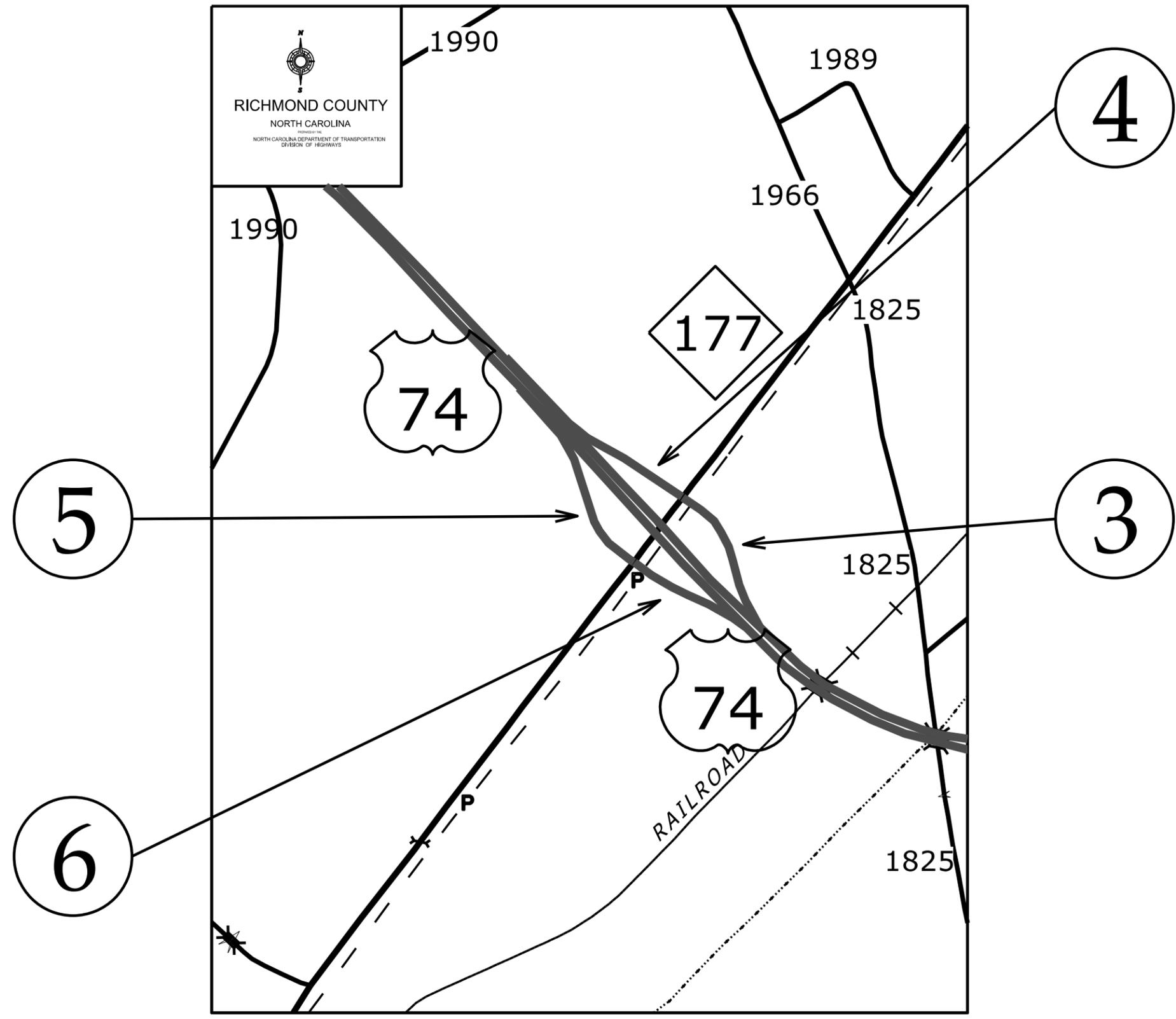




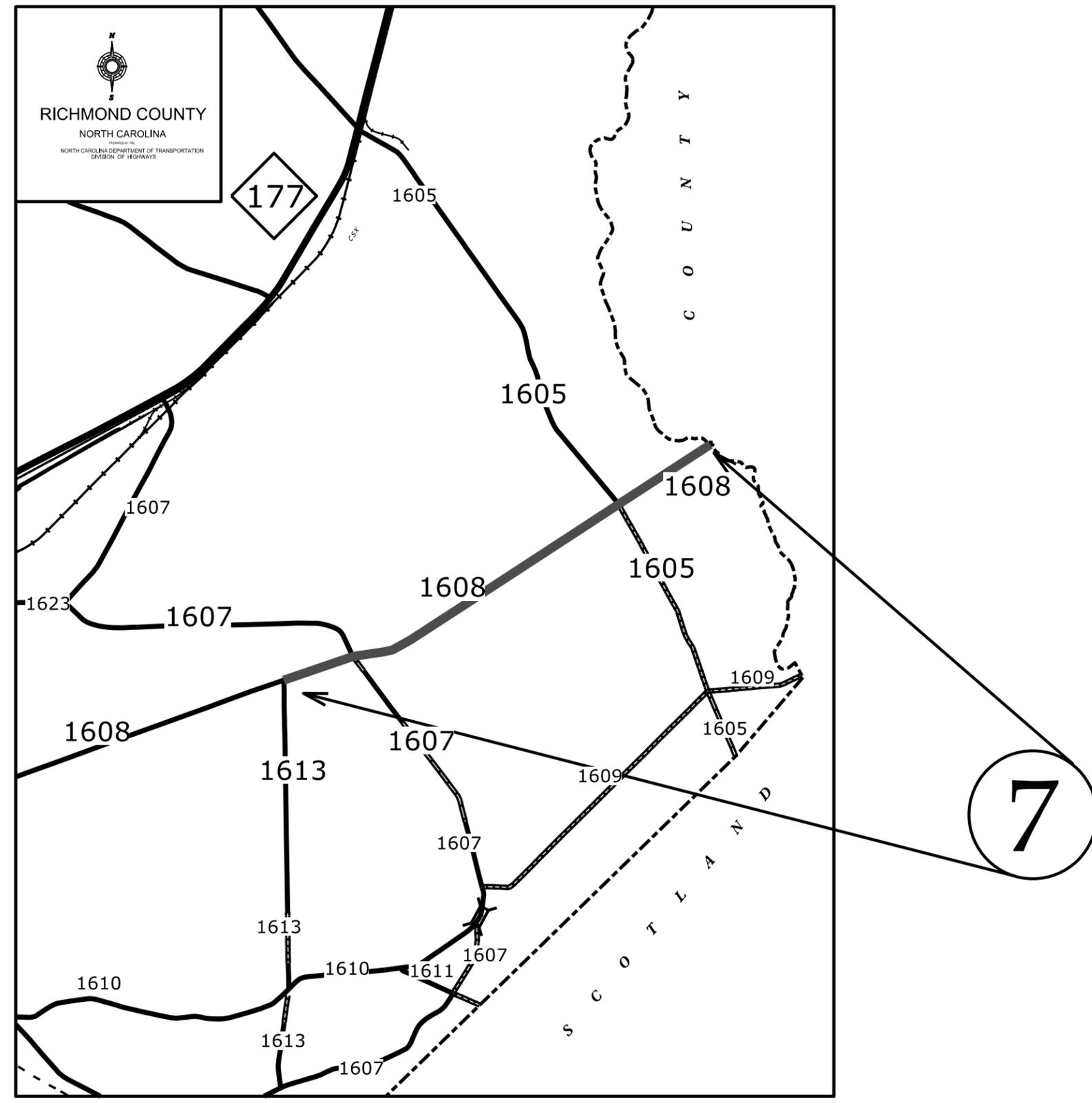


# Maps 3 - 6



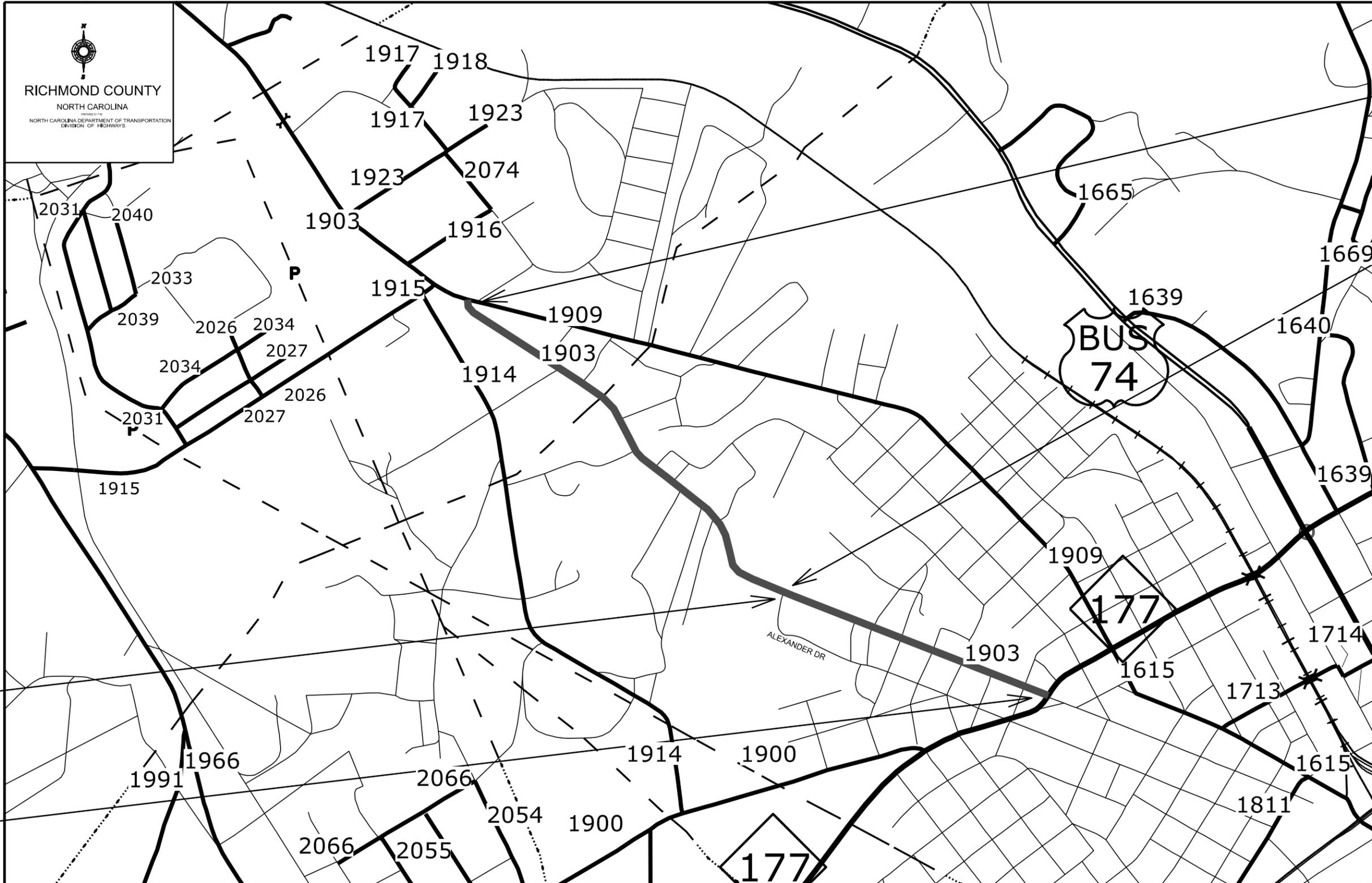
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\$\$\$\$\$STATE\$\$\$\$\$  
\$\$\$\$\$ZIP\$\$\$\$\$  
\$\$\$\$\$PROJECT\$\$\$\$\$  
\$\$\$\$\$SHEET NO. 3\$\$\$\$\$  
\$\$\$\$\$DATE\$\$\$\$\$

# Map 7



\$\$\$\$\$SYTIME\$\$\$\$\$  
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\$\$\$\$\$DATE\$\$\$\$\$  
\$\$\$\$\$SCALE\$\$\$\$\$  
\$\$\$\$\$PROJECT\$\$\$\$\$  
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\$\$\$\$\$TOTAL SHEETS 4\$\$\$\$\$  
\$\$\$\$\$DRAWN BY\$\$\$\$\$  
\$\$\$\$\$DATE\$\$\$\$\$

# Maps 8 & 12



12

8

\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$DATE\$\$\$\$\$  
\$\$\$\$\$USER\$\$\$\$\$  
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\$\$\$\$\$STATE\$\$\$\$\$  
\$\$\$\$\$ZIP\$\$\$\$\$  
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\$\$\$\$\$CITY\$\$\$\$\$  
\$\$\$\$\$STATE\$\$\$\$\$  
\$\$\$\$\$ZIP\$\$\$\$\$  
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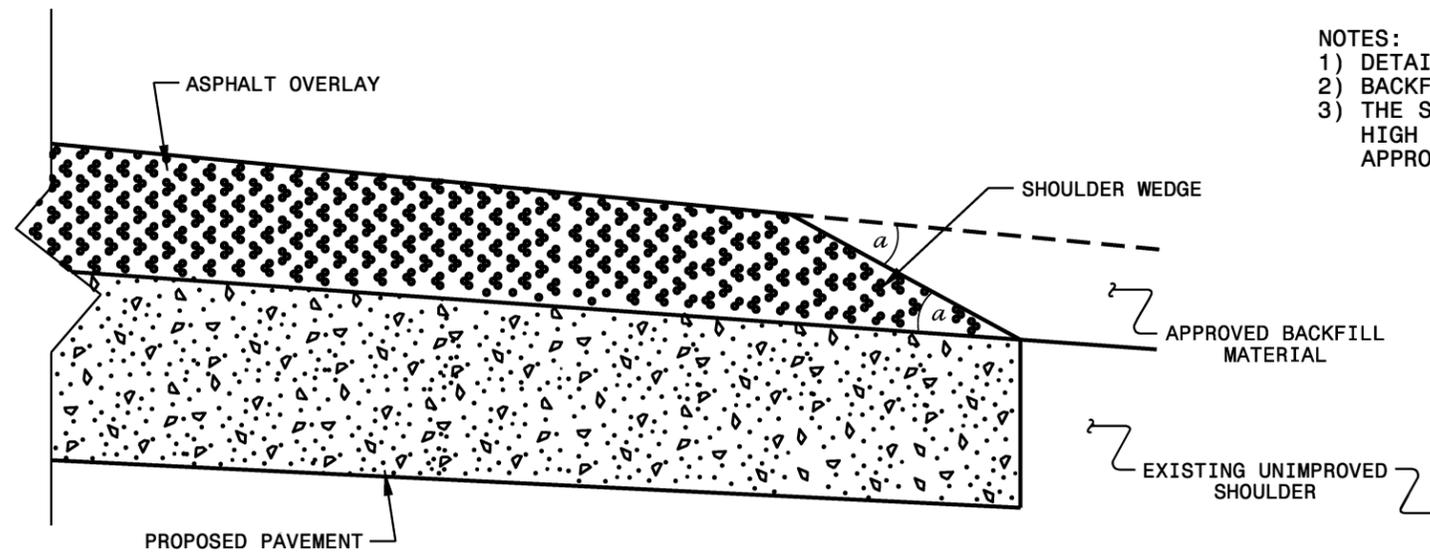






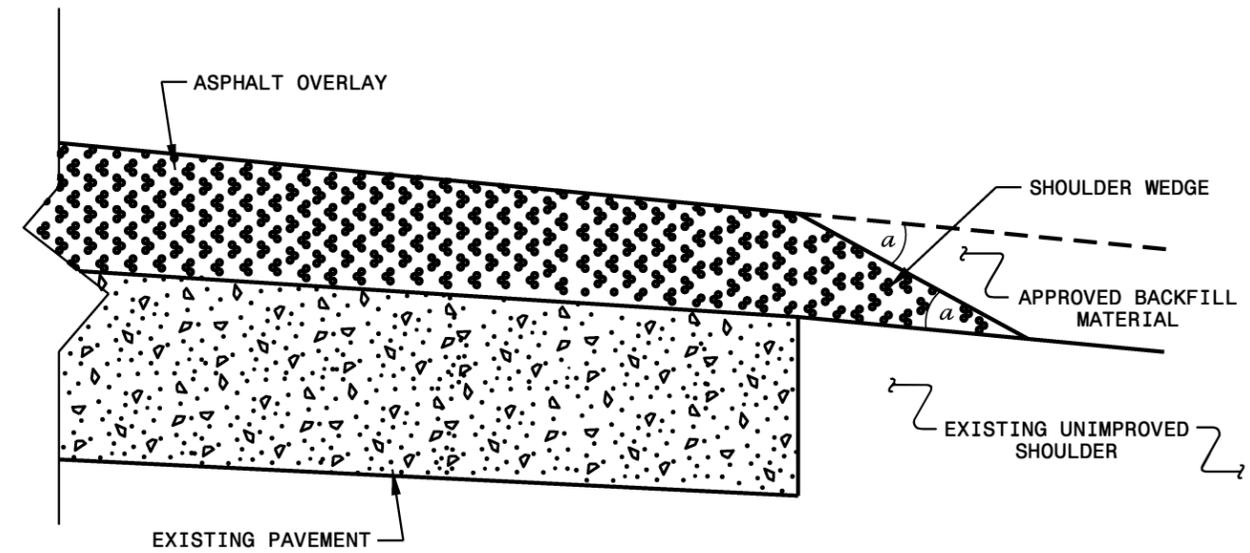
**NOTES:**

- 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.



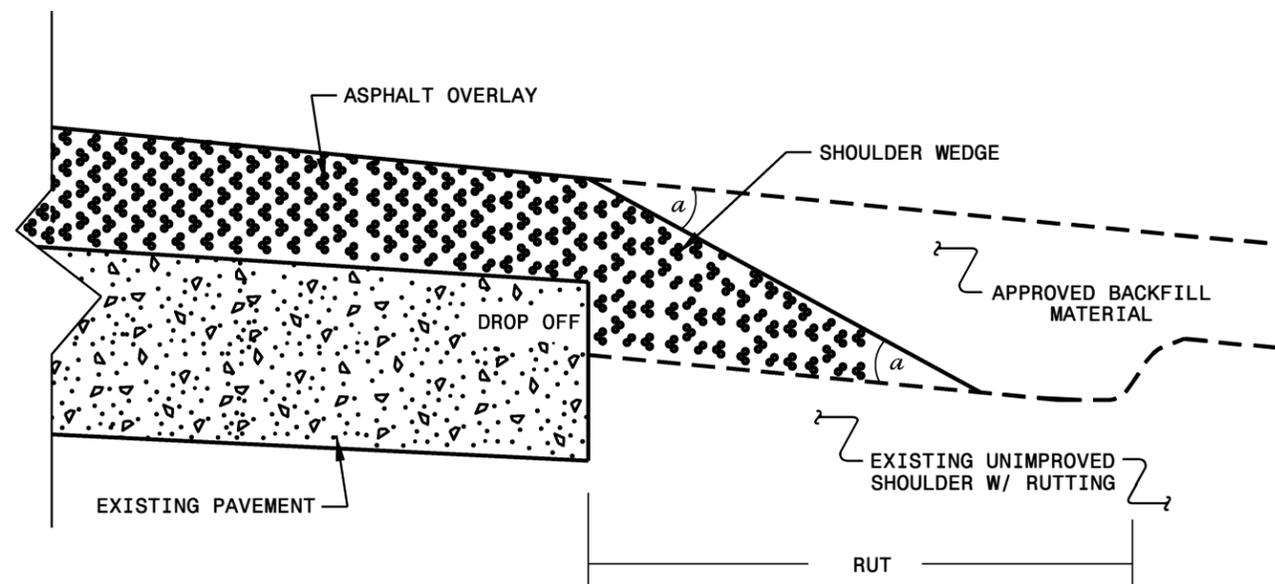
**SHOULDER WEDGE DETAIL**

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



**SHOULDER WEDGE DETAIL**

(Resurfacing Projects w/ NO Widening)



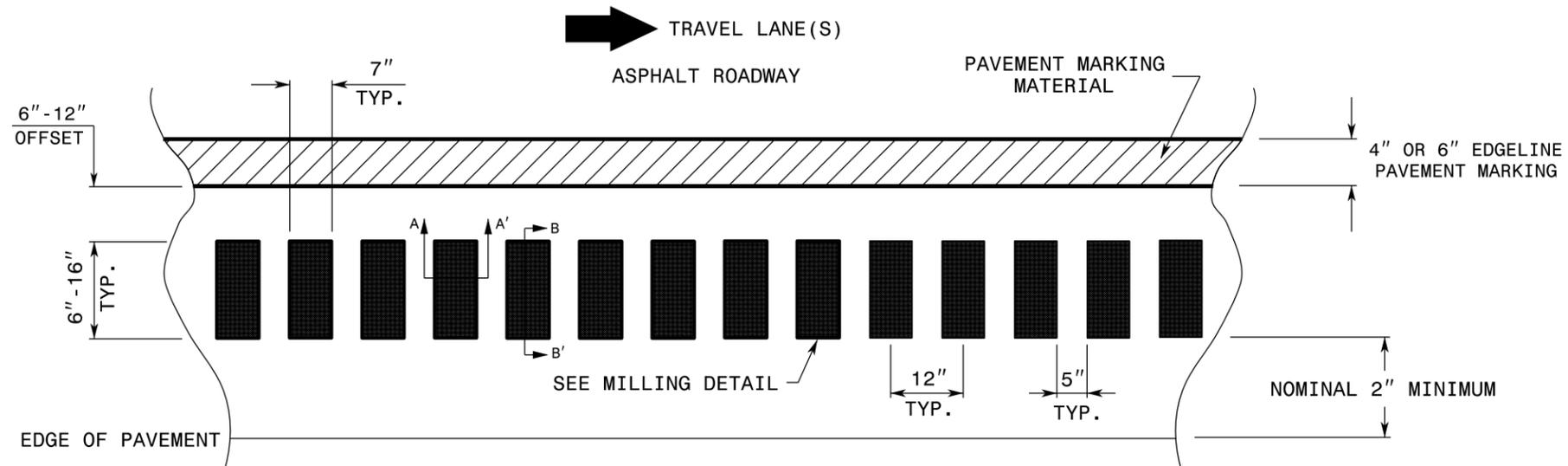
**SHOULDER WEDGE DETAIL**

(Resurfacing Adjacent to Rutted Shoulder)

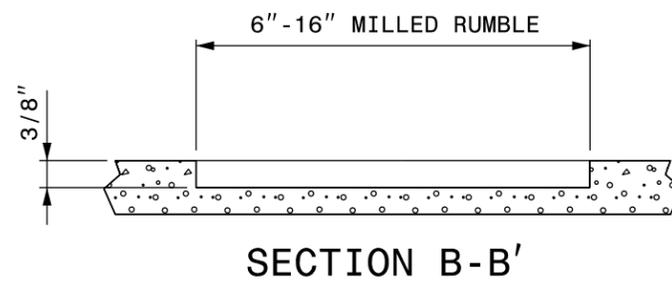
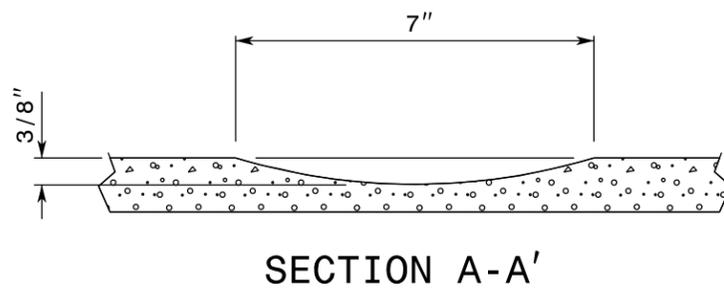
- SHOULDER WEDGE ANGLE = 30°

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

See Table 1 within Rumble Strip Policy for Design Guidance



**MILLING DETAIL:**



REFERENCE DRAWING ID: Trad.Strip

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

ROADWAY DETAIL DRAWING FOR  
**RUMBLE STRIPS / STRIPES**  
TRADITIONAL SHOULDER RUMBLE STRIP

SHEET 1 OF 9

**CONTRACTS STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-8950 FAX 919-250-4119

Milled Rumble Strips

ORIGINAL BY: C. SIMPSON DATE: 04-24-2025  
MODIFIED BY: DATE: \_\_\_\_\_  
CHECKED BY: DATE: \_\_\_\_\_  
FILE SPEC.: \_\_\_\_\_



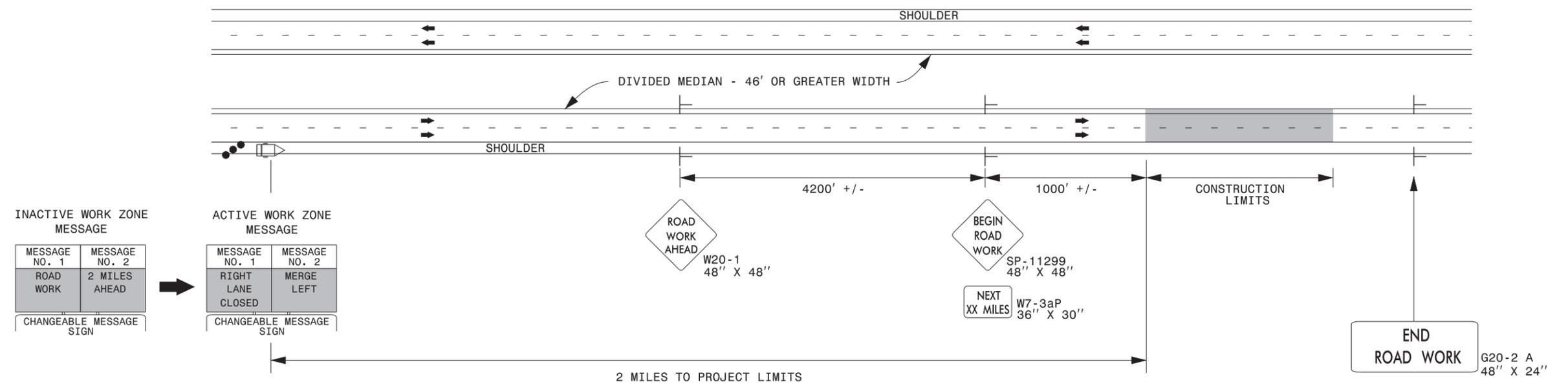
PROJECT NO.	SHEET NO.	TOTAL NO.
2026CPT.08.11.10771, 2026CPT.08.11.20771	20	

## SUMMARY OF QUANTITIES

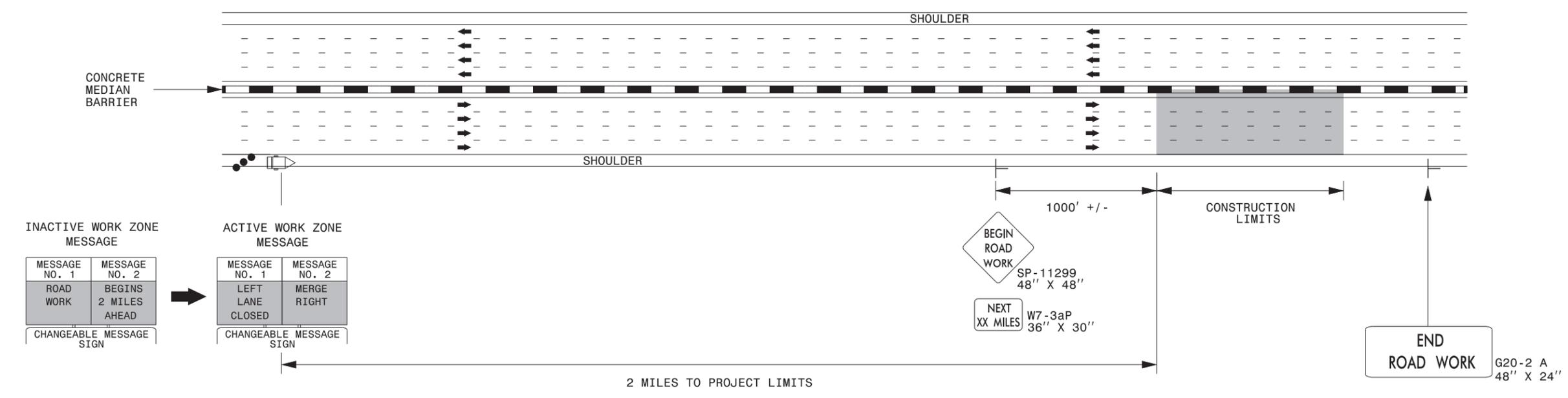
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	BEG N MP	END MP	1245000000-E	1260000000-E	1297000000-E	1330000000-E	1503000000-E	1519000000-E	1523000000-E	1575000000-E	1704000000-E	1841000000-E	2830000000-N	2845000000-N	5255000000-N	7444000000-E			
												SHOULDER RECONSTRUCTION	AGGREGATE SHOULDER BORROW	1.5" MILLING	INCIDENTAL MILLING	INTERMEDIATE COURSE, I19.0C	SURFACE COURSE, S9.5B	SURFACE COURSE, S9.5C	ASPHALT BINDER FOR PLANT MIX	PATCHING EXISTING PAVEMENT	GENERIC PAVING ITEM - MILLED RUMBLE STRIPS (12")	ADJUST MANHOLES	ADJUST METER OR VALVE BOX	PORTABLE LIGHTING	INDUCTIVE LOOP SAWCUT			
												SMI	TON	SY	SY	TONS	TONS	TONS	TONS	TONS	LF	EA	EA	LS	LF			
2026CPT.08.11.10771	Richmond	1	US-74 W	FROM MARKS CREEK BRIDGE TO SR 1108 (MIZPAH RD.)	1	2	2WD	5.020	25	6.480	11.500			74,363	2,240			7,078	430	253								
<b>TOTAL FOR MAP NO. 1</b>								<b>5.020</b>						<b>74,363</b>	<b>2,240</b>			<b>7,078</b>	<b>430</b>	<b>253</b>								
2026CPT.08.11.10771	Richmond	2	US-74 E	FROM SR 1108 (MIZPAH RD.) TO BRIDGE AT MARKS CREEK	1	2	2WD	5.040	25	6.250	11.290			74,013	2,755			7,091	422	83								
<b>TOTAL FOR MAP NO. 2</b>								<b>5.040</b>						<b>74,013</b>	<b>2,755</b>			<b>7,091</b>	<b>422</b>	<b>83</b>								
2026CPT.08.11.10771	Richmond	3	RMP-5404 OI	FROM BACK OF GORE TO BACK OF RADIUS (MP 0.3)	2	1		0.247	25	0.053	0.300	0.48	67.00	4,155				384	23		55							
<b>TOTAL FOR MAP NO. 3</b>								<b>0.247</b>				<b>0.48</b>	<b>67.00</b>	<b>4,155</b>				<b>384</b>	<b>23</b>		<b>55</b>							
2026CPT.08.11.10771	Richmond	4	RMP-5405 OI	FROM BACK OF RADIUS (MP 0.02) TO BACK OF GORE	2	1		0.211	25	0.020	0.231	0.42	58.86	3,022				279	16		50							
<b>TOTAL FOR MAP NO. 4</b>								<b>0.211</b>				<b>0.42</b>	<b>58.86</b>	<b>3,022</b>				<b>279</b>	<b>16</b>		<b>50</b>							
2026CPT.08.11.10771	Richmond	5	RMP-5406 OI	FROM BACK OF GORE TO BACK OF RADIUS (MP 0.31)	2	1		0.250	25	0.060	0.310	0.50	69.73	4,015				371	22		50							
<b>TOTAL FOR MAP NO. 5</b>								<b>0.250</b>				<b>0.50</b>	<b>69.73</b>	<b>4,015</b>				<b>371</b>	<b>22</b>		<b>50</b>							
2026CPT.08.11.10771	Richmond	6	RMP-5407 OI	FROM BACK OF RADIUS (MP 0.02) TO BACK OF GORE	2	1		0.205	25	0.020	0.225	0.38	53.03	2,722				252	15		50							
<b>TOTAL FOR MAP NO. 6</b>								<b>0.205</b>				<b>0.38</b>	<b>53.03</b>	<b>2,722</b>				<b>252</b>	<b>15</b>		<b>50</b>							
<b>TOTAL FOR PROJ NO. 2026CPT.08.11.10771</b>								<b>10.973</b>				<b>1.78</b>	<b>248.62</b>	<b>162,290</b>	<b>4,995</b>				<b>15,455</b>	<b>928</b>	<b>336</b>	<b>205</b>			<b>1</b>			
2026CPT.08.11.20771	Richmond	7	SR-1608 / BOYD LAKE RD	FROM SCOTLAND CO. LINE TO SR 1613 (COLES STORE RD.)	3	2	2WU	2.900	20	0.000	2.900	5.65	790.81				1,050	3,201		213	103							
<b>TOTAL FOR MAP NO. 7</b>								<b>2.900</b>				<b>5.65</b>	<b>790.81</b>				<b>1,050</b>	<b>3,201</b>		<b>213</b>	<b>103</b>							
2026CPT.08.11.20771	Richmond	8	SR-1903 / MCDONALD AV	FROM END OF SIDEWALK/ C&G TO SR 1909 (HYLAN AVE)	3	2	2WU	1.090	24	0.650	1.740	2.18	300.00				950	1,427		95	38		1	3				
<b>TOTAL FOR MAP NO. 8</b>								<b>1.090</b>				<b>2.18</b>	<b>300.00</b>				<b>950</b>	<b>1,427</b>		<b>95</b>	<b>38</b>		<b>1</b>	<b>3</b>				
2026CPT.08.11.20771	Richmond	9	SR-1324 / ALLRED RD	FROM SR 1153 (COUNTY LINE RD.) TO SR 1321 (CAPEL MILL RD.)	3	2	2WU	1.650	16	0.000	1.650	3.24	453.70				411	1,452		96	32							
<b>TOTAL FOR MAP NO. 9</b>								<b>1.650</b>				<b>3.24</b>	<b>453.70</b>				<b>411</b>	<b>1,452</b>		<b>96</b>	<b>32</b>							
2026CPT.08.11.20771	Richmond	10	SR-1162 / ALVIN HARRIS RD	FROM SR 1159 (PEE DEE CHURCH RD.) TO SR 1164 (DAVIS HAYWOOD RD.)	3	2	2WU	2.920	20	0.000	2.920	5.49	768.14				900	2,932		194	76							
<b>TOTAL FOR MAP NO. 10</b>								<b>2.920</b>				<b>5.49</b>	<b>768.14</b>				<b>900</b>	<b>2,932</b>		<b>194</b>	<b>76</b>							
2026CPT.08.11.20771	Richmond	11	SR-1230 / ENTERPRISE DR	FROM SR 1139 (SILVER GROVE CHURCH RD.) TO D.E.	4	2	2WU	0.500	25	0.000	0.500	0.96	359.76				556	1,139		671	103	187						
<b>TOTAL FOR MAP NO. 11</b>								<b>0.500</b>				<b>0.96</b>	<b>359.76</b>				<b>556</b>	<b>1,139</b>		<b>671</b>	<b>103</b>	<b>187</b>						
2026CPT.08.11.20771	Richmond	12	SR-1903 / MCDONALD AV	FROM NC HWY 177 (MALBORO ST.) TO END OF SIDEWALK/C&G (ALEXANDER DR.)	5,6	2	2WU	0.650	27	0.000	0.650			11,371	1,427			1,161		75			5	3		360		
<b>TOTAL FOR MAP NO. 12</b>								<b>0.650</b>							<b>11,371</b>	<b>1,427</b>			<b>1,161</b>		<b>75</b>			<b>5</b>	<b>3</b>		<b>360</b>	
2026CPT.08.11.20771	Richmond	13	SR-1648 / ROCKINGHAM RD	FROM MP 0.00 TO US 74 BUS (EAST BROAD AVE)	7,8,9,1	2		1.740	26	0.000	1.740	1.69	236.52	33,500	2,075			3,228		212	48		12	6		2,880		
<b>TOTAL FOR MAP NO. 13</b>								<b>1.740</b>				<b>1.69</b>	<b>236.52</b>	<b>33,500</b>	<b>2,075</b>			<b>3,228</b>		<b>212</b>	<b>48</b>		<b>12</b>	<b>6</b>				<b>2,880</b>
<b>TOTAL FOR PROJ NO. 2026CPT.08.11.20771</b>								<b>11.450</b>				<b>19.21</b>	<b>2,908.93</b>	<b>44,871</b>	<b>7,369</b>	<b>1,139</b>	<b>13,401</b>	<b>671</b>	<b>988</b>	<b>484</b>		<b>18</b>	<b>12</b>					<b>3,240</b>
<b>GRAND TOTAL</b>								<b>22.423</b>				<b>20.99</b>	<b>3,157.55</b>	<b>207,161</b>	<b>12,364</b>	<b>1,139</b>	<b>13,401</b>	<b>16,126</b>	<b>1,916</b>	<b>820</b>	<b>205</b>	<b>18</b>	<b>12</b>	<b>1</b>				<b>3,240</b>



### 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**

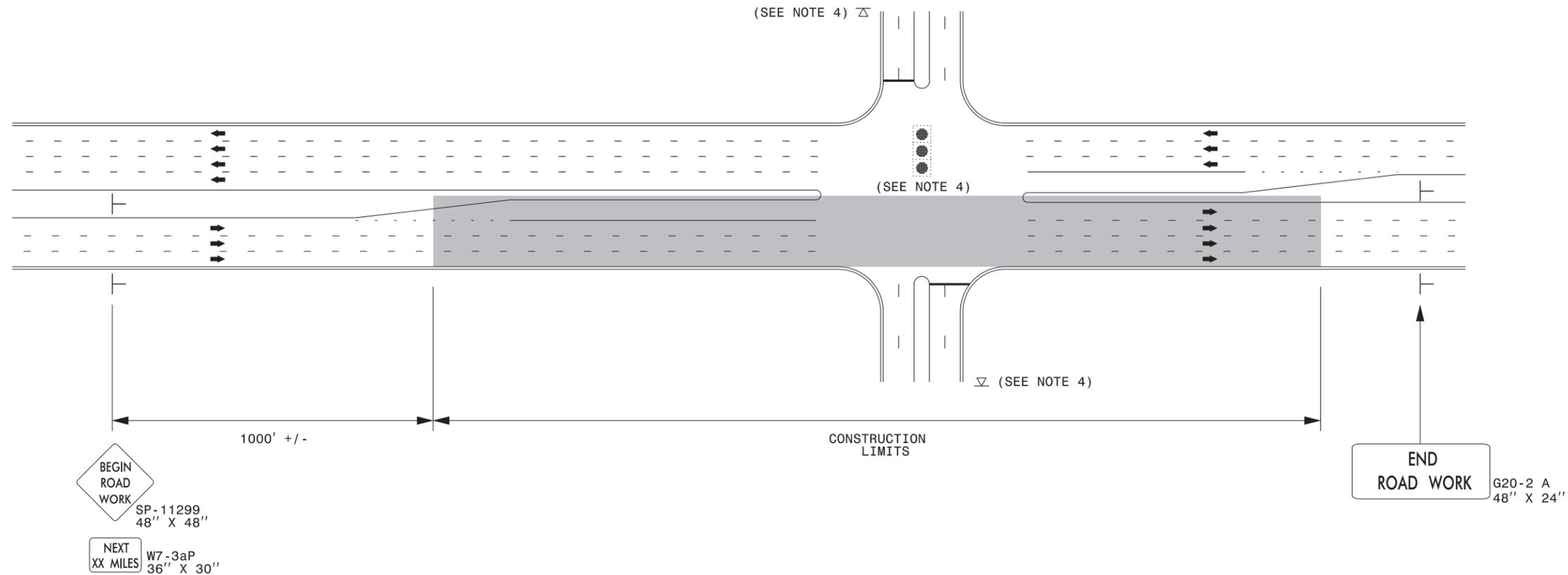
- CHANGEABLE MESSAGE SIGN (CMS)
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- TRAFFIC DRUM



**RESURFACING ADVANCE WARNING SIGNS FOR HIGH SPEED FACILITIES ≥ 60 MPH**

3/23/2015 C:\Users\rmgarrrett\Downloads\Resurfacing\_AdvWarn\_HSpd.dgn User:rmgarrrett

## URBAN / SUBURBAN WORKZONES

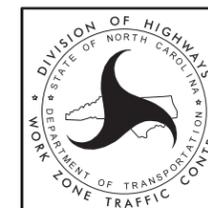


### NOTES:

- 1) 48" x 48" SIZED SIGNS (SP- 11299) MAY BE REDUCED TO 36" X 36" ON ROADWAYS WITH SPEED LIMITS OF 40 MPH OR LESS.
- 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) ADVANCE WARNING SIGNS NOT REQUIRED ON NON-SIGNALIZED SIDE STREETS.
- 4) MAY USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AS DIRECTED BY THE ENGINEER. PROVIDE PORTABLE "ROAD WORK AHEAD" (W20-1) SIGNS 500' IN ADVANCE ALONG BOTH APPROACHES FROM THE SIDE STREETS WHEN PAVING PROCEEDS THROUGH THE INTERSECTION.
- 5) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 2' AS MEASURED FROM THE EDGE OF PAVEMENT OR THE FACE OF THE CURB. WHEN UNABLE TO OBTAIN THE LATERAL CLEARANCE WITHIN THE MEDIAN AREA USE SHOULDER MOUNTS ONLY.
- 6) SIGN MOUNT LOCATIONS SHALL NOT BLOCK SIDEWALKS OR DRIVEWAYS.
- 7) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 8) 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 WHERE LATERAL CLEARANCE CAN BE OBTAINED WITHIN THE MEDIAN AREAS. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

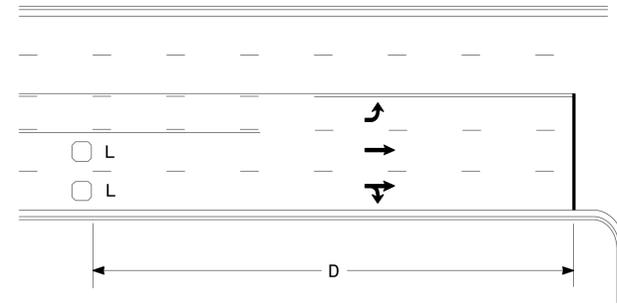
### LEGEND

- ┆ STATIONARY SIGN
- ➔ DIRECTION OF TRAFFIC FLOW



**RESURFACING ADVANCE  
WARNING SIGNS FOR  
URBAN / SUBURBAN  
FACILITIES**

### High Speed Detection (≥35 mph)

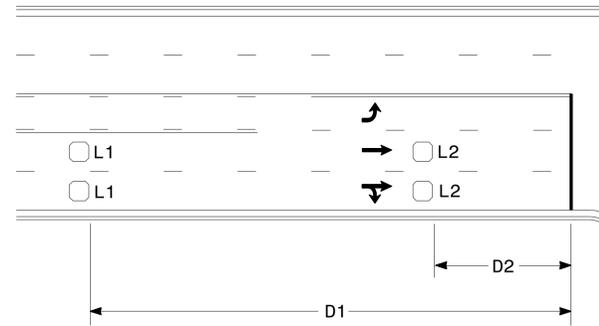


Speed Limit mph	D ft
35	200
40	250
45	300
50	355
55	420
60	475
65	550

L = 6ft X 6ft  
Wired separately

Volume Density Operation

OR



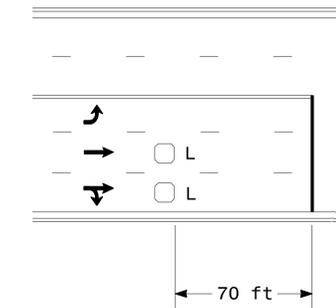
Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110
60	475	120
65	550	130

L1 = 6ft X 6ft  
Wired in series

L2 = 6ft X 6ft  
Wired in series

"Stretch" Operation

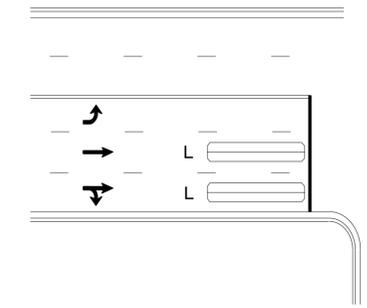
### Low Speed Detection (≤35 mph)



L = 6ft X 6ft  
Wired in series

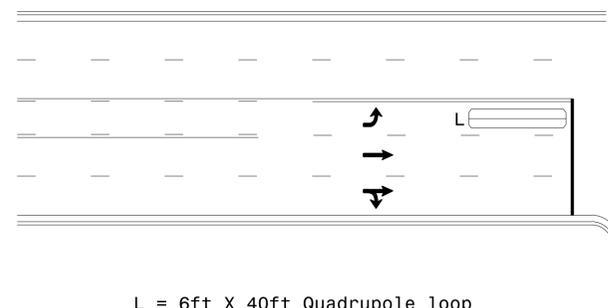
L = 6ft X 6ft  
Wired in series

OR



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

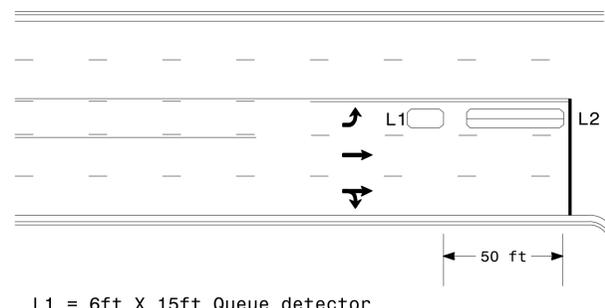
### Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

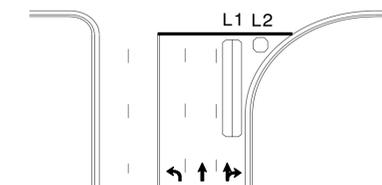
OR



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

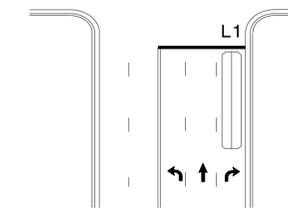
Queue Loop Detection

### Right Turn Lane Detection

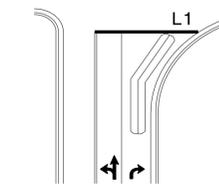


Shared Lane/  
Wide Radius Turn

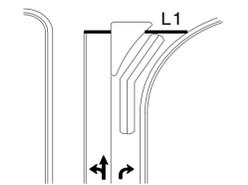
L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately



Standard Turn

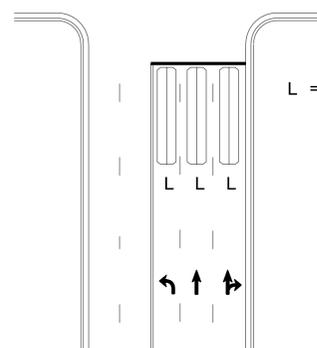


Wide Radius Turn



Channelized Turn

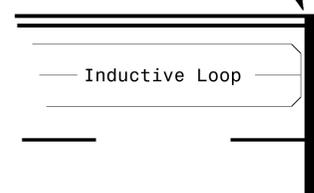
### Side Street Detection



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

	<p>Prepared In the Offices of:</p> <p>TRANSPORTATION MOBILITY AND SAFETY DIVISION STATE OF NORTH CAROLINA Signal Design Section</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>		<p>SEAL NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEGMEYER</p>	
	<p>Typical Signal Loop Locations</p>		<p>PLAN DATE: September 2025 REVIEWED BY:</p> <p>PREPARED BY: J.A. Lohr REVIEWED BY:</p>	
<p>SCALE N/A</p>	<p>REVISIONS</p>	<p>INIT.</p>	<p>DATE</p>	<p>11/25/2025 DATE</p>