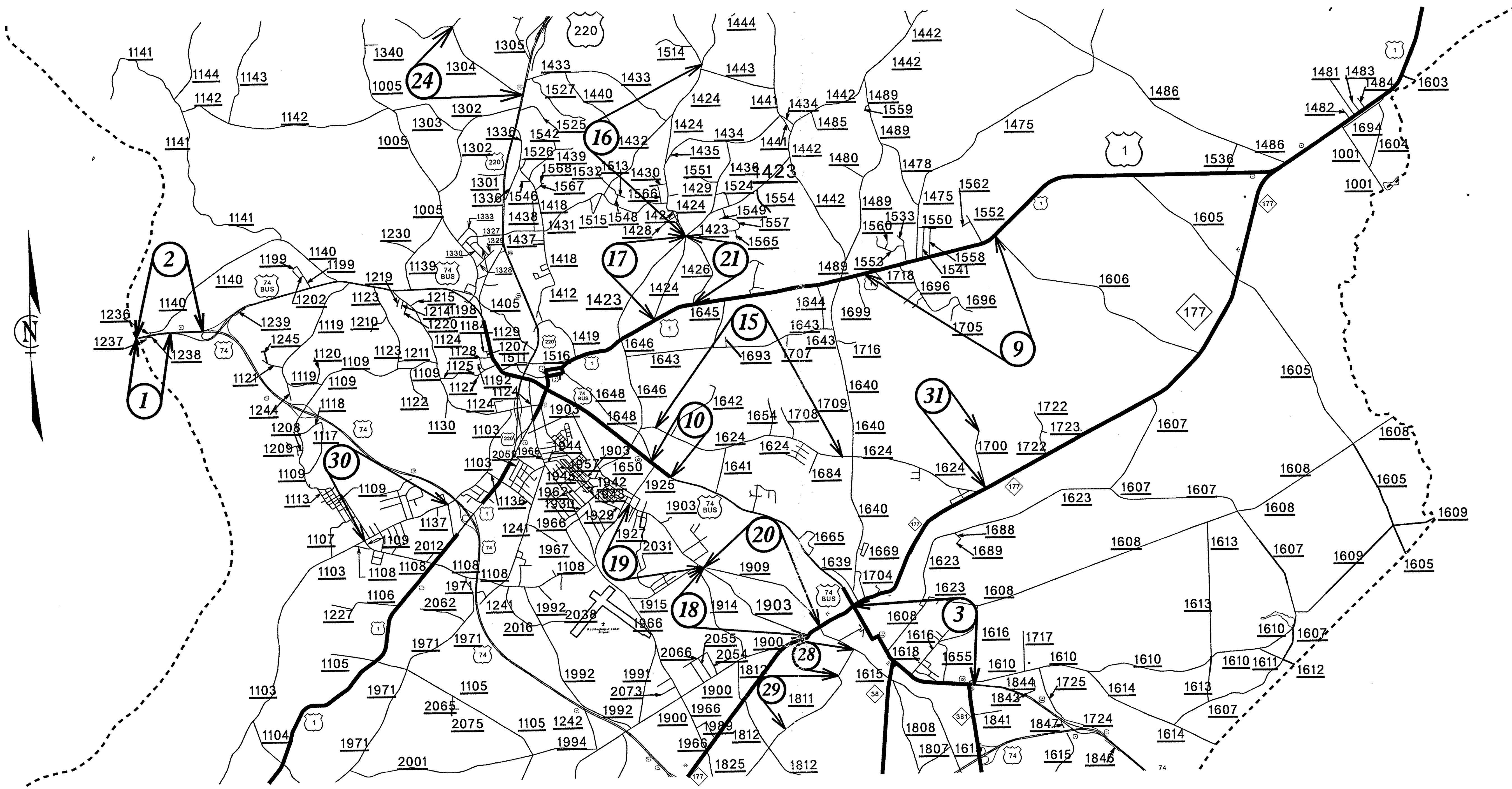
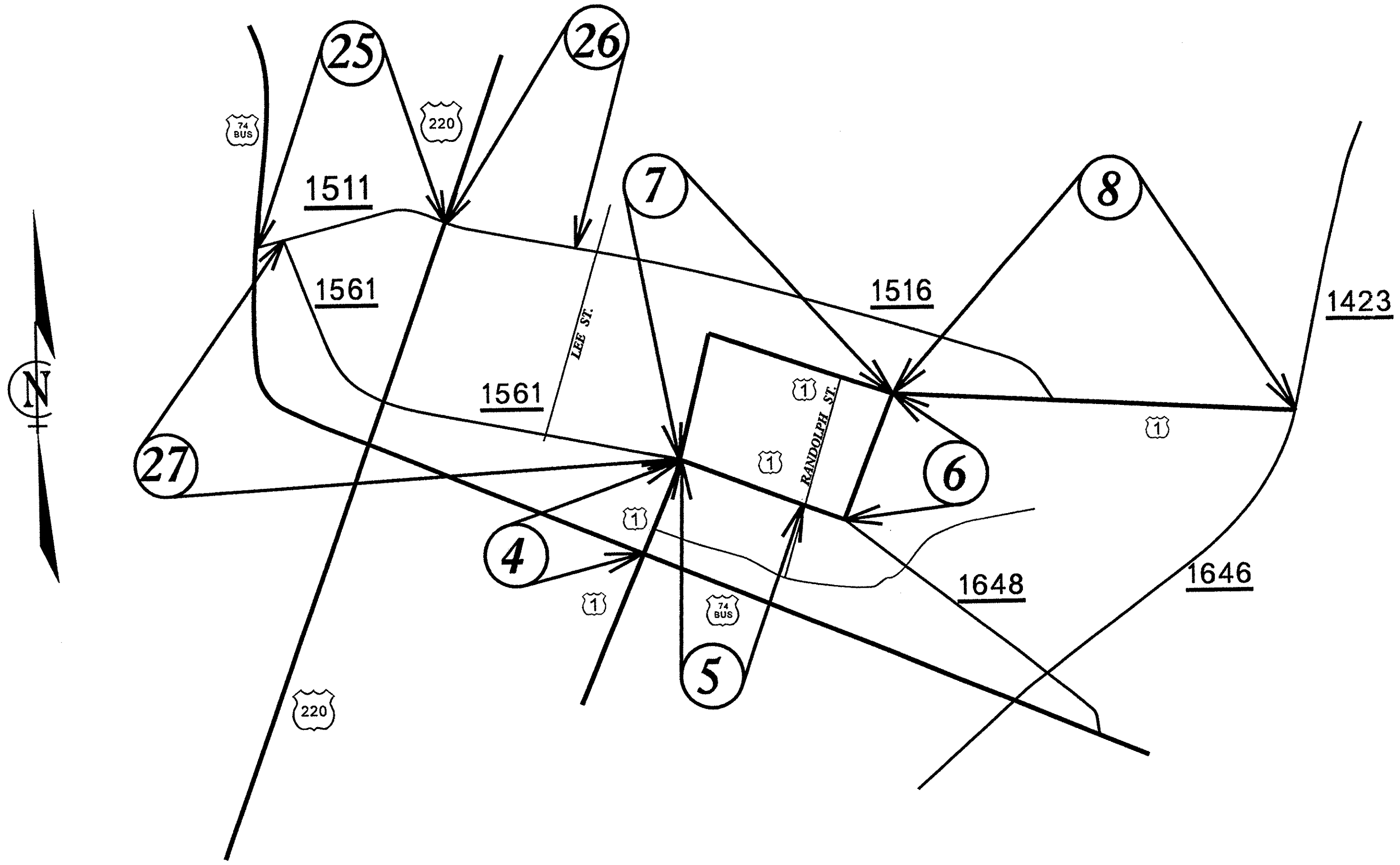
WBS ELEMENT	SHEET NO.
8CR.10771.15, 8CR.20771.15	1

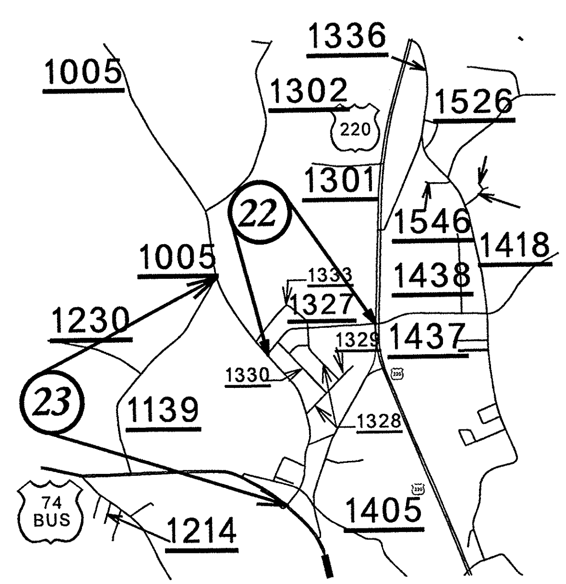


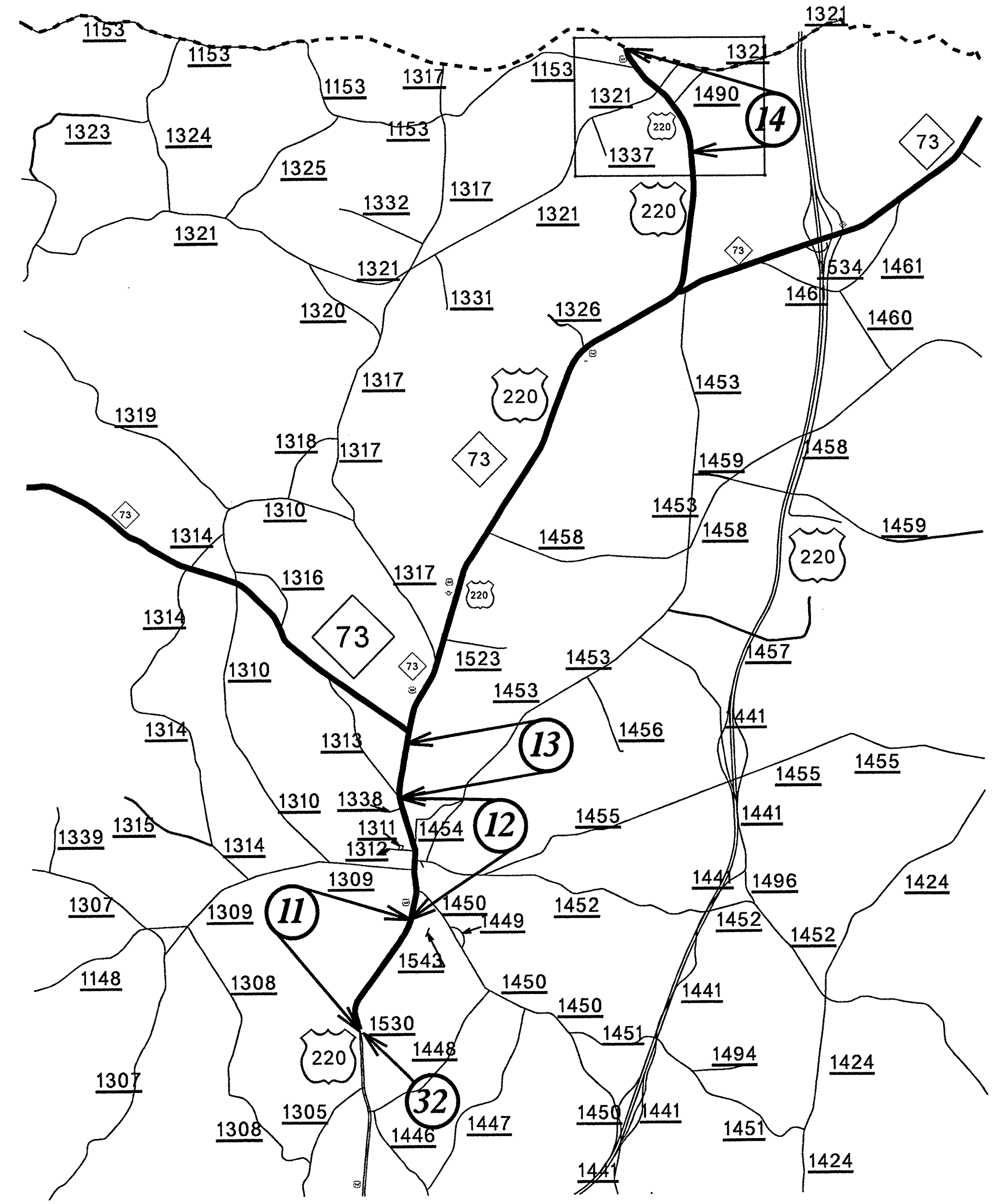
RICHMOND COUNTY

15-NOV-2010 10:52
\Greg\Projects-Docs & Xls\2010 Resurfacing\Richmond\RICH-VIC-MAP.dgn
3v15 AT DBCAD-2464463

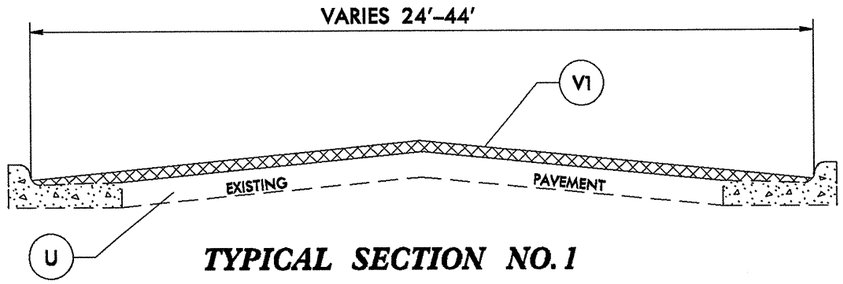
WBS ELEMENT	SHEET NO.
8CR.10771.15, 8CR.20771.15	2



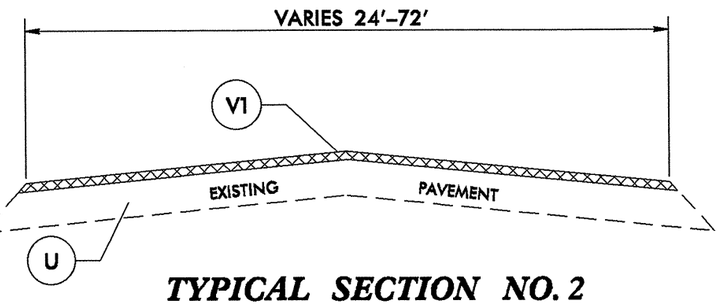




RICHMOND COUNTY



TYPICAL SECTION NO. 1



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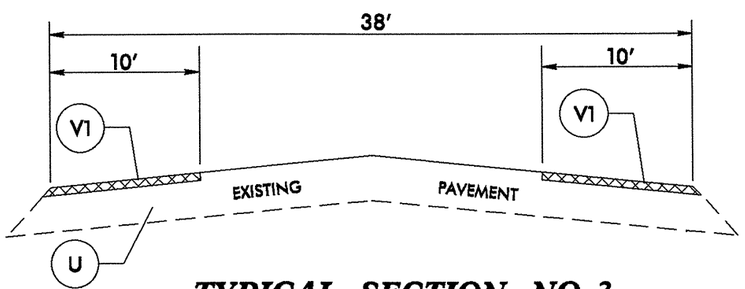

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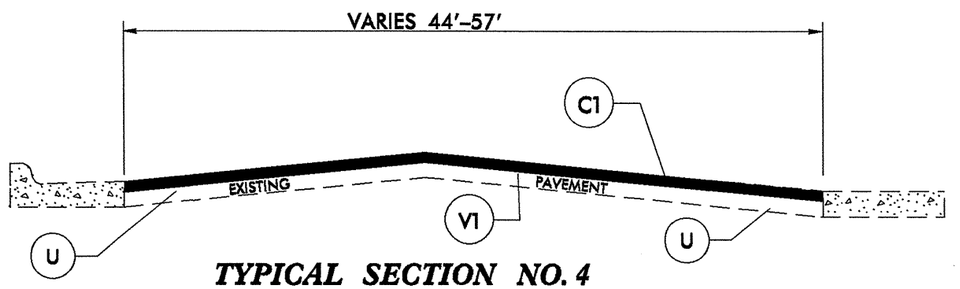

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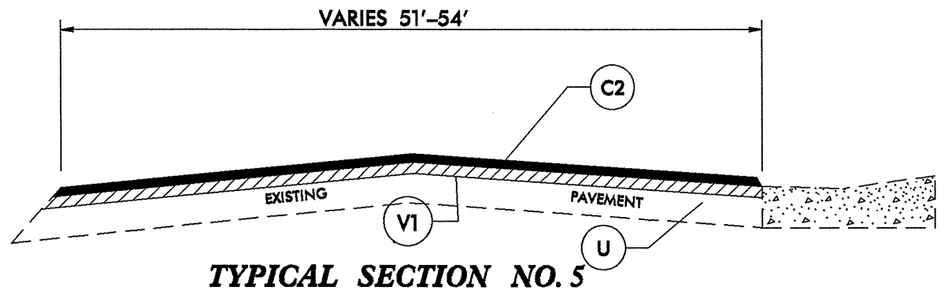
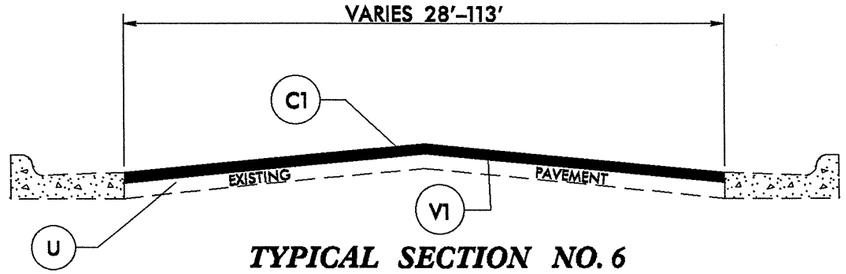


TYPICAL SECTION NO. 5

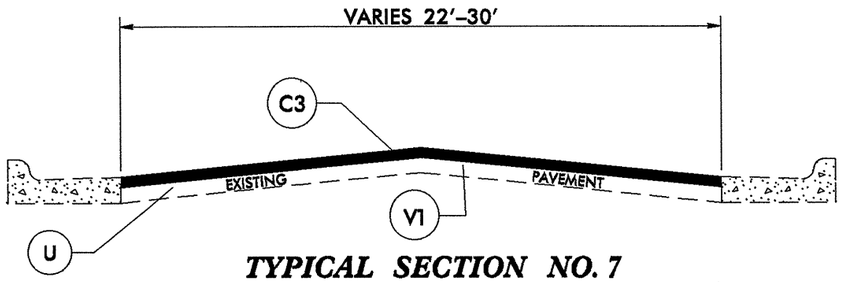


TYPICAL SECTION NO. 6

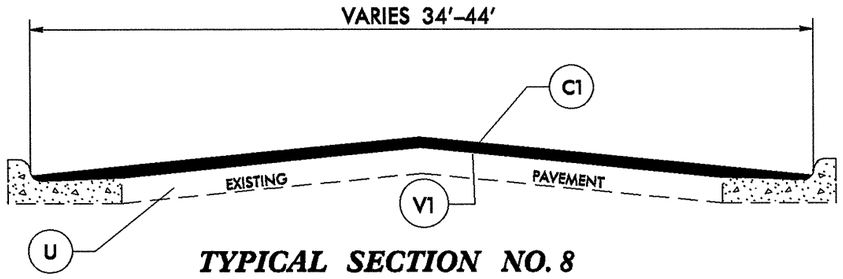
NOTE: SHOULDER RECONSTRUCTION AND SEEDING AND MULCHING BY STATE FORCES.

PAVEMENT SCHEDULE

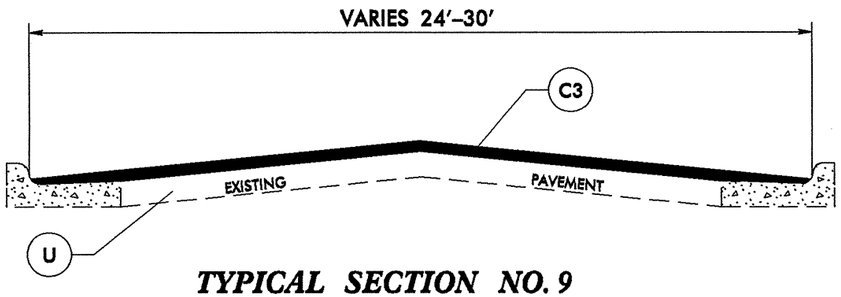
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
U	EXISTING PAVEMENT.
V1	MILLING 1 1/2" IN DEPTH.



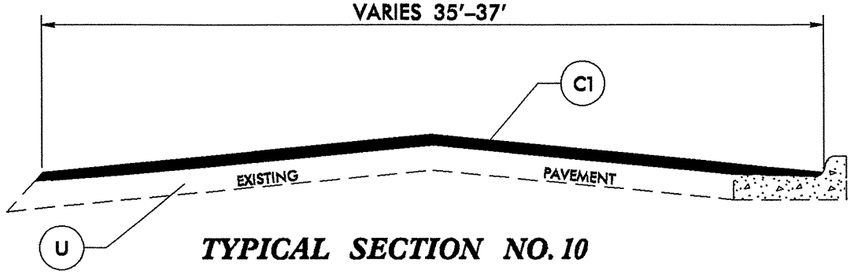
TYPICAL SECTION NO. 7



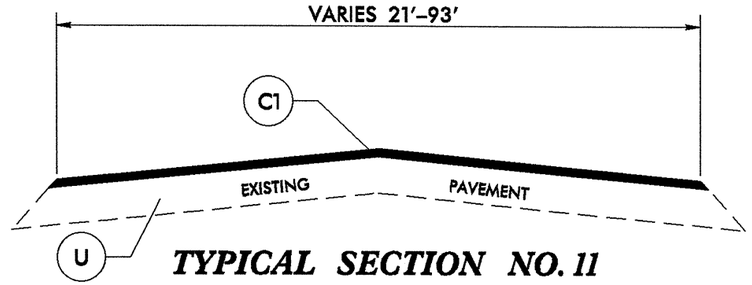
TYPICAL SECTION NO. 8



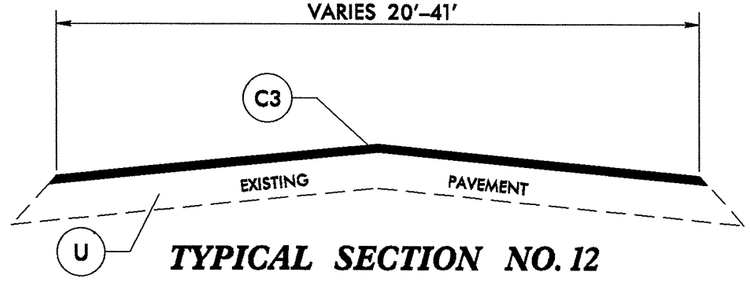
TYPICAL SECTION NO. 9



TYPICAL SECTION NO. 10



TYPICAL SECTION NO. 11

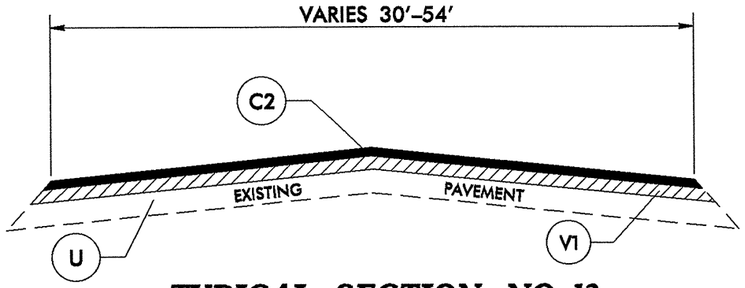


TYPICAL SECTION NO. 12

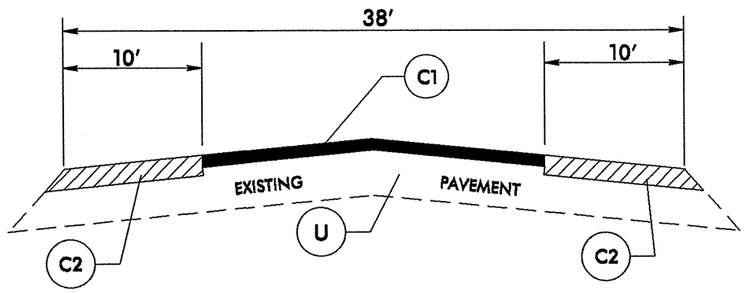
NOTE: SHOULDER RECONSTRUCTION AND SEEDING AND MULCHING BY STATE FORCES.

PAVEMENT SCHEDULE

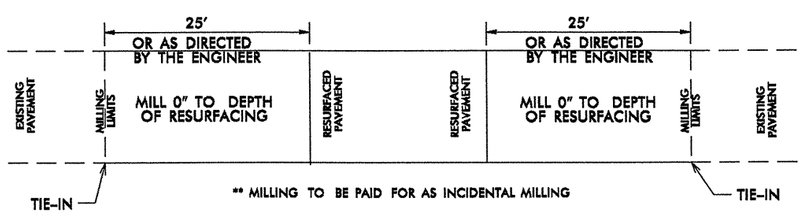
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
U	EXISTING PAVEMENT.
V1	MILLING 1 1/2" IN DEPTH.



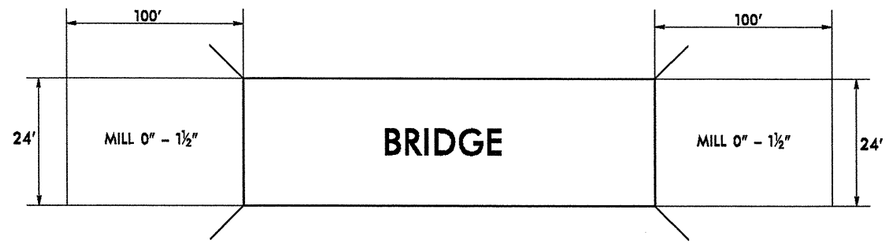
TYPICAL SECTION NO. 13



TYPICAL SECTION NO. 14



PAVEMENT TIE-IN DETAIL



BRIDGE DRAWING FOR SR 1424 (MAP #16) BRIDGE # 47

** MILLING TO BE PAID FOR AS INCIDENTAL MILLING

EFF. 07-18-06
REV. 01-02-07

2006 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch – N. C. Department of Transportation – Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 6 – ASPHALT BASES AND PAVEMENTS	
665.01	Milled Rumble Strips – Asphalt Pavements

NOTE: SHOULDER RECONSTRUCTION AND SEEDING AND MULCHING BY STATE FORCES.

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
U	EXISTING PAVEMENT.
V1	MILLING 1 1/2" IN DEPTH.

PROJECT NO.	SHEET NO.	TOTAL NO.
8CR.10771.15, 8CR.20771.15	6	7

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	FINAL SURFACE TESTING REQUIRED	LENGTH MI	WIDTH FT	1½" MILLING SY	INCIDENTAL MILLING SY	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, SF9.5A TON	PG 64-22 PLANT MIX TONS	MILLED RUMBLE STRIPS LF	ADJUST MANHOLES EA	ADJUST METER OR VALVE BOX EA	INDUCTIVE LOOP LF
8CR.10771.15	Richmond	1	US 74 BYP EB	FROM ANSON COUNTY BRIDGE TO US 74 BUS SPLIT	5,13	NO	0.46	36-54	10,307		1,820		109	4,858			
		2	US 74 BYP WB	FROM US 74 BUS RAMP TO ANSON COUNTY BRIDGE	5,13	NO	0.84	30-51	18,000		3,030		182	8,870			
		3	US 74 BUS (HAMLET)	FROM NC 177 TO PVMT JT AT BEGIN DIVIDED HIGHWAY	6,8	NO	2.14	40	58,791	1,000	5,150		309		34	10	2,240
		4	US 1	FROM US 74 BUS TO FRANKLIN STREET	4,6	NO	0.17	38-57	4,205		385		23		3	5	380
		5	US 1 N	FROM SR 1561 (FRANKLIN STREET) TO PVMT JT AT RANDOLPH ST.	8	NO	0.14	31	2,619		235		14		5	9	940
		6	US 1 N	FROM SR 1648 TO US 1 SB	6	NO	0.08	24	725		95		6			2	
		7	US 1 S	FROM US 1 N TO SR 1561 (FRANKLIN STREET)	8	NO	0.3	32	5,632		500		30		6	11	880
		8	US 1	FROM US 1 SBL TO SR 1646 PVMT JOINT (FAYETTEVILLE ST.)	6	NO	0.84	26	13,270	270	1,245		75		11	9	
		9	US 1	FROM U-3456 PVMT JOINT TO SR 1606 (FOX RD.)	3,11,14	NO	1.89	27	3,778	667	3,355		201			4	
		10	US 74 BUS	FROM SR 1646 TO BEGIN DIVIDED HWY (ROCKINGHAM)	6	NO	0.68	60-113	37,493	347	3,310		199		8	4	3,500
		11	US 220	FROM SR 1530 TO BEGIN C&G	2,11	NO	1.03	42	19,777		1,765		106				
		12	US 220	FROM BEG C&G TO SR 1313	6,8,10,11	NO	1.23	30	22,024	700	1,975		119		10	6	240
		13	US 220	FROM SR 1313 TO PVMT JT AT NC 73	2,11	NO	0.56	27	10,766		905		54				
		14	US 220	FROM SCL NORMAN TO MONTGOMERY COUNTY	2,11	NO	1	32	18,667		1,585		95				
TOTAL FOR PROJ NO. 8CR.10771.15							**11.36**		**226,054**	**2,984**	**25,355**		**1,522**	**13,728**	**77**	**60**	**8,180**
8CR.20771.15	Richmond	15	SR 1624	FROM PVMT JT AT SR 1640 TO PVMT CHANGE AT SR 1646	2,11	NO	2.7	25	39,747	719	3,465		208		1	4	
		16	SR 1424	FROM SR 1423 TO SR 1445	9,12	NO	2.56	24		500		3,325	216		1	1	
		17	SR 1424	FROM SR 1423 TO US 1	12	NO	1	21				1,220	79			4	300
		18	SR 1903	FROM NC 177 TO SR 1909	7,12	NO	1.7	22	11,333			2,510	163		4	3	160
		19	SR 1903	FROM SR 1909 TO SR 1925	12	NO	1.3	24				1,790	116			2	220
		20	SR 1909	FROM NC 177 TO SR 1903	1,9,12	NO	1.81	25	2,778			2,230	145		4	9	60
		21	SR 1426	FROM SR 1423 TO US 1	12	NO	1.1	22				1,195	78			4	
		22	SR 1327	FROM SR 1005 TO US 220	11	NO	0.57	21			665		40			6	
		23	SR 1005	FROM SR 1139 TO US 74 BUS	11	NO	1.3	22			1,815		109		1	2	
		24	SR 1304	FROM US 220 TO SR 1306	11	NO	1.33	22			1,450		87				
		25	SR 1511	FROM US 74 BUS TO US 220	6	NO	0.41	48	10,448		975		59				220
		26	SR 1516	FROM US 220 TO LEE STREET	6	NO	0.18	48	5,067		430		26				220
		27	SR 1561	FROM SR 1511 TO US 1	6	NO	0.49	33	9,748		820		49		9	7	240
		28	SR 1811	FROM SR 1615 TO END C&G	7	NO	0.24	28	3,982			335	22		8	2	
		29	SR 1811	FROM END C&G TO PVMT JOINT	12	NO	0.52	20				515	33		2		
		30	SR 1103	FROM SR 1137 TO SR 1109	12	NO	1.24	22				1,660	108			2	
		31	SR 1700	FROM NC 177 TO DEAD END	12	NO	0.77	22				840	55				
		32	SR 1530	FROM US 220A TO END	11	NO	0.023	27		370	35		2				
TOTAL FOR PROJ NO. 8CR.20771.15							**19.243**		**83,103**	**1,589**	**9,655**	**15,620**	**1,595**		**30**	**46**	**1,420**
GRAND TOTAL							**30.603**		**309,157**	**4,573**	**35,010**	**15,620**	**3,117**	**13,728**	**107**	**106**	**9,600**

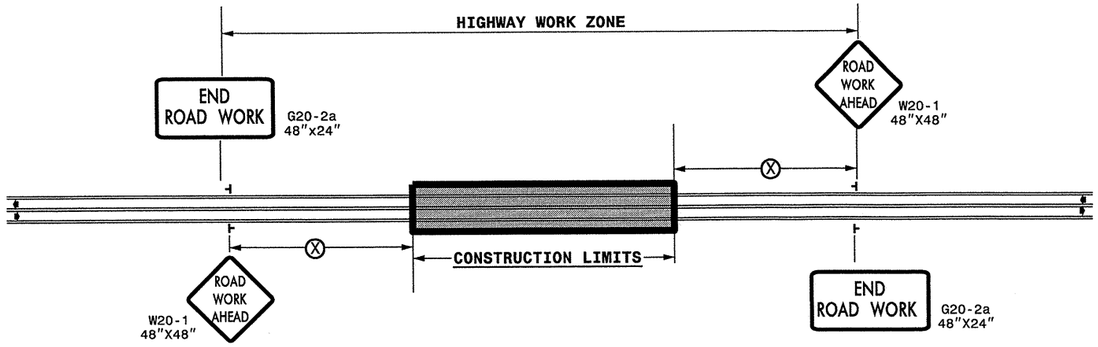
PROJECT NO.	SHEET NO.	TOTAL NO.
8CR.10771.15, 8CR.20771.15	7	7

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4589000000-N TRAFFIC CONTROL LS	4585000000-E 4" X 90 M YELLOW THERMO LF	4585000000-E 4" X 90 M WHITE THERMO LF	4686000000-E 4" X 120 M WHITE THERMO LF	4686000000-E 4" X 120 M YELLOW THERMO LF	4695000000-E 8" X 90 M WHITE THERMO LF	4695000000-E 8" X 90 M YELLOW THERMO LF	4697000000-E 8" X 120 M WHITE THERMO LF	4705000000-E 16" X 120 M WHITE THERMO LF	4719000000-E 24" X 120 M WHITE THERMO LF	4721000000-E THERMO MSG ONLY 120 M EA	4721000000-E THERMO MSG SCHOOL 120 M EA	4721000000-E THERMO MSG AHEAD 120 M EA	4721000000-E THERMO MSG STOP 120 M EA	4721000000-E THERMO RXR 120 M EA	4725000000-E THERMO LT ARROW 90 M EA	4725000000-E THERMO RT ARROW 90 M EA	4725000000-E THERMO STR ARROW 90 M EA	4725000000-E THERMO STR & RT ARROW 90 M EA	4725000000-E THERMO STR & LT ARROW 90 M EA	4810000000-E 4" WHITE PAINT LF	4810000000-E 4" YELLOW PAINT LF	4820000000-E 8" WHITE PAINT LF	4835000000-E 24" WHITE PAINT LF	4840000000-N PAINT MSG SCHOOL EA	4845000000-N PAINT STR & RT ARROW EA	4845000000-N PAINT LT ARROW EA	4900000000-N CYAN & RED MARKERS EA	4900000000-N YELLOW & YELLOW MARKERS EA
8CR.10771.15	Richmond	1	US 74 BYP EB	FROM ANSON COUNTY BRIDGE TO US 74 BUS SPLIT	*	2,783	2,521	913		620										4					2,500		600					66	
		2	US 74 BYP WB	FROM US 74 BUS RAMP TO ANSON COUNTY BRIDGE	*	4,435	4,603	1,388		550										2	2	3			4,600		500					88	
		3	US 74 BUS (HAMLET)	FROM NC 177 TO PVMT JT AT BEGIN DIVIDED HIGHWAY	*		2,038	3,391	25,503	716	40			146						49	11	10	7	8	5,000	25,000		146				222	219
		4	US 1	FROM US 74 BUS TO FRANKLIN STREET	*		450	192	1,800					46	4					1	2	2	1		500	2,000		46				11	11
		5	US 1 N	FROM SR 1561 (FRANKLIN STREET) TO PVMT JT AT RANDOLPH ST.	*	681	1,004	217				554		141								4	2	2	1,000			141				10	
		6	US 1 N	FROM SR 1648 TO US 1 SB	*	20	272	106				54								2			2		200						5	
		7	US 1 S	FROM US 1 N TO SR 1561 (FRANKLIN STREET)	*			434				727		64	4					4		2	4	2	400			64				20	
		8	US 1	FROM US 1 SBL TO SR 1646 PVMT JOINT (FAYETTEVILLE ST.)	*			183	10,202		64	204		20						5					400	10,000		20				14	72
		9	US 1	FROM U-3456 PVMT JOINT TO SR 1606 (FOX RD.)	*		20,336	708	17,018		307			12						7	1				1,000	20,000		12				18	156
		10	US 74 BUS	FROM SR 1646 TO BEGIN DIVIDED HWY (ROCKINGHAM)	*	380	380	3,815	8,245		240			231						33	17	57	6		3,800	8,000		231				274	92
		11	US 220	FROM SR 1530 TO BEGIN C&G	*		10,534	138	9,313		48			50						8		5			100	9,000		50				8	89
		12	US 220	FROM BEG C&G TO SR 1313	*		11,474	130	10,480		40	220		48						4		4			100	10,000		48				5	70
		13	US 220	FROM SR 1313 TO PVMT JT AT NC 73	*		5,890	20	5,193		90									2		2	4		100	5,000		50				5	44
		14	US 220	FROM SCL NORMAN TO MONTGOMERY COUNTY	*		10,560		10,560																	10,000							66
TOTAL FOR PROJ NO. 8CR.10771.15						8,299	70,062	11,635	98,314	1,886	829	1,759		758	8					121	33	89	26	12	19,700	99,000	1,100	808				746	819
						78,361		109,949		2,715					8					281					118,700							1,565	
8CR.20771.15	Richmond	15	SR 1624	FROM PVMT JT AT SR 1640 TO PVMT CHANGE AT SR 1646	*		29,052		17,820																29,000							180
		16	SR 1424	FROM SR 1423 TO SR 1445	*																			55,091	54,912							172
		17	SR 1424	FROM SR 1423 TO US 1	*																			23,480	17,760		115					70
		18	SR 1903	FROM NC 177 TO SR 1909	*									100		12								35,500	36,640	240	100	12				112
		19	SR 1903	FROM SR 1909 TO SR 1925	*																			28,200	22,440		28		1	1	4	87
		20	SR 1909	FROM NC 177 TO SR 1903	*																			38,200	30,560	160						120
		21	SR 1426	FROM SR 1423 TO US 1	*																			23,232	18,586							73
		22	SR 1327	FROM SR 1005 TO US 220	*																			12,000	12,000							38
		23	SR 1005	FROM SR 1139 TO US 74 BUS	*		14,450		13,925																							86
		24	SR 1304	FROM US 220 TO SR 1306	*																			28,622	17,556							88
		25	SR 1511	FROM US 74 BUS TO US 220	*			1,320	3,918					25	4					10	2		3		1,000	3,900		25				50	25
		26	SR 1516	FROM US 220 TO LEE STREET	*			582	1,900					24	8		10	8		6			6		500	1,900		25				26	12
		27	SR 1561	FROM SR 1511 TO US 1	*	353	515	80	5,174	667				47								4			100	5,000		50				5	65
		28	SR 1811	FROM SR 1615 TO END C&G	*																				5,120							16
		29	SR 1811	FROM END C&G TO PVMT JOINT	*								100	50				4						10,960	10,960		24					34
		30	SR 1103	FROM SR 1137 TO SR 1109	*								100	50				4						28,189	21,950		20					82
		31	SR 1700	FROM NC 177 TO DEAD END	*																			16,280	9,768							52
		32	SR 1530	FROM US 220A TO END	*		270		240					35											240							
TOTAL FOR PROJ NO. 8CR.20771.15						353	44,287	1,982	42,977	667			200	331	12	12	10	8	8	16	2	4	9		301,654	300,292	400	385	12	1	1	85	1,312
						44,640		44,959		667					50					31					601,946					2		1,397	
GRAND TOTAL					1	8,652	114,349	13,617	141,291	2,553	829	1,759	200	1,089	20	12	10	8	8	137	35	93	35	12	321,354	399,292	1,500	1,193	12	1	1	831	2,131
						123,001		154,908		3,382					68					312					720,646					2		2,962	

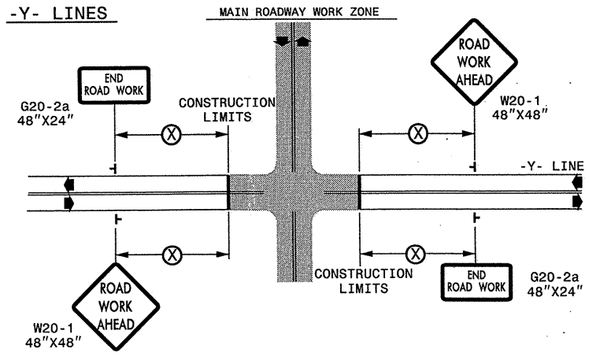
PROJ. REFERENCE NO.	SHEET NO.
8CR.10771.15 & 8CR.20771.15	TCP-1

TWO-WAY UNDIVIDED ** (L-LINES)



POSTED SPEED LIMIT (M.P.H.)	RECOMMENDED MINIMUM SIGN SPACING (X)
≤ 50	500′
≥ 55	1000′

ROADWAYS INTERSECTING ALONG 2 WAY UNDIVIDED WORK ZONE (Y-LINES)



GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4″ X 4″ WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B), MAY BE GALVANIZED STEEL, OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.
- ** TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

LEGEND

- ⊢ STATIONARY SIGN
- ⬅ DIRECTION OF TRAFFIC FLOW

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

DETAIL DRAWING FOR TWO-WAY UNDIVIDED WORK ZONE WARNING SIGNS

SHEET 1 OF 1

APPROVED:_____ DATE:_____

SEAL

DETAIL DRAWING FOR TWO-WAY UNDIVIDED AND URBAN FREEWAYS ADVANCED WORK ZONE WARNING SIGNS

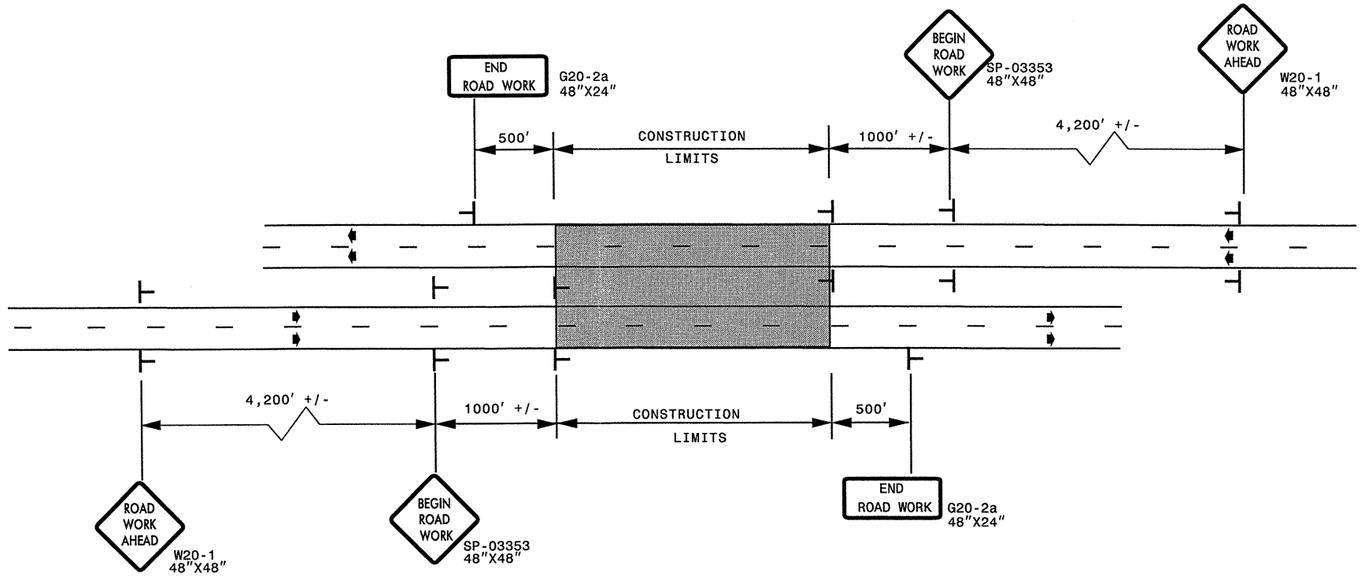
SCALE:	NONE
DATE:	
DWG. BY:	
DESIGN BY:	
REVIEWED BY:	

REVISIONS	
7-98	10/01
10-98	03/04
01/01	11/04
CADD FILE	

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

PROJ. REFERENCE NO.	SHEET NO.
8CR.10771.15 & 8CR.20771.15	TCP-2

DETAIL A

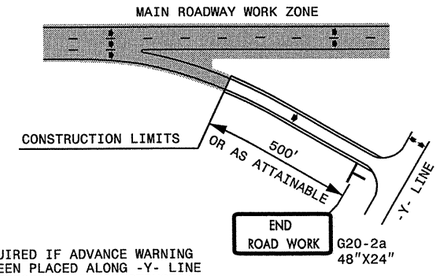


LEGEND
- ⊢ STATIONARY SIGN
- ➧ DIRECTION OF TRAFFIC FLOW

* USE THE "$250 SPEEDING PENALTY" SIGN, SPEED LIMIT SIGN, AND ORANGE PANEL; ONLY WHEN A "$250 SPEEDING PENALTY" ORDINANCE HAS BEEN ISSUED BY THE REGIONAL TRAFFIC ENGINEER.

DETAIL B

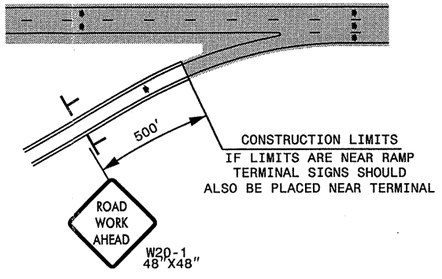
EXIT RAMPS



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.

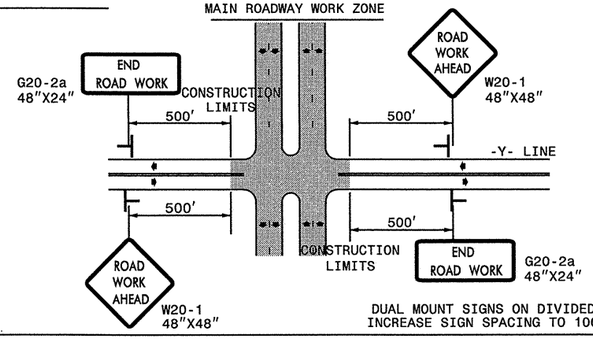
DETAIL C

ENTRANCE RAMPS



DETAIL D

-Y- LINES



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

GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED.
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- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.

APPROVED:_____ DATE:_____

SEAL

ADVANCED WORK ZONE WARNING SIGNS FOR FREEWAYS (4 LANES OR GREATER)

SCALE:	NONE
DATE:	8/03
DWG. BY:	JI
DESIGN BY:	JI
REVIEWED BY:	

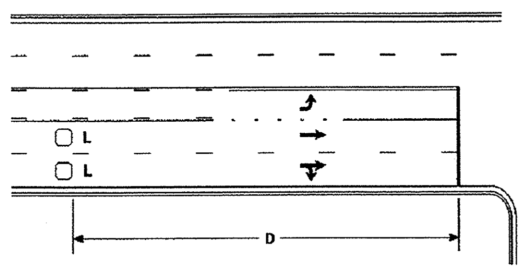
REVISIONS	
03/04	
CADD FILE	

07-DEC-2010 09:33
\\DOT\DFSROOT01\GROUPS-WZTCCC\M&S Division\Share\Resur-facing\20IIResur-facing\20IICentral\20IL_Div08\C202673A-B.8CR.I077LI5x2_Richmond_USIetc_m32\C202673A-B.8CR.I077LI5x2_freeways_4lanes_or_greater_stationary.dgn
bschoenbauer
AT WZTC244737

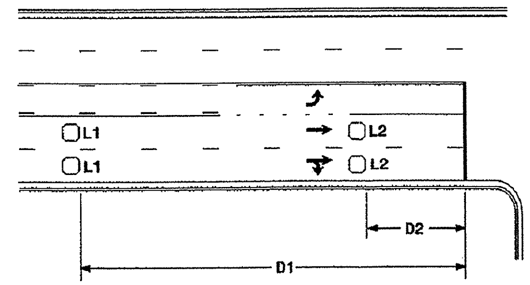
PROJECT REFERENCE NO.	SHEET NO.
8CR.10771.15 &	SIG 1

8CR.20771.15

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



OR



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

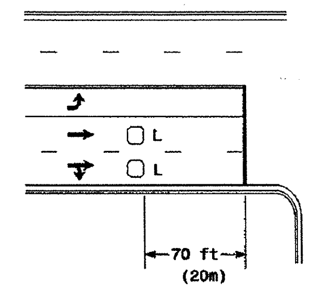
Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

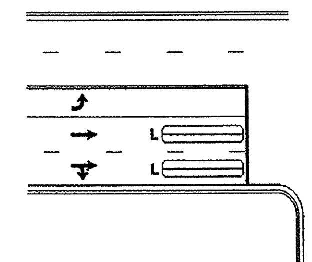
L2 = 6ft X 6ft (1.8m X 1.8m) Wired in series

"Stretch" Operation

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



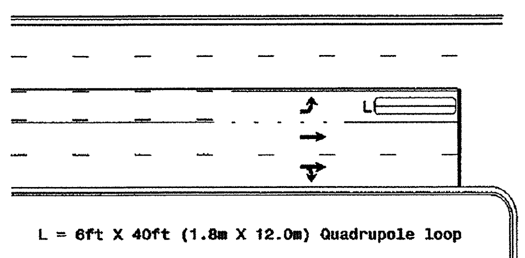
OR



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

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

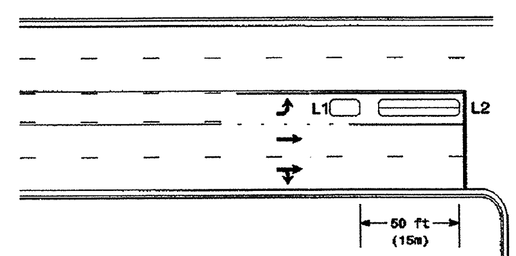
Left Turn Lane Detection



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

Presence Loop Detection

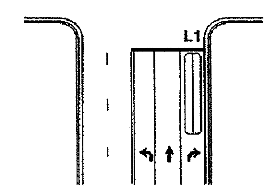
OR



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

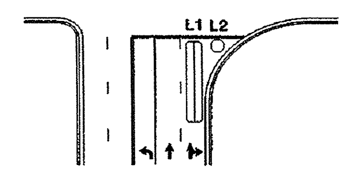
Queue Loop Detection

Right Turn Lane Detection

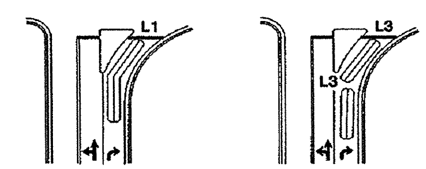


Standard Turn

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

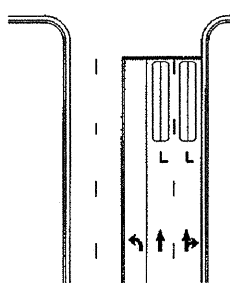


Wide Radius Turn



Channelized Turn

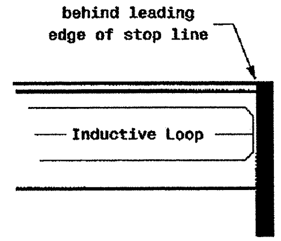
Side Street Detection



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 Offices of:
Traffic Engineering and Safety Systems Branch
State of North Carolina Department of Transportation
Signals and Geometrics Section
122 N. McDowell St., Raleigh, NC 27603

Typical Loop Locations

PLAN DATE: June 2006	REVIEWED BY:
PREPARED BY: P L Alexander	REVIEWED BY:

SCALE
N/A

REVISIONS	INIT.	DATE
Revise pavement markings	[illegible]	[illegible]

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23486 ENGINEER PAMELA ALEXANDER

SIGNATURE DATE 6/6/06

SIG. INVENTORY NO.

PROJECT REFERENCE NO.	SHEET NO.
	Sig.2

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

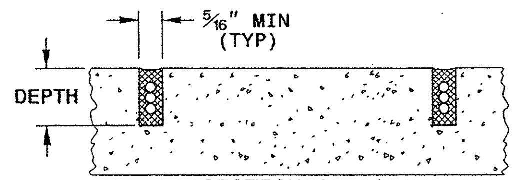
11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

CONVENTIONAL 4-SIDED LOOP

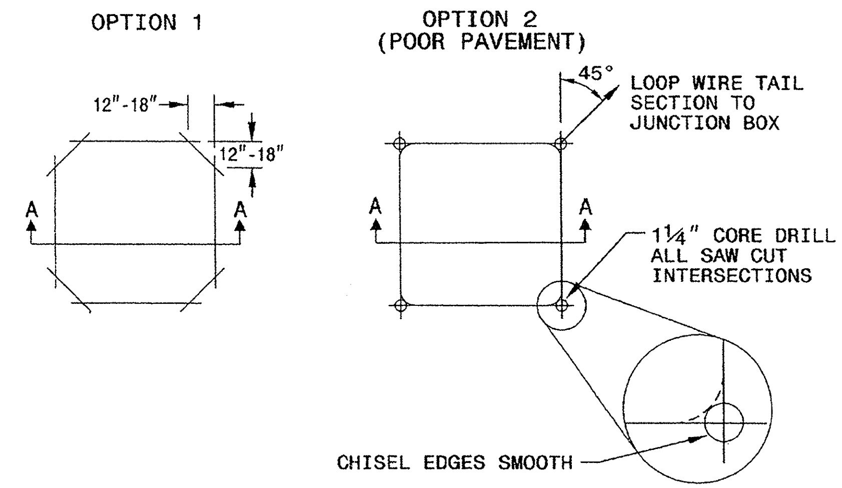
SAW SLOT DEPTH CHART

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

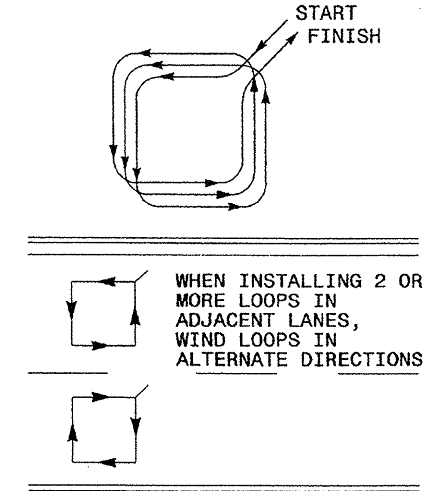


SECTION A - A

SAW CUT OPTIONS

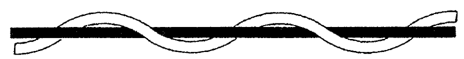


LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE



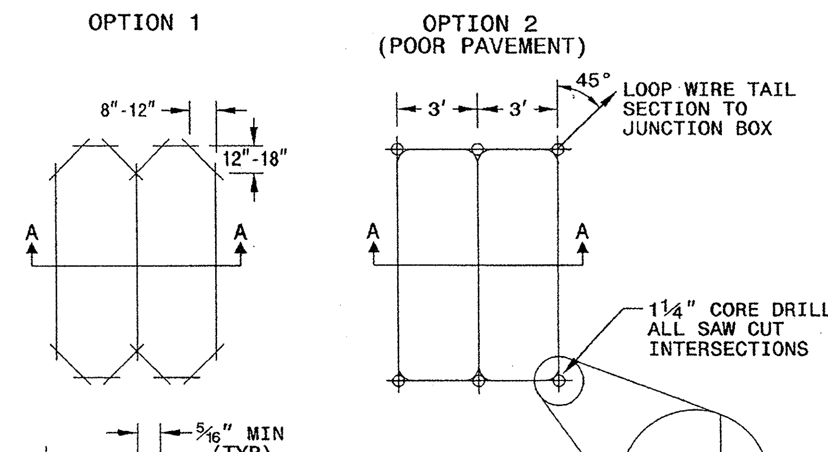
CORRECT WAY TO TWIST WIRE

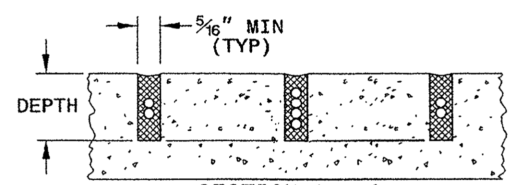
NOTES

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

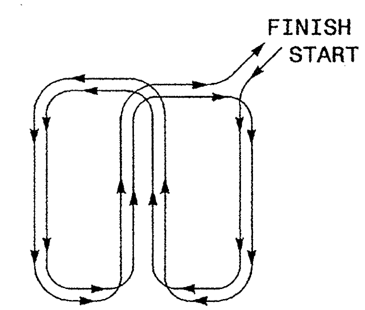




SECTION A - A

DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

LOOP WINDING METHOD



SHEET 1 OF 3
1725D01

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

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 16286 ENGINEER MILTON I. DEAN

SIGNATURE 11/24/08 DATE

24-NOV-2008 09:28
d:\work files\0-standard plate sheets\1725D01_nov2307.dgn
zmlittle

PROJECT REFERENCE NO.	SHEET NO.
	Sig. 3

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

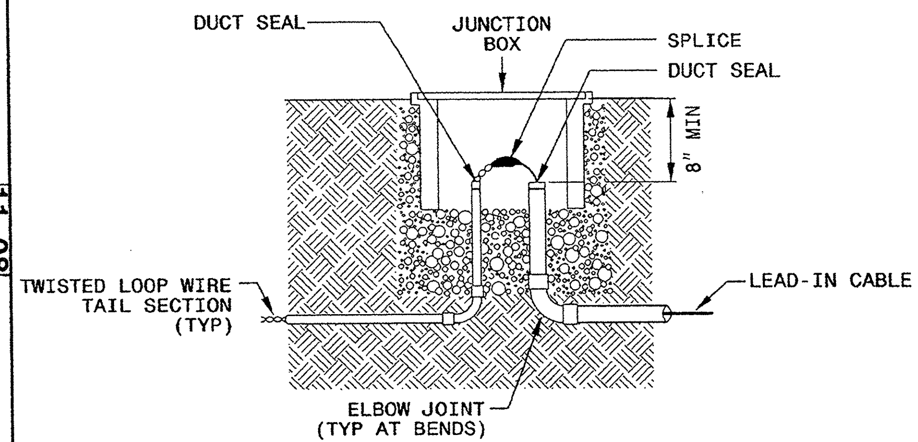
11-08

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

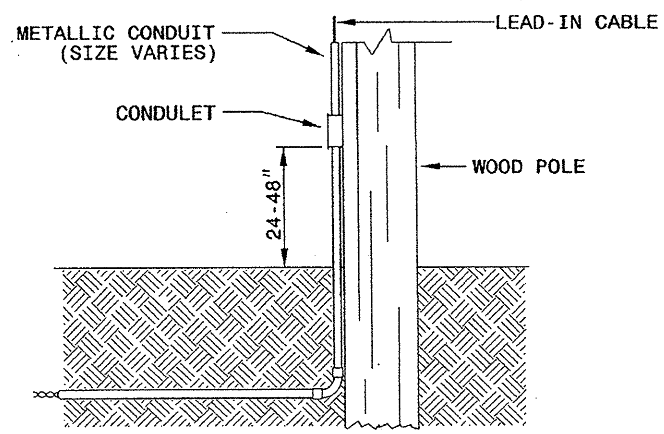
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

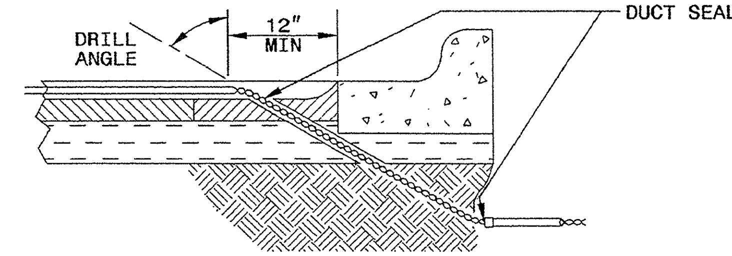


NOTE

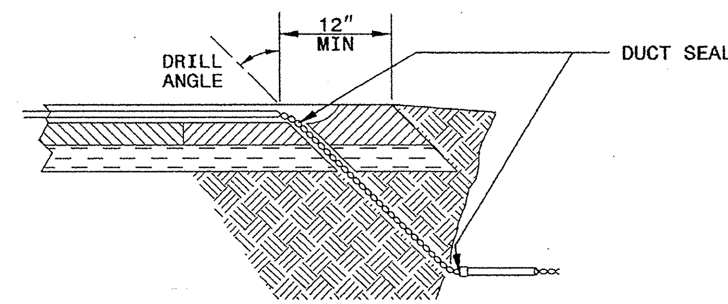
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

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.

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

See Plate for Title

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16286 MILTON J. DEAN

Milton J. Dean 11/24/08
SIGNATURE DATE

PROJECT REFERENCE NO.	SHEET NO.
	Sig. 4

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

11-08

ENGLISH DETAIL DRAWING FOR

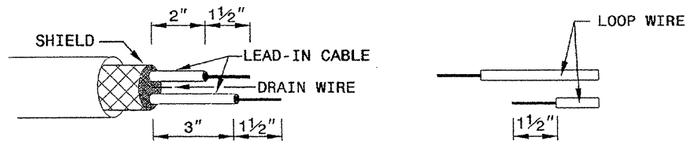
INDUCTIVE DETECTION LOOPS

SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

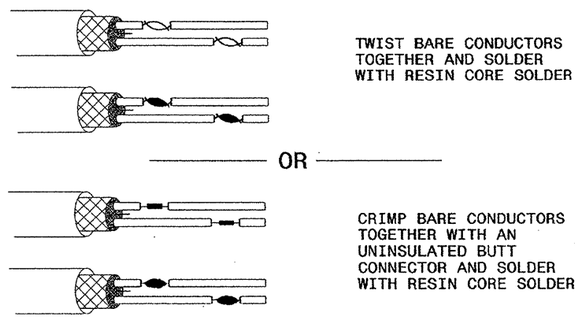
SHEET 3 OF 3

1725D01

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE



STEP 2. CONNECT AND SOLDER



TWIST BARE CONDUCTORS TOGETHER AND SOLDER WITH RESIN CORE SOLDER

OR

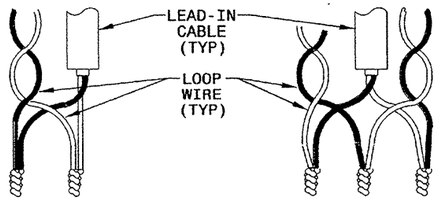
CRIMP BARE CONDUCTORS TOGETHER WITH AN UNINSUTLATED BUTT CONNECTOR AND SOLDER WITH RESIN CORE SOLDER

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

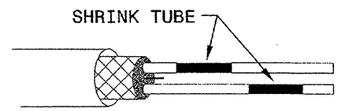
LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

SINGLE CONNECTION

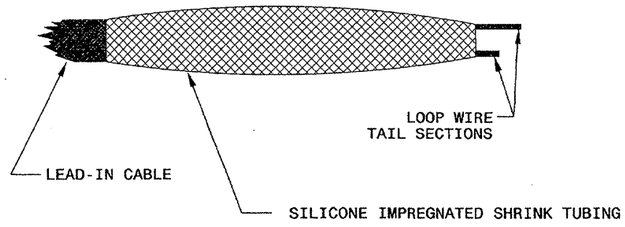
SERIES CONNECTION



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



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

11-08

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:

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SEAL

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Milton I. Dean 11/24/08
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