

LENGTH OF PROJECT		
PROJECT SC 5132 (061)	MILES-NET	MILES-GROSS
COUNTY ROAD 8	12.848	12.879
COUNTY ROAD 11	4.915	4.926
TOTAL	17.763	17.808

WARD COUNTY HIGHWAY DEPARTMENT
MINOT, NORTH DAKOTA

FEDERAL AID PROJECT NUMBER SC 5132 (061) PCN # 24537

FOR THE PROPOSED IMPROVEMENTS OF

WARD COUNTY ROAD 8 & 11

MILLING, CEMENT STABILIZATION, AND HOT BITUMINOUS PAVING

COUNTY ROAD 8 FROM THE INTERSECTION OF CR 8 & HWY 52 EAST TO THE INTERSECTION OF CR 8 & HWY 83
COUNTY ROAD 11 FROM THE INTERSECTION OF CR 11 & HWY 52 NORTH TO THE INTERSECTION OF CR 11 & CR 6

STATE	PROJECT NO.	PCN	SHEET NO.	TOTAL SHEETS
ND	SC 5132 (061)	24537	1	13

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

INDEX OF SHEETS

SHEET NO 1	TITLE PAGE
SHEET NO 2-3	CONSTRUCTION NOTES
SHEET NO 4	BASIS OF ESTIMATE & SUMMARY OF QUANTITIES
SHEET NO 4	MAILBOXES
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SHEET NO 8-11	TYPICAL DRAWINGS
SHEET NO 12	TRAFFIC CONTROL DEVICE LIST
SHEET NO 13	TRAFFIC CONTROL LAYOUT MAP

SPECIAL PROVISIONS

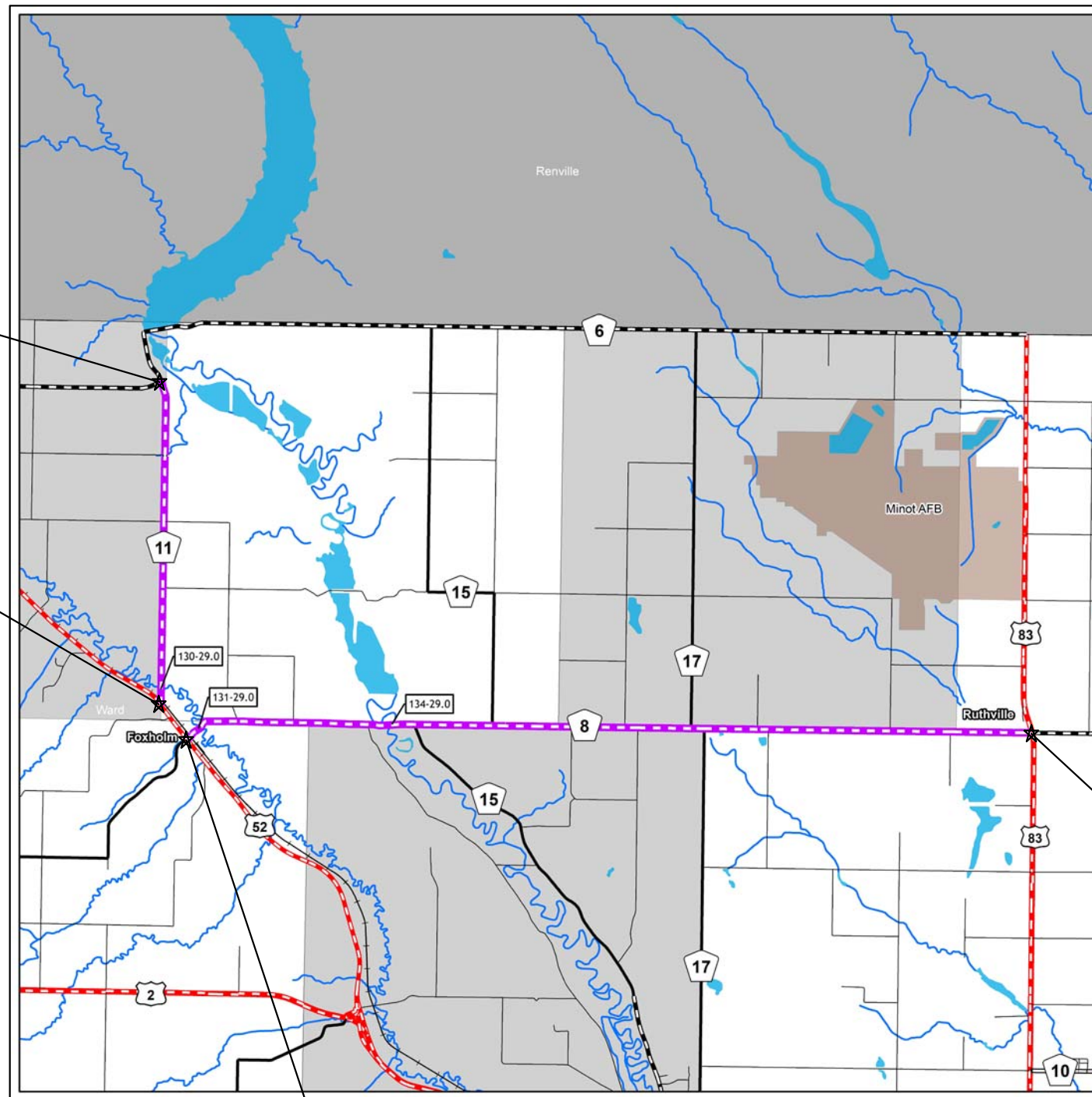
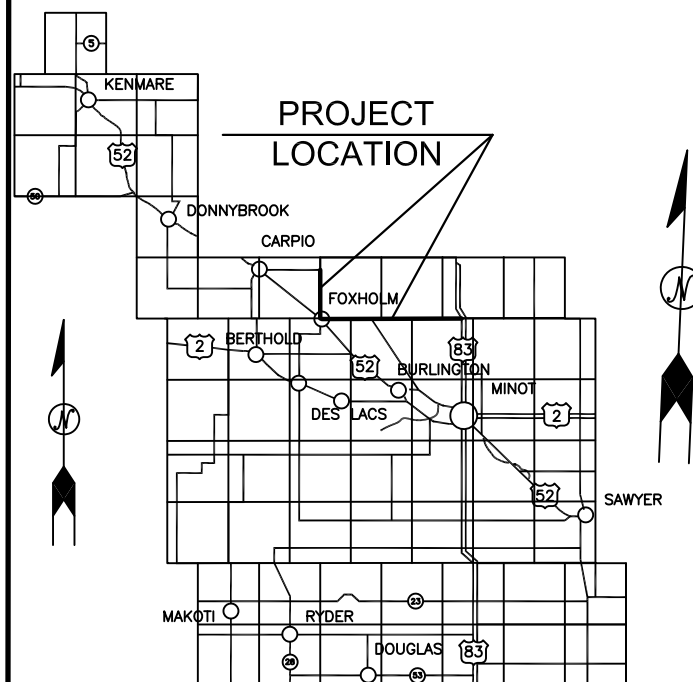
PSP 65(24)	PERMITS AND ENVIRONMENTAL CONSIDERATIONS
SP 472(24)	CEMENT STABILIZED BASE COURSE

STANDARD DRAWINGS

STD D-704-7 thru 11A	CONSTRUCTION SIGN DETAILS
STD D-704-13	BARRICADE DETAILS
STD D-704-14	CONSTRUCTION SIGN & BARRICADE ASSEMBLY
STD D-704-15	CONSTRUCTION SIGN & BARRICADE LOCATION
STD D-704-20	CONSTRUCTION SIGN & BARRICADE LOCATION
STD D-704-26	CONSTRUCTION SIGN & BARRICADE LOCATION
STD D-760-5	RUMBLE STRIPS
STD D-762-1	PAVEMENT MARKING MESSAGE
STD D-762-4	PAVEMENT MARKINGS
STD D-762-11	SHORT TERM PAVEMENT MARKING

END PROJECT ON SC 5132 (061)
(COUNTY ROAD 11) @ STA 260+07 AT THE
INTERSECTION COUNTY ROAD 14 AND
COUNTY ROAD 9.

BEGIN PROJECT ON SC 5132 (061)
(COUNTY ROAD 11) @ STA 0+00, AT THE
INTERSECTION OF COUNTY ROAD 11 AND US
HIGHWAY 52.



END PROJECT ON SC 5132 (061)
(COUNTY ROAD 8) @ STA 680+00 AT THE
INTERSECTION COUNTY ROAD 8 AND US
HIGHWAY 83.

BEGIN PROJECT ON SC 5132 (061)
(COUNTY ROAD 8) @ STA 0+00, AT THE
INTERSECTION OF COUNTY ROAD 8 AND US
HIGHWAY 52.

These documents were originally issued and sealed by Dana G. Larsen, Registration Number 5547 on February 20, 2025, and the original documents are stored at Ward County Highway Dept., 200 72nd St SE, Minot, ND 58701.

NOTES			STATE	PROJECT NO.	PCN	SHEET NO.	TOTAL SHEETS
			ND	SC 5132 (061)	24537	2	13
100-P01	START DATE: Hauling Operations shall not start prior to June 1, 2025						
100-P02	CONSTRUCTION ACTIVITIES: Work activities will be conducted during daylight hours only and construction activities will be scheduled to accommodate traffic before dark. The roadway shall be open to traffic during non-work hours. Prior to paving operations commencing, the Contractor must notify Ward County fifteen (15) days prior so Ward County staff can mow and spray shoulders prior to the Contactors operations. The Contractor will be required to ensure the roadways are clean and free of debris prior to start of paving operations. The Contractor shall conduct his operations in a manner that will minimize local traffic interruptions to businesses and homeowners along the project. Every effort shall be made by the Contractor to complete construction operations in a timely manner. The Contractor must have an individual on-site at all times capable of making decisions and recommendations to the Engineer as field conditions change throughout the project to assure the best possible product. Qualifications and references of this individual must be submitted to the Engineer. The Foreman/Supervisor shall be responsible for recording where mix designs have been modified.						
106-P01	SAMPLING AND TESTING: The Contractor shall be responsible for conducting QC for all materials being used on the project and submit a copy of the final test results to the Ward County Engineer. The Contractor will be responsible for collecting a split sample for every sample collected on the project and will furnish Ward County with the split sample to conduct random QA testing. All testing shall be in accordance with NDDOT Standard Specifications. The cost of this work shall be included in the bid price for “RECYLCED ASPHALT PAVEMENT - SUPERPAVE FAA 43”. Ward County will be using Materials Testing Services (Address: 3001 N Broadway #1 , Minot ND 58703 Phone # 701-852-5553) for our local QA.						
107-P01	HAUL ROADS: Before submitting a proposal, contact the appropriate State, County, Township or City officials to determine if there are any roadways that will be designated as “no haul routes”. All haul routes must be approved in writing by the local agency and approved by the Engineer. The gross vehicle weight on all county and township roads shall not exceed the legal load limits unless approved by the local agency.						
107-P02	RAILWAY PROTECTION INSURANCE: On this project there are 2 locations in which Canadian Pacific Railway cross the County Highways. The crossing numbers for the locations are as follows: County Road 8 (crossing # 698949E) County Road 11 (crossing # 698950Y) Contact Info for Canadian Pacific Railway: Greda Lynn, Phone: (612)-330-4532 Email: greda_lynn@cpr.ca						
302-P02	AGGREGATE BASE COURSE: Aggregate Base Course will be utilized for Approaches and Shouldering as needed. Aggregate base course utilized with Field Approaches, Private Drives, Township Roads, and County Road approaches and shoulder widening as needed. The Contractor must ensure the bituminous pavement is free of all loose aggregate base course upon completion of each area where material is placed on the shoulder. The cost of this work will be included in the bid price for “AGGREGATE BASE COURSE CL-5”.						
401-P01	PRIME COAT & BLOTTER MATERIAL: The Prime coat and blotter material may be eliminated at the discretion of the Ward County Engineer based on site conditions and the Contractors operation.						
411-P01	MILLING PAVEMENT SURFACE: Milling of the pavement surface will be at various depths. Where the average depth of ¾” takes place, it will be 1” on center ½” on outside lane at a 2.5% cross slope. Where Milling is at 2” will be across Bridge Number 131-29.0 at a 2.5% cross slope. Where the Milling is at 4” the contractor will need to mill the asphalt surface in a way to minimize particles exceeding 1.5 inch, which may include but not limited to leaving a thin layer of asphalt on roadway, using slower speeds, and milling the roadway in two lifts. All excess milled material not incorporated in the project shall become the property of WARD COUNTY. The Contractor shall haul the milled material to a pit location approved by the Engineer. The millings shall be stockpiled at the pit location and allowed to remain at this location for a minimum of five (5) years after final project acceptance. There will need to be a signed agreement to allow Ward County to access the pile until all the material has been used and the pile is depleted. The costs for this work and lease for storage of millings shall be included in the bid price for “MILLING PAVEMENT SURFACE”.						
430-P01	HOT BITUMINOUS PATCHING: The Contractor shall remove bituminous surfacing for all areas noted on the existing pavement. Contractor shall make cuts square or rectangular, with faces straight and vertical. In areas where subgrade soils are deficient in strength, subgrade soils shall be removed to depth up to 12 inches but will be determined by the Ward County Engineer. Class 5 aggregate shall be placed and compacted up to finished road base elevation with 6-inches of Asphalt Pavement – Superpave FAA 43 on all areas that require additional stabilization. The costs for removal and stabilization of additional aggregate base, subgrade soils, and PG 58-34 shall be included in the bid price for “PATCHING”. The Contractor shall backfill all areas to be patched with hot mix, while the temperature of the mix stays above 185 degrees F. The Contractor shall prevent segregation of the mixture. The hot mix shall be compacted with equipment most suited for size of job. Adequate compaction equipment will yield surface of patch at same elevation as the surrounding pavement. The cost of Patching will include Tack for patch area and disposal of old pavement and any subgrade soils removed that are not suitable for reuse. The Contractor is responsible for disposing of all old pavement from patching. The Ward County Engineer reserves the right to increase or decrease all the project quantities related to hot bituminous patching on this project.						
430-P02	RECYCLED ASPHALT PAVEMENT: The Contractor shall use a windrow pickup machine or similar machine in order to maintain a constant speed and minimize starts and stops. The base and wearing course shall be required to be constructed in the manner shown in the typical sections and in a manner to provide a smooth ride. The contractor shall be required to maintain a minimum 4:1 slough, and ensure that there is a smooth transition from the new road top to the existing inslope. The use of a slough roller will be required on this project. The mix design shall evaluate both a 4% air void design and a 3% air void design with the goal of improving the coating of virgin aggregates and preventing a dryer mix.						
DANA G. LARSEN, P.E. WARD COUNTY ENGINEER MINOT, NORTH DAKOTA						These documents were originally issued and sealed by Dana G. Larsen, Registration Number 5547 on February 20, 2025, and the original documents are stored at Ward County Highway Dept., SE, Minot ND 58702-5005	

NOTES		STATE	PROJECT NO.	PCN	SHEET NO.	TOTAL SHEETS
		ND	SC 5132 (061)	24537	3	13
430-P04	APPROACHES: Field Approaches, Private Drives, Township Roads and County Roads shall be paved concurrent with the placement of the hot bituminous pavement surface course. Each individual approach is outlined on Pages 8 & 9. The Contractor will be required to slope the hot bituminous pavement and/or use the existing material on each approach to provide a smooth transition between the top of the road surface and the existing ground with the radius of the approaches having an 8:1 transition. The Private Drives, Township roads, and County Roads will be placed in two equal lifts. The work shall be done to the satisfaction of the Engineer. The cost of this work shall be included in the bid price for “RECYLCLED ASPHALT PAVEMENT SUPERPAVE FAA 43”.					
430-P05	WARM MIX ASPHALT (WMA): Warm Mix Asphalt (WMA) may be substituted for Hot Mix Asphalt (HMA) at the Contractor’s Choosing. The WMA additive or technology is at the Contractor’s choosing, and to be approved by the Engineer. All costs and savings associated with the WMA shall be included in the unit cost for “RECYLCLED ASPHALT PAVEMENT SUPERPAVE FAA 43.					
430-P06	COMPACTION: Compaction of the hot bituminous pavement shall be in accordance with NDDOT Standard Specification 430.04 Ordinary Compaction. However, it is recommended that the Contractor use a single drum roller as a finish roller in order to correctly roll the edges of the pavement. The Contractor may use other methods of finish rolling but will be required to provide a rounded transition between the roadway and slough as shown on pages 10-13.					
704-P01	FLAGGING & PILOT CAR: All flagging and pilot car hours shall be incidental to the cost of the project.					
760-P01	RUMBLE STRIPS: Rumble strips be required at the Intersection of County Road 11 and Highway 52. The Rumble Strips will be grooved in offset 12” from centerline of the road daylighting out on the shoulder of the road to allow moisture to drain out of the grooved in rumble strips.					
762-P01	STRIPING: Centerline short-term pavement markings will be required and is in the bid price for SHORT TERM 4IN LINE – TYPE NR. The permanent striping will consist of two edge lines and a barrier line at 4 inch instead of those shown on the NDDOT Standard Drawing D-762-4 and D-762-11.					
762-P02	PREFORMED PATTERNED PVMT MK-GROOVED: The Railroad Crossing on County Road 11 (698950Y) will require Preformed Patterned Pvmt MK – Message- Grooved as outlined in the Standard Drawings (D-762-1). The Crossing on County Road 8 (698949E) will only require the 2 foot by 12 foot band (stop bar) on both sides of the track crossing. There will also be Stop bands at the following intersections. On County Road 8 at the intersection of County Road 8 and Highway 52, The intersection of County Road 8 and Highway 83. On County Road 11 the Stop band will be at the Intersection of County Road 11 and Highway 52.					
766-P1	MAILBOXES: Notify affected mailbox owners in writing 30 days in advance of disturbing the existing mailboxes and supports. Provide a copy of the notifications to the Engineer. Just prior to removing the existing mailbox and support, coordinate verbally with the mailbox owner to discuss resetting the existing mailbox on new support. Contact the U.S. Postal Service for the Mailbox owners contact information.					
		<div>DANA G. LARSEN, P.E. WARD COUNTY ENGINEER MINOT, NORTH DAKOTA</div>				<div>These documents were originally issued and sealed by Dana G. Larsen, Registration Number 5547 on February 20, 2025, and the original documents are stored at Ward County Highway Dept., SE, Minot ND 58702-5005</div>

BASIS OF ESTIMATE SC 5132 (061) (COUNTY ROAD 8)			
DESCRIPTION	STATION	WIDTH	QUANTITY / MILE
3/4" MILLING @ 2.5% CROSS SLOPE 1"ON CENTER 0.5" ON OUTSIDE EDGE	0+00 TO 11+54 & 11+86 TO 21+00	29'	17,013 SY /MILE
2" MILLING ACROSS BRIDGE ID # 131-29.0	11+54 TO 11+86	29'	17,013 SY / MILE
4" MILLING @ 2.5% CROSS SLOPE	21+00 TO 169+60 & 170+80 TO 419+50	30'	17,600 SY /MILE
3/4" MILLING @ 2.5% CROSS SLOPE 1"ON CENTER 0.5" ON OUTSIDE EDGE	419+50 TO 680+00	27'	15,840 SY /MILE
CEMENT STABILIZED BASE COURSE (12 INCH) FINISHED WITH A 2.5% CROSS SLOPE	21+00 TO 169+60 & 170+80 TO 419+50	28'	16,427 SY /MILE
PORTLAND CEMENT @ 6%	21+00 TO 169+60 & 170+80 TO 419+50	28'	488 TONS/MILE
MC 70 OR MC 250 LIQUID ASPHALT FOR PRIME COAT 0.25 GAL/SY	21+00 TO 169+60 & 170+80 TO 419+50	28'	4,107 GAL / MILE
BLOTTER MATERIAL CL 44	21+00 TO 169+60 & 170+80 TO 419+50	28'	123 TON / MILE
SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL /SY	0+00 TO 11+54 & 11+86 TO 21+00	27' SURFACE COURSE	792 GAL / MILE
SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL /SY	0+00 TO 21+00	28' WEAR COURSE	821 GAL / MILE
SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL /SY	21+00 TO 169+60 & 170+80 TO 419+50	29' SURFACE COURSE	851 GAL / MILE
SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL /SY	21+00 TO 169+60 & 170+80 TO 419+50	30' WEAR COURSE	880 GAL / MILE
SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL /SY	419+50 TO 680+00	26' SURFACE COURSE	763 GAL / MILE
SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL /SY	419+50 TO 680+00	27' SURFACE COURSE	792 GAL / MILE
RECYCLED ASPHALT PAVEMENT - SUPERPAVE FAA 43 @ 2 TON / CY	0+00 TO 11+54 & 11+86 TO 21+00	2" SURFACE COURSE 25' TOP - 1' SLOUGH	1,695 TON / MILE
RECYCLED ASPHALT PAVEMENT - SUPERPAVE FAA 43 @ 2 TON / CY	0+00 to 21+00	2" WEAR COURSE 25' TOP- 1.5' SLOUGH	1,760 TON / MILE
RECYCLED ASPHALT PAVEMENT - SUPERPAVE FAA 43 @ 2 TON / CY	21+00 TO 169+60 & 170+80 TO 419+50	2.75" SURFACE COURSE 26' TOP - 1.5' SLOUGH	2,465 TON / MILE
RECYCLED ASPHALT PAVEMENT - SUPERPAVE FAA 43 @ 2 TON / CY	21+00 TO 169+60 & 170+80 TO 419+50	2.25" WEAR COURSE 26' TOP- 2' SLOUGH	2098 TON / MILE
RECYCLED ASPHALT PAVEMENT - SUPERPAVE FAA 43 @ 2 TON / CY	419+50 TO 680+00	2" SURFACE COURSE 24' TOP - 0.75' SLOUGH	1,613 TON / MILE
RECYCLED ASPHALT PAVEMENT - SUPERPAVE FAA 43 @ 2 TON / CY	419+50 TO 680+00	1.75" WEAR COURSE 24' TOP- 1.25' SLOUGH	1,473 TON / MILE
ASPHALT CEMENT PG 58H-34 @ 5.0%	0+00 TO 680+00		

SUMMARY OF QUANTITIES SC 5132 (061) PCN 24537						
SPEC.	CODE	DESCRIPTION	UNIT	COUNTY ROAD 8 QUANTITIES	COUNTY ROAD 11 QUANTITIES	COMBINED TOTAL QUANTITIES
103	0100	CONTRACT BOND	L SUM	0.5	0.5	1
107	0101	RAILWAY PROTECTION INSURANCE (2 - LOCATIONS)	L SUM	0.5	0.5	1
302	0120	AGGREGATE BASE COURSE CL 5	TON	585	90	675
320	0100	CEMENT STABILIZED BASE COURSE (12 INCH)	SY	123,605		123,605
320	0200	PORTLAND CEMENT (6%)	TON	5,249		5,249
401	0050	TACK COAT	GAL	21,945	8,324	30,269
401	0060	PRIME COAT (MC 70 OR MC 250 LIQUID ASPHALT)	GAL	30,901		30,901
411	0105	MILLING PAVEMENT SURFACE (3/4")	SY	84,917	83,620	168,537
411	0114	MILLING PAVEMENT SURFACE (2")	SY	103		103
411	0118	MILLING PAVEMENT SURFACE (4")	SY	132,433		132,433
420	0160	BLOTTER MATERIAL CL 44	TON	927		927
430	0143	RECYCLED ASPHALT PAVEMENT - SUPER PAVE FAA 43	TON	54,122	18,154	72,276
430	2000	PATCHING	TON	35	30	65
430	5818	PG 58H-34 ASPHALT CEMENT	TON	2,706	908	3,614
702	0100	MOBILIZATION	L SUM	0.5	0.5	1
704	1000	TRAFFIC CONTROL SIGNS	UNIT	1583	419	2,002
704	1052	TYPE III BARRICADES	EA	2	2	4
704	1067	TUBULAR MARKERS	EA	150	50	200
760	0010	RUMBLE STRIPS - INTERSECTION	SET		1	1
762	0122	PREFORMED PATTERNED PVMT MK - MESSAGE - GROOVED (RR XING)	SF		265	265
762	0430	SHORT TERM 4IN LINE - TYPE NR (YELLOW)	LF	38,676	26,752	65,428
762	1104	PVMT MK PAINTED 4IN LINE	LF	173,006	52,159	225,165
762	1325	PREFORMED PATTERNED PVMT MK 24IN LINE - GROOVED (STOP BARS)	SF	96	72	168
766	0100	MAILBOX-ALL TYPES	EA	20	1	21

BASIS OF ESTIMATE SC 5132 (061) (COUNTY ROAD 11)				
DESCRIPTION	STATION	WIDTH	/ MILE	
3/4" MILLING @ 2.5% CROSS SLOPE 1"ON CENTER 0.5" ON OUTSIDE EDGE	0+00 TO 12+26 & 12+82 TO 260+07	29'	17,013	SY /MILE
SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL /SY	0+00 TO 12+26 & 12+82 TO 260+07	28' BASE COURSE	821	GAL / MILE
SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL /SY	0+00 TO 12+26 & 12+82 TO 260+07	29' WEAR COURSE	851	GAL / MILE
RECYCLED ASPHALT PAVEMENT - SUPERPAVE FAA 43 @ 2 TON / CY	0+00 TO 12+26 & 12+82 TO 260+07	2" SURFACE COURSE 25' TOP - 1.25' SLOUGH	1,711	TON / MILE
RECYCLED ASPHALT PAVEMENT - SUPERPAVE FAA 43 @ 2 TON / CY	0+00 TO 12+26 & 12+82 TO 260+07	2" WEAR COURSE 25' TOP- 1.75' SLOUGH	1,776	TON / MILE
ASPHALT CEMENT PG 58H-34 @ 5.0%	0+00 TO 12+26 & 12+82 TO 260+07			

COUNTY ROAD 8 MAILBOXES			
STATION	MAILBOXES	POSTS	SIDE OF ROAD
21+87	1	1	RIGHT
71+56	1	1	RIGHT
98+04	1	1	RIGHT
115+38	1	1	RIGHT
186+00	2	2	LEFT
231+46	1	1	RIGHT
261+34	2	1	RIGHT
419+81	2	1	RIGHT
419+83	1	1	RIGHT
470+53	1	1	RIGHT
478+53	1	1	RIGHT
567+52	4	1	RIGHT
615+60	1	1	RIGHT
676+37	1	1	RIGHT

COUNTY ROAD 11 MAILBOXES			
STATION	MAILBOXES	POSTS	SIDE OF ROAD
178+36	I	I	LEFT

PATCHING SC 5132 (061) (COUNTY ROAD 8)						
STATION	SIDE OF ROAD	SIZE			SQUARE FEET	Tons
436+30	LEFT	6	X	15	90	3.3
441+08	RIGHT	6	X	15	90	3.3
455+75	LEFT	6	X	15	90	3.3
469+79	LEFT	6	X	15	90	3.3
478+25	BOTH	6	X	24	144	5.3
506+80	LEFT	6	X	15	90	3.3
534+00	RIGHT	6	X	15	90	3.3
638+45	RIGHT	6	X	15	90	3.3
662+90	RIGHT	6	X	15	90	3.3
663+45	RIGHT	6	X	15	90	3.3
				TOTAL	954	35

*Note: The quantity listed for CSS1H is raw material at 0.05 GAL / SY. The material used for will be applied with a 50/50 blend at a rate of 0.10 GAL / SY.

BASIS OF ESTIMATE & SUMMARY OF QUANTITITES

These documents were originally issued and sealed by Dana G. Larsen, Registration Number 5547 on February 21, 2025, and the original documents are stored at Ward County Highway Dept., 200 72nd St SE, Minot, ND 58701

COUNTY ROAD 8 YELLOW PAVEMENT MARKINGS PAINTED 4 INCH LINE		
STATIONING	TYPE OF PAINTED LINE	LENGTH (FEET)
0+70	DOUBLE SOLID	270
3+40	STOP STRIPE	
3+79	DOUBLE SOLID	1773
21+52	LEFT SOLID RIGHT DASHED	236
23+88	SINGLE DASHED	1062
34+50	RIGHT SOLID LEFT DASHED	849
42+99	DOUBLE SOLID	546
48+45	LEFT SOLID RIGHT DASHED	708
55+53	SINGLE DASHED	357
59+10	RIGHT SOLID LEFT DASHED	575
64+85	LEFT SOLID RIGHT DASHED	715
72+00	SINGLE DASHED	2244
94+44	RIGHT SOLID LEFT DASHED	482
99+26	LEFT SOLID RIGHT DASHED	624
105+50	RIGHT SOLID LEFT DASHED	546
110+96	LEFT SOLID RIGHT DASHED	551
116+47	SINGLE DASHED	342
119+89	LEFT SOLID RIGHT DASHED	560
125+49	RIGHT SOLID LEFT DASHED	606
131+55	DOUBLE SOLID	497
136+52	LEFT SOLID RIGHT DASHED	873
145+25	SINGLE DASHED	1939
164+64	RIGHT SOLID LEFT DASHED	388
168+52	DOUBLE SOLID	312
171+64	LEFT SOLID RIGHT DASHED	2292
194+56	RIGHT SOLID LEFT DASHED	886
203+42	DOUBLE SOLID	470
208+12	LEFT SOLID RIGHT DASHED	736
215+48	SINGLE DASHED	1528
230+76	LEFT SOLID RIGHT DASHED	524
236+00	SINGLE DASHED	1950
255+50	RIGHT SOLID LEFT DASHED	675
262+25	LEFT SOLID RIGHT DASHED	649
268+74	SINGLE DASHED	40225
670+99	DOUBLE SOLID	842
679+41	STOP STRIPE	

COUNTY ROAD 8 YELLOW PAVEMENT MARKINGS PAINTED 4 INCH LINE			
DISTANCE (FEET)	DISCRIPTION	CALCULATION	STRIPING (FT)
4710	DOUBLE YELLOW STRIPE	1FT OF DISTANCE = 2FT OF 4IN STRIPING	9420
5007	RIGHT SOLID YELLOW, LEFT DASHED	1FT OF DISTANCE = 1.25FT OF 4IN STRIPING	6259
8468	LEFT SOLID YELLOW, RIGHT DASHED	1FT OF DISTANCE =1.25FT OF 4IN STRIPING	10585
49647	SINGLE CENTER LINE DASHED	1FT OF DISTANCE = 0.25FT OF 4IN STRIPING	12412
TOTAL			38676

COUNTY ROAD 8 WHITE PAVEMENT MARKINGS PAINTED 4 INCH LINE
* 75 FOOT SKIPS AT MAJOR INTERSECTIONS*
MAJOR INTERSECTIONS ARE AS FOLLOWS
18 TOWNSHIP ROADS
4 COUNTY ROADS
134,330 LINEAR FEET OF PAINTED WHITE MARKINGS

COUNTY ROAD 11 YELLOW PAVEMENT MARKINGS PAINTED 4 INCH LINE		
STATIONING	TYPE OF PAINTED LINE	LENGTH (FEET)
0+55	DOUBLE SOLID	270
3+25	STOP STRIPE	
3+67	DOUBLE SOLID	1001
13+68	LEFT SOLID RIGHT DASHED	451
18+19	SINGLE DASHED	1138
29+57	RIGHT SOLID LEFT DASHED	647
36+04	LEFT SOLID RIGHT DASHED	817
44+21	SINGLE DASHED	346
47+67	RIGHT SOLID LEFT DASHED	1051
58+18	DOUBLE SOLID	517
63+35	LEFT SOLID RIGHT DASHED	936
72+71	SINGLE DASHED	825
80+96	RIGHT SOLID LEFT DASHED	594
86+90	DOUBLE SOLID	456
91+46	LEFT SOLID RIGHT DASHED	533
96+79	SINGLE DASHED	4021
137+00	RIGHT SOLID LEFT DASHED	546
142+46	SINGLE DASHED	257
145+03	LEFT SOLID RIGHT DASHED	856
153+59	SINGLE DASHED	297
156+56	RIGHT SOLID LEFT DASHED	641
162+97	DOUBLE SOLID	350
166+47	LEFT SOLID RIGHT DASHED	750
173+97	SINGLE DASHED	619
180+16	RIGHT SOLID LEFT DASHED	325
183+41	DOUBLE SOLID	443
187+84	LEFT SOLID RIGHT DASHED	824
196+08	SINGLE DASHED	1406
210+14	RIGHT SOLID LEFT DASHED	649
216+63	LEFT SOLID RIGHT DASHED	778
224+41	SINGLE DASHED	176
226+17	RIGHT SOLID LEFT DASHED	760
233+77	DOUBLE SOLID	1147
245+24	LEFT SOLID RIGHT DASHED	711
252+35	DOUBLE SOLID	638
258+73	STOP STRIPE	

COUNTY ROAD 11 YELLOW PAVEMENT MARKINGS PAINTED 4 INCH LINE			
DISTANCE (FEET)	DISCRIPTION	CALCULATION	STRIPING (FT)
4822	DOUBLE YELLOW STRIPE	1FT OF DISTANCE = 2FT OF 4IN STRIPING	9644
5213	RIGHT SOLID YELLOW, LEFT DASHED	1FT OF DISTANCE = 1.25FT OF 4IN STRIPING	6516
6656	LEFT SOLID YELLOW, RIGHT DASHED	1FT OF DISTANCE =1.25FT OF 4IN STRIPING	8320
9085	SINGLE CENTER LINE DASHED	1FT OF DISTANCE = 0.25FT OF 4IN STRIPING	2271
TOTAL			26752

COUNTY ROAD 11 WHITE PAVEMENT MARKINGS PAINTED 4 INCH LINE
* 75 FOOT SKIPS AT MAJOR INTERSECTIONS*
MAJOR INTERSECTIONS ARE AS FOLLOWS
8 TOWNSHIP ROADS
25,407 LINEAR FEET OF PAINTED WHITE MARKINGS

STRIPING

These documents were originally issued and sealed by Dana G. Larsen, Registration Number 5547 on February 20, 2025, and the original documents are stored at Ward County Highway Dept., 200 72nd St SE, Minot, ND 58701

STATE

ND

PROJECT NO.

SC 5132 (061)

PCN

24537

SHEET NO.

6

TOTAL SHEETS

13

Field Approach

Private Drive

Township Road

County Roads

8

24'

22'

48

DEPTH OF ASPHALT
NEW – 3.5"
EXISTING – 2"

30' TO 50'

R = 22'

24'

22'

DEPTH OF ASPHALT
NEW – 3.5"
EXISTING – 2"

50'

R = 26'

28'

26'

DEPTH OF ASPHALT
NEW – 4"
EXISTING – 2"

200'

R = 28'

30'

28'

DEPTH OF ASPHALT
NEW – 4"
EXISTING – 2.5"

8:1 TRANSITIONS SHALL
BE REQUIRED ON ALL
APPROACH RADIUS

COUNTY ROAD 8

APPROACH STATION	APPROACH TYPE	SIDE OF ROAD
1+13	PRIVATE	LEFT
1+13	PRIVATE	RIGHT
2+03	PRIVATE	RIGHT
3+02	PRIVATE	LEFT
4+75	FIELD	LEFT
5+79	182ND ST NW	RIGHT
7+03	FIELD	LEFT
8+34	FIELD	LEFT
8+66	181ST ST NW	RIGHT
12+71	PRIVATE	LEFT
14+19	PRIVATE	RIGHT
15+32	CHURCH PARKING LOT START	RIGHT
17+85	CHURCH PARKING LOT END	RIGHT
16+37	FIELD	LEFT
17+33	PRIVATE	LEFT
18+25	PRIVATE	LEFT
20+51	TOWNSHIP ROAD	LEFT
21+95	PRIVATE	LEFT
22+26	FIELD	RIGHT
25+94	PRIVATE	LEFT
46+00	170TH ST SW	LEFT
46+29	PRIVATE	RIGHT
50+71	PRIVATE	RIGHT
55+53	FIELD	RIGHT
64+47	FIELD	LEFT
65+29	FIELD	RIGHT
71+73	PRIVATE	LEFT
77+10	FIELD	LEFT
77+37	FIELD	RIGHT
91+06	TOWNSHIP ROAD	LEFT
91+06	FIELD	RIGHT
98+25	PRIVATE	LEFT
103+64	FIELD	RIGHT
115+14	PRIVATE	RIGHT
116+94	PRIVATE	RIGHT
117+47	FIELD	LEFT
119+89	FIELD	RIGHT
127+58	FIELD	LEFT
129+12	FIELD	RIGHT
150+48	142ND ST NW	RIGHT
154+31	PRIVATE	LEFT
165+76	FIELD	RIGHT
166+00	PRIVATE	LEFT
171+93	FIELD	LEFT
181+12	FIELD	RIGHT
183+45	PRIVATE	LEFT
184+30	PRIVATE	LEFT
186+00	12' PULLOFF	LEFT
187+13	PRIVATE	LEFT
187+16	COUNTY ROAD 15	RIGHT
207+67	FIELD	RIGHT
210+38	FIELD	LEFT
221+14	PRIVATE	RIGHT
223+65	PRIVATE	LEFT
226+04	PRIVATE	RIGHT
227+21	PRIVATE	RIGHT
323+01	PRIVATE	LEFT
232+01	PRIVATE	RIGHT
249+90	COUNTY ROAD 15	LEFT
249+90	FIELD	RIGHT
260+46	FIELD	RIGHT
261+82	PRIVATE	RIGHT
273+73	PRIVATE	RIGHT

COUNTY ROAD 8

APPROACH STATION	APPROACH TYPE	SIDE OF ROAD
276+38	FIELD	LEFT
284+94	FIELD	LEFT
302+75	TOWNSHIP ROAD	LEFT
302+75	FIELD	RIGHT
313+33	FIELD	LEFT
313+33	100TH ST NW	RIGHT
325+41	FIELD	LEFT
339+62	FIELD	RIGHT
355+75	86TH ST NW	LEFT
355+75	FIELD	RIGHT
366+11	86TH ST NW	RIGHT
366+11	FIELD	LEFT
382+05	FIELD	LEFT
392+48	FIELD	RIGHT
394+17	PRIVATE	LEFT
408+52	COUNTY ROAD 17	LEFT
408+52	FIELD	RIGHT
414+74	FIELD	LEFT
419+09	PRIVATE	LEFT
419+09	COUNTY ROAD 17	RIGHT
422+34	PRIVATE	LEFT
430+21	FIELD	RIGHT
449+37	FIELD	LEFT
453+76	FIELD	RIGHT
461+41	TOWNSHIP ROAD	LEFT
461+41	FIELD	RIGHT
470+11	62ND ST NW	RIGHT
470+11	FIELD	LEFT
478+11	PRIVATE	RIGHT
480+49	FIELD	LEFT
500+93	PRIVATE	LEFT
514+30	TOWNSHIP ROAD	LEFT
514+30	FIELD	RIGHT
523+15	FIELD	RIGHT
536+50	FIELD	RIGHT
540+63	FIELD	LEFT
567+21	30TH ST NW	LEFT
567+21	FIELD	RIGHT
575+73	30TH ST NW	RIGHT
587+13	FIELD	LEFT
593+49	FIELD	LEFT
593+49	FIELD	RIGHT
605+31	FIELD	LEFT
605+31	FIELD	RIGHT
615+30	19TH ST NW	RIGHT
615+30	FIELD	LEFT
628+78	FIELD	RIGHT
635+67	FIELD	LEFT
635+67	FIELD	RIGHT
649+61	PRIVATE	LEFT
651+31	PRIVATE	RIGHT
663+49	FIELD	LEFT
665+94	PRIVATE	RIGHT
666+12	TOWNSHIP ROAD	LEFT
668+55	PRIVATE	RIGHT
671+72	PRIVATE	RIGHT
673+00	2ND ST NW	LEFT
673+00	2ND ST NW	RIGHT
674+24	PRIVATE	RIGHT
674+24	KARMA PARKING LOT START	LEFT
678+02	KARMA PARKING LOT END	LEFT
674+90	GAS STATION LOT START	RIGHT
678+60	GAS STATION LOT END	RIGHT

ACTUAL QUANTITIES

DESCRIPTION	FIELD APPROACH	PRIVATE DRIVE	TWP ROAD	COUNTY ROAD	12' X VARIED LENGTH APPROACHES	TOTAL
SS–1H OR CSS–1H OR MS–1 ASPHALT FOR TACK 0.05 GAL/SY	112	160	126	148	70	616
RECYCLED ASPHALT PAVEMENT – SUPER PAVE FAA 43 @ 2 TON/CY	448	1000	810	488	231	2977
ASPHALT CEMENT PG–58H–34 @ 5 %	22.4	50	40.5	24.4	11.6	148.9

BASIS FOR QUANTITIES

DESCRIPTION	FIELD APPROACH	PRIVATE DRIVE	TWP ROAD	COUNTY ROAD
SS–1H OR CSS–1H OR MS–1 ASPHALT FOR TACK 0.05 GAL/SY	2 GAL EACH	4 GAL EACH	7 GAL EACH	37 GAL EACH
RECYCLED ASPHALT PAVEMENT – SUPER PAVE FAA 43 @ 2 TON/CY	8 TONS EACH	25 TONS EACH	45 TONS EACH	122 TONS EACH
ASPHALT CEMENT PG–58H–34 @ 5 %	0.4 TONS EACH	1.25 TONS EACH	2.25 TONS EACH	6.1 TONS EACH

56 Field Approaches

40 Private Drives

18 Township Roads

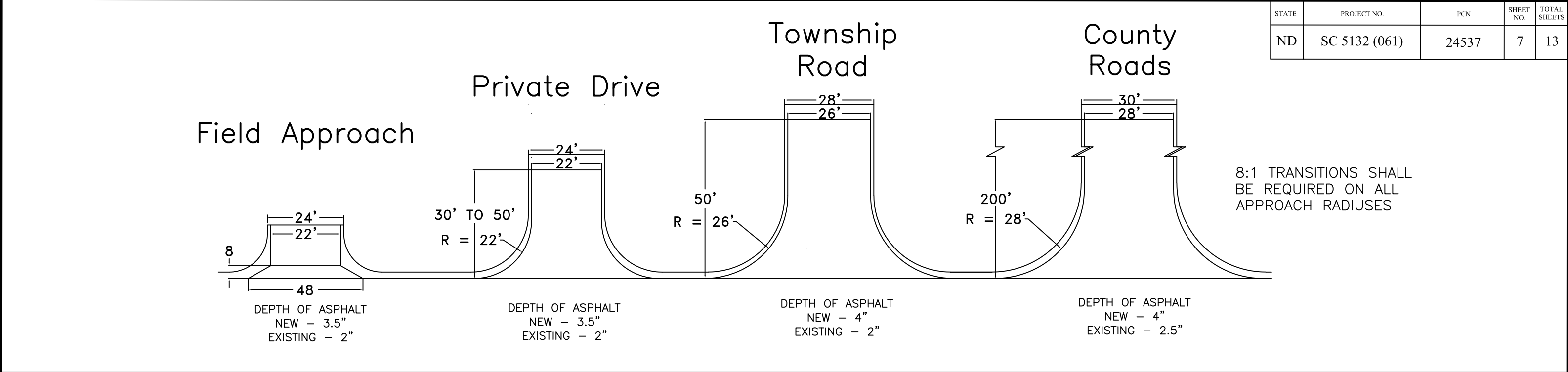
4 County Roads

4 12' X Varied Length

* The 12' x Varied Length Approaches are long Parking Lot Entrances and a Pull off Area

CR 8 TYPICAL DRAWINGS & APPROACH LIST

These documents were originally issued and sealed by Dana G. Larsen, Registration Number 5547 on February 20, 2025 and the original documents are stored at Ward County Highway Dept., 200 72nd St SE, Minot, ND 58701



COUNTY ROAD 11			ACTUAL QUANTITIES					
APPROACH STATION	APPROACH TYPE	SIDE OF ROAD	DESCRIPTION	FIELD APPROACH	PRIVATE DRIVE	TWP ROAD	COUNTY ROAD	TOTAL
3+60	PRIVATE	RIGHT	SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL/SY	78	16	56	0	187
6+21	TOWNSHIP ROAD	RIGHT						
18+61	PRIVATE	LEFT	RECYCLED ASPHALT PAVEMENT – SUPER PAVE FAA 43 @ 2 TON/CY	312	100	360	0	894
21+07	FIELD	LEFT						
21+07	FIELD	RIGHT						
34+89	FIELD	LEFT	ASPHALT CEMENT PG-58H-34 @ 5 %	6	6.25	18	0	30.25
66+86	TOWNSHIP ROAD	LEFT						
66+86	FIELD	RIGHT						
80+31	FIELD	LEFT						
93+38	TOWNSHIP ROAD	LEFT						
93+38	TOWNSHIP ROAD	RIGHT						
119+96	FIELD	LEFT						
119+96	FIELD	RIGHT						
146+38	170TH AVE NW	LEFT						
146+38	170TH AVE NW	RIGHT						
173+08	PRIVATE	RIGHT						
174+75	PRIVATE	RIGHT						
178+36	PRIVATE	RIGHT						
184+91	FIELD	LEFT						
186+30	FIELD	RIGHT						
194+64	FIELD	RIGHT						
199+38	184TH AVE NW	LEFT						
203+03	FIELD	RIGHT						
220+64	FIELD	RIGHT						
232+61	FIELD	RIGHT						
232+61	FIELD	LEFT						
257+11	SCENIC DRIVE ENTERANCE	RIGHT						
259+32	FIELD	RIGHT						

15 Field Approaches

5 Private Drives

8 Township Roads

0 County Roads

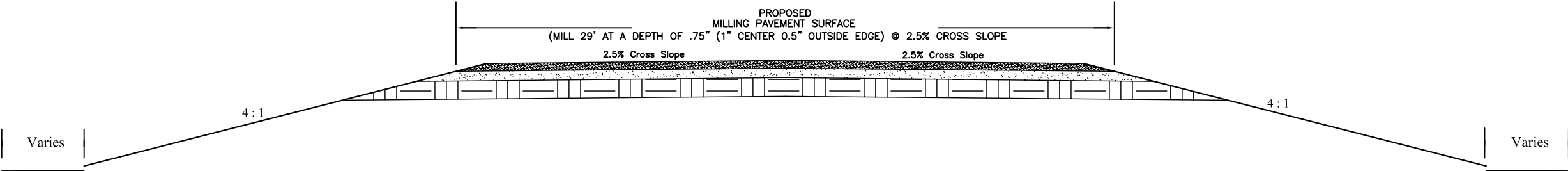
BASIS FOR QUANTITIES				
DESCRIPTION	FIELD APPROACH	PRIVATE DRIVE	TWP ROAD	COUNTY ROAD
SS-1H OR CSS-1H OR MS-1 ASPHALT FOR TACK 0.05 GAL/SY	2 GAL EACH	4 GAL EACH	7 GAL EACH	37 GAL EACH
RECYCLED ASPHALT PAVEMENT – SUPER PAVE FAA 43 @ 2 TON/CY	8 TONS EACH	25 TONS EACH	45 TONS EACH	122 TONS EACH
ASPHALT CEMENT PG-58H-34 @ 5 %	0.4 TONS EACH	1.25 TONS EACH	2.25 TONS EACH	6.1 TONS EACH

CR 11 TYPICAL DRAWINGS & APPROACH LIST

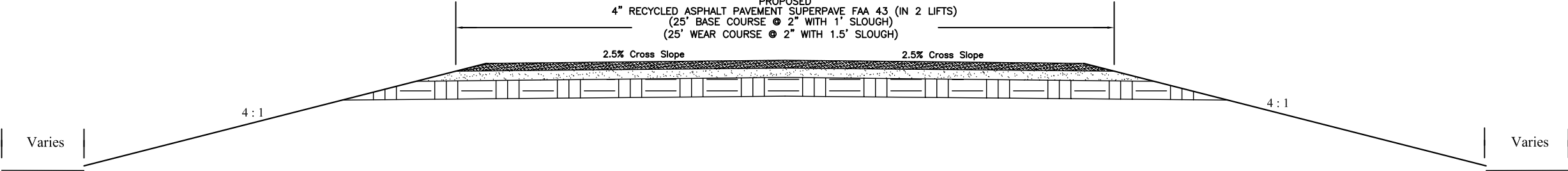
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STATE	PROJECT NO.	PCN	SHEET NO.	TOTAL SHEETS
ND	SC 5132 (061)	24537	8	13

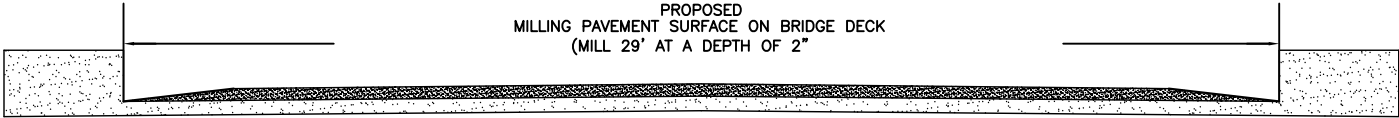
COUNTY ROAD 8
STA 0+00 TO STA 11+54 &
STA 11+86 TO STA 21+00



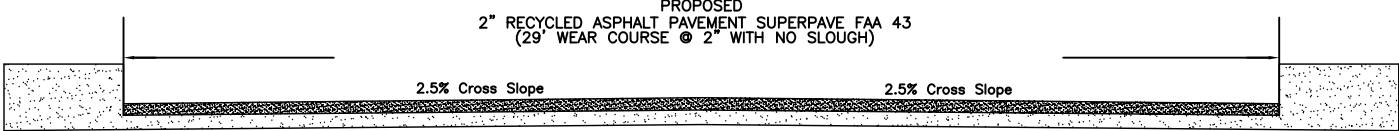
COUNTY ROAD 8
STA 0+00 TO STA 11+54 &
STA 11+86 TO STA 21+00



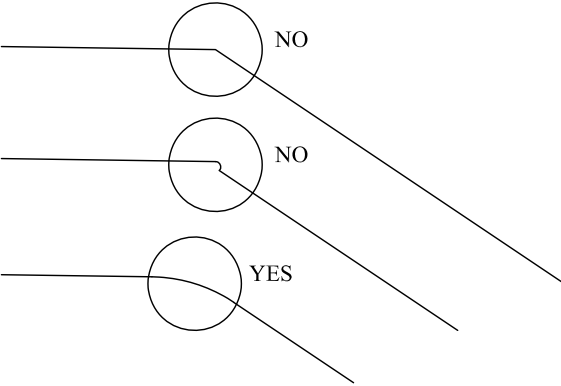
COUNTY ROAD 8
STA 11+54 TO STA 11+86



COUNTY ROAD 8
STA 11+54 TO STA 11+86

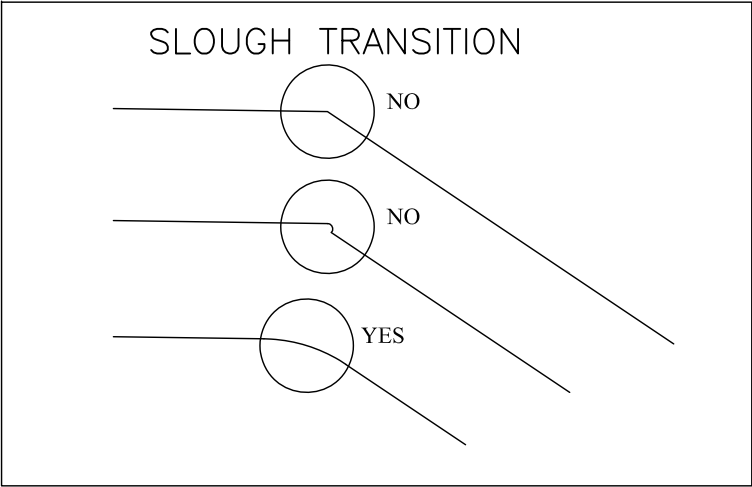
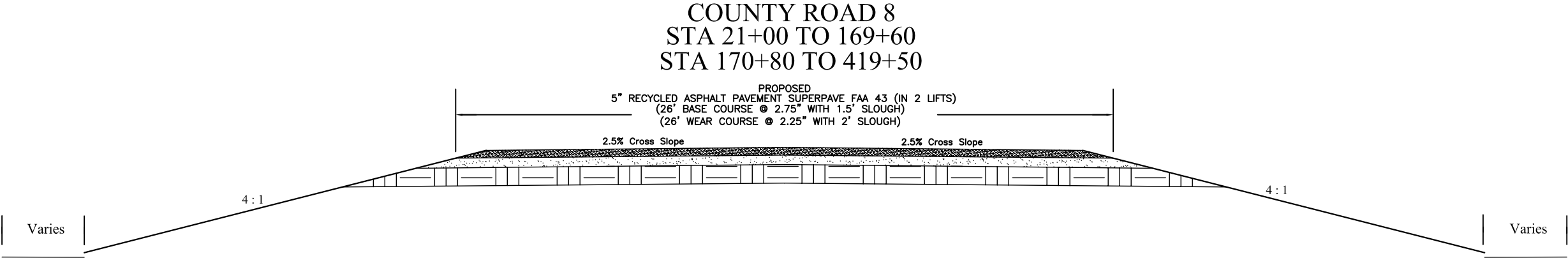
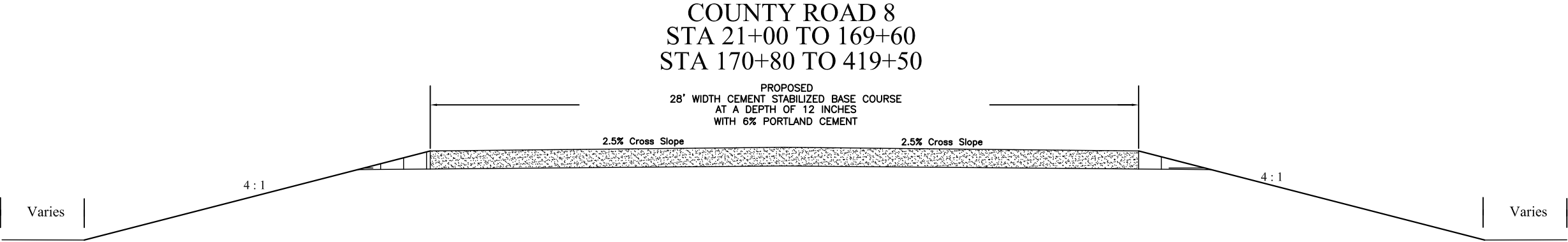
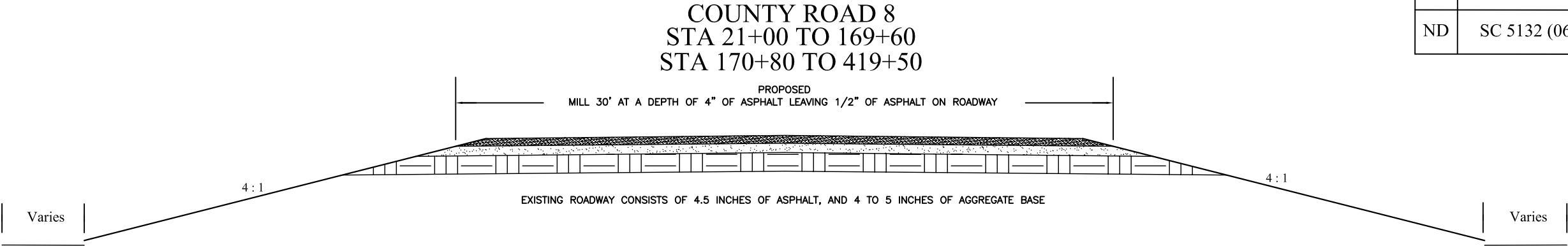


SLOUGH TRANSITION



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STATE	PROJECT NO.	PCN	SHEET NO.	TOTAL SHEETS
ND	SC 5132 (061)	24537	9	13

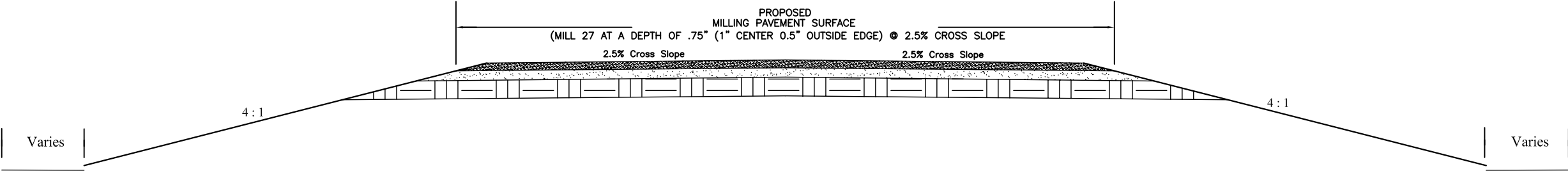


COUNTY ROAD 8 TYPICAL SECTIONS

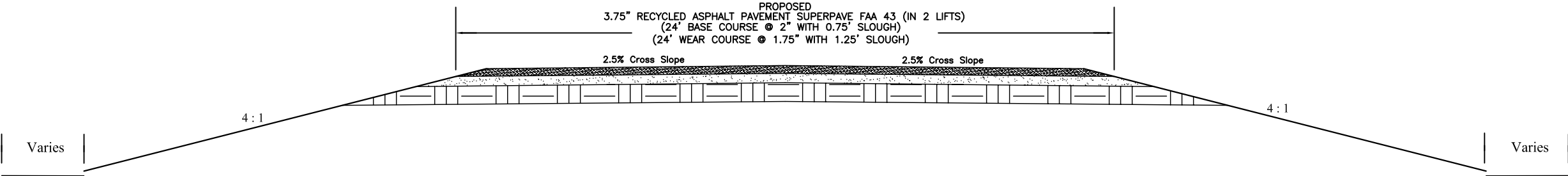
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STATE	PROJECT NO.	PCN	SHEET NO.	TOTAL SHEETS
ND	SC 5132 (061)	24537	10	13

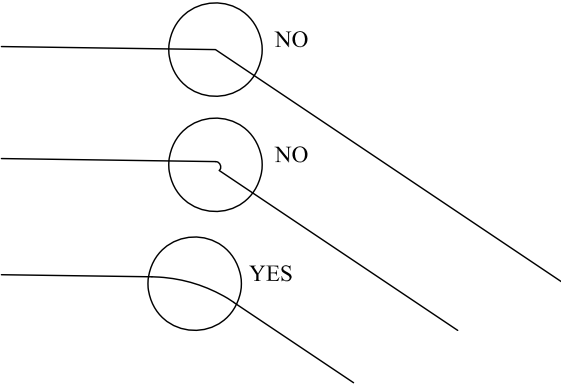
COUNTY ROAD 8
STA 419+50 TO STA 680+00



COUNTY ROAD 8
STA 419+50 TO 680+00



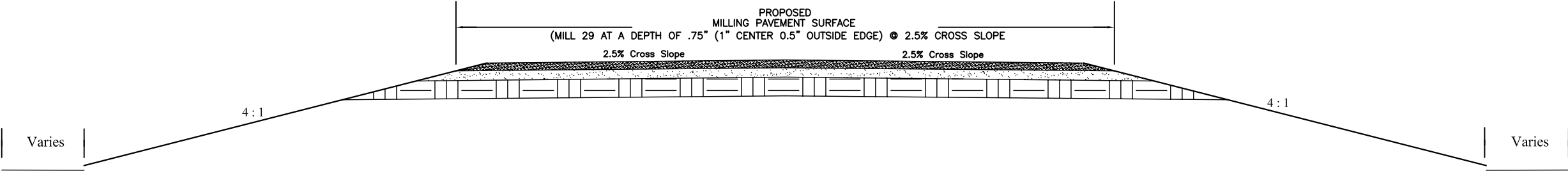
SLOUGH TRANSITION



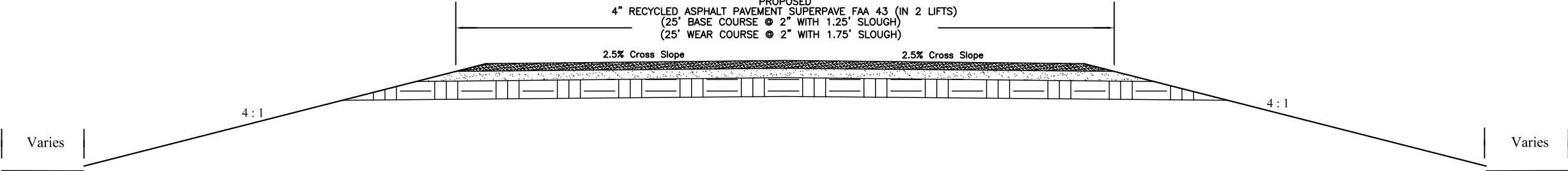
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STATE	PROJECT NO.	PCN	SHEET NO.	TOTAL SHEETS
ND	SC 5132 (061)	24537	11	13

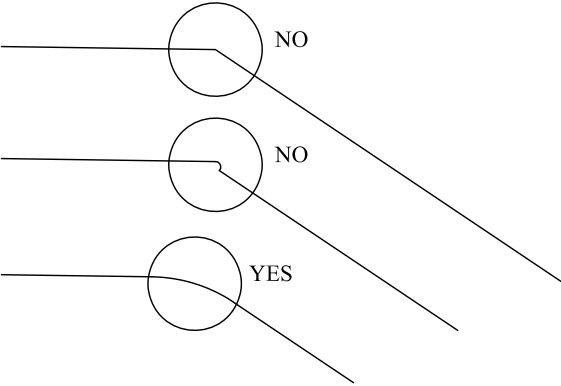
COUNTY ROAD 11
STA 0+00 TO STA 12+26 &
STA 12+82 TO STA 260+07



COUNTY ROAD 11
STA 0+00 TO STA 12+26 &
STA 12+82 TO STA 260+07



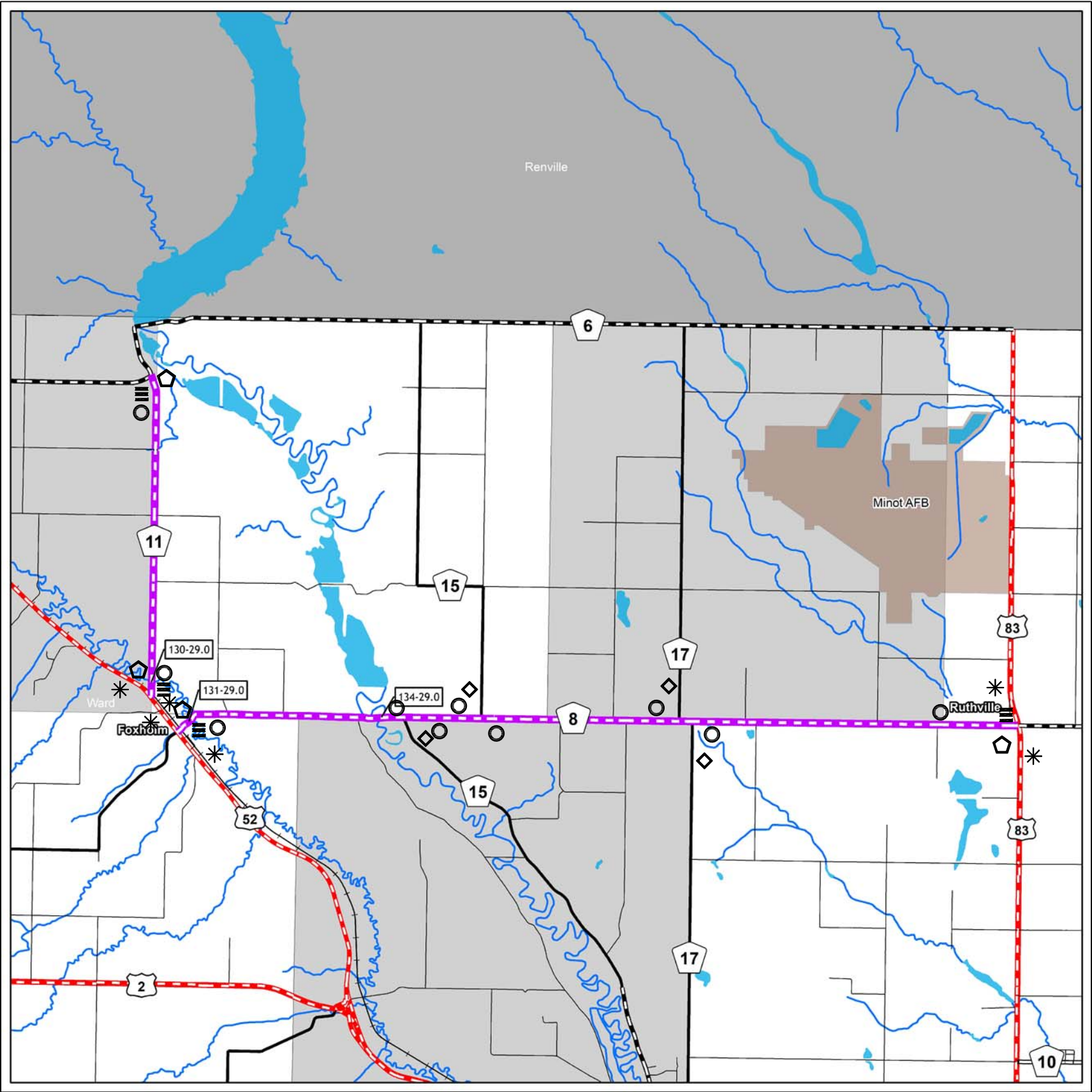
SLOUGH TRANSITION



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STATE	PROJECT NO.	PCN	SHEET NO.	TOTAL SHEETS
ND	SC 5132 (061)	24537	13	13

SYMBOL	AMOUNT REQUIRED	SIGN NUMBER	DESCRIPTION
○	10	W8-12-48	NO CENTER STRIPE
○	10	R4-1-48	DO NOT PASS
○	10	R2-1-48	SPEED LIMIT __
○	10	R2-1a-24	MINIMUM FEE \$80 (MOUNTED TO SPEED LIMIT POST)
≡	4	G20-1a-60	ROAD WORK NEXT __ MILES
◇	4	G20-50a-72	ROAD WORK NEXT __ MILES RT & LT ARROWS
✱	6	G20-52a-72	ROAD WORK NEXT __ MILES RT OR LT ARROW
⬠	4	G20-2a-48	END ROAD WORK



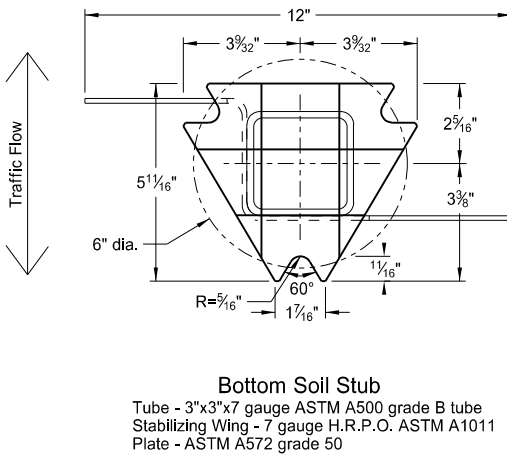
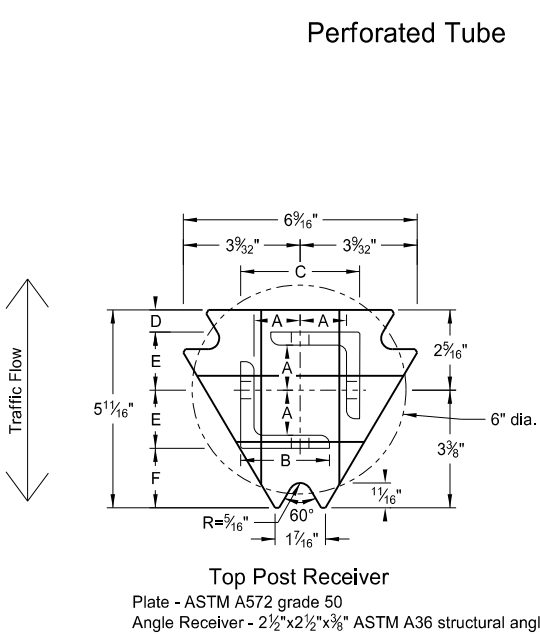
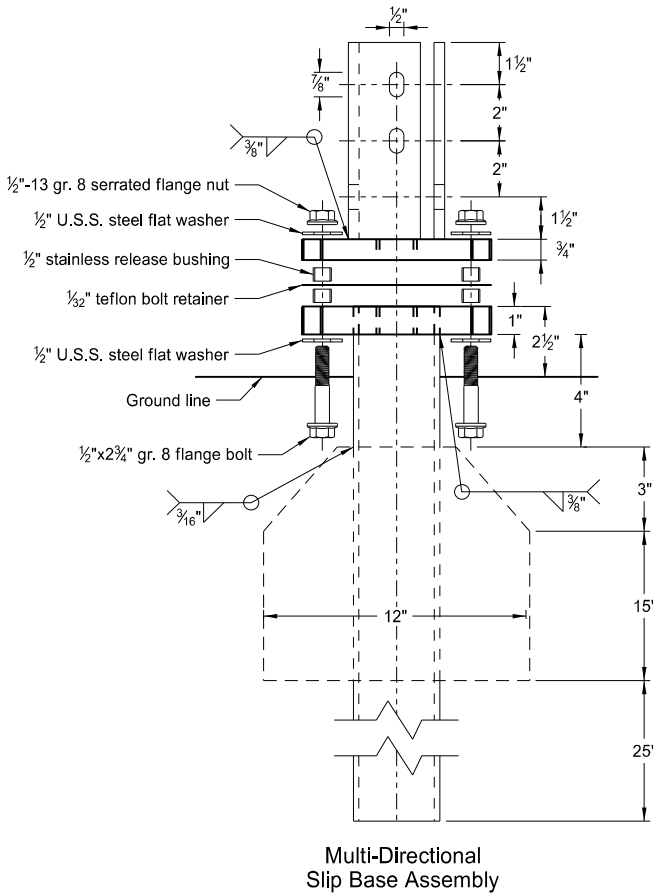
SIGNING FOR BITUMINOUS SURFACING

- D 704-15 Type A
- D 704-20
- D 704-26 Type EE & FF & GG

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Perforated Tube

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

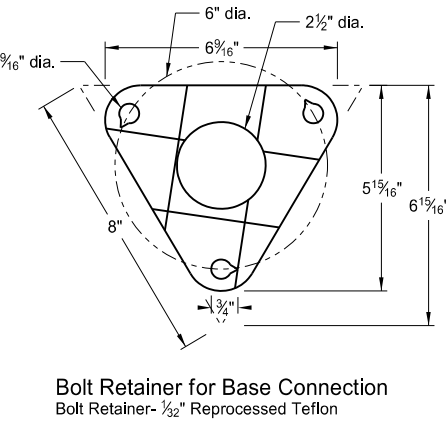
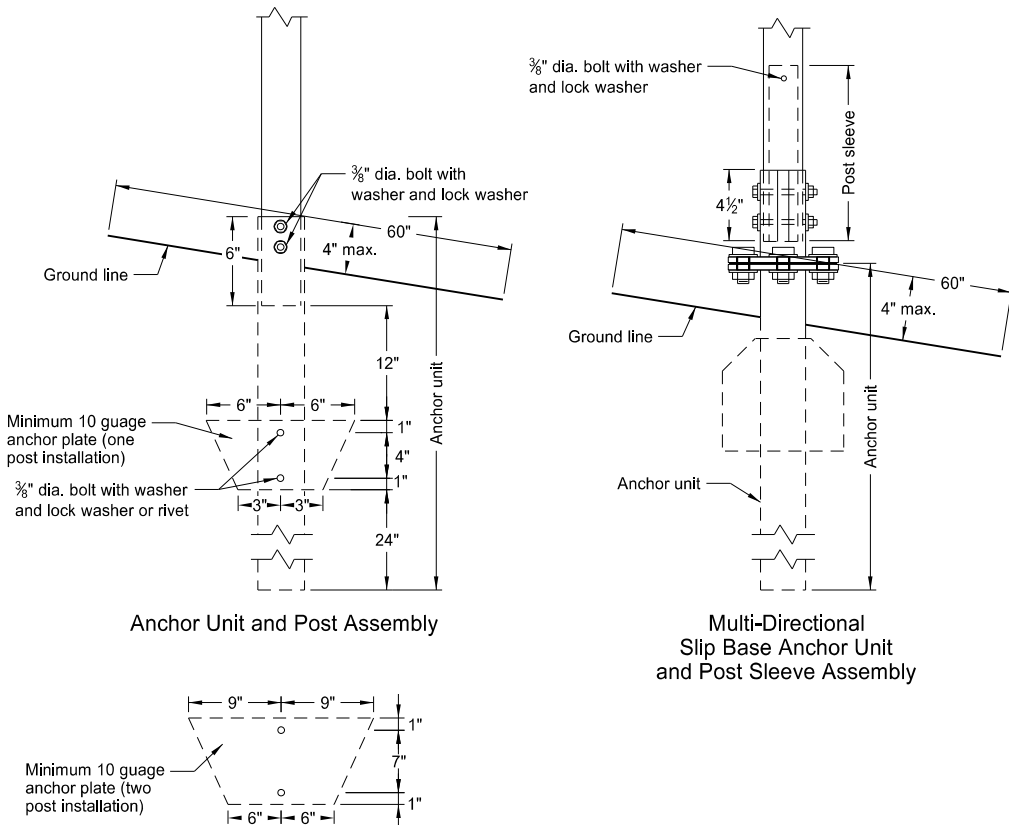


Telescoping Perforated Tube						
Number of Posts	Post Size in.	Wall Thick-ness Gauge	Sleeve Size in.	Wall Thick-ness Gauge	Slip Base	Anchor Size without Slip Base in.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			(A)	3
1	2 1/2	10			Yes	
1	2 1/4	12	2	12	Yes	
1	2 1/2	12	2 1/4	12	Yes	
2	2	12			No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

Properties of Telescoping Perforated Tube						
Tube Size in.	Wall Thickness in.	U.S. Standard Gauge	Weight per Foot lbs.	Moment of Inertia in. ⁴	Cross Sec. Area in. ²	Section Modulus in. ³
1 1/2 x 1 1/2	0.105	12	1.702	0.129	0.380	0.172
2 x 2	0.105	12	2.416	0.372	0.590	0.372
2 1/4 x 2 1/4	0.105	12	2.773	0.561	0.695	0.499
2 3/8 x 2 3/8	0.135	10	3.432	0.605	0.841	0.590
2 1/2 x 2 1/2	0.105	12	3.141	0.804	0.803	0.643
2 1/2 x 2 1/2	0.135	10	4.006	0.979	1.010	0.785

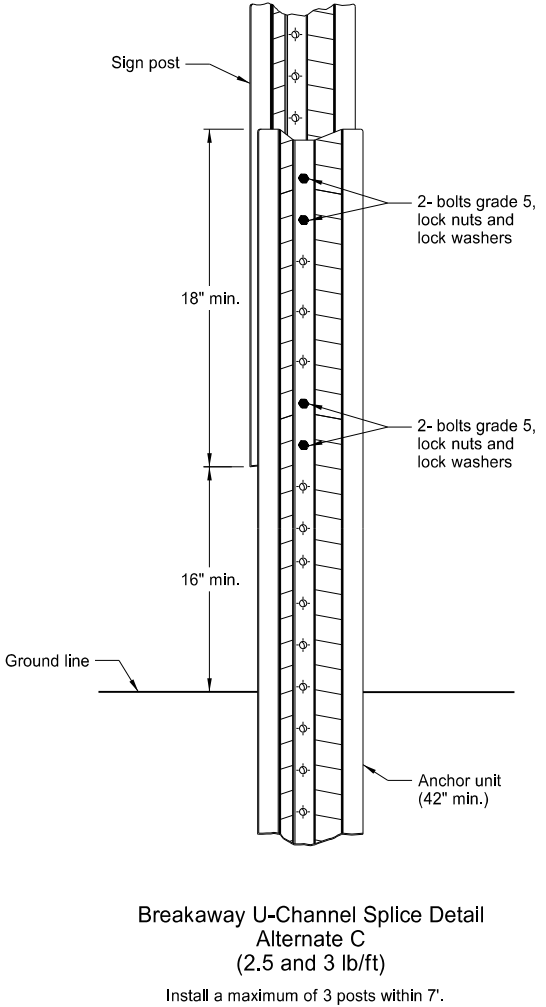
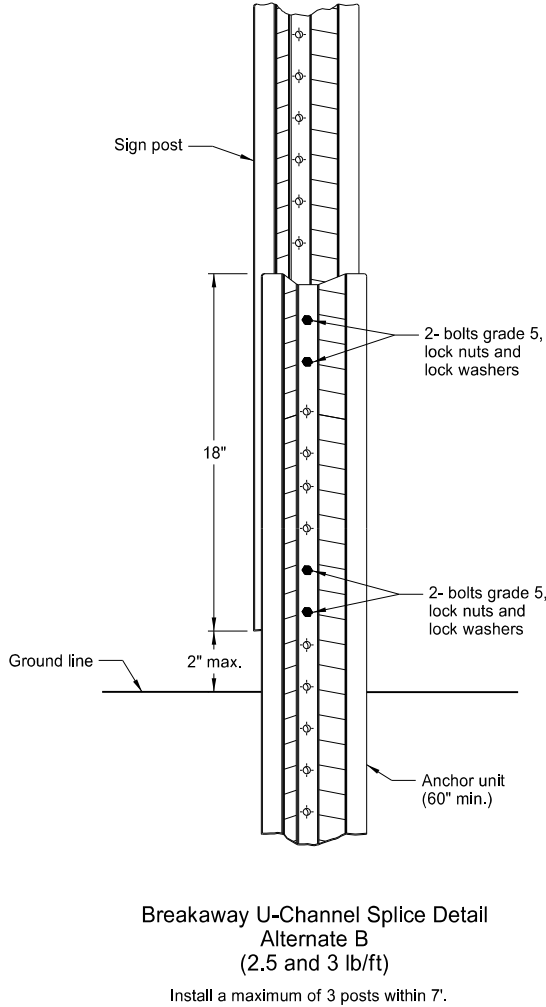
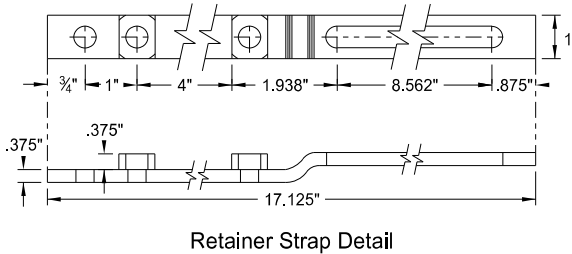
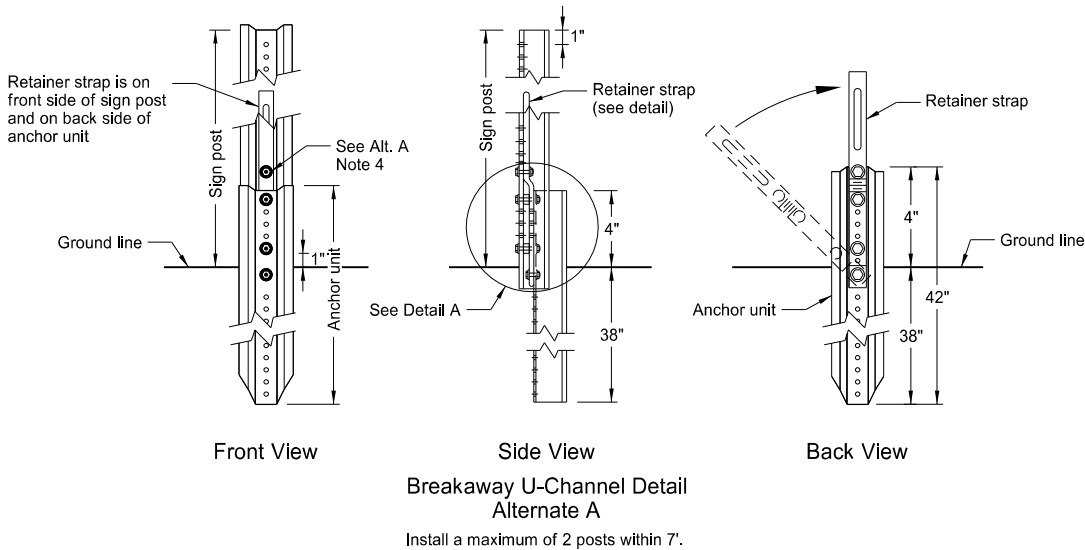
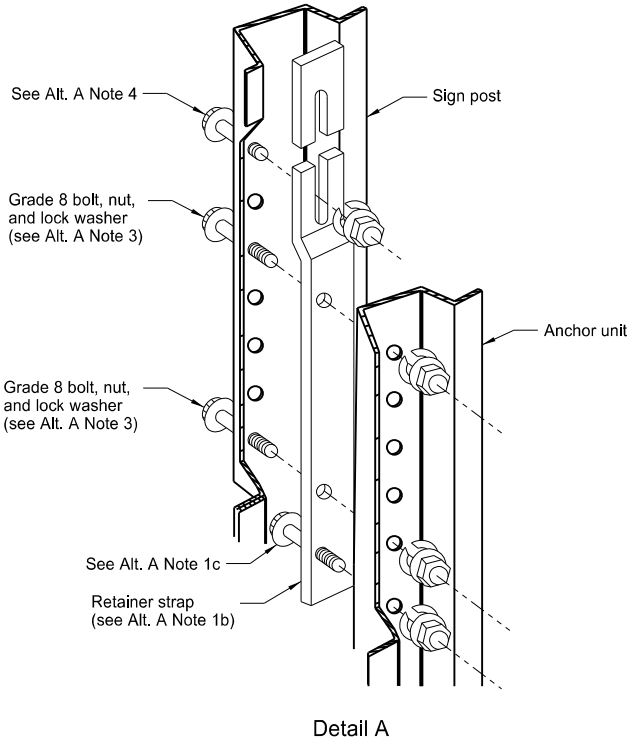
Top Post Receiver Data Table						
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16"x10 ga.	1 5/16"	2 1/2"	3 1/2"	2 5/32"	1 33/64"	1 7/8"
2 1/2"x10 ga.	1 3/32"	2 1/2"	3 5/16"	5/8"	1 21/32"	1 3/4"

- (A) Use breakaway base when support is placed in weak soils. Engineer determines if soils are weak.
- (B) For additional wind load, insert the 2 3/8"x10 ga. into 2 1/2"x10 ga.



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		This document was originally issued and sealed by Kirk J Hoff, Registration Number PE- 4683, on 10/03/19 and the original document is stored at the North Dakota Department of Transportation
2-28-14		
REVISIONS		
DATE	CHANGE	
9-27-17 10-03-19	Updated to active voice New Design Engr PE Stamp	

U-Channel Post



Alternate A Steps of Installation:

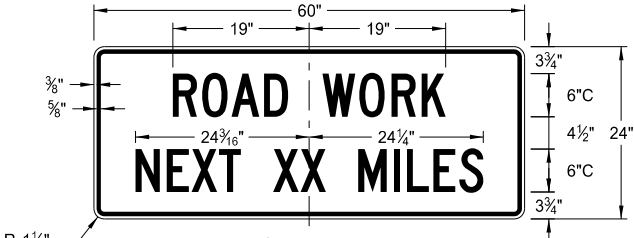
- a) Drive anchor unit to within 12" of ground level.
b) Establish proper assembly by lining up bottom hole of retainer strap with 6th hole from the top of the anchor unit.
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.
d) Rotate strap 90° to left.
- a) Drive anchor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

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

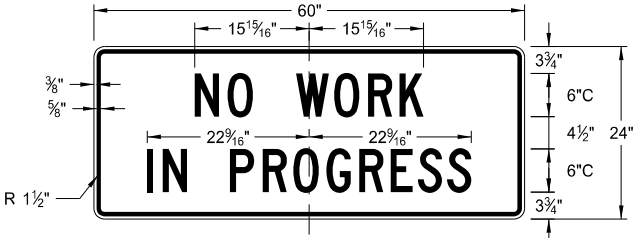
This document was originally issued and sealed by
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on 10/03/19 and the original document is stored at the
North Dakota Department
of Transportation

CONSTRUCTION SIGN DETAILS
TERMINAL AND GUIDE SIGNS

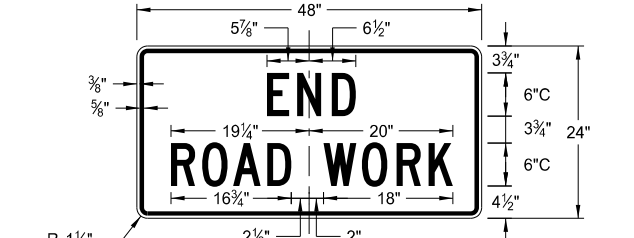
D-704-9



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



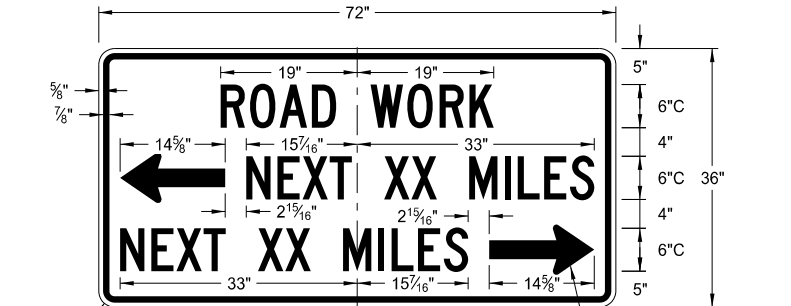
G20-1b-60
Legend: black (non-refl)
Background: orange



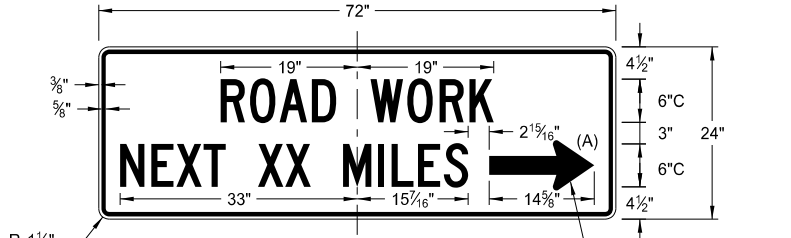
G20-2-48
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Background: orange



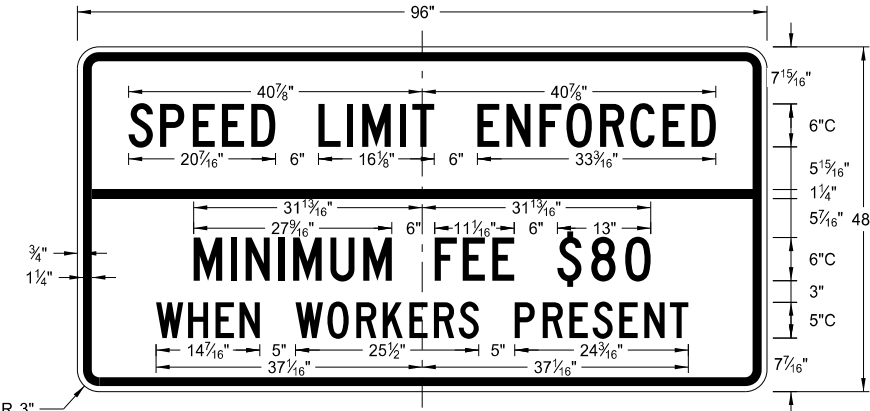
G20-4b-36
Legend: black (non-refl)
Background: orange



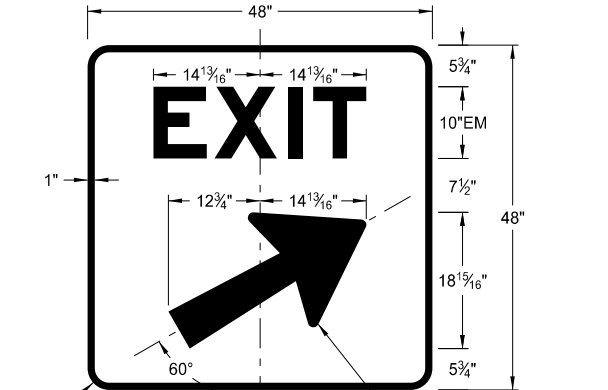
G20-50a-72
Legend: black (non-refl)
Background: orange



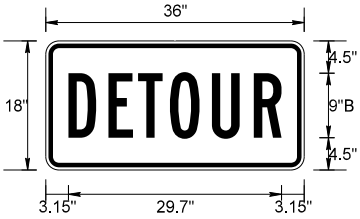
G20-52a-72
Legend: black (non-refl)
Background: orange



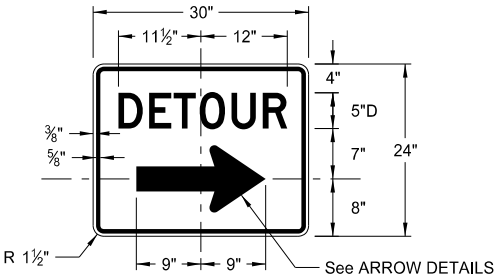
G20-55-96
Legend: black (non-refl)
Background: orange



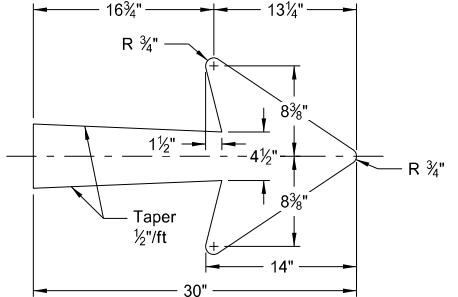
E5-1(L or R)-48
Legend: white
Background: green (orange optional)



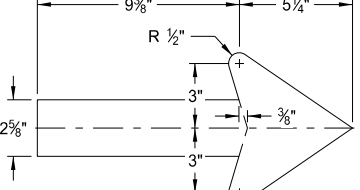
M4-8-36
Legend: black (non-refl)
Background: orange



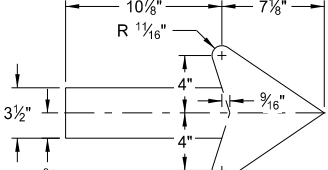
M4-9(L or R)-30 & M4-9-30
Legend: black (non-refl)
Background: orange



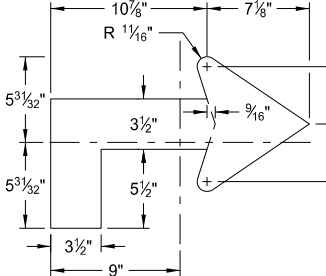
E5-1-48



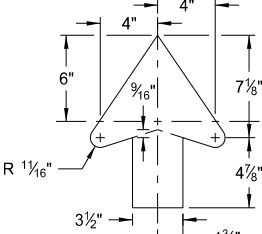
G20-50a-72
G20-52a-72



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



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



M4-9-30
Straight

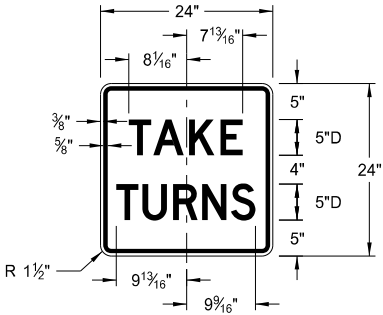
ARROW DETAILS

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

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		This document was originally issued and sealed by Kirk J Hoff, Registration Number PE- 4683, on 10/03/19 and the original document is stored at the North Dakota Department of Transportation
8-13-13		
REVISIONS		
DATE	CHANGE	
8-17-17 10-03-19	Added sign & background color New Design Engineer PE Stamp	

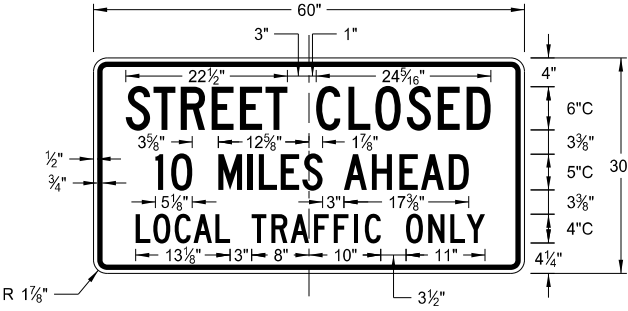
CONSTRUCTION SIGN DETAILS
REGULATORY SIGNS

D-704-10



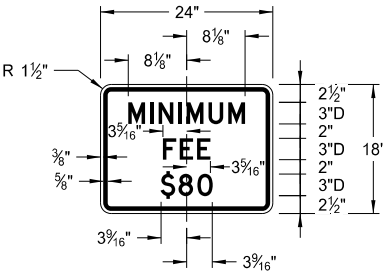
R1-50P-24

Legend: black (non-refl)
Background: white



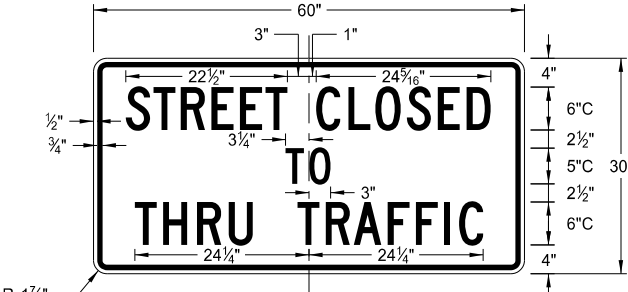
R11-3c-60

Legend: black (non-refl)
Background: white



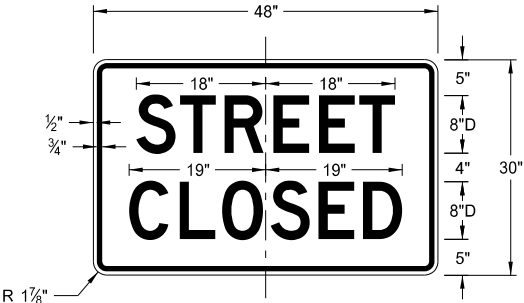
R2-1aP-24

Legend: black (non-refl)
Background: white



R11-4a-60

Legend: black (non-refl)
Background: white



R11-2a-48

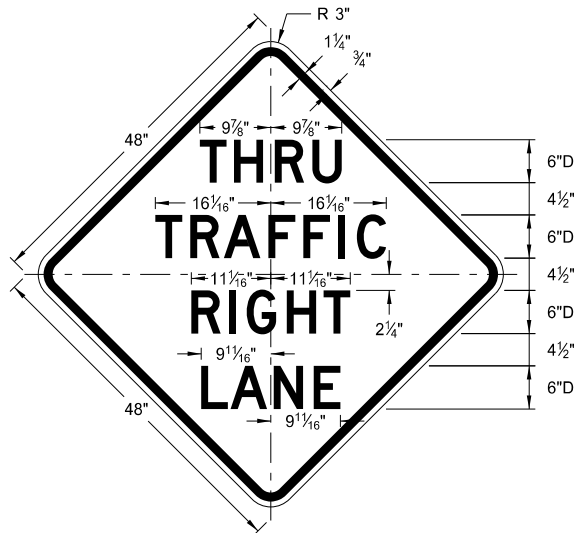
Legend: black (non-refl)
Background: white

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

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Registration Number
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on 10/03/19 and the original
document is stored at the
North Dakota Department
of Transportation

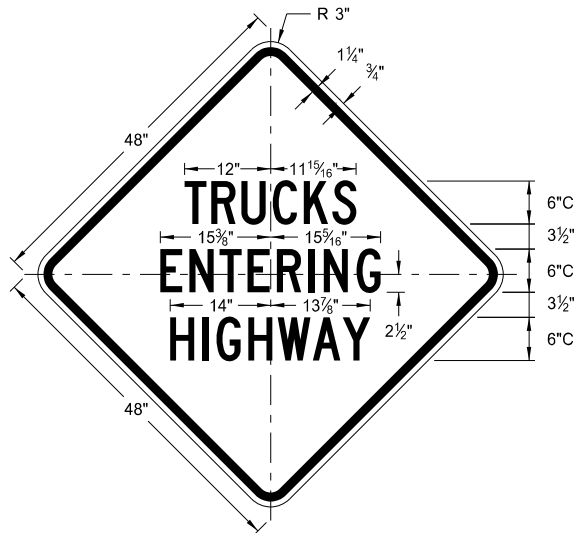
CONSTRUCTION SIGN DETAILS
WARNING SIGNS

D-704-11



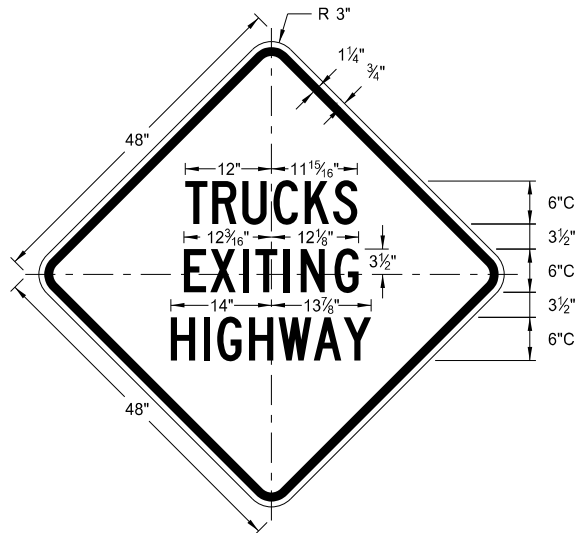
W5-8-48

Legend: black (non-refl)
Background: orange



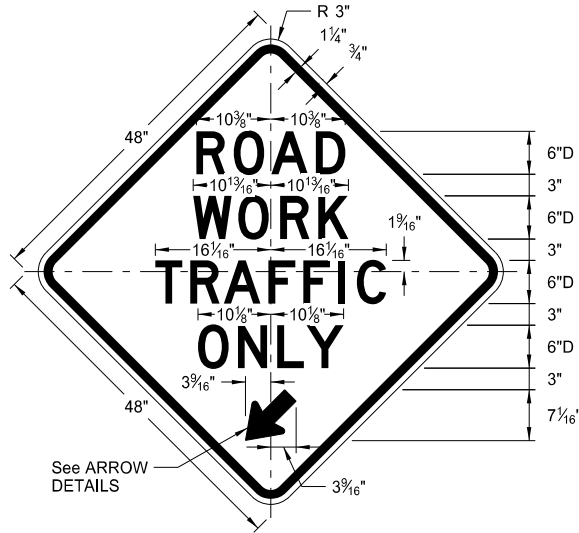
W8-53-48

Legend: black (non-refl)
Background: orange



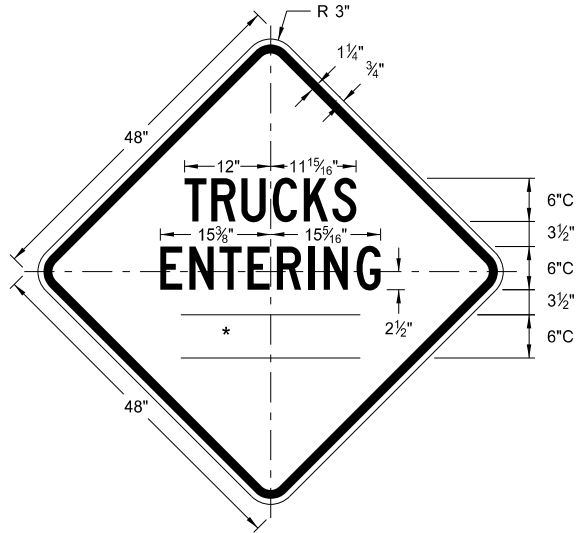
W8-56-48

Legend: black (non-refl)
Background: orange



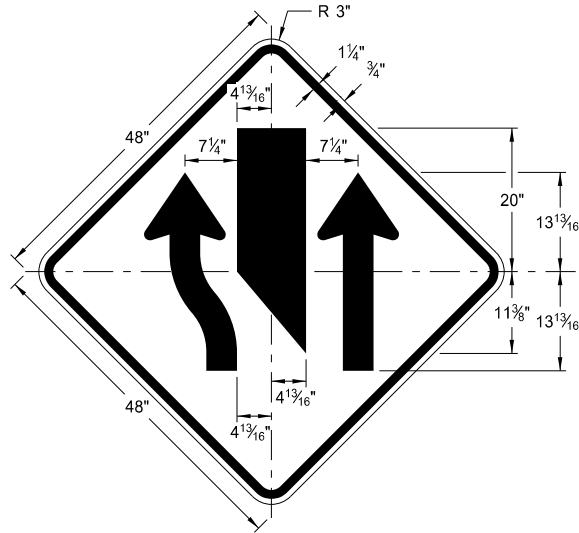
W5-9-48

Legend: black (non-refl)
Background: orange



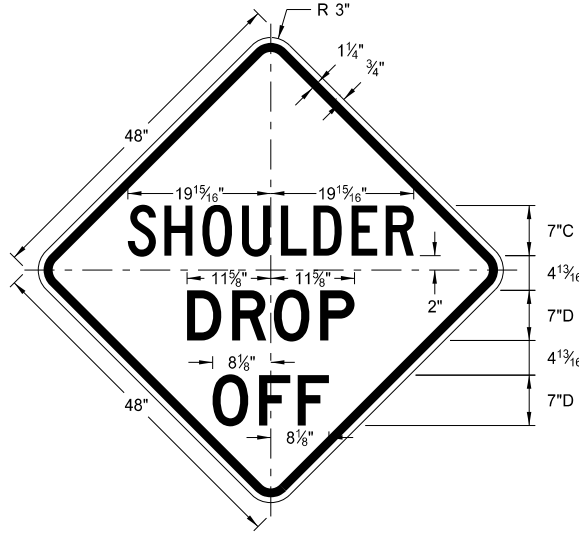
W8-54-48

Legend: black (non-refl)
Background: orange



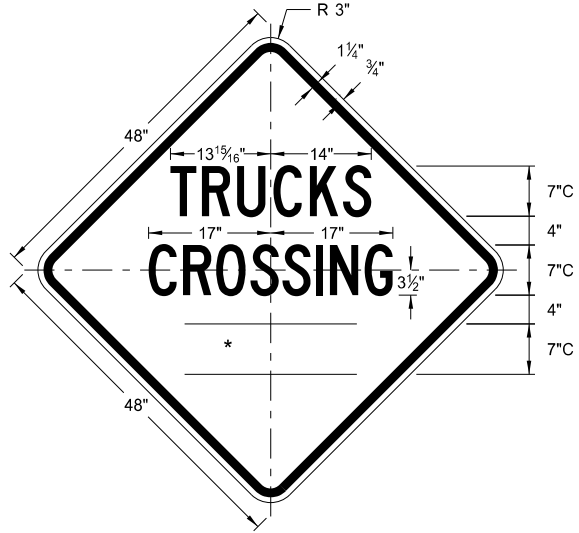
W9-3a-48

Legend: black (non-refl)
Background: orange



W8-9a-48

Legend: black (non-refl)
Background: orange

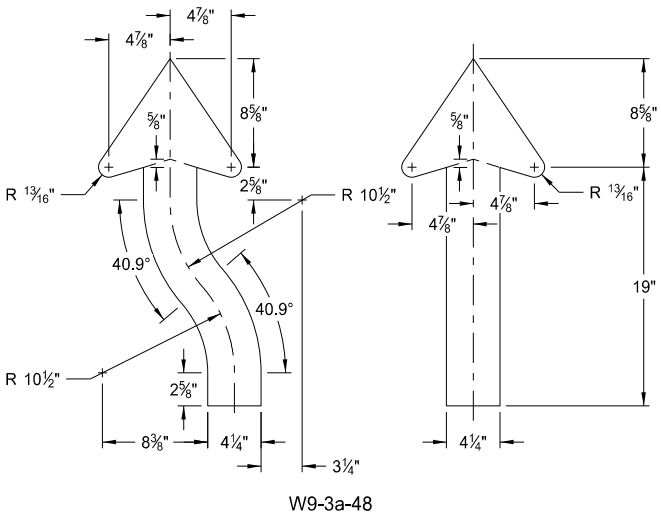
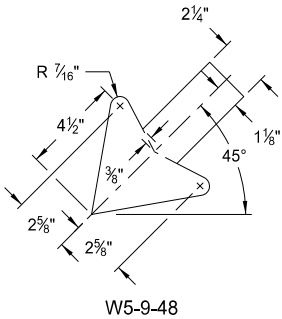


W8-55-48

Legend: black (non-refl)
Background: orange

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

* DISTANCE MESSAGES



ARROW DETAILS

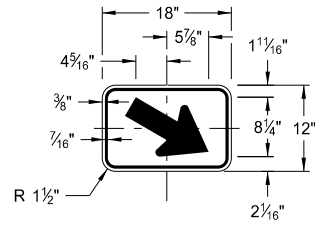
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
8-13-13	
REVISIONS	
DATE	CHANGE
8-17-17 5-31-18 10-03-19	Updated sign number Revised sign and arrow details New Design Engineer PE Stamp

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CONSTRUCTION SIGN DETAILS
WARNING SIGNS

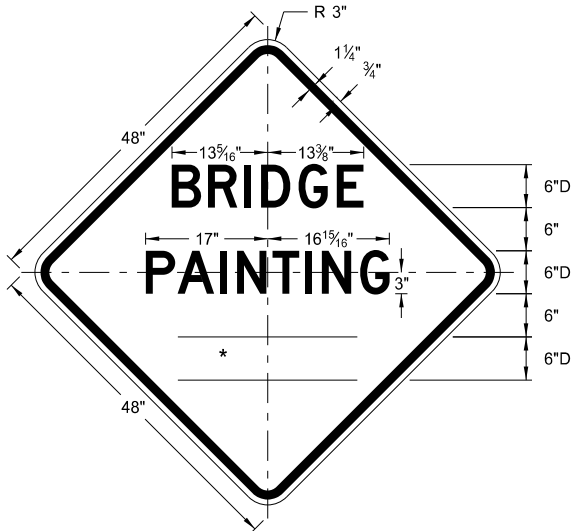
WORD	LETTER SPACING
AHEAD	Standard
200 FT	Standard
350 FT	Standard
500 FT	Standard
1000 FT	Reduce 40%
1500 FT	Reduce 40%
½ MILE	Reduce 50%
1 MILE	Standard

* DISTANCE MESSAGES



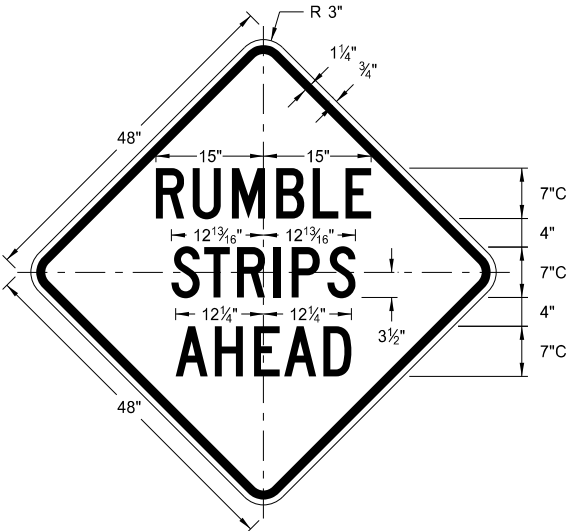
W16-7aP-18

Legend: black (non-refl)
Background: orange



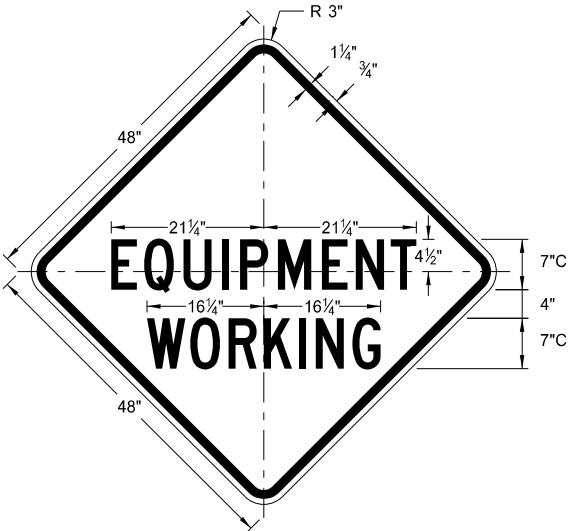
W21-50-48

Legend: black (non-refl)
Background: orange



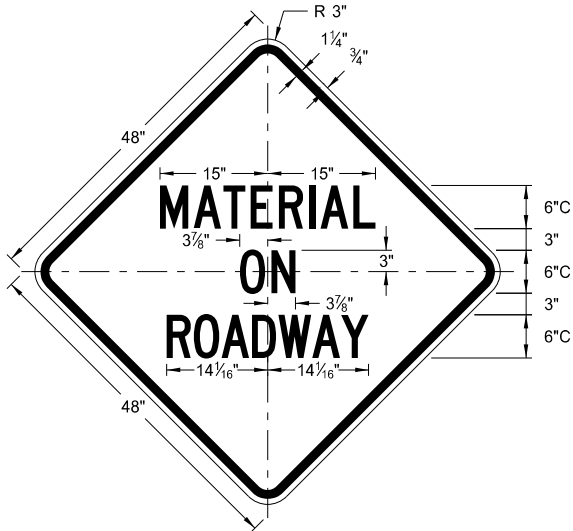
W21-53-48

Legend: black (non-refl)
Background: orange



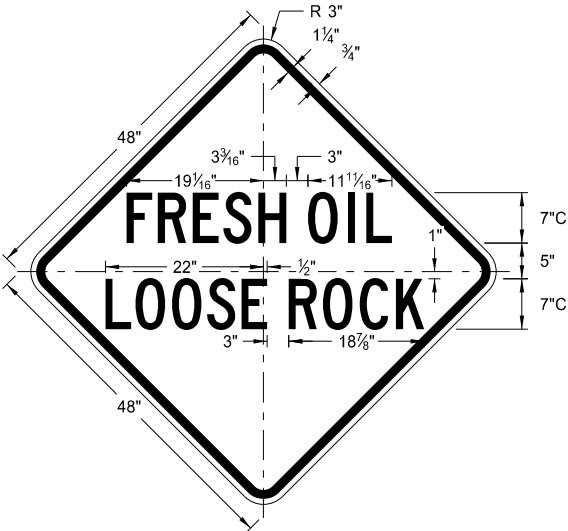
W20-51-48

Legend: black (non-refl)
Background: orange



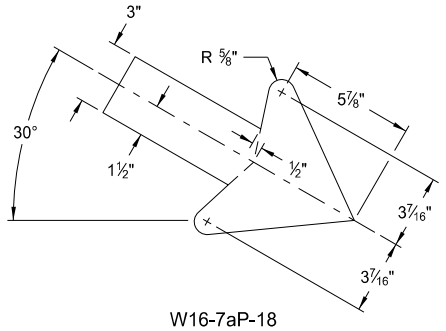
W21-51-48

Legend: black (non-refl)
Background: orange

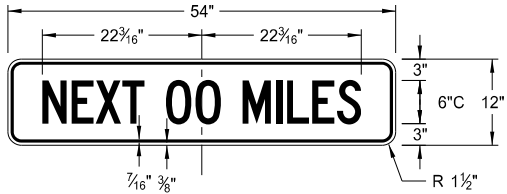


W22-8-48

Legend: black (non-refl)
Background: orange

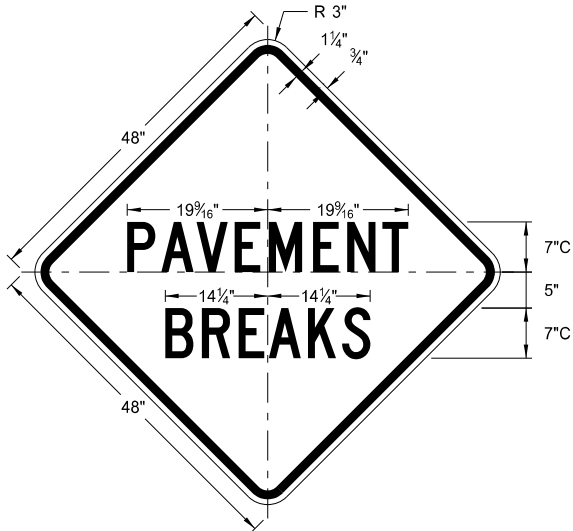


W16-7aP-18



W20-52P-54

Legend: black (non-refl)
Background: orange

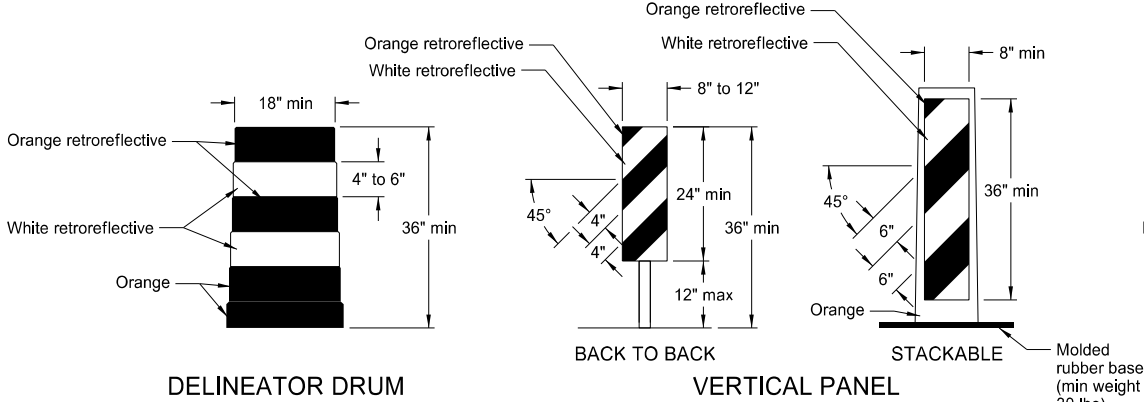


W21-52-48

Legend: black (non-refl)
Background: orange

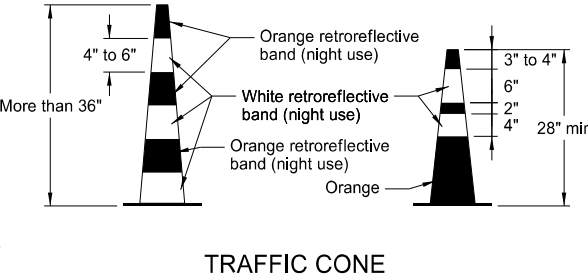
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		This document was originally issued and sealed by Kirk J Hoff, Registration Number PE- 4683, on 11/1/19 and the original document is stored at the North Dakota Department of Transportation
5-31-18		
REVISIONS		
DATE	CHANGE	
11-01-19	Added details for sign W16-7aP-18.	

BARRICADE AND CHANNELIZING DEVICE DETAILS

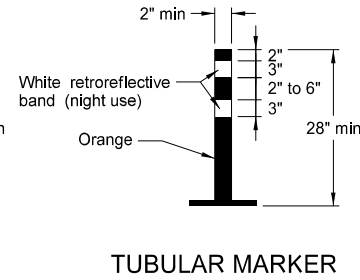


Provide horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide for drum markings. Use a minimum of two orange and two white stripes with the top stripe being orange for each drum. Do not exceed 3" nonretroreflectorized spaces between the horizontal orange and 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.

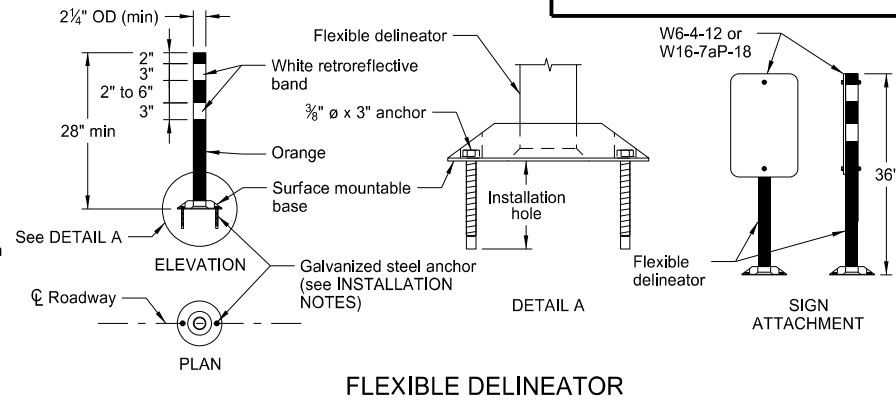
Provide alternating orange and white retroreflective stripes, sloping downward in direction vehicular traffic is to pass. Place retroreflective sheeting on both sides of panel with a minimum of 270 square inches of retroreflective area facing vehicular traffic. Where the height of the retroreflective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



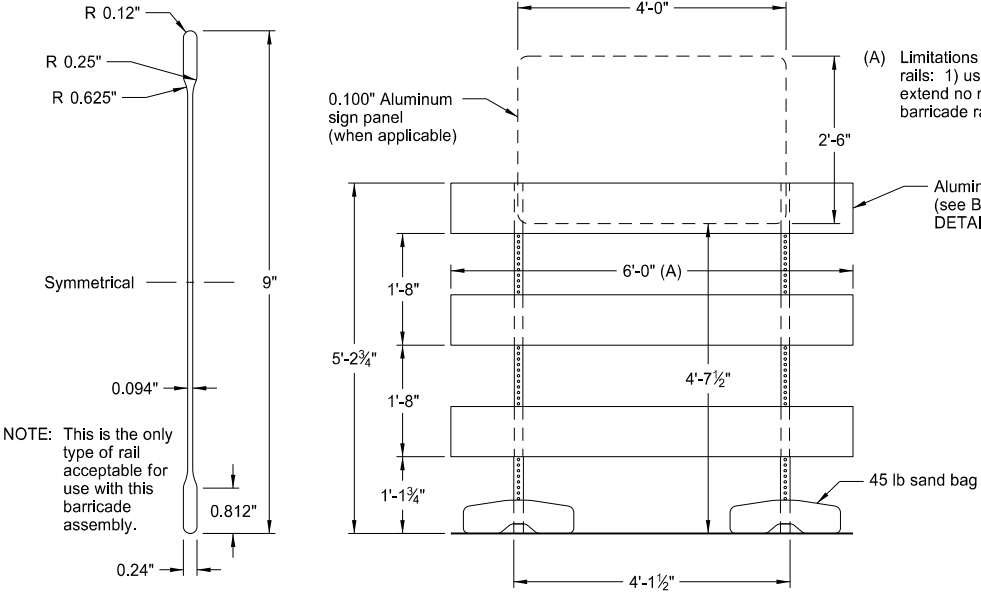
Provide retroreflectorization of cones more than 36" in height by alternating orange and white retroreflective stripes. Use a minimum of two orange and two white stripes for each cone with the top stripe being orange. Use maximum 3" nonretroreflectorized space between the orange and white stripes.



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.



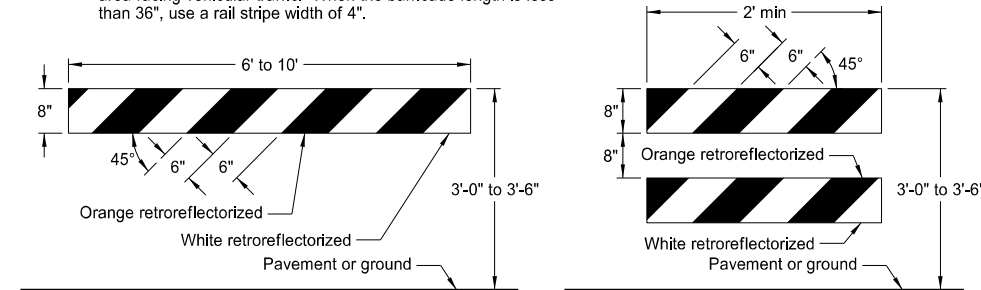
- INSTALLATION NOTES:
1. Drill installation holes to diameter and depth required by manufacturer's specifications.
 2. For removal, remove anchors and fill installation hole with an epoxy designed to bond to pavement surface.
 3. In lieu of bolted down base, use an 8" x 8" butyl pad or hot melt butyl.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



BARRICADE BLADE DETAIL

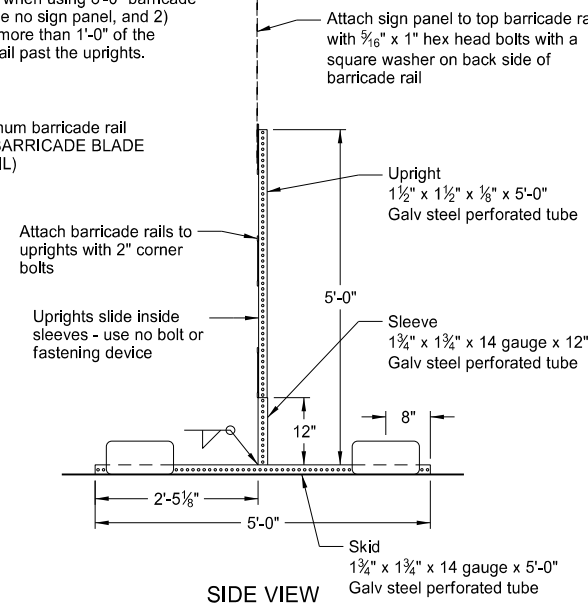
BARRICADE ASSEMBLY DETAIL (Aluminum Barricade Rails)

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".

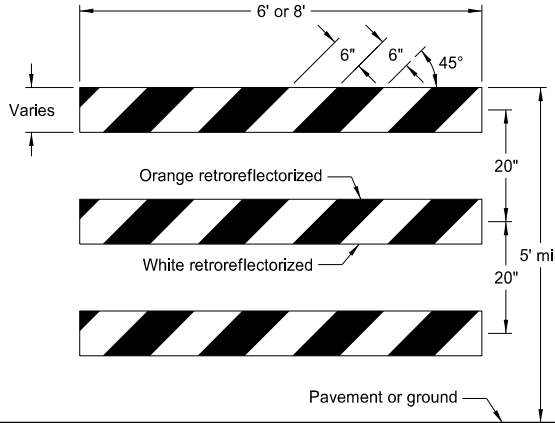


TYPE I BARRICADE

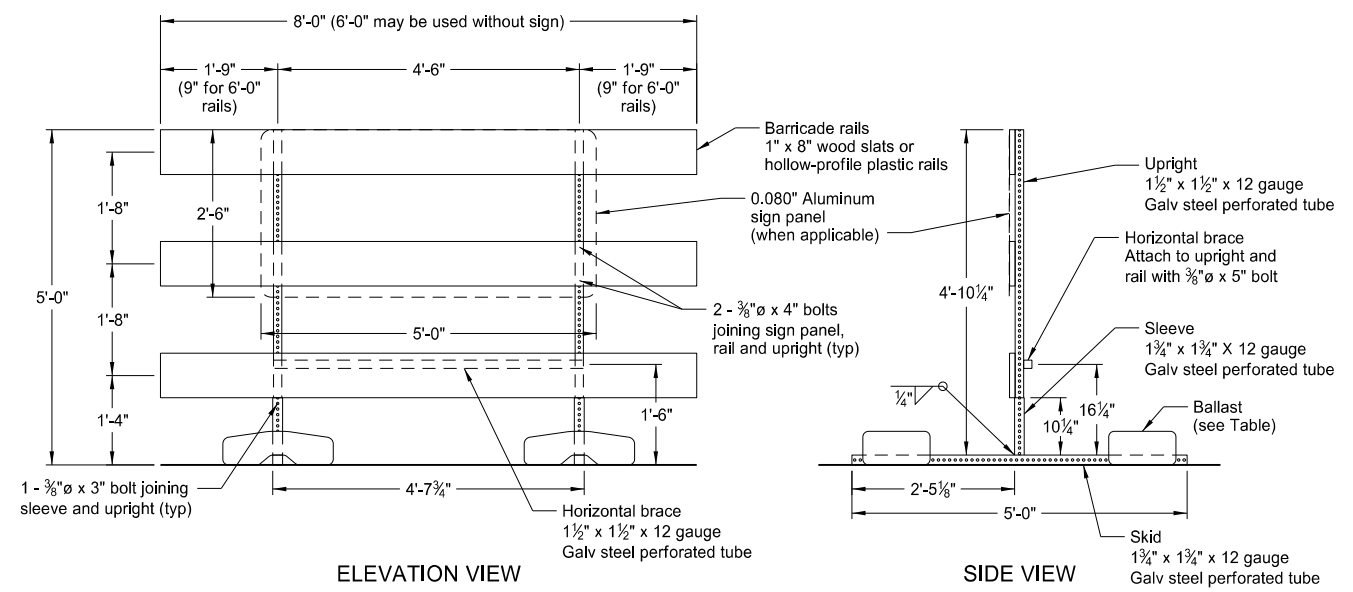
TYPE II BARRICADE
BARRICADE RAIL DETAILS



SIDE VIEW



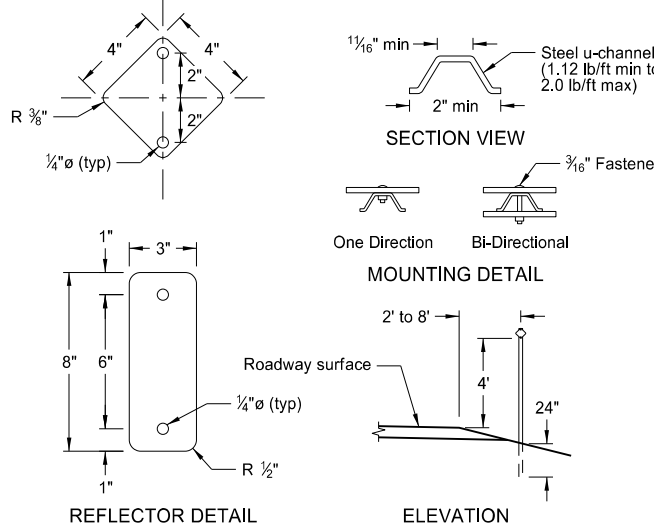
TYPE III BARRICADE



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

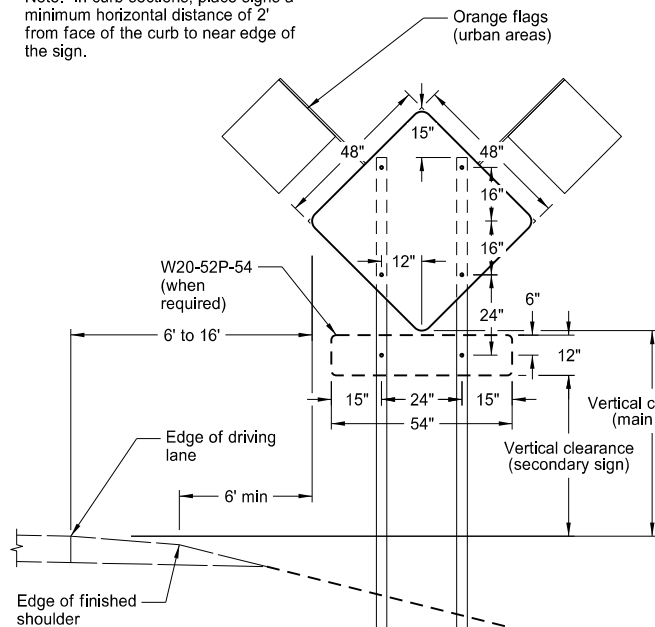
Note: Number of sandbags based on a wind speed of 55 MPH. Sandbags assumed to be placed at or near the ends of the skids.

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

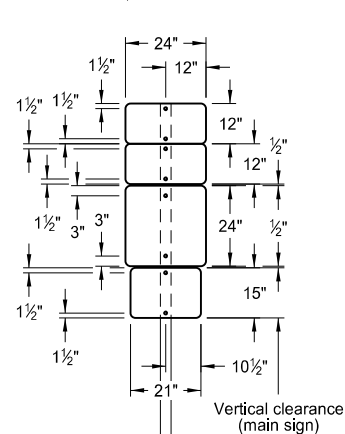
This document was originally issued and sealed by
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CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

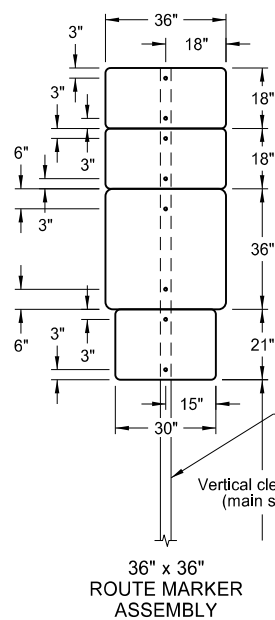
Note: In curb sections, place signs a minimum horizontal distance of 2' from face of the curb to near edge of the sign.



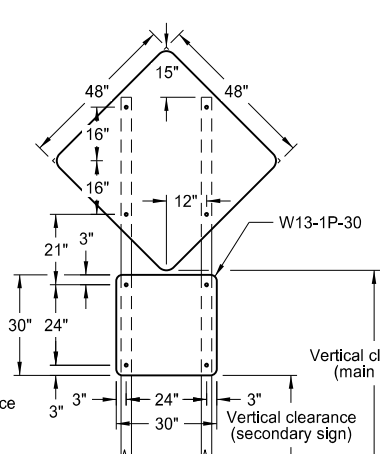
TYPICAL SECTION
(48" x 48" diamond warning sign shown)



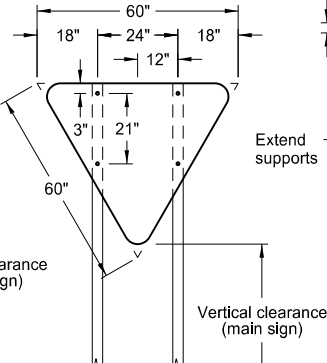
24" x 24"
ROUTE MARKER
ASSEMBLY



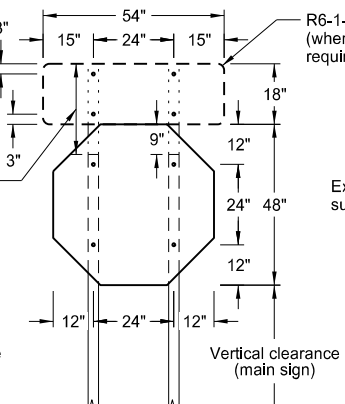
36" x 36"
ROUTE MARKER
ASSEMBLY



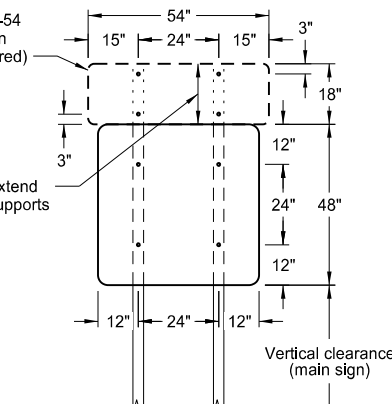
48" x 48" DIAMOND SIGN
(with 30" x 30" secondary sign)



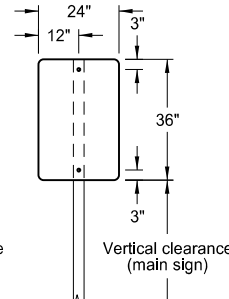
R1-2-60 - YIELD SIGN



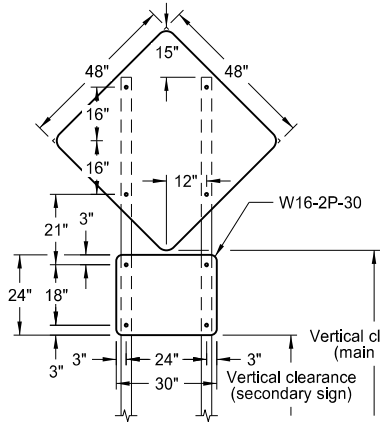
R1-1-48 - STOP SIGN
(with R6-1-54 sign as required)



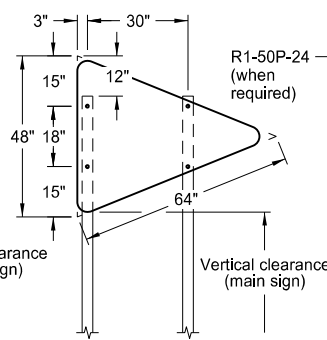
48" x 48" SIGN
(with R6-1-54 sign as required)



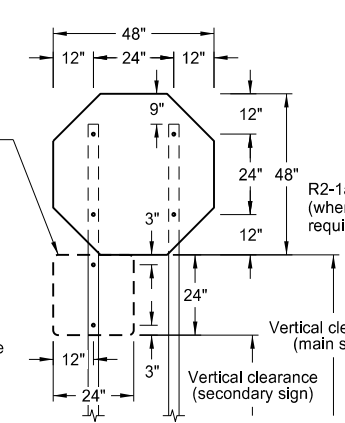
24" x 36" SIGN



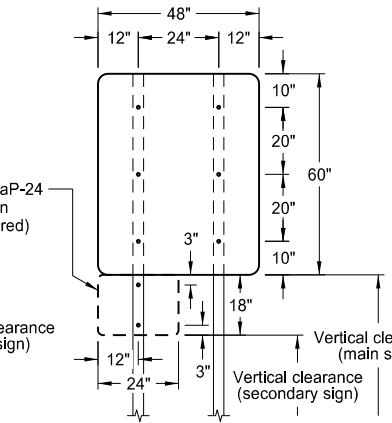
48" x 48" DIAMOND SIGN
(with 30" x 24" secondary sign)



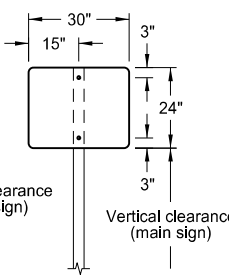
W14-3-64 - PENNANT SIGN



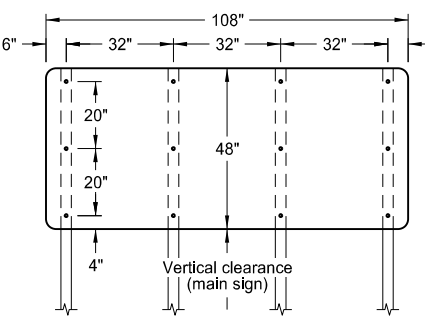
R1-1-48 - STOP SIGN
(with R1-50P-24 sign as required)



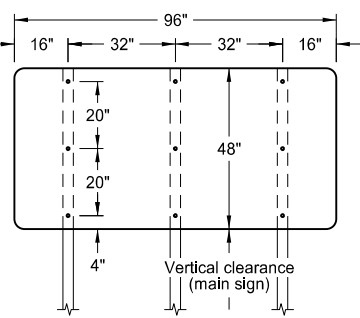
48" x 48" SIGN
(with R2-1aP-24 sign as required)



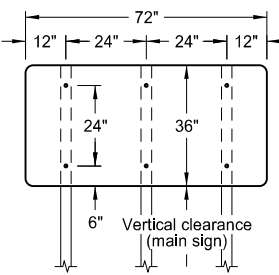
30" x 24" SIGN



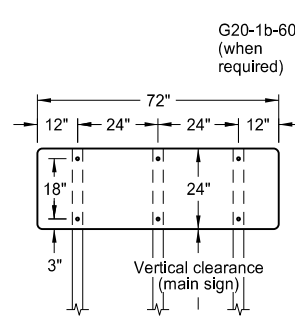
108" x 48" SIGN



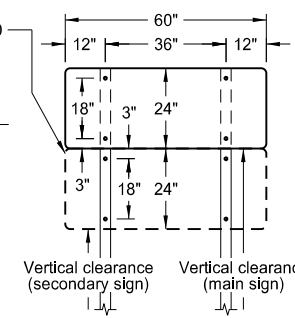
96" x 48" SIGN



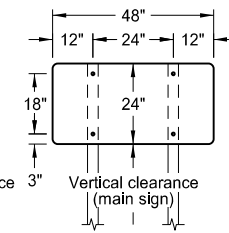
72" x 36" SIGN



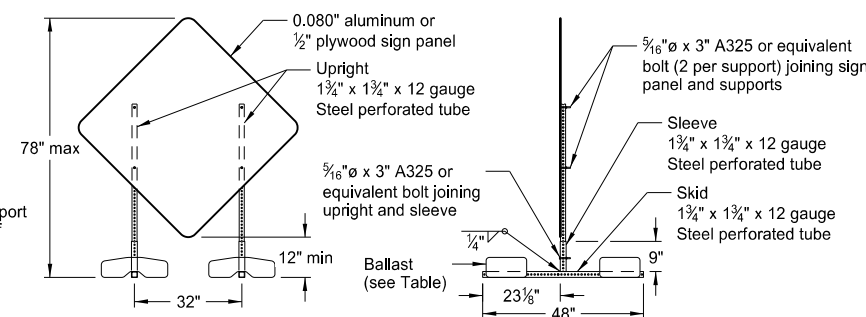
72" x 24" SIGN



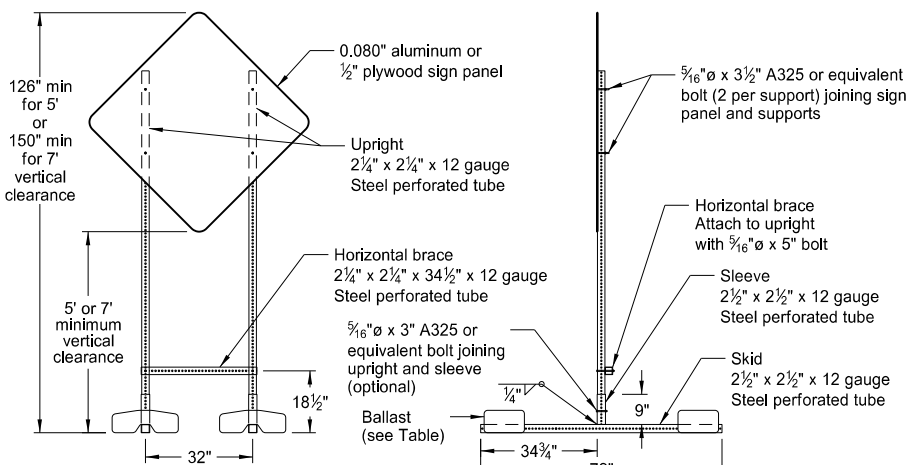
60" x 24" SIGN



48" x 24" SIGN



PORTABLE SIGN SUPPORT
LOW-MOUNTING HEIGHT



PORTABLE SIGN SUPPORT
HIGH-MOUNTING HEIGHT

NOTES:

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

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

Do not attach guy wires to sign supports. Attach wind beams behind sign panels when used with u-posts.
2. Sign Panels: Provide sign panels made of 0.100" aluminum, ½" plywood, or other approved material, except where noted. Punch all holes round for ⅝" 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

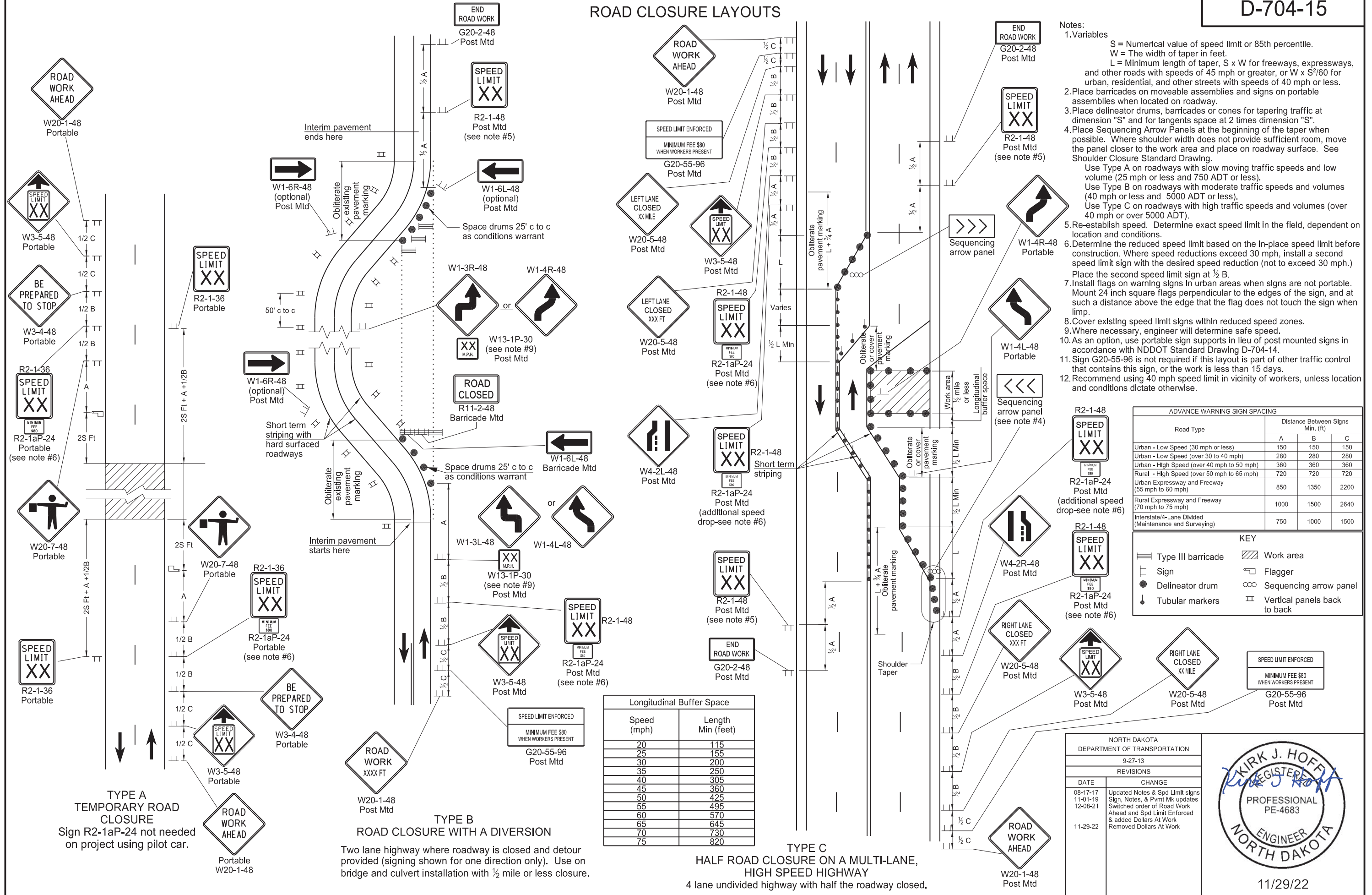
Note: The number of sandbags are based on a wind speed of 55 MPH. Place sandbags at or near the ends of skids.

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

This document was originally issued and sealed by

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

ROAD CLOSURE LAYOUTS



NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
9-27-13	
REVISIONS	
DATE	CHANGE
08-17-17	Updated Notes & Spd Limit signs
11-01-19	Sign, Notes, & Pmt Mk updates
12-08-21	Switched order of Road Work Ahead and Spd Limit Enforced & added Dollars At Work
11-29-22	Removed Dollars At Work

KIRK J. HOFF

REGISTERED

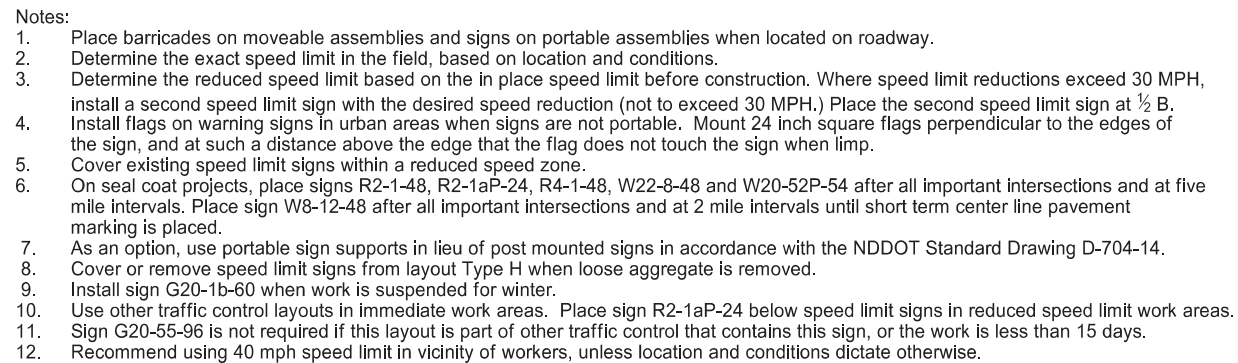
PROFESSIONAL

PE-4683

ENGINEER

NORTH DAKOTA

11/29/22



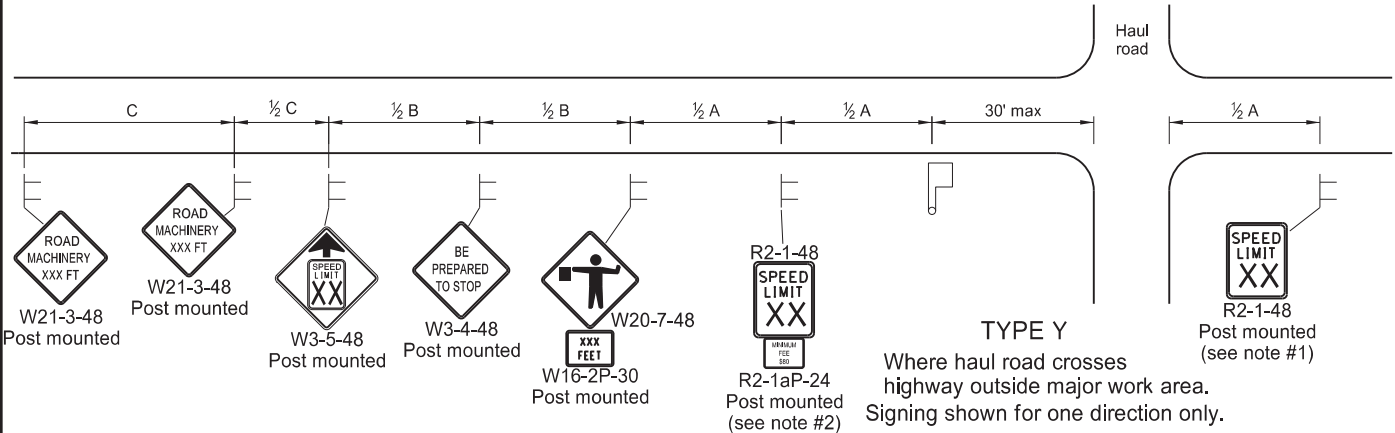
ADVANCE WARNING SIGN SPACING			
Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway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

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



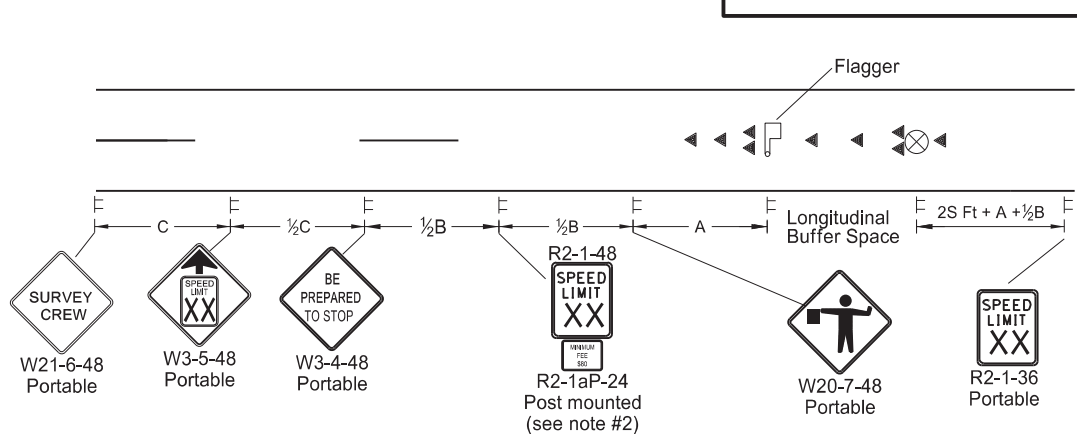
11/29/22

MISCELLANEOUS SIGN LAYOUTS

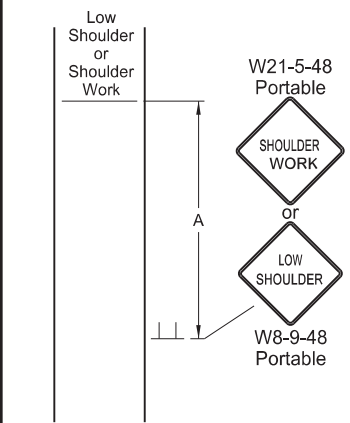


TYPE Y
Where haul road crosses
highway outside major work area.
Signing shown for one direction only.

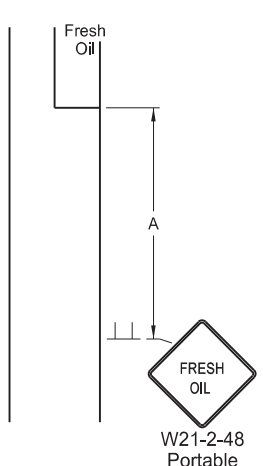
TYPE Z
Where speed zone is needed
Signing shown for one direction only.



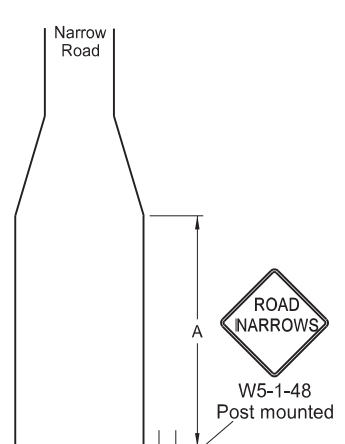
TYPE AA
Where survey crew is used
Signing shown for one direction only.



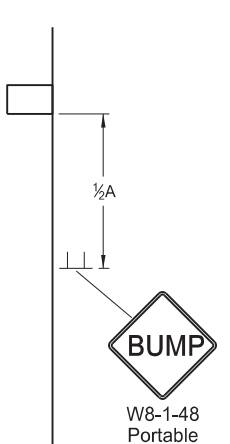
TYPE BB
Within major work area
where sign conditions exist



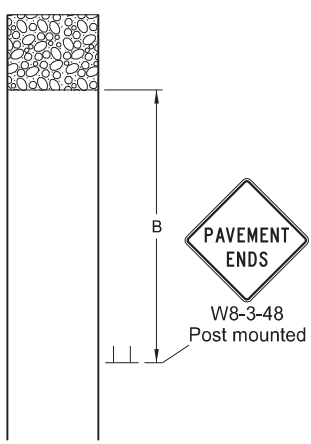
TYPE CC
Where sign conditions exist



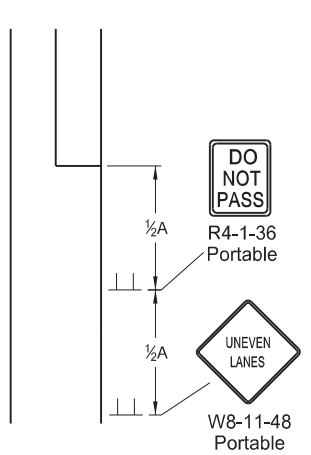
TYPE DD
Where sign conditions exist



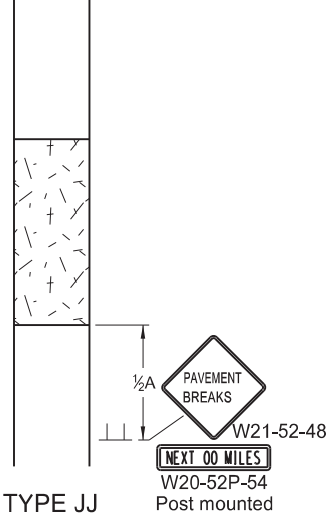
TYPE EE
Where sign conditions exist



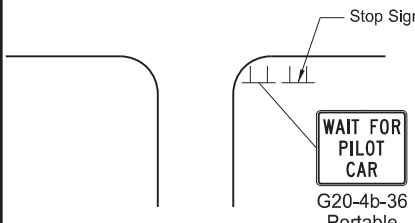
TYPE FF
Where sign conditions exist
Signing shown for one direction only.



TYPE GG
Where elevation difference
exists between lanes



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



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

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

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

KEY

Flagger Sign

Cones Survey Equipment

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

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

9-27-13

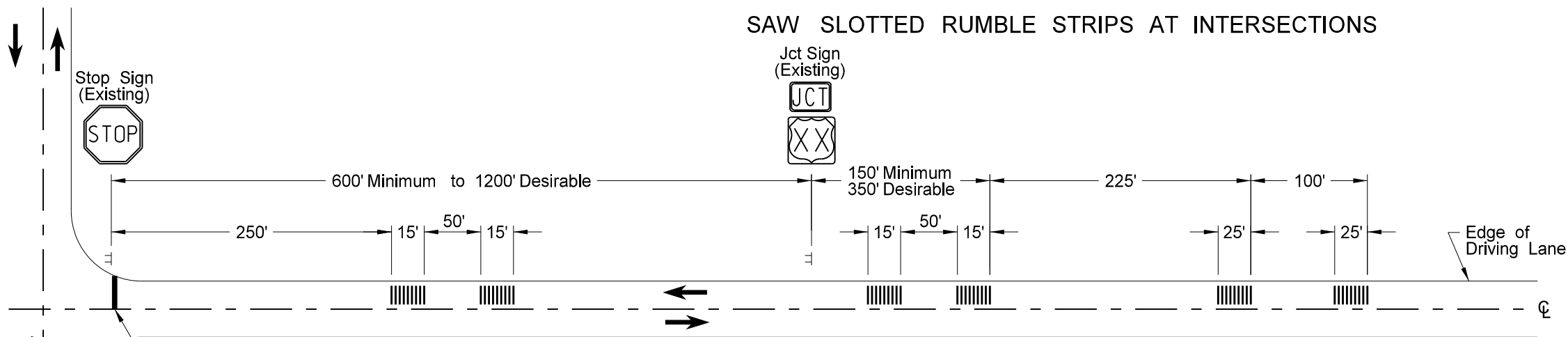
REVISIONS

DATE	CHANGE
8-17-17	Added speed limit signs. Updated notes & sign numbers.
11-01-19	Revised note 5 & sign numbers.
2-23-23	Revised distance & removed signs.

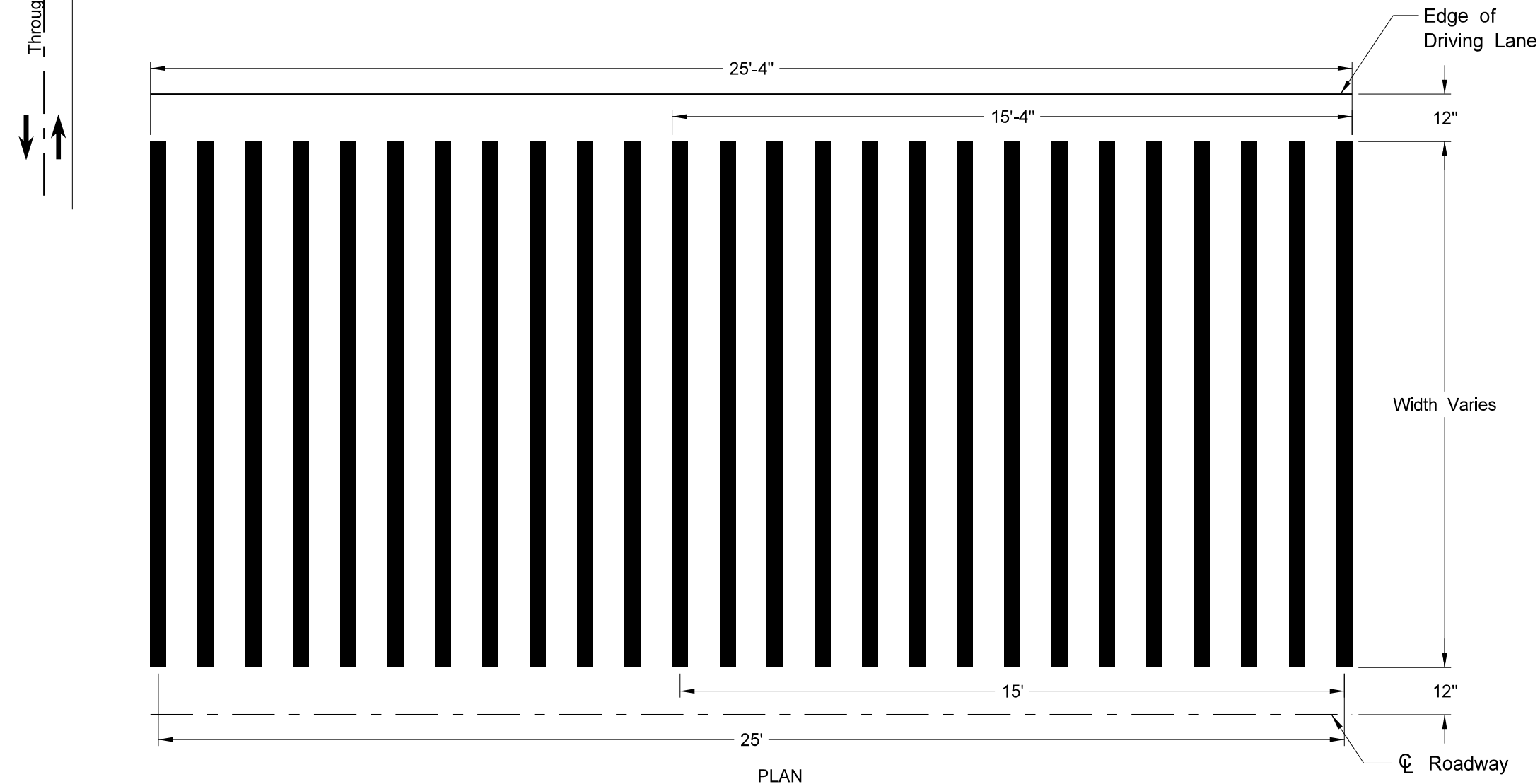
KIRK J. HOFF
REGISTERED
PROFESSIONAL
PE-4683
ENGINEER
NORTH DAKOTA

02/23/23

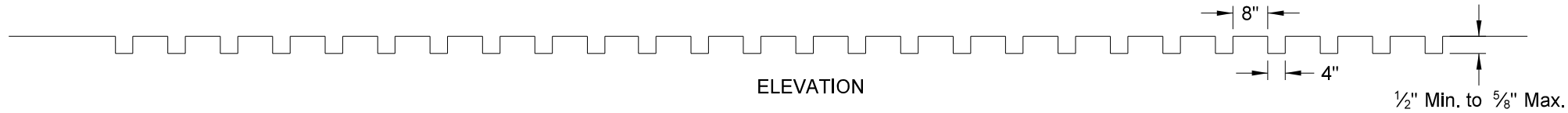
SAW SLOTTED RUMBLE STRIPS AT INTERSECTIONS



TYPICAL STOP INTERSECTION SAW SLOTTED RUMBLE STRIP LOCATION



PLAN



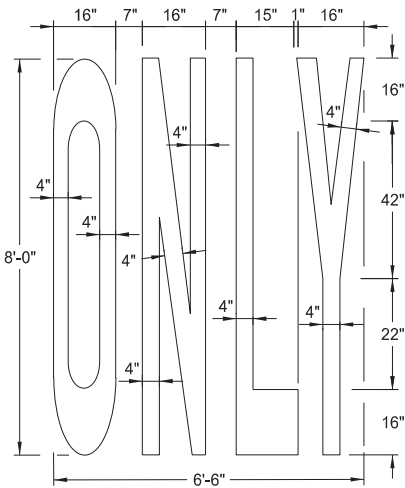
ELEVATION

SAW SLOTTED RUMBLE STRIP DETAIL

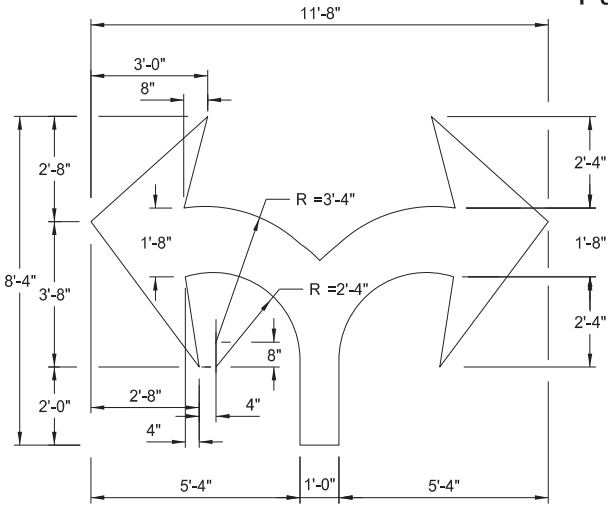
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		This document was originally issued and sealed by Kirk J Hoff, Registration Number PE- 4683 , on 8/27/19 and the original document is stored at the North Dakota Department of Transportation
12-29-09		
REVISIONS		
DATE	CHANGE	
2-22-10 2-25-10 9-8-11 7-7-14 8-27-19	Saw Slotted width revised. Note 7 was added. Revised Notes and D-760-5. Deleted Notes. New Design Engr PE Stamp.	

Pavement Marking Message Details

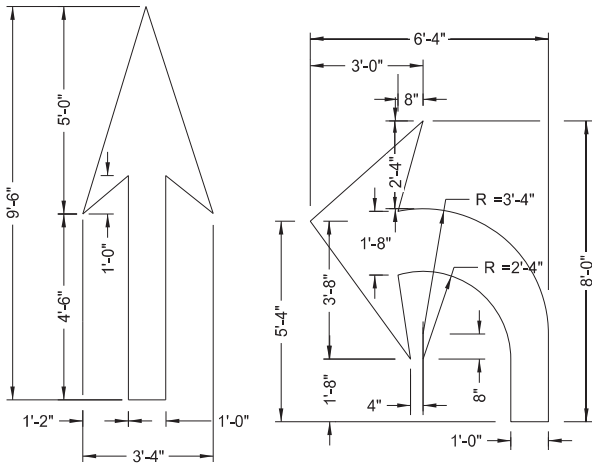
D-762-1



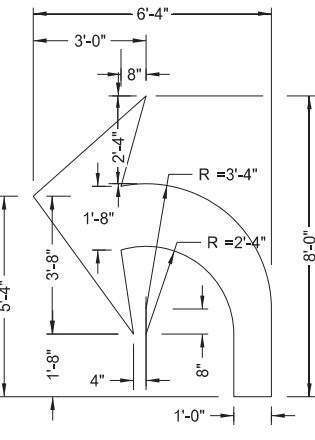
22 S. F.



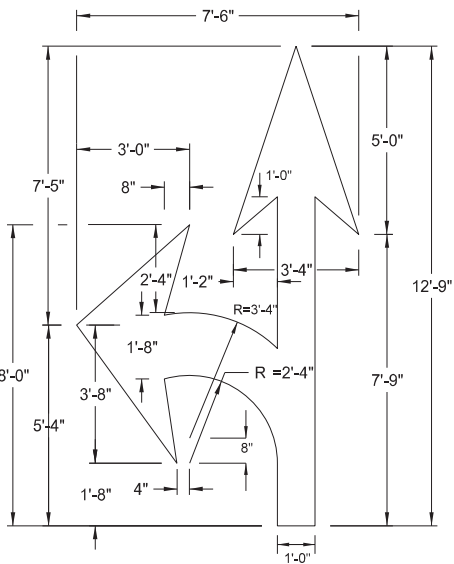
29 S. F.



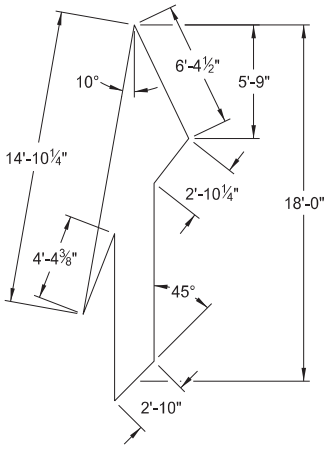
12 S. F.



16 S. F.



27 S. F.

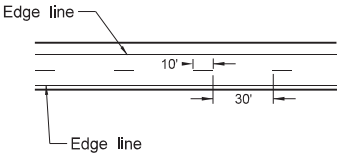


41 S. F.

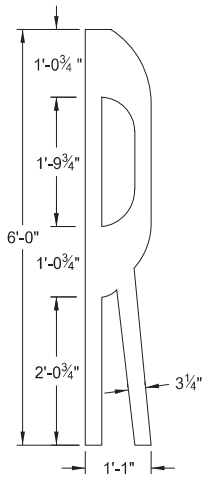
Note: Rotate merge arrow 20° from edge of roadway.

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'

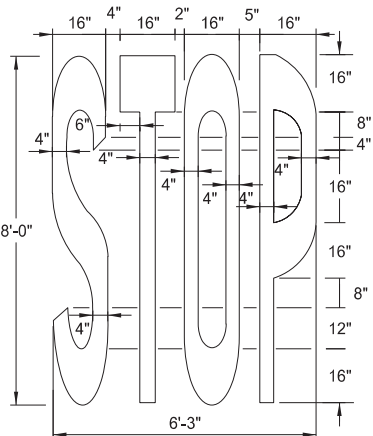
Chevron Crosshatching Table



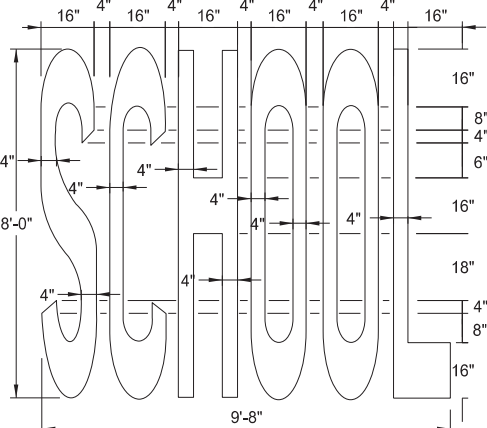
Centerline Pavement Marking Skip Spacing Detail



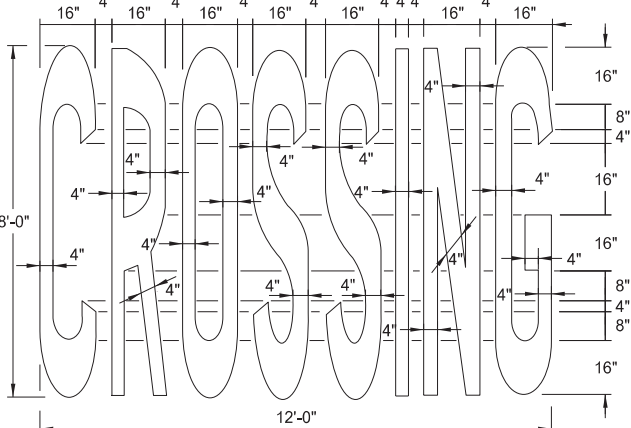
4 S. F.



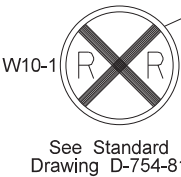
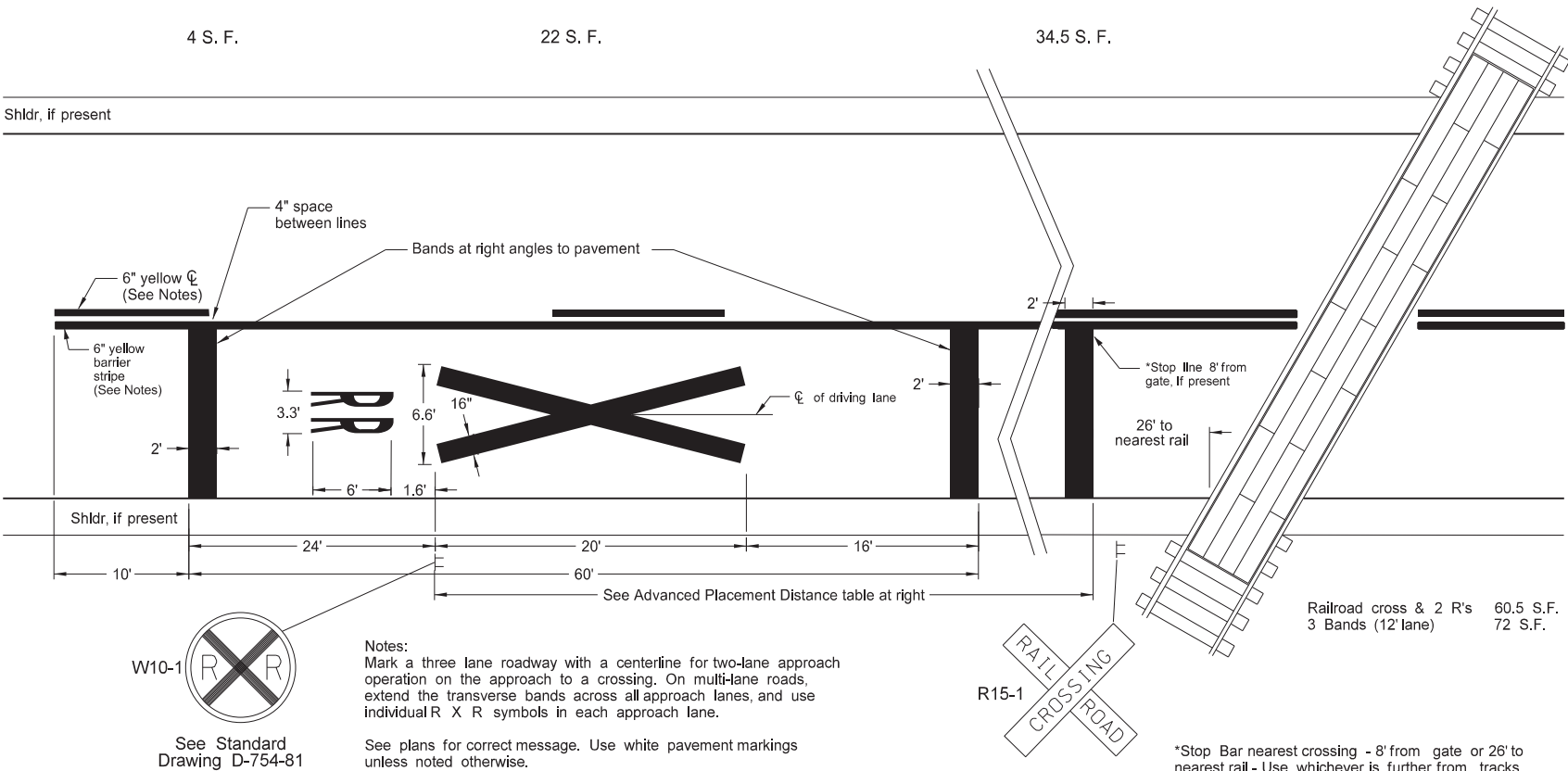
22 S. F.



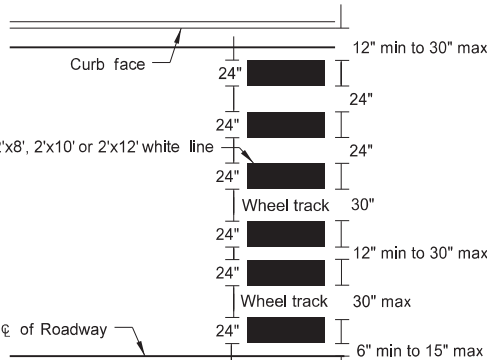
34.5 S. F.



46 S. F.



Notes:
Mark a three lane roadway with a centerline for two-lane approach operation on the approach to a crossing. On multi-lane roads, extend the transverse bands across all approach lanes, and use individual R X R symbols in each approach lane.
See plans for correct message. Use white pavement markings unless noted otherwise.



Continental Crosswalk Detail

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

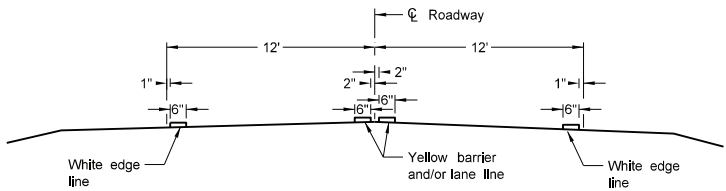
Posted or 85th Percentile Speed	Advance Distance
20 mph	min. 100 ft
25 mph	min. 100 ft
30 mph	min. 100 ft
35 mph	min. 100 ft
40 mph	125 ft
45 mph	175 ft
50 mph	250 ft
55 mph	325 ft
60 mph	400 ft
65 mph	475 ft
70 mph	550 ft

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-6-11	
REVISIONS	
DATE	CHANGE
10-17-17	Updated to active voice.
06-27-19	New Design Engineer PE Stamp.
01-28-2020	Revised min Stop Bar distance to rail.
11-22-2023	Revised pavement marking widths.

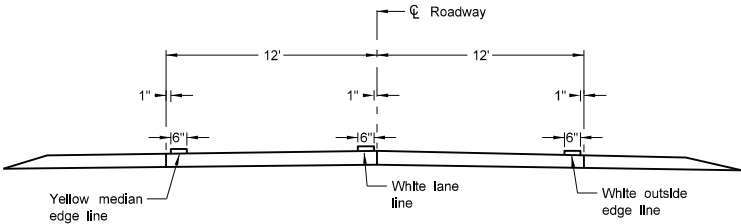


PAVEMENT MARKING

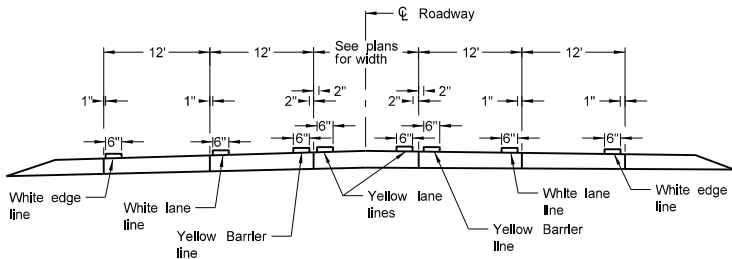
D-762-4



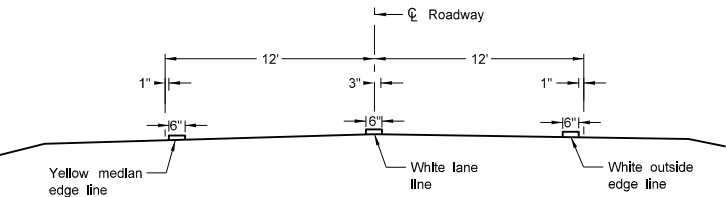
Two Lane Two Way
RURAL ROADWAY



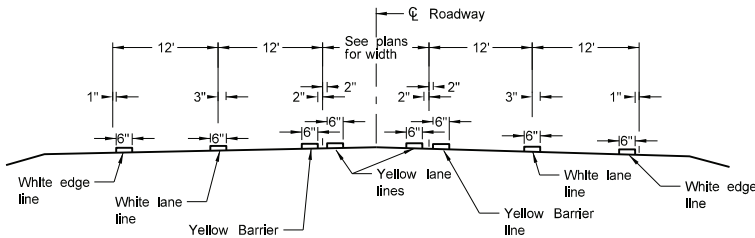
Two Lane Roadway
INTERSTATE HIGHWAY
Concrete Section



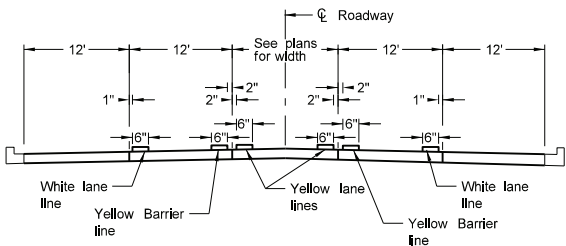
RURAL FIVE LANE ROADWAY
Concrete Section



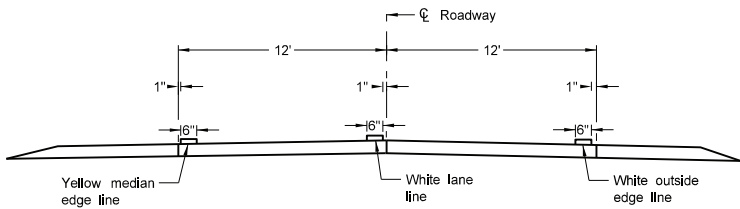
Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Asphalt Section



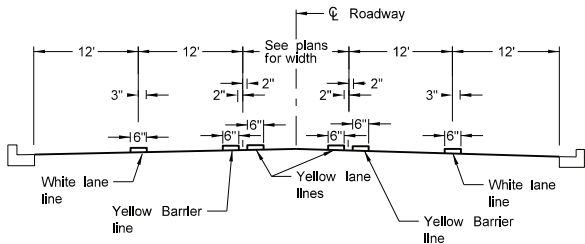
RURAL FIVE LANE ROADWAY
Asphalt Section



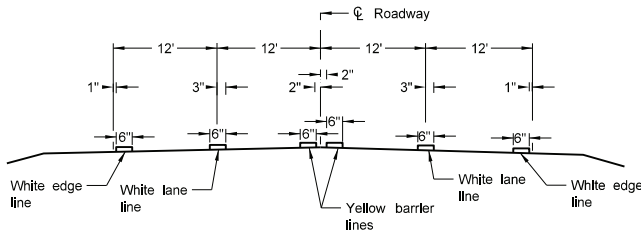
URBAN FIVE LANE SECTION
Concrete Section



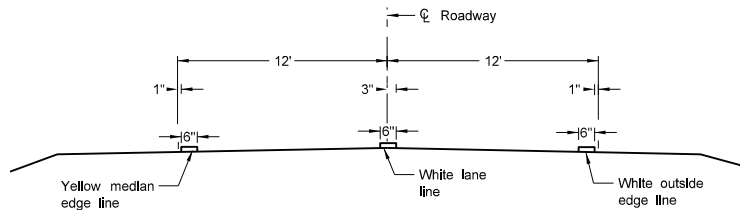
Two Lane Divided
Rural Roadway
PRIMARY HIGHWAY
Concrete Section



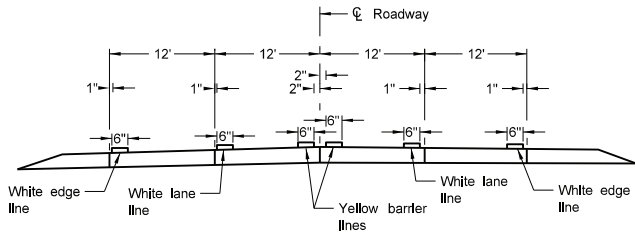
URBAN FIVE LANE SECTION
Asphalt Section



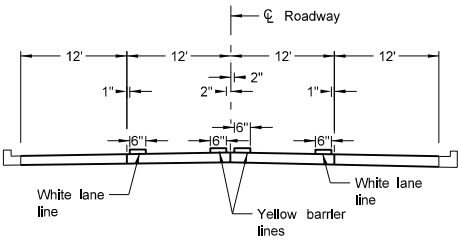
RURAL FOUR LANE ROADWAY
Asphalt Section



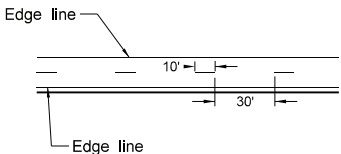
Two Lane Roadway
INTERSTATE HIGHWAY
Asphalt Section



RURAL FOUR LANE ROADWAY
Concrete Section



URBAN FOUR LANE SECTION
Concrete Section



CENTERLINE PAVEMENT MARKING SKIP SPACING DETAIL

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

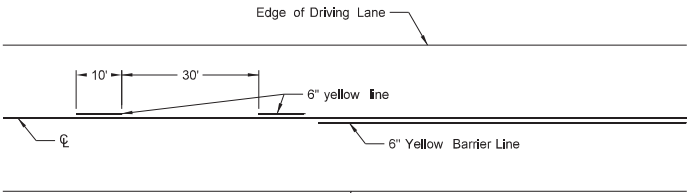
For section lines, county roads, and street approaches, stripe the radii and edge lines of the paved surface within the right of way except where curb and gutter is present.
 2. Normal width line - 6 inches wide for freeways, expressways, and ramps; 6 inches for all other roadways with speed limits >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

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

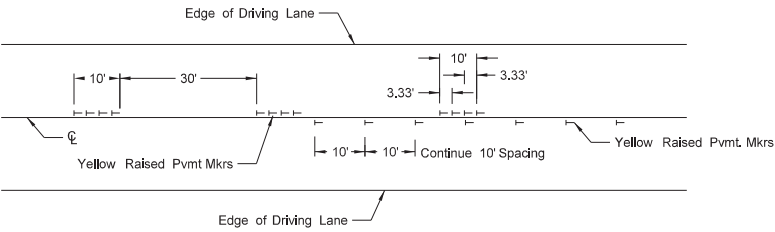


SHORT-TERM PAVEMENT MARKING

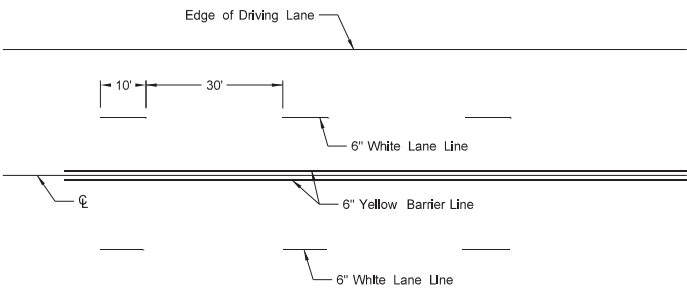
D-762-11



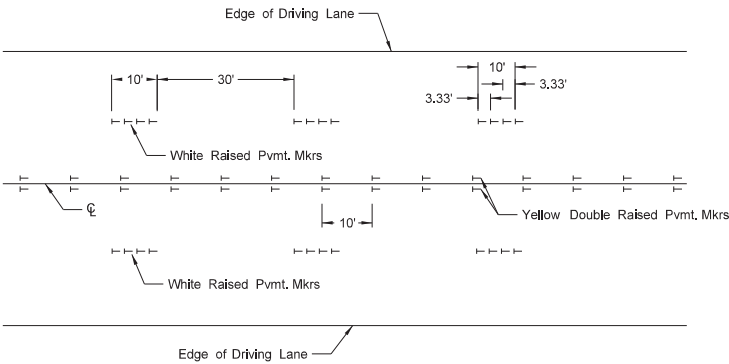
Painted or Tape Lines



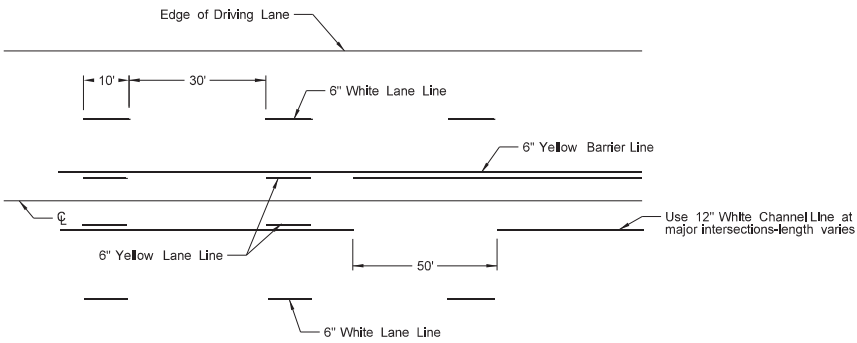
Raised Pavement Markers
TWO-LANE TWO-WAY ROADWAY



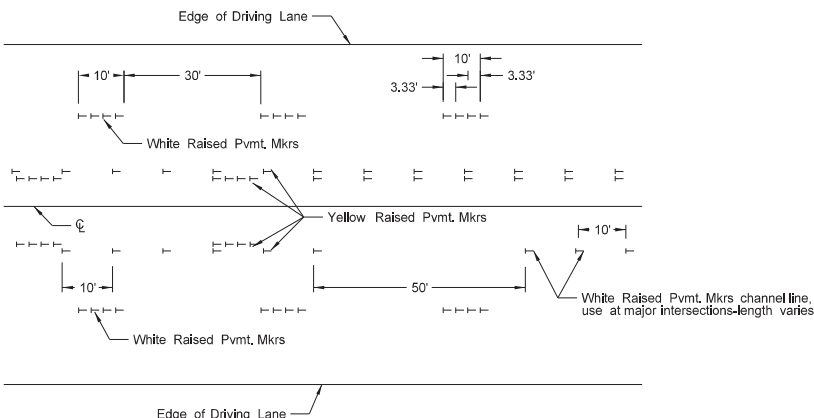
Painted or Tape Lines



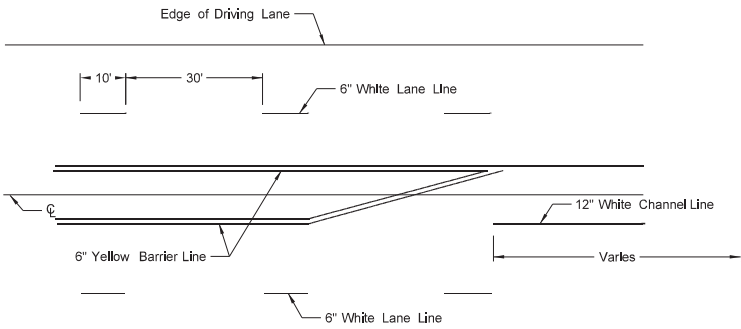
Raised Pavement Markers
FOUR LANE ROADWAY



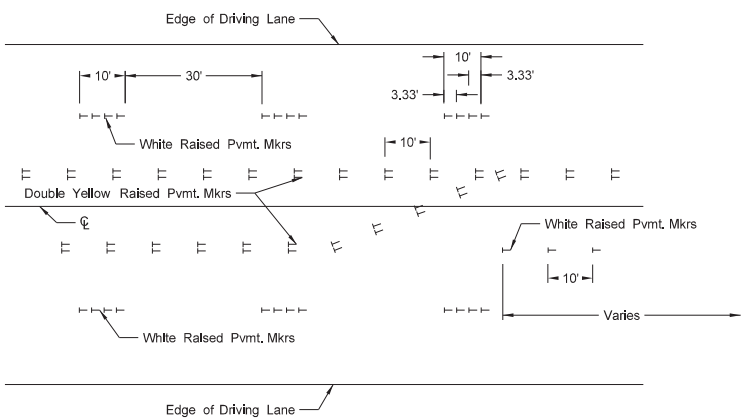
Painted or Tape Lines



Raised Pavement Markers
FIVE LANE ROADWAY TWO WAY LEFT TURN



Painted or Tape Lines



Raised Pavement Markers
FIVE LANE ROADWAY WITH MARKED ISLANDS

NOTES:

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

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

