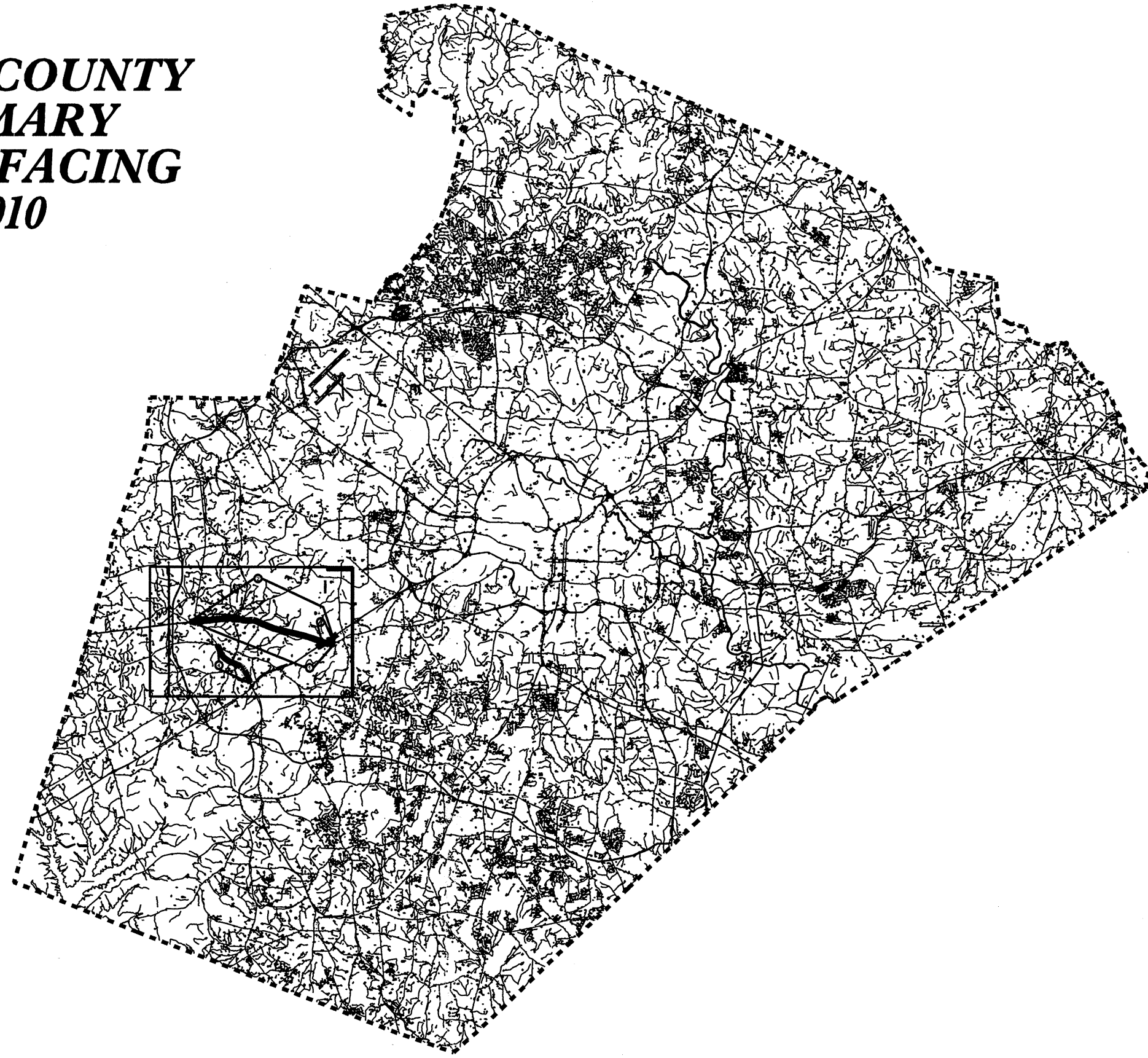
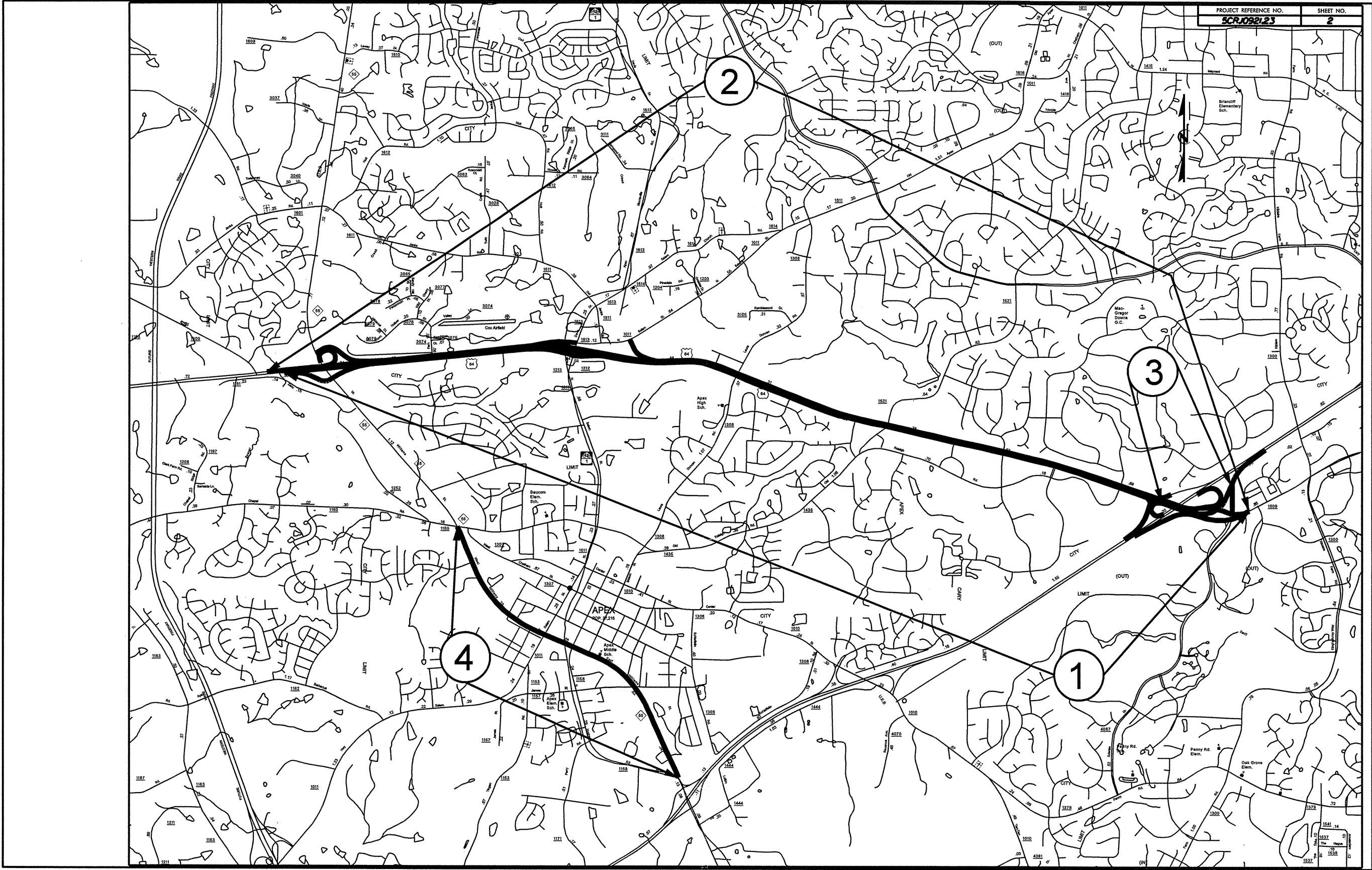


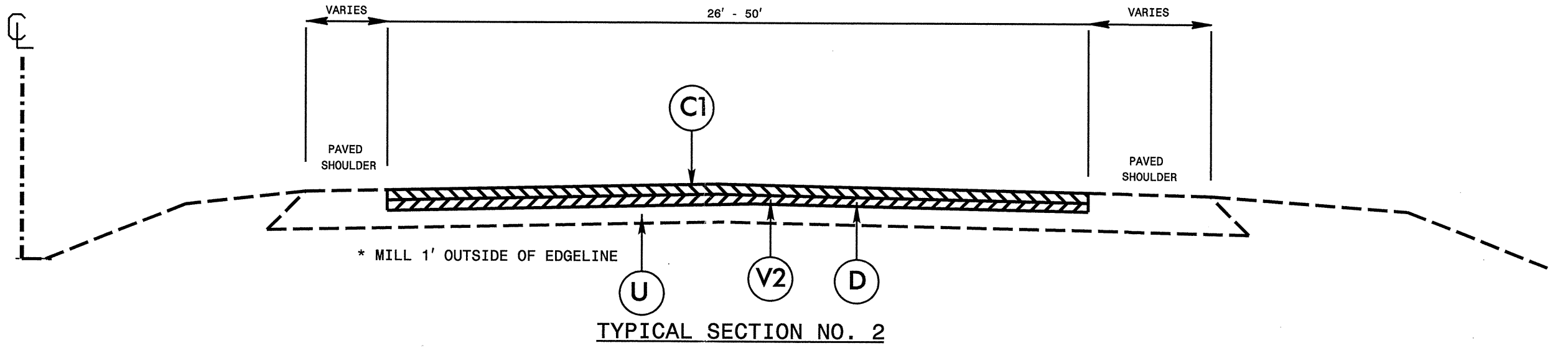
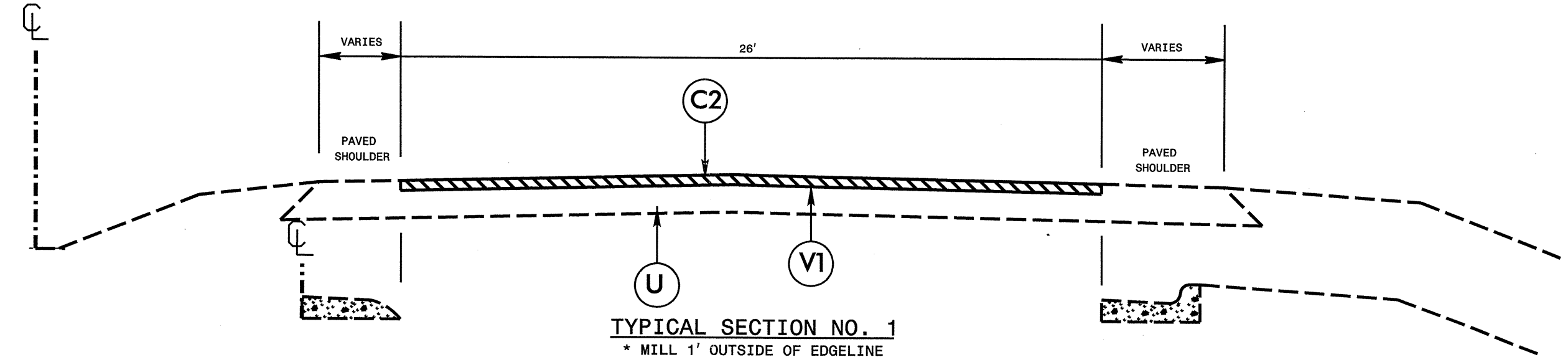
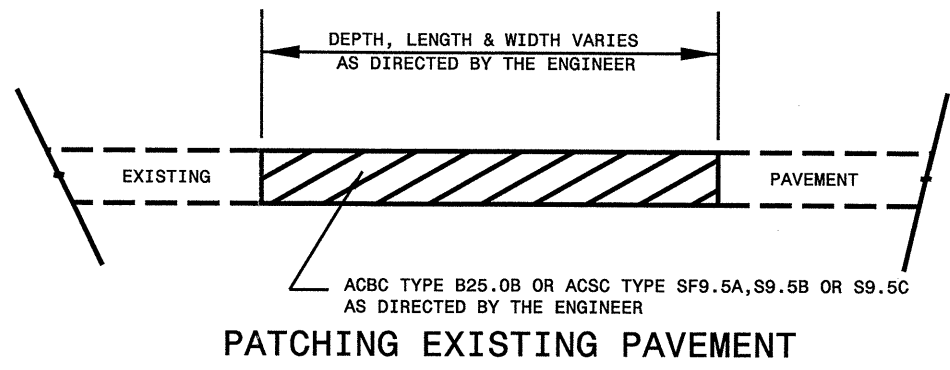
# WAKE COUNTY PRIMARY RESURFACING 2010





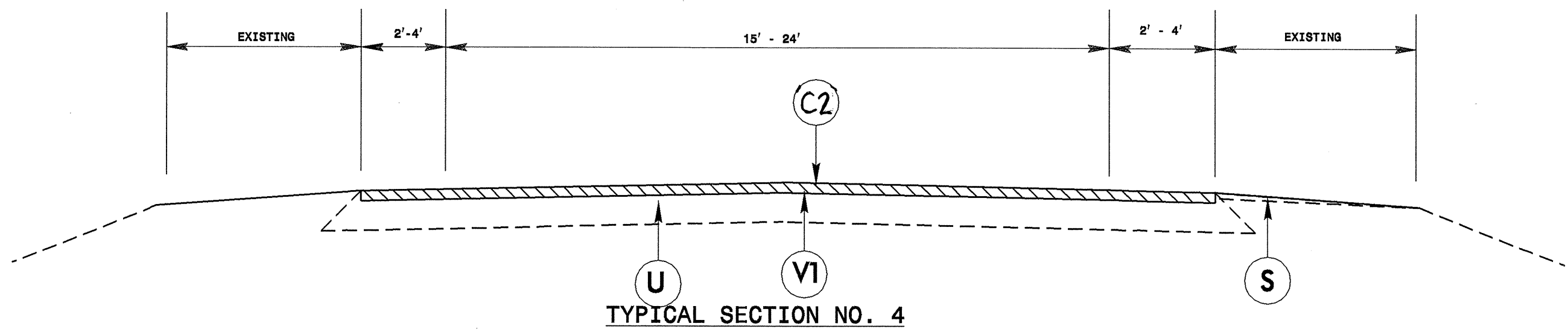
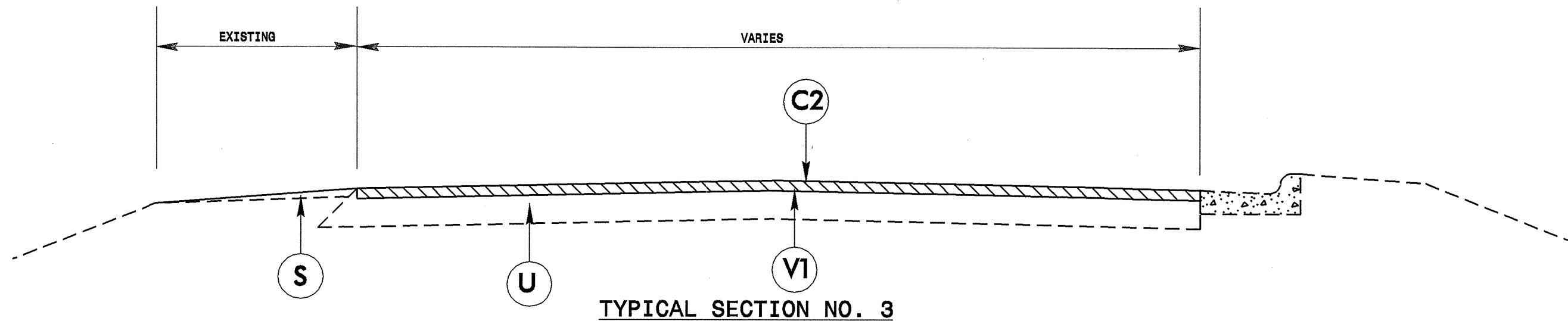
PAVEMENT SCHEDULE	
C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
V1	2" MILLING
V2	4" MILLING
U	EXISTING PAVEMENT
S	SHOULDER RECONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
5CR092123	3



# PAVEMENT SCHEDULE

C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
V1	2" MILLING
V2	4" MILLING
U	EXISTING PAVEMENT
S	SHOULDER RECONSTRUCTION

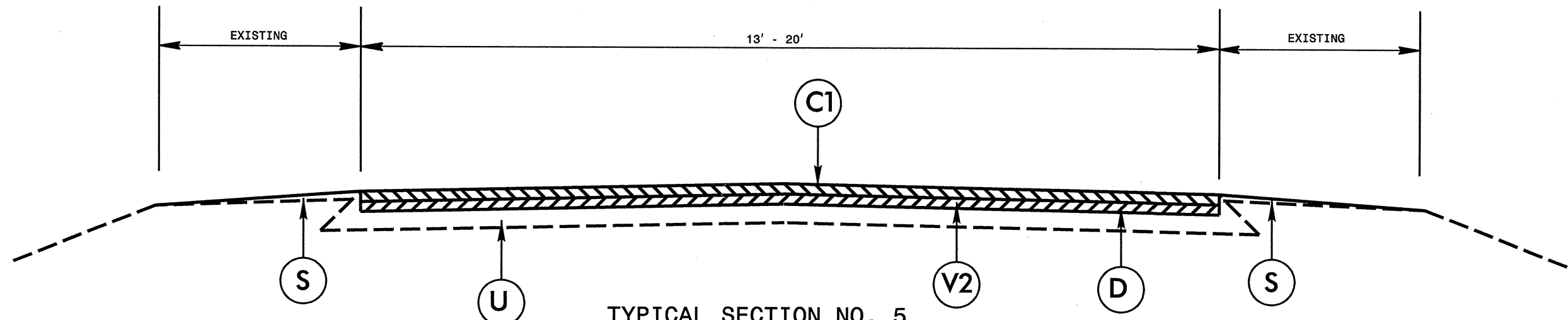


\* CONTRACTOR SHALL USE THIS TYPICAL FOR THE RAMPS

# PAVEMENT SCHEDULE

PROJECT REFERENCE NO. **SCR2092123** SHEET NO. **5**

C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
V1	2" MILLING
V2	4" MILLING
U	EXISTING PAVEMENT
S	SHOULDER RECONSTRUCTION



**TYPICAL SECTION NO. 5**

**\* CONTRACTOR SHALL USE THIS TYPICAL FOR THE RAMP FROM EAST BOUND 64 TO NORTH BOUND US1**

PROJECT NO.	SHEET NO.	TOTAL NO.
SCR.10921.23	6	

### SUMMARY OF QUANTITIES

PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	TYP	FINAL SURFACE TESTING REQUIRED	LENGTH MI	WIDTH FT	BORROW CY	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	2" MILLING SY	4" MILLING SY	INTER-MEDIATE COURSE, 119.0C TONS	SURFACE COURSE, 99.5C TONS	PG 64-22 PLANT MIX TONS	PG 70-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	SEED & MULCHING AC	INDUCTIVE LOOP LF
SCR.10921.23	Wake	1	US 64 EASTBOUND AND RAMPS	FROM JT. NEAR ASHVILLE AVE. TO GREEN LEVEL RD PROJECT JT.	1,2,4	NO	5.4	26-50	73	184	3.67	124,761.00	16,662.00	2,432.00	15,886.00	114.00	953.00	200.00	2.67	3,610
TOTAL FOR MAP NO. 1							5.4		73	184	3.67	124,761.00	16,662.00	2,432.00	15,886.00	114.00	953.00	200.00	2.67	3,610
		2	US 64 WESTBOUND, RAMPS AND CROSS OVERS	FROM JT NEAR ASHVILLE AVE. TO GREEN LEVEL PROJECT JT.	1,2,4	NO	5.5	26-50	57	142	2.83	124,232.00	16,662.00	2,432.00	15,799.00	114.00	948.00	200.00	2.06	3,610
TOTAL FOR MAP NO. 2							5.5		57	142	2.83	124,232.00	16,662.00	2,432.00	15,799.00	114.00	948.00	200.00	2.06	3,610
		3	US 64 EB RAMP (SPECIAL TREATMENT)	US 64 EB TO US1 NB	5	NO	0.3	13-20	12	0	0.60	4,430.00	663.00	390.00	31.00	23.00				
TOTAL FOR MAP NO. 3							0.3		12	0	0.60	4,430.00	663.00	390.00	31.00	23.00				
		4	NC 55	FROM SOUTH OF PERRY RD TO JT JUST NORTH OF HUNTER ST	3	NO	1.61	Varies	23	58	1.15	36,525.00			4,519.00		271.00	161.00	0.84	2,050
TOTAL FOR MAP NO. 4							1.61		23	58	1.15	36,525.00			4,519.00		271.00	161.00	0.84	2,050
TOTAL FOR PROJ NO. SCR.10921.23							12.81		165	384	8.25	285,516.00	37,754.00	5,527.00	36,594.00	259.00	2,195.00	561.00	5.57	9,270
GRAND TOTAL							12.81		165	384	8.25	285,516.00	37,754.00	5,527.00	36,594.00	259.00	2,195.00	561.00	5.57	9,270

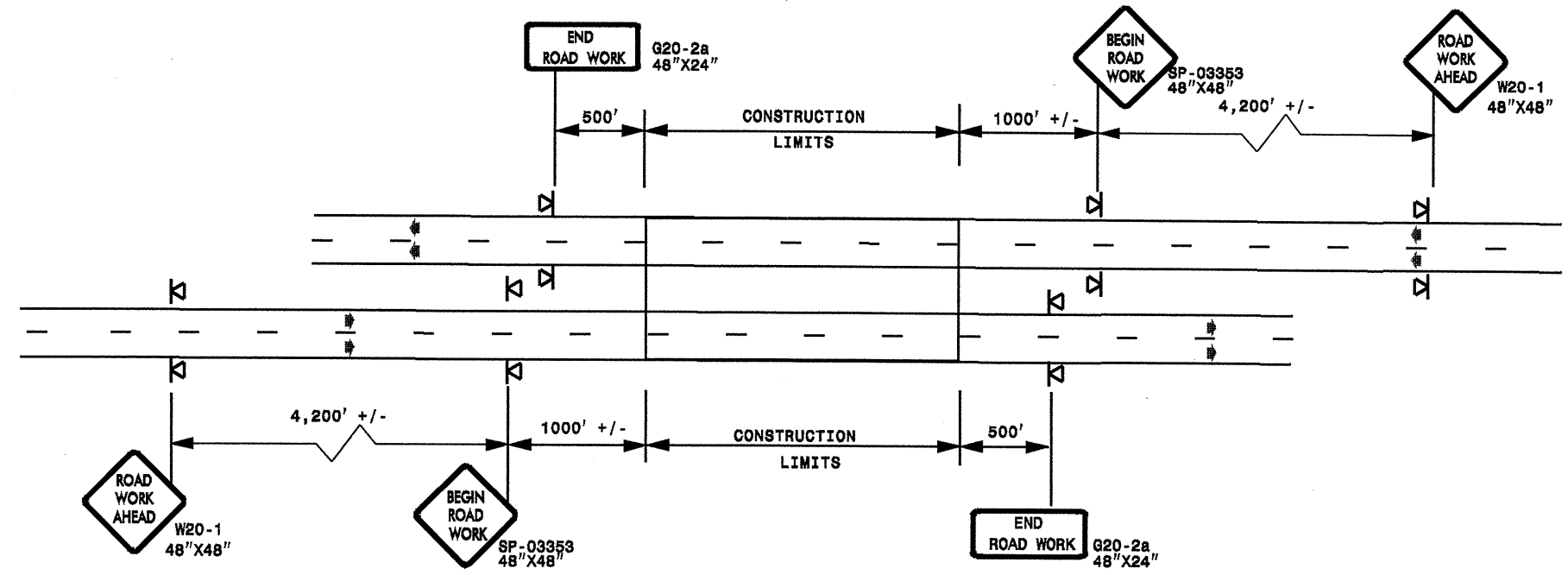
### THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	4589000000-N		4685000000-E		4686000000-E		4697000000-E		4710000000-E		4721000000-E			4725000000-E			4770000000-E		4810000000-E		4820000000-E		4835000000-E		4840000000-N		4845000000-N				4900000000-N		4905000000-N	
					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 120 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO MSG ONLY 120 M	THERMO MSG SCHOOL 120 M	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR ARROW 90 M	THERMO STR & LT ARROW 90 M	THERMO STR & RT ARROW 90 M	4" WHITE COLD APPLIED PLASTIC, TYPF III LF	4" YELLOW COLD APPLIED PLASTIC, TYPF III LF	4" WHITE PAINT	4" YELLOW PAINT	8" WHITE PAINT	24" WHITE PAINT	PAINT MSG ONLY	PAINT MSG SCHOOL	PAINT LT ARROW	PAINT RT ARROW	PAINT STR ARROW	PAINT STR & LT ARROW	PAINT STR & RT ARROW	CRYSTAL & RED MARKERS	YELLOW & YELLOW MARKERS	SNOW PLOWABLE MARKERS				
SCR.10921.23	Wake	1	US 64 EASTBOUND AND RAMPS	FROM JT. NEAR ASHVILLE AVE. TO GREEN LEVEL RD PROJECT JT.	0.43	36,153	35,830	13,804		3,710	430	56		25	35	55	6	225	175	49,957	35,830	3,710	430	56		25	35	55	6							1,078		
TOTAL FOR MAP NO. 1					0.43	36,153	35,830	13,804		3,710	430	56		25	35	55	6	225	175	49,957	35,830	3,710	430	56		25	35	55	6							1,078		
		2	US 64 WESTBOUND, RAMPS AND CROSS OVERS	FROM JT NEAR ASHVILLE AVE. TO GREEN LEVEL PROJECT JT.	0.43	35,725	35,148	13,180		2,905	506	68		52	27	67	5	644	515	48,905	35,148	2,905	506	68		52	27	67	5						1,080			
TOTAL FOR MAP NO. 2					0.43	35,725	35,148	13,180		2,905	506	68		52	27	67	5	644	515	48,905	35,148	2,905	506	68		52	27	67	5							1,080		
		3	US 64 EB RAMP (SPECIAL TREATMENT)	US 64 EB TO US1 NB	0.02	1,584	1,584													1,584	1,584																	
TOTAL FOR MAP NO. 3					0.02	1,584	1,584														1,584	1,584																
		4	NC 55	FROM SOUTH OF PERRY RD TO JT JUST NORTH OF HUNTER ST	0.11	10,350		1,220	19,640	440	464		12	40	5	5									6	40	5	5		15	81	292						
TOTAL FOR MAP NO. 4					0.11	10,350		1,220	19,640	440	464		12	40	5	5									6	40	5	5		15	81	292						
TOTAL FOR PROJ NO. SCR.10921.23					1	83,812	72,562	28,204	19,640	7,055	1,400	124	12	117	67	127	11	15	869	690	112,016	92,202	7,055	1,400	124	6	117	67	127	11	15	81	292			2,158		
GRAND TOTAL					1	83,812	72,562	28,204	19,640	7,055	1,400	124	12	117	67	127	11	15	869	690	112,016	92,202	7,055	1,400	124	6	117	67	127	11	15	81	292			2,158		



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

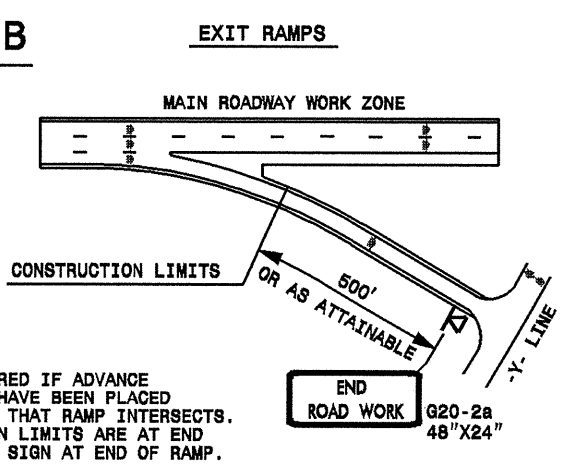
**DETAIL A**



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

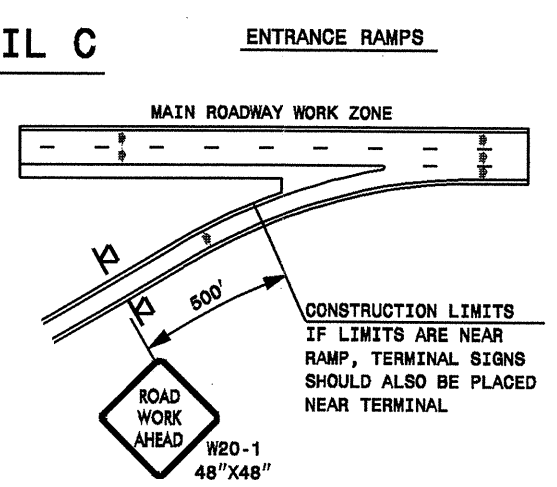
**ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)**

**DETAIL B**



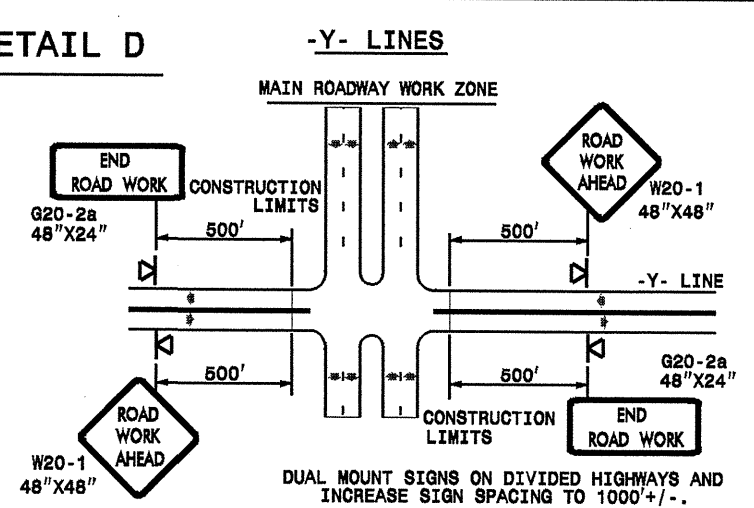
NOTE:  
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

**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

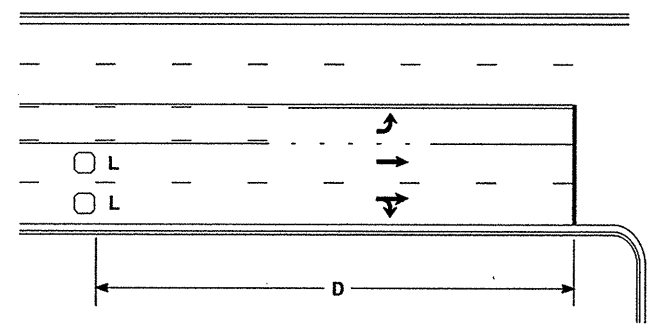
SHEET 1 OF 1

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

23-NOV-2009 17:03  
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pseymore AT WZTC237802



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

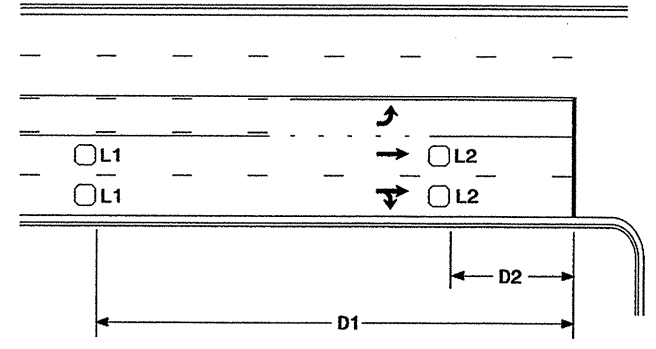


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

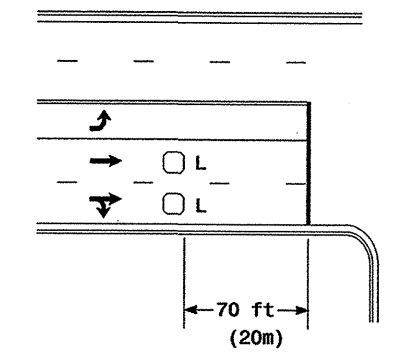


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

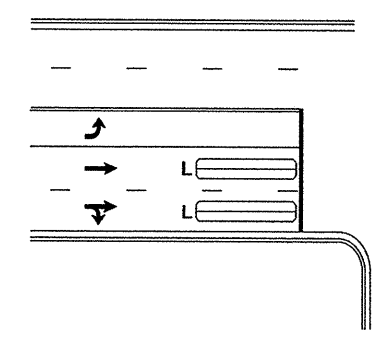
"Stretch" Operation

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



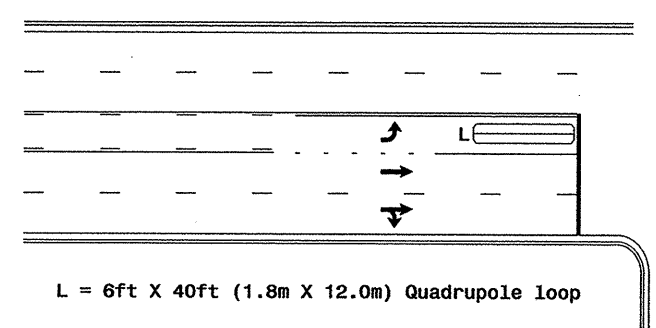
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

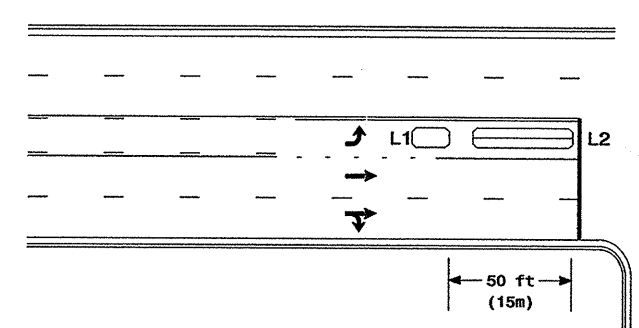
### Left Turn Lane Detection



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

Presence Loop Detection

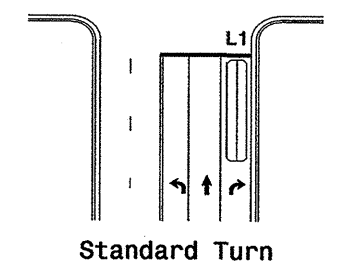
OR



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

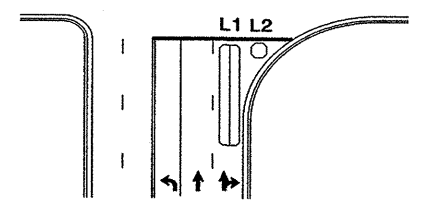
Queue Loop Detection

### Right Turn Lane Detection

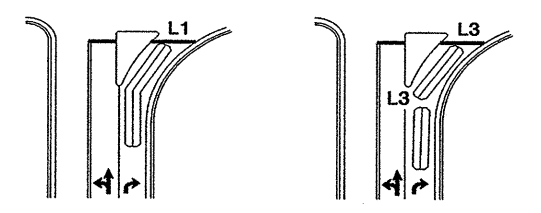


Standard Turn

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

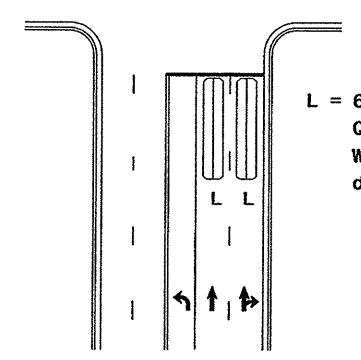


Wide Radius Turn



Channelized Turn

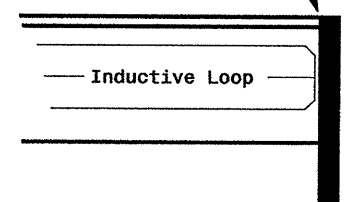
### Side Street Detection



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

Prepared in the Office of  
Public Utilities and Safety Services  
STATE OF NORTH CAROLINA  
DIVISION OF TRANSPORTATION  
Special and Geometric Section

722 N. McDowell St., Raleigh, NC 27603

SCALE  
N/A

#### Typical Loop Locations

PLAN DATE: June 2006	REVIEWED BY:
PREPARED BY: P L Alexander	REVIEWED BY:
REVISIONS	INIT. DATE
1. Revise pavement markings	aa 12/1/04

SEAL

NORTH CAROLINA  
PROFESSIONAL ENGINEER  
SEAL 23488  
P L ALEXANDER

SIGNATURE DATE

SIG. INVENTORY NO.

18-000-2006 14:39  
s:\w\p\signal\turn\_in\m\scat\copy\lcal2006.dgn  
plalexander

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

11-08

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

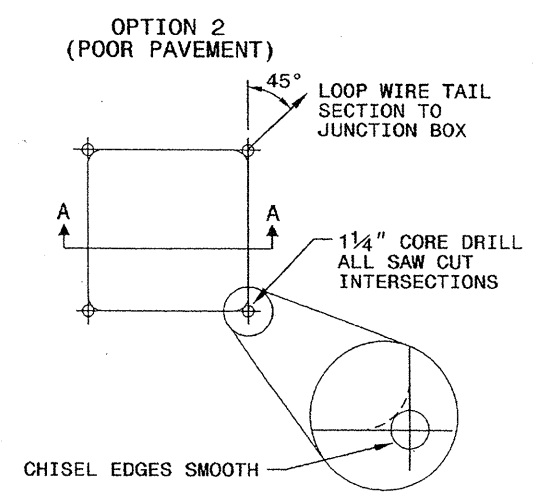
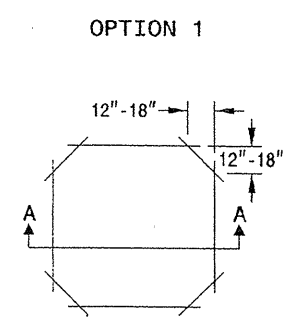
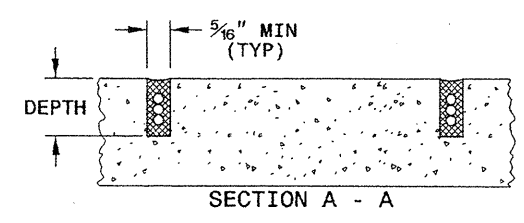
SHEET 1 OF 3  
**1725D01**

**CONVENTIONAL 4-SIDED LOOP**

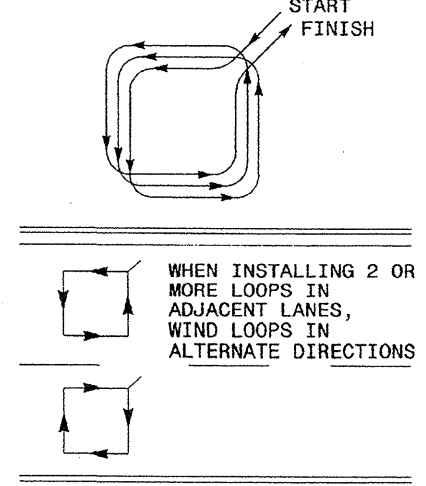
**SAW CUT OPTIONS**

**SAW SLOT DEPTH CHART**

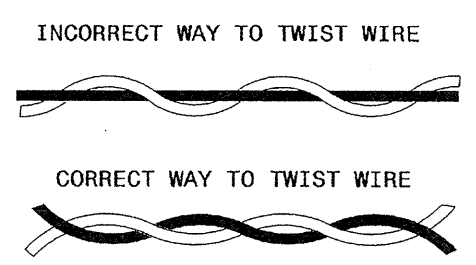
DEPTH (IN)	NO. OF WIRE TURNS				
	2	3	4	5	6
CONCRETE	2.0	2.0	2.5	2.5	3.0
ASPHALT	2.0	2.5	3.0	3.0	3.0



**LOOP WINDING METHOD**



**LOOP WIRE TWISTING METHOD**

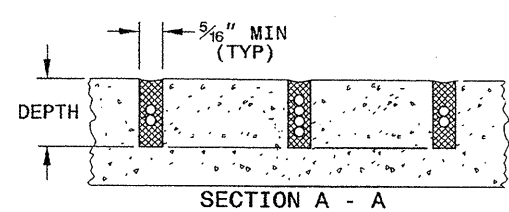
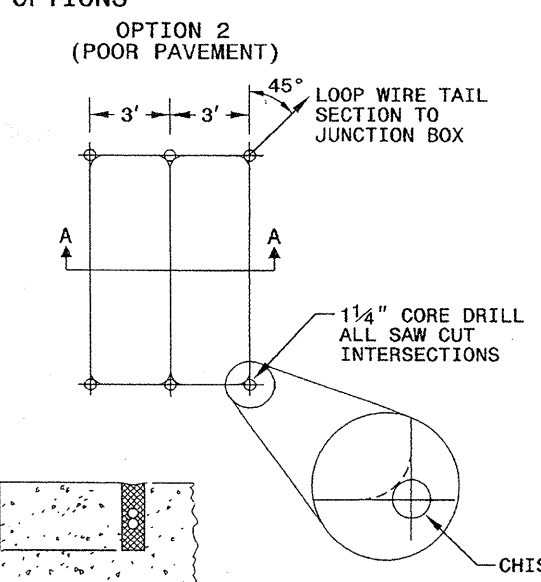
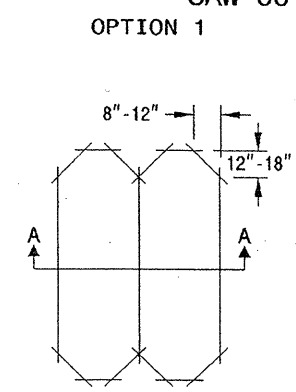


**NOTES**

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.

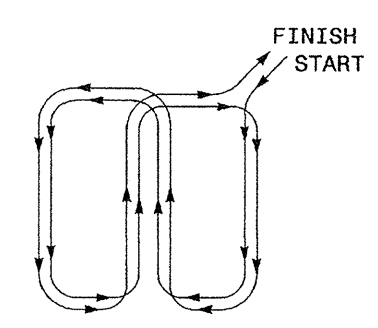
**QUADRUPOLE LOOP**

**SAW CUT OPTIONS**



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

**LOOP WINDING METHOD**



ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

11-08

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

SHEET 1 OF 3  
**1725D01**

See Plate for Title

Prepared in the Offices of:

750 N. Greenfield Parkway  
 Garner, NC 27529

SEAL

Wilton I. Dean  
 ENGINEER  
 4/24/08  
 SIGNATURE DATE

24-H04-2008 08:28  
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 11/11/08

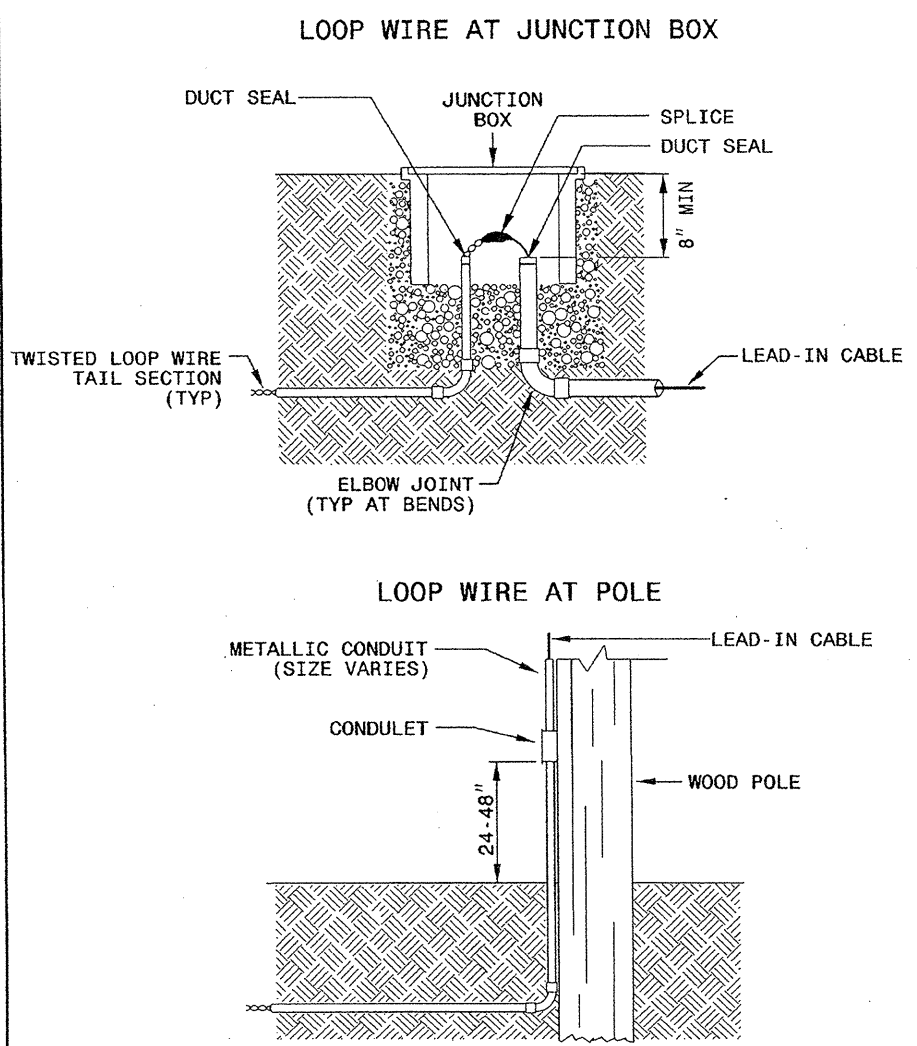
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DIVISION OF HIGHWAYS  
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11-08

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

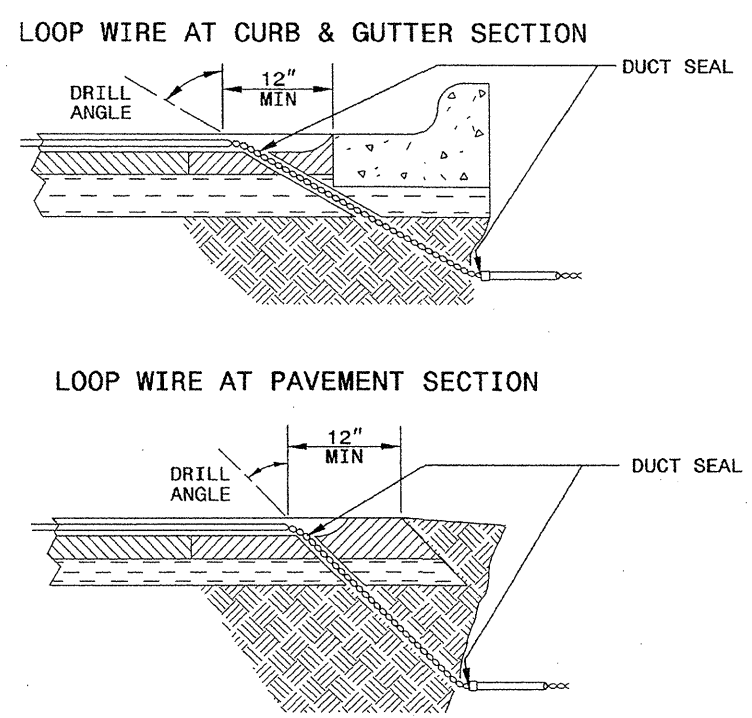
SHEET 2 OF 3  
**1725D01**

LOOP WIRE SPLICE POINT DETAILS



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

LOOP WIRE PAVEMENT EDGE DETAILS



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.

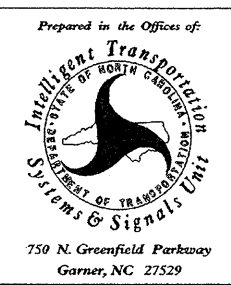
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ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
LOOP WIRE DETAILS

SHEET 2 OF 3  
**1725D01**

See Plate for Title



SEAL  
NORTH CAROLINA PROFESSIONAL ENGINEER  
SEAL 16286  
MILTON I. DEAN  
Signature: *Milton I. Dean* 11/24/08  
DATE

24-wire-008 09-23  
20-wire-008 standard plate sheets 17250102.mxd 2/10/07.dgn  
2/11/11

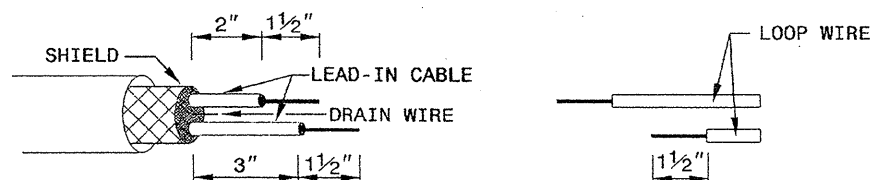
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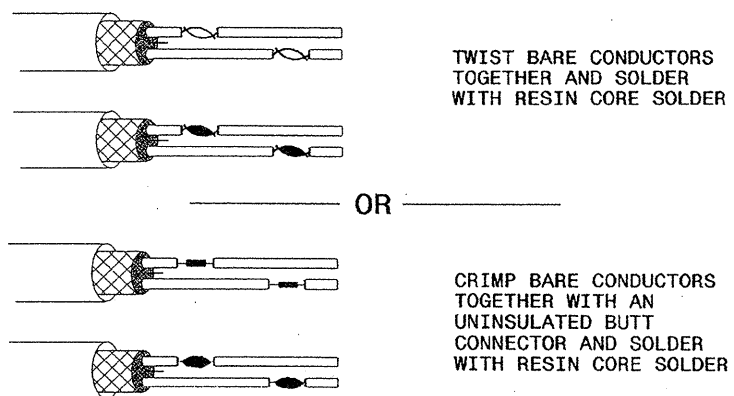
ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
 SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3  
**1725D01**

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

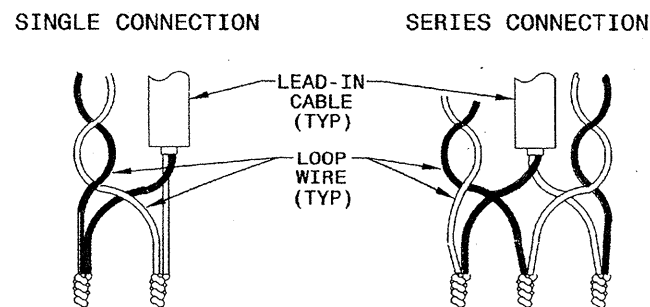


**STEP 2. CONNECT AND SOLDER**

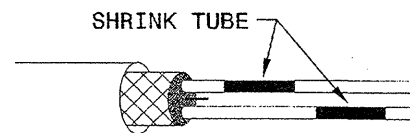


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

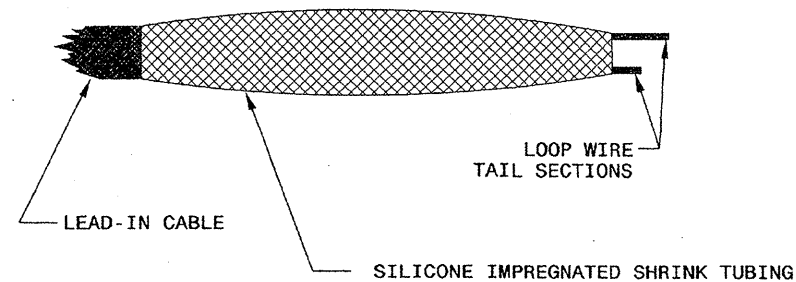
**LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS**



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



**STEP 4. ENVIRONMENTALLY PROTECT SPLICE**



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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

Prepared in the Offices of:

750 N. Greenfield Parkway  
 Garner, NC 27529

SEAL

Milton L. Dean 11/24/08  
 SIGNATURE DATE