

DESIGN DATA				
Traffic	Average Daily			
Current 2024	Pass: 914	Trucks: 229	Total: 1143	
Preventive Maintenance				

NORTH DAKOTA

DEPARTMENT OF TRANSPORTATION

NH-5-012(058)020

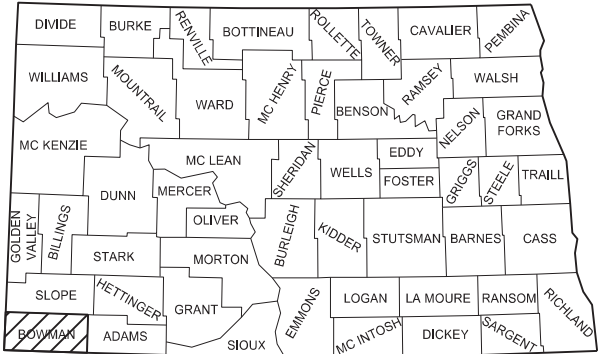
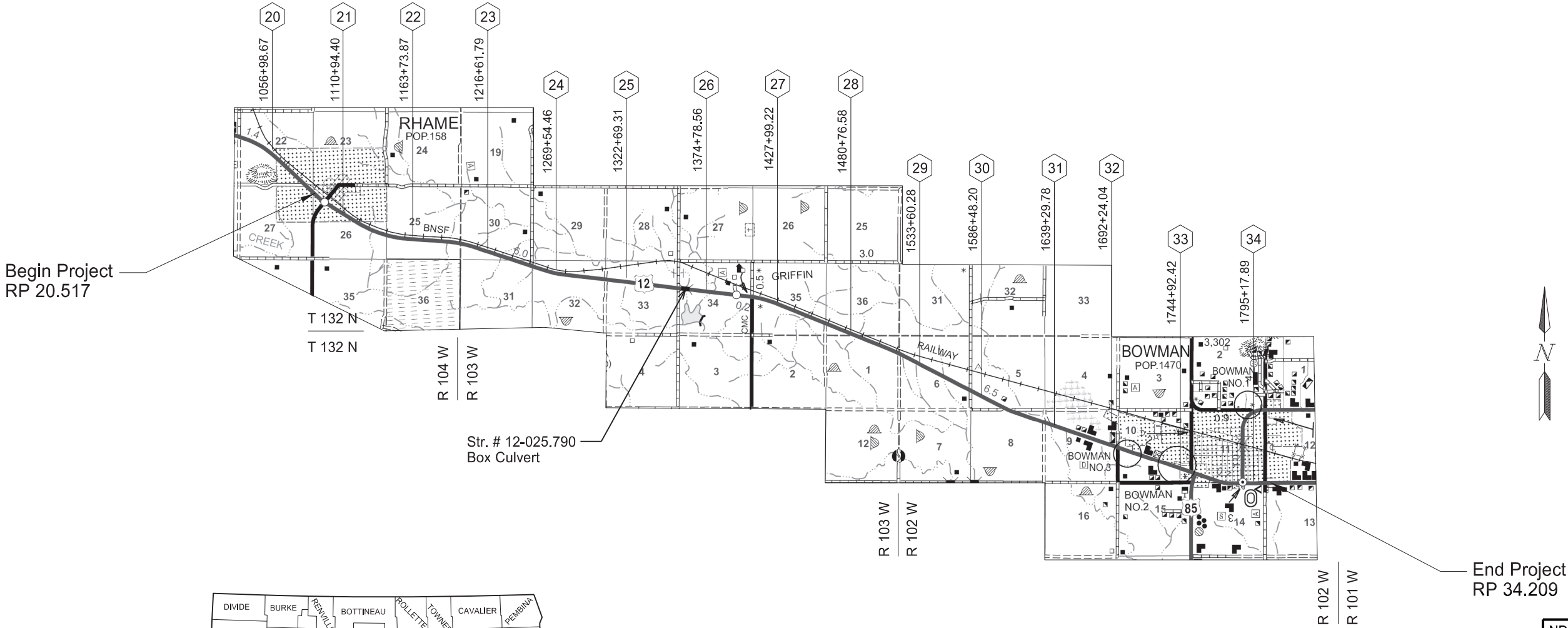
Bowman County
Rhame to Bowman

Seal Coat

	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	24691	1	1

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

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
NH-5-012(058)020 \ Seal Coat	13.616	13.692



DESIGNER Denis Oyugi
DESIGNER Bonnie Brown
DESIGNER Ben Hanson

STATE COUNTY MAP

ND DEPARTMENT OF TRANSPORTATION
Dickinson District

Robert Rayhorn
12/09/25

NDDOT DICKINSON DISTRICT

REGISTERED PROFESSIONAL ENGINEER

JASON R. FISCHER

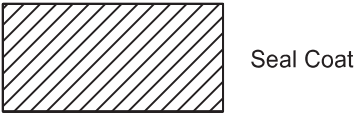
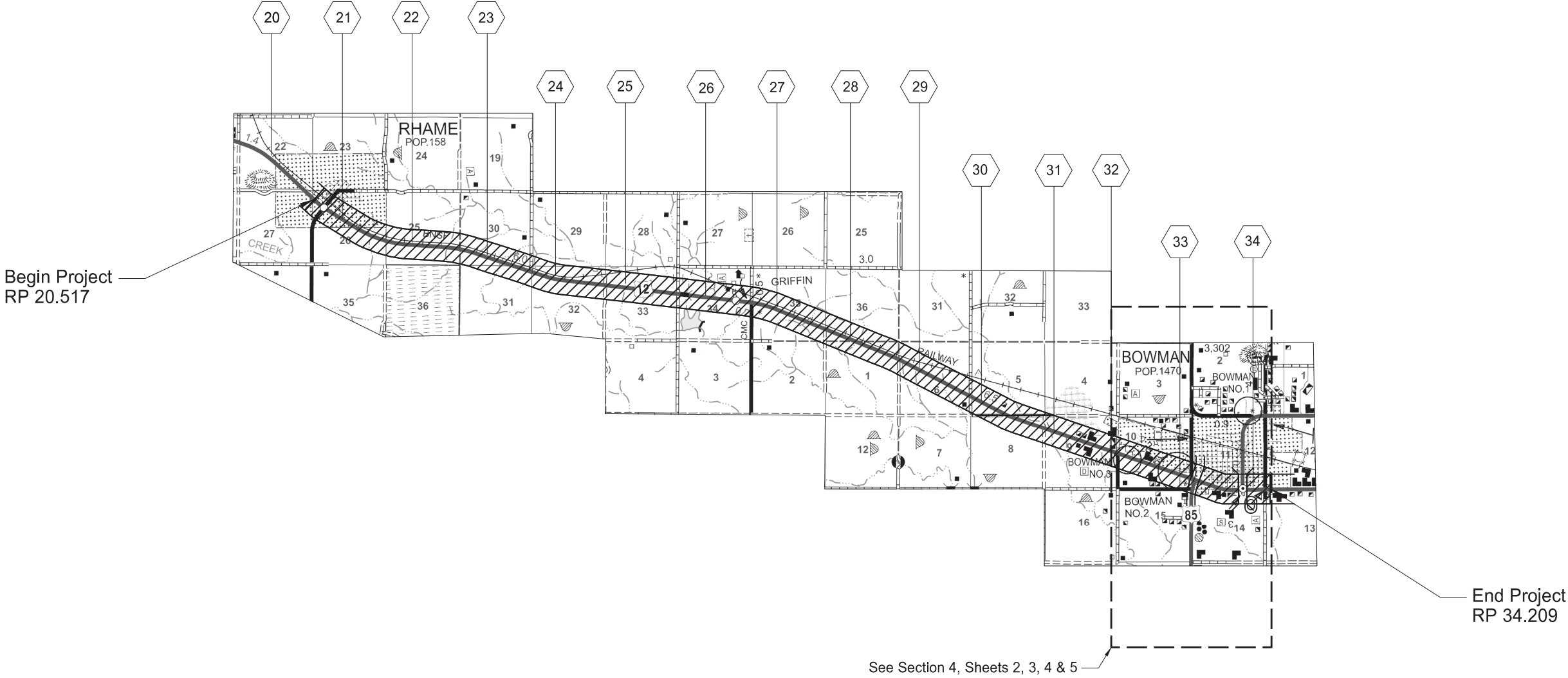
PE-6865

DATE
12/08/25

NORTH DAKOTA

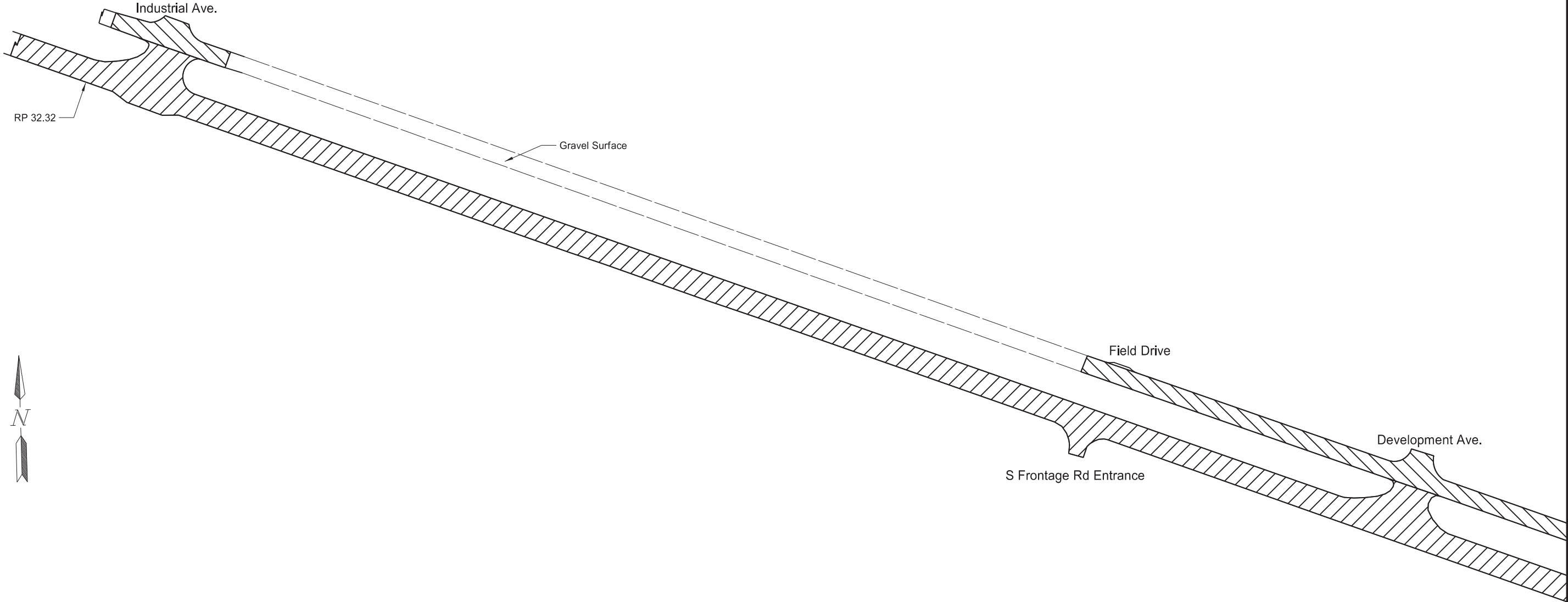
TABLE OF CONTENTS						STATE	PROJECT NO.	SECTION NO.	SHEET NO.
						ND	NH-5-012(058)020	2	1
PLAN SECTIONS					LIST OF STANDARD DRAWINGS				
Section	Page(s)	Description	Number	Description					
1	1	Title Sheet	D-101-1, 2,3,4	NDDOT Abbreviations					
2	1	Table of Contents	D-101-10	NDDOT Utility Company and Organization Abbreviations					
4	1 - 5	Scope of Work	D-101-20, 21	Line Styles					
6	1	Notes	D-101-30, 31,32,33	Symbols					
8	1	Quantities	D-704-3	Lane Markers (Spotting Tab For Seal Projects Only)					
10	1	Basis of Estimate	D-704-7	Breakaway Systems For Construction Zone Signs - Perforated Tube					
20	1 - 5	General Details	D-704-8	Breakaway Systems For Construction Zone Signs - U-Channel Post					
30	1 - 9	Typical Sections	D-704-9	Construction Sign Details - Terminal And Guide Signs					
90	1 - 4	Paving Layouts	D-704-10	Construction Sign Details - Regulatory Signs					
100	1 - 6	Work Zone Traffic Control	D-704-11, 11A	Construction Sign Details - Warning Signs					
			D-704-13	Barricade And Channelizing Device Details					
			D-704-14	Construction Sign Punching And Mounting Details					
			D-704-20	Terminal And Seal Coat Sign Layouts					
			D-704-22	Construction Truck And Temporary Detour Layouts					
			D-704-26	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 Details					
			D-762-4	Pavement Marking					
			D-762-5	Pavement Marking for Standard 90 Degree Flared Intersection-(No Center Left Turn Lane on Major Road)					
			D-762-11	Short-Term Pavement Marking					
SPECIAL PROVISIONS									
Number	Description								
SP 42(25)	Warranty Chip Seal								
PSP 54(25)	Permits and Environmental Considerations								

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	4	1



Scope of Work
Seal Coat
Rhome to Bowman

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	4	2



Seal Coat (Mainline)

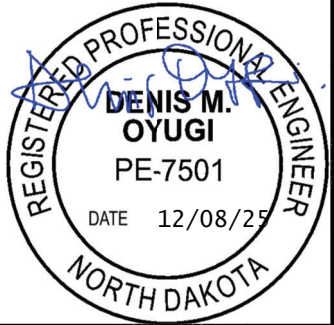


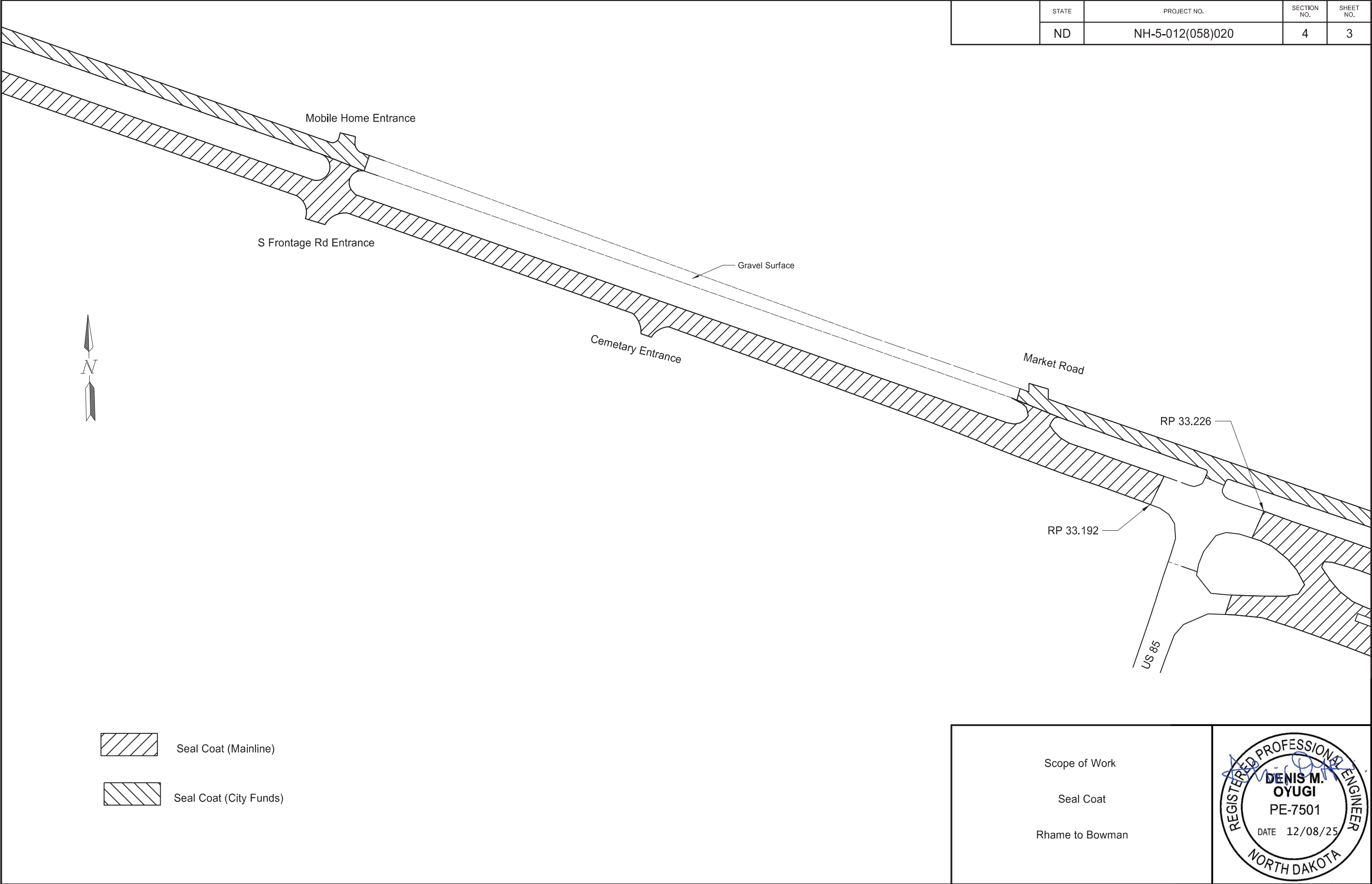
Seal Coat (City Funds)

Scope of Work



Seal Coat

Rhame to Bowman





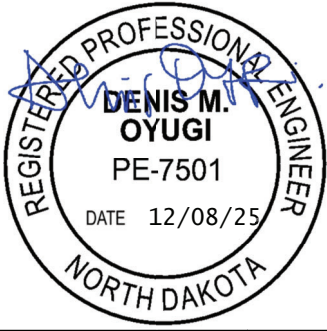
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	4	3

-  Seal Coat (Mainline)
-  Seal Coat (City Funds)

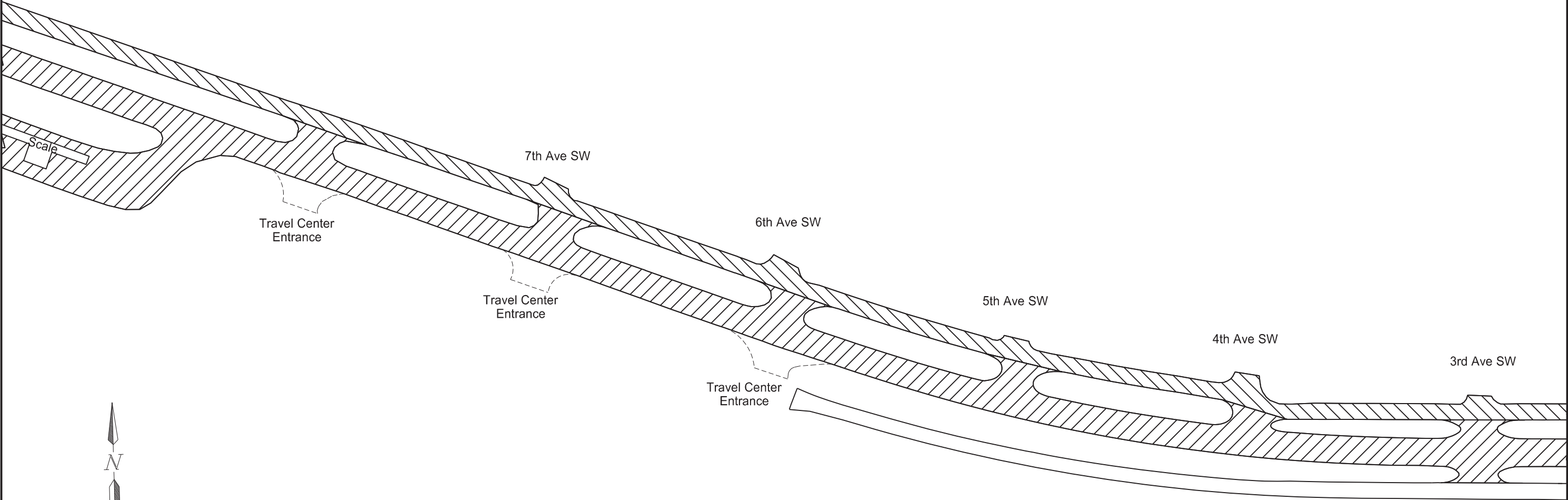
Scope of Work

Seal Coat

Rhame to Bowman



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	4	4



Seal Coat (Mainline)

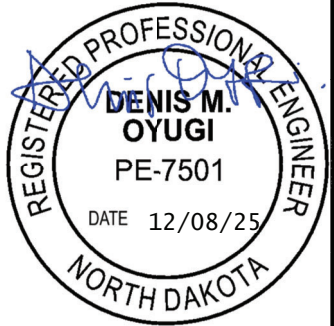


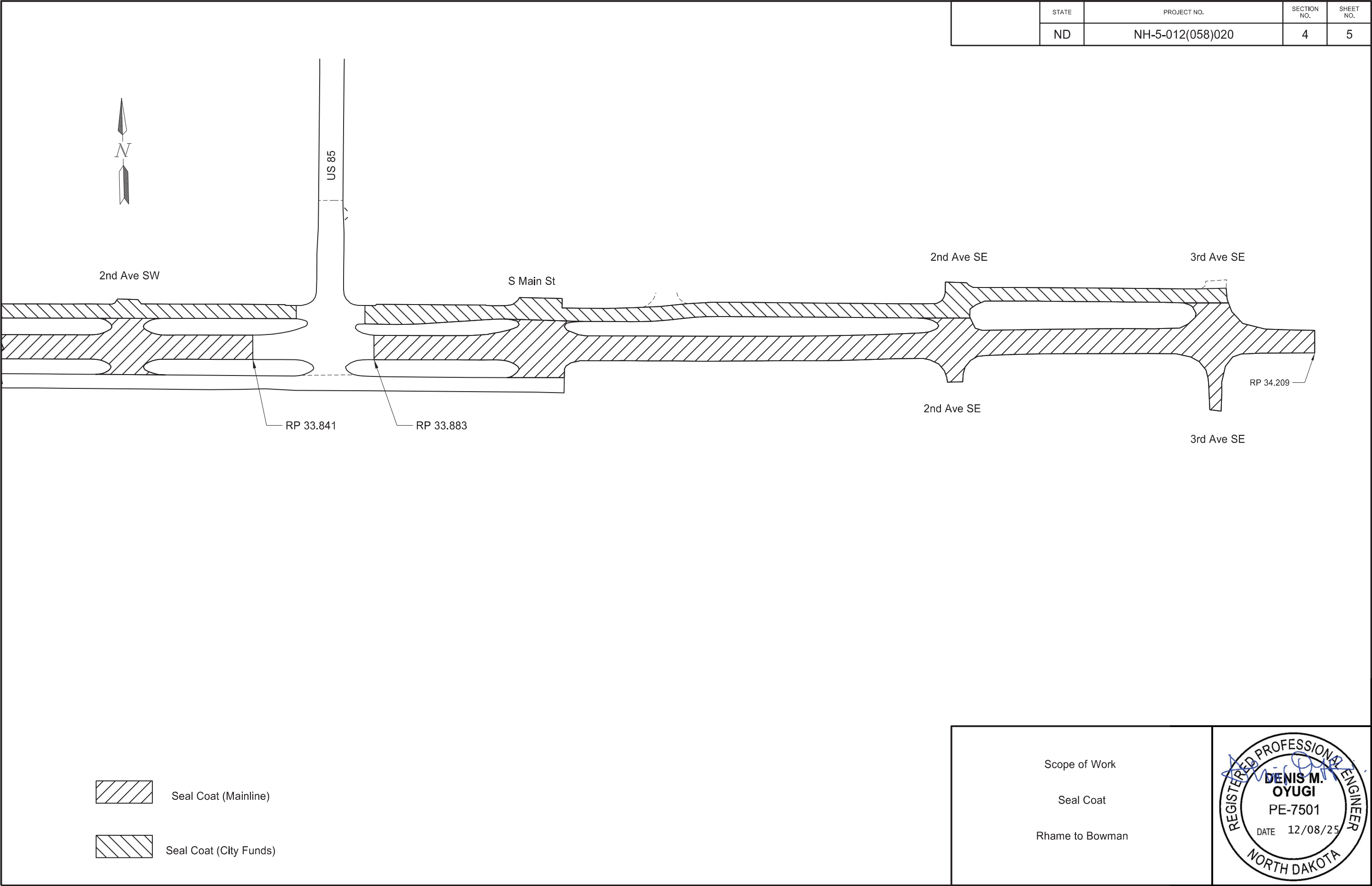
Seal Coat (City Funds)

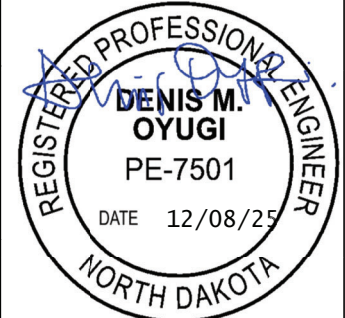
Scope of Work

Seal Coat

Rhame to Bowman





			STATE	PROJECT NO.	SECTION NO.	SHEET NO.
<u>NOTES</u>			ND	NH-5-012(058)020	6	1
100-P01	TIED PROJECTS: This project is tied to project NH-085(093)000. Portable traffic control devices used on this project will be paid for once, on project NH-085(093)000, even though they are used on both projects. These devices include portable rumble strips, along with signs per D-704-22, D-704-26 and D-704-33. Contract Bond and Mobilization will be split and paid on each project.			Install PRS that meet the following criteria: <ul style="list-style-type: none">Have no adhesives or fasteners required for placement.Have a manufacture’s speed rating that meets or exceeds the posed speed limit; andEach strip in the array must weigh a minimum of 100 pounds.		
100-P02	WEIGH STATION: Provide a written notification to Sgt. Christopher Messer, ND Highway Patrol, two weeks prior to starting work at the Weigh Station. Provide a copy of the written notification to the engineer. Contact Information for Sgt. Christopher Messer: cmesser@nd.gov Phone: (701)328-2447			Use individual PRS constructed in one of the following manners: <ul style="list-style-type: none">A single piece;Interlocking segments; orTwo pieces hinged at the midpoint.		
401-P01	FOG SEAL: Dilute fog seal and apply at a rate of 0.12 Gal/SY (0.06 Gal/SY undiluted). Fog Seal oil shall be diluted by the supplier.			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.		
420-P01	REMOVAL OF EXCESS CHIPS: After final sweeping, remove all excess chips from the curb/gutter sections.			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 7 mile limitation and the following list: <ol style="list-style-type: none">Layout per Section 100; for chip seal work.Standard D-704-20, layout H: for post mounted sign spacingStandard D-704-22, layouts K & L: for trucks entering roadway.Standard D-704-26, type KK: for use at major intersections within pilot zone.Standard D-704-33, for Chip Seal work. Provide additional devices at no cost to the Department.			762-050 PAVEMENT MARKING: If the Engineer and Contractor agree, plan quantity will be used as the measurement for payment for pavement marking items.		
704-P02	TRAFFIC CONTROL FOR SEAL COAT: Install and maintain a 45 MPH speed limit after cover coat application and prior to initial sweeping, where speed limit exceed 45 MPH. Re-establish the speed limit to pre-construction condition after the initial sweeping.					
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: <ul style="list-style-type: none">“Be Prepared to Stop” (W3-4); and“Flagger” symbol (W20-7)					

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-5-012(058)020	8	1

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	CITY	TOTAL
103	0100	CONTRACT BOND	L SUM	0.41		0.41
420	0405	SEAL COAT	SY	312,053	21,514	333,567
702	0100	MOBILIZATION	L SUM	0.41		0.41
704	1000	TRAFFIC CONTROL SIGNS	UNIT	3,130		3,130
762	0103	PVMT MK PAINTED-MESSAGE	SF	720		720
762	0432	SHORT TERM 6IN LINE-TYPE NR	LF	47,630		47,630
762	0437	SHORT TERM 12IN LINE-TYPE NR	LF	2,310		2,310
762	1106	PVMT MK PAINTED 6IN LINE	LF	190,341		190,341
762	1108	PVMT MK PAINTED 8IN LINE	LF	303		303
762	1112	PVMT MK PAINTED 12IN LINE	LF	2,310		2,310
762	1124	PVMT MK PAINTED 24IN LINE	LF	614		614

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	10	1

Design Calculations - Mainline

		Ref Points			Ref Points			Ref Points			Ref Points		
		20.517	to	33.037	33.045	to	33.105	33.105	to	33.192	33.226	to	33.443
		33.037	to	33.045	Taper Transition								
		Net Miles =	12.528		Net Miles =	0.060		Net Miles =	0.087		Net Miles =	0.217	
Material	Unit	Width	Qty/ Mile	Qty	Avg Width	Qty/ Mile	Qty	Width	Qty/ Mile	Qty	Width	Qty/ Mile	Qty
Seal Coat	SY	36.0	21,120.00	264,591	46.0	26,986.67	1,619	56.0	32,853.33	2,858	47.2	27,690.67	6,009
**Cover Coat Material CL41 @ 25 lbs/SY	Ton	28.0	205.33	2,572	40.0	293.33	18	52.0	381.33	33	44.0	322.67	70
**CRS2P Emulsified Asphalt @ 0.38 Gal/SY	Gal	28.0	6,242.13	78,201	40.0	8,917.33	535	56.0	12,484.27	1,086	47.2	10,522.45	2,283
**Fog Seal @ 0.06 Gal/SY	Gal	8.0	281.60	3,528	6.0	211.20	13	0	0	0	0	0	0

**For informational purposes only, quantity included and paid for under "Seal Coat"

Design Calculations - Mainline

		Ref Points			Ref Points			Ref Points			Ref Points		
		33.443	to	33.714	33.714	to	33.841	33.928	to	34.070	34.070	to	34.209
					33.883	to	33.928						
		Net Miles =	0.271		Net Miles =	0.172		Net Miles =	0.142		Net Miles =	0.139	
Material	Unit	Width	Qty/ Mile	Qty	Width	Qty/ Mile	Qty	Width	Qty/ Mile	Qty	Width	Qty/ Mile	Qty
Seal Coat	SY	46.3	27,162.67	7,361	44.0	25,813.33	4,440	43.1	25,302.93	3,593	42.2	24,757.33	3,441
**Cover Coat Material CL41 @ 25 lbs/SY	Ton	44.0	322.67	87	44.0	322.67	55	42.5	311.67	44	41.0	300.67	42
**CRS2P Emulsified Asphalt @ 0.38 Gal/SY	Gal	46.3	10,321.81	2,797	44.0	9,809.07	1,687	43.1	9,608.43	1,364	42.2	9,407.79	1,308
**Fog Seal @ 0.06 Gal/SY	Gal	0	0	0	0	0	0	0	0	0	0	0	0

Quantity Summary		Mainline	Rural Approaches (Section 20, Sheet 1 & 2)	Urban Approaches (Section 20, Sheets 3 - 4)	Weigh Station (Section 20, Sheet 5)	Frontage Road - City Funds (Section 90, Sheets 1-4)	Total
Material	Unit						
Seal Coat	SY	293,913	6,293	6,572	5,275	21,514	333,567
**Cover Coat Material CL41 @ 25 lbs/SY	Ton	2,922	85	81	63	261	3,412
**CRS2P Emulsified Asphalt @ 0.38 Gal/SY	Gal	89,262	2,556	2,469	2,005	7,920	104,212
**Fog Seal @ 0.06 Gal/SY	Gal	3,541	53	5	0	1,291	4,889

**For informational purposes only, quantity included and paid for under "Seal Coat"

Short Term Pavement Marking (Paint)

Location - RP	Unit	Basis	Quantity
Centerline Skips	LF	Measured	16,539
Centerline Barrier	LF	Measured	31,091
12" Channel White*	LF	Measured	2,310

*Install mainline only, not Weigh Sta

Permanent Pavement Marking (Paint)**

Location - RP	Unit	Basis	Quantity
Centerline Skips	LF	Measured	16,539
Centerline Barrier	LF	Measured	31,091
Edgeline	LF	Measured	142,673
2' Skip Lines	LF	Measured	38
12" Channel White	LF	Measured	2,310
8" Chevrons	LF	Measured	211
8" Corner Fan	LF	Measured	92
Message	SF	Measured	720
Stop Bars	LF	Measured	614

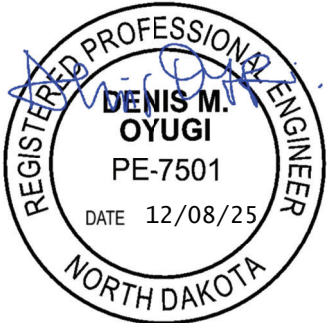
**Includes quantities for concrete intersection exception areas

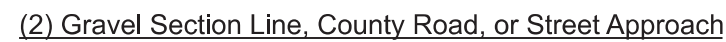
**Stripe the concrete seal exception areas

Basis of Estimate

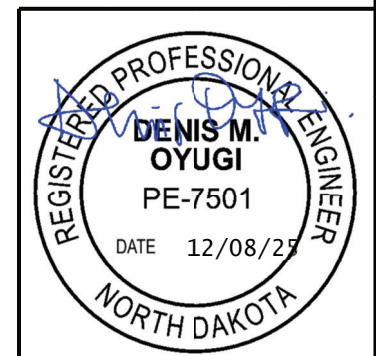
Seal Coat

Rhame to Bowman





1. Actual Seal Coat locations may vary in the field, as approved by the engineer
2. Quantity of totals have been included in the bid items of the "Estimate of Quantities" of the plans.
3. See Section 20, Sheet 2 for locations.
4. Chip Seal = CRS2P Oil + Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area + Fog Seal Area)
5. An estimated 17 tons of chips & 497 gal of CRS2P oil is included in the quantities for the area between mainline chips and approach chips shown in layouts 1 through 4



Rhame to Bowman

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	20	2

Basis of Estimate			Left		Right		Quantities		
Reference Point	LT or RT	Approach Type	Chip Seal Area SY	Fog Seal Area @ Field Approach (SY)	Chip Seal Area (SY)	Fog Seal Area @ Field Approach (SY)	*Cover Coat Material CL. 41 @ 25 lbs/SY (TON)	*CRS2P Emulsified Asphalt @ 0.38 Gal/SY (GAL)	*Fog Seal @ 0.06 Gal/SY (GAL)
20.639	RT	3			50.0		0.6	19.0	
20.653	LT	4	36.2				0.5	13.7	
20.685	LT	1	656.0				8.2	249.3	
20.685	RT	1			718.0		9.0	272.8	
20.841	RT	4			95.0		1.2	36.1	
21.119	RT	5				55.3			3.3
21.733	RT	5				28.3			1.7
22.231	RT	5				43.6			2.6
22.231	LT	5		8.9					0.5
22.662	RT	5				25.8			1.5
23.082	RT	5				38.6			2.3
23.680	LT	2	181.6				2.3	69.0	
23.693	RT	4			101.9		1.3	38.7	
24.705	LT	5		27.4					1.6
24.709	RT	4			51.2		0.6	19.5	
25.094	LT	5		21.8					1.3
25.094	RT	4			48.7		0.6	18.5	
25.712	LT	2	252.7				3.2	96.0	
25.712	RT	2			237.4		3.0	90.2	
26.008	RT	5				40.5			2.4
26.202	LT	5		37.5					2.3
26.202	RT	5				44.1			2.6
26.502	LT	5		53.4					3.2
26.502	RT	5				49.4			3.0
26.705	LT	2	194.0				2.4	73.7	
26.705	RT	1			476.0		6.0	180.9	
27.033	RT	5				33.1			2.0
27.231	LT	5		38.4					2.3
27.544	RT	5				62.1			3.7
28.850	LT	5		44.9					2.7
28.862	RT	5				52.1			3.1
29.915	LT	2	206.5				2.6	78.5	
29.925	RT	2			296.8		3.7	112.8	
30.379	LT	4	124.3				1.6	47.2	
30.437	RT	4			255.4		3.2	97.0	
30.566	LT	5		58.4					3.5
30.712	RT	5				38.2			2.3
31.029	RT	5				34.5			2.1
31.081	LT	5		39.2					2.3
31.550	LT	4	181.2				2.3	68.9	
31.557	RT	4			146.4		1.8	55.6	
31.654	LT	4	188.3				2.4	71.6	
31.654	RT	4			148.8		1.9	56.6	
32.078	LT	3	257.4				3.2	97.8	
32.086	RT	1			331.6		4.1	126.0	
32.161	LT	3	182.3				2.3	69.3	
Seal Coat			2,460	330	2,957	546			
Estimated Quantities							68	2,059	53

*For informational purposes only, quantity included and paid for under "Seal Coat."

Seal Coat = Area measured for payment. (Chip Seal Area + Oil Only Area)

** Seal Coat to ROW line

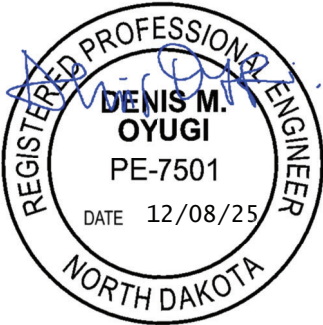
Legend

- 1= Paved Section Line, or County Road
- 2= Gravel Section Line, County Road or Street Approach
- 3= Paved Private Drive Approach
- 4= Gravel Private Drive Approach
- 5= Field Drive Approach

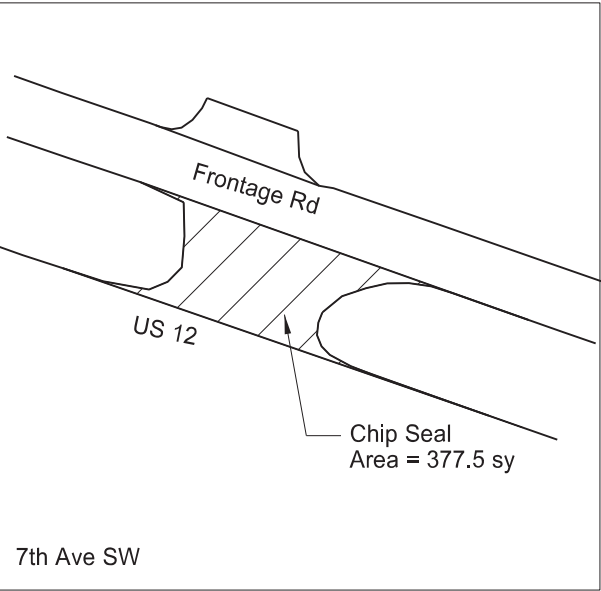
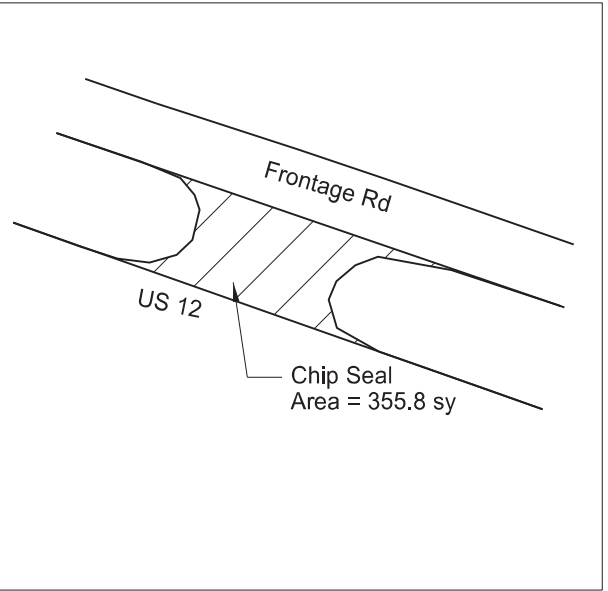
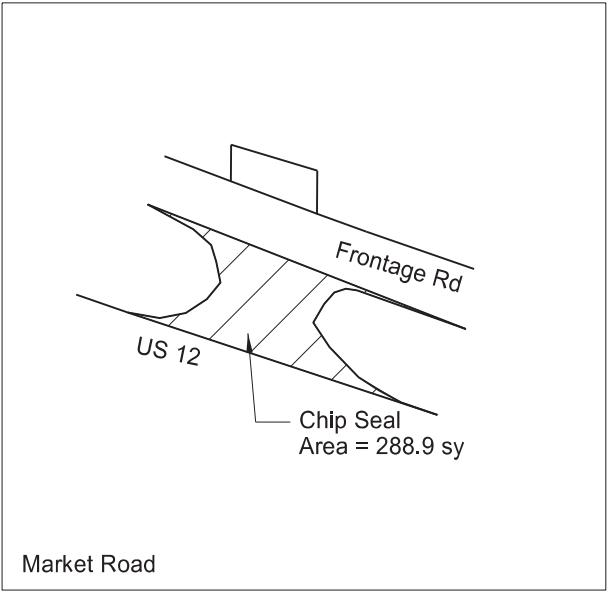
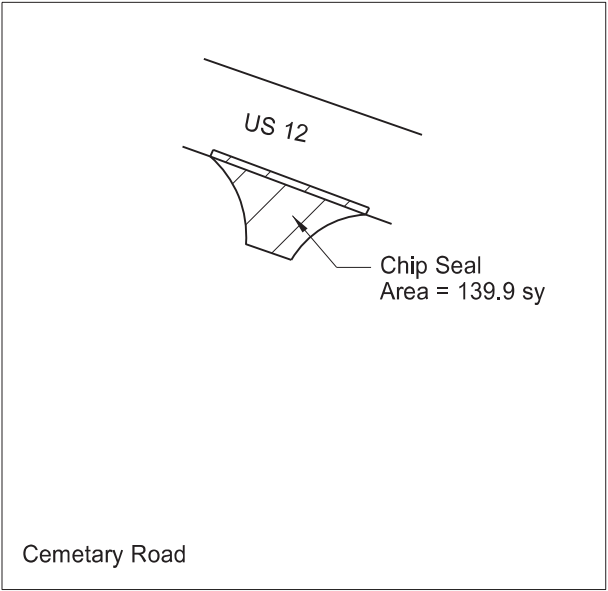
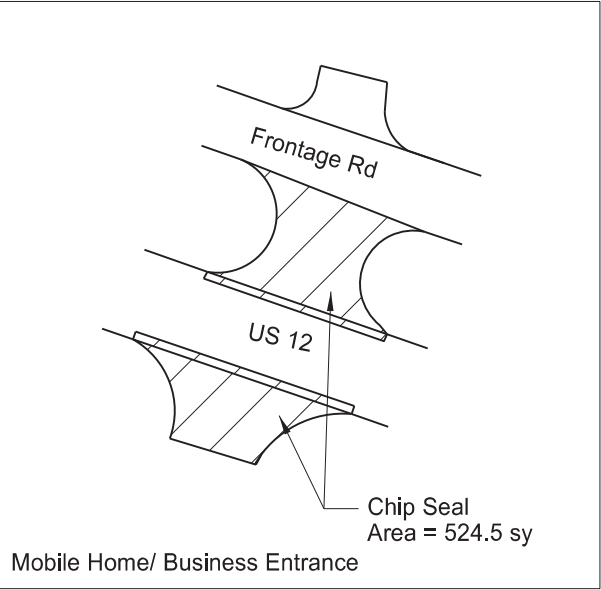
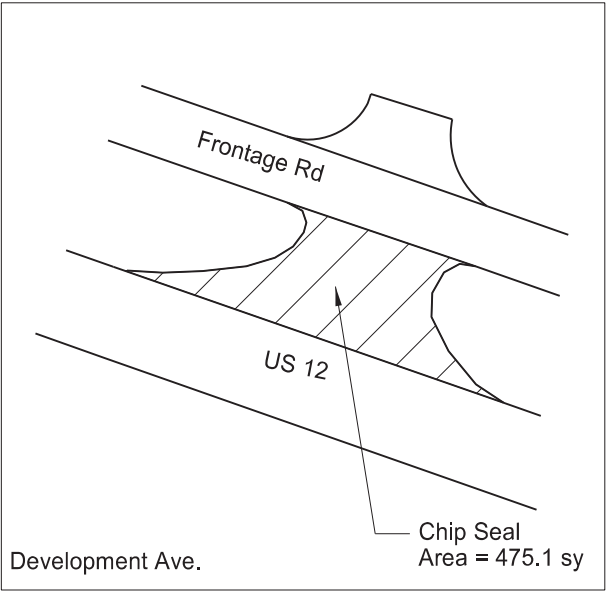
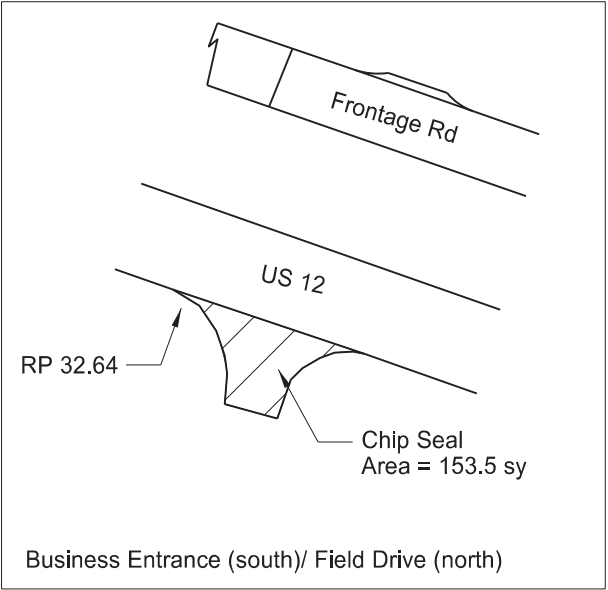
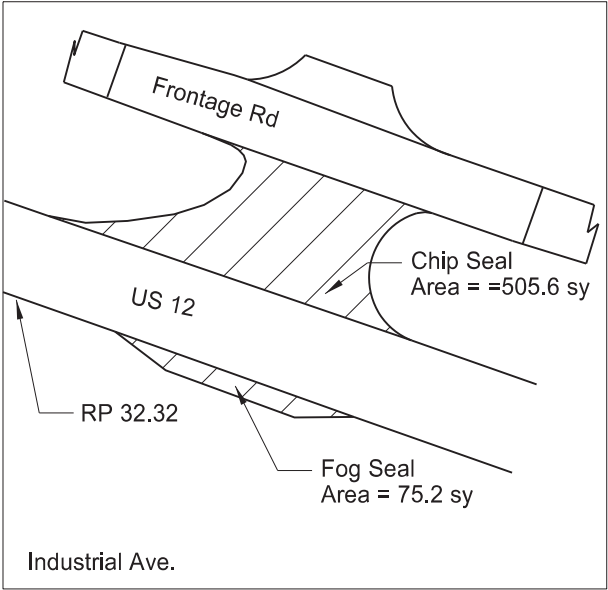
Rural Approaches

Seal Coat

Rhame to Bowman



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-5-012(058)020	20	3



Seal Coat
(Federal/State Funds)

Urban Approach Quantity Summary		
Material	Unit	Total
Seal Coat	SY	2,896
**Cover Coat Material CL41 @ 25 lbs/SY	Ton	35
**CRS2P Emulsified Asphalt @ 0.38 Gal/SY	Gal	1,072
**Fog Seal @ 0.06 Gal/SY	Gal	5

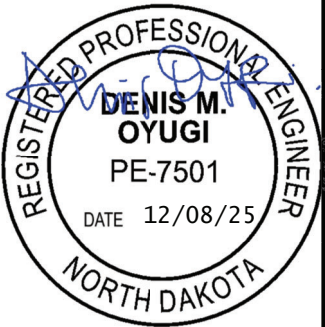
**Cover Coat Area = 2,821 SY

**For informational purposes only, quantity included and paid for under "Seal Coat"

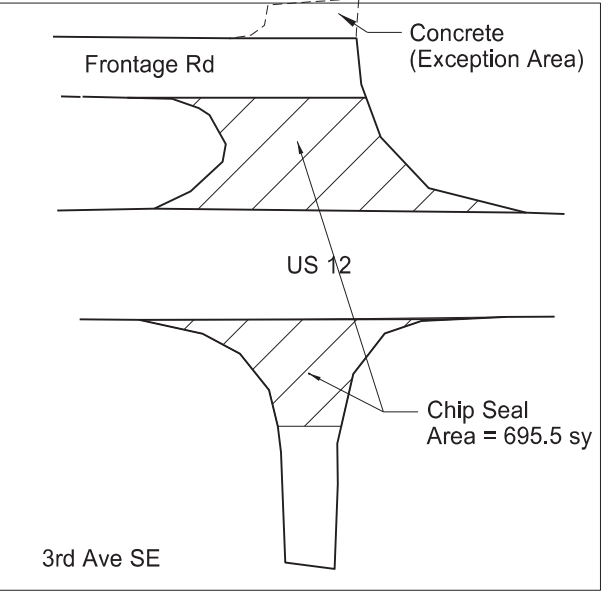
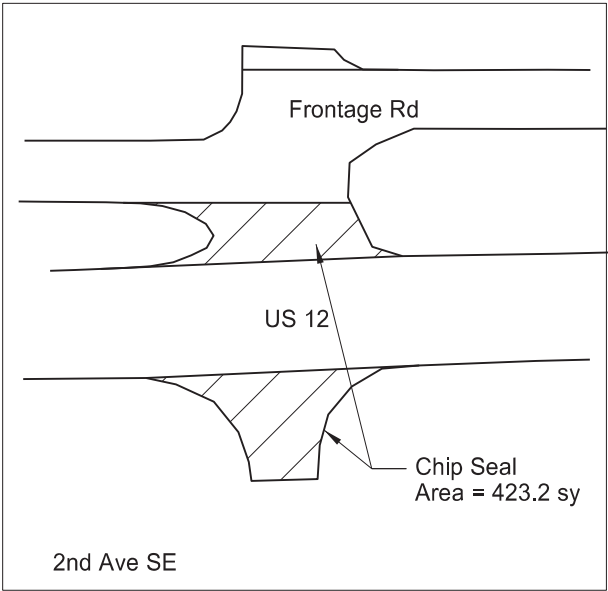
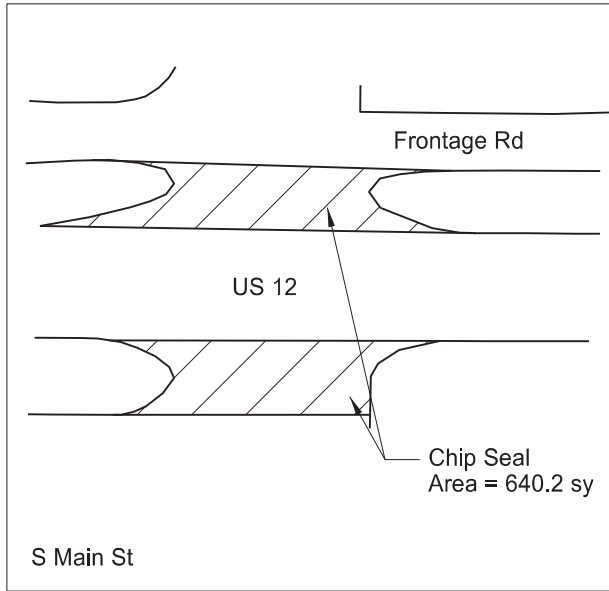
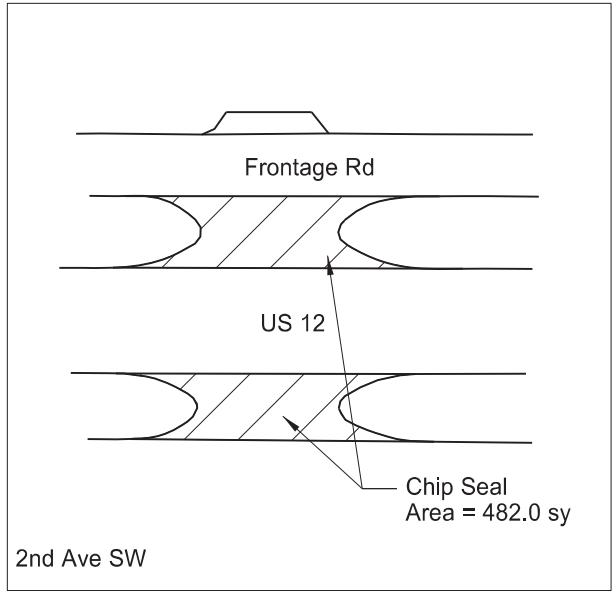
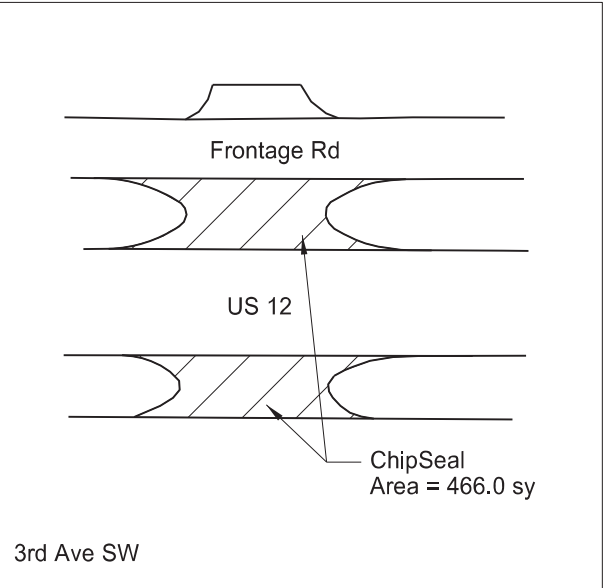
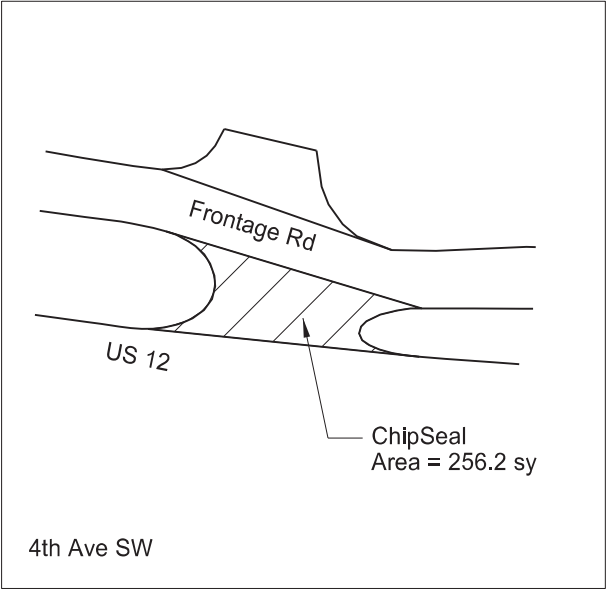
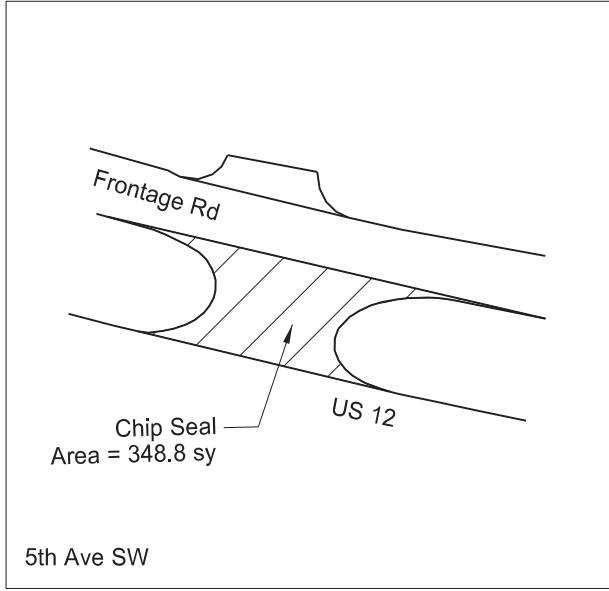
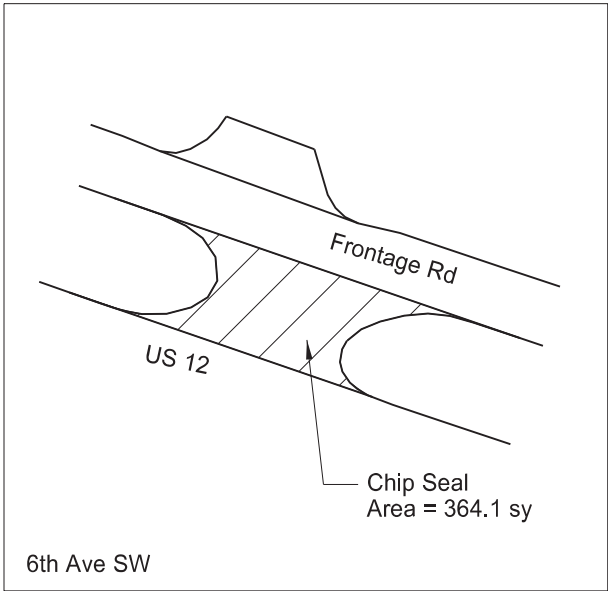
Urban Approaches

Seal Coat

Rhame to Bowman



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NH-5-012(058)020	20	4



Seal Coat
(Federal/State Funds)

Urban Approach Quantity Summary		
Material	Unit	Total
Seal Coat	SY	3,676
**Cover Coat Material CL41 @ 25 lbs/SY	Ton	46
**CRS2P Emulsified Asphalt @ 0.38 Gal/SY	Gal	1,397
**Fog Seal @ 0.06 Gal/SY	Gal	-

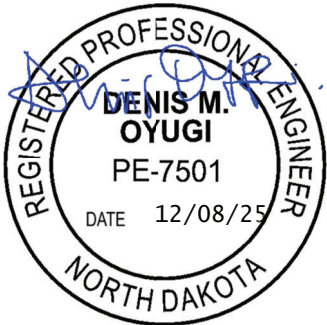
**Cover Coat Area = 3,676 SY

**For informational purposes only, quantity included and paid for under "Seal Coat"

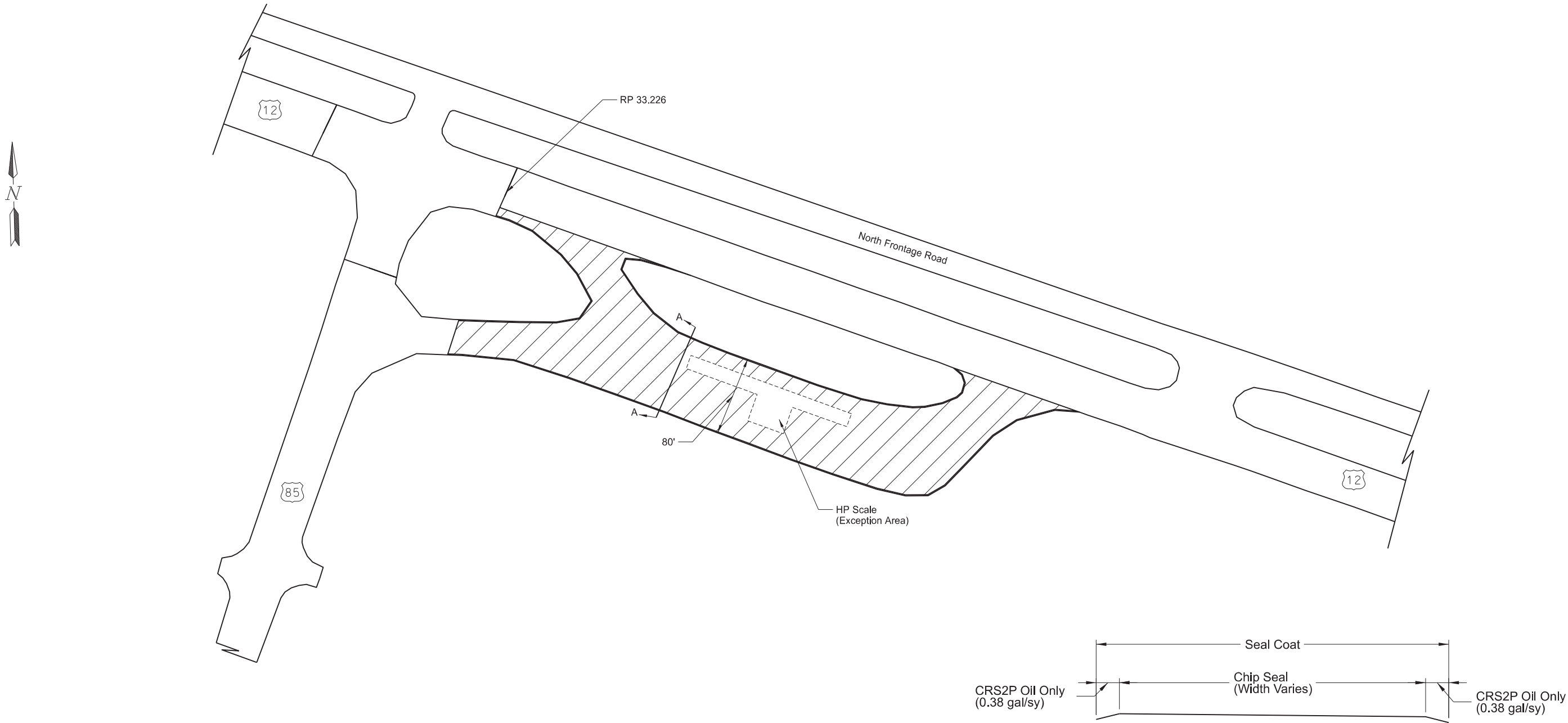
Urban Approaches

Seal Coat

Rhame to Bowman



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	20	5



Seal Coat

Chip Seal = 5071 SY
CRS2P Oil Only = 204 SY

Weigh Station Quantity Summary		
Material	Unit	Total
Seal Coat	SY	5,275
**Cover Coat Material CL41 @ 25 lbs/SY	Ton	63
**CRS2P Emulsified Asphalt @ 0.38 Gal/SY	Gal	2,005

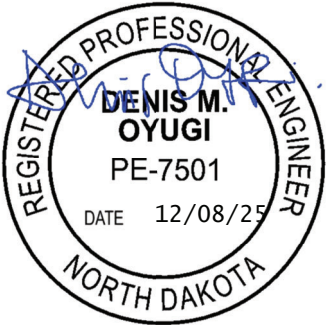
**Cover Coat Area = 5071 SY

**For informational purposes only, quantity included and paid for under "Seal Coat"

HP Scale

Seal Coat

Rhame to Bowman

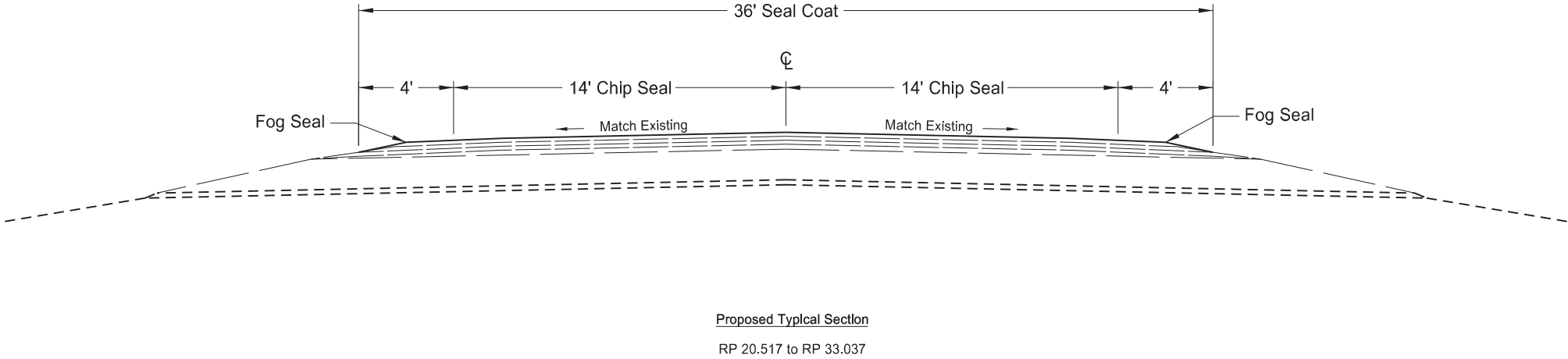
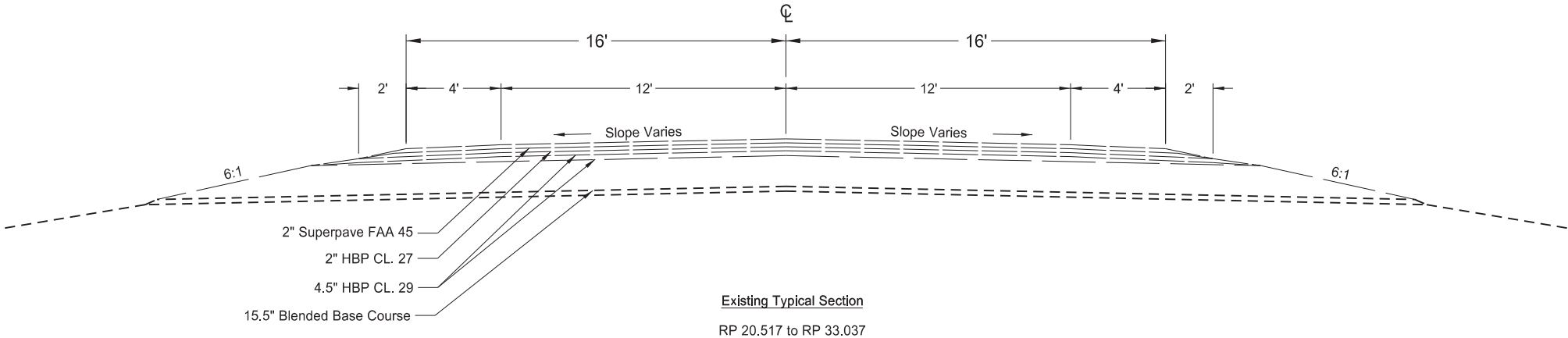


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	30	1

Chip Seal = CRS2P Oil & Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area + Fog Seal Area)

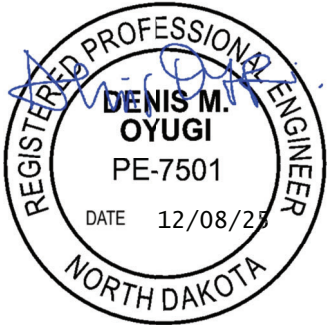
Chip Seal: CRS2P Oil @ 0.38 gal/sy
Cover Coat CI 41 @ 25 lbs/sy

Fog Seal: Fog Seal @ 0.06 gal/sy undiluted



Typical Sections

Seal Coat

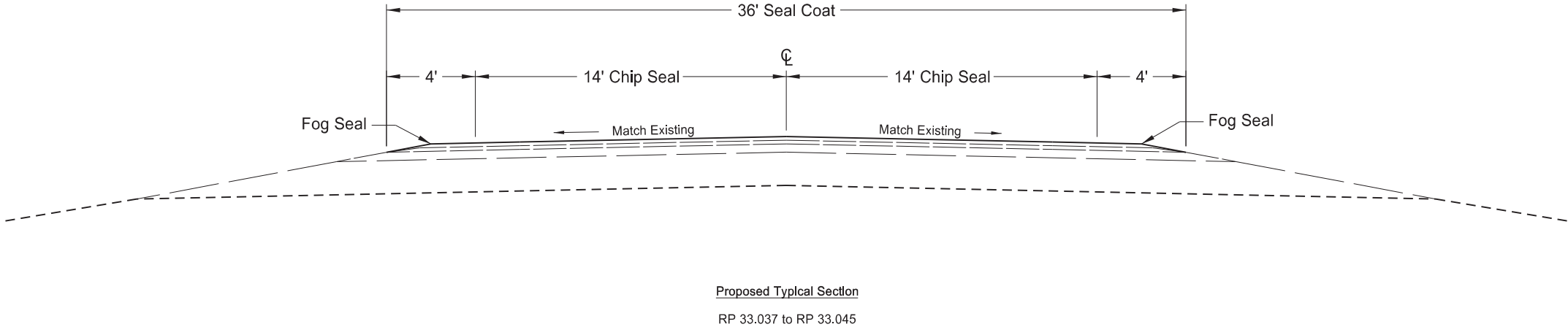
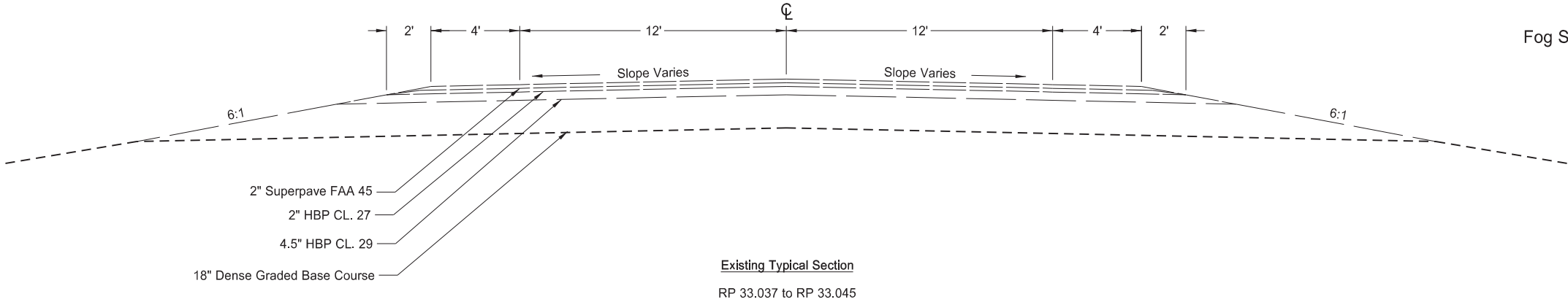


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	30	2

Chip Seal = CRS2P Oil & Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area + Fog Seal Area)

Chip Seal: CRS2P Oil @ 0.38 gal/sy
Cover Coat CI 41 @ 25 lbs/sy

Fog Seal: Fog Seal @ 0.06 gal/sy undiluted

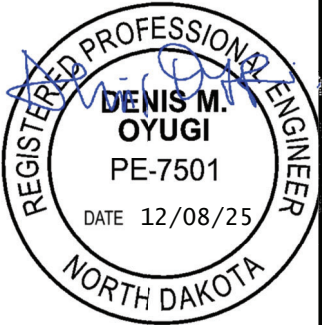


Note:
RP 33.045 to RP 33.105 - Taper Transition

Typical Sections

Seal Coat

Rhame to Bowman

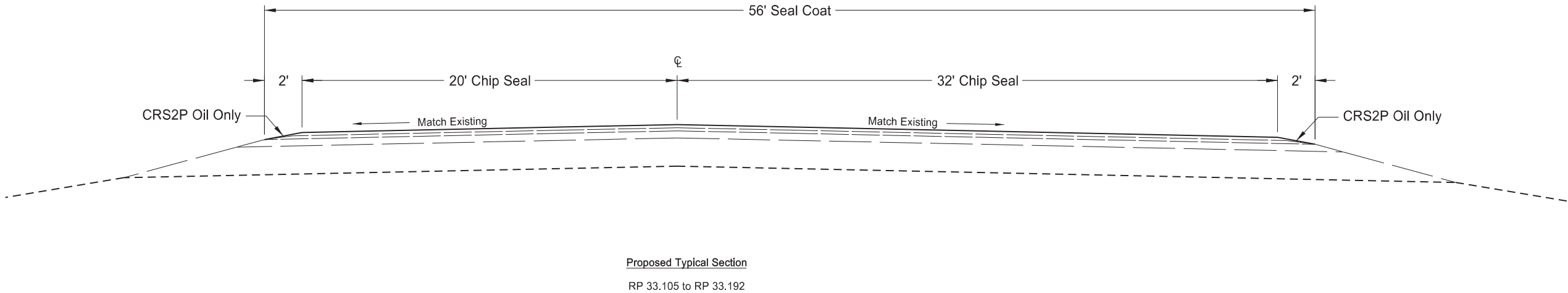
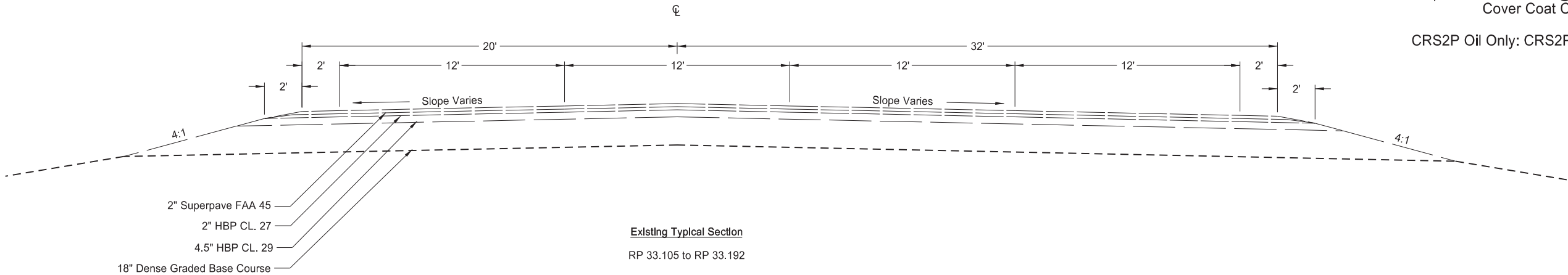


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	30	3

Chip Seal = CRS2P Oil & Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area + CRS2P Oil Only Area)

Chip Seal: CRS2P Oil @ 0.38 gal/sy
Cover Coat CI 41 @ 25 lbs/sy

CRS2P Oil Only: CRS2P Oil @ 0.38 gal/sy

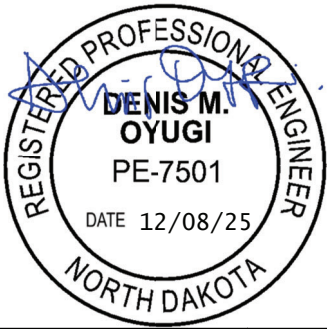


Note:
RP 33.045 to RP 33.105 - Taper Transition

Typical Sections

Seal Coat

Rhame to Bowman

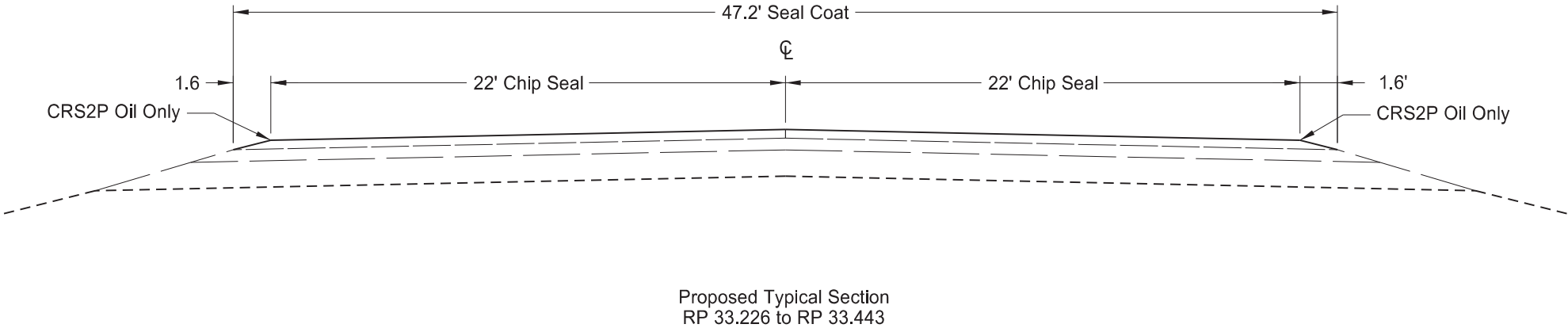
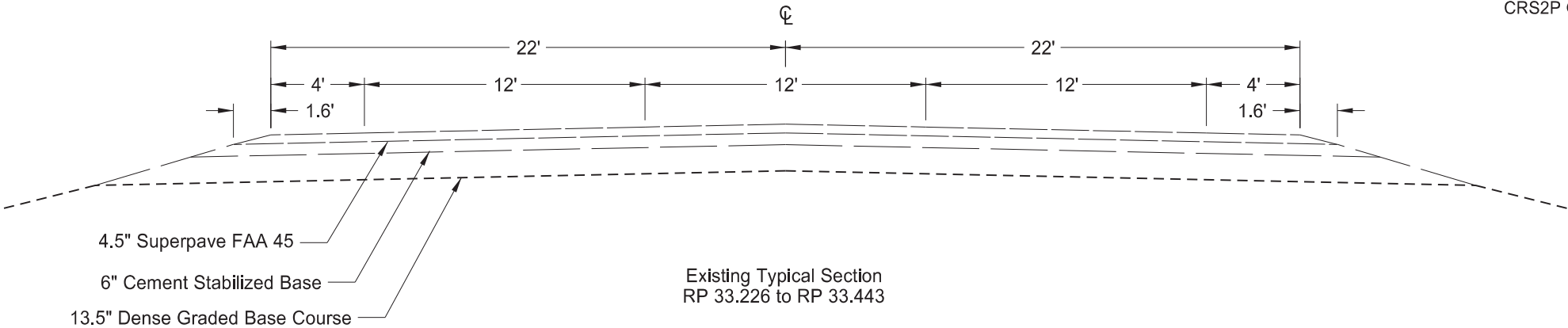


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	30	4

Chip Seal = CRS2P Oil & Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area + CRS2P Oil Only Area)

Chip Seal: CRS2P Oil @ 0.38 gal/sy
 Cover Coat CI 41 @ 25 lbs/sy

CRS2P Oil Only: CRS2P Oil @ 0.38 gal/sy

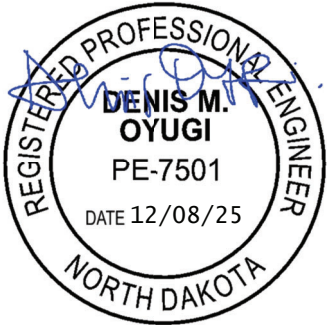


Concrete Intersection Exception - RP 33.192 to RP 33.226

Typical Sections

Seal Coat

Rhame to Bowman

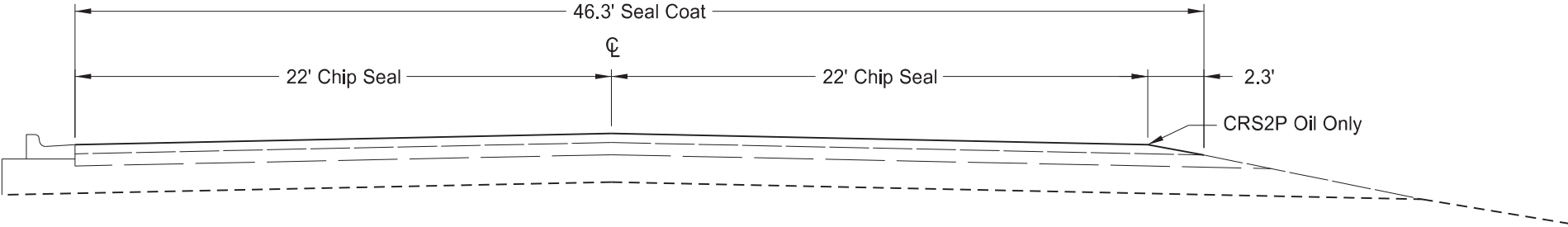
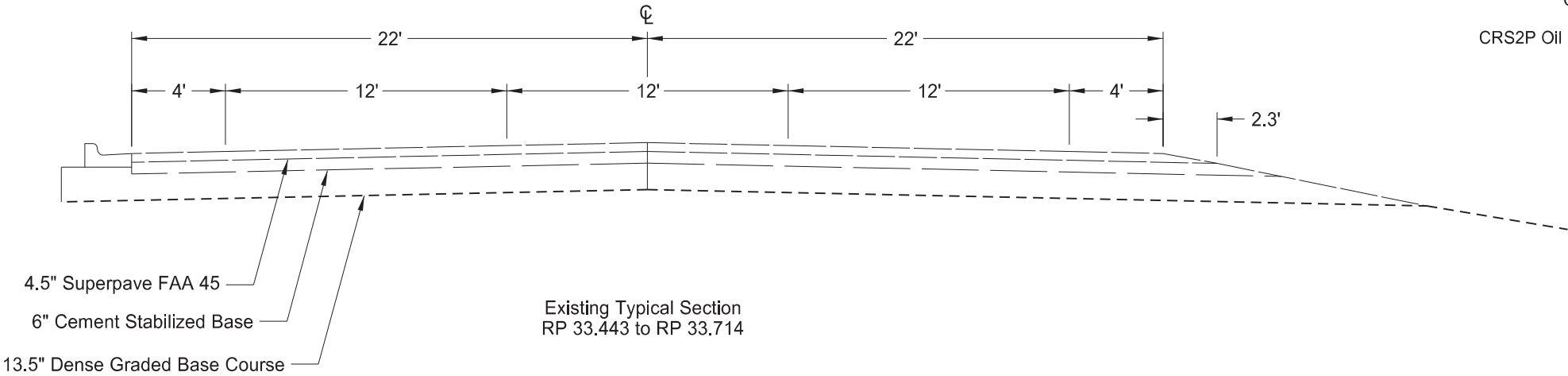


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	30	5

Chip Seal = CRS2P Oil & Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area + CRS2P Oil Only Area)

Chip Seal: CRS2P Oil @ 0.38 gal/sy
Cover Coat CI 41 @ 25 lbs/sy

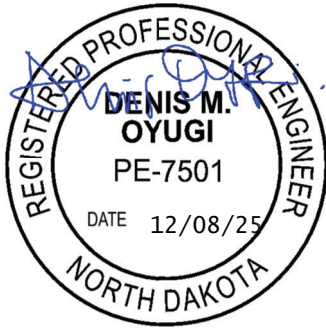
CRS2P Oil Only: CRS2P Oil @ 0.38 gal/sy



Typical Sections

Seal Coat

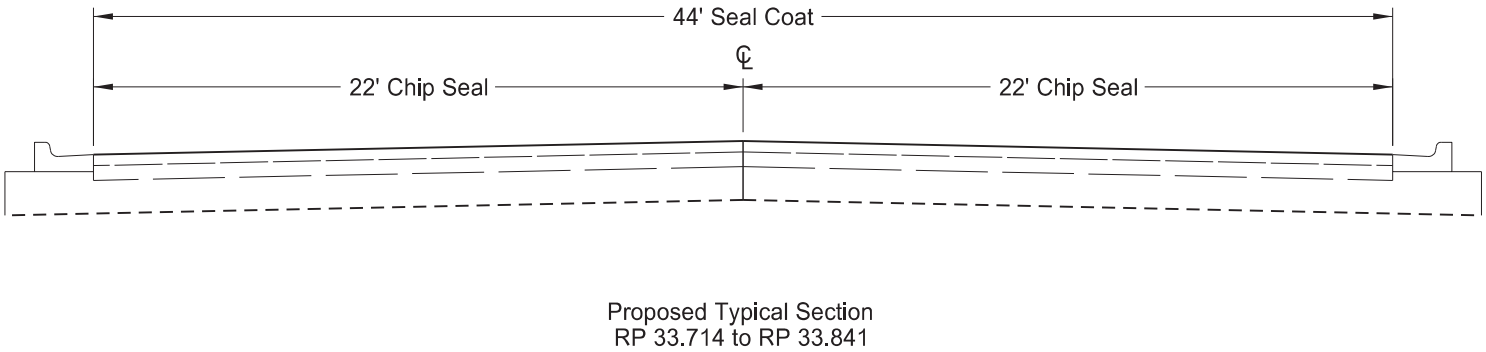
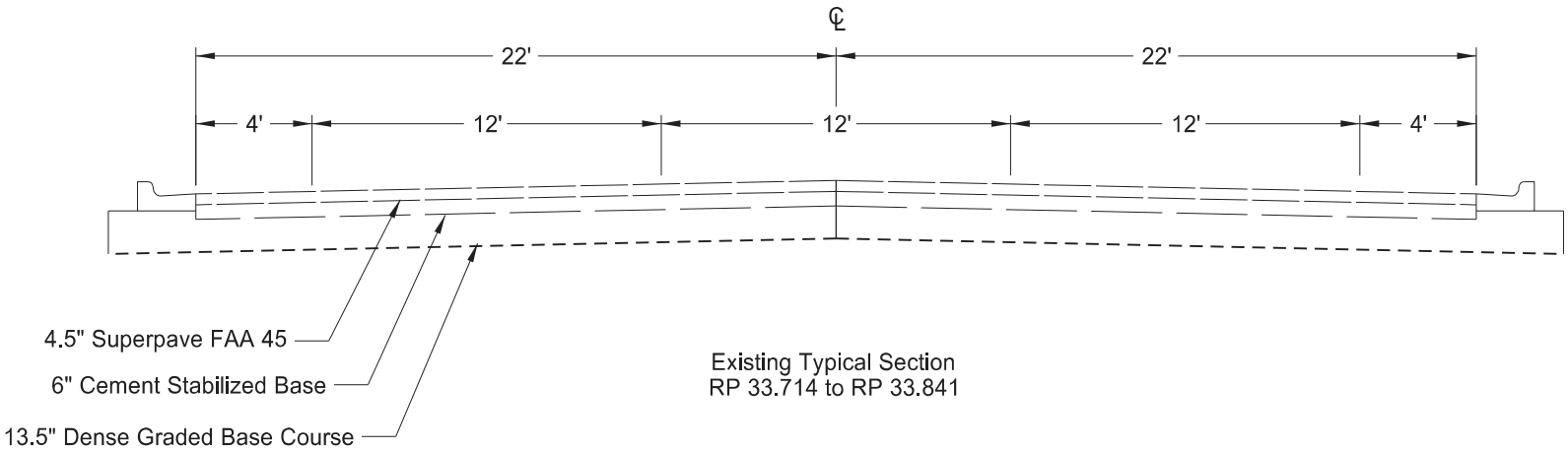
Rhame to Bowman



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	30	6

Chip Seal = CRS2P Oil & Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area)

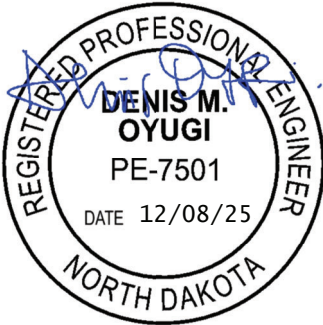
Chip Seal: CRS2P Oil @ 0.38 gal/sy
Cover Coat CI 41 @ 25 lbs/sy



Typical Sections

Seal Coat

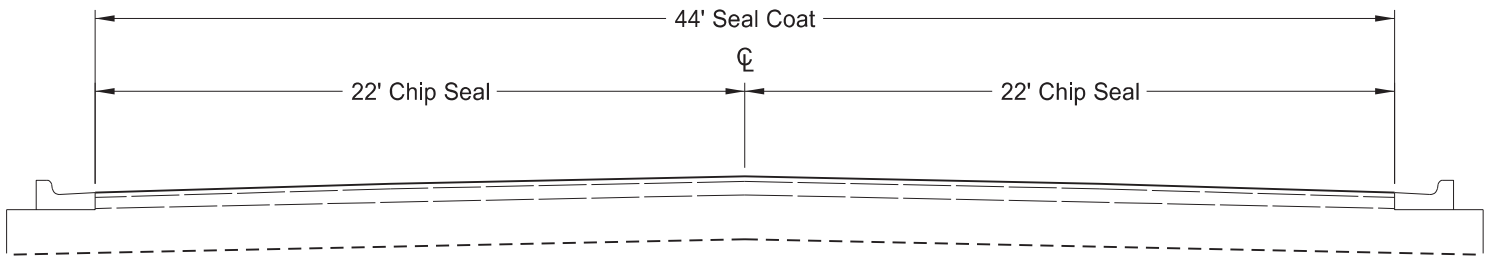
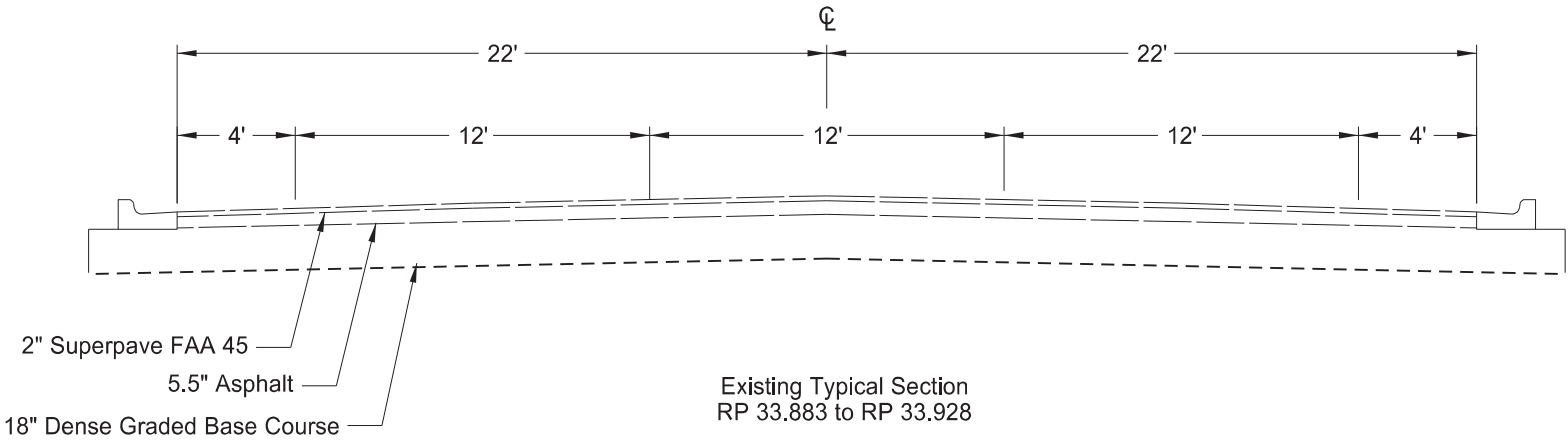
Rhame to Bowman



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	30	7

Chip Seal = CRS2P Oil & Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area)

Chip Seal: CRS2P Oil @ 0.38 gal/sy
Cover Coat CI 41 @ 25 lbs/sy

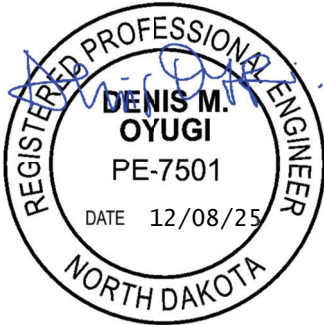


Concrete Intersection Exception - RP 33.841 to RP 33.883

Typical Sections

Seal Coat

Rhame to Bowman

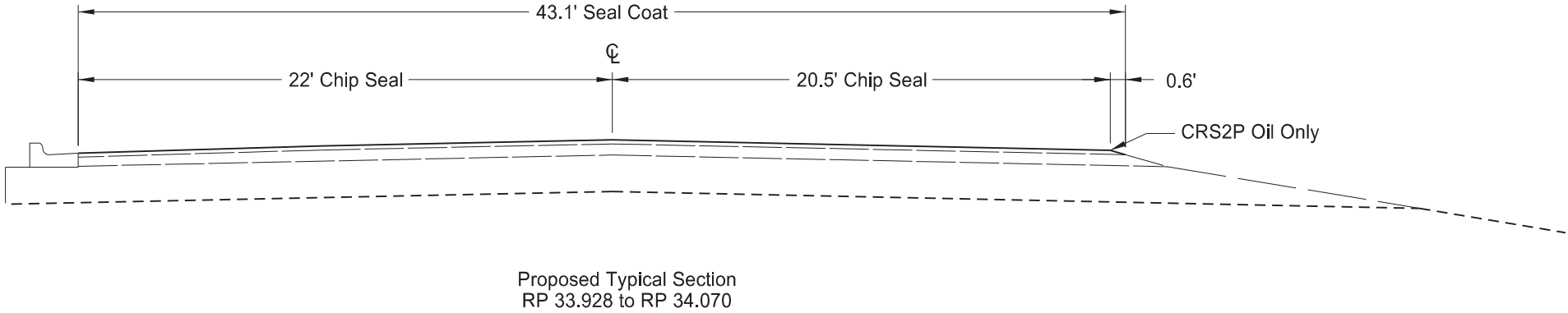
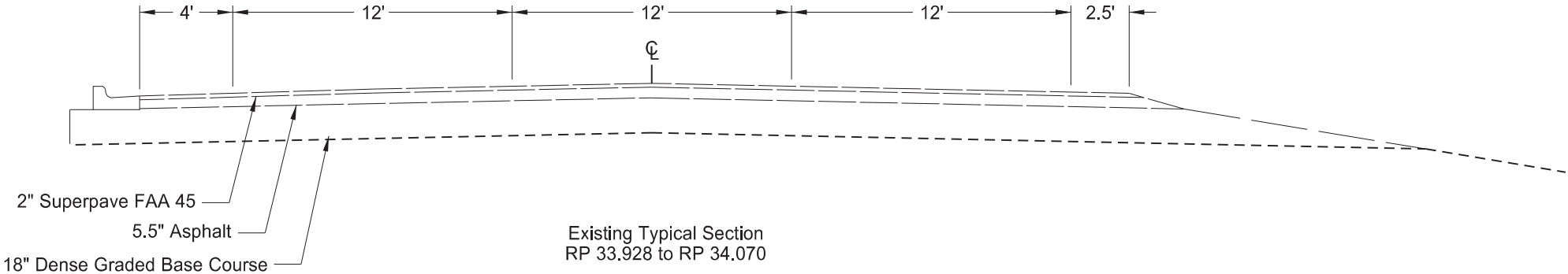


	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	30	8

Chip Seal = CRS2P Oil & Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area + CRS2P Oil Only Area)

Chip Seal: CRS2P Oil @ 0.38 gal/sy
 Cover Coat CI 41 @ 25 lbs/sy

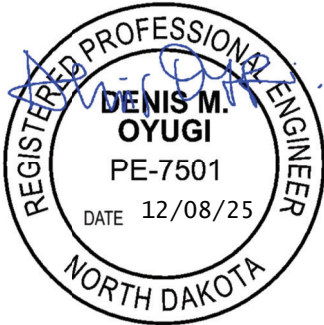
CRS2P Oil Only: CRS2P Oil @ 0.38 gal/sy



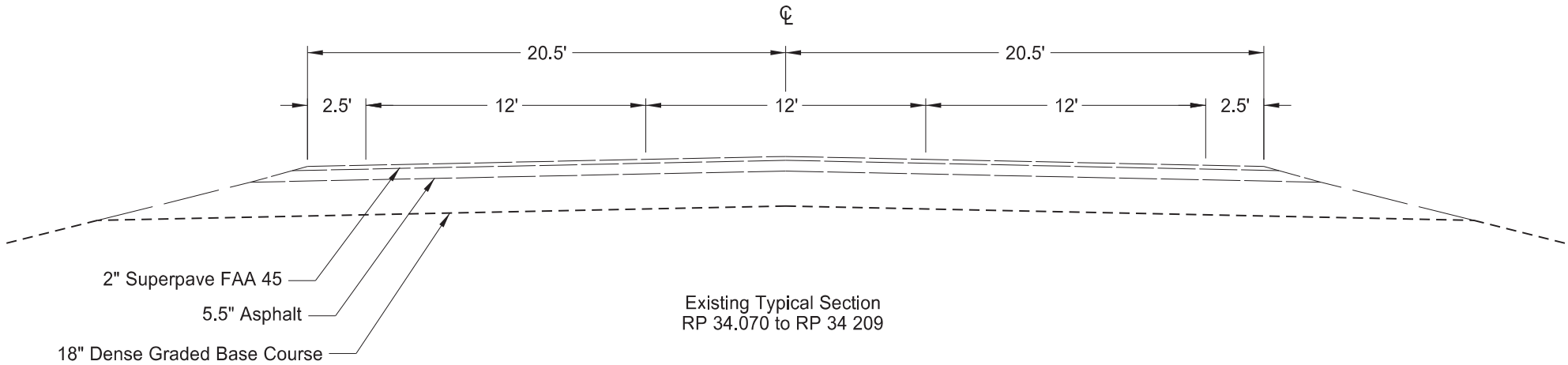
Typical Sections

Seal Coat

Rhame to Bowman



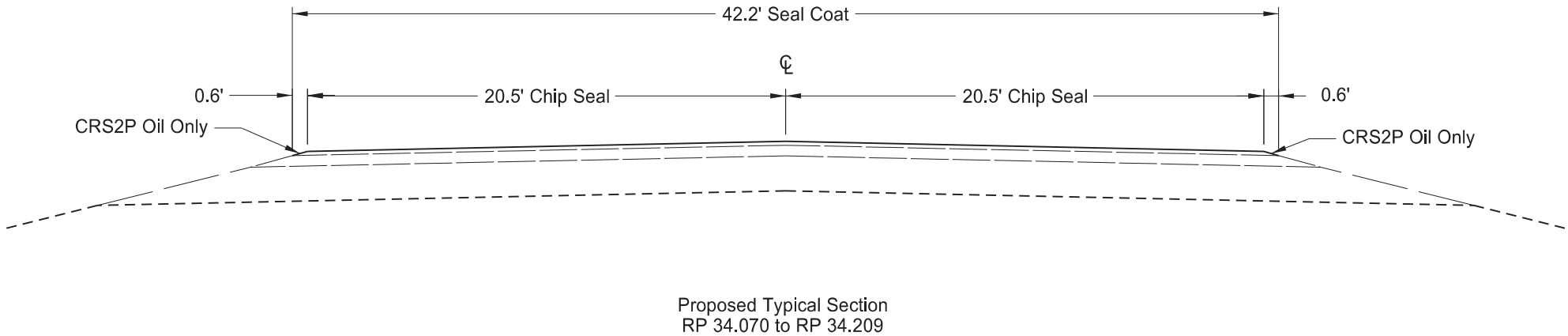
	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	30	9



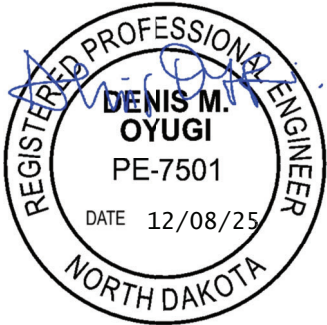
Chip Seal = CRS2P Oil & Cover Coat CI 41
Seal Coat = Area measured for payment
(Chip Seal Area + CRS2P Oil Only Area)

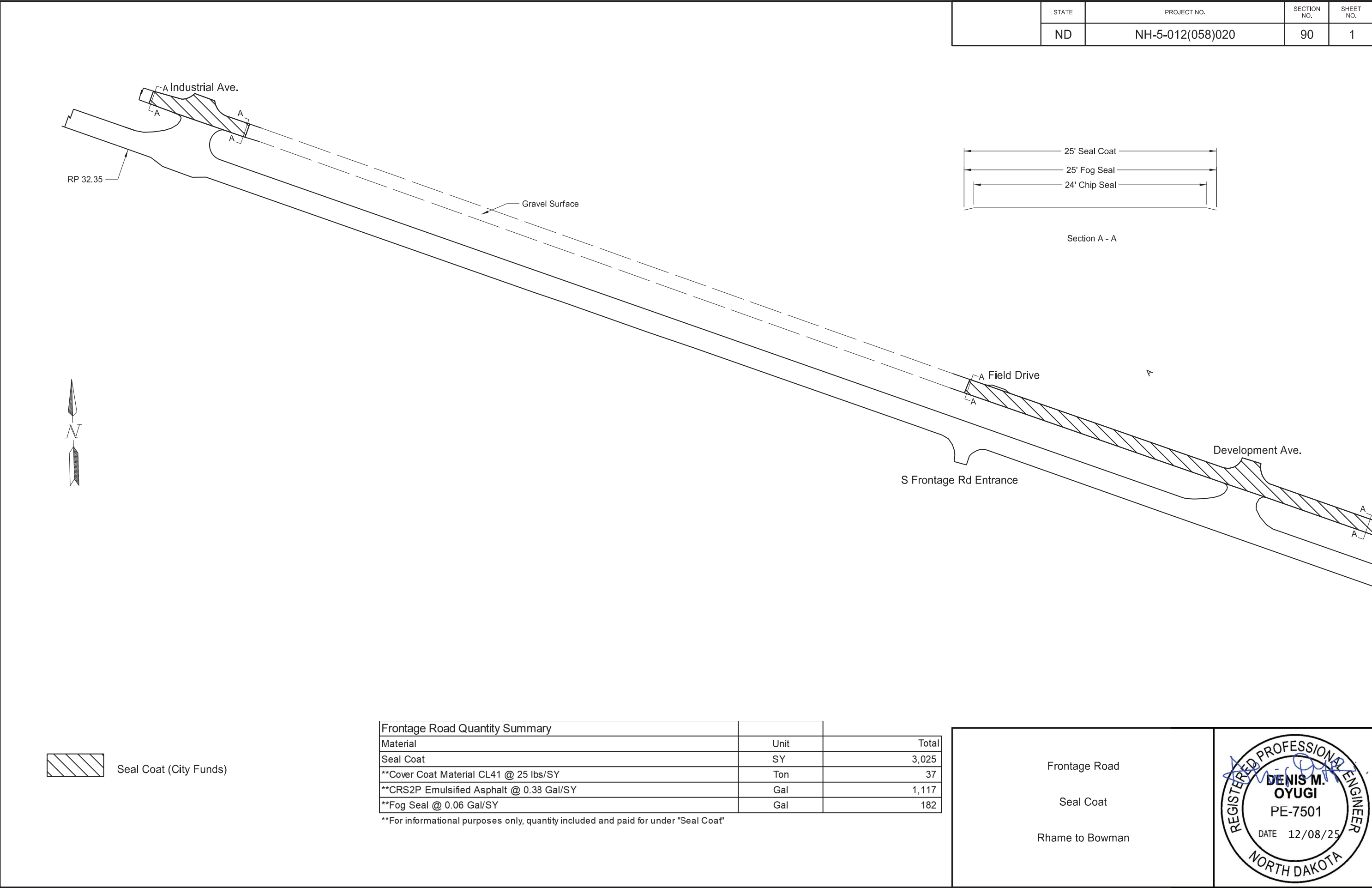
Chip Seal: CRS2P Oil @ 0.38 gal/sy
Cover Coat CI 41 @ 25 lbs/sy

CRS2P Oil Only: CRS2P Oil @ 0.38 gal/sy



Typical Sections
Seal Coat
Rhame to Bowman





	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	90	1



Section A - A

Frontage Road Quantity Summary		
Material	Unit	Total
Seal Coat	SY	3,025
**Cover Coat Material CL41 @ 25 lbs/SY	Ton	37
**CRS2P Emulsified Asphalt @ 0.38 Gal/SY	Gal	1,117
**Fog Seal @ 0.06 Gal/SY	Gal	182

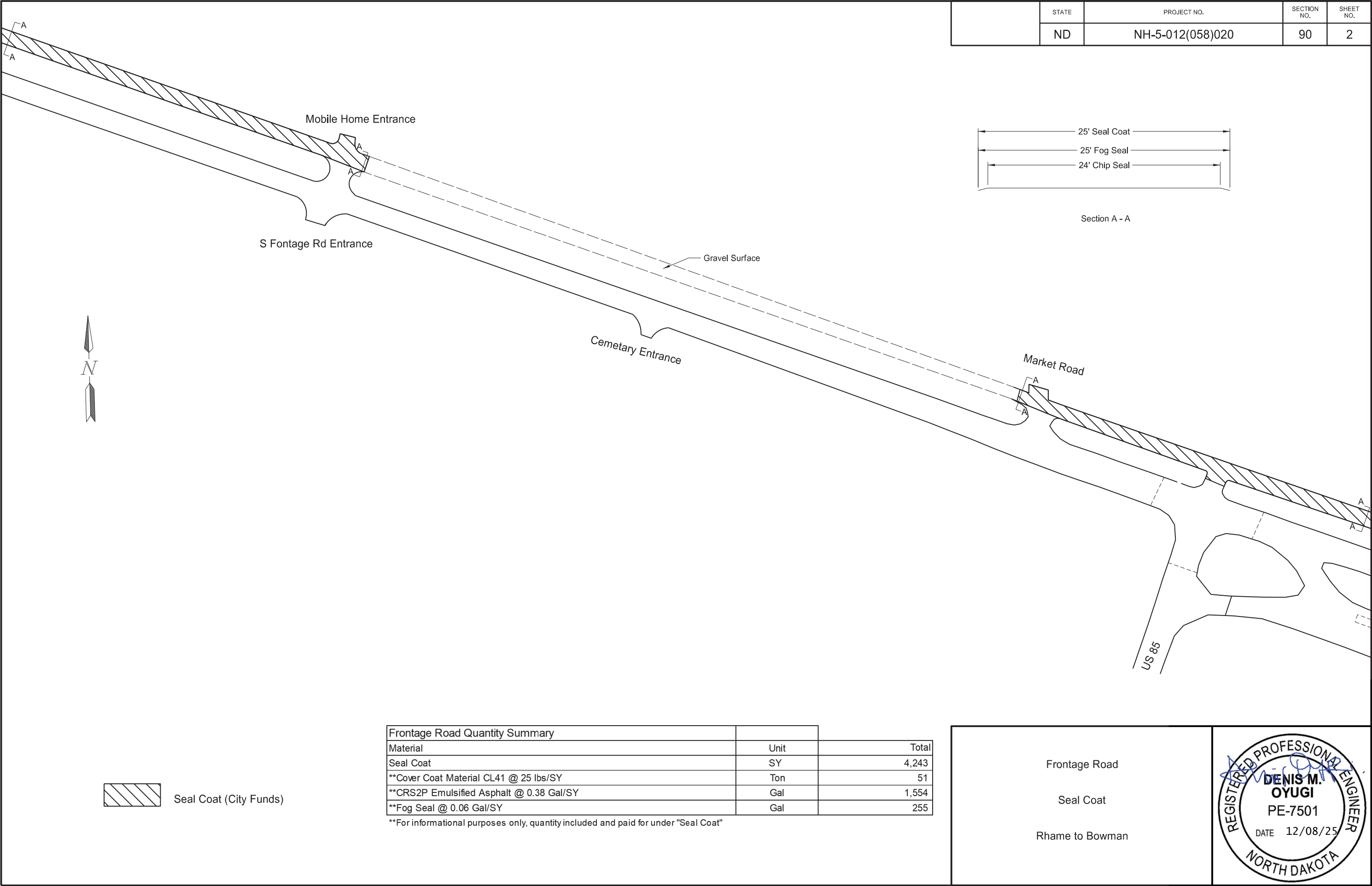
**For informational purposes only, quantity included and paid for under "Seal Coat"

Frontage Road

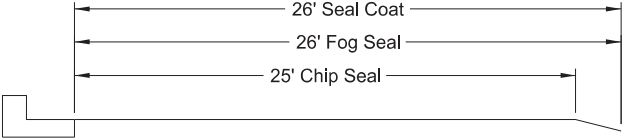
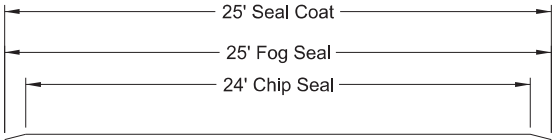
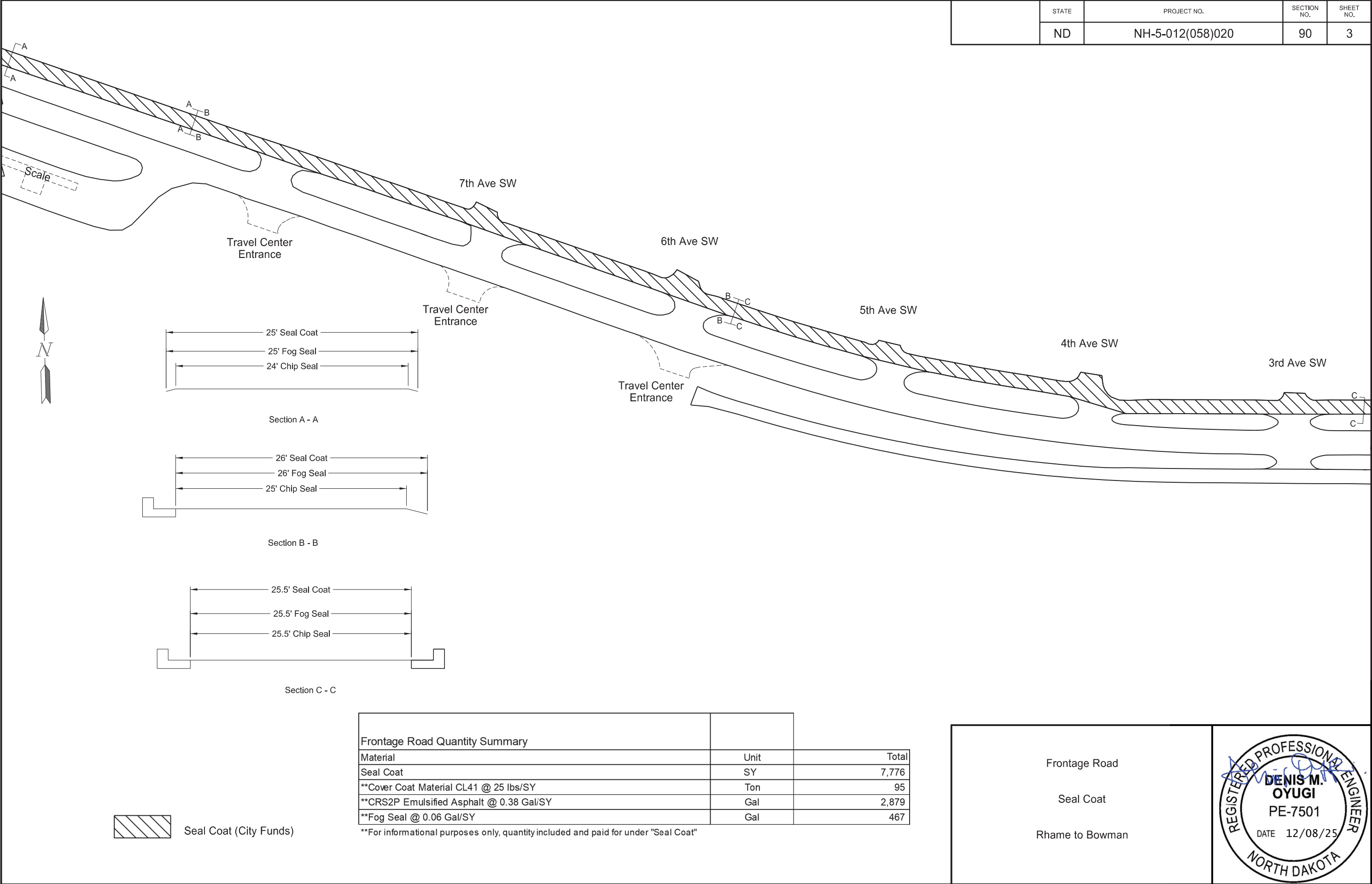
Seal Coat

Rhame to Bowman

REGISTERED PROFESSIONAL ENGINEER
DENIS M. OYUGI
PE-7501
DATE 12/08/25
NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	90	3



Seal Coat (City Funds)

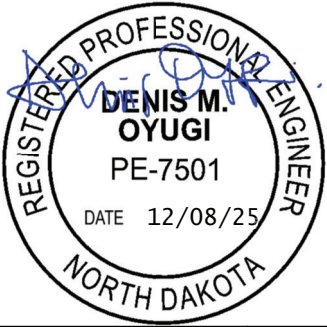
Frontage Road Quantity Summary		
Material	Unit	Total
Seal Coat	SY	7,776
**Cover Coat Material CL41 @ 25 lbs/SY	Ton	95
**CRS2P Emulsified Asphalt @ 0.38 Gal/SY	Gal	2,879
**Fog Seal @ 0.06 Gal/SY	Gal	467

**For informational purposes only, quantity included and paid for under "Seal Coat"

Frontage Road

Seal Coat

Rhame to Bowman



STATE

ND

PROJECT NO.

SECTION NO.

SHEET NO.

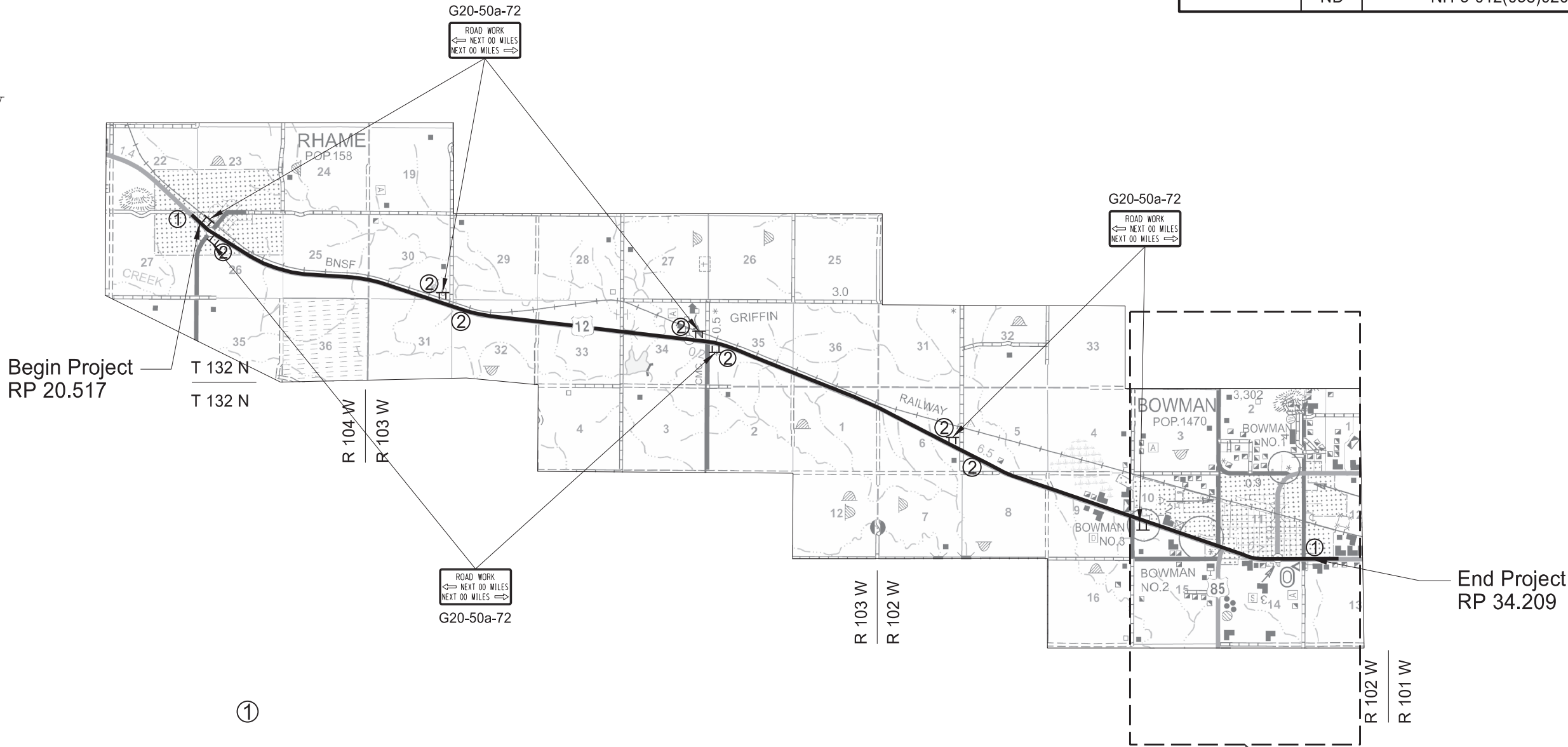
NH-5-012(058)020

100

1

SIGN NUMBER	SIGN SIZE	DESCRIPTION	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB TOTAL
E5-1-48	48"x48"	EXIT GORE		35	
G20-1-60	60"x24"	ROAD WORK NEXT MILES	2	28	56
G20-1b-60	60"x24"	NO WORK IN PROGRESS (Sign and installation only)		18	
G20-2-48	48"x24"	END ROAD WORK	2	26	52
G20-4-36	36"x18"	PILOT CAR FOLLOW ME (Mounted to back of pilot car)		18	
G20-4b-36	36"x30"	WAIT FOR PILOT CAR		18	
G20-50a-72	72"x36"	ROAD WORK NEXT MILES RT & LT ARROWS	29	43	1247
G20-52a-72	72"x24"	ROAD WORK NEXT MILES RT or LT ARROW		36	
G20-55-96	96"x48"	SPEED LIMIT ENFORCED - MINIMUM FEE \$150 WHEN WORKERS PRESENT	2	59	118
M1-1-36	36"x36"	INTERSTATE ROUTE MARKER (Post and installation only)		11	
M1-4-24	24"x24"	U.S. ROUTE MARKER (Post and installation only)		10	
M1-5-24	24"x24"	STATE ROUTE MARKER (Post and installation only)		10	
M3-1-24	24"x12"	NORTH (Mounted on route marker post)		7	
M3-2-24	24"x12"	EAST (Mounted on route marker post)		7	
M3-3-24	24"x12"	SOUTH (Mounted on route marker post)		7	
M3-4-24	24"x12"	WEST (Mounted on route marker post)		7	
M4-8-24	24"x12"	DETOUR (Mounted on route marker post)		7	
M4-9-30	30"x24"	DETOUR ARROW RIGHT or LEFT/AHD AND RT or LT		15	
M4-10-48	48"x18"	DETOUR (INSIDE ARROW) RIGHT or LEFT (Mounted on barricade)		7	
M5-1-21	21"x15"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)		7	
M5-1-30	30"x21"	ADVANCE TURN ARROW RT or LT(Mounted on route marker post)		9	
M6-1-21	21"x15"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)		7	
M6-1-30	30"x21"	DIRECTIONAL ARROW RT or LT (Mounted on route marker post)		9	
M6-3-21	21"x15"	DIRECTIONAL ARROW UP (Mounted on route marker post)		7	
R1-1-48	48"x48"	STOP		32	
R1-2-60	60"x60"	YIELD		29	
R2-1-36	36"x48"	SPEED LIMIT (Portable only)		30	
R2-1-48	48"x60"	SPEED LIMIT	17	39	663
R2-1aP-24	24"x18"	MINIMUM FEE \$150 (Mounted on Speed Limit post)	15	10	150
R3-2-48	48"x48"	NO LEFT TURN		35	
R4-1-48	48"x60"	DO NOT PASS	9	39	351
R4-7-48	48"x60"	KEEP RIGHT		39	
R5-1-48	48"x48"	DO NOT ENTER		35	
R6-1-54	54"x18"	ONE WAY RIGHT or LEFT (Mounted on STOP or DO NOT ENTER post)		14	
R7-1-12	12"x18"	NO PARKING ANY TIME		11	
R10-6-24	24"x36"	STOP HERE ON RED		16	
R11-2-48	48"x30"	ROAD CLOSED (Mounted on barricade)		12	
R11-2a-48	48"x30"	STREET CLOSED (Mounted on barricade)		12	
R11-3a-60	60"x30"	ROAD CLOSED MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)		15	
R11-3c-60	60"x30"	STREET CLOSED MILES AHEAD LOCAL TRAFFIC ONLY (Mtd on barricade)		15	
R11-4a-60	60"x30"	STREET CLOSED TO THRU TRAFFIC (Mounted on barricade)		15	
W1-3-48	48"x48"	REVERSE TURN RIGHT or LEFT		35	
W1-4-48	48"x48"	REVERSE CURVE RIGHT or LEFT		35	
W1-4b-48	48"x48"	TWO LANE REVERSE CURVE RIGHT or LEFT		35	
W1-6-48	48"x24"	ONE DIRECTION LARGE ARROW		26	
W3-1-48	48"x48"	STOP AHEAD		35	
W3-3-48	48"x48"	SIGNAL AHEAD		35	
W3-4-48	48"x48"	BE PREPARED TO STOP		35	
W3-5-48	48"x48"	SPEED REDUCTION AHEAD	2	35	70
W4-2-48	48"x48"	LANE ENDS RIGHT or LEFT		35	
W5-1-48	48"x48"	ROAD NARROWS		35	
W5-8-48	48"x48"	THRU TRAFFIC RIGHT LANE		35	
W5-9-48	48"x48"	ROAD WORK TRAFFIC ONLY DOWN & LT or RT ARROW		35	
W6-3-48	48"x48"	TWO WAY TRAFFIC		35	
W8-1-48	48"x48"	BUMP		35	
W8-3-48	48"x48"	PAVEMENT ENDS		35	
W8-7-48	48"x48"	LOOSE GRAVEL		35	
W8-11-48	48"x48"	UNEVEN LANES		35	
W8-12-48	48"x48"	NO CENTER LINE		35	
W8-17-48	48"x48"	SHOULDER DROP-OFF SYMBOL		35	
W8-53-48	48"x48"	TRUCKS ENTERING HIGHWAY		35	
W8-54-48	48"x48"	TRUCKS ENTERING AHEAD or FT or MILE		35	
W8-55-48	48"x48"	TRUCKS CROSSING AHEAD or FT or MILE		35	
W8-56-48	48"x48"	TRUCKS EXITING HIGHWAY		35	
W9-3a-48	48"x48"	CENTER LANE CLOSED SYMBOL		35	
W13-1P-30	30"x30"	MPH ADVISORY SPEED PLAQUE (Mounted on warning sign post)		14	
W14-3-64	64"x48"	NO PASSING ZONE		28	
W16-2P-30	30"x24"	FEET PLAQUE (Mounted on warning sign post)		10	
W20-1-48	48"x48"	ROAD WORK AHEAD or FT or MILE		35	
W20-2-48	48"x48"	DETOUR AHEAD or FT or MILE		35	
W20-3-48	48"x48"	ROAD or STREET CLOSED AHEAD or FT or MILE		35	

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	100	2



See Sect 100; Sheets 3, 4, 5 & 6

END
ROAD WORK
G20-2-48

ROAD WORK
NEXT 00 MILES
G20-1-60

SPEED LIMIT ENFORCED
MINIMUM FEE \$150
WHEN WORKERS PRESENT
G20-55-96

DO NOT PASS
R4-1-48

SPEED LIMIT 45
W3-5-48

FRESH OIL
LOOSE ROCK
W22-8-48
NEXT 00 MILES
W20-52P-54

SPEED LIMIT 45
R2-1-48
MINIMUM FEE \$150
R2-1aP-24

35mph E end

SPEED LIMIT 65
R2-1-48

45mph after Chip Seal, where speed is greater than 45mph.
After initial sweeping return to posted speed limit.
Sign spacing per D-704-20.

DO NOT PASS
R4-1-48

SPEED LIMIT 45
R2-1-48
MINIMUM FEE \$150
R2-1aP-24

FRESH OIL
LOOSE ROCK
W22-8-48
NEXT 00 MILES
W20-52P-54

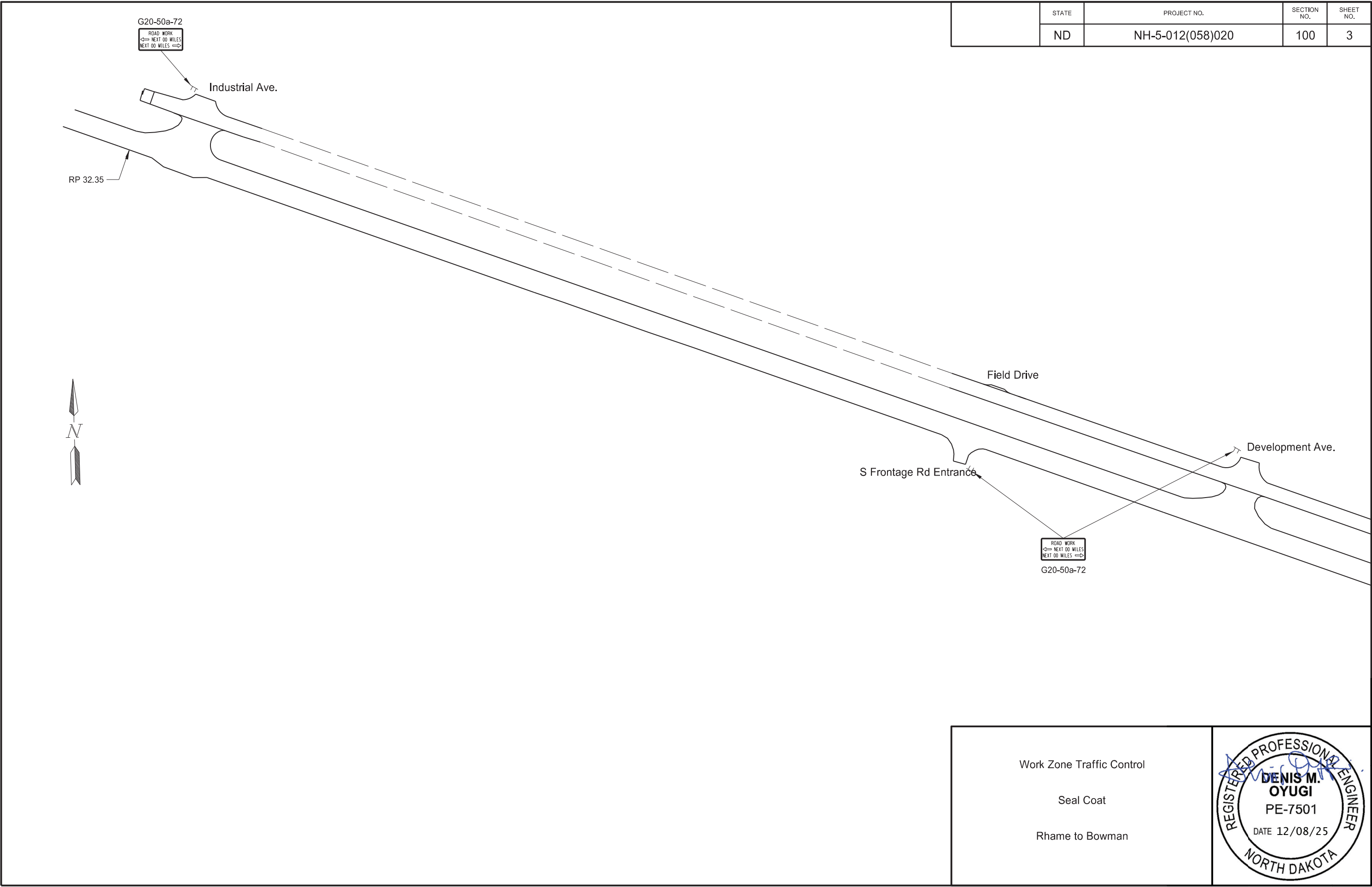
Sign spacing per D-704-20.

Work Zone Traffic Control

Seal Coat

Rhame to Bowman

REGISTERED PROFESSIONAL ENGINEER
DENIS M. OYUGI
PE-7501
DATE 12/08/25
NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	100	3

Work Zone Traffic Control

Seal Coat

Rhame to Bowman

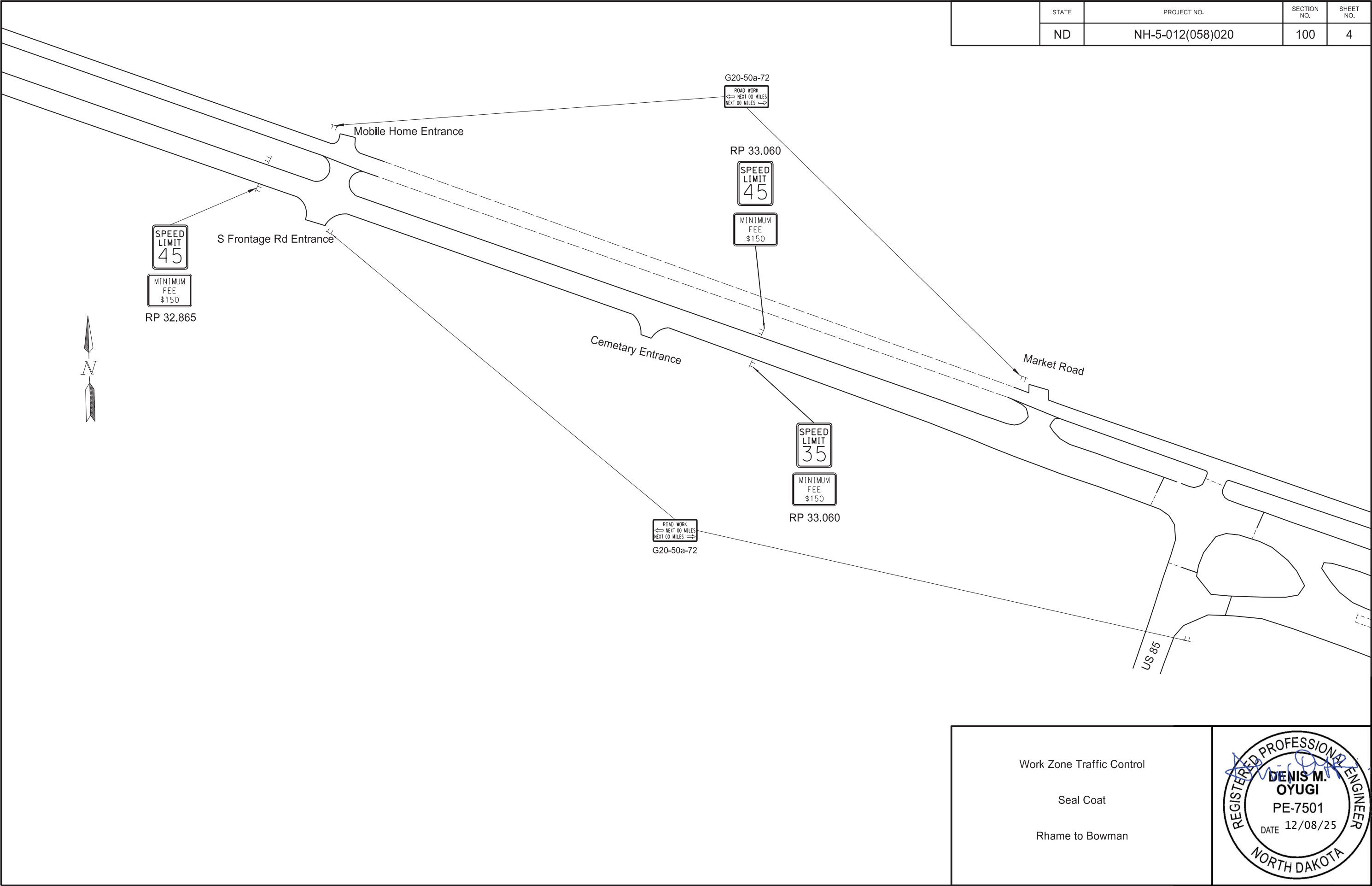
REGISTERED PROFESSIONAL ENGINEER

DENIS M. OYUGI

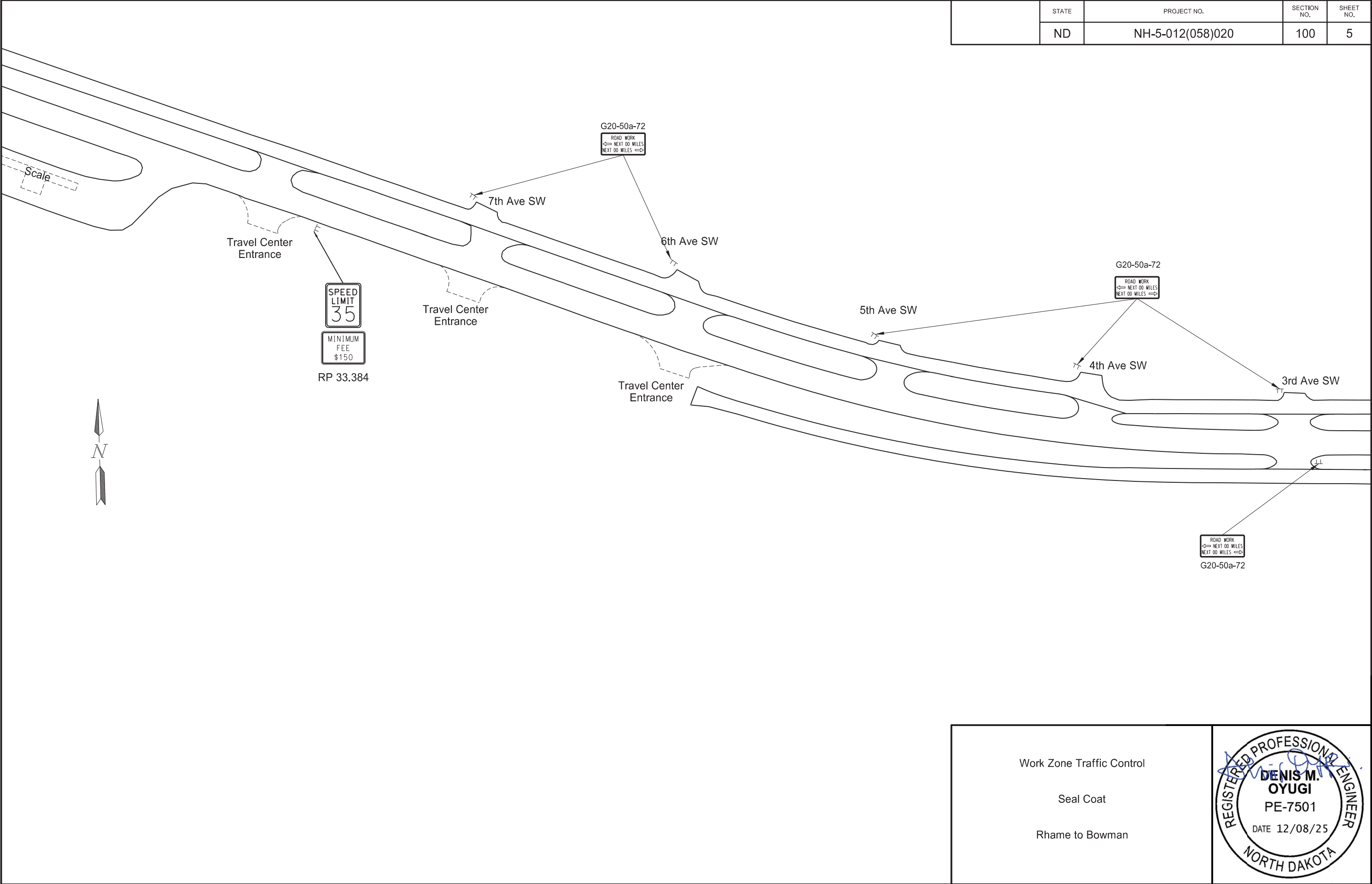
PE-7501

DATE 12/08/25

NORTH DAKOTA



	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	NH-5-012(058)020	100	5

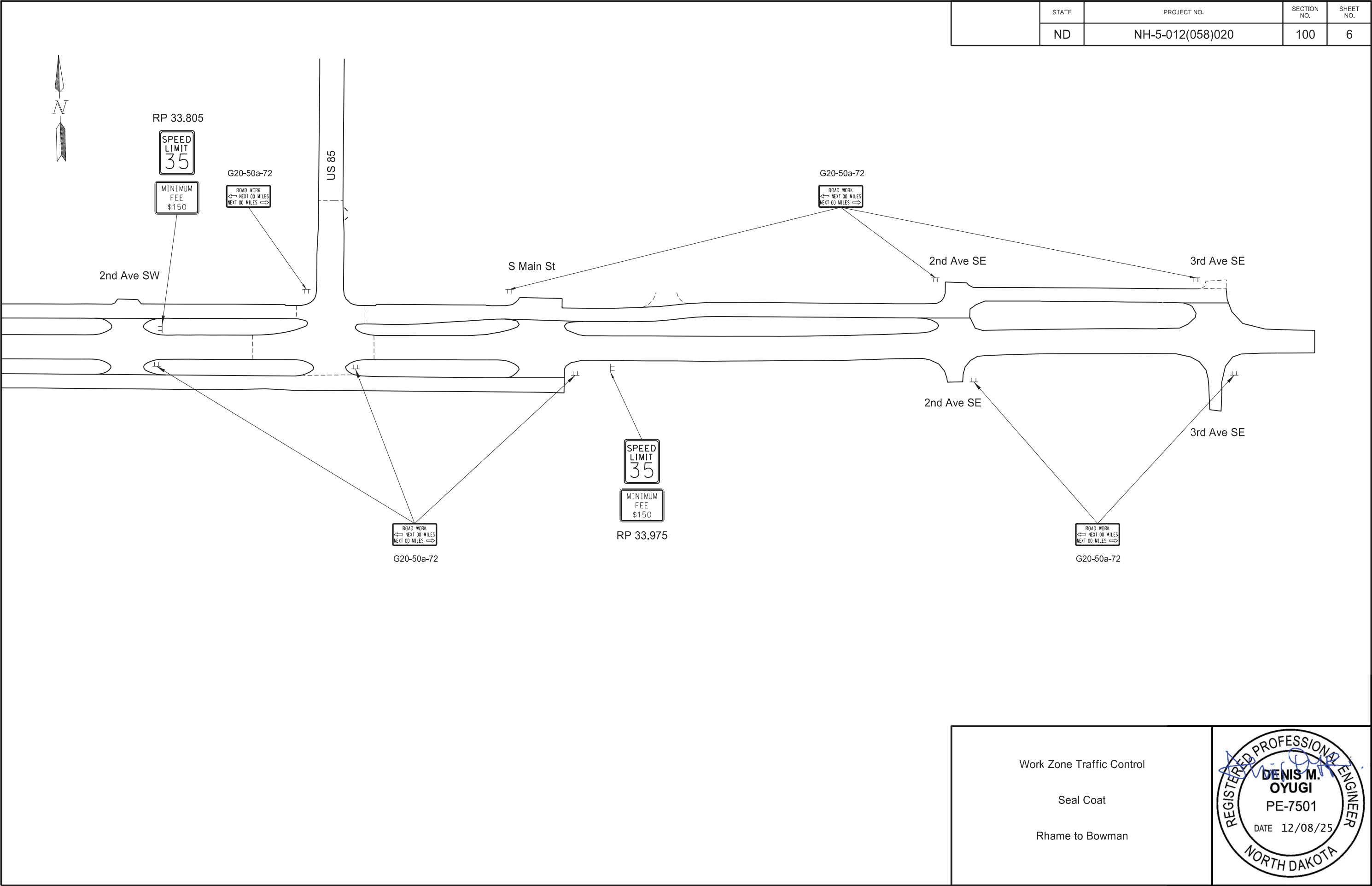


Work Zone Traffic Control

Seal Coat

Rhame to Bowman





NDDOT ABBREVIATIONS

D-101-1

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

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



NDDOT ABBREVIATIONS

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	LvIng	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	Rcy	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			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	PI or P _L	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	preformed		
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			Prod.	production/produce		
Jct	junction	Neop	neoprene	Prog	programmed		
		Ntwk	network	Prop.	property		
		N	North	Ppsd	proposed		
		NE	Northeast	PB	pull box		
		NW	Northwest				
		NB	Northbound				
		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
06-16-22	General Revisions
04-14-25	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	Southeast	TERO	tribal employment rights ordinance
SW	Southwest	Tpl	triple
SB	Southbound	Typ	typical
Sp	spaces		
Spcl	special	Qu	unconfined compressive strength
SA	special assembly	Ugrnd	underground
SP	special provisions	Util	utility
G	specific gravity		
Spk	spike		
SB	split barrel sample	VG	valley gutter
SH	sprinkler head	Vap	vapor
SV	sprinkler valve	Vert	vertical
Sq	square	VCP	vitrified clay pipe
Stk	stake	Vol	volume
Std	standard	VSFS	vehicle speed feedback sign
N	standard penetration test		
Std Specs	standard specifications	Wkwy	walkway
Stm L	steam line	W	water content
SEC	steel encased concrete	WGV	water gate valve
SMA	stone matrix asphalt	WL	water line
SSD	stopping sight distance	WM	water main
SD	storm drain	WMV	water main valve
St	street	W Mtr	water meter
SPP	structural plate pipe	WSV	water service valve
SPPA	structural plate pipe arch	WW	water well
Str	structure	Wrng	wearing
Subd	subdivision	WIM	weigh in motion
Sub	subgrade	W	west
Sub Prep	subgrade preperation	WB	westbound
Ss	subsoil	Wrng	wiring
SS	supplement specification	W/	with
Supp	supplemental	W/o	without
Surf	surfacing		
Surv	survey		
Sym	symmetrical		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
09-03-15	General Revisions
04-23-18	General Revisions
12-18-20	General Revisions
08-16-22	General Revisions
04-14-25	General Revisions



NDDOT ABBREVIATIONS

D-101-4

MEASUREMENTS

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

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

SURVEY DESCRIPTIONS

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

SOIL TYPES

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
07-01-14	
REVISIONS	
DATE	CHANGE
12-18-20	Sheet Added - Continued from D-101-3 General Revisions
4-14-25	



NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

D-101-10

702COM 702 Communications
ACCENT Accent Communications
AGASSIZ WU Agassiz Water Users District
AGC Associated General Contractors of America
ALL PL Alliance Pipeline
ALL SEAS WU All Seasons Water Users District
AMOCO PI Amoco Pipeline Company
AMRDA HESS Amerada Hess Corporation
AT&T AT&T Corporation
B PAW Bear Paw Energy Incorporated
BAKER ELEC Baker Electric
BASIN ELEC Basin Electric Cooperative Incorporated
BEK TEL Bek Communications Cooperative
BELLE PL Belle Fourche Pipeline Company
BLM Bureau of Land Management
BNSF Burlington Northern Santa Fe Railway
BOEING Boeing
BRNS RWD Barnes Rural Water District
BURK-DIV ELEC Burke-Divide Electric Cooperative
BURL WRD Burleigh County Water Resource District
CABLE ONE Cable One
CABLE SERV Cable Services
CAP ELEC Capital Electric Cooperative Incorporated
CASS CO ELEC Cass County Electric Cooperative
CASS RWU Cass Rural Water Users District
CAV ELEC Cavalier Rural Electric Cooperative
CBLCOM Cablecom Of Fargo
CENEX PL Cenex Pipeline
CENT PL WATER DIST Central Pipe Line Water District
CENT PWR ELEC Central Power Electric Cooperative
CENTURYLINK CenturyLink
COE Corps of Engineers
CONS COMM Consolidated Communications
CONS TELCOM Consolidated Telcom
CONT RES Continental Resource Inc
CPR Canadian Pacific Railway
D O E Department Of Energy
DAK CARR Dakota Carrier Network
DAK CENT TEL Dakota Central Telephone
DAK RWD Dakota Rural Water District
DGC Dakota Gasification Company
DICKY R NET Dickey Rural Networks
DICKY WRD Dickey County Water Resource District
DICKY TEL Dickey Telephone
DNRR Dakota Northern Railroad
DOME PL Dome Pipeline Company
DVELEC Dakota Valley Electric Cooperative
DVMW Dakota, Missouri Valley & Western
E CENT REG WD East Central Water District
ENBRDG Enbridge Pipelines Incorporated
ENVENTIS Enventis Telephone
EQUINOR Equinor Pipeline
FALK MNG Falkirk Mining Company
FHWA Federal Highway Administration
G FKS-TRL WD Grand Forks-traill Water District
GETTY TRD & TRAN Getty Trading & Transportation
GLDN W ELEC Golden West Electric Cooperative

GTR RAMSEY WD Greater Ramsey Water District
GT PLNS NAT GAS Great Plains Natural Gas Company
HALS TEL Halstad Telephone Company
IDEA1 Idea1
INT-COMM TEL Inter-Community Telephone Company
KANEB PL Kaneb Pipeline Company
KEM ELEC Kem Electric Cooperative Incorporated
KOCH GATH SYS Koch Gathering Systems Incorporated
LKHD PL Lakehead Pipeline Company
LWR YELL R ELEC Lower Yellowstone Rural Electric
LUMEN Lumen Technologies Incorporated
MCKNZ CON McKenzie Consolidated Telcom
MCKNZ ELEC McKenzie Electric Cooperative
MCKNZ WRD McKenzie County Water Resource District
MCLEOD McLeod USA
MCLN ELEC McLean Electric Cooperative
MCLN-SHRDN R WAT McLean-Sheridan Rural Water District
MDU Montana-dakota Utilities
MIDCO MidContinent Communications
MIDSTATE TEL Midstate Telephone Company
MINOT CABLE Minot Cable Television
MINOT TEL Minot Telephone Company
MISS VALL COMM Missouri Valley Communications Incorporated
MISS W W S Missouri West Water System
MNKOTA PWR Minnkota Power
MOR-GRAN-SOU ELEC Mor-gran-sou Electric Cooperative
MOUNT-WILLI ELEC Mountrail-williams Electric Cooperative
MLGC Moore & Liberty - Griggs County
MUNICIPAL City Water And Sewer
MUNICIPAL City Of '.....'
N CENT ELEC North Central Electric Cooperative
N PRAIR REG WD North Prairie Regional Water District
ND PKS & REC North Dakota Parks And Recreation
ND TEL North Dakota Telephone Company
NDDOT North Dakota Department of Transportation
NE REG WD Northeast Regional Water District
NDSU SOIL SCI DEPT NDSU Soil Science Department
NEMONT TEL Nemont Telephone
NODAK R ELEC Nodak Rural Electric Cooperative
NOON FRMS TEL Noonan Farmers Telephone Company
NPR Northern Plains Railroad
NSP Northern States Power
NTHN BRDR PL Northern Border Pipeline
NTHN PLNS ELEC Northern Plains Electric Cooperative Incorporated
NTHWSTRN REF Northwestern Refinery Company
NW COMM Northwest Communication Cooperation
NWRWD Northwest Rural Water District
ONEOK Oneok gas
OSHA Occupational Safety and Health Administration
OTTR TL PWR Otter Tail Power Company
PAAP Plains All American Pipeline
P L E M Prairielands Energy Marketing
POLAR COM Polar Communications
PVT ELEC Private Electric
QWEST Qwest Communications
R&T REG WD R & T Water District

RED RIV COMM Red River Communications
RESVTN TEL Reservation Telephone
ROBRTS TEL Roberts Company Telephone
R-RIDER ELEC Roughrider Electric Cooperative
RRVW Red River Valley & Western Railroad
S CENT REG WD South Central Regional Water District
SE W U Southeast Water Users Incorporated
SCOTT CABLE Scott Cable Television Dickinson
SHERDN ELEC Sheridan Electric Cooperative
SHEYN VLY ELEC Sheyenne Valley Electric Cooperative
SKYTECH Skyland Technologies Incorporated
SLOPE ELEC Slope Electric Cooperative Incorporated
SOURIS RIV TELCOM Souris River Telecommunications
ST WAT COMM State Water Commission
STATE LN WATER State Line Water Cooperative
STER ENG Sterling Energy
STUT RWD Stutsman Rural Water District
SW PL PRJ Southwest Pipeline Project
SWWA Southwest Water Authority
SUNOCO Sunoco LP
T M C Turtle Mountain Communications
TCI TCI of North Dakota
TESORO GHG PLNS PL Tesoro High Plains Pipeline
TRI-CNTY WU Tri-County Water Users Incorporated
TRL CO WRD Traill County Water Resource District
UNTD TEL United Telephone
UPPR SOUR WD Upper Souris Water District
US SPRINT U.S. Sprint
USAF MSL CABLE U.S.A.F. Missile Cable
USFWS US Fish and Wildlife Service
USW COMM U.S. West Communications
VRNDRY ELEC Verendrye Electric Cooperative
W RIV TEL West River Telephone Incorporated
WAPA Western Area Power Administration
WAWSA Western Area Water Supply Authority
WEB W. E. B. Water Development Association
WILLI WRD Williams County Water Resource District
WILSTN BAS PL Williston Basin Interstate Pipeline Company
WLSH RWD Walsh Water Rural Water District
WOLVRTN TEL Wolverton Telephone
XLENER Xcel Energy
YSVR Yellowstone Valley Railroad

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



LINE STYLES

Existing Topography

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

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

Proposed Topography

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

Existing Utilities

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

Proposed Utilities

	24 Inch Pipe
	Reinforced Concrete Pipe
	Under Drain
	Edge Drain

Traffic Utilities

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

Sign Structures

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

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

07-01-14

REVISIONS






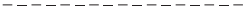







DATE	CHANGE
09-23-16	Added and Revised Items, Organized by Functional Groups
12-18-20	General Revisions

12 18 2020





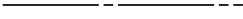




LINE STYLES

D-101-21



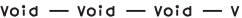





Right Of Way

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







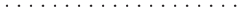
Boundary Control

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



Cross Sections and Typicals

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



Geotechnical

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







Countours

	Depression Contours
	Supplemental Contour




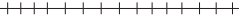
Profile

	Subgrade, Subcut or Ditch Grade
	Topsoil Profile










Striping

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








Pavement Joints

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






Bridge Details

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

Erosion Control

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

Environmental

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

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

07-01-14

REVISIONS

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

KIRK J. HOFF

REGISTERED

PROFESSIONAL

PE-4683

ENGINEER

NORTH DAKOTA

12 18 2020

SYMBOLS

D-101-30


 North Arrow (Half Scale)

 Alignment Data Point

 Alignment Monument

 Spot Elevation

 Existing Miscellaneous Spot

 Existing Access Control Arrow

 Existing Benchmark

 Reset USGS Marker

 Iron Monument Found

 Iron Pin R/W Monument

 Property Corner

 Iron Pin Reference Monument

   Right of Way Marker (Exst, Ppsd, Reset)

 Existing Federal Reference Corner

    Existing Section Corner (Full, Quarter, Sixteenth, Meander)

 Existing Witness Corner


   Existing Control Point (CP, GPS-RTK, TRI)

 Existing Traverse PI Aerial Panel

 Existing Reference Marker Point NGS

 Existing EFB Misc

 Existing Bush or Shrub

 Existing Large Evergreen Tree

 Existing Small Evergreen Tree

 Existing Large Tree

 Existing Small Tree

 Existing Tree Trunk

 Cairn or Stone Circle


 Existing Artifact


 Existing Satellite Dish

 Existing Weather Station

 Existing Windmill or Tower


 Reinforced Pavement

 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

KIRK J. HOFF

REGISTERED



PROFESSIONAL

PE-4683


































ENGINEER

NORTH DAKOTA


12 18 2020

SYMBOLS

D-101-31

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

















































































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




12 18 2020

SYMBOLS


D-101-32

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

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



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



12 18 2020

SYMBOLS

D-101-33

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

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

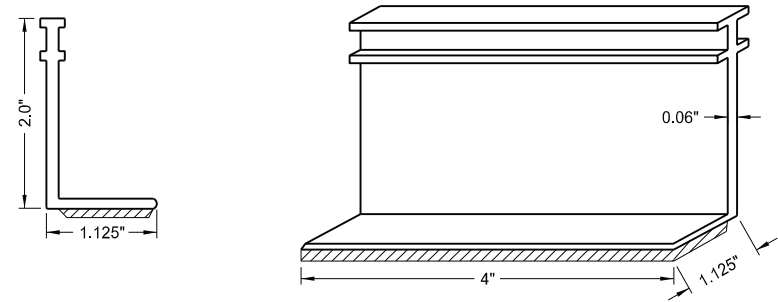
12 18 2020

LANE MARKERS
(Spotting Tab for Seal Projects only)

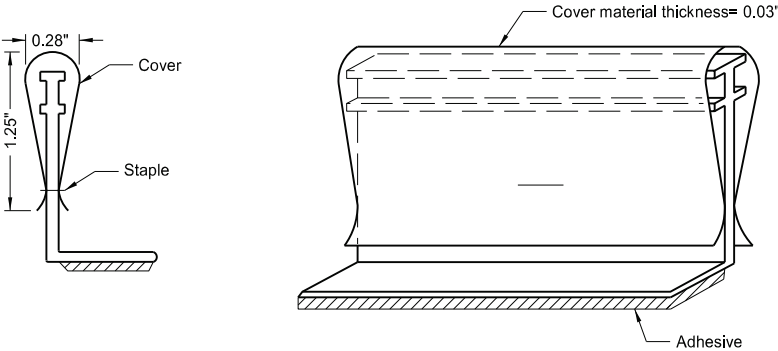
D-704-3

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

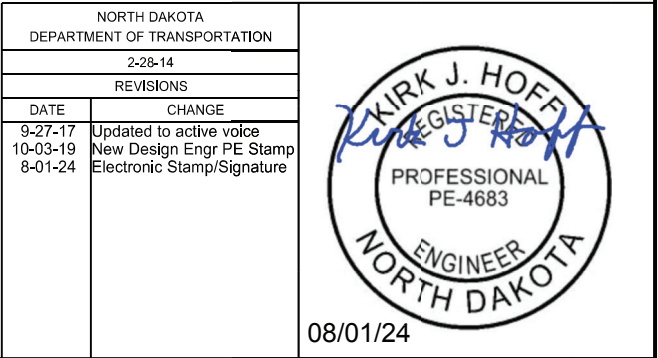


Marker Body with Protective Cover

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
8-01-24	Electronic Stamp/Signature



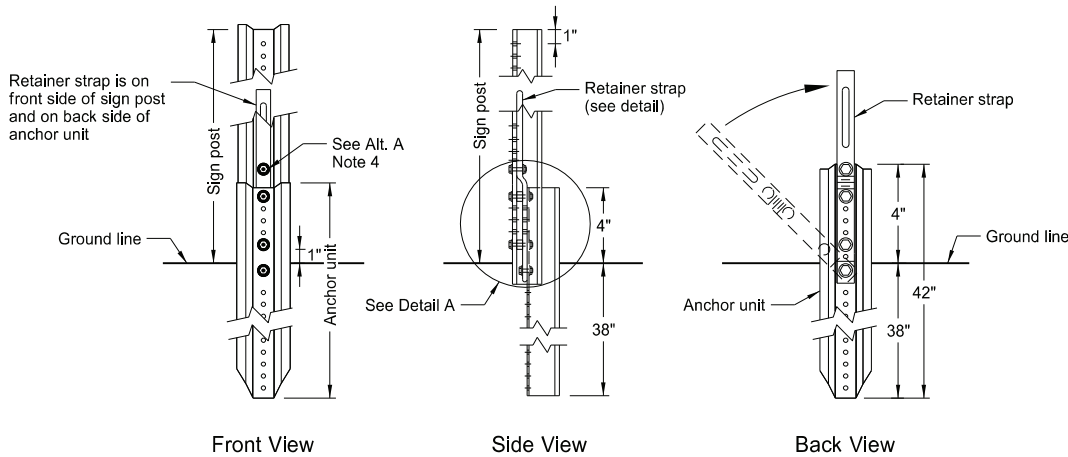
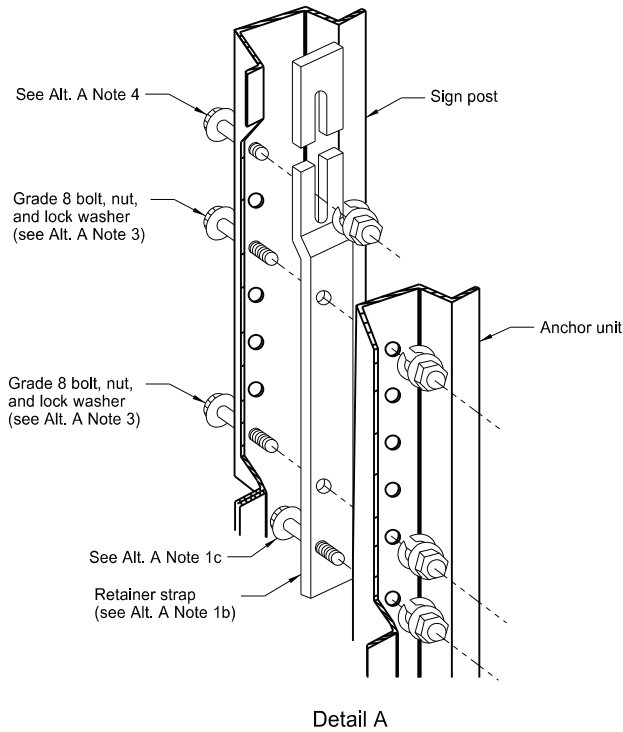
08/01/24



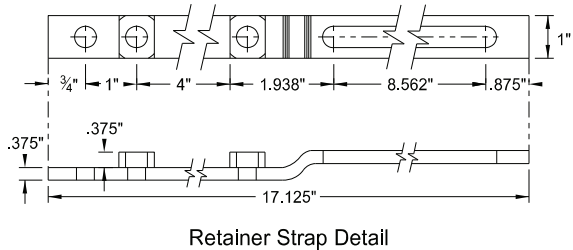
BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS

D-704-8

U-Channel Post

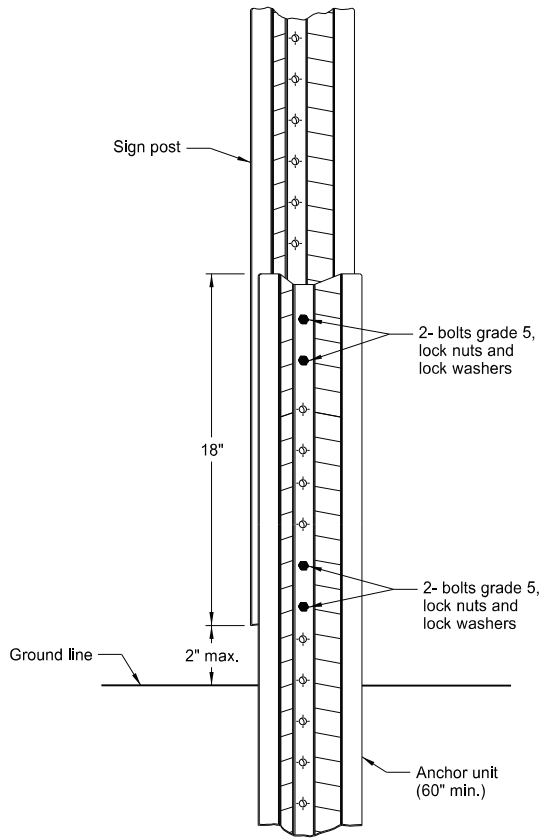


Breakaway U-Channel Detail
Alternate A
Install a maximum of 2 posts within 7'.

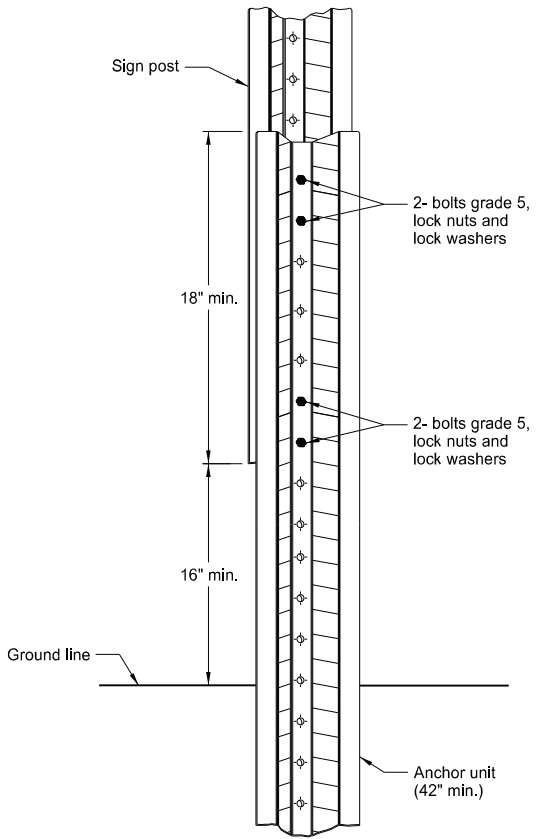


Alternate A Steps of Installation:

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



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'.

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

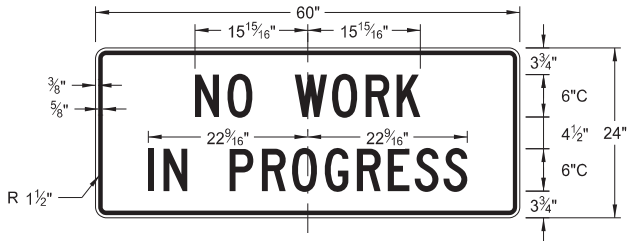


08/01/24

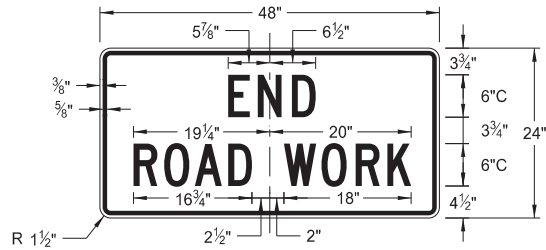
CONSTRUCTION SIGN DETAILS
TERMINAL AND GUIDE SIGNS



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



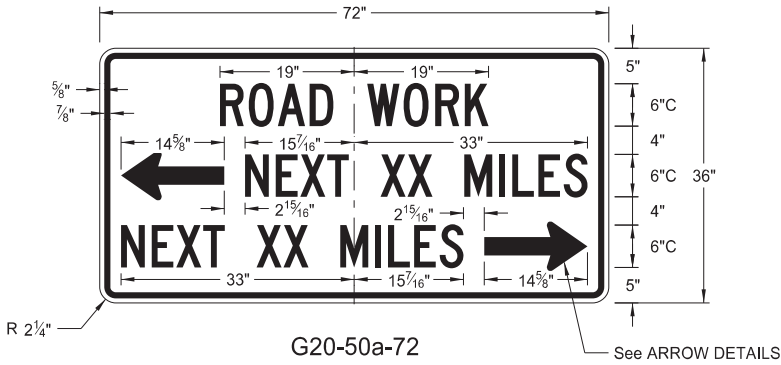
G20-1b-60
Legend: black (non-refl)
Background: orange



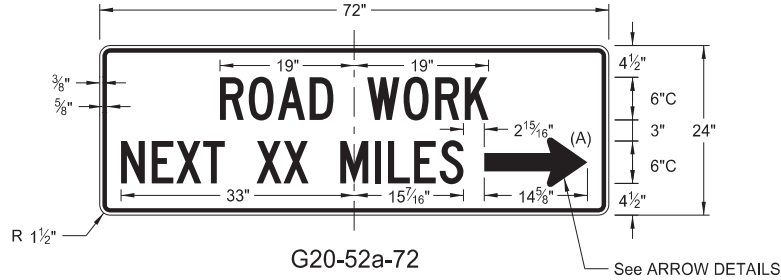
G20-2-48
Legend: black (non-refl)
Background: orange



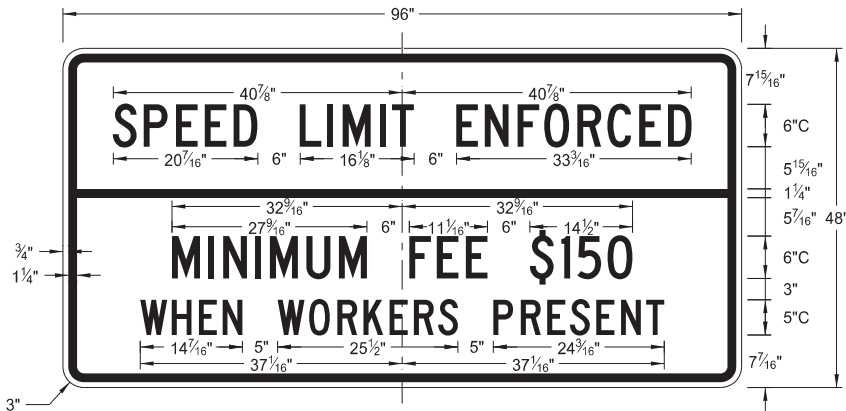
G20-4b-36
Legend: black (non-refl)
Background: orange



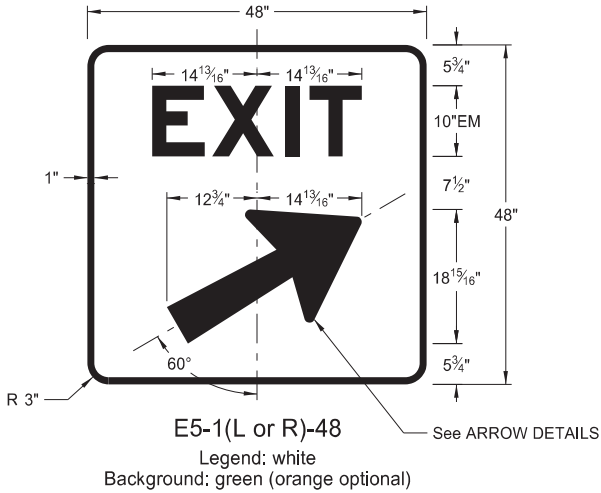
G20-50a-72
Legend: black (non-refl)
Background: orange



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

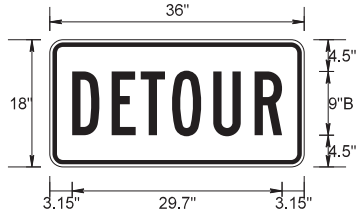


G20-55-96
Legend: black (non-refl)
Background: orange



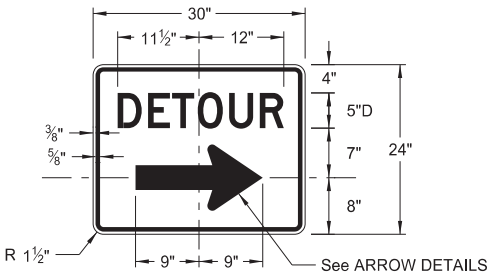
E5-1(L or R)-48

Legend: white
Background: green (orange optional)



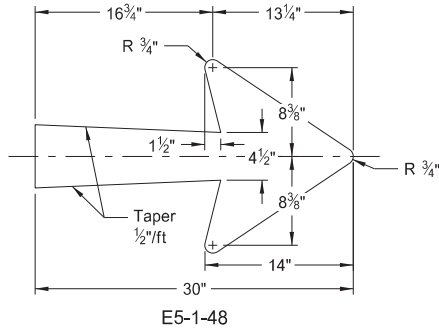
M4-8-36

Legend: black (non-refl)
Background: orange

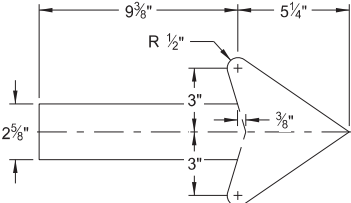


M4-9(L or R)-30 &
M4-9-30

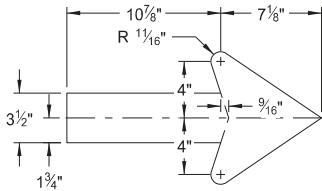
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Background: orange



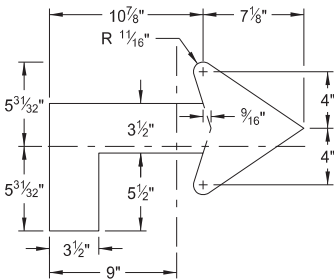
E5-1-48



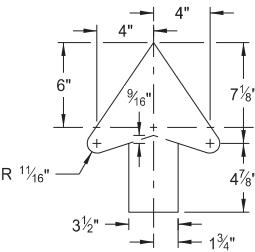
G20-50a-72
G20-52a-72



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:

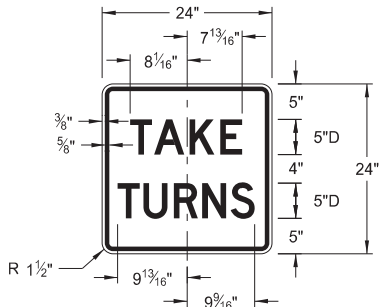
(A) Arrow may be right or left of the legend to indicate construction to the right or left.

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

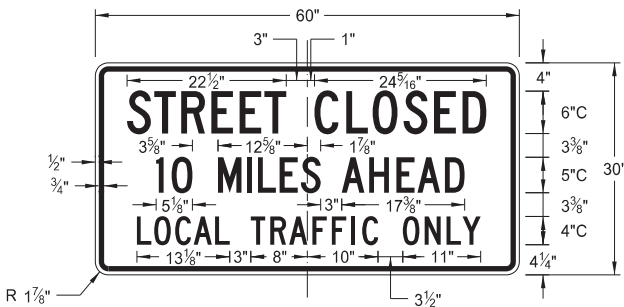


CONSTRUCTION SIGN DETAILS
REGULATORY SIGNS

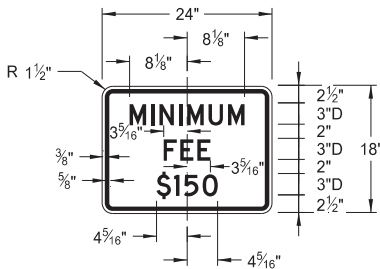
D-704-10



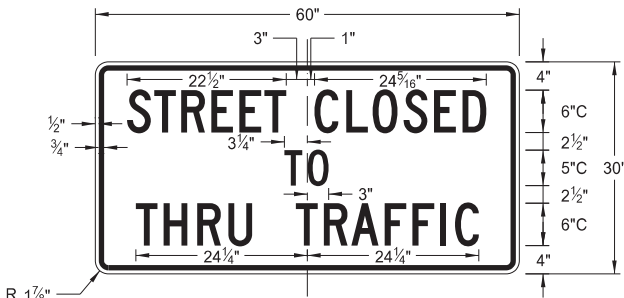
R1-50P-24
Legend: black (non-refl)
Background: white



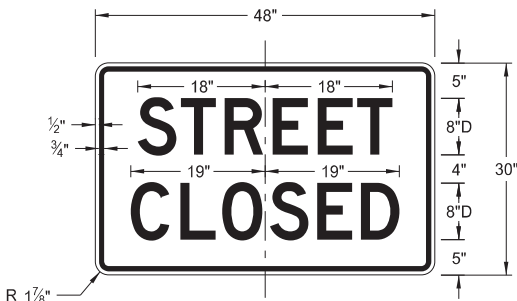
R11-3c-60
Legend: black (non-refl)
Background: white



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



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



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

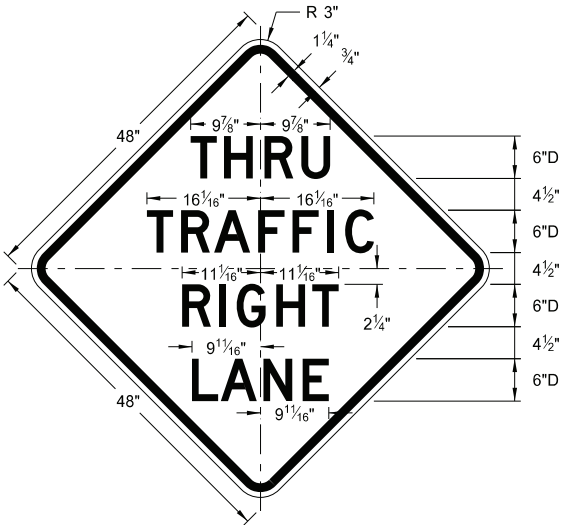
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
08-17-17	Revised sign number
10-03-19	New Design Engineer PE Stamp
08-01-24	Electronic Stamp/Signature
06-30-25	Legislative Changes



CONSTRUCTION SIGN DETAILS
WARNING SIGNS

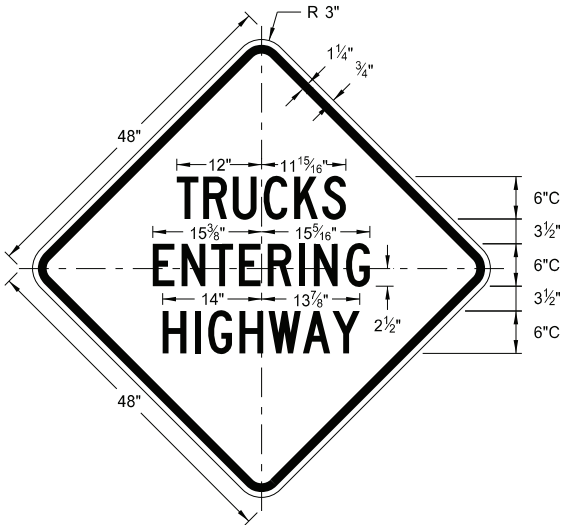
WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
½ MILE	Reduce 50%
1 MILE	Standard

* DISTANCE MESSAGES



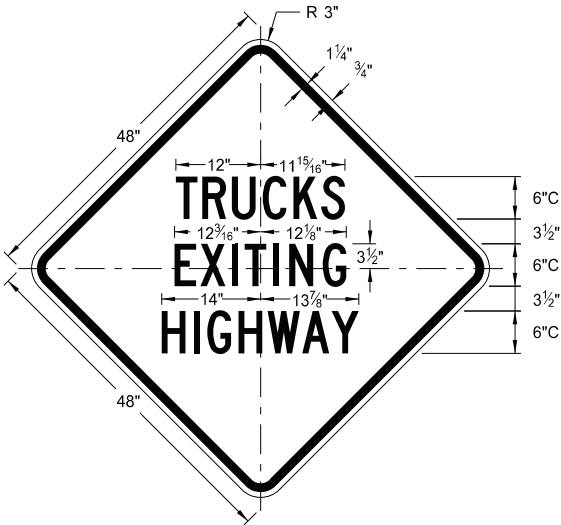
W5-8-48

Legend: black (non-refl)
Background: orange



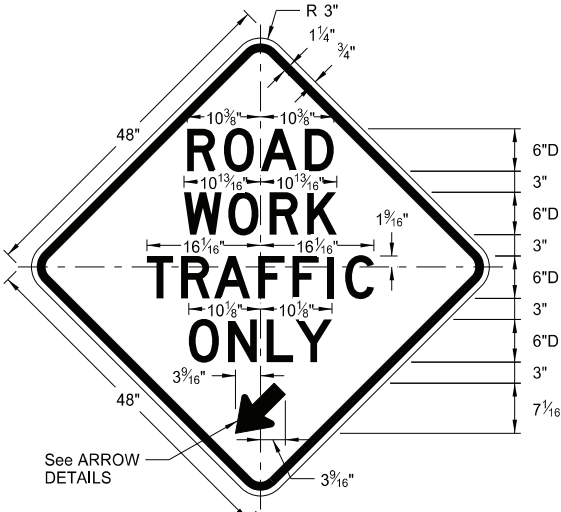
W8-53-48

Legend: black (non-refl)
Background: orange



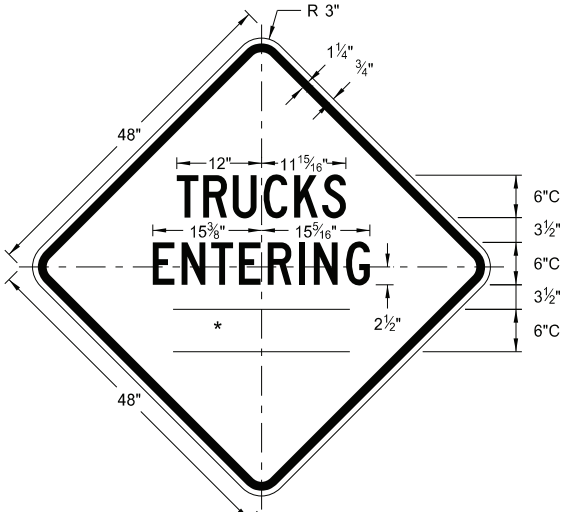
W8-56-48

Legend: black (non-refl)
Background: orange



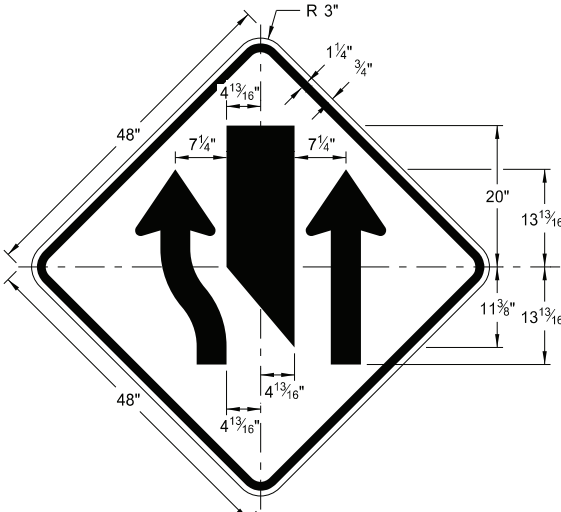
W5-9-48

Legend: black (non-refl)
Background: orange



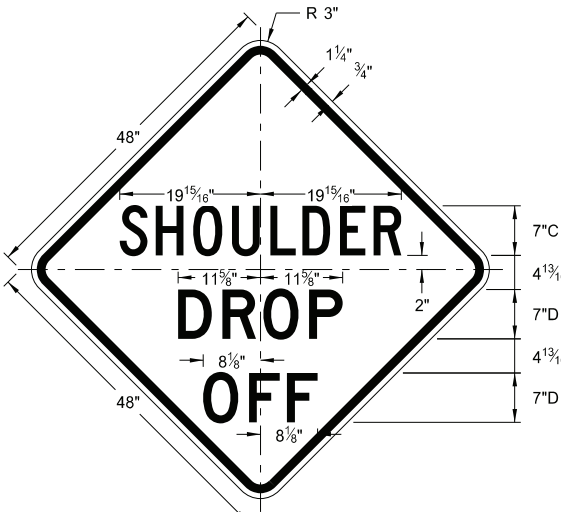
W8-54-48

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Background: orange



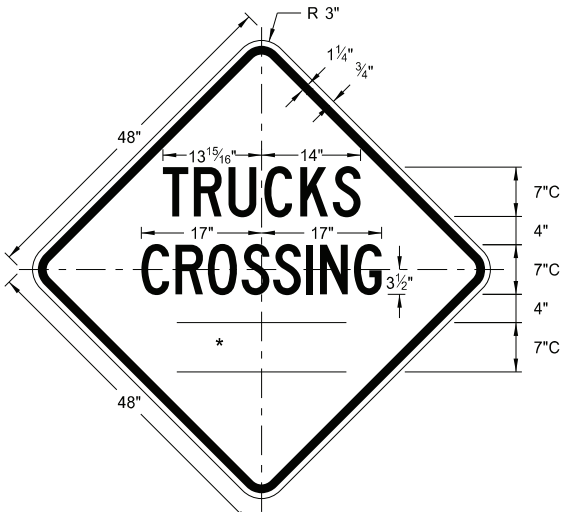
W9-3a-48

Legend: black (non-refl)
Background: orange



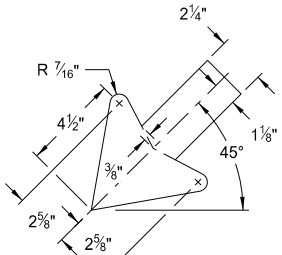
W8-9a-48

Legend: black (non-refl)
Background: orange

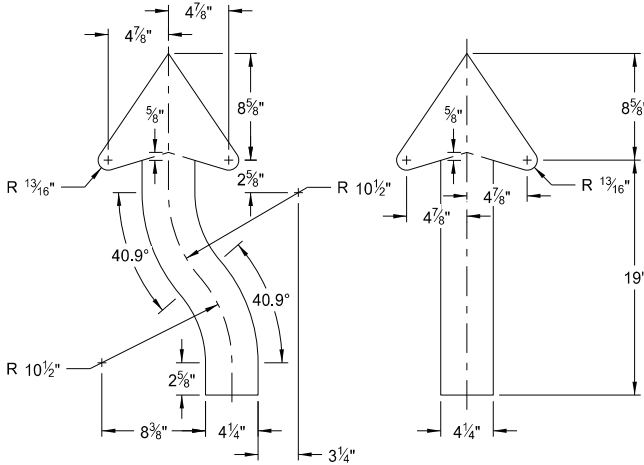


W8-55-48

Legend: black (non-refl)
Background: orange



W5-9-48



W9-3a-48

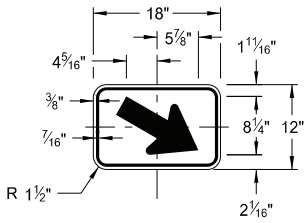
ARROW DETAILS

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
8-01-24	Electronic Stamp/Signature

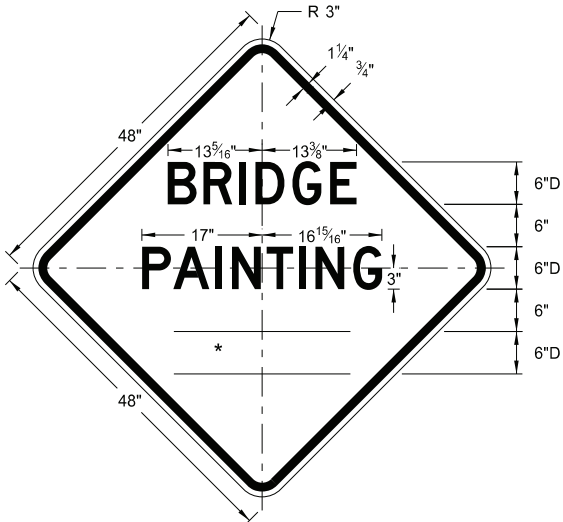


08/01/24

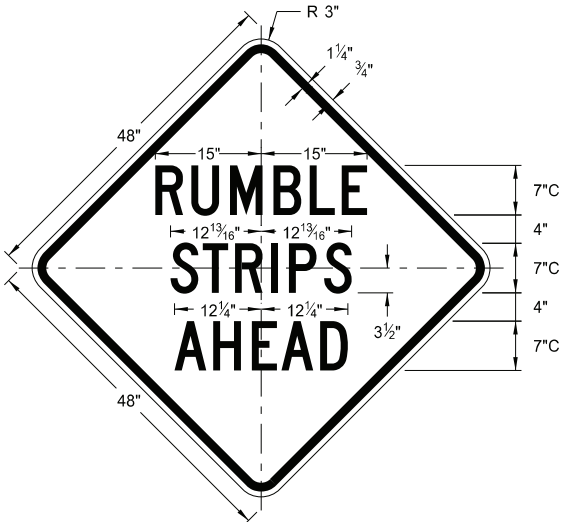
CONSTRUCTION SIGN DETAILS
WARNING SIGNS



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



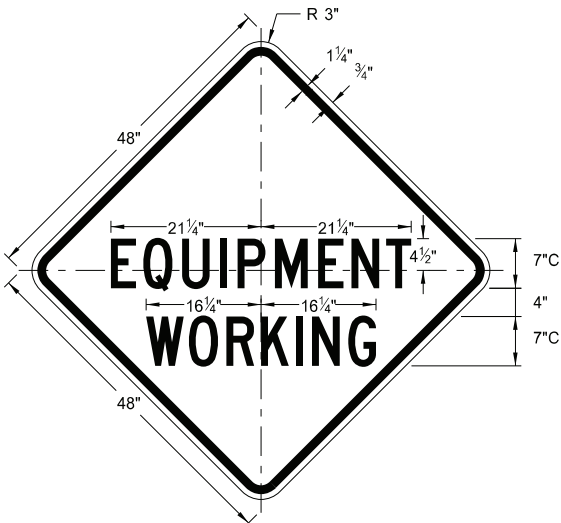
W21-50-48
Legend: black (non-refl)
Background: orange



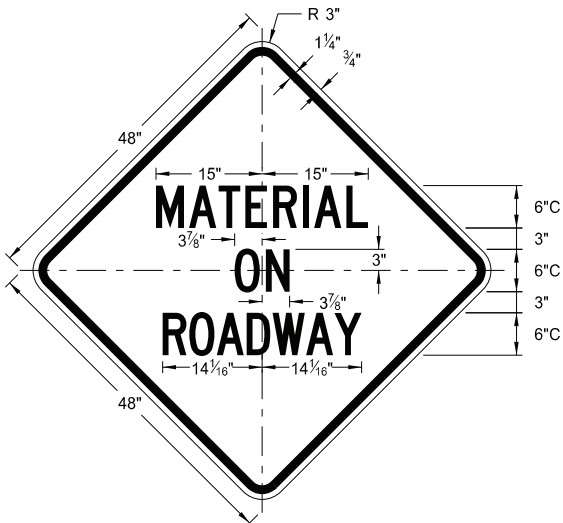
W21-53-48
Legend: black (non-refl)
Background: orange

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

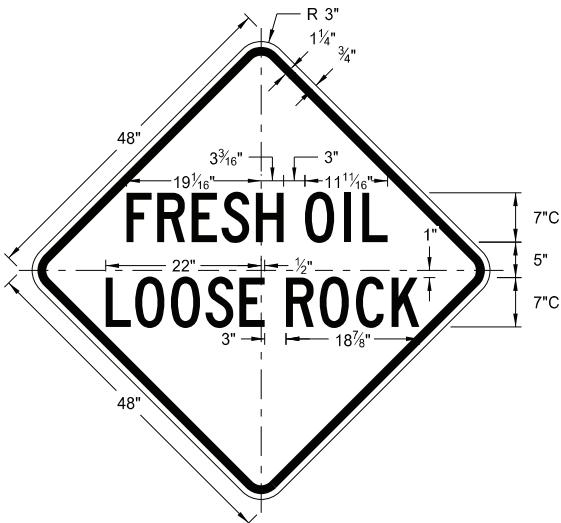
* DISTANCE MESSAGES



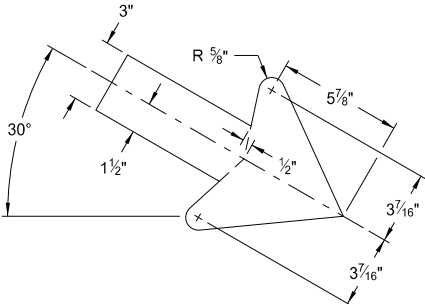
W20-51-48
Legend: black (non-refl)
Background: orange



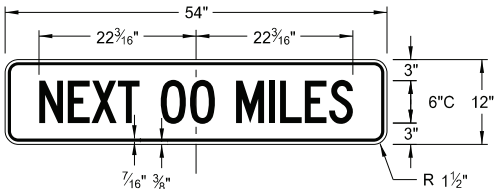
W21-51-48
Legend: black (non-refl)
Background: orange



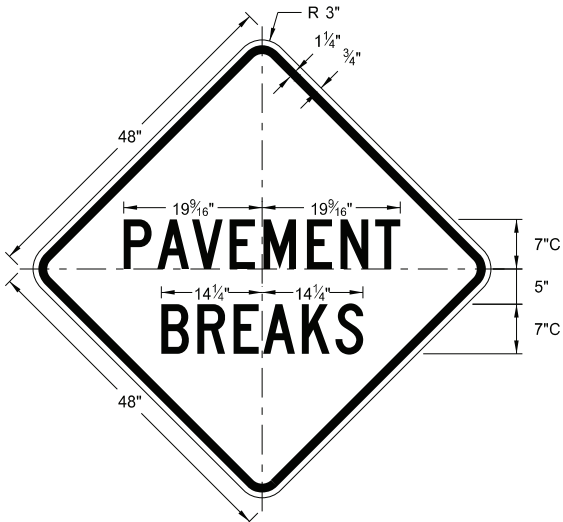
W22-8-48
Legend: black (non-refl)
Background: orange



W16-7aP-18



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



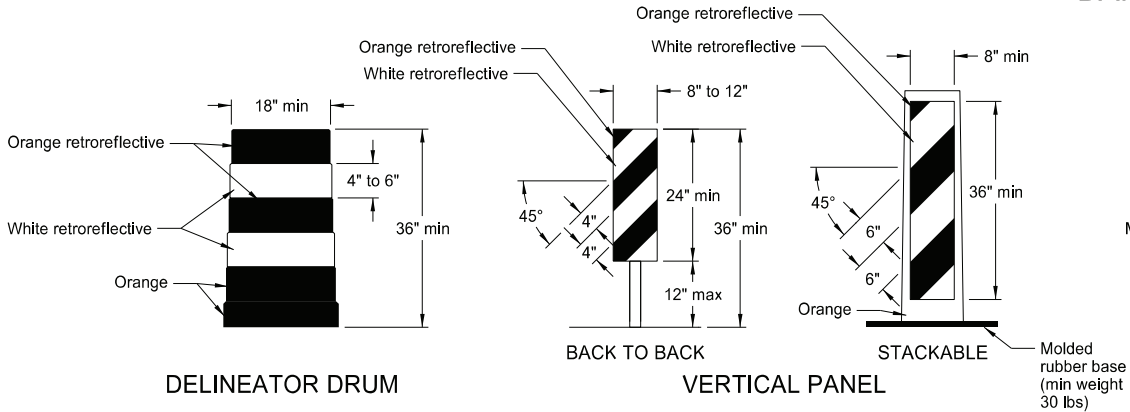
W21-52-48
Legend: black (non-refl)
Background: orange

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



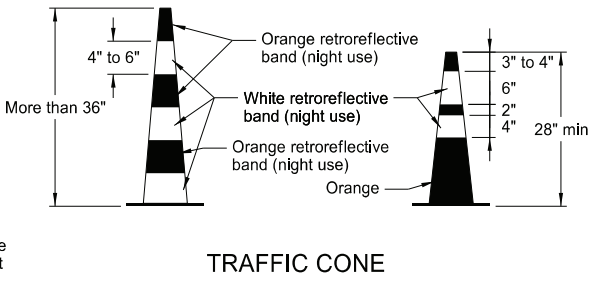
08/01/24

BARRICADE AND CHANNELIZING DEVICE DETAILS

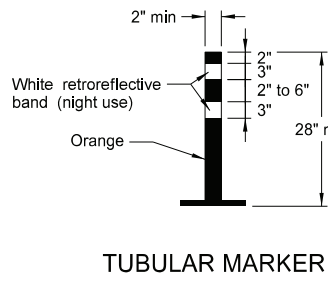


Provide horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide for drum markings. Use a minimum of two orange and two white stripes with the top stripe being orange for each drum. Do not exceed 3" nonretroreflectORIZED spaces between the horizontal orange and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

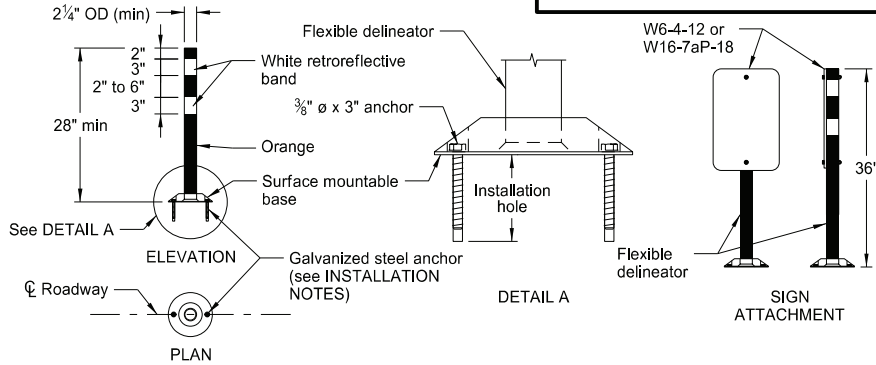
Provide alternating orange and white retroreflective stripes, sloping downward in direction vehicular traffic is to pass. Place retroreflective sheeting on both sides of panel with a minimum of 270 square inches of retroreflective area facing vehicular traffic. Where the height of the retroreflective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



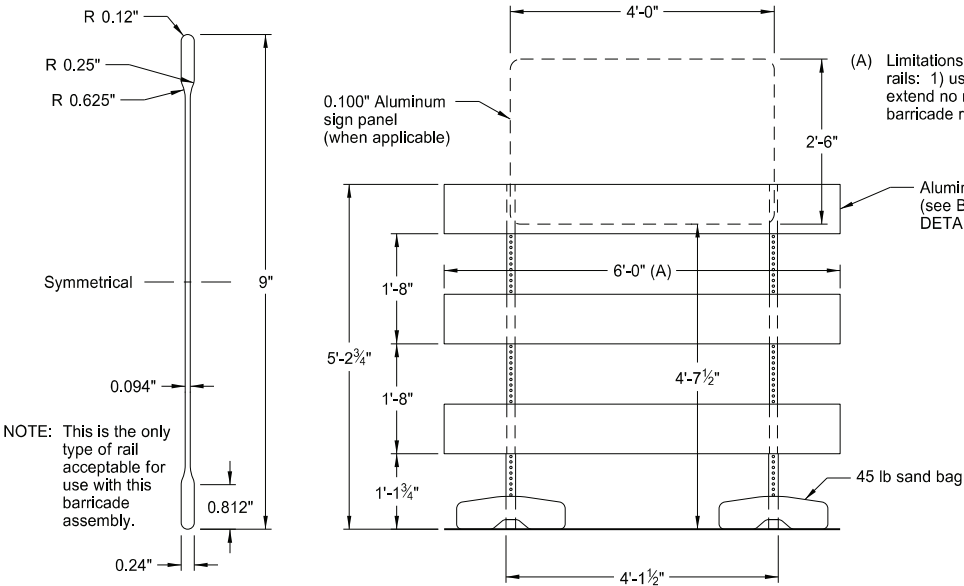
Provide retroreflectORIZATION of cones more than 36" in height by alternating orange and white retroreflective stripes. Use a minimum of two orange and two white stripes for each cone with the top stripe being orange. Use maximum 3" nonretroreflectORIZED space between the orange and white stripes.



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



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

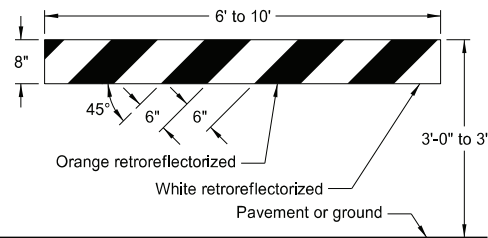


BARRICADE BLADE DETAIL

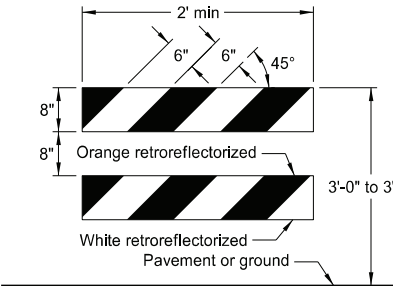
ELEVATION VIEW

BARRICADE ASSEMBLY DETAIL
(Aluminum Barricade Rails)

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

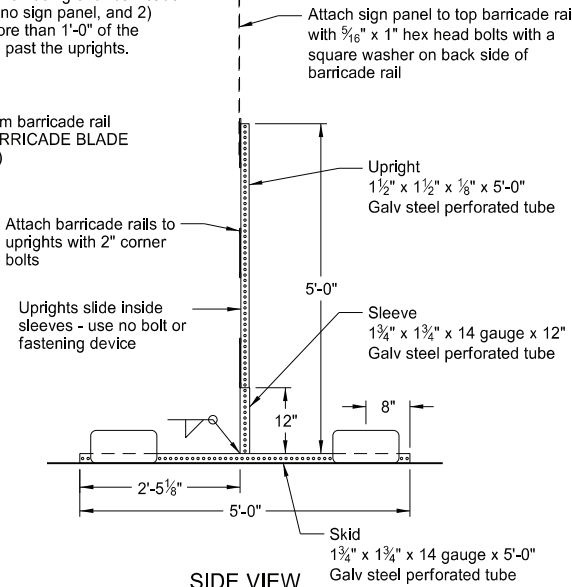


TYPE I BARRICADE

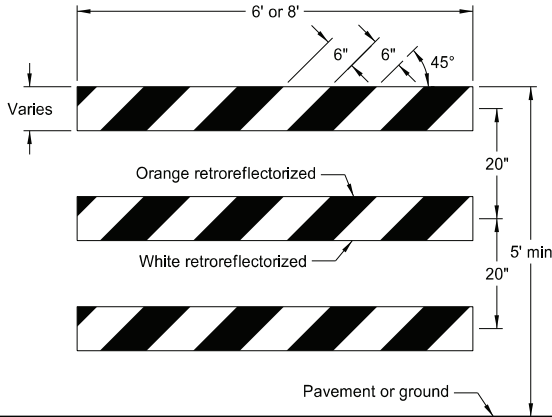


TYPE II BARRICADE

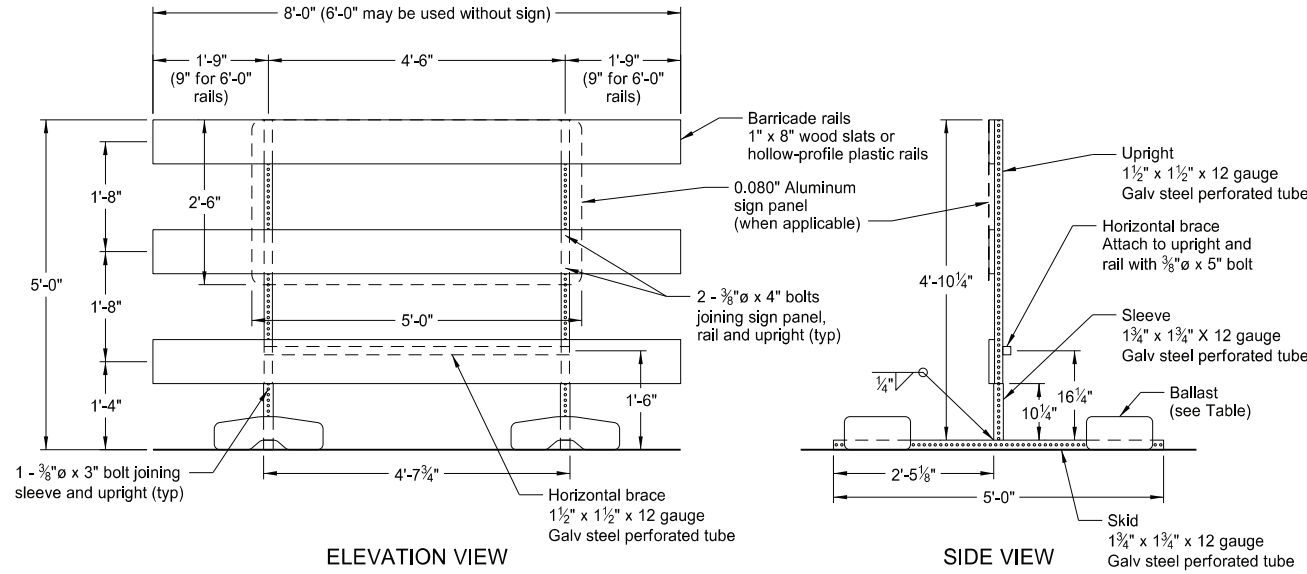
BARRICADE RAIL DETAILS



SIDE VIEW



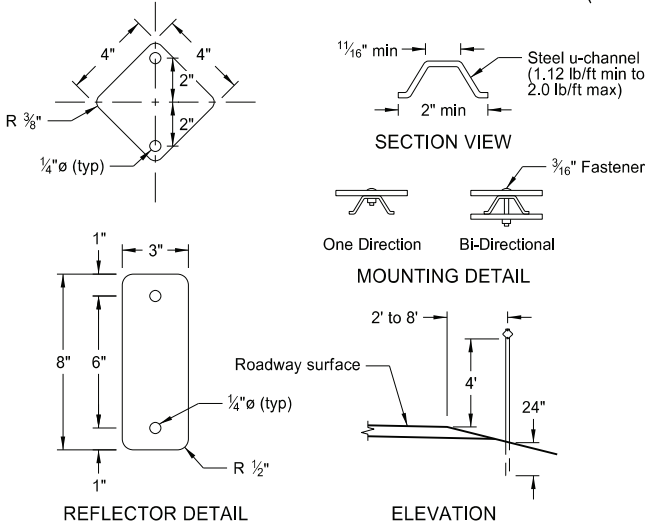
TYPE III BARRICADE



ELEVATION VIEW

BARRICADE ASSEMBLY DETAIL
(Wood or Plastic Rails)

SIDE VIEW



REFLECTOR DETAIL

ELEVATION

DELINEATORS

MINIMUM BALLAST
(For each side of barricade support)

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

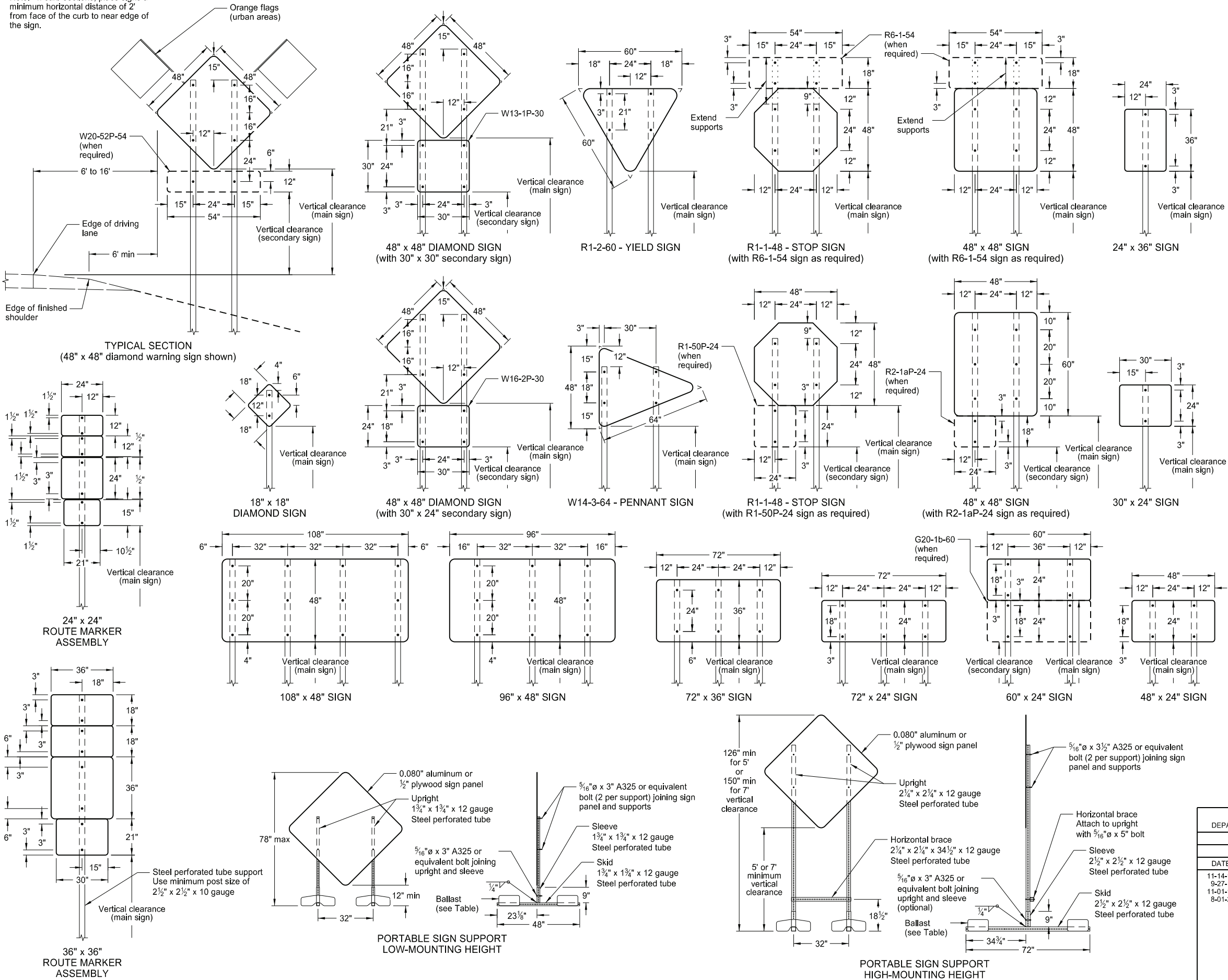
Note: Number of sandbags based on a wind speed of 55 MPH. Sandbags assumed to be placed at or near the ends of the skids.

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



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.



NOTES:

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

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

Do not attach guy wires to sign supports. Attach wind beams behind sign panels when used with u-posts.
2. Sign Panels: Provide sign panels made of 0.100" aluminum, ½" plywood, or other approved material, except where noted. Punch all holes round for ⅜" bolts.
3. Alternate Messages: Install and remove alternate message signs on reflectorized plate (without borders) as required. (i.e. "Left" and "Right" message on lane closure sign)
4. Route Marker Auxiliary Signs: Provide route marker auxiliary signs, such as the cardinal direction and directional arrows, with a background and legend that match the route marker they are used with:

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

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

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

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

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

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

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

MINIMUM BALLAST
(For each side of sign support base)

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

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

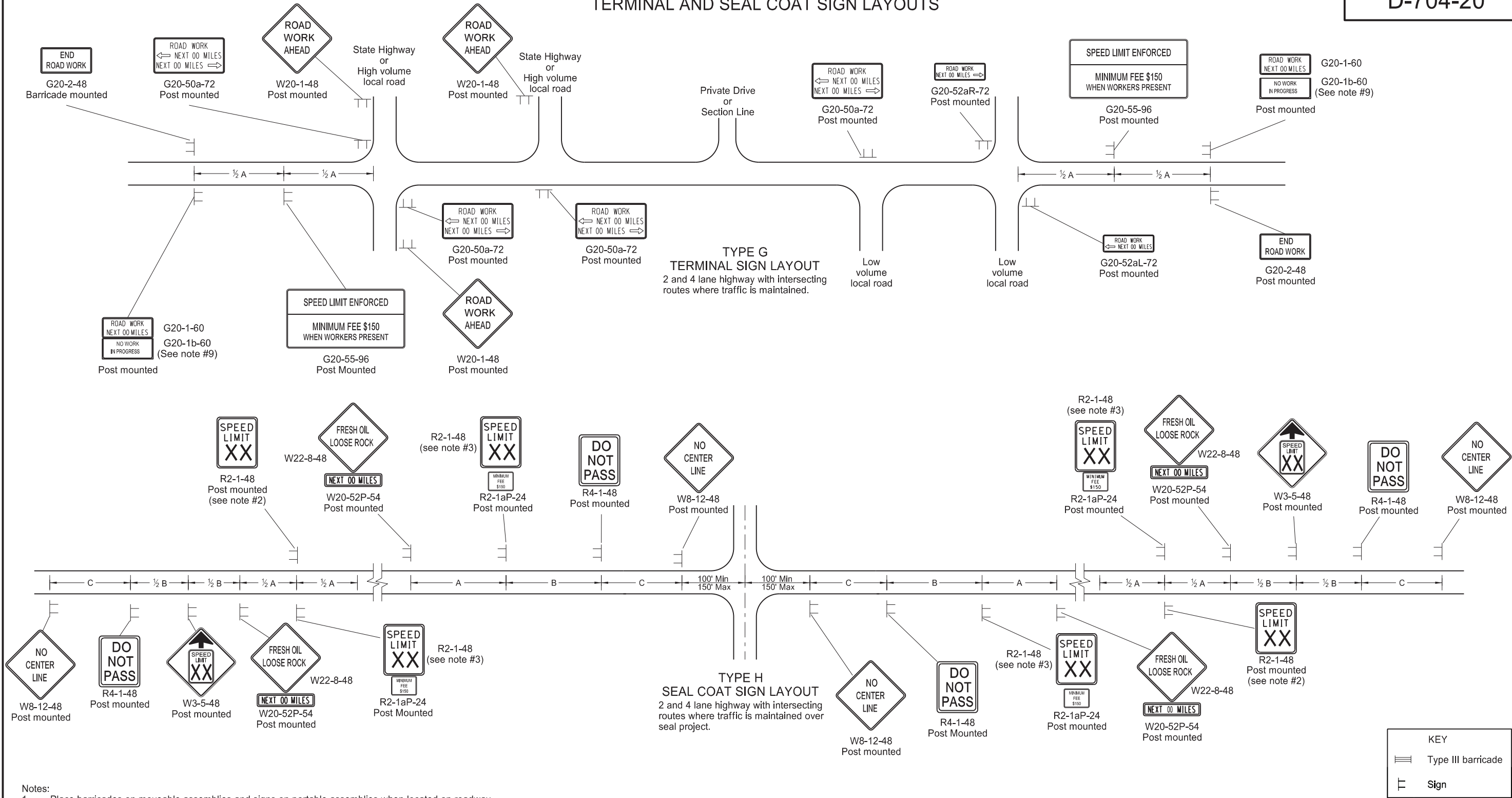
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-4-13	
REVISIONS	
DATE	CHANGE
11-14-13	Revised Note 6
9-27-17	Updated to active voice
11-01-19	Revised 60"x24" sign detail
8-01-24	Electronic Stamp/Signature



08/01/24

TERMINAL AND SEAL COAT SIGN LAYOUTS

D-704-20



Notes:

- Place barricades on moveable assemblies and signs on portable assemblies when located on roadway.
- Determine the exact speed limit in the field, based on location and conditions.
- Determine the reduced speed limit based on the in place speed limit before construction. Where speed limit reductions exceed 30 MPH, install a second speed limit sign with the desired speed reduction (not to exceed 30 MPH.) Place the second speed limit sign at $\frac{1}{2}$ 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.

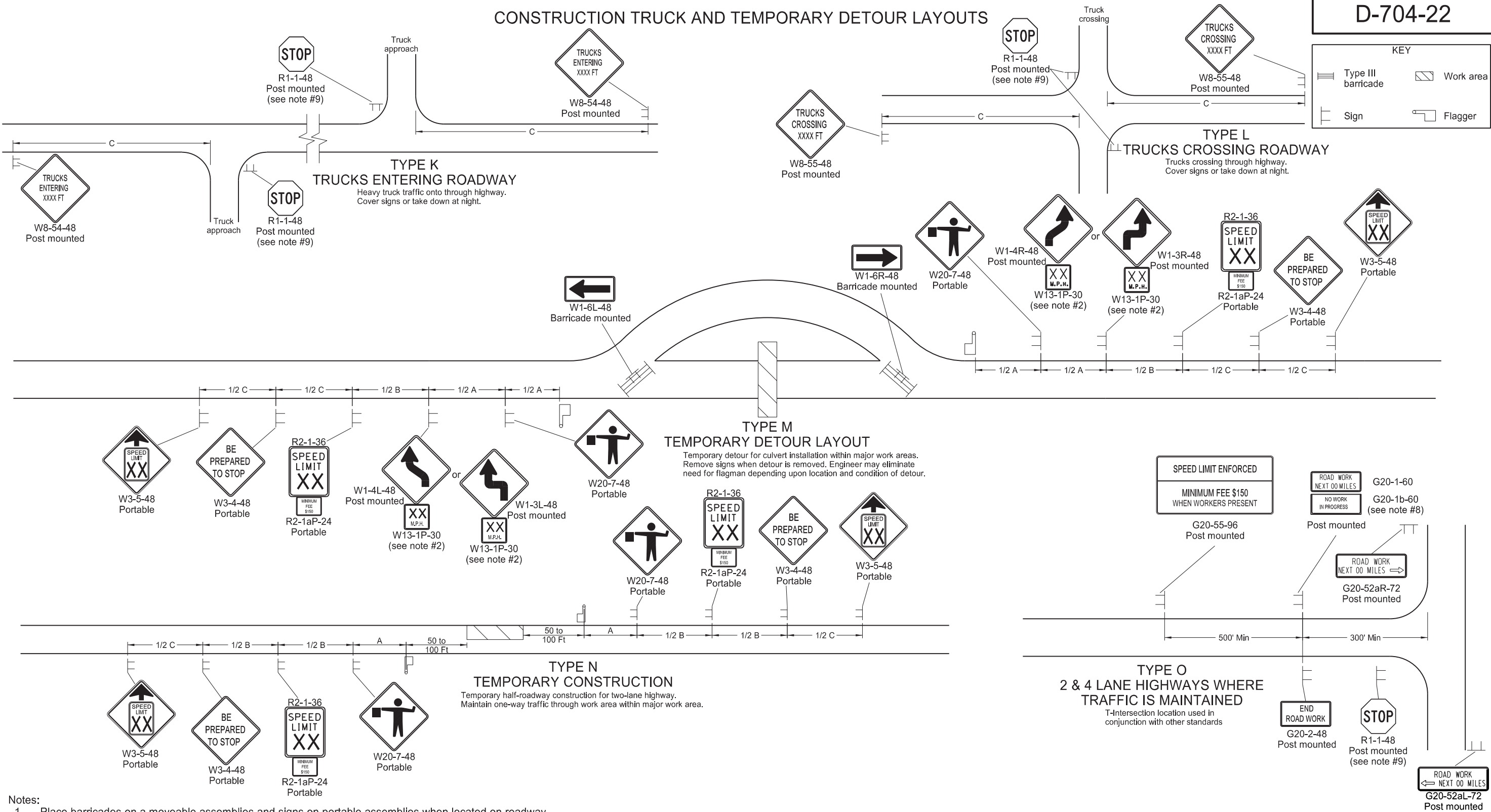
ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs		
	Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway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

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



CONSTRUCTION TRUCK AND TEMPORARY DETOUR LAYOUTS

D-704-22



Notes:

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

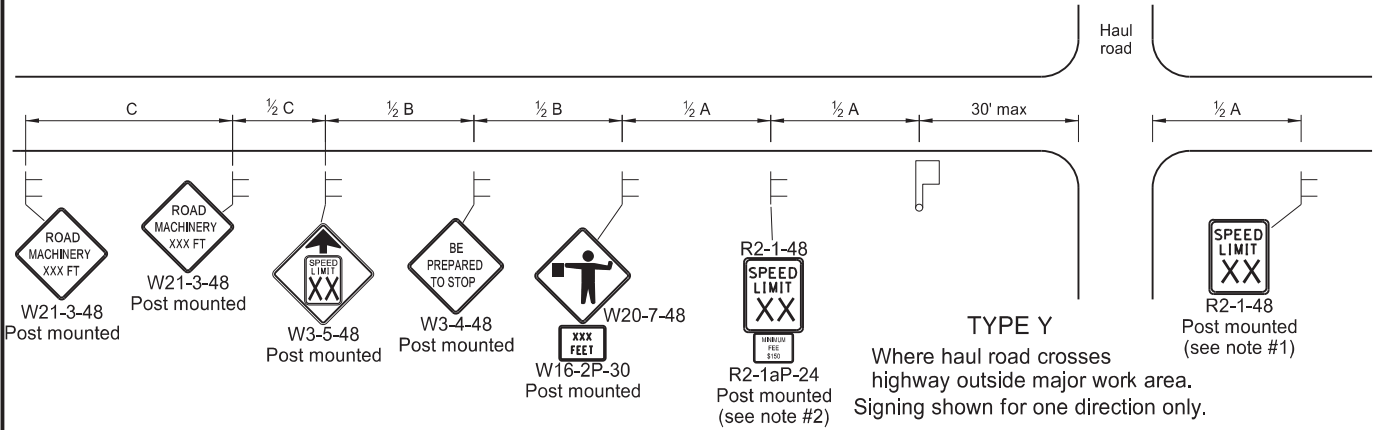
ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway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

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

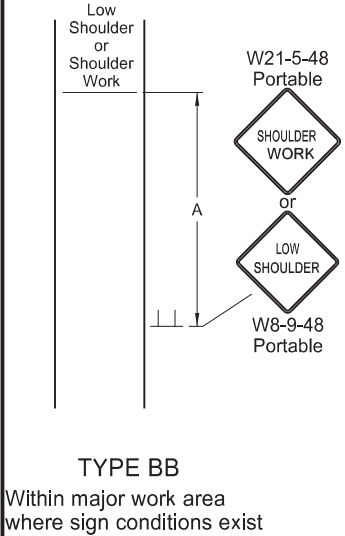
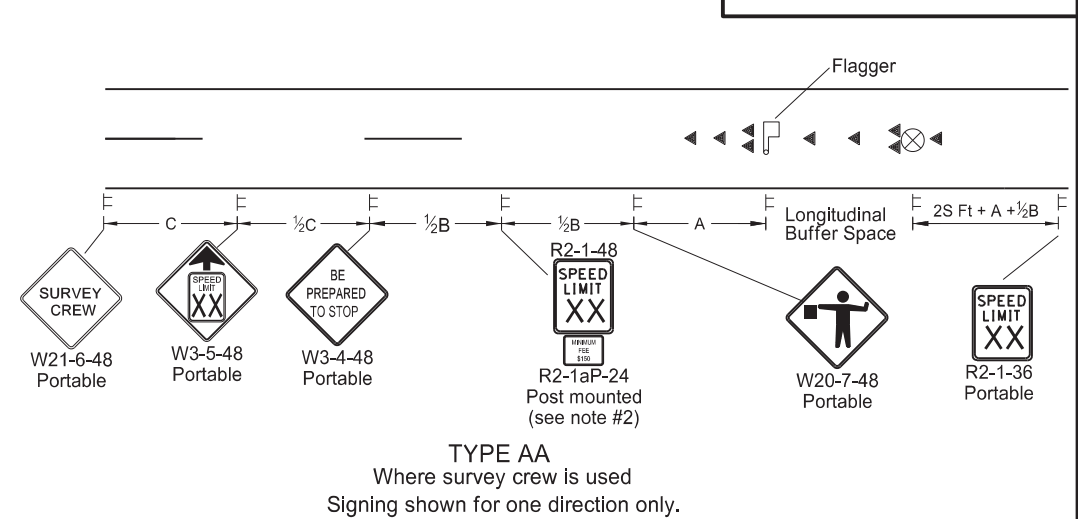


MISCELLANEOUS SIGN LAYOUTS

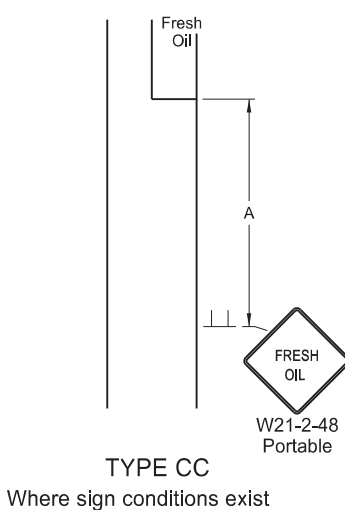
D-704-26



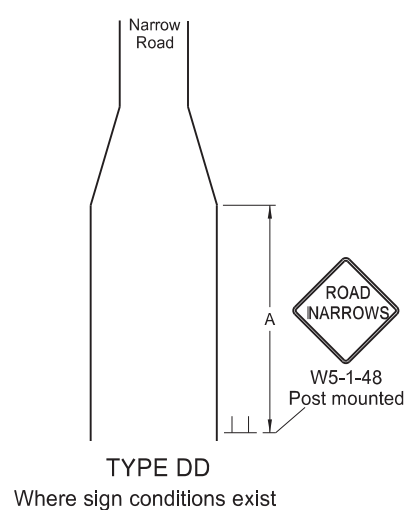
TYPE Z
Where speed zone is needed
Signing shown for one direction only.



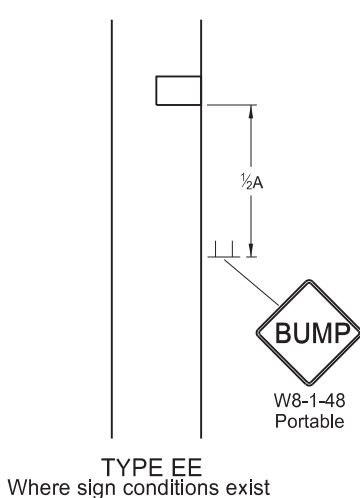
TYPE BB
Within major work area
where sign conditions exist



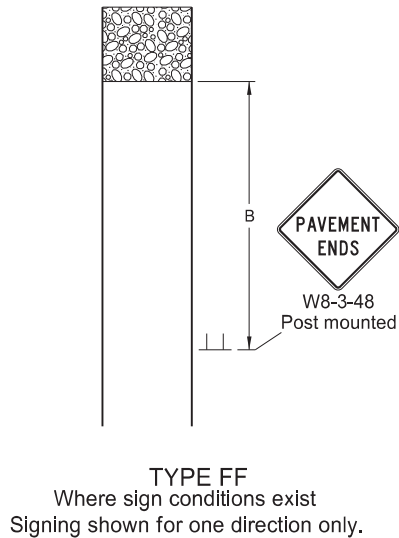
TYPE CC
Where sign conditions exist



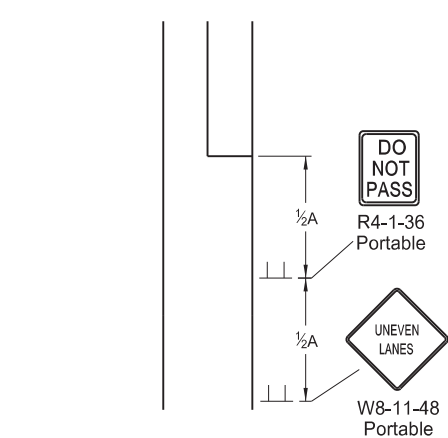
TYPE DD
Where sign conditions exist



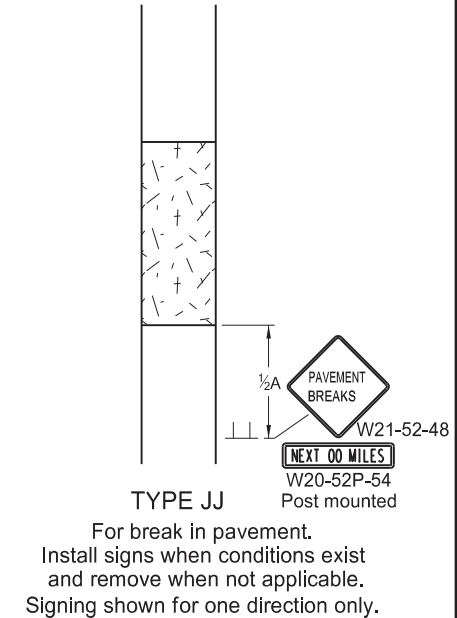
TYPE EE
Where sign conditions exist



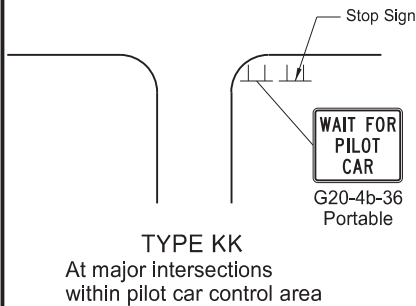
TYPE FF
Where sign conditions exist
Signing shown for one direction only.



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.



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.
 2. 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.
 3. 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.
 4. Cover existing speed limit signs within reduced speed zones.
 5. As an option, use portable sign supports in lieu of post mounted signs in accordance with NDDOT Standard Drawing D-704-14.
 6. Sign G20-55-96 is not required if this standard is part of other traffic control layouts, or work is less than 15 days.
 7. When pilot car operation is used, place sign G20-4b-36 "Wait For Pilot Car" at major intersections within pilot car control area.
 8. Recommend 40 mph speed limit in vicinity of workers, unless location and conditions dictate otherwise.
 9. Layouts shown for one direction only.

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

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
80	910

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

KEY

Flagger

Cones

Sign

Survey Equipment

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

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

9-27-13

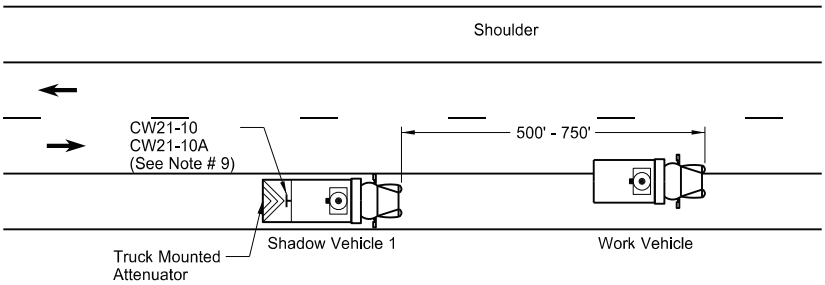
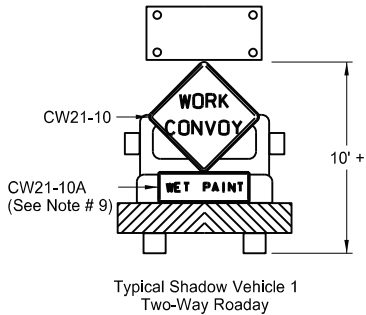
REVISIONS

DATE	CHANGE
08-17-17	Added speed limit signs. Updated notes & sign numbers
11-01-19	Revised note 5 & sign numbers
02-23-23	Revised distance & removed signs
06-30-25	Legislative Changes

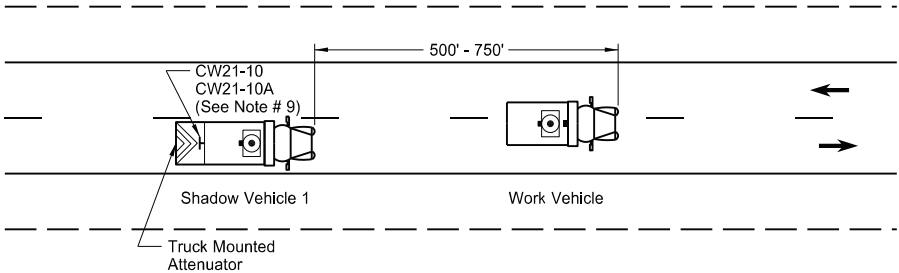
KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
06/30/25
ENGINEER
NORTH DAKOTA

MOBILE OPERATION
(PAVEMENT MARKING)

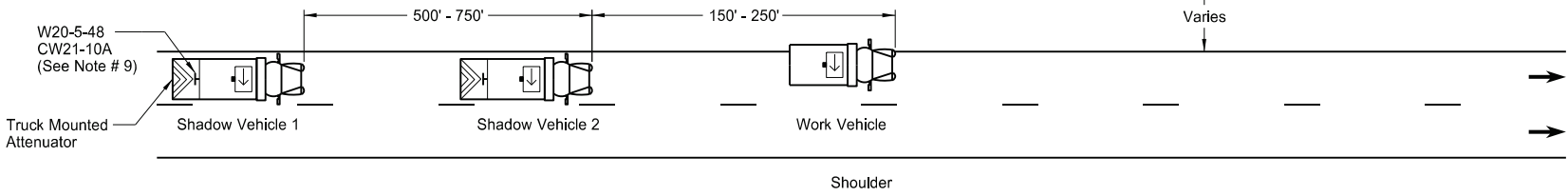
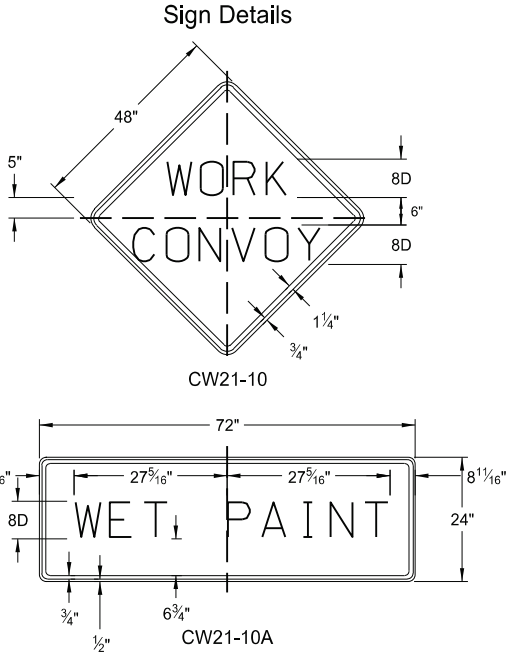
D-704-27



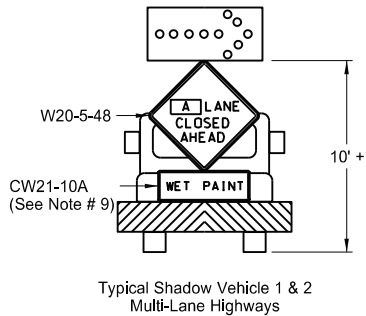
Two-Way Roadway with Paved Shoulders



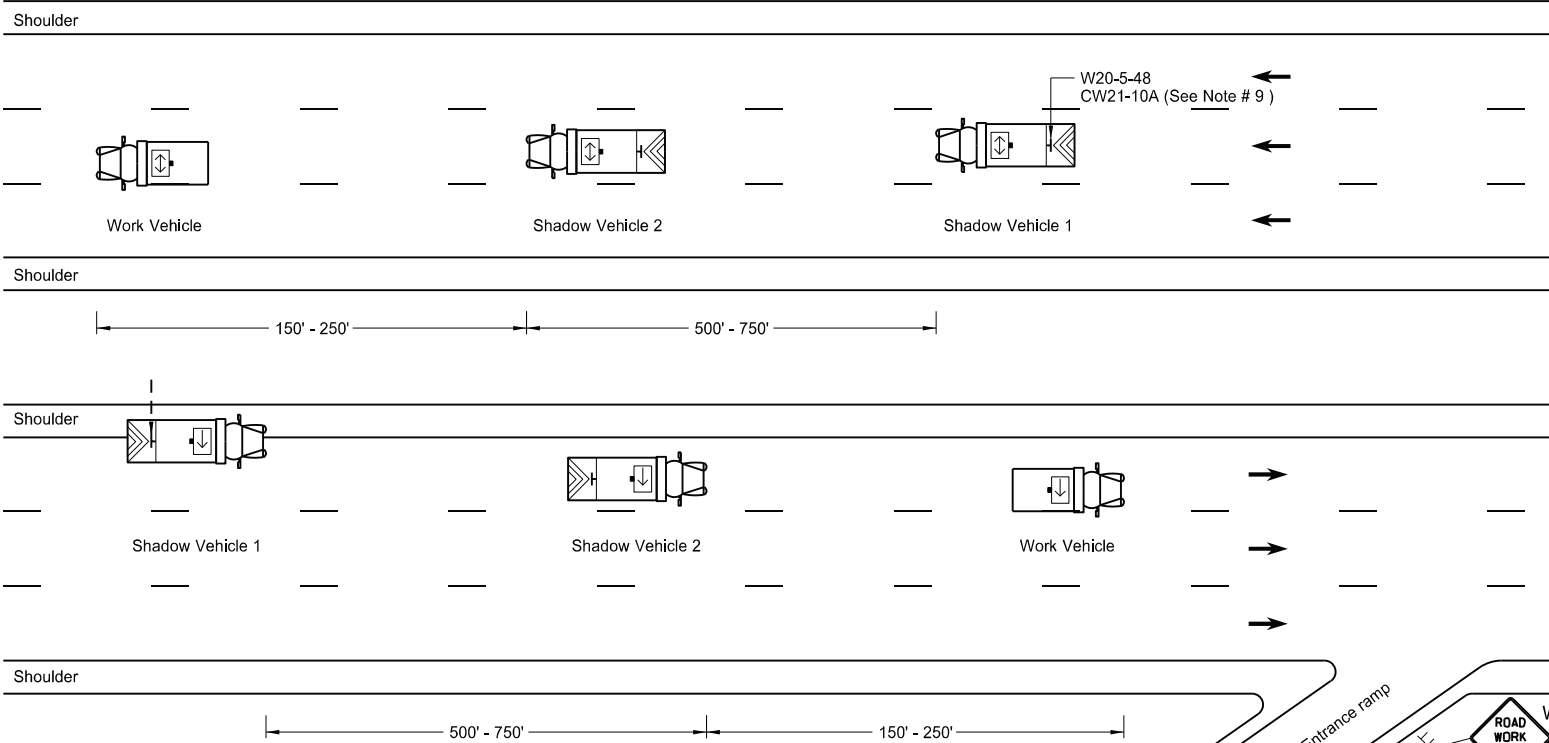
Two-Way Roadway without Paved Shoulders



Undivided Multi-Lane Roadway

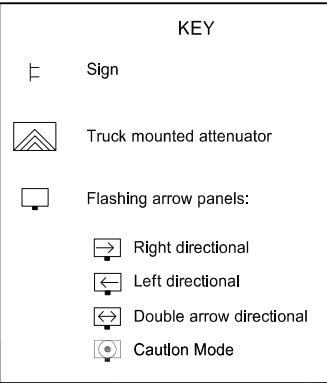


A = ☐ Left ☐ Right ☐ Center



Divided Multi-Lane Highway

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



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
6-02-24	Electronic Stamp/Signature.



08/02/24

Two-Lane Roadway Portable Rumble Strips

D-704-33

Work area

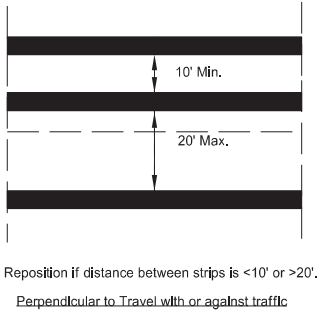
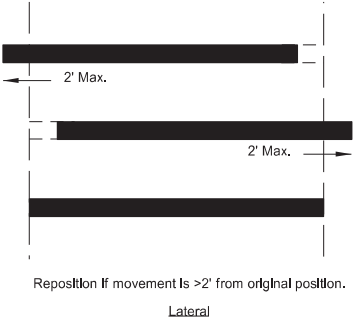
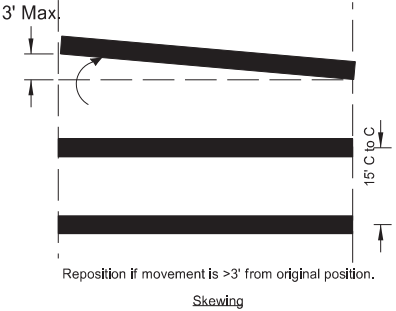
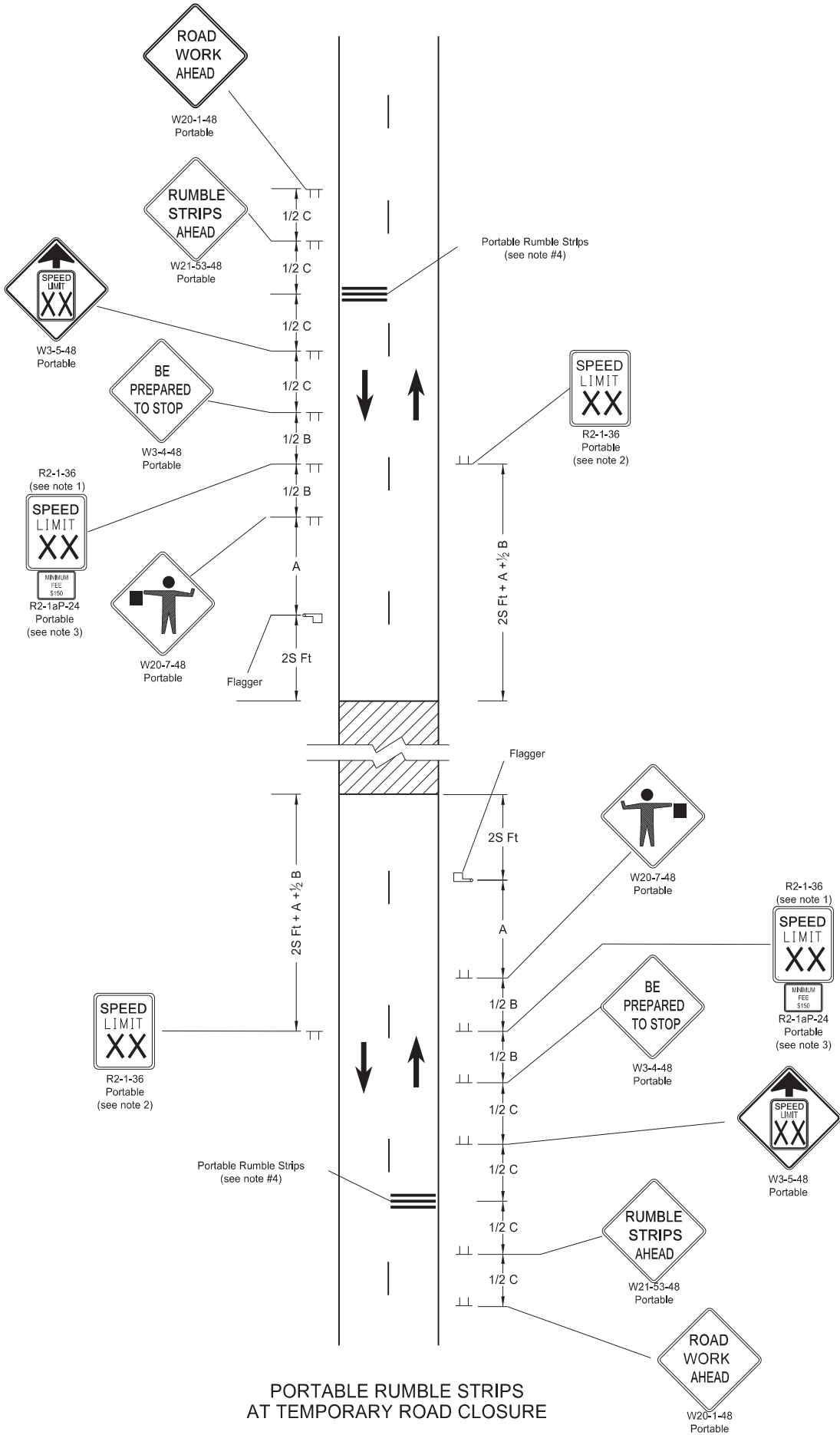
Flagger

Sign

KEY

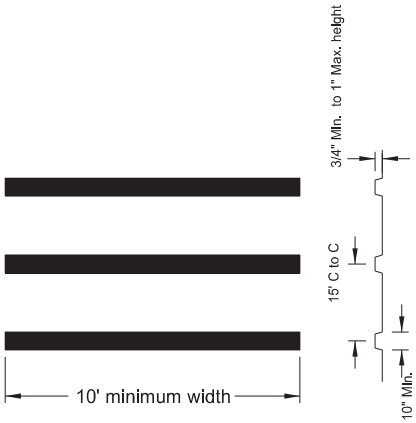
S = Numerical value of speed limit or 85th percentile.

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

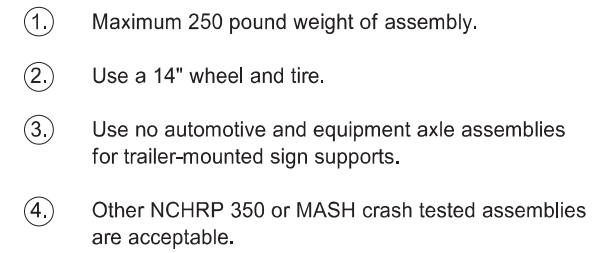
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

02-22-22

REVISIONS

DATE	CHANGE
03-07-23	Use changed to min 45 mph
06-30-25	Legislative Changes

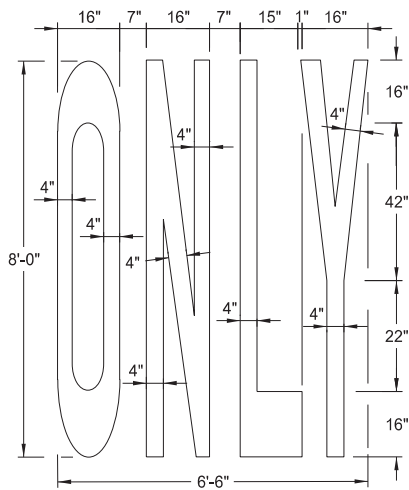
D-704-50



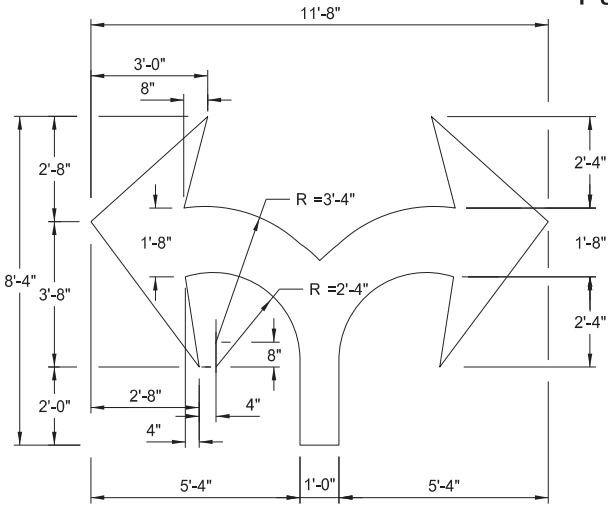
The seal is circular with a double-line border. The outer ring contains the text "KIRK J. HOFF" at the top and "NORTH DAKOTA" at the bottom. The inner circle contains the text "REGISTERED" at the top, "PROFESSIONAL" in the middle, and "PE-4683" at the bottom. A handwritten signature "Kirk J Hoff" is written across the center of the seal. Below the seal, the date "12 02 2020" is printed.

Pavement Marking Message Details

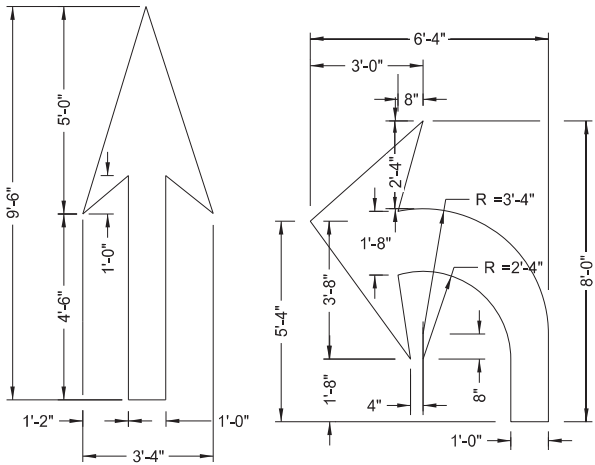
D-762-1



22 S. F.

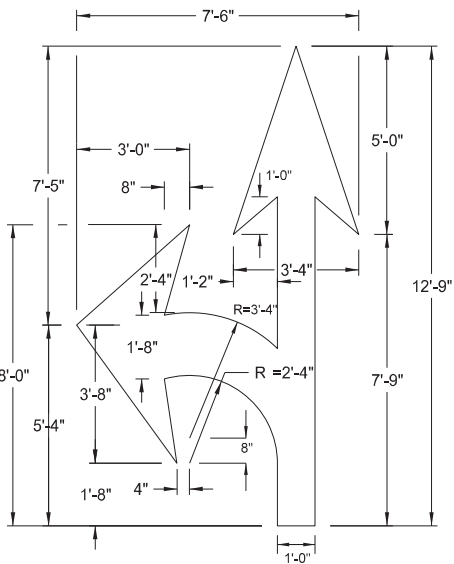


29 S. F.

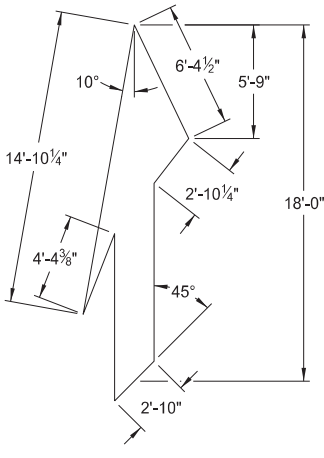


12 S. F.

16 S. F.



27 S. F.

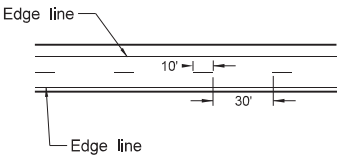


41 S. F.

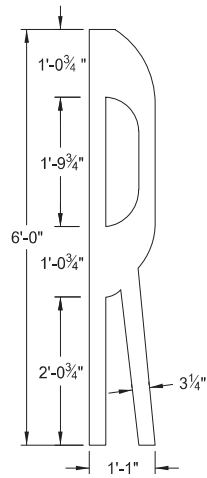
Note: Rotate merge arrow
20° from edge of roadway.

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'

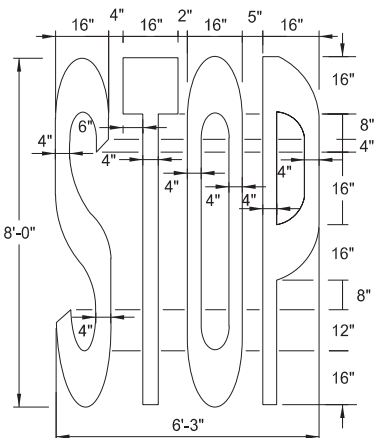
Chevron Crosshatching Table



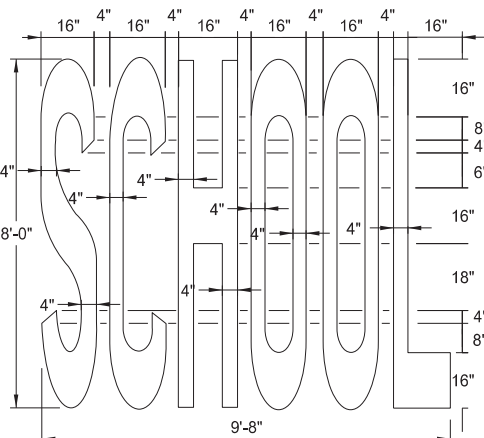
Centerline Pavement Marking Skip Spacing Detail



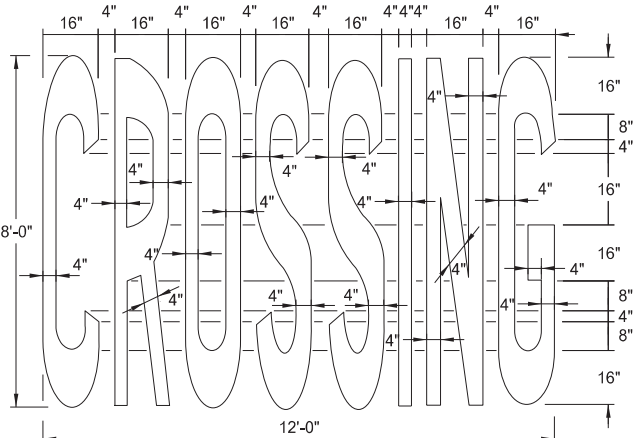
4 S. F.



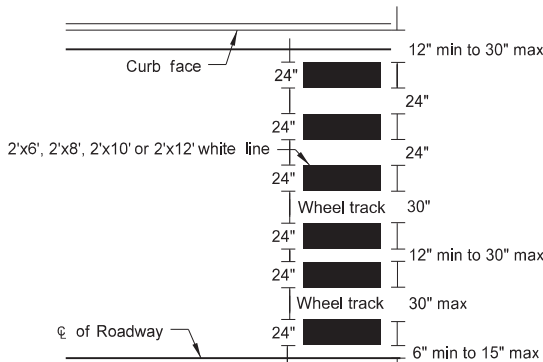
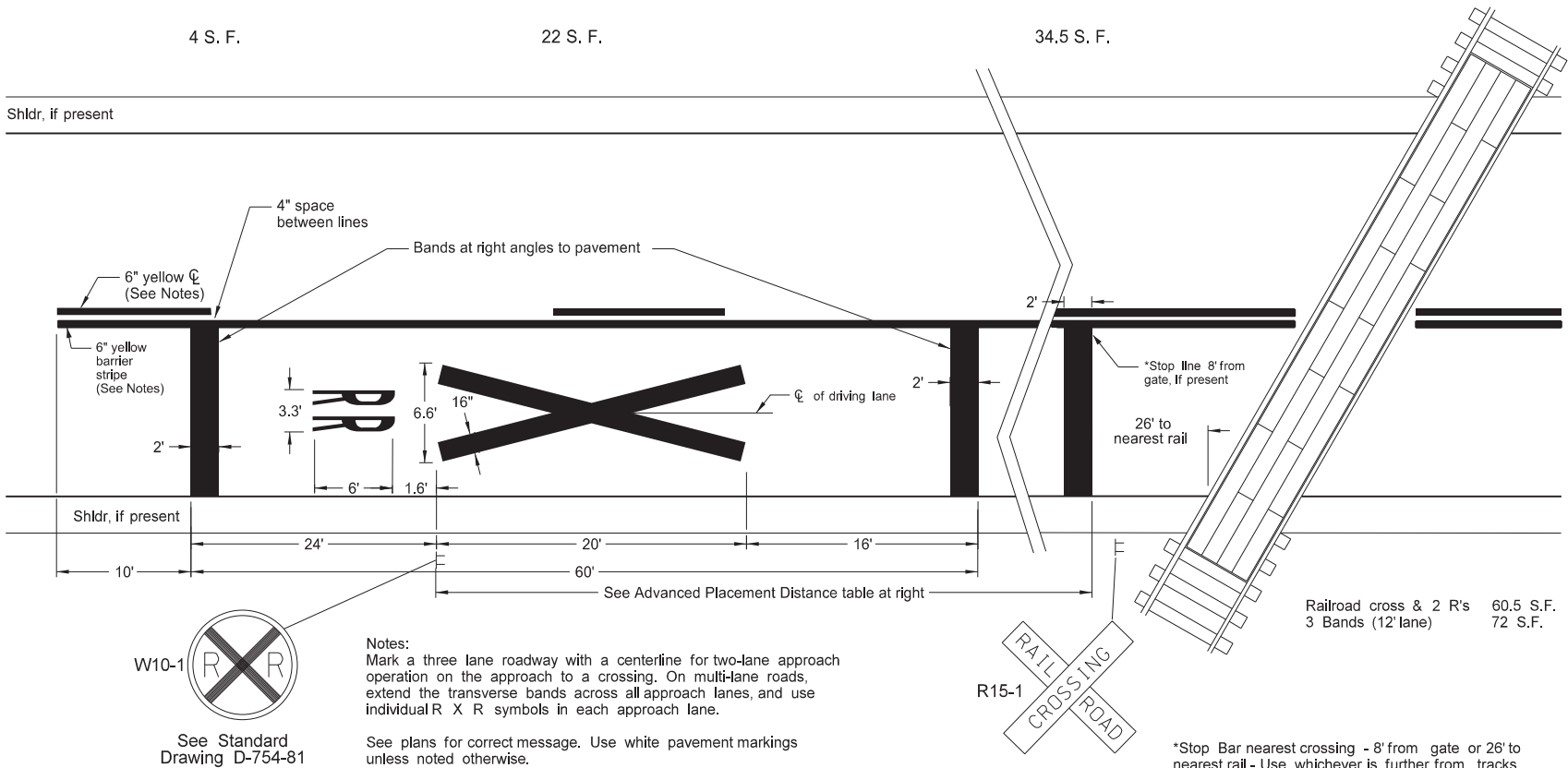
22 S. F.



34.5 S. F.



46 S. F.



Continental Crosswalk 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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-6-11	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
08-27-19	New Design Engineer PE Stamp.
01-28-2020	Revised min Stop Bar distance to rail.
11-22-2023	Revised pavement marking widths.

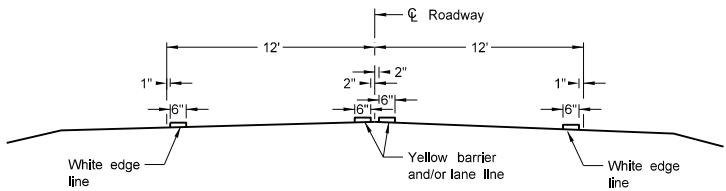


NOTES:

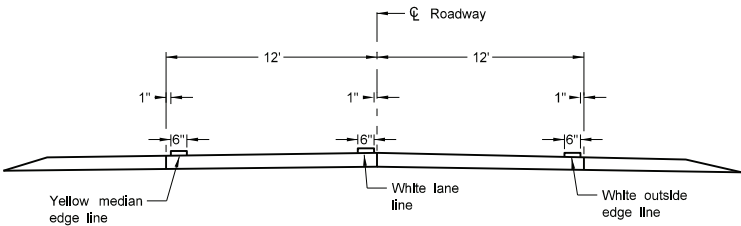
1. Normal width line - 6 inches wide for freeways, expressways, and ramps; 6 inches for all other roadways with speed limits > 40 mph,
2. Use 4 or 6 inch wide pavement marking for all other roadways with speed limits \leq 40 mph.

PAVEMENT MARKING

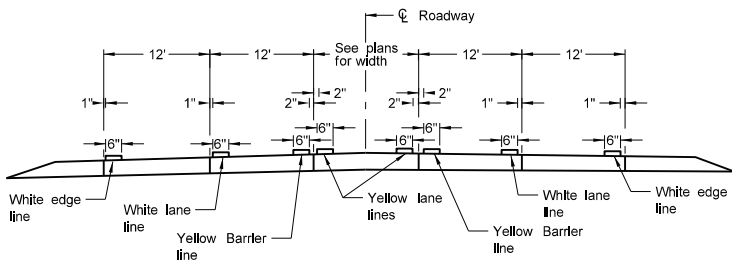
D-762-4



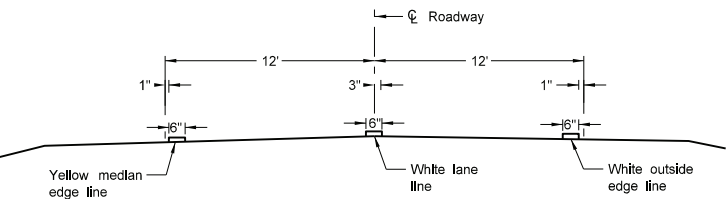
Two Lane Two Way
RURAL ROADWAY



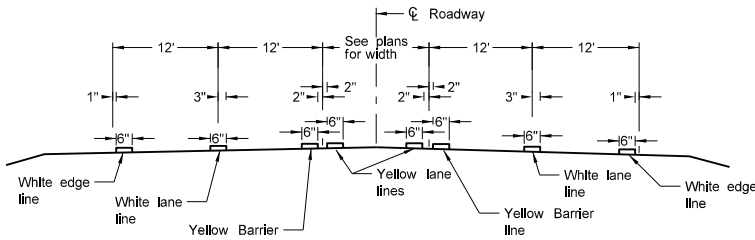
Two Lane Roadway
INTERSTATE HIGHWAY
Concrete Section



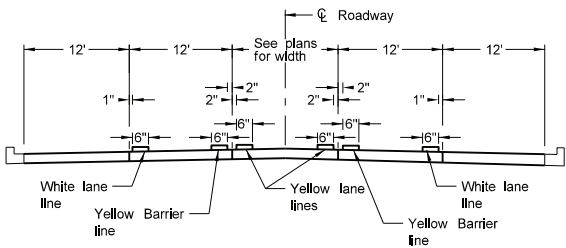
RURAL FIVE LANE ROADWAY
Concrete Section



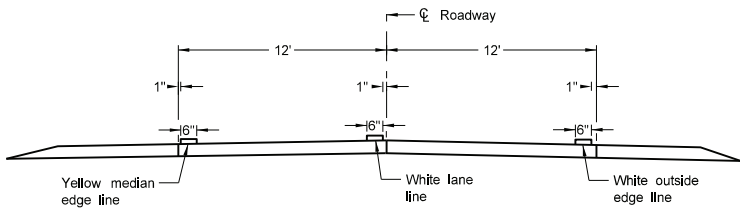
Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Asphalt Section



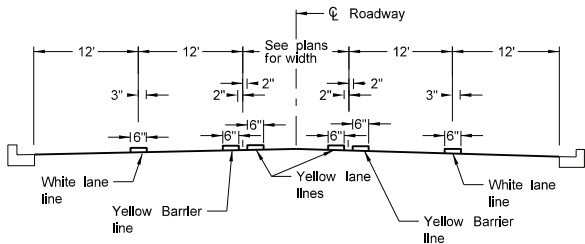
RURAL FIVE LANE ROADWAY
Asphalt Section



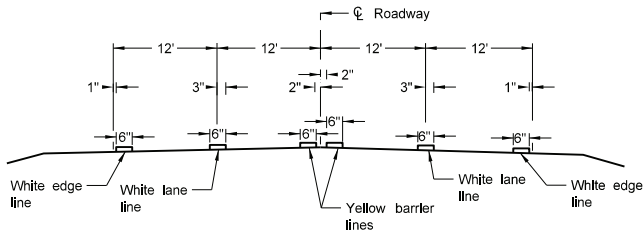
URBAN FIVE LANE SECTION
Concrete Section



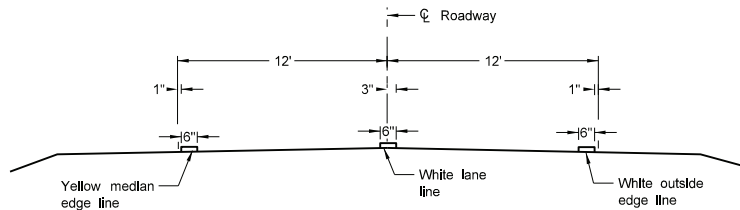
Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Concrete Section



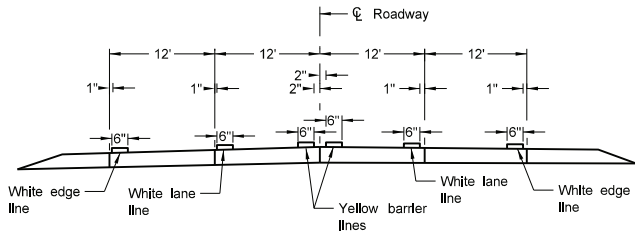
URBAN FIVE LANE SECTION
Asphalt Section



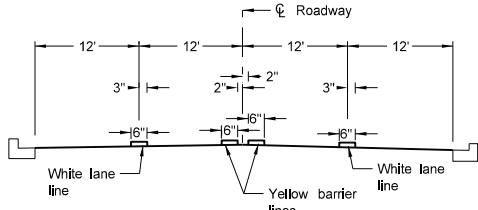
RURAL FOUR LANE ROADWAY
Asphalt Section



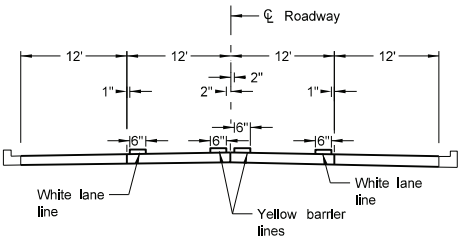
Two Lane Roadway
INTERSTATE HIGHWAY
Asphalt Section



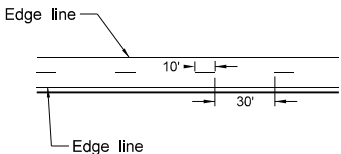
RURAL FOUR LANE ROADWAY
Concrete Section



URBAN FOUR LANE SECTION
Asphalt Section



URBAN FOUR LANE SECTION
Concrete Section



CENTERLINE PAVEMENT MARKING SKIP SPACING DETAIL

NOTES:

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

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

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

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

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



PAVEMENT MARKING FOR STANDARD 90 DEGREE FLARED INTERSECTION

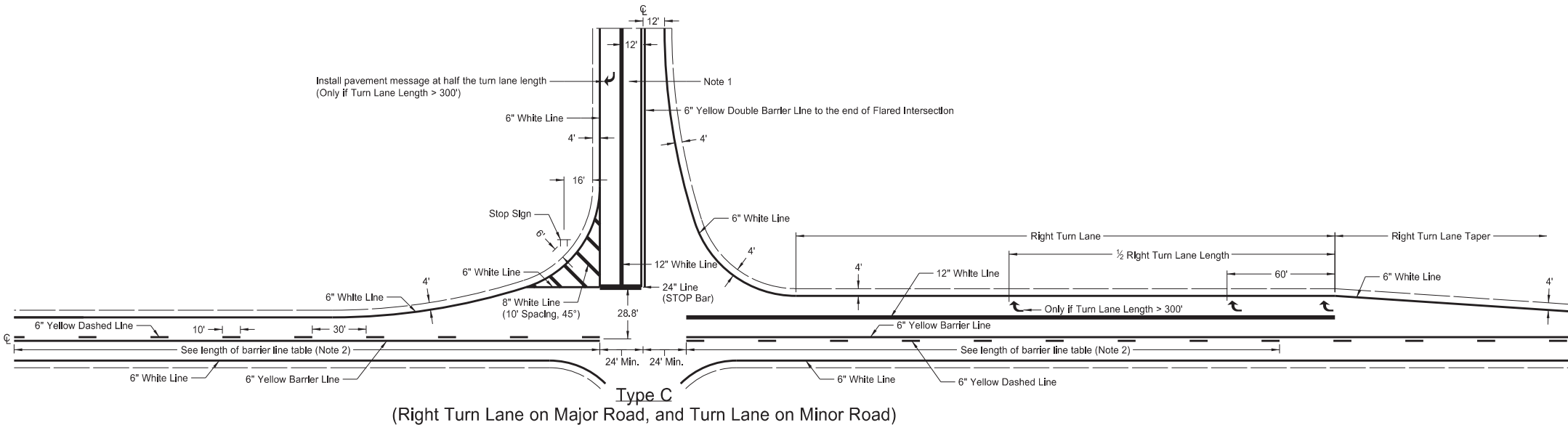
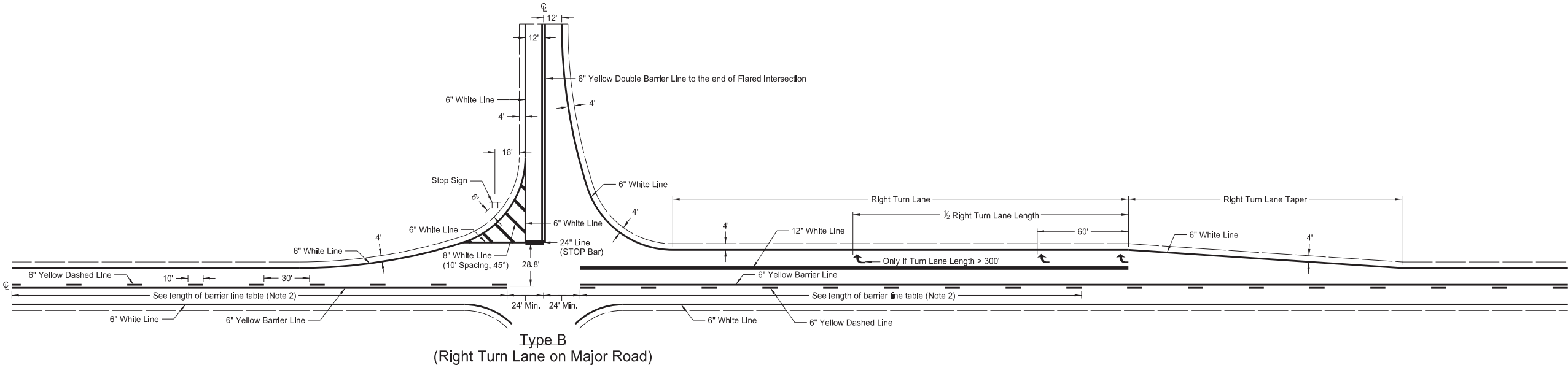
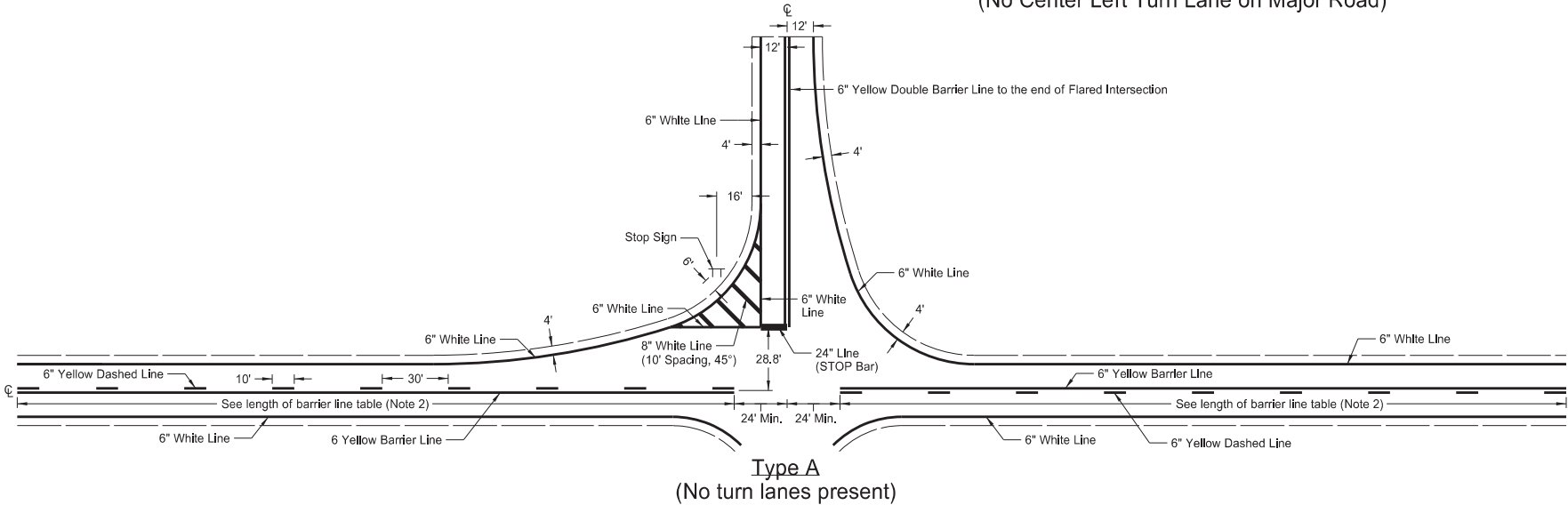
(No Center Left Turn Lane on Major Road)

D-762-5

Notes

- 1. At "T" intersections (3-leg), additionally install left turn pavement marking message arrow.
- 2. The barrier lines have variable distances dependent on speed limit. Obtain barrier line length from table below (stopping sight distance.)
- 3. Normal width line - 6 inches wide for freeways, expressways, and ramps; 6 inches for all other roadways with speed limits > 40 mph.
- 4. Use 4 or 6 inch wide pavement marking for all other roadways with speed limits ≤ 40.
- 5. Wide line - 8 inches wide if 4 inch normal width lines are used and 12 inches wide if 6 inch normal width lines are used.

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



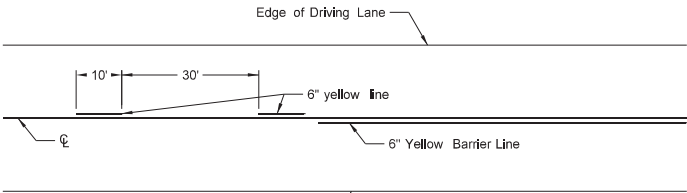
- 6" Marking
- 8" Marking
- 12" Marking
- 24" Marking

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
3-29-16	
REVISIONS	
DATE	CHANGE
8-17-17	Updated note & dimensioning.
8-30-18	Corrected pvmt mkg placement.
8-27-19	New Design Engineer PE Stamp.
11-22-23	Revised pavement marking widths.
1-17-24	Revised wide pvmt mkg width.

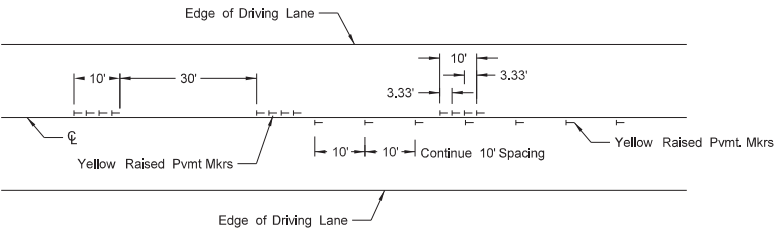


SHORT-TERM PAVEMENT MARKING

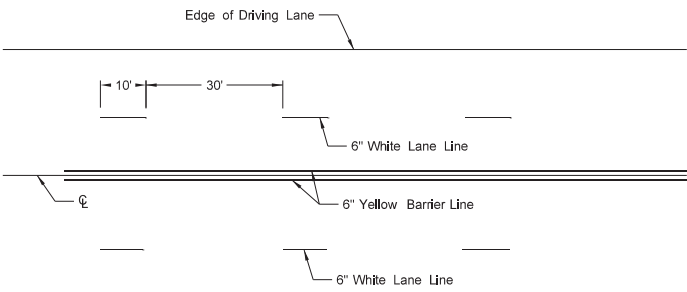
D-762-11



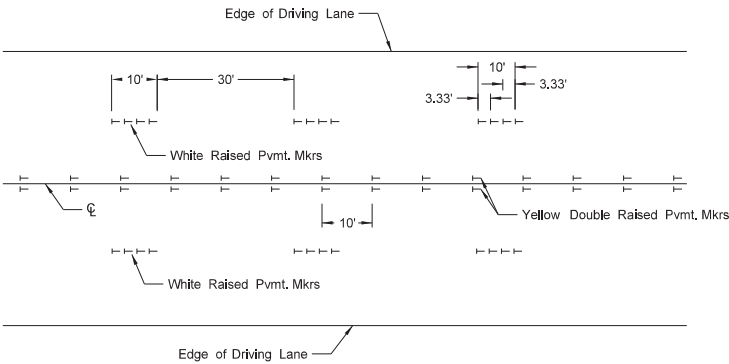
Painted or Tape Lines



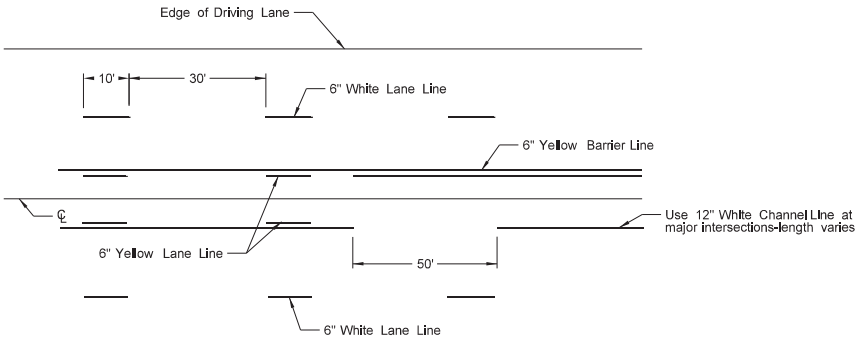
Raised Pavement Markers
TWO-LANE TWO-WAY ROADWAY



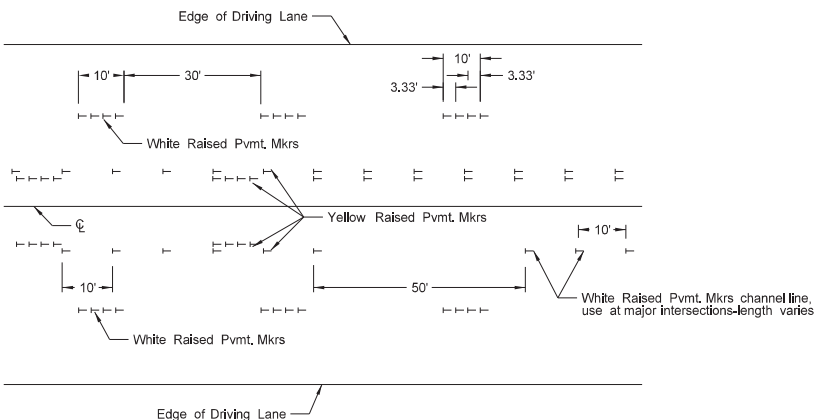
Painted or Tape Lines



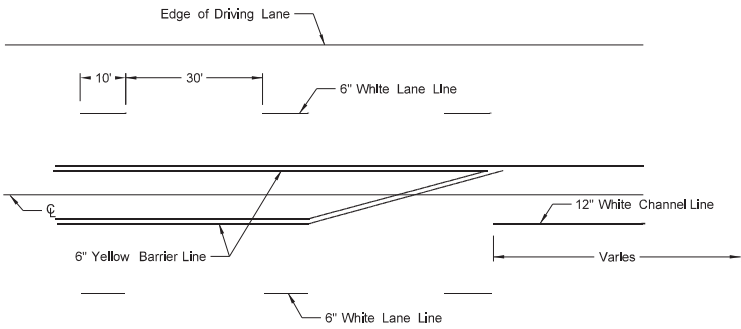
Raised Pavement Markers
FOUR LANE ROADWAY



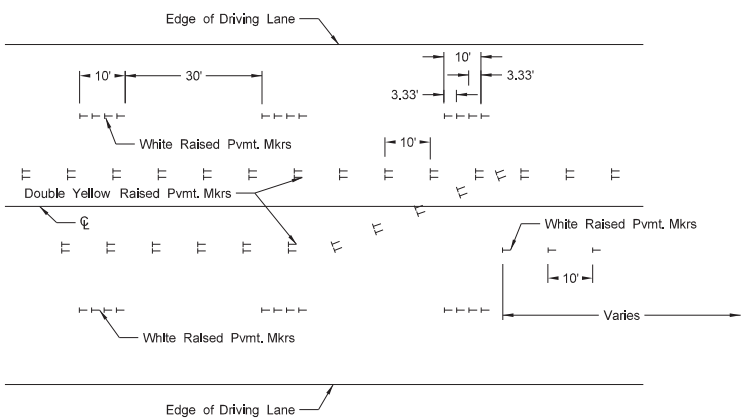
Painted or Tape Lines



Raised Pavement Markers
FIVE LANE ROADWAY TWO WAY LEFT TURN



Painted or Tape Lines



Raised Pavement Markers
FIVE LANE ROADWAY WITH MARKED ISLANDS

NOTES:

- 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.
- Place short term center line stripe (paint) on top lift to match exact placement of permanent stripe.
- Remove raised markers and tape markings after permanent pavement marking is installed.
- Normal width line - 6 inches wide for freeways, expressways, and ramps; 6 inches for all other roadways with speed limits > 40 mph.
- Use 4 or 6 inch wide pavement marking for all other roadways with speed limits ≤ 40 mph.
- Wide lines - 8 inches wide if 4 inch normal width lines are used and 12 inches wide if 6 inch normal width lines are used.

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

