STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	1CR.10581.17	1	5

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

WBS NO.: 1CR.10581.17

CONTRACT NO.:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MARTIN COUNTY

LOCATION: US 17 FROM US 64 ALT. SOUTH FOR 2.6 MILES TO SR1501 (BIG MILL RD.)

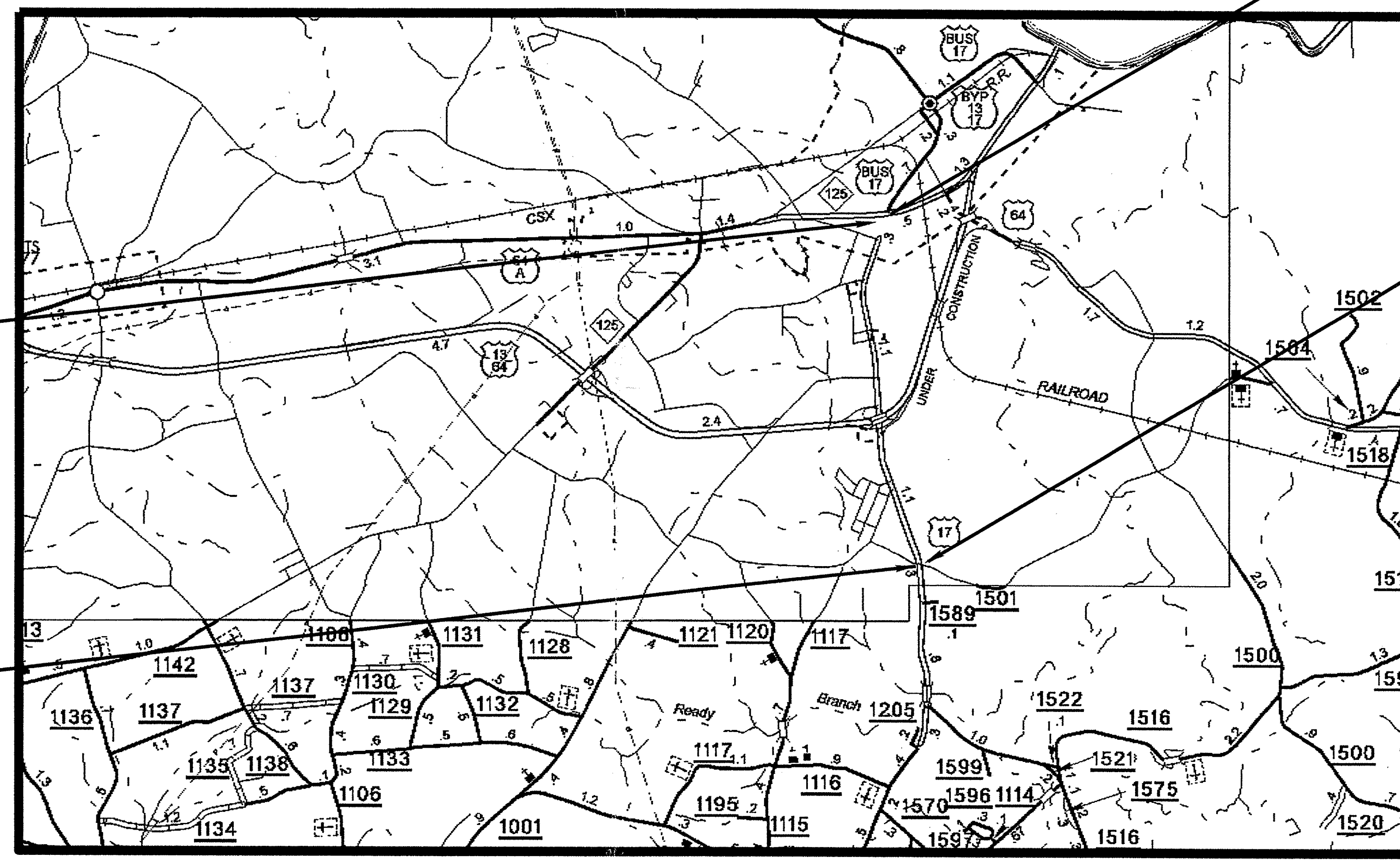
TYPE OF WORK: MILLIG, RESURFACING, LONG LIFE PAVEMENT MARKINGS AND MARKERS

US 17 NBL MAP # 2

US 17 NBL MAP # 2

US 17 SBL MAP # 1

US 17 SBL MAP # 1



NOT TO SCALE

PROJECT LENGTH

WBS# 1CR.10581.17 = 2.60 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:

W.B. HOBBS, P.E.
DIVISION PROJECT MANAGER

C.E. SLACHTA
DIVISION PROPOSALS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	1CR.10581.18	2	5

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MARTIN COUNTY

LOCATION: ***US 13/17 FROM RONOAKE RIVER BRIDGE SOUTH TO BEGIN NEW PAVEMENT***

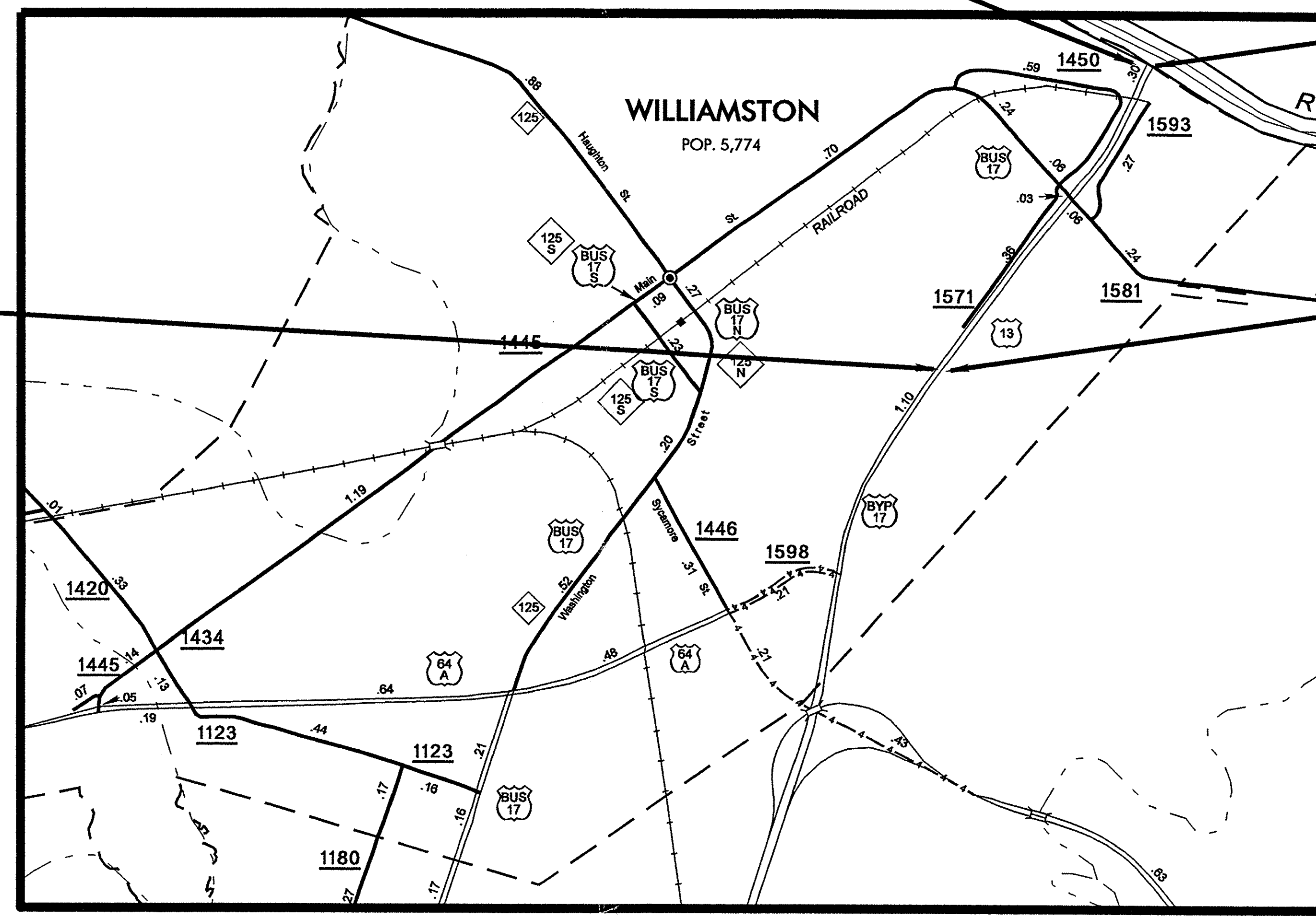
TYPE OF WORK: ***MILLIG, RESURFACING, LONG LIFE PAVEMENT MARKINGS AND MARKERS***

US 13/17 SBL MAP # 3

US 13/17 NBL MAP # 4

US 13/17 SBL MAP # 3

US 13/17 NBL MAP # 4



NOT TO SCALE

PROJECT LENGTH

WBS# 1CR.10581.18 = 0.81 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:

W.B. HOBBS, P.E.
DIVISION PROJECT MANAGER

C.E. SLACHTA
DIVISION PROPOSALS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

WBS NO.: 1CR.10581.18

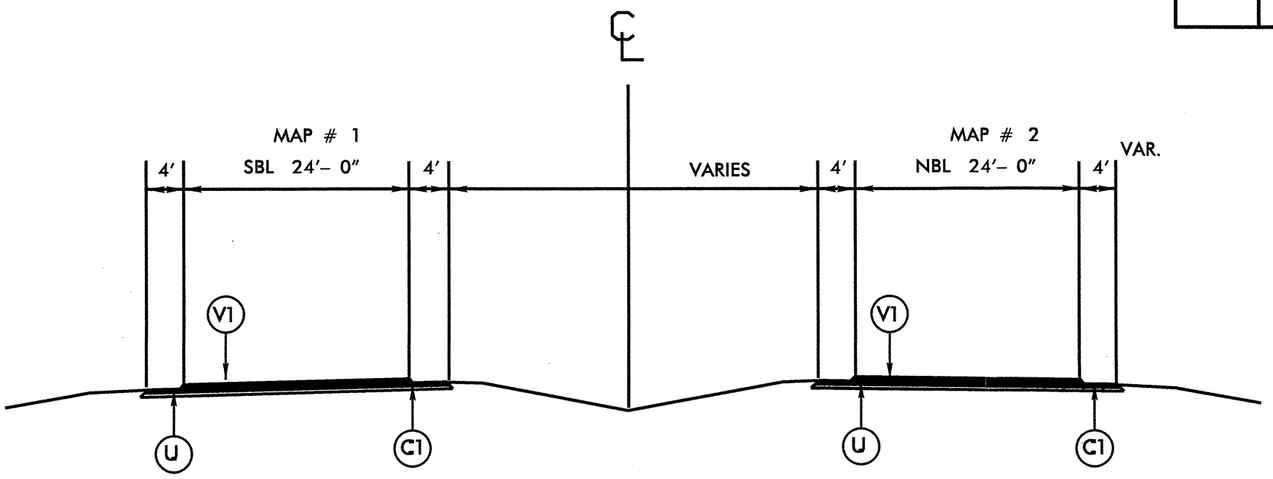
CONTRACT NO.:

NOTES:

1. ALL PAVED INTERSECTIONS, CROSS OVERS AND TURN LANES ARE TO BE MILLED AND RESURFACED TO THE ENDS OF THE RADII OR AS DIRECTED BY THE ENGINEER
2. EDGES, PAVEMENT WIDENING, INTERSECTIONS, CROSSOVERS AND TURN LANES ARE INCLUDED IN SUMMARY OF QUANTITIES
3. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE
4. SHOULDERS AND DITCHES ARE TO BE CONTRUCTED BY OTHERS

PROJECT REFENCE NO.	SHEET NO.
1CR.10581.17	3 OF 5

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE TYPE S 9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ.YD.
V1	MILLING ASPHALT PAVEMENT DEPTH 1.5"
U	EXISTING PAVEMENT.



TYPICAL SECTION #1

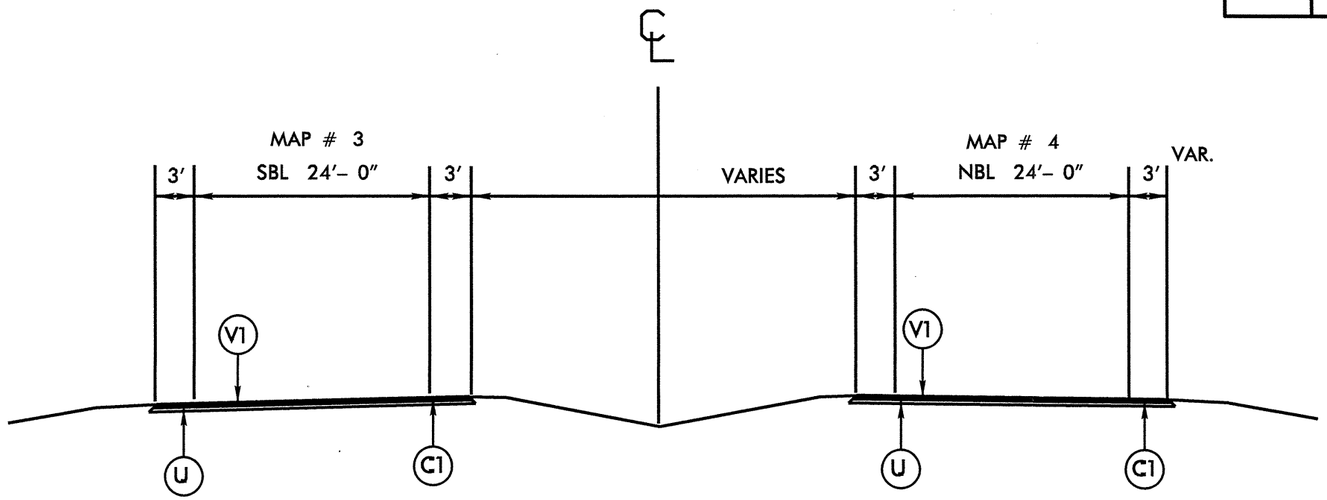
USE WITH MAP'S 1 & 2

NOTES:

1. ALL PAVED INTERSECTIONS, CROSS OVERS AND TURN LANES ARE TO BE MILLED AND RESURFACED TO THE ENDS OF THE RADII OR AS DIRECTED BY THE ENGINEER
2. EDGES, PAVEMENT WIDENING, INTERSECTIONS, CROSSOVERS AND TURN LANES ARE INCLUDED IN SUMMARY OF QUANTITIES
3. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE
4. SHOULDERS AND DITCHES ARE TO BE CONTRUCTED BY OTHERS

PROJECT REFENCE NO.	SHEET NO.
1CR.10581.18	4 OF 5

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE TYPE S 9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ.YD.
V1	MILLING ASPHALT PAVEMENT DEPTH 2.0"
U	EXISTING PAVEMENT.



TYPICAL SECTION #2

USE WITH MAP'S 3 & 4

PROJECT NO.	SHEET NO.	TOTAL NO.
1CR.10581.17, 1CR.10581.18	5	5

SUMMARY OF QUANTITIES

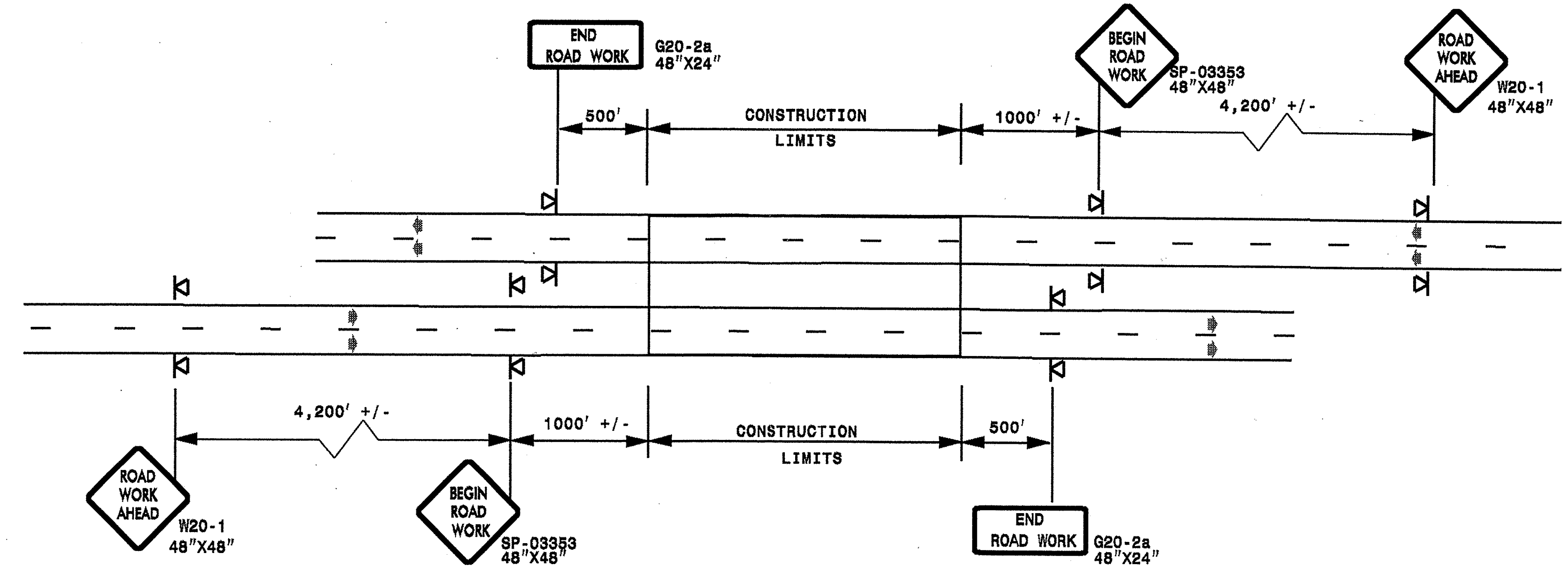
PROJECT	COUNTY	MAP	ROUTE	DESCRIPTION	TYP	FINAL SURFACE TESTING REQUIRED	LENGTH	WIDTH	MOBILIZATION	MILLING ASPHALT PAVEMENT, 1½" DEPTH	MILLING ASPHALT PAVEMENT, 2" DEPTH	SURFACE COURSE, S9.5B	PG 64-22 PLANT MIX	ADJ. OF MANHOLES	GENERIC TRAFFIC CONTROL ITEM (LUMP
NO		NO			NO		MI	FT	LS	SY	SY	TONS	TONS	EA	LS
1CR.10581.17	Martin	1	US 17 SOUTH BOUND LANE	SOUTH BOUND LANE FROM US64 ALT TO SR 1501	1	NO	2.6	32	1	54,294		6,720	403		1
1CR.10581.17	Martin	2	US 17 NORTH BOUND LANE	NORTH BOUND LANE FROM SR1501 TO US 64 ALT	1	NO	2.6	32	*	54,294		6,720	403		*
TOTAL FOR 1CR.10581.17										**108,588**		**13,440**	**806**		
1CR.10581.18	Martin	3	US 13/ 17 SOUTH BOUND LANE	FROM RONOAKE RIVER BRIDGE TO NEW PAVEMENT	2	NO	0.81	30	*		17,288	2,000	120	3	*
1CR.10581.18	Martin	4	US 13/17 NORTH BOUND LANE	FROM NEW PAVEMENT TO RONOAKE RIVER BRIDGE	2	NO	0.81	30	*		17,288	2,000	120		*
TOTAL FOR 1CR.10581.18											**34,576**	**4,000**	**240**	**3**	
GRAND TOTAL							**6.82**		**1**	**108,588**	**34,576**	**17,440**	**1,046**	**3**	**1**

PROJECT	COUNTY	MAP	ROUTE	DESCRIPTION	4685000000-E		4686000000-E	4710000000-E	4725000000-E				4810000000-E		4835000000-N	4900000000-N		7444000000-E	7456000000-E
					4" X 90 M WHITE THERMO	4" X 90 M YELLOW THERMO	4" X 120 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR ARROW 90 M	THERMO STR & RT ARROW 90 M	4" WHITE PAINT	4" YELLOW PAINT	24" WHITE PAINT	CRYSTAL & RED MARKERS	YELLOW & YELLOW MARKERS	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (18-4)
NO		NO			LF	LF	LF	LF	EA	EA	EA	EA	LF	LF	LF	EA	EA	LF	LF
1CR.10581.17	Martin	1	US 17 SOUTH BOUND LANE	SOUTH BOUND LANE FROM US64 ALT TO SR 1501	15,250	15,250	5,300	128	23	20	40	40	22,550	15,250	128	300		5,100	5,000
1CR.10581.17	Martin	2	US 17 NORTH BOUND LANE	NORTH BOUND LANE FROM SR1501 TO US 64 ALT	15,250	15,250	5,300	128	23	20	40	40	22,550	15,250	128	300		5,100	5,000
					30,500	**30,500**			**46**	**40**	**80**	**80**	**45,100**	**30,500**		600			
TOTAL FOR 1CR.10581.17					**61,000**		**10,600**	**256**	**246**				**75,600**		**256**	**600**		**10,200**	**10,000**
1CR.10581.18	Martin	3	US 13/ 17 SOUTH BOUND LANE	SOUTH BOUND LANE FROM RONOAKE RIVER BRIDGE TO NEW PAVEMENT	8,716	6,500	1,069	65	7	2	2	2	9,716	6,500	65	50	60		
1CR.10581.18	Martin	4	US 13/17 NORTH BOUND LANE	FROM NEW PAVEMENT TO RONOAKE RIVER BRIDGE	8,716	6,500	1,100	50	8	2	6		9,816	6,500	50	50	60		
					17,432	**13,000**	**2,169**	**115**	**15**	**4**	**8**	**2**	**19,532**	**13,000**	**115**	**100**	**120**		
TOTAL FOR 1CR.10581.18					**30,432**				**29**				**32532**			**220**			
GRAND TOTAL					**47,932**	**43,500**			**61**	**44**	**88**	**82**	**64,632**	**43,500**		**700**	**120**		
					91,432		**12,769**	**371**	**275**				**108,132**		**371**	**820**		**10,200**	**10,000**

PROJ. REFERENCE NO.	SHEET NO.
1CR.10581.17 & 1CR.10581.18	TCP-1

ADVANCE WORK ZONE WARNING SIGNING FOR FREEWAYS (4 LANES OR GREATER)

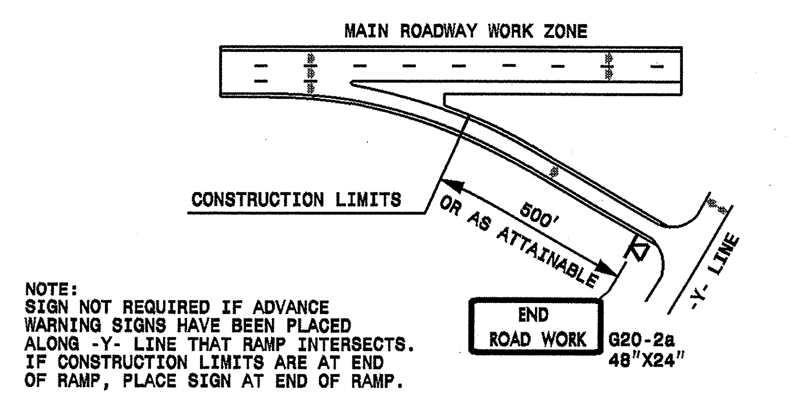
DETAIL A



ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)

DETAIL B

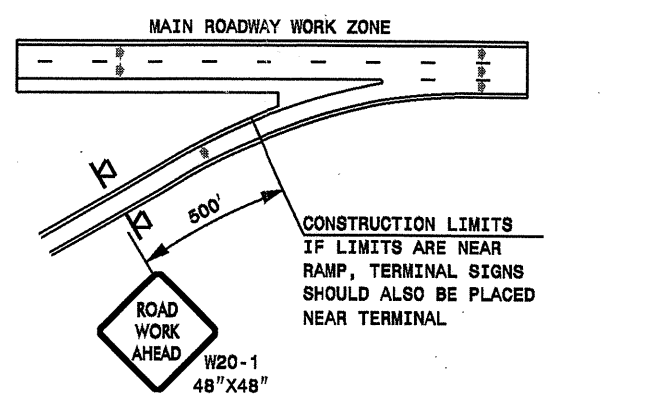
EXIT RAMPS



NOTE:
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

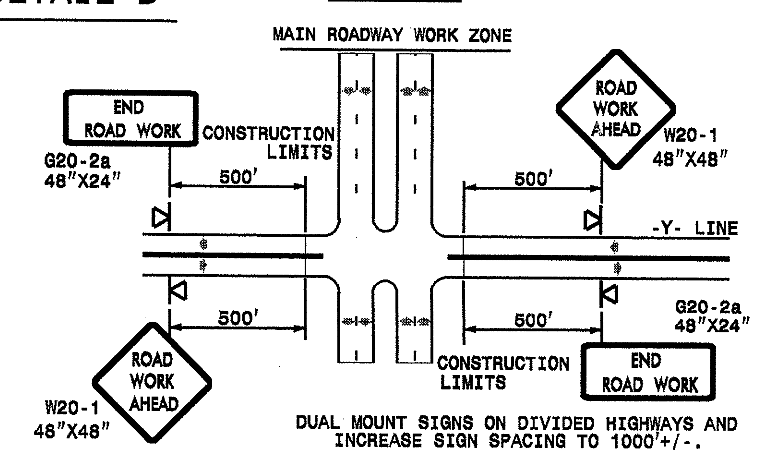
DETAIL C

ENTRANCE RAMPS



DETAIL D

-Y- LINES



DUAL MOUNT SIGNS ON DIVIDED HIGHWAYS AND INCREASE SIGN SPACING TO 1000'+/-.

GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCE WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE PORTABLE WORK ZONE SIGNS ONLY WITH PORTABLE WORK ZONE SIGN STANDS SPECIFICALLY DESIGNED FOR ONE ANOTHER. PORTABLE WORK ZONE SIGNS MAY BE ROLL UP OR APPROVED COMPOSITE.
- PROVIDE PORTABLE WORK ZONE SIGN STANDS, PORTABLE SIGNS AND SIGN SHEETING WHICH ARE LISTED ON THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S APPROVED PRODUCT LIST OR ACCEPTED AS TRAFFIC QUALIFIED BY THE TRAFFIC CONTROL UNIT.
- ** TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

LEGEND

- PORTABLE SIGN
- DIRECTION OF TRAFFIC FLOW

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

DETAIL DRAWING FOR FREEWAYS WORK ZONE WARNING SIGNS (SHORT-DURATION LANE CLOSURES)

SHEET 1 OF 1

APPROVED: ______ DATE: ______

SEAL

DETAIL DRAWING FOR FREEWAYS WORK ZONE WARNING SIGNS

SCALE: NONE
DATE:
DWG. BY:
DESIGN BY:
REVIEWED BY:

REVISIONS	
7-98	10/01
10-98	03/04
01/01	11/04

24-MAY-2010 10:49
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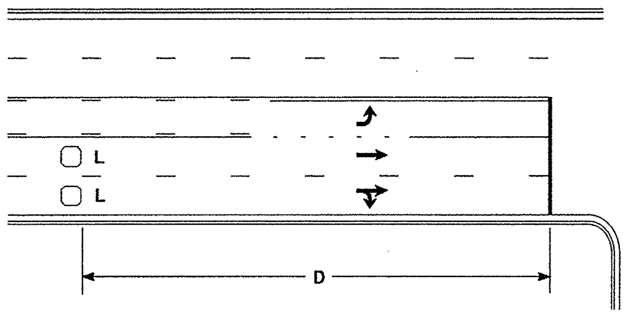
pseymore AT W2TC237502

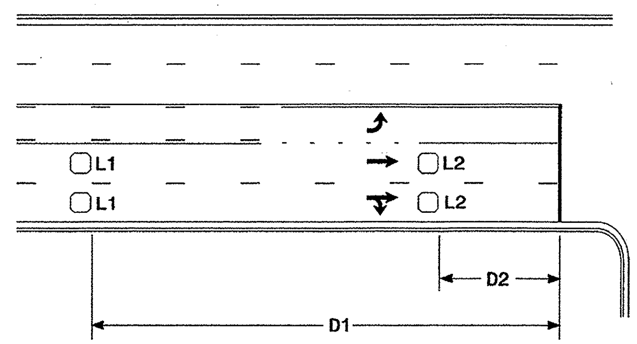
PROJECT REFERENCE NO.	SHEET NO.
	SIG 1

1CR.10581.17 & 1CR.10581.18

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



OR



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

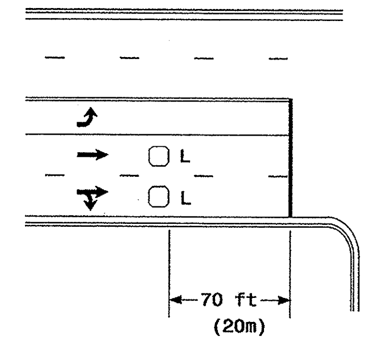
Speed Limit mph (km/hr)		D1 ft	(m)	D2 ft	(m)
40	(64)	250	(75)	80	(25)
45	(72)	300	(90)	90	(27)
50	(80)	355	(110)	100	(30)
55	(88)	420	(130)	110	(35)

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)]



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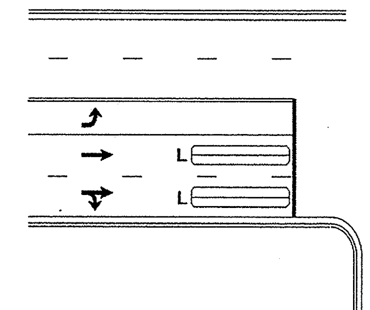
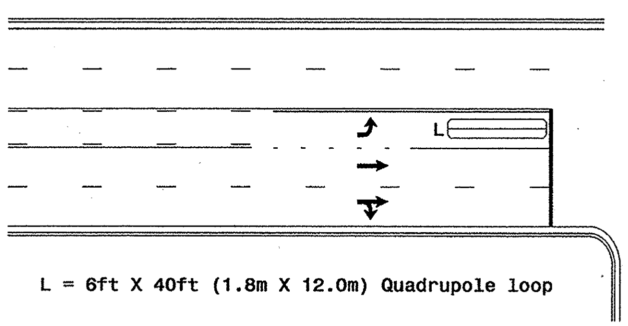


L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

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

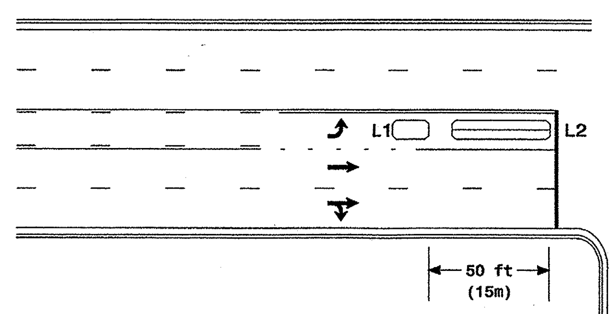
Left Turn Lane Detection



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

Presence Loop Detection

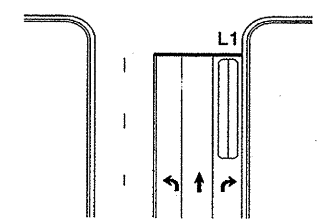
OR



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

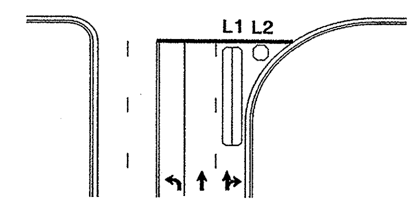
Queue Loop Detection

Right Turn Lane Detection

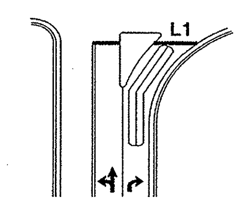


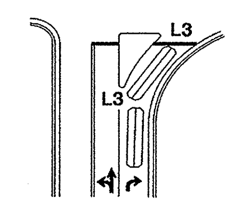
Standard Turn

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



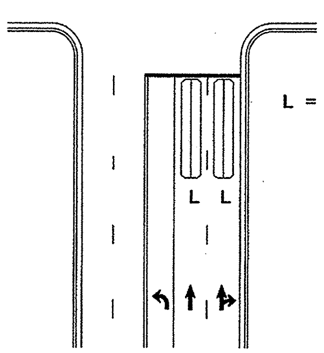
Wide Radius Turn





Channelized Turn

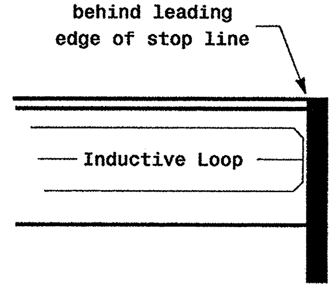
Side Street Detection



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

Prepared in the Offices of:
Traffic Engineering and Safety Systems Branch
State of North Carolina Department of Transportation
Signals and Geometrics Section
122 N. McDowell St., Raleigh, NC 27603

Typical Loop Locations

PLAN DATE: June 2006
REVIEWED BY:
PREPARED BY: P L Alexander
REVIEWED BY:

SCALE
N/A

REVISIONS	INIT.	DATE
Revise pavement markings	aa	12/19/06

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23488 ENGINEER PAMELA L. ALEXANDER
SIGNATURE DATE 6/6/06
SIG. INVENTORY NO.

19-DEC-2006 14:29
s:*its signals*lib turn in*misc*looptypical2006.dgn
palexander

PROJECT REFERENCE NO.	SHEET NO.
	Sig. 2

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

11-08

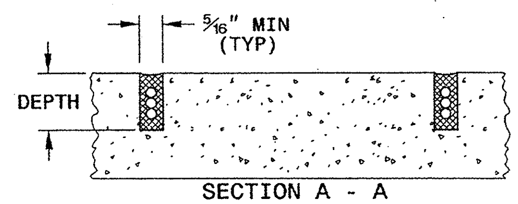
ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

SHEET 1 OF 3
1725D01

CONVENTIONAL 4-SIDED LOOP

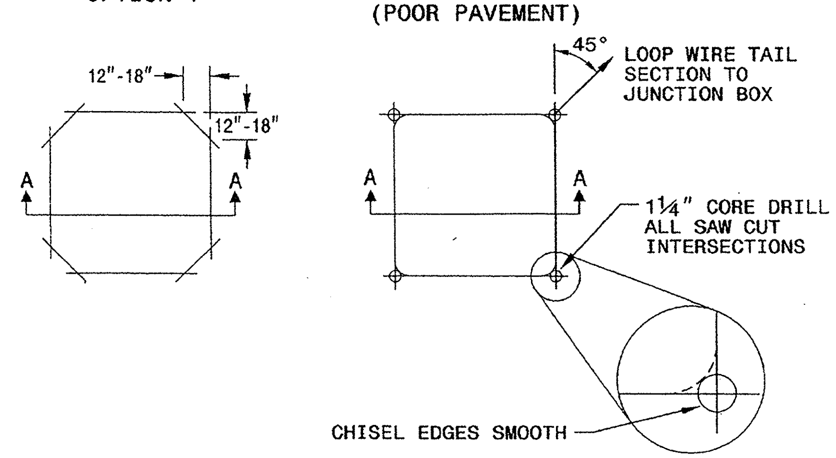
SAW SLOT DEPTH CHART

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

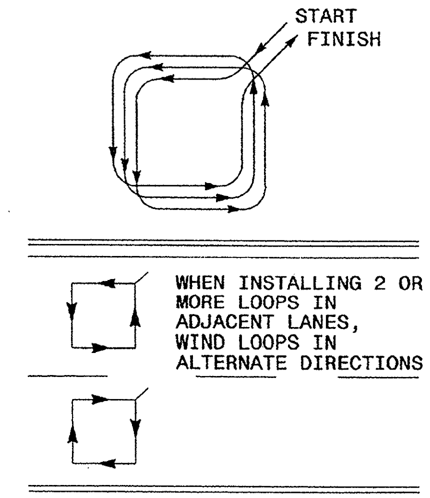


SECTION A - A

SAW CUT OPTIONS

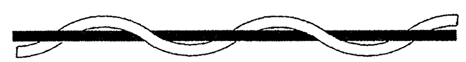


LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE



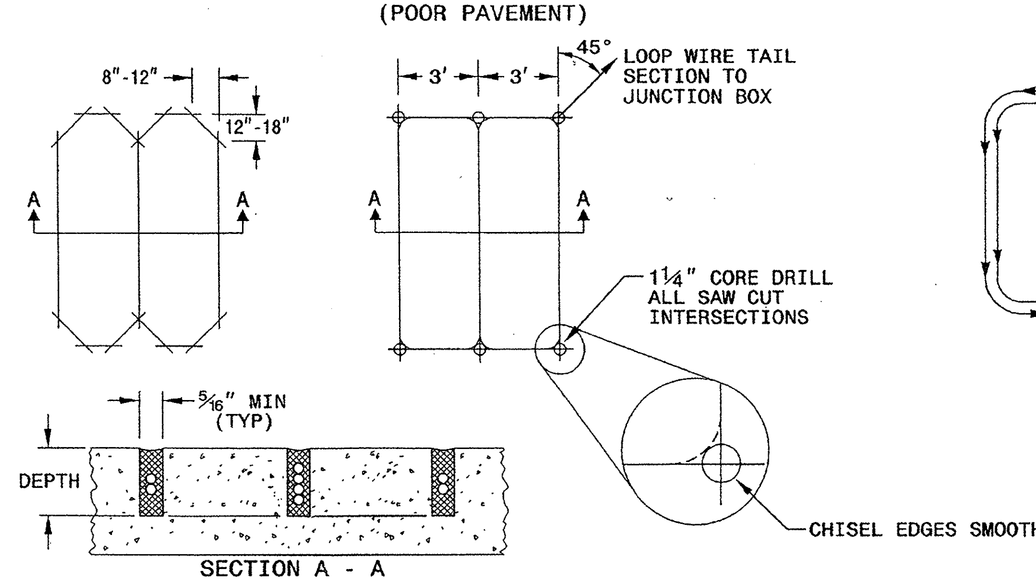
CORRECT WAY TO TWIST WIRE

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.

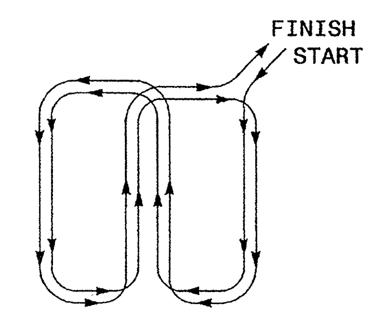
QUADRUPOLE LOOP

SAW CUT OPTIONS



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



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

See Plate for Title

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
North Carolina Department of Transportation
750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16286 MILTON I. DEAN

SIGNATURE 11/24/08
DATE

24-NOV-2008 09:28
d:\work files\0-standard plate sheets\1725D101_may2301.dgn
zmiltle

PROJECT REFERENCE NO.	SHEET NO.
	Sig. 3

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

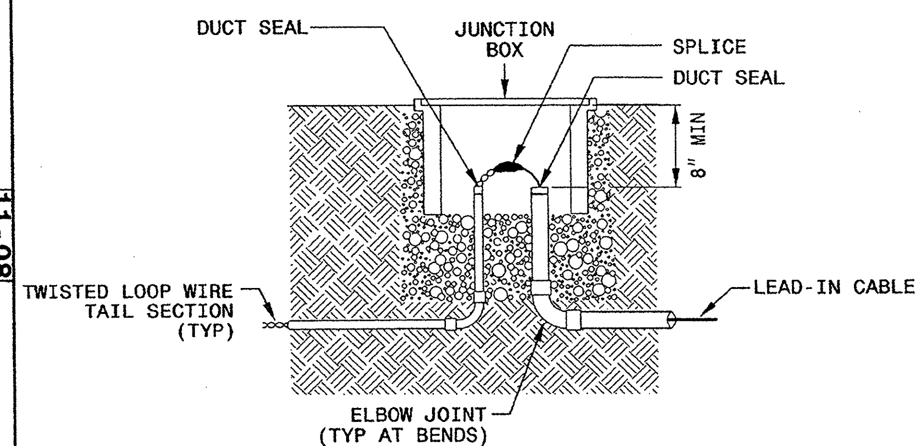
11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

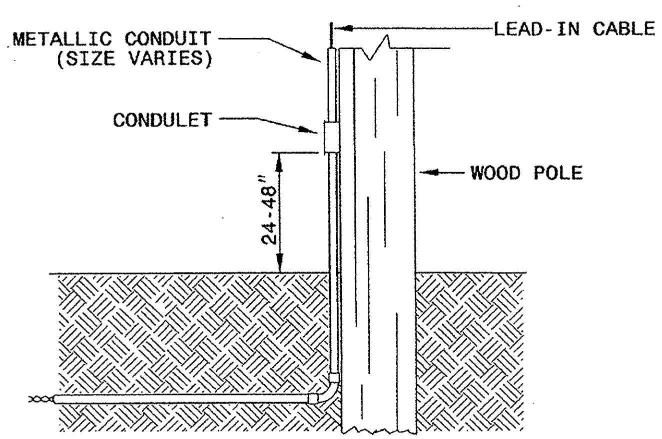
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

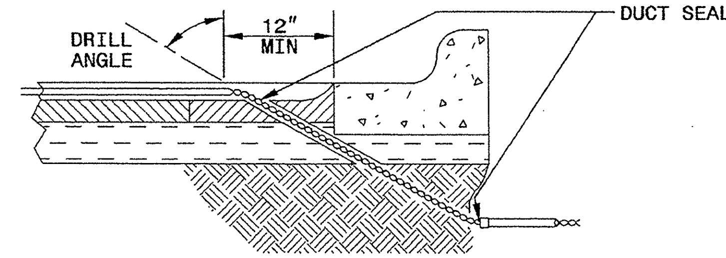


NOTE

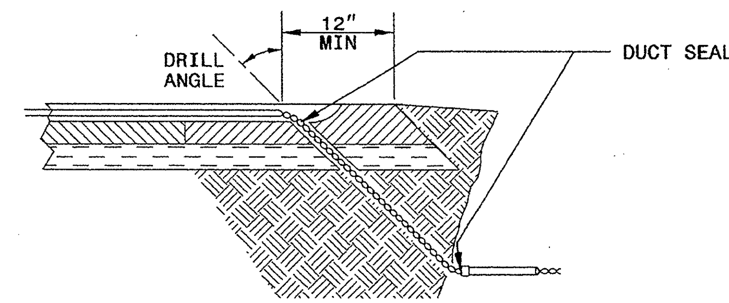
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

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.

STATE OF
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ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

SHEET 2 OF 3
1725D01

See Plate for Title

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16286 MILTON T. DEAN

SIGNATURE 11/24/08 DATE

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PROJECT REFERENCE NO.	SHEET NO.
	Sig. 4

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11-08

ENGLISH DETAIL DRAWING FOR

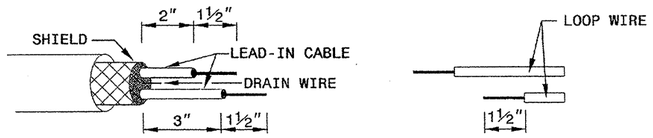
INDUCTIVE DETECTION LOOPS

SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

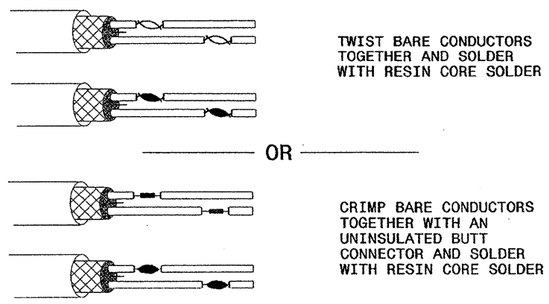
SHEET 3 OF 3

1725D01

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE



STEP 2. CONNECT AND SOLDER



TWIST BARE CONDUCTORS TOGETHER AND SOLDER WITH RESIN CORE SOLDER

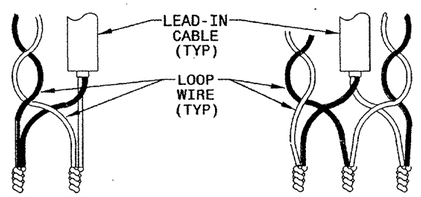
OR

CRIMP BARE CONDUCTORS TOGETHER WITH AN UNINSULATED BUTT CONNECTOR AND SOLDER WITH RESIN CORE SOLDER

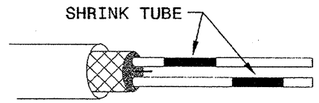
BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

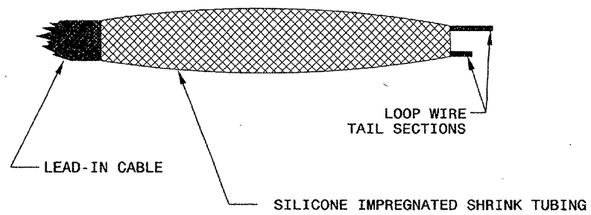
SINGLE CONNECTION SERIES CONNECTION



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



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ENGLISH DETAIL DRAWING FOR

INDUCTIVE DETECTION LOOPS

SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3

1725D01

See Plate for Title

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 16286 ENGINEER MILTON I. DEAN

Milton I. Dean 11/24/08
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zmiller