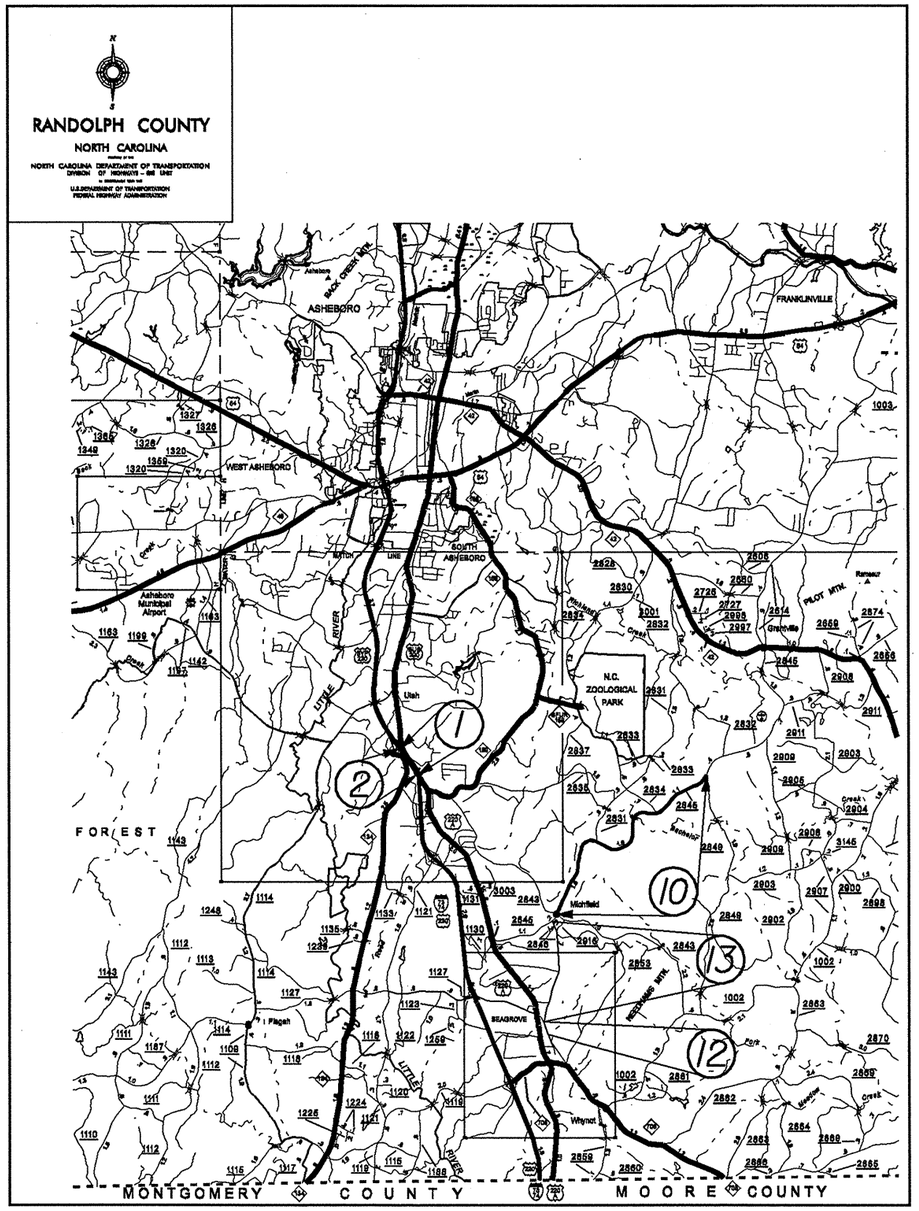
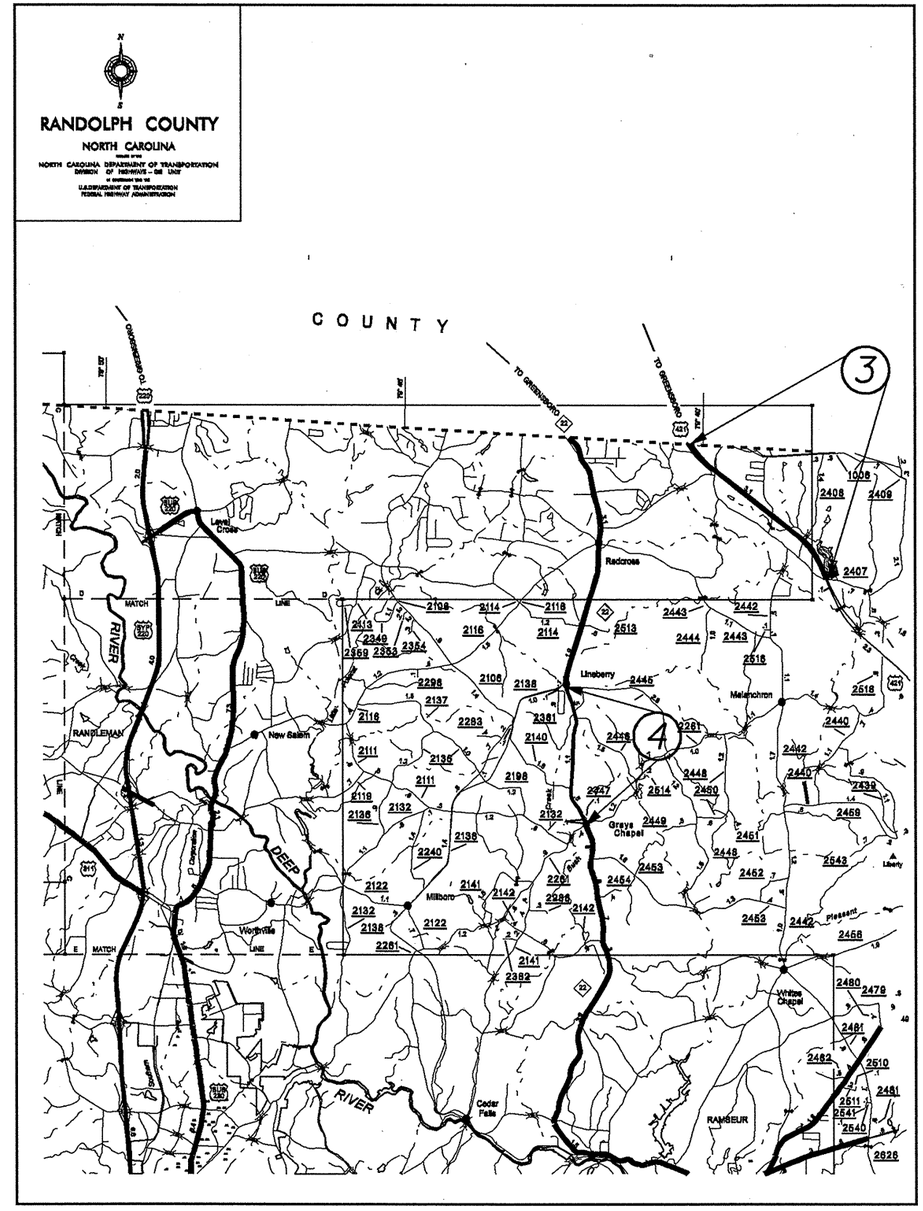
WBS ELEMENT	SHEET NO.
8CR.10761.12, 8CR.20761.12	1

MAPS #1, #2, #10, #12, #13



MAPS #3 & #4



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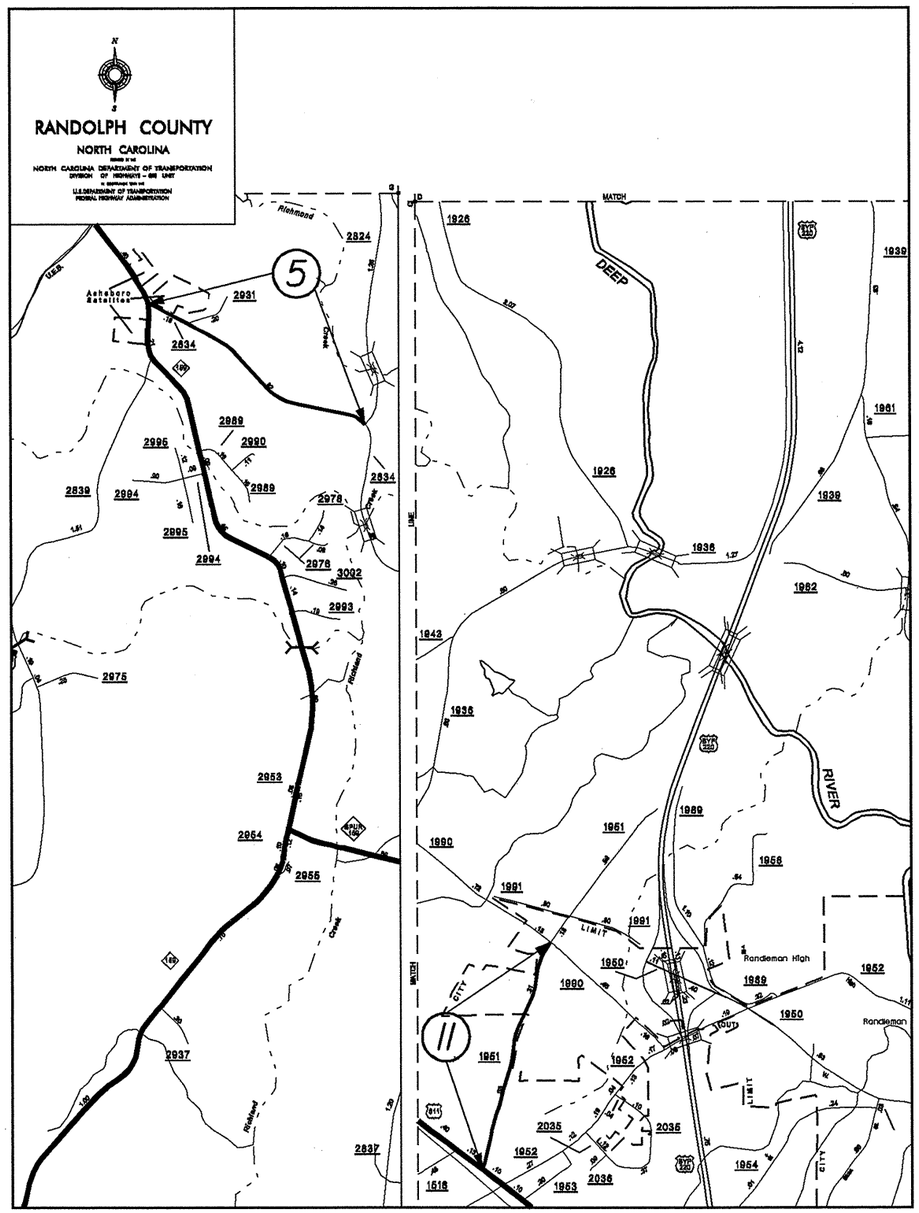
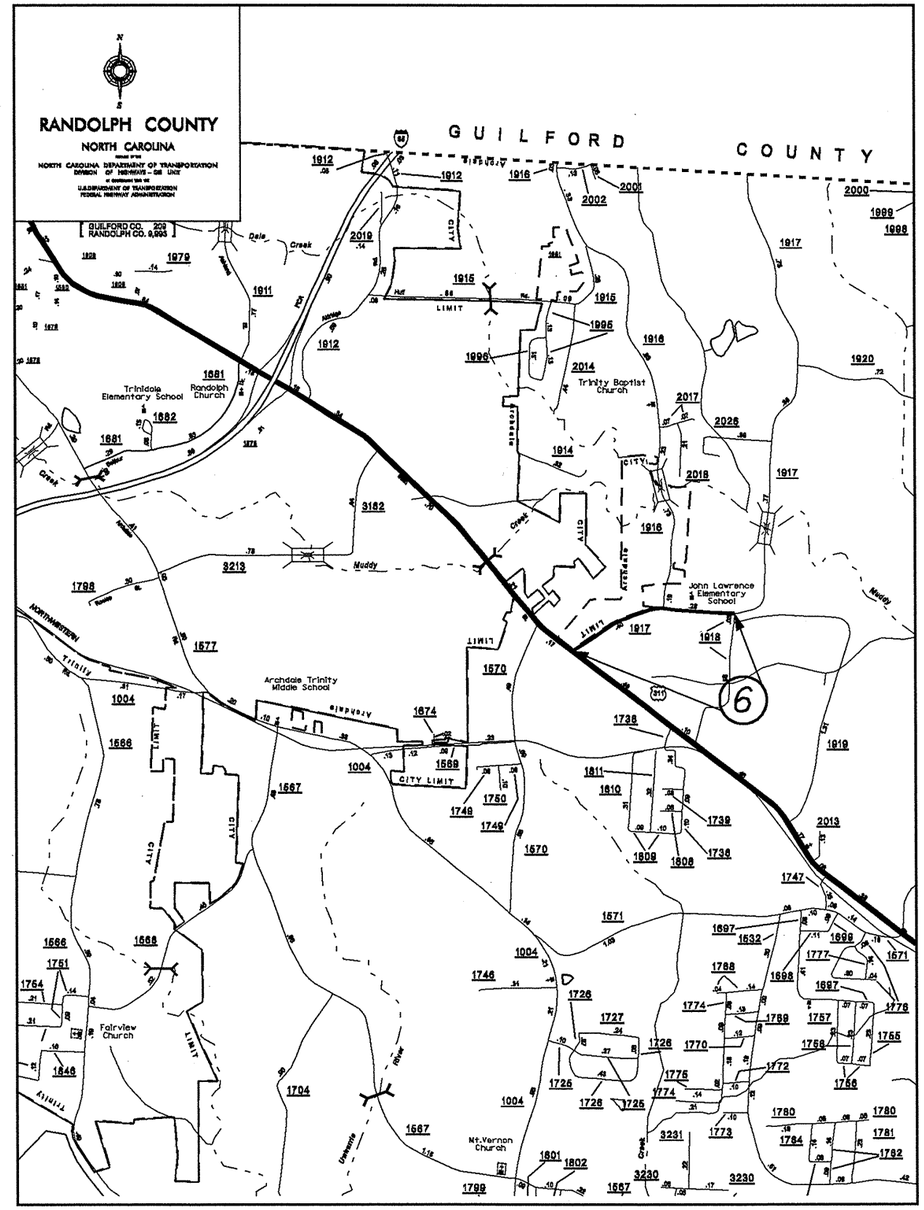
WBS ELEMENT	SHEET NO.
8CR.10761.12, 8CR.20761.12	2

MAPS #5 & #11



MAP #6



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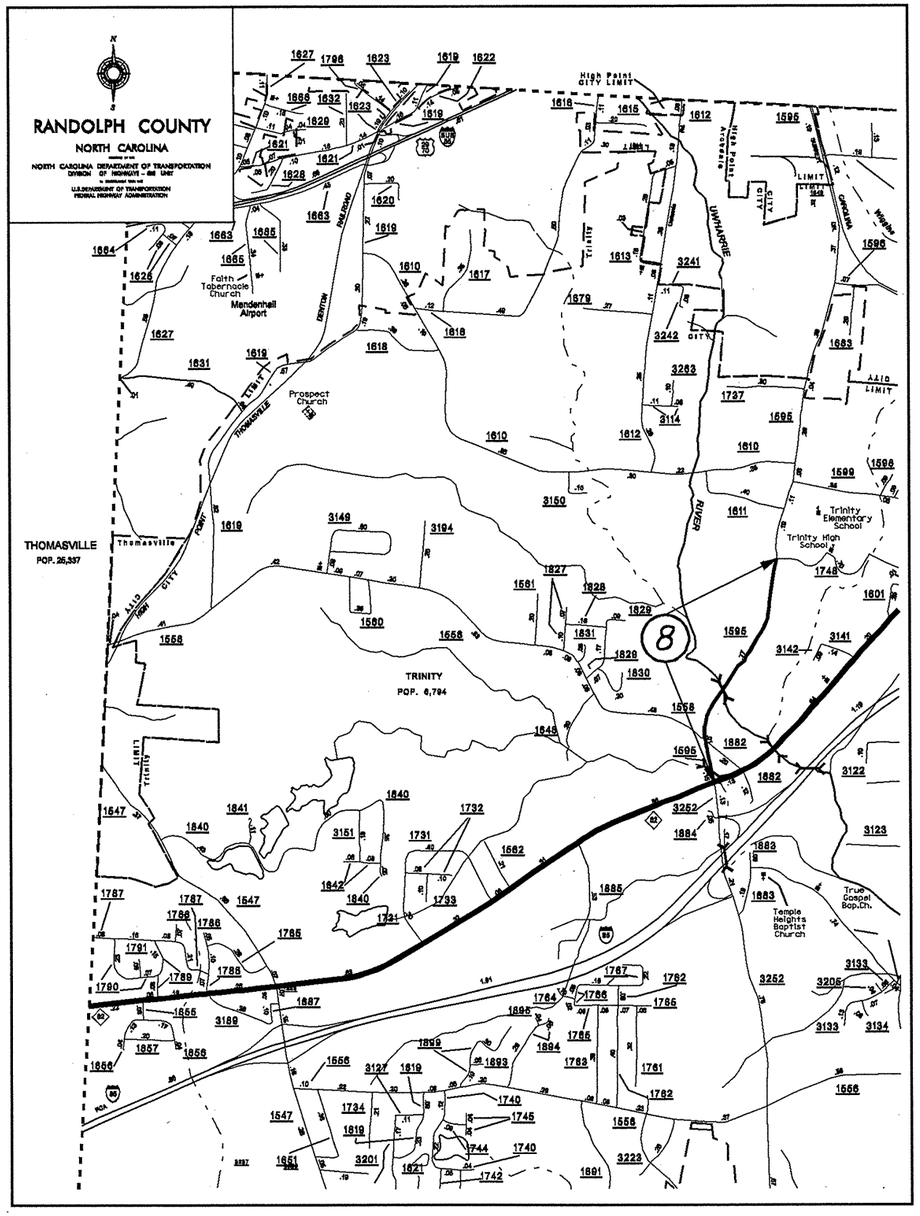
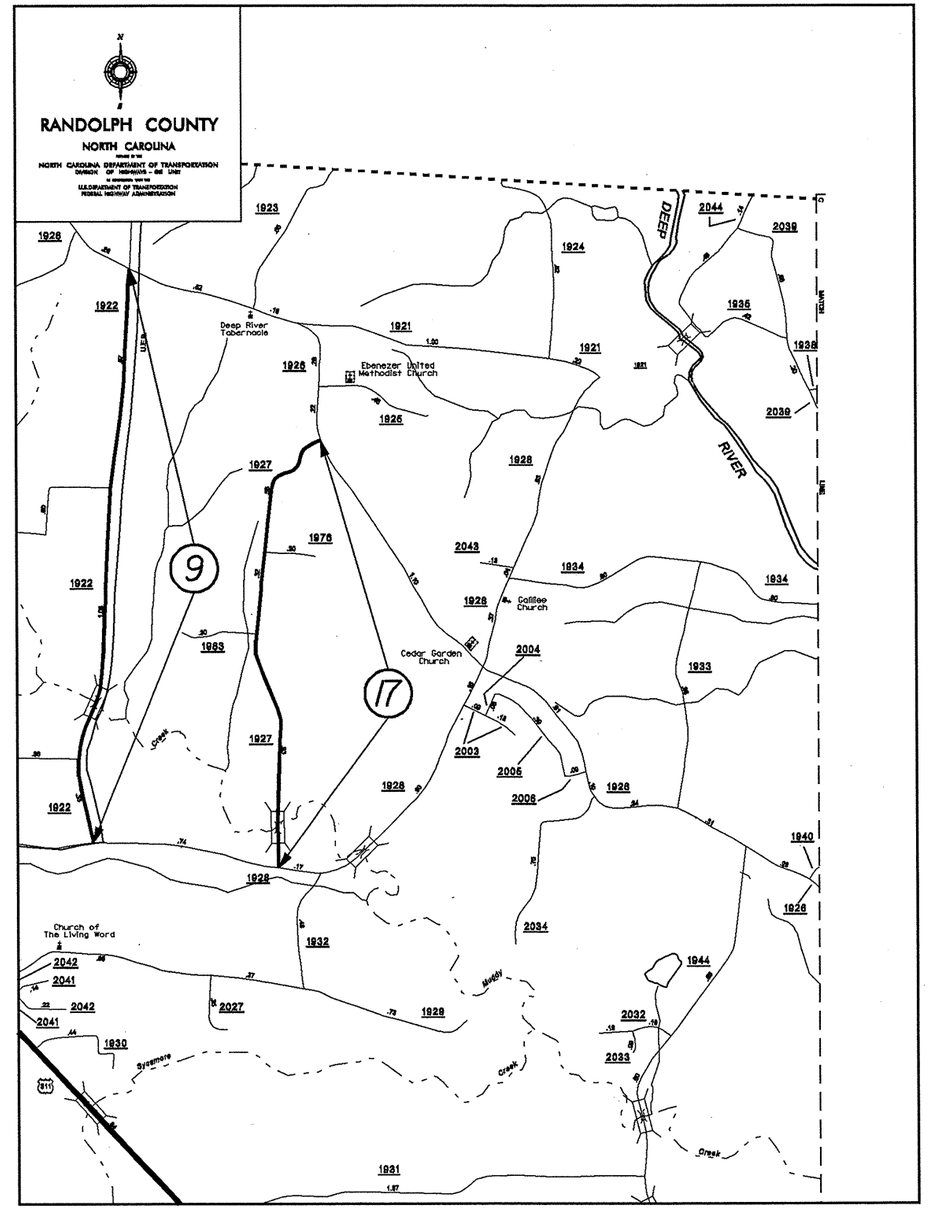
WBS ELEMENT	SHEET NO.
8CR.10761.12, 8CR.20761.12	3

MAP #8



MAPS #9 & #17



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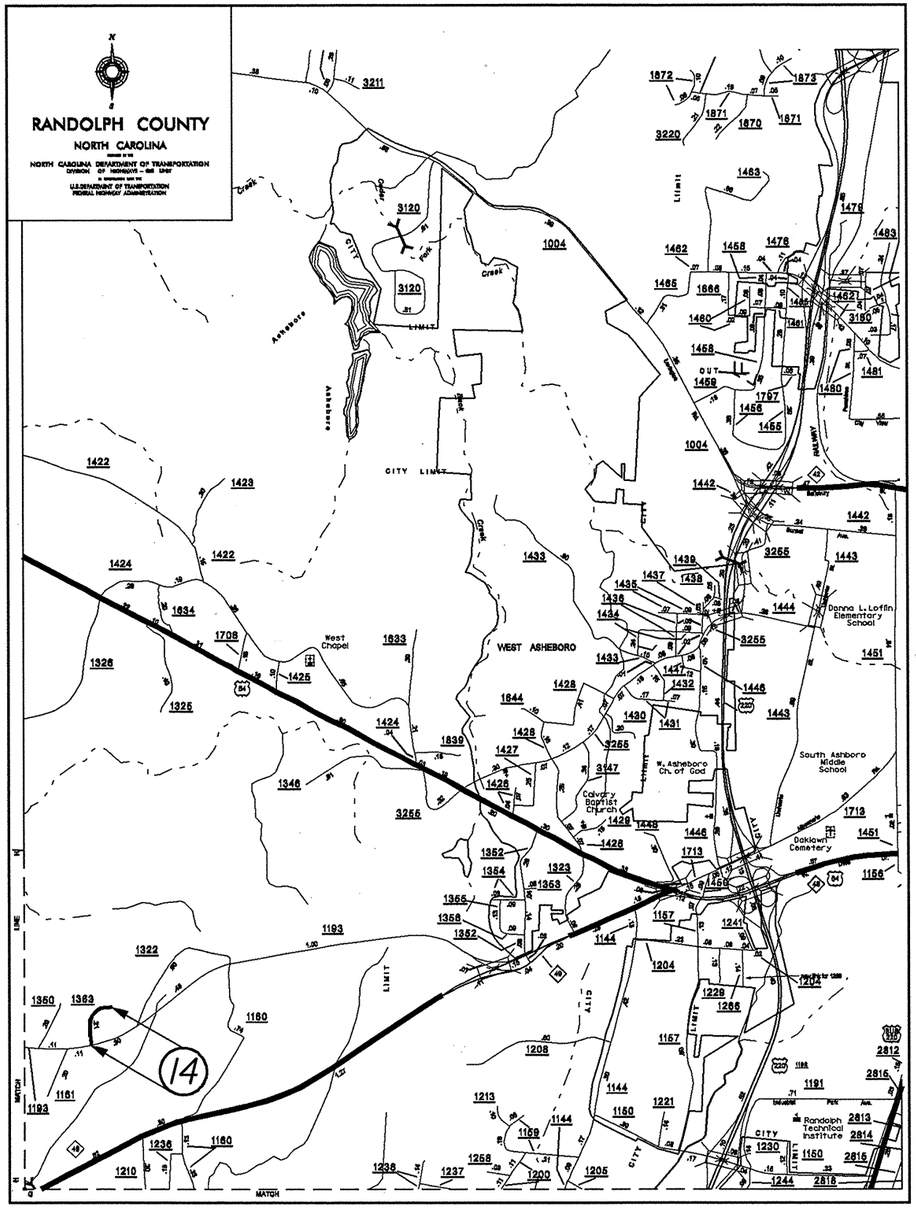
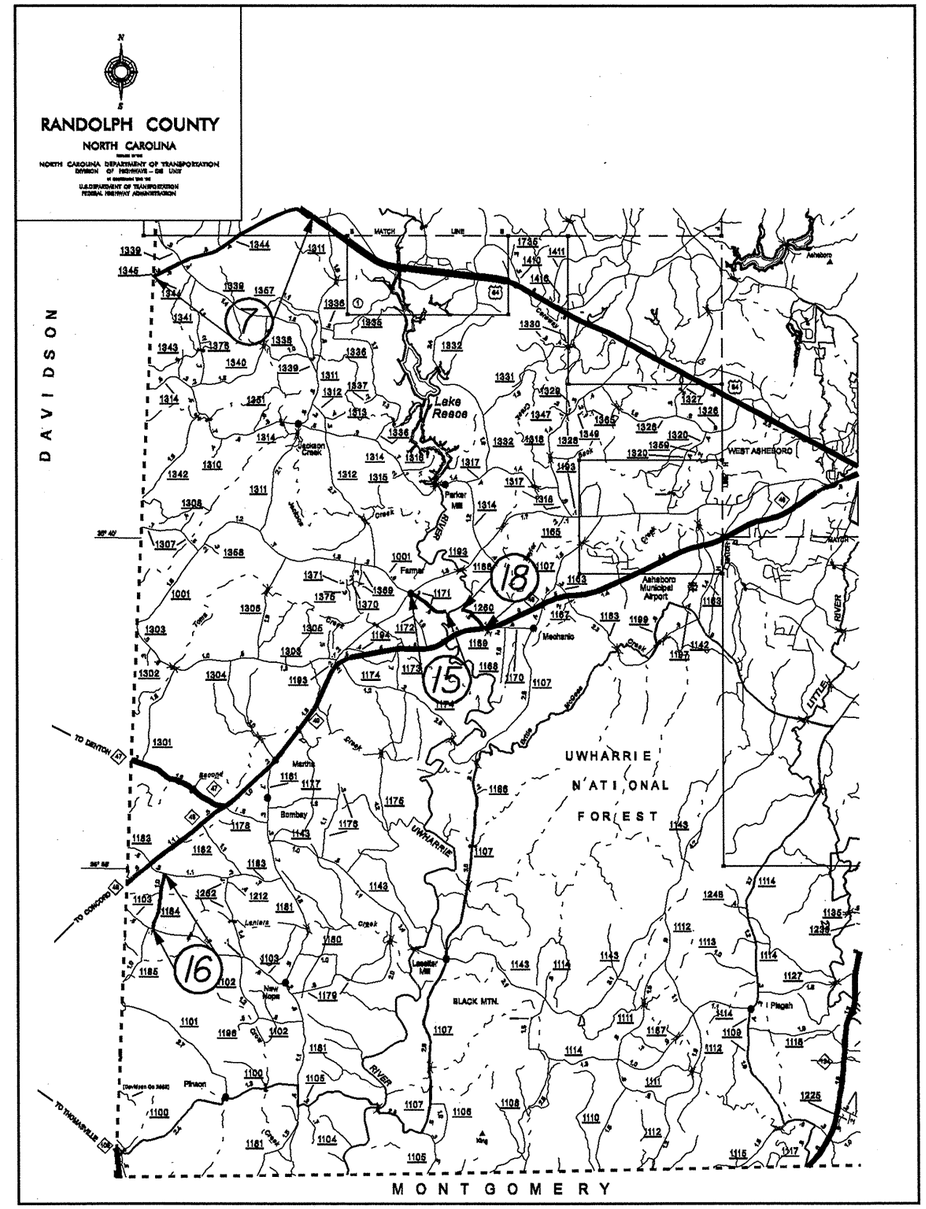
WBS ELEMENT	SHEET NO.
SCR.10761.12, SCR.20761.12	4

MAP #14

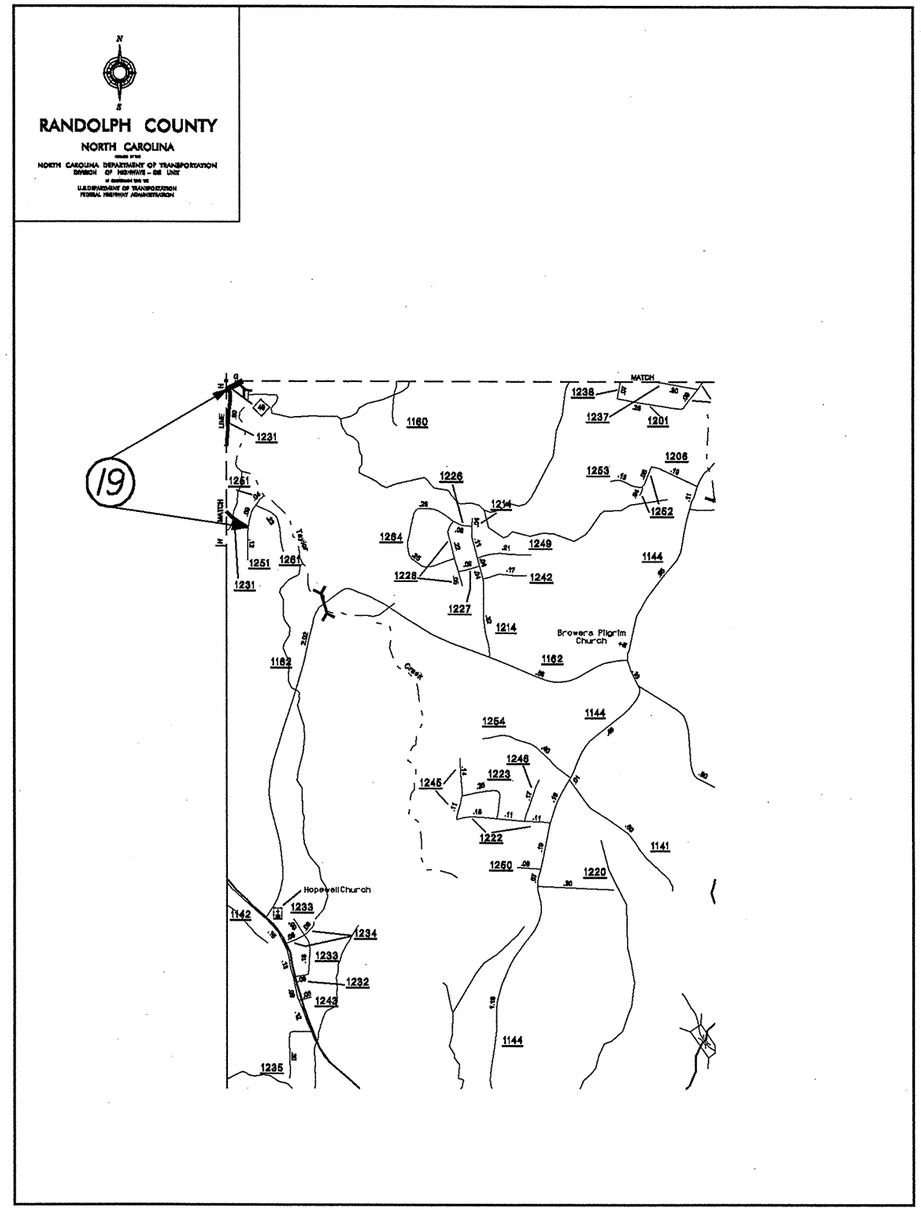


MAPS #7, #15, #16 & #18



WBS ELEMENT	SHEET NO.
BCR.10761.12, BCR.20761.12	5

MAP #19



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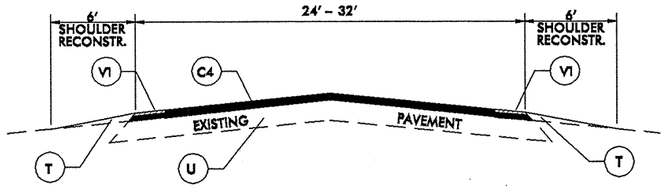
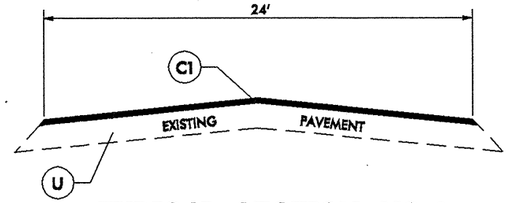
WBS ELEMENT	SHEET NO.
8CR.10761.12, 8CR.20761.12	6



TYPICAL SECTION NO. 1



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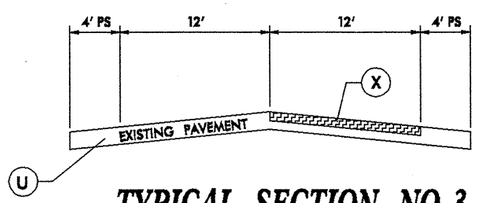

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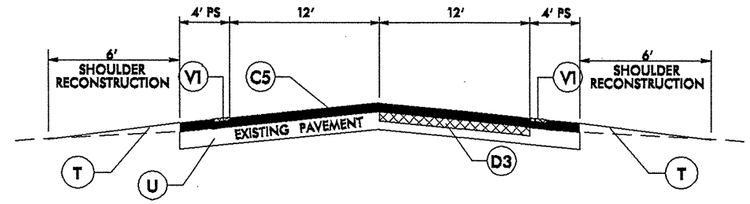

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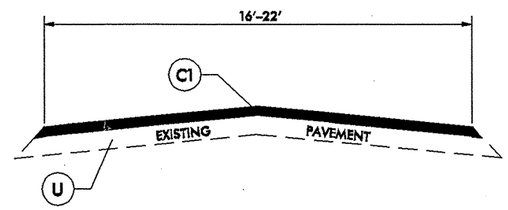

TYPICAL SECTION NO. 5

* SHOULDER CONSTRUCTION ON SECONDARY ROADS BY NCDOT, UNLESS NOTED OTHERWISE

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5"ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5"ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C4	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C5	PROP. APPROX. 3.0"ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E2	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	MILLED RUMBLE STRIPS
X	MILLING 2.5" IN DEPTH

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
DIVISION 8 - INCIDENTALS	
848.02	Driveway Turnout - Radius Type

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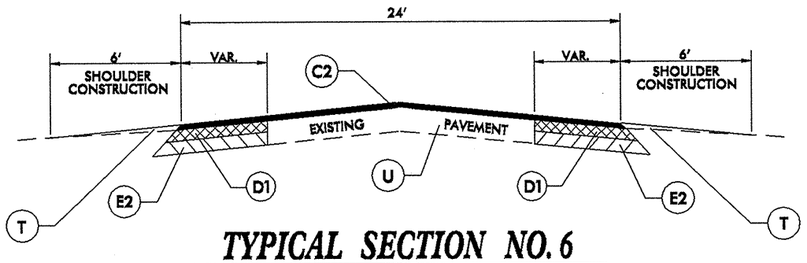
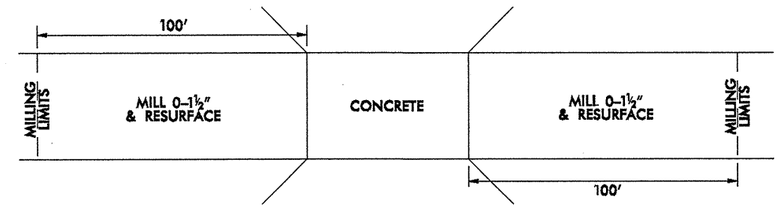
WBS ELEMENT	SHEET NO.
8CR.10761.12, 8CR.20761.12	7

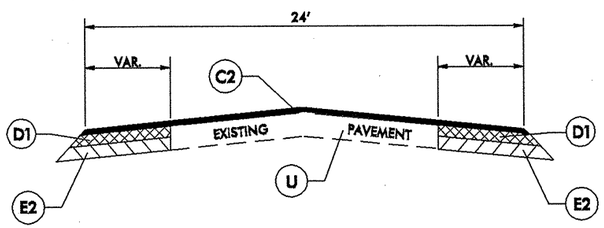


TYPICAL SECTION NO. 6



BRIDGE APPROACH MILLING

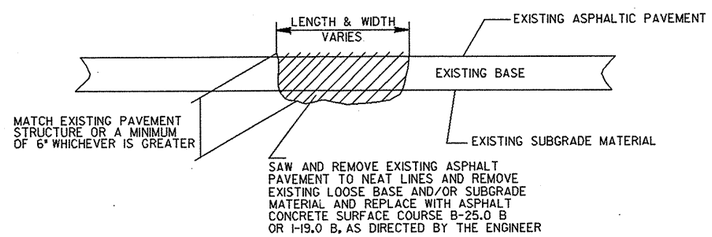
* MILLING SHALL BE PAID FOR UNDER INCIDENTAL MILLING



TYPICAL SECTION NO. 7

DETAILS OF REPAIRING EXISTING PAVEMENT PRIOR TO RESURFACING

USE WITH MAP #4, #5, #8, #9, #10, #11, #13, #14, #16, #18, & #19 (TYPICALS 2,5,6, & 8)



* SHOULDER CONSTRUCTION ON SECONDARY ROADS BY NCDOT, UNLESS NOTED OTHERWISE

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5"ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5"ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C4	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C5	PROP. APPROX. 3.0"ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D3	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
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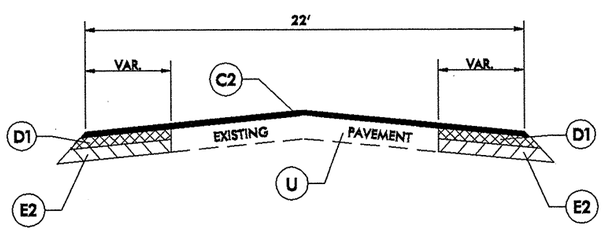
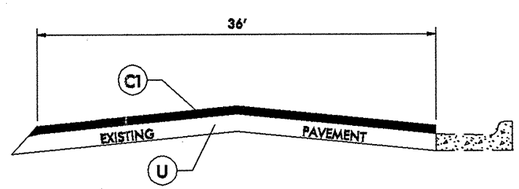
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	MILLED RUMBLE STRIPS
X	MILLING 2.5" IN DEPTH



TYPICAL SECTION NO. 8



TYPICAL SECTION NO. 9

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PROJECT NO.	SHEET NO.	TOTAL NO.
8CR.10761.12, 8CR.20761.12	8	9

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	FINAL SURFACE TESTING REQUIRED	LENGTH MI	WIDTH FT	INCIDENTAL STONE BASE TONS	SHOULDER CONSTRUCTION SMI	SHOULDER RECONSTRUCTION SMI	2.5" MILLING SY	MILLED RUMBLE STRIPS LF	INCIDENTAL MILLING SY	BASE COURSE, B25.0B TONS	INTERMEDIATE COURSE, I19.0B 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	6" DRIVEWAYS SY	SEED & MULCHING AC	INDUCTIVE LOOP LF
8CR.10761.12	Randolph	1	US 220N	FROM PVMT JOINT TO BRIDGE OVER SR 1138	1	NO	0.25	32			0.5		2,640	180					415			25			0.36	
TOTAL FOR MAP NO. 1							0.25				0.5		2,640	180					415			25			0.36	
		2	US 220S	FROM BRIDGE OVER SR 1138 TO PVMT JOINT	1	NO	0.25	32			0.5		2,640	180					415			25			0.36	
TOTAL FOR MAP NO. 2							0.25				0.5		2,640	180					415			25			0.36	
		3	US 421N	FROM SR 2407 TO GUILFORD CO	3, 4	NO	3.03	32			6.06	21,331	32,000	300			3,040		10,365		143	622			4.39	
TOTAL FOR MAP NO. 3							3.03				6.06	21,331	32,000	300			3,040		10,365		143	622			4.39	
		4	NC 22	FROM SR 2261 TO SR 2138	6	NO	2.27	20	227	4.54				230	1,730	1,050		2,950			301		89	173	3.29	
TOTAL FOR MAP NO. 4							2.27		227	4.54	0	0	0	230	1,730	1,050	0	2,950			301		89	173	3.29	
TOTAL FOR PROJ NO. 8CR.10761.12							5.8		227	4.54	7.06	21,331	37,280	890	1,730	1,050	3,040	2,950	11,195		444	672	89	173	8.40	
8CR.20761.12	Randolph	5	SR 2834	FROM NC 159 TO SR 2830	8	NO	1.66	22	166					125	585	350		1,980			160		50			
TOTAL FOR MAP NO. 5							1.66		166	0	0	0	0	125	585	350	0	1,980			160		50			
		6	SR 1917	FROM US 311 TO SR 1918	7	NO	0.62	24	62					135	435	260		855			82			47		300
TOTAL FOR MAP NO. 6							0.62		62	0	0	0	0	135	435	260	0	855			82			47		300
		7	SR 1344	FROM DAVIDSON CO TO US 64	8	NO	3.1	22	310					125	2,180	1,305		3,380			358		58	236		
TOTAL FOR MAP NO. 7							3.1		310	0	0	0	0	125	2,180	1,305	0	3,380			358		58	236		
		8	SR 1595	FROM NC 62 TO SR 1748	2	NO	0.88	24	88					135						1,100	72		74			350
TOTAL FOR MAP NO. 8							0.88		88	0	0	0	0	135	0	0	0	0		1,100	72		74			350
		9	SR 1922	FROM SR 1928 TO SR 1926	5	NO	2.24	18	224					100						2,105	137		116			
TOTAL FOR MAP NO. 9							2.24		224	0	0	0	0	100	0	0	0	0		2,105	137		116			
		10	SR 2845	FROM SR 2849 TO SR 2843	5	NO	4.25	22	425					125						4,920	320		26			
TOTAL FOR MAP NO. 10							4.25		425	0	0	0	0	125	0	0	0	0		4,920	320		26			
		11	SR 1951	FROM US 311 TO SR 1990	5	NO	0.66	20	66					115						690	45		53			
TOTAL FOR MAP NO. 11							0.66		66	0	0	0	0	115	0	0	0	0		690	45		53			
		12	SR 2846	FROM SR 2851 TO NCL SEAGROVE	9	NO	0.04	36						200						75	5					
TOTAL FOR MAP NO. 12							0.04		0	0	0	0	0	200	0	0	0	0		75	5					
		13	SR 2846	FROM NCL SEAGROVE TO SR 2845	5	NO	1.85	20	185					115						2,035	132		32			
TOTAL FOR MAP NO. 13							1.85		185	0	0	0	0	115	0	0	0	0		2,035	132		32			
		14	SR 1363	FROM SR 1193 TO DEAD END	5	NO	0.2	16	20					50						170	11		25			
TOTAL FOR MAP NO. 14							0.2		20	0	0	0	0	50	0	0	0	0		170	11		25			
		15	SR 1171	FROM SR 1193 TO END MAINT	5	NO	0.74	16	74					50						620	40					
TOTAL FOR MAP NO. 15							0.74		74	0	0	0	0	50	0	0	0	0		620	40					
		16	SR 1184	FROM SR 1183 TO SR 1103	5	NO	1	20	100					115						1,045	68		42			
TOTAL FOR MAP NO. 16							1		100	0	0	0	0	115	0	0	0	0		1,045	68		42			
		17	SR 1927	FROM SR 1928 TO SR 1926	5	NO	1.26	20	126					115						1,365	89					
TOTAL FOR MAP NO. 17							1.26		126	0	0	0	0	115	0	0	0	0		1,365	89					
		18	SR 1260	FROM NC 49 TO END MAINT	5	NO	0.5	16	50					50						410	27		42			
TOTAL FOR MAP NO. 18							0.5		50	0	0	0	0	50	0	0	0	0		410	27		42			
		19	SR 1231	FROM NC 49 TO SR 1251	5	NO	0.57	20	57					115						595	39		68			
TOTAL FOR MAP NO. 19							0.57		57	0	0	0	0	115	0	0	0	0		595	39		68			
TOTAL FOR PROJ NO. 8CR.20761.12							19.57		1,953	0	0	0	0	1,670	3,200	1,915	0	6,215		15,130	1,585		586	283		650
GRAND TOTAL							25.37		2,180	4.54	7.06	21,331	37,280	2,560	4,930	2,965	3,040	9,165	11,195	15,130	2,029	672	675	456	8.40	650

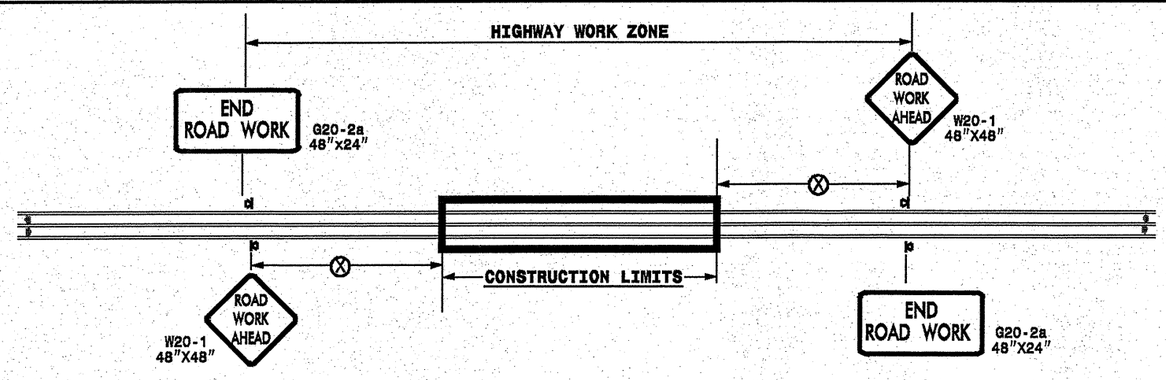
PROJECT NO.	SHEET NO.	TOTAL NO.
8CR.10761.12, 8CR.20761.12	9	9

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4685000000-E 4" X 90 M WHITE THERMO LF	4685000000-E 4" X 90 M YELLOW THERMO LF	4686000000-E 4" X 120 M WHITE THERMO LF	4686000000-E 4" X 120 M YELLOW THERMO LF	4710000000-E 24" X 120 M WHITE THERMO LF	4721000000-E THERMO MSG SCHOOL 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	4810000000-E 4" WHITE PAINT LF	4810000000-E 4" YELLOW PAINT LF	4820000000-E 8" YELLOW PAINT LF	4900000000-N YELLOW & YELLOW MARKERS EA	4905000000-N SNOW PLOWABLE MARKERS EA
8CR.10761.12	Randolph	1	US 220N	FROM PVMT JOINT TO BRIDGE OVER SR 1138	1,320	1,320	40											17
TOTAL FOR MAP NO. 1					**1,320**	**1,320**	**40**											**17**
		2	US 220S	FROM BRIDGE OVER SR 1138 TO PVMT JOINT	1,320	1,320	40											17
TOTAL FOR MAP NO. 2					**1,320**	**1,320**	**40**											**17**
		3	US 421N	FROM SR 2407 TO GUILFORD CO	16,000	16,000	1,400				6	1		17,400	16,000			200
TOTAL FOR MAP NO. 3					**16,000**	**16,000**	**1,400**				**6**	**1**		**17,400**	**16,000**			**200**
		4	NC 22	FROM SR 2261 TO SR 2138	24,425			19,540	100	12							150	
TOTAL FOR MAP NO. 4					**24,425**			**19,540**	**100**	**12**							**150**	
TOTAL FOR PROJ NO. 8CR.10761.12					**43,065**	**18,640**	**1,480**	**19,540**	**100**	**12**	**6**	**1**		**17,400**	**16,000**		**150**	**233**
					61,705		**21,020**					**7**		**33,400**				
8CR.20761.12	Randolph	5	SR 2834	FROM NC 159 TO SR 2830										35,100	28,100			
TOTAL FOR MAP NO. 5														**35,100**	**28,100**			
		6	SR 1917	FROM US 311 TO SR 1918					100	12				13,100	10,500			
TOTAL FOR MAP NO. 6									**100**	**12**				**13,100**	**10,500**			
		7	SR 1344	FROM DAVIDSON CO TO US 64										65,500	52,400			
TOTAL FOR MAP NO. 7														**65,500**	**52,400**			
		8	SR 1595	FROM NC 62 TO SR 1748	9,470			7,580									58	
TOTAL FOR MAP NO. 8					**9,470**			**7,580**									**58**	
		9	SR 1922	FROM SR 1928 TO SR 1926										48,205	29,000			
TOTAL FOR MAP NO. 9														**48,205**	**29,000**			
		10	SR 2845	FROM SR 2849 TO SR 2843										89,800	76,500			
TOTAL FOR MAP NO. 10														**89,800**	**76,500**			
		11	SR 1951	FROM US 311 TO SR 1990										14,200	11,400		51	
TOTAL FOR MAP NO. 11														**14,200**	**11,400**		**51**	
		12	SR 2846	FROM SR 2851 TO NCL SEAGROVE							1			845	680			
TOTAL FOR MAP NO. 12											**1**			**845**	**680**			
		13	SR 2846	FROM NCL SEAGROVE TO SR 2845									1	39,200	31,500	800		
TOTAL FOR MAP NO. 13													**1**	**39,200**	**31,500**	**800**		
		14	SR 1363	FROM SR 1193 TO DEAD END														
TOTAL FOR MAP NO. 14																		
		15	SR 1171	FROM SR 1193 TO END MAINT					50	6				15,800	12,700			
TOTAL FOR MAP NO. 15									**50**	**6**				**15,800**	**12,700**			
		16	SR 1184	FROM SR 1183 TO SR 1103										21,500	17,200			
TOTAL FOR MAP NO. 16														**21,500**	**17,200**			
		17	SR 1927	FROM SR 1928 TO SR 1926										26,620	21,300			
TOTAL FOR MAP NO. 17														**26,620**	**21,300**			
		18	SR 1260	FROM NC 49 TO END MAINT														
TOTAL FOR MAP NO. 18																		
		19	SR 1231	FROM NC 49 TO SR 1251														
TOTAL FOR MAP NO. 19																		
TOTAL FOR PROJ NO. 8CR.20761.12					**9,470**			**7,580**	**150**	**18**	**1**		**1**	**369,870**	**291,280**	**800**	**109**	
					9,470		**7,580**					**2**		**661,150**				
GRAND TOTAL					**52,535**	**18,640**	**1,480**	**27,120**	**250**	**30**	**7**	**1**	**1**	**387,270**	**307,280**	**800**	**259**	**234**
					71,175		**28,600**					**9**		**694,550**				

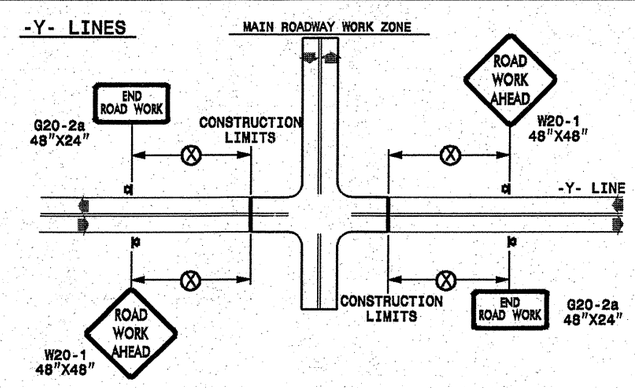
PROJ. REFERENCE NO.	SHEET NO.
8CR.10761.12 & 8CR.20761.12	TCP-1

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 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 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

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
ADVANCED WORK ZONE WARNING SIGNS

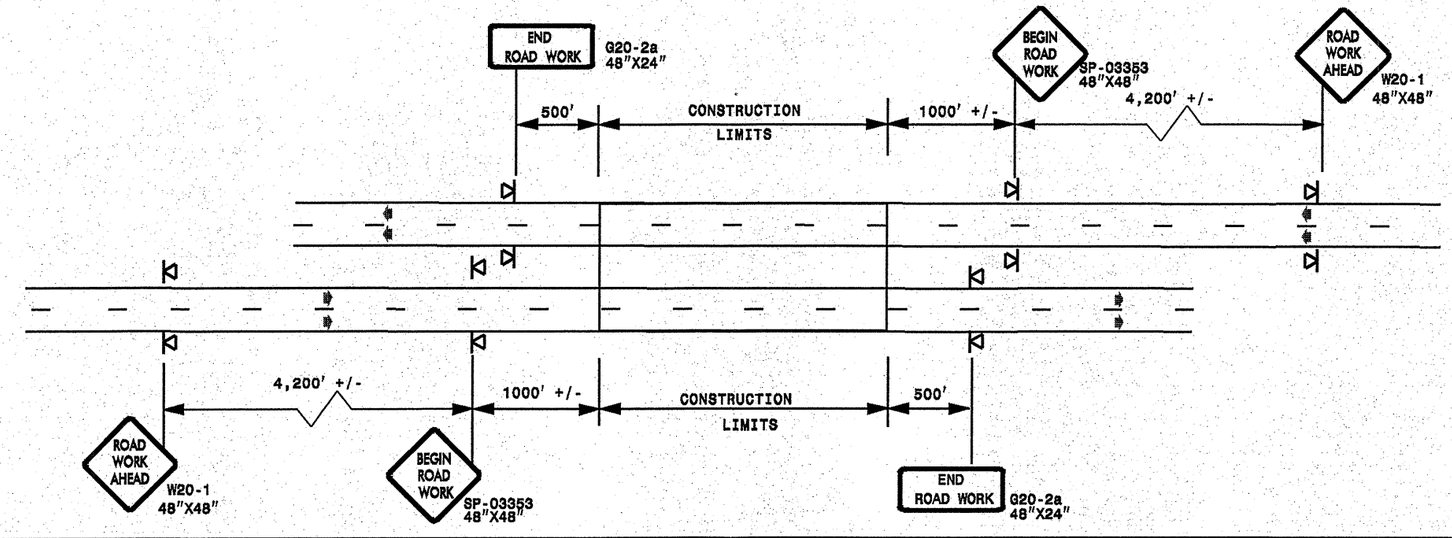
SCALE: NONE	REVISIONS	
DATE:	7-98	10/01
DWG. BY:	10-98	03/04
DESIGN BY:	01/01	11/04
REVIEWED BY:	CADD FILE	

27-AUG-2009 17:46
s:\signing\resurfacing\030509\resurfacing2009\dlv08\c202455a-b_8cr10761x2_2wayundivurbfrwysjuly2006_portable.dgn
pseymore AT WZTC237502

PROJ. REFERENCE NO.	SHEET NO.
8CR.10761.12 & 8CR.20761.12	TCP-2

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

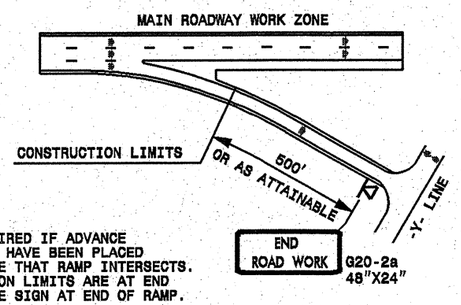
DETAIL A



ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)

DETAIL B

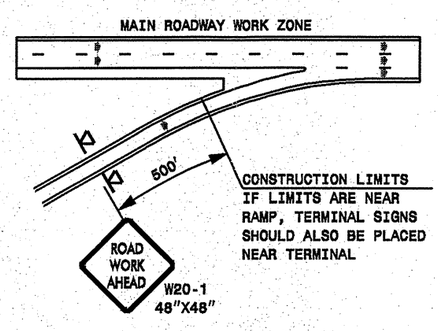
EXIT RAMPS



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

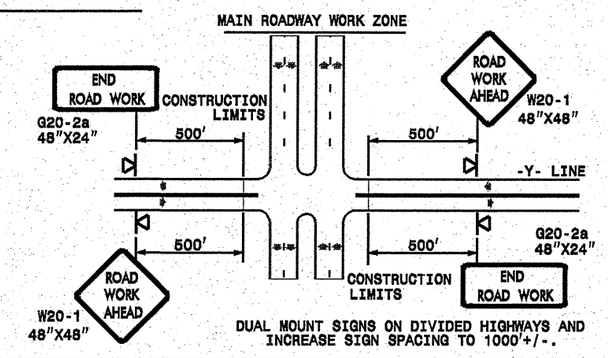
ENTRANCE RAMPS



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

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 ADVANCE WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
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- 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

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

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

SHEET 1 OF 1

APPROVED: _____ DATE: _____

SEAL

DETAIL DRAWING
FOR FREEWAYS
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

27-AUG-2009 17:47
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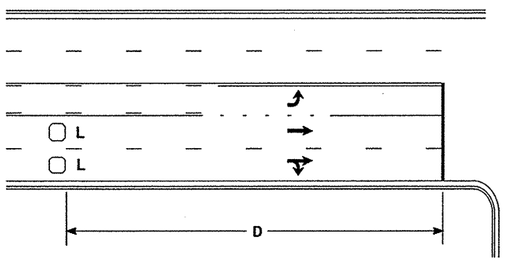
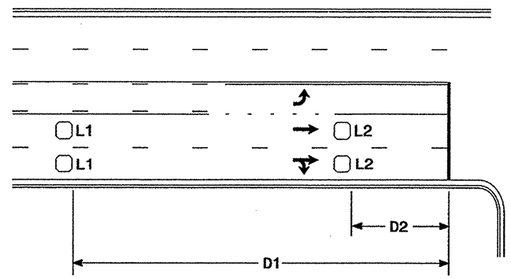
dseymore AT WZTC237602

PROJECT REFERENCE NO.	SHEET NO.
	SIG 1

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)

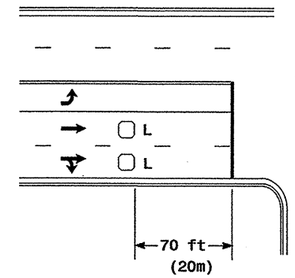
L1 = 6ft X 6ft (1.8m X 1.8m)
Wired in series

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

"Stretch" Operation

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

8CR.10761.12 & 8CR.20761.12



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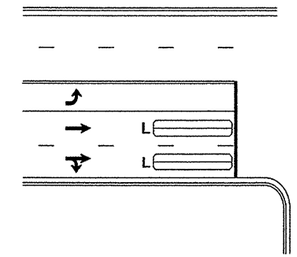
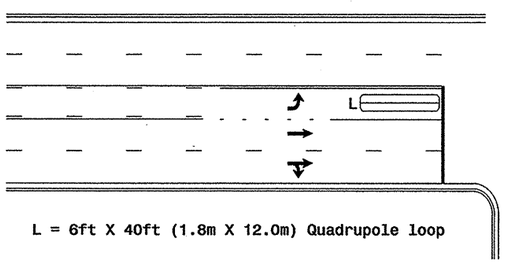


L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

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

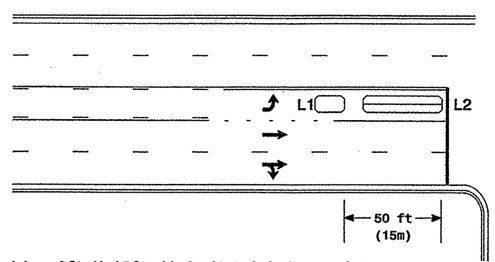
Left Turn Lane Detection



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

Presence Loop Detection

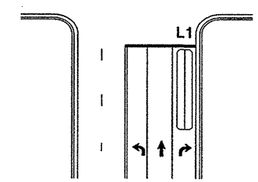
OR



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

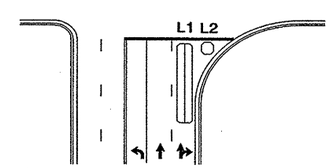
Queue Loop Detection

Right Turn Lane Detection

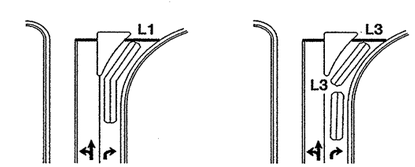


Standard Turn

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

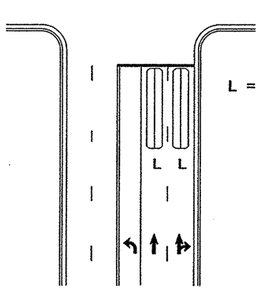


Wide Radius Turn



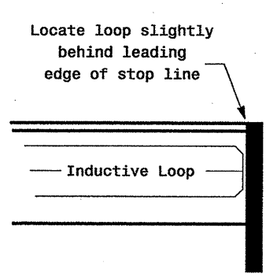
Channelized Turn

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



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
Signals and Geometrics Section
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
122 N. McDowell St., Raleigh, NC 27603

Typical Loop Locations

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

REVISIONS	INIT.	DATE
1) Revise pavement markings	ac	12/19/06

SCALE
N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23486 ENGINEER PAMELA L. ALEXANDER
SIGNATURE
DATE 6/6/06
SIG. INVENTORY NO.

19-DEC-2006 14:29
s:\its signals\lib turn inms\scellloop\typical2006.dgn
palexander

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

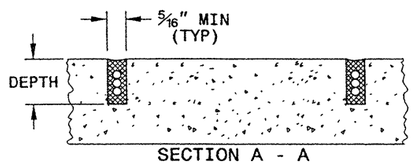
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

CONVENTIONAL 4-SIDED LOOP

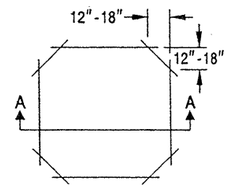
SAW SLOT DEPTH CHART

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

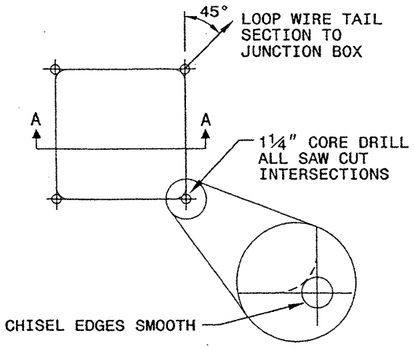


SAW CUT OPTIONS

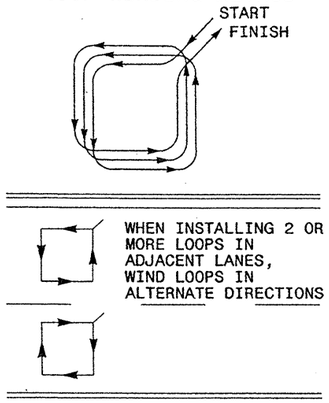
OPTION 1



OPTION 2
(POOR PAVEMENT)



LOOP WINDING METHOD



LOOP WIRE TWISTING METHOD

INCORRECT WAY TO TWIST WIRE

CORRECT WAY TO TWIST WIRE

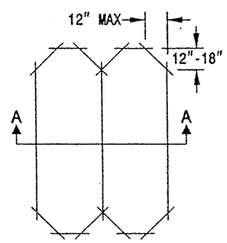
NOTES

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.

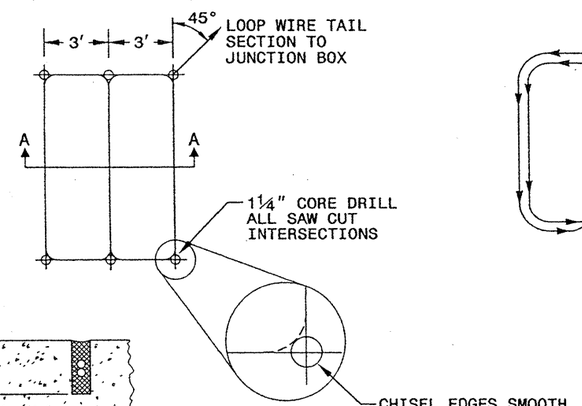
QUADRUPOLE LOOP

SAW CUT OPTIONS

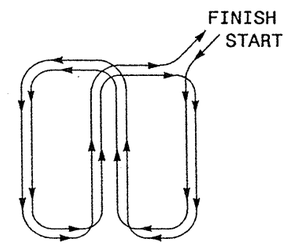
OPTION 1

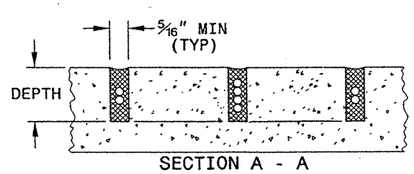


OPTION 2
(POOR PAVEMENT)



LOOP WINDING METHOD





DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

SHEET 1 OF 3
1725D01

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

5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS

SHEET 1 OF 3
1725D01

See Plate for Title

Prepared in the Offices of:
Intelligent Transportation Systems & Signals Unit
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 N. Greenfield Parkway
Garner, NC 27529

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

05-SEP-2007 14:00
C:\Documents and Settings\zmilittle.dot\desktop\standard metal pole sheets\1725D01_may2007.dgn
zmilittle

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

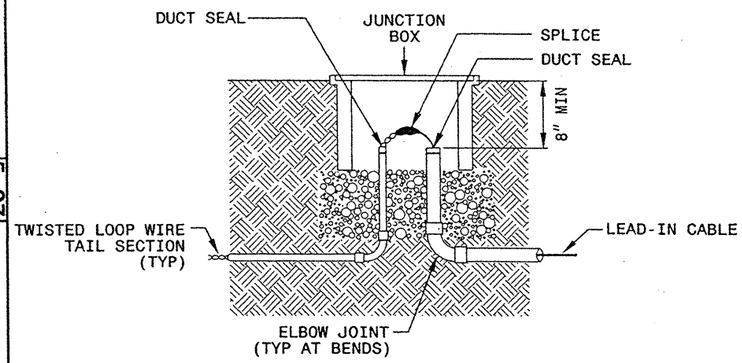
5-07

ENGLISH DETAIL DRAWING FOR
INDUCTIVE DETECTION LOOPS
LOOP WIRE DETAILS

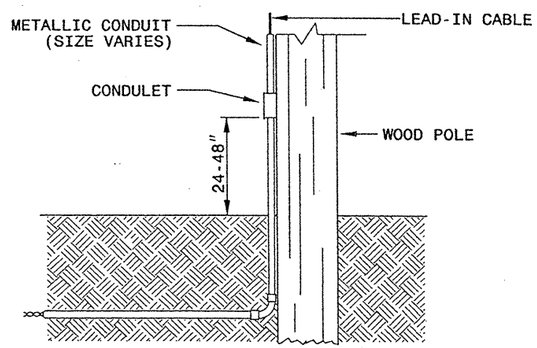
SHEET 2 OF 3
1725D01

LOOP WIRE SPLICE POINT DETAILS

LOOP WIRE AT JUNCTION BOX



LOOP WIRE AT POLE

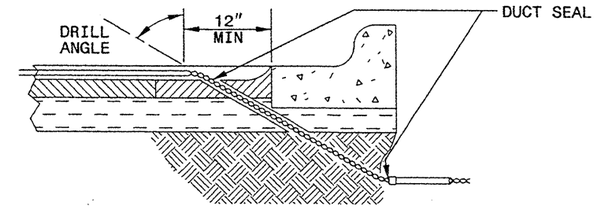


NOTE

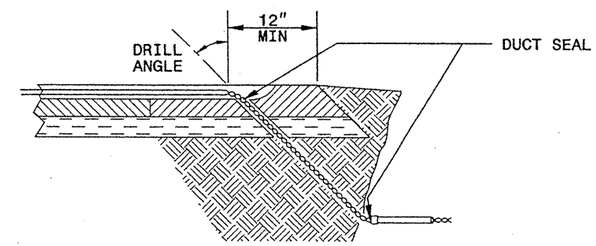
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

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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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 SEAL 016286 ENGINEER MILTON I. DEAN
SIGNATURE
9/5/07
DATE

05-SEP-2007 14:00
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PROJECT REFERENCE NO.	SHEET NO.
8CR.10761.12, 8CR.20761.12	Sig. 4

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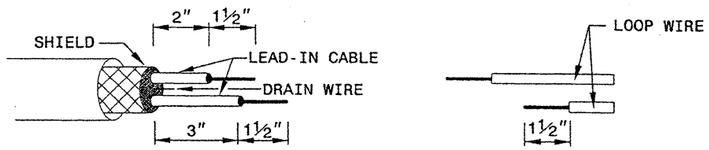
DIVISION OF HIGHWAYS
RALEIGH, N.C.

5-07

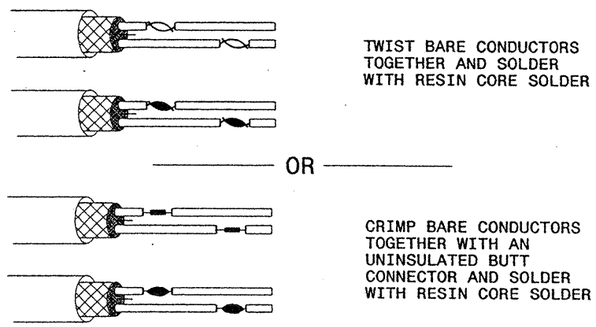
ENGLISH DETAIL DRAWING FOR
INDUCTION DETECTION LOOPS
SPLICING FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3
1725D01

STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE



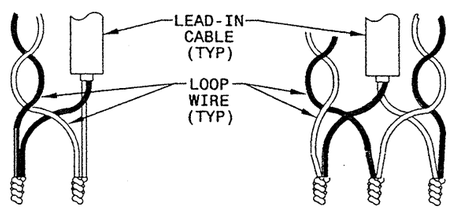
STEP 2. CONNECT AND SOLDER



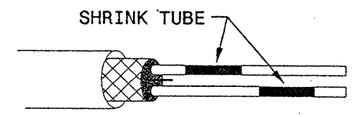
BOND SHIELD DRAIN WIRE AT SPLICE SECTIONS (DO NOT GROUND)

LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS

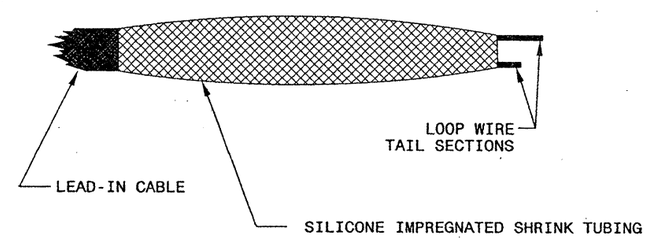
SINGLE CONNECTION SERIES CONNECTION



STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY



STEP 4. ENVIRONMENTALLY PROTECT SPLICE



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

SHEET 3 OF 3
1725D01

See Plate for Title

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750 N. Greenfield Parkway
Garner, NC 27529

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 016286 ENGINEER MILTON I. DEAN

Milton I. Dean 9/5/07
SIGNATURE DATE

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