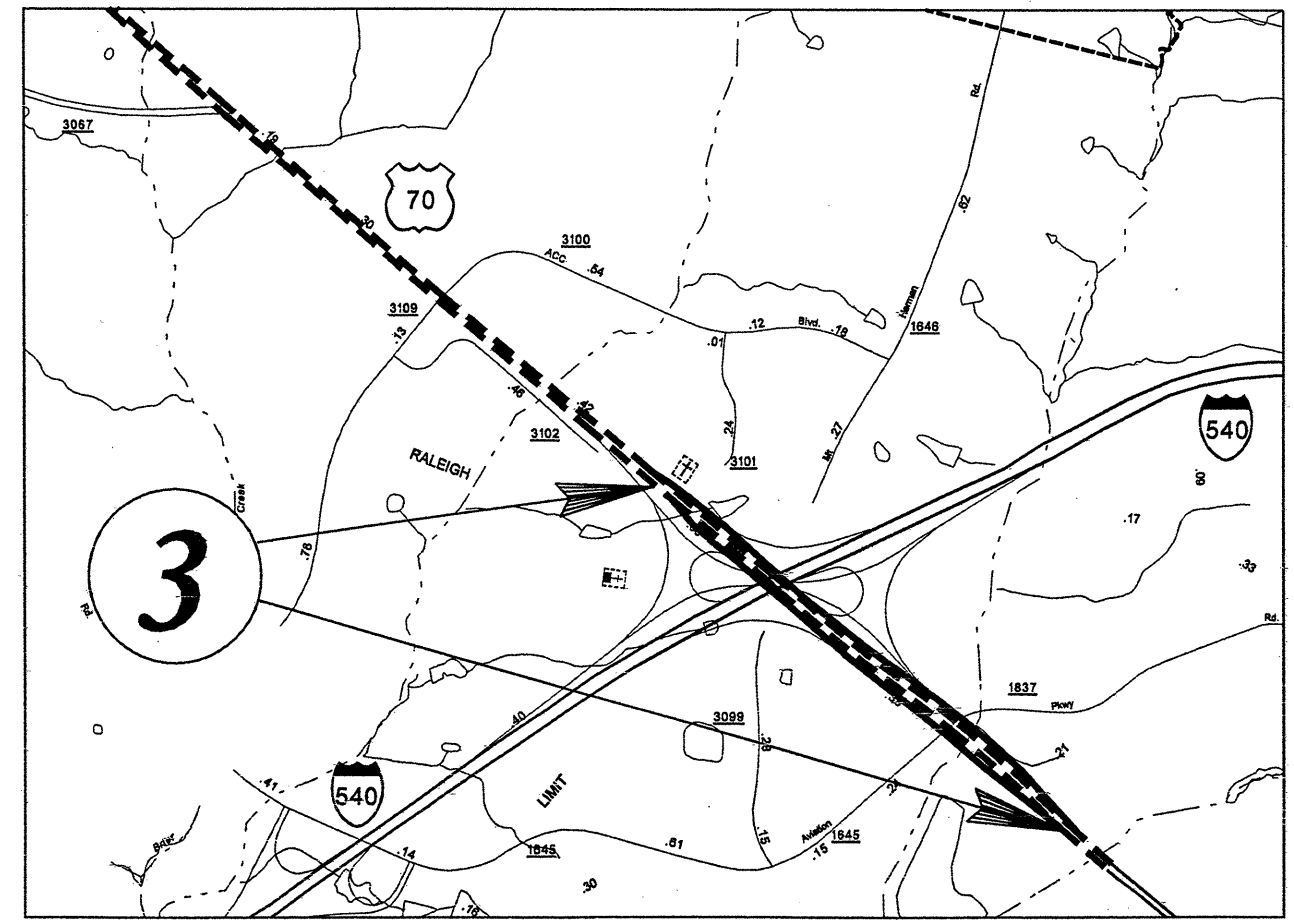
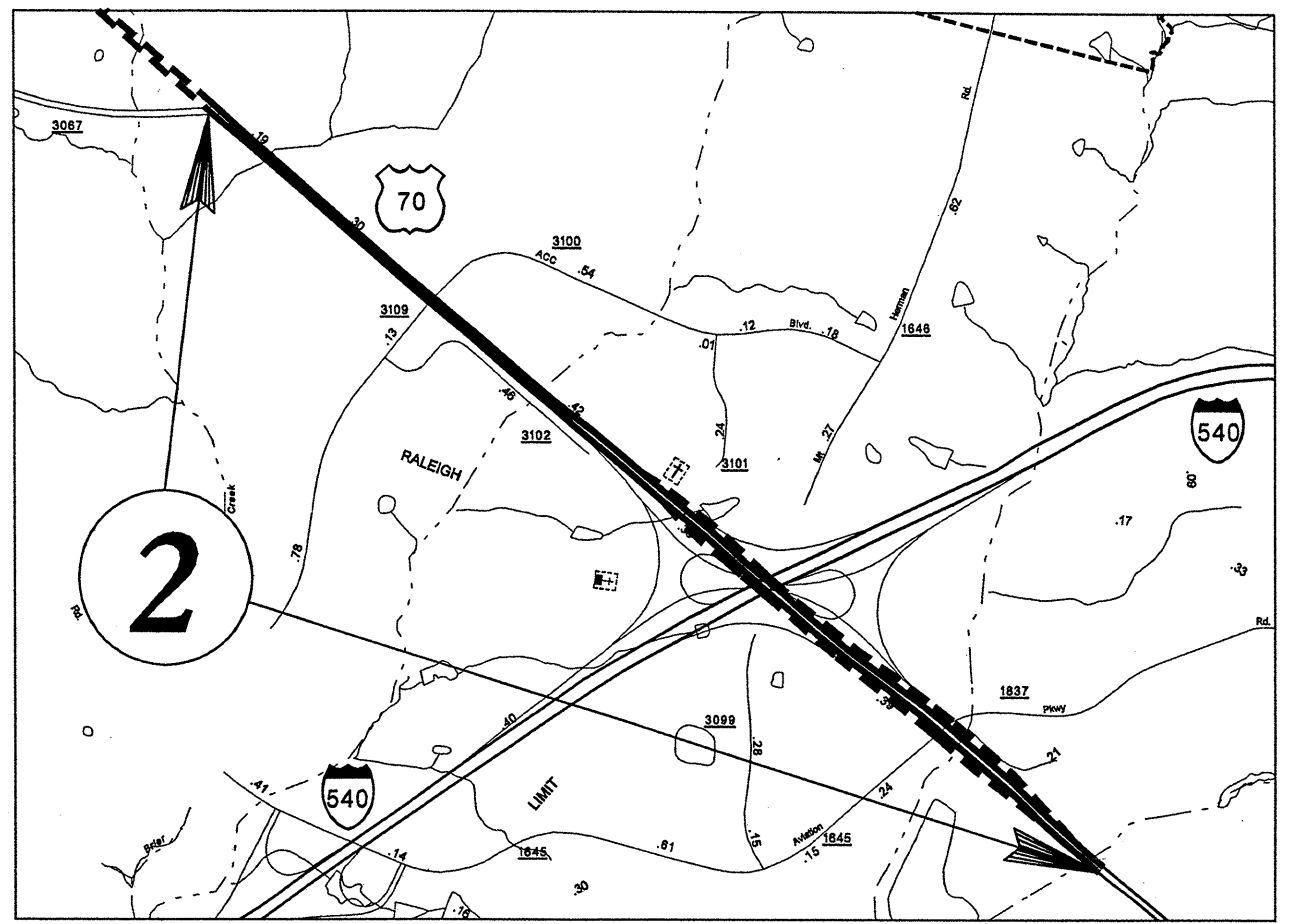
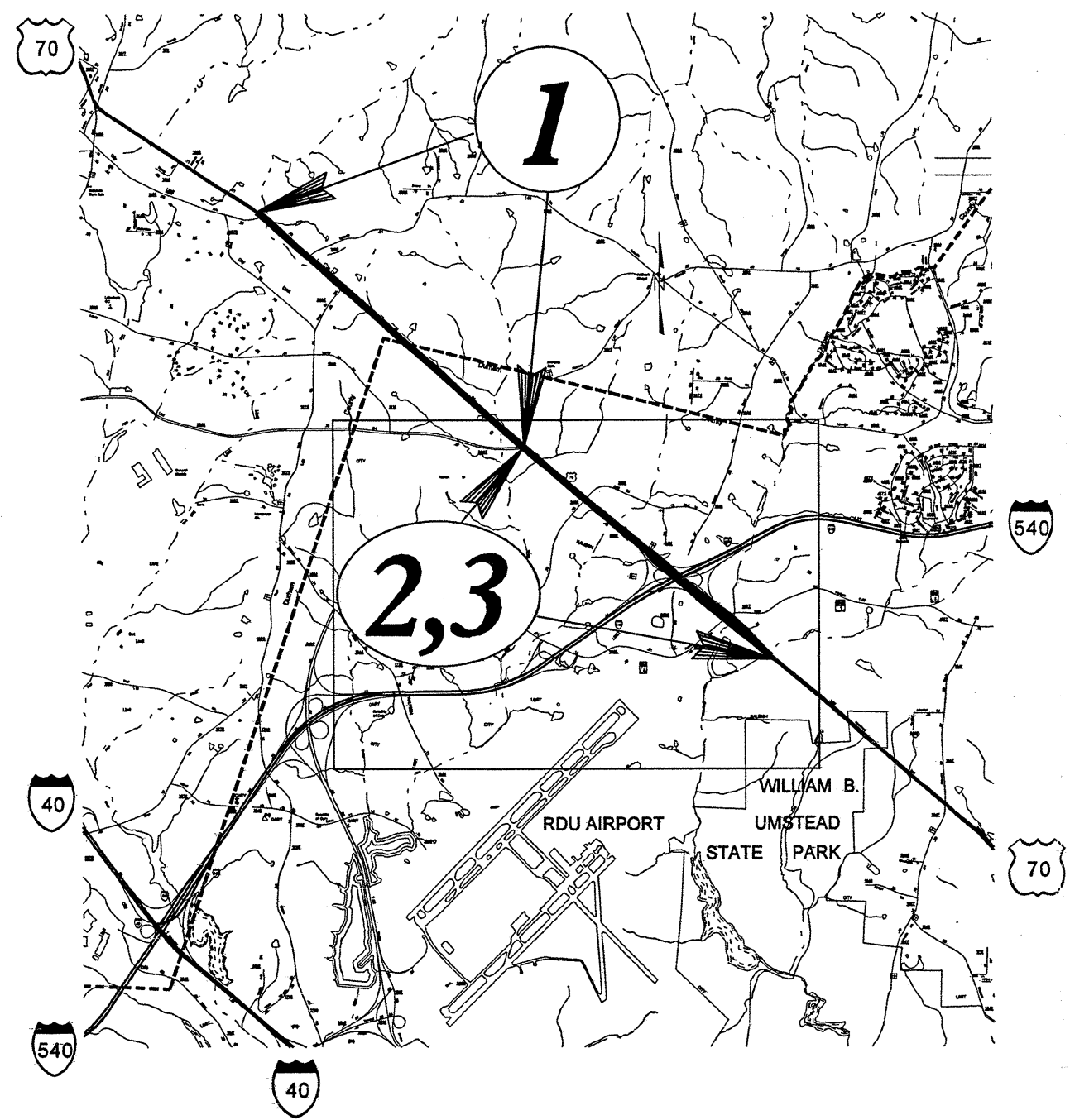
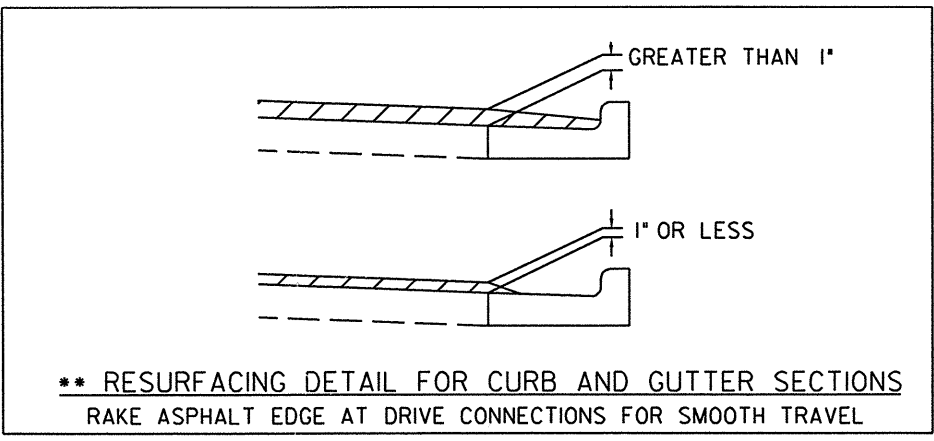


Durham And Wake Counties



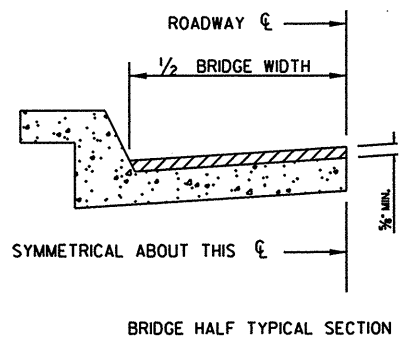
PAVEMENT SCHEDULE

(C1)	PROP. APPROX. 2" ASPH. CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
(C2)	PROP. APPROX. 1.5" ASPH. CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
(E1)	PROP. APPROX. 10" ASPH. CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 550 LBS. PER SQ. YD. IN EACH OF TWO LIFTS.
(E2)	PROP. APPROX. 4" ASPH. CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 440 LBS. PER SQ. YD.
(U)	EXISTING PAVEMENT



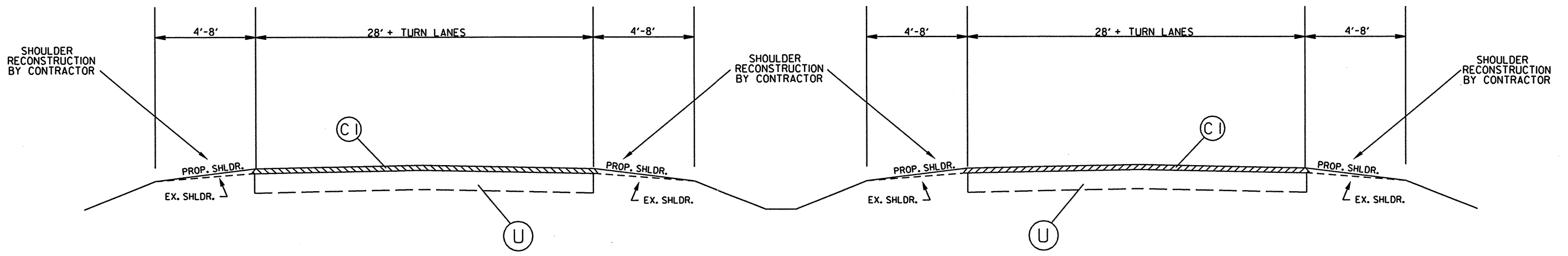
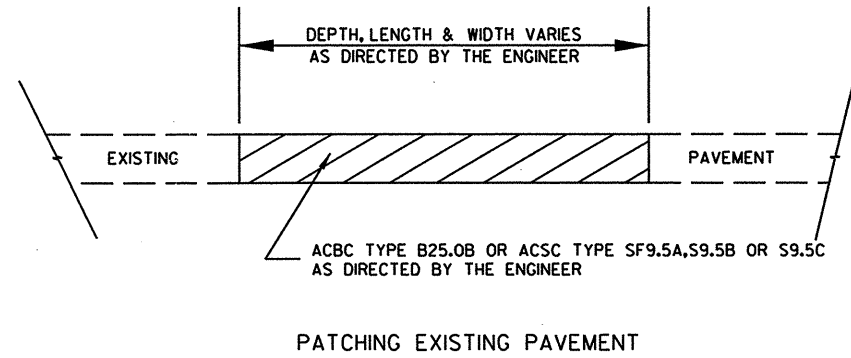
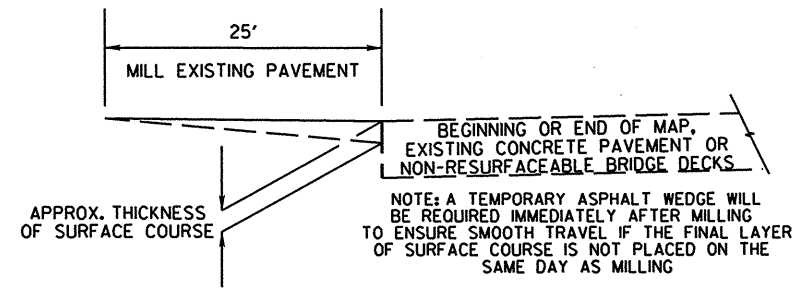
NOTES

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 RADI, 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.

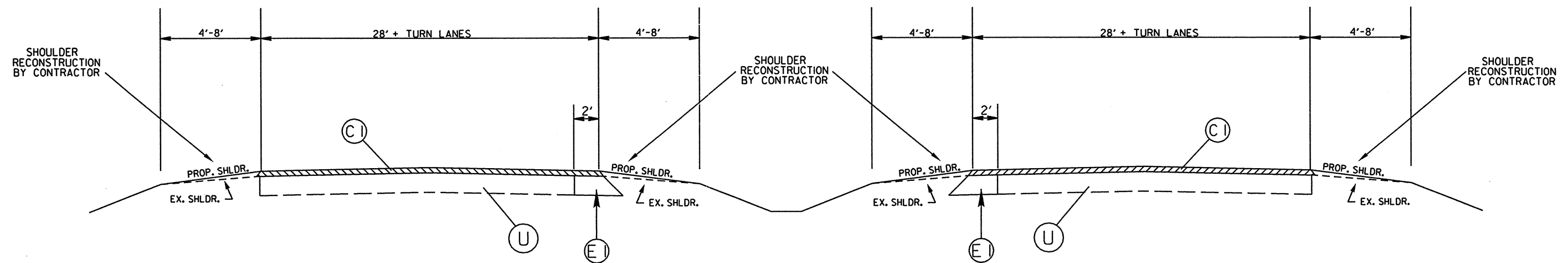


FOR BRIDGES WITH FLOOR DRAINS, CARE SHALL BE EXERCISED IN PLACING THE WEARING SURFACE AROUND FLOOR DRAINS SO AS NOT TO HINDER EFFECTIVE DRAINAGE. ALL DRAINS SHALL BE LEFT OPEN.

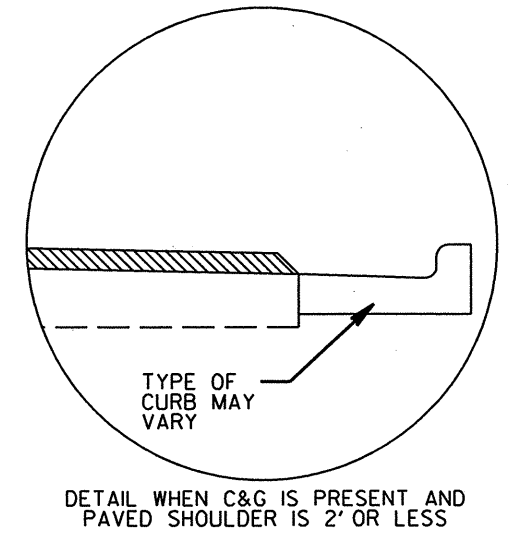
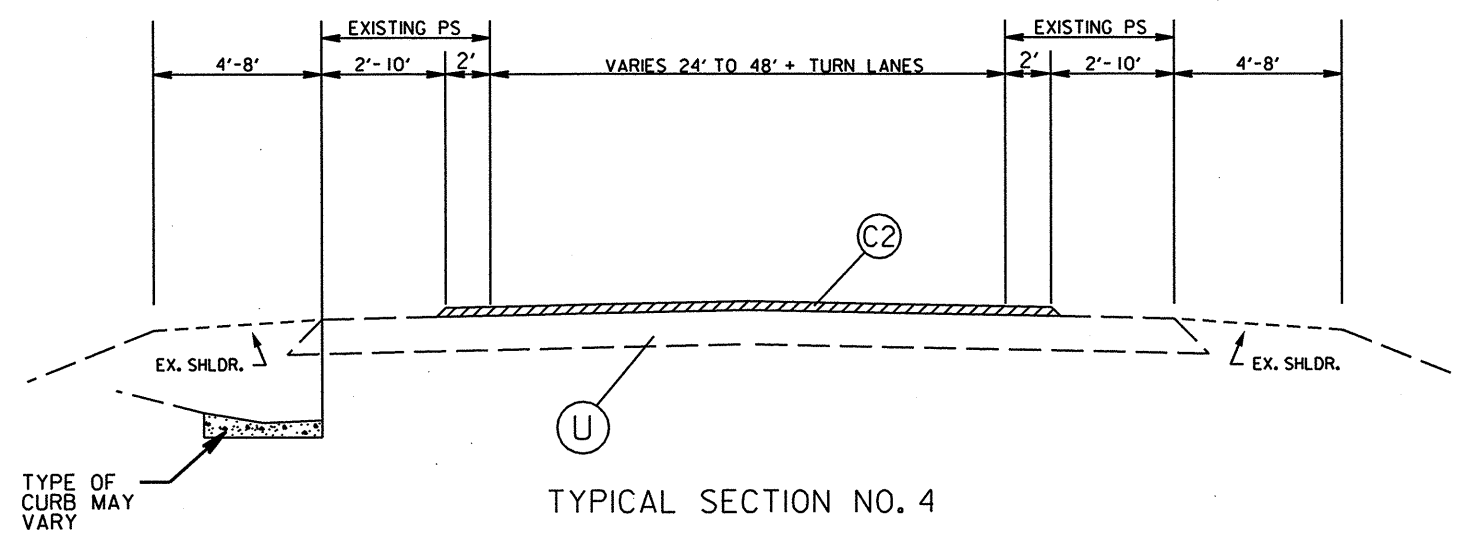
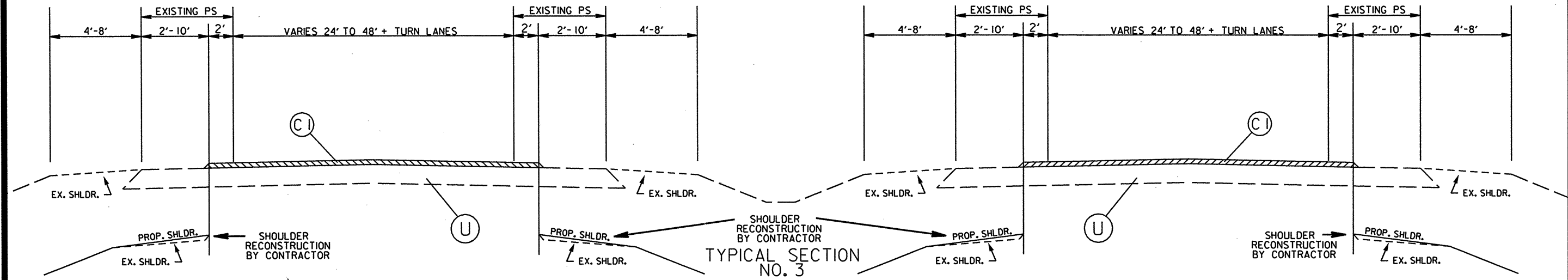
THE PROPOSED WEARING SURFACE SHALL VARY IN THICKNESS AS NECESSARY TO PROVIDE A SMOOTH RIDING SURFACE. A THICKNESS OF NOT LESS THAN 3/8" SHALL BE PROVIDED. THE MAXIMUM THICKNESS SHALL PREFERABLY BE 1 1/2" UNLESS IT IS IMPRACTICAL TO PROVIDE A SMOOTH RIDING SURFACE OTHERWISE.



TYPICAL SECTION NO. 1
USE FROM ANGIER AVE TOWAKE/DURHAM COUNTY LINE

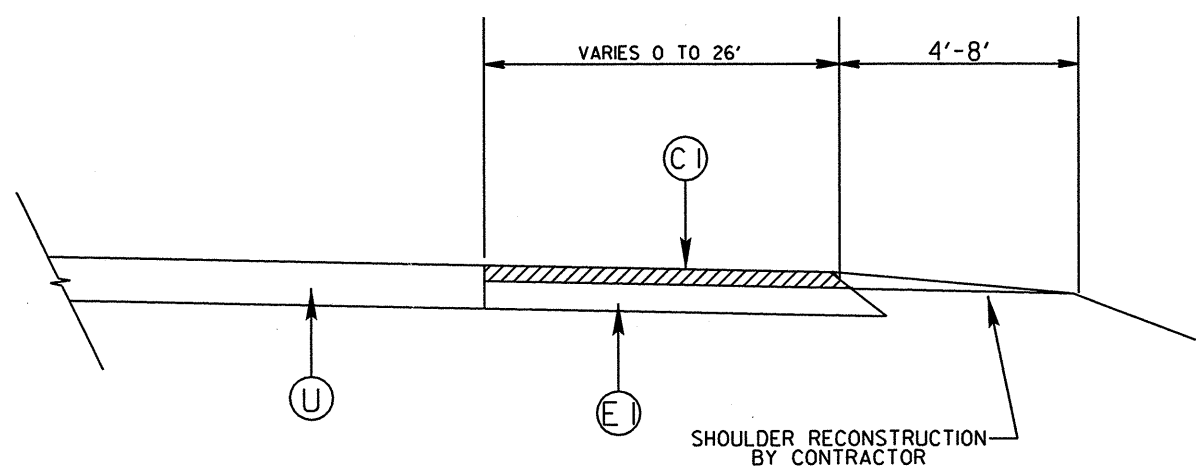


TYPICAL SECTION NO. 2
USE FROM THE WAKE/DURHAM COUNTY LINE TO TW ALEXANDER



WIDENING FOR EXTENSION OF TURN LANES

EXTEND LEFT TURN LANE STORAGE BY 100 FT AND SHIFT DECEL TAPER. CREATE RIGHT TURN TAPER ONLY.

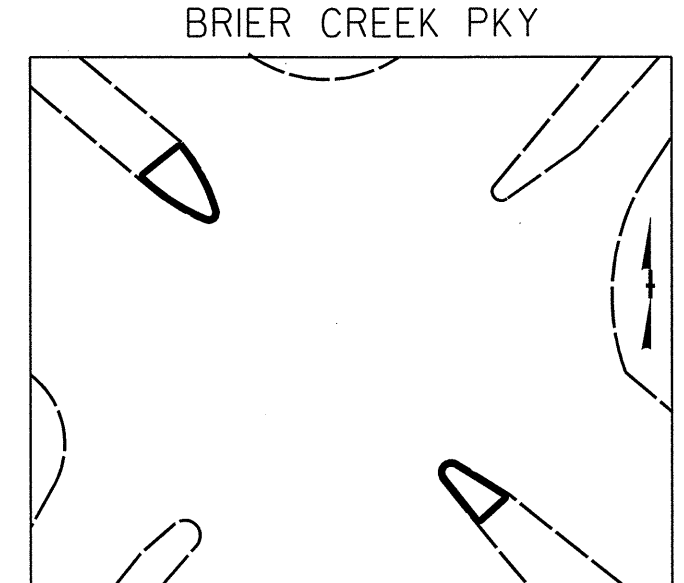
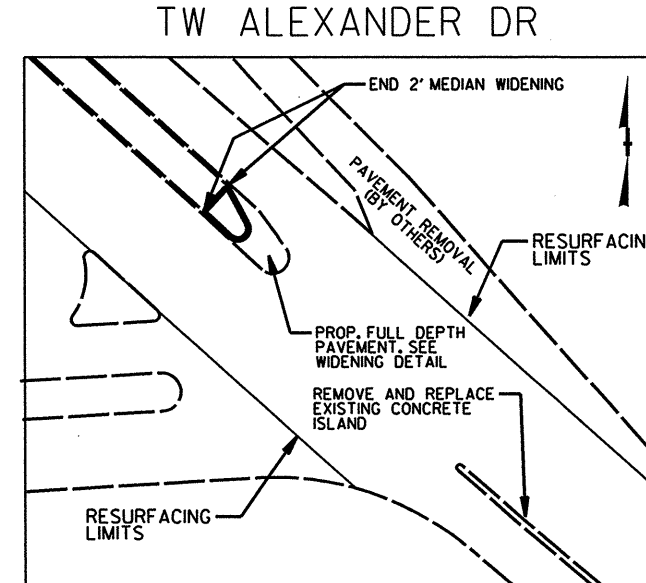
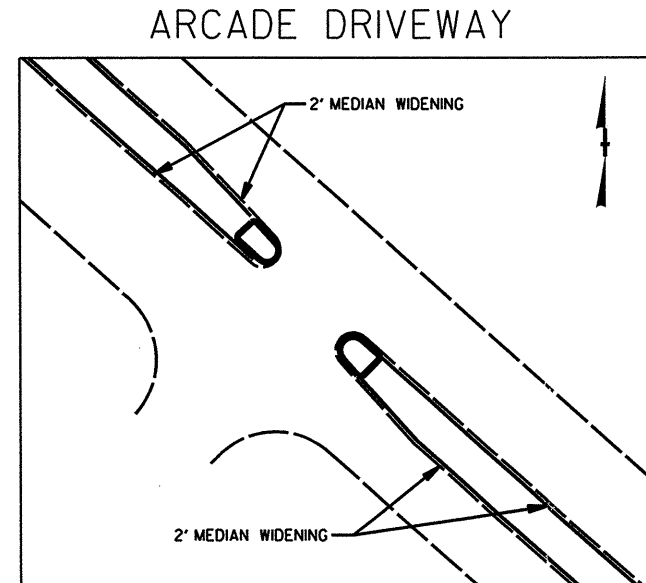
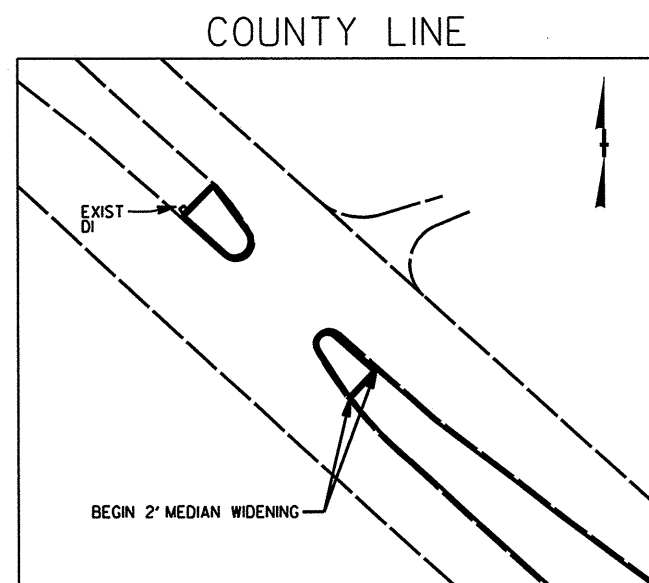
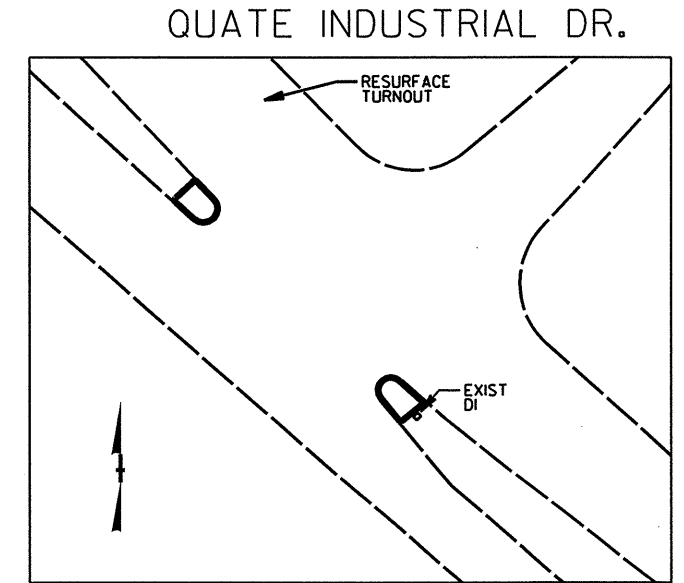
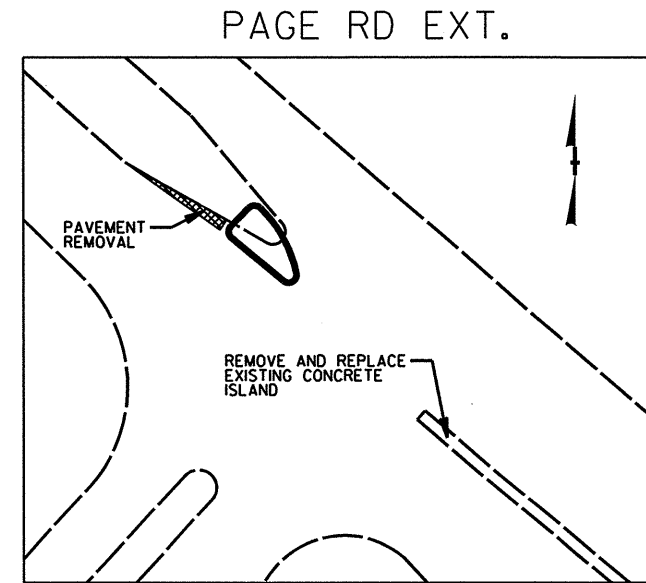
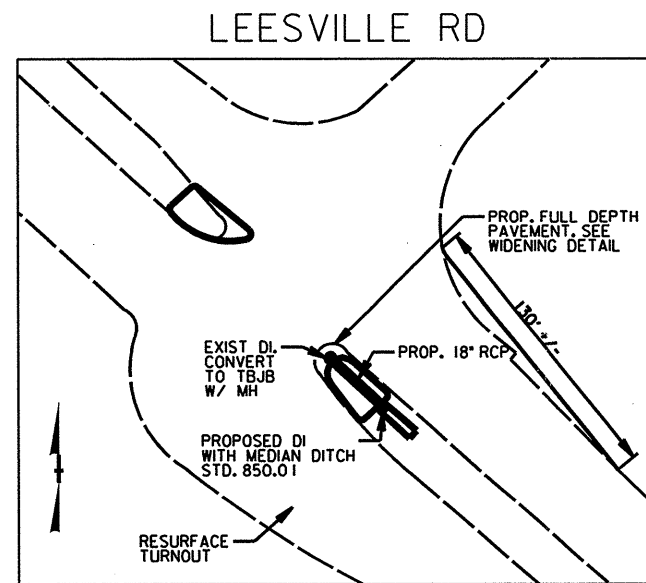
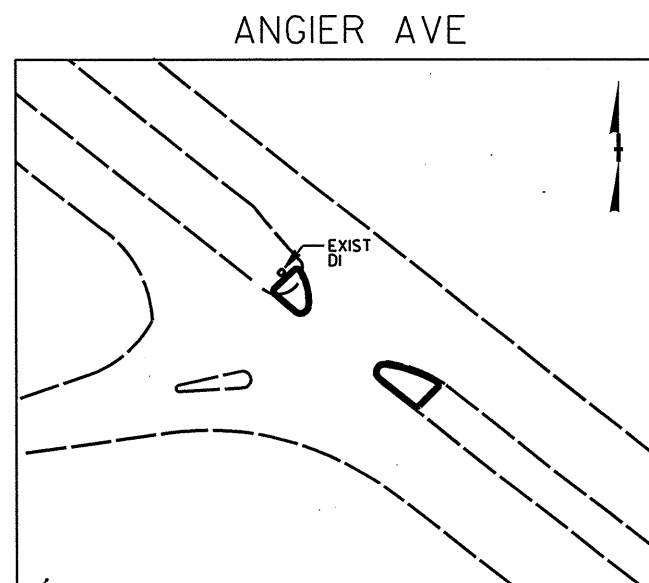
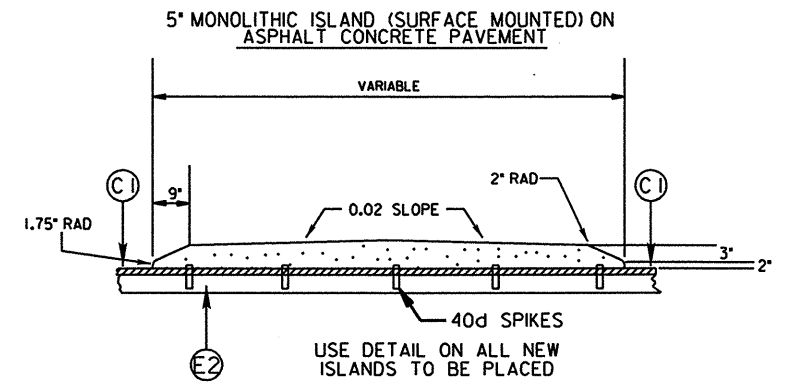
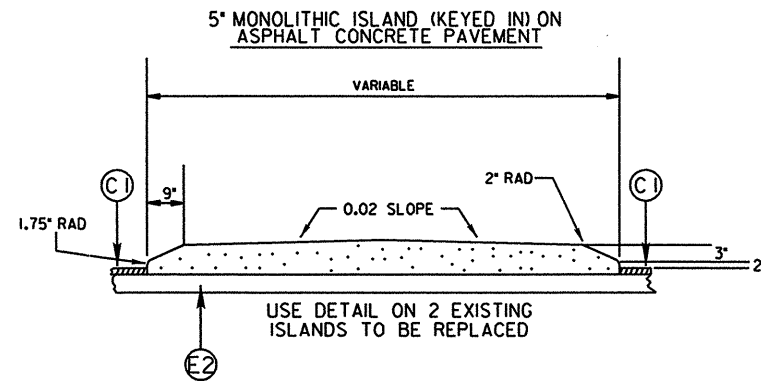
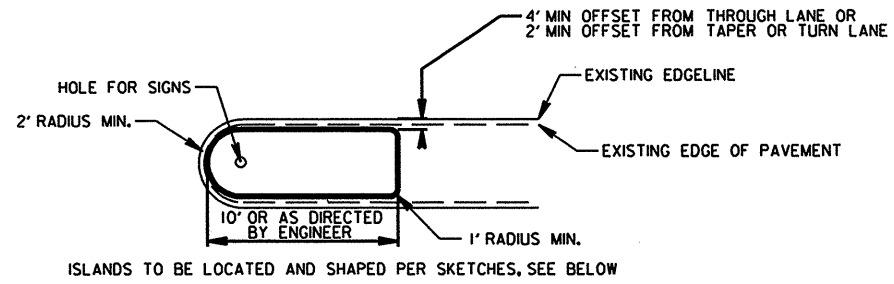


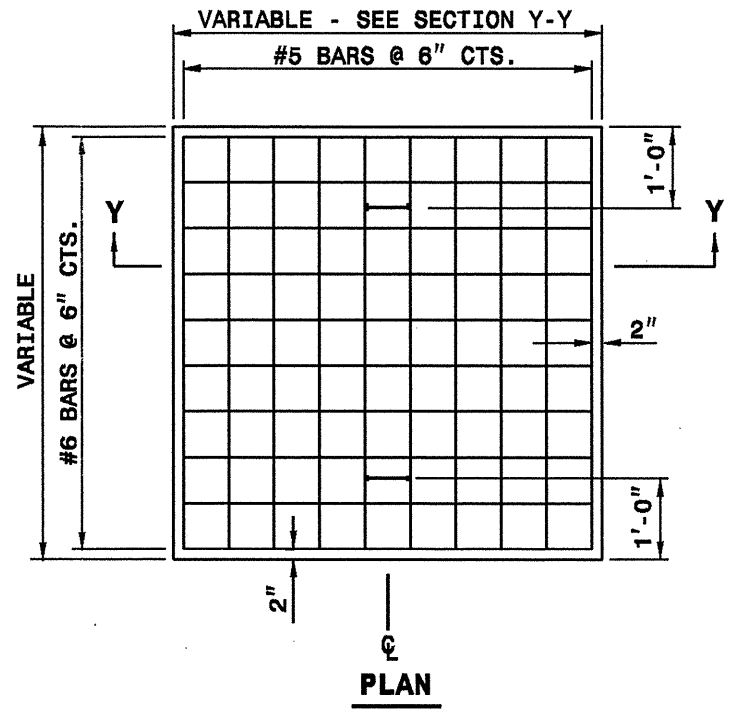
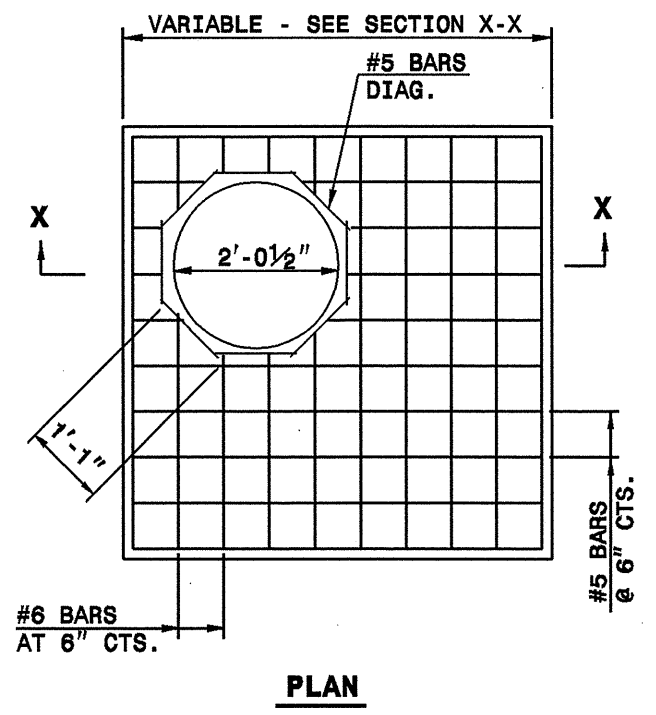
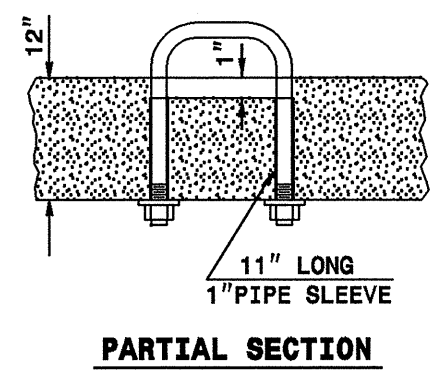
FOR LEFT TURN LANE (MEDIAN WIDENING) - USE AT EASTBOUND TW ALEXANDER DR, AND EAST AND WESTBOUND BRIER CREEK PARKWAY INTERSECTIONS.

FOR RIGHT TURN WIDENING - USE AT WESTBOUND LEESVILLE RD, TAPER ONLY (SEE DETAIL NEXT PAGE)

5/13/08
SYSTEMS
DESIGN
GROUP

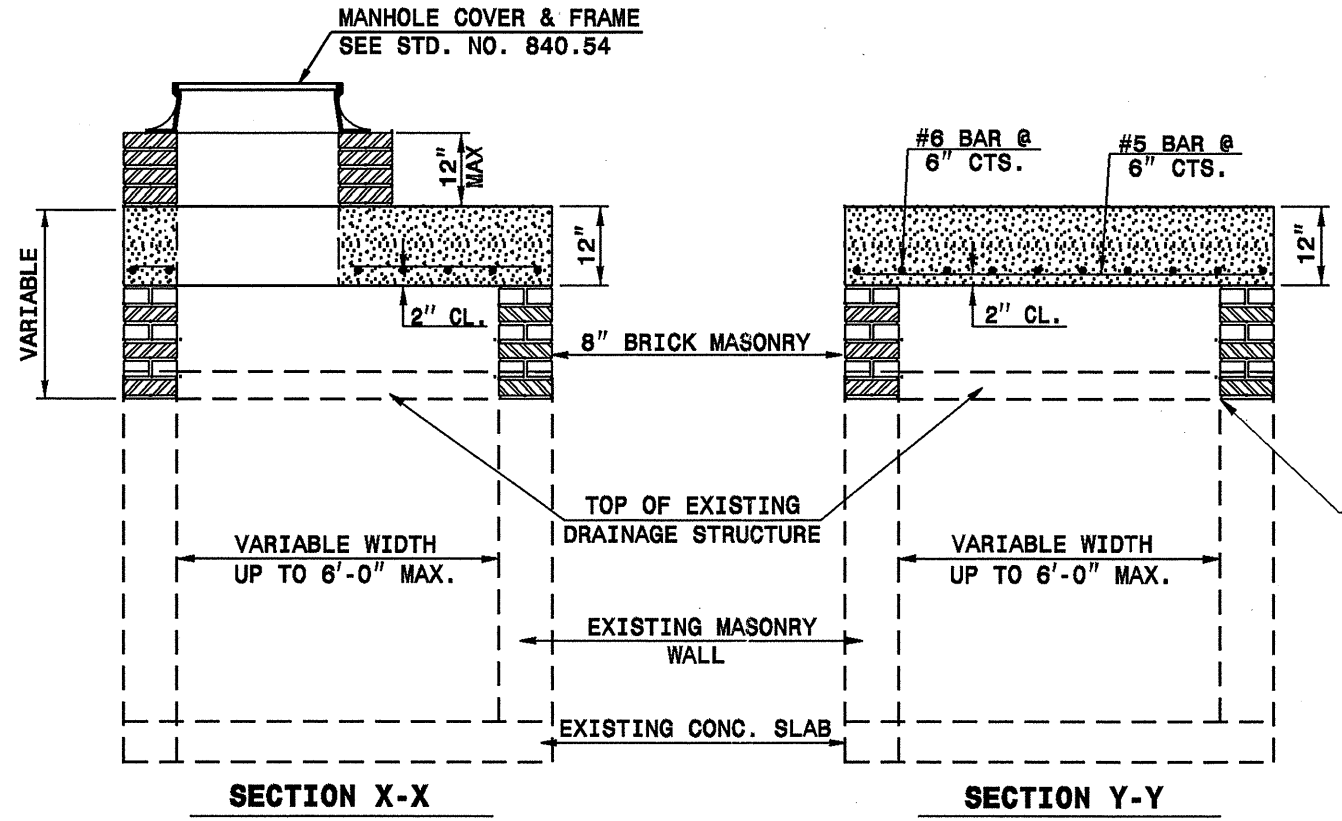
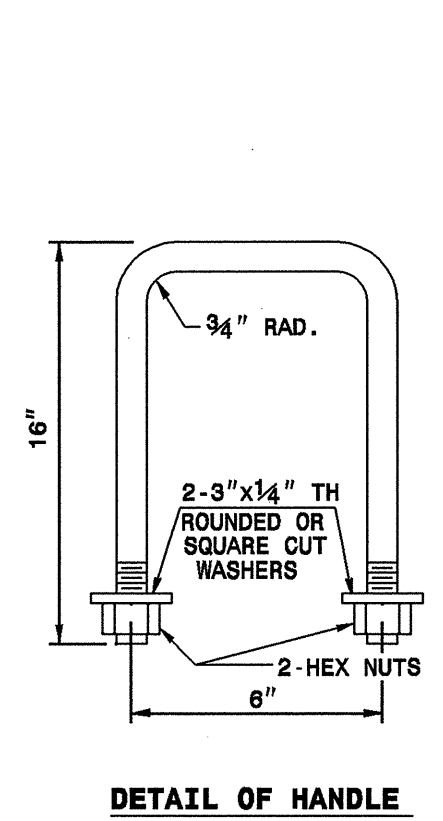
INSTALLATION DETAILS OF MONOLITHIC CONCRETE ISLANDS TO BE INSTALLED AT EACH MEDIAN OPENING.





GENERAL NOTES:
 CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.
 FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES.

BILL OF MATERIALS			
MASONRY			
TOP SLAB CONCRETE CLASS "A"		.037YDS ³	PER FT ²
BRICK MASONRY		.025YDS ³	PER FT ²
REINFORCING STEEL		7.64LBS PER FT ²	
MANHOLE OPTION QUANTITIES			
SIZE	QTY.	LENGTH	REINF. STEEL LBS.
#5 DIAG.	8	1'-1"	9.04



NOTE:
 CONCRETE AND REINFORCING STEEL QUANTITIES BASED ON SQUARE FOOT AREA OF THE PROPOSED TOP SLAB FOR THE EXISTING DRAINAGE STRUCTURE.
 BRICK MASONRY QUANTITY IS BASED ON THE TOTAL SQUARE FOOTAGE OF EXTERIOR WALL SURFACE AREA TO BE CONSTRUCTED.

ALIGN PROPOSED BRICK VERTICAL ADJUSTMENT TO INNER FACE OF WALL

**PROJECT SERVICES UNIT
 STANDARDS AND SPECIAL DESIGN**
 Office 919-250-4128 FAX 919-250-4119

**DETAIL TO CONVERT EXISTING
 DROP INLET OR CATCH BASIN
 TO TRAFFIC BEARING JUNCTION BOX
 (MANHOLE OPTIONAL)**

ORIGINAL BY: T.S.S.	DATE: FEB. 2000
MODIFIED BY: E.E.W.	DATE: NOV. 2001
CHECKED BY:	DATE:
FILE SPEC: w:eroward/ur/details/stand/boxtotbibe.dgn	

PROJECT NO.	SHEET NO.	TOTAL NO.
42046	6	

SUMMARY OF QUANTITIES

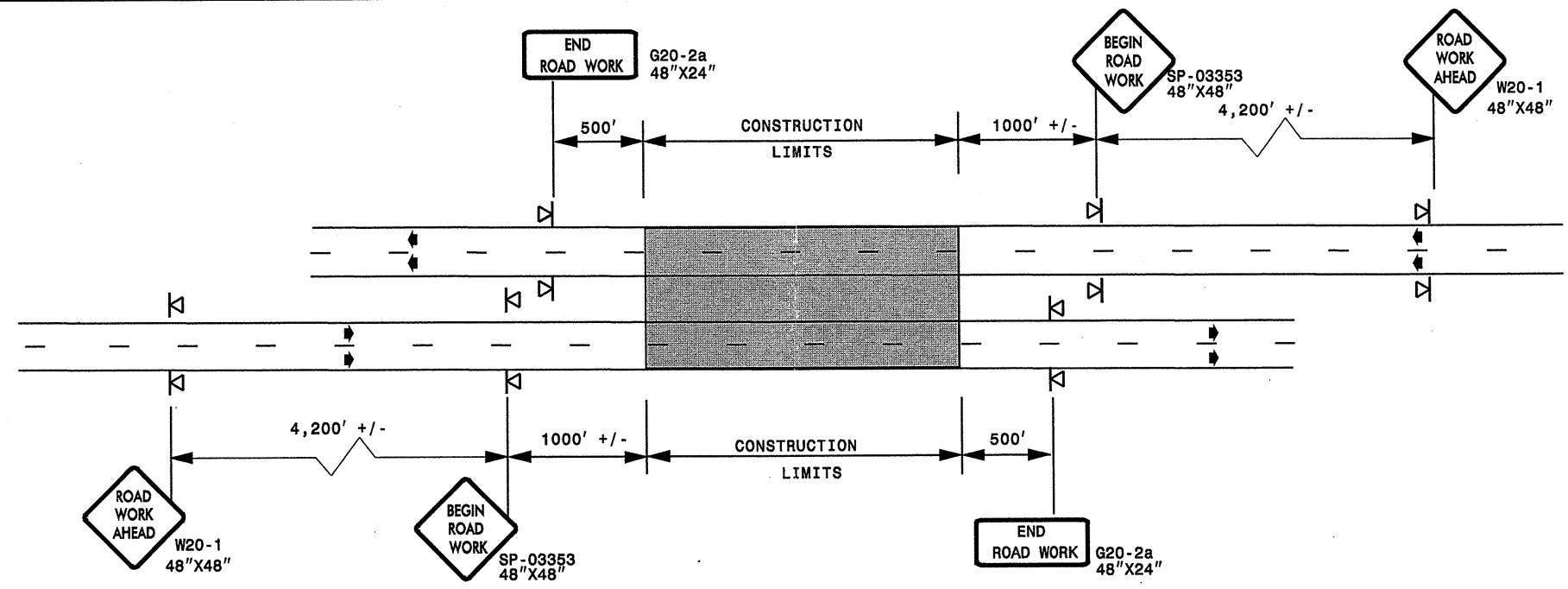
PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	TYP	LENGTH MI	WIDTH FT	REMOVAL OF EXIST. ASPHALT PVMT. SY	18" RCP CULVERTS, CLASS III LF	SHOULDER RECONSTRUCTION SMI	INCIDENTAL MILLING SY	BASE COURSE, B25.0B TONS	SURFACE COURSE, S9.5B TONS	PG 64-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	MASONRY DRAINAGE STRUCTURES EA	FRAME WITH TWO GRATES, STD 840 EA	4" CONCRETE PAVED DITCH SY	5" MONO. CONC. ISLAND KEYED-IN SY	5" MONO. CONC. ISLAND SURFACE MOUNT. SY	ADJUST DROP INLET EA	CONVERT EXIST DI TO TBJB WITH MH EA	SEED & MULCHING AC	INDUCTIVE LOOP LF	LEAD-IN CABLE (18-4) LF	PORTABLE LIGHTING LS
42046	Durham	1	US 70	FROM 400' WEST OF SR 1926 (ANGIER AVE) TO SR 2028 (TW ALEXANDER)	1,2	2.29	56	15	15	9.16	1100	1449	10,541	695	250	1	1	10	180	240		1.00	6.87	5,000	5,000	
	Wake	2	US 70	FROM SR 2028 (TW ALEXANDER) TO END WIDE SHOULDER 800' WEST OF ANGUS DR	3	2.1	56			4.62		341	10,801	663	250				270	80	2.00		3.36	1,800	1,800	*
		3	US 70 RAMPS	AT WESTGATE ROAD	4	1.9	18				1300		2,957	177	150									1,800	1,800	
TOTAL FOR PROJ NO. 42046						6.29		15	15	13.78	2400	1790	24,299	1,535	650	1	1	10	180	320	2.00	1.00	10.23	8,600	8,600	*
GRAND TOTAL						6.29		15	15	13.78	2400	1790	24,299	1,535	650	1	1	10	450	320	2.00	1.00	10.23	8,600	8,600	1

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	4685000000-E		4686000000-E	4697000000-E	4710000000-E	4721000000-E	4725000000-E			4900000000-N	4415000000-N	4420000000-N	4480000000-N	4430000000-N
					4" X 90 M WHITE THERMO LF	4" X 90 M YELLOW THERMO LF	4" X 120 M WHITE THERMO LF	8" X 120 M WHITE THERMO LF	24" X 120 M WHITE THERMO LF	THERMO MSG ONLY 120 M EA	THERMO LT ARROW 90 M EA	THERMO STR ARROW 90 M EA	THERMO RT ARROW 90 M EA	CRYSTAL & RED MARKERS EA	FAP EA	CMS EA	TMIA EA	DRUMS EA
42046	Durham	1	US 70	FROM 400' WEST OF SR 1926 (ANGIER AVE) TO SR 2028 (TW ALEXANDER)	24,182	24,182	7,099		208		20	23	13	1,000				
	Wake	2	US 70	FROM SR 2028 (TW ALEXANDER) TO END WIDE SHOULDER 800' WEST OF ANGUS DR	22,176	22,176	8,400		250		22	22	6	1,100	1	1	1	50
		3	US 70 RAMPS	AT WESTGATE ROAD	10,032	10,032	5,016	4,600		24	12	10	11	1,000	1	1	1	50
TOTAL FOR PROJ NO. 42046					56,390	56,390	20,515	4,600	458	24	54	55	30	3,100	2	2	2	100
GRAND TOTAL					112,781	112,781					139							

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

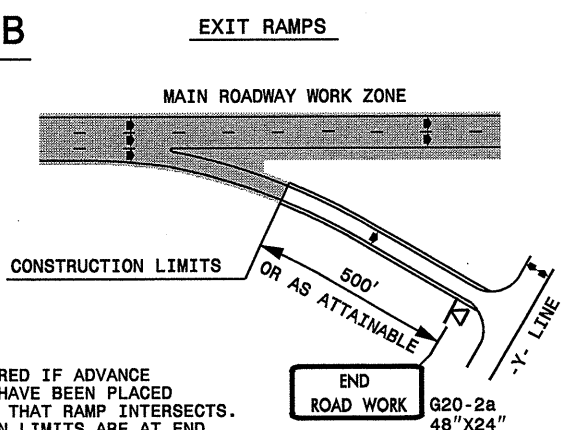
DETAIL A



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

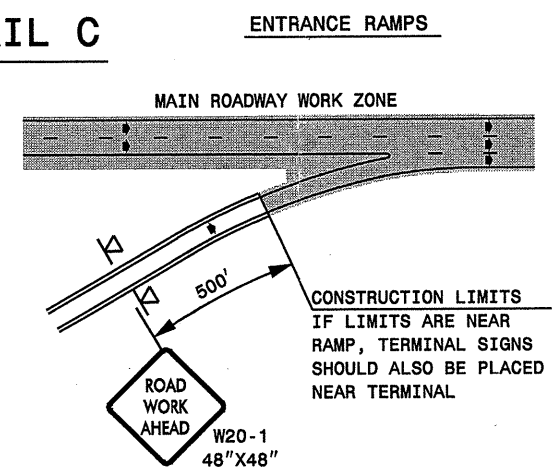
ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)

DETAIL B



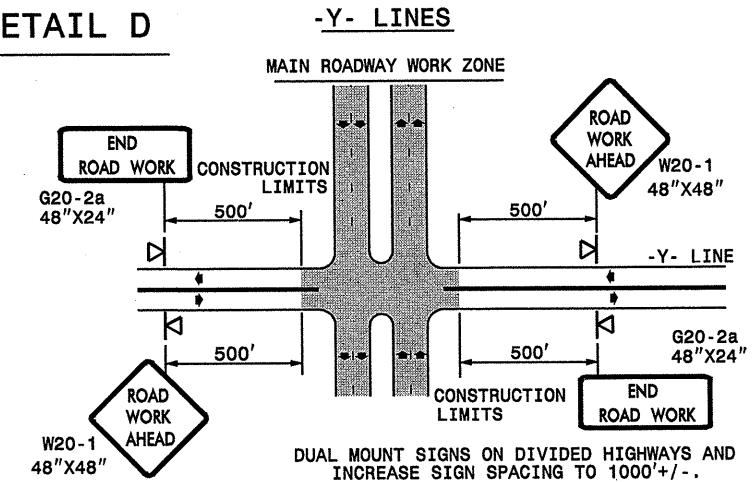
NOTE:
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

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

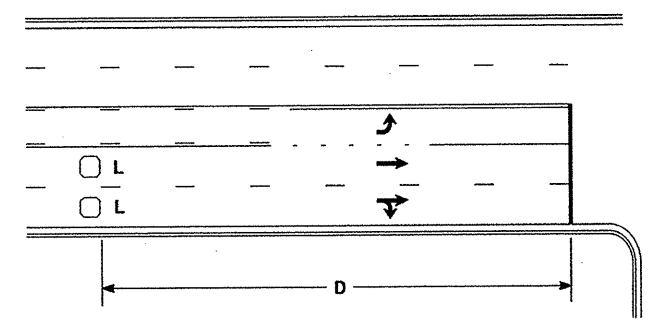
➔ DIRECTION OF TRAFFIC FLOW

SHEET 1 OF 1

APPROVED: _____	DATE: _____	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: _____	CADD FILE		

17-MAR-2008 16:51 \\DOT\DFSROOT\GROUPS\WZTCCC\des\gn\group4\resurfacing\resurfacing2007\div05\c202059_42046_wkedurham_us70\c202059_42046_freeway4lanesgreat_july2006.dgn pseymore AT WZTCCC237502

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

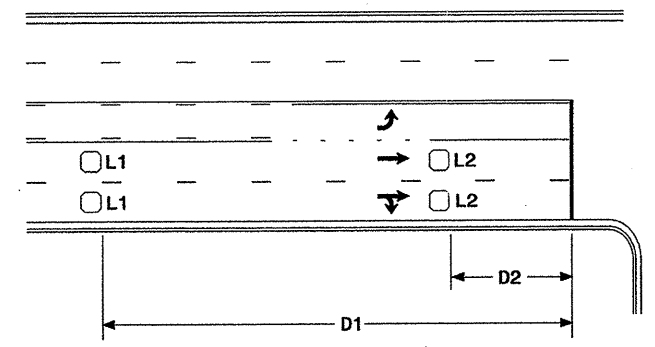


Speed Limit mph (km/hr)	D	
	ft	(m)
40 (64)	250	(75)
45 (72)	300	(90)
50 (80)	355	(110)
55 (88)	420	(130)

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

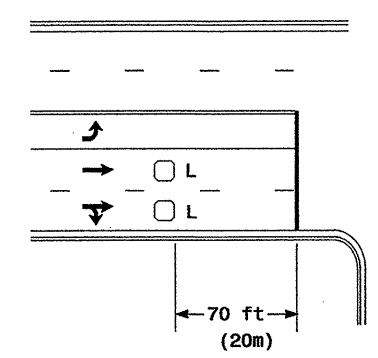


Speed Limit mph (km/hr)	D1		D2	
	ft	(m)	ft	(m)
40 (64)	250	(75)	80	(25)
45 (72)	300	(90)	90	(27)
50 (80)	355	(110)	100	(30)
55 (88)	420	(130)	110	(35)

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

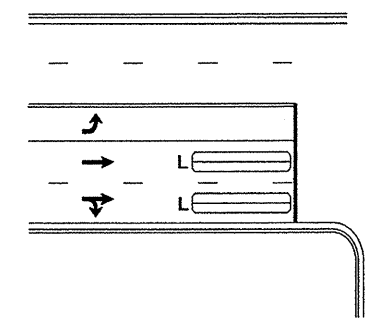
"Stretch" Operation

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



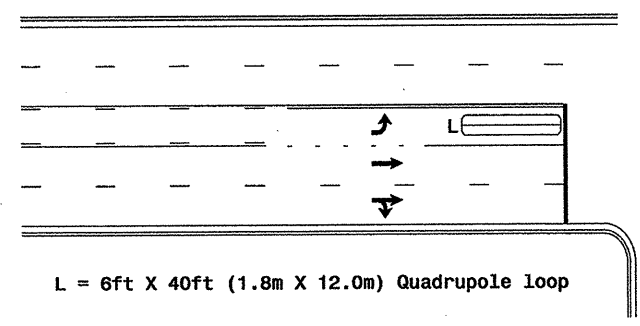
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



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

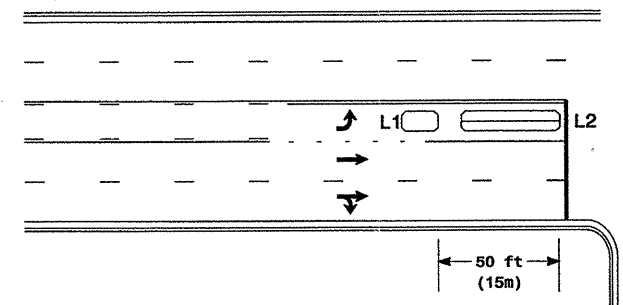
Left Turn Lane Detection



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

Presence Loop Detection

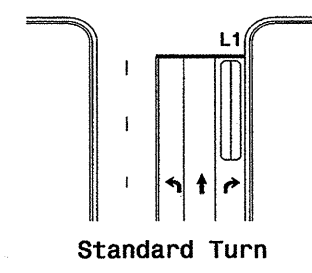
OR



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

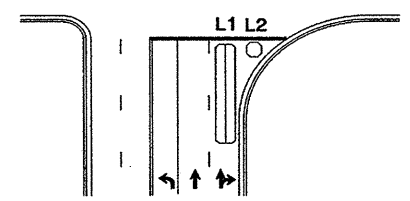
Queue Loop Detection

Right Turn Lane Detection

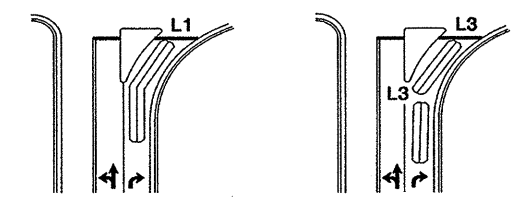


Standard Turn

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

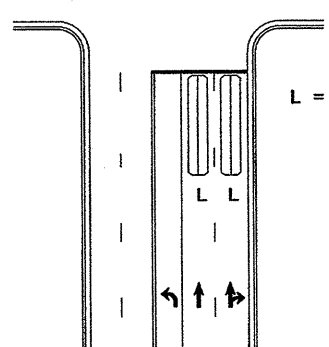


Wide Radius Turn



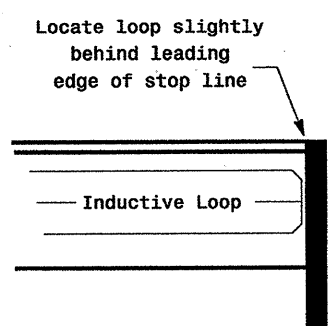
Channelized Turn

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 14:23
s:\its\signal\ib_turn_inm\scf\loop\plol2006.dgn
plalexander

Typical Loop Locations

PLAN DATE: June 2006	REVIEWED BY:
PREPARED BY: P. L. Alexander	REVIEWED BY:
REVISIONS	INIT. DATE
✓ Revise pavement markings	PLA 12/10/06
SIGNATURE	DATE
	6/6/06

SCALE: N/A

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

5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

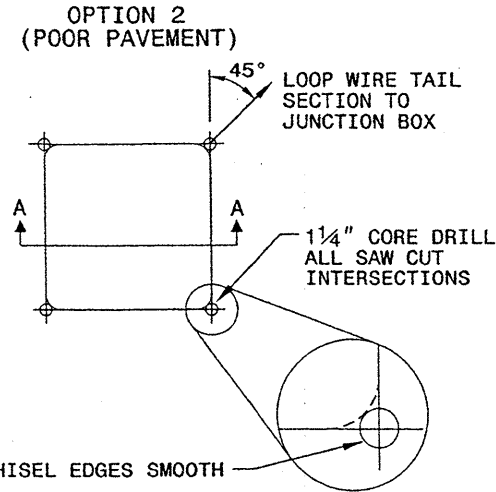
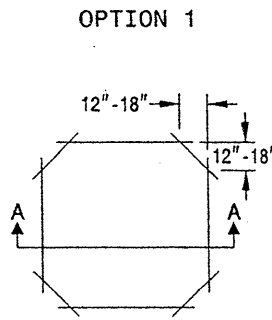
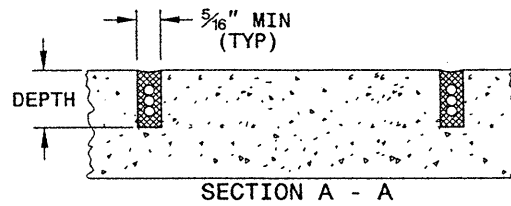
SHEET 1 OF 3
1725D01

CONVENTIONAL 4-SIDED LOOP

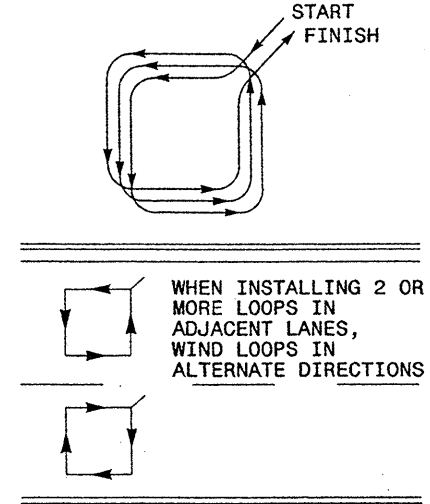
SAW CUT OPTIONS

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

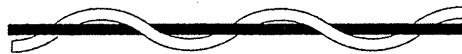


LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE



CORRECT WAY TO TWIST WIRE

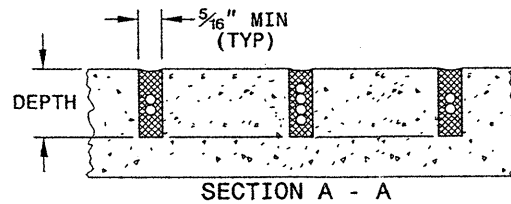
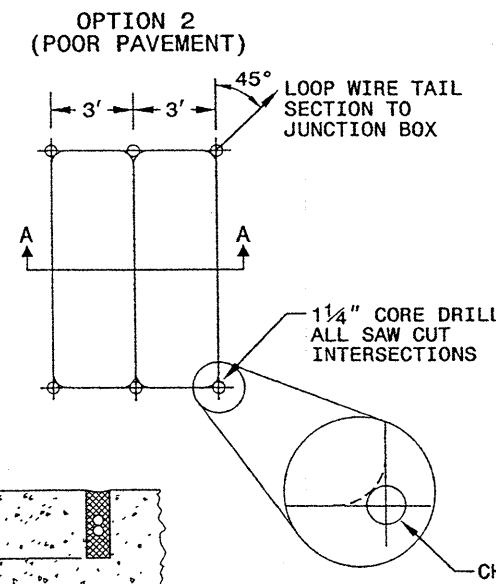
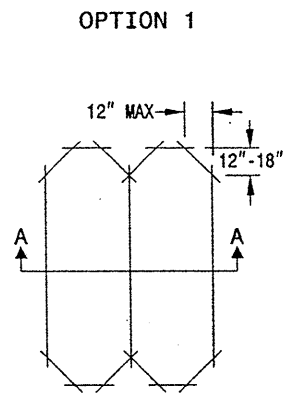


NOTES

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.

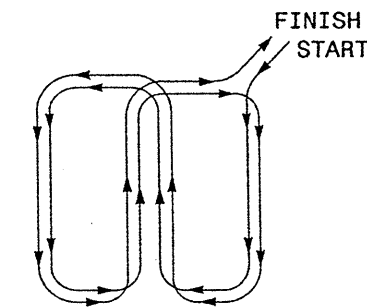
QUADRUPOLE LOOP

SAW CUT OPTIONS



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



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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

ENGINEER
MILTON I. DEAN
DATE: 9/5/07

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

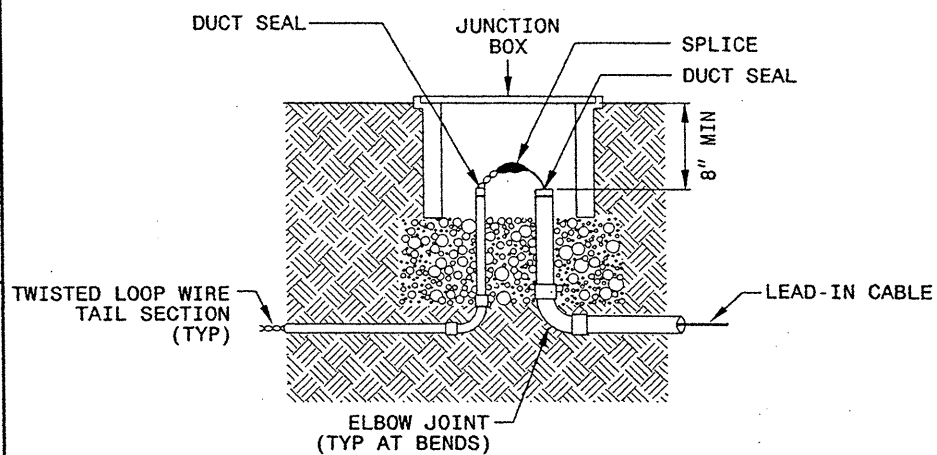
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
 LOOP WIRE DETAILS

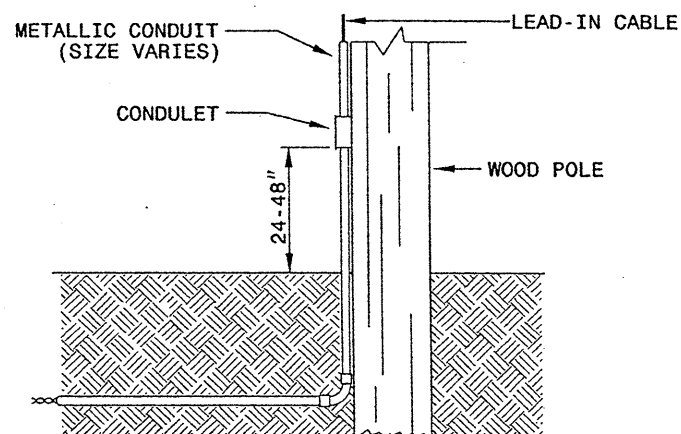
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

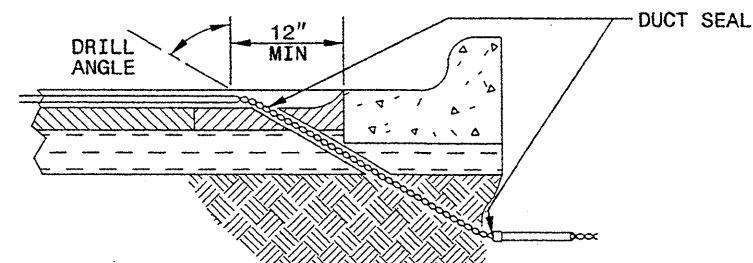


NOTE

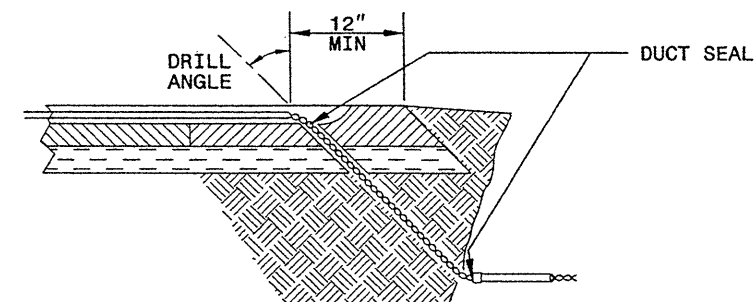
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

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.

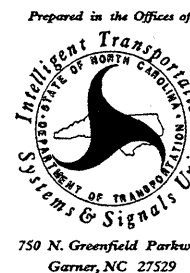
STATE OF NORTH CAROLINA
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5-07

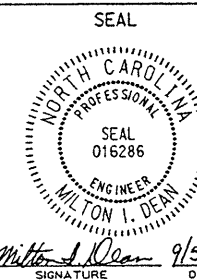
ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
 LOOP WIRE DETAILS

SHEET 2 OF 3
1725D01

See Plate for Title



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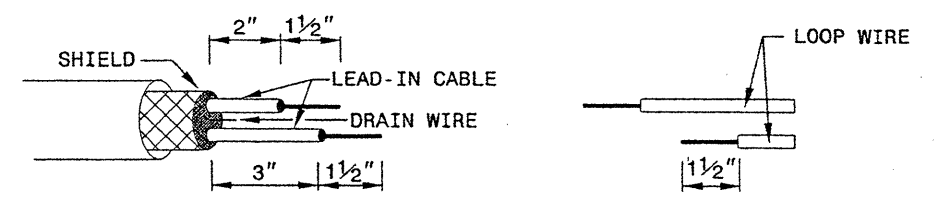
Milton I. Dean 9/5/07
SIGNATURE DATE

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

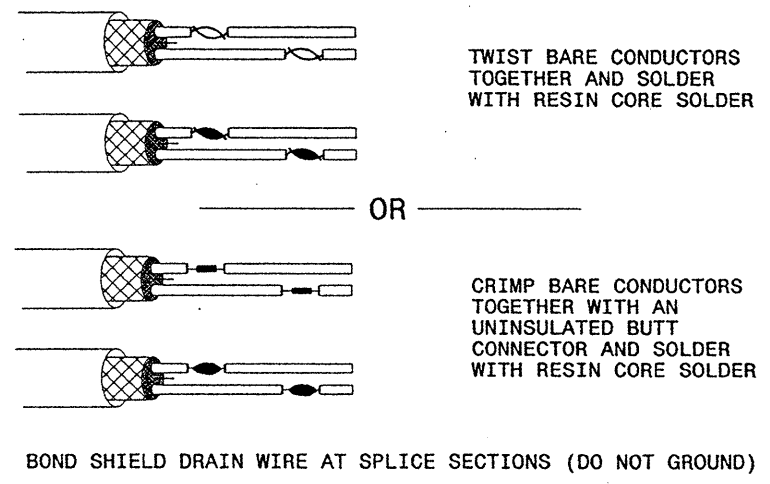
5-07
ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
1725D01

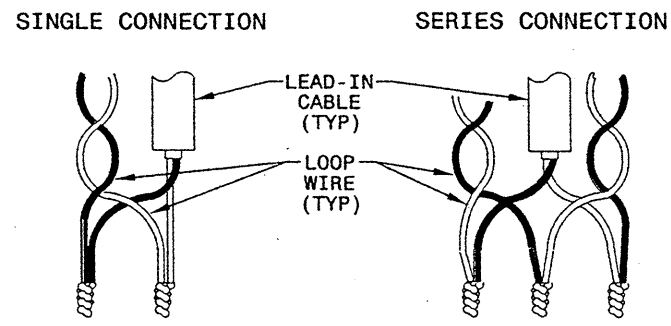
STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE



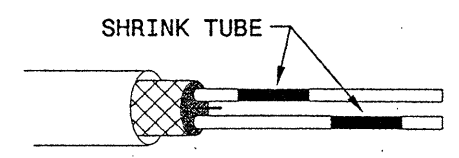
STEP 2. CONNECT AND SOLDER



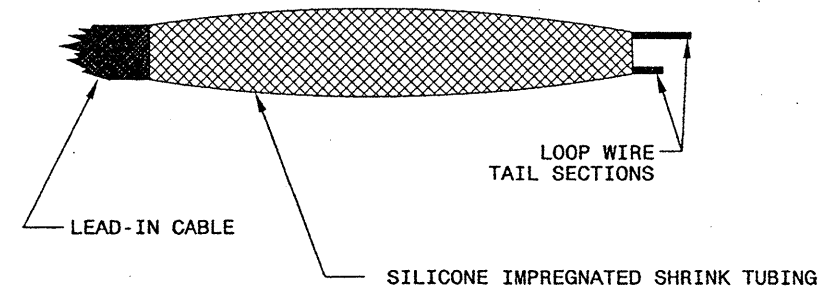
LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS



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 Office of:

750 N. Greenfield Parkway
Garner, NC 27529

SEAL

ENGINEER
MILTON I. DEANN

Milton I. Deann 9/5/07
SIGNATURE DATE

05-SEP-2007 14:01
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sheet3.dwg
1725D01.dwg