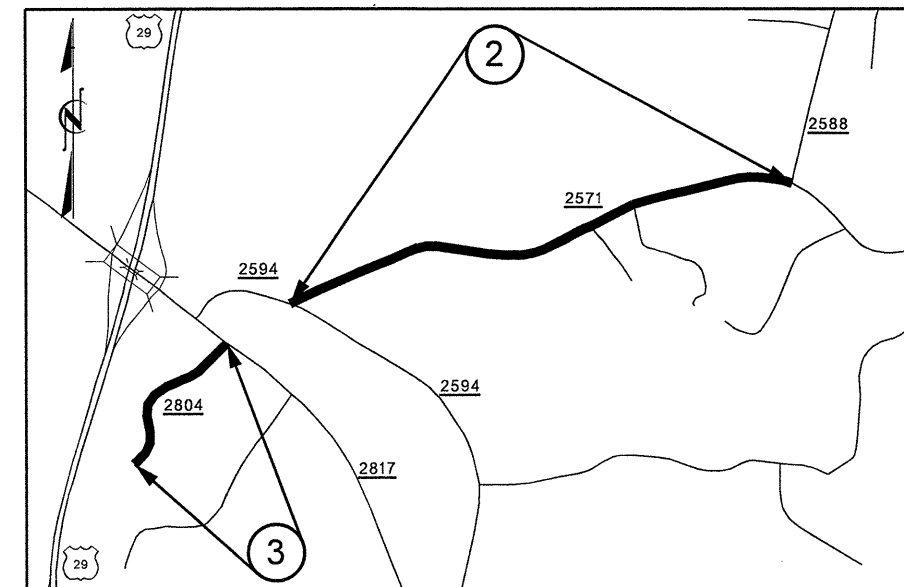
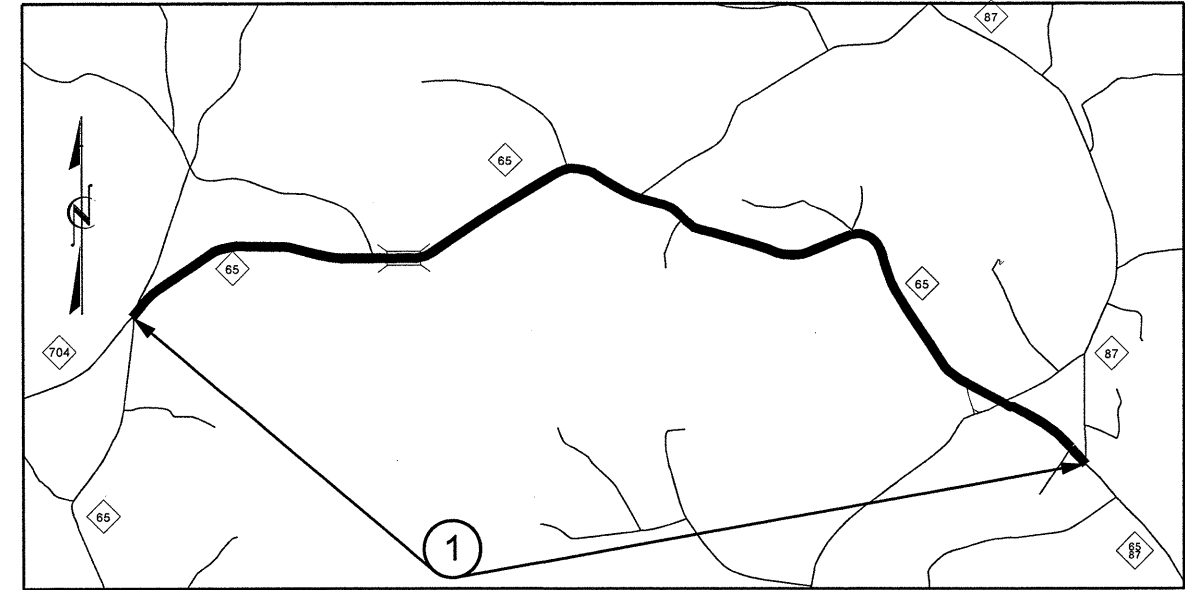
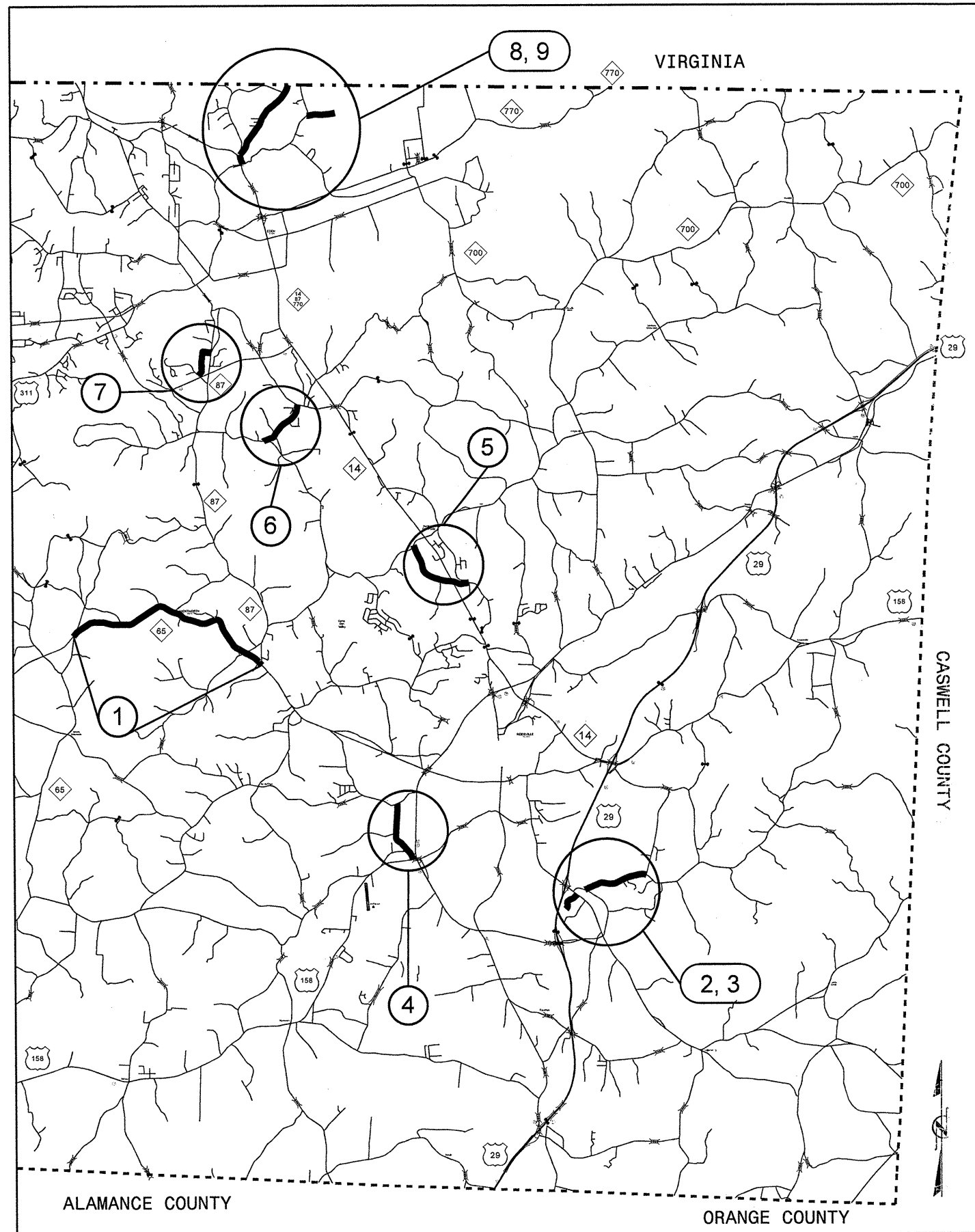
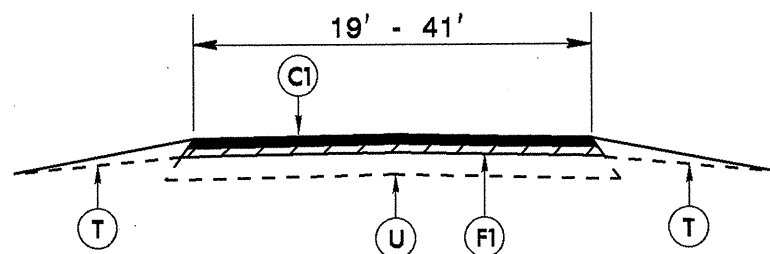


STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	7CR.10791.37, 7CR.20791.37	1	6
F.A. PROJ. NO.			

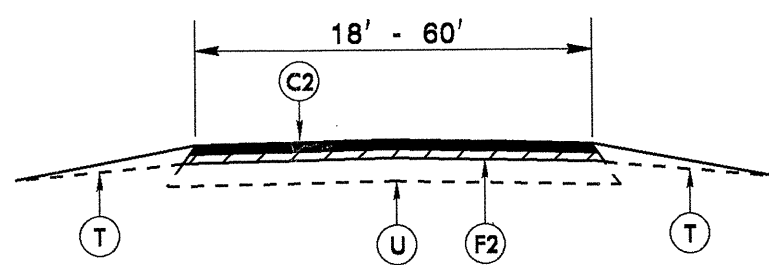
# 2012 ROCKINGHAM COUNTY





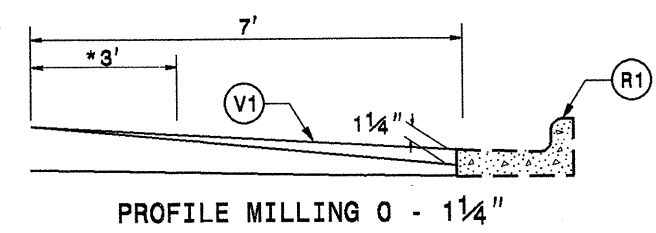


**TYPICAL SECTION NO. 1**  
 TO BE USED ON MAPS 1, 4, 5, 6, AND 7  
 MAP 1: STA. 0+00 TO STA. 194+90



**TYPICAL SECTION NO. 4**  
 TO BE USED ON MAPS 2, 3, 8, AND 9

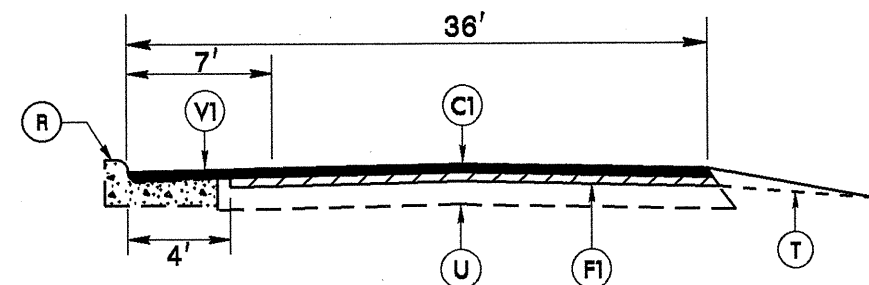
**MILLING DETAIL 1**



PROFILE MILLING 0 - 1 1/4"

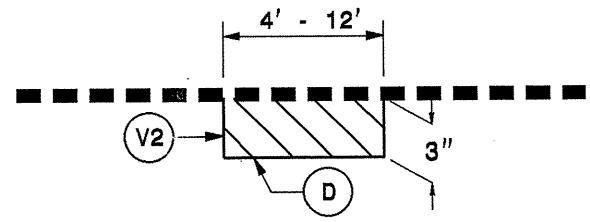
\*IF 78M IS INVOLVED OVERLAP 3'.  
 PROFILE MILL EXISTING ASPHALT PAVEMENT 1 1/4" AT LOCATIONS AS DIRECTED BY THE ENGINEER.

NOTE: TO BE USED IN CONJUNCTION WITH:  
 TS. NO. 2 ON MAP 1 STA. 194+90 TO STA. 199+90 LT  
 TS. NO. 3 ON MAP 1 STA. 199+90 TO STA. 217+80 LT&RT



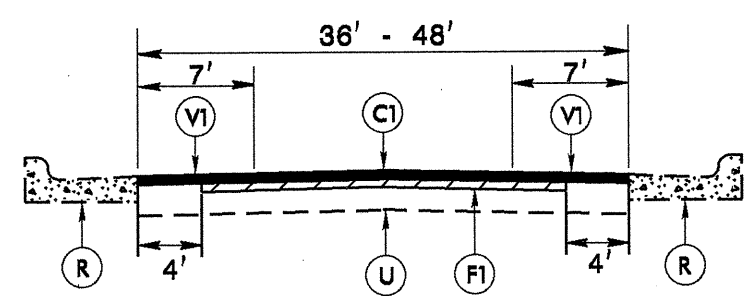
**TYPICAL SECTION NO. 2**  
 TO BE USED ON MAP 1  
 MAP 1: STA. 194+90 TO STA. 199+90

**MILLING DETAIL 3**



USE FOR PATCHING ON MAP 1, 2, 7, AND 8  
 MILL EXISTING ASPHALT PAVEMENT 3" IN DEPTH AND FILL WITH INTERMEDIATE COURSE, TYPE I19.0B AT LOCATIONS AS DIRECTED BY THE ENGINEER.

MAP 1: 3" MILLING = 5439 SYD  
 INTERMEDIATE COURSE, TYPE I19.0B = 930 TONS  
 MAP 2: 3" MILLING = 1737 SYD  
 INTERMEDIATE COURSE, TYPE I19.0B = 297 TONS  
 MAP 7: 3" MILLING = 702 SYD  
 INTERMEDIATE COURSE, TYPE I19.0B = 120 TONS  
 MAP 8: 3" MILLING = 2977 SYD  
 INTERMEDIATE COURSE, TYPE I19.0B = 509 TONS



**TYPICAL SECTION NO. 3**  
 TO BE USED ON MAP 1  
 MAP 1: STA. 199+90 TO STA. 217+80

**\*\*NOTE: EACH MAP MUST BE PATCHED AS DIRECTED BY THE ENGINEER BEFORE PROCEEDING WITH RESURFACING\*\***

**PAVEMENT SCHEDULE**

C1	PROP. APPROX. 1 1/4" 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 SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
D	PROP. APPROX 3" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0B, AT AN AVERAGE RATE OF 342LBS. PER SQ. YD.
F1	AST MAT COAT, #78M SEAL
F2	AST MAT COAT #67 STONE
R	EXISTING CURB AND GUTTER
T	INCIDENTAL STONE BASE IN LOW SHOULDER AREAS, AS DIRECTED BY THE ENGINEER.
U	EXISTING PAVEMENT.
V1	0 - 1 1/4" MILLING
V2	3" MILLING

\$\$\$\$\$SYTIME\$\$\$\$\$DGN\$\$\$\$\$USERNAME\$\$\$\$\$



PROJECT NO.	SHEET NO.	TOTAL NO.
7CR.10791.37, 7CR.20791.37	5	6

### SUMMARY OF QUANTITIES

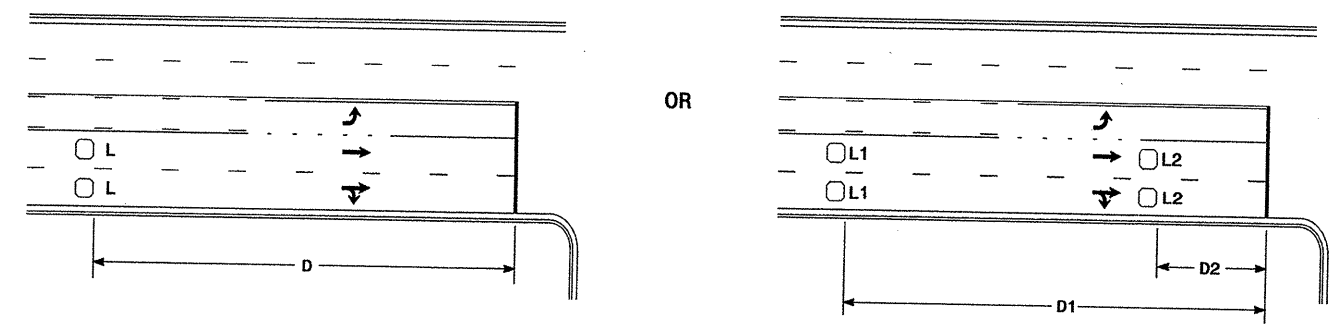
PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	TYP	FINAL SURFACE TESTING REQUIRED	LENGTH MI	WIDTH FT	INCIDENTAL STONE BASE TONS	MILLING ASPHALT PAVEMENT, 3" DEPTH SY	MILLING ASPHALT PAVEMENT, 0 - 1 1/4" DEPTH SY	INTERMEDIATE COURSE, 119.08 TONS	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A TONS	ASPHALT BINDER FOR PLANT MIX TONS	ASPHALT SURFACE TREATMENT, MAT COAT, #78M STONE SY	GENERIC PAVING ITEM - ASPHALT SURFACE TREATMENT, MAT COAT, #67 STONE SY	ADJ. OF MANHOLES EA	ADJUSTMENT OF METER BOXES OR VALVE BOXES EA	TRENCHING (UNPAVED) ( 1 ) ( 2" ) LF	JUNCTION BOX (STANDARD SIZE) EA	2" RISER W/ WEATHERHEAD EA	INDUCTIVE LOOP SAW CUT LF	LEAD-IN CABLE (14-2) LF						
																								NO	NO	NO	NO	NO	NO
7CR.10791.37	Rockingham	1	NC 65	FROM NC 704 - 15.25 TO NC 87 - 19.38	1	NO	0.077	21-24	305	5,439		930	72	49	1,039														
				1	NO	0.839	21								714	48	10,337												
				SKIP				1	NO	0.285	21																		
								1	NO	1.025	21					932	62	12,628				1							
								1	NO	0.076	29					89	6	1,293				1							
								1	NO	0.013	21-29					13	1	191											
								1	NO	0.527	21					449	30	6,493											
								1	NO	0.034	21-29					54	4	499											
								1	NO	0.05	29-32					63	4	909											
								1	NO	0.133	21-32					145	10	2,107											
								1	NO	0.034	21					29	2	419											
								1	NO	0.076	21-34					86	6	1,248											
								1	NO	0.366	34					563	38	7,301											
								1	NO	0.157	41					260	17	3,776				1							
								2	NO	0.095	36			390		138	9	1,833				2	700	6	2	620	1,000		
								3	NO	0.072	36			591		105	7	1,224											
								3	NO	0.02	36-48			164		34	2	408				1							
								3	NO	0.088	48			723		211	14	2,118				3	1						
								3	NO	0.066	36			542		96	6	1,128											
								3	NO	0.021	36-48			172		36	2	428											
								3	NO	0.034	48			279		86	6	820				1							
								3	NO	0.038	36			312		55	4	644						350	2	1	550	1,000	
								<b>TOTAL FOR MAP NO. 1</b>			<b>4.126</b>		<b>305</b>	<b>5,439</b>	<b>3,173</b>	<b>930</b>	<b>4,230</b>	<b>327</b>	<b>56,843</b>			<b>5</b>	<b>6</b>	<b>1,050</b>	<b>8</b>	<b>3</b>	<b>1,170</b>	<b>2,000</b>	
				<b>TOTAL FOR PROJ NO. 7CR.10791.37</b>			<b>4.126</b>		<b>305</b>	<b>5,439</b>	<b>3,173</b>	<b>930</b>	<b>4,230</b>	<b>327</b>	<b>56,843</b>			<b>5</b>	<b>6</b>	<b>1,050</b>	<b>8</b>	<b>3</b>	<b>1,170</b>	<b>2,000</b>					
7CR.20791.37	Rockingham	2	SR 2571 (GROOMS ROAD)	FROM SR 2594 (HOLIDAY LOOP) - 8.19 TO SR 2588 (KNOWLES ROAD) - 7.00	4	NO	1.19	22	146	1,737		297	1,354	105		15,359													
				<b>TOTAL FOR MAP NO. 2</b>						<b>1.19</b>		<b>146</b>	<b>1,737</b>		<b>297</b>	<b>1,354</b>	<b>105</b>		<b>15,359</b>		<b>1</b>								
				3	SR 2804 (ROCKINGHAM DRIVE)	FROM SR 2817 (BARNES STREET) - 0.00 TO END OF MAINTENANCE - 0.380	4	NO	0.036	24-38	19						49	3	591										
						<b>TOTAL FOR MAP NO. 3</b>						<b>0.379</b>						<b>401</b>	<b>27</b>	<b>4,829</b>		<b>5,420</b>							
				4	SR 2414 (REID SCHOOL ROAD)	FROM SR 2413 (VANCE STREET EXT) - 1.12 TO US 158 - 0.00	1	NO	0.028	22-24	65							26	2	378									
							1	NO	0.013	20-22									11	1	160								
							1	NO	0.814	20									780	52	9,551								
							1	NO	0.07	20-32									74	5	1,068								
							1	NO	0.09	32									177	12	1,690								
							1	NO	0.048	22-32									52	4	760								
				<b>TOTAL FOR MAP NO. 4</b>						<b>1.122</b>		<b>65</b>					<b>1,233</b>	<b>84</b>	<b>14,369</b>										
				5	SR 1990 (STRAWBERRY ROAD)	FROM SR 1991 (BERRYMORE ROAD) - 1.38 TO SR 2037 (HARRISON CROSSROADS) - 0.00	1	NO	0.853	19	184							657	44	9,508									
							1	NO	0.022	19-20									38	3	258								
							1	NO	0.174	20									141	9	2,042								
							SKIP				1	NO	0.084	20															
				<b>TOTAL FOR MAP NO. 5</b>						<b>1.382</b>		<b>184</b>					<b>202</b>	<b>14</b>	<b>2,922</b>										
				6	SR 2021 (ANDERSON ROAD)	FROM SR 2203 (ASHLEY LOOP) - 0.00 TO SR 2039 (BETHLEHEM CHURCH ROAD) - 0.96	1	NO	0.95	20	86							870	58	11,147									
							1	NO	0.014	20-27									14	1	197								
				<b>TOTAL FOR MAP NO. 6</b>						<b>0.964</b>		<b>86</b>					<b>884</b>	<b>59</b>	<b>11,344</b>										
				7	SR 2214 (DAN RIVER CHURCH ROAD)	FROM SR 2104 (LONGHOOK ROAD) - 0.00 TO SR 2282 (HAMILTON STREET) - 0.61	1	NO	0.027	21-26	52	702				120		26	8	380									
							1	NO	0.065	19-21									53	4	763								
							1	NO	0.513	19									415	28	5,718								
				<b>TOTAL FOR MAP NO. 7</b>						<b>0.605</b>		<b>52</b>	<b>702</b>		<b>120</b>	<b>494</b>	<b>40</b>	<b>6,861</b>											
8	SR 1716 (VIRGINIA STREET)	FROM SR 1714 (AIKEN ROAD) - 0.00 TO VIRGINIA STATE LINE - 1.74	4	NO	0.011	27-33	236	2,977				509		16	26	194													
			4	NO	0.023	25-27									29	2	351			1									
			4	NO	0.076	25									92	6	1,115			2									
			4	NO	0.046	24									54	4	648			2									
			4	NO	0.034	22-23									118	8	459			1	1								
			4	NO	0.599	22									641	43	7,731			1									
			4	NO	0.011	21-22									32	2	142												
			4	NO	0.071	21									93	6	875												
<b>TOTAL FOR MAP NO. 8</b>						<b>1.741</b>		<b>236</b>	<b>2,977</b>		<b>509</b>	<b>1,965</b>	<b>157</b>	<b>21,756</b>			<b>6</b>	<b>2</b>											
9	SR 1715 (ROUND HOUSE ROAD)	FROM SR 1797 (FRIENDLY ROAD) - 0.00 TO END OF MAINTENANCE - 0.43	4	NO	0.015	20-24	46							16	1	194													
			4	NO	0.152	20									148	10	1,784												
			4	NO	0.076	18-20									70	5	847												
			4	NO	0.169	18									148	10	1,785												
			4	NO	0.015	18-30									18	1	211												
<b>TOTAL FOR MAP NO. 9</b>						<b>0.427</b>		<b>46</b>				<b>400</b>	<b>27</b>	<b>4,821</b>			<b>7</b>	<b>2</b>											
<b>TOTAL FOR PROJ NO. 7CR.20791.37</b>						<b>7.81</b>		<b>834</b>	<b>5,416</b>		<b>926</b>	<b>7,818</b>	<b>572</b>	<b>47,304</b>			<b>47,356</b>		<b>12</b>	<b>8</b>		<b>1,050</b>	<b>8</b>	<b>3</b>	<b>1,170</b>	<b>2,000</b>			
<b>GRAND TOTAL</b>						<b>11.936</b>		<b>1,139</b>	<b>10,855</b>	<b>3,173</b>	<b>1,856</b>	<b>12,048</b>	<b>899</b>	<b>104,147</b>			<b>47,356</b>		<b>12</b>	<b>8</b>		<b>1,050</b>	<b>8</b>	<b>3</b>	<b>1,170</b>	<b>2,000</b>			

PROJECT NO.	SHEET NO.	TOTAL NO.
7CR.10791.37, 7CR.20791.37	6	6

### THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	LENGTH	WIDTH	4685000000-E	4686000000-E	4690000000-E	4695000000-E	4710000000-E		4725000000-E				4810000000-E		4900000000-N	4905000000-N		
							4" X 90 M WHITE THERMO LF	4" X 120 M WHITE THERMO LF	4" X 120 M YELLOW THERMO LF	6" X 120 M WHITE THERMO LF	8" X 90 M YELLOW THERMO LF	24" X 120 M YELLOW THERMO LF	24" X 120 M WHITE THERMO LF	THERMO STR ARROW 90 M EA	THERMO LT ARROW 90 M EA	THERMO RT ARROW 90 M EA	THERMO STR & RT ARROW 90 M EA	4" WHITE PAINT LF	4" YELLOW PAINT LF	YELLOW & YELLOW MARKERS EA	SNOWPLOWABLE PAVEMENT MARKERS EA	
7CR.10791.37	Rockingham	1	NC 65	FROM NC 704 - 15.25 TO NC 87 - 19.38	4.126	21-48	36,720	1,175	42,028	180	75	8	100	2	41	4	9			475		
TOTAL FOR MAP NO. 1					4.126		36,720	1,175	42,028	180	75	8	100	2	41	4	9			475		
TOTAL FOR PROJ NO. 7CR.10791.37					4.126		36,720	1,175	42,028	180	75	8	100	2	41	4	9			475		
							43,203				108		56									
7CR.20791.37	Rockingham	2	SR 2571 (GROOMS ROAD)	FROM SR 2594 (HOLIDAY LOOP) - 8.19 TO SR 2588 (KNOWLES ROAD) - 7.00	1.19	22	12,570		10,943	46										100		
		TOTAL FOR MAP NO. 2					1.19		12,570		10,943	46										100
		3	SR 2804 (ROCKINGHAM DRIVE)	FROM SR 2817 (BARNES STREET) - 0.00 TO END OF MAINTENANCE - 0.380	0.379	24-38																
		TOTAL FOR MAP NO. 3					0.379															
		4	SR 2414 (REID SCHOOL ROAD)	FROM SR 2413 (VANCE STREET EXT) - 1.12 TO US 158 - 0.00	1.122	20-32	11,860	214	12,354	132	312					4						100
		TOTAL FOR MAP NO. 4					1.122		11,860	214	12,354	132	312			4						100
		5	SR 1990 (STRAWBERRY ROAD)	FROM SR 1991 (BERRYMORE ROAD) - 1.38 TO SR 2037 (HARRISON CROSSROADS) - 0.00	1.382	19-20	75				24									27,270	26,580	100
		TOTAL FOR MAP NO. 5					1.382		75		24									27,270	26,580	100
		6	SR 2021 (ANDERSON ROAD)	FROM SR 2203 (ASHLEY LOOP) - 0.00 TO SR 2039 (BETHLEHEM CHURCH ROAD) - 0.96	0.964	20-27	375				64									19,610	19,638	75
		TOTAL FOR MAP NO. 6					0.964		375		64									19,610	19,638	75
		7	SR 2214 (DAN RIVER CHRUCH ROAD)	FROM SR 2104 (LONGHOOK ROAD) - 0.00 TO SR 2282 (HAMILTON STREET) - 0.61	0.605	19-26	75				12									12,630	12,780	50
		TOTAL FOR MAP NO. 7					0.605		75		12									12,630	12,780	50
		8	SR 1716 (VIRGINIA STREET)	FROM SR 1714 (AIKEN ROAD) - 0.00 TO VIRGINIA STATE LINE - 1.74	1.741	20-33	18,160		15,570	86												125
TOTAL FOR MAP NO. 8					1.741		18,160		15,570	86											125	
9	SR 1715 (ROUND HOUSE ROAD)	FROM SR 1797 (FRIENDLY ROAD) - 0.00 TO END OF MAINTENANCE - 0.43	0.427	18-30																		
TOTAL FOR MAP NO. 9					0.427																	
TOTAL FOR PROJ NO. 7CR.20791.37					7.81		43,115	214	38,867	364	312			4				59,510	58,998	550		
							39,081						4				118,508					
GRAND TOTAL					11.936		79,835	1,389	80,895	544	387	8	100	2	45	4	9	59,510	58,998	550	475	
							82,284				108		60				118,508					

### 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

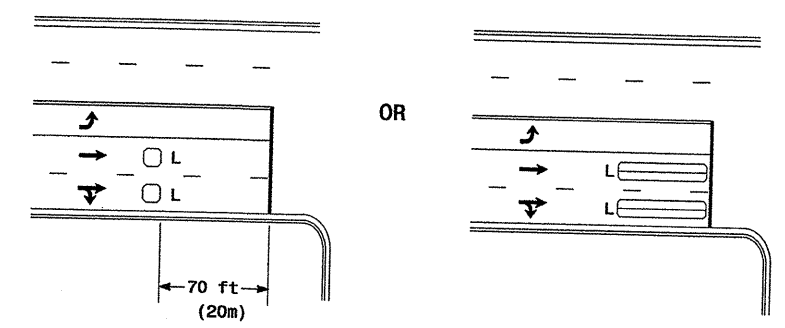
Volume Density Operation

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

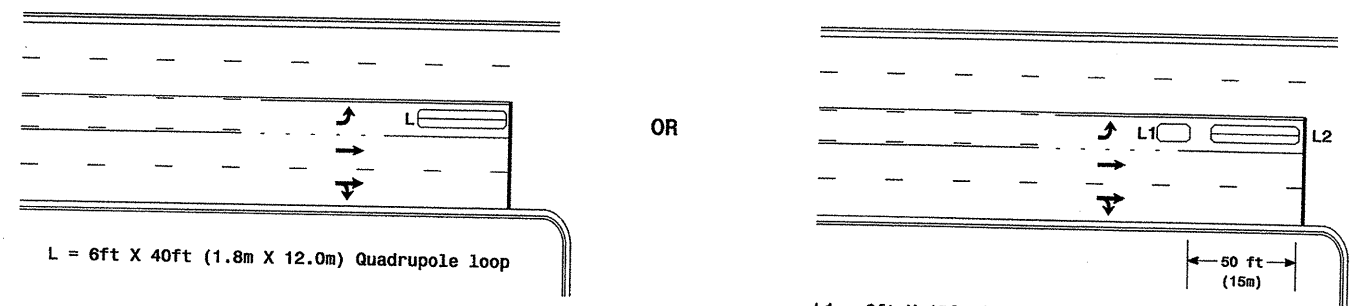
### Low Speed Detection [≤35 mph (56 km/hr)]



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

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

### Left Turn Lane Detection



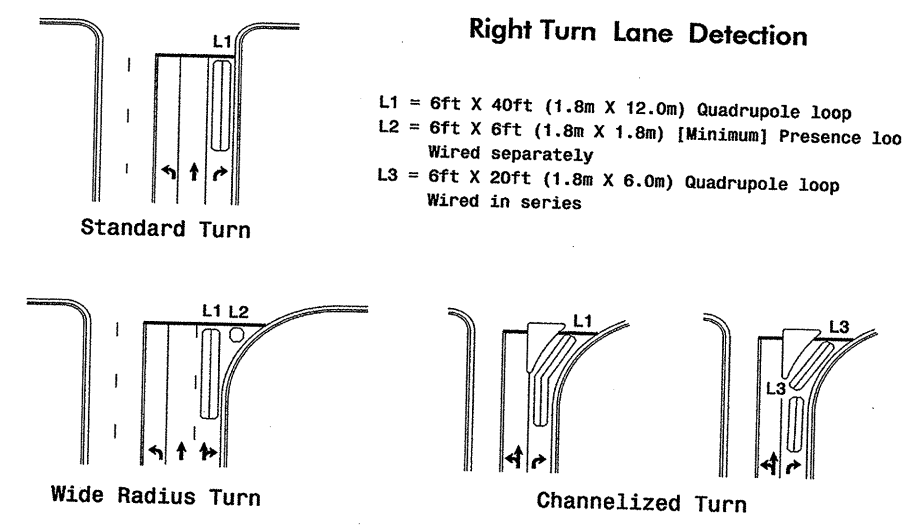
L = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Presence Loop Detection

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

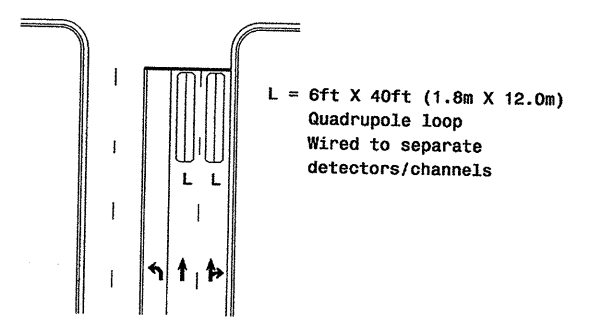
Queue Loop Detection

### Right Turn Lane Detection



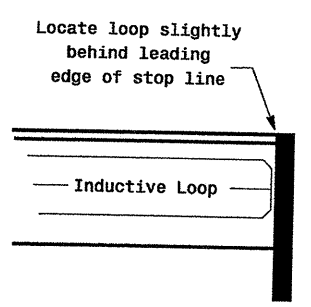
L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop  
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop  
Wired separately  
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop  
Wired in series

### 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

	<b>Typical Loop Locations</b>		
	PLAN DATE: June 2006 PREPARED BY: P L Alexander	REVIEWED BY:	
SCALE: N/A	REVISIONS:	INIT.:	DATE:
122 N. McDowell St., Raleigh, NC 27603			

19-DEC-2006 14:29  
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