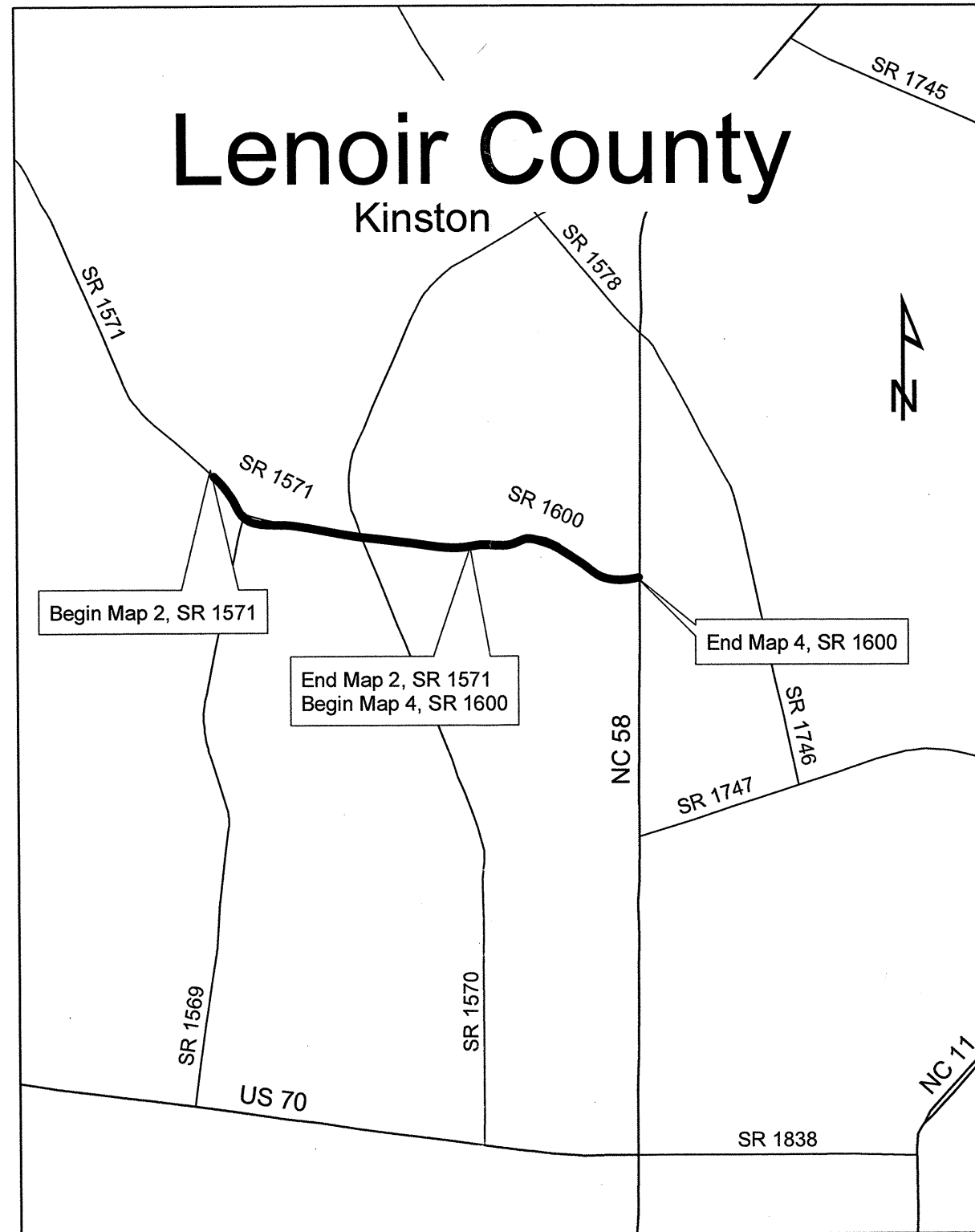


WBS 2CR.20541.6  
Mill & Resurface 2 sections and Resurface 4 sections of Secondary Roads in Lenoir County

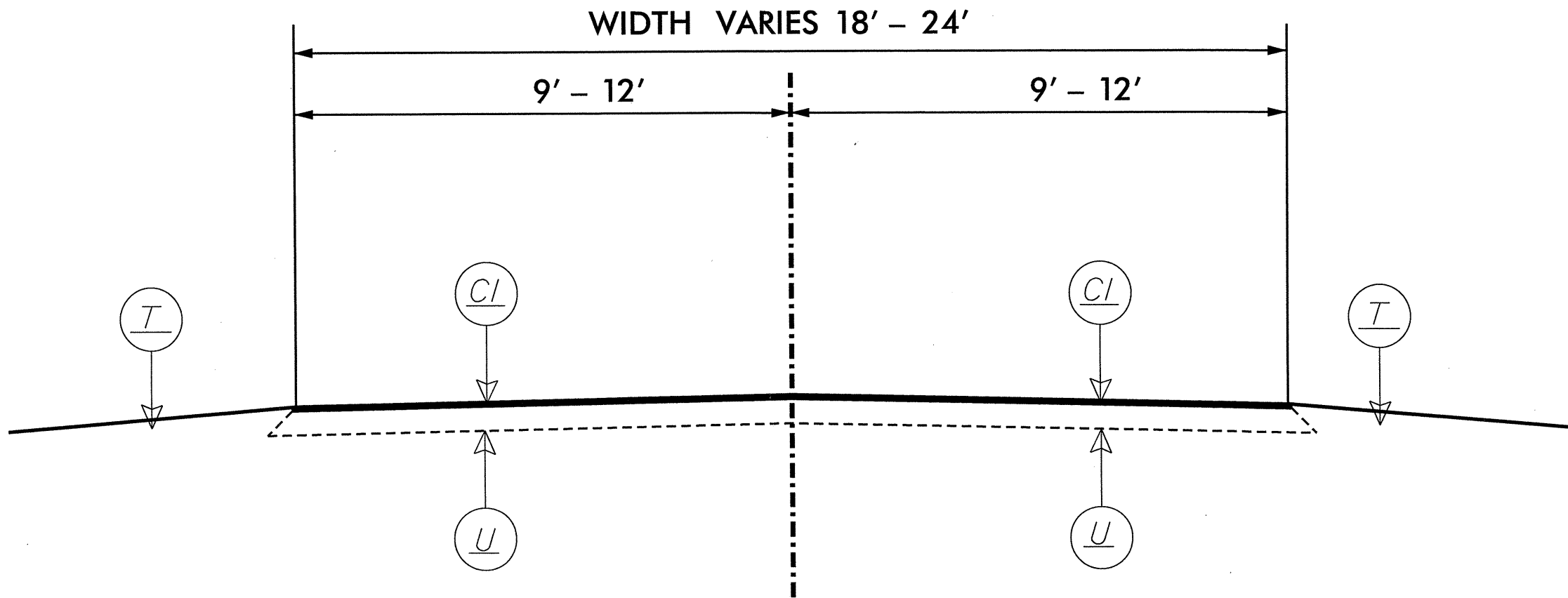


WBS 2CR.20541.6  
Mill & Resurface 2 sections and Resurface 4 sections of Secondary Roads in Lenoir County

# LENOIR COUNTY 2012 RESURFACING

C1	PROP APPROX, 1 3/4" ASPHALT CONCRETE SURFACE COURSE, TYPE, SF9.A, AT AN AVERAGE RATE OF 192.5 LBS PER SQ YD
T	SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



**TYPICAL SECTION #1**

**USE FOR MAP 1, 3, 5 AND 6**

10/26/98

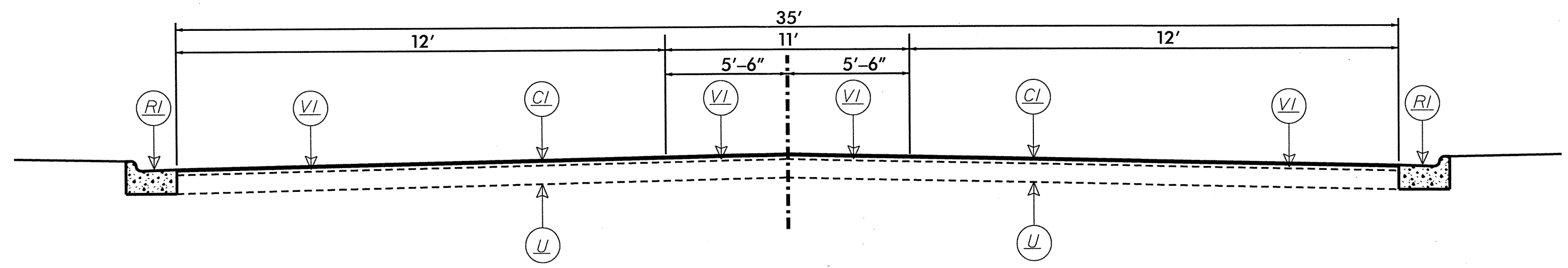
SYSTEMS AND DESIGN



# LENOIR COUNTY 2012 RESURFACING

C1	PROP APPROX, 2" ASPHALT CONCRETE SURFACE COURSE, TYPE, SF9.5A, AT AN AVERAGE RATE OF 220 LBS PER SQ YD *MILLING REQUIRED, SEE CONTRACT FOR SPECIFICATIONS.
VI	2" MILLING
R1	EXISTING 2'-6" CURB & GUTTER
U	EXISTING PAVEMENT

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



**TYPICAL SECTION #3**  
**USE FOR MAP #4**

10/26/08  
C:\TME\2008\20080924\20080924.DWG

PROJECT NO.	SHEET NO.	TOTAL NO.
2CR.20541.6	6	

## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	FINAL SURFACE TESTING REQUIRED	LENGTH MI	WIDTH FT	INDUCTIVE LOOPS LFT	ASPHALT PLANT MIX PAVEMENT REPAIR TON	2" MILLING SY	SURFACE COURSE, SF9.5A TONS	ASPHALT BINDER FOR PLANT MIX TONS	ADJ. OF MANHOLES EA	ADJ. OF METER OR VALVE BOX EA
2CR.20541.6	Lenoir	1	SR 1154	FROM DUPLIN CO TO NC 55	1	NO	4.85	18				5,576	374		
		2	SR 1571	FROM LUTHERAN LN TO BEGIN SR 1600	2	NO	0.53	60	200	25	18,656	2,058	124		
		3	SR 1573	FROM US 258 TO SR 1578	1	NO	2.94	24				5,329	357	2	8
		4	SR 1600	FROM END SR 1571 TO NC 58	4	NO	0.27	35	100	50	7,334	890	60		
		5	SR 1909	FROM US 258 TO NC 58	1	NO	4.25	20				5,450	327		
		6	SR 1543	FROM SR 1529 TO US 258	1	NO	2.59	20				3,241	217		
<b>TOTAL FOR PROJ NO. 2CR.20541.6</b>							<b>15.43</b>		<b>300</b>	<b>75</b>	<b>25,990</b>	<b>22,544</b>	<b>1,459</b>	<b>2</b>	<b>8</b>
<b>GRAND TOTAL</b>							<b>15.43</b>		<b>300</b>	<b>75</b>	<b>25,990</b>	<b>22,544</b>	<b>1,459</b>	<b>2</b>	<b>8</b>

## THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	LEN GTH	WIDTH	4399000000-N TEMPORARY TRAFFIC CONTROL LS
2CR.20541.6	Lenoir	1	SR 1154	FROM DUPLIN CO TO NC 55	4.9	18	1.00
		2	SR 1571	FROM LUTHERAN LN TO BEGIN SR 1600	0.5	60	
		3	SR 1573	FROM US 258 TO SR 1578	2.9	24	
		4	SR 1600	FROM END SR 1571 TO NC 58	0.3	35	
		5	SR 1909	FROM US 258 TO NC 58	4.3	20	
		6	SR 1543	FROM SR 1529 TO US 258	2.6	20	
<b>TOTAL FOR PROJ NO. 2CR.20541.6</b>					<b>15</b>		<b>1</b>
<b>GRAND TOTAL</b>					<b>15</b>		<b>1</b>

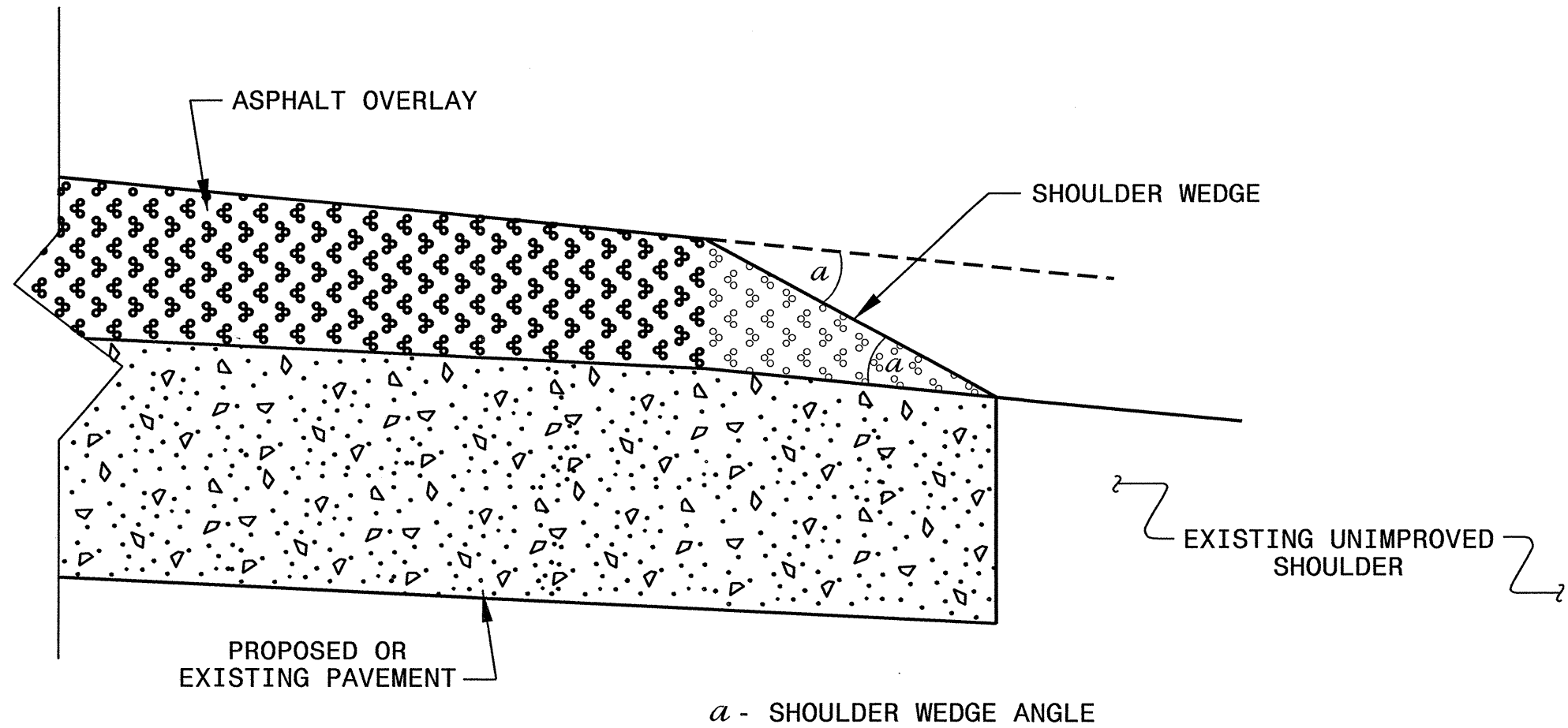
Amend Milling Asphalt Pavement Section 607. After page 6-6 line 15 of 2012 Standard Specifications, insert the following: Milled areas are to be resurfaced within 48 hours. Repairs of milled pavement damaged prior to the 48 hour time limit will be paid for per ton of Asphalt Plant Mix, Pavement Repair used in accordance with Section 654 of the 2012 Standard Specifications. If milled pavement is damaged after the 48 hour time period, the contractor will be responsible for the pavement repairs to the satisfaction of the Engineer at no cost to the department. If damage occurs on nights or weekends it shall be the responsibility of the contractor to furnish adequate warning signs and affect repairs as soon as possible.

Amend Section 654 Asphalt Plant Mix Pavement Repair After Page 6-47 Line 4, insert the following: The price per ton paid will be full compensation for all labor, materials and equipment necessary to excavate and dispose of damaged subgrade and asphalt material and place acceptable asphalt plant mix in the repair.

Map 2 SR 1571 will require the installation of signal induction loops damaged by milling at the intersection of SR 1569 and the east side of SR 1570.

Map 4 SR 1600 will require the installation of signal induction loops damaged by milling at the intersection of NC 58.

Shoulder reconstruction, pavement markings and erosion control will be accomplished by state forces.

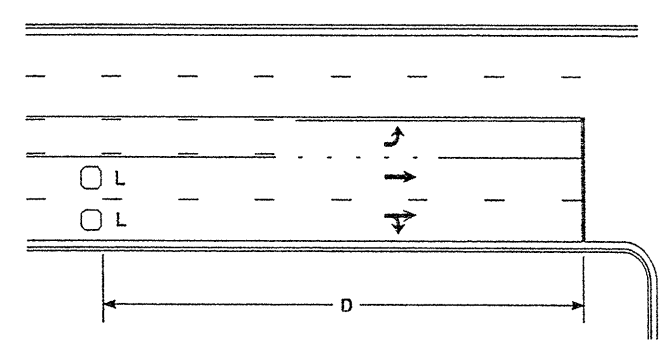


## SHOULDER WEDGE DETAIL

04-OCT-2011 12:22  
 C:\Users\jhowerton\Documents\Special Details\howerton\shoulder-wedge\detail.dgn  
 \$\$\$USERNAME\$\$\$

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

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

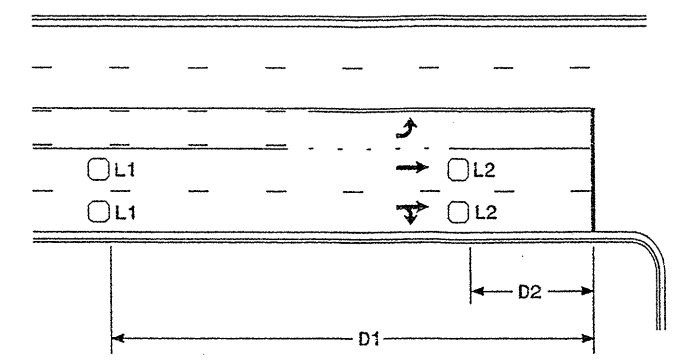


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

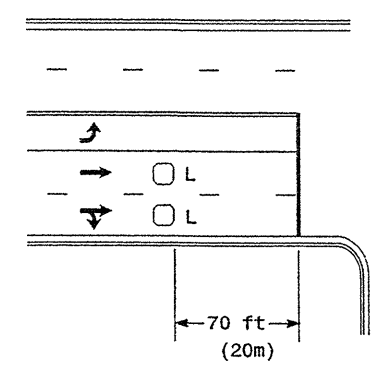


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

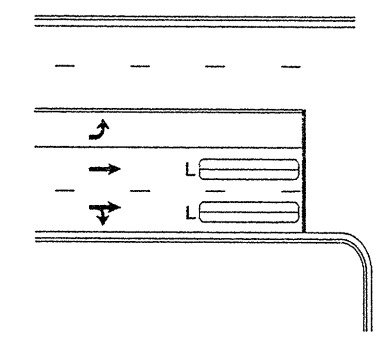
"Stretch" Operation

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



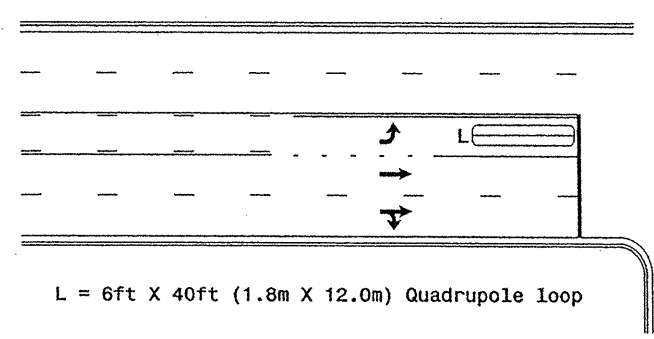
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

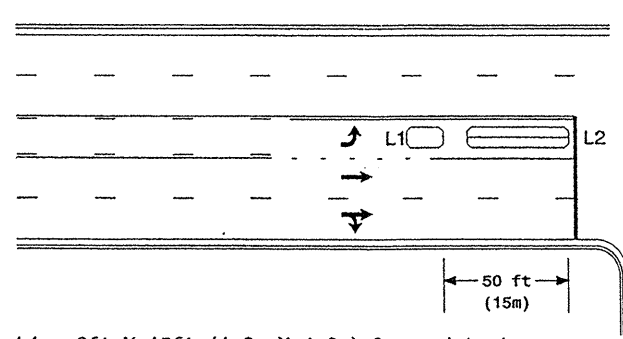
### Left Turn Lane Detection



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

Presence Loop Detection

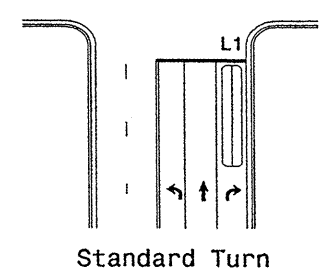
OR



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

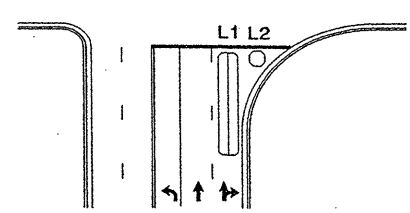
Queue Loop Detection

### Right Turn Lane Detection

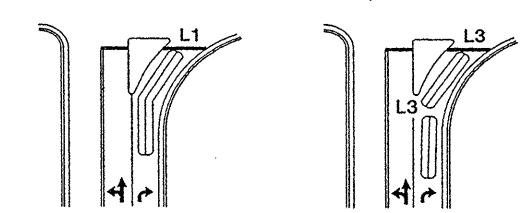


Standard Turn

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

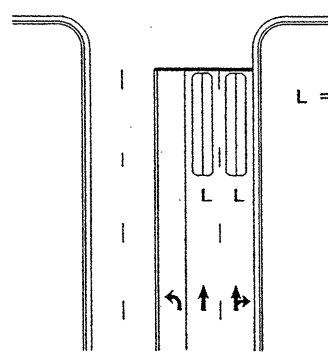


Wide Radius Turn



Channelized Turn

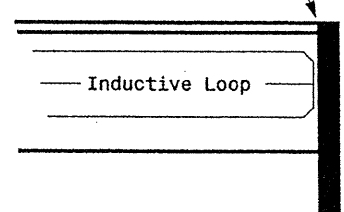
### Side Street Detection



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

19-DEC-2006 14:29  
S:\ITS\_Signals\1b turn\_inmi\scd\typical\2006.dgn  
P:\alexander

	Typical Loop Locations		
	PLAN DATE: June 2006 PREPARED BY: P. L. Alexander	REVIEWED BY: DATE: 12/21/06	



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

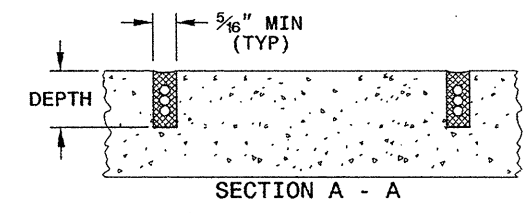
11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

SHEET 1 OF 3  
**1725D01**

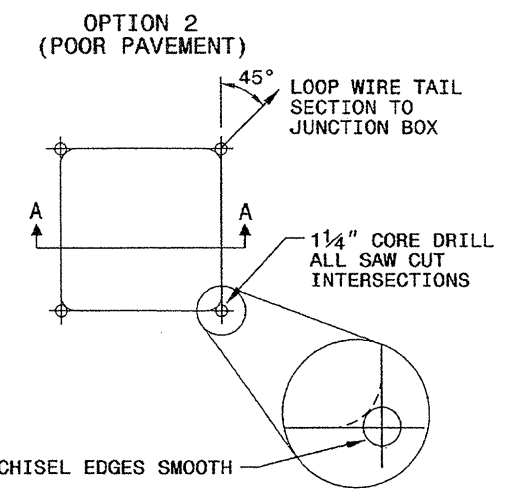
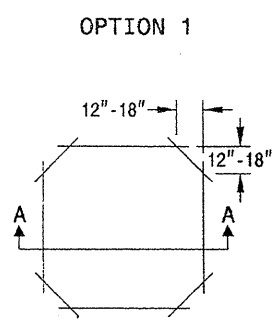
**SAW SLOT DEPTH CHART**

DEPTH (IN)	NO. OF WIRE TURNS					
	2	3	4	5	6	
CONCRETE	2.0	2.0	2.5	2.5	3.0	
ASPHALT	2.0	2.5	3.0	3.0	3.0	

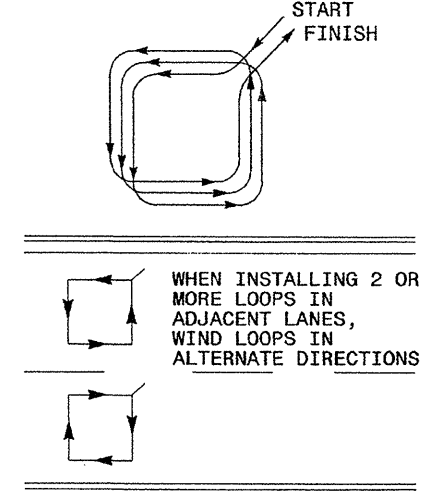


**CONVENTIONAL 4-SIDED LOOP**

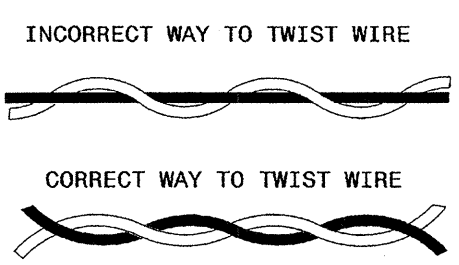
**SAW CUT OPTIONS**



**LOOP WINDING METHOD**



**LOOP WIRE TWISTING METHOD**

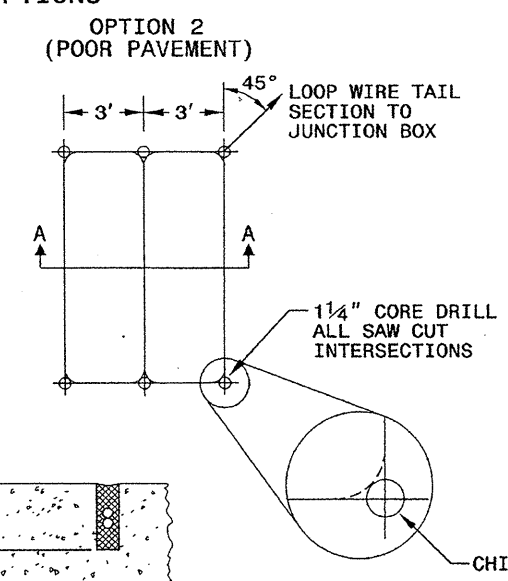
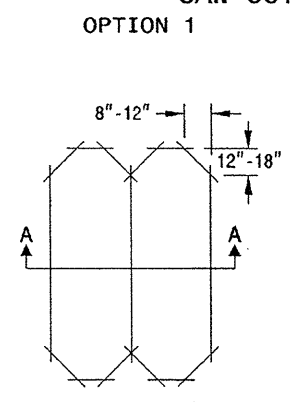


**NOTES**

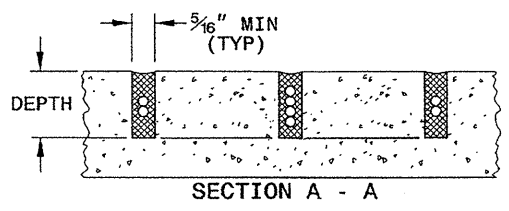
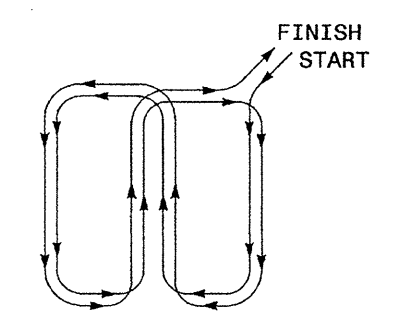
1. OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
2. MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
3. WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
4. LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

**QUADRUPOLE LOOP**

**SAW CUT OPTIONS**



**LOOP WINDING METHOD**



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

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RALEIGH, N.C.

11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

SHEET 1 OF 3  
**1725D01**

See Plate for Title

Prepared in the Offices of

750 N. Greenfield Parkway  
Garner, NC 27529

SEAL

*Milton I. Dean* 4/24/08  
SIGNATURE DATE

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

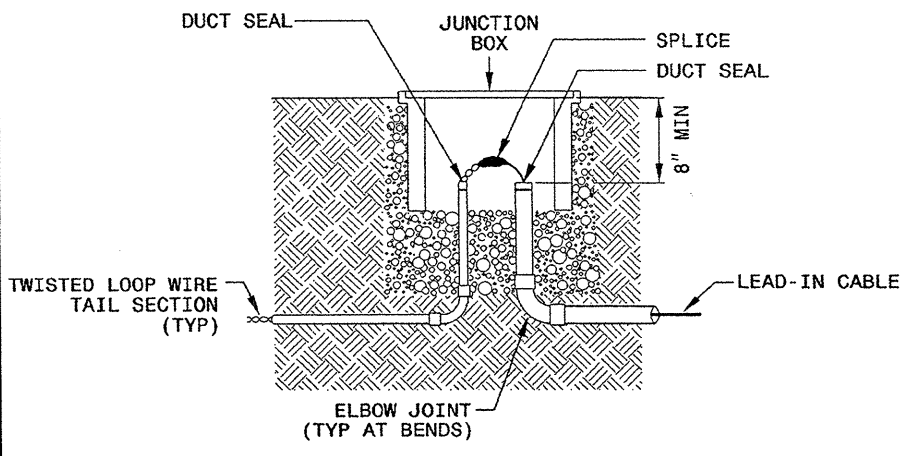
11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
 LOOP WIRE DETAILS

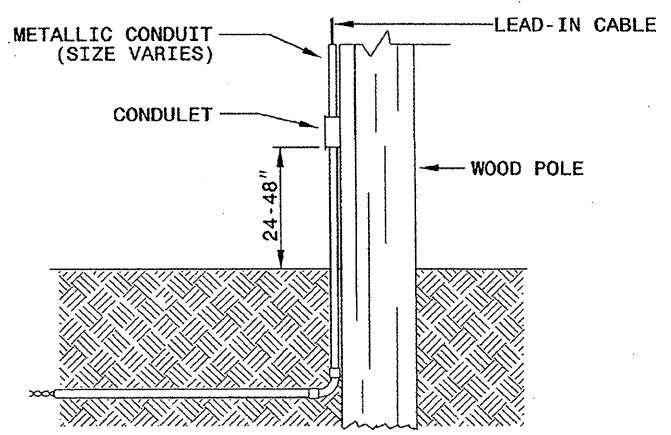
SHEET 2 OF 3  
**1725D01**

**LOOP WIRE SPLICE POINT DETAILS**

**LOOP WIRE AT JUNCTION BOX**



**LOOP WIRE AT POLE**

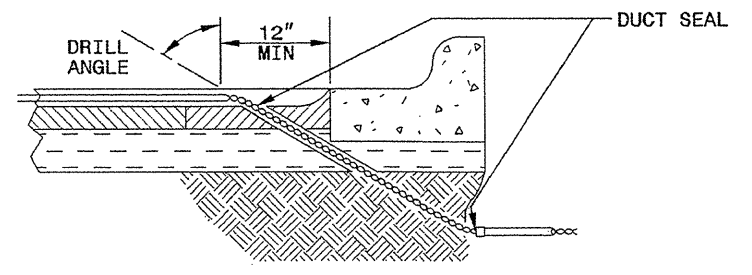


**NOTE**

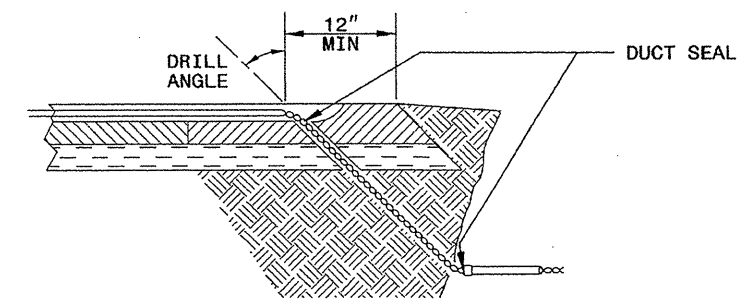
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

**LOOP WIRE PAVEMENT EDGE DETAILS**

**LOOP WIRE AT CURB & GUTTER SECTION**



**LOOP WIRE AT PAVEMENT SECTION**



**NOTES**

1. DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
2. TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
3. BEFORE SEALING LOOPS, INSTALL DUCT SEAL WHERE LOOP WIRE TAIL SECTION LEAVES SAW CUT IN PAVEMENT AND AT ENTRANCE OF CONDUIT TO JUNCTION BOX.

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11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
 LOOP WIRE DETAILS

SHEET 2 OF 3  
**1725D01**

See Plate for Title

Prepared in the Offices of:

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 Garner, NC 27529

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*Milton J. Dean* 11/24/08  
 SIGNATURE DATE

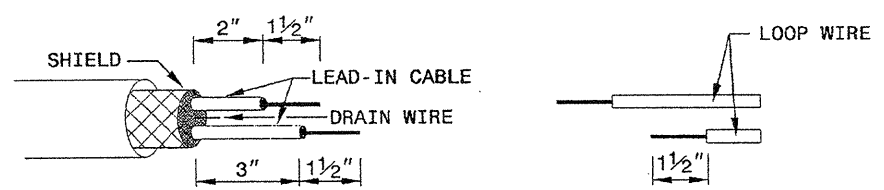
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

11-08

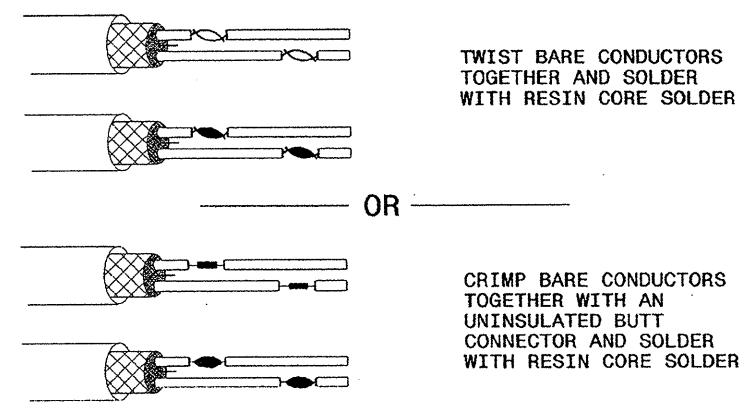
ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3  
**1725D01**

**STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE**

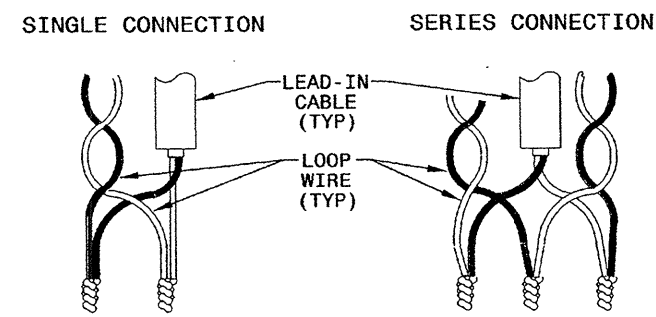


**STEP 2. CONNECT AND SOLDER**

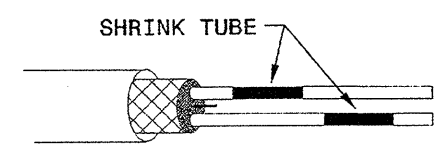


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

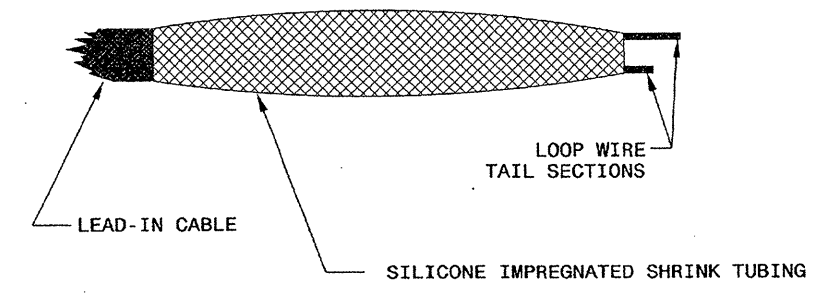
**LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS**



**STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY**



**STEP 4. ENVIRONMENTALLY PROTECT SPLICE**



11-08  
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3  
**1725D01**

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Milton I. Dean 11/24/08  
SIGNATURE DATE

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