

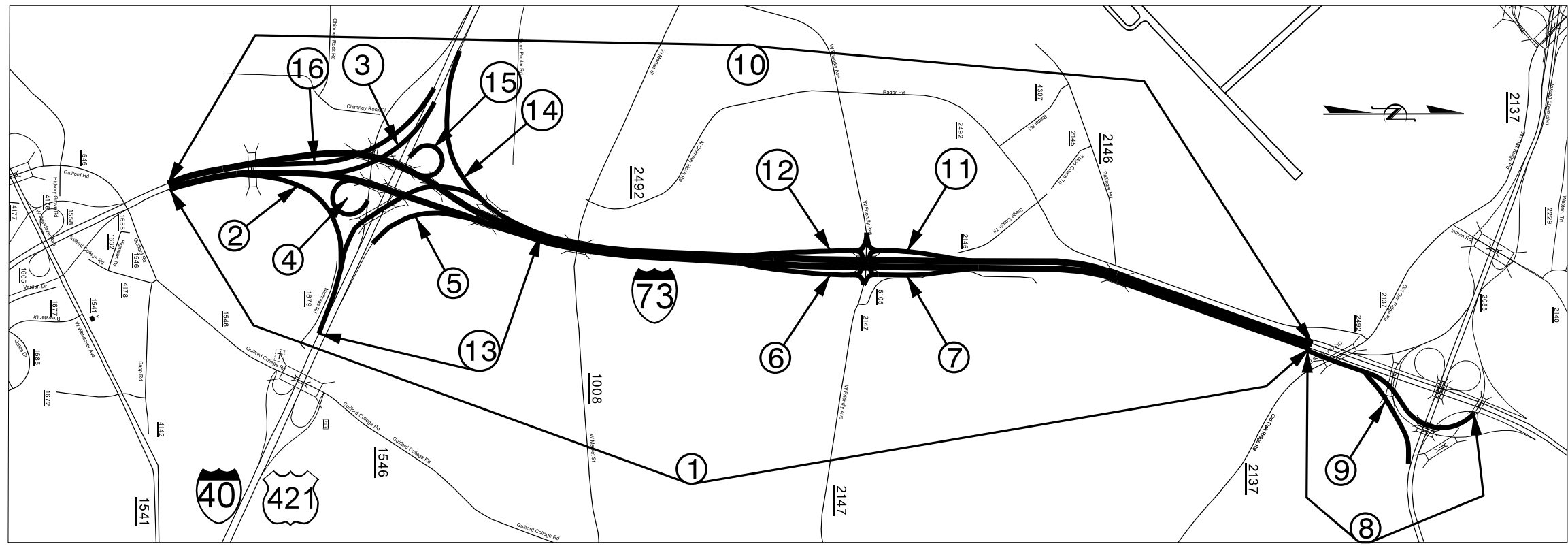
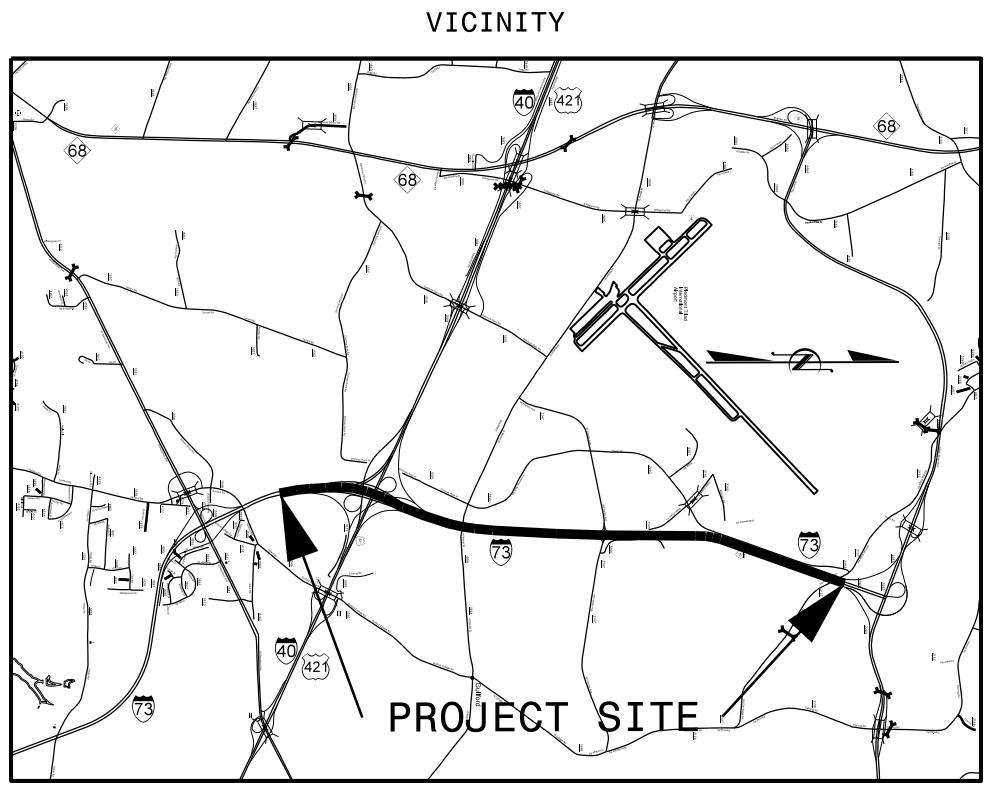
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5852B	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
53056.1.1	NHPIM-0085(34)	PE	
53056.3.3	NHPIM-0085(34)	CONST	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

**LOCATION: I-73 FROM 0.7 MILE SOUTH OF I-40 TO
0.73 MILE SOUTH OF SR 2085 (JOSEPH
M BRYAN BLVD) IN GREENSBORO**

TYPE OF WORK: PAVEMENT REHABILITATION



GRAPHIC SCALES
NOT TO SCALE

DESIGN DATA
NA

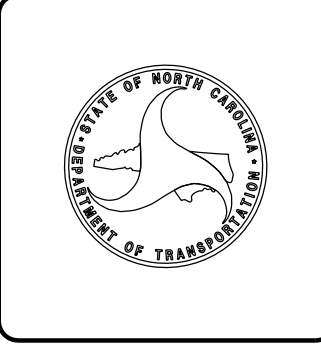
PROJECT LENGTH
I-5852B: 3.900 miles

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610
2012 STANDARD SPECIFICATIONS

C. B. SMITHERMAN, P.E.
PROJECT ENGINEER

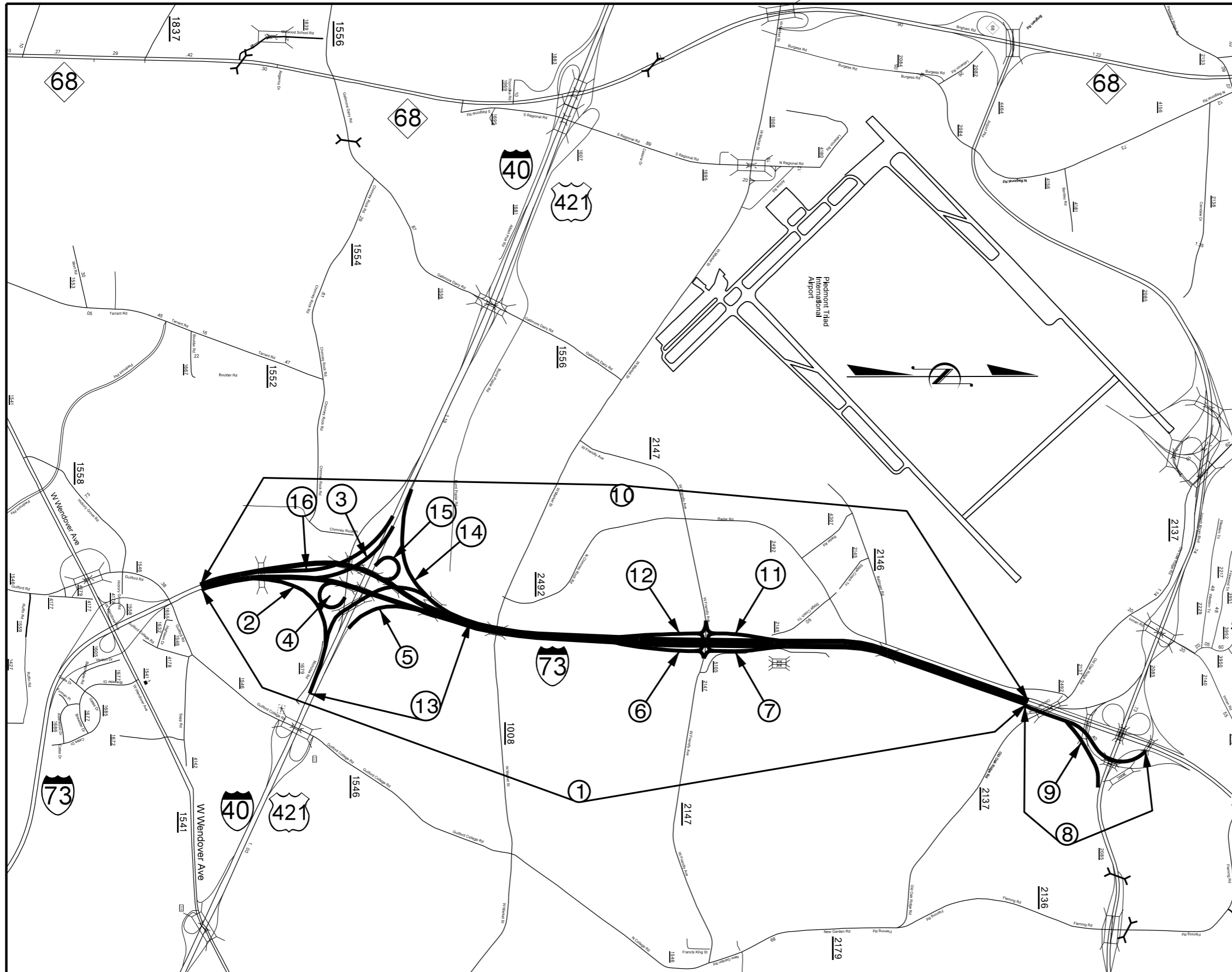
CLINTON A. WILES
ENGINEERING TECHNICIAN

LETTING DATE:
July 18, 2017



CONTRACT: C204045 **TIP PROJECT: I-5852B**
 14-JUN-2017 09:56
 S:\DDC\3-Guilford\I-5852B Rehab\CADD\I-5852B Title.dgn
 AT DIV07-300048
 cwiles

I - 5852B



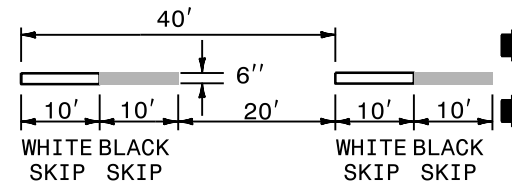
GUILFORD COUNTY

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVG RATE OF 168 LBS PER SQ. YD
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, S9.5C AT AN AVG. RATE OF 168 LBS PER SQ. YD.
D	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, I19.0C AT AN AVG RATE OF 456 LBS PER SQ. YD. IN ONE LIFT
F	PROPOSED FOG SEAL TO BE APPLIED TO THE EXISTING ASPHALT SHOULDER
R	EXISTING CONCRETE STRUCTURE
U	EXISTING PAVEMENT
V1	1½" MILLING
V2	MILLED RUMBLE STRIP
V3	4" MILLING FOR PATCHING
Y	PROPOSED DIAMOND GRINDING

BLACK - WHITE COMBINATION 10' WHITE SKIP LINES 10' BLACK SKIP LINES

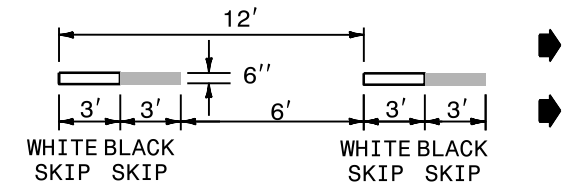
FOR USE ON CONCRETE PAVEMENTS TO PROVIDE CONTRAST FOR THE WHITE LANE LINE, ALONG THRU LANES AND RAMP LANES.



NOTE:
6" LINE REMOVAL SHALL BE USED TO REMOVE 100% OF THE 6" TEMPORARY PAINT ON THE CONCRETE SURFACE BY GRINDING METHOD ONLY. ALSO 6" LINE REMOVAL BY GRINDING SHALL BE USED IN THE AREA OF THE BLACK CONTRAST FOR SURFACE PREPARATION.

BLACK - WHITE COMBINATION 3' MINI WHITE SKIP LINES 3' MINI BLACK SKIP LINES

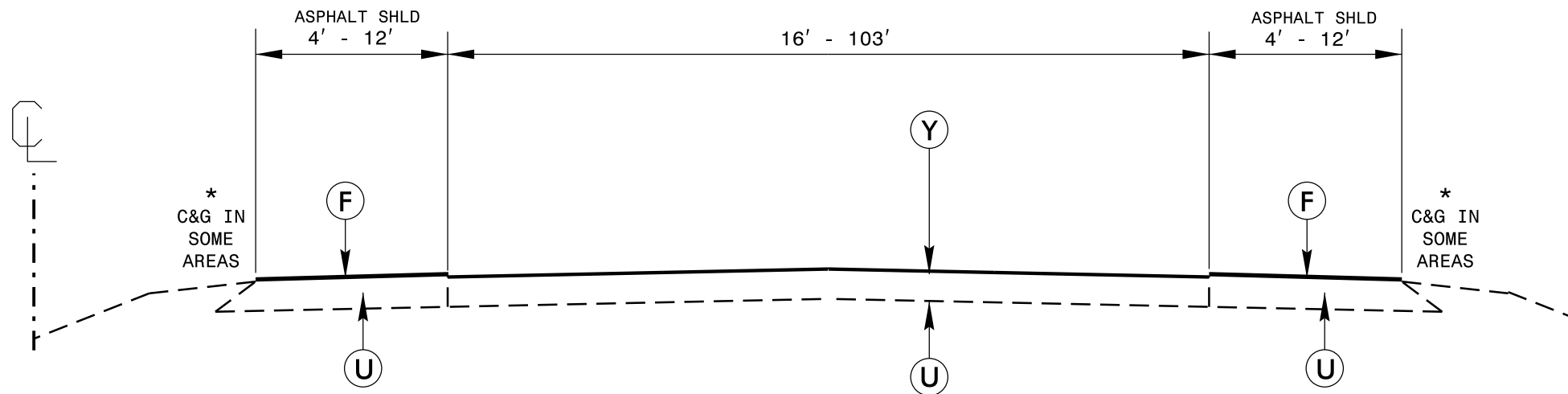
FOR USE ON CONCRETE PAVEMENTS TO PROVIDE CONTRAST FOR THE WHITE LANE LINE, ALONG THRU LANES AND RAMP LANES.



NOTE:
6" LINE REMOVAL SHALL BE USED TO REMOVE 100% OF THE 6" TEMPORARY PAINT ON THE CONCRETE SURFACE BY GRINDING METHOD ONLY. ALSO 6" LINE REMOVAL BY GRINDING SHALL BE USED IN THE AREA OF THE BLACK CONTRAST FOR SURFACE PREPARATION.

NOTES:

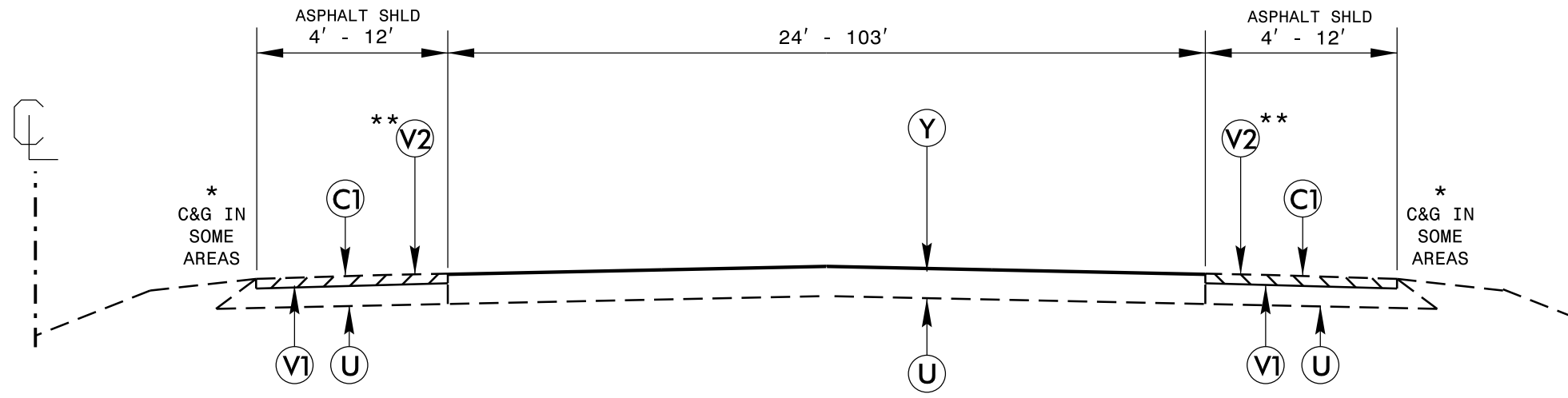
- DIAMOND GRIND EXISTING TRAVEL LANES, AUXILIARY LANES AND RAMPS INCLUDING GORE AREAS
- DIAMOND GRINDING OPERATION SHALL BE PERFORMED AFTER ALL CONCRETE REPAIRS ARE COMPLETE AND PRIOR TO JOINT SEALING OPERATION
- PRIOR TO PLACING FINAL PAVEMENT MARKING MATERIAL ON CONCRETE SURFACES THAT ARE DIAMOND GROUND, THE CONTRACTOR SHALL USE AN ACCEPTABLE METHOD TO GRIND RIDGES SMOOTH ONLY WHERE PAVEMENT MARKINGS WILL BE INSTALLED.



TYPICAL SECTION NO. 1

TO BE USED ON MAPS 1, 3, 10, 14, 16,
 MAP 1: STA. 10+00 TO STA. 44+50
 MAP 10: STA. 172+75 TO STA. 215+90
 MAP 14: STA. 31+12 TO STA. 31+90
 MAP 15: STA. 19+40 TO STA. 20+35

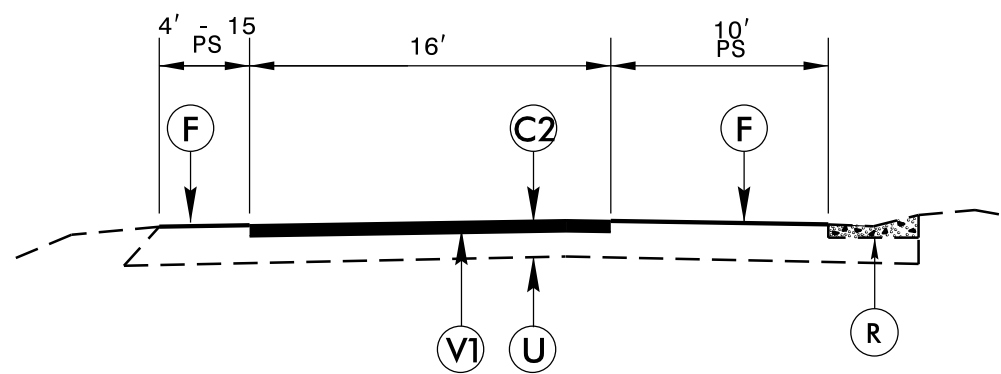
CONTRACTOR SHALL PERFORM MILL/FILL OPERATION ON SHOULDER BEFORE DIAMOND GRINDING TO AVOID TACK AND DEBRIS ON FINAL CONCRETE PAVEMENT SURFACE.
 DIAMOND GRIND EXISTING TRAVEL LANES, AUXILIARY LANES AND RAMPS INCLUDING GORE AREAS
 DIAMOND GRINDING OPERATION SHALL BE PERFORMED AFTER ALL CONCRETE REPAIRS ARE COMPLETE AND PRIOR TO JOINT SEALING OPERATION



TYPICAL SECTION NO. 2

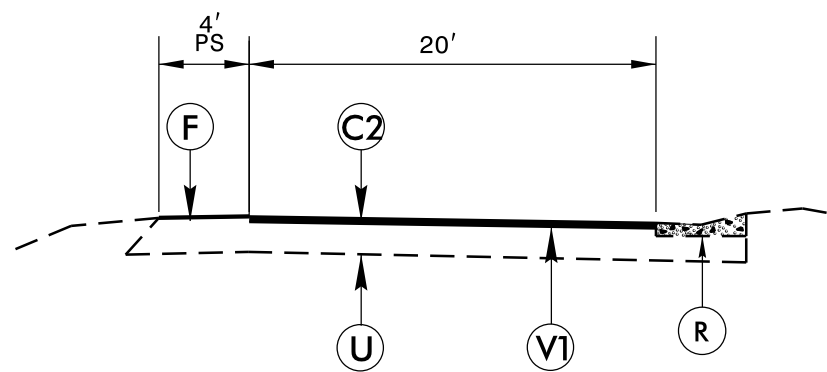
TO BE USED ON MAPS 1, 10, 13
 MAP 1: STA. 44+50 TO STA. 213+60
 10: STA. 10+00 TO STA. 172+75
 13: STA. 10+00 TO STA. 14+60 **NO V2 (RUMBLE STRIPS)

CONTRACTOR SHALL PERFORM MILL/FILL OPERATION ON SHOULDER BEFORE DIAMOND GRINDING TO AVOID TACK AND DEBRIS ON FINAL CONCRETE PAVEMENT SURFACE.
 DIAMOND GRIND EXISTING TRAVEL LANES, AUXILIARY LANES AND RAMPS INCLUDING GORE AREAS
 DIAMOND GRINDING OPERATION SHALL BE PERFORMED AFTER ALL CONCRETE REPAIRS ARE COMPLETE AND PRIOR TO JOINT SEALING OPERATION



TYPICAL SECTION NO. 3

TO BE USED ON MAPS 2, 5,
 MAP 5: STA. 10+00 TO STA. 23+96

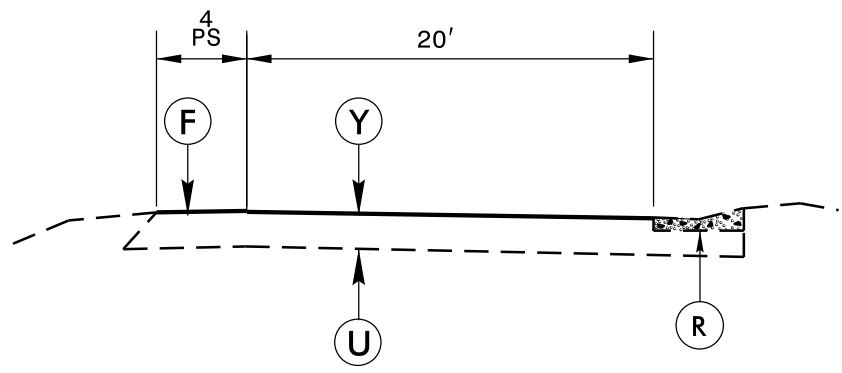


TYPICAL SECTION NO. 4

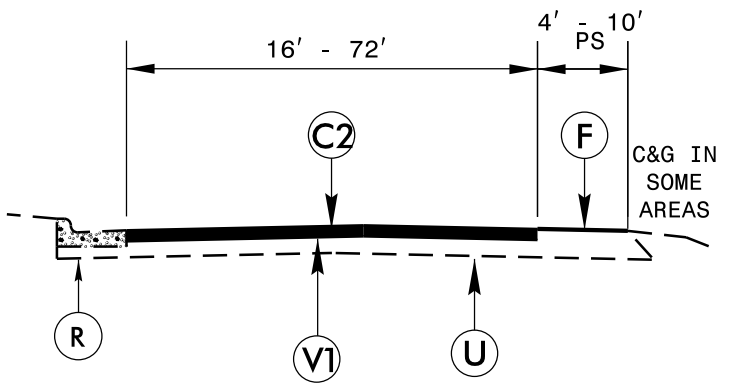
TO BE USED ON MAPS 4, 15,
 MAP 4: STA. 10+00 TO STA. 20+85
 MAP 15: STA. 10+00 TO STA. 19+40

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVG RATE OF 168 LBS PER SQ. YD
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, S9.5C AT AN AVG. RATE OF 168 LBS PER SQ. YD.
D	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, I19.0C AT AN AVG RATE OF 456 LBS PER SQ. YD. IN ONE LIFT
F	PROPOSED FOG SEAL TO BE APPLIED TO THE EXISTING ASPHALT SHOULDER
R	EXISTING CONCRETE STRUCTURE
U	EXISTING PAVEMENT
V1	1½" MILLING
V2	MILLED RUMBLE STRIP
V3	4" MILLING FOR PATCHING
Y	PROPOSED DIAMOND GRINDING

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 S:\PDC\3-Gulf\I-5852B Rehab\CADD\I-5852B typical Sht 2.dgn
 cwiles AT DIV07-300048

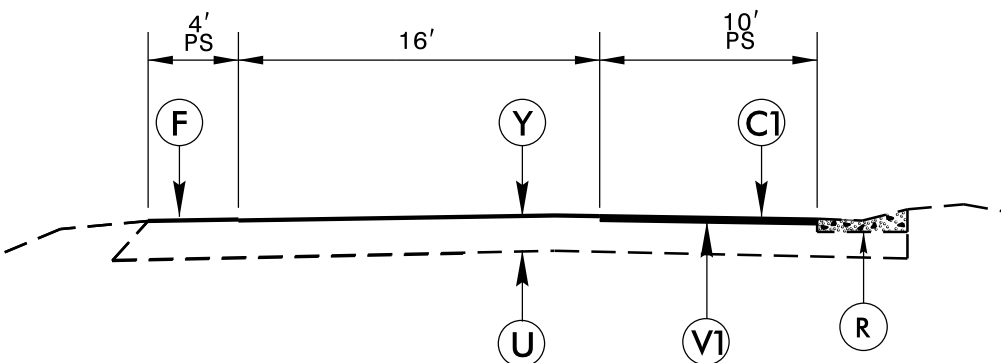


TYPICAL SECTION NO. 5
 TO BE USED ON MAPS 4,
 MAP 4: STA. 20+85 TO STA. 22+02

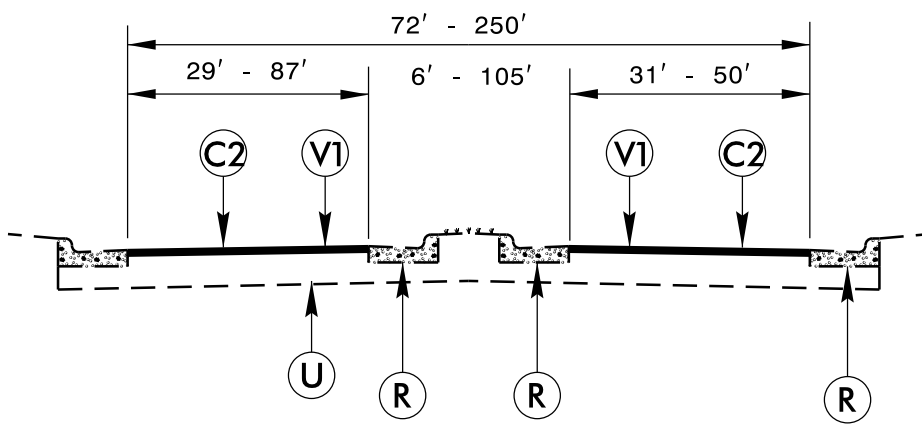


TYPICAL SECTION NO. 8
 TO BE USED ON MAPS 6, 11
 MAP 6: STA. 11+09 TO STA. 18+80
 MAP 11: STA. 11+32 TO STA. 15+89

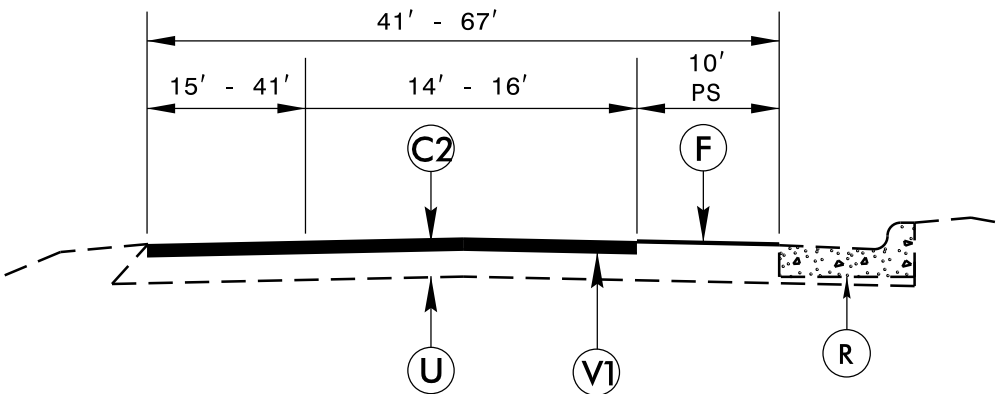
C&G IN SOME AREAS



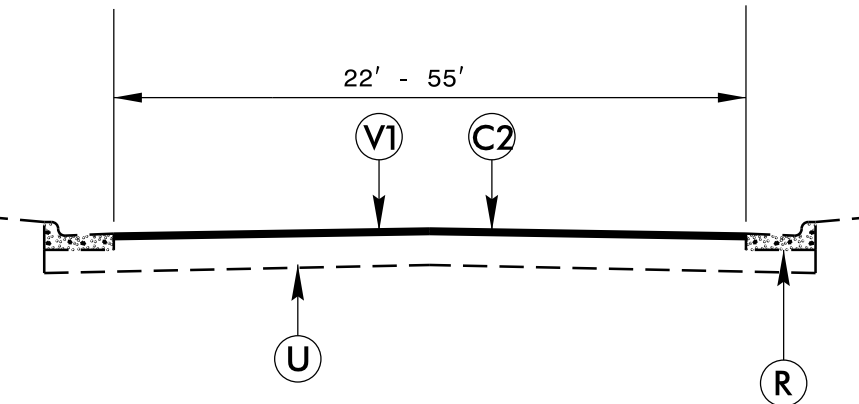
TYPICAL SECTION NO. 6
 TO BE USED ON MAP 5
 MAP 5: STA. 23+96 TO STA. 24+61



TYPICAL SECTION NO. 9
 TO BE USED ON MAPS 6, 7, 11, 12
 MAP 6: STA. 19+67 TO STA. 20+60
 MAP 7: STA. 10+00 TO STA. 10+95
 MAP 11: STA. 20+22 TO STA. 21+37
 MAP 12: STA. 10+00 TO STA. 11+22



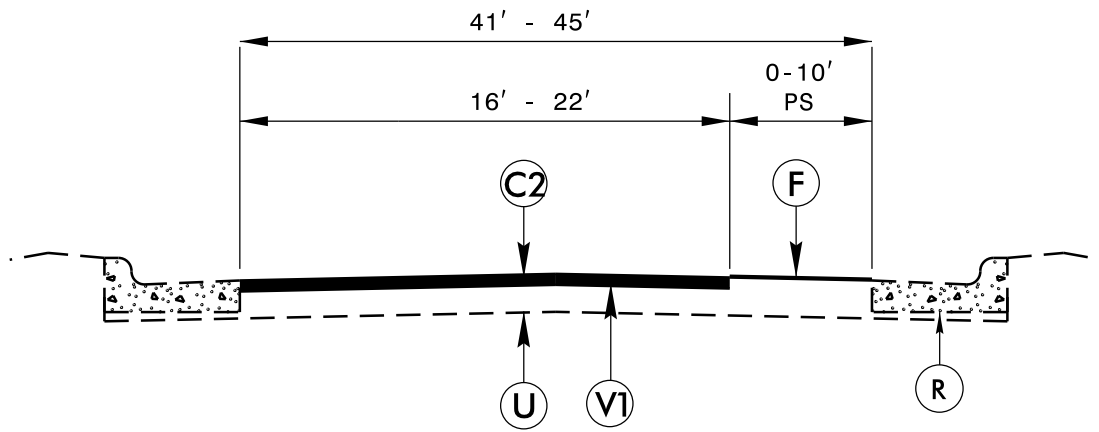
TYPICAL SECTION NO. 7
 TO BE USED ON MAPS 6, 7, 11, 12
 MAP 6: STA. 10+00 TO STA. 11+09
 MAP 7: STA. 19+41 TO STA. 21+35
 MAP 11: STA. 10+00 TO STA. 11+05
 MAP 12: STA. 19+70 TO STA. 22+00



TYPICAL SECTION NO. 10
 TO BE USED ON MAPS 6, 7, 11, 12
 MAP 6: STA. 18+80 TO STA. 19+67
 MAP 7: STA. 10+95 TO STA. 12+30
 MAP 11: STA. 15+89 TO STA. 20+22
 MAP 12: STA. 11+22 TO STA. 14+70

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVG RATE OF 168 LBS PER SQ. YD
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, S9.5C AT AN AVG. RATE OF 168 LBS PER SQ. YD.
D	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, I19.0C AT AN AVG RATE OF 456 LBS PER SQ. YD. IN ONE LIFT
F	PROPOSED FOG SEAL TO BE APPLIED TO THE EXISTING ASPHALT SHOULDER
R	EXISTING CONCRETE STRUCTURE
U	EXISTING PAVEMENT
V1	1½" MILLING
V2	MILLED RUMBLE STRIP
V3	4" MILLING FOR PATCHING
Y	PROPOSED DIAMOND GRINDING

06-JUN-2017 07:35
 S:\DDC\3-GulfFord\I-5852B Rehab\CADD\I-5852B typical Sht 3.dgn
 cwiles AT DIV07-300248



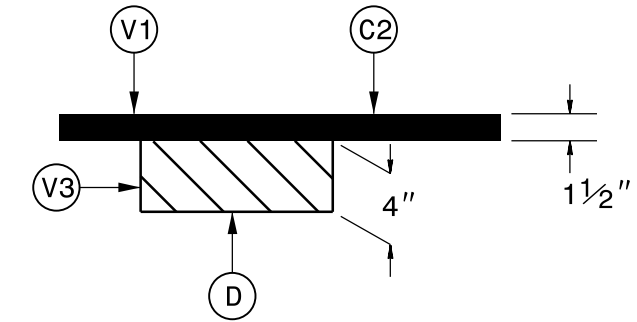
TYPICAL SECTION NO. 11

TO BE USED ON MAPS 7, 12

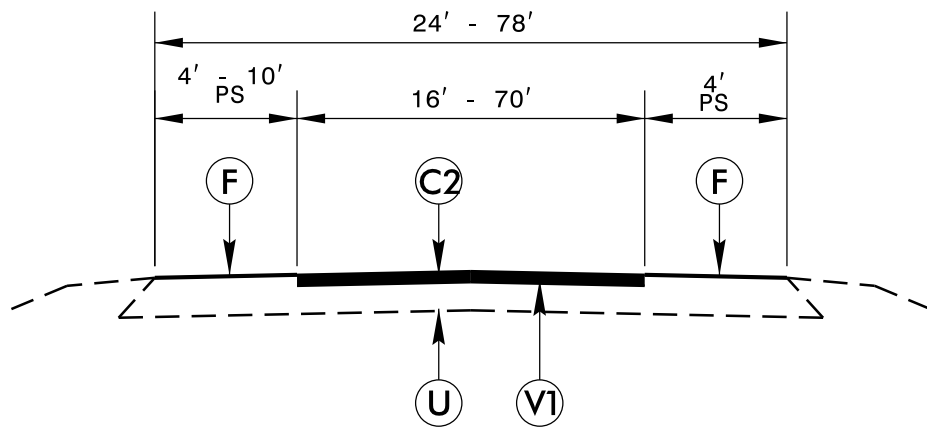
MAP 7: STA. 12+30 TO STA. 19+41

MAP 12: STA. 14+70 TO STA. 19+70

4" MILLING FOR PATCHING DETAIL



TO BE USED IN AREAS AS DIRECTED BY THE ENGINEER IN CONJUNCTION WITH: MAPS 1, 5, 10



TYPICAL SECTION NO. 12

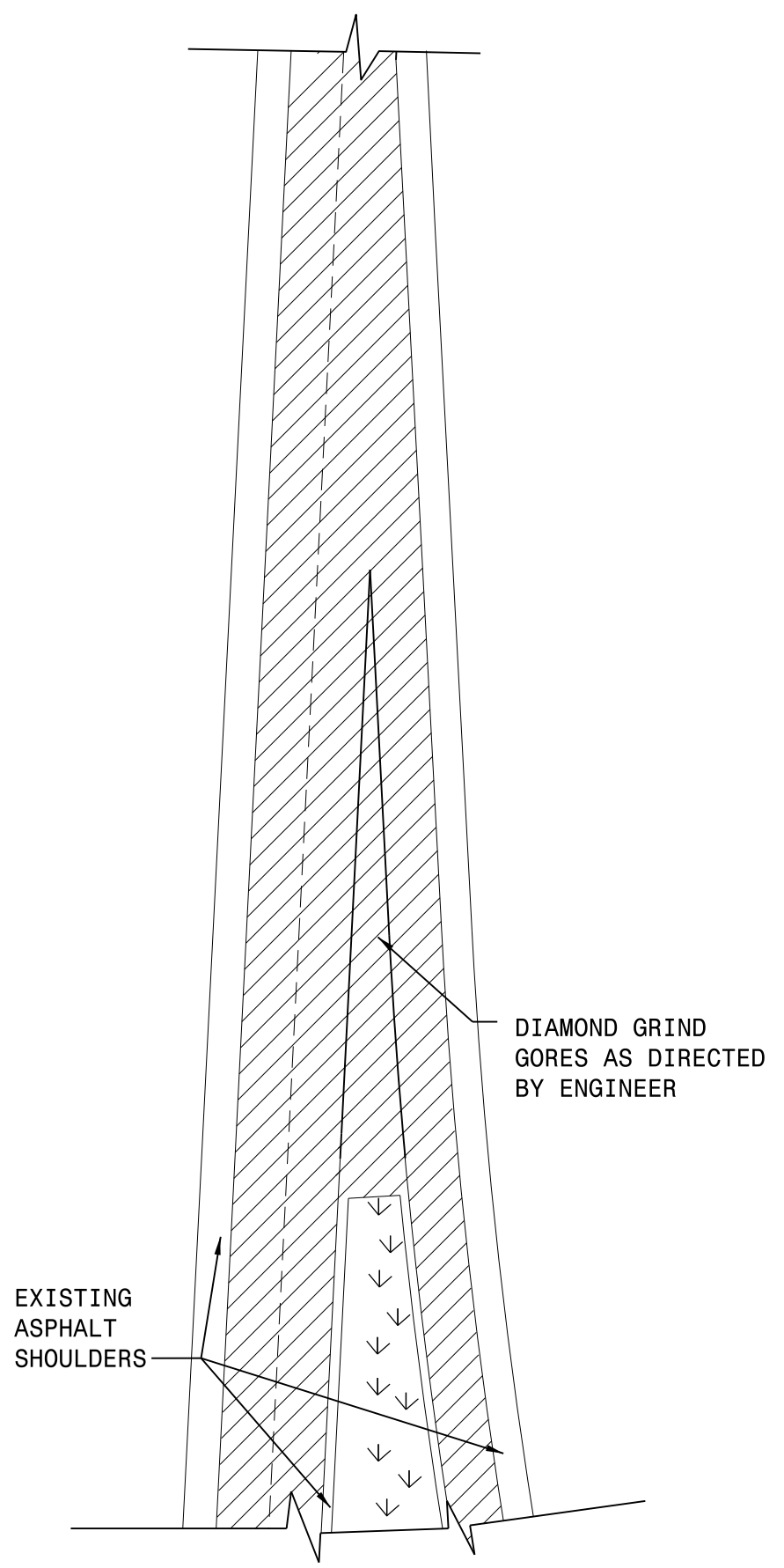
TO BE USED ON MAPS 8, 9, 13, 14

MAP 13: STA. 14+60 TO STA. 51+75

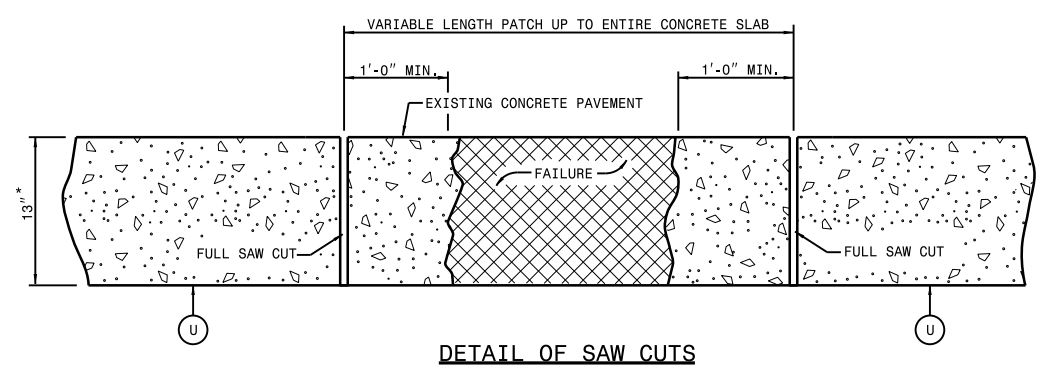
MAP 14: STA. 10+00 TO STA. 31+12

PAVEMENT SCHEDULE

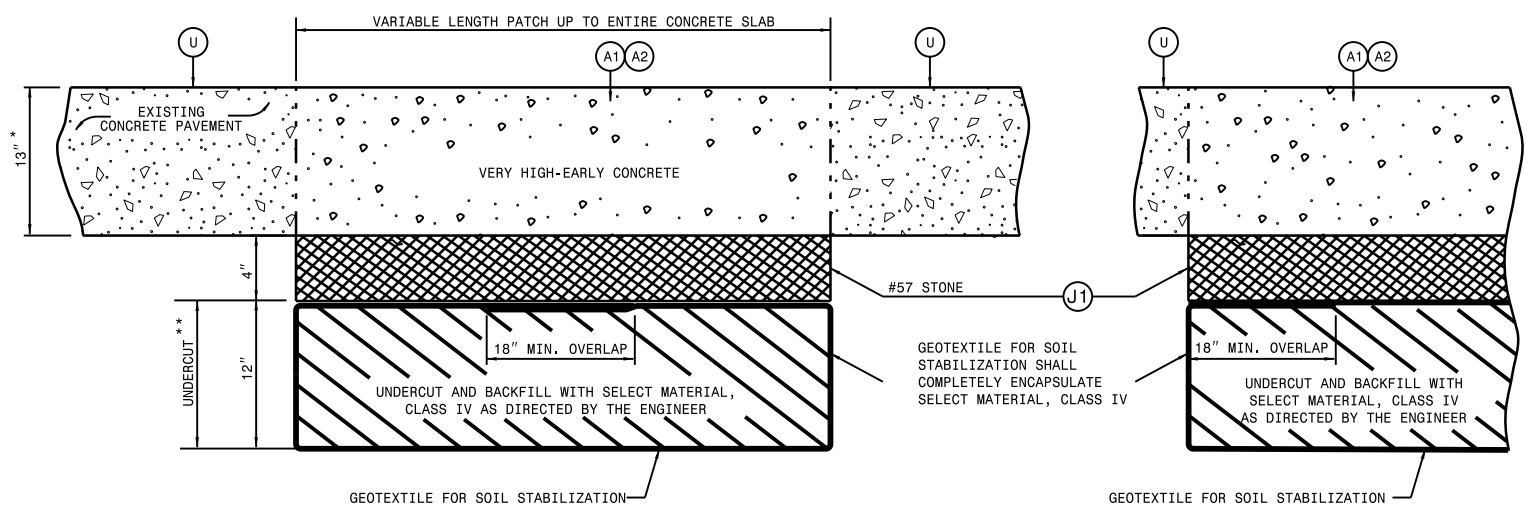
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVG RATE OF 168 LBS PER SQ. YD
C2	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, S9.5C AT AN AVG. RATE OF 168 LBS PER SQ. YD.
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F	PROPOSED FOG SEAL TO BE APPLIED TO THE EXISTING ASPHALT SHOULDER
R	EXISTING CONCRETE STRUCTURE
U	EXISTING PAVEMENT
V1	1 1/2" MILLING
V2	MILLED RUMBLE STRIP
V3	4" MILLING FOR PATCHING
Y	PROPOSED DIAMOND GRINDING



DETAIL FOR LIMITS OF MILLING AND DIAMOND GRINDING AT GORE AREAS



DETAIL OF SAW CUTS



DETAIL OF CONCRETE PAVEMENT REPAIR

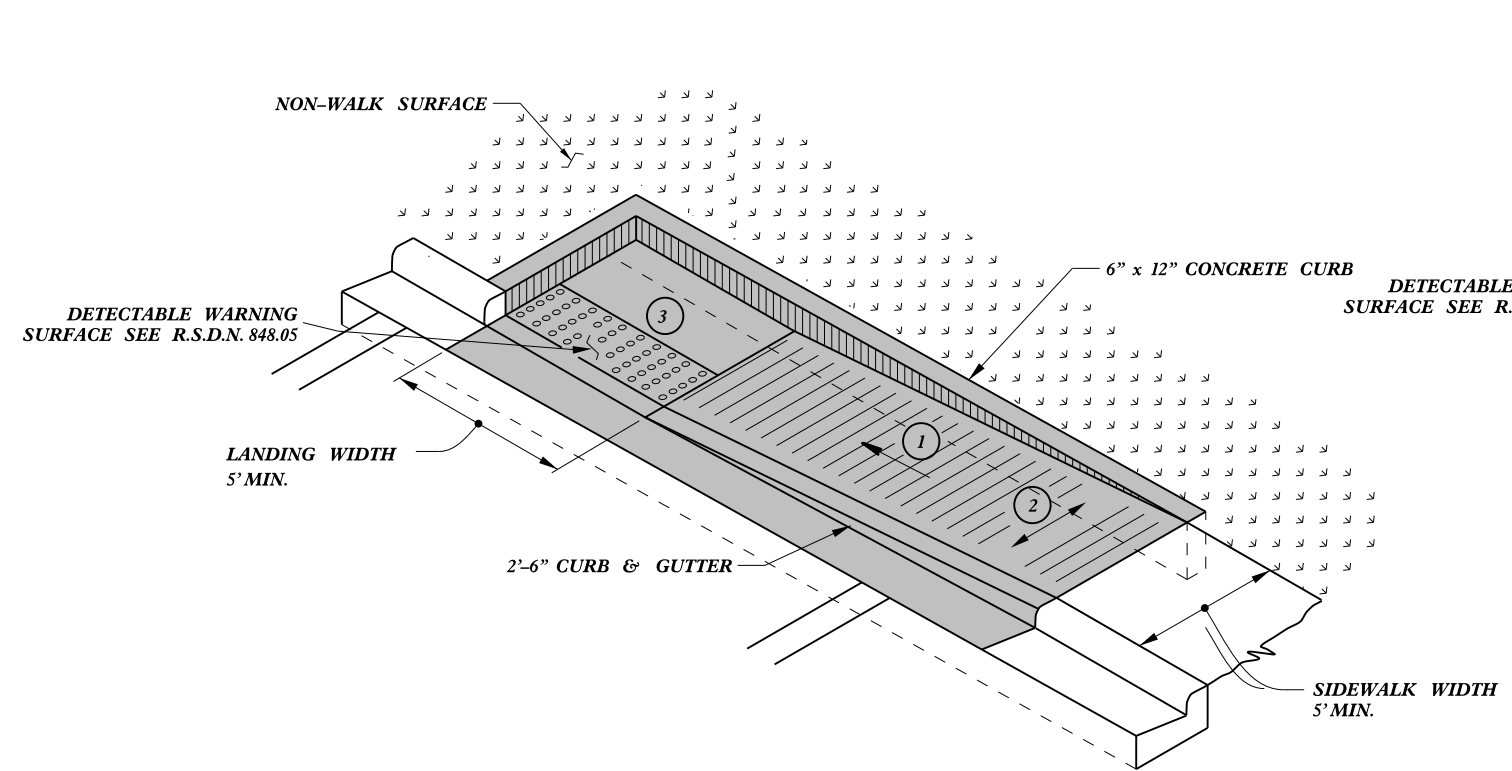
* DIMENSIONS ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED
 MAPS 1, 10: 11"
 MAP 16: 14"
 ** UNDERCUT REQUIRED IN AREAS AS DIRECTED BY THE ENGINEER

PAVEMENT SCHEDULE	
A1	13" VERY HIGH-EARLY CONCRETE
A2	10" VERY HIGH-EARLY CONCRETE
J1	#57 STONE
U	EXISTING PAVEMENT

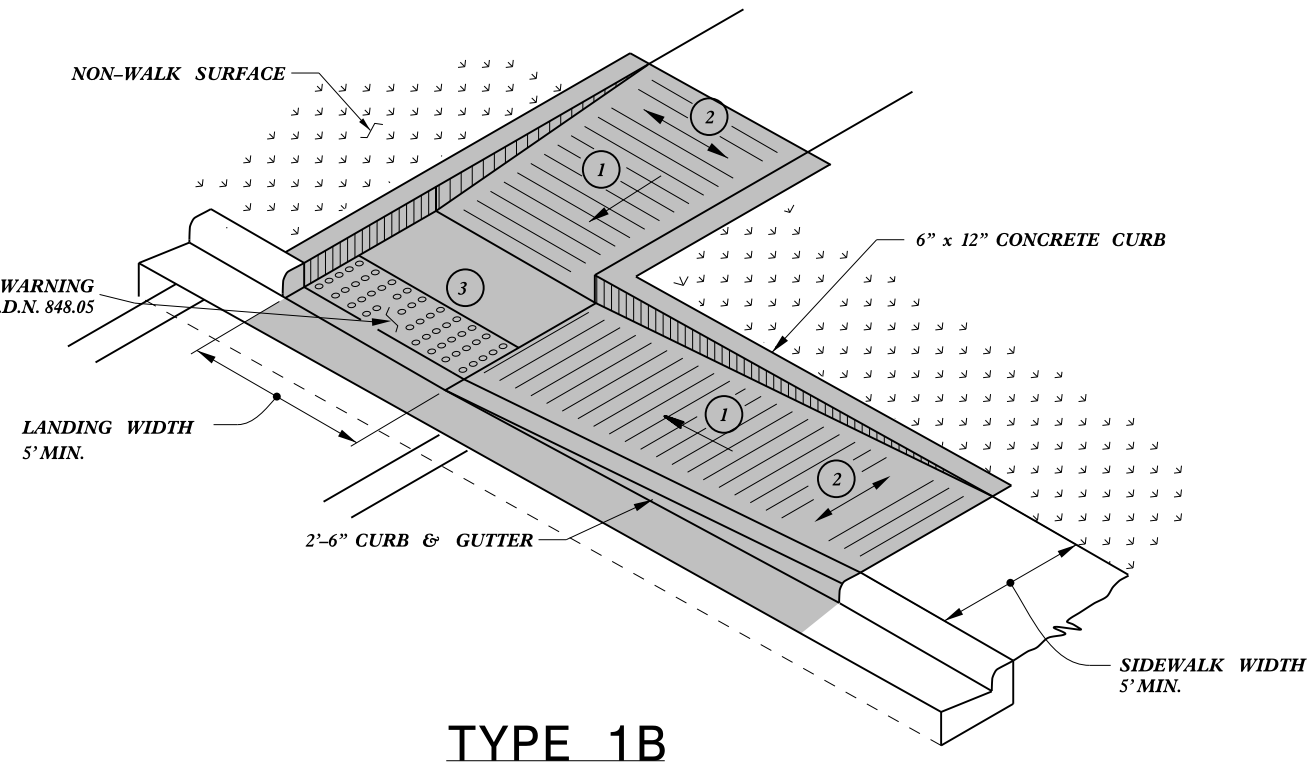
Refer to the North Carolina Department of Transportation "Partial and Full Depth Repair Manual" when Replacing Slabs and when Repairing Concrete Pavement.

DETAIL FOR REPAIR OF CONCRETE PAVEMENT

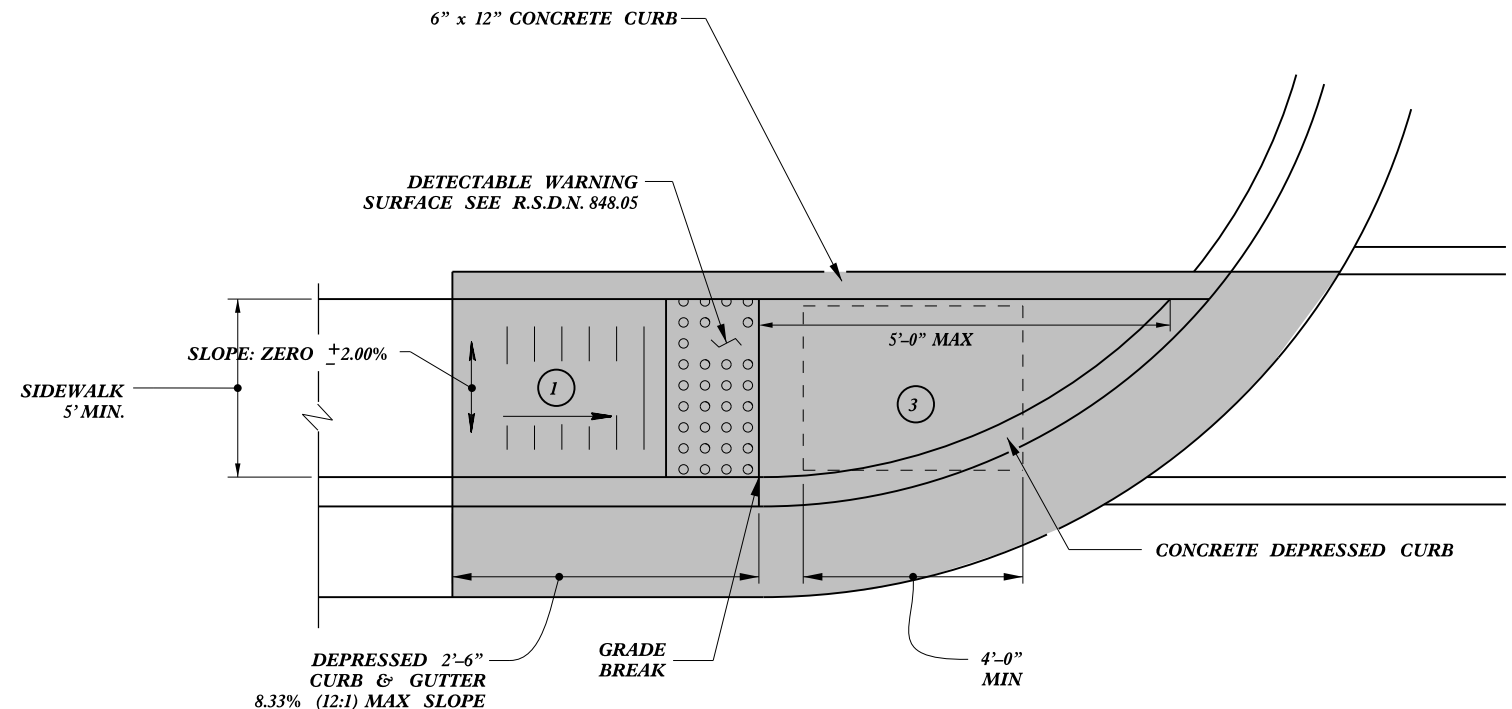
02-JUN-2017 14:02 S:\PDC\3-Gulford\I-5852B Rehab\CADD\I-5852B typical Sht 5.dgn cwiles AT DIV07-300048



TYPE 1A



TYPE 1B



TYPE 1

PAY LIMITS FOR 1 CURB RAMP

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES



DocuSign
 Joel S. Howerton
 449E8E25522144F...
 11/18/2015

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
CURB RAMPS	
Directional Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: stds/2012CurbRamp/CurbRampDetails.dwg	

5/14/99
 TIME
 CON
 USER
 NAME

PROJECT REFERENCE NO.	SHEET NO.
I-5852B	9

SHOULDER DRAIN SUMMARY

AGGREGATE SHOULDER DRAIN					SHOULDER DRAIN OUTLET LOCATIONS					REMOVE & REPLACE CONCRETE APRON	PATCHING EXISTING PAVEMENT		
PROJECT #	MAP #	STATION	STATION	LOCATION	SHOULDER DRAIN FT	4" SHOULDER DRAIN PIPE FT	STATION	LOCATION	LENGTH OF OUTLET PIPE FT			OUTLET TYPE TIE TO DI	PAD EA
I-5852B	10	53+50	56+50	Median	300	300	53+50	Median	20	X		EA 1	TON 25
MAP 10 TOTALS					300	300			20			1	25
PROJECT GRAND TOTALS					300	300			20			1	*25

* Not Grand Total, see SOQ for other locations of patching

PROJECT NO.	SHEET NO.	TOTAL NO.
I-5852B	10	

CURB RAMPS DETAILS													
Map #	Sect. #	Location	Retrofit	CURB RAMP TYPE									Comments
				Type 1	Type 1 Mod.	Type 1A	Type 1B	Type 2	Type 2A	Type 3	Type 4	Type 4A	
			EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	
6	1	Friendly Ave.				1							Remove/Replace
7	1	Friendly Ave.				1							Remove/Replace
11	1	Friendly Ave.				1							Remove/Replace
12	1	Friendly Ave.				1							Remove/Replace
TOTAL			0	0	0	4	0	0	0	0	0	0	
				4									

PROJECT NO.	SHEET NO.	TOTAL NO.
I-5852B	11	

SUMMARY OF QUANTITIES

PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	REPAIR OF JOINTED CONCRETE PAVEMENT SLAB SYD	UNDERCUT EXCAVATION CY	BORROW EXCAVATION CY	SELECT MATERIAL, CLASS IV TON	#57 STONE TON	GEOTEXTILE FOR SOIL STABILIZATION SY	INCIDENTAL STONE BASE TONS	MILLING ASPHALT PAVEMENT, 1½" DEPTH SY	ASPHALT CONC SURFACE COURSE, TYPE S9.5B TONS	ASPHALT CONC SURFACE COURSE, TYPE S9.5C TONS	ASPHALT BINDER FOR PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	PATCHING CONCRETE PAVEMENT SPALLS SF	ASPHALT SURFACE TREATMENT, FOG SEAL SY	MILLED RUMBLE STRIPS LF	JOINT CONSTRUCTION, REPAIR & SEALING LF		
53056.3.3	Guilford	1	I-73 NB	FROM SOUTH OF I-40 TO OLD CONCRETE JOINT SOUTH OF SR 2085 (BRYAN BLVD.)	1,2	4	MD	NO	NO	3.856	48	25.0	8		23	8	51		40,026	3,384		203	5	882.00	7,808	15,392	121,008.00		
TOTAL FOR MAP NO. 1										3.856		25.0	8		23	8	51		40,026	3,384		203	5	882.00	7,808	15,392	121,008.00		
53056.3.3	Guilford	2	RAMP TO I-40 EB	RAMP FROM I-73 NB TO I-40 EB	3	1		NO	NO	0.408	16							40	3,830		324	19				3,348			
TOTAL FOR MAP NO. 2										0.408								40	3,830		324	19				3,348			
53056.3.3	Guilford	3	RAMP TO I-40 WB	RAMP FROM I-73 NB TO I-40 WB	1	3	MD	NO	NO	0.378	36													33.00	5,325		7,600.00		
TOTAL FOR MAP NO. 3										0.378															33.00	5,325		7,600.00	
53056.3.3	Guilford	4	LOOP TO I-73 NB	FROM I-40 EB TO I-73 NB	4	1		NO	NO	0.205	20							3	2,405		203	12				534			
		"	"	CONCRETE SECTION	5	1		NO	NO	0.022	20																351.00		
TOTAL FOR MAP NO. 4										0.227								3	2,405		203	12				534	351.00		
53056.3.3	Guilford	5	RAMP TO I-73 NB	RAMP FROM I-40 WB TO I-73 NB	3	1		NO	NO	0.264	16							3	2,478		210	12	10			2,172			
		"	"	CONCRETE SECTION	6	1		NO	NO	0.012	16									6							28	178.00	
TOTAL FOR MAP NO. 5										0.276								3	2,549	6	210	13	10			2,200	178.00		
53056.3.3	Guilford	6	RAMP TO FRIENDLY AVE.	RAMP FROM I-73 NB TO FRIENDLY AVE.	7,8,9,10	3		NO	NO	0.201	36								5,417		410	24				423			
TOTAL FOR MAP NO. 6										0.201									5,417		410	24				423			
53056.3.3	Guilford	7	RAMP FROM FRIENDLY AVE.	RAMP FROM FRIENDLY AVE. TO I-73 NB	7,9,10,11	2		NO	NO	0.215	22								3,629		309	18				991			
TOTAL FOR MAP NO. 7										0.215									3,629		309	18				991			
53056.3.3	Guilford	8	RAMP TO BRYAN BLVD. WB	RAMP FROM I-73 NB TO BRYAN BLVD. WB	12	2		NO	NO	0.644	24							10	9,586		811	48				3,637			
TOTAL FOR MAP NO. 8										0.644								10	9,586		811	48				3,637			
53056.3.3	Guilford	9	RAMP TO BRYAN BLVD. EB	RAMP FROM I-73 NB TO BRYAN BLVD. EB	12	1		NO	NO	0.339	16							34	3,182		269	16				2,301			
TOTAL FOR MAP NO. 9										0.339								34	3,182		269	16				2,301			
53056.3.3	Guilford	10	I-73 SB	FROM OLD CONCRETE JOINT SOUTH OF SR 2085 (BRYAN BLVD.) TO SOUTH OF SOUTH OF I-40	1,2	3	MD	NO	NO	3.9	36	311.2	104	10	280	93	623		37,296	3,154		189	25	611.00	8,760	15,015	93,077.00		
TOTAL FOR MAP NO. 10										3.9									37,296	3,154		189	25	611.00	8,760	15,015	93,077.00		
53056.3.3	Guilford	11	RAMP TO FRIENDLY AVE.	RAMP FROM I-73 SB TO FRIENDLY AVE.	7,8,9,10	4		NO	NO	0.516	48								13,698		1,157	68				253			
TOTAL FOR MAP NO. 11										0.516									13,698		1,157	68				253			
53056.3.3	Guilford	12	RAMP FROM FRIENDLY AVE	ON-RAMP FROM FRIENDLY AVE. TO I-73 SB	7,9,10,11	2		NO	NO	0.534	24								7,511		637	38				767			
TOTAL FOR MAP NO. 12										0.534									7,511		637	38				767			
53056.3.3	Guilford	13	RAMP TO I-40 EB	RAMP FROM I-73 SB TO I-40 EB (CONCRETE SECTION)	2	2		NO	NO	0.058	24							25	743	63		4				673.00			
		"	"	ASPHALT SECTION	12	2		NO	NO	1.01	24								9,539		808	48				4,332			
TOTAL FOR MAP NO. 13										1.068									25	10,282	63	808	52				4,332	673.00	
53056.3.3	Guilford	14	RAMP TO I-40 WB	RAMP FROM I-73 SB TO I-40 WB	12	1		NO	NO	0.402	16							41	3,773		319	19				1,884			
		"	"	CONCRETE SECTION	1	1		NO	NO	0.015	16															68	62.00		
TOTAL FOR MAP NO. 14										0.417									41	3,773		319	19				1,952	62.00	
53056.3.3	Guilford	15	LOOP TO I-73 SB	LOOP FROM I-40 WB TO I-73 SB	4	1		NO	NO	0.185	19							20	2,062		174	10				868			
		"	"	CONCRETE SECTION	5	1		NO	NO	0.019	19															89	95.00		
TOTAL FOR MAP NO. 15										0.204									20	2,062		174	10				957	95.00	
53056.3.3	Guilford	16	RAMP TO I-73 SB	RAMP FROM I-40 EB TO I-73 SB	1	3	MD	NO	NO	0.837	36	32.0	11		29	10	64							88.00	11,785		16,796.00		
TOTAL FOR MAP NO. 16										0.837									29	10	64					88.00	11,785		16,796.00
TOTAL FOR PROJ NO. 53056.3.3										14.02									145,246	6,607	5,631	729	40		1,614.00	55,373	30,407	239,840.00	
GRAND TOTAL										14.02									145,246	6,607	5,631	729	40		1,614.00	55,373	30,407	239,840.00	

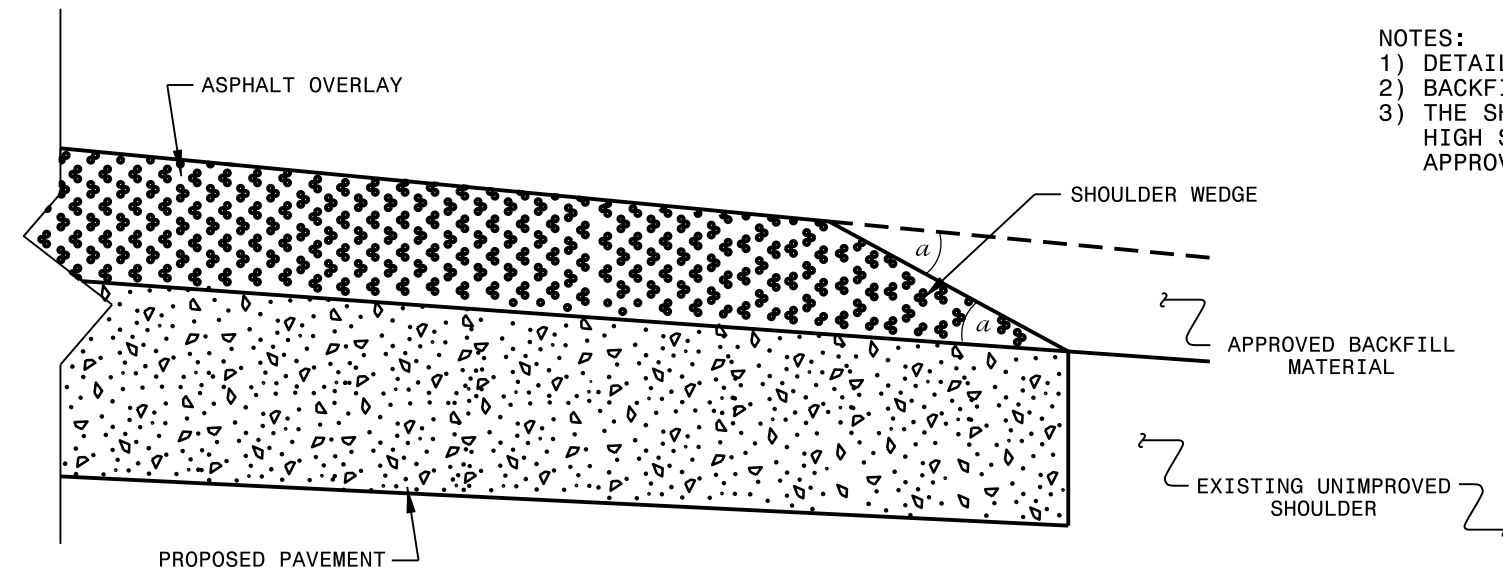
PROJECT NO.	SHEET NO.	TOTAL NO.
I-5852B	12	

SUMMARY OF QUANTITIES

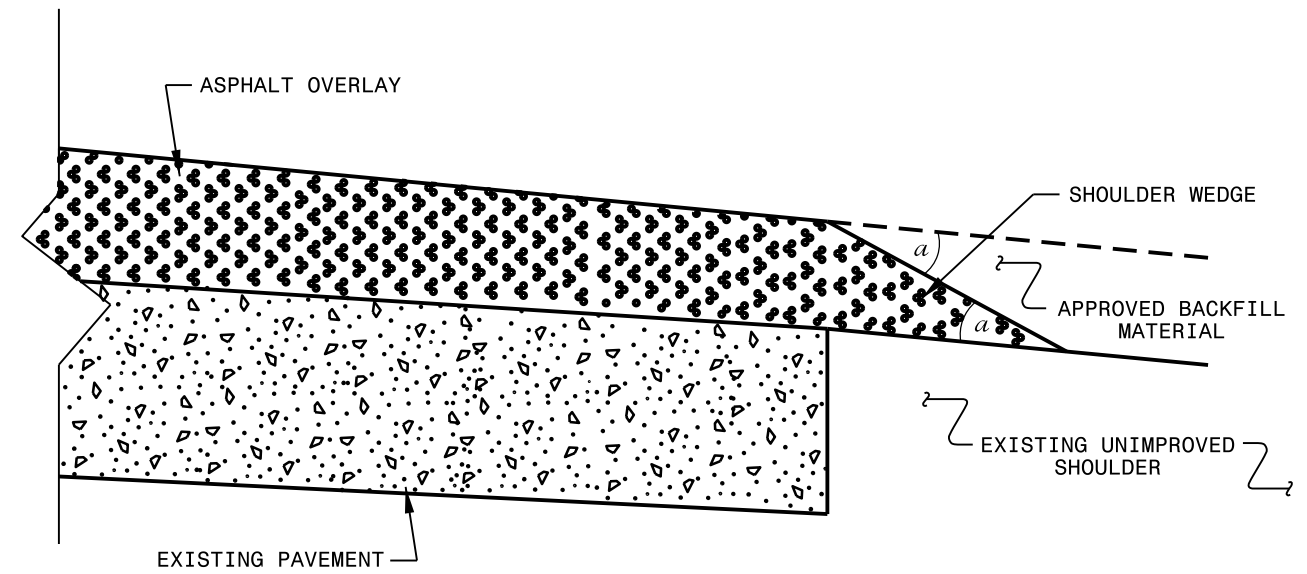
PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	SEALING EXIST PAVEMENT CRACKS & JOINTS LB	DIAMOND GRINDING PCC SY	SHOULDER DRAIN LF	4" SHOULDER DRAIN PIPE LF	4" OUTLET PIPE FOR SHOULDER DRAINS LF	REMOVE & REPLACE CONCRETE APRON EA	REM & REPL CONC. EXPRESSWAY GUTTER LF	REMOVE & REPLACE CURB RAMP STD. 848.06 AND DETAIL EA	SEALING EX. PVT CRACKS (POLYMER PATCH) LB	ADJ. OF MANHOLES EA	REMOVE & RESET EXISTING GUARDRAIL LF	PORTABLE LIGHTING LS	TEMPORARY SILT FENCE LF	MATTING FOR EROSION CONTROL SY	WATTLE LF	SEEDING & MULCHING AC	INDUCTIVE LOOP SAW CUT LF	
53056.3.3	Guilford	1	I-73 NB	FROM SOUTH OF I-40 TO OLD CONCRETE JOINT SOUTH OF SR 2085 (BRYAN BLVD.)	1,2	4	MD	NO	NO	3.856	48	897.00	116,795.0					100				100.00	1.00	750		375			
TOTAL FOR MAP NO. 1										3.856		897.00	116,795.0					100				100.00	1.00	750		375			
53056.3.3	Guilford	2	RAMP TO I-40 EB	RAMP FROM I-73 NB TO I-40 EB	3	1		NO	NO	0.408	16																		
TOTAL FOR MAP NO. 2										0.408																			
53056.3.3	Guilford	3	RAMP TO I-40 WB	RAMP FROM I-73 NB TO I-40 WB	1	3	MD	NO	NO	0.378	36	519.00	8,000.0																
TOTAL FOR MAP NO. 3										0.378		519.00	8,000.0																
53056.3.3	Guilford	4	LOOP TO I-73 NB	FROM I-40 EB TO I-73 NB	4	1		NO	NO	0.205	20																		
		"	"	CONCRETE SECTION	5	1		NO	NO	0.022	20		260.0																
TOTAL FOR MAP NO. 4										0.227			260.0																
53056.3.3	Guilford	5	RAMP TO I-73 NB	RAMP FROM I-40 WB TO I-73 NB	3	1		NO	NO	0.264	16																		
		"	"	CONCRETE SECTION	6	1		NO	NO	0.012	16		116.0																
TOTAL FOR MAP NO. 5										0.276			116.0																
53056.3.3	Guilford	6	RAMP TO FRIENDLY AVE.	RAMP FROM I-73 NB TO FRIENDLY AVE.	7,8,9,10	3		NO	NO	0.201	36								1		1							825	
TOTAL FOR MAP NO. 6										0.201									1		1								825
53056.3.3	Guilford	7	RAMP FROM FRIENDLY AVE.	RAMP FROM FRIENDLY AVE. TO I-73 NB	7,9,10,11	2		NO	NO	0.215	22								1		1								
TOTAL FOR MAP NO. 7										0.215									1		1								
53056.3.3	Guilford	8	RAMP TO BRYAN BLVD. WB	RAMP FROM I-73 NB TO BRYAN BLVD. WB	12	2		NO	NO	0.644	24																		
TOTAL FOR MAP NO. 8										0.644																			
53056.3.3	Guilford	9	RAMP TO BRYAN BLVD. EB	RAMP FROM I-73 NB TO BRYAN BLVD. EB	12	1		NO	NO	0.339	16																		
TOTAL FOR MAP NO. 9										0.339																			
53056.3.3	Guilford	10	I-73 SB	FROM OLD CONCRETE JOINT SOUTH OF SR 2085 (BRYAN BLVD.) TO SOUTH OF SOUTH OF I-40	1,2	3	MD	NO	NO	3.9	36	854.00	92,077.0	300	300	20	1			72					90	10	0.10		
TOTAL FOR MAP NO. 10										3.9		854.00	92,077.0	300	300	20	1			72						90	10	0.10	
53056.3.3	Guilford	11	RAMP TO FRIENDLY AVE.	RAMP FROM I-73 SB TO FRIENDLY AVE.	7,8,9,10	4		NO	NO	0.516	48								1									825	
TOTAL FOR MAP NO. 11										0.516									1									825	
53056.3.3	Guilford	12	RAMP FROM FRIENDLY AVE	ON-RAMP FROM FRIENDLY AVE. TO I-73 SB	7,9,10,11	2		NO	NO	0.534	24								1										
TOTAL FOR MAP NO. 12										0.534									1										
53056.3.3	Guilford	13	RAMP TO I-40 EB	RAMP FROM I-73 SB TO I-40 EB (CONCRETE SECTION)	2	2		NO	NO	0.058	24		811.0																
		"	"	ASPHALT SECTION	12	2		NO	NO	1.01	24																		
TOTAL FOR MAP NO. 13										1.068			811.0																
53056.3.3	Guilford	14	RAMP TO I-40 WB	RAMP FROM I-73 SB TO I-40 WB	12	1		NO	NO	0.402	16																		
		"	"	CONCRETE SECTION	1	1		NO	NO	0.015	16		137.0																
TOTAL FOR MAP NO. 14										0.417			137.0																
53056.3.3	Guilford	15	LOOP TO I-73 SB	LOOP FROM I-40 WB TO I-73 SB	4	1		NO	NO	0.185	19																		
		"	"	CONCRETE SECTION	5	1		NO	NO	0.019	19		211.0																
TOTAL FOR MAP NO. 15										0.204			211.0																
53056.3.3	Guilford	16	RAMP TO I-73 SB	RAMP FROM I-40 EB TO I-73 SB	1	3	MD	NO	NO	0.837	36	1,149.00	17,680.0																
TOTAL FOR MAP NO. 16										0.837		1,149.00	17,680.0																
TOTAL FOR PROJ NO. 53056.3.3										14.02		3,419.00	236,087.0	300	300	20	1	100	4	72	2	100.00	1.00	750	90	385	0.10	1,650	
GRAND TOTAL										14.02		3,419.00	236,087.0	300	300	20	1	100	4	72	2	100.00	1.00	750	90	385	0.10	1,650	

NOTES:

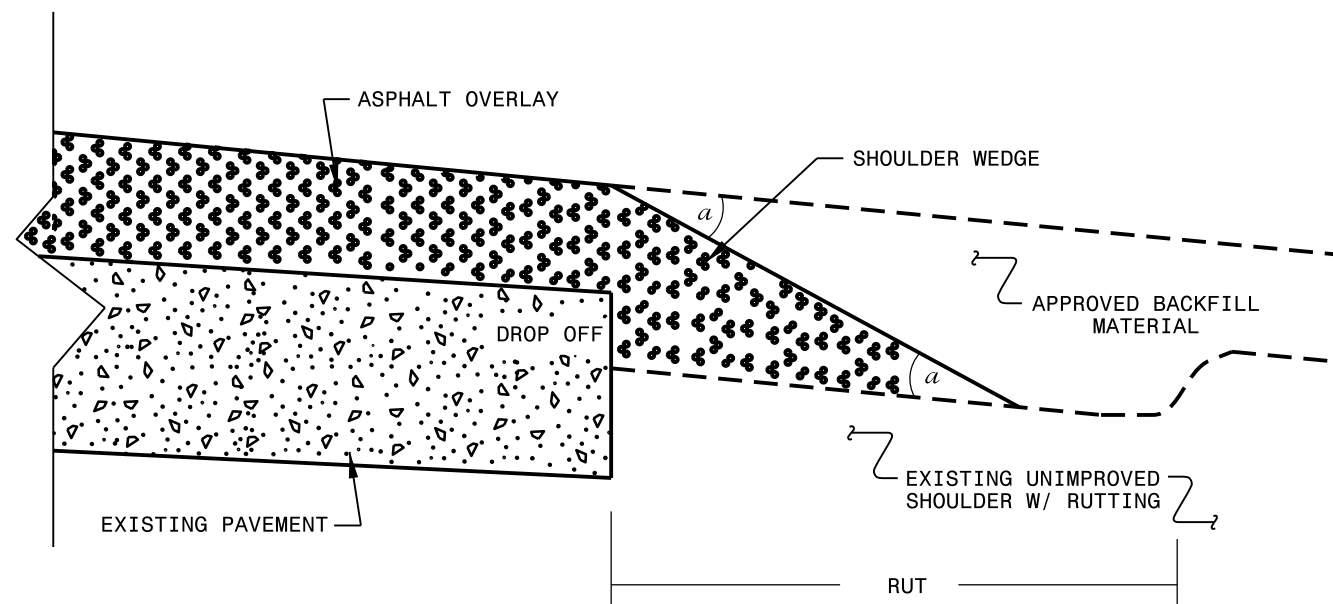
- 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
- 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
- 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



SHOULDER WEDGE DETAIL
 (Resurfacing Projects w/ Widening or
 with Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL
 (Resurfacing Projects w/ NO Widening)



SHOULDER WEDGE DETAIL
 (Resurfacing Adjacent to
 Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

CONTRACT STANDARDS AND DEVELOPMENT UNIT			
Office 919-707-6950		FAX 919-250-4119	
SHOULDER WEDGE DETAILS			
ORIGINAL BY: T.SPELL	DATE: 7-19-11		
MODIFIED BY:	DATE: 2/2/16		
CHECKED BY:	DATE:		
FILE SPEC.: szusr/details/stand/shoulderwedgedetail.dgn			

24-MAR-2016 11:45
 S:\Contracts\Resurfacing Projects\Shoulder Wedge Details\Revised Shoulder Wedge Detail.dgn
 \$\$\$USERNAME\$\$\$

DIVIDED MEDIANS WITH WIDTHS 46' OR GREATER

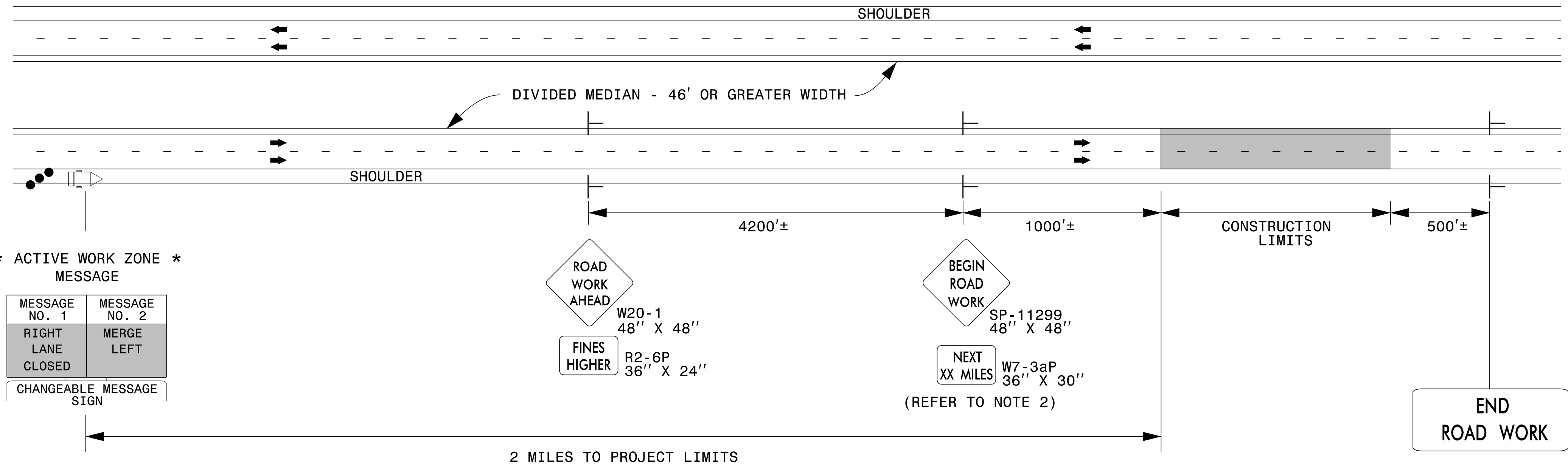
* NOTE: ADVANCE THIS CMS CONTINUOUSLY AS WORK OPERATIONS PROGRESS.

* INACTIVE WORK ZONE MESSAGE

MESSAGE NO. 1	MESSAGE NO. 2
ROAD WORK	2 MILES AHEAD
CHANGEABLE MESSAGE SIGN	

* ACTIVE WORK ZONE MESSAGE

MESSAGE NO. 1	MESSAGE NO. 2
RIGHT LANE CLOSED	MERGE LEFT
CHANGEABLE MESSAGE SIGN	



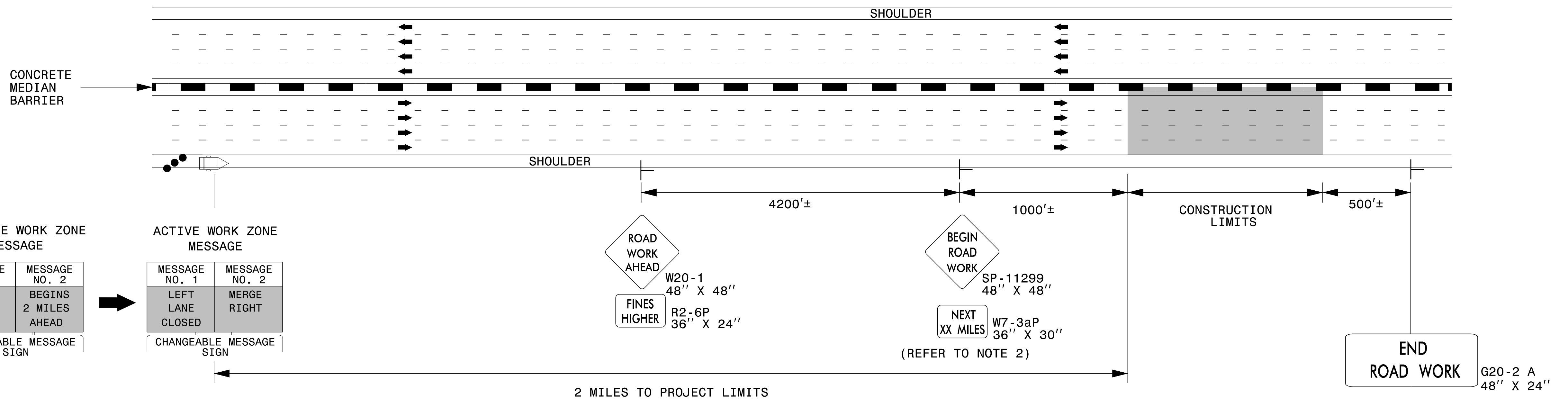
DIVIDED MEDIANS WITH WIDTHS LESS THAN 46' OR WITH PERMANENT MEDIAN BARRIER

INACTIVE WORK ZONE MESSAGE

MESSAGE NO. 1	MESSAGE NO. 2
ROAD WORK	BEGINS 2 MILES AHEAD
CHANGEABLE MESSAGE SIGN	

ACTIVE WORK ZONE MESSAGE

MESSAGE NO. 1	MESSAGE NO. 2
LEFT LANE CLOSED	MERGE RIGHT
CHANGEABLE MESSAGE SIGN	



NOTES

1. THIS DRAWING IS TO BE USED IN CONJUNCTION WITH THE WORK ZONE VARIABLE SPEED LIMIT USING DIGITAL SPEED LIMIT SIGNS FOR INTERSTATE/FREEWAY RESURFACING PROJECTS DETAIL.
2. FOR SIGN W7-3aP, ROUND TO THE NEAREST MILE.
3. FOR ENTRANCE AND EXIT RAMP, REFER TO RSD 1101.01, SHEET 1, DETAIL B & C.
4. FOR ADDITIONAL NOTES, REFER TO RSD 1101.01, SHEET 1.

LEGEND

- CHANGEABLE MESSAGE SIGN (CMS)
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- TRAFFIC DRUM

APPROVED: *Steve Kite*
DATE: 2/23/2017

DocuSigned by:
E27CE30E10FC442...

SEAL
022104
JOHN S. KITE, II
ENGINEER

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

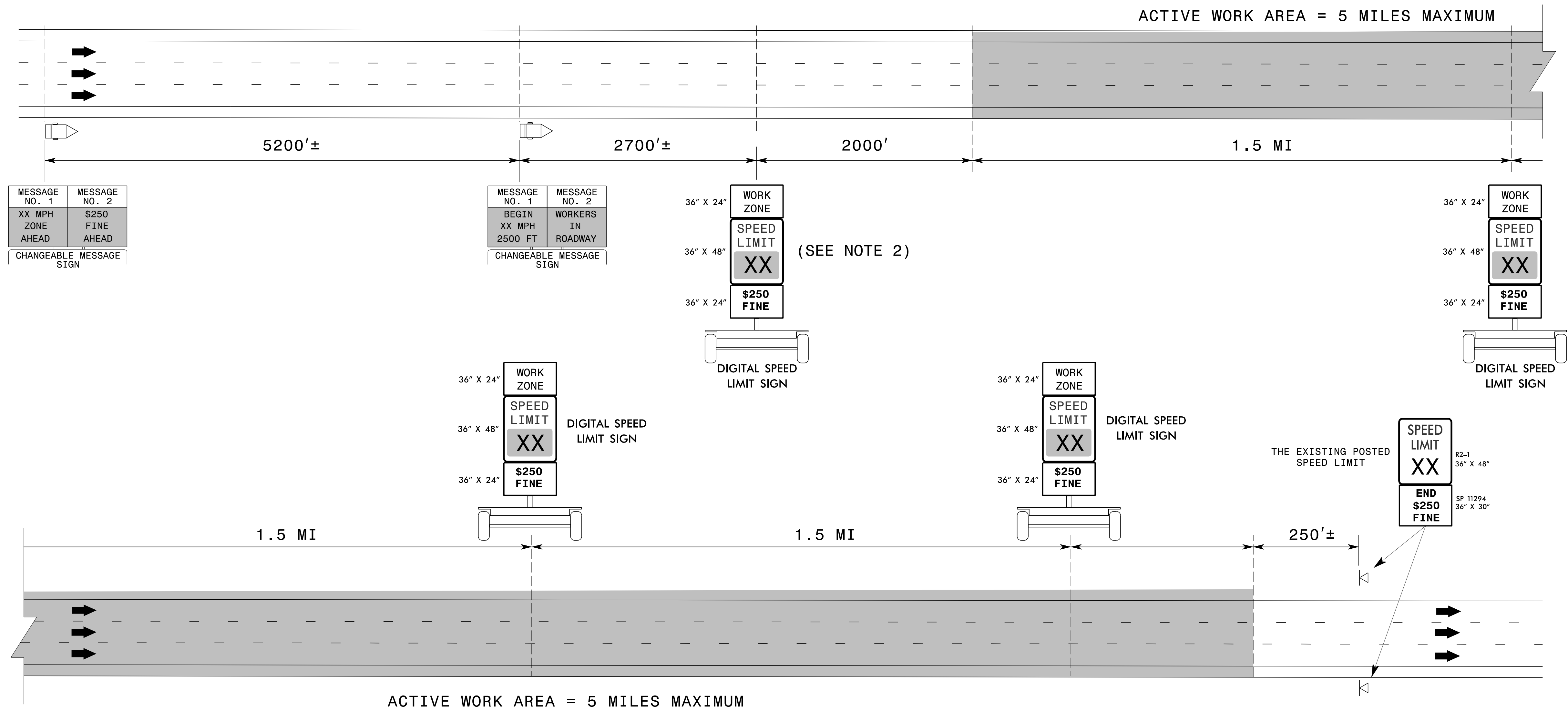
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

STATIONARY ADVANCE
WARNING SIGNS FOR
INTERSTATE/FREEWAY
RESURFACING PROJECTS

INTERSTATE RESURFACING OPERATIONS WITH DIGITAL SPEED LIMIT SIGNS

I-5852B

SHEET NO.
TMP-2



WHEN THERE IS NOT ACTIVE WORK IN THE TRAVEL LANE

SPEED LIMIT DISPLAY	CONDITIONS	
	DROP-OFFS BETWEEN OPEN TRAVEL LANES	PAVED SHOULDER DROP-OFFS
USE EXISTING SPEED LIMIT	< 1.0"	≤ 3.0"
REDUCE SPEED LIMIT 5 MPH	1.0" - 2.0"	> 3.0"

DROP-OFFS BETWEEN OPEN TRAVEL LANES SHOULD NOT EXCEED 2.0"

- ### NOTES
1. THE SPEED LIMITS DISPLAYED WITHIN THE ACTIVE WORK AREA MAY VARY BETWEEN 55 MPH AND 70 MPH, DEPENDENT UPON ROAD WORK CONDITIONS AND THE EXISTING SPEED LIMIT. 55 MPH IS ONLY DISPLAYED DURING ACTIVE LANE CLOSURE OPERATIONS.
 2. AT THE FIRST DIGITAL SPEED LIMIT LOCATION, PLACE A DIGITAL SPEED LIMIT SIGN ON BOTH THE INSIDE AND OUTSIDE SHOULDERS, UNLESS DIRECTED OTHERWISE BY THE ENGINEER WHEN THERE IS NOT ENOUGH ROOM ON THE INSIDE SHOULDER DUE TO NARROW MEDIAN AND PERMANENT MEDIAN BARRIER. AT SUBSEQUENT LOCATIONS DOWNSTREAM, PLACE A SINGLE DIGITAL SPEED LIMIT SIGN ON THE OUTSIDE SHOULDER.
 3. THE ENGINEER MAY DETERMINE TO INSTALL THE DIGITAL SPEED LIMIT SIGNS ON THE OUTSIDE SHOULDER OR ON THE MEDIAN SIDE IF THE SIGNS ARE NOT HIGHLY VISIBLE TO ALL MOTORISTS. AT THE FIRST DIGITAL SPEED LIMIT
 4. THIS APPLICATION IS FOR SHORT-TERM ACTIVITIES. THE MAXIMUM ACTIVE WORK AREA IS 5 MILES.
 5. THE DIGITAL SPEED LIMIT SIGNS TAKE PRECEDENCE OVER EXISTING SPEED LIMIT SIGNS. ALL EXISTING SPEED LIMIT SIGNS SHALL BE COVERED OR REMOVED.
 6. THE DIGITAL SPEED LIMITS SIGNS WILL BE INSTALLED (TRAILER MOUNTED OR STATIONARY MOUNTED) IN ADVANCE AND SPACED APPROXIMATELY 1.5 MILES THROUGHOUT THE ACTIVE WORK AREA, UNLESS DIRECTED OTHERWISE.
 7. NCDOT HAS SOLE AUTHORITY OF THE SPEED LIMITS DISPLAYED ON THE DIGITAL SPEED LIMIT SIGNS.
 8. THE WORK ZONE VARIABLE SPEED LIMIT AND THE \$250 SPEEDING PENALTY ARE SEPARATE ORDINANCES THAT MUST BE SIGNED BY THE STATE TRAFFIC ENGINEER TO BE VALID AND ENFORCEABLE. WITHOUT A SIGNED ORDINANCE, THE SPEED LIMIT ON A FACILITY SHALL REMAIN UNCHANGED.

APPROVED: *Steve Kite*
DATE: 2/23/2017

SEAL
022104
STEVE KITE, P.E.
NORTH CAROLINA
PROFESSIONAL
ENGINEER

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UNLESS ALL SIGNATURES COMPLETED**

DIVISION OF HIGHWAYS
 NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 WORK ZONE TRAFFIC CONTROL

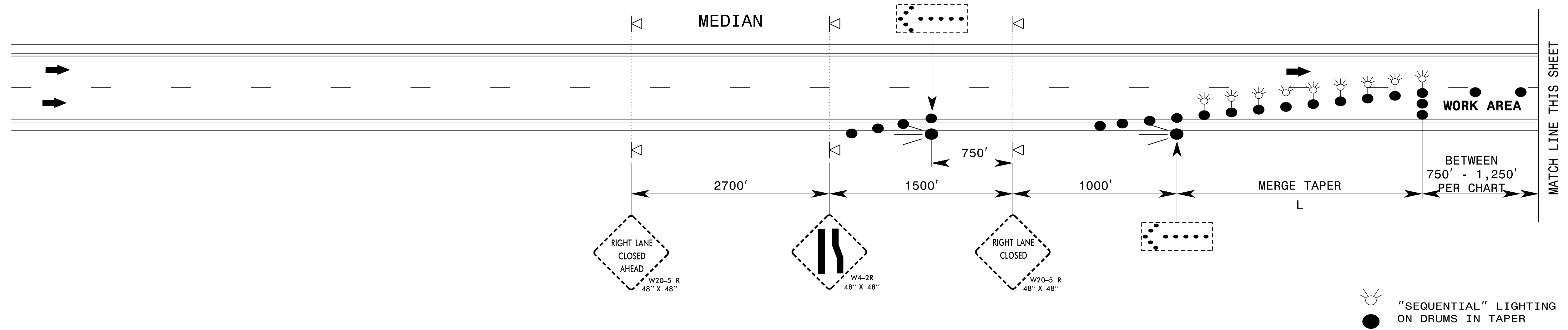
WORK ZONE "VARIABLE"
 SPEED LIMIT USING
 DIGITAL SPEED LIMIT
 SIGNS FOR INTERSTATE/
 FREEWAY RESURFACING
 PROJECTS

2/23/2017 S:\TMU\WZTC\DesignGroup3\Squad3B\0Data\Interstate Resurfacing Provisions and Details\WVSL\Interstate_DSL.dgn User:kedais

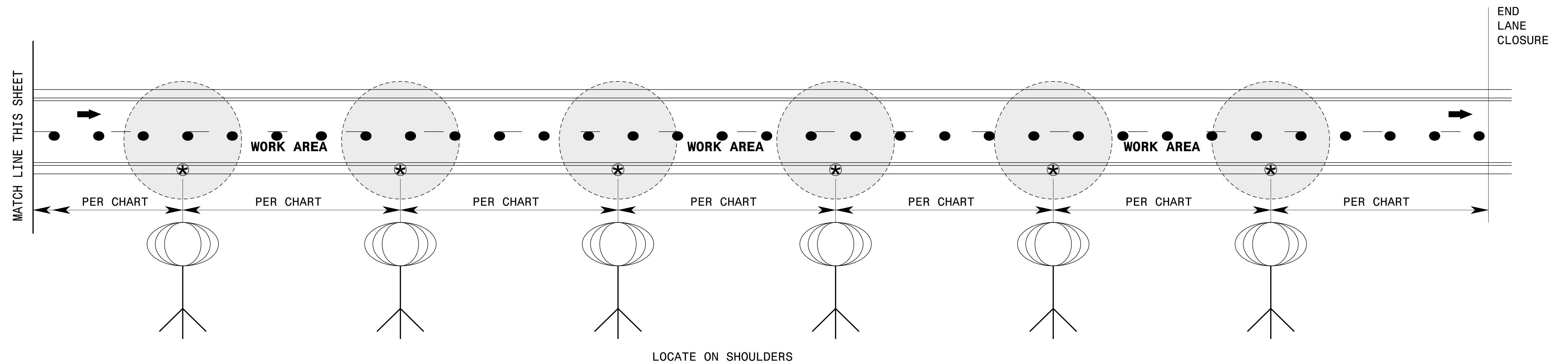
ADVANCE WARNING AREA

I-5852B

SHEET NO.
TMP-3



WORK ZONE AREA



LOCATE ON SHOULDERS

SPACING CHART

LIGHT OUTPUT (LUMENS)	MINIMUM LIGHTED FIXTURE AREA (SQUARE FEET)	MAXIMUM SPACING (FEET)	LIGHT UNITS (PER MILE)
50,000 TO 65,000	5.5	750'	6
66,000 TO 80,000	5.5	1,000'	5
81,000 TO 100,000	36	1,250'	4

NOTES

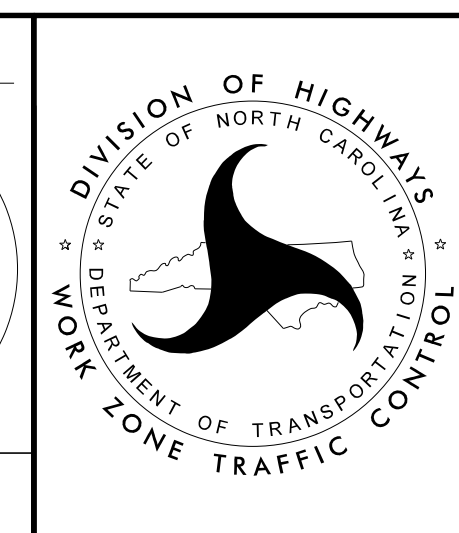
- 1) SPACE LIGHT UNITS ACCORDING TO THE CHART.
- 2) EACH LIGHT UNIT SHALL BE CAPABLE OF ELEVATING TO A MINIMUM HEIGHT OF 14' ABOVE THE PAVEMENT.
- 3) PLACE ON PAVED SHOULDER IF POSSIBLE.

APPROVED: *Steve Kite*
DATE: 3/17/2017

DocuSigned by:
E27CE30E1DFC442...

SEAL
022104
ENGINEER
JOHN S. KITE, II

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UNLESS ALL SIGNATURES COMPLETED**



**SEQUENTIAL FLASHING
WARNING LIGHTS
AND
WORK ZONE
PRESENCE LIGHTING**

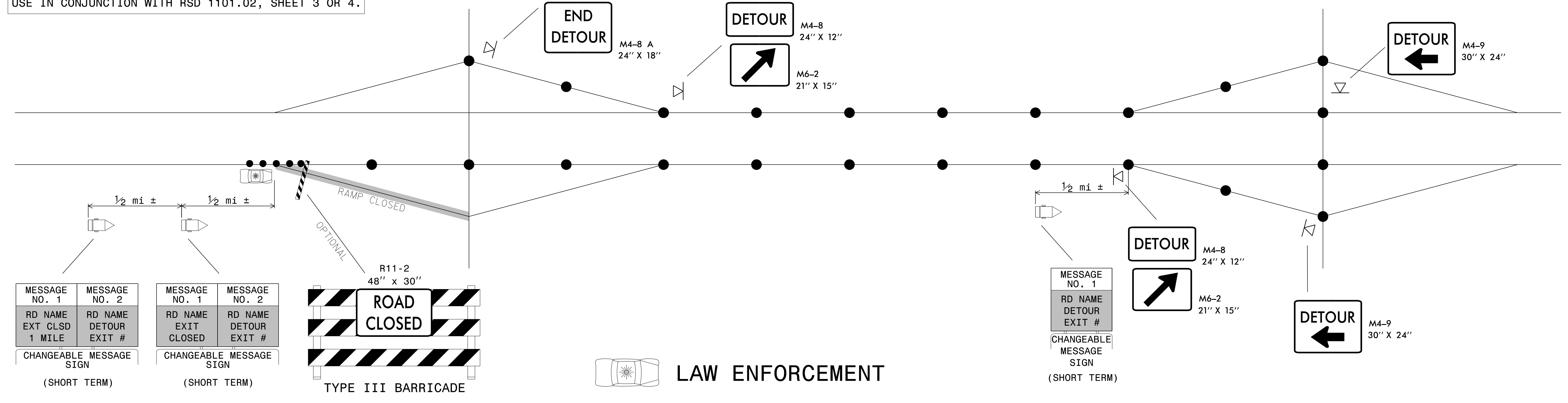
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SHORT TERM CLOSURE AND DETOUR OF OFF-RAMP TO ADJACENT INTERCHANGE

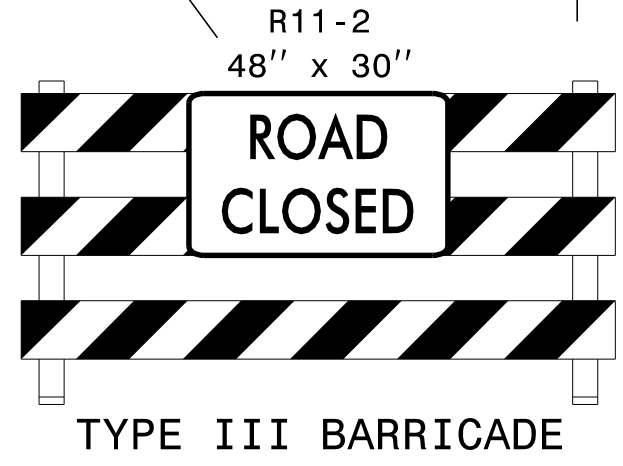
I-5852B

SHEET NO.
TMP-4

USE IN CONJUNCTION WITH RSD 1101.02, SHEET 3 OR 4.



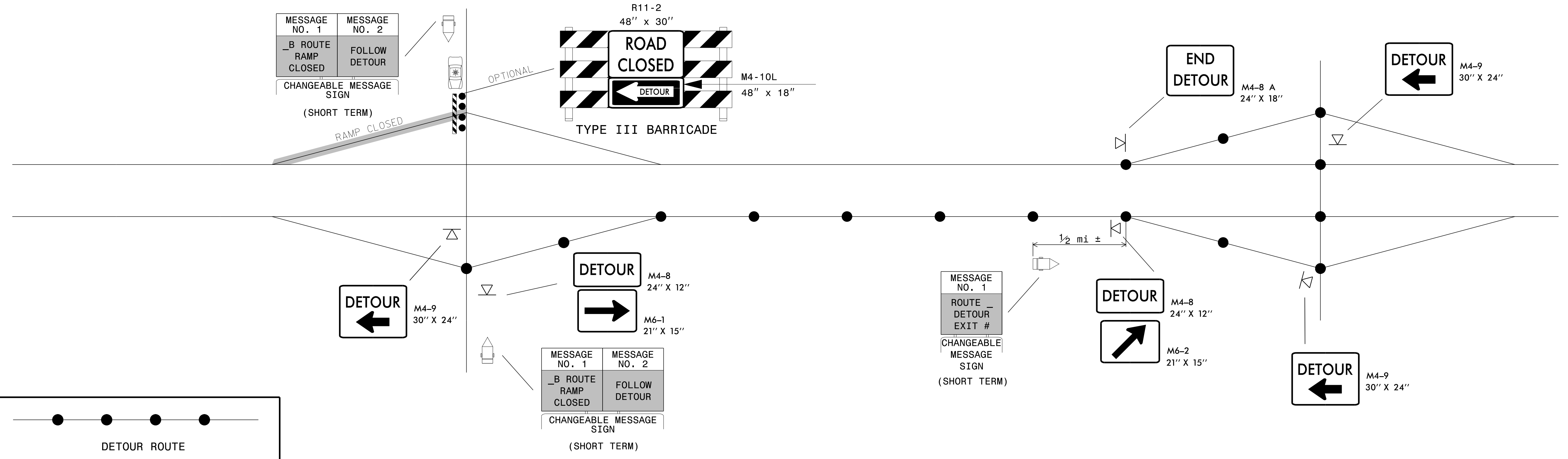
MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2
RD NAME	RD NAME	RD NAME	RD NAME
EXT CLSD	DETOUR	EXIT CLOSED	DETOUR
1 MILE	EXIT #		EXIT #
CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN	
(SHORT TERM)		(SHORT TERM)	



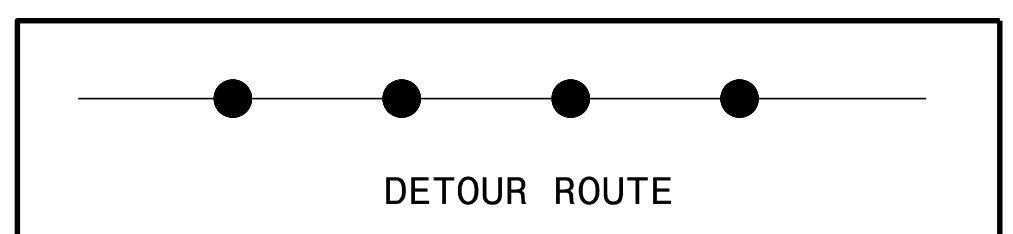
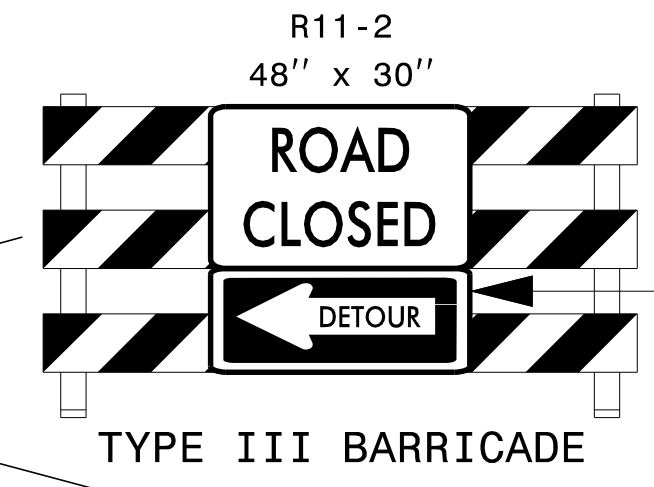
MESSAGE NO. 1
RD NAME
DETOUR
EXIT #
CHANGEABLE MESSAGE SIGN
(SHORT TERM)

SHORT TERM CLOSURE AND DETOUR OF ON-RAMP TO ADJACENT INTERCHANGE

USE IN CONJUNCTION WITH RSD 1101.02, SHEET 3 OR 4.



MESSAGE NO. 1	MESSAGE NO. 2
_B ROUTE	FOLLOW
RAMP	DETOUR
CLOSED	
CHANGEABLE MESSAGE SIGN	
(SHORT TERM)	



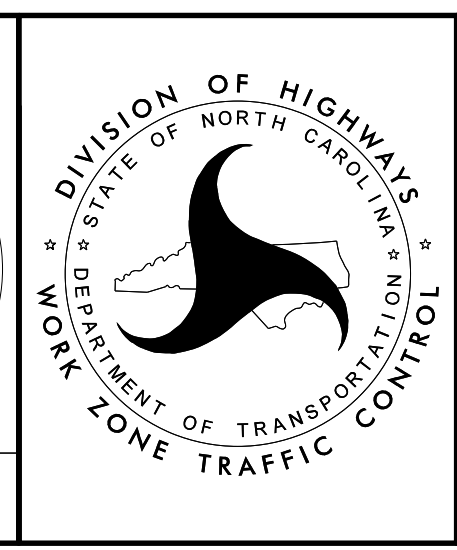
MESSAGE NO. 1	MESSAGE NO. 2
_B ROUTE	FOLLOW
RAMP	DETOUR
CLOSED	
CHANGEABLE MESSAGE SIGN	
(SHORT TERM)	

GENERAL NOTES:

1. THIS DRAWING IS INTENDED FOR USE DURING SHORT TERM CLOSURES OF INTERSTATE AND FREEWAY RAMPS.
2. RAMP CLOSURES SHALL BE APPROVED BY THE ENGINEER.
3. IF RAMP CLOSURE RESTRICTIONS APPLY, SEE SPECIAL PROVISION, "INTERMEDIATE CONTRACT TIMES AND LIQUIDATED DAMAGES".
4. ADDITIONAL CHANGEABLE MESSAGE SIGNS AND POSSIBLE DETOUR SIGNS MAY BE NECESSARY FOR MORE COMPLEX CLOSURES/DETOURS. COMPENSATION FOR ADDITIONAL DEVICES SHALL BE MADE BASED ON THE UNIT BID PRICE FOR THE RESPECTIVE DEVICE.

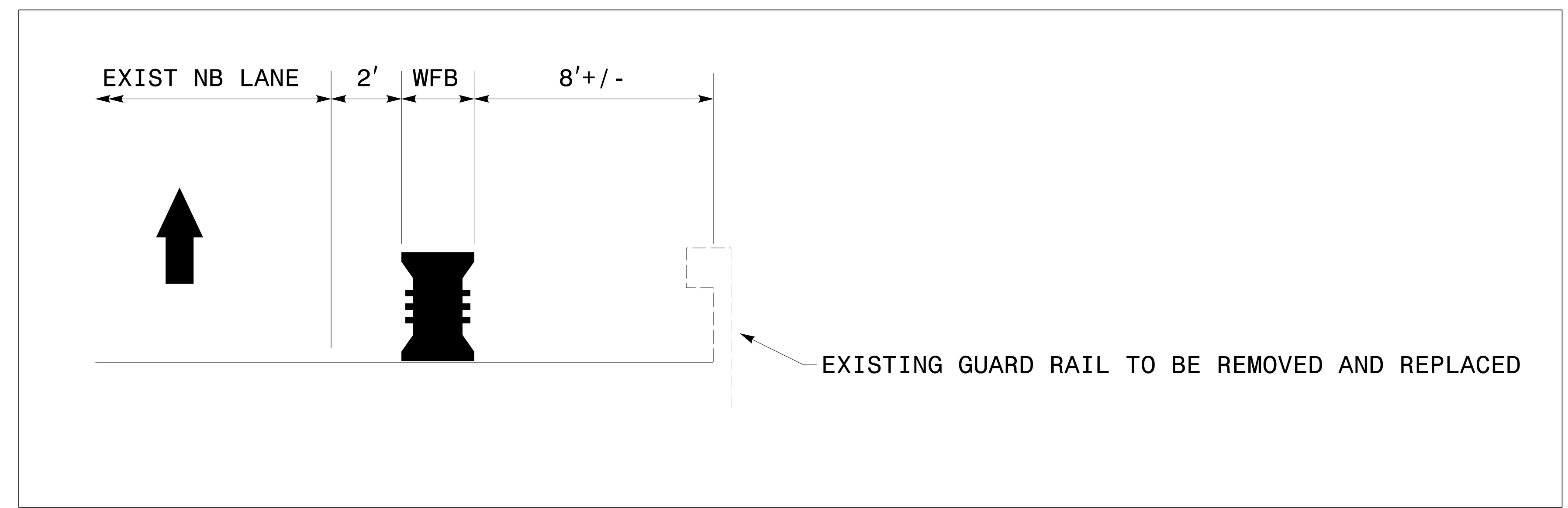
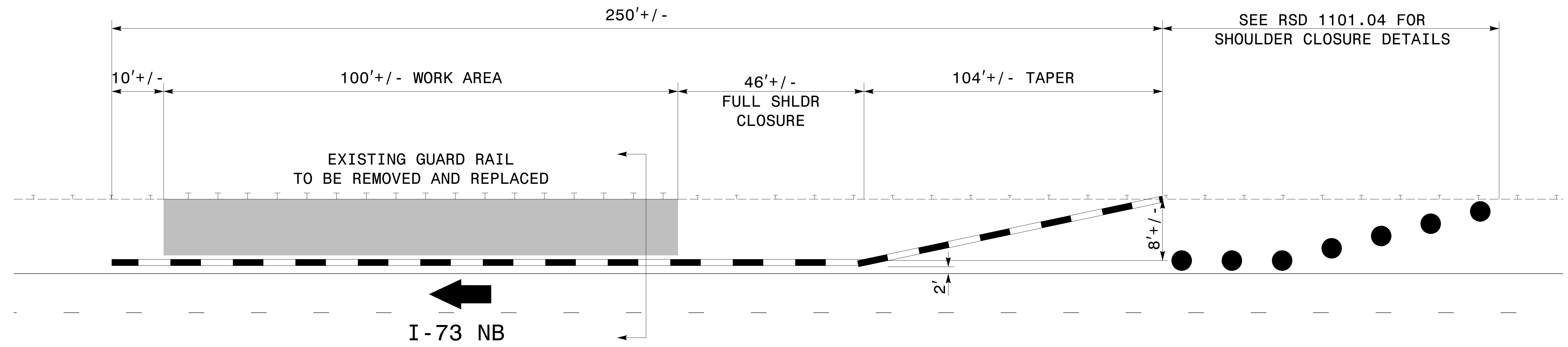
APPROVED: *Steve Kite*
DATE: 2/23/2017

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SHORT TERM CLOSURE AND DETOUR OF INTERSTATE/FREEWAY RAMPS

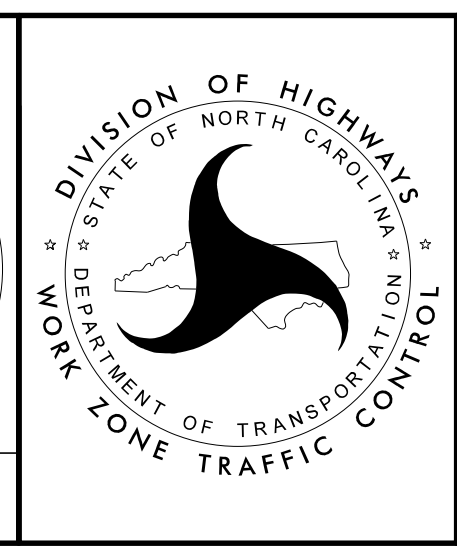
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5/18/2017
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 User: dertcharadson

APPROVED: *Samuel D. Coleman*
9990BECF4590410...
 DATE: 5/18/2017

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**WATER FILLED
BARRIER AT
WORK ZONE**

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

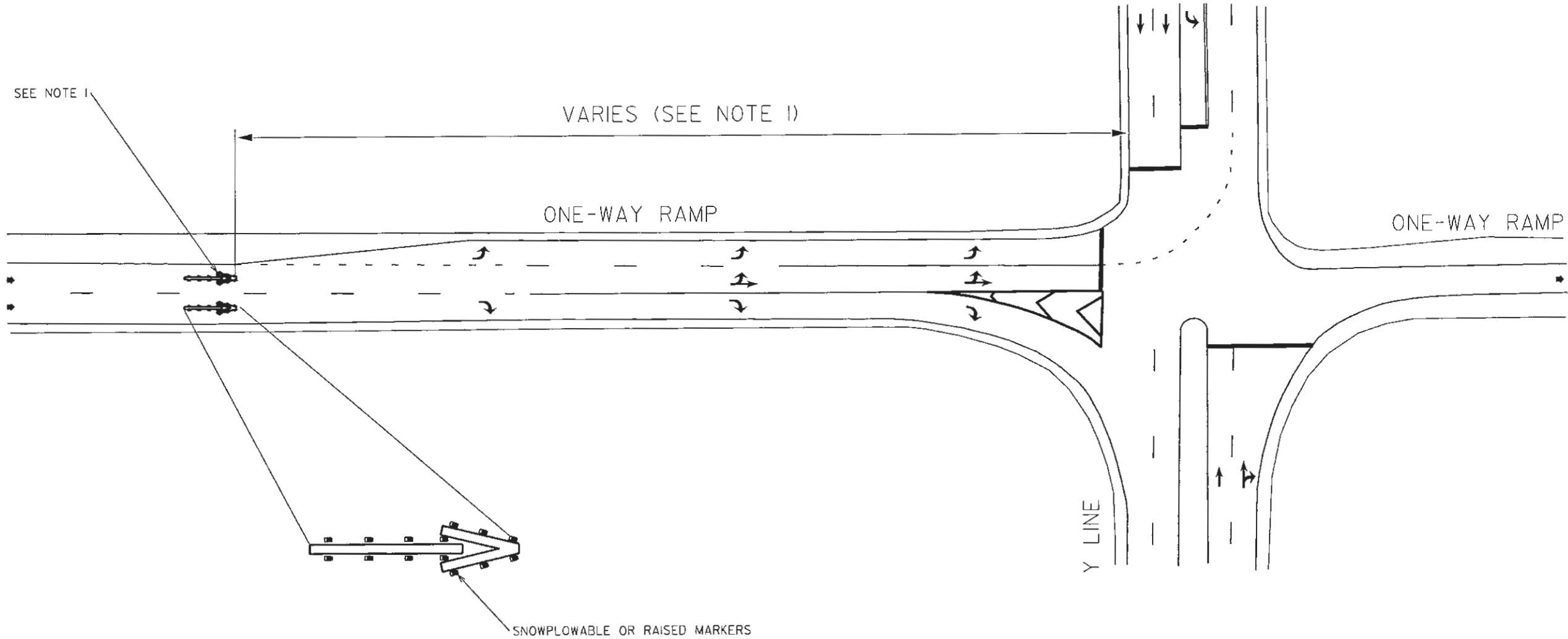
8-15

ENGLISH STANDARD DETAIL FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

SHEET 1 OF 2

1205.XX

ASPHALT TREATMENT



NOTES:

- 1) REFER TO THE 2012 ROADWAY STANDARD DRAWING 1205.09, SHEET 1 OF 8 FOR RAMP ARROW DIMENSION REQUIREMENTS.
- 2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.
- 3) INSTALL MARKERS (SNOWPLOWABLE/RAISED) IN ACCORDANCE TO THE ROADWAY STANDARD DETAIL.
- 4) MARKING SHALL BE THERMOPLASTIC MATERIAL.

LEGEND	
	DIRECTION OF TRAFFIC FLOW
	PAVEMENT MARKING SYMBOLS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

8-15

ENGLISH STANDARD DETAIL FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

SHEET 1 OF 2

1205.XX

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

4-16

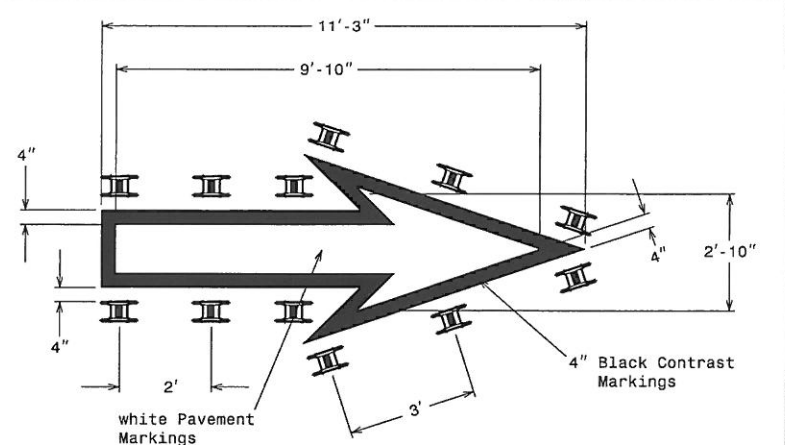
ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

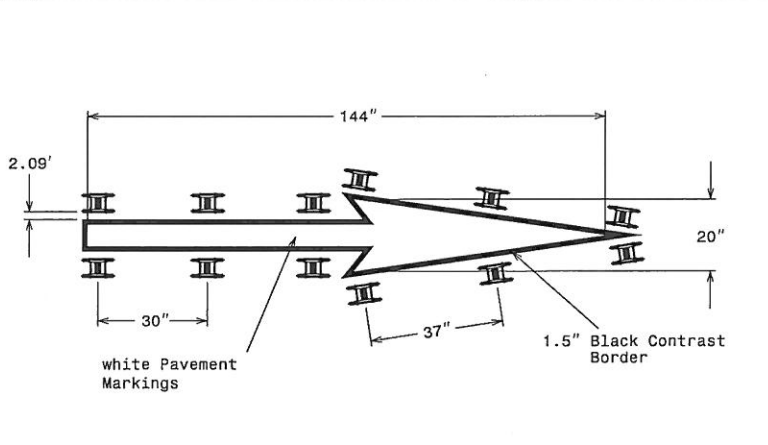
4-16

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
TWO-LANE EXIT RAMP AT MULTI-LANE APPROACH

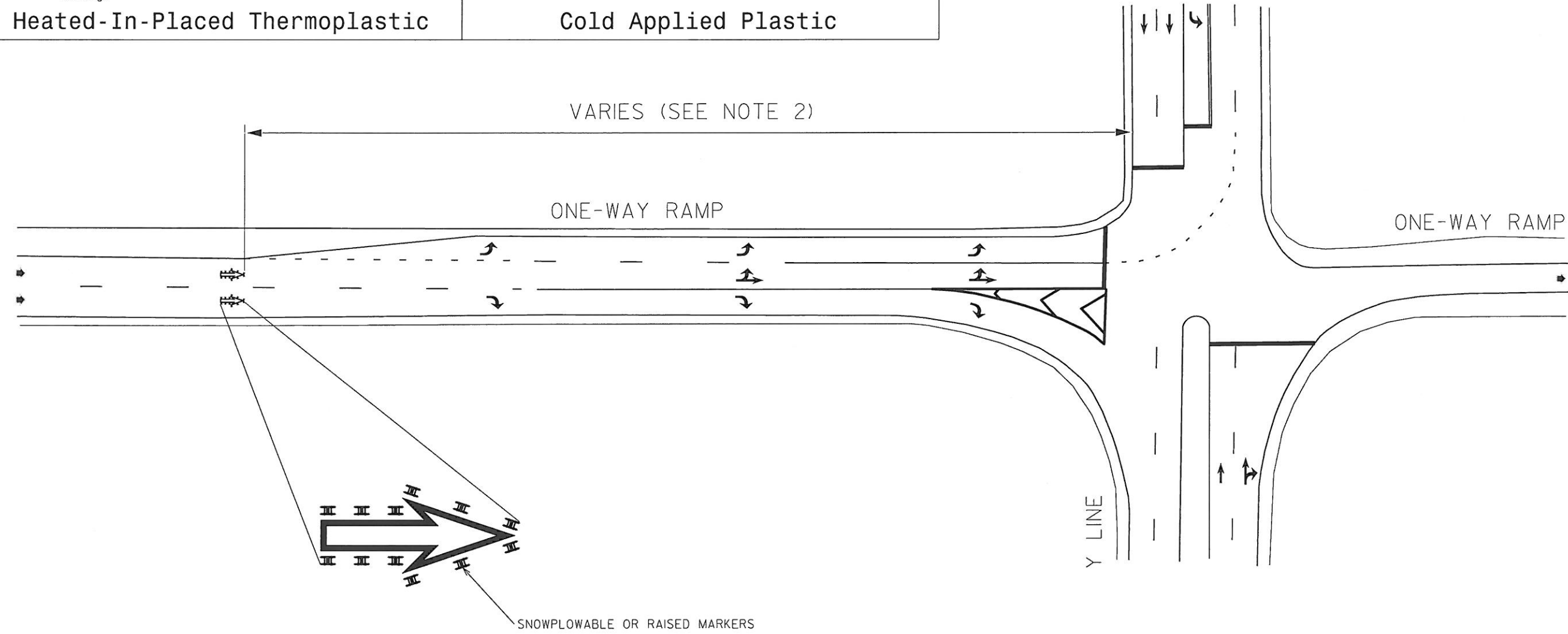
CONCRETE TREATMENT



Heated-In-Placed Thermoplastic



Cold Applied Plastic



NOTES:

- 1) PAVEMENT MARKINGS SHALL BE INSTALLED ON CONCRETE SURFACES ONLY.
- 2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.
- 3) INSTALL MARKERS, SNOWPLOWABLE OR RAISED, IN ACCORDANCE TO THE DETAILS ON THIS SHEET.
- 4) MARKING SHALL BE WHITE HEATED-IN-PLACED THERMOPLASTIC WITH 4 INCH BLACK CONTRAST BORDER OR COLD APPLIED PLASTIC WITH 1.5 INCH BLACK CONTRAST BORDER.

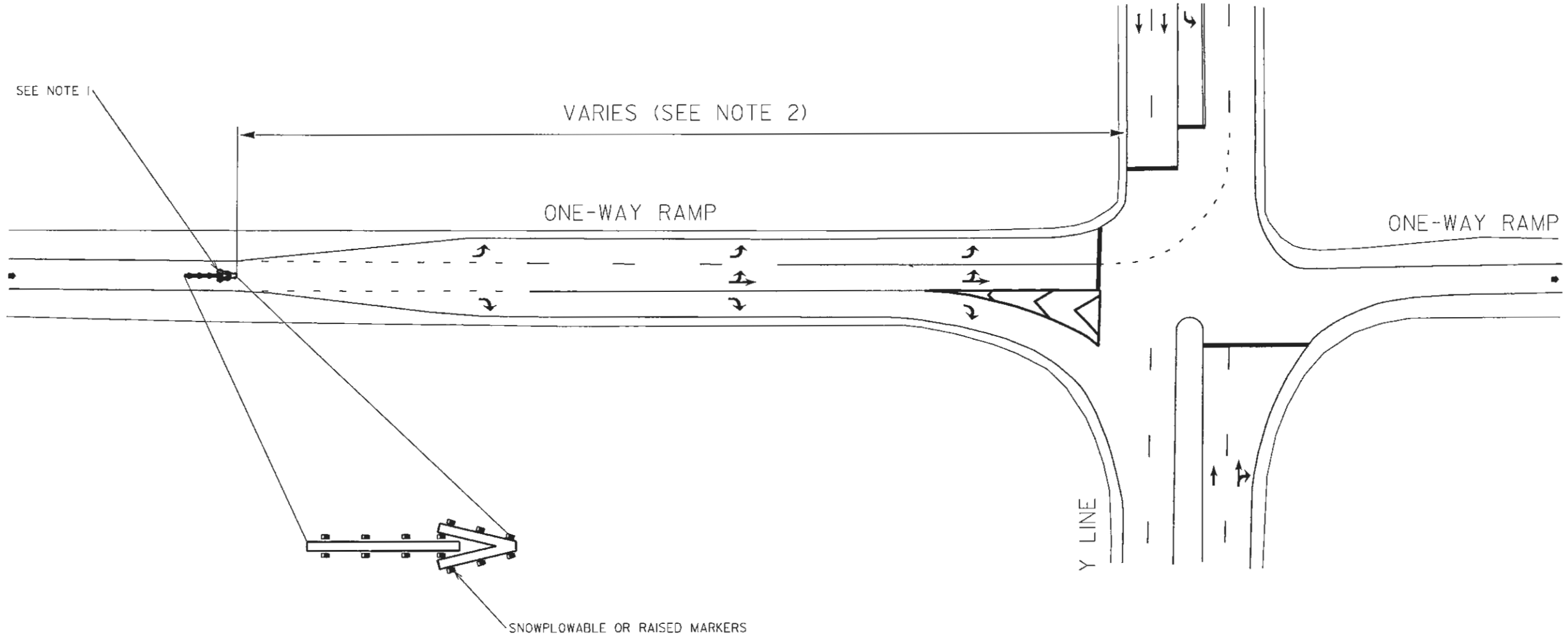
LEGEND	
	DIRECTION OF TRAFFIC FLOW
	PAVEMENT MARKING SYMBOLS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

8-15

ENGLISH STANDARD DETAIL FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

ASPHALT TREATMENT



NOTES:

- 1) REFER TO THE 2012 ROADWAY STANDARD DRAWING 1205.09, SHEET 1 OF 8 FOR RAMP ARROW DIMENSION REQUIREMENTS.
- 2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.
- 3) INSTALL MARKERS (SNOWPLOWABLE/RAISED) IN ACCORDANCE TO THE ROADWAY STANDARD DETAIL.
- 4) MARKING SHALL BE THERMOPLASTIC MATERIAL.

LEGEND	
	DIRECTION OF TRAFFIC FLOW
	WRONG WAY RAMP ARROW
	PAVEMENT MARKING SYMBOLS

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

8-15

ENGLISH STANDARD DETAIL FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

4-16

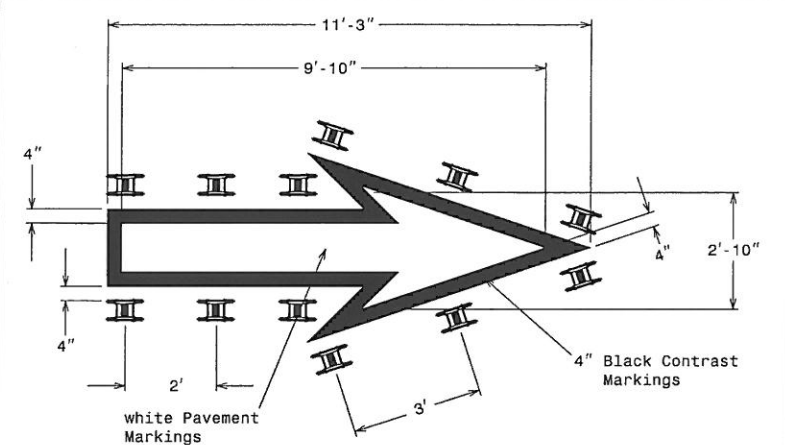
ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
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RALEIGH, N.C.

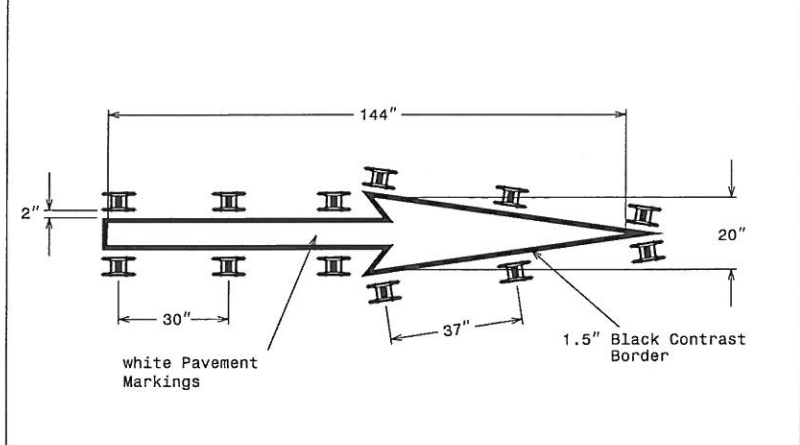
4-16

ENGLISH DETAIL DRAWING FOR
PAVEMENT MARKINGS
WRONG WAY RAMP ARROW
ONE-LANE EXIT RAMP AT MULTI-LANE APPROACH

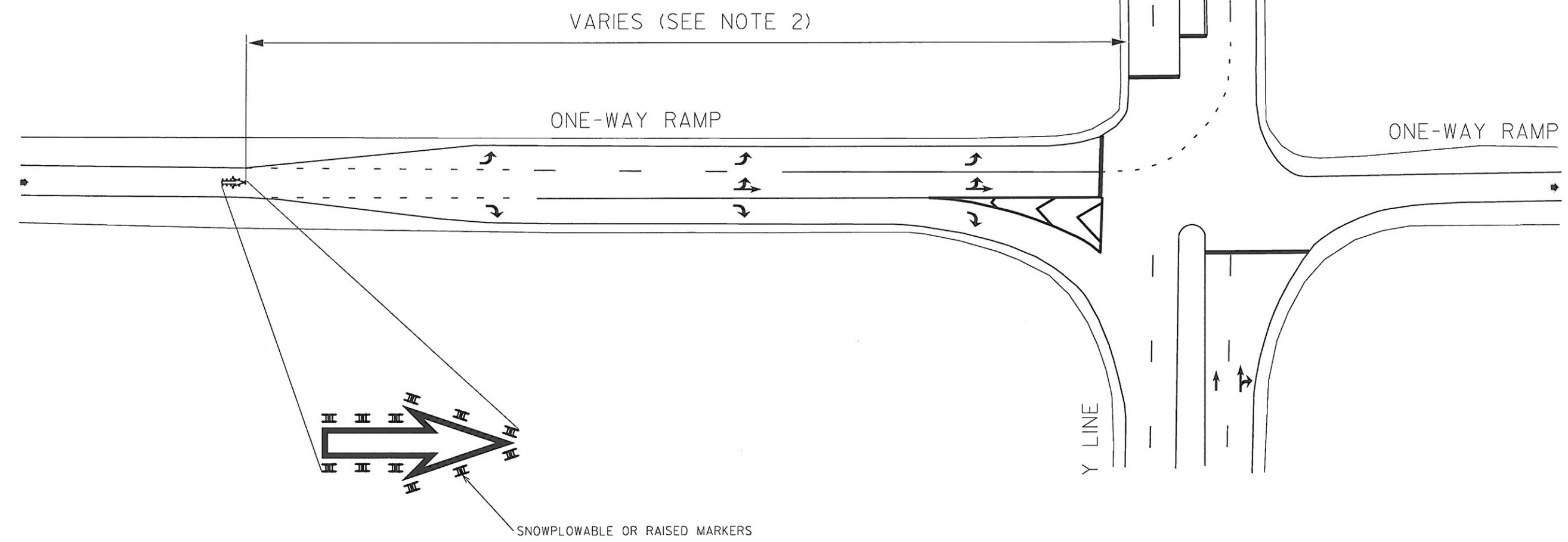
CONCRETE TREATMENT



Heated-In-Placed Thermoplastic



Cold Applied Plastic

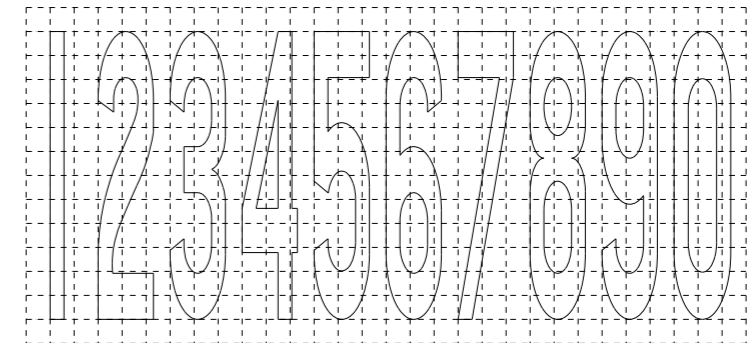
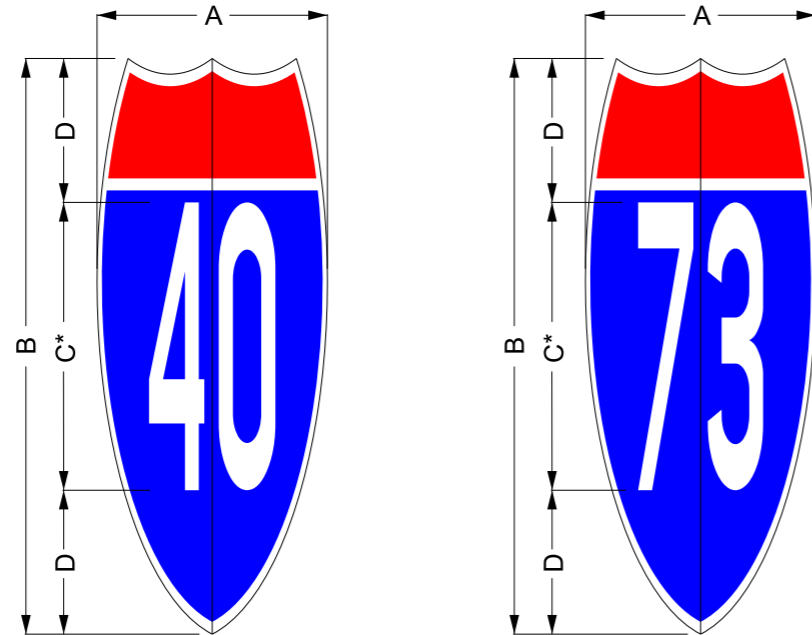


NOTES:

- 1) PAVEMENT MARKINGS SHALL BE INSTALLED ON CONCRETE SURFACES ONLY.
- 2) PLACEMENT OF WRONG-WAY RAMP ARROW VARIES AND SHOULD BE LOCATED JUST BEFORE THE MULTI-LANE APPROACH.
- 3) INSTALL MARKERS, SNOWPLOWABLE OR RAISED, IN ACCORDANCE TO THE DETAILS ON THIS SHEET.
- 4) MARKING SHALL BE WHITE HEATED-IN-PLACED THERMOPLASTIC WITH 4 INCH BLACK CONTRAST BORDER OR COLD APPLIED PLASTIC WITH 1.5 INCH WITH BLACK CONTRAST BORDER.

LEGEND	
	DIRECTION OF TRAFFIC FLOW
	PAVEMENT MARKING SYMBOLS

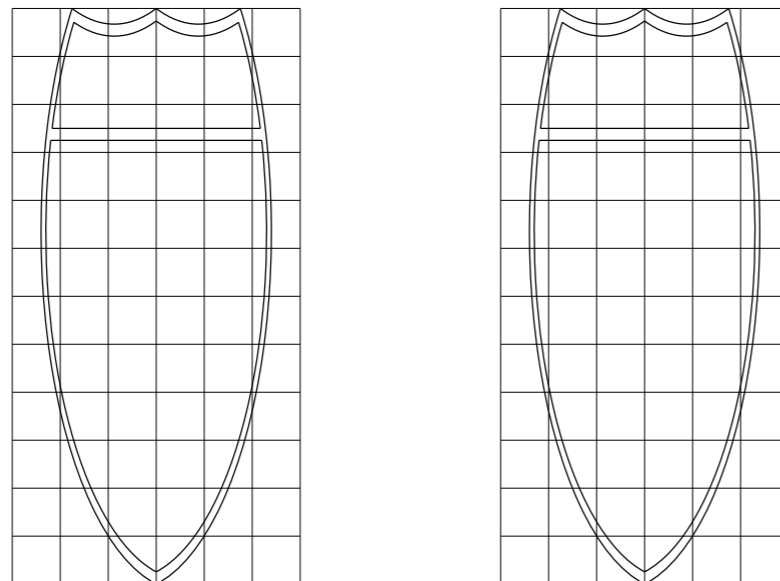
NOTE:
Contact Traffic Services prior to installation of shields.



Font series for one and two digit shields

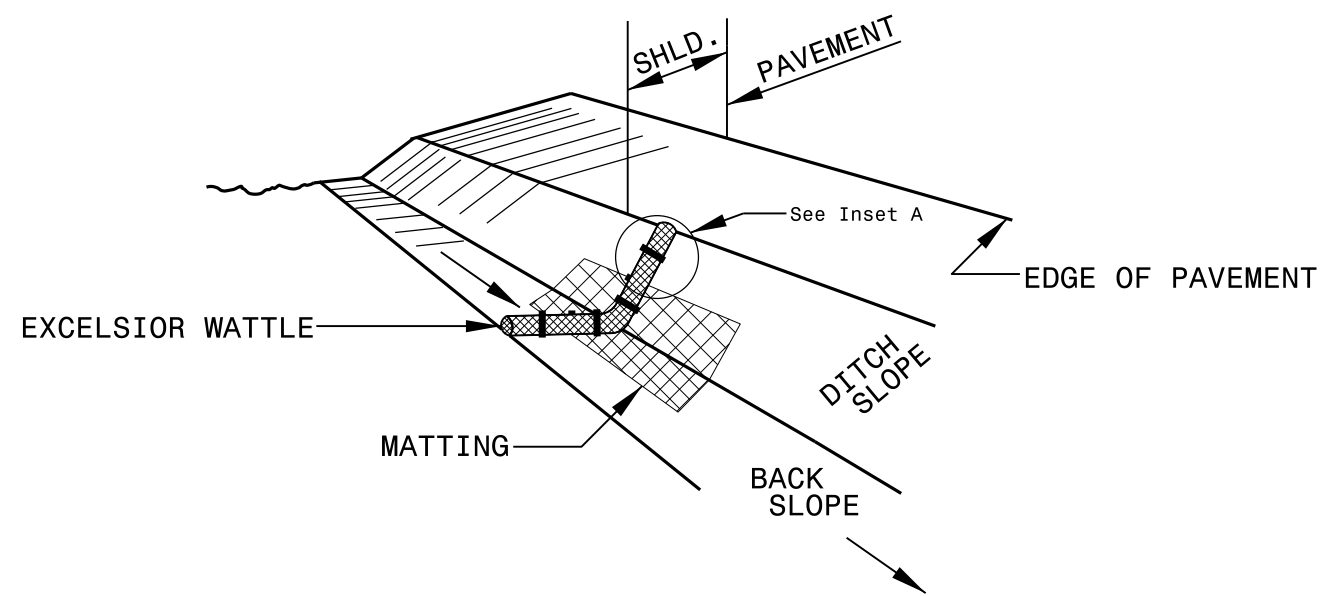
- * See chart for font style
- ** Optically space numerals about vertical centerline
- Legend - white (retroreflective)
- Top - red (retroreflective)
- Bottom - blue (retroreflective)

A	B	C	D
72"	180"*	90"	45"

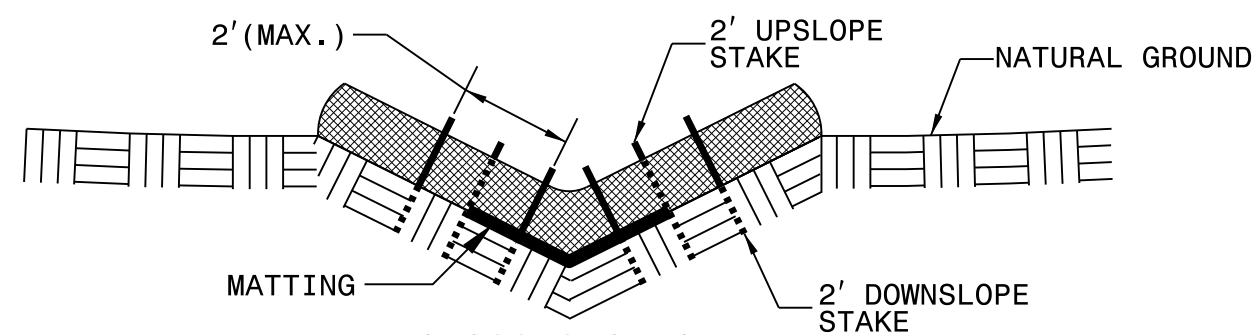


One and two digit Interstate shield

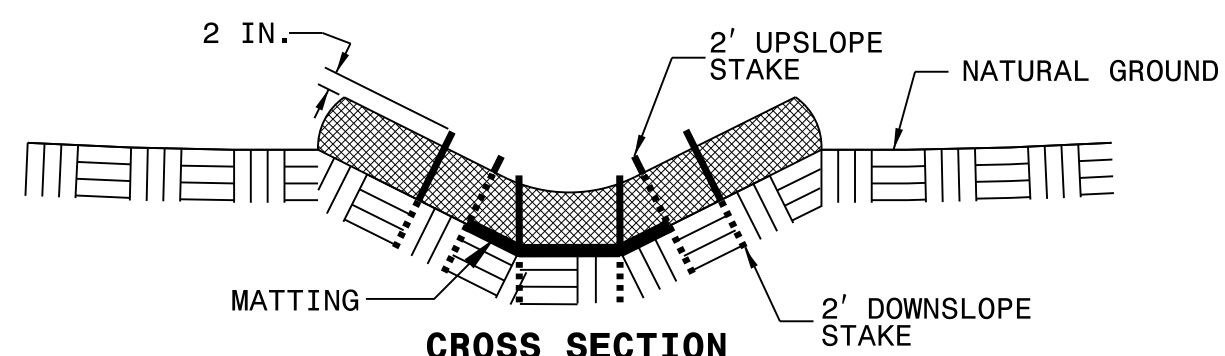
WATTLE DETAIL



ISOMETRIC VIEW



**CROSS SECTION
VEE DITCH**



**CROSS SECTION
TRAPEZOIDAL DITCH**

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

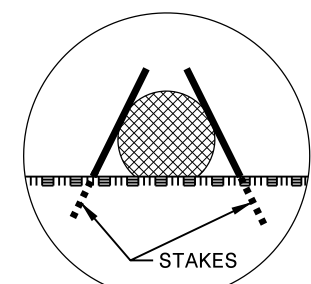
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

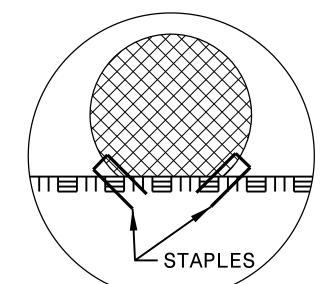
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

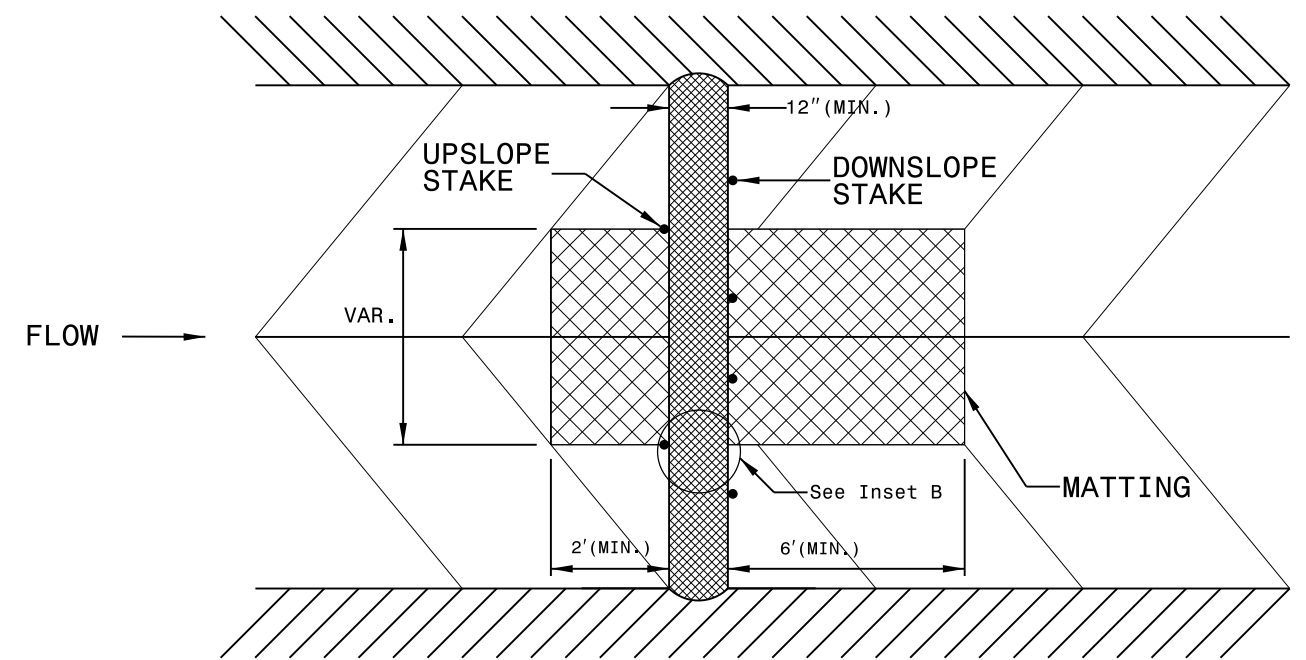
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A

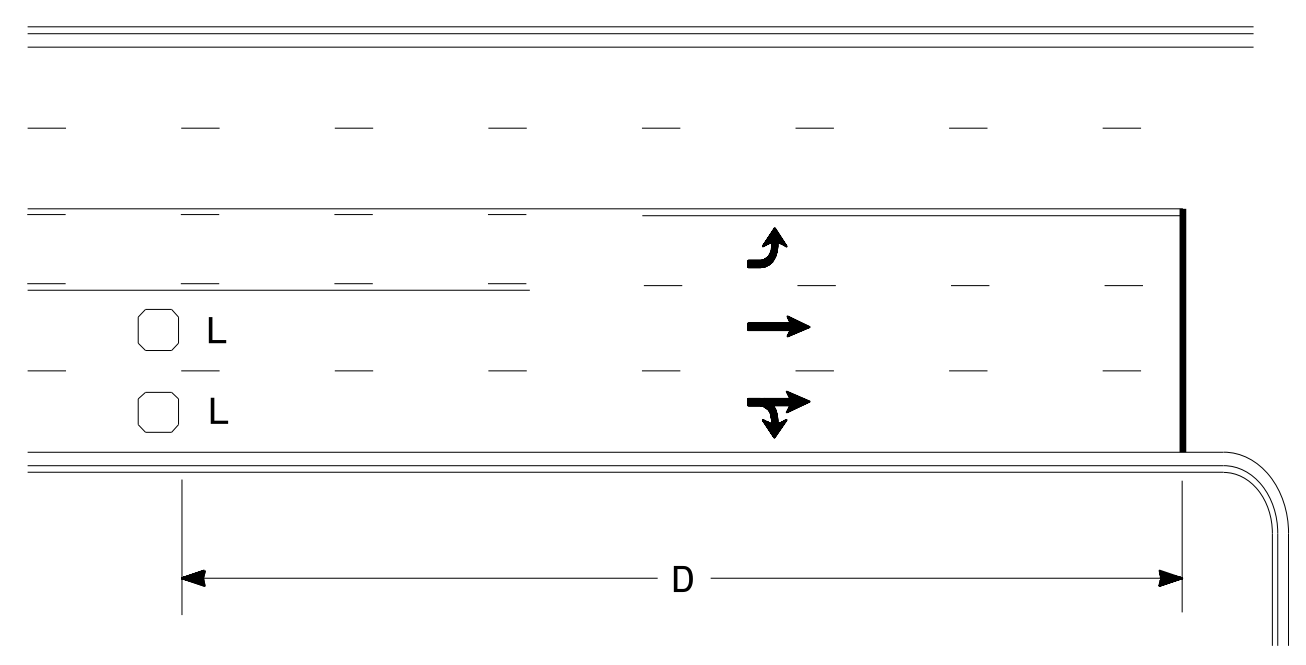


INSET B



TOP VIEW

High Speed Detection (≥40 mph)

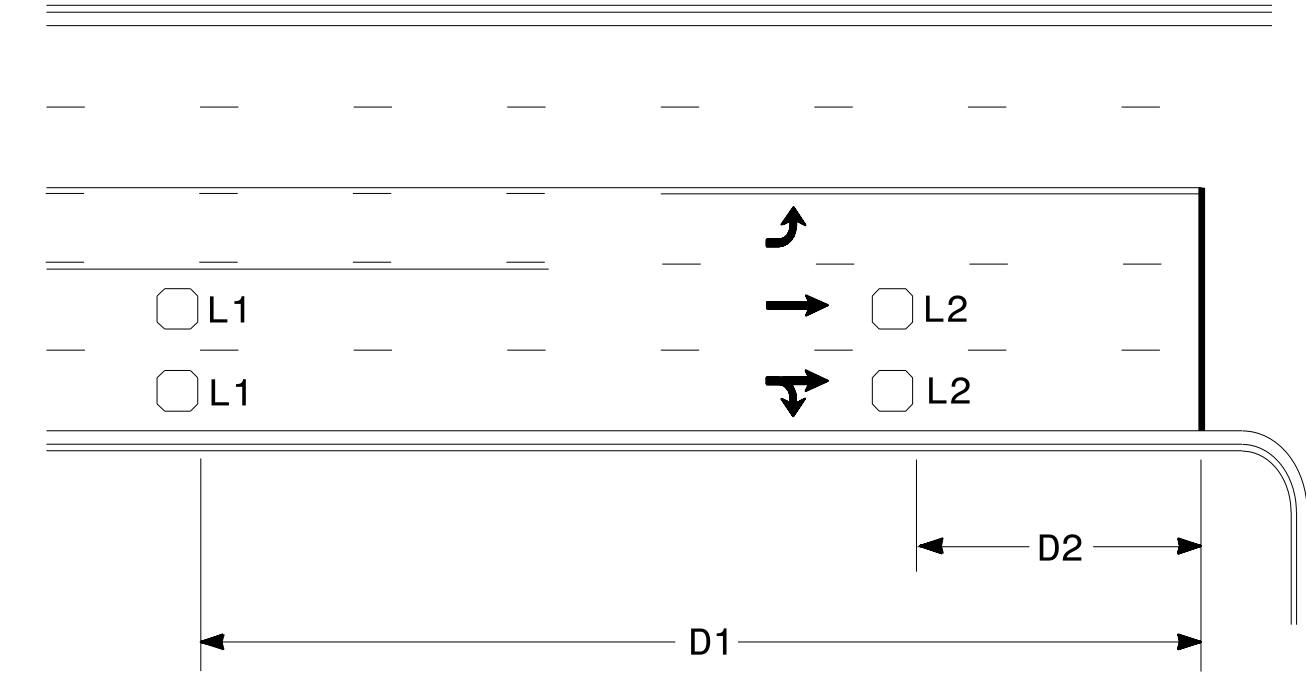


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

L = 6ft X 6ft
Wired in series for TS1
Controllers
Wired separately for TS2,
170, and 2070L Controllers

Volume Density Operation

OR

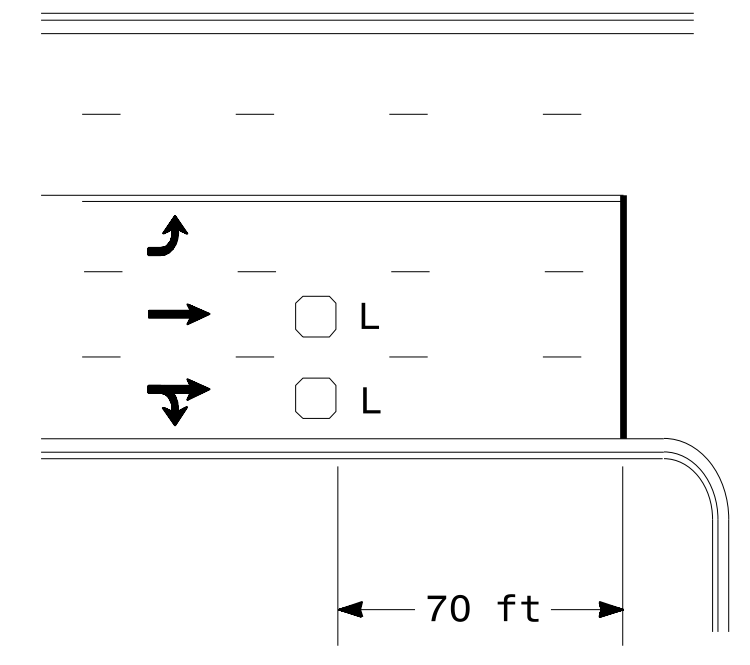


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series
L2 = 6ft X 6ft
Wired in series

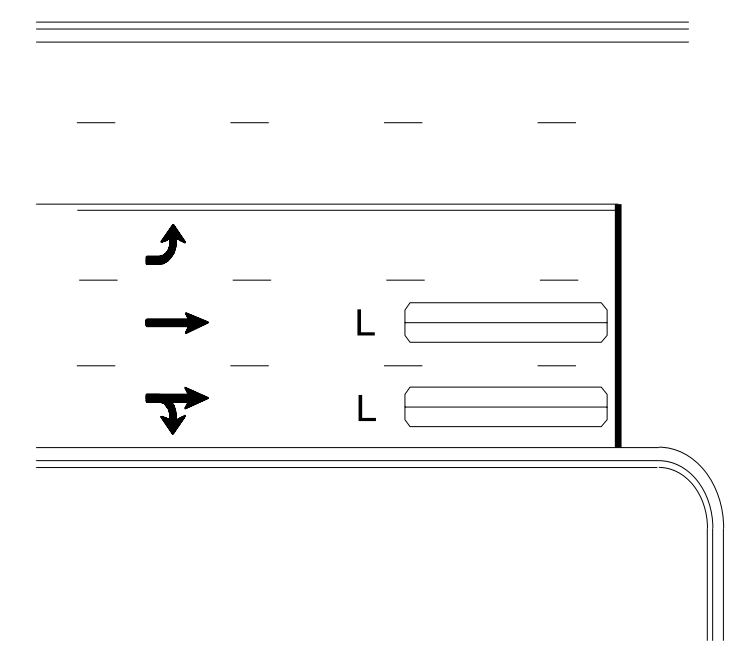
"Stretch" Operation

Low Speed Detection (≤35 mph)



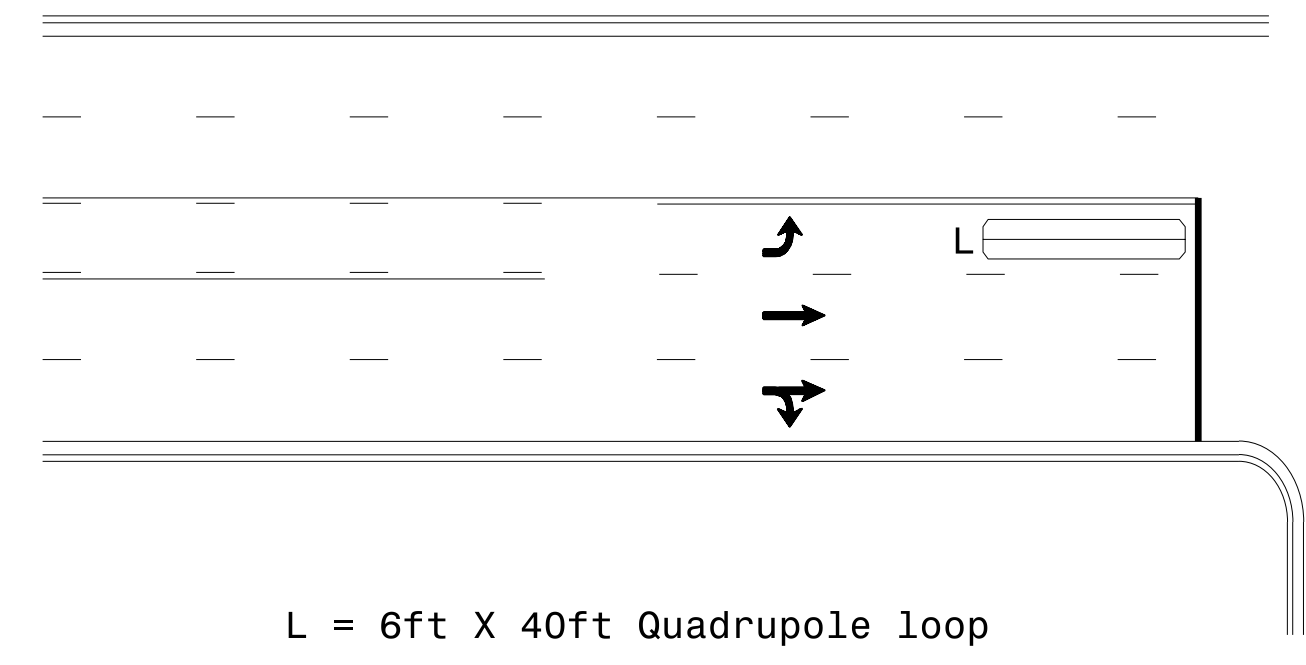
L = 6ft X 6ft
Wired in series

OR



L = 6ft X 40ft
Quadrupole loop, wired separately

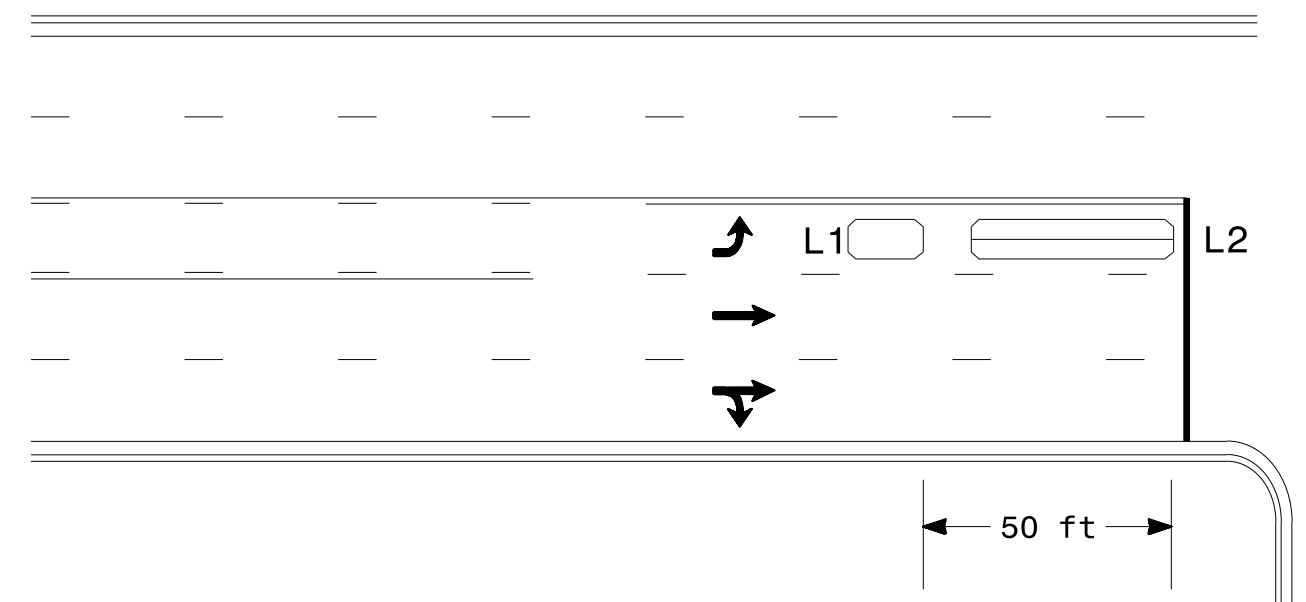
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

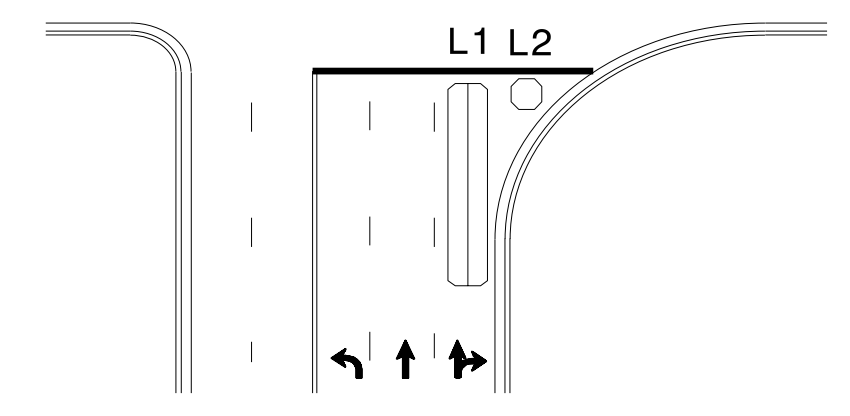
OR



L1 = 6ft X 15ft Queue detector
L2 = 6ft X 40ft Quadrupole loop

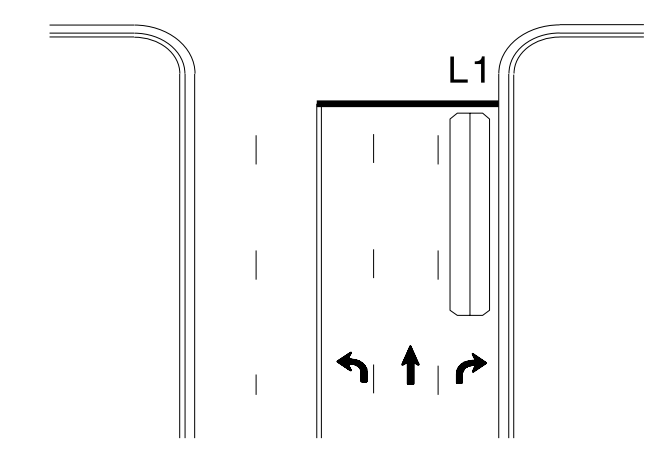
Queue Loop Detection

Right Turn Lane Detection

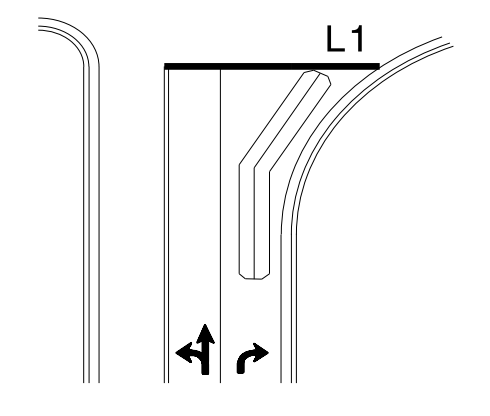


Shared Lane/
Wide Radius Turn

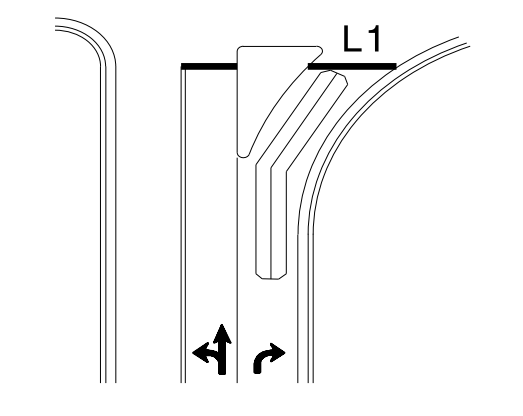
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

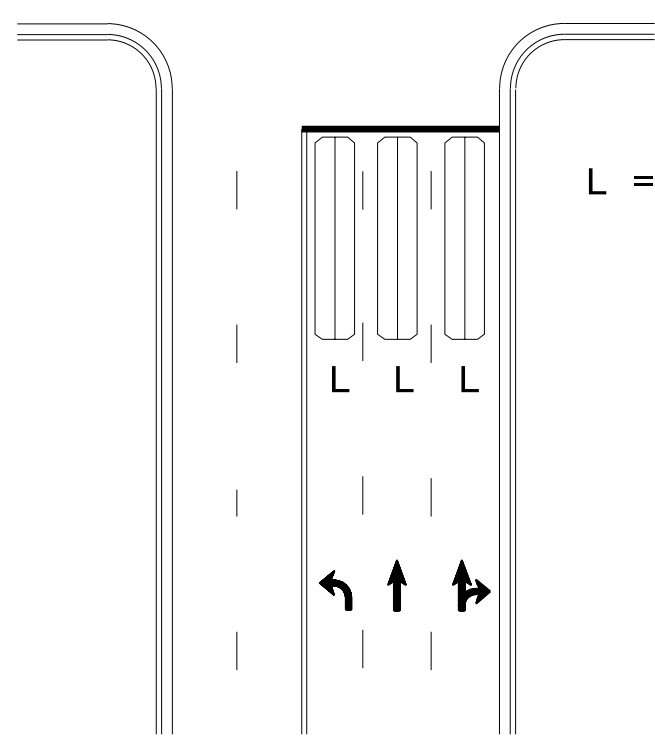


Wide Radius Turn



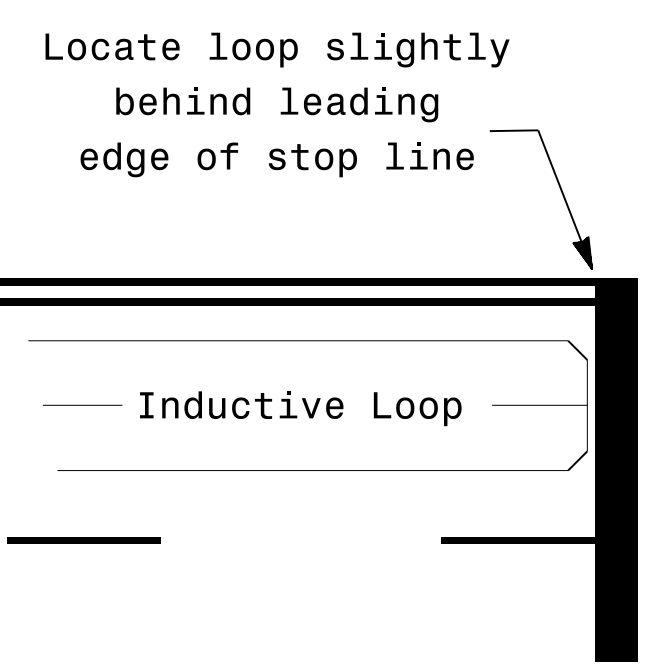
Channelized Turn

Side Street Detection



L = 6ft X 40ft
Quadrupole loop
Wired to separate
detectors/channels

Presence Loop Placement at Stop Lines



Locate loop slightly
behind leading
edge of stop line

- Note:
Loop may be located in advance
of stop line under any of the
following conditions:
- 1) stop line is greater than 15' from edge of intersecting roadway
 - 2) loop detects a permissive or protected/permissive left turn
 - 3) for an exclusive right turn lane

Recommended Number of Turns

Single 6' X 6' loop
(when wired separately):

Length of Lead-in ft	Number of Turns
< 250	3
250-375	4
375-525	5
> 525	6

Quadrupole loops: Use 2-4-2 turns
6' X 15' Loops:
Lead-in < 150', use 2 turns
Lead-in > 150', use 3 turns

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: N/A

Typical Signal Loop Locations

PLAN DATE: January 2015	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:
REVISIONS	INIT. DATE

DocuSigned by:
P. Alexander
1/30/2015

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
PAMELA L. ALEXANDER
23489

SIG. INVENTORY NO.

3D:\146-2015-12-30-SIGNAL\146-2015-12-30-SIGNAL\SIGNAL Design Section\Eastern Region\loop\ypl\ca\2015.dgn
palexander

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
DEEP-CUT INDUCTIVE DETECTION LOOPS
(FOR INSTALLATION PRIOR TO MILLING)

SHEET 1 OF 1

NOTES

- OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
- MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
- WIRE LOOPS CONNECTED TO THE SAME DETECTOR IN SERIES.
- LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS.
- USE A SERIES OF ONE INCH PIECES OF BACKER ROD SPACED ONE FOOT APART ALONG THE ENTIRE LENGTH OF THE FEEDER SLOT AND LOOP SAW SLOT.
- CONSULT LOOP SEALANT MANUFACTURER TO DETERMINE CURING TIME REQUIRED PRIOR TO MILLING.
- REFER TO STANDARD DRAWING 1725.01 SHEETS 2 AND 3 FOR ADDITIONAL REQUIREMENTS.

SAW SLOT DEPTH CHART
ASSUMING 2" MILLING DEPTH

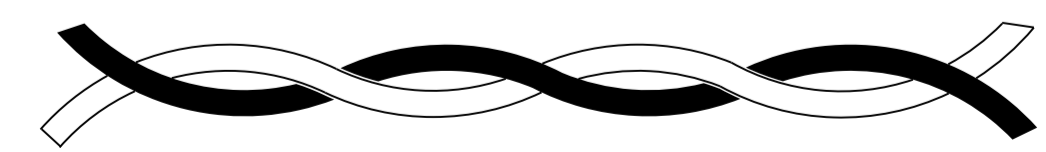
DEPTH (IN)	MAX NO. OF WIRE LAYERS				
	2	3	4	5	6
SAW SLOT DEPTH	4.0	4.5	5.0	5.0	5.0
MINIMUM TOTAL ASPHALT DEPTH REQUIRED	5.0	5.5	6.0	6.0	6.0

LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE



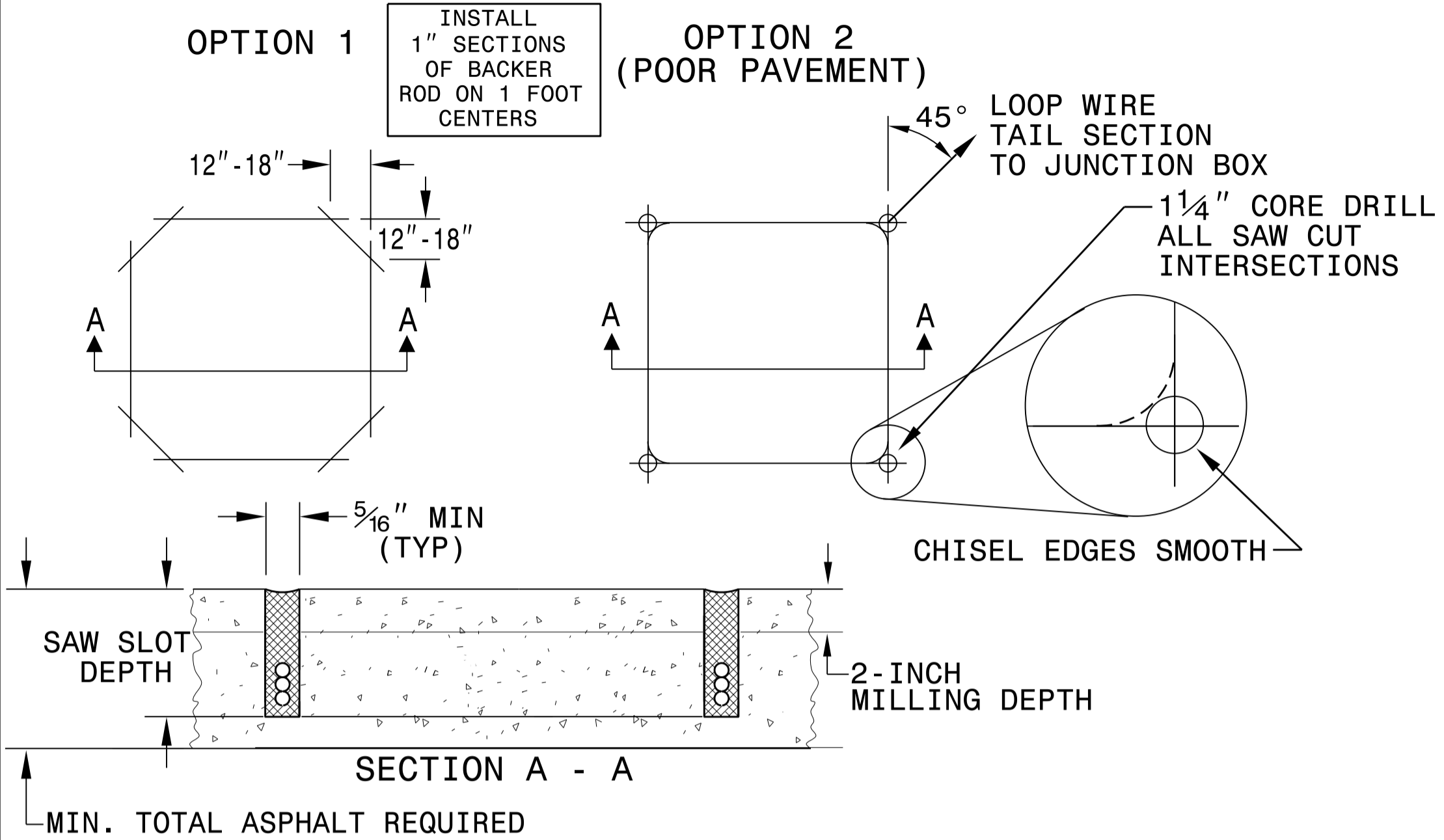
CORRECT WAY TO TWIST WIRE



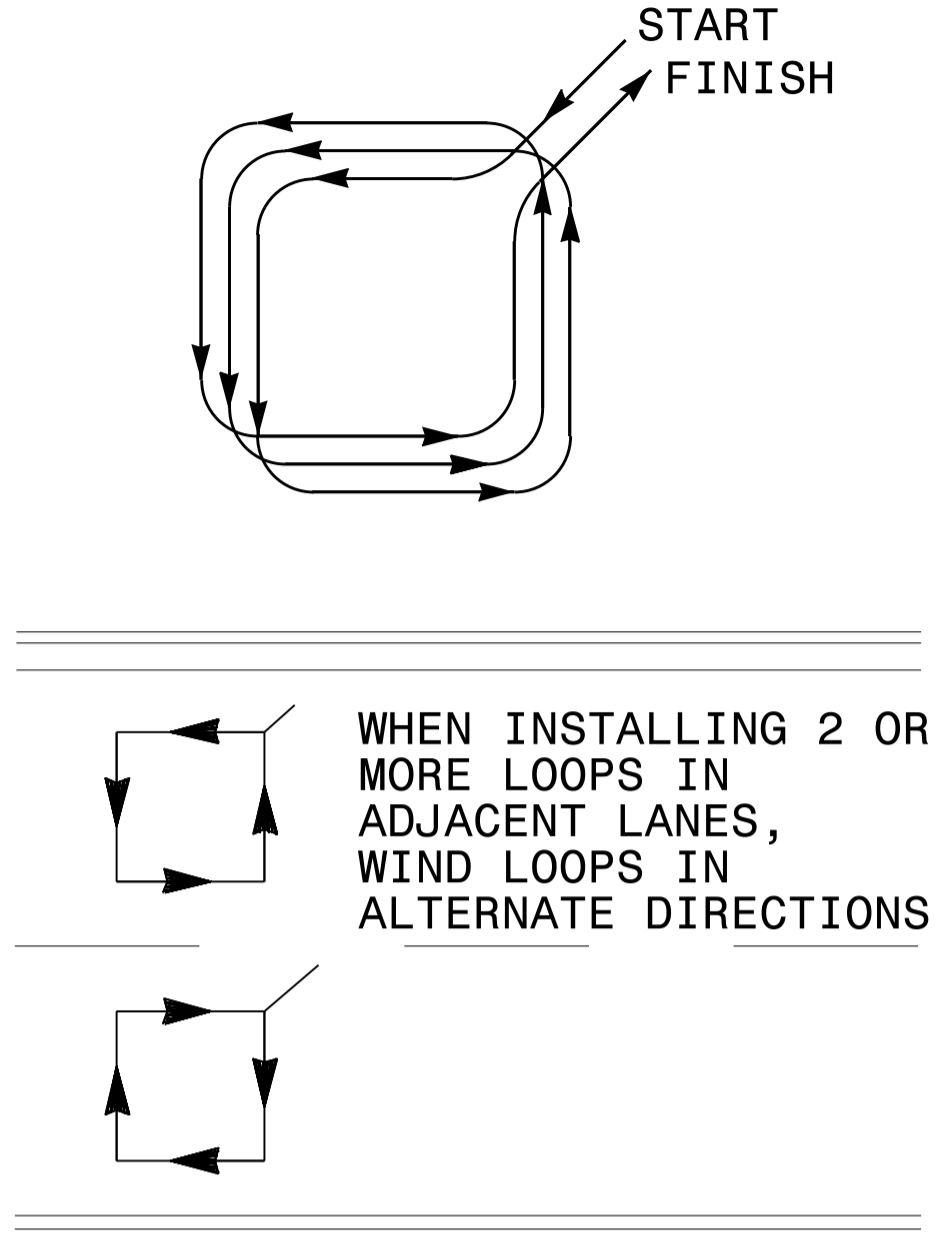
CONVENTIONAL 4-SIDED LOOP

I-5852B SIG-2

SAW CUT OPTIONS

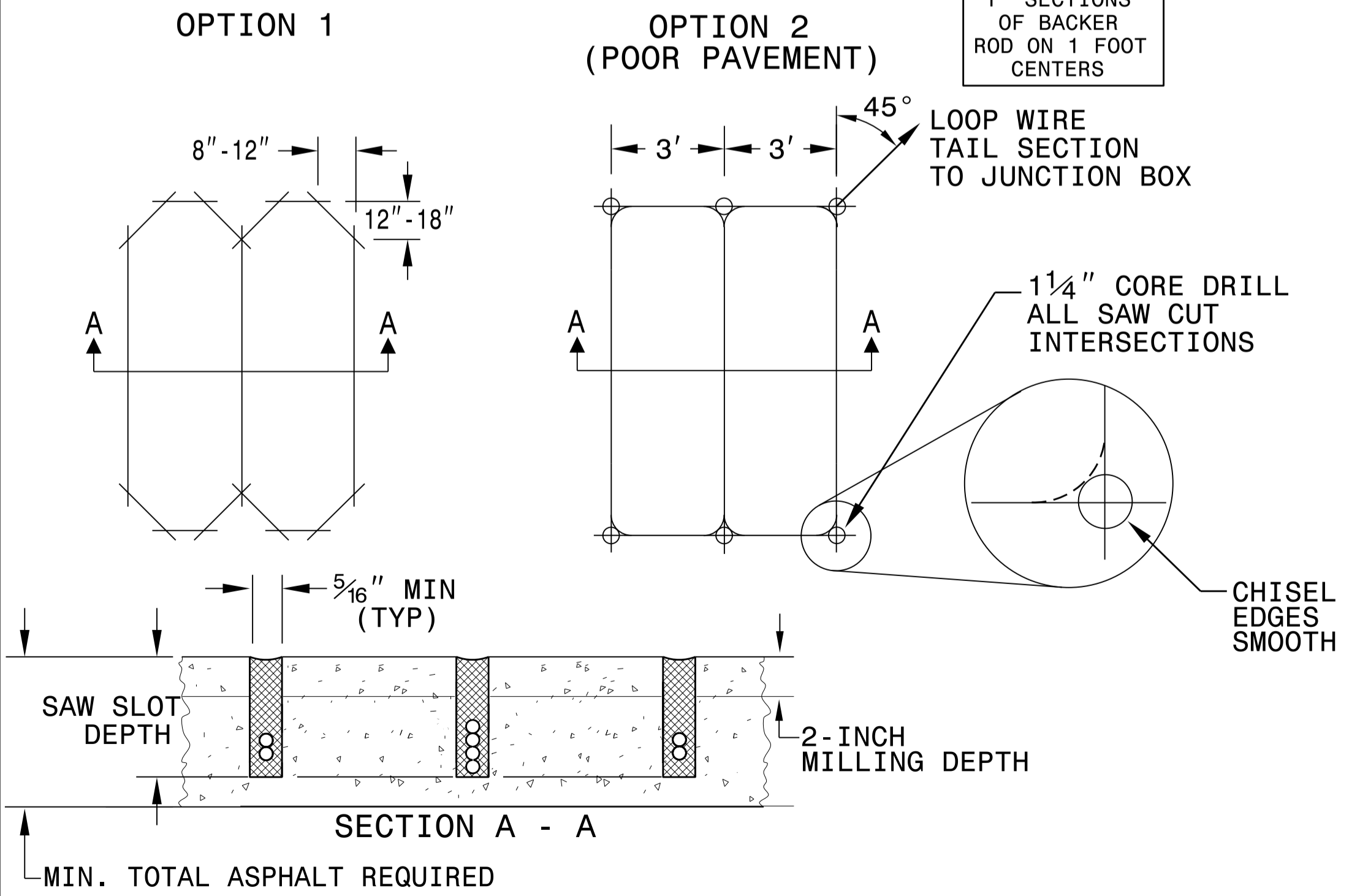


LOOP WINDING METHOD

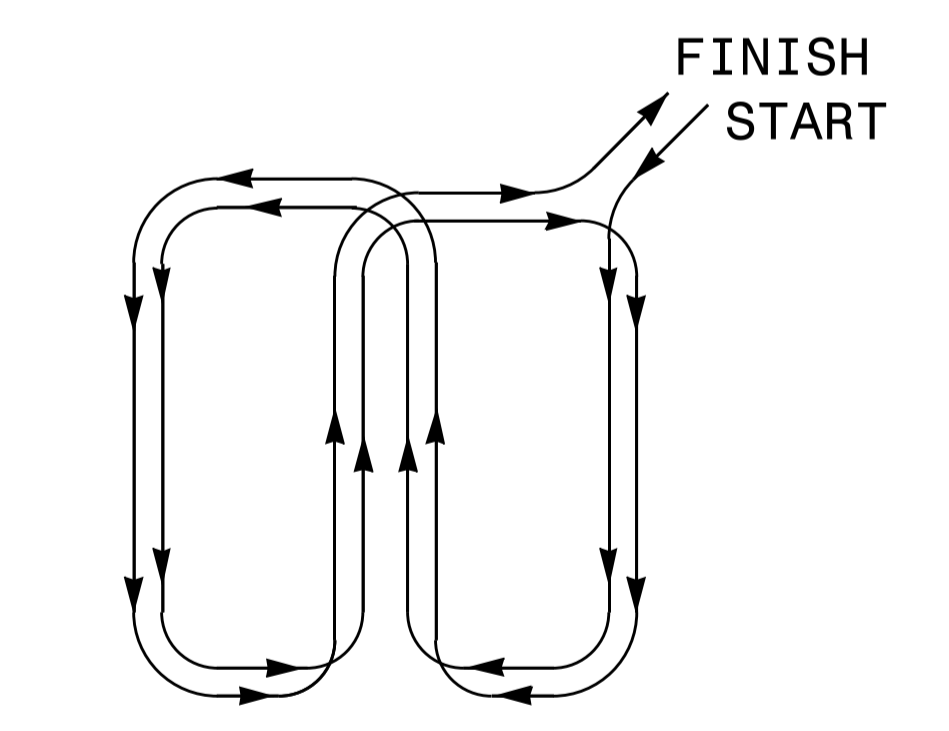


QUADRUPOLE LOOP

SAW CUT OPTIONS

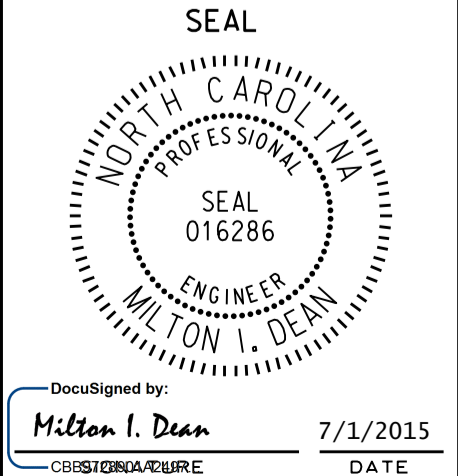
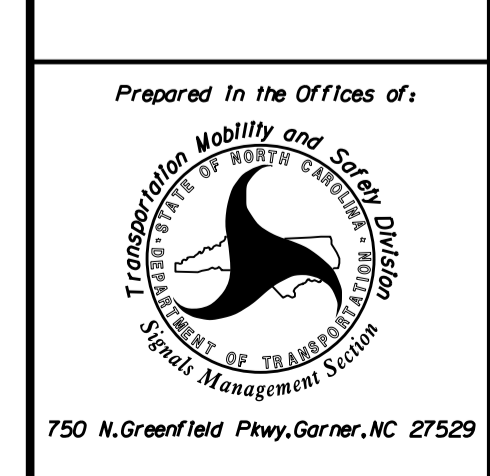


LOOP WINDING METHOD



REVISIONS

1. REMOVED TWISTING NOTES FROM TAIL SECT. TO JUNCTION BOX. 2/26/08 MWH
2. REVISED SECTION A - A DETAILS. 6/29/15 JTP



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SHEET 1 OF 1