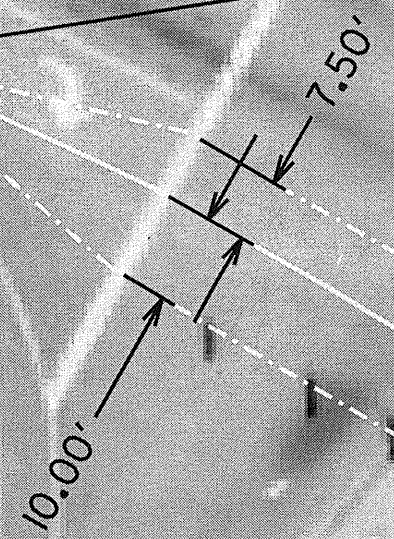




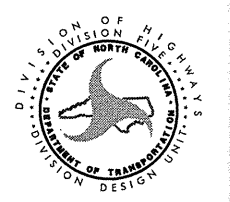


ALIGNMENT "RS"  
FOLLOWS THE PAVEMENT JOINT  
LOCATED ALONG THE STOPBAR

FIELD ADJUST TIE-IN  
AS DIRECTED  
BY THE ENGINEER



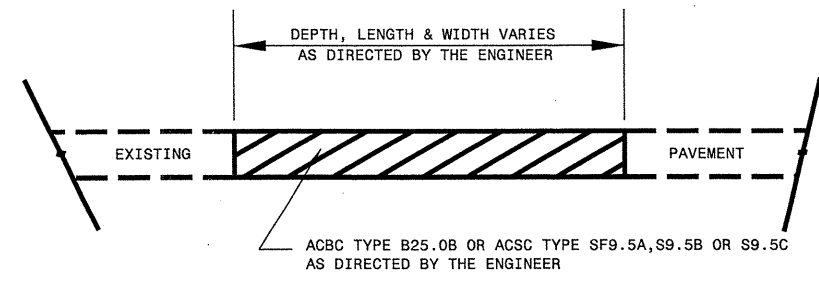
RALPH STEPHENS  
LEVELING DETAIL





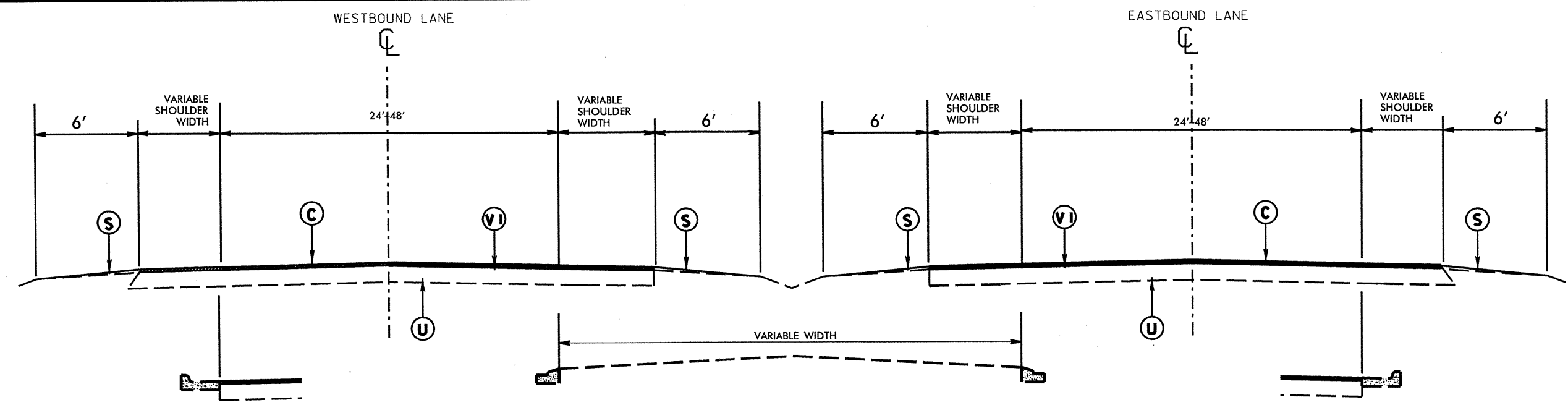
# PAVEMENT SCHEDULE

(C)	PROP. APPROX. 2" ASPH. CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(D)	PROP. APPROX. 6" ASPH. CONC. INTERMEDIATE COURSE, TYPE 119.0C, 4" LIFT (456 LBS. PER SQ. YD.) AND A 2" LIFT (228 LBS. PER SQ. YD.)
(V1)	MILL 2.0" IN DEPTH
(V2)	MILL 6.0" IN DEPTH
(S)	PROP. SHOULDER GRADING
(U)	EXISTING PAVEMENT



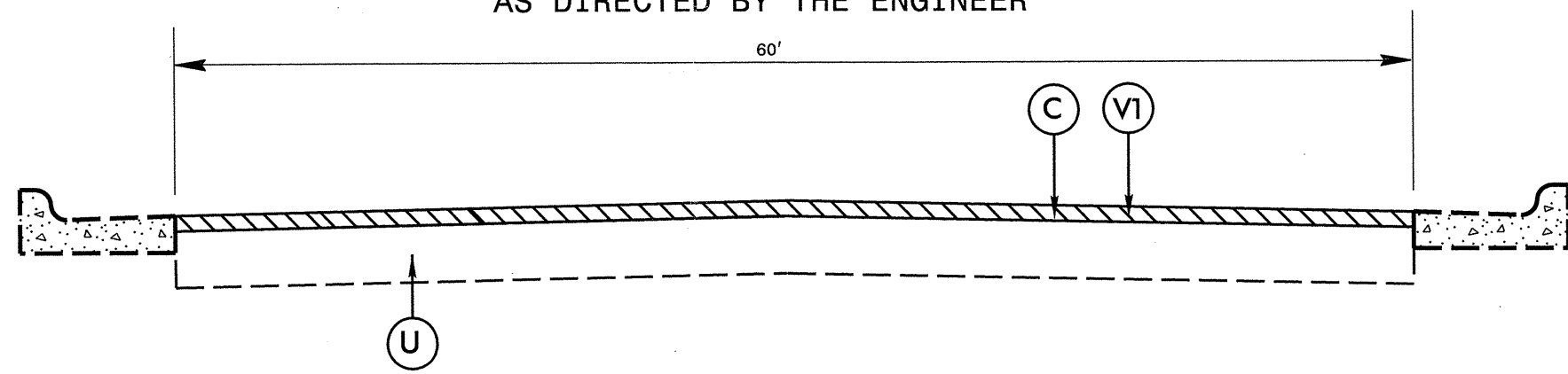
**PATCHING EXISTING PAVEMENT**  
 PATCHING TO BE PERFORMED PRIOR TO MILL AND FILL OPERATION

ALL UNPAVED S.R. ROADS TO BE RESURFACED 50' FROM EDGE OF PAVEMENT OF MAIN PROJECT  
 ALL PAVED S.R. ROADS TO BE RESURFACED TO THE ENDS OF THE RADII, OR AS DIRECTED BY THE ENGINEER.  
 EDGES, PAVEMENT WIDENING, INTERSECTIONS AND BRIDGE FLARES ARE INCLUDED IN THE TABLE OF QUANTITIES.  
 BRIDGES TO BE RESURFACED AT LOCATIONS AND TO DEPTH AS DIRECTED BY THE ENGINEER.



**TYPICAL SECTION NO. 1**

NOTE: RECENTLY CONSTRUCTED SUPERSTREET INTERSECTIONS ARE NOT INCLUDED IN THIS PROJECT AND ARE NOT TO BE RESURFACED, AS DIRECTED BY THE ENGINEER



**TYPICAL SECTION NO. 2**

# PAVEMENT SCHEDULE

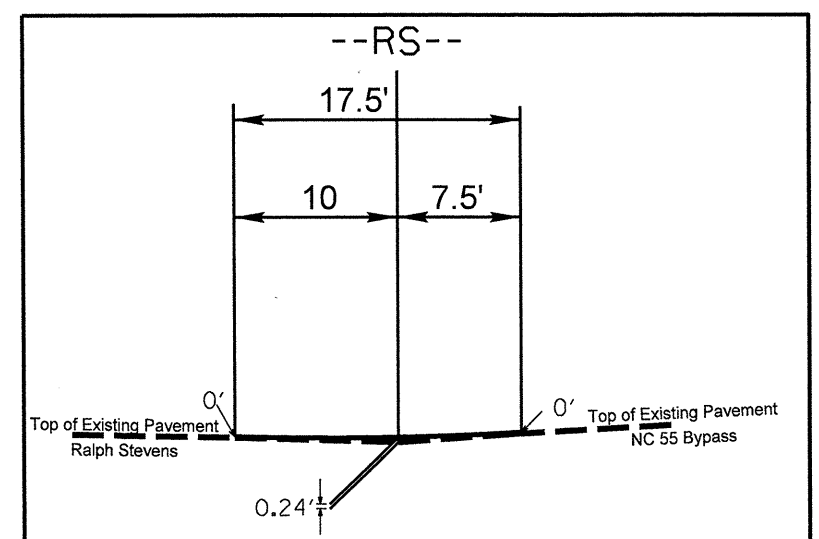
(C)	PROP. APPROX. 2" ASPH. CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(D)	PROP. APPROX. 6" ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0C, 4" LIFT (456 LBS. PER SQ. YD.) AND A 2" LIFT (228 LBS. PER SQ. YD.)
(V1)	MILL 2.0" IN DEPTH
(V2)	MILL 6.0" IN DEPTH
(S)	PROP. SHOULDER GRADING
(U)	EXISTING PAVEMENT

MINIMUM TIE IN ON CITY STREETS AND COMMERCIAL DRIVES AS DIRECTED BY THE ENGINEER

EXTEND LIMITS TO BACK OF SIGNAL LOOPS ON STATE MAINTAINED ROADS AS DIRECTED BY THE ENGINEER

MINIMUM TIE IN ON CITY STREETS AND COMMERCIAL DRIVES AS DIRECTED BY THE ENGINEER

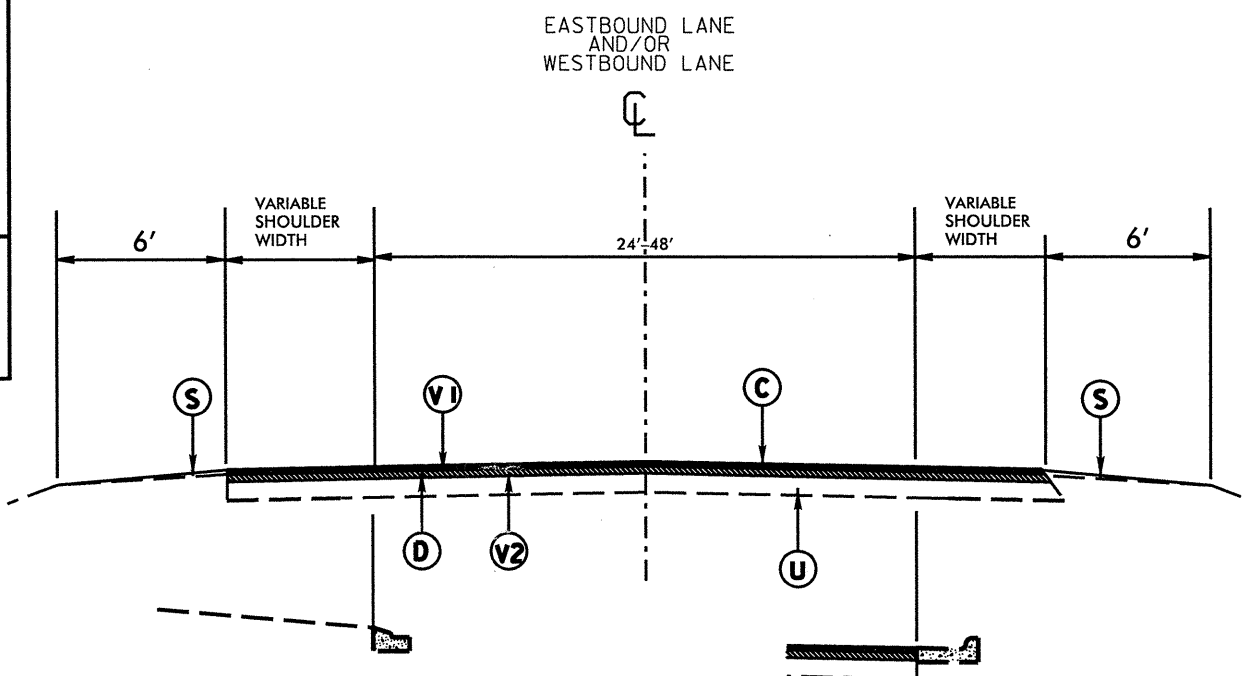
EXTEND LIMITS TO BACK OF RADIUS ON STATE MAINTAINED ROADS, S DIRECTED BY THE ENGINEER



FOR LEVELING DETAIL AT RALPH STEVENS (NTS)  
NOTE: CONTRACTOR TO PERFORM PRIOR TO MILL AND FILL OPERATION

DETAIL OF PROJECT LIMITS AT SIGNALIZED Y LINES to be paid for as 2" milling

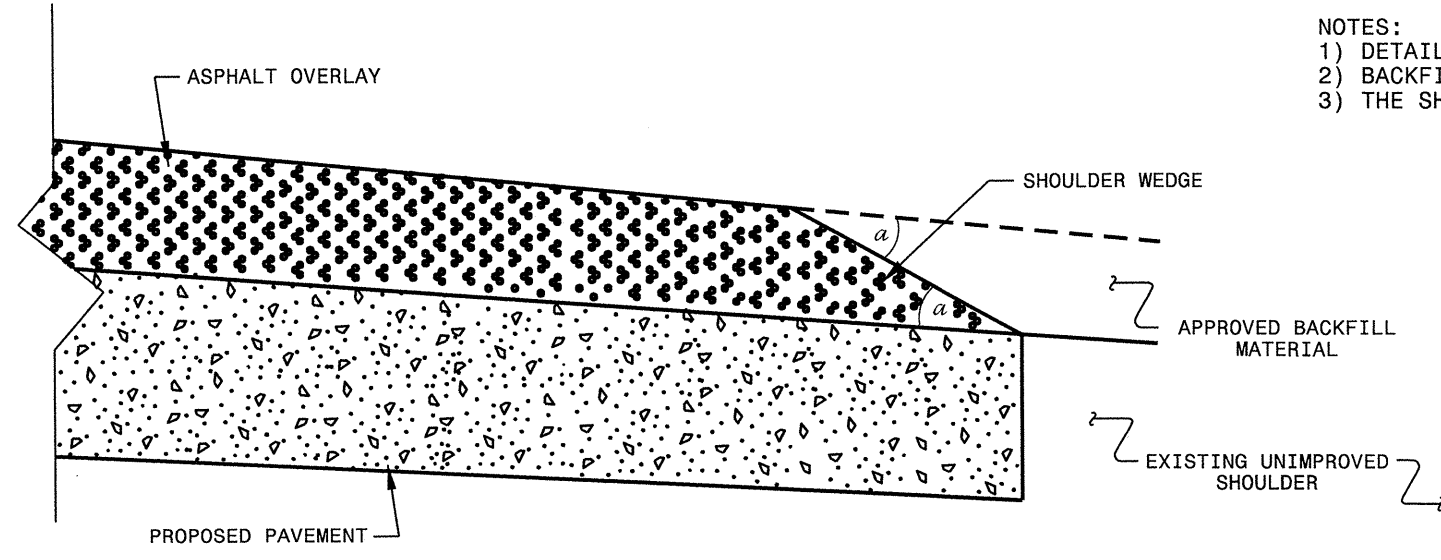
DETAIL OF PROJECT LIMITS AT UNSIGNALIZED Y LINES to be paid for as 2" milling



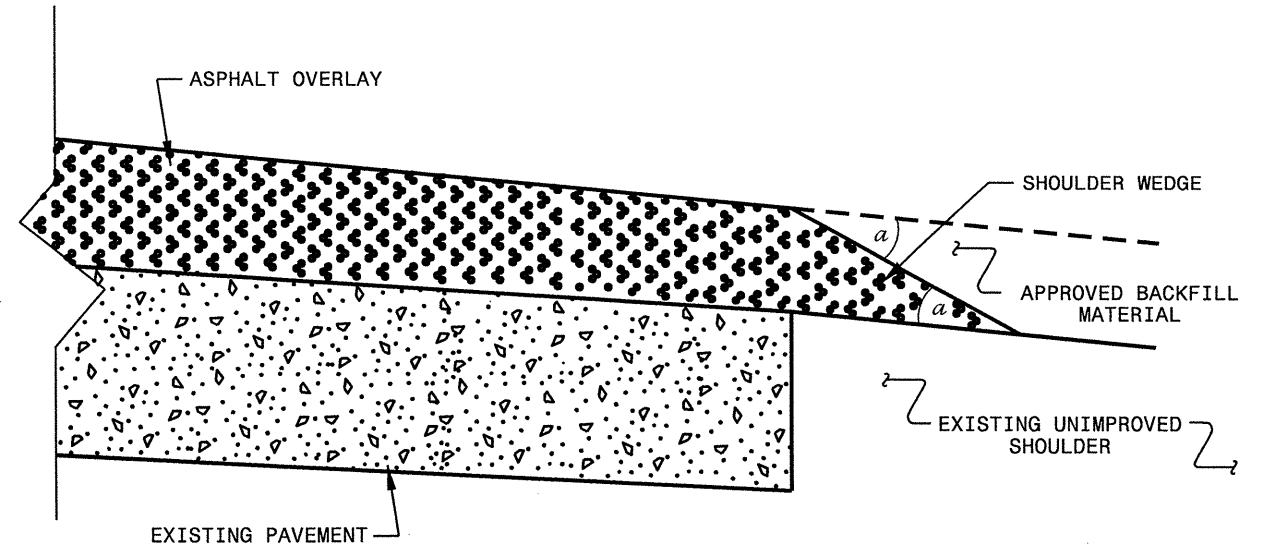
## TYPICAL SECTION NO. 3

NOTE: 6" MILL AND FILL WILL BE PERFORMED IN AREAS OF EXISING SETTLEMENT AS DIRECTED BY THE ENGINEER.  
6" MILL AND FILL SHALL BE PERFORMED PRIOR TO 2" MILL.  
2" MILL AND FILL WILL REMOVE THE TOP 2" LIFT OF I19.0C.  
PAYMENT WILL BE MADE FOR BOTH OPERATIONS IN THIS AREA

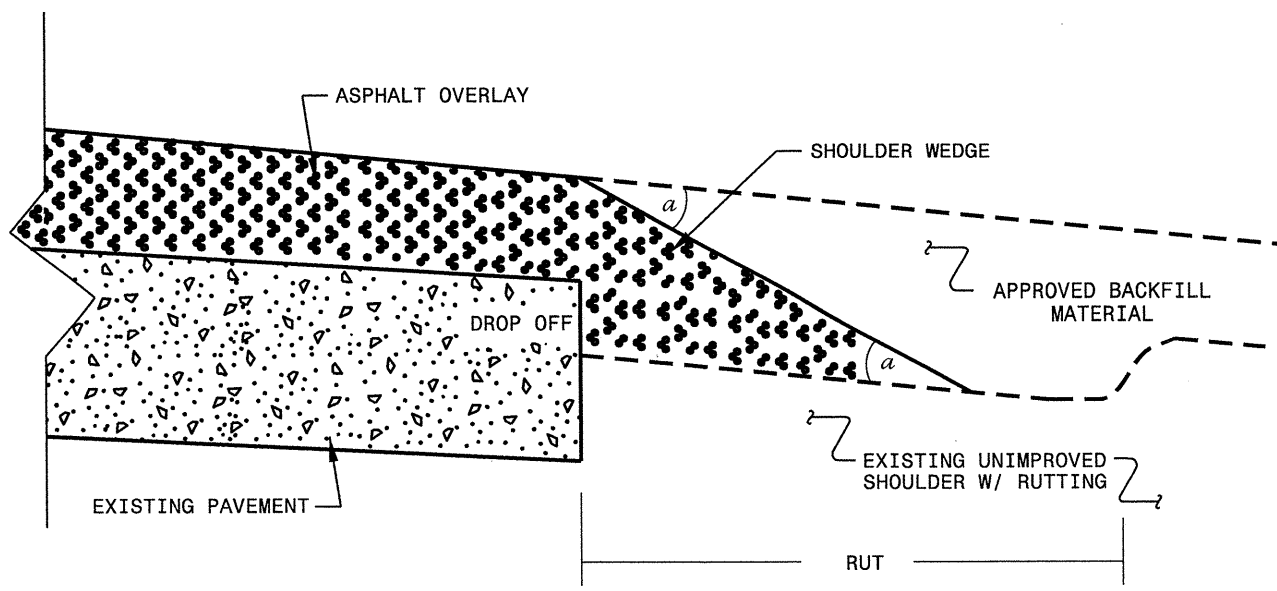
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFD AND ULTRA-THIN BONDED WEARING COURSE.
  - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
  - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



**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	
<b>SHOULDER WEDGE DETAILS</b>			
ORIGINAL BY:	T.SPELL	DATE:	7-19-11
MODIFIED BY:		DATE:	10/16/12
CHECKED BY:		DATE:	
FILE SPEC.:	susr/details/stand/shoulderwedgedetail.dgn		

\*\*\*\*\*  
 SYSTEMS  
 \*\*\*\*\*

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

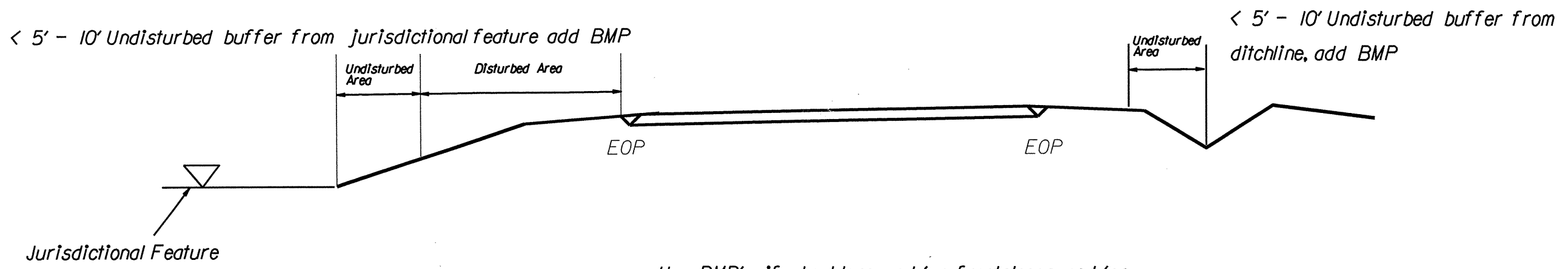
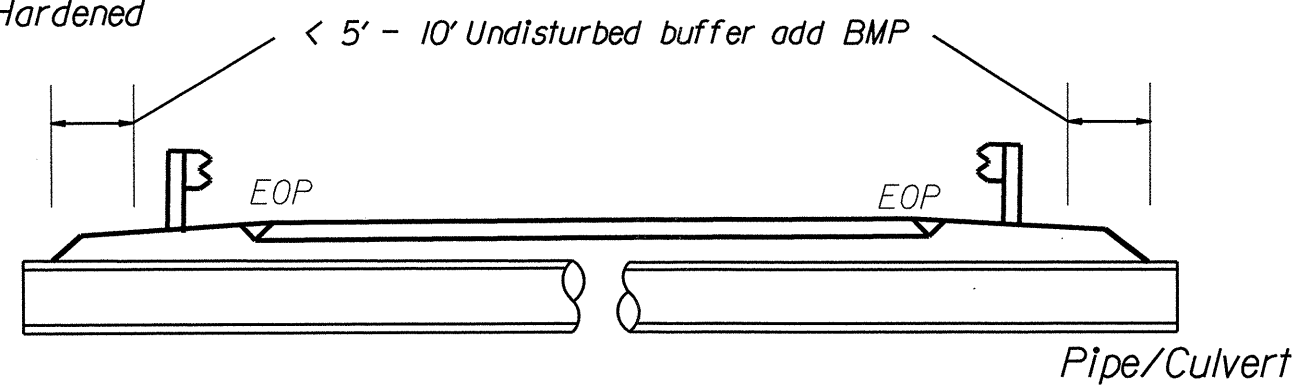
***SOIL STABILIZATION TIMEFRAMES***

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HOW ZONES.

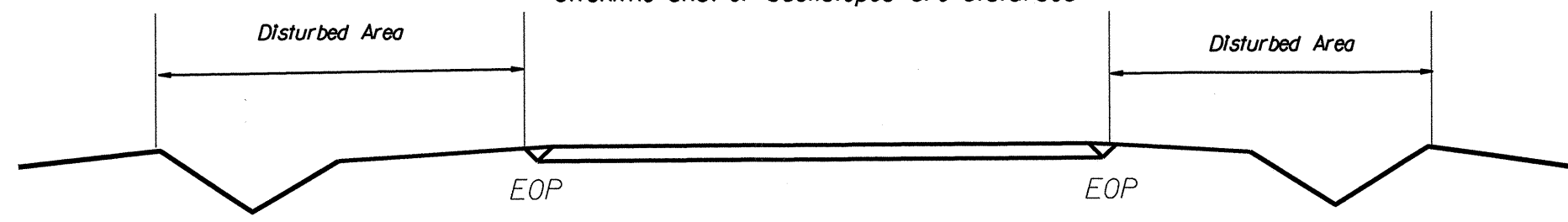
NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

# EROSION CONTROL DETAIL

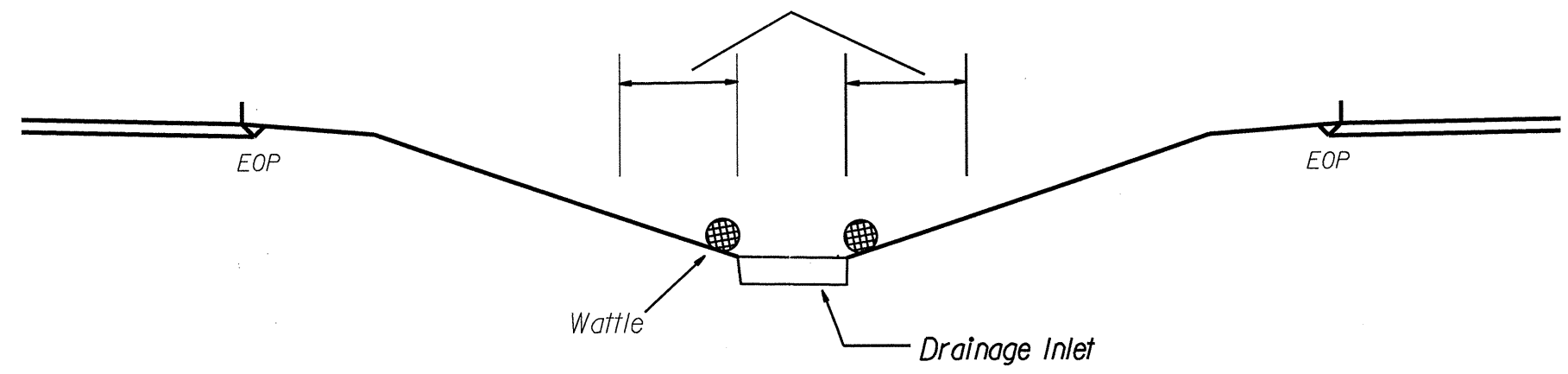
BMP Options: Wattle, Silt Fence or Hardened Aggregate.



Use BMP's if shoulders and/or front slopes and/or ditchline and/or backslopes are disturbed

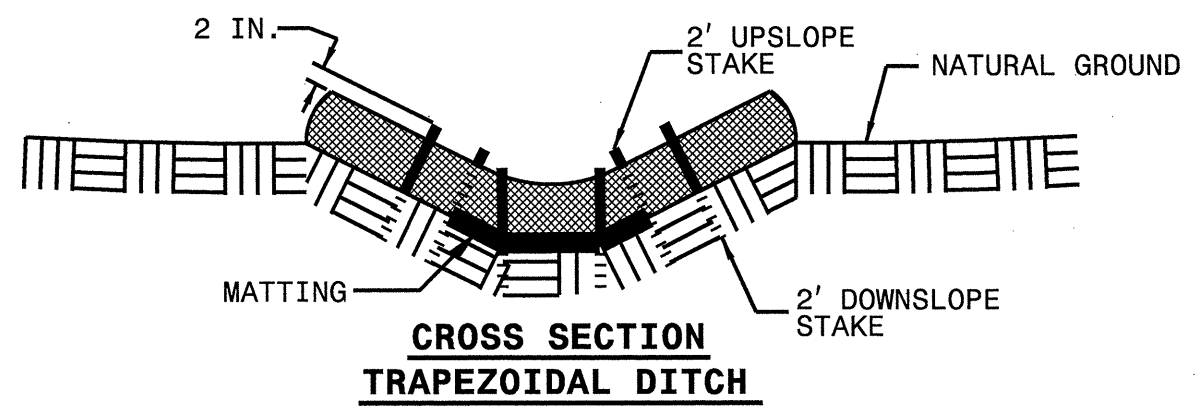
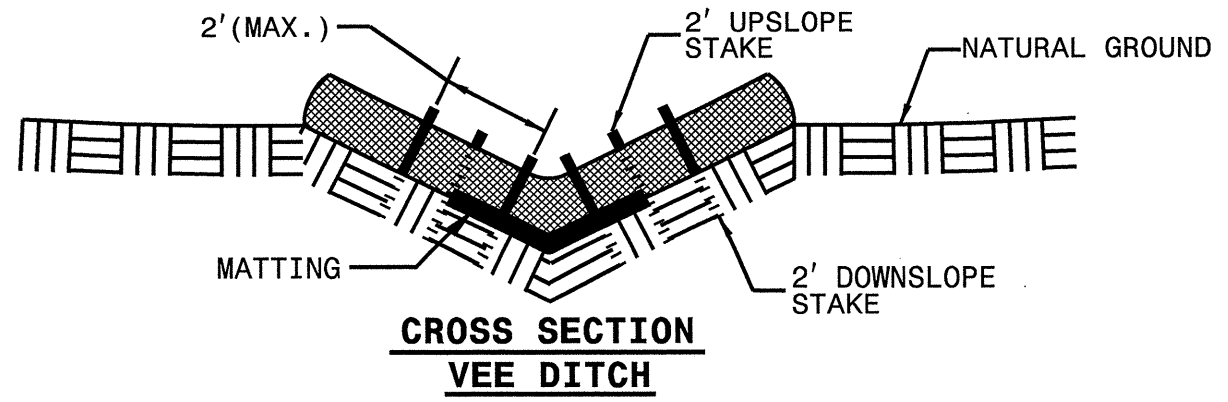
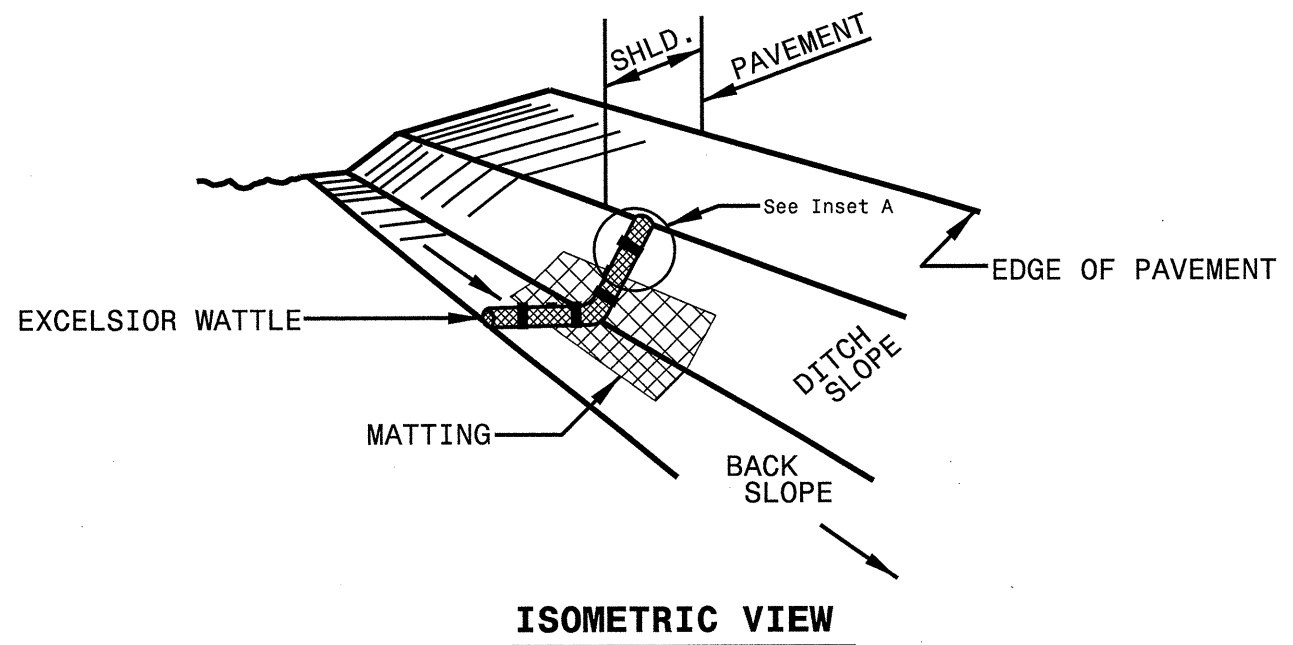


< 5' - 10' Undisturbed buffer from inlet, add wattle



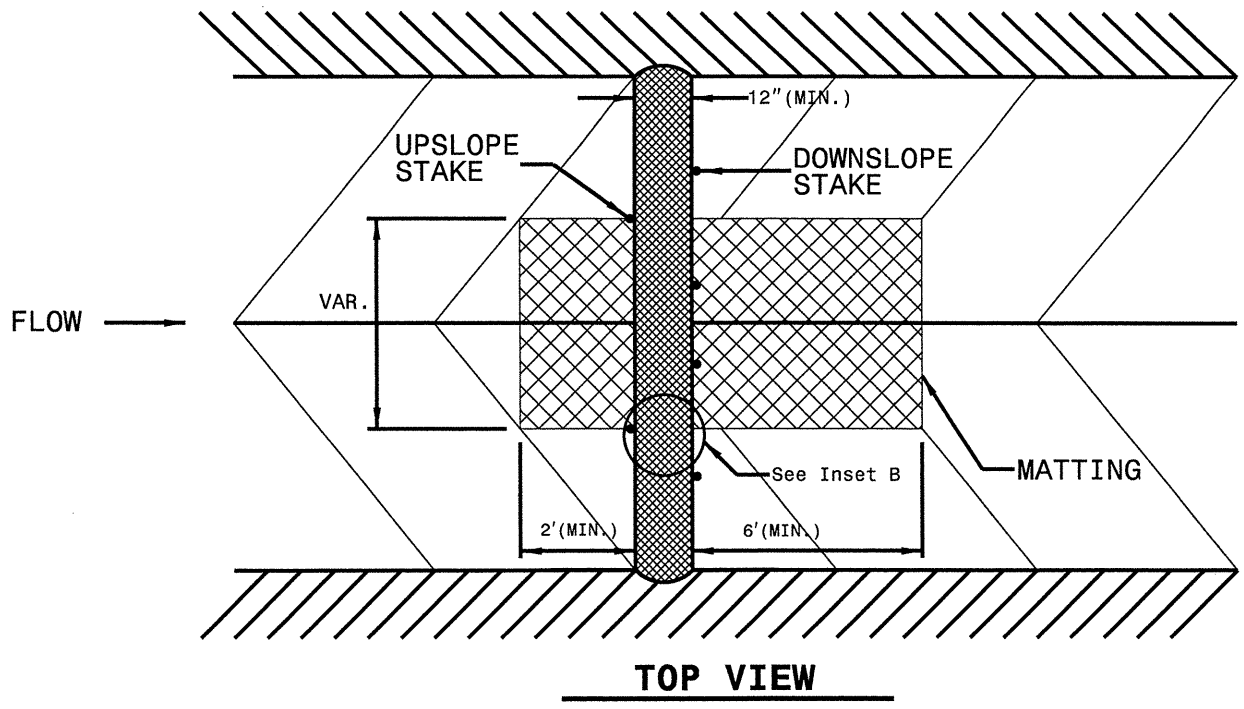
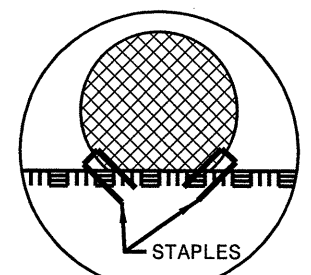
NOT TO SCALE

# WATTLE DETAIL



**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.





PROJECT NO.	SHEET NO.	TOTAL NO.
5CR.10921.47	9	

### 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	BORROW CY	SHOULDER GRADING SMI	INCIDENTAL STONE BASE TONS	2" MILLING SY	6" MILLING SY	INTERMEDIATE COURSE, I19.0C TONS	SURFACE COURSE, S9.5C TONS	LEVELING COURSE, TYPE SF9.5A TONS
5CR.10921.47	Wake	1	NC 55 BYPASS	JOINTS NORTH OF US1 TO 1870' SOUTH OF SR (RALPH STEVENS LOOP) AND NC 55 (S MAIN ST)	1, 2, 3	2		NO	NO	5.81	60	1,398	13.98	699	221,358	1,745	600	27,341	20
<b>TOTAL FOR PROJ NO. 5CR.10921.47</b>										<b>5.81</b>		<b>1,398</b>	<b>13.98</b>	<b>699</b>	<b>221,358</b>	<b>1,745</b>	<b>600</b>	<b>27,341</b>	<b>20</b>
<b>GRAND TOTAL</b>										<b>5.81</b>		<b>1,398</b>	<b>13.98</b>	<b>699</b>	<b>221,358</b>	<b>1,745</b>	<b>600</b>	<b>27,341</b>	<b>20</b>

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	ASPHALT BINDER COURSE TONS	PATCHING EXISTING PAVEMENT TONS	ADJUST MANHOLES EA	ADJUST METER OR VALVE BOX EA	TEMPORARY SILT FENCE LF	WATTLE LF	SEED & MULCHING AC	INDUCTIVE LOOP LF	PORTABLE LIGHTING LS
5CR.10921.47	Wake	1	NC 55 BYPASS	JOINTS NORTH OF US1 TO 1870' SOUTH OF SR (RALPH STEVENS LOOP) AND NC 55 (S MAIN ST)	1, 2, 3	2		NO	NO	5.81	60	1,653	1,162	3	18	1,016	2,540	10.16	3,200	1
<b>TOTAL FOR PROJ NO. 5CR.10921.47</b>										<b>5.81</b>		<b>1,653</b>	<b>1,162</b>	<b>3</b>	<b>18</b>	<b>1,016</b>	<b>2,540</b>	<b>10.16</b>	<b>3,200</b>	<b>1</b>
<b>GRAND TOTAL</b>										<b>5.81</b>		<b>1,653</b>	<b>1,162</b>	<b>3</b>	<b>18</b>	<b>1,016</b>	<b>2,540</b>	<b>10.16</b>	<b>3,200</b>	<b>1</b>

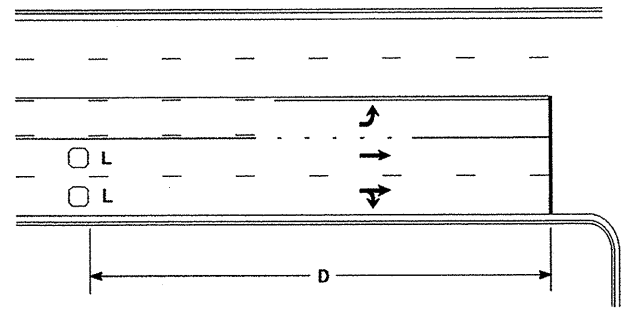
PROJECT NO.	SHEET NO.	TOTAL NO.
SCR.10921.47	10	

## THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4590000000-E	4510000000-N	4589000000-N	4685000000-E		4686000000-E		4695000000-E		4710000000-E	4721000000-E
										GENERIC TRAFFIC CONTROL ITEM WORK ZONE ADVANCE/GENERAL WARNING SIGNING SF	LAW ENFORCEMENT	GENERIC TRAFFIC CONTROL ITEM TEMPORARY TRAFFIC CONTROL	4" X 90 M WHITE THERMO	4" X 90 M YELLOW THERMO	4" X 120 M WHITE THERMO	4" X 120 M YELLOW THERMO	8" X 90 M WHITE THERMO	8" X 90 M YELLOW THERMO	24" X 120 M WHITE THERMO	THERMO MSG ONLY 120 M
5CR.10921.47	Wake	1	NC 55 BYPASS	JOINTS NORTH OF US1 TO 1870' SOUTH OF SR (RALPH STEVENS LOOP) AND NC 55 (S MAIN ST)	1, 2, 3	2		5.81	60	126	320	1	45,115	39,435	25,270	14,700	640	45	1,365	40
<b>TOTAL FOR PROJ NO. 5CR.10921.47</b>								<b>5.81</b>		<b>126</b>	<b>320</b>	<b>1</b>	<b>45,115</b>	<b>39,435</b>	<b>25,270</b>	<b>14,700</b>	<b>640</b>	<b>45</b>	<b>1,365</b>	<b>40</b>
<b>GRAND TOTAL</b>								<b>5.81</b>		<b>126</b>	<b>320</b>	<b>1</b>	<b>45,115</b>	<b>39,435</b>	<b>25,270</b>	<b>14,700</b>	<b>640</b>	<b>45</b>	<b>1,365</b>	<b>40</b>

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4725000000-E					4770000000-E	4805000000-N		4850000000-E	4875000000-N	4900000000-N	4905000000-N
										THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR ARROW 90 M	THERMO STR & RT ARROW 90 M	THERMO MERGE ARROW 90 MILS	4" WHITE COLD APPLIED PLASTIC, TYPE III	COLD APPLIED PLASTIC STR ARROW, TYPE III	COLD APPLIED PLASTIC LEFT ARROW, TYPE III	4" LINE REMOVAL	REML OF PVMT MRKG SYMBOLS & CHARACTERS	CRYSTAL & RED MARKERS	SNOW PLOWABLE MARKERS
5CR.10921.47	Wake	1	NC 55 BYPASS	JOINTS NORTH OF US1 TO 1870' SOUTH OF SR (RALPH STEVENS LOOP) AND NC 55 (S MAIN ST)	1, 2, 3	2		5.81	60	84	26	58	6	4	325	4	4	325	8	15	1,780
<b>TOTAL FOR PROJ NO. 5CR.10921.47</b>								<b>5.81</b>		<b>84</b>	<b>26</b>	<b>58</b>	<b>6</b>	<b>4</b>	<b>325</b>	<b>4</b>	<b>4</b>	<b>325</b>	<b>8</b>	<b>15</b>	<b>1,780</b>
<b>GRAND TOTAL</b>								<b>5.81</b>		<b>84</b>	<b>26</b>	<b>58</b>	<b>6</b>	<b>4</b>	<b>325</b>	<b>4</b>	<b>4</b>	<b>325</b>	<b>8</b>	<b>15</b>	<b>1,780</b>

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

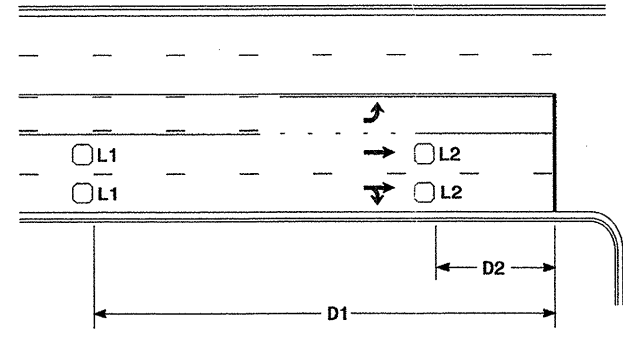


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

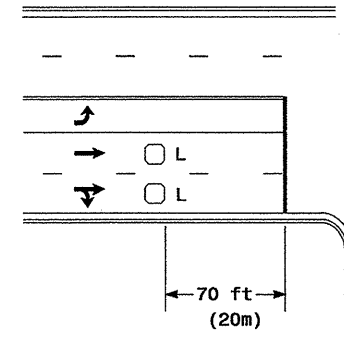


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

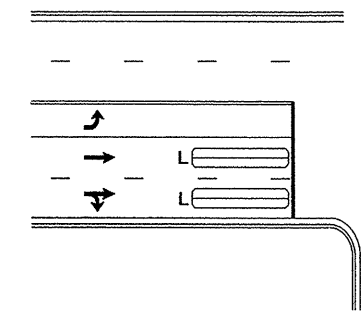
"Stretch" Operation

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



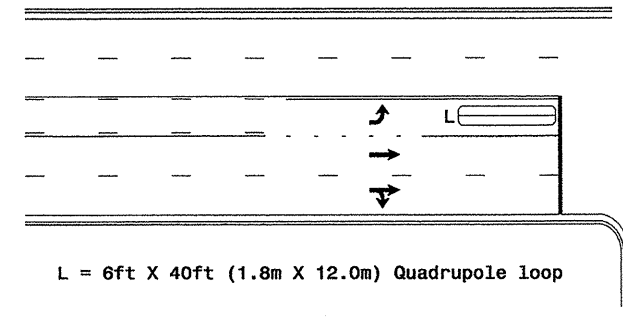
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

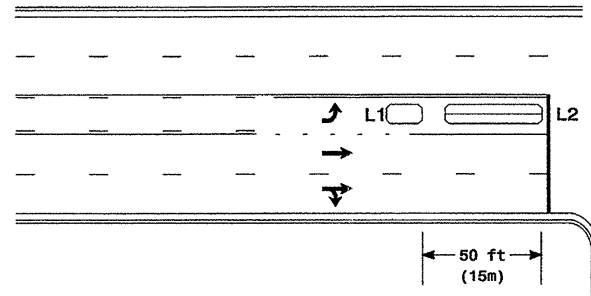
### Left Turn Lane Detection



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

Presence Loop Detection

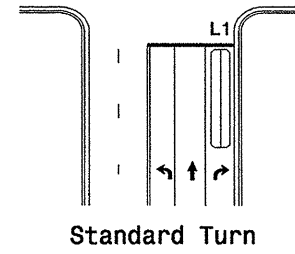
OR



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

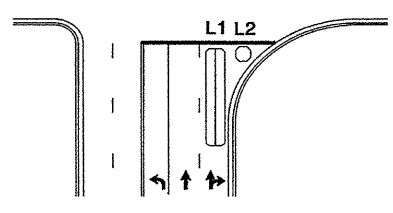
Queue Loop Detection

### Right Turn Lane Detection

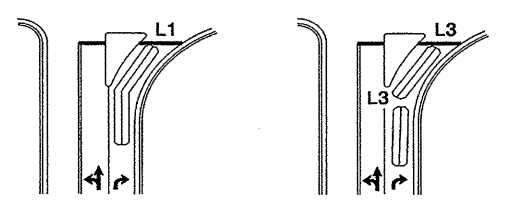


Standard Turn

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

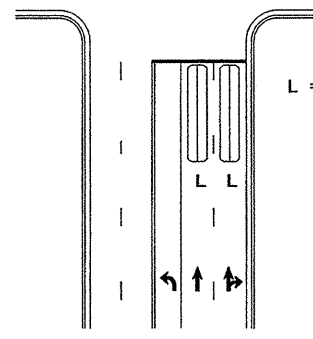


Wide Radius Turn



Channelized Turn

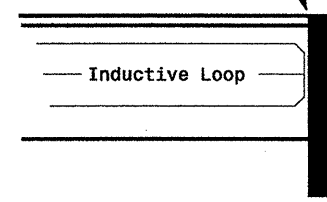
### Side Street Detection



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):

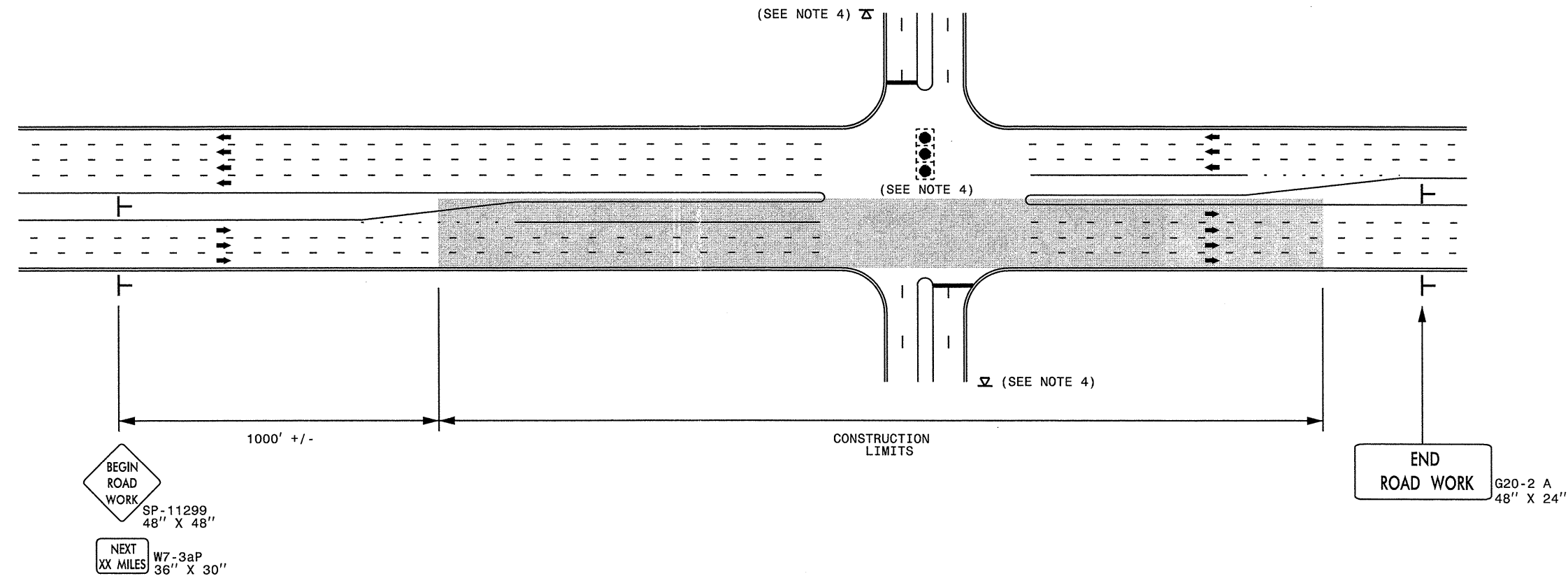
Length of Lead-in ft (m)	Number of Turns
< 250 (75)	3
250-375 (75-115)	4
375-525 (115-160)	5
> 525 (160)	6

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

	<b>Typical Loop Locations</b>		
	PLAN DATE: June 2006 PREPARED BY: P L Alexander	REVIEWED BY:	
REVISIONS:		INIT. DATE	SIGNATURE DATE
VI. Revise pavement markings		[Signature] 12/1/06	[Signature] 12/1/06
SIGNED: INVENTORY NO.			

19-DEC-2006 14:23  
s:\nts\signal\to turn\lmm\lmm\loop\loop\2006.dgn  
P.L.Alexander

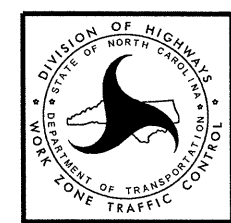
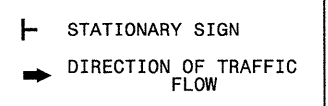
## URBAN / SUBURBAN WORKZONES



### 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) USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AND 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



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

20-AUG-2013 08:52  
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