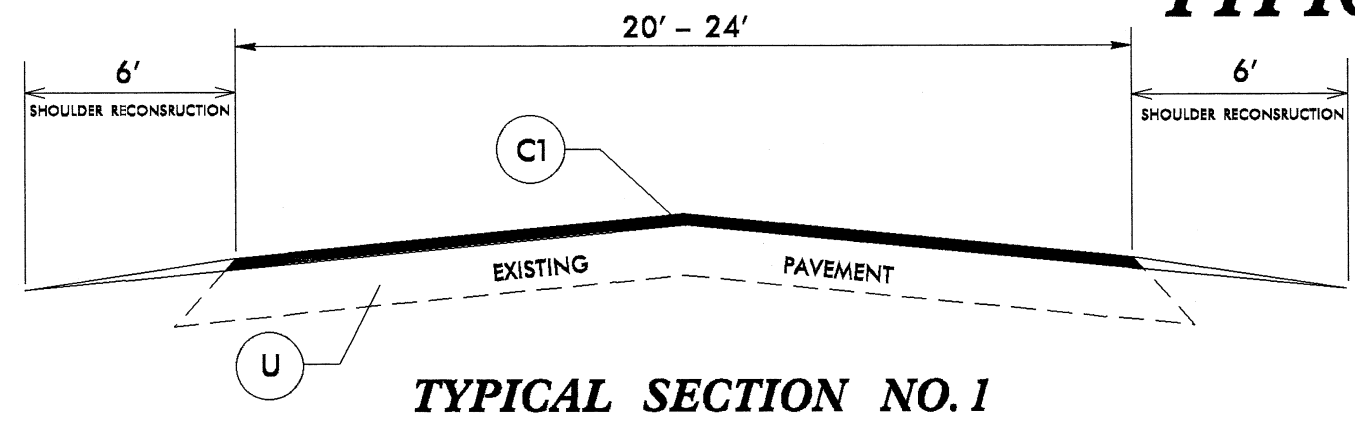
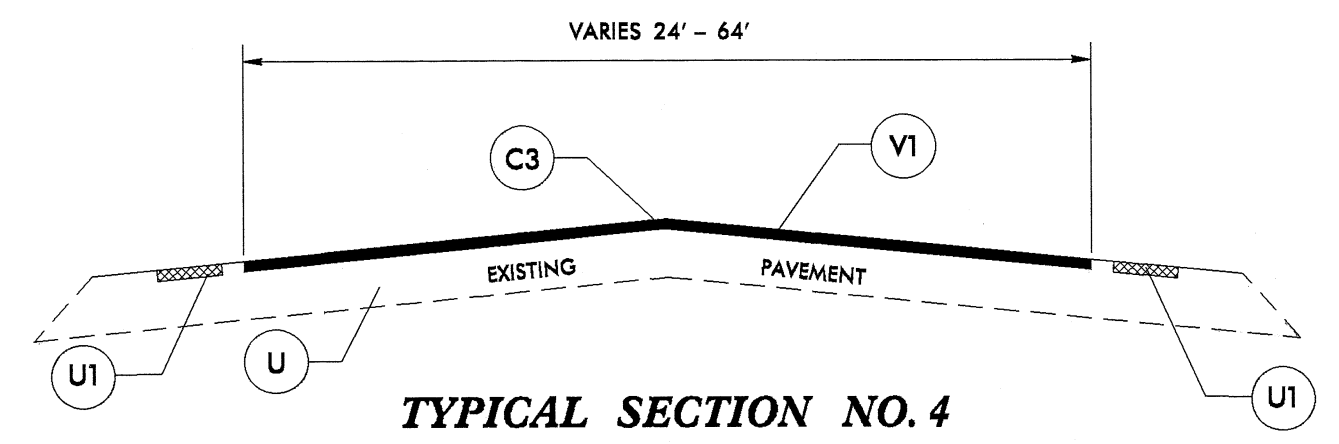


RICHMOND COUNTY

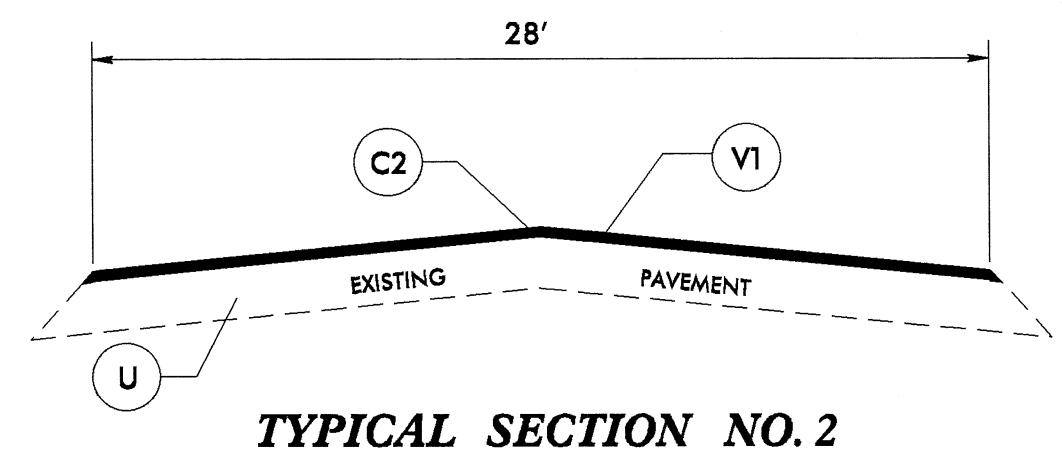
TYPICAL SECTIONS



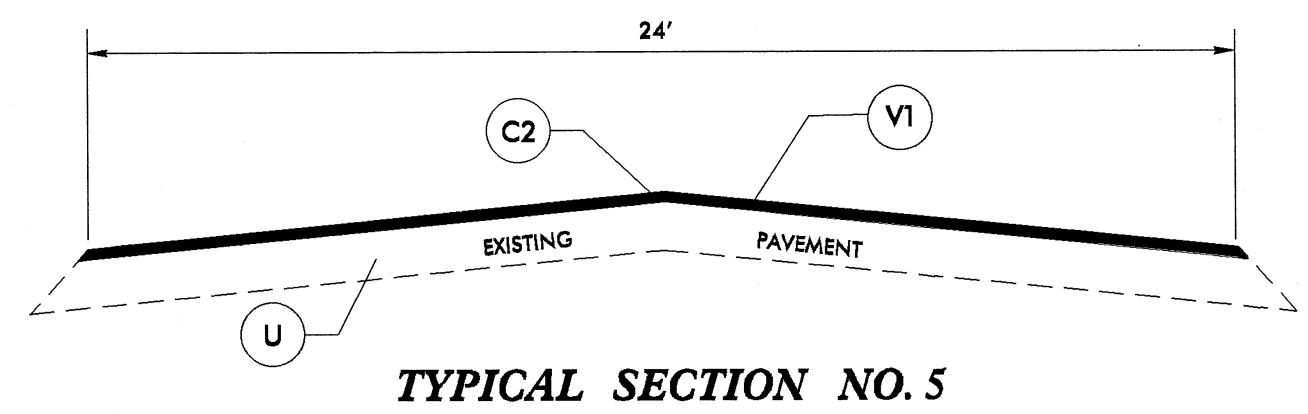
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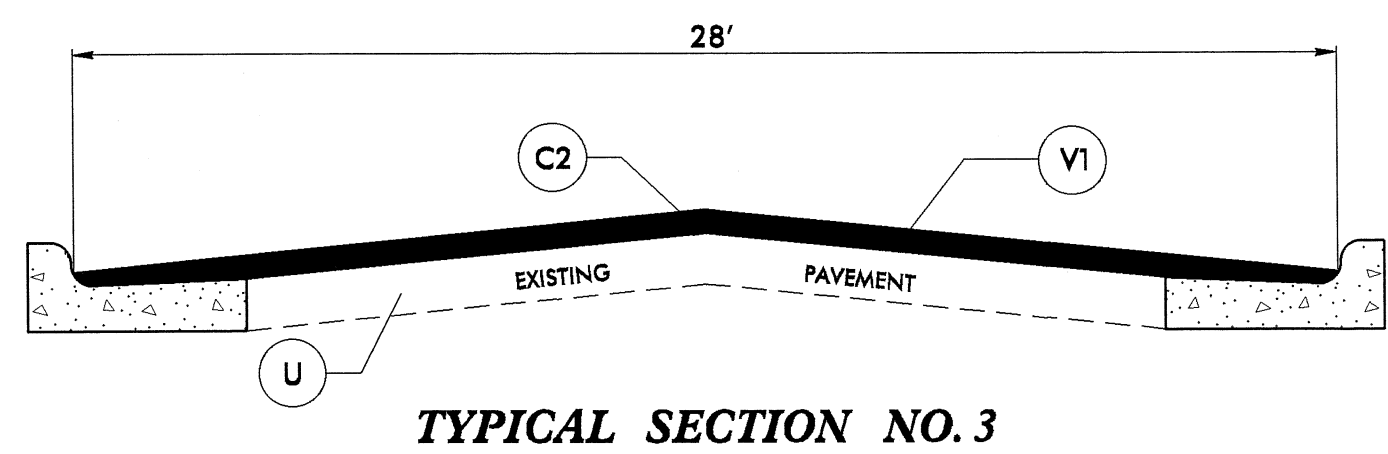
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TYPICAL SECTION NO. 2

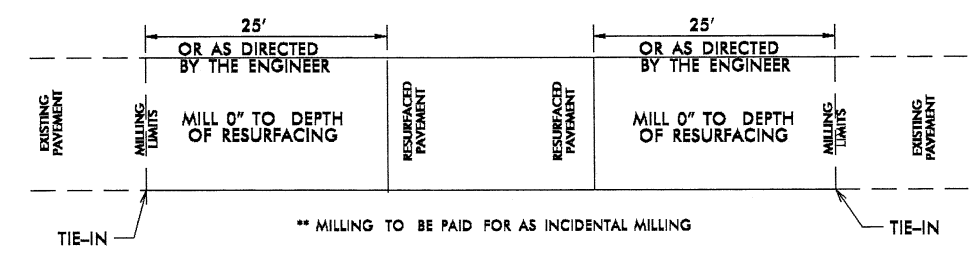


TYPICAL SECTION NO. 5



TYPICAL SECTION NO. 3

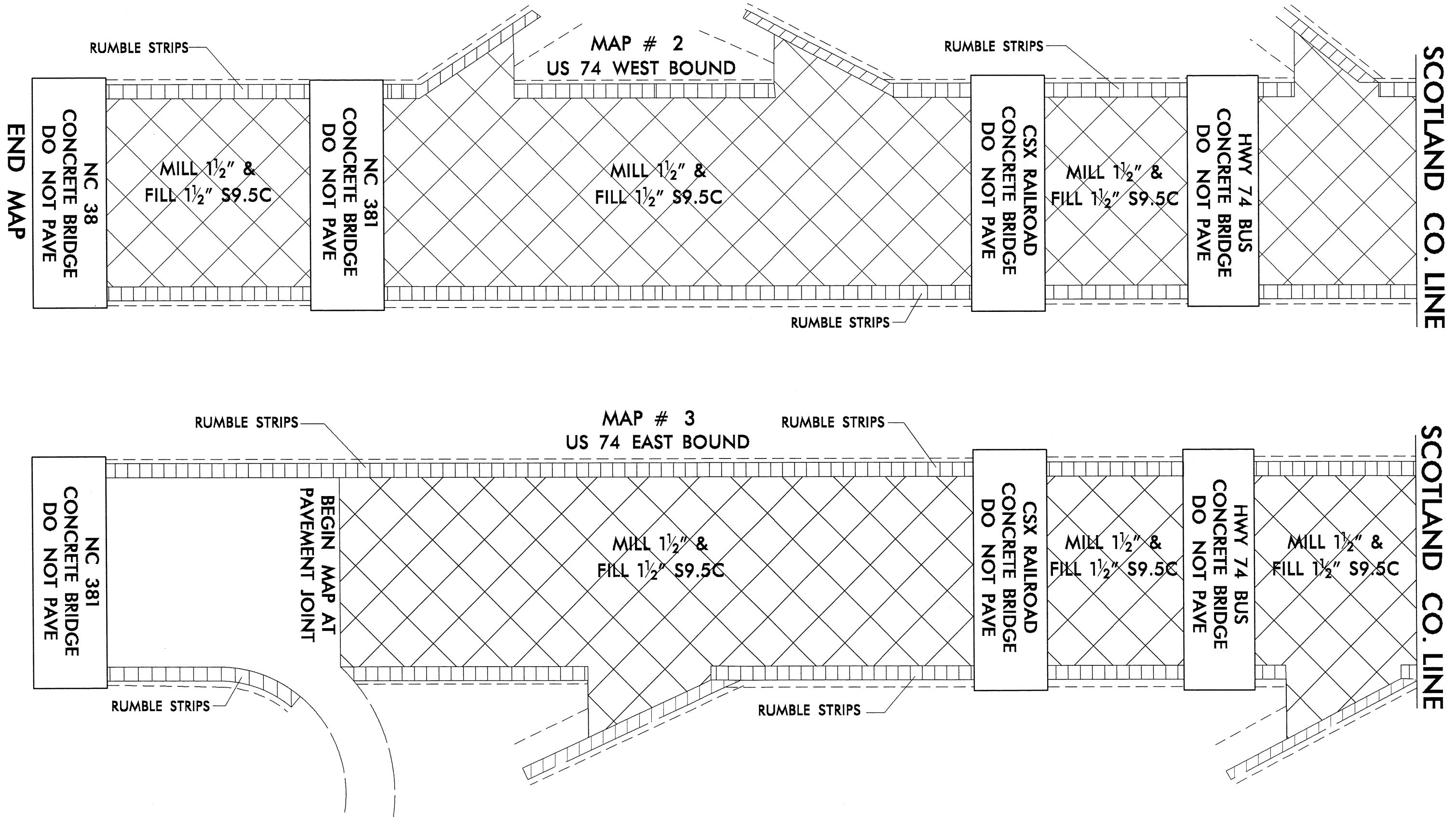
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C2	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
U	EXISTING PAVEMENT
U1	EXISTING MILLED RUMBLE STRIPS
V1	MILLING 1.5" IN DEPTH.



PAVEMENT TIE-IN DETAIL

19-MAY-2014 07:27 Richmond_Submittal_July_2014_Revise Files\Rich4.2015.PRI-SEC-RESURF.dgn

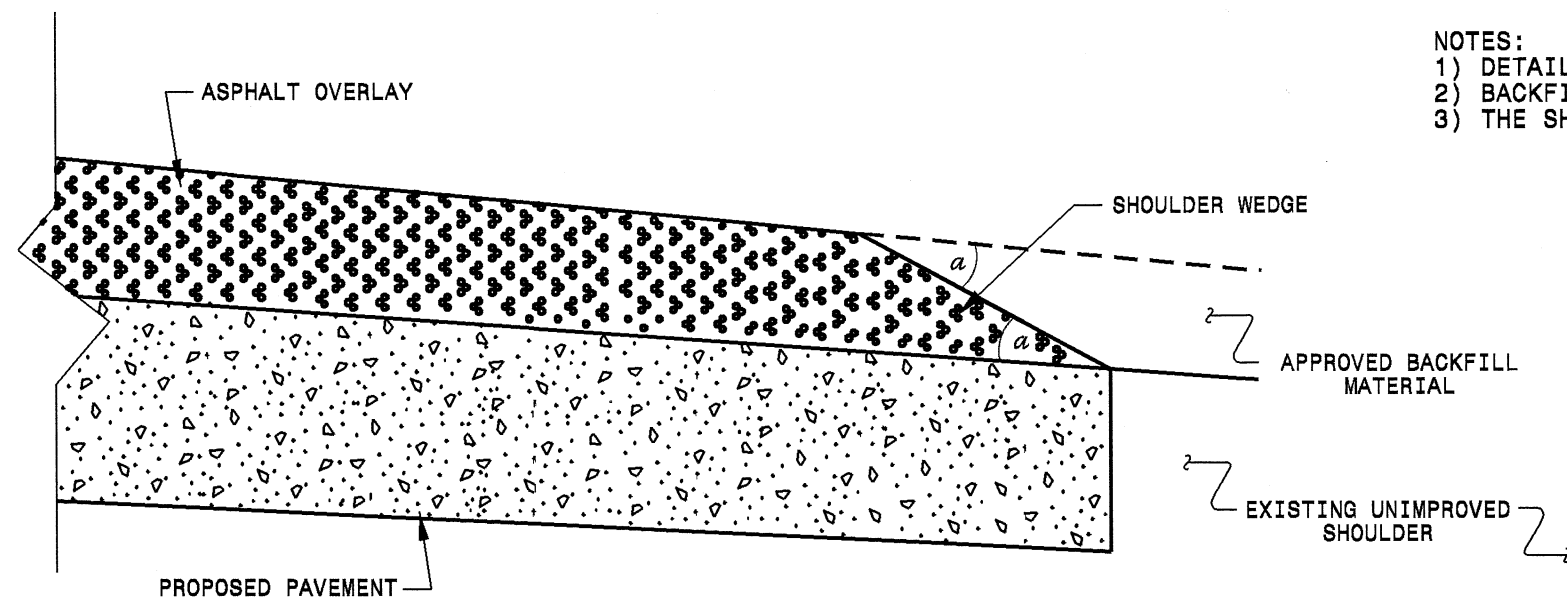
RICHMOND COUNTY



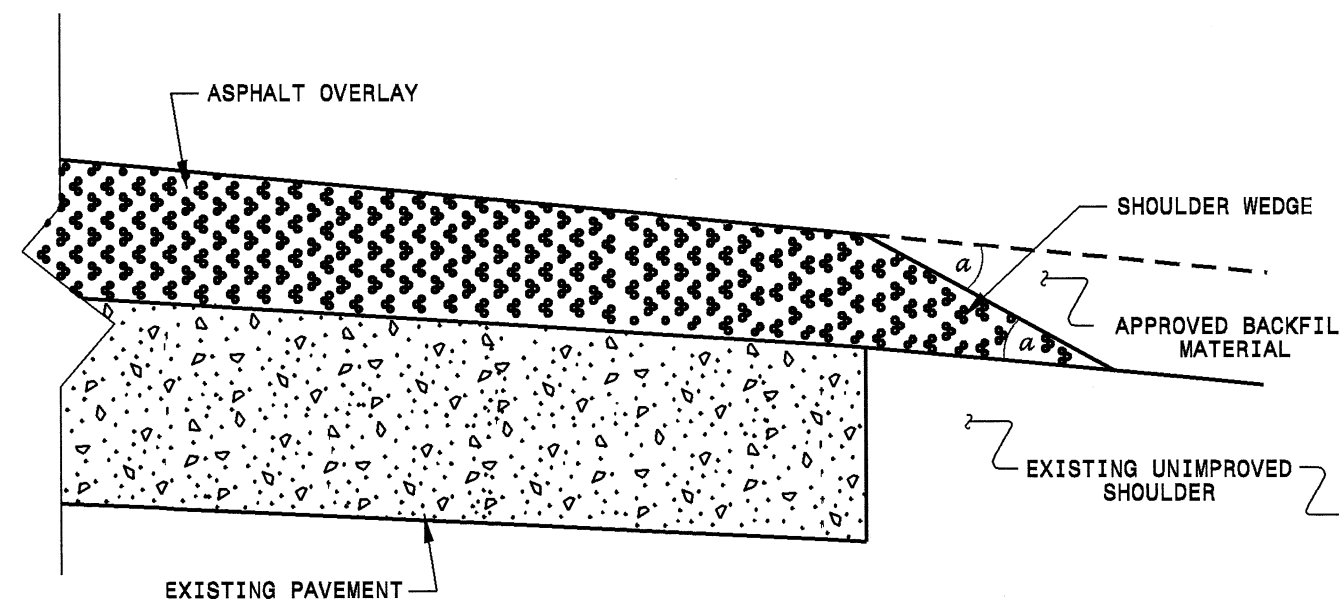
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19-MAY-2014 07:27 C:\richmond\Submittal_July_2014\Revised Files\RICH.2015.PRI.SEC.RESURF.dgn

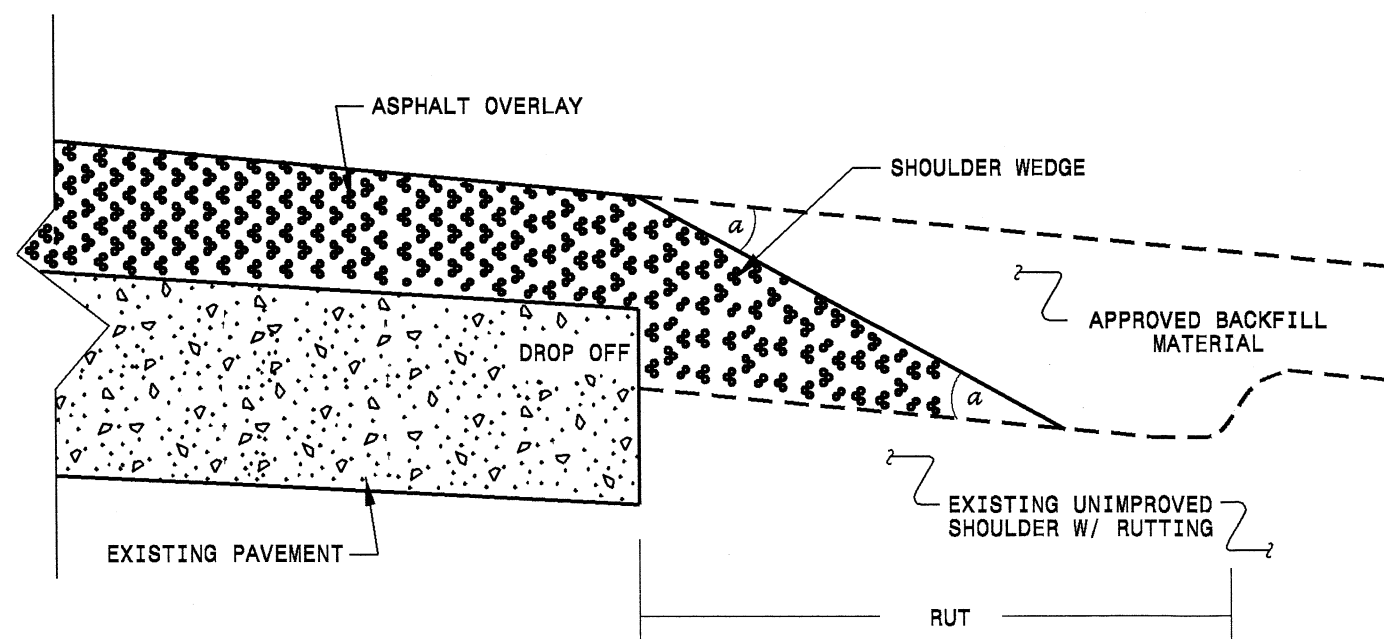
- NOTES:
 1) DETAIL DOES NOT APPLY TO OGAFD AND ULTRA-THIN BONDED WEARING COURSE.
 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



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°

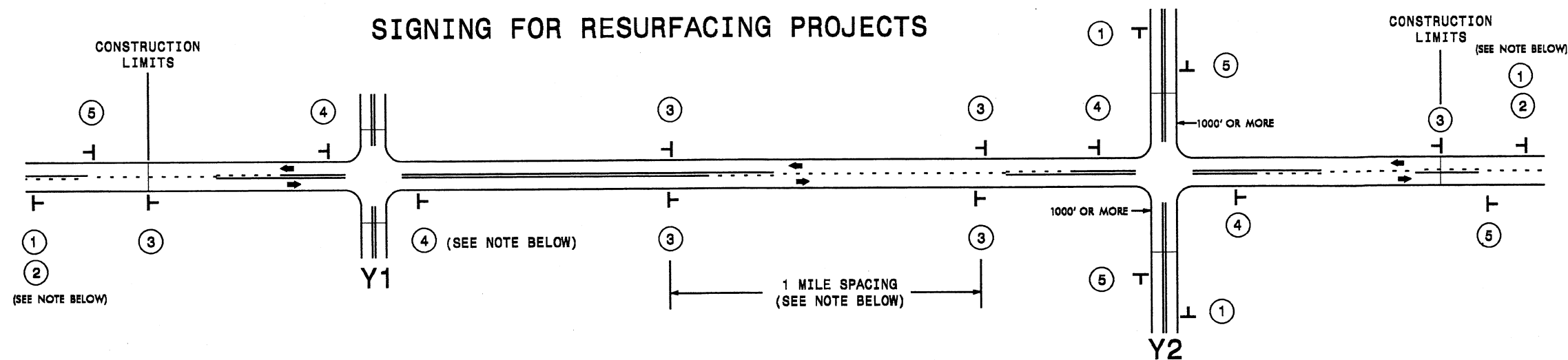
CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
SHOULDER WEDGE DETAILS	
ORIGINAL BY: T.SPELL	DATE: 7-19-11
MODIFIED BY:	DATE: 10/16/12
CHECKED BY:	DATE:
FILE SPEC: s:\user\detail\stand\shoulderwedge\std1.dgn	

PROJECT NO.	SHEET NO.	TOTAL NO.
8CR.10771.24, 8CR.2077124	5	6

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	AGGREGATE SHOULDER BORROW TON	SHOULDER RECONSTRUCTION SMI	1.5" MILLING SY	INCIDENTAL MILLING SY	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, S9.5C TONS	SURFACE COURSE, SF9.5A TON	ASPHALT BINDER FOR PLANT MIX TONS	ADJUST MANHOLES EA	ADJUST METER OR VALVE BOX EA	INDUCTIVE LOOP SAWCUT LF	LEAD-IN CABLE (14-2 PAIR) LF
8CR.10771.24	Richmond	1	US 1	FROM SR 1606 (FOX RD) TO PROJECT R-2501C	5	2	2WU	NO	NO	1.3	24			18,304		1,550			93				
TOTAL FOR MAP NO. 1										1.3				18,304		1,550			93				
8CR.10771.24	Richmond	2	US 74 BYP WB	SCOTLAND CO LINE TO NC 38	4	2	MD	NO	NO	4.56	24-64			73,257			6,185		365				
TOTAL FOR MAP NO. 2										4.56				73,257			6,185		365				
8CR.10771.24	Richmond	3	US 74 BYP EB	FROM NC 381 TO SCOTLAND CO LINE	4	2	MD	NO	NO	3.09	24-64			49,094			4,145		244				
TOTAL FOR MAP NO. 3										3.09				49,094			4,145		244				
TOTAL FOR PROJ NO. 8CR.10771.24										8.95				140,655			1,550		10,330				
8CR.20771.24	Richmond	4	SR 1441 (GREEN LAKE RD)	FROM SR 1442 (LEDBETTER RD) TO SR1450 (GREEN LAKE RD)	1	2	2WU	NO	NO	3.78	22	1,055.00	7.56		100			3,530	237				
TOTAL FOR MAP NO. 4										3.78		1,055.00	7.56		100			3,530	237				
8CR.20771.24	Richmond	5	SR 1442 (LEDBETTER RD)	FROM SR 1423 (RICHMOND RD EXT.) TO SR 1441 (GREEN LAKE RD)	1	2	2WU	NO	NO	0.41	23	115.00	0.82		100			395	26				
TOTAL FOR MAP NO. 5										0.41		115.00	0.82		100			395	26				
8CR.20771.24	Richmond	6	SR 1516 (GREEN ST)	FROM US 1 TO PVMNT CHANGE	2,3	2	2WU	NO	NO	0.4	28			6,571	1,053	595			36	8	8	800	150
TOTAL FOR MAP NO. 6										0.4				6,571	1,053	595			36	8	8	800	150
8CR.20771.24	Richmond	7	SR 1524 (CREEK RUN LANE)	FROM SR 1436 (TERRY BRIDGE RD) TO SR 1423 (RICHMOND RD EXT.)	1	2	2WU	NO	NO	0.31	20	87.00	0.62		100			255	17				
TOTAL FOR MAP NO. 7										0.31		87.00	0.62		100			255	17				
8CR.20771.24	Richmond	8	SR 1549 (LAKESHORE DR)	FROM SR 1423 (RICHMOND RD EXT) TO END MAINT.)	1	2	2WU	NO	NO	0.59	20	165.00	1.18		100			520	35				
TOTAL FOR MAP NO. 8										0.59		165.00	1.18		100			520	35				
8CR.20771.24	Richmond	9	SR 1557 (PINEVIEW CT)	FROM SR 1549 (LAKESHORE DR.) TO DEAD END	1	2	2WU	NO	NO	0.09	20	26.00	0.18		100			75	5				
TOTAL FOR MAP NO. 9										0.09		26.00	0.18		100			75	5				
8CR.20771.24	Richmond	10	SR 1565 (LAKE PT DR)	FROM SR 1549 (LAKESHORE DR) TO END MAINT.	1	2	2WU	NO	NO	0.48	20	135.00	0.96		100			410	27				
TOTAL FOR MAP NO. 10										0.48		135.00	0.96		100			410	27				
8CR.20771.24	Richmond	11	SR 1570 (PAYTON CT)	FROM SR 1565 (LAKE POINT DR.) TO CUL-DE-SAC	1	2	2WU	NO	NO	0.12	20	34.00	0.24		100			100	7				
TOTAL FOR MAP NO. 11										0.12		34.00	0.24		100			100	7				
TOTAL FOR PROJ NO. 8CR.20771.24										6.18		1,617.00	11.56	6,571	1,753	595		5,285	390	8	8	800	150
GRAND TOTAL										15.13		1,617.00	11.56	147,226	1,753	2,145	10,330	5,285	1,092	8	8	800	150

SIGNING FOR RESURFACING PROJECTS

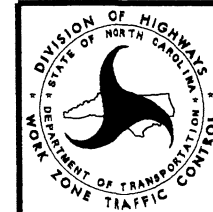


LEGEND	
T	STATIONARY SIGN
←	DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

-Y- LINE SIGNING

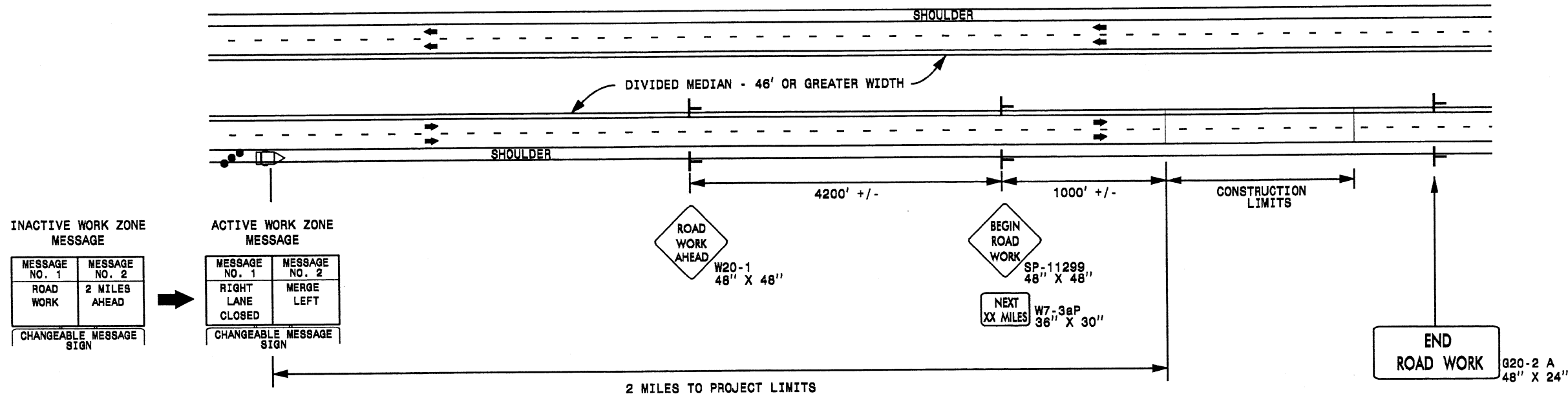
SIGNING NOTES AND PLACEMENT PER DIRECTION	1	2	3	4	5	
	PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	#2 SIGN ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER. (NO FRACTIONAL OR DECIMAL NUMBERS)	PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER. IF NO -Y- LINES EXIST, PLACE 2ND SET 1/2 MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.	THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN.	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.	
	NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:					
	1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE 2) SUBDIVISION ROADS 3) DEAD END ROADS					
WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.						
					PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.	



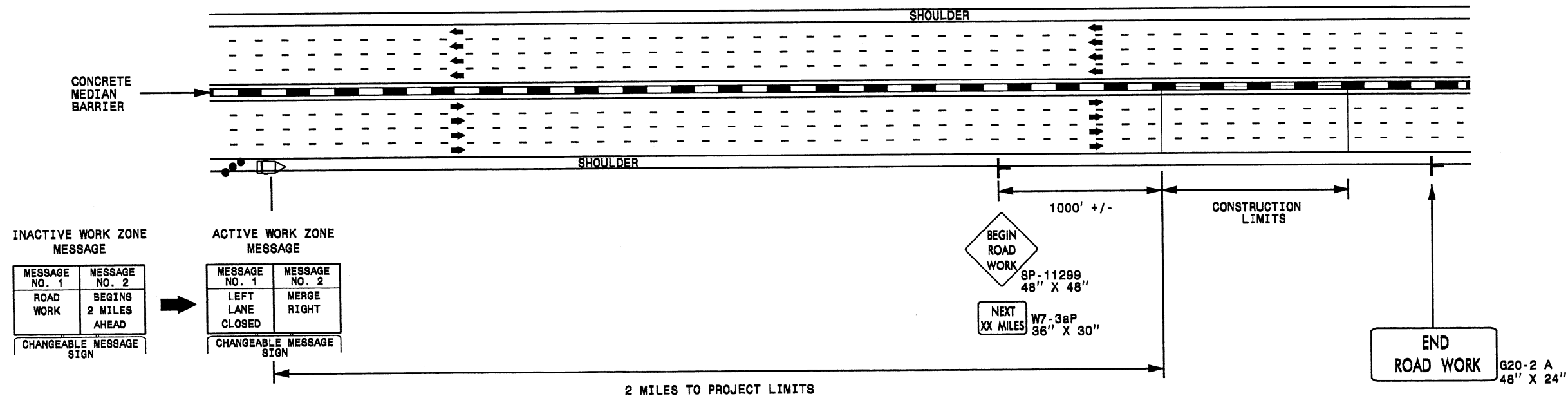
RESURFACING
 ADVANCE WARNING SIGNS
 FOR
 RURAL AND SUBURBAN
 2 LANE ROADWAYS

08-MAY-2014 13:18 C:\div8_projects\Resurfacing\June_2014\Richmond\Richmond_Submittal_July_2014\Resurfacing_AdvWarn_2Ln.dgn gsoavis AT DECAD-210410

DIVIDED MEDIANS WITH WIDTHS 46' OR GREATER



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

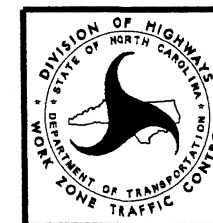


NOTES:

- 1) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 6' AS MEASURED FROM THE EDGE OF PAVEMENT.
- 2) MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
- 3) FOR MEDIAN WIDTHS LESS THAN 46' (MEASURED EDGELINE TO EDGELINE) USE THE BOTTOM DRAWING.
- 4) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 5) INSTALL "ROAD WORK AHEAD" (W20-1) ALONG ENTRANCE RAMP 500' PRIOR TO RAMP TERMINAL, AND "END ROAD WORK" (G20-2a) AT THE END OF EXIT RAMP WITHIN THE WORK ZONE.
- 6) IF MILLED AREAS ARE NOT PAVED BACK BY THE END OF THE WORK DAY, PORTABLE SIGNS SHALL BE USED TO WARN DRIVERS OF THE PRESENT CONDITIONS. THESE ARE TO INCLUDE, BUT NOT LIMITED TO "ROUGH ROAD" W8-8, "UNEVEN LANES" W8-11, "GROOVED PAVEMENT" W8-15 w/MOTORCYCLE PLAQUE MOUNTED BELOW. THESE ARE TO BE DOUBLE INDICATED ON MULTI-LANE ROADWAYS WITH SPEED LIMITS 45 MPH AND GREATER AND WITH DIVIDED MEDIANS OF 46' OR GREATER. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

LEGEND

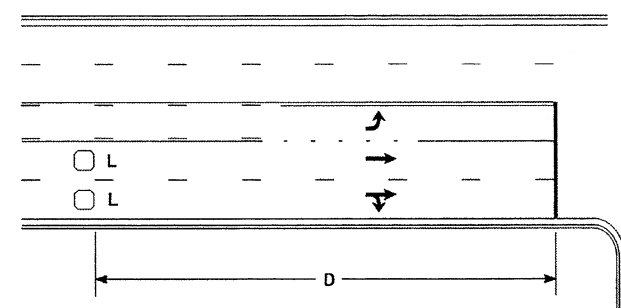
- CHANGEABLE MESSAGE SIGN (CMS)
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- TRAFFIC DRUM



RESURFACING ADVANCE WARNING SIGNS FOR HIGH SPEED FACILITIES ≥ 60 MPH

08-MAY-2014 13:18 C:\div8_projects\Resurfacing\June_2014\Richmond\Richmond_Submittal_July_2014\Resurfacing_AdvWarn_HSP.dgn gsdavis AT DBCAD-270410

High Speed Detection [≥40 mph (64 km/hr)]

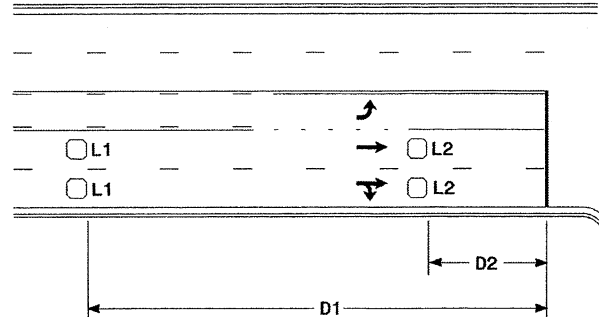


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

L = 6ft X 6ft (1.8m X 1.8m)
Wired in series for TS1
Controllers
Wired separately for TS2,
170, and 2070L Controllers

Volume Density Operation

OR

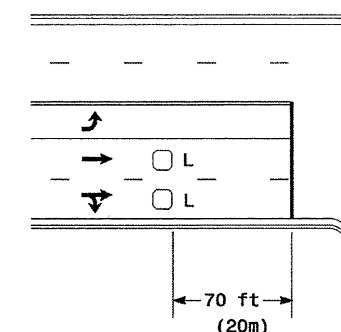


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

L1 = 6ft X 6ft
(1.8m X 1.8m)
Wired in series
L2 = 6ft X 6ft
(1.8m X 1.8m)
Wired in series

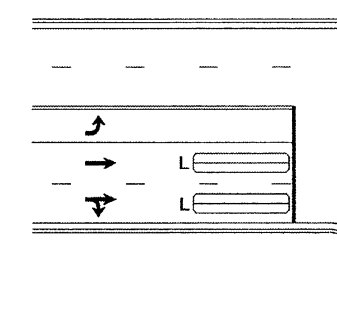
"Stretch" Operation

Low Speed Detection [≤35 mph (56 km/hr)]



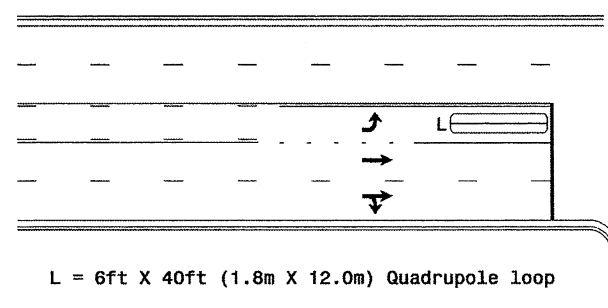
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



L = 6ft X 40ft (1.8m X 12.0m)
Quadrupole loop, wired separately

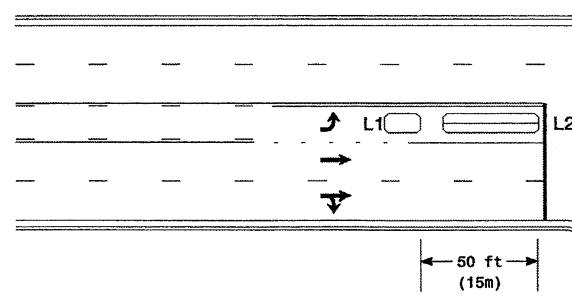
Left Turn Lane Detection



L = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Presence Loop Detection

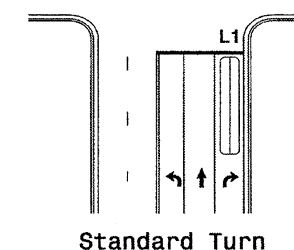
OR



L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

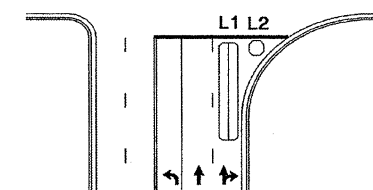
Queue Loop Detection

Right Turn Lane Detection

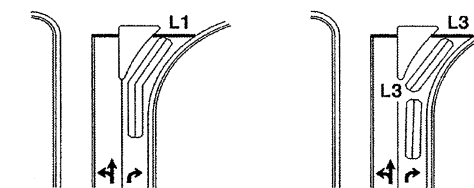


Standard Turn

L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop
Wired separately
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop
Wired in series

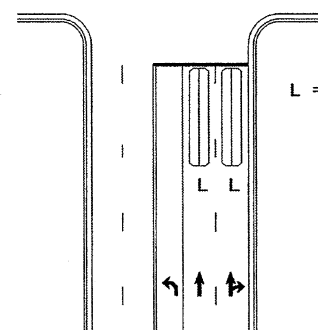


Wide Radius Turn



Channelized Turn

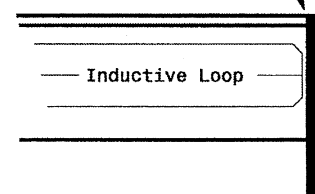
Side Street Detection



L = 6ft X 40ft (1.8m X 12.0m)
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 when stop line is
greater than 15' (4.5m) from edge
of intersecting roadway; or, when
loop detects a permissive or
protected/permissive left turn.

Recommended Number of Turns

Single 6' X 6' (1.8m X 1.8m)
loop (wired separately):

Length of Lead-in ft (m)	Number of Turns
< 250 (75)	3
250-375 (75-115)	4
375-525 (115-160)	5
> 525 (160)	6

Quadrupole loops: Use 2-4-2 turns

6' X 15' (1.8m X 4.6m) Loops:

Lead-in < 150' (45 m), use 2 turns
Lead-in > 150' (45 m), use 3 turns

	<p>Prepared in the Office of:</p> <p>122 N. McDowell St., Raleigh, NC 27603</p>	
	<p>Typical Loop Locations</p>	
<p>SCALE N/A</p>	<p>PLAN DATE: June 2006</p> <p>PREPARED BY: P. L. Alexander</p>	<p>REVIEWED BY:</p> <p>REVISIONS</p> <p>INIT. DATE</p> <p>12/21/06</p>
<p>SIGNATURE</p> <p>DATE</p>		<p>SIG. INVENTORY NO.</p>