

DESIGN DATA				
Traffic		Average Daily		
Current	2025	Pass: 13,942	Trucks: 198	Total: 14,140
Preventive Maintenance				

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

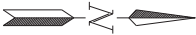
NHU-1-083(148)900
NHU-1-083(149)900
Burleigh County
7th & 9th Street (Bismarck Expy to E Boulevard Ave)

Microsurfacing, Pavement Marking

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	NHU-1-083(148)900	24402	1	1
	NHU-1-083(149)900	24406	1	1

GOVERNING SPECIFICATIONS	Date Published and Adopted by the North Dakota Department of Transportation
Standard Specifications	7/1/2025
Supplemental Specifications	NONE

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
NHU-1-083(148)900	0.610	0.610
NHU-1-083(149)900	2.187	2.187



Begin Project: 24406
Sta 0+50
RP 900.010

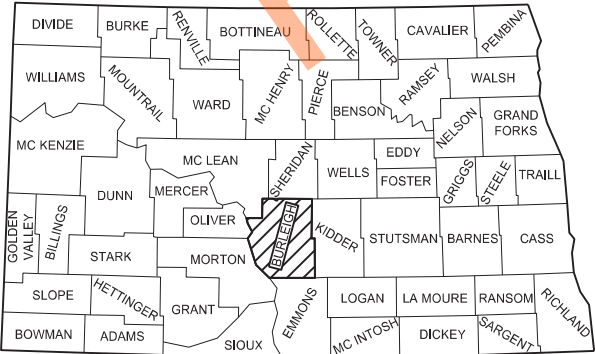
Begin Project: 24402
Sta 0+53.6
RP 900.010

End Project: 24406
Sta 56+14
RP 901.404

End Project: 24406
Sta 546+19
RP 901.456

End Project: 24402
Sta 32+68
RP 900.663

Begin Project: 24406
Sta 500+68
RP 900.663



STATE COUNTY MAP

DESIGNER Loren Lee
DESIGNER Cole Balzer
DESIGNER

ND DEPARTMENT OF TRANSPORTATION
BISMARCK DISTRICT

Larry Gangl
07/21/26

NDDOT BISMARCK DISTRICT



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2	1	Table of Contents	D-101-10	NDDOT Utility Company and Organization Abbreviations					
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			D-704-13	Barricade And Channelizing Device Details					
			D-704-14	Construction Sign Punching And Mounting Details					
			D-704-20	Terminal And Seal Coat Sign Layouts					
			D-704-22	Construction Truck And Temporary Detour Layouts					
			D-704-34	Sign Layout For One Lane Closure					
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Number	Description								
SP 436(25)	Railroad Requirements BNSF								
PSP 82(25)	Permits and Environmental Considerations								

NOTES		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
		ND	NHU-1-083(148)900	6	1

107-P01	HEIGHT RESTRICTION FOR CONSTRUCTION EQUIPMENT: Equipment is restricted to a height of 16 feet or less due to the Airport restrictions. Equipment height will be measured from the centerline of the roadway.	704-P04	NON-PEAK HOUR PAVING: The following timeframes are considered non-peak hours: - Monday 6:30 PM to Tuesday 6:30 AM (12 hrs.) - Tuesday 6:30 PM to Wednesday 6:30 AM (12 hrs.) - Wednesday 6:30 PM to Thursday 6:30 AM (12 hrs.) - Thursday 6:30 PM to Friday 6:30 AM (12 hrs.) - Friday 6:30 PM to Saturday 6:30 AM (12 hrs.) - Saturday 6:30 PM to Sunday 6:30 AM (12 hrs.) - Sunday 6:30 PM to Monday 6:30 AM (12 hrs.) The Engineer will assess liquidated damages in accordance with Table 108-02 of Section 108.07.B.1 per lane per hour for each 1,000 feet of lane closure for failure to open traffic lanes in the construction areas restricted to work only in non-peak hours. Any fraction of 1,000 feet or hour shall be considered a full 1,000 feet or hour. Charges will be assessed when lane closures are in place, whether or not work is in progress and regardless of weather conditions. The Engineer, in their sole discretion, reserves the right to waive liquidated damages charges in extenuating circumstances. Liquidated damages for lane closures in restricted areas may run concurrently with liquidated damages associated with failure to complete all work by the required completion date.
421-P01	MICROSURFACING SIDESTREET LIMITS: See section 120 for sidestreet microsurfacing paving limits.	704-P05	TRAFFIC CONTROL: A quantity of 34 No Parking signs are included in the plans. Place no parking signs one day before lane closure is installed to prevent street parking from E Boulevard Ave to E Ave A.
704-100	TRAFFIC CONTROL SUPERVISOR: Provide a Traffic Control Supervisor.	704-P06	MAINTAINING ACCESS: Perform paving operations at intersections and driveways in a manner that maintains access to the adjacent properties without causing damage to microsurfacing material. Maintain at least one access to adjacent properties at all times.
704-P01	TRAFFIC CONTROL FOR MICROSURFACING: Provide traffic control consisting of lane closures and flagging. The maximum work zone length is limited to one night's production. The length of the work zone includes the daily construction area plus the longitudinal buffer space and does not include tapers. For estimating purposes, the traffic control device list is based on a 1-mile work zone and the following list: 1. Standard D-704-34 2. Section 100 Sheets 3-5 3. Standard D-704-20 4. Standard D-704-22 Remove lane closures if no work is scheduled for the following day. Lane closures may remain in place for up to 3 days if weather prevents work from being performed on days when work was scheduled to take place. The department will pay for all necessary deployed devices, regardless of the number and length of the lane closures.	704-P07	PORTABLE CHANGEABLE MESSAGE SIGN: Install Portable Changeable Message Signs (PCMS) at least a week before work begins on the project. The Engineer will determine the locations for PCMS installation. Relocate the PCMS as directed by the Engineer. Provide an operator trained in the use of the PCMS. The Engineer will determine the message to be displayed. The operator shall program the message within one hour of the Engineer's request to change the message.
704-P02	OBLITERATION OF PAVEMENT MARKINGS (PCN 24402 ONLY): Obliterate all grooved epoxy and thermoplastic pavement marking before microsurfacing. Obliteration locations are the same as the pavement marking locations in Section 120.		
704-P03	WORK ZONE TRAFFIC CONTROL: Close half of the roadway at a time. Perform all obliteration of pavement marking, short-term pavement marking, paving operations, and permanent pavement marking during non-peak hours (See note 704-P04 "NON-PEAK HOUR PAVING"). Reopen all traffic lanes prior to the end of the non-peak hours. Remove all temporary traffic control devices and place short-term pavement markings prior to reopening the roadway to traffic.		

REGISTERED PROFESSIONAL ENGINEER

DANIEL CHRISTENSON

PE-27391

DATE 07/30/26

NORTH DAKOTA



NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-083(148)900	6	2

762-P01 PREFORMED THERMO PLASTIC PAVEMENT MARKING:

Provide one of the following materials:

- PreMark with Vizigrip manufactured by Ennis Flint
- Optamark as manufactured by Geveko Markings
- 3M Durable Retroreflective Liquid Pavement Markings Series 500
- An approved equal.

Provide markings that are 125 mils thick (+/- 5 mils). Install as recommended by the manufacturer. Groove the areas to receive 6” and 24” thermo plastic pavement markings. Include all costs to groove the pavement markings in the price bid for “Preformed Thermo Plastic Pvmt Mk 6In Line” and “Preformed Thermo Plastic Pvmt Mk 24In Line”.

Preliminary Plans



Estimated Quantities						STATE	PROJECT NO.	SECTION NO.	SHEET NO.
						ND	NHU-1-083(148)900	8	1
					NHU-1-083(149)900				
SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU-1-083(148)900	TOTAL				
103	0100	CONTRACT BOND	L SUM	0.19	0.19				
421	0011	AGGREGATE FOR MICROSURFACING TYPE III	TON	205	205				
421	0020	ASPHALT EMULSION FOR MICROSURFACING	GAL	6842	6842				
702	0100	MOBILIZATION	L SUM	0.19	0.19				
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1083	1083				
704	1052	TYPE III BARRICADE	EA	6	6				
704	1060	DELINEATOR DRUMS	EA	48	48				
704	1067	TUBULAR MARKERS	EA	150	150				
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	1	1				
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	2296	2296				
704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2	2				
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED	LF	3464	3464				
762	0132	EPOXY PVMT MK 8IN LINE-GROOVED	LF	1028	1028				
762	0136	EPOXY PVMT MK MESSAGE-GROOVED	SF	32	32				
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	6928	6928				
762	0434	SHORT TERM 8IN LINE-TYPE NR	LF	2056	2056				
762	0436	SHORT TERM 24IN LINE-TYPE NR	LF	332	332				
762	0442	SHORT TERM MESSAGE-TYPE NR	SF	64	64				
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6IN LINE	LF	187	187				
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24IN LINE	LF	166	166				

Estimated Quantities						STATE	PROJECT NO.	SECTION NO.	SHEET NO.
						ND	NHU-1-083(149)900	8	1
					NHU-1-083(148)900				
SPEC	CODE	ITEM DESCRIPTION	UNIT	NHU-1-083(149)900	TOTAL				
103	0100	CONTRACT BOND	L SUM	0.81	0.81				
107	0100	RAILWAY PROTECTION INSURANCE	L SUM	1	1				
107	0140	RAILROAD COORDINATION	L SUM	1	1				
107	0145	RAILROAD FLAGGING	DAY	2000	2000				
421	0011	AGGREGATE FOR MICROSURFACING TYPE III	TON	629	629				
421	0020	ASPHALT EMULSION FOR MICROSURFACING	GAL	20958	20958				
702	0100	MOBILIZATION	L SUM	0.81	0.81				
704	1000	TRAFFIC CONTROL SIGNS	UNIT	2883	2883				
704	1052	TYPE III BARRICADE	EA	24	24				
704	1060	DELINEATOR DRUMS	EA	176	176				
704	1067	TUBULAR MARKERS	EA	163	163				
704	1087	SEQUENCING ARROW PANEL-TYPE C	EA	2	2				
704	4011	PORTABLE CHANGEABLE MESSAGE SIGN	EA	1	1				
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED	LF	4071	4071				
762	0132	EPOXY PVMT MK 8IN LINE-GROOVED	LF	7131	7131				
762	0136	EPOXY PVMT MK MESSAGE-GROOVED	SF	2204	2204				
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	4071	4071				
762	0434	SHORT TERM 8IN LINE-TYPE NR	LF	7131	7131				
762	0436	SHORT TERM 24IN LINE-TYPE NR	LF	1076	1076				
762	0442	SHORT TERM MESSAGE-TYPE NR	SF	2204	2204				
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6IN LINE	LF	3904	3904				
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24IN LINE	LF	1076	1076				

BASIS OF ESTIMATE

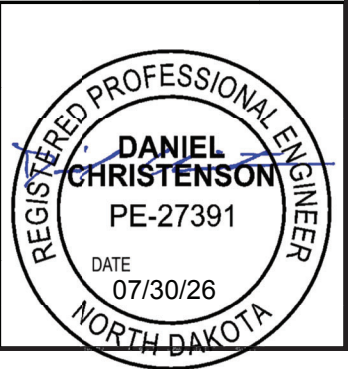
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-083(148)900	10	1
ND	NHU-1-083(149)900		

		Mainline (PCN:24402)			Mainline (PCN:24406)			Mainline (PCN:24406)		
		Sta 0+53 to Sta 32+68 (South 9 th Street)			Sta 0+53 to Sta 32+68 (South 7 th Street) Sta 506+95 to Sta 532+28 (North 9 th Street) Sta 20+25 to Sta 42+03 (North 7 th Street)			Sta 42+03 to Sta 56+14 (North 7 th Street) Sta 532+28 to Sta 546+19 (North 9 th Street)		
Material	Unit	Width (ft)	Quantity/Mile	Total	Width (ft)	Quantity/Mile	Total	Width (ft)	Quantity/Mile	Total
Microsurfacing	SY	45	26,400	16,075	45	26,400	39,630	41	24,053	12,764
Aggregate for Microsurfacing Type III @ 24 LB/SY	Ton	45	317	193	45	317	476	41	289	153
Asphalt Emulsion for Microsurfacing @ 0.4 GAL/SY	Gal	45	10,560	6,430	45	10,560	15,852	41	9,621	5,106

Note: See Section 30 for additional miscellaneous Microsurfacing Quantities.

Obliteration of Pavement Markings			
Mainline (PCN:24402)			
Location - Type	Basis	Unit	Quantity
Centerline Skips – 4IN Line	Measured	SF	1,154
White Cross Walk – 6IN Line	Measured	SF	93
White Channel Line – 8IN Line	Measured	SF	685
White Stop Bar – 24IN Line	Measured	SF	332
Messaging – Arrows	Measured	SF	32
		Total	2,296

Permanent Pavement Marking		
Mainline (PCN:24402)		
Location - Type	Basis	Quantity
Centerline Skips – Epoxy Pvmt MK 4IN Line – Grooved	Measured	3,464 LF
White Cross Walk Line – Pref. Thermo Pl. Pvmt MK 6IN Line	Measured	187 LF
White Channel Lane Line/Dashes – Epoxy Pvmt MK 8IN Line-Grooved	Measured	1,028 LF
White Stop Bar/Crosswalk – Pref. Thermo Pl. Pvmt MK 24IN Line	Measured	166 LF
Message- Epoxy Pvmt MK-Message - Grooved	Measured	32 SF
Mainline (PCN:24406)		
Location - Type	Basis	Quantity
Centerline Slips – Epoxy Pvmt MK 4IN Line – Grooved	Measured	4,071 LF
White Cross Walk Line – Pref. Thermo Pl. Pvmt MK 6IN Line	Measured	3,904 LF
White Channel Lane Line/Dashes – Epoxy Pvmt MK 8IN Line-Grooved	Measured	7,131 LF
White Stop Bar/Crosswalk – Pref. Thermo Pl. Pvmt MK 24IN Line	Measured	1,076 LF
Message- Epoxy Pvmt MK-Message - Grooved	Measured	2,204 SF



BASIS OF ESTIMATE

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-1-083(148)900	10	2
ND	NHU-1-083(149)900		

Short Term 4 IN Line-Type NR (PCN:24402)			
1 Application After Obliteration and Microsurfacing			
Location - Type	Basis	Unit	Quantity
Centerline Skips – 4IN Line	Measured	LF	3,464
		# of Applications	2
		Total	6,928
Short Term 8 IN Line-Type NR (PCN:24402)			
1 Application After Obliteration and Microsurfacing			
Location - Type	Basis	Unit	Quantity
Channel Line/Dashes – 8IN Line	Measured	LF	1,028
		# of Applications	2
		Total	2,056
Short Term 24 IN Line-Type NR (PCN:24402)			
1 Application After Obliteration and Microsurfacing			
Location - Type	Basis	Unit	Quantity
Stop Bars/Cross Walks	Measured	LF	166
		# of Applications	2
		Total	332
Short Term Message-Type NR (PCN:24402)			
1 Application After Obliteration and Microsurfacing			
Location - Type	Basis	Unit	Quantity
Turn Arrows	Measured	SF	32
		# of Applications	2
		Total	64

Short Term 4 IN Line-Type NR (PCN:24406)			
1 Application After Microsurfacing			
Location - Type	Basis	Unit	Quantity
Centerline Skips – 4IN Line	Measured	LF	4,071
		# of Applications	1
		Total	4,071
Short Term 8 IN Line-Type NR (PCN:24406)			
1 Application After Microsurfacing			
Location - Type	Basis	Unit	Quantity
Channel Line/Dashes – 8IN Line	Measured	LF	7,131
		# of Applications	1
		Total	7,131
Short Term 24 IN Line-Type NR (PCN:24406)			
1 Application After Microsurfacing			
Location - Type	Basis	Unit	Quantity
Stop Bars/Cross Walks	Measured	LF	1,076
		# of Applications	1
		Total	1,076
Short Term Message-Type NR (PCN:24406)			
1 Application After Microsurfacing			
Location - Type	Basis	Unit	Quantity
Turn Arrows	Measured	SF	2,204
		# of Applications	1
		Total	2,204



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(148)900	30	1
		NHU-1-083(149)900		

Additional Microsurfacing Quantity for Intersections and turn lanes:

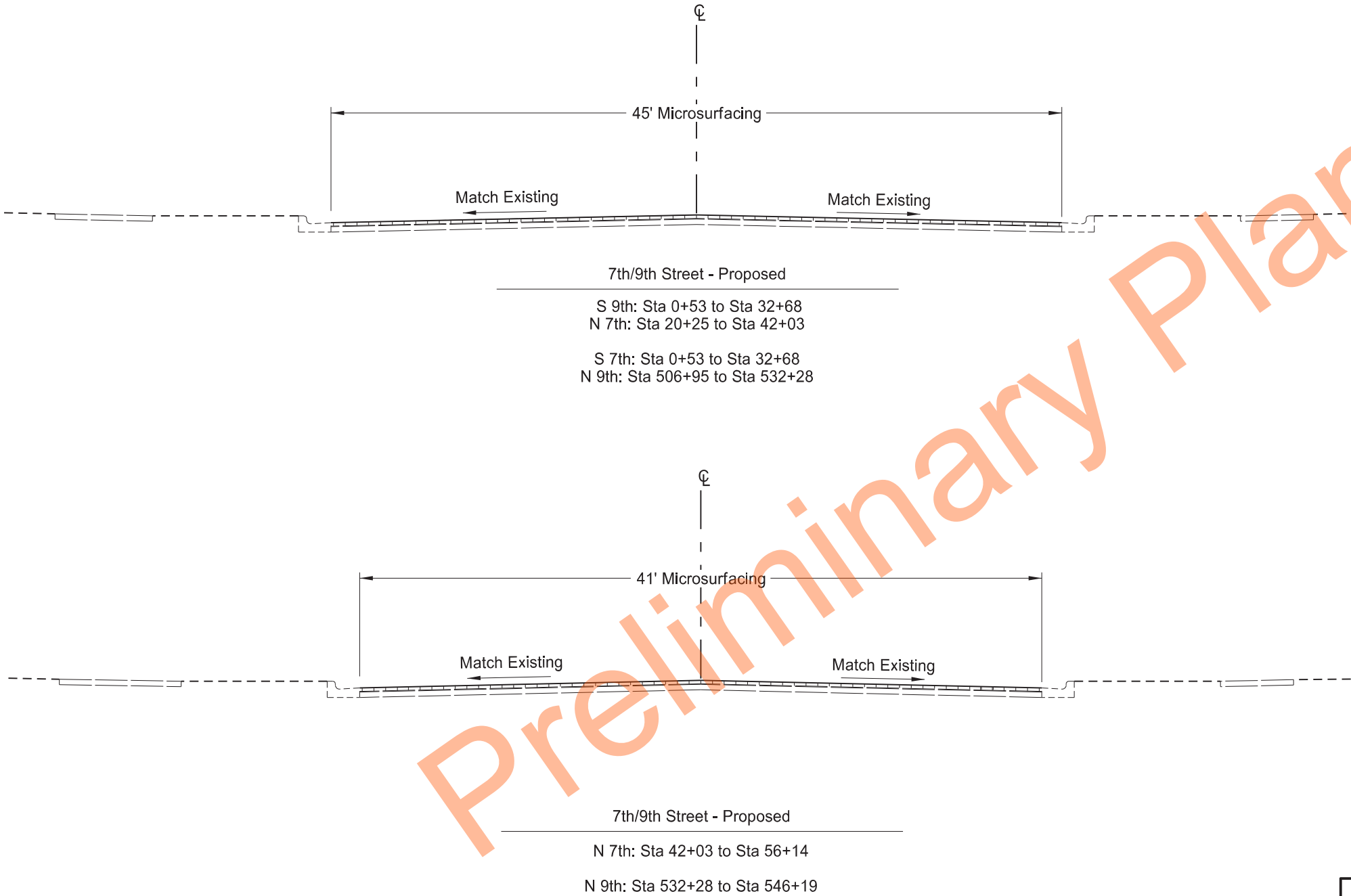
9th Street:
E Arbor Ave - 375
E Indiana Ave - 92
E Bowen Ave - 279
E Sweet Ave - 284
E Broadway Ave - 352
E Thayer Ave - 97
E Rosser Ave - 193
E Ave A - 56
E Ave B - 92
E Ave C - 98
E Ave D - 117
E Ave E - 90
E Ave F - 59

7th Street:
E Arbor Ave - 230
Target South Turn Lane - 234
Target North Turn Lane - 239
E Bowen Ave - 304
E Thayer Ave - 113
E Rosser Ave - 220
E Ave B - 290
E Ave C - 200
E Ave E - 178

Totals:
Microsurfacing = 4,192 SY

Aggregate for Microsurfacing Type III @ 24 LB/SY = 50 Tons

Asphalt Emulsion for Microsurfacing @ 0.4 GAL/SY = 1,678 Gallons



Proposed Typical Section

Microsurfacing

7th & 9th Street - Bismarck Expressway to Front Ave

REGISTERED PROFESSIONAL ENGINEER

DANIEL CHRISTENSON

PE-27391

DATE 07/30/26

NORTH DAKOTA

[illegible][illegible]

SPEC & CODE			
704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	1083

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY
704-0100	FLAGGING	MHR	
704-1048	PORTABLE RUMBLE STRIPS	EACH	
704-1050	TYPE I BARRICADES	EACH	
704-1052	TYPE III BARRICADES	EACH	6
704-1060	DELINEATOR DRUMS	EACH	48
704-1065	TRAFFIC CONES	EACH	
704-1067	TUBULAR MARKERS	EACH	150
704-1070	DELINEATOR	EACH	
704-1072	FLEXIBLE DELINEATORS	EACH	
704-1080	STACKABLE VERTICAL PANELS	EACH	
704-1081	VERTICAL PANELS - BACK TO BACK	EACH	
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH	
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH	
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	2
704-1500	OBLITERATION OF PVMT MK	SF	2296
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH	
762-0200	RAISED PAVEMENT MARKERS	EACH	
762-0420	SHORT TERM 4IN LINE - TYPE R	LF	
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF	6928
762-0434	SHORT TERM 8IN LINE-TYPE NR	LF	2056
762-0442	SHORT TERM MESSAGE-TYPE NR	SF	64
762-0736	SHORT TERM 24IN LINE-TYPE NR	LF	332

A circular professional engineer seal for the State of North Dakota. The outer ring contains the text "REGISTERED PROFESSIONAL ENGINEER" at the top and "NORTH DAKOTA" at the bottom. The center of the seal contains the name "DANIEL CHRISTENSON" in bold, the license number "PE-27391", and the expiration date "DATE 07/30/26". A blue ink signature is written across the seal, overlapping the name and license number.

Bismarck Expressway to Front Ave

[illegible][illegible]

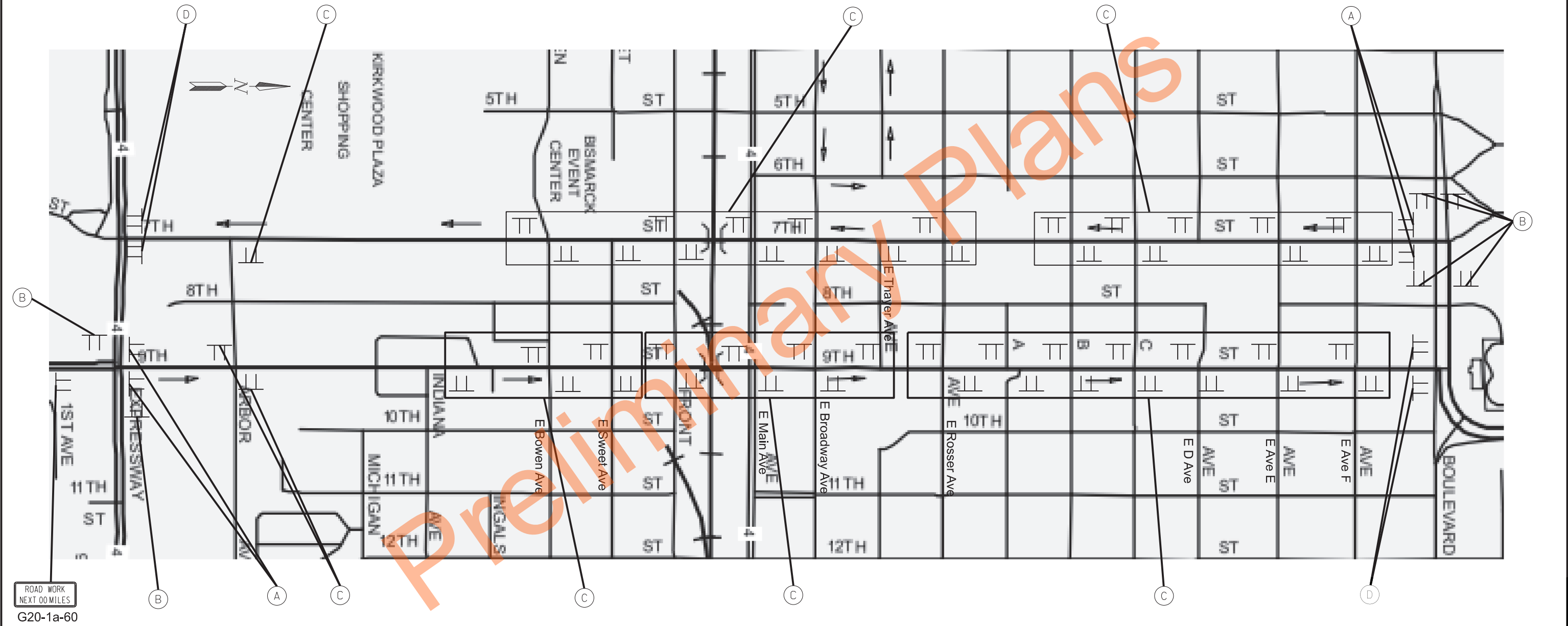
SPEC & CODE			
704-1000	TRAFFIC CONTROL SIGNS	TOTAL UNITS	2883

SPEC & CODE	DESCRIPTION	UNIT	QUANTITY
704-0100	FLAGGING	MHR	
704-1048	PORTABLE RUMBLE STRIPS	EACH	
704-1050	TYPE I BARRICADES	EACH	24
704-1052	TYPE III BARRICADES	EACH	176
704-1060	DELINEATOR DRUMS	EACH	176
704-1065	TRAFFIC CONES	EACH	
704-1067	TUBULAR MARKERS	EACH	163
704-1070	DELINEATOR	EACH	
704-1072	FLEXIBLE DELINEATORS	EACH	
704-1080	STACKABLE VERTICAL PANELS	EACH	
704-1081	VERTICAL PANELS - BACK TO BACK	EACH	
704-1085	SEQUENCING ARROW PANEL - TYPE A	EACH	
704-1086	SEQUENCING ARROW PANEL - TYPE B	EACH	
704-1087	SEQUENCING ARROW PANEL - TYPE C	EACH	2
704-1500	OBLITERATION OF PVMT MK	SF	
704-3501	PORTABLE PRECAST CONCRETE MED BARRIER	LF	
704-3510	PRECAST CONCRETE MED BARRIER - STATE FURNISHED	EACH	
762-0200	RAISED PAVEMENT MARKERS	EACH	
762-0420	SHORT TERM 4IN LINE - TYPE R	LF	
762-0430	SHORT TERM 4IN LINE - TYPE NR	LF	4157
762-0434	SHORT TERM 8IN LINE-TYPE NR	LF	7134
762-0442	SHORT TERM MESSAGE-TYPE NR	SF	2250
762-0736	SHORT TERM 24IN LINE-TYPE NR	LF	1718

A circular professional engineer seal for the State of North Dakota. The outer ring contains the text "REGISTERED PROFESSIONAL ENGINEER" at the top and "NORTH DAKOTA" at the bottom. The center of the seal contains the name "DANIEL CHRISTENSON" in bold, the license number "PE-27391", and the expiration date "DATE 07/30/26". A blue ink signature is written across the seal, overlapping the name and license number.

Bismarck Expressway to E Boulevard Ave

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(148)900	100	3

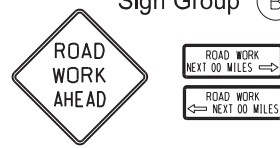


Sign Group (A)



G20-1a-60 G20-55-96

Sign Group (B)



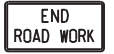
W20-1-48 G20-52a(L/R)-72

Sign Group (C)



G20-52a(L/R)-72

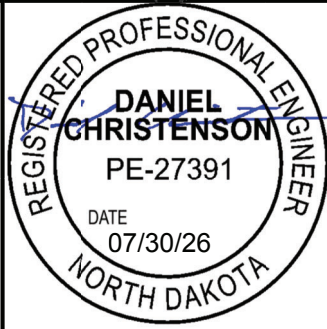
Sign Group (D)

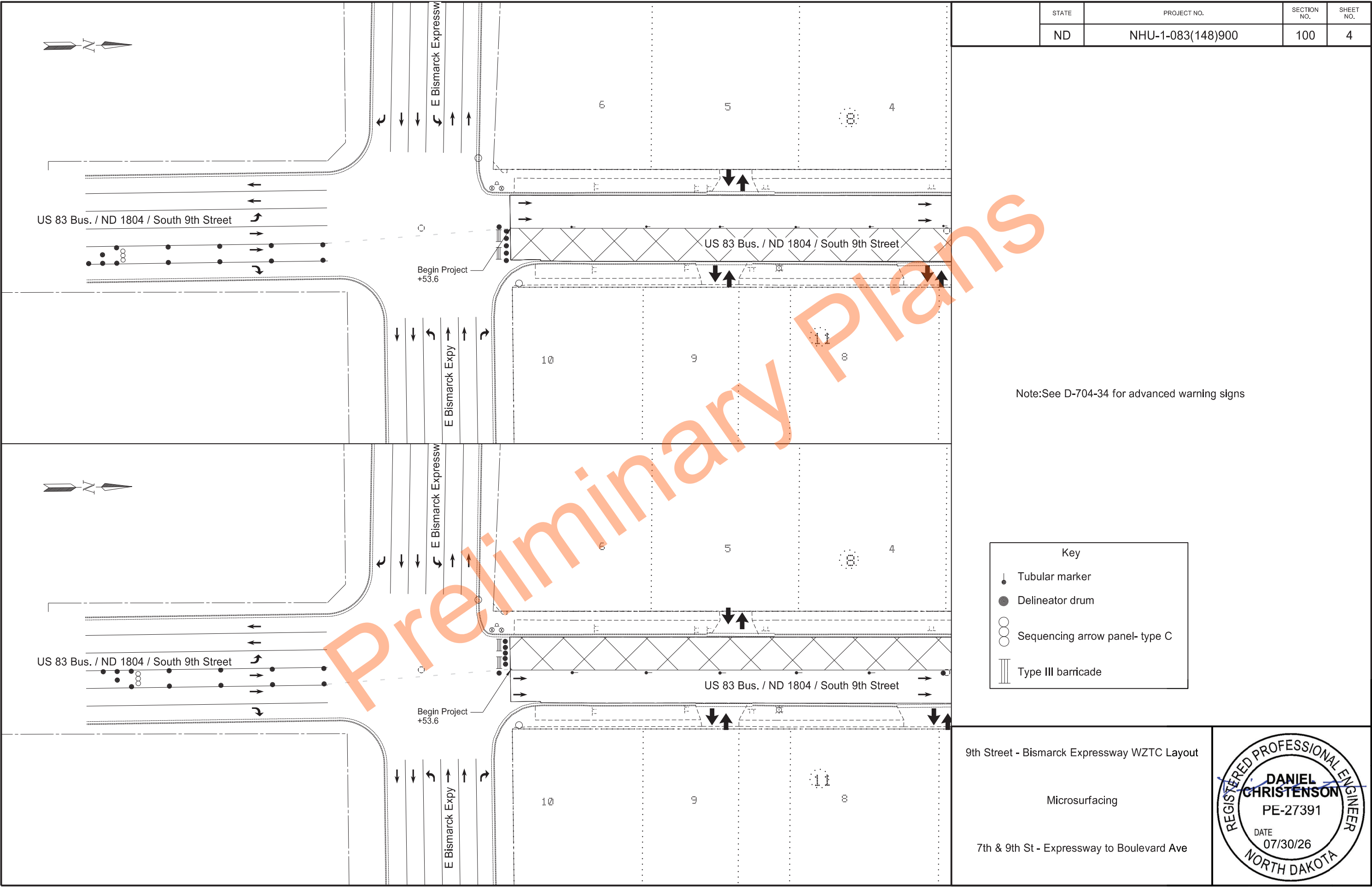


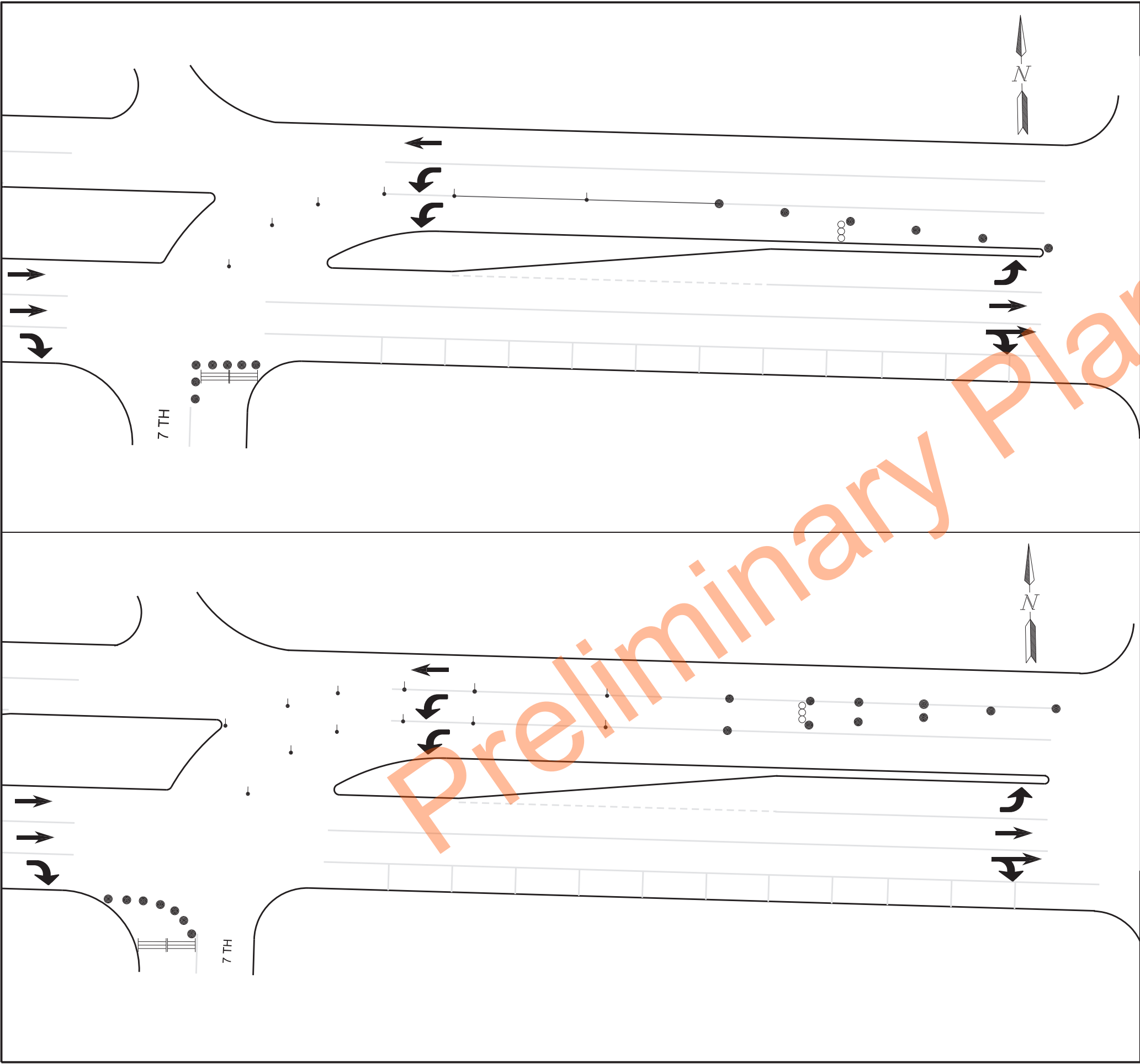
G20-2a-48C

Terminal Signing

Microsurfacing
7th and 9th St
Bismarck Expressway to Boulevard Ave







Note:See D-704-34 for advanced warning signs

Key

Tubular marker

Delineator drum

Sequencing arrow panel- type C

Type III barricade

7th St & Boulevard Ave WZTC Layout

Microsurfacing

7th & 9th St - Expressway to Boulevard Ave

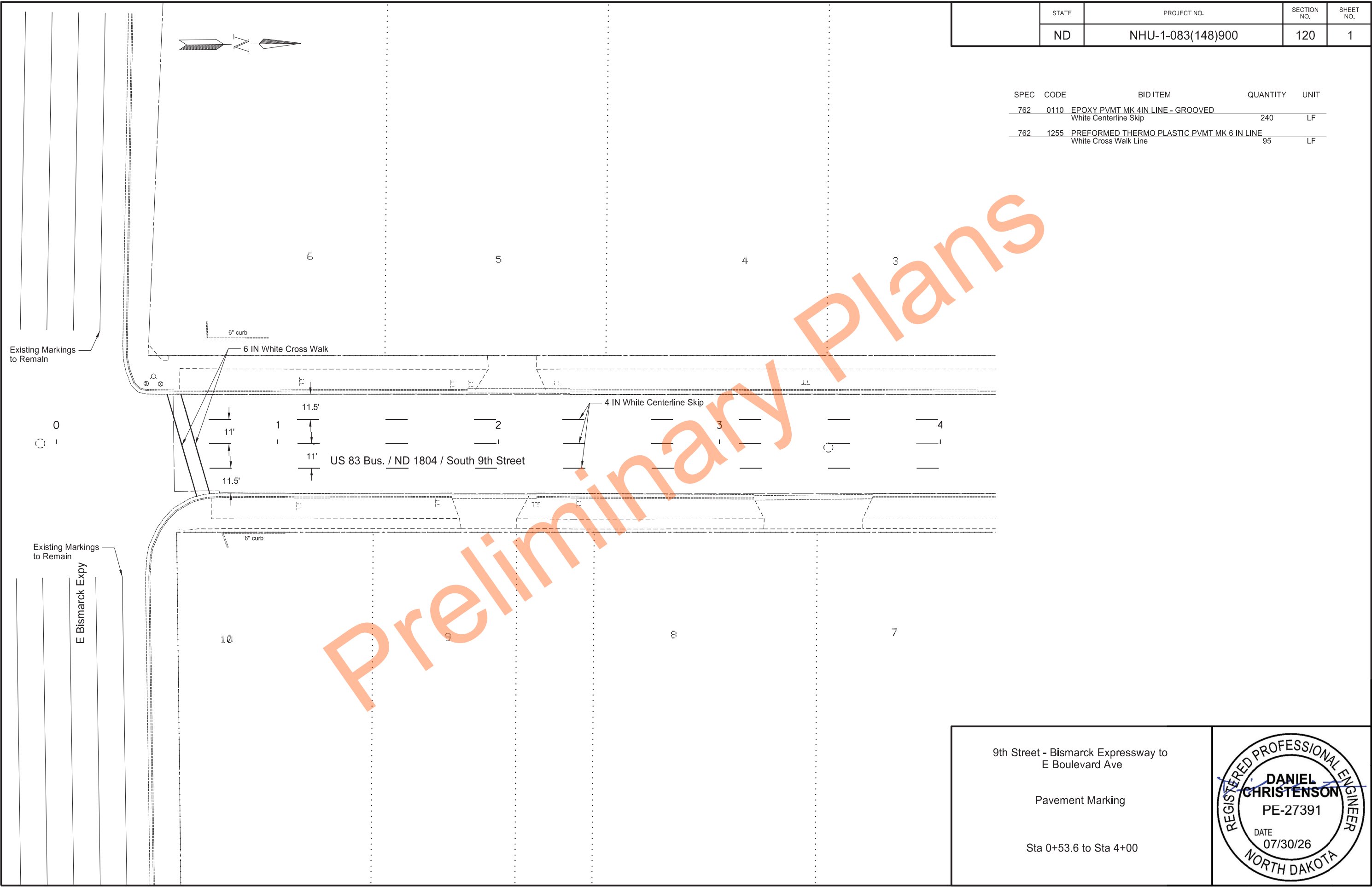
REGISTERED PROFESSIONAL ENGINEER

DANIEL CHRISTENSON

PE-27391

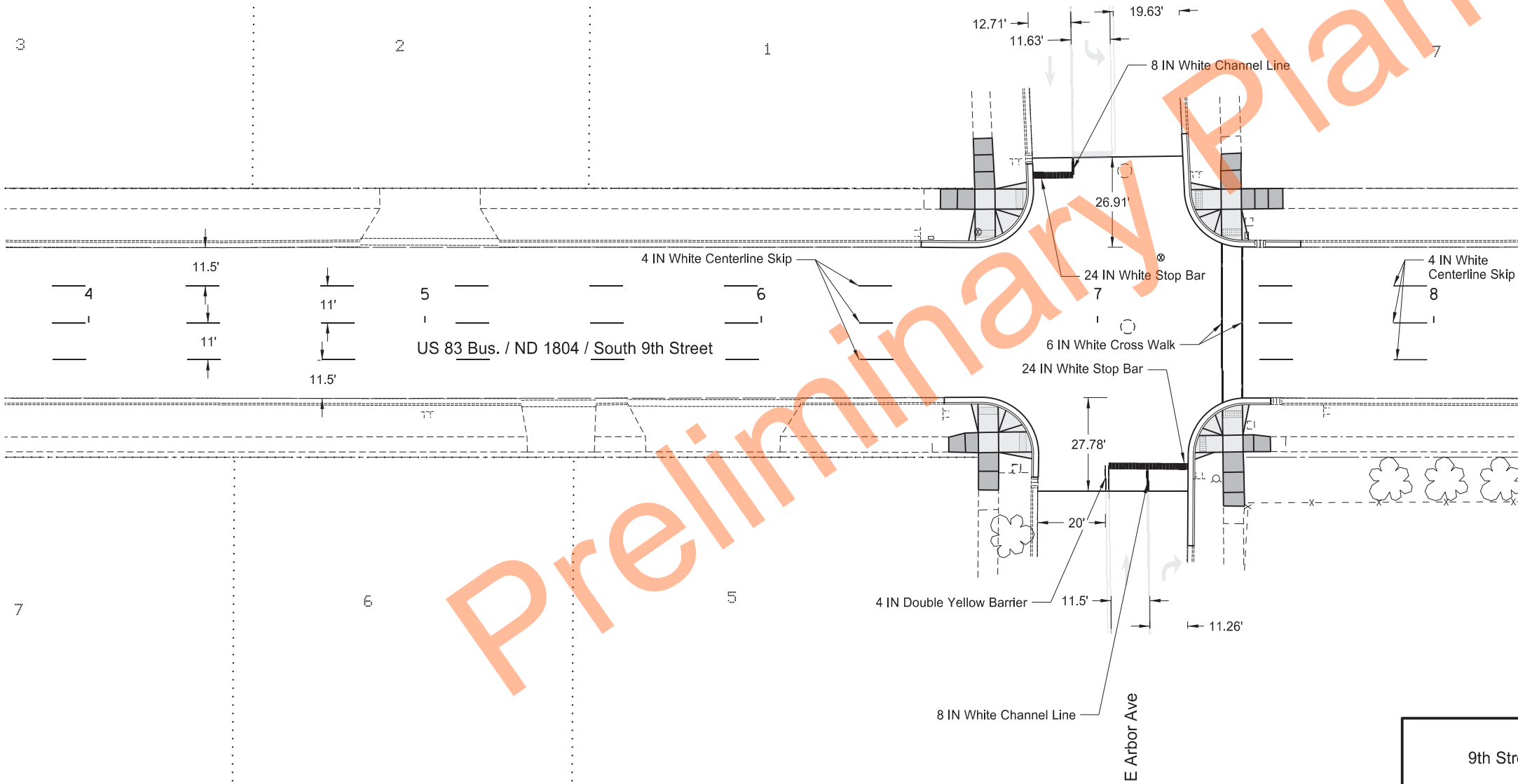
DATE 07/30/26

NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(148)900	120	2

SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0110	EPOXY PVMT MK 4IN LINE - GROOVED		
		White Centerline Skip	270	LF
		Double Yellow Barrier	114	LF
762	0132	EPOXY PVMT MK 8IN LINE - GROOVED		
		White Channel Line	18	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24 IN LINE		
		White Stop Bar	35	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6 IN LINE		
		White Cross Walk Line	92	LF

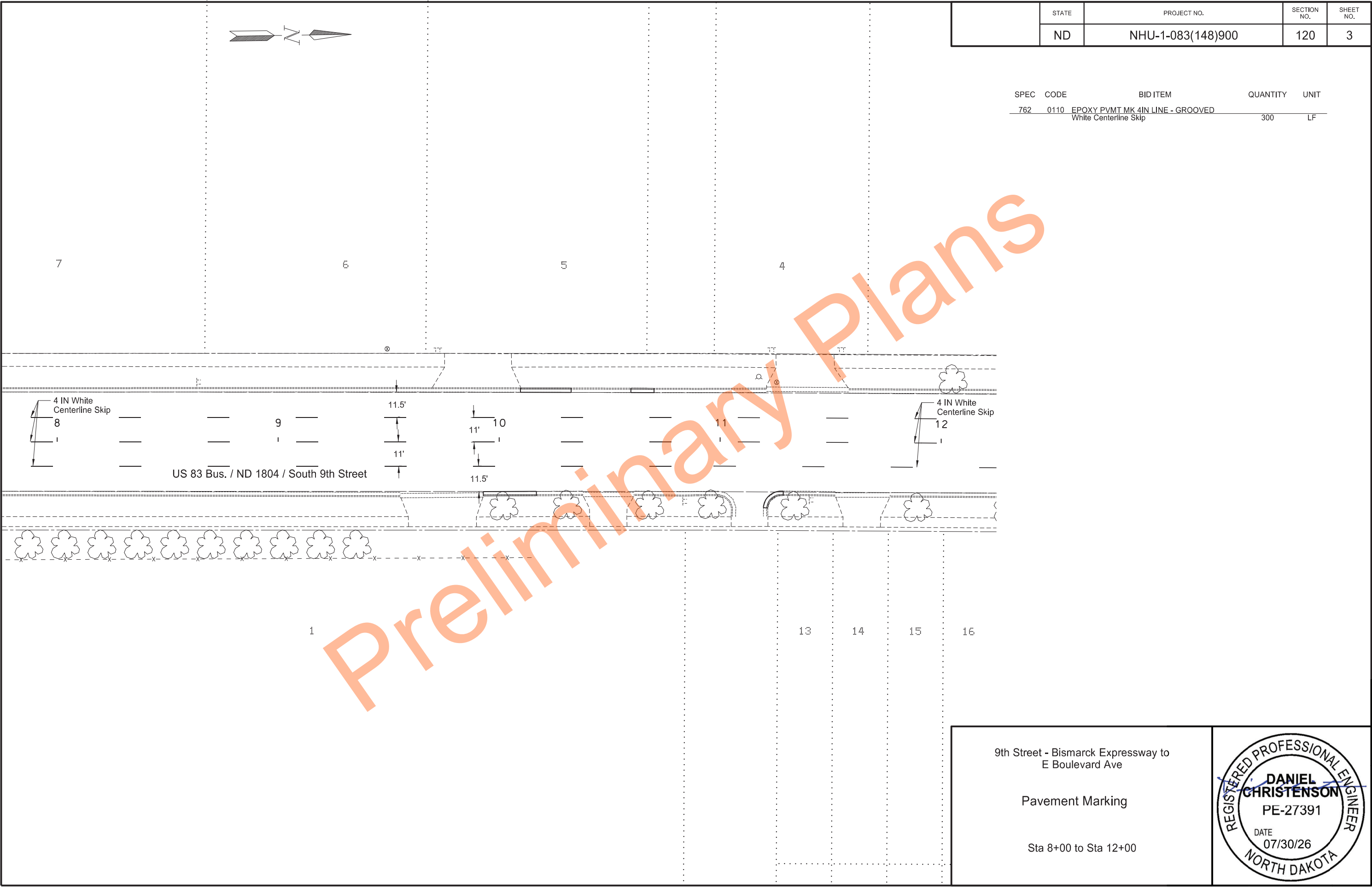


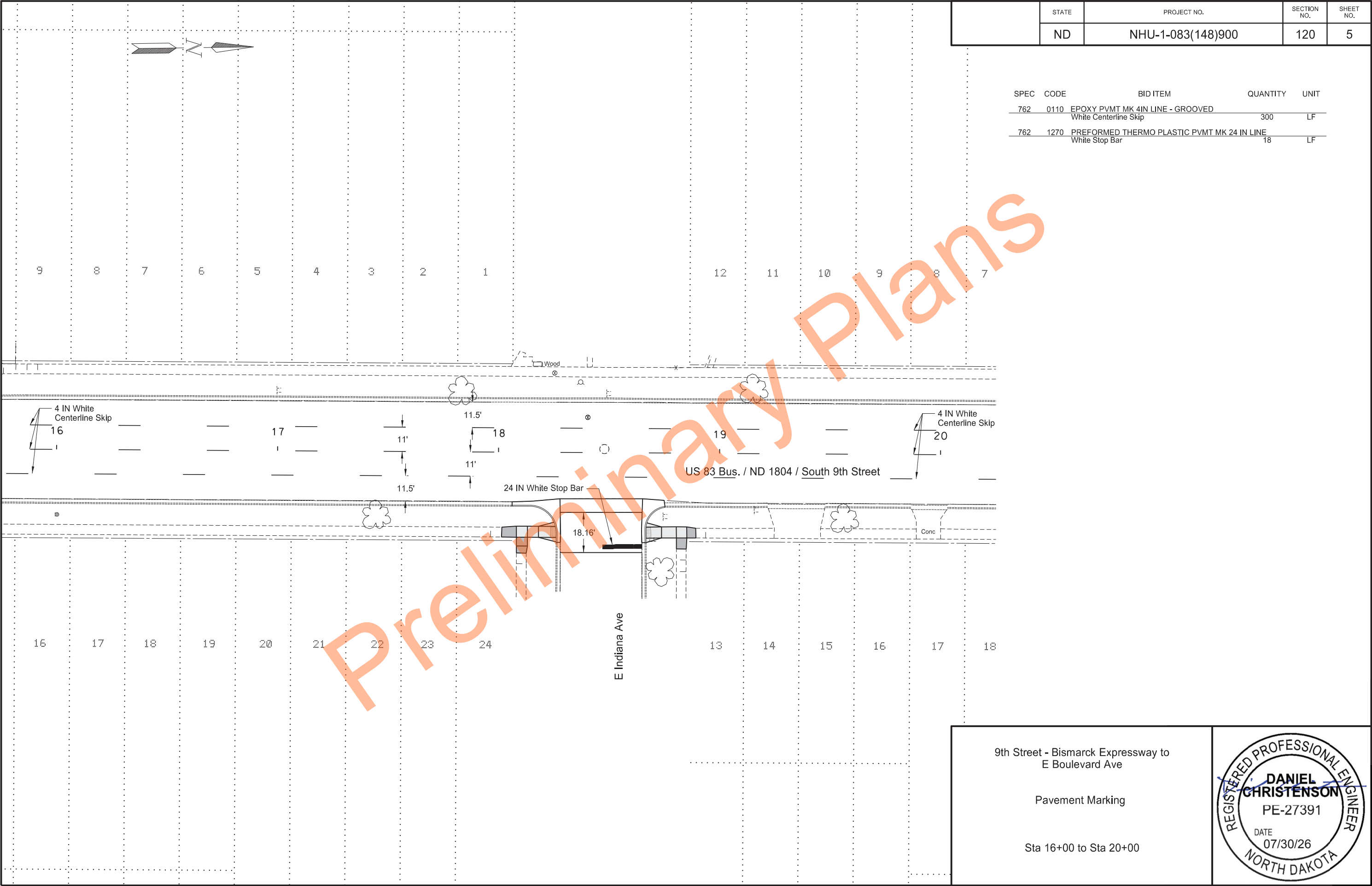
9th Street - Bismarck Expressway to
E Boulevard Ave

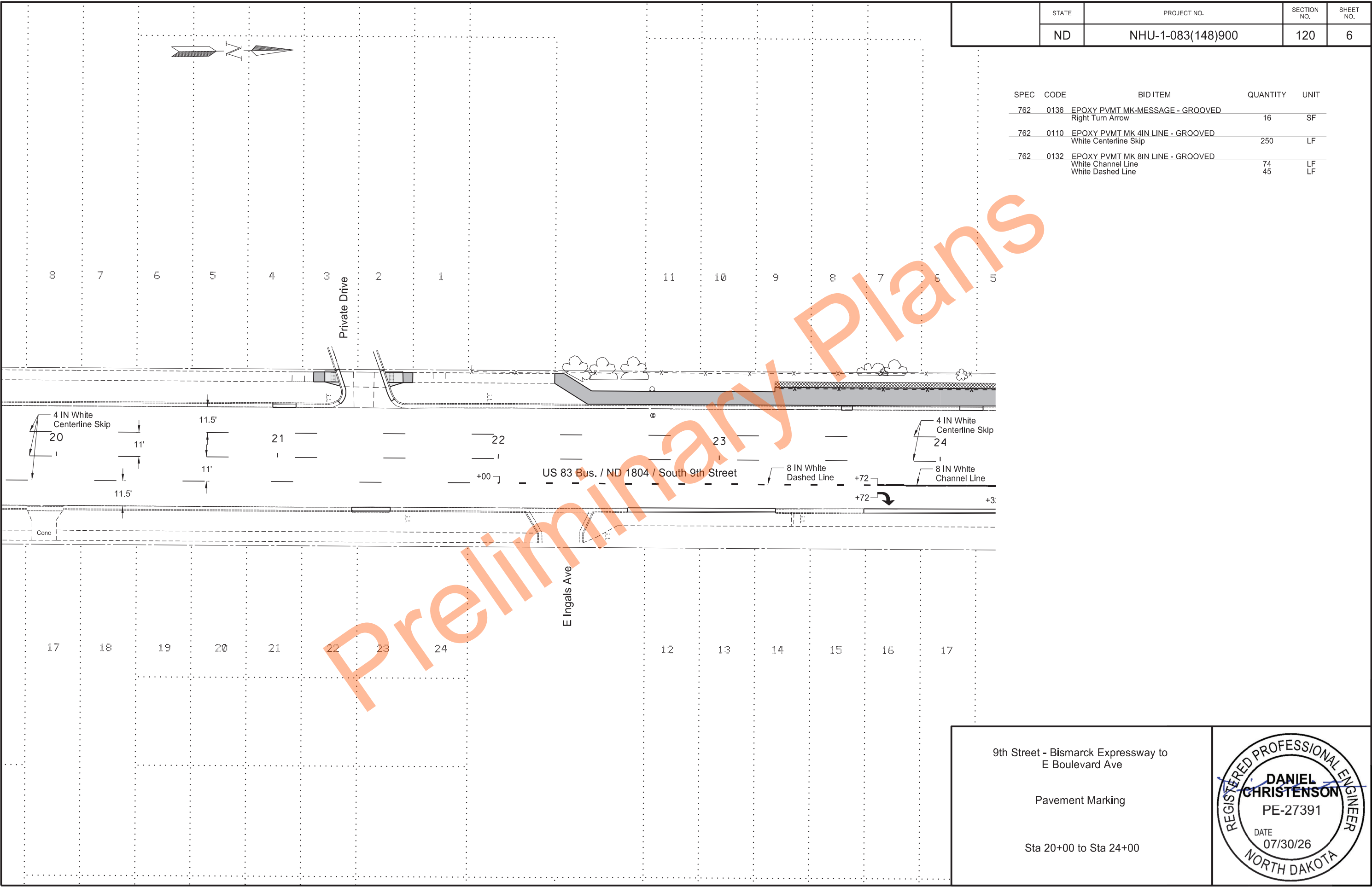
Pavement Marking

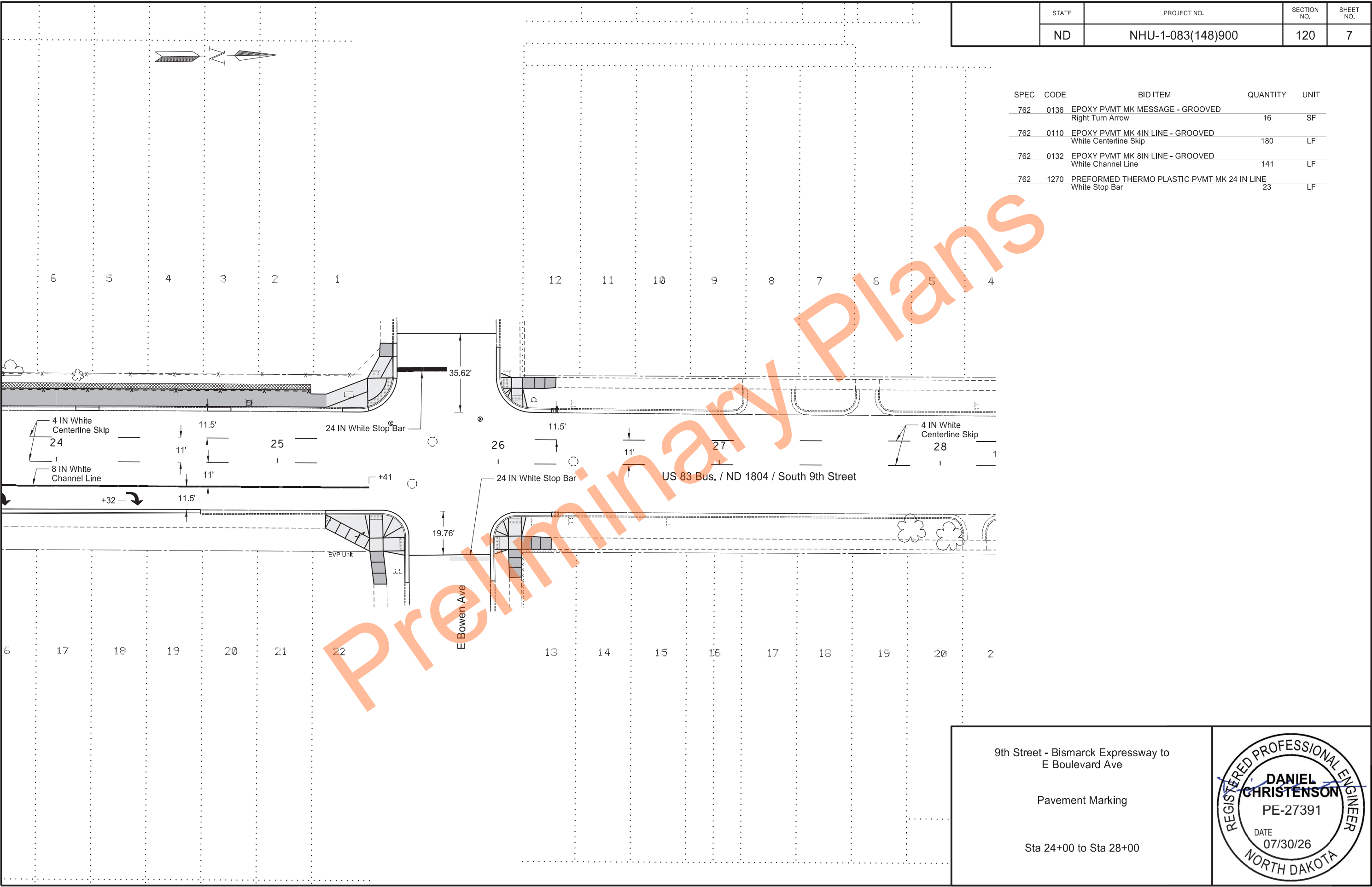
Sta 4+00 to Sta 8+00

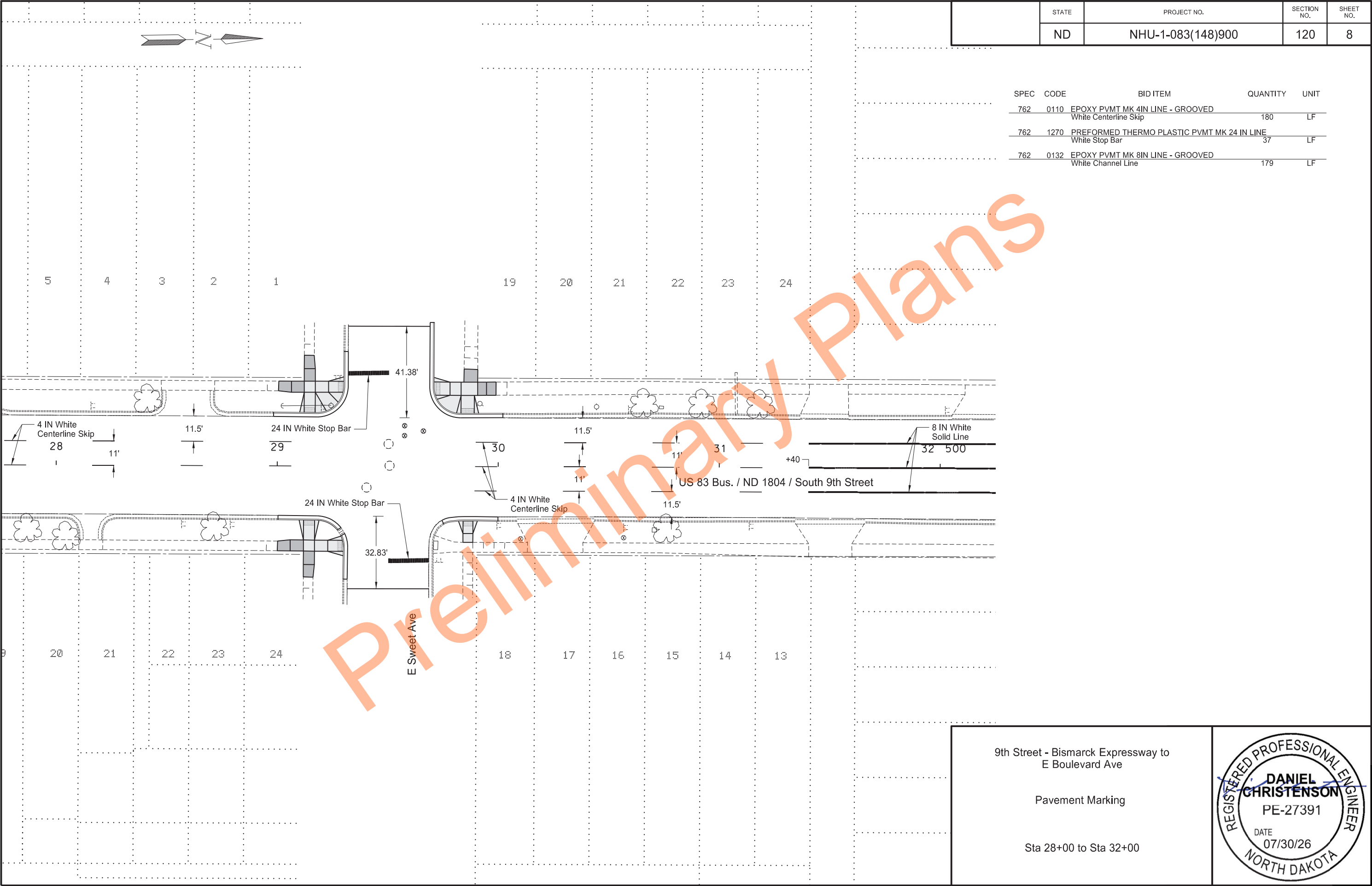


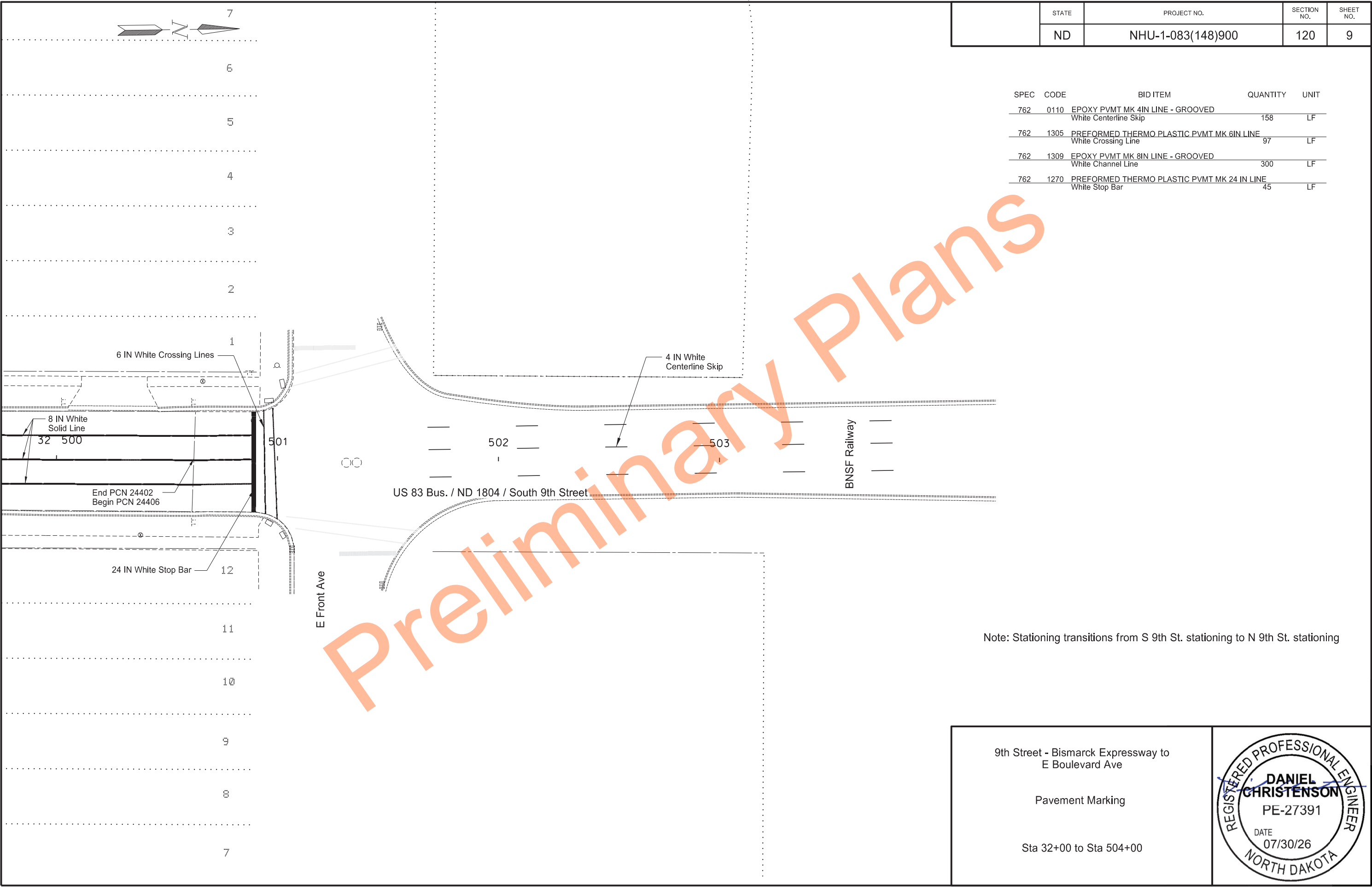


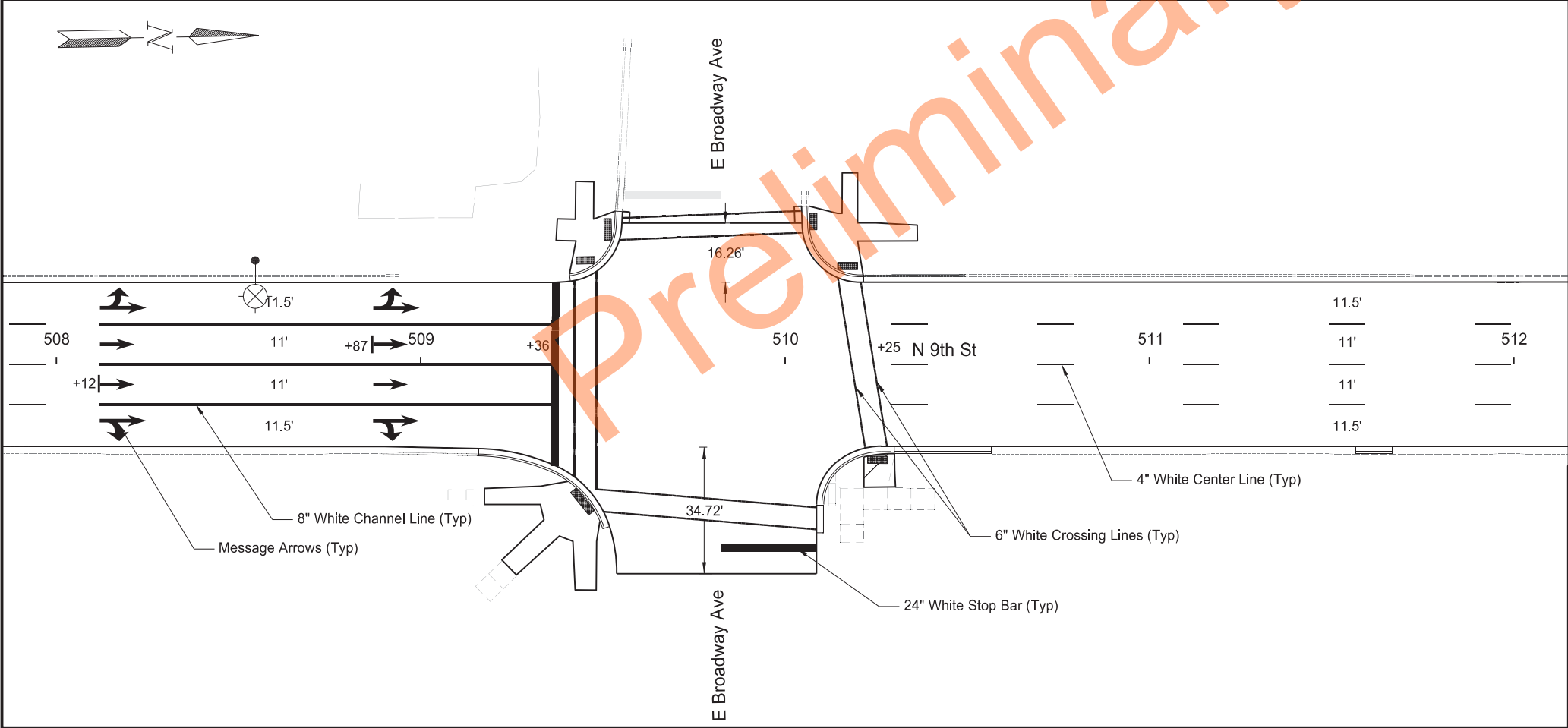
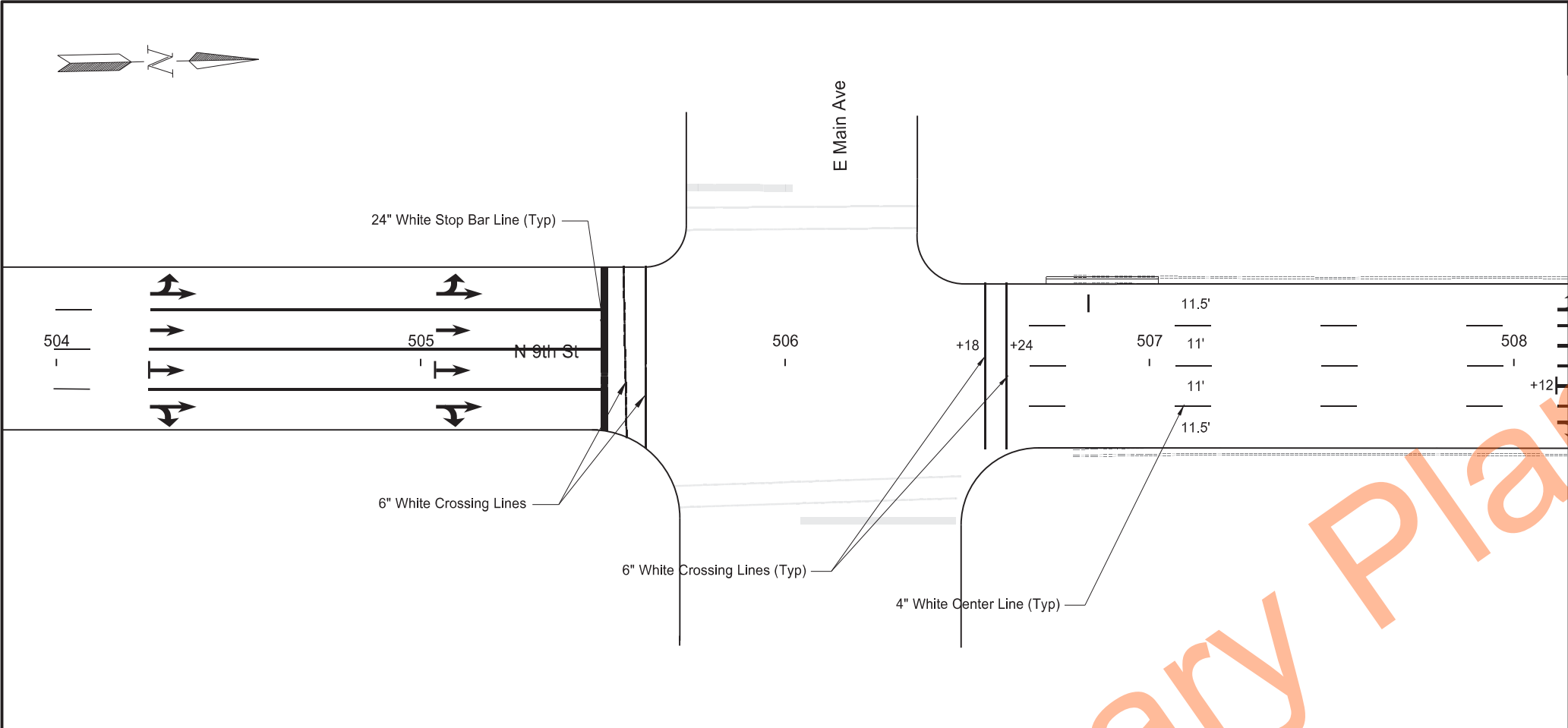












	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	10

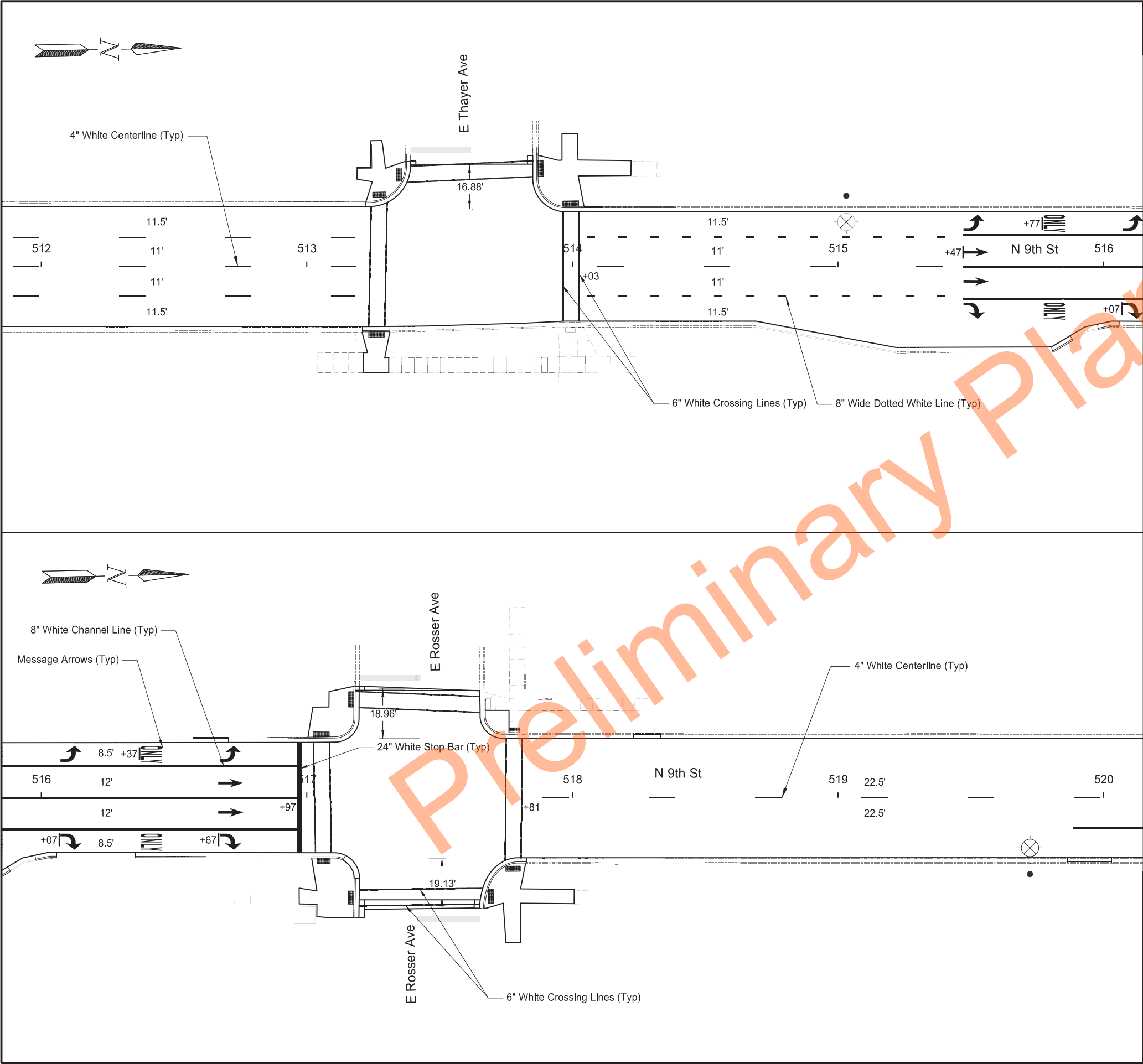
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK MESSAGE - GROOVED		
		Straight Arrow	96	SF
		Left Turn Arrow	108	SF
		Right Turn Arrow	108	SF
762	0110	EPOXY PVMT MK 4IN LINE - GROOVED		
		White Centerline Skip	344	LF
762	0132	EPOXY PVMT MK 8IN LINE - GROOVED		
		White Channel Lines	876	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6IN LINE		
		White Crosswalk Lines	143	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24IN LINE		
		White Stop Bar	113	LF

9th Street - Bismarck Expressway to
E Boulevard Ave

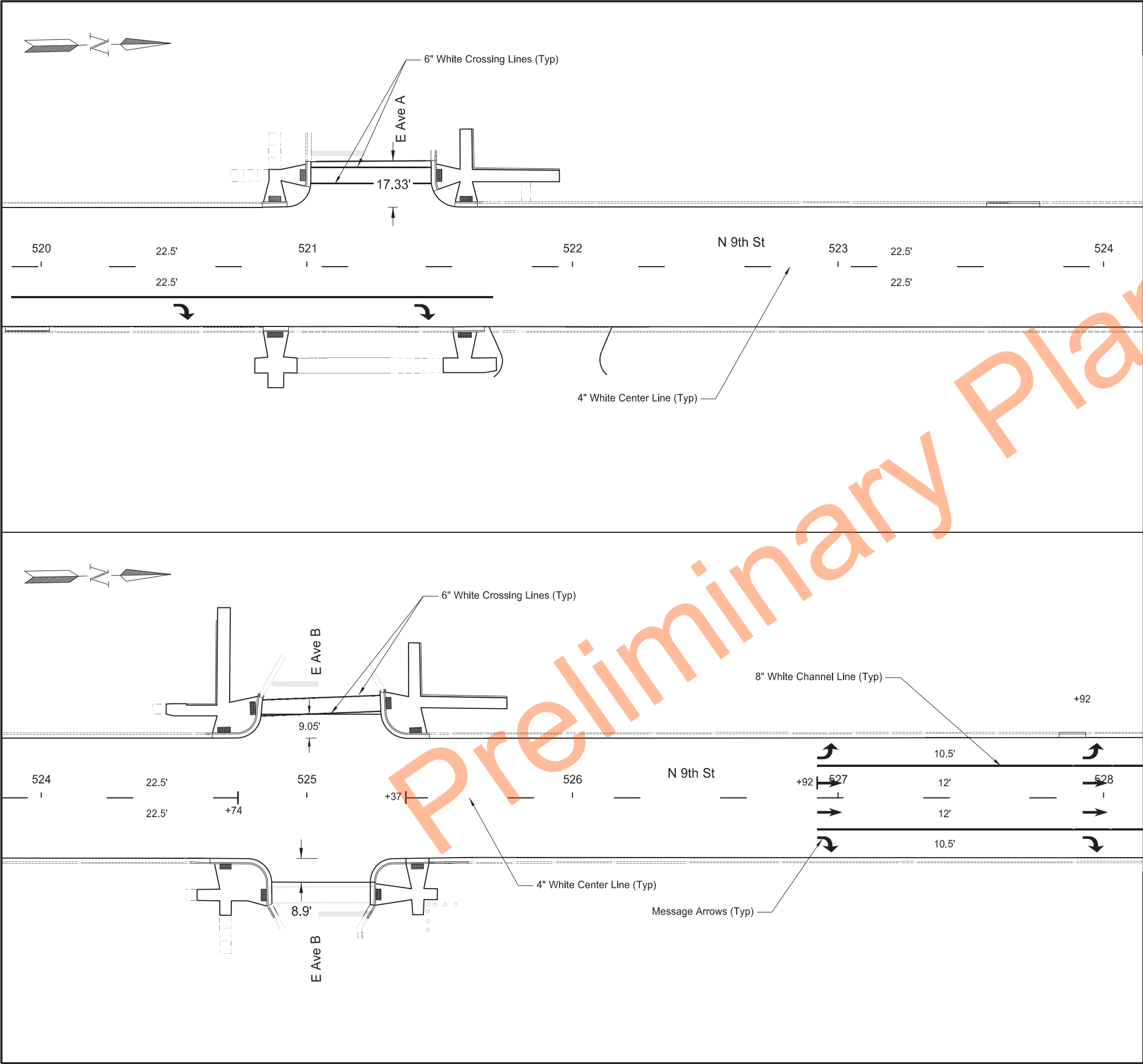
Pavement Marking

Sta 504+00 to Sta 512+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	11
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK MESSAGE - GROOVED		
		Straight Arrow	48	SF
		Left Turn Arrow	48	SF
		Right Turn Arrow	48	SF
		Only Message	88	SF
762	0110	EPOXY PVMT MK 4IN LINE - GROOVED		
		White Centerline Skip	185	LF
762	0132	EPOXY PVMT MK 8IN LINE - GROOVED		
		White Channel Line	522	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6IN LINE		
		White Crosswalk Line	626	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24IN LINE		
		White Stop Bar	42	LF
9th Street - Bismarck Expressway to E Boulevard Ave				
Pavement Marking				
Sta 512+00 to Sta 520+00				
REGISTERED PROFESSIONAL ENGINEER DANIEL CHRISTENSON PE-27391 DATE 07/30/26 NORTH DAKOTA				



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	12

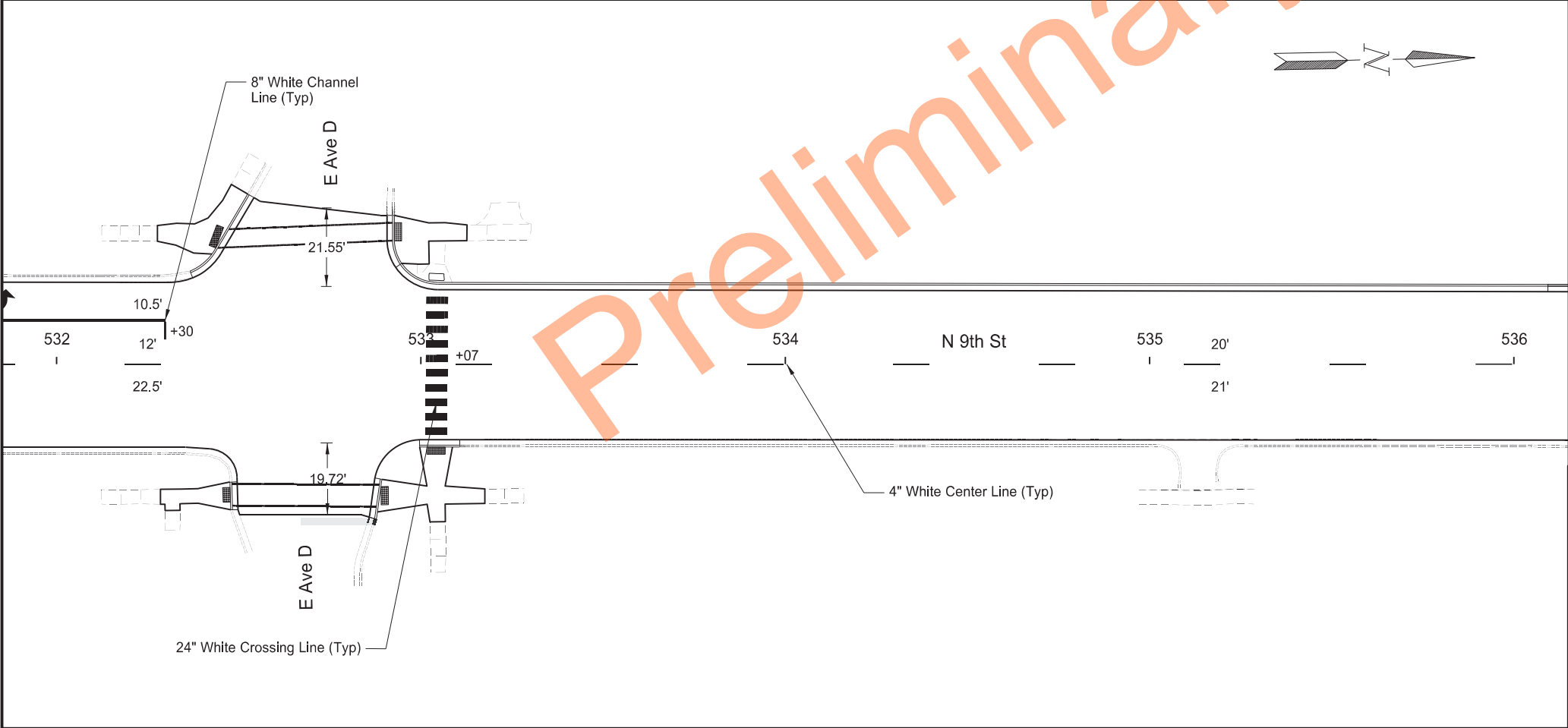
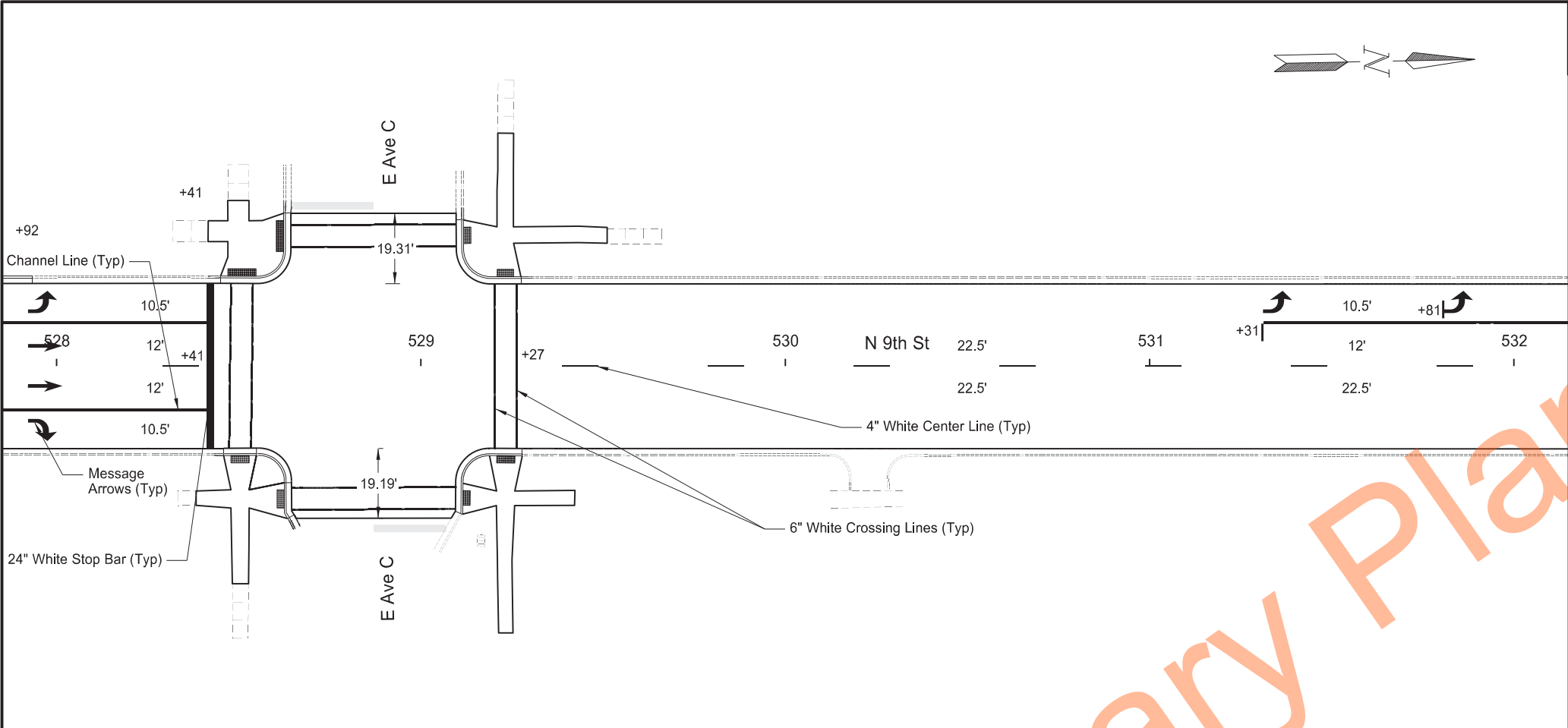
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK MESSAGE - GROOVED		
		Straight Arrow	48	SF
		Left Turn Arrow	32	SF
		Right Turn Arrow	64	SF
762	0110	EPOXY PVMT MK 4IN LINE - GROOVED		
		White Centerline Sklp	186	LF
762	0132	EPOXY PVMT MK 8IN LINE - GROOVED		
		White Channel Line	396	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6IN LINE		
		White Crosswalk Line	220	LF

9th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

Sta 520+00 to Sta 528+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	13

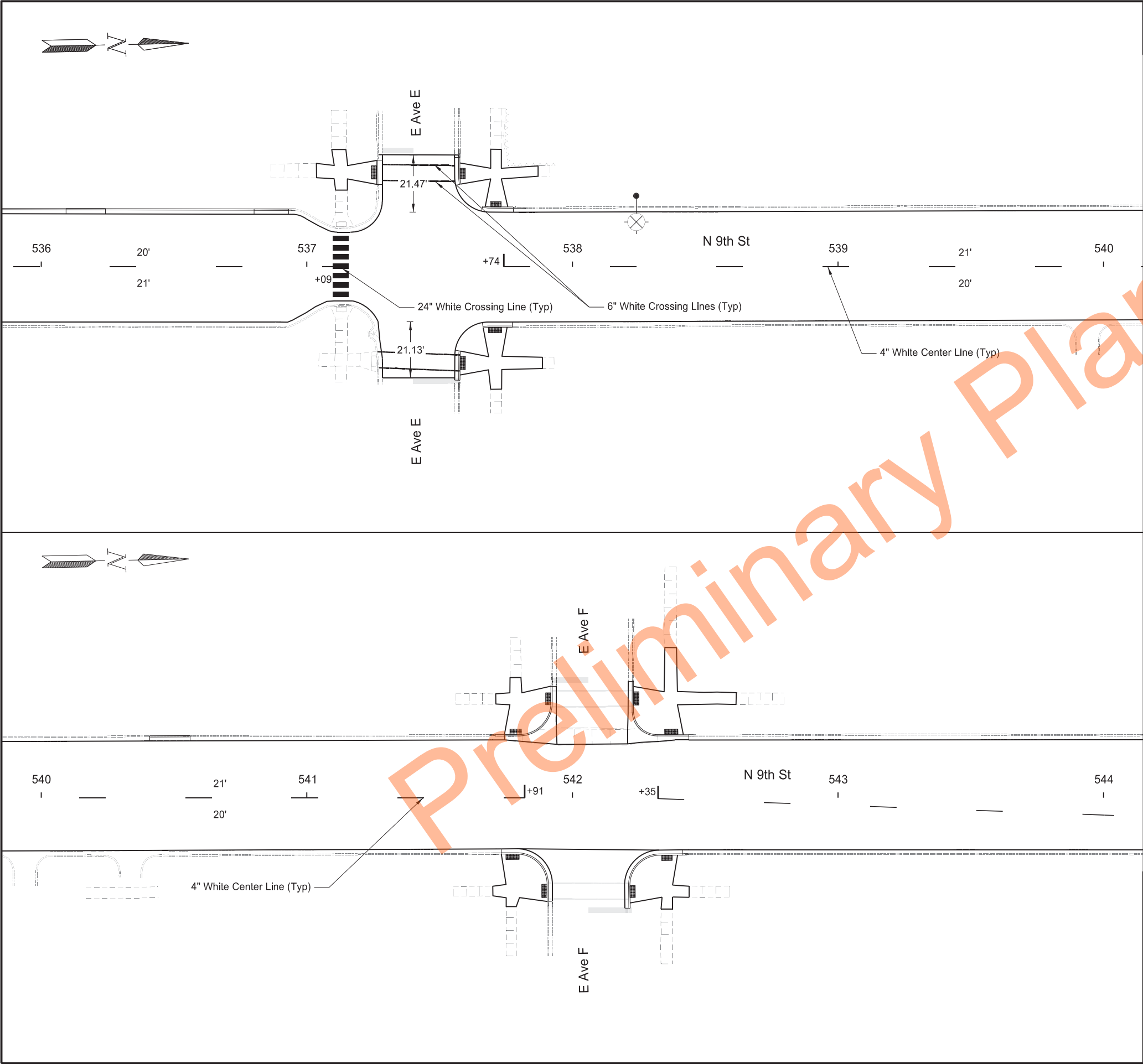
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK MESSAGE - GROOVED Left Turn Arrow	32	SF
762	0110	EPOXY PVMT MK 4IN LINE - GROOVED White Centerline Skip	158	LF
762	0132	EPOXY PVMT MK 8IN LINE - GROOVED White Channel Line	183	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6IN LINE White Cross Walk Line	535	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24IN LINE White Cross Walk Line/ Stop Bar	105	LF

9th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

Sta 528+00 to Sta 536+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	14

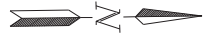
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0110	EPOXY PVT MK 4IN LINE - GROOVED White Center Line Skip	134	LF
762	1255	PREFORMED THERMO PLASTIC PVT MK 6IN LINE White Crossing Line	117	LF
762	1270	PREFORMED THERMO PLASTIC PVT MK 24IN LINE White Crossing Line	42	LF

9th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

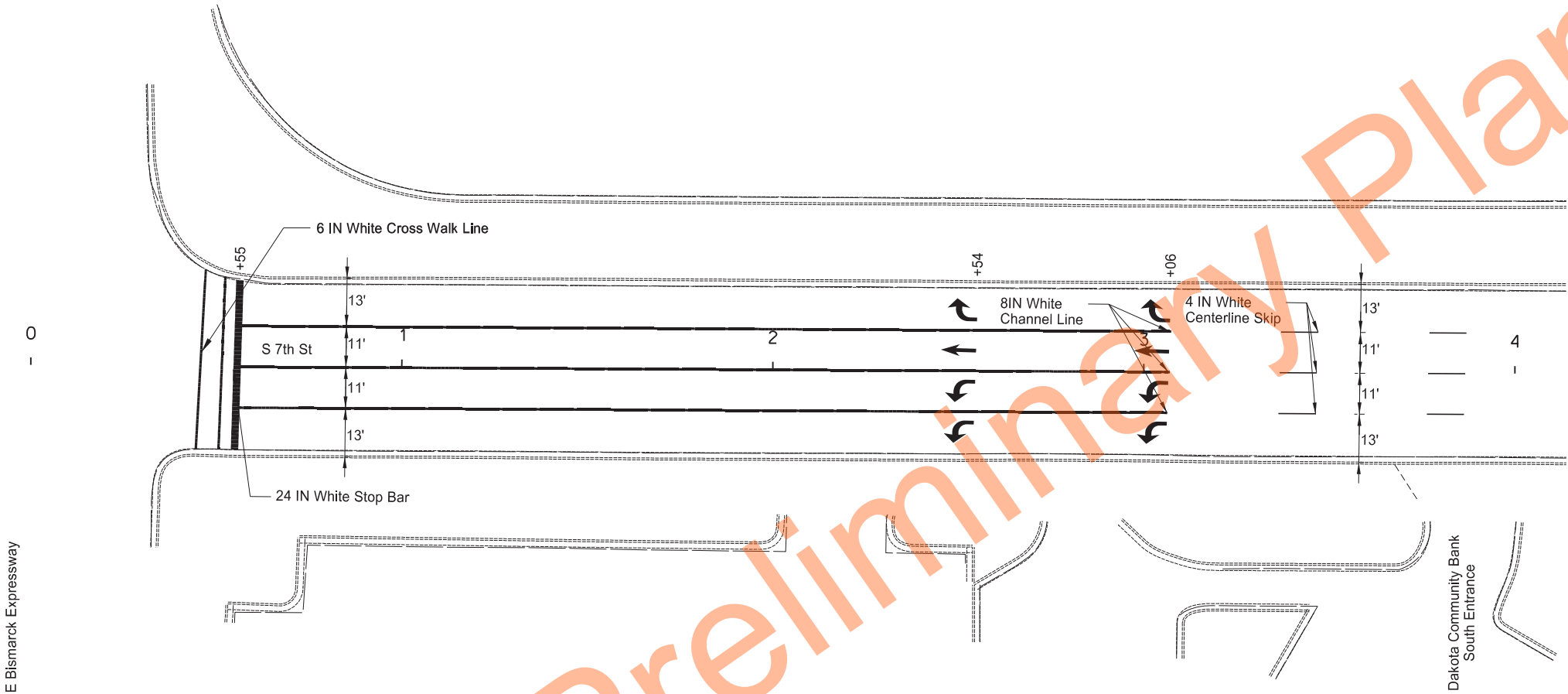
Sta 536+00 to Sta 544+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	16

SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK-MESSAGE(GROOVED)		
		Straight Arrow	24	SF
		Left Turn Arrow	64	SF
		Right Turn Arrow	32	SF
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED		
		White Centerline Skip	90	LF
762	0132	EPOXY PVMT MK 8IN LINE-GROOVED		
		Channel Line	750	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6 IN LINE		
		White Cross Walk Line	94	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24 IN LINE		
		Stop Bar	46	LF

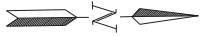


7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

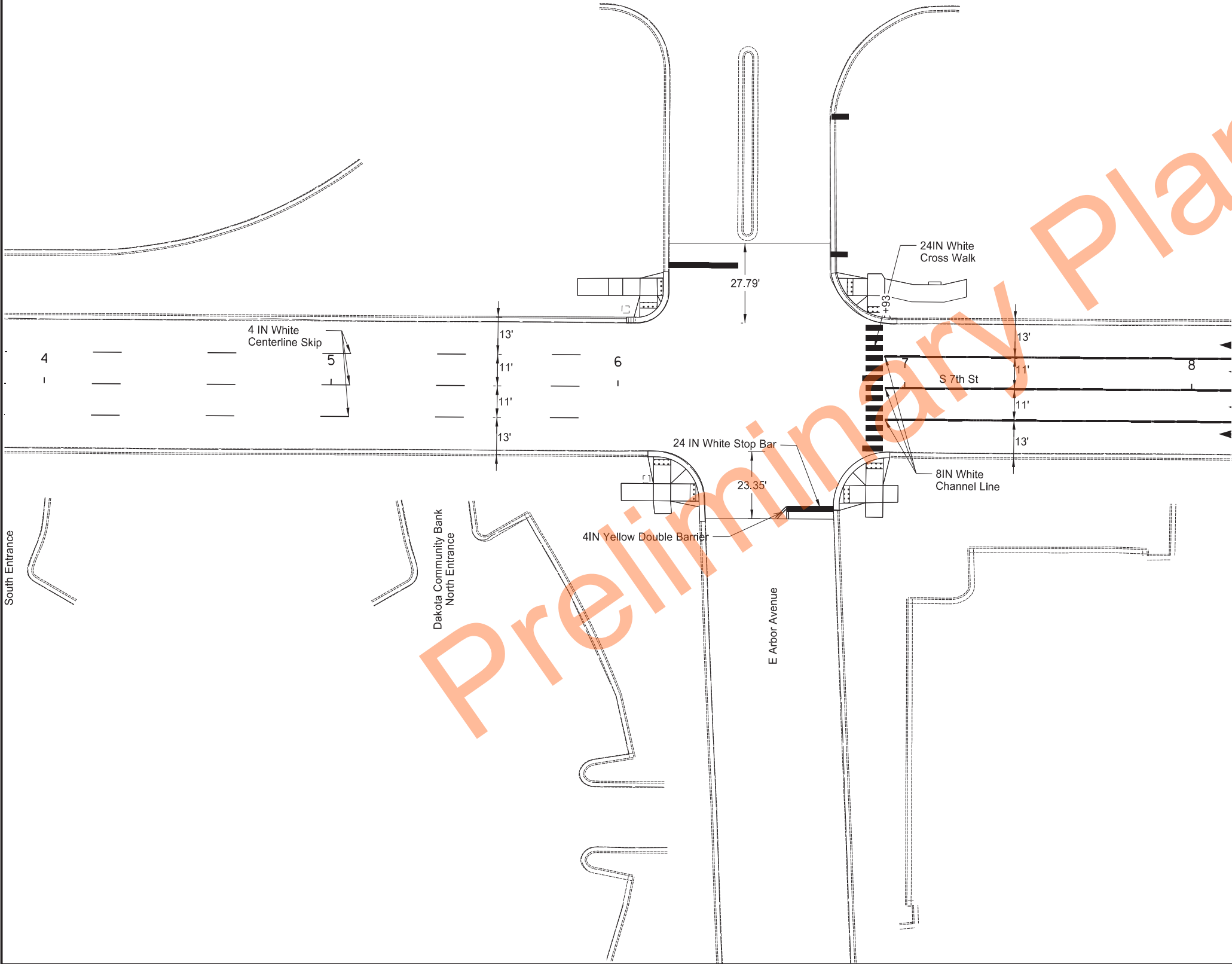
Sta 0+53.6 to Sta 4+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	17

SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED		
		White Centerline Skip	150	LF
		Yellow Double Barrier	10	LF
762	0132	EPOXY PVMT MK 8IN LINE-GROOVED		
		Channel Line	321	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24 IN LINE		
		Stop Bar	40	LF
		Cross Walk	78	LF

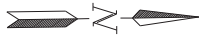


7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

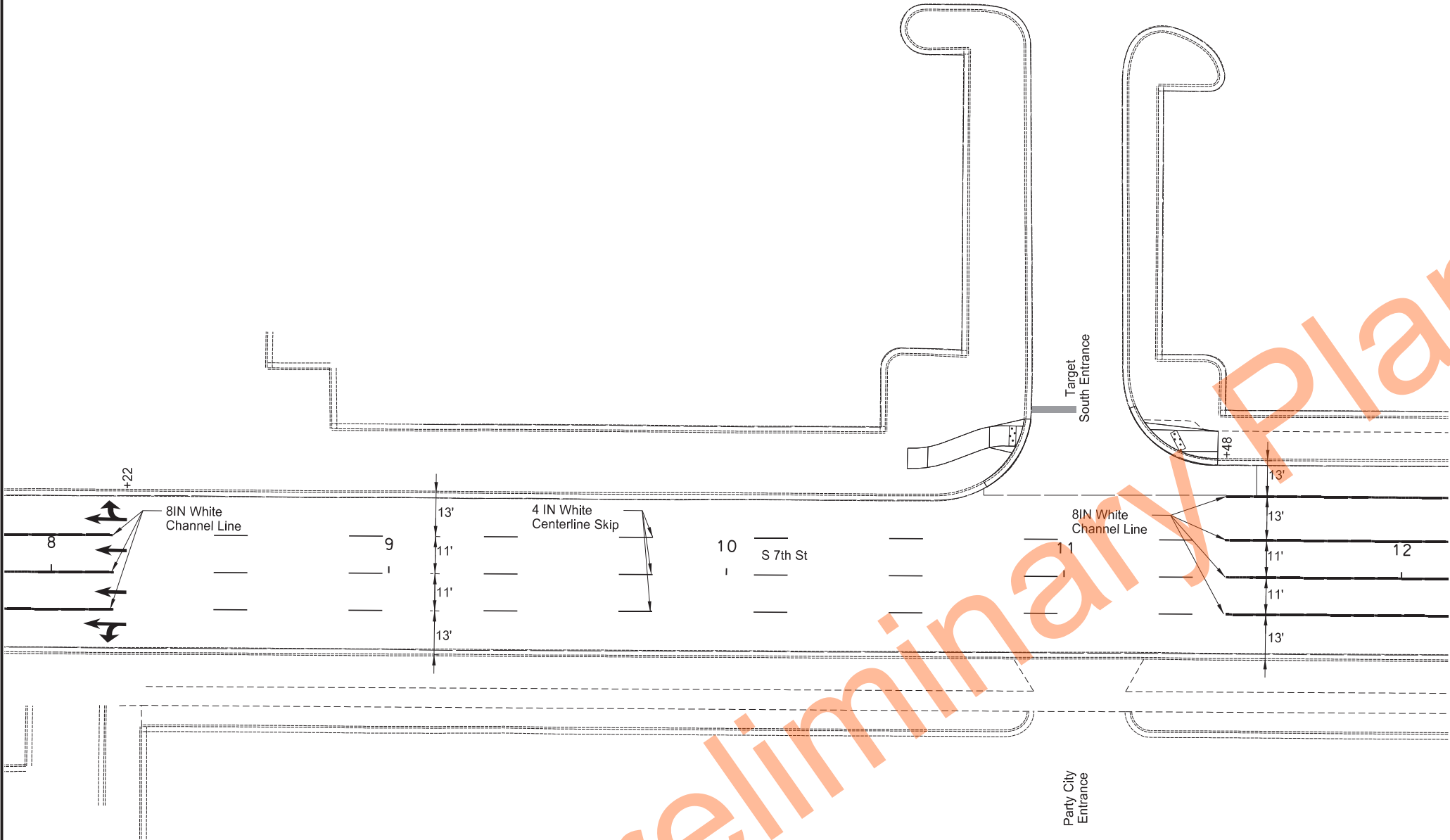
Sta 4+00 to Sta 8+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	18

SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK-MESSAGE-GROOVED		
		Straight Arrow	24	SF
		Left Turn Arrow	27	SF
		Right Turn Arrow	27	SF
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED		
		White Centerline Skip	240	LF
762	0132	EPOXY PVMT MK 8IN LINE-GROOVED		
		Channel Line	274	LF

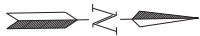


7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

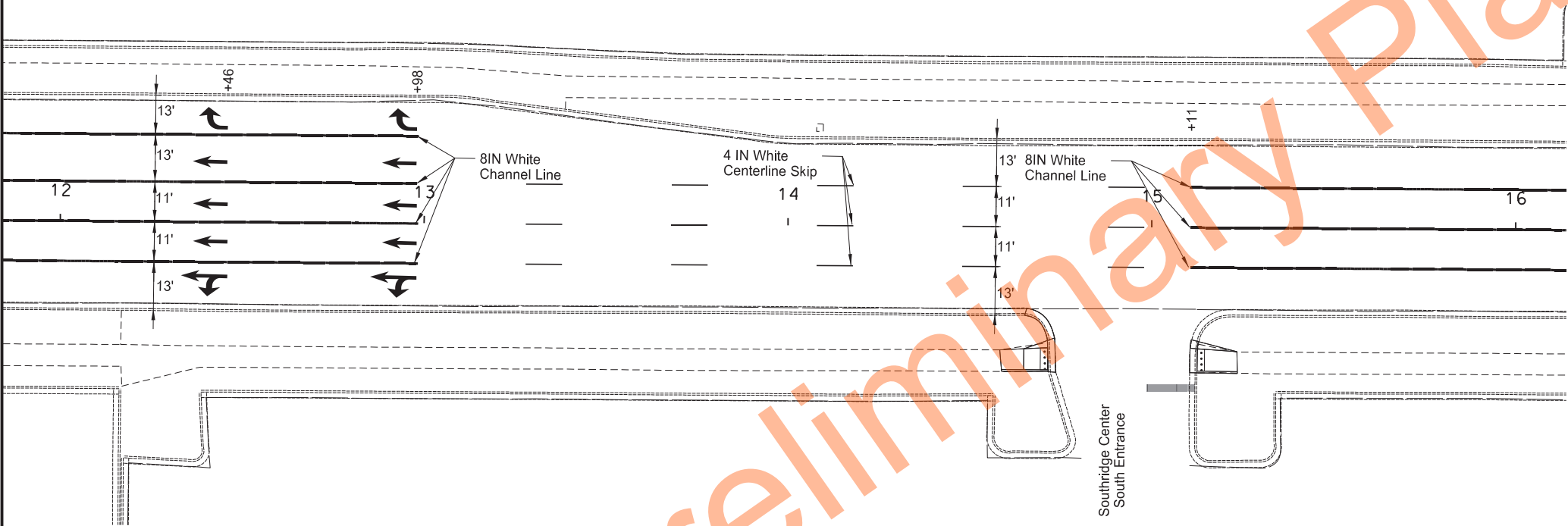
Sta 8+00 to Sta 12+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	19

SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK MESSAGE - GROOVED		
		Straight Arrow	72	SF
		Left Turn Arrow	32	SF
		Right Turn Arrow	54	SF
762	0110	EPOXY PVMT MK 4IN LINE - GROOVED		
		White Centerline Skip	180	LF
762	0132	EPOXY PVMT MK 8IN LINE - GROOVED		
		White Cross Walk Line	655	LF



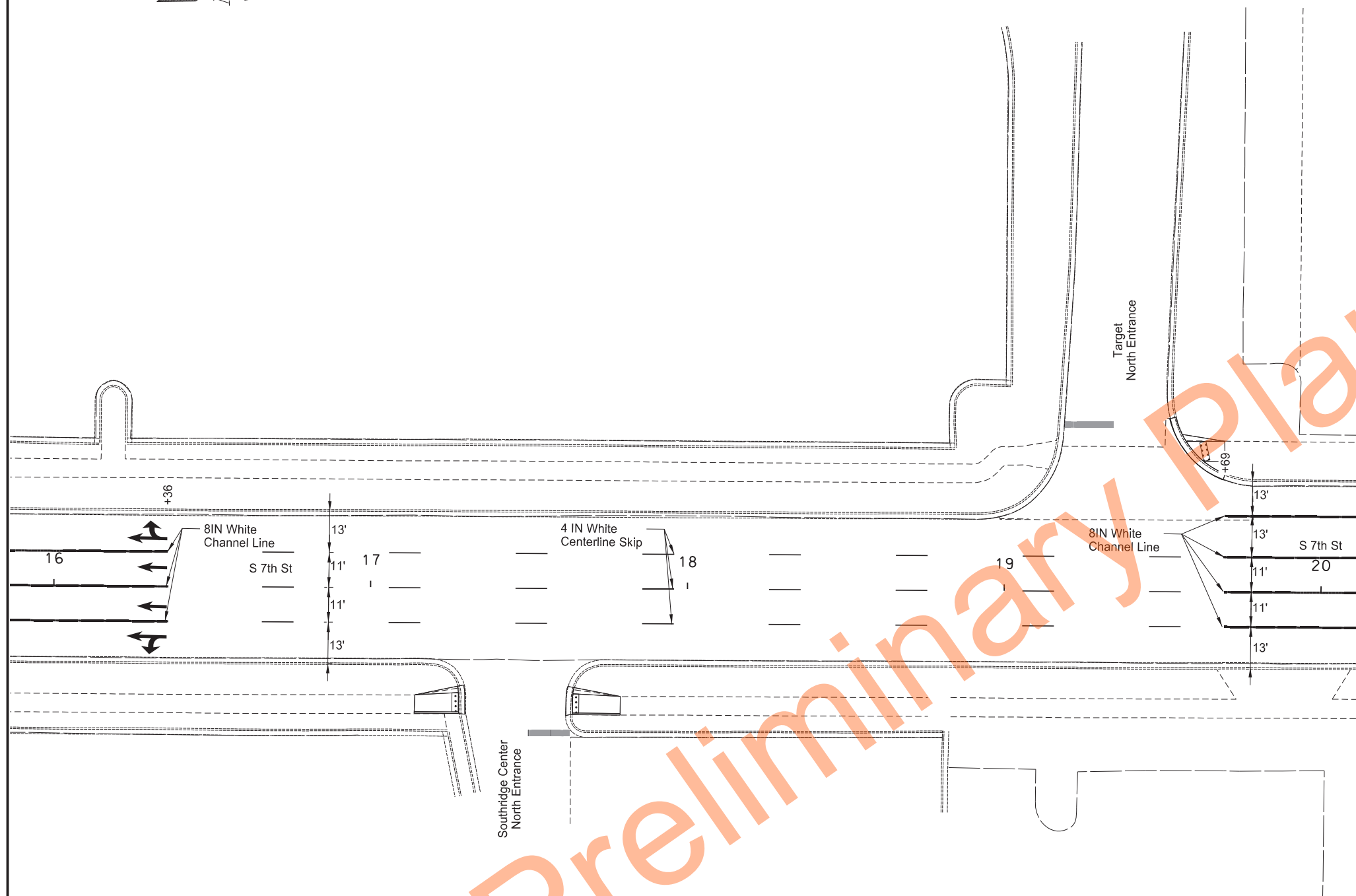
7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

Sta 12+00 to Sta 16+00



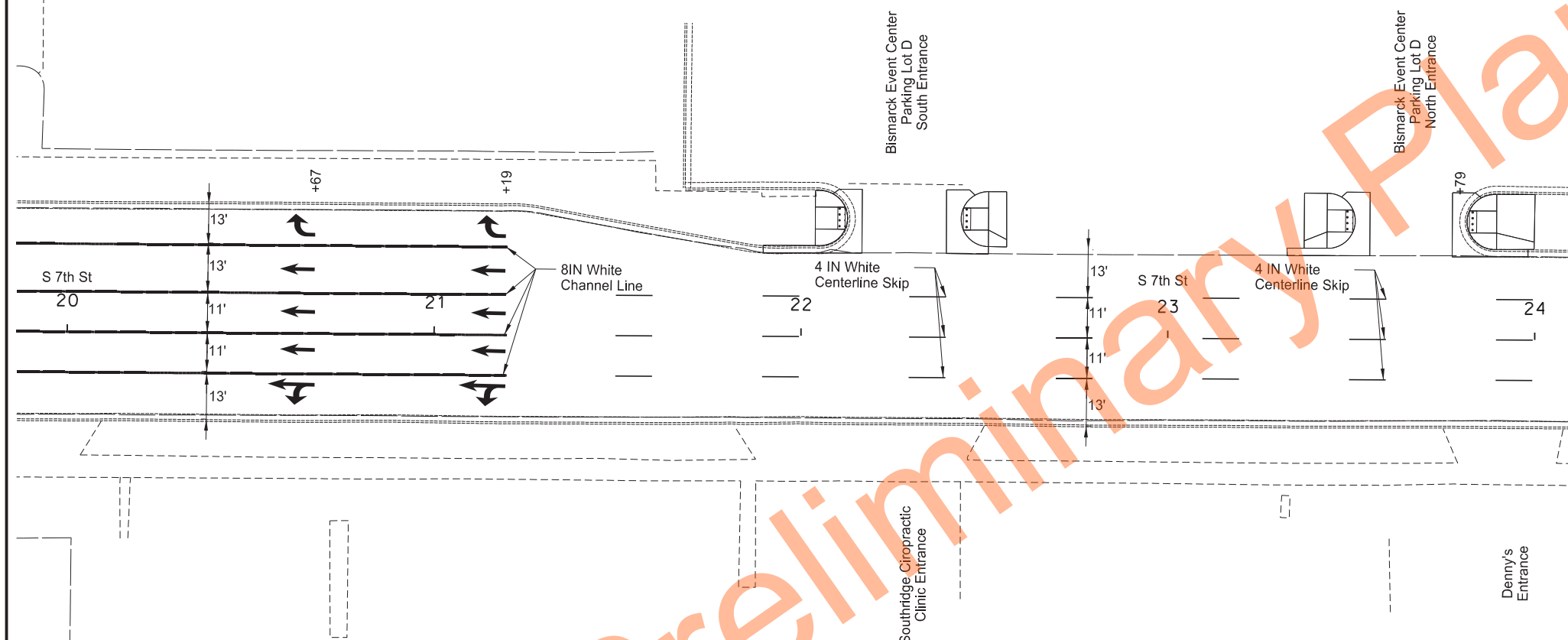
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK MESSAGE - GROOVED		
		Straight Arrow	24	SF
		Left Turn Arrow	27	
		Right Turn Arrow	27	
762	0110	EPOXY PVMT MK 4IN LINE - GROOVED		
		White Centerline Skip	240	LF
762	0132	EPOXY PVMT MK 8IN LINE - GROOVED		
		White Channel	232	LF



Sta 16+00 to Sta 20+00

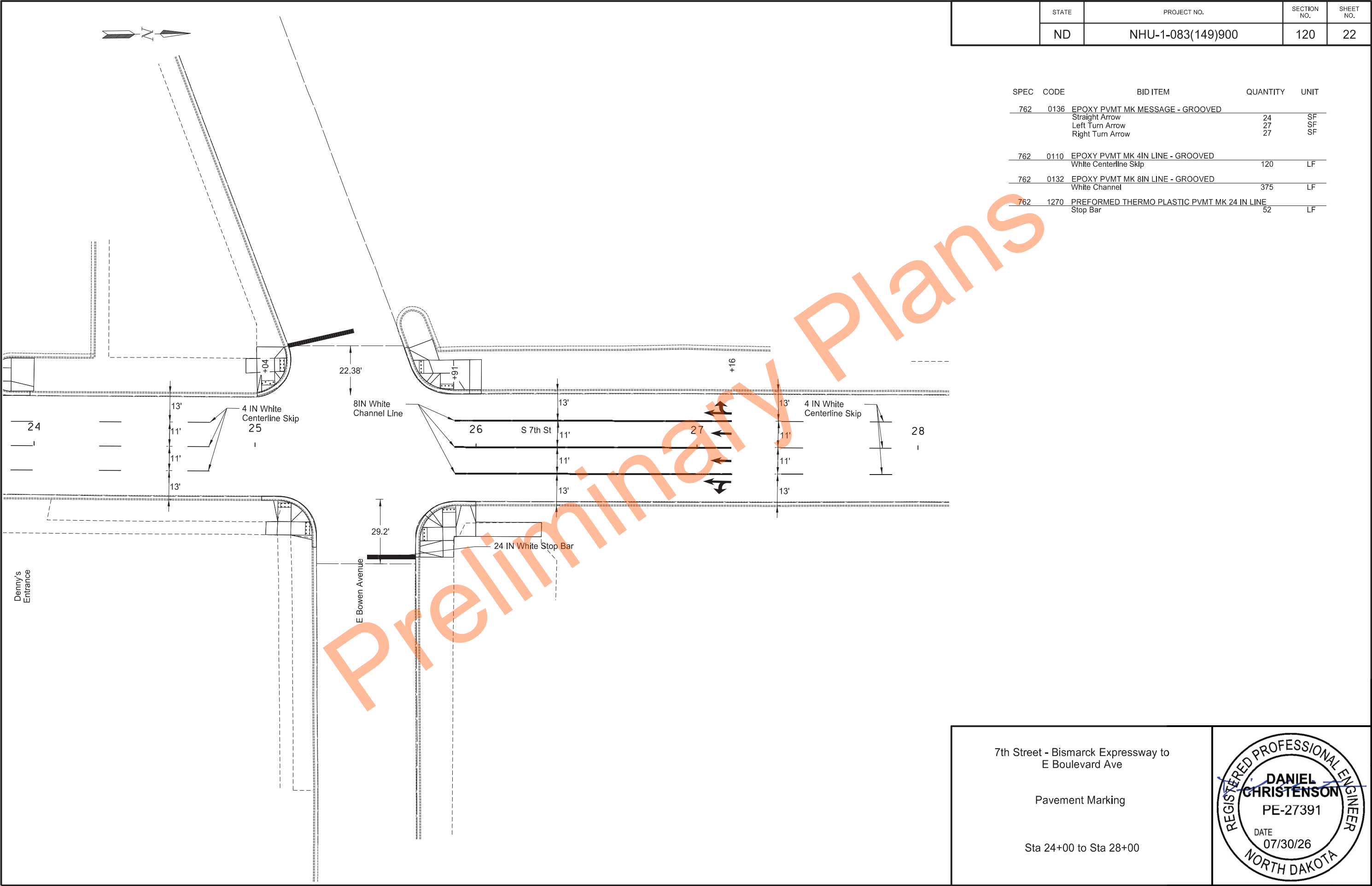


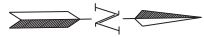
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK MESSAGE - GROOVED		
		Straight Arrow	72	SF
		Left Turn Arrow	31	
		Right Turn Arrow	54	
762	0110	EPOXY PVMT MK 4IN LINE - GROOVED		
		White Centerline Skp	210	LF
762	0132	EPOXY PVMT MK 8IN LINE - GROOVED		
		White Channel	476	LF



Sta 20+00 to Sta 24+00

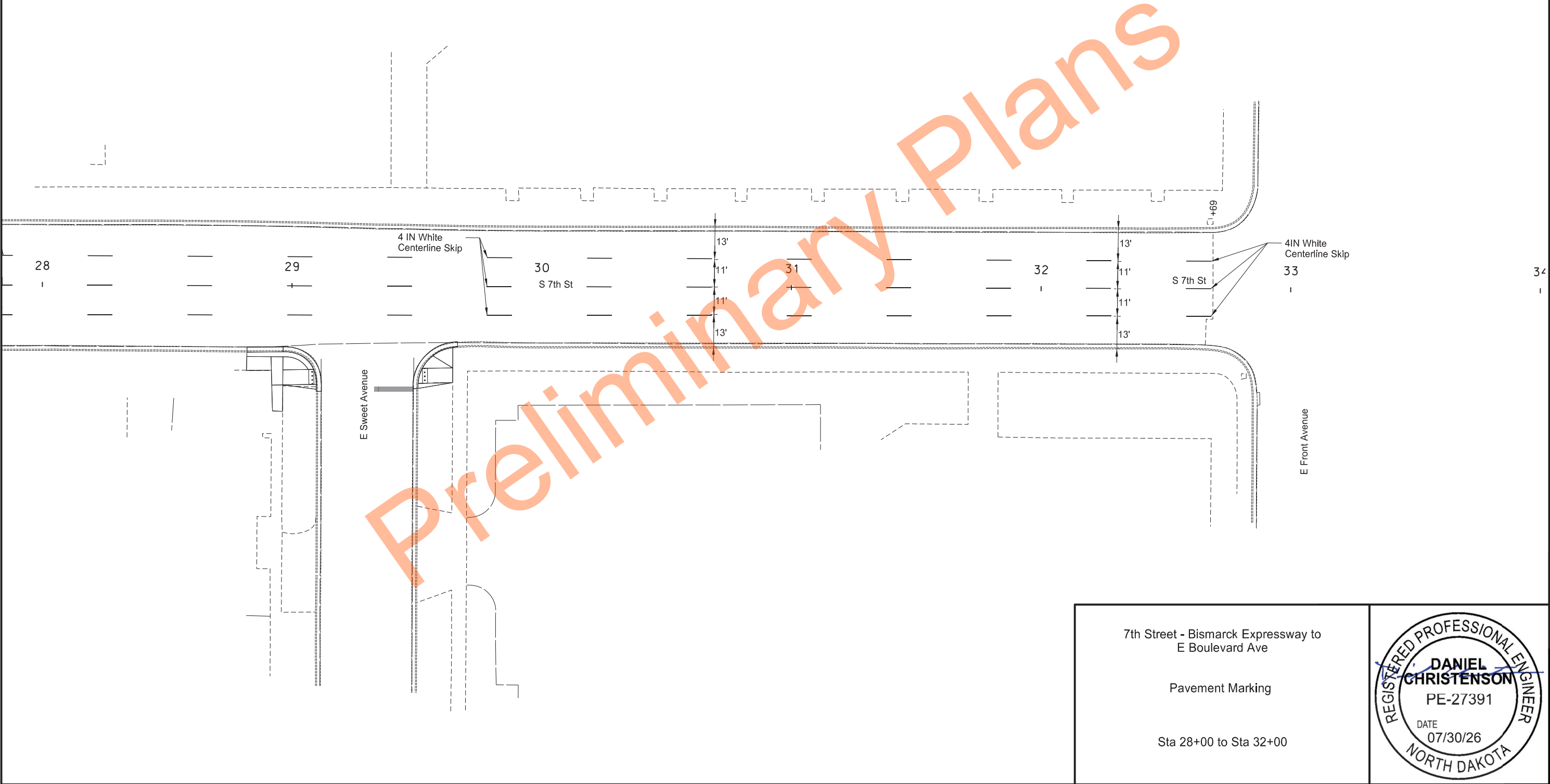






	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	23

SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0110	EPOXY P/VMT MK 4IN LINE - GROOVED White Centerline Skip	300	LF

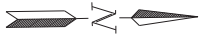


7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

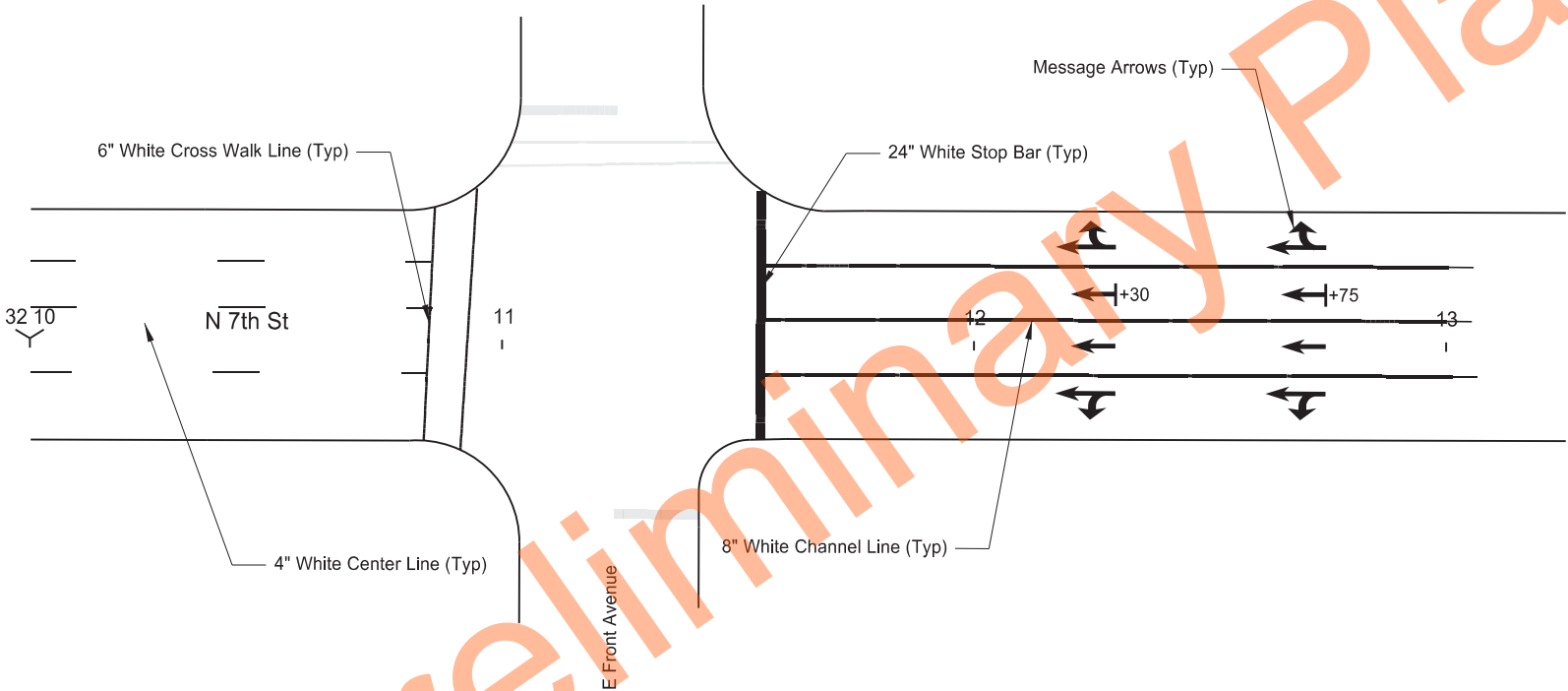
Sta 28+00 to Sta 32+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	24

SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK-MESSAGE-GROOVED		
		Straight Arrow	72	SF
		Left Turn Arrow	81	SF
		Right Turn Arrow	81	SF
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED		
		White Centerline Skip	361	LF
762	0132	EPOXY PVMT MK 8IN LINE-GROOVED		
		Channel Line	417	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24 IN LINE		
		Stop Bar	52	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6 IN LINE		
		White Cross Walk Line	95	LF



Note: Stationing transitions from S 7th St. stationing to N 7th St. stationing

7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

Sta 10+00 to Sta 13+00



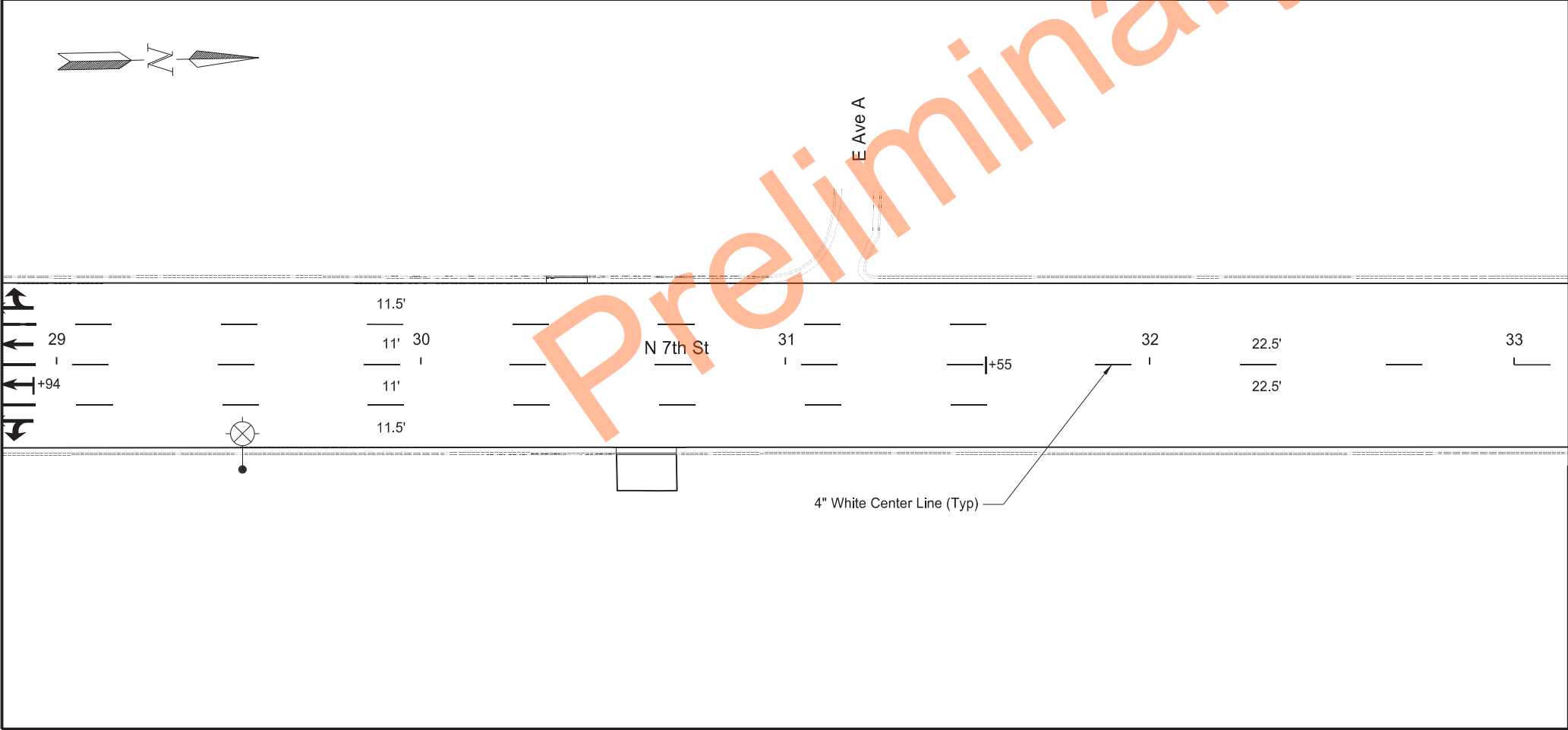
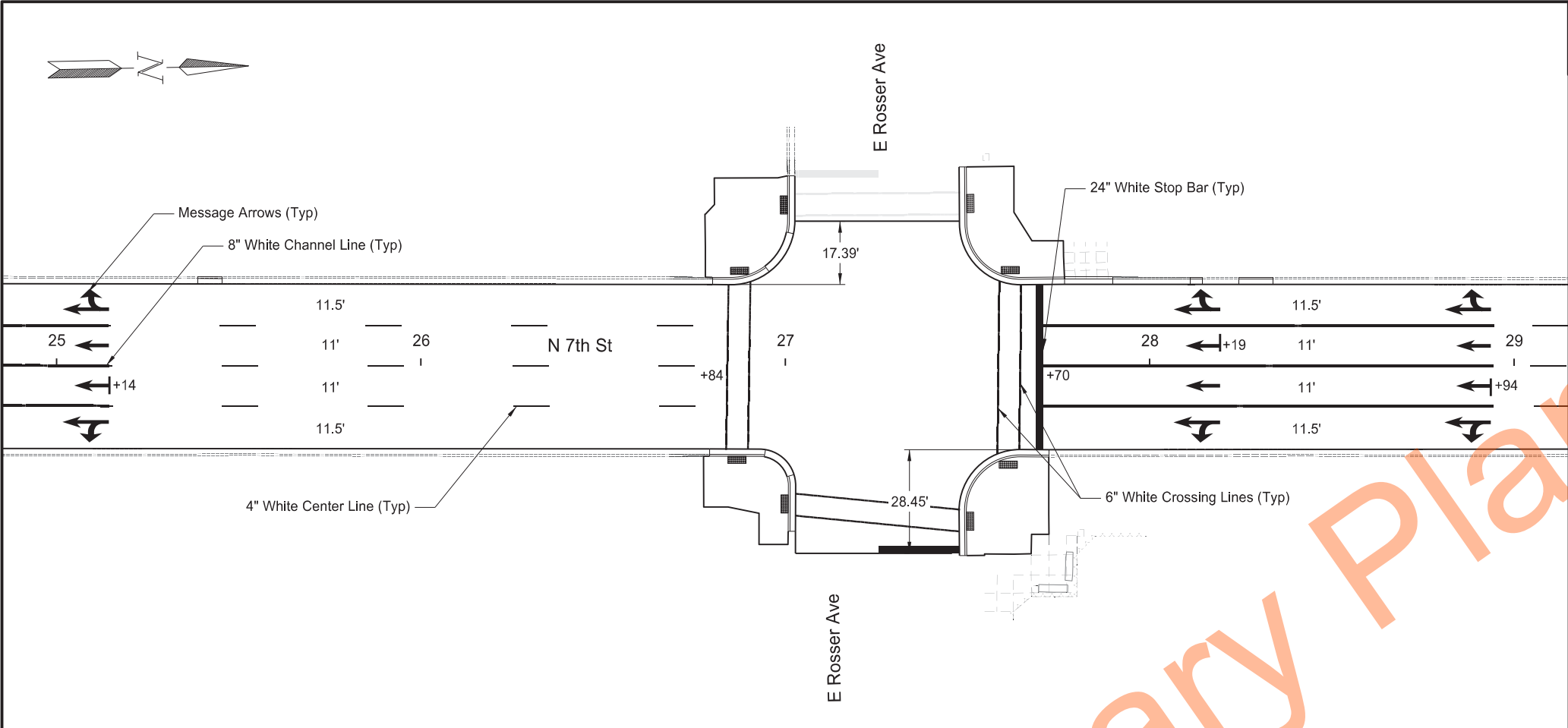
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	25

SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVMT MK MESSAGE-GROOVED		
		Right Turn Arrow	81	SF
		Left Turn Arrow	81	SF
		Straight Arrow	72	SF
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED		
		White Centerline Skip	301	LF
762	0132	EPOXY PVMT MK 8IN LINE-GROOVED		
		White Solid Turn Lane Line	369	LF
762	1305	PREFORMED THERMO PLASTIC PVMT MK 6IN LINE		
		White Centerline Skip	413	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24 IN LINE		
		White Stop Bar	95	LF

7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

Sta 13+00 to Sta 21+00



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	27

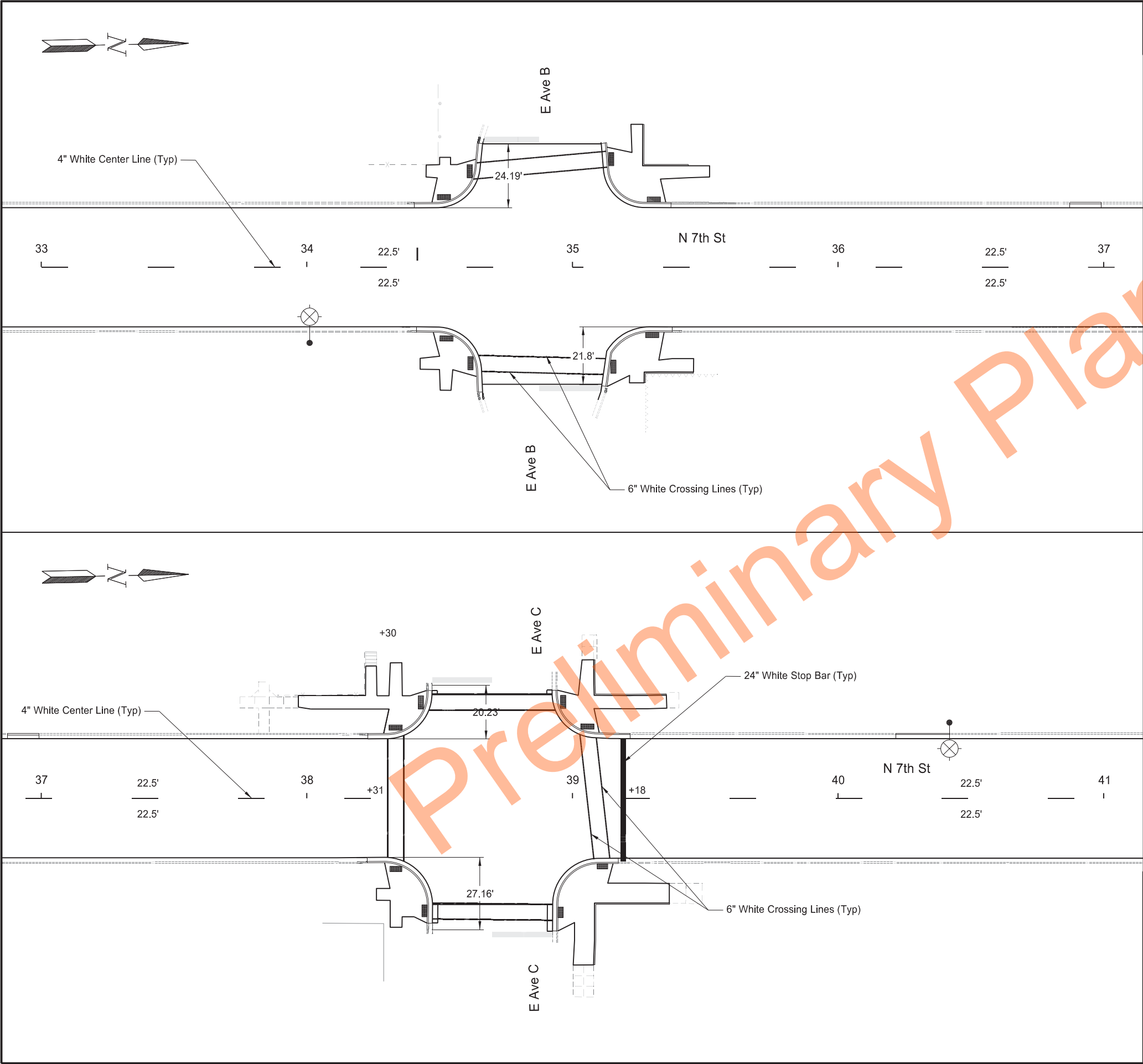
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0136	EPOXY PVT MK MESSAGE-GROOVED		
		Straight Arrow	72	SF
		Left Turn Arrow	81	SF
		Right Turn Arrow	81	SF
762	0110	EPOXY PVT MK 4IN LINE-GROOVED		
		White Centerline Skip	361	LF
762	0132	EPOXY PVT MK 8IN LINE-GROOVED		
		Channel Line	417	LF
762	1270	PREFORMED THERMO PLASTIC PVT MK 24 IN LINE		
		Stop Bar	67	LF
762	1255	PREFORMED THERMO PLASTIC PVT MK 6 IN LINE		
		White Cross Walk Line	273	LF

7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

Sta 25+00 to Sta 33+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	28

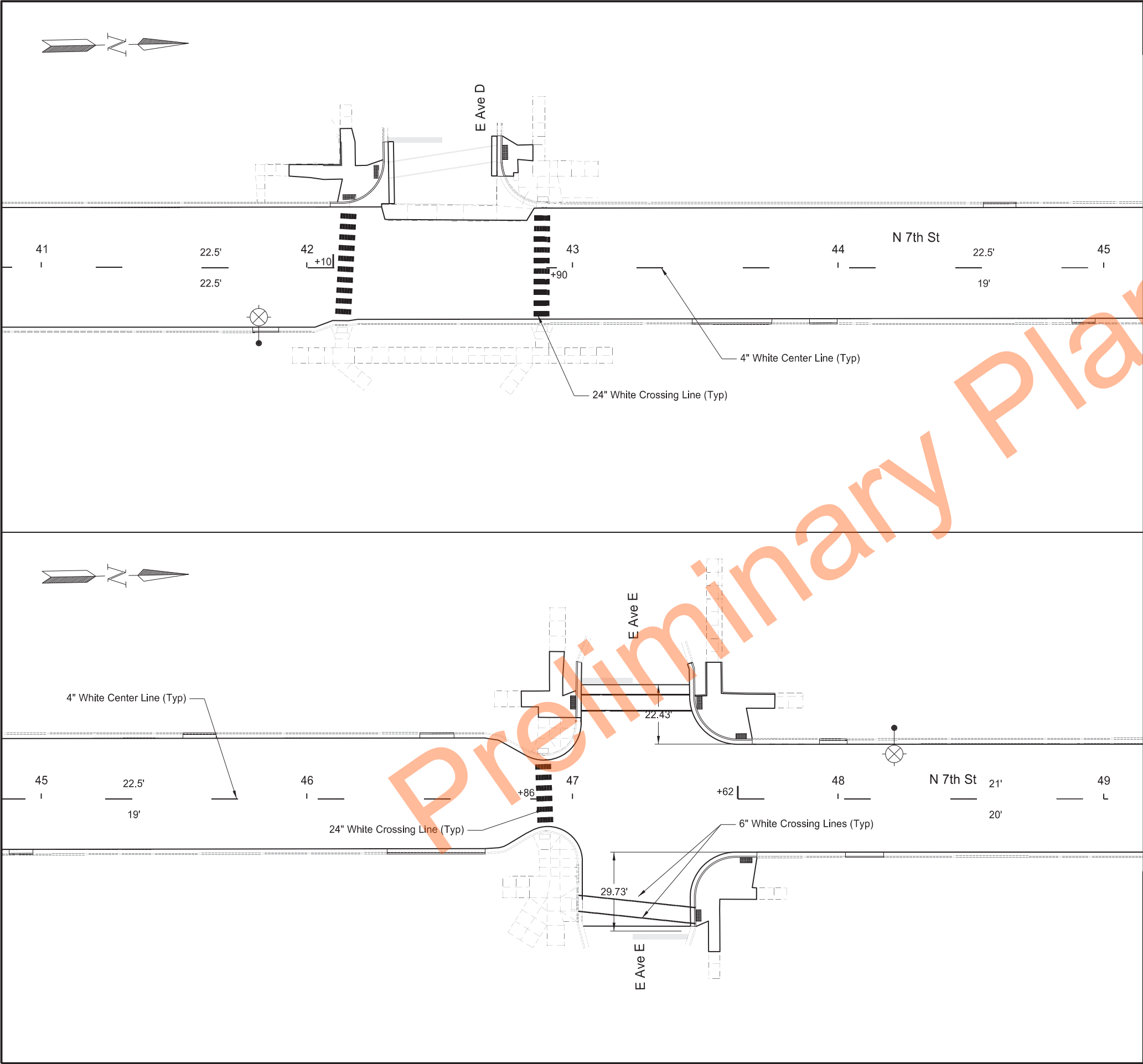
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED White Centerline Skip	177	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6 IN LINE White Cross Walk Line	562	LF

7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

Sta 33+00 to Sta 41+00





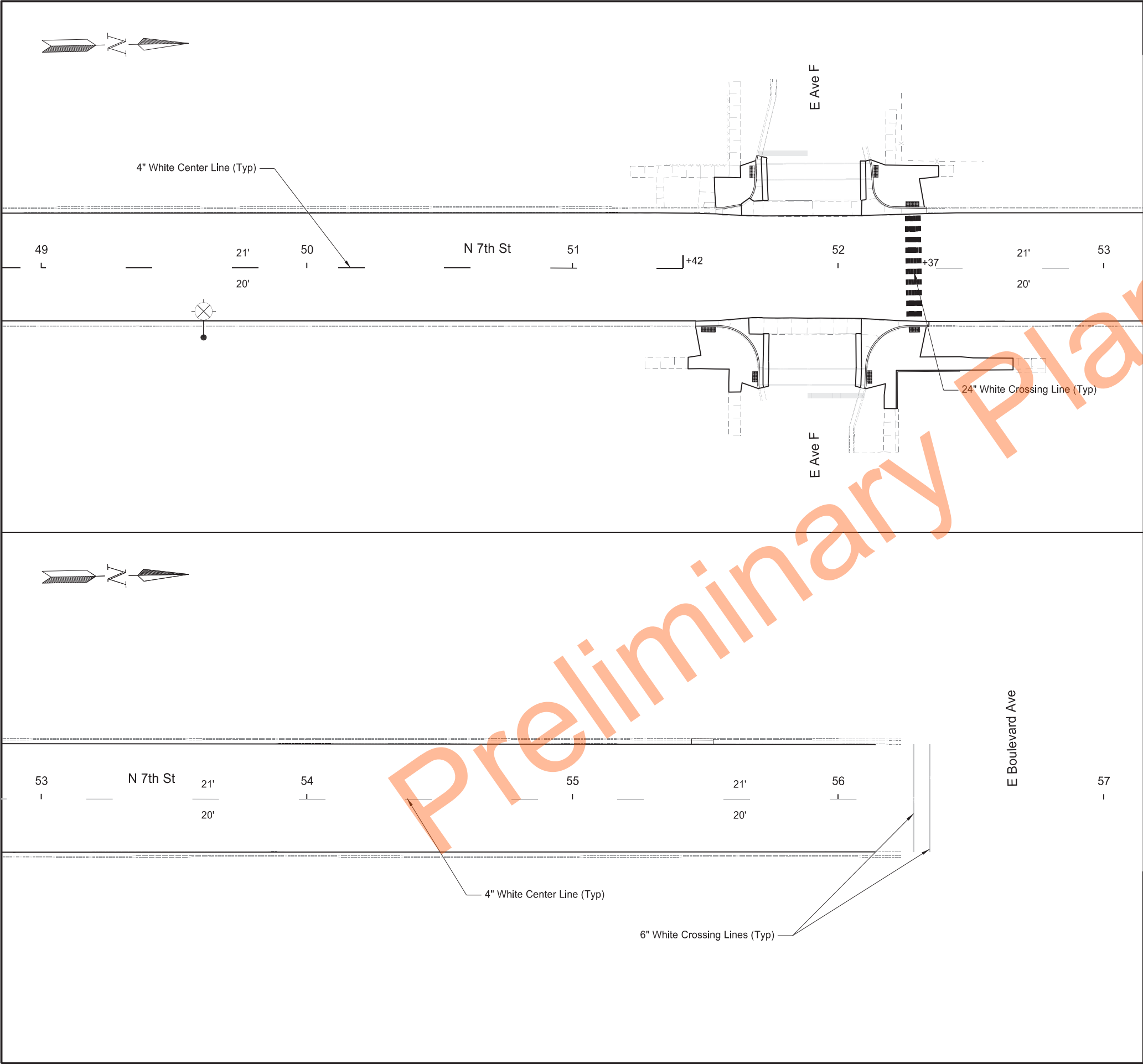
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	29
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED White Centerline Skip	160	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24 IN LINE White Cross Walk Line	156	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6 IN LINE White Cross Walk Line	166	LF

7th Street - Bismarck Expressway to
E Boulevard Ave

Pavement Marking

Sta 41+00 to Sta 49+00





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NHU-1-083(149)900	120	30
SPEC	CODE	BID ITEM	QUANTITY	UNIT
762	0110	EPOXY PVMT MK 4IN LINE-GROOVED White Centerline Skip	159	LF
762	1270	PREFORMED THERMO PLASTIC PVMT MK 24 IN LINE White Cross Walk Line	60	LF
762	1255	PREFORMED THERMO PLASTIC PVMT MK 6 IN LINE White Cross Walk Line	80	LF

NDDOT ABBREVIATIONS

D-101-1

?	This is a special text character used in the labeling of existing features. It indicates a feature that has an unknown characteristic, potentially based on: lack of description, location accuracy or purpose.	C Gdrl	cable guardrail	Culv	culvert	FOS	factor of safety
Abn	abandoned	Calc	calculate	C&G	curb & gutter	Fed	Federal
Abut	abutment	CIP	cast iron pipe	CI	curb inlet	FP	feed point
Adj	adjusted	CB	catch basin	CR	curb ramp	Fn	fence
Aggr	aggregate	CRS	cationic rapid setting	C	cut	Fn P	fence post
Ahd	ahead	C Gd	cattle guard	Dd Ld	dead load	FO	fiber optic
ARV	air release valve	C To C	center to center	Defl	deflection	FD	field drive
Align	alignment	CL or $\varnothing$	centerline	Defm	deformed	F	fill
Al	alley	Ch	chain	DInt	delineate	FAA	fine aggregate angularity
Alt	alternate	Chnlk	chain-link	DIntr	delineator	FH	fire hydrant
Alum	aluminum	Ch Blk	channel block	Depr	depression	FI	flange
ADA	Americans with Disabilities Act	Ch Ch	channel change	Desc	description	Flrd	flared
&	and	Chk	check	Det	detail	FES	flared end section
Appr	approach	Chsld	chiseled	DWP	detectable warning panel	F Bcn	flashing beacon
Approx	approximate	Cir	circle	Dtr	detour	FA	flight auger sample
ACP	asbestos cement pipe	Cl	class	Dia or $\varnothing$	diameter	FL	flow line
Asph	asphalt	Clnt	clean-out	Dir	direction	Ftg	footing
AC	asphalt cement	Clr	clear	Dist	distance	FM	force main
Assmd	assumed	Cl&gr	clearing & grubbing	DM	disturbed material	Fnd	found
@	at	Comb.	combination	DB	ditch block	Fdn	foundation
Atten	attenuation	Coml	commercial	DG	ditch grade	Frac	fractional
ATR	automatic traffic recorder	Compr	compression	Dbl	double	Frwy	freeway
Ave	Avenue	CADD	computer aided drafting & design	Dn	down	Frt	front
Avg	average	Conc	concrete	Dwg	drawing	FF	front face
ADT	average daily traffic	CECB	concrete erosion control blanket	Dr	drive	F Disp	fuel dispenser
		Cond	conductor	Drwy	driveway	FFP	fuel filler pipes
		Const	construction	DI	drop inlet	FLS	fuel leak sensor
		Cont	continuous	D	dry density	Furn	furnish/ed
		CSB	continuous split barrel sample				
		Contr	contraction				
		Contr	contractor				
Bk	back	CP	control point	Ea	each		
BF	back face	Coord	coordinate	Esmt	easement		
Balc	balcony	Cor	corner	E	East		
B Wire	barbed wire	Corr	corrected	EB	Eastbound		
Barr	barricade	CAES	corrugated aluminum end section	Elast	elastomeric		
Btry	battery	CAP	corrugated aluminum pipe	EL	electric locker		
BI	beehive inlet	CMES	corrugated metal end section	E Mtr	electric meter		
Beg	begin	CMP	corrugated metal pipe	EVSE	electric vehicle supply equipment		
BG	below grade	CPVCP	corrugated poly-vinyl chloride pipe	Elec	electric/al		
BM	bench mark	CSES	corrugated steel end section	EDM	electronic distance meter		
Bkwy	bikeway	CSFES	corrugated steel flared end section	Elev or El	elevation		
Bit	bituminous	CSP	corrugated steel pipe	Ellipt	elliptical		
Blk	block	CSTES	corrugated steel traversable end section	Emb	embankment		
BH	bore hole	Co	County	Emuls	emulsion/emulsified		
Bot	bottom	Crse	course	ES	end section		
Blvd	Boulevard	Ct	Court	Engr	engineer		
Bndry	boundary	Xarm	cross arm	ESS	environmental sensor station		
Brkwy	breakaway	Xbuck	cross buck	Eq	equal		
Br	bridge	Xsec	cross sections	Evgr	evergreen		
Bldg	building	Xing	crossing	Exc	excavation		
Bus.	business	Xrd	crossroad	Exst	existing		
BV	butterfly valve	Crn	crown	Exp	expansion		
Byp	bypass			Expy	Expressway		
				E	external of curve		
				Extru	extruded		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
04-23-18	General Revisions
09-20-18	General Revisions
12-18-20	General Revisions
08-16-22	General Revisions
04-14-25	General Revisions



NDDOT ABBREVIATIONS

D-101-2

Galv galvanized
Gar garage
Gs L gas line
G Reg gas line regulator
GMV gas main valve
G Mtr gas meter
GSV gas service valve
GVP gas vent pipe
GV gate valve
Ga gauge
Gov government
Grd graded/grade
Grnd ground
GWM ground water monitor
Gdrl guardrail
Gtr gutter

H Plg H piling
Hdwl headwall
Ht height
Hel helical
HDPE high density polyethylene
HM high mast
HP high pressure
HPS high pressure sodium
HTCG high tension cable guardrail
Hwy highway
Hor horizontal
HBP hot bituminous pavement
HMA hot mix asphalt
Hyd hydrant
Ph hydrogen ion content

Id identification
Incl inclinometer tube
IMH inlet manhole
ID inside diameter
Inst instrument
Intchg interchange
Intmdt intermediate
Intscn intersection
Inv invert
IP iron pipe

Ln lane
Lg large
Lat latitude
Lt left
Lens lenses
Lvl level
Lvng leveling
Lht light
LP light pole
Ltg lighting
Liq liquid
LL liquid limit
Loc location
Long. longitude
Lp loop
LD loop detector
Lum luminaire

Mb mailbox
ML main line
MH manhole
Mkd marked
Mkr marker
Mkg marking
MA mast arm
Matl material
Max maximum

Meas measure
Mdn median
MD median drain
MC medium curing
MGS Midwest Guardrail System
MM mile marker
MP mile post
Min minimum
Misc miscellaneous
Mon monument
Mnd mound
Mtbl mountable
Mtd mounted
Mtg mounting
Mk muck

Neop neoprene
Ntwk network
N North
NE Northeast
NW Northwest
NB Northbound
No. or # number

Obsc obscure(d)
Ocpd occupied
Ocpy occupy
O/s offset
OC on center
C one dimensional consolidation
OC organic content
Orig original
O To O out to out
OD outside diameter
OH overhead

PMT pad mounted transformer
Pg pages
Pntd painted
Pr pair
Pnl panel
Pk park
PSD passing sight distance
Pvmt pavement
Ped pedestal
Ped pedestrian
PPP pedestrian pushbutton post
Pen. penetration
Perf perforated
Per. perimeter
Perm permanent
PL pipeline
Pl place
P&P plan & profile
PL plastic limit
Pl or P plate
Pt point
PE polyethylene
PVC polyvinyl chloride
PCC Portland Cement concrete
PP power pole
Preempt preemption
Prefab prefabricated
Prfmd or Pref preformed
Prep preperation
Press. pressure
PRV pressure relief valve
Prestr prestressed
Pvt private
PD private drive
Prod. production/produce
Prog programmed
Prop. property
Ppsd proposed
PB pull box

Qty quantity
Qtr quarter

Rad or R radius
RR railroad
Rlwy railway
Rsd raised
RC rapid curing
Rec record
Rcy recycle
RAP recycled asphalt pavement
RPCC recycled portland cement concrete
Ref reference
R Mkr reference marker
RM reference monument
RP reference point
Refl reflectorized
RCB reinforced concrete box
RCES reinforced concrete end section
RCFES reinforced concrete flared end section
RCP reinforced concrete pipe
RCPS reinforced concrete pipe sewer
RCTES reinforced concrete traversable end section
Reinf reinforcement
Res reservation
Res residence
Ret retaining
Rev reverse
Rt right
R/W right of way
Riv river
Rd road
Rdbd road bed
Rdwy roadway
RWIS roadway weather information system
Rk rock
Rt route

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08-16-22	General Revisions
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NDDOT ABBREVIATIONS

D-101-3

Salv	salvage(d)	Tel	telephone
San	sanitary sewer line	Tel B	Telephone Booth
Sec	section	Tel P	telephone pole
SL	section line	Tv	television
Sep	separation	Temp	temperature
Seq	sequence	Temp	temporary
Serv	service	TBM	temporary bench mark
Sht	sheet	T	thinwall tube sample
Shtng	sheeting	Ts	topsoil
Shldr	shoulder	Traf	traffic
Sw or Sdwk	sidewalk	TSCB	traffic signal control box
SD	sight distance	Tr	trail
SN	sign number	Transf	transformer
Sig	signal	Trans	transition
Sgl	single	TT	transmission tower
SRCP	slotted reinforced concrete pipe	TES	traversable end section
SC	slow curing	Trans	transverse
SS	slow setting	Trtd	treated
Sm	small	Trmt	treatment
S	South	Qc	triaxial compression
SE	Southeast	TERO	tribal employment rights ordinance
SW	Southwest	Tpl	triple
SB	Southbound	Typ	typical
Sp	spaces		
Spcl	special	Qu	unconfined compressive strength
SA	special assembly	Ugrnd	underground
SP	special provisions	Util	utility
G	specific gravity		
Spk	spike		
SB	split barrel sample	VG	valley gutter
SH	sprinkler head	Vap	vapor
SV	sprinkler valve	Vert	vertical
Sq	square	VCP	vitrified clay pipe
Stk	stake	Vol	volume
Std	standard	VSFS	vehicle speed feedback sign
N	standard penetration test		
Std Specs	standard specifications	Wkwy	walkway
Stm L	steam line	W	water content
SEC	steel encased concrete	WGV	water gate valve
SMA	stone matrix asphalt	WL	water line
SSD	stopping sight distance	WM	water main
SD	storm drain	WMV	water main valve
St	street	W Mtr	water meter
SPP	structural plate pipe	WSV	water service valve
SPPA	structural plate pipe arch	WW	water well
Str	structure	Wrng	wearing
Subd	subdivision	WIM	weigh in motion
Sub	subgrade	W	west
Sub Prep	subgrade preperation	WB	westbound
Ss	subsoil	Wrng	wiring
SS	supplement specification	W/	with
Supp	supplemental	W/o	without
Surf	surfacing		
Surv	survey		
Sym	symmetrical		

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NDDOT ABBREVIATIONS

D-101-4

MEASUREMENTS

ac	acres
A	ampere
Bd Ft	board feet
Cd	candela
cm	centimeter
C	coulomb
CF	cubic feet
m3	cubic meter
m3/s	cubic meters per second
CY	cubic yard
CY/mi	cubic yards per mile
D or Deg	degree
F	Fahrenheit
F	farad
ft	feet/foot
Gal	gallon
G	giga
Ha	hectare
H	henry
Hz	hertz
hr	hour(s)
in.	inch
J	joule
K	kelvin
kN	kilo newton
kPa	kilo pascal
kg	kilogram
kg/m3	kilogram per cubic meter
km	kilometer
K	Kip(s)
LF	linear foot
L	litre
Lm	lumen
L sum	lump sum
Lx	lux
M Hr	man hour
M	mega
m	meter
m/s	meters per second
mi	mile
mL	milliliter
mm	millimeter
mm/hr	millimeters per hour
n	nano
N	newton
Pa	pascal
lb	pounds
sec	seconds
S	siemens
SF	square feet
km2	square kilometer
m2	square meter
SY	square yard
Sta Yd	station yards
SI	Systems International

T	tesla
T/mi	tons per mile
V	volt
W	watt
Wb	weber

SURVEY DESCRIPTIONS

Az	azimuth
Bs	backsight
Brg	bearing
BP Cap	blue plastic cap
BS	both sides
BC	brass cap
CC	closing corner
CS	curve to spiral
Eq	equation
E	external of curve
FS	far side
FB	field book
Fs	foresight
Geod	geodetic
GIS	Geographical Information System
GPS	Global Positioning System
HI	height of instrument
IM	iron monument
I Pn	iron pin
LS	Land Surveyor (licensed)
LSIT	Land Surveyor In Training
L	length of curve
LC	long chord
LB	level book
MC	meander corner
Mer	meridian
M	mid ordinate of curve
NGS	National Geodetic Survey
NS	near side
Obsn	observation
Off Loc	office location
OP Cap	orange plastic cap
PK	Parker-Kalon nail
P Cap	plastic cap
PP Cap	pink plastic cap
PCC	point of compound curve
PC	point of curve
PI	point of intersection
PRC	point of reverse curvature
PT	point of tangent
POC	point on curve
POT	point on tangent
RTP	random traverse point
Rge	range
RP Cap	red plastic cap
SC	spiral to curve
SC	standard corner
ST	spiral to tangent
Sta	station
SE	superelevation
Tan	tangent
T	tangent (semi)
TS	tangent to spiral
Twp	township
TB	transit book
TP	traverse point
TP	turning point
USC&G	US Coast & Geodetic Survey
USGS	US Geologic Survey
VC	vertical curve
WC	witness corner
WGS	World Geodetic System
YP Cap	yellow plastic cap
Z	zenith

SOIL TYPES

Cl	clay
Cl F	clay fill
Cl Hvy	clay heavy
Cl Lm	clay loam
Co S	coal slack
C Gr	coarse gravel
CS	coarse sand
FS	fine sand
Gr	gravel
Lig Co	lignite coal
Lig Sl	lignite slack
Lm	loam
Rk	rock
Sd	sand
Sdy Cl	sandy clay
Sdy Cl Lm	sandy clay loam
Sdy Fl	sandy fill
Sdy Lm	sandy loam
Sc	scoria
Sh	shale
Si Cl	silt clay
Si Cl Lm	silty clay loam
Si Lm	silty loam

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NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

D-101-10

702COM
ACCENT
AGASSIZ WU
AGC
ALL PL
ALL SEAS WU
AMOCO PI
AMRDA HESS
AT&T
B PAW
BAKER ELEC
BASIN ELEC
BEK TEL
BELLE PL
BLM
BNSF
BOEING
BRNS RWD
BURK-DIV ELEC
BURL WRD
CABLE ONE
CABLE SERV
CAP ELEC
CASS CO ELEC
CASS RWU
CAV ELEC
CBLCOM
CENEX PL
CENT PL WATER DIST
CENT PWR ELEC
CENTURYLINK
COE
CONS COMM
CONS TELCOM
CONT RES
CPR
D O E
DAK CARR
DAK CENT TEL
DAK RWD
DGC
DICKY R NET
DICKY WRD
DICKY TEL
DNRR
DOME PL
DVELEC
DVMW
E CENT REG WD
ENBRDG
ENVENTIS
EQUINOR
FALK MNG
FHWA
G FKS-TRL WD
GETTY TRD & TRAN
GLDN W ELEC

702 Communications
Accent Communications
Agassiz Water Users District
Associated General Contractors of America
Alliance Pipeline
All Seasons Water Users District
Amoco Pipeline Company
Amerada Hess Corporation
AT&T Corporation
Bear Paw Energy Incorporated
Baker Electric
Basin Electric Cooperative Incorporated
Bek Communications Cooperative
Belle Fourche Pipeline Company
Bureau of Land Management
Burlington Northern Santa Fe Railway
Boeing
Barnes Rural Water District
Burke-Divide Electric Cooperative
Burleigh County Water Resource District
Cable One
Cable Services
Capital Electric Cooperative Incorporated
Cass County Electric Cooperative
Cass Rural Water Users District
Cavalier Rural Electric Cooperative
Cablecom Of Fargo
Cenex Pipeline
Central Pipe Line Water District
Central Power Electric Cooperative
CenturyLink
Corps of Engineers
Consolidated Communications
Consolidated Telcom
Continental Resource Inc
Canadian Pacific Railway
Department Of Energy
Dakota Carrier Network
Dakota Central Telephone
Dakota Rural Water District
Dakota Gasification Company
Dickey Rural Networks
Dickey County Water Resource District
Dickey Telephone
Dakota Northern Railroad
Dome Pipeline Company
Dakota Valley Electric Cooperative
Dakota, Missouri Valley & Western
East Central Water District
Enbridge Pipelines Incorporated
Enventis Telephone
Equinor Pipeline
Falkirk Mining Company
Federal Highway Administration
Grand Forks-traill Water District
Getty Trading & Transportation
Golden West Electric Cooperative

GTR RAMSEY WD
GT PLNS NAT GAS
HALS TEL
IDEA1
INT-COMM TEL
KANEB PL
KEM ELEC
KOCH GATH SYS
LKHD PL
LWR YELL R ELEC
LUMEN
MCKNZ CON
MCKNZ ELEC
MCKNZ WRD
MCLEOD
MCLN ELEC
MCLN-SHRDN R WAT
MDU
MIDCO
MIDSTATE TEL
MINOT CABLE
MINOT TEL
MISS VALL COMM
MISS W W S
MNMKOTA PWR
MOR-GRAN-SOU ELEC
MOUNT-WILLI ELEC
MLGC
MUNICIPAL
MUNICIPAL
N CENT ELEC
N PRAIR REG WD
ND PKS & REC
ND TEL
NDDOT
NE REG WD
NDSU SOIL SCI DEPT
NEMONT TEL
NODAK R ELEC
NOON FRMS TEL
NPR
NSP
NTHN BRDR PL
NTHN PLNS ELEC
NTHWSTRN REF
NW COMM
NWRWD
ONEOK
OSHA
OTTR TL PWR
PAAP
P L E M
POLAR COM
PVT ELEC
QWEST
R&T REG WD

Greater Ramsey Water District
Great Plains Natural Gas Company
Halstad Telephone Company
Idea1
Inter-Community Telephone Company
Kaneb Pipeline Company
Kem Electric Cooperative Incorporated
Koch Gathering Systems Incorporated
Lakehead Pipeline Company
Lower Yellowstone Rural Electric
Lumen Technologies Incorporated
McKenzie Consolidated Telcom
McKenzie Electric Cooperative
McKenzie County Water Resource District
McLeod USA
McLean Electric Cooperative
McLean-Sheridan Rural Water District
Montana-dakota Utilities
MidContinent Communications
Midstate Telephone Company
Minot Cable Television
Minot Telephone Company
Missouri Valley Communications Incorporated
Missouri West Water System
Minnkota Power
Mor-gran-sou Electric Cooperative
Mountrail-williams Electric Cooperative
Moore & Liberty - Griggs County
City Water And Sewer
City Of '.....'
North Central Electric Cooperative
North Prairie Regional Water District
North Dakota Parks And Recreation
North Dakota Telephone Company
North Dakota Department of Transportation
Northeast Regional Water District
NDSU Soil Science Department
Nemont Telephone
Nodak Rural Electric Cooperative
Noonan Farmers Telephone Company
Northern Plains Railroad
Northern States Power
Northern Border Pipeline
Northern Plains Electric Cooperative Incorporated
Northwestern Refinery Company
Northwest Communication Cooperation
Northwest Rural Water District
Oneok gas
Occupational Safety and Health Administration
Otter Tail Power Company
Plains All American Pipeline
Praiarielands Energy Marketing
Polar Communications
Private Electric
Qwest Communications
R & T Water District

RED RIV COMM
RESVTN TEL
ROBRTS TEL
R-RIDER ELEC
RRVW
S CENT REG WD
SE W U
SCOTT CABLE
SHERDN ELEC
SHEYN VLY ELEC
SKYTECH
SLOPE ELEC
SOURIS RIV TELCOM
ST WAT COMM
STATE LN WATER
STER ENG
STUT RWD
SW PL PRJ
SWWA
SUNOCO
T M C
TCI
TESORO GHG PLNS PL
TRI-CNTY WU
TRL CO WRD
UNTD TEL
UPPR SOUR WD
US SPRINT
USAF MSL CABLE
USFWS
USW COMM
VRNDRY ELEC
W RIV TEL
WAPA
WAWSA
WEB
WILLI WRD
WILSTN BAS PL
WLSH RWD
WOLVRTN TEL
XLENER
YSVR

Red River Communications
Reservation Telephone
Roberts Company Telephone
Roughrider Electric Cooperative
Red River Valley & Western Railroad
South Central Regional Water District
Southeast Water Users Incorporated
Scott Cable Television Dickinson
Sheridan Electric Cooperative
Sheyenne Valley Electric Cooperative
Skyland Technologies Incorporated
Slope Electric Cooperative Incorporated
Souris River Telecommunications
State Water Commission
State Line Water Cooperative
Sterling Energy
Stutsman Rural Water District
Southwest Pipeline Project
Southwest Water Authority
Sunoco LP
Turtle Mountain Communications
TCI of North Dakota
Tesoro High Plains Pipeline
Tri-County Water Users Incorporated
Traill County Water Resource District
United Telephone
Upper Souris Water District
U.S. Sprint
U.S.A.F. Missile Cable
US Fish and Wildlife Service
U.S. West Communications
Verendrye Electric Cooperative
West River Telephone Incorporated
Western Area Power Administration
Western Area Water Supply Authority
W. E. B. Water Development Association
Williams County Water Resource District
Williston Basin Interstate Pipeline Company
Walsh Water Rural Water District
Wolverton Telephone
Xcel Energy
Yellowstone Valley Railroad

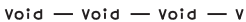
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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DATE	CHANGE
04-23-18	General Revisions
09-20-18	General Revisions
12-18-20	General Revisions
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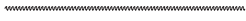
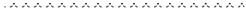


LINE STYLES

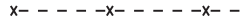
D-101-20

Existing Topography

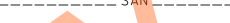
	Existing Ground Void
	Existing Cemetery Boundary
	Existing Box Culvert Bridge
	Existing Concrete Surface
	Existing Drainage Structure
	Existing Gravel Surface
	Existing Riprap
	Existing Dirt Surface
	Existing Asphalt Surface
	Existing Tie Point Line
	Existing Railroad Centerline
	Existing Guardrail Cable
	Existing Guardrail Metal
	Existing Edge of Water
	Existing Fence
	Existing Railroad
	Existing Field Line
	Exst Flow
	Existing Curb
	Existing Valley Gutter
	Existing Driveway Gutter
	Existing Curb and Gutter
	Existing Mountable Curb and Gutter

	Existing 3-Cable w Posts
	Site Boundary
	Existing Berm, Dike, Pit, or Earth Dam
	Existing Ditch Block
	Existing Tree Boundary
	Existing Brush or Shrub Boundary
	Existing Retaining Wall
	Existing Planter or Wall
	Existing W-Beam Guardrail with Posts
	Existing Railroad Switch
	Gravel Pit - Borrow Area
	Existing Wet Area-Vegetation Break
	Existing High Tension Cable Guardrail
	Existing High Tension Cable Guardrail with Posts

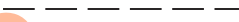
Proposed Topography

	3-Cable w Posts
	Flow
	Fence
	Remove Line
	Wall
	Retaining Wall (Plan View)
	W-Beam w Posts
	High Tension Cable Guardrail with Posts

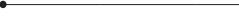
Existing Utilities

	Existing Electrical
	Existing Fiber Optic Line
	Existing TV Fiber Optic
	Existing Gas Pipe
	Existing Overhead Utility Line
	Existing Power
	Existing Fuel Pipeline
	Existing Undefined Above Ground Pipe Line
	Existing Sanitary Sewer
	Existing Sanitary Force Main
	Existing Storm Drain
	Existing Storm Drain Force Main
	Existing Culvert
	Existing Telephone Line
	Existing TV Line
	Existing Water or Steam Line
	Existing Under Drain
	Existing Slotted Drain
	Existing Conduit
	Existing Conductor
	Existing Down Guy Wire Down Guy
	Existing Underground Vault or Lift Station

Proposed Utilities

	24 Inch Pipe
	Reinforced Concrete Pipe
	Under Drain
	Edge Drain

Traffic Utilities

	Conductor
	Fiber Optic
	Existing Loop Detector
	Existing Double Micro Loop Detector
	Micro Loop Detector Double
	Existing Micro Loop Detector
	Micro Loop Detector
	Signal Head with Mast Arm
	Existing Signal Head with Mast Arm

Sign Structures

	Existing Overhead Sign Structure
	Existing Overhead Sign Structure Cantilever
	Overhead Sign Structure Cantilever

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09-23-16	Added and Revised Items, Organized by Functional Groups General Revisions
12-18-20	

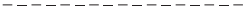


12 18 2020

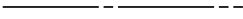
LINE STYLES

D-101-21

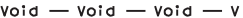
Right Of Way

	Easement
	Existing Easement
	Right of Way
	Existing Right of Way
	Existing Right of Way Railroad
	Existing Right of Way Not State Owned
	Existing Government Lot Line
	Existing Adjacent Block Lines
	Existing Adjacent Lot Lines
	Existing Adjacent Property Line
	Existing Adjacent Subdivision Lines
	Sight Distance Triangle Line
	Dimension Leader

Boundary Control

	Existing City Corporate Limits or Reservation Boundary
	Existing State or International Line
	Existing Township
	Existing County
	Existing Section Line
	Existing Quarter Section Line
	Existing Sixteenth Section Line
	Existing Centerline
	Tangent Line

Cross Sections and Typicals

	Existing Ground
	Existing Topsoil (Cross Section View)
	Existing Ground Void (Not Surveyed)
	Existing Concrete
	Existing Aggregate (Cross Section View)
	Existing Curb and Gutter (Cross Section View)
	Existing Asphalt (Cross Section View)
	Existing Reinforcement Rebar

Geotechnical

	Geotextile Fabric Type D
	Geogrid
	Geotextile Fabric Type R
	Geotextile Fabric Type R1
	Geotextile Fabric Type RR
	Geotextile Fabric Type S
	Subgrade Reinforcement

Countours

	Depression Contours
	Supplemental Contour

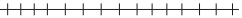
Profile

	Subgrade, Subcut or Ditch Grade
	Topsoil Profile

Striping

	Centerline Pavement Marking
	Barrier with Centerline Pavement Marking
	Barrier Pavement Marking
	Stripe 4 IN Dotted Extension White
	Stripe 8 IN Dotted Extension White
	Stripe 8 IN Lane Drop

Pavement Joints

	Doweled Joint
	Tie Bar 30 Inch 4 Foot Center to Center
	Tie Bar 18 Inch 3 Foot Center to Center
	Tie Bar at Random Spacing

Bridge Details

	Small Hidden Object
	Large Hidden Object
	Phantom Object
	Existing Conditions Object
	Centerline Main
	Centerline Secondary
	Excavation Limits
	Proposed Ground
	Sheet Piling

Erosion Control

	Limits of Const Transition Line
	Bale Check
	Rock Check
	Floating Silt Curtain
	Silt Fence
	Excavation Limits
	Fiber Rolls

Environmental

	Wetland Mitigation
	Existing Wetland Easement USFWS
	Existing Wetland Jurisdictional
	Existing Wetland
	Tree Row

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

07-01-14

REVISIONS

DATE	CHANGE
09-23-16	Added and Revised Items, Organized by Functional Groups
12-18-20	General Revisions

KIRK J. HOFF

REGISTERED

PROFESSIONAL

PE-4683

ENGINEER

NORTH DAKOTA

12 18 2020

SYMBOLS

D-101-30

	North Arrow (Half Scale)		Existing Bush or Shrub		Continuous Split Barrel Sample
	Alignment Data Point		Existing Large Evergreen Tree		Flight Auger Sample
	Alignment Monument		Existing Small Evergreen Tree		Split Barrel Sample
	Spot Elevation		Existing Large Tree		Thinwall Tube Sample
	Existing Miscellaneous Spot		Existing Small Tree		Standard Penetration Test
	Existing Access Control Arrow		Existing Tree Trunk		Inclinometer Tube
	Existing Benchmark		Cairn or Stone Circle		Excavation Unit
	Reset USGS Marker		Existing Artifact		Existing Ground Water Well Bore Hole
	Iron Monument Found		Existing Satellite Dish		
	Iron Pin R/W Monument		Existing Weather Station		
	Property Corner		Existing Windmill or Tower		
	Iron Pin Reference Monument		Reinforced Pavement		
	Right of Way Marker (Exst, Ppsd, Reset)				
	Existing Federal Reference Corner				
	Existing Section Corner (Full, Quarter, Sixteenth, Meander)				
	Existing Witness Corner				
	Existing Control Point (CP, GPS-RTK, TRI)				
	Existing Traverse PI Aerial Panel				
	Existing Reference Marker Point NGS				
	Existing EFB Misc				

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
12-18-20	General Revisions

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REGISTERED
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NORTH DAKOTA
12 18 2020

SYMBOLS

D-101-31

	Flexible Delineator		Highway Sign (Exst, Ppsd)
	Flexible Delineator Type A (Exst, Ppsd)		Mile Post Type A (Exst-Ppsd-Reset)
	Flexible Delineator Type B (Exst, Ppsd)		Mile Post Type B (Exst, Ppsd)
	Flexible Delineator Type C (Exst, Ppsd)		Mile Post Type C (Exst, Ppsd)
	Flexible Delineator Type D (Exst, Ppsd)		Object Marker Type I (Exst, Ppsd)
	Flexible Delineator Type E (Exst, Ppsd)		Object Marker Type II (Exst, Ppsd)
	Delineator Type A (Exst, Ppsd, Diamond Grade-Reset)		Object Marker Type III (Exst, Ppsd)
	Delineator Type B (Exst, Ppsd, Diamond Grade-Reset)		Existing Reference Marker
	Delineator Type C (Exst, Ppsd, Diamond Grade)		Road Closure Gate 18 Ft (Exst, Ppsd)
	Delineator Type D (Exst, Ppsd, Diamond Grade)		Road Closure Gate 28 Ft (Exst, Ppsd)
	Delineator Type E (Exst, Ppsd, Diamond Grade)		Road Closure Gate 40 Ft (Exst, Ppsd)
	Barricade (Type I, Type II, Type III)		Existing Railroad Battery Box
	Arrow Panel (Caution Mode, Double Direction, Left Directional, Right Directional, Sequencing, Truck Mounted)		Existing RR Profile Spot
	Attenuation Device		Existing Railroad Crossbuck
	Truck Mounted Attenuator		Existing Railroad Frog
	Delineator Drums		Existing Mailbox (Private, Federal)
	Flagger		
	Tubular Marker		
	Traffic Cone		
	Back to Back Vertical Panel Sign		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
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12-18-20	General Revisions



12 18 2020

SYMBOLS

D-101-32

	Existing Luminaire		High Mast Light Standard 3 Luminaire (Exst, Ppsd)		Existing Traffic Signal Standard
	Luminaire LED		High Mast Light Standard 4 Luminaire (Exst, Ppsd)		Pull Box (Exst-Ppsd-Undefined)
	Existing Light Standard Luminaire		High Mast Light Standard 5 Luminaire (Exst, Ppsd)		Intelligent Transportation Pull Box (Exst, Ppsd)
	Relocate Light Standard		High Mast Light Standard 6 Luminaire (Exst, Ppsd)		Transformer (Exst, Ppsd)
	Light Standard Light LED Luminaire		High Mast Light Standard 7 Luminaire (Exst, Ppsd)		Power Pole (Exst-Ppsd-with Transformer)
	Light Standard 35 Watt High Pressure Sodium Vapor Luminaire		High Mast Light Standard 8 Luminaire (Exst, Ppsd)		Wood Pole (Exst, Ppsd)
	Light Standard 50 Watt High Pressure Sodium Vapor Luminaire		High Mast Light Standard 9 Luminaire (Exst, Ppsd)		Pedestrian Push Button Post (Exst, Ppsd)
	Light Standard 70 Watt High Pressure Sodium Vapor Luminaire		High Mast Light Standard 10 Luminaire (Exst, Ppsd)		Existing Pole
	Light Standard 100 Watt High Pressure Sodium Vapor Luminaire		Overhead Sign Structure Load Center (Exst, Ppsd)		Existing Telephone Pole
	Light Standard 150 Watt High Pressure Sodium Vapor Luminaire		Traffic Signal Controller (Exst, Ppsd)		Existing Post
	Light Standard 200 Watt High Pressure Sodium Vapor Luminaire		Pad Mounted Traffic Signal Controller (Exst, Ppsd)		Connection Conductor (Ground, Neutral, Phase 1, Phase 2)
	Light Standard 250 Watt High Pressure Sodium Vapor Luminaire		Flashing Beacon (Exst, Ppsd)		
	Light Standard 310 Watt High Pressure Sodium Vapor Luminaire		Concrete Foundation (Exst, Ppsd)		
	Light Standard 400 Watt High Pressure Sodium Vapor Luminaire		Pipe Mounted Flasher (Exst, Ppsd)		
	Light Standard 700 Watt High Pressure Sodium Vapor Luminaire		Pad Mounted Feed Point (Exst, Ppsd)		
	Light Standard 1000 Watt High Pressure Sodium Vapor Luminaire		Pipe Mounted Feed Point with Pad (Exst, Ppsd)		
	Emergency Vehicle Detector		Pole Mounted Feed Point (Exst, Ppsd)		
	Video Detection Camera		Junction Box (Exst, Ppsd)		
			Existing Pedestrian Head with Number		
			Existing Signal Head		
			Pole Mounted Head		
			Existing Lighting Standard Pole		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14 REVISIONS	
DATE	CHANGE
12-18-20	General Revisions

12 18 2020

SYMBOLS

D-101-33

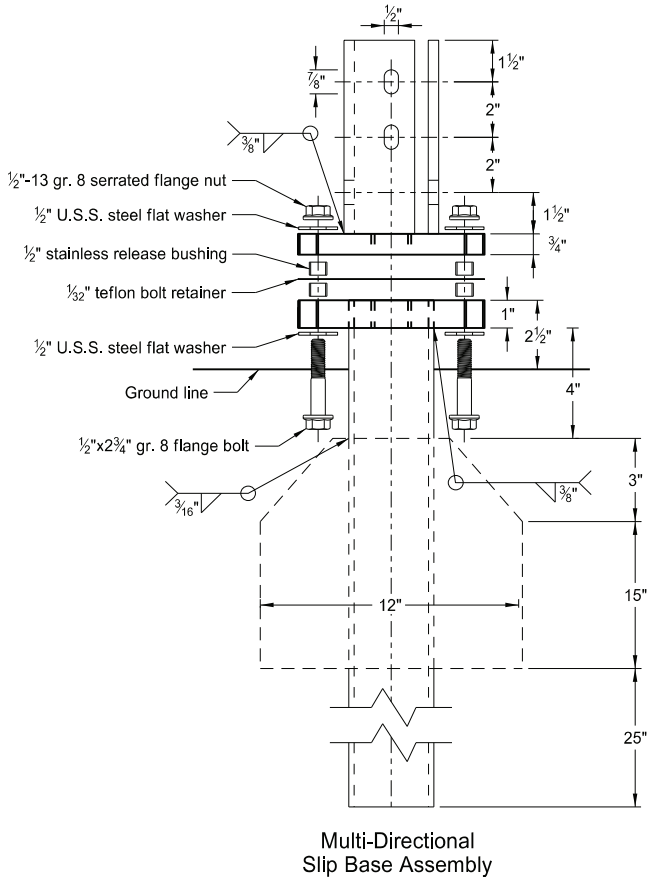
			Existing Manhole (Electrical, Gas, Telephone)		Cap or Stub Exst Gas, Exst Sanitary, Exst Storm Drain, Ppsd Storm Drain, Exst Water
			Water Manhole (Exst, Exst with Valve)		Existing Pedestal Electrical, Telephone, Fiber Optic Telephone, TV, Fiber Optic TV, Undefined
			Sanitary Sewer Manhole (Exst, Ppsd, Exst with Valve)		Existing Pipe Vent Gas, Fuel, Sanitary, Storm Drain, Water, Undefined
			Sanitary Force Main Manhole (Exst, Ppsd, Exst with Valve)		Valve Exst Gas, Exst Water, Ppsd Water, Exst Undefined
			Storm Drain Manhole (Exst, Ppsd, Exst with Inlet, Ppsd with Inlet)		Pump Sanitary, Storm Drain, Exst Water
			Force Main Storm Drain Manhole (Exst, Exst with Valve)		Corrugated Metal End Section (18, 24, 30, 36, 42, 48, 54, 60 Inch)
			Manhole (Ppsd, Ppsd 48 Inch, Exst Undefined)		Reinforced Concrete End Section (18, 24, 30, 36, 42, 48, 54, 60 Inch)
			Existing Water Appurtenance		Existing Utility Marker
			Sprinkler Head (Exst, Ppsd)		Existing Meter
			Fire Hydrant (Exst, Ppsd)		Existing Fuel Dispensers
			Cleanout (Exst Sanitary, Underdrain)		Existing Fuel Filler Pipes
			Existing Catch Basin Inlet (Round, Square)		Existing Fuel Leak Sensors
			Existing Curb Inlet (Round, Square)		
			Existing Slotted Reinforced Concrete Pipe		
			Catch Basin (Riser 30 Inch, Beehive, Type A)		
			Inlet Mountable Curb (Type A, Type B)		
			Inlet Saddle Base (Type 1, Type 2)		
			Inlet Special (Catch Basin, Type 1, Type A)		
			Inlet (Tee, Type 1, Type 2, Type 2 Double)		
			Median Drain		
			Headwall (Exst, Ppsd, Ppsd Single with Vegetation Barrier, Ppsd Double with Vegetation Barrier)		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
12-18-20	General Revisions Sheet added - Continued from D-101-32

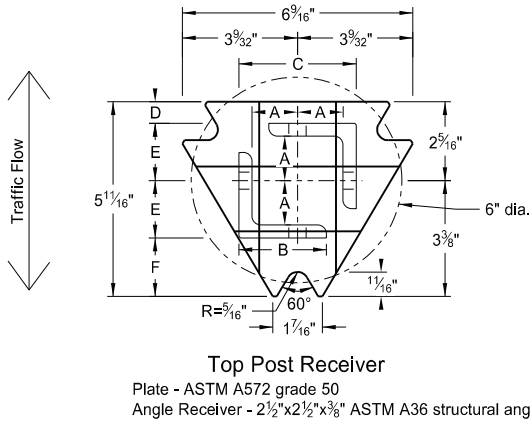
12 18 2020

BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS

D-704-7



Perforated Tube



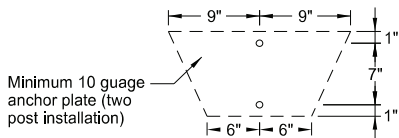
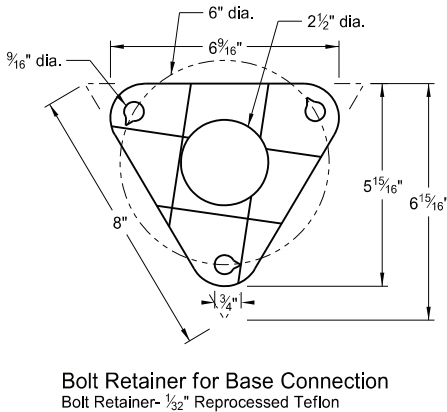
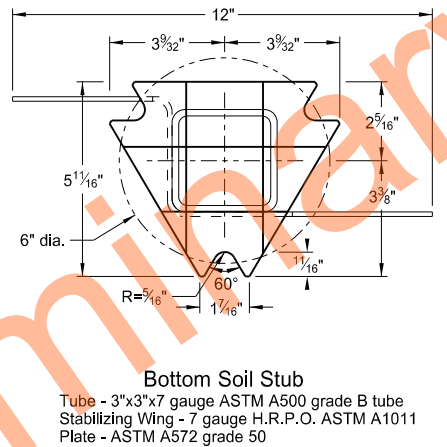
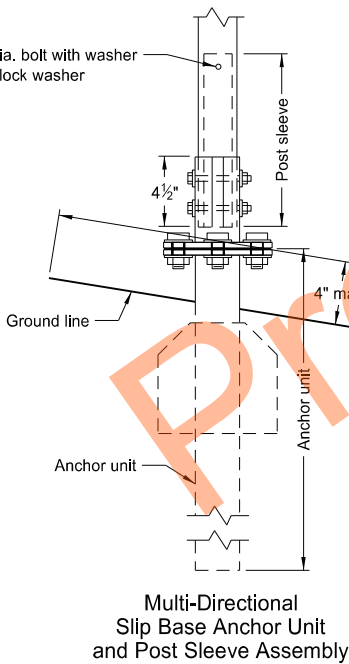
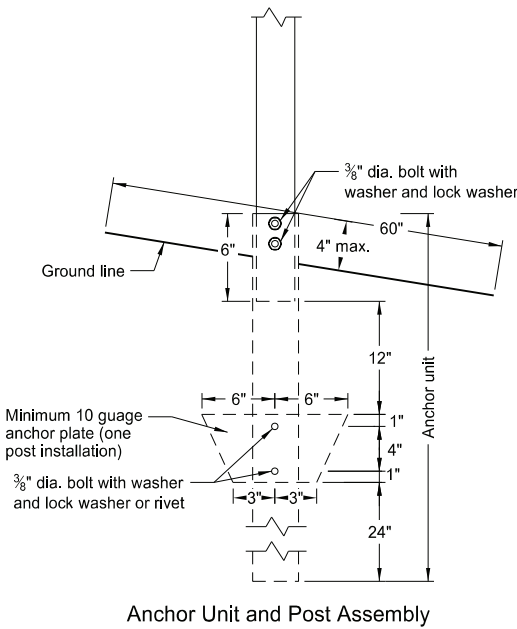
- Notes:
1. Torque slip base bolts as specified by manufacturer.
 2. Use anchor with 43.9 KSI yield strength and 59.3 KSI tensile strength.
 3. Provide 4" vertical clearance for anchor or breakaway base. Measure the 4"x60" measurement above and below post location and back and ahead of post.
 4. In concrete sidewalk, use same anchor without wings.
 5. Provide more than 7' between the first and fourth posts of a four post sign.

Telescoping Perforated Tube						
Number of Posts	Post Size in.	Wall Thickness Gauge	Sleeve Size in.	Wall Thickness Gauge	Slip Base	Anchor Size without Slip Base in.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			(A)	3
1	2 1/2	10			Yes	
1	2 1/4	12	2	12	Yes	
1	2 1/2	12	2 1/4	12	Yes	
2	2	12			No	2 1/4
2	2 1/4	12			No	2 1/2
2	2 1/2	12			Yes	
2	2 1/2	12			Yes	
2	2 1/4	10	2	12	Yes	
2	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/2	12			Yes	
3 & 4	2 1/2	10			Yes	
3 & 4	2 1/2	12	2 1/4	12	Yes	
3 & 4	2 1/4	12	2	12	Yes	
3 & 4	2 1/2	10	2 3/16	10	Yes	

Properties of Telescoping Perforated Tube						
Tube Size in.	Wall Thickness in.	U.S. Standard Gauge	Weight per Foot lbs.	Moment of Inertia in. ⁴	Cross Sec. Area in. ²	Section Modulus in. ³
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499
2 3/16 x 2 3/16	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.785

Top Post Receiver Data Table						
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16"x10 ga.	1 5/64"	2 1/2"	3 1/32"	2 5/32"	1 33/64"	1 7/8"
2 1/2"x10 ga.	1 1/32"	2 1/2"	3 5/16"	5/8"	1 21/32"	1 3/4"

- (A) Use breakaway base when support is placed in weak soils. Engineer determines if soils are weak.
- (B) For additional wind load, insert the 2 3/16"x10 ga. into 2 1/2"x10 ga.



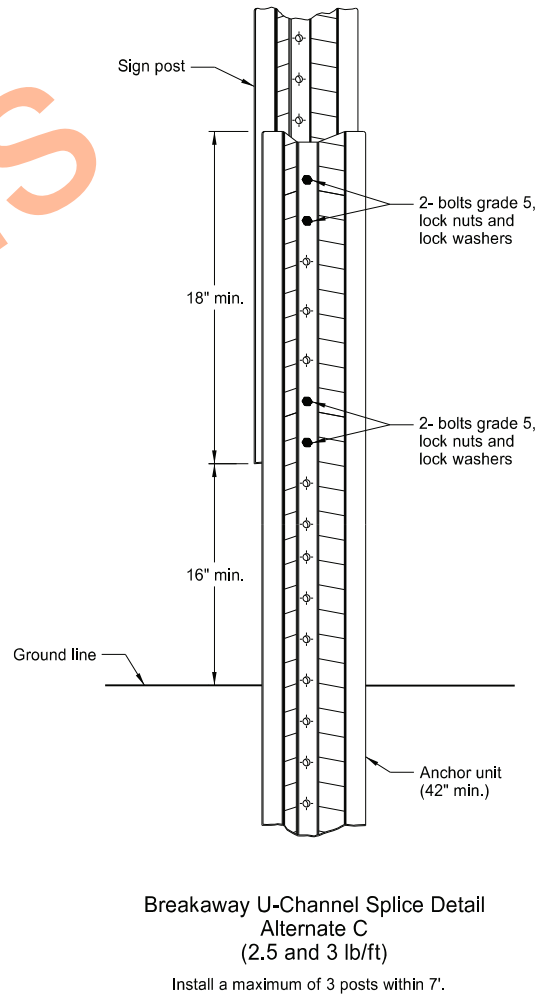
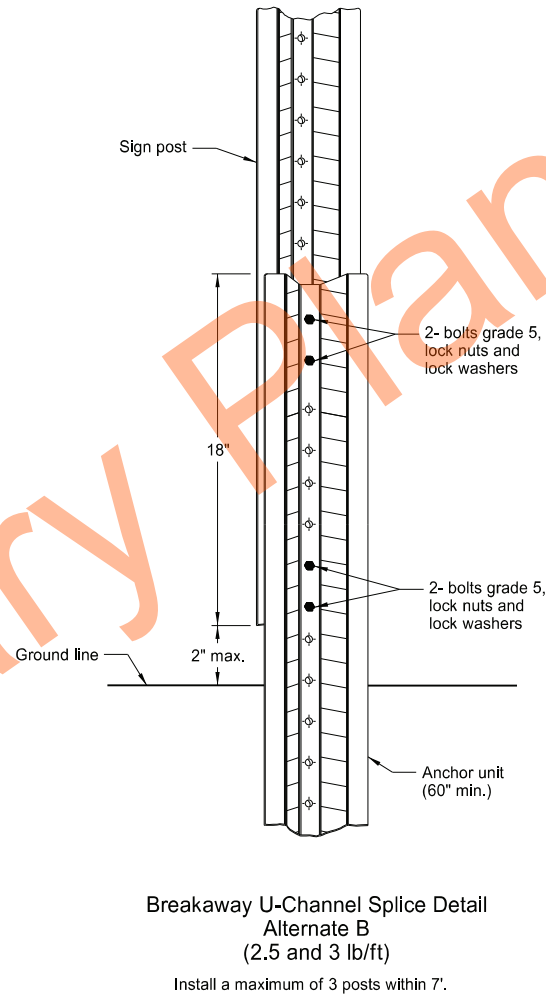
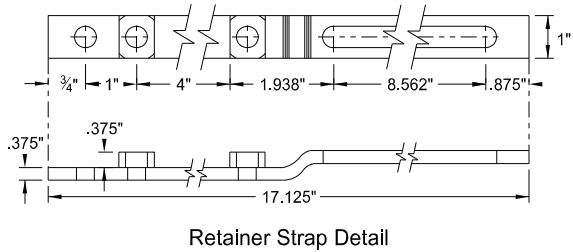
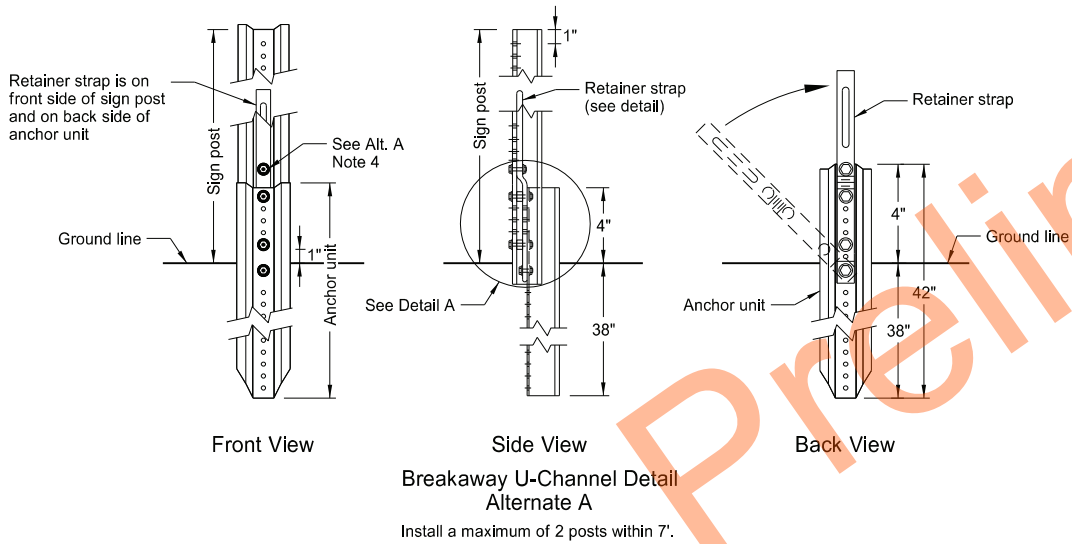
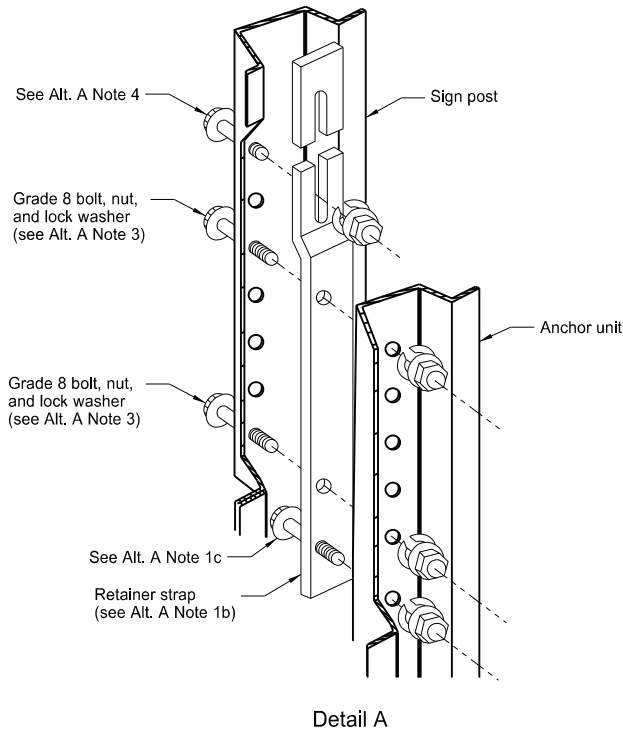
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-28-14	
REVISIONS	
DATE	CHANGE
9-27-17	Updated to active voice
10-03-19	New Design Engr PE Stamp
8-01-24	Electronic Stamp/Signature



BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS

D-704-8

U-Channel Post



Alternate A Steps of Installation:

- a) Drive anchor unit to within 12" of ground level.
b) Establish proper assembly by lining up bottom hole of retainer strap with 6th hole from the top of the anchor unit.
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.
d) Rotate strap 90° to left.
- a) Drive anchor unit to 4" above ground.
b) Rotate strap to vertical position.
- a) Place 5/16"x2" bolt, lock washer and nut in bottom of sign post to facilitate alignment of sign post with proper hole in anchor unit.
b) Alternately tighten two connector bolts.
- Complete assembly by tightening 5/16"x2" bolt (this fastens sign post to retainer strap).
- Properly nest base post, strap, and sign post. Proper nesting occurs when all flat surfaces of the base post, strap, and sign post at the bolts have full contact across the entire width.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-28-14	
REVISIONS	
DATE	CHANGE
9-27-17	Updated to active voice
10-03-19	New Design Engr PE Stamp
8-01-24	Electronic Stamp/Signature

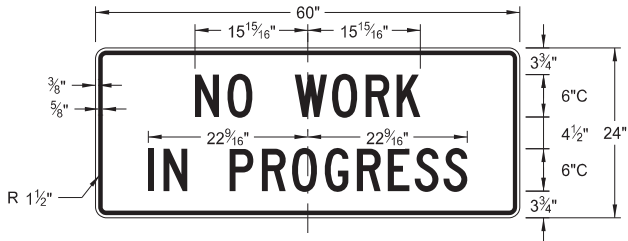


08/01/24

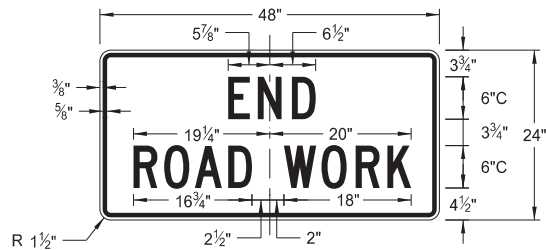
CONSTRUCTION SIGN DETAILS
TERMINAL AND GUIDE SIGNS



G20-1-60
Legend: black (non-refl)
Background: orange



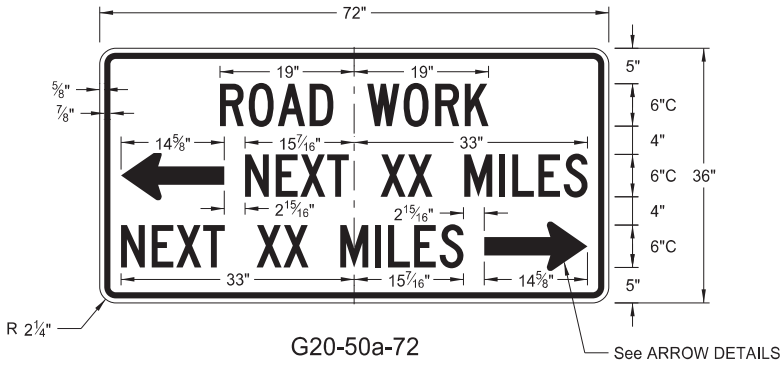
G20-1b-60
Legend: black (non-refl)
Background: orange



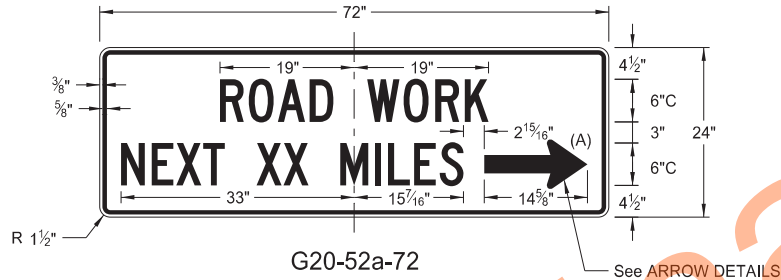
G20-2-48
Legend: black (non-refl)
Background: orange



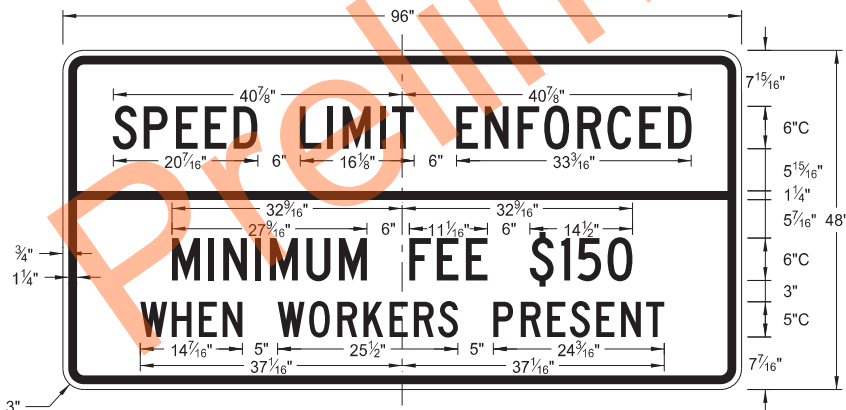
G20-4b-36
Legend: black (non-refl)
Background: orange



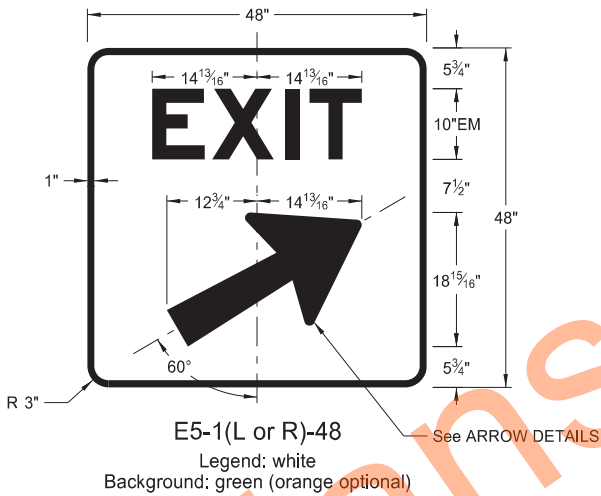
G20-50a-72
Legend: black (non-refl)
Background: orange



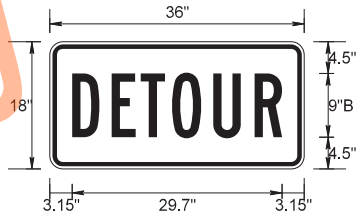
G20-52a-72
Legend: black (non-refl)
Background: orange



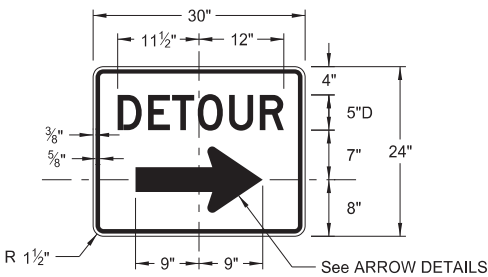
G20-55-96
Legend: black (non-refl)
Background: orange



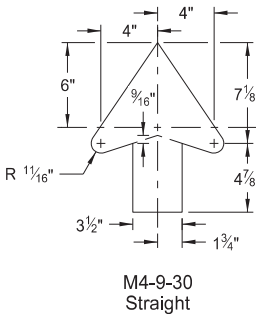
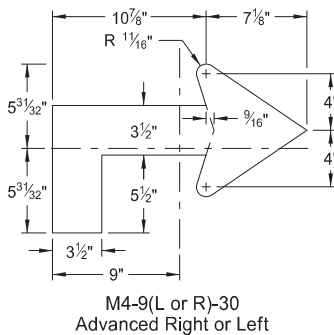
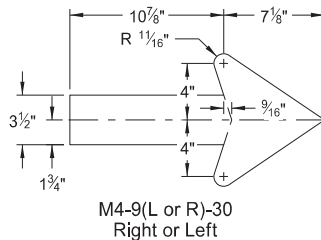
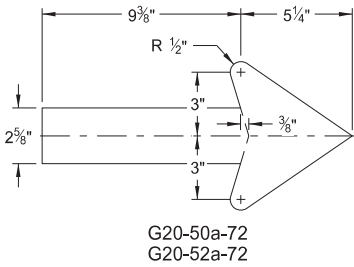
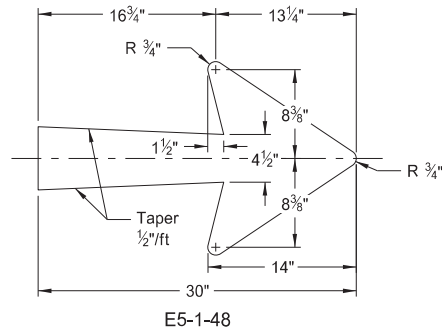
E5-1(L or R)-48
Legend: white
Background: green (orange optional)



M4-8-36
Legend: black (non-refl)
Background: orange



M4-9(L or R)-30 &
M4-9-30
Legend: black (non-refl)
Background: orange



ARROW DETAILS

NOTES:

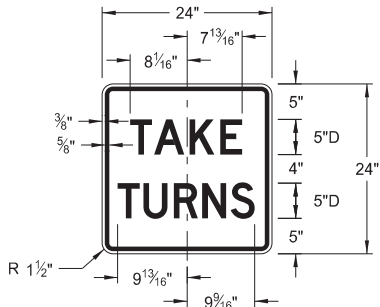
(A) Arrow may be right or left of the legend to indicate construction to the right or left.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
08-17-17	Added sign & background color
10-03-19	New Design Engineer PE Stamp
08-01-24	Electronic Stamp/Signature
06-30-25	Legislative Changes

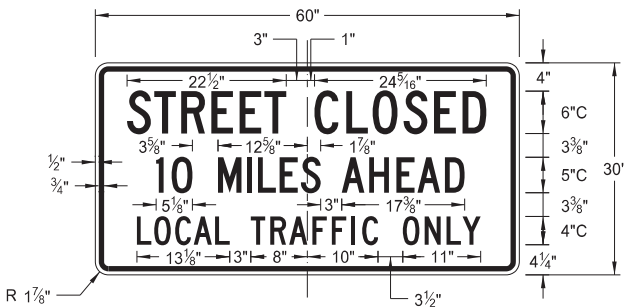


CONSTRUCTION SIGN DETAILS
REGULATORY SIGNS

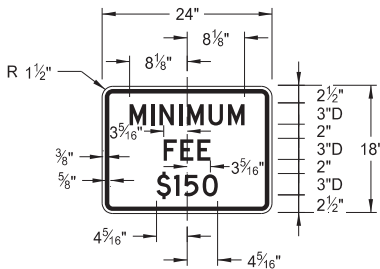
D-704-10



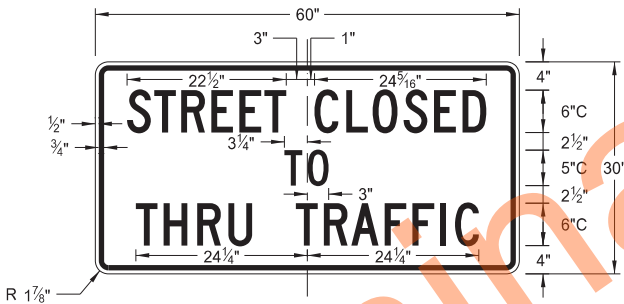
R1-50P-24
Legend: black (non-refl)
Background: white



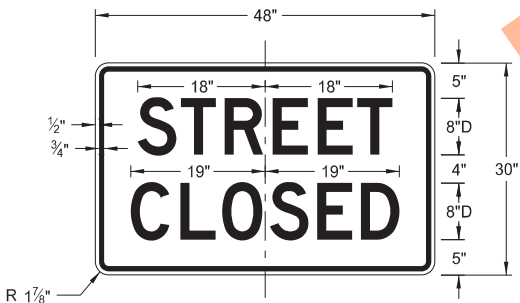
R11-3c-60
Legend: black (non-refl)
Background: white



R2-1aP-24
Legend: black (non-refl)
Background: white



R11-4a-60
Legend: black (non-refl)
Background: white



R11-2a-48
Legend: black (non-refl)
Background: white

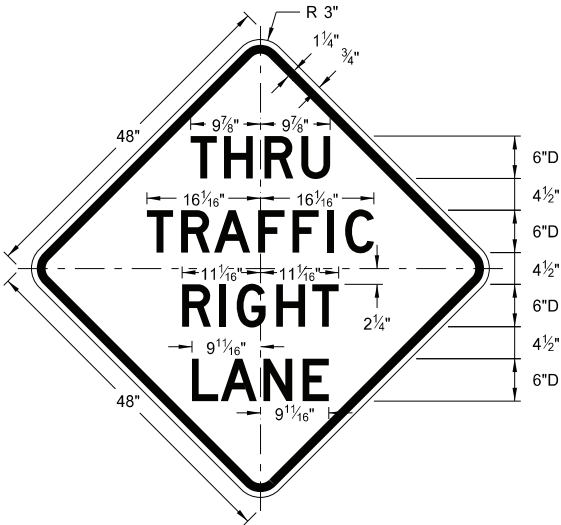
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
08-17-17	Revised sign number
10-03-19	New Design Engineer PE Stamp
08-01-24	Electronic Stamp/Signature
06-30-25	Legislative Changes



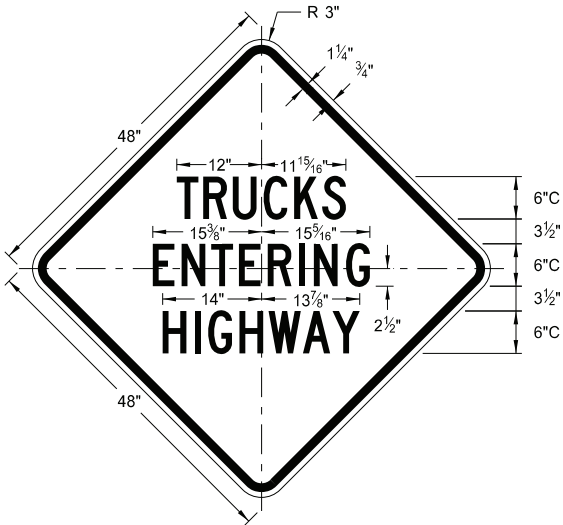
CONSTRUCTION SIGN DETAILS
WARNING SIGNS

WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
½ MILE	Reduce 50%
1 MILE	Standard

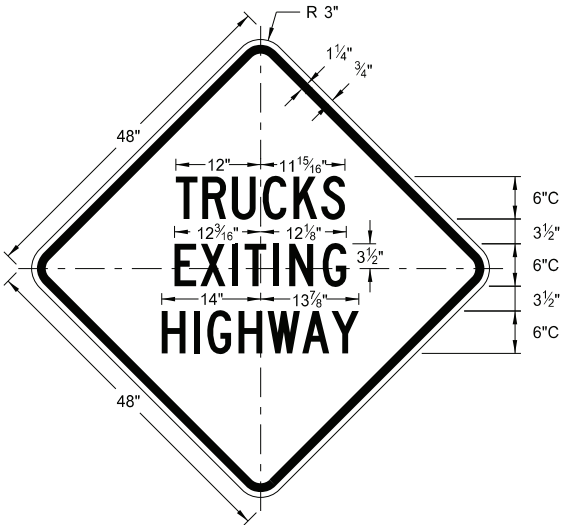
* DISTANCE MESSAGES



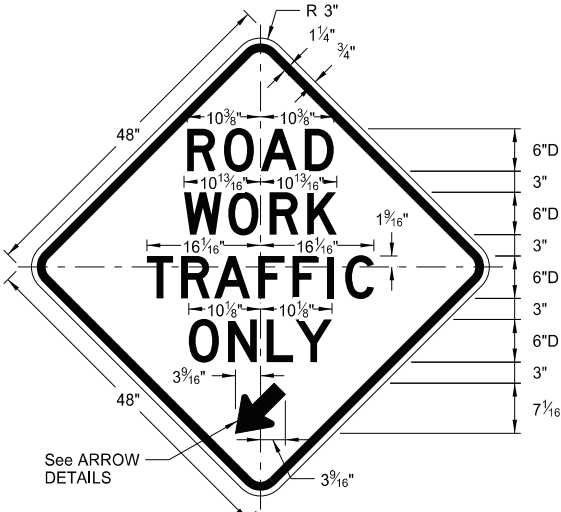
W5-8-48
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Background: orange



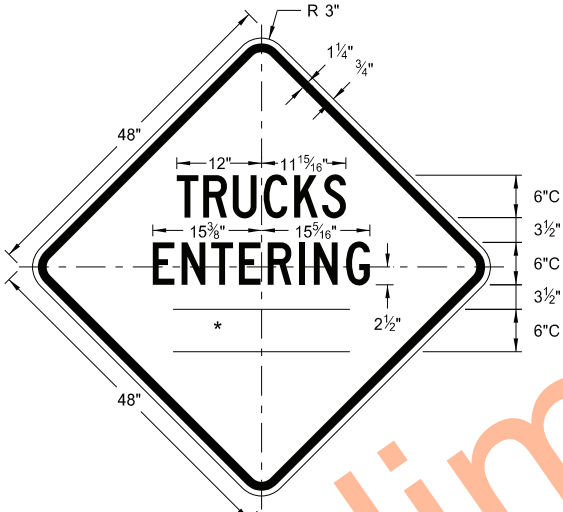
W8-53-48
Legend: black (non-refl)
Background: orange



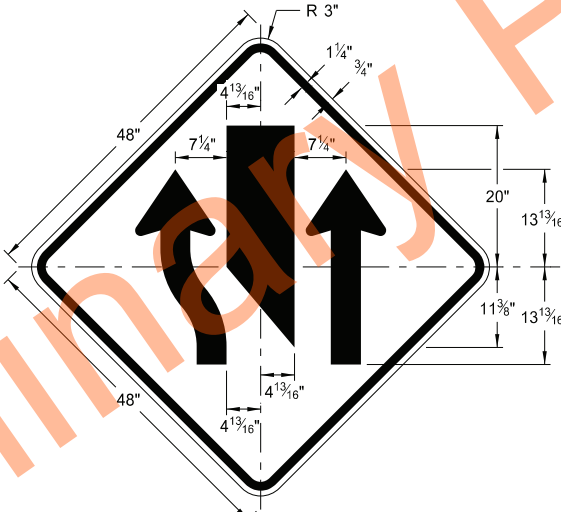
W8-56-48
Legend: black (non-refl)
Background: orange



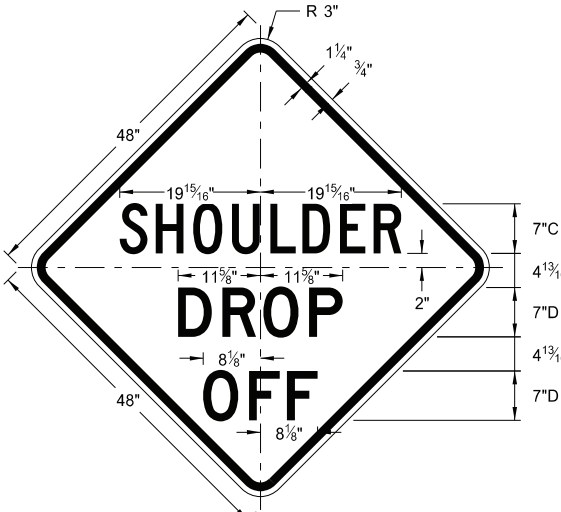
W5-9-48
Legend: black (non-refl)
Background: orange



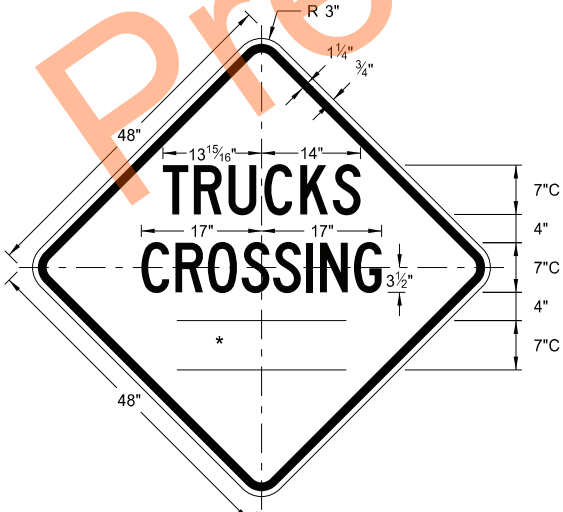
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Background: orange



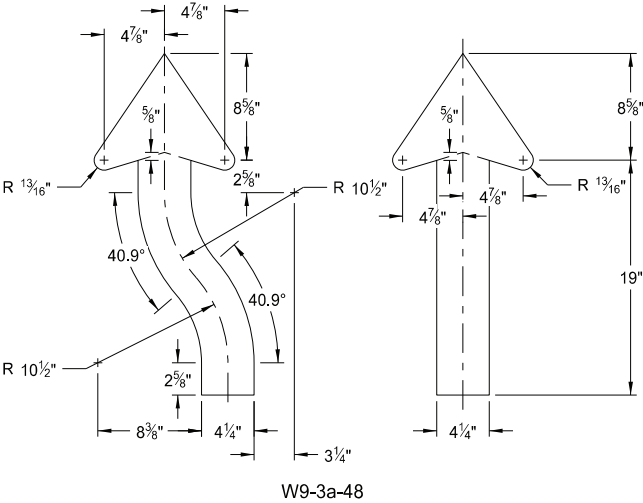
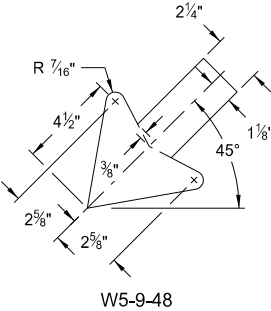
W9-3a-48
Legend: black (non-refl)
Background: orange



W8-9a-48
Legend: black (non-refl)
Background: orange



W8-55-48
Legend: black (non-refl)
Background: orange



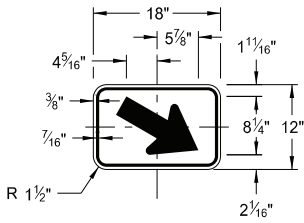
ARROW DETAILS

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17	Updated sign number
5-31-18	Revised sign and arrow details
10-03-19	New Design Engineer PE Stamp
8-01-24	Electronic Stamp/Signature

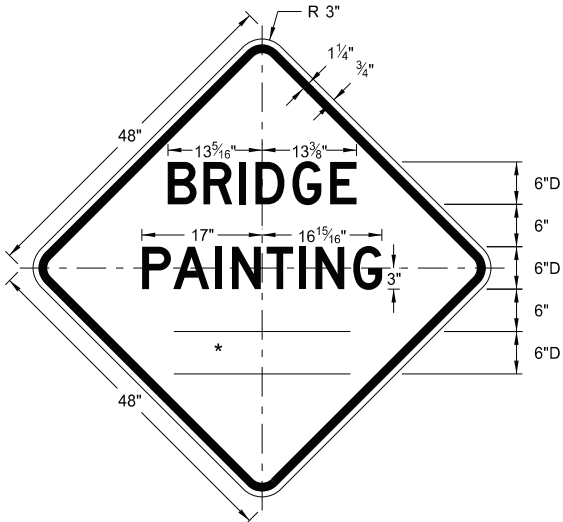


08/01/24

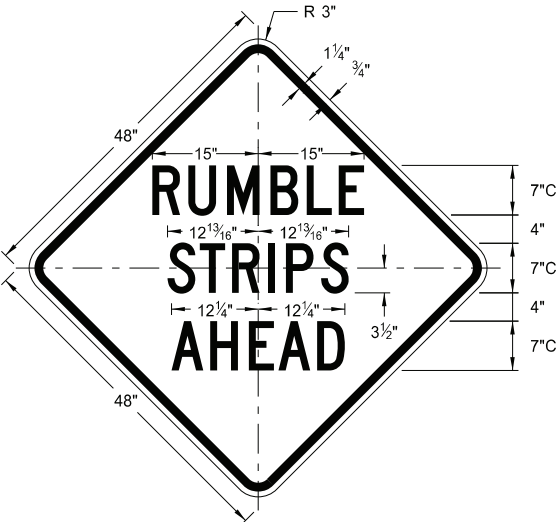
CONSTRUCTION SIGN DETAILS
WARNING SIGNS



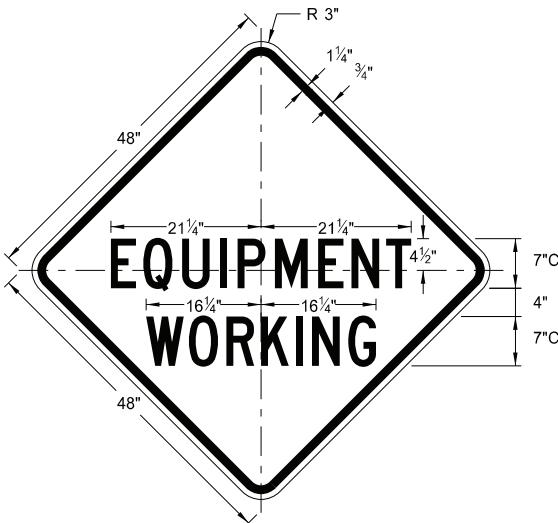
W16-7aP-18
Legend: black (non-refl)
Background: orange



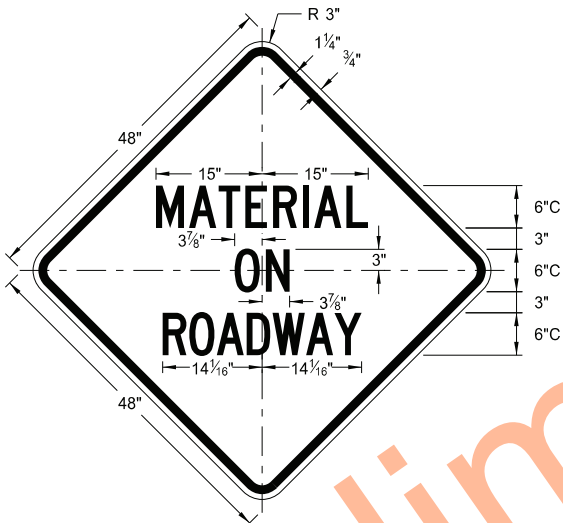
W21-50-48
Legend: black (non-refl)
Background: orange



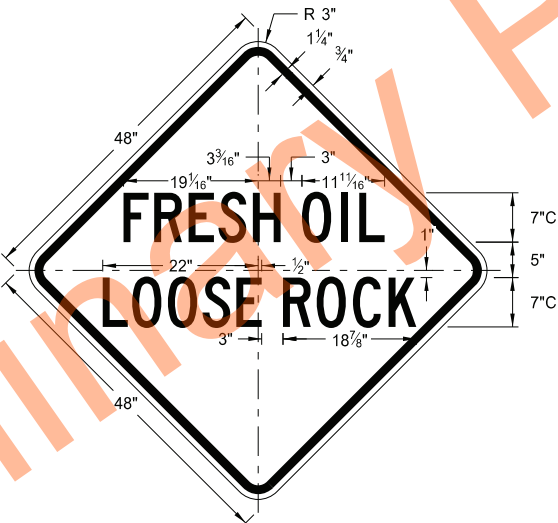
W21-53-48
Legend: black (non-refl)
Background: orange



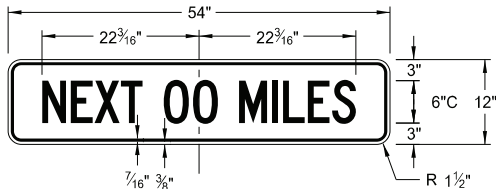
W20-51-48
Legend: black (non-refl)
Background: orange



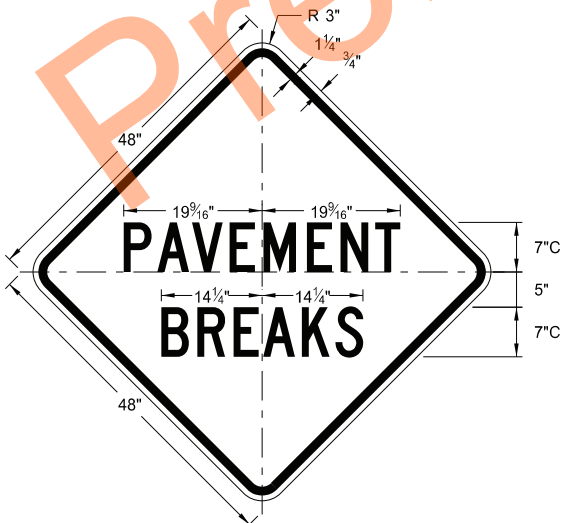
W21-51-48
Legend: black (non-refl)
Background: orange



W22-8-48
Legend: black (non-refl)
Background: orange



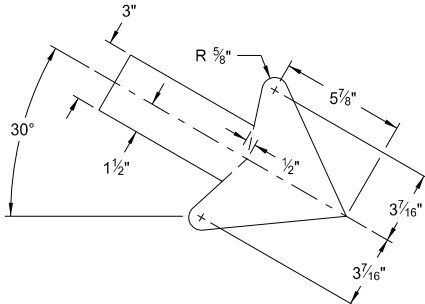
W20-52P-54
Legend: black (non-refl)
Background: orange



W21-52-48
Legend: black (non-refl)
Background: orange

WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
½ MILE	Reduce 50%
1 MILE	Standard

* DISTANCE MESSAGES



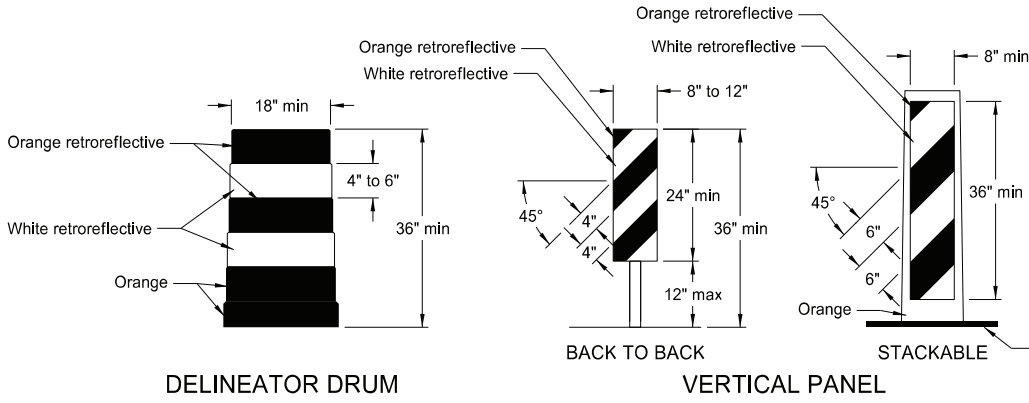
W16-7aP-18

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
5-31-18	
REVISIONS	
DATE	CHANGE
11-01-19	Added details for sign W16-7aP-18.
8-01-24	Electronic Stamp/Signature.



08/01/24

BARRICADE AND CHANNELIZING DEVICE DETAILS



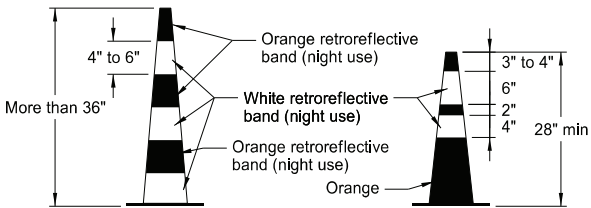
DELINEATOR DRUM

VERTICAL PANEL

STACKABLE

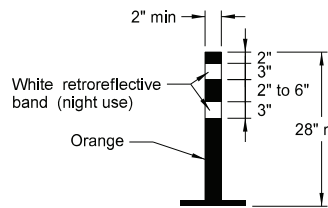
Provide horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide for drum markings. Use a minimum of two orange and two white stripes with the top stripe being orange for each drum. Do not exceed 3" nonretroreflective spaces between the horizontal orange and white stripes. Avoid placement of stripes on drum ribs or indentations. Use closed top drums that will not allow collection of debris. Do not place ballast on the top of drum.

Provide alternating orange and white retroreflective stripes, sloping downward in direction vehicular traffic is to pass. Place retroreflective sheeting on both sides of panel with a minimum of 270 square inches of retroreflective area facing vehicular traffic. Where the height of the retroreflective material on the vertical panel is 36 inches or more, use a stripe width of 6 inches.



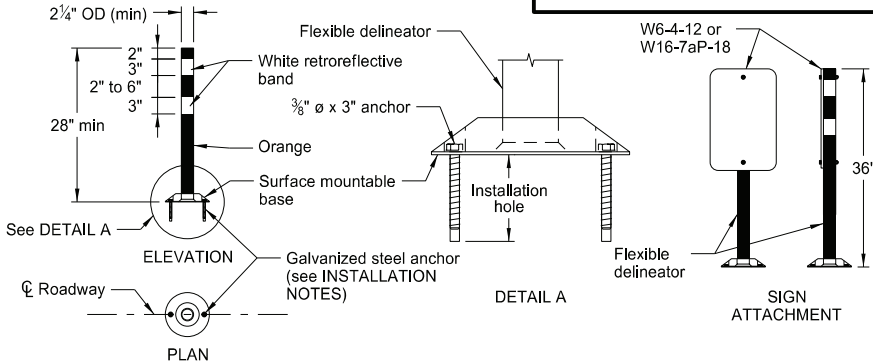
TRAFFIC CONE

Provide retroreflectorization of cones more than 36" in height by alternating orange and white retroreflective stripes. Use a minimum of two orange and two white stripes for each cone with the top stripe being orange. Use maximum 3" nonretroreflective space between the orange and white stripes.



TUBULAR MARKER

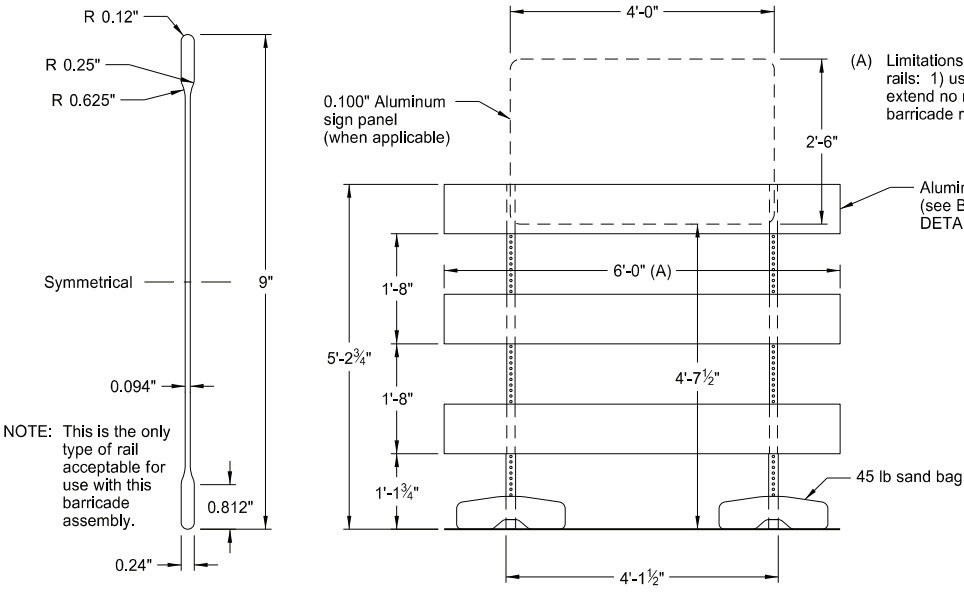
Provide retroreflectorization of tubular markers more than 42" in height by alternating four 4" to 6" wide orange and white stripes with the top stripe being orange.



FLEXIBLE DELINEATOR

INSTALLATION NOTES:

1. Drill installation holes to diameter and depth required by manufacturer's specifications.
2. For removal, remove anchors and fill installation hole with an epoxy designed to bond to pavement surface.
3. In lieu of bolted down base, use an 8" x 8" butyl pad or hot melt butyl. Remove butyl as close as possible to pavement surface.



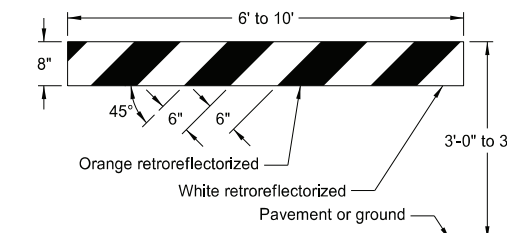
BARRICADE BLADE DETAIL

ELEVATION VIEW

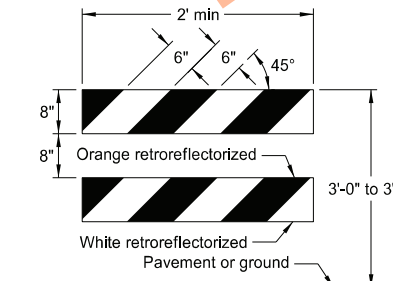
SIDE VIEW

BARRICADE ASSEMBLY DETAIL (Aluminum Barricade Rails)

NOTE: For barricade markings use alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Place retroreflective sheeting on both sides of the rails with a minimum of 270 square inches of visible retroreflective area facing vehicular traffic. When the barricade length is less than 36", use a rail stripe width of 4".

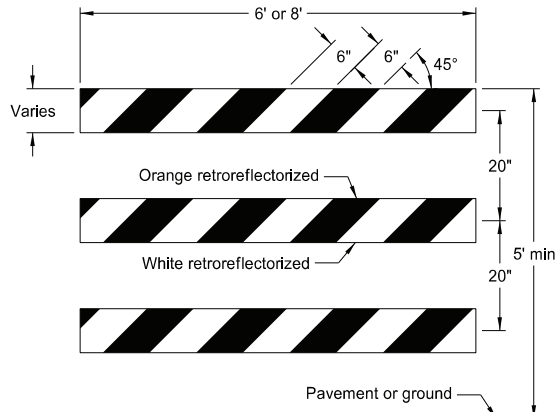


TYPE I BARRICADE

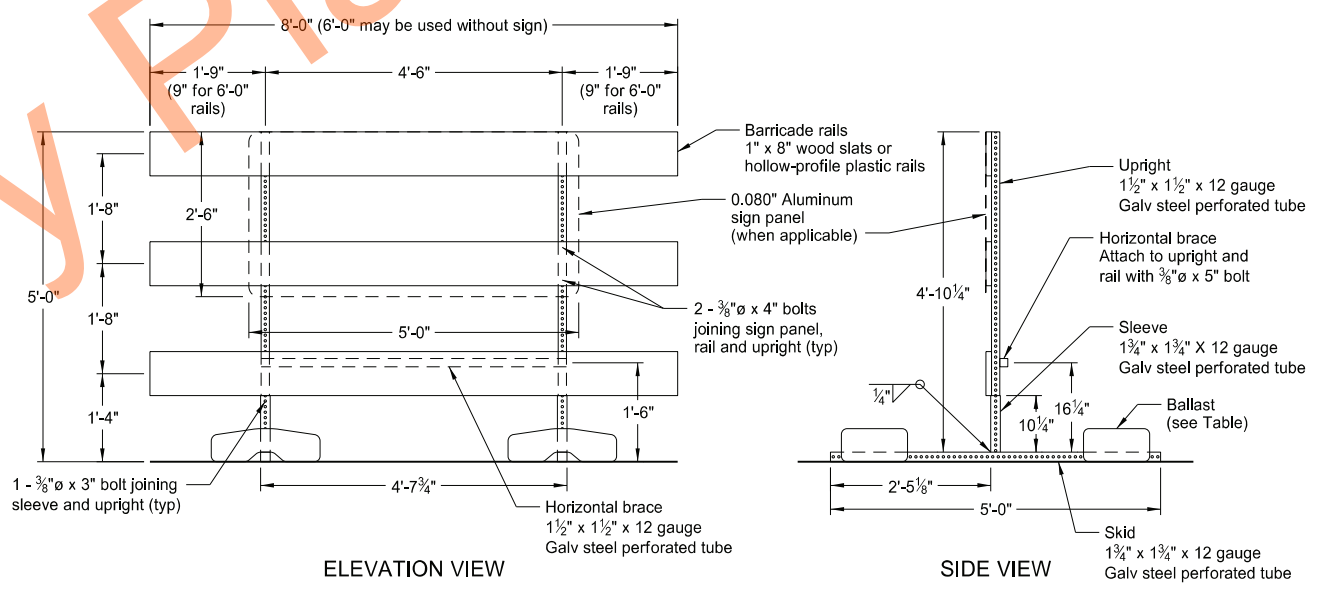


TYPE II BARRICADE

BARRICADE RAIL DETAILS



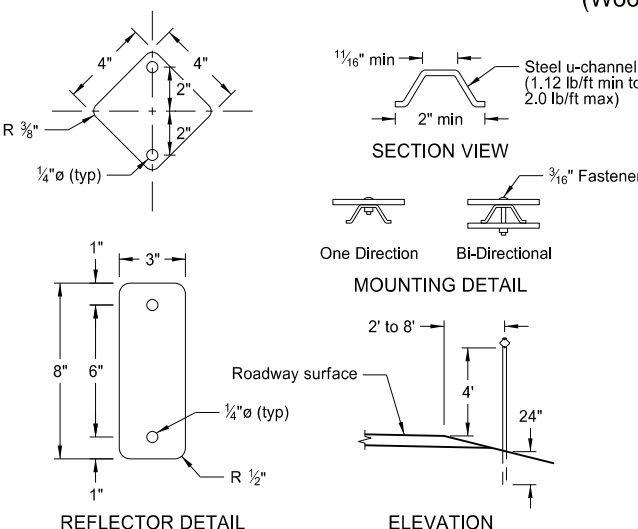
TYPE III BARRICADE



ELEVATION VIEW

SIDE VIEW

BARRICADE ASSEMBLY DETAIL (Wood or Plastic Rails)



REFLECTOR DETAIL

ELEVATION

DELINEATORS

MINIMUM BALLAST (For each side of barricade support)

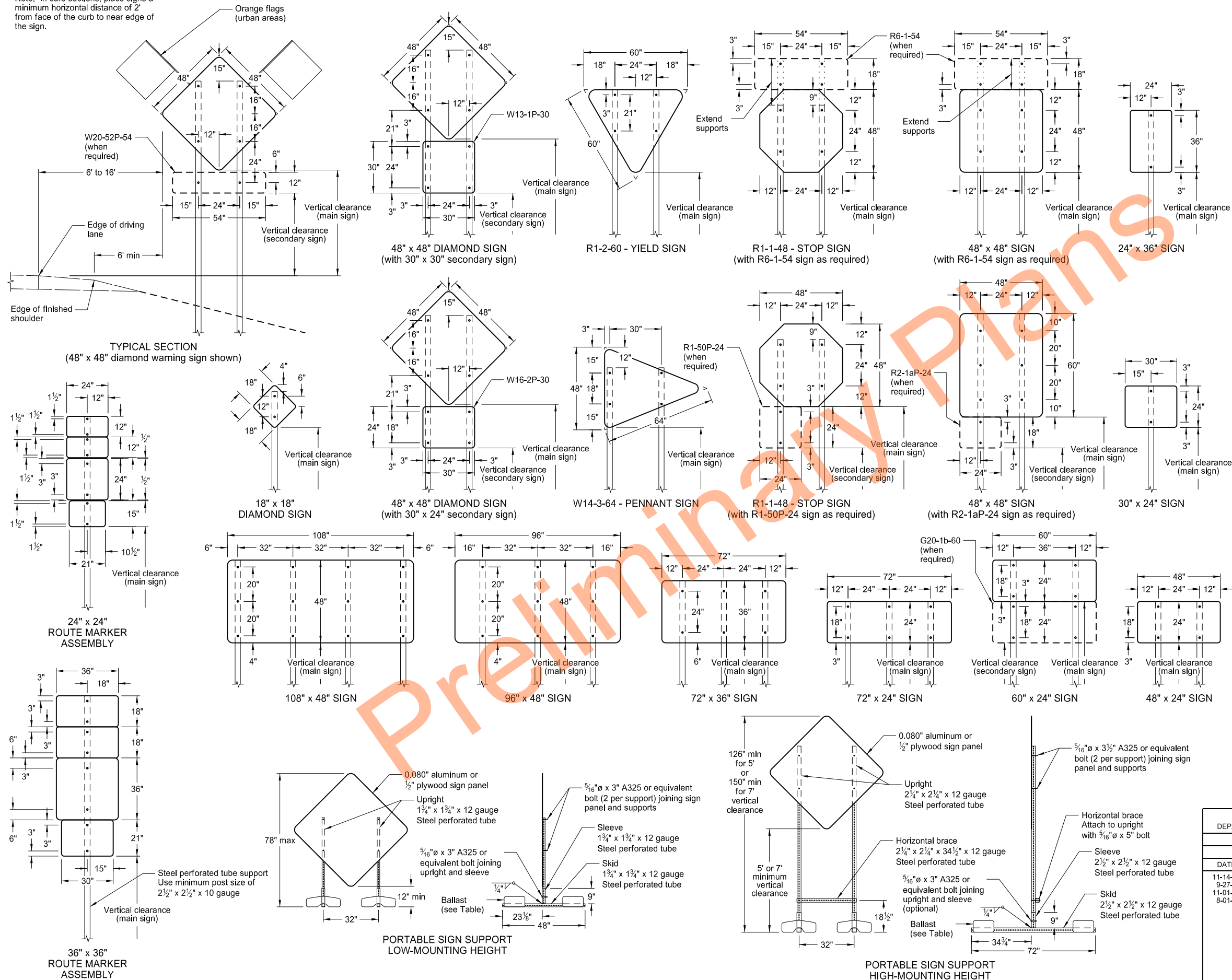
Without Sign	4 - 25 lb sandbags
With Sign	6 - 25 lb sandbags

Note: Number of sandbags based on a wind speed of 55 MPH. Sandbags assumed to be placed at or near the ends of the skids.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
REVISIONS	
DATE	CHANGE
9-27-17	Updated to active voice
11-01-19	Revised details for Flexible Delineator
8-01-24	Electronic Stamp/Signature



Note: In curb sections, place signs a minimum horizontal distance of 2' from face of the curb to near edge of the sign.



NOTES:

1. **Sign Supports:** Galvanize or paint supports. Minimum post sizes are 2.5 lb/ft u-channel or 2" x 2" x 12 gauge steel perforated tube, except where noted. When installing signs on u-channel, minimum post size for assemblies containing a secondary sign is 3.0 lb/ft. Post sizes based on a wind speed of 55 MPH.

Place signs over 50 square feet on 2½" x 2½" perforated tube supports as a minimum.

Do not attach guy wires to sign supports. Attach wind beams behind sign panels when used with u-posts.

2. **Sign Panels:** Provide sign panels made of 0.100" aluminum, $\frac{1}{2}$ " plywood, or other approved material, except where noted. Punch all holes round for $\frac{3}{8}$ " bolts.
3. **Alternate Messages:** Install and remove alternate message signs on reflectorized plate (without borders) as required. (i.e. "Left" and "Right" message on lane closure sign)

4. **Route Marker Auxiliary Signs:** Provide route marker auxiliary signs, such as the cardinal direction and directional arrows, with a background and legend that match the route marker they are used with:

Interstate - white legend on blue background
Interstate Business Loop - white legend on green background
US and State - black legend on white background
County - yellow legend on blue background

5. Vertical Clearance: Install signs with a vertical clearance of 5'-0" (see TYPICAL SECTION.). In areas where parking or pedestrian movements are likely or the view of the sign may be obstructed, install signs with a vertical clearance of 7'-0" from the top of the curb or from the near edge of the driving lane in absence of a curb.

The vertical clearance to secondary signs is 1'-0" less than the vertical clearance stated above.

Provide a minimum clearance of 7'-0" from the ground at the post for signs with an area exceeding 50 square feet.

6. **Portable Signs:** Provide portable signs that meet the vertical clearance stated above when it is necessary to place signs within the pavement surface.

Use of low-mounting height (minimum 12" vertical clearance) portable signs for 5 days or less, is allowed as long as the view of the sign is not obstructed. Time delays caused by unforeseen circumstances, such as equipment breakdown, rain, subgrade failures, etc., will not accrue towards the 5 day period. Use of R9-8 through R9-11a series, W1-6 through W1-8 series, M4-10, and E5-1 is allowed for longer than 5 days.

Restrict signs mounted on portable sign supports shown in the LOW-MOUNTING HEIGHT and HIGH-MOUNTING HEIGHT details to a maximum surface area of 16 square feet.

MINIMUM BALLAST
(For each side of sign support base)

Sign Panel Mounting Height (ft)	Number of 25 lb sandbags for 4' x 4' sign panel
1'	6
5'	8
7'	10

Note: The number of sandbags are based on a wind speed of 55 MPH. Place sandbags at or near the ends of sklds.

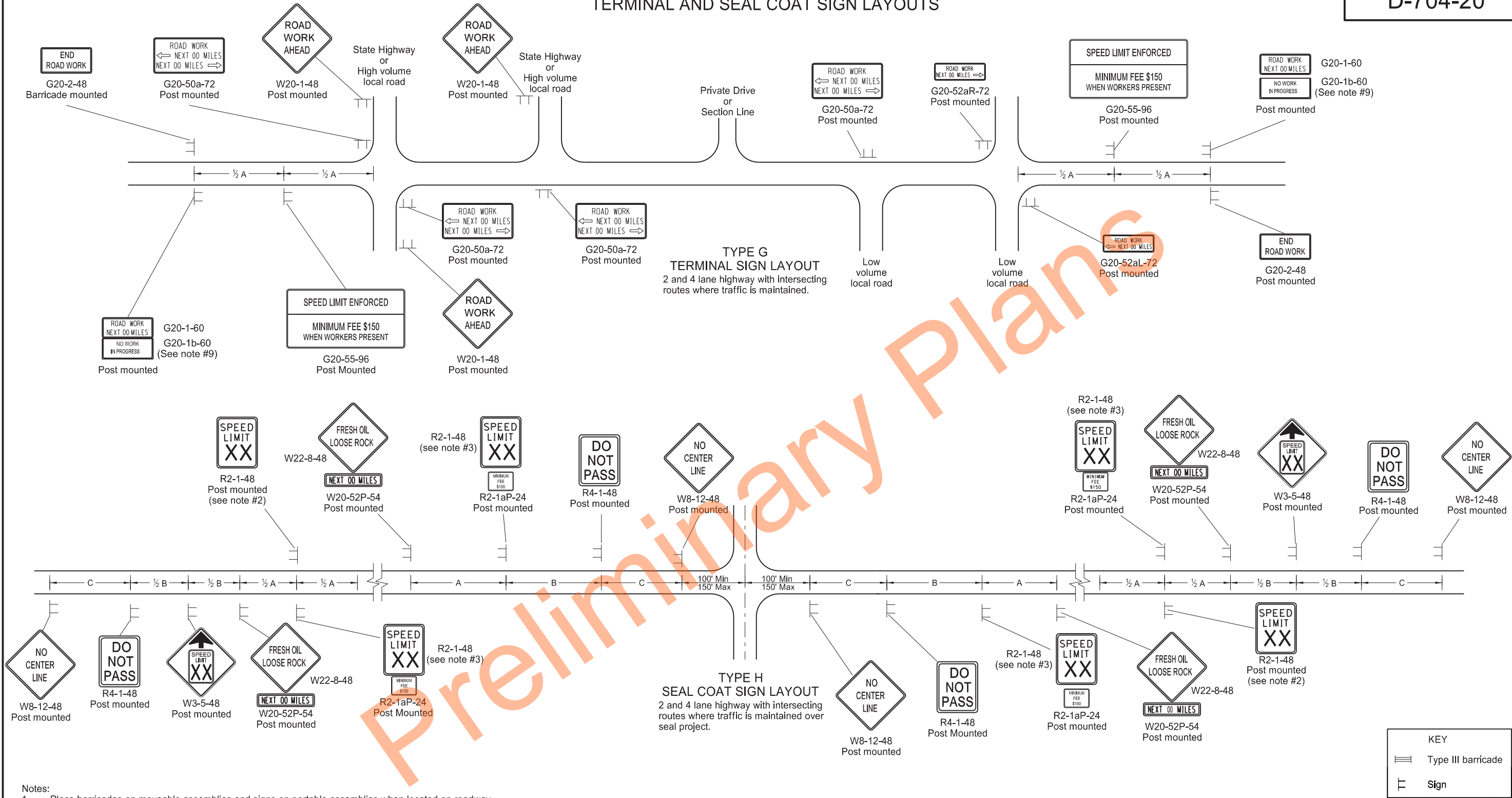
NORTH DAKOTA	
DEPARTMENT OF TRANSPORTATION	
10-04-13	
REVISIONS	
DATE	CHANGE
11-14-13	Revised Note 6
9-27-17	Updated to active voice
11-01-19	Revised 60"x24" sign detail
8-01-24	Electronic Stamp/Signature



08/01/24

TERMINAL AND SEAL COAT SIGN LAYOUTS

D-704-20



Notes:

- Place barricades on moveable assemblies and signs on portable assemblies when located on roadway.
- Determine the exact speed limit in the field, based on location and conditions.
- Determine the reduced speed limit based on the in place speed limit before construction. Where speed limit reductions exceed 30 MPH, install a second speed limit sign with the desired speed reduction (not to exceed 30 MPH.) Place the second speed limit sign at 1/2 B.
- Install flags on warning signs in urban areas when signs are not portable. Mount 24 inch square flags perpendicular to the edges of the sign, and at such a distance above the edge that the flag does not touch the sign when limp.
- Cover existing speed limit signs within a reduced speed zone.
- On seal coat projects, place signs R2-1-48, R2-1aP-24, R4-1-48, W22-8-48 and W20-52P-54 after all important intersections and at five mile intervals. Place sign W8-12-48 after all important intersections and at 2 mile intervals until short term center line pavement marking is placed.
- As an option, use portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Drawing D-704-14.
- Cover or remove speed limit signs from layout Type H when loose aggregate is removed.
- Install sign G20-1b-60 when work is suspended for winter.
- Use other traffic control layouts in immediate work areas. Place sign R2-1aP-24 below speed limit signs in reduced speed limit work areas.
- Sign G20-55-96 is not required if this layout is part of other traffic control that contains this sign, or the work is less than 15 days.
- Recommend using 40 mph speed limit in vicinity of workers, unless location and conditions dictate otherwise.

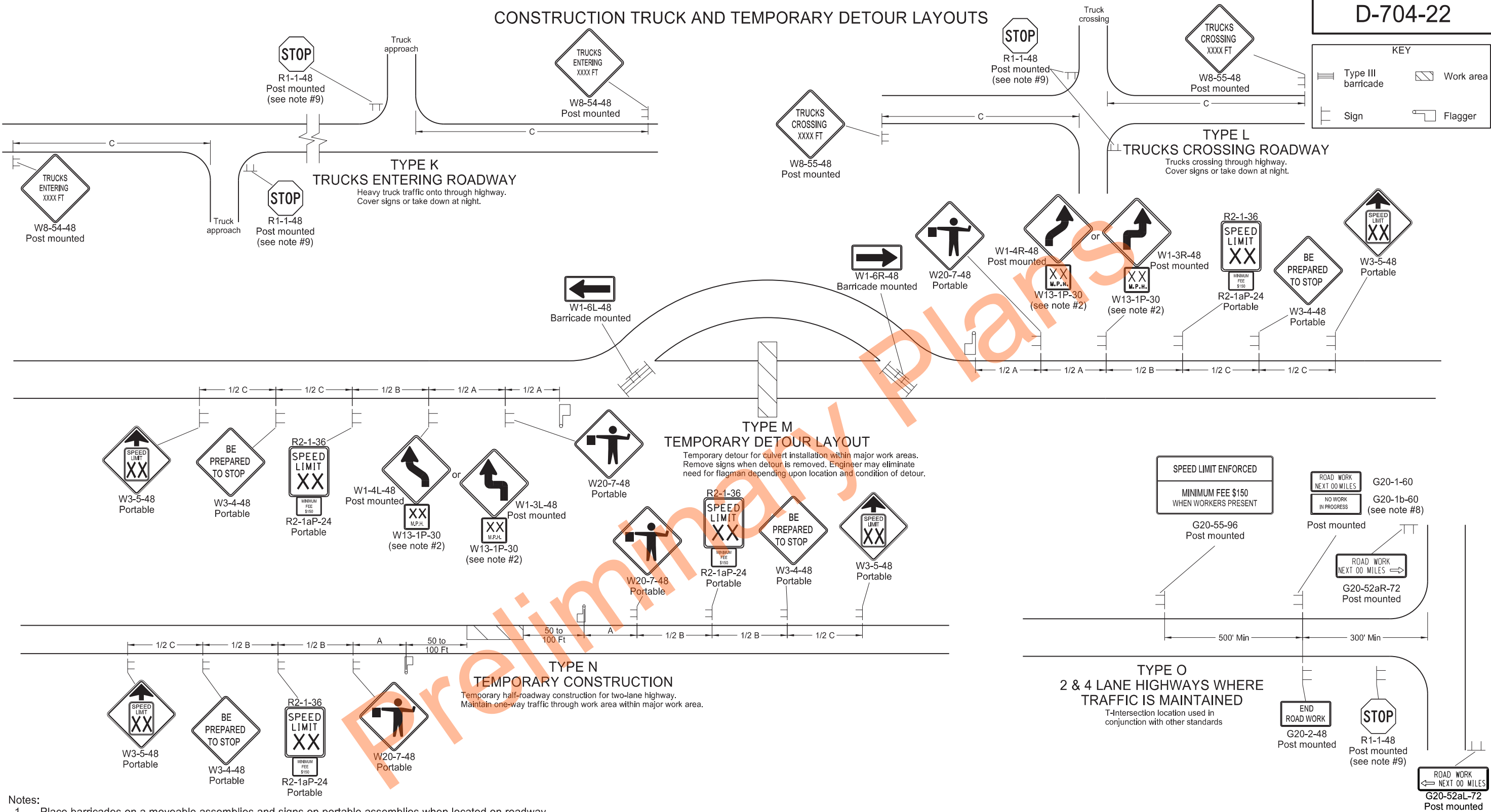
ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 80 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE
08-17-17	Updated notes & sign numbers
11-01-19	Updated note & sign
12-08-21	Switched order of Road Work and Spd Limit Enforced & added Dollars At Work
11-29-22	Removed Dollars At Work
06-30-25	Legislative Changes



CONSTRUCTION TRUCK AND TEMPORARY DETOUR LAYOUTS

D-704-22



Notes:

- Place barricades on a moveable assemblies and signs on portable assemblies when located on roadway.
- Where necessary, safe speed to be determined by the Engineer.
- Determine the reduced speed limit based on the in-place speed limit before construction. Where speed reductions exceed 30 mph, install a second speed limit sign with the desired speed reduction (not to exceed 30 mph.) Place the second speed limit sign at 1/2 B.
- Install flags on warning signs in urban areas when signs are not portable. Mount 24 inch square flags perpendicular to the edges of the sign, and at such a distance above the edge that the flag does not touch the sign when limp.
- Cover existing speed limit signs within a reduced speed zone.
- Covered (when approved by engineer) or obliterated pavement marking measured as Obliteration of Pavement Marking.
- As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
- Install sign G20-1b-60 when work is suspended for winter.
- If existing stop sign is in place, a 48" stop sign is not required.
- Sign G20-55-96 is not required if layout is part of other traffic control that contains this sign, or if work is less than 15 days.
- Recommend using 40 mph speed limit in vicinity of workers, unless location and conditions dictate otherwise.

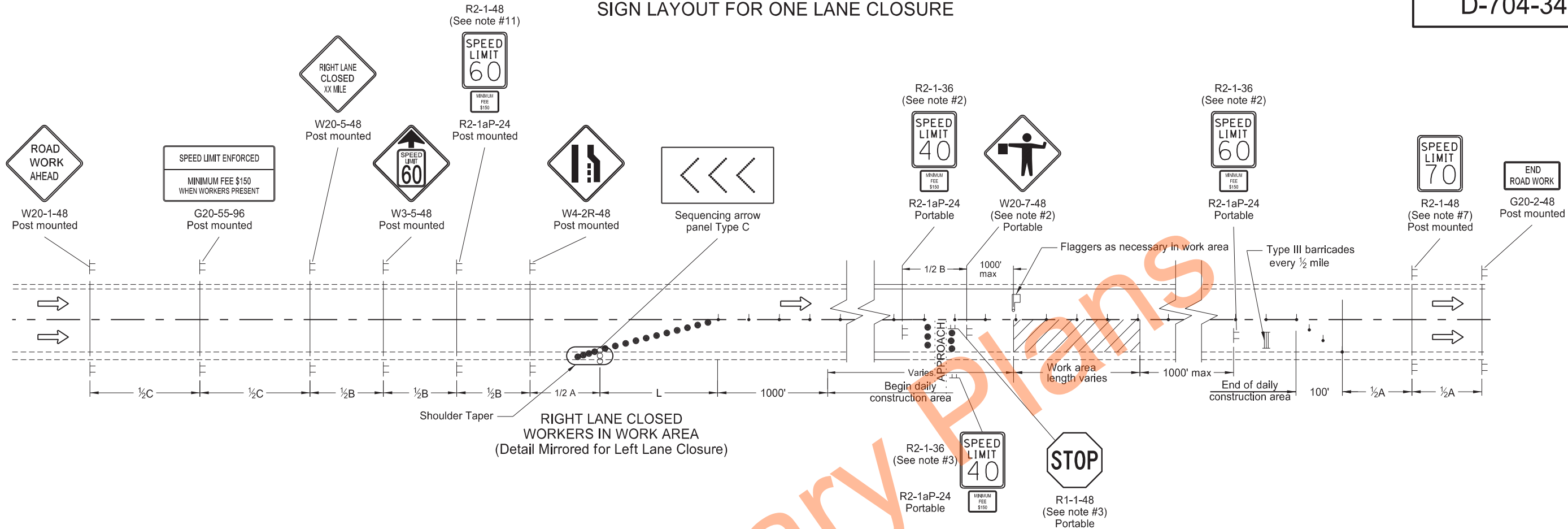
ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 80 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE
08-17-17	Update notes & sign numbers
11-01-19	Revised sign numbers & note 7
12-09-21	Added Speed Limit Enforced and Dollars At Work signs
11-29-22	Removed Dollars At Work
06-30-25	Legislative Changes



SIGN LAYOUT FOR ONE LANE CLOSURE

D-704-34



Notes:

1. Install advance signs for flagging when flaggers are flagging.
2. Move the advanced flagger sign and speed limit signs as the work area moves through the construction zone. When the work area is not visible from the flagger, move the flagger station so the work area is visible. Place the 40 mph speed limit sign at 1/2A in advance of the flagger sign and move the 60 mph speed limit sign. Cover or remove the 40 mph speed limit and the Minimum Fee \$150 signs upon completion of the work day or when workers are not present. Determine the exact speed limit in the field, dependent on location and conditions.
3. Approaches: When the work area encompasses an approach, install a 40 mph speed limit sign to control the approach. Cover the existing stop sign and install a new portable stop sign when the approach is on the side of the lane closure. Remove the approach speed limit sign once the main line 40 mph speed zone is moved past the approach.
4. Variables:
 - S=Numerical value of speed limit or 85th percentile
 - W=The width of taper.
 - L=Minimum length of taper, or SxW for freeways, expressways, and all other roads with speeds of 45 mph or greater, or (WxSxS)/60 for urban, residential, and other streets with speeds of 40 mph or less.
5. Space delineator drums for tapering traffic at the dimension "S". Space tubular markers used for tangents at 2 times dimension "S".
6. Place sequencing arrow panels at the beginning of the taper when possible. Where shoulder width does not provide sufficient room, move the panel closer to the work area and place on the roadway surface.
 - Use Type A on roadways with slow moving traffic speeds and low volume (25 mph or less and 750 ADT or less).
 - Use Type B on roadways with moderate traffic speeds and volumes (40 mph or less and 5000 ADT or less).
 - Use Type C on roadways with high traffic speeds and volumes (over 40 mph or over 5000 ADT).
7. Re-establish the speed limit. Determine the exact speed limit in the field, dependent on location and conditions.
8. Cover existing speed limit signs within a reduced speed zone.
9. Install flags on warning signs in urban areas when signs are not portable. Mount 24 inch square flags perpendicular to the edges of the diamond sign, and at such a distance above the edge that the flag does not touch the sign when limp.
10. Determine the reduced speed limit dependent on the in place speed limit before construction. Where speed limits are to be reduced more than 30 mph, install a second speed limit sign with the desired speed reduction (not to exceed 30 mph.) Place the second speed limit sign at 1/2B.
11. As an option use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
12. Sign G20-55-96 is not required if this layout is part of other traffic control that contains this sign, or the work is less than 15 days.

KEY	
	Type I barricade
	Type II barricade
	Type III barricade
	Sign
	Delineator drum
	Work area
	Flagger
	Sequencing arrow panel
	Tubular markers

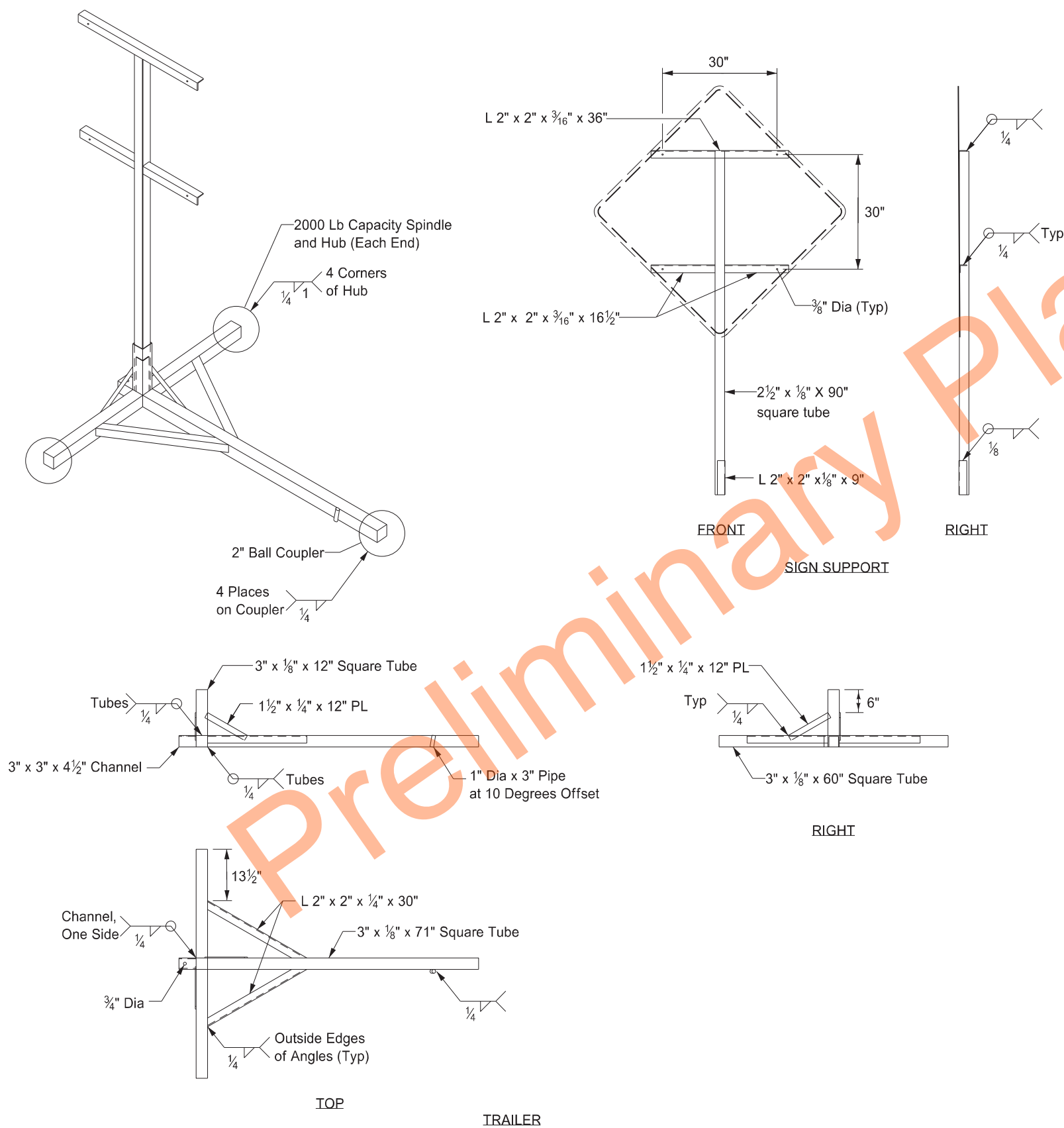
ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 80 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-26-2012	
REVISIONS	
DATE	CHANGE
03-15-16	Removed Do Not Pass signs & updated notes
08-17-17	Updated notes & sign numbers & moved Speed Limit signs
11-01-19	Removed shldr taper details & revised tubular mkr symbol
12-08-21	Switched order of Road Work and Spd Limit Enforced, removed table, & added Dollars At Work
11-29-22 06-30-25	Removed Dollars At Work Legislative Changes

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
06/30/25
ENGINEER
NORTH DAKOTA

PORTABLE SIGN SUPPORT ASSEMBLY

D-704-50



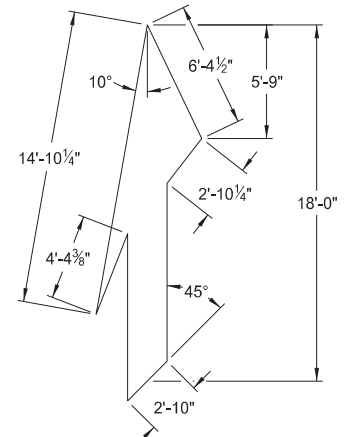
Notes:

1. Maximum 250 pound weight of assembly.
2. Use a 14" wheel and tire.
3. Use no automotive and equipment axle assemblies for trailer-mounted sign supports.
4. Other NCHRP 350 or MASH crash tested assemblies are acceptable.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-23-10	
REVISIONS	
DATE	CHANGE
12/02/2020	Updated Note to active voice.



D-762-1



41 S. F.

[illegible]

46 S. F.

Centerline Pavement Marking Skip Spacing Detail

4 S. F. 22 S. F. 34.5 S. F.

Shldr, if present

6" yellow $\bar{C}$ (See Notes)

6" yellow barrier stripe (See Notes)

4" space between lines

Bands at right angles to pavement

2'

3.3'

6.6'

16"

6'

1.6'

$\bar{C}$ of driving lane

2'

*Stop line 8' from gate, if present

26' to nearest rail

Shldr, if present

10'

24'

20'

16'

60'

See Advanced Placement Distance table at right

W10-1

Notes:

Mark a three lane roadway with a centerline for two-lane approach operation on the approach to a crossing. On multi-lane roads, extend the transverse bands across all approach lanes, and use individual R X R symbols in each approach lane.

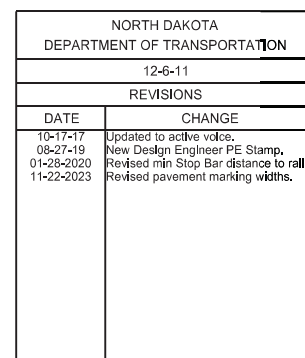
See plans for correct message. Use white pavement markings unless noted otherwise.

R15-1

RAILROAD CROSSING ROAD

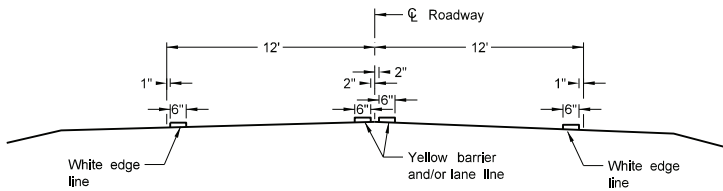
RAILROAD cross & 2 R's 60.5 S.F.
3 Bands (12 lane) 72 S.F.

*Stop Bar nearest crossing - 8' from gate or 26' to nearest rail, whichever is further from tracks

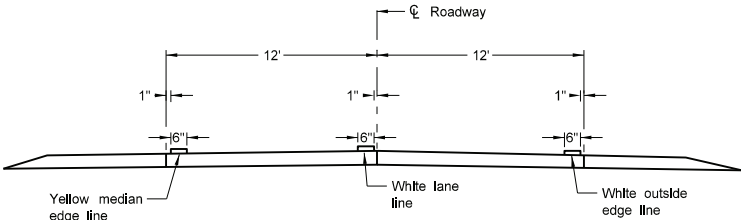


PAVEMENT MARKING

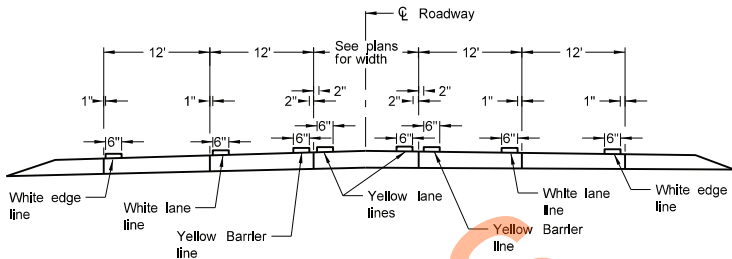
D-762-4



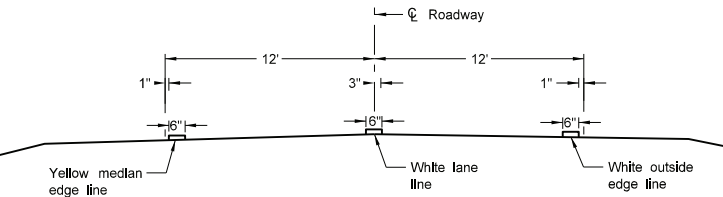
Two Lane Two Way
RURAL ROADWAY



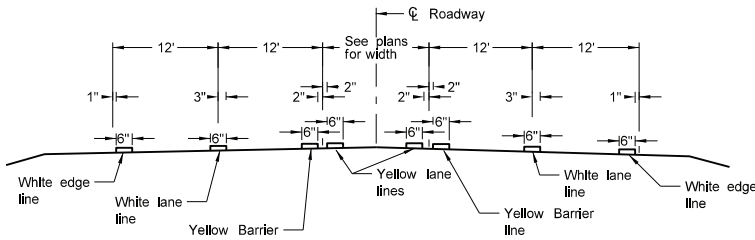
Two Lane Roadway
INTERSTATE HIGHWAY
Concrete Section



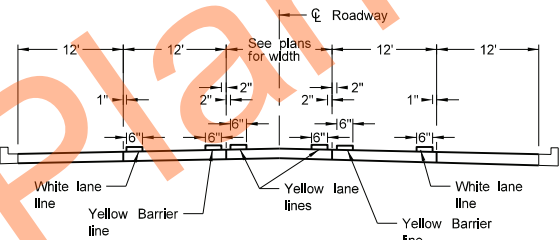
RURAL FIVE LANE ROADWAY
Concrete Section



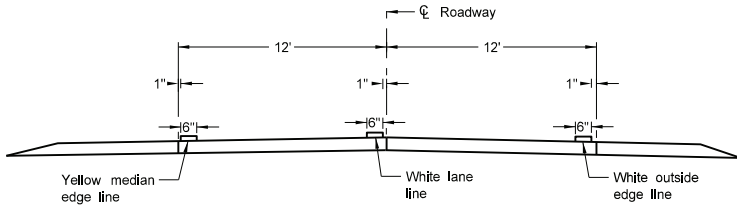
Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Asphalt Section



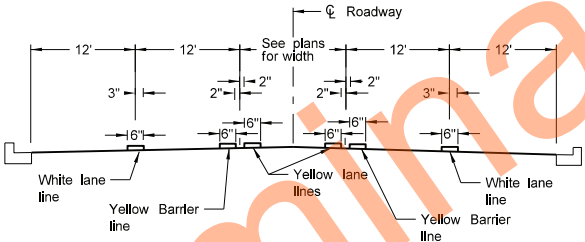
RURAL FIVE LANE ROADWAY
Asphalt Section



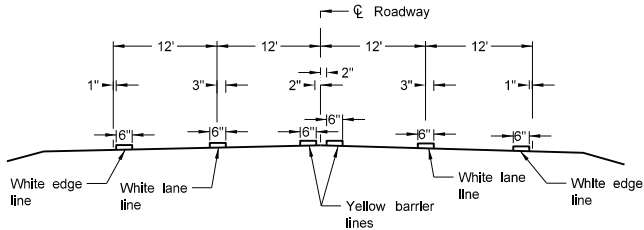
URBAN FIVE LANE SECTION
Concrete Section



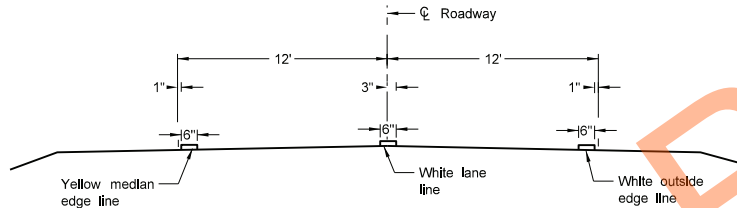
Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Concrete Section



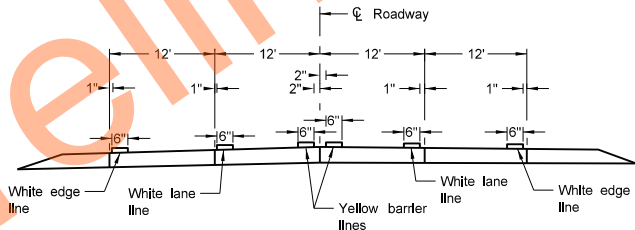
URBAN FIVE LANE SECTION
Asphalt Section



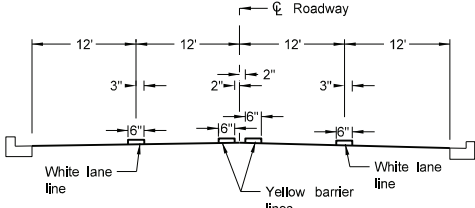
RURAL FOUR LANE ROADWAY
Asphalt Section



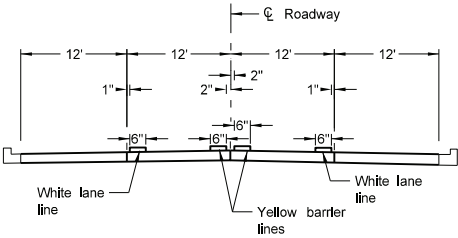
Two Lane Roadway
INTERSTATE HIGHWAY
Asphalt Section



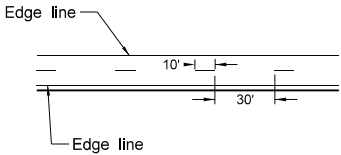
RURAL FOUR LANE ROADWAY
Concrete Section



URBAN FOUR LANE SECTION
Asphalt Section



URBAN FOUR LANE SECTION
Concrete Section



CENTERLINE PAVEMENT MARKING SKIP SPACING DETAIL

NOTES:

1. Continue edge lines through private drives and field drives. Break edge lines for intersections.

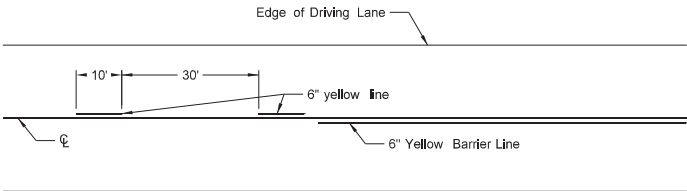
For section lines, county roads, and street approaches, stripe the radii and edge lines of the paved surface within the right of way except where curb and gutter is present.
2. Normal width line - 6 inches wide for freeways, expressways, and ramps; 6 inches for all other roadways with speed limits > 40 mph.
3. Use 4 or 6 inch wide pavement marking for all other roadways with speed limits < 40 mph.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-1-10	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
08-27-19	New Design Engineer PE Stamp.
11-22-23	Revised pavement marking widths.
07-09-24	Modified Note 1.

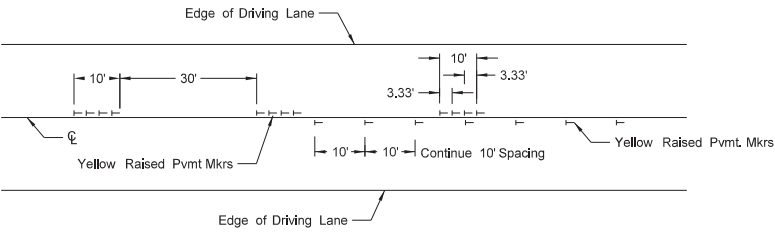


SHORT-TERM PAVEMENT MARKING

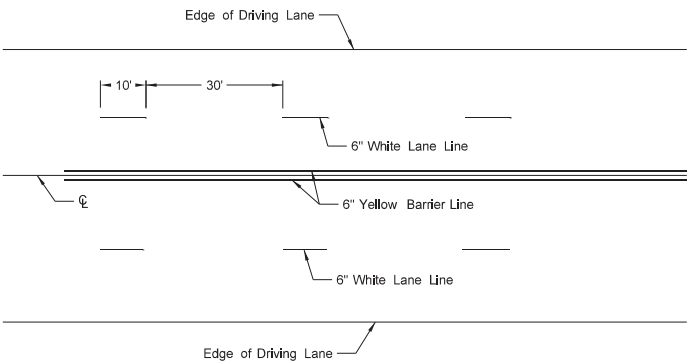
D-762-11



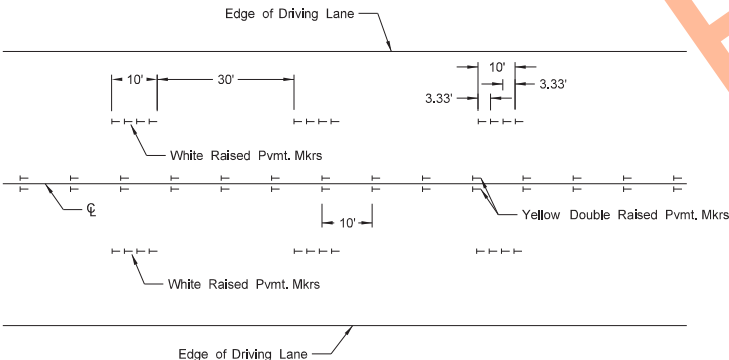
Painted or Tape Lines



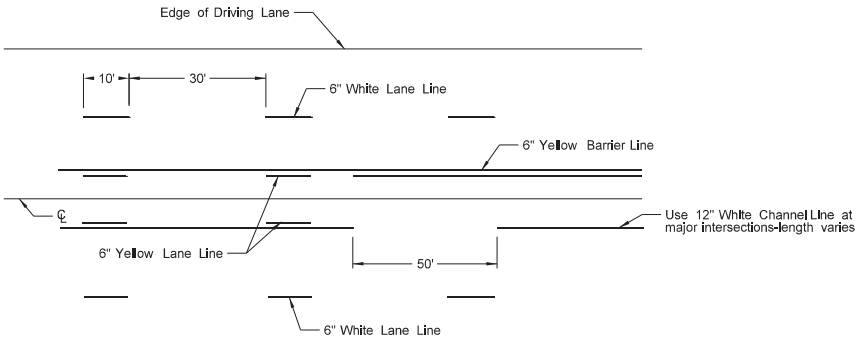
Raised Pavement Markers
TWO-LANE TWO-WAY ROADWAY



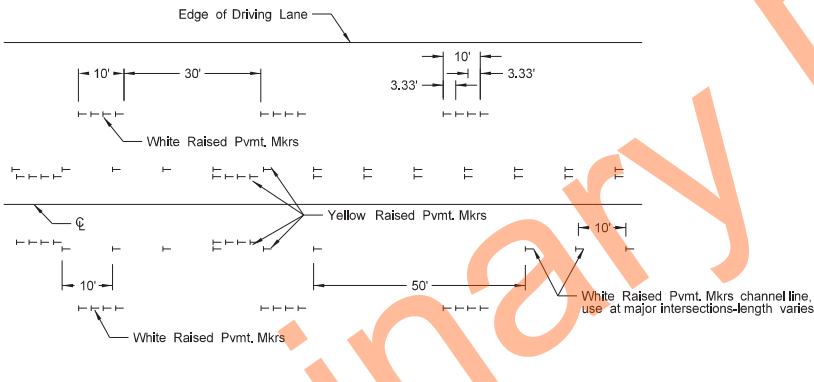
Painted or Tape Lines



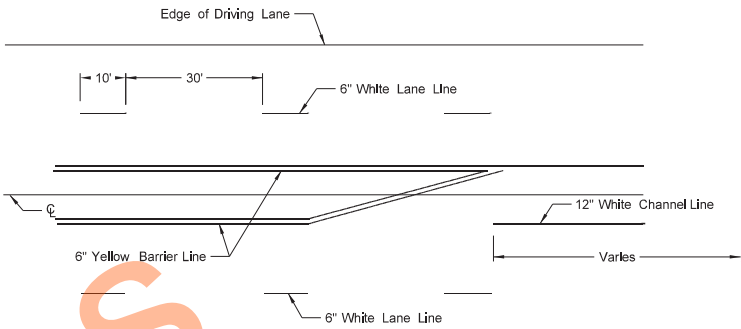
Raised Pavement Markers
FOUR LANE ROADWAY



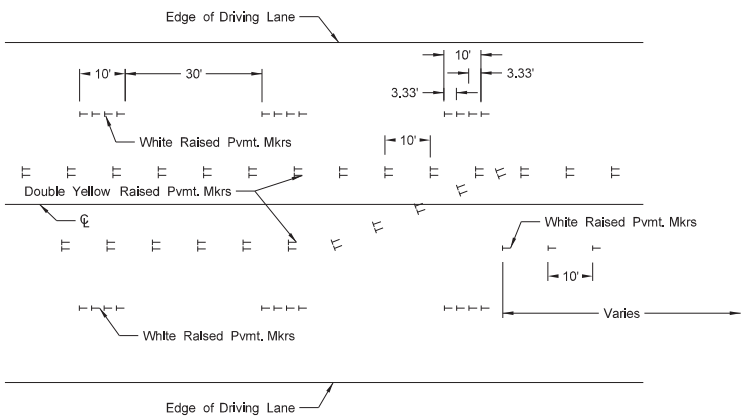
Painted or Tape Lines



Raised Pavement Markers
FIVE LANE ROADWAY TWO WAY LEFT TURN



Painted or Tape Lines



Raised Pavement Markers
FIVE LANE ROADWAY WITH MARKED ISLANDS

- NOTES:
1. Place no passing zones on two-lane two-way roadways as shown. In lieu of short term no passing zone pavement markings, place no passing zone signs. Replace no passing zone signs with short term no passing zone pavement marking within three days.
 2. Place short term center line stripe (paint) on top lift to match exact placement of permanent stripe.
 3. Remove raised markers and tape markings after permanent pavement marking is installed.
 4. Normal width line - 6 inches wide for freeways, expressways, and ramps;
6 inches for all other roadways with speed limits > 40 mph.
 5. Use 4 or 6 inch wide pavement marking for all other roadways with speed limits ≤ 40 mph.
 6. Wide lines - 8 inches wide if 4 inch normal width lines are used and
12 inches wide if 6 inch normal width lines are used.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-1-10	
REVISIONS	
DATE	CHANGE
3-29-16	Re-numbered to be D-762-11 (previously was D-762-6)
10-17-17	Updated to active voice.
8-27-19	New Design Engineer PE Stamp.
11-22-23	Revised pavement marking widths
1-17-24	Revised wide pvmt marking width.

