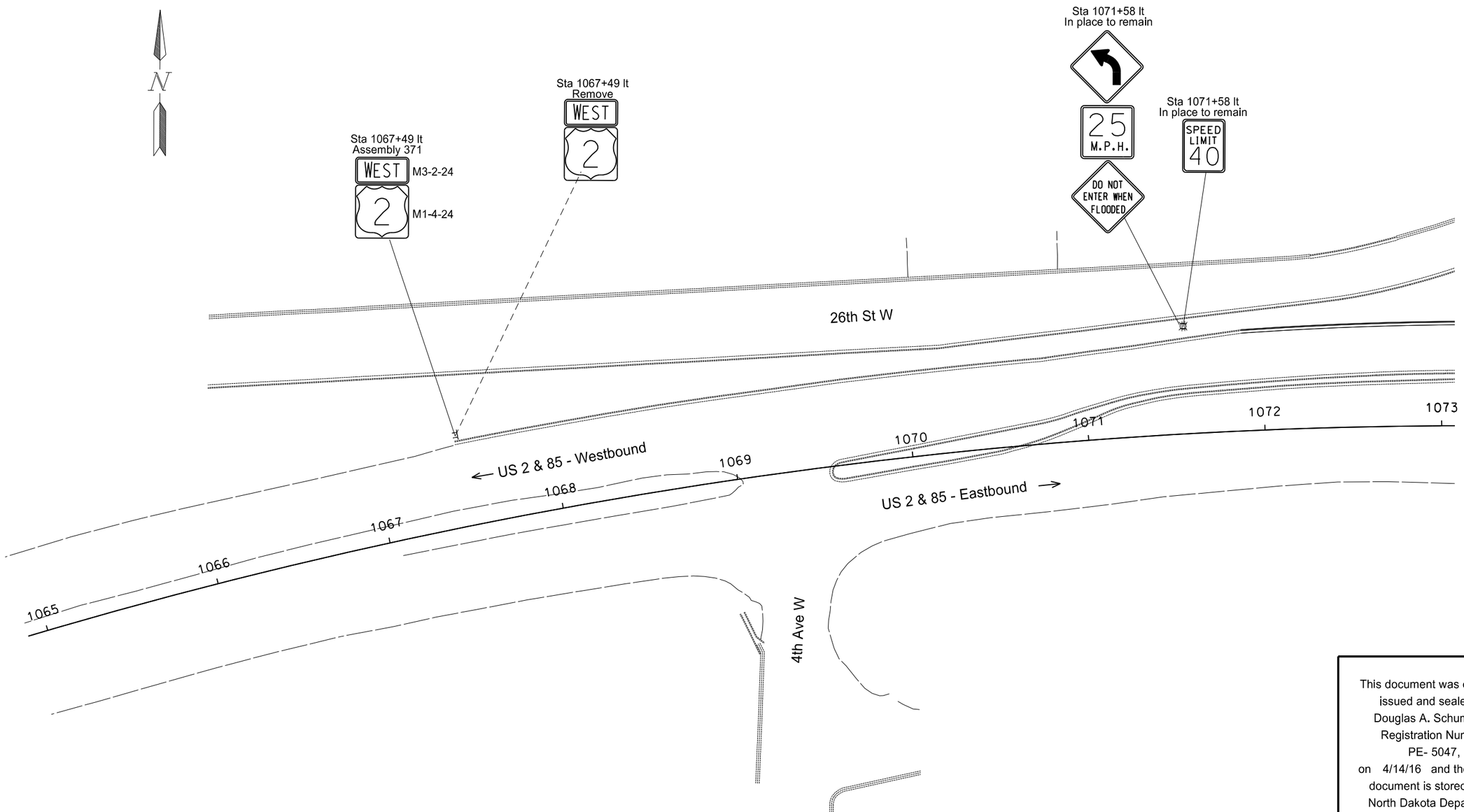
Signing

Williston Intersection - US 2 and 9th Ave W

Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	110	6



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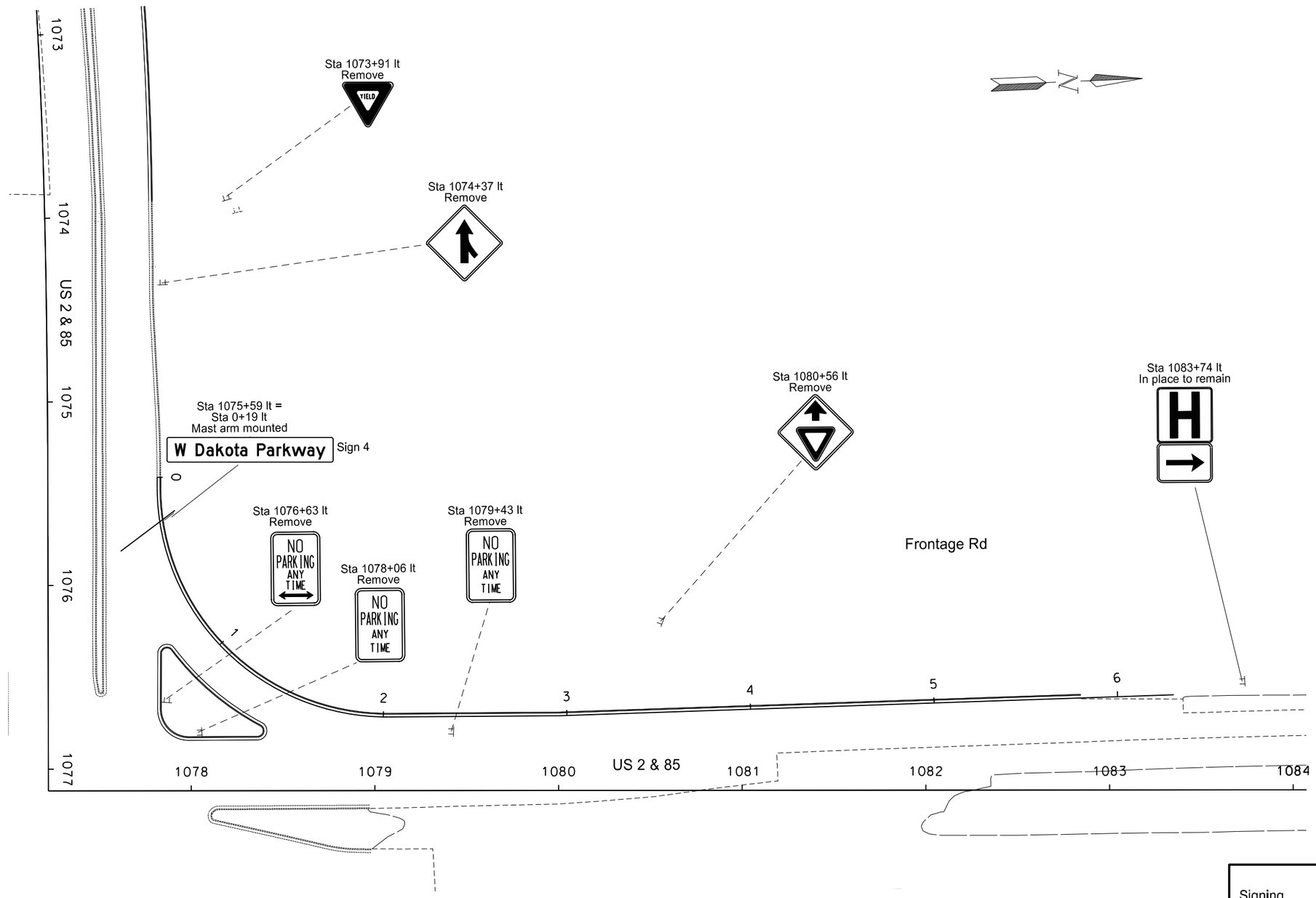
Signing

Williston Intersection - US 2 and 9th Ave W

Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	110	7



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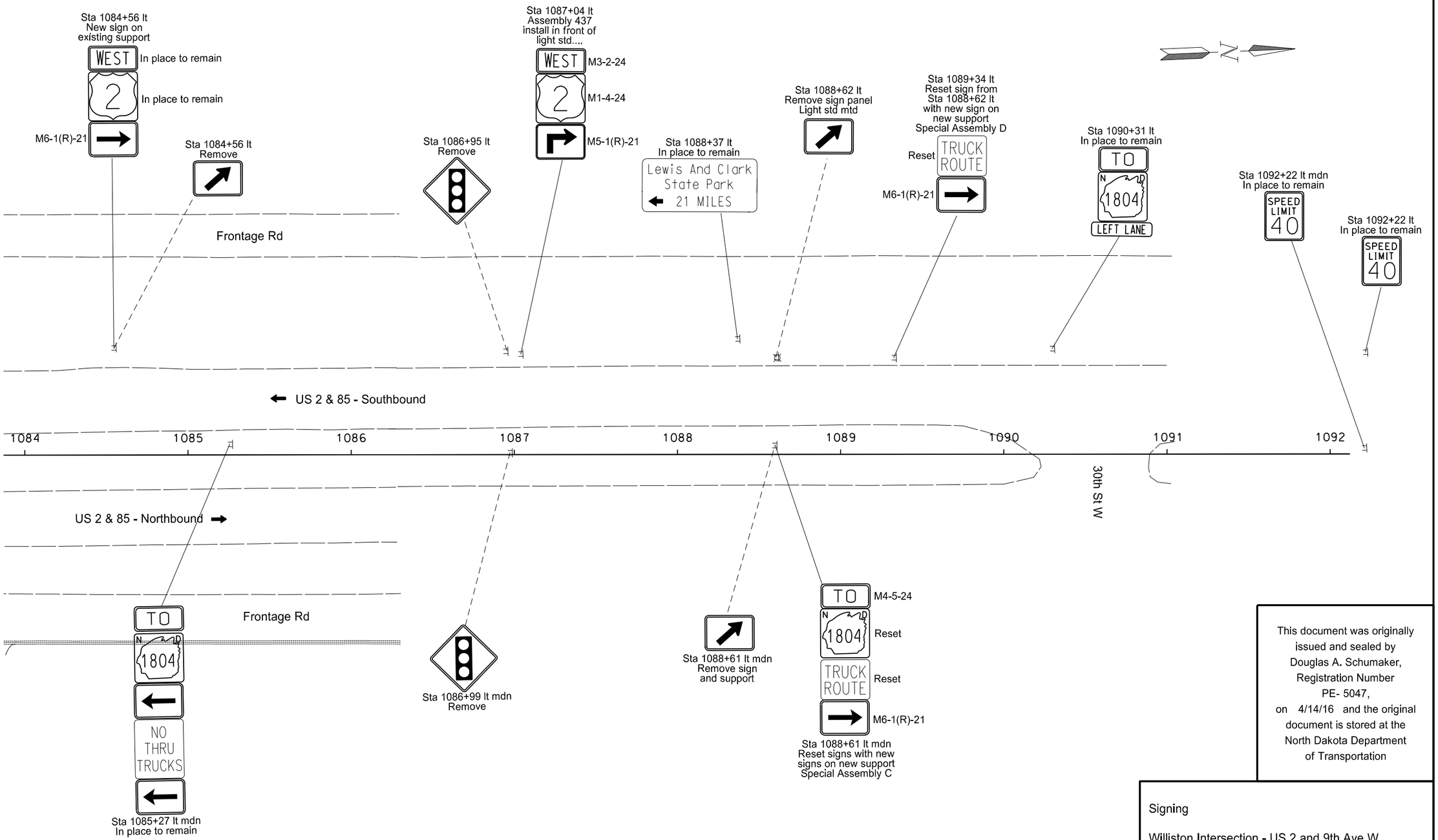
Signing

Williston Intersection - US 2 and 9th Ave W

Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	110	8



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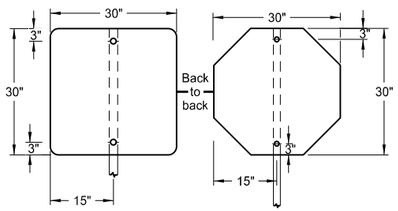
Signing

Williston Intersection - US 2 and 9th Ave W

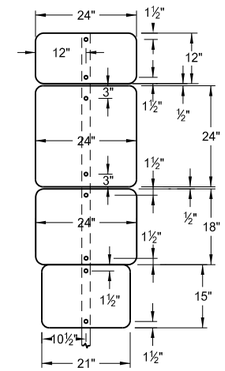
Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	110	9



Special Assembly A
(back to back)
Sta 18+82 Rt

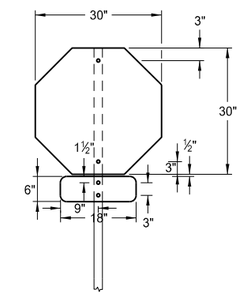
Area: 11.43 SF



Special Assembly C

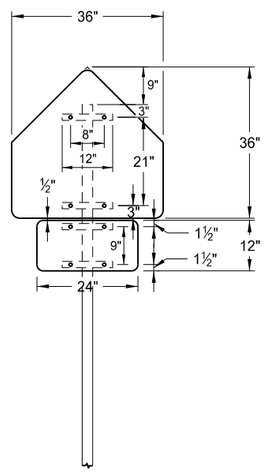
Sta 1088+61 Lt mdn

Area: 12.1875 SF



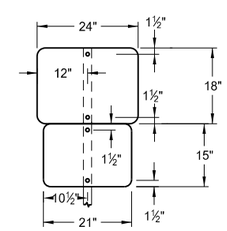
Special Assembly E
Sta 10+25 Rt
Sta 10+37 Lt
Sta 20+00 Lt
Sta 20+45 Lt

Area: 7.00 SF



Special Assembly B
Sta 13+25 Rt
Sta 18+00 Lt

Area: 8.75 SF



Special Assembly D

Sta 1089+34 Lt

Area: 5.1875 SF

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Special Assembly Details

Williston Intersection - US 2 and 9th Ave W

Williston ND

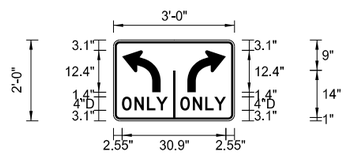
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	110	10

SIGN NUMBER	Sign 1
WIDTH x HEIGHT	3'-0" x 2'-0"
BORDER WIDTH	0.63" (inset 0.38")
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: XI Reflective
	COLOR: White
LEGEND/BORDER	TYPE: Non-reflective
	COLOR: Black

SYMBOL	X	Y	WID	HT	ANGLE
ARW_LT	2.6	8.5	11.5	12.4	0
ARW_RT	22	8.5	11.5	12.4	180

STATION(S):
17+39 rt

AREA: 6.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Misc_Regulatory.ssi

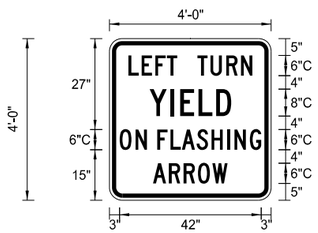
LETTER POSITION (X)																				LENGTH	SIZE	SERIES
O	N	L	Y																	13.6	4	D 2000
2.6	6.3	10	12.7																			
O	N	L	Y																	13.6	4	D 2000
19.9	23.6	27.3	30																			

SIGN NUMBER	Sign 2
WIDTH x HEIGHT	4'-0" x 4'-0"
BORDER WIDTH	1.25" (inset 0.75")
CORNER RADIUS	3"
MOUNTING	Mast Arm Mounted
BACKGROUND	TYPE: XI Reflective
	COLOR: White
LEGEND/BORDER	TYPE: Non-reflective
	COLOR: Black

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
1051+36-57' rt

AREA: 16.0 Sq.Ft.

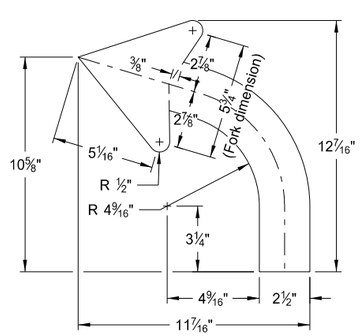


Dimensions are in inches.tenths

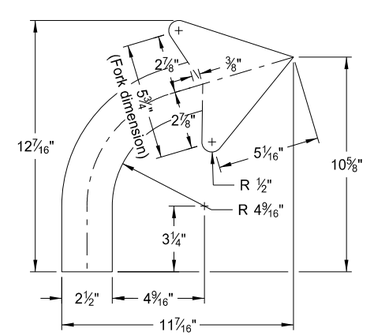
Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Misc_Regulatory.ssi

LETTER POSITION (X)																				LENGTH	SIZE	SERIES
L	E	F	T		T	U	R	N												36.8	6	C 2000
5.6	9.5	13.6	17	20.1	26.1	30	34.7	39														
Y	I	E	L	D																24.2	8	C 2000
11.9	18.1	21	26.4	31.6																		
O	N	F	L	A	S	H	I	N	G											42	6	C 2000
3	7.7	14.2	18.1	21.5	25.9	30.3	34.9	37.1	41.7													
A	R	R	O	W																22.1	6	C 2000
12.9	17.6	22	26.3	30.5																		



ARW_LT DETAIL



ARW_RT DETAIL

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Sign Details

Williston Intersection - US 2 and 9th Ave W

Williston ND

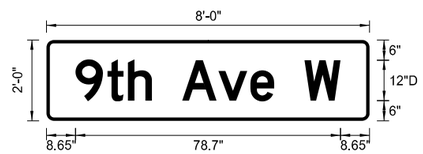
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	110	11

SIGN NUMBER	Sign 3
WIDTH x HEIGHT	8'-0" x 2'-0"
BORDER WIDTH	1" (inset 0")
CORNER RADIUS	2.25"
MOUNTING	Mast Arm Mounted
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
1049+83 lt
1051+36 rt

AREA: 16.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Street_Name_Overhead_Border.ssi

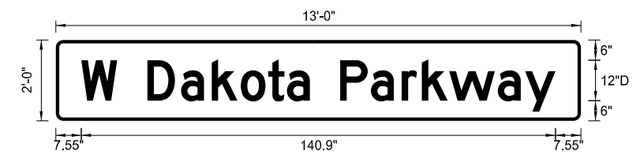
LETTER POSITION (X)																			LENGTH	SIZE	SERIES
9	t	h		A	v	e		W											78.7	12/9	D 2000
8.6	18.1	24.2	31.3	40.3	51.1	60.6	67.7	76.7													

SIGN NUMBER	Sign 4
WIDTH x HEIGHT	13'-0" x 2'-0"
BORDER WIDTH	1" (inset 0")
CORNER RADIUS	2.25"
MOUNTING	Overhead
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
1050+27-60 rt

AREA: 26.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Street_Name_Overhead_Border.ssi

LETTER POSITION (X)																			LENGTH	SIZE	SERIES
W		D	a	k	o	t	a		P	a	r	k	w	a	y				140.9	12/9	D 2000
7.6	18.2	27.2	37.2	46.3	55	63.1	68.6	75.5	84.5	93.6	102.7	108.7	116.9	131.3	139.4						

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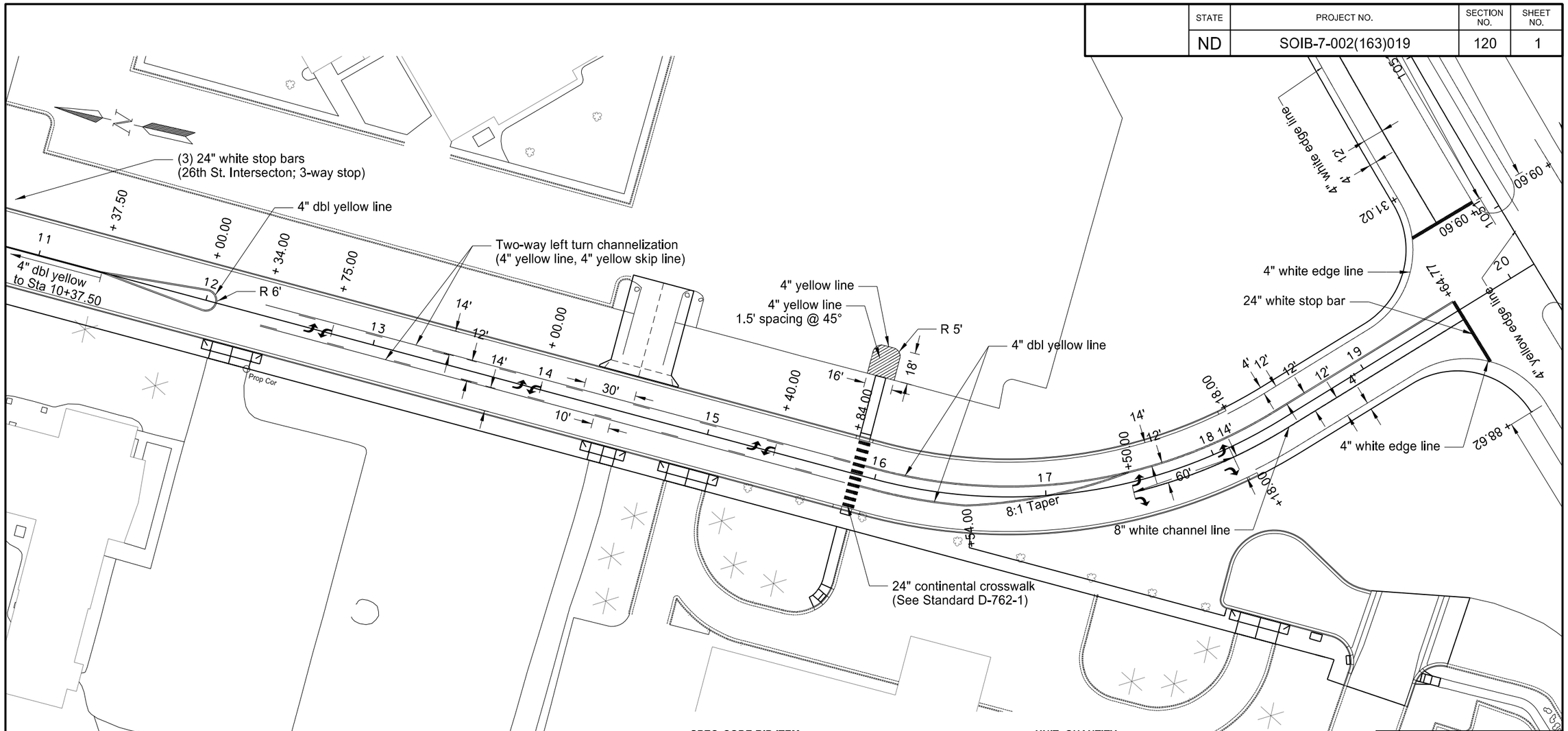
Sign Details

Williston Intersection - US 2 and 9th Ave W

Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	120	1



SPEC	CODE	BID ITEM	UNIT	QUANTITY
762	0112	**EPOXY PVMT MK MESSAGE**		
		2 Left Arrow - Southbound Left Turn Lane	SF	32
		2 Right Arrow - Southbound Right Turn Lane	SF	32
		6 Left Arrow - Center Left Turn Lane	SF	64
762	0113	**EPOXY PVMT MK 4IN LINE**		
		4" dbl yellow barrier line - 9th Ave (Sta 10+37.50 to Sta 12+06)	LF	490
		4" dbl yellow barrier line - Southbound Left Turn Lane (Sta 15+92 to Sta 19+64.77)	LF	1056
		4" yellow channelization line - Center Left Turn Lane (Sta 12+34 to Sta 15+84)	LF	875
		4" yellow line - New Hope Church Parking Lot (Sta 15+89 Lt)	LF	233
		4" white edge line - 9th Ave Lt	LF	179
		4" white edge line - 9th Ave Rt	LF	194
762	0115	**EPOXY PVMT MK 8IN LINE**		
		8" white channel line - Soutbound Left Turn Lane	LF	217
762	0117	**EPOXY PVMT MK 24IN LINE**		
		24" white stop bar - Soutbound Left Turn Lane	LF	41
		24" white stop bars - 26th St. Intersection (3-way stop)	LF	65
		24" white continental crosswalk line - 9th Ave	LF	60

Note: Obliterate existing pavement marking as shown on the basis of estimate or as directed by the Engineer.

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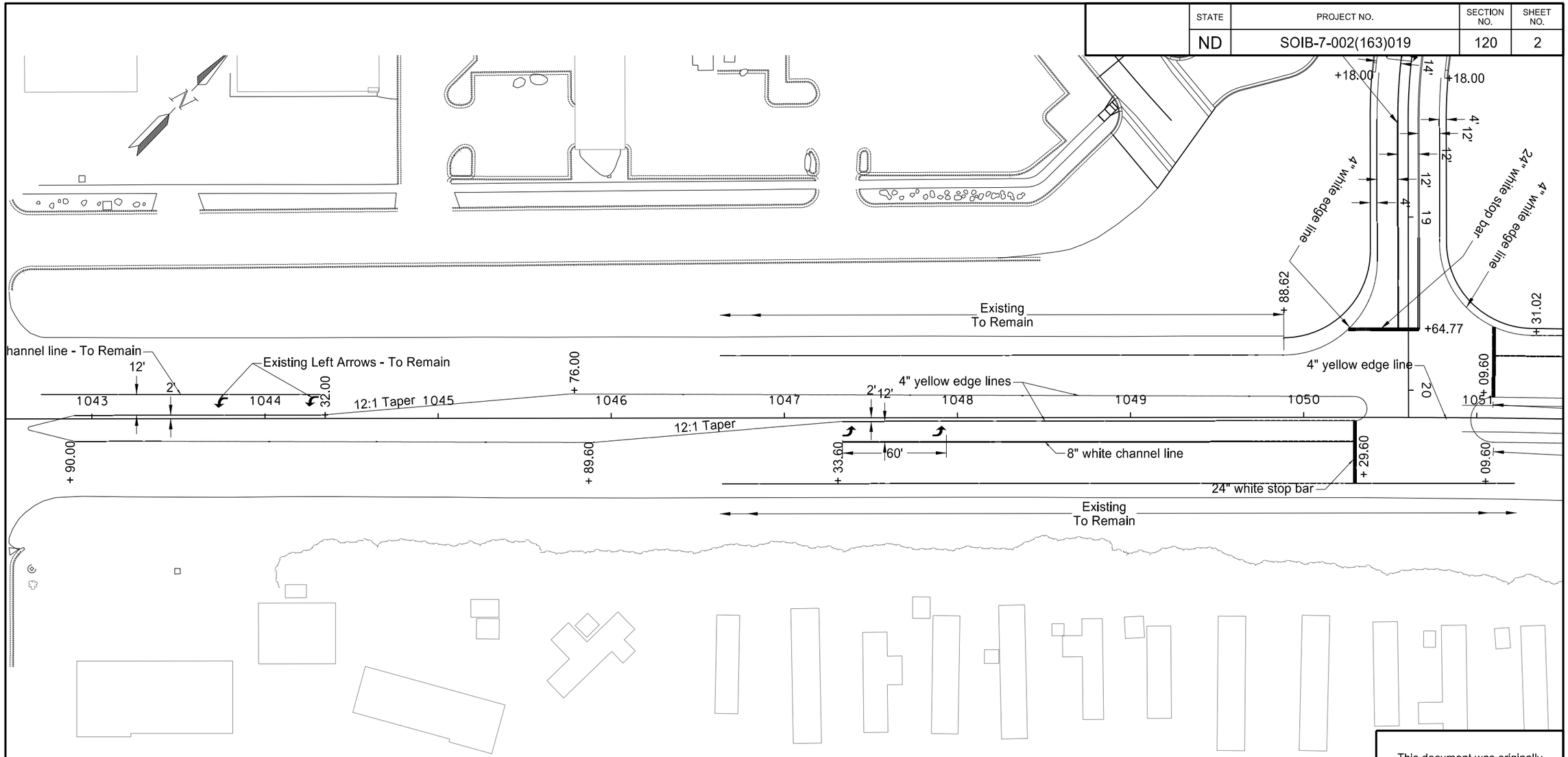
9TH AVENUE PAVEMENT MARKING

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	120	2



SPEC	CODE	BID ITEM	UNIT	QUANTITY
762	**0112**	**EPOXY PVMT MK MESSAGE**		
		2 Left Arrow - Eastbound Left Turn Lane	SF	32
762	**0113**	**EPOXY PVMT MK 4IN LINE**		
		4" yellow edge line - Eastbound Median	LF	800
		4" yellow edge line - Westbound Median	LF	800
762	**0115**	**EPOXY PVMT MK 8IN LINE**		
		8" white channel line - Eastbound Left Turn Lane	LF	296
762	**0117**	**EPOXY PVMT MK 24IN LINE**		
		24" white stop bar - Eastbound Left Turn Lane	LF	36

Note: Obliterate existing pavement marking as shown on the basis of estimate or as directed by the Engineer.

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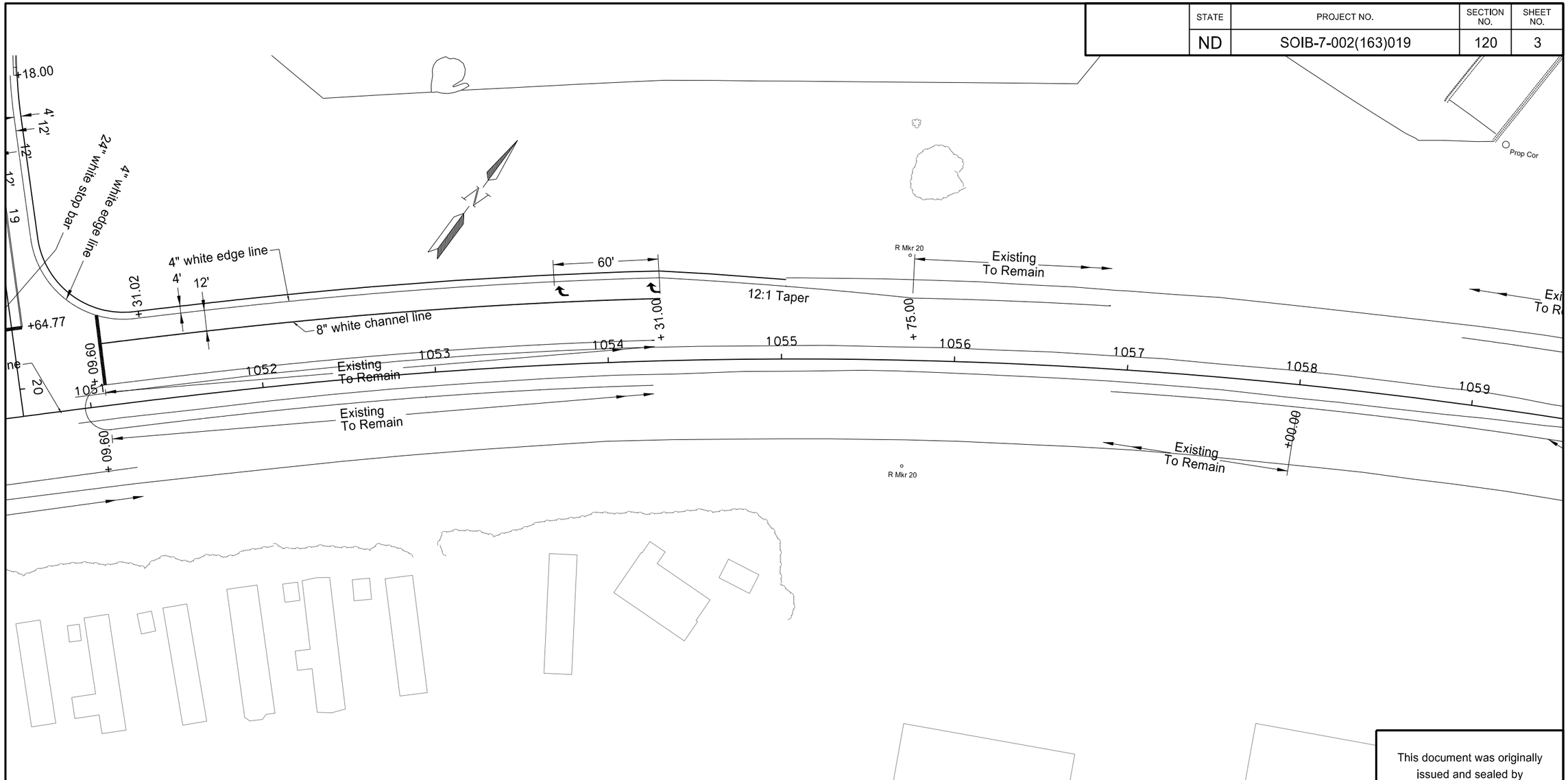
US 2 LEFT TURN LANE PAVEMENT MARKING

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	120	3



SPEC	CODE	BID ITEM	UNIT	QUANTITY
762	0112	**EPOXY PVMT MK MESSAGE**		
		2 Right Arrow - Westbound Right Turn Lane	SF	32
762	0113	**EPOXY PVMT MK 4IN LINE**		
		4" white edge line - Westbound Right Turn Lane	LF	451
762	0115	**EPOXY PVMT MK 8IN LINE**		
		8" white channel line - Westbound Right Turn Lane	LF	325
762	0117	**EPOXY PVMT MK 24IN LINE**		
		24" white stop bar - Westbound Right Turn Lane	LF	41

Note: Obliterate existing pavement marking as shown on the basis of estimate or as directed by the Engineer.

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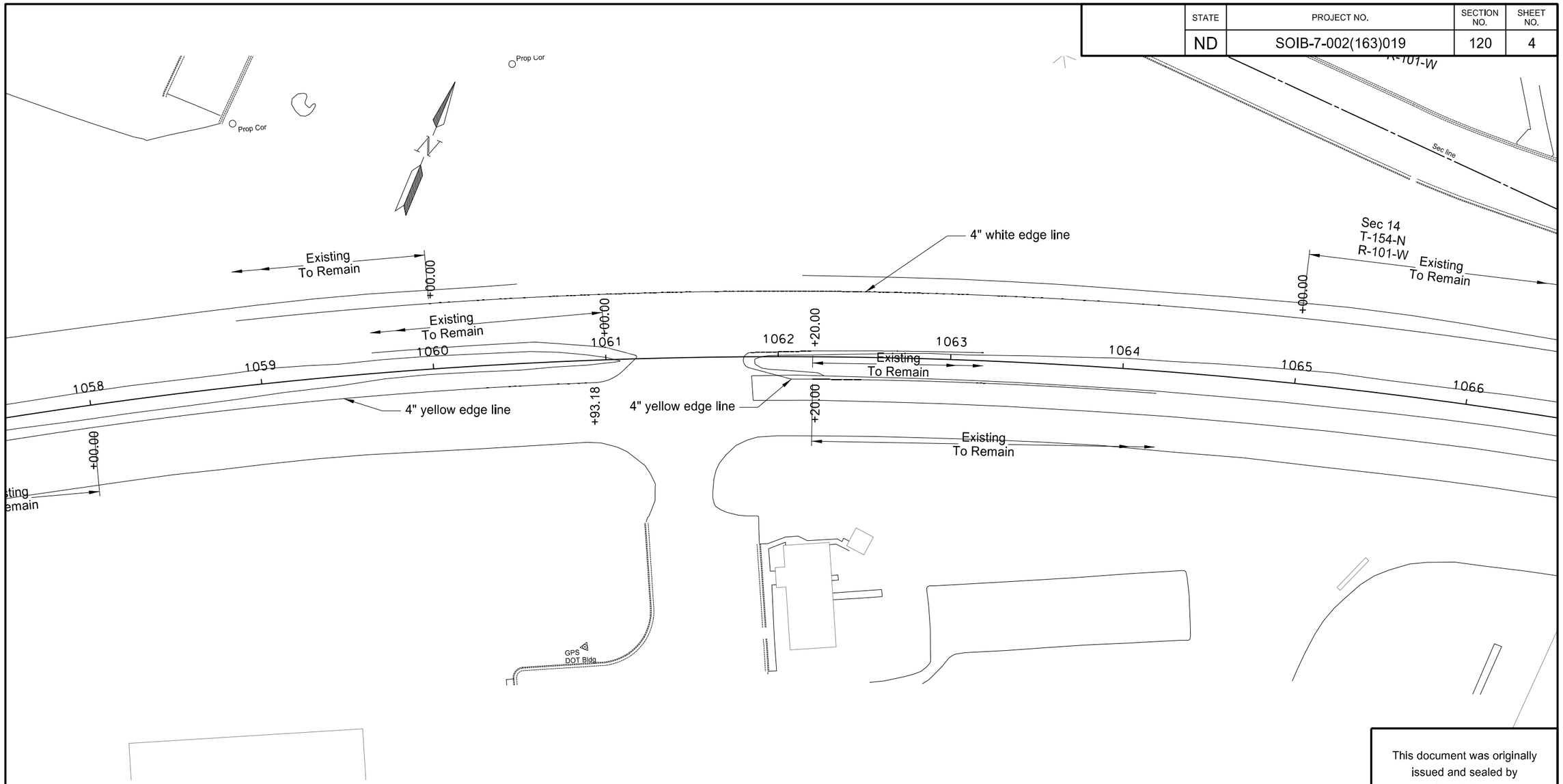
US 2 RIGHT TURN LANE PAVEMENT MARKING

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	120	4



SPEC	CODE	BID ITEM	UNIT	QUANTITY
762	0113	EPOXY PVMT MK 4IN LINE		
		4" yellow edge line - Eastbound Median	LF	415
		4" white edge line - Westbound Outside	LF	507

Note: Obliterate existing pavement marking as shown on the basis of estimate or as directed by the Engineer.

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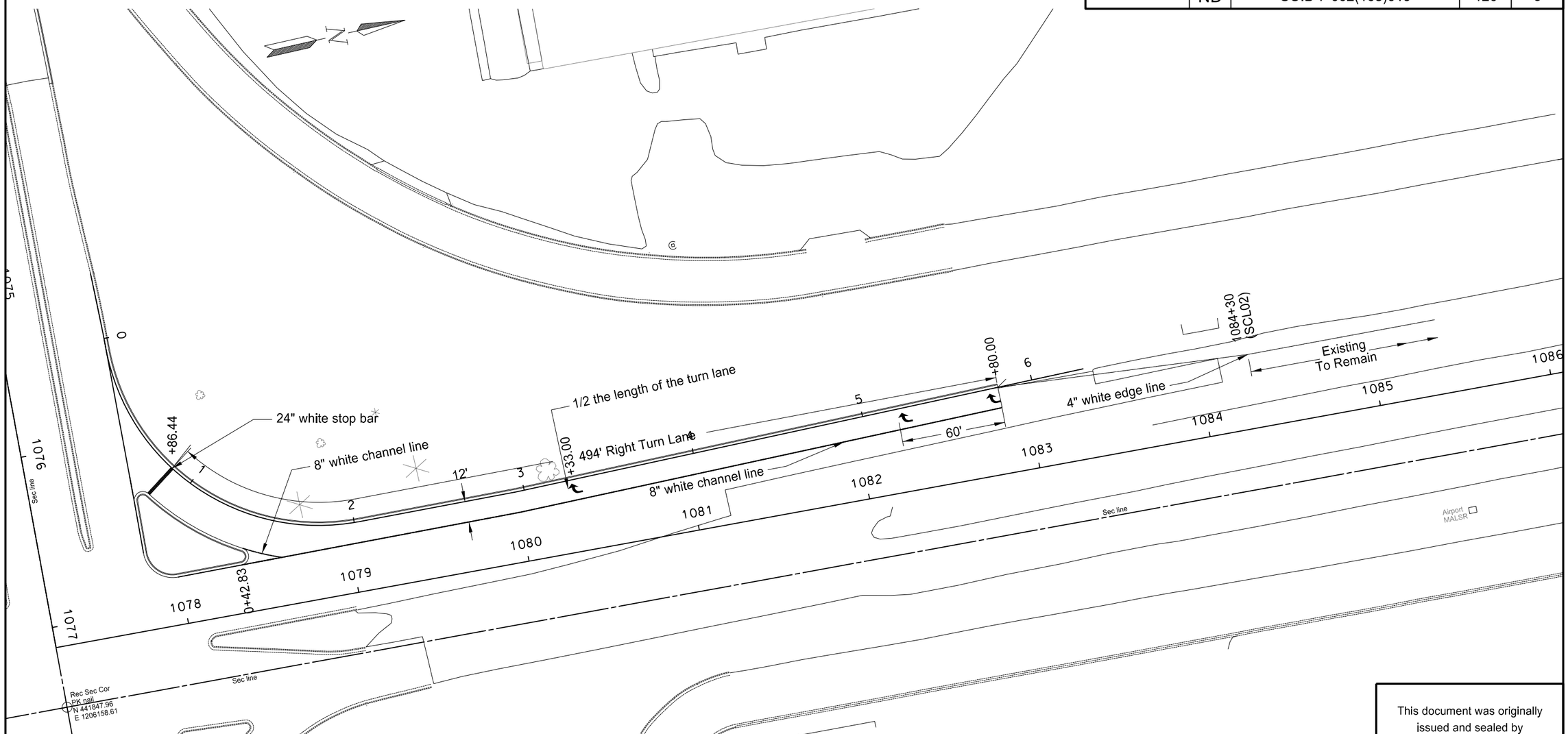
US 2 6TH AVENUE PAVEMENT MARKING

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	120	5



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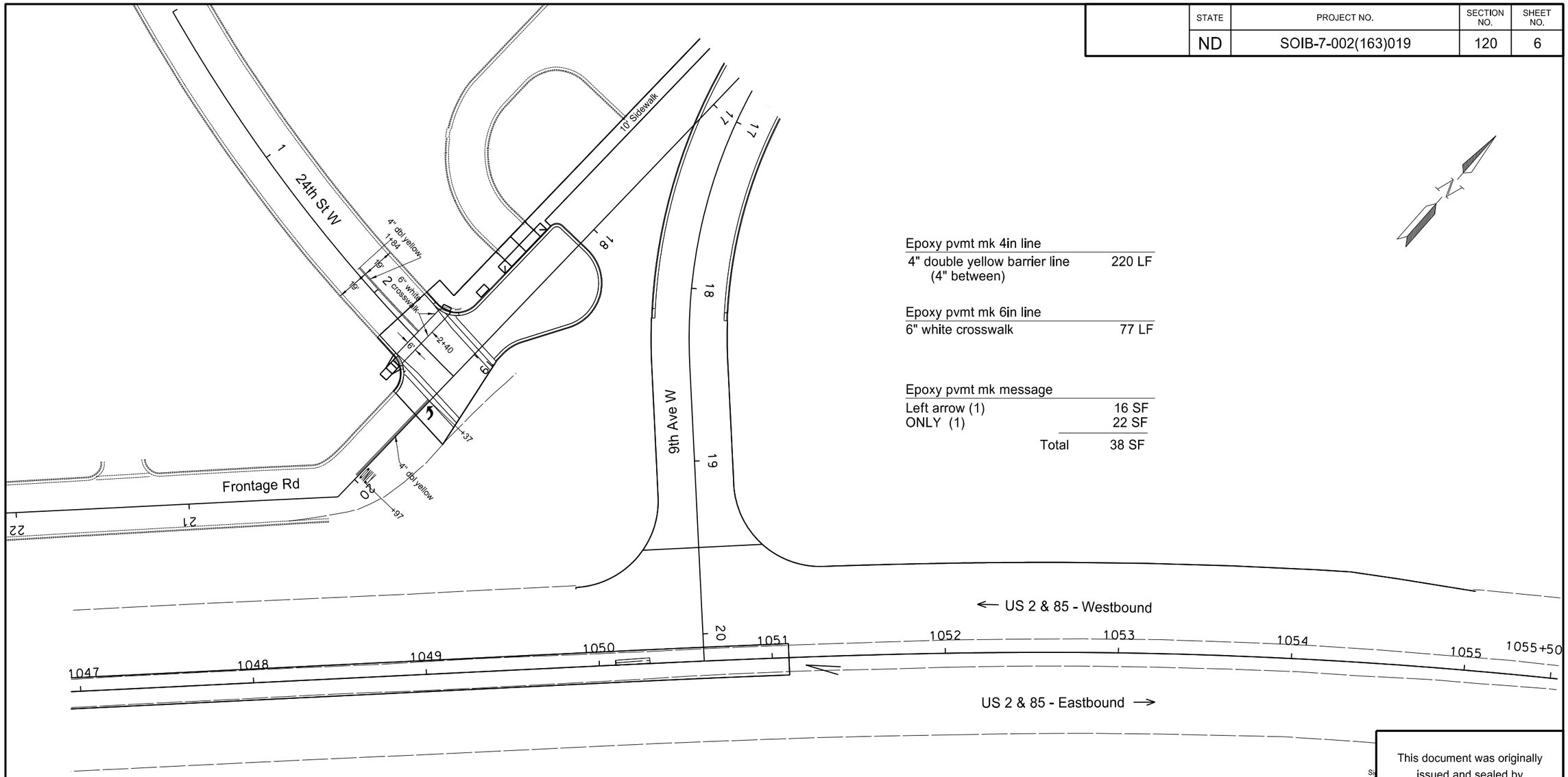
SPEC	CODE	BID ITEM	UNIT	QUANTITY
762	0112	**EPOXY PVMT MK MESSAGE**		
		3 Right Arrow - Southbound Right Turn Lane	SF	32
762	0113	**EPOXY PVMT MK 4IN LINE**		
		4" white edge line - 2nd Ave Turn Lane Taper	LF	146
762	0115	**EPOXY PVMT MK 8IN LINE**		
		8" white channel line - 2nd Ave	LF	472
762	0117	**EPOXY PVMT MK 24IN LINE**		
		24" white stop bar - 2nd Ave	LF	20

Note: Obliterate existing pavement marking as shown on the basis of estimate or as directed by the Engineer.

2ND AVENUE PAVEMENT MARKING

US Hwy 2 Intersection Improvements - Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	120	6



Epoxy pvmt mk 4in line

4" double yellow barrier line (4" between)	220 LF

Epoxy pvmt mk 6in line

6" white crosswalk	77 LF

Epoxy pvmt mk message

Left arrow (1)	16 SF
ONLY (1)	22 SF
Total	38 SF

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Pavement Marking

Williston Intersection - US 2 and 9th Ave W

Williston ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	120	7

Epoxy pvmt mk message

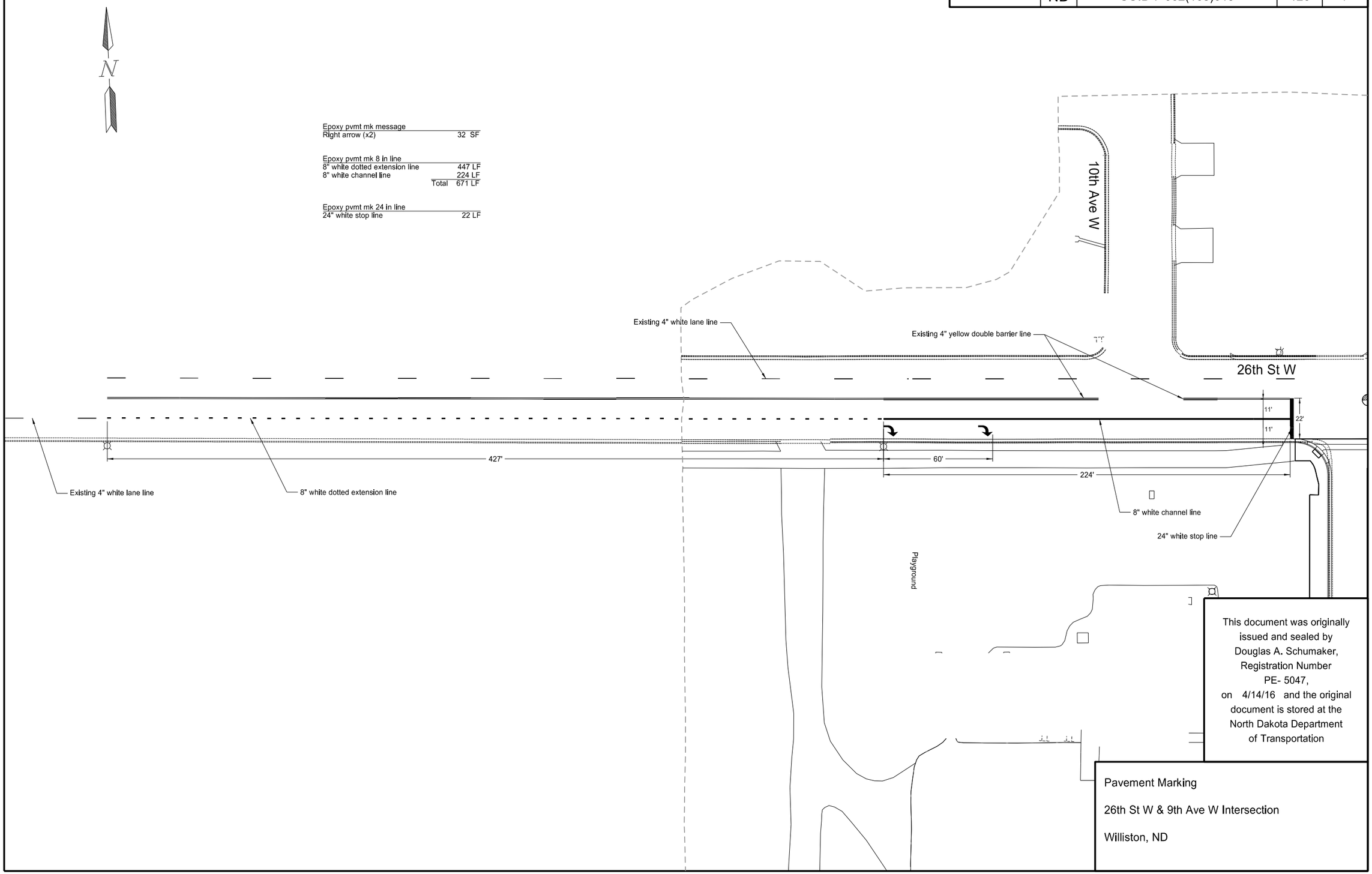
Right arrow (x2)	32 SF

Epoxy pvmt mk 8 in line

8" white dotted extension line	447 LF
8" white channel line	224 LF
Total	671 LF

Epoxy pvmt mk 24 in line

24" white stop line	22 LF



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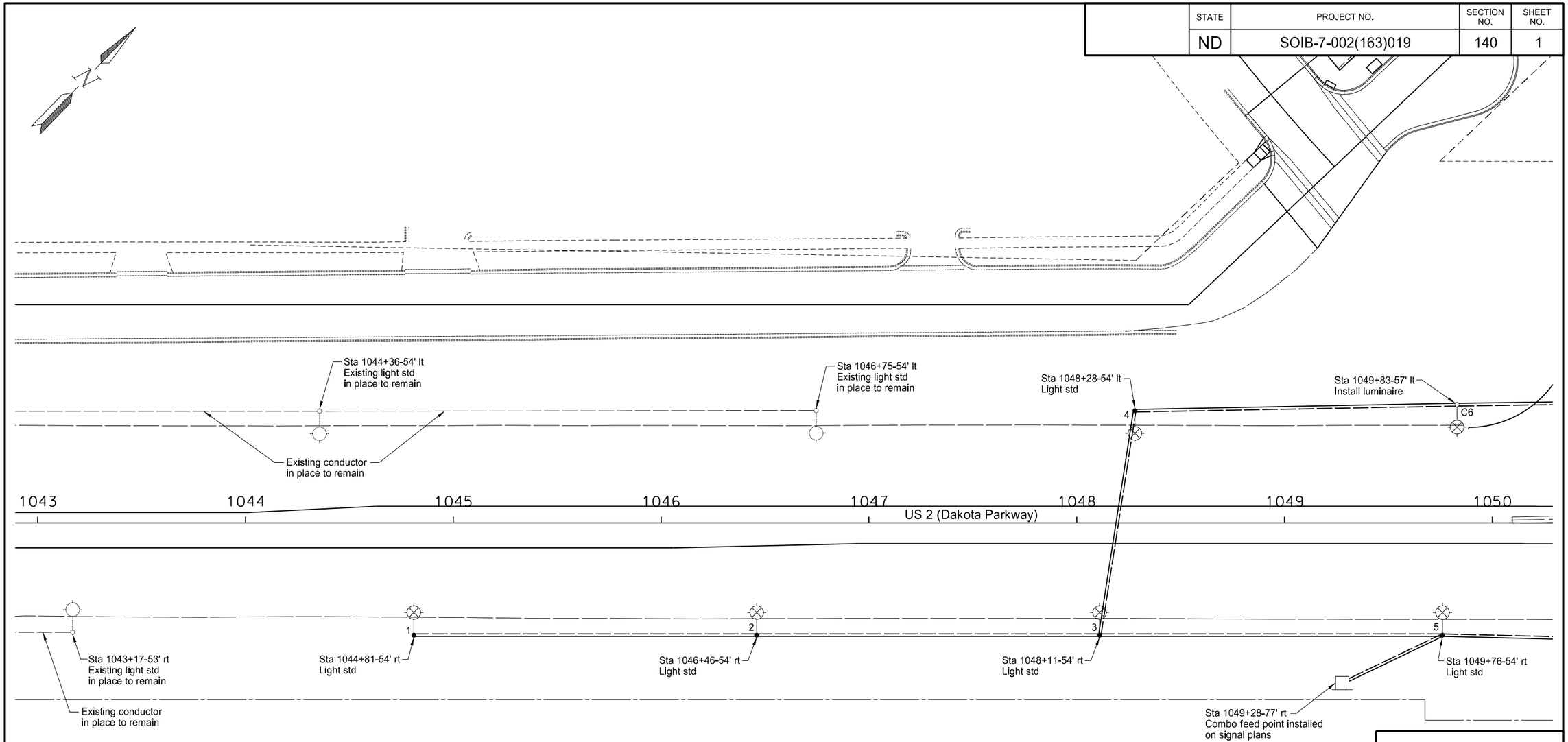
Pavement Marking

26th St W & 9th Ave W Intersection

Williston, ND

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	140	1



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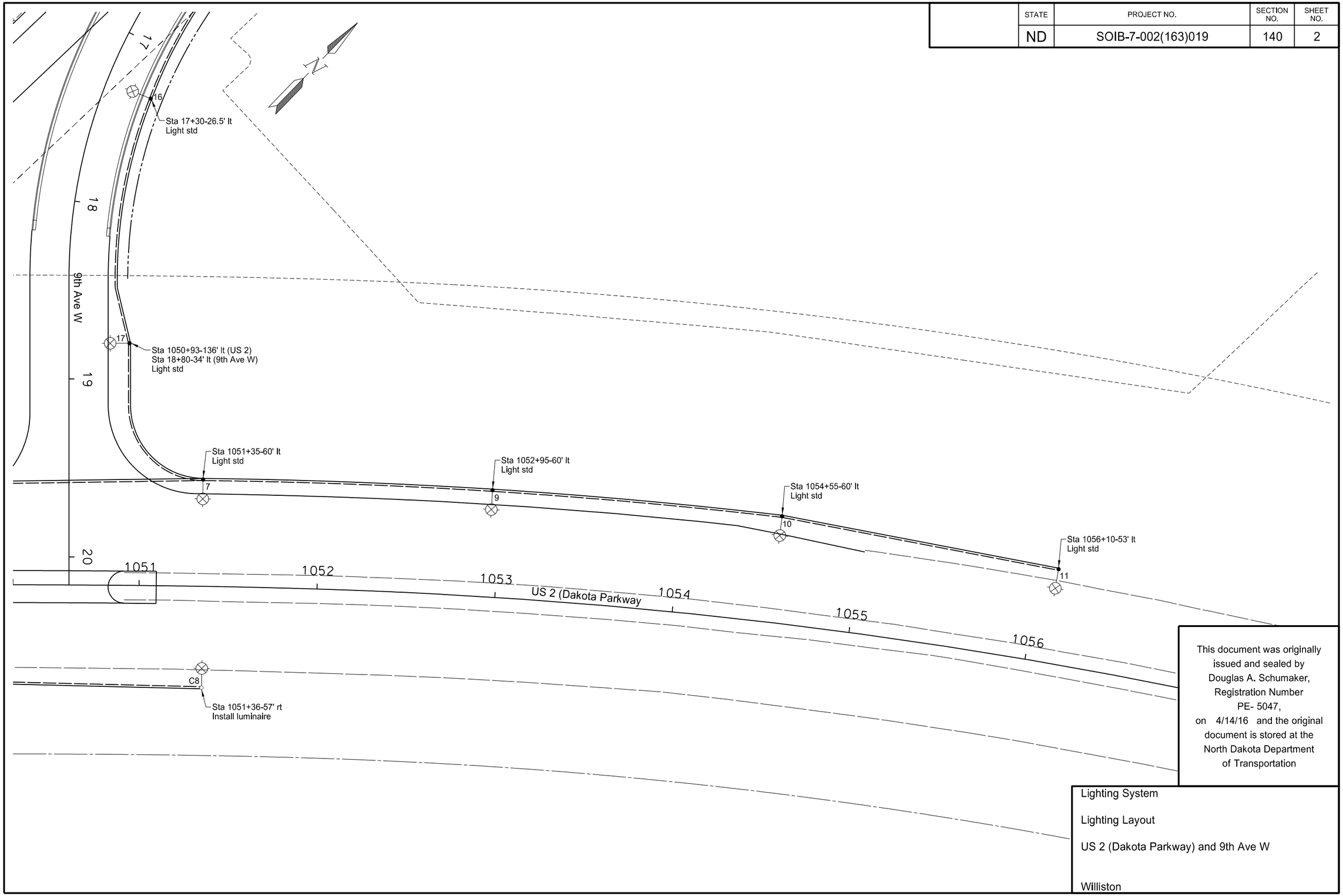
Lighting System

Lighting Layout

US 2 (Dakota Parkway)

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	140	2



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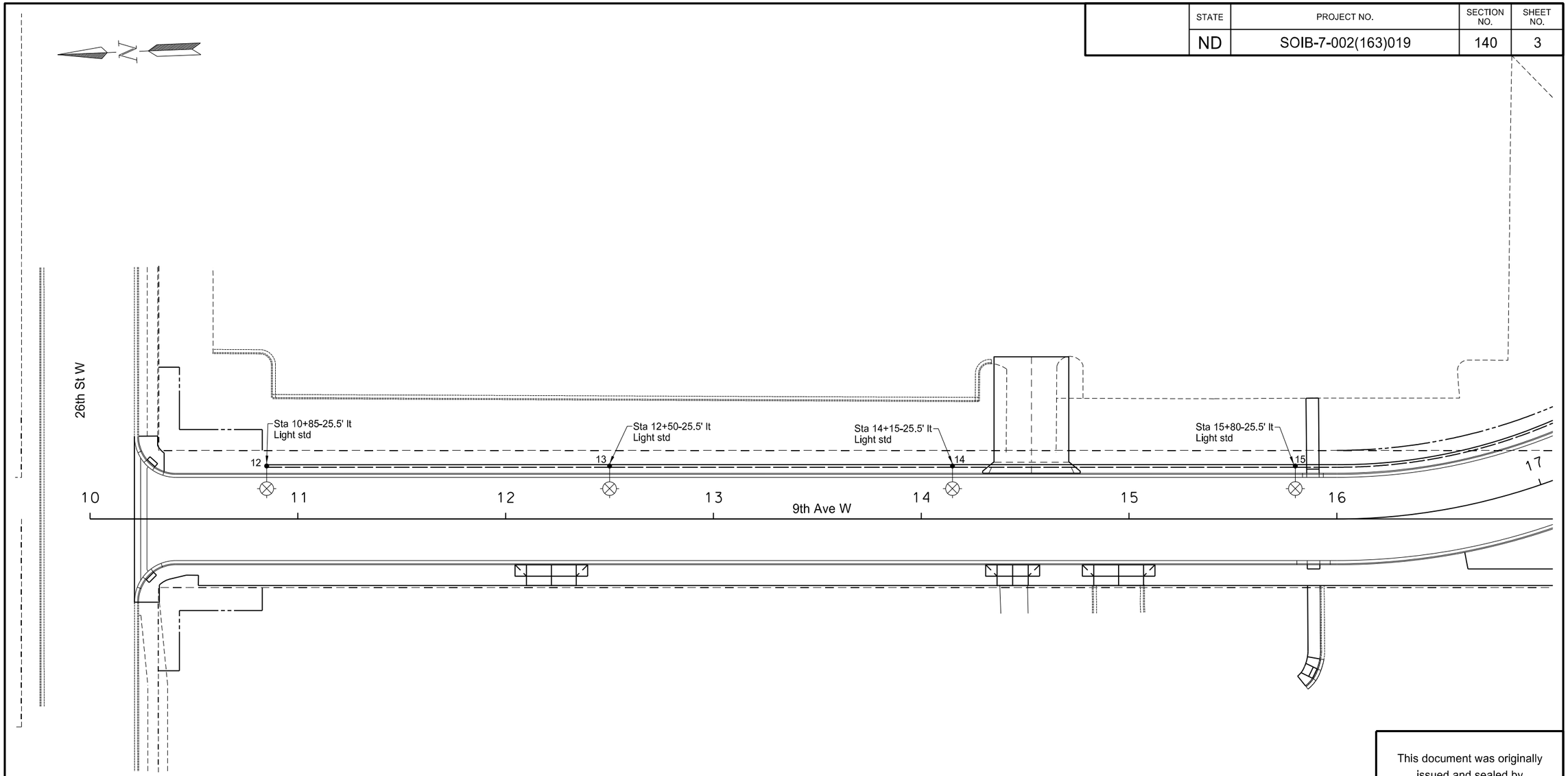
Lighting System

Lighting Layout

US 2 (Dakota Parkway) and 9th Ave W

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	140	3



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Lighting System

Lighting Layout

9th Ave W

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	140	4

Light Std Number	Station	Conduit Runs		Cable Runs	
		LF	Dia	LF	Type
1 2	1044+81-54' rt to 1046+46-54' rt	163	2"	346 173	(2) No. 6 RHW (1) No. 6 THW
2 3	1046+46-54' rt to 1048+11-54' rt	163	2"	346 173	(2) No. 6 RHW (1) No. 6 THW
3 5	1048+11-54' rt to 1049+76-54' rt	163	2"	346 173	(2) No. 6 RHW (1) No. 6 THW
FP 5	1049+28-77' rt to 1049+76-54' rt	52	2"	136 68	(2) No. 6 RHW (1) No. 6 THW
5 C8	1049+76-54' rt to 1051+36-57' rt	158	2"	336 168	(2) No. 6 RHW (1) No. 6 THW
3 4	1048+11-54' rt to 1048+28-54' lt	108	2"	236 118	(2) No. 6 RHW (1) No. 6 THW
4 C6	1048+28-54' lt to 1049+83-57' lt	153	2"	326 163	(2) No. 6 RHW (1) No. 6 THW
C6 7	1049+83-57' lt to 1051+35-60' lt	151	2"	322 161	(2) No. 6 RHW (1) No. 6 THW
7 9	1051+35-60' lt to 1052+95-60' lt	161	2"	342 171	(2) No. 6 RHW (1) No. 6 THW
9 10	1052+95-60' lt to 1054+55-60' lt	162	2"	344 172	(2) No. 6 RHW (1) No. 6 THW
10 11	1054+55-60' lt to 1056+10-53' lt	157	2"	334 167	(2) No. 6 RHW (1) No. 6 THW
7 17 17	1051+35-60' lt to 1050+93-136' lt = 18+80-34' lt	98	2"	216 108	(2) No. 6 RHW (1) No. 6 THW
17 16	18+80-34' lt to 17+30-26.5' lt	139	2"	298 149	(2) No. 6 RHW (1) No. 6 THW
16 15	17+30-26.5' lt to 15+80-25.5' lt	138	2"	296 148	(2) No. 6 RHW (1) No. 6 THW
15 14	15+80-25.5' lt to 14+15-25.5' lt	163	2"	346 173	(2) No. 6 RHW (1) No. 6 THW
14 13	14+15-25.5' lt to 12+50-25.5' lt	163	2"	346 173	(2) No. 6 RHW (1) No. 6 THW
13 12	12+50-25.5' lt to 10+85-25.5' lt	163	2"	346 173	(2) No. 6 RHW (1) No. 6 THW

LIGHT STANDARD FOUNDATION TABLE		
Description	Footing Depth "D" 24" and 30" Dia	Footing Depth "D" 36" and 42" Dia
Light Standard - 40' and 42'	6'	5'

Lighting Quantities (A)									
Concrete Foundation - Highway Lighting	2" Dia Rigid Conduit	Underground Conductor No. 6 - Type RHW	Underground Conductor No. 6 - Type THW	Light Std 6 FT MA 40 FT Mounting Height	Light Std 6 FT MA 42 FT Pole Breakaway	LED Luminaire			Lighting System
EA	LF	LF	LF	EA	EA	EA			EA
15	2455	5262	2731	5	10	17			1

(A) Do not bid seperately but included in the item "Lighting System".

Light Standards						
No.	Station	Wattage	Circuit	Distribution	Pole/MT Ht.	Mast Arm
1	1044+81-54' rt	130 - 170	1	3	42' (B)	6'
2	1046+46-54' rt	130 - 170	1	3	42' (B)	6'
3	1048+11-54' rt	130 - 170	1	3	42' (B)	6'
4	1048+28-54' lt	130 - 170	1	3	42' (B)	6'
5	1049+76-54' rt	130 - 170	1	3	42' (B)	6'
C6	1049+83-57' lt	130 - 170	1	3	40'	6'
7	1051+35-60' lt	130 - 170	1	3	42' (B)	6'
C8	1051+36-57' rt	130 - 170	1	3	40'	6'
9	1052+95-60' lt	130 - 170	1	3	42' (B)	6'
10	1054+55-60' lt	130 - 170	1	3	42' (B)	6'
11	1056+10-53' lt	130 - 170	1	3	42' (B)	6'
12	10+85-25.5' lt	130 - 170	1	3	40'	6'
13	12+50-25.5' lt	130 - 170	1	3	40'	6'
14	14+15-25.5' lt	130 - 170	1	3	40'	6'
15	15+80-25.5' lt	130 - 170	1	3	40'	6'
16	17+30-26.5' lt	130 - 170	1	3	40'	6'
17	18+80-34' lt	130 - 170	1	3	42' (B)	6'

(B) Breakaway

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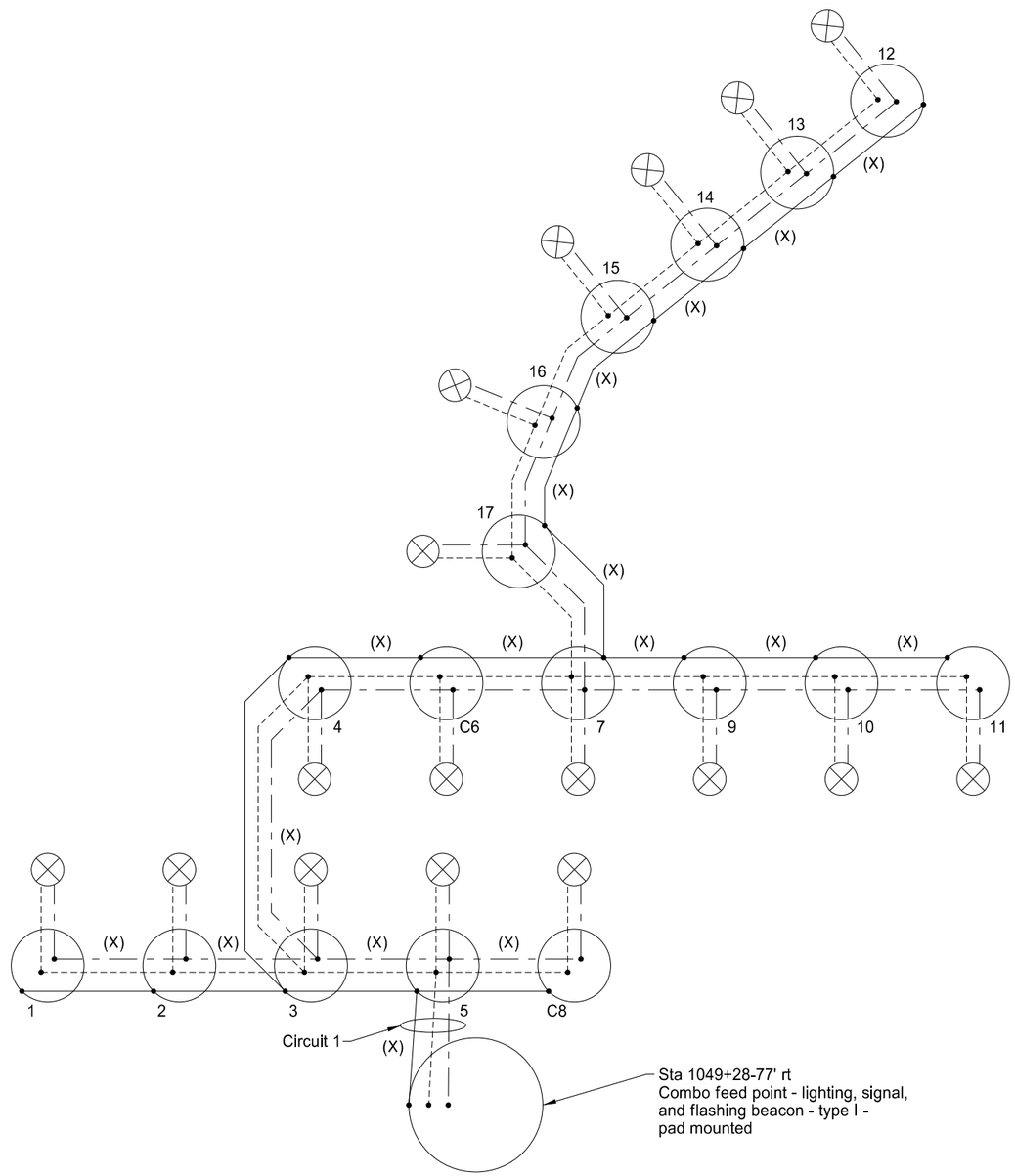
Lighting System

Light Standards, Cable Runs, and Quantities

US 2 (Dakota Parkway) and 9th Ave W

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	140	5



LEGEND

— - — - —	Phase conductor
- - - - - - - -	Phase conductor
————	Ground conductor
(X)	Underground conductor (2) No. 6 RHW (1) No. 6 THW
⊗	LED luminaire 120v x 240v operated on 240v
○	Light standard
10	Light standard number

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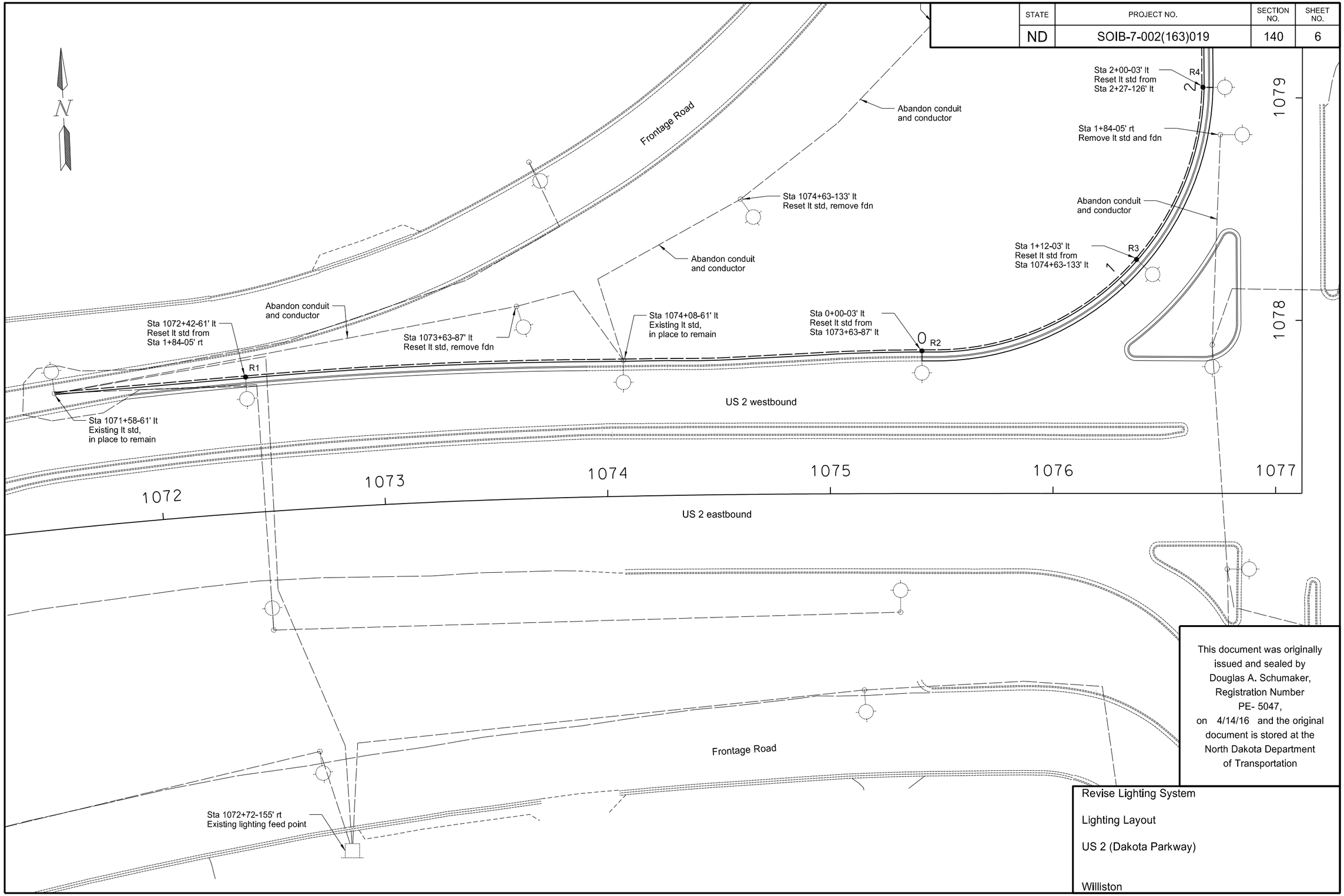
Lighting System

Lighting Schematic

US 2 (Dakota Parkway) and 9th Ave W

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	140	6



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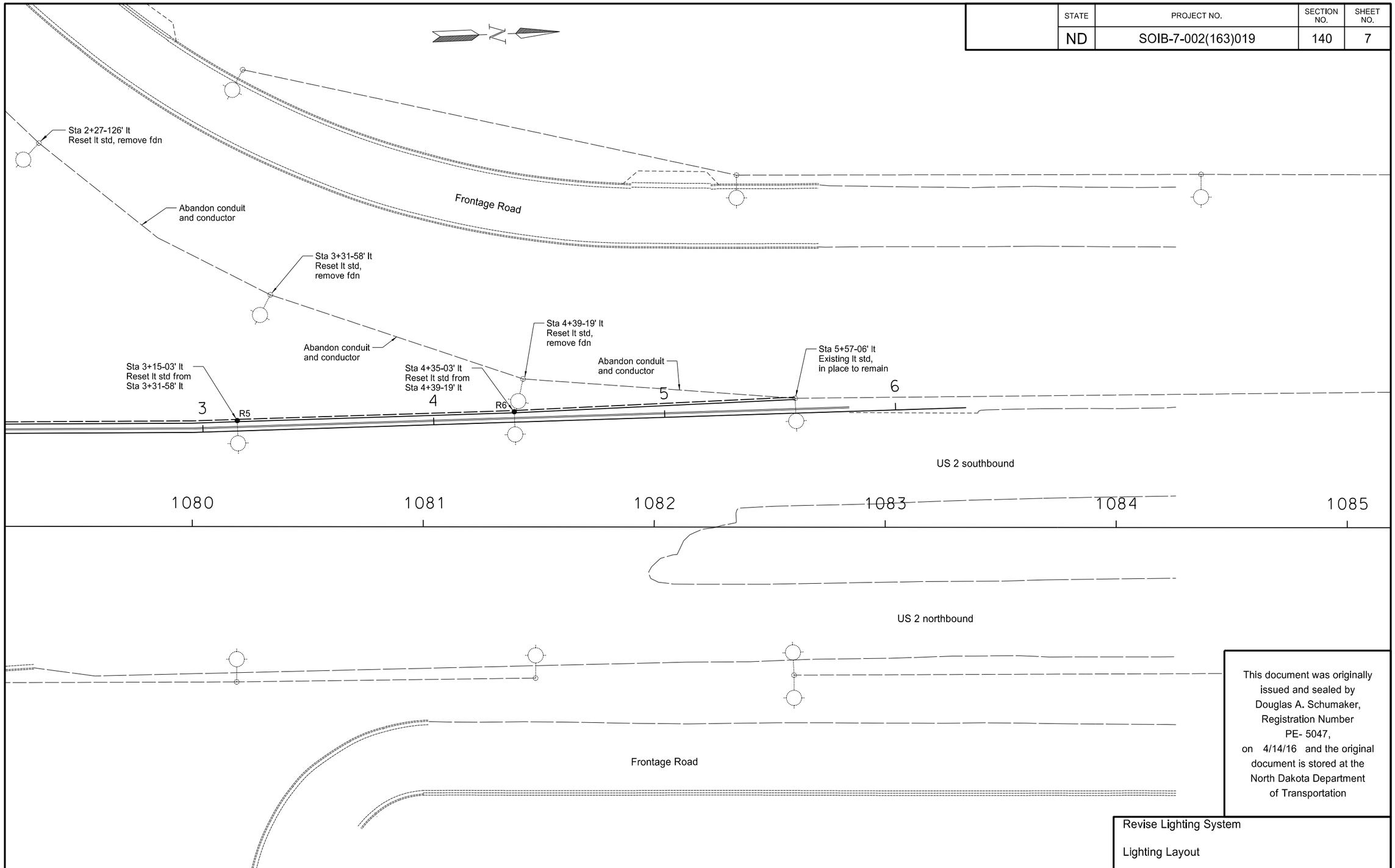
Revise Lighting System

Lighting Layout

US 2 (Dakota Parkway)

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	140	7



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Revise Lighting System

Lighting Layout

US 2 (3rd Ave W)

Williston

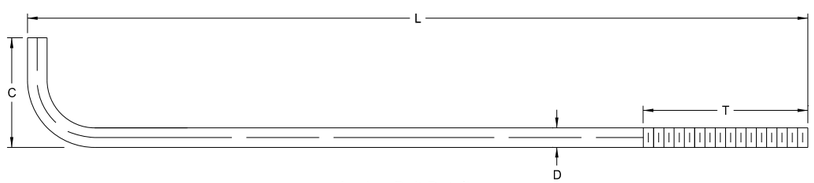
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	140	8

Light Std Number	Station	Conduit Runs		Cable Runs	
		LF	Dia	LF	Type
R6	5+57-06' lt to 4+35+03' lt	126	2"	260 130	(2) No. 4 RHW (1) No. 6 THW
R6 R5	4+35+03' lt to 3+15-03' lt	124	2"	256 128	(2) No. 4 RHW (1) No. 6 THW
R5 R4	3+15-03' lt to 2+00-03' lt	119	2"	246 123	(2) No. 4 RHW (1) No. 6 THW
R4 R3	2+00-03' lt to 1+12-03' lt	89	2"	186 93	(2) No. 4 RHW (1) No. 6 THW
R3 R2	1+12-03' lt to 0+00-03' lt	112	2"	232 116	(2) No. 4 RHW (1) No. 6 THW
R2	0+00-03' lt to 1074+08-61' lt	138	2"	284 142	(2) No. 4 RHW (1) No. 6 THW
R1	1074+08-61' lt to 1072+42-61' lt	174	2"	356 178	(2) No. 4 RHW (1) No. 6 THW
R1	1072+42-61' lt to 1071+58-61' lt	90	2"	188 94	(2) No. 4 RHW (1) No. 6 THW

Lighting Quantities (A)									
Concrete Foundation - Highway Lighting	2" Dia Rigid Conduit	Underground Conductor No. 4 - Type RHW	Underground Conductor No. 6 - Type THW	Relocate Light Standard (B)	Remove Concrete Foundation				Revise Lighting System
EA	LF	LF	LF	EA	EA				EA
6	972	2008	1004	6	6				1

(A) Include these items in the price bid for "Revise Lighting System".

(B) The feed point for most of these light standards is located at Sta 1072+72-155' rt. The existing light standard located at Sta 1+84-05' rt is connected to the signal feed point.



Anchor Bolt Detail
for relocated light standards

D	L	T	C	Anchor Bolts per lt std	Nuts per lt std	Washers per lt std
1.25"	42"	6"	6"	4	8	8

Note: Verify actual anchor bolt dimensions and bolt circle dimensions in the field.
Include the anchor bolts in the bid item "Revise Lighting System".

Relocated Light Standards					
No.	Station	Wattage	Circuit	Pole/MT Ht.	Mast Arm
R1	1072+42-61' lt	existing	existing	40'	6'
R2	0+00-03' lt	existing	existing	17'	6'
R3	1+12-03' lt	existing	existing	17'	6'
R4	2+00-03' lt	existing	existing	17'	6'
R5	3+15-03' lt	existing	existing	17'	6'
R6	4+35-03' lt	existing	existing	40'	6'

Lighting Foundation Table		
Description	Footing Depth "D" 24" and 30" Dia	Footing Depth "D" 36" and 42" Dia
Light Standard 17' Pole	6'	5'
Light Standard 40' Pole	6'	5'

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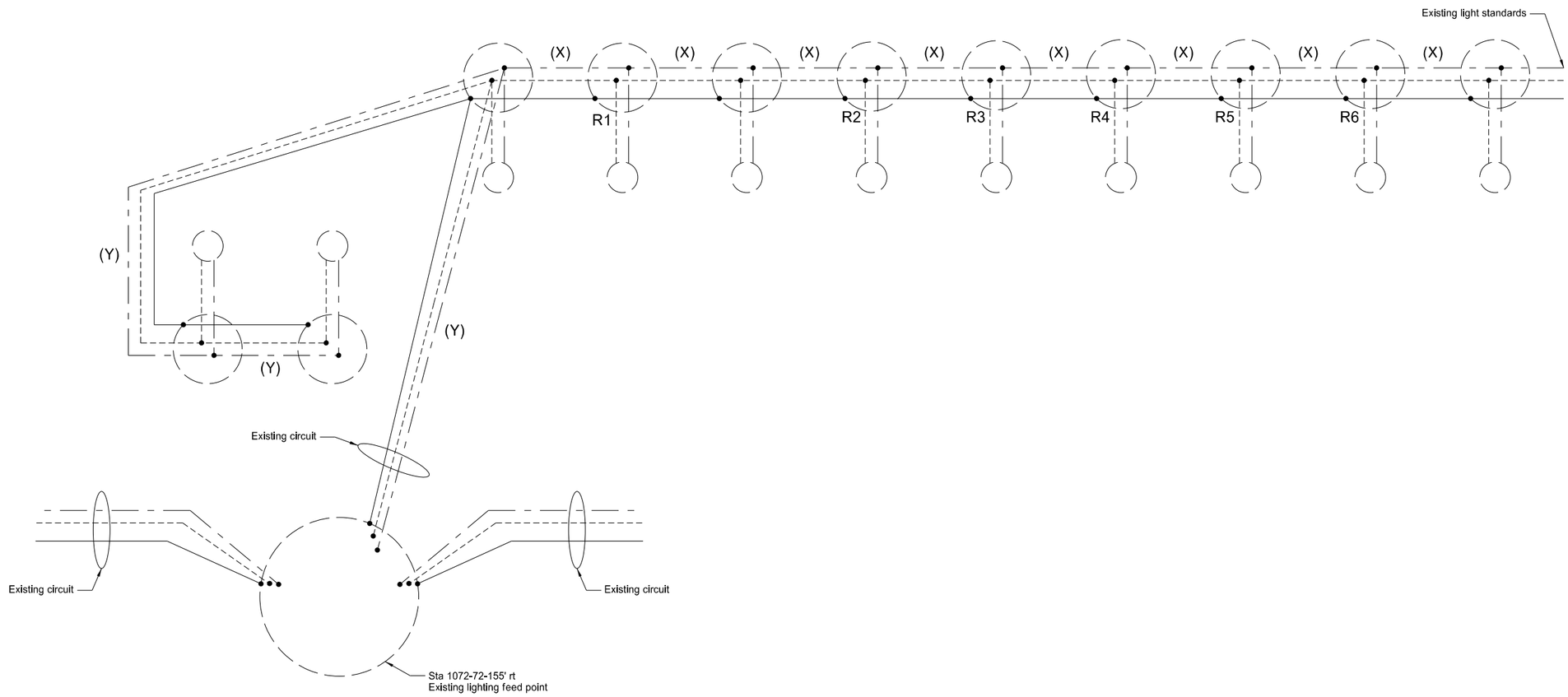
Revise Lighting System

Cable Runs and Quantities

US 2 (Dakota Parkway) and 26th St W

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	140	9



LEGEND

— - — - —	Phase conductor		Existing luminaire 120v x 240v operated on 240v
- - - - - - - -	Phase conductor		
————	Ground conductor		
(X)	Underground conductor (2) No. 4 RHW (1) No. 6 THW		Existing Light standard
(Y)	Existing Conductor	10	Light standard number

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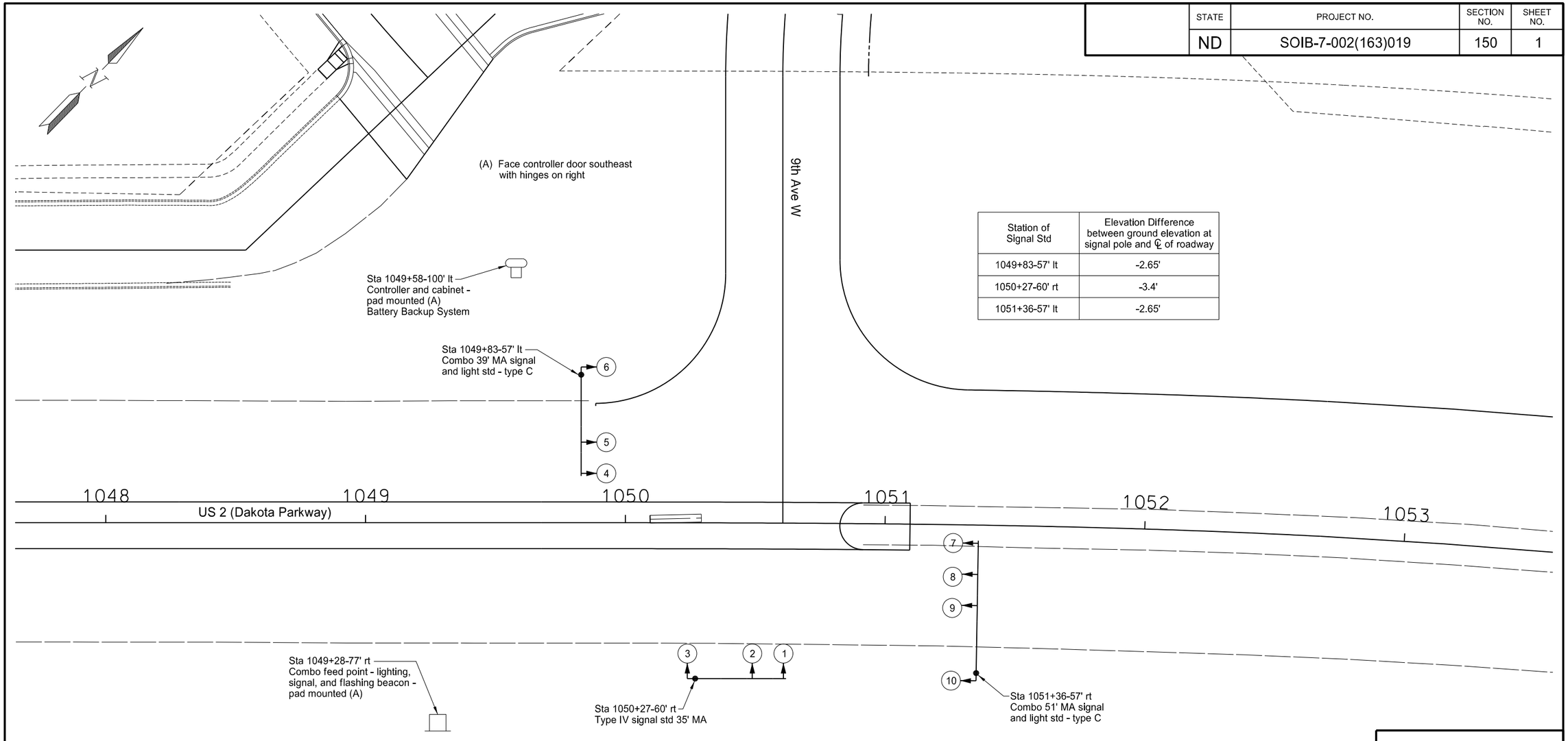
Revise Lighting System

Lighting Schematic

US 2 (Dakota Parkway) and 26th St W

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	1



Station of Signal Std	Elevation Difference between ground elevation at signal pole and ℄ of roadway
1049+83-57' lt	-2.65'
1050+27-60' rt	-3.4'
1051+36-57' lt	-2.65'

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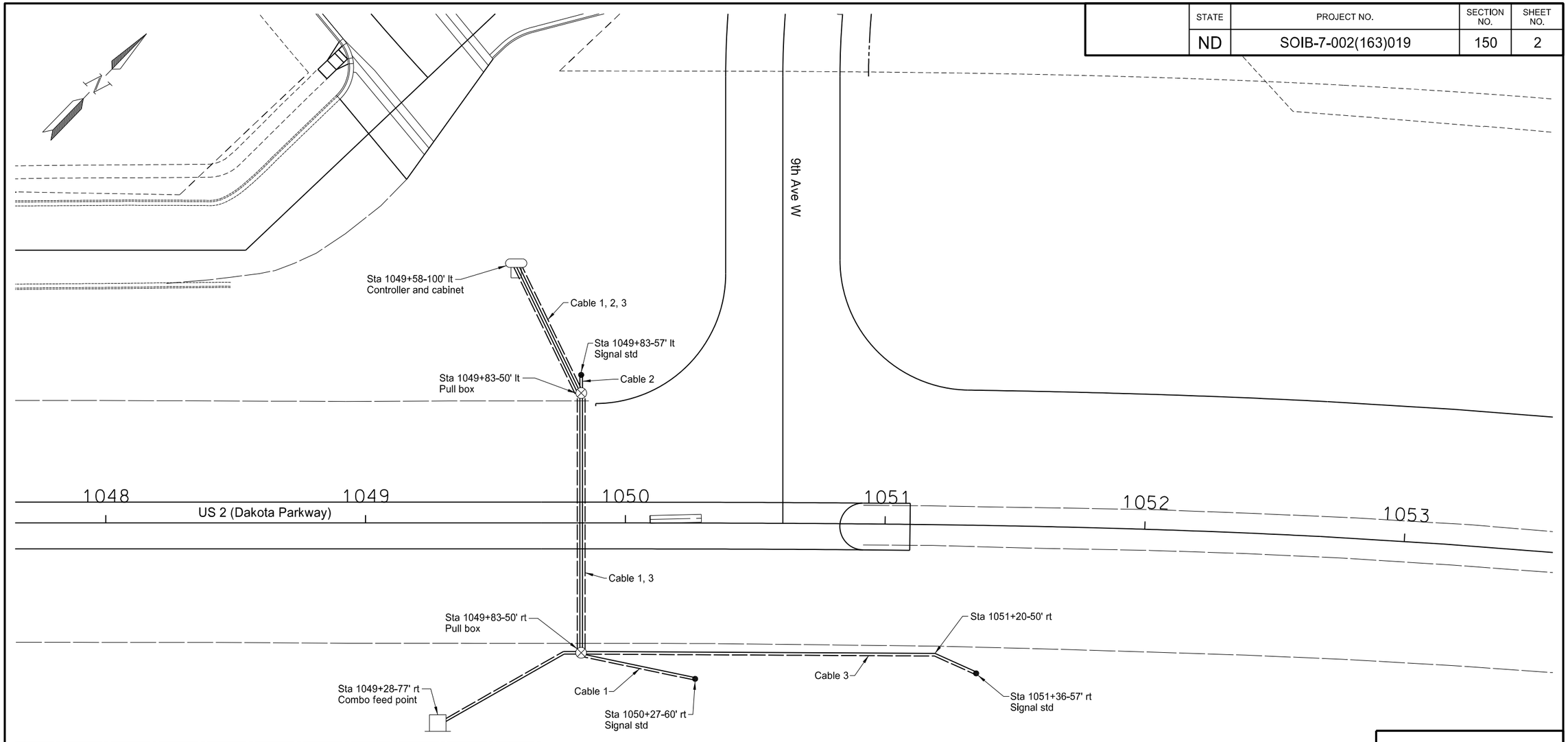
Traffic Signal System

Traffic Signal Layout

US 2 (Dakota Parkway) and 9th Ave W Intersection

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	2



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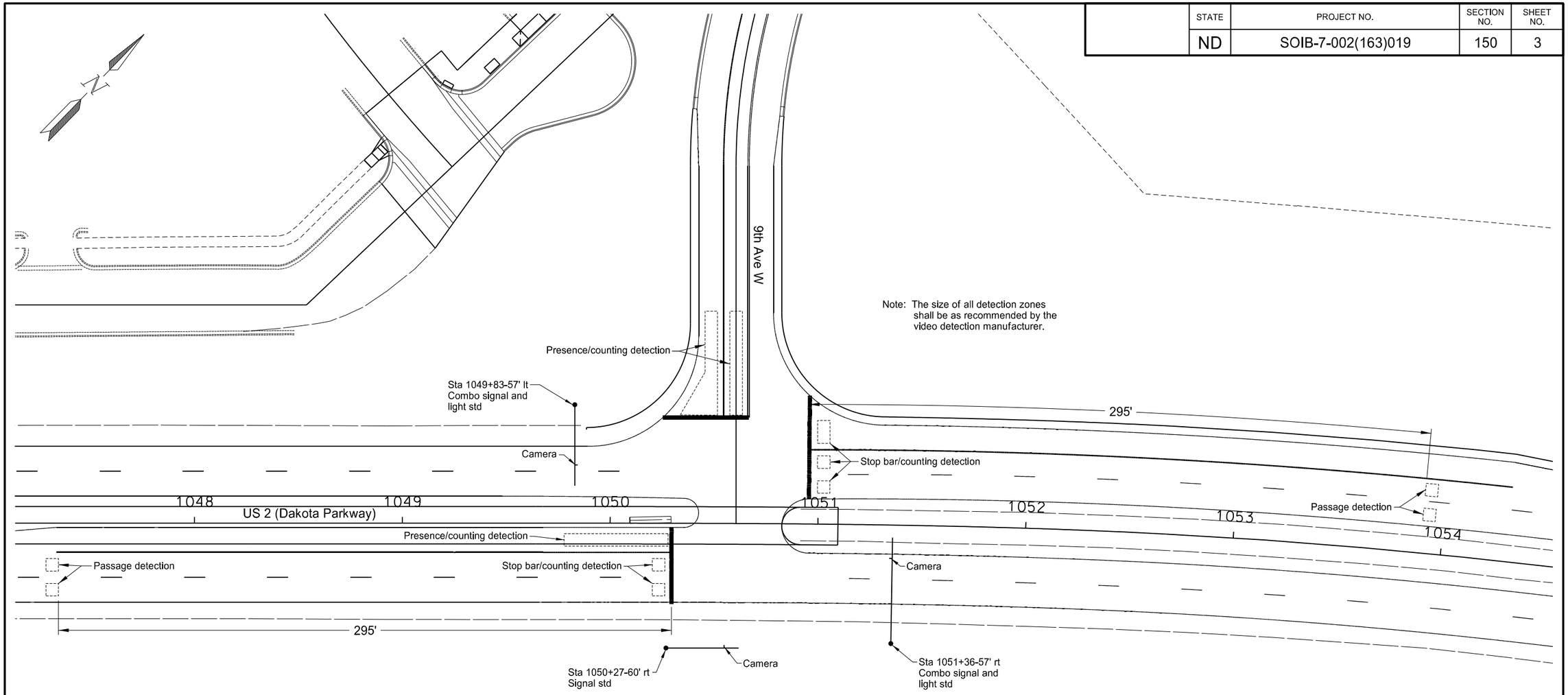
Traffic Signal System

Conduit and Conductor Layout

US 2 (Dakota Parkway) and 9th Ave W Intersection

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	3



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Traffic Signal System

Video Detection Zone Layout

US 2 (Dakota Parkway) and 9th Ave W Intersection

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	4

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
1051+36-57' rt to 1051+20-50' rt to 1049+83-50' rt	17 136	2" 2"	160 212 212 227 227	Cable 3 EVD cable (C) No. 14 AWG 2 (D) No. 16 AWG 3 (E) Coaxial cable (F)
1050+27-60' rt to 1049+83-50' rt	44	2"	50 90 90 105 105	Cable 1 EVD cable (C) No. 14 AWG 2 (D) No. 16 AWG 3 (E) Coaxial cable (F)
1049+83-50' rt to 1049+83-50' lt	99	3"	100 100 200 200 200 200	Cable 1 Cable 3 (2) EVD cable (C) (2) No. 14 AWG 2 (D) (2) No. 16 AWG 3 (E) (2) Coaxial cable (F)
1049+83-57' lt to 1049+83-50' lt	6	2"	12 64 64 67 67	Cable 2 EVD cable (C) No. 14 AWG 2 (D) No. 16 AWG 3 (E) Coaxial cable (F)
1049+83-50' lt to 1049+58-100' lt	55	3"	65 65 65 195 195 195 195	Cable 1 Cable 2 Cable 3 (3) EVD cable (C) (3) No. 14 AWG 2 (D) (3) No. 16 AWG 3 (E) (3) Coaxial cable (F)
1049+28-77' rt to 1049+83-50' rt to 1049+83-50' lt to 1049+58-110' lt	61 99 55	2" 2" 2"	474 237	(2) No. 6 RHW (1) No. 6 THW

(C) Emergency vehicle detector cable

(D) Indicator lamp conductor

(E) Video detection power conductor (As required by manufacturer)

(F) Video detection coaxial cable (As required by manufacturer)

QUANTITIES (A)

STATION	Concrete Foundation - Traffic Signals	Concrete Foundation - Feed Point - Type B	Pull Box	2" Dia Rigid Conduit	3" Dia Rigid Conduit	Underground Conductor No 6 - Type RHW	Underground Conductor No 6 - Type THW	Emergency Vehicle Detector Cable	No. 14 AWG 2 Conductor Cable	No. 14 AWG 5 Conductor Cable	No. 14 AWG 7 Conductor Cable	No. 14 AWG 12 Conductor Cable	No. 16 AWG 3 Conductor Cable	Coaxial Cable	Combo Feed Point - Lighting (Type 1), Signal, and Flashing Beacon - Pad Mounted	Type IV Signal Std 35 FT MA	Combo 39 FT MA Signal and Light Std - Type C	Combo 51 FT MA Signal and Light Std - Type C	1-Way 3 Section Head W/12" Lens - Mast Arm Mounted	1-Way 3 Section Head W/12" Lens - Post Mounted	1-Way 4 Section Head W/12" Lens - Mast Arm Mounted	1-Way 5 Section Head W/12" Lens - Post Mounted	Video Detection System	Controller Type 1 and Cabinet	Battery Backup System	Emergency Vehicle Pre-Emption Unit	Traffic Signals System
	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
1049+58-100' lt	1																							1	1		
1049+83-57' lt	1									110 (B)	15 (B)						1		2			1					
1050+27-60' rt	1									102 (B)	15 (B)					1			2			1					
1051+36-57' rt	1									125 (B)	73 (B)							1	2	1	1						
1049+58-110' lt		1													1												
Various Locations			2	418	154	474	237	761	761			617	794	794									1			1	
TOTAL	4	1	2	418	154	474	237	761	761	337	103	617	794	794	1	1	1	1	6	1	1	2	1	1	1	1	1

(A) Do not bid these items separately but include in the item "Traffic Signals System".

(B) Used for internal wiring of signal standards.

SIGNAL STANDARD FOUNDATION TABLE

Description	Footing Depth "D" 24" and 30" Dia	Footing Depth "D" 36" and 42" Dia
Combination Signal and Light Std 40' Mounting Height		
Single 39' Mast Arm Single 51' Mast Arm	14', 14' 18', 17'	14', 14' 16', 16'
Type IV Signal Std		
Single 35' Mast Arm	12', 12'	12', 12'

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Traffic Signal System

Cable, Conduit Runs, and Quantities

US 2 (Dakota Parkway) and 9th Ave W Intersection

Williston

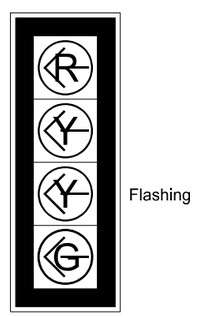
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	5

CONDUCTORS		CABLE 1 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black			Spare
2 White			Neutral
3 Red		1, 2, 3	Red
4 Green			Ground
5 Orange		1, 2, 3	Yellow
6 Blue		1, 2, 3	Green
7 White	Black		Spare
8 Red	Black		Spare
9 Green	Black		Spare
10 Orange	Black	3	Yellow Right Arrow
11 Blue	Black	3	Green Right Arrow
12 Black	White		Spare

CONDUCTORS		CABLE 2 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black			Spare
2 White			Neutral
3 Red		4, 5, 6	Red
4 Green			Ground
5 Orange		4, 5, 6	Yellow
6 Blue		4, 5, 6	Green
7 White	Black		Spare
8 Red	Black		Spare
9 Green	Black		Spare
10 Orange	Black	6	Yellow Right Arrow
11 Blue	Black	6	Green Right Arrow
12 Black	White		Spare

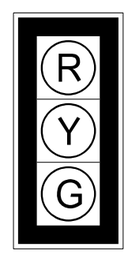
CONDUCTORS		CABLE 3 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black			Spare
2 White			Neutral
3 Red		8, 9, 10	Red
4 Green			Ground
5 Orange		8, 9, 10	Yellow
6 Blue		8, 9, 10	Green
7 White	Black		Spare
8 Red	Black	7	Red Left Arrow
9 Green	Black	7	Flashing Yellow Left Arrow
10 Orange	Black	7	Yellow Left Arrow
11 Blue	Black	7	Green Left Arrow
12 Black	White		Spare

Head 7



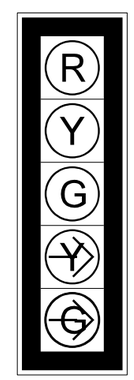
5" Louvered Backplate

Head 1, 2, 4, 5, 8, 9, 10



5" Louvered Backplate

Heads 3, 6



5" Louvered Backplate

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Traffic Signal System

Signal Heads and Conductors

US 2 (Dakota Parkway) and 9th Ave W Intersection

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	6

N

Head #	Phase 1 (Future OLA, Future) R/W	Clear to Ø 2	3	4	5	6	7	8
1								
2								
3								
	G	Y		Y		(A)		
4								
5								
6								
7	G	Y		Y		(A)		
8								
9								
10								

Head #	Phase 2 R/W	Clear to Ø 3	4	5	6	7	8	1
1								
2								
3								
4	G		Y		(A)			Y
5	G		Y		(A)			Y
6	G		Y		(A)			Y
7	FY		Y		(A)			Y
8								
9								
10								

Head #	Phase 3 (Future) R/W	Clear to Ø 4	5	6	7	8	1	2
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Head #	Phase 4 (OLB) R/W	Clear to Ø 5	6	7	8	1	2	3
1	G		Y			Y	Y	
2	G		Y			Y	Y	
3	G		Y			Y	Y	
4								
5								
6								
	G		Y			Y	Y	
7								
8								
9								
10								

Head #	Phase 5 (Future) R/W	Clear to Ø 6	7	8	1	2	3	4
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Head #	Phase 6 R/W	Clear to Ø 7	8	1	2	3	4	5
1								
2								
3								
4								
5								
6								
7								
8	G			(A)	(A)		Y	
9	G			(A)	(A)		Y	
10	G			(A)	(A)		Y	

Head #	Phase 7 (Future) R/W	Clear to Ø 8	1	2	3	4	5	6
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Head #	Phase 8 (Future) R/W	Clear to Ø 1	2	3	4	5	6	7
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

Blank Squares Denote a Red Indication.

(A) When one phase is on alone, any nonconflicting phase may start timing concurrently without a clearance interval. (See Chart A)

EMERGENCY VEHICLE PRE-EMPTION PHASING		
Phase 2	Phase 4	Phase 6
Southbound	Eastbound	Northbound

Note: Do not allow flashing yellow left turn arrow during pre-emption for phase 2.

CHART A

On Phase	Non-Conflicting Phase Allowed to Time Concurrently
1	6 (Future)
2	6
3	Future
4	None
5	Future
6	1 (Future) or 2
7	Future
8	Future

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Traffic Signal System

Controller Phasing

US 2 (Dakota Parkway) and 9th Ave W Intersection

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	7

		01	02	03	04	05	06	07	08
BASIC INTERVALS (or FUNCTIONS)									
Minimum Green/Initial			15.0		5.0		15.0		
Vehicle Extension/Passage Time			5.0		2.0		5.0		
Maximum Green			60.0		30.0		60.0		
Yellow Change			3.9		3.0		3.9		
Red Clearance			1.2		3.2		1.2		
Walk									
Pedestrian Clearance									
VOLUME DENSITY TIMING FUNCTIONS		Future		Future		Future		Future	Future
Variable Initial Timing Options									
Added Initial per Actuation			1.6				1.6		
Maximum Initial			28.0				28.0		
TIME WAITING GAP REDUCTION OPTIONS									
Time Before Reduction			30.0				30.0		
Time to Reduce to Minimum Gap			18.0				18.0		
Minimum Gap			2.0				2.0		
Locking Memory			X				X		
Non-Locking Memory					X				
Flashing-Normal & Conflict Monitor			Y		R		Y		
Start Up Phasing			G		R		G		
Type of Detector	Presence				X				
	Calling (A)		X				X		
	Passage		X				X		
	Counting		X		X		X		
Emergency Vehicle Pre-emption			X		X		X		

(A) Calling loops shall place one call into the controller on the yellow or red interval. Calling loops shall be disconnected during the green interval.

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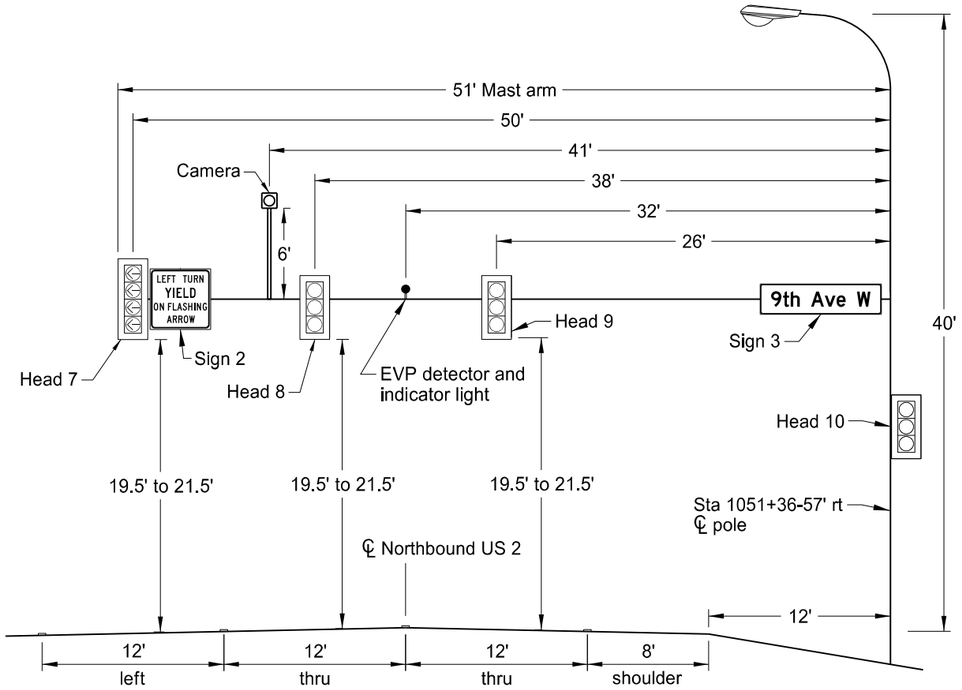
Traffic Signal System

Controller Settings

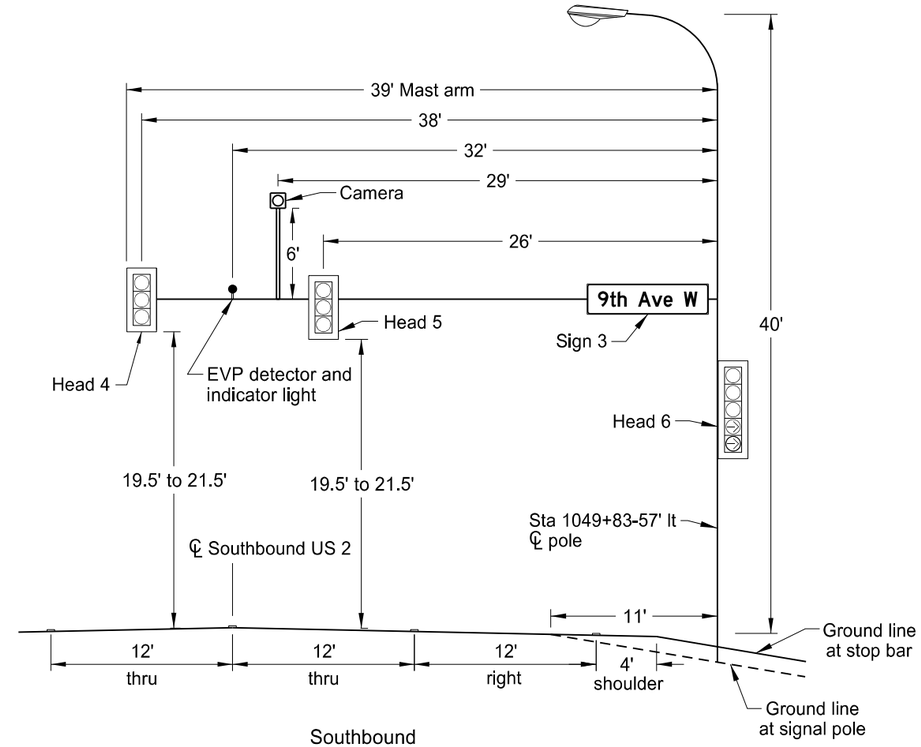
US 2 (Dakota Parkway) and 9th Ave W Intersection

Williston

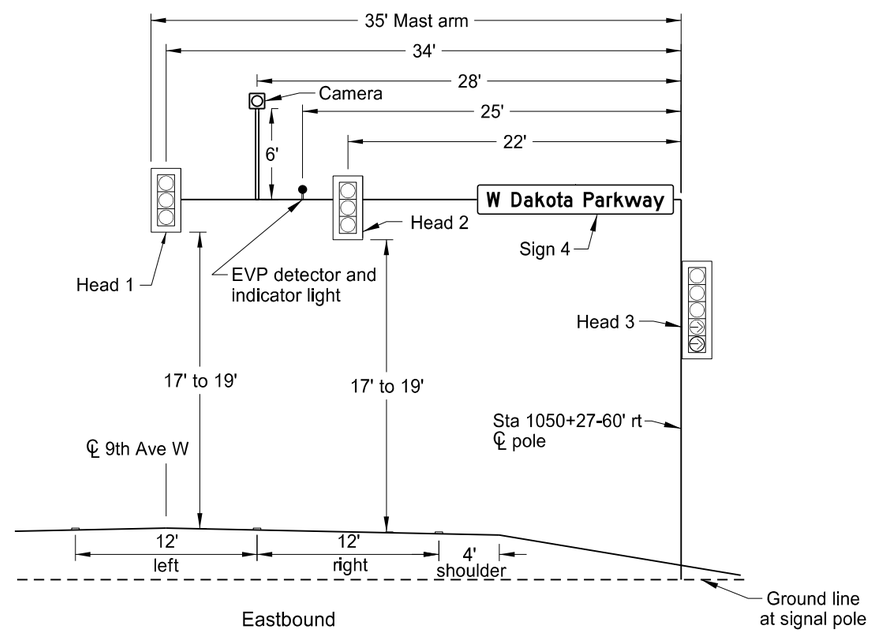
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	8



Northbound



Southbound



Eastbound

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Traffic Signal System

Signal Standards and Head Locations

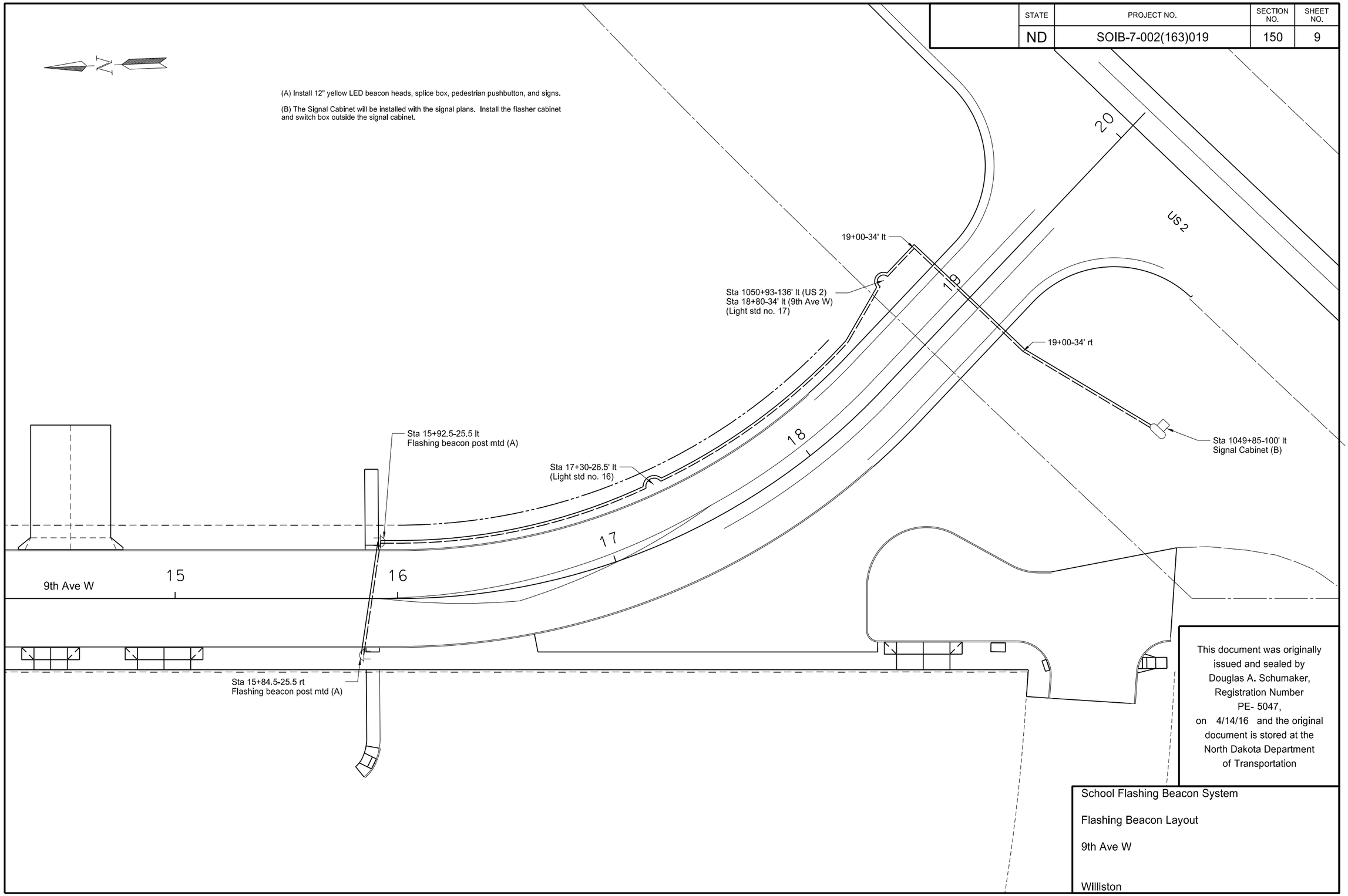
US 2 (Dakota Parkway) and 9th Ave W Intersection

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	9

(A) Install 12" yellow LED beacon heads, splice box, pedestrian pushbutton, and signs.

(B) The Signal Cabinet will be installed with the signal plans. Install the flasher cabinet and switch box outside the signal cabinet.



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School Flashing Beacon System

Flashing Beacon Layout

9th Ave W

Williston

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	10

Station	Conduit Runs		Cable Runs	
	LF	Dia	LF	Type
15+84.5-25.5' rt	13 3 4	1" 1" 1"	19 9 7	No. 12 AWG 5 (D) No. 12 AWG 5 (E) No. 16 AWG 2 (F)
15+84.5-25.5' rt to 15+92.5-25.5' lt	55	2"	55 55	No. 12 AWG 5 (D) No. 16 AWG 2 (F)
15+92.5-25.5' lt	13 3 4	1" 1" 1"	19 9 7	No. 12 AWG 5 (D) No. 12 AWG 5 (E) No. 16 AWG 2 (F)
15+92.5-25.5' lt to 17+30-26.5' lt	123	2"	123 123	No. 12 AWG 5 (D) No. 16 AWG 2 (F)
17+30-26.5' lt to 18+80-34' lt	144	2"	144 144	No. 12 AWG 5 (D) No. 16 AWG 2 (F)
18+80-34' lt to 19+00-34' lt	22	2"	22 22	No. 12 AWG 5 (D) No. 16 AWG 2 (F)
19+00-34' lt to 19+00-34' rt	67	2"	67 67	No. 12 AWG 5 (D) No. 16 AWG 2 (F)
19+00-34' rt to 1049+85-100' lt	81	2"	81 81	No. 12 AWG 5 (D) No. 16 AWG 2 (F)

Flashing Beacon Quantities (A)												
Structural Splice Box	1 Inch Diameter Rigid Conduit	2 Inch Diameter Rigid Conduit	No. 12 AWG 5 Conductor Cable	No. 16 AWG 2 Conductor Cable	12 Inch Yellow LED Beacon Head	Pedestrian Pushbutton	Flasher	Reset Timer (B)	Par Lamp Holder and LED Par Lamp	Flat Sheet For Signs - Type XI Reflective Sheeting (C)	Mounting Hardware	Flashing Beacon - Post Mounted - School
EA	LF	LF	LF	LF	EA	EA	EA	EA	EA	SF	LS	EA
2	40	492	548	506	2	2	1	1	2	3	1	1

(A) Include these items in the price bid for "Flashing Beacon - Post Mounted - School".

(B) Provide 25 seconds of flashing time per actuation.

(C) The signs and supports are installed on the signing plans.

(D) To beacon head.

(E) To par lamp.

(F) To pedestrian pushbutton.

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School Flashing Beacon System

Cable Runs and Quantities

9th Ave W

Williston

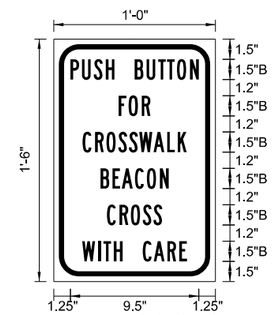
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	11

SIGN NUMBER	Flashing Beacon Sign
WIDTH x HEIGHT	1'-0" x 1'-6"
BORDER WIDTH	0.38" (inset 0.38")
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: XI Reflective
	COLOR: White
LEGEND/BORDER	TYPE: Non-Reflective
	COLOR: Black

SYMBOL	X	Y	WID	HT	ANGLE

STATION(S):
15+84.5-25.5' rt
15+92.5-25.5' lt

AREA: 1.5 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Misc_Regulatory.ssl

LETTER POSITION (X)																			LENGTH	SIZE	SERIES
P	U	S	H		B	U	T	T	O	N									9.5	1.5	B 2000
1.2	2.1	3	3.9	4.5	6	6.9	7.7	8.4	9.1	10.1											
F	O	R																	2.4	1.5	B 2000
4.8	5.6	6.5																			
C	R	O	S	S	W	A	L	K											7.7	1.5	B 2000
2.1	3.1	3.9	4.8	5.6	6.4	7.4	8.4	9.2													
B	E	A	C	O	N														5.1	1.5	B 2000
3.5	4.4	5	6	6.9	7.9																
C	R	O	S	S															4.1	1.5	B 2000
4	4.9	5.7	6.6	7.4																	
W	I	T	H		C	A	R	E											7.8	1.5	B 2000
2.1	3.3	3.7	4.5	5.1	6.6	7.4	8.4	9.3													

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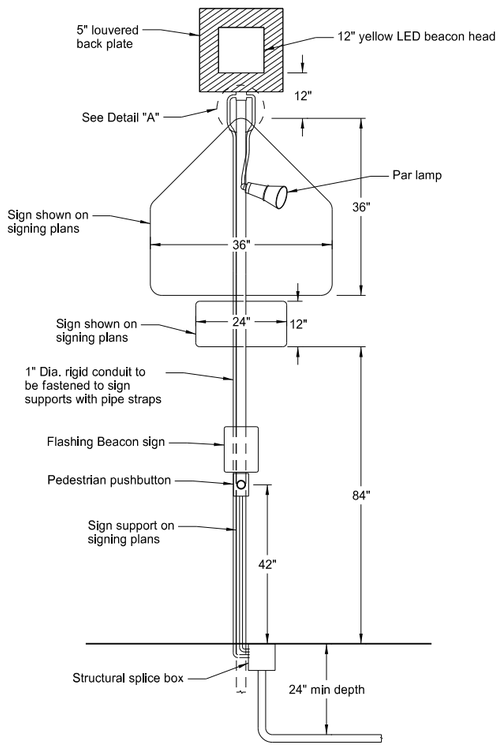
School Flashing Beacon System

Sign Details

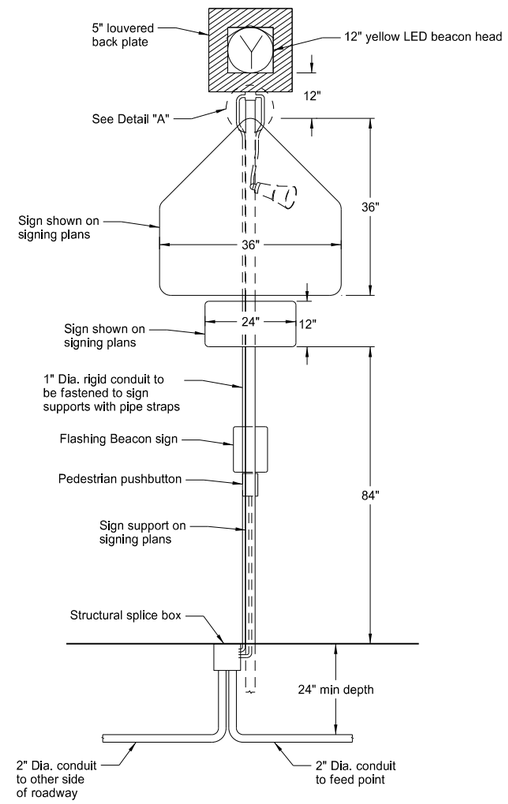
9th Ave W

Williston

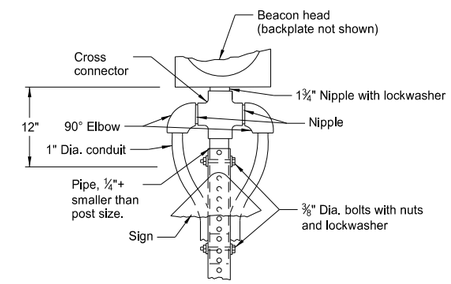
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	12



Back View
Sta 15+84.5-25.5' rt



Front View
Sta 15+92.5-25.5' lt



Detail "A"

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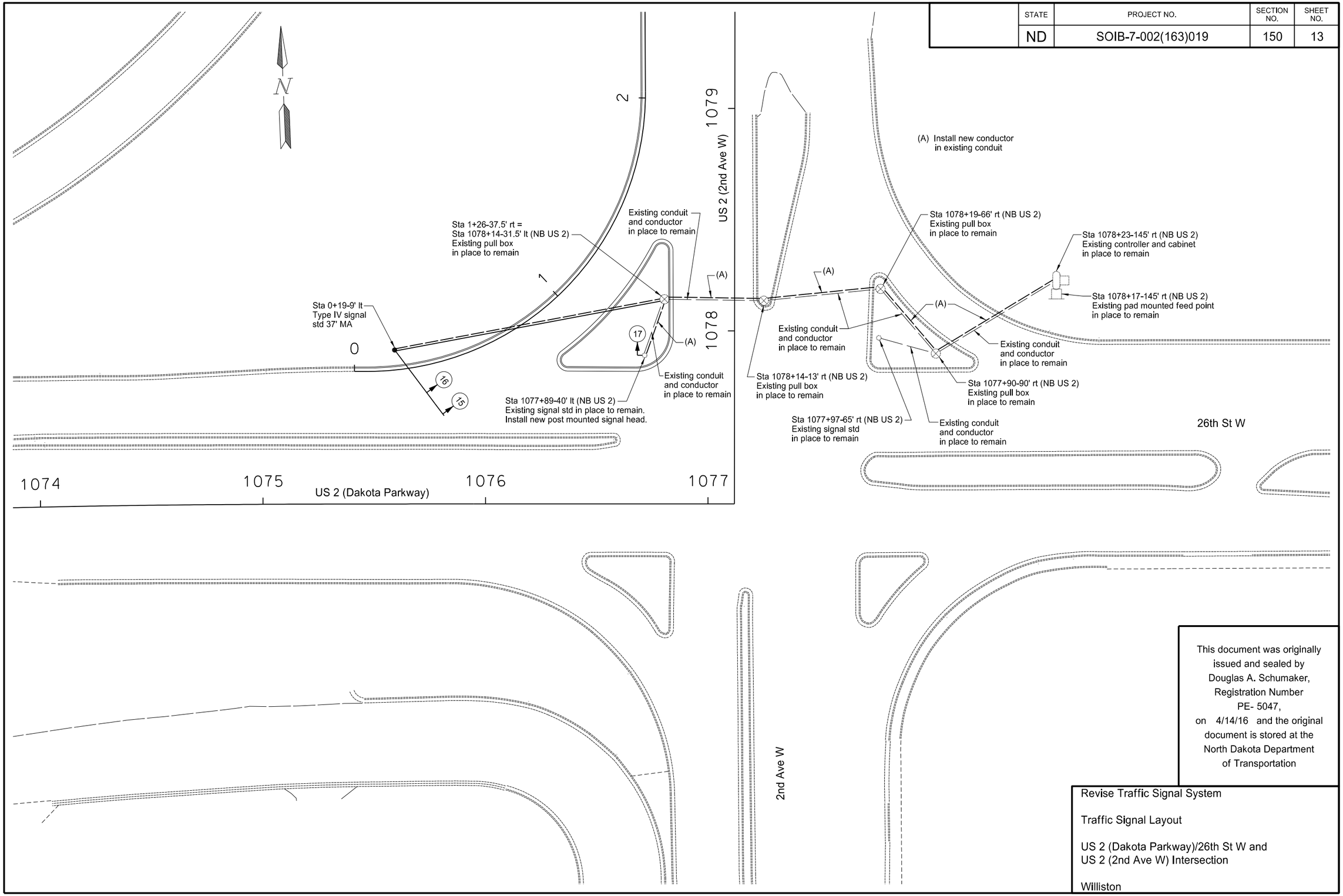
School Flashing Beacon System

Assembly Details

9th Ave W

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	13



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Revise Traffic Signal System

Traffic Signal Layout

US 2 (Dakota Parkway)/26th St W and
US 2 (2nd Ave W) Intersection

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	14

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
0+19-9' lt to 1+26-37.5' rt = 1078+14-31.5' lt	123	2"	128	Cable 5
1077+89-40' lt to 1078+14-31.5' lt	26 (C)	2" (C)	31	Cable 6
1078+14-31.5' lt to 1078+14-13' rt to 1078+19-66' rt to 1077+90-90' rt to 1078+23-145' rt	44 (C) 52 (C) 38 (C) 65 (C)	2" (C) 2" (C) 2" (C) 3.5" (C)	210 210	Cable 5 Cable 6

(C) Existing conduit.

CONDUCTORS			CABLE 5 (NO.14 AWG 7)	
BASE		TRACER	HEAD	INDICATION
1	Black			Spare
2	White			Neutral
3	Red		15, 16	Red
4	Green			Ground
5	Orange		15, 16	Yellow Right Arrow
6	Blue		15, 16	Green Right Arrow
7	White	Black		Spare

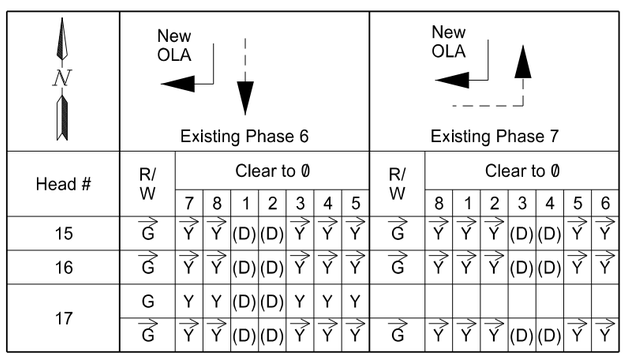
CONDUCTORS			CABLE 6 (NO.14 AWG 7)	
BASE		TRACER	HEAD	INDICATION
1	Black		17	Yellow Right Arrow
2	White			Neutral
3	Red		17	Red
4	Green			Ground
5	Orange		17	Yellow
6	Blue		17	Green
7	White	Black	17	Green Right Arrow

QUANTITIES (A)											
	Concrete Foundation - Traffic Signals	2" Dia Rigid Conduit	No. 14 AWG 5 Conductor Cable	No. 14 AWG 7 Conductor Cable	Type IV Signal Std 37 FT MA	1-Way 3 Section Head W/12" Lens - Mast Arm Mounted	1-Way 5 Section Head W/12" Lens - Post Mounted	Revise Controller (E)			Revise Traffic Signal System - Site 1
STATION	EA	LF	LF	LF	EA	EA	EA	EA			EA
0+19-9' lt	1		106 (B)		1	2					
1077+89-40' lt				15 (B)			1				
Various Locations		123		579				1			
TOTAL	1	123	106	594	1	2	1	1			1

(A) Do not bid these items separately but include in the item "Revise Traffic Signal System - Site 1".

(B) Used for internal wiring of signal standards.

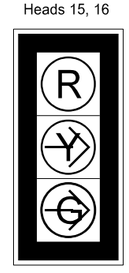
(E) Revise Controller includes all work neseccary to add the southbound to westbound right turn overlap to the existing controller and cabinet.



Head #	R/W	Clear to Ø							R/W	Clear to Ø						
		7	8	1	2	3	4	5		8	1	2	3	4	5	6
15	G	Y	Y	(D)	(D)	Y	Y	Y	G	Y	Y	Y	(D)	(D)	Y	Y
16	G	Y	Y	(D)	(D)	Y	Y	Y	G	Y	Y	Y	(D)	(D)	Y	Y
17	G	Y	Y	(D)	(D)	Y	Y	Y								
	G	Y	Y	(D)	(D)	Y	Y	Y	G	Y	Y	Y	(D)	(D)	Y	Y

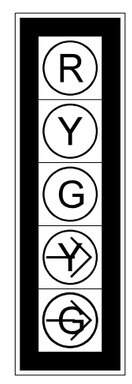
(D) When one phase is on alone, any nonconflicting phase may start timing concurrently without a clearance interval.

Heads 15, 16



5" Louvered Backplate

Head 17



5" Louvered Backplate

SIGNAL STANDARD FOUNDATION TABLE		
Description	Footing Depth "D" 24" and 30" Dia	Footing Depth "D" 36" and 42" Dia
Type IV Signal Std Single 37' Mast Arm	13', 13'	13', 13'

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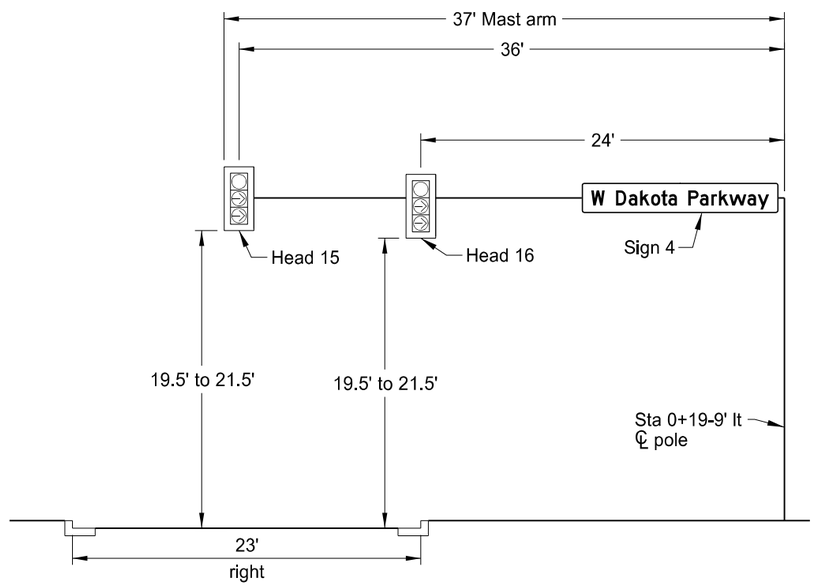
Revise Traffic Signal System

Cable, Conduit Runs, and Quantities

US 2 (Dakota Parkway)/26th St W and
US 2 (2nd Ave W) Intersection

Williston

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-7-002(163)019	150	15



Southbound Right

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Revise Traffic Signal System

Signal Standard and Head Locations

US 2 (Dakota Parkway)/26th St W and
US 2 (2nd Ave W) Intersection

Williston