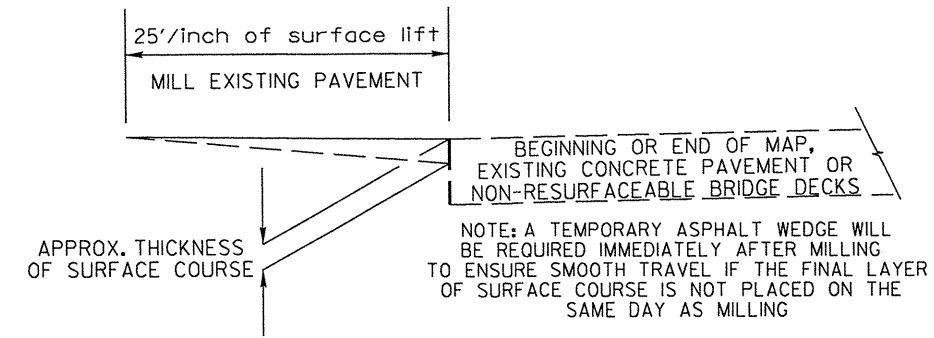


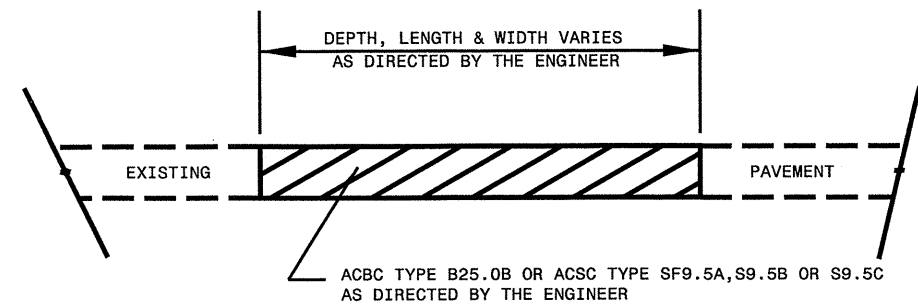
PAVEMENT SCHEDULE

C	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
U	EXISTING PAVEMENT
V	2½" MILLING

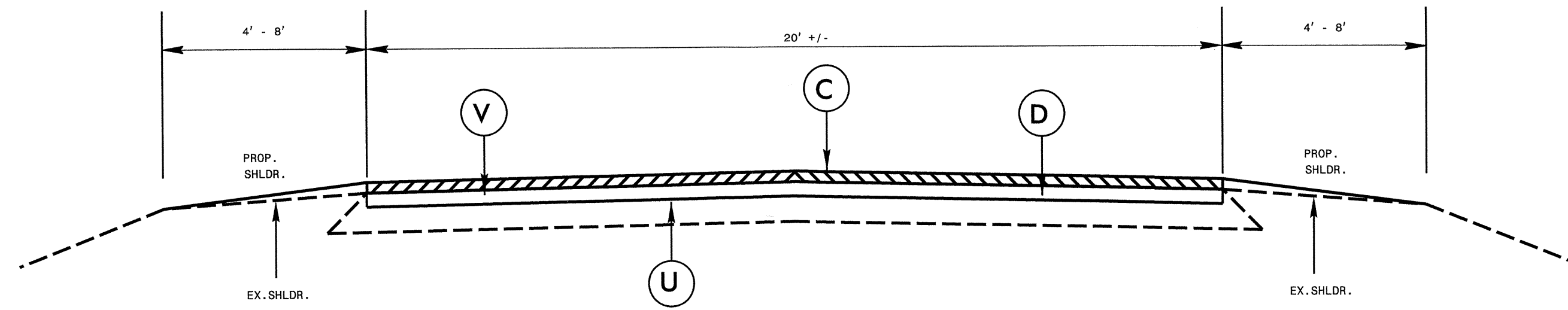


NOTES

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 RADII, 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.



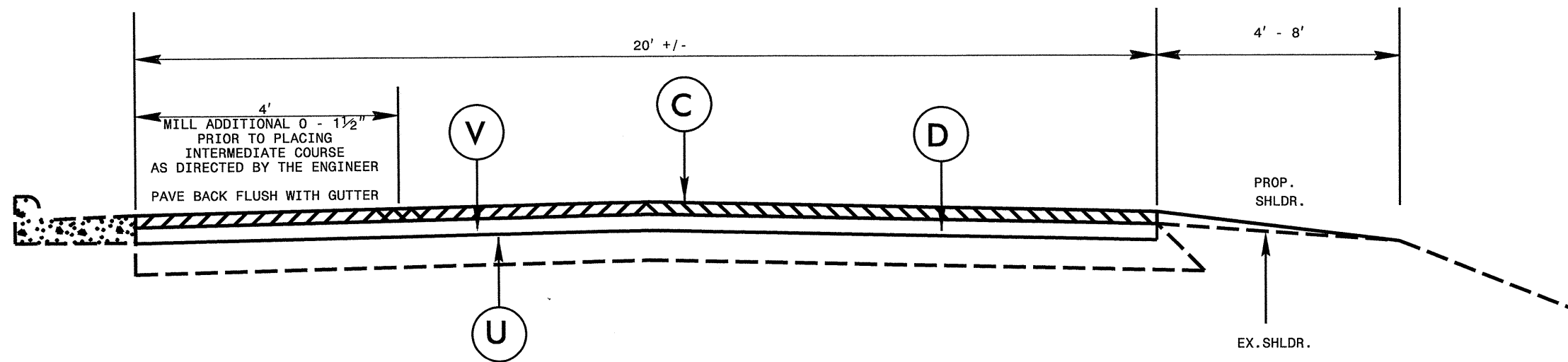
PATCHING EXISTING PAVEMENT
 PATCHING TO BE PERFORMED PRIOR TO MILL AND FILL OPERATION



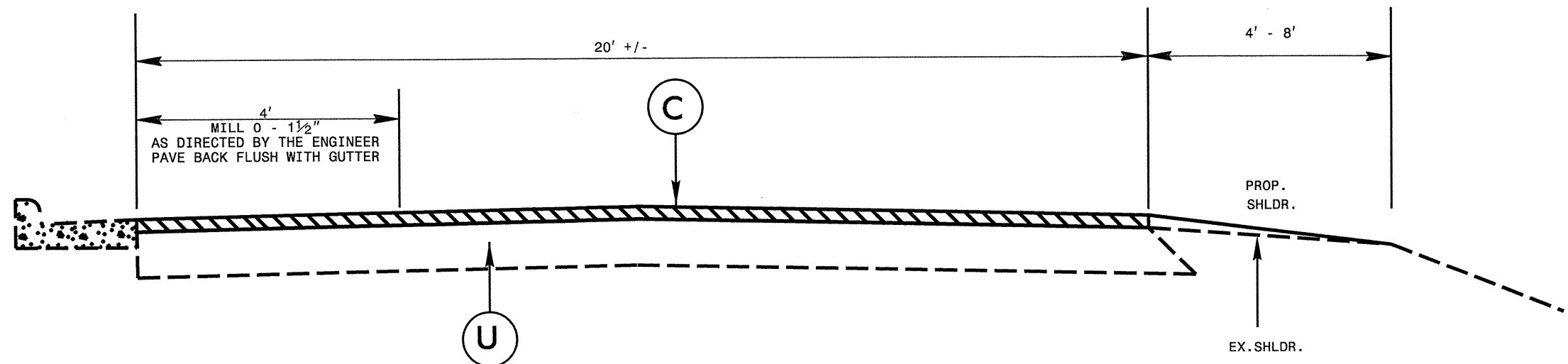
TYPICAL SECTION NO. 1

PAVEMENT SCHEDULE

C	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
U	EXISTING PAVEMENT
V	2½" MILLING



TYPICAL SECTION NO. 2



TYPICAL SECTION NO. 3

NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

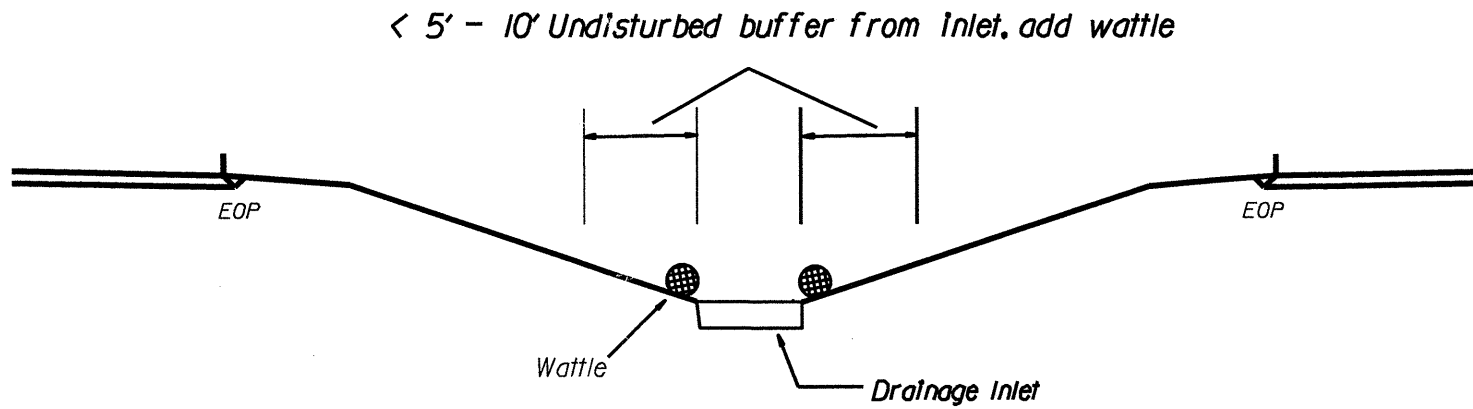
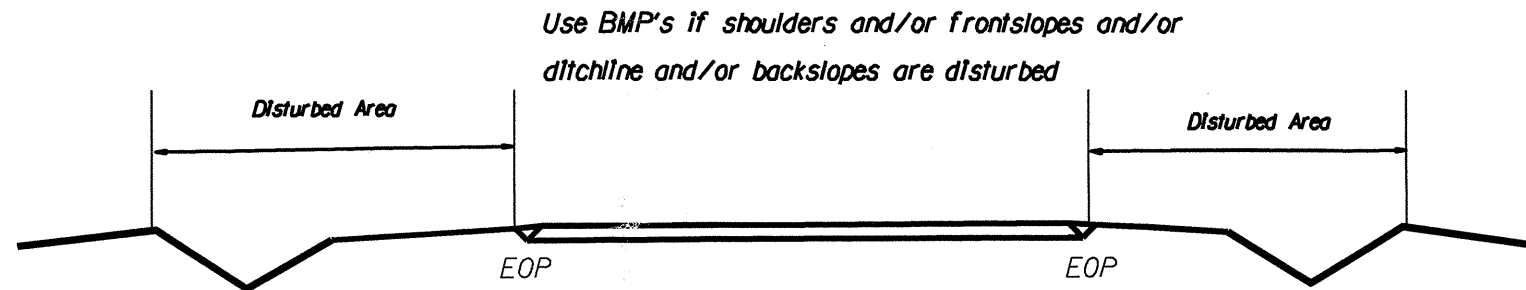
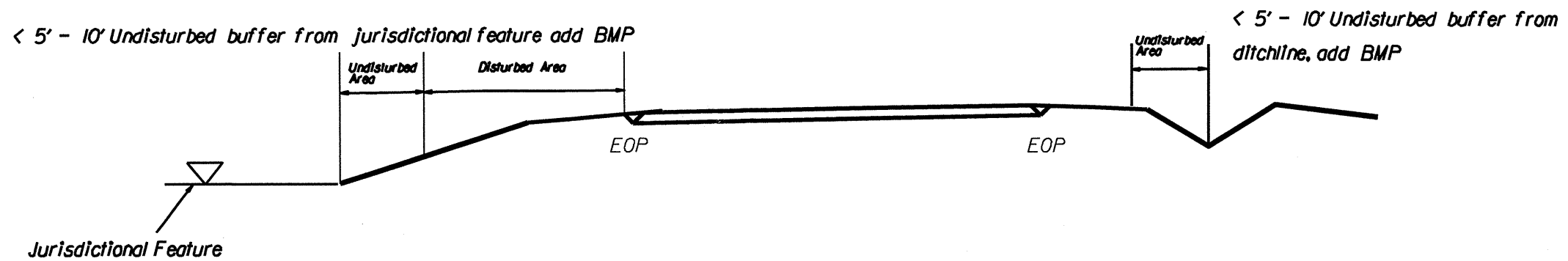
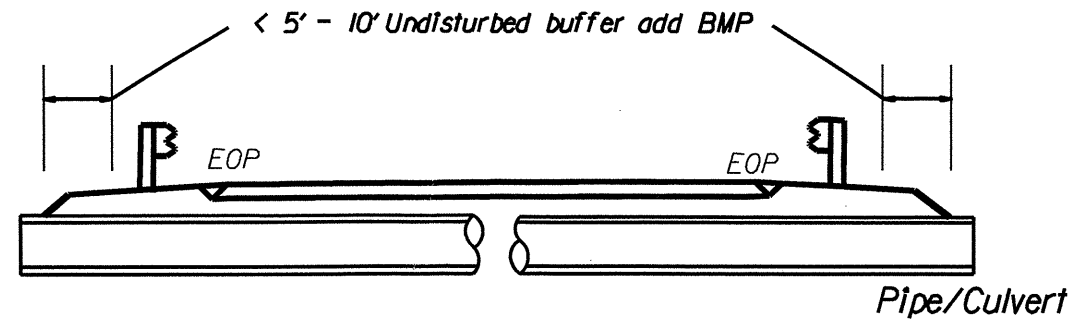
BMP Options: Wattle, Silt Fence, or Hardened Aggregate.

EROSION CONTROL DETAIL

SCR.20321.21.01

Sht.7

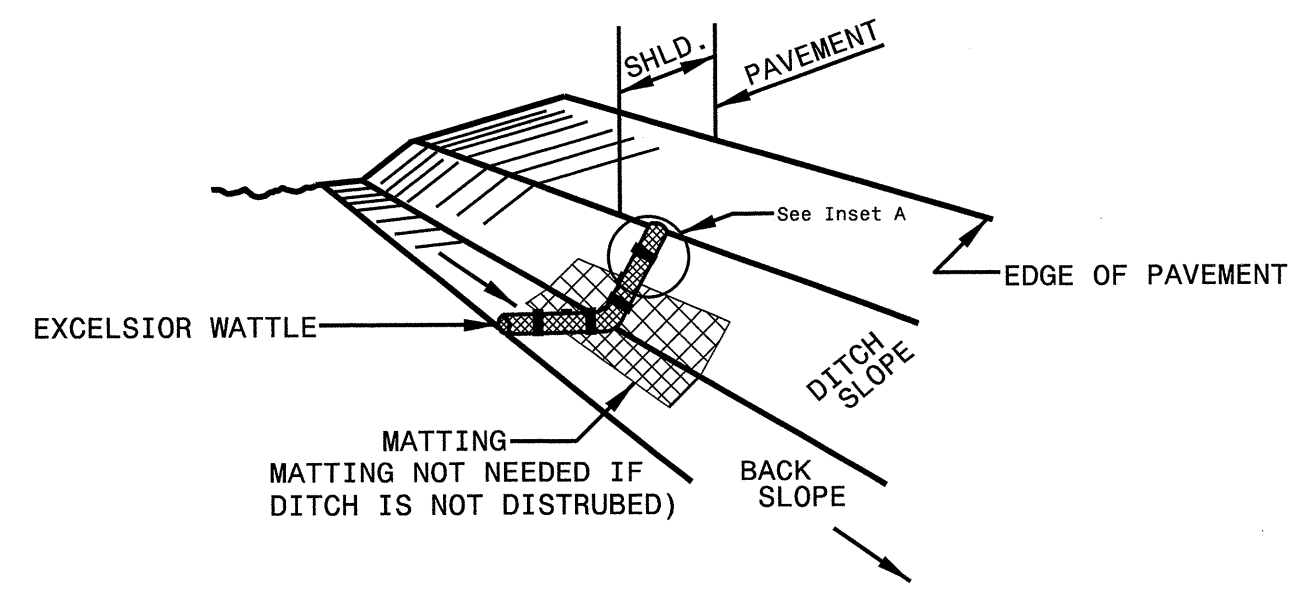
NO. 1-1111	IC-22/0001.01
REV. SHEET NO.	DATE
BY	CHKD BY
APP'D BY	APP'D BY



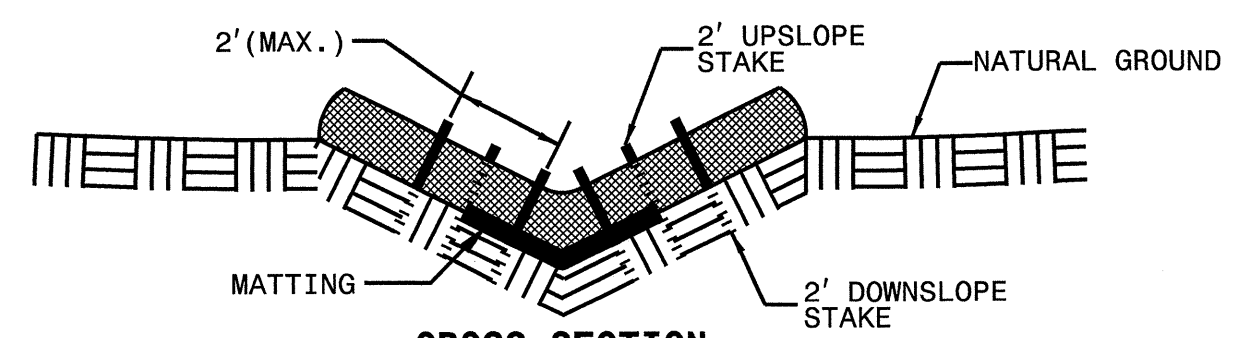
NOT TO SCALE

SCR. 20321.21, ETC.
Sht. 8

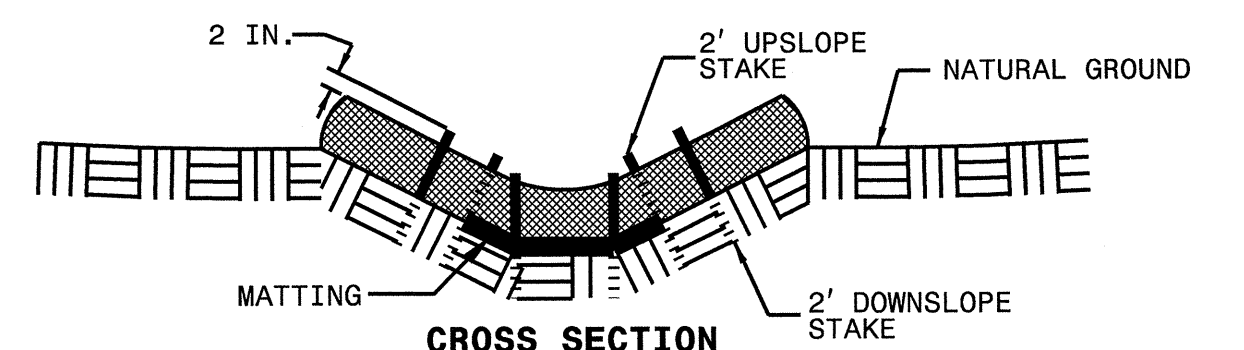
WATTLE DETAIL



ISOMETRIC VIEW



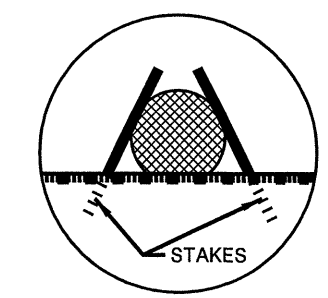
CROSS SECTION VEE DITCH



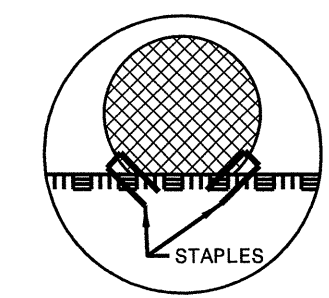
CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

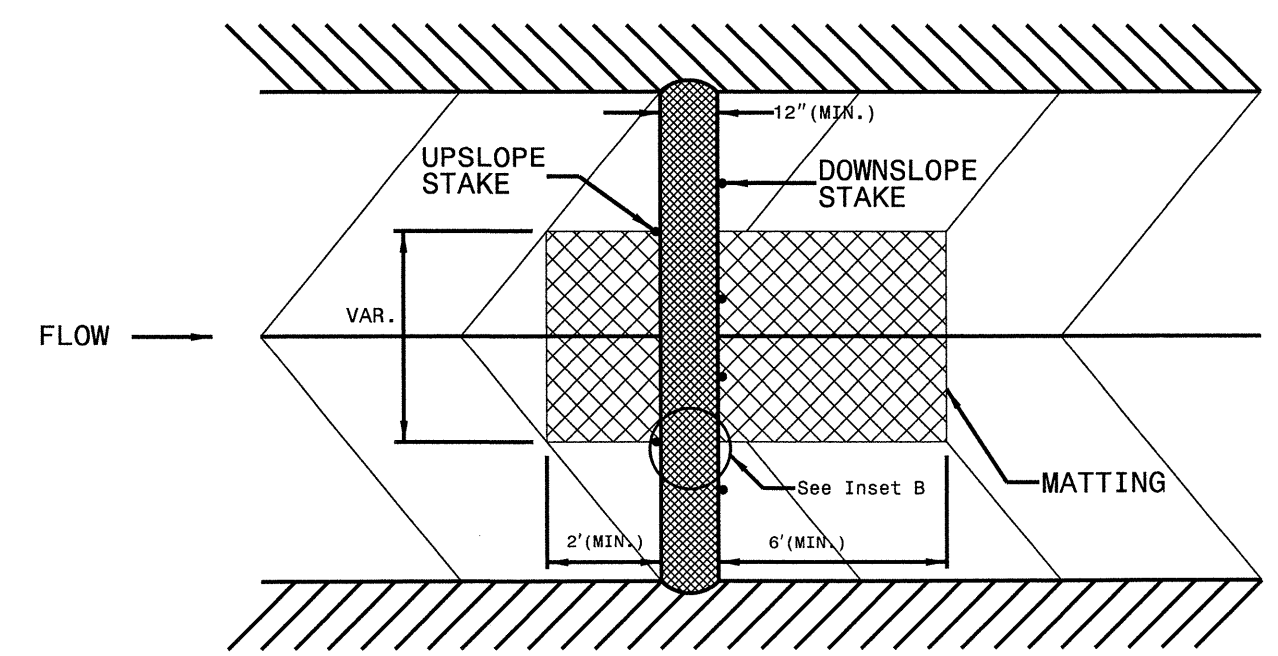
- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- IF DITCH WILL BE DISTURBED, INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



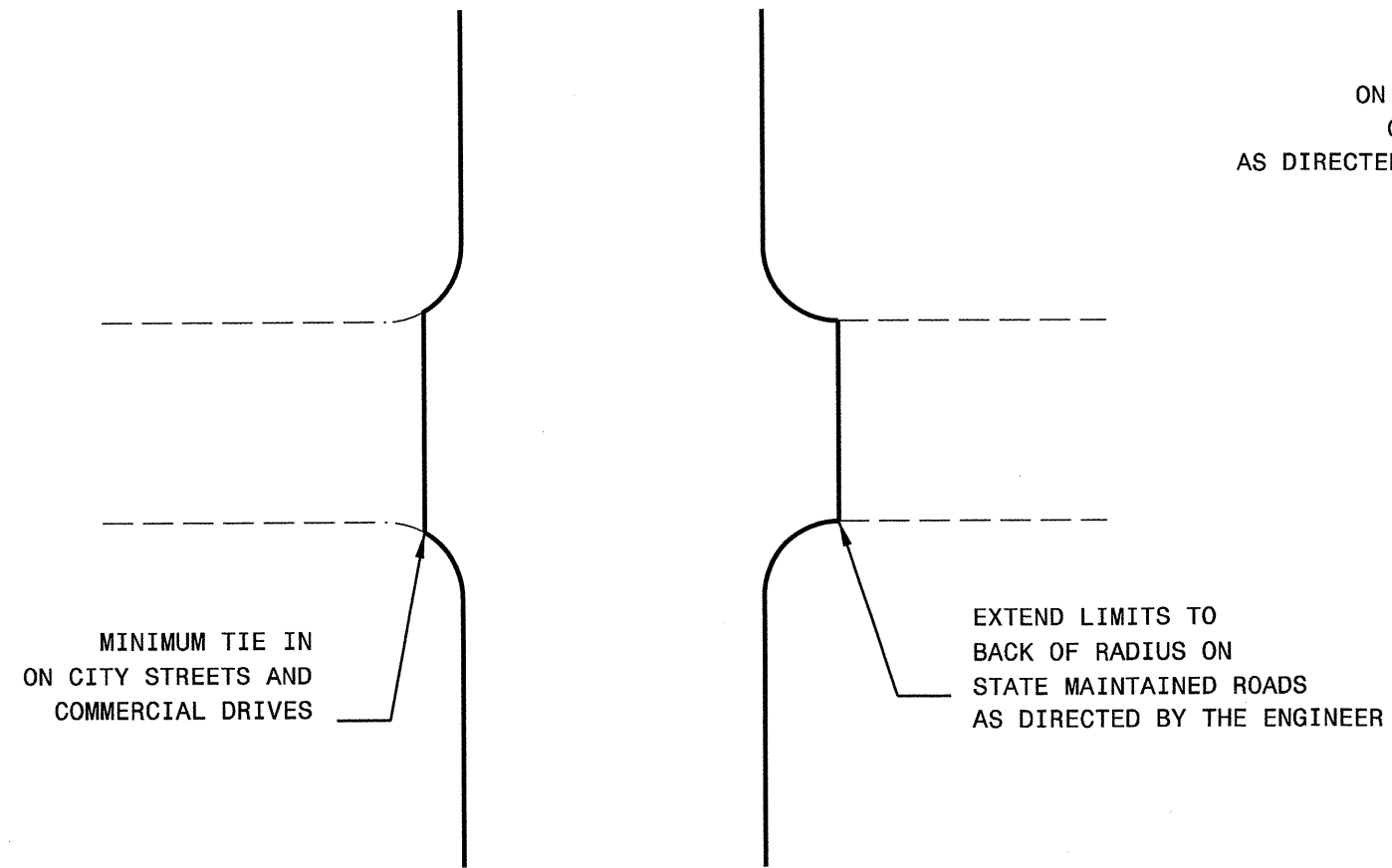
INSET A



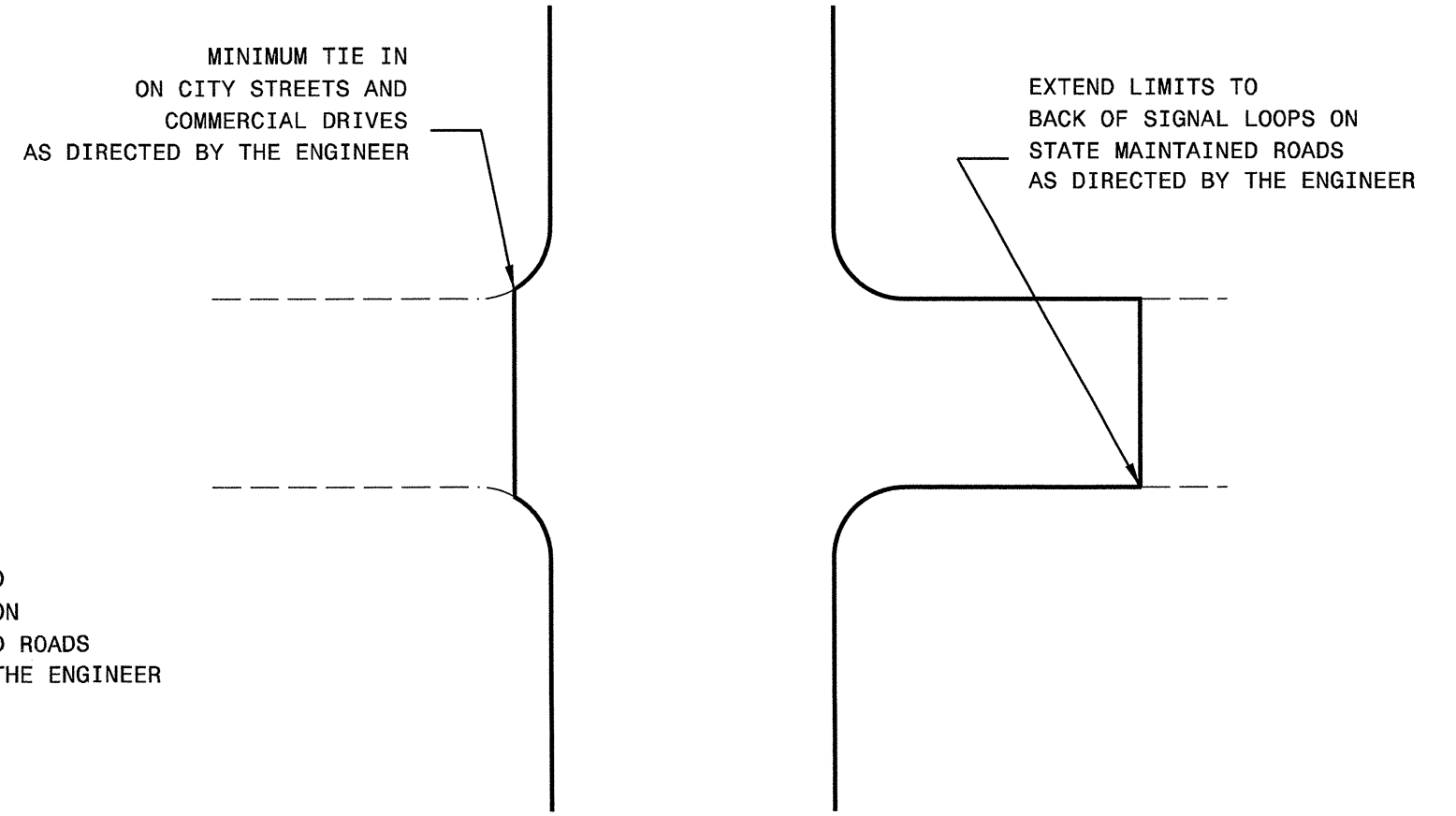
INSET B



TOP VIEW



DETAIL OF PROJECT LIMITS AT UNSIGNALIZED Y LINES



DETAIL OF PROJECT LIMITS AT SIGNALIZED Y LINES

PROJECT NO.	SHEET NO.	TOTAL NO.
SCR.20321.21	10	

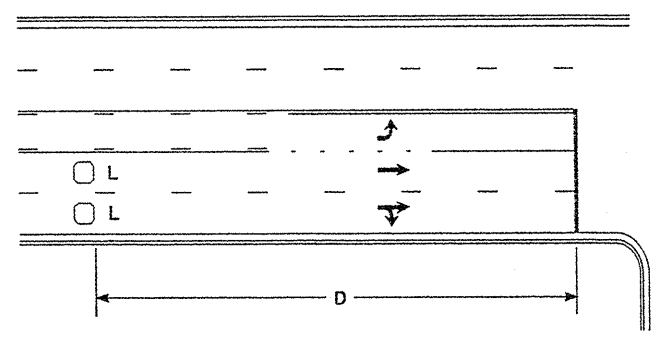
SUMMARY OF QUANTITIES

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	2.5" MILLING SY	0" TO 1.5" MILLING SY	INCIDENTAL MILLING SY	INTER-MEDIATE COURSE, 119.08 TONS	SURFACE COURSE, S9.5B TONS	ASPHALT BINDER FOR PLANT MIX TON	PATCHING EXISTING PAVEMENT TONS	ADJUST MANHOLES EA	ADJUST METER OR VALVE BOX EA	TEMPORARY SILT FENCE LF	WATTLE LF	SEED & MULCHING AC	INDUCTIVE LOOP LF	
SCR.20321.21	Durham	1	SR1628 - ORANGE FACTORY RD	1.15 MI WEST OF SR 1615 - STAGVILLE RD TO SR 1615 - STAGVILLE RD	2	NO	1.15	20	213	107	2.13	15,943	945	313	2,440	1,501	207	100			155	390	1.55		
TOTAL FOR MAP NO. 1							1.15		213	107	2.13	15,943	945	313	2,440	1,501	207	100			155	390	1.55		
SCR.20321.21	Durham	2	SR1675 - GLENN SCHOOL RD.	FROM SR1636 - GLENN RD. TO I-85 BRG	1	NO	0.4	20	80	40	0.80	5,110		333	842	518	72	100			58	150	0.58	272	
TOTAL FOR MAP NO. 2							0.4		80	40	0.80	5,110		333	842	518	72	100				58	150	0.58	272
SCR.20321.21	Durham	3	SR1400 - SPARGER RD.	FROM US70 TO SR1401 - COLE MILL RD.	1	NO	1.71	20	342	171	3.42	20,983		444	3,021	1,858	256	100		1	248	620	2.48		
TOTAL FOR MAP NO. 3							1.71		342	171	3.42	20,983		444	3,021	1,858	256	100			1	248	620	2.48	
SCR.20321.21	Durham	4	SR1002 - SAINT MARYS RD.	FROM NC157 TO ORANGE COUNTY LINE	1	NO	1.74	20	348	170	3.48	20,416		332	3,087	1,898	262	100			252	630	2.52		
TOTAL FOR MAP NO. 4							1.74		348	170	3.48	20,416		332	3,087	1,898	262	100				252	630	2.52	
SCR.20321.21	Durham	5	SR1669 - EAST CLUB BLVD.	SR1666 - DEARBORN DR TO 85 BRG	3	NO	1.09	20	218	109	2.18		167	926		1,364	82	545	7	2	154	390	1.54	30	
TOTAL FOR MAP NO. 5							1.09		218	109	2.18		167	926		1,364	82	545	7	2	154	390	1.54	30	
TOTAL FOR PROJ NO. SCR.20321.21							6.09		1,201	597	12.01	62,452	1,112	2,348	9,390	7,139	879	945	7	3	867	2,180	8.67	302	
GRAND TOTAL							6.09		1,201	597	12.01	62,452	1,112	2,348	9,390	7,139	879	945	7	3	867	2,180	8.67	302	

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	LENGTH	WIDTH	4685000000-E	4686000000-E	4695000000-E	4710000000-E	4725000000-E			4770000000-E		4810000000-E		4820000000-E	4835000000-E	4845000000-N			4850000000-E	4900000000-N			
							4" X 90 M WHITE THERMO	4" X 120 M WHITE THERMO	4" X 120 M YELLOW THERMO	8" X 90 M YELLOW THERMO	24" X 120 M WHITE THERMO	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR ARROW 90 M	4" WHITE COLD APPLIED PLASTIC, TYPE III LF	4" YELLOW COLD APPLIED PLASTIC, TYPE III LF	4" WHITE PAINT	4" YELLOW PAINT	8" YELLOW PAINT	24" WHITE PAINT	PAINT LT ARROW	PAINT RT ARROW	PAINT STR ARROW	4" LINE REMOVAL	CRYSTAL & RED MARKERS	YELLOW & YELLOW MARKERS	
SCR.20321.21	Durham	1	SR1628 - ORANGE FACTORY RD	1.15 MI WEST OF SR 1615 - STAGVILLE RD TO SR 1615 - STAGVILLE RD	1.15	20	11,494	206	11,334		15	3	3	2			11,700	11,334		15	3	3	2		8	70	
TOTAL FOR MAP NO. 1							1.15	206	11,334		15	3	3	2			11,700	11,334		15	3	3	2		8	70	
SCR.20321.21	Durham	2	SR1675 - GLENN SCHOOL RD.	FROM SR1636 - GLENN RD. TO I-85 BRG	0.4	20	3,800		3,800		20				360	360	3,800	3,800		20				720	26		
TOTAL FOR MAP NO. 2							0.4		3,800		20				360	360	3,800	3,800		20				720	26		
SCR.20321.21	Durham	3	SR1400 - SPARGER RD.	FROM US70 TO SR1401 - COLE MILL RD.	1.71	19	17,558	19	17,558		1				520	520	17,577	17,558		1			1,040		113		
TOTAL FOR MAP NO. 3							1.71	19	17,558		1				520	520	17,577	17,558		1			1,040		113		
SCR.20321.21	Durham	4	SR1002 - SAINT MARYS RD.	FROM NC157 TO ORANGE COUNTY LINE	1.74	20	17,952	162	17,793	100							18,114	17,793	100		2			8	137		
TOTAL FOR MAP NO. 4							1.74	162	17,793	100							18,114	17,793	100		2			8	137		
SCR.20321.21	Durham	5	SR1669 - EAST CLUB BLVD.	SR1666 - DEARBORN DR TO 85 BRG	1.09	20	11,260	282	11,892		71	6			400	400							800	12	95		
TOTAL FOR MAP NO. 5							1.09	282	11,892		71	6			400	400									800	12	95
TOTAL FOR PROJ NO. SCR.20321.21							6.09	669	62,377	100	106	12	3	2	1,280	1,280	51,191	50,485	100	35	6	3	2	2,560	28	441	
GRAND TOTAL							6.09	669	62,377	100	106	12	3	2	1,280	1,280	51,191	50,485	100	35	6	3	2	2,560	28	441	

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

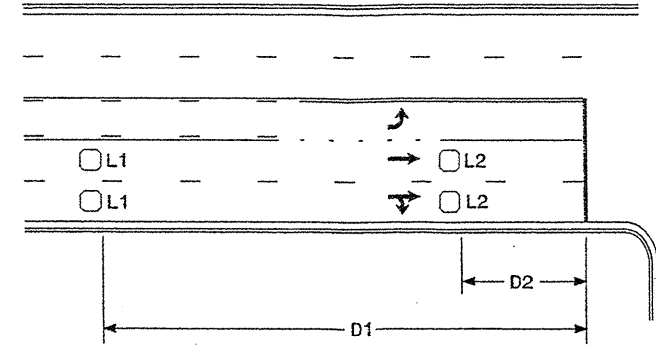


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

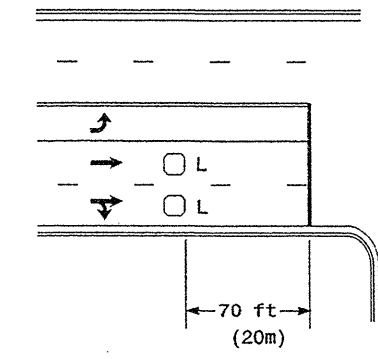


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

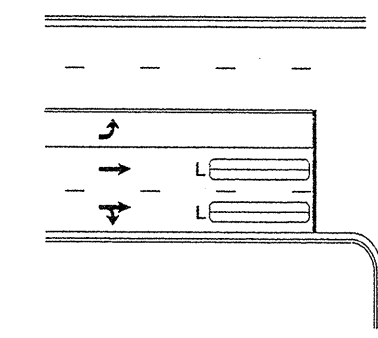
"Stretch" Operation

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



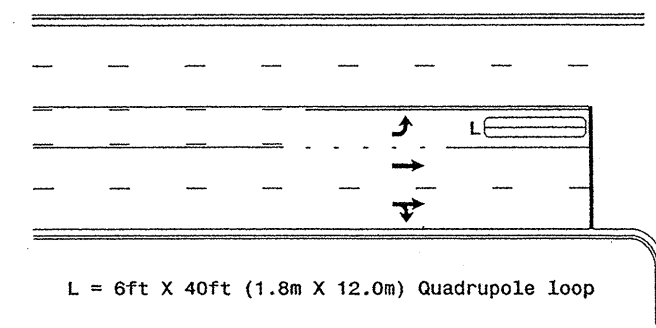
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



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

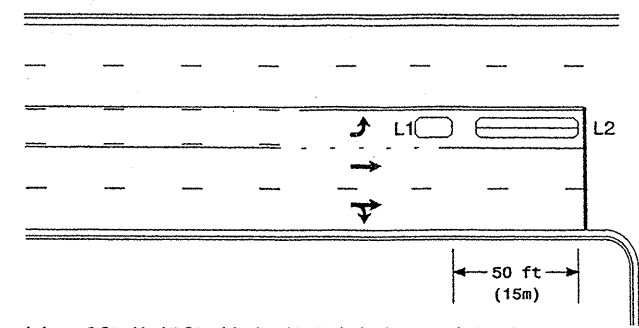
Left Turn Lane Detection



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

Presence Loop Detection

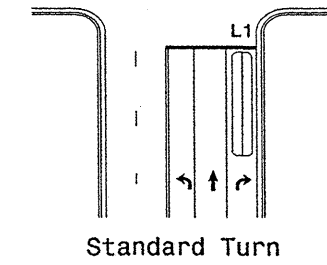
OR



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

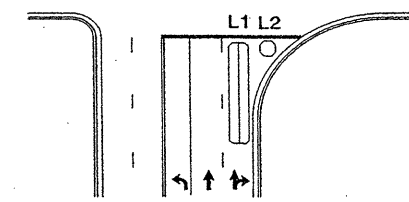
Queue Loop Detection

Right Turn Lane Detection

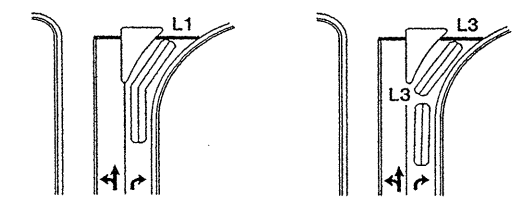


Standard Turn

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

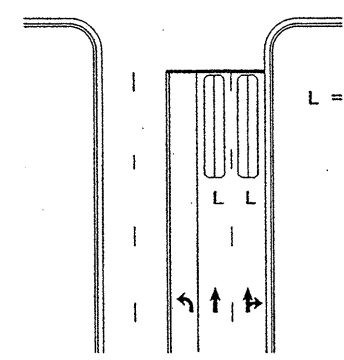


Wide Radius Turn



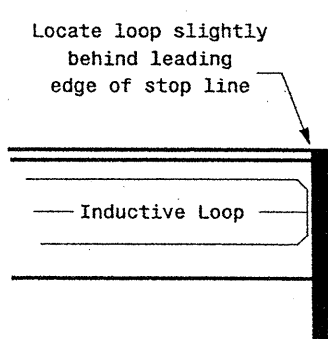
Channelized Turn

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

18-DEC-2006 14:29
s:\m\signal\turn_in\m\loop\py\lcal2006.dgn
ppl alexander

122 N. McDowell St., Raleigh, NC 27603

Typical Loop Locations

PLAN DATE: June 2006 REVIEWED BY:

PREPARED BY: P L Alexander REVIEWED BY:

REVISIONS

NO.	DATE	INIT.	DATE
1	12/18/06	PLA	12/18/06

SIGNATURE: *P L Alexander* DATE: 12/18/06

SIG. INVENTORY NO.

SEAL

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

11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

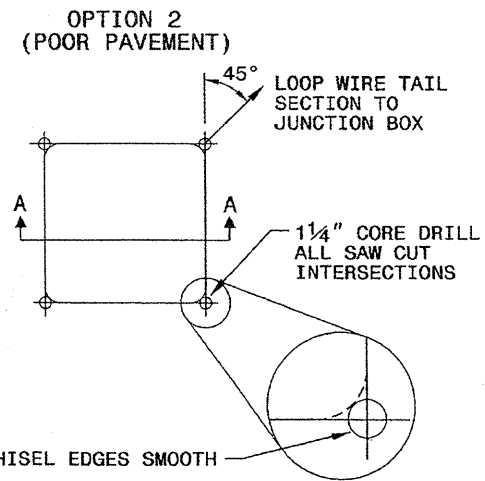
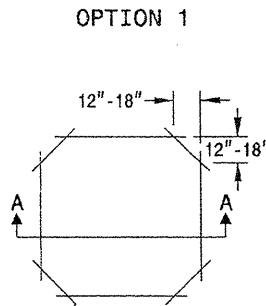
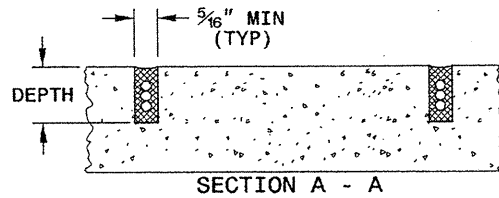
SHEET 1 OF 3
1725D01

CONVENTIONAL 4-SIDED LOOP

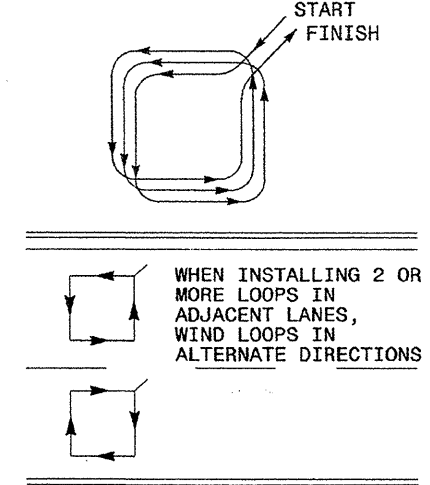
SAW CUT OPTIONS

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

INCORRECT WAY TO TWIST WIRE



CORRECT WAY TO TWIST WIRE

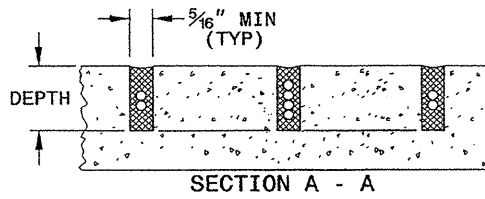
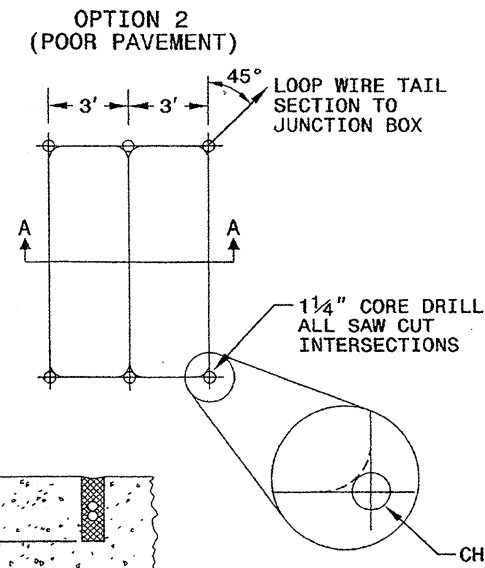
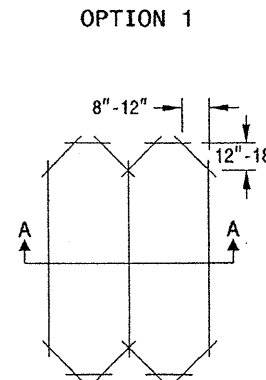


NOTES

1. OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
2. MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
3. WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
4. LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

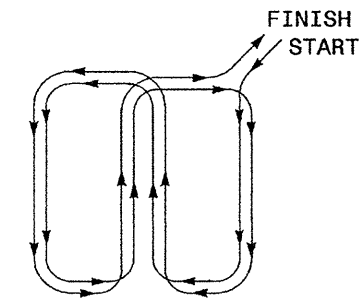
QUADRUPOLE LOOP

SAW CUT OPTIONS



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



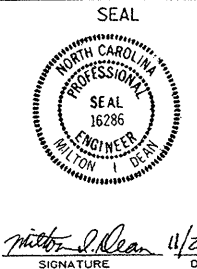
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

SHEET 1 OF 3
1725D01

See Plate for Title



Signature: *Wilton I. Dean* DATE: 4/24/08

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

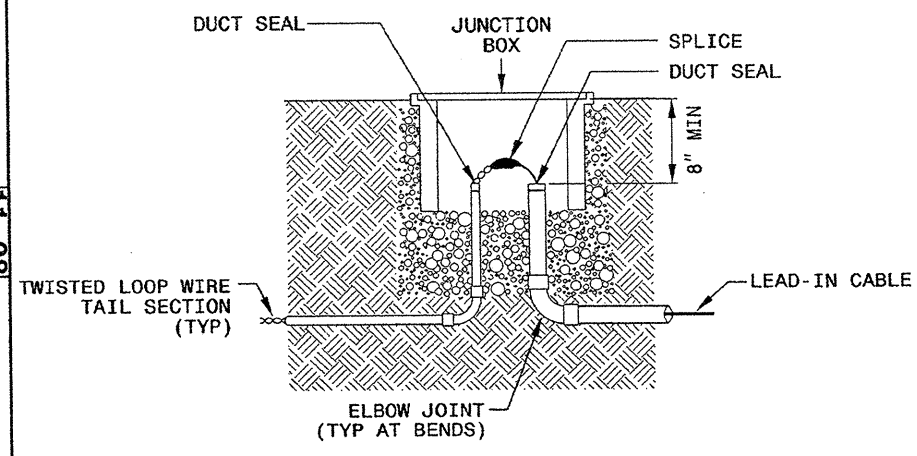
11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

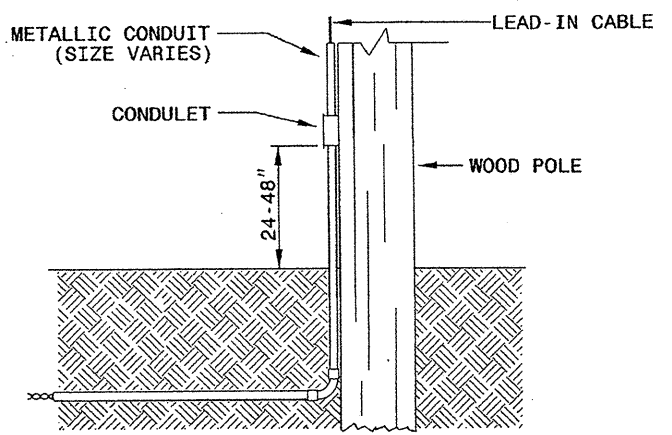
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

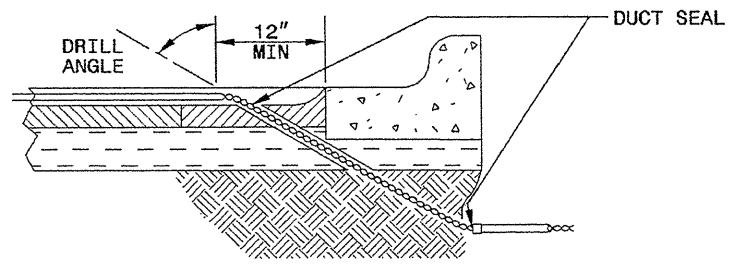


NOTE

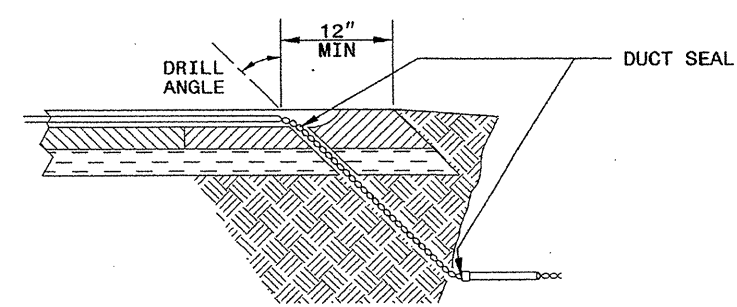
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

LOOP WIRE PAVEMENT EDGE DETAILS

LOOP WIRE AT CURB & GUTTER SECTION



LOOP WIRE AT PAVEMENT SECTION



NOTES

1. DO NOT EXCAVATE UNDER CURB AND GUTTER SECTIONS FOR CONDUIT INSTALLATION.
2. TWIST LOOP WIRE TAIL SECTIONS FROM WHERE LOOP WIRE TAIL LEAVES SAW CUT TO JUNCTION BOX, INCLUDING THROUGH CONDUIT.
3. BEFORE SEALING LOOPS, INSTALL DUCT SEAL WHERE LOOP WIRE TAIL SECTION LEAVES SAW CUT IN PAVEMENT AND AT ENTRANCE OF CONDUIT TO JUNCTION BOX.

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ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

SHEET 2 OF 3
1725D01

See Plate for Title

Prepared in the Offices of:

750 N. Greenfield Parkway
Garner, NC 27529

SEAL

Milton J. Dean 11/24/08
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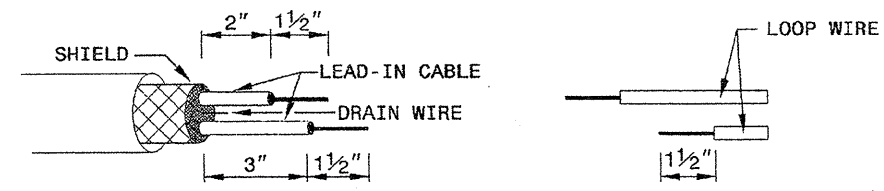
STATE OF NORTH CAROLINA
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11-08

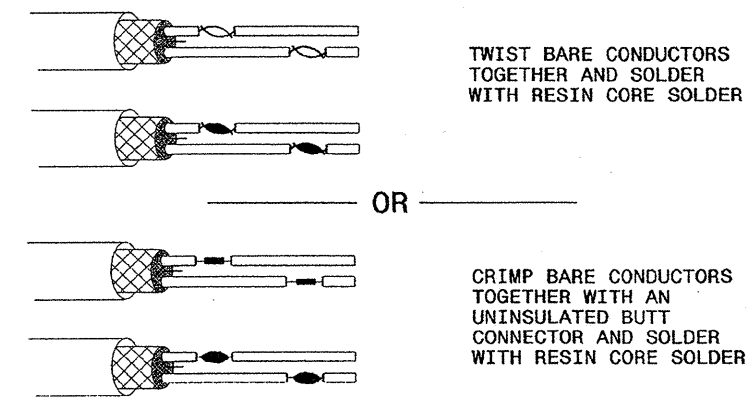
ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
1725D01

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE

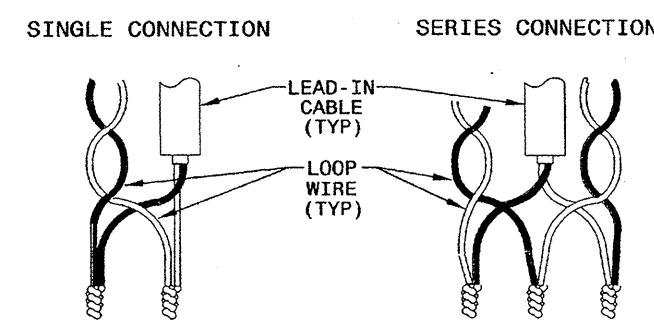


STEP 2. CONNECT AND SOLDER

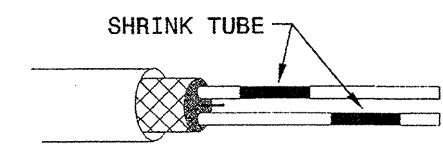


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

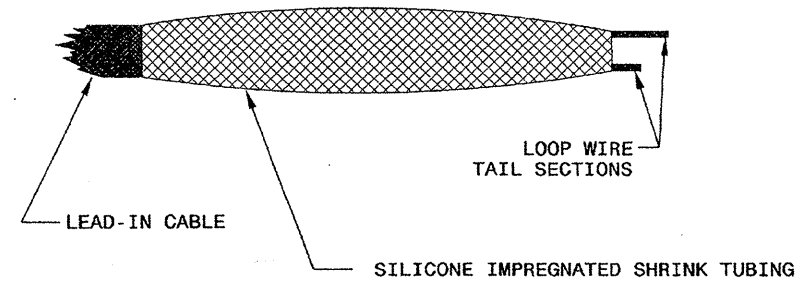
LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



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

SHEET 3 OF 3
1725D01

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