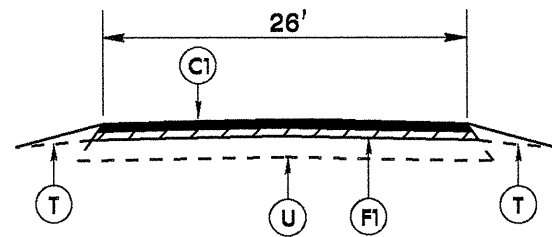
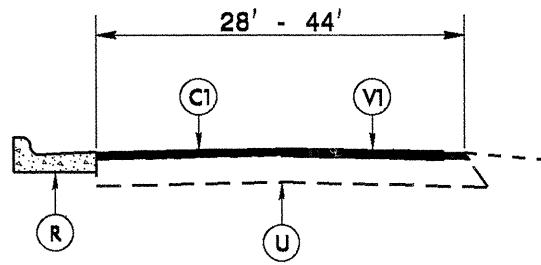




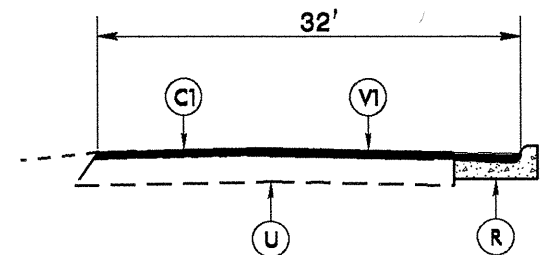
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	7CR.10791.52, 7CR.20791.52	2	



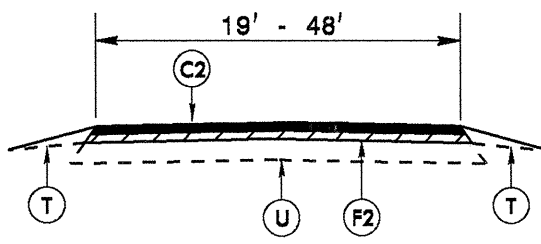
**TYPICAL SECTION NO. 1**  
TO BE USED ON MAP 1  
STA. 0+00 TO STA. 12+30



**TYPICAL SECTION NO. 5**  
TO BE USED ON MAP 1  
STA. 53+85 TO STA. 59+30

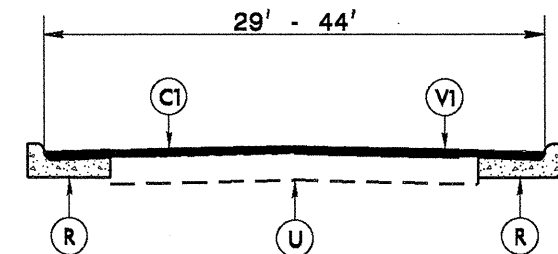


**TYPICAL SECTION NO. 2**  
TO BE USED ON MAP 1  
STA. 12+30 TO STA. 13+80

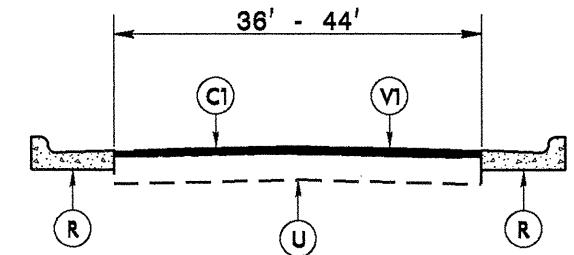


\*NOTE: NO PAVEMENT ON SECTION  
MAP 2: STA. 121+45 TO STA. 124+95  
\*\*NOTE: ON MAP 5 MILL 1 1/4" AND FILL WITH 1 1/4" SURFACE COURSE, TYPE SF9.5A  
STA. 76+40 TO STA. 76+75  
\*\*\*NOTE: ON MAP 13 NO PAVEMENT ON BRIDGE #89  
STA. 123+20 TO STA. 124+15

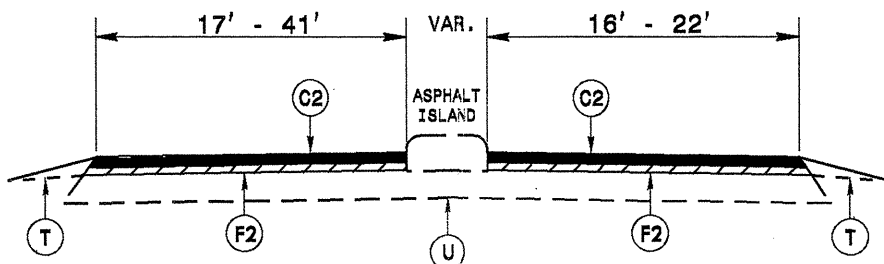
**TYPICAL SECTION NO. 6**  
TO BE USED ON MAPS 2, 3, 4, 5, 6, 7,  
8, 9, 11, 12, AND 13  
MAP 5: STA. 0+00 TO STA. 66+90  
STA. 67+15 TO STA. 67+50  
STA. 69+00 TO STA. 69+55  
STA. 70+25 TO STA. 90+55  
MAP 13: STA. 0+45 TO STA. 148+80



\*NOTE: NO PAVEMENT ON SECTION  
STA. 52+20 TO STA. 53+05  
**TYPICAL SECTION NO. 3**  
TO BE USED ON MAPS 1 AND 5  
MAP 1: STA. 13+80 TO STA. 53+05  
MAP 5: STA. 90+55 TO STA. 90+90  
STA. 100+70 TO STA. 104+15



**TYPICAL SECTION NO. 4**  
TO BE USED ON MAPS 1 AND 5  
MAP 1: STA. 53+05 TO STA. 53+85  
MAP 5: STA. 111+35 TO STA. 112+75



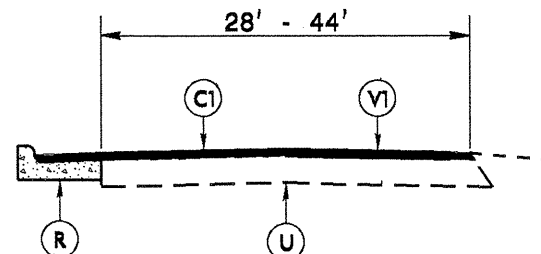
**TYPICAL SECTION NO. 7**  
TO BE USED ON MAP 5  
STA. 66+90 TO STA. 67+15  
STA. 67+50 TO STA. 69+00  
STA. 69+55 TO STA. 70+25

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C3	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
F1	AST MAT COAT #67 STONE
F2	AST MAT COAT, #78M STONE
R	EXISTING CONCRETE STRUCTURE
T	INCIDENTAL STONE BASE IN LOW SHOULDER AREAS, AS DIRECTED BY THE ENGINEER.
U	EXISTING PAVEMENT.
V1	1 1/2" MILLING
V2	0 - 1" MILLING

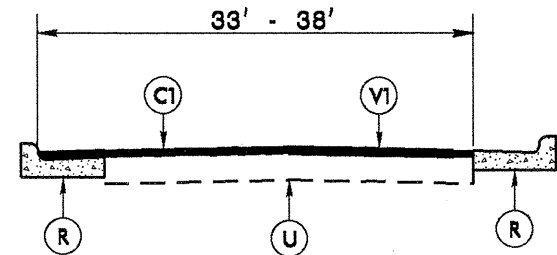
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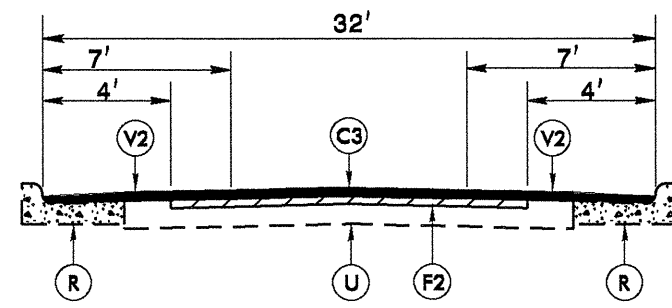
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	7CR.10791.52, 7CR.20791.52	3	



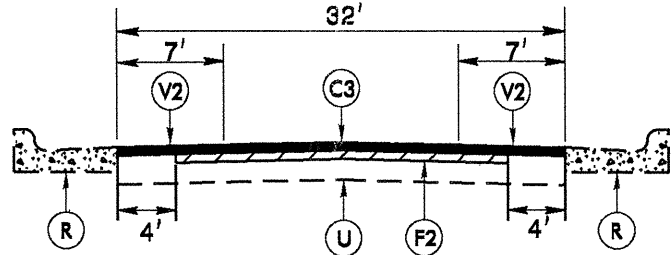
**TYPICAL SECTION NO. 8**  
 TO BE USED ON MAP 5  
 STA. 90+90 TO STA. 100+70



**TYPICAL SECTION NO. 9**  
 TO BE USED ON MAP 5  
 STA. 104+15 TO STA. 111+35

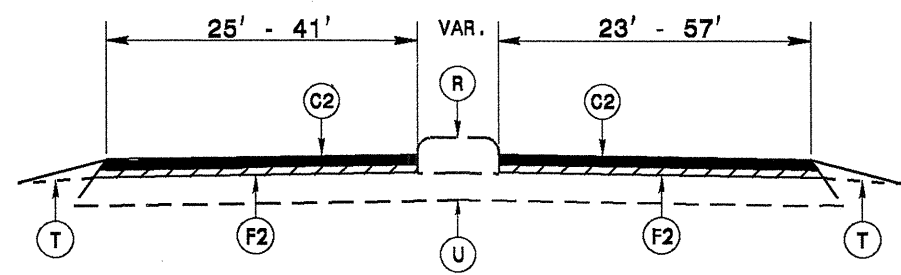


**TYPICAL SECTION NO. 10**  
 TO BE USED ON MAP 10  
 STA. 0+00 TO STA. 5+00

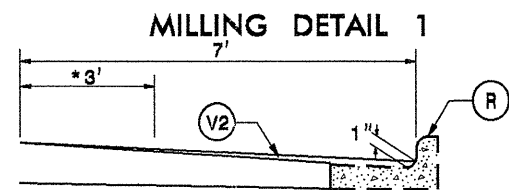


**TYPICAL SECTION NO. 11**  
 TO BE USED ON MAP 10  
 STA. 5+60 TO STA. 11+05

\*NOTE: NO PAVEMENT ON SECTION  
 STA. 5+00 TO STA. 5+60



**TYPICAL SECTION NO. 12**  
 TO BE USED ON MAP 13  
 STA. 0+00 TO STA. 0+45

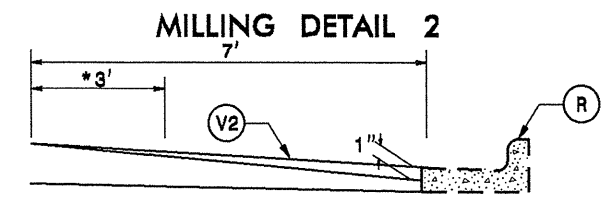


**MILLING DETAIL 1**

PROFILE MILLING 0 - 1"  
 \* IF 78M IS INVOLVED OVERLAP 3'.

PROFILE MILL EXISTING ASPHALT PAVEMENT 1"  
 AT LOCATIONS AS DIRECTED BY THE ENGINEER.

NOTE: TO BE USED IN CONJUNCTION WITH:  
 TS. NO. 10 ON MAP 10 STA. 0+00 TO STA. 5+00 RT & LT



**MILLING DETAIL 2**

PROFILE MILLING 0 - 1"  
 \*IF 78M IS INVOLVED OVERLAP 3'.

PROFILE MILL EXISTING ASPHALT PAVEMENT 1"  
 AT LOCATIONS AS DIRECTED BY THE ENGINEER.

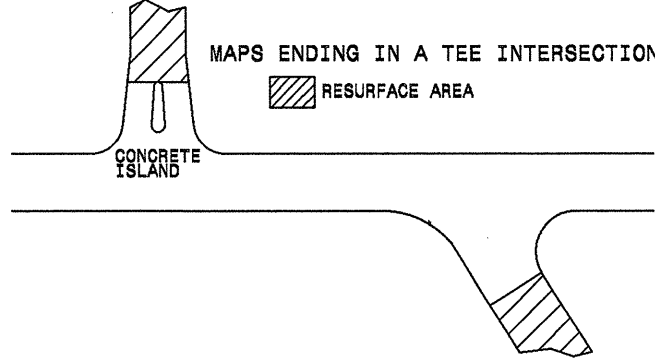
NOTE: TO BE USED IN CONJUNCTION WITH:  
 TS. NO. 11 ON MAP 10 STA. 5+60 TO STA. 11+05 RT & LT

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.
C3	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
F1	AST MAT COAT #67 STONE
F2	AST MAT COAT, #78M STONE
R	EXISTING CONCRETE STRUCTURE
T	INCIDENTAL STONE BASE IN LOW SHOULDER AREAS, AS DIRECTED BY THE ENGINEER.
U	EXISTING PAVEMENT.
V1	1 1/2" MILLING
V2	0 - 1" MILLING

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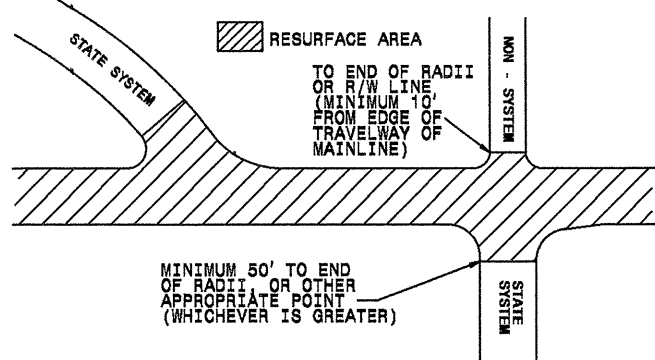
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	7CR.10791.52, 7CR.20791.52	4	

**PAVING DETAIL 1  
MAIN LINE IS NOT BEING RESURFACED**

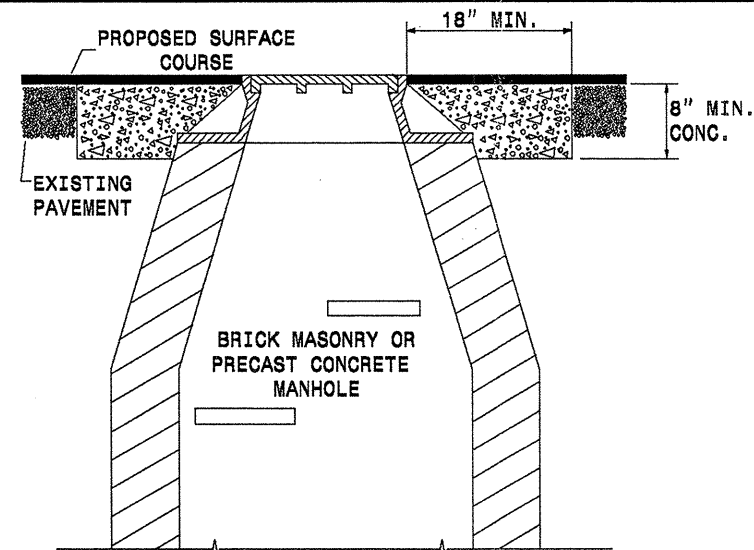
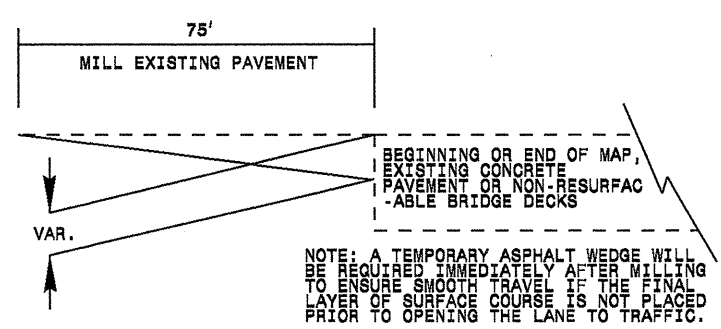


**PAVING DETAIL 2  
MAIN LINE IS BEING RESURFACED**

NOTE: NON-SYSTEM (CITY STREET, PRIVATE DRIVE, SCHOOL BUS DRIVE)

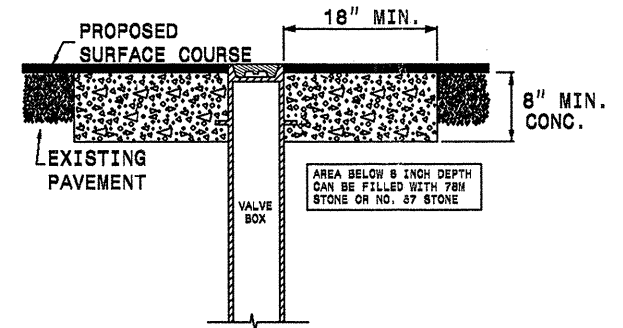


**INCIDENTAL MILLING DETAIL**

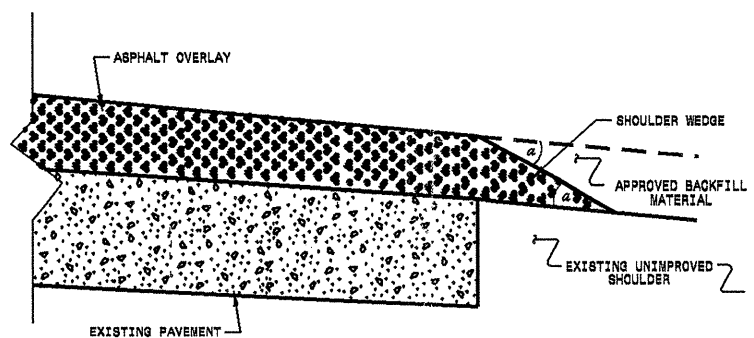


- NOTES:
1. MORTAR SHALL BE MIXED TO NCDOT SPECIFICATIONS.
  2. ALL FAULTY EXISTING BRICKWORK TO BE REMOVED AND REPLACED WITH NEW BRICK MASONRY.
  3. EXCAVATION FOR THE ADJUSTMENT SHALL BE SHEER CUT ON ALL SIDES.
  4. USE RAPID SET GROUT, MORTAR OR CONCRETE AS NOTED IN PROJECT SPECIAL PROVISIONS. CLASS B CONCRETE MAY BE USED WHEN THE ADJUSTMENTS ARE NOT IN THE TRAVEL LANE.

**STANDARD CONCRETE ENCASEMENT FOR VALVE CASTINGS IN PAVEMENT**

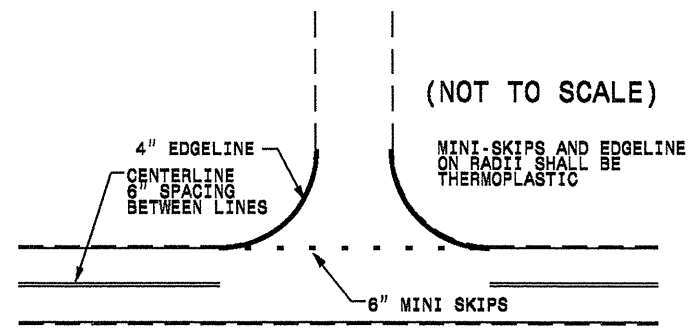


USE RAPID SET GROUT, MORTAR, OR CONCRETE CLASS B CONCRETE MAY BE USED WHEN ADJUSTMENTS ARE NOT IN THE TRAVEL LANE.



**SHOULDER WEDGE DETAIL**  
(Resurfacing Projects w/ NO Widening)

**TO BE USED AT ALL  
NON-SIGNALIZED INTERSECTIONS**



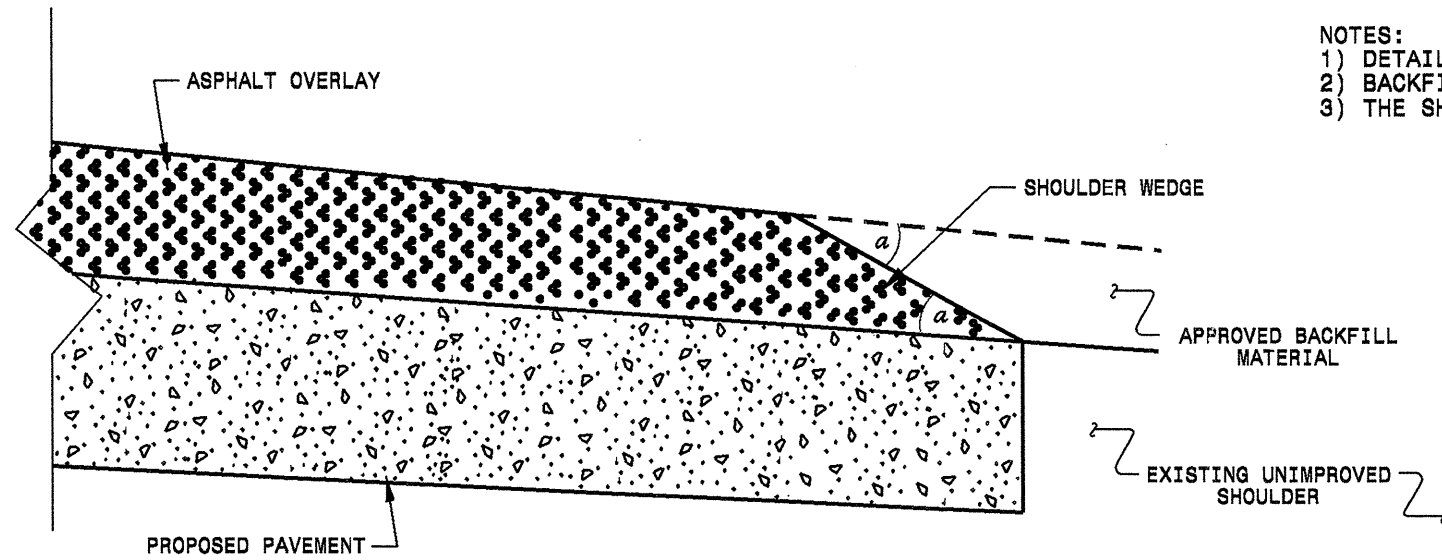
NOTE: MINI SKIPS SHALL BE PLACED ON A 10' CYCLE, CONTAINING AN 8' AND 2' SKIP, THE WIDTH OF THE SKIP SHALL BE 6".

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

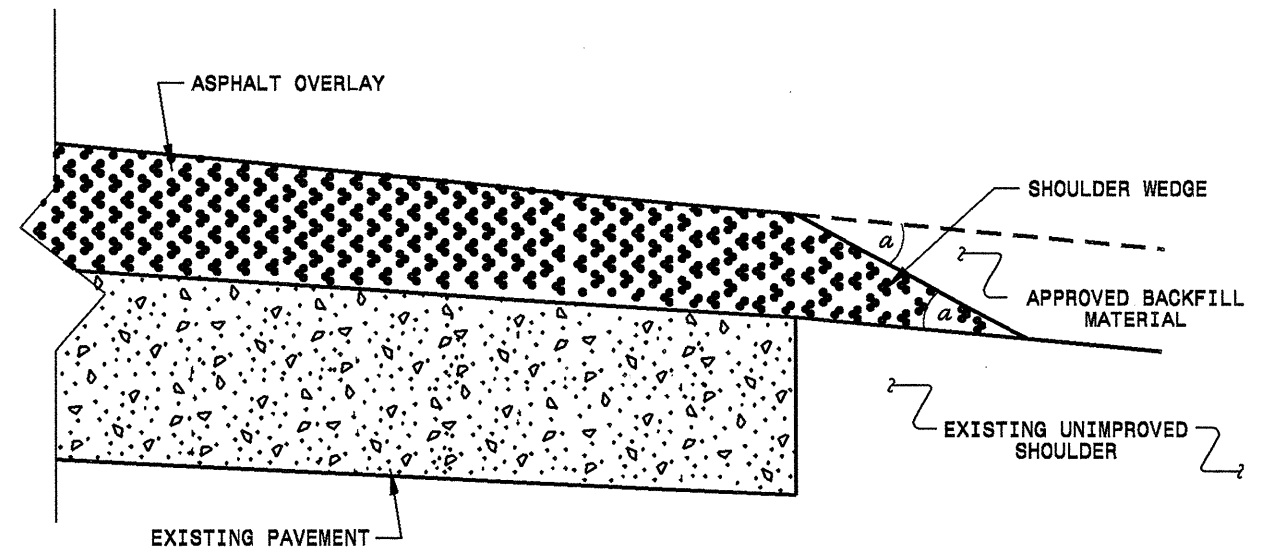
**PAVEMENT SCHEDULE**

C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	
C2	PROP. APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD.	
C3	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.	
F1	AST MAT COAT #67 STONE	
F2	AST MAT COAT, #78M STONE	
R	EXISTING CONCRETE STRUCTURE	
T	INCIDENTAL STONE BASE IN LOW SHOULDER AREAS, AS DIRECTED BY THE ENGINEER.	
U	EXISTING PAVEMENT.	
V1	1 1/2" MILLING	V2 0 - 1" MILLING

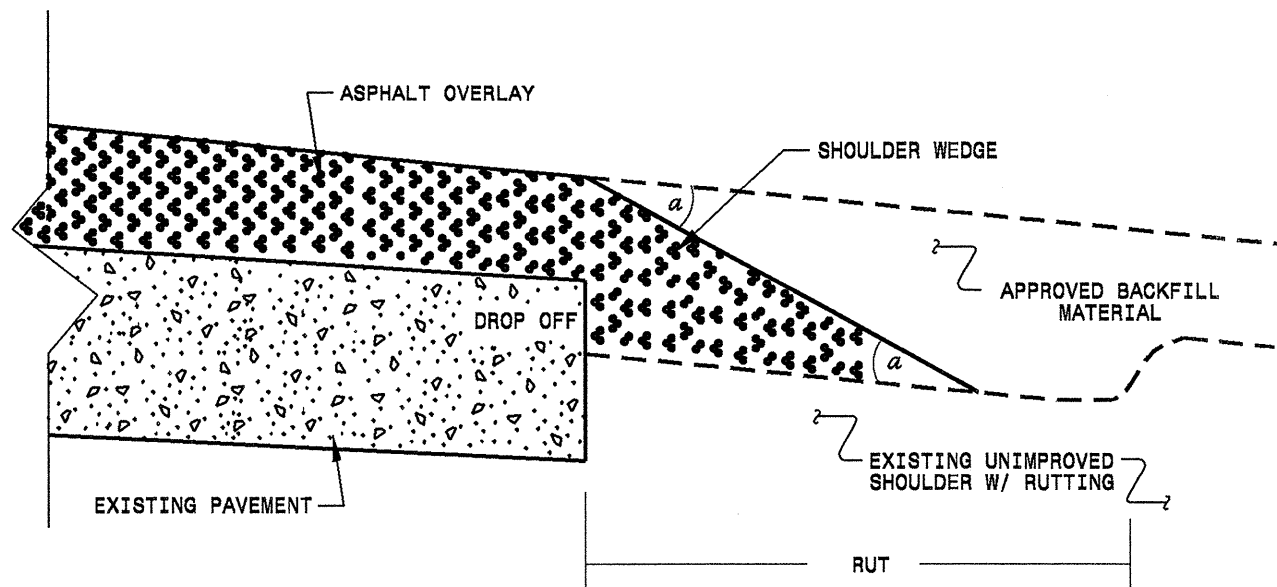
- NOTES:  
 1) DETAIL DOES NOT APPLY TO OGAFG AND ULTRA-THIN BONDED WEARING COURSE.  
 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.  
 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



**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°

<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: 7-18-11
MODIFIED BY:	DATE: 10/18/12
CHECKED BY:	DATE:
FILE SPEC.: s:\isp\details\stand\shoulderwedgesdeta1.dwg	

21-OCT-2013 12:26  
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 Paper Plot

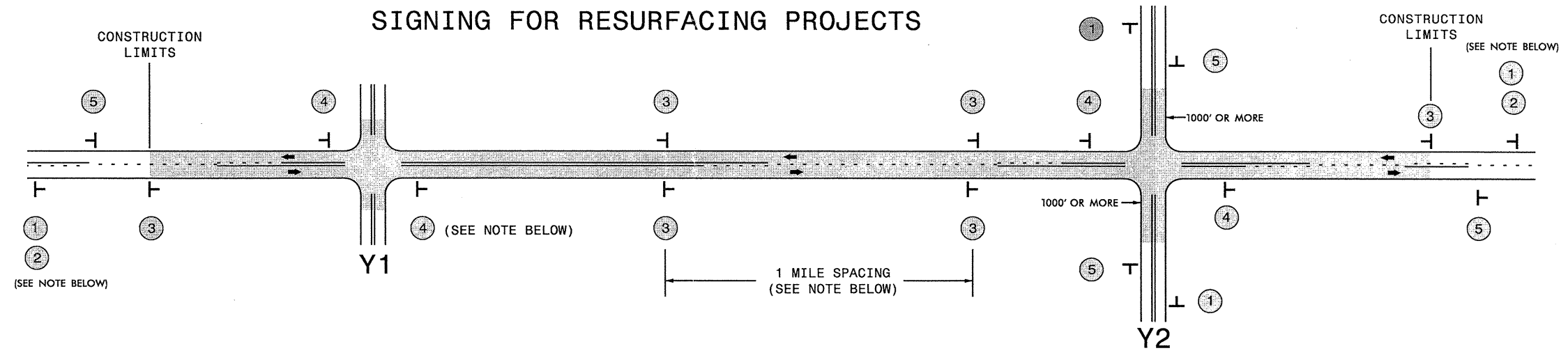


PROJECT NO.	SHEET NO.	TOTAL NO.
7CR.10791.52, 7CR.20791.52	7	

### THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LENGTH	WIDTH	4413000000-E	4457000000-N	45100000	4685000000-E		4686000000-E		46900000	46950000	46970000	47100000	4725000000-E					4810000000-E		4820000000-E		483500	4845000000-N					4900000000-N		4905000000-N	
									WORK ZONE ADVANCE/GENERAL WARNING SIGNING	TEMPORARY TRAFFIC CONTROL	LAW ENFORCEMENT	4" X 90 M WHITE THERMO	4" X 90 M YELLOW THERMO	4" X 120 M WHITE THERMO	4" X 120 M YELLOW THERMO	6" X 120 M WHITE THERMO	8" X 90 M YELLOW THERMO	8" X 120 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO LT ARROW 90 M	THERMO STR ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR & RT ARROW 90 M	THERMO STR & LT ARROW 90 M	4" WHITE PAINT	4" YELLOW PAINT	8" WHITE PAINT	8" YELLOW PAINT	24" WHITE PAINT	PAINT LT ARROW	PAINT STR ARROW	PAINT RT ARROW	PAINT STR & RT ARROW	PAINT STR & LT ARROW	YELLOW & WHITE MARKERS	CRYSTAL & RED MARKERS	SNOWPLOWABLE PAVEMENT MARKERS	
NO		NO			NO				SF	LS	HR	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	
7CR.10791.52	Rockingham	1	US 311 (ACADEMY STREET)	FROM JOINT EAST OF NON-SYSTEM (SUMMIT STREET) - 4.43 TO BRIDGE #30 (OVER DAN RIVER) - 5.55	1-5	2	1.123	28-44	200	*	20	2,930		442	13,755	16	81	554	154	15	3	3	3	2	612	11,295	554	81	154	15	3	3	3	2			150	
TOTAL FOR PROJ NO. 7CR.10791.52												2,930	14,197								26			11,907	635			26										
7CR.20791.52	Rockingham	2	SR 2336 (GRIFFIN ROAD)	FROM NC 65 - 0.00 TO SR 2326 (GOLD HILL ROAD) - 3.17	6	2	3.174	20	320			15	375			58									66,290	59,575										275		
		3	SR 2326 (GOLD HILL ROAD)	FROM US 220 - 0.00 TO SR 2316 (BETHANY ROAD) - 4.22	6	2	4.223	22-34	420			15	750			170									87,700	86,835										350		
		4	SR 2308 (BALD HILL LOOP ROAD)	FROM JOINT WEST OF SR 2319 (BAGGAGE ROAD) - 1.81 TO NC 704 - 4.83	6	2	3.022	20	300			15	600			156									62,620	61,023										250		
		5	SR 1603 (HENRY STREET)	FROM SOUTH RADIUS OF US 220 NORTHBOUND RAMPS- 0.10 TO NC 770 (MAIN STREET) - 2.15	3-8	2	2.135	22-57	250			15	19,065	730	87	22,240	204		76	90				1		1	87	4,440	76		90			1	1	200	60	
		6	SR 1533 (SHADY GROVE ROAD)	FROM NC 770/SR 1604 (WASHINGTON STREET) - 1.31 TO SR 1535 (PRICE ROAD)	6	2	1.307	21-36	150			15	375			54									26,850	27,248										125		
		7	SR 2104 (LONGHOOK ROAD)	FROM NC 770 - 0.18 TO END OF PAVEMENT - 1.07	6	2	0.889	19-24	100		*	15	225			40									18,330	18,780												
		8	SR 1743 (GANT ROAD)	FROM NC 770 - 0.00 TO VIRGINIA STATE LINE - 0.60	6	2	0.603	21	60			15													12,740	3,435										50		
		9	SR 2082 (HIGH SCHOOL ROAD)	FROM NC 87 - 0.00 TO HIGH SCHOOL ENTRANCE GATE - 0.11	6	2	0.114	21-32	41			15	75			14									2,270	2,420												
		10	SR 2540 (WALKER STREET)	FROM SR 2817 (BARNES STREET) - 0.00 TO END OF CURB AND GUTTER - 0.21	9	2	0.209	32	40			15																										
		11	SR 2417 (SWALLOW ROAD)	FROM US 158 - 0.58 TO SR 2414 (REID SCHOOL ROAD) - 0.00	6	2	0.582	21-47	60			15	150			26									12,300	13,380			38							50		
		12	SR 2416 (HUNTER ROAD)	FROM SR 2417 (SWALLOW ROAD) - 0.08 TO SR 2414 (REID SCHOOL ROAD) - 0.00	6	2	0.078	20	30			15													1,640	1,640										10		
		13	SR 2627 (CANDY CREEK ROAD)	FROM US 29 BUSINESS - 2.81 TO NC 150 - 0.00	6,10	2	2.815	20-98	300			15	375			118									58,690	53,425										250		
TOTAL FOR PROJ NO. 7CR.20791.52												180	21,990	730	87	22,240	840		76	90				1		1	349,517	332,201	76	38	90			1	1	1,560	60	
													22,720	22,327									2			681,718	114			2						1,620		
GRAND TOTAL							20,274		2,271	1	200	24,920	730	529	35,995	856	81	630	244	15	3	4	3	3	350,129	343,496	630	119	244	15	3	4	3	3	1,560	60	150	
												25,650		36,524									28			693,625	749			28						1,620		

## SIGNING FOR RESURFACING PROJECTS



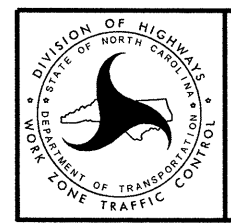
LEGEND	
T	STATIONARY SIGN
←	DIRECTION OF TRAFFIC FLOW

### MAINLINE (-L-) SIGNING

### -Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	1	 <small>W20-1 48" X 48"</small>	PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	<p style="text-align: center;">NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</p> <ol style="list-style-type: none"> <li>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>2) SUBDIVISION ROADS</li> <li>3) DEAD END ROADS</li> </ol> <p style="text-align: center;">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.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <small>W20-1 48" X 48"</small> </div> <div style="text-align: center;">   <small>W20-7 A 48" X 48"</small> </div> </div> <p style="text-align: center;">PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.</p>
	2	 <small>W7-3aP 24" X 18"</small>	#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)	
	3	 <small>SP 13107 48" X 48"</small>	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.	
	4	 <small>SP 13106 48" X 48"</small>	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.	
	5	 <small>G20-2 A 48" X 24"</small>	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.	

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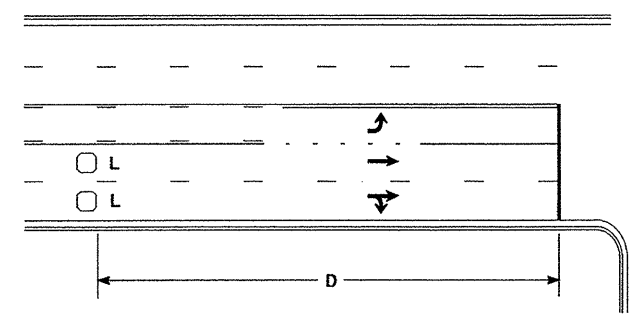


RESURFACING  
ADVANCE WARNING SIGNS  
FOR  
RURAL AND SUBURBAN  
2 LANE ROADWAYS



### High Speed Detection

[≥40 mph (64 km/hr)]

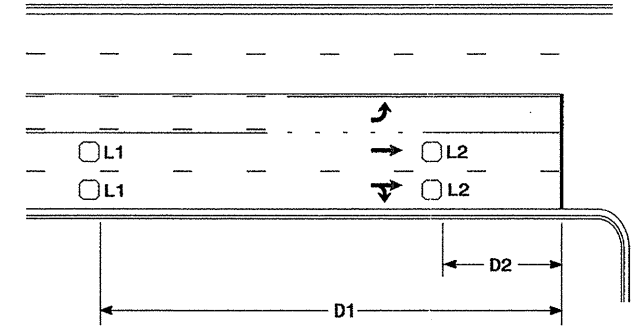


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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



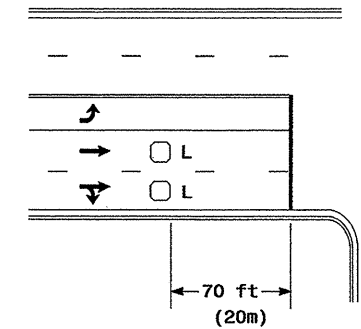
Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

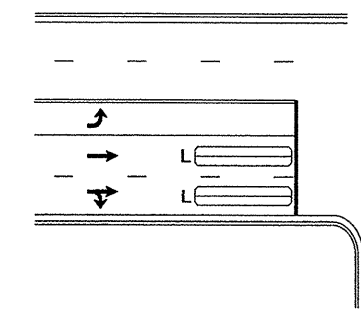
### Low Speed Detection

[≤35 mph (56 km/hr)]



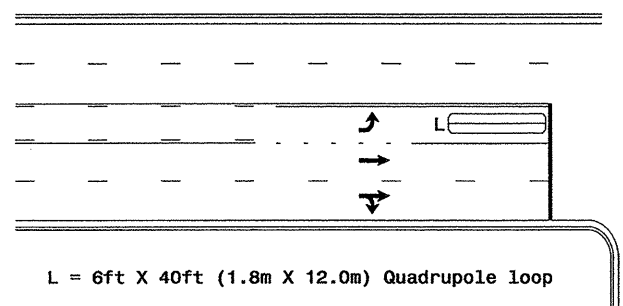
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

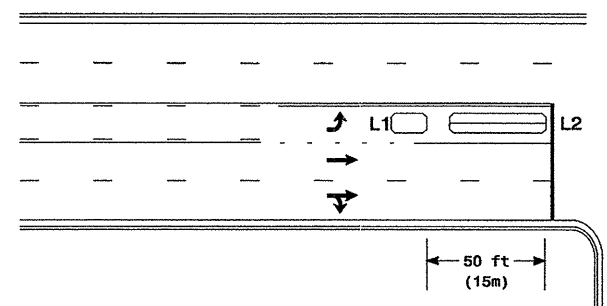
### Left Turn Lane Detection



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

Presence Loop Detection

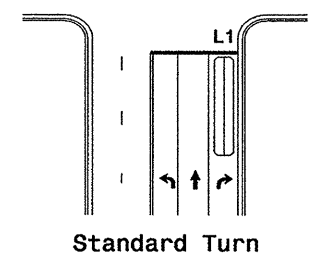
OR



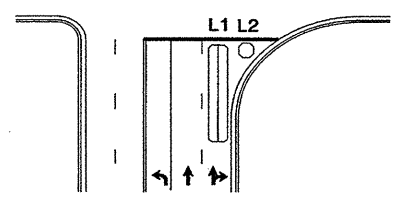
L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector  
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Queue Loop Detection

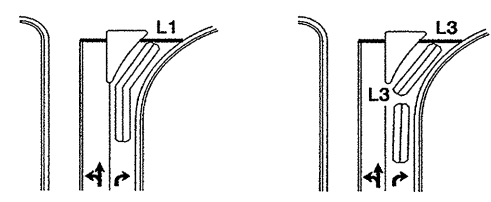
### Right Turn Lane Detection



Standard Turn



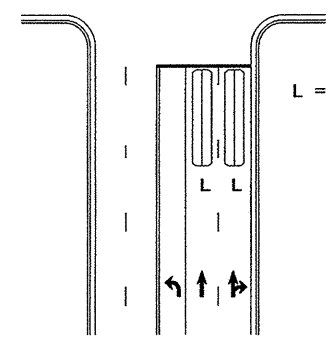
Wide Radius Turn



Channelized Turn

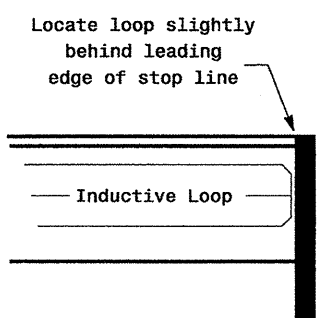
L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop  
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop  
Wired separately  
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop  
Wired in series

### 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



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

	Typical Loop Locations		
	PLAN DATE: June 2006 PREPARED BY: P. L. Alexander	REVIEWED BY:	
REVISIONS: Revise pavement markings		INIT. DATE:	SIGNATURE DATE:
SIG. INVENTORY NO.			

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