

C 201986

PROJECT NO.	SHEET NO.	TOTAL NO.
8CR.10771.8, 8CR.20771.8	1	6

SUMMARY OF QUANTITIES

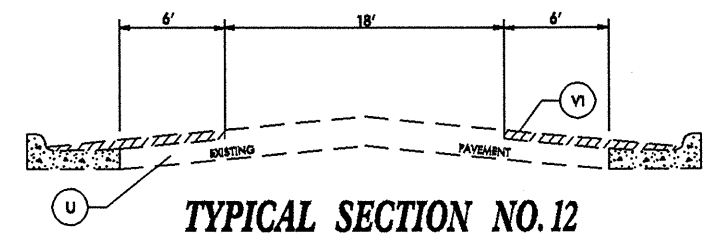
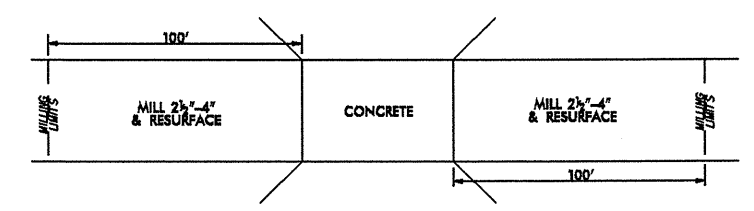
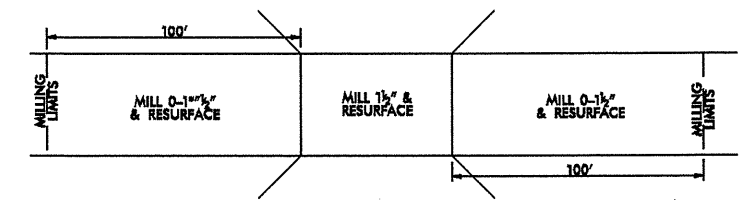
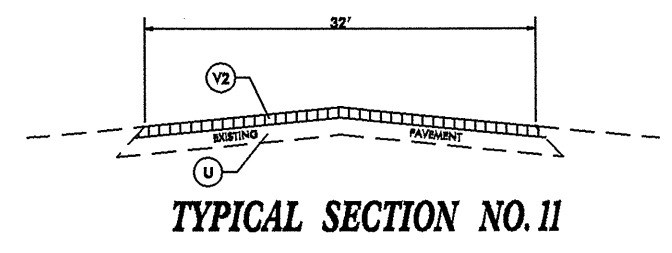
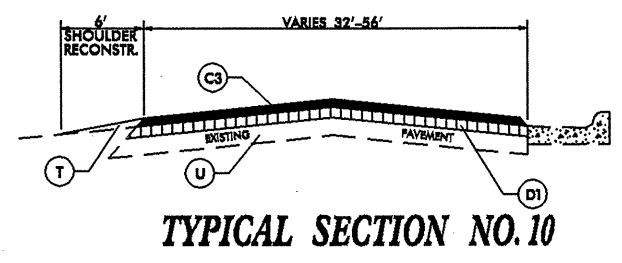
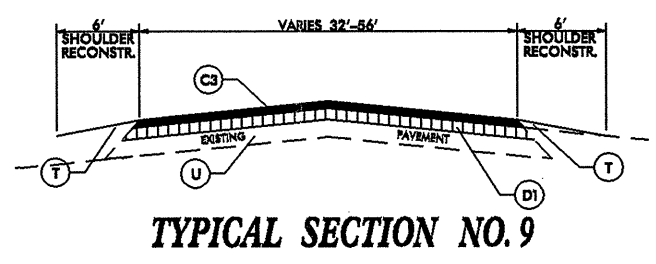
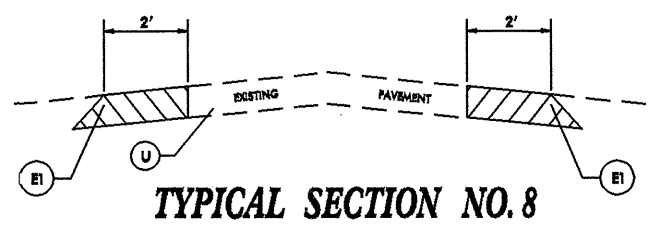
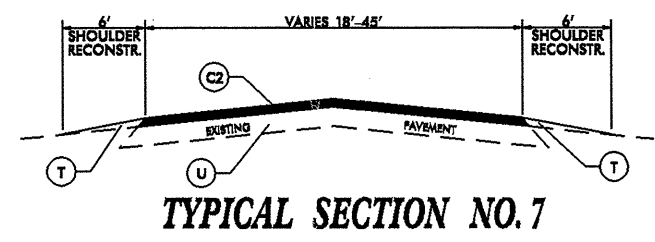
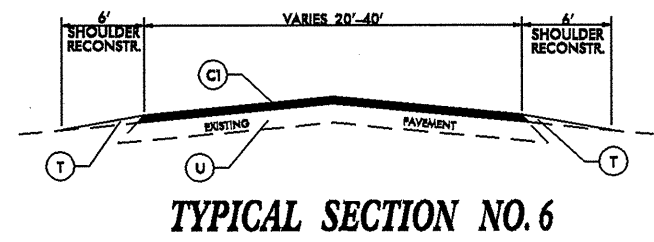
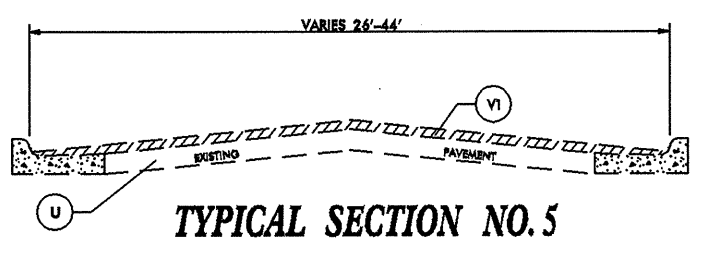
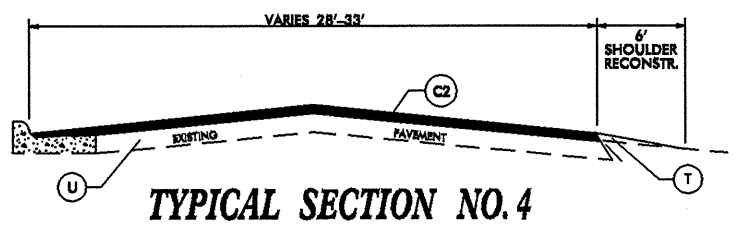
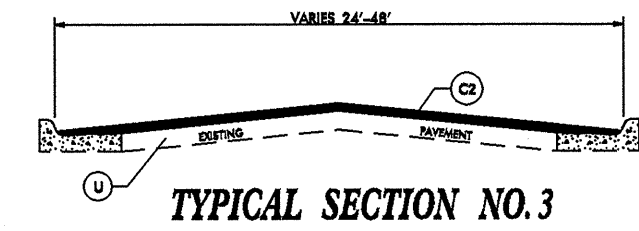
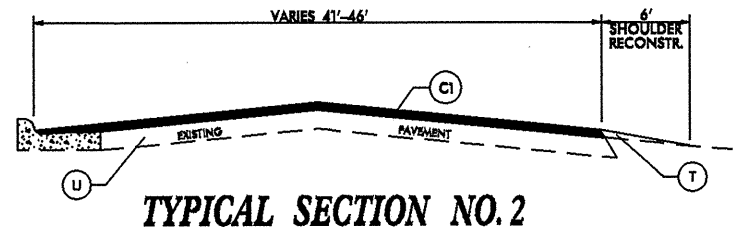
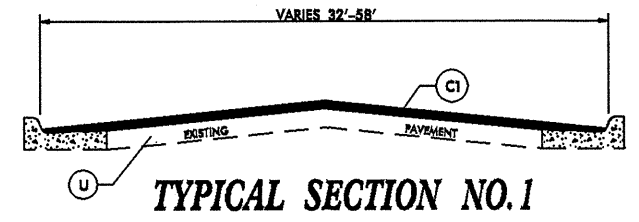
PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	TYP NO.	LENGTH MI.	WIDTH FT.	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	2.5" MILLING SY	0" TO 1 1/2" MILLING SY	2.5" TO 4" MILLING SY	INCIDENTAL MILLING SY	BASE COURSE, B25.0B TONS	INTERMEDIATE COURSE, I19.0C TONS	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, S9.5C TONS	SURFACE COURSE, SF9.5A TON	PG 64-22 PLANT MIX TONS	PG 70-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	2'-6" CURB & GUTTER LF	WHEELCHAIR RAMPS (NEW) EA	WHEELCHAIR RAMPS (RETROFIT) EA	CONVERT CONC. CB TO DI EA	ADJUST MANHOLES EA	ADJUST METER OR VALVE BOX EA	SEED & MULCHING AC	INDUCTIVE LOOP LF		
8CR.10771.8	Richmond		1	US 220 S	FROM SR 1327 TO PVMT JOINT AT SR 1124	9.10.11	2.87	32	125	5.74	53880	720			8115		5,400		381	324	400	30	1						4.20		
			2	US 220 N	FROM PVMT JOINT AT SR 1124 TO SR 1327	9.10.11	2.89	32	125	5.78	54255		720			8171		5,435		384	326	400	20	2						4.20	
			3	US 220 N	FROM SR 1327 TO SR 1336	9.10.11	1.41	32	100	2.82	26470					3990		2,725		188	163	200								2.05	
			4	US 220 S	FROM SR 1336 TO PVMT JOINT AT SR 1301	9.10.11	0.64	32	40	1.28	12015					1810		1,065		85	64	80								0.93	
			5	NC 177	FROM NCL DOBBINS HEIGHTS TO US 1	6	7.13	22	325	14.26				400			10870				652								2	10.37	
			6	NC 73	FROM CJ 0.1 MI WEST OF SR 1461 TO MONTGOMERY CO.	6	2.98	20	150	5.96				200				3145				189								4.33	
TOTAL FOR PROJ NO. 8CR.10771.8						17.92		865	35.84	146620		1440	600		22086	14015	14,625		1,879	877	1,080	50	3	1	10	2	35.19	200.00			
8CR.20771.8	Richmond		7	SR 1648	FROM US 74 BUS. TO SR 1650	1	0.44	42					100			955			57			20					5	5			
			8	SR 1925	FROM US 74 BUS. TO SR 1903	1.6	0.64	32	10	0.06				100			1110			67							6	3	0.05		
			9	SR 1646	FROM US 1 TO PAVEMENT CHANGE	1	0.5	37							100			1000			60				1		2	7	6		
			10	SR 1650	FROM US 74 BUS. TO PAVEMENT JT.	1.2,6	0.23	48	10	0.3					100			575			34									0.20	
			11	SR 1639	FROM NC 177 TO US 74 BUS.	3,5,7	0.7	28	35	1.12			2850							1,045	68						5	3	0.80	200	
			12	SR 1110	FROM SR 1103 TO SR 1109	7	0.75	22	40	1.5					100					975	63						7		1.00		
			13	SR 1939	FROM SR 1903 TO SR 1966	3,7,12	0.54	18	50	0.7			1350							615	40						9	4	0.51		
			14	SR 1960	FROM SR 1903 TO SR 1966	7	0.35	18	35	0.7					100					480	31								0.50		
			15	SR 1453	FROM NC 73 TO PAVEMENT JT. US 220 BYP. PROJECT	7,8	1.28	22	65	2.56						995				1,460	138									1.90	
			16	SR 1453	FROM PAVEMENT JT. US 220 BYP. PROJECT TO SR 1456	7,8	0.42	22	25	0.84					100	325				480	45									0.65	
			17	SR 1624	FROM PAVEMENT JT. TO NC 177	7	1.65	26	85	3.3					100					2,350	153								4	2.40	
			18	SR 1419	FROM US 1 TO ASLINGTON ST.	3,4,7	0.64	23		0.77			950		100					805	52			40	3			8	7	1.10	
			TOTAL FOR PROJ NO. 8CR.20771.8						8.14		355	11.85	0	5150	0	1200	1320	0	3640		8,210	808		40	3	3	8	47	32	9.11	200
GRAND TOTAL						26.06		1220	47.69	146620	5150	1440	1800	1320	22086	17655	14,625	8,210	2,687	877	1,080	110	7	6	10	47	34	35.19	200.00		

PROJECT NO.	SHEET NO.	TOTAL NO.
8CR.10771.8, 8CR.20771.8	2	6

THERMOPLASTIC AND PAINT QUANTITIES

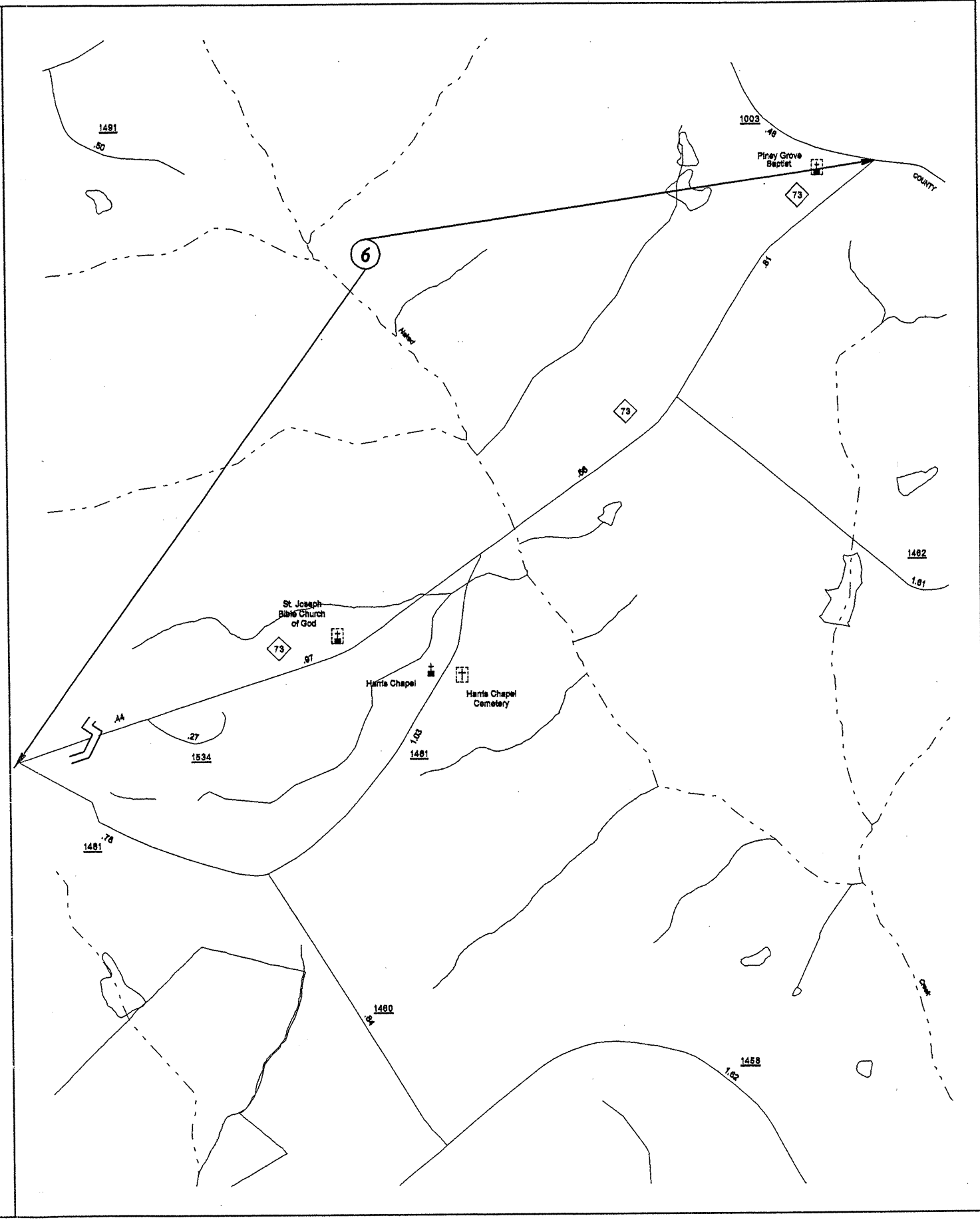
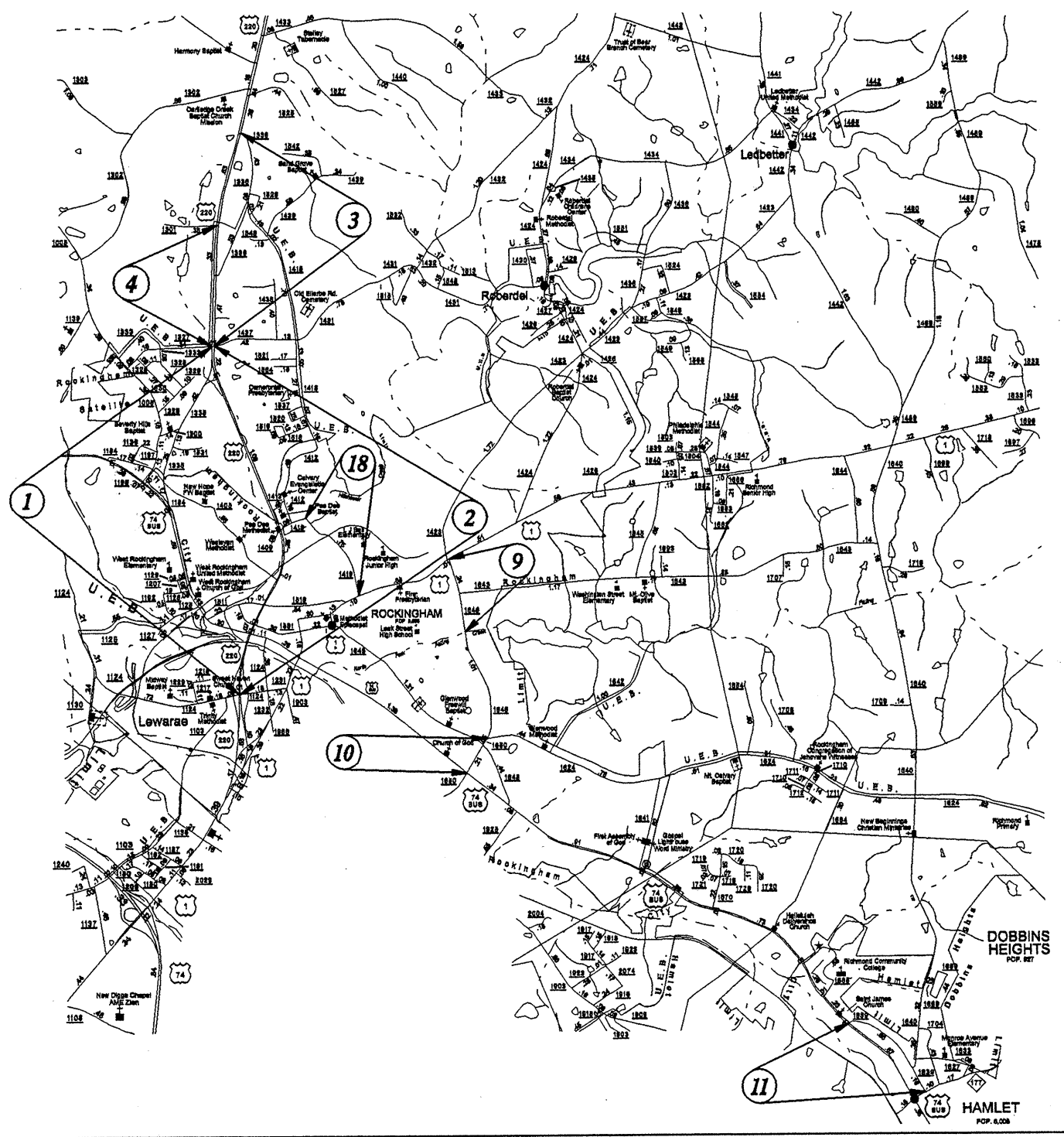
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					4" X 90 M WHITE THERMO	4" X 90 M YELLOW THERMO	4" X 120 M WHITE THERMO	4" X 120 M YELLOW THERMO	8" X 120 M WHITE THERMO	8" X 90 M WHITE THERMO	8" X 90 M YELLOW THERMO	16" X 120 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO RXR 120 M	THERMO MSG ONLY 120 M	THERMO MSG SCHOOL 120 M	THERMO STR ARROW 90 M	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR & RT ARROW 90 M	THERMO STR & LT ARROW 90 M	THERMO LT STR RT ARROW 90 M	4" YELLOW PAINT	4" WHITE PAINT	YELLOW & YELLOW MARKERS	CYAN & RED MARKERS	SNOW PLOWABLE MARKERS					
NO					LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA						
8CR.10771.8	Richmond		1	US 220 S	FROM SR 1327 TO PVMT JOINT AT SR 1124	15,728	15,154	3,788				1,125		4				7	10	122	2	4	2		15,000	18,000			225			
			2	US 220 N	FROM PVMT JOINT AT SR 1124 TO SR 1327	15,837	15,259	3,815				1,600								17	18	4	5	2		15,000	18,000			240		
			3	US 220 N	FROM SR 1327 TO SR 1336	7,727	7,445	1,861													4	2					7,500	9,400			95	
			4	US 220 S	FROM SR 1336 TO PVMT JOINT AT SR 1301	3,507	3,379	845														2						3,400	4,300			45
			5	NC 177	FROM NCL DOBBINS HEIGHTS TO US 1	76,720		800	68,970					100		4					85	6								660	70	
			6	NC 73	FROM CJ 0.1 MI WEST OF SR 1461 TO MONTGOMERY CO.	31,500			25,200																					215		
TOTAL FOR PROJ NO. 8CR.10771.8					151,019	41,237	11,109	94,170			2,725		200	344	8			24	119	14	9	2		40,900	49,700	875	70	605				
					192,256		105,279			2,725				8			168							90,600		945						
8CR.20771.8	Richmond		7	SR 1648	FROM US 74 BUS. TO SR 1650			1,400	4,400				150			8		4	15	6			2	2	2							
			8	SR 1925	FROM US 74 BUS. TO SR 1903									100		4				16	2	2	2			16,500	1,300					
			9	SR 1646	FROM US 1 TO PAVEMENT CHANGE			500	7,000	200											1	16	4	5	3							
			10	SR 1650	FROM US 74 BUS. TO PAVEMENT JT.	1,700		300	3,000												2	7	2	3								
			11	SR 1639	FROM NC 177 TO US 74 BUS.	6,300			8,000				40	30							2	3	1									
			12	SR 1110	FROM SR 1103 TO SR 1109					100																		16,000	16,800	20	15	
			13	SR 1939	FROM SR 1903 TO SR 1966										100		4					2	2					12,000	12,400			
			14	SR 1960	FROM SR 1903 TO SR 1966																							8,000	8,600			
			15	SR 1453	FROM NC 73 TO PAVEMENT JT. US 220 BYP. PROJECT																							22,080	27,600	115		
			16	SR 1453	FROM PAVEMENT JT. US 220 BYP. PROJECT TO SR 1456																							7,200	9,000	40		
			17	SR 1624	FROM PAVEMENT JT. TO NC 177	18,000		700	18,000														6	5	5							
			18	SR 1419	FROM US 1 TO ASLINGTON ST.				150																			13,600	13,600	200	30	
TOTAL FOR PROJ NO. 8CR.20771.8					26,000		2,900	40,400	450	40	570	200	565	8	16	24	17	62	22	10	7	2		13,600	13,600	375	45					
					26,000		43,300	450	610		610		48				120							184,680		420						
GRAND TOTAL					177,019	41,237	14,009	134,570	450	2,765	570	400	909	16	16	24	41	181	36	19	9	2		136,280	139,000	1,250	115	605				
					218,256		148,579			3,335				56			288							275,280		1,365						

RICHMOND COUNTY TYPICAL SECTIONS



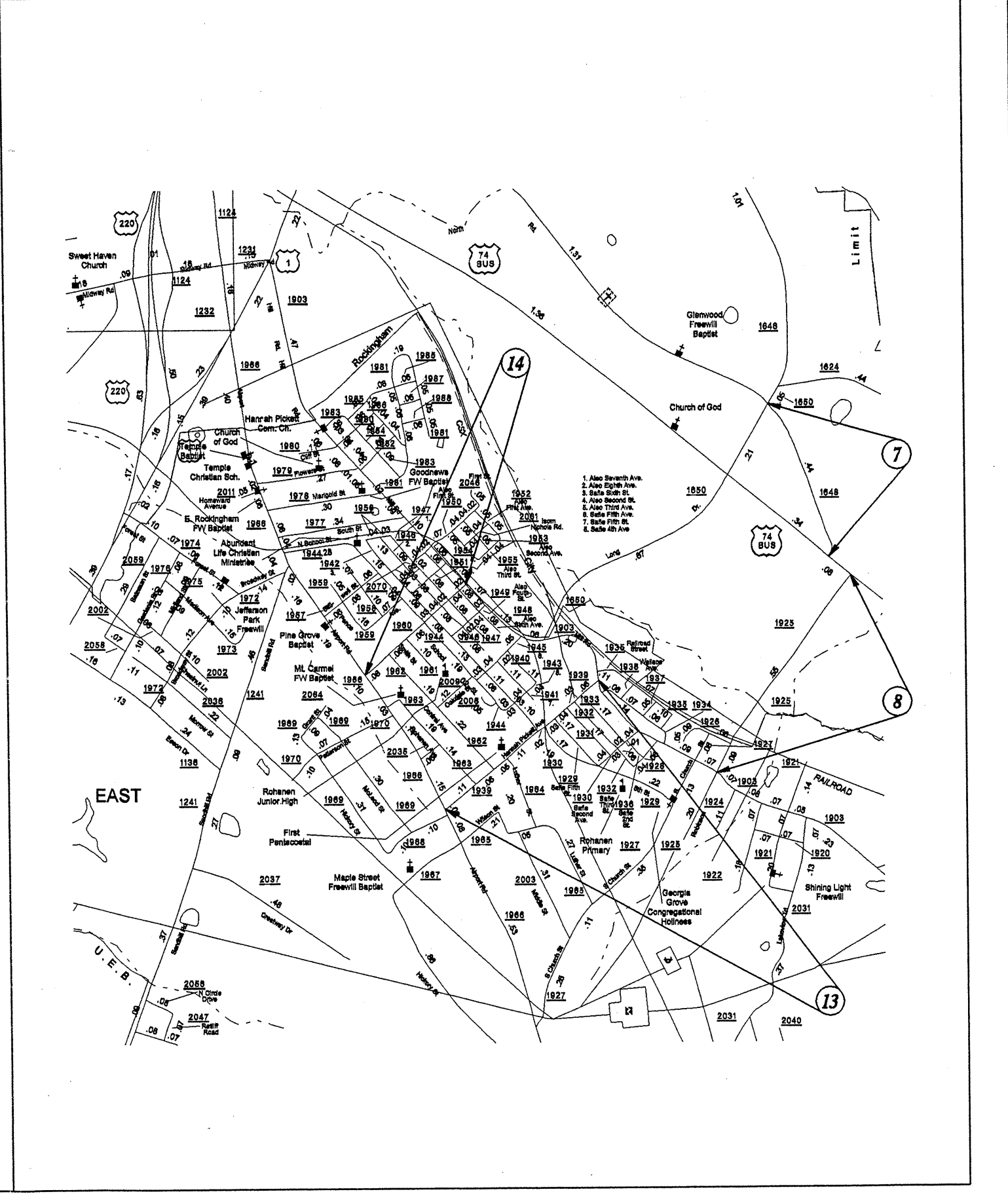
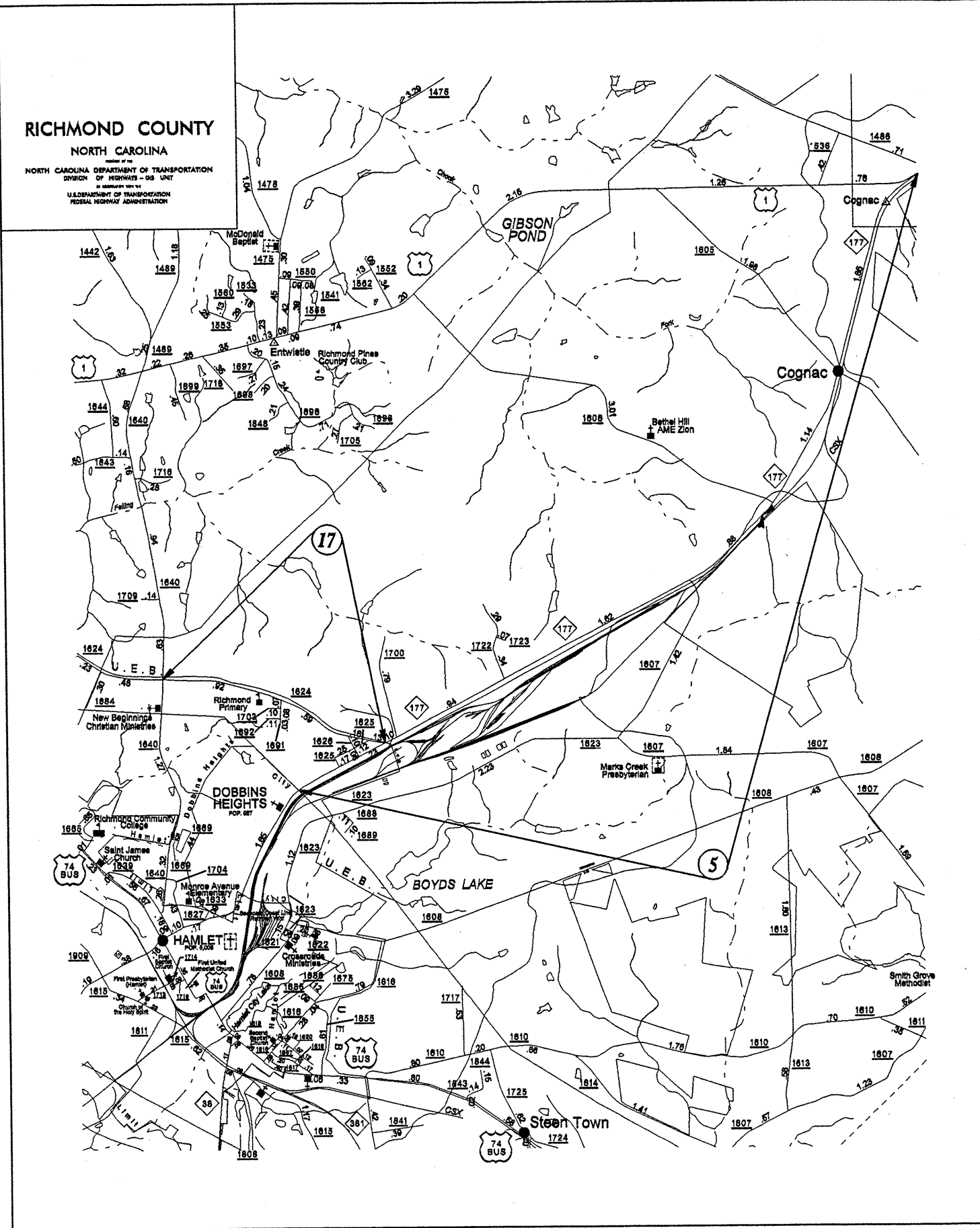
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C3	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	MILLING 0" TO 1 1/2" IN DEPTH.
V2	MILLING 2 1/2" IN DEPTH.

RICHMOND COUNTY
NORTH CAROLINA
Division of the
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Division of HIGHWAYS - ONE UNIT
In accordance with the
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



RICHMOND COUNTY
NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - OS UNIT
in cooperation with
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

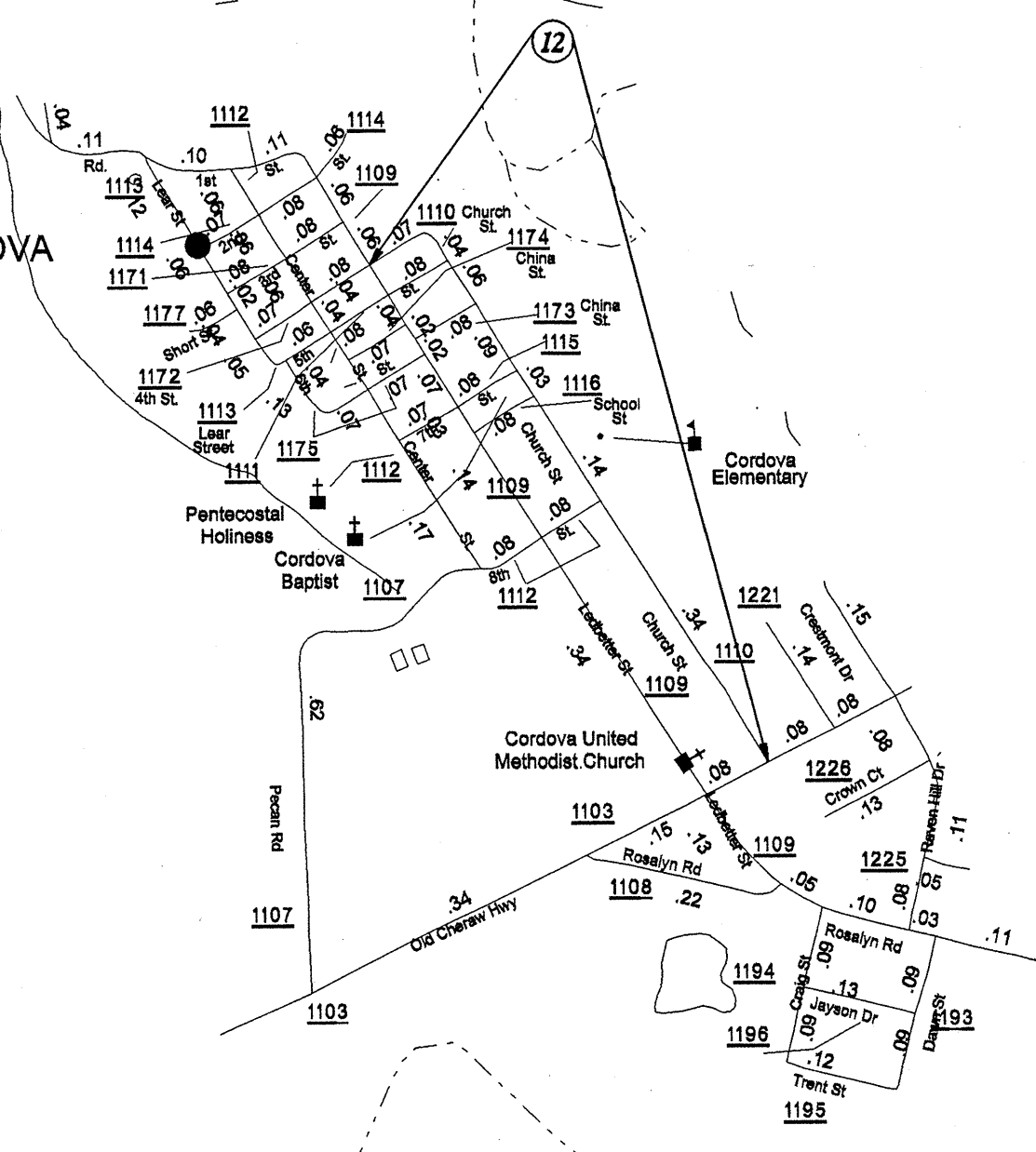


RICHMOND COUNTY

NORTH CAROLINA

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS - GS UNIT
L.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

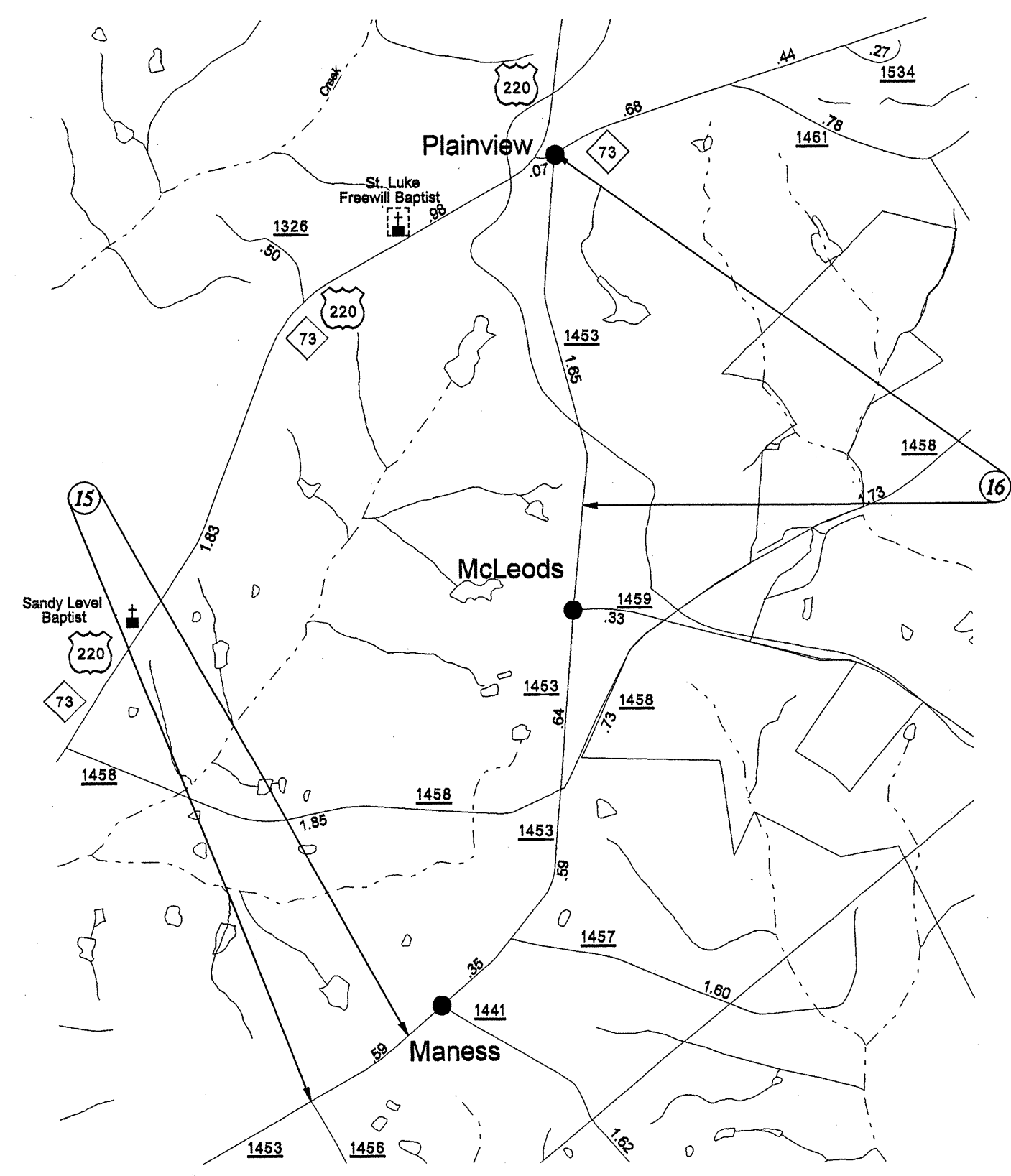
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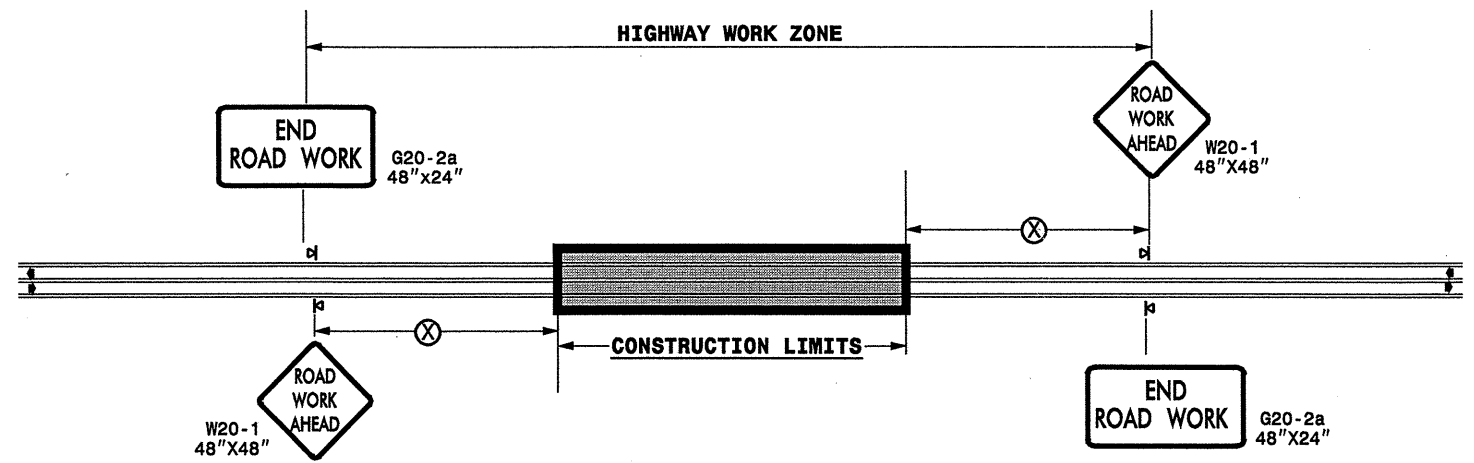
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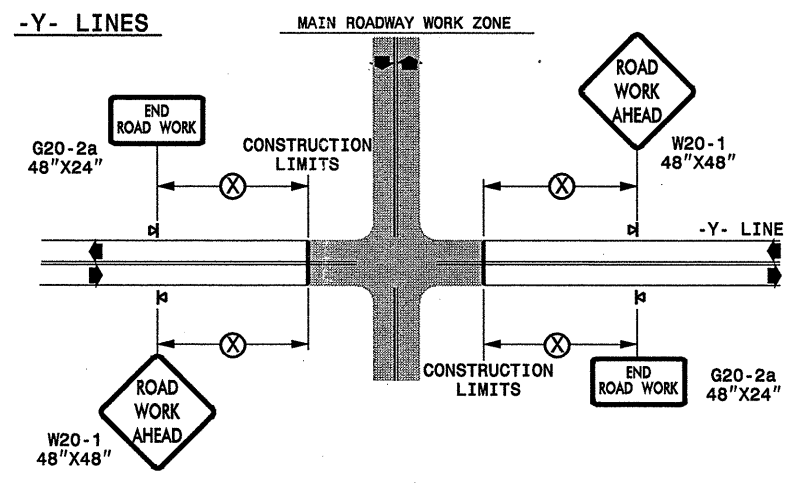
TWO-WAY UNDIVIDED ** (L-LINES)



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

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

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.
- 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 SIGNS, 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 URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

LEGEND

◀ PORTABLE SIGN

◀ DIRECTION OF TRAFFIC FLOW

DETAIL DRAWING
FOR TWO-WAY UNDIVIDED
WORK ZONE WARNING SIGNS

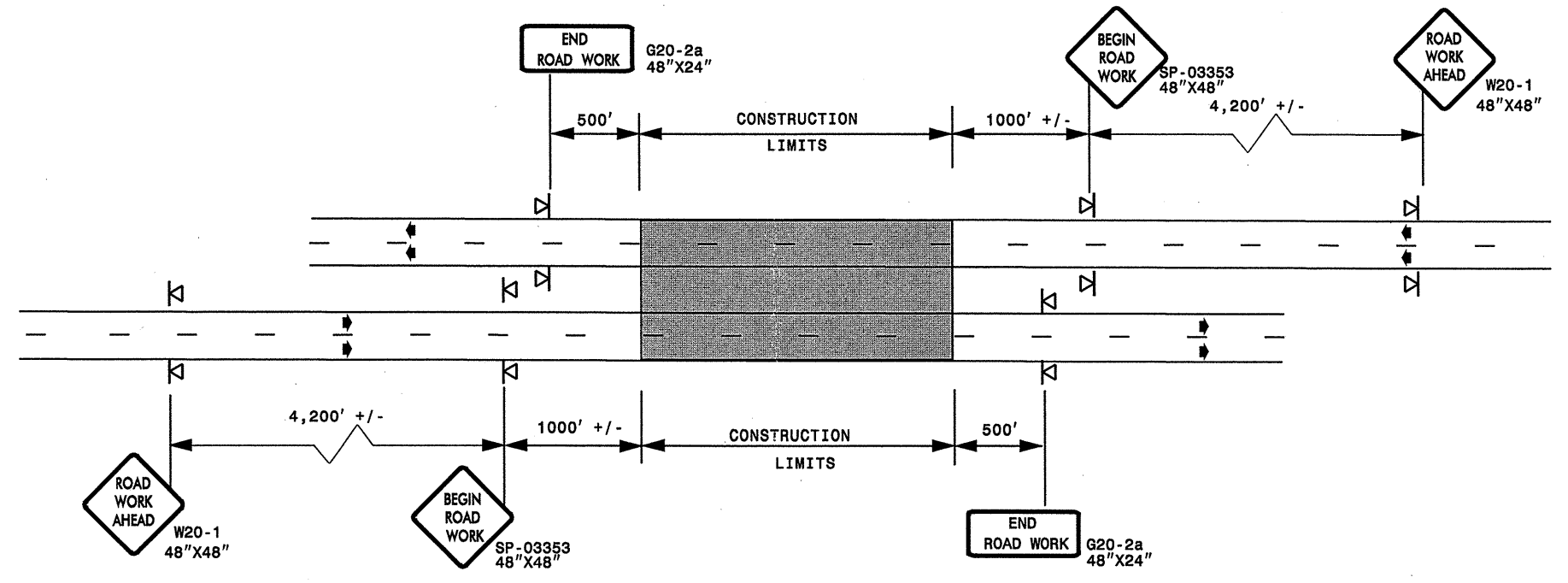
SHEET 1 OF 1

APPROVED: _____ DATE: _____	DETAIL DRAWING FOR TWO-WAY UNDIVIDED 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
SEAL				

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 psevmore AT WZTCCC1502

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

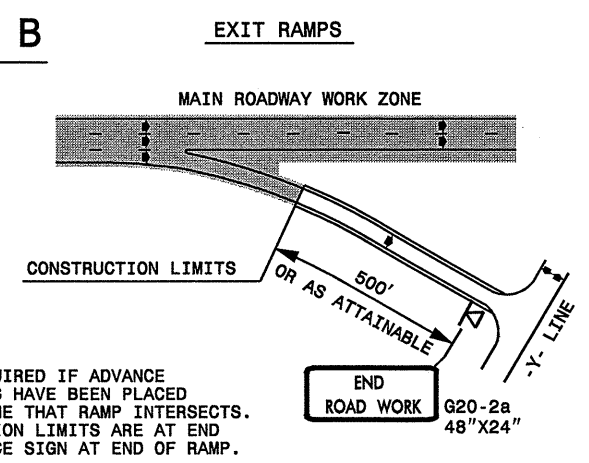
DETAIL A



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

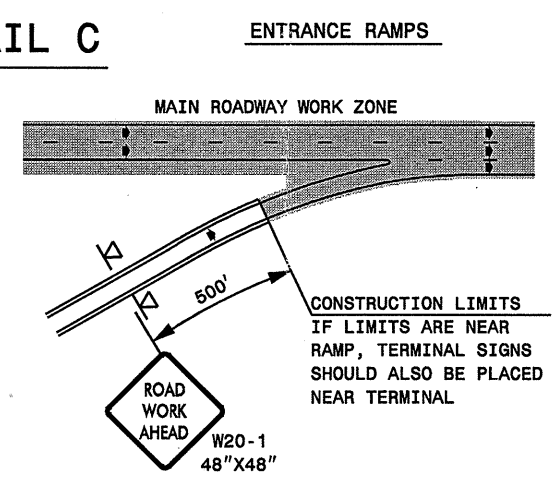
ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)

DETAIL B

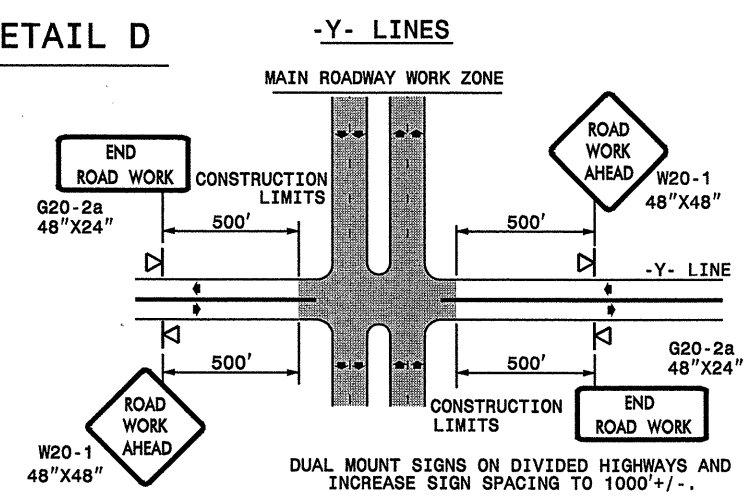


NOTE:
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

DETAIL C



DETAIL D



GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCE WORK ZONE SIGNS.
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- 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

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

APPROVED: _____	DATE: _____	<p align="center">DETAIL DRAWING FOR FREEWAYS WORK ZONE WARNING SIGNS</p>	<p>SCALE: NONE</p> <p>DATE: _____</p> <p>DWG. BY: _____</p> <p>DESIGN BY: _____</p> <p>REVIEWED BY: _____</p>		<p align="center">REVISIONS</p> <table border="1"> <tr> <td>7-98</td> <td>10/01</td> </tr> <tr> <td>10-98</td> <td>03/04</td> </tr> <tr> <td>01/01</td> <td>11/04</td> </tr> </table>	7-98	10/01	10-98	03/04	01/01	11/04
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10-98	03/04										
01/01	11/04										
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 pseymore AT WZT237502

SP 03353

<p>SIGN NUMBER: SP-03353 TYPE: A QUANTITY: 1 SIGN WIDTH: 4'-0" HEIGHT: 4'-0" TOTAL AREA: 16.0 Sq.Ft. BORDER TYPE: FLUSH RECESS: 0.59" WIDTH: 0.75" RADII: 1.38" NO. Z BARBS: N/A LENGTH: N/A</p> <p>USE NOTES: 2, 4 1. Legend and border shall be direct applied Type VII reflective sheeting. 2. Legend and border shall be direct applied non-reflective sheeting. 3. Shields shall be Type VII reflective sheeting on 0.032" (0.8mm) aluminum and demountable. 4. Background shall be Type VII reflective sheeting. 5. Background shall be Type I reflective sheeting. 6. Center arrow(s) vertically on sign. 7. Bottom panel shall be yellow Type III sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:</p>	<p>BACKG COLOR: Fluorescent Orange COPY COLOR: Black</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> <p>DESIGN BY: CL DOWNEY CHECKED BY: CHECKED PROJECT ID: ALL PROJECTS DIV: DIV STD #: W20-1 DATE: Aug 20, 2003</p>	SYMBOL	X	Y	WID	HT																																																								
SYMBOL	X	Y	WID	HT																																																										
<p>LETTER POSITIONS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="10">Letter spacings are to start of next letter</th> <th>Series/Size</th> <th>Text Length</th> </tr> </thead> <tbody> <tr> <td>B</td><td>E</td><td>G</td><td>I</td><td>N</td><td>O</td><td>R</td><td>W</td><td>X</td><td>Y</td> <td>C7</td> <td>21.6</td> </tr> <tr> <td>22.4</td><td>5.3</td><td>4.8</td><td>5.4</td><td>2.5</td><td>3.8</td><td>22.4</td><td></td><td></td><td></td> <td>C7</td> <td>19.6</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>C7</td> <td>21.2</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Spacing Factor is 1 unless specified otherwise FILENAME: SPEC19A.X NORTH CAROLINA D.O.T. SIGN DETAIL</p>			Letter spacings are to start of next letter										Series/Size	Text Length	B	E	G	I	N	O	R	W	X	Y	C7	21.6	22.4	5.3	4.8	5.4	2.5	3.8	22.4				C7	19.6											C7	21.2												
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										C7	21.2																																																			

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

DETAIL DRAWING FOR
WORK ZONE SIGNS
BEGIN ROAD WORK

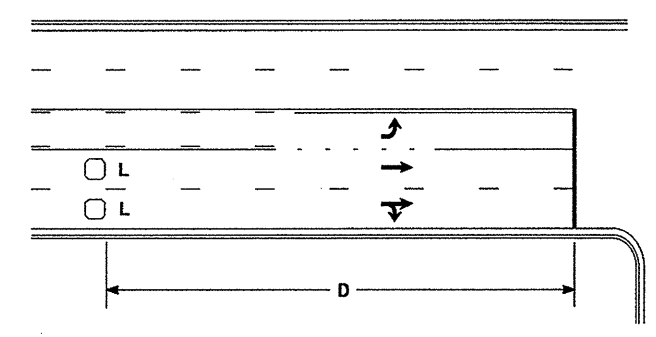
GENERAL NOTES FOR SIGN SP-03353 "BEGIN ROAD WORK"

- SIGN SP-03353 "BEGIN ROAD WORK" ONLY APPLIES TO FULL CONTROL AND PARTIAL CONTROL OF ACCESS ROADWAYS
- WHEN USED, INSTALL SIGN SP-03353 "BEGIN ROAD WORK" ACCORDING TO DETAIL FOR FREEWAY WORK ZONE SIGNS

APPROVED: _____	DATE: _____	DETAIL DRAWING FOR ADVANCED WORK ZONE WARNING SIGN DESIGNS							
	SCALE: NONE								
	DATE: 08/03								
	DWG. BY: _____								
	DESIGN BY: _____								
REVIEWED BY: _____		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">REVISIONS</th> </tr> <tr> <td style="width: 50%;">04/04</td> <td style="width: 50%;"></td> </tr> <tr> <td>11/04</td> <td></td> </tr> </table>		REVISIONS		04/04		11/04	
REVISIONS									
04/04									
11/04									

03-DEC-2007 18:30 \\DOT\DFSR001\GROUPS-WZTCCC\designgroup4\resurfacing\resurfacing2007\div08\c201986\8cr107718etc\c201986\c201986_richmond_us220etc\C201986_8CR107718etc_SignDesignsJuly2006.dgn pseymore AT WZTCCC1502

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

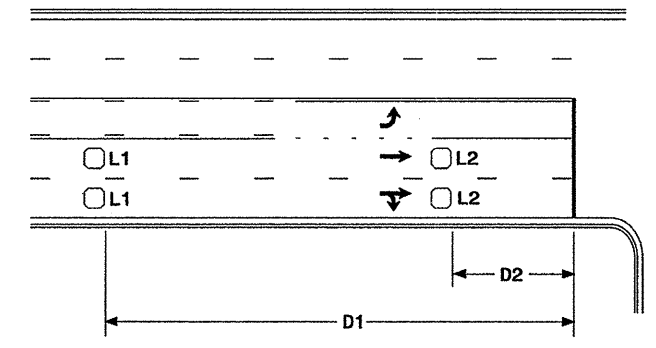


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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



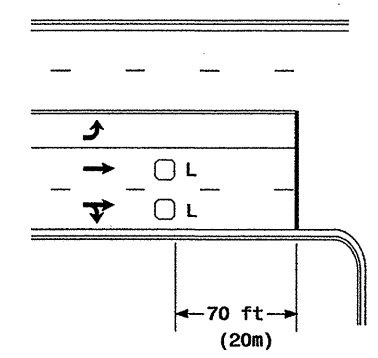
Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

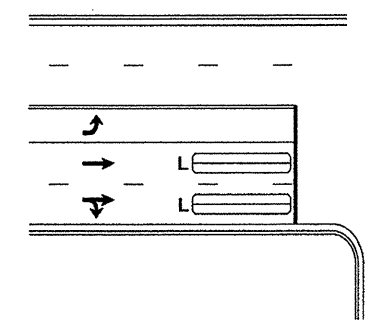
Low Speed Detection [≤35 mph (56 km/hr)]

8CR.10771.8 & 8CR.20771.8



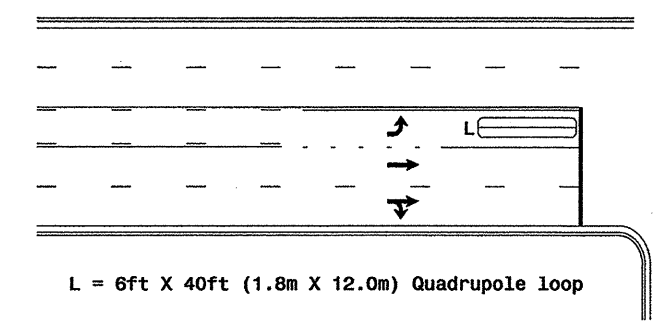
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



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

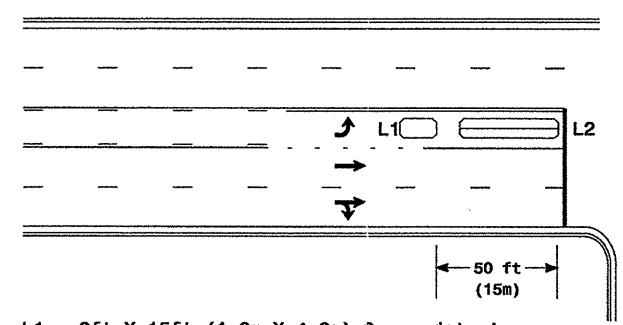
Left Turn Lane Detection



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

Presence Loop Detection

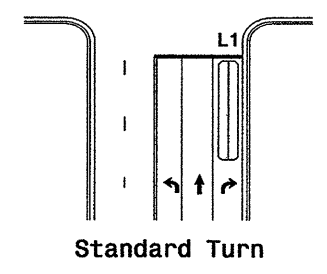
OR



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

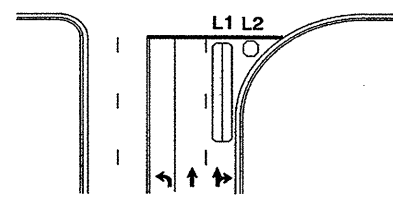
Queue Loop Detection

Right Turn Lane Detection

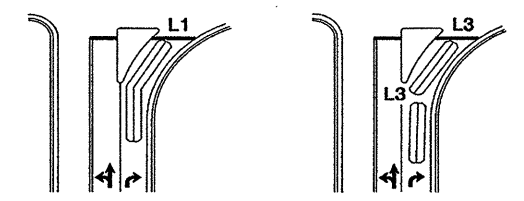


Standard Turn

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

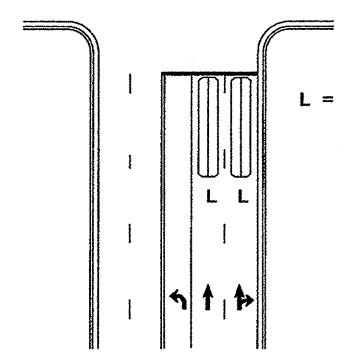


Wide Radius Turn



Channelized Turn

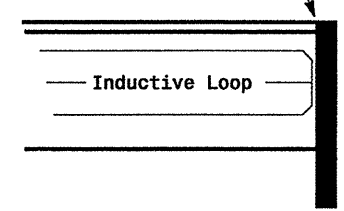
Side Street Detection



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

Typical Loop Locations

PLAN DATE: June 2006	REVIEWED BY:
PREPARED BY: P. L. Alexander	REVIEWED BY:
SCALE: N/A	SIGNATURE: [Signature]
DATE: 12/11/06	DATE: 12/11/06

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DIVISION OF HIGHWAYS
RALEIGH, N.C.

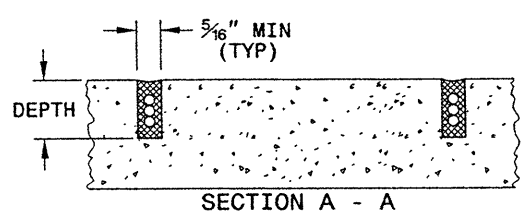
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

SHEET 1 OF 3
1725D01

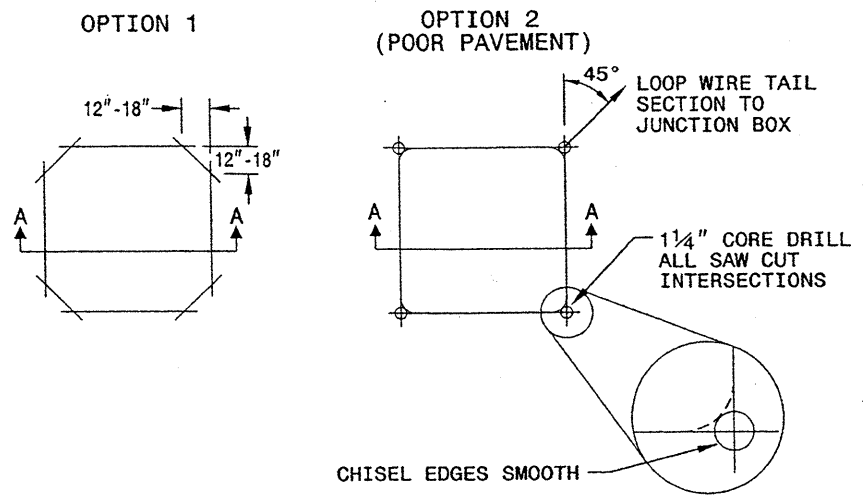
SAW SLOT DEPTH CHART

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

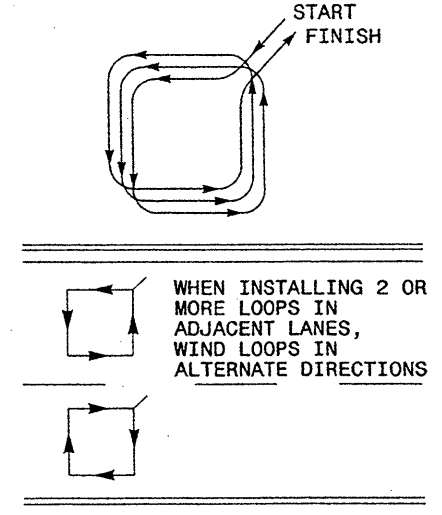


CONVENTIONAL 4-SIDED LOOP

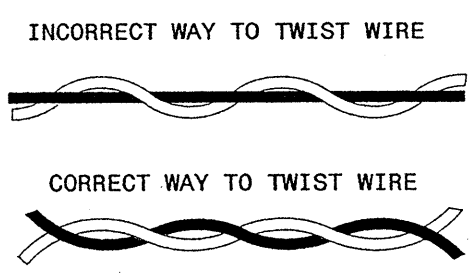
SAW CUT OPTIONS



LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

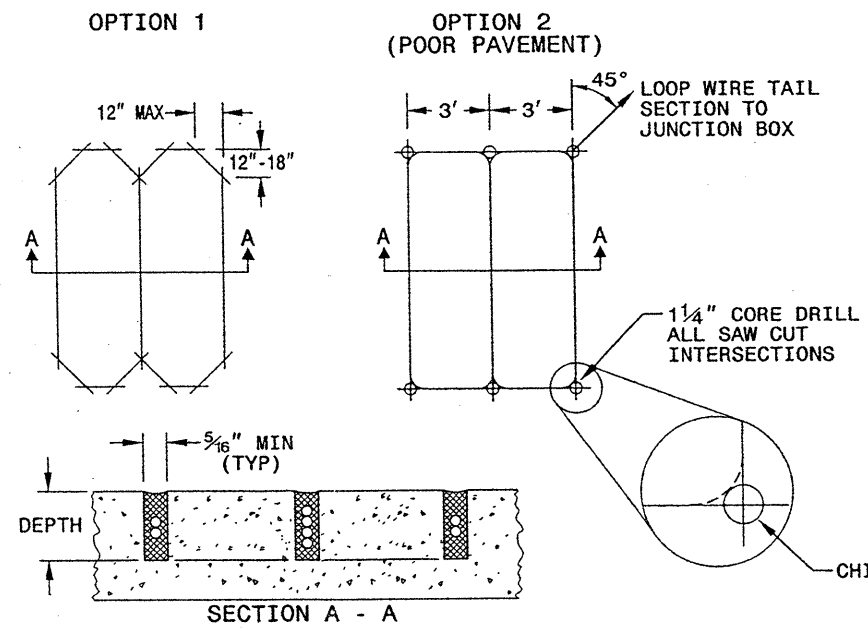


NOTES

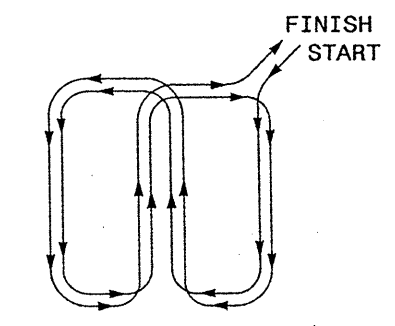
1. OVERLAP SAW CUTS AT CORNERS AND INTERSECTION POINTS TO ENSURE UNIFORM SAW SLOT DEPTH.
2. MAINTAIN 12" SPACING BETWEEN LOOP WIRE TAIL SECTIONS.
3. WIRE LOOPS CONNECTED TO THE SAME DETECTOR CHANNEL IN SERIES.
4. LOCATE LOOPS IN CENTER OF LANES UNLESS OTHERWISE SHOWN ON PLANS OR APPROVED BY ENGINEER.

QUADRUPOLE LOOP

SAW CUT OPTIONS



LOOP WINDING METHOD



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

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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
9/5/07
SIGNATURE DATE

05-SEP-2007 14:00
c:\pwworking\mdean\1725d01.dwg
User: mdean
Title: 1725D01

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

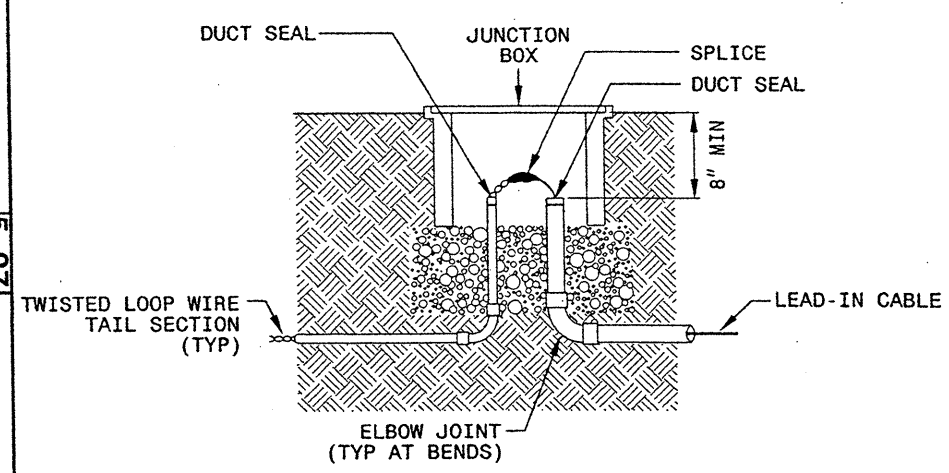
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

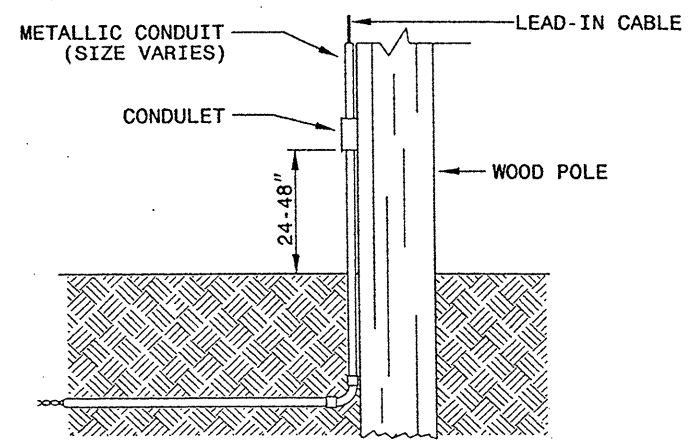
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



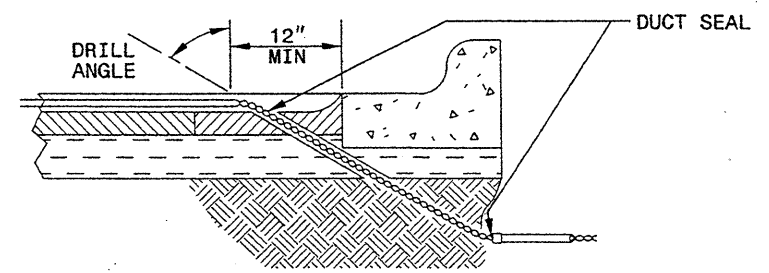
LOOP WIRE AT POLE



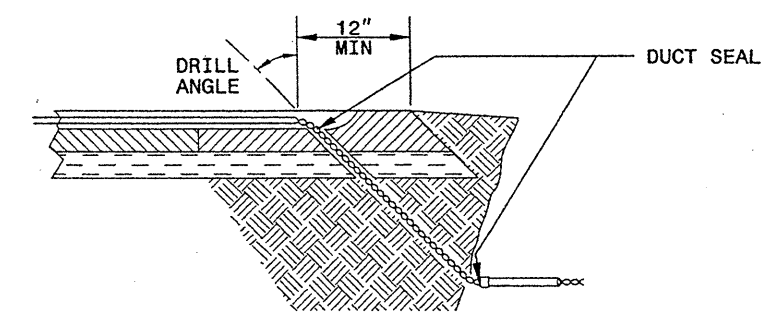
NOTE
SPlice ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

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.

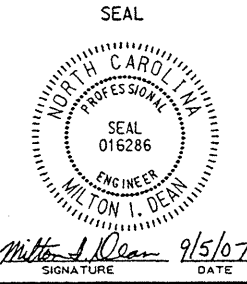
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

SHEET 2 OF 3
1725D01

See Plate for Title



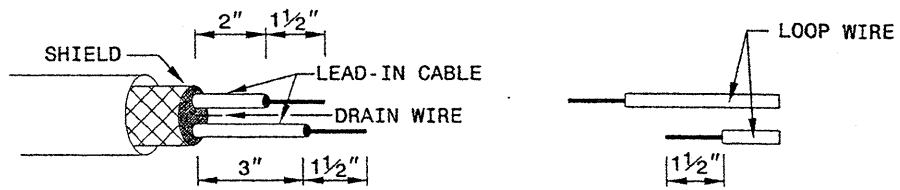
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RALEIGH, N.C.

5-07

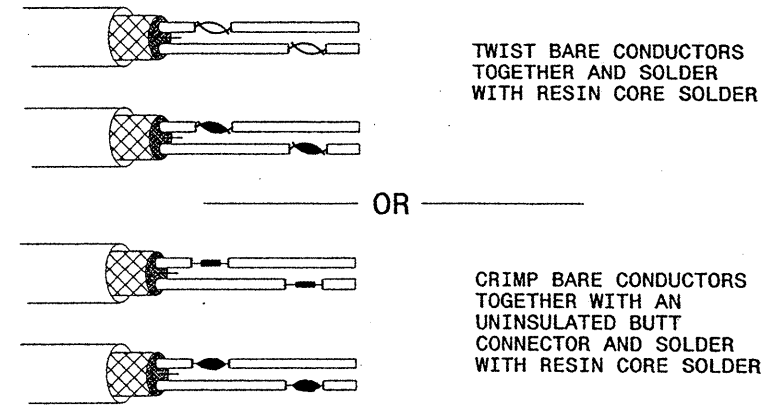
ENGLISH DETAIL DRAWING FOR
INDUCTION DETECTION LOOPS
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
1725D01

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE

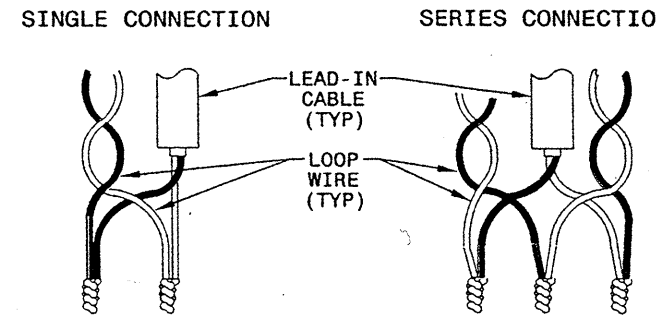


STEP 2. CONNECT AND SOLDER

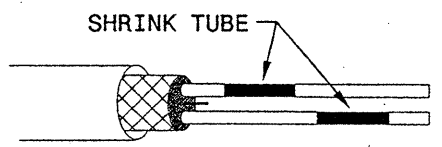


BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

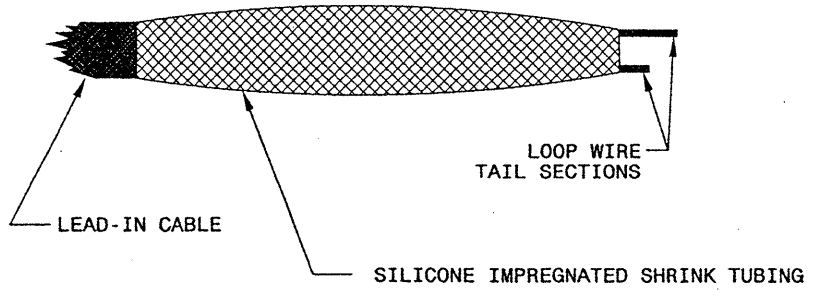
LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



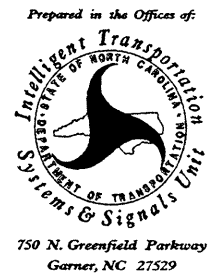
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RALEIGH, N.C.

5-07

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

SHEET 3 OF 3
1725D01

See Plate for Title



750 N. Greenfield Parkway
Garner, NC 27529



Milton I. Dean 9/5/07
SIGNATURE DATE