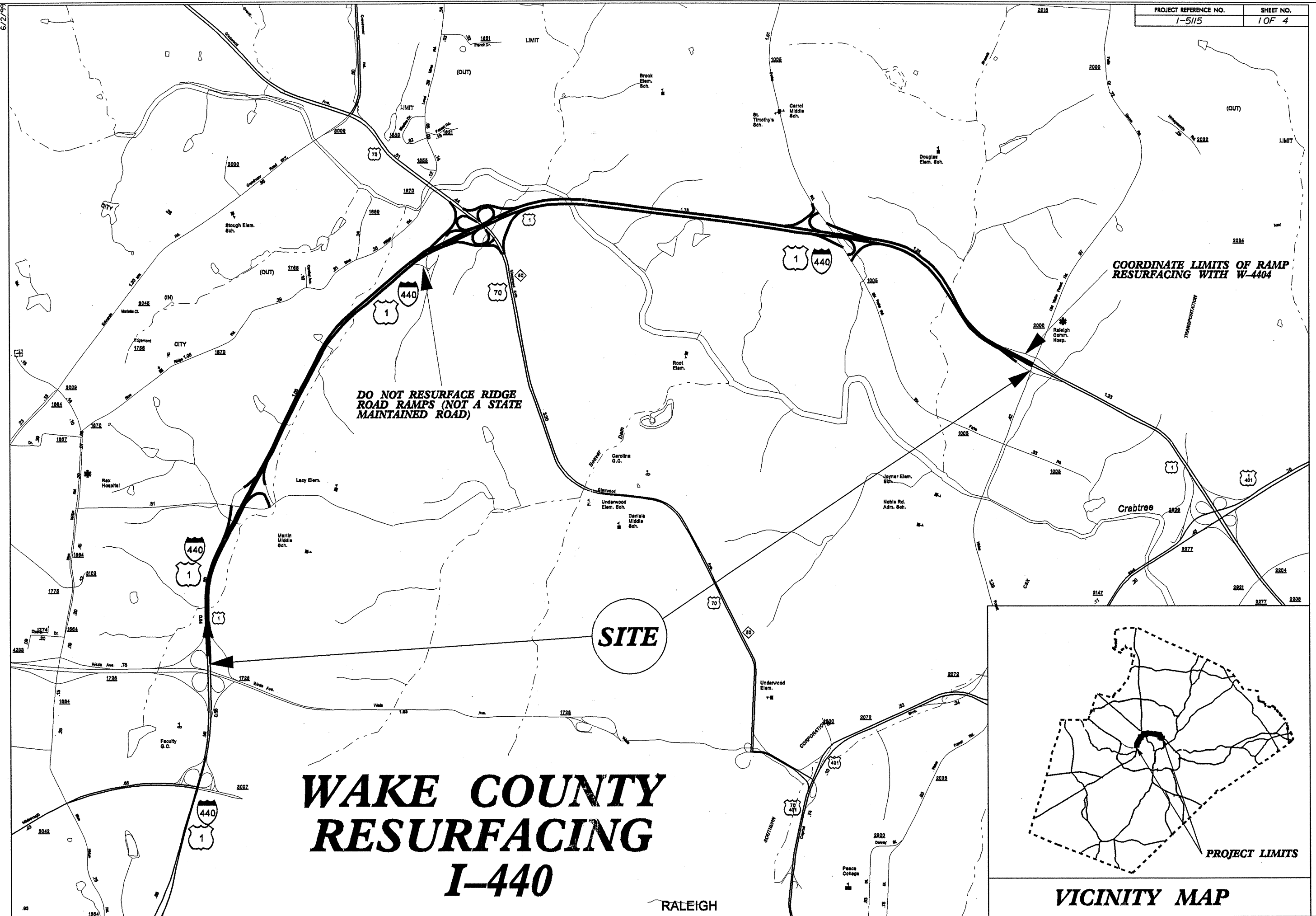
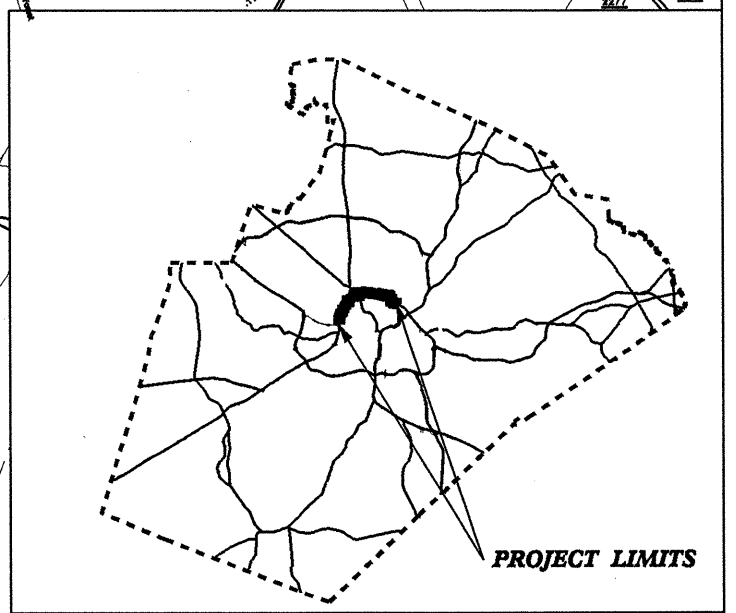


6/2/95



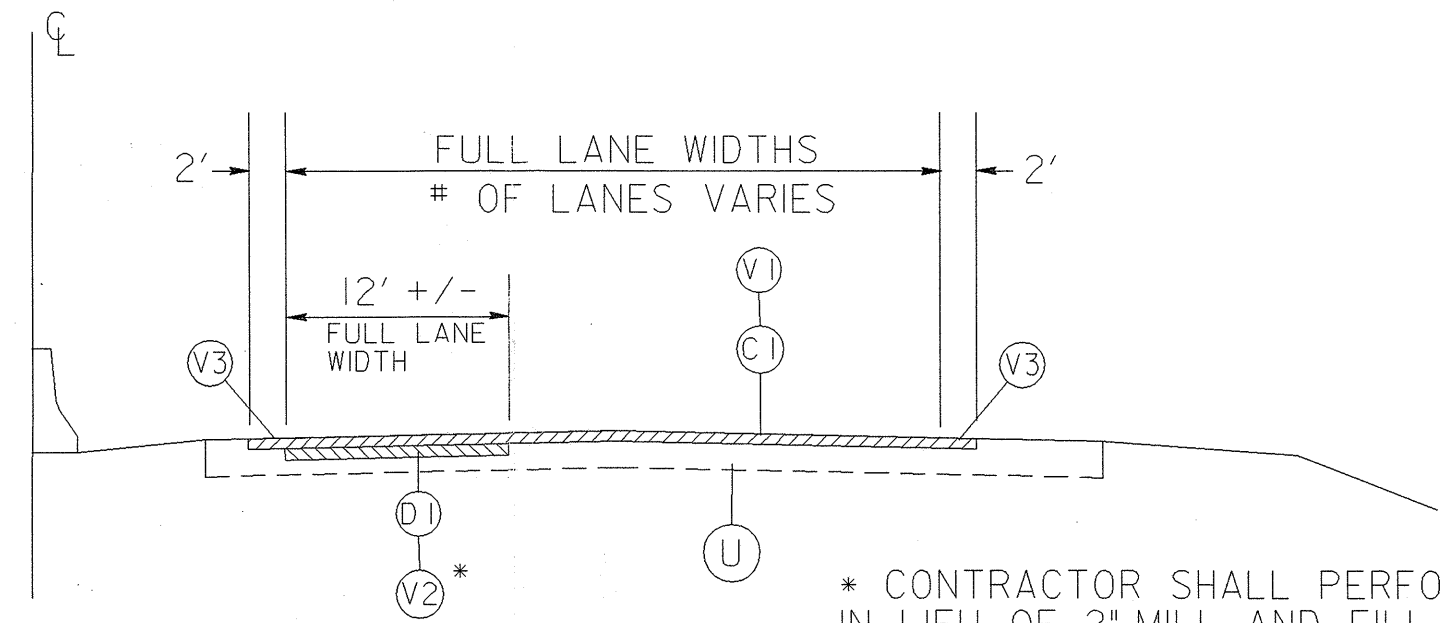
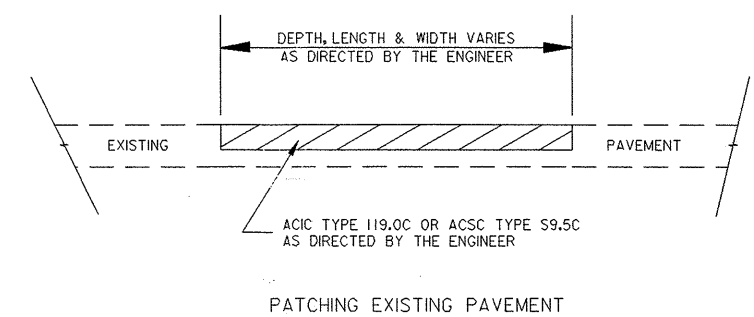
COORDINATE LIMITS OF RAMP RESURFACING WITH W-4404



PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 2" ASPH. CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(D1)	PROP. APPROX. 3" ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
(S)	PROP. SHOULDER RECONSTRUCTION BY CONTRACTOR
(V1)	MILL 2" IN DEPTH
(V2)	MILL 5" IN DEPTH
(V3)	MILLED RUMBLE STRIPS
(U)	EXISTING PAVEMENT

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
1-5115	2	4
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION



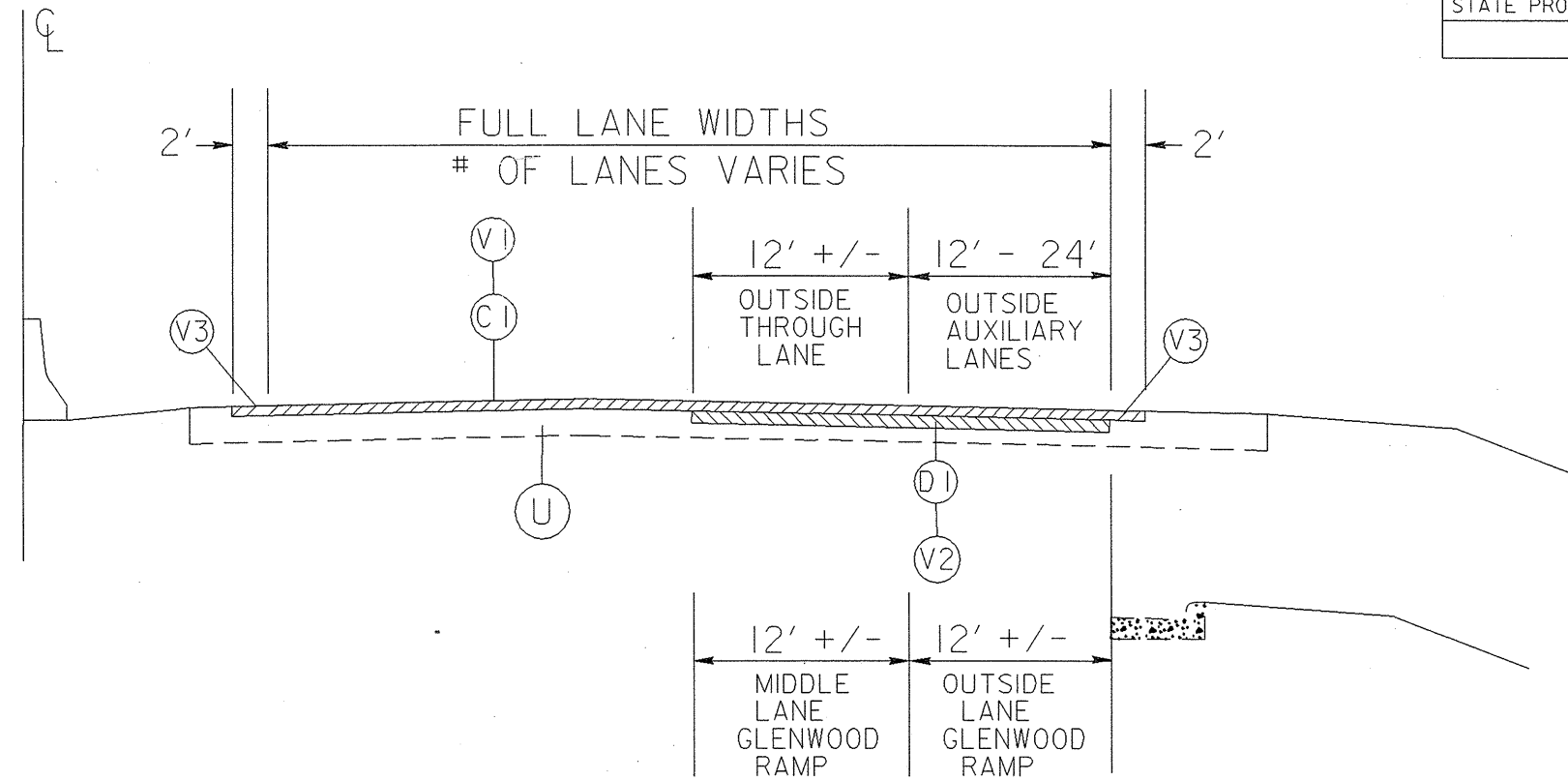
TYPICAL SECTION NO. 1

USE ON: I-440 EB FROM THE JOINT AT WADE AVE. TO THE STRUCTURE AT WAKE FOREST ROAD
 I-440 WB FROM THE STRUCTURE AT WAKE FOREST ROAD TO SIX FORKS ROAD
 I-440 WB FROM THE PAVEMENT JOINT AT THE GLEN EDEN DR. OVERPASS TO THE JOINT AT WADE AVE.

PAVEMENT SCHEDULE

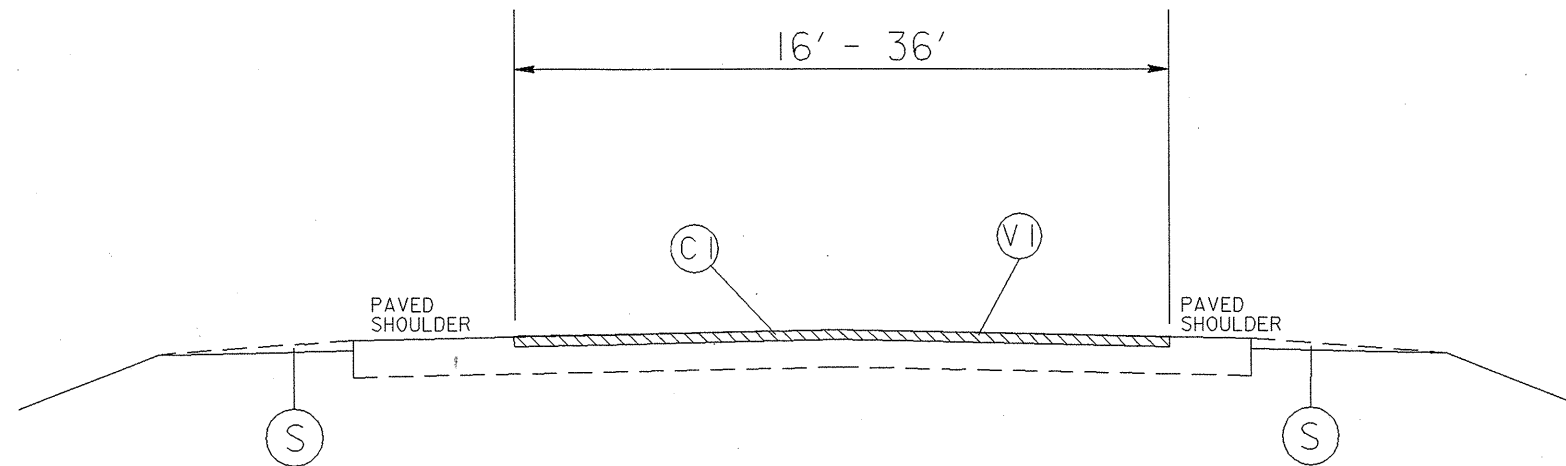
PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
1-5115	3	4
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

(C1)	PROP. APPROX. 2" ASPH. CONC. SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(D1)	PROP. APPROX. 3" ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
(S)	PROP. SHOULDER RECONSTRUCTION BY CONTRACTOR
(V1)	MILL 2" IN DEPTH
(V2)	MILL 5" IN DEPTH
(V3)	MILLED RUMBLE STRIPS
(U)	EXISTING PAVEMENT



TYPICAL SECTION NO. 2

USE ON: I-440 WB FROM SIX FORKS ROAD TO THE PAVEMENT JOINT AT THE GLEN EDEN DR. OVERPASS AND ON THE RAMP FROM I-440 WB TO US 70 WB



TYPICAL SECTION NO. 3
TO BE USED ON RAMPS

PROJECT NO.	SHEET NO.	TOTAL NO.
I-5115	4	4
45053.3.ST1		

SUMMARY OF QUANTITIES

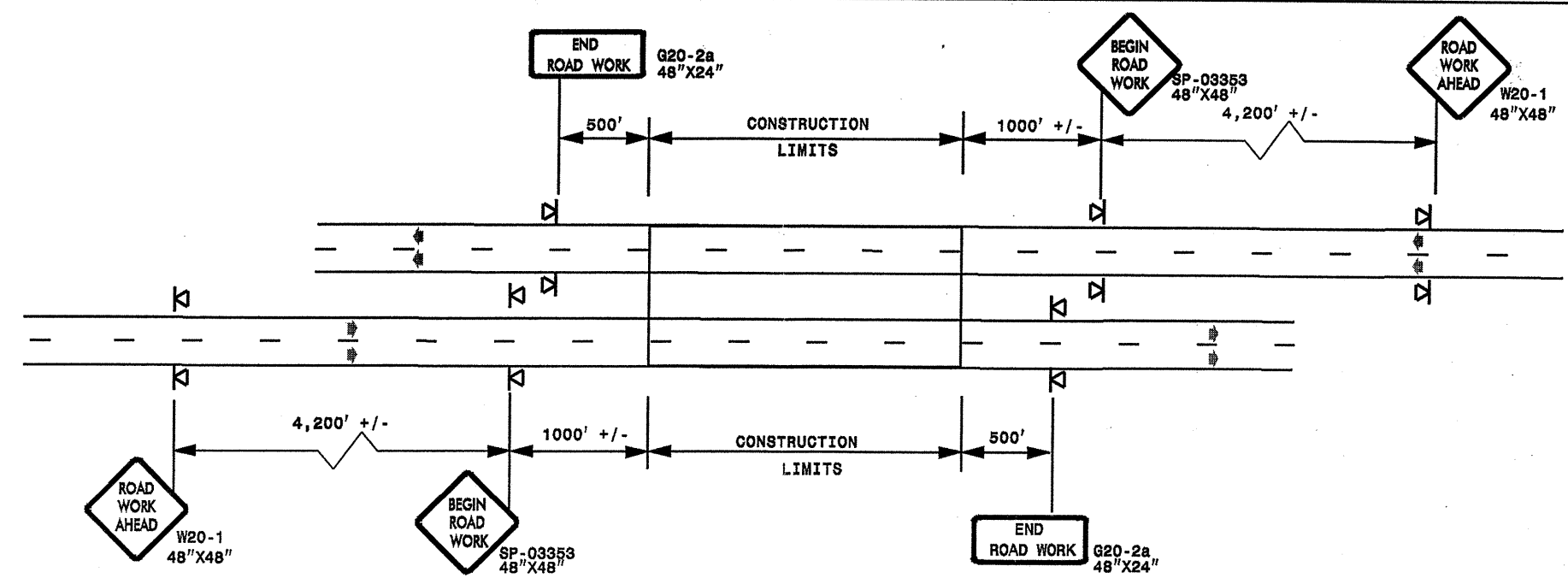
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LENGTH MI	WIDTH FT	SHOULDER RECONSTRUCTION SMI	2" MILLING SY	5" MILLING SY	MILLED RUMBLE STRIPS LF	INTER-MEDIATE COURSE, I19.0C TONS	SURFACE COURSE, S9.5C TONS	PG 64-22 PLANT MIX TONS	PG 70-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	PORTABLE LIGHTING LS	SEED & MULCHING AC	INDUCTIVE LOOP LF
I-5115	Wake	1	I-440 EB & WB	FROM JOINT AT WADE AVE. TO STRUCTURE AT WAKE FOREST RD	1, 2 & 3	5.6	80	4.70	323,676.00	38,210.00	118,272.00	6,730.00	41,540.00	316.00	2,492.00	1,000.00	1.00	3.90	1,552
TOTAL FOR PROJ NO. PRIMARY						5.6		4.70	323,676.00	38,210.00	118,272.00	6,730.00	41,540.00	316.00	2,492.00	1,000.00	1.00	3.90	1,552
GRAND TOTAL						5.6		4.70	323,676.00	38,210.00	118,272.00	6,730.00	41,540.00	316.00	2,492.00	1,000.00	1.00	3.90	1,552

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4415000000-E	4420000000-N	4430000000-E	4510000000-N	4685000000-E		4688000000-E		4690000000-E	4700000000-E	4721000000-E	4725000000-E			4775000000-E	4800000000-N	4805000000-N		4855000000-E	4875000000-N	4905000000-N	
					FLASHING ARROW PANELS, TYPE C	CHANGABLE MESSAGE SIGNS	DRUMS	POLICE	4" X 90 M WHITE THERMO	4" X 90 M YELLOW THERMO	6" X 90 M WHITE THERMO	6" X 90 M YELLOW THERMO	6" X 120 M WHITE THERMO	12" X 90 M WHITE THERMO	THERMO MSG ONLY 120 M	THERMO STR ARROW 90 M	THERMO RT ARROW 90 M	6" YELLOW COLD APPLIED PLASTIC, TYPE III	6" WHITE COLD APPLIED PLASTIC, TYPE III	COLD APPLIED MSG ONLY, TYPE III	COLD APPLIED PLASTIC RT ARROW, TYPE III	COLD APPLIED PLASTIC STR ARROW, TYPE III	6" LINE REMOVAL	REML OF PVMT MRKG SYMBOLS & CHARACTERS	SNOW PLOWABLE MARKERS	
NO					EA	EA	EA	HRS	LF	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	EA	EA	EA	EA	EA	EA	EA
I-5115	Wake	1	I-440 EB & WB	FROM JOINT AT WADE AVE. TO STRUCTURE AT WAKE FOREST RD	4	4.00	480	2,000.00	36,593	12,307	59,980	59,980	40,276	12,380	44	15	16	2,150	3,810	8	2	1	5,960	11	2,452	
TOTAL FOR PROJ NO. PRIMARY					4	4	480	2,000	36,593	12,307	59,980	59,980	40,276	12,380	44	15	16	2,150	3,810	8	2	1	5,960	11	2,452	
GRAND TOTAL					4	4	480	2,000	36,593	12,307	59,980	59,980	40,276	12,380	44	15	16	2,150	3,810	8	2	1	5,960	11	2,452	

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

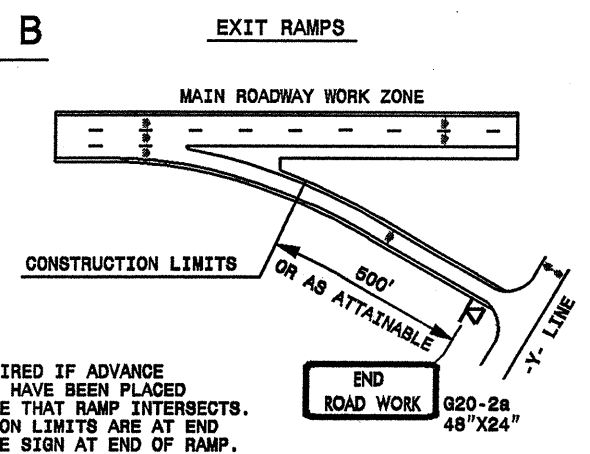
DETAIL A



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

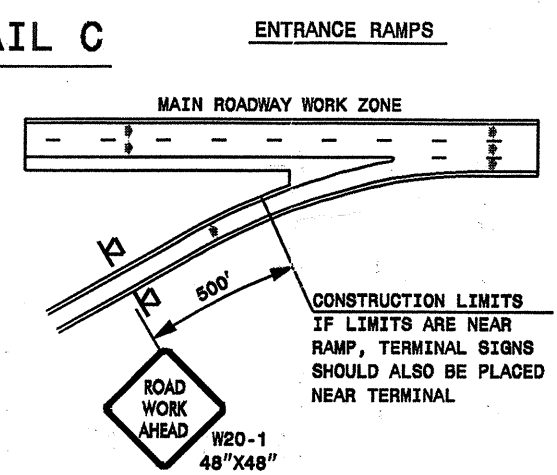
ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)

DETAIL B



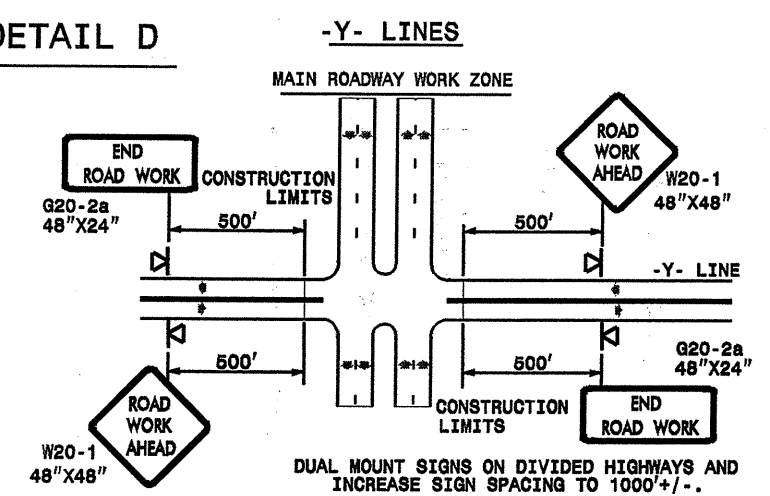
NOTE:
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

DETAIL C



CONSTRUCTION LIMITS IF LIMITS ARE NEAR RAMP, TERMINAL SIGNS SHOULD ALSO BE PLACED NEAR TERMINAL

DETAIL D



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

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

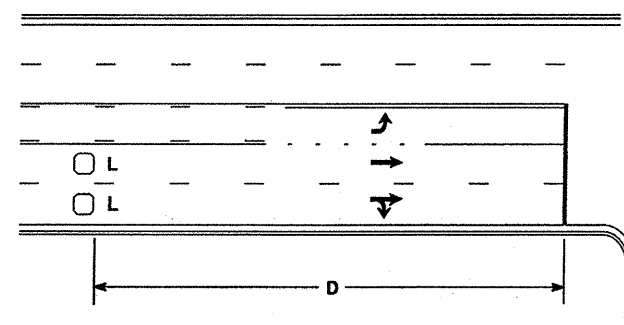
◁ PORTABLE SIGN

➡ DIRECTION OF TRAFFIC FLOW

APPROVED: _____	DATE: _____	DETAIL DRAWING FOR FREEWAYS WORK ZONE WARNING SIGNS	
SEAL			
SCALE: NONE		REVISIONS	
DATE: _____		7-98	10/01
DWG. BY: _____		10-98	03/04
DESIGN BY: _____		01/01	11/04
REVIEWED BY: _____			

05-MAR-2009 2:04 PM s:\slam\101\resurfacing\030509\resurfacing2009\dwg\05_wke.l-40_c202286_450533st1.1-515_freelanesgreat.july2006.dgn

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

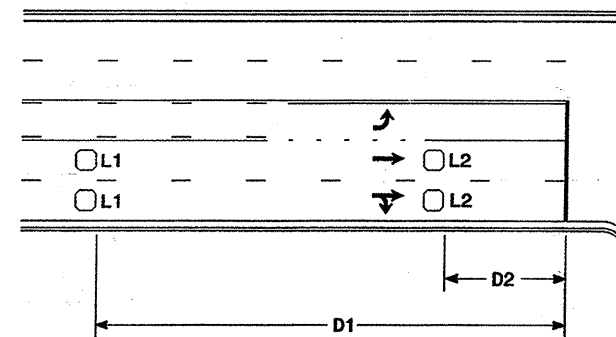


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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



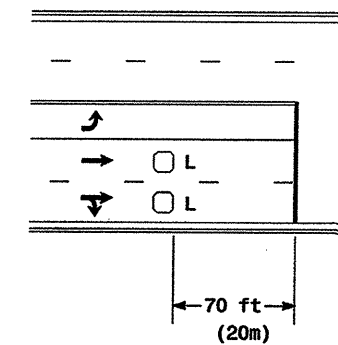
Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

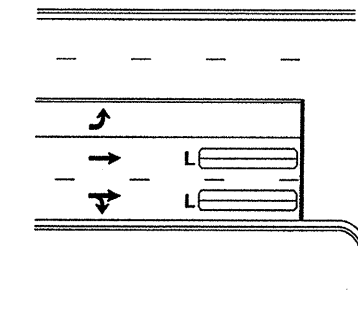
Low Speed Detection [≤35 mph (56 km/hr)]

45053.3.ST1 (I-5115)



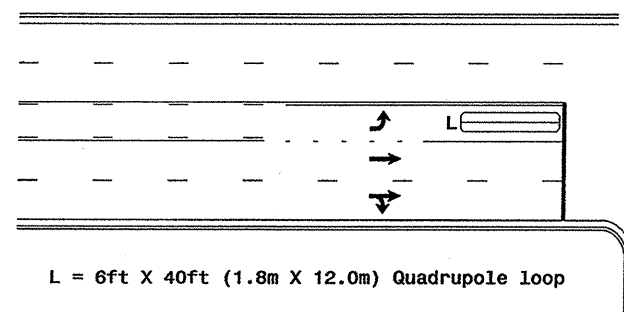
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



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

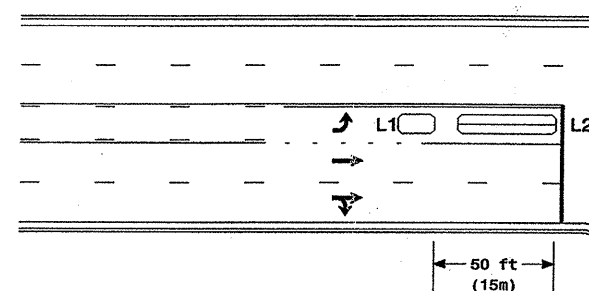
Left Turn Lane Detection



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

Presence Loop Detection

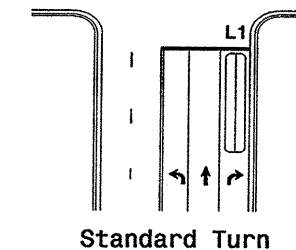
OR



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

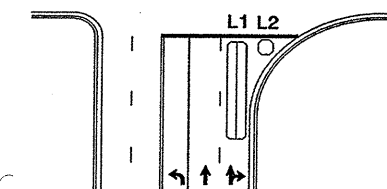
Queue Loop Detection

Right Turn Lane Detection

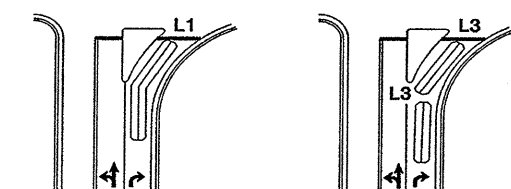


Standard Turn

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

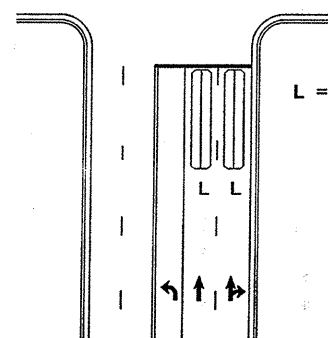


Wide Radius Turn



Channelized Turn

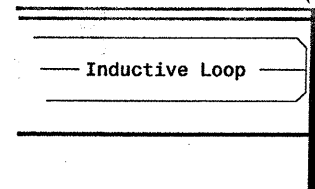
Side Street Detection



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

Prepared in the Office of:

 STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEERS AND SURVEYORS
 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: *Revise pavement markings*
 INIT. DATE: *PLA* *12/1/06*
 SIGNATURE: *P L Alexander* DATE: *12/1/06*
 SEAL: *P L Alexander*
 SIG. INVENTORY NO.:

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

5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

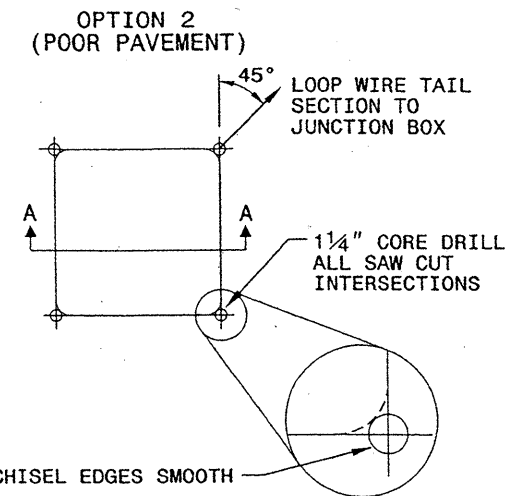
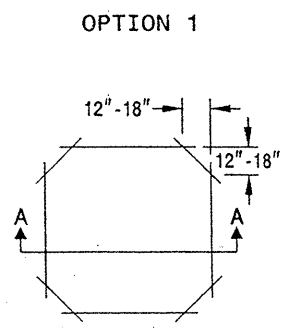
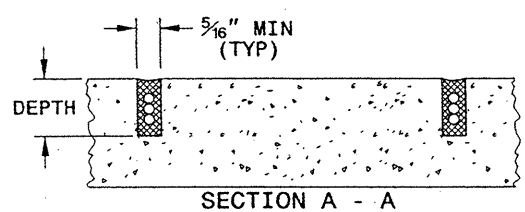
SHEET 1 OF 3
1725D01

CONVENTIONAL 4-SIDED LOOP

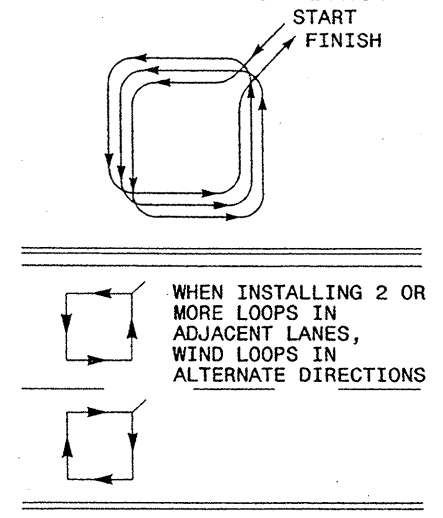
SAW CUT OPTIONS

SAW SLOT DEPTH CHART

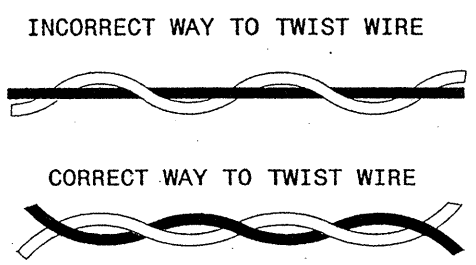
DEPTH (IN)	NO. OF WIRE TURNS				
	2	3	4	5	6
CONCRETE	2.0	2.0	2.5	2.5	3.0
ASPHALT	2.0	2.5	3.0	3.0	3.0



LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

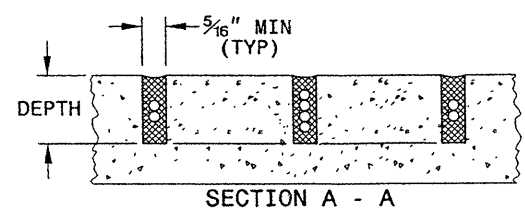
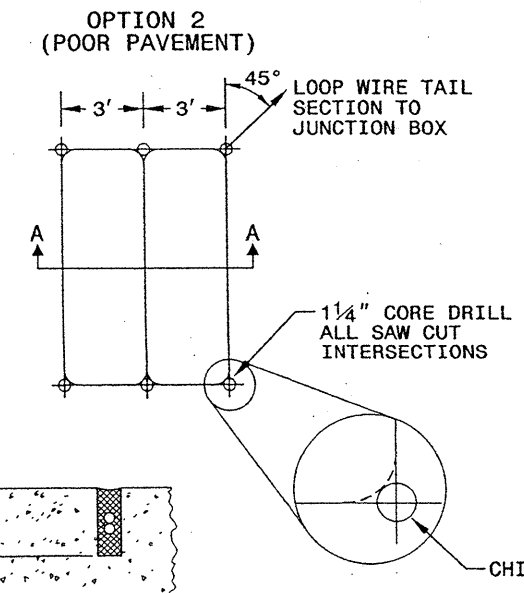
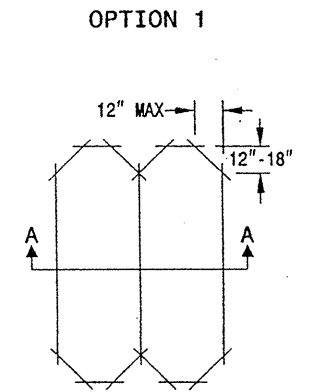


NOTES

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.

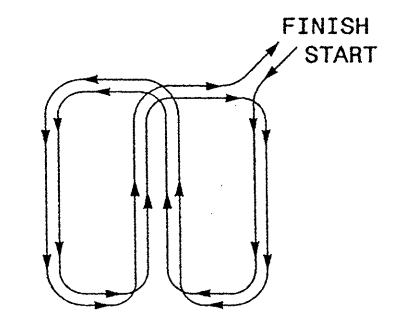
QUADRUPOLE LOOP

SAW CUT OPTIONS



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

5-07

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. Denn 9/5/07
SIGNATURE DATE

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

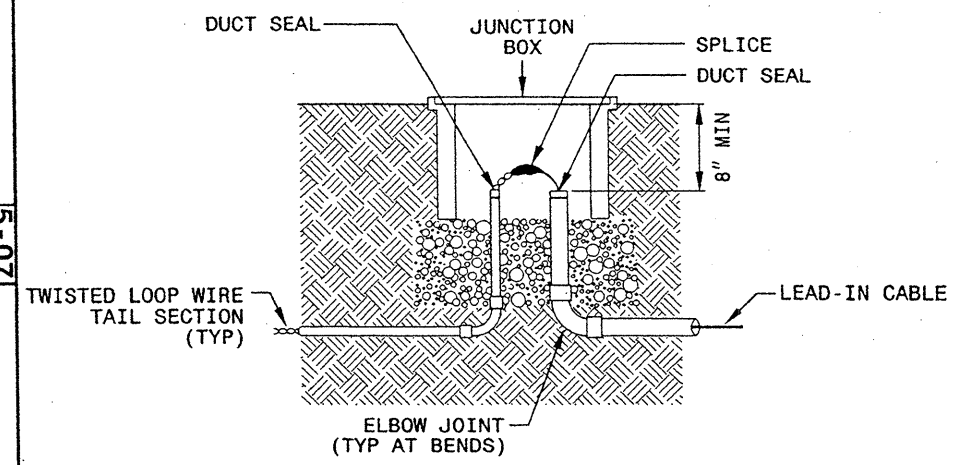
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

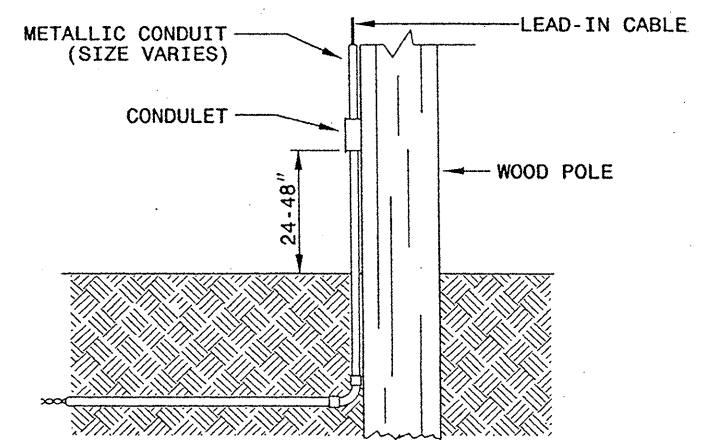
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

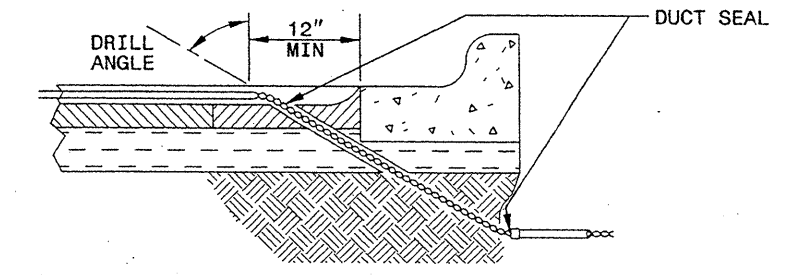


NOTE

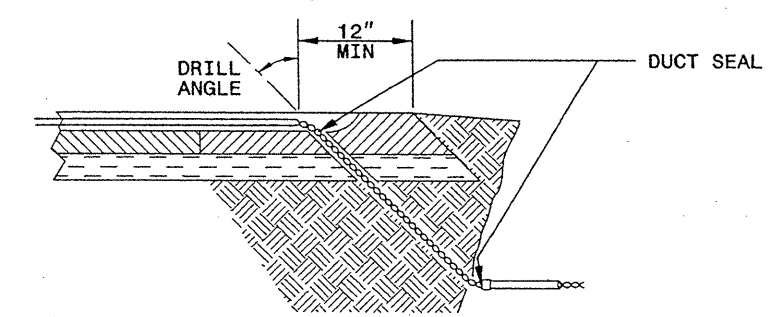
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

LOOP WIRE PAVEMENT EDGE DETAILS

LOOP WIRE AT CURB & GUTTER SECTION



LOOP WIRE AT PAVEMENT SECTION



NOTES

- DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
- TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
- 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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DIVISION OF HIGHWAYS
RALEIGH, N.C.

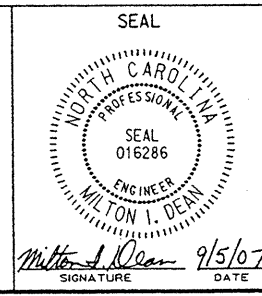
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

SHEET 2 OF 3
1725D01

05-SEP-2007 14:00 c:\documents and settings\mzmi\1716_dot\desktop\standard metal pole sheets\1725D0102.dwg 2307.dgn 2/11/17

See Plate for Title



750 N. Greenfield Parkway
Garner, NC 27529

Milton I. Dean 9/5/07
SIGNATURE DATE

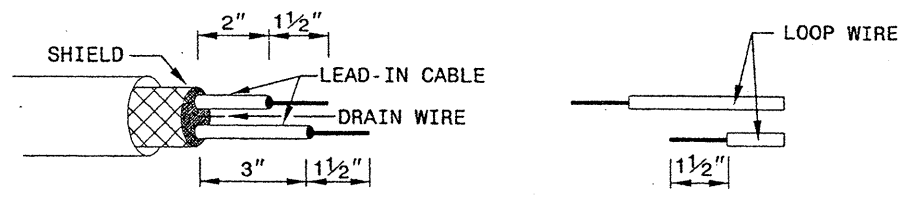
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

5-07

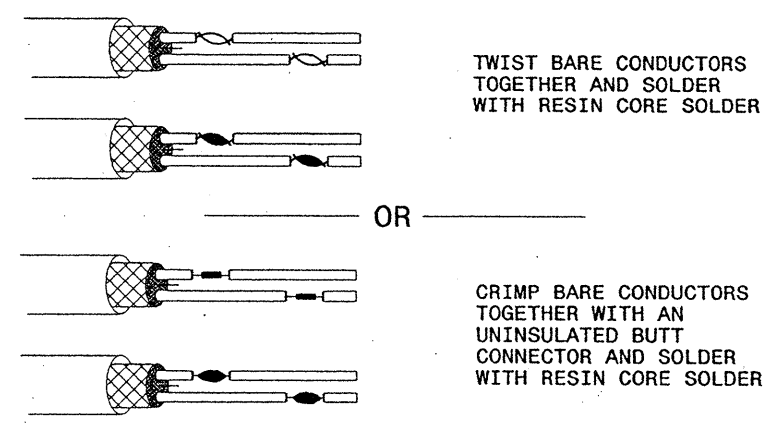
ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
1725D01

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE

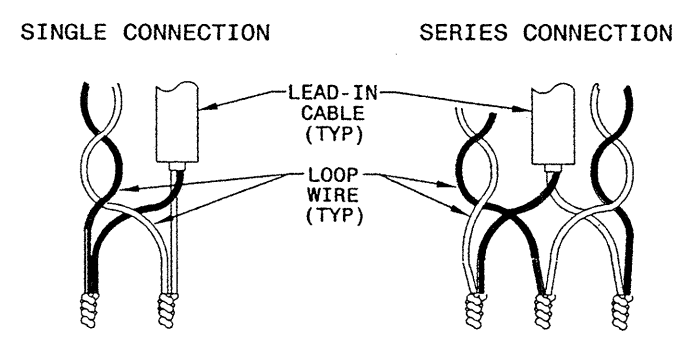


STEP 2. CONNECT AND SOLDER

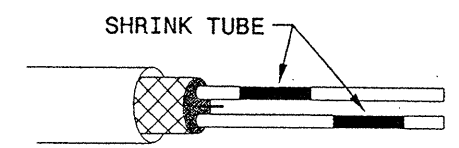


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

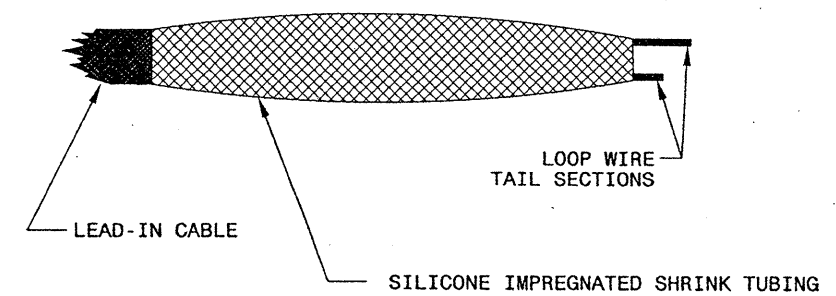
LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



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

5-07

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

SHEET 3 OF 3
1725D01

See Plate for Title

Prepared in the Office of:

750 N. Greenfield Parkway
Garner, NC 27529

SEAL

Milton I. Denn 9/15/07
SIGNATURE DATE

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