

MAP 1

MAP 2

MAP 3

LAKE GRESHAM

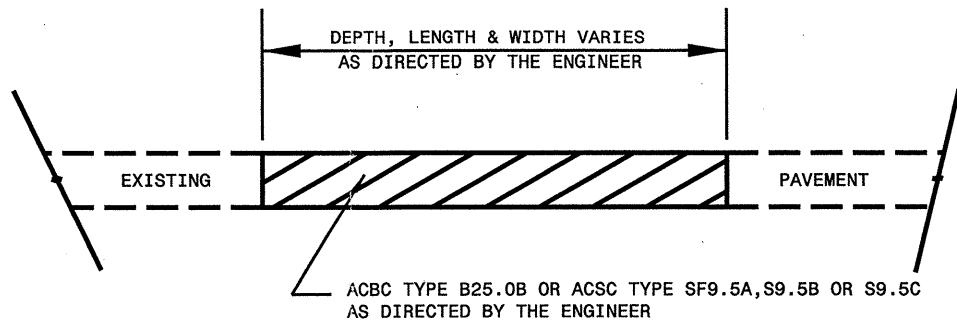
Cheviot Hills G.C.

LIMIT Forest

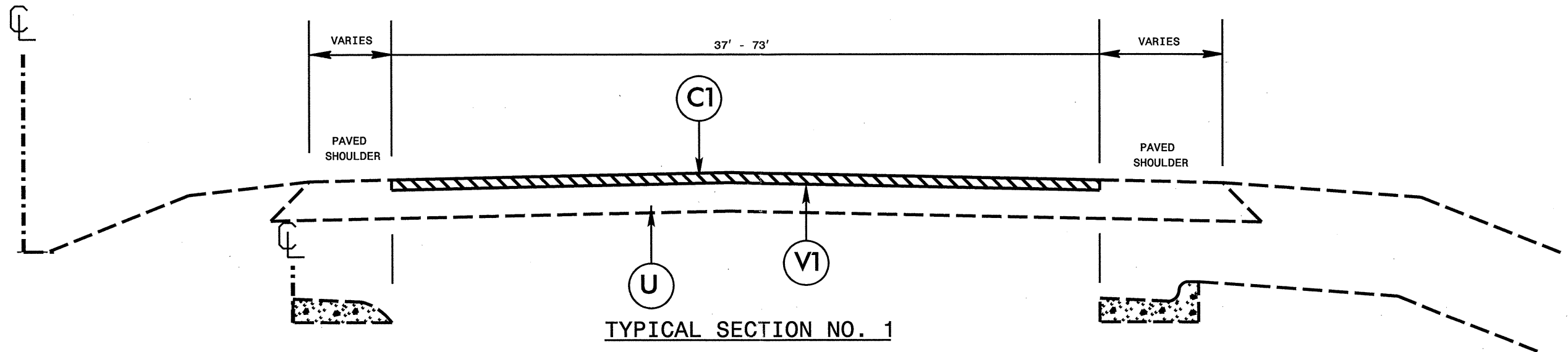
Fox Rd. Elem.

PAVEMENT SCHEDULE	
C1	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 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

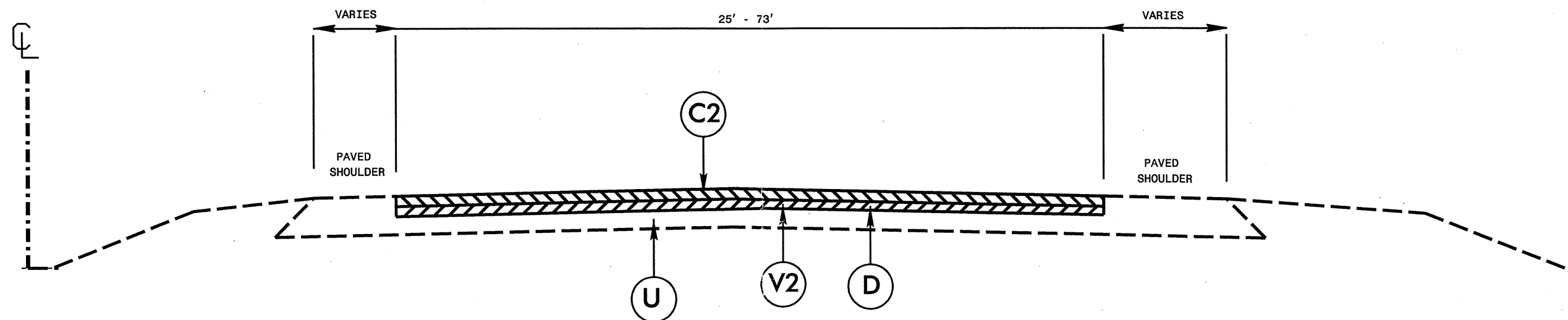
PROJECT REFERENCE NO.	SHEET NO.
5CR10921.20	2



PATCHING EXISTING PAVEMENT
 PATCHING TO BE PERFORMED PRIOR TO MILL AND FILL OPERATION



TYPICAL SECTION NO. 1



TYPICAL SECTION NO. 2

PAVEMENT SCHEDULE

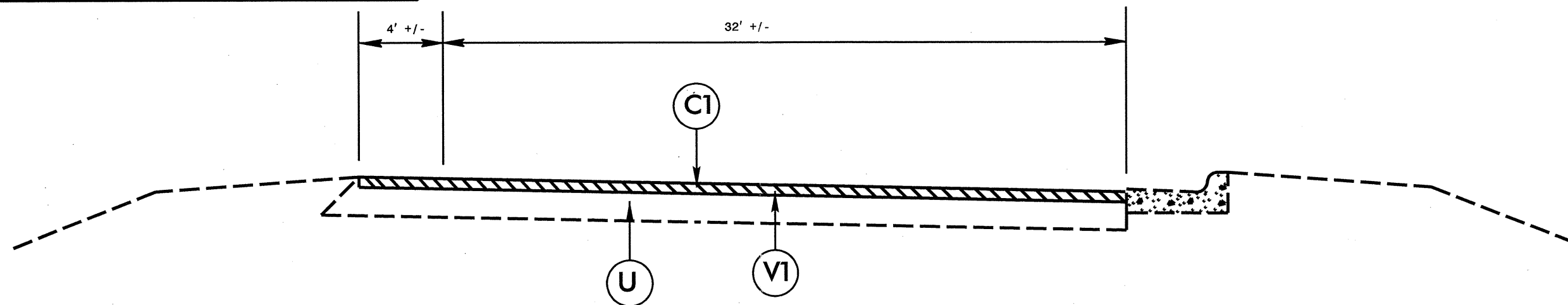
PROJECT REFERENCE NO.

5CR.10921.20

SHEET NO.

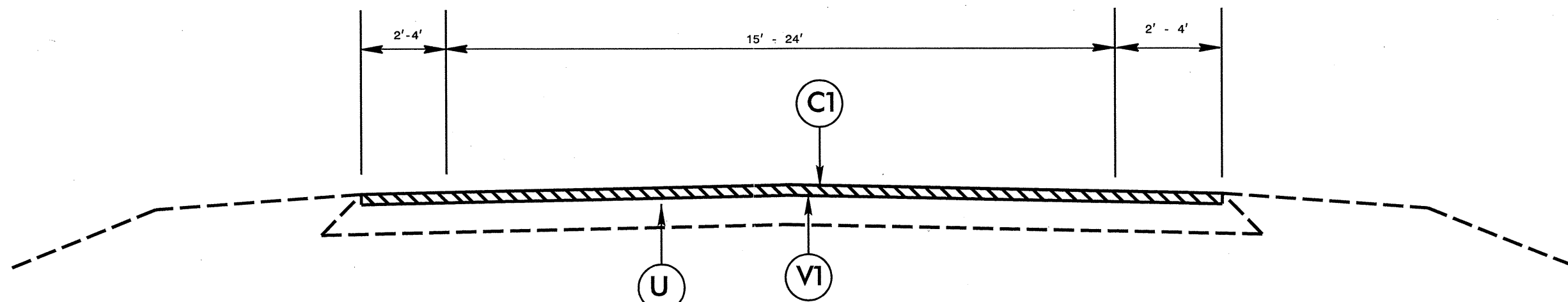
3

C1	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 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



TYPICAL SECTION NO. 3

* CONTRACTOR SHALL USE THIS TYPICAL FOR THE LOOP



TYPICAL SECTION NO. 4

* CONTRACTOR SHALL USE THIS TYPICAL FOR THE RAMPS

PROJECT NO.	SHEET NO.	TOTAL NO.
5CR.10921.20	4	

SUMMARY OF QUANTITIES

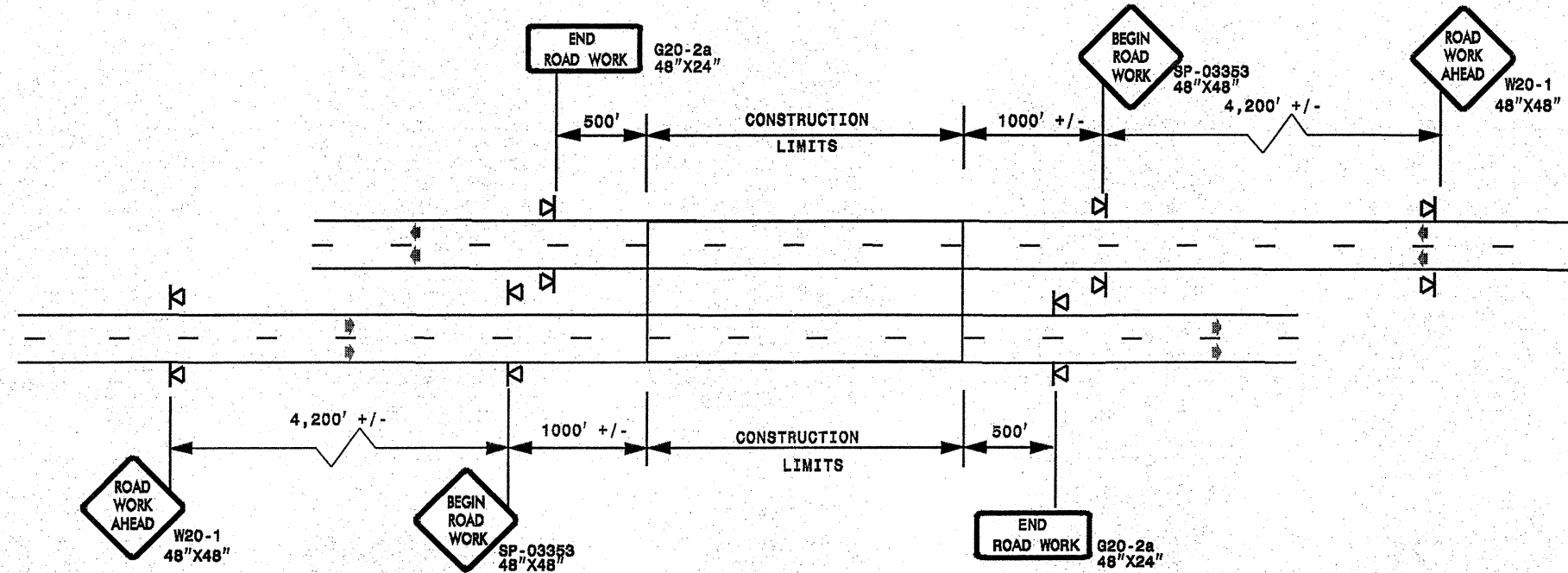
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	FINAL SURFACE TESTING REQUIRED	LENGTH MI	WIDTH FT	INCIDENTAL STONE BASE TONS	4" MILLING SY	2" MILLING SY	INTER-MEDIATE COURSE, I19.0C TONS	SURFACE COURSE, S9.5C TONS	PG 64-22 PLANT MIX TONS	PG 70-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	PORTABLE LIGHTING LS	INDUCTIVE LOOP LF
5CR.10921.20	Wake	1	US 1 SB (CAPITAL BLVD) AND RAMP	FROM JOINT S OF HOMESTEAD DR TO BRIDGE AT I-540	2, 4	NO	0.82	25.5	41	23,804	3,840	3,474	2,508	163	150	495	*	500
TOTAL FOR MAP NO. 1							0.82		41	23,804	3,840	3,474	2,508	163	150	495	1	500
		2	US 1 SB (CAPITAL BLVD)	FROM BRIDGE AT I-540 TO END OF TAPER NORTH OF SUMNER BLVD INTERSECTION	1	NO	0.64	37.5	20		19,403		2,246		135	690	*	500
TOTAL FOR MAP NO. 2							0.64		20		19,403		2,246		135	690	1	500
		3	US 1 NB (CAPITAL BLVD) AND LOOP AND RAMP	FROM BEGINNING OF TAPER NORTH OF SUMNER BLVD INTERSECTION TO JOINT S OF HOMESTEAD DR	1, 3, 4	NO	1.46	49.5	59		63,984		7,398		444	1,588	*	1,140
TOTAL FOR MAP NO. 3							1.46		59		63,984		7,398		444	1,588	1	1,140
TOTAL FOR PROJ NO. 5CR.10921.20							2.92		120	23,804	87,227	3,474	12,152	163	729	2,773	1	2,140
GRAND TOTAL							2.92		120	23,804	87,227	3,474	12,152	163	729	2,773	1	2,140

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		4805000000-N	4850000000-E	4875000000-N	4900000000-N	4905000000-N	
					TRAFFIC CONTROL LS	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 STR ARROW 90 M EA	THERMO LT ARROW 90 M EA	THERMO RT ARROW 90 M EA	THERMO STR & RT ARROW 90 M EA	4" WHITE COLD APPLIED PLASTIC, TYPE III LF	4" YELLOW COLD APPLIED PLASTIC, TYPE III LF	COLD APPLIED PLASTIC STR ARROW, TYPE III EA	4" LINE REMOVAL LF	REML OF PVMT MRKG SYMBOLS & CHARACTER S EA	CRYSTAL & RED MARKERS EA	SNOW PLOWABLE MARKERS EA
5CR.10921.20	Wake	1	US 1 SB (CAPITAL BLVD) AND RAMP	FROM JOINT S OF HOMESTEAD DR TO BRIDGE AT I-540	*	5,770	5,770	3,673	1,155	144		9	2	4							230	
TOTAL FOR MAP NO. 1					1	5,770	5,770	3,673	1,155	144		9	2	4							230	
		2	US 1 SB (CAPITAL BLVD)	FROM BRIDGE AT I-540 TO END OF TAPER NORTH OF SUMNER BLVD INTERSECTION	*	3,379	3,379	3,205		130	4	9	6	4							161	
TOTAL FOR MAP NO. 2					1	3,379	3,379	3,205		130	4	9	6	4							161	
		3	US 1 NB (CAPITAL BLVD) AND LOOP AND RAMP	FROM BEGINNING OF TAPER NORTH OF SUMNER BLVD INTERSECTION TO JOINT S OF HOMESTEAD DR	*	12,761	12,761	9,167	660	300	16	39	10	12	3	1,782	1,425	2	3,207	2	25	448
TOTAL FOR MAP NO. 3					1	12,761	12,761	9,167	660	300	16	39	10	12	3	1,782	1,425	2	3,207	2	25	448
TOTAL FOR PROJ NO. 5CR.10921.20					1	21,910	21,910	16,045	1,815	574	20	57	18	20	3	1,782	1,425	2	3,207	2	25	839
GRAND TOTAL					1	21,910	21,910	16,045	1,815	574	20	57	18	20	3	1,782	1,425	2	3,207	2	25	839

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

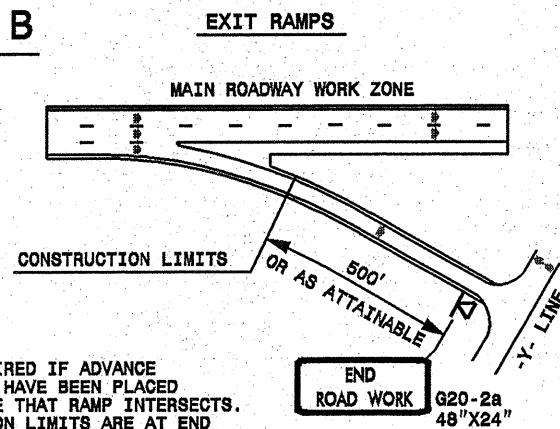
DETAIL A



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DIVISION OF HIGHWAYS
RALEIGH, N.C.

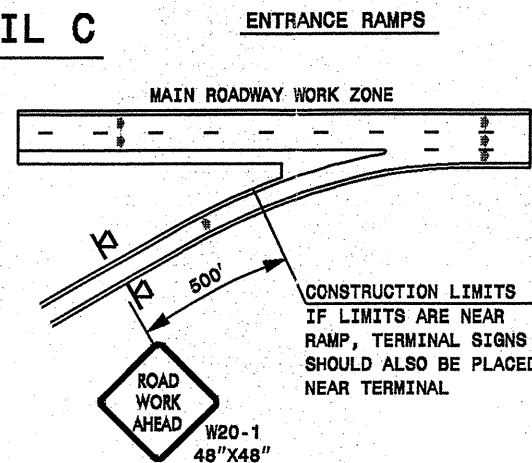
ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)

DETAIL B



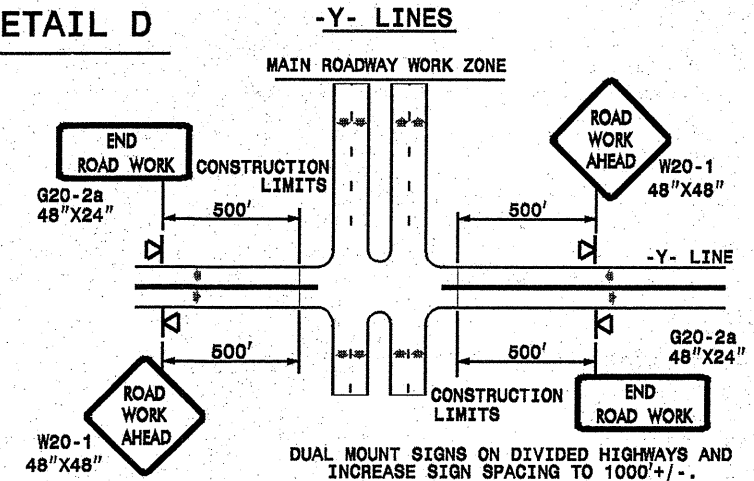
NOTE:
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

DETAIL C



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

DETAIL D



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

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

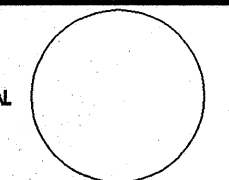
GENERAL NOTES

- 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 09/04
	DESIGN BY: _____	01/01 11/04
REVIEWED BY: _____	DATE: _____	FILE: _____

10-SEP-2009 11:04
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pseymore AT WZ12231302

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

5-07

INDUCTIVE DETECTION LOOPS
ENGLISH DETAIL DRAWING FOR

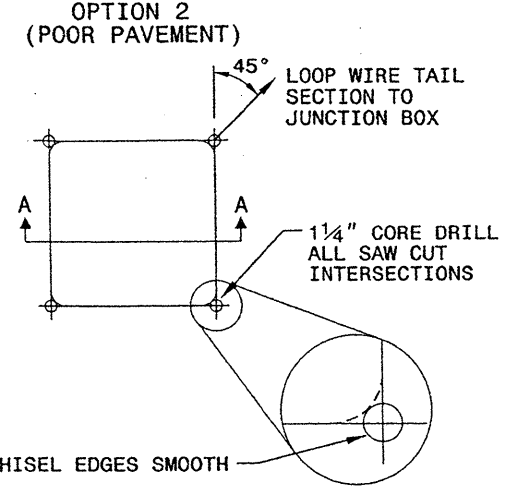
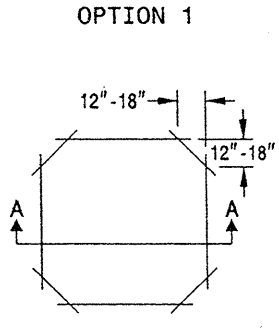
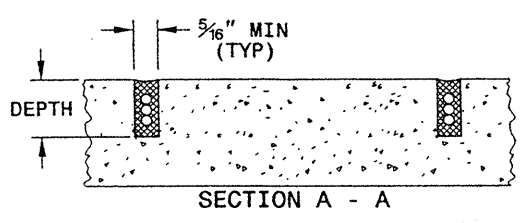
SHEET 1 OF 3
1725D01

CONVENTIONAL 4-SIDED LOOP

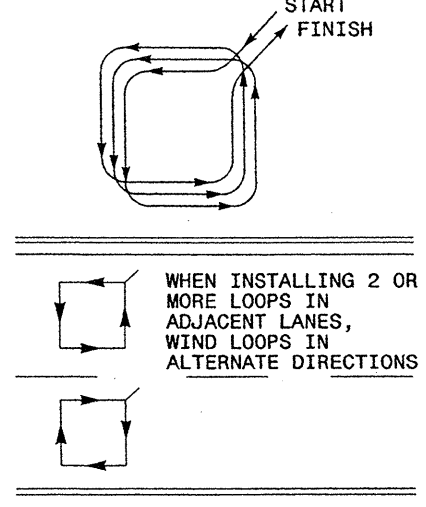
SAW CUT OPTIONS

SAW SLOT DEPTH CHART

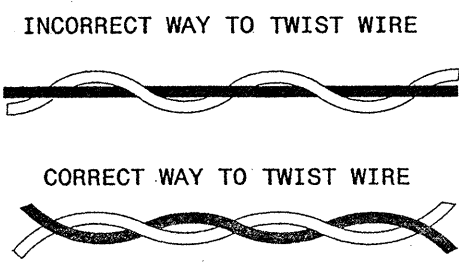
DEPTH (IN)	NO. OF WIRE TURNS					
	2	3	4	5	6	
CONCRETE	2.0	2.0	2.5	2.5	3.0	
ASPHALT	2.0	2.5	3.0	3.0	3.0	



LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

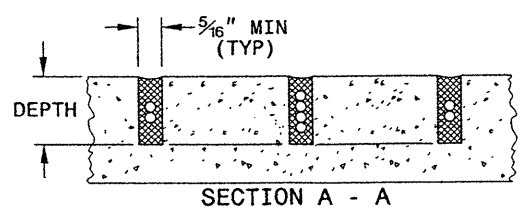
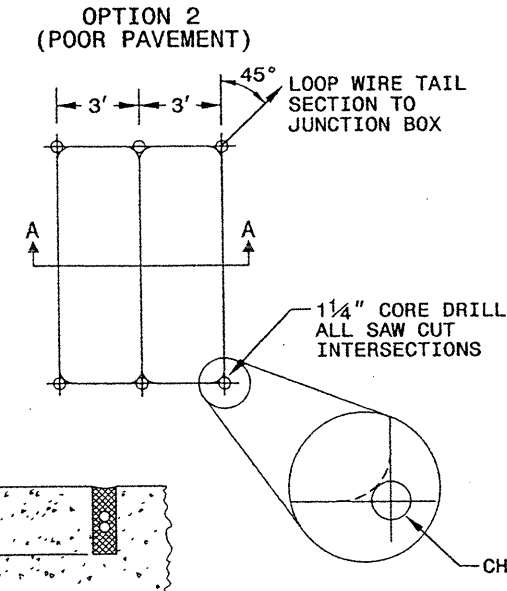
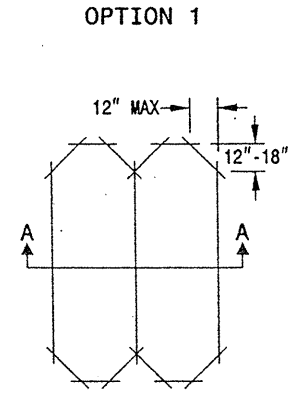


NOTES

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.

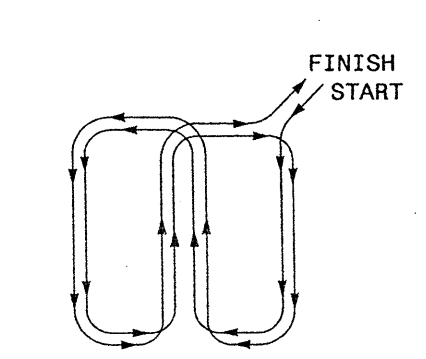
QUADRUPOLE LOOP

SAW CUT OPTIONS



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



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DIVISION OF HIGHWAYS
RALEIGH, N.C.

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INDUCTIVE DETECTION LOOPS
ENGLISH DETAIL DRAWING FOR

SHEET 1 OF 3
1725D01

See Plate for Title

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 016286
MILTON I. DEAN
Signature: Milton I. Dean
Date: 9/5/07

05-SEP-2007 14:00 c:\documents and settings\zml111e\dtdetail\topostandard.merol.pole sheets\1725D01.mxd zml111e

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

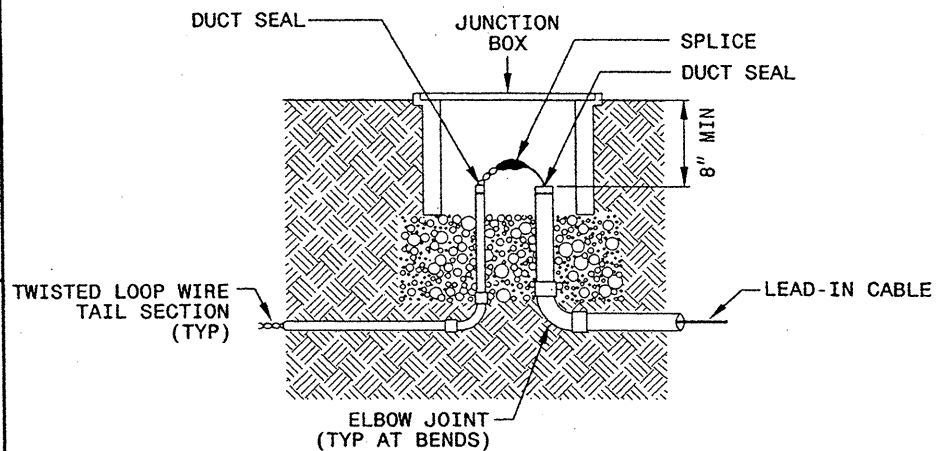
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

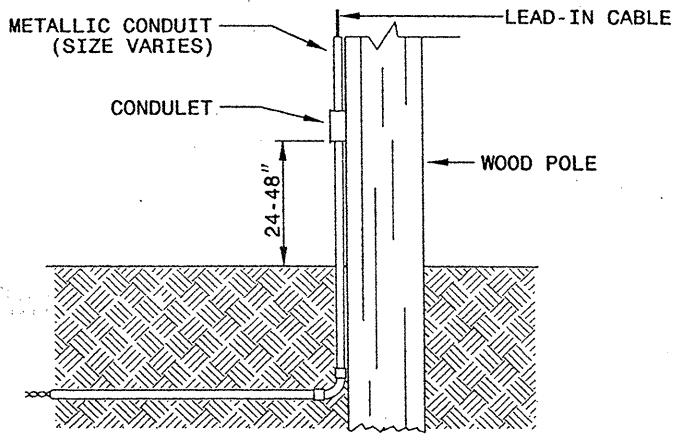
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

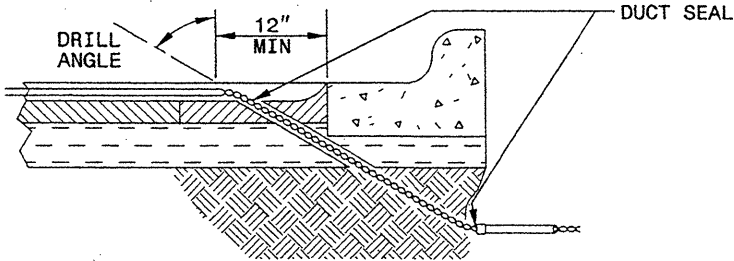


NOTE

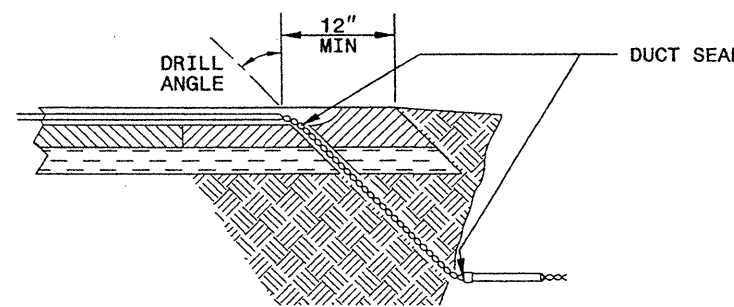
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

LOOP WIRE PAVEMENT EDGE DETAILS

LOOP WIRE AT CURB & GUTTER SECTION



LOOP WIRE AT PAVEMENT SECTION



NOTES

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.

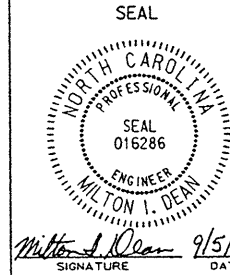
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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

SHEET 2 OF 3
1725D01

See Plate for Title



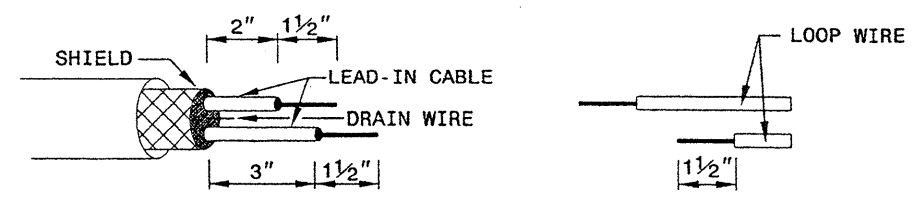
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

5-07

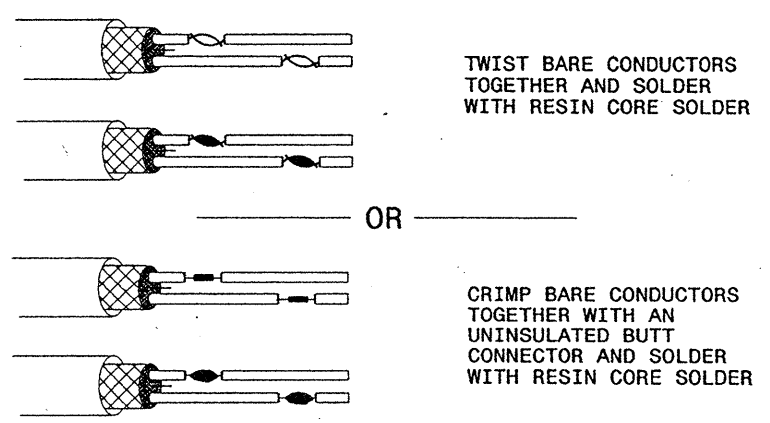
ENGLISH DETAIL DRAWING FOR
INDUCTION DETECTION LOOPS
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
1725D01

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE

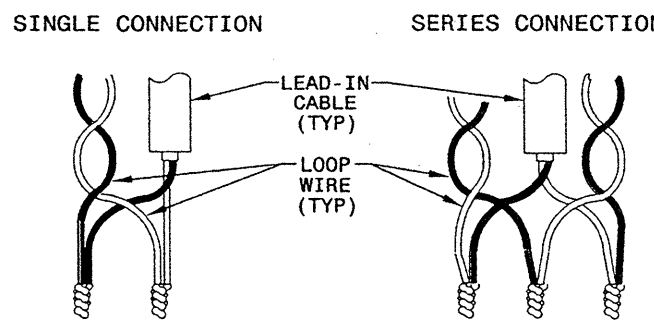


STEP 2. CONNECT AND SOLDER

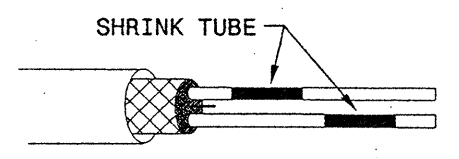


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

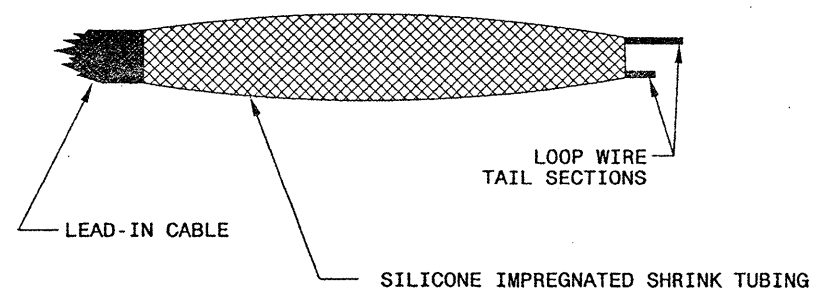
LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



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5-07

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

SHEET 3 OF 3
1725D01

See Plate for Title

Prepared in the Offices of:

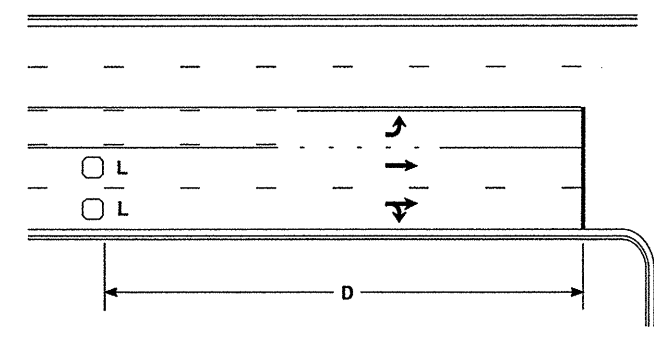
750 N. Greenfield Parkway
Garner, NC 27529

SEAL

Milton I. Dean 9/5/07
SIGNATURE DATE

65-569-001 11/01
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emilittle

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

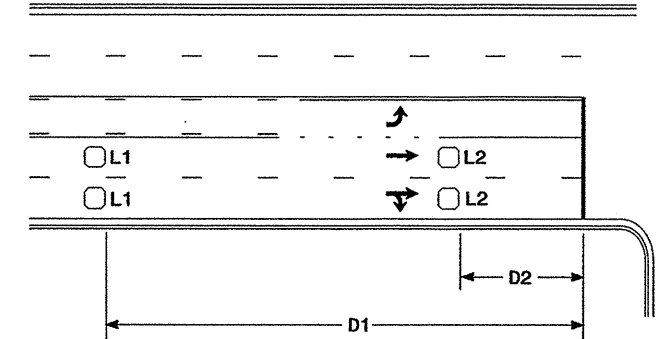


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

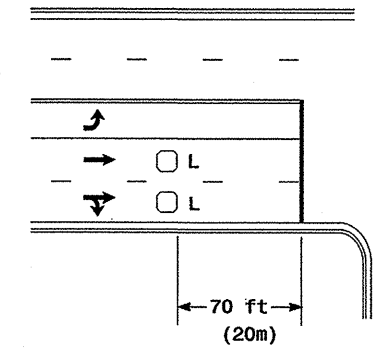


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

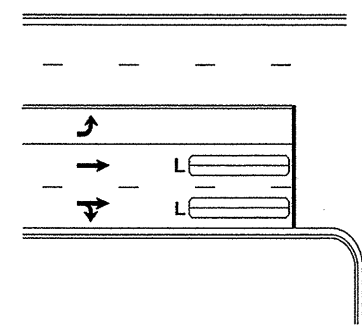
"Stretch" Operation

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



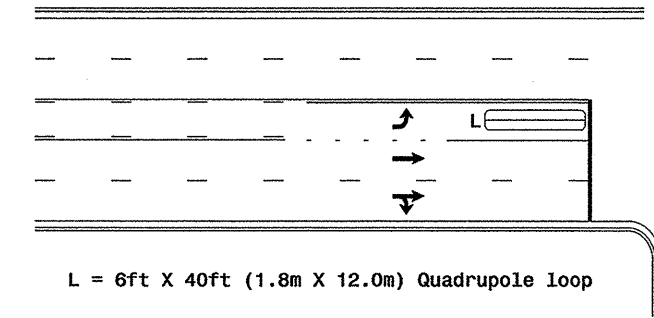
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



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

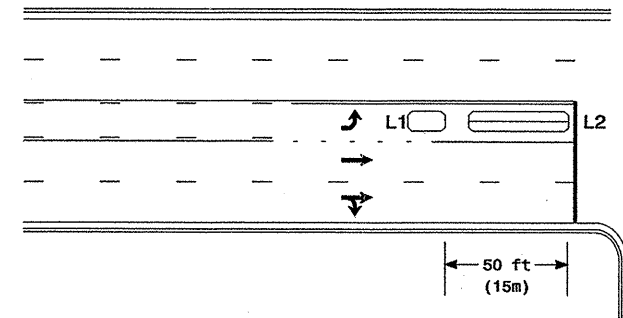
Left Turn Lane Detection



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

Presence Loop Detection

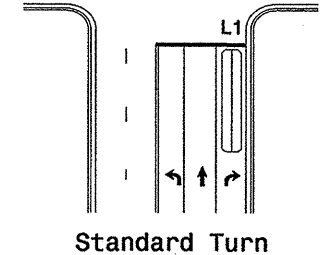
OR



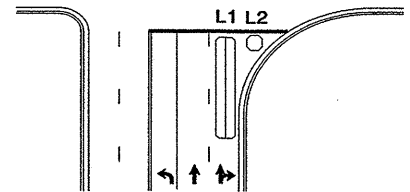
L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Queue Loop Detection

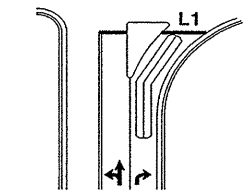
Right Turn Lane Detection



Standard Turn



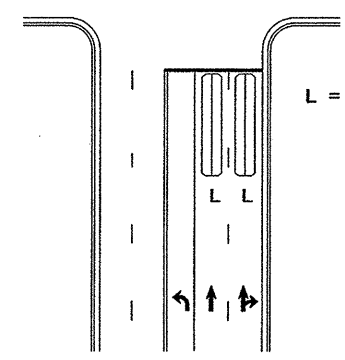
Wide Radius Turn



Channelized 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

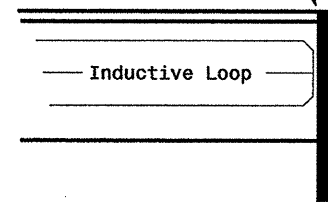
Side Street Detection



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

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s:\p1s\signal\1b\turn_in\in\loop\typical\2006.dgn
pal alexander

Typical Loop Locations

PLAN DATE: June 2006	REVIEWED BY:
PREPARED BY: P. L. Alexander	REVIEWED BY:
REVISIONS	
SCALE N/A	INT. DATE 12/1/06
SIGNATURE DATE PAL 12/1/06	
SIG. INVENTORY NO.	