

STATE COUNTY MAP

STARK COUNTY NORTH DAKOTA

SC-4500(020)
CMC 4510, CMC 4537, & 98th Ave SW
 CHIP SEAL COAT AND INCIDENTALS
 Dickinson to Morton County Line

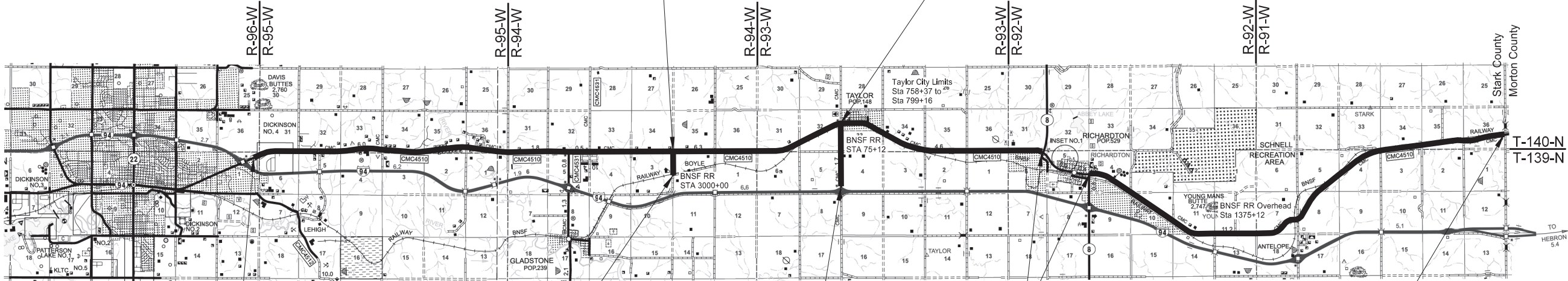
STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SC-4500(020)	23927	1	1

GOVERNING SPECIFICATIONS	Date Published and Adopted by the North Dakota Department of Transportation
Standard Specifications	4/1/2023
Supplemental Specifications	NONE

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
CMC 4510	30.436	31.733
CMC 4537	1.457	1.457
SITE 1 - 98TH AVE SW	0.513	0.513
TOTAL	32.406	33.703

END NON PARTICIPATING SITE 1
 Sta 3027+12. A point 120 feet south of the northwest corner of Section 2, Township 139 N, Range 94 W of the 5th P.M., Stark County, North Dakota

END SC-4500(020) - CMC 4537
 Sta 76+92. A point 84 feet south of the intersection of CMC 4510 & CMC 4537 between Sections 32 & 33, Township 140 N, Range 93 W of the 5th P.M., Stark County, North Dakota



BEGIN SC-4500(020) - CMC 4510
 Sta 1+90. A point 190 feet east of the intersection of the I-94 interchange east right of way and the center line of CMC 4510 in Section 1, Township 139 N, Range 96 W of the 5th P.M., Stark County, North Dakota

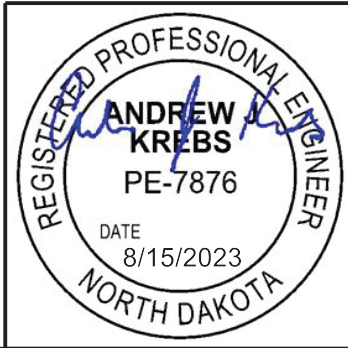
BEGIN NON PARTICIPATING SITE 1
 Sta 3000+05. A point 2829 feet south of the northwest corner of Section 2, Township 139 N, Range 94 W of the 5th P.M., Stark County, North Dakota

BEGIN SC-4500(020) - CMC 4537
 Sta 0+00. A point 975 feet north of the southeast quarter of Section 5, Township 139 N, Range 93 W of the 5th P.M., Stark County, North Dakota

ND Hwy 8 Exception:
 Sta 1019+80 to Sta 1088+26
 6846 Feet

END SC-4500(020) - CMC 4510
 Sta 1677+40. A point 36 feet west of the intersection of CMC 4510 and 78th Avenue Southwest in Section 36, Township 140 N, Range 91 W of the 5th P.M., Stark County, North Dakota

DESIGNERS
 Andrew J. Krebs, PE



677 27TH AVENUE EAST
 DICKINSON, ND 58601
 (701) 483-1284, FAX (855) 288-8055
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	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SC-4500(020)	2	1

TABLE OF CONTENTS

<u>SECTION NO.</u>	<u>SHEET NO.</u>	<u>DESCRIPTION</u>
1	1	Title Sheet
2	1	Table of Contents, List of Special Provisions, & List of Standard Drawings
6	1-2	Plan Notes
8	1	Estimate of Quantities
10	1	Basis of Estimate
20	1	Details
30	1-5	Typical Sections
100	1-7	Work Zone Traffic Control
120	1-16	Pavement Marking

LIST OF SPECIAL PROVISIONS (SP)

<u>NUMBER</u>	<u>DESCRIPTION</u>
PSP 25(23)	Permits and Environmental Considerations
SSP 3	Local Agency Contracts

LIST OF STANDARD DRAWINGS

<u>STANDARD NO.</u>	<u>DESCRIPTION</u>
D-101-1, 2, 3 & 4	NDDOT Abbreviations
D-101-10	NDDOT Utility Company and Organization Abbreviations
D-101-20 & 21	Line Styles
D-101-30, 31, 32 & 33	Symbols
D-704-3	Lane Markers (Spotting Tab for Seal Projects Only)
D-704-7	Breakaway Systems for Construction Zone Signs – Perforated Tube
D-704-8	Breakaway Systems for Construction Zone Signs – U Channel Post
D-704-9	Construction Sign Details – Terminal and Guide Signs
D-704-10	Construction Sign Details – Regulatory Signs
D-704-11 & 11a	Construction Sign Details – Warning Signs
D-704-14	Construction Sign Punching and Mounting Details
D-704-20	Terminal and Seal Coat Sign Layouts
D-704-22	Construction Truck and Temporary Detour Layouts
D-704-26	Miscellaneous Sign Layouts
D-704-27	Mobile Operation (Pavement Marking)
D-704-33	Two-Lane Roadway Portable Rumble Strips
D-704-50	Portable Sign Support Assembly
D-762-1	Pavement Marking Message Detail
D-762-4	Pavement Marking
D-762-11	Short-Term Pavement Marking



PLAN NOTES

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SC-4500(020)	6	1

100-P01 SHOULDER MOWING: Stark County will mow the existing shoulders prior to chip seal operations. Provide Stark County a two-week notification to complete the mowing prior to chip sealing. The contact is Al Heiser at (701) 290-8429.

107-115 RAILROAD PROTECTIVE LIABILITY INSURANCE: This project crosses the BNSF Railway Company at Sta 75+12 on CMC 4537 and at Sta 3000+00 on 98th Ave SW. The type of work that will be performed within the railroad right of way is chip sealing, fog sealing, and pavement marking. Direct inquiries regarding protective liability insurance to:

Rosa Martinez
Marsh USA Inc.
4400 Comerica Bank Tower
1717 Main Street
Dallas, TX 75201-7357, USA
214-303-8519
Rosa.M.Martinez@marsh.com

Obtain information regarding CMC 4537 crossing number 087925D and 98th Ave SW crossing number 087929F from the Federal Railroad Administration website: <http://safetydata.fra.dot.gov/Officeofsafety/>

107-P01 RAILROAD FLAGGING: Coordinate the need for railroad flagging with BNSF. Provide them at least 48 hours notice before flagging operations are needed. Payment for flagging required will be made by the Contractor to Burlington Northern Santa Fe Railroad and shall be included in the price bid for "RAILWAY PROTECTION INSURANCE-2 LOCATIONS".

401-P01 FOG SEAL COAT: Complete the final sweeping within 1-5 calendar days after completion of the seal coat operation. Dilute fog oil to a 50:50 blend with water and apply at a rate of 0.12 Gal/SY (0.06 Gal/SY undiluted.) Dilution at the supplier is required. Apply Fog oil within 2 calendar days after final sweeping. The maintenance period will end 5 days after the application of the fog coat.

420-P01 INLET PROTECTION: Prior to beginning chip seal operations, install inlet protection on all storm sewer inlets in the proposed project area to prevent chips and oil from entering the storm sewer system. Inlet protection is to remain in place until final sweeping is complete. Include all associated costs for inlet protection in the price bid for "MOBILIZATION".

420-P02 EXISTING UTILITIES: Cover all existing manholes, gate value boxes, and concrete valley gutters within the proposed project limits immediately prior to chip and fog sealing. Remove the covering after the rolling operation has finished and after the fog seal has cured. Include all associated costs with covering the existing utilities in the price bid for "MOBILIZATION".

420-P03 CHFRS-2P ACCEPTANCE: CHFRS-2P will be accepted on certifications.

704-500 PORTABLE RUMBLE STRIPS (PRS): Use PRS made of rubber or engineered polymers.

Install PRS as part of the temporary traffic control when the following signs are also part of the required traffic control set up:

- "Be Prepared to Stop" (W3-4); and
- "Flagger" symbol (W20-7)

Install PRS that meet the following criteria:

- Have no adhesives or fasteners required for placement;
- Have a manufacture's speed rating that meets or exceeds the posted speed limit; and
- Each strip in the array must weigh a minimum of 100 pounds.

Use individual PRS constructed in one of the following manners:

- A single piece;
- Interlocking segments; or

- Two pieces hinged at the midpoint.

An installed array of PRS consists of a minimum of 3 individual strips.

Move rumble strips with the flagging operation. Do not place rumble strips on horizontal curves.

The Engineer will count and measure each array as one unit. Include the cost of providing, installing, maintaining, and relocating PRS in the unit price bid for "Portable Rumble Strips".

704-P01 TRAFFIC CONTROL FOR SEAL COATS: Provide traffic control consisting of a temporary lane closure, flagging, and a pilot car.

Traffic control device quantities are based on a 6-mile limitation using traffic control signing layouts (shown in Section 100 of the plans) and standard drawings listed below:

1. Standard D-704-20, Type G and H: For project terminal signing. Sign G20-1b-60 will not be required.
2. Standard D-704-22, Type K: For trucks hauling material.
3. Standard D-704-26, Type KK: For use at intersections within pilot zone.
4. Standard D-704-33: For flagging station setup.

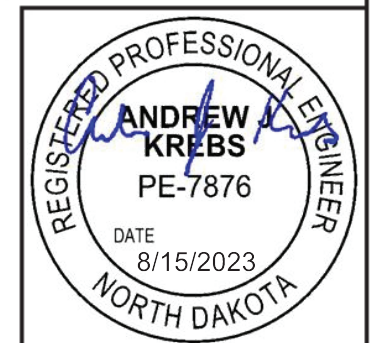
Install and maintain a 35 MPH speed limit after cover coat application and prior to initial sweeping, where the existing speed is greater than 35 MPH. Re-establish the speed limit to pre-construction condition after the initial sweeping. Four (4) additional speed limit signs have been included in the traffic control devices list for this.

Eight (8) "Wait for Pilot Car" signs have been included in the traffic control devices list. Install and remove the signs as needed.

Traffic control devices will be paid for the maximum required number of each type of device at one time between all the different locations on the project.

704-P02 FLAGGING & PILOT CAR: Furnish flagging and pilot cars as specified in Section 704, "Temporary Traffic Control" required to complete all work on the project. Include the cost of flagging and pilot cars in the price bid for other items.

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

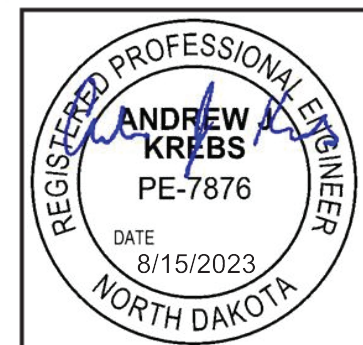


SC-4500(020)	
<small>CMC 4510, CMC 4537, & SITE 1 - 98th AVE SW</small>	
	Plan Notes Stark County, ND
DRWN. BY AK	CHKD. BY JPM
PROJECT NO. 2303-00213	

PLAN NOTES

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SC-4500(020)	6	2

- 762-P01 EDGE LINE:** Edge lines will be continued through private drives and broken for intersections.
- 762-P02 EPOXY PVMT MK MESSAGE:** Install painted warning messages and 24 inch stop bars on the north and south sides of the BNSF railroad crossing on CMC 4537 at Station 75+12 and on the north side of the BNSF railroad crossing on Site 1/98th Ave SW at Station 3001+88 according to Standard Drawing D-762-1. These quantities have been provided in the Summary of Quantities.
- 762-P03 PAVEMENT MARKING MASKING:** In locations where there is existing Preformed Patterned Pavement Markings follow the installation sequence below:
1. Immediately before chip sealing the area in which the Preformed Patterned Pavement Markings are located, Mask the markings with an adhesive coated paper liner. Install the liner as recommended by the pavement marking manufacturer. Apply spotting tabs to the ends of each liner.
 2. Install the Chip Seal Coat.
 3. Remove the masking liner after the rolling operation has finished in the area the markings were covered. Dispose of liners as specified in Section 107.17, "Removed Material".
 4. Immediately before fog sealing the area in which the Preformed Patterned Pavement Markings are located, apply a second application of pavement marking masking.
 5. Install the Fog Seal Coat.
 6. Remove the masking liner after the fog seal has cured in the area the markings were covered. Dispose of liners as specified in Section 107.17, "Removed Material".
 7. Include all associated costs with masking in the price bid for "PAVEMENT MARKING MESSAGE-MASKING" and "PAVEMENT MARKING 8IN LINE-MASKING".
- 762-P04 SHORT TERM PAVEMENT MARKINGS:** Plan quantity includes one application of short term centerline pavement markings after the fog seal is complete for all locations. In addition, a second application has been included for after the chip seal is complete in the following locations:
- CMC 4510
- Sta 1+90 to Sta 552+30: – 48,644 LF
- CMC 4510
- Sta 1011+60 to Sta 1019+80 – 3,170 LF



SC-4500(020)	
CMC 4510, CMC 4537, & SITE 1 – 98 TH AVE SW	
	Plan Notes
	Stark County, ND
DRWN. BY AK	CHKD. BY JPM
PROJECT NO. 2303-00213	

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	8	1

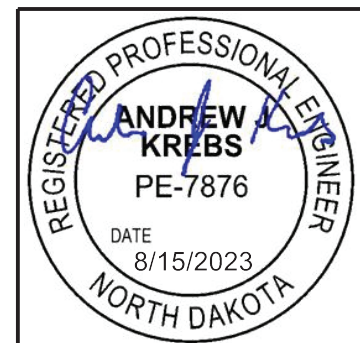
Spec	Code	Description	Unit	SC-4500(020)		Non Part	Total Quantities
				CMC 4510	CMC 4537	Site 1 98th Ave SW	
103	0100	CONTRACT BOND	LSUM	1	0	0	1
107	0101	RAILWAY PROTECTION INSURANCE-2 LOCATIONS	LSUM	0	0.5	0.5	1
401	0070	FOG SEAL	GAL	34,940	1,435	729	37,104
420	0118	CHFRS-2P EMULSIFIED ASPHALT	GAL	187,550	8,079	4,287	199,916
420	0125	COVER COAT MATERIAL CL 41	TON	6,582	284	153	7,019
702	0100	MOBILIZATION	LSUM	1	0	0	1
704	1000	TRAFFIC CONTROL SIGNS	UNIT	7,232	646	525	8,403
704	1048	PORTABLE RUMBLE STRIPS	EA	3	0	0	3
704	1500	OBLITERATION OF PAVEMENT MARKING	SF	329	0	0	329
762	0111	EPOXY PVMT MK 12IN LINE	LF	775	0	0	775
762	0112	EPOXY PVMT MK MESSAGE	SF	140	265	133	538
762	0113	EPOXY PVMT MK 4IN LINE	LF	411,488	19,860	10,611	441,959
762	0114	EPOXY PVMT MK 6IN LINE	LF	242	0	0	242
762	0115	EPOXY PVMT MK 8IN LINE	LF	1081	0	0	1,081
762	0117	EPOXY PVMT MK 24IN LINE	LF	87	0	0	87
762	0430	SHORT TERM 4IN LINE-TYPE NR	LF	148,830	4,740	5,402	158,972
762	1350	PAVEMENT MARKING MESSAGE-MASKING	SF	288	0	0	288
762	1362	PAVEMENT MARKING 8IN LINE-MASKING	LF	2,694	0	0	2,694



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SC-4500(020)	10	1

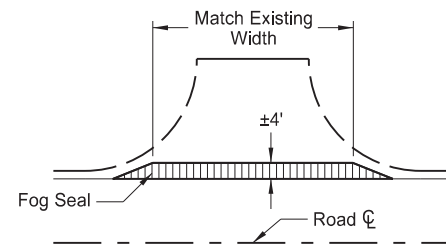
CHIP & FOG SEAL SUMMARY										
Description	Begin Station	End Station	Length (LF)	Chip Seal		Fog Seal		401 0070 FOG SEAL (GAL)	420 0118 CHFRS-2P EMULSIFIED ASPHALT (GAL)	420 0125 COVER COAT MATERIAL CL 41 (TON)
				Area (SY)	Width (LF)	Area (SY)	Width (LF)			
				CMC 4510						
Typ Sec 1	1+90	29+09	2,719	-	27.5	-	40	726	3,324	117
	41+05	276+81	23,576	-	-	-	-	6,287	28,816	1,009
Trans Typ 1 to Typ 2	29+09	30+89	180	-	35	-	46	56	280	10
	39+80	41+05	125	-	-	-	-	39	195	7
Typ Sec 2	30+89	39+80	891	-	41.75	-	51	303	1,654	58
Typ Sec 3	276+81	404+40	12,759	-	24	-	28	2,382	13,610	477
Typ Sec 4	404+40	405+40	100	-	-	-	-	22	116	5
	424+79	517+65	9,286	-	26	-	32	1,982	10,731	376
	523+00	523+32	32	-	-	-	-	7	37	2
CMC 4531	405+40	408+64	324	2,595	-	2,888	-	174	1,038	37
Typ Sec 5	408+64	417+64	900	-	41	-	47	282	1,640	58
Taper 1	417+64	424+79	715	2,662	-	3,138	-	189	1,065	38
Trans Typ 4 to Typ 6	517+65	518+95	130	-	34	-	41	36	197	7
	521+10	523+00	190	-	-	-	-	52	288	11
Typ Sec 6	518+95	521+10	215	-	42	-	49	71	402	15
Taper 2	523+32	533+73	1,041	4,363	-	5,056	-	304	1,746	62
Typ Sec 7	533+73	538+08	435	-	54	-	60	174	1,044	37
	1018+30	1019+80	150	-	-	-	-	60	360	13
98th Ave SW	538+08	539+70	162	1,637	-	1,761	-	106	655	23
Taper 3	539+70	542+31	261	1,390	-	1,564	-	94	556	20
Typ Sec 8	542+31	545+12	281	-	39.5	-	45.5	86	494	18
Taper 4	545+12	553+36	824	2,772	-	3,255	-	196	1,109	39
Typ Sec 9	553+36	591+73	3,837	-	26.5	-	32	819	4,520	159
Typ Sec 10	591+73	770+18	17,845	-	26	-	32	3,807	20,621	722
Trans Typ 10 to Typ 11	770+18	771+64	146	-	36	-	39	38	234	9
Typ Sec 11	771+64	784+64	1,300	-	46	-	46	399	2,658	94
Trans Typ 11 to Typ 12	784+64	785+42	78	-	36	-	39	21	125	5
Typ Sec 12	785+42	1011+60	22,618	-	25	-	31	4,675	25,132	880
Trans Typ 12 to Typ 7	1011+60	1018+30	670	-	40	-	46	206	1,192	42
Exception	1019+80	1088+26								
ND Hwy 8 Exception										
Typ Sec 13	1088+26	1380+75	29,249	-	22	-	26.5	5,168	28,600	1,001
Typ Sec 14	1380+75	1677+40	29,665	-	24	-	27	5,340	31,643	1,108
Approaches (Sheet 20-1)	-	-	-	-	-	-	-	839	3,468	123
CMC 4510 SUBTOTAL =			160,704	-	-	-	-	34,940	187,550	6,582
CMC 4537										
Typ Sec 1	0+00	76+92	7,692	-	23	-	27	1,385	7,863	276
Approaches (Sheet 20-1)	-	-	-	-	-	-	-	50	216	8
CMC 4537 SUBTOTAL =			7,692	-	-	-	-	1,435	8,079	284
NON PARTICIPATING SITE 1 - 98TH AVE SW										
Typ Sec 1	3000+05	3003+28	323	-	17	-	20	44	245	9
Trans Typ 1 to Typ 2	3003+28	3003+50	22	-	18	-	23	4	18	1
Typ Sec 2	3003+50	3006+90	340	-	19	-	25	57	288	11
Trans Typ 2 to Typ 3	3006+90	3008+65	175	-	28	-	33	39	218	8
Typ Sec 3	3008+65	3027+12	1,847	-	37	-	41	505	3,038	107
Approaches (Sheet 20-1)	-	-	-	-	-	-	-	80	480	17
98TH AVE SW SUBTOTAL =			2,707	-	-	-	-	729	4,287	153
GRAND TOTAL =			171,103	-	-	-	-	37,104	199,916	7,019

Pavement
Fog Seal @ 0.06 Gal/SY
CHFRS-2P Emulsified Asphalt @ 0.40 Gal/SY
Cover Coat Material Cl 41 @ 28 lb/SY

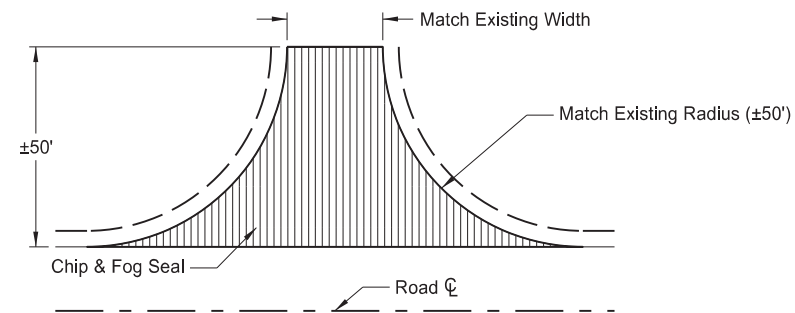


SC-4500(020)	
CMC 4510, CMC 4537, & SITE 1 - 98th Ave SW	
	Basis of Estimate
	Stark County, ND
<small>DRAWN BY</small> AK	<small>CHKD BY</small> JPM
<small>PROJECT NO.</small> 2303-00213	

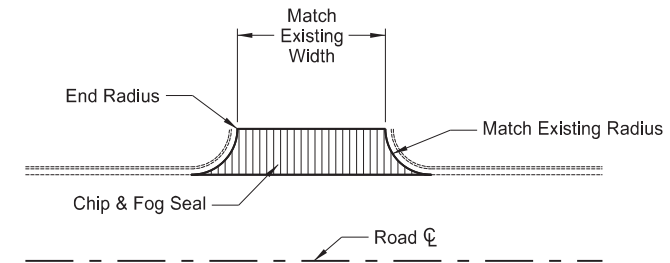
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SC-4500(020)	20	1



(1) Field/Private Drive Approach



(2) County Road & Major Approach



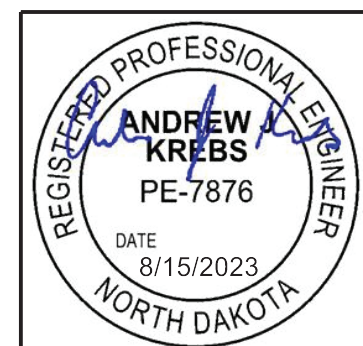
(3) City of Taylor Approach

BASIS OF ESTIMATE										
SC-4500(020)										
ITEM	UNIT	CMC 4510				CMC 4537				GRAND TOTAL
		1	2	3	SUBTOTAL	1	2	3	SUBTOTAL	
Number of Locations		143	29	12		8	2	0		
CHFRS-2P Emulsified Asphalt @ 0.40 Gal/SY	GAL		108	28	3,468		108		216	3,684
Cover Coat Material CI 41 @ 28 lb/SY	TON		3.8	1	123		3.8		8	131
Fog Seal @ 0.06 Gal/SY	GAL	2	17	5	839	2	17		50	889

Notes:

1. Actual Chip & Fog Seal locations may vary in the field, as approved by the Engineer.
2. Match existing pavement dimensions as they appear in the field.
3. Quantity totals have been included in the Chip & Fog Seal Summary in the Basis of Estimate.

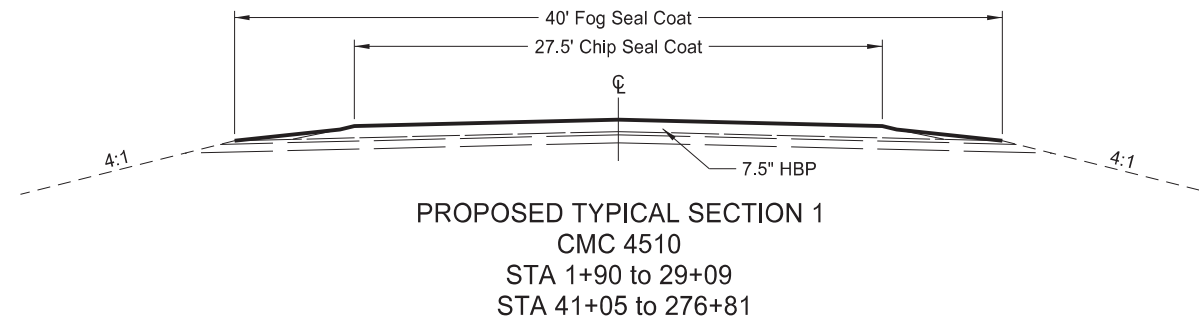
BASIS OF ESTIMATE					
Non Participating					
Site 1 - 98th Ave SW					
ITEM	UNIT	1	2	3	TOTAL
Number of Locations		1	3	0	
CHFRS-2P Emulsified Asphalt @ 0.40 Gal/SY	GAL		160		480
Cover Coat Material CI 41 @ 28 lb/SY	TON		5.6		17
Fog Seal @ 0.06 Gal/SY	GAL	8	24		80



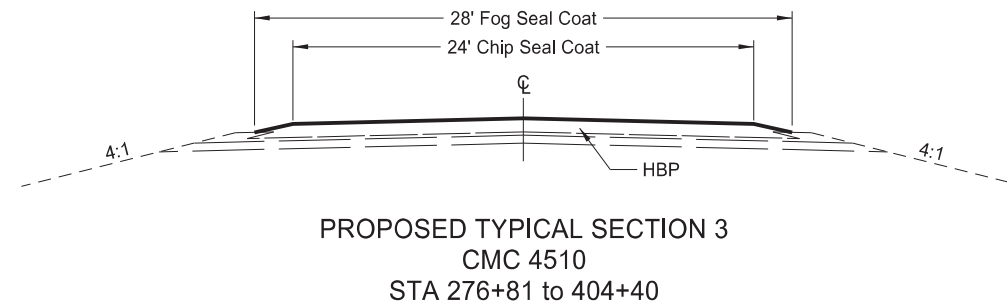
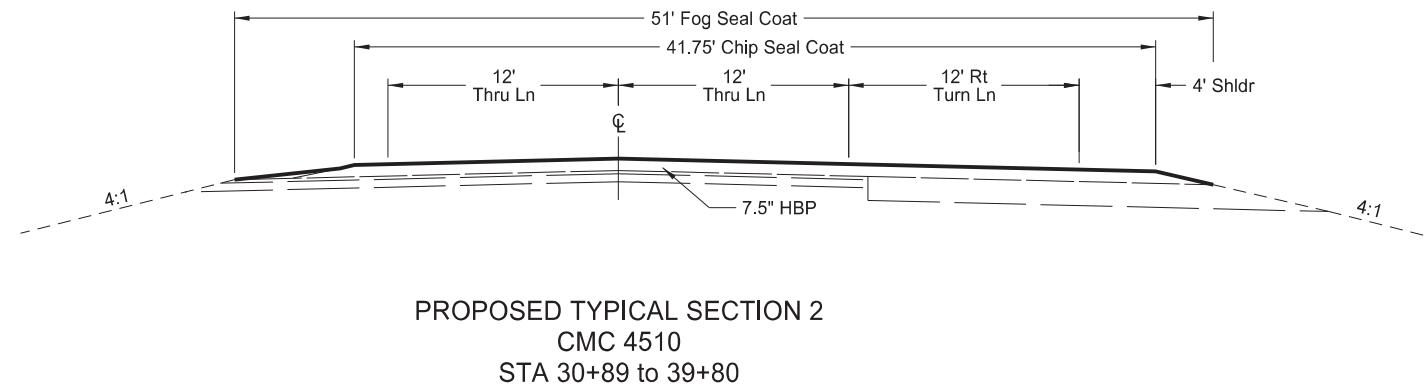
SC-4500(020)	
CMC 4510, CMC 4537, & SITE 1 - 98th Ave SW	
	Approach Details
	Stark County, ND
DRAWN BY AK	CHECKED BY JPM
PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	30	1

Transition Typ 1 to Typ 2
Sta 29+09 to 30+89



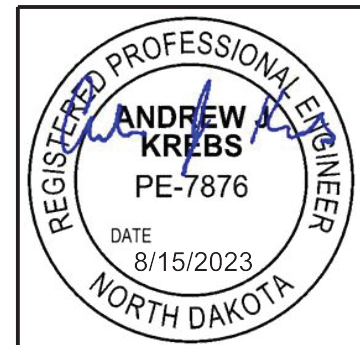
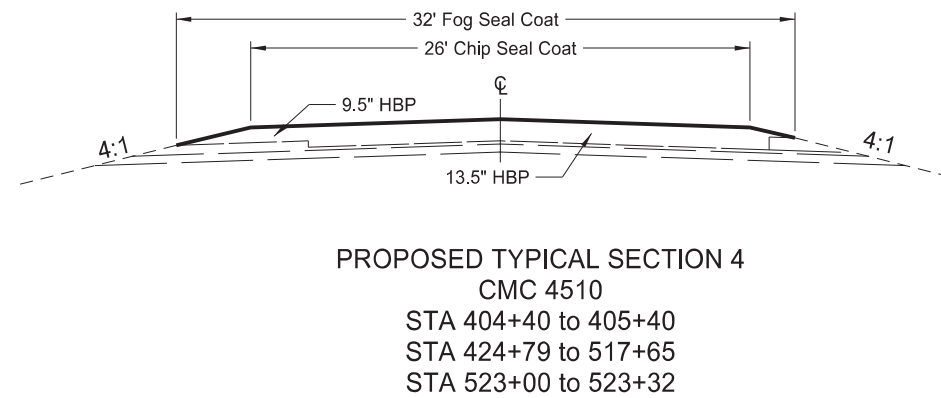
Transition Typ 2 to Typ 1
Sta 39+80 to 41+05



Note: CMC 4531 Sta 405+40 to 408+64

Transition Typ 4 to Typ 6 Sta 517+65 to 518+95

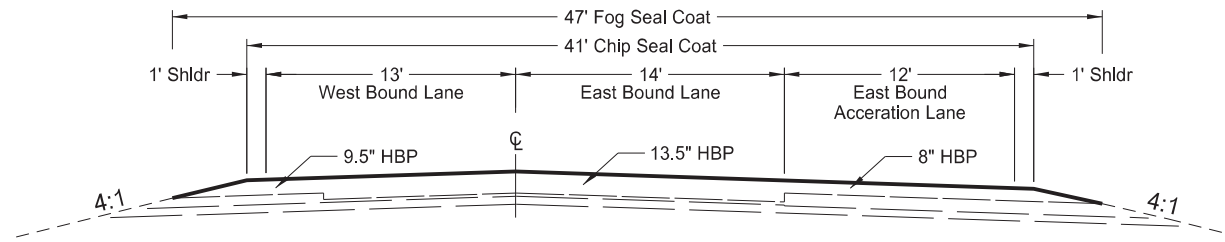
Note: Turn Lane Taper 2 Sta 523+32 to 533+73



SC-4500(020)	
CMC 4510	
Proposed Typical Sections Stark County, ND	
DRAWN BY AK	CHECKED BY JPM
PROJECT NO. 2303-00213	

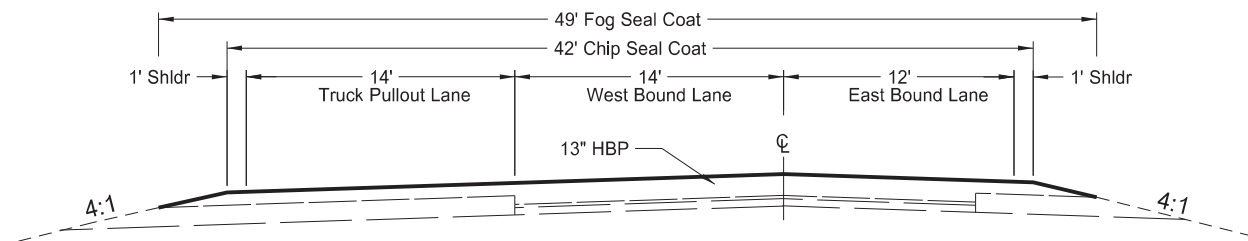
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	30	2

Note: Turn Lane Taper 1 Sta 417+64 to 424+79



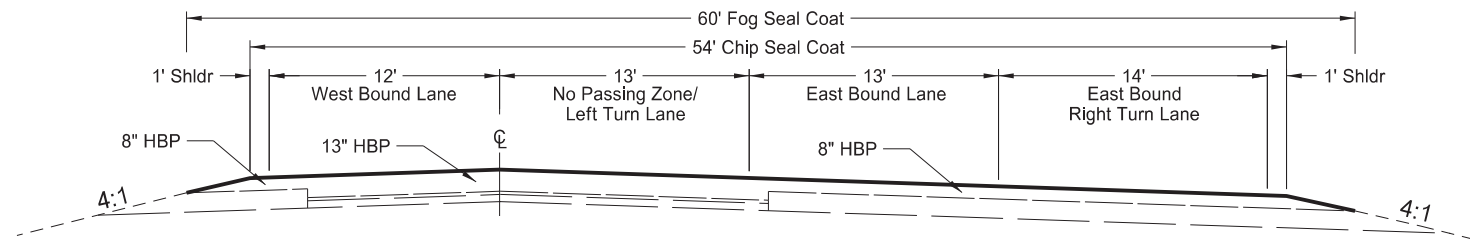
PROPOSED TYPICAL SECTION 5
CMC 4510
STA 408+64 to 417+64

Transition Typ 6 to Typ 4
Sta 521+10 to 523+00



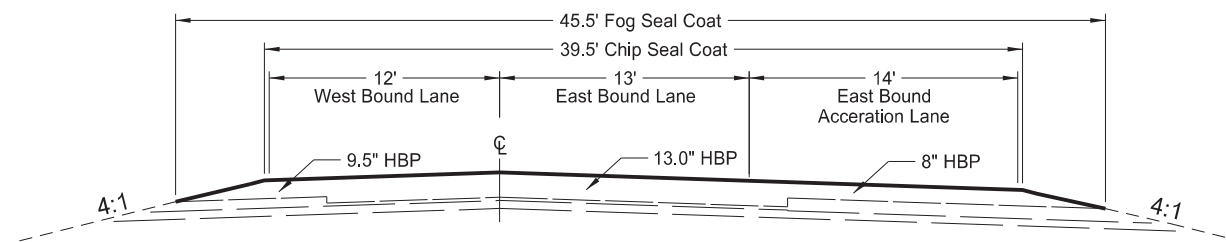
PROPOSED TYPICAL SECTION 6
CMC 4510
STA 518+95 to 521+10

Note: 98th Ave SW Sta 538+08 to 539+70
Note: Turn Lane Taper 3 Sta 539+70 to 542+31
Note: ND Hwy 8 Sta 1019+80 to 1088+26

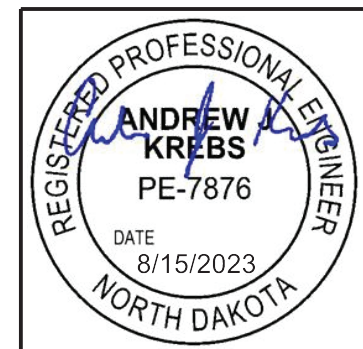


PROPOSED TYPICAL SECTION 7
CMC 4510
STA 533+73 to 538+08
STA 1018+30 to 1019+80

Note: Turn Lane Taper 4 Sta 545+12 to 553+36

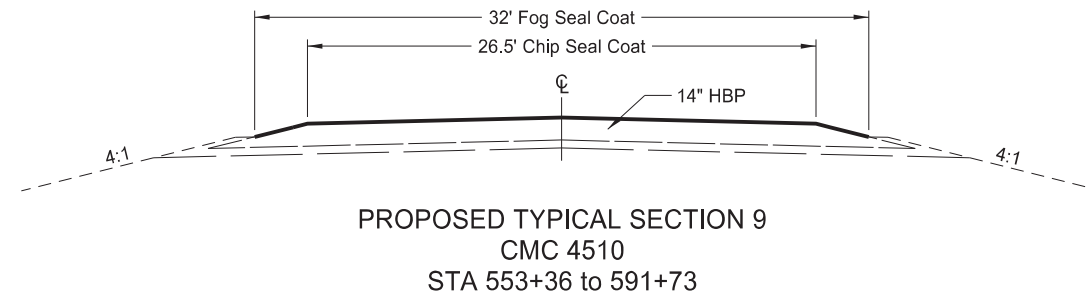


PROPOSED TYPICAL SECTION 8
CMC 4510
STA 542+31 to 545+12

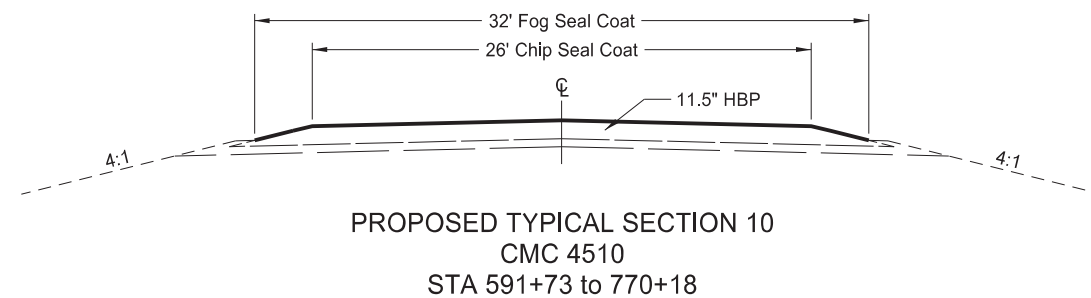


SC-4500(020)							
CMC 4510							
Proposed Typical Sections Stark County, ND							
KLJ	<table border="1"> <tr> <td>DRWN. BY</td> <td>CHKD. BY</td> <td>PROJECT NO.</td> </tr> <tr> <td>AK</td> <td>JPM</td> <td>2303-00213</td> </tr> </table>	DRWN. BY	CHKD. BY	PROJECT NO.	AK	JPM	2303-00213
DRWN. BY	CHKD. BY	PROJECT NO.					
AK	JPM	2303-00213					

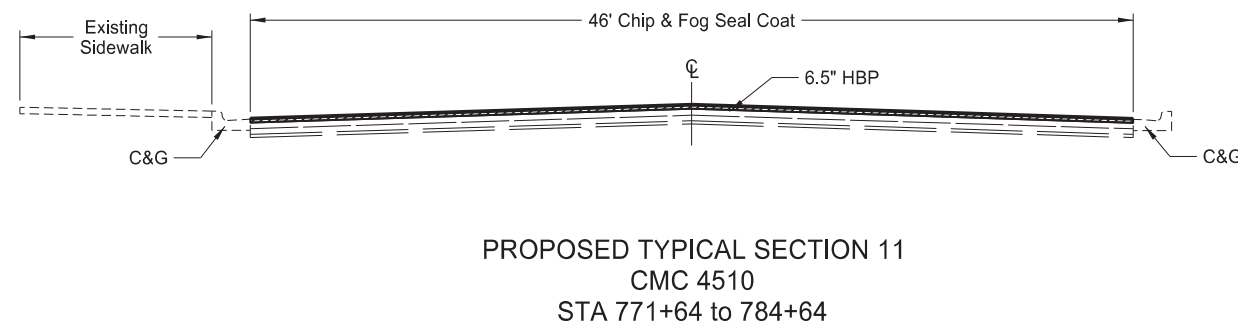
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	30	3



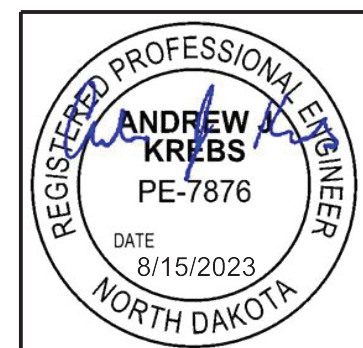
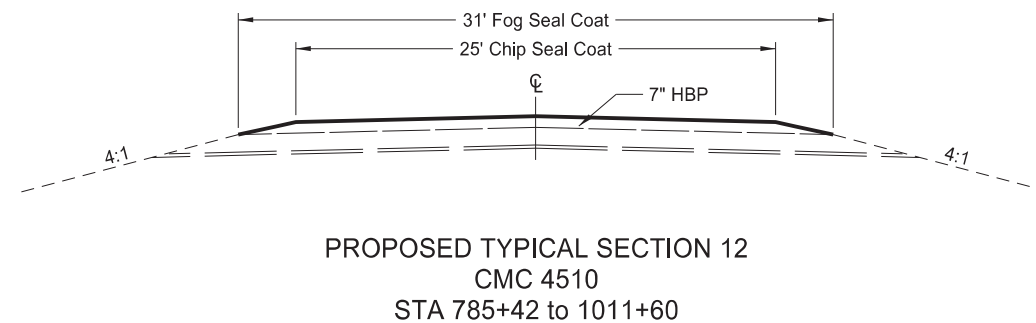
Transition Typ 10 to Typ 11
Sta 770+18 to 771+64



Transition Typ 11 to Typ 12
Sta 784+64 to 785+42

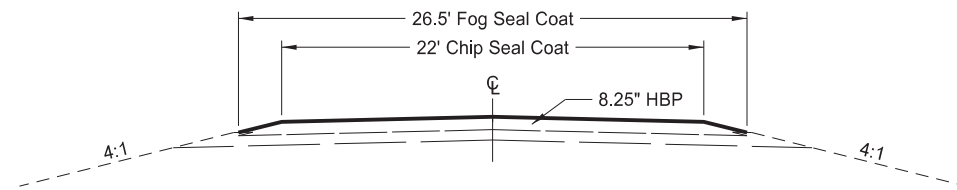


Transition Typ 12 to Typ 7
Sta 1011+60 to 1018+30

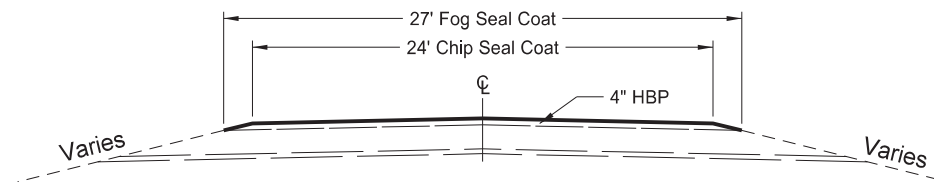


SC-4500(020)	
CMC 4510	
Proposed Typical Sections Stark County, ND	
KLJ	<small>DRAWN BY</small> AK <small>CHECKED BY</small> JPM <small>PROJECT NO.</small> 2303-00213

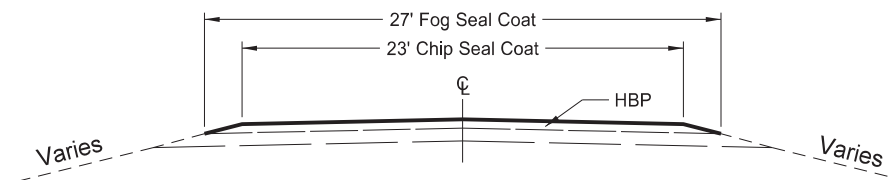
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	30	4



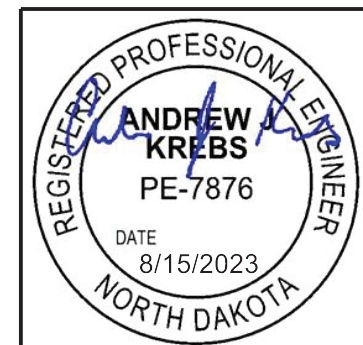
PROPOSED TYPICAL SECTION 13
CMC 4510
STA 1088+26 to 1380+75



PROPOSED TYPICAL SECTION 14
CMC 4510
STA 1380+75 to 1677+40

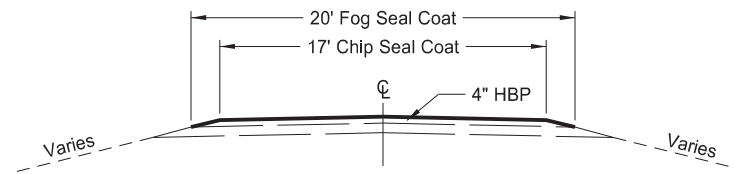


PROPOSED TYPICAL SECTION 1
CMC 4537
STA 0+00 to 76+92



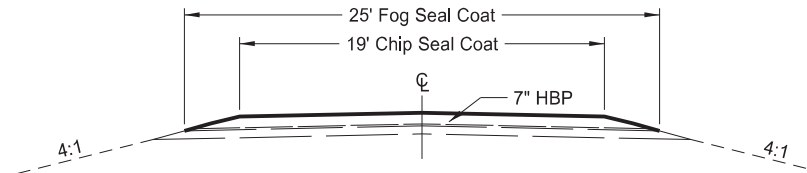
SC-4500(020)			
CMC 4510 & CMC 4537			
	Proposed Typical Sections Stark County, ND		
	<table border="1"> <tr> <td>DRWN. BY AK</td> <td>CHKD. BY JPM</td> <td>PROJECT NO. 2303-00213</td> </tr> </table>	DRWN. BY AK	CHKD. BY JPM
DRWN. BY AK	CHKD. BY JPM	PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	30	5



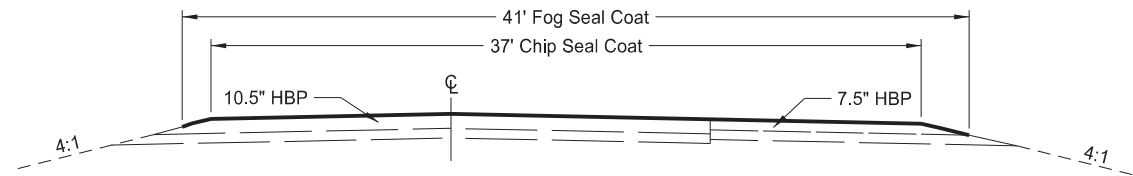
PROPOSED TYPICAL SECTION 1 - SITE 1
98TH AVE SW
STA 3000+05 to 3003+28

Transition Typ 1 to Typ 2
Sta 3003+28 to 3003+50

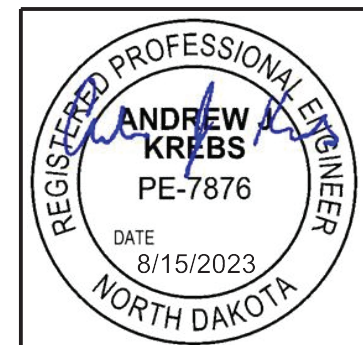



PROPOSED TYPICAL SECTION 2 - SITE 1
98TH AVE SW
STA 3003+50 to 3006+90

Transition Typ 2 to Typ 3
Sta 3006+90 to 3008+65



PROPOSED TYPICAL SECTION 3 - SITE 1
98TH AVE SW
STA 3008+65 to 3027+12

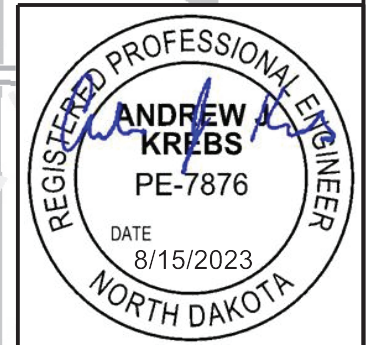
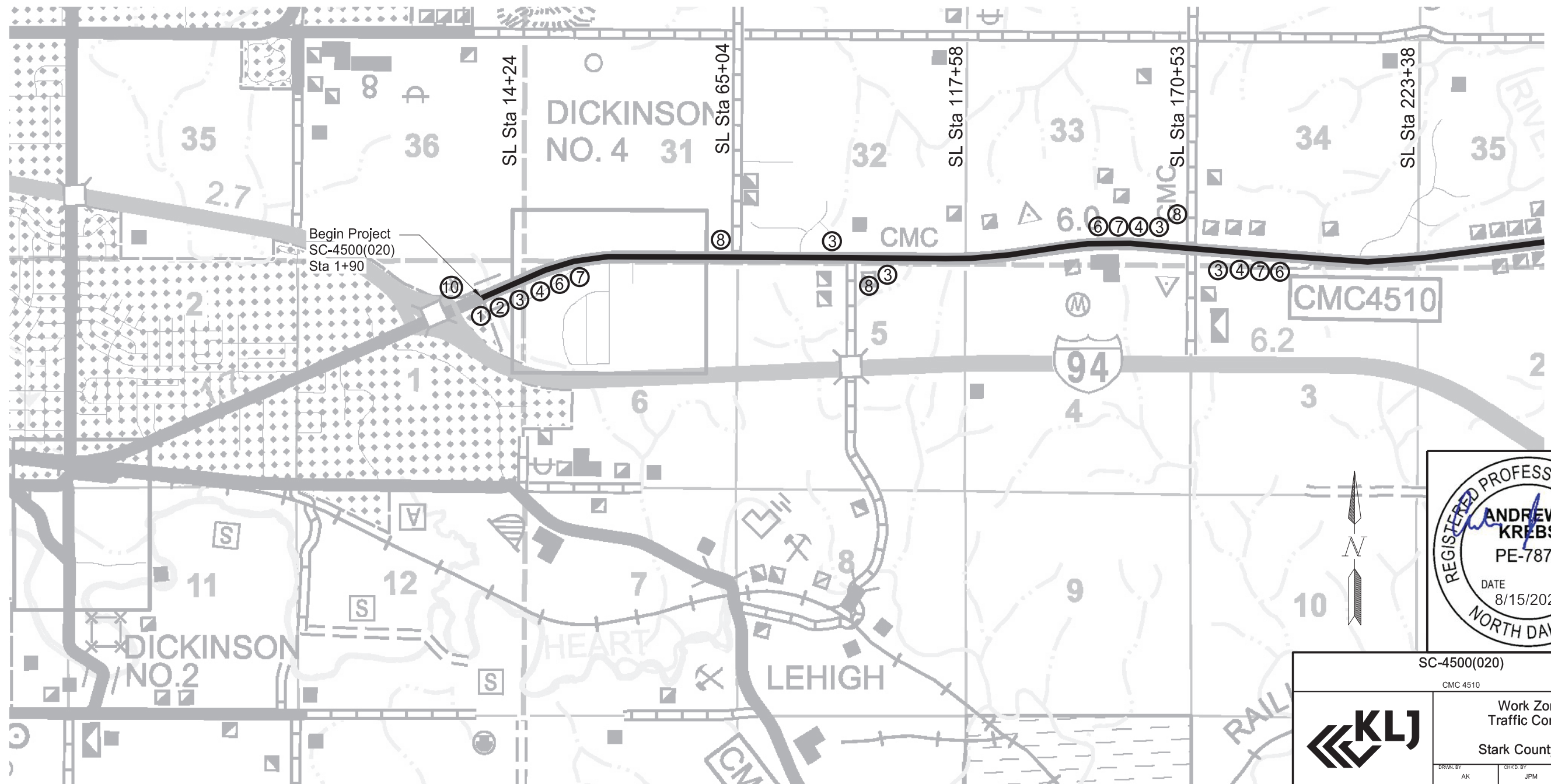


SC-4500(020)	
SITE 1 - 98TH AVE SW	
	Proposed Typical Sections Stark County, ND
	<small> DRAWN BY: AK CHECKED BY: JPM PROJECT NO.: 2303-00213 </small>

- ① G20-1-60 Road Work Next __ Miles
- ② G20-55-96 Speed Limit Enforced - Min Fee \$80
- ③ W8-12-48 No Center Line (Place according to D-704-20 Note #6, Skid Mount Sign)
- ④ R4-1-48 Do Not Pass
- ⑤ W3-5-48 Speed Reduction Ahead
- ⑥ W22-8-48 Fresh Oil Loose Rock
- W20-52P-54 Next __ Miles
- ⑦ R2-1-48 45 MPH or maintain existing if less
- R2-1aP-24 Minimum Fee \$80
- ⑧ G20-50a-72 Road Work Next __ Miles Rt & Lt Arrows
- ⑨ G20-52a-72 Road Work Next __ Miles Rt or Lt Arrow
- ⑩ G20-2-48 End Road Work

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	100	2

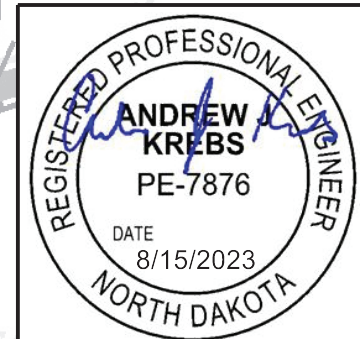
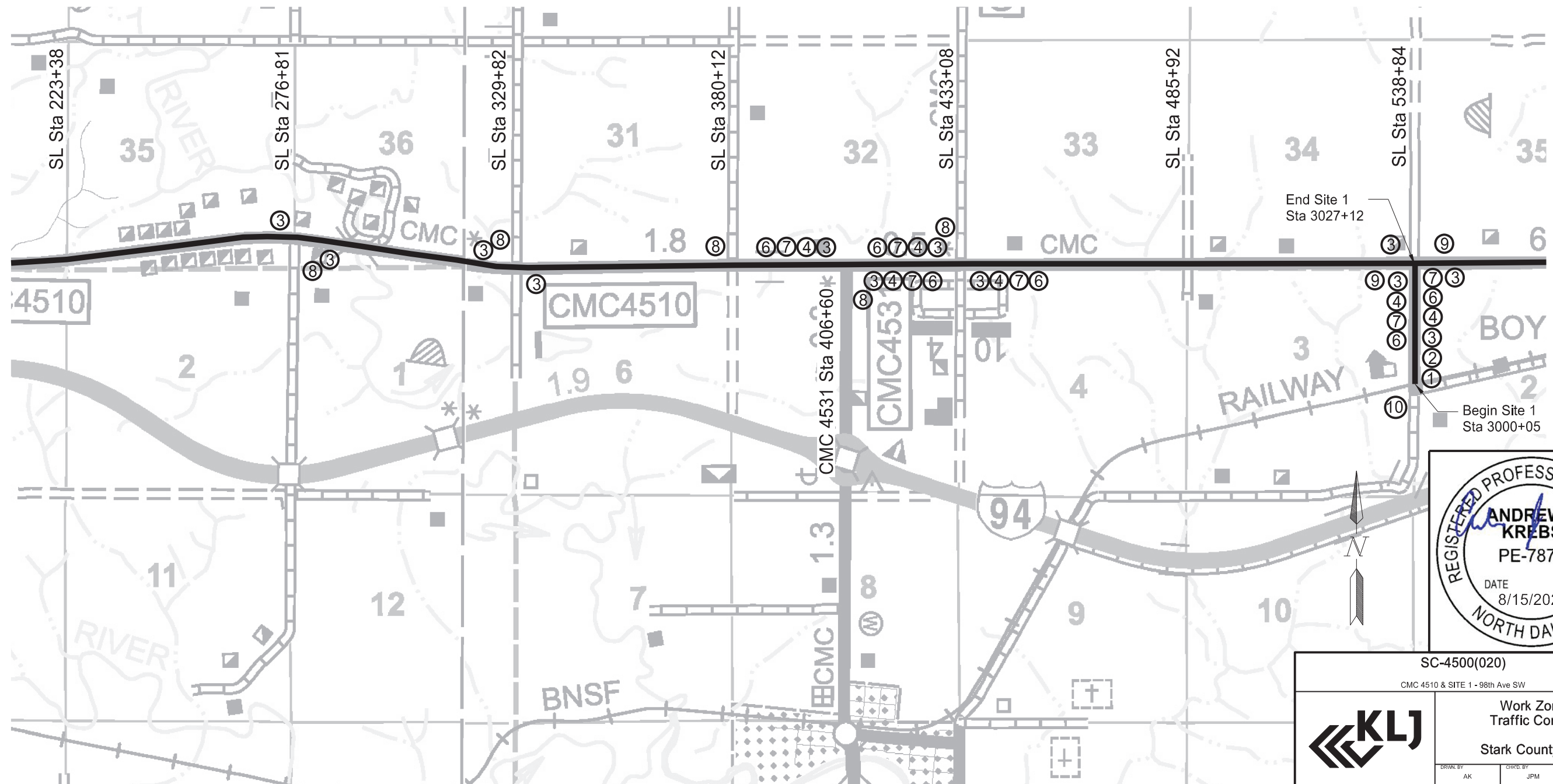
Note: Install a G20-50a-72 sign at all intersecting streets in the City of Dickinson (4 Total)



	SC-4500(020)
	CMC 4510
	Work Zone Traffic Control Stark County, ND
DRWN BY AK	CHKD BY JPM
PROJECT NO. 2303-00213	

- ① G20-1-60 Road Work Next __ Miles
- ② G20-55-96 Speed Limit Enforced - Min Fee \$80
- ③ W8-12-48 No Center Line (Place according to D-704-20 Note #6, Skid Mount Sign)
- ④ R4-1-48 Do Not Pass
- ⑤ W3-5-48 Speed Reduction Ahead
- ⑥ W22-8-48 Fresh Oil Loose Rock
- W20-52P-54 Next __ Miles
- ⑦ R2-1-48 45 MPH or maintain existing if less
- R2-1aP-24 Minimum Fee \$80
- ⑧ G20-50a-72 Road Work Next __ Miles Rt & Lt Arrows
- ⑨ G20-52a-72 Road Work Next __ Miles Rt or Lt Arrow
- ⑩ G20-2-48 End Road Work

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	100	3



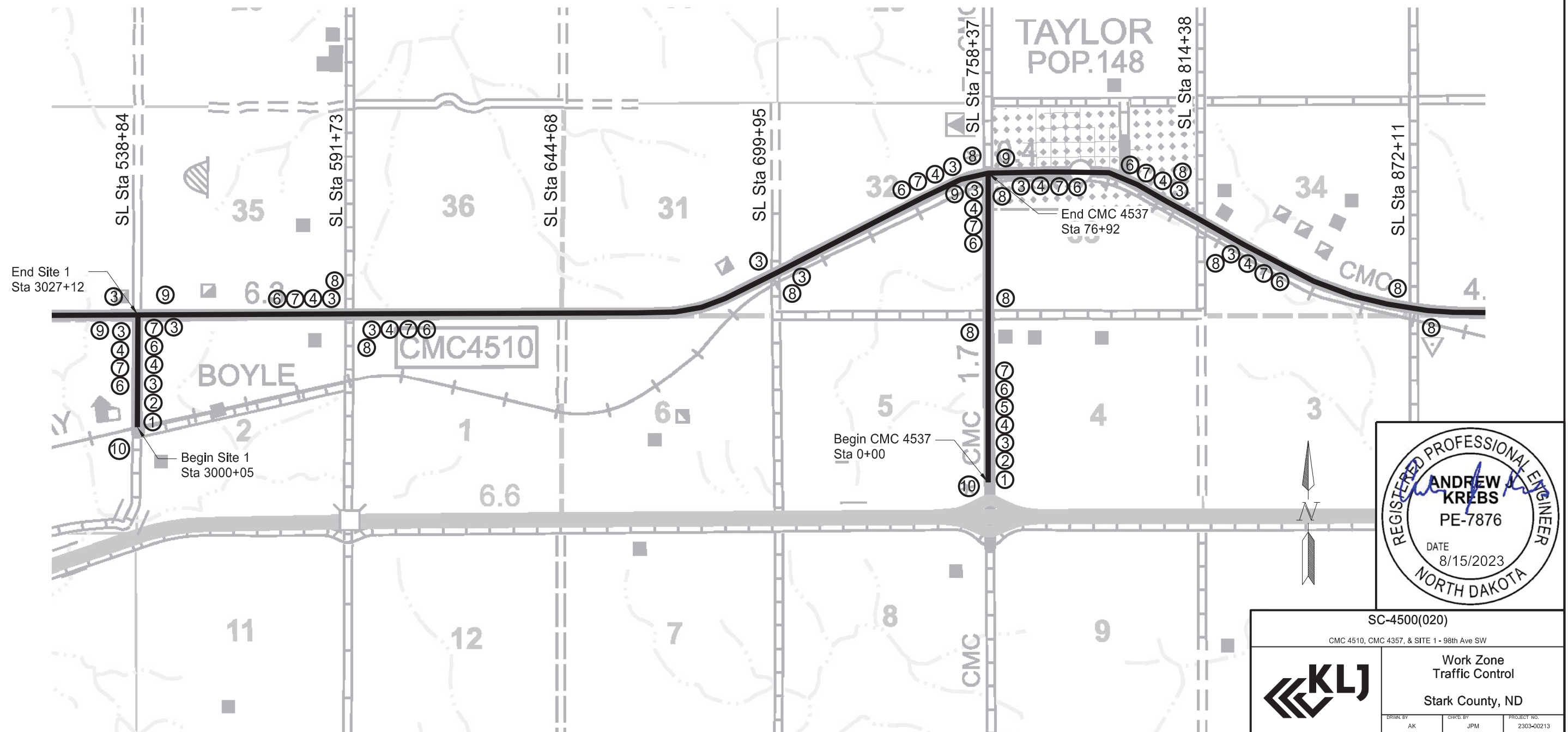
SC-4500(020)	
CMC 4510 & SITE 1 - 98th Ave SW	
KLJ	
Work Zone Traffic Control Stark County, ND	
DRWN. BY AK	CHKD. BY JPM
PROJECT NO. 2303-00213	

- ① G20-1-60 Road Work Next __ Miles
- ② G20-55-96 Speed Limit Enforced - Min Fee \$80
- ③ W8-12-48 No Center Line (Place according to D-704-20 Note #6, Skid Mount Sign)
- ④ R4-1-48 Do Not Pass
- ⑤ W3-5-48 Speed Reduction Ahead
- ⑥ W22-8-48 Fresh Oil Loose Rock
- W20-52P-54 Next __ Miles
- ⑦ R2-1-48 45 MPH or maintain existing if less
- R2-1aP-24 Minimum Fee \$80
- ⑧ G20-50a-72 Road Work Next __ Miles Rt & Lt Arrows
- ⑨ G20-52a-72 Road Work Next __ Miles Rt or Lt Arrow
- ⑩ G20-2-48 End Road Work

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	100	4

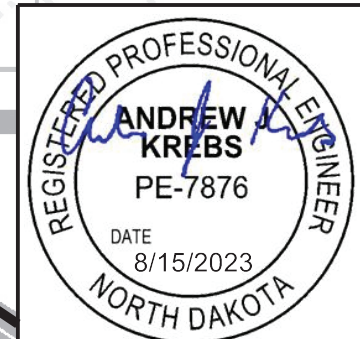
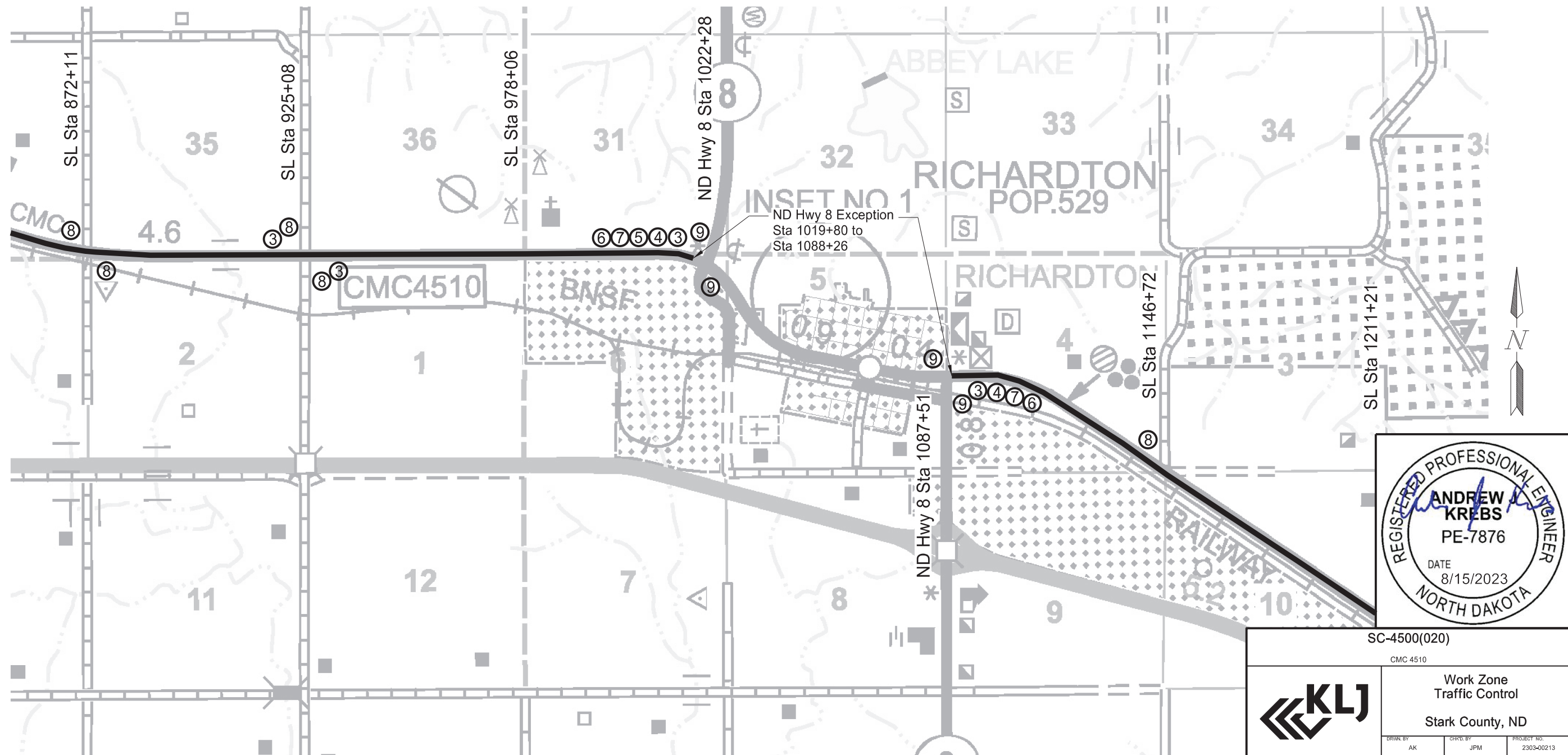
Note: Install a G20-50a-72 sign at all intersecting streets in the City of Taylor (7 Total)

Note: Set speed limit through the City of Taylor to 25 mph.



- ① G20-1-60 Road Work Next __ Miles
- ② G20-55-96 Speed Limit Enforced - Min Fee \$80
- ③ W8-12-48 No Center Line (Place according to D-704-20 Note #6, Skid Mount Sign)
- ④ R4-1-48 Do Not Pass
- ⑤ W3-5-48 Speed Reduction Ahead
- ⑥ W22-8-48 Fresh Oil Loose Rock
- W20-52P-54 Next __ Miles
- ⑦ R2-1-48 45 MPH or maintain existing if less
- R2-1aP-24 Minimum Fee \$80
- ⑧ G20-50a-72 Road Work Next __ Miles Rt & Lt Arrows
- ⑨ G20-52a-72 Road Work Next __ Miles Rt or Lt Arrow
- ⑩ G20-2-48 End Road Work

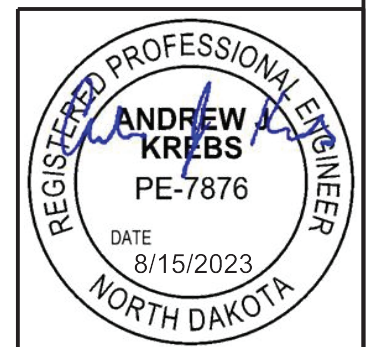
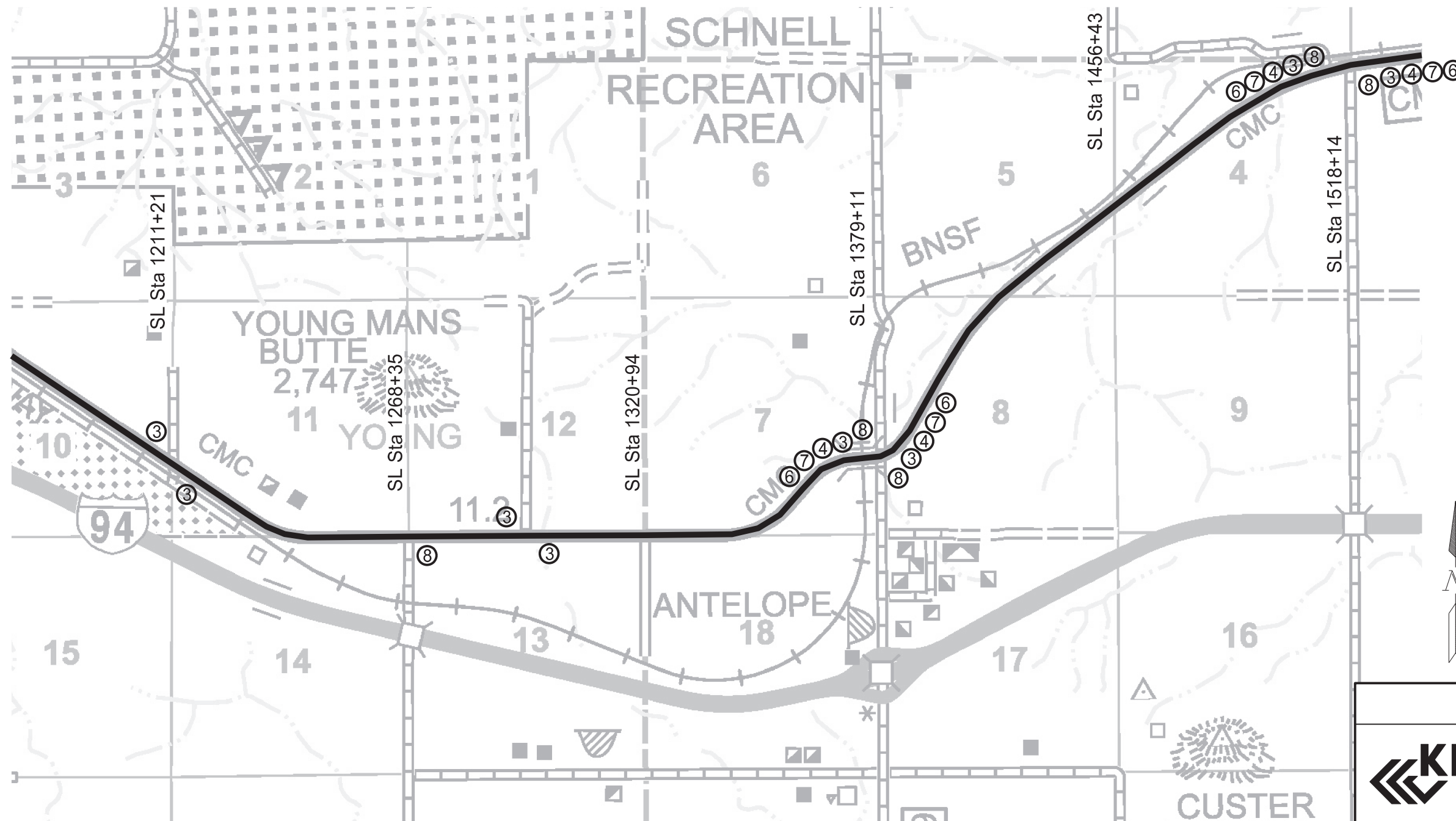
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	100	5



SC-4500(020)	
CMC 4510	
Work Zone Traffic Control	
Stark County, ND	
DRAWN BY AK	CHKD BY JPM
PROJECT NO. 2303-00213	

- ① G20-1-60 Road Work Next __ Miles
- ② G20-55-96 Speed Limit Enforced - Min Fee \$80
- ③ W8-12-48 No Center Line (Place according to D-704-20 Note #6, Skid Mount Sign)
- ④ R4-1-48 Do Not Pass
- ⑤ W3-5-48 Speed Reduction Ahead
- ⑥ W22-8-48 Fresh Oil Loose Rock
- W20-52P-54 Next __ Miles
- ⑦ R2-1-48 45 MPH or maintain existing if less
- R2-1aP-24 Minimum Fee \$80
- ⑧ G20-50a-72 Road Work Next __ Miles Rt & Lt Arrows
- ⑨ G20-52a-72 Road Work Next __ Miles Rt or Lt Arrow
- ⑩ G20-2-48 End Road Work

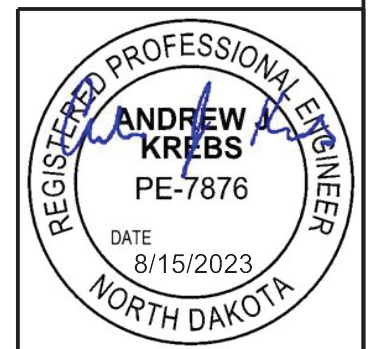
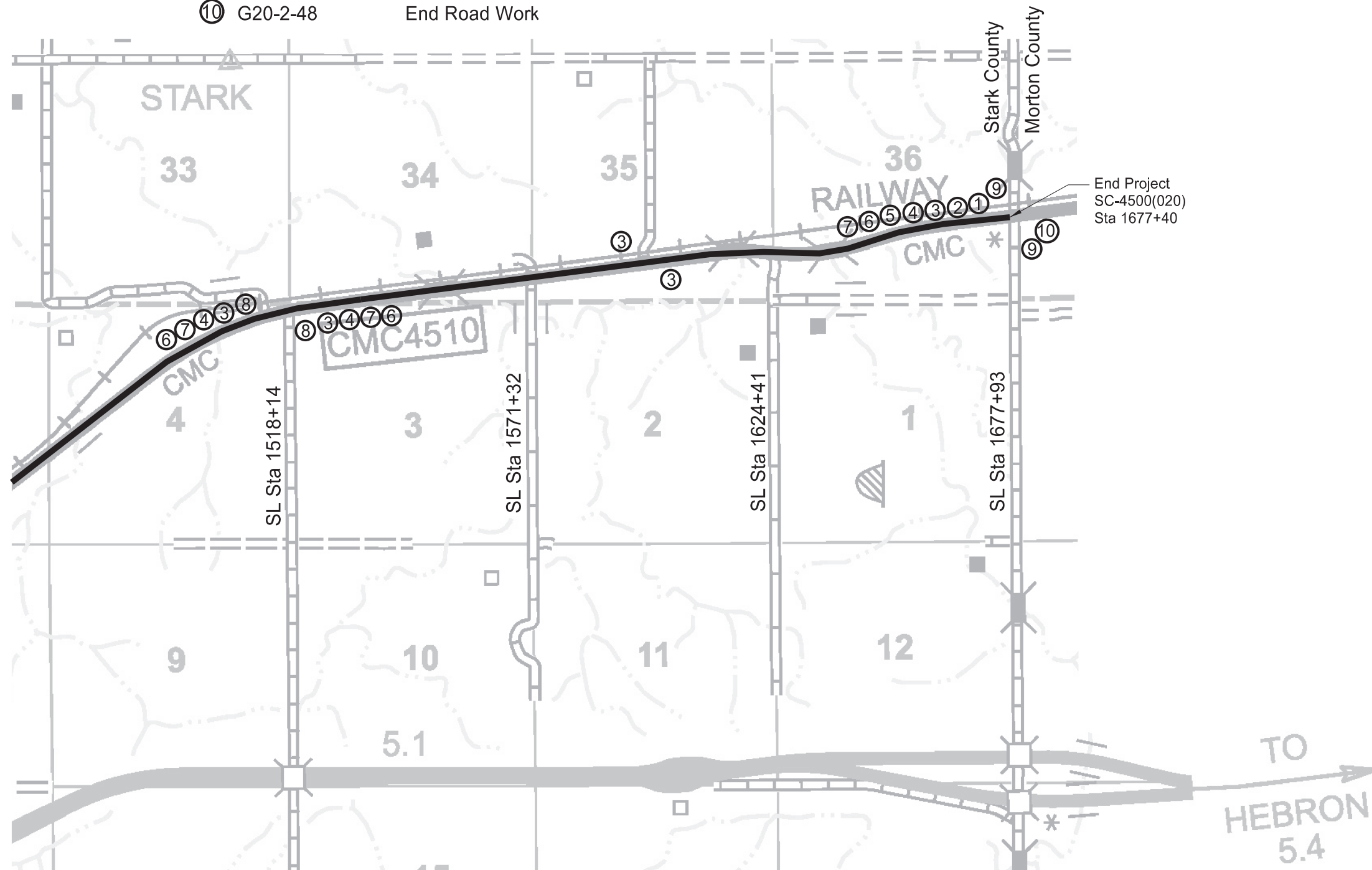
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	100	6



	SC-4500(020) CMC 4510
	Work Zone Traffic Control Stark County, ND
<small>DRAWN BY: AK</small> <small>CHKD BY: JPM</small>	<small>PROJECT NO.: 2303-00213</small>

- ① G20-1-60 Road Work Next __ Miles
- ② G20-55-96 Speed Limit Enforced - Min Fee \$80
- ③ W8-12-48 No Center Line (Place according to D-704-20 Note #6, Skid Mount Sign)
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- ⑧ G20-50a-72 Road Work Next __ Miles Rt & Lt Arrows
- ⑨ G20-52a-72 Road Work Next __ Miles Rt or Lt Arrow
- ⑩ G20-2-48 End Road Work

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	100	7



KLJ	SC-4500(020)	
	CMC 4510	
Work Zone Traffic Control Stark County, ND		
DRAWN BY AK	CHKD BY JPM	PROJECT NO. 2303-00213

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SC-4500(020)	120	1

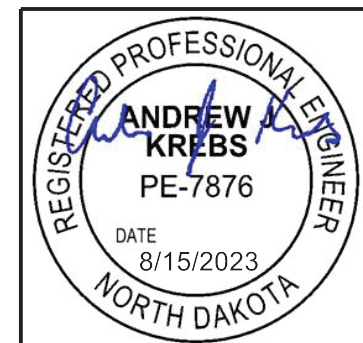
NO PASSING ZONES: CMC 4510						Double Barrier
Westbound (LT)			Eastbound (RT)			
Station to	Station	Quantity (LF)	Station to	Station	Quantity (LF)	Quantity (LF)
1+50	2+00	50	1+50	2+00	50	50
47+05	60+90	1385	42+00	50+70	870	365
93+60	99+70	610	84+50	90+90	640	
181+00	188+90	790	172+70	176+80	410	
211+20	217+95	675	202+50	208+90	640	
245+05	251+95	690	234+50	243+40	890	
306+30	319+60	1330	297+80	310+80	1300	450
360+35	372+35	1200	345+55	364+65	1910	430
435+20	460+30	2510	426+20	442+15	1595	695
502+90	514+50	1160	489+90	500+60	1070	
628+60	635+80	720	626+20	629+50	330	90
658+25	668+00	975	645+25	661+65	1640	340
771+00	773+85	285	771+00	773+85	285	285
774+50	777+50	300	774+50	777+50	300	300
778+20	781+20	300	778+20	781+20	300	300
781+90	785+00	310	781+90	785+00	310	310
938+36	942+71	435	929+48	935+32	584	
1088+26	1094+76	650				
1280+90	1285+10	420	1274+15	1278+60	445	
1322+80	1327+45	465	1315+70	1323+45	775	65
1370+75	1378+66	791	1370+75	1378+66	791	791
1379+56	1393+00	1344	1379+56	1382+30	274	274
1405+00	1416+00	1100	1396+00	1407+00	1100	200
1474+00	1479+00	500	1465+00	1470+00	500	200
1486+00	1497+00	1100	1477+00	1488+00	1100	200
1528+00	1535+00	700	1519+00	1526+00	700	
SUBTOTAL =		20,795	SUBTOTAL =		18,809	
			TOTAL NPZ =		39,604	5,345

EPOXY PVMT MK 4IN LINE SUMMARY: CMC 4510							
White						Yellow	
Westbound (LT)			Eastbound (RT)			Description	Quantity (LF)
Station to	Station	Quantity (LF)	Station to	Station	Quantity (LF)		
1+50	29+00	2,750	1+50	8+60	710	Centerline Skips	36,899
42+00	64+40	2,240	9+50	12+10	260	No Passing Zones	39,604
65+70	169+90	10,420	13+05	27+10	1,405		
171+20	329+30	15,810	28+50	29+00	50		
330+30	379+65	4,935	42+00	90+75	4,875		
380+55	404+40	2,385	91+75	276+40	18,465		
426+20	432+60	640	277+20	404+40	12,720		
433+60	517+65	8,405	426+20	432+75	655		
552+30	591+25	3,895	433+45	517+65	8,420		
592+25	757+35	16,510	552+30	591+25	3,895		
759+35	769+95	1,060	592+25	699+45	10,720		
785+50	788+25	275	700+45	758+25	5,780		
789+00	792+00	300	758+50	771+90	1,340		
793+00	813+80	2,080	784+70	814+40	2,970		
814+80	871+70	5,690	815+40	871+70	5,630		
872+50	924+60	5,210	872+50	924+60	5,210		
925+60	992+00	6,640	925+60	1011+60	8,600		
992+90	1011+60	1,870	1088+26	1267+95	17,969		
1088+26	1146+00	5,774	1268+75	1378+45	10,970		
1147+20	1210+70	6,350	1379+75	1517+70	13,795		
1211+70	1294+00	8,230	1518+60	1571+05	5,245		
1294+70	1378+45	8,375	1571+55	1624+15	5,260		
1379+75	1512+45	13,270	1624+65	1677+40	5,275		
1513+25	1571+05	5,780					
1571+55	1595+95	2,440					
1596+50	1677+40	8,090					
SUBTOTAL =		149,424	SUBTOTAL =		150,219	TOTAL YELLOW =	76,503
			TOTAL WHITE =		299,643	TOTAL 4IN LINE =	376,146

NOTE: Additional striping quantities from Detail Sheets are not included in tables.

NO PASSING ZONES: CMC 4537						Double Barrier
Southbound (LT)			Northbound (RT)			
Station to	Station	Quantity (LF)	Station to	Station	Quantity (LF)	Quantity (LF)
0+00	2+74	274	0+00	2+74	274	274
35+00	40+75	575	26+25	35+00	875	
72+60	74+80	220	70+20	74+80	460	220
75+42	76+92	150	75+42	76+92	150	150
SUBTOTAL =		1,219	SUBTOTAL =		1,759	
			TOTAL NPZ =		2,978	644

EPOXY PVMT MK 4IN LINE SUMMARY: CMC 4537							
White						Yellow	
Southbound (LT)			Northbound (RT)			Description	Quantity (LF)
Station to	Station	Quantity (LF)	Station to	Station	Quantity (LF)		
0+00	42+35	4235	0+00	42+35	4235	Centerline Skips	1,762
43+05	74+80	3175	43+05	74+80	3175	No Passing Zones	2,978
75+42	76+92	150	75+42	76+92	150		
SUBTOTAL =		7,560	SUBTOTAL =		7,560	TOTAL YELLOW =	4,740
			TOTAL WHITE =		15,120	TOTAL 4IN LINE =	19,860

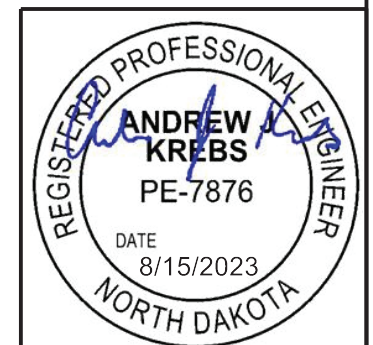


SC-4500(020)	
CMC 4510 & CMC 4537	
	Pavement Marking
	Stark County, ND
DRWN. BY AK	CHKD. BY JPM
PROJECT NO. 2303-00213	

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SC-4500(020)	120	2

NO PASSING ZONES: SITE 1 - 98TH AVE SW						Double Barrier
Southbound (LT)			Northbound (RT)			
Station to	Station	Quantity (LF)	Station to	Station	Quantity (LF)	Quantity (LF)
3000+05	3000+75	70	3000+05	3000+75	70	70
3001+55	3001+83	28	3001+55	3001+83	28	28
3001+93	3002+44	51	3001+93	3002+44	51	51
3003+35	3027+12	2,377	3003+35	3027+12	2,377	2,377
3006+90	3008+65	175	3006+90	3008+65	175	175
SUBTOTAL =		2,701	SUBTOTAL =		2,701	
			TOTAL NPZ =		5,402	2,701

EPOXY PVMT MK 4IN LINE SUMMARY: SITE 1 - 98TH AVE SW										
White									Yellow	
Southbound Edge (LT)			Southbound Lane Line (LT)			Northbound Edge (RT)			Description	Quantity (LF)
Station to	Station	Quantity (LF)	Station to	Station	Quantity (LF)	Station to	Station	Quantity (LF)		
3003+40	3005+00	160	3009+20	3026+95	450	3001+90	3027+12	2,522	Centerline Skips	0
3005+85	3007+90	205							No Passing Zones	5,402
3008+40	3027+12	1,872								
SUBTOTAL =		2,237	SUBTOTAL =		450	SUBTOTAL =		2,522	TOTAL YELLOW =	5,402
						TOTAL WHITE =		5,209	TOTAL 4IN LINE =	10,611

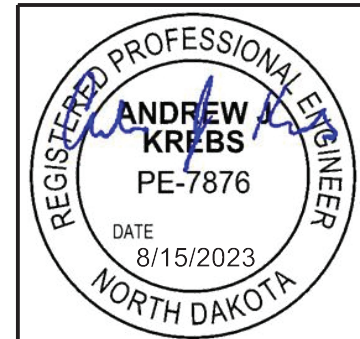
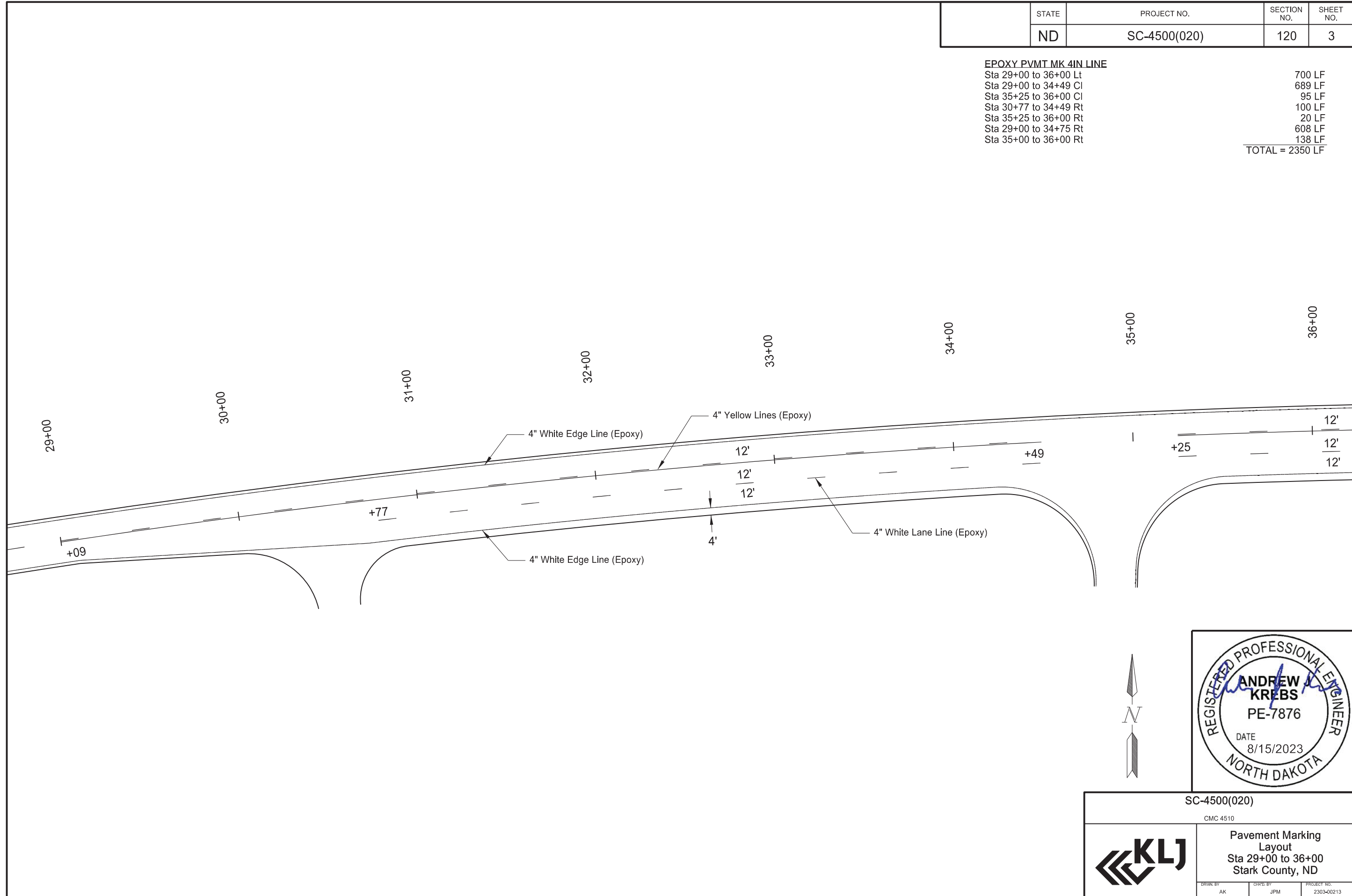


SC-4500(020)	
SITE 1 - 98th Ave SW	
	Pavement Marking
	Stark County, ND
DRAWN BY AK	CHECKED BY JPM
PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	3

EPOXY PVMT MK 4IN LINE

Sta 29+00 to 36+00 Lt	700 LF
Sta 29+00 to 34+49 Cl	689 LF
Sta 35+25 to 36+00 Cl	95 LF
Sta 30+77 to 34+49 Rt	100 LF
Sta 35+25 to 36+00 Rt	20 LF
Sta 29+00 to 34+75 Rt	608 LF
Sta 35+00 to 36+00 Rt	138 LF
TOTAL =	2350 LF



SC-4500(020)						
CMC 4510						
	Pavement Marking Layout Sta 29+00 to 36+00 Stark County, ND					
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DRWN. BY	CHKD. BY	PROJECT NO.				
AK	JPM	2303-00213				

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	4

EPOXY PVMT MK 4IN LINE

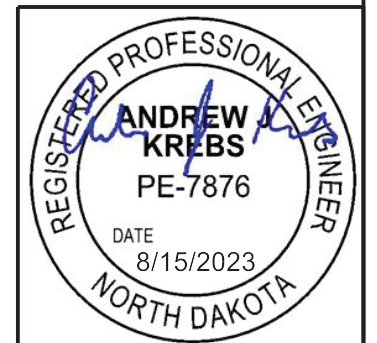
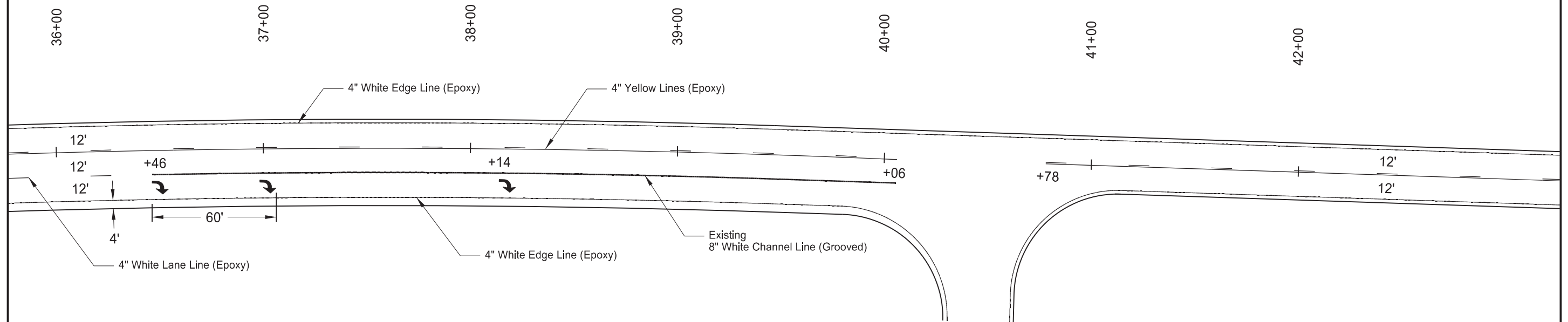
Sta 36+00 to 42+00 Lt	600 LF
Sta 36+00 to 40+06 Cl	516 LF
Sta 40+78 to 42+00 Cl	152 LF
Sta 36+00 to 36+46 Rt	10 LF
Sta 36+00 to 40+30 Rt	462 LF
Sta 40+60 to 42+00 Rt	180 LF
TOTAL =	1920 LF

PAVEMENT MARKING MESSAGE-MASKING

Sta 36+46 (Rt Arrow) (2 applications)	32 SF
Sta 36+98 (Rt Arrow) (2 applications)	32 SF
Sta 38+14 (Rt Arrow) (2 applications)	32 SF

PAVEMENT MARKING 8IN LINE-MASKING

Sta 36+46 to 40+06 Rt (2 applications)	720 LF
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SC-4500(020)	
CMC 4510	
	Pavement Marking Layout Sta 36+00 to 42+00 Stark County, ND
	<small> DRAWN BY: AK CHECKED BY: JPM PROJECT NO.: 2303-00213 </small>

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	5

OBLITERATION OF PAVEMENT MARKINGS

Sta 406+59 to 406+73 Rt (24IN Line)	28 SF
Sta 406+60 Rt (STOP)	22 SF
Sta 406+73 to 407+22 Rt (8IN Line)	51 SF
Sta 406+73 to 408+66 Rt (8IN Line)	129 SF
Sta 406+73 Rt (8IN Line)	35 SF
TOTAL =	265 SF

EPOXY PVMT MK MESSAGE

Sta 406+60 Rt (STOP)	22 SF
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EPOXY PVMT MK 4IN LINE

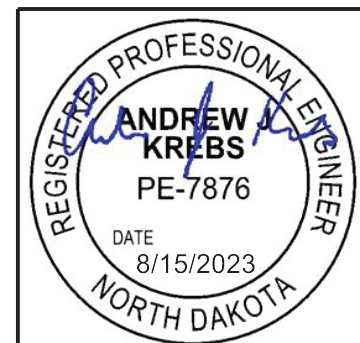
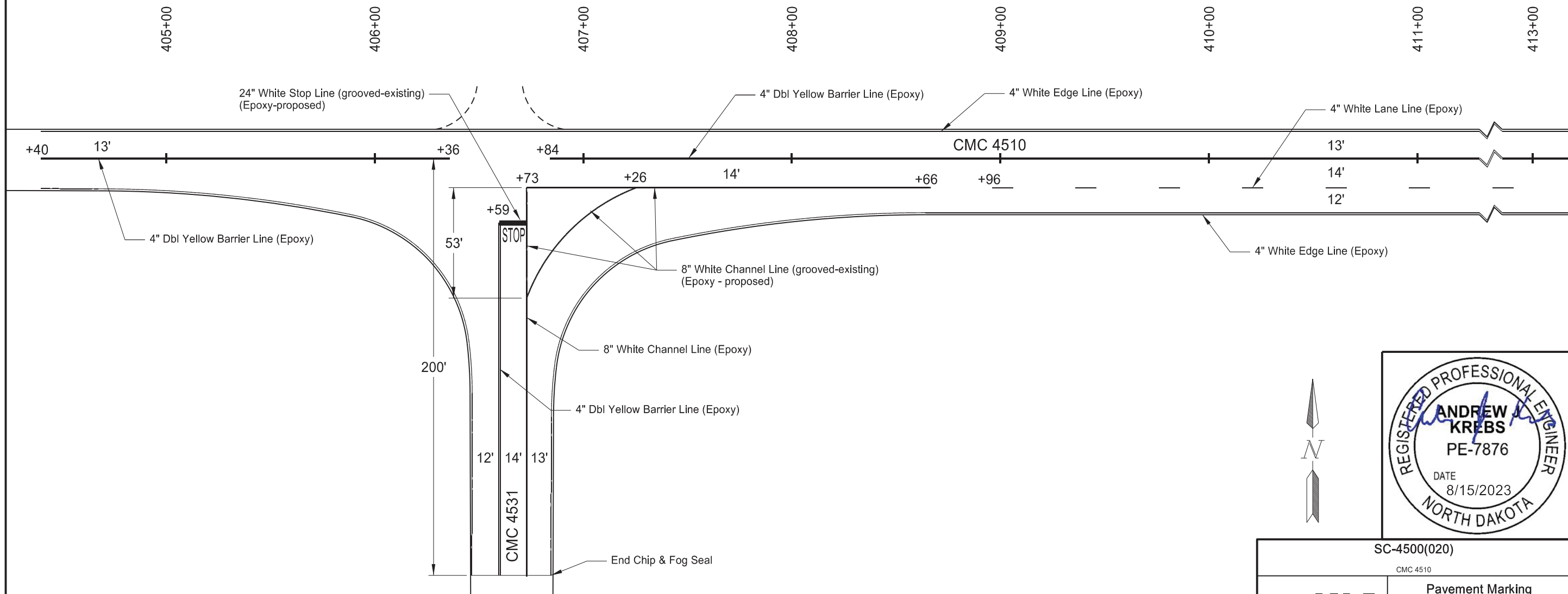
Sta 404+40 to 413+00 Lt	860 LF
Sta 404+40 to 406+36 Cl	392 LF
Sta 406+84 to 413+00 Cl	1232 LF
Sta 404+40 to 406+47 Rt	351 LF
Sta 406+59 Rt	338 LF
Sta 406+85 to 413+00 Rt	748 LF
Sta 408+96 to 413+00 Rt	100 LF
TOTAL =	4021 LF

EPOXY PVMT MK 8IN LINE

Sta 406+73 Rt	186 LF
Sta 406+73 to 407+22 Rt	77 LF
Sta 406+73 to 408+66 Rt	193 LF
TOTAL =	456 LF

EPOXY PVMT MK 24IN LINE

Sta 406+59 to 406+73 Rt	14 LF
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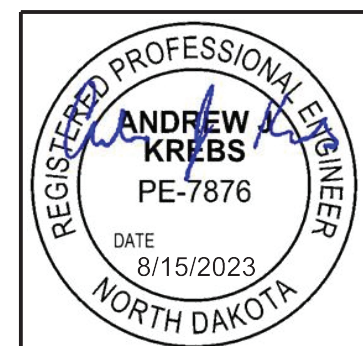
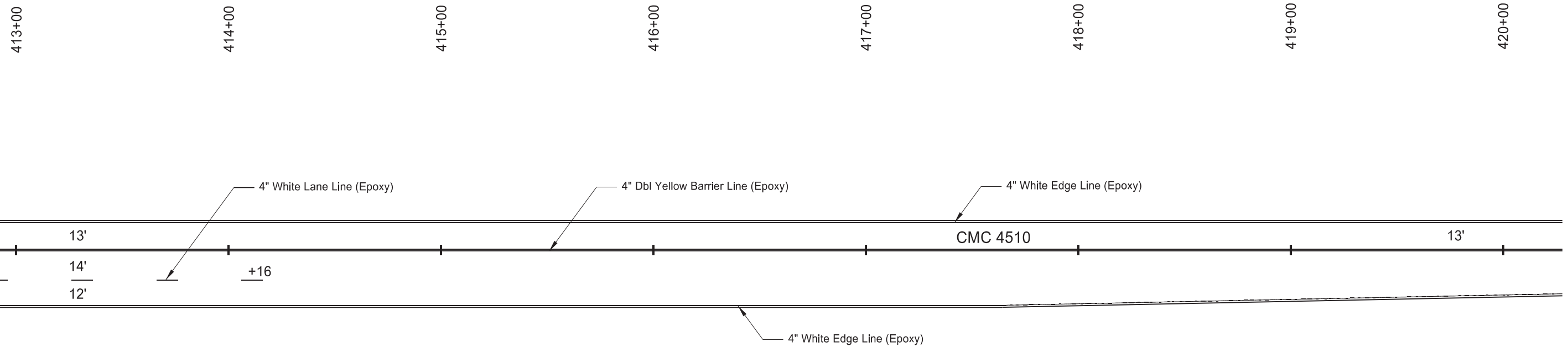


SC-4500(020)						
CMC 4510						
	Pavement Marking Layout Sta 404+40 to 413+00 Stark County, ND					
	<table border="0"> <tr> <td>DRWN. BY</td> <td>CHKD. BY</td> <td>PROJECT NO.</td> </tr> <tr> <td>AK</td> <td>JPM</td> <td>2303-00213</td> </tr> </table>	DRWN. BY	CHKD. BY	PROJECT NO.	AK	JPM
DRWN. BY	CHKD. BY	PROJECT NO.				
AK	JPM	2303-00213				

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	6

EPOXY PVMT MK 4IN LINE

Sta 413+00 to 420+00 Lt	700 LF
Sta 413+00 to 420+00 Rt	700 LF
Sta 413+00 to 420+00 Cl	1400 LF
Sta 413+00 to 414+16 Rt	30 LF
TOTAL =	2830 LF

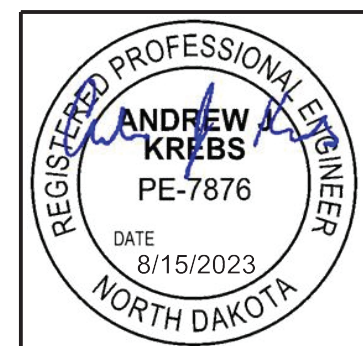
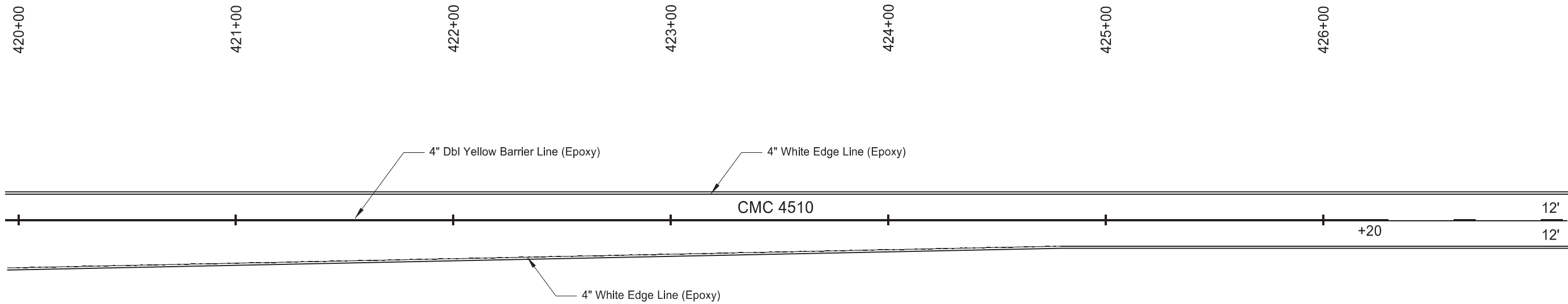


SC-4500(020)			
CMC 4510			
	Pavement Marking Layout Sta 413+00 to 420+00 Stark County, ND		
	<table border="1"> <tr> <td>DRWN. BY AK</td> <td>CHKD. BY JPM</td> <td>PROJECT NO. 2303-00213</td> </tr> </table>	DRWN. BY AK	CHKD. BY JPM
DRWN. BY AK	CHKD. BY JPM	PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	7

EPOXY PVMT MK 4IN LINE
 Sta 420+00 to 426+20 Lt
 Sta 420+00 to 426+20 Rt
 Sta 420+00 to 426+20 CI

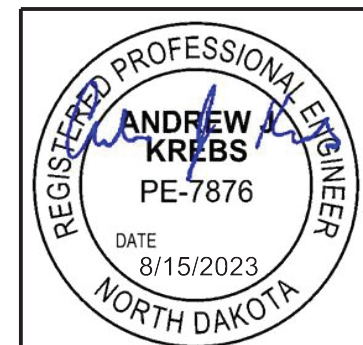
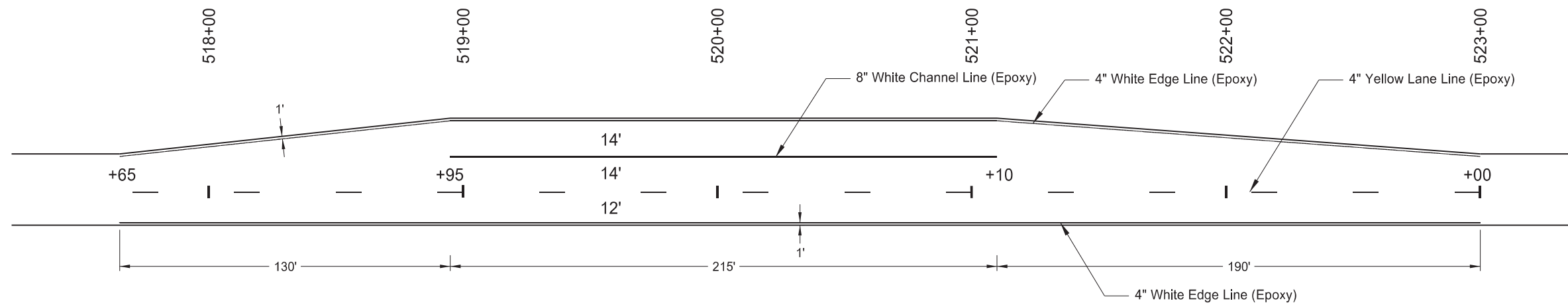
620 LF
 620 LF
 1240 LF
 TOTAL = 2480 LF



SC-4500(020)			
CMC 4510			
	Pavement Marking Layout Sta 420+00 to 426+20 Stark County, ND		
	<table border="1"> <tr> <td>DRWN. BY AK</td> <td>CHKD. BY JPM</td> <td>PROJECT NO. 2303-00213</td> </tr> </table>	DRWN. BY AK	CHKD. BY JPM
DRWN. BY AK	CHKD. BY JPM	PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	8

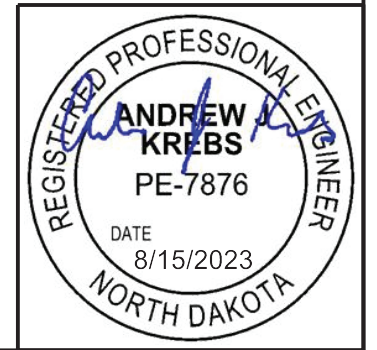
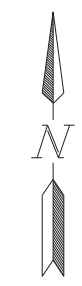
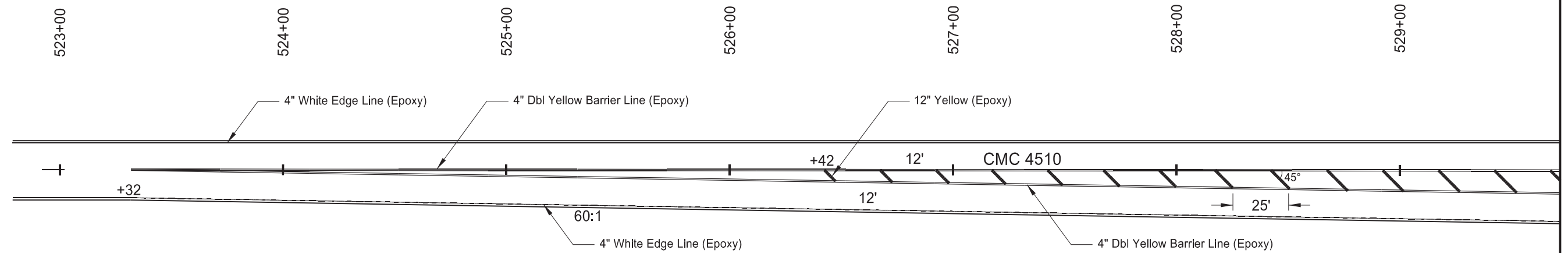
EPOXY PVMT MK 4IN LINE	
Sta 517+65 to 523+00 Lt	536 LF
Sta 517+65 to 523+00 Cl	140 LF
Sta 517+65 to 523+00 Rt	535 LF
	<u>TOTAL = 1211 LF</u>
 EPOXY PVMT MK 8IN LINE	
Sta 518+95 to 521+10 Lt	215 LF



SC-4500(020)						
CMC 4510						
	Pavement Marking Layout Sta 517+65 to 523+00 Stark County, ND					
	<table border="0"> <tr> <td>DRWN. BY</td> <td>CHKD. BY</td> <td>PROJECT NO.</td> </tr> <tr> <td>AK</td> <td>JPM</td> <td>2303-00213</td> </tr> </table>	DRWN. BY	CHKD. BY	PROJECT NO.	AK	JPM
DRWN. BY	CHKD. BY	PROJECT NO.				
AK	JPM	2303-00213				

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	9

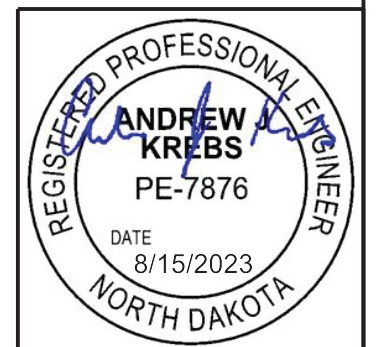
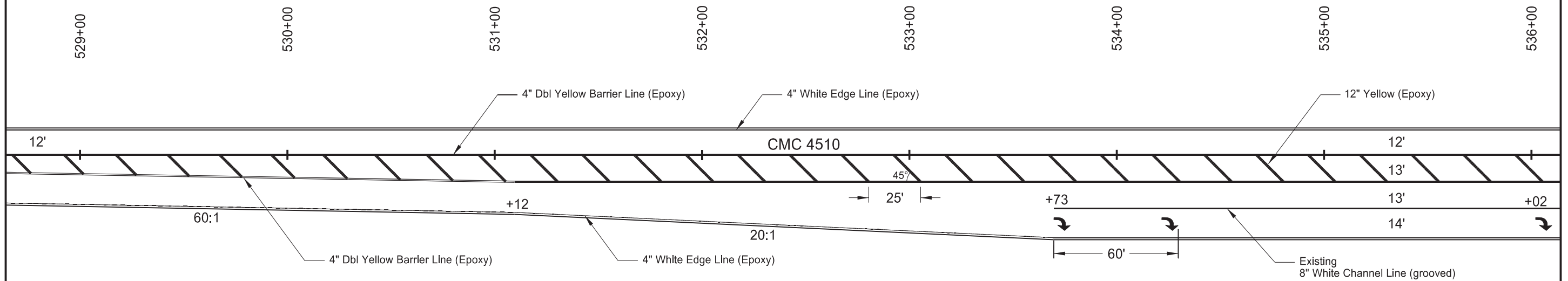
EPOXY PVMT MK 12IN LINE Sta 526+42 to 529+00	112 LF
EPOXY PVMT MK 4IN LINE Sta 523+00 to 529+00 Lt	600 LF
Sta 523+00 to 529+00 Rt	600 LF
Sta 523+32 to 529+00 CI	1136 LF
Sta 523+32 to 529+00 CI	1136 LF
TOTAL =	3472 LF



SC-4500(020)			
CMC 4510			
	Pavement Marking Layout Sta 523+00 to 529+00 Stark County, ND		
	<table border="0"> <tr> <td>DRWN. BY AK</td> <td>CHKD. BY JPM</td> <td>PROJECT NO. 2303-00213</td> </tr> </table>	DRWN. BY AK	CHKD. BY JPM
DRWN. BY AK	CHKD. BY JPM	PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	10

EPOXY PVMT MK 12IN LINE Sta 529+00 to 536+00	497 LF
EPOXY PVMT MK 4IN LINE Sta 529+00 to 536+00 Lt Sta 529+00 to 536+00 Rt Sta 529+00 to 536+00 Cl Sta 529+00 to 536+00 CI	700 LF 700 LF 1400 LF 1400 LF
TOTAL = 4200 LF	
PAVEMENT MARKING MESSAGE-MASKING Sta 534+73 (Rt Arrow) (2 applications) Sta 535+25 (Rt Arrow) (2 applications)	32 SF 32 SF
PAVEMENT MARKING 8IN LINE-MASKING Sta 533+73 to 536+00 Rt (2 applications)	454 LF



SC-4500(020)			
CMC 4510			
	Pavement Marking Layout Sta 529+00 to 536+00 Stark County, ND		
	<table border="0"> <tr> <td>DRWN. BY AK</td> <td>CHKD. BY JPM</td> <td>PROJECT NO. 2303-00213</td> </tr> </table>	DRWN. BY AK	CHKD. BY JPM
DRWN. BY AK	CHKD. BY JPM	PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	11

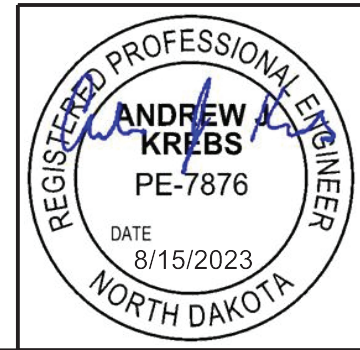
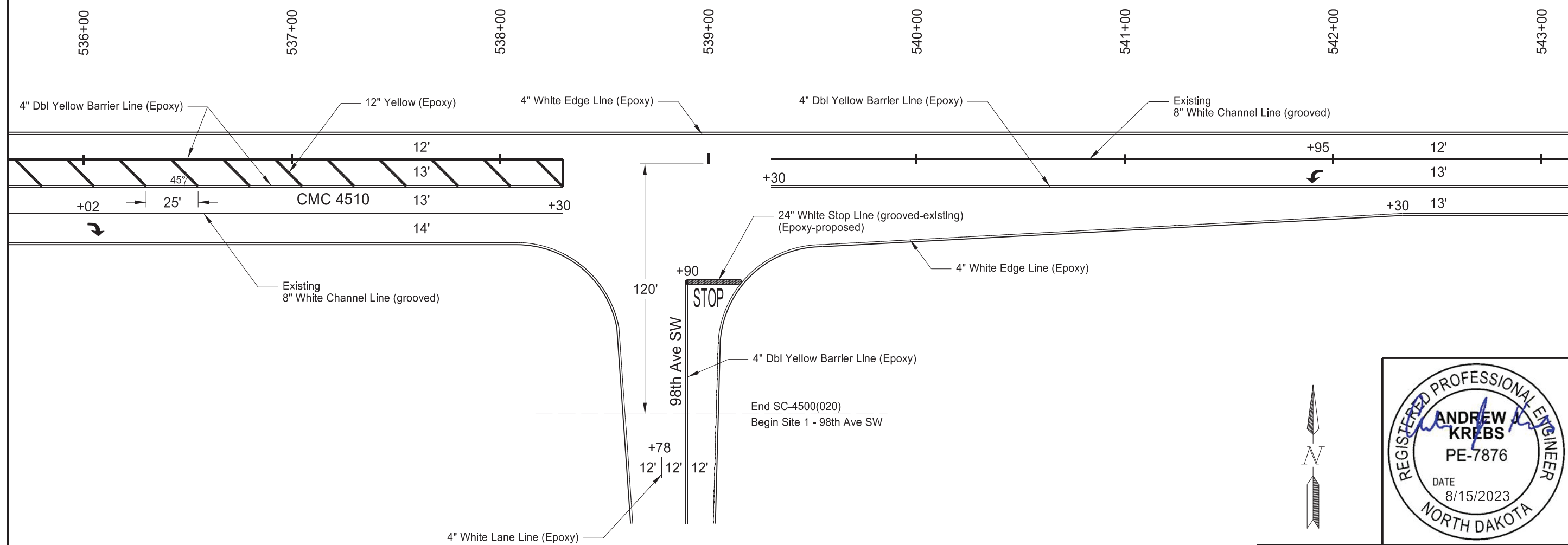
OBLITERATION OF PAVEMENT MARKING	
Sta 538+96 Rt (STOP)	22 SF
Sta 538+90 to 539+11 Rt (24IN Line)	42 SF
	TOTAL = 64 SF
EPOXY PVMT MK 12IN LINE	
Sta 536+00 to 538+30	166 LF
EPOXY PVMT MK MESSAGE	
Sta 538+96 Rt (STOP)	22 SF

EPOXY PVMT MK 4IN LINE	
Sta 536+00 to 543+00 Lt	700 LF
Sta 536+00 to 538+58 Rt	331 LF
Sta 539+05 to 543+00 Rt	421 LF
Sta 536+00 to 538+30 Cl	460 LF
Sta 536+00 to 538+30 Cl	460 LF
Sta 538+30	26 LF
Sta 539+30 to 543+00 Cl	740 LF
Sta 538+90 Rt	60 LF
	TOTAL = 3198 LF

EPOXY PVMT MK 24IN LINE	
Sta 538+90 to 539+11 Rt	21 LF

PAVEMENT MARKING MESSAGE-MASKING	
Sta 541+95 (Lt Arrow) (2 applications)	32 SF
Sta 536+02 (Rt Arrow) (2 applications)	32 SF

PAVEMENT MARKING 8IN LINE-MASKING	
Sta 536+00 to 538+30 Rt (2 applications)	460 LF
Sta 539+30 to 543+00 Lt (2 applications)	740 LF



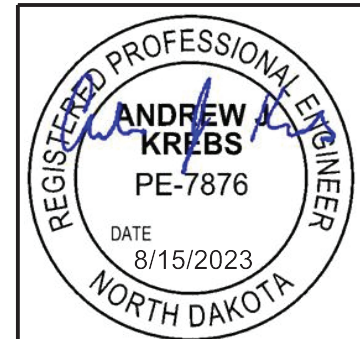
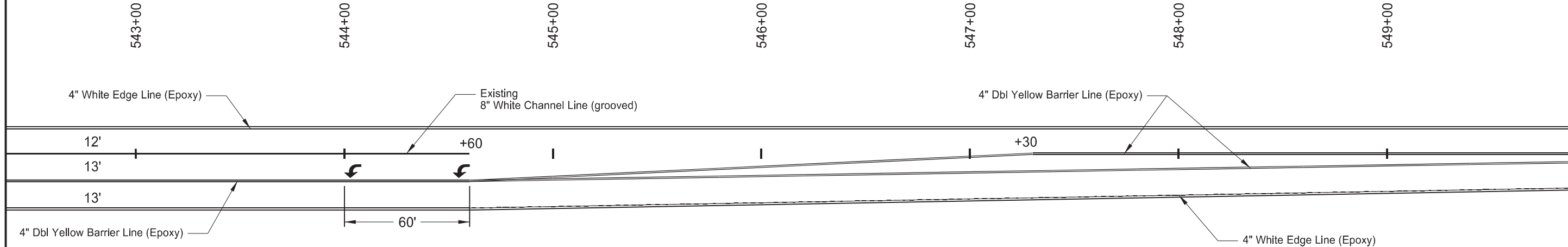
SC-4500(020)			
CMC 4510 & SITE 1 - 98th Ave SW			
	Pavement Marking Layout Sta 536+00 to 543+00 Stark County, ND		
	<table border="0"> <tr> <td>DRWN. BY AK</td> <td>CHKD. BY JPM</td> <td>PROJECT NO. 2303-00213</td> </tr> </table>	DRWN. BY AK	CHKD. BY JPM
DRWN. BY AK	CHKD. BY JPM	PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	12

EPOXY PVMT MK 4IN LINE	
Sta 543+00 to 549+00 Lt	600 LF
Sta 543+00 to 549+00 Rt	600 LF
Sta 543+00 to 544+60 Cl	320 LF
Sta 544+60 to 549+00 Cl	880 LF
Sta 544+60 to 549+00 Cl	880 LF
TOTAL =	3280 LF

PAVEMENT MARKING MESSAGE-MASKING	
Sta 544+08 (LT Arrow) (2 applications)	32 SF
Sta 544+60 (LT Arrow) (2 applications)	32 SF

PAVEMENT MARKING 8IN LINE-MASKING	
Sta 543+00 to 544+60 Lt (2 applications)	320 LF

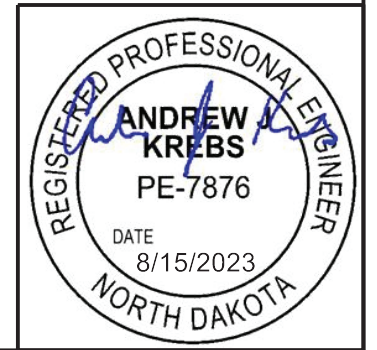
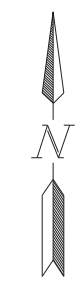
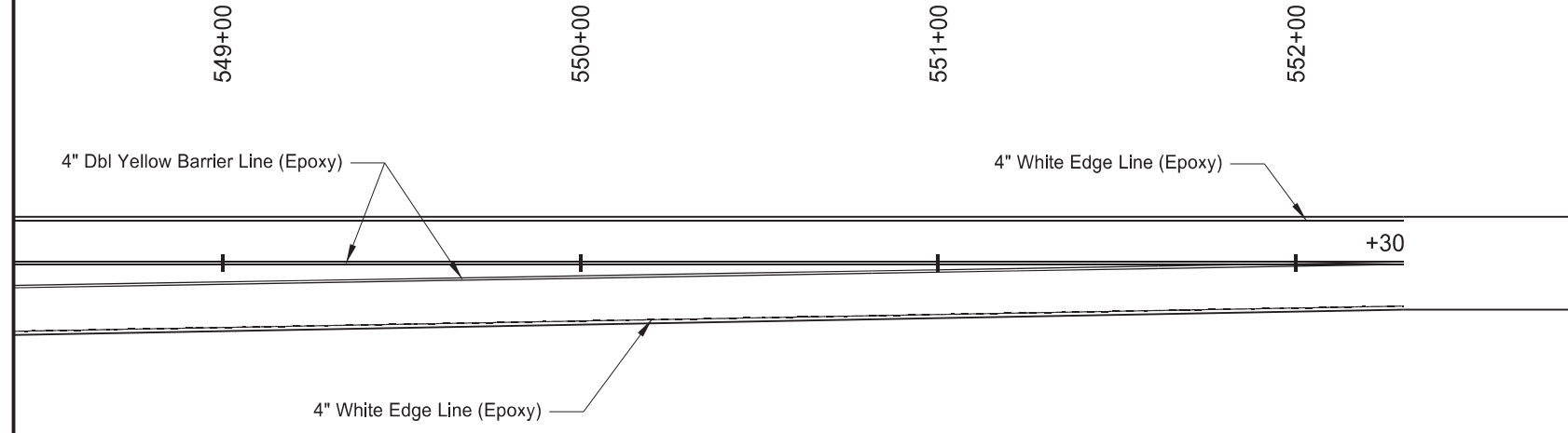


SC-4500(020)			
CMC 4510			
	Pavement Marking Layout Sta 543+00 to 549+00 Stark County, ND		
	<table border="0"> <tr> <td>DRWN. BY AK</td> <td>CHKD. BY JPM</td> <td>PROJECT NO. 2303-00213</td> </tr> </table>	DRWN. BY AK	CHKD. BY JPM
DRWN. BY AK	CHKD. BY JPM	PROJECT NO. 2303-00213	

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SC-4500(020)	120	13

EPOXY PVMT MK 4IN LINE

Sta 549+00 to 552+30 Lt	330 LF
Sta 549+00 to 552+30 Rt	330 LF
Sta 549+00 to 552+30 CI	660 LF
Sta 549+00 to 552+30 CI	660 LF
TOTAL =	1980 LF



SC-4500(020)			
<small>CMC 4510</small>			
	Pavement Marking Layout Sta 549+00 to 552+30 Stark County, ND		
	<table border="1"> <tr> <td><small>DRWN. BY</small> AK</td> <td><small>CHKD. BY</small> JPM</td> <td><small>PROJECT NO.</small> 2303-00213</td> </tr> </table>	<small>DRWN. BY</small> AK	<small>CHKD. BY</small> JPM
<small>DRWN. BY</small> AK	<small>CHKD. BY</small> JPM	<small>PROJECT NO.</small> 2303-00213	

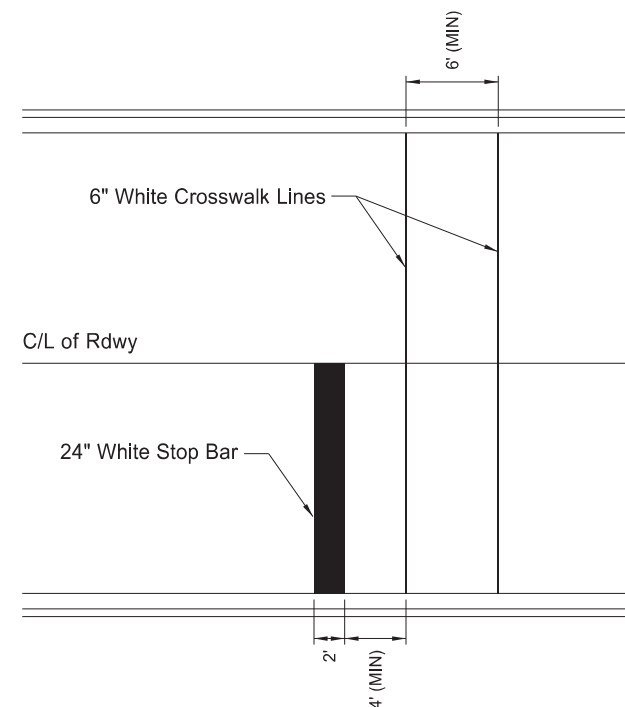
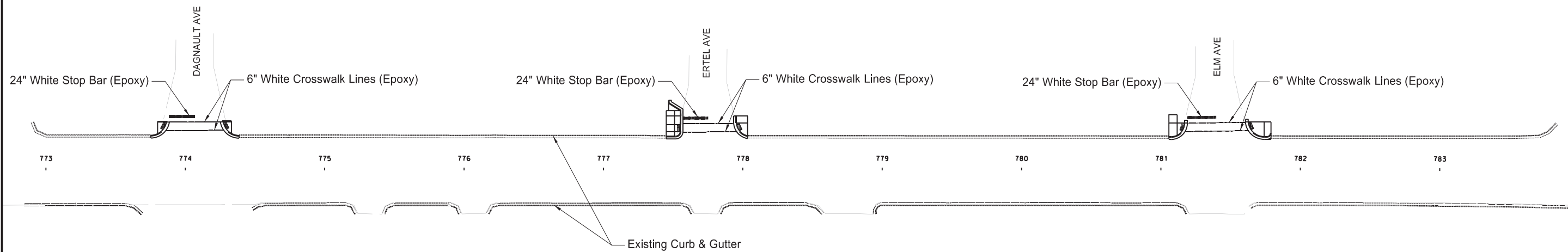
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	14

EPOXY PVMT MK 6IN LINE

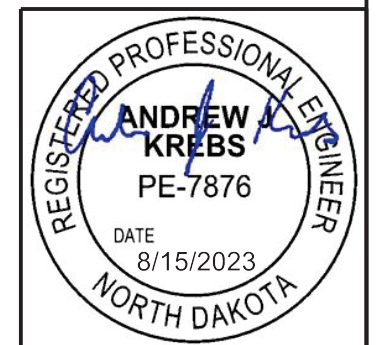
Sta 773+89 to 774+25 Lt	36 LF
Sta 773+86 to 774+28 Lt	42 LF
Sta 777+57 to 777+93 Lt	36 LF
Sta 777+57 to 777+93 Lt	36 LF
Sta 781+19 to 781+61 Lt	42 LF
Sta 781+15 to 781+65 Lt	50 LF
TOTAL = 242 LF	

EPOXY PVMT MK 24IN LINE

Sta 773+94 to 774+07 Lt	13 LF
Sta 777+57 to 777+75 Lt	18 LF
Sta 781+19 to 781+40 Lt	21 LF
TOTAL = 52 LF	



CROSSWALK PAVEMENT MARKING DETAIL

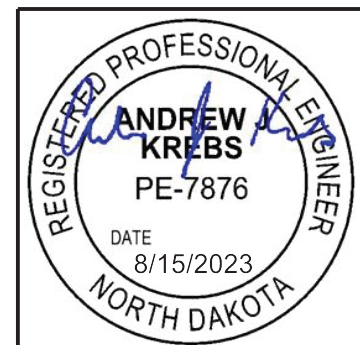
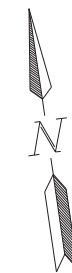
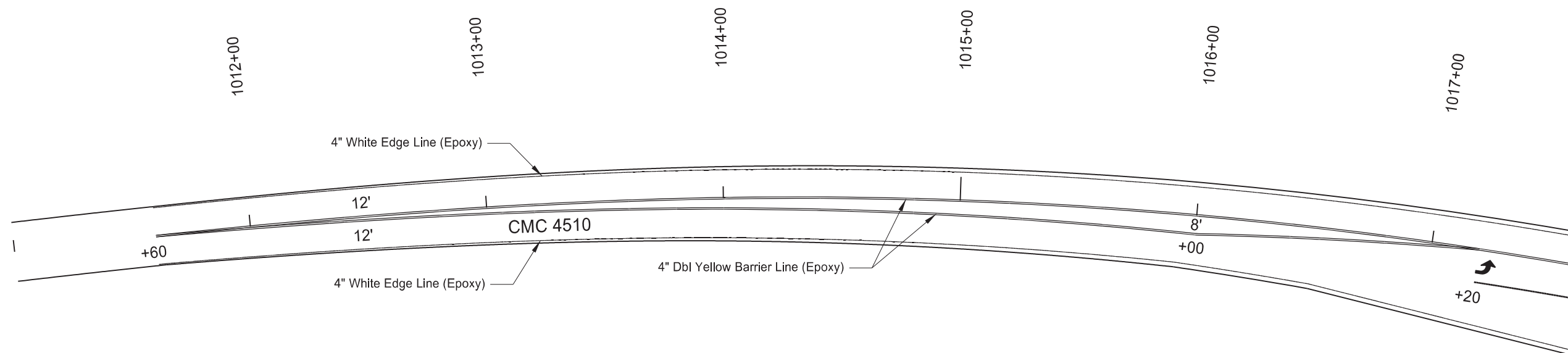


SC-4500(020)			
CMC 4510			
	Pavement Marking Layout Taylor Street Approaches Stark County, ND		
	<table border="0"> <tr> <td>DRWN. BY AK</td> <td>CHKD. BY JPM</td> <td>PROJECT NO. 2303-00213</td> </tr> </table>	DRWN. BY AK	CHKD. BY JPM
DRWN. BY AK	CHKD. BY JPM	PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	15

EPOXY PVMT MK 4IN LINE
 Sta 1011+60 to 1017+00 Lt 540 LF
 Sta 1011+60 to 1017+00 Cl 1080 LF
 Sta 1011+60 to 1017+00 Cr 1080 LF
 Sta 1011+60 to 1017+00 Rt 540 LF

TOTAL = 3240 LF



SC-4500(020)			
CMC 4510			
	Pavement Marking Layout Sta 1011+60 to 1017+00 Stark County, ND		
	<table border="1"> <tr> <td>DRWN. BY AK</td> <td>CHKD. BY JPM</td> <td>PROJECT NO. 2303-00213</td> </tr> </table>	DRWN. BY AK	CHKD. BY JPM
DRWN. BY AK	CHKD. BY JPM	PROJECT NO. 2303-00213	

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SC-4500(020)	120	16

EPOXY PVMT MK MESSAGE

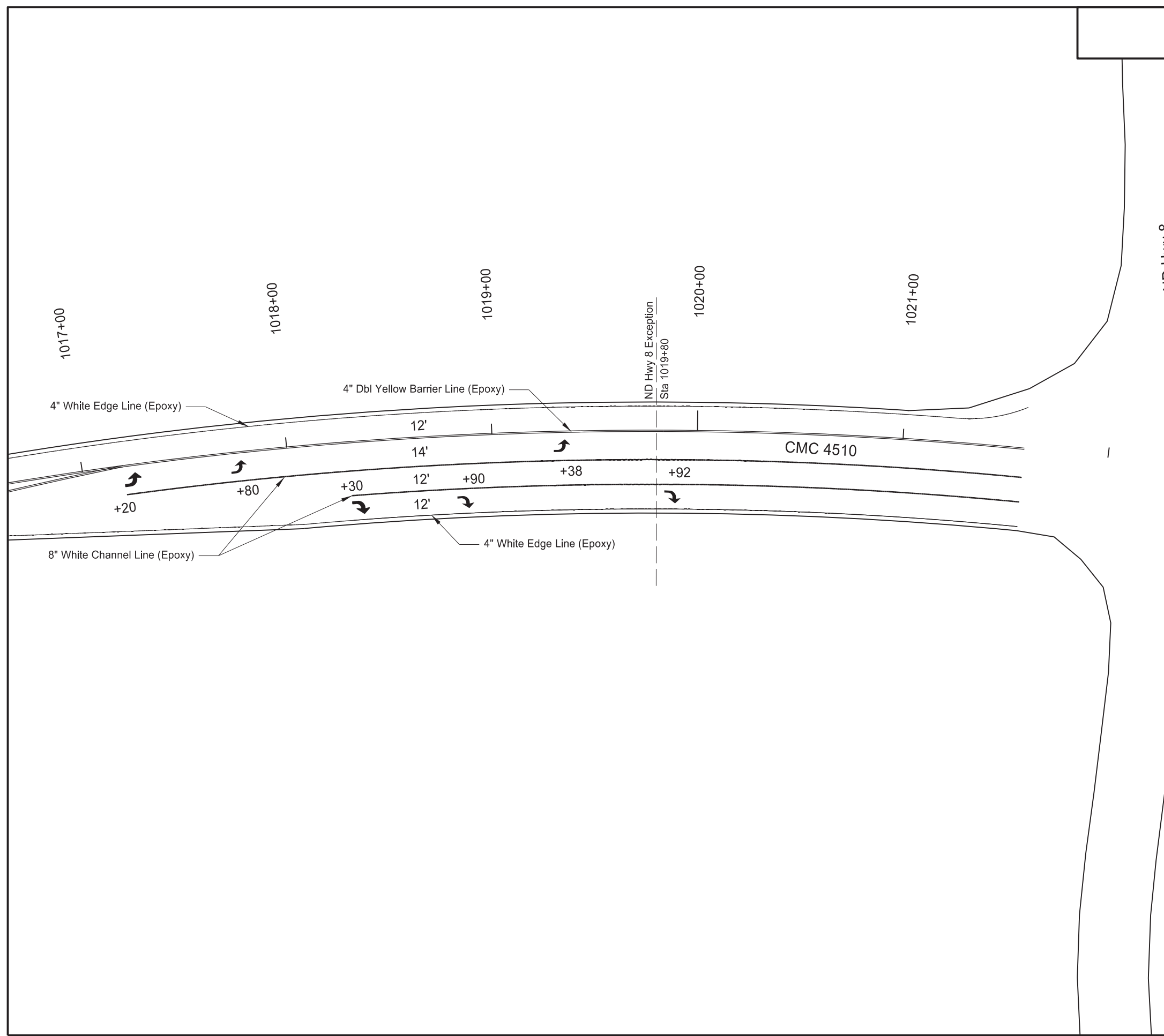
Sta 1017+20 (Lt Arrow)	16 SF
Sta 1017+80 (Lt Arrow)	16 SF
Sta 1018+30 (Rt Arrow)	16 SF
Sta 1018+90 (Rt Arrow)	16 SF
Sta 1019+38 (Lt Arrow)	16 SF
Sta 1019+92 (Rt Arrow)	16 SF
TOTAL = 96 SF	

EPOXY PVMT MK 4IN LINE

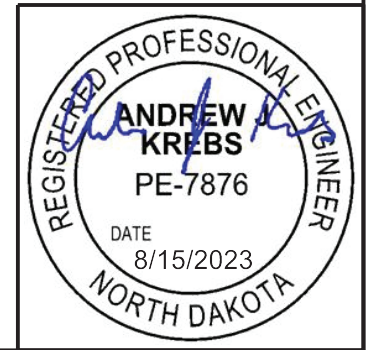
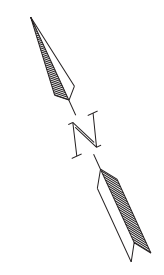
Sta 1017+00 to 1019+80 Lt	280 LF
Sta 1017+00 to 1017+20 Cl	40 LF
Sta 1017+00 to 1017+20 Cl	40 LF
Sta 1017+00 to 1019+80 Rt	280 LF
Sta 1017+20 to 1019+80 Cl	520 LF
TOTAL = 1160 LF	

EPOXY PVMT MK 8IN LINE

Sta 1017+20 to 1019+80 Rt	260 LF
Sta 1018+30 to 1019+80 Rt	150 LF
TOTAL = 410 LF	



ND Hwy 8



SC-4500(020)						
CMC 4510						
	Pavement Marking Layout Sta 1017+00 to 1019+80 Stark County, ND					
	<table border="0"> <tr> <td>DRWN. BY</td> <td>CHKD. BY</td> <td>PROJECT NO.</td> </tr> <tr> <td>AK</td> <td>JPM</td> <td>2303-00213</td> </tr> </table>	DRWN. BY	CHKD. BY	PROJECT NO.	AK	JPM
DRWN. BY	CHKD. BY	PROJECT NO.				
AK	JPM	2303-00213				

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 C 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
 DInt delineate
 DIntr delineator
 Depr depression
 Desc description
 Det detail
 DWP detectable warning panel
 Dtr detour
 Dia or \emptyset 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
05-20-18	General Revisions
12-10-20	General Revisions
08-16-22	General Revisions



NDDOT ABBREVIATIONS

Galv	galvanized	Ln	lane	Obsc	obscure(d)	Qty	quantity
Gar	garage	Lg	large	Ocpd	occupied	Qtr	quarter
Gs L	gas line	Lat	latitude	Ocpy	occupy		
G Reg	gas line regulator	Lt	left	O/s	offset		
GMV	gas main valve	Lens	lenses	OC	on center	Rad or R	radius
G Mtr	gas meter	Lvl	level	C	one dimensional consolidation	RR	railroad
GSV	gas service valve	Lvng	leveling	OC	organic content	Rlwy	railway
GVP	gas vent pipe	Lht	light	Orig	original	Rsd	raised
GV	gate valve	LP	light pole	O To O	out to out	RC	rapid curing
Ga	gauge	Ltg	lighting	OD	outside diameter	Rec	record
Gov	government	Liq	liquid	OH	overhead	Recy	recycle
Grd	graded/grade	LL	liquid limit			RAP	recycled asphalt pavement
Grnd	ground	Loc	location			RPCC	recycled portland cement concrete
GWM	ground water monitor	Long.	longitude	PMT	pad mounted transformer	Ref	reference
Gdrl	guardrail	Lp	loop	Pg	pages	R Mkr	reference marker
Gtr	gutter	LD	loop detector	Pntd	painted	RM	reference monument
		Lum	luminaire	Pr	pair	RP	reference point
				Pnl	panel	Refl	reflectorized
H Plg	H piling			Pk	park	RCB	reinforced concrete box
Hdwl	headwall	Mb	mailbox	PSD	passing sight distance	RCES	reinforced concrete end section
Ht	height	ML	main line	Pvmt	pavement	RCFES	reinforced concrete flared end section
Hel	helical	MH	manhole	Ped	pedestal	RCP	reinforced concrete pipe
HDPE	high density polyethylene	Mkd	marked	Ped	pedestrian	RCPS	reinforced concrete pipe sewer
HM	high mast	Mkr	marker	PPP	pedestrian pushbutton post	RCTES	reinforced concrete traversable end section
HP	high pressure	Mkg	marking	Pen.	penetration	Reinf	reinforcement
HPS	high pressure sodium	MA	mast arm	Perf	perforated	Res	reservation
HTCG	high tension cable guardrail	Matl	material	Per.	perimeter	Res	residence
Hwy	highway	Max	maximum	Perm	permanent	Ret	retaining
Hor	horizontal	MC	meander corner	PL	pipeline	Rev	reverse
HBP	hot bituminous pavement	Meas	measure	PI	place	Rt	right
HMA	hot mix asphalt	Mdn	median	P&P	plan & profile	R/W	right of way
Hyd	hydrant	MD	median drain	PL	plastic limit	Riv	river
Ph	hydrogen ion content	MC	medium curing	Pl or \bar{P}	plate	Rd	road
		MGS	Midwest Guardrail System	Pt	point	Rdbd	road bed
		MM	mile marker	PE	polyethylene	Rdwy	roadway
Id	identification	MP	mile post	PVC	polyvinyl chloride	RWIS	roadway weather information system
Incl	inclinometer tube	Min	minimum	PCC	Portland Cement concrete	Rk	rock
IMH	inlet manhole	Misc	miscellaneous	PP	power pole	Rt	route
ID	inside diameter	Mon	monument	Preempt	preemption		
Inst	instrument	Mnd	mound	Prefab	prefabricated		
Intchg	interchange	Mtbl	mountable	Prfmd or Pref	performed		
Intmdt	intermediate	Mtd	mounted	Prep	preparation		
Intscn	intersection	Mtg	mounting	Press.	pressure		
Inv	invert	Mk	muck	PRV	pressure relief valve		
IP	iron pipe			Prestr	prestressed		
				Pvt	private		
				PD	private drive		
Jt	joint	Neop	neoprene	Prod.	production/produce		
Jct	junction	Ntwk	network	Prog	programmed		
		N	North	Prop.	property		
		NE	North East	Prop Ln	property line		
		NW	North West	Ppsd	proposed		
		NB	Northbound	PB	pull box		
		No. or #	number				

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
08-03-15	General Revisions
04-23-18	General Revisions
12-18-20	General Revisions
08-16-22	General Revisions

NDDOT ABBREVIATIONS

D-101-3

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
08-03-15	General Revisions
04-23-18	General Revisions
12-18-20	General Revisions
08-16-22	General Revisions



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

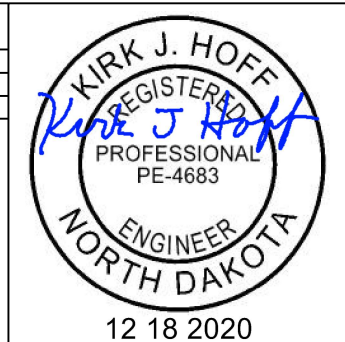
SURVEY DESCRIPTIONS

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
12-18-20	Sheet Added - Continued from D-101-3



NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

D-101-10

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
04-23-18	General Revisions
05-20-18	General Revisions
12-18-20	General Revisions
08-16-22	General Revisions



LINE STYLES

D-101-20

Existing Topography

- Void - Void - Void - V 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

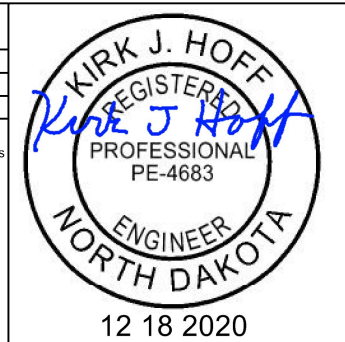
Traffic Utilities

- 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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14 REVISIONS	
DATE	CHANGE
09-23-16	Added and Revised Items, Organized by Functional Groups General Revisions
12-18-20	



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 Typical

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

Geotechnical

- D ----- D ----- Geotextile Fabric Type D
- **Geo** ----- **Geo** ----- Geogrid
- R ----- R ----- Geotextile Fabric Type R
- R ----- R ----- Geotextile Fabric Type R1
- RR ----- RR ----- Geotextile Fabric Type RR
- S ----- S ----- Geotextile Fabric Type S

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

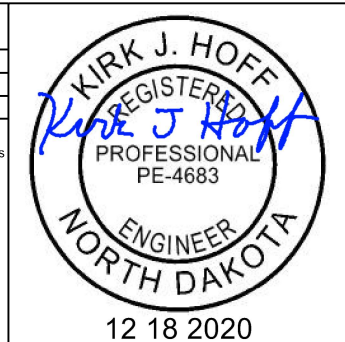
Erosion Control

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

Environmental

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
09-23-16	Added and Revised Items, Organized by Functional Groups General Revisions
12-18-20	



SYMBOLS



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



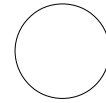
Existing Large Tree



Existing Small Tree



Existing Tree Trunk



Cairn or Stone Circle



Existing Artifact



Existing Satellite Dish



Existing Weather Station



Existing Windmill or Tower



Reinforced Pavement



Continuous Split Barrel Sample



Flight Auger Sample



Split Barrel Sample



Thinwall Tube Sample



Standard Penetration Test



Inclinometer Tube



Excavation Unit



Existing Ground Water Well Bore Hole

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

07-01-14

REVISIONS

















































































DATE	CHANGE
12-18-20	General Revisions



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



KIRK J. HOFF

REGISTERED

PROFESSIONAL

PE-4683

ENGINEER

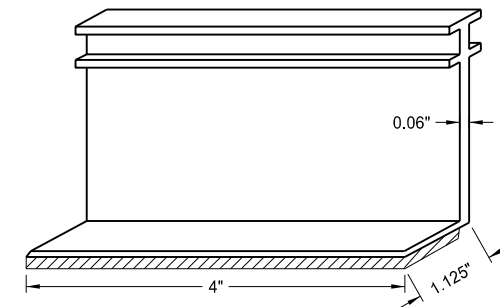
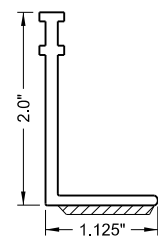
NORTH DAKOTA

12 18 2020

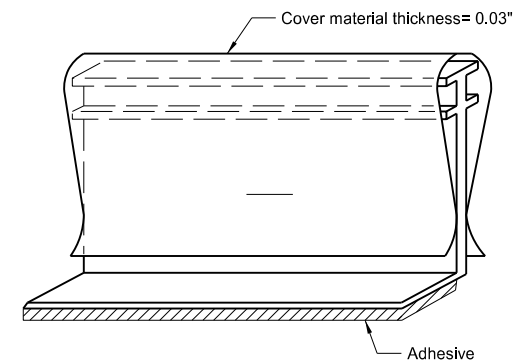
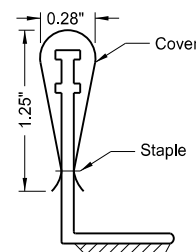
LANE MARKERS
(Spotting Tab for Seal Projects only)

Notes:

1. Install lane line markers as shown, prior to beginning the seal coat.
2. Attach cover to vertical part of marker so traffic does not cause it to detach, but it can be easily removed manually.
3. Remove protective covers immediately after seal coat is applied.
4. Remove markers after permanent pavement marking is installed.
5. Use marker body and cover manufactured from polyurethane material.
6. Marker types:
 Type Y - Yellow body and cover with yellow reflective tape on both sides.
 Type W - White body and cover with white reflective tape on one side.
7. Use retroreflective tape with a minimum reflectance of 1200 candle power per foot-candle per square foot, using a .1 degree observation angle and 0 degree entrance angle.
8. Use adhesive conforming to AASHTO M 237.



Marker Body



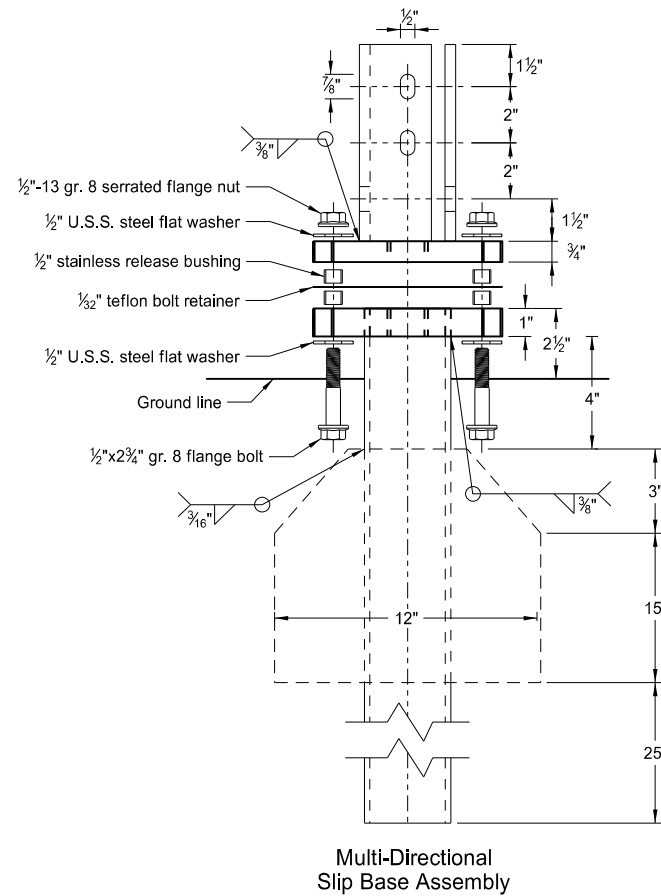
Marker Body with Protective Cover

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-3-13	
REVISIONS	
DATE	CHANGE
9-27-17	Updated to active voice
10-03-19	New Design Engr PE Stamp

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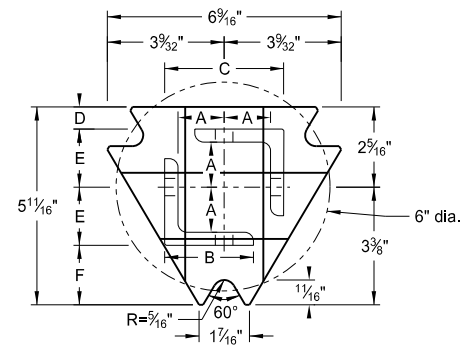
BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS

Perforated Tube



Multi-Directional Slip Base Assembly

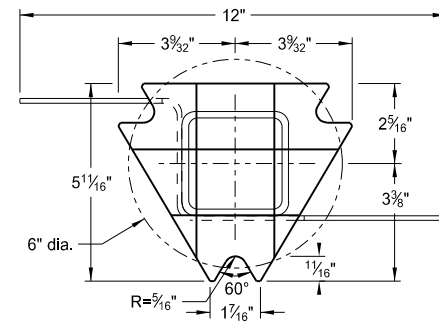
Traffic Flow



Top Post Receiver

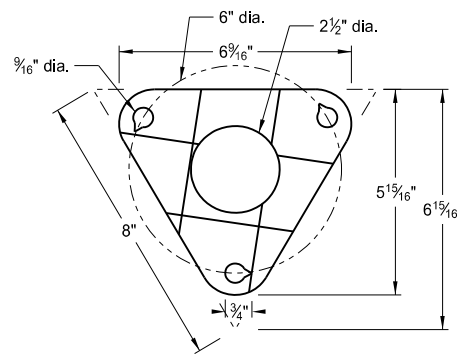
Plate - ASTM A572 grade 50
Angle Receiver - 2 1/2" x 2 1/2" x 3/8" ASTM A36 structural angle

Traffic Flow



Bottom Soil Stub

Tube - 3"x3"x7 gauge ASTM A500 grade B tube
Stabilizing Wing - 7 gauge H.R.P.O. ASTM A1011
Plate - ASTM A572 grade 50



Bolt Retainer for Base Connection
Bolt Retainer- 1/2" Reprocessed Teflon

Notes:

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

Telescoping Perforated Tube

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

Properties of Telescoping Perforated Tube

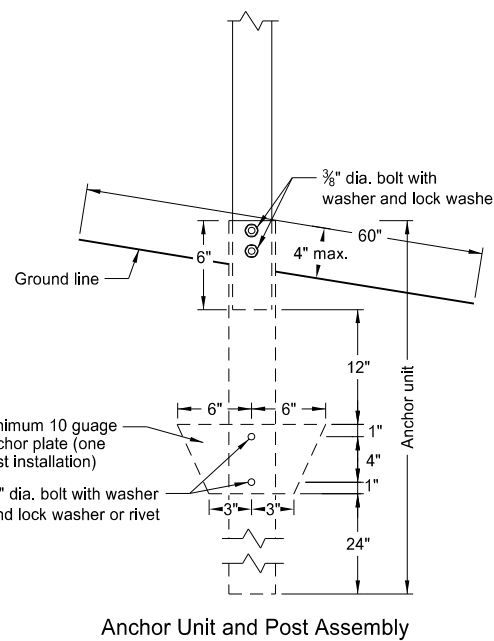
Tube Size in.	Wall Thickness in.	U.S. Standard Gauge	Weight per Foot lbs.	Moment of Inertia in. ⁴	Cross Sec. Area in. ²	Section Modulus in. ³
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499
2 3/16 x 2 3/16	0.135	10	3.432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

Top Post Receiver Data Table

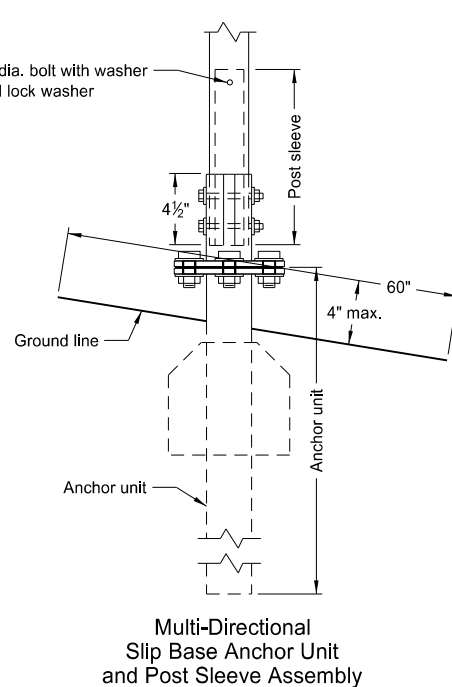
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16" x 10 ga.	1 5/16"	2 1/2"	3 1/2"	2 5/32"	1 3 3/64"	1 7/8"
2 1/2" x 10 ga.	1 3/32"	2 1/2"	3 5/16"	5/8"	1 2 1/32"	1 3/4"

(A) Use breakaway base when support is placed in weak soils. Engineer determines if soils are weak.

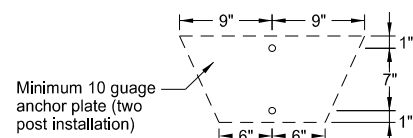
(B) For additional wind load, insert the 2 3/16" x 10 ga. into 2 1/2" x 10 ga.



Anchor Unit and Post Assembly



Multi-Directional Slip Base Anchor Unit and Post Sleeve Assembly

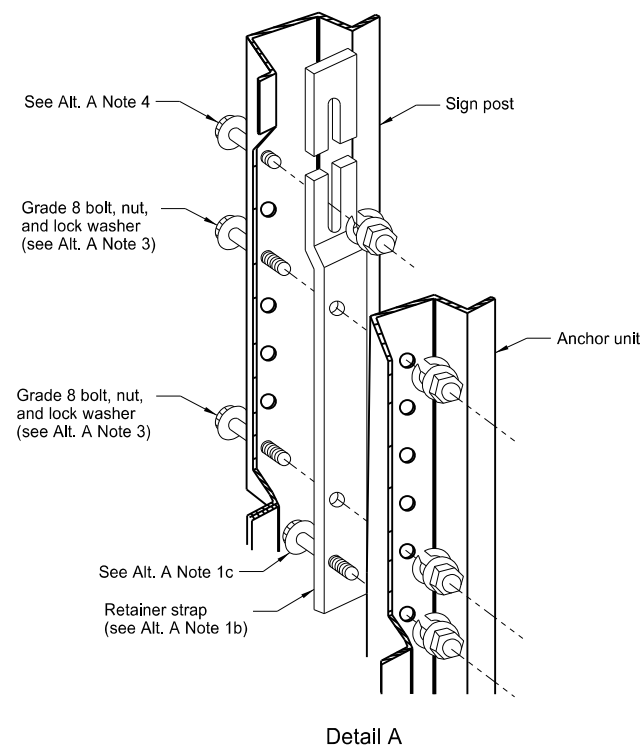


Minimum 10 gauge anchor plate (two post installation)

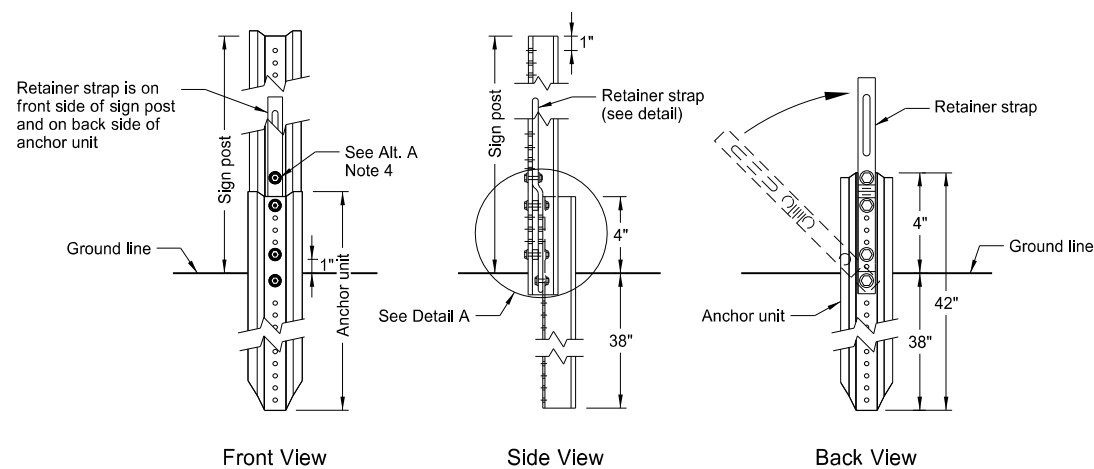
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
2-28-14	
REVISIONS	
DATE	CHANGE
9-27-17	Updated to active voice
10-03-19	New Design Engr PE Stamp

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U-Channel Post



Detail A



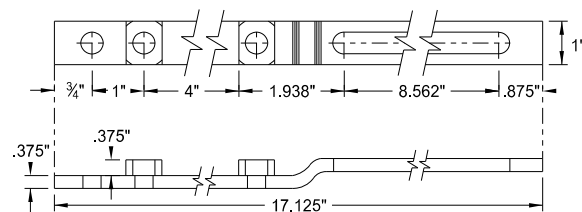
Front View

Side View

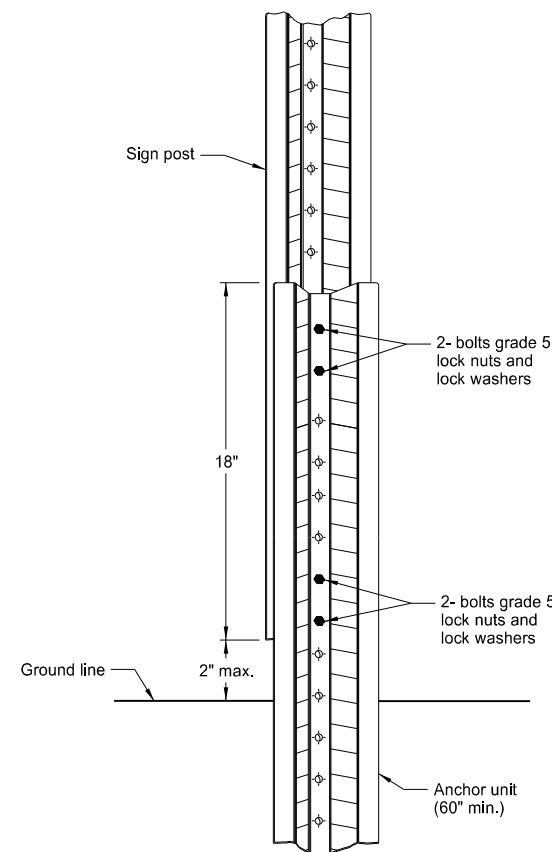
Back View

Breakaway U-Channel Detail Alternate A

Install a maximum of 2 posts within 7'.

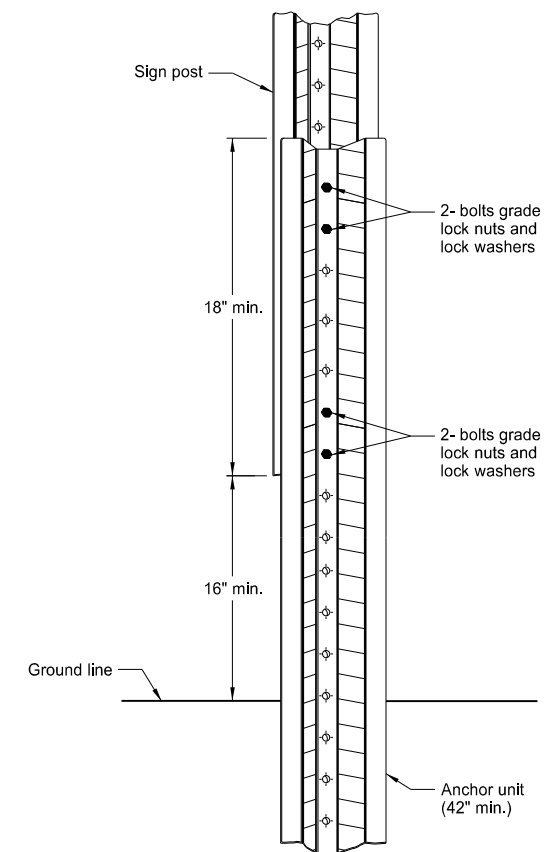


Retainer Strap Detail



Breakaway U-Channel Splice Detail Alternate B (2.5 and 3 lb/ft)

Install a maximum of 3 posts within 7'.



Breakaway U-Channel Splice Detail Alternate C (2.5 and 3 lb/ft)

Install a maximum of 3 posts within 7'.

Alternate A Steps of Installation:

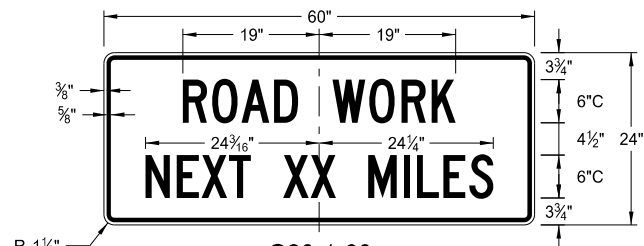
1. a) Drive anchor unit to within 12" of ground level.
b) Establish proper assembly by lining up bottom hole of retainer strap with 6th hole from the top of the anchor unit.
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.
d) Rotate strap 90° to left.
2. a) Drive anchor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

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

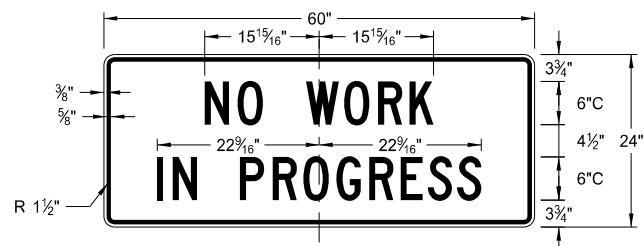
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CONSTRUCTION SIGN DETAILS
 TERMINAL AND GUIDE SIGNS

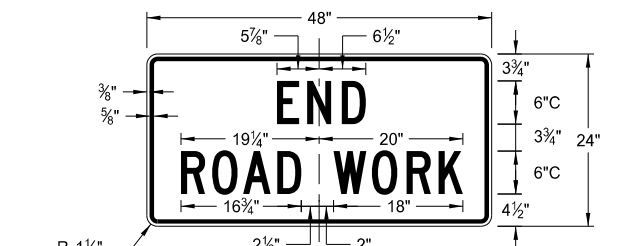
D-704-9



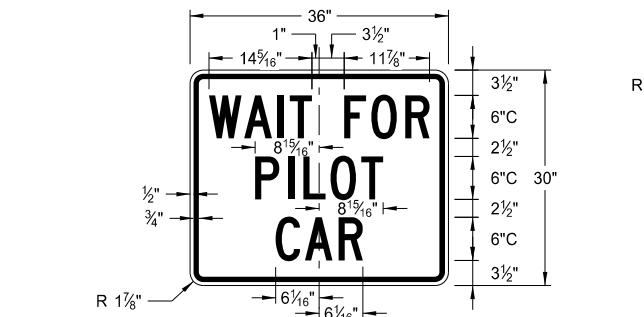
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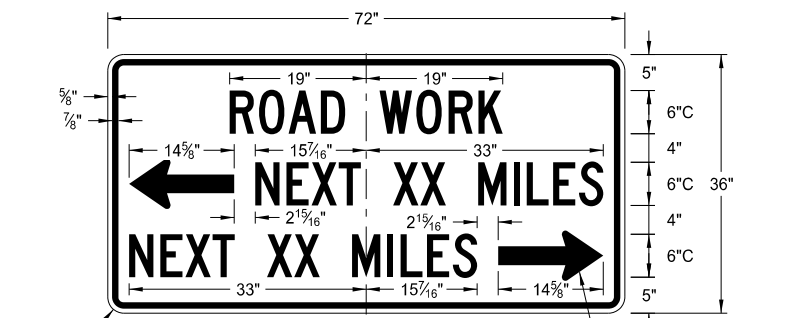
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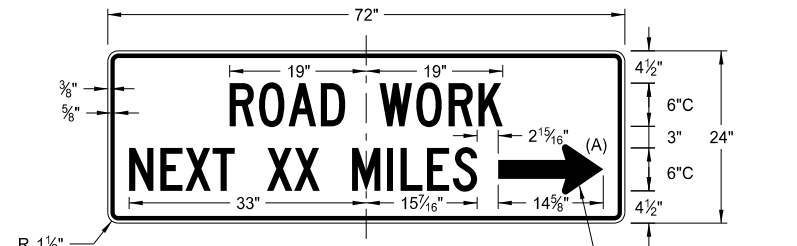
G20-2-48
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 Background: orange



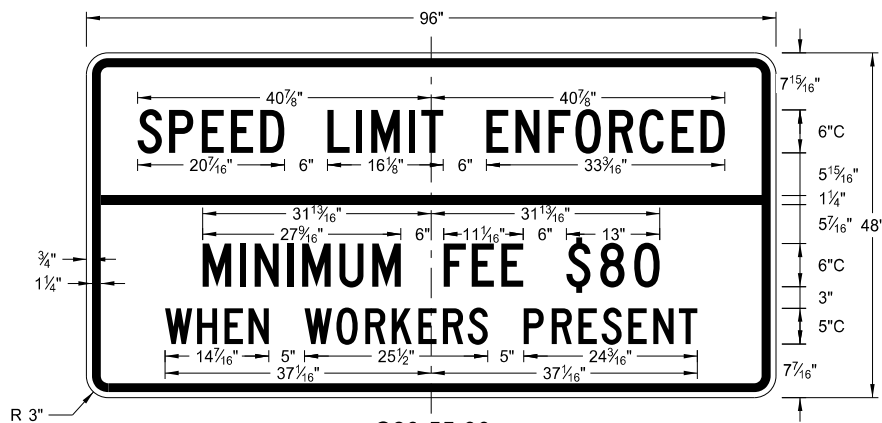
G20-4b-36
 Legend: black (non-refl)
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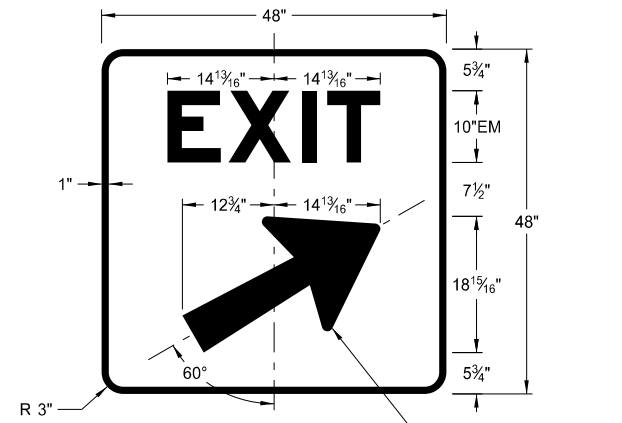
G20-50a-72
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 Background: orange



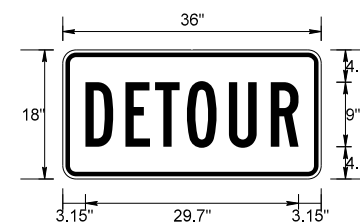
G20-52a-72
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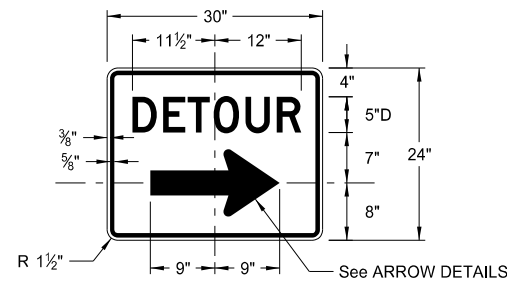
G20-55-96
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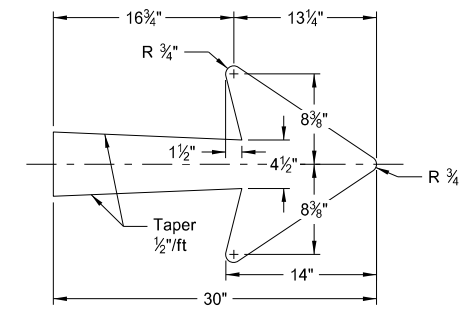
E5-1(L or R)-48
 Legend: white
 Background: green (orange optional)



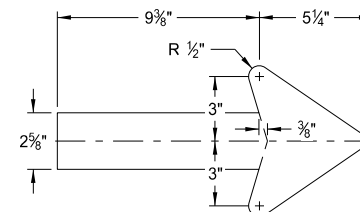
M4-8-36
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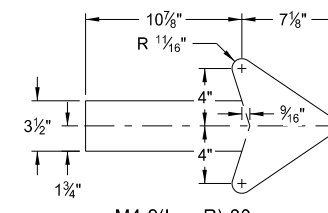
M4-9(L or R)-30 &
 M4-9-30
 Legend: black (non-refl)
 Background: orange



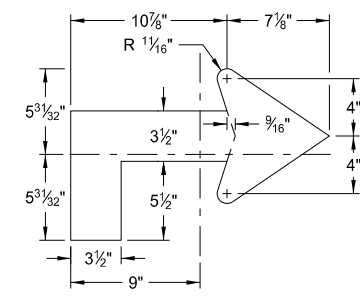
E5-1-48



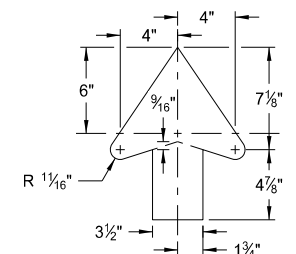
G20-50a-72
 G20-52a-72



M4-9(L or R)-30
 Right or Left



M4-9(L or R)-30
 Advanced Right or Left



M4-9-30
 Straight

ARROW DETAILS

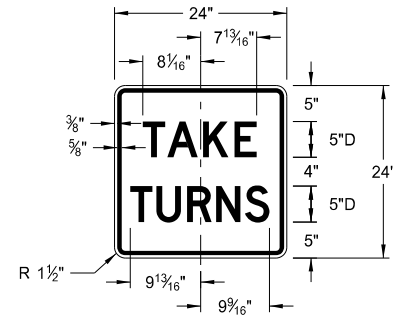
NOTES:

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

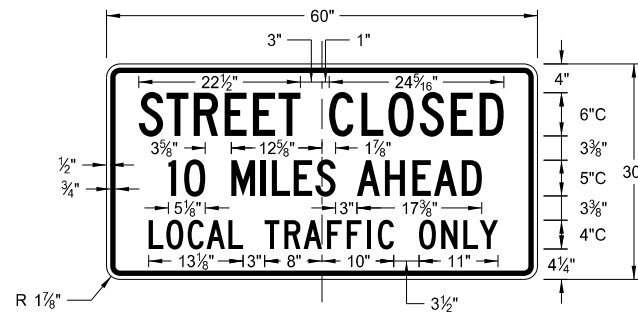
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17 10-03-19	Added sign & background color New Design Engineer PE Stamp

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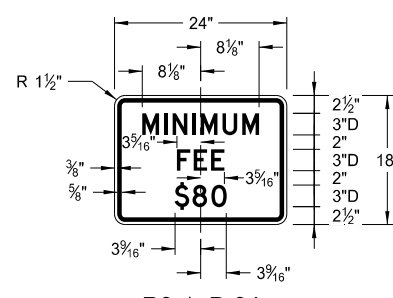
CONSTRUCTION SIGN DETAILS
REGULATORY SIGNS



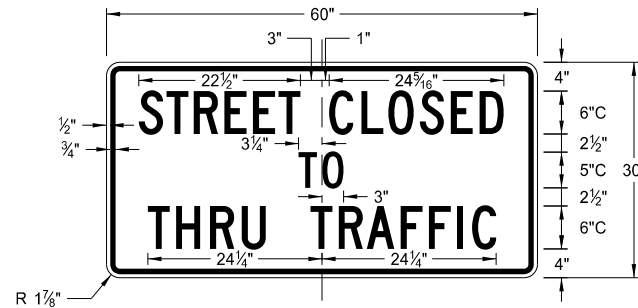
R1-50P-24
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Background: white



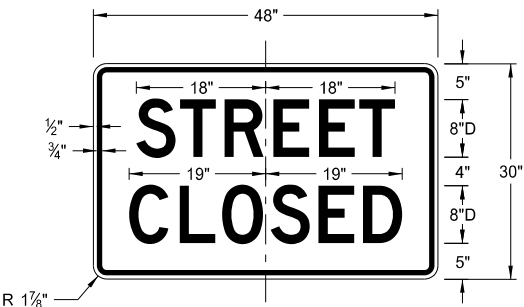
R11-3c-60
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Background: white



R2-1aP-24
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Background: white



R11-4a-60
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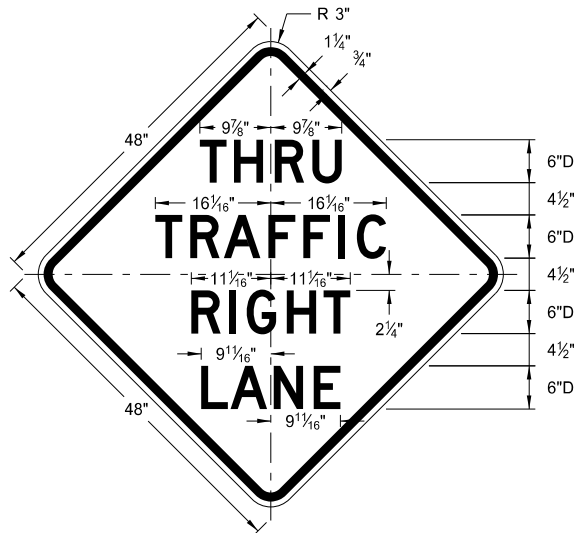


R11-2a-48
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Background: white

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17	Revised sign number
10-03-19	New Design Engineer PE Stamp

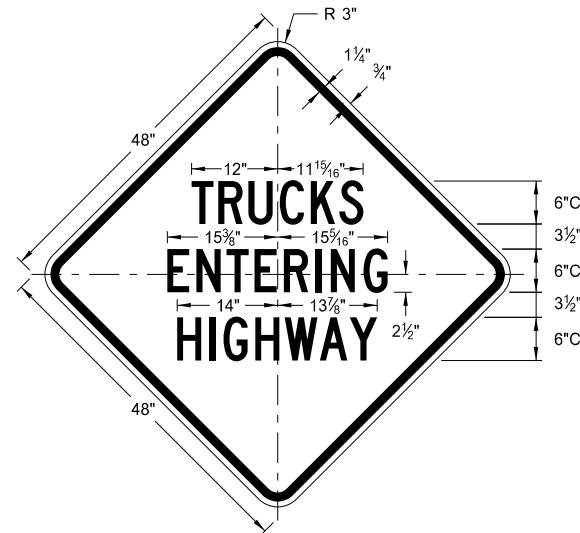
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CONSTRUCTION SIGN DETAILS
WARNING SIGNS



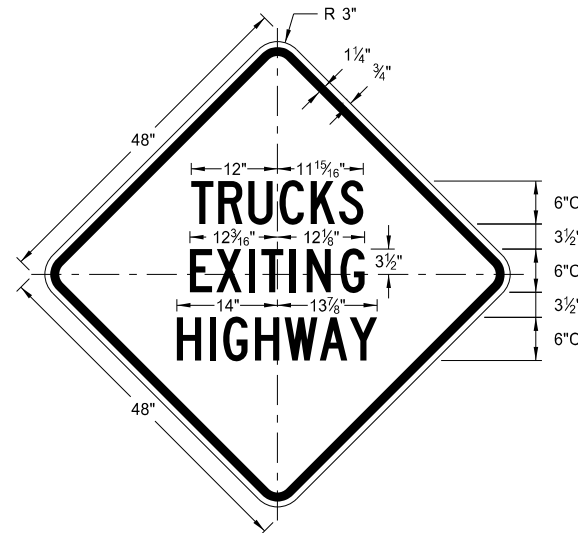
W5-8-48

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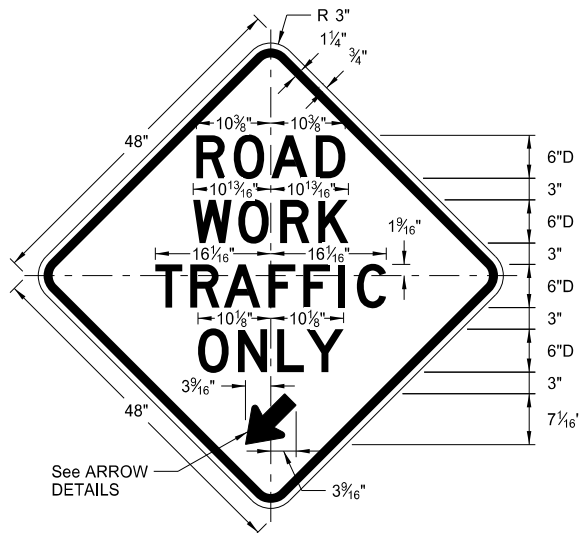
W8-53-48

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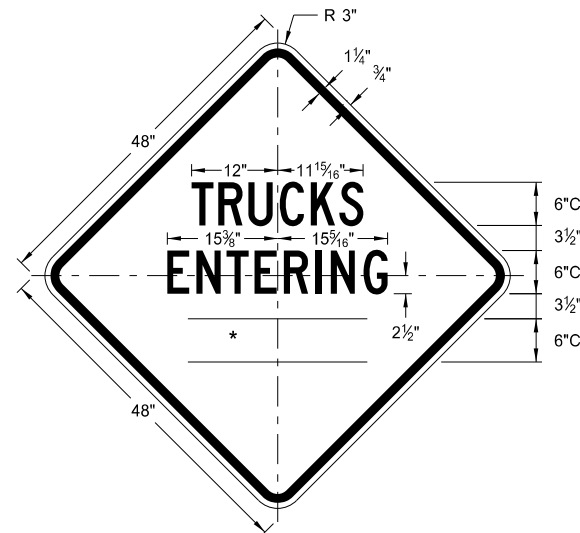
W8-56-48

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Background: orange



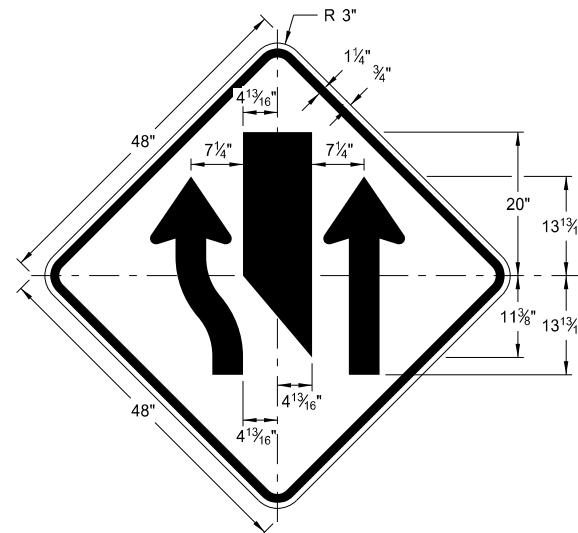
W5-9-48

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Background: orange



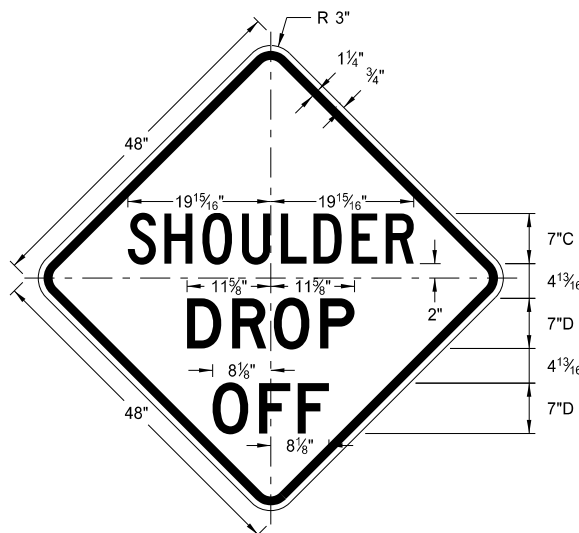
W8-54-48

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Background: orange



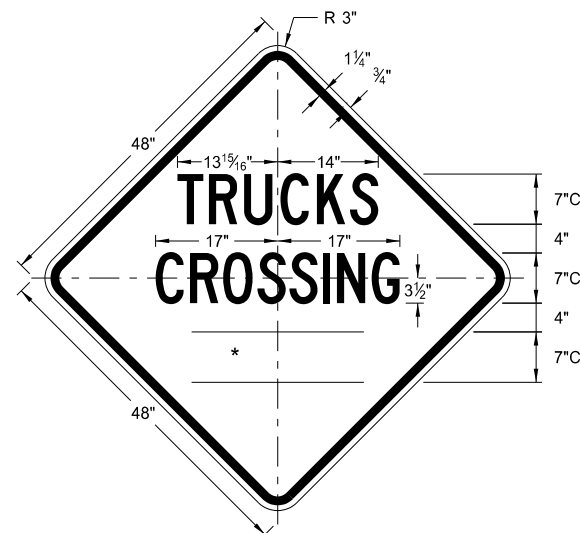
W9-3a-48

Legend: black (non-refl)
Background: orange



W8-9a-48

Legend: black (non-refl)
Background: orange

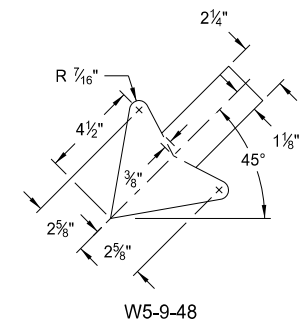


W8-55-48

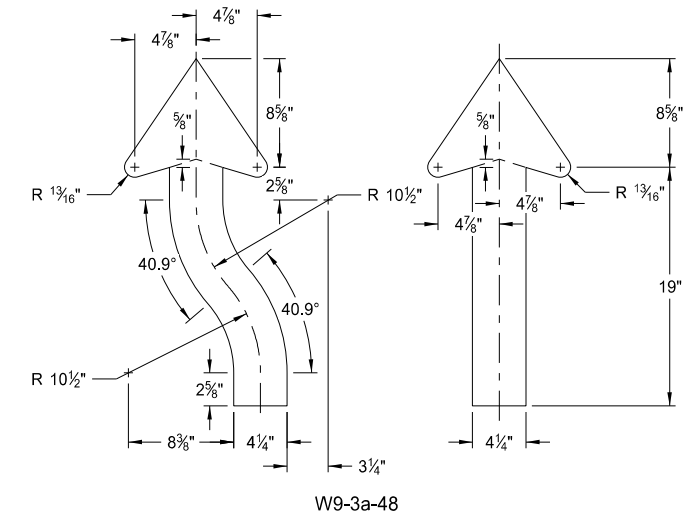
Legend: black (non-refl)
Background: orange

WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
1/2 MILE	Reduce 50%
1 MILE	Standard

* DISTANCE MESSAGES



W5-9-48



W9-3a-48

ARROW DETAILS

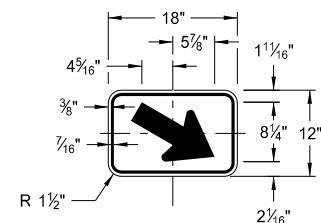
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17	Updated sign number
5-31-18	Revised sign and arrow details
10-03-19	New Design Engineer PE Stamp

This document was originally issued and sealed by
Kirk J Hoff,
Registration Number
PE- 4683,
on 10/03/19 and the original document is stored at the North Dakota Department of Transportation

CONSTRUCTION SIGN DETAILS
WARNING SIGNS

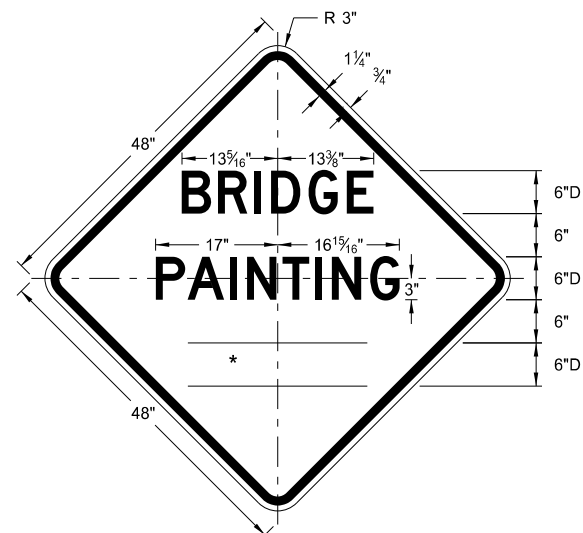
WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
½ MILE	Reduce 50%
1 MILE	Standard

* DISTANCE MESSAGES



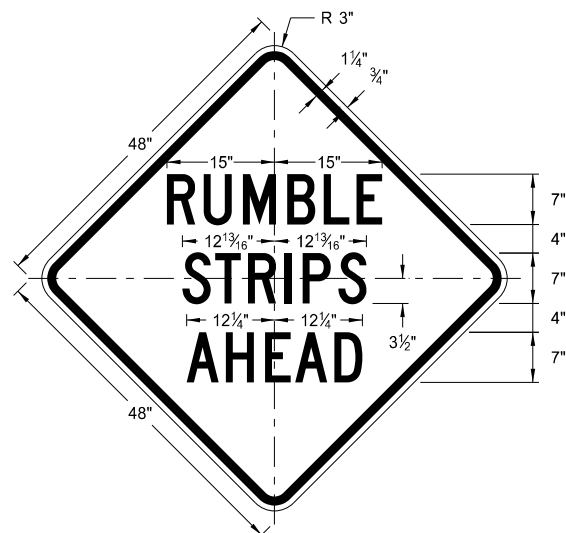
W16-7aP-18

Legend: black (non-refl)
Background: orange



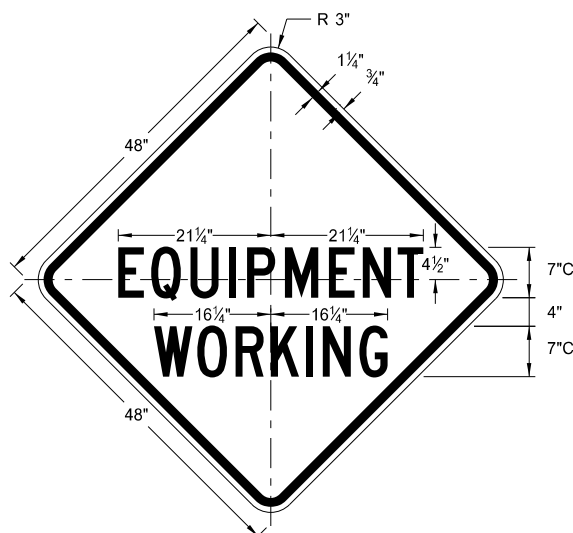
W21-50-48

Legend: black (non-refl)
Background: orange



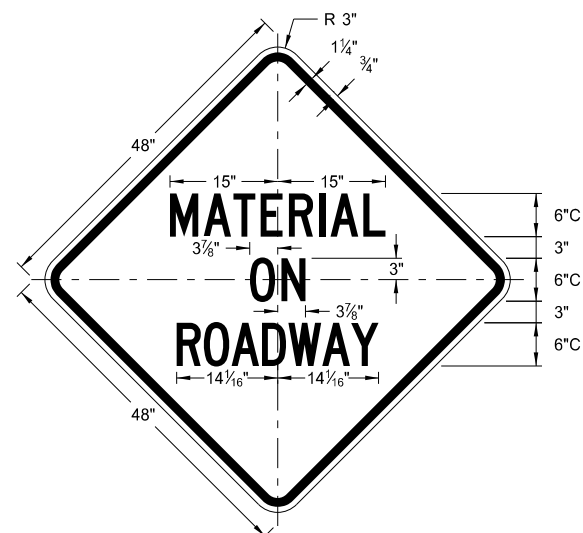
W21-53-48

Legend: black (non-refl)
Background: orange



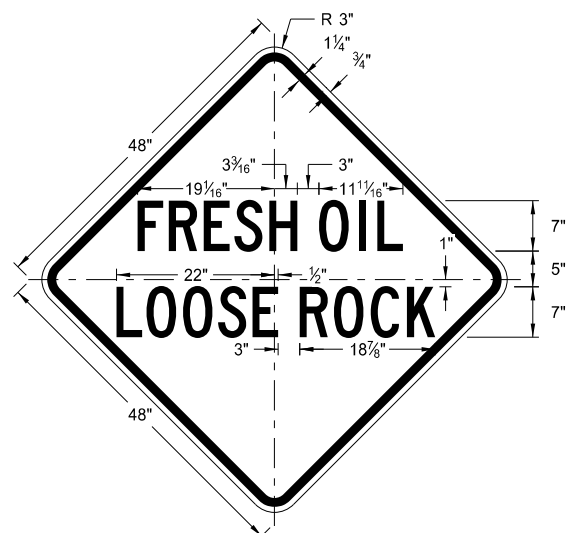
W20-51-48

Legend: black (non-refl)
Background: orange



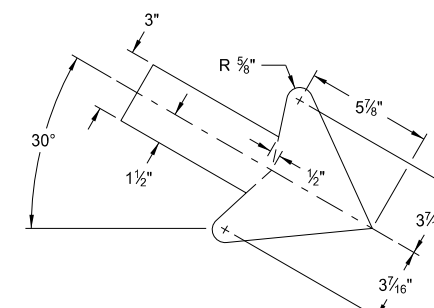
W21-51-48

Legend: black (non-refl)
Background: orange

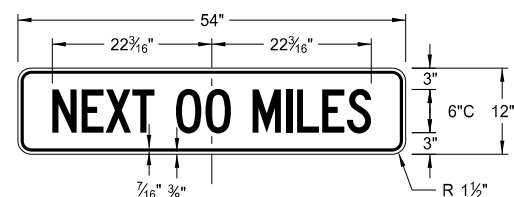


W22-8-48

Legend: black (non-refl)
Background: orange

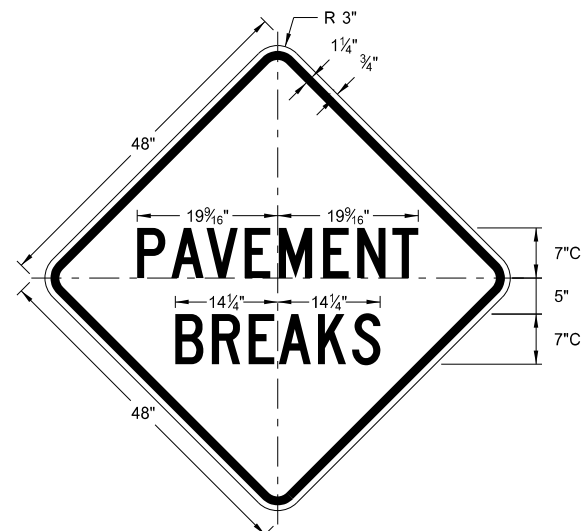


W16-7aP-18



W20-52P-54

Legend: black (non-refl)
Background: orange



W21-52-48

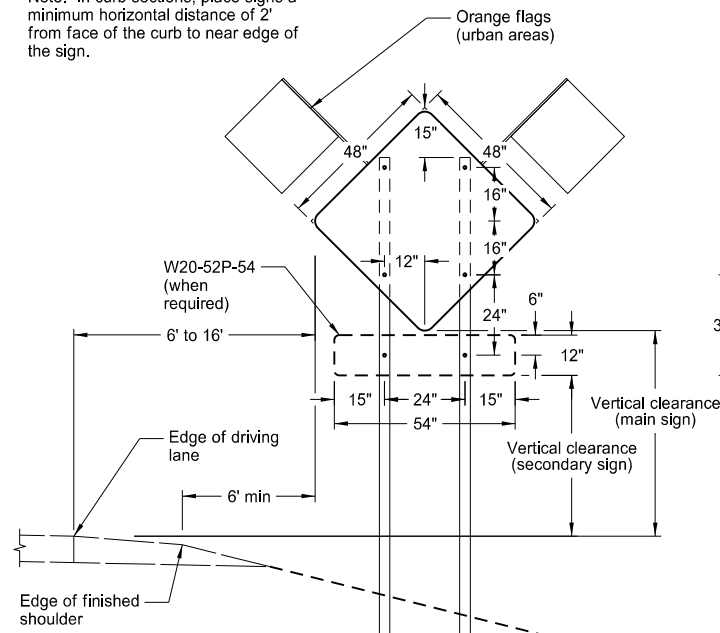
Legend: black (non-refl)
Background: orange

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
5-31-18	
REVISIONS	
DATE	CHANGE
11-01-19	Added details for sign W16-7aP-18.

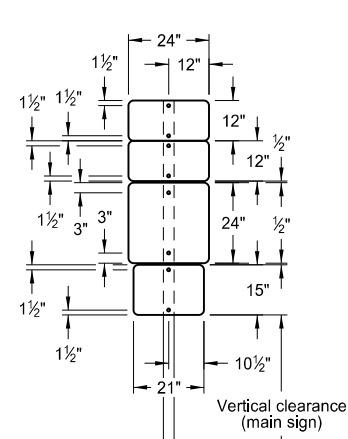
This document was originally issued and sealed by
Kirk J Hoff,
Registration Number
PE- 4683,
on 11/1/19 and the original document is stored at the North Dakota Department of Transportation

CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

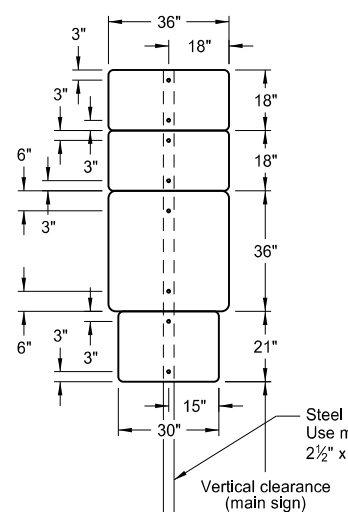
Note: In curb sections, place signs a minimum horizontal distance of 2' from face of the curb to near edge of the sign.



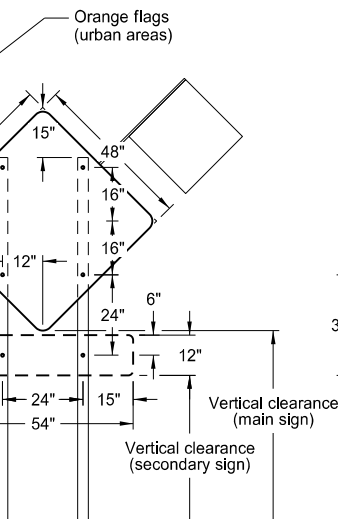
TYPICAL SECTION
(48" x 48" diamond warning sign shown)



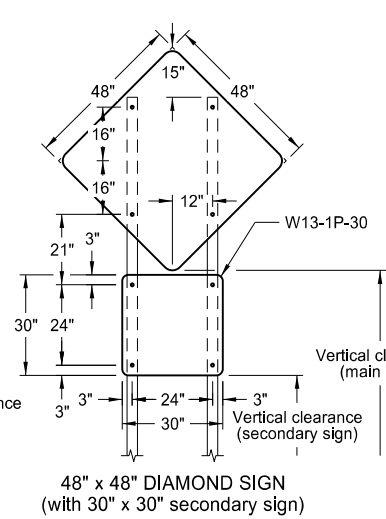
24" x 24" ROUTE MARKER ASSEMBLY



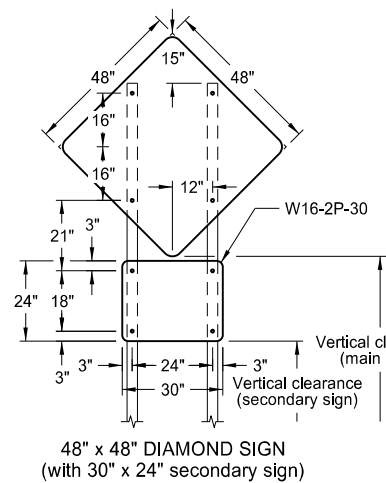
36" x 36" ROUTE MARKER ASSEMBLY



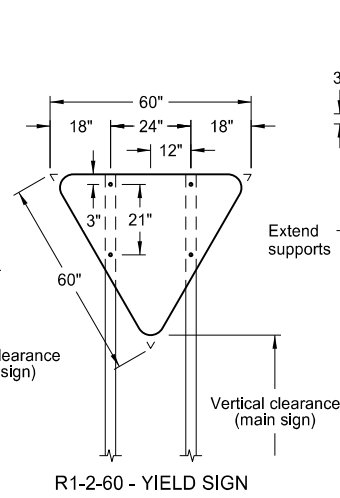
18" x 18" DIAMOND SIGN



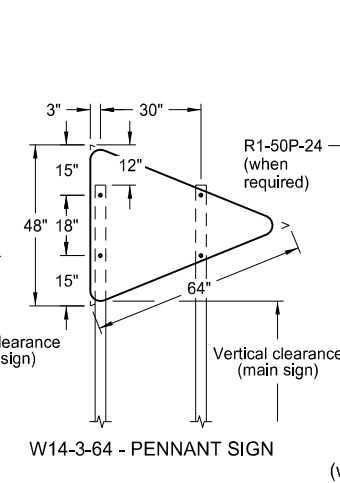
48" x 48" DIAMOND SIGN
(with 30" x 30" secondary sign)



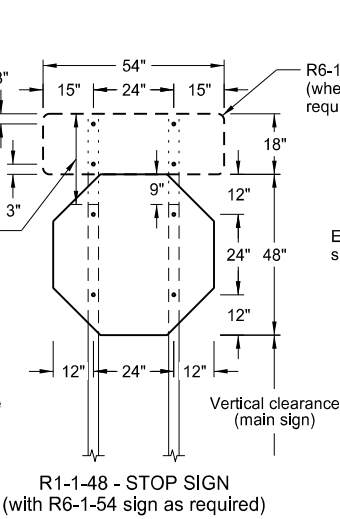
48" x 48" DIAMOND SIGN
(with 30" x 24" secondary sign)



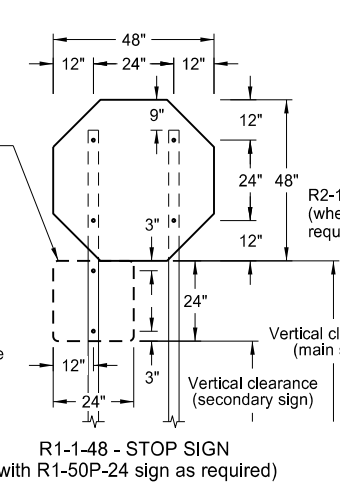
R1-2-60 - YIELD SIGN



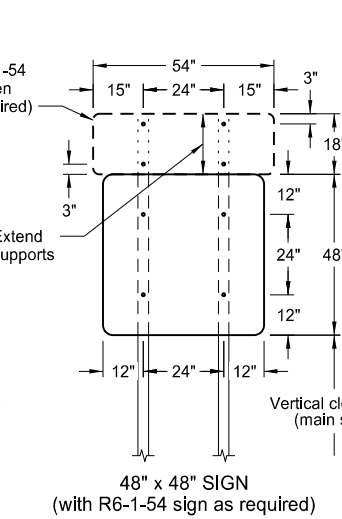
W14-3-64 - PENNANT SIGN



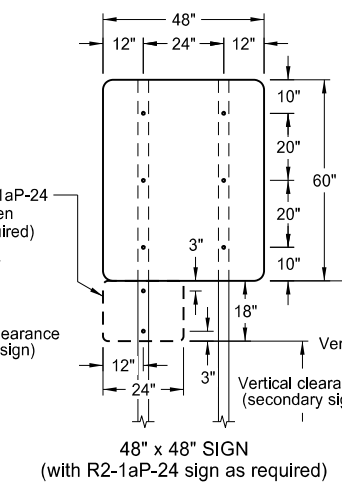
R1-1-48 - STOP SIGN
(with R6-1-54 sign as required)



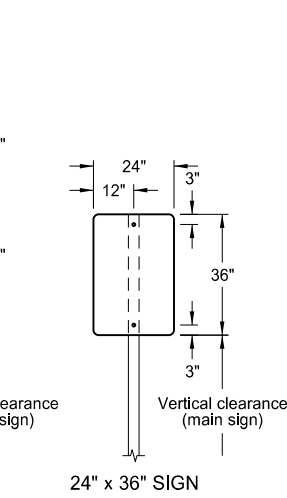
R1-1-48 - STOP SIGN
(with R1-50P-24 sign as required)



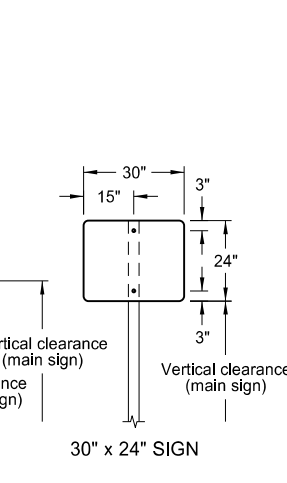
48" x 48" SIGN
(with R6-1-54 sign as required)



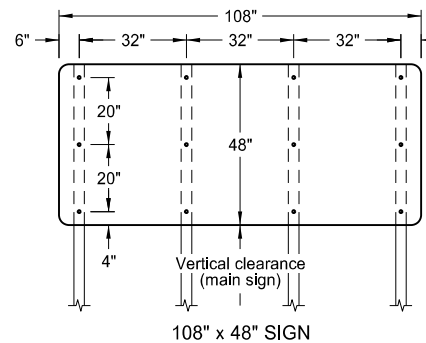
48" x 48" SIGN
(with R2-1aP-24 sign as required)



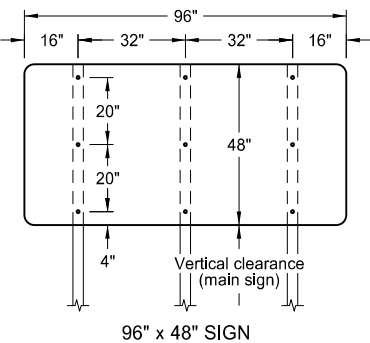
24" x 36" SIGN



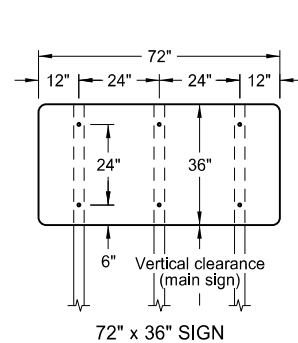
30" x 24" SIGN



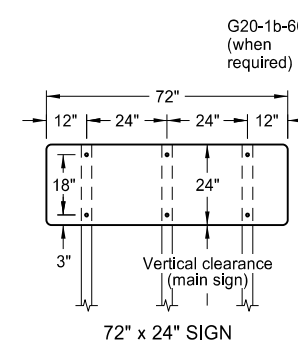
108" x 48" SIGN



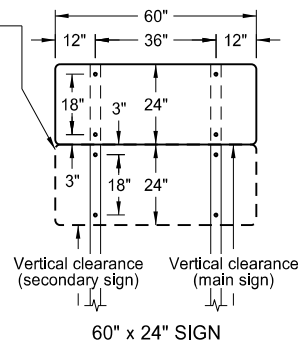
96" x 48" SIGN



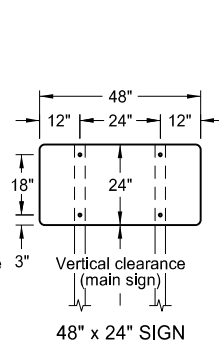
72" x 36" SIGN



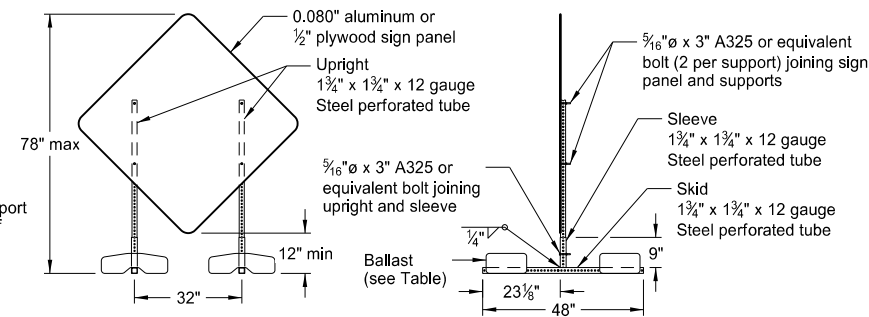
72" x 24" SIGN



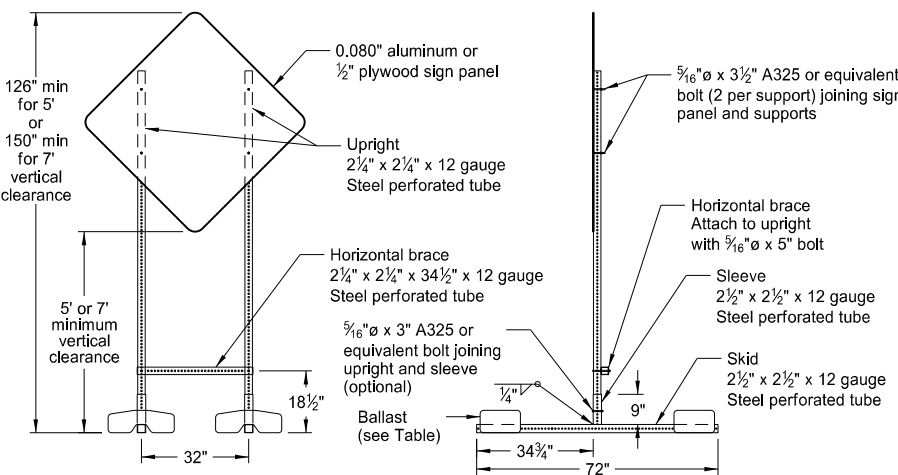
60" x 24" SIGN



48" x 24" SIGN



PORTABLE SIGN SUPPORT
LOW-MOUNTING HEIGHT



PORTABLE SIGN SUPPORT
HIGH-MOUNTING HEIGHT

NOTES:

- 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 2 1/2" x 2 1/2" 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.
- Sign Panels: Provide sign panels made of 0.100" aluminum, 1/2" plywood, or other approved material, except where noted. Punch all holes round for 3/8" bolts.
- 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)
- 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

- 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.

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

Use of low-mounting height (minimum 12" vertical clearance) portable signs for 5 days or less, is allowed as long as the view of the sign is not obstructed. Time delays caused by unforeseen circumstances, such as equipment breakdowns, 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)

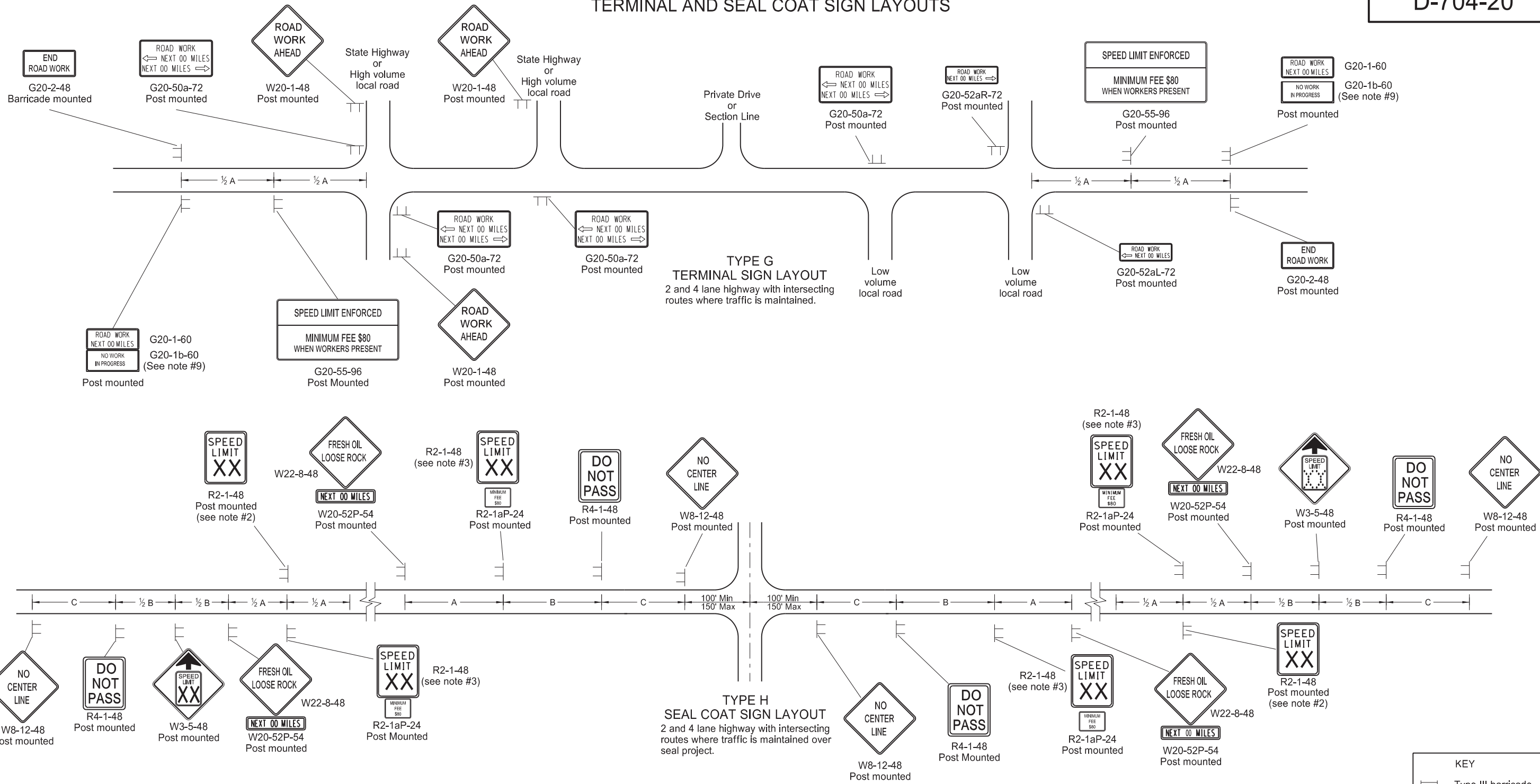
Sign Panel Mounting Height (ft)	Number of 25 lb sandbags for 4' x 4' sign panel
1'	6
5'	8
7'	10

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

TERMINAL AND SEAL COAT SIGN LAYOUTS



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

ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs 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

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

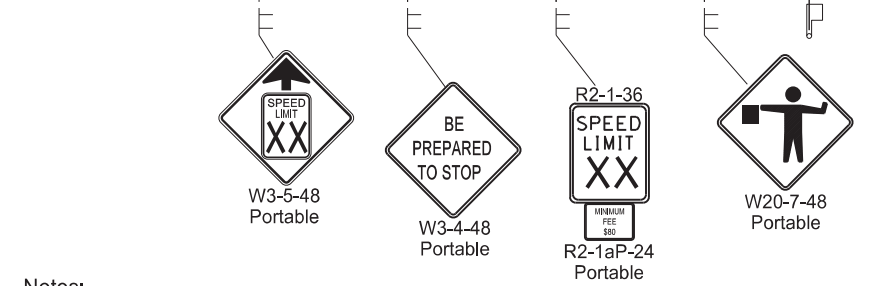
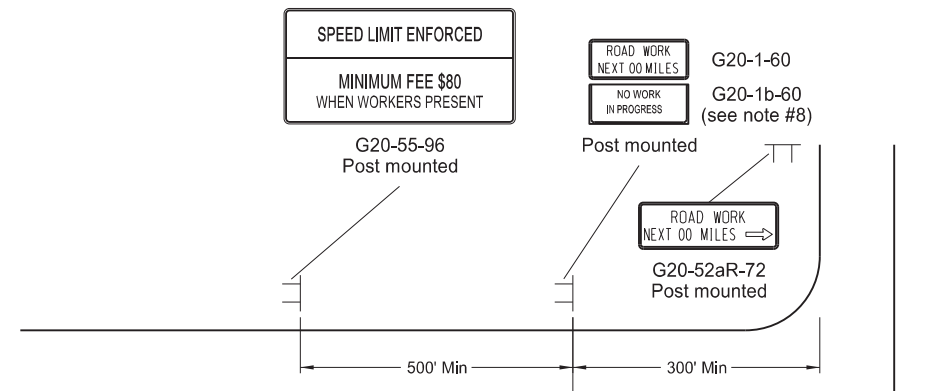
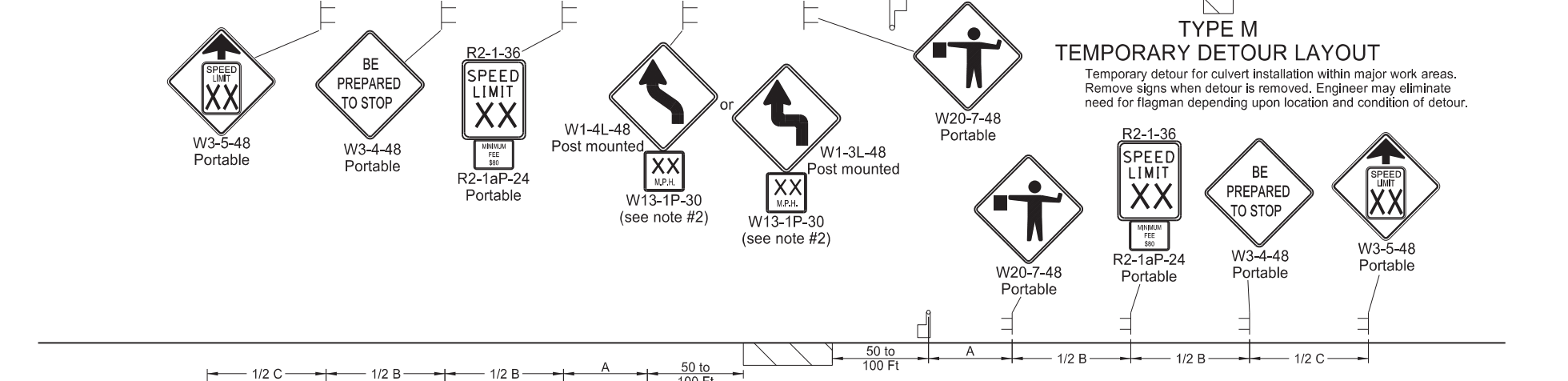
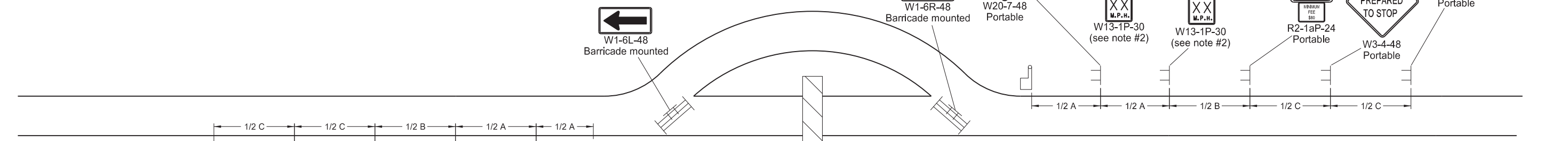
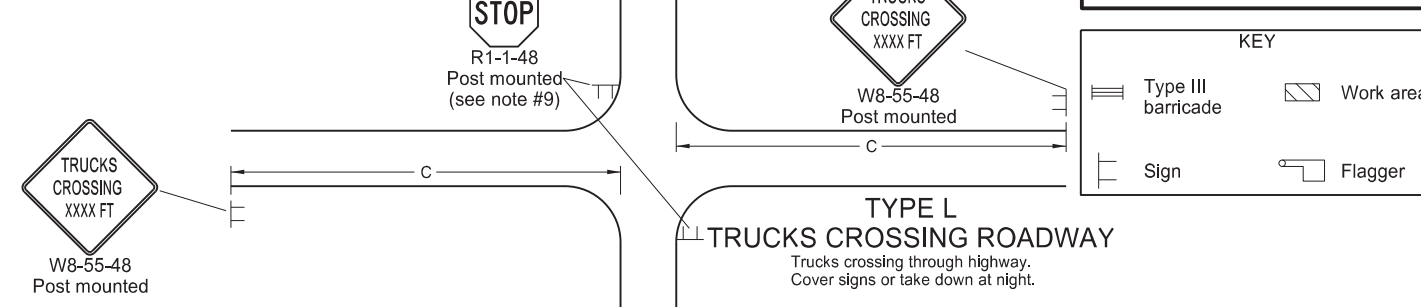
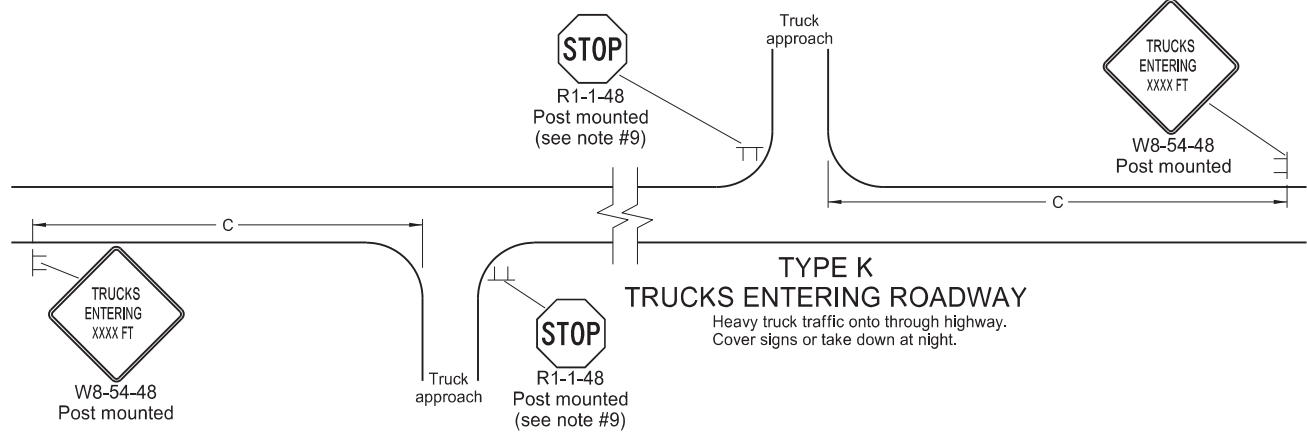


CONSTRUCTION TRUCK AND TEMPORARY DETOUR LAYOUTS

D-704-22

KEY

- Type III barricade
- Sign
- Work area
- Flagger



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

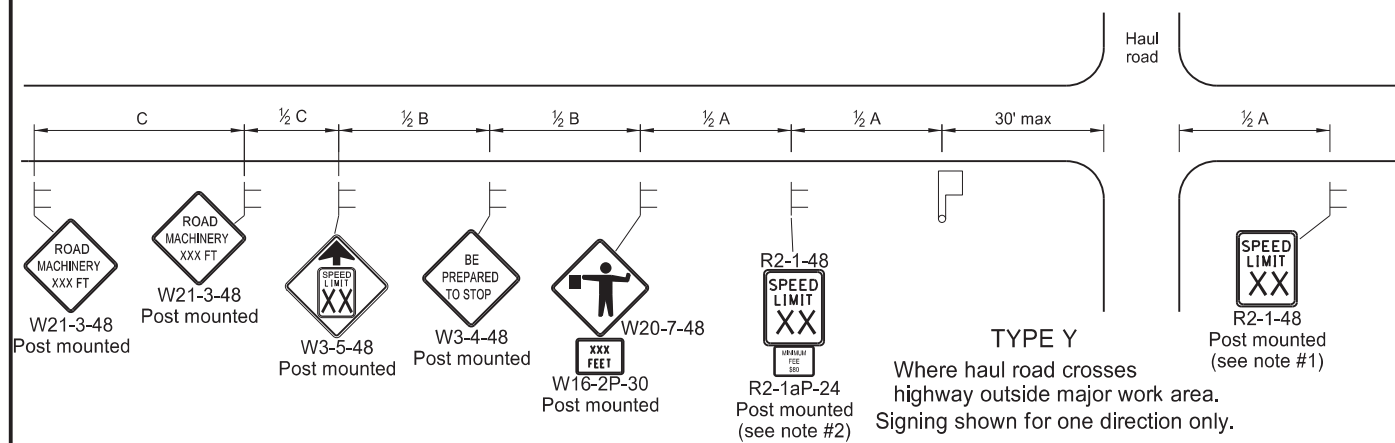
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

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

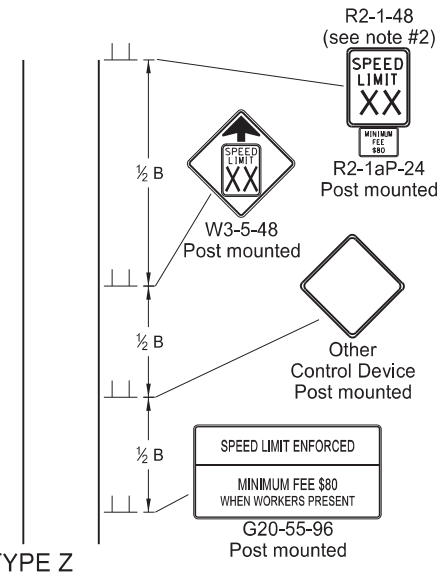


11/29/22

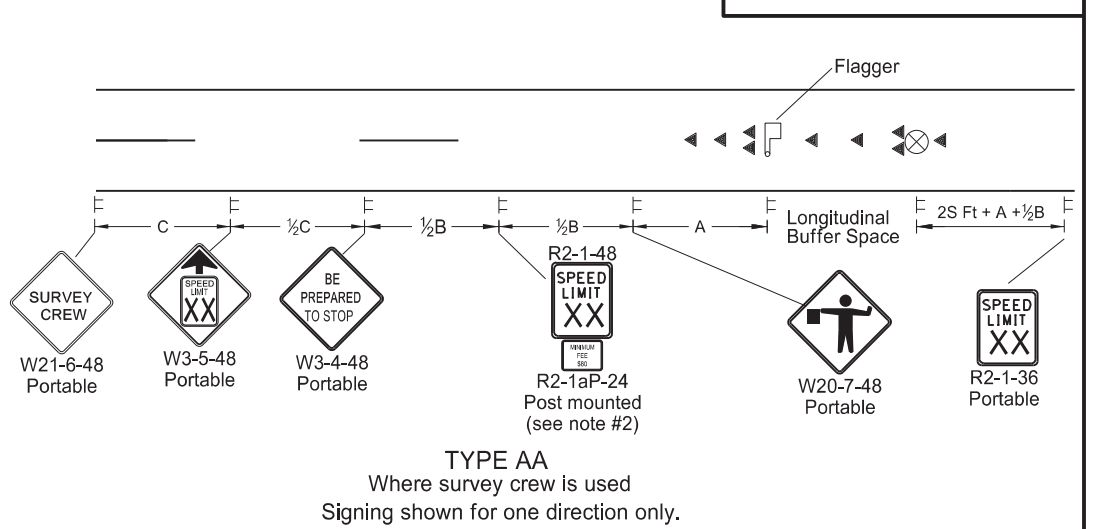
MISCELLANEOUS SIGN LAYOUTS



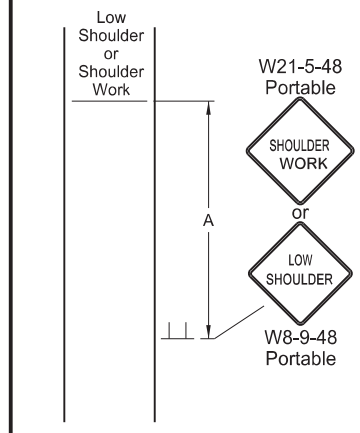
TYPE Y
Where haul road crosses highway outside major work area. Signing shown for one direction only.



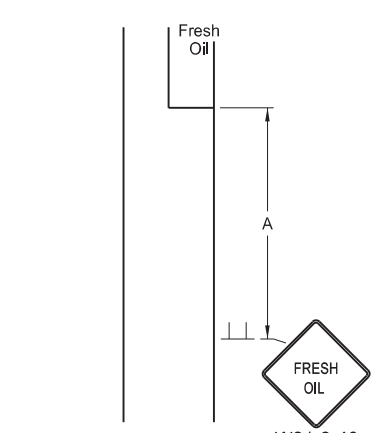
TYPE Z
Where speed zone is needed. Signing shown for one direction only.



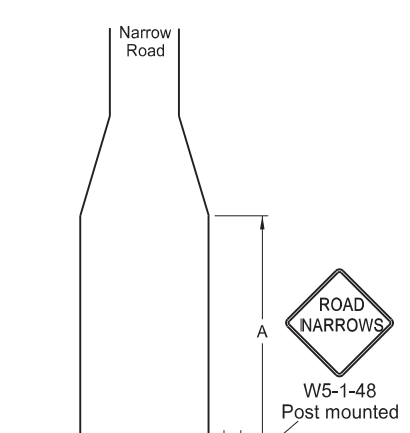
TYPE AA
Where survey crew is used. Signing shown for one direction only.



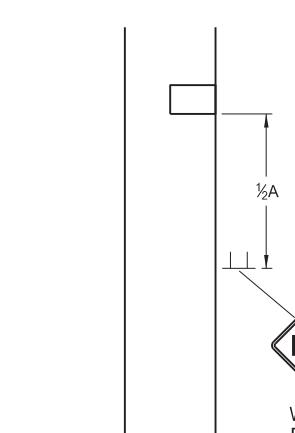
TYPE BB
Within major work area where sign conditions exist



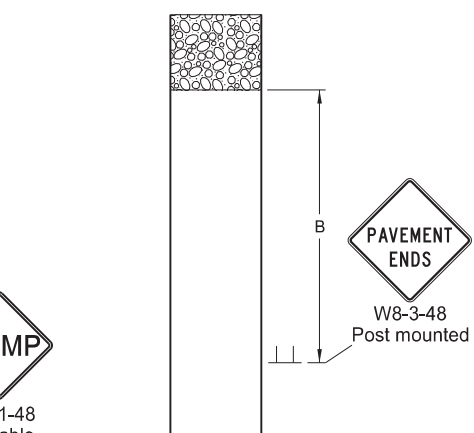
TYPE CC
Where sign conditions exist



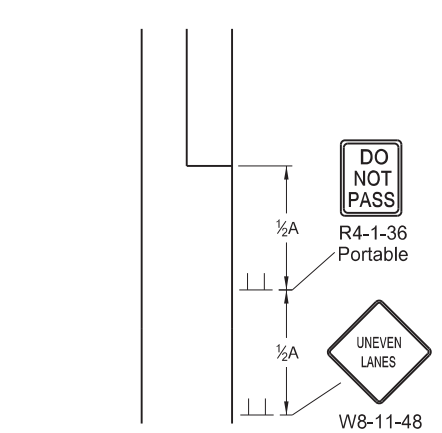
TYPE DD
Where sign conditions exist



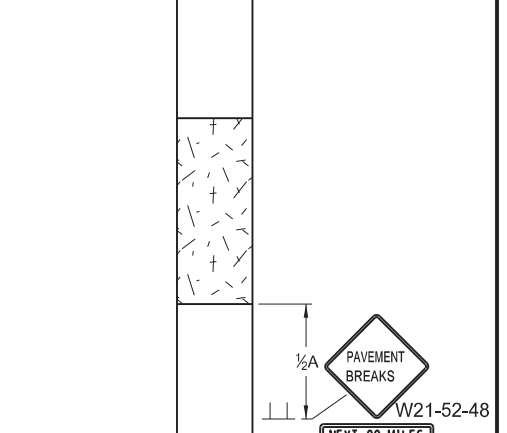
TYPE EE
Where sign conditions exist



TYPE FF
Where sign conditions exist. Signing shown for one direction only.



TYPE GG
Where elevation difference exists between lanes

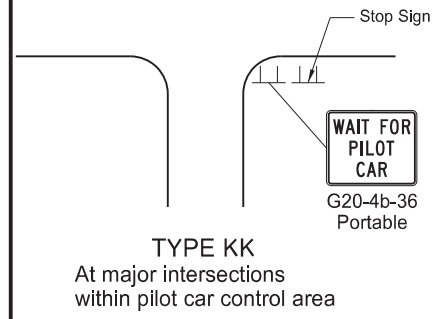


TYPE JJ
For break in pavement. Install signs when conditions exist and remove when not applicable. Signing shown for one direction only.

KEY

- Flagger
- Sign
- Cones
- Survey Equipment

S = Numerical value of speed limit or 85th percentile.



TYPE KK
At major intersections within pilot car control area

- Notes**
1. Re-establish speed limit. Determine exact speed limit in the field, dependent on location and conditions. Determine reduced speed limit based on in-place speed limit before construction. Where speed reductions exceed 30 mph, install a second speed limit sign with the desired speed reduction (not to exceed 30 mph.) Place the second speed limit sign at 1/2 B.
 2. 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.
 3. Cover existing speed limit signs within reduced speed zones.
 4. As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
 5. Sign G20-55-96 is not required if this standard is part of other traffic control layouts, or work is less than 15 days.
 6. When pilot car operation is used, place sign G20-4b-36 "Wait For Pilot Car" at major intersections within pilot car control area.
 7. Recommend 40 mph speed limit in vicinity of workers, unless location and conditions dictate otherwise.
 8. Layouts shown for one direction only.
 - 9.

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

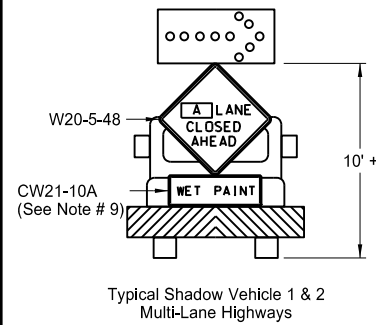
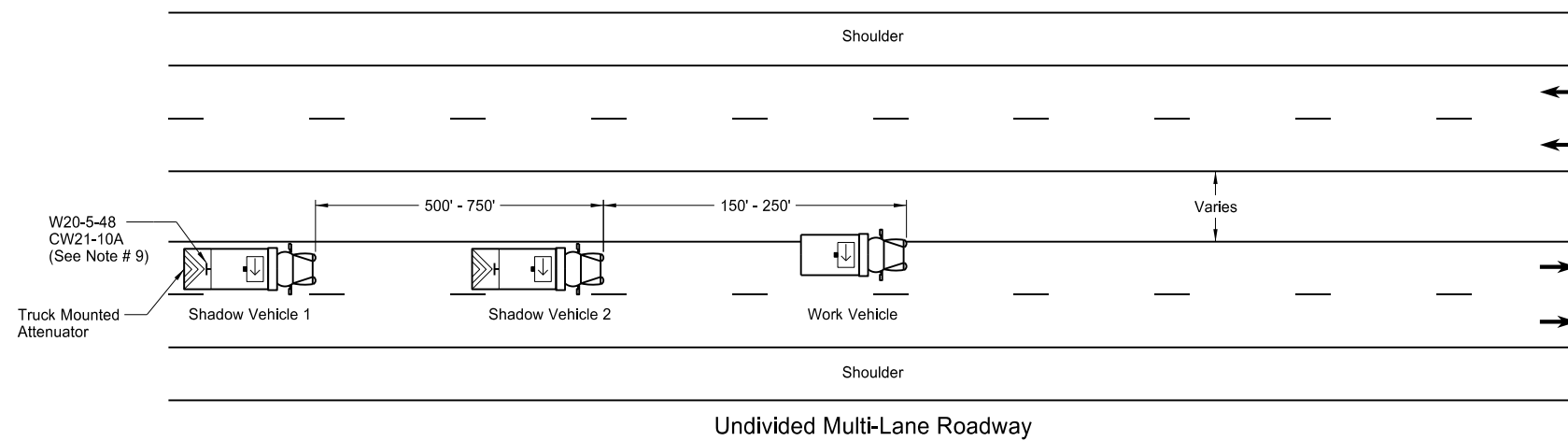
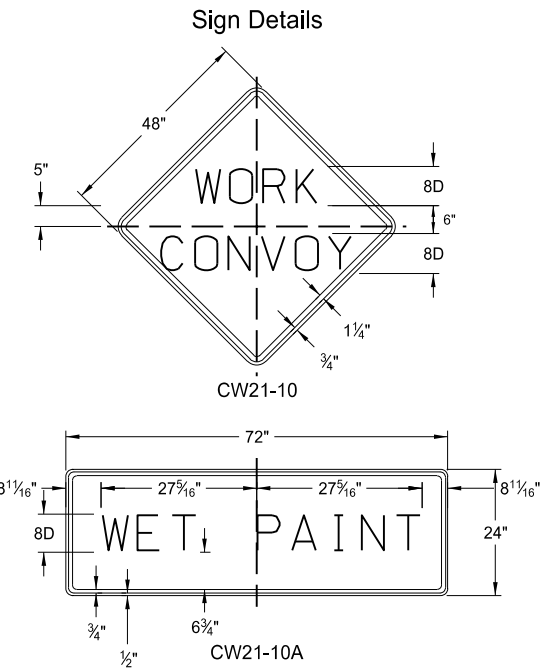
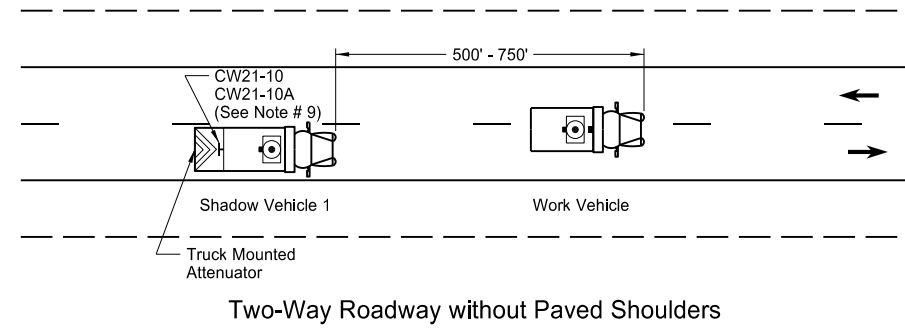
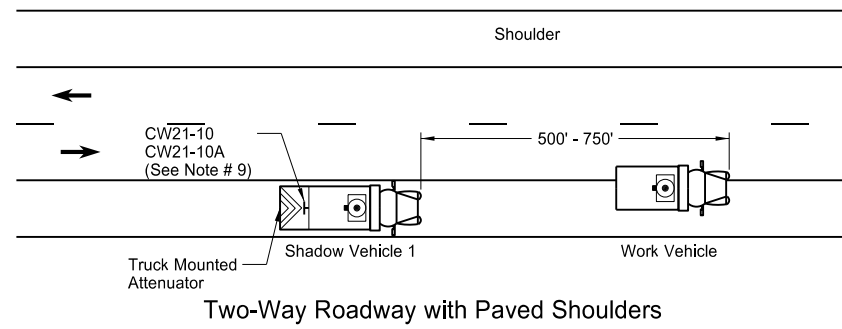
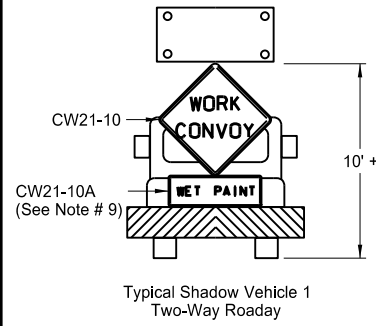
* Posted speed, off-peak 85th percentile speed prior to work starting, or the anticipated operating speed in mph.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE
8-17-17	Added speed limit signs. Updated notes & sign numbers.
11-01-19	Revised note 5 & sign numbers.
2-23-23	Revised distance & removed signs.

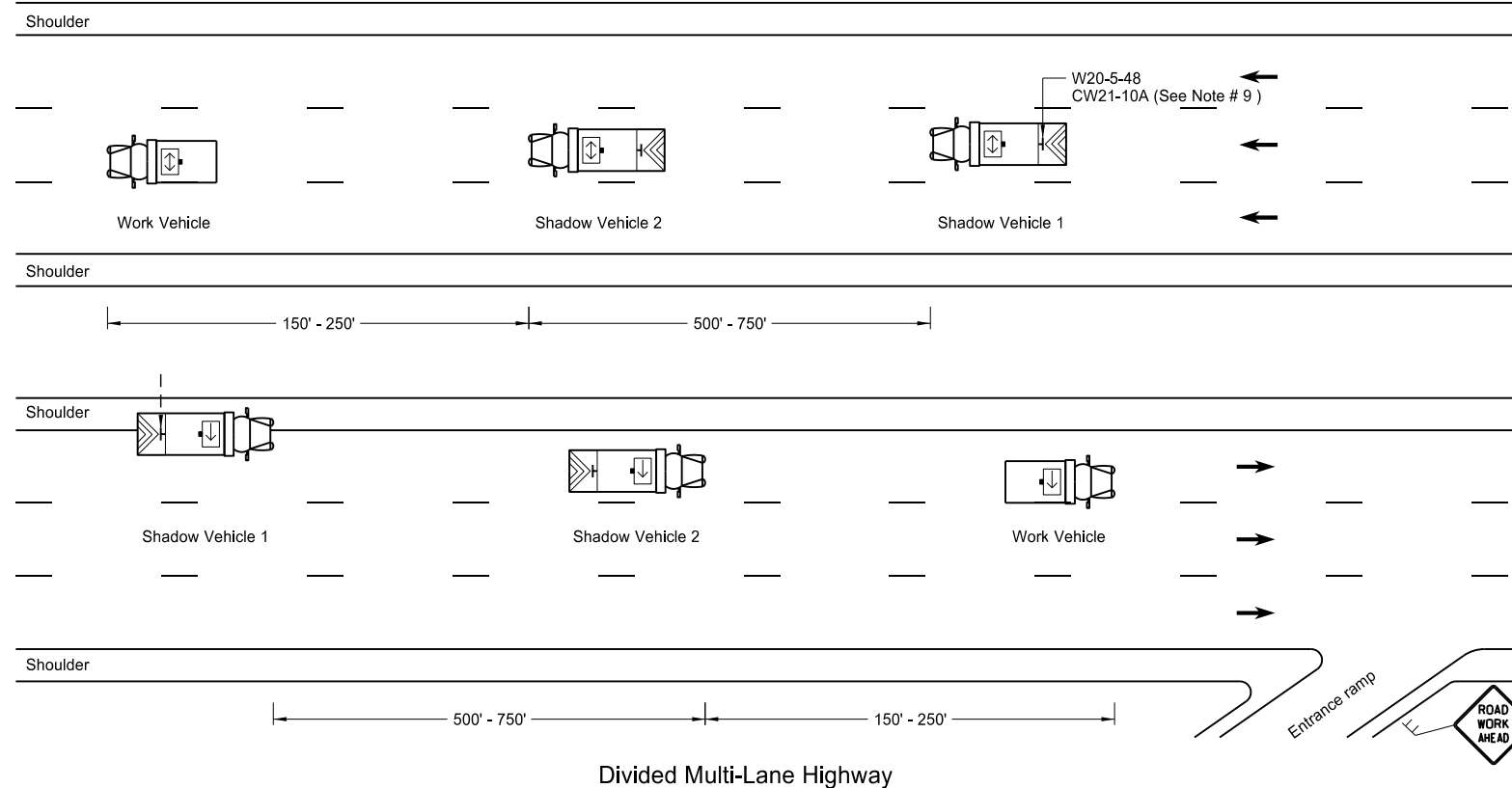


02/23/23

MOBILE OPERATION
(PAVEMENT MARKING)

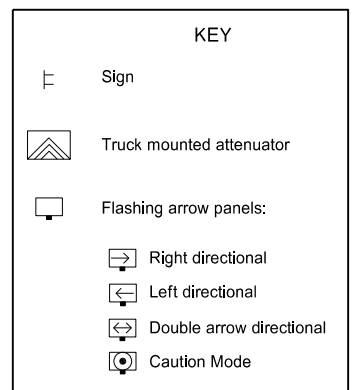


A = Left Right Center



Notes

- Use additional vehicles you choose to be in the convoy with truck mounted attenuators, at your own expense.
- Display yellow rotating beacons or strobe lights on shadow and work vehicles, unless otherwise stated in the plans.
- Use Type B or Type C flashing arrow panels controlled from inside the vehicle.
- Provide each vehicle with two-way electronic communication capability.
- Move shadow vehicle 1 first to shadow other convoy vehicles when convoy changes lane.
- 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.
- Sign Colors
Letters = Black
Border = Black
Background = Orange
- As an option, use shadow vehicle 2 the paint tender vehicle.
- Use sign CW21-10A only during painting operation.
- Pull over work and shadow vehicles periodically to allow motor vehicle traffic to pass on two lane - two way roadways.



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

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

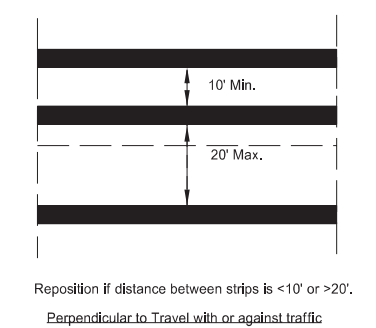
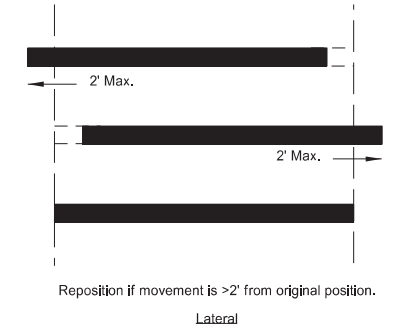
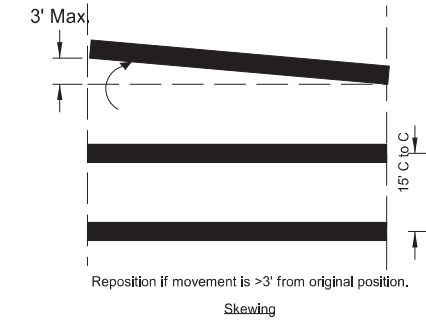
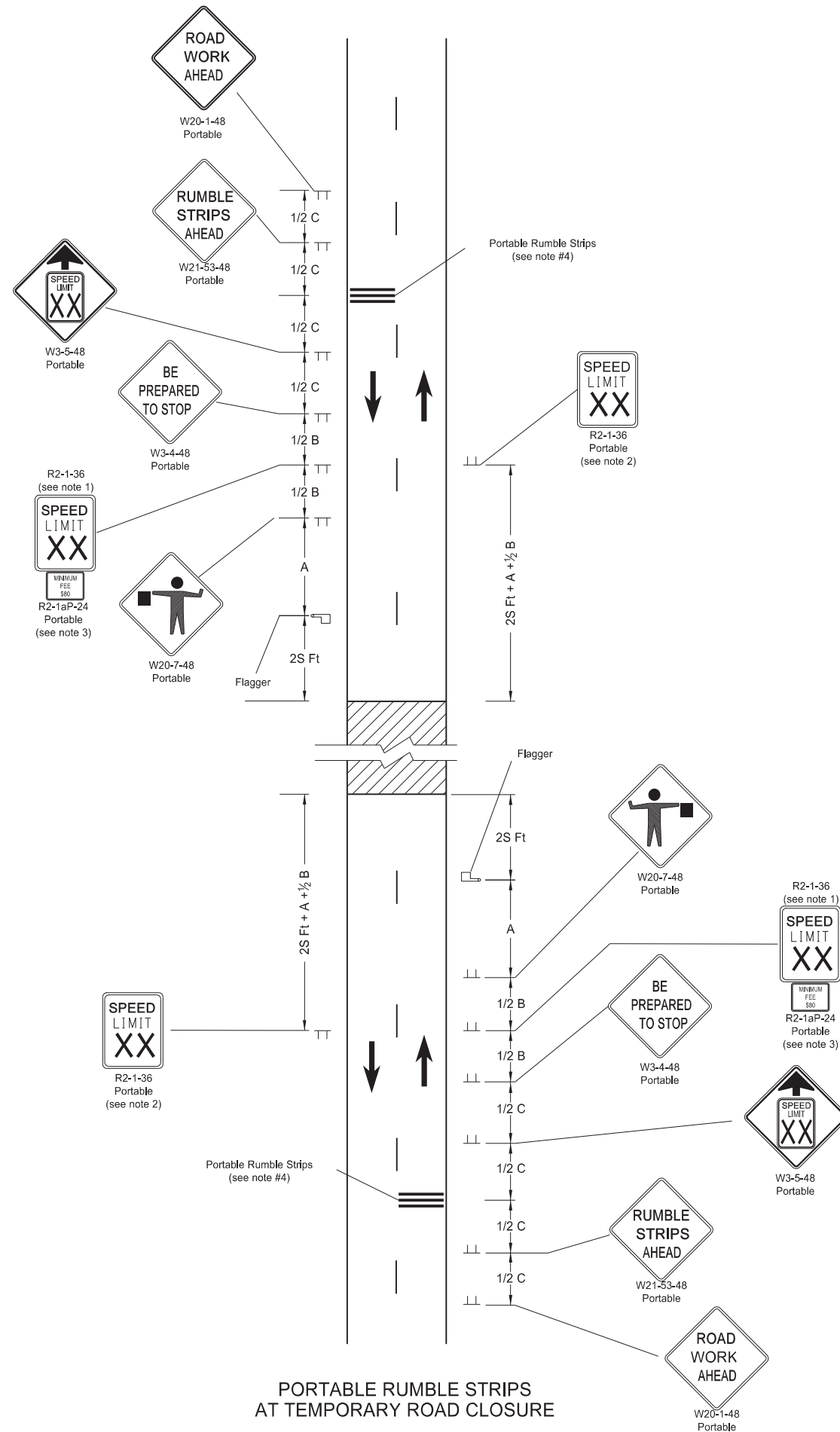
Two-Lane Roadway Portable Rumble Strips

KEY

	Work area
	Flagger
	Sign

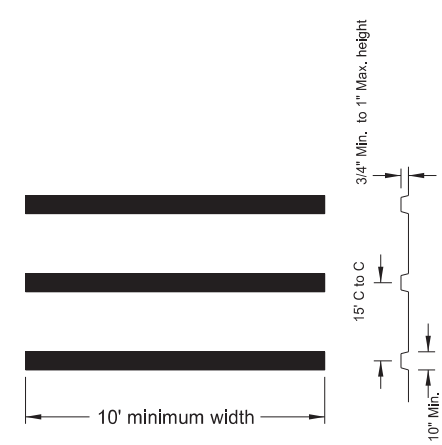
S = Numerical value of speed limit or 85th percentile.

ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - High Speed (over 45 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720



PORTABLE RUMBLE STRIPS ARRAY TYPES OF MOVEMENT AND MAXIMUM ALLOWANCES

- Notes:
- Determine speed in the field based on location and conditions.
 - Re-establish the speed limit. Determine the exact speed limit in the field, dependent on location and conditions.
 - Sign R2-1aP-24 is not required when pilot car operation is used.
 - Do not use rumble strips on a non paved surface or in a pre-construction speed zone of 45 mph or less.



PORTABLE RUMBLE STRIPS ARRAY DETAIL

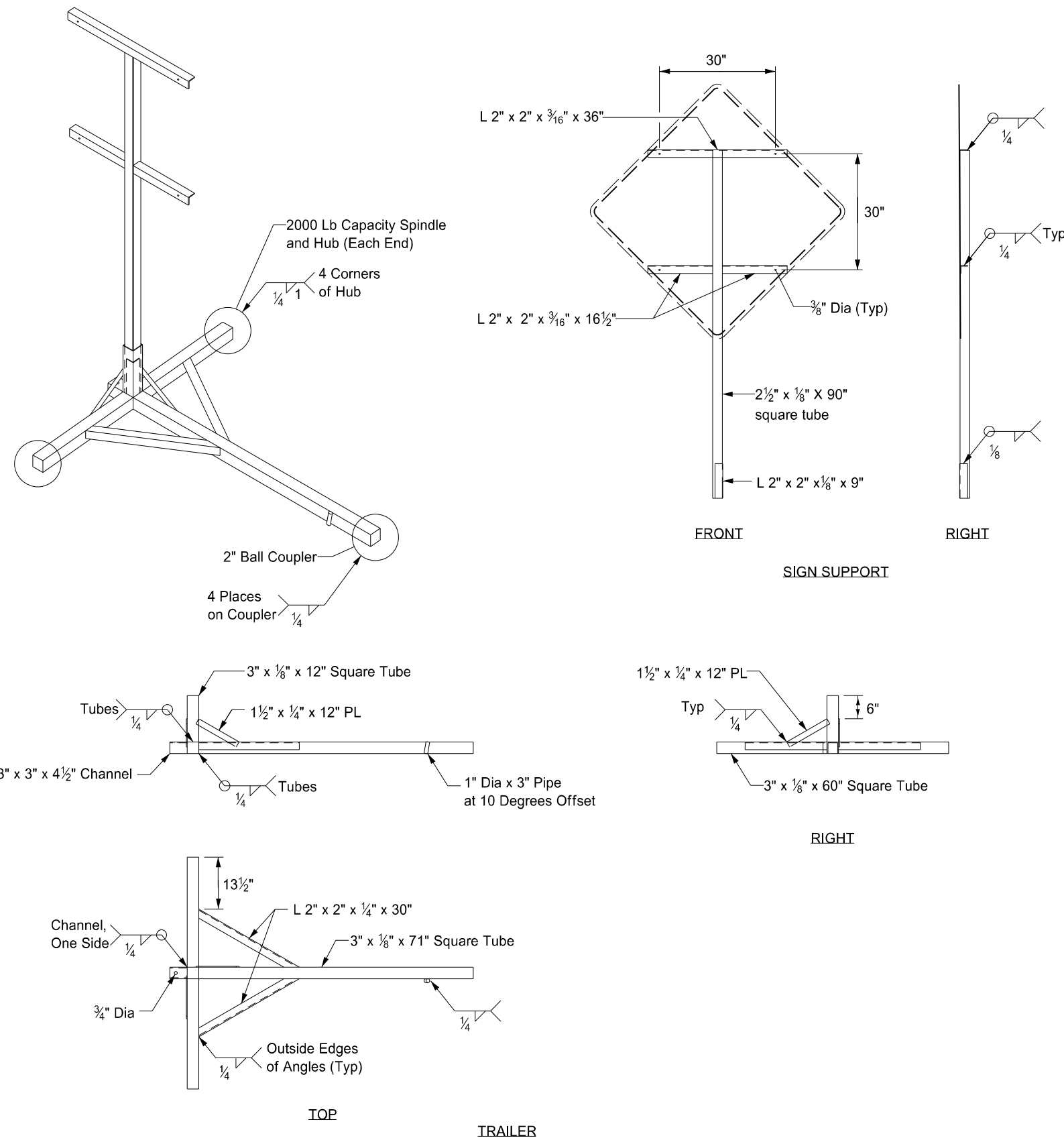
PORTABLE RUMBLE STRIPS AT TEMPORARY ROAD CLOSURE

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		
02-22-22 REVISIONS		
DATE	CHANGE	<p>03/07/23 Use changed to min 45 mph.</p>
03/07/23		

03/07/23

PORTABLE SIGN SUPPORT ASSEMBLY

D-704-50



Notes:

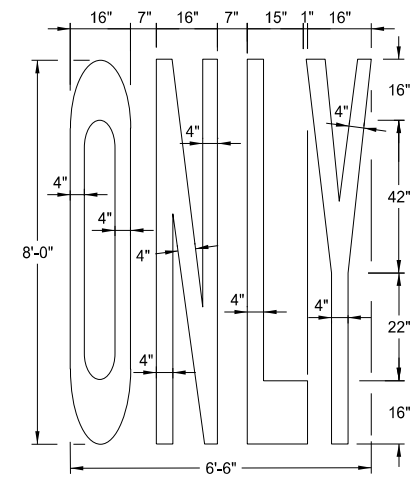
- ① Maximum 250 pound weight of assembly.
- ② Use a 14" wheel and tire.
- ③ Use no automotive and equipment axle assemblies for trailer-mounted sign supports.
- ④ Other NCHRP 350 or MASH crash tested assemblies are acceptable.

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

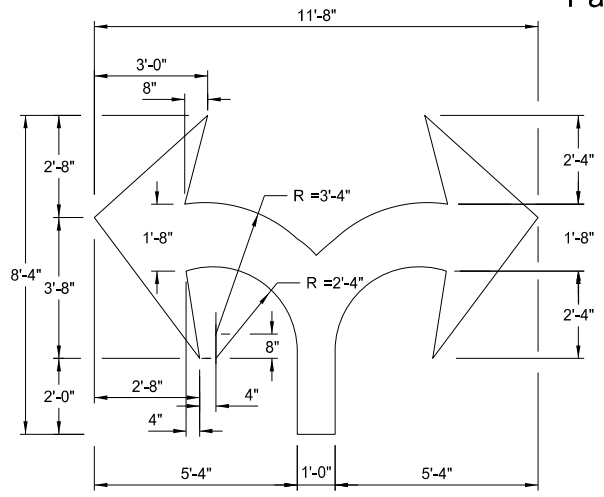
KIRK J. HOFF
 REGISTERED
 PROFESSIONAL
 PE-4683
 ENGINEER
 NORTH DAKOTA
 12 02 2020

Pavement Marking Message Details

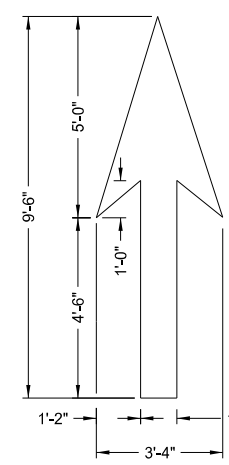
D-762-1



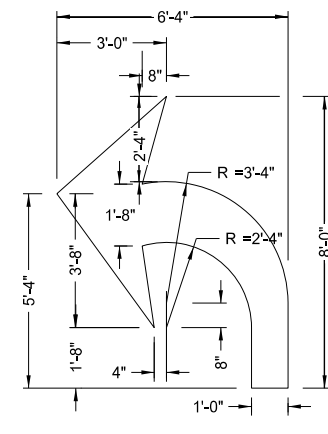
22 S. F.



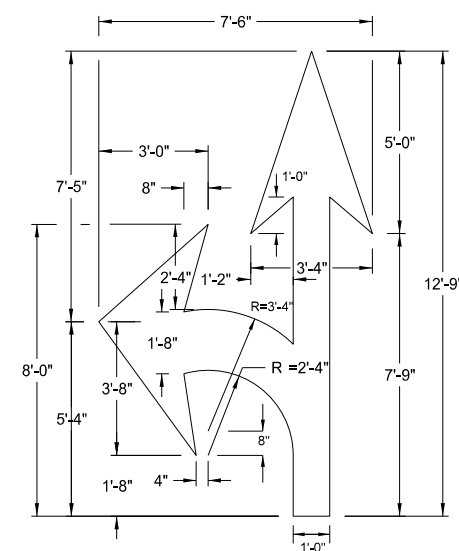
29 S. F.



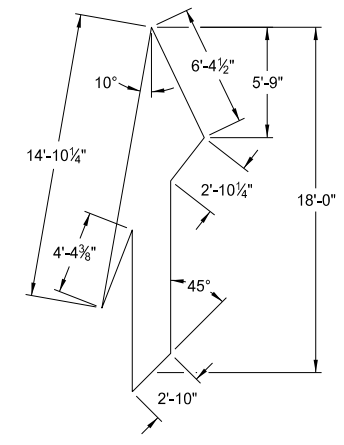
12 S. F.



16 S. F.

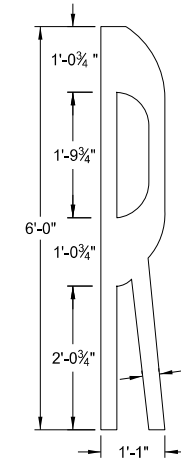


27 S. F.

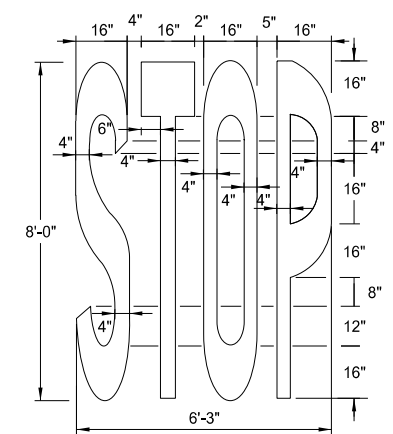


41 S. F.

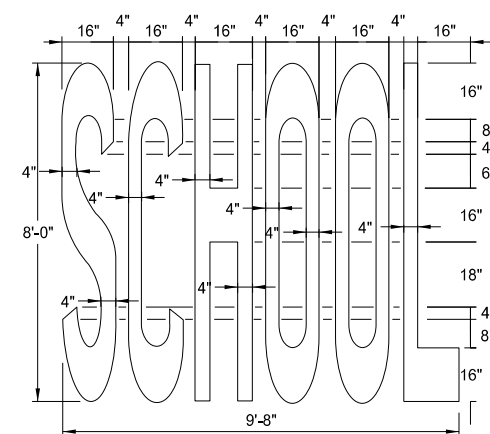
Note: Rotate merge arrow 20° from edge of roadway.



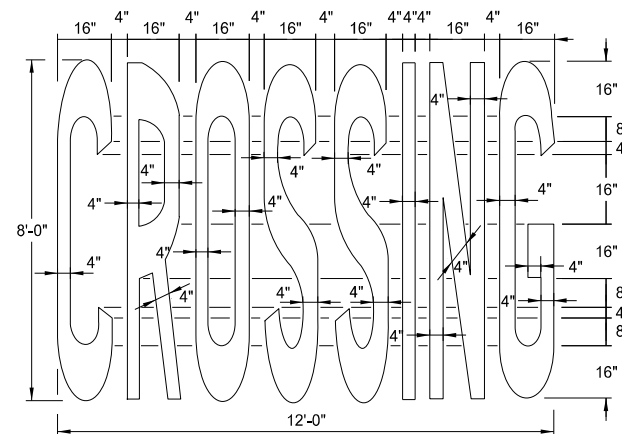
4 S. F.



22 S. F.



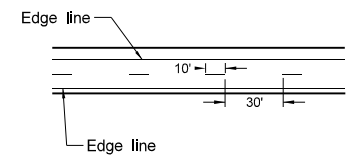
34.5 S. F.



46 S. F.

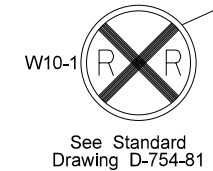
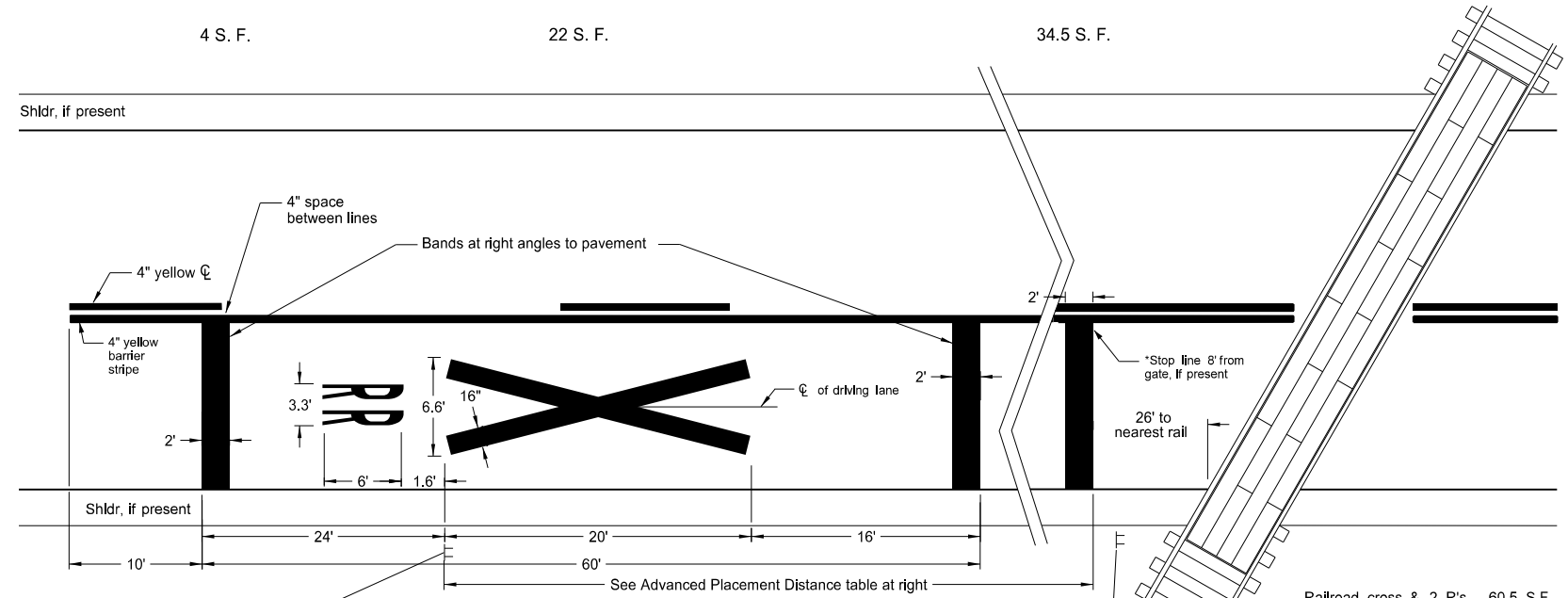
Speed Limit	Chevron Width	Chevron Spacing 45° to Traffic
0-25 mph	8"	5'
30-40 mph	8"	15'
45 mph and above	12"	25'

Chevron Crosshatching Table

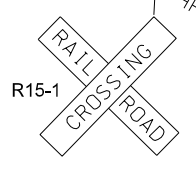


Centerline Pavement Marking Skip Spacing Detail

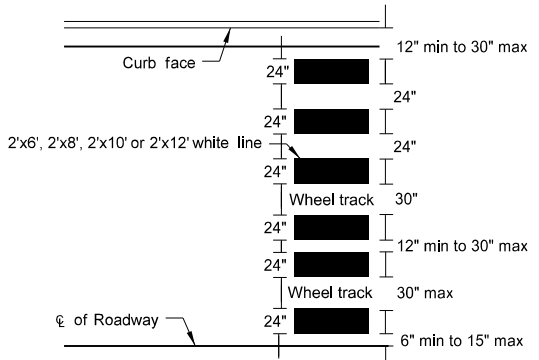
Advance Placement Distance for Railroad Warning Signs	
Posted or 85th Percentile Speed	Advance Distance
20 mph	min. 100 ft
25 mph	min. 100 ft
30 mph	min. 100 ft
35 mph	min. 100 ft
40 mph	125 ft
45 mph	175 ft
50 mph	250 ft
55 mph	325 ft
60 mph	400 ft
65 mph	475 ft
70 mph	550 ft



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.



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



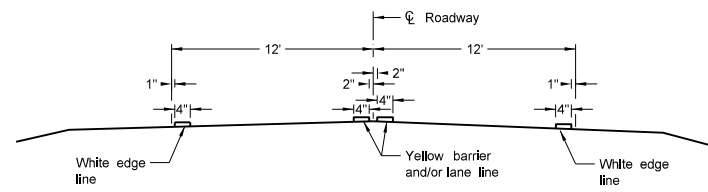
Continental Crosswalk Detail

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.

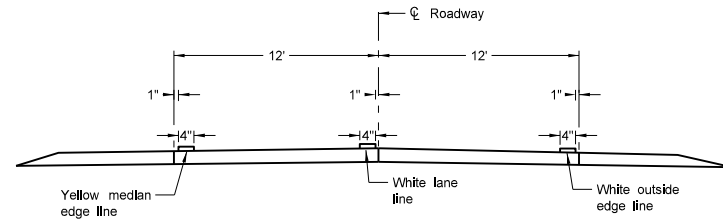
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Registration Number
PE-4683,
on 1/28/2020 and the original document is stored at the North Dakota Department of Transportation

PAVEMENT MARKING

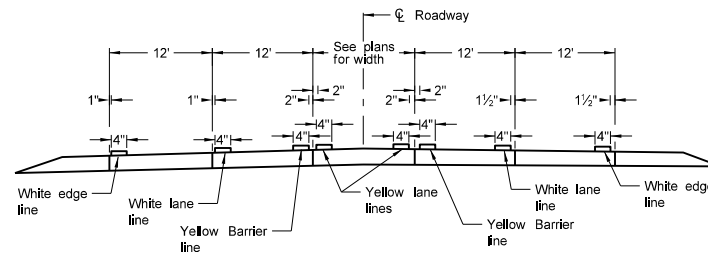
D-762-4



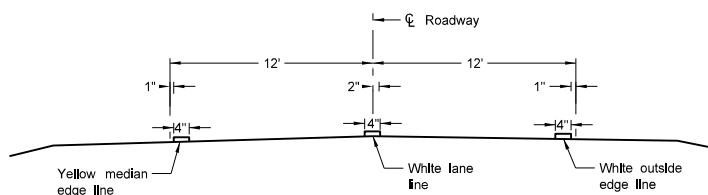
Two Lane Two Way
RURAL ROADWAY



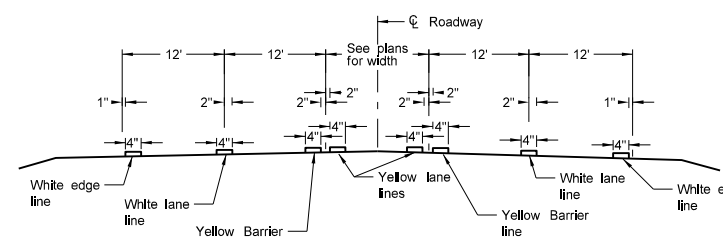
Two Lane Roadway
INTERSTATE HIGHWAY
Concrete Section



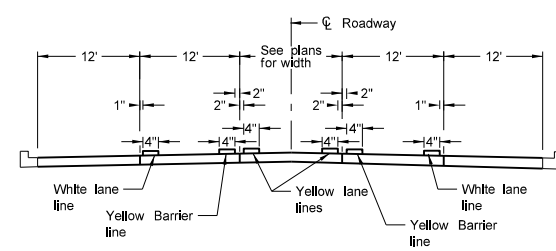
RURAL FIVE LANE ROADWAY
Concrete Section



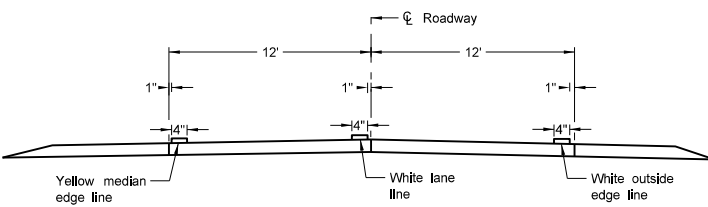
Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Asphalt Section



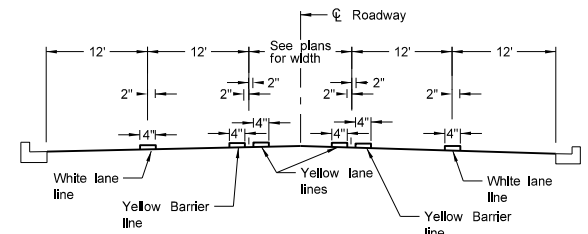
RURAL FIVE LANE ROADWAY
Asphalt Section



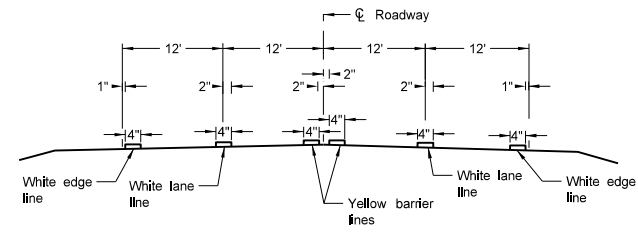
URBAN FIVE LANE SECTION
Concrete Section



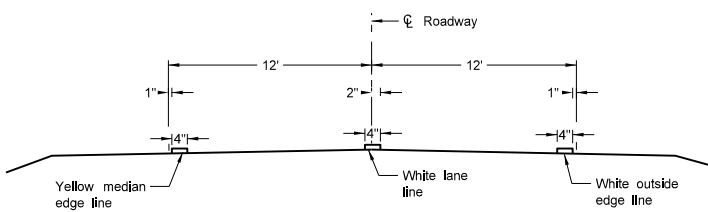
Two Lane Roadway
PRIMARY HIGHWAY
Concrete Section



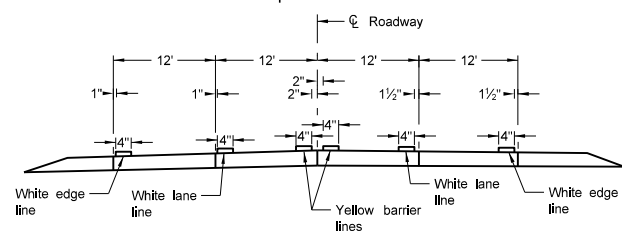
URBAN FIVE LANE SECTION
Asphalt Section



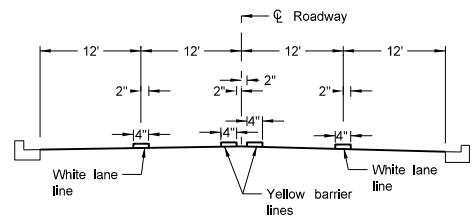
RURAL FOUR LANE ROADWAY
Asphalt Section



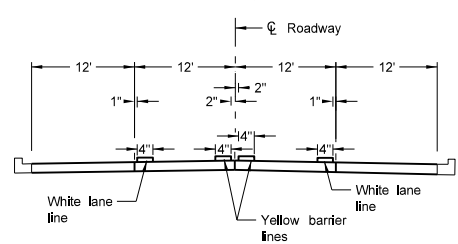
Two Lane Roadway
INTERSTATE HIGHWAY
Asphalt Section



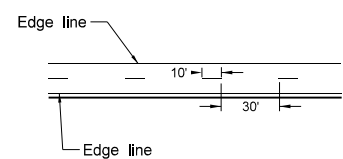
RURAL FOUR LANE ROADWAY
Concrete Section



URBAN FOUR LANE SECTION
Asphalt Section



URBAN FOUR LANE SECTION
Concrete Section



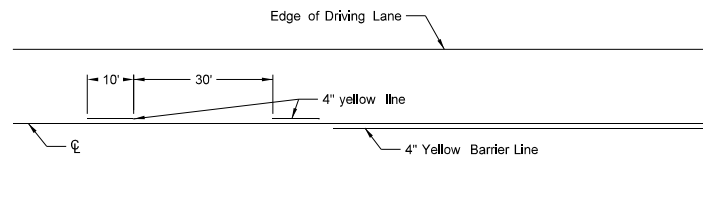
CENTERLINE PAVEMENT MARKING SKIP SPACING DETAIL

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

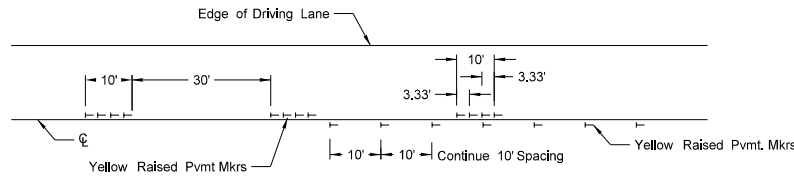
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-1-10	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
08-27-19	New Design Engineer PE Stamp.

This document was originally issued and sealed by
Kirk J Hoff,
Registration Number
PE-4683,
on 8/27/19 and the original document is stored at the North Dakota Department of Transportation

SHORT-TERM PAVEMENT MARKING

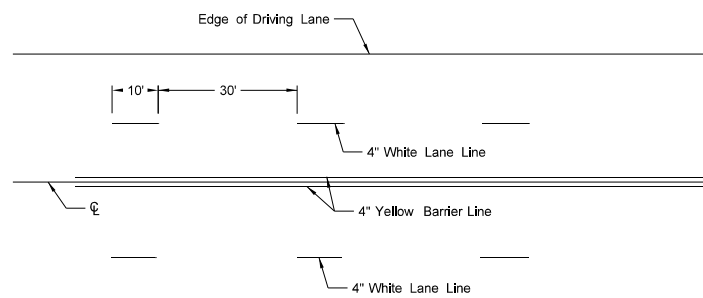


Painted or Tape Lines

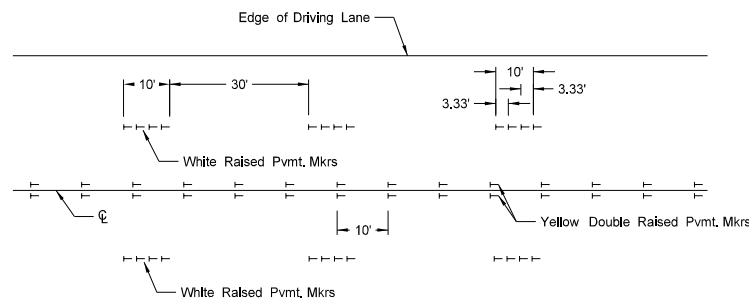


Raised Pavement Markers

TWO-LANE TWO-WAY ROADWAY

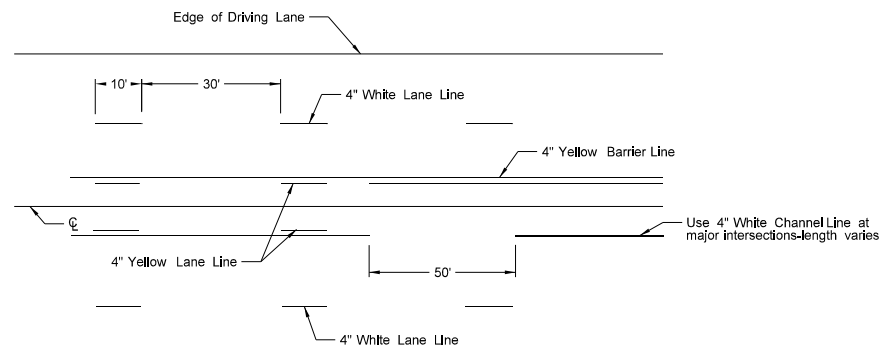


Painted or Tape Lines

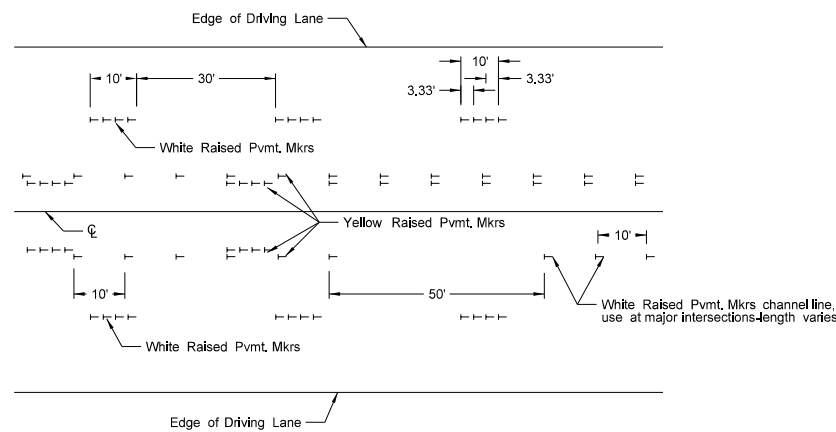


Raised Pavement Markers

FOUR LANE ROADWAY

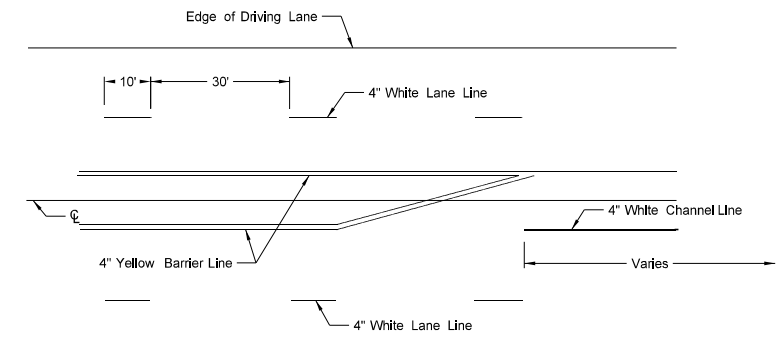


Painted or Tape Lines

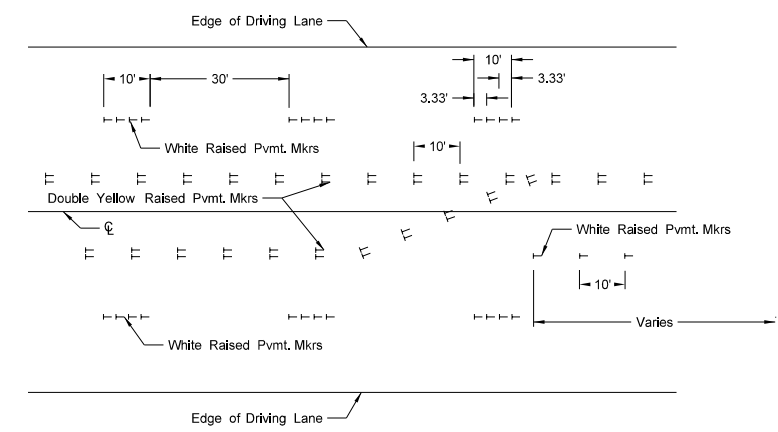


Raised Pavement Markers

FIVE LANE ROADWAY TWO WAY LEFT TURN



Painted or Tape Lines



Raised Pavement Markers

FIVE LANE ROADWAY WITH MARKED ISLANDS

NOTES:

1. Place no passing zones on two-lane two-way roadways as shown. In lieu of short term no passing zone pavement markings, place no passing zone signs. Replace no passing zone signs with short term no passing zone pavement marking within three days.
2. Place short term center line stripe (paint) on top lift to match exact placement of permanent stripe.
3. Remove raised markers and tape markings after permanent pavement marking is installed.

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.

This document was originally issued and sealed by
 Kirk J Hoff,
 Registration Number
 PE-4683,
 on 8/27/19 and the original document is stored at the North Dakota Department of Transportation