DESIGN DATA				
Traffic	Average Daily			
Current 2014	Pass: 18,570	Trucks: 7,040	Total: 25,610	
Forecast 2034	Pass: 37,090	Trucks: 5,910	Total: 43,000	
Clear Zone Distance: 18'		Design Speed: 25 mph		
Minimum Sight Dist. for Stopping: 155'		Bridges: HL-93		
Limited Access Control				
Pavement Design Life 20 (years)				
Design Accumulated One-way flexible ESALs: 2,610,664				

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	18933	1	1

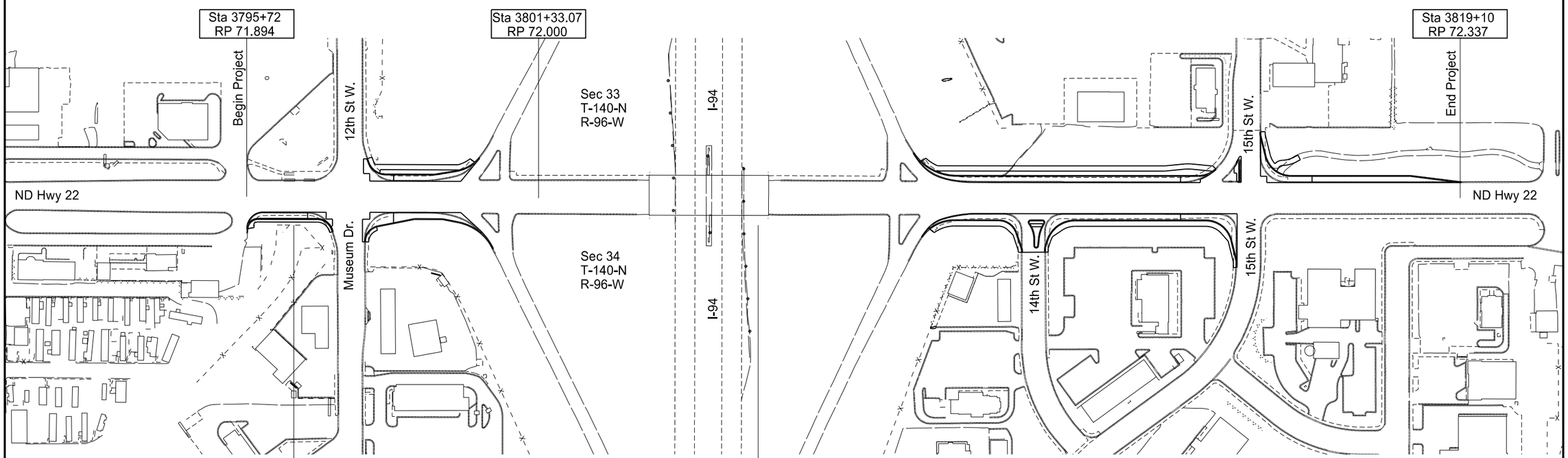
JOB # 25
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

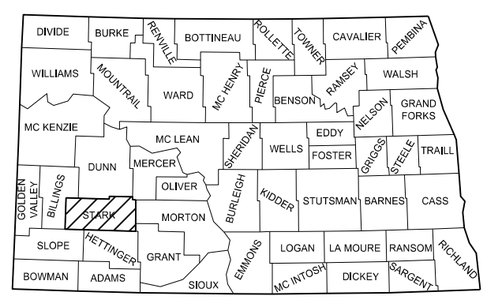
SOIB-5-094(088)061

Stark County
ND Hwy 22
Dickinson, ND
Grading, HMA, Concrete, RCB,
Sidewalk, Signals and Lighting

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-5-094(088)061	0.290	0.443





STATE COUNTY MAP

DESIGNERS

Michael Wilz /s/

Blaine Johanneson /s/

Travis Cork /s/

APPROVED DATE 3-18-2016

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

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

APPROVED DATE 3-18-16

James Douglas Rath /s/
NDDOT Design Division

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SP 0004(14)	Federal Migratory Bird Treaty Act
SP 304(14)	Temporary Stream Diversions
SP 307(14)	Interconnect Cable
SP 5109(14)	Permits and Environmental Considerations

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D-550-2	Longitudinal Joint Details
D-704-7	Breakaway Systems for Construction Zone Signs - Perforated Tube
D-704-8	Breakaway Systems for Construction Zone Signs - U-Channel Post
D-704-9	Construction Sign Details - Terminal and Guide Signs
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D-704-12	Shoulder Closure Tapers
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D-754-23	Perforated Tube Assembly Details
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D-754-24A	Breakaway Coupler System for Perforated Tubes
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D-770-3	Pull Box Details
D-770-4	Lighting and Signal Details
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D-772-2	Traffic Signal Standards
D-772-3	Traffic Signal Standards (Mast Arm Type)
D-772-4	Traffic Signal Head Mounting
D-772-6	Span Wire Mounted Traffic Signals

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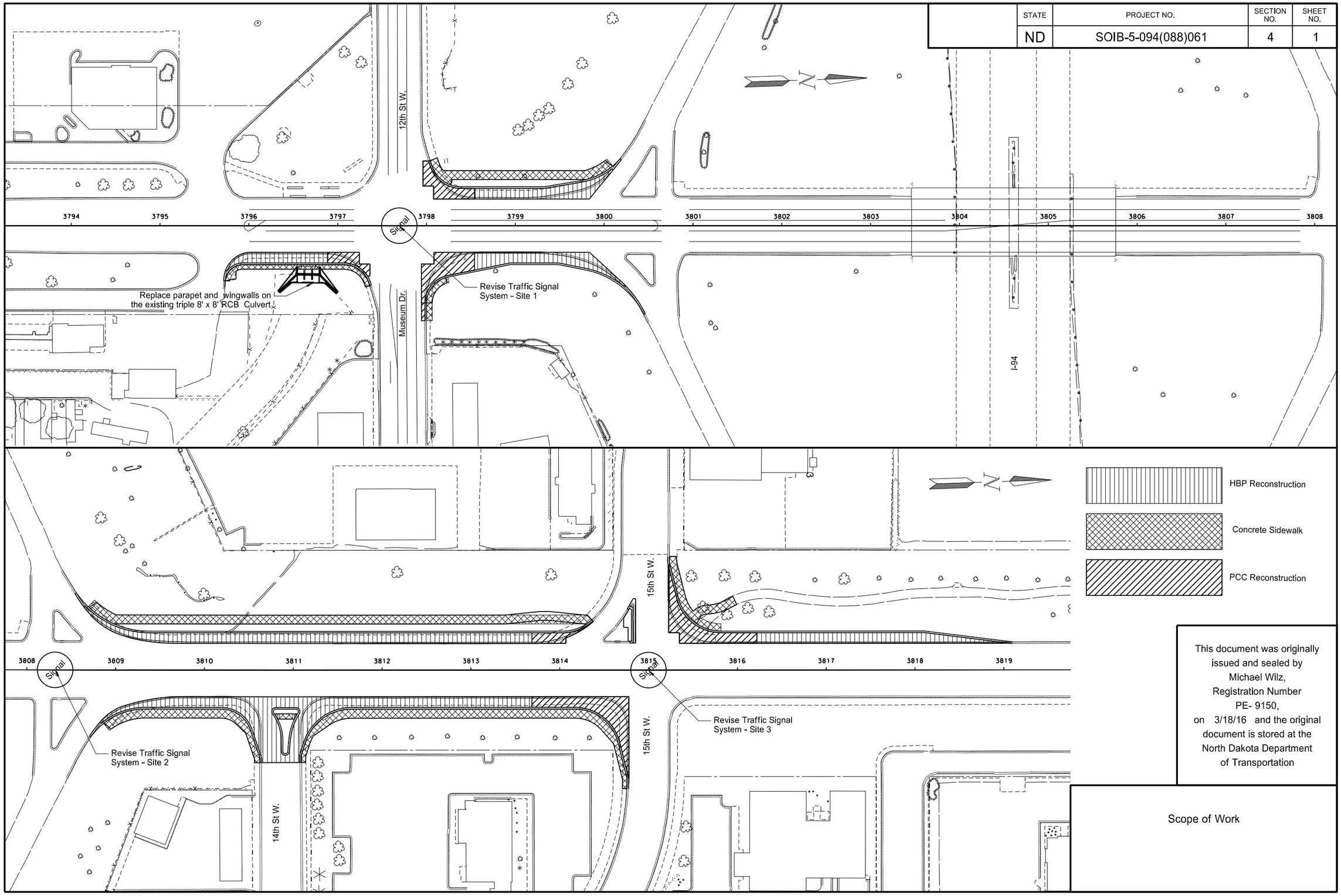

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Scope of Work

3/18/2016 1:37:43 PM cfrising R:\project\50094061.088\design\Sheet\004SW_001.dgn

NOTES

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

Send a knowledgeable representative to conduct the weekly reporting/planning meeting. Prepare minutes for each meeting and make the appropriate distribution of the minutes within 48 hours of the meeting. 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 Dickinson
c. Emergency Services
d. Utilities
e. Subcontractors

100-P02 COORDINATION OF PROJECTS: Other projects in the vicinity of this project are under contract during the 2016 construction season. The projects are:

- SOIB-5-094(087)059 from West Dickinson Interchange to RP 71.1 Eastbound
- SU-5-983(055)055 Dickinson Museum Drive Reconstruction
- SOIA-SAP-CPU-5-983(050)050 Dickinson RR Grade Separation – State Ave

100-P03 MAINTAINING TRAFFIC – NEXT TO DROP-OFFS: Excavation and pavement removal operations will result in a pavement drop-off adjacent to the roadway surface. Minimize the time of the pavement drop-off by coordinating the surfacing removal with the aggregate and paving operations. In addition, place an aggregate wedge (4:1 or flatter) where possible to minimize the time the drop-off is adjacent to the travelled lane.

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".

201-P01 APPLEBEE'S PROMOTIONAL SIGNS: Two promotional signs are located on each end of the Applebee's property that will be impacted by the widening of Hwy 22. The signs are approximately 8' wide x 4' tall mounted on 4" x 4" wooden supports.

The signs shall be removed, placed on temporary supports, and relocated to their approximate original location (outside of the NDDOT Right of Way) after earthwork operations are complete. Place the signs on new 4" x 4" treated wood support posts for the final sign placement. The contractor shall contact the Applebee's' manager prior to construction to determine temporary and permanent sign locations. All cost to complete the above described work shall be included in the price bid for "Clearing & Grubbing".

202-P01 REMOVAL OF PAVEMENT: Removal of pavement consists of removing bituminous and concrete pavement, median paving, sidewalks, 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 shall 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.

302-P01 TEMPORARY TRAFFIC SURFACE AGGREGATE: 33 Tons of temporary traffic surface aggregate (4" depth x 5' width) has been provided for pedestrian access connections as shown in Section 100 Phase 2 Work Zone Traffic Control plan sheets. The temporary traffic surface aggregate consists of 100% bituminous millings or 100% crushed concrete. Grade the bituminous millings or crushed concrete to a maximum cross slope of 2%. Maintain a smooth compacted surface for the temporary pedestrian access.

Include all costs to furnish, construct, grade, compact, maintain and remove the pedestrian access aggregate in the price bid for "Temporary Traffic Surface Aggregate".

430-P01 COMMERICAL GRADE HOT MIX ASPHALT: Use a commercial grade asphalt mix that meets Superpave FAA 45 requirements. Include Prime, Tack, and PG 58-28 oil in the contract unit price bid for "Commercial Grade Hot Mix Asphalt".

430-P02 COMMERICAL GRADE HOT MIX ASPHALT: Contractor is responsible for sampling and testing of the mix for each days production. The results will be given to the engineer for determining "Calculated Density" for the lot. Tests to be conducted are: ND T 312, ND T 166, and ND T 209 as found

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NOTES

in Table 430-7 in the FSTM, performed by certified contractors personal or a qualified testing lab.

Calculated Density is required on each sublot. A sublot is defined as a single lift, the width of the turn lane, and the length of each turn lane. There are 6 turn lane locations. They are described in the Sec 11 Earthwork Summary Sheet. Table 430-12 will be followed for pay adjustments.

Cores will be required for each sublot. Locations will be marked by the engineer. These cores will be used to determine calculated densities.

Include all costs related to testing, coring and laboratory of the HMA in the contract unit price bid for “Commercial Grade Hot Mix Asphalt”.

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.

D-704-15, Type C: For lane closure.
D-704-22, Type K and Type L: For construction trucks hauling material.

The device list and plan sheets have been developed based the following phases:

Phase 1:
This phase consists of a one lane closure in the outermost lane of the northbound roadway of Hwy 22, for the entire length of the project. The NE radius of the Hwy 22/Museum Drive intersection cannot be constructed in Phase 1 due to the adjacent Museum Drive reconstruction project.

Maintain access to the existing shared-use path on the west side of Hwy 22 to allow for pedestrian and bicycle traffic as shown in Sec 100 Work Zone Traffic Control plan sheet layouts.

Phase 1b:
This phase consists constructing the NE Radius of Hwy 22/Museum Drive intersection. The concrete pavement, curb & gutter and sidewalk south of Museum Drive must be completed (open to pedestrian traffic) prior to switching to Phase 1b.

All surfacing, curb & gutter, sidewalk, temporary pedestrian access connections and striping must be in-place for NB Hwy 22 prior to switching to Phase 2.

Phase 2:
This phase consists of a one lane closure in the outermost lane of the southbound roadway of Hwy 22, for the entire length of the project.

Portions of the existing shared-use path (north and south of the ramps) will be closed and the newly constructed sidewalk located on the east side of Hwy 22 will accommodate the north/south movement of pedestrians and bicycle traffic as shown in Sec 100 Work Zone Traffic Control plan sheet layouts.

Phase 3:
This phase consists of single lane closures for the inside lanes of both the northbound and southbound lanes of Hwy 22. This phase has been provided for the installation of temporary and permanent signals and striping. The inside lanes of Hwy 22 may have to closed multiple times throughout the duration of the project.

709-P01 GEOSYNTHETIC MATERIAL TYPE R1: A quantity of 1200 SY of Geosynthetic Material Type R1 has been included to be used at the Engineer’s discretion. The estimated quantity is based on 1/3 of the SY area of roadway surfacing.

714-P01 SILTED PIPES: If the Contractor encounters silted-in pipes at locations where pipes are to be extended, the silted-in material shall be removed from the pipes before extending them. The two pipe to be extended consist of an 18” RCP at Sta 3796+12 Rt. and an 24” RCP at Sta 3810+23 Lt. The removed material shall not be dispersed into the adjacent wetland or water body. The contractor shall take protective measures to collect the sediment. The collected material may be spread along the foreslope that requires widening or can become property of the contractor and disposed of off the right of way. Removal of the silt shall not be bid separately but shall be included in the price bid for the “Pipe Conc Reinf __ IN CL III- Storm Drain”.

752-P01 TEMPORARY SAFETY FENCE: Install temporary safety fence where hazardous situations may occur for pedestrians. Payment includes the removal of the temporary safety fence. A quantity of 475 LF is shown in Sec 100 Work Zone Traffic Control plan sheets and an additional 200 LF has been added to be used as directed by the Engineer.

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.

970-P01 TREES: This work shall consist of furnishing and planting 17 trees. All trees shall be a minimum of 2 inches in diameter when measured at breast height.

All trees shall be balled and burlaped, nursery grown and typical of their species or variety. All plants shall have normal well develop branches with full foliage when in leaf and vigorous root systems. They shall be sound, healthy, and free of defects, disfiguring knots, sunscald injury, diseases, insect eggs, borers, and any other forms of infestations. As a condition of delivery and approval of the plant stock, the Contractor shall furnish the Engineer with a certificate of compliance stating that the plants furnished are

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NOTES

in conformance with the specification requirements. The certificate of compliance will state the species, sizes, and quantities furnished, and the name of the nursery grower.

The trees shall be planted in the approximate location as shown in the plans or at a location to be determined by the engineer in the field. All excavated materials shall be removed and disposed of to the Engineer's satisfaction within three days of the excavation. Topsoil shall be placed to a depth of not less than 12 in under the ball and around the periphery of the ball. Topsoil shall be watered and firmed in place to eliminate all air pockets and give adequate support to the ball. Fertilizer shall be applied as recommended by the local nursery.

Trees shall not be within five feet of gas lines and/or ten feet of water service connections.

Trees shall be installed on the day of delivery to the project site. All trees shall be watered by the end of the same day they were planted or sooner as determined by the Engineer. The watering operation shall be completed in a manner such that the tree settles into a plumb position. Watering shall follow nursery recommendations and continue throughout the growing season.

The trees shall be staked with 2" x 2" pressure treated tree stakes or painted T-shaped steel posts securely inserted approximately 2' in depth and outside the root system. A galvanized guy wire shall be extended from the tree stake to a polypropylene strap (or equal) around the tree trunk.

It shall be the Contractor's responsibility to protect and care for the trees during the period of construction. If any trees die or become damaged, it shall be replaced by the contractor at his own expense.

All equipment, materials (including fertilizer, topsoil, staking, etc), and labor required to plant, maintain and water the trees shall be included in the items " Ohio Buckeye", "Common Hackberry", "Northern Acclaim Honeylocust", "Bur Oak", and "Harvest Gold Linden".

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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”.

Section 150

772-P01 TEMPORARY TRAFFIC SIGNALS COODINATION: Coordinate the temporary traffic signals during construction. Install coordination settings in the temporary controllers at the 12th St W and 15th St W intersections that match the existing coordination settings in the existing controllers. The coordination settings in the North Ramp intersection controller will remain as is. The interconnect cable is not available during construction. The coordination during construction will be time based.

772-P02 CONTROLLER SETTINGS: Controller settings as follows:

ND 22 (3rd Ave W) and 12th St W Intersection

Change pedestrian clearance times to:
Phase 2 – 26 sec, Phase 4 – 27 sec, Phase 6 – 25 sec, Phase 8 – 31 sec

All other timing and coordination settings to remain as existing.

ND 22 (3rd Ave W) and I-94 North Ramp Intersection

All timings and coordination settings to remain as existing.

ND 22 (3rd Ave W) and 15th St W Intersection

Change pedestrian clearance times to:
Phase 2 – 19 sec, Phase 4 – 25 sec, Phase 6 – 21 sec, Phase 8 – 25 sec

All other timing and coordination settings to remain as existing.

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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.

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. 0.04 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 Ac.	Wetland Feature	USACE Jurisdictional Wetlands*	Wetland Impacts (acres)		USFWS Easement Impacts		Wetland Mitigation				
											Mitigation Required			Location; Acreage; Wetland#; Ratio	Onsite Mitigation Acres
							Temp. Ac.	Perm. Ac.	Temp.	Perm.	EO 11990	USACE	USFWS		
1b	Sec. 33 T140N, R96W	PEMCx	Ditch	0.34	Artificial	X	0.00	0.00			N	N	N		
2	Sec. 33 T140N, R96W	PEMCx	Ditch	0.14	Artificial	X	0.04	0.01			N	N	N		
			Totals	**0.48**			**0.04**	**0.01**	**0.00**	**0.00**					**0.00**

* A wetland Jurisdictional Determination was issued by the USACE on 1/8/2015; NWO-2015-0035-BIS.

**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.

***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), Preamble Wetlands, and temporary impacts do not require mitigation.

Other Waters Impact Table

Other Waters											Other Water Mitigation				
Number	Location	Type	Size		Feature	USACE Jurisdictional*	Impacts to Other Waters				Mitigation Required			Location	Method
							Acres		Linear Feet						
			Acres	Linear Feet			Temp	Perm	Temp	Perm	EO 11990	USACE	USFWS		
OW1a	Sec. 34 T140N, R96W	Tributary to Heart River	0.06	190	Natural	X	0.02	0.00	40.00	0.00	N	N	N		
		Totals	**0.06**	**190**			**0.02**	**0.00**	**40.00**	**0.00**					

Summary Impact Table

Total Permanent Impact Summary		Temporary Impacts and additional informaton	
Wetland Type	Total (Acres)	Wetland Type	Total (Acres/Lf)
Natural/JD	0.00	Temporary JD	0.04
Natural/Non-JD	0.00	Non-JD Temporary	0.00
Artificial/JD	0.01	Permanent JD > 0.10	0.00
Artificial /Non-JD	0.00	Permanent OW	0.00 ac/0ft.
Total	**0.01**	Temporary OW	0.02 ac/40ft

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
103	0100	CONTRACT BOND	L SUM	1	1
201	0330	CLEARING & GRUBBING	L SUM	1	1
202	0101	REMOVAL OF CONCRETE	EA	1	1
202	0136	REMOVAL OF PAVEMENT	TON	1,757	1,757
202	0169	REMOVAL OF END SECTION-ALL TYPES & SIZES	EA	1	1
202	0174	REMOVAL OF PIPE ALL TYPES AND SIZES	LF	69	69
202	0230	REMOVAL OF INLETS	EA	4	4
202	0310	REMOVAL OF CHAIN LINK FENCE	LF	192	192
203	0101	COMMON EXCAVATION-TYPE A	CY	1,516	1,516
203	0109	TOPSOIL	CY	2,190	2,190
203	0140	BORROW-EXCAVATION	CY	3,688	3,688
210	0050	BOX CULVERT EXCAVATION	EA	1	1
210	0210	FOUNDATION FILL	CY	50	50
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1	1
216	0100	WATER	M GAL	102	102
251	0100	SEEDING CLASS I	ACRE	2.73	2.73
253	0201	HYDRAULIC MULCH	ACRE	5.51	5.51
255	0102	ECB TYPE 2	SY	266	266
256	0200	RIPRAP GRADE II	CY	65	65
260	0200	SILT FENCE SUPPORTED	LF	400	400
260	0201	REMOVE SILT FENCE SUPPORTED	LF	400	400
261	0106	FIBER ROLLS 6IN	LF	810	810
261	0107	REMOVE FIBER ROLLS 6IN	LF	400	400
302	0120	AGGREGATE BASE COURSE CL 5	TON	3,998	3,998
302	0314	TEMPORARY TRAFFIC SURFACE AGGREGATE	TON	33	33
430	0500	COMMERCIAL GRADE HOT MIX ASPHALT	TON	840	840
550	0300	8IN NON-REINF CONCRETE PVMT CL AE-DOWELED	SY	926	926
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	75.4	75.4
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	10,030	10,030
624	0124	PEDESTRIAN FENCE	LF	24	24
702	0100	MOBILIZATION	L SUM	1	1
704	0100	FLAGGING	MHR	4,000	4,000
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1,339	1,339

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	8	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
704	1050	TYPE I BARRICADE	EA	15	15
704	1052	TYPE III BARRICADE	EA	35	35
704	1060	DELINEATOR DRUMS	EA	146	146
704	1067	TUBULAR MARKERS	EA	133	133
704	1080	STACKABLE VERTICAL PANELS	EA	117	117
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	2	2
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	2,375	2,375
708	1530	INLET PROTECTION-FIBER ROLL 6IN	EA	2	2
708	1532	REMOVAL INLET PROTECTION-FIBER ROLL 6IN	EA	1	1
708	1540	INLET PROTECTION-SPECIAL	EA	6	6
708	1541	REMOVE INLET PROTECTION-SPECIAL	EA	6	6
709	0151	GEOSYNTHETIC MATERIAL TYPE R1	SY	1,200	1,200
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	125	125
714	0115	PIPE CONC REINF 12IN CL III-STORM DRAIN	LF	12	12
714	0210	PIPE CONC REINF 15IN CL III-STORM DRAIN	LF	32	32
714	0315	PIPE CONC REINF 18IN CL III-STORM DRAIN	LF	18	18
714	0620	PIPE CONC REINF 24IN CL III-STORM DRAIN	LF	40	40
714	3010	END SECT-CONC REINF 18IN	EA	1	1
714	3020	END SECT-CONC REINF 24IN	EA	1	1
722	3510	INLET-TYPE 2	EA	2	2
722	3701	INLET SPECIAL-TYPE 2 48IN	EA	2	2
722	6200	ADJUST MANHOLE	EA	1	1
722	6240	ADJUST UTILITY APPURTENANCE	EA	2	2
748	0140	CURB & GUTTER-TYPE I	LF	2,629	2,629
750	0100	SIDEWALK CONCRETE	SY	1,852	1,852
750	2115	DETECTABLE WARNING PANELS	SF	182	182
752	0600	FENCE CHAIN LINK	LF	177	177
752	0911	TEMPORARY SAFETY FENCE	LF	675	675
752	3100	CORNER ASSEMBLY CHAIN LINK	EA	4	4
754	0110	FLAT SHEET FOR SIGNS-TYPE XI REFL SHEETING	SF	176	176
754	0112	FLAT SHEET FOR SIGNS-TYPE IV REFL SHEETING	SF	166	166
754	0193	FLEXIBLE DELINEATORS-TYPE D	EA	7	7
754	0206	STEEL GALV POSTS-TELESCOPING PERFORATED TUBE	LF	287	287

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	8	3

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
754	0592	RESET SIGN PANEL	EA	9	9
754	0593	RESET SIGN SUPPORT	EA	8	8
754	0805	OBJECT MARKERS - CULVERTS	EA	2	2
762	0122	PREFORMED PATTERNED PVMT MK-MESSAGE(GROOVED)	SF	806	806
762	0422	SHORT TERM 6IN LINE-TYPE R	LF	180	180
762	0426	SHORT TERM 24IN LINE-TYPE R	LF	26	26
762	1305	PREFORMED PATTERNED PVMT MK 4IN LINE-GROOVED	LF	9,801	9,801
762	1307	PREFORMED PATTERNED PVMT MK 6IN LINE-GROOVED	LF	1,668	1,668
762	1309	PREFORMED PATTERNED PVMT MK 8IN LINE-GROOVED	LF	4,665	4,665
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE-GROOVED	LF	668	668
770	4525	REVISE LIGHTING SYSTEM	EA	1	1
772	0450	INTERCONNECT CABLE	LF	2,190	2,190
772	2810	TEMPORARY TRAFFIC SIGNALS	EA	2	2
772	2906	REVISE TRAFFIC SIGNAL SYSTEM-SITE 1	EA	1	1
772	2907	REVISE TRAFFIC SIGNAL SYSTEM-SITE 2	EA	1	1
772	2908	REVISE TRAFFIC SIGNAL SYSTEM-SITE 3	EA	1	1
900	1000	TEMPORARY STREAM DIVERSION	EA	1	1
970	2029	OHIO BUCKEYE	EA	3	3
970	2050	COMMON HACKBERRY	EA	3	3
970	2150	NORTHERN ACCLAIM HONEYLOCUST	EA	3	3
970	2330	BUR OAK	EA	5	5
970	2436	HARVEST GOLD LINDEN	EA	3	3

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	10	1

BASIS OF ESTIMATE

Removals

Removal of Pavement
- Concrete @ 2.0 Ton/CY
- Aggregate Base @ 1.875 Ton/CY
- Bituminous Pavement @ 2.0 Ton/CY
- Curb & Gutter @ 0.1155 Ton/LF

Materials

Commercial Grade Hot Mix Asphalt @ 2 Tons/CY
PG 58-28 @ 6% of HMA
Tack Coat at 0.05 Gal/SY

Water
10 MGal for Dust Palliative
10 Gal/Ton for Aggregates
10 Gal/CY for Embankment

HBP Cored Samples

	A	B	C			
Specification Section	**Turn Lanes**	**Lifts**	**Sublots (A × B)**	**Quantity (D × 2)**	**Quantity (1 per mile)**	**Unit**
430.04 I.2.b(1), "General"	6	3	18	36	N/A	EA
430.04 I.2.b(2), "Pavement Thickness Determination Cores"				N/A	0	EA
			Total	36*	0	EA

*Cores will not be paid for separately but should be included in the price bid for “Commercial Grade Hot Mix Asphalt”

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Paving Quantity Accumulation Table

Spec & Code	Description	Unit	Museum Dr NB Right	South Ramp NB Right	12th St SB Right	15th St NB Right	North Ramp SB Right	15th St SB Right	Total
302-0120	Aggregate Base Course CL 5	TON							
	Concrete	TON	36.2	85.6	57.8	142.8	35.9	14.8	373
	HMA	TON	192.5	328.3	293.8	1132.5	833.2	430.1	3210
	Sidewalk	TON	23.2	5.1	53.4	157.4	147.9	27.5	415
430-0500	Commercial Grade Hot Mix Asphalt	TON	47.5	81.3	75.7	322	208.3	104.7	840
550-0300	8IN Non Reinf Concrete Pvmt CL AE-Doweled	SY	63	175	112	273	75	229	926
748-0140	Curb & Gutter-Type I	LF	185	284	237	839	641	443	2629
750-0100	Sidewalk Concrete	SY	102	23	235	720	649	123	1852

Earthwork Summary

Location	Excavation (CY)	Pavement Removal from Excavation Areas (CY)	Common Excavation - Type A (CY) Pay Item	Embankment (CY)	Borrow Required Pay Item
	A	B	C = A - B	D	E = D - C
South of 12th St					
Right	138	64	74	340	266
12th St to EB Ramps					
Right	178	103	75	371	296
Left	205	117	88	1731	1643
WB Ramps to 15th St					
Right	955	451	504	1451	947
Left	678	217	461	1311	850
North of 15th St					
Left	422	109	313	0	-313
TOTALS =	2576	1060	**1516**	5204	**3688**

Note: An additional volume of 25% is included for shrinkage in earth embankment.

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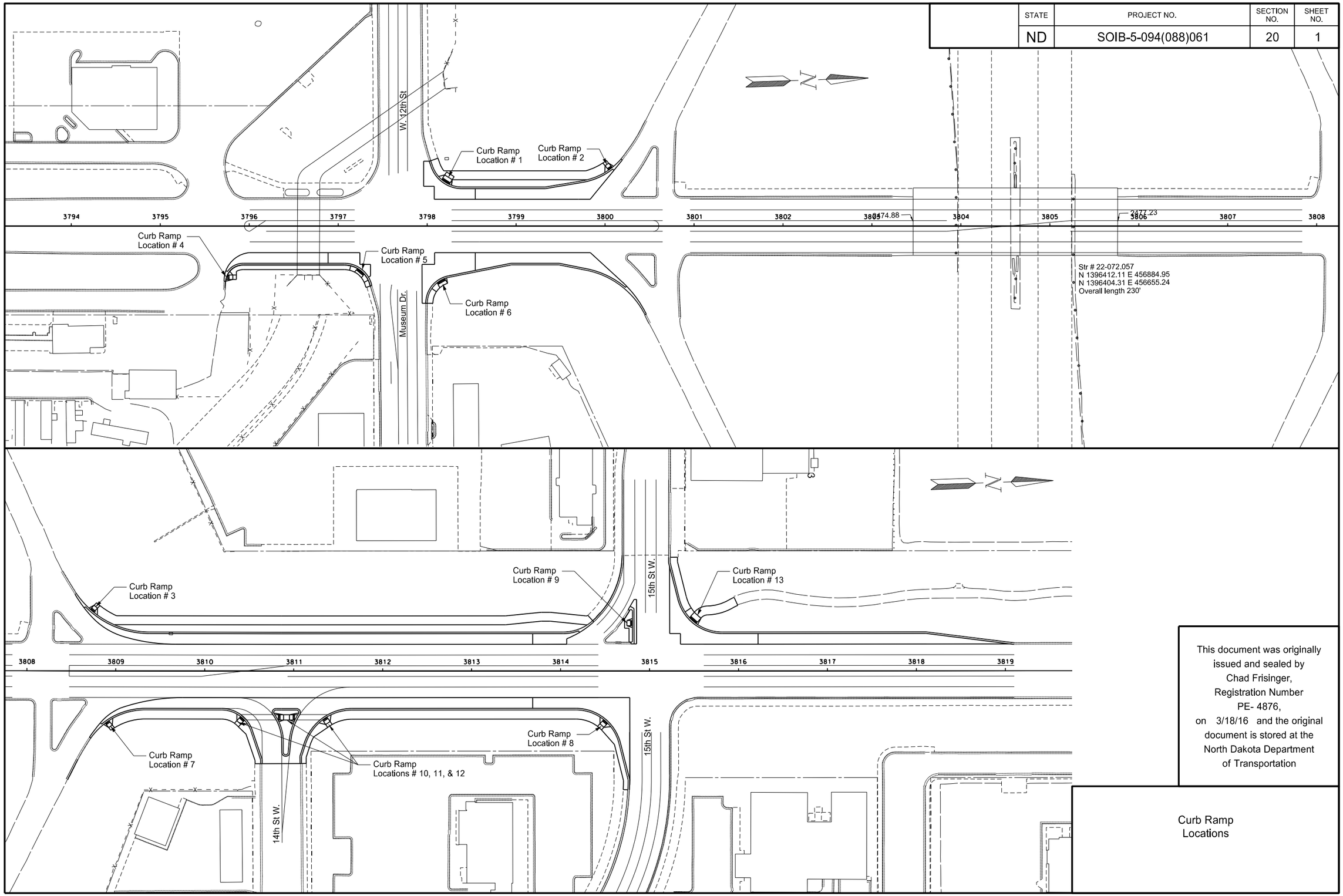
Data Tables

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	1



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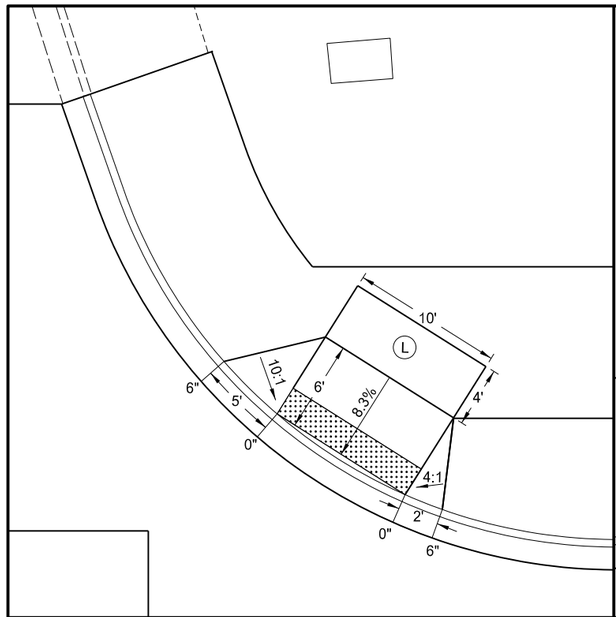
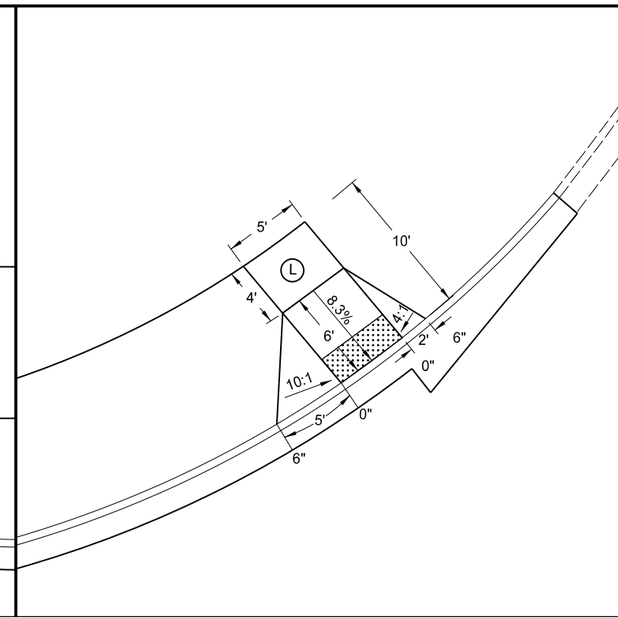
Curb Ramp Locations

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	2

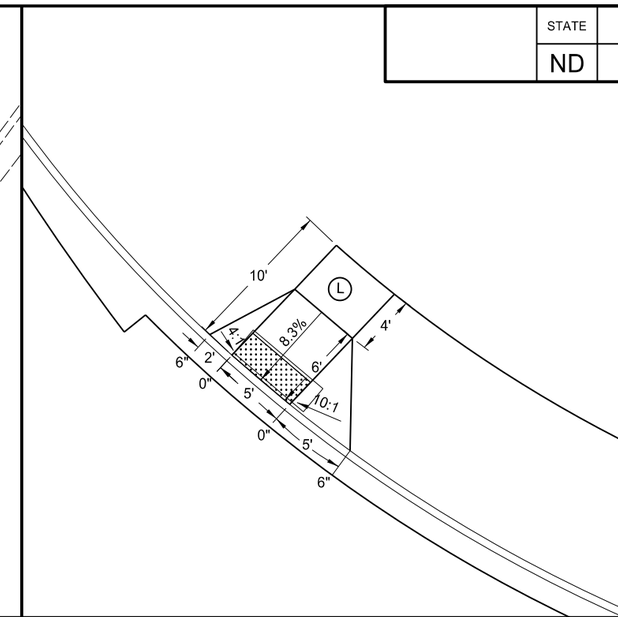
See Standard D-750-3 for additional information



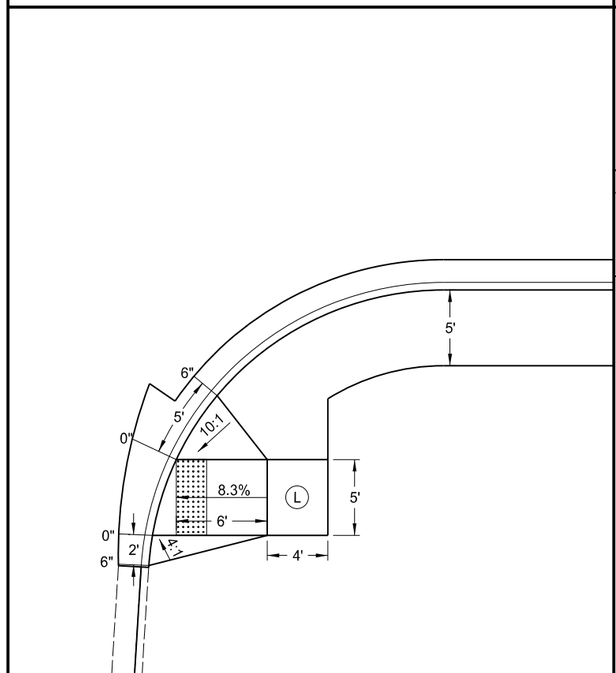
NW Corner of Hwy 22 & 12th St W.
Location #1



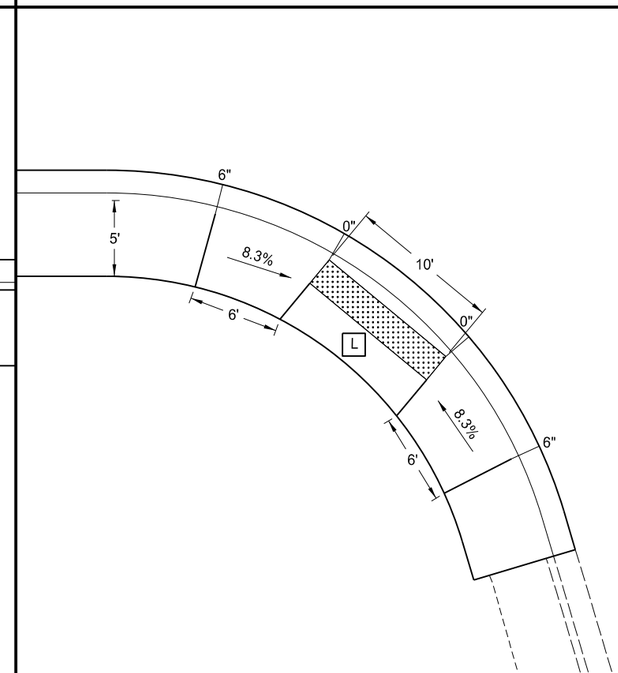
SW Corner of Hwy 22 & SW Ramp
Location #2



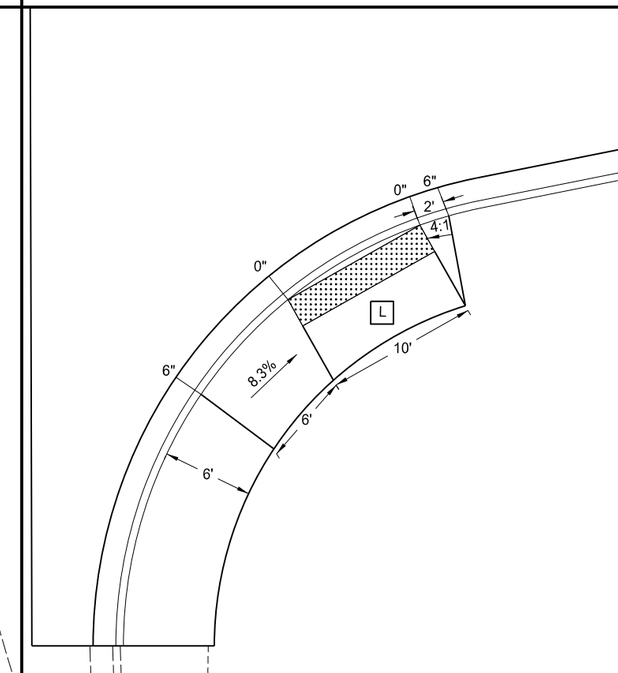
NW Corner of Hwy 22 & NE Ramp
Location #3



NE Corner of Hwy 22 & East Frontage Road
(south of Museum Drive)
Location #4



SE Corner of Hwy 22 & Museum Dr.
Location #5



NE Corner of Hwy 22 & Museum Drive
Location #6

LEGEND

- : Detectable Warning Panel
- (L) : Upper Landing
- [L] : Lower Landing
- 0" or 6" : Curb Height
- 8.3% : All Slopes shown are max grades. Flatter slopes may be used

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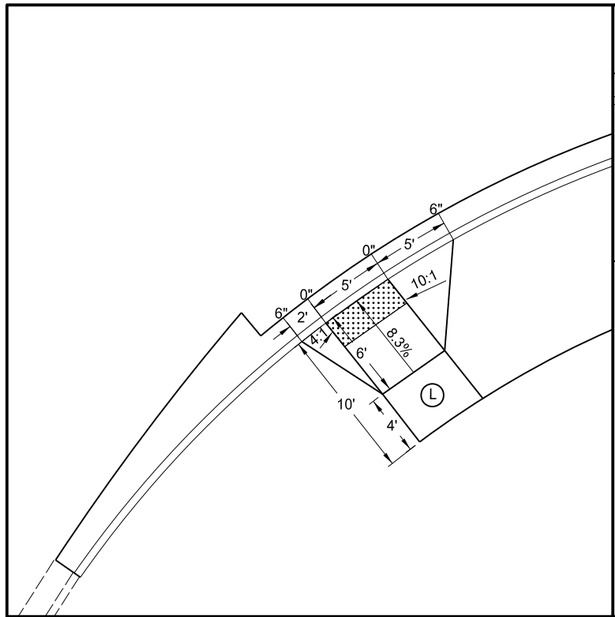
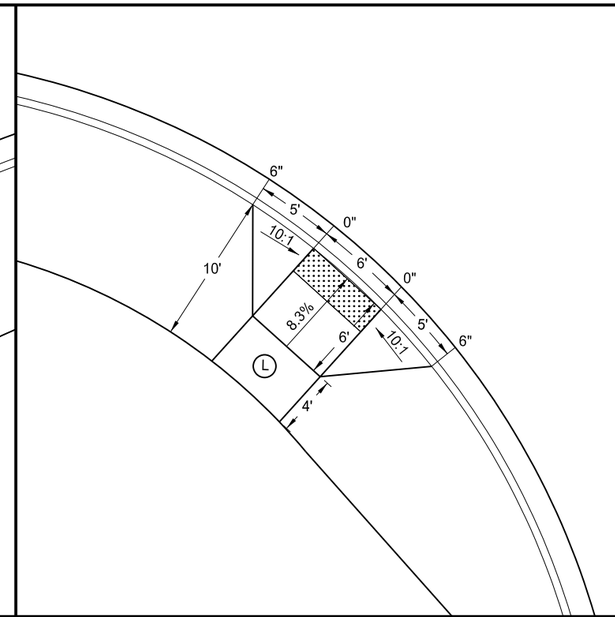
Curb Ramp Details

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	3

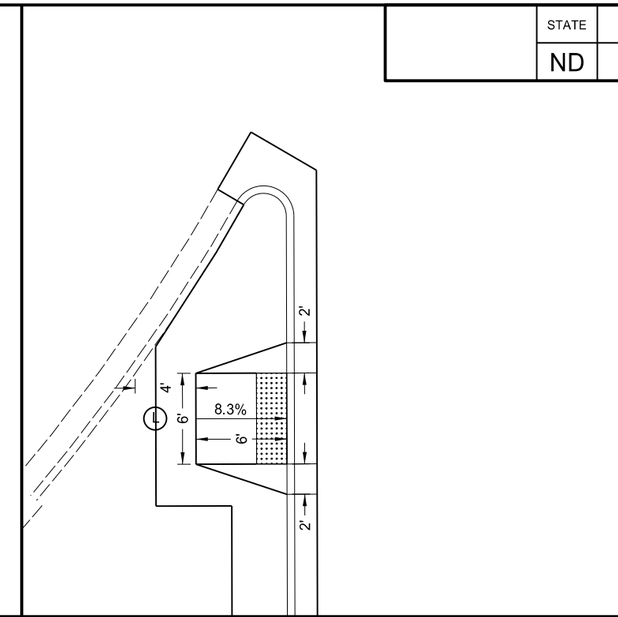
See Standard D-750-3 for additional information



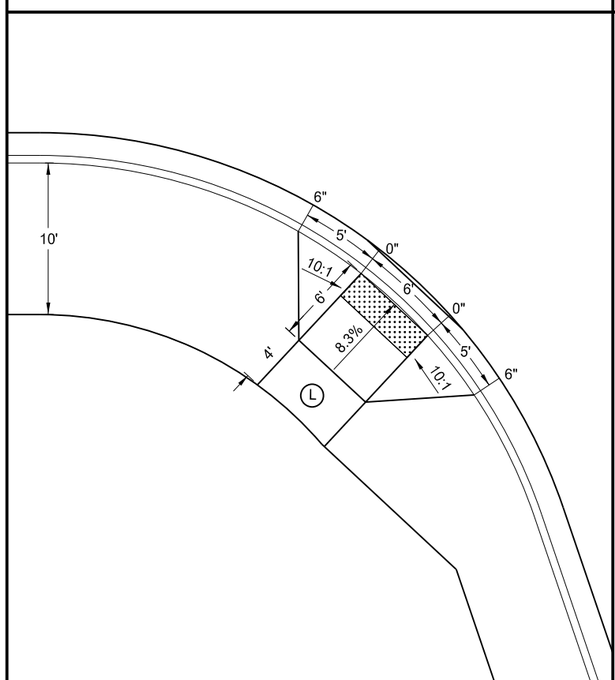
NE Corner of Hwy 22 NE Ramp
Location #7



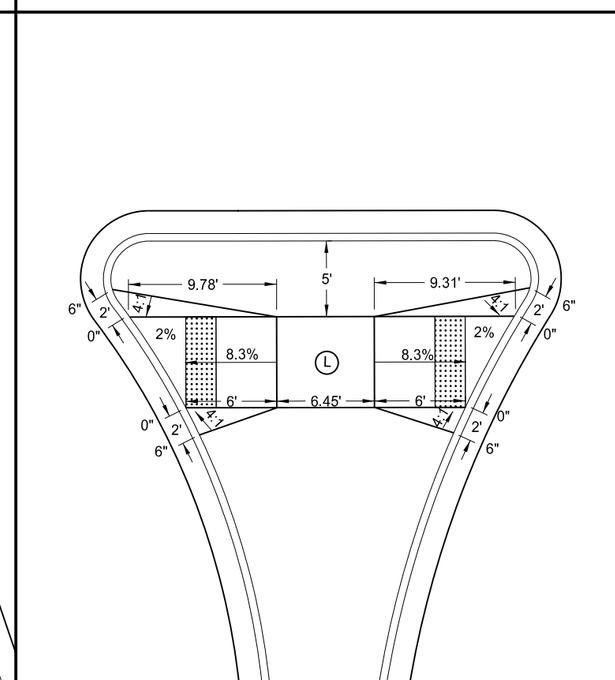
SE Corner of Hwy 22 & 15th St W
Location #8



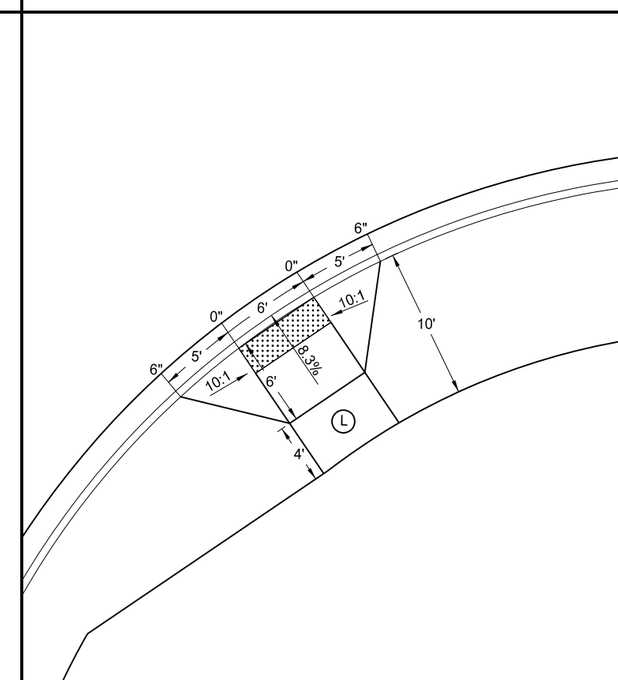
Triangular shaped island at Hwy 22 & 15th St W
Location #9



SE Corner of Hwy 22 & 14th St W
Location #10



Median Island at Hwy 22 & 14th St W
Location #11



NE Corner of Hwy 22 & 14th St W
Location #12

LEGEND

- : Detectable Warning Panel
- Ⓛ : Upper Landing
- [L] : Lower Landing
- 0" or 6": Curb Height
- 8.3% : All Slopes shown are max grades. Flatter slopes may be used

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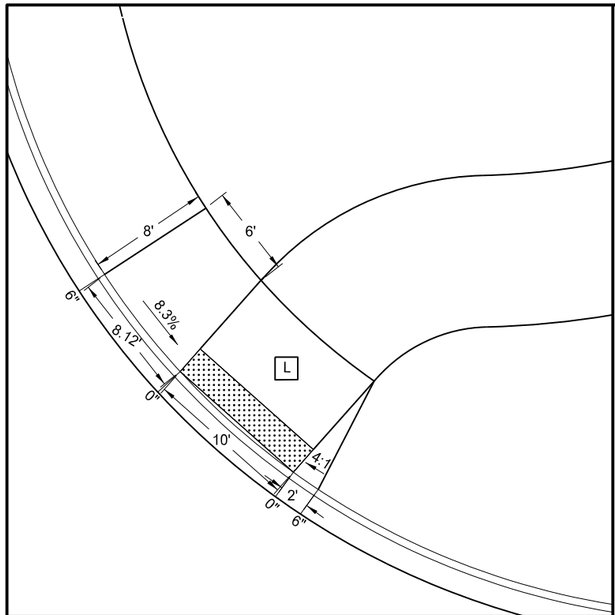
Curb Ramp Details

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	4

See Standard D-750-3 for additional information



NW Corner of Hwy 22 & 15th St W
Location #13

LEGEND

: Detectable Warning Panel

Ⓛ : Upper Landing

[L] : Lower Landing

0" or 6": Curb Height

8.3% : All Slopes shown are max grades. Flatter slopes may be used

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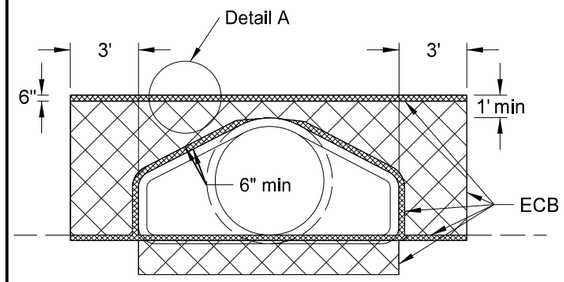
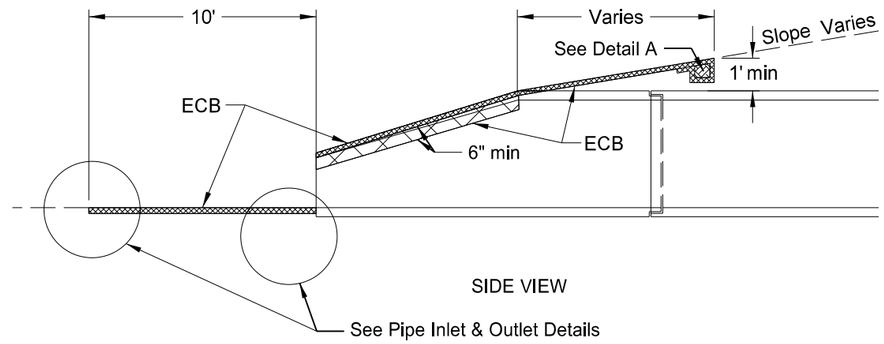
Curb Ramp Details

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	5

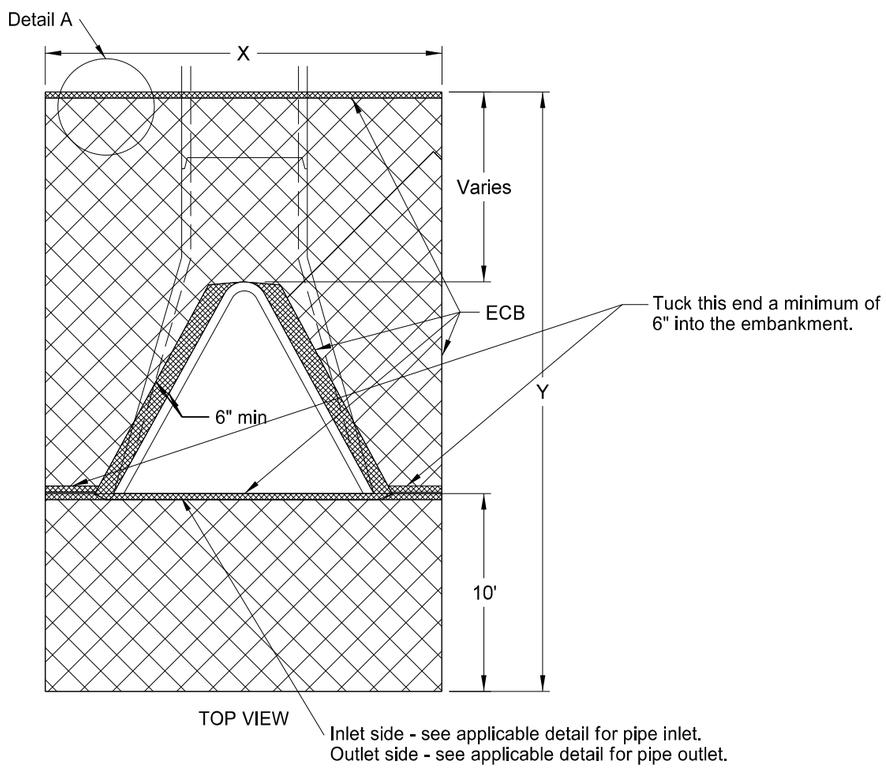
Item	Description	Quantity	Unit
255-0102	ECB TYPE 2		
	3809+95 Lt	20	SY



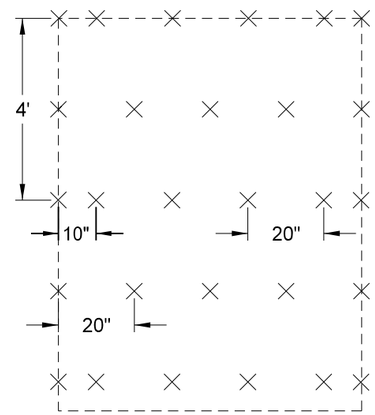
FRONT VIEW



SIDE VIEW



TOP VIEW

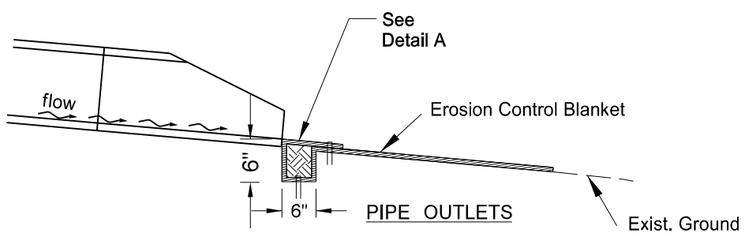


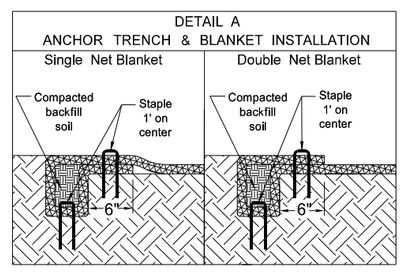
STAPLE PATTERN

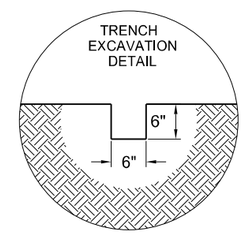
DIA	X	Y	Surface area to be protected	ECB
In	Ft	Ft	SF	SY
18	9.5	16.3	162.0	18
24	10.5	17.5	172.1	20
27	11.0	18.0	182.3	21
30	11.6	18.5	195.1	22
36	12.7	19.2	216.7	24
42	13.3	19.2	225.2	25
48	13.8	20.0	238.0	27
54	14.5	19.5	244.7	28
60	15.0	19.0	248.3	28
66	15.6	20.0	264.5	30
72	16.2	20.5	276.8	31

Note: Quantities based on 4:1 slope.

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







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Erosion Control at Culvert Flared End Sections

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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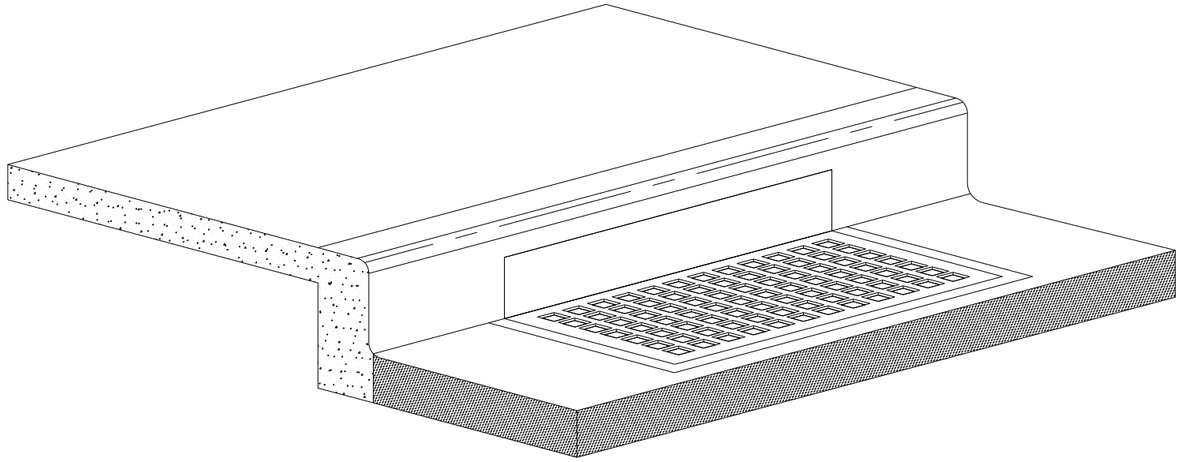


Inlet Protection Device

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.

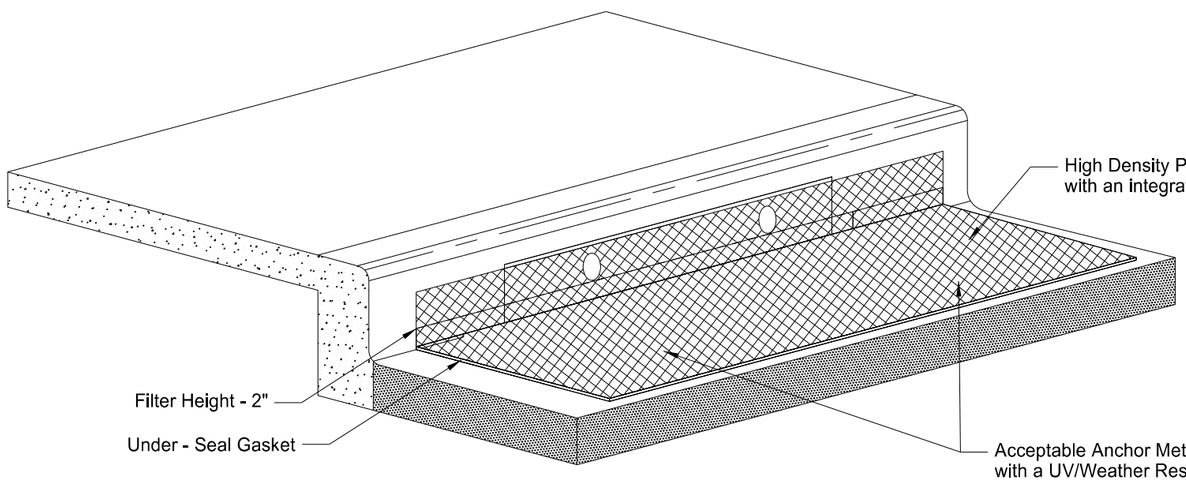
3. Anchor the device so that water cannot flow behind it.

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.



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

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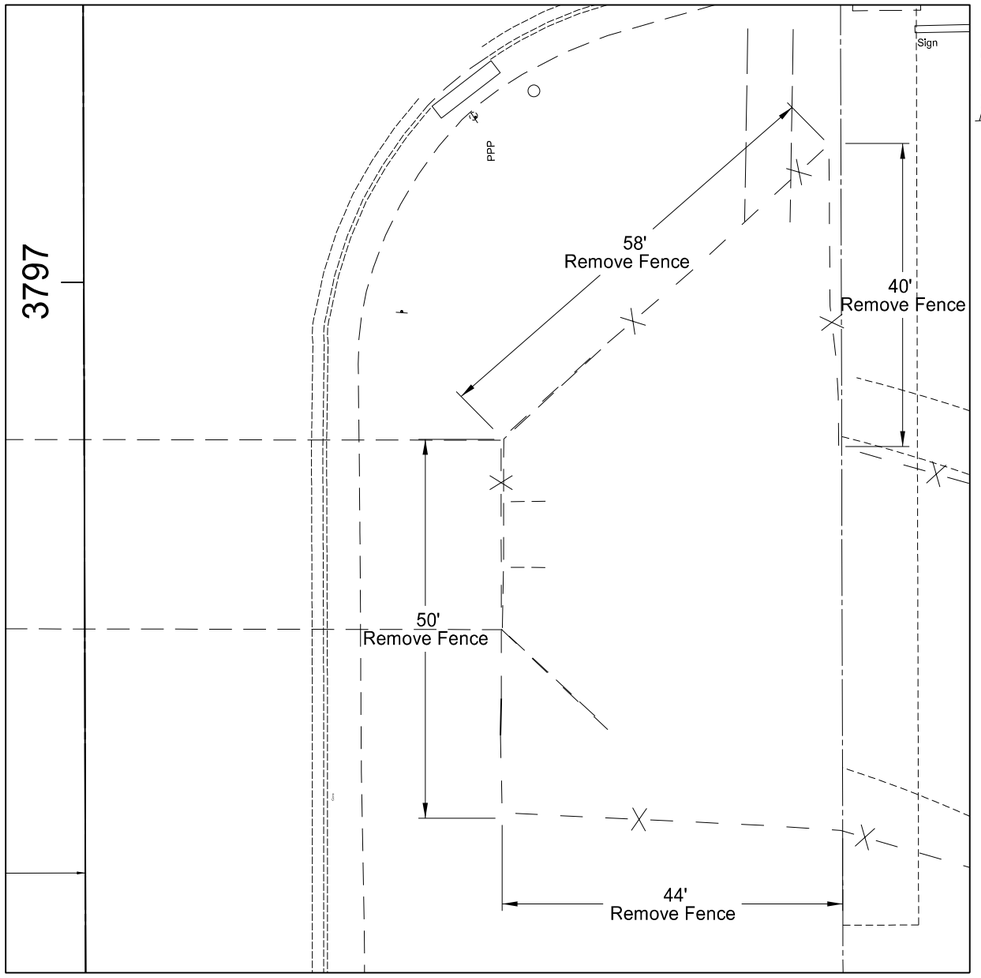
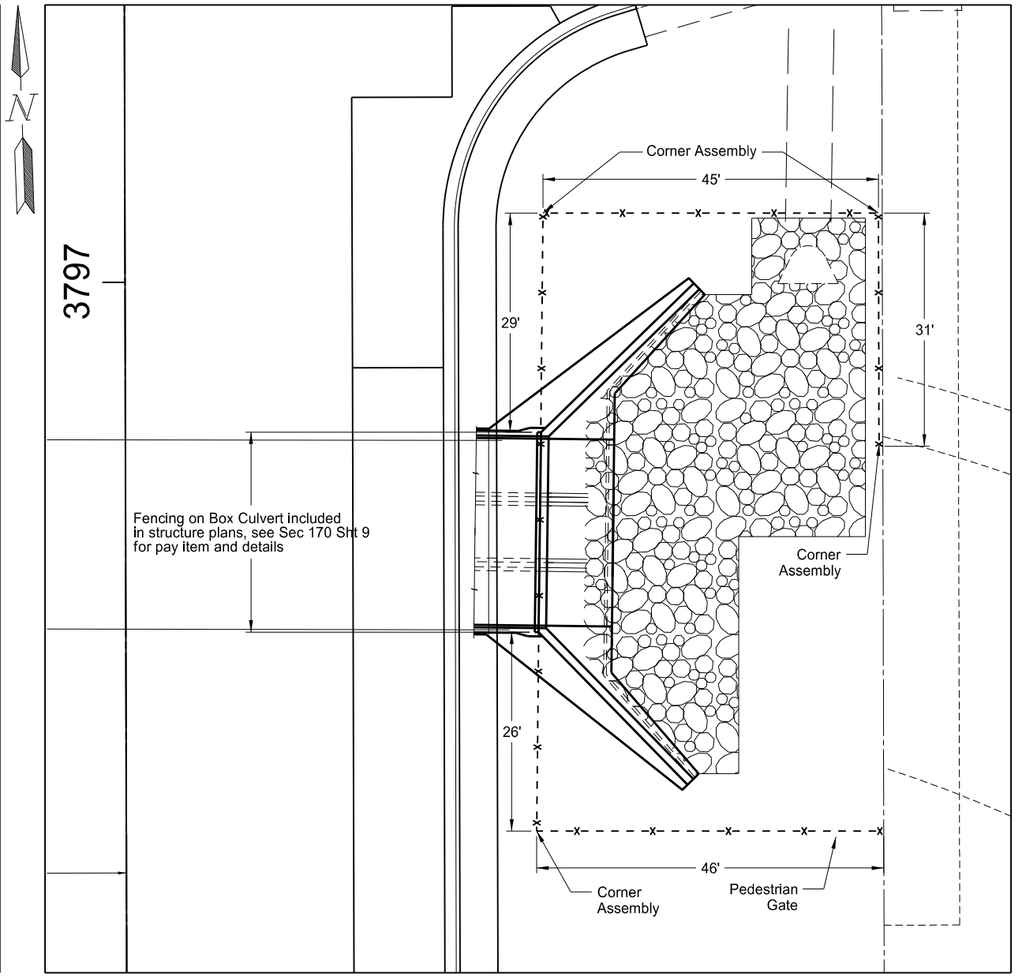
Inlet Protection Device

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	7



Existing



Proposed

Item	Description	Quantity	Unit
202-0310	REMOVAL OF CHAIN LINK FENCE		
	Drainage Channel Fencing	192	LF
752-0600	FENCE CHAIN LINK		
	Drainage Channel Fencing	177	LF
752-3100	CORNER ASSEMBLY CHAIN LINK		
	Drainage Channel Fencing	4	EA

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Fencing Details

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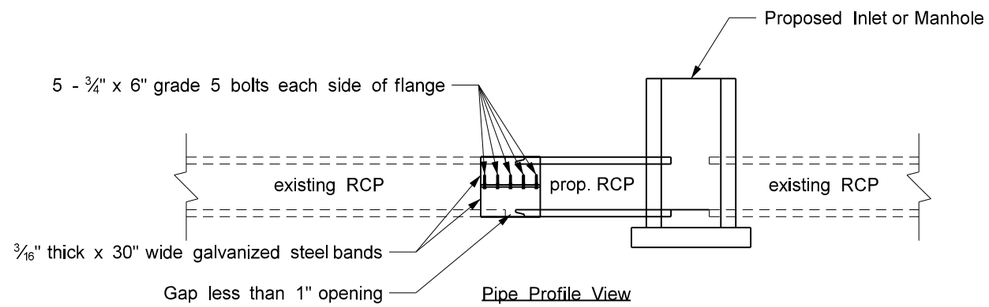
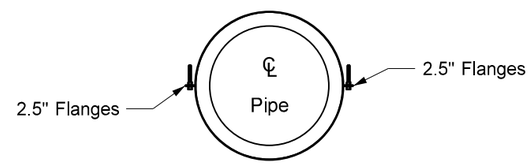
Pipe Location	Pipe Size
3811+41 Rt	15"
3811+41 Lt	15"
3816+31 Lt	12"



Pipe Profile View



Pipe Cross Section View

NOTES:

1. Steel Bands will be used when connecting a new pipe to an existing pipe that has been previously cut.
2. All costs for labor, equipment, and materials to place the steel bands will be included in the price bid for "Pipe Conc Reinf (size) IN Cl III".
3. Use a butyl joint material to seal the pipes to the exterior metal connection band.

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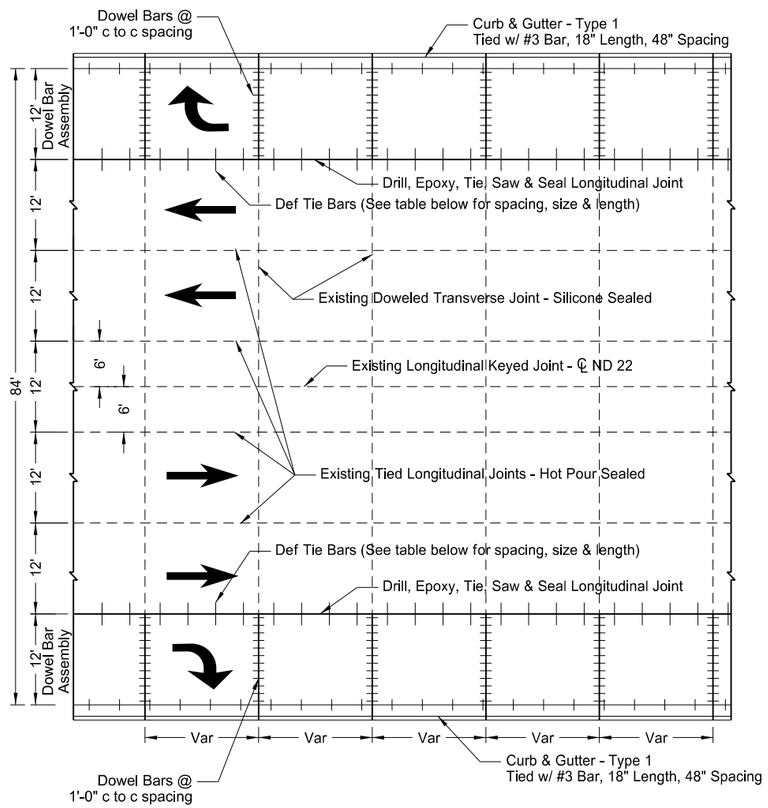
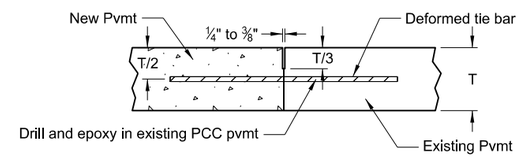
Exterior Galvanized Steel Band Pipe Connections

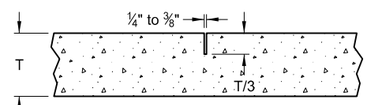
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	9



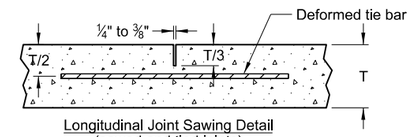
Mainline Joints
Joint spacing to match existing (Approx. 15')



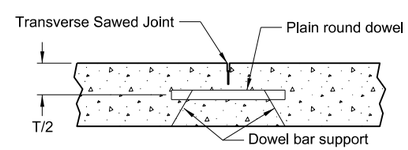
Longitudinal Joint Tie Bar Installation



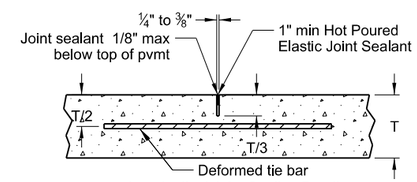
Transverse Joint
(non-doweled joint)



Longitudinal Joint Sawing Detail
(sawed and tied joints)



Transverse Joint
(doweled)

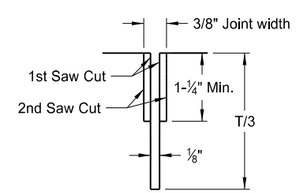


Longitudinal Joint Sealing Detail
(sawed and tied joints)

Longitudinal Joint Tie Bar Size, Length, and Spacing				
Location	Pvmt Thickness	Steel Grade	Bar Size & Length	Spacing 'S'
Mainline	8"	40	# 5 Bar x 30"	30"
		40	# 6 Bar x 36"	45"
		60	# 4 Bar x 36"	30"
		60	# 5 Bar x 42"	45"

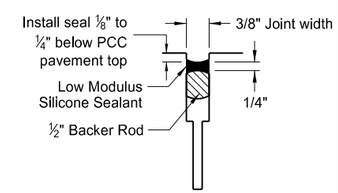
Notes:
1. S = Tiebar spacing
2. T = Pavement Thickness
3. Place no tie bar within 15" of a transverse joint

Dowel bars shall be 1 1/4" x 18" for T = 8"



Transverse Joint Sawing

Silicone Seal



Transverse Joint Sealing

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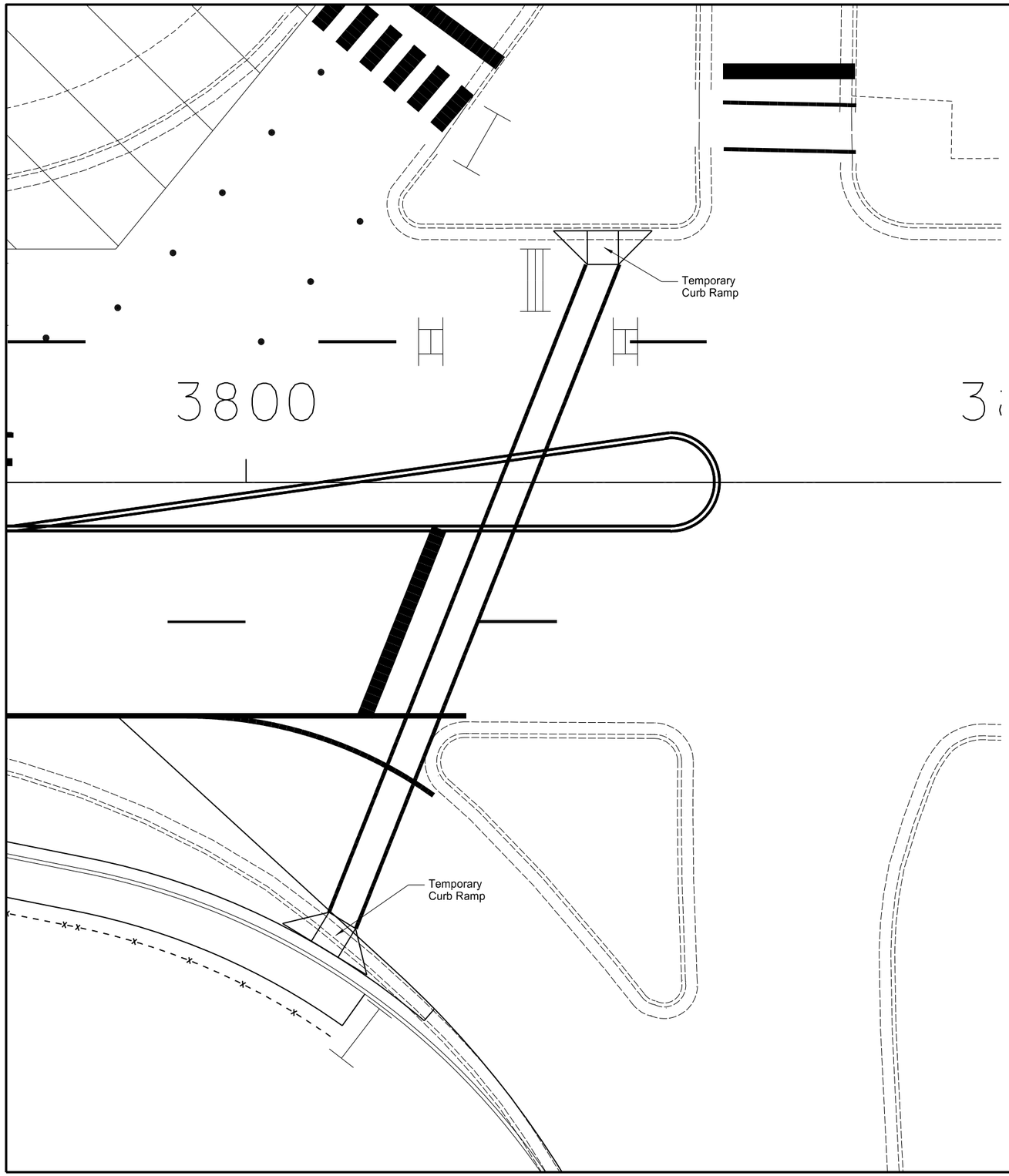
PCC Pavement Joint Details

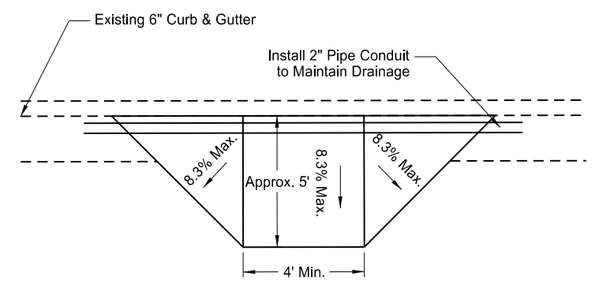
Perpendicular With 15' Joint Width

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	10



NOTES:

1. Temporary curb ramps are required in Phase 2 of the Work Zone Traffic Control - See Sec 100 Sheet 8
2. Construct with 100% bituminous millings or 100% crushed concrete.
3. Alternative curb ramp materials may be substituted as approved by the Engineer. The material shall not be susceptible to erosion.
4. Include all costs to furnish, construct, grade, compact, maintain and remove Temporary Curb Ramps in the price bid for "Temporary Traffic Surface Aggregate".



Temporary Curb Ramp
Plan View

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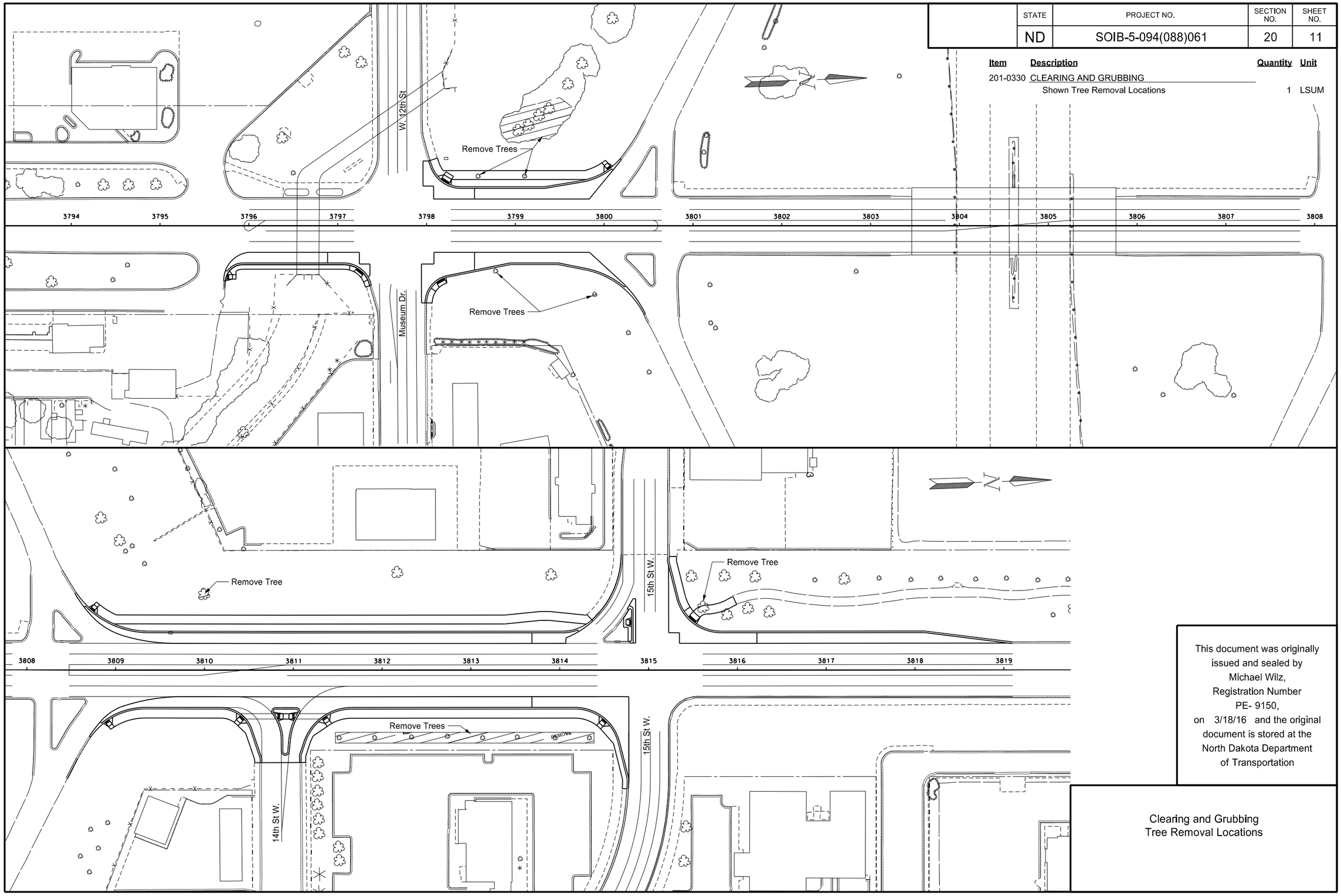
Temporary

Curb Ramp Details

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	11

Item	Description	Quantity	Unit
201-0330	CLEARING AND GRUBBING		
	Shown Tree Removal Locations	1	LSUM



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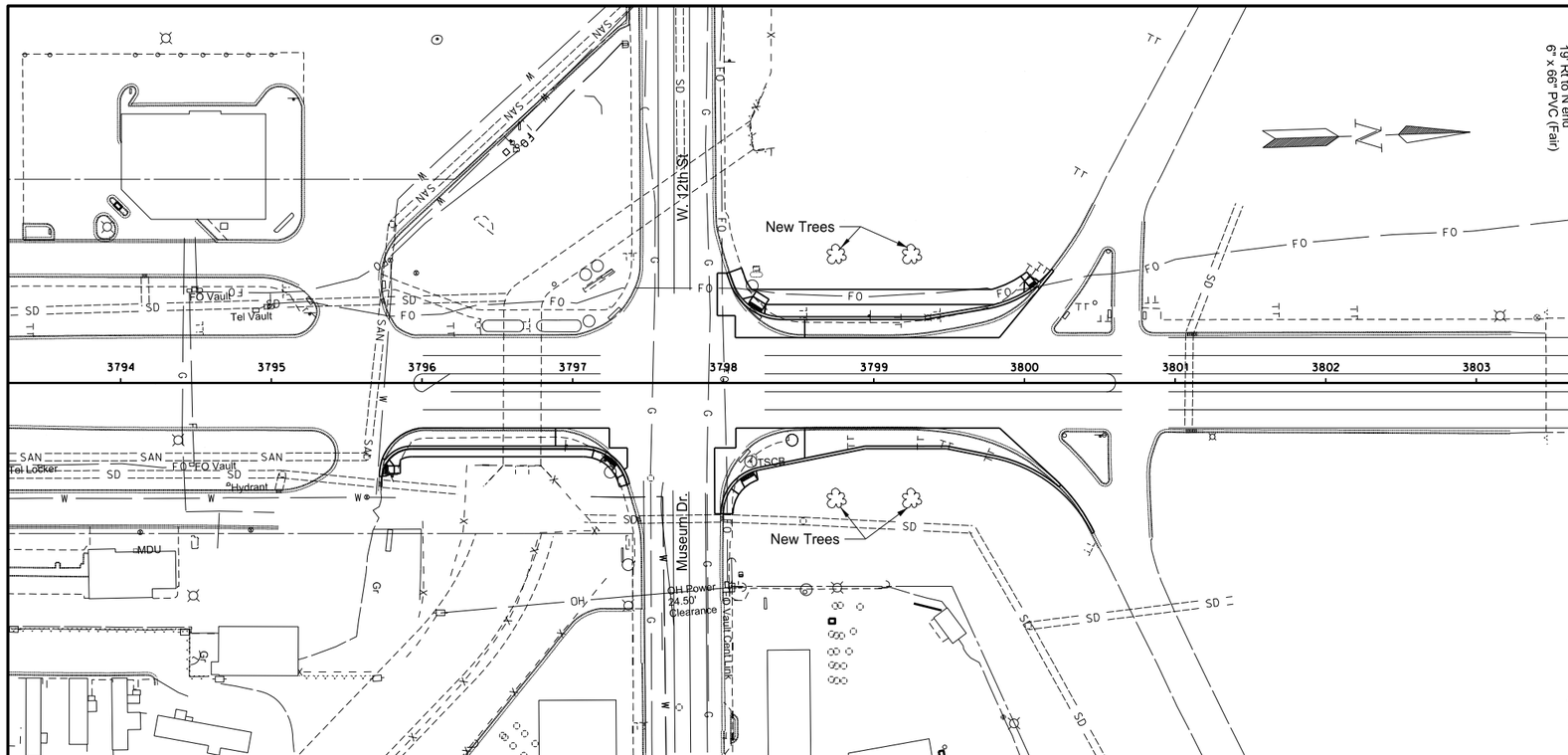
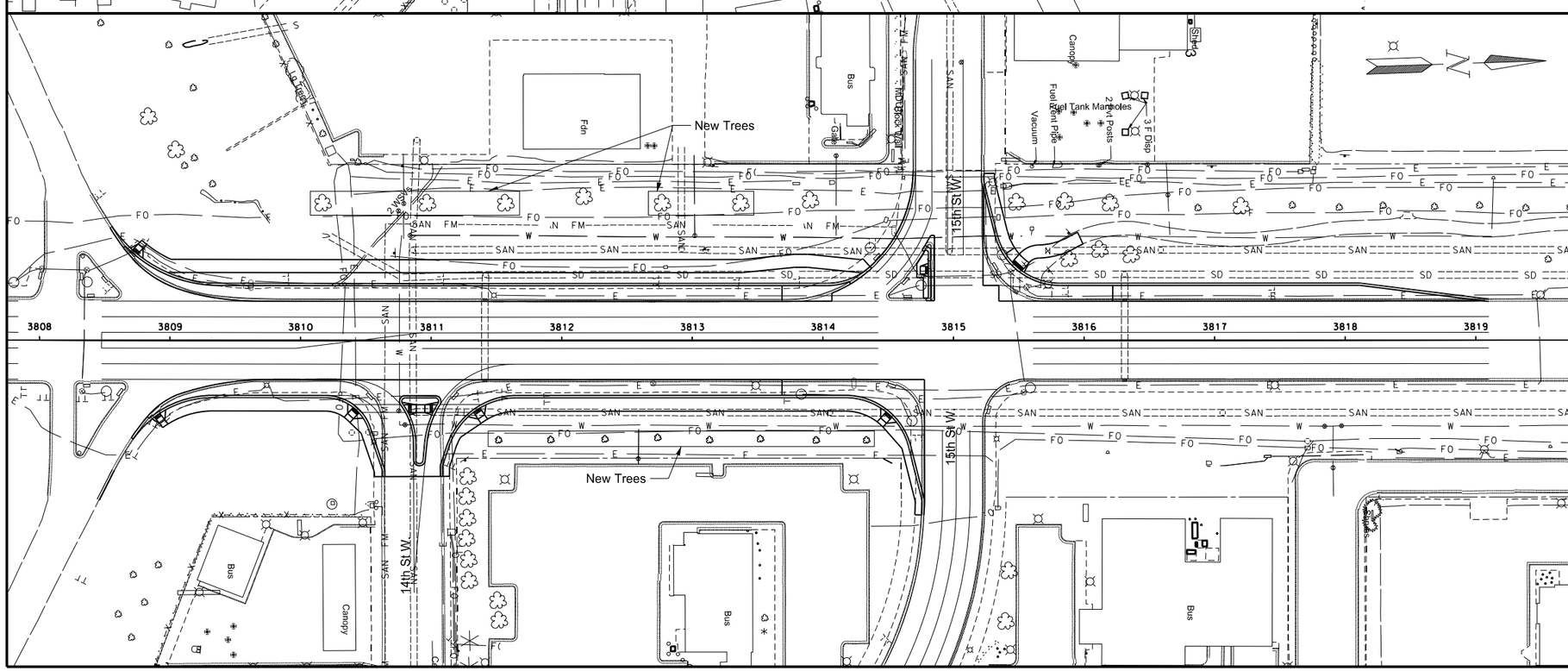
Clearing and Grubbing
Tree Removal Locations

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	12



Item	Description	Quantity	Unit
970-2029	OHIO BUCKEYE		
	Sta 3810+17-105' Lt	1	EA
	Sta 3811+50-78' Rt	1	EA
	Sta 3813+10-78' Rt	1	EA
970-2050	COMMON HACKBERRY		
	Sta 3810+97-105' Lt	1	EA
	Sta 3811+90-78' Rt	1	EA
	Sta 3813+50-78' Rt	1	EA
970-2150	NORHTERN ACCLAIM HONEYLOCUST		
	Sta 3811+57-105' Lt	1	EA
	Sta 3812+30-78' Rt	1	EA
	Sta 3813+90-78' Rt	1	EA
970-2330	BUR OAK		
	Sta 3798+75-80' Lt	1	EA
	Sta 3799+25-80' Lt	1	EA
	Sta 3798+75-80' Rt	1	EA
	Sta 3799+25-80' Rt	1	EA
	Sta 3812+77-105' Lt	1	EA
970-2436	HARVEST GOLD LINDEN		
	Sta 3812+70-78' Rt	1	EA
	Sta 3813+37-105' Lt	1	EA
	Sta 3814+30-78' Rt	1	EA



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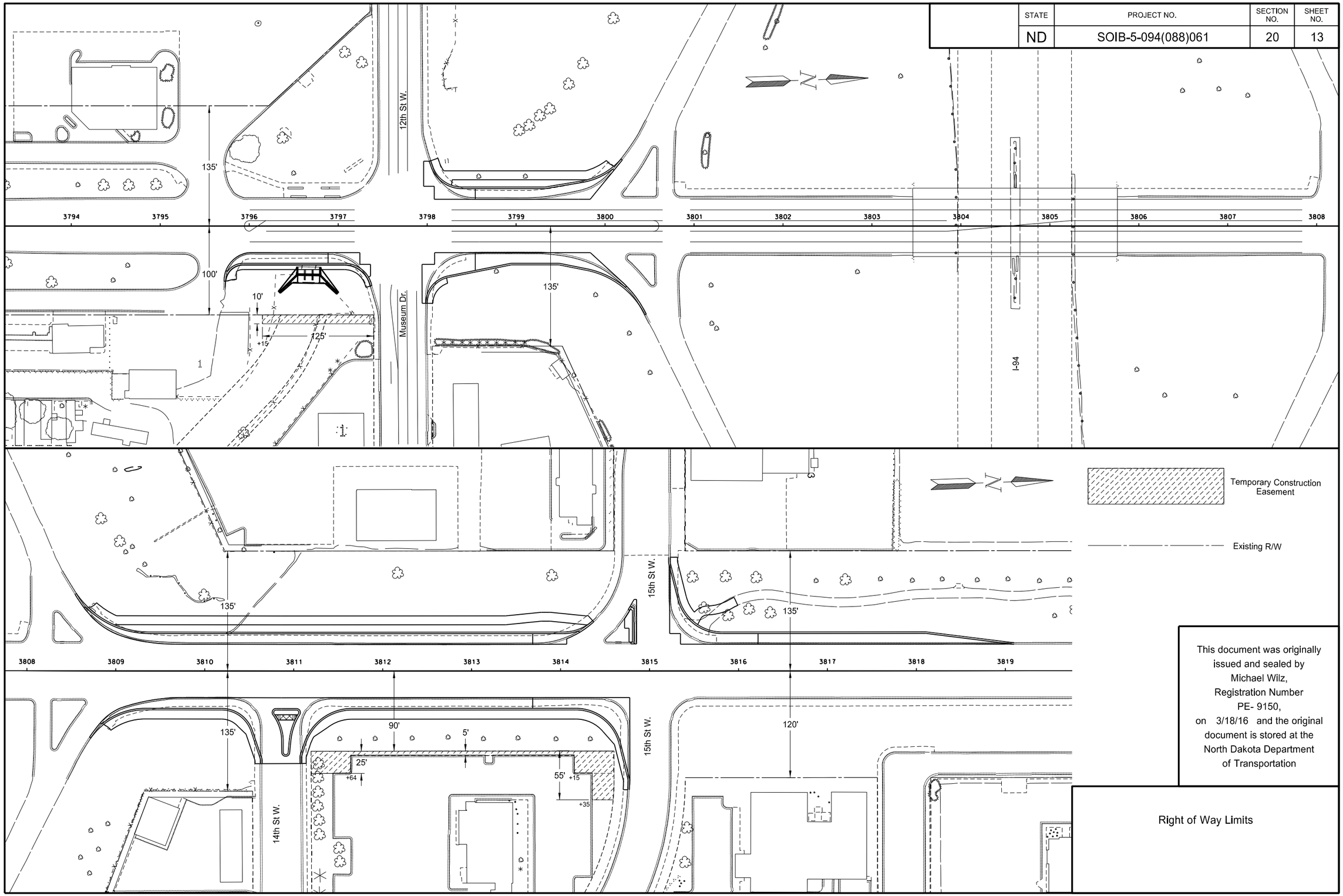
Tree Plantings

3/18/2016 11:29:10 AM cfrising R:\project\50094061.088\design\Sheet\020GD_012_Trees.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	20	13



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Right of Way Limits

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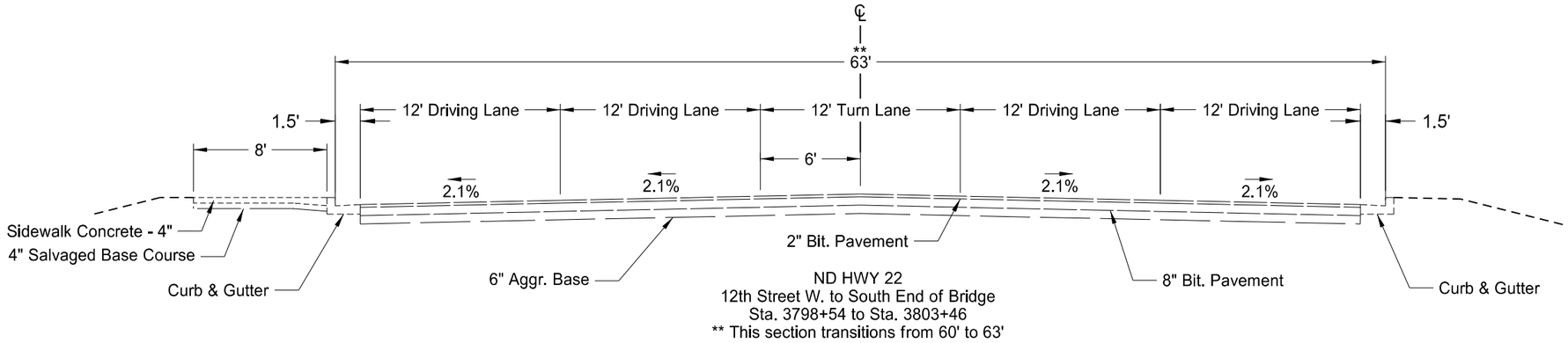
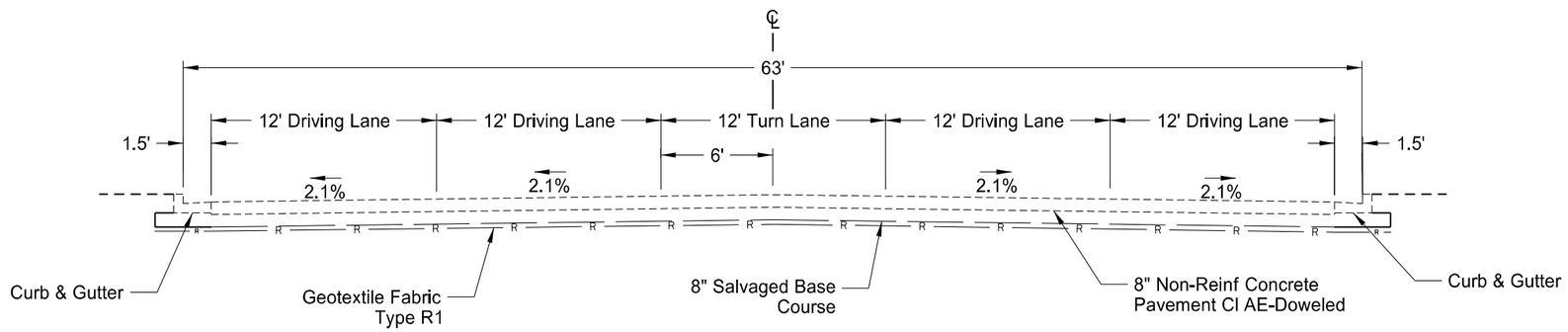
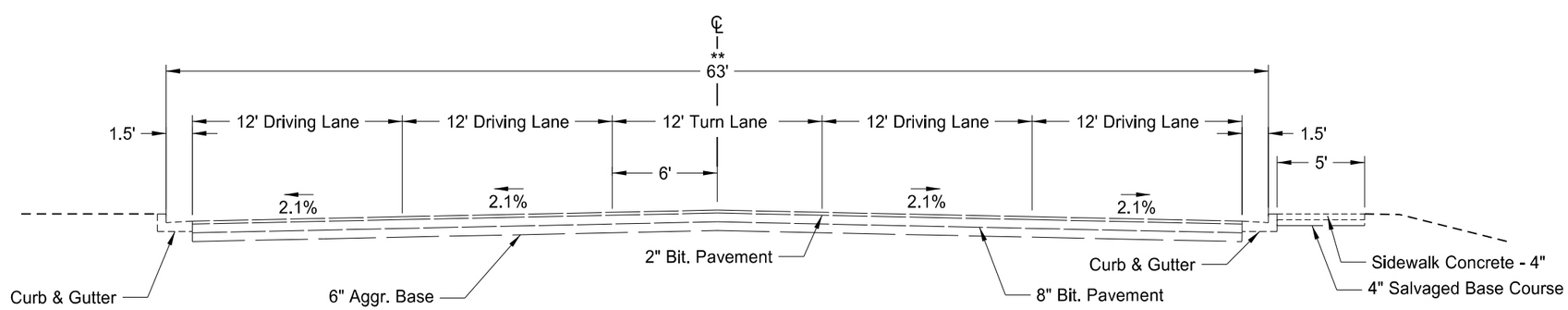
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	30	1



ND HWY 22
12th Street W. to South End of Bridge
Sta. 3798+54 to Sta. 3803+46
** This section transitions from 60' to 63'



ND HWY 22
12th Street West. Intersection
Sta 3796+89 to 3798+54



ND HWY 22
T-Rex Plaza Entrance to 12th Street West
Sta. 3795+60 to Sta. 3796+89
** This section transitions from 60' to 63'

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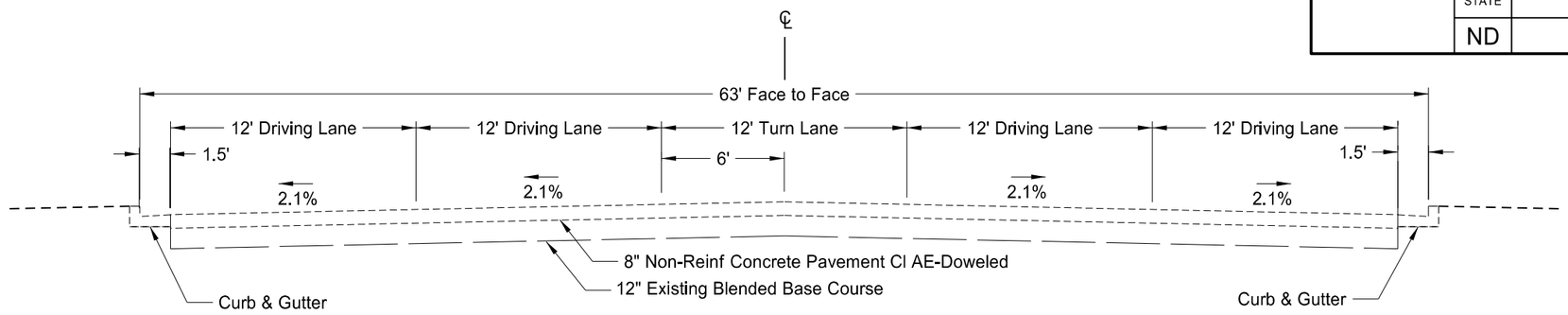
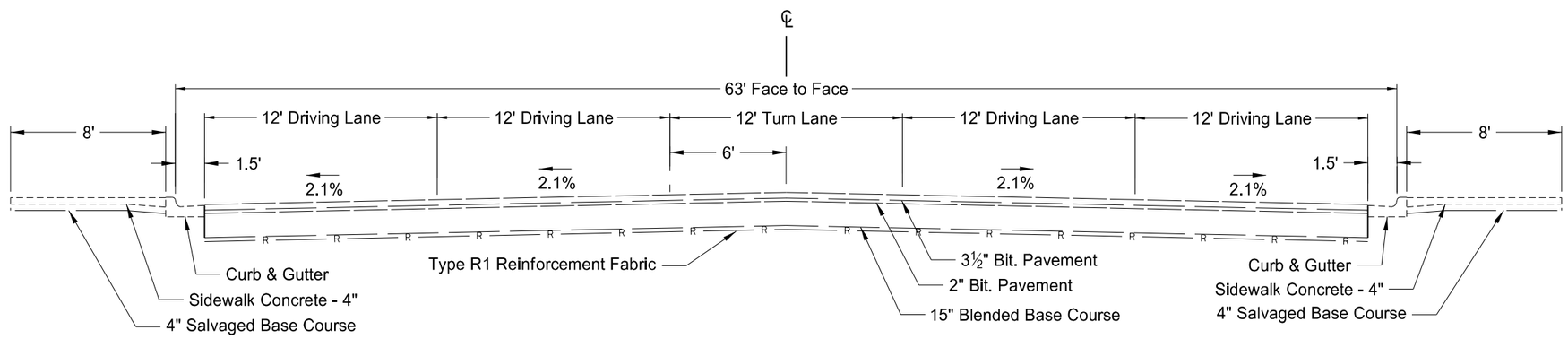
Existing Typical Sections

South of I-94

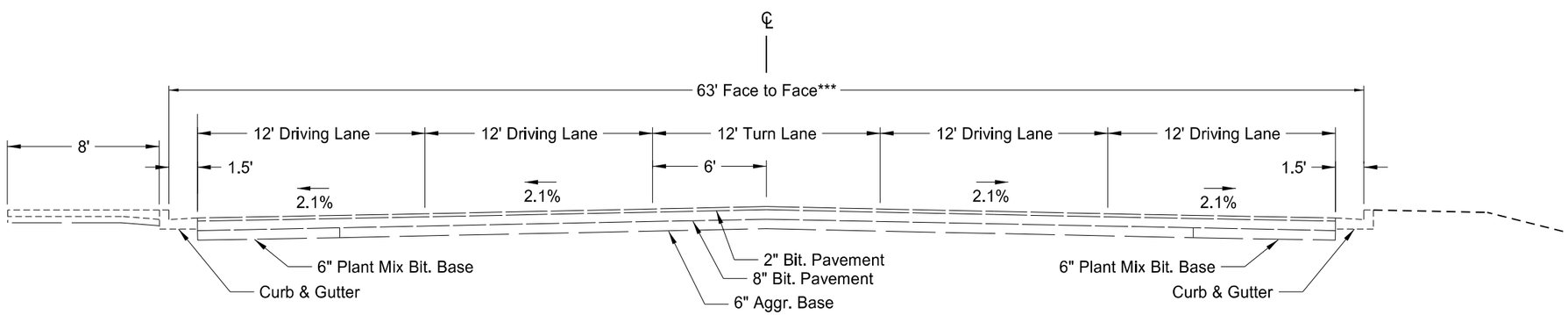
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	30	2



ND HWY. 22
15th Street & ND Hwy 22 Intersection
Sta 3813+68 to 3816+22



ND HWY. 22
14th. Street to Prairie Hills Mall Entrance
Sta. 3810+36 to 3813+68
Sta3816+22 to 3819+85



ND HWY. 22
North End of Bridge to 14th Street West
Sta. 3805+76 to 3810+36
***This section transitions from 63' to 60'

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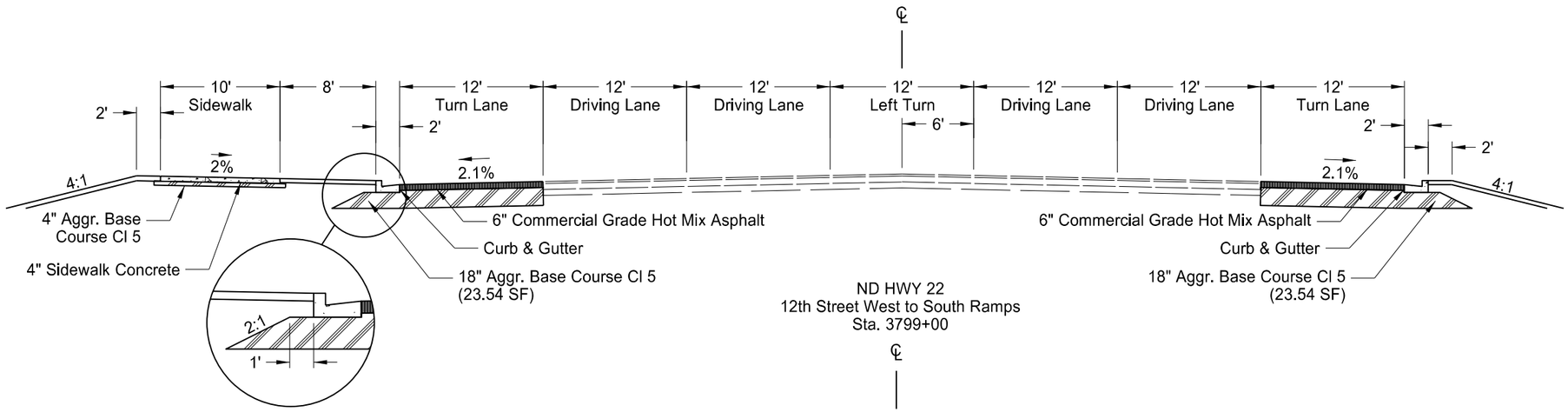
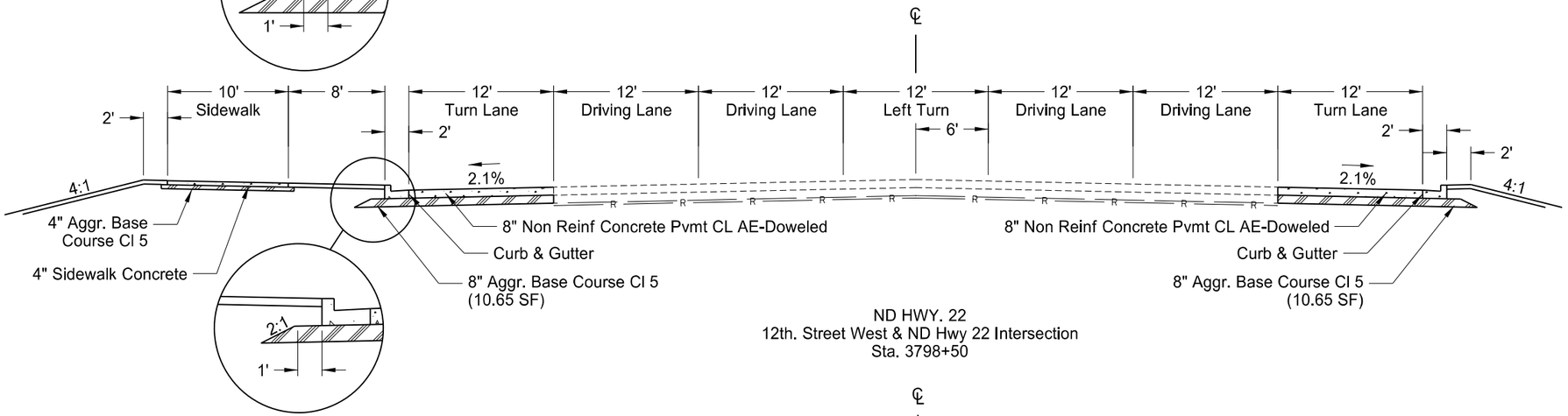
Existing Typical Sections

North of I-94

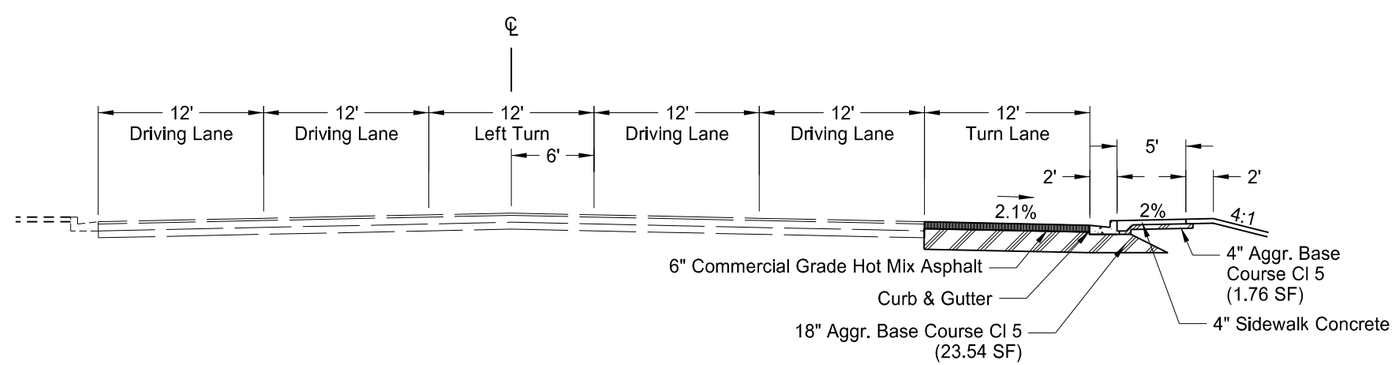
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	30	3



ND HWY 22
12th Street West to South Ramps
Sta. 3799+00



ND HWY. 22
12th. Street West & ND Hwy 22 Intersection
Sta. 3798+50



ND HWY. 22
T-Rex Plaza Entrance to 12th. Street W.
Sta. 3796+50

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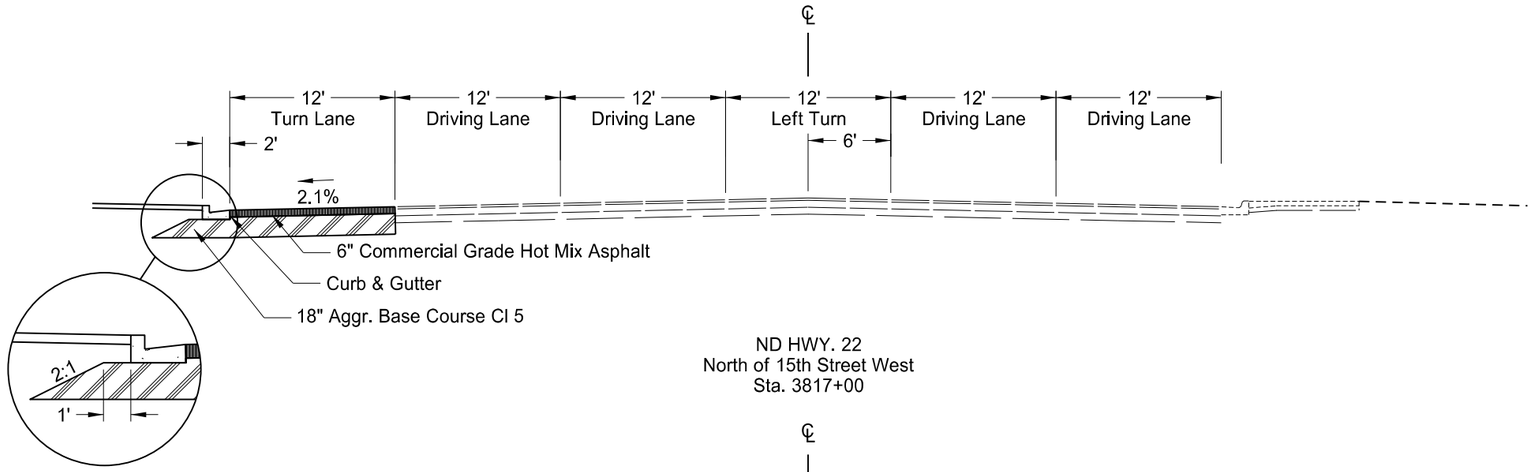
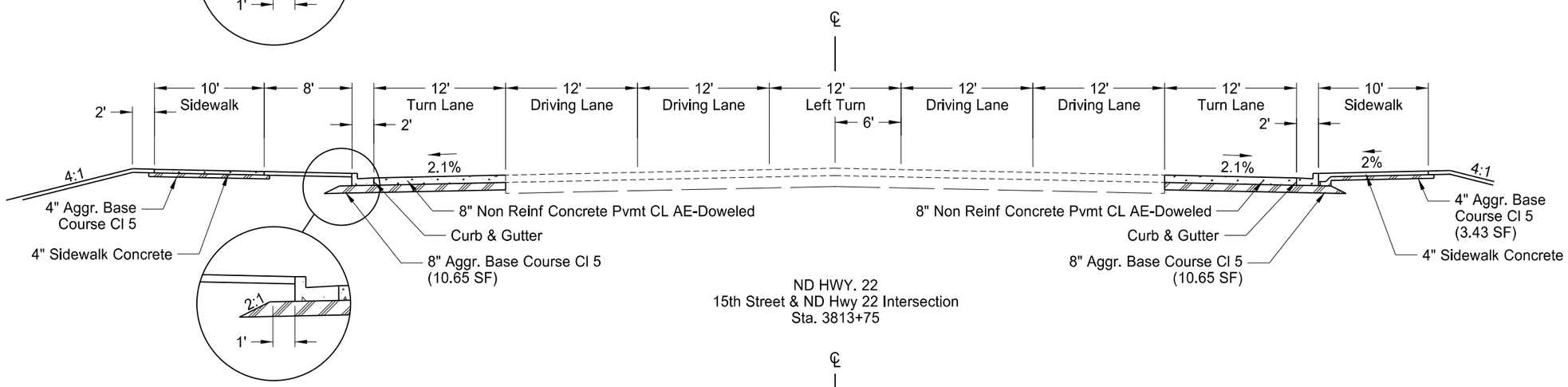
Proposed Typical Sections

South of I-94

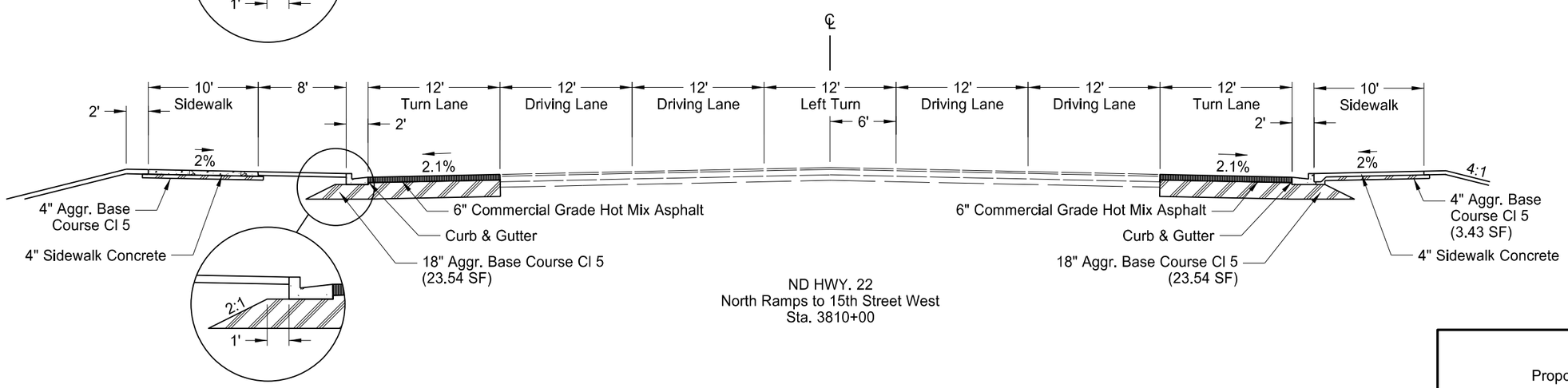
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	30	4



ND HWY. 22
North of 15th Street West
Sta. 3817+00



ND HWY. 22
15th Street & ND Hwy 22 Intersection
Sta. 3813+75



ND HWY. 22
North Ramps to 15th Street West
Sta. 3810+00

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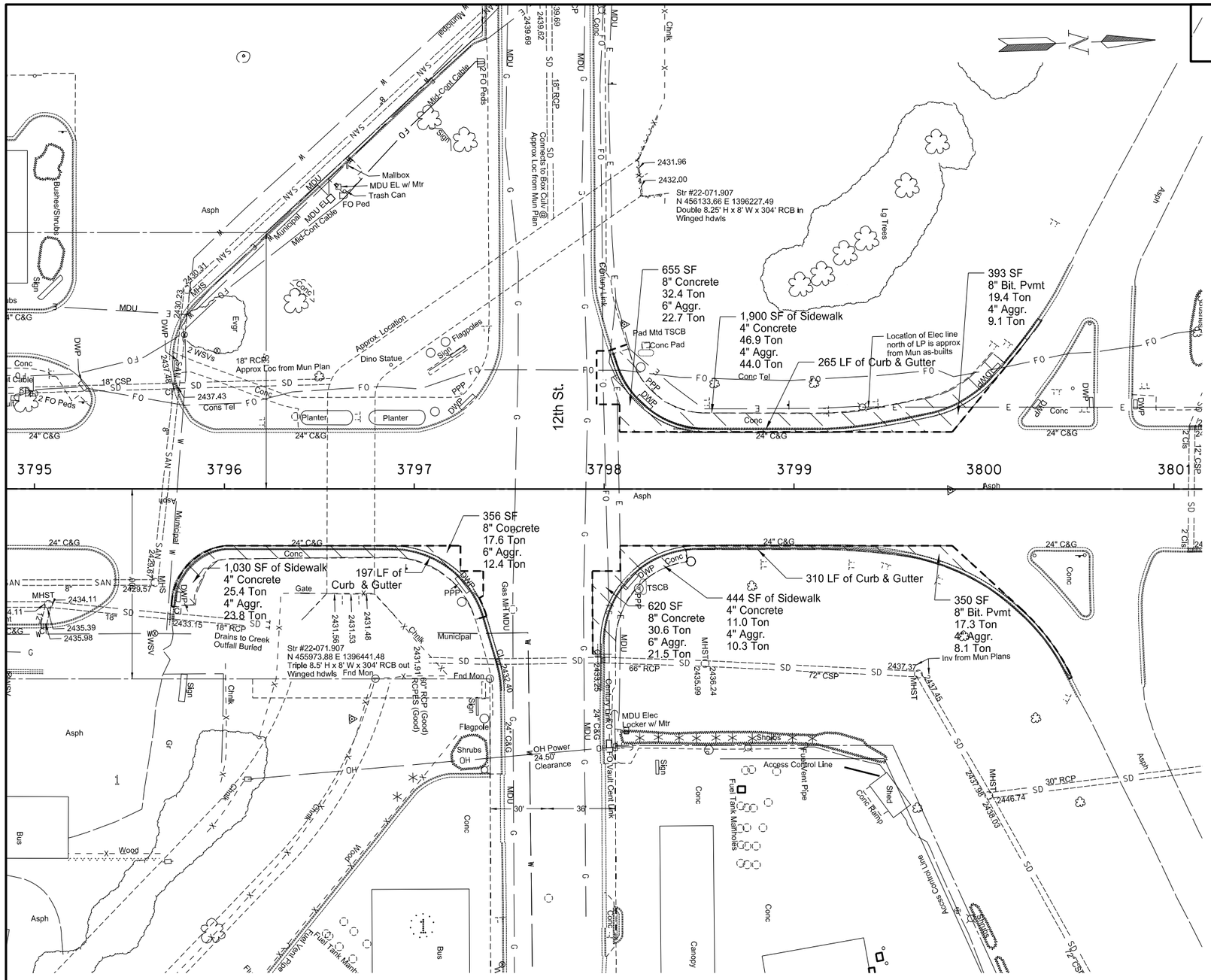
Proposed Typical Sections

North of I-94

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	40	1



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	136	REMOVAL OF PAVEMENT		
		Bituminous Pavement	TON	36.7
		Concrete Pavement	TON	163.9
		Concrete Curb & Gutter (772 LF)	TON	89.2
		Aggregate	TON	151.9
		Total	TON	441.7

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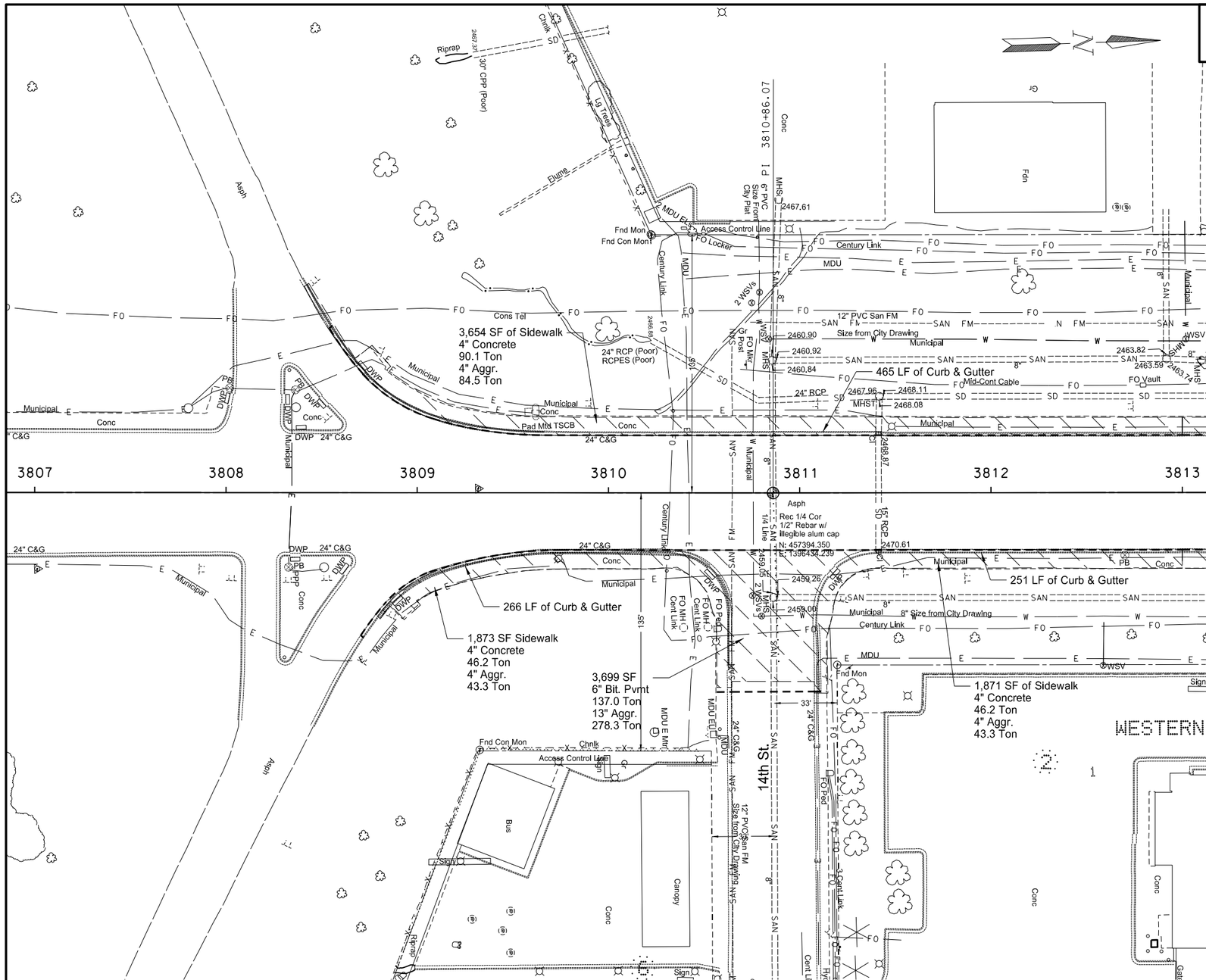
Removals

I-94 Exit 61 & ND 22

Sta 3795+00 to 3801+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	40	2



SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	136	REMOVAL OF PAVEMENT		
		Bituminous Pavement	TON	137.0
		Concrete Pavement	TON	182.5
		Concrete Curb & Gutter (981 LF)	TON	133.4
		Aggregate	TON	449.4
		Total	TON	902.3

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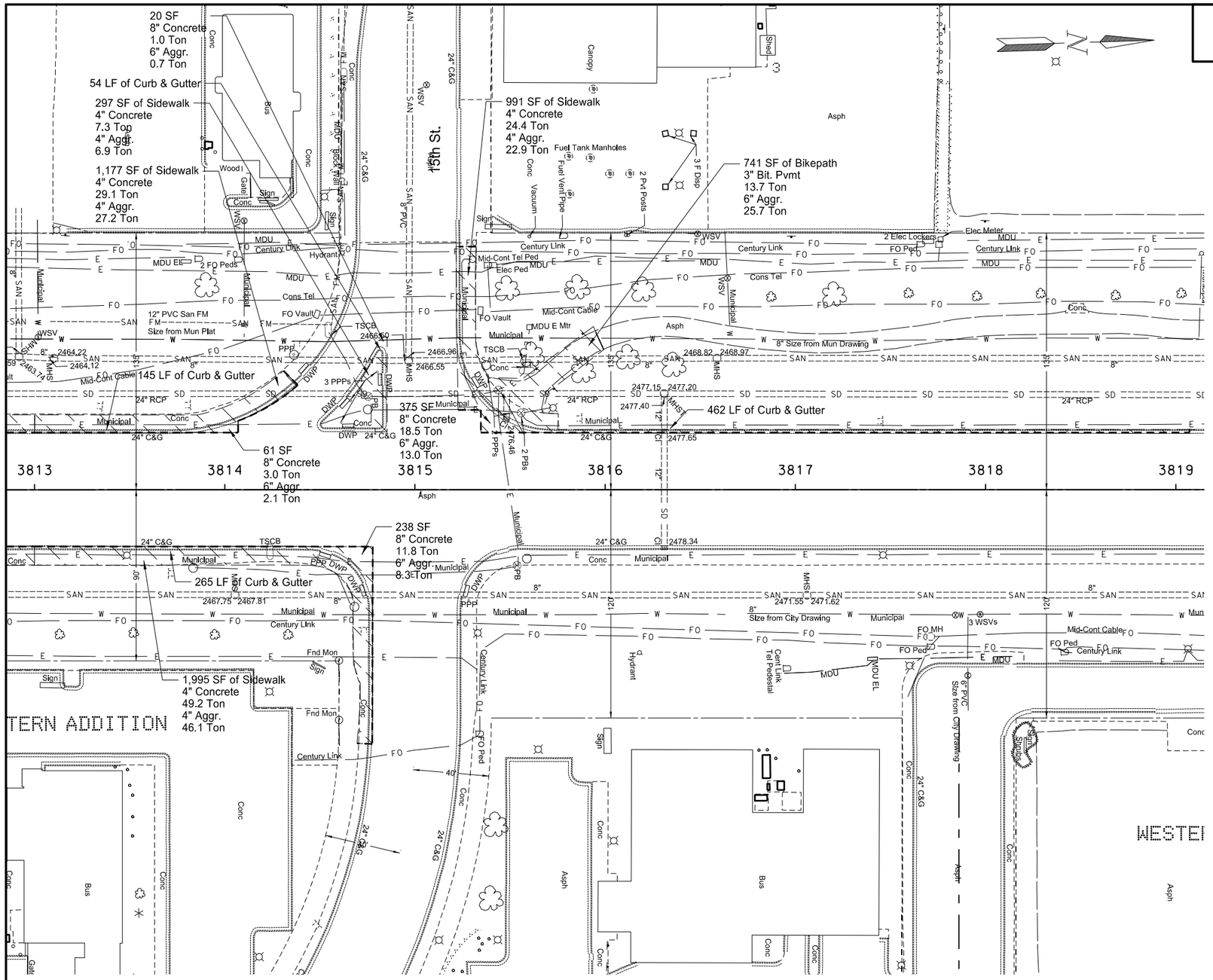
Removals

I-94 Exit 61 & ND 22

Sta 3807+00 to 3813+00



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	40	3

SPEC	CODE	BID ITEM	UNIT	QUANTITY
202	136	REMOVAL OF PAVEMENT		
		Bituminous Pavement	TON	13.7
		Concrete Pavement	TON	141.3
		Concrete Curb & Gutter (926 LF)	TON	107.0
		Aggregate	TON	150.8
		Total	TON	412.8

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Removals

I-94 Exit 61 & ND 22

Sta 3813+00 to 3819+00

INLET AND MANHOLE SUMMARY

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	50	1

Inlet No. 1A
Type Inlet - Special - Type 2 - 48 In.
Grate Style D
Sta. 3811+41.5 - 42.2' Lt. (EX22)
Grate Elev. 2476.00
Base Elev. 2468.20
Invert Elev. 2468.39
H' Dist. 6.97 Ft.

Inlet No. 1B
Type Inlet - Type 2
Grate Style V
Sta. 3811+41.6 - 48.4' Rt. (EX22)
Grate Elev. 2475.90
Base Elev. 2470.97
Invert Elev. 2471.16
H' Dist. 4.60 Ft.

Inlet No. 2A
Type Inlet - Special - Type 2 - 48 In.
Grate Style D
Sta. 3815+56 - 50.4' Lt. (EX22)
Grate Elev. 2481.02
Base Elev. 2475.48
Invert Elev. 2475.73
H' Dist. 4.71 Ft.

Inlet No. 3A
Type Inlet - Type 2
Grate Style V
Sta. 3816+31.1 - 43' Lt. (EX22)
Grate Elev. 2482.02
Base Elev. 2477.08
Invert Elev. 2477.25
H' Dist. 4.61 Ft.

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	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	
3796+12	71' Rt	3796+19	74' Rt	18	Pipe Conc. Reinf. CL III	4'	Reinforced Concrete Pipe - Class III **(barrel length = 4 LF)**	18						FES	D-714-27
3809+95	95' Lt	3810+23	80' Lt	24	Pipe Conc. Reinf. CL III	28'	Reinforced Concrete Pipe - Class III **(barrel length = 28 LF)**	24					FES		D-714-27
3811+41	30' Lt	1A		15	Pipe Conc. Reinf. CL III	12'	Reinforced Concrete Pipe - Class III **(barrel length = 12 LF)**	15							D-714-27
3811+41	30' Rt	1B		15	Pipe Conc. Reinf. CL III	20'	Reinforced Concrete Pipe - Class III **(barrel length = 20 LF)**	15							D-714-27
3815+44	50' Lt	2A		24	Pipe Conc. Reinf. CL III	12'	Reinforced Concrete Pipe - Class III **(barrel length = 12 LF)**	24							D-714-27
3816+31	30' Lt	3A		12	Pipe Conc. Reinf. CL III	10'	Reinforced Concrete Pipe - Class III **(barrel length = 16 LF)**	12							D-714-27

(*)Pipe Extensions shall pay for end sections seperately.
FES = Flared End Section
TES = Traversable End Section

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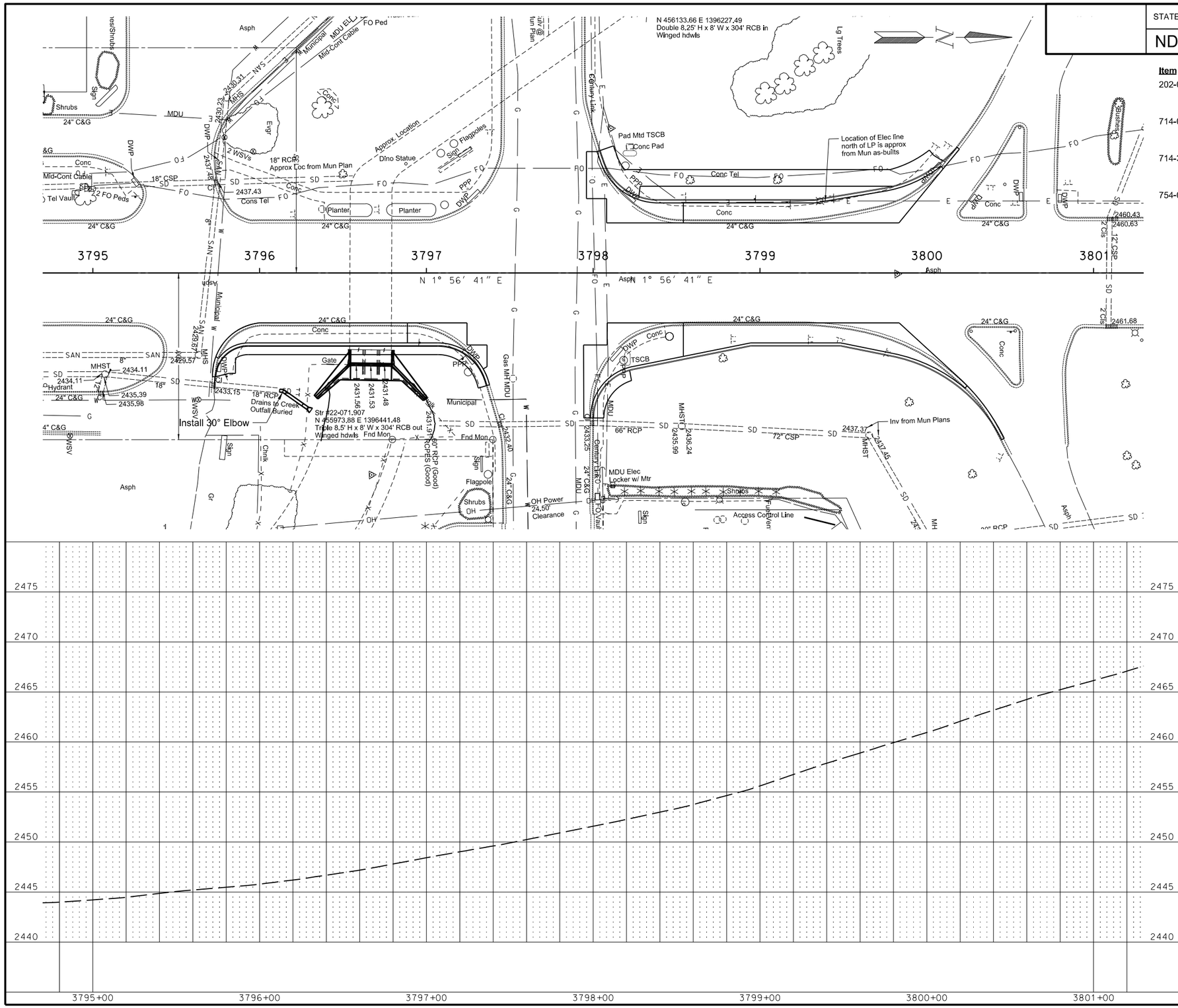
Allowable Pipe List

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	60	1



Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE - ALL TYPES AND SIZES Sta 3796+12 to Unknown	20	LF
714-0315	PIPE CONC REINF 18IN CL III - STORM DRAIN Sta 3796+12-71' Rt to 3796+26-79' Rt (Includes 30° Elbow	18	LF
714-3010	END SECTION - CONC REINF 18IN Sta 3796+26 79' Rt	1	EA
754-0805	OBJECT MARKERS-CULVERT Sta 3796+26 79' Rt	1	EA

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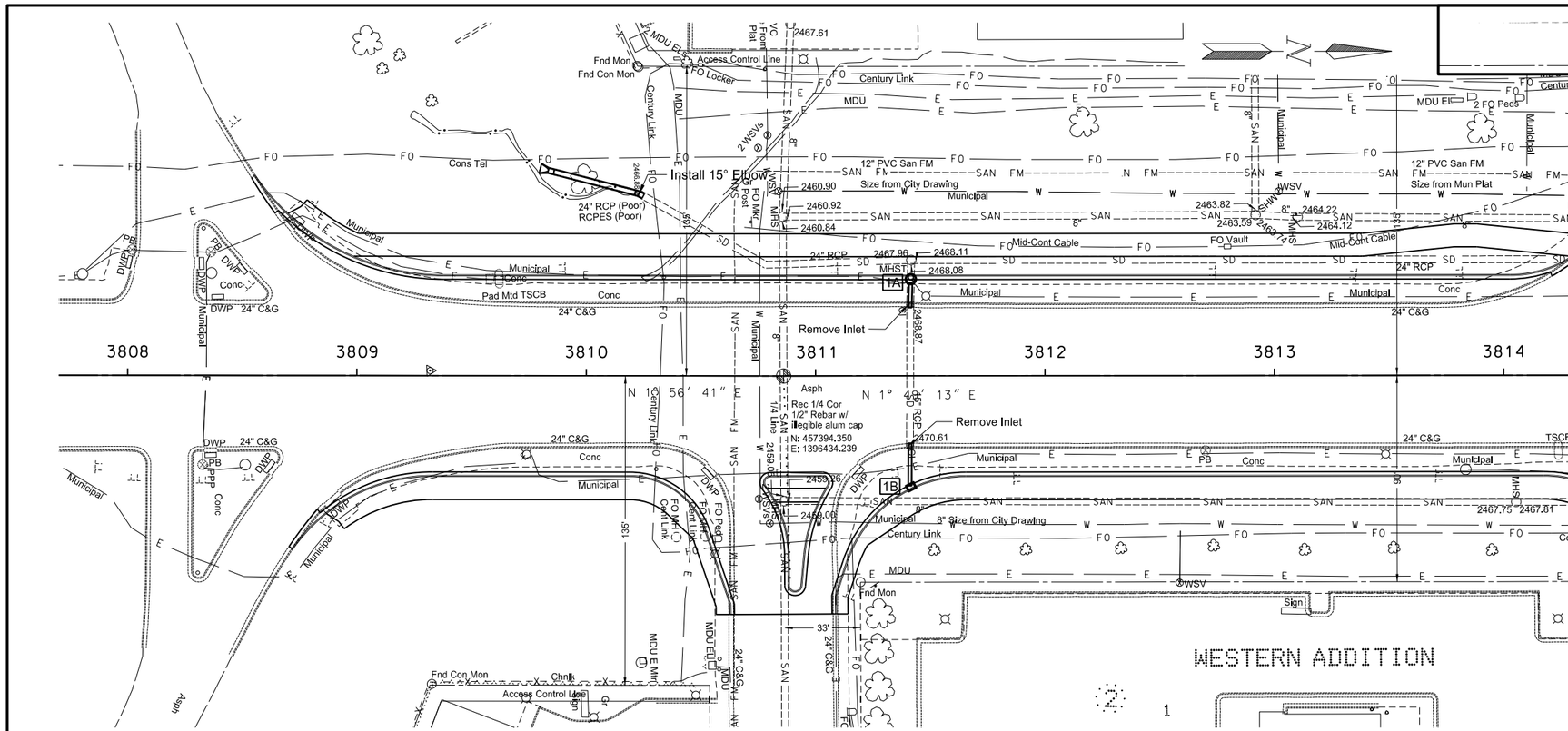
Plan & Profile

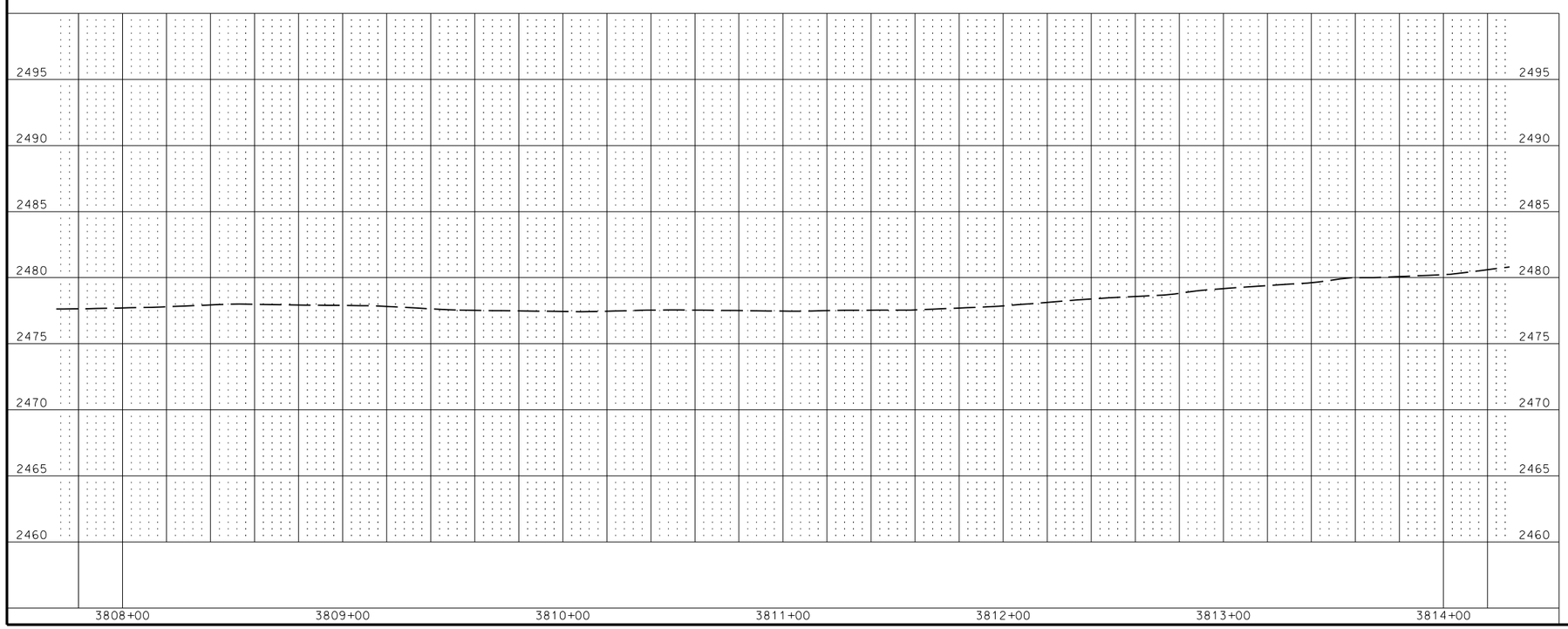
I-94 Exit 61 & ND 22

Sta 3795+00 to 3801+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	60	2



Item	Description	Quantity	Unit
202-0169	REMOVAL OF END SECTION - ALL TYPES AND SIZES		
	Sta 3810+23 - 80' Lt	1	EA
202-0174	REMOVAL OF PIPE - ALL TYPES AND SIZES		
	Sta 3811+41 - 31' Lt to 43' Lt	12	LF
202-0230	REMOVAL OF INLETS		
	Sta 3811+41 - 30' Lt	1	EA
	Sta 3811+41 - 30' Rt	1	EA
714-0210	PIPE CONC REINF 15IN CL III - STORM DRAIN		
	Sta 3811+41 - 30' Lt to 42' Lt	12	LF
	Sta 3811+41 - 30' Rt to 48' Rt	20	LF
714-0620	PIPE CONC REINF 24IN CL III - STORM DRAIN		
	Sta 3810+23 - 80' Lt to 3809+95 - 95' Lt	28	LF
714-3020	END SECTION - CONC REINF 24IN		
	Sta 3809+95 - 95' Lt	1	EA
722-3510	INLET - TYPE 2		
	1B	1	EA
722-3701	INLET SPECIAL - TYPE 2 48IN		
	1A	1	EA
722-6200	ADJUST MANHOLE		
	Sta 3810+85 Rt	1	EA
722-6240	ADJUST UTILITY APPURTENANCE		
	Sta 3810+75 Rt - Water Valve	1	EA
	Sta 3810+80 Rt - Water Valve	1	EA
754-0805	OBJECT MARKERS-CULVERT		
	Sta 3809+95 - 95' Lt	1	EA



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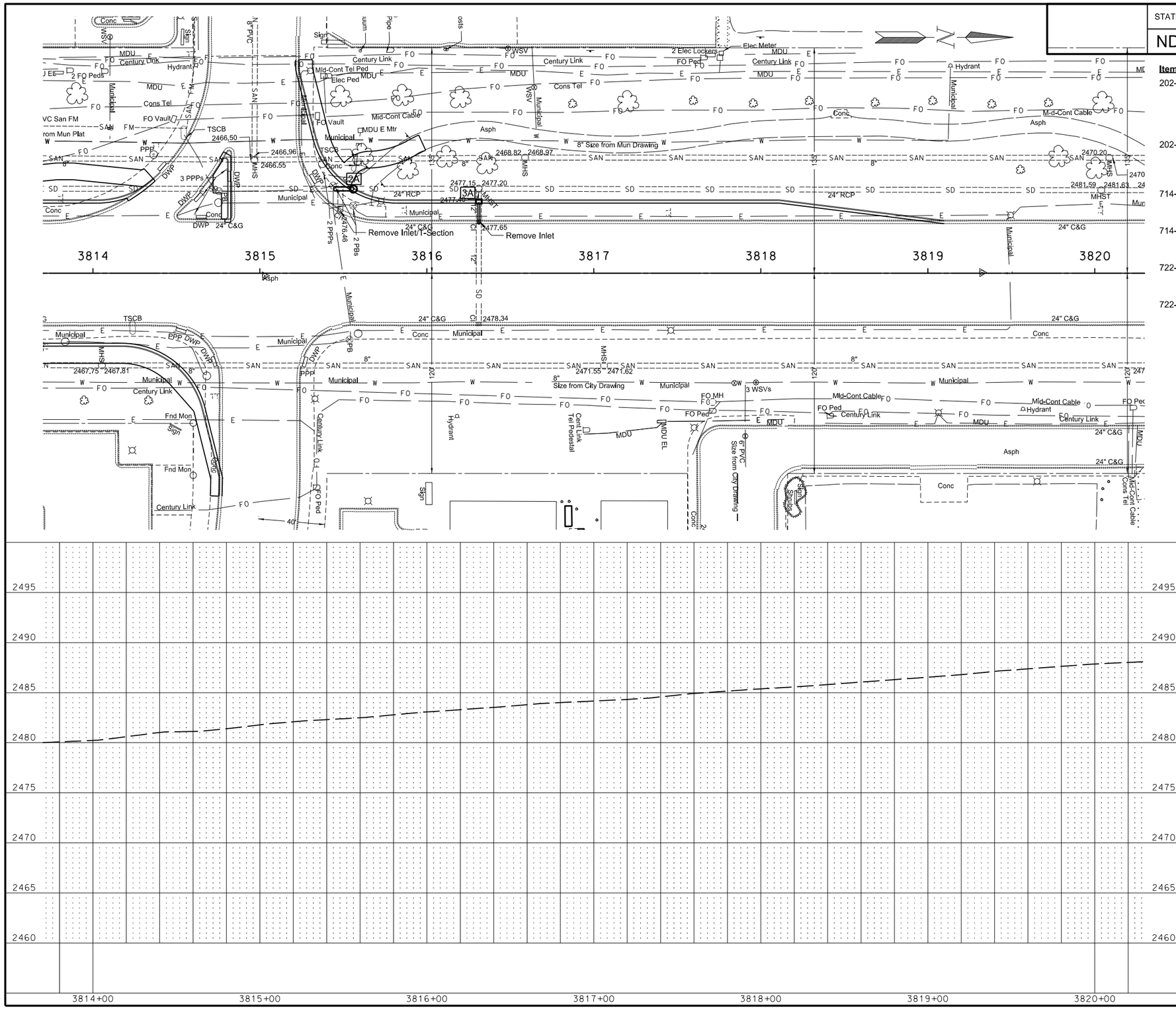
Plan & Profile

I-94 Exit 61 & ND 22

Sta 3808+00 to 3814+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	60	3



Item	Description	Quantity	Unit
202-0174	REMOVAL OF PIPE - ALL TYPES AND SIZES		
	Sta 3815+44 - 50' Lt to Sta 3815+57 - 50' Lt	13	LF
	Sta 3815+48 - 49' Lt to 37' Lt	12	LF
	Sta 3816+31 - 32' Lt to 44' Lt	12	LF
202-0230	REMOVAL OF INLETS		
	Sta 3815+48 - 37' Lt	1	EA
	Sta 3816+31 - 30' Lt	1	EA
714-0115	PIPE CONC REINF 12IN CL III - STORM DRAIN		
	Sta 3816+31 - 30' Lt to 42' Lt	12	LF
714-0620	PIPE CONC REINF 24IN CL III - STORM DRAIN		
	Sta 3815+44 - 50' Lt to Sta 3815+54 - 50' Lt	12	LF
722-3510	INLET - TYPE 2		
	3A	1	EA
722-3701	INLET SPECIAL - TYPE 2 48IN		
	2A	1	EA

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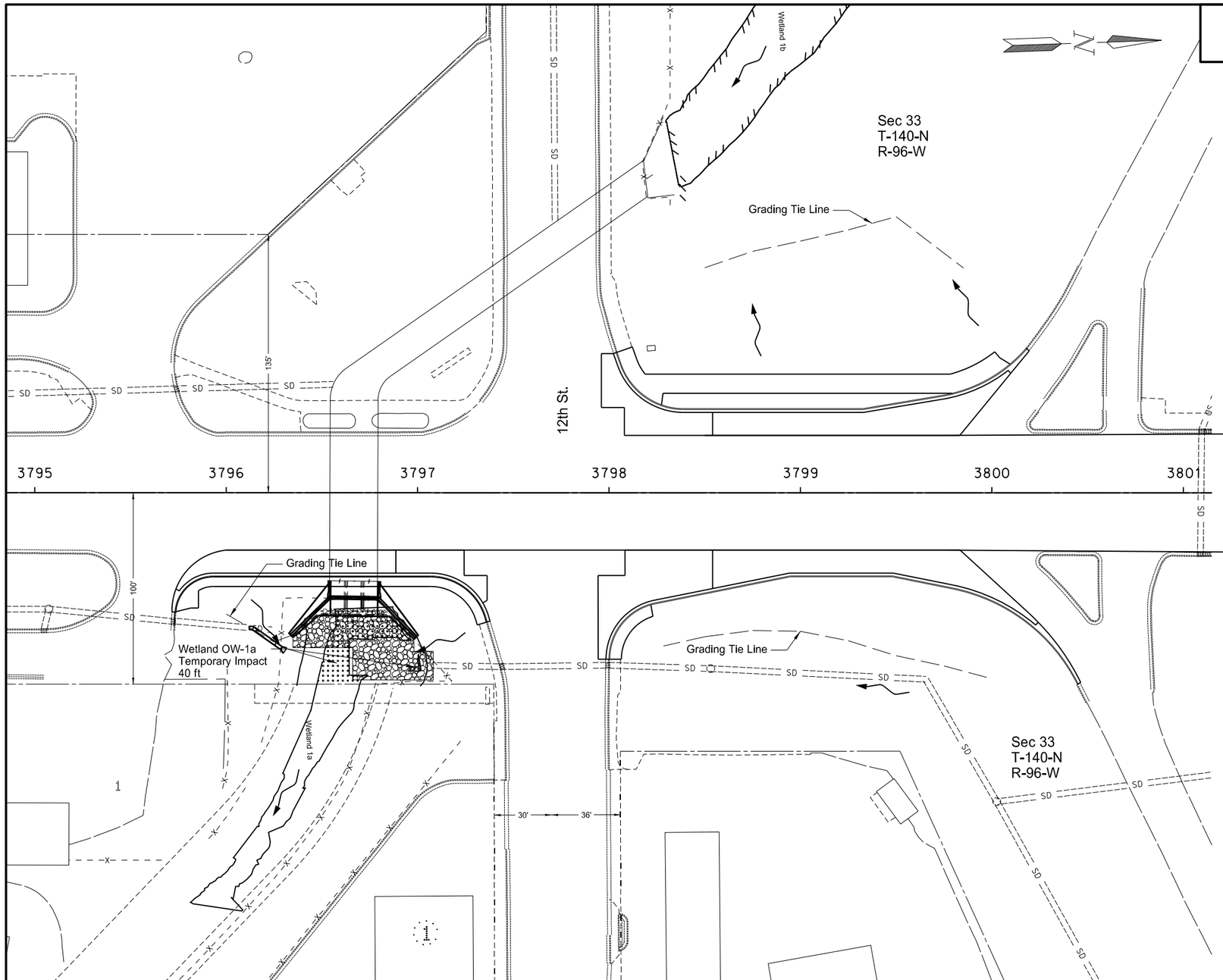
Plan & Profile

I-94 Exit 61 & ND 22

Sta 3814+00 to 3820+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	75	1



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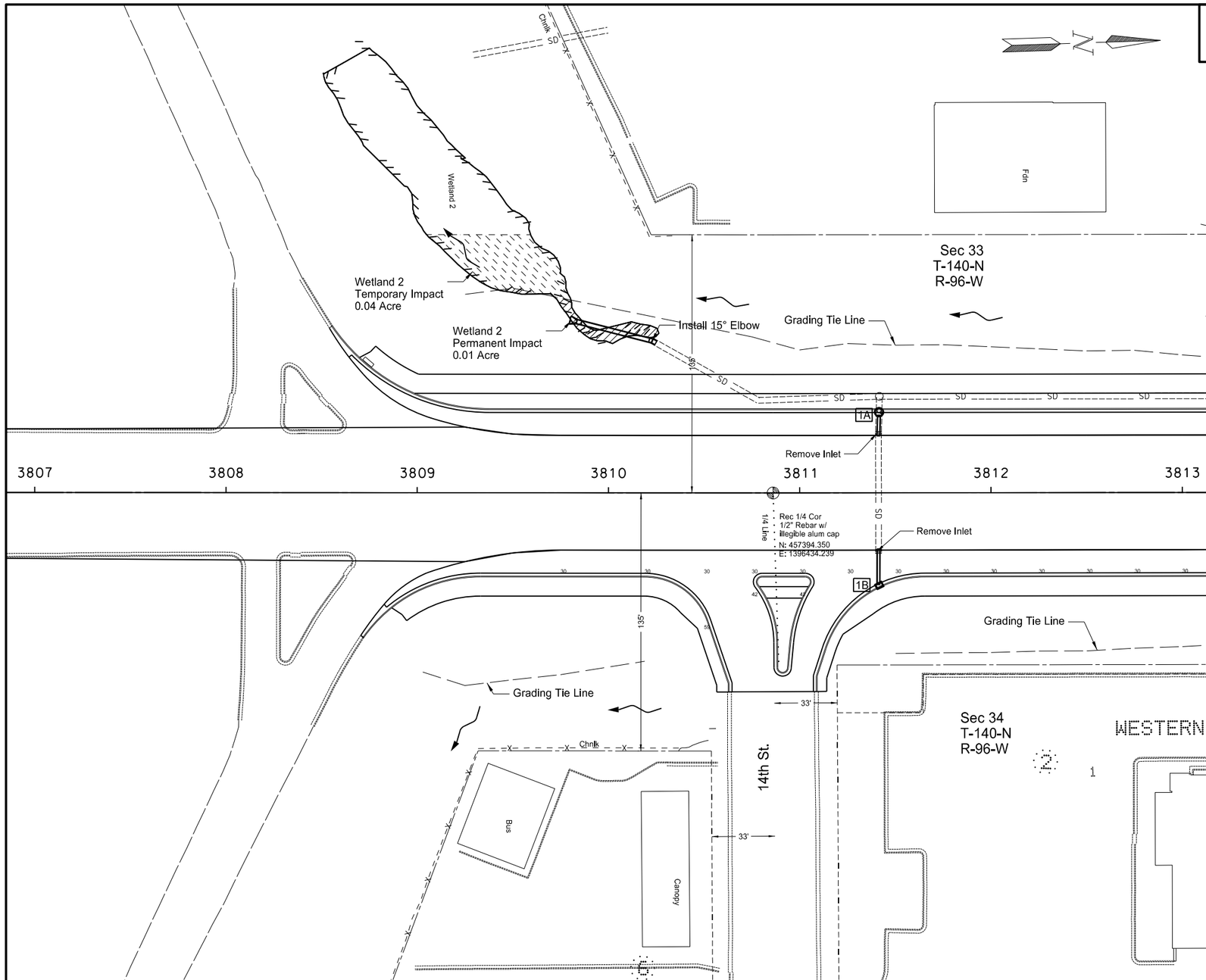
Wetland Impacts

I-94 Exit 61 & ND 22

Sta 3795+00 to 3801+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	75	2



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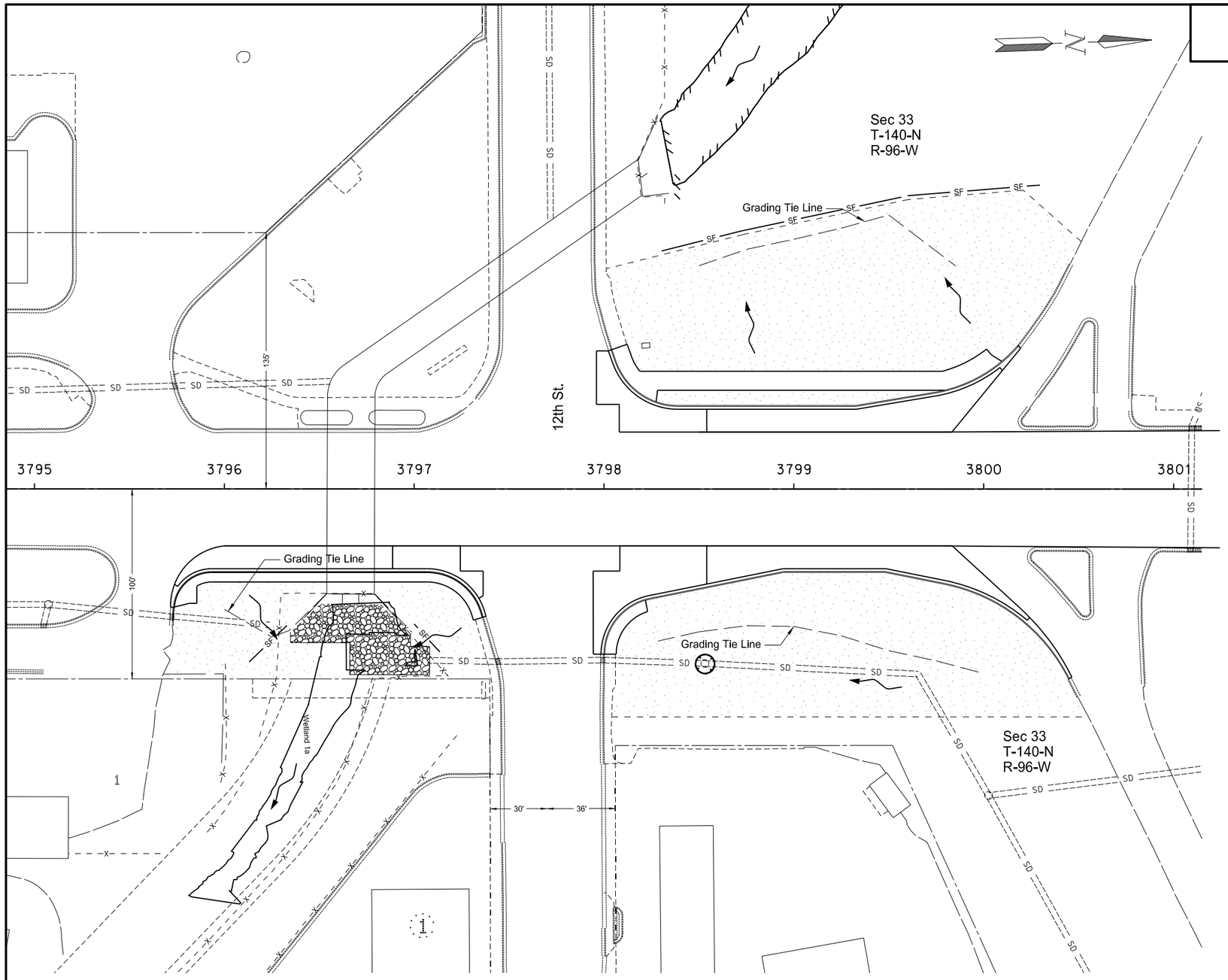
Wetland Impacts

I-94 Exit 61 & ND 22

Sta 3807+00 to 3813+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	76	1



Item	Description	Quantity	Unit
253-0201	HYDRAULIC MULCH		
	Sta 3795+00 TO 3801+00 Lt	0.41	ACRE
	Sta 3795+00 TO 3801+00 Rt	0.48	ACRE
260-0200	SILT FENCE SUPPORTED		
	Sta 3798+30 to 3800+30 Lt	200	LF
	Sta 3796+13 Rt	25	LF
	Sta 3797+00 Rt	15	LF
260-0201	REMOVE SILT FENCE SUPPORTED		
	Sta 3798+30 to 3800+30 Lt	200	LF
	Sta 3796+13 Rt	25	LF
	Sta 3797+00 Rt	15	LF
708-1530	INLET PROTECTION - FIBER ROLL 6IN		
	Sta 3798+53 Rt	1	EA
708-1532	REMOVE INLET PROTECTION - FIBER ROLL 6 IN		
	Sta 3798+53 Rt	1	EA
708-1540	INLET PROTECTION - SPECIAL		
	Sta 3797+44 Rt	1	EA
	Sta 3798+00 Rt	1	EA
708-1541	REMOVE INLET PROTECTION - SPECIAL		
	Sta 3797+44 Rt	1	EA
	Sta 3798+00 Rt	1	EA

Fiber Roll

SF Silt Fence

Hydraulic Mulch

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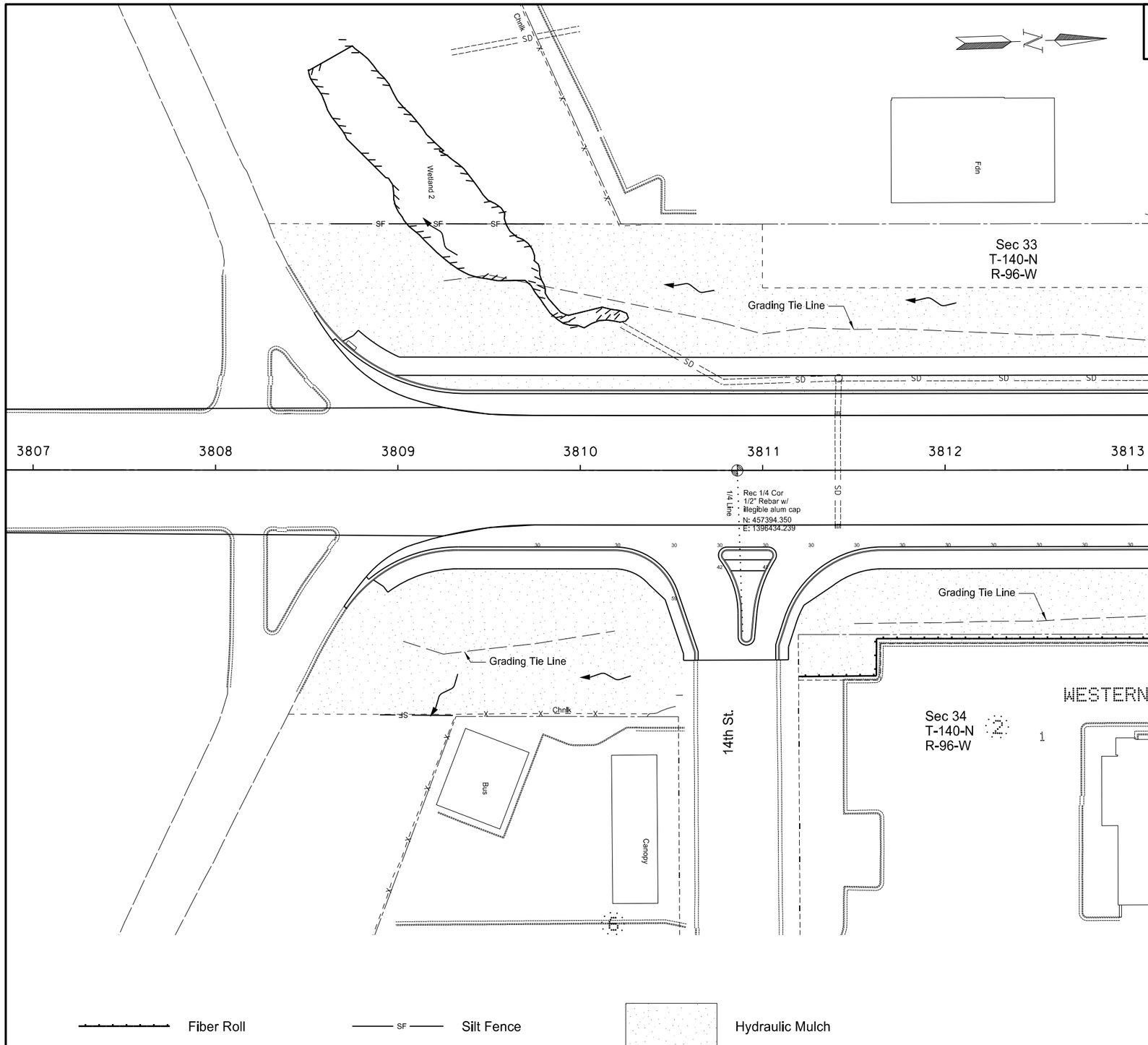
Temporary Erosion Control

I-94 Exit 61 & ND 22

Sta 3795+00 to 3801+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	76	2



Item	Description	Quantity	Unit
253-0201	HYDRAULIC MULCH		
	Sta 3807+00 TO 3813+00 Lt	0.65	ACRE
	Sta 3807+00 TO 3813+00 Rt	0.54	ACRE
260-0200	SILT FENCE SUPPORTED		
	Sta 3808+90 to 3809+30 Rt	40	LF
	Sta 3808+63 to 3809+83 Lt	120	LF
260-0201	REMOVE SILT FENCE SUPPORTED		
	Sta 3808+90 to 3809+30 Rt	40	LF
	Sta 3808+63 to 3809+83 Lt	120	LF
261-0106	FIBER ROLLS 6 IN		
	Border Applebee's Parking Lot	200	LF
261-0107	REMOVE FIBER ROLLS 6 IN		
	Border Applebee's Parking Lot	200	LF
708-1540	INLET PROTECTION - SPECIAL		
	Sta 3811+41 Lt	1	EA
	Sta 3811+41 Rt	1	EA
708-1541	REMOVE INLET PROTECTION - SPECIAL		
	Sta 3811+41 Lt	1	EA
	Sta 3811+41 Rt	1	EA

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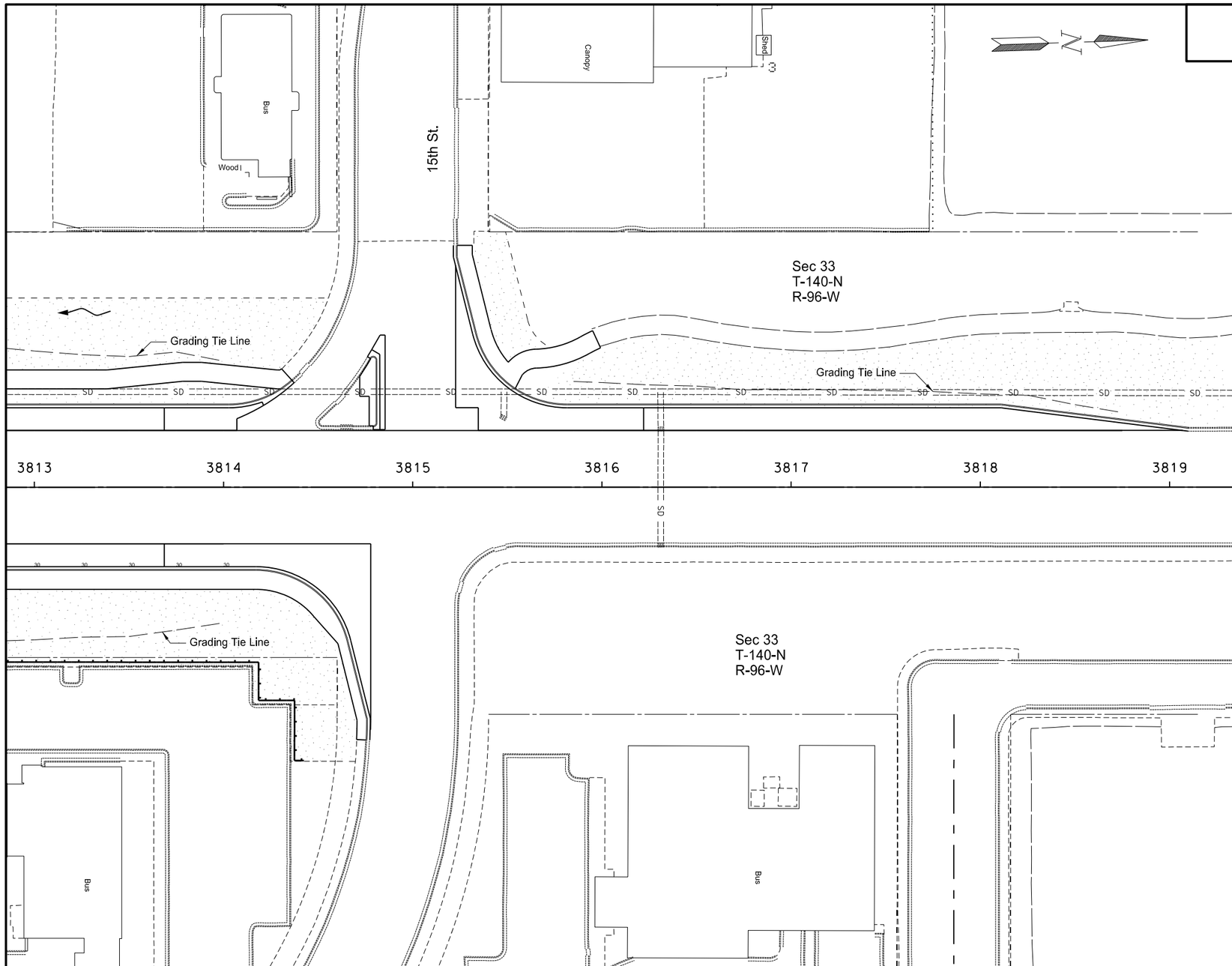
Temporary Erosion Control

I-94 Exit 61 & ND 22

Sta 3807+00 to 3813+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	76	3



Item	Description	Quantity	Unit
253-0201	HYDRAULIC MULCH		
	Sta 3813+00 TO 3819+50 Lt	0.51	ACRE
	Sta 3813+00 TO 3819+50 Rt	0.19	ACRE
261-0106	FIBER ROLLS 6 IN		
	Border Applebee's Parking Lot	200	LF
261-0107	REMOVE FIBER ROLLS 6 IN		
	Border Applebee's Parking Lot	200	LF
708-1540	INLET PROTECTION - SPECIAL		
	Sta 3815+48 Lt	1	EA
	Sta 3816+31 Lt	1	EA
708-1541	REMOVE INLET PROTECTION - SPECIAL		
	Sta 3815+48 Lt	1	EA
	Sta 3816+31 Lt	1	EA

Fiber Roll

SF Silt Fence

Hydraulic Mulch

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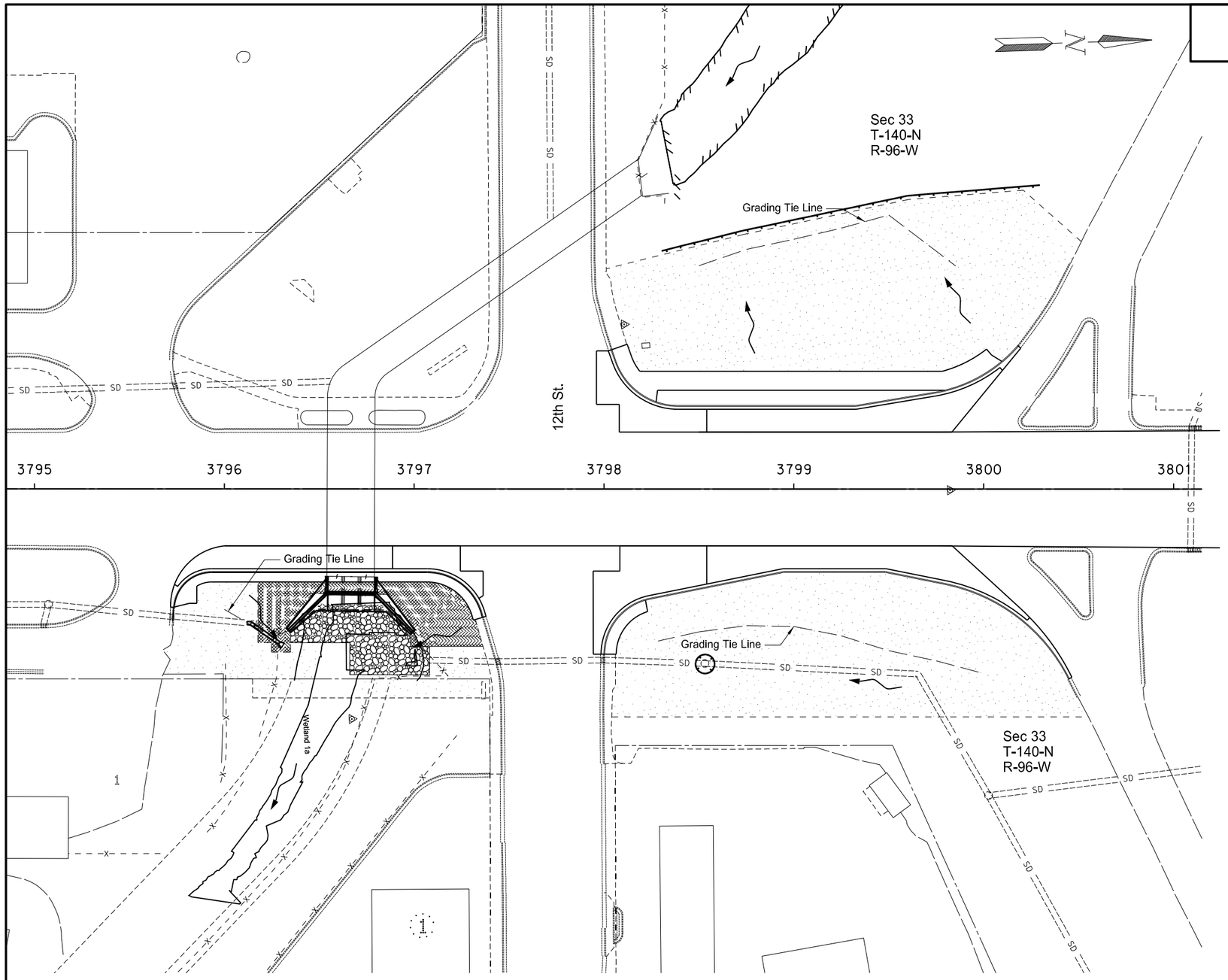
Temporary Erosion Control

I-94 Exit 61 & ND 22

Sta 3813+00 to 3819+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	77	1



Item	Description	Quantity	Unit
251-0100	SEEDING CLASS I		
	Sta 3795+00 TO 3801+00 Lt	0.41	ACRE
	Sta 3795+00 TO 3801+00 Rt	0.46	ACRE
253-0201	HYDRAULIC MULCH		
	Sta 3795+00 TO 3801+00 Lt	0.41	ACRE
	Sta 3795+00 TO 3801+00 Rt	0.46	ACRE
255-0102	ECB TYPE 2		
	Box Culvert End Section	246	SY
261-0106	FIBER ROLLS 6 IN		
	Sta 3798+30 to 3800+30 Lt	170	LF
708-1530	INLET PROTECTION - FIBER ROLL 6IN		
	Sta 3798+53 Rt	1	EA

Fiber Roll

Seeding Class I
& Hydraulic Mulch

Erosion Control
Blanket - Type 2

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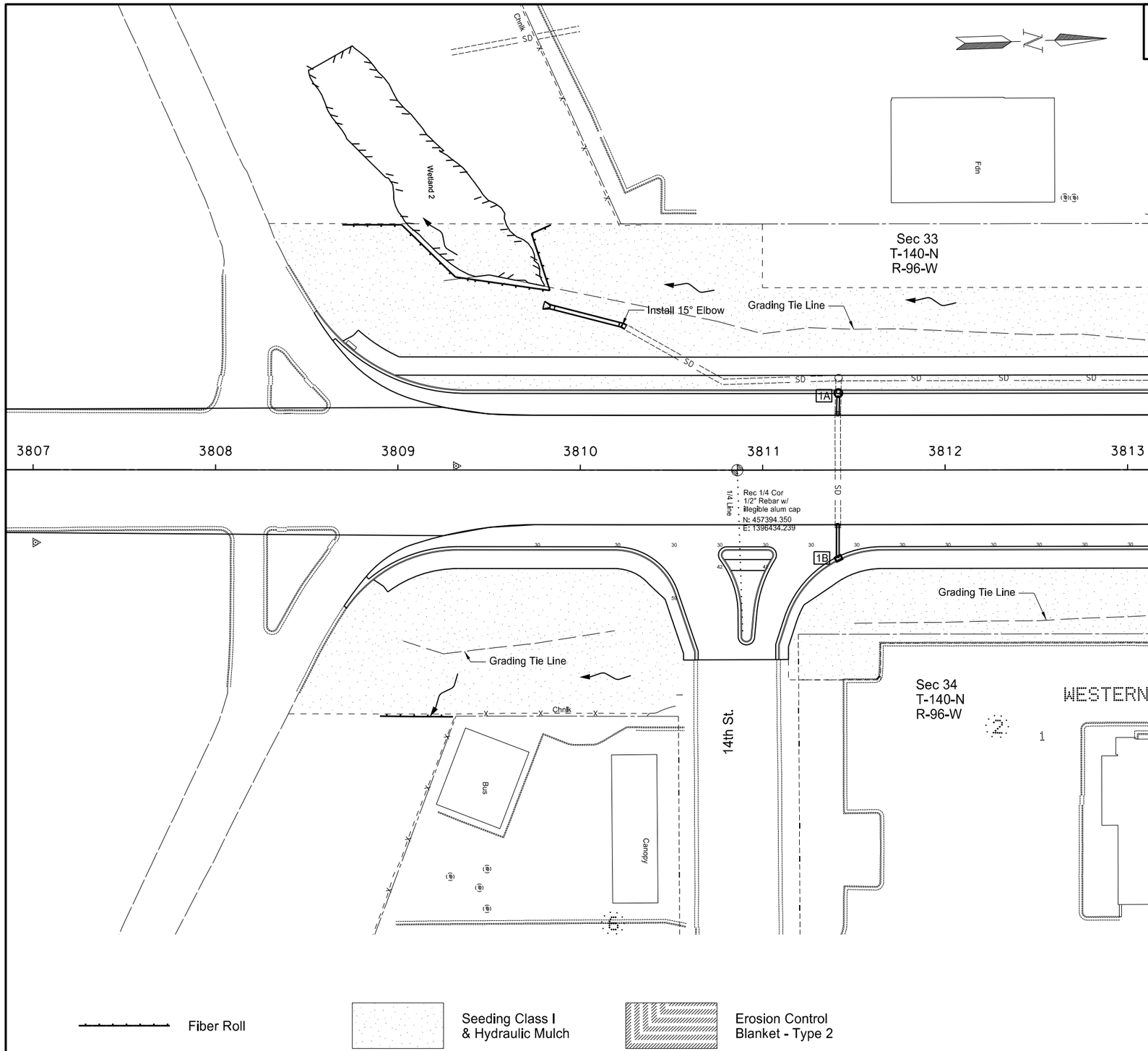
Permanent Erosion Control

I-94 Exit 61 & ND 22

Sta 3795+00 to 3801+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	77	2



Item	Description	Quantity	Unit
251-0100	SEEDING CLASS I		
	Sta 3807+00 TO 3813+00 Lt	0.62	ACRE
	Sta 3807+00 TO 3813+00 Rt	0.54	ACRE
253-0201	HYDRAULIC MULCH		
	Sta 3807+00 TO 3813+00 Lt	0.62	ACRE
	Sta 3807+00 TO 3813+00 Rt	0.54	ACRE
261-0106	FIBER ROLLS 6 IN		
	Sta 3808+70 to 3809+83 Lt	170	LF
	Sta 3808+90 to 3809+30 Rt	40	LF

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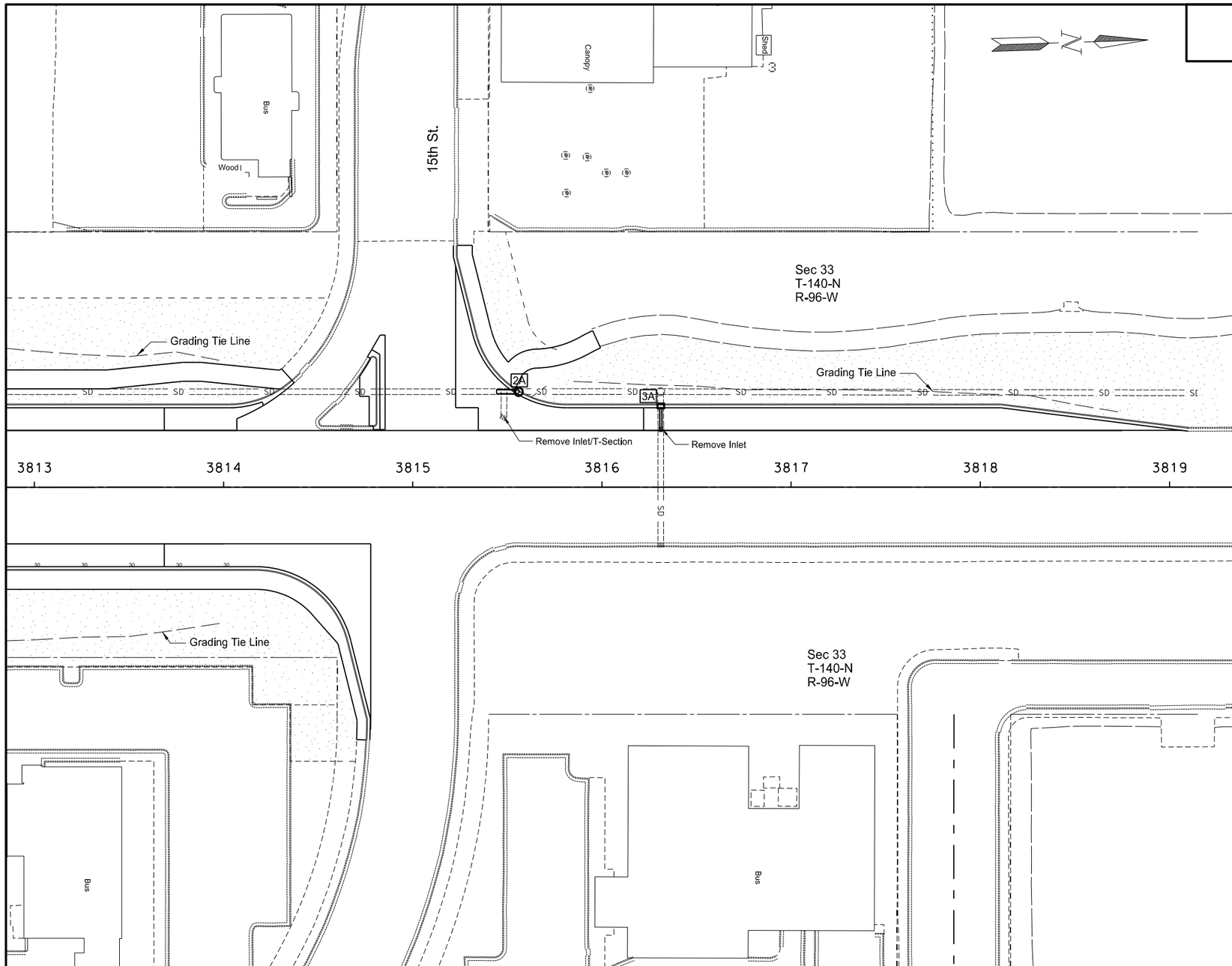
Permanent Erosion Control

I-94 Exit 61 & ND 22

Sta 3807+00 to 3813+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	77	3



Item	Description	Quantity	Unit
251-0100	SEEDING CLASS I		
	Sta 3813+00 TO 3819+50 Lt	0.51	ACRE
	Sta 3813+00 TO 3819+50 Rt	0.19	ACRE
253-0201	HYDRAULIC MULCH		
	Sta 3813+00 TO 3819+50 Lt	0.51	ACRE
	Sta 3813+00 TO 3819+50 Rt	0.19	ACRE

Fiber Roll

Seeding Class I
& Hydraulic Mulch

Erosion Control
Blanket - Type 2

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Permanent Erosion Control

I-94 Exit 61 & ND 22

Sta 3813+00 to 3819+00

PRELIMINARY SURVEY COORDINATE AND CURVE DATA - DICKINSON ND - EXIT 61

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SIM-5-094(088)061	81	1

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
ND 22 (EX22)			
Sec Cor	3784+53.12	454762.92	1396344.886
Sta 3797+69.31 = Intr EX12W		456078.35	1396389.55
Sta 3797+69.60 = Intr EX12E		456078.62	1396389.56
Sta 3804+60.96 = Intr EX94		456769.60	1396413.02
¼ Line	3810+86.07	457394.35	1396434.24
Sta 3810+86.07 = 14th St		457394.35	1396434.24
Sta 3814+99.94 = 15th St E		457808.01	1396447.38
Sta 3815+00.05 = 15th St W		457808.12	1396447.39
Sec Cor	3837+22.27	460029.218	1396517.97
I 94 (EX94)			
PI 9000	3219+49.93	456859.10	1396344.88
PC	3259+28.28	456724.40	1397747.26
PI	3262+99.43	456711.83	1398118.20
PT	3266+70.33	456675.29	1398487.55
12 St W (EX12W)			
PI 1000	100+00.00	456132.51	1394733.70
PI 1001	116+56.73	456078.35	1396389.55
12 St E (EX12E)			
PI 1002	116+56.73	456078.62	1396389.56
PI 1003	129+35.85	456038.56	1397668.05
14 St (EX14)			
PI 1004	200+00.00	457394.35	1396434.24
PI 1005	208+74.76	457370.13	1397308.67

CURVE DATA

ARC DEFINITION

C1

PI STA = 3262+99.43

Delta = 3° 42' 37"

D_c = 0° 30' 00"

R= 11,459.16

T= 371.15

L = 742.05

US PUBLIC LAND SURVEY DATA

DESC.	SEC-TWP-RGE	NORTHING	EASTING
E ¼ Cor	Sec 34 T-140-N R-96-W	457394.35	1396434.24
NE Cor	Sec 34 T-140-N R-96-W	460029.22	1396517.97
SE Cor	Sec 34 T-140-N R-96-W	454762.92	1396344.89

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	STATION	OFFSET	CONTROL POINT DESCRIPTION
Primary Control						
GPS 1	455417.61	1396330.949	2443.255	3791+06.96	36.15' LT	3/4" x 24" IRON ROD
GPS 2	457008.508	1396461.102	2477.261	3807+01.36	39.94' RT	3/4" x 24" IRON ROD
GPS 3	458952.185	1396445.018	2489.899	3826+43.43	38.71' LT	3/4" x 24" IRON ROD
Secondary Control						
CP 50	456122.562	1396304.339	2447.697	3798+10.61	86.67' LT	5/8" x 24" IRON ROD w/ ALUMINUM CAP MARKED "DOWL"
CP 51	455972.18	1396507.145	2434.218	3796+67.19	121.13' RT	5/8" x 24" IRON ROD w/ ALUMINUM CAP MARKED "DOWL"

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

NOTES:

Date Survey Completed 3/10/15

☐ Assumed Coordinates

☒ All All coordinates on this sheet are Stark County ground coordinates. They are derived from the "North Dakota Coordinate System of 1983", NAD83(2011). South Zone Combination Factor (cf) = 0.9998175

INITIALIZING BENCH MARK
NDGPS Stations OPUS

☒ NAVD-88
☐ NGVD-29

☐ GEOID 09 ☐ _____
☒ GEOID 12A

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PRELIMINARY SURVEY COORDINATE AND CURVE DATA - DICKINSON ND - EXIT 61

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SIM-5-094(088)061	81	2

HORIZONTAL ALIGNMENT

PNT	STATION	NORTHING	EASTING
15 St W (EX15W)			
PI 1006	300+00.00	457843.78	1395312.89
PI 1007	311+35.06	457808.12	1396447.39
15 St E (EX15E)			
PI 1008	311+35.06	457808.01	139447.38
PC	312+56.24	457804.31	1396568.51
PI	314+09.90	457799.62	1396722.10
PT	315+40.46	457672.61	1396808.57
1012	317+39.89	457507.76	1396920.81

CURVE DATA

ARC DEFINITION

C2

PI STA = 314+09.90

Delta = 54° 00' 00" RT

D = 18° 59' 59"

R = 301.56'

T =153.65'

L = 284.21'

US PUBLIC LAND SURVEY DATA

DESC.	SEC-TWP-RGE	NORTHING	EASTING

SURVEY CONTROL POINTS

PNT	NORTHING	EASTING	ELEV	STATION	OFFSET	CONTROL POINT DESCRIPTION

HORIZONTAL ALIGNMENT

R Mkr #	NORTHING	EASTING	STATION	OFFSET
72	456436.32	1396442.04	3801+29	40' Rt

NOTES:

Date Survey Completed 3/10/15

☐ Assumed Coordinates

☒ All All coordinates on this sheet are Stark County ground coordinates. They are derived from the "North Dakota Coordinate System of 1983", NAD83(2011). South Zone Combination Factor (cf) = 0.9998175

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

INITIALIZING BENCH MARK
NDGPS Stations Opus

☒ NAVD-88
☐ NGVD-29

☐ GEOID 09 ☐ _____
☒ GEOID 12A

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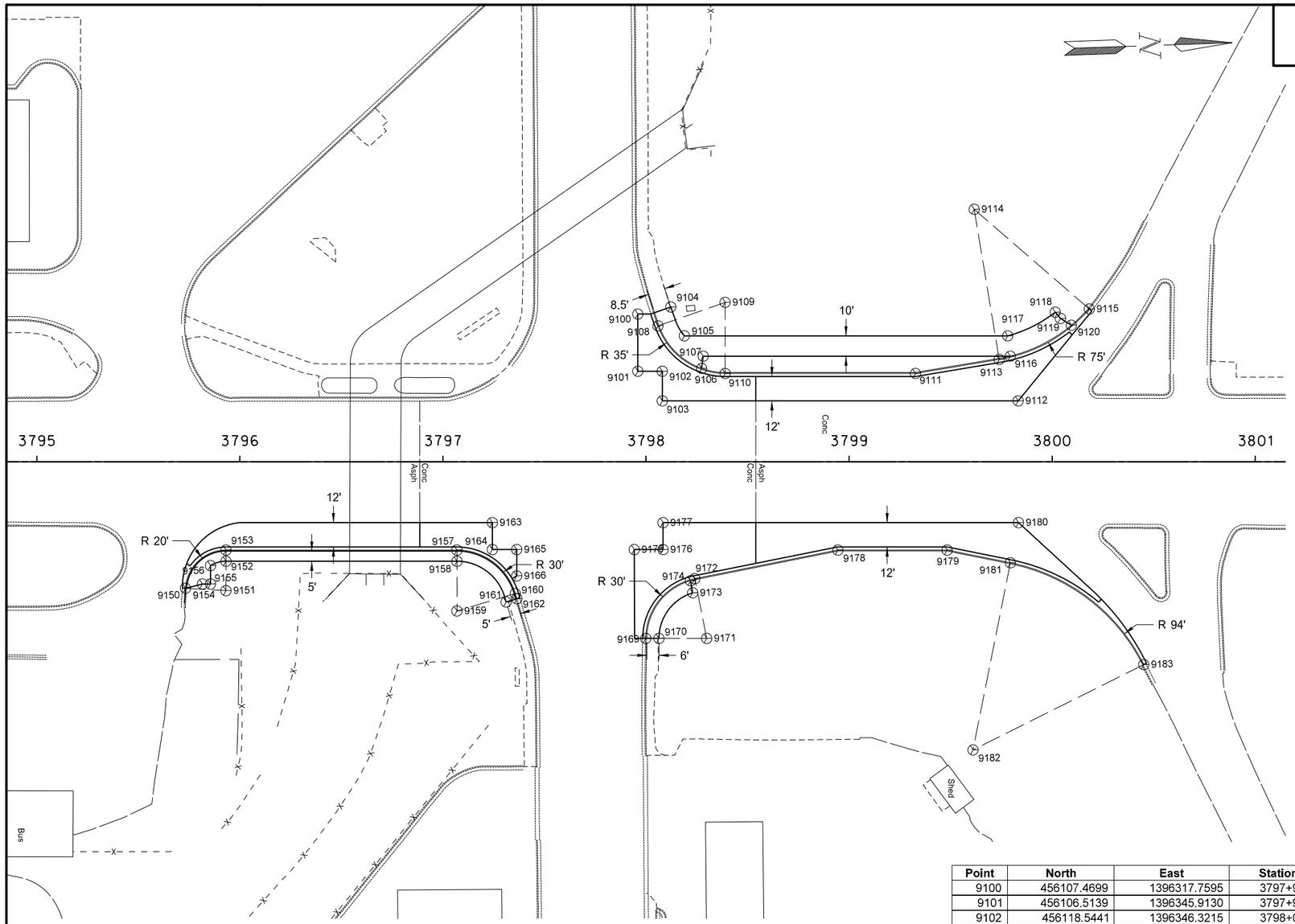
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	82	1



Point	North	East	Station	Offset
9150	455880.2577	1396445.1463	3795+73.22	62.2840
9151	455900.1679	1396447.0391	3795+93.18	63.5000
9152	455900.6600	1396432.5474	3795+93.18	49.0000
9153	455900.8467	1396427.0506	3795+93.18	43.5000
9154	455888.6450	1396443.3377	3795+81.54	60.1918
9155	455892.6427	1396443.4730	3795+85.54	60.1914
9156	455892.9486	1396434.4640	3795+85.54	51.1772
9157	456014.4964	1396430.9097	3797+06.90	43.5000
9158	456014.3098	1396436.4065	3797+06.90	49.0000
9159	456013.4783	1396460.8924	3797+06.90	73.5000
9160	456042.5023	1396453.3024	3797+35.65	64.9294
9161	456037.8551	1396457.2706	3797+31.14	69.0530
9162	456043.1761	1396455.8791	3797+36.41	67.4818
9163	456032.3742	1396418.0090	3797+24.33	30.0000
9164	456031.9246	1396431.2497	3797+24.33	43.2484
9165	456043.9177	1396431.6569	3797+36.33	43.2484
9166	456043.4765	1396444.6494	3797+36.33	56.2484
9167	456099.7902	1396497.4151	3797+94.40	107.0726
9168	456111.7832	1396497.8223	3798+06.40	107.0726
9169	456105.9679	1396477.5489	3797+99.90	87.0081
9170	456112.4642	1396477.7695	3798+06.40	87.0081
9171	456135.9506	1396478.5670	3798+29.90	87.0081
9172	456131.0689	1396448.9668	3798+24.02	57.5907
9173	456129.7870	1396455.8897	3798+22.97	64.5531
9174	456128.8948	1396449.9232	3798+21.88	58.6203
9175	456101.7891	1396433.6218	3797+94.23	43.2482
9176	456115.9278	1396434.1019	3798+08.38	43.2482
9177	456116.3774	1396420.8614	3798+08.38	30.0000
9178	456201.9600	1396437.2752	3798+94.47	43.5000
9179	456255.7567	1396439.1019	3799+48.30	43.5000
9180	456291.3265	1396426.8020	3799+83.43	30.0000
9181	456286.7010	1396446.3910	3799+79.47	49.7347
9182	456265.1488	1396537.8869	3799+61.04	141.9093
9183	456350.6017	1396498.7230	3800+45.11	99.8680

Note:
1. Station and Offsets are listed from ND 22 Centerline: Chain EX22
2. Radius points and dimensions are given at the face of curb.

Point	North	East	Station	Offset
9100	456107.4699	1396317.7595	3797+95.98	-72.7402
9101	456106.5139	1396345.9130	3797+95.98	-44.5704
9102	456118.5441	1396346.3215	3798+08.02	-44.5704
9103	456118.0496	1396360.8836	3798+08.02	-30.0000
9104	456123.8096	1396314.8438	3798+12.21	-76.2087
9105	456129.9745	1396329.2701	3798+18.86	-62.0000
9106	456137.9902	1396345.5680	3798+27.43	-45.9835
9107	456138.9432	1396339.5804	3798+28.17	-52.0000
9108	456117.2079	1396323.8955	3798+05.92	-66.9382
9109	456150.6164	1396313.4615	3798+38.95	-78.5000
9110	456149.4287	1396348.4413	3798+38.95	-43.5000
9111	456243.1251	1396351.6229	3799+32.71	-43.5000
9112	456293.1892	1396366.8306	3799+83.26	-30.0000
9113	456284.5976	1396346.1499	3799+73.97	-50.3772
9114	456274.7853	1396271.7946	3799+61.64	-124.3568
9115	456329.7506	1396322.8221	3800+18.30	-75.2239
9116	456290.0607	1396344.7117	3799+79.38	-52.0000
9117	456289.1485	1396334.6750	3799+78.13	-62.0000
9118	456312.9129	1396323.8189	3800+01.51	-73.6563
9119	456315.3721	1396326.9650	3800+04.07	-70.5955
9120	456320.6662	1396330.4903	3800+09.48	-67.2519

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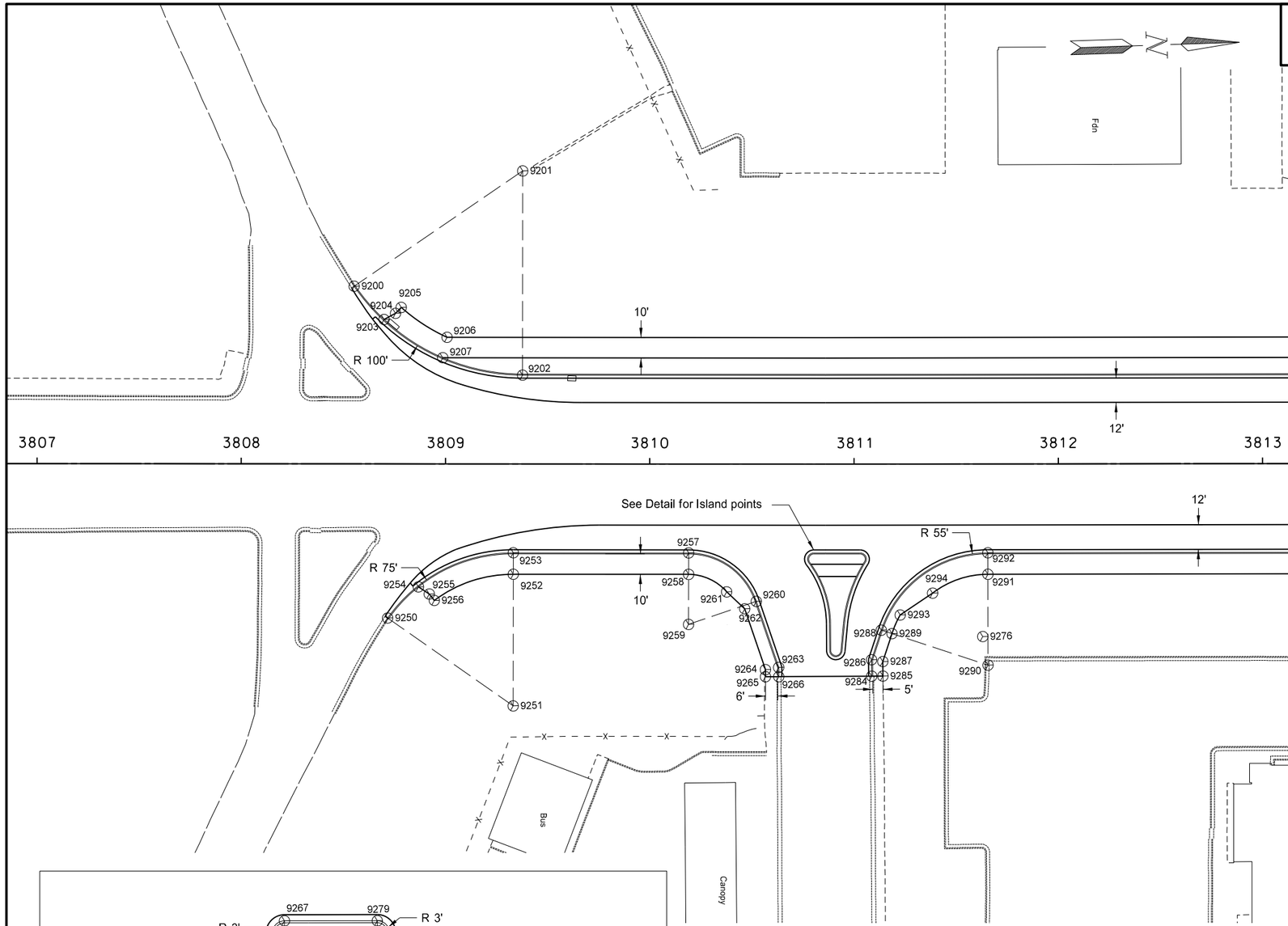
Survey Data

I-94 Exit 61 & ND 22

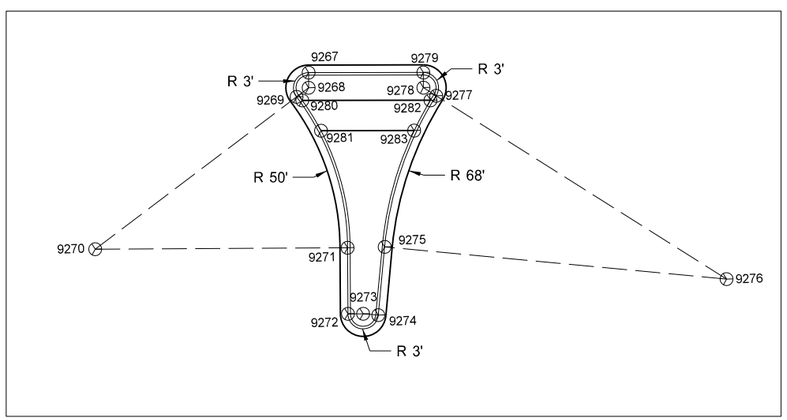
Sta 3795+00 to 3801+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	82	2



Point	North	East	Station	Offset
9250	457177.5867	1396502.4357	3808+71.75	75.5136
9251	457237.5512	1396547.4830	3809+33.21	118.5000
9252	457239.7401	1396483.0202	3809+33.21	54.0000
9253	457240.0965	1396472.5262	3809+33.21	43.5000
9254	457193.1260	1396487.6779	3808+86.78	60.2370
9255	457198.3319	1396491.3322	3808+92.10	63.7125
9256	457200.6637	1396494.5721	3808+94.54	66.8714
9257	457325.9014	1396475.4398	3810+19.06	43.5000
9258	457325.5451	1396485.9338	3810+19.06	54.0000
9259	457324.7137	1396510.4197	3810+19.06	78.5000
9260	457358.2113	1396500.2754	3810+52.19	67.2248
9261	457343.8581	1396495.1311	3810+37.67	62.5706
9262	457352.4533	1396503.6880	3810+46.55	70.8308
9263	457368.1064	1396532.9502	3810+63.19	99.5450
9264	457361.5797	1396533.8246	3810+56.70	100.6404
9265	457361.4835	1396537.2942	3810+56.72	104.1112
9266	457367.9810	1396537.4742	3810+63.22	104.0706
9267	457387.1158	1396477.5184	3810+80.31	43.5000
9268	457387.0140	1396480.5167	3810+80.31	46.5000
9269	457384.5624	1396482.2458	3810+77.92	48.3113
9270	457343.7031	1396511.0645	3810+38.06	78.5000
9271	457393.6839	1396512.4491	3810+87.89	78.1918
9272	457393.3219	1396525.5166	3810+87.94	91.2642
9273	457396.3207	1396525.5997	3810+90.94	91.2520
9274	457399.2964	1396525.9807	3810+93.93	91.5383
9275	457401.0228	1396512.4998	3810+95.23	78.0094
9276	457468.4720	1396521.1372	3811+62.92	84.5000
9277	457412.2161	1396482.9367	3811+05.47	48.1056
9278	457409.7343	1396481.2514	3811+02.94	46.5000
9279	457409.8296	1396478.2529	3811+02.94	43.5000
9280	457385.6789	1396482.9881	3810+79.06	49.0153
9281	457389.1774	1396489.1024	3810+82.76	55.0073
9282	457411.0459	1396483.7943	3811+04.33	49.0000
9283	457407.6179	1396489.6884	3811+01.09	55.0000
9284	457413.4636	1396538.7342	3811+08.49	103.8353
9285	457418.9615	1396538.8865	3811+13.99	103.8129
9286	457413.6859	1396530.7087	3811+08.46	95.8069
9287	457419.1591	1396531.7532	3811+13.96	96.6770
9288	457418.9071	1396516.3806	3811+13.22	81.3201
9289	457424.0747	1396518.2636	3811+18.45	83.0381
9290	457470.5831	1396535.2114	3811+65.47	98.5000
9291	457471.9965	1396490.7338	3811+65.47	54.0000
9292	457472.3300	1396480.2391	3811+65.47	43.5000
9293	457428.4310	1396509.2604	3811+22.52	73.9011
9294	457444.6270	1396499.0654	3811+38.38	63.1967

Note:
1. Station and Offsets are listed from ND 22 Centerline: Chain EX22
2. Radius points and dimensions are given at the face of curb.



14th St Island Detail

Point	North	East	Station	Offset
9200	457166.5661	1396339.4770	3808+55.20	-86.9772
9201	457250.9303	1396285.7863	3809+37.70	-143.5000
9202	457247.5366	1396385.7287	3809+37.70	-43.5000
9203	457180.6706	1396356.2408	3808+69.87	-70.7017
9204	457186.3900	1396353.4295	3808+75.49	-73.7055
9205	457189.2417	1396350.6305	3808+78.24	-76.5997
9206	457211.1993	1396365.9842	3809+00.71	-62.0000
9207	457208.7580	1396375.9071	3808+98.61	-52.0000

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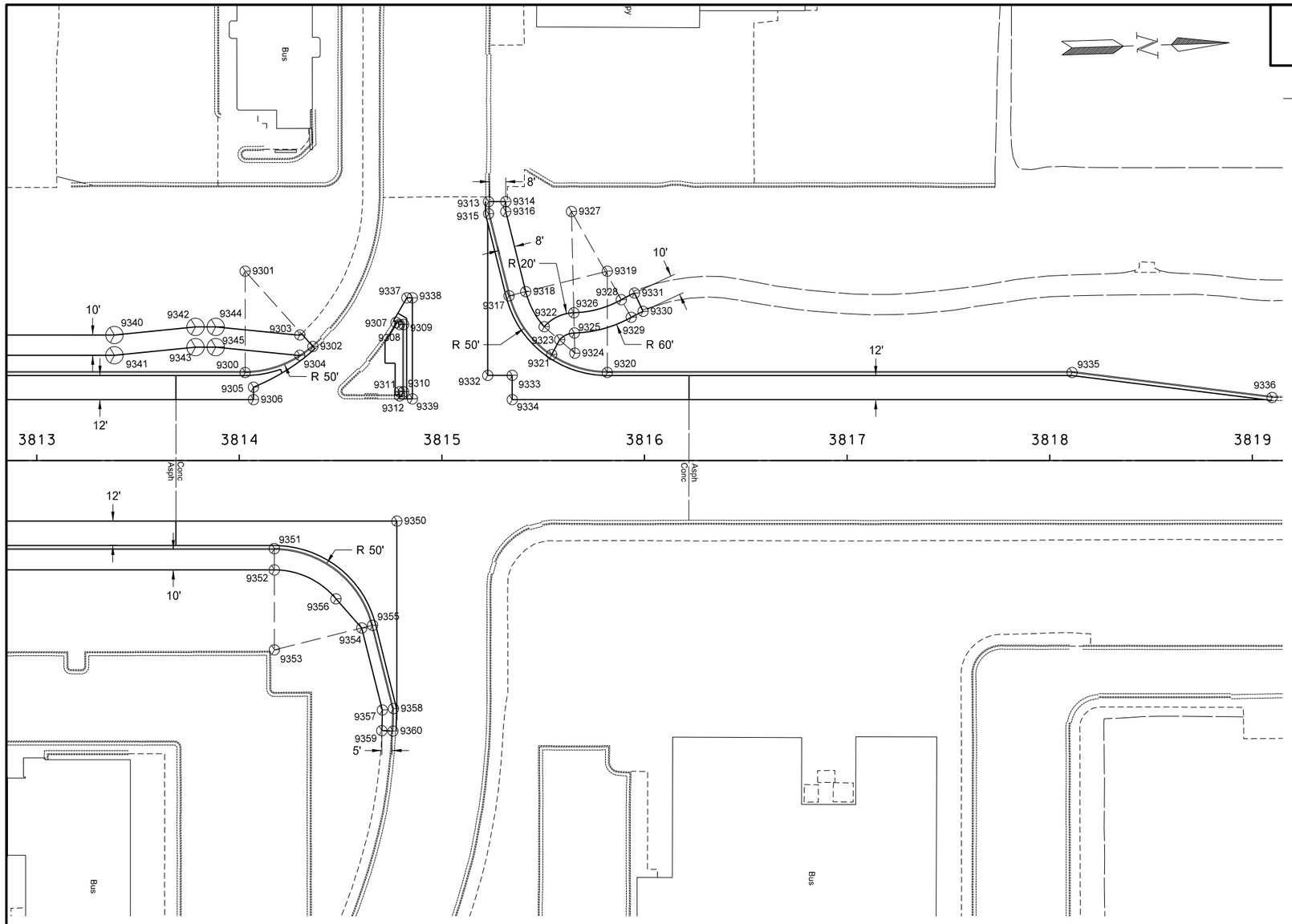
Survey Data

I-94 Exit 61 & ND 22

Sta 3807+00 to 3813+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	82	3



Point	North	East	Station	Offset
9300	457712.3719	1396400.8235	3814+02.87	-43.5000
9301	457713.9601	1396350.8488	3814+02.87	-93.5000
9302	457746.2011	1396389.0655	3814+36.31	-56.3267
9303	457739.9644	1396383.1911	3814+29.89	-62.0000
9304	457739.6098	1396393.1848	3814+29.85	-52.0000
9305	457716.2701	1396408.1991	3814+07.00	-36.2520
9306	457716.0743	1396414.3587	3814+07.00	-30.0893
9307	457787.6143	1396378.4978	3814+77.37	-68.2044
9308	457789.3093	1396379.5593	3814+79.09	-67.1973
9309	457791.3083	1396379.6221	3814+81.09	-67.1980
9310	457790.2634	1396412.8644	3814+81.11	-33.9393
9311	457788.2644	1396412.8015	3814+79.11	-33.9386
9312	457788.2016	1396414.8006	3814+79.11	-31.9386
9313	457835.1244	1396320.3677	3815+23.01	-127.8142
9314	457843.6202	1396320.6348	3815+31.51	-127.8171
9315	457834.9376	1396326.3118	3815+23.01	-121.8672
9316	457843.4663	1396325.5333	3815+31.51	-122.9162
9317	457843.7839	1396367.1201	3815+33.15	-81.3605
9318	457852.0909	1396365.3193	3815+41.39	-83.4242
9319	457892.6489	1396356.5273	3815+81.65	-93.5000
9320	457891.0608	1396406.5021	3815+81.65	-43.5000
9321	457863.9356	1396396.8485	3815+54.23	-52.2872
9322	457860.6320	1396382.9312	3815+50.49	-66.0925
9323	457868.0735	1396389.6173	3815+58.14	-59.6461
9324	457875.3191	1396396.5095	3815+65.60	-52.9876
9325	457875.4034	1396386.5099	3815+65.37	-62.9848
9326	457875.4877	1396376.5102	3815+65.13	-72.9821
9327	457875.9092	1396326.5120	3815+63.97	-122.9685
9328	457899.1026	1396370.8072	3815+88.55	-79.4323
9329	457903.7412	1396379.6663	3815+93.47	-70.7251
9330	457909.6633	1396376.9347	3815+99.30	-73.6434
9331	457905.7274	1396367.7395	3815+95.08	-82.7089
9332	457832.0374	1396406.0393	3815+22.64	-42.0878
9333	457844.0907	1396406.4225	3815+34.70	-42.0877
9334	457843.7127	1396418.4165	3815+34.70	-30.0877
9335	458120.3506	1396413.7888	3818+11.06	-43.5000
9336	458218.5795	1396429.2792	3819+09.73	-31.1375
9337	457793.3453	1396366.5196	3814+82.71	-80.3586
9338	457796.0304	1396366.6040	3814+85.40	-80.3596
9339	457794.4620	1396416.4981	3814+85.42	-30.4408
9340	457648.4938	1396380.2842	3813+38.37	-62.0000
9341	457648.1762	1396390.2791	3813+38.37	-52.0000
9342	457688.6007	1396377.5567	3813+78.37	-66.0000
9343	457688.2831	1396387.5517	3813+78.37	-56.0000
9344	457698.5956	1396377.8744	3813+88.37	-66.0000
9345	457698.2780	1396387.8693	3813+88.37	-56.0000

Note:
1. Station and Offsets are listed from ND 22 Centerline: Chain EX22
2. Radius points and dimensions are given at the face of curb.

Point	North	East	Station	Offset
9350	457784.9112	1396476.5774	3814+77.78	29.9116
9351	457724.0236	1396488.2377	3814+17.29	43.5000
9352	457723.6901	1396498.7324	3814+17.29	54.0000
9353	457722.4354	1396538.2125	3814+17.29	93.5000
9354	457765.9245	1396528.7812	3814+60.46	82.6921
9355	457771.2996	1396527.6156	3814+65.80	81.3563
9356	457753.6436	1396513.9988	3814+47.72	68.3073
9357	457774.7603	1396569.5242	3814+70.59	123.1339
9358	457780.2817	1396569.0336	3814+76.09	122.4682
9359	457774.1840	1396579.7357	3814+70.33	133.3586
9360	457779.6685	1396580.1488	3814+75.83	133.5972

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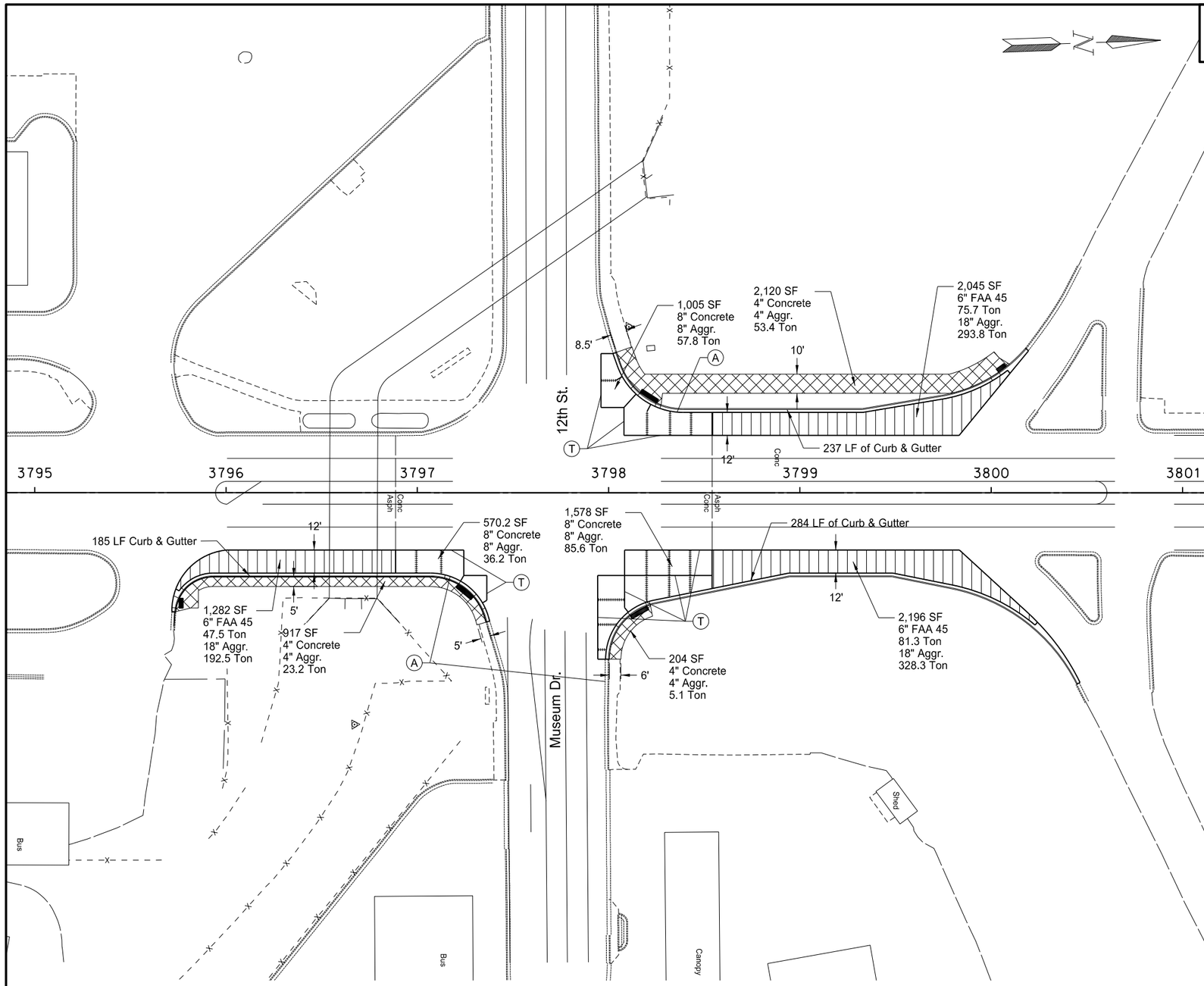
Survey Data

I-94 Exit 61 & ND 22

Sta 3813+00 to 3819+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	90	1



Item	Description	Quantity	Unit
302-0120	AGGREGATE BASE COURSE Cl 5		
	Mainline (Sta 3795+70 to 3800+50)	995	Ton
	Sidewalk 4" (Sta 3795+70 to 3800+50)	82	Ton
430-0500	COMMERCIAL GRADE ASPHALT		
	Mainline (Sta 3795+70 to 3800+50)	205	Ton
550-0300	8IN NON REINF CONCRETE PVMT CL AE-DOWELED		
	Mainline (Sta 3795+70 to 3800+50)	350	SY
748-0140	CURB & GUTTER-TYPE I		
	Mainline (Sta 3795+70 to 3800+50)	706	LF
750-0100	SIDEWALK CONCRETE		
	(Sta 3795+70 to 3800+50)	360	SY
750-2115	DETECTABLE WARNING PANELS		
	Sidewalk (Sta 3795+70 to 3800+50)	70	SF

Commercial Grade Asphalt

Sidewalk Concrete

8 IN Non Reinf Concrete CL AE- Doweled

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(A) Curb and Gutter (All): No. 3 tie bars, 1'-6" @ 4' c to c (Continuous)

(T) Tied Joint with Hot Pour Seal - See Detail

(K) Keyed Joint Not Tied

Doweled Joint

Joint Spacing - Match Existing Joints

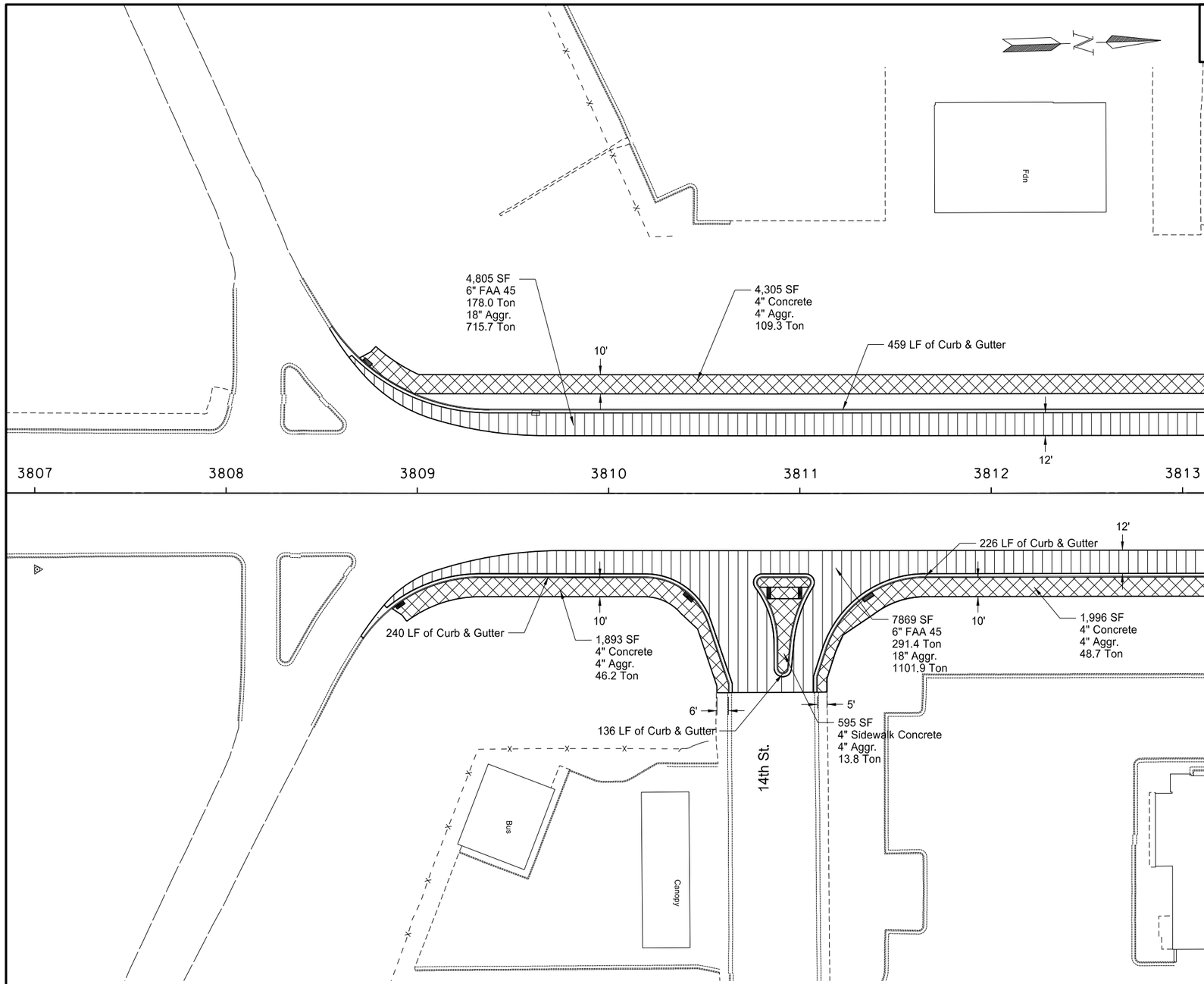
Tie bars will be drilled and epoxied into place where existing pavement abuts new pavement or curb and gutter. All costs to be included in price bid for concrete pavement or curb and gutter.

Paving

I-94 Exit 61 & ND 22

Sta 3795+00 to 3801+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	90	2



Item	Description	Quantity	Unit
302-0120	AGGREGATE BASE COURSE CL 5		
	Mainline (Sta 3808+50 to 38123+00)	1,817	Ton
	Sidewalk 4" (Sta 3808+50 to 3813+00)	218	Ton
430-0500	COMMERCIAL GRADE ASPHALT		
	Mainline (Sta 3808+50 to 3813+00)	469	Ton
748-0140	CURB & GUTTER-TYPE I		
	Mainline (Sta 3808+50 to 3813+00)	1,061	LF
750-0100	SIDEWALK CONCRETE		
	(Sta 3808+50 to 3813+00)	977	SY
750-2115	DETECTABLE WARNING PANELS		
	Sidewalk (Sta 3808+50 to 3813+00)	68	SF

Commercial Grade Asphalt

Sidewalk Concrete

8 IN Non Reinf Concrete
CL AE- Doweled

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(A) Curb and Gutter (All): No. 3 tie bars, 1'-6" @ 4' c to c (Continuous)

(T) Tied Joint with Hot Pour Seal - See Detail

(K) Keyed Joint Not Tied

+++ Doweled Joint

Joint Spacing - Match Existing Joints

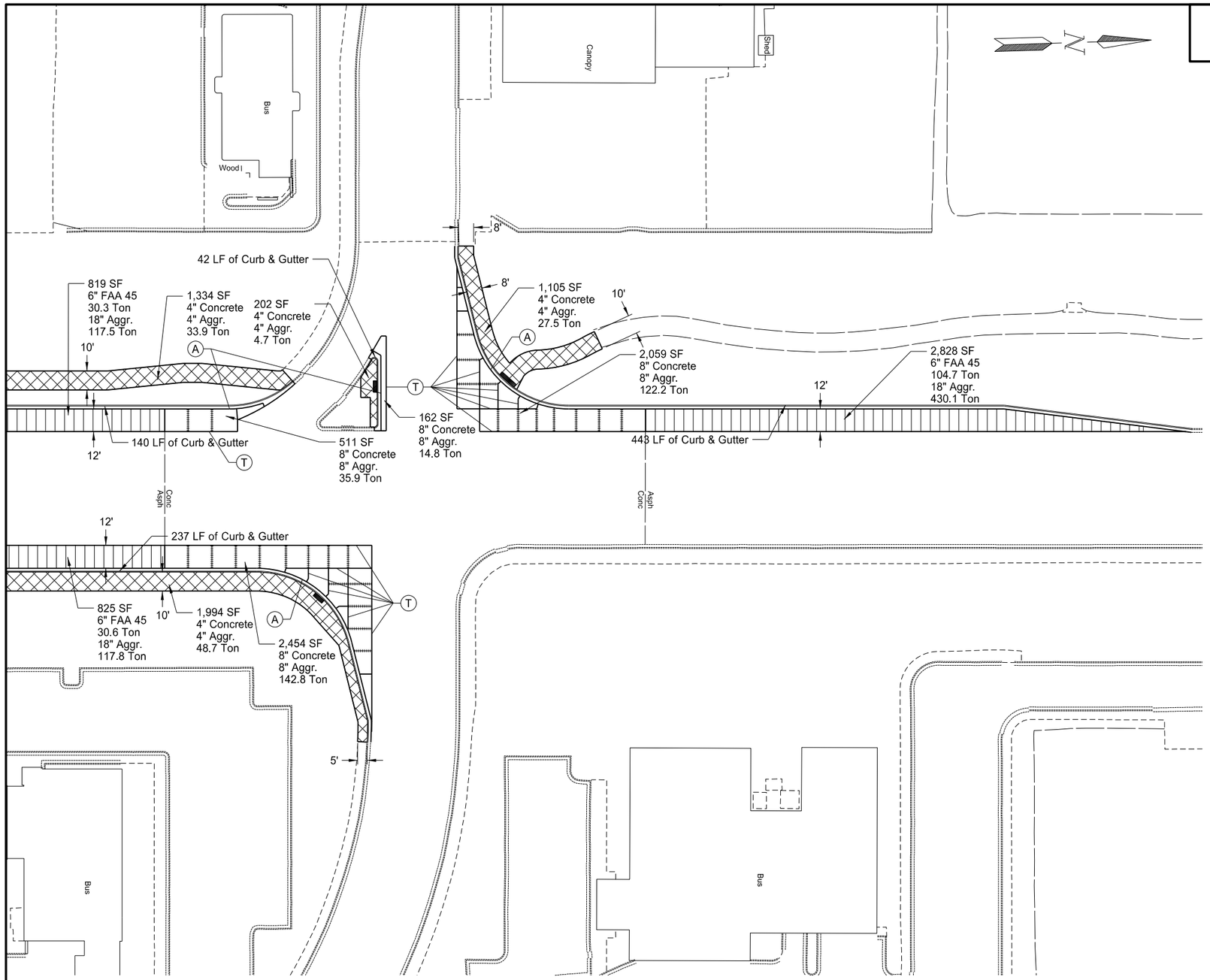
Tie bars will be drilled and epoxied into place where existing pavement abuts new pavement or curb and gutter. All costs to be included in price bid for concrete pavement or curb and gutter.

Paving

I-94 Exit 61 & ND 22

Sta 3807+00 to 3813+00

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	90	3



Item	Description	Quantity	Unit
302-0120	Aggregate Base Course Cl 5		
	Mainline (Sta 3813+00 to 3819+15)	981	Ton
	Sidewalk 4" (Sta 3812+85 to 3819+15)	115	Ton
430-0500	COMMERCIAL GRADE ASPHALT		
	Mainline (Sta 3813+00 to 3819+15)	166	Ton
550-0300	8IN NON REINF CONCRETE PVMT CL AE-DOWELED		
	Mainline (Sta 3813+00 to 3819+15)	576	SY
748-0140	CURB & GUTTER-TYPE I		
	Mainline (Sta 3813+00 to 3819+15)	862	LF
750-0100	SIDEWALK CONCRETE		
	(Sta 3813+00 to 3819+15)	515	SY
750-2115	DETECTABLE WARNING PANELS		
	Sidewalk (Sta 3813+00 to 3819+15)	44	SF

Superpave FAA 45

Sidewalk Concrete

8 IN Non Reinf Concrete CL AE- Doweled

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(T) Tied Joint with Hot Pour Seal - See Detail

(K) Keyed Joint Not Tied

Doweled Joint

Joint Spacing - Match Existing Joints

Tie bars will be drilled and epoxied into place where existing pavement abuts new pavement or curb and gutter. All costs to be included in price bid for concrete pavement or curb and gutter.

Paving

I-94 Exit 61 & ND 22

Sta 3812+85 to 3819+15

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	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**	**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**	**1**		**1**		**1**	**37**	**37**
G20-52a-72	**72"x24"**	**ROAD WORK NEXT __ MILES RT or LT ARROW**	**10**	**10**	**9**		**10**	**30**	**300**
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**	**4**	**4**	**4**		**4**	**32**	**128**
R1-1a-18	**18"x18"**	**STOP and SLOW PADDLE Back to Back**	**4**	**4**	**4**		**4**	**5**	**20**
R1-2-60	60"x60"	YIELD						29	
R2-1-48	**48"x60"**	**SPEED LIMIT __**	**2**	**3**	**2**		**3**	**39**	**117**
R2-1a-24	24"x18"	MINIMUM FEE $80 (Mounted on Speed Limit post)						10	
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"x24"**	**SIDEWALK CLOSED**	**9**	**3**			**9**	**9**	**81**
R9-11-24	**24"x24"**	**SIDEWALK CLOSED CROSS HERE**	**1**	**6**			**6**	**9**	**54**
R10-6-24	**24"x36"**	**STOP HERE ON RED**		**2**			**2**	**16**	**32**
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						35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD						35	
W4-2-48	**48"x48"**	**RIGHT or LEFT LANE TRANSITION SYMBOL**	**1**	**1**	**2**		**2**	**35**	**70**
W5-1-48	**48"x48"**	**ROAD NARROWS**	**1**				**1**	**35**	**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**		**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	
W11-2-36	**36"x36"**	**PEDESTRIAN CROSSING**		**1**			**1**	**20**	**20**
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	
W16-7-24	**25"x12"**	**ARROW**		**1**			**1**	**3**	**3**
W20-1-48	**48"x48"**	**ROAD WORK AHEAD or _FT or _ MILE**	**2**	**2**	**2**		**2**	**35**	**70**
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**	**4**		**4**	**35**	**140**
W20-7a-48	48"x48"	FLAGGING SYMBOL						35	
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	

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED BY PHASE NO. 1	2	3		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
W20-52-54	54"x12"	NEXT __ MILES (Mounted on warning sign post)						12	
W21-1a-48	48"x48"	WORKERS SYMBOL						35	
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						35	
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

SIGN NUMBER	SIGN SIZE	DESCRIPTION	1	2	3		TOTAL AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL

SPEC & CODE

704-1000	**TRAFFIC CONTROL SIGNS**	**TOTAL UNITS**	**1339**

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY BY PHASE NO. 1	2	3		TOTAL QUANTITY
704-0100	**FLAGGING**	MHR	**1000**	**1000**	**2000**		**4000**
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	**15**	**9**			**15**
704-1051	TYPE II BARRICADES	EACH					
704-1052	**TYPE III BARRICADES**	EACH	**18**	**11**	**35**		**35**
704-1060	**DELINEATOR DRUMS**	EACH	**96**	**77**	**146**		**146**
704-1065	TRAFFIC CONES	EACH					
704-1067	**TUBULAR MARKERS**	EACH			**133**		**133**
704-1070	DELINEATOR	EACH					
704-1072	FLEXIBLE DELINEATORS	EACH					
704-1080	**STACKABLE VERTICAL PANELS**	EACH	**57**	**73**	**117**		**117**
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**	**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					
752-0911	**TEMPORARY SAFETY FENCE**	LF	**115**	**360**			**475**
762-0200	RAISED PAVEMENT MARKERS	EACH					
762-0420	SHORT TERM 4IN LINE - TYPE R	LF					
762-0422	**SHORT TERM 6IN LINE-TYPE R**	LF		**180**			**180**
762-0426	**SHORT TERM 24IN LINE-TYPE R**	LF		**26**			**26**
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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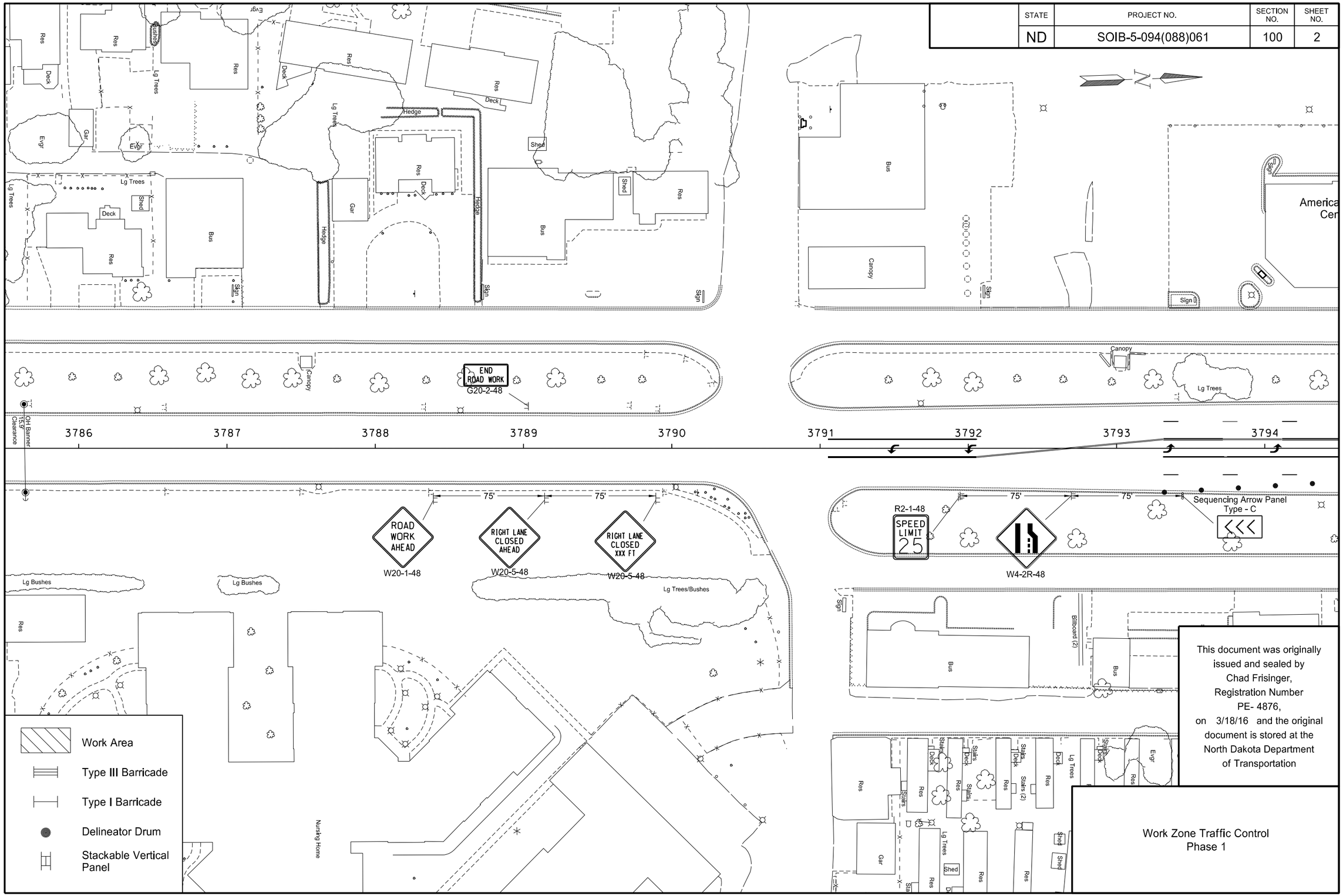
Traffic Control Devices List

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	2



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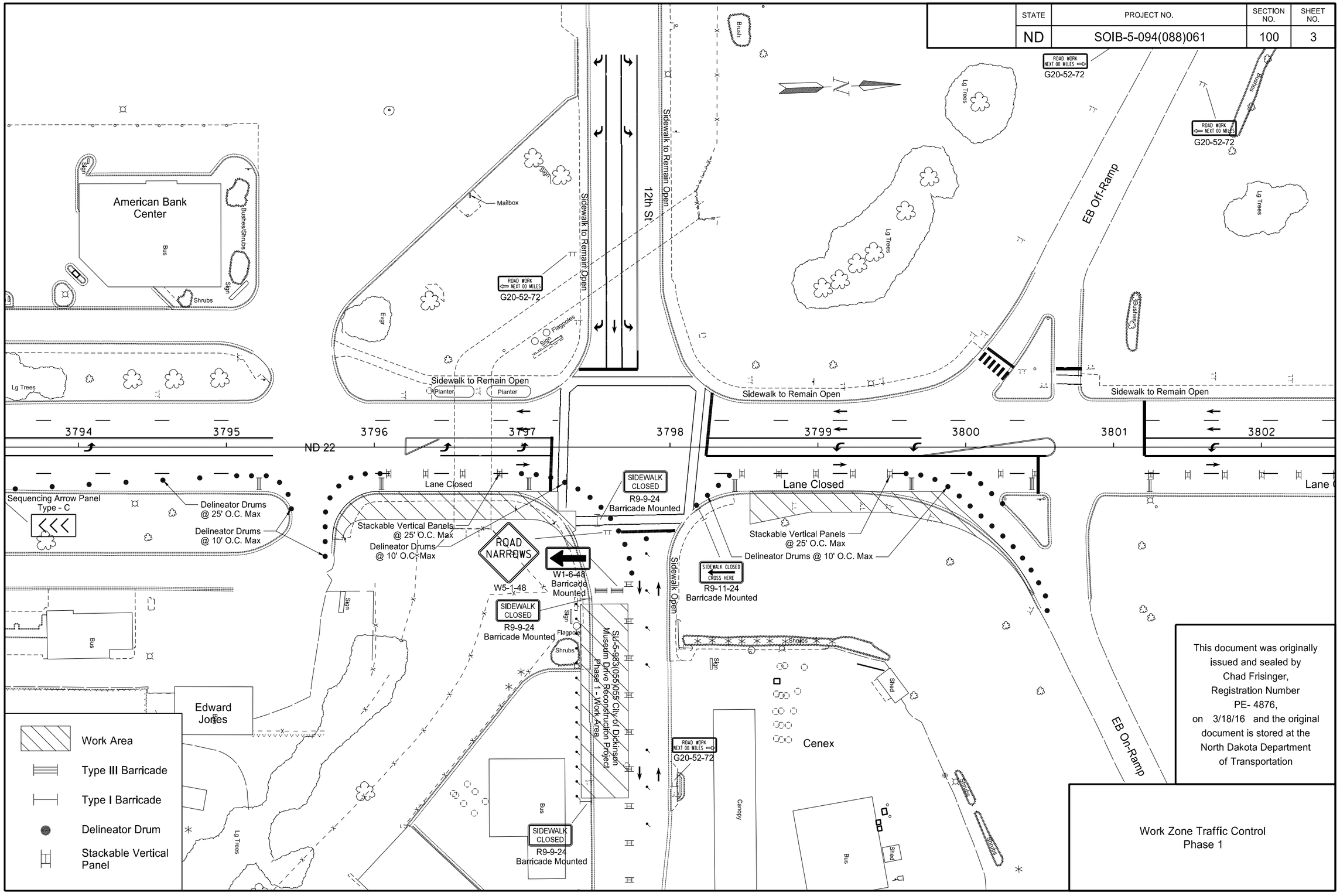
Work Zone Traffic Control
Phase 1

3/18/2016 11:30:04 AM cfrising R:\project\50094061.088\design\Sheet\100WZ_002.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	3



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Phase 1

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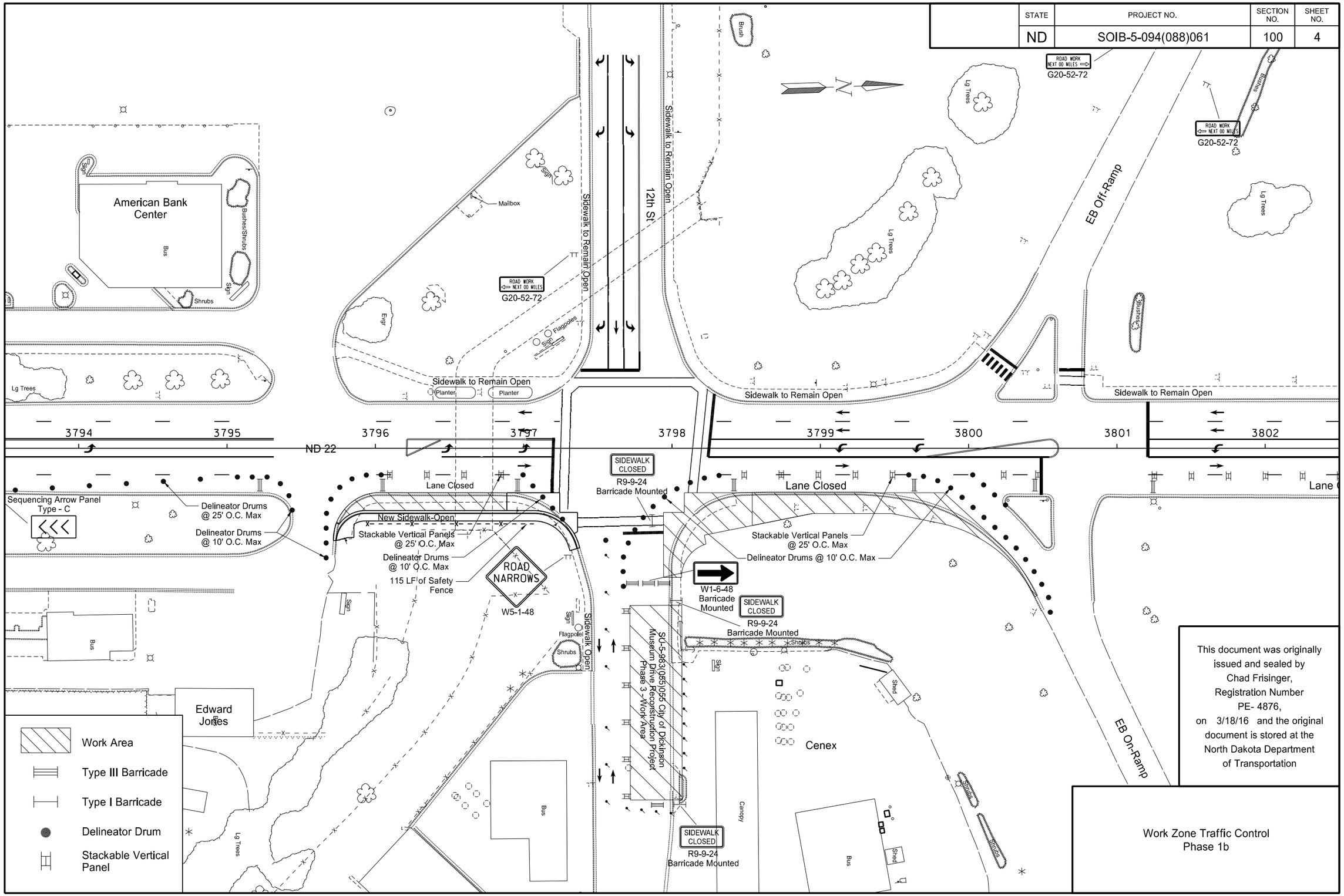

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Work Zone Traffic Control
Phase 1b

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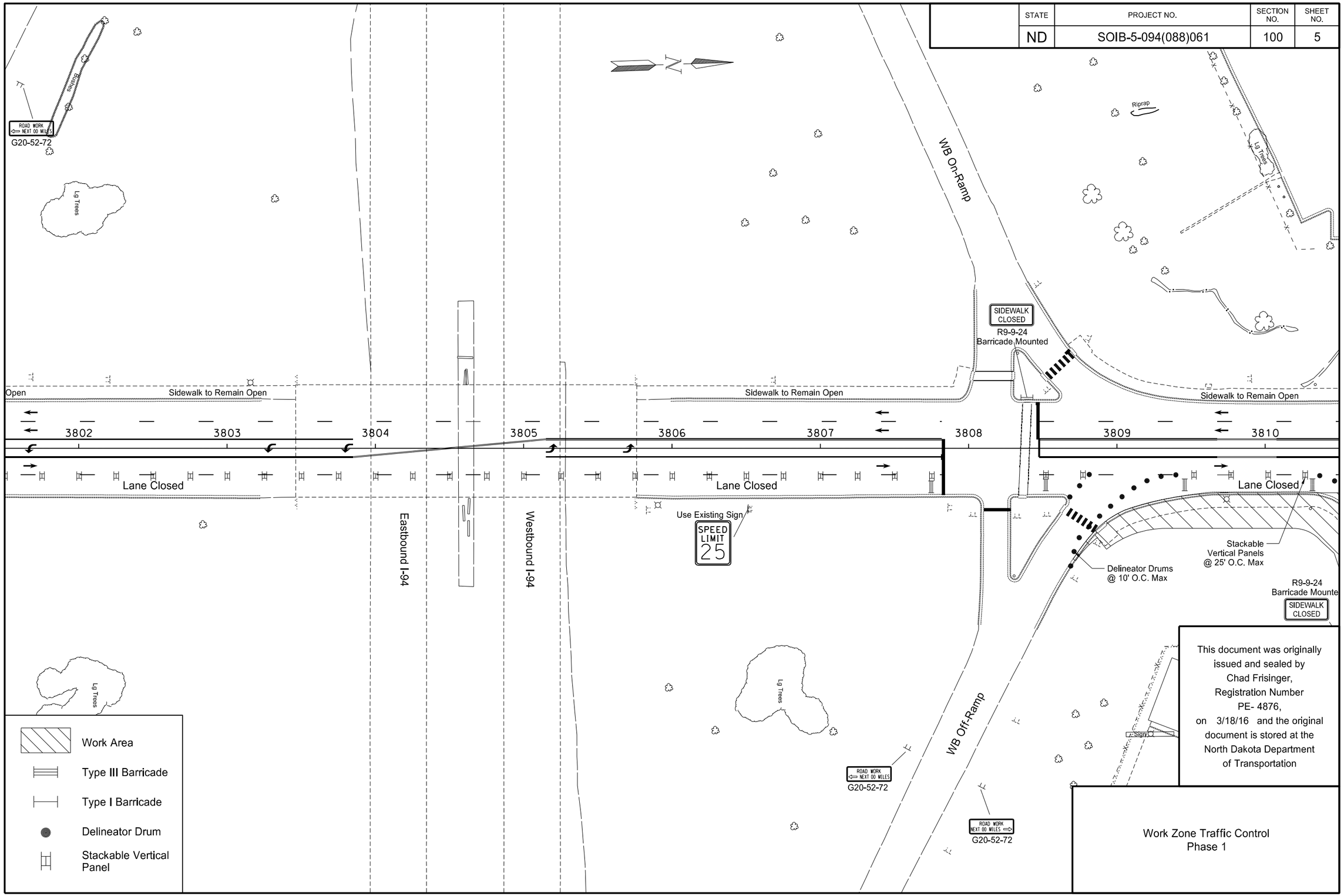

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Work Zone Traffic Control
Phase 1

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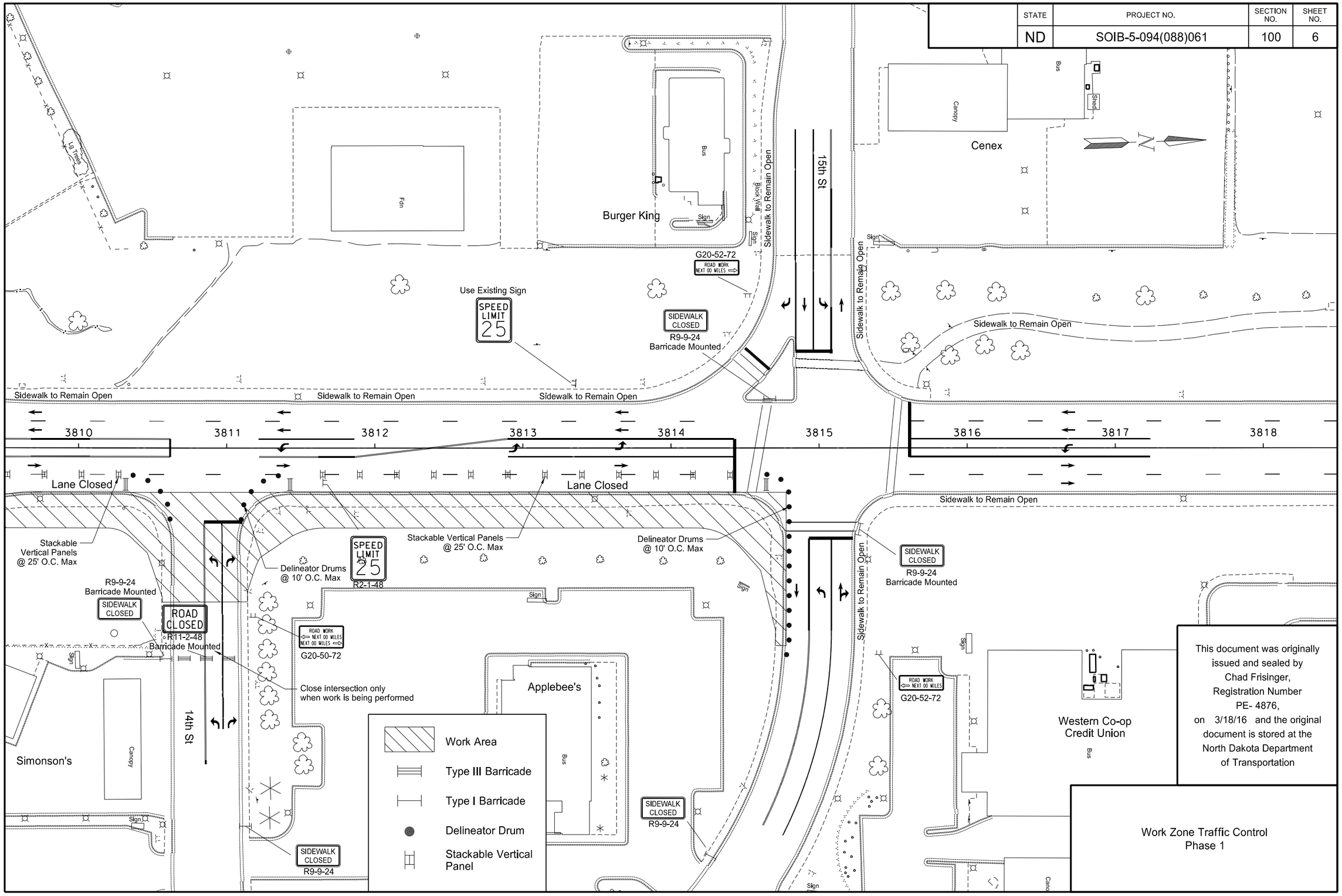
ND	SOIB-5-094(088)061	100	6



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Phase 1

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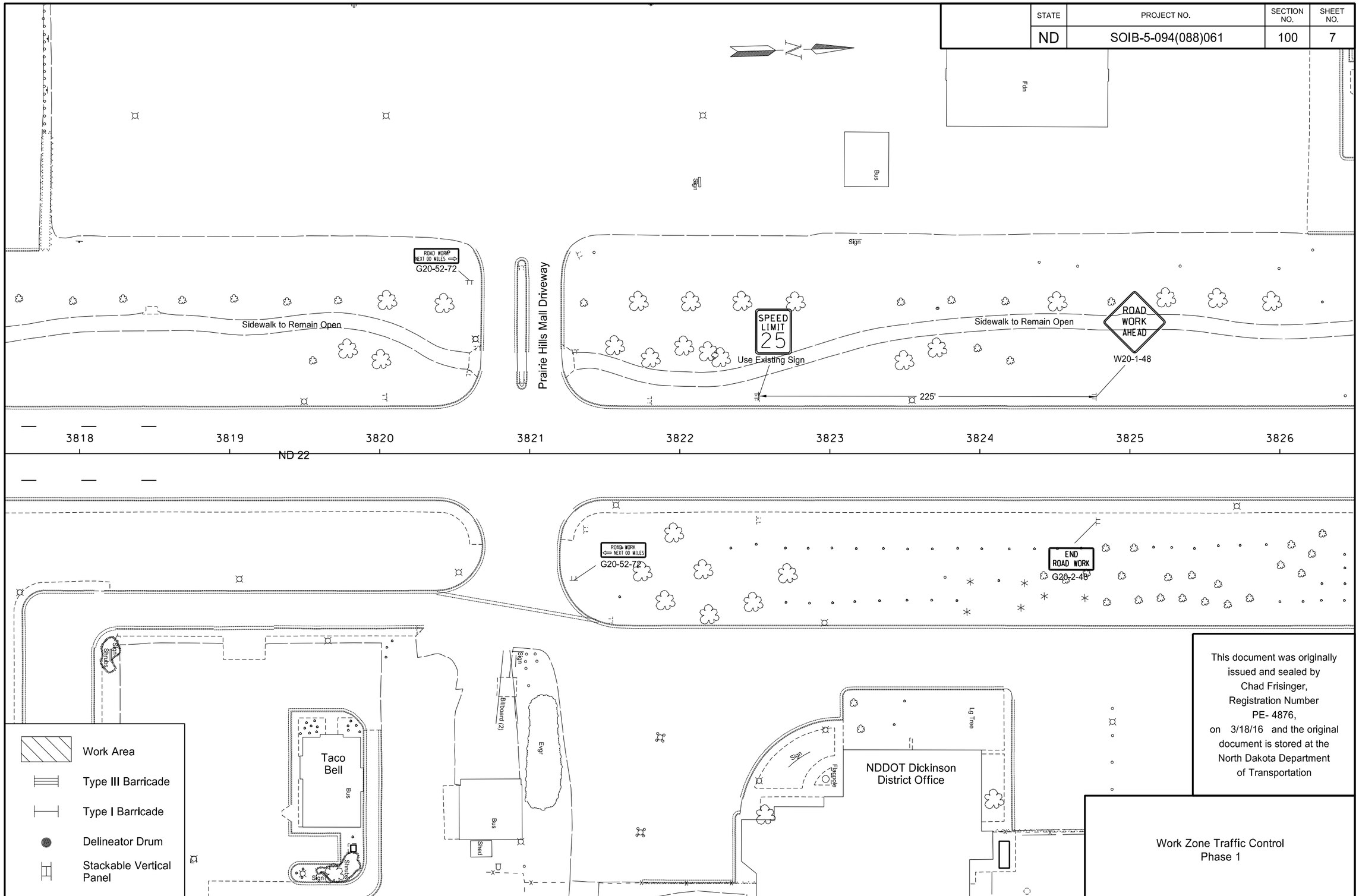

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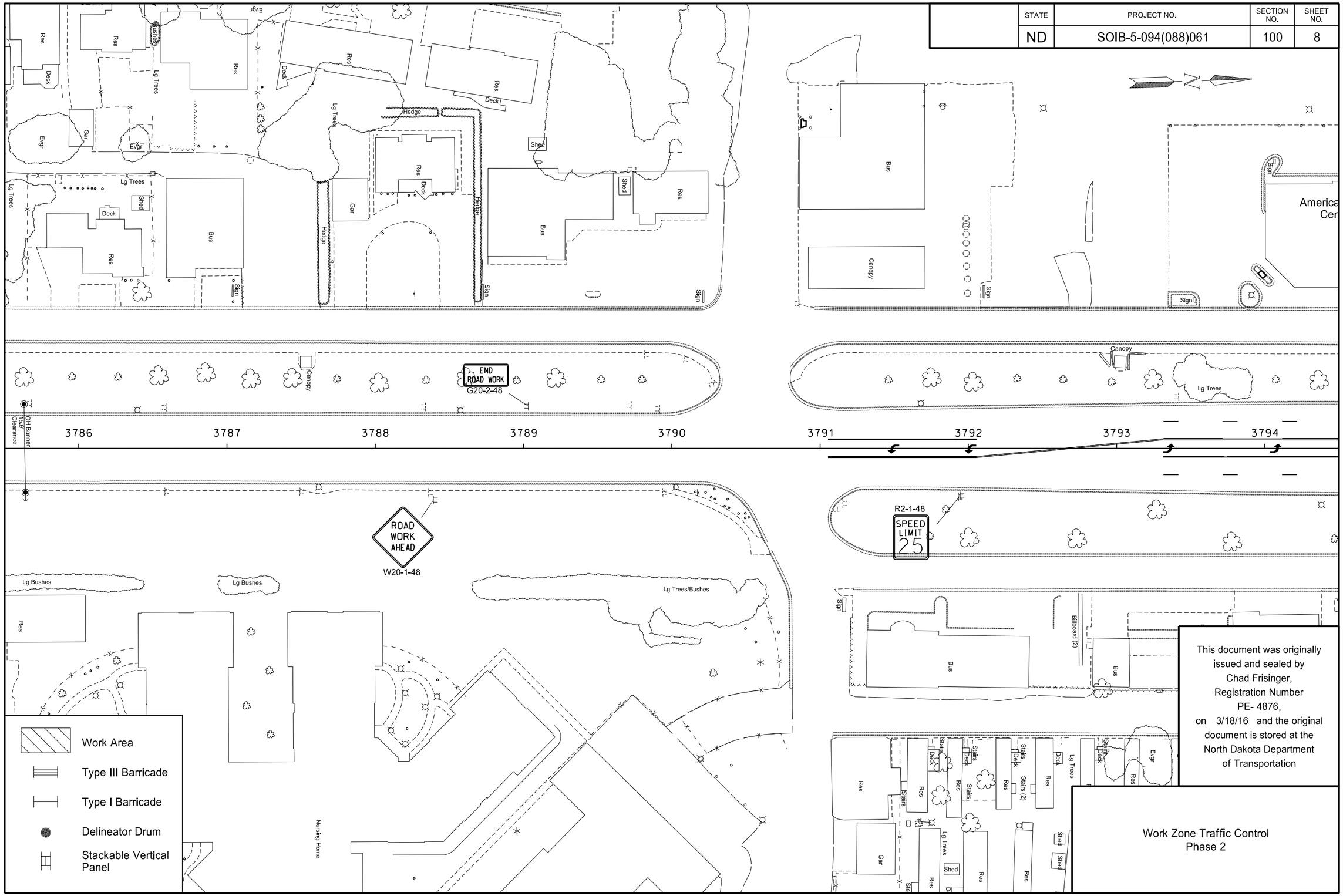
Work Zone Traffic Control
Phase 1

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	8



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Work Zone Traffic Control
Phase 2

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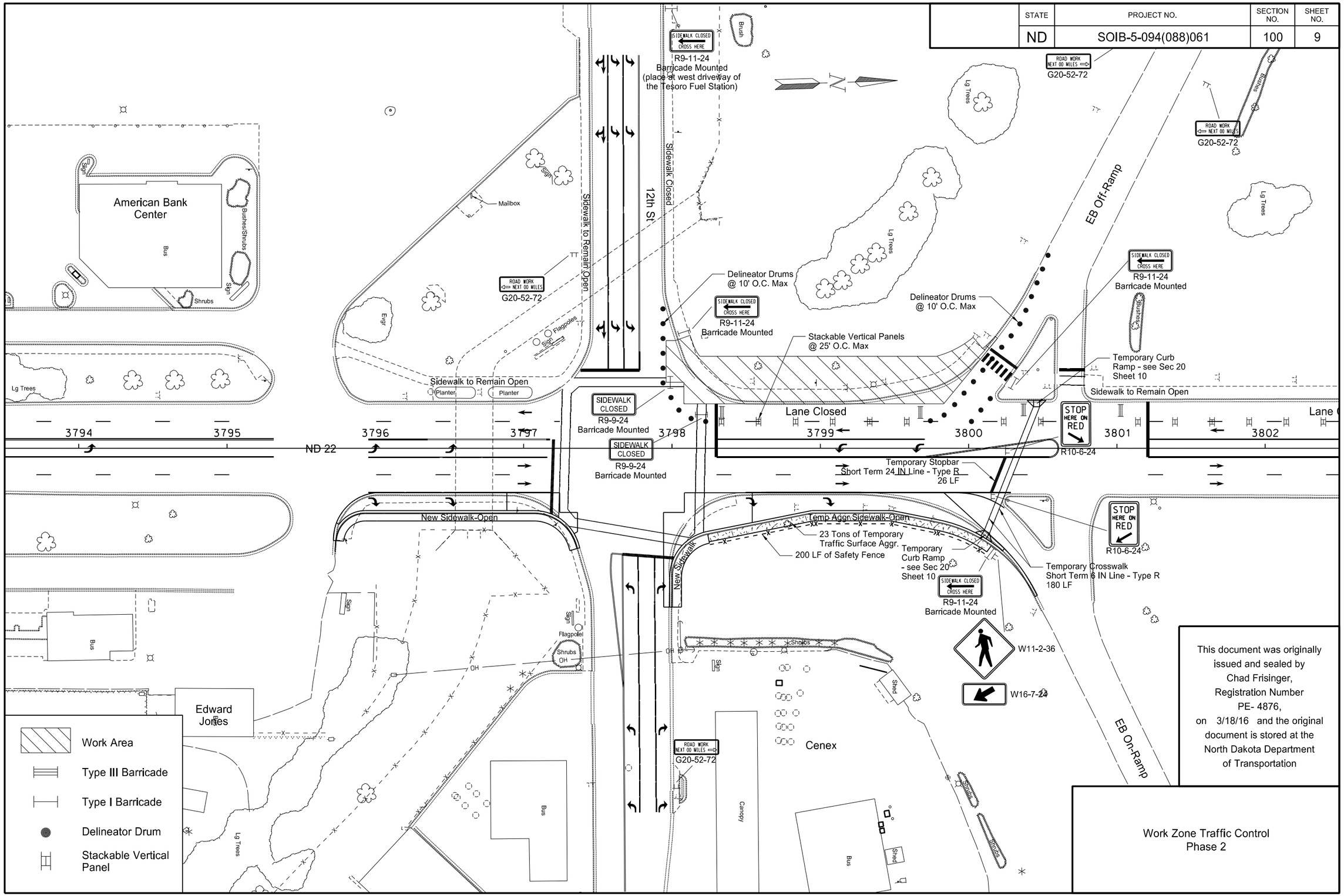

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Work Zone Traffic Control
Phase 2

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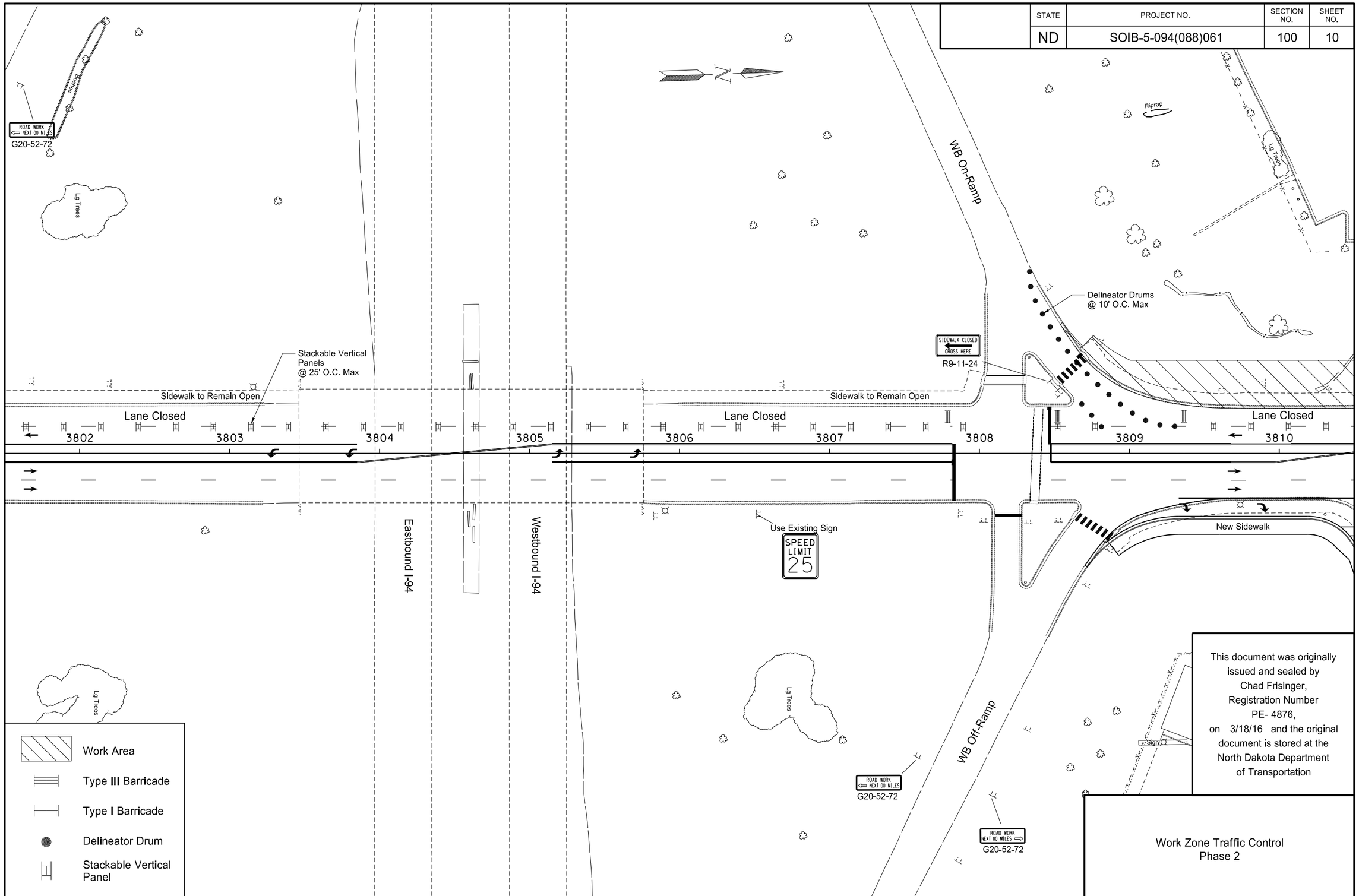

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Work Zone Traffic Control
Phase 2

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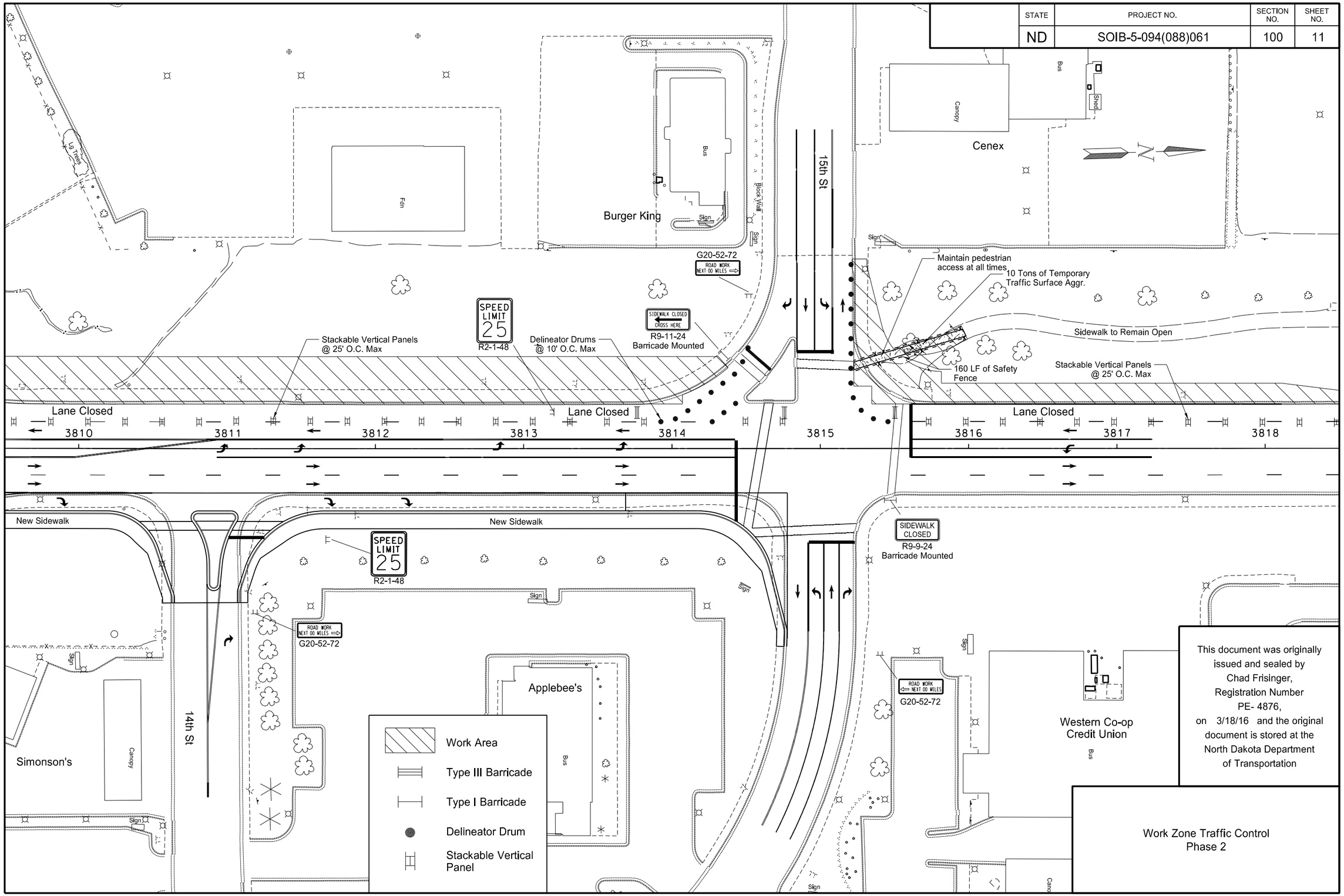

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Work Zone Traffic Control
Phase 2

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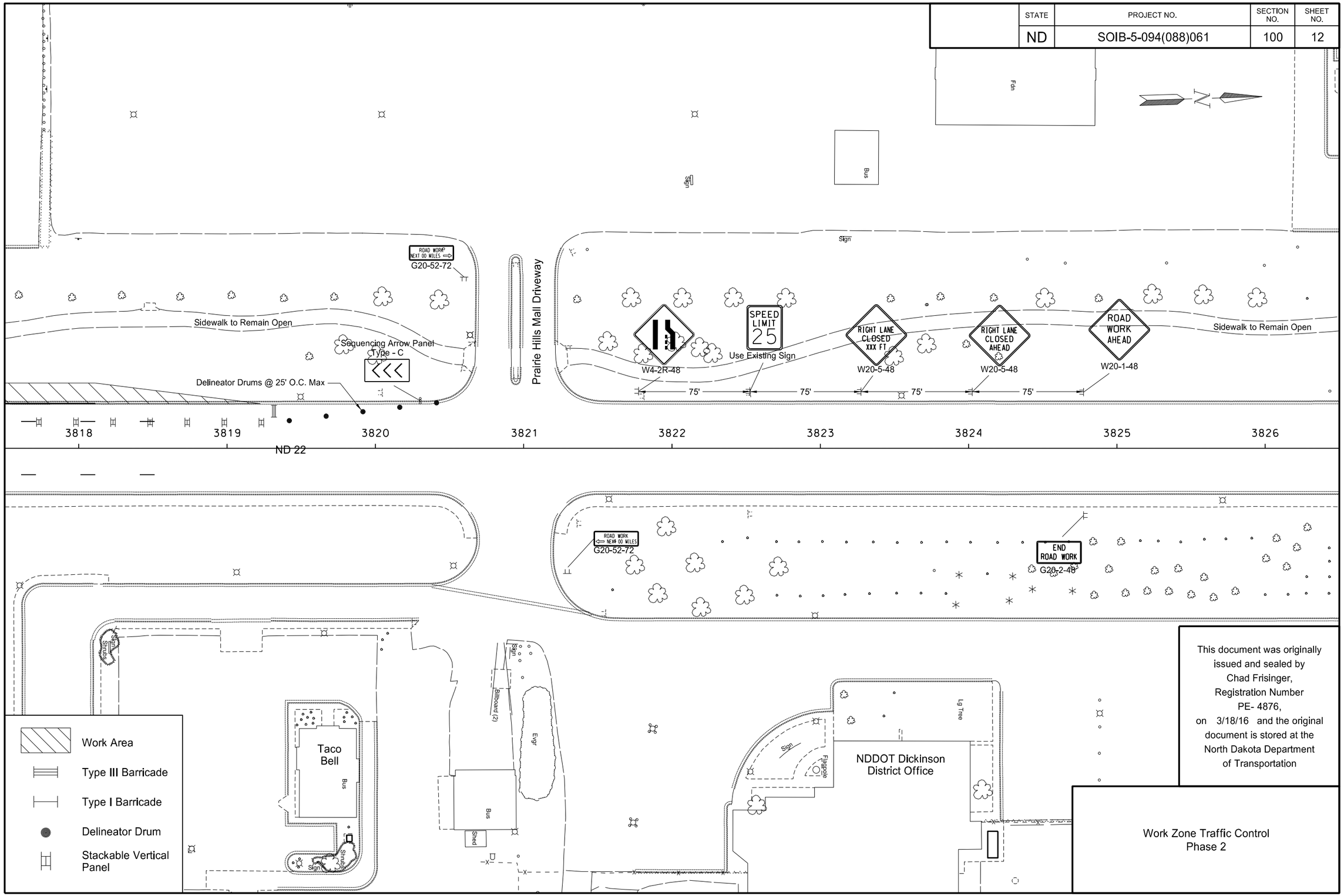

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Phase 2

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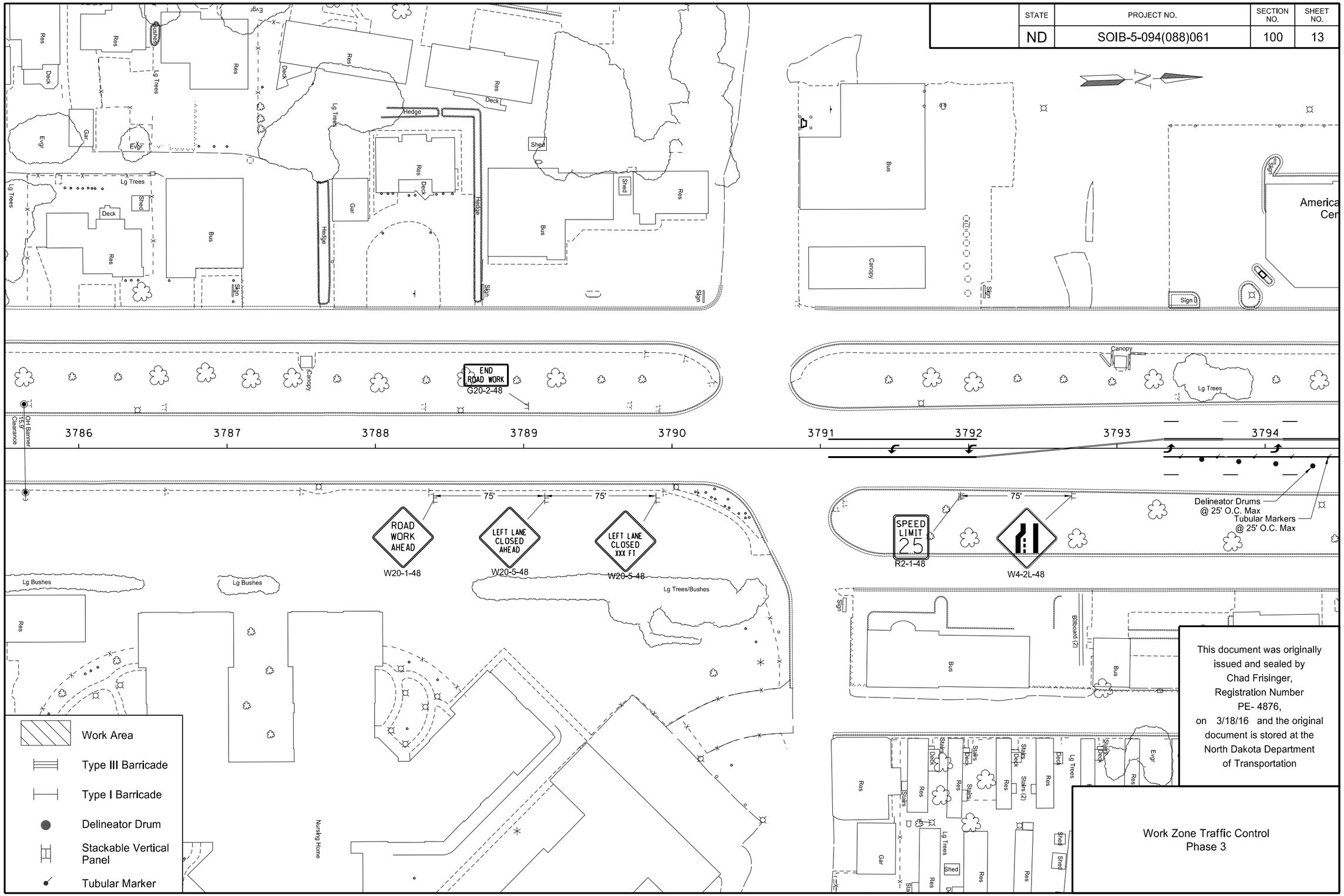

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Work Zone Traffic Control
Phase 3

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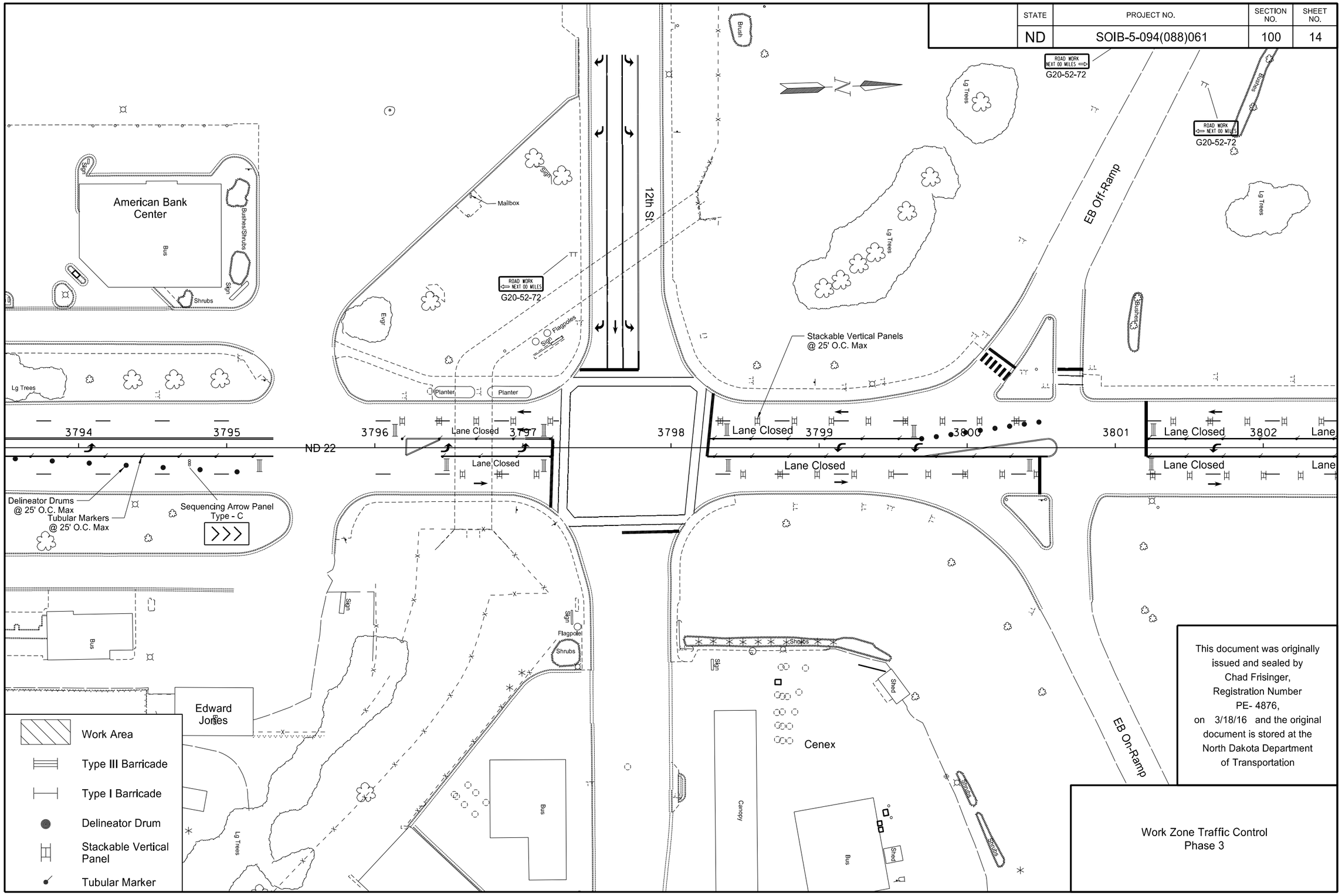

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Work Zone Traffic Control
Phase 3

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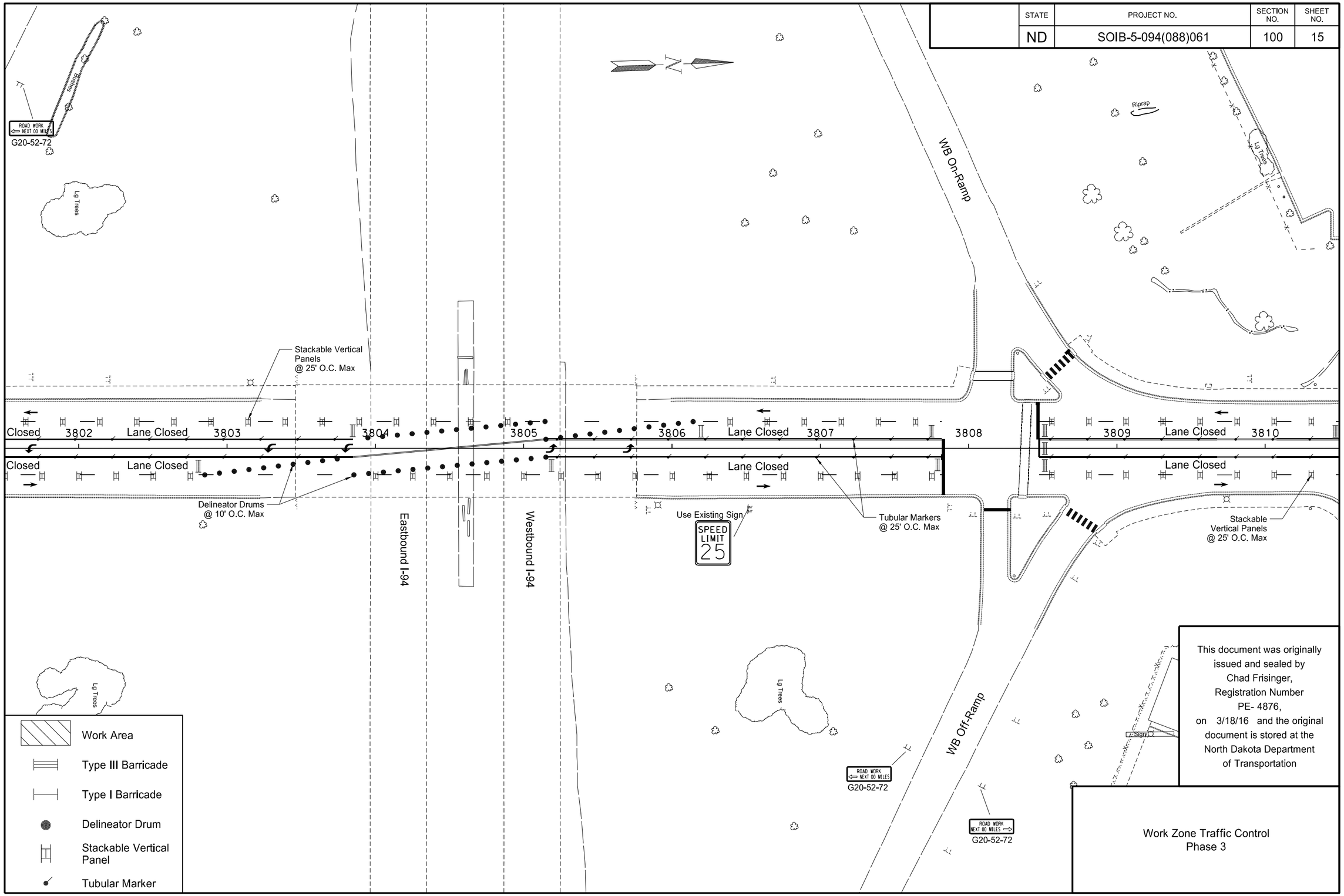

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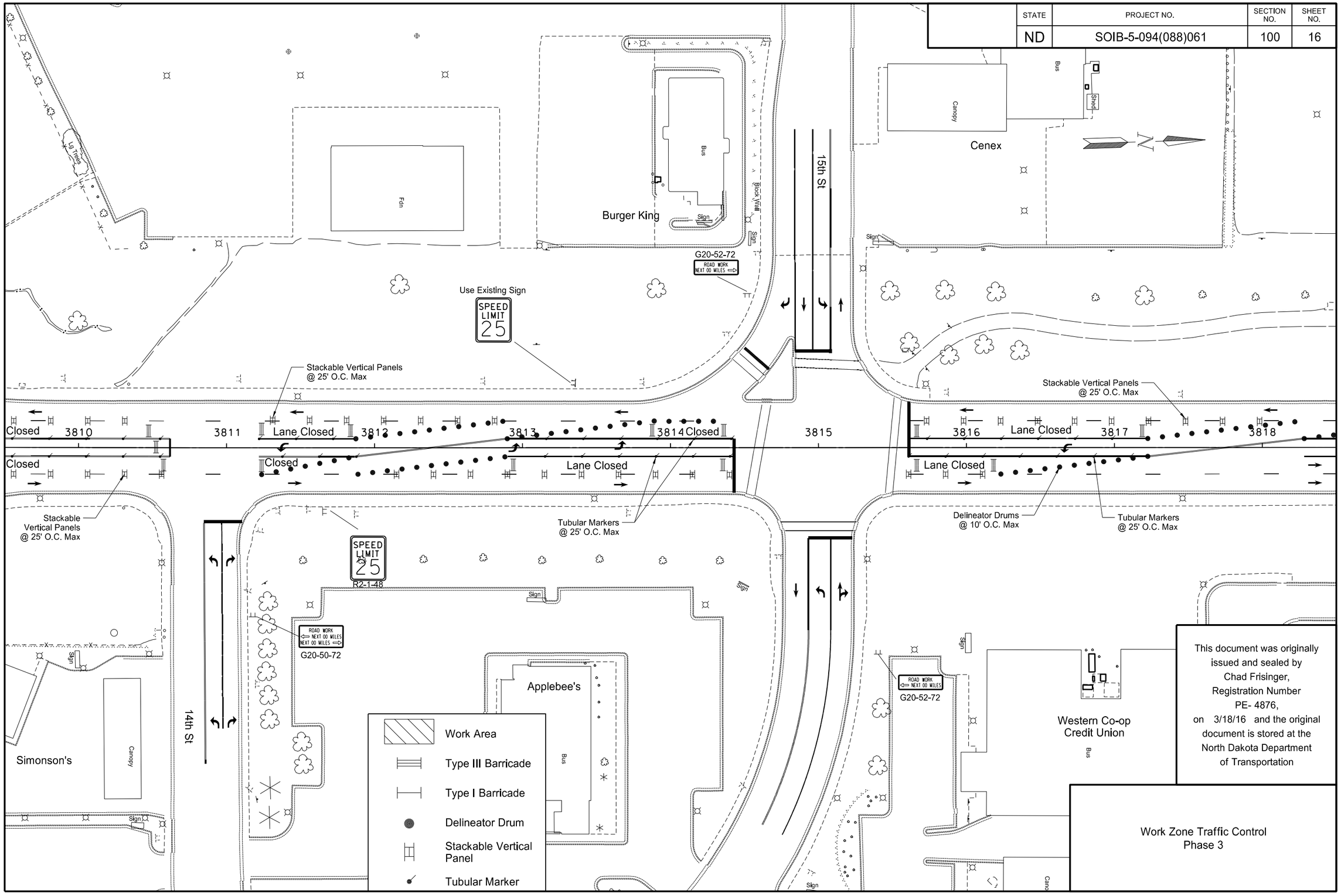
Work Zone Traffic Control
Phase 3

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	16



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Work Zone Traffic Control
Phase 3

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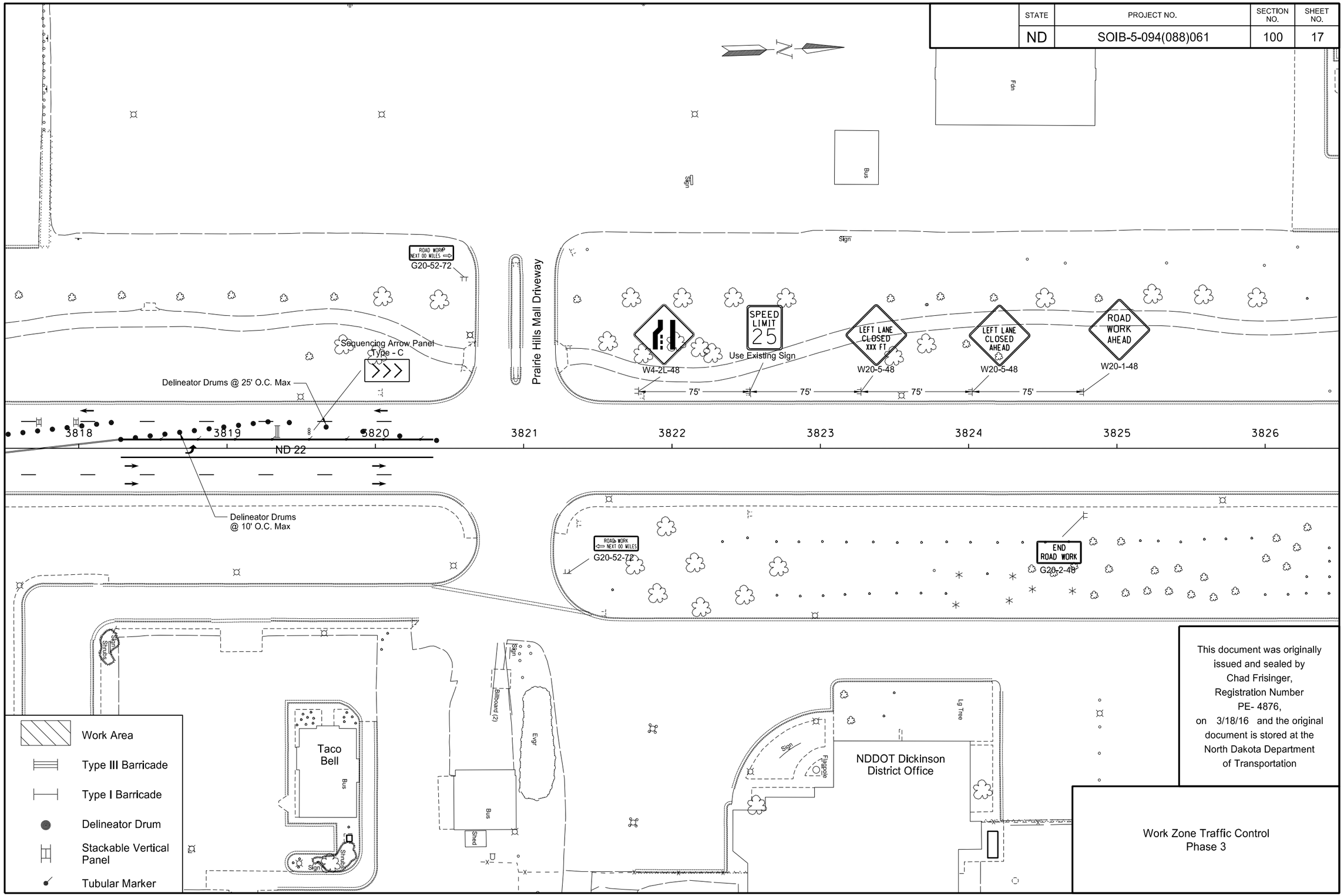

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Phase 3

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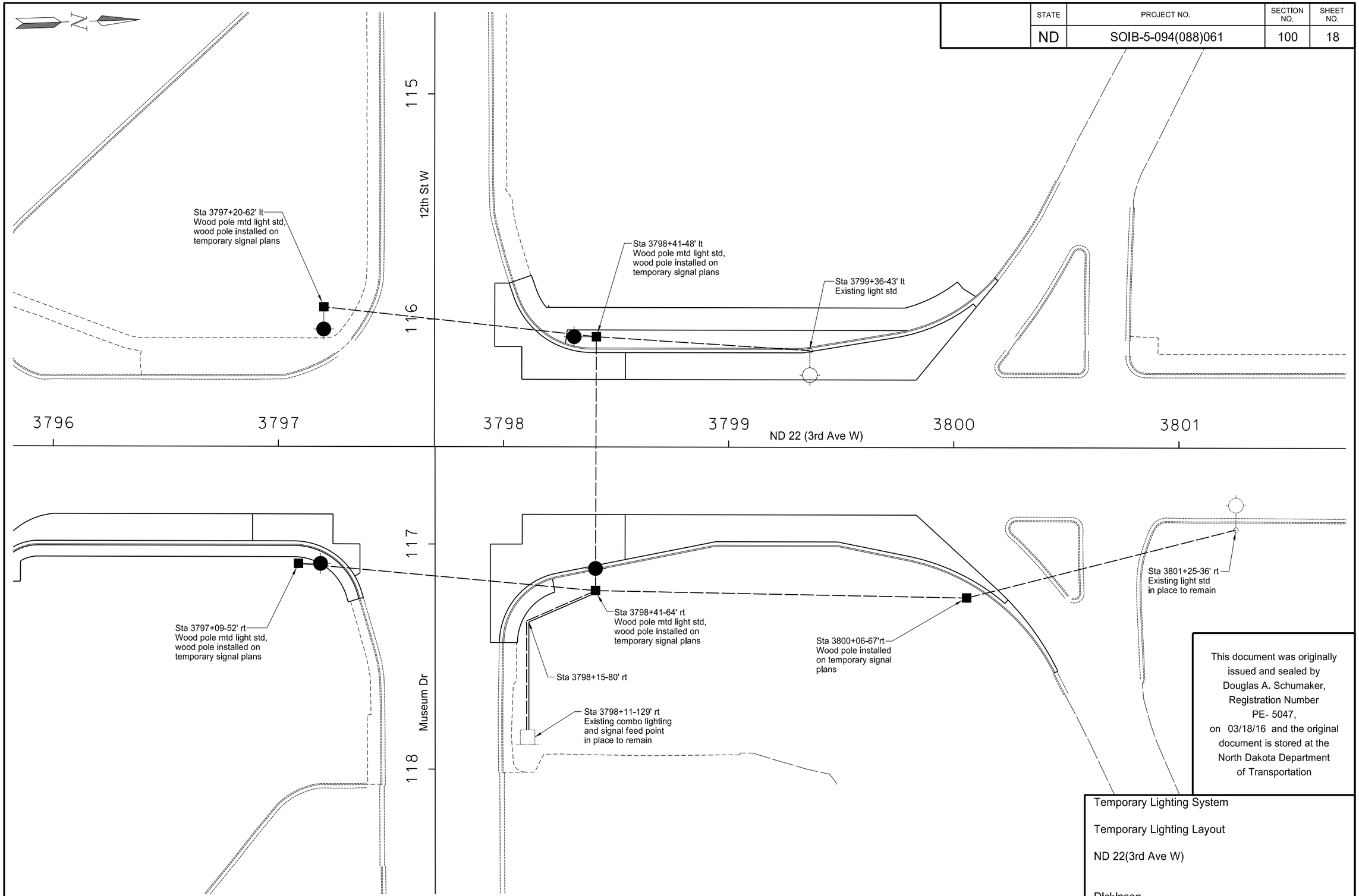

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Temporary Lighting System

Temporary Lighting Layout

ND 22(3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	19

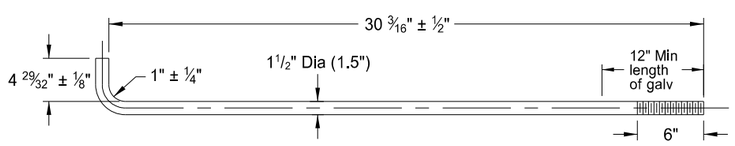
Station	Conduit Runs		Cable Runs	
	LF	Dia	LF	Type
3801+25-36' rt to 3800+06-67' rt			124	Aerial Cable 3 AWG 4
3800+06-67' rt to 3798+41-64' rt			165	Aerial Cable 3 AWG 4
3799+36-43' lt to 3798+41-48' lt			106	Aerial Cable 3 AWG 4
3797+20-62' lt to 3798+41-48' lt			133	Aerial Cable 3 AWG 4
3798+41-48' lt to 3798+41-64' rt			123	Aerial Cable 3 AWG 4
3797+09-52' rt to 3798+41-64' rt			144	Aerial Cable 3 AWG 4
3798+41-64' rt	37	2"	40	Aerial Cable 3 AWG 4
3798+41-64' rt to 3798+15-80' rt to 3798+11-129' rt	31 65	2" 2"	106	Aerial Cable 3 AWG 4

Lighting Quantities (A)									
2" Dia Rigid Conduit	Aerial Cable 2 AWG 4, plus Messenger Cable	HP Sodium Vapor Luminaire - 250 Watt	Wood Pole Mtd 12 ft Mast Arm						Temporary Lighting System
LF	LF	EA	EA						EA
133	941	4	4						1

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

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

Relocated Signal Standard
Anchor Bolt Detail



Cut length before bending = 40"

Bolt circle (4 bolts) = 12"

The contractor shall verify the bolt circle

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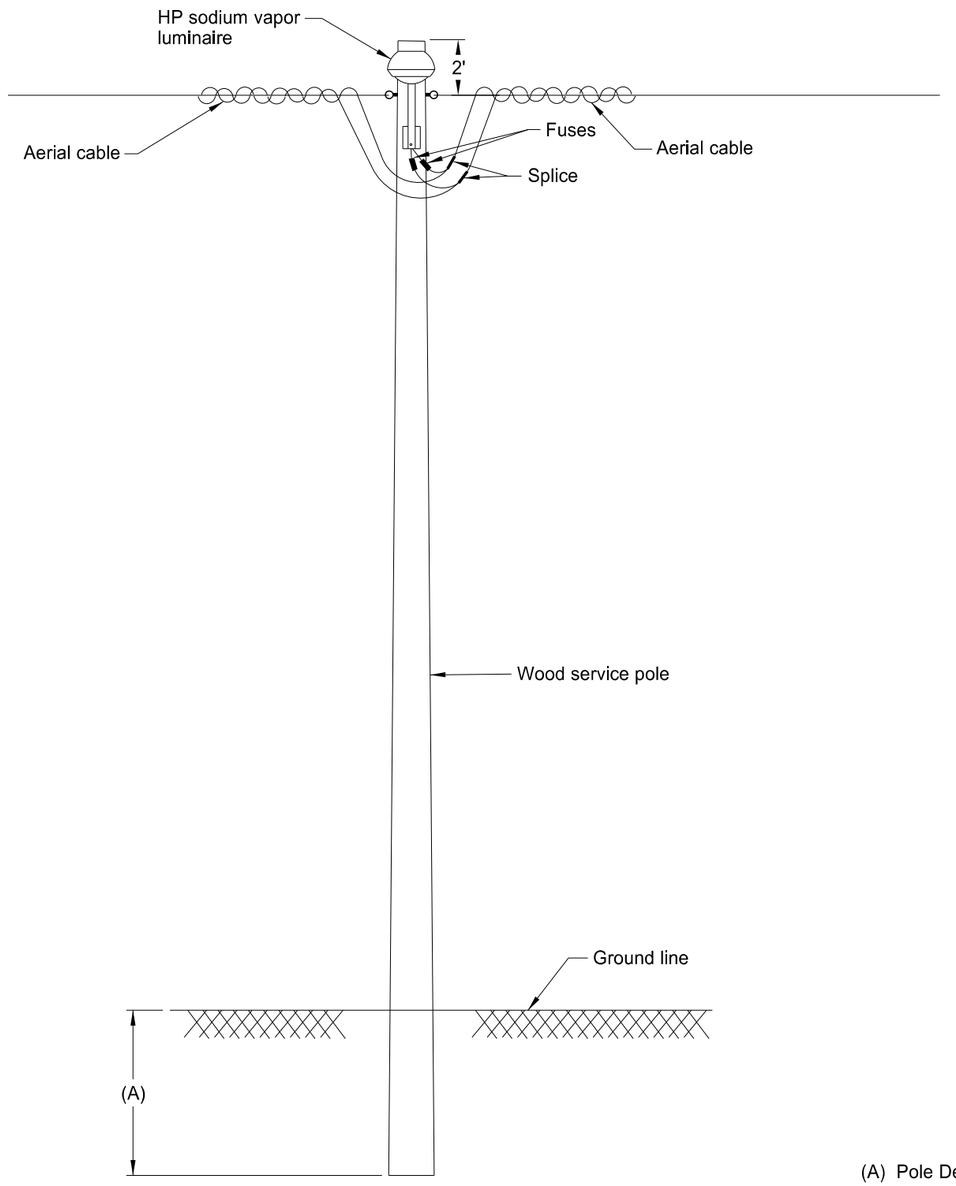
Temporary Lighting System

Cable Runs and Quantities

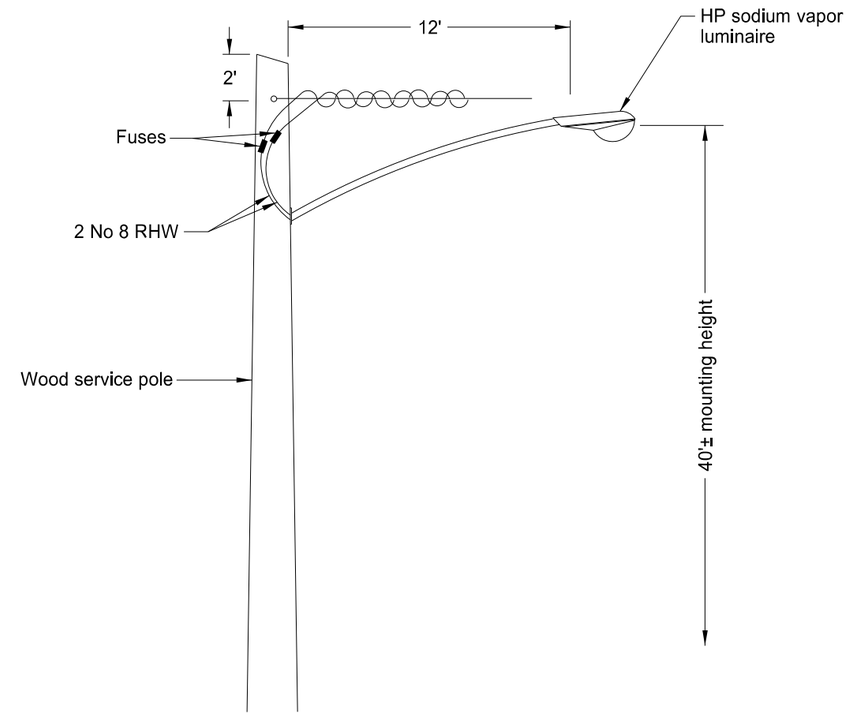
ND 22 (3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	20



Wood Pole Light Std Detail



Luminaire Wiring Detail

(A) Pole Depth in Ground

Length of Pole	Depth in Ground
35 ft	6 ft
40 ft	6 ft
45 ft	6.5 ft
50 ft	7 ft
55 ft	7 ft

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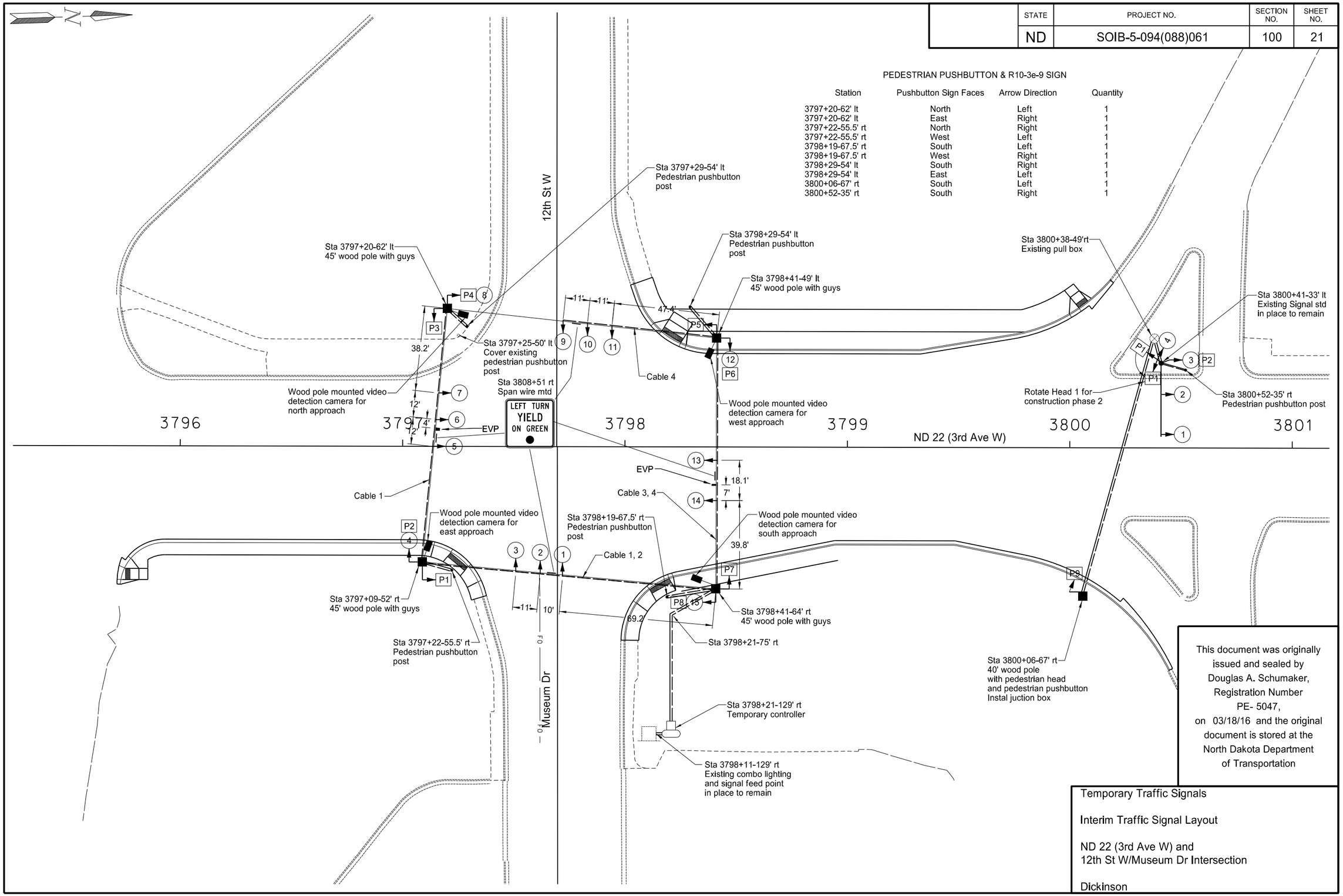
Temporary Lighting System

Wood Pole Light Standard Detail

ND 22 (3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	21



PEDESTRIAN PUSHBUTTON & R10-3e-9 SIGN

Station	Pushbutton Sign Faces	Arrow Direction	Quantity
3797+20-62' lt	North	Left	1
3797+20-62' lt	East	Right	1
3797+22-55.5' rt	North	Right	1
3797+22-55.5' rt	West	Left	1
3798+19-67.5' rt	South	Left	1
3798+19-67.5' rt	West	Right	1
3798+29-54' lt	South	Right	1
3798+29-54' lt	East	Left	1
3800+06-67' rt	South	Left	1
3800+52-35' rt	South	Right	1

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Temporary Traffic Signals

Interim Traffic Signal Layout

ND 22 (3rd Ave W) and
12th St W/Museum Dr Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	22

STATION	CONDUIT RUNS LF	CONDUIT RUNS DIA	CABLE RUNS LF	CABLE RUNS Type
3797+29-54' lt 3797+20-62' lt	11	1"	20	(2) No. 16 AWG 2 (C)
3797+20-62' lt	25 (H) 35 (H)	2" 1"	60 70	Cable 1 (2) No. 16 AWG 2 (C)
3797+20-62' lt to 3797+09-52' lt			238 119 164 238 67 67 124 124	(2) Span Wire (B) (1) Stability Wire (B) Cable 1 (2) No. 16 AWG 2 (C) EVD Cable (D) No. 14 AWG 2 (E) Coaxial Cable (F) No. 16 AWG 3 (G)
3797+22-55.5' rt 3797+09-52' rt	14	1"	22	(2) No. 16 AWG 2 (C)
3797+09-52' lt to	25 (H) 35 (H)	2" 1"	60 60 70	Cable 1 Cable 2 (2) No. 16 AWG 2 (C)
3797+09-52' rt to 3798+41-64' rt			272 136 164 145 544 136 136 272 272	(2) Span Wire (B) (1) Stability Wire (B) Cable 1 Cable 2 (4) No. 16 AWG 2 (C) EVD Cable (D) No. 14 AWG 2 (E) (2) Coaxial Cable (F) (2) No. 16 AWG 3 (G)
3797+20-62' lt to 3798+41-48' lt			252 126 109	(2) Span Wire (B) (1) Stability Wire (B) Cable 4
3798+29-54' lt to 3798+41-49' lt	18	1"	54	(2) No. 16 AWG 2 (C)
3798+41-48' lt	25 (H) 35 (H)	2" 1"	60 70	Cable 4 (2) No. 16 AWG 2 (C)
3798+41-49' lt to 3798+41-64' rt			228 114 76 114 456 50 50 233 233	(2) Span Wire (B) (1) Stability Wire (B) Cable 3 Cable 4 (4) No. 16 AWG 2 (C) EVD Cable (D) No. 14 AWG 2 (E) (2) Coaxial Cable (F) (2) No. 16 AWG 3 (G)
3798+19-67.5' rt to 3798+41-64' rt	21	1"	60	(2) No. 16 AWG 2 (C)
3798+41-64' lt	25 (H) 35 (H) 35 (H)	2" 1" 2 1/2"	95 105 70	Cable 3 Cable 1, 2, 4 (2) No. 16 AWG 2 (C)
3798+41-64' rt to 3798+21-75' rt to 3798+231-129' rt	53 22	3" 3"	348 696 174 174 348 348	Cable 1, 2, 3, 4 (8) No. 16 AWG 2 (C) (2) EVD Cable (D) (2) No. 14 AWG 2 (E) (4) Coaxial Cable (F) (4) No. 16 AWG 3 (G)
3798+19–67.5' rt to 3798+41-64' rt	8	2"	58 29	(2) No. 6 RHW (1) No. 6 THW
3800+06-67' rt to 3800+38-49' rt	8' 120	1 2"	128 135	No. 16 AWG 2 (C) No. 14 AWG 5
3800+38-49' rt to 3800+41-33' lt	16	1"	19 19	No. 16 AWG 2 (C) No. 14 AWG 5
3800+52-35' rt to 3800+41-33' lt	20	1"	31	No. 16 AWG 2 (C)

QUANTITIES (A)

STATION	40' Wood Pole	45' Wood Pole with Guy Wires	Concrete Foundation - Traffic Signals	Controller Type 1 and Cabinet	1" Dia Rigid Conduit	2" Dia Rigid Conduit	2.5" 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 12 Conductor Cable	No. 16 AWG 2 Conductor Cable	No. 16 AWG 3 Conductor Cable	Coaxial Cable	½" Span Wire Extra High Strength Steel	½" Stability Wire Extra High Strength Steel	1-Way 5 Section Head W/12" Lens - Span Wire Mounted	1-Way 3 Section Head W/12" Lens - Span Wire Mounted	1-Way 3 Section Head W/12" Lens - Wood Pole Mounted	Pedestrian Countdown Signal Head - Wood Pole Mounted	Pedestrian Pushbutton Post and Sign	Pedestrian Pushbutton and Sign	Video Detection System	Mounting Hardware and Cable Hangers	Flat Sheet for Signs - Type XI Refl Sheeting (Same detail as permanent signing)	Junction Box	Emergency Vehicle Pre-emption Unit	Temporary Traffic Signals
	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	LS	SF	EA	EA	EA
3797+09-52' rt		1	1																												
3797+20-62' lt		1																													
3798+41-64' rt		1																													
3798+41-48' lt		1																													
3800+06-67' rt	1																								1						
3798+11-129' rt			1	1																											
3797+22-55.5' rt																								1	1						
3797+20-62' lt																								1	1						
3797+19-67.5' rt																								1	1						
3798+29-54' lt																								1	1						
3798+29-54' lt																								1							
Various Locations				1	248	228	35	75	58	29	427	427	135	1560	2548	977	977	990	495	4	7	4	9			1	1	64	1	1	
TOTAL	1	4	1	1	248	228	35	75	58	29	427	427	135	1560	2548	977	977	990	495	4	7	4	9	5	5	1	1	64	1	1	1

(A) These items shall not be bid separately but shall be included in the item "Temporary Traffic Signals".

(B) ½" Extra High Strength Steel

(C) Pedestrian Pushbutton Conductor

(D) Emergency Vehicle Detector Cable

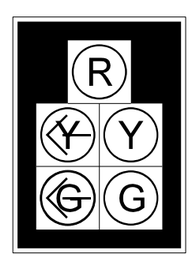
(E) Indicator Lamp Conductor

(F) Video Detection - (As Required by Manufacturer)

(G) Video Detection Power Cable - (As Required by Manufacturer)

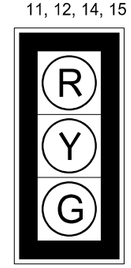
(H) Wood Pole Mounted Condut

Head 1, 5, 9, 13



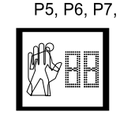
5" Louvered Backplate

Head 2, 3, 4, 6 ,7, 8, 10
11, 12, 14, 15



5" Louvered Backplate

Heads P1, P2, P3, P4,
P5, P6, P7, P8, P9



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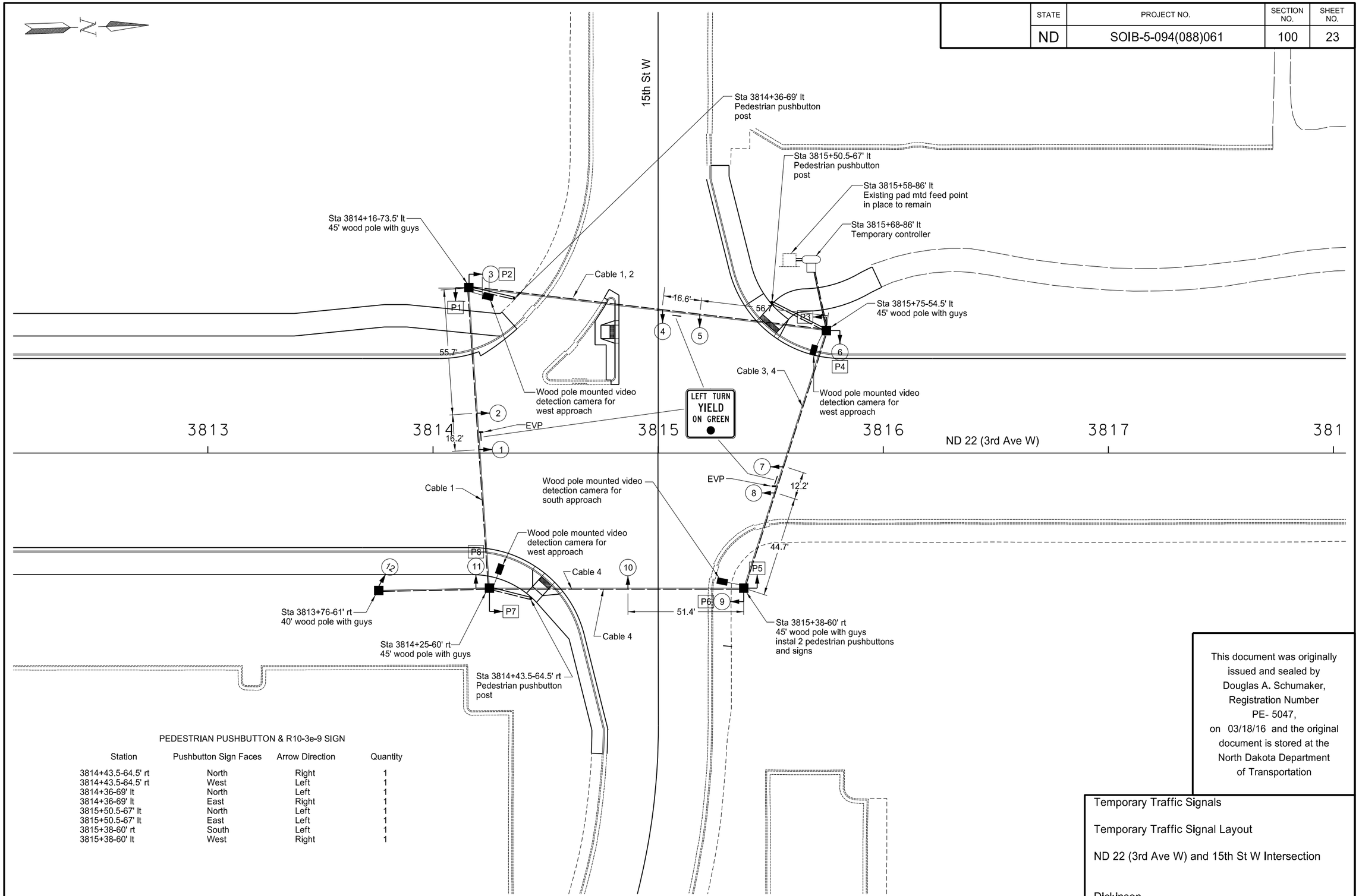
Temporary Traffic Signals

Cable Runs and Quantities

ND 22 (3rd Ave W) and 12 St W/Museum Drive

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	23



PEDESTRIAN PUSHBUTTON & R10-3e-9 SIGN

Station	Pushbutton Sign Faces	Arrow Direction	Quantity
3814+43.5-64.5' rt	North	Right	1
3814+43.5-64.5' rt	West	Left	1
3814+36-69' lt	North	Left	1
3814+36-69' lt	East	Right	1
3815+50.5-67' lt	North	Left	1
3815+50.5-67' lt	East	Left	1
3815+38-60' rt	South	Left	1
3815+38-60' lt	West	Right	1

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Temporary Traffic Signals

Temporary Traffic Signal Layout

ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	100	24

STATION	CONDUIT RUNS LF	CONDUIT RUNS DIA	CABLE RUNS LF	CABLE RUNS Type
3813+76–61' rt	25 (H)	2"	56	Cable 5
3813+76-61' rt to 3814+25-60' rt			51 51	(1) Stability Wire (B) Cable 4
3814+43.56-64.5' rt 3814+25-60' rt	19	1"	54	(2) No. 16 AWG 2 (C)
3797+09-52' lt to	25 (H) 35 (H)	2" 1"	57 60 70	Cable 1 Cable 4 (2) No. 16 AWG 2 (C)
3814+25-60' lt to 3814+16-73.5' lt			292 146 146 292 76 76 146 146	(2) Span Wire (B) (1) Stability Wire (B) Cable 1 (2) No. 16 AWG 2 (C) EVD Cable (D) No. 14 AWG 2 (E) Coaxial Cable (F) No. 16 AWG 3 (G)
3814+36-69' lt 3814+16-73.5' lt	20	1"	56	(2) No. 16 AWG 2 (C)
3814+16-73.5' lt to	25 (H) 35 (H)	2" 1"	57 60 70	Cable 1 Cable 4 (2) No. 16 AWG 2 (C)
3814+16-73.5' lt to 3815+75-54.5' lt			286 143 170 292 146 146 297 297	(2) Span Wire (B) (1) Stability Wire (B) Cable 1 (2) No. 16 AWG 2 (C) EVD Cable (D) No. 14 AWG 2 (E) (2) Coaxial Cable (F) (2) No. 16 AWG 3 (G)
3814+25-60 rt to 3815+38-60'rt			234 117 129 122 122	(2) Span Wire (B) (1) Stability Wire (B) Cable 4 (2) Coaxial Cable (F) (2) No. 16 AWG 3 (G)
3815+38-60' rt to	25 (H) 35 (H)	2" 1"	60 70	Cable 3 (2) No. 16 AWG 2 (C)
3815+38-60' rt to 3815+75-54.5' lt			228 114 138 114 456 68 68 233 233	(2) Span Wire (B) (1) Stability Wire (B) Cable 3 Cable 4 (4) No. 16 AWG 2 (C) EVD Cable (D) No. 14 AWG 2 (E) (2) Coaxial Cable (F) (2) No. 16 AWG 3 (G)
3815+50.5-67' lt 3815+75-54.5' lt	27	1"	70	(2) No. 16 AWG 2 (C)
3815+75-54.5' lt	25 (H) 35 (H) 35 (H)	2" 1" 2 1/2"	95 105 70	Cable 3 Cable 1, 2, 4 (2) No. 16 AWG 2 (C)
3815+75-54.5' lt to 3815+68-86' lt	31	3"	164 328 82 82 164 164	Cable 1, 2, 3, 4 (8) No. 16 AWG 2 (C) (2) EVD Cable (D) (2) No. 14 AWG 2 (E) (4) Coaxial Cable (F) (4) No. 16 AWG 3 (G)
3815+68-86' lt to 3815+58-6486' lt	8	2"	58 29	(2) No. 6 RHW (1) No. 6 THW

QUANTITIES (A)

STATION	40' Wood Pole	45' Wood Pole with Guy Wires	Concrete Foundation - Traffic Signals	Controller Type 1 and Cabinet	1" Dia Rigid Conduit	2" Dia Rigid Conduit	2.5" 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 12 Conductor Cable	No. 16 AWG 2 Conductor Cable	No. 16 AWG 3 Conductor Cable	Coaxial Cable	½" Span Wire Extra High Strength Steel	½" Stability Wire Extra High Strength Steel	1-Way 5 Section Head W/12" Lens - Span Wire Mounted	1-Way 5 Section Head W/12" Lens - Wood Pole Mounted	1-Way 3 Section Head W/12" Lens - Span Wire Mounted	1-Way 3 Section Head W/12" Lens - Wood Pole Mounted	Pedestrian Countdown Signal Head - Wood Pole Mounted	Pedestrian Pushbutton Post and Sign	Pedestrian Pushbutton and Sign	Video Detection System	Mounting Hardware and Cable Hangers	Flat Sheet for Signs - Type XI Refl Sheeting (Same detail as permanent signing)			Temporary Traffic Signals
STATION	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	LS	SF			EA
3814+16-73.5' lt		1	1																												
3814+25-60' rt		1																													
3815+38-60' rt		1																							2						
3815+75-54.5' lt		1																													
3813+76-61' rt	1																														
3815+68-86' lt			1	1																											
3814+43.5-64.5' rt																								1	1						
3814+36-69' lt																								1	1						
3815+50.5-67' lt																								1	1						
Various Locations				1	206	133	35	31	58	29	372	372	1462	1828	962	962	1040	571	4	1	4	4	8			1	1	48			
TOTAL	1	4	1		206	133	35	31	58	29	372	372	1462	1828	962	962	1040	571	4	1	4	4	9	3	5	1	1	48		1	1

(A) These items shall not be bid separately but shall be included in the item "Temporary Traffic Signals".

(B) ½" Extra High Strength Steel

(C) Pedestrian Pushbutton Conductor

(D) Emergency Vehicle Detector Cable

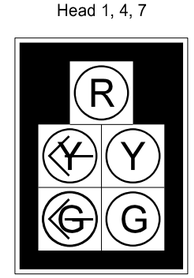
(E) Indicator Lamp Conductor

(F) Video Detection - (As Required by Manufacturer)

(G) Video Detection Power Cable - (As Required by Manufacturer)

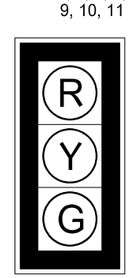
(H) Wood Pole Mounted Condut

Head 1, 4, 7



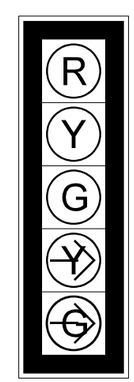
5" Louvered Backplate

Head 2, 3, 5, 8, 9, 10, 11



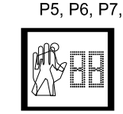
5" Louvered Backplate

Heads 12



5" Louvered Backplate

Heads P1, P2, P3, P4, P5, P6, P7, P8



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Temporary Traffic Signals

Cable Runs and Quantities

ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	SOIB-5-094(088)061	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
3796+89 Rt		399	6.2		10.5				2.25 x 2.25 12 ga	12.7						1	4	2.5 x 2.5 12 ga				
3797+10 Lt	SN 5			16.0																		Mount on Mast Arm
3797+26 Rt	SN 5			16.0																		Mount on Mast Arm
3798+20 Lt	SN 5			16.0																		Mount on Mast Arm
3798+24 Rt									2 x 2 12 ga										1	1		
3798+26 Rt									2 x 2 12 ga										1	1		
3798+56 Lt		399	6.2		10.5				2.25 x 2.25 12 ga	12.7						1	4	2.5 x 2.5 12 ga				
3798+76 Rt	SN 5			16.0																		Mount on Mast Arm
3798+76. Rt																			1			Mount on Mast Arm
3798+83 Rt	SN 1		22.5		9.2	9.2			2.5 x 2.5 10 ga	10.0						2	4	3 x 3 7 ga			2	
3799+18 Lt									2 x 2 12 ga										1	1		
3799+28 Rt		17		16.0	9.9				2.5 x 2.5 12 ga	10.4	3.5				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
3799+36 Lt		371	6.0																			Mount on Light Standard
3799+48 Rt		399	6.2		10.5				2.25 x 2.25 12 ga	12.7						1	4	2.5 x 2.5 12 ga				
3799+74 Rt		436	24.6		11.0	11.0			2.25 x 2.25 12 ga	11.3	3.6	3.6			2 x 2 12 ga	2	4	3 x 3 7 ga			2	
3808+51 Rt	SN 5			16.0																		Mount on Mast Arm
3808+84 Lt									2 x 2 12 ga										1	1		
3809+75 Rt		371	6.0																			Mount on Light Standard
3809+83 Lt									2 x 2 12 ga										1	1		
3810+83 Lt		17		16.0	9.9				2.5 x 2.5 12 ga	10.4	3.5				2.25 x 2.25 12 ga	1	4	3 x 3 7 ga			1	
3810+93 Rt		14		4.0	9.2				2 x 2 12 ga	13.0						1	4	2.25 x 2.25 12 ga				
3811+17 Rt		10		7.5	10.2				2.25 x 2.25 12 ga	10.6						1	4	2.5 x 2.5 12 ga				
3811+33 Rt		1	5.2		9.7				2 x 2 12 ga	10.5						1	4	2.25 x 2.25 12 ga				
3811+43 Rt									2 x 2 12 ga										1	1		
3811+56 Rt		9		5.0	9.7				2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga				
3811+83 Lt		436	24.6		11.0	11.0			2.25 x 2.25 12 ga	11.3	3.6	3.6			2 x 2 12 ga	2	4	3 x 3 7 ga			2	
3812+83 Lt		9		5.0	9.7				2 x 2 12 ga	11.5						1	4	2.25 x 2.25 12 ga				
3813+83 Lt	SN 3		6.2		9.7	9.7			2.5 x 2.5 10 ga	10.5						2	4	3 x 3 7 ga			2	
3814+59 Rt	SN 5			16.0																		Mount on Mast Arm
3814+59. Rt	SN 4		16.0																			Mount on Mast Arm
3814+74 Rt									2 x 2 12 ga										1	1		
3814+75 Lt				5.0																		Mount on Mast Arm
3815+43 Lt	SN 5			16.0																		Mount on Mast Arm
3815+43. Lt	SN 4		16.0																			Mount on Mast Arm

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")

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Sign Summary
Perforated Tube

Exit 61

I-94

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
N.D.	SOIB-5-094(088)061	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
3815+59 Rt				5.0																		Mount on Mast Arm
3817+47 Lt									2 x 2 12 ga										1	1		
3819+50 Lt		391	6.2																			Mount on Light Standard
RP 74.756 Rt	SN 2		14.0		12.4	13.4			2.5 x 2.5 10 ga	15.1						2	4	3 x 3 7 ga			2	
Sub Total			165.9	175.5		**Total**	207.0									**Total**	80		9	8	12	
Grand Total			165.9	175.5		**Total**	207.0									**Total**	80		9	8	12	

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")

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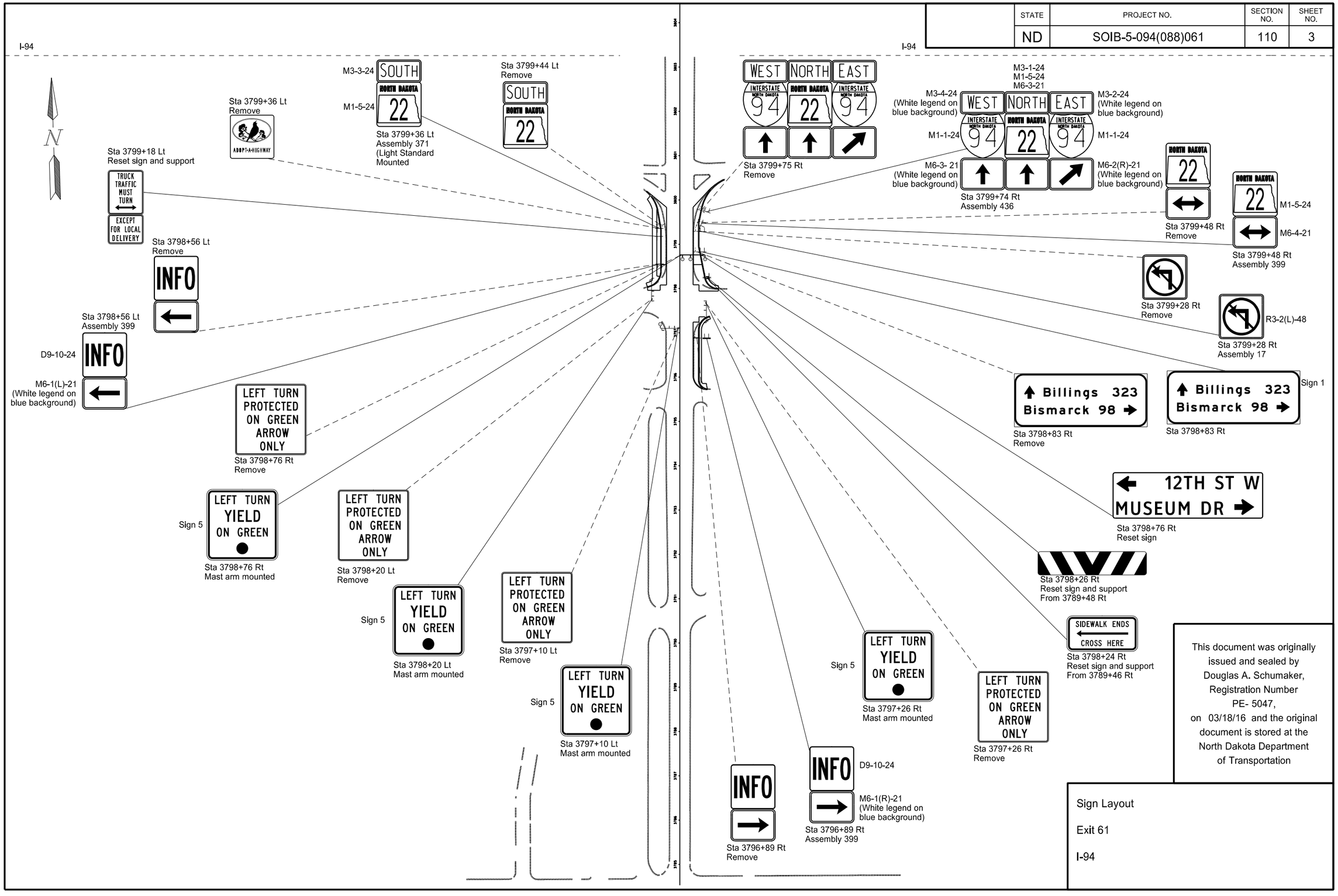
Sign Summary
Perforated Tube

Exit 61

I-94

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	110	3



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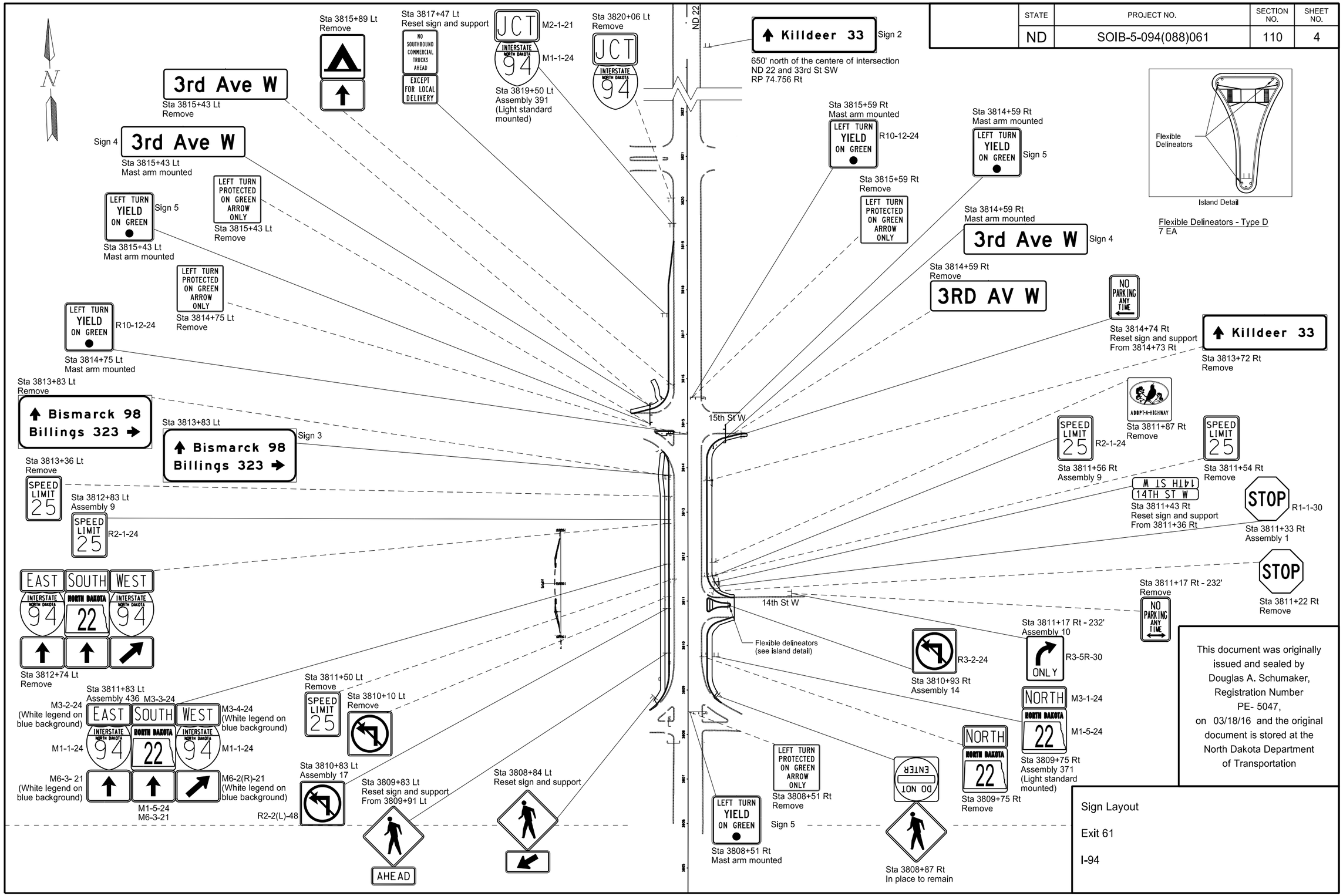
Sign Layout

Exit 61

I-94

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	110	4



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Sign Layout

Exit 61

I-94

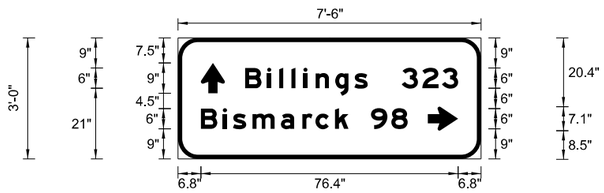
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	110	5

SIGN NUMBER	Sign 1
WIDTH x HEIGHT	7'-6" x 3'-0"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	6"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ARDD	6.8	19.5	7.1	9	90
ARDD	74.2	8.4	7.1	9	0

STATION(S):
3798+83 Rt

AREA: 22.5 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Conv_Destination.ssl

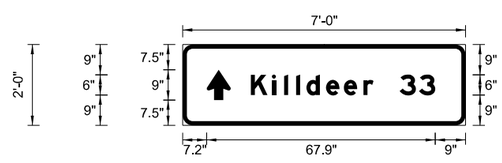
LETTER POSITION (X)											LENGTH	SIZE	SERIES
B	i	l	l	i	n	g	s	3	2	3	63.3	6/4.5	EM 2000
19.9	26.5	30.1	33.7	37.3	40.9	46.7	52.4	66.4	72.5	78.4			
B	i	s	m	a	r	c	k	9	8		61.4	6/4.5	EM 2000
6.8	13.3	16.3	22.1	30.5	36.9	40.8	46.6	57.3	63.4				

SIGN NUMBER	Sign 2
WIDTH x HEIGHT	7'-0" x 2'-0"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	3"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ARDD	7.2	7.5	7.1	9	90

STATION(S):
3813+72 Rt

AREA: 14.0 Sq.Ft.



Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Conv_Destination.ssl

LETTER POSITION (X)											LENGTH	SIZE	SERIES
K	i	l	l	d	e	e	r	3	3		54.8	6/4.5	EM 2000
20.3	26.5	30.1	33.7	36.8	42.6	47.9	53.7	64.4	70.2				

SIGN NUMBER	Sign 3
WIDTH x HEIGHT	7'-6" x 3'-0"
BORDER WIDTH	1.25" (inset 0")
CORNER RADIUS	6"
MOUNTING	Ground
BACKGROUND	TYPE: IV Reflective
	COLOR: Green
LEGEND/BORDER	TYPE: IV Reflective
	COLOR: White

SYMBOL	X	Y	WID	HT	ANGLE
ARDD	7.7	19	7.1	9	90
ARDD	73.3	8	7.1	9	0

STATION(S):
3813+83 Lt

AREA: 22.5 Sq.Ft.

Dimensions are in inches.tenths

Letter locations are panel edge to lower left corner

PANEL STYLE: ND_Conv_Destination.ssl

LETTER POSITION (X)											LENGTH	SIZE	SERIES
B	i	s	m	a	r	c	k	9	8		61.4	6/4.5	EM 2000
20.9	27.4	30.3	36.2	44.6	51	54.9	60.7	71.4	77.4				
B	i	l	l	i	n	g	s	3	2	3	59.5	6/4.5	EM 2000
7.7	14.3	17.9	21.5	25.1	28.7	34.5	40.2	50.5	56.6	62.4			

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Sign Details

Exit 61

I-94

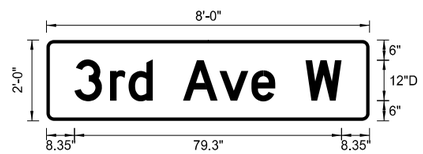
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	110	6

SIGN NUMBER	Sign 4
WIDTH x HEIGHT	8'-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):
3814+59 Rt
3815+43 Lt

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.ssl

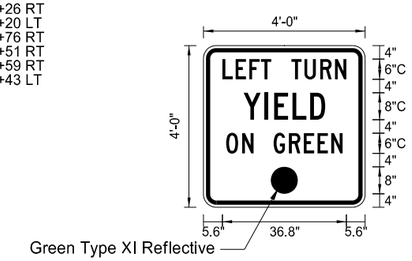
LETTER POSITION (X)									LENGTH	SIZE	SERIES
3	r	d		A	v	e		W	79.3	12/9	D 2000
8.3	18.9	24.4	31.6	40.6	51.4	60.9	68	77			

SIGN NUMBER	Sign 5
WIDTH x HEIGHT	4'-0" x 4'-0"
BORDER WIDTH	1.25" (inset 0.75")
CORNER RADIUS	3"
MOUNTING	Overhead
BACKGROUND	TYPE: XI Reflective
	COLOR: White
LEGEND/BORDER	TYPE: Non-reflective
	COLOR: Black

SYMBOL	X	Y	WID	HT	ANGLE
BALL	20	4	8	8	0

STATION(S):
3797+10 LT
3797+26 RT
3798+20 LT
3798+76 RT
3808+51 RT
3814+59 RT
3815+43 LT

AREA: 16.0 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
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		G	R	E	E	N												34.6	6	C 2000
6.7	11.5	14.8	20.8	25.4	29.8	33.8	37.9														

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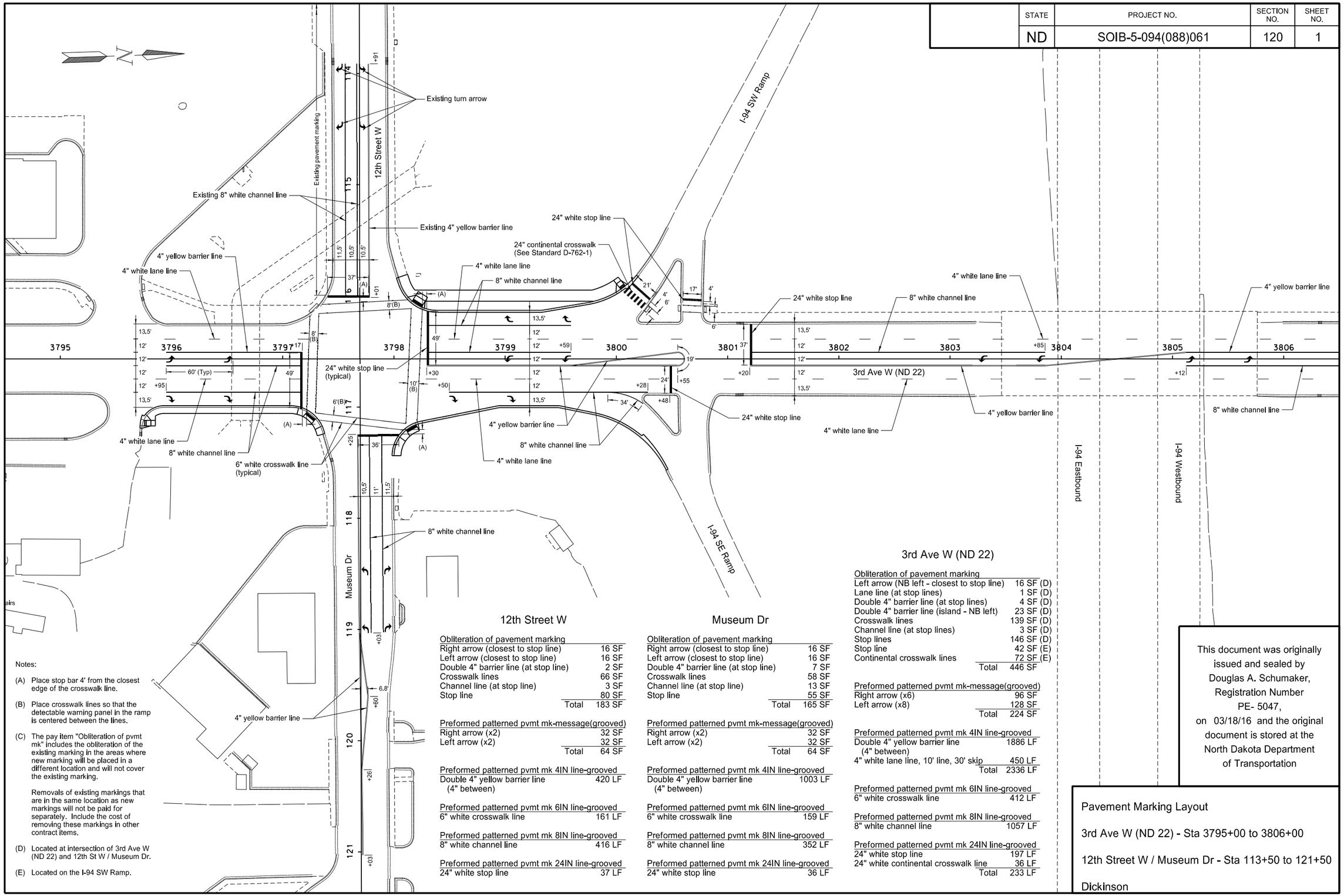
Sign Details

Exit 61

I-94

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	120	1



Notes:

(A) Place stop bar 4' from the closest edge of the crosswalk line.

(B) Place crosswalk lines so that the detectable warning panel in the ramp is centered between the lines.

(C) The pay item "Obliteration of pvmt mk" includes the obliteration of the existing marking in the areas where new marking will be placed in a different location and will not cover the existing marking.

Removals of existing markings that are in the same location as new markings will not be paid for separately. Include the cost of removing these markings in other contract items.

(D) Located at intersection of 3rd Ave W (ND 22) and 12th St W / Museum Dr.

(E) Located on the I-94 SW Ramp.

12th Street W

Obliteration of pavement marking	
Right arrow (closest to stop line)	16 SF
Left arrow (closest to stop line)	16 SF
Double 4" barrier line (at stop line)	2 SF
Crosswalk lines	66 SF
Channel line (at stop line)	3 SF
Stop line	80 SF
Total	183 SF
Preformed patterned pvmt mk-message(grooved)	
Right arrow (x2)	32 SF
Left arrow (x2)	32 SF
Total	64 SF
Preformed patterned pvmt mk 4IN line-grooved	
Double 4" yellow barrier line (4" between)	420 LF
Preformed patterned pvmt mk 6IN line-grooved	
6" white crosswalk line	161 LF
Preformed patterned pvmt mk 8IN line-grooved	
8" white channel line	416 LF
Preformed patterned pvmt mk 24IN line-grooved	
24" white stop line	37 LF

Museum Dr

Obliteration of pavement marking	
Right arrow (closest to stop line)	16 SF
Left arrow (closest to stop line)	16 SF
Double 4" barrier line (at stop line)	7 SF
Crosswalk lines	58 SF
Channel line (at stop line)	13 SF
Stop line	55 SF
Total	165 SF
Preformed patterned pvmt mk-message(grooved)	
Right arrow (x2)	32 SF
Left arrow (x2)	32 SF
Total	64 SF
Preformed patterned pvmt mk 4IN line-grooved	
Double 4" yellow barrier line (4" between)	1003 LF
Preformed patterned pvmt mk 6IN line-grooved	
6" white crosswalk line	159 LF
Preformed patterned pvmt mk 8IN line-grooved	
8" white channel line	352 LF
Preformed patterned pvmt mk 24IN line-grooved	
24" white stop line	36 LF

3rd Ave W (ND 22)

Obliteration of pavement marking	
Left arrow (NB left - closest to stop line)	16 SF (D)
Lane line (at stop lines)	1 SF (D)
Double 4" barrier line (at stop lines)	4 SF (D)
Double 4" barrier line (island - NB left)	23 SF (D)
Crosswalk lines	139 SF (D)
Channel line (at stop lines)	3 SF (D)
Stop lines	146 SF (D)
Stop line	42 SF (E)
Continental crosswalk lines	72 SF (E)
Total	446 SF
Preformed patterned pvmt mk-message(grooved)	
Right arrow (x6)	96 SF
Left arrow (x8)	128 SF
Total	224 SF
Preformed patterned pvmt mk 4IN line-grooved	
Double 4" yellow barrier line (4" between)	1886 LF
4" white lane line, 10' line, 30' skip	450 LF
Total	2336 LF
Preformed patterned pvmt mk 6IN line-grooved	
6" white crosswalk line	412 LF
Preformed patterned pvmt mk 8IN line-grooved	
8" white channel line	1057 LF
Preformed patterned pvmt mk 24IN line-grooved	
24" white stop line	197 LF
24" white continental crosswalk line	36 LF
Total	233 LF

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Pavement Marking Layout

3rd Ave W (ND 22) - Sta 3795+00 to 3806+00

12th Street W / Museum Dr - Sta 113+50 to 121+50

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	120	2

Notes:

(A) Place stop bar 4' from the closest edge of the crosswalk line.

(B) Place crosswalk lines so that the detectable warning panel in the ramp is centered between the lines.

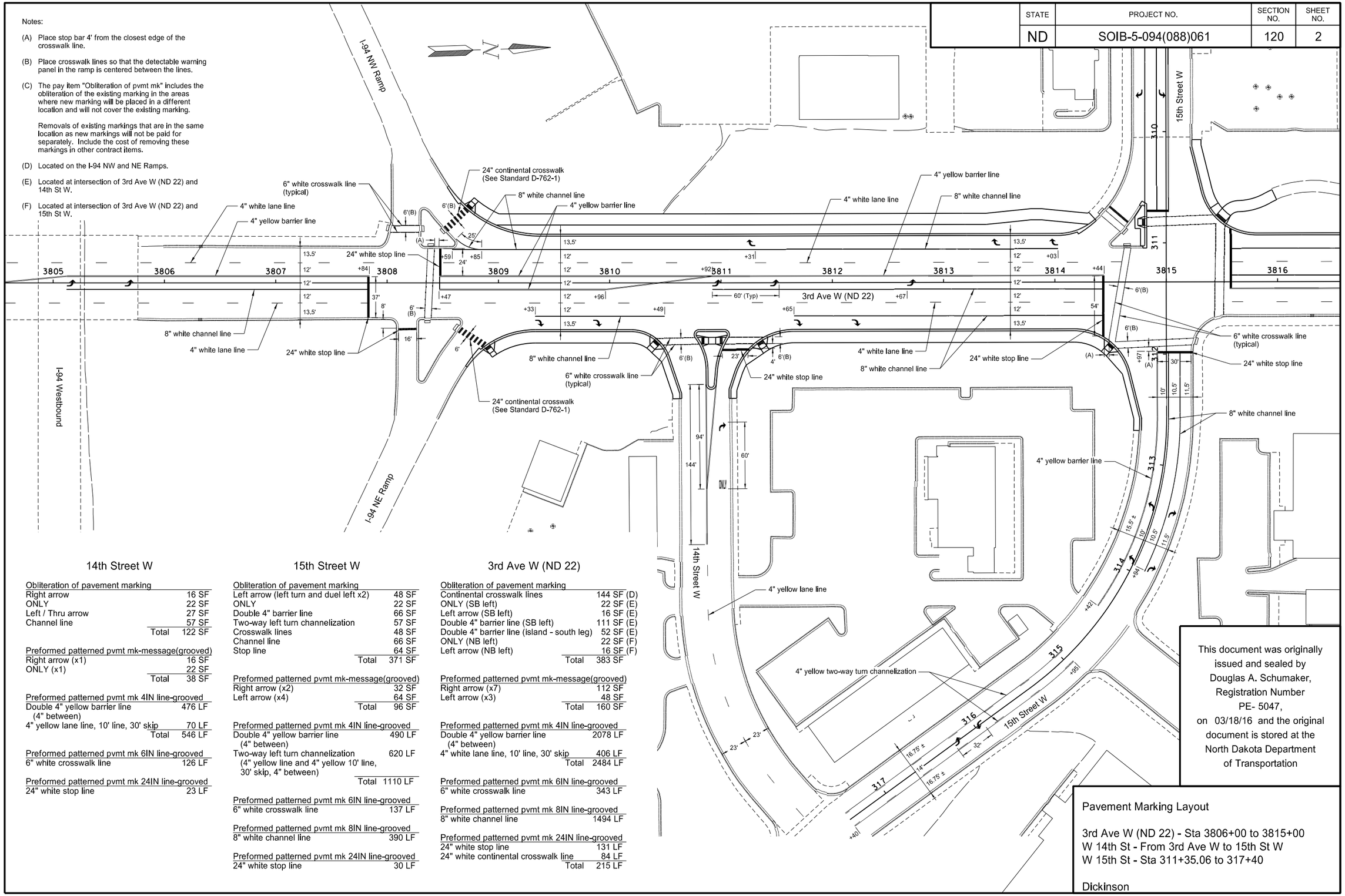
(C) The pay item "Obliteration of pvmt mk" includes the obliteration of the existing marking in the areas where new marking will be placed in a different location and will not cover the existing marking.

Removals of existing markings that are in the same location as new markings will not be paid for separately. Include the cost of removing these markings in other contract items.

(D) Located on the I-94 NW and NE Ramps.

(E) Located at intersection of 3rd Ave W (ND 22) and 14th St W.

(F) Located at intersection of 3rd Ave W (ND 22) and 15th St W.



14th Street W

Obliteration of pavement marking	
Right arrow	16 SF
ONLY	22 SF
Left / Thru arrow	27 SF
Channel line	57 SF
Total	122 SF
Preformed patterned pvmt mk-message(grooved)	
Right arrow (x1)	16 SF
ONLY (x1)	22 SF
Total	38 SF
Preformed patterned pvmt mk 4IN line-grooved	
Double 4" yellow barrier line (4" between)	476 LF
4" yellow lane line, 10' line, 30' skip	70 LF
Total	546 LF
Preformed patterned pvmt mk 6IN line-grooved	
6" white crosswalk line	126 LF
Preformed patterned pvmt mk 24IN line-grooved	
24" white stop line	23 LF

15th Street W

Obliteration of pavement marking	
Left arrow (left turn and duel left x2)	48 SF
ONLY	22 SF
Double 4" barrier line	66 SF
Two-way left turn channelization	57 SF
Crosswalk lines	48 SF
Channel line	66 SF
Stop line	64 SF
Total	371 SF
Preformed patterned pvmt mk-message(grooved)	
Right arrow (x2)	32 SF
Left arrow (x4)	64 SF
Total	96 SF
Preformed patterned pvmt mk 4IN line-grooved	
Double 4" yellow barrier line (4" between)	490 LF
Two-way left turn channelization (4" yellow line and 4" yellow 10' line, 30' skip, 4" between)	620 LF
Total	1110 LF
Preformed patterned pvmt mk 6IN line-grooved	
6" white crosswalk line	137 LF
Preformed patterned pvmt mk 8IN line-grooved	
8" white channel line	390 LF
Preformed patterned pvmt mk 24IN line-grooved	
24" white stop line	30 LF

3rd Ave W (ND 22)

Obliteration of pavement marking	
Continental crosswalk lines	144 SF (D)
ONLY (SB left)	22 SF (E)
Left arrow (SB left)	16 SF (E)
Double 4" barrier line (SB left)	111 SF (E)
Double 4" barrier line (island - south leg)	52 SF (E)
ONLY (NB left)	22 SF (F)
Left arrow (NB left)	16 SF (F)
Total	383 SF
Preformed patterned pvmt mk-message(grooved)	
Right arrow (x7)	112 SF
Left arrow (x3)	48 SF
Total	160 SF
Preformed patterned pvmt mk 4IN line-grooved	
Double 4" yellow barrier line (4" between)	2078 LF
4" white lane line, 10' line, 30' skip	406 LF
Total	2484 LF
Preformed patterned pvmt mk 6IN line-grooved	
6" white crosswalk line	343 LF
Preformed patterned pvmt mk 8IN line-grooved	
8" white channel line	1494 LF
Preformed patterned pvmt mk 24IN line-grooved	
24" white stop line	131 LF
24" white continental crosswalk line	84 LF
Total	215 LF

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Pavement Marking Layout

3rd Ave W (ND 22) - Sta 3806+00 to 3815+00
W 14th St - From 3rd Ave W to 15th St W
W 15th St - Sta 311+35.06 to 317+40

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	120	3

Notes:

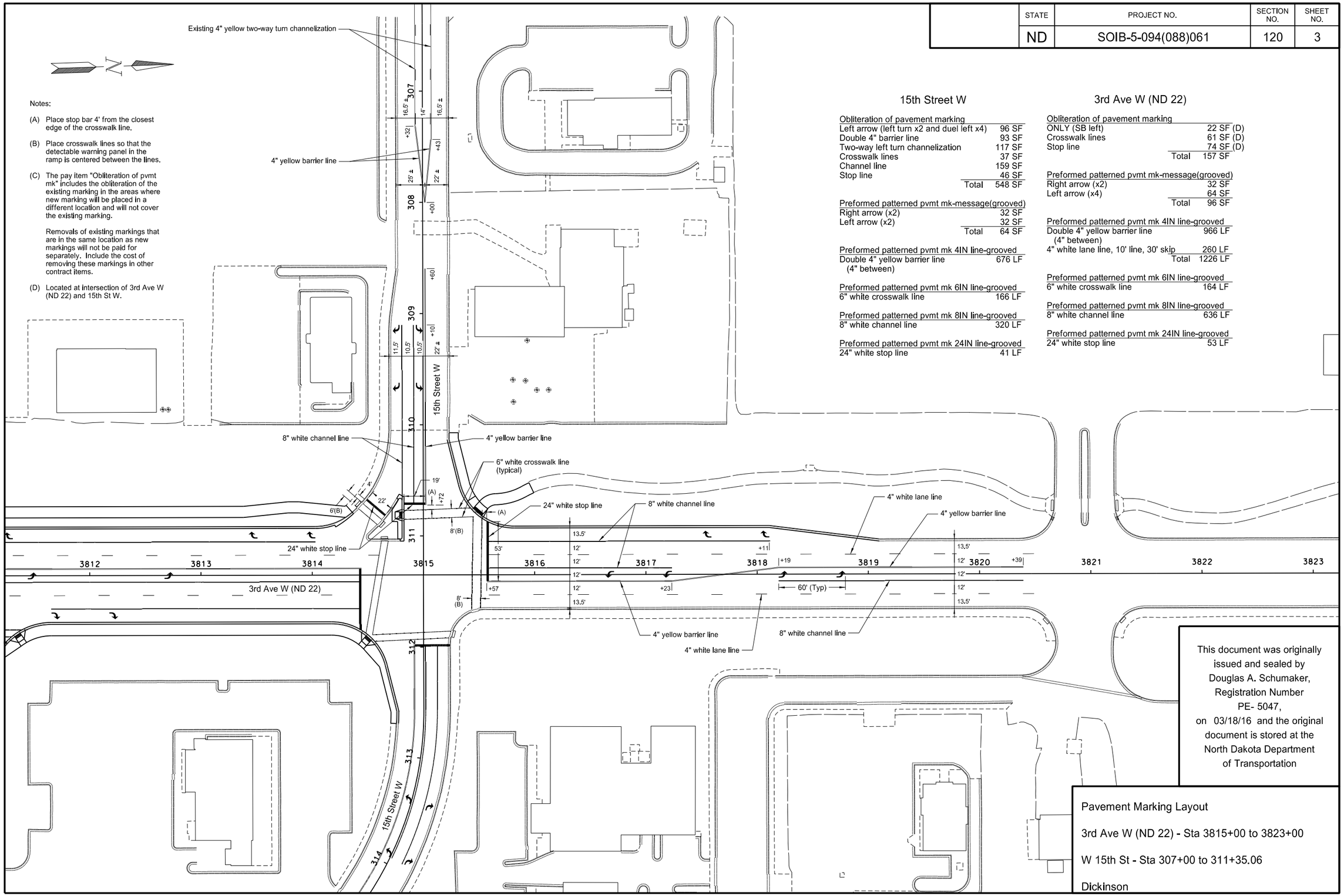
(A) Place stop bar 4' from the closest edge of the crosswalk line.

(B) Place crosswalk lines so that the detectable warning panel in the ramp is centered between the lines.

(C) The pay item "Obliteration of pvmt mk" includes the obliteration of the existing marking in the areas where new marking will be placed in a different location and will not cover the existing marking.

Removals of existing markings that are in the same location as new markings will not be paid for separately. Include the cost of removing these markings in other contract items.

(D) Located at intersection of 3rd Ave W (ND 22) and 15th St W.



15th Street W

Obliteration of pavement marking

Left arrow (left turn x2 and duel left x4)	96 SF
Double 4" barrier line	93 SF
Two-way left turn channelization	117 SF
Crosswalk lines	37 SF
Channel line	159 SF
Stop line	46 SF
Total	548 SF

Preformed patterned pvmt mk-message(grooved)

Right arrow (x2)	32 SF
Left arrow (x2)	32 SF
Total	64 SF

Preformed patterned pvmt mk 4IN line-grooved

Double 4" yellow barrier line (4" between)	676 LF

Preformed patterned pvmt mk 6IN line-grooved

6" white crosswalk line	166 LF

Preformed patterned pvmt mk 8IN line-grooved

8" white channel line	320 LF

Preformed patterned pvmt mk 24IN line-grooved

24" white stop line	41 LF

3rd Ave W (ND 22)

Obliteration of pavement marking

ONLY (SB left)	22 SF (D)
Crosswalk lines	61 SF (D)
Stop line	74 SF (D)
Total	157 SF

Preformed patterned pvmt mk-message(grooved)

Right arrow (x2)	32 SF
Left arrow (x4)	64 SF
Total	96 SF

Preformed patterned pvmt mk 4IN line-grooved

Double 4" yellow barrier line (4" between)	966 LF
4" white lane line, 10' line, 30' skip	260 LF
Total	1226 LF

Preformed patterned pvmt mk 6IN line-grooved

6" white crosswalk line	164 LF

Preformed patterned pvmt mk 8IN line-grooved

8" white channel line	636 LF

Preformed patterned pvmt mk 24IN line-grooved

24" white stop line	53 LF

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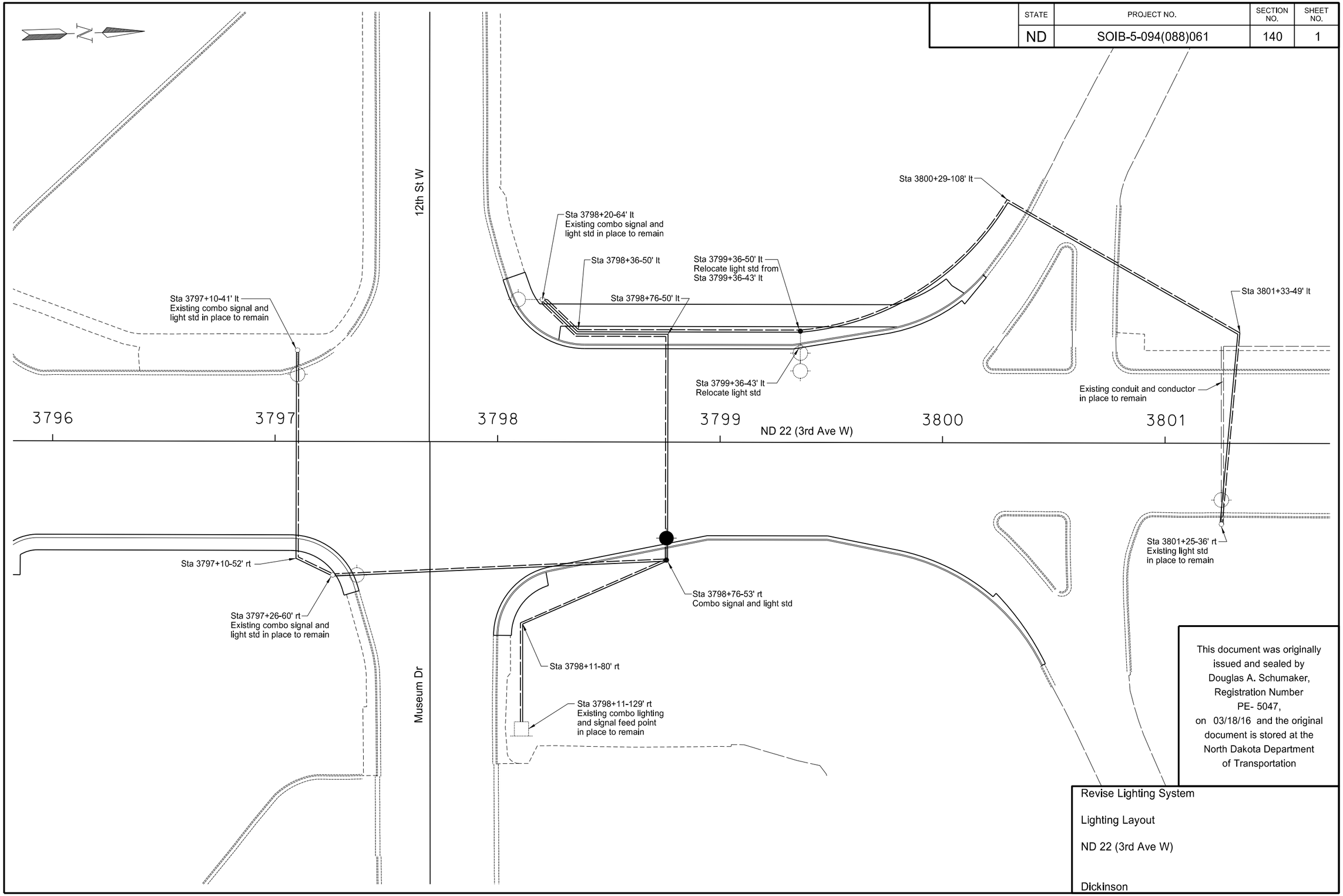
Pavement Marking Layout

3rd Ave W (ND 22) - Sta 3815+00 to 3823+00

W 15th St - Sta 307+00 to 311+35.06

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	140	1



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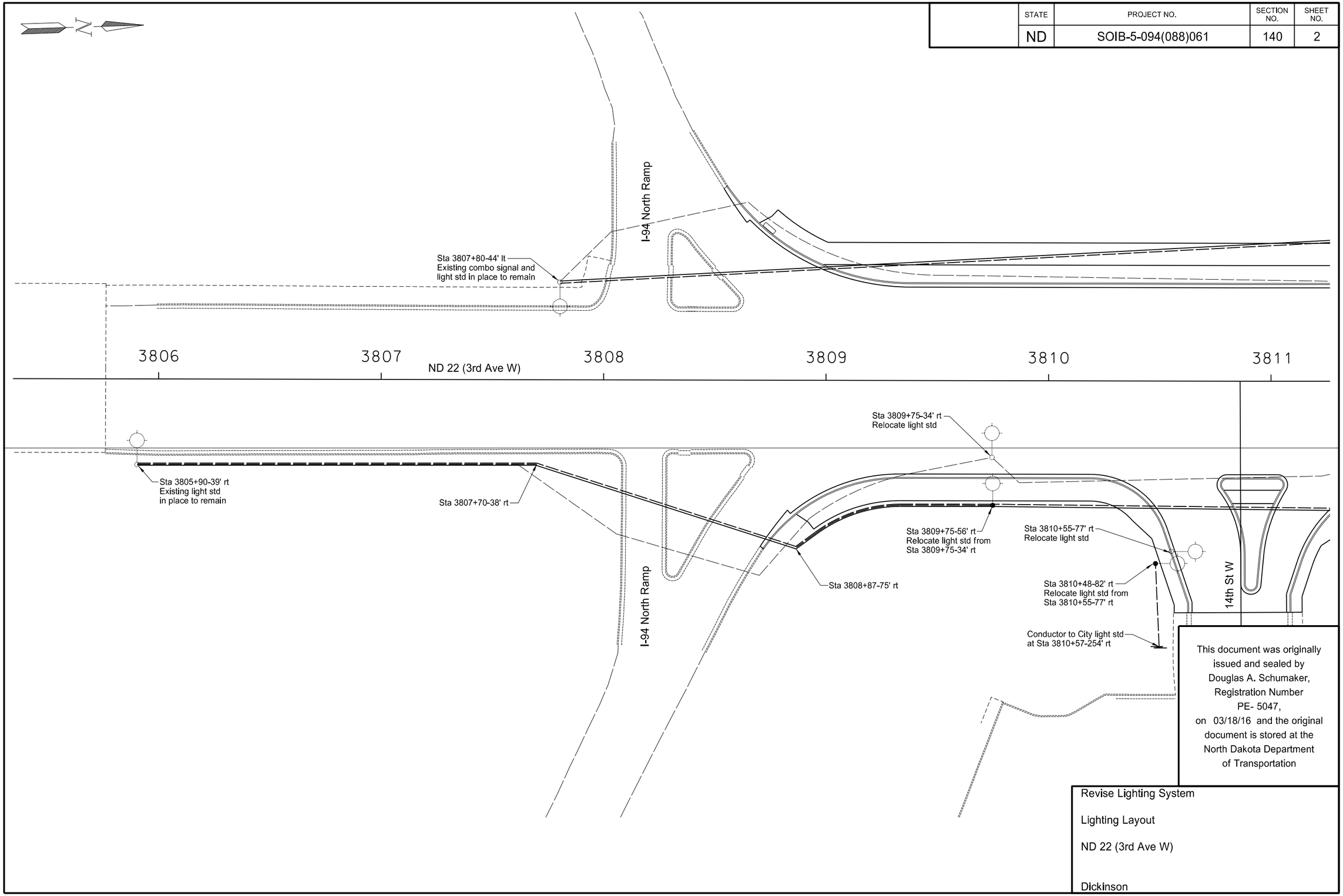
Revise Lighting System

Lighting Layout

ND 22 (3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	140	2



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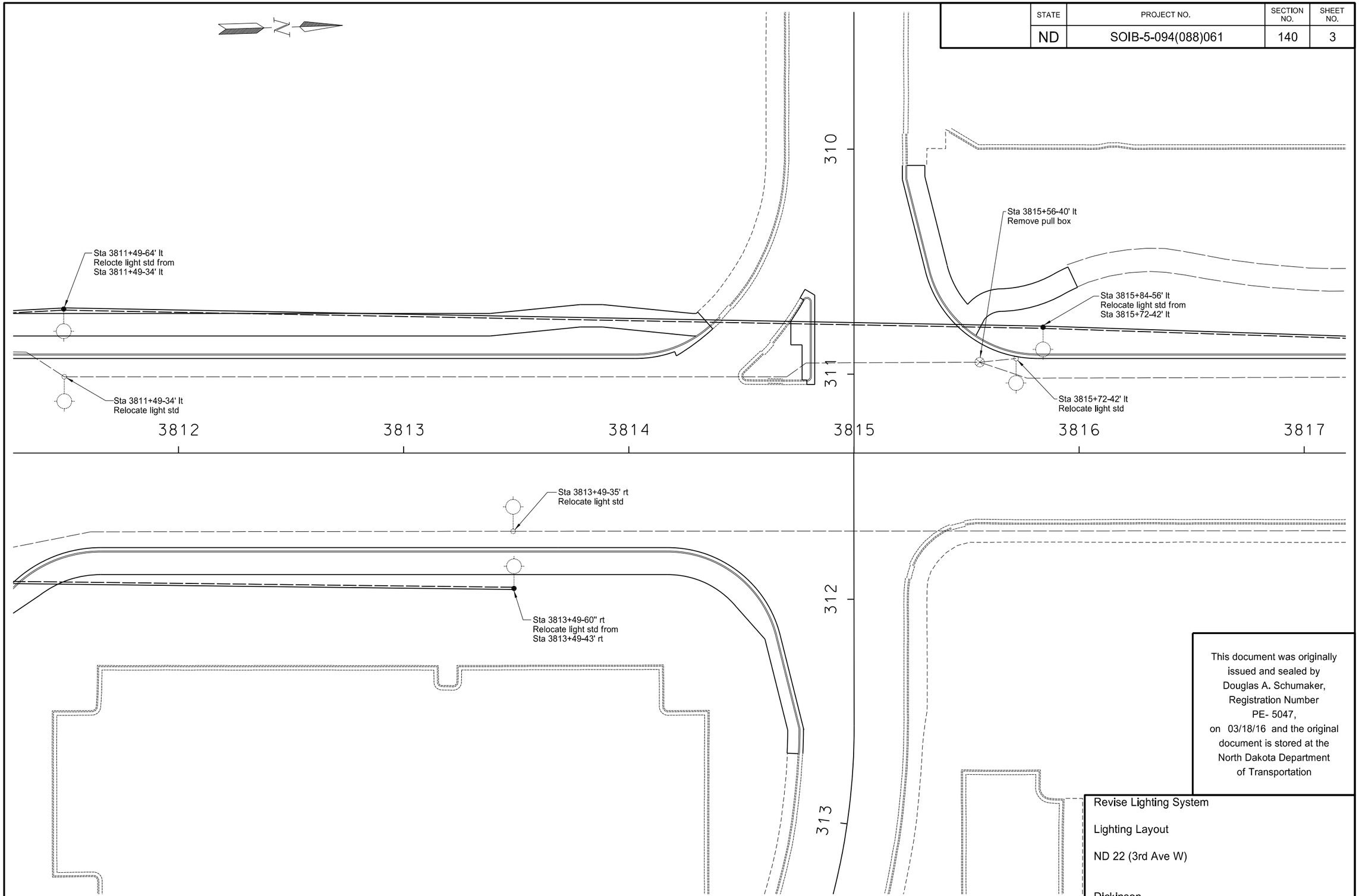
Revise Lighting System

Lighting Layout

ND 22 (3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	140	3



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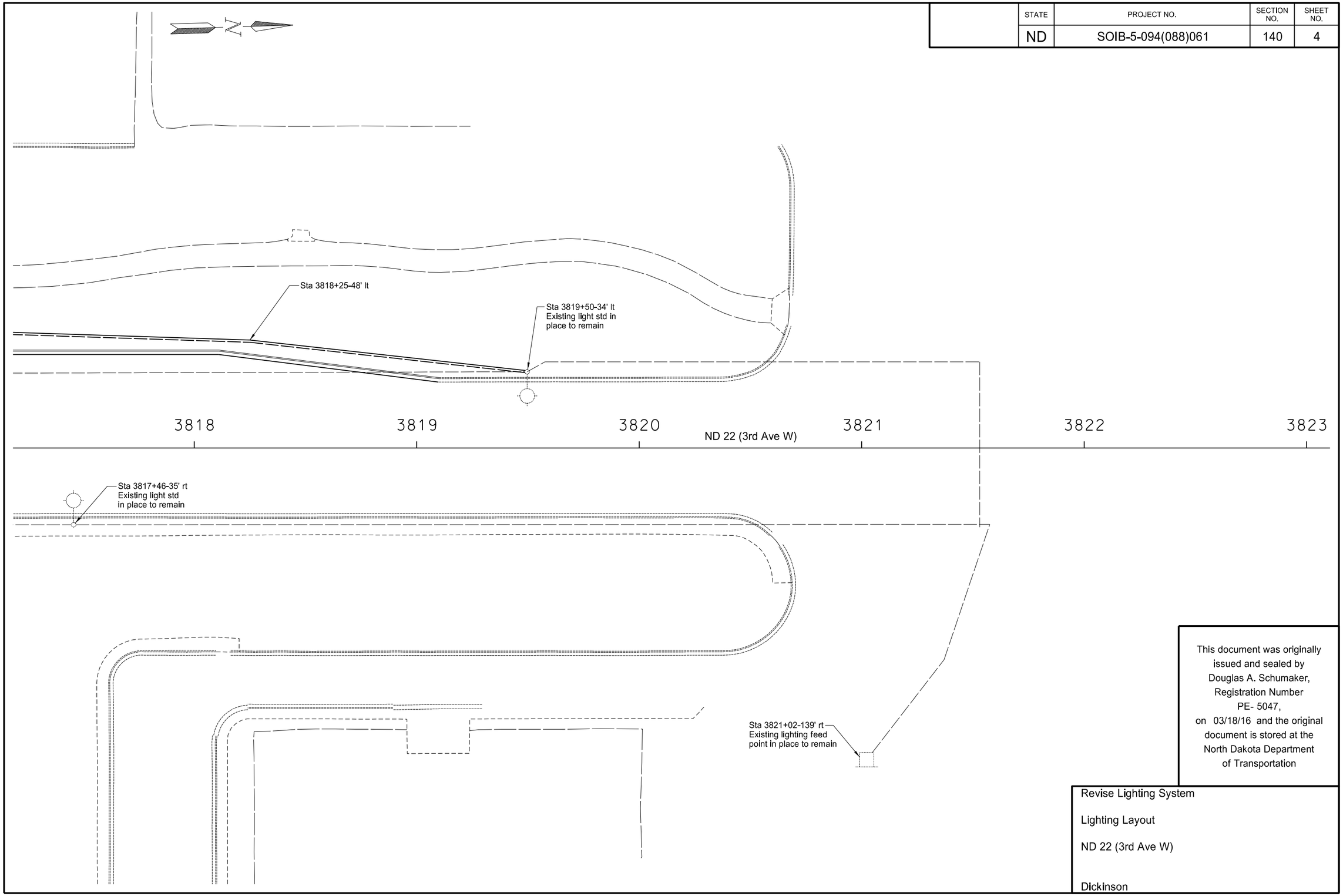
Revise Lighting System

Lighting Layout

ND 22 (3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	140	4



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Revise Lighting System

Lighting Layout

ND 22 (3rd Ave W)

Dickinson

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	140	5

Station	Conduit Runs		Cable Runs	
	LF	Dia	LF	Type
3797+10-41' lt to 3797+10-52' rt to 3797+26-60' rt	 92 17	 2" 2"	238 119	(2) No 4 RHW (1) No 6 THW
3797+26-60' rt to 3798+76-53' rt	 148	 2"	316 158	(2) No 4 RHW (1) No 6 THW
3801+25-36' rt to 3801+33-49' lt to 3800+29-108' lt to 3799+36-50' lt	 85 120 113	 2" 2" 2"	660 330	(2) No 4 RHW (1) No 6 THW
3799+36-50' lt to 3798+36-50' lt to 3798+20-64' lt	 99 20	 2" 2"	258 129	(2) No 4 RHW (1) No 6 THW
3798+20-64' lt to 3798+36-50' lt to 3798+76-50' lt to 3798+76-53' rt	 20 40 102	 2" 2" 2"	344 172	(2) No 4 RHW (1) No 6 THW
3798+76-53' rt to 3798+11-80' rt to 3798+11-129' rt	 71 48	 2" 2"	258 129	(2) No 4 RHW (1) No 6 THW
3819+50-34' lt to 3818+25-48' lt to 3815+84-48 ' lt	 125 240	 2" 2"	750 375	(2) No 4 RHW (1) No 6 THW
3815+84-48' lt to 3811+49-64' lt	 433	 2"	886 443	(2) No 4 RHW (1) No 6 THW
3813+49-60' rt to 3809+75-56' rt	 372	 2"	764 382	(2) No 4 RHW (1) No 6 THW
3809+75-56' rt to 3808+87-75' rt to 3807+70-38'rt to 3805+90-39'rt	 92 122 179	 2" 2" 2"	806 403	(2) No 4 RHW (1) No 6 THW
3810+48-82' rt to (City light std) 3810+57-56' rt (City light std)			364 182	(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	HP Sodium Vapor Luminaire - 250 Watt	Relocate Light Standard	Remove Pull Box			Revise Lighting System
EA	LF	LF	LF	EA	EA	EA			EA
6	2551	5644	2822	1	6	1			1

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

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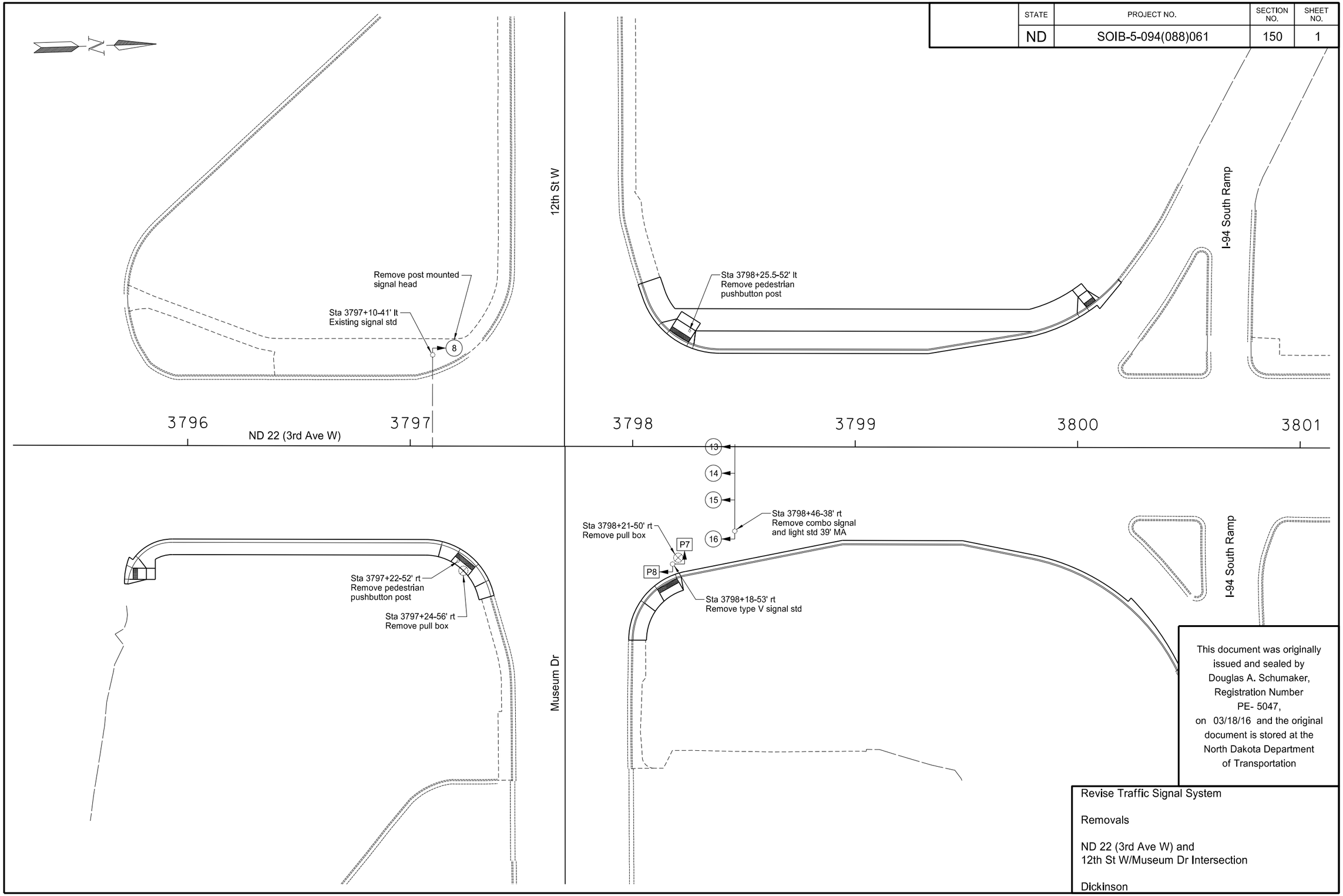
Revise Lighting System

Cable Runs and Quantities

ND 22 (3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	1



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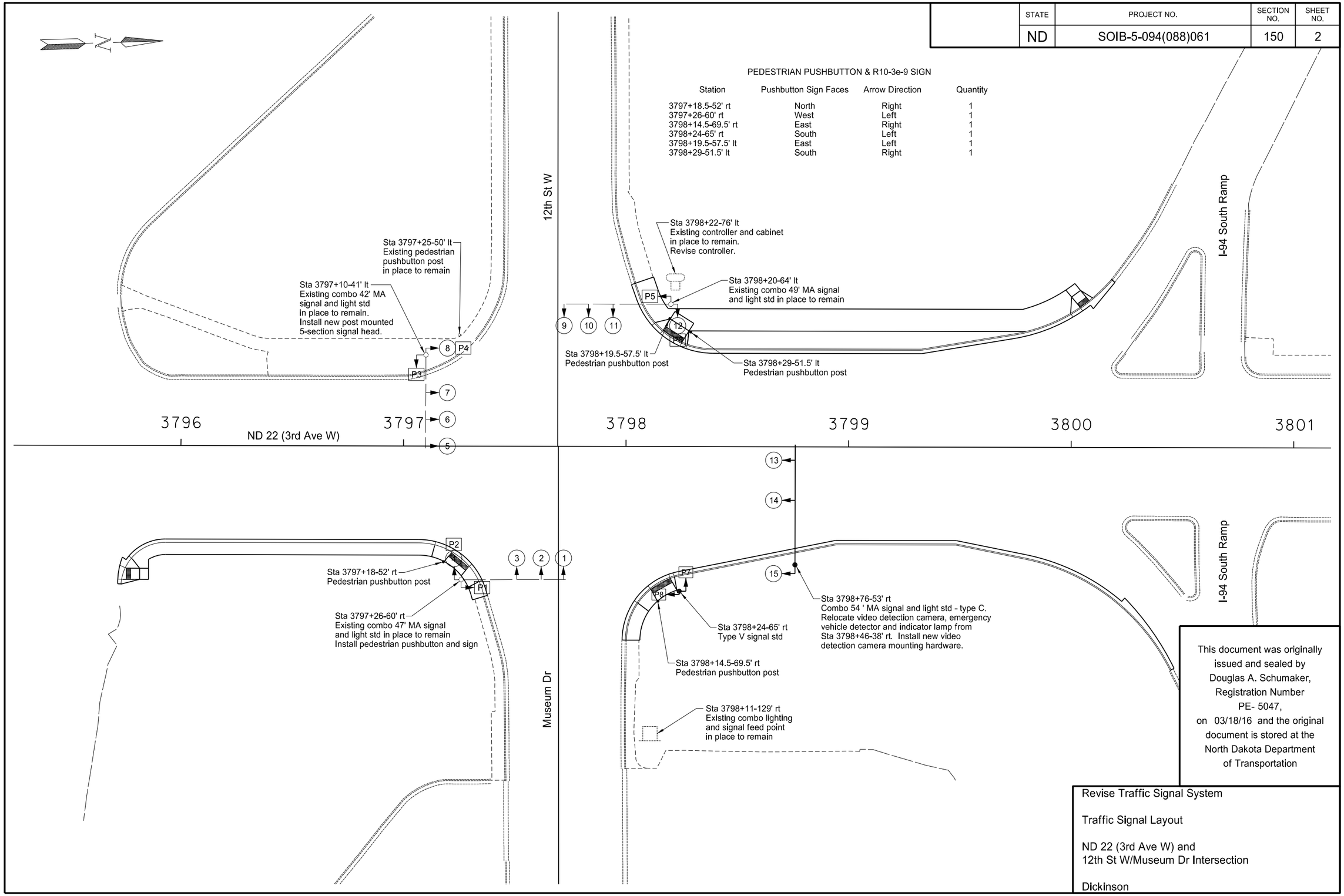
Revise Traffic Signal System

Removals

ND 22 (3rd Ave W) and
12th St W/Museum Dr Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	2



PEDESTRIAN PUSHBUTTON & R10-3e-9 SIGN

Station	Pushbutton Sign Faces	Arrow Direction	Quantity
3797+18.5-52' rt	North	Right	1
3797+26-60' rt	West	Left	1
3798+14.5-69.5' rt	East	Right	1
3798+24-65' rt	South	Left	1
3798+19.5-57.5' lt	East	Left	1
3798+29-51.5' lt	South	Right	1

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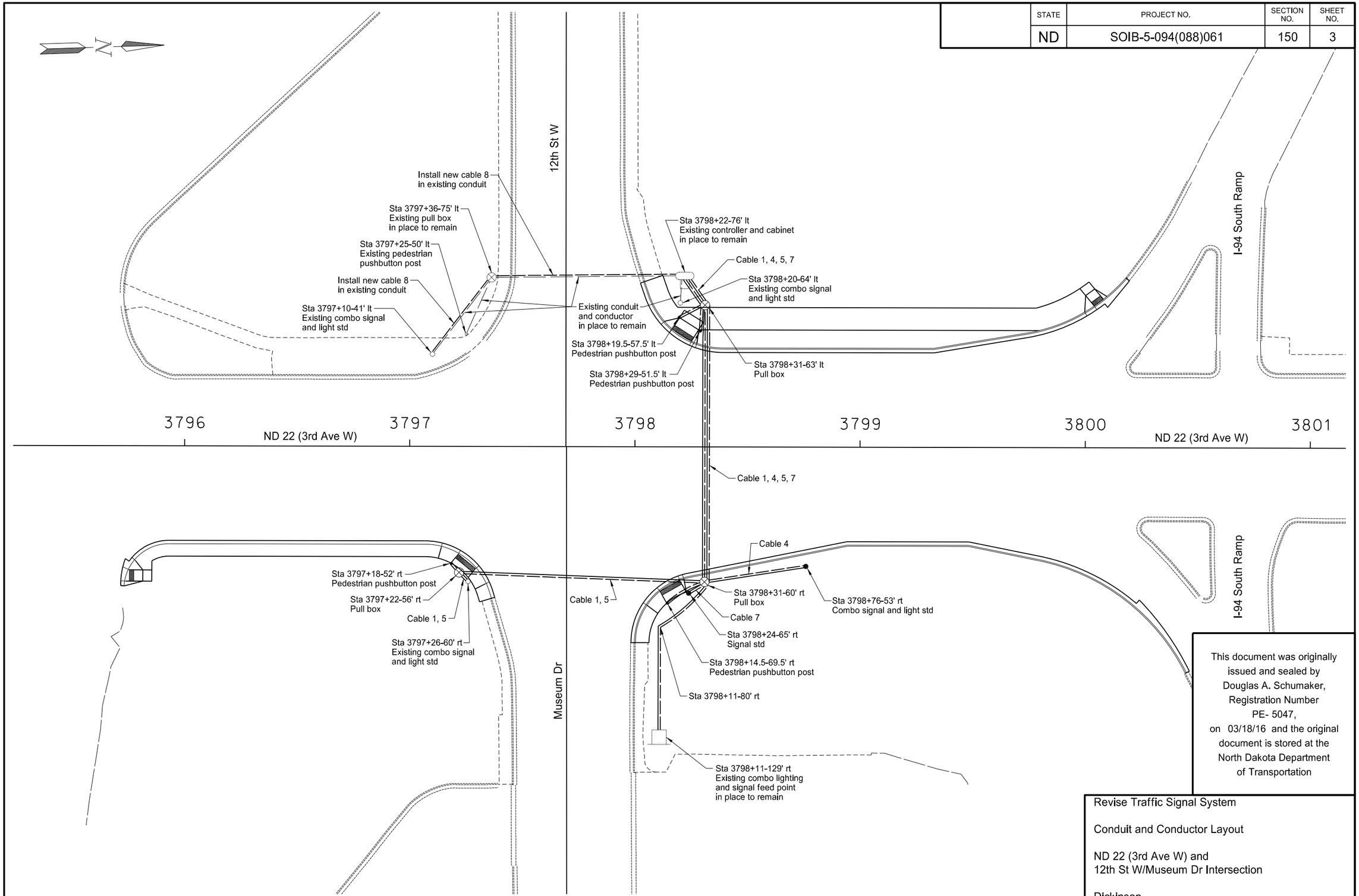
Revise Traffic Signal System

Traffic Signal Layout

ND 22 (3rd Ave W) and
12th St W/Museum Dr Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	3



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Revise Traffic Signal System

Conduit and Conductor Layout

ND 22 (3rd Ave W) and
12th St W/Museum Dr Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	4

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
3797+18-52' rt to 3797+22-56' rt	6	1"	14	No. 16 AWG 2 (A)
3797+18.5-52' rt to 3797+22-56' rt	6	2"	11 11 14 56	Cable 1 Cable 5 No. 16 AWG 2 (A) No. 16 AWG 3 (D)
3797+22-56' rt to 3798+31-60' rt	109	2"	109 109 218 109	Cable 1 Cable 5 (2) No. 16 AWG 2 (A) No. 16 AWG 3 (D)
3798+76-53' rt to 3798+31-60' rt	45	2"	51 104 104 96	Cable 4 EVD cable (B) No. 14 AWG 2 (C) No. 16 AWG 3 (D)
3798+14.5-69.5' rt to 3798+31-60' rt	19	1"	27	No. 16 AWG 2 (A)
3798+24-65' rt to 3798+31-60' rt	8	2"	14 17	Cable 7 No. 16 AWG 2 (A)
3798+31-60' rt to 3798+31-63' lt	122	3"	123 123 123 123 492 123 123 246	Cable 1 Cable 4 Cable 5 Cable 7 (4) No. 16 AWG 2 (A) EVD cable (B) No. 14 AWG 2 (C) (2) No. 16 AWG 3 (D)
3798+19.5-57.5' lt to 3798+31-63' lt	13	1"	21	No. 16 AWG 2 (A)
3798+29.5-51.5' lt to 3798+31-63' lt	12	1"	20	No. 16 AWG 2 (A)
3798+31-63' lt to 3798+22-76' lt	15	3.5"	25 25 25 25 150 25 25 50	Cable 1 Cable 4 Cable 5 Cable 7 (6) No. 16 AWG 2 (A) EVD cable (B) No. 14 AWG 2 (C) (2) No. 16 AWG 3 (D)
3797+10-41' lt to 3797+36-75' lt	42 (E)	2" (E)	48	Cable 8
3797+36-75' lt to 3798+22-76' lt	85 (E)	2.5" (E)	95	Cable 8
3798+11-129' rt to 3798+11-80' rt to 3798+31-60' rt to 3798+31-63' lt to 3798+22-76' lt	48 30 122 15	2" 2" 2" 2"	474 237	(2) No. 6 RHW (1) No. 6 THW

(A) Pedestrian pushbutton conductor

(B) Emergency vehicle detector cable

(C) Indicator lamp conductor

(D) Video detection power cable

(E) Existing conduit

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Revise Traffic Signal System

Cable and Conduit Runs

ND 22 (3rd Ave W) and
12th St W/Museum Dr Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	5

QUANTITIES (A)

STATION	Concrete Foundation - Traffic Signals	Pull Box	2" Dia Rigid Conduit	3" Dia Rigid Conduit	3.5" 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 3 Conductor Cable	No. 14 AWG 5 Conductor Cable	No. 14 AWG 7 Conductor Cable	No. 14 AWG 12 Conductor Cable	No. 16 AWG 2 Conductor Cable	No. 16 AWG 3 Conductor Cable	Type V Signal Std	Combo 54 FT MA Signal and Light Std - Type C	1-Way 3 Section Head W/12" Lens - Mast Arm Mounted	1-Way 5 Section Head W/12" Lens - Post Mounted	1-Way 5 Section Head W/12" Lens - Mast Arm Mounted	Pedestrian Countdown Signal Head - Post Mounted	Pedestrian Pushbutton Post	Pedestrian Pushbutton and Sign	Relocate Video Detection Camera	Video Detection Camera Mounting Hardware	Relocate Emergency Vehicle Detector and Indicator Lamp	Revise Controller (C)	Remove Combo Signal and Light Std	Remove Type V Signal Std	Remove Post Mounted Signal Head	Remove Pedestrian Pushbutton Post	Remove Pull Box				Revise Traffic Signal System - Site 1
	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA				EA
3797+10-41' lt												15 (B)							1											1						
3798+24-65' rt	1									24 (B)						1					2															
3798+76-53' rt	1										52 (B)	85 (B)					1	1	1	1				1	1	1										
Various Locations		3	383	122	15	474	237	252	252		411		629	973	557							4	1				1	1	1		2	2				
TOTAL	2	3	383	122	15	474	237	252	252	24	463	100	629	973	557	1	1	1	2	1	2	4	1	1	1	1	1	1	1	1	2	2				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.

(C) Revise controller includes adding the northbound to eastbound and southbound to westbound right turn overlaps. Installing and connecting new conductors and interconnect cable in the exisitng contoller cabinet. Making any contoller setting changes.

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 54' Mast Arm	18', 17'	16', 16'
Type V Signal Std	4'	3'

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Revise Traffic Signal System

Quantities

ND 22 (3rd Ave W) and
12th St W/Museum Dr Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	6

CONDUCTORS		CABLE 1 (NO.12 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black		P4	Walk
2 White			Neutral
3 Red		5, 6, 7, 8	Red
4 Green			Ground
5 Orange		5, 6, 7, 8	Yellow
6 Blue		5, 6, 7, 8	Green
7 White	Black	P4	Don't Walk
8 Red	Black		Spare
9 Green	Black	P2, P3	Walk
10 Orange	Black	5	Yellow Left Arrow
11 Blue	Black	5	Green Left Arrow
12 Black	White	P2, P3	Don't Walk

CONDUCTORS		CABLE 2 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black		P1, P8	Walk
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange		1	Yellow Left Arrow
6 Blue		1	Green Left Arrow
7 White	Black	P1, P8	Don't Walk
8 Red	Black	1, 2, 3, 4	Red
9 Green	Black		Walk
10 Orange	Black	1, 2, 3, 4	Yellow
11 Blue	Black	1, 2, 3, 4	Green
12 Black	White		Don't Walk

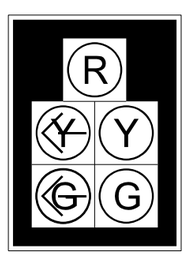
CONDUCTORS		CABLE 4 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black		15	Green Right Arrow
2 White			Neutral
3 Red		13, 14, 15	Red
4 Green			Ground
5 Orange		13, 14, 15	Yellow
6 Blue		13, 14, 15	Green
7 White	Black	15	Yellow Right Arrow
8 Red	Black		Spare
9 Green	Black		Spare
10 Orange	Black	13	Yellow Left Arrow
11 Blue	Black	13	Green Left Arrow
12 Black	White		Spare

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

CONDUCTORS		CABLE 7 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black		P8	Walk
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange			Spare
6 Blue			Spare
7 White	Black	P8	Don't Walk
8 Red	Black		Spare
9 Green	Black	P7	Walk
10 Orange	Black		Spare
11 Blue	Black		Spare
12 Black	White	P7	Don't Walk

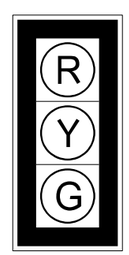
CONDUCTORS		CABLE 8 (NO.14 AWG 5)	
BASE	TRACER	HEAD	INDICATION
1 Black		8	Green Right Arrow
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange		8	Yellow Right Arrow

Head 13



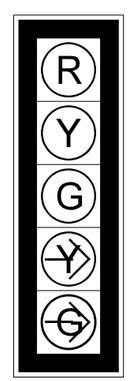
5" Louvered Backplate

Head 14



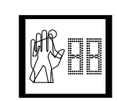
5" Louvered Backplate

Heads 8, 15



5" Louvered Backplate

Heads P7, P8



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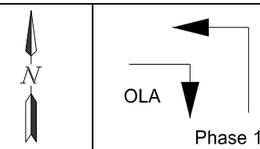
Revise Traffic Signal System

Signal Heads and Conductors

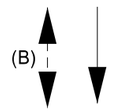
ND 22 (3rd Ave W) and
12th St W/Museum Dr Intersection

Dickinson

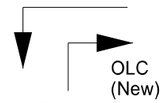
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	7



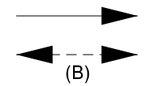
Phase 1



Phase 2



Phase 3



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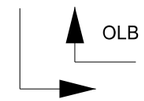

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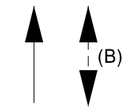

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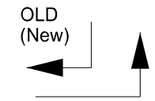
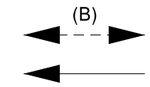


Phase 7



Phase 8

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

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)

(B) Upon pedestrian actuation only.

CHART A

On Phase	Non-Conflicting Phase Allowed to Time Concurrently
1	5 or 6
2	5 or 6
3	7 or 8
4	7 or 8
5	1 or 2
6	1 or 2
7	3 or 4
8	3 or 4

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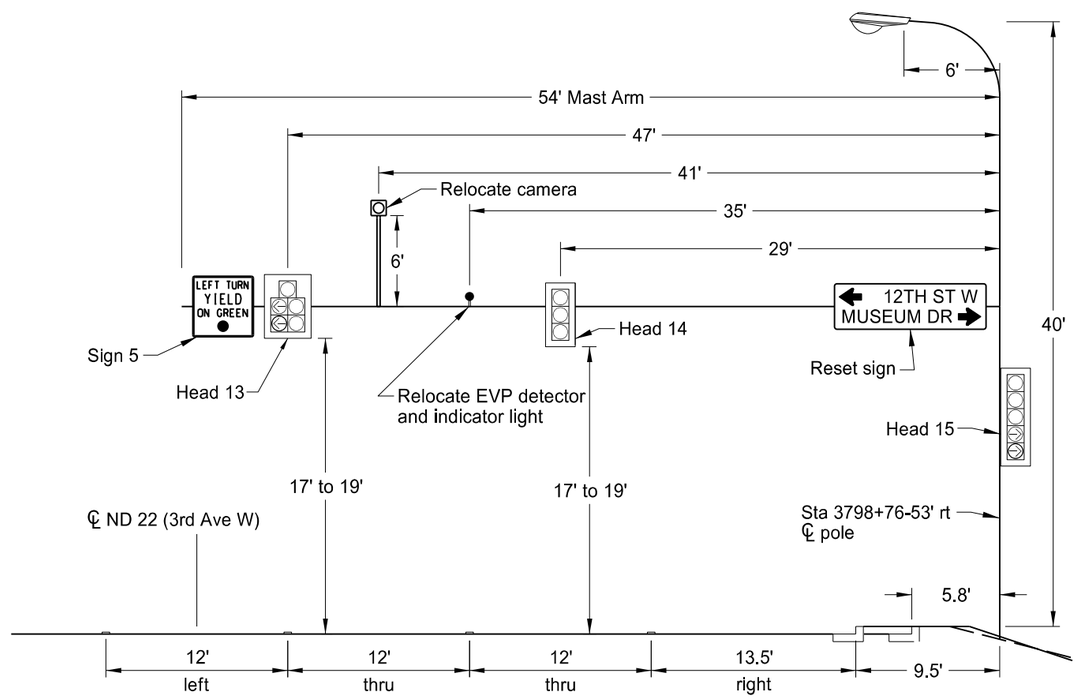
Revise Traffic Signal System

Controller Phasing

ND 22 (3rd Ave W) and
12th St W/Museum Dr Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	8



Northbound

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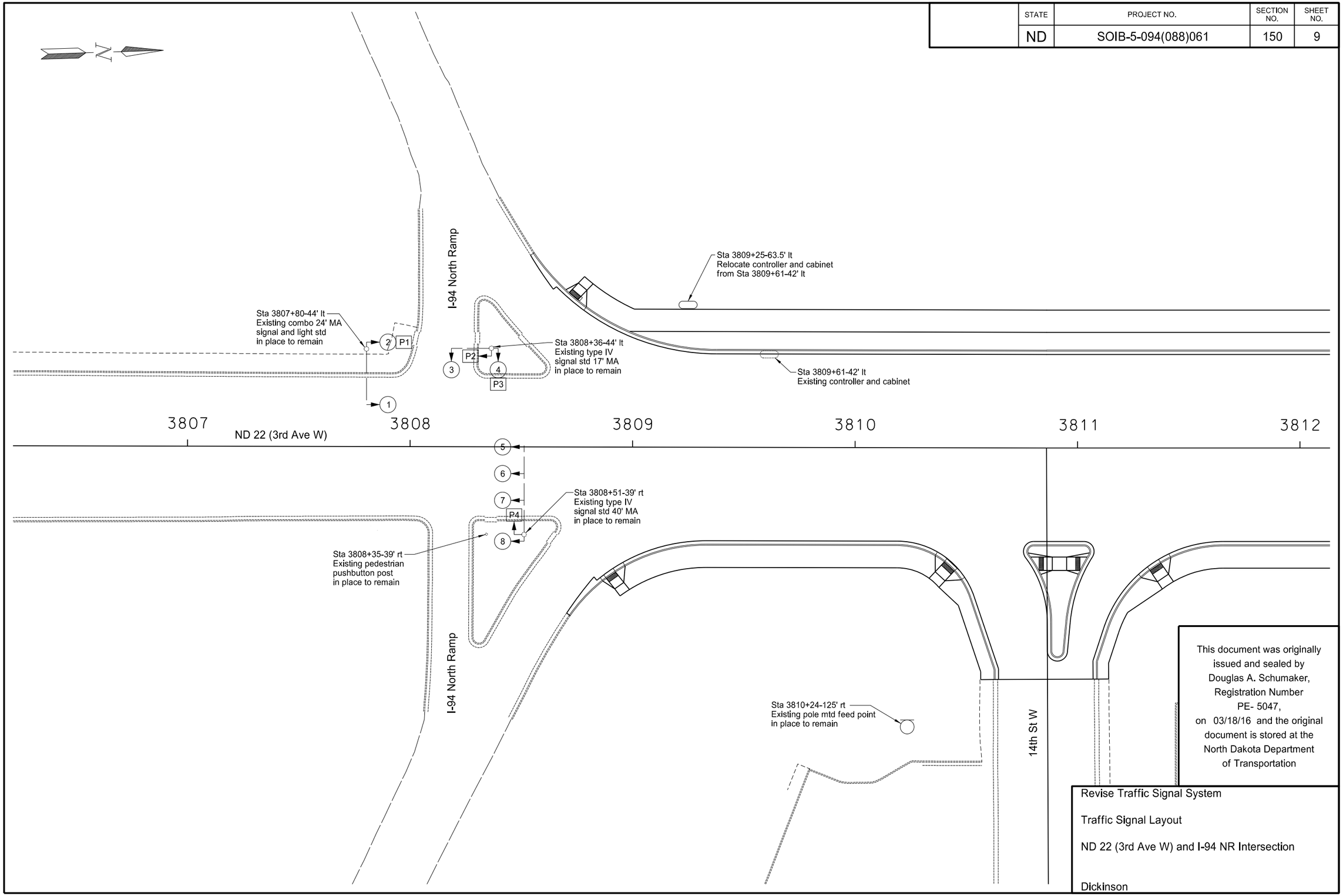
Revise Traffic Signal System

Signal Standards and Head Locations

ND 22 (3rd Ave W) and
12th St W/Museum Dr Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	9



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Revise Traffic Signal System

Traffic Signal Layout

ND 22 (3rd Ave W) and I-94 NR Intersection

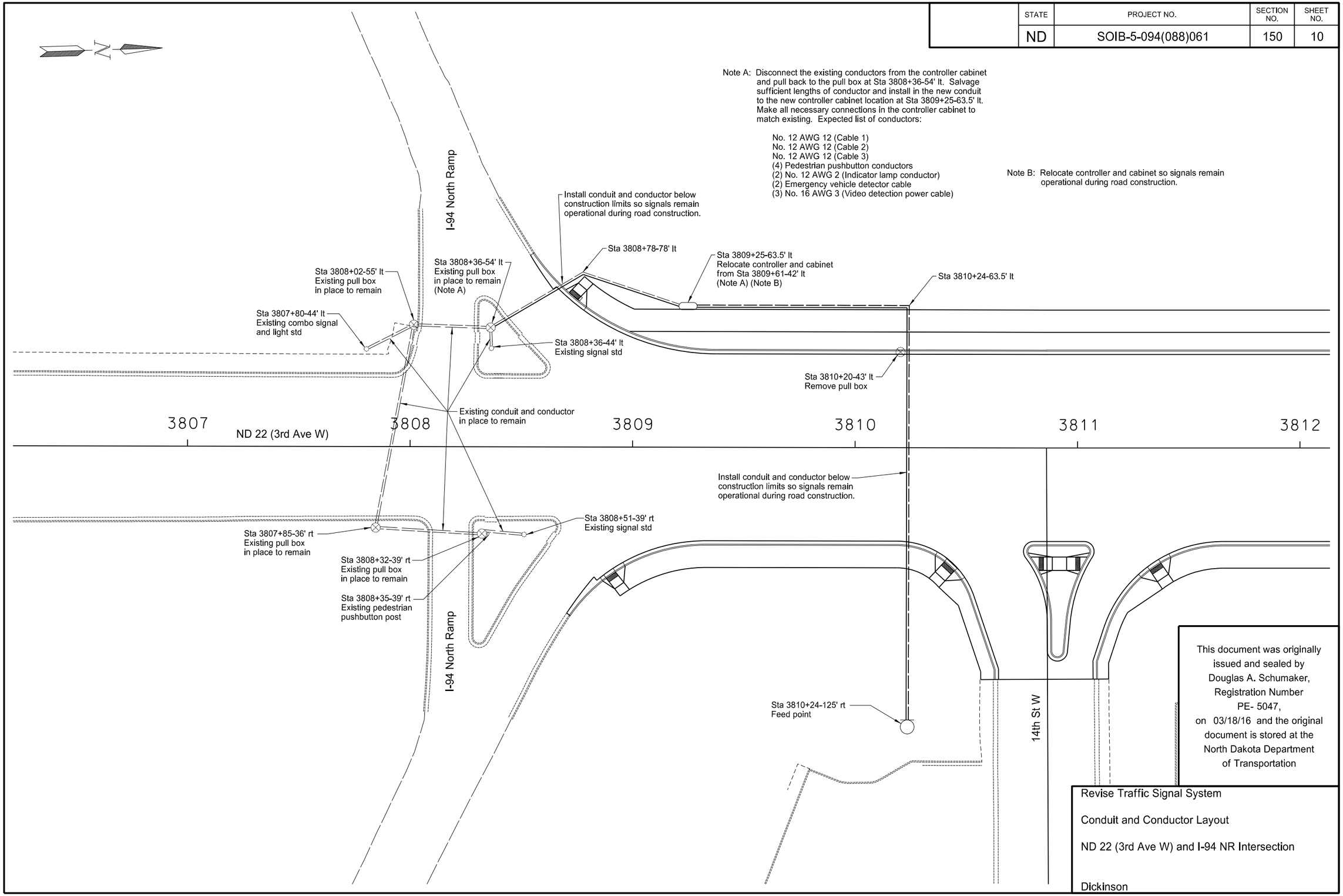
Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	10

Note A: Disconnect the existing conductors from the controller cabinet and pull back to the pull box at Sta 3808+36-54' lt. Salvage sufficient lengths of conductor and install in the new conduit to the new controller cabinet location at Sta 3809+25-63.5' lt. Make all necessary connections in the controller cabinet to match existing. Expected list of conductors:

No. 12 AWG 12 (Cable 1)
No. 12 AWG 12 (Cable 2)
No. 12 AWG 12 (Cable 3)
(4) Pedestrian pushbutton conductors
(2) No. 12 AWG 2 (Indicator lamp conductor)
(2) Emergency vehicle detector cable
(3) No. 16 AWG 3 (Video detection power cable)

Note B: Relocate controller and cabinet so signals remain operational during road construction.



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Revise Traffic Signal System

Conduit and Conductor Layout

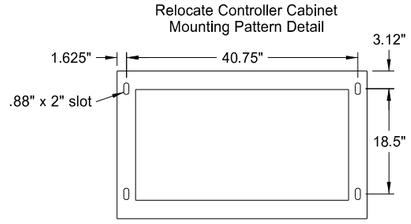
ND 22 (3rd Ave W) and I-94 NR Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	11

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
3808+36-54' lt to 3808+78-78' lt to 3809+25-63.5' lt	48 49	3.5" 3.5"	Existing Existing Existing Existing Existing Existing Existing	No. 12 AWG 12 (Cable 1) No. 12 AWG 12 (Cable 2) No. 12 AWG 12 (Cable 3) (4) Pedestrian pushbutton conductor (2) No. 12 AWG 2 (Indicator lamp conductor) (2) Emergency vehicle detector cable (2) No. 16 AWG 3 (Video detection power cable)
3810+24-125' rt to 3810+24-63.5' lt to 3809+25-63.5' lt	188 98	2" 2"	614 307	(2) No. 6 RHW (1) No. 6 THW

Relocate Controller Cabinet
Mounting Pattern Detail



Verify dimensions

QUANTITIES (A)										
	Concrete Foundation - Traffic Signals	2" Dia Rigid Conduit	3.5" Dia Rigid Conduit	Underground Conductor No 6 - Type RHW	Underground Conductor No 6 - Type THW	Relocate Controller and Cabinet				Revise Traffic Signal System - Site 2
STATION	EA	LF	LF	LF	LF	EA				EA
3809+20-64' lt	1					1				
Various Locations		286	97	614	307					
TOTAL	1	286	97	614	307	1				1

(A) Do not bid these items separately but include in the item "Revise Traffic Signal System - Site 2".

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Revise Traffic Signal System

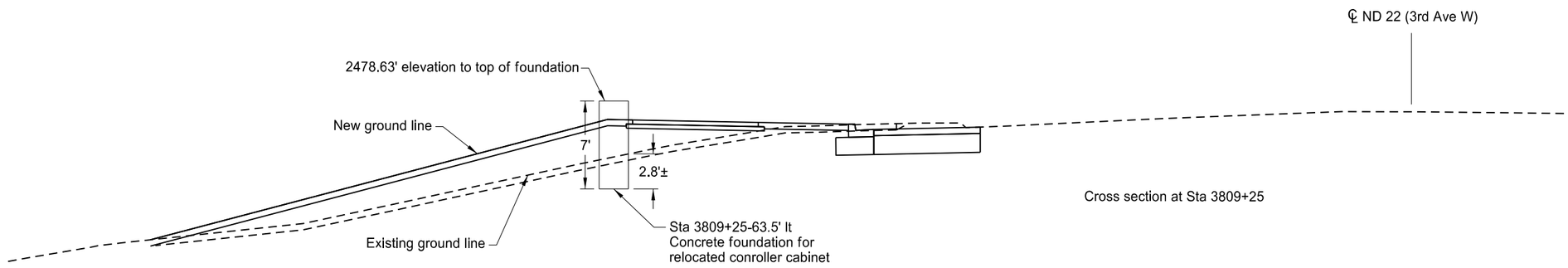
Cable, Conduit Runs, and Quantities

ND 22 (3rd Ave W) and I-94 NR Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	12

Note: Install signal conductor conduit in the controller cabinet foundation 2' below existing ground line.
Install interconnect cable conduit in the controller cabinet foundation 2' below new ground line.
Cap interconnect cable conduit until interconnect conduit is installed in the new embankment.
Install extra 2" conduit in the controller cabinet foundation 2' below the new ground line pointing south. Cap the extra conduit.



Cross section at Sta 3809+25

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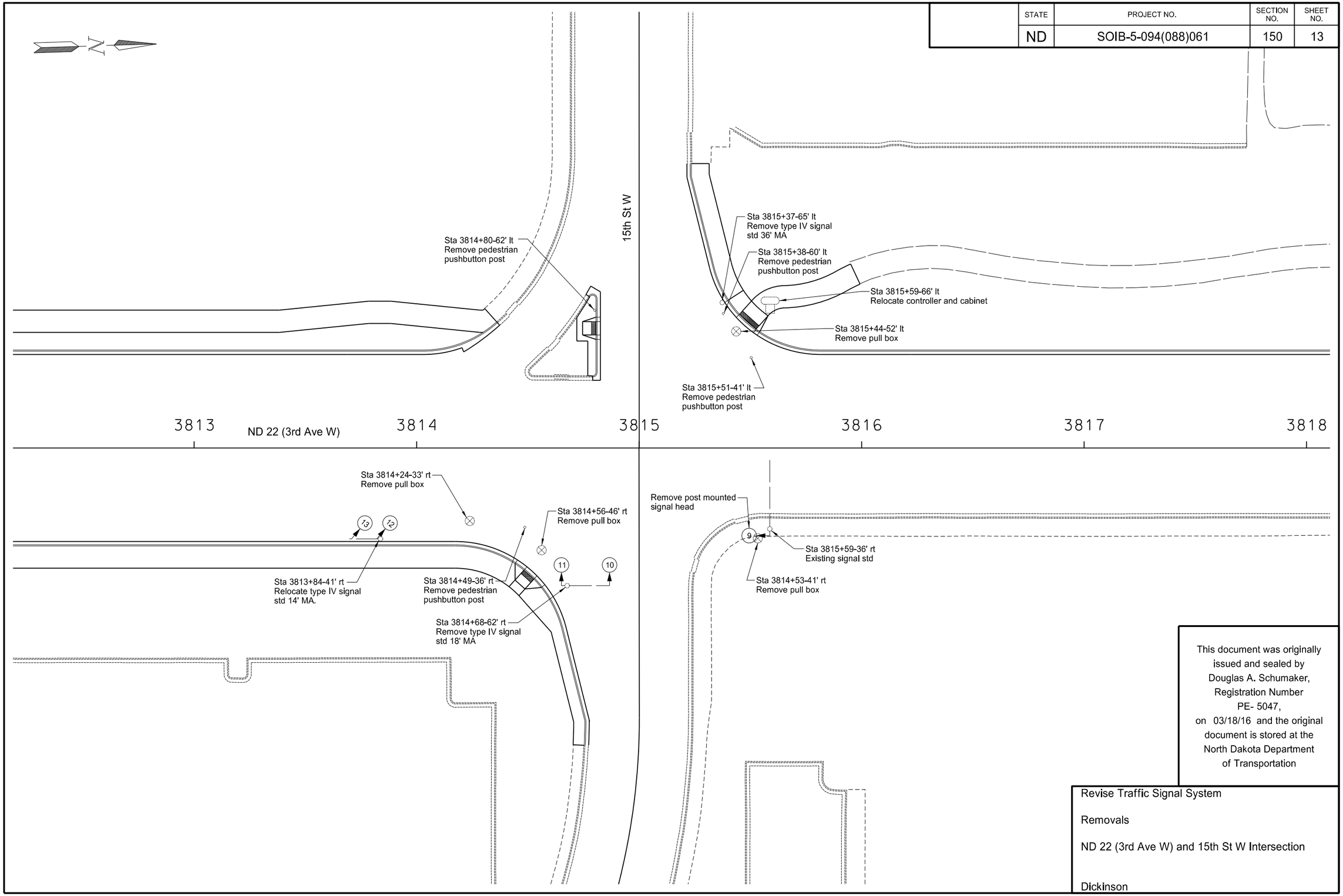
Revise Traffic Signal System

Controller Cabinet Foundation Detail

ND 22 (3rd Ave W) and I-94 NR Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	13



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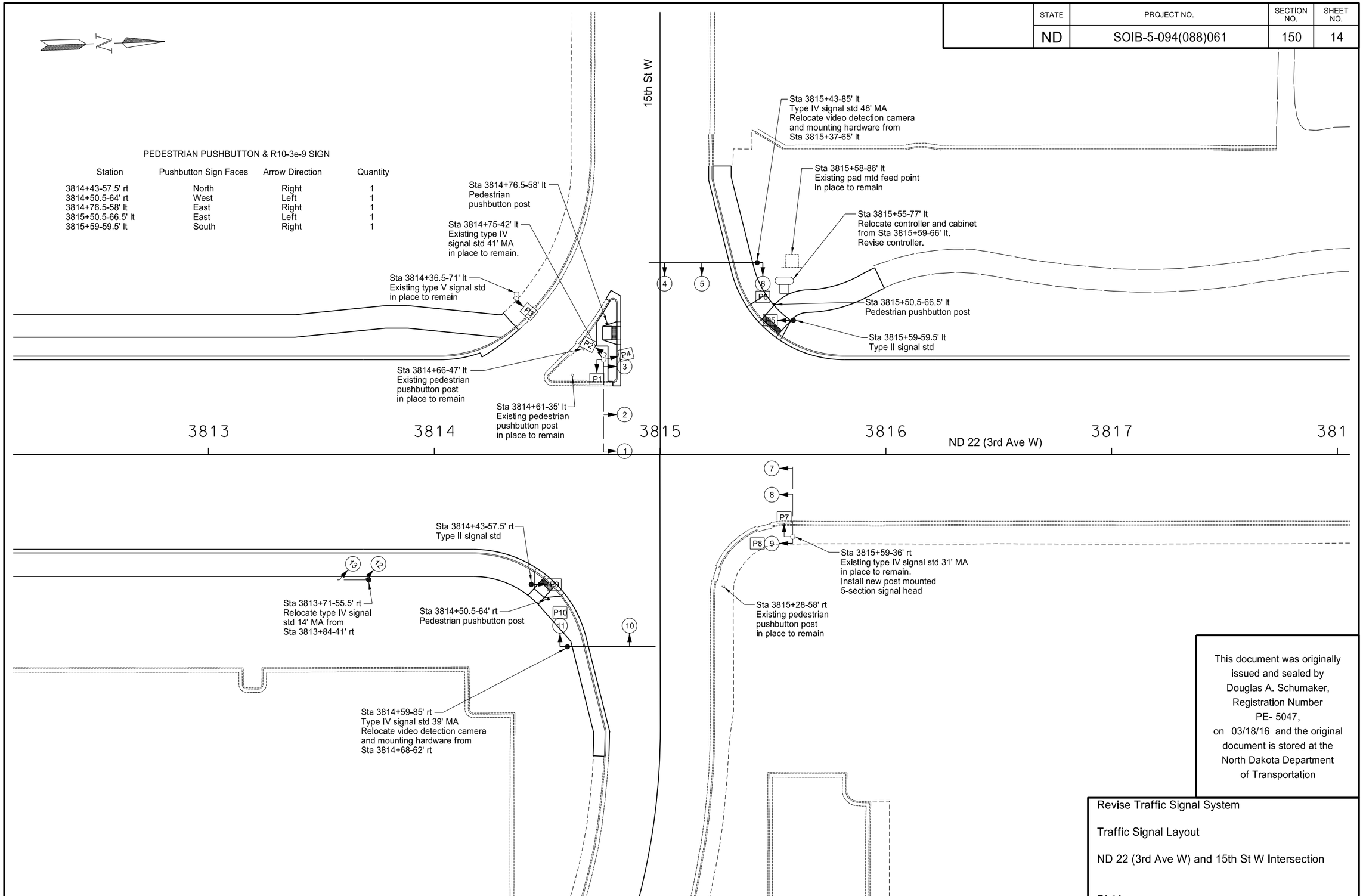
Revise Traffic Signal System

Removals

ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	14



PEDESTRIAN PUSHBUTTON & R10-3e-9 SIGN

Station	Pushbutton Sign Faces	Arrow Direction	Quantity
3814+43-57.5' rt	North	Right	1
3814+50.5-64' rt	West	Left	1
3814+76.5-58' lt	East	Right	1
3815+50.5-66.5' lt	East	Left	1
3815+59-59.5' lt	South	Right	1

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Revise Traffic Signal System

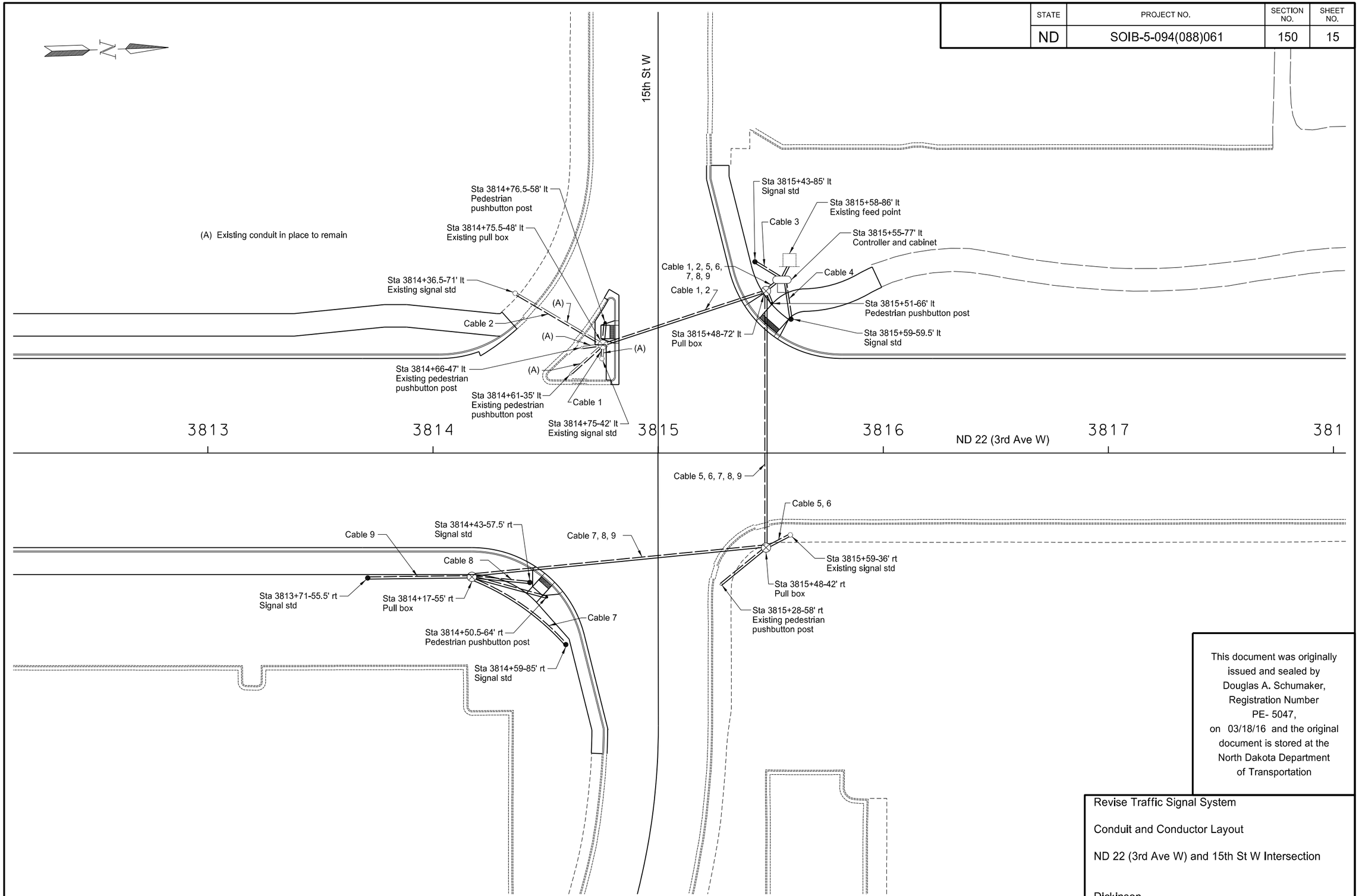
Traffic Signal Layout

ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

3/18/2016 10:52:08 AM bjohanne R:\project\50094061.088\traffic\150SL_014_LSGNL.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	15



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Revise Traffic Signal System

Conduit and Conductor Layout

ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	16

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
3813+71-55.5' rt to 3814+17-55' rt	45	2"	51	Cable 9
3814+59-85' rt to 3814+17-55' rt	51	2"	57 114	Cable 7 No. 16 AWG 3 (D)
3814+50.5-64' rt to 3814+17-55' rt	35	1"	43	No. 16 AWG 2 (A)
3814+43-57.5' rt to 3814+17-55' rt	25	2"	31 34	Cable 8 No. 16 AWG 2 (A)
3814+17-55' rt to 3815+48-42' rt	105	2"	106 106 106 212 106	Cable 7 Cable 8 Cable 9 (2) No. 16 AWG 2 (A) No. 16 AWG 3 (D)
3815+28-58' rt to 3815+48-42' rt	26	1"	34	No. 16 AWG 2 (A)
3815+59-36' rt to 3815+48-42' rt	12	2"	18 18 21 62 62 58	Cable 5 Cable 6 No. 16 AWG 2 (A) EVD cable (B) No. 14 AWG 2 (C) No. 16 AWG 3 (D)
3815+48-42' rt to 3815+48-72' lt	113	3"	114 114 114 114 114 456 114 114 228	Cable 5 Cable 6 Cable 7 Cable 8 Cable 9 (4) No. 16 AWG 2 (A) EVD cable (B) No. 14 AWG 2 (C) (2) No. 16 AWG 3 (D)
3814+36.5-71' lt to 3814+75.5-48' lt	46 (E)	2" (E)	51 54	Cable 2 No. 16 AWG 2 (A)
3814+61-35' lt to 3814+75.5-48' lt	20 (E)	1" (E)	28	No. 16 AWG 2 (A)
3814+66-47' lt to 3814+75.5-48' lt	10 (E)	1" (E)	18	No. 16 AWG 2 (A)
3814+76.5-58' lt to 3814+75.5-48' lt	10	1"	18	No. 16 AWG 2 (A)
3814+75-42' lt to 3814+75.5-48' lt	6 (E)	2" (E)	11 68 68 56	Cable 1 EVD cable (B) No. 14 AWG 2 (C) No. 16 AWG 3 (D)
3814+75.5-48' lt to 3815+48-72' lt	76	2"	77 77 308 77 77 77	Cable 1 Cable 2 (4) No. 16 AWG 2 (A) EVD cable (B) No. 14 AWG 2 (C) No. 16 AWG 3 (D)
3815+51-66' lt to 3815+48-72' lt	7	1"	15	No. 16 AWG 2 (A)

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
3815+48-72' lt to 3815+55-77' lt	8	3.5"	18 18 18 18 18 18 18 162 36 36 54	Cable 1 Cable 2 Cable 5 Cable 6 Cable 7 Cable 8 Cable 9 (9) No. 16 AWG 2 (A) (2) EVD cable (B) (2) No. 14 AWG 2 (C) (3) No. 16 AWG 3 (D)
3815+43-85' lt to 3815+55-77' lt	14	2"	29 90	Cable 3 No. 16 AWG 3 (D)
3815+59-59.5' lt to 3815+55-77' lt	17	2"	32 35	Cable 4 No. 16 AWG 2 (A)
3815+55-77' lt to 3815+58-86' lt	8	2"	58 29	(2) No. 6 RHW (1) No. 6 THW

(A) Pedestrian pushbutton conductor

(B) Emergency vehicle detector cable

(C) Indicator lamp conductor

(D) Video detection power cable

(E) Existing conduit

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Revise Traffic Signal System

Cable and Conduit Runs

ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	17

QUANTITIES (A)

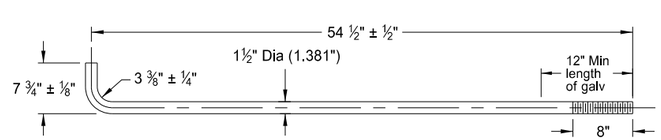
STATION	Concrete Foundation - Traffic Signals	Pull Box	1" Dia Rigid Conduit	2" Dia Rigid Conduit	3" Dia Rigid Conduit	3.5" Dia Rigid Conduit	Underground Conductor No 6 - Type RHW	Underground Conductor No 6 - Type THW	Emergency Vehicle Detector Cable	No. 14 AWG 2 Conductor Cable	No. 14 AWG 3 Conductor Cable	No. 14 AWG 5 Conductor Cable	No. 14 AWG 7 Conductor Cable	No. 14 AWG 12 Conductor Cable	No. 16 AWG 2 Conductor Cable	No. 16 AWG 3 Conductor Cable	Type II Signal Std	Type IV Signal Std 39' MA	Type IV Signal Std 48' MA	1-Way 3 Section Head W/12" Lens - Mast Arm Mounted	1-Way 5 Section Head W/12" Lens - Post Mounted	1-Way 5 Section Head W/12" Lens - Mast Arm Mounted	Pedestrian Countdown Signal Head - Post Mounted	Pedestrian Countdown Signal Head - Pedestal Mounted	Pedestrian Pushbutton Post	Relocate Controller and Cabinet	Relocate Video Detection Camera and Mounting Hardware	Relocate Type IV Signal Std	Revise Controller (C)	Remove Type IV Signal Std	Remove Post Mounted Signal Head	Remove Pedestrian Pushbutton Post	Remove Pull Box	Revise Traffic Signal System - Site 3
	EA	EA	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA		EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
3813+71-55.5' rt	1																											1						
3814+43-57.5' rt	1										12 (B)						1							1										
3814+59-85' rt	1										12 (B)	51 (B)	15 (B)					1		1	1		1				1							
3815+43-85' lt	1										12 (B)	48 (B)	79 (B)						1	1	1	1	1				1							
3815+59-59.5' lt	1										12 (B)						1							1										
3815+59-36' rt													15 (B)								1										1			
3815+55-77' lt	1																									1			1					
Various Locations		3	78	353	113	8	58	29	357	357		597		869	1438	783									3					2		4	3	
TOTAL	6	3	78	353	113	8	58	29	357	357	48	696	109	869	1438	783	2	1	1	2	3	1	2	2	3	1	2	1	1	2	1	4	3	1

(A) Do not bid these items separately but include in the item "Revise Traffic Signal System - Site 3".

(B) Used for internal wiring of signal standards.

(C) Revise controller includes adding the northbound to eastbound right turn overlap. Installing and connecting new conductors and interconnect cable in the exisitng contoller cabinet. Making any contoller setting changes.

Relocate Signal Standard
Anchor Bolt Detail

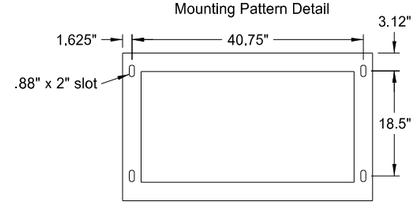


Cut length before bending = 60"

Bolt circle (4 bolts) = 18"

Verify the bolt circle

Relocate Controller Cabinet
Mounting Pattern Detail



Verify dimensions

SIGNAL STANDARD FOUNDATION TABLE		
Description	Footing Depth "D" 24" and 30" Dia	Footing Depth "D" 36" and 42" Dia
Type IV Signal Std		
Single 39' Mast Arm Single 48' Mast Arm	13', 13' 16', 16'	13', 13' 15', 15'
Type II Signal Std	4'	3'

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Revise Traffic Signal System

Quantities

ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	18

CONDUCTORS		CABLE 1 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black		P2, P4	Walk
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	P2, P4	Don't Walk
8 Red	Black		Spare
9 Green	Black	P1	Walk
10 Orange	Black	1	Yellow Left Arrow
11 Blue	Black	1	Green Left Arrow
12 Black	White	P1	Don't Walk

CONDUCTORS		CABLE 2 (NO.14 AWG 5)	
BASE	TRACER	HEAD	INDICATION
1 Black		P3	Walk
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange		P3	Don't Walk

CONDUCTORS		CABLE 3 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black		6	Green Right Arrow
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange		4	Yellow Left Wrrow
6 Blue		4	Green Left Arrow
7 White	Black	6	Yellow Right Arrow
8 Red	Black	4, 5, 6	Red
9 Green	Black	P6	Walk
10 Orange	Black	4, 5, 6	Yellow
11 Blue	Black	4, 5, 6	Green
12 Black	White	P6	Don't Walk

CONDUCTORS		CABLE 4 (NO.14 AWG 5)	
BASE	TRACER	HEAD	INDICATION
1 Black		P5	Walk
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange		P5	Don't Walk

CONDUCTORS		CABLE 5 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black		P8	Walk
2 White			Neutral
3 Red		7, 8, 9	Red
4 Green			Ground
5 Orange		7, 8, 9	Yellow
6 Blue		7, 8, 9	Green
7 White	Black	P8	Don't Walk
8 Red	Black		Spare
9 Green	Black	P7	Walk
10 Orange	Black	7	Yellow Left Arrow
11 Blue	Black	7	Green Left Arrow
12 Black	White	P7	Don't Walk

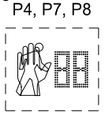
CONDUCTORS		CABLE 6 (NO.14 AWG 5)	
BASE	TRACER	HEAD	INDICATION
1 Black		9	Green Right Arrow
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange		9	Yellow Right Arrow

CONDUCTORS		CABLE 7 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black		11	Green Right Arrow
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange			Spare
6 Blue			Spare
7 White	Black	11	Yellow Right Arrow
8 Red	Black	10, 11	Red
9 Green	Black	P10	Walk
10 Orange	Black	10, 11	Yellow
11 Blue	Black	10, 11	Green
12 Black	White	P10	Don't Walk

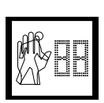
CONDUCTORS		CABLE 8 (NO.14 AWG 5)	
BASE	TRACER	HEAD	INDICATION
1 Black		P9	Walk
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange		P9	Don't Walk

CONDUCTORS		CABLE 9 (NO.14 AWG 12)	
BASE	TRACER	HEAD	INDICATION
1 Black		12, 13	Green Right Arrow
2 White			Neutral
3 Red			Spare
4 Green			Ground
5 Orange			Spare
6 Blue			Spare
7 White	Black	12, 13	Yellow Right Arrow
8 Red	Black	12, 13	Red
9 Green	Black		Spare
10 Orange	Black	12, 13	Yellow
11 Blue	Black	12, 13	Green
12 Black	White		Spare

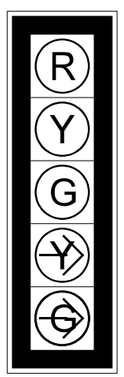
Existing Heads P1, P2, P3, P4, P7, P8



Heads P5, P6, P9, P10

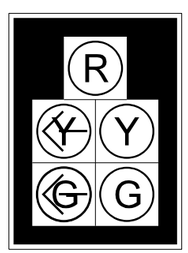


Heads 6, 9, 11



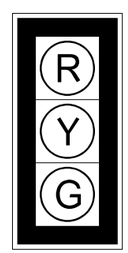
5" Louvered Backplate

Head 4



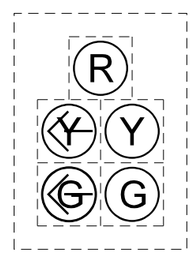
5" Louvered Backplate

Heads 5, 10

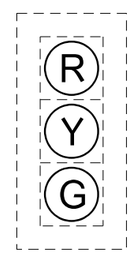


5" Louvered Backplate

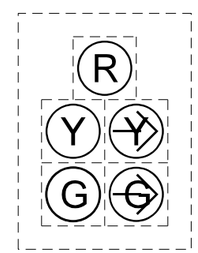
Existing Heads 1, 7



Existing Heads 2, 3, 8



Existing Heads 12, 13



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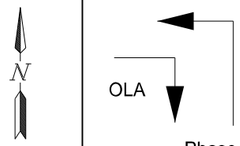
Revise Traffic Signal System

Signal Heads and Conductors

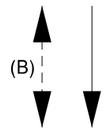
ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

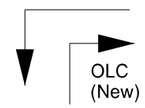
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	19



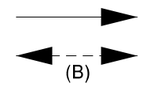
Phase 1



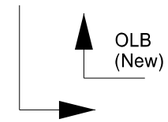
Phase 2



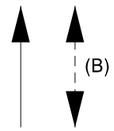
Phase 3



Phase 4

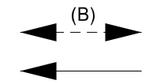


Phase 5



Phase 6

Phase 7



Phase 8

Head #	R/W	Clear to ∅							R/W	Clear to ∅							R/W	Clear to ∅							R/W	Clear to ∅							R/W	Clear to ∅							R/W	Clear to ∅							R/W	Clear to ∅							R/W	Clear to ∅						
		2	3	4	5	6	7	8		3	4	5	6	7	8	1		4	5	6	7	8	1	2		5	6	7	8	1	2	3		6	7	8	1	2	3	4		7	8	1	2	3	4	5		8	1	2	3	4	5	6		1	2	3	4	5	6	7
1																																		G	Y		Y	(A)	(A)	Y	Y																							
									G	Y	Y	(A)	(A)		Y	Y																																														
2									G	Y	Y	(A)	(A)		Y	Y																																														
3									G	Y	Y	(A)	(A)		Y	Y																																														
4																	G	Y	Y	Y		(A)	Y	Y																																					
																																																											G	Y	Y	(A)	(A)	Y	Y	
5																																																											G	Y	Y	(A)	(A)	Y	Y	
6																																																											G	Y	Y	(A)	(A)	Y	Y	
																																		G	Y		Y	(A)	(A)	Y	Y																							
7	G	Y	Y	Y	(A)	(A)		Y																																																							
																																											G		Y	(A)	(A)	Y	Y	Y														
8																																											G		Y	(A)	(A)	Y	Y	Y														
9																																											G		Y	(A)	(A)	Y	Y	Y														
																	G	Y	Y	Y		(A)	Y	Y																																					
10																									G	Y	Y		(A)	Y	Y	Y																													
11																									G	Y	Y		(A)	Y	Y	Y																													
	G	Y	Y	Y	(A)	(A)		Y																																																						
12																									G	Y	Y		(A)	Y	Y	Y																													
	G	Y	Y	Y	(A)	(A)		Y																																																						
13																									G	Y	Y		(A)	Y	Y	Y																													
	G	Y	Y	Y	(A)	(A)		Y																																																						

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)

(B) Upon pedestrian actuation only.

CHART A

On Phase	Non-Conflicting Phase Allowed to Time Concurrently
1	5 or 6
2	5 or 6
3	8
4	8
5	1 or 2
6	1 or 2
7	
8	3 or 4

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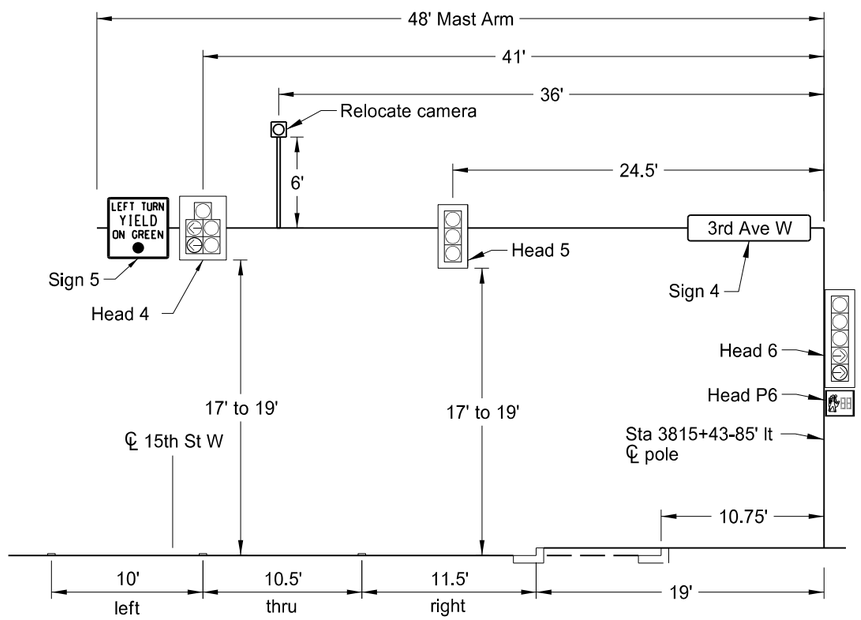
Revise Traffic Signal System

Controller Phasing

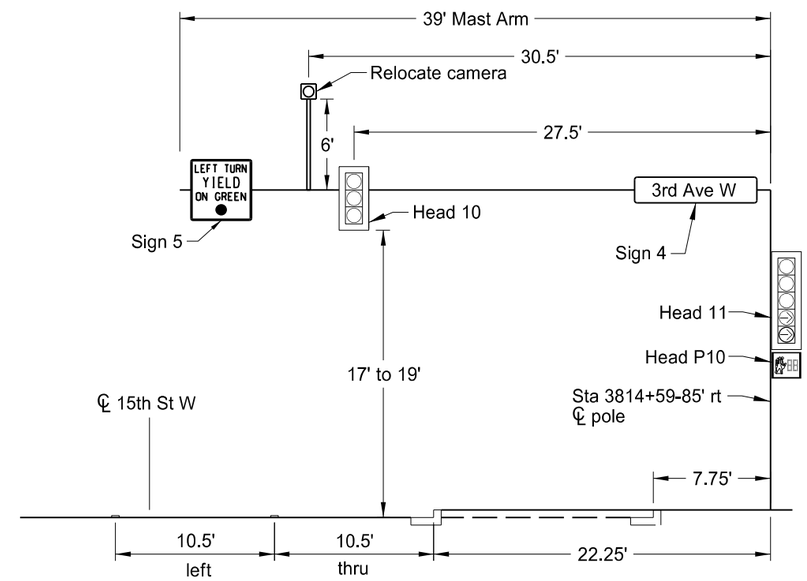
ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	20



Westbound



Eastbound

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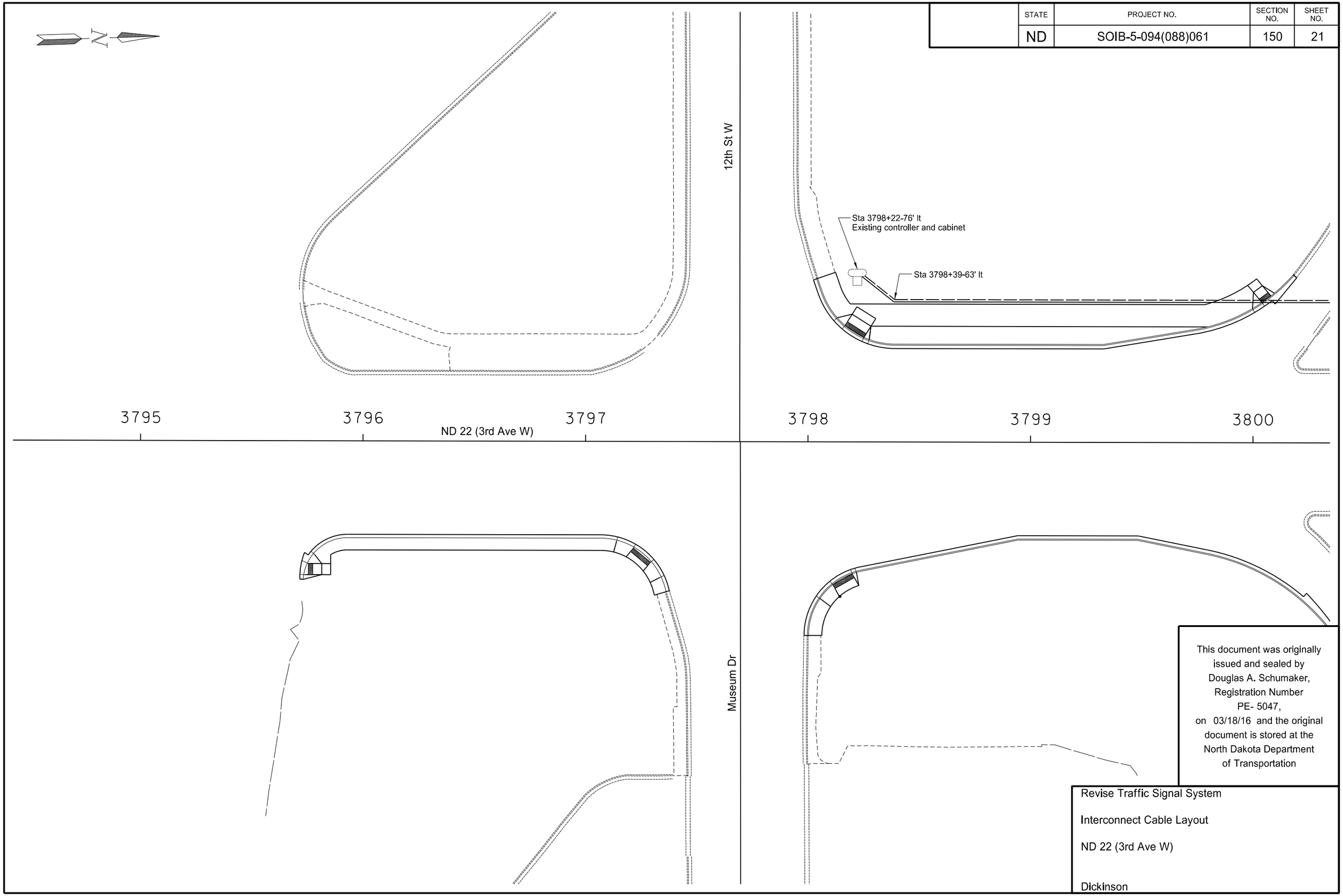
Revise Traffic Signal System

Signal Standards and Head Locations

ND 22 (3rd Ave W) and 15th St W Intersection

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	21



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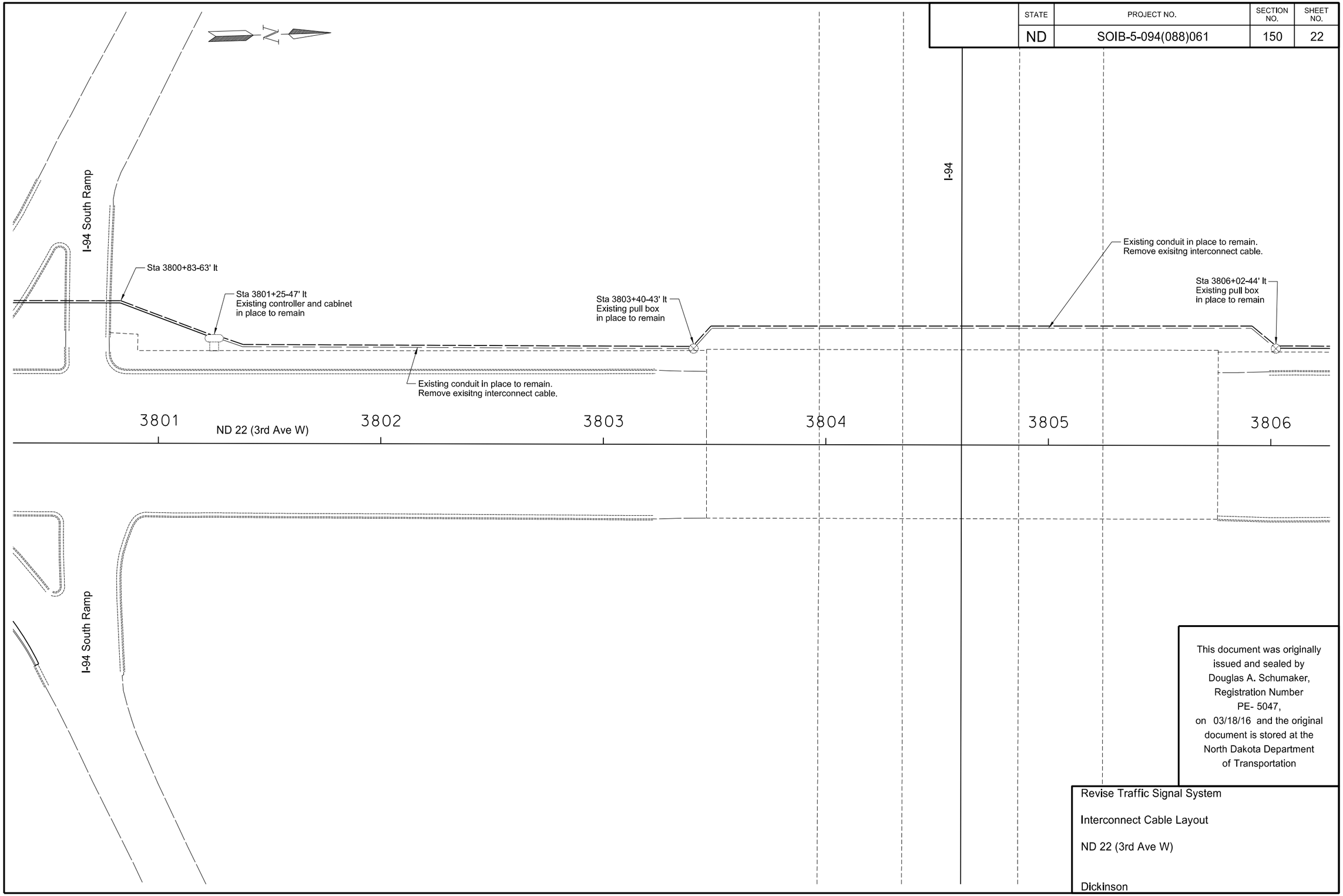
Revise Traffic Signal System

Interconnect Cable Layout

ND 22 (3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	22



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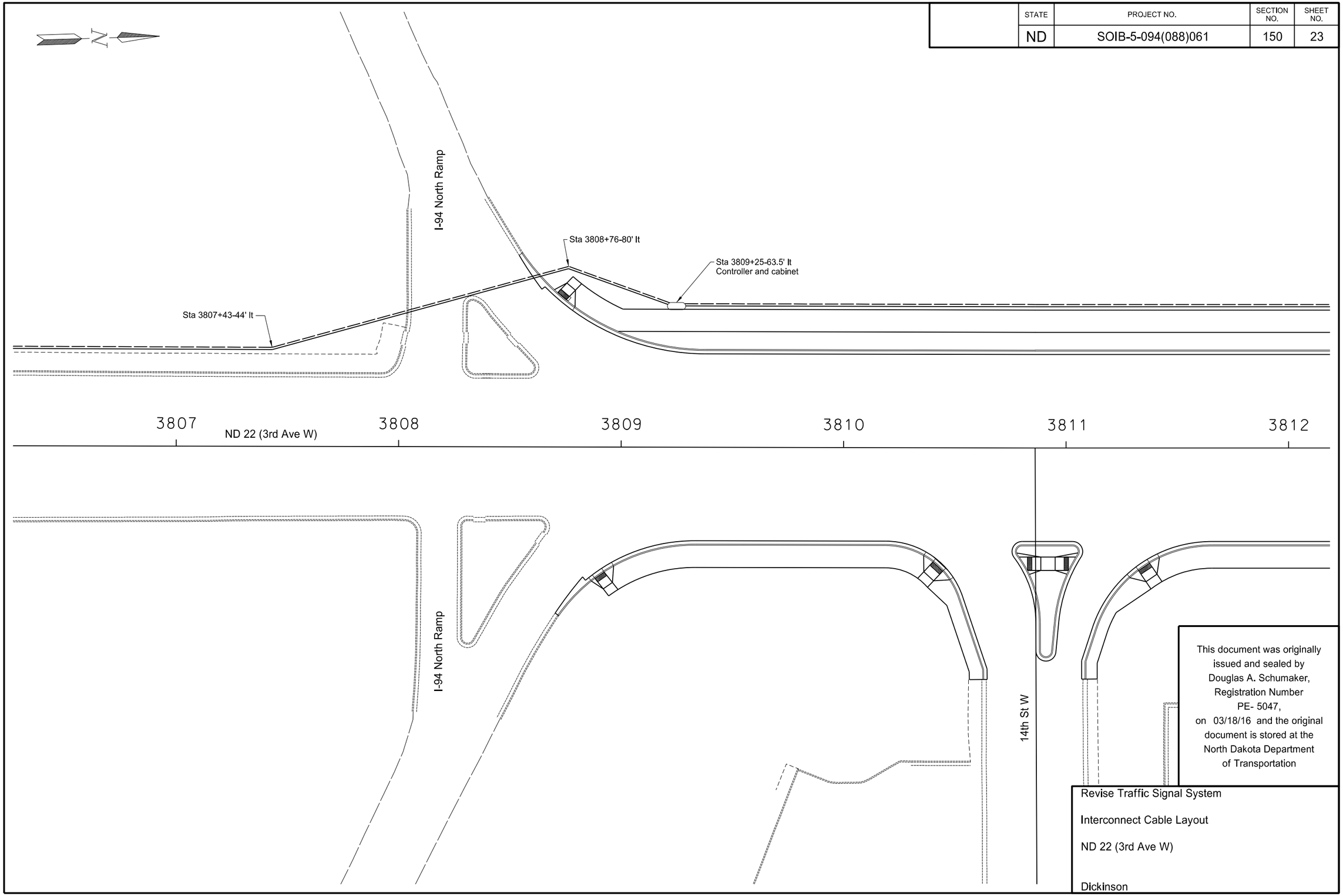
Revise Traffic Signal System

Interconnect Cable Layout

ND 22 (3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	23



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Revise Traffic Signal System

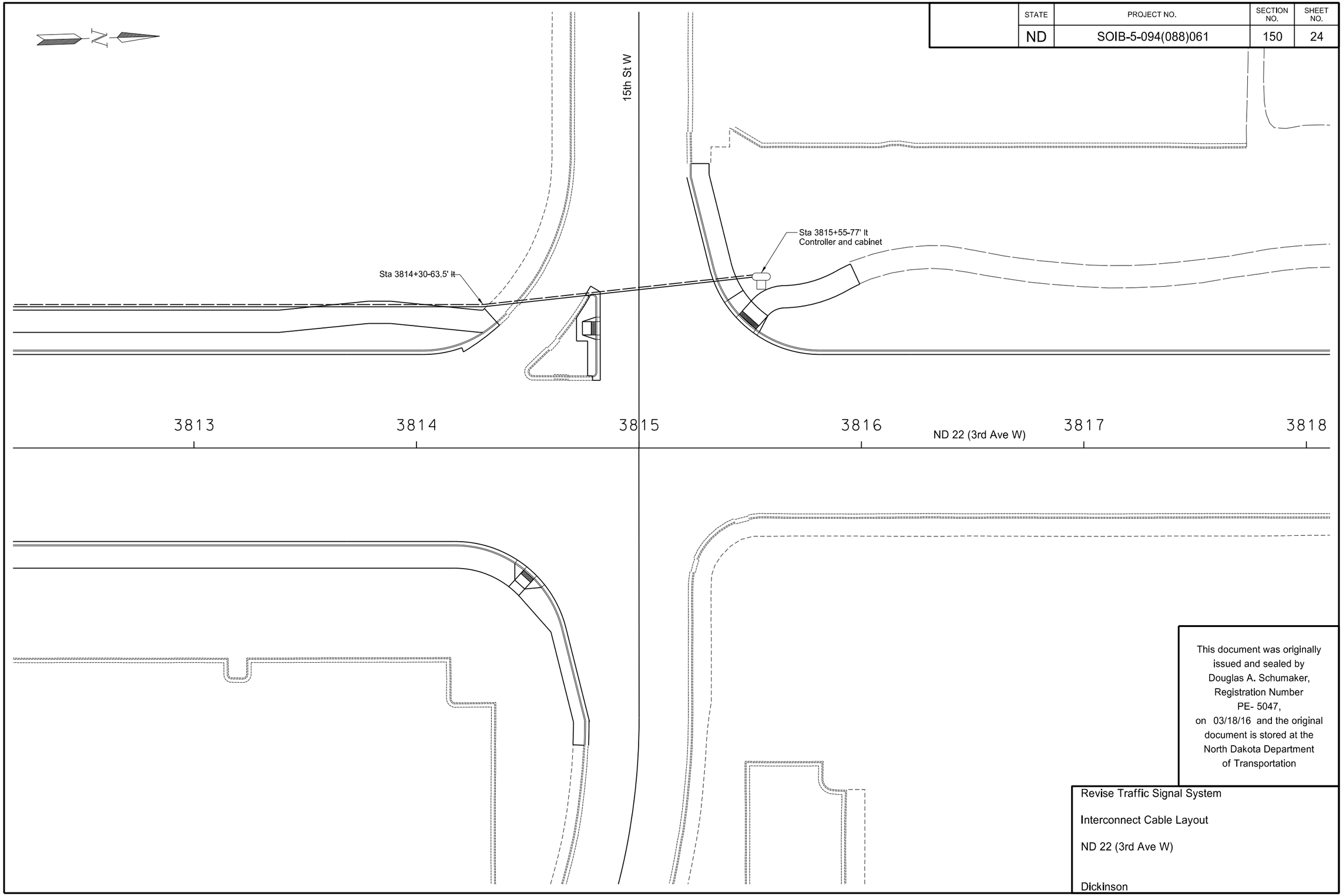
Interconnect Cable Layout

ND 22 (3rd Ave W)

Dickinson

3/18/2016 10:52:14 AM bjohanne R:\project\50094061.088\traffic\150SL_023_LSCOP_ITS.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	24



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Revise Traffic Signal System

Interconnect Cable Layout

ND 22 (3rd Ave W)

Dickinson

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	150	25

STATION	CONDUIT RUNS		CABLE RUNS	
	LF	DIA	LF	Type
3798+22-76' lt to 3798+39-63' lt to 3800+83-63' lt to 3801+25-47' lt	 21 244 44	 2" 2" 2"	411	Interconnect Cable
3801+25-47' lt to 3803+40-43' lt to 3806+02-44' lt to 3807+43-44' lt to 3808+76-80' lt to 3809+25-63.5' lt	 216 (B) 300± (B) 141 138 53	 2" (B) 2" (B) 2" 2" 2"	1048	Interconnect Cable
3809+25-63.5' lt to 3814+30-63.5' lt to 3815+55-77' lt	 504 125	 2" 2"	731	Interconnect Cable

(B) Existing conduit

	QUANTITIES (A)					
	2" Dia Rigid Conduit	Interconnect Cable				Interconnect Cable
	LF	LF				LF
TOTAL	1270	2190				2190

(A) Do not bid these items separately but included in the item "Interconnect Cable".

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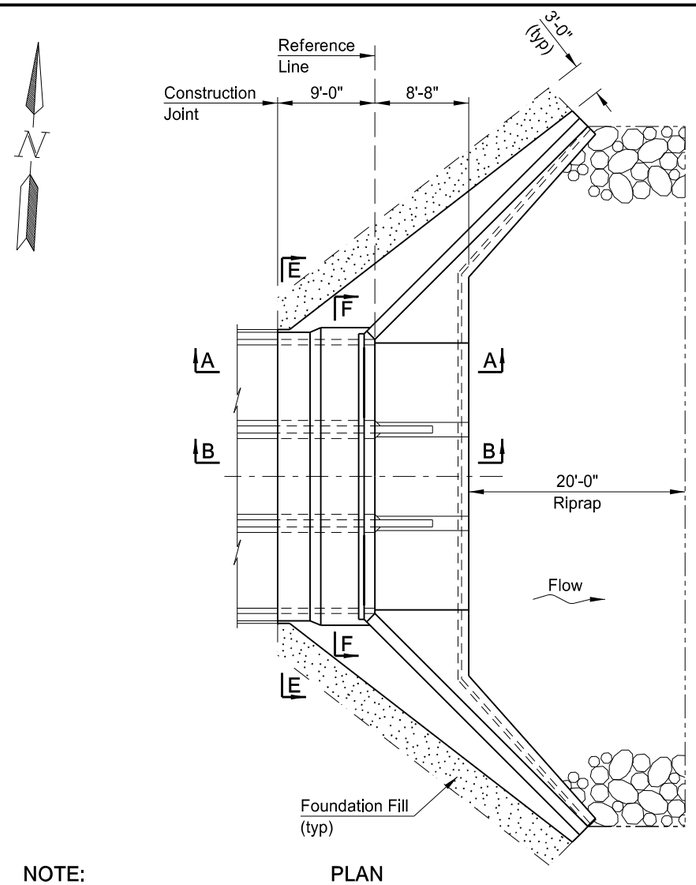
Revise Traffic Signal System

Interconnect Cable Runs and Quantities

ND 22 (3rd Ave W)

Dickinson

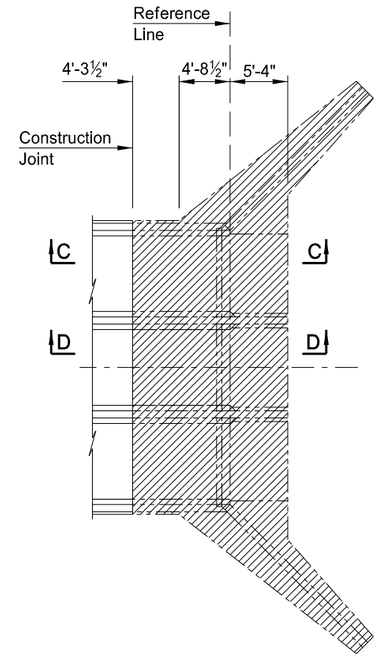
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	170	1



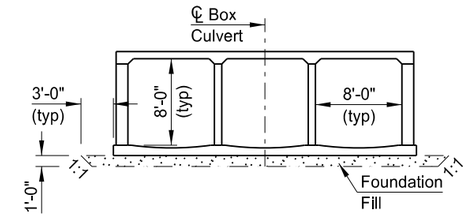
PLAN

NOTE:

See Dwg 22-071.907-3 For Sections E-E and F-F

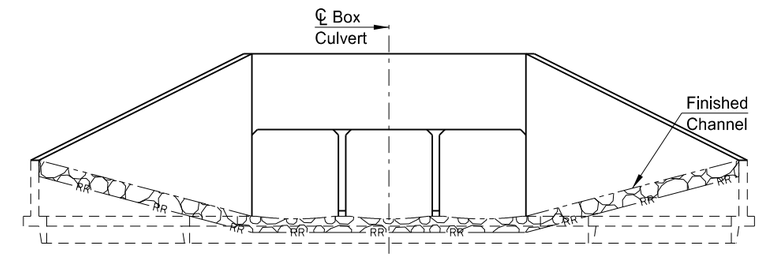


REMOVAL PLAN



(SHOWING FILL UNDER BOX)

SECTION



(SHOWING FINISHED SECTION)

END VIEW

NOTE:

Provide a 1'-0" minimum depth of foundation fill under the floor. Remove and replace all unsound material under the box extension with foundation fill. The Engineer will determine the depth required.

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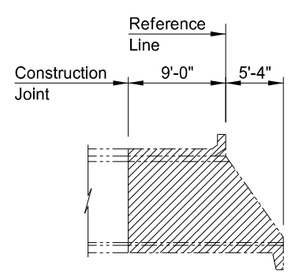
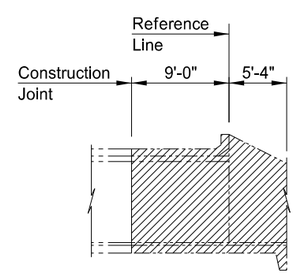
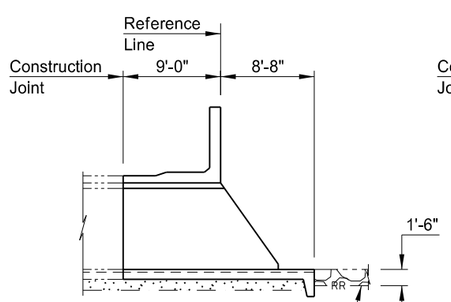


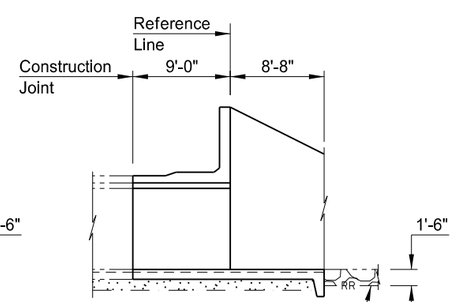
D-D



C-C



B-B



A-A

DESIGN STRENGTHS:

f'c = 3,000 psi ~ Class AE-3 Concrete
fy = 60,000 psi ~ Reinforcing Steel

Load & Resistance Factor Design

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0101	REMOVAL OF CONCRETE	EA	1
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	50
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	65
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	75.4
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	10,030
624	0124	PEDESTRIAN FENCE	LF	24.0
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	125

SPECIAL PROVISIONS	
SP 4(14)	MIGRATORY BIRD TREATY ACT

HL-93 DESIGN LOADING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
NORTH DICKINSON
EXIT 61

REINFORCED CONCRETE TRIPLE BOX CULVERT RECONSTRUCTION LAYOUT

CLEAR SPAN 3 x 8' CLEAR HEIGHT 8'
MAXIMUM FILL 5'

PROJECT: SOIB-5-094(088)061
STATION: 3796+66.80
STARK COUNTY

03/17/16 — DATE
Terrence R. Udland — BRIDGE ENGINEER

NOTES

100 SCOPE OF WORK: Work at this site consists of removing and replacing 9'-0" of the existing triple 8' x 8' reinforced concrete box culvert.

202 REMOVAL OF CONCRETE: Remove 9'-0" of the existing box measured from the reference line. Leave exposed reinforcing steel extended 1'-6" past the removal line.

Submit SFN 17987 "Asbestos Notification of Demolition and Renovation" to the North Dakota Department of Health 10 days before beginning removal of concrete.

602 CONCRETE: Provide aggregate for concrete that meets the requirements of Section 802.01C.2, "Course Aggregate" and Section 802.01C.3, "Fine Aggregate".

602 CONCRETE: Cast the following elements of each section in one continuous run:

1. Floor slab and wing footings
2. Each intermediate wall up to the bottom of fillets
3. Each sidewall up to the bottom of fillets with its adjacent wings to construction joint or complete to the top
4. Roof slab
5. Parapet

Allow the concrete in the walls to set at least two hours before the roof slab is poured. Allow the concrete in the roof to set at least twenty four hours before the parapet is poured if the roof forms are still in place.

If the existing wall and roof thickness are different than the new thicknesses, the inner surfaces shall be flush and the exterior surfaces tapered in the first 1'-6" of the barrel.

602 CURING CONCRETE: Wet cure all concrete surfaces not covered by forms. Cover the concrete with a double thickness of burlap. Maintain surface moisture between the final finish and placement of burlap by periodic applications of a light fog spray of water. Keep the burlap continuously moist until the end of the curing period.

612 REINFORCING STEEL: Dimensions of bent bars are given out to out.

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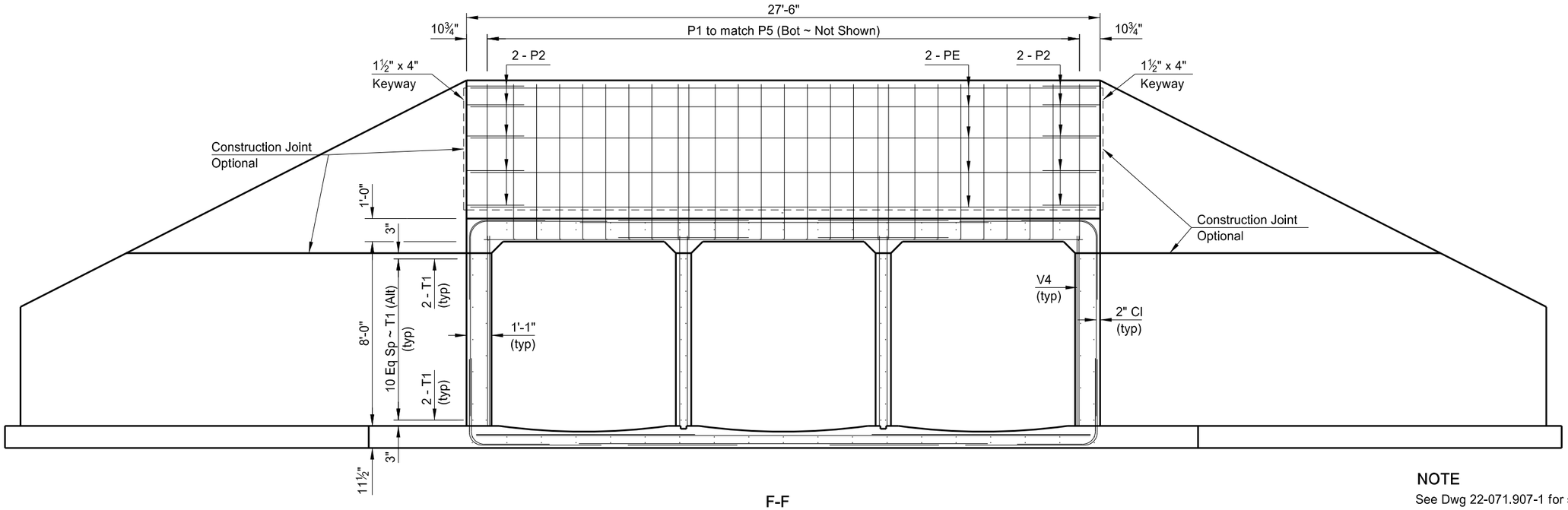
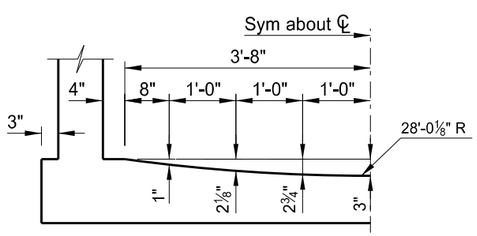
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	170	3



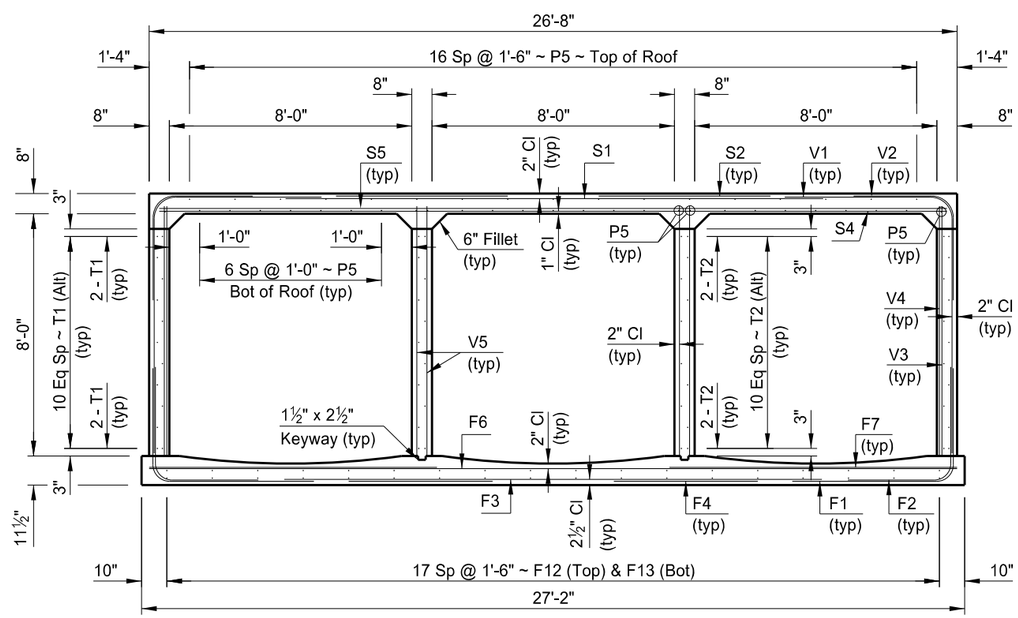
F-F

NOTE

See Dwg 22-071.907-1 for sections E-E & F-F



CURVED FLOOR OFFSETS



E-E

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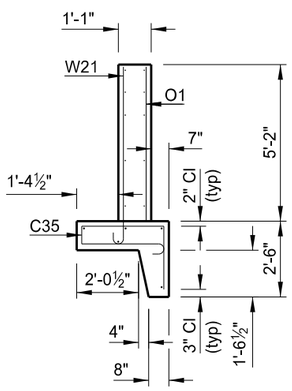
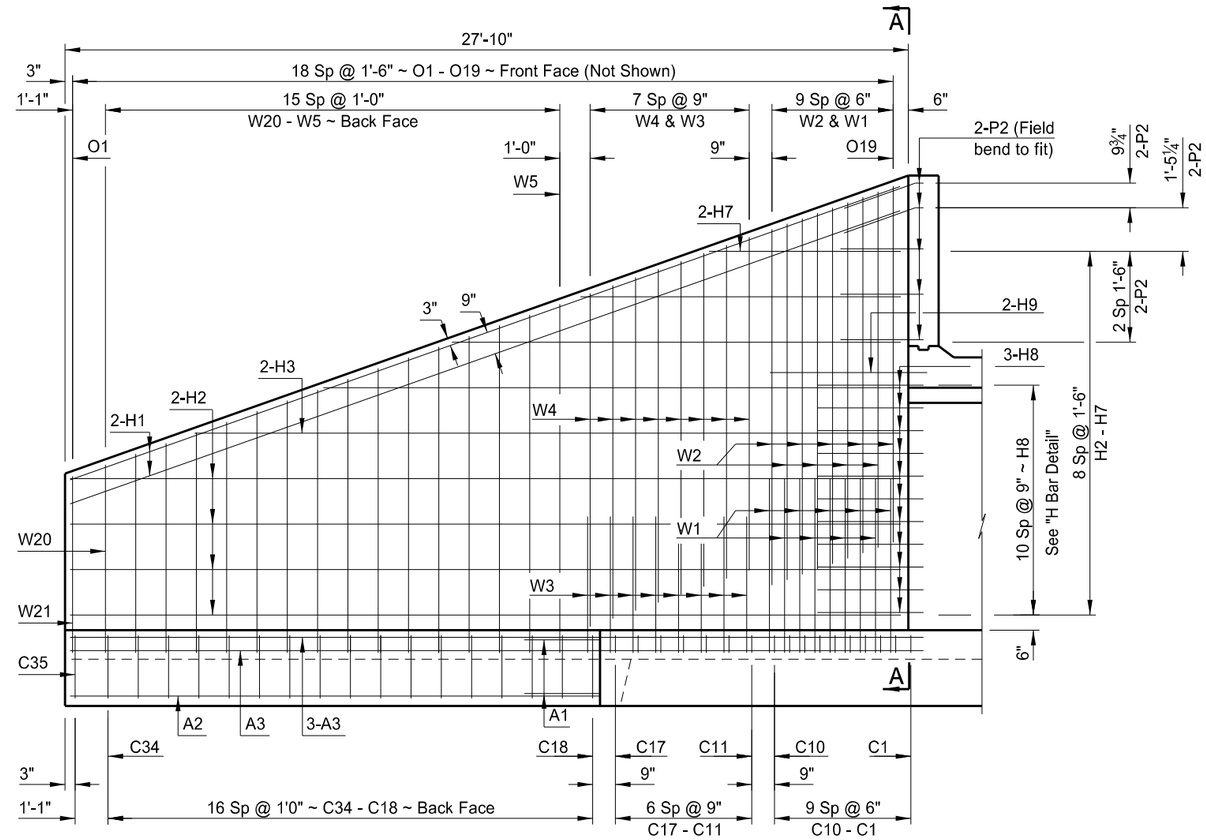
NORTH DICKINSON
EXIT 61

BARREL SECTION

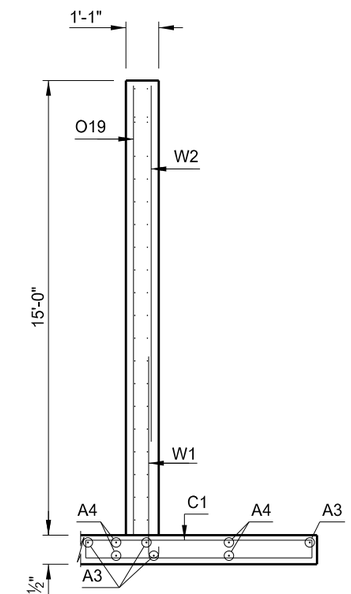
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	170	4



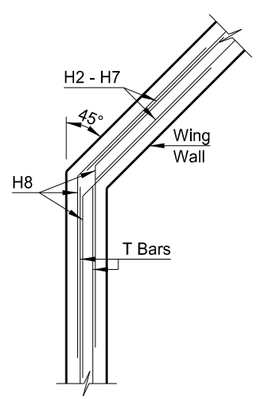
END VIEW



WING ELEVATION



A-A



H BAR DETAIL

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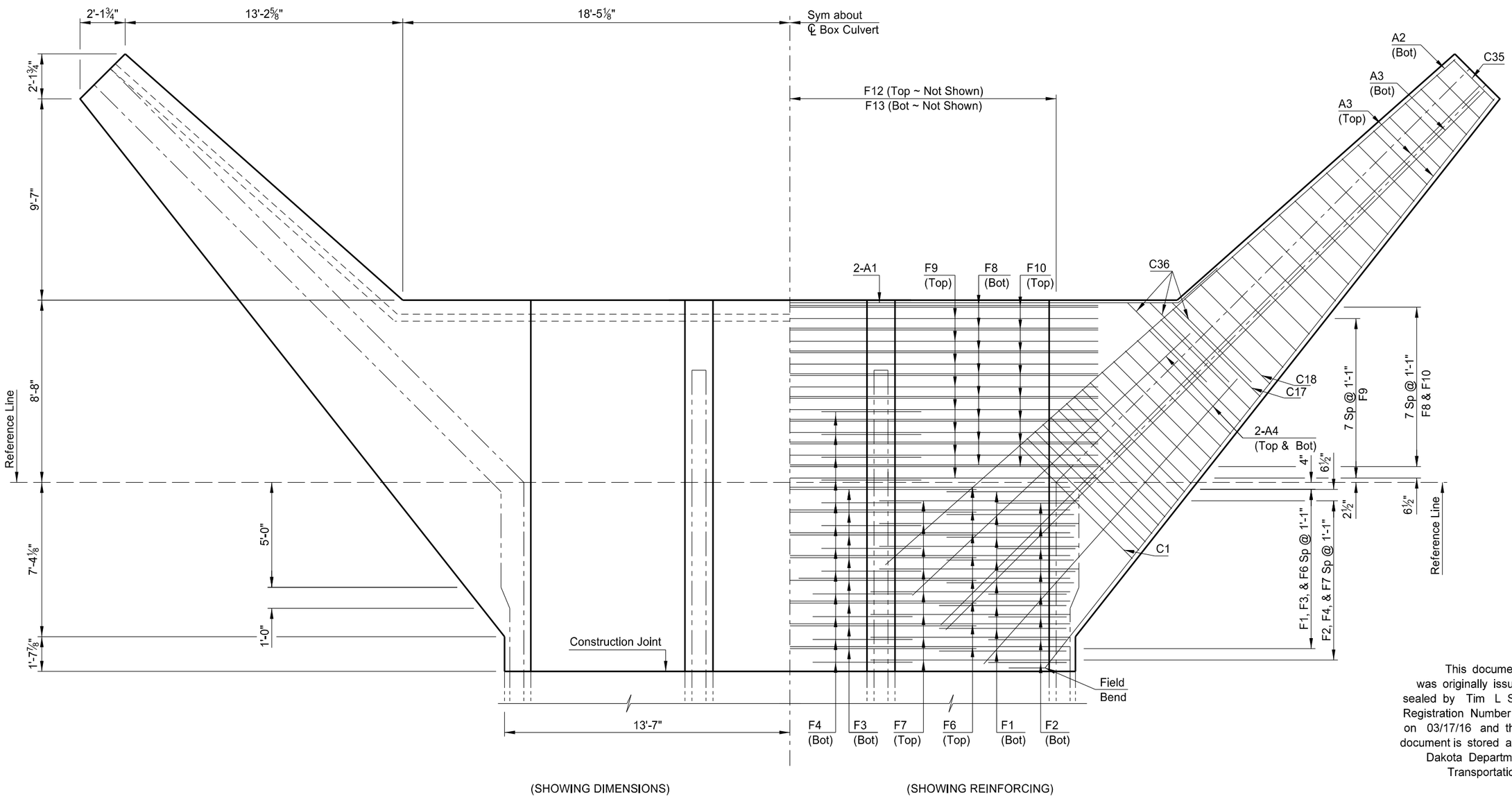
NORTH DICKINSON
EXIT 61

WING DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	170	5



(SHOWING DIMENSIONS)

(SHOWING REINFORCING)

FLOOR PLAN

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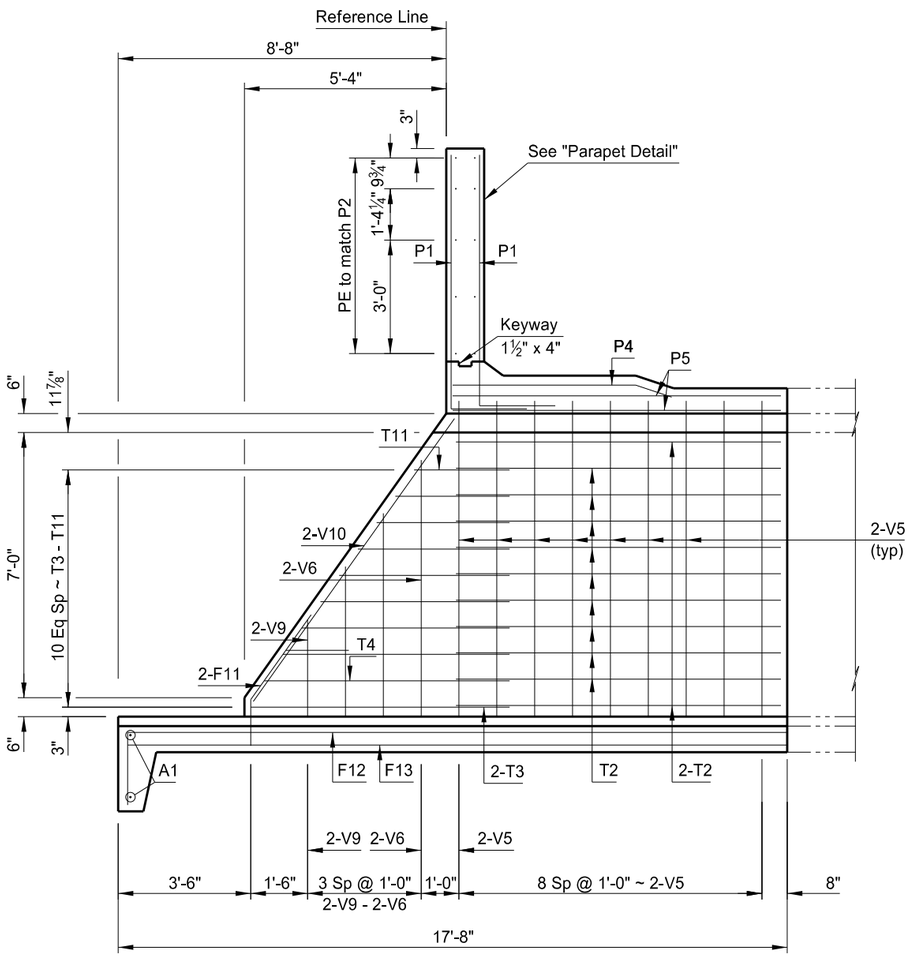
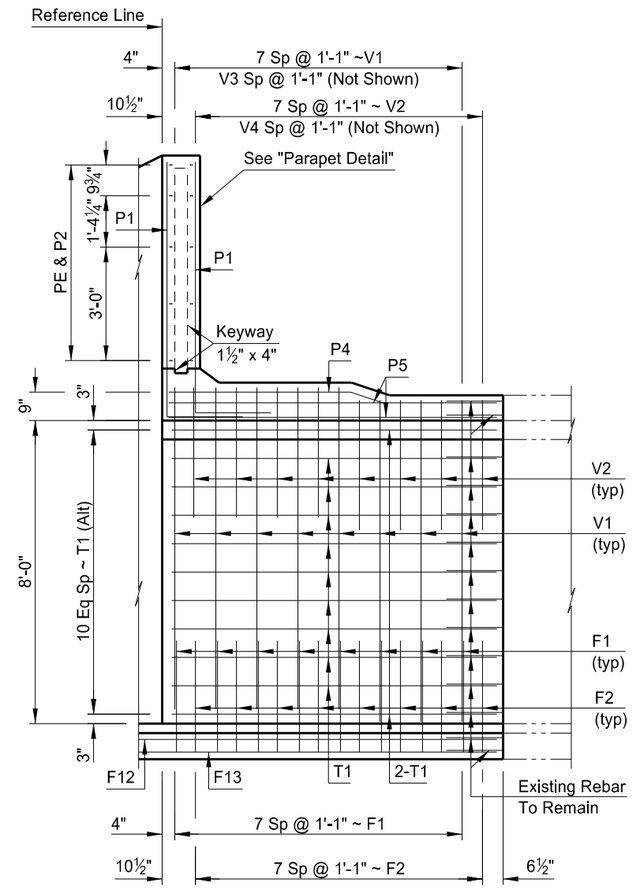
NORTH DICKINSON
EXIT 61

FLOOR DETAIL

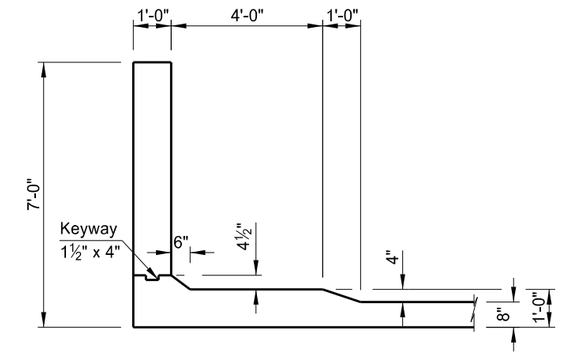
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	170	6



INNER WALL



OUTER WALL



PARAPET DETAIL

LONGITUDINAL SECTIONS

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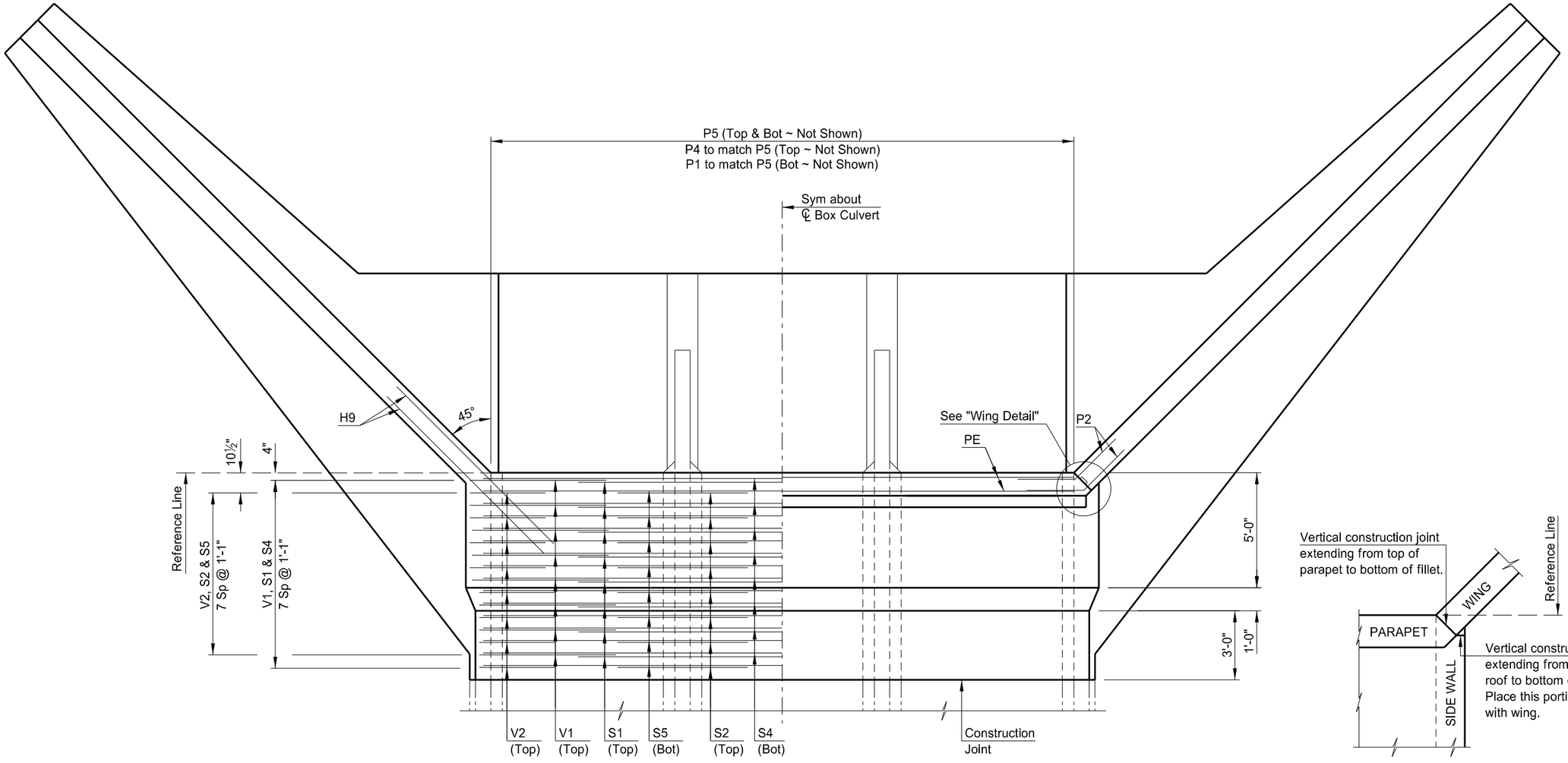
EXIT 61

WALL DETAILS &
PARAPET DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	170	7



ROOF PLAN

WING DETAIL

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NORTH DICKINSON
EXIT 61

ROOF DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	170	8

BAR LIST (CONSTANT)

MARK	SIZE	NO.	LENGTH	SHAPE
W1	7	18	6'-6"	BENT
W2	6	18	11'-9"	STR.
W3	7	16	5'-3"	BENT
W4	6	16	11'-0"	STR.
W5	7	2	12'-2"	BENT
W6	7	2	11'-10"	BENT
W7	7	2	11'-6"	BENT
W8	7	2	11'-2"	BENT
W9	7	2	10'-9"	BENT
W10	7	2	10'-5"	BENT
W11	6	2	10'-0"	BENT
W12	6	2	9'-8"	BENT
W13	5	2	9'-2"	BENT
W14	5	2	8'-10"	BENT
W15	5	2	8'-6"	BENT
W16	4	2	8'-1"	BENT
W17	4	2	7'-8"	BENT
W18	4	2	7'-4"	BENT
W19	4	2	7'-0"	BENT
W20	4	2	6'-8"	BENT
W21	4	2	6'-3"	BENT
C1	6	2	17'-0"	BENT
C2	6	2	16'-10"	BENT
C3	6	2	16'-8"	BENT
C4	6	2	16'-6"	BENT
C5	6	2	16'-4"	BENT
C6	6	2	16'-2"	BENT
C7	6	2	16'-0"	BENT
C8	6	2	15'-10"	BENT
C9	6	2	15'-8"	BENT
C10	6	2	15'-6"	BENT
C11	6	2	15'-2"	BENT
C12	6	2	14'-10"	BENT
C13	6	2	14'-8"	BENT
C14	6	2	14'-4"	BENT
C15	6	2	14'-2"	BENT
C16	6	2	13'-10"	BENT
C17	6	2	13'-6"	BENT
C18	6	2	14'-10"	BENT
C19	5	2	14'-5"	BENT
C20	5	2	14'-1"	BENT
C21	5	2	13'-9"	BENT
C22	5	2	13'-5"	BENT
C23	5	2	13'-1"	BENT
C24	5	2	12'-9"	BENT
C25	5	2	12'-3"	BENT
C26	5	2	11'-4"	BENT
C27	4	2	11'-6"	BENT
C28	4	2	11'-2"	BENT
C29	4	2	10'-10"	BENT
C30	4	2	10'-6"	BENT
C31	4	2	10'-2"	BENT
C32	4	2	9'-10"	BENT
C33	4	2	9'-4"	BENT
C34	4	2	9'-0"	BENT
C35	4	2	8'-8"	BENT
C36	4	6	7'-5"	BENT
H1	7	8	29'-0"	STR.
H2	4	16	27'-5"	STR.
H3	4	4	23'-3"	STR.
H4	4	4	19'-0"	STR.
H5	4	4	14'-9"	STR.
H6	4	4	10'-6"	STR.
H7	4	4	6'-3"	STR.
H8	4	66	6'-0"	BENT
H9	6	4	9'-8"	STR.
O1-O12	4	2 SETS	186'-10"	STR.

BAR LIST (CONSTANT)

MARK	SIZE	NO.	LENGTH	SHAPE
A1	6	4	21'-11"	BENT
A2	6	2	17'-8"	STR.
A3	6	8	36'-3"	STR.
A4	6	8	18'-2"	STR.
P1	4	54	8'-8"	BENT
P2	6	20	5'-0"	BENT
P4	4	17	5'-10"	BENT
P5	4	44	8'-8"	STR.
PE	6	10	25'-4"	STR.
V6	4	4	6'-9"	STR.
V7	4	4	5'-4"	STR.
V8	4	4	3'-11"	STR.
V9	4	4	2'-6"	STR.
V10	4	4	9'-2"	STR.
F8	5	8	29'-4"	STR.
F9	4	8	29'-4"	STR.
F10	4	8	29'-4"	STR.
F11	6	4	3'-11"	BENT
F12	4	18	19'-4"	BENT
F13	4	18	17'-5"	STR.
T3	4	4	6'-10"	STR.
T4-T11	4	2 SETS	36'-4"	STR.

BAR LIST (VARIABLE)

MARK	SIZE	NO.	LENGTH	SHAPE
V1	5	16	14'-1"	BENT
V2	5	16	6'-5"	BENT
V3	4	16	8'-4"	STR.
V4	4	16	8'-4"	STR.
V5	4	36	8'-4"	STR.
F1	6	16	9'-9"	BENT
F2	6	16	7'-5"	BENT
F3	4	8	17'-9"	STR.
F4	5	24	4'-9"	STR.
F6	5	8	26'-8"	STR.
F7	4	16	9'-6"	STR.
S1	6	8	17'-9"	STR.
S2	6	16	5'-8"	STR.
S4	5	8	26'-0"	STR.
S5	4	8	26'-0"	STR.
T1	4	26	8'-7"	STR.
T2	4	26	8'-10"	STR.

CONCRETE QUANTITIES (ONE END)	
ENTIRE FLOOR	29.8 CY
TWO OUTSIDE WALLS & TWO WINGS	26.9 CY
INSIDE WALLS	4.5 CY
ENTIRE ROOF	8.6 CY
PARAPET	5.6 CY
TOTAL	75.4 CY

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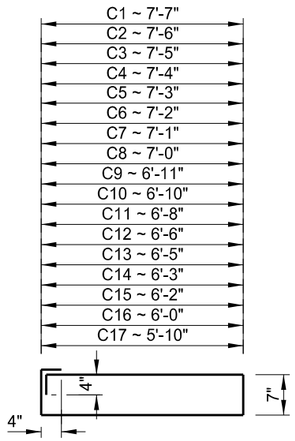
QUANTITIES	
CLASS AE-3 CONCRETE	75.4 CY
REINFORCING STEEL	10,030 LBS

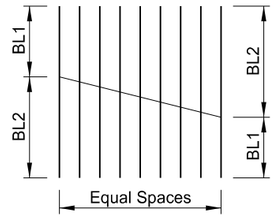
NORTH DICKINSON
EXIT 61

REINFORCING BAR LIST

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	170	9



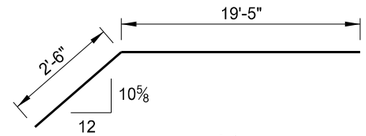
C1 - C17



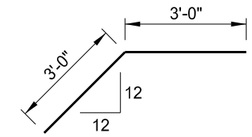
2 SETS SHOWN

MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-O19	186'-10"	5'-1"	14'-7"	18
T4-T11	36'-4"	6'-5"	2'-8"	7

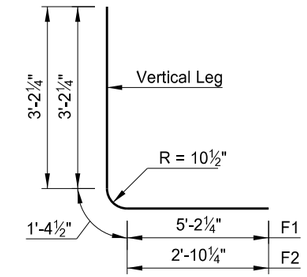
BAR CUTTING DETAILS



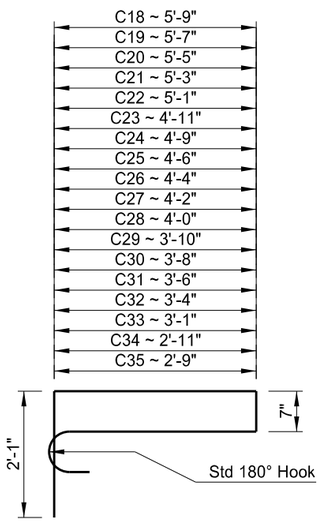
A1



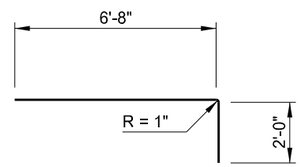
H8



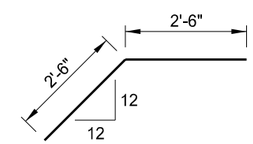
F1 & F2



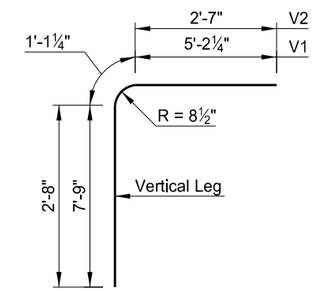
C18 - C35



P1

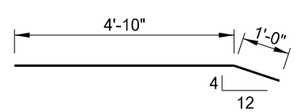


P2

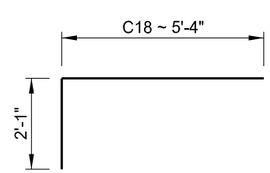


V1 & V2

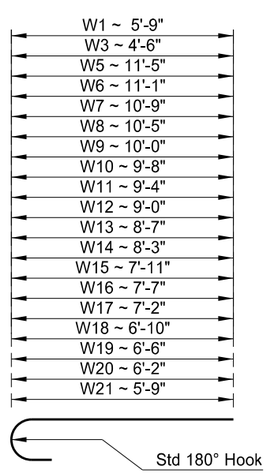
C18 - C35



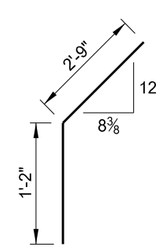
P4



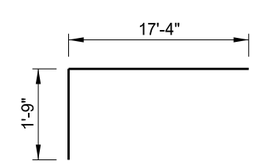
C36



W1, W3 & W5 - W20



F11



F12

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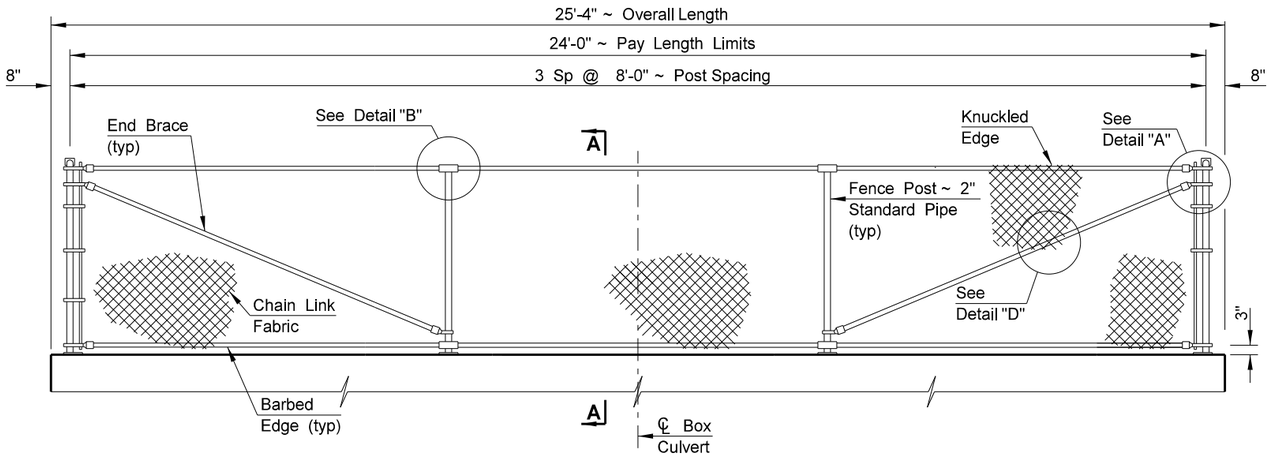
NORTH DICKINSON
EXIT61

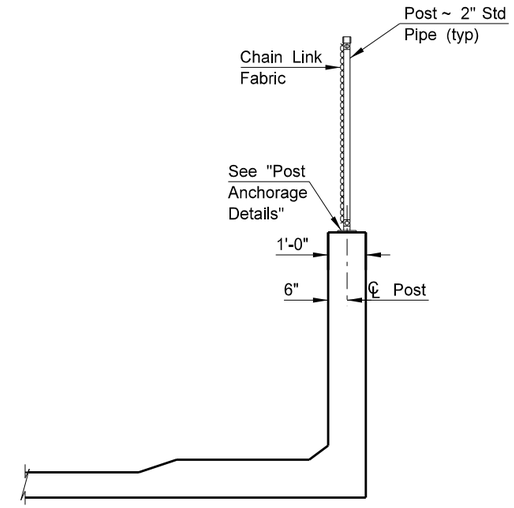
REINFORCING BAR LIST

23 U.S.C. 409
NDDOT Reserves All Objections

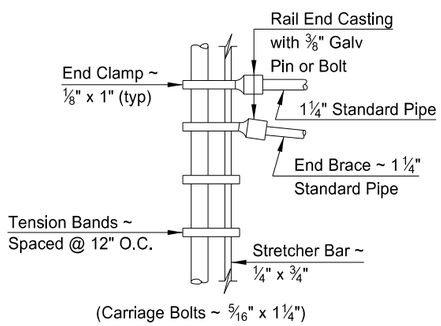
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIB-5-094(088)061	170	10



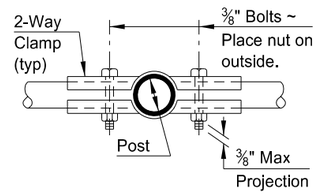
PARAPET ELEVATION



A-A



DETAIL "A"



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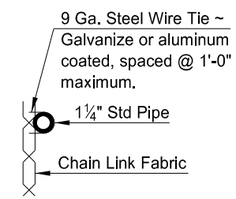
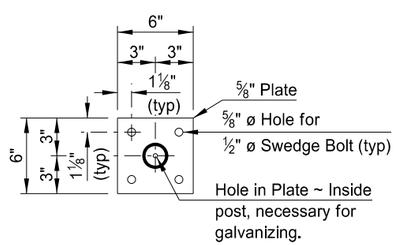
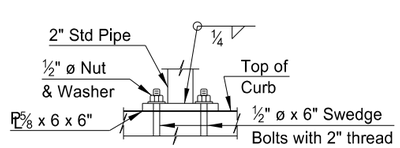


TYPICAL FABRIC ATTACHMENT

DETAIL "D"



BASE PLATE PLAN



ELEVATION

FENCE POST ANCHORAGE DETAILS

NOTES:

Fabric will be AASHTO M 181 Type IV, Class B and will be 9 gauge wire, 2 inch mesh, 60 inches high and the bottom selvage barbed.

Posts and fittings will be AASHTO M 181 Grade 1.

Anchorage plates will be AASHTO M 270 Grade 36 and will be hot-dipped galvanized in accordance with Section 854 of the Standard Specifications.

To anchor base plates, the Contractor has the option to epoxy in ½" ø anchor bolts or place them in the concrete at the time of pouring. If the Contractor elects to drill the bolt holes, do not damage the concrete parapet, and place the base plates shown in the Parapet Elevation view. Supply each anchor bolt with a minimum pullout capacity of 10,000 pounds and a minimum embedment of 8". Anchor bolts and nuts will conform to ASTM F1554 Grade 36 and ASTM A563 Grade A Hex respectively. Washers will meet ASTM F436 Type 1. Hot-dip galvanized all bolts, nuts, and washers in accordance with AASHTO M 111 or AASHTO M 232 as applicable.

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QUANTITIES	
PEDESTRIAN FENCE	24.0 LF

NORTH DICKINSON
EXIT 61

PEDESTRIAN FENCE DETAILS