Docusign Envelope ID: 6D3D951D-85D2-498F-8511-7553231B3899

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	HES-6-999(064)	24494	1	1

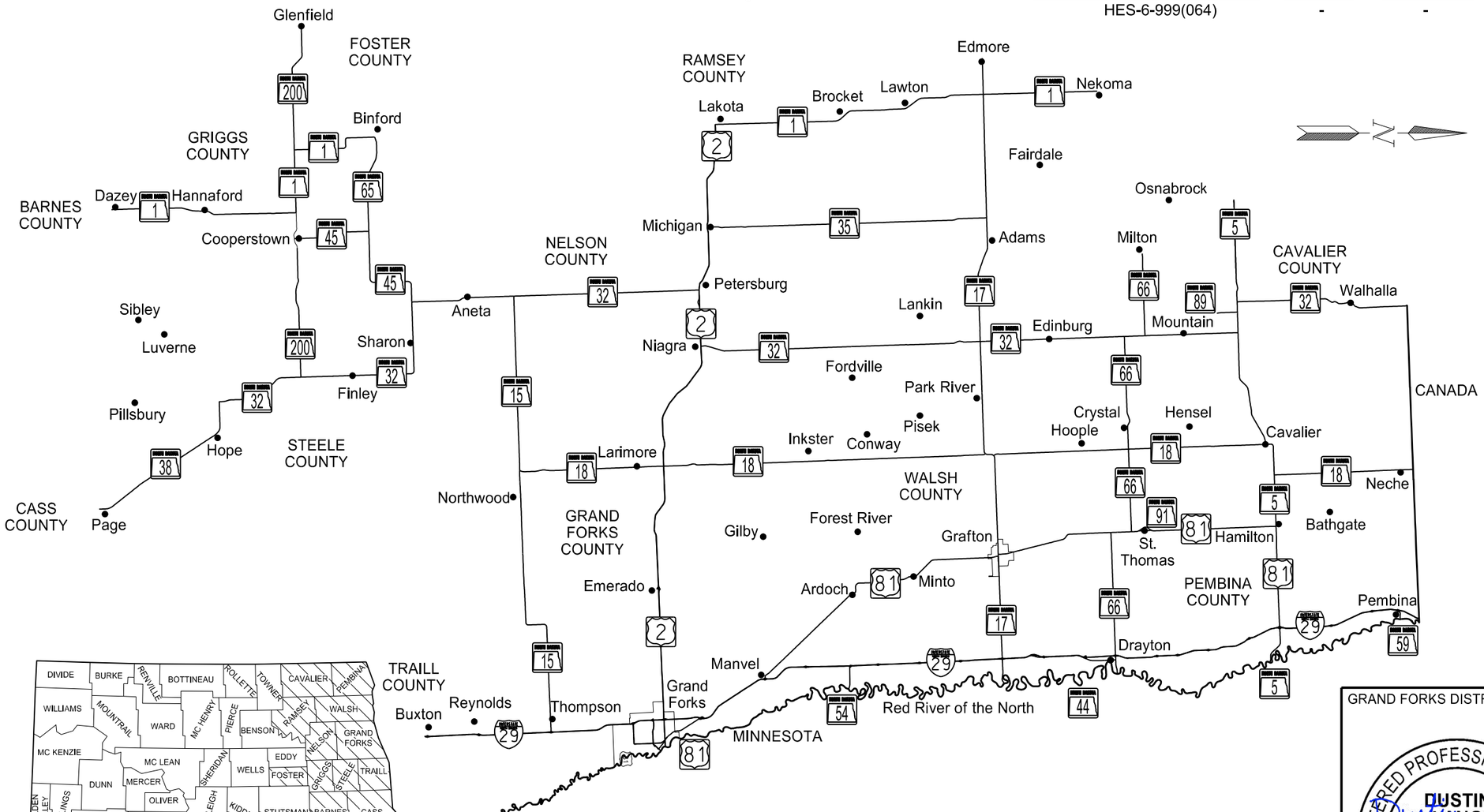
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

HES-6-999(064)

Barnes, Cass, Cavalier, Foster, Grand Forks, Griggs,
Nelson, Pembina, Ramsey, Steele, Traill, and Walsh Counties
Various US & State Highways - Grand Forks District
Pavement Marking

GOVERNING SPECIFICATIONS	Date Published and Adopted by the North Dakota Department of Transportation
Standard Specifications	07/01/2024
Supplemental Specifications	NONE

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
HES-6-999(064)	-	-



STATE COUNTY MAP

DESIGNER
Joshua Twamley, E.I.

ND DEPARTMENT OF TRANSPORTATION
GRAND FORKS DISTRICT

01/15/25

GRAND FORKS DISTRICT

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/9/2025 7:17:58 AM jtwamley R:\project\60999000.064\District\Sheets\001TS_Title\001TS_001_TitleSheet.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	2	1

TABLE OF CONTENTS

PLAN SECTIONS

LIST OF STANDARD DRAWINGS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HES-6-999(064)	6	1

NOTES

100-P01 PROJECT COORDINATION: Coordinate with Engineer at least one week prior to beginning work to determine if roadway segments are prepared for work to begin. The following areas are excluded from pavement marking due to active projects:

1. ND 1 – RP 181.581 to RP 200.526
2. US 2 WB – RP 306.819 to RP 317.046
3. US 2 – Emerado Interchange
4. ND 5 – RP 314.009 to RP 322.180
5. ND 15 – RP 89.872 to RP 114.902
6. ND 17 - RP 77.962 to RP 82.122
7. ND 18 – RP 183.378 to RP 197.571
8. ND 18 – RP 239.681 to RP 242.000
9. I 29 NB – RP 147.226 to RP 161.700
10. I 29 – Interchange 164
11. ND 66 – RP 129.922 to RP 130.428 (Eastbound ONLY)

Segments may be added or removed depending upon projects under contract during the 2025 construction season.

704-P01 TRAFFIC CONTROL FOR PAVEMENT MARKING OPERATION: Maintain traffic at all times. Provide traffic control based on the following list:

1. D-704-27

Include all costs associated with traffic control for painting pavement markings in the contract unit price “PVMT MK INSTALLATION”.

704-P02 TRAFFIC CONTROL FOR PAVEMENT MARKING MESSAGE OPERATION: Maintain traffic at all times. Provide traffic control based on the following list:

1. D-704-14, Note 6
2. D-704-15, Type A

Any other method of traffic control must be submitted to the Engineer for approval prior to use in the field.

Include all costs associated with traffic control and flagging for painting pavement messages in the contract unit price “PVMT MK PAINTED-MESSAGE”.

762-P01 ESTIMATED QUANTITIES: Total pavement marking quantity is to the nearest whole mile for bidding purposes.

762-P02 PAVEMENT MARKING INSTALLATION: Install water-based pavement marking paint. Installation will be paid by the mile for each 6 IN painted line when applied, completed, and accepted. Unless changes are made and approved by the Engineer, field measurements will not be made for bid item “PVMT MK INSTALLATION.”

762-P03 PAVEMENT MARKING AT REST AREAS: Apply 4 IN White and Blue Pavement Marking to parking spaces at Larimore Rest Area at the JCT of US HWY 2 and ND HWY 18 and Alexander Henry Rest Area at RP 179 – Northbound and Southbound I-29.

Quantities for the Larimore Rest Area:
- 4IN White Line = 1,144 LF
- 4IN Blue Line = 236 LF

Quantities for the Alexander Henry Rest Area – NB/SB Sites:
- 4IN White Line = 2,640 LF
- 4IN Blue Line = 338 LF

Refer to Section 120 Sheets 40 and 46 for layouts of the parking spaces.

Include all costs associated with the installation of 4 IN lines in the contract unit price “PVMT MK PAINTED 4IN LINE”.

762-P04 EDGE LINES: Discontinue edge lines for County, Township, and City roads, and where curb and gutter are present.

Quantities have been included for painting the radii of interchange connections, intersections of State Highways, US Highways, and paved County Roads.

Installation of edge lines for wraparounds on US Highway 2 are to be for US Highways, State Highways, and paved County Roads only.

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HES-6-999(064)	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
103	0100	CONTRACT BOND	L SUM	1	1
702	0100	MOBILIZATION	L SUM	1	1
762	0103	PVMT MK PAINTED-MESSAGE	SF	16,324	16,324
762	0109	PVMT MK INSTALLATION - 6IN	MILE	2,050	2,050
762	1104	PVMT MK PAINTED 4IN LINE	LF	38,926	38,926
762	1106	PVMT MK PAINTED 6IN LINE	LF	4,593	4,593
762	1108	PVMT MK PAINTED 8IN LINE	LF	2,996	2,996
762	1112	PVMT MK PAINTED 12IN LINE	LF	108,822	108,822
762	1124	PVMT MK PAINTED 24IN LINE	LF	8,161	8,161
762	1140	PVMT MK PAINTED CURB TOP & FACE	LF	1,573	1,573

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HES-6-999(064)	10	1

BASIS OF ESTIMATE

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	RDWY (MILES)	EDGE LINE (MILES)	℄ SKIP (MILES)	BARRIER (MILES)	PVMT MK INSTALL (MILES)	12IN LINE (LF)
ND 1	Jct ND 26 N to County Line	95.662	99.669	4.007	8.014	1.002	0.332	9.348	-
ND 1	CO LN N to Municipal Section Hannaford	99.669	104.070	4.401	8.802	1.100	0.720	10.622	-
ND 1	Municipal Section Hannaford	104.070	104.789	0.719	0.926	0.028	1.218	2.172	-
ND 1	Municipal Section Hannaford to Jct ND 200	104.789	113.714	8.925	17.850	2.231	1.314	21.395	-
ND 1	E Jct ND 200 (Cooperstown) to W Jct ND 200	113.714	119.821	6.107	12.214	1.527	0.369	14.110	588
ND 1	W Jct ND 200 N to Jct ND 65 (Binford)	119.821	128.493	8.672	17.344	2.168	5.261	24.773	53
ND 1	Jct US 2 (Lakota) N to County Line	162.802	173.833	11.031	22.062	2.758	1.707	26.527	-
ND 1	CO LN N to Lawton	173.833	181.581	7.748	15.496	1.937	1.108	18.541	-
ND 5	District Boundary to Jct ND 32 (Hallson)	288.966	302.001	13.035	26.070	3.259	4.956	34.285	-
ND 5	Jct ND 32 (Hallson) E to Cavalier	302.001	313.271	11.270	22.512	3.279	3.848	29.639	1,394
ND 5	Jct I-29 (Joliette) E to Red River	332.003	335.813	3.810	7.620	0.953	1.163	9.736	-
ND 15	E Jct ND 18 to Jct I-29	114.902	134.137	19.235	38.470	4.809	3.529	46.808	-
ND 17	Jct ND 1 to Adams	82.122	96.973	14.851	29.702	3.713	3.881	37.296	-
ND 17	Adams to Jct ND 32	96.973	106.314	9.341	18.682	2.335	0.578	21.595	157
ND 17	Jct ND 32 to Park River Municipal	106.314	111.310	4.996	9.992	1.249	2.096	13.337	-
ND 17	Park River Municipal	111.310	112.848	1.538	-	0.740	3.382	4.122	122
ND 17	Park River Municipal to S ND Jct 18	112.848	117.243	4.395	8.790	1.099	0.815	10.704	190
ND 17	N Jct ND 18 E to W End of Grafton-School Road	118.119	127.030	8.911	17.822	2.228	1.379	21.429	264
ND 17	Grafton-School Road E to Grafton-Hill Ave	127.030	127.738	0.708	-	0.275	1.238	1.513	359
ND 17	Grafton-Hill Ave E to Grafton Municipal Station 1+37	127.738	127.922	0.184	-	0.047	0.432	0.479	655
ND 17	Grafton Municipal Sta 1+37 E to Near Jct I-29	127.922	137.688	9.766	19.532	2.442	2.964	24.938	-
ND 17	Near Jct I-29 E to Red River	137.688	140.372	2.684	5.368	0.671	1.064	7.103	-
					Page Subtotals:			390.470	3,782

Truck Application

ND 1, ND 5, ND 15 & ND 17

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HES-6-999(064)	10	2

BASIS OF ESTIMATE

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	RDWY (MILES)	EDGE LINE (MILES)	℄ SKIP (MILES)	BARRIER (MILES)	PVMT MK INSTALL (MILES)	12IN LINE (LF)
ND 18	W Jct ND 15 N to Larimore	152.185	163.186	11.001	22.002	2.750	0.826	25.578	565
ND 18	Larimore Municipal	163.186	163.786	0.600	-	-	1.200	1.200	-
ND 18	Larimore N to Jct US 2	163.786	166.225	2.439	4.878	0.610	1.129	6.617	-
ND 18	Jct US 2 (Larimore) to N 3 Miles	166.225	169.225	3.000	6.000	0.750	0.756	7.506	-
ND 18	3 Mi No of Jct US 2 to CO LN	169.225	183.378	14.153	28.306	3.538	2.091	33.935	-
ND 18	Co Ln to S Jct ND 17	183.378	197.571	14.193	28.386	3.548	1.405	33.339	-
ND 18	W Jct ND 17 N to E Jct ND 17	197.571	198.447	0.876	1.752	0.219	0.672	2.643	-
ND 18	E Jct ND 17 N to Jct CO RD 9	198.447	202.571	4.124	8.248	1.031	0.944	10.223	-
ND 18	Jct Cty Rd 9 N to Co Ln	202.571	207.582	5.011	10.022	1.253	1.517	12.792	-
ND 18	Co Ln to 1 Mile S Hensel	207.582	216.597	9.015	18.030	2.254	0.436	20.720	-
ND 18	1 Mile S of Hensel N to Cavalier	216.597	224.522	7.925	15.850	1.981	1.056	18.887	-
ND 18	E Jct ND 5 N to 1.5M S of Neche	228.609	239.650	11.041	22.082	2.760	0.227	25.069	-
ND 32	Jct ND 38 N to S Jct ND 200	104.086	112.875	8.789	17.578	2.197	0.976	20.751	-
ND 32	S Jct ND 200 N to Finley	112.875	117.362	4.487	8.974	1.122	1.705	11.801	-
ND 32	Finley Municipal Section	117.362	118.090	0.728	-	-	1.456	1.456	-
ND 32	Finley N to Jct ND 45	118.090	130.732	12.642	25.284	3.161	3.407	31.852	264
ND 32	Jct ND 45 N to Aneta	130.732	136.000	5.268	10.536	1.317	1.103	12.956	-
ND 32	Aneta Municipal	136.000	136.350	0.350	0.700	0.087	0.700	1.487	-
ND 32	Aneta N to Jct ND 15	136.350	140.714	4.364	8.728	1.091	0.748	10.567	-
ND 32	Jct ND 15 N to Jct US 2 (Petersburg)	140.714	158.736	18.022	36.044	4.506	1.501	42.051	64
ND 32	Jct US 2 (Niagara) N to Jct ND 17	164.197	191.471	27.274	54.548	6.819	7.333	68.700	169
ND 32	Jct ND 17 N to Edinburg	191.471	198.002	6.531	13.062	1.633	2.705	17.400	63
ND 32	Edinburg N to S Jct ND 66	198.002	205.471	7.469	14.938	1.867	1.995	18.800	228
ND 32	S Jct ND 66 N to E Jct ND 5 (Hallson)	205.471	216.551	11.080	22.160	2.770	1.154	26.084	-
ND 32	W Jct ND 5 N to Walhalla	219.556	230.638	11.082	22.164	2.771	4.746	29.681	-
ND 32	Walhalla Municipal	230.638	231.438	0.800	-	0.200	0.536	0.736	-
ND 32	Walhalla N to State Line	231.438	236.674	5.236	10.472	1.309	0.835	12.616	936
					Page Subtotals:			505.446	2,289

Truck Application

ND 18 & ND 32

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HES-6-999(064)	10	3

BASIS OF ESTIMATE

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	RDWY (MILES)	EDGE LINE (MILES)	℄ SKIP (MILES)	BARRIER (MILES)	PVMT MK INSTALL (MILES)	12IN LINE (LF)
ND 35	Jct US 2 N Municipal Section in Michigan	0.000	0.667	0.667	0.179	-	1.334	1.513	-
ND 35	Michigan N to Nelson - Walsh CO LN	0.667	12.183	11.516	23.032	2.879	1.295	27.206	-
ND 35	CO LN N to Jct ND 17 (Adams)	12.183	27.264	15.081	30.162	3.770	0.751	34.683	-
ND 38	Page N to Jct ND 32 (Hope)	19.519	36.332	16.813	33.626	4.203	2.334	40.163	140
ND 44	Jct I-29 to Drayton	29.434	31.836	2.402	4.804	0.600	0.530	5.934	-
ND 44	Drayton Municipal	31.836	32.636	0.800	-	-	1.600	1.600	-
ND 44	Drayton to Jct ND 66	32.636	32.883	0.247	0.494	0.062	0.428	0.984	-
ND 45	Cooperstown Municipal Section	0.000	0.788	0.788	-	-	1.556	1.556	-
ND 45	Coooperstown N to Jct ND 65	0.788	7.385	6.597	13.194	1.649	1.226	16.069	-
ND 45	Jct ND 65 E-N-E to Jct ND 32	7.385	18.048	10.663	21.326	2.666	4.812	28.804	-
ND 54	I-29 to Red River (Oslo)	7.695	9.958	2.263	4.526	0.566	1.002	6.094	-
ND 59	I-29 to Red River (Pembina)	0.000	1.063	1.063	2.126	-	2.056	4.182	-
ND 65	Jct ND 1 (Binford) E to Jct ND 45	0.000	9.383	9.383	18.766	2.346	2.113	23.225	-
ND 66	District Boundary E to Jct ND 32	93.830	101.868	8.038	16.076	2.010	1.901	19.987	-
ND 66	Jct ND 32 (Gardar) E to Crystal	103.872	112.811	8.939	17.878	2.235	0.883	20.996	-
ND 66	Crystal E to N Jct US 81 (St. Thomas)	112.811	122.947	10.136	20.272	2.534	0.735	23.541	454
ND 66	S Jct US 81 to I-29	124.950	136.933	11.983	23.966	2.996	0.691	27.021	-
ND 66	I-29 to Jct ND 44	136.933	137.339	0.406	0.812	-	0.812	1.624	-
ND 66	Jct ND 44 to RP 138.066 (Bridge)	137.339	138.066	0.727	1.454	0.182	0.153	1.789	-
ND 66	RP 138.066 (Bridge) to Red River	138.066	138.720	0.654	1.308	-	1.308	2.616	-
					Page Subtotals:			289.586	594

Truck Application

ND 38, ND 45, ND 54, ND 65 & ND 66

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	4

BASIS OF ESTIMATE

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	RDWY (MILES)	EDGE LINE (MILES)	℄ SKIP (MILES)	BARRIER (MILES)	PVMT MK INSTALL (MILES)	12IN LINE (LF)
US 81	Manvel to Levant	163.105	169.619	6.514	13.028	1.629	1.324	15.981	-
US 81	Levant NW to N Edge of Ardoch	169.619	175.291	5.672	11.344	1.418	1.634	14.396	984
US 81	N Edge of Ardoch to Minto	175.291	181.246	5.955	11.910	1.489	2.243	15.642	936
US 81	Minto Municipal	181.246	182.088	0.842	0.518	0.210	0.410	1.139	-
US 81	Minto N to Grafton	182.088	190.469	8.381	16.762	2.095	1.815	20.672	-
US 81	Grafton N Urban Limits to N Jct ND 66 St. Thomas	192.414	204.270	11.856	19.646	2.395	1.820	23.861	
US 81	N Jct 66 N 2.54 Mi	204.270	206.800	2.530	5.060	0.633	0.979	6.672	876
US 81	Near N Jct ND 66 St Thomas to Jct ND 5 (Hamilton)	206.800	218.530	11.730	23.460	2.933	2.177	28.570	-
US 81	W Jct ND 5 (Hamilton) E to I-29	218.530	228.353	9.823	19.646	2.456	1.069	23.171	-
US 81	Grand Forks City Limits (27th Ave.) N to I-29	946.409	949.485	3.076	6.152	0.769	1.072	7.993	-
ND 89	Concrete Spur - Par Road	10.000	11.960	1.960	3.920	3.108	0.520	7.548	-
ND 91	St. Thomas Spur	900.000	901.262	1.262	1.000	0.161	1.111	2.272	-
ND 200	Jct ND 20 (Glenfield) E to W Jct ND 1	319.373	331.806	12.433	24.866	3.127	2.507	30.500	253
ND 200	E Jct ND 1 to Cooperstown	337.913	341.441	3.528	7.056	0.882	2.181	10.119	-
ND 200	Cooperstown to S Jct ND 32	341.441	354.115	12.674	25.348	3.169	2.789	31.306	401
					Page Subtotals:			239.841	3,450

Truck Application

US 81, ND 89, ND 91 & ND 200

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

BASIS OF ESTIMATE

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	5

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	4IN LINE (LF)	6IN LINE (LF)	24IN LINE (LF)	Arrows (AR)		CROSSWALK (CW)		CURB	ADA	STOP AHEAD (SA)		RAILROAD (RR)			LOCATIONS	COMMENTS
							# OF ARROWS	ARROWS (SF) 16 SF EACH	# OF CONTINENTAL CROSSWALK	CONTINENTAL CROSSWALK (SF)	PVMT MK TOP & FACE (LF)	BLUE HANDICAP SYMBOL (SF) 6 SF EA	# OF STOP AHEAD	STOP AHEAD (SF) 52 SF EACH	# OF RR MESSAGES	"X" & "RR" (SF) 60.5 SF EACH	24IN BANDS (SF) 72 SF EACH		
ND 1	Jct ND 26 N to County Line	95.662	99.669	-	-	27	-	-	-	-	-	-	1	52	-	-	-	RP 000.153 1 SA	-
ND 1	CO LN N to Municipal Section Hannaford	99.669	104.070	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 1	Municipal Section Hannaford	104.070	104.789	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 1	Municipal Section Hannaford to Jct ND 200	104.789	113.714	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 1	E Jct ND 200 (Cooperstown) to W Jct ND 200	113.714	119.821	-	-	25	6	96	-	-	-	-	-	-	-	-	-	RP 113.740 2 AR, RP 119.761 3 AR	-
ND 1	W Jct ND 200 N to Jct ND 65 (Binford)	119.821	128.493	-	-	20	-	-	-	-	-	-	1	52	-	-	-	RP 119.821 1 SA	-
ND 1	Jct US 2 (Lakota) N to County Line	162.802	173.833	-	-	24	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 1	CO LN N to Lawton	173.833	181.581	-	-	-	-	-	-	-	-	-	-	-	4	242	288	RP 162.802 2 CH, RP 163.060 2 RR, RP 171.330 2 RR	-
ND 5	District Boundary to Jct ND 32 (Hallson)	288.966	302.001	-	-	-	2	32	-	-	-	-	-	-	-	-	-	RP 301.947 2 AR	-
ND 5	Jct ND 32 (Hallson) E to Cavalier	302.001	313.271	48	382	114	16	256	12- 2' x 8'	192	-	-	-	-	1	61	72	RP 307.860 12 AR, RP 313.257 2 AR, RP 313.270 2 RR	-
ND 5	Cavalier Municipal	313.271	314.009	2,308	235	169	-	-	-	-	1,424	6	-	-	-	-	-	2 AR, RP 313.550	See Note 1
ND 5	Jct I-29 (Joliette) E to Red River	332.003	335.813	-	-	-	-	-	-	-	-	-	-	-	2	121	144	RP 332.170 2 RR	-
	Page Subtotals:			2,356	617	379	-	384	-	192	1,424	6		104	-	424	504		

Note 1: Apply 6" Crosswalk Pavement Marking to **Mainline Highways only**. Do not apply pavement marking to side streets.

Hand-operated Application

ND 1 & ND 5

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

BASIS OF ESTIMATE

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	6

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	4IN LINE (LF)	6IN LINE (LF)	24IN LINE (LF)	Arrows (AR)		CROSSWALK (CW)		CURB	STOP AHEAD (SA)		RAILROAD (RR)			LOCATIONS	COMMENTS
							# OF ARROWS	ARROWS (SF) 16 SF EACH	# OF CONTINENTAL CROSSWALK	CONTINENTAL CROSSWALK (SF)	PVMT MK TOP & FACE (LF)	# OF STOP AHEAD	STOP AHEAD (SF) 52 SF EACH	# OF RR MESSAGES	"X" & "RR" (SF) 60.5 SF EACH	24IN BANDS (SF) 72 SF EACH		
ND 15	Jct ND 32 E to 1 Mi W of Northwood	-	-	-	-	40	2	32	-	-	-	1	52	-	-	-	RP 106.866 2 AR	-
ND 15	1 Mi W of Northwood E to E Jct ND 18	107.934	114.902	-	-	-	2	32	-	-	-	-	-	2	121	144	RP 109.360 2 RR	-
ND 15	E Jct ND 18 to Jct I-29	114.902	134.137	-	-	-	-	-	-	-	-	-	-	2	121	144	RP 132.620 2 RR	-
ND 15	Thompson Municipal	-	-	-	-	-	-	-	6 - 2' x 10'	120	-	-	-	-	-	-	-	-
ND 17	Jct ND 1 to Adams	82.122	96.973	-	-	46	-	-	-	-	-	2	104	-	-	-	RP 82.122 2 SA	-
ND 17	Adams to Jct ND 32	96.973	106.314	-	-	-	-	-	-	-	-	-	-	2	121	144	RP 96.980 2 RR	-
ND 17	Jct ND 32 to Park River Municipal	106.314	111.310	-	-	-	2	32	-	-	-	-	-	-	-	-	RP 106.354 2 AR	-
ND 17	Park River Municipal	111.310	112.848	-	-	-	14	224	11 - 2' x 10' ; 8 - 2' x 10' ; 11 - 2' x 5'	490	-	-	-	2	121	144	RP 111.860 2 RR	-
ND 17	Park River Municipal to S ND Jct 18	112.848	117.243	-	-	-	2	32	-	-	-	-	-	-	-	-	RP 117.193 2 AR	-
ND 17	N Jct ND 18 E to W End of Grafton-School Road	118.119	127.030	-	-	-	7	112	10 - 2' x 12'	240	-	-	-	-	-	-	RP 118.159 2 AR, RP 126.928 2 AR, RP 126.966 2 AR	See Note 1
ND 17	Grafton-School Road E to Grafton-Hill Ave	127.030	127.738	-	158	78	21	336	16 - 2' x 6'	436	-	-	-	-	-	-	-	See Note 1 & 2
ND 17	Grafton-Hill Ave E to Grafton Municipal Station 1+37	127.738	127.922	-	377	127	6	96	-	-	-	-	-	-	-	-	-	-
ND 17	Grafton Municipal Sta 1+37 E to Near Jct I-29	127.922	137.688	-	232	-	4	64	14 - 2' x 8' ; 14 - 2' x 6'	392	-	-	-	4	242	288	RP 127.910 4 RR	See Note 3
ND 17	Near Jct I-29 E to Red River	137.688	140.372	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Page Subtotals:			0	767	291		960		1,678	0		156		726	864		

Note 1: Apply 6" Crosswalk Pavement Marking to **Mainline Highways only**. Do not apply pavement marking to side streets.
Note 2: Refer to Section 120 Sheet 18 for Location and Layout of the Continental Crosswalk.
Note 3: Refer to Section 120 Sheet 25 for Location and Layout of the Continental Crosswalk.

Hand-operated Application

ND 15 & ND 17

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

BASIS OF ESTIMATE

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	7

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	4IN LINE (LF)	6IN LINE (LF)	24IN LINE (LF)	Arrows (AR)			CROSSWALK (CW)		STOP AHEAD (SA)		RAILROAD (RR)			LOCATIONS	COMMENTS
							# OF ARROWS	ARROWS (SF) 16 SF EACH	MESSAGE THROUGH ARROWS (SF) 12 SF EACH	# OF CONTINENTAL CROSSWALK	CONTINENTAL CROSSWALK (SF)	# OF STOP AHEAD	STOP AHEAD (SF) 52 SF EACH	# OF RR MESSAGES	"X" & "RR" (SF) 60.5 SF EACH	24IN BANDS (SF) 72 SF EACH		
ND 18	W Jct ND 15 N to Larimore	152.185	163.186	-	-	32	3	48	-	-	-	1	52	-	-	-	RP 157.260 3 AR; RP 152.185 1 SA; RP 152.185 CH	-
ND 18	Larimore Municipal	163.186	163.786	2,876	-	-	-	-	-	12 - 2' x 6'	144	-	-	2	121	144	RP 163.220 2 RR	-
ND 18	Larimore N to Jct US 2	163.786	166.225	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-
ND 18	W Jct ND 17 N to E Jct ND 17	197.571	198.447	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 18	E Jct ND 17 N to Jct CO RD 9	198.447	202.571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 18	Jct Cty Rd 9 N to Co Ln	202.571	207.582	-	-	-	-	-	-	-	-	-	-	2	121	144	RP 205.710 2 RR	-
ND 18	Co Ln to 1 Mile S Hensel	207.582	216.597	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 18	1 Mile S of Hensel N to Cavalier	216.597	224.522	-	118	34	-	-	-	-	-	-	-	-	-	-	Cavalier Municipal	See Note 1
ND 18	S End of Cavalier N to W Jct ND 5	224.522	224.991	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 18	E Jct ND 5 N to 1.5M S of Neche	228.609	239.650	-	-	48	12	192	-	-	-	-	-	-	-	-	RP 228.659 2 AR, RP 233.540 3 AR, RP 233.680 3 AR, RP 239.550 2 AR; RP 233.540 2 CH	-
ND 18	1.5M S of Neche to Canadian Border	239.650	242.147	-	-	980	2	-	24	-	-	-	-	-	-	-	RP 239.650 2 AR; RP 241.933 BORDER CROSSING 2 AR; 239.550 2 CH	-
	Page Subtotal:			2,876	118	1,111	-	240	24	-	144	-	52	-	242	288		

Note 1: Apply 6" Crosswalk Pavement Marking to **Mainline Highways only**. Do not apply pavement marking to side streets.

Hand-operated Application

ND 18

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 3:38:54 PM jtwamley R:\project\60999000.064\District\Sheets\010BE_Basest\020GD_Basest.dgn

BASIS OF ESTIMATE

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	8

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	6IN LINE (LF)	24IN LINE (LF)	Arrows (AR)			STOP AHEAD (SA)		RAILROAD (RR)			LOCATIONS	COMMENTS
						# OF ARROWS	ARROWS (SF) 16 SF EACH	MESSAGE THROUGH ARROWS (SF) 12 SF EACH	# OF STOP AHEAD	STOP AHEAD (SF) 52 SF EACH	# OF RR MESSAGES	"X" & "RR" (SF) 60.5 SF EACH	24IN BANDS (SF) 72 SF EACH		
ND 32	S Jct ND 200 N to Finley	112.875	117.362	-	-	3	48	-	-	-	-	-	-	RP 112.875 3 AR	-
ND 32	Finley Municipal Section	117.362	118.090	185	44	-	-	-	-	-	2	121	144	RP 117.380 2 RR	See Note 1
ND 32	Finley N to Jct ND 45	118.090	130.732	-	20	2	32	-	-	-	2	121	144	RP 130.662 2 AR; RP 126.610 2 RR	-
ND 32	Jct ND 45 N to Aneta	130.732	136.000	-	-	-	-	-	-	-	-	-	-	-	-
ND 32	Aneta Municipal	136.000	136.350	-	-	-	-	-	-	-	-	-	-	-	-
ND 32	Aneta N to Jct ND 15	136.350	140.714	-	-	-	-	-	-	-	2	121	144	RP 136.430 RR	-
ND 32	Jct ND 15 N to Jct US 2 (Petersburg)	140.714	158.736	-	12	-	-	-	-	-	-	-	-	RP 158.736 CH	-
ND 32	Jct US 2 (Niagara) N to Jct ND 17	164.197	191.471		88	-	-	-	-	-	4	242	288	RP 177.790 2 RR; RP 180.49 2 RR; RP 164.197 CH; RP 191.471 CH	-
ND 32	Jct ND 17 N to Edinburg	191.471	198.002	-	12	-	-	-	-	-	-	-	-	RP 191.471 CH	-
ND 32	Edinburg N to S Jct ND 66	198.002	205.471	-	-	-	-	-	-	-	2	121	144	RP 198.270 2 RR	-
ND 32	S Jct ND 66 N to E Jct ND 5 (Hallson)	205.471	216.551	-	15	2	32	-	1	52	-	-	-	RP 205.448 2 AR; RP 216.551 1 SA	-
ND 32	W Jct ND 5 N to Walhalla	219.556	230.638	-	17	-	-	-	1	52	-	-	-	RP 219.722 1 SA	-
ND 32	Walhalla Municipal	230.638	231.438	984	-	-	-	-	-	-	-	-	-	-	See Note 1
ND 32	Walhalla N to State Line	231.438	236.674	-	1,032	2	-	24	-	-	2	121	144	RP 231.440 2 RR; RP 236.606 BORDER CROSSING 2 AR	-
	Page Subtotal:			1,169	1,240	-	112	24	-	104	-	847	1,008		

Note 1: Apply 6" Crosswalk Pavement Marking to **Mainline Highways only**. Do not apply pavement marking to side streets.

Hand-operated Application

ND 32

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HES-6-999(064)	10	9

BASIS OF ESTIMATE

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	6IN LINE (LF)	24IN LINE (LF)	Arrows (AR)		CROSSWALK (CW)		STOP AHEAD (SA)		RAILROAD (RR)			LOCATIONS	COMMENTS
						# OF ARROWS	ARROWS (SF) 16 SF EACH	# OF CONTINENTAL CROSSWALK	CONTINENTAL CROSSWALK (SF)	# OF STOP AHEAD	STOP AHEAD (SF) 52 SF EACH	# OF RR MESSAGES	"X" & "RR" (SF) 60.5 SF EACH	24IN BANDS (SF) 72 SF EACH		
ND 35	Jct US 2 N Municipal Section in Michigan	0.000	0.667	-	124	-	-	-	-	-	-	2	121	144	RP 0.035 2 RR	-
ND 35	Michigan N to Nelson - Walsh CO LN	0.667	12.183	-	-	-	-	-	-	-	-	2	121	144	RP 9.670 2 RR	-
ND 35	CO LN N to Jct ND 17 (Adams)	12.183	27.264	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 38	Page N to Jct ND 32 (Hope)	19.519	36.332	-	37	2	32	-	-	1	52	-	-	-	RP 19.930 2 AR; RP 36.319 1 SA	-
ND 44	Jct I-29 to Drayton	29.434	31.836	-	-	-	-	-	-	-	-	-	-	-	-	
ND 44	Drayton Municipal	31.836	32.636	733	-	-	-	24 - 2' x 6'	288	-	-	-	-	-	-	See Note 2
ND 44	Drayton to Jct ND 66	32.636	32.883	-	21	-	-	-	-	1	52	-	-	-	RP 32.883 1 SA	
ND 45	Cooperstown Municipal Section	0.000	0.788	1,189	21	-	-	-	-	-	-	-	-	-	RP 0.000 CH	See Note 1
ND 45	Coooperstown N to Jct ND 65	0.788	7.385	-	25	-	-	-	-	-	-	-	-	-	-	-
ND 45	Jct ND 65 E-N-E to Jct ND 32	7.385	18.048	-	-	-	-	-	-	-	-	-	-	-	-	-
								-								
ND 65	Jct ND 1 (Binford) E to Jct ND 45	0.000	9.383	-	49	-	-	-	-	1	52	-	-	-	RP 000.138 1 SA	-
ND 66	District Boundary E to Jct ND 32	93.830	101.868	-	17	-	-	-	-	-	-	-	-	-	-	-
ND 66	Jct ND 32 (Gardar) E to Crystal	103.872	112.811	-	12	-	-	-	-	-	-	2	121	144	RP 112.810 2 RR	-
ND 66	Crystal E to N Jct US 81 (St. Thomas)	112.811	122.947	-	83	3	48	-	-	3	156	-	-	-	RP 122.867 3 AR; RP 114.916 2 SA; RP 122.947 1 SA	-
ND 66	S Jct US 81 to I-29	124.950	136.933	-	42	3	48	-	-	1	52	-	-	-	RP 124.950 1 SA	-
ND 66	I-29 to Jct ND 44	136.933	137.339	-	21	-	-	-	-	1	52	2	121	144	RP 137.339 1 SA; RP 137.250 2 RR	-
ND 66	Drayton Municipal	-	-	-	36	-	-	-	-	-	-	-	-	-	-	-
ND 66	Jct ND 44 to RP 138.066 (Bridge)	137.339	138.066	-	-	-	-	-	-	-	-	-	-	-	-	-
ND 66	RP 138.066 (Bridge) to Red River	138.066	138.720	-	-	-	-	-	-	-	-	-	-	-	-	-
	Page Subtotal:			1,922	488	-	128	-	288	-	416	-	484	576		

Note 1: Apply 6" Crosswalk Pavement Marking to **Mainline Highways only**. Do not apply pavement marking to side streets

Note 2: Apply 6" Crosswalk Line Pavement Marking across ND 44 at Leslie Ave, Harper Ave, Lincoln, Ave, Grant Ave, Mill Ave, and Divide Ave. Apply Continental Crosswalk across ND 44 at Wallace Ave, and Melbourn Ave. Refer to Standard Drawing D-762-1 for Layout.

Hand-operated Application

ND 38, ND 45, ND 65 & ND 66

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

BASIS OF ESTIMATE

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	10

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	24IN LINE (LF)	Arrows (AR)		STOP AHEAD (SA)		RAILROAD (RR)			LOCATIONS	COMMENTS
					# OF ARROWS	ARROWS (SF) 16 SF EACH	# OF STOP AHEAD	STOP AHEAD (SF) 52 SF EACH	# OF RR MESSAGES	"X" & "RR" (SF) 60.5 SF EACH	24IN BANDS (SF) 72 SF EACH		
US 81	Manvel Municipal	-	-	60	-	-	-	-	-	-	-	-	-
US 81	Manvel to Levant	163.105	169.619	45	-	-	2	104	1	61	72	RP 163.486 1 SA; Manvel 1 RR	-
US 81	Levant NW to N Edge of Ardoch	169.619	175.291	80	10	160	-	-	2	121	144	RP 174.940 3 AR, RP 175.050 2 AR, RP 175.070 2 AR, RP 175.120 3 AR; RP 175.270 2 RR	-
US 81	N Edge of Ardoch to Minto	175.291	181.246	96	11	176	-	-	2	121	144	RP 175.360 4 AR, RP 176.080 7 AR; RP 175.700 2 RR	-
US 81	Minto Municipal	181.246	182.088	-	-	-	-	-	-	-	-	-	-
US 81	Minto N to Grafton	182.088	190.469	-	4	64	-	-	-	-	-	RP 190.040 2 AR, RP 190.280 2 AR	-
US 81	Grafton N Urban Limits to N Jct ND 66 St. Thomas	192.414	204.270	0	9	144	-	-	-	-	-	RP 194.970 2 AR, RP 195.130 2 AR, RP 202.191 2 AR, RP 202.341 2 AR	-
US 81	N Jct 66 N 2.54 Mi	204.270	206.800	22	3	48	-	-	-	-	-	RP 204.270 CH; RP 204.353 3 AR	-
US 81	Near N Jct ND 66 St Thomas to Jct ND 5 (Hamilton)	206.800	218.530	-	-	-	-	-	-	-	-	-	-
US 81	W Jct ND 5 (Hamilton) E to I-29	218.530	228.353	34	-	-	-	-	-	-	-	-	-
US 81	Grand Forks City Limits (27th Ave.) N to I-29	946.409	949.485	-	-	-	-	-	-	-	-	-	-
ND 89	Concrete Spur - Par Road	10.000	11.960	24	-	-	-	-	-	-	-	-	-
ND 91	St. Thomas Spur	900.000	901.262	72	-	-	-	-	-	-	-	-	-
ND 200	Jct ND 20 (Glenfield) E to W Jct ND 1	319.373	331.806	137	2	32	-	-	-	-	-	RP 319.373 CH; RP 325.786 2 AR; RP 331.806 CH	-
ND 200	E Jct ND 1 to Cooperstown	337.913	341.441	24	-	-	-	-	-	-	-	RP 337.913 CH	-
ND 200	Cooperstown to S Jct ND 32	341.441	354.115	44	3	48	1	52	-	-	-	RP 354.093 3 AR; RP 354.115 1 SA	-
	Page Subtotal:			638	-	672	-	156	-	303	360		

Hand-operated Application

US 81, ND 89, ND 91, & ND 200

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

BASIS OF ESTIMATE

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	11

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	RDWY (MILES)	Main Line Quantity Length of				Additional Quantity Length of				Messages Quantity							COMMENTS
													Arrows (AR)		Cross Hatch (CH)		ADVANCED SAFETY (AS)	Curb		
					EDGE LINE (MILES)	℄ SKIP (MILES)	BARRIER (MILES)	PVMT MK INSTALL (MILES)	4IN LINE (LF)	8IN LINE (LF)	12IN LINE (LF)	24IN LINE (LF)	# OF ARROWS	ARROWS (SF) 16 SF EACH	# OF CROSS HATCH LOCATIONS	12IN LINE (LF)	55 MPH (SF) & Signal Ahead (SF)	PVMT MK TOP & FACE (LF)	LOCATIONS	
US 2	GF City Limits to Near GF AFB	354.724	343.075	11.649	23.298	-	-	23.298	-	-	6,330	92	46	736	-	-	250	-	-	-
US 2	Near GF AFB to Near Arvilla	343.075	337.08	5.995	11.990	-	-	11.990			3,631	24	19	304	1	495				
US 2	Near Arvilla to RP 333.002	337.080	333.002	4.078	8.156	1.019	-	9.175	-	-	1,200	-	3	48	-	-	-	-	RP 337.210 3 AR	-
US 2	RP 333.002 to Jct ND 18	333.002	330.520	2.482	4.964	0.621	-	5.585	-	-	1,932	-	9	144	1	666	-	-	RP 330.600 6 AR, RP 332.600 3 AR; RP 330.520 CH	-
US 2	Larimore Rest Area	-	-	-	0.213	-	0.293	-	4,054	40	-	32	-	-	-	-	-	49	-	See Note 1
US 2	Jct ND 18 to CO LN	330.520	317.046	13.474	26.948	3.369	-	30.317	-	-	898	-	10	160	-	-	-	-	RP 317.582 6 AR, RP 319.420 2 AR, RP 323.030 2 AR;	-
US 2	Michigan Bypass	306.819	305.219	1.600	3.200	0.400		3.600												
US 2	Michigan Frontage Road	-	-	-	1.101	0.035	0.233	1.369	-	-	-	53	-	-	-	-	-	-	-	-
US 2	Mapes X-Over to Lakota	300.764	295.468	5.296	-	-	-	-	-	-	1,573	-	-	-	-	-	-	-	-	-
					Page Subtotal:			85.333	4,054	40	15,564	201	-	1,392	-	1,161	250	49		

Note 1: 4IN white edge line (1,126 LF), 8IN blue handicap cross hatch (40 LF), and 4IN yellow double barrier line (1,548 LF).

Truck & Hand-operated Application

Westbound US 2

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

BASIS OF ESTIMATE

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	12

ROUTE	LOCATION	FROM REF. POINT	TO REF. POINT	RDWY (MILES)	Main Line Quantity Length of			Additional Quantity Length of		Messages Quantity						COMMENTS
										Arrows (AR)		Cross Hatch (CH)		Advanced Safety (AS)		
					EDGE LINE (MILES)	℄ SKIP (MILES)	PVMT MK INSTALL (MILES)	12IN LINE (LF)	24IN LINE (LF)	# OF ARROWS	ARROWS (SF) 16 SF EACH	# OF CROSS HATCH LOCATIONS	12IN LINE (LF)	Reduced Speed Ahead (SF) 55 MPH (SF) & Signal Ahead (SF)	LOCATIONS	
US 2	Lakota to RP 295.970	295.468	295.970	0.502	1.004	0.126	1.130	644	11	-	-	-	-	-	-	
US 2	RP 295.970 to Mapes X-Over	295.970	300.969	4.999	9.998	1.250	11.248	750	-	6	96	-	-	-	RP 300.570 6 AR	
US 2	Mapes X-Over to Michigan X-Over	300.969	305.220	4.251	8.502	1.063	9.565	924	-	-	-	-	-	-	-	
US2	Michigan X-Over to 2 MI E of CO LN	305.220	318.984	13.764	27.528	3.441	30.969	2,344	42	24	384	-	-	-	RP 305.232 3 AR, RP 305.508 3 AR, RP 305.687 3 AR, RP 311.350 3 AR, RP 311.980 6 AR, RP 317.442 6 AR	
US 2	2 MI E of CO LN to 1.4 MI W of Jct ND 18	318.984	329.073	10.089	20.178	2.522	22.700	1,420	-	6	96	-	-	-	RP 319.360 3 AR, RP 322.995 3 AR	-
US 2	1.4 MI W of Jct ND 18 to W JCT GF CNTY 2 S (RP 337.080	329.073	337.080	8.007	16.014	2.002	18.016	2,422	24	6	96	1	693	-	RP 330.460 6 AR, RP 335.520 CH	-
US 2	E JCT GF CNTY 2 S to 1 MI W of GFAFB	337.080	341.721	4.641	-	-	-	2,410	24	13	208	1	425	-	-	
US 2	1 MI W of GF AFB to GF City Limits	341.721	354.724	13.003	26.006	-	26.006	200	92	44	704	-	-	457	-	-
					Page Subtotal:		119.633	11,114	193	-	1,584	-	1,118	457		

Truck & Hand-operated Application

Eastbound US 2

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	13

BASIS OF ESTIMATE

Locations	FROM REF. POINT	TO REF. POINT	RDWY (MILES)	Northbound			Southbound		
				EDGE LINE (MILES)	℄ SKIP (MILES)	PVMT MK INSTALL (MILES)	EDGE LINE (MILES)	℄ SKIP (MILES)	PVMT MK INSTALL (MILES)
S of ND 15 to Near 32nd Ave	129.539	136.874	7.335	14.670	1.834	16.504	14.670	1.834	16.504
Near 32nd Ave to N of N GF INTR	136.874	147.226	10.352	20.704	2.588	23.292	20.704	2.588	23.292
N of N GF INTR to Manvel	147.226	152.337	5.111	-	-	0.000	10.222	-	10.222
N of Jct ND 54 to Manvel	161.700	152.337	9.363	-	-	-	18.726	-	18.726
N of Jct ND 54 N to Forest River	161.700	168.629	6.929	13.858	1.732	15.590	13.858	-	13.858
Forest River to S of Jct ND 17	168.629	174.900	6.271	12.542	1.568	14.110	-	-	-
Jct ND 17 to Forest River	175.792	168.629	7.163	-	-	-	14.326	-	14.326
S of Jct ND 17 to S of Herrick	174.900	183.014	8.114	16.228	2.029	18.257	-	-	-
S of Herrick to Jct ND 17	183.014	175.792	7.222	-	-	-	14.444	1.806	16.250
S of Herrick to N of Jct ND 66	183.014	187.347	4.333	8.666	1.083	9.749	8.666	1.083	9.749
N of Jct ND 66 to N Bowesmont INTR	187.347	197.080	9.733	19.466	2.433	21.899	-	-	-
N Bowesmont INTR to S of Bathgate	197.080	205.932	8.852	17.704	2.213	19.917	-	-	-
RP 203.410 to N of Jct ND 66	203.410	187.347	16.063	-	-	-	32.126	4.016	36.142
S of Bathgate to Canadian Border Station	205.932	216.772	10.840	21.680	2.710	24.390	-	-	-
Canadian Border Station to Canadian Border	216.772	217.399	0.627	1.254	0.186	1.440	-	-	-
Canadian Border to RP 203.410	217.517	203.410	14.107	-	-	-	28.214	3.527	31.741
		Page Subtotals		-	-	165.148	-	-	190.809

Truck Application

I29 Mainline

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	10	14

Location	Ramp Quantity											Messages Quantity			
	Northbound				Southbound							ARROWS (AR)		Curb	
	12IN LINE (LF)	24IN LINE (LF)	6IN DOTTED LINE (MILES)	RAMP EDGE LINE (MILES)	12IN LINE (LF)	24IN LINE (LF)	6IN DOTTED LINE (MILES)	RAMP EDGE LINE (MILES)	CROSSROAD ℄ & EDGE LINE (MILES)	PVMT MK INSTALL (MILES)	4IN LINE (LF)	# OF ARROWS	ARROWS (SF) 16 SF EACH	PVMT MK TOP & FACE (LF)	LOCATIONS
Interchange 118 (Buxton)	912	85	-	0.718	-	74	-	0.703	0.424	1.846	-	-	-	-	-
Buxton Truck Inspection Site	950	-	0.280	0.370	1,056	-	0.310	0.410	-	1.370	-	-	-	-	-
Interchange 123 (Reynolds)	1,092	81	-	0.713	-	77	-	0.737	0.460	1.910	-	-	-	-	-
Interchange 130 (ND 15)	848	110	0.041	0.697	842	110	0.039	0.681	-	1.458	-	-	-	-	-
Interchange 138 (32nd Ave)	2,522	72	0.056	1.184	2,756	76	0.052	1.682	-	2.974	-	-	-	-	-
Interchange 140 (Demers Ave)	2,114	14	0.081	0.780	1,155	37	0.074	0.921	-	1.856	-	-	-	-	-
Interchange 141 (US 2)	1,582	48	0.050	0.601	2,614	54	0.092	1.095	-	1.839	-	11	176	-	NB off ramp 7x SB off ramp 4x
Interchange 145 Exit (US 81 - North Grand Forks)	644	58	0.023	0.344	452	26	0.029	0.347	-	0.743	-	-	-	-	-
Interchange 145 Entrance (US 81 - North Grand Forks)	233	-	0.017	0.350	587	-	0.034	0.361	-	0.762	-	-	-	-	-
Interchange 152 (US 81 - Manvel)	1,402	94	0.035	0.780	1,229	83	0.070	0.800	-	1.685	-	-	-	-	-
Interchange 157 (Johnstown)	877	72	0.040	0.694	1,257	91	0.063	0.698	0.473	1.968	-	-	-	-	-
Interchange 161 (ND 54)	552	54	0.057	0.827	917	60	0.077	0.400	-	1.361	-	-	-	-	-
Interchange 164 (Lake Ardoch)	857	54	0.040	0.713	1,039	57	0.073	0.713	0.562	2.101	-	-	-	-	-
Interchange 168 (Minto)	822	60	0.040	0.701	1,229	59	0.077	0.708	0.566	2.091	-	-	-	-	-
Interchange 172 (Pulaski)	1,220	63	0.075	0.695	819	65	0.076	0.708	0.521	2.075	-	-	-	-	-
Interchange 176 (ND 17)	997	64	0.068	0.707	1,026	40	0.070	0.691	-	1.536	-	-	-	-	-
Alexander Henry Rest Area	1,383	-	0.098	0.359	1,370	-	0.079	0.934	-	1.470	2,978	-	-	100	-
Interchange 180 (Cashell)	986	68	0.071	0.695	1,024	62	0.065	0.768	0.417	2.015	-	-	-	-	-
Interchange 184 (Herrick)	788	20	0.024	0.938	897	36	0.043	2.421	1.307	4.733	-	-	-	-	-
Interchange 187 (ND 66)	1,572	78	0.052	0.746	1,833	55	0.056	0.656	-	1.509	-	-	-	-	-
Interchange 191 (Pittsburg)	1,944	70	0.040	0.719	1,216	70	0.032	0.821	0.916	2.527	-	-	-	-	-
Interchange 193 (Lincoln)	2,186	76	0.031	0.699	1,320	78	0.052	0.707	0.417	1.906	-	-	-	-	-
Interchange 196 (Bowesmont)	1,529	75	0.045	0.703	1,755	78	0.046	0.712	0.927	2.433	-	-	-	-	-
Interchange 200 (Carlisle)	1,138	68	0.045	0.782	1,290	70	0.047	0.740	0.455	2.070	-	-	-	-	-
Interchange 203 (ND 5)	1,124	73	0.060	1.128	1,348	68	0.051	0.819	-	2.058	-	-	-	-	-
Interchange 208 (Bathgate/McArthur)	1,205	70	0.055	0.660	1,174	70	0.047	0.704	1.043	2.510	-	-	-	-	-
Interchange 212 (Neche)	1,230	70	0.066	0.654	1,182	70	0.053	0.708	1.038	2.519	-	-	-	-	-
Interchange 215 (Pembina)	1,151	86	0.064	0.716	1,334	74	0.043	0.725	0.739	2.286	-	-	-	-	-
Historical Site 216	1,112	-	0.089	0.715	-	-	-	-	-	0.804	-	-	-	-	-
Page Subtotal:	34,972	1,683			32,721	1,640				56.415	2,978	-	176	100	

Truck & Hand-operated Application

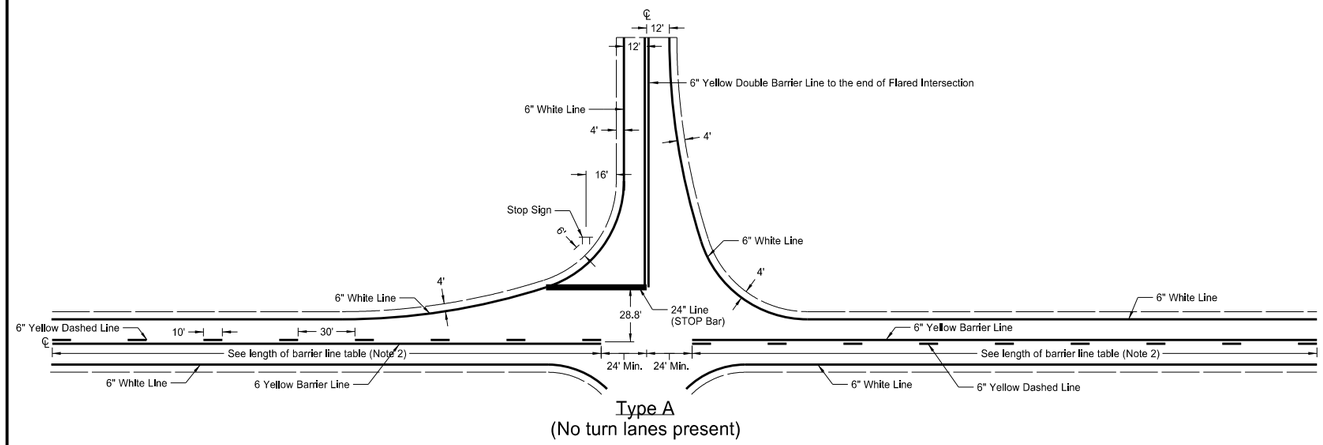
I 29 Interchanges, Rest Area
& Truck Inspection Site

Pavement Marking

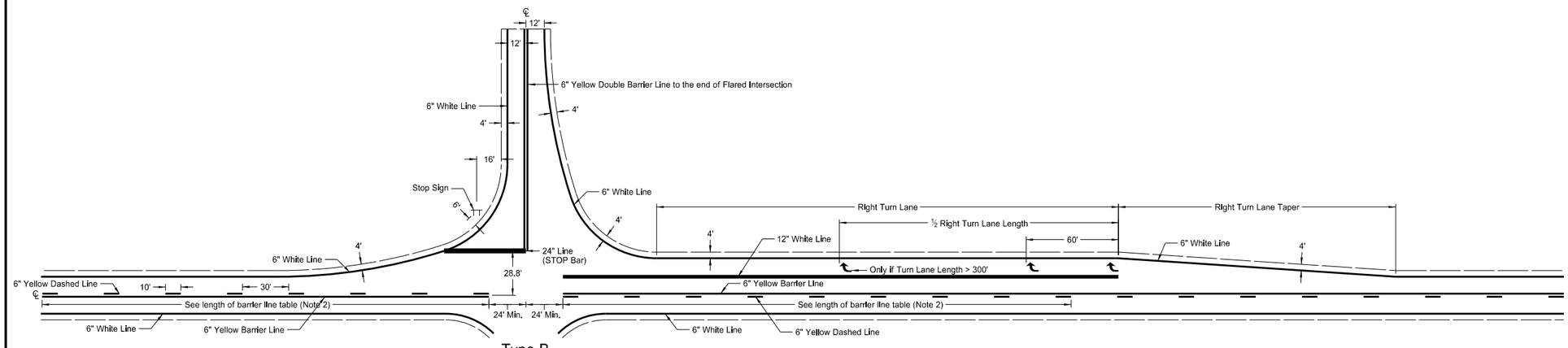
Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

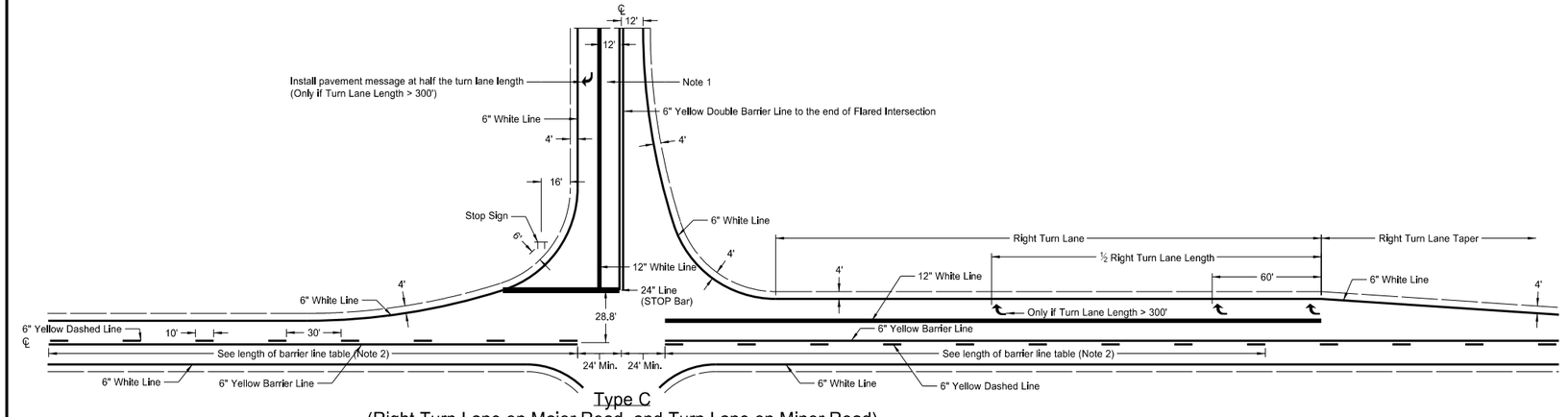
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	20	1



Type A
(No turn lanes present)



Type B
(Right Turn Lane on Major Road)



Type C
(Right Turn Lane on Major Road, and Turn Lane on Minor Road)

Notes

1. At "T" intersections (3-leg), additionally install left turn pavement marking message arrow.
2. The barrier lines have variable distances dependent on speed limit. Obtain barrier line length from table below (stopping sight distance.)

Table for Length of Barrier Line									
Speed Limit (mph)	30	35	40	45	50	55	60	65	70
Minimum Length	200'	250'	305'	360'	425'	495'	570'	645'	730'

6" Marking
8" Marking
12" Marking
24" Marking

General Details

Standard 90 Degree Flared Intersection
(No Center Left Turn Lane on Major Road)

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

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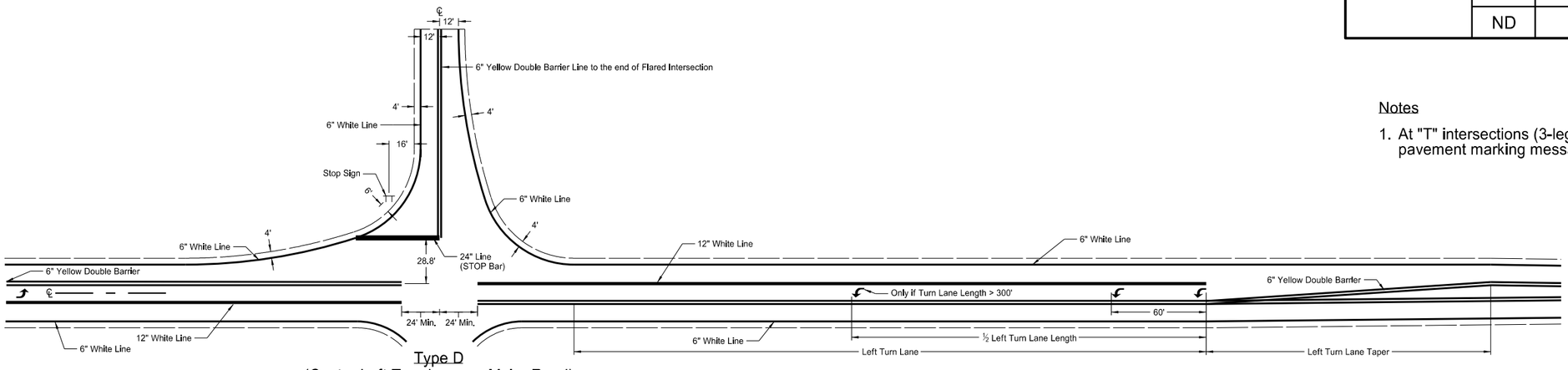
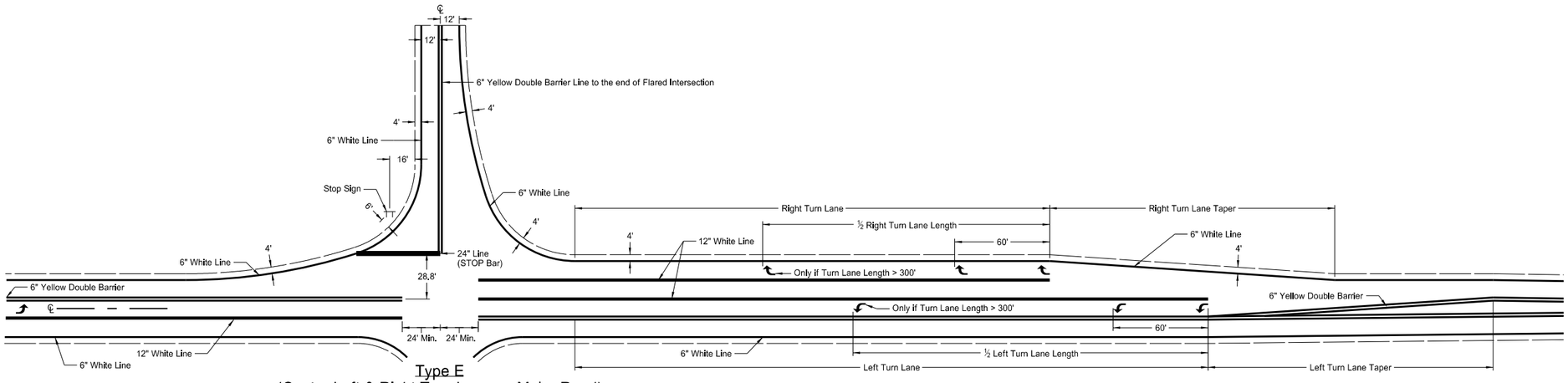
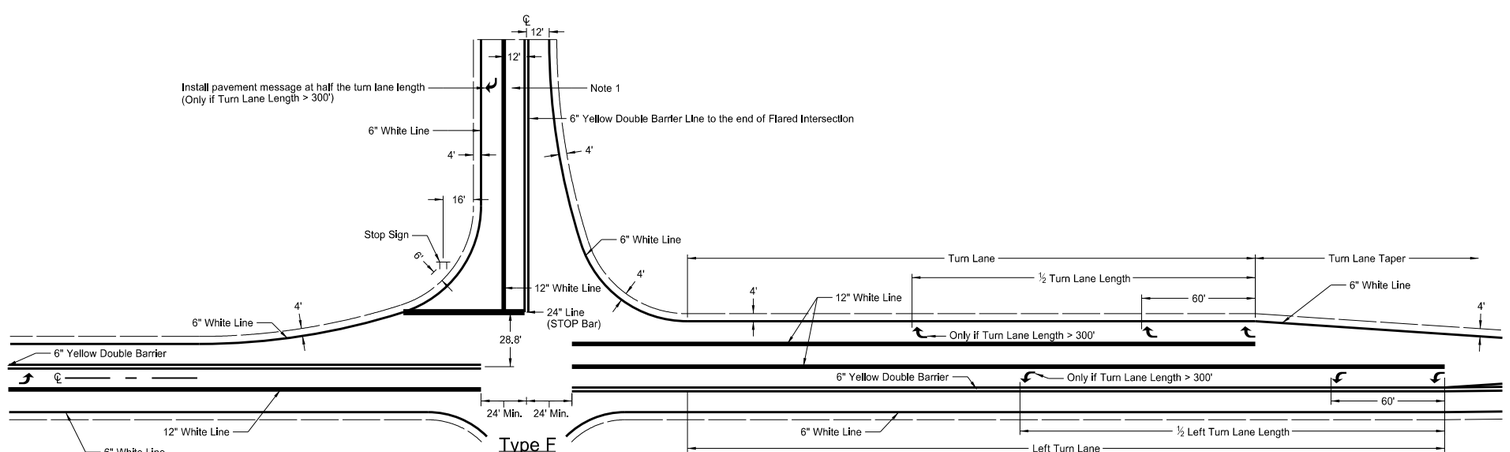
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	20	2



Type D
(Center Left Turn Lane on Major Road)



Type E
(Center Left & Right Turn Lane on Major Road)



Type F
(Center Left & Right Turn Lane on Major road, and Turn Lane on Minor Road)

Notes

1. At "T" intersections (3-leg), additionally install left turn pavement marking message arrow.

6" Marking
8" Marking
12" Marking
24" Marking

General Details

Standard 90 Degree Flared Intersection
(Center Left Turn Lane on Major Road)

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

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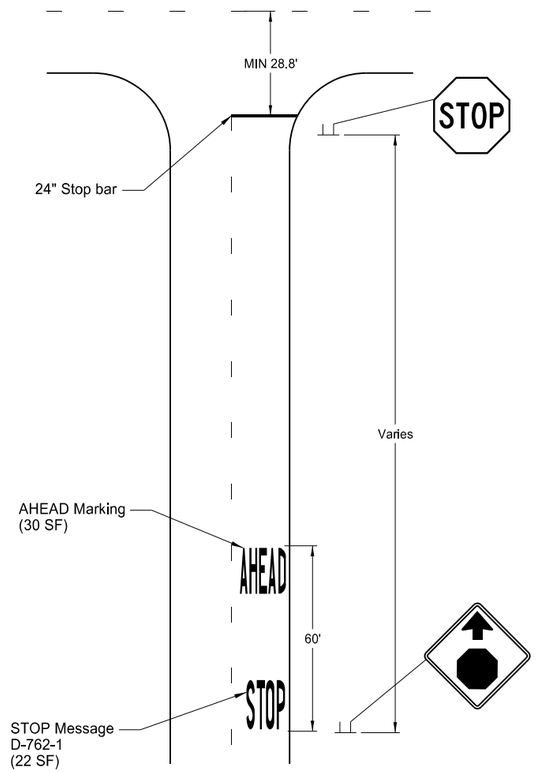
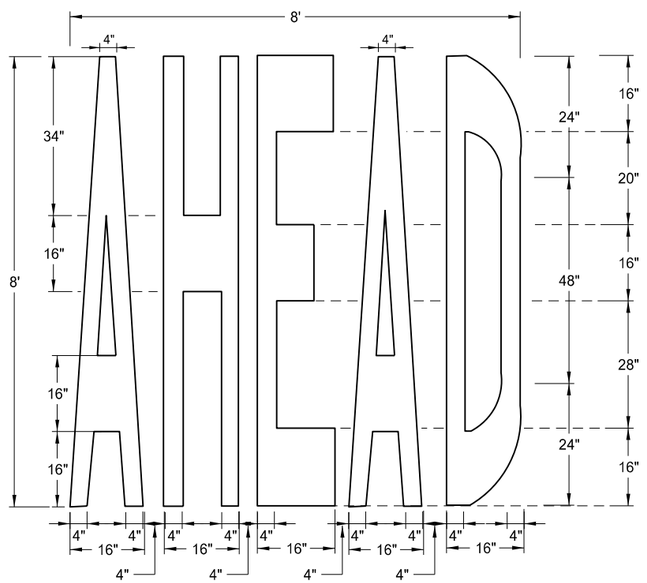
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HES-6-999(064)	20	3

Pavement Marking Installation Detail



"AHEAD" Pavement Marking Detail



General Details

Stop Ahead

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/8/2025 8:56:46 AM jtwamley R:\project\60999000.064\District\Sheets\020GD_Detail\020GD_003_StopAhead.dgn

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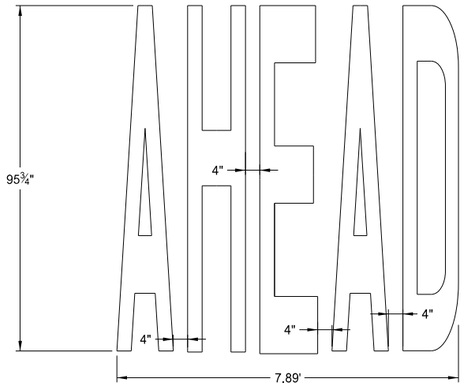
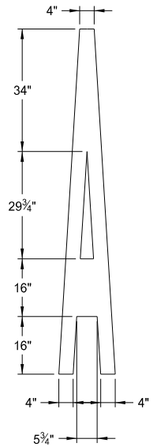
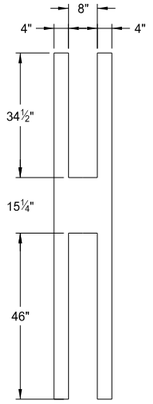
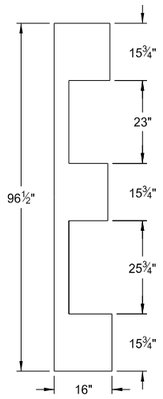
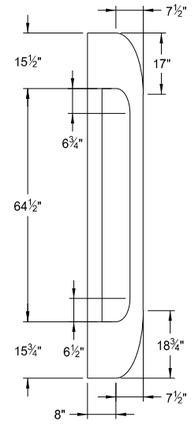
	ND	HES-6-999(064)	20	4

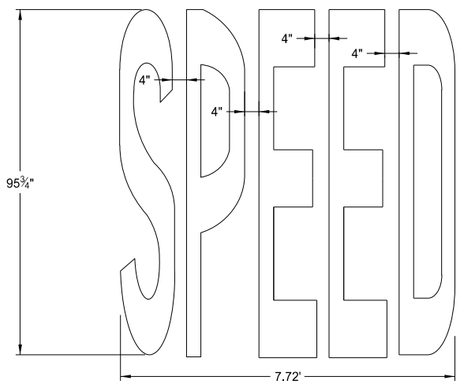


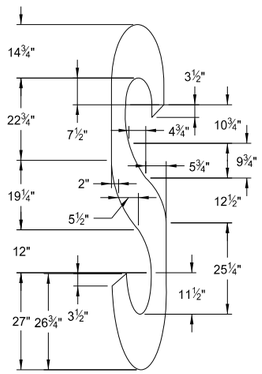


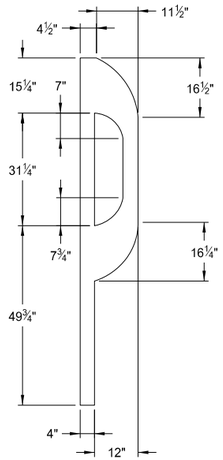


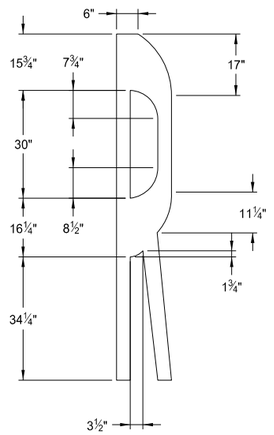


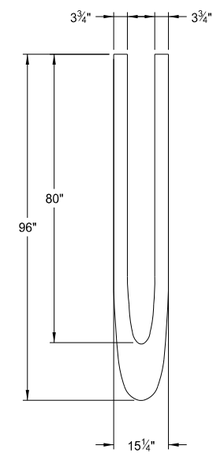


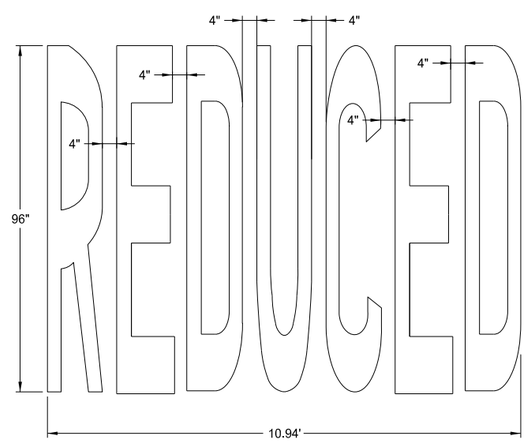


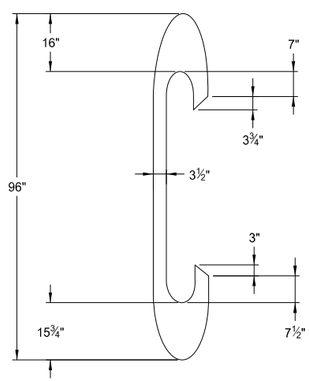












General Details

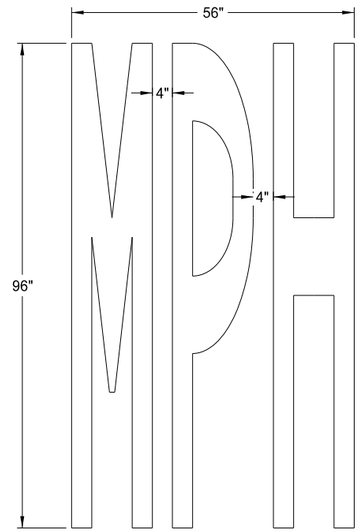
Reduced Speed Ahead

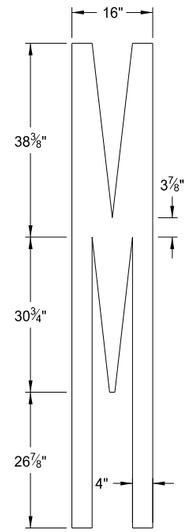
Pavement Marking

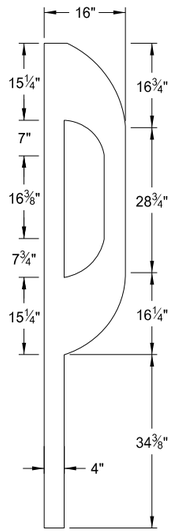
Various US & State Highways - Grand Forks District

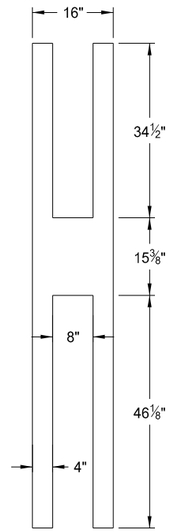
REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

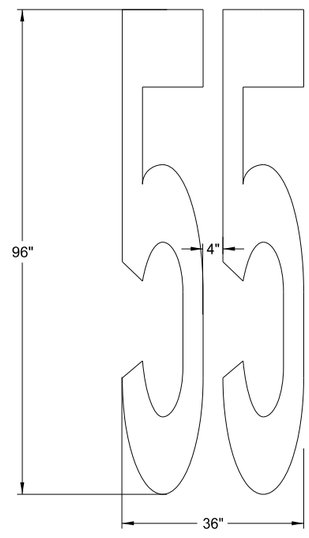
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	20	5

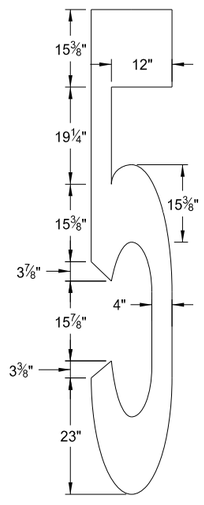












General Details

55 MPH

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

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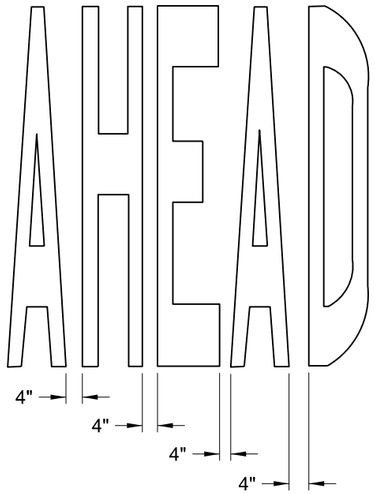
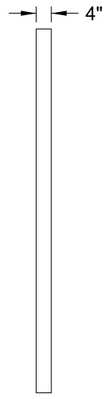
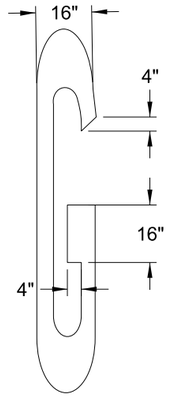
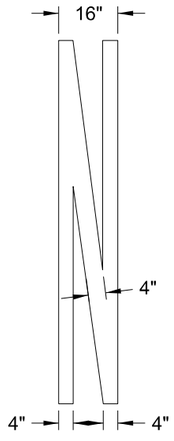
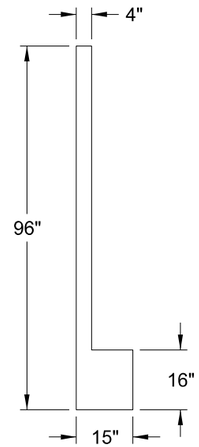
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	20	6

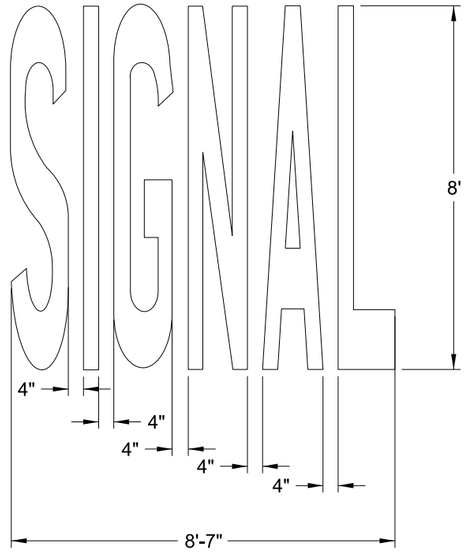












General Details

Signal Ahead

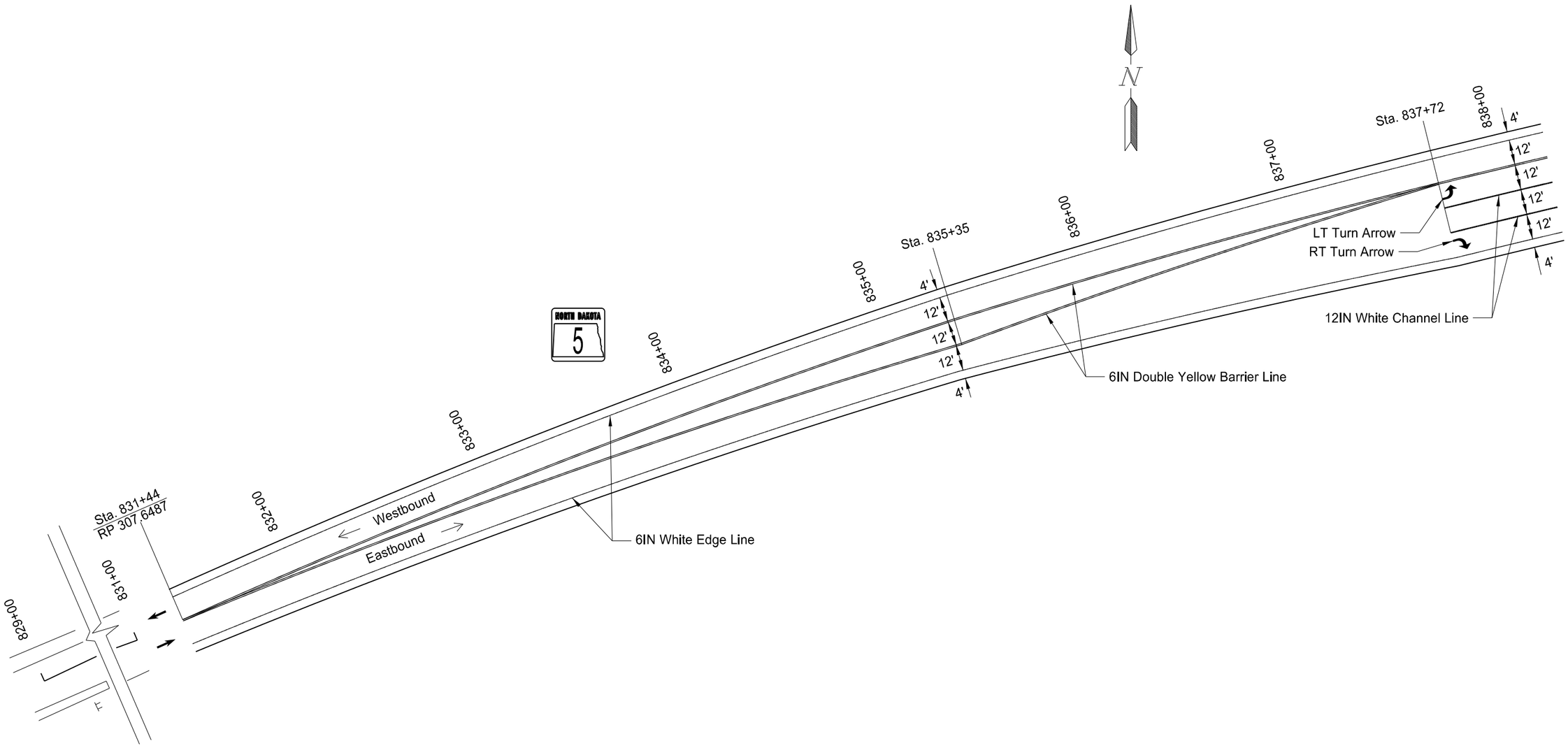
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/8/2025 8:56:48 AM jtwamley R:\project\60999000,064\District\Sheets\020GD_Detail\020GD_006_SignalAhead.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	1



ND 5 - STA. 831+44 to STA. 838+00
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	1,312 LF
6IN Double Yellow Barrier Line	2,568 LF
TOTAL	3,880 LF

ND 5 - STA. 831+44 to STA. 838+00
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	56 LF

ND 5 - STA. 831+44 to STA. 838+00
PVMT MK PAINTED MESSAGE

1 - RT Turn Lane	16 SF
1 - LT Turn Lane	16 SF
TOTAL	32 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 5

Pavement Marking Layout

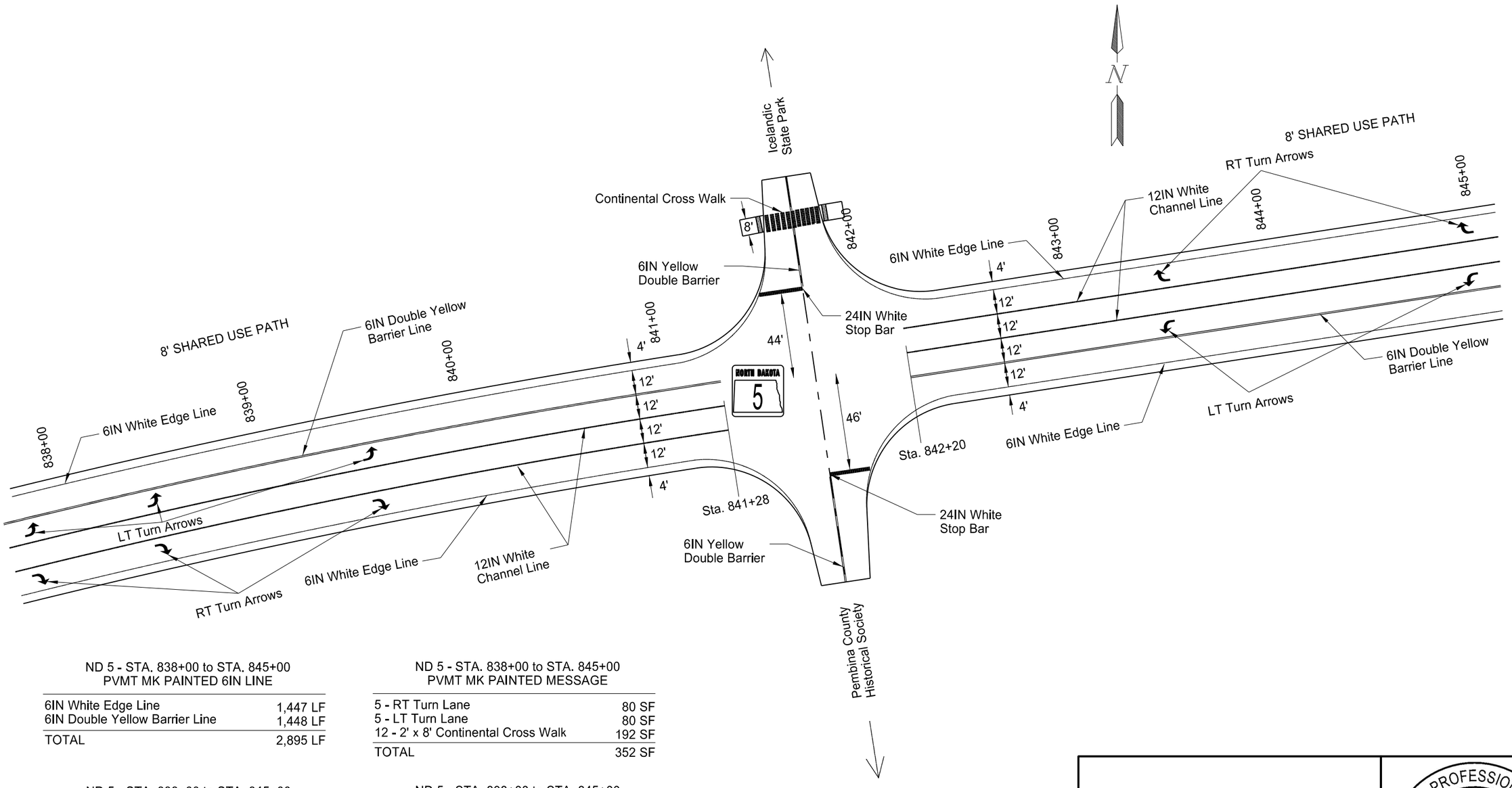
Icelandic State Park
ND 5

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	2



ND 5 - STA. 838+00 to STA. 845+00
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	1,447 LF
6IN Double Yellow Barrier Line	1,448 LF
TOTAL	2,895 LF

ND 5 - STA. 838+00 to STA. 845+00
PVMT MK PAINTED MESSAGE

5 - RT Turn Lane	80 SF
5 - LT Turn Lane	80 SF
12 - 2' x 8' Continental Cross Walk	192 SF
TOTAL	352 SF

ND 5 - STA. 838+00 to STA. 845+00
PVMT MK PAINTED 24IN LINE

24IN Stop Bar	48 LF

ND 5 - STA. 838+00 to STA. 845+00
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	1,216 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 5

Pavement Marking Layout

Icelandic State Park
ND 5

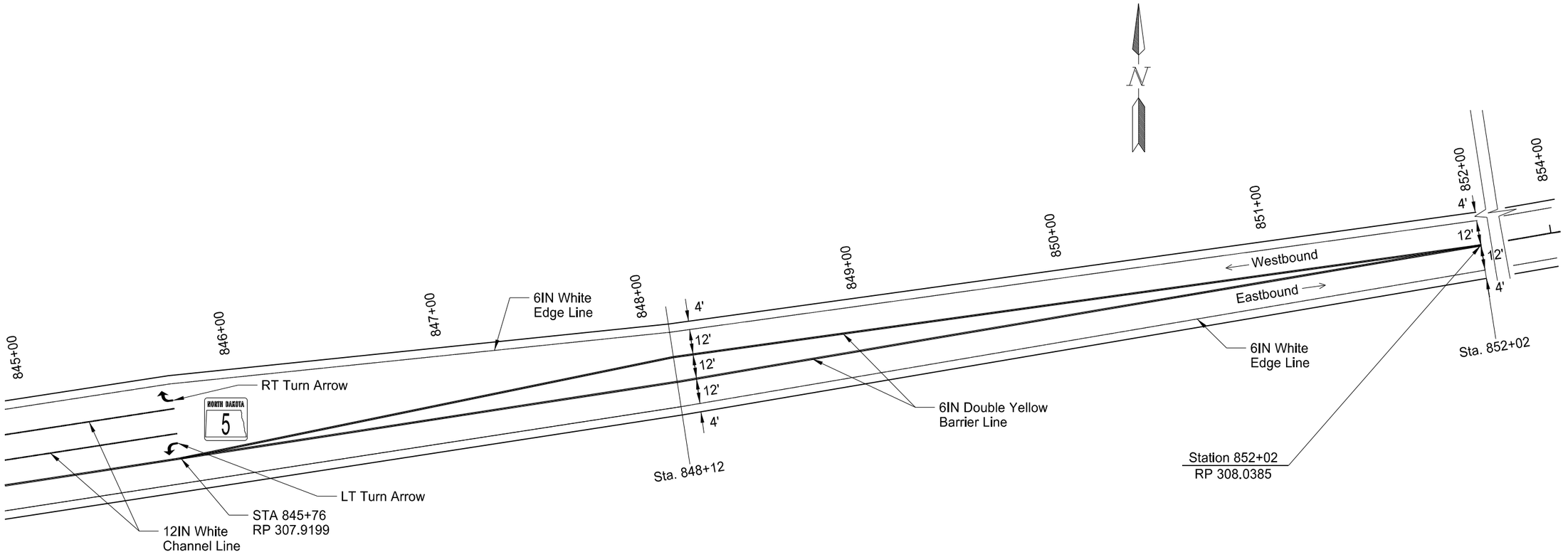
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:20:58 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_002_ND 5.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	3



ND 5 - STA. 845+00 to STA. 852+00
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	1,404 LF
6IN Double Yellow Barrier Line	2,664 LF
TOTAL	4,068 LF

ND 5 - STA. 845+00 to STA. 852+00
PVMT MK PAINTED MESSAGE

1 - RT Turn Lane	16 SF
1 - LT Turn Lane	16 SF
TOTAL	32 SF

ND 5 - STA. 845+00 to STA. 852+00
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	152 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 5

Pavement Marking Layout

Icelandic State Park
ND 5

Pavement Marking

Various US & State Highways - Grand Forks District

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PE-6394
DATE 01/10/25
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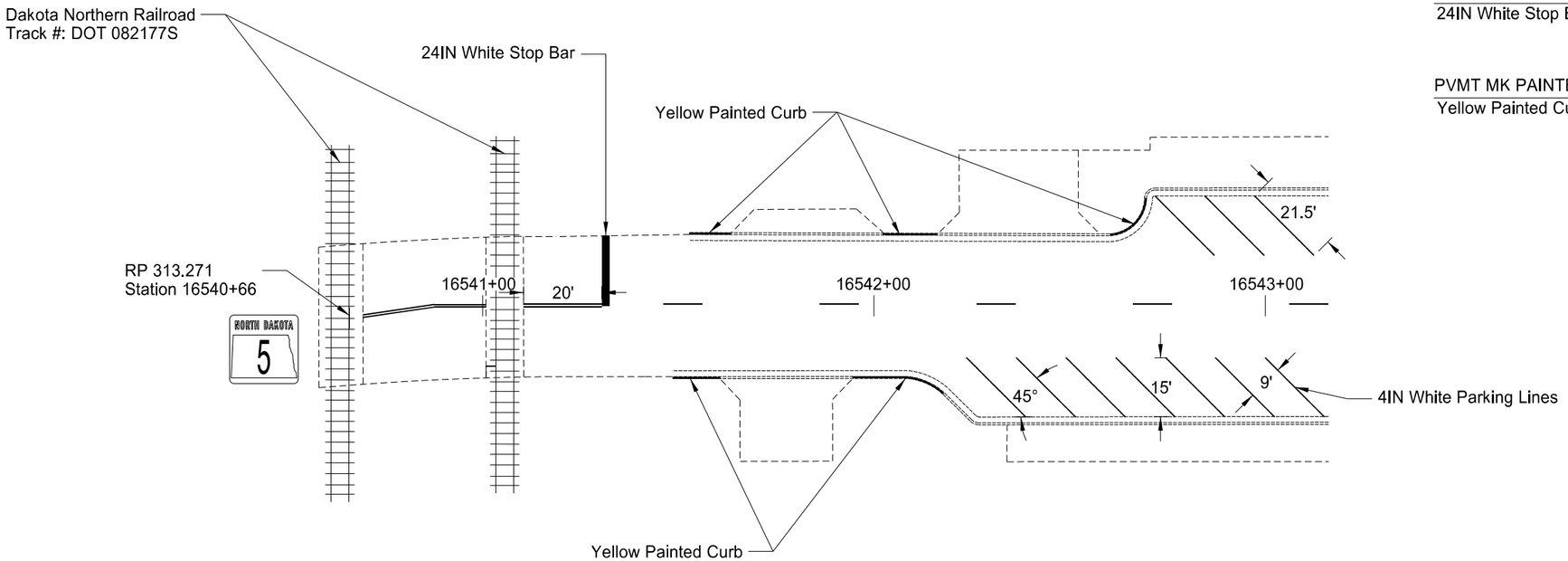
1/10/2025 1:20:59 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_003_ND 5.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	4



PVMT MK PAINTED 4IN LINE

4IN White Parking Lines	215 LF

PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	18 LF

PVMT MK PAINTED CURB TOP & FACE

Yellow Painted Curb	91 LF

*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 Cavalier Municipal
PR 313.271 - RP 313.302

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:00 PM jtwamley R:\project\60999000,064\District\Sheets\120MK_PVMT\120MK_004_ND5_Cavalier_DakotaTracks.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	5

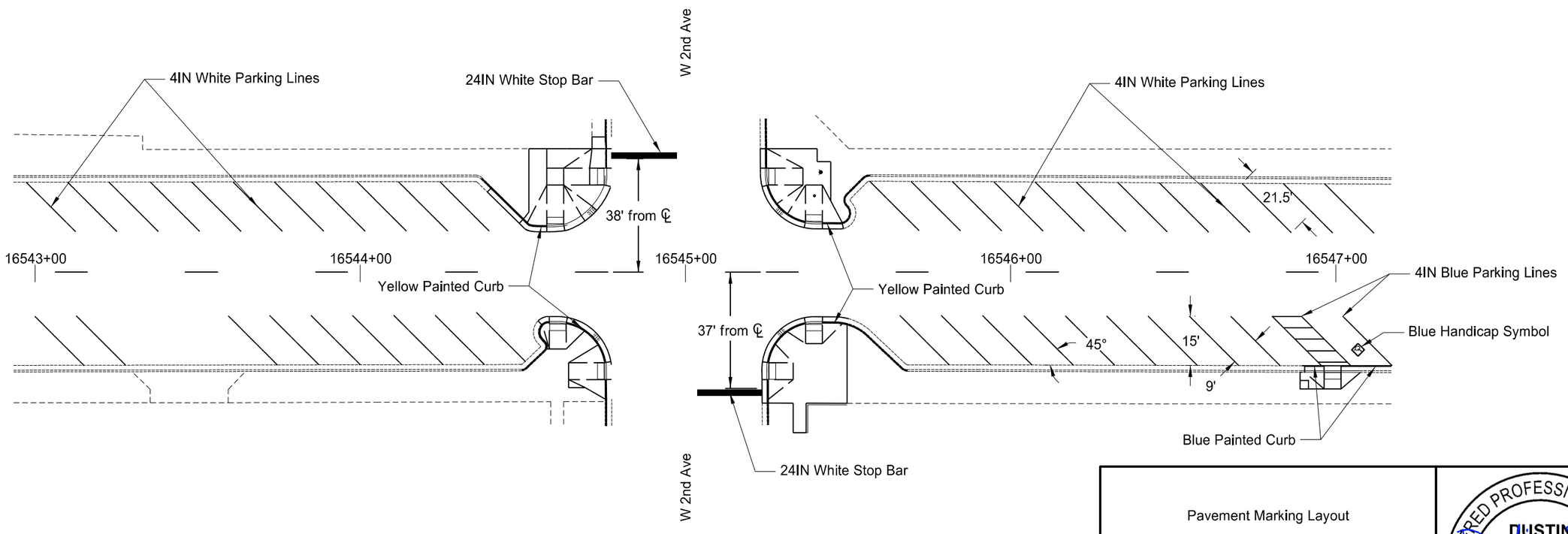
N

PVMT MK PAINTED 4IN LINE	
4IN White Parking Lines	882 LF
4IN Blue Parking Lines	110 LF
TOTAL	992 LF

PVMT MK PAINTED 24IN LINE	
24 IN White Stop Bar	40 LF

PVMT MK PAINTED CURB TOP & FACE	
Blue Painted Curb	22 LF
Yellow Painted Curb	236 LF
TOTAL	258 LF

PVMT MK PAINTED MESSAGE	
Blue Handicap Symbol	6 SF



*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 - Cavalier Municipal
RP 313.302 - RP 313.389

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:01 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_005_ND5_Cavalier_W2ndAVE.dgn

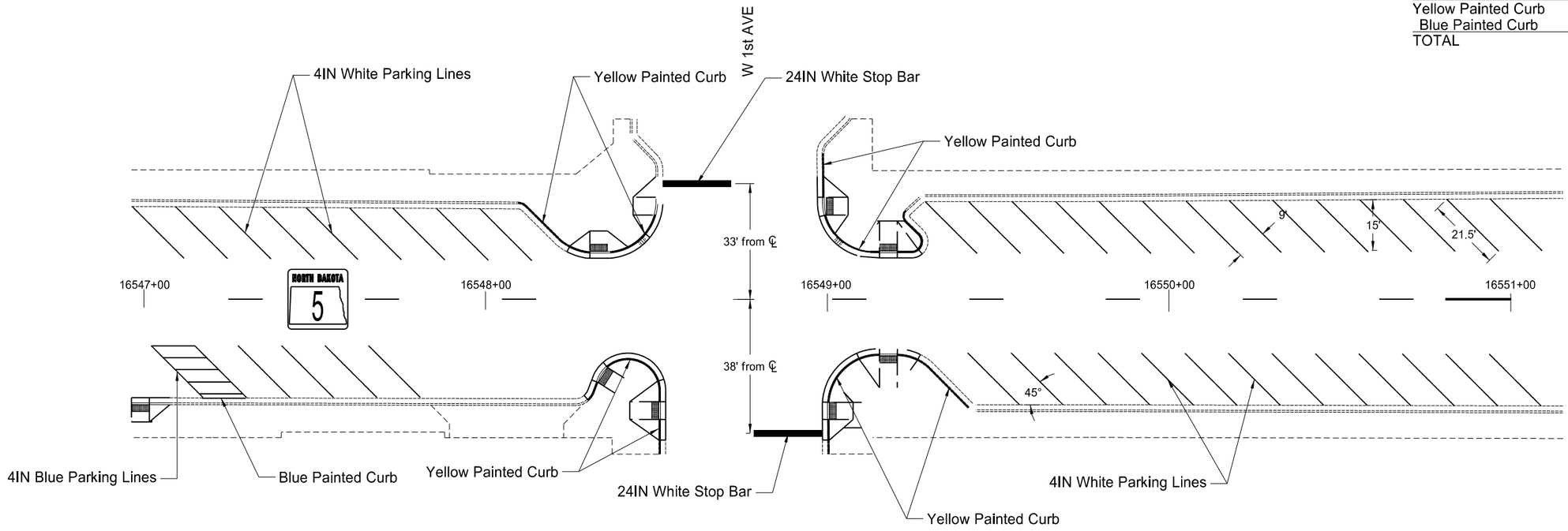
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	6

N

PVMT MK PAINTED 4IN LINE	
4IN White Parking Lines	860 LF
4IN Blue Parking Lines	47 LF
TOTAL	907 LF

PVMT MK PAINTED 24IN LINE	
24IN White Stop Bars	40 LF

PVMT MK PAINTED CURB TOP & FACE	
Yellow Painted Curb	253 LF
Blue Painted Curb	13 LF
TOTAL	266 LF



*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 - Cavalier Municipal
RP 313.389 - RP 313.465

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:02 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_006_ND 5_Cavalier_W 1st Ave.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	7

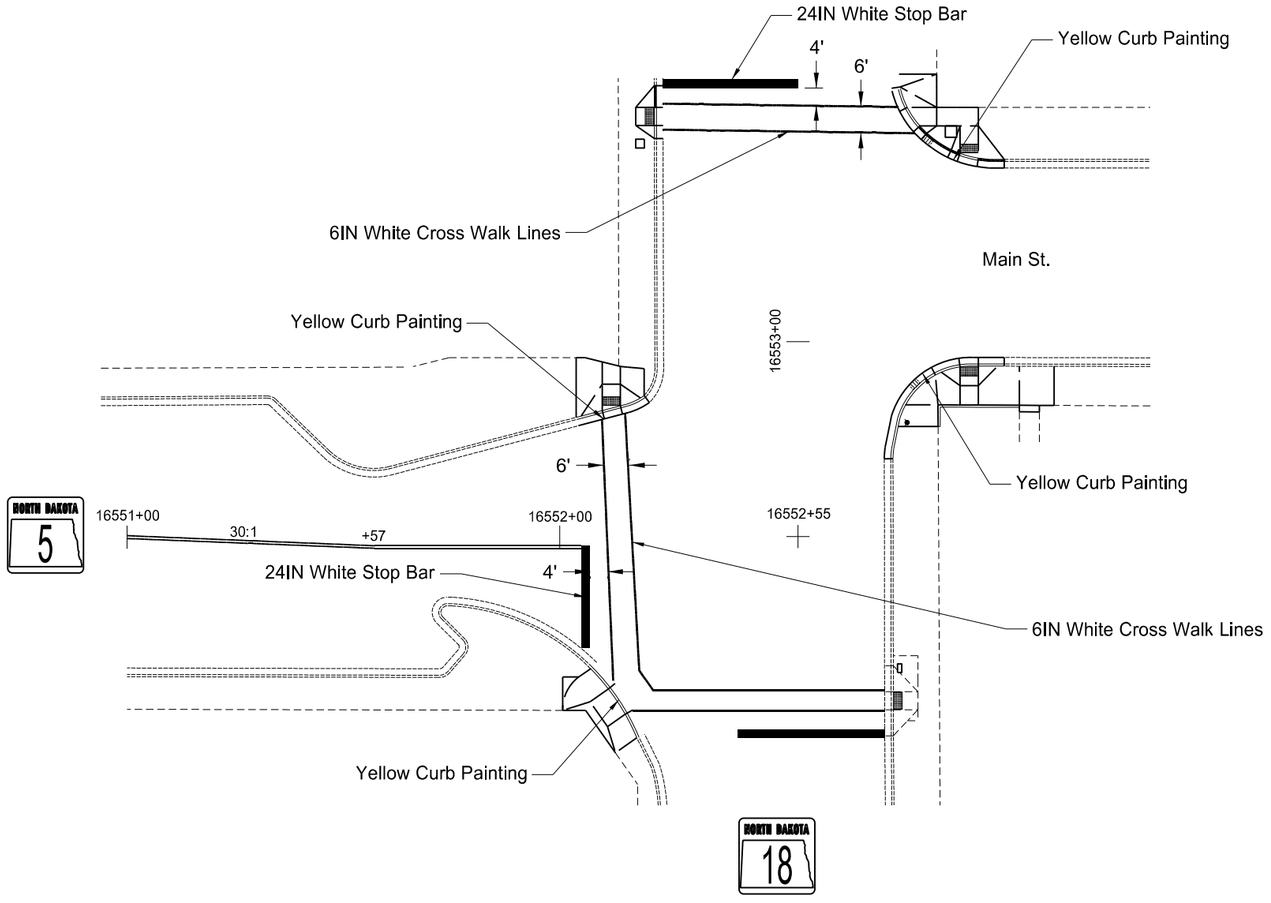
N

PVMT MK PAINTED 4IN LINE

4IN White Parking Lines	194 LF

PVMT MK PAINTED CURB TOP & FACE

Yellow Painted Curb	372 LF



*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 - Cavalier Municipal
RP 313.465 - RP 313.514

Pavement Marking

Various US & State Highways - Grand Forks District

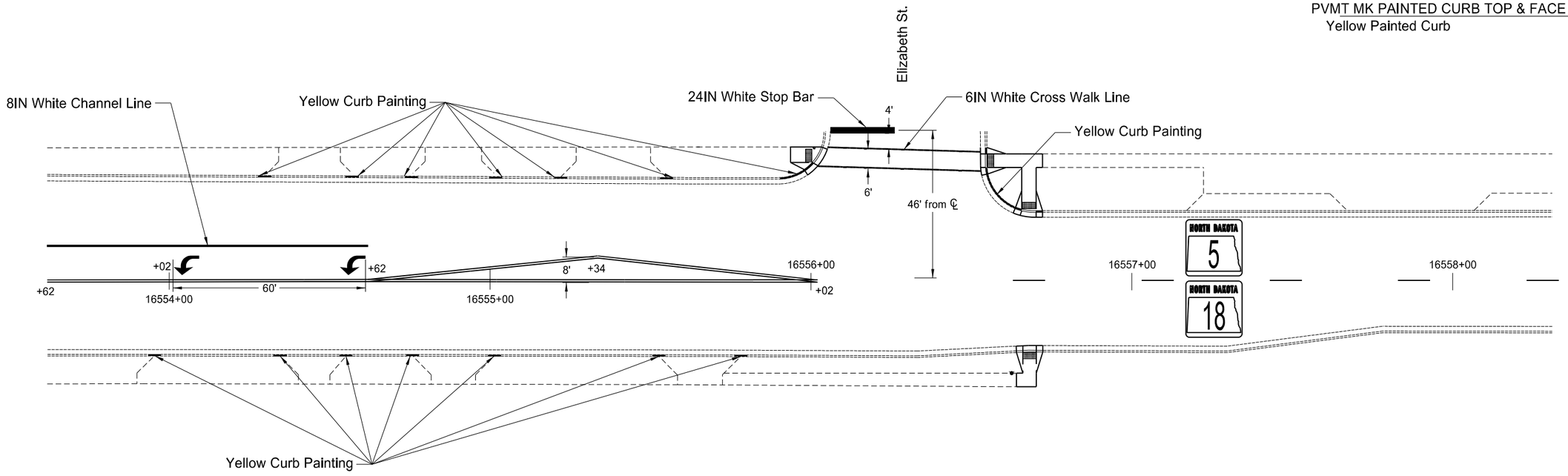
REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:03 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_007_ND 5_Cavalier_W JCT ND 5 ND 18.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	8

PVMT MK PAINTED 24IN LINE
24IN White Stop Bars 20 LF

PVMT MK PAINTED CURB TOP & FACE
Yellow Painted Curb 94 LF



*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 - Cavlier Municipal
RP 313.514 - RP 313.584

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	9

PVMT MK PAINTED 6IN LINE

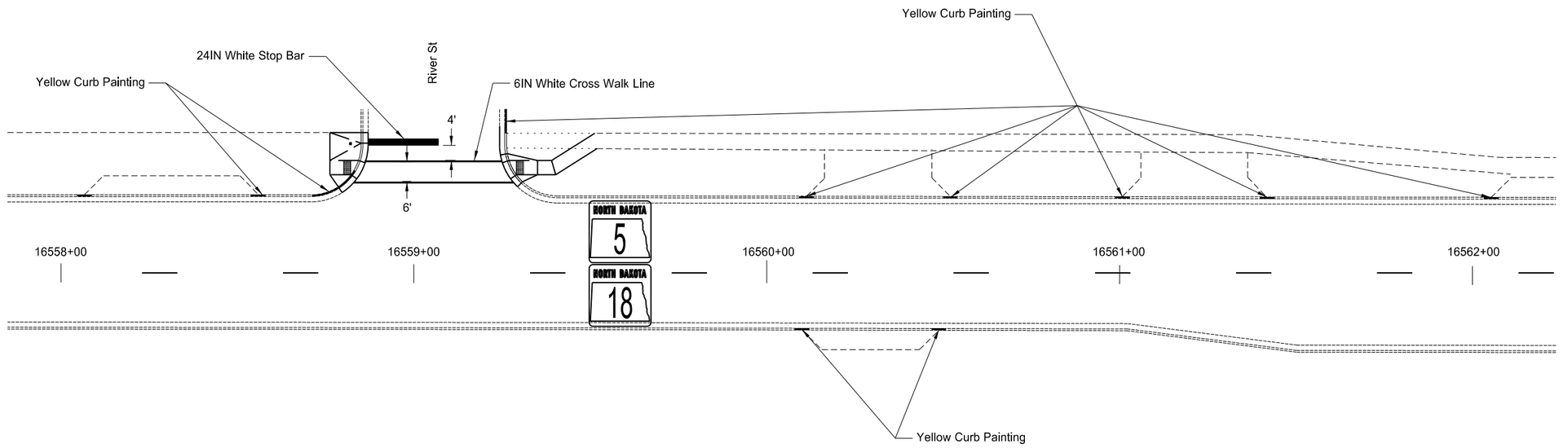
6IN White Cross Walk Lines	85 LF

PVMT MK PAINTED 24IN LINE

24IN White Stops Bars	20 LF

PVMT MK PAINTED CURB TOP & FACE

Yellow Painted Curb	86 LF



*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 - Cavalier Municipal
RP 313.584 - RP 313.651

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

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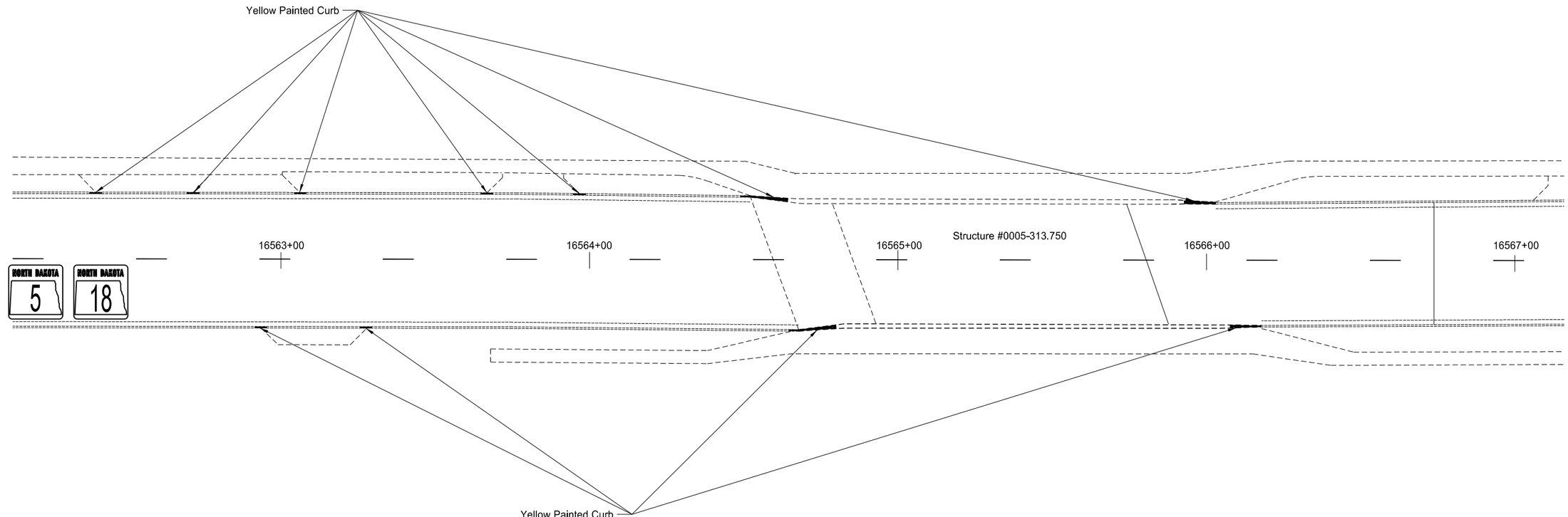
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	10

PVMT MK PAINTED CURB TOP & FACE

Yellow Painted Curb	82 LF



*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 - Cavalier Municipal
RP 313.651 - RP 313.745

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
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PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:05 PM jtwamley R:\project\60999000,064\District\Sheets\120MK_PVMT\120MK_010_ND 5_Cavalier.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	11

PVMT MK PAINTED 6IN LINE

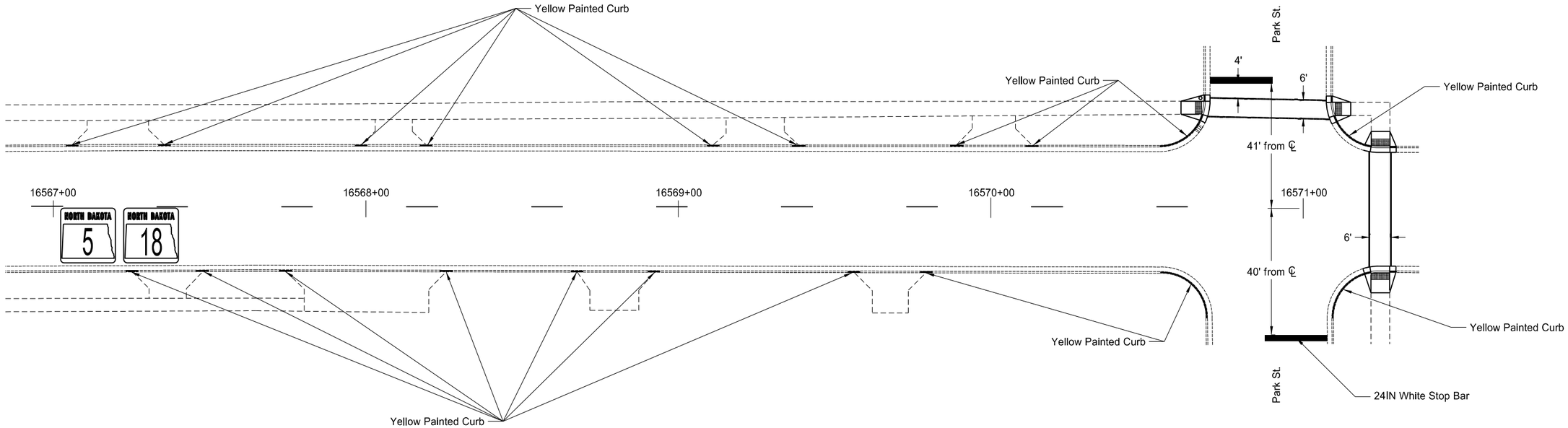
6IN White Cross Walk Line	150 LF

PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	40 LF

PVMT MK PAINTED CURB TOP & FACE

Yellow Painted Curb	151 LF



*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 - Cavalier Municipal
RP 313.745 - RP 313.825

Pavement Marking

Various US & State Highways - Grand Forks District

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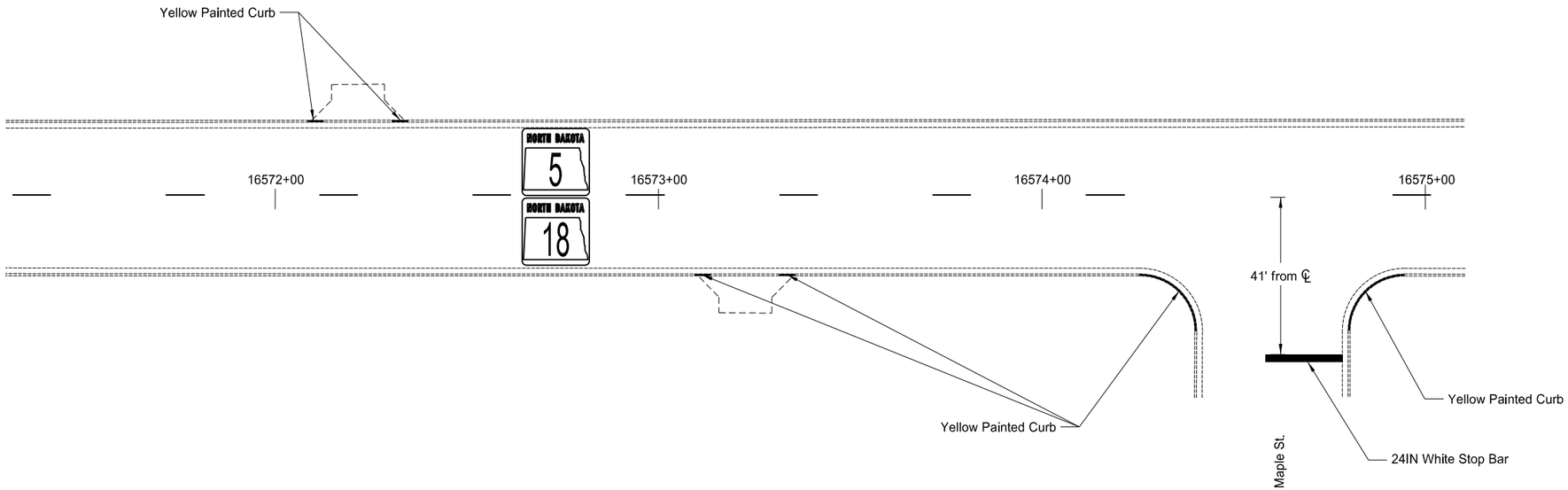
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	12

PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	20 LF

PVMT MK PAINTED CURB TOP & FACE

Yellow Painted Curb	62 LF



*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 - Cavalier Municipal
RP 313.825 - 313.895

Pavement Marking

Various US & State Highways - Grand Forks District

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PE-6394
DATE 01/10/25
NORTH DAKOTA

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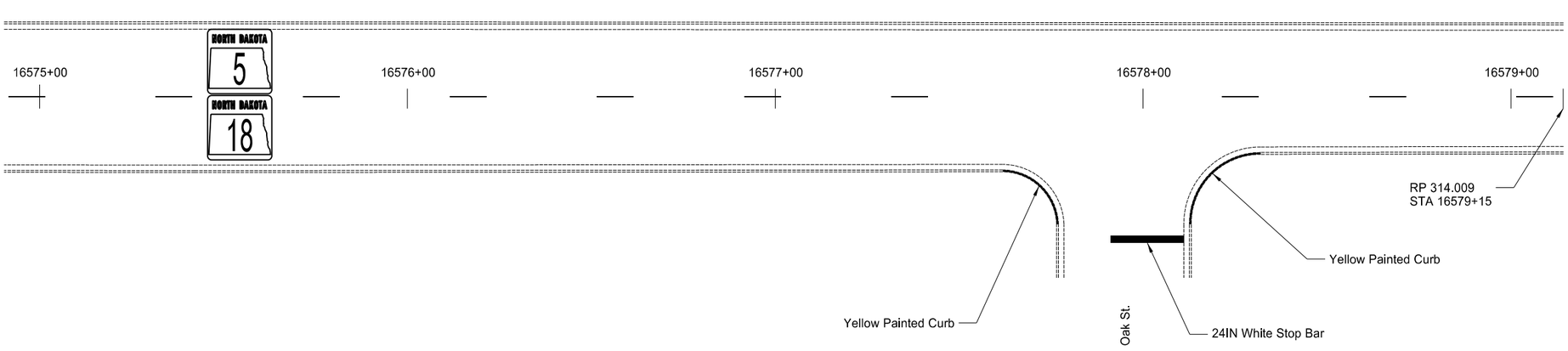
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	13

PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	20 LF

PVMT MK PAINTED CURB TOP & FACE

Yellow Painted Curb	53 LF



*Note: These Quantities have been accounted for in Section 10 Sheet 5

Pavement Marking Layout

ND 5 - Cavalier Municipal
RP 313.895 - RP 314.009

Pavement Marking

Various US & State Highways - Grand Forks District

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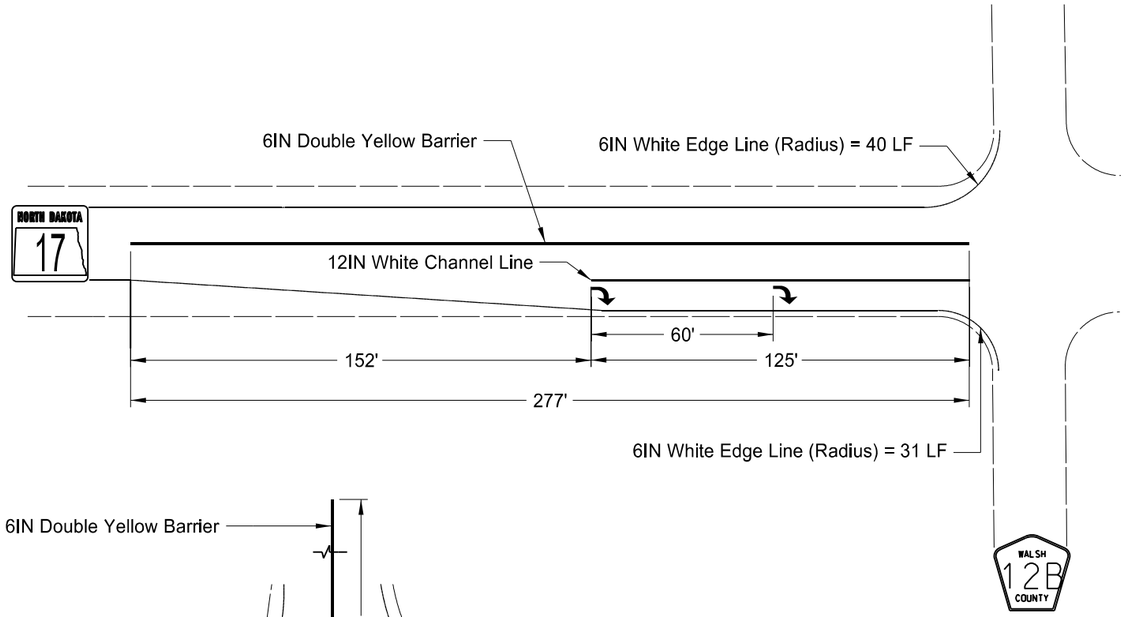
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:08 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_013_ND 5_Cavalier.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	14



JCT ND 17 and Walsh 12B
PVMT MK PAINTED 6IN LINE

6IN White Edge Line - Around Radii	71 LF
6IN Double Yellow Barrier Line	277 LF
TOTAL	348 LF

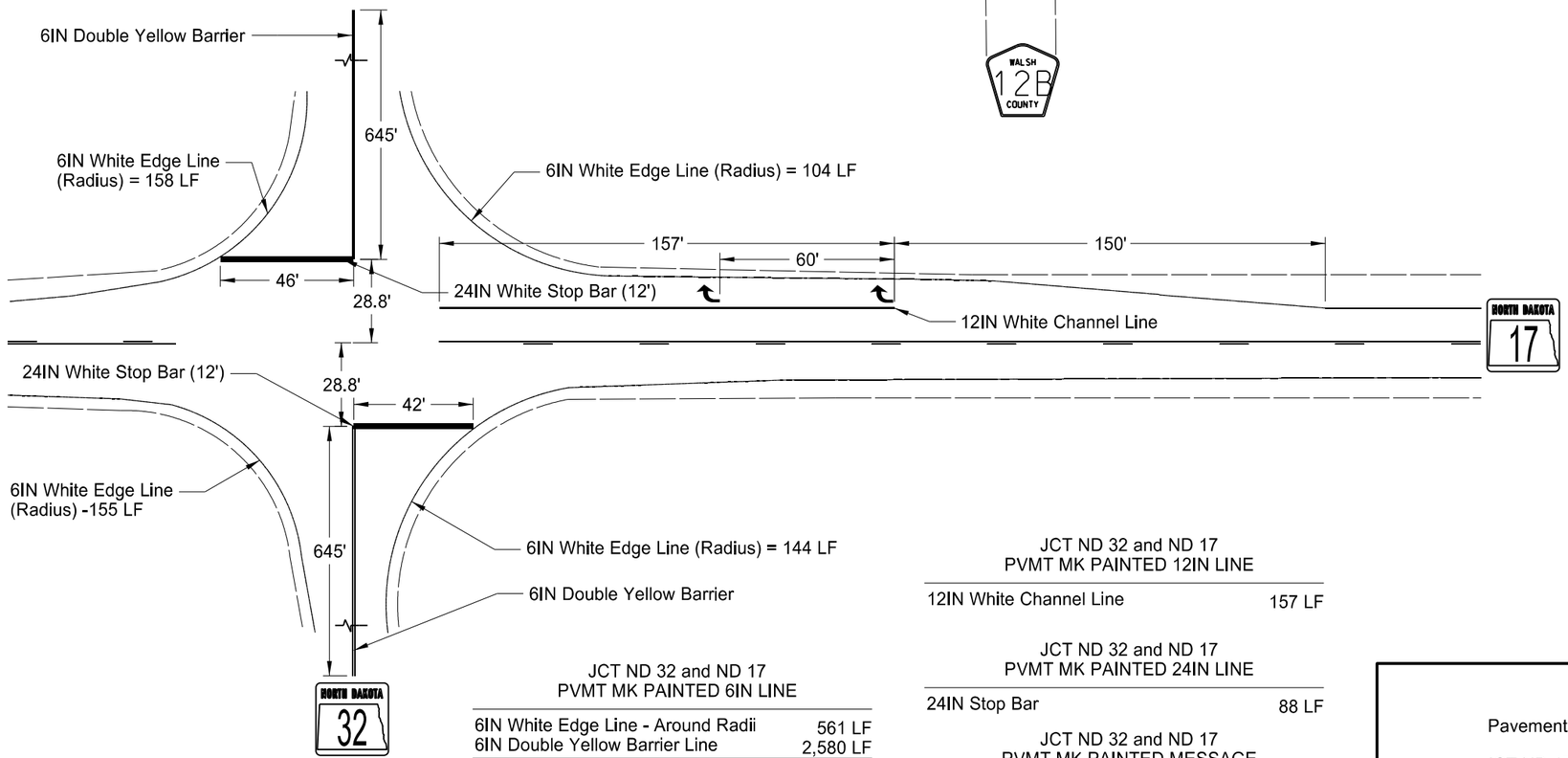
JCT ND 17 and Walsh 12B
PVMT MK PAINTED MESSAGE

2 - RT Turn Arrows	32 SF

JCT ND 17 and Walsh 12B
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	125 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6



JCT ND 32 and ND 17
PVMT MK PAINTED 6IN LINE

6IN White Edge Line - Around Radii	561 LF
6IN Double Yellow Barrier Line	2,580 LF
TOTAL	3,141 LF

JCT ND 32 and ND 17
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	157 LF

JCT ND 32 and ND 17
PVMT MK PAINTED 24IN LINE

24IN Stop Bar	88 LF

JCT ND 32 and ND 17
PVMT MK PAINTED MESSAGE

2 - RT Turn Arrows	32 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 2 & 8

Pavement Marking Layout

JCT ND 17 & CO. RD. 12B

JCT ND 17 & ND 32

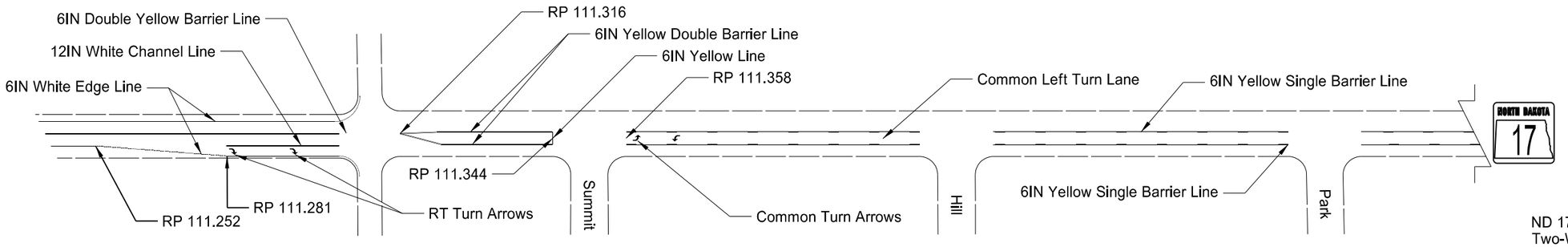
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

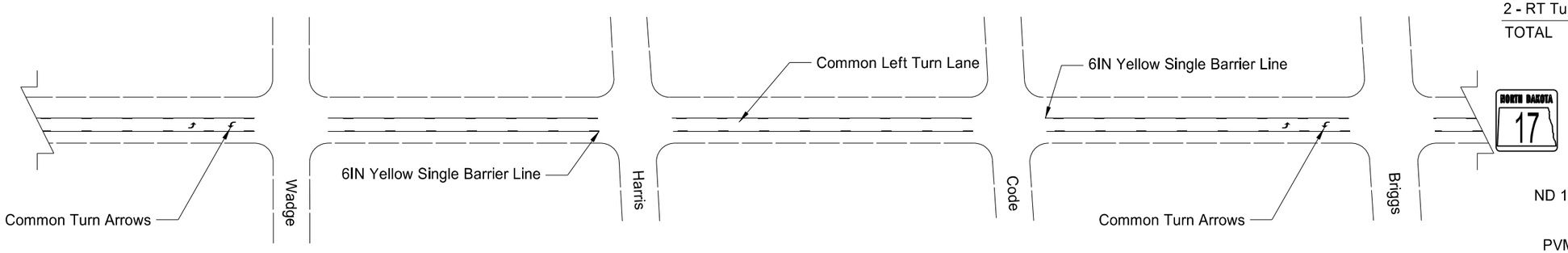
1/10/2025 1:21:09 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_014_ND 17 & ND 32.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	15



ND 17 - PARK RIVER MUNICIPAL
Two-Way Left Turn Channelization
RP 111.358 to RP 112.053
PVMT MK PAINTED MESSAGE

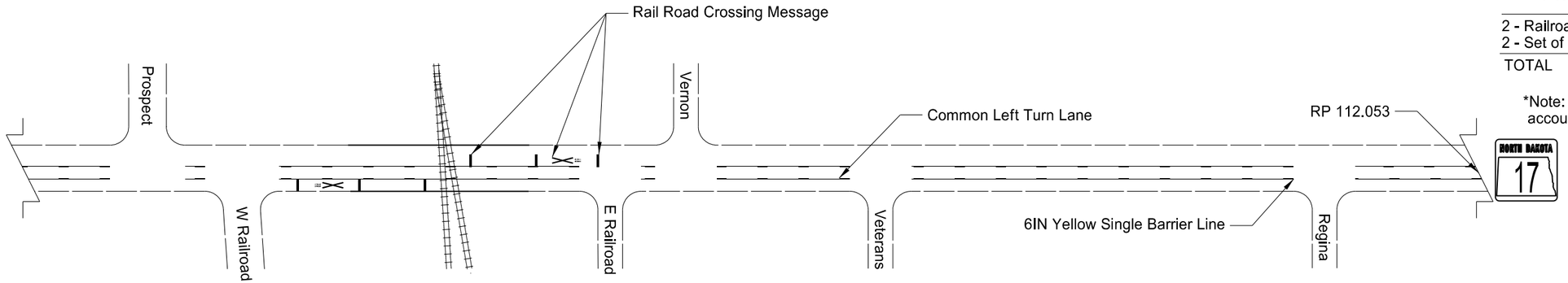
6 - Common Turn Lane Arrows	96 SF
2 - RT Turn Arrows	32 SF
TOTAL	128 SF



ND 17 - PARK RIVER MUNICIPAL
Railroad Crossing
RP 111.860
PVMT MK PAINTED MESSAGE

2 - Railroad Messages	121 SF
2 - Set of Three 12' Bands	144 SF
TOTAL	265 SF

*Note: These Quantities have been accounted for in Section 10 Sheet 1



ND 17 - PARK RIVER MUNICIPAL
RP 111.252 to RP 111.344
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	549 LF
6IN Yellow Double Barrier line	1,146 LF
6IN Yellow Line	12 LF
TOTAL	1,707 LF

ND 17 - PARK RIVER MUNICIPAL
Two-Way Left Turn Channelization
RP 111.358 to RP 112.053
PVMT MK PAINTED 6IN LINE

6IN Yellow Single Barrier Line	5,684 LF
6IN Yellow ℄ Skips - 10' Line / 30' Skips	1,421 LF
TOTAL	7,105 LF

ND 17 - PARK RIVER MUNICIPAL
RP 111.252 to RP 111.344
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	122 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

N

Pavement Marking Layout

ND 17 - Park River Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

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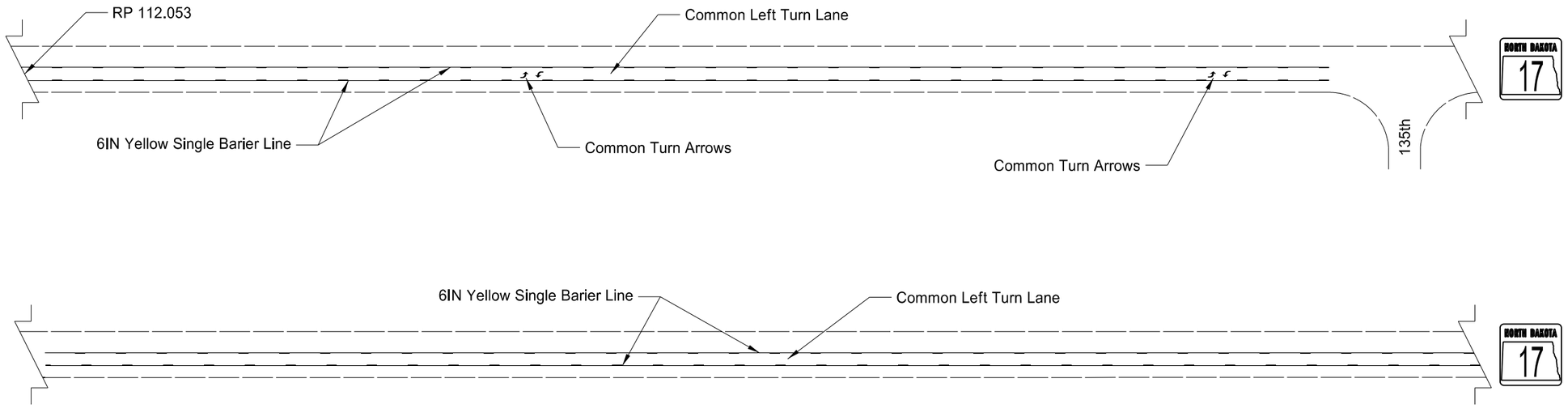
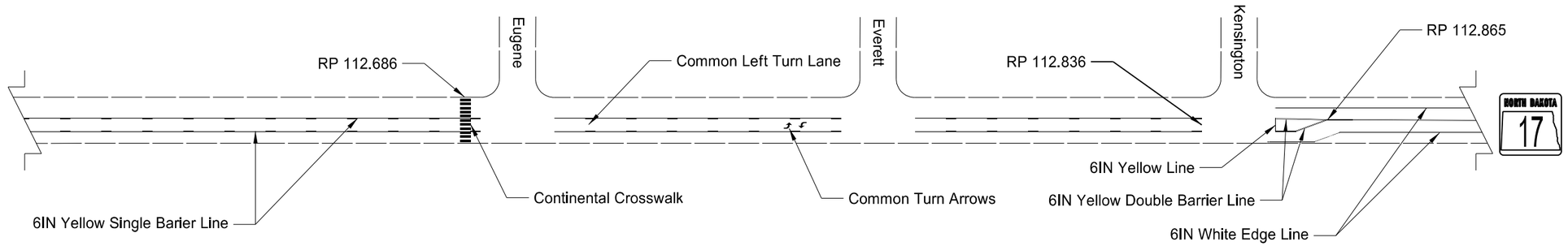
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	16





ND 17 - PARK RIVER MUNICIPAL
RP 112.840 to RP 112.865
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	180 LF
6IN Yellow Double Barrier line	528 LF
6IN Yellow Single Barrier Line	12 LF
TOTAL	720 LF

ND 17 - PARK RIVER MUNICIPAL
Two-Way Left Turn Channelization
RP 112.053 to RP 112.836
PVMT MK PAINTED 6IN LINE

6IN Yellow Single Barrier Line	7,678 LF
6IN Yellow ℄ Skips - 10' Line / 30' Skip	1,919 LF
TOTAL	9,597 LF

ND 17 - PARK RIVER MUNICIPAL
RP 112.840 to RP 112.865
PVMT MK PAINTED MESSAGE

6 - Common Turn Lane Arrows	96 SF
11 - 2' x 10' Continental Crosswalk Bars	220 SF
TOTAL	316 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

N

Pavement Marking Layout

ND 17 - Park River Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

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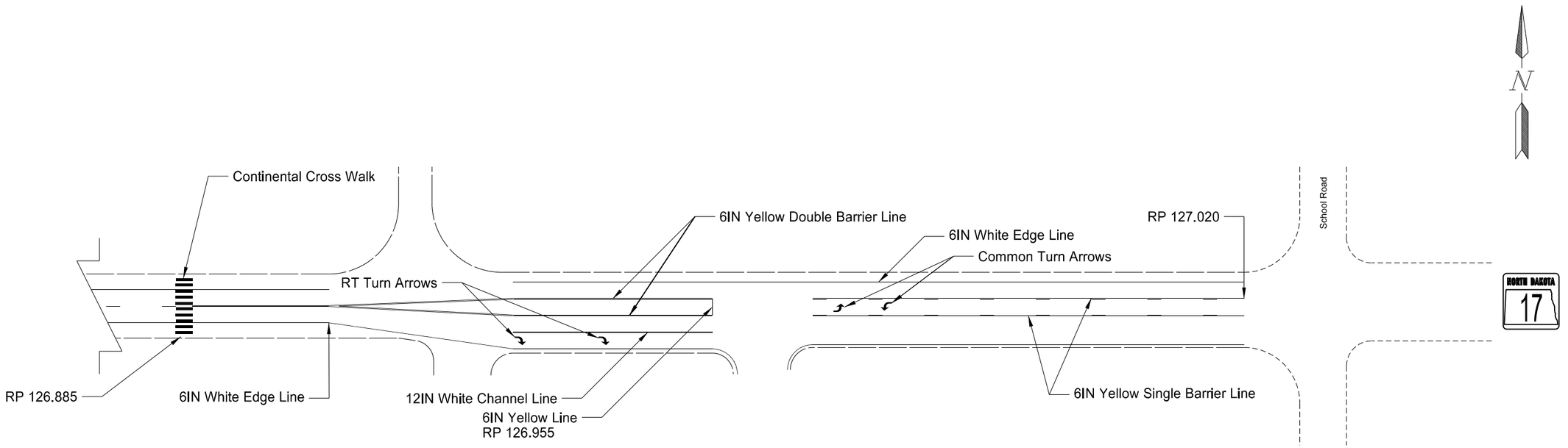
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	17



ND 17 - GRAFTON MUNICIPAL
Two-Way Left Turn Channelization
RP 126.965 to RP 127.020
PVMT MK PAINTED 6IN LINE

6IN Yellow Single Barrier Line	584 LF
6IN Yellow ℄ Skips - 10' Line / 30' Skip	150 LF
TOTAL	734 LF

ND 17 - GRAFTON MUNICIPAL
RP 126.885 to RP 127.020
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	1,305 LF
6IN Yellow Double Barrier Line	1,296 LF
6IN Yellow Line	12 LF
TOTAL	2,613 LF

ND 17 - GRAFTON MUNICIPAL
Two-Way Left Turn Channelization
RP 126.965 to RP 127.020
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	140 LF

ND 17 - GRAFTON MUNICIPAL
PVMT PAINTED MESSAGE

2 - Common Turn Lane Arrows	32 SF
2 - RT Turn Lane Arrows	32 SF
TOTAL	64 SF

ND 17 - GRAFTON MUNICIPAL
RP 126.885 Continental Cross Walk
PVMT PAINTED MESSAGE

10 - 2' x 12' Continental Cross Walk Bars	240 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

Pavement Marking Layout

ND 17 - Grafton Municipal

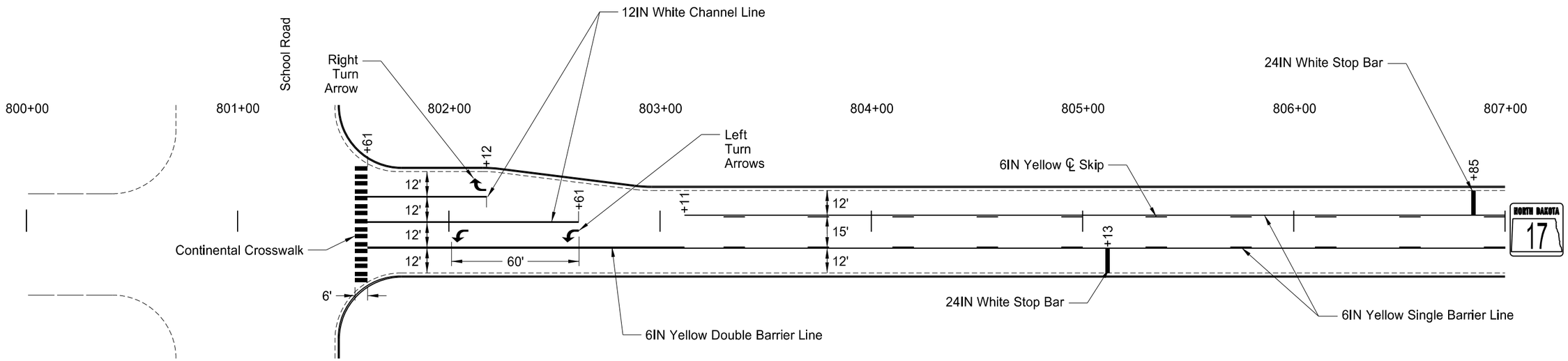
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:13 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_017_ND 17.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	18



GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN Yellow ℄ Skips - 10' Line / 30' Skip	200 LF
6IN Yellow Double Barrier Line	300 LF
6IN Single Yellow Barrier Line	778 LF
TOTAL	1,278 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	156 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED MESSAGE

2 - LT Turn Arrows	32 SF
1 - RT Turn Arrow	16 SF
TOTAL	48 SF

GRAFTON MUNICIPAL
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	24 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED MESSAGE

16 - 2' x 6' Continental Cross Walk Bars	192 SF

N

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

Pavement Marking Layout

ND 17 - Grafton Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

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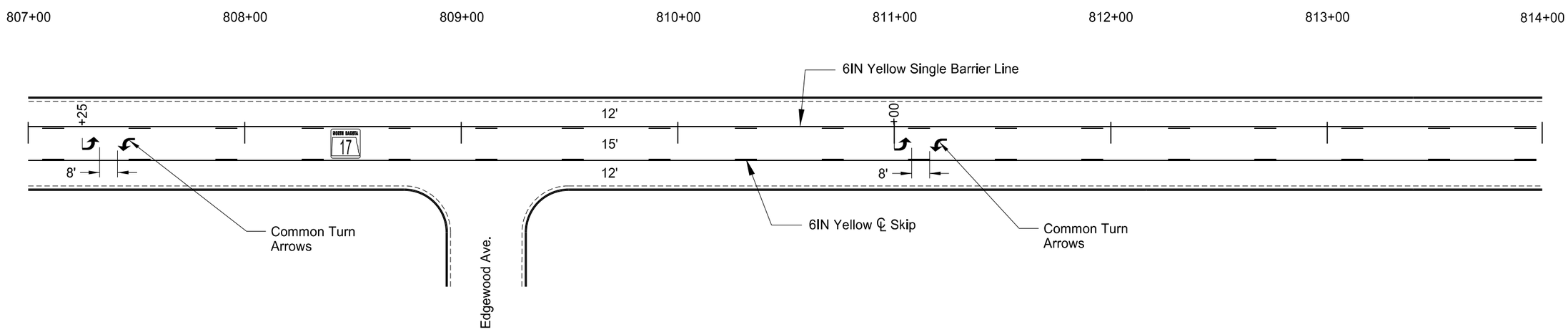

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN Yellow ℄ Skips - 10' Line / 30' Skip	360 LF
6IN Yellow Single Barrier Line	1,400 LF
TOTAL	1,760 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED MESSAGE

4 - Common Turn Arrows	64 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

Pavement Marking Layout

ND 17 - Grafton Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

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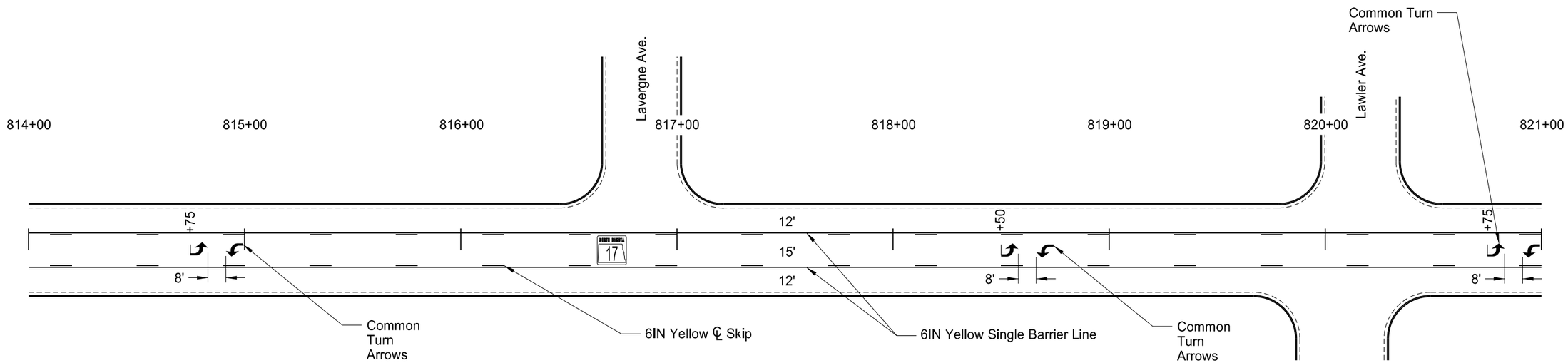

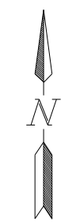

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN Yellow ℄ Skips - 10' Line / 30' Skip	360 LF
6IN Yellow Single Barrier Line	1,400 LF
TOTAL	1,760 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED MESSAGE

6 - Common Turn Arrows	96 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

Pavement Marking Layout

ND 17 - Grafton Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

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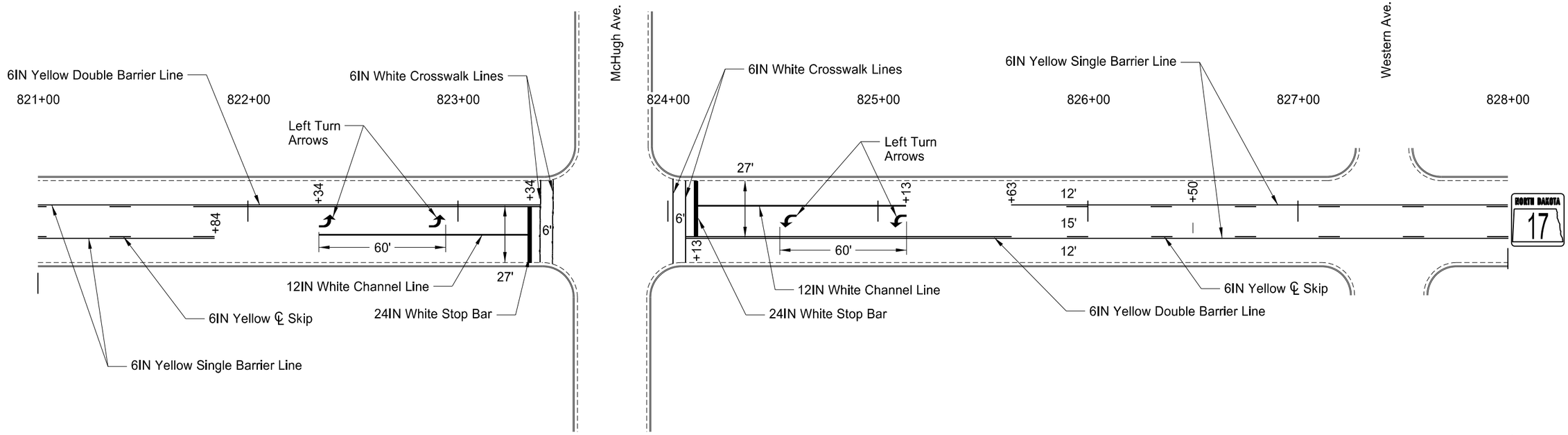

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN Yellow ℄ Skips - 10' Line / 30' Skip	170 LF
6IN Yellow Double Barrier Line	620 LF
6IN Yellow Single Barrier Line	640 LF
TOTAL	1,430 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN White Cross Walk Lines	158 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	200 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	54 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED MESSAGE

4 - LT Turn Arrows	64 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

Pavement Marking Layout

ND 17 - Grafton Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

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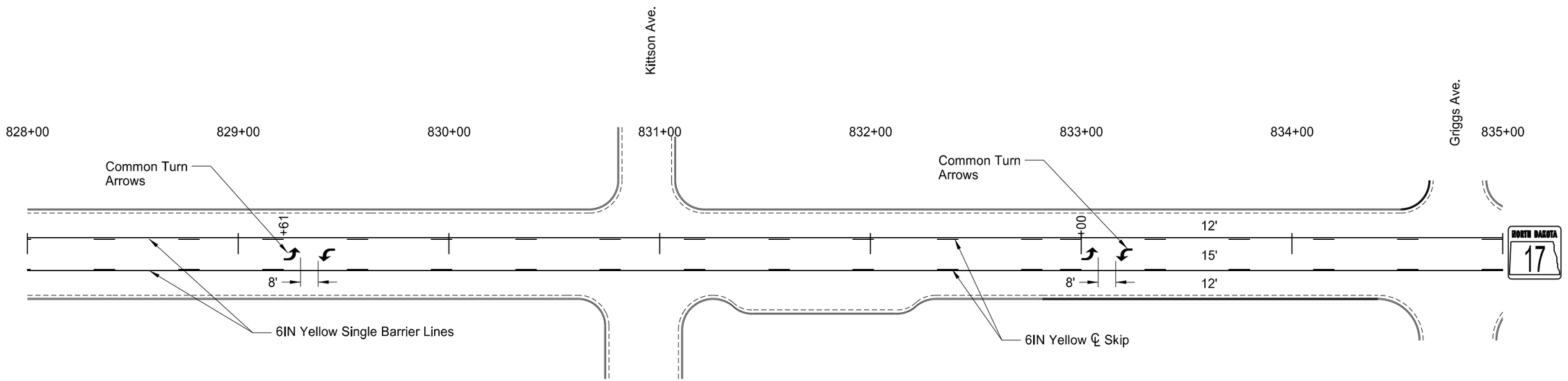

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN Yellow ℄ Skips - 10' Line / 30' Skip	360 LF
6IN Yellow Single Barrier Line	1,400 LF
TOTAL	1,760 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED MESSAGE

4 - Common Turn Arrows	64 SF

N

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

Pavement Marking Layout

ND 17 - Grafton Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

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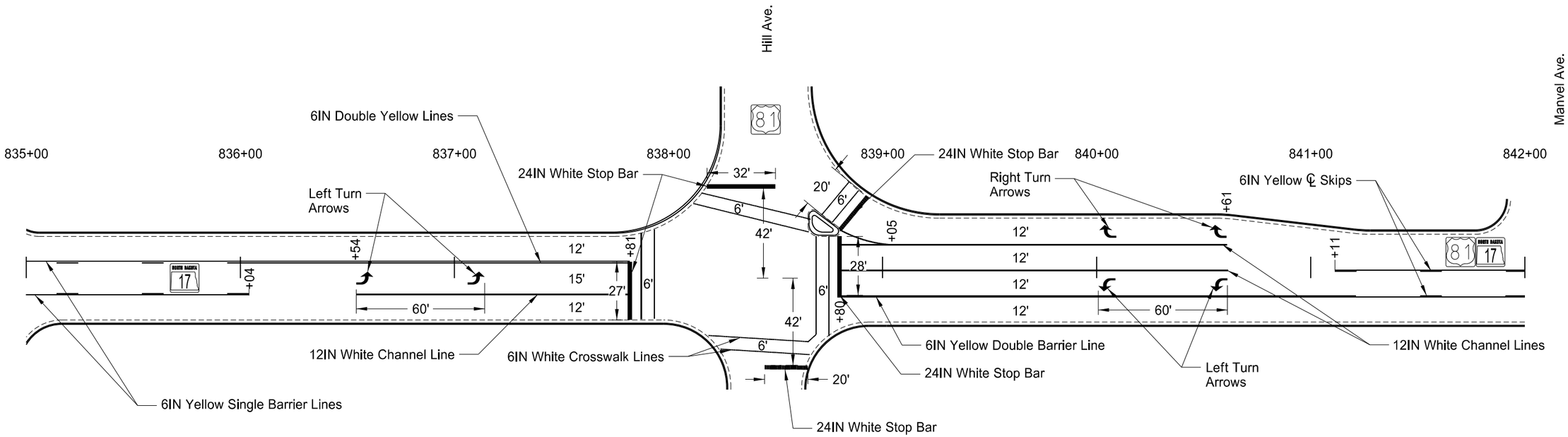

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN Yellow ℄ Skips - 10' Line / 30' Skip	110 LF
6IN Yellow Double Barrier Line	863 LF
6IN Yellow Single Barrier Line	375 LF
TOTAL	1,348 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED MESSAGE

4 - LT Turn Arrows	64 SF
2 - RT Turn Arrows	32 SF
TOTAL	96 SF

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN White Cross Walk Lines	377 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	127 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	515 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

N

Pavement Marking Layout

ND 17 - Grafton Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

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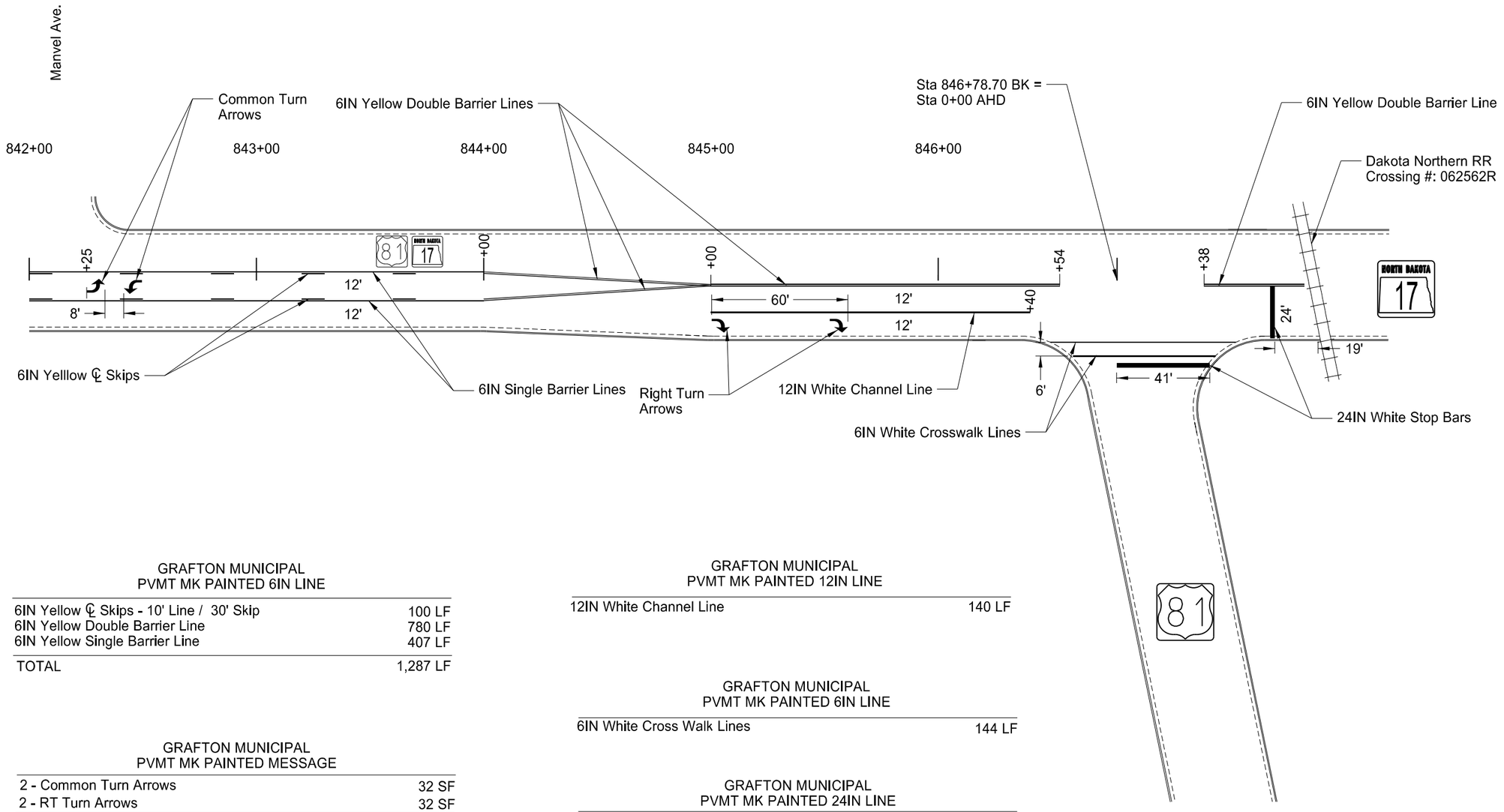

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN Yellow ℄ Skips - 10' Line / 30' Skip	100 LF
6IN Yellow Double Barrier Line	780 LF
6IN Yellow Single Barrier Line	407 LF
TOTAL	1,287 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED MESSAGE

2 - Common Turn Arrows	32 SF
2 - RT Turn Arrows	32 SF
TOTAL	64 SF

GRAFTON MUNICIPAL
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	140 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN White Cross Walk Lines	144 LF

GRAFTON MUNICIPAL
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	65 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

Pavement Marking Layout

ND 17 - Grafton Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

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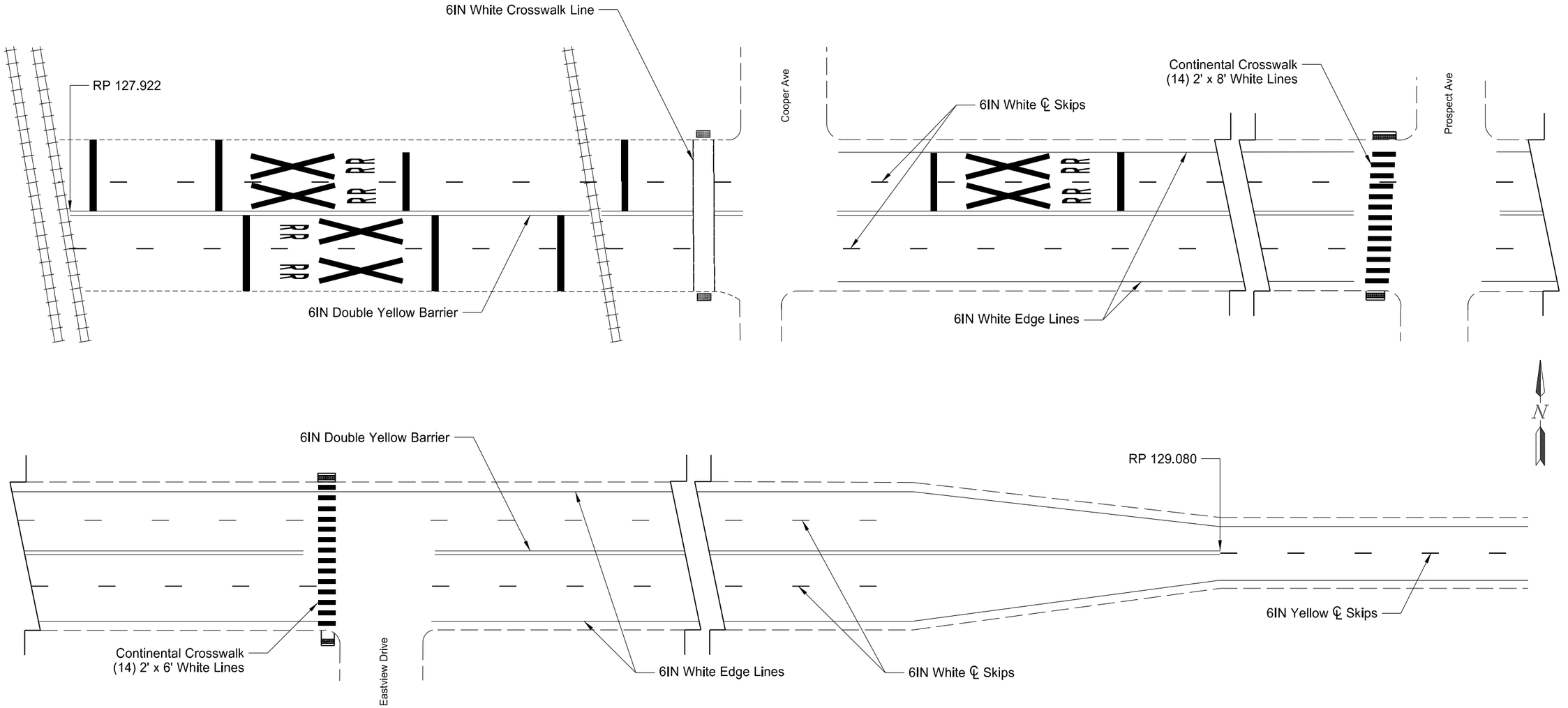

GRAFTON MUNICIPAL
PVMT MK PAINTED MESSAGE

RR Cross, 2 R's, 3 Bands	795 SF
Continental Crosswalks	392 SF
TOTAL	1,187 SF

GRAFTON MUNICIPAL
PVMT MK PAINTED 6IN LINE

6IN Yellow Double Barrier Line	8,012 LF
6IN White ℄ Skips - 10' Line / 30' Skip	2,050 LF
6IN White Edge Lines	8,038 LF
6IN White Crosswalk Line	100 LF
TOTAL	18,200 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 1 & 6

Pavement Marking Layout

ND 17 - Grafton Municipal

Pavement Marking

Various US & State Highways - Grand Forks District

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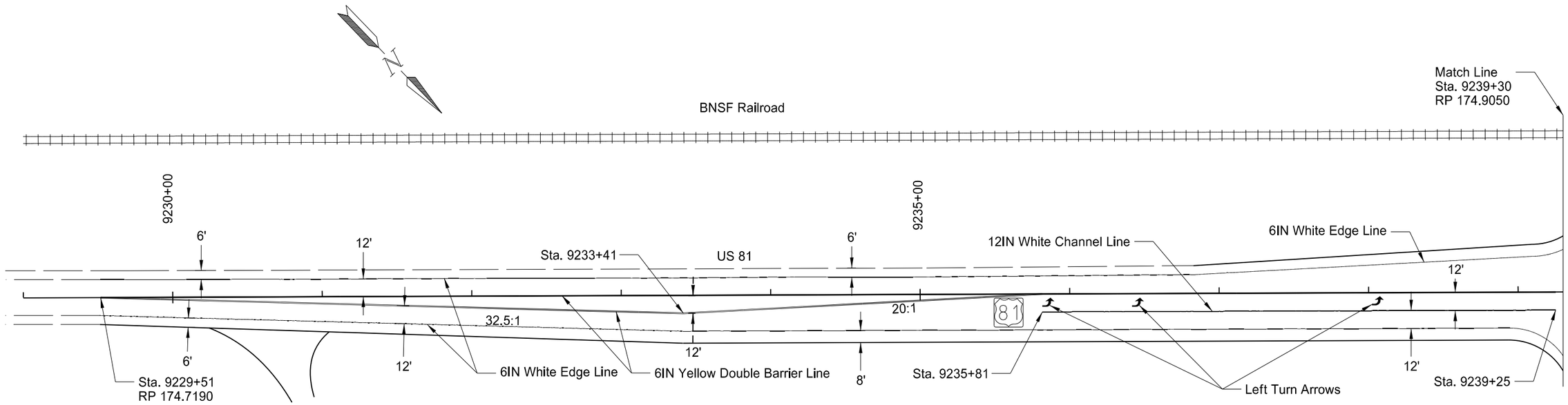

US 81 - RP 174.719 TO RP 174.905
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	1,965 LF
6IN Yellow Double Barrier Line	3,206 LF
TOTAL	5,171 LF

US 81 - RP 174.719 TO RP 174.905
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	360 LF

US 81 - RP 174.719 TO RP 174.905
PVMT MK PAINTED MESSAGE

3- LT Turn Arrows	48 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 4 & 10

Pavement Marking Layout

US 81 - Ardoch

Pavement Marking

Various US & State Highways - Grand Forks District

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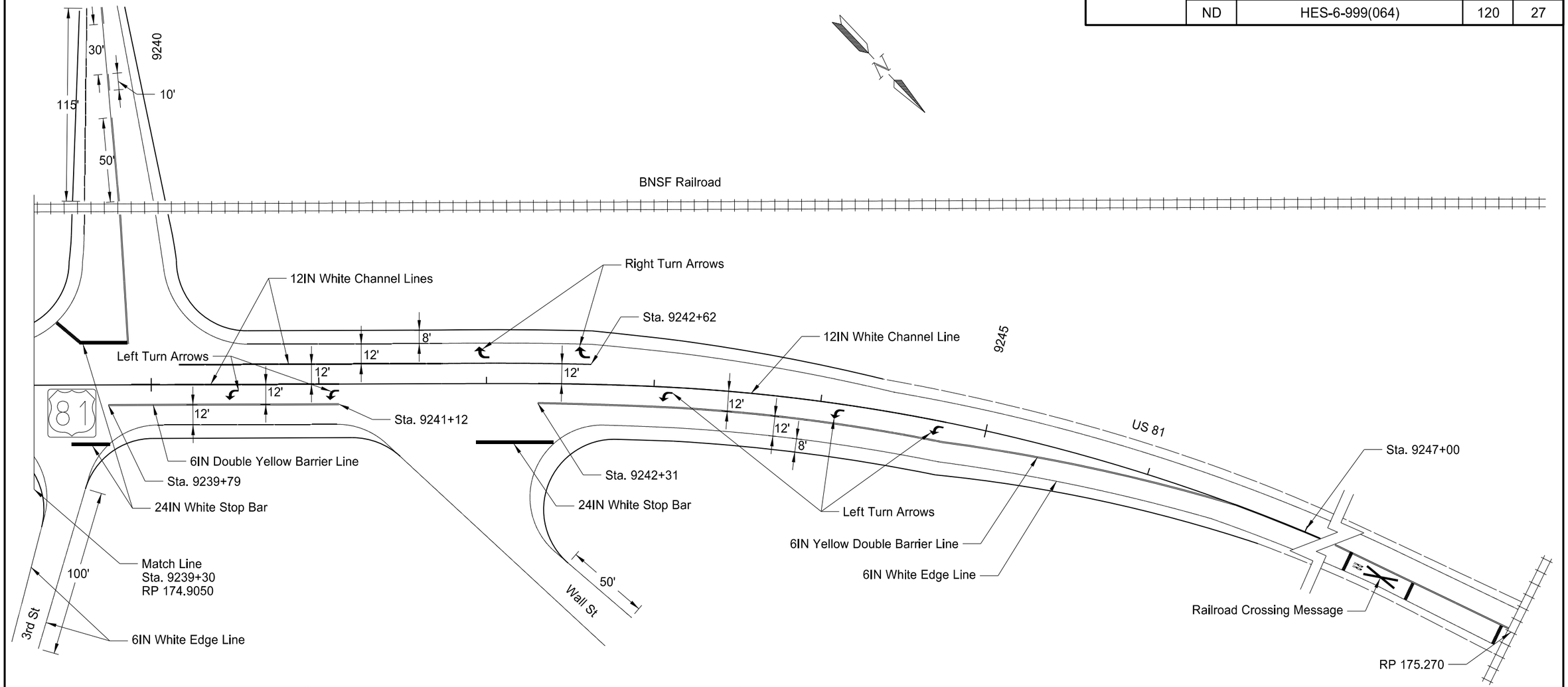

US 81 - RP 174.905 TO RP 175.255
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	4,699 LF
6IN Yellow ℄ Skips - 10' Line / 30' Skip	20 LF
6IN Yellow Single Barrier Line	66 LF
6IN Yellow Double Barrier Line	3,674 LF
TOTAL	8,459 LF

US 81 - RP 174.905 TO RP 175.255
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	624 LF

US 81 - RP 174.905 TO RP 175.255
PVMT MK PAINTED MESSAGE

5 - LT Turn Arrows	80 SF
2 - RT Turn Arrows	32 SF
TOTAL	112 SF

US 81 - RP 174.905 TO RP 175.255
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	80 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 4 & 10

Pavement Marking Layout

US 81 - Ardoch

Pavement Marking

Various US & State Highways - Grand Forks District

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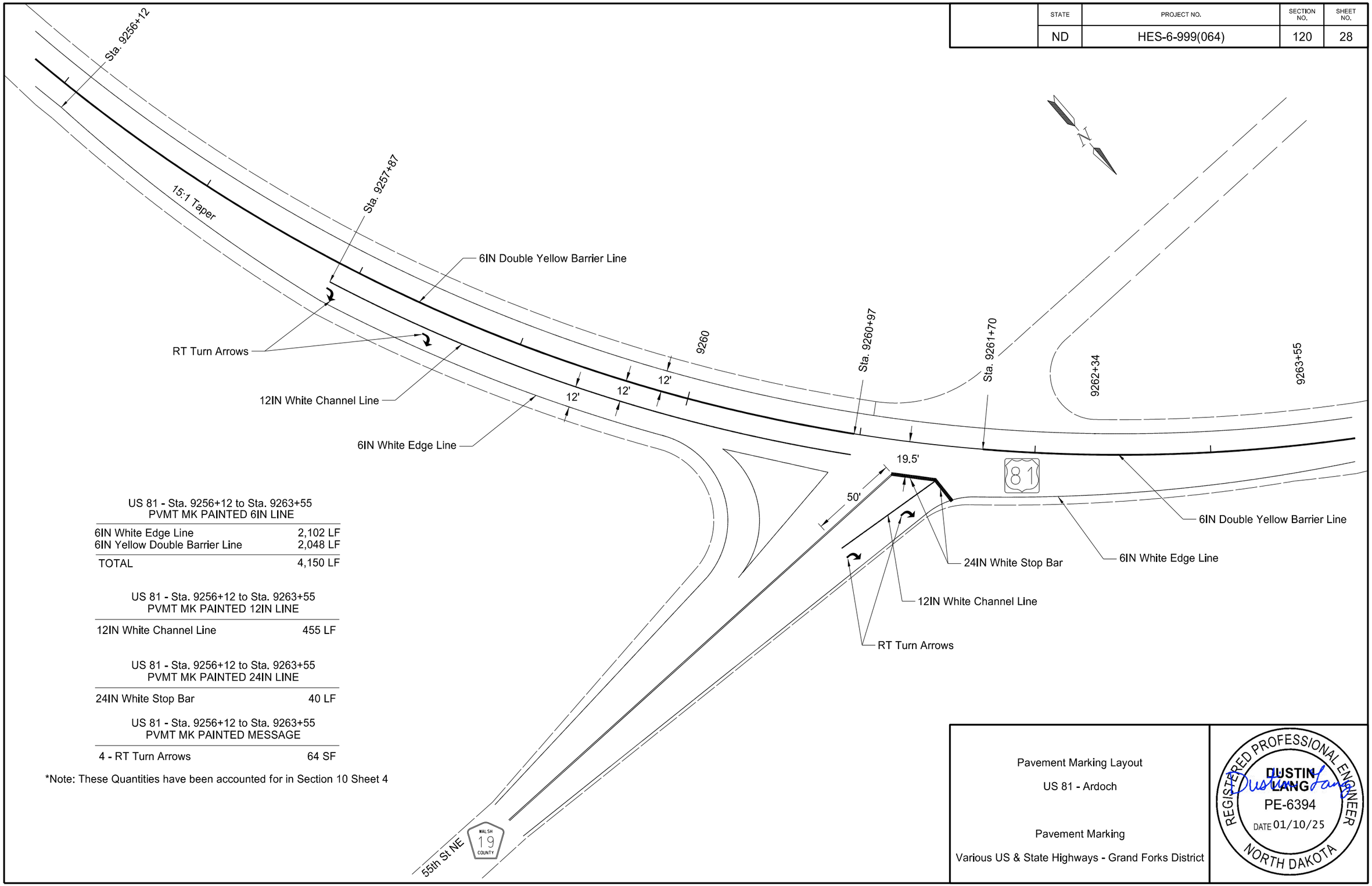

US 81 - Sta. 9256+12 to Sta. 9263+55
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	2,102 LF
6IN Yellow Double Barrier Line	2,048 LF
TOTAL	4,150 LF

US 81 - Sta. 9256+12 to Sta. 9263+55
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	455 LF

US 81 - Sta. 9256+12 to Sta. 9263+55
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	40 LF

US 81 - Sta. 9256+12 to Sta. 9263+55
PVMT MK PAINTED MESSAGE

4 - RT Turn Arrows	64 SF

*Note: These Quantities have been accounted for in Section 10 Sheet 4

Pavement Marking Layout

US 81 - Ardoch

Pavement Marking

Various US & State Highways - Grand Forks District

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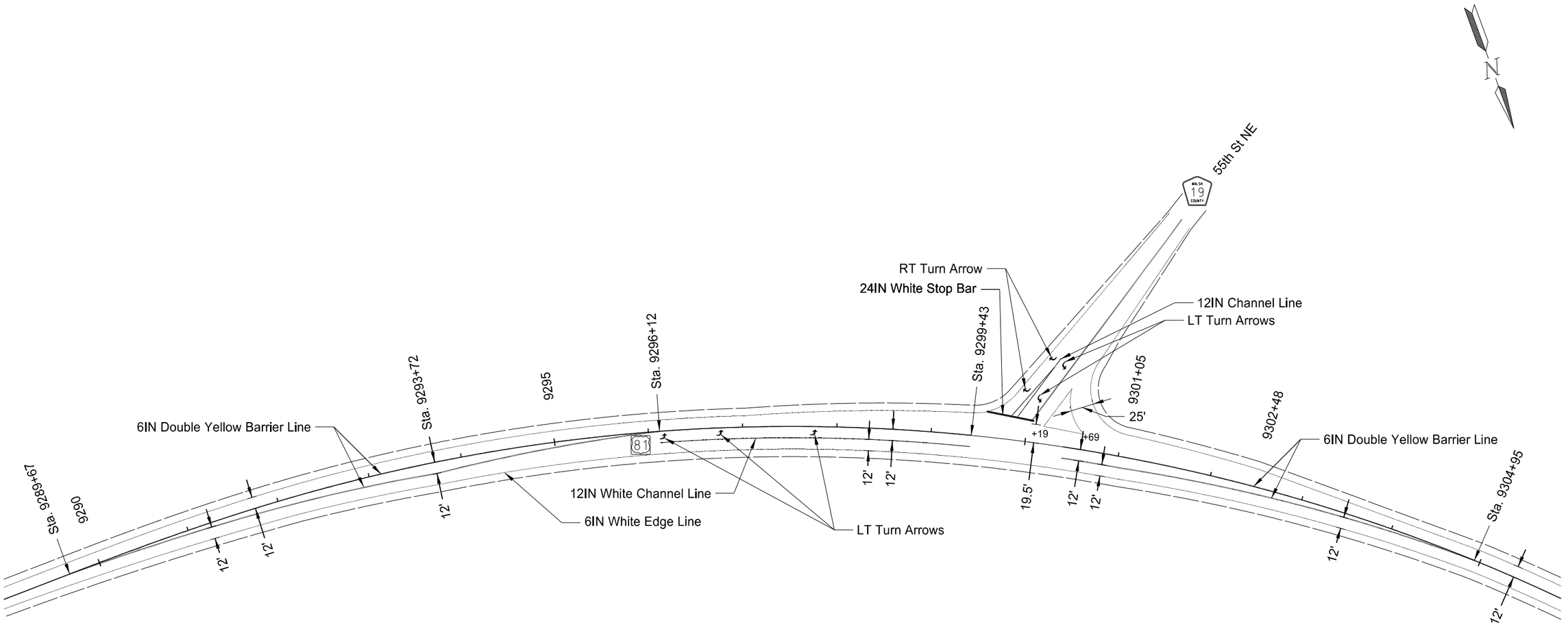

US 81 - STA. 9289+67 to STA. 9304+95
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	3,631 LF
6IN Yellow Double Barrier Line	5,626 LF
TOTAL	9,257 LF

US 81 - STA. 9289+67 to STA. 9304+95
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	481 LF

US 81 - STA. 9289+67 to STA. 9304+95
PVMT MK PAINTED 24IN LINE

24IN Stop Bar	56 LF

US 81 - STA. 9289+67 to STA. 9304+95
PVMT MK PAINTED MESSAGE

5 - LT Turn Arrows	80 SF
2 - RT Turn Arrows	32 SF
TOTAL	112 SF

*Note: These Quantities have been accounted for in Section 10 Sheet 4

Pavement Marking Layout

US 81 - Ardoch

Pavement Marking

Various US & State Highways - Grand Forks District

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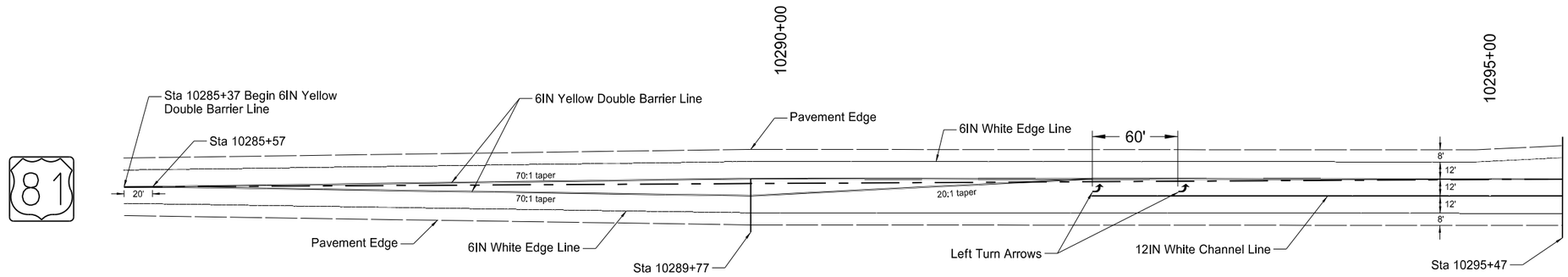
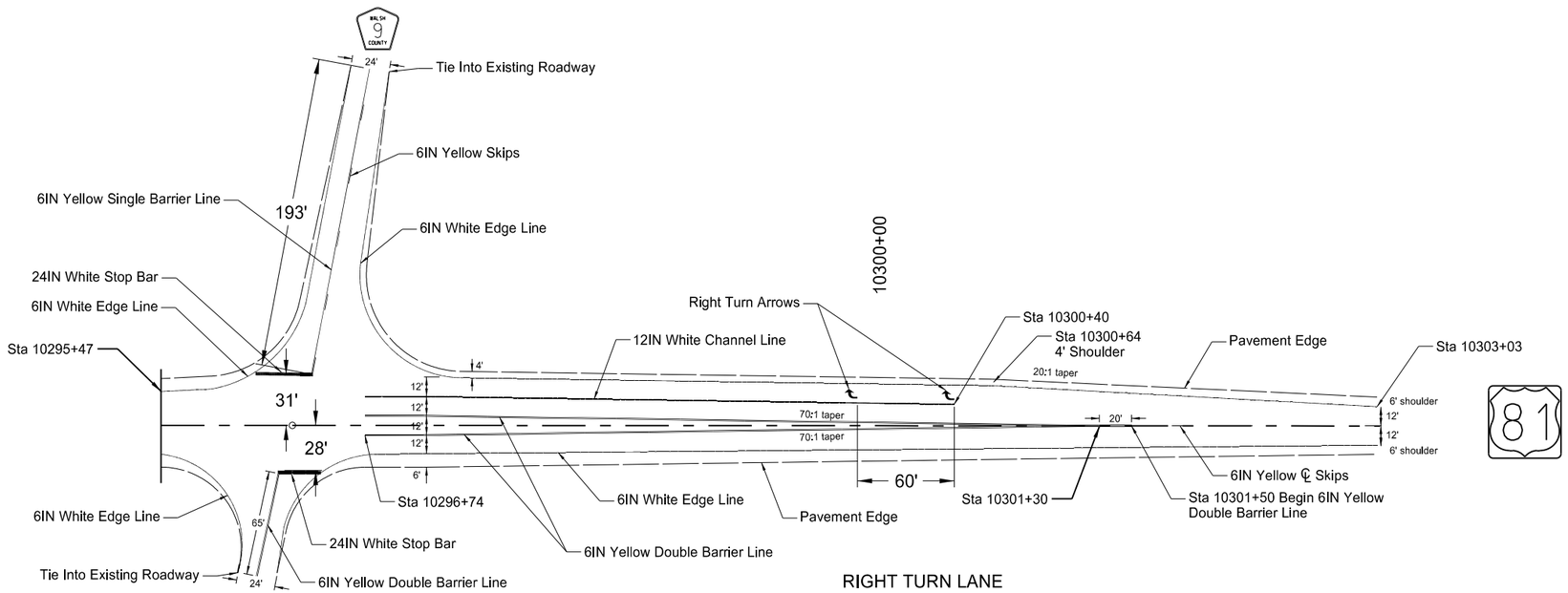


LEFT TURN LANE



RIGHT TURN LANE

JCT US 81 & Co. Rd. 9
STA 10285+37 to STA 10303+03
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	3,880 LF
6IN Yellow ℄ Skips - 10' Line / 30' Skip	90 LF
6IN Yellow Double Barrier Line	5,336 LF
6IN Yellow Single Barrier Line	193 LF
TOTAL	9,499 LF

JCT US 81 & Co. Rd. 9
STA 10285+37 to STA 10303+03
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	713 LF

JCT US 81 & Co. Rd. 9
STA 10285+37 to STA 10303+03
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	34 LF

JCT US 81 & Co. Rd. 9
STA 10285+37 to STA 10303+03
PVMT MK PAINTED MESSAGE

2 - Left Turn Arrows	32 SF
2 - Right Turn Arrows	32 SF
TOTAL	64 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 4 & 10

Pavement Marking Layout

JCT US 81 & Walsh CNTY RD 9

Pavement Marking

Various US & State Highways - Grand Forks District

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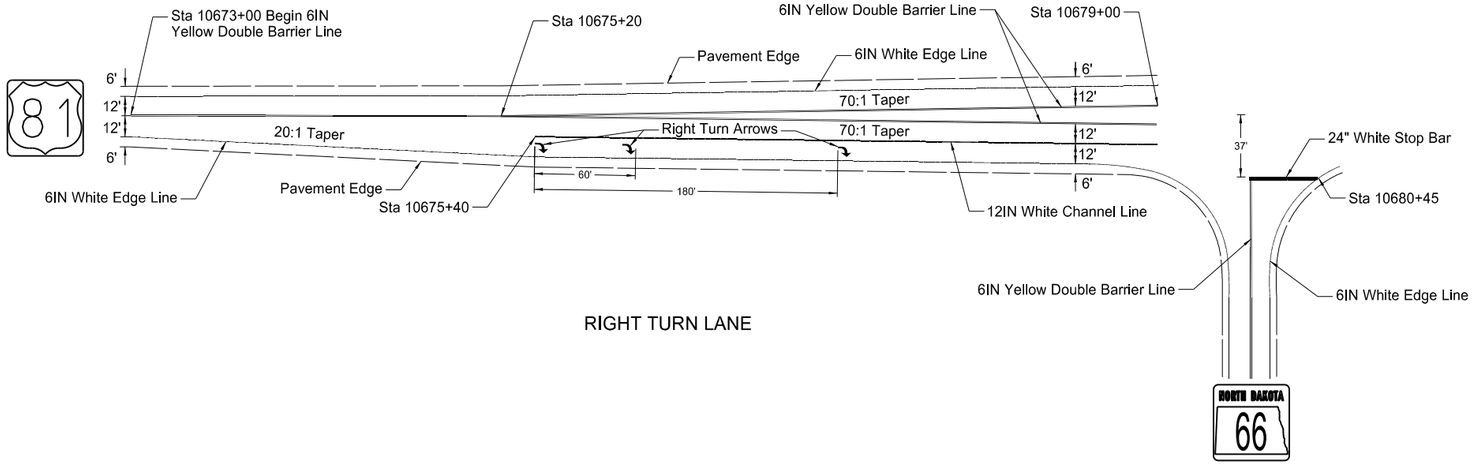
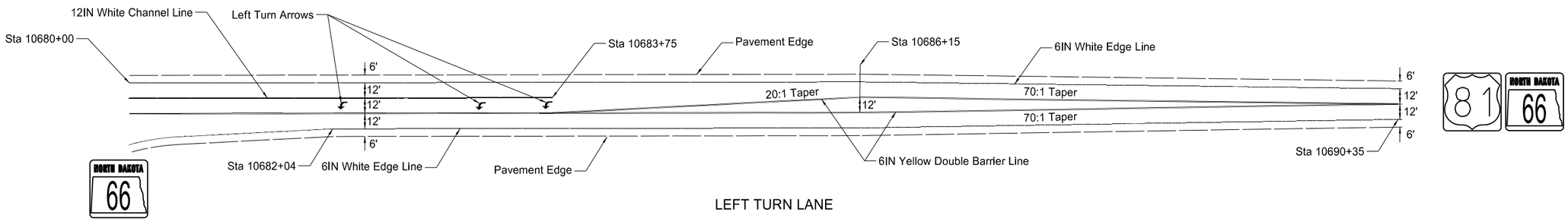


RIGHT TURN LANE

10685+00

10690+00



LEFT TURN LANE

SOUTH JCT ND 66 & US 81
STA 10673+00 to STA 11690+55
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	3,510 LF
6IN Yellow Double Barrier Line	8,911 LF
TOTAL	12,421 LF

SOUTH JCT ND 66 & US 81
STA 10673+00 to STA 11690+55
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	708 LF

SOUTH JCT ND 66 & US 81
STA 10673+00 to STA 11690+55
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	42 LF

SOUTH JCT ND 66 & US 81
STA 10673+00 to STA 11690+55
PVMT MK PAINTED MESSAGE

3 - Left Turn Arrows	48 SF
3 - Right Turn Arrows	48 SF
TOTAL	96 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 4 & 10

Pavement Marking Layout

JCT US 81 & ND 66 S

Pavement Marking

Various US & State Highways - Grand Forks District

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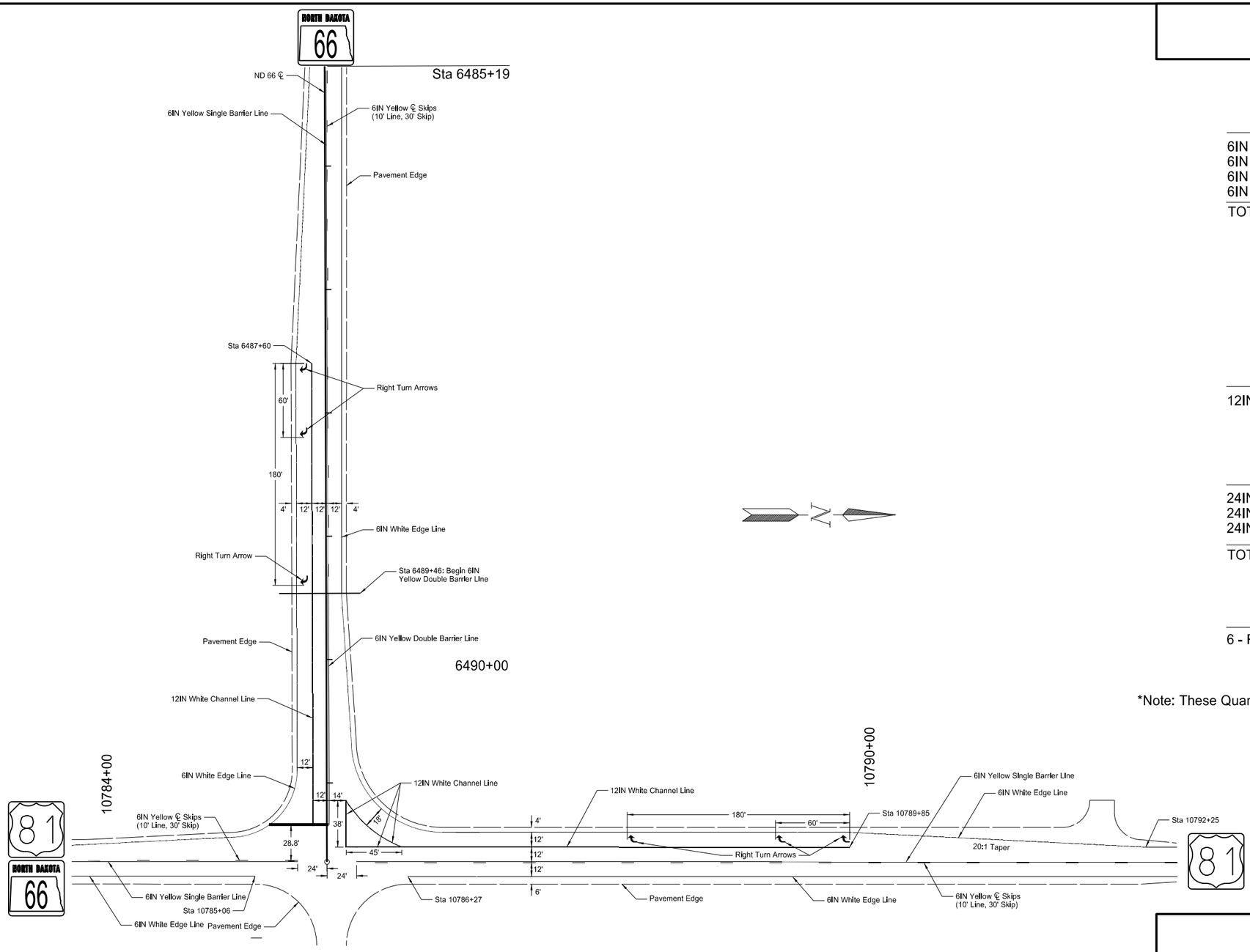

NORTH JCT ND 66 & US 81
STA 10784+00 to STA 10792+25
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	2,880 LF
6IN Yellow ℄ Skips - 10' Line / 30' Skip	330 LF
6IN Yellow Single Barrier Line	1,272 LF
6IN Yellow Double Barrier Line	376 LF
TOTAL	4,858 LF

NORTH JCT ND 66 & US 81
STA 10784+00 to STA 10792+25
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	879 LF

NORTH JCT ND 66 & US 81
STA 10784+00 to STA 10792+25
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	48 LF
24IN White Stop Bar (S. JCT ND 91)	29 LF
24IN White Stop Bar (N. JCT ND 91)	21 LF
TOTAL	98 LF

NORTH JCT ND 66 & US 81
STA 10784+00 to STA 10792+25
PVMT MK PAINTED MESSAGE

6 - Right Turn Arrows	96 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 3, 4, 9, & 10

Pavement Marking Layout

JCT US 81 & N ND 66

Pavement Marking

Various US & State Highways - Grand Forks District

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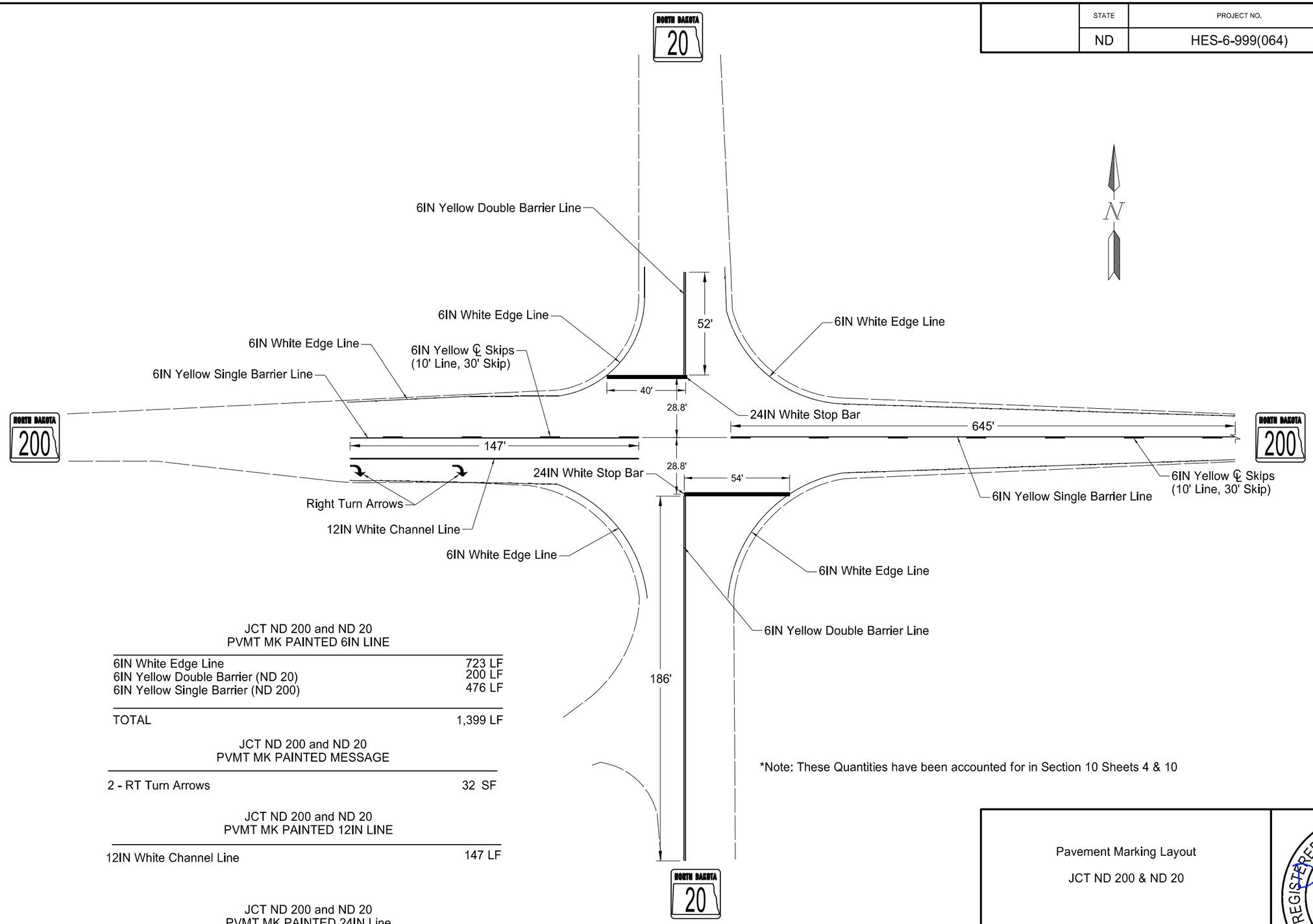

JCT ND 200 and ND 20
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	723 LF
6IN Yellow Double Barrier (ND 20)	200 LF
6IN Yellow Single Barrier (ND 200)	476 LF
TOTAL	1,399 LF

JCT ND 200 and ND 20
PVMT MK PAINTED MESSAGE

2 - RT Turn Arrows	32 SF

JCT ND 200 and ND 20
PVMT MK PAINTED 12IN LINE

12IN White Channel Line	147 LF

JCT ND 200 and ND 20
PVMT MK PAINTED 24IN Line

24IN White Stop Bar	94 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 4 & 10

Pavement Marking Layout

JCT ND 200 & ND 20

Pavement Marking

Various US & State Highways - Grand Forks District

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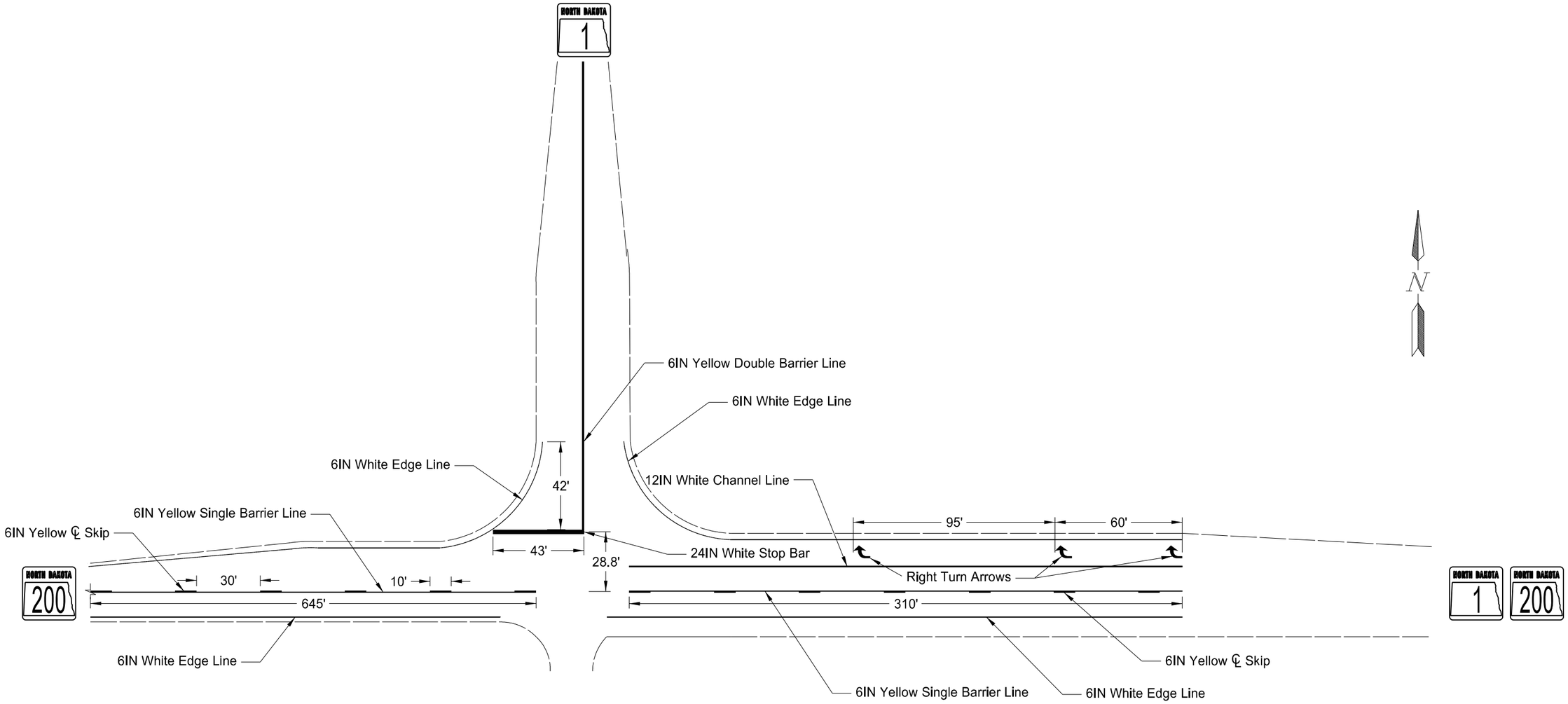
JUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:33 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_033_ND 200 & ND 20.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	34



JCT ND 200 and ND 1
PVMT MK PAINTED 6IN Line

6IN White Edge Line (JCT ND 200 & ND 1)	213 LF
6IN Yellow Double Barrier (JCT ND 200 & ND 1)	84 LF
TOTAL	297 LF

JCT ND 200 and ND 1
PVMT MK PAINTED 12IN Line

12IN White Channel Line	310 LF

JCT ND 200 and ND 1
PVMT MK PAINTED 24IN Line

24IN White Stop Bar	43 LF

JCT ND 200 and ND 1
PVMT MK PAINTED MESSAGE

3 - RT Turn Arrows	48 SF

*Note: These Quantities have been accounted for in Section 10 Sheets 4 & 10

Pavement Marking Layout

JCT ND 200 & W JCT ND 1

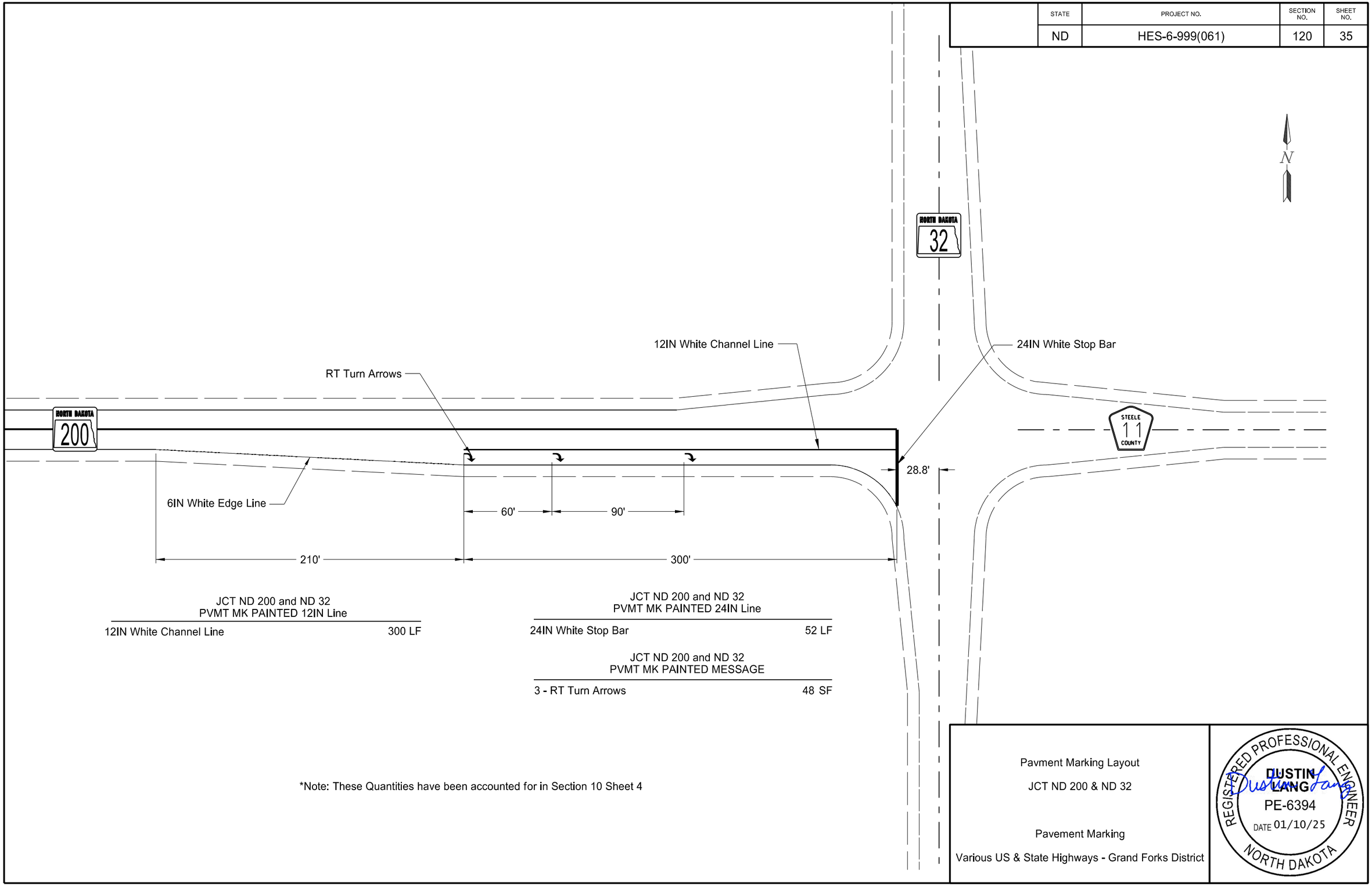
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:35 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_034_ND 200 & ND 1.dgn

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	HES-6-999(061)	120	35



JCT ND 200 and ND 32
PVMT MK PAINTED 12IN Line

12IN White Channel Line	300 LF

JCT ND 200 and ND 32
PVMT MK PAINTED 24IN Line

24IN White Stop Bar	52 LF

JCT ND 200 and ND 32
PVMT MK PAINTED MESSAGE

3 - RT Turn Arrows	48 SF

*Note: These Quantities have been accounted for in Section 10 Sheet 4

Pavment Marking Layout

JCT ND 200 & ND 32

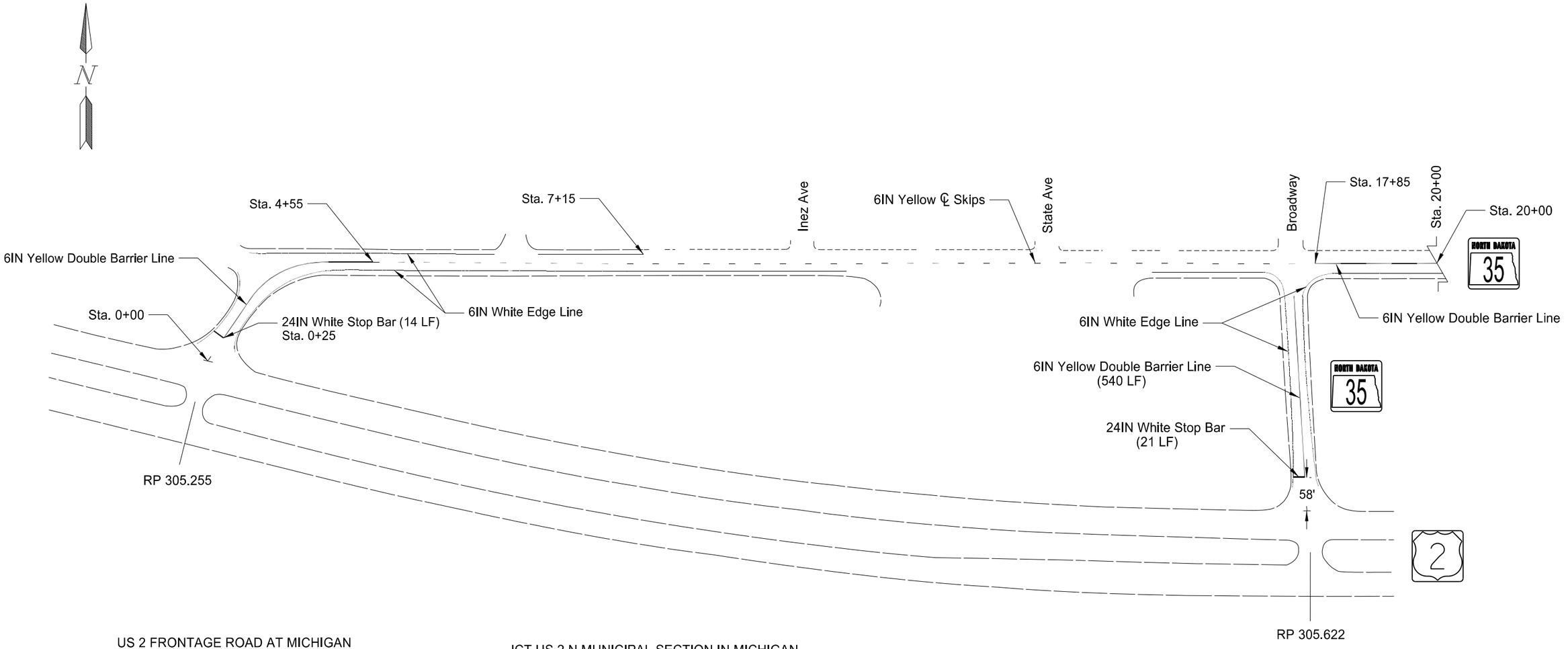
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:36 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_035_ND 200 & ND 32.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	36



US 2 FRONTAGE ROAD AT MICHIGAN
STA 0+00 TO STA 20+00
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	1,728 LF
6IN Yellow ℄ Skips - 10' Line / 30' Skip	330 LF
6IN Yellow Double Barrier Line	860 LF
TOTAL	2,918 LF

JCT US 2 N MUNICIPAL SECTION IN MICHIGAN
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	945 LF
6IN Yellow Double Barrier Line	970 LF
TOTAL	1,915 LF

US 2 FRONTAGE ROAD AT MICHIGAN
STA 0+00 TO STA 20+00
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	14 LF

JCT US N MUNICIPAL SECTION IN MICHIGAN
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	21 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 3, 9, & 11

Pavement Marking Layout

JCT ND 35 & US 2
Michigan Acces & Frontage RD

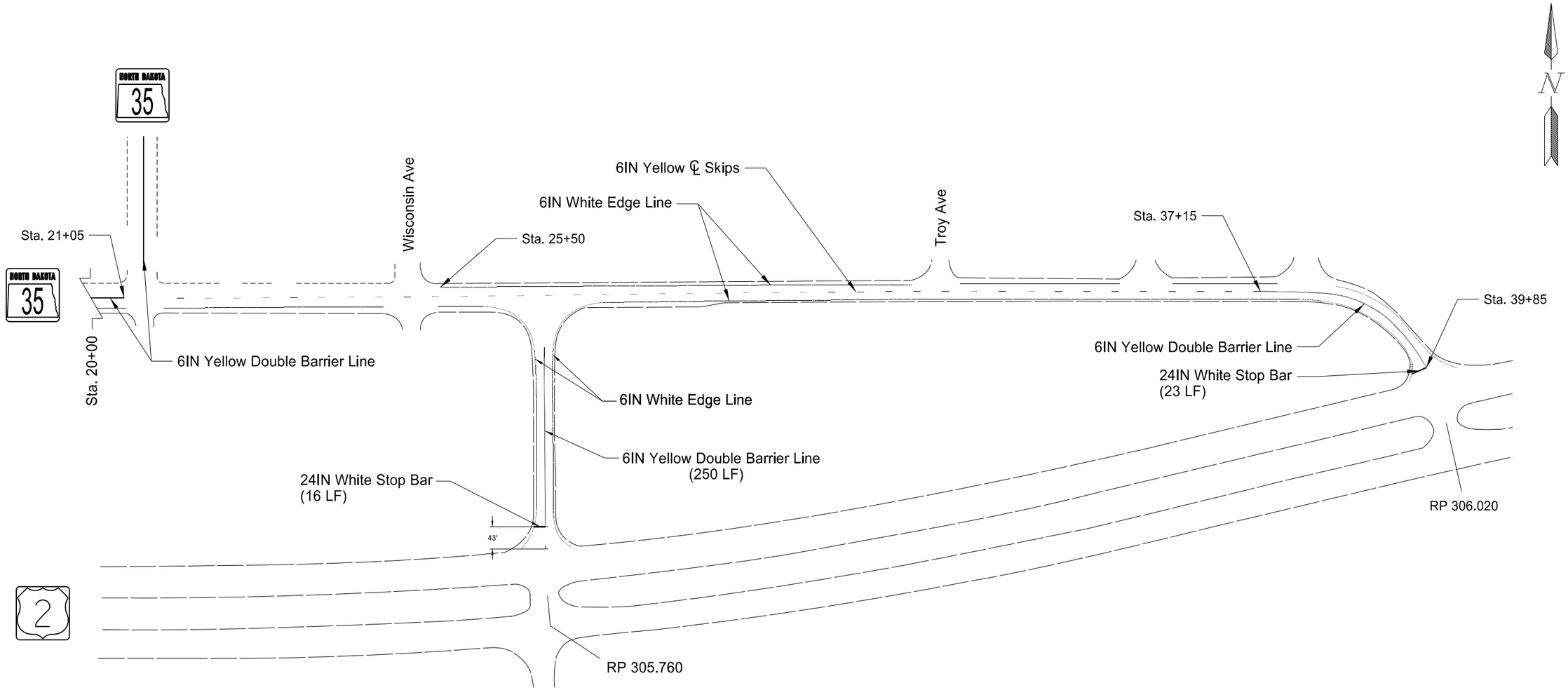
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:38 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_036_US 2 & ND 35.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	37



US 2 FRONTAGE ROAD AT MICHIGAN
STA 20+00 TO STA 39+85
PVMT MK PAINTED 6IN LINE

6IN White Edge Line	4,087 LF
6IN Yellow ℄ Skips - 10' Line / 30' Skip	400 LF
6IN Yellow Double Barrier Line	1,040 LF
TOTAL	5,287 LF

US 2 FRONTAGE ROAD AT MICHIGAN
STA 20+00 TO STA 39+85
PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	39 LF

JCT US 2 N MUNICIPAL SECTION IN MICHIGAN
STA 20+00 TO STA 21+05
PVMT MK PAINTED 6IN LINE

6IN Yellow Double Barrier Line	210 LF

*Note: These Quantities have been accounted for in Section 10 Sheets 3 & 11

Pavement Marking Layout

JCT ND 35 & US 2
Michigan Access & Frontage RD

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:39 PM jtwamley R:\project\60999000,064\District\Sheets\120MK_PVMT\120MK_037_US 2 & ND 35.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	38

PVMT MK PAINTED 6IN LINE

6IN White Edge Line	1,940 LF
6IN Yellow Edge Line	980 LF
TOTAL	2,920 LF

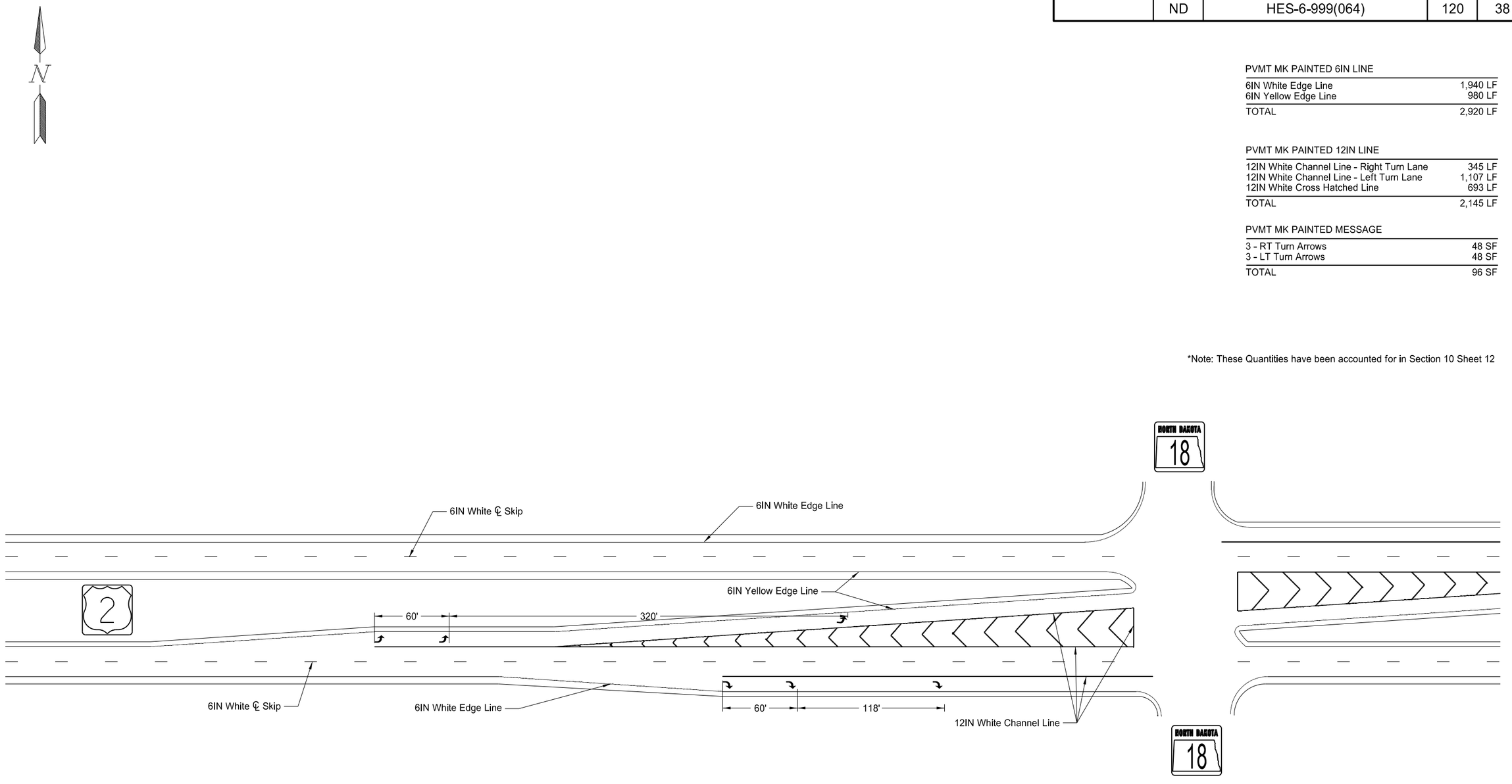
PVMT MK PAINTED 12IN LINE

12IN White Channel Line - Right Turn Lane	345 LF
12IN White Channel Line - Left Turn Lane	1,107 LF
12IN White Cross Hatched Line	693 LF
TOTAL	2,145 LF

PVMT MK PAINTED MESSAGE

3 - RT Turn Arrows	48 SF
3 - LT Turn Arrows	48 SF
TOTAL	96 SF

*Note: These Quantities have been accounted for in Section 10 Sheet 12



Pavement Marking Layout

JCT US 2 & ND 18
EB US 2

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:40 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_038_US 2 & ND 18.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	39

PVMT MK PAINTED 6IN LINE

6IN White Edge Line	2,112 LF
6IN Yellow Edge Line	996 LF
TOTAL	3,108 LF

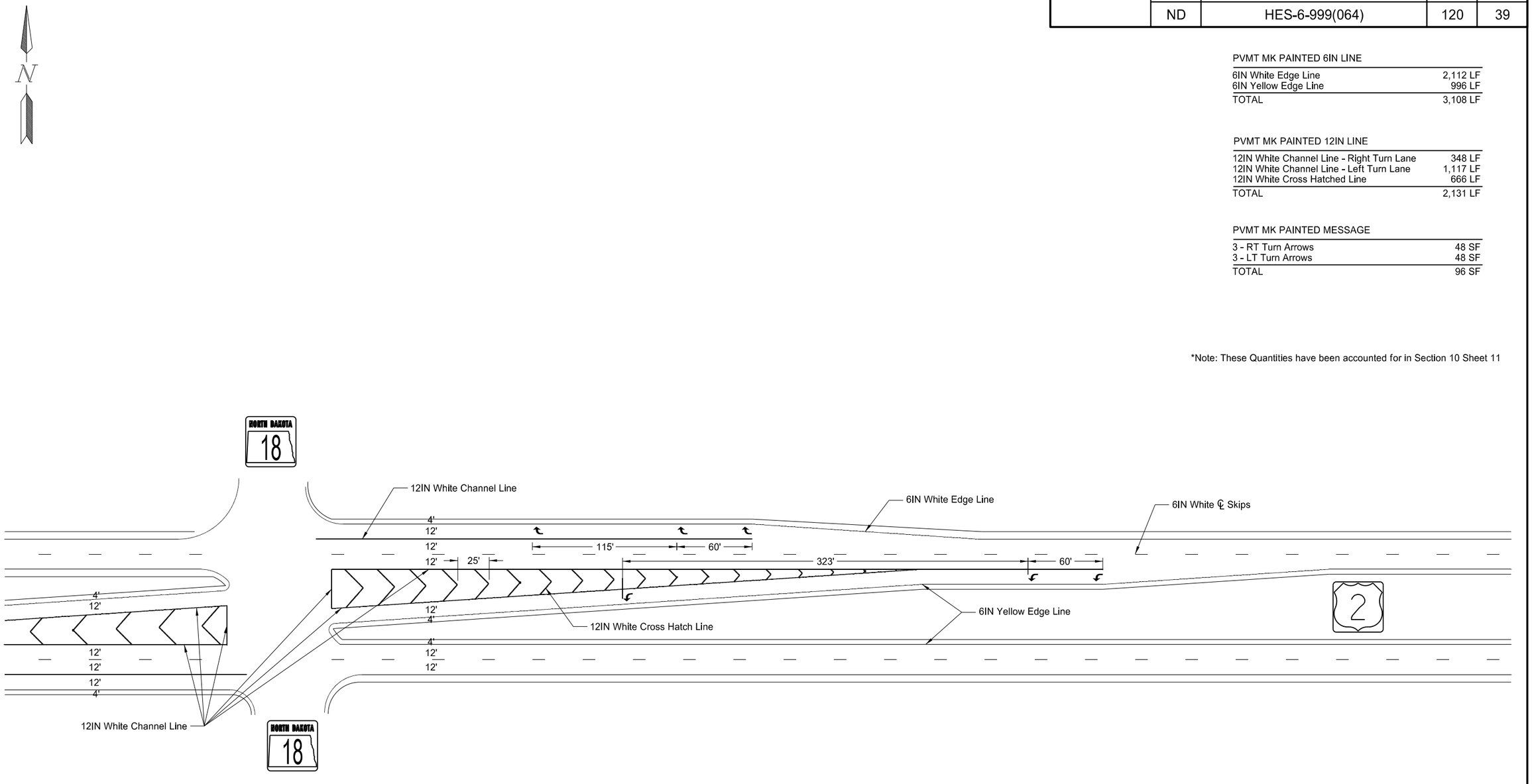
PVMT MK PAINTED 12IN LINE

12IN White Channel Line - Right Turn Lane	348 LF
12IN White Channel Line - Left Turn Lane	1,117 LF
12IN White Cross Hatched Line	666 LF
TOTAL	2,131 LF

PVMT MK PAINTED MESSAGE

3 - RT Turn Arrows	48 SF
3 - LT Turn Arrows	48 SF
TOTAL	96 SF

*Note: These Quantities have been accounted for in Section 10 Sheet 11



Pavement Marking Layout

JCT US 2 & ND 18
WB US 2

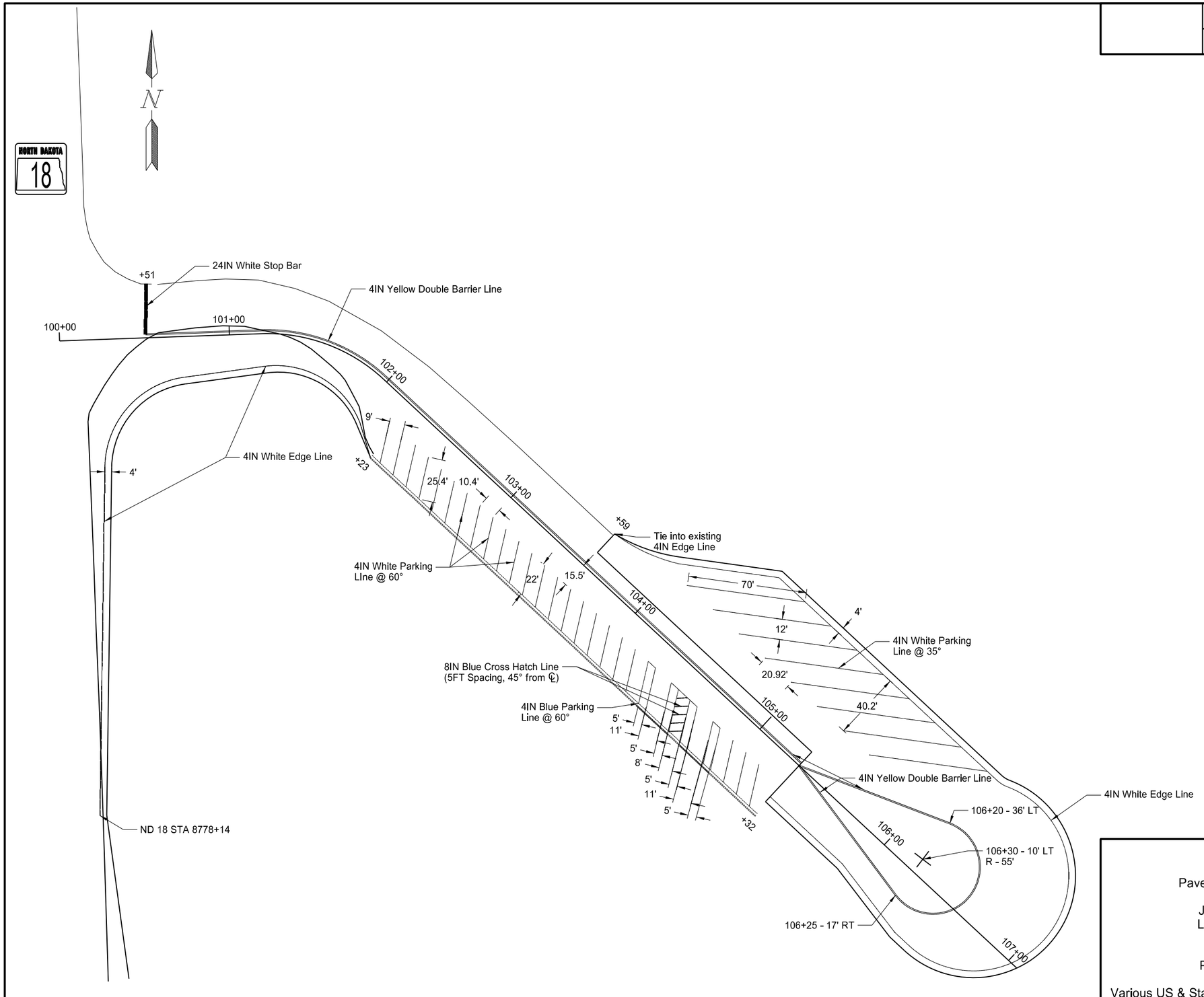
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:41 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_039_US 2 & ND 18.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	40



PVMT MK PAINTED 4IN LINE

4IN White Edge Line	1,126 LF
4IN White Parking Line	1,144 LF
4IN Blue Handicap Parking Line	236 LF
4IN Double Yellow Barrier Line	1,548 LF
TOTAL	4,054 LF

PVMT MK PAINTED 8IN LINE

8IN Blue Cross Hatch Line (5FT Center @ 45°)	40 LF

PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	32 LF

PVMT MK PAINTED CURB TOP & FACE

Blue Curb Top & Face	49 LF

*Note: These Quantities have been accounted for in Section 10 Sheet 11

Pavement Marking Layout

JCT US 2 & ND 18
Larimore Rest Area

Pavement Marking

Various US & State Highway - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:42 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_040_US 2 & 18 Larimore Rest Area.dgn

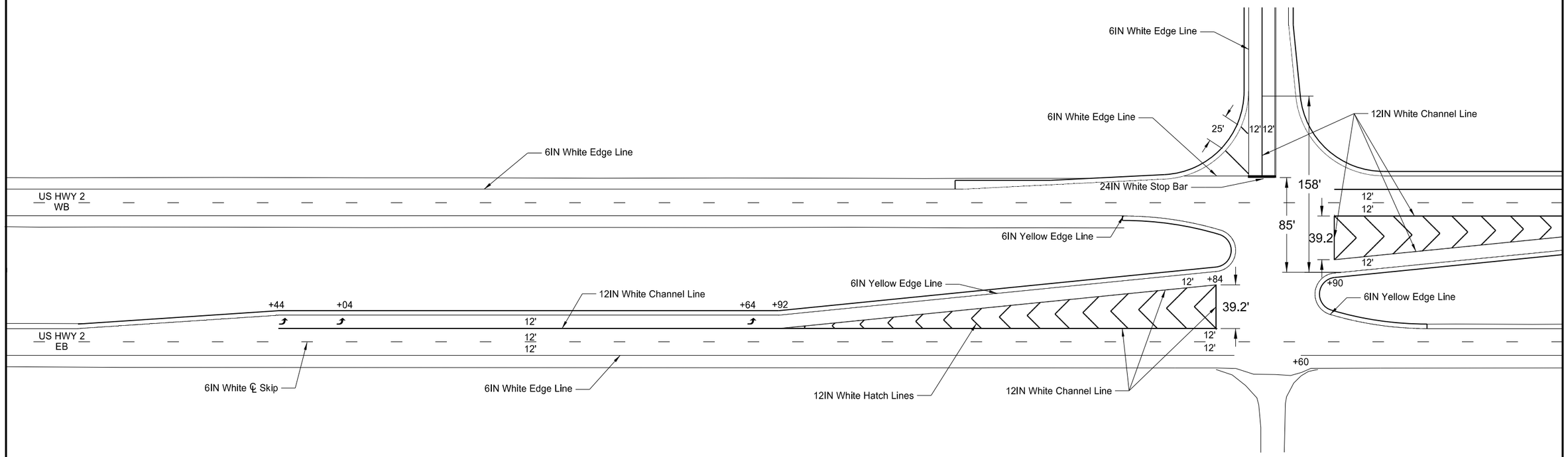
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	41

PVMT MK PAINTED 6IN LINE	
6IN White Edge Line	6,005 LF
6IN Yellow Edge Line	6,205 LF
6IN White ℄ Skips - 10' Line / 30' Skip	1,560 LF
6IN Yellow Double Barrier Line	152 LF
TOTAL	13,922 LF

PVMT MK PAINTED 12IN LINE	
12IN White Channel Line - Left Turn Lane	1,234 LF
12IN White Cross Hatched Line	425 LF
TOTAL	1,659 LF

PVMT MK PAINTED MESSAGE	
3 - LT Turn Arrows	48 SF

*Note: These Quantities have been accounted for in Section 10 Sheet 12



Pavement Marking Layout

JCT US 2 & 27th St NE (Northrop Grunman)
EB US 2 - RP 340.882

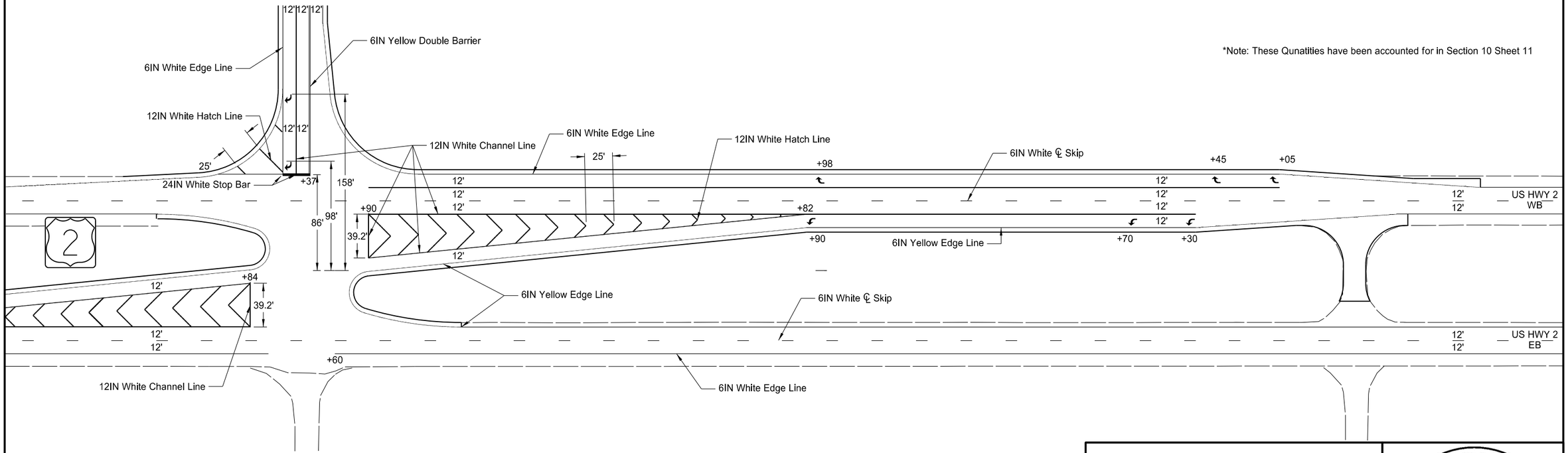
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:43 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_041_US 2 & 27th St NE.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(061)	120	42



N

PVMT MK PAINTED 6IN LINE

6IN White Edge Line	6,745 LF
6IN Yellow Edge Line	6,205 LF
6IN White ℄ Skips - 10' Line / 30' Skip	1,570 LF
6IN Yellow Double Barrier Line	153 LF
TOTAL	14,673 LF

PVMT MK PAINTED 12IN LINE

12IN White Channel Line - Left Turn Lane	1,174 LF
12IN White Channel Line - Right Turn Lane	815 LF
12IN White Channel Line - 27th St NE	136 LF
12IN White Cross Hatched Line	495 LF
TOTAL	2,620 LF

PVMT MK PAINTED 24IN LINE

24IN White Stop Bar	24 LF

PVMT MK PAINTED MESSAGE

5 - RT Turn Arrows	80 SF
3 - LT Turn Arrows	48 SF
TOTAL	128 SF

*Note: These Qunatities have been accounted for in Section 10 Sheet 11

Pavement Marking Layout

JCT US 2 & 27th St NE (Northrop Grunman)
WB US 2 - RP 340.882

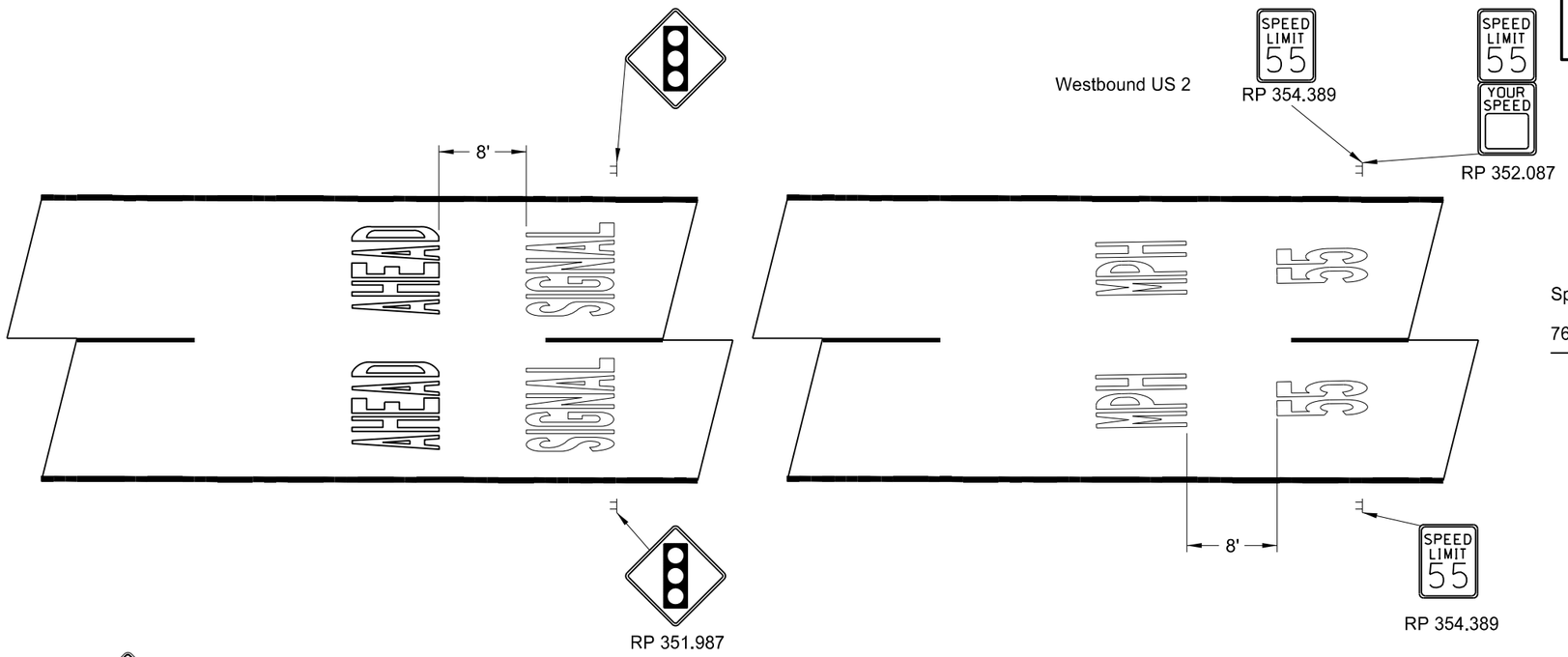
Pavement Marking

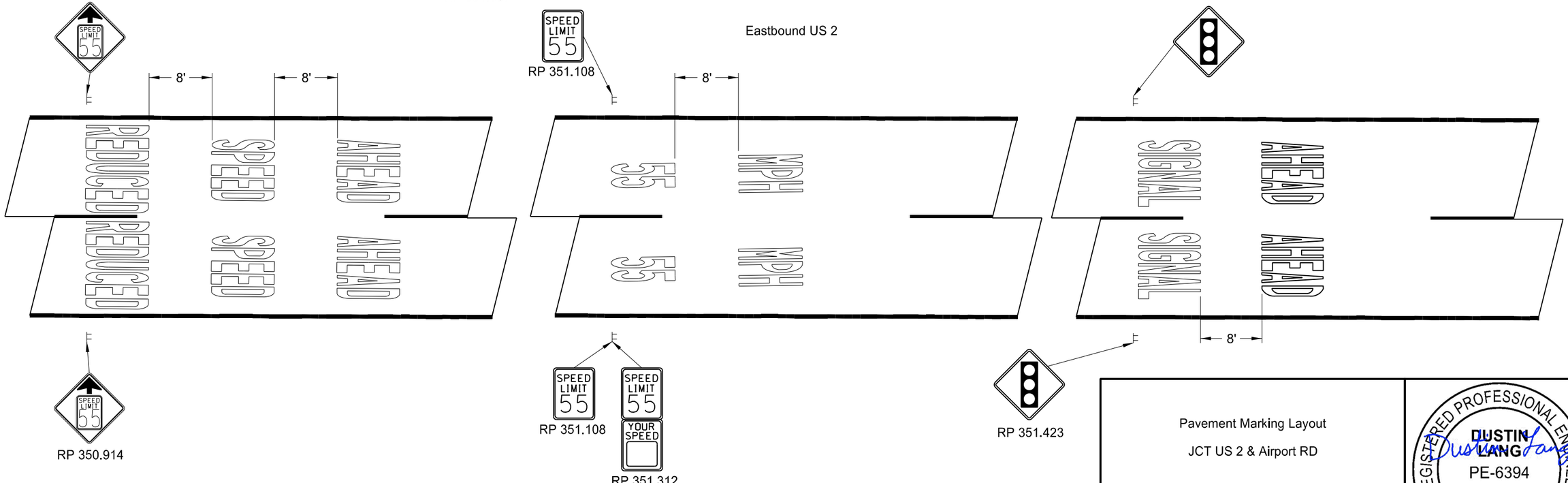
Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:44 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_042_US 2 & 27th St NE.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	43





Spec	Code	Description	SF/applications	Quantity
762	0103	PVMT MK PAINTED-MESSAGE		
		55 MPH	31.8	254.4 SF
		Reduced Speed Ahead	103.7	207.4 SF
		Signal Ahead	61.2	244.8 SF

Pavement Marking Layout

JCT US 2 & Airport RD

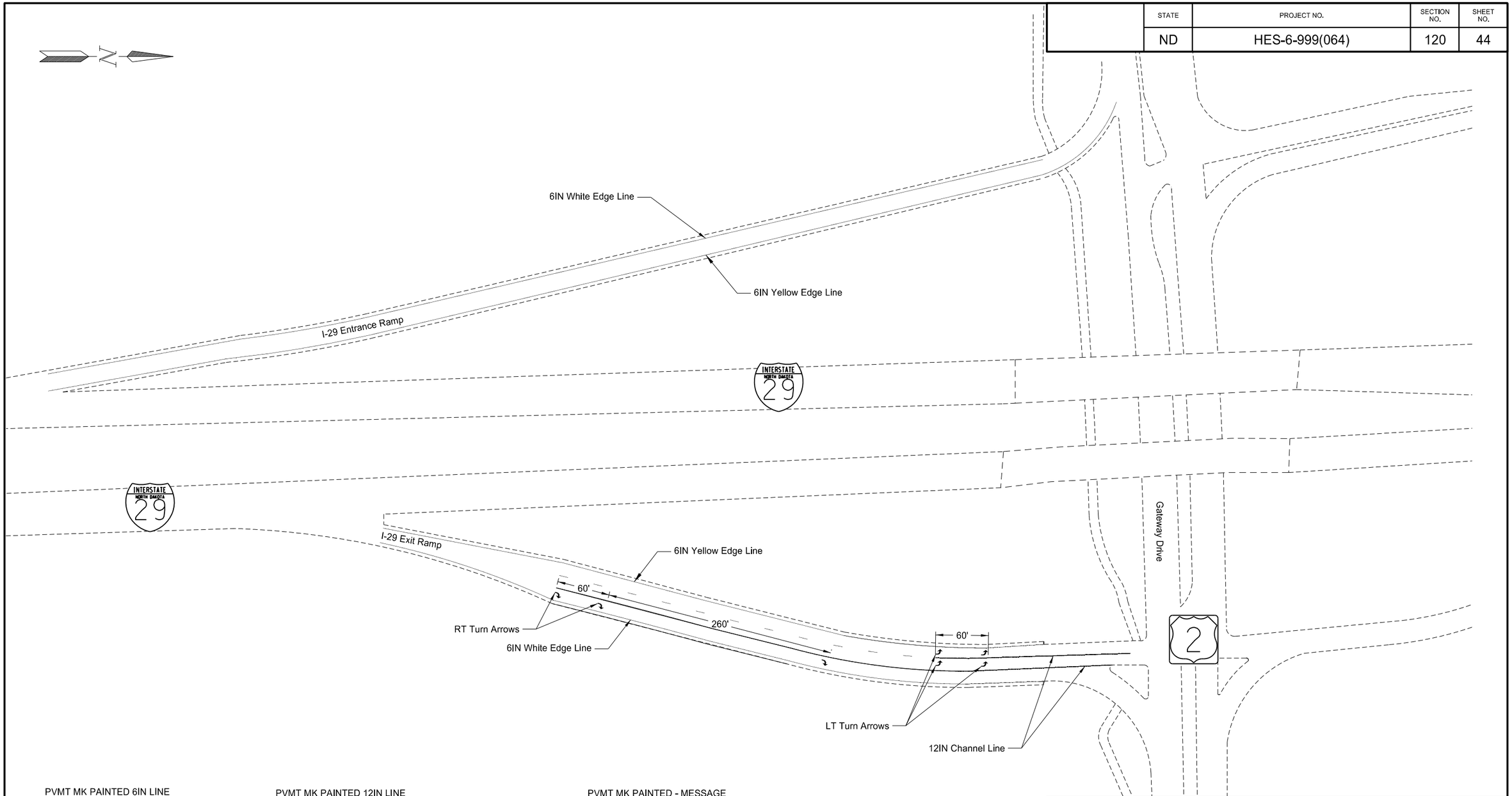
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:45 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_043_US 2 JCT Airport RD.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	44



PVMT MK PAINTED 6IN LINE	
6IN White Edge Line - SW Ramp	1,135 LF
6IN Yellow Edge Line - SW Ramp	1,250 LF
6IN White Edge Line - SE Ramp	774 LF
6IN Yellow Edge Line - SE Ramp	764 LF
TOTAL	3,923 LF

PVMT MK PAINTED 12IN LINE	
12IN White Channel Line - SE Ramp RT Turn Lane	585 LF
12IN White Channel Line - SE Ramp LT Turn Lane	180 LF
TOTAL	765 LF

PVMT MK PAINTED - MESSAGE	
3 - RT Turn Arrows	48 SF
4 - LT Turn Arrows	64 SF
TOTAL	112 SF

*Note: These Quantities have been accounted for in Section 10 Sheet 14

Pavement Marking Layout

I-29 Interchange 141 (US 2 - Gateway Drive)
Southern Ramps

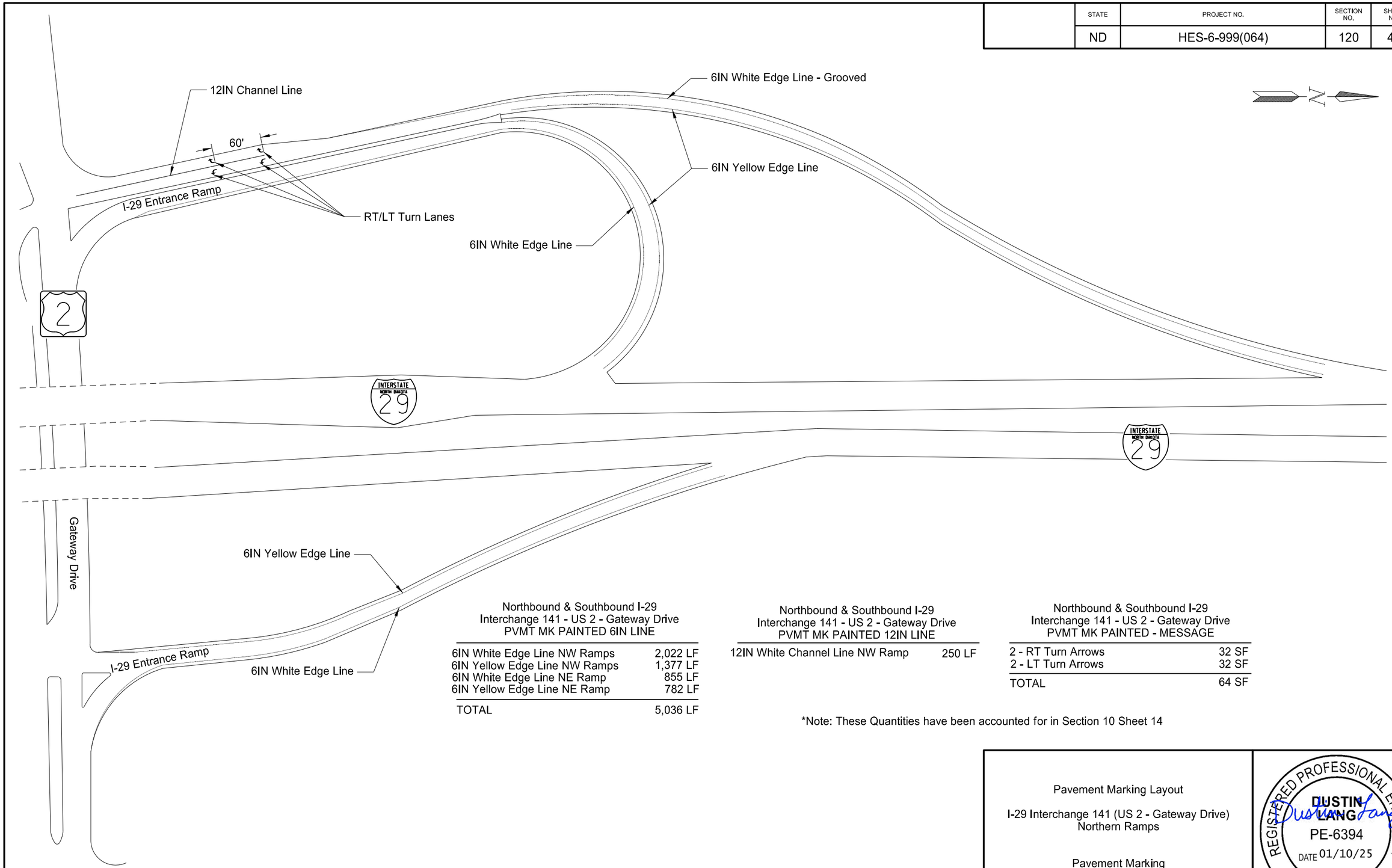
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:46 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_044_I29_RP141_Exit 141.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	45



Northbound & Southbound I-29
Interchange 141 - US 2 - Gateway Drive
PVMT MK PAINTED 6IN LINE

6IN White Edge Line NW Ramps	2,022 LF
6IN Yellow Edge Line NW Ramps	1,377 LF
6IN White Edge Line NE Ramp	855 LF
6IN Yellow Edge Line NE Ramp	782 LF
TOTAL	5,036 LF

Northbound & Southbound I-29
Interchange 141 - US 2 - Gateway Drive
PVMT MK PAINTED 12IN LINE

12IN White Channel Line NW Ramp	250 LF

Northbound & Southbound I-29
Interchange 141 - US 2 - Gateway Drive
PVMT MK PAINTED - MESSAGE

2 - RT Turn Arrows	32 SF
2 - LT Turn Arrows	32 SF
TOTAL	64 SF

*Note: These Quantities have been accounted for in Section 10 Sheet 14

Pavement Marking Layout

I-29 Interchange 141 (US 2 - Gateway Drive)
Northern Ramps

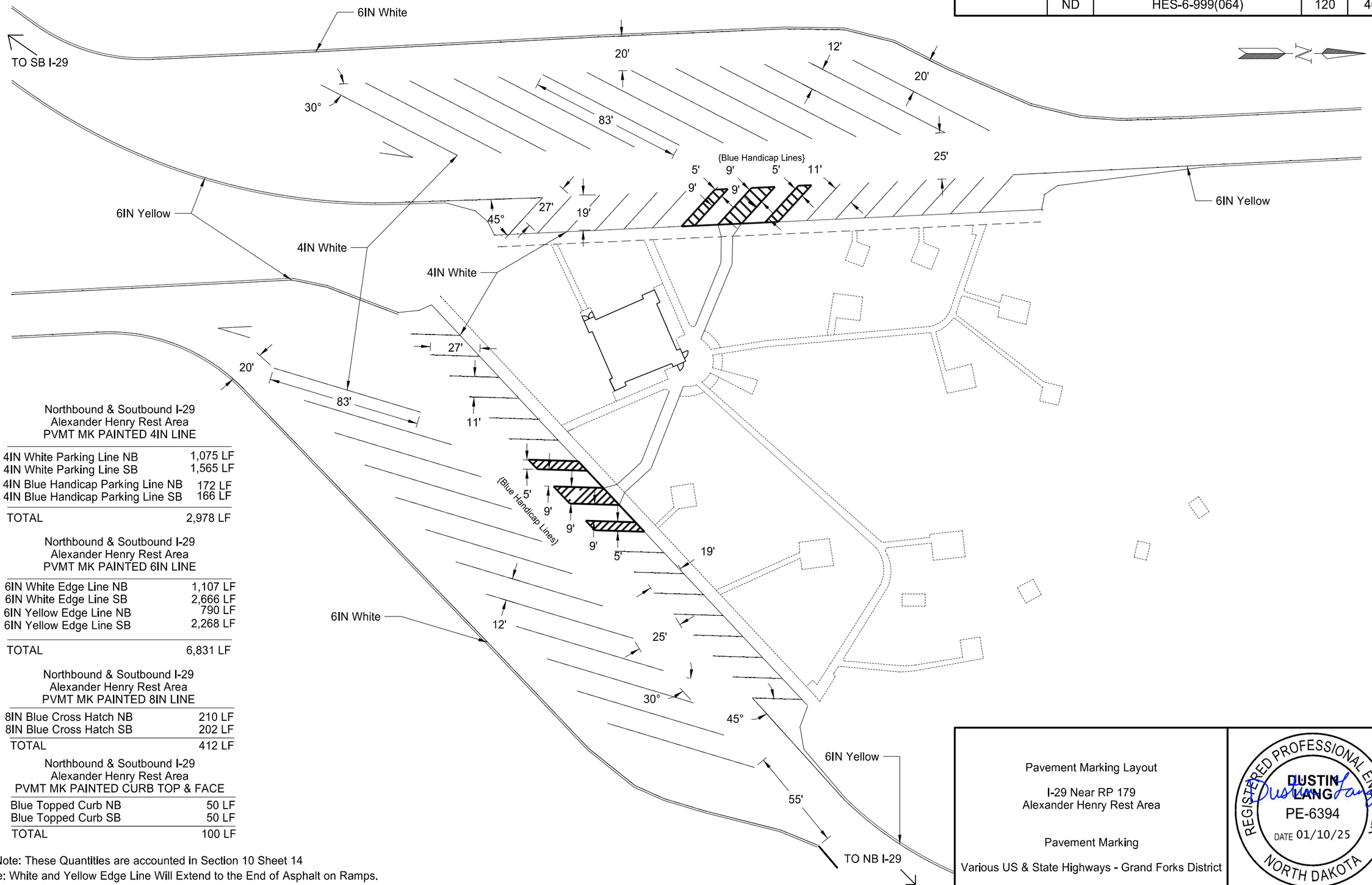
Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:47 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_045_I29_RP141_Exit 141.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	HES-6-999(064)	120	46



Northbound & Soutbound I-29
Alexander Henry Rest Area
PVMT MK PAINTED 4IN LINE

4IN White Parking Line NB	1,075 LF
4IN White Parking Line SB	1,565 LF
4IN Blue Handicap Parking Line NB	172 LF
4IN Blue Handicap Parking Line SB	166 LF
TOTAL	2,978 LF

Northbound & Soutbound I-29
Alexander Henry Rest Area
PVMT MK PAINTED 6IN LINE

6IN White Edge Line NB	1,107 LF
6IN White Edge Line SB	2,666 LF
6IN Yellow Edge Line NB	790 LF
6IN Yellow Edge Line SB	2,268 LF
TOTAL	6,831 LF

Northbound & Soutbound I-29
Alexander Henry Rest Area
PVMT MK PAINTED 8IN LINE

8IN Blue Cross Hatch NB	210 LF
8IN Blue Cross Hatch SB	202 LF
TOTAL	412 LF

Northbound & Soutbound I-29
Alexander Henry Rest Area
PVMT MK PAINTED CURB TOP & FACE

Blue Topped Curb NB	50 LF
Blue Topped Curb SB	50 LF
TOTAL	100 LF

*Note: These Quantities are accounted in Section 10 Sheet 14
**Note: White and Yellow Edge Line Will Extend to the End of Asphalt on Ramps.

Pavement Marking Layout

I-29 Near RP 179
Alexander Henry Rest Area

Pavement Marking

Various US & State Highways - Grand Forks District

REGISTERED PROFESSIONAL ENGINEER
DUSTIN LANG
PE-6394
DATE 01/10/25
NORTH DAKOTA

1/10/2025 1:21:48 PM jtwamley R:\project\60999000.064\District\Sheets\120MK_PVMT\120MK_046_I29_RP179_Alexander Rest Area.dgn

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

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

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA
08/16/22

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
Jt	joint
Jct	junction

Ln	lane
Lg	large
Lat	latitude
Lt	left
Lens	lenses
Lvl	level
Lvlng	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
MC	meander corner
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	North East
NW	North West
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 ℄	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
Prop Ln	property line
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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REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA
08/16/22

Salv	salvage(d)
San	sanitary sewer line
Sec	section
SL	section line
Sep	separation
Seq	sequence
Serv	service
Sht	sheet
Shtng	sheeting
Shldr	shoulder
Sw or Sdwk	sidewalk
SD	sight distance
SN	sign number
Sig	signal
Sgl	single
SRCP	slotted reinforced concrete pipe
SC	slow curing
SS	slow setting
Sm	small
S	South
SE	South East
SW	South West
SB	Southbound
Sp	spaces
Spcl	special
SA	special assembly
SP	special provisions
G	specific gravity
Spk	spike
SB	split barrel sample
SH	sprinkler head
SV	sprinkler valve
Sq	square
Stk	stake
Std	standard
N	standard penetration test
Std Specs	standard specifications
Stm L	steam line
SEC	steel encased concrete
SMA	stone matrix asphalt
SSD	stopping sight distance
SD	storm drain
St	street
SPP	structural plate pipe
SPPA	structural plate pipe arch
Str	structure
Subd	subdivision
Sub	subgrade
Sub Prep	subgrade preperation
Ss	subsoil
SS	supplement specification
Supp	supplemental
Surf	surfacing
Surv	survey
Sym	symmetrical

Tel	telephone
Tel B	Telephone Booth
Tel P	telephone pole
Tv	television
Temp	temperature
Temp	temporary
TBM	temporary bench mark
T	thinwall tube sample
Ts	topsoil
Traf	traffic
TSCB	traffic signal control box
Tr	trail
Transf	transformer
Trans	transition
TT	transmission tower
TES	traversable end section
Trans	transverse
Trtd	treated
Trmt	treatment
Qc	triaxial compression
TERO	tribal employment rights ordinance
Tpl	triple
Typ	typical
Qu	unconfined compressive strength
Ugrnd	underground
Util	utility
VG	valley gutter
Vap	vapor
Vert	vertical
VCP	vitrified clay pipe
Vol	volume
VSFS	vehicle speed feedback sign
Wkwy	walkway
W	water content
WGV	water gate valve
WL	water line
WM	water main
WMV	water main valve
W Mtr	water meter
WSV	water service valve
WW	water well
Wrng	wearing
WIM	weigh in motion
W	west
WB	westbound
Wrng	wiring
W/	with
W/o	without
WC	witness corner

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KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

08/16/22

NDDOT ABBREVIATIONS

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
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
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
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
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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KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA
12 18 2020

NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

D-101-10

702COM	702 Communications
ACCENT	Accent Communications
AGASSIZ WU	Agassiz Water Users Incorporated
AGC	Assiociated General Contractors of America
ALL PL	Alliance Pipeline
ALL SEAS WU	All Seasons Water Users Association
AMOCO PI	Amoco Pipeline Company
AMRDA HESS	Amerada Hess Corporation
AT&T	AT&T Corporation
B PAW	Bear Paw Energy Incorporated
BAKER ELEC	Baker Electric
BASIN ELEC	Basin Electric Cooperative Incorporated
BEK TEL	Bek Communications Cooperative
BELLE PL	Belle Fourche Pipeline Company
BLM	Bureau of Land Management
BNSF	Burlington Northern Santa Fe Railway
BOEING	Boeing
BRNS RWD	Barnes Rural Water District
BURK-DIV ELEC	Burke-Divide Electric Cooperative
BURL WU	Burleigh Water Users
CABLE ONE	Cable One
CABLE SERV	Cable Services
CAP ELEC	Capital Electric Cooperative Incorporat
CASS CO ELEC	Cass County Electric Cooperative
CASS RWU	Cass Rural Water Users Incorporated
CAV ELEC	Cavalier Rural Electric Cooperative
CBLCOM	Cablecom Of Fargo
CENEX PL	Cenex Pipeline
CENT PL WATER DIST	Central Pipe Line Water District
CENT PWR ELEC	Central Power Electric Cooperative
CENTURYLINK	CenturyLink
COE	Corps of Engineers
CONS TEL	Consolidated Telephone
CONT RES	Continental Resource Inc
CPR	Canadian Pacific Railway
D O E	Department Of Energy
DAK CARR	Dakota Carrier Network
DAK CENT TEL	Dakota Central Telephone
DAK RWD	Dakota Rural Water District
DGC	Dakota Gasification Company
DICKEY R NET	Dickey Rural Networks
DICKEY RWU	Dickey Rural Water Users Association
DICKEY TEL	Dickey Telephone
DNRR	Dakota Northern Railroad
DOME PL	Dome Pipeline Company
DVELEC	Dakota Valley Electric Cooperative
DVMW	Dakota, Missouri Valley & Western
ENBRDG	Enbridge Pipelines Incorporated
ENVENTIS	Enventis Telephone
EQUINOR	Equinor Pipeline
FALK MNG	Falkirk Mining Company
FHWA	Federal Highway Administration
G FKS-TRL WD	Grand Forks-traill Water District
GETTY TRD & TRAN	Getty Trading & Transportation
GLDN W ELEC	Golden West Electric Cooperative
GRGS CO TEL	Griggs County Telephone
GTR RAMSEY WD	Greater Ramsey Water District
GT PLNS NAT GAS	Great Plains Natural Gas Company
HALS TEL	Halstad Telephone Company
IDEA1	Idea1
INT-COMM TEL	Inter-Community Telephone Company
KANEB PL	Kaneb Pipeline Company
KEM ELEC	Kem Electric Cooperative Incorporated
KOCH GATH SYS	Koch Gathering Systems Incorporated
LKHD PL	Lakehead Pipeline Company
LNGDN RWU	Langdon Rural Water Users Incorporated
LWR YELL R ELEC	Lower Yellowstone Rural Electric
MCKNZ CON	McKenzie Consolidated Telcom
MCKNZ ELEC	McKenzie Electric Cooperative
MCKNZ WRD	McKenzie County Water Resource District
MCLEOD	McLeod USA
MCLN ELEC	McLean Electric Cooperative
MCLN-SHRDN R WAT	McLean-Sheridan Rural Water
MDU	Montana-dakota Utilities
MIDCO	MidContinent Communications
MIDSTATE TEL	Midstate Telephone Company
MINOT CABLE	Minot Cable Television
MINOT TEL	Minot Telephone Company
MISS VALL COMM	Missouri Valley Communications
MISS W W S	Missouri West Water System
MNKOTA PWR	Minnkota Power
MOR-GRAN-SOU ELEC	Mor-gran-sou Electric Cooperative
MOUNT-WILLI ELEC	Mountrail-williams Electric Cooperative
MRE LBTY TEL	Moore & Liberty Telephone
MUNICIPAL	City Water And Sewer
MUNICIPAL	City Of '.....'
N CENT ELEC	North Central Electric Cooperative
N VALL W DIST	North Valley Water District
ND PKS & REC	North Dakota Parks And Recreation
ND TEL	North Dakota Telephone Company
NDDOT	North Dakota Department of Transportation
NDSU SOIL SCI DEPT	NDSU Soil Science Department
NEMONT TEL	Nemont Telephone
NODAK R ELEC	Nodak Rural Electric Cooperative
NOON FRMS TEL	Noonan Farmers Telephone Company
NPR	Northern Plains Railroad
NSP	Northern States Power
NTH PRAIR RW	Northern Prairie Rural Water Association
NTHN BRDR PL	Northern Border Pipeline
NTHN PLNS ELEC	Northern Plains Electric Cooperative Incorporated
NTHWSTRN REF	Northwestern Refinery Company
NW COMM	Northwest Communication Cooperation
NWRWD	Northwest Rural Water District
ONEOK	Oneok gas
OSHA	Occupational Safety and Health Administration
OTTR TL PWR	Otter Tail Power Company
PAAP	Plains All American Pipeline
P L E M	Prairielands Energy Marketing
POLAR COM	Polar Communications
PVT ELEC	Private Electric
QWEST	Qwest Communications
R&T W SUPPLY	R & T Water Supply Association
RED RIV COMM	Red River Rural Communications
RESVTN TEL	Reservation Telephone
ROBRTS TEL	Roberts Company Telephone
R-RIDER ELEC	Roughrider Electric Cooperative
RRVW	Red River Valley & Western Railroad
S CENT REG WD	South Central Regional Water District
S E W U	South East Water Users Incorporated
SCOTT CABLE	Scott Cable Television Dickinson
SHERDN ELEC	Sheridan Electric Cooperative
SHEYN VLY ELEC	Sheyenne Valley Electric Cooperative
SKYTECH	Skyland Technologies Incorporated
SLOPE ELEC	Slope Electric Cooperative Incorporated
SOURIS RIV TELCOM	Souris River Telecommunications
ST WAT COMM	State Water Commission
STATE LN WATER	State Line Water Cooperative
STER ENG	Sterling Energy
STUT RWU	Stutsman Rural Water Users
SW PL PRJ	Southwest Pipeline Project
T M C	Turtle Mountain Communications
TCI	TCI of North Dakota
TESORO HGH PLNS PL	Tesoro High Plains Pipeline
TRI-CNTY WU	Tri-County Water Users Incorporated
TRL CO RWU	Traill County Rural Water Users
UNTD TEL	United Telephone
UPPR SOUR WUA	Upper Souris Water Users Association
US SPRINT	U.S. Sprint
USAF MSL CABLE	U.S.A.F. Missile Cable
USFWS	US Fish and Wildlife Service
USW COMM	U.S. West Communications
VRNDRY ELEC	Verendrye Electric Cooperative
W RIV TEL	West River Telephone Incorporated
WAPA	Western Area Power Administration
WAWSA	Western Area Water Supply Authority
WEB	W. E. B. Water Development Association
WILLI RWA	Williams Rural Water Association
WILSTN BAS PL	Williston Basin Interstate Pipeline Company
WLSH RWD	Walsh Water Rural Water District
WOLVRTN TEL	Wolverton Telephone
XLENER	Xcel Energy
YSVR	Yellowstone Valley Railroad

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KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

08/16/22

LINE STYLES

D-101-20

Existing Topography

- Existing Ground Void
- Existing Cemetary 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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KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

Kirk J Hoff

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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) (void — void — void — v)
- 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 (D — D)
- Geogrid (Geo — Geo)
- Geotextile Fabric Type R (R — R)
- Geotextile Fabric Type R1 (R — R)
- Geotextile Fabric Type RR (RR — RR)
- Geotextile Fabric Type S (S — S)
- Subgrade Reinforcement
- Failure Line

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 (S — S)
- Silt Fence (SF — SF)
- Excavation Limits
- Fiber Rolls

Environmental

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

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KIRK J. HOFF
REGISTERED
Kirk J Hoff
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

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SYMBOLS

D-101-30

North Arrow (Half Scale)

Alignment Data Point

Alignment Monument

Spot Elevation

Existing Miscellaneous Spot

Existing Access Control Arrow

Existing Benchmark

Reset USGS Marker

Iron Monument Found

Iron Pin R/W Monument

Property Corner

Iron Pin Reference Monument

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

Existing Bush or Shrub

Existing Large Evergreen Tree

Existing Small Evergreen Tree

Existing Large Tree

Existing Small Tree

Existing Tree Trunk

Cairn or Stone Circle

Existing Artifact

Existing Satellite Dish

Existing Weather Station

Existing Windmill or Tower

Reinforced Pavement

CSB Continuous Split Barrel Sample

FA Flight Auger Sample

SB Split Barrel Sample

T Thinwall Tube Sample

N Standard Penetration Test

Incl Inclinometer Tube

Excavation Unit

Existing Ground Water Well Bore Hole

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KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

Kirk J Hoff

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SYMBOLS

D-101-31

- Flexible Delineator
- Flexible Delineator Type A (Exst, Ppsd)
- Flexible Delineator Type B (Exst, Ppsd)
- Flexible Delineator Type C (Exst, Ppsd)
- Flexible Delineator Type D (Exst, Ppsd)
- Flexible Delineator Type E (Exst, Ppsd)
- Delineator Type A (Exst, Ppsd, Diamond Grade-Reset)
- Delineator Type B (Exst, Ppsd, Diamond Grade-Reset)
- Delineator Type C (Exst, Ppsd, Diamond Grade)
- Delineator Type D (Exst, Ppsd, Diamond Grade)
- Delineator Type E (Exst, Ppsd, Diamond Grade)
- Barricade (Type I, Type II, Type III}
- Arrow Panel (Caution Mode, Double Direction, Left Directional, Right Directional, Sequencing, Truck Mounted)
- Attenuation Device
- Truck Mounted Attenuator
- Delineator Drums
- Flagger
- Tubular Marker
- Traffic Cone
- Back to Back Vertical Panel Sign

- Highway Sign (Exst, Ppsd)
- Mile Post Type A (Exst-Ppsd-Reset)
- Mile Post Type B (Exst, Ppsd)
- Mile Post Type C (Exst, Ppsd)
- Object Marker Type I (Exst, Ppsd)
- Object Marker Type II (Exst, Ppsd)
- Object Marker Type III (Exst, Ppsd)
- Existing Reference Marker
- Road Closure Gate 18 Ft (Exst, Ppsd)
- Road Closure Gate 28 Ft (Exst, Ppsd)
- Road Closure Gate 40 Ft (Exst, Ppsd)
- Existing Railroad Battery Box
- Existing RR Profile Spot
- Existing Railroad Crossbuck
- Existing Railroad Frog
- Existing Mailbox (Private, Federal)

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

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

Kirk J Hoff

12 18 2020

SYMBOLS

D-101-32

- Existing Luminaire
- Luminaire LED
- Existing Light Standard Luminaire
- Relocate Light Standard
- Light Standard Light LED Luminaire
- Light Standard 35 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 50 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 70 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 100 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 150 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 200 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 250 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 310 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 400 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 700 Watt High Pressure Sodium Vapor Luminaire
- Light Standard 1000 Watt High Pressure Sodium Vapor Luminaire
- Emergency Vehicle Detector
- Video Detection Camera

- High Mast Light Standard 3 Luminaire (Exst, Ppsd)
- High Mast Light Standard 4 Luminaire (Exst, Ppsd)
- High Mast Light Standard 5 Luminaire (Exst, Ppsd)
- High Mast Light Standard 6 Luminaire (Exst, Ppsd)
- High Mast Light Standard 7 Luminaire (Exst, Ppsd)
- High Mast Light Standard 8 Luminaire (Exst, Ppsd)
- High Mast Light Standard 9 Luminaire (Exst, Ppsd)
- High Mast Light Standard 10 Luminaire (Exst, Ppsd)
- Overhead Sign Structure Load Center (Exst, Ppsd)
- Traffic Signal Controller (Exst, Ppsd)
- Pad Mounted Traffic Signal Controller (Exst, Ppsd)
- Flashing Beacon (Exst, Ppsd)
- Concrete Foundation (Exst, Ppsd)
- Pipe Mounted Flasher (Exst, Ppsd)
- Pad Mounted Feed Point (Exst, Ppsd)
- Pipe Mounted Feed Point with Pad (Exst, Ppsd)
- Pole Mounted Feed Point (Exst, Ppsd)
- Junction Box (Exst, Ppsd)
- Existing Pedestrian Head with Number
- Existing Signal Head
- Pole Mounted Head
- Existing Lighting Standard Pole

- Existing Traffic Signal Standard
- Pull Box (Exst-Ppsd-Undefined)
- Intelligent Transportation Pull Box (Exst, Ppsd)
- Transformer (Exst, Ppsd)
- Power Pole (Exst-Ppsd-with Transformer)
- Wood Pole (Exst, Ppsd)
- Pedestrian Push Button Post (Exst, Ppsd)
- Existing Pole
- Existing Telephone Pole
- Existing Post
- Connection Conductor (Ground, Neutral, Phase 1, Phase 2)

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

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12 18 2020

SYMBOLS

D-101-33

Existing Manhole (Electrical, Gas, Telephone)

Water Manhole (Exst, Exst with Valve)

Sanitary Sewer Manhole (Exst, Ppsd, Exst with Valve)

Sanitary Force Main Manhole (Exst, Ppsd, Exst with Valve)

Storm Drain Manhole (Exst, Ppsd, Exst with Inlet, Ppsd with Inlet)

Force Main Storm Drain Manhole (Exst, Exst with Valve)

Manhole (Ppsd, Ppsd 48 Inch, Exst Undefined)

Existing Water Appurtenance

Sprinkler Head (Exst, Ppsd)

Fire Hydrant (Exst, Ppsd)

Cleanout (Exst Sanitary, Underdrain)

Existing Catch Basin Inlet (Round, Square)

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 Vegitation Barrier, Ppsd Double with Vegitation Barrier)

Cap or Stub
Exst Gas, Exst Sanitary, Exst Storm Drain, Ppsd Storm Drain, Exst Water

Existing Pedestal
Electrical, Telephone, Fiber Optic Telephone, TV, Fiber Optic TV, Undefined

Existing Pipe Vent
Gas, Fuel, Sanitary, Storm Drain, Water, Undefined

Valve
Exst Gas, Exst Water, Ppsd Water, Exst Undefined

Pump
Sanitary, Storm Drain, Exst Water

Corrugated Metal End Section (18, 24, 30, 36, 42, 48, 54, 60 Inch)

Reinforced Concrete End Section (18, 24, 30, 36, 42, 48, 54, 60 Inch)

Existing Utility Marker

Existing Meter

Existing Fuel Dispensers

Existing Fuel Filler Pipes

Existing Fuel Leak Sensors

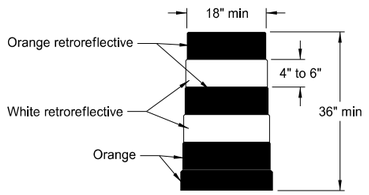
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
12-18-20	General Revisions Sheet added - Continued from D-101-32

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

12 18 2020

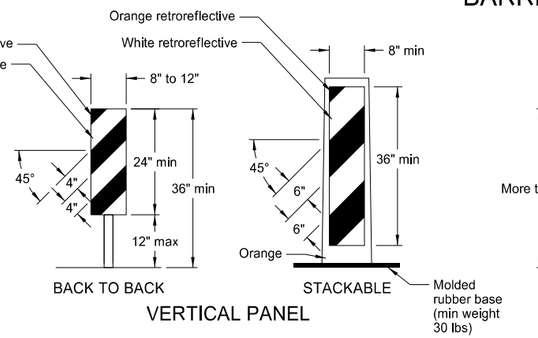
BARRICADE AND CHANNELIZING DEVICE DETAILS

D-704-13



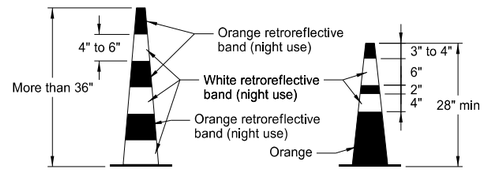
DELINEATOR DRUM

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" nonretroreflectorized 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.



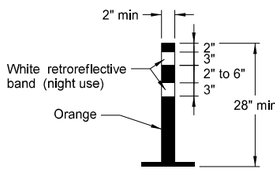
VERTICAL PANEL

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.



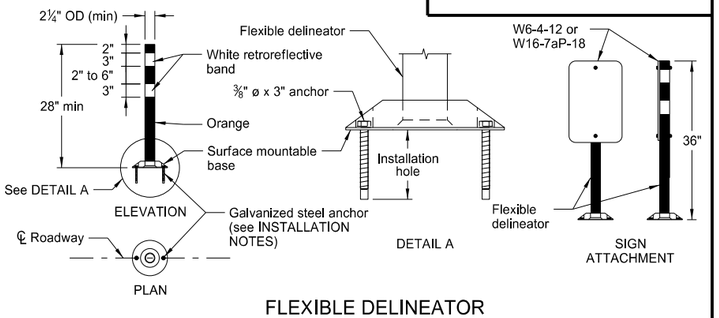
TRAFFIC CONE

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" nonretroreflectorized space between the orange and white stripes.



TUBULAR MARKER

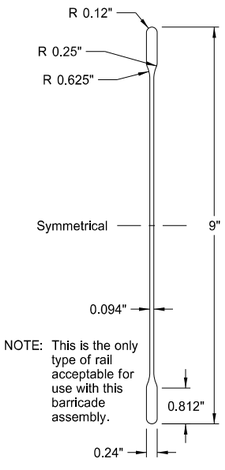
Provide retroreflectorization of tubular markers more than 42" in height by alternating four 4" to 6" wide orange and white stripes with the top stripe being orange.



FLEXIBLE DELINEATOR

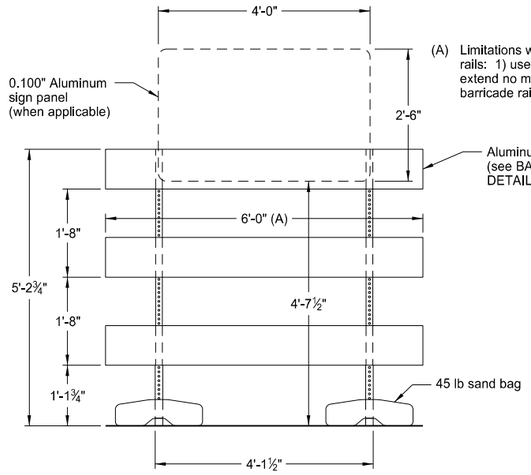
INSTALLATION NOTES:

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.



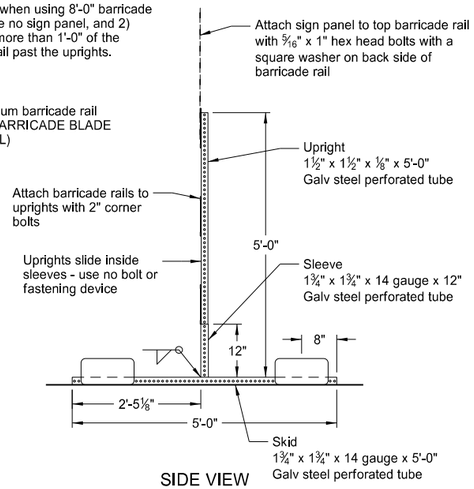
NOTE: This is the only type of rail acceptable for use with this barricade assembly.

BARRICADE BLADE DETAIL



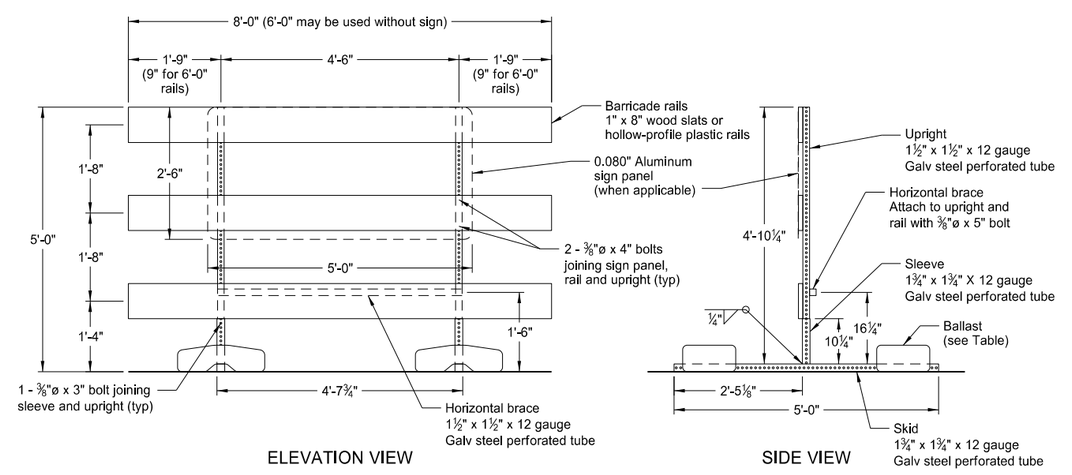
(A) Limitations when using 8'-0" barricade rails: 1) use no sign panel, and 2) extend no more than 1'-0" of the barricade rail past the uprights.

ELEVATION VIEW



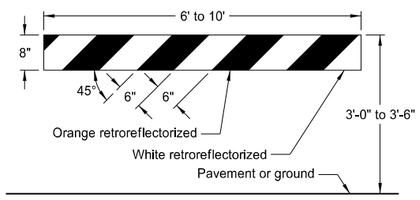
SIDE VIEW

BARRICADE ASSEMBLY DETAIL (Aluminum Barricade Rails)

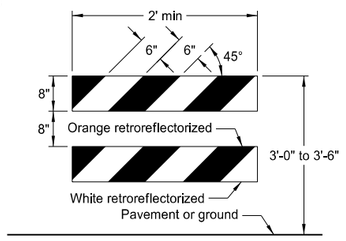


BARRICADE ASSEMBLY DETAIL (Wood or Plastic Rails)

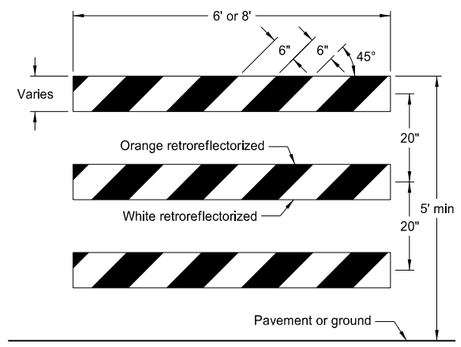
NOTE: For barricade markings use alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Place retroreflective sheeting on both sides of the rails with a minimum of 270 square inches of visible retroreflective area facing vehicular traffic. When the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



TYPE I BARRICADE

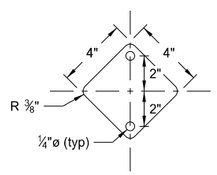


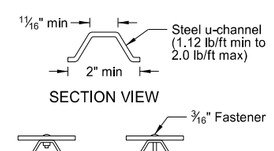
TYPE II BARRICADE

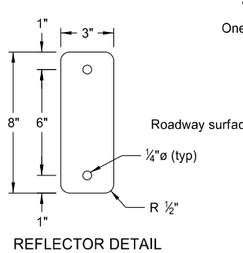


TYPE III BARRICADE

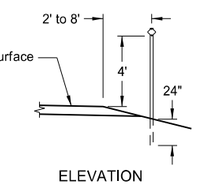
BARRICADE RAIL DETAILS







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.

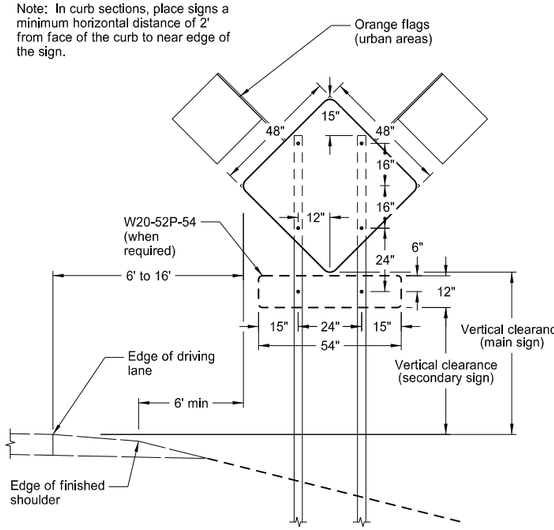
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
REVISIONS	
DATE	CHANGE
9-27-17 11-01-19	Updated to active voice Revised details for Flexible Delineator

This document was originally issued and sealed by Kirk J Hoff, Registration Number PE-4683, on 11/1/19 and the original document is stored at the North Dakota Department of Transportation

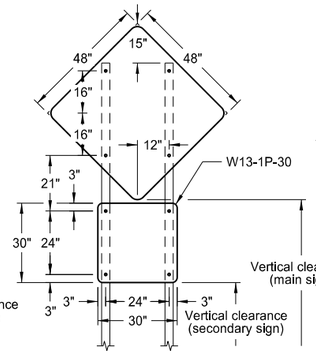
CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

D-704-14

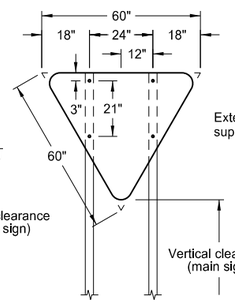
Note: In curb sections, place signs a minimum horizontal distance of 2' from face of the curb to near edge of the sign.



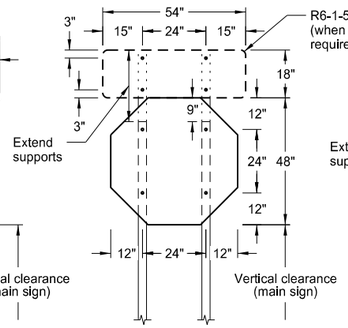
TYPICAL SECTION
(48" x 48" diamond warning sign shown)



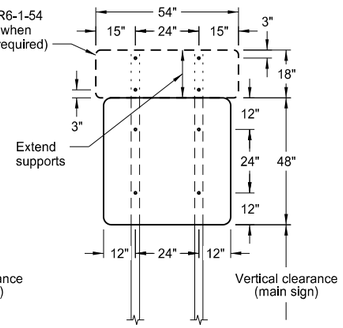
48" x 48" DIAMOND SIGN
(with 30" x 30" secondary sign)



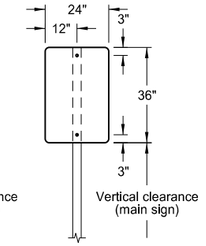
R1-2-60 - YIELD SIGN



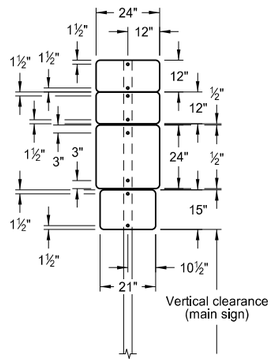
R1-1-48 - STOP SIGN
(with R6-1-54 sign as required)



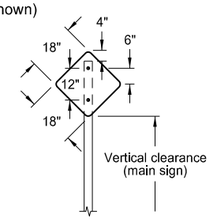
48" x 48" SIGN
(with R6-1-54 sign as required)



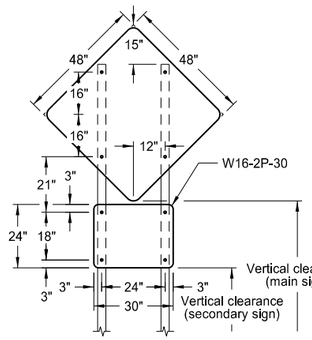
24" x 36" SIGN



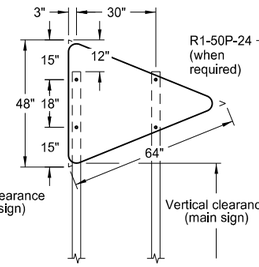
24" x 24"
ROUTE MARKER
ASSEMBLY



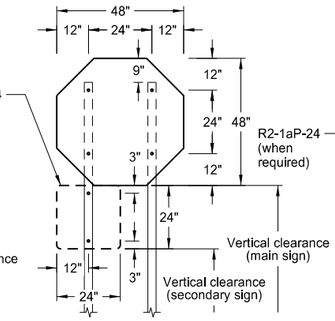
18" x 18"
DIAMOND SIGN



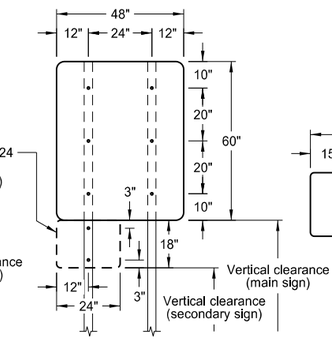
48" x 48" DIAMOND SIGN
(with 30" x 24" secondary sign)



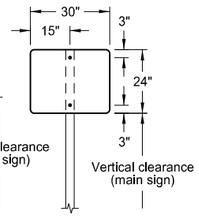
W14-3-64 - PENNANT SIGN



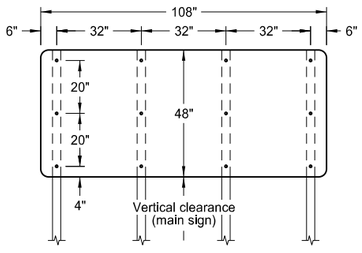
R1-1-48 - STOP SIGN
(with R1-50P-24 sign as required)



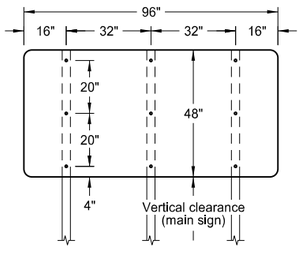
48" x 48" SIGN
(with R2-1aP-24 sign as required)



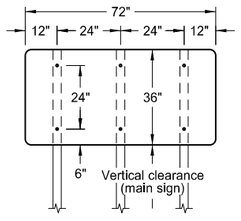
30" x 24" SIGN



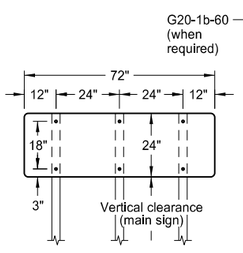
108" x 48" SIGN



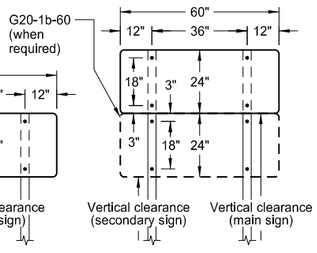
96" x 48" SIGN



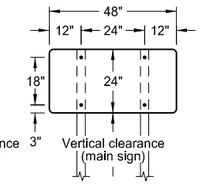
72" x 36" SIGN



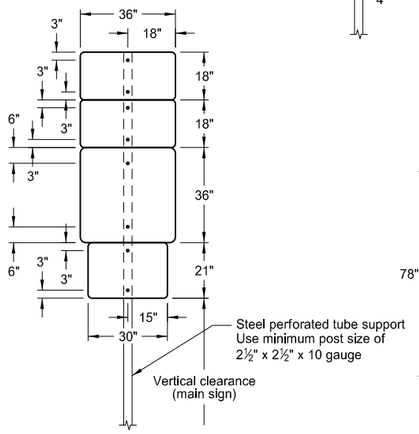
72" x 24" SIGN



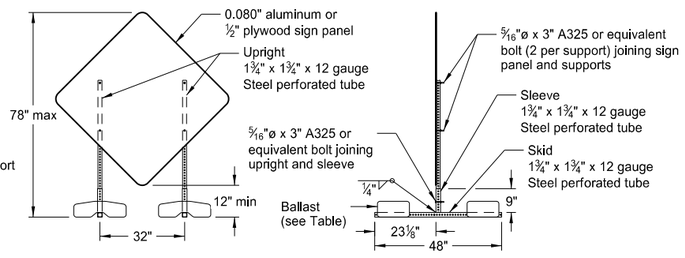
60" x 24" SIGN



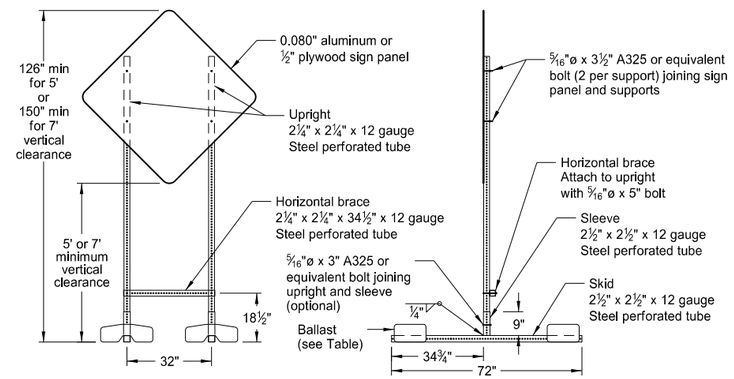
48" x 24" SIGN



36" x 36"
ROUTE MARKER
ASSEMBLY



PORTABLE SIGN SUPPORT
LOW-MOUNTING HEIGHT



PORTABLE SIGN SUPPORT
HIGH-MOUNTING HEIGHT

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, ½" plywood, or other approved material, except where noted. Punch all holes round for ⅜" 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 unforseen 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

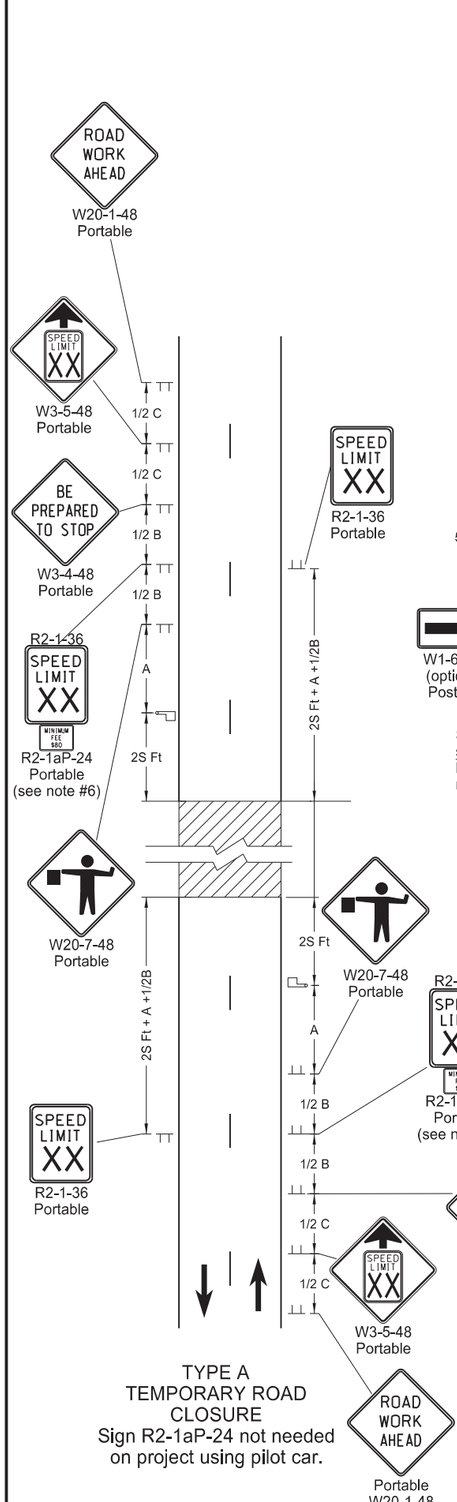
Note: The number of sandbags are based on a wind speed of 55 MPH. Place sandbags at or near the ends of skids.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-4-13	
REVISIONS	
DATE	CHANGE
11-14-13	Revised Note 6
9-27-17	Updated to active voice
11-01-19	Revised 60"x24" sign detail

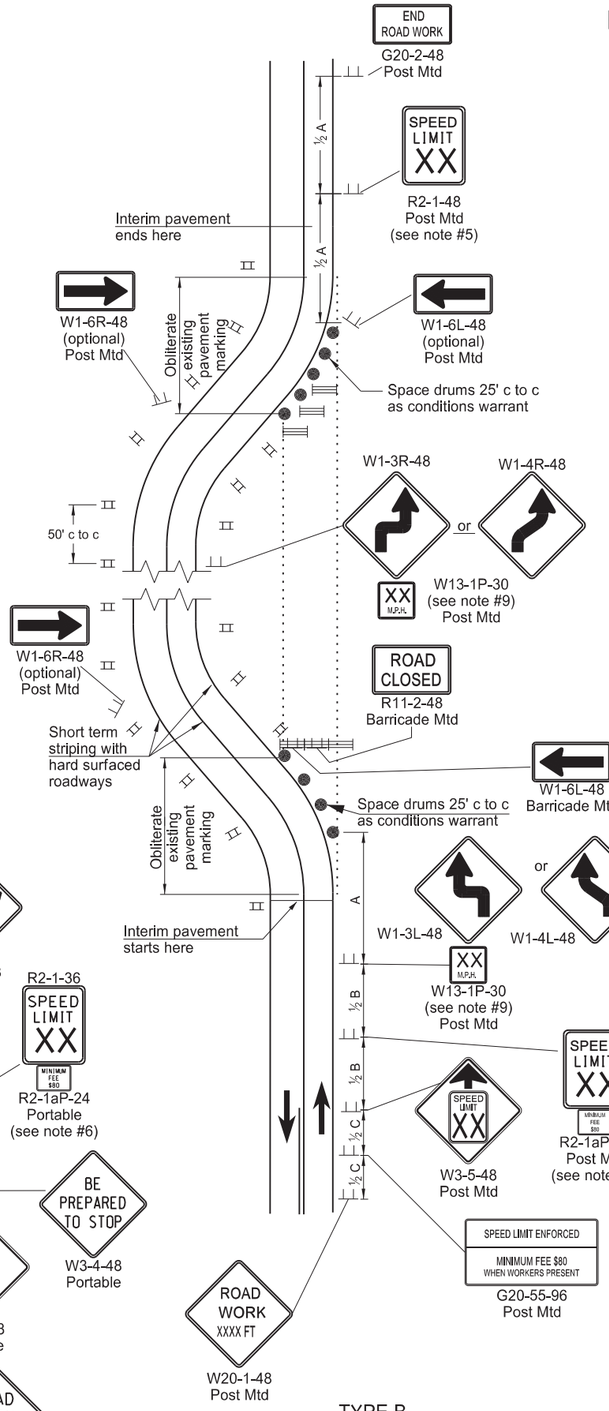
This document was originally issued and sealed by Kirk J Hoff, Registration Number PE-4683, on 11/1/19 and the original document is stored at the North Dakota Department of Transportation

ROAD CLOSURE LAYOUTS

D-704-15

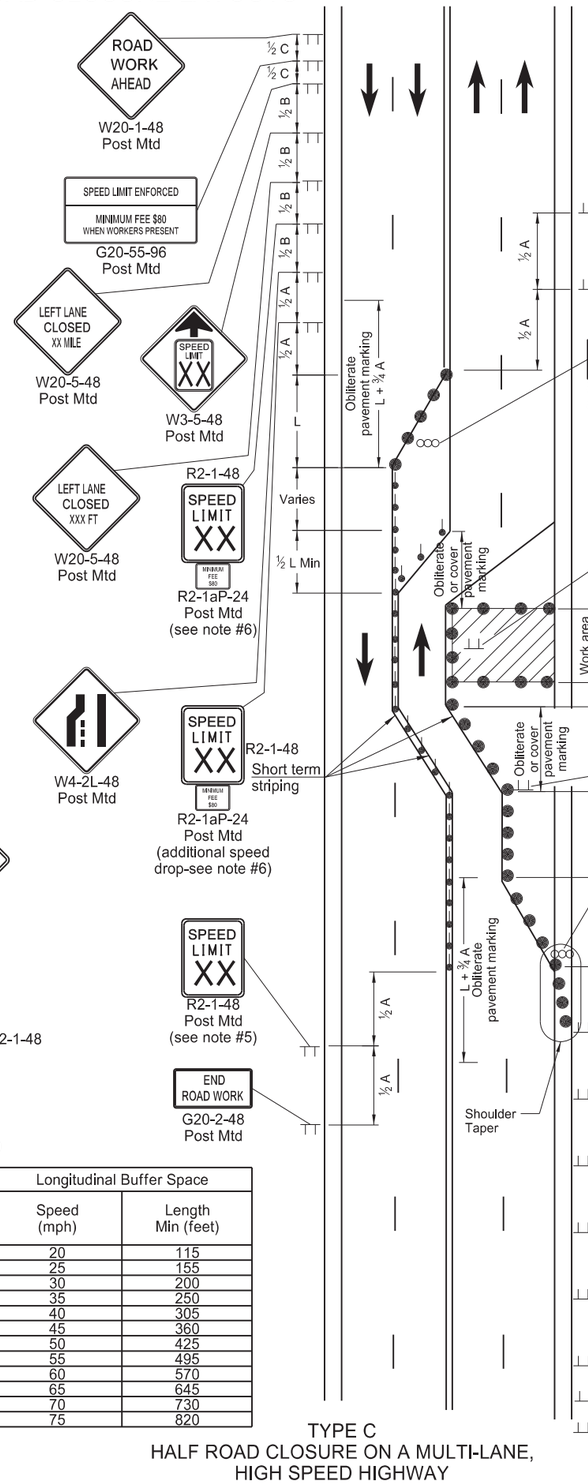


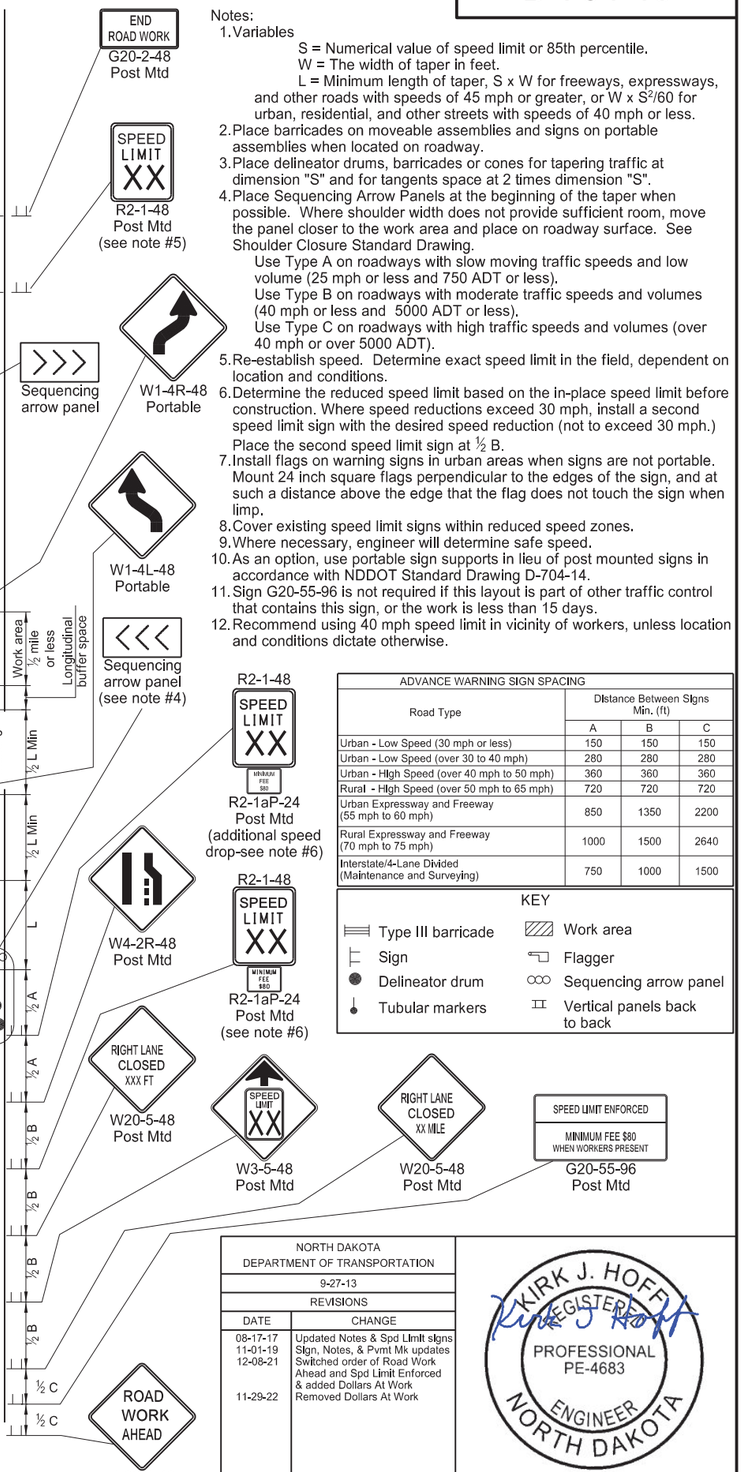
TYPE A
TEMPORARY ROAD CLOSURE
Sign R2-1aP-24 not needed on project using pilot car.



TYPE B
ROAD CLOSURE WITH A DIVERSION
Two lane highway where roadway is closed and detour provided (signing shown for one direction only). Use on bridge and culvert installation with ½ mile or less closure.

Longitudinal Buffer Space	
Speed (mph)	Length Min (feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820





TYPE C
HALF ROAD CLOSURE ON A MULTI-LANE, HIGH SPEED HIGHWAY
4 lane undivided highway with half the roadway closed.

Notes:
1. Variables
   S = Numerical value of speed limit or 85th percentile.
   W = The width of taper in feet.
   L = Minimum length of taper, S x W for freeways, expressways, and other roads with speeds of 45 mph or greater, or W x S^2/60 for urban, residential, and other streets with speeds of 40 mph or less.
2. Place barricades on moveable assemblies and signs on portable assemblies when located on roadway.
3. Place delineator drums, barricades or cones for tapering traffic at dimension "S" and for tangents space at 2 times dimension "S".
4. 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 roadway surface. See Shoulder Closure Standard Drawing.
   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).
5. Re-establish speed. Determine exact speed limit in the field, dependent on location and conditions.
6. 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 ½ B.
7. 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.
8. Cover existing speed limit signs within reduced speed zones.
9. Where necessary, engineer will determine safe speed.
10. As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
11. 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.
12. 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 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 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

KEY
- Type III barricade
- Sign
- Delineator drum
- Tubular markers
- Work area
- Flagger
- Sequencing arrow panel
- Vertical panels back to back

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

9-27-13

REVISIONS

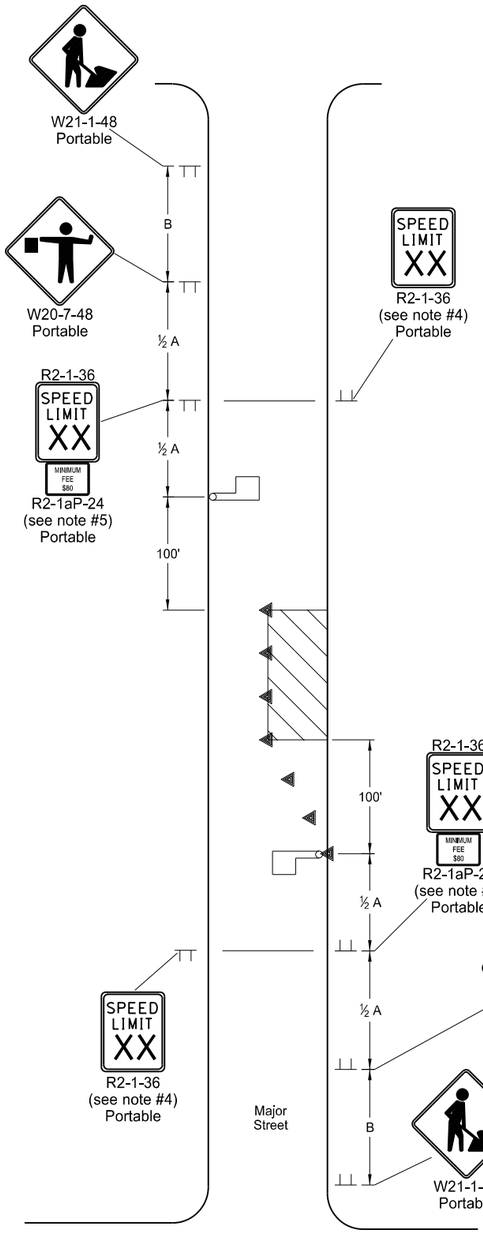
DATE	CHANGE
08-17-17	Updated Notes & Spd Limit signs
11-01-19	Sign, Notes, & Pvmt Mk updates
12-08-21	Switched order of Road Work Ahead and Spd Limit Enforced & added Dollars At Work
11-29-22	Removed Dollars At Work

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

11/29/22

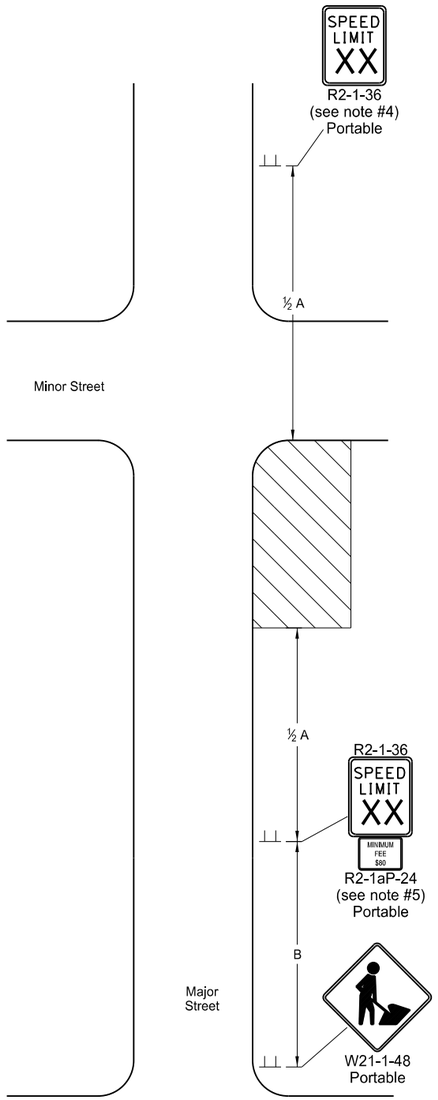
LANE CLOSURES ON URBAN STREETS LAYOUTS

D-704-25



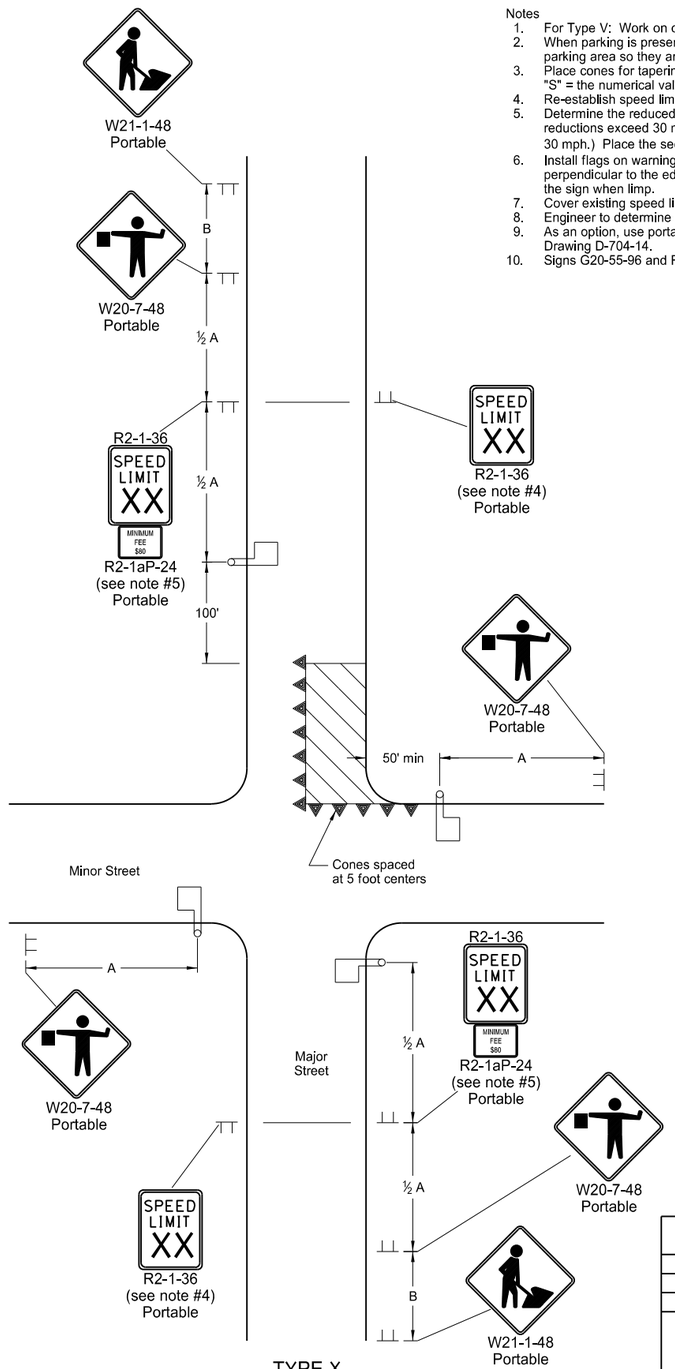
TYPE V
LANE CLOSURE ON URBAN STREET

Portion of roadway closed to traffic only
during daylight hours (mid block location).



TYPE W
WORK BEYOND CURB ON URBAN STREET

Work area outside driving lane and no closure necessary.



TYPE X
LANE CLOSURE NEAR INTERSECTION ON URBAN STREET

Portion of roadway closed to traffic only
during daylight hours (end block location).

Notes

1. For Type V: Work on one side of roadway at a time so as not to block off more than one lane of traffic.
2. When parking is present, place signs so they are entirely visible above parked vehicles or at the edge of the parking area so they are visible to oncoming traffic. Place signs on portable mounts when located on roadway.
3. Place cones for tapering traffic at 3 equal spaces and cones for tangents at dimension "S".
   "S" = the numerical value of speed limit.
4. Re-establish speed limit. Determine exact speed limit in the field, dependent on location and conditions.
5. 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 ½ B.
6. Install flags on warning signs in urban areas when signs are not portable. Mount 24 inches 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.
7. Cover existing speed limit signs within reduced speed zones.
8. Engineer to determine safe speed, when necessary.
9. As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
10. Signs G20-55-96 and R2-1aP-24 are not required for urban projects.

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 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

KEY

Sign | Work area | Cones | Flagger

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

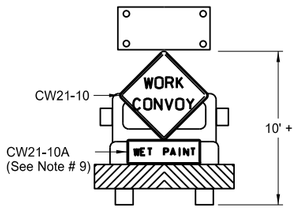
9-27-13

REVISIONS

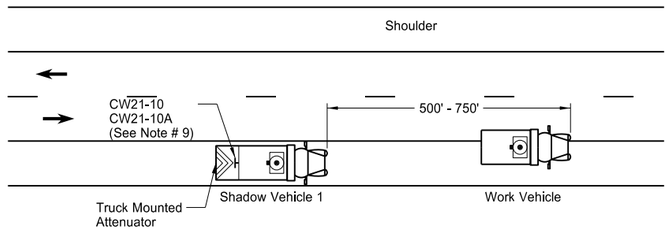
DATE	CHANGE
8-17-17	Updated notes & removed signs
11-01-19	Revised note & added Min Fee sign

This document was originally issued and sealed by Kirk J Hoff, Registration Number PE-4683, on 11/1/19 and the original document is stored at the North Dakota Department of Transportation

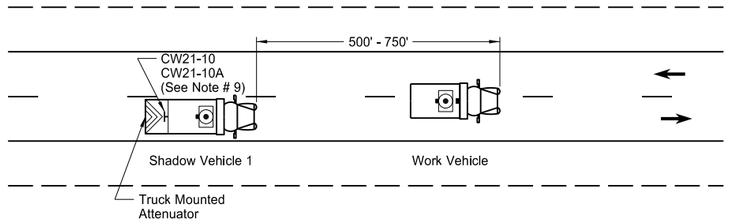
MOBILE OPERATION
(PAVEMENT MARKING)



Typical Shadow Vehicle 1
Two-Way Roaday

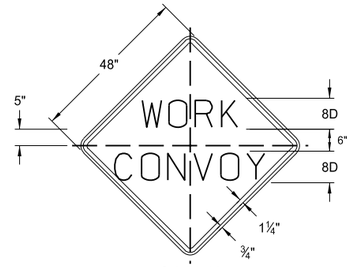


Two-Way Roadway with Paved Shoulders

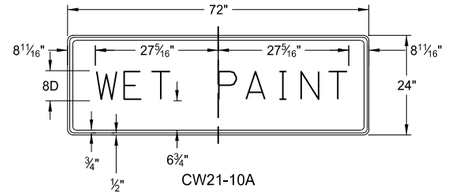


Two-Way Roadway without Paved Shoulders

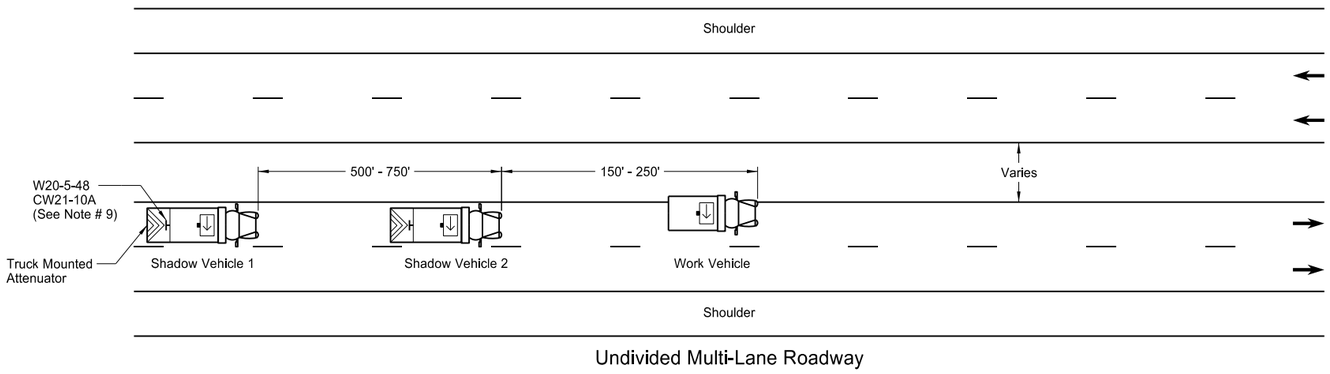
Sign Details



CW21-10

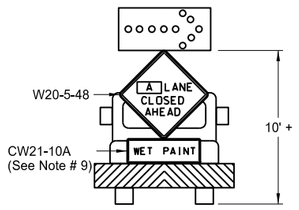


CW21-10A



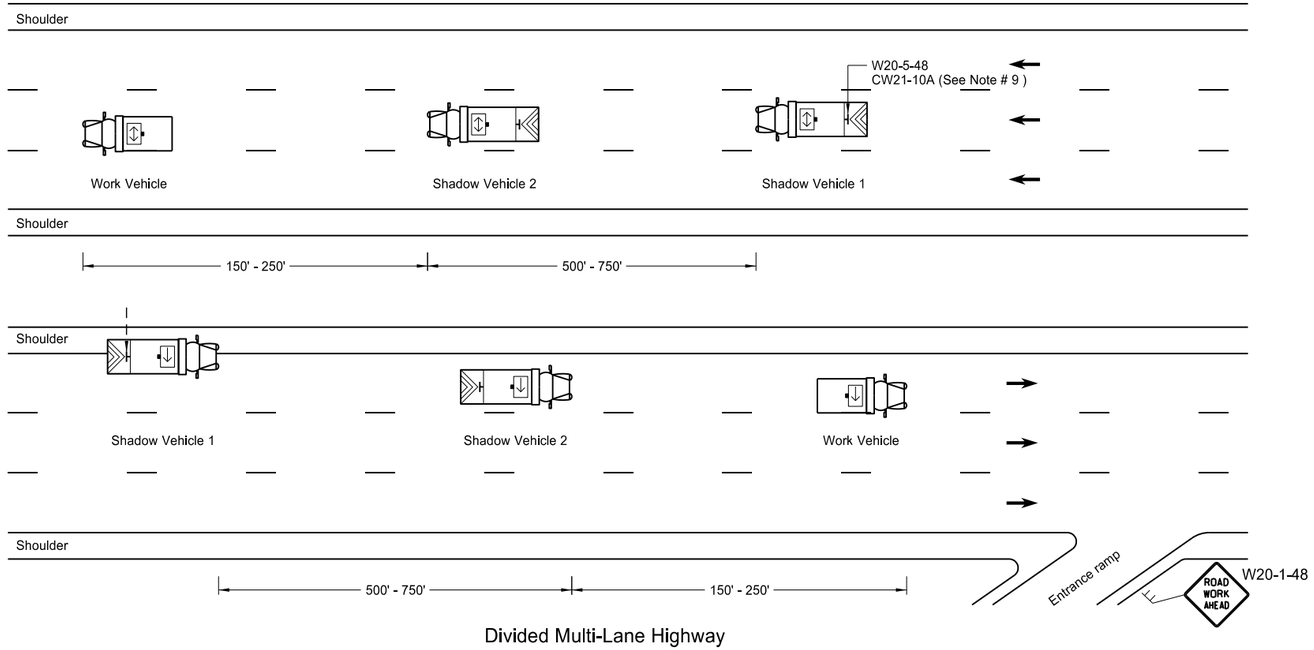
Undivided Multi-Lane Roadway

Notes
1. Use additional vehicles you choose to be in the convoy with truck mounted attenuators, at your own expense.
2. Display yellow rotating beacons or stobe lights on shadow and work vehicles, unless otherwise stated in the plans.
3. Use Type B or Type C flashing arrow panels controlled from inside the vehicle.
4. Provide each vehicle with two-way electronic communication capability.
5. Move shadow vehicle 1 first to shadow other convoy vehicles when convoy changes lane.
6. Vary vehicle spacing between shadow vehicle 1 and shadow vehicle 2 based on sight distance restrictions. Motorists approaching the work convoy need to see trail vehicle in time to slow down and/or change lanes as they approach shadow vehicle.
7. Sign Colors
   Letters = Black
   Border = Black
   Background = Orange
8. As an option, use shadow vehicle 2 the paint tender vehicle.
9. Use sign CW21-10A only during painting operation.
10. Pull over work and shadow vehicles periodically to allow motor vehicle traffic to pass on two lane - two way roadways.



Typical Shadow Vehicle 1 & 2
Multi-Lane Highways

A = Left Right Center



Divided Multi-Lane Highway

KEY

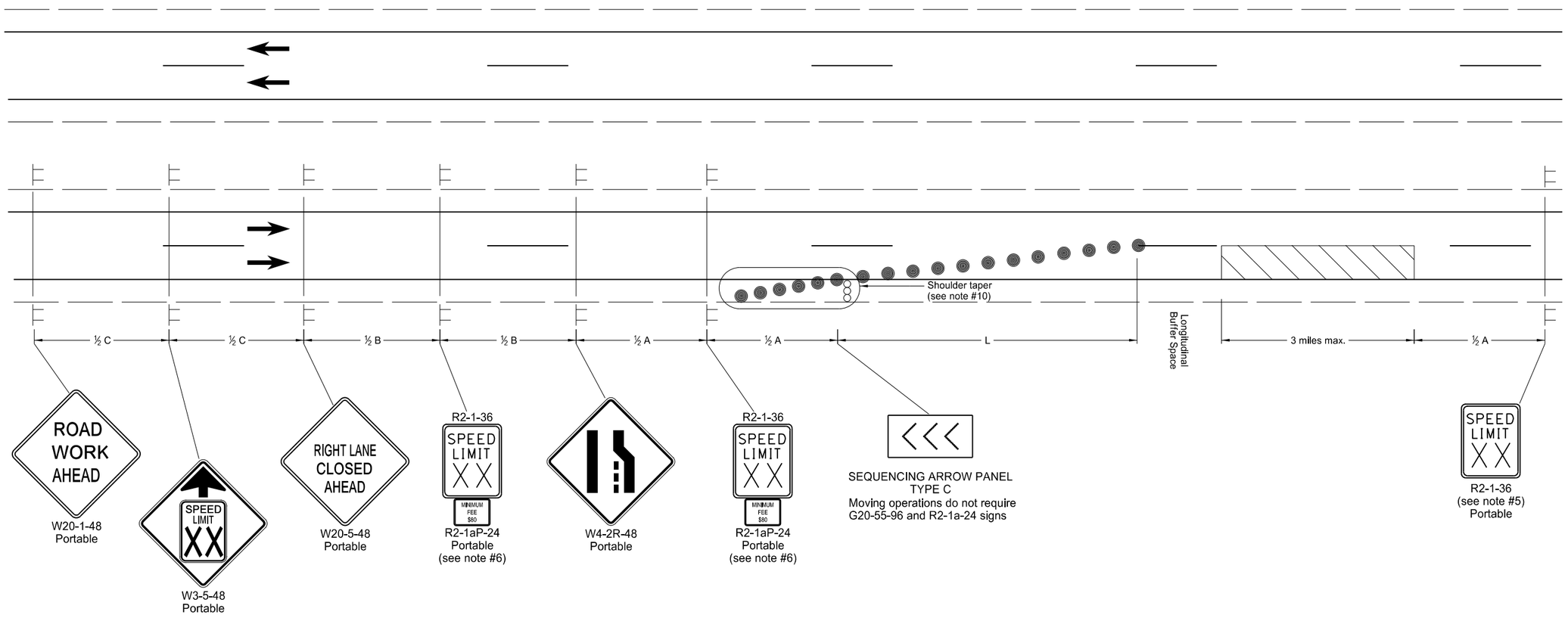
- Sign
- Truck mounted attenuator
- Flashing arrow panels:
  - Right directional
  - Left directional
  - Double arrow directional
  - Caution Mode

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE
6-18-14	Removed shadow vehicle 2 on two lane roadways
9-27-17	Updated to active voice
11-08-19	Changed Standard Heading

This document was originally issued and sealed by Kirk J Hoff, Registration Number PE-4683, on 11/08/19 and the original document is stored at the North Dakota Department of Transportation

SIGN LAYOUT FOR ONE LANE CLOSURE DIVIDED HIGHWAY MOVING OPERATION

D-704-32



Notes
1. Provide an additional sequencing arrow panel in the closed lane, near the work area, if the moving operation is not visible to the motorist from the end of the taper.
2. Variables
   S = Numerical value of speed limit or 85th percentile.
   W = The width of the taper.
   L = Minimum length of taper, S x W for freeways, expressways, and all other roads with speeds of 45 mph or greater, or W x S^2 /60 for urban, residential, and other streets with speeds of 40 mph or less.
3. Space delineator drums for tapering traffic at dimension "S".
4. Sequencing Arrow Panels
   Panels should normally be placed at the beginning of the taper. Where shoulder width does not provide sufficient room, the panel should be moved closer to the work area so that it can be placed on the roadway surface.
   Type A shall be used on roadways with slow moving traffic speeds and low volume (25 mph & 750 ADT or less).
   Type B shall be used on roadways with moderate traffic speeds and volumes (40 mph and 5000 ADT or less).
   Type C shall be used on roadways with high traffic speeds and volumes (over 40 mph and 5000 ADT).
5. Re-establish speed limit. Determine the exact speed limit in the field, dependent on location and conditions.
6. Determine the reduced speed limit 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 ½ B.
7. 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.
8. Cover existing speed limit signs within a reduced speed zone.
9. As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
10. Provide shoulder taper when shoulder is 8' or wider.
11. Recommend using 40 mph speed limit in vicinity of workers, unless location and conditions dictate otherwise.

KEY

Sign		Work area	
Delineator Drums		Sequencing arrow panel	

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 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

Longitudinal Buffer Space	
*Speed (mph)	Length Min (feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

* Posted speed, off-peak 85th percentile speed prior to work starting, or anticipated operating speed in mph.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

9-27-13

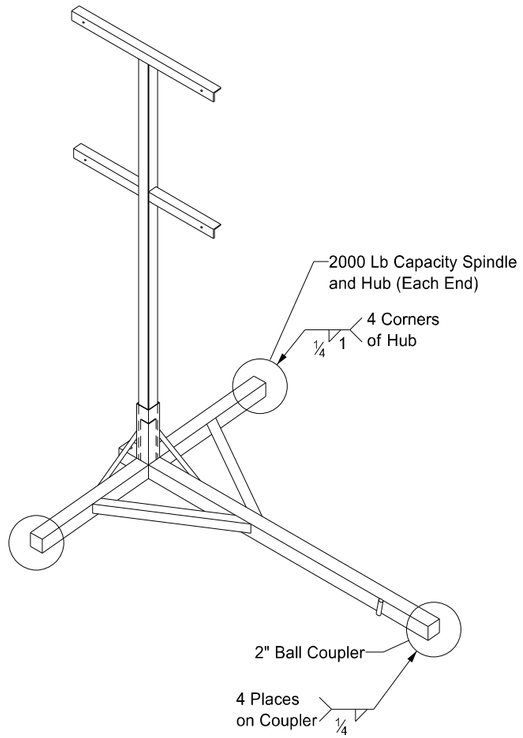
REVISIONS

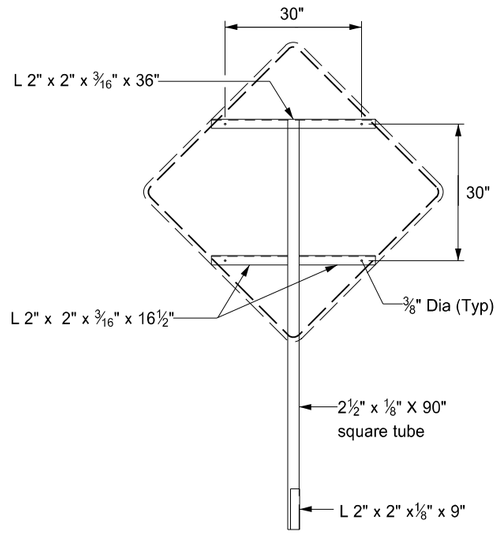
DATE	CHANGE
6-24-14	Revised Note 9
8-17-17	Updated notes & sign numbers
11-01-19	Added sign, revised note & sign #

This document was originally issued and sealed by Kirk J Hoff, Registration Number PE-4683, on 11/1/19 and the original document is stored at the North Dakota Department of Transportation

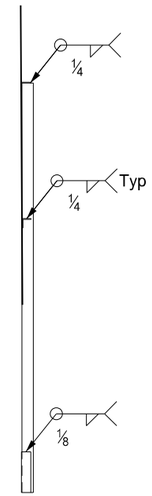
PORTABLE SIGN SUPPORT ASSEMBLY

D-704-50





FRONT

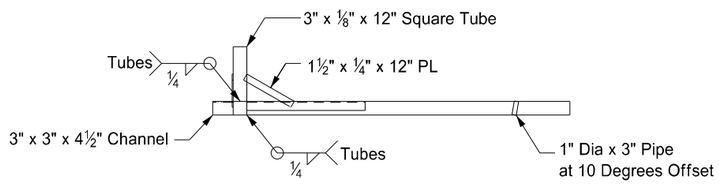


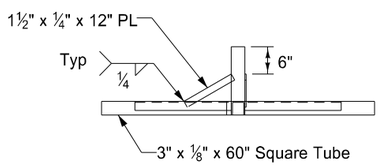
RIGHT

SIGN SUPPORT

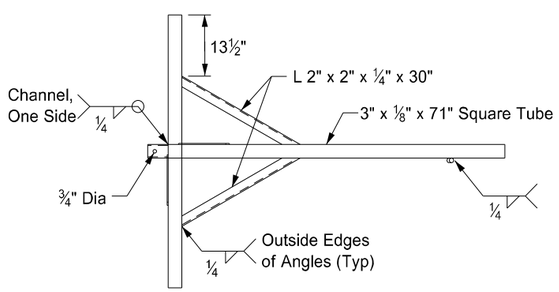
Notes:

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.





RIGHT



TOP

TRAILER

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

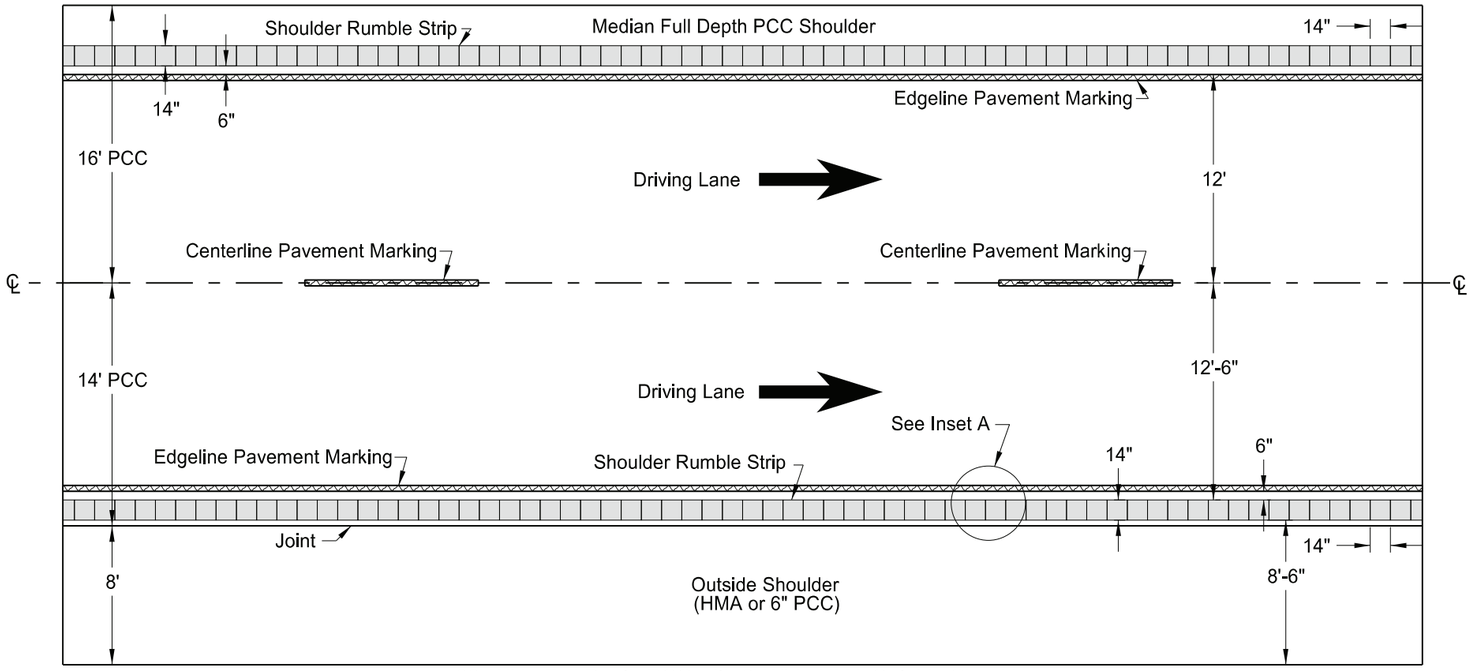
KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA
Kirk J Hoff
12 02 2020

RUMBLE STRIPS
INTERSTATE HIGHWAYS

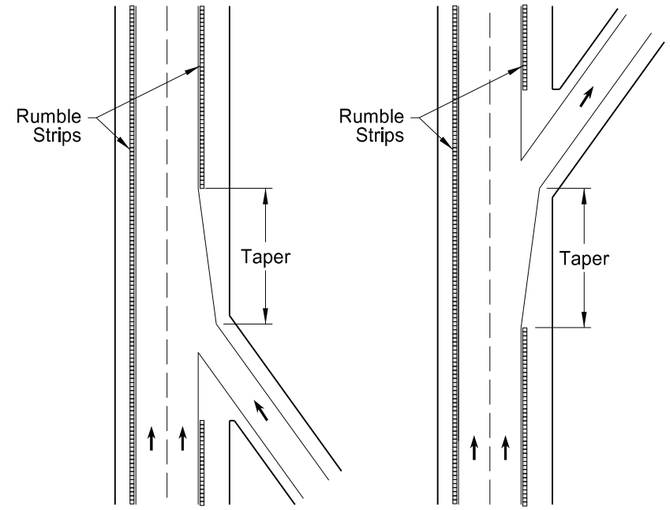
D-760-1

NOTES:

1) Discontinue rumble strips through ramps and tapers.

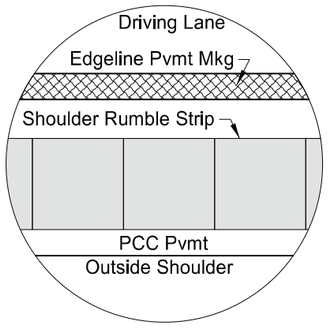


30' Wide Full Depth PCC with 8' Wide HMA Outside Shoulder

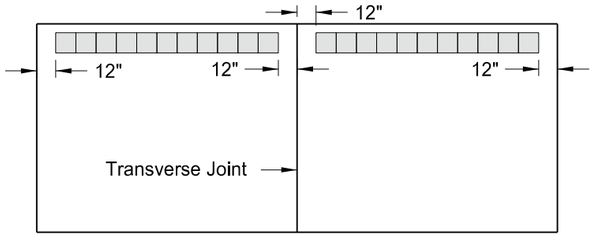


Entrance Ramp

Exit Ramp

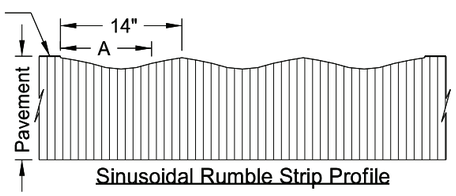


Inset A - Shoulder Rumble Strip
(Layout for opposite shoulder reversed)



Discontinue rumble strip approx. 12" on both sides of PCC transverse joint

Milling Depths		
Location A (in)	Depth MIL	Depth in
0	62.5	1/16
1 3/4	156	5/32
3 1/2	281	9/32
5 1/4	438	7/16
7	500	1/2
8 3/4	438	7/16
10 1/2	281	9/32
12 1/4	156	5/32
14	62.5	1/16



Sinusoidal Rumble Strip Profile

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-29-09	
REVISIONS	
DATE	CHANGE
2-25-10	Note 4 was added.
9-08-11	Revised Notes and D-760-1.
8-30-18	Revised drawings for clarity.
10-25-19	Added missing dimensions.
11-16-21	Added rumbles to end of taper.
5-26-23	Rumble strips made sinusoidal.

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

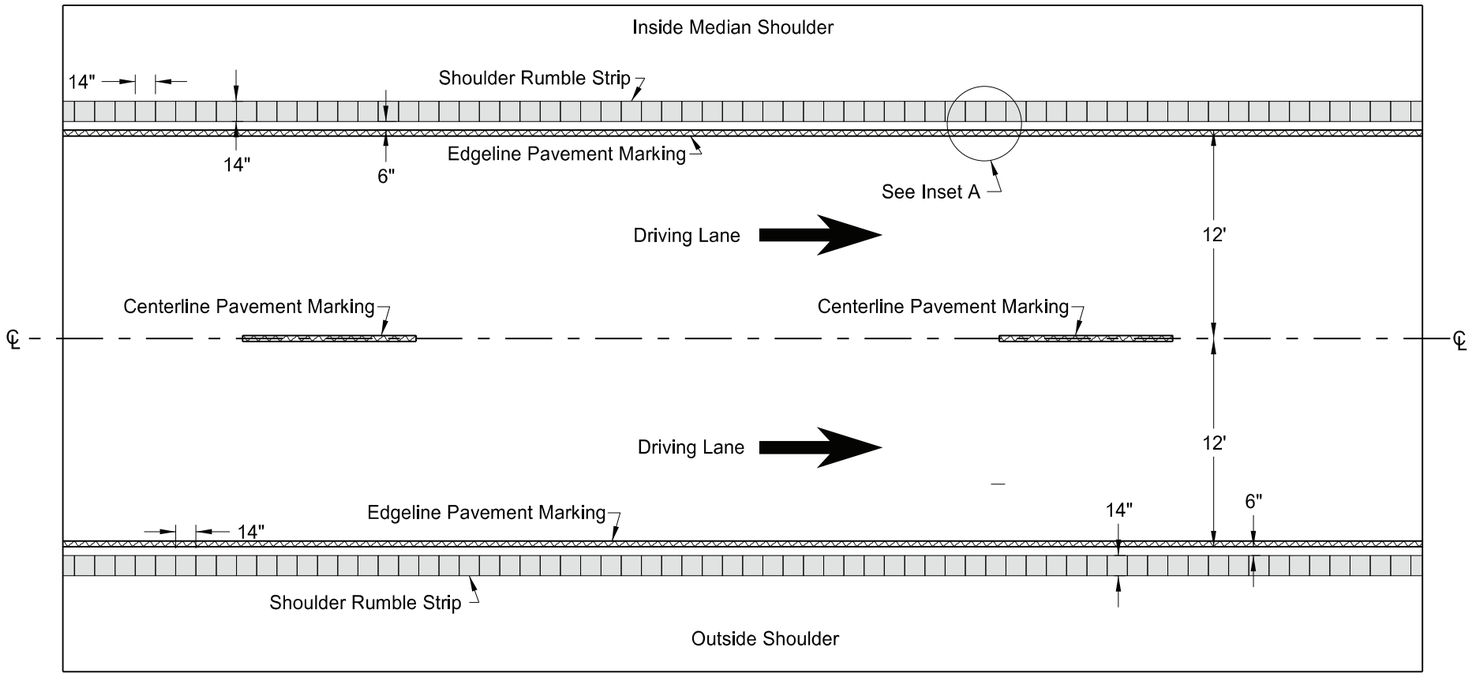
05/26/23

RUMBLE STRIPS
DIVIDED HIGHWAYS (NON-INTERSTATE)

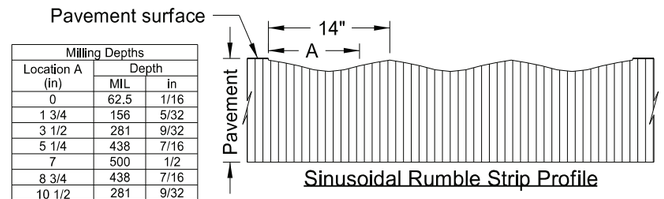
D-760-2

NOTES:

1) Discontinue rumble strips through the entire length of turn lanes and tapers, at ramps and tapers, and at the radius of paved or gravel highways, section line approaches, and private drives.

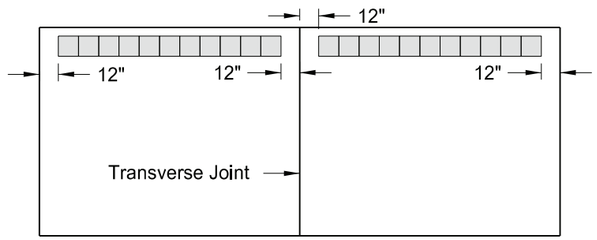


Divided Highways (Non-Interstate)

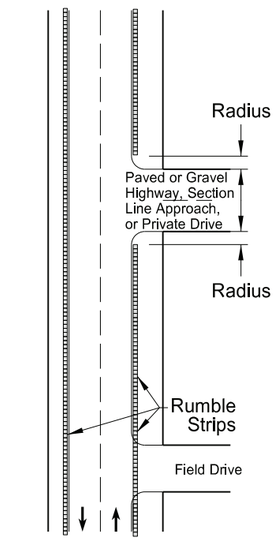


Milling Depths		
Location A (in)	Depth	
	MIL	in
0	62.5	1/16
1 3/4	156	5/32
3 1/2	281	9/32
5 1/4	438	7/16
7	500	1/2
8 3/4	438	7/16
10 1/2	281	9/32
12 1/4	156	5/32
14	62.5	1/16

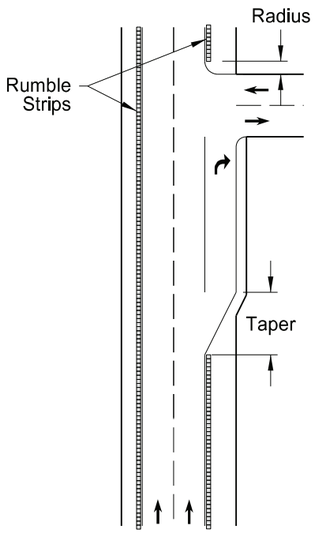
Sinusoidal Rumble Strip Profile



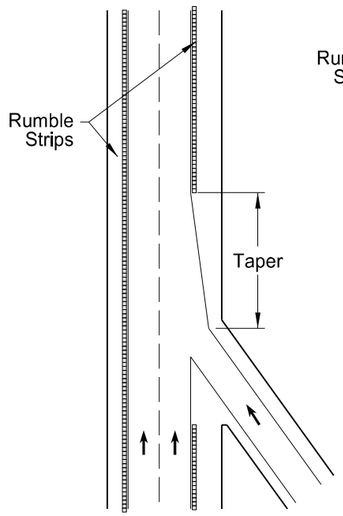
Discontinue rumble strip approx. 12" on both sides of PCC transverse joint



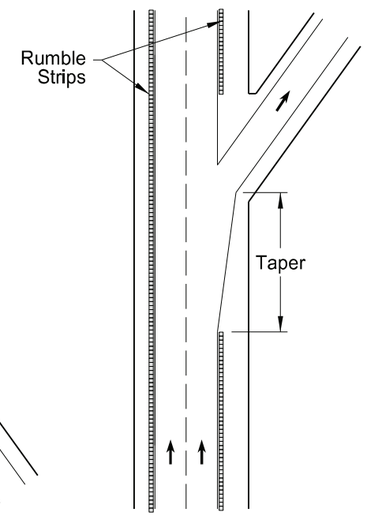
Entrance Roadways



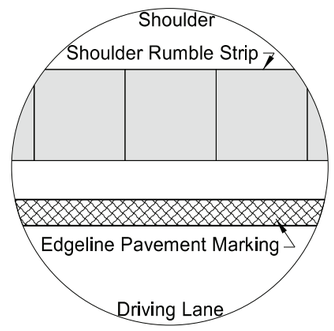
Turn Lane
(Right & Left)



Entrance Ramp



Exit Ramp



Inset A - Shoulder Rumble Strip
(Layout for opposite shoulder reversed)

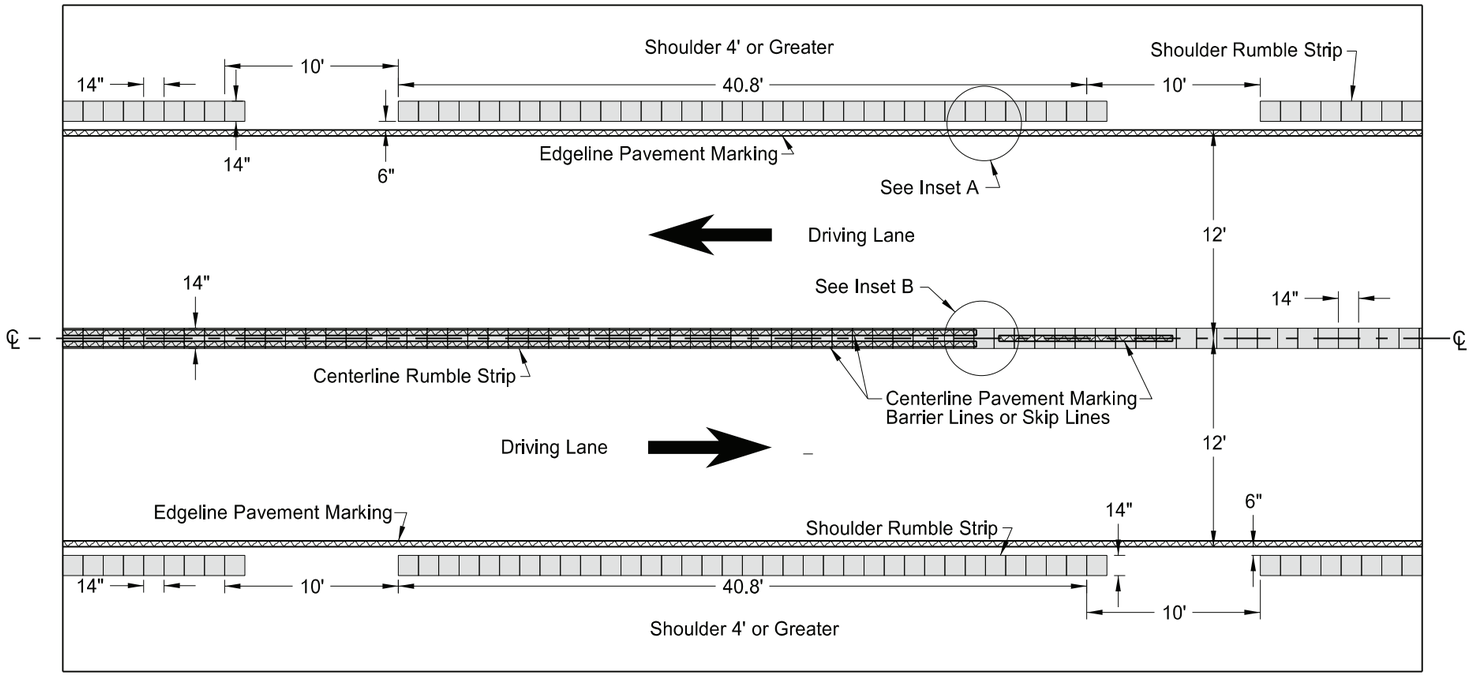
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-29-09	
REVISIONS	
DATE	CHANGE
2-25-10	Note 4 was added.
9-08-11	Revised Notes and D-760-2.
8-27-19	New Design Engr PE Stamp.
11-16-21	Added rumbles to end of taper.
5-26-23	Rumble strips made sinusoidal.

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

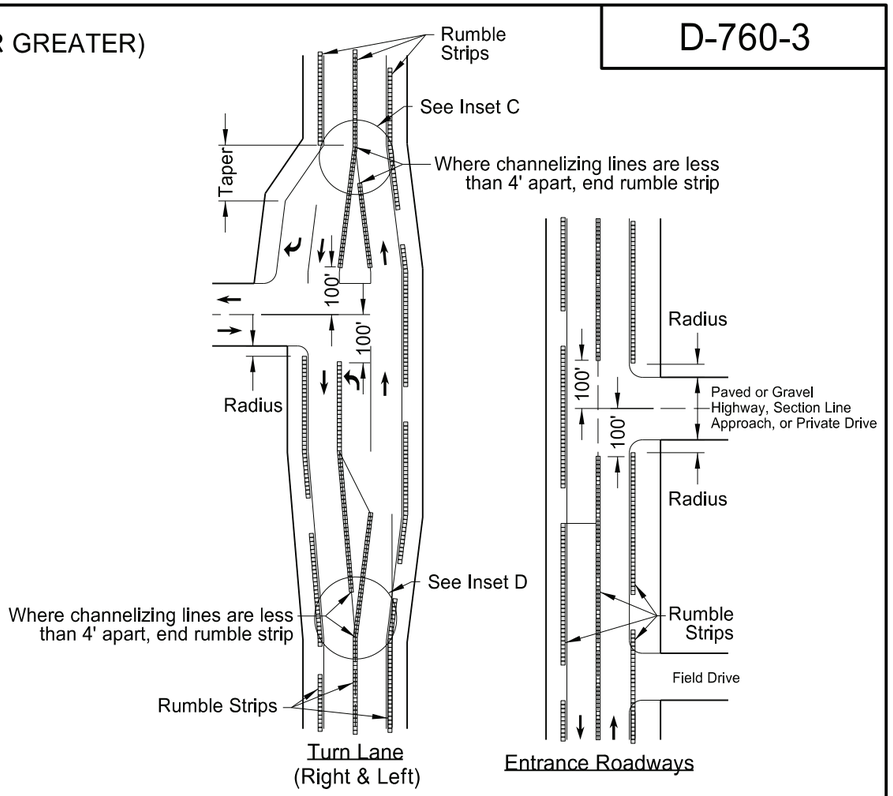
05/26/23

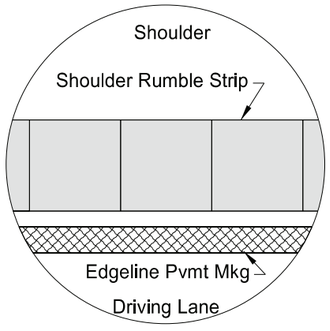
RUMBLE STRIPS UNDIVIDED HIGHWAYS (SHOULDERS 4' OR GREATER)

D-760-3

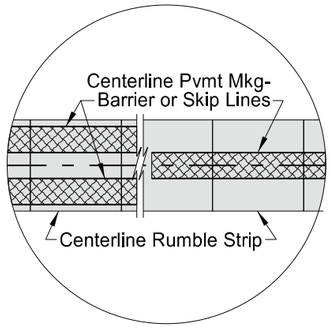


Undivided Highways (Shoulders 4' or Greater)

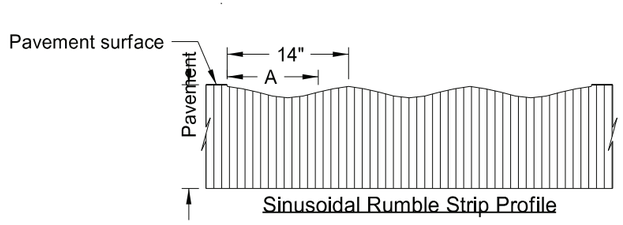




Inset A - Shoulder Rumble Strip
(Layout for opposite shoulder reversed)

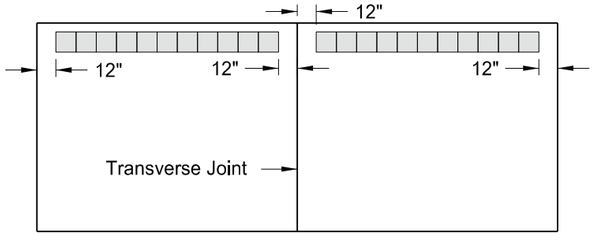


Inset B - Centerline Rumble Strip

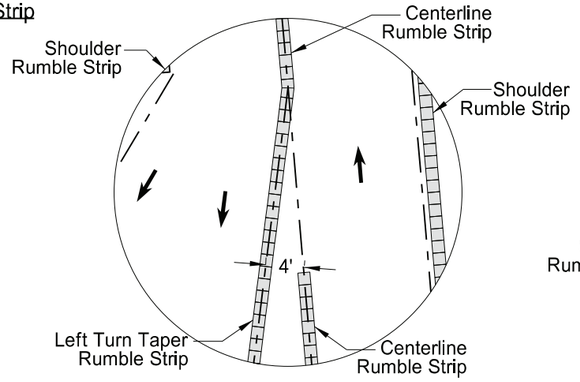


Sinusoidal Rumble Strip Profile

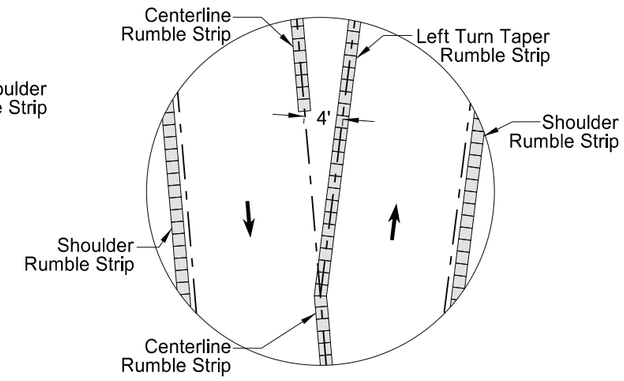
Milling Depths		
Location A (in)	Depth MIL	Depth in
0	62.5	1/16
1 3/4	156	5/32
3 1/2	281	9/32
5 1/4	438	7/16
7	500	1/2
8 3/4	438	7/16
10 1/2	281	9/32
12 1/4	156	5/32
14	62.5	1/16



Discontinue rumble strip approx. 12" on both sides of PCC transverse joint



Inset C



Inset D

NOTES:

1) Discontinue shoulder rumble strips through the entire length of right turn lanes and tapers, and at the radius of paved or gravel highways, section line approaches, or private drives.

2) Discontinue centerline rumble strips 100' before and after paved or gravel highways, section line approaches, or private drives. Place rumble strips at left turn lanes as shown below.

3) No additional quantity provided for centerline rumble strips on left turn tapers. Include all costs for centerline rumble strips on left turn tapers in the price bid for "Sinusoidal Rumble Strip - Asphalt Centerline" or "Sinusoidal Rumble Strip - Concrete Centerline".

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

12-29-09

REVISIONS

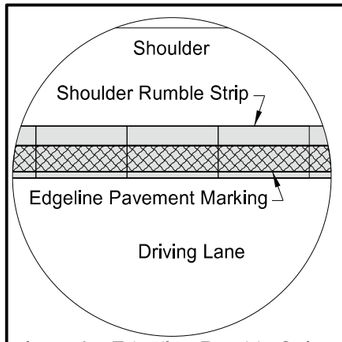
DATE	CHANGE
2-25-10	Note 4 was added.
4-19-10	Revised Note 5, Note 6, and Turn Lane (Right & Left).
9-08-11	Revised Notes and D-760-3.
10-25-19	Added missing dimensions.
11-16-21	Changed turn lane rumble layouts.
3-07-23	Added Note 3.
5-26-23	Made rumble strips sinusoidal.

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

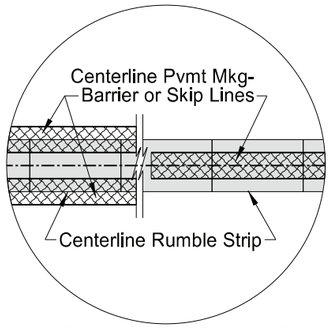
05/26/23

RUMBLE STRIPS
UNDIVIDED HIGHWAYS (SHOULDERS LESS THAN 4')

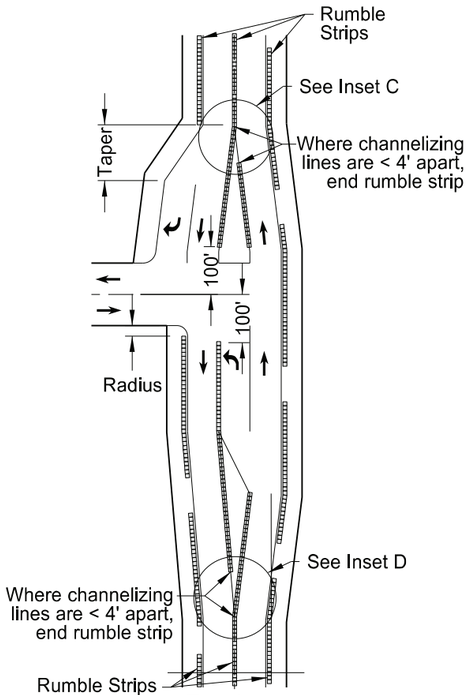
D-760-4



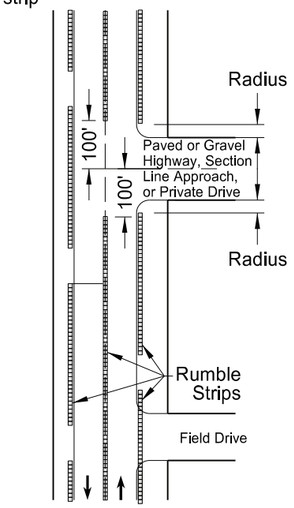
Inset A - Edgeline Rumble Strip
(Layout for opposite shoulder reversed)



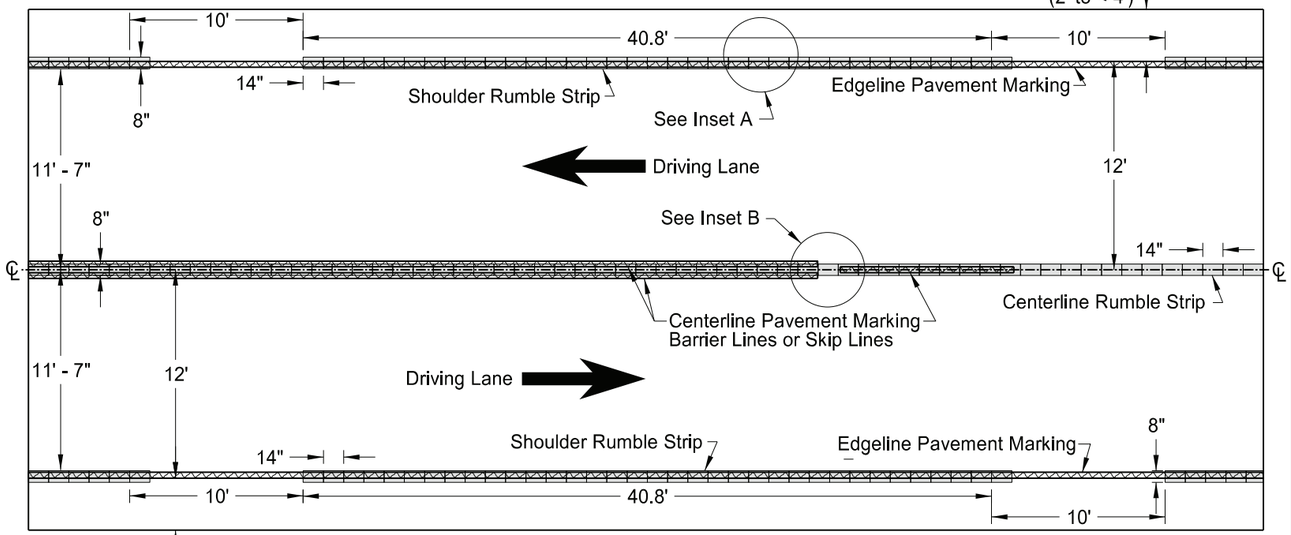
Inset B - Centerline Rumble Strip



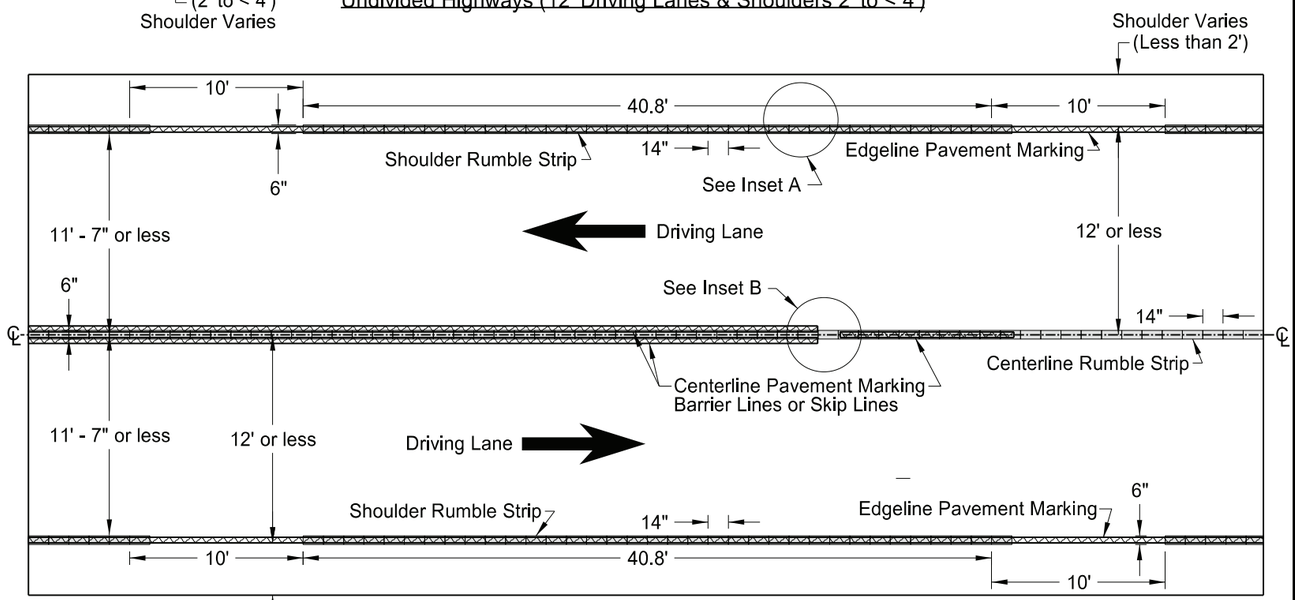
Turn Lane
(Right & Left)



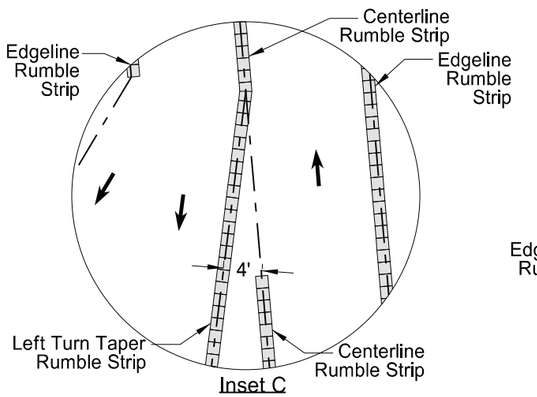
Entrance Roadways



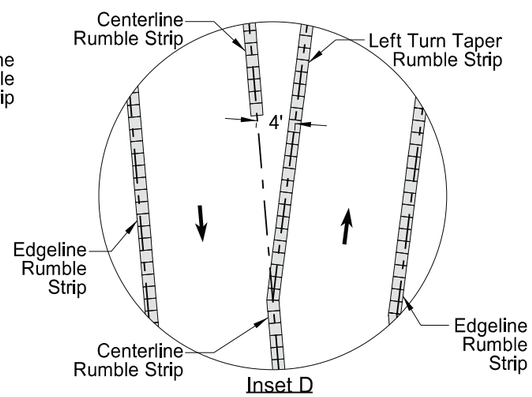
Undivided Highways (12' Driving Lanes & Shoulders 2' to < 4')



Undivided Highways (12' Driving Lanes or less & Shoulders Less than 2')



Inset C



Inset D

NOTES:
1) Discontinue shoulder rumble strips through the entire length of right turn lanes and tapers, and at the radius of paved or gravel highways, section line approaches, or private drives.

2) Discontinue centerline rumble strips 100' before and after paved or gravel highways, section line approaches, or private drives. Place rumble strips at left turn lanes as shown below.

3) No additional quantity provided for centerline rumble strips on left turn tapers. Include all costs for centerline rumble strips on left turn tapers in the price bid for "Sinusoidal Rumble Strip - Asphalt Centerline" or "Sinusoidal Rumble Strip - Concrete Centerline".

Milling Depths		
Location A (in)	Depth	
	MIL	in
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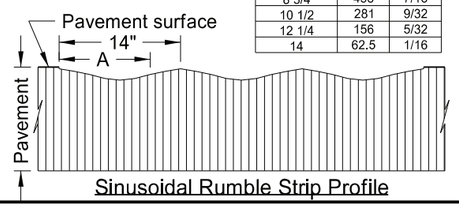
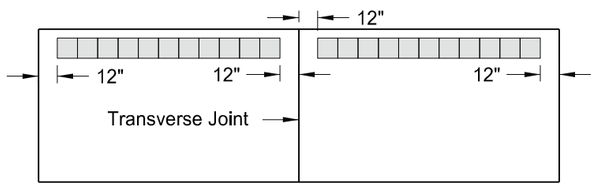
7	500	1/2
8 3/4	438	7/16
10 1/2	281	9/32
12 1/4	156	5/32
14	62.5	1/16



Sinusoidal Rumble Strip Profile



Discontinue rumble strip approx. 12" on both sides of PCC transverse joint

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-29-09	
REVISIONS	
DATE	CHANGE
2-25-10	Note 4 was added.
4-19-10	Revised Note 5, Note 6, and Turn Lane (Right & Left).
9-08-11	Revised Notes and D-760-4.
1-26-12	Revised details for rumble strip widths and dimensions.
10-25-19	Added missing dimensions.
11-16-21	Revised turn lane rumble layout.
3-07-23	Added Note 3.
5-26-23	Rumble Strips made Sinusoidal.

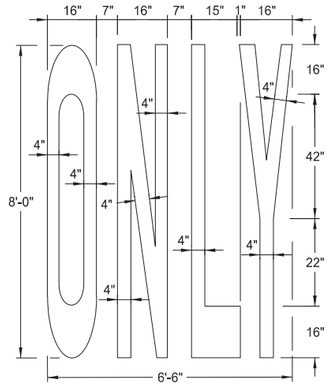
KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

05/26/23

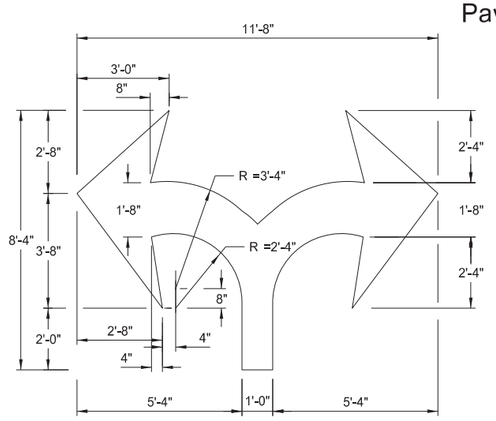
DocuSign Envelope ID: F823D7A4-83CC-4936-ABE1-378FF7682B3C

Pavement Marking Message Details

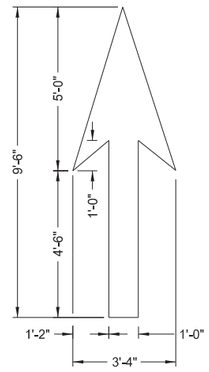
D-762-1



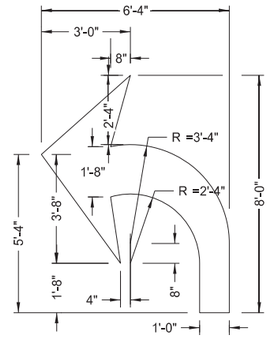
22 S. F.



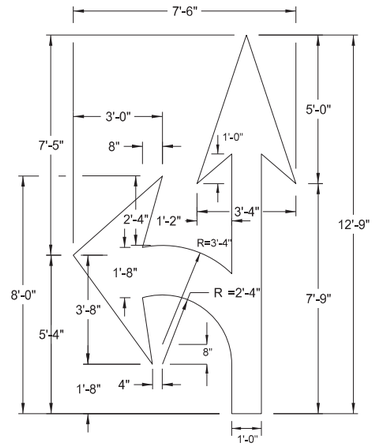
29 S. F.



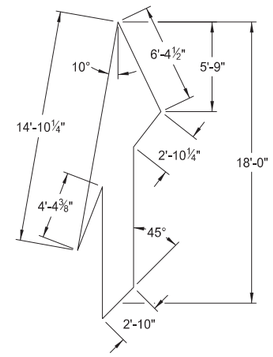
12 S. F.



16 S. F.

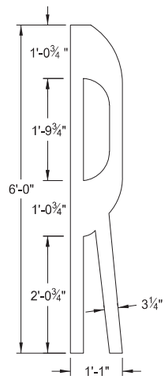


27 S. F.

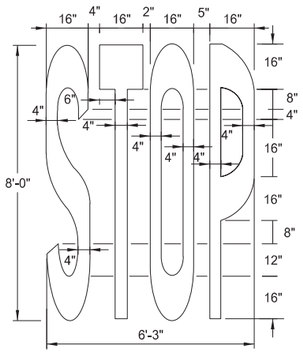


41 S. F.

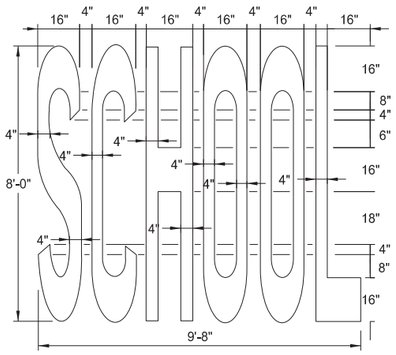
Note: Rotate merge arrow 20° from edge of roadway.



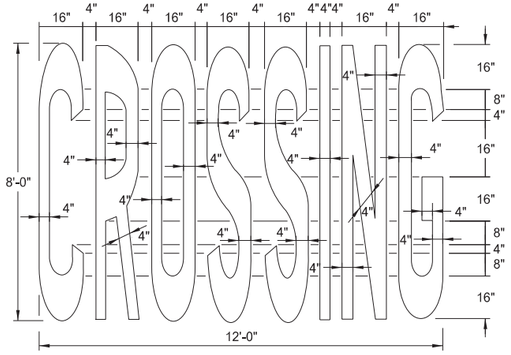
4 S. F.



22 S. F.



34.5 S. F.

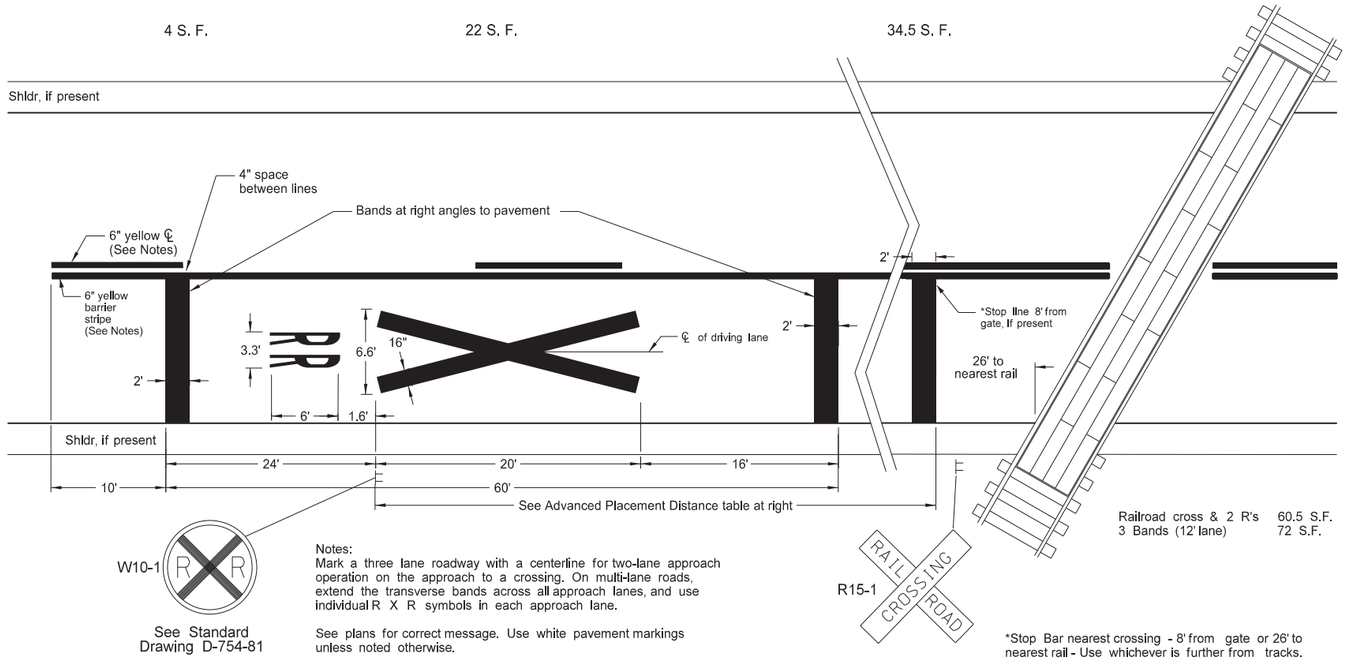


46 S. F.

Speed Limit	Chevron Width	Chevron Spacing 45° to Traffic
0-25 mph	8"	5'
30-40 mph	8"	15'
45 mph and above	12"	25'

Chevron Crosshatching Table

Centerline Pavement Marking Skip Spacing Detail



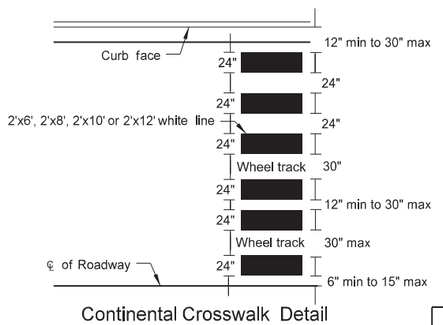
Notes:
Mark a three lane roadway with a centerline for two-lane approach operation on the approach to a crossing. On multi-lane roads, extend the transverse bands across all approach lanes, and use individual R X R symbols in each approach lane.

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

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 - Use whichever is further from tracks.

Advance Placement Distance for Railroad Warning Signs	
Posted or 85th Percentile Speed	Advance Distance
20 mph	min. 100 ft
25 mph	min. 100 ft
30 mph	min. 100 ft
35 mph	min. 100 ft
40 mph	125 ft
45 mph	175 ft
50 mph	250 ft
55 mph	325 ft
60 mph	400 ft
65 mph	475 ft
70 mph	550 ft



Continental Crosswalk Detail

NOTES:

1. Normal width line - 6 inches wide for freeways, expressways, and ramps; 6 inches for all other roadways with speed limits > 40 mph.
2. Use 4 or 6 inch wide pavement marking for all other roadways with speed limits ≤ 40 mph.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

12-6-11

REVISIONS

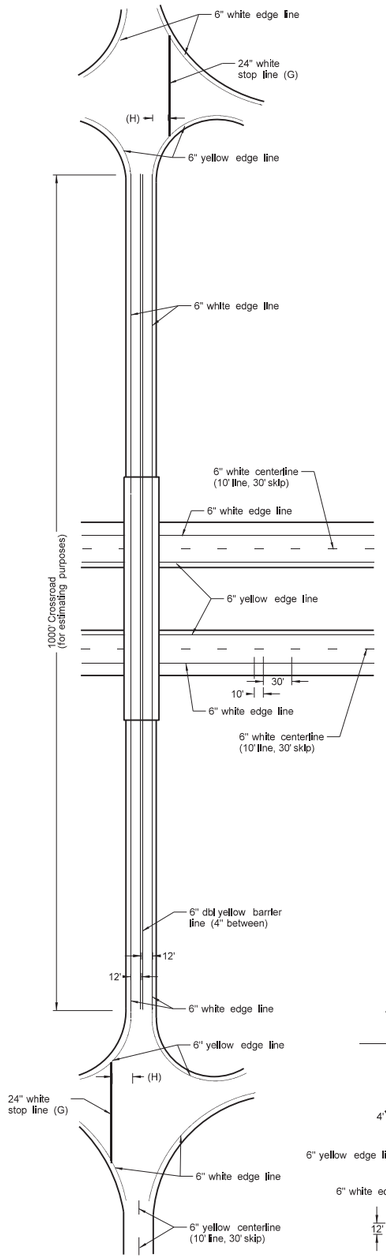
DATE	CHANGE
10-17-17	Updated to active voice.
08-27-19	New Design Engineer PE Stamp.
01-28-2020	Revised min Stop Bar distance to rail.
11-22-2023	Revised pavement marking widths.

KIRK J. HOFF REGISTERED PROFESSIONAL PE-4683 11/22/23 ENGINEER NORTH DAKOTA

DocuSign Envelope ID: 09EA856C-BD61-42B6-B726-BC2420A5CEC1

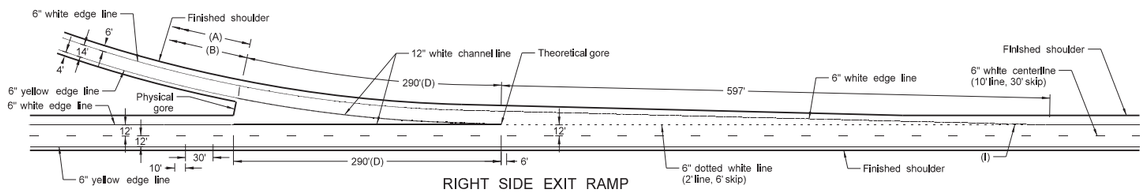
INTERSTATE PAVEMENT MARKING
4 LANE DIVIDED HIGHWAY

D-762-2

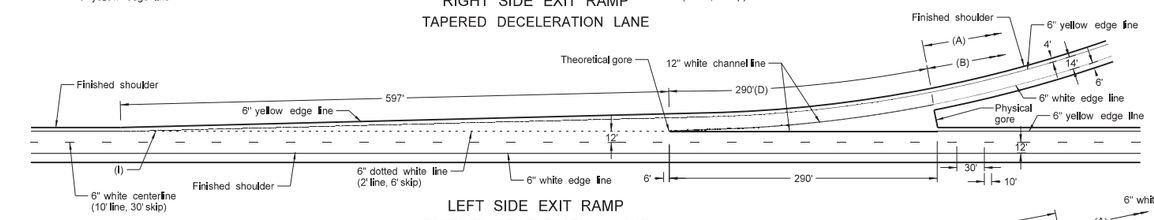


CROSS-ROAD & STRUCTURE

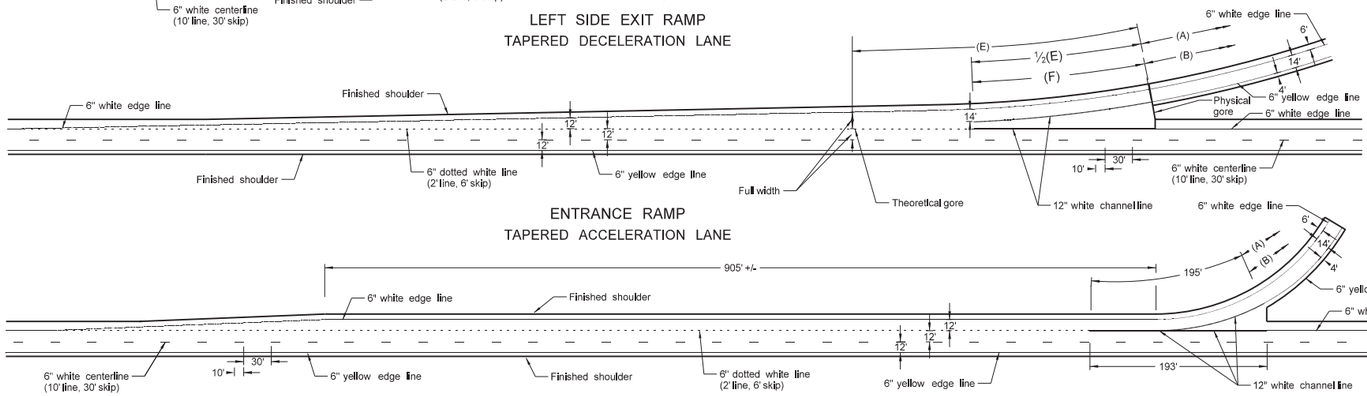
Engineer will determine length striped.



RIGHT SIDE EXIT RAMP
TAPERED DECELERATION LANE

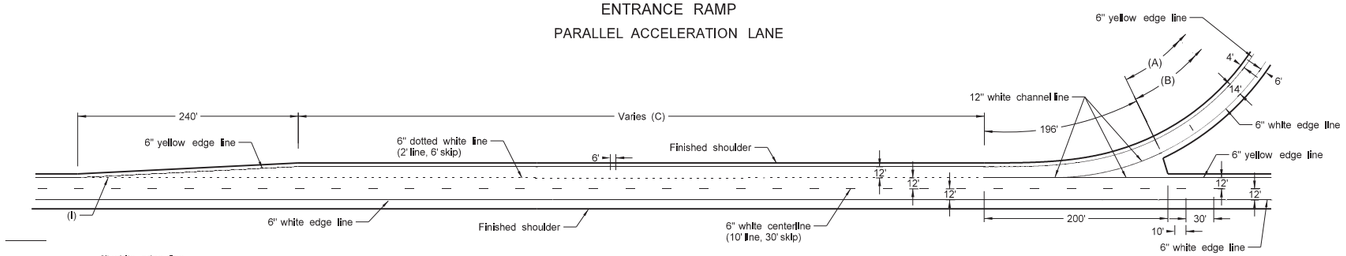


LEFT SIDE EXIT RAMP
TAPERED DECELERATION LANE

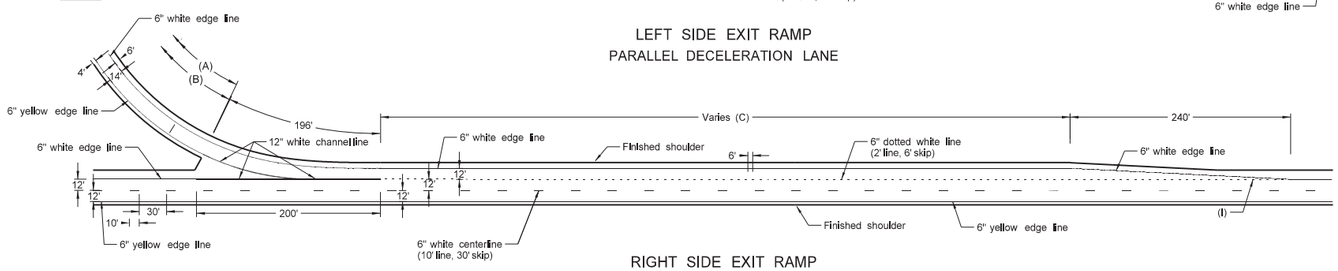


ENTRANCE RAMP
TAPERED ACCELERATION LANE

ENTRANCE RAMP
PARALLEL ACCELERATION LANE



LEFT SIDE EXIT RAMP
PARALLEL DECELERATION LANE



RIGHT SIDE EXIT RAMP
PARALLEL DECELERATION LANE

NOTE:

(A) Normal width white edge line - 6 inches wide for freeways, expressways, and ramps; 6 inches for all other roadways with speed limits > 40 mph.

Use 4 or 6 inch wide pavement marking for all other roadways with speed limits ≤ 40 mph.

(B) Normal width yellow edge line - 6 inches wide for freeways, expressways, and ramps; 6 inches for all other roadways with speed limits > 40 mph.

Use 4 or 6 inch wide pavement marking for all other roadways with speed limits ≤ 40 mph.

(C) Assume "varies" equals 790' for purpose of estimate. Place pavement marking from beginning of taper to the 12" line.
(D) Beginning of physical gore to theoretical gore.
(E) If the distace is less than 350' extend the 12" channel line to the theoretical gore, otherwise use 195'.
(F) Use 195' for estimating purposes.
(G) Not required for gravel surface crossroad approaches.
(H) 4' minimum, 15' maximum from nearest edge of intersection traveled way.
(I) Extend dotted line until it touches the edgeline.

BASIS OF ESTIMATE		
LOCATION	ITEM	
Right or Left Side Exit Ramp TAPERED	12" White channel line	580 LF
	24" White stop line	60 LF
	6" White dotted line	148 LF
	6" White edge line	1115 LF
	6" Yellow edge line	1075 LF
Entrance Ramp TAPERED	12" White channel line	390 LF
	6" White dotted line	258 LF
	6" White edge line	1270 LF
	6" Yellow edge line	1075 LF
Right or Left Side Exit Ramp PARALLEL	12" White channel line	396 LF
	24" White stop line	60 LF
	6" White dotted line (C)	258 LF
	6" White edge line	1115 LF
	6" Yellow edge line	1075 LF
Entrance Ramp PARALLEL	12" White channel line	388 LF
	6" White dotted line	283 LF
	6" White edge line	1275 LF
	6" Yellow edge line	1075 LF
Main Line (Both Roadways)	6" White lane line, 10' line, 30' skip	2640 LF/MI
	6" White edge line	10,560 LF/MI
	6" Yellow edge line	10,560 LF/MI
Cross Road	6" White edge line	2000 LF
	6" Dbl yellow barrier line (4" between)	2000 LF

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-3-11	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice
10-25-19	Replaced 2' Max dim with Note (I)
11-05-21	Revised labels
11-22-23	Revised pvmt marking widths
1-17-24	Revised wide pvmt marking width

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
01/17/24
ENGINEER
NORTH DAKOTA

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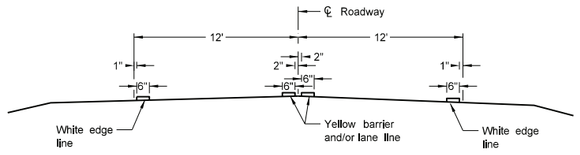
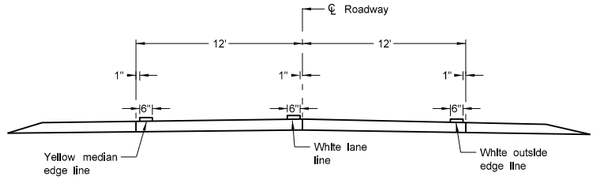
PAVEMENT MARKING

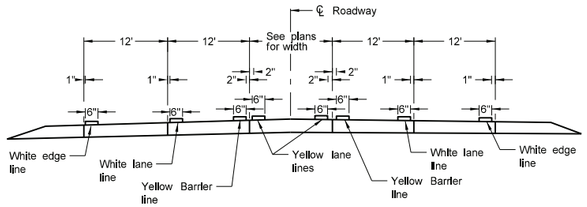
D-762-4



Two Lane Two Way
RURAL ROADWAY



Two Lane Roadway
INTERSTATE HIGHWAY
Concrete Section



RURAL FIVE LANE ROADWAY
Concrete Section

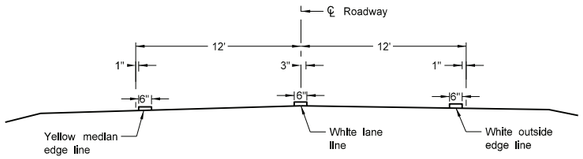
NOTES:

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

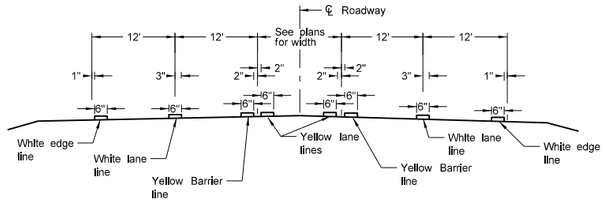
   For section lines, county roads, and street approaches, stripe the radii and edge lines of the paved surface within the right of way except where curb and gutter is present.

2. Normal width line - 6 inches wide for freeways, expressways, and ramps; 6 inches for all other roadways with speed limits > 40 mph,

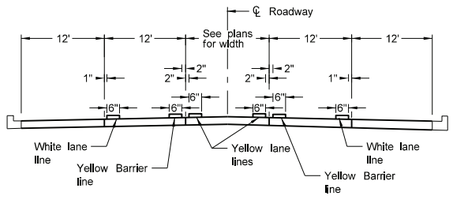
3. Use 4 or 6 inch wide pavement marking for all other roadways with speed limits < 40 mph.



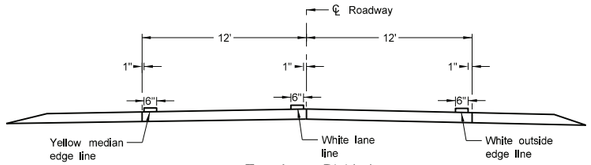
Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Asphalt Section



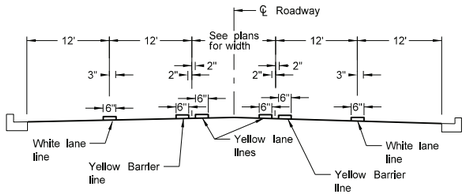
RURAL FIVE LANE ROADWAY
Asphalt Section



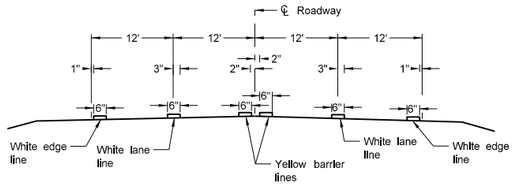
URBAN FIVE LANE SECTION
Concrete Section



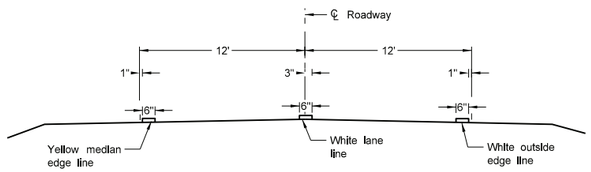
Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Concrete Section



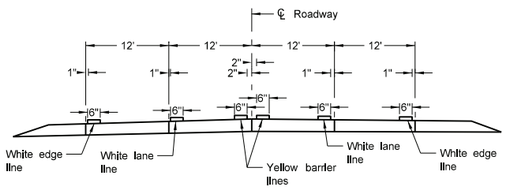
URBAN FIVE LANE SECTION
Asphalt Section



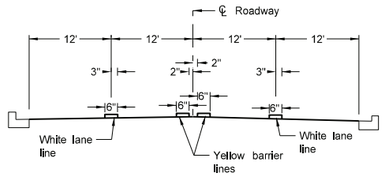
RURAL FOUR LANE ROADWAY
Asphalt Section



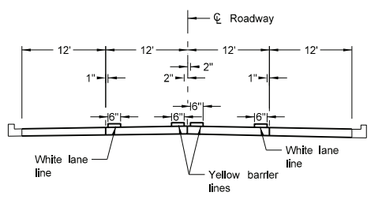
Two Lane Roadway
INTERSTATE HIGHWAY
Asphalt Section



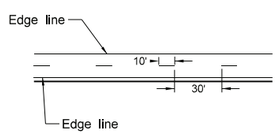
RURAL FOUR LANE ROADWAY
Concrete Section



URBAN FOUR LANE SECTION
Asphalt Section



URBAN FOUR LANE SECTION
Concrete Section



CENTERLINE PAVEMENT MARKING SKIP SPACING DETAIL

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.

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
07/09/24
ENGINEER
NORTH DAKOTA

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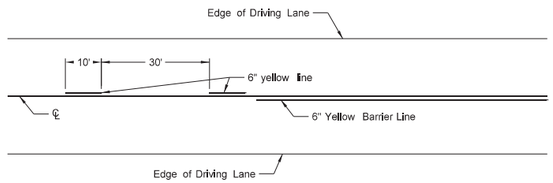
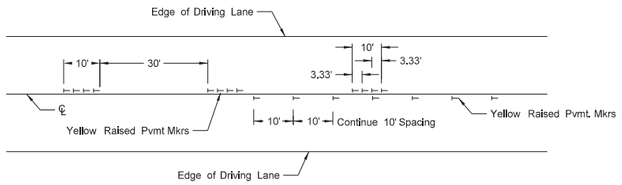
SHORT-TERM PAVEMENT MARKING

D-762-11

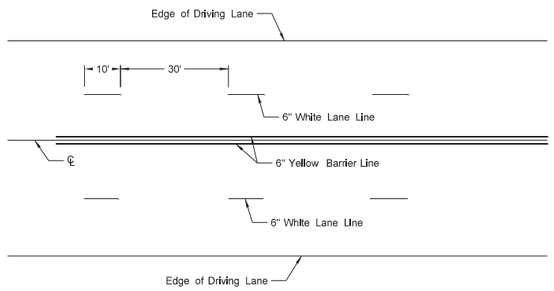


Painted or Tape Lines



Raised Pavement Markers

TWO-LANE TWO-WAY ROADWAY



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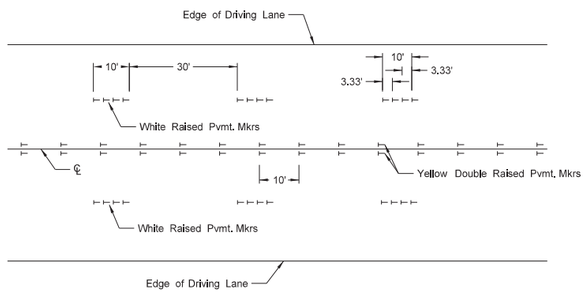
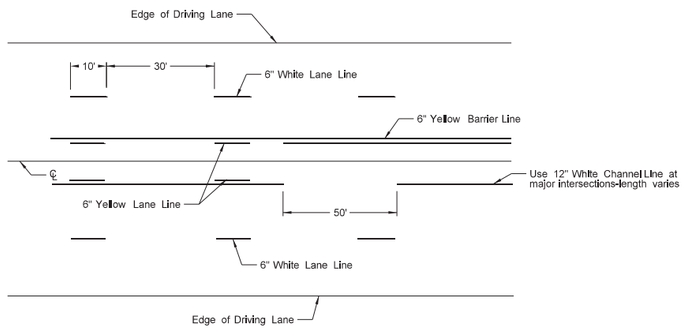


Raised Pavement Markers

FOUR LANE ROADWAY



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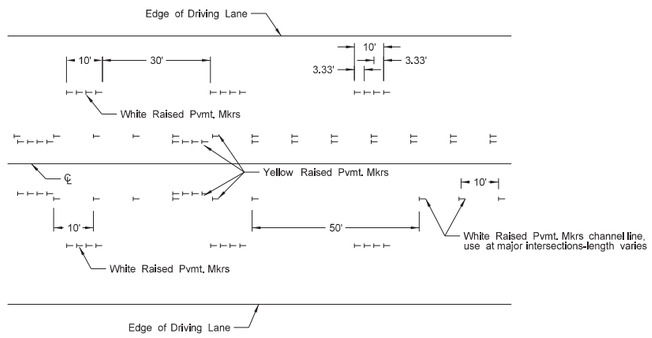
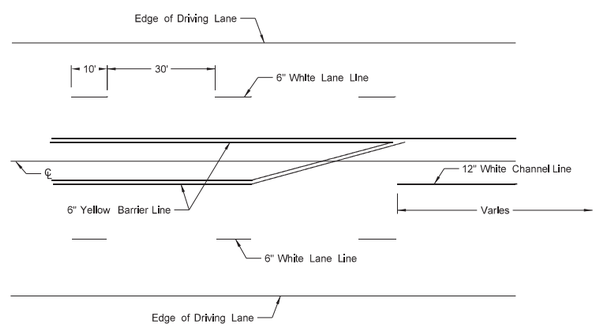
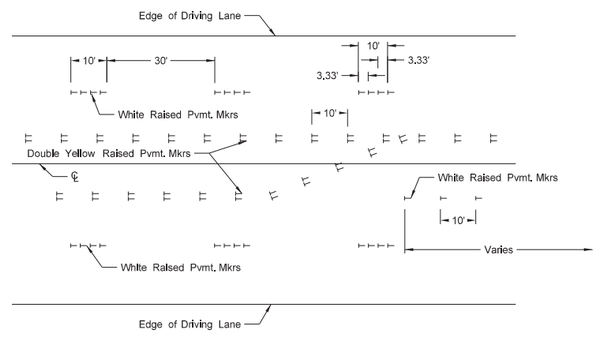


Raised Pavement Markers

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.

KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
01/17/24
ENGINEER
NORTH DAKOTA