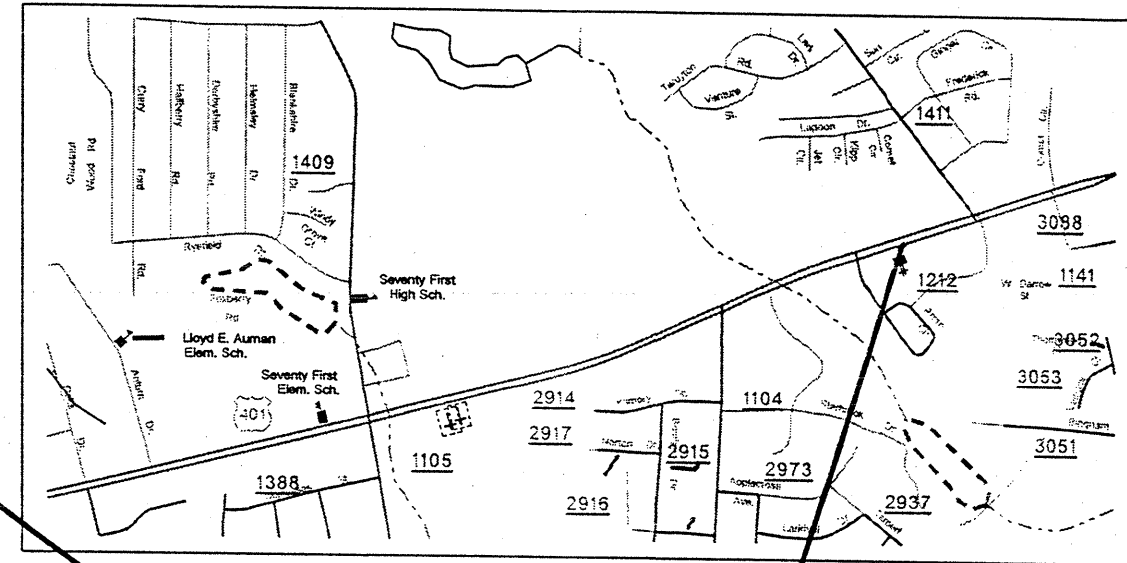
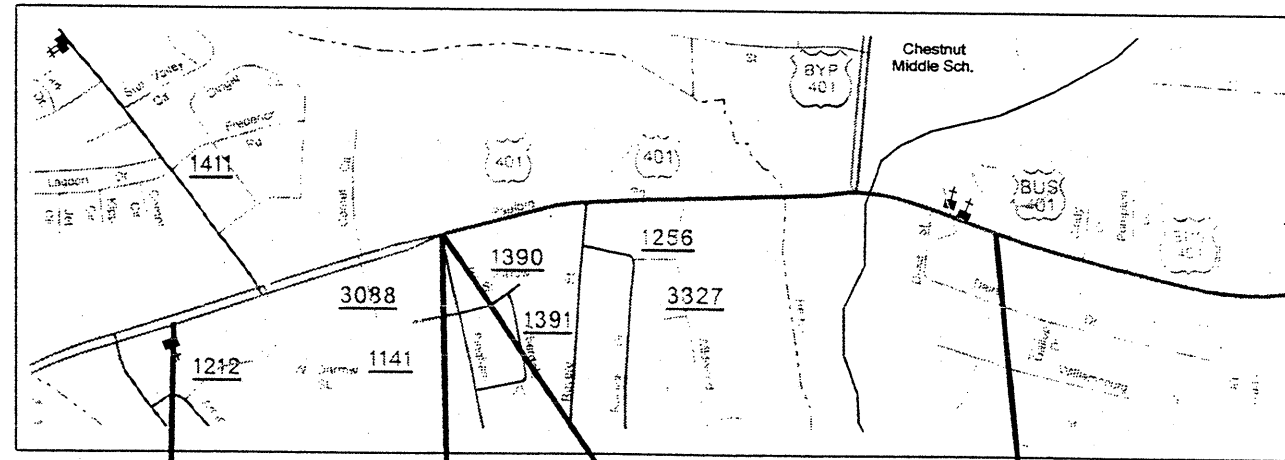


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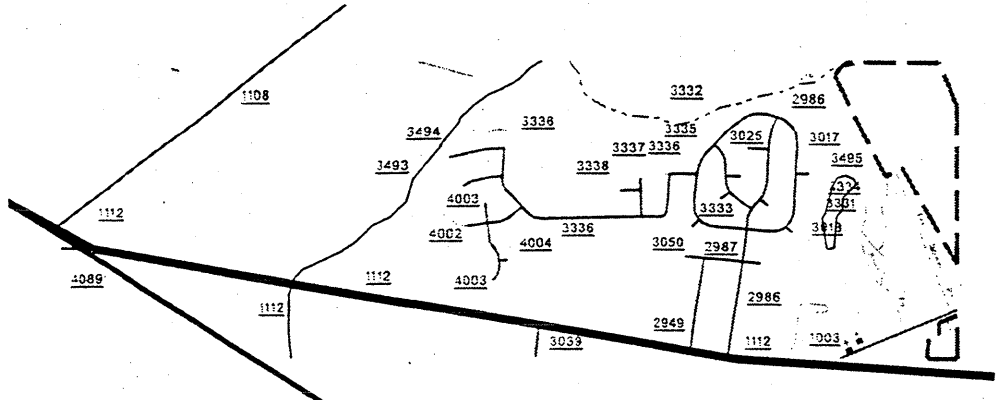
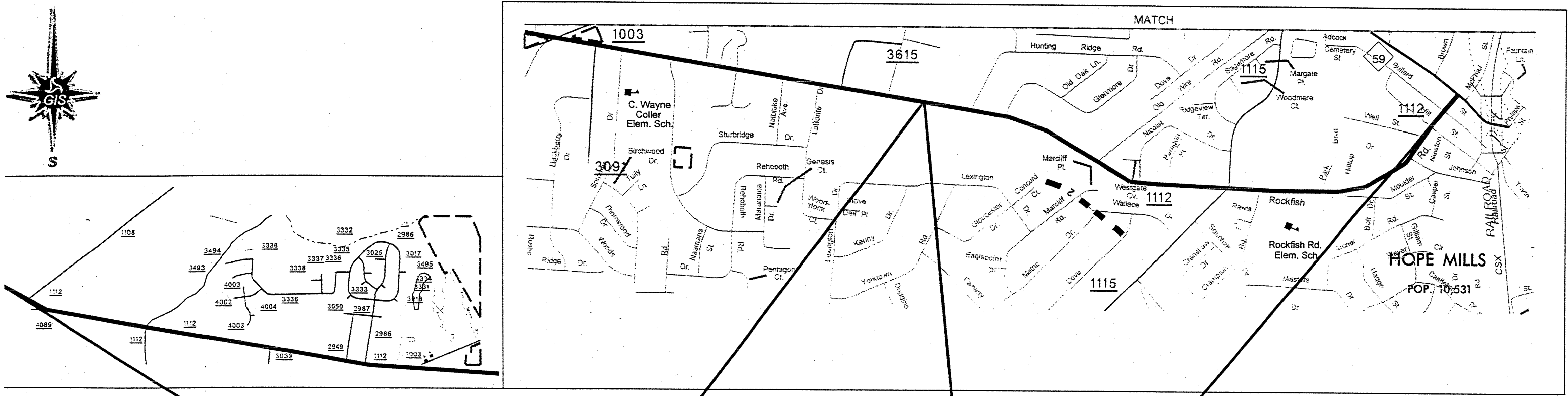
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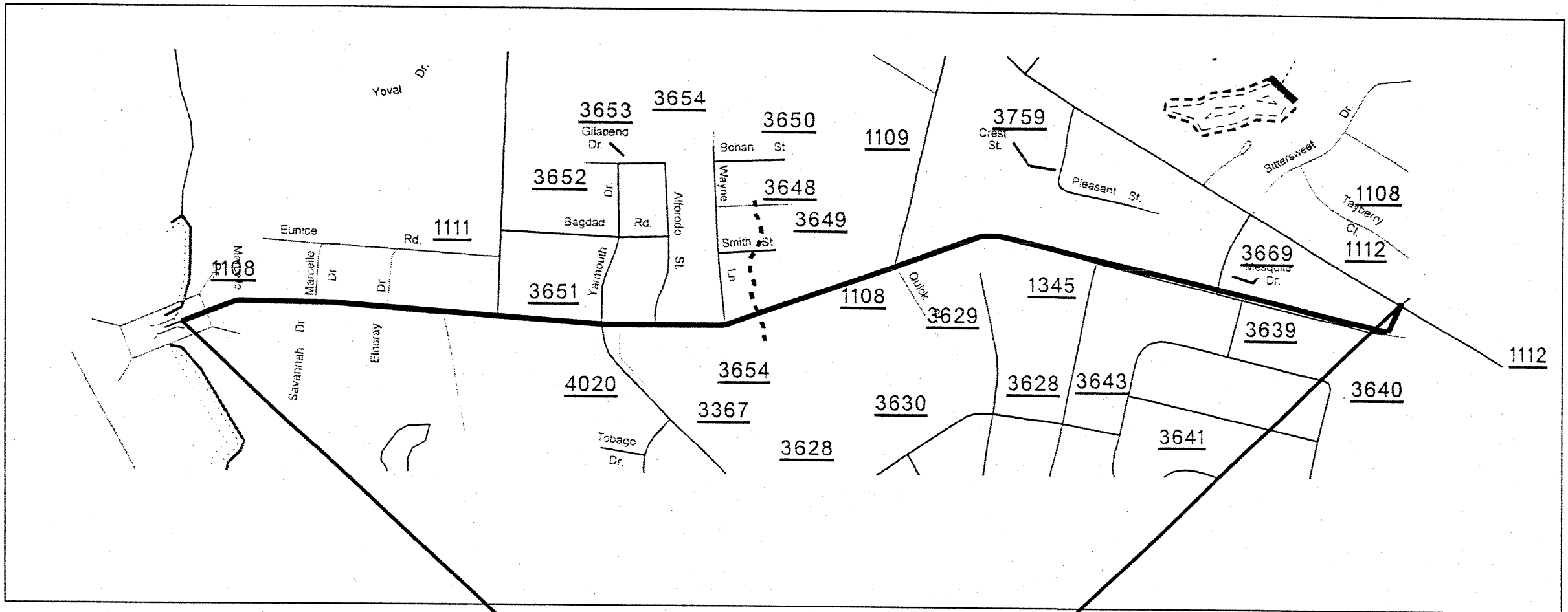
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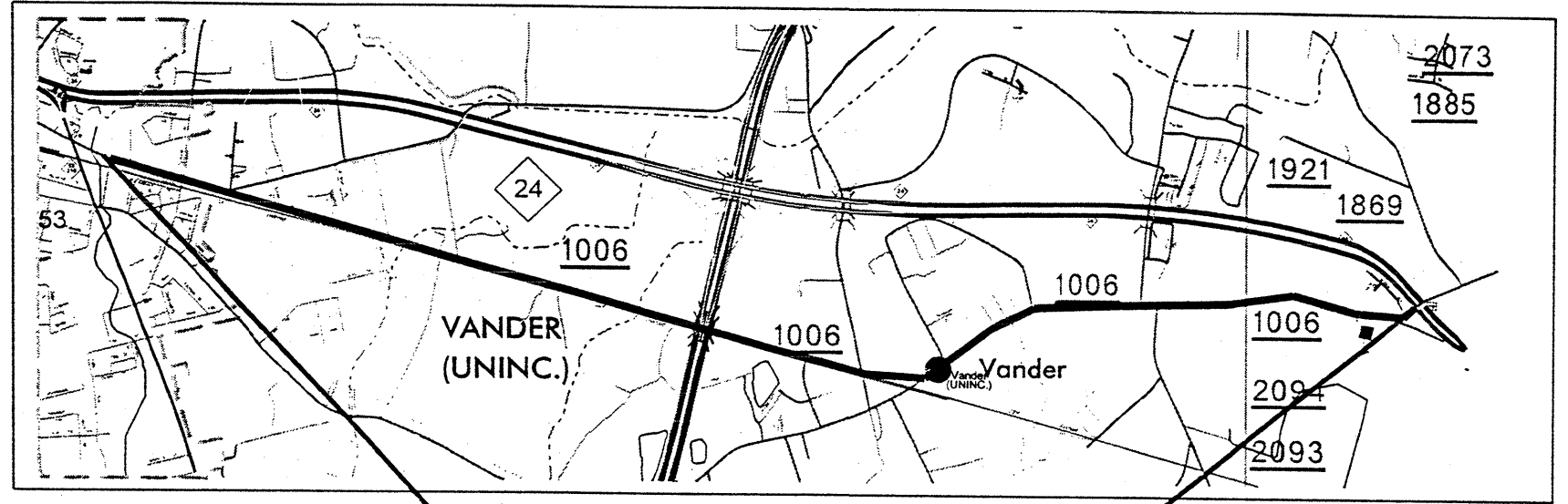


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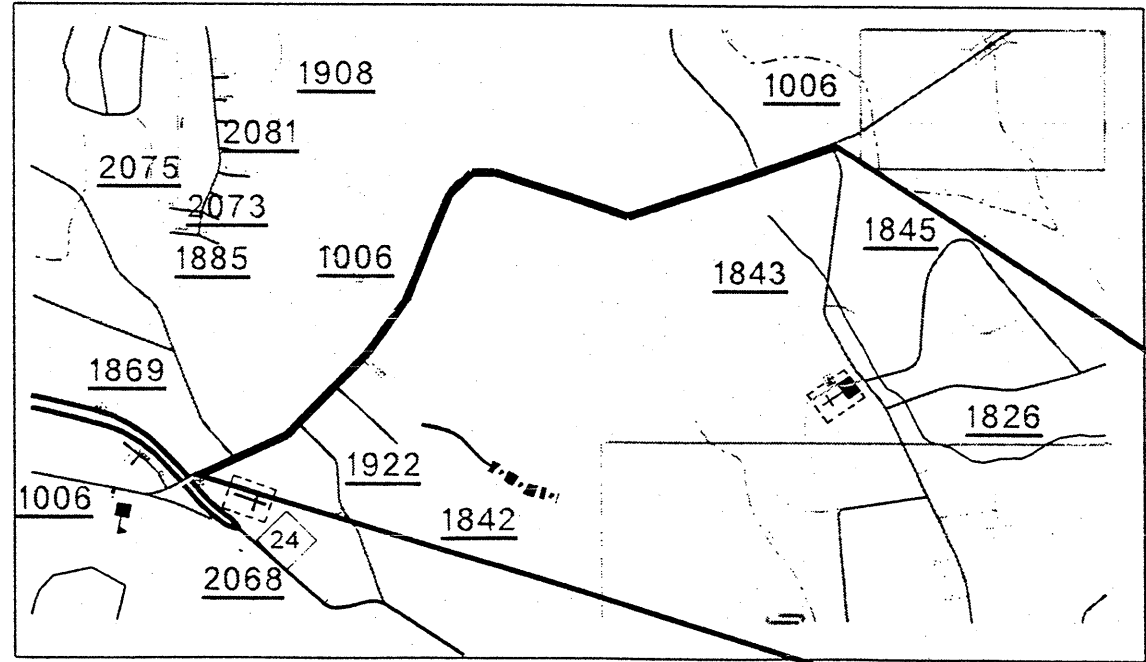
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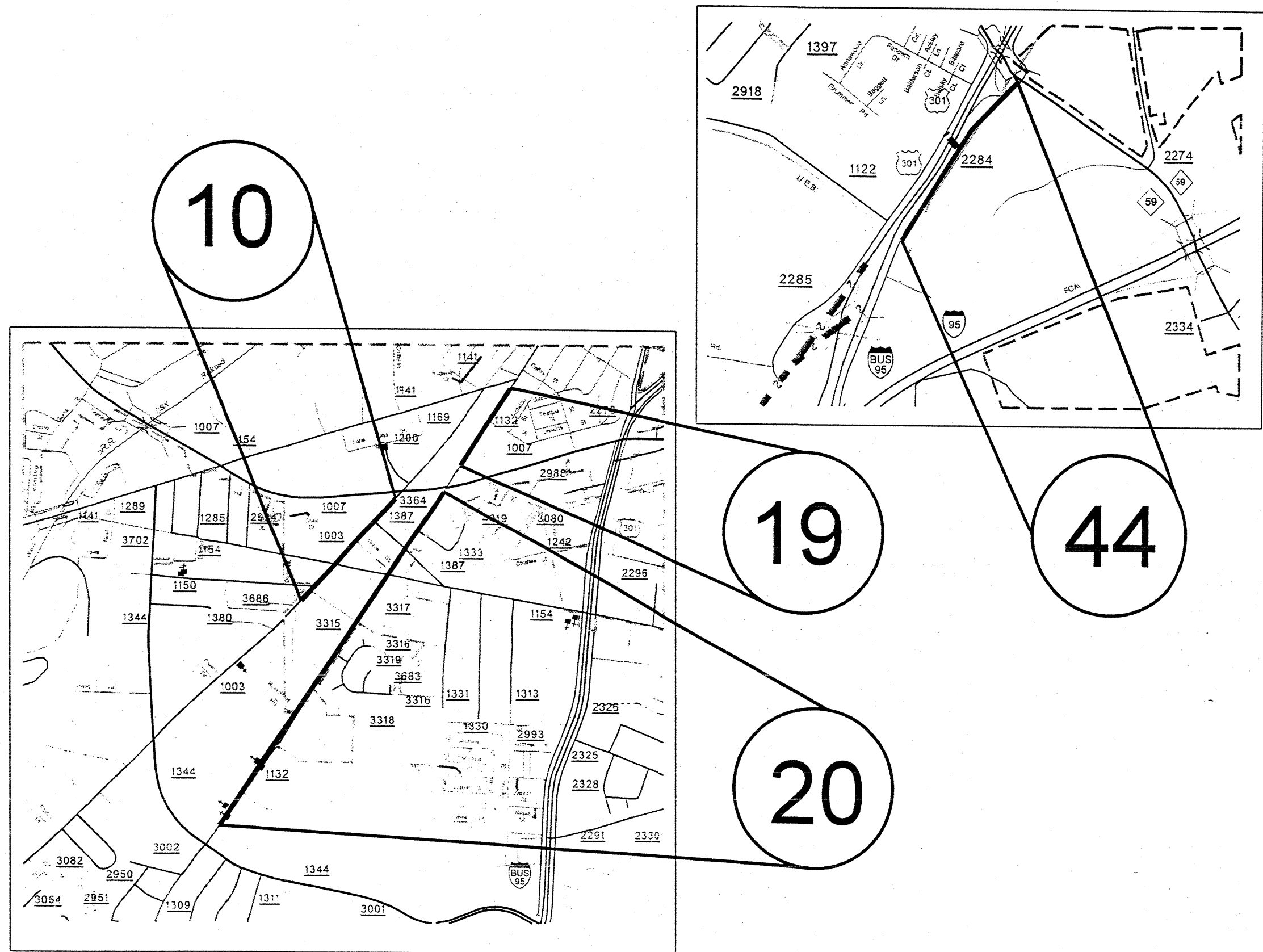
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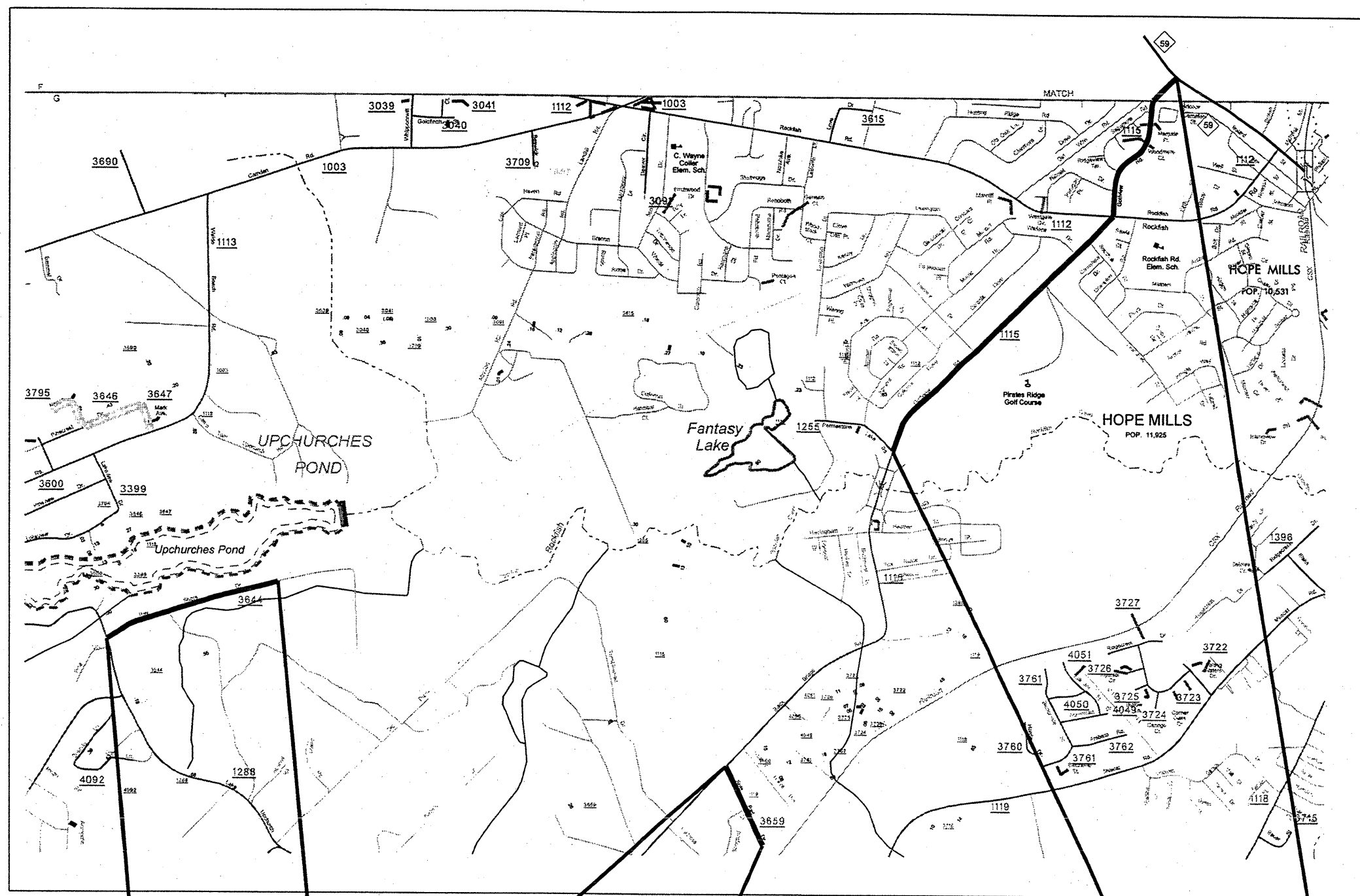


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13





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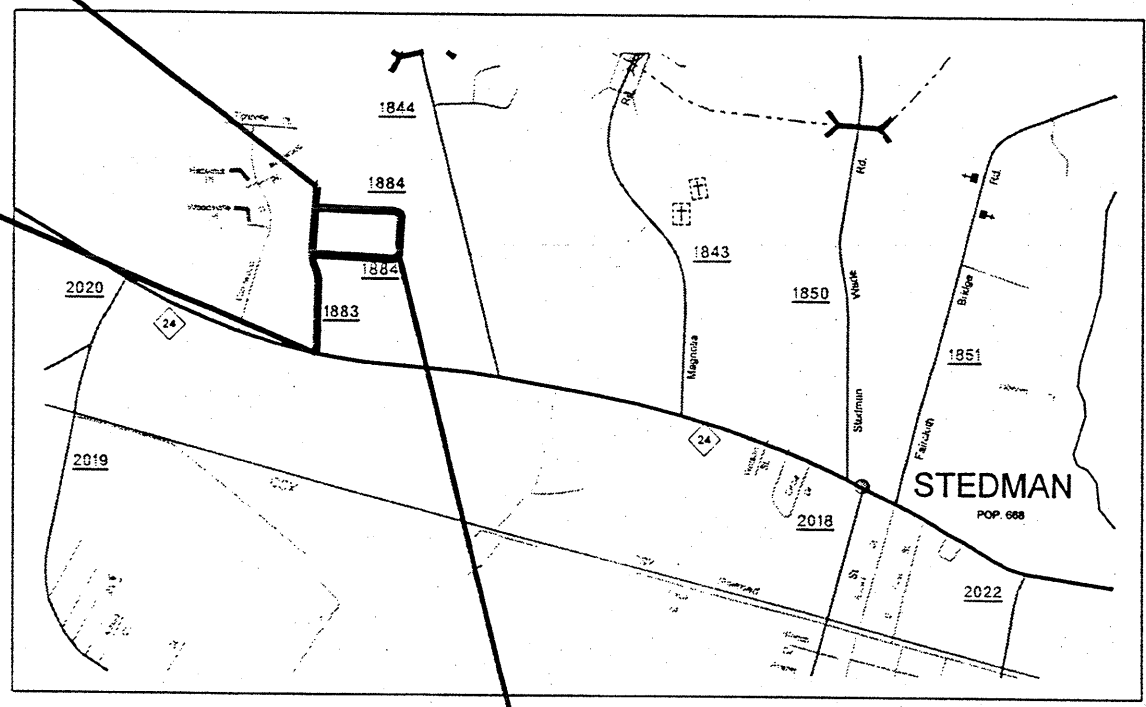
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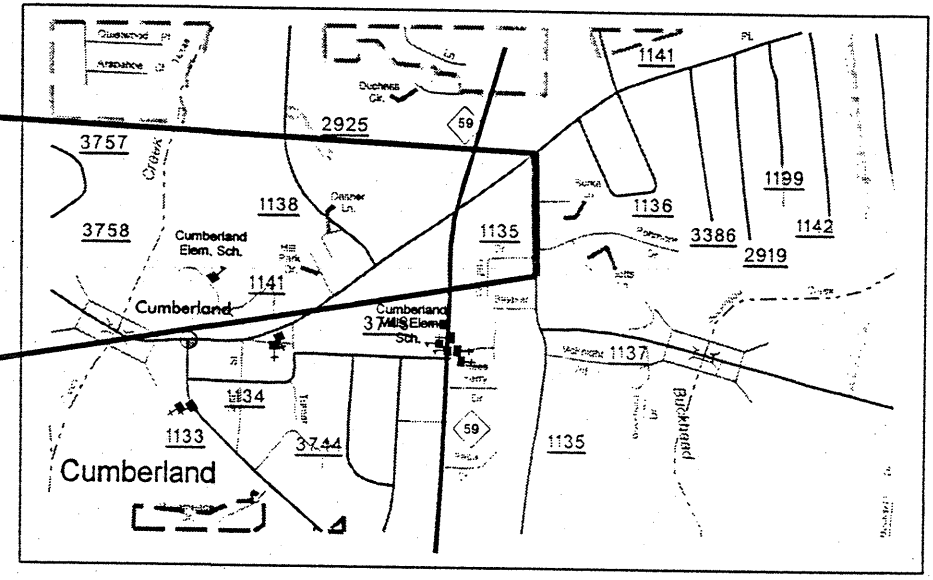
Cumberland County



36



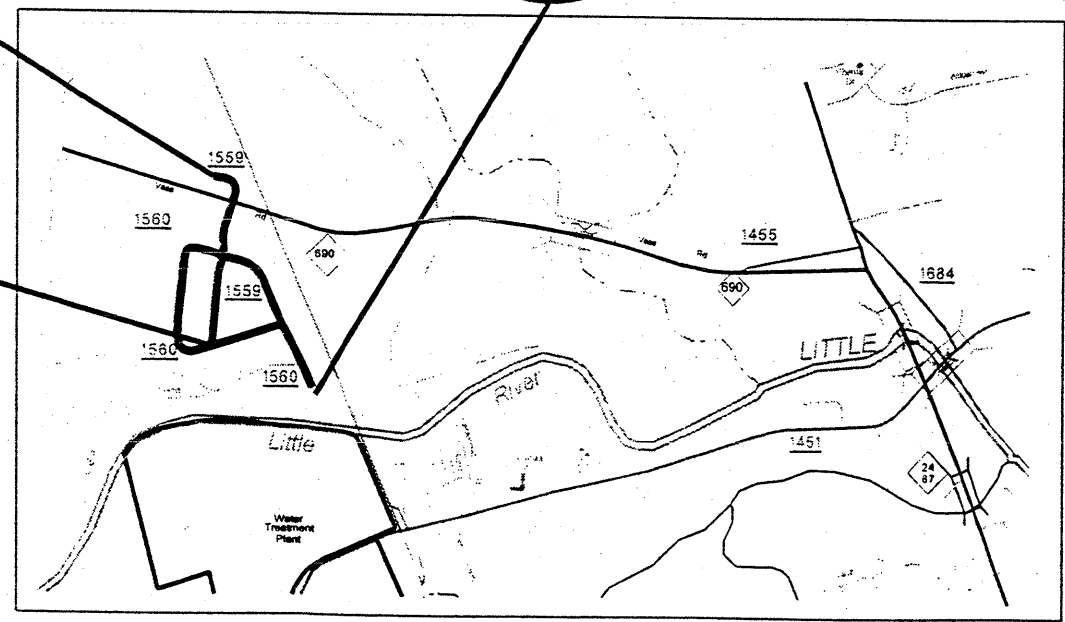
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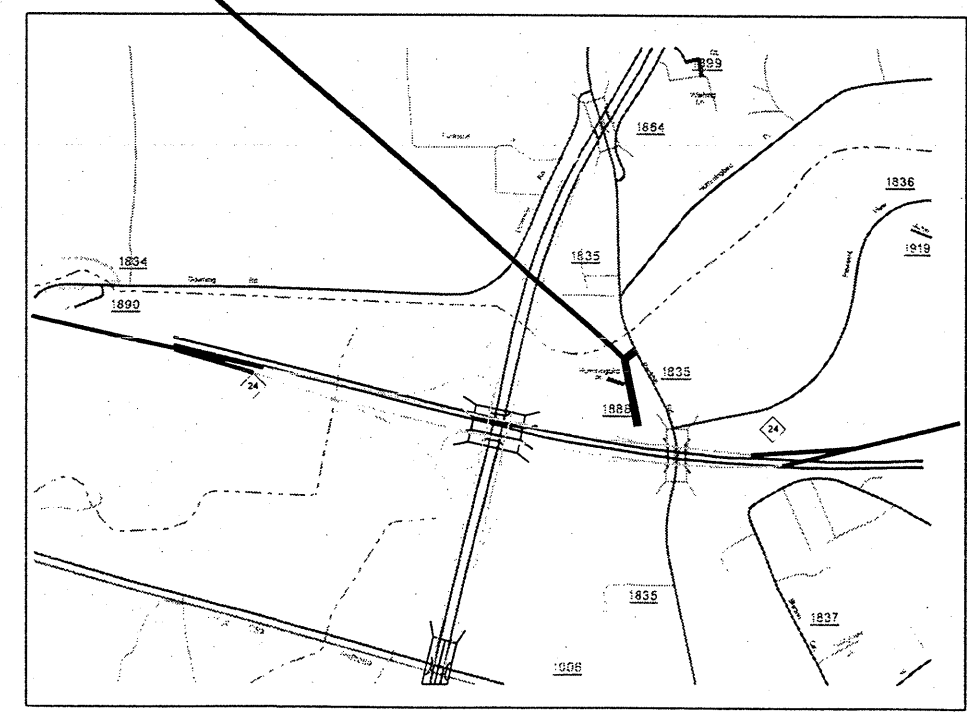
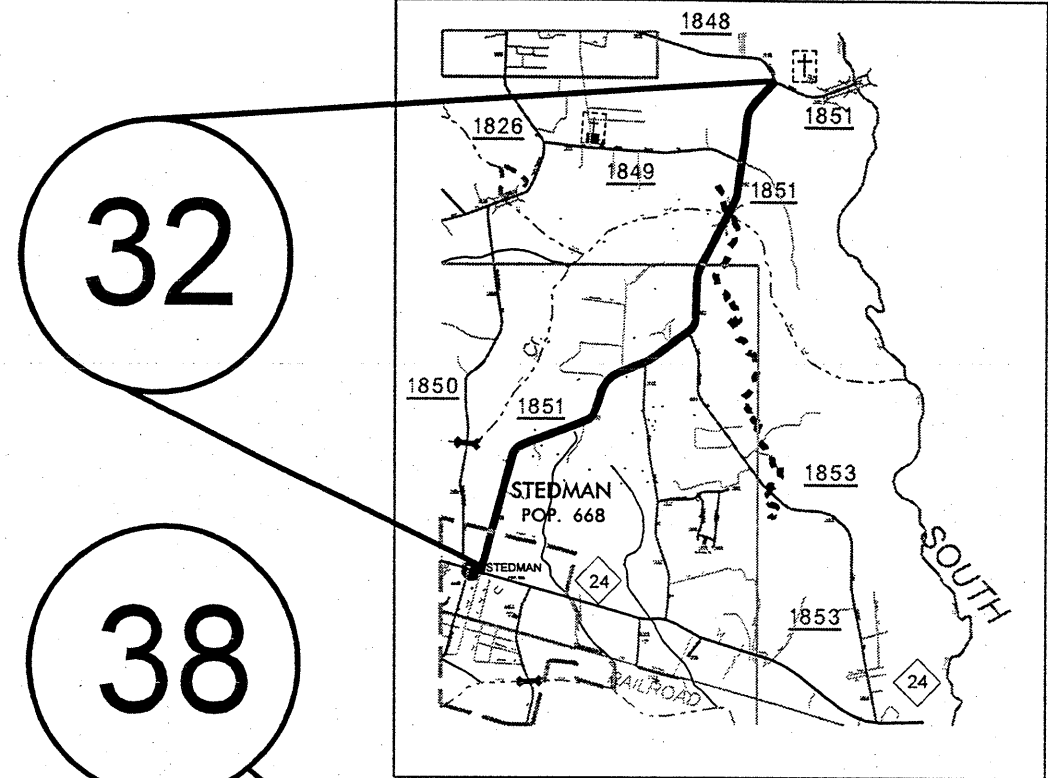
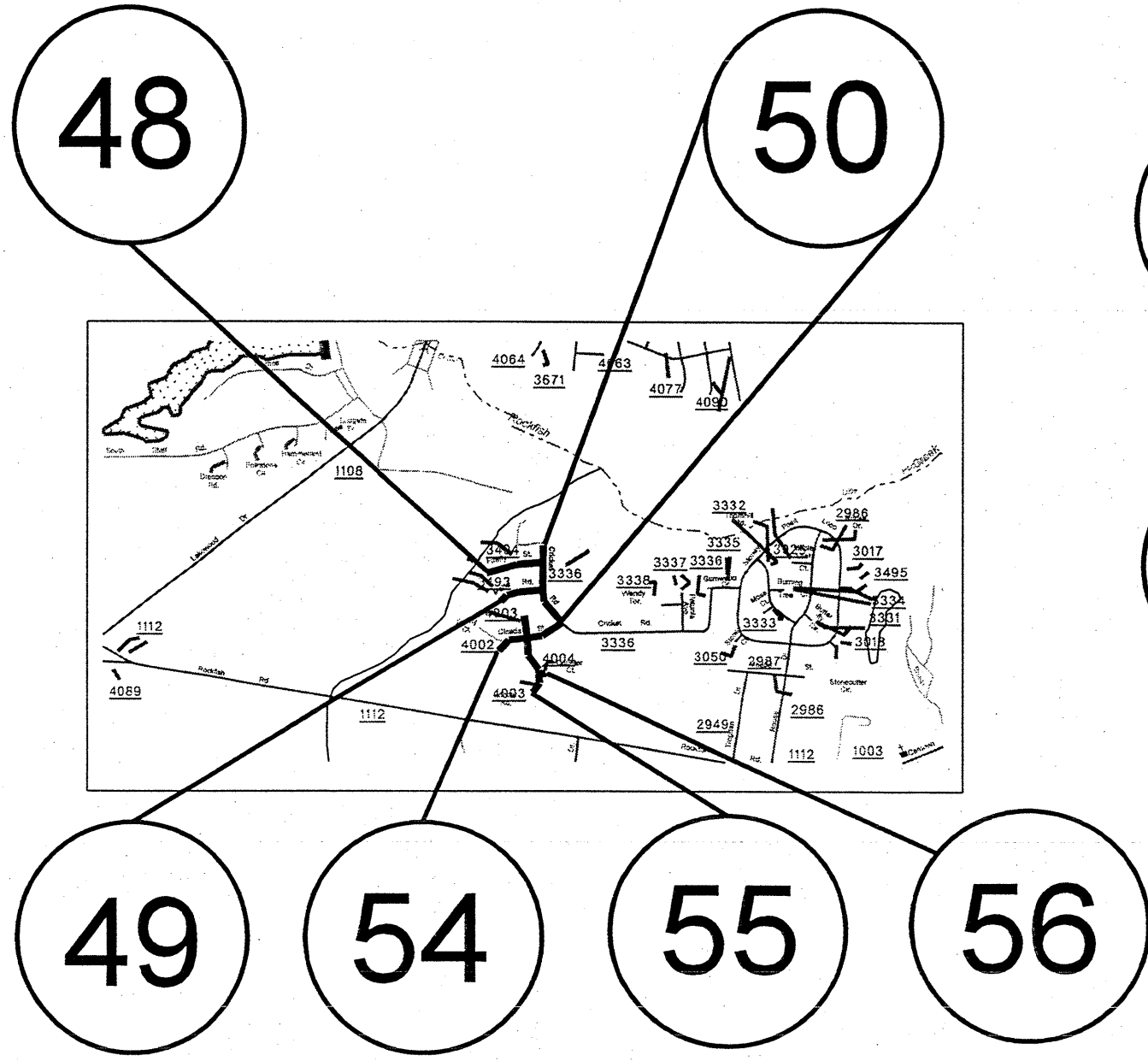
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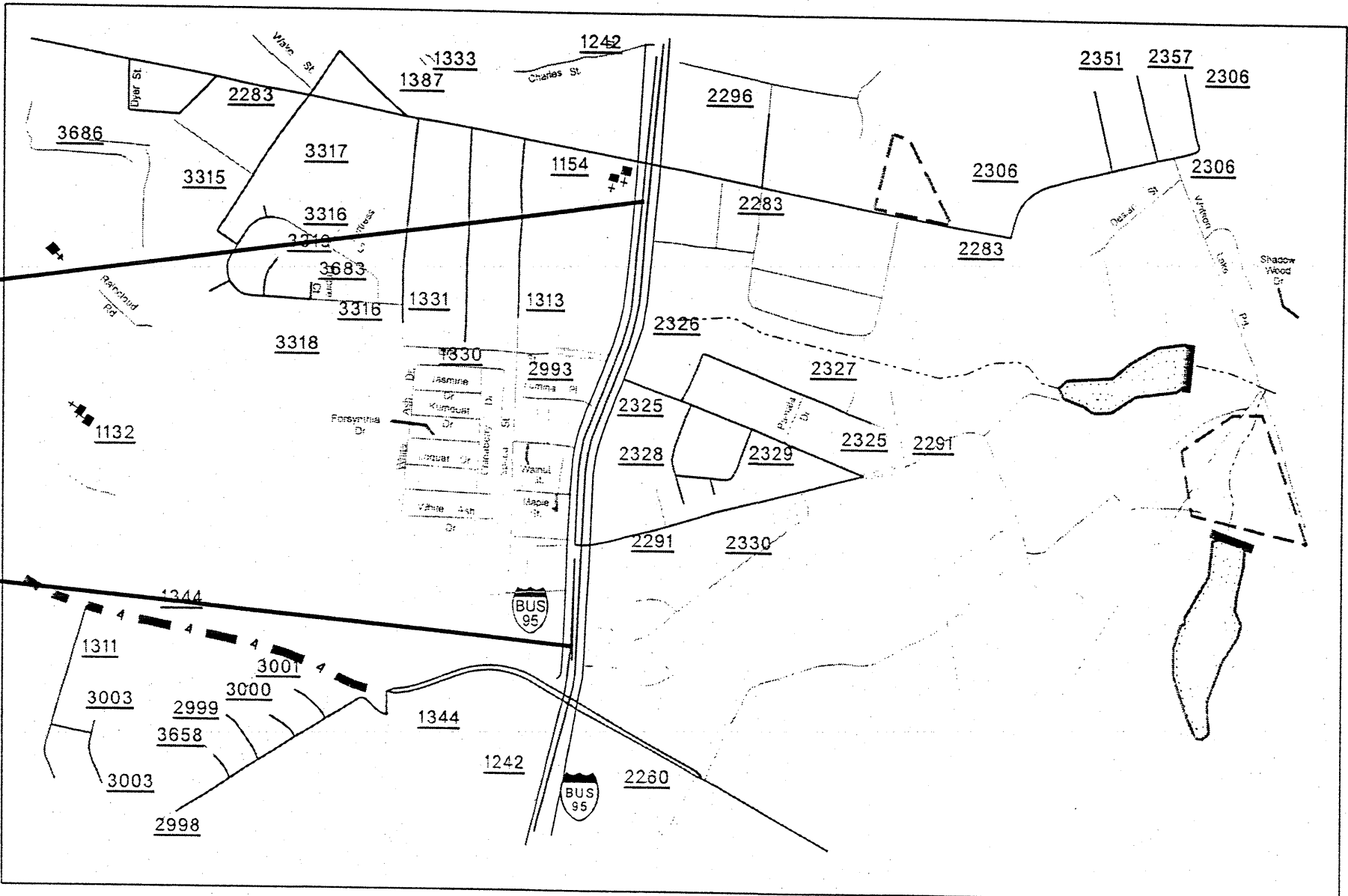


Cumberland County



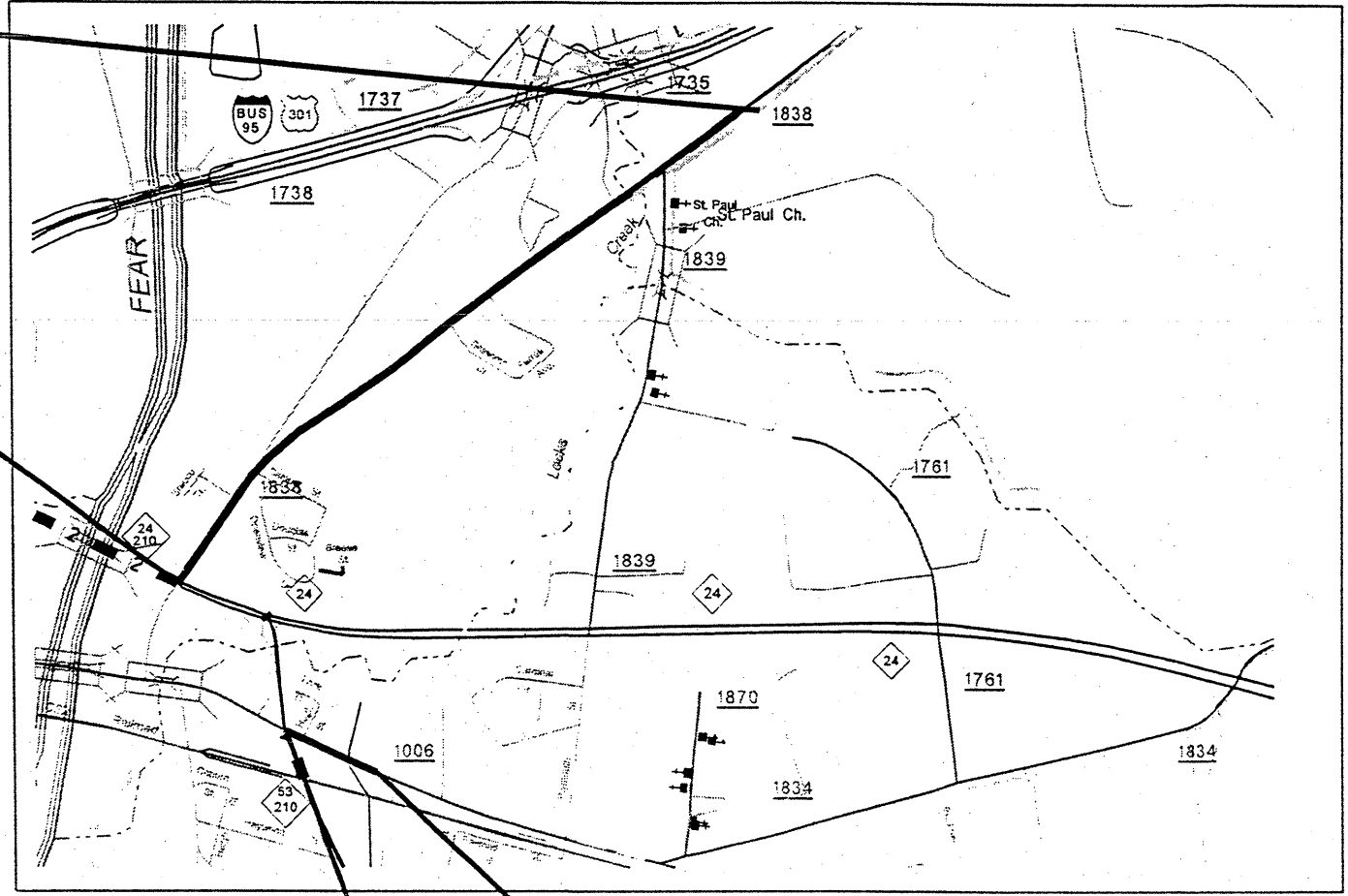


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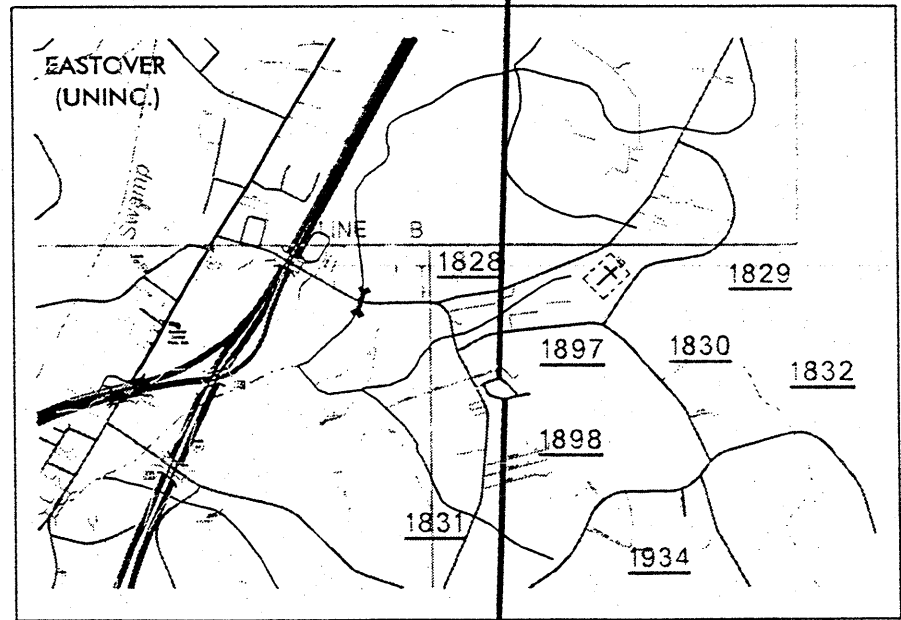




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11

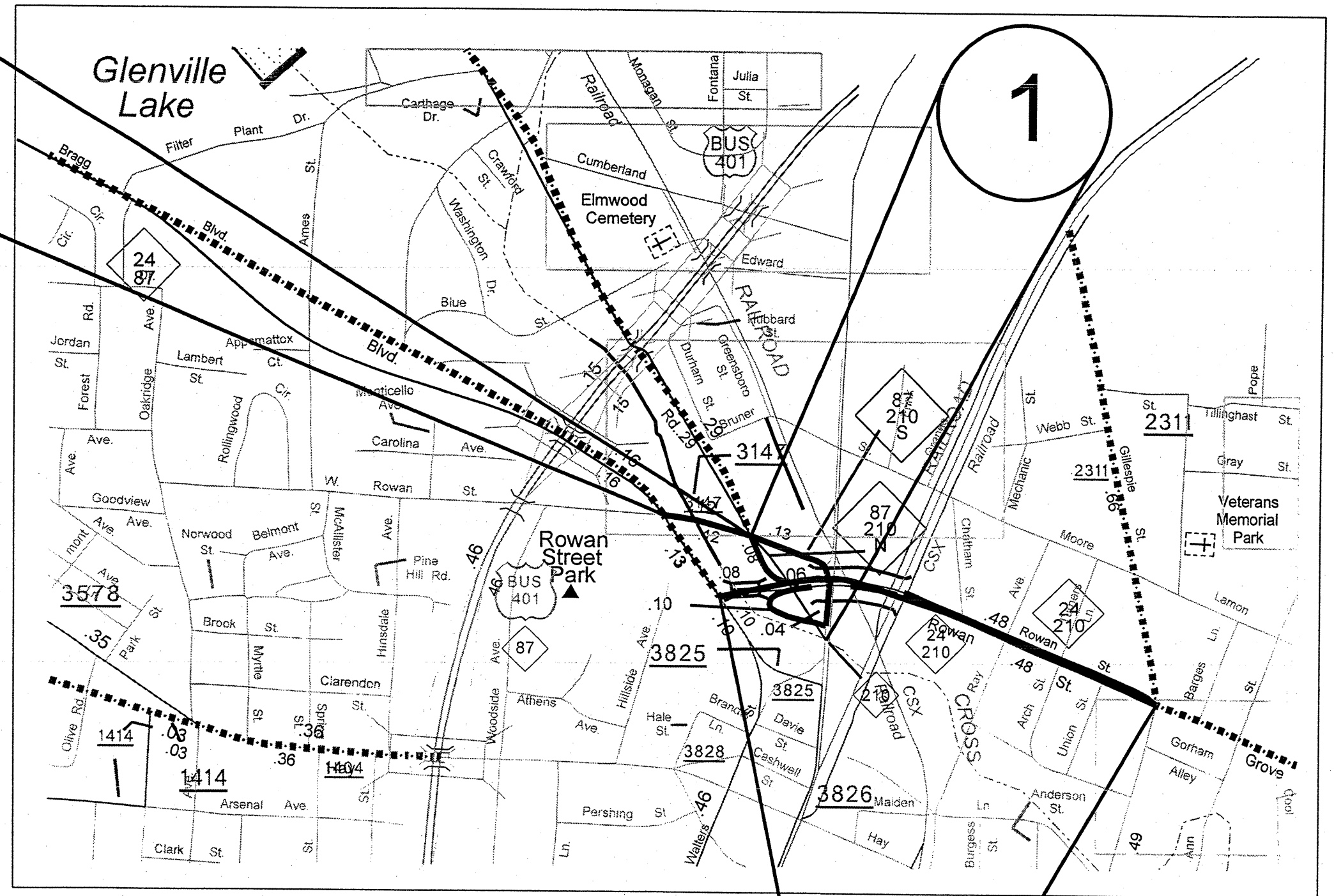
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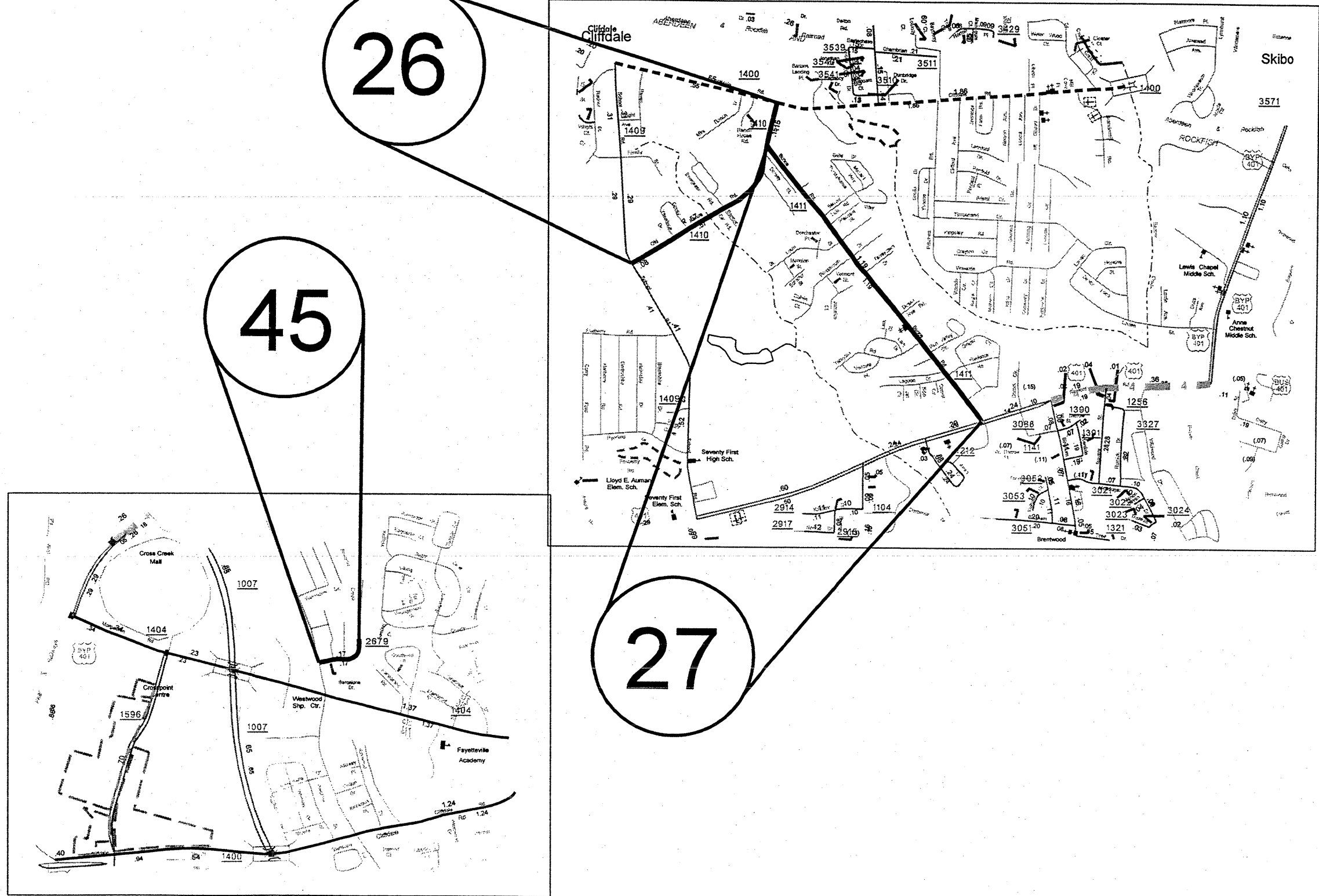
Cumberland County



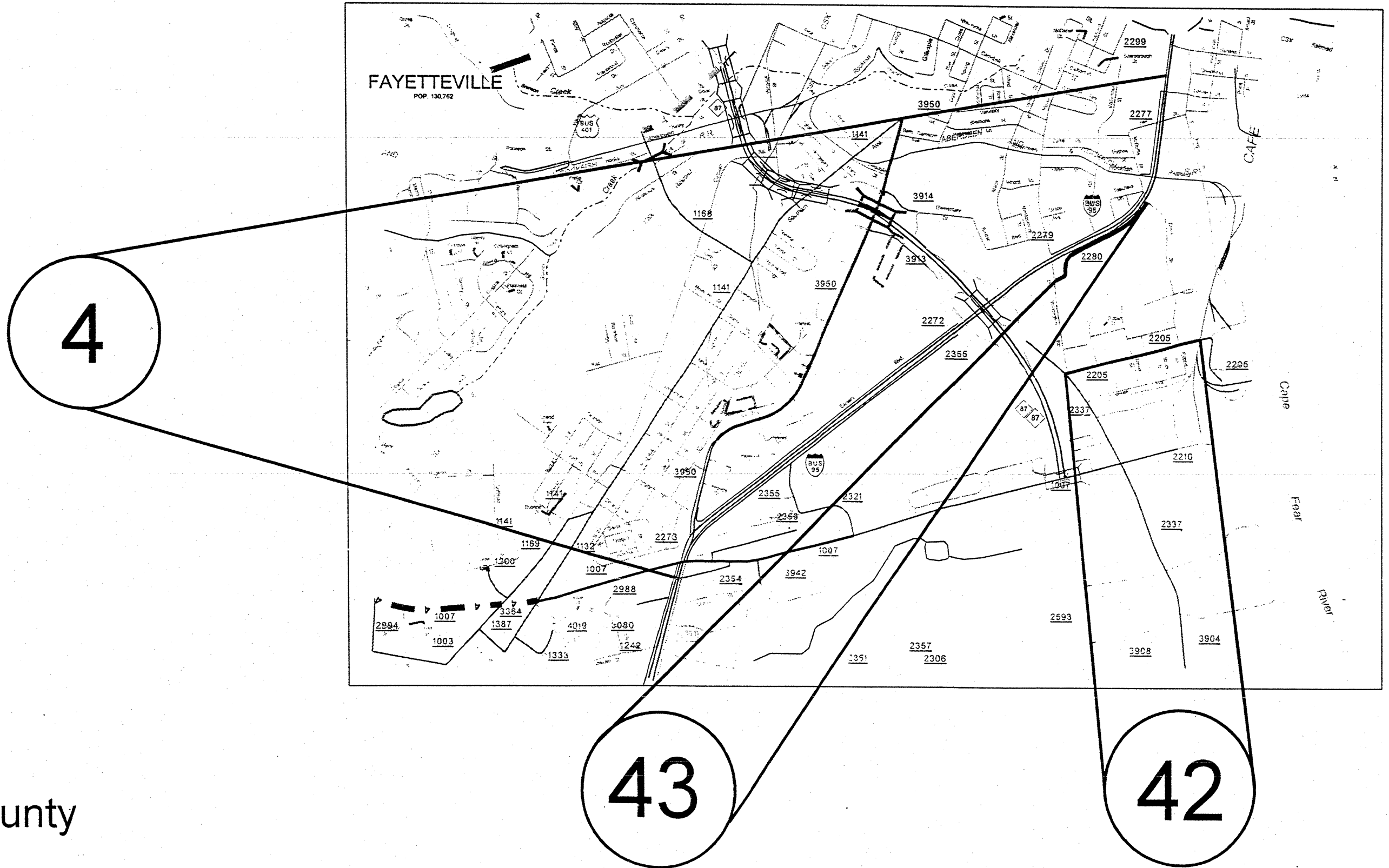
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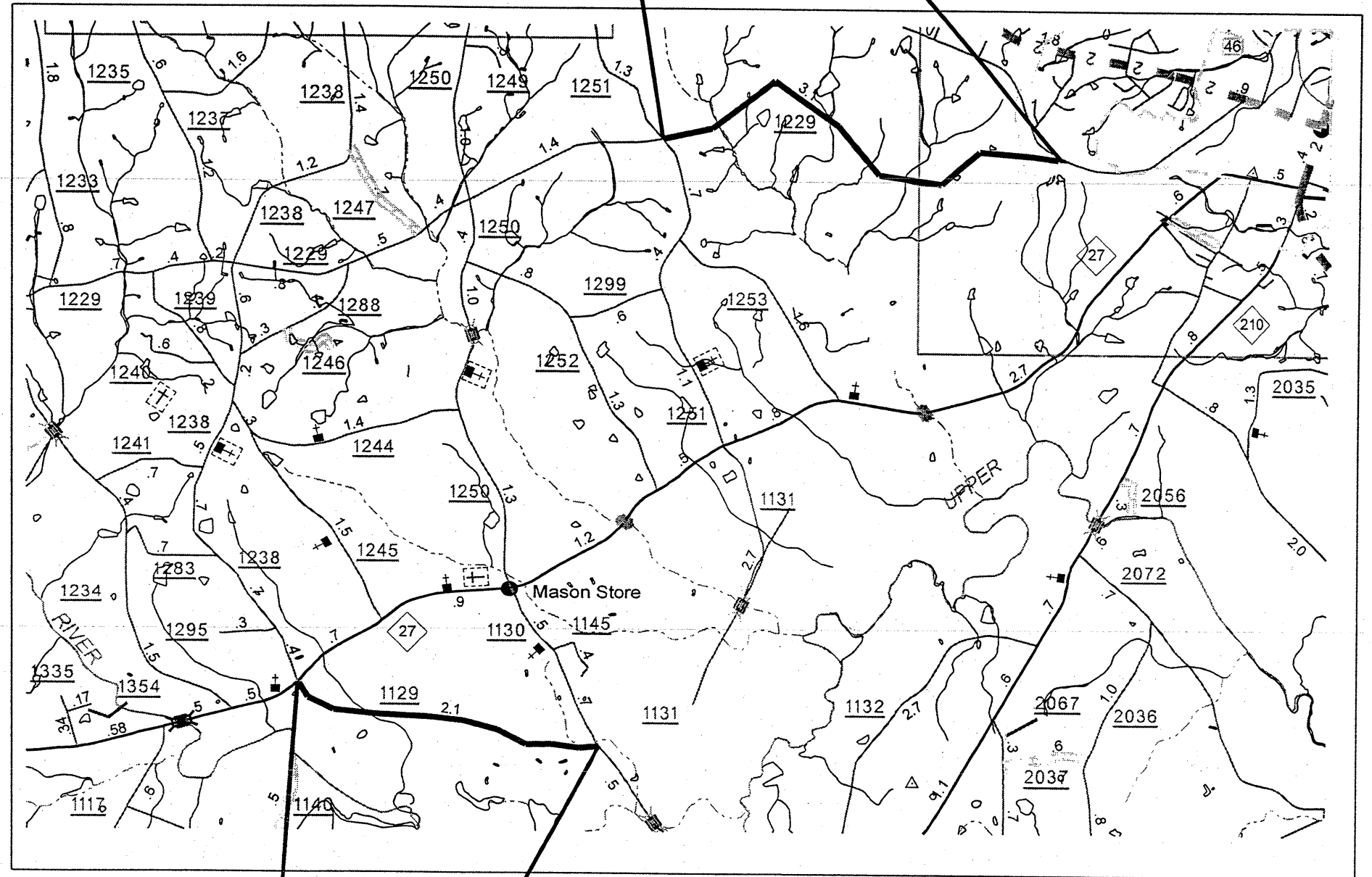
Cumberland County











Harnett County

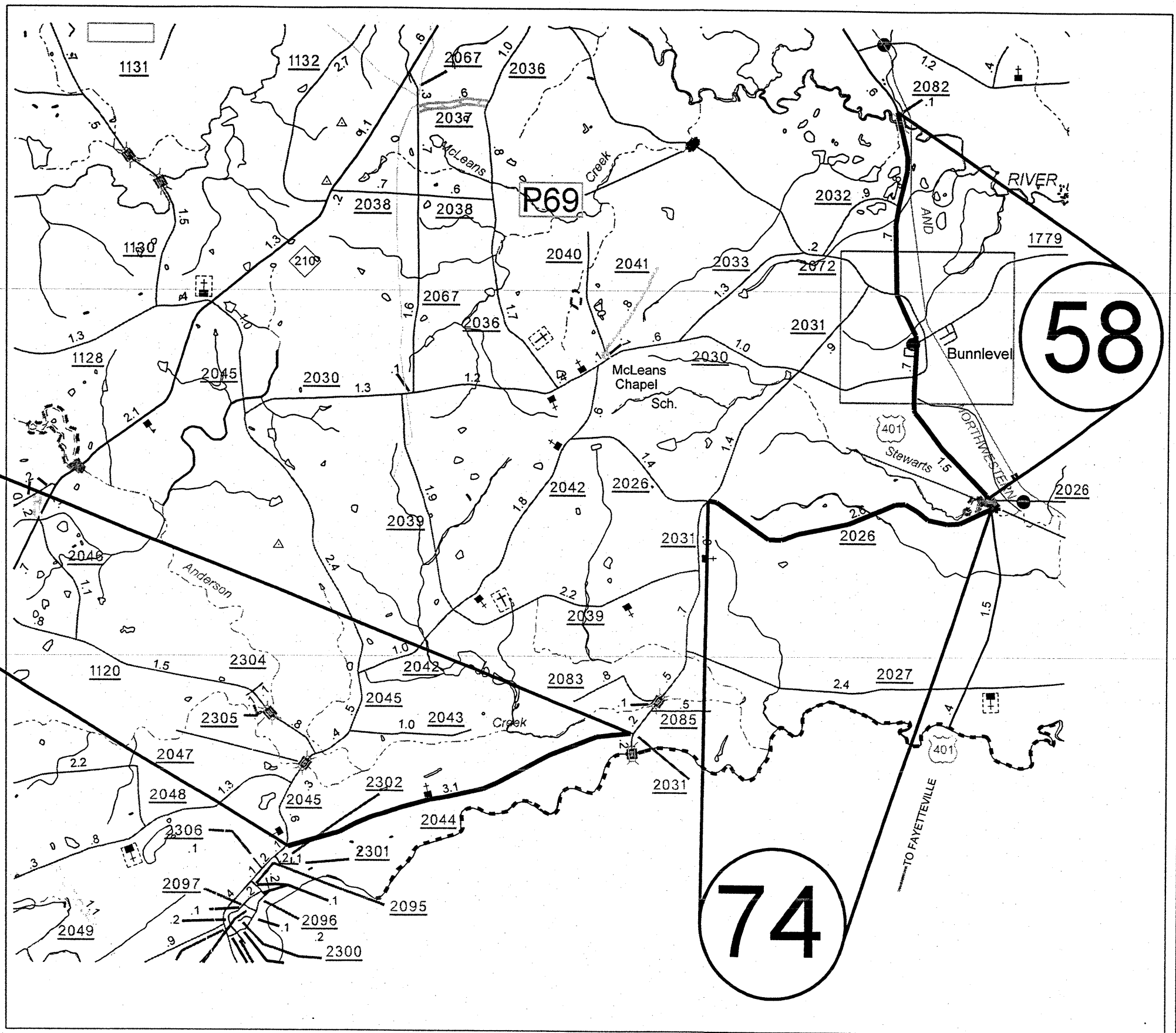
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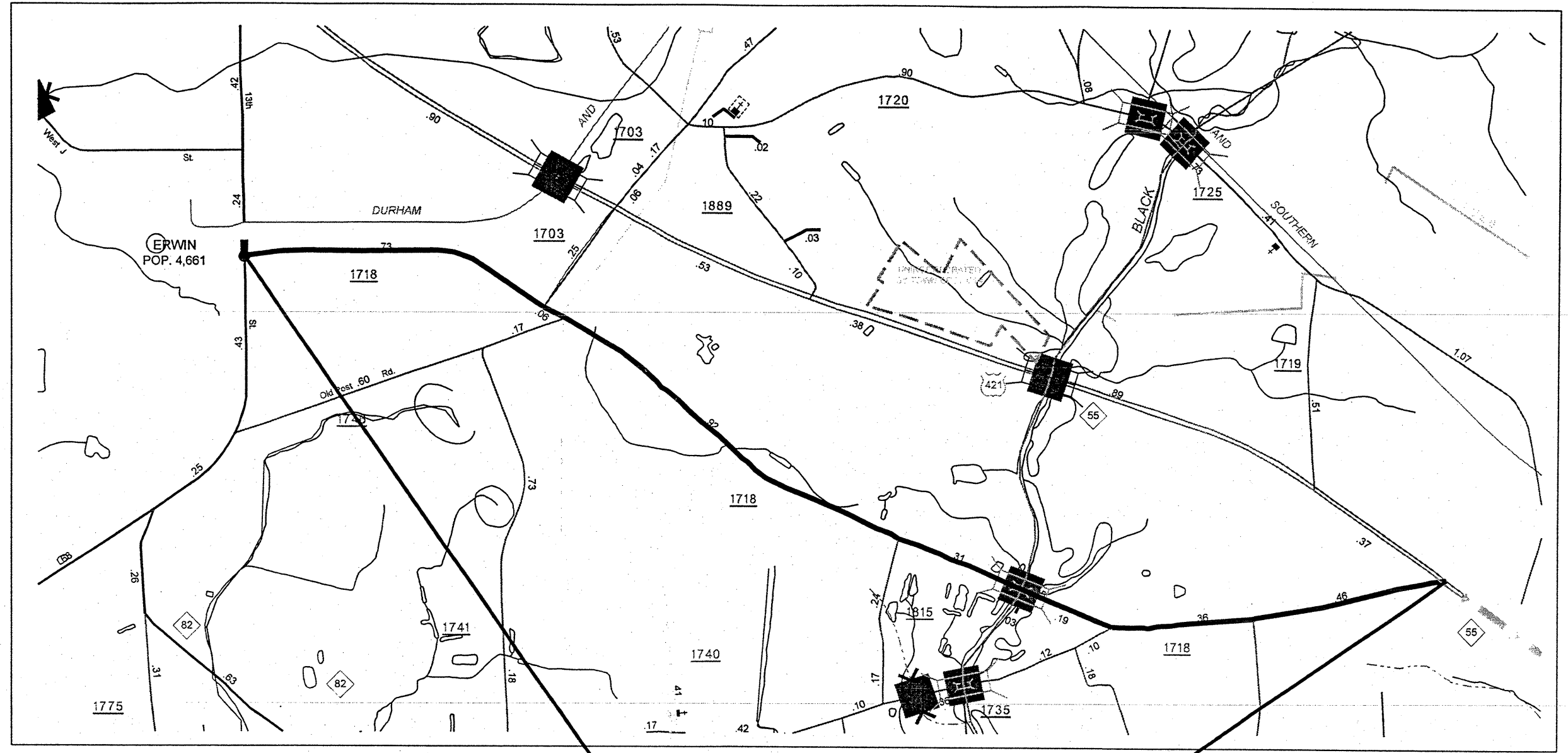
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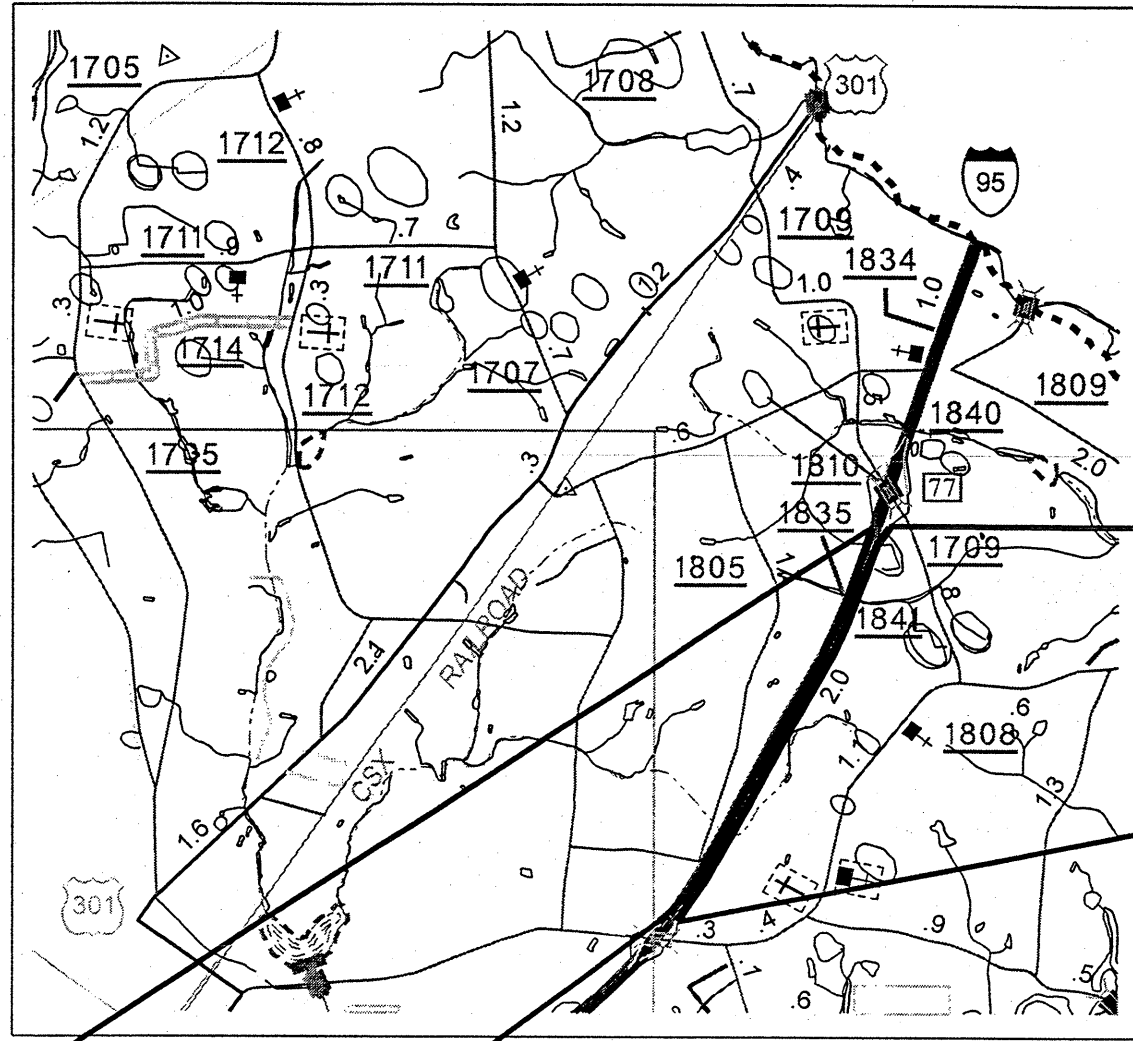
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# Harnett County



69

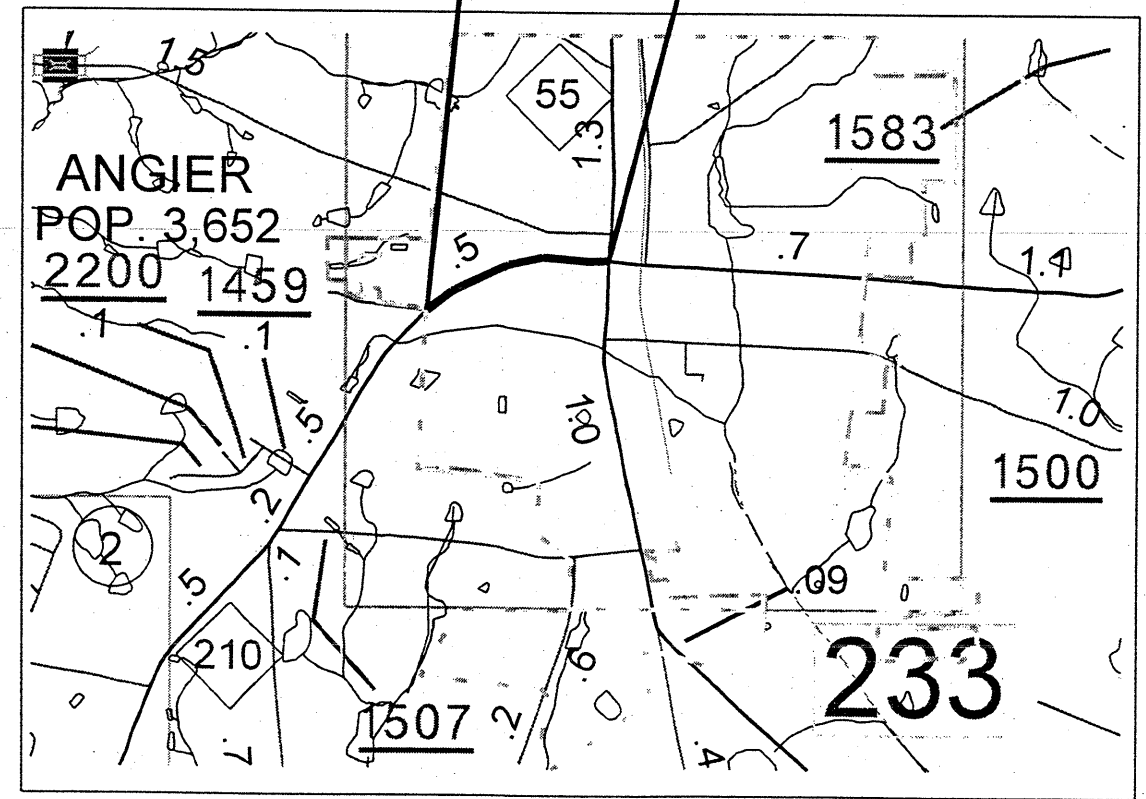
# Harnett County



73

57

72



Harnett County

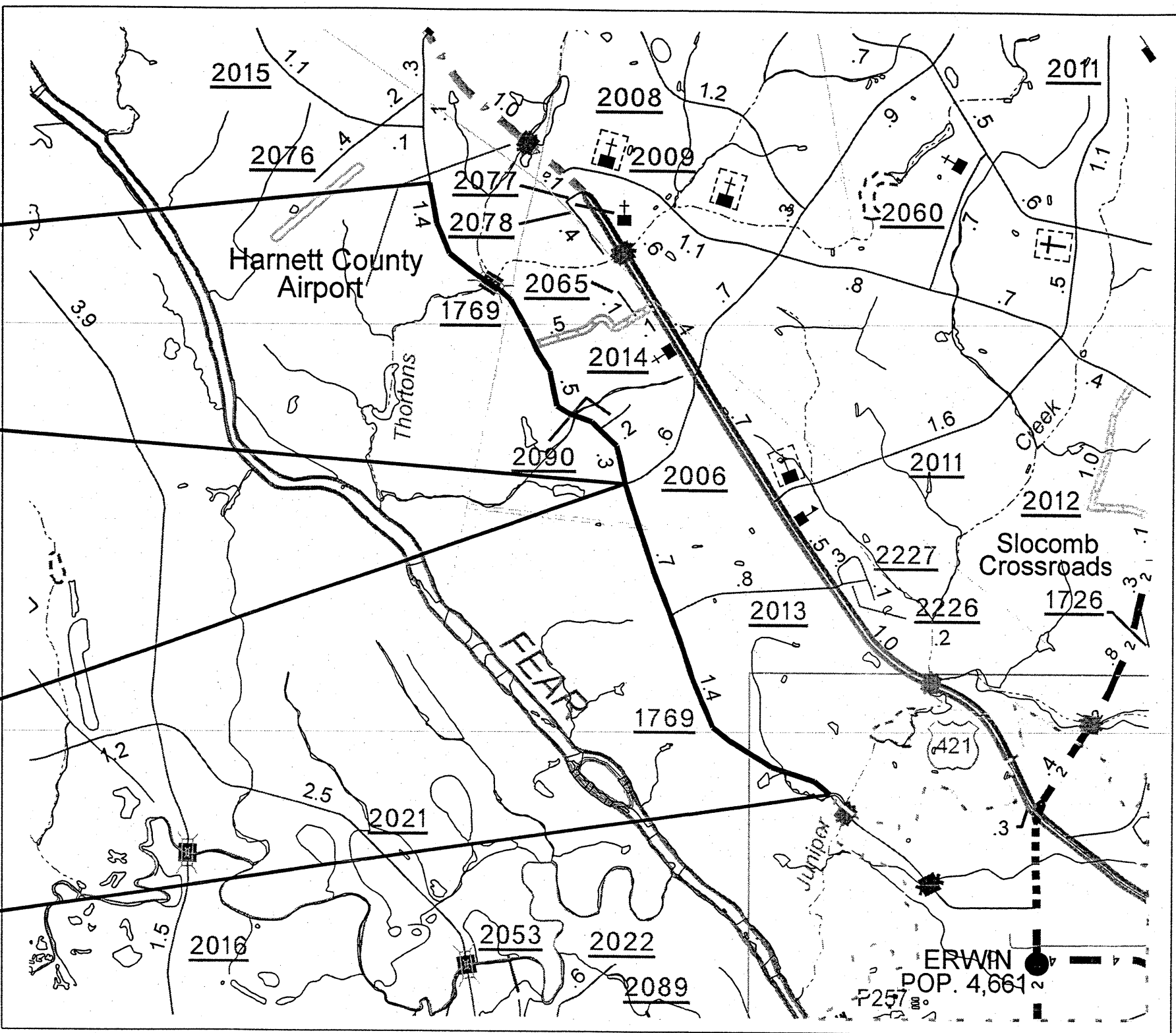
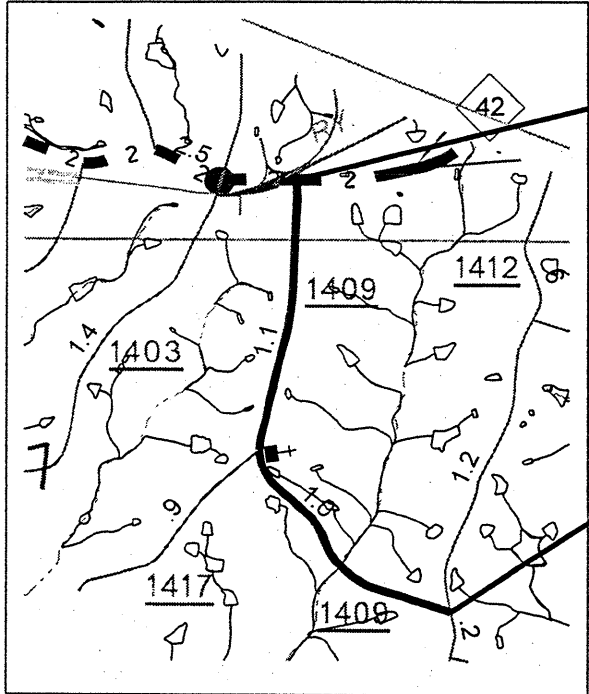




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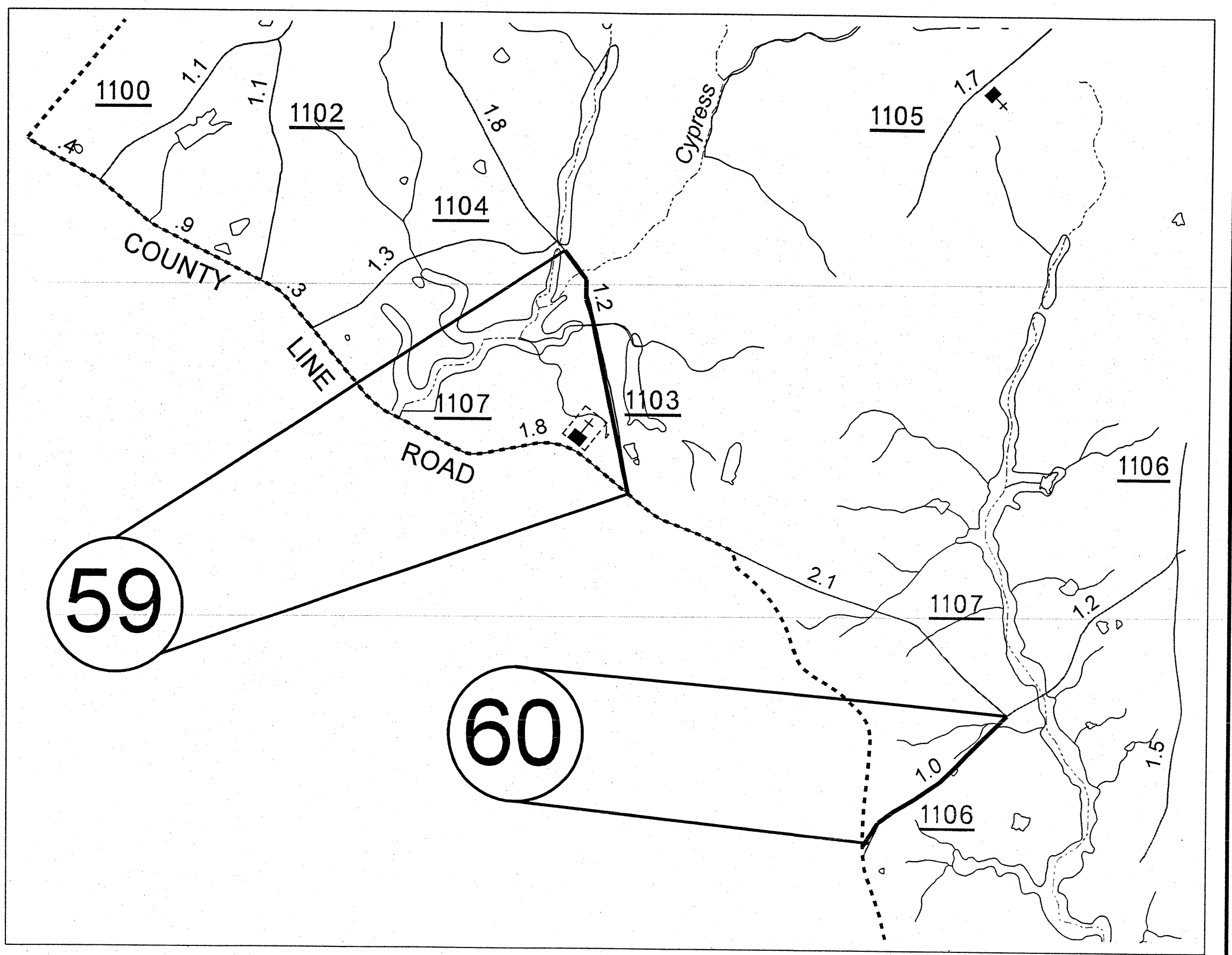
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70



# Harnett County





# Harnett County





## SUMMARY OF QUANTITIES

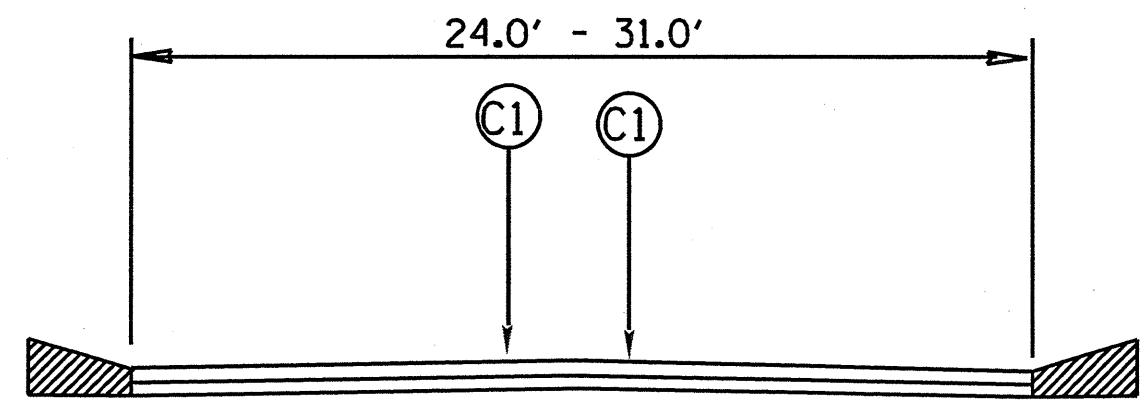
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LENGTH MI	WIDTH FT	5" CONCRETE MONO. ISLAND SY	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	1.5" MILLING SY	0.0" TO 1.5" MILLING SY	0.0" TO 1.25" MILLING SY	0.0" TO 1.0" MILLING SY	0.0" TO 3.0" MILLING SY	INTERMEDIATE COURSE, I19.0B TONS	SURFACE COURSE, S9.5B TONS	LEVELING COURSE, S9.5B TONS	SURFACE COURSE, SF9.5A TONS	PG 64-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	SURFACE COURSE, S4.75 TONS	WHEEL CHAIR RAMPS EA	MANHOLES EA	METER OR VALVE BOX EA	SEED & MULCHING AC	PAVED TRENCHING (1") FT	UNPAVED TRENCHING (2") FT	JUNCTION BOX (STANDARD) EA	2" RISER W/WEATHER HEAD EA	INDUCTIVE LOOP LF	LEAD-IN CABLE LF				
		31	SR 1838	FROM NC 24 MP 0 TO PAV JT MP 1.41		15	1.41	25	34	2.82									1859	121	5			7	5	3										
		32	SR 1851	FROM NC 24 MP 0 TO SR 1848		9	3.45	20	83	6.9				1291					2268	147	15					8										
		33	SR 1862	FROM US 301 MP 0 TO DE MP 0.13		2	0.13	18	3											4	1	57														
		34	SR 1867	FROM SR 1838 MP 0 TO DE MP 0.37		2	0.37	19												13	1	183			3											
		35	SR 1868	FROM SR 1838 TO SR 1867		2	0.13	20												5	5	68			3											
		36	SR 1883	FROM NC 24 MP 0 TO DE MP 0.32		5	0.32	23												17	5	238		3												
		37	SR 1884	FROM SR 1883 MP 0 TO SR 1883 MP 0.40		5	0.4	23												20	5	285														
		38	SR 1888	FROM SR 1835 MP 0 TO DE MP 0.19		6	0.19	20		5	0.38									8	1	119				0										
		39	SR 1889	FROM SR 1835 MP 0 TO DE MP 0.39		3	0.39	19		9	0.78									16	3	173				1										
		40	SR 1897	FROM SR 1831 MP 0 TO SR 1898 MP 0.24		4	0.24	20												12	8	171														
		41	SR 1898	FROM SR 1897 MP 0 TO DE MP 0.25		4	0.25	21												12	1	169														
		42	SR 2205	FROM SR 2337 MP 0 TO PAV JT @ R/R MP 0.47		15	0.08	31		2	0.16									132	9	2				0										
						15	0.39	24		9	0.78								453	29	2				1											
		TOTAL FOR MAP NO. 42					0.47			11	0.94	0	0	0	0		0	0	585	38	4	0				1										
		43	SR 2280	FROM OLD WILMINGTON RD MP 0 TO US 301 MP 0.43		25	0.43	24		10	0.86					230	534			43	10				1	1										
		44	SR 2284	FROM BEGIN 2' WIDENING TO NC 59		8	0.52	24		12	1.04									411	27	15				1										
						8	0.1	50		2	0.2								186	12	1				0											
		TOTAL FOR MAP NO. 44					0.62			14	1.24	0	0	0	0	0	0	0	597	39	16	0				2										
		45	SR 2679	FROM MCPHERSON CH RD MP 0 TO END MAINT MP 0.16		7	0.16	33												11	15	162		7	3											
		46	SR 3003	FROM SR 1308 MP 0.02 TO DE MP 0.17		5	0.17	22												8		117		1	3											
		47	SR 3147	FROM NC 24 MP 0 TO NC 210 MP 0.11		21	0.11	41					1291							18	8			4	4											
		48	SR 3336	FROM SR 4002 TO DE		1	0.18	28												9	10	128														
		49	SR 3493	FROM SR 3336 TO DE		1	0.11	28												5	10	73														
		50	SR 3494	FROM SR 3336 MP 0 TO DE MP 0.14		5	0.14	28												9	1	123														
		51	SR 3644	FROM SR 1288 MP 0 TO DE MP 0.53		4	0.53	20												22	8	318														
		52	SR 3659	FROM SR 1115 MP 0 TO DE MP 0.28		4	0.28	19												11	8	164														
		53	SR 3828	FROM PAV JT 500' N OF BLOUNT ST TO PAV JT 400' N OF SR 1168		19	0.7	60					4506		9856		2143			129	40			26	18		10	100	2	2	2,400	150				
		54	SR 4002	FROM SR 3336 TO DE		1	0.15	31												8	2	119														
		55	SR 4003	FROM DE TO DE		1	0.2	27												10	2	136														
		56	SR 4004	FROM SR 4003 TO DE		1	0.03	27												2	1	23														
		TOTAL FOR PROJ NO. 6CR.20261.23					36.8			725	59.38	0	7440	4477	1291	9856	230	2971	0	32041	2563	598	4092		83	118	77	10	100	2	2	2,400	150			
6CR.10431.23	Harnett	57	NC 210	FROM ANGLIER CITY LIMITS TO NC 55		23	0.52	25		12	1.04								790				1	1	1											
		58	US 401B	FROM PAV JT 300' N OF BRIDGE TO SR 2026		24	3.06	29		73	6.12		1871							4449						7										
						21	0.33	45				3872								757																
		TOTAL FOR MAP NO. 58					3.39			73	6.12	0	5743	0	0	0	0	0	5206	312	11	0				7										
		TOTAL FOR PROJ NO. 6CR.10431.23					3.91			85	7.16	0	5743	0	0	0	0	0	5996	0	0	359	21	0	1	1	9									
6CR.20431.23	Harnett	59	SR 1103	FROM SR 1107 MP 0 TO SR 1104 MP 1.24		8	1.24	21		30	2.48									857	56	10				3										
		60	SR 1106	FROM SR 1107 TO MORRE CO		8	0.96	19		23	1.92									597	39	5				2										
		61	SR 1129	FROM NC 27 MP 0 TO SR 1130 MP 2.10		8	2.1	21		50	4.2									1439	94	10				5										
		62	SR 1221	FROM PAV JT @ LEE CO MP 0 TO SR 1222 MP 0.72		8	0.72	19		17	1.44									458	30	5				2										
		63	SR 1229A	FROM SR 1291 MP 0 TO PAV JT @ SR 1251 MP 3.13		8	3.13	19		75	6.26									1935	126	15				8										
		64	SR 1229B	FROM PAV JT @ SR 1213 MP 10.40 TO SR 1215 MP 12.89		8	2.49	20		60	4.98									1673	109	5				6										
		65	SR 1409	FROM NC 42 MP 0 TO SR 1412 MP 2.09		8	2.09	21		50	4.18									1441	94	6			5	5										
		66	SR 1712A	FROM SR 1802 MP 0 TO US 301 MP 0.73		9	0.73	21		18	1.46			1355						511	33	3				2										
		67	SR 1712B	FROM US 301 MP 0.73 TO SR 1714 MP 2.16		8	1.43	19		34	2.81									901	59	8				2	3									
		68	SR 1712C	FROM SR 1714 MP 2.16 TO SR 1705 MP 3.18		8	1.02	19		24	2.04									658	43	5				3	2									
		69	SR 1718	FROM US 421 MP 0 TO NC 217 MP 3.13		21	0.48	44					5632							1066	64	5		8	2		10	100	2	2	3,400	150				
						23	0.36	35		9	0.72								634	38	5				5	1										
						24	1.48	23		36	2.96		1484						1690	101	8		1													



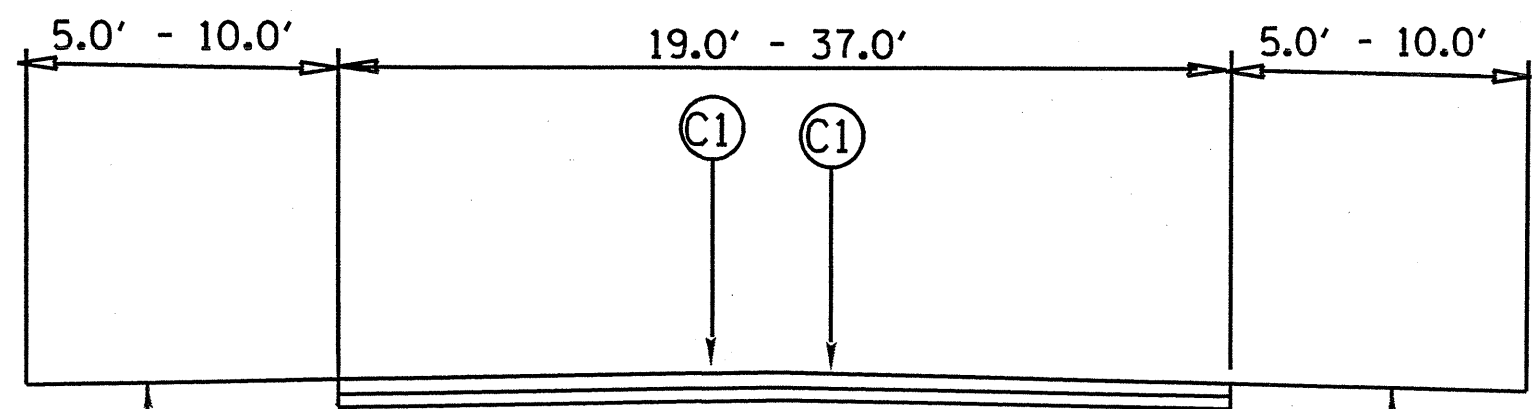




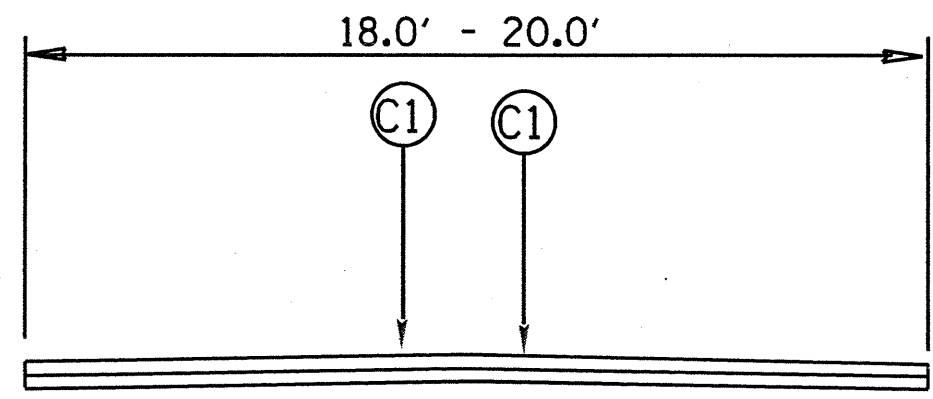
PAVEMENT SCHEDULE	
C1	PROP. APPROX. $\frac{3}{4}$ " ASPHALT CONCRETE SURFACE COURSE, TYPE S4.75A, AT AN AVERAGE RATE OF 75 LBS. PER SQ. YD.
C2	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE S4.75A, AT AN AVERAGE RATE OF 100 LBS. PER SQ. YD.
C3	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
C4	PROP. APPROX. $1\frac{1}{4}$ " ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD.
C5	PROP. APPROX. $1\frac{1}{2}$ " ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C6	PROP. APPROX. $1\frac{1}{2}$ " ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 4 " ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
M1	MILLING AT AN AVERAGE DEPTH OF 1.00" FOR BRIDGE OR RAILROAD APPROACHES AND DEPARTURES AS DIRECTED BY THE ENGINEER.
M2	MILLING AT AN AVERAGE DEPTH OF 1" AS DIRECTED BY THE ENGINEER.
M3	MILLING AT AN AVERAGE DEPTH OF 1.25" FOR BRIDGE OR RAILROAD APPROACHES AND DEPARTURES AS DIRECTED BY THE ENGINEER.
M4	MILLING AT A DEPTH OF 0" TO 1.25" TO BE MILLED TO A DEPTH OF 1.25" BELOW THE GUTTER AT EP AS DIRECTED BY THE ENGINEER.
M5	MILLING AT AN AVERAGE DEPTH OF 0 - 1.5" AS DIRECTED BY THE ENGINEER.
M6	MILLING AT AN AVERAGE DEPTH OF 1.50" FOR BRIDGE OR RAILROAD APPROACHES AND DEPARTURES AS DIRECTED BY THE ENGINEER.
M7	MILLING AT A DEPTH OF 0" TO 1.5" TO BE MILLED TO A DEPTH OF 1.5" BELOW THE GUTTER AT EP AS DIRECTED BY THE ENGINEER.
M8	MILLING AT A DEPTH OF 0" TO 3.0" TO BE MILLED TO A DEPTH OF 3.0" BELOW THE GUTTER AT EP AS DIRECTED BY THE ENGINEER.
M9	MILLING AT AN AVERAGE DEPTH OF 1.5" AS DIRECTED BY THE ENGINEER.
T	EARTH MATERIAL.



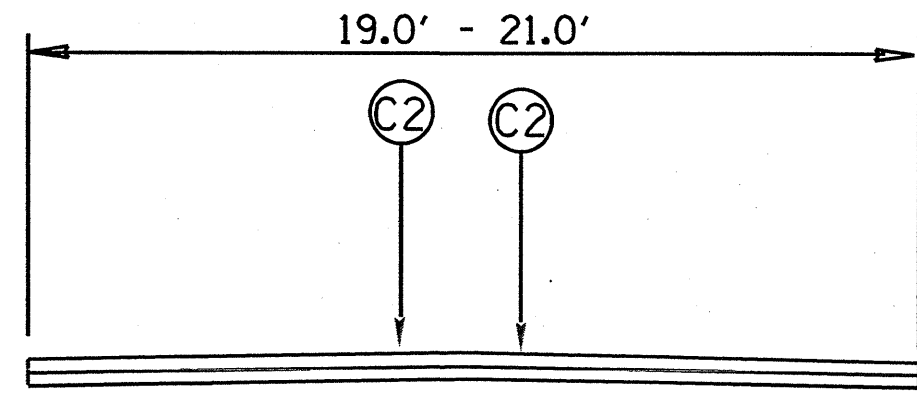
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TYPICAL SECTION NO. 3

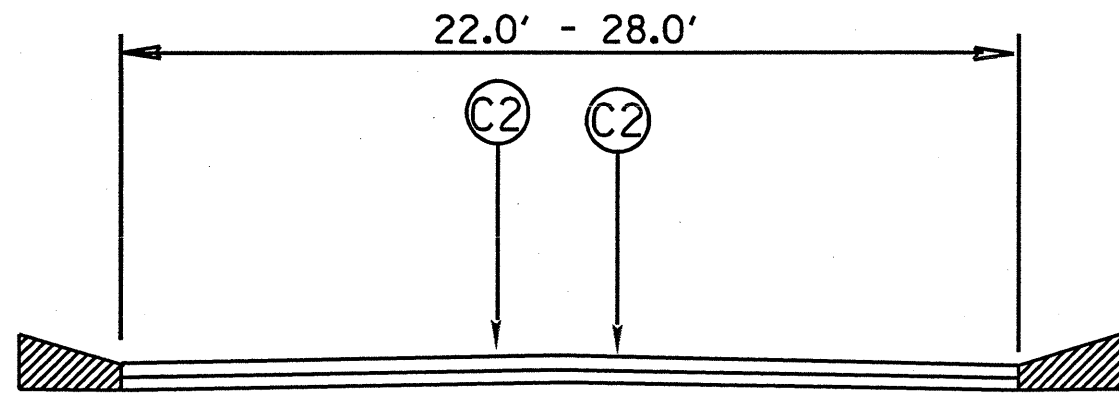


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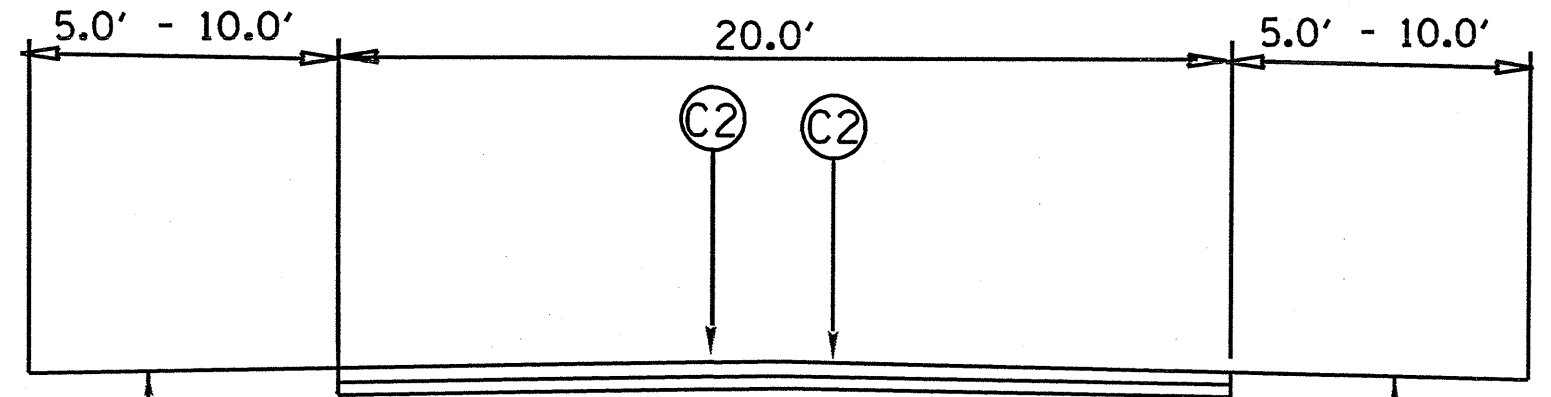


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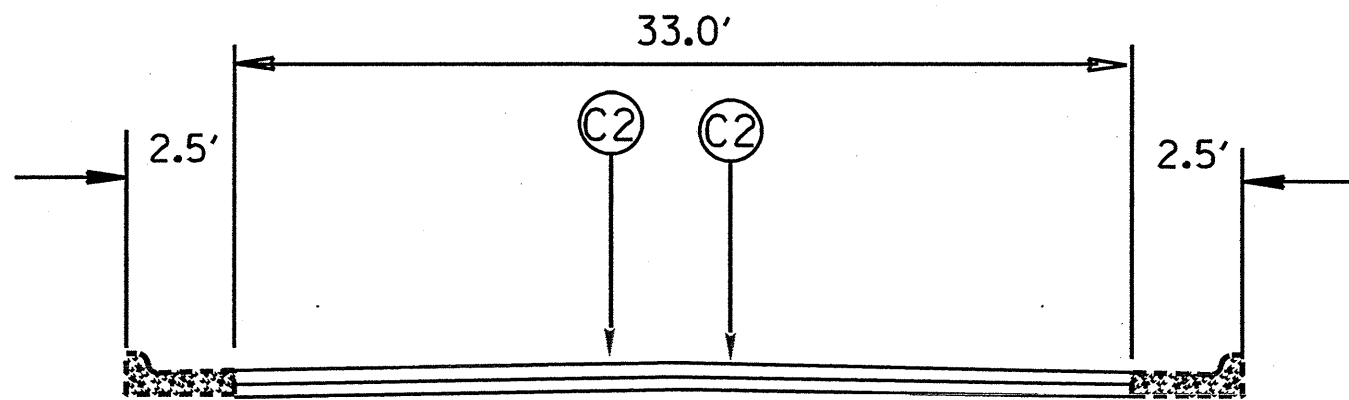




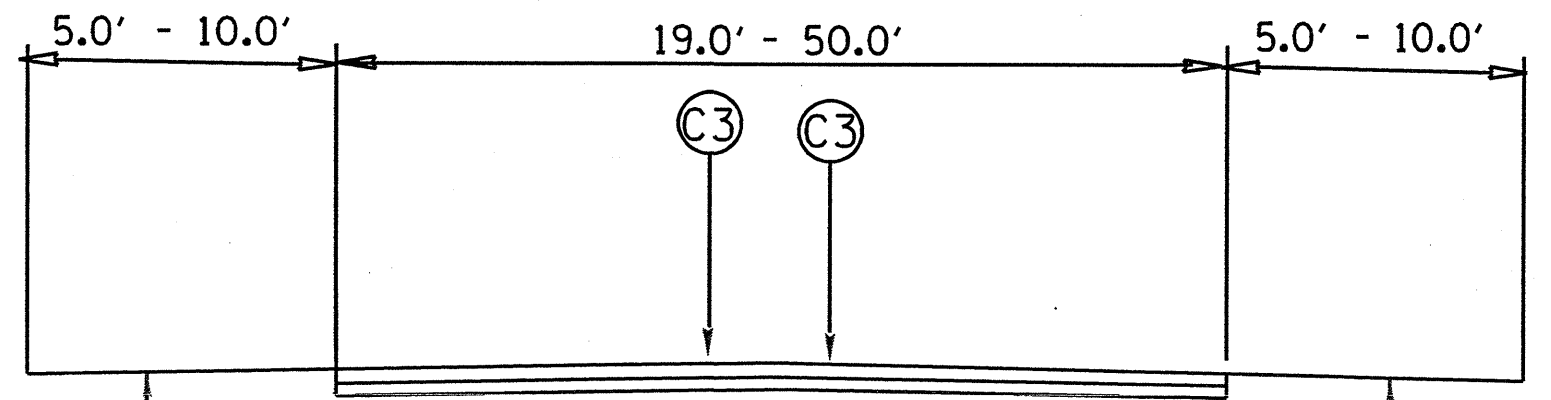
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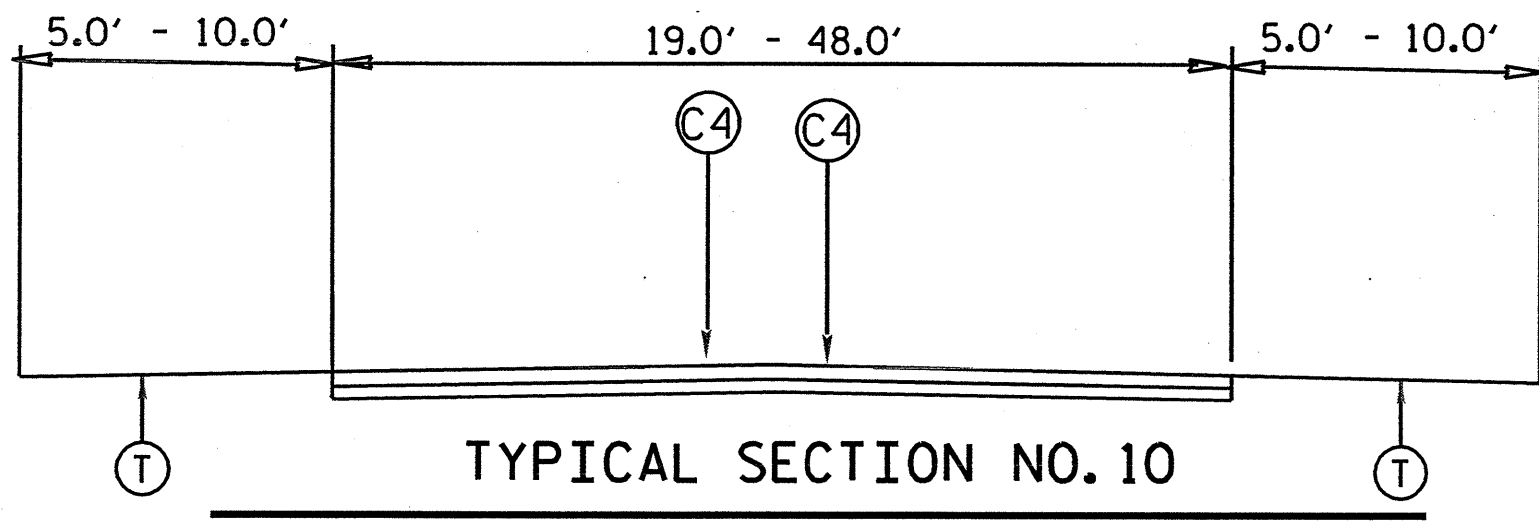
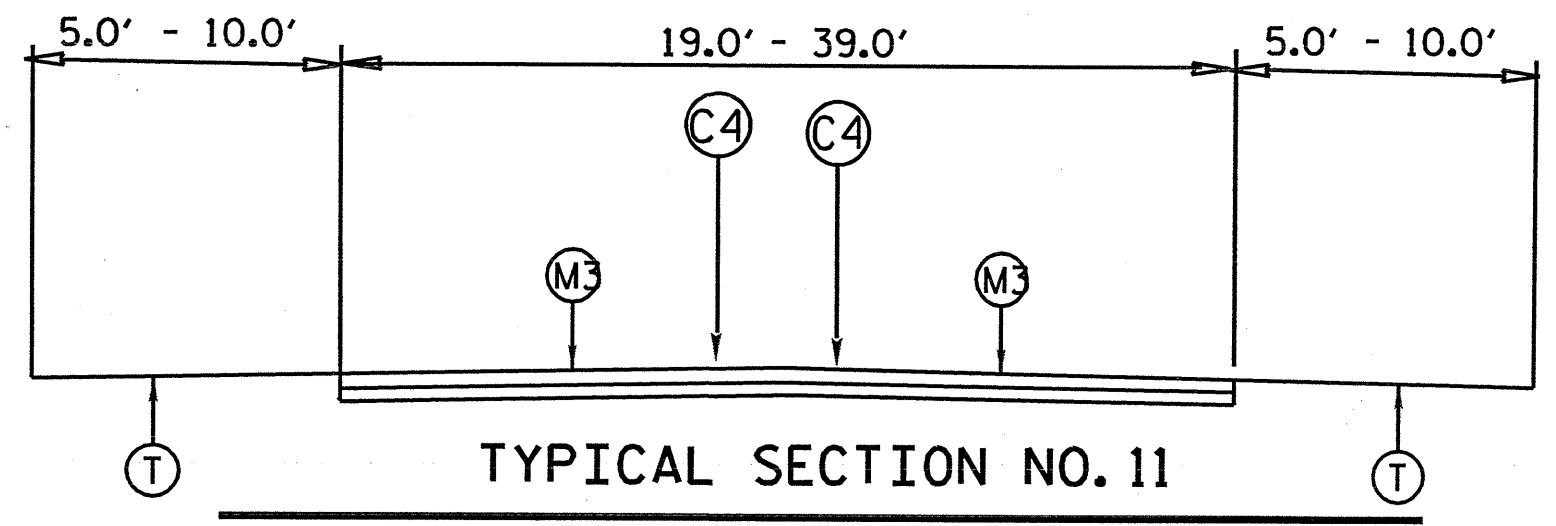
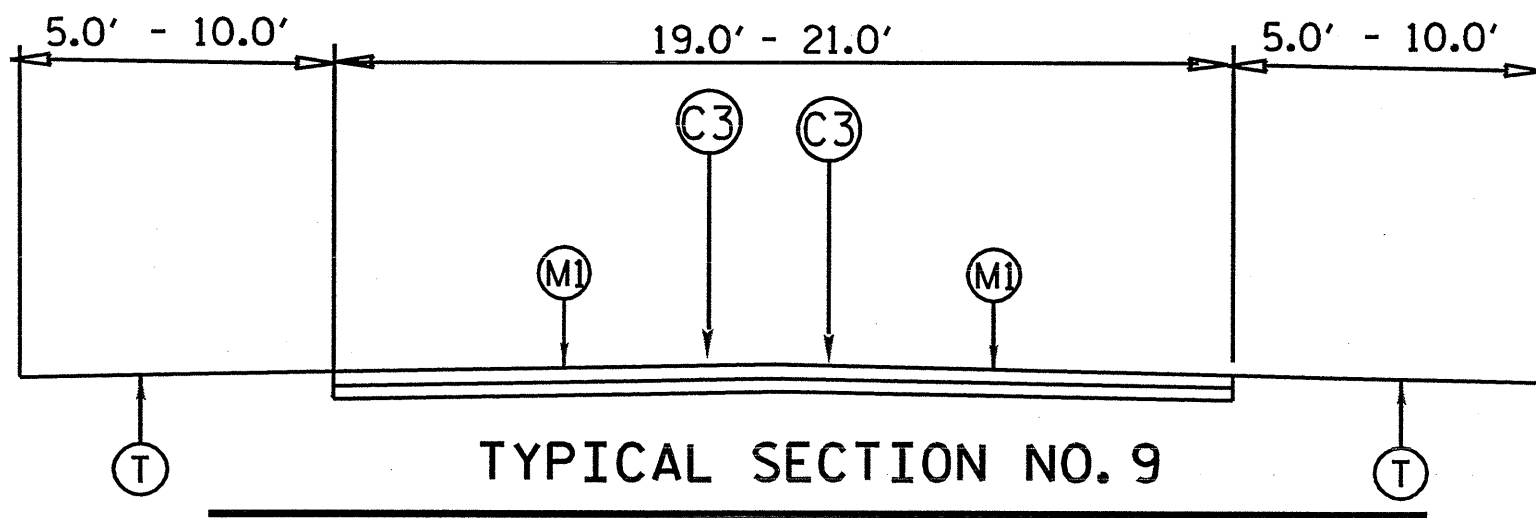
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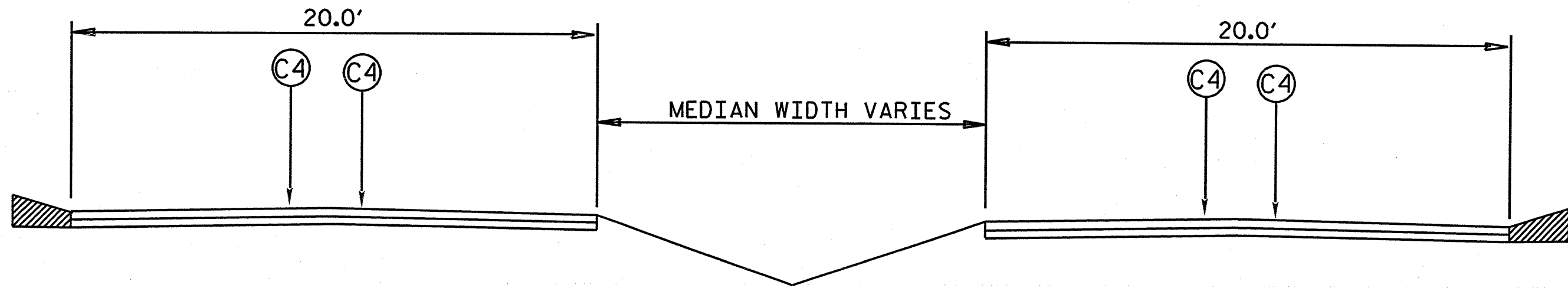


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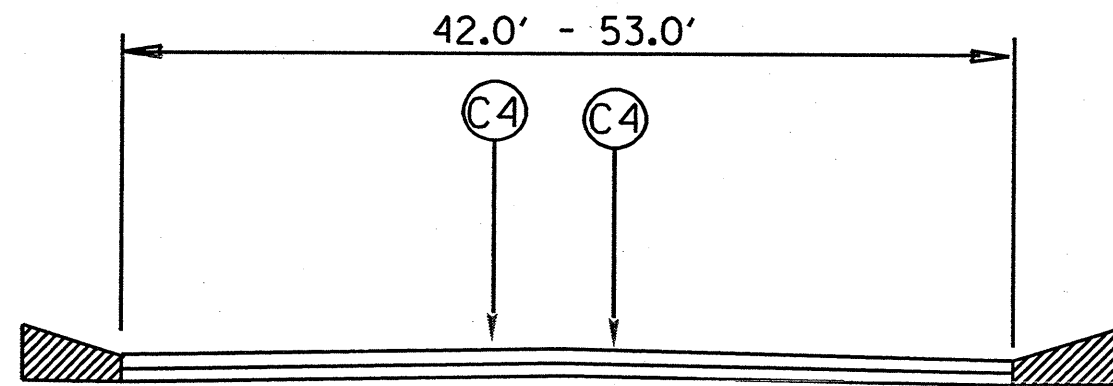


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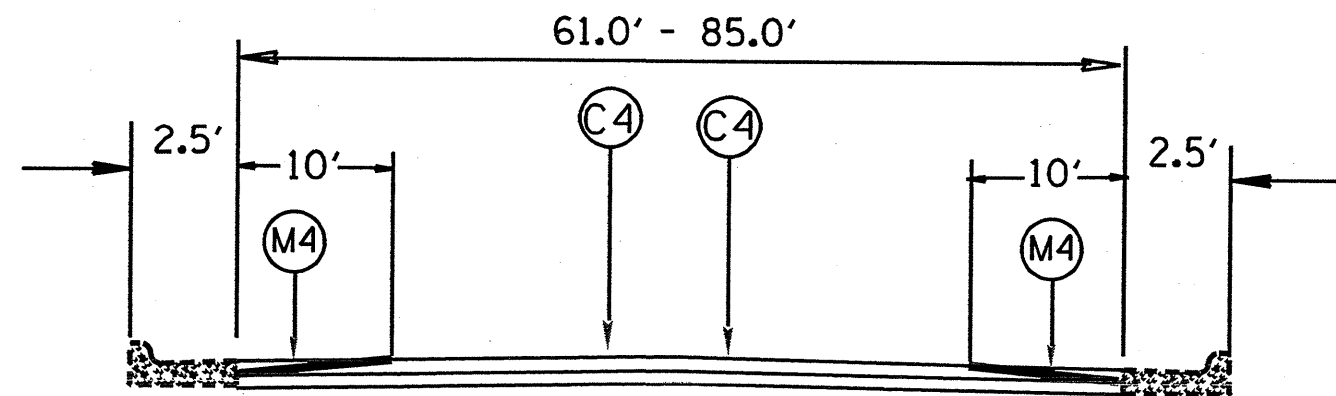




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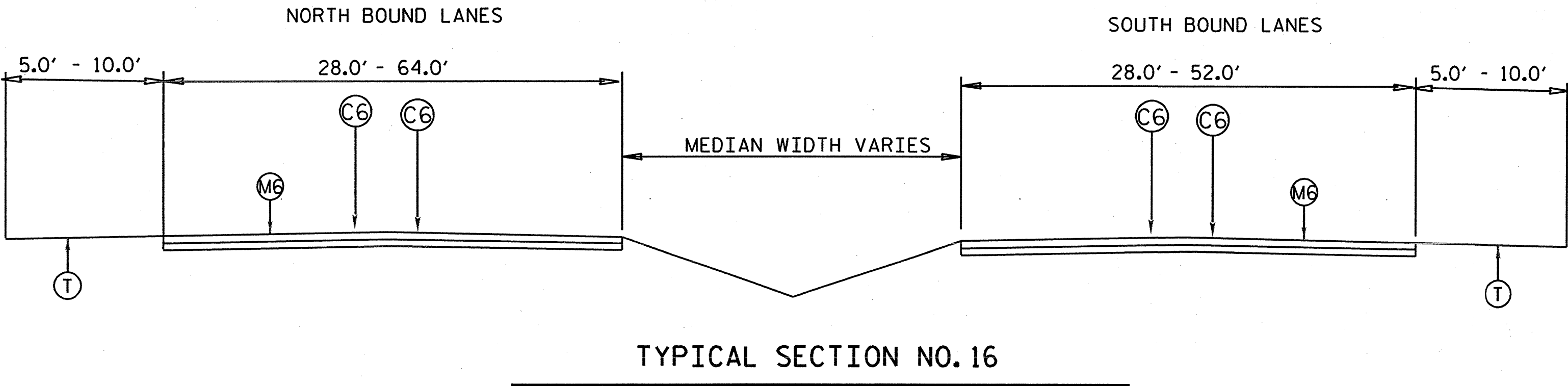
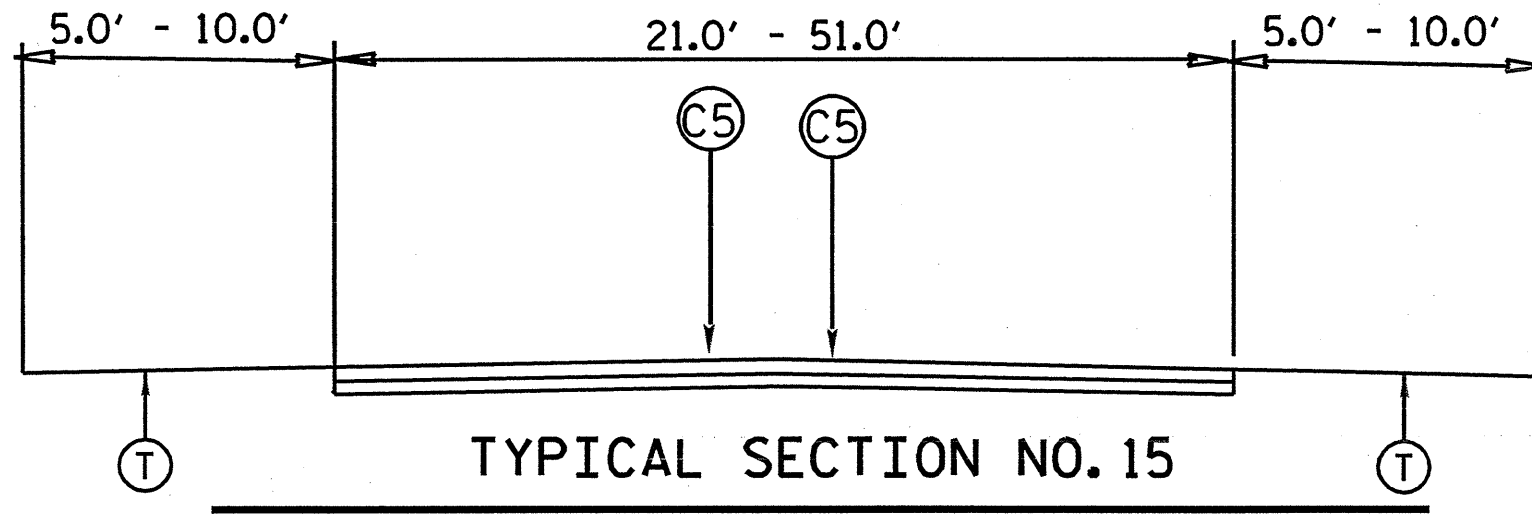


TYPICAL SECTION NO. 13



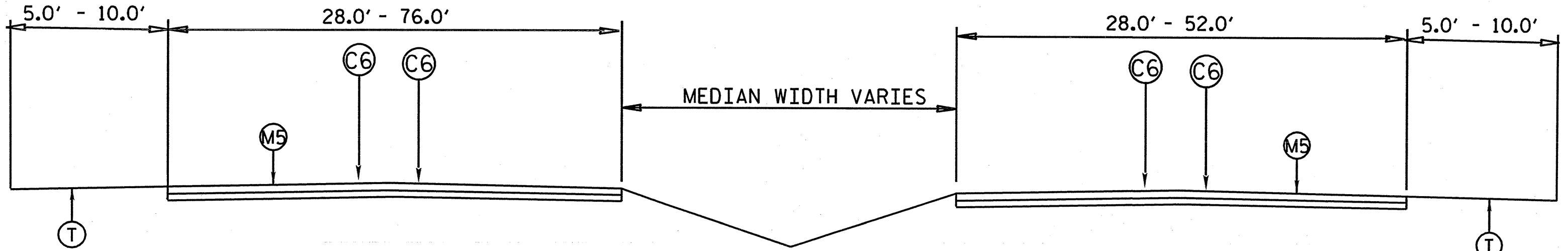
TYPICAL SECTION NO. 14

•MILL 10' ALONG CURB ON BOTH SIDES



NORTH BOUND LANES

SOUTH BOUND LANES

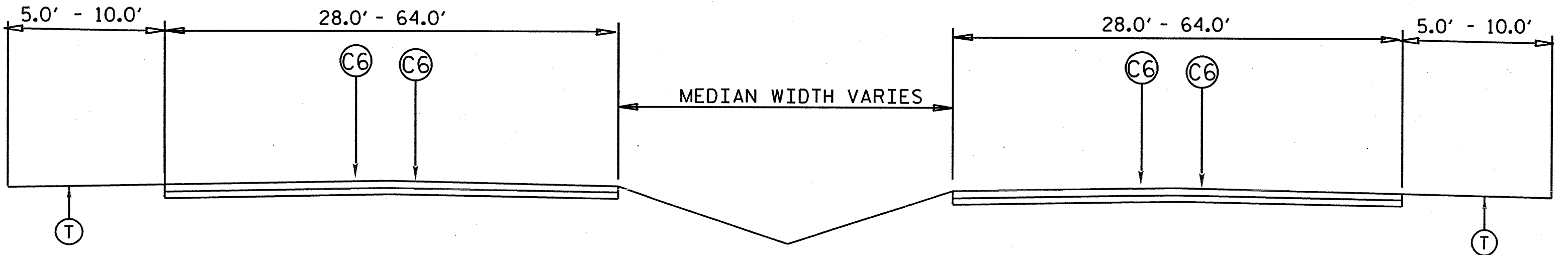


TYPICAL SECTION NO. 17

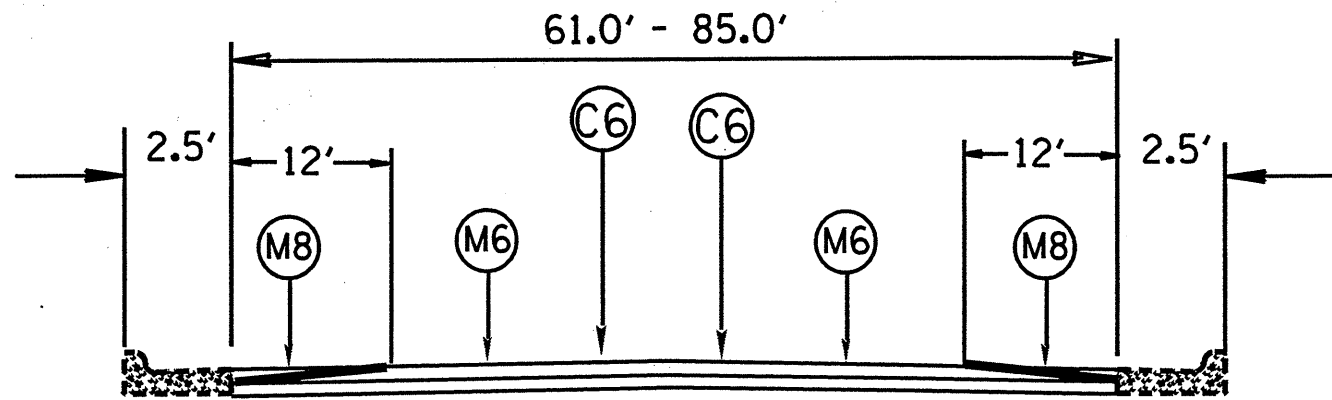
- MILL AT THE INTERSECTIONS AS NEEDED

NORTH BOUND LANES

SOUTH BOUND LANES

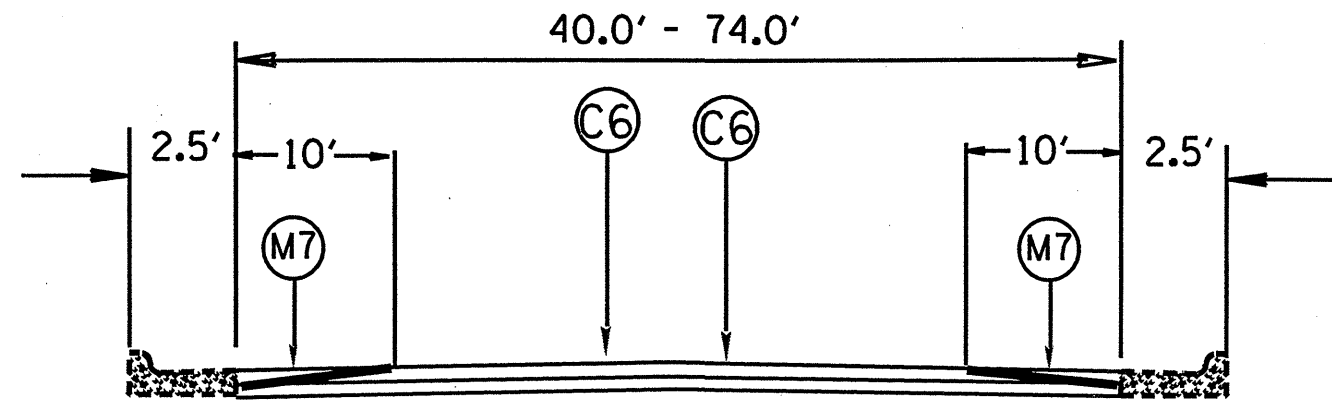


TYPICAL SECTION NO. 18



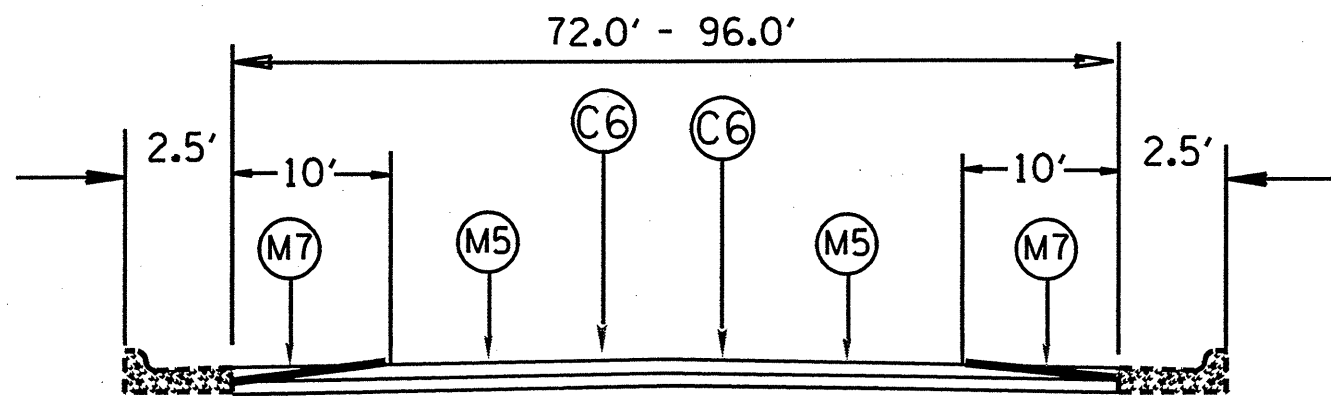
TYPICAL SECTION NO. 19

- MILL ALONG CURB 12' WIDE ON BOTH SIDES



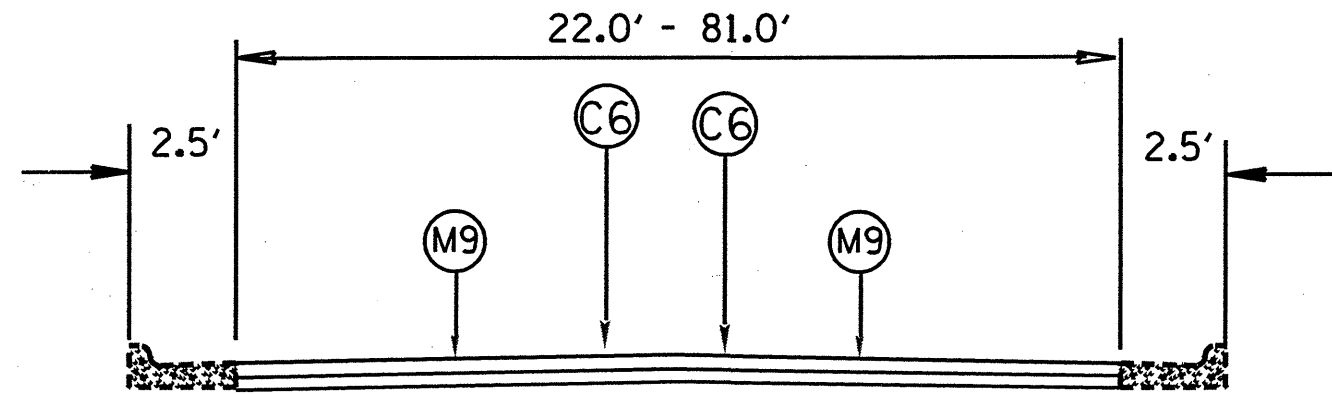
TYPICAL SECTION NO. 21

- MILL ALONG THE CURB 10' WIDE ON BOTH SIDES



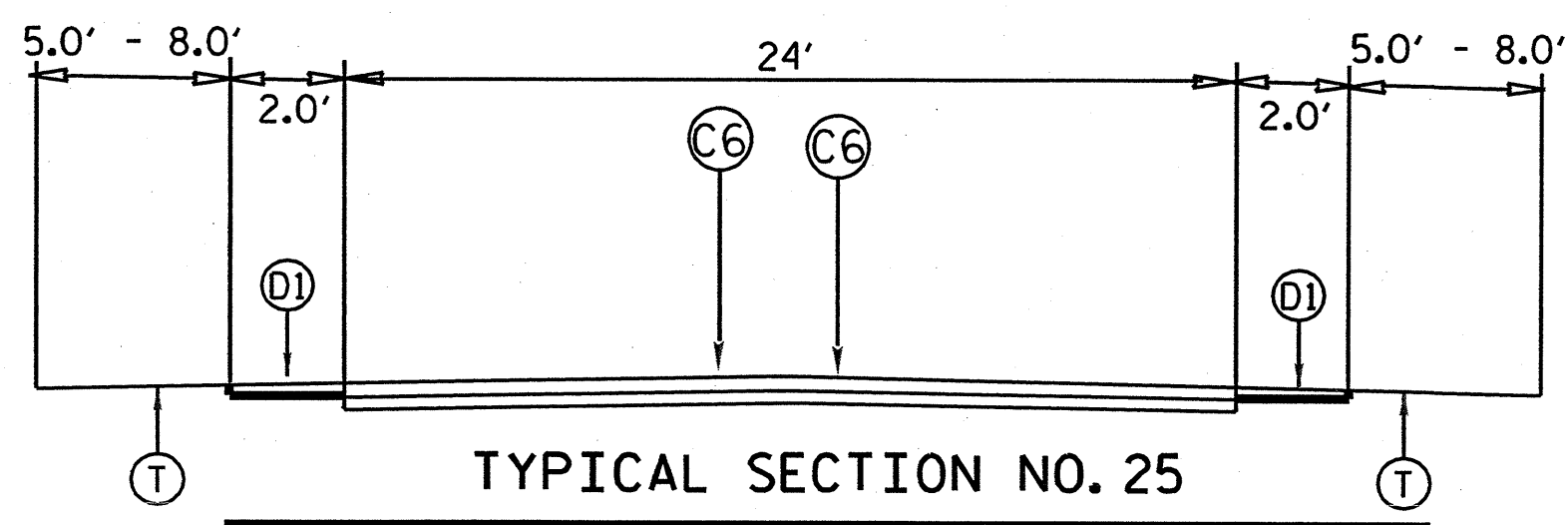
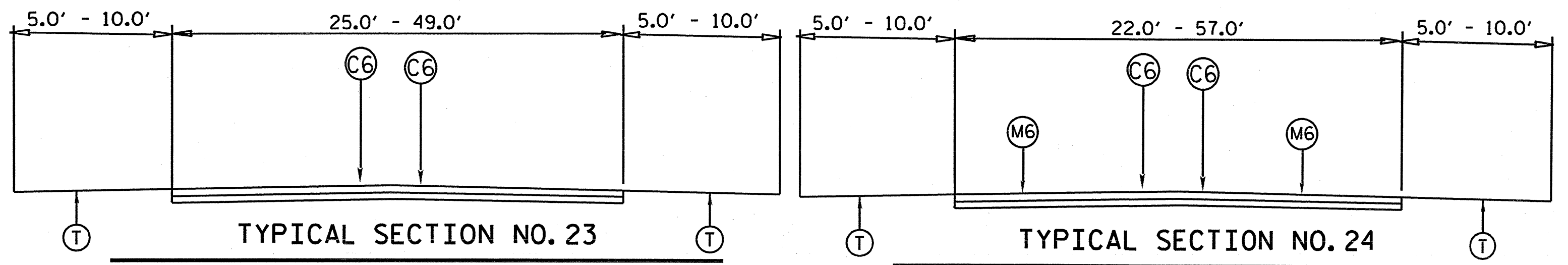
TYPICAL SECTION NO. 20

- MILL ALONG THE CURB 10' WIDE ON BOTH SIDES
- MILL INTERSECTIONS AS NEEDED



TYPICAL SECTION NO. 22

- MILL THE ENTIRE ROADWAY INCLUDING RAMPS



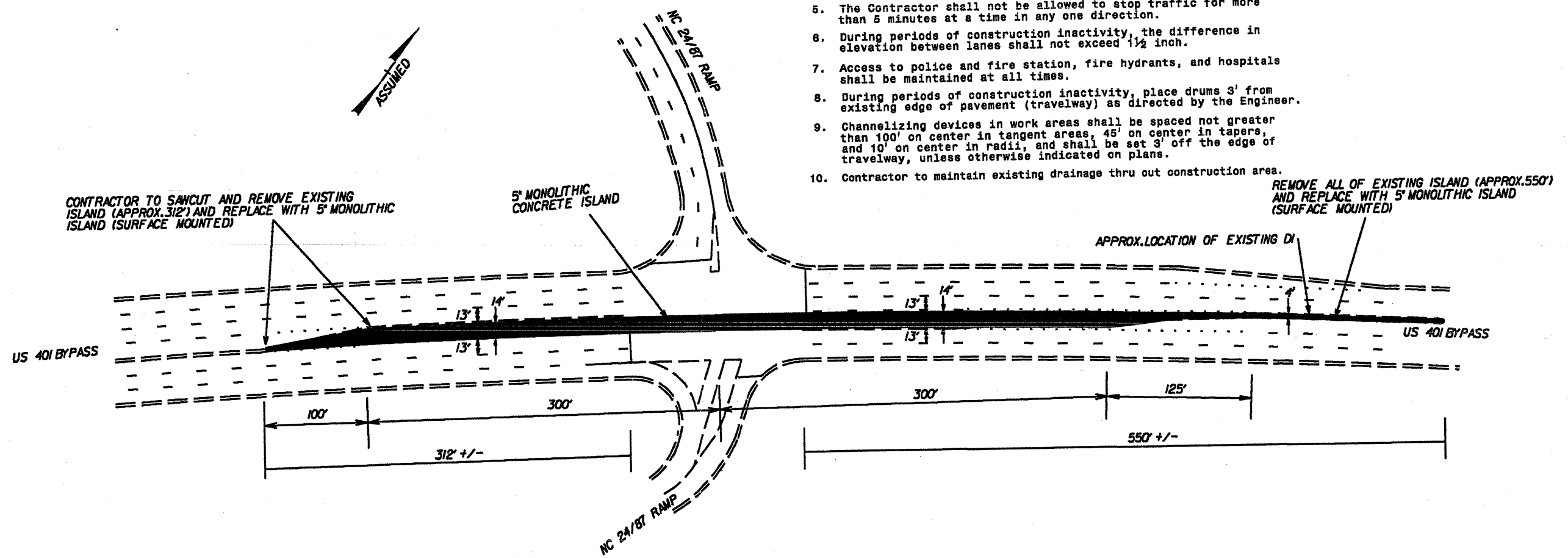
\* ENTIRE ROADWAY TO INCLUDE 2' SYMMETRICAL WIDENING

PROJECT NOTES

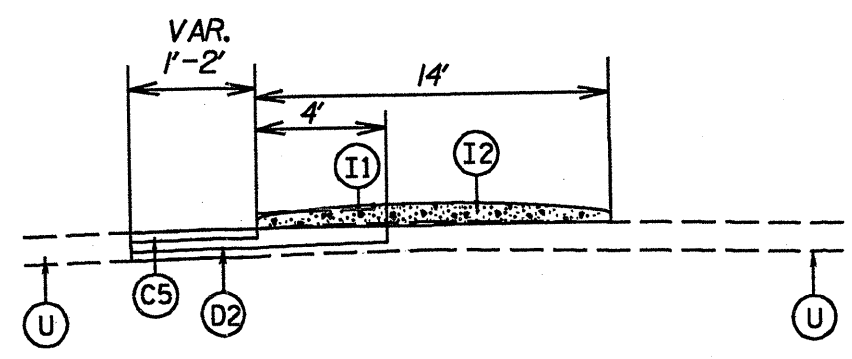
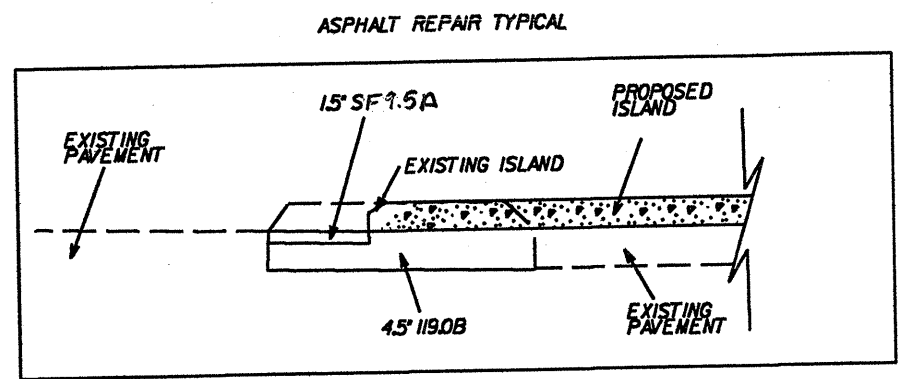
1. The Contractor shall not work on both sides of the road simultaneously within the same area.
2. Ingress and egress shall be maintained to all businesses and dwellings on the project.
3. At the end of each workday, the Contractor shall be required to backfill any area adjacent to existing travelway that has been graded but no base material placed.
4. A minimum of two-way, two-lane traffic (plus all existing and right turn lanes) shall be maintained during periods of construction inactivity.
5. The Contractor shall not be allowed to stop traffic for more than 5 minutes at a time in any one direction.
6. During periods of construction inactivity, the difference in elevation between lanes shall not exceed 1/2 inch.
7. Access to police and fire station, fire hydrants, and hospitals shall be maintained at all times.
8. During periods of construction inactivity, place drums 3' from existing edge of pavement (travelway) as directed by the Engineer.
9. Channelizing devices in work areas shall be spaced not greater than 100' on center in tangent areas, 45' on center in tapers, and 10' on center in radii, and shall be set 3' off the edge of travelway, unless otherwise indicated on plans.
10. Contractor to maintain existing drainage thru out construction area.

NOT TO SCALE

THE CONTRACTOR SHALL REMOVE THE EXISTING ISLAND. NO SEPERATE MEASUREMENT OR PAYMENT WILL BE MADE FOR THIS CONCRETE REMOVAL. IT SHALL BE INCIDENTAL TO THE VARIOUS OTHER ITEMS IN THIS CONTRACT.



CONTRACTOR SHALL:  
 PLACE BLOCK OUTS IN THE PROPOSED ISLAND FOR SIGNING AS DIRECTED BY THE ENGINEER.  
 PLACE 1' OPENINGS IN ISLAND FOR DRAINAGE AS DIRECTED BY THE ENGINEER.  
 USE RDWY.STD.DWG.NO.852.06 FOR PLACING AROUND EXISTING DI



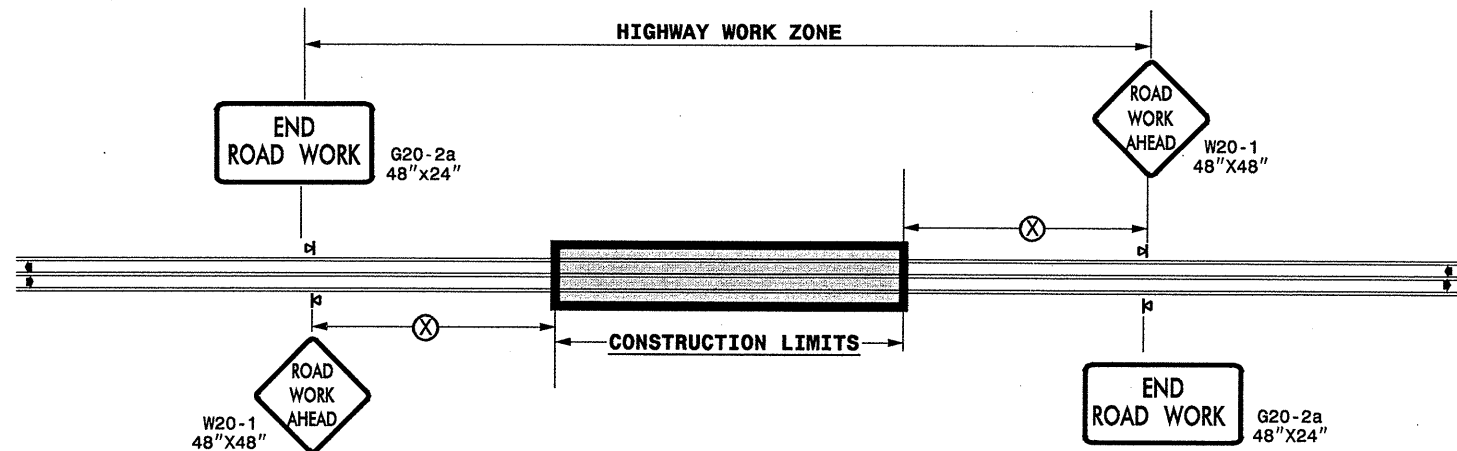
TYPICAL SECTION NO.26  
 US 401BYP AT NC 24/87 (BRAGG BLVD)

PAVEMENT SCHEDULE

C5	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D2	PROP. APPROX. 4 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
I1	EXISTING MONO. CONCRETE ISLAND TO BE REMOVED
I2	PROPOSED MONO. CONCRETE ISLAND
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.



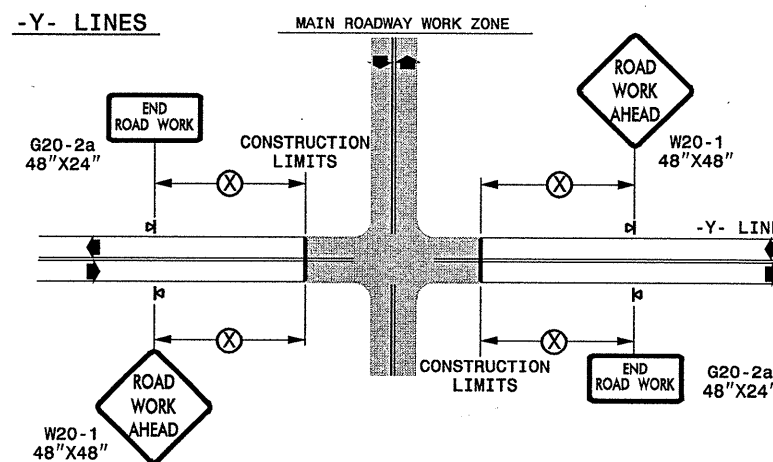
**TWO-WAY UNDIVIDED \*\* (L-LINES)**



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)**



DETAIL DRAWING  
FOR TWO-WAY UNDIVIDED  
WORK ZONE WARNING SIGNS

**GENERAL NOTES**

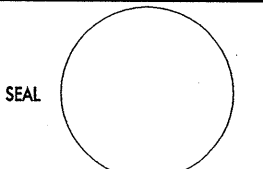
- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCE WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE PORTABLE WORK ZONE SIGNS ONLY WITH 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 WORK ZONE 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

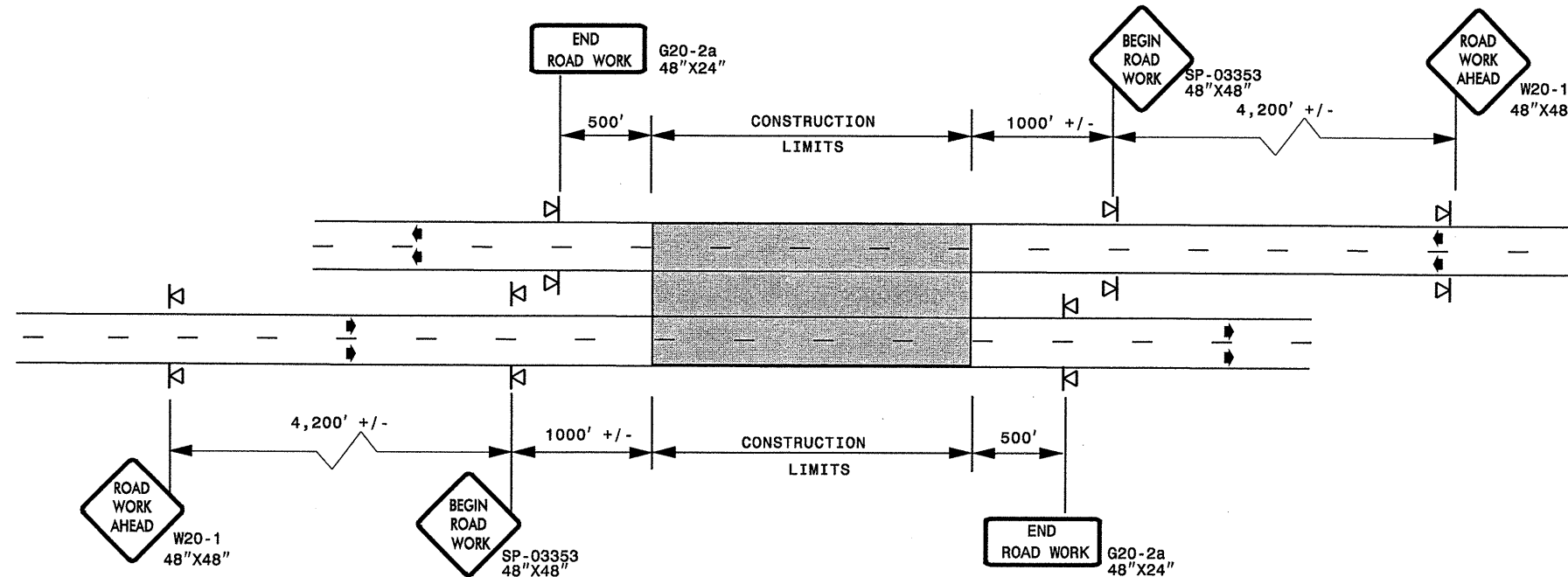
SHEET 1 OF 1

APPROVED: _____	DATE: _____	DETAIL DRAWING FOR TWO-WAY UNDIVIDED ADVANCED WORK ZONE WARNING SIGNS	
			
		DATE: _____	7-98 10/01
DWG. BY: _____	DESIGN BY: _____	10-98 03/04	
REVIEWED BY: _____	DATE FILE: _____	01/01 11/04	

07 NOV 2006 12:12  
 C:\D01\DFSR001\DWG\GROUPS-WZTCCC\design\group4\resurfacing\resurfacing2006\div06\6cr1026123\_2woyundivurbfrwys\july2006.dgn  
 pss/more AT WZTCCC471

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

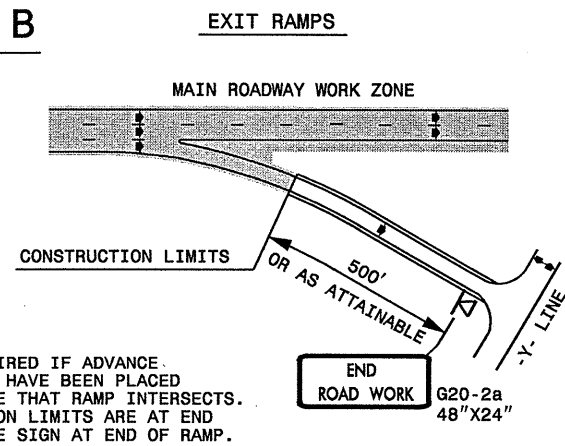
**DETAIL A**



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

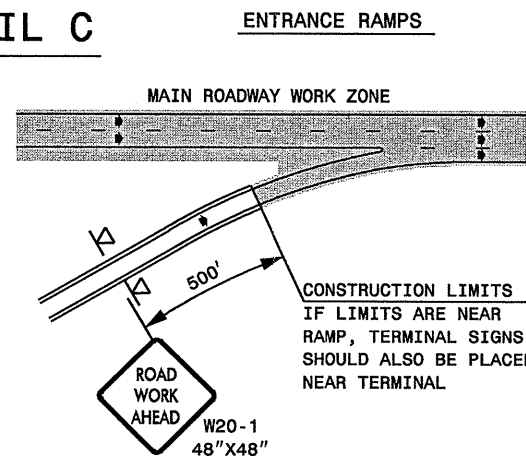
**ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)**

**DETAIL B**



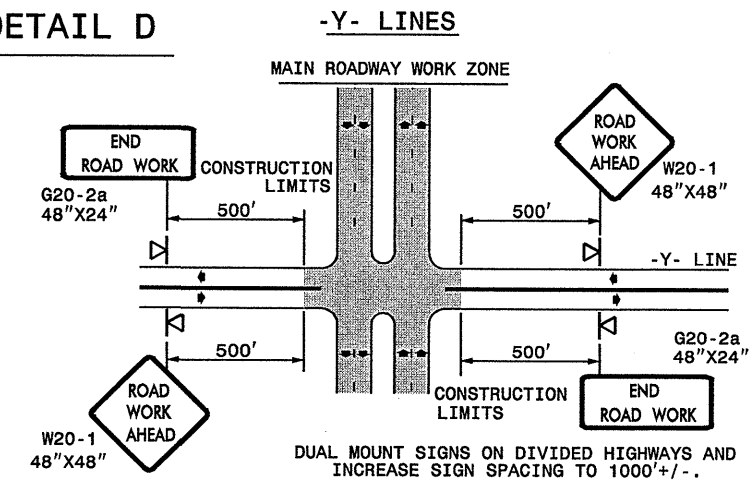
NOTE:  
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

**DETAIL C**



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

**DETAIL D**



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

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

**GENERAL NOTES**


- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCE WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE PORTABLE WORK ZONE SIGNS ONLY WITH PORTABLE WORK ZONE SIGN STANDS SPECIFICALLY DESIGNED FOR ONE ANOTHER. PORTABLE WORK ZONE SIGNS MAY BE ROLL UP OR APPROVED COMPOSITE.
- PROVIDE PORTABLE WORK ZONE SIGN STANDS, PORTABLE SIGNS AND SIGN SHEETING WHICH ARE LISTED ON THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S APPROVED PRODUCT LIST OR ACCEPTED AS TRAFFIC QUALIFIED BY THE WORK ZONE TRAFFIC CONTROL UNIT.
- \*\* TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

**LEGEND**

◁ PORTABLE SIGN

➡ DIRECTION OF TRAFFIC FLOW

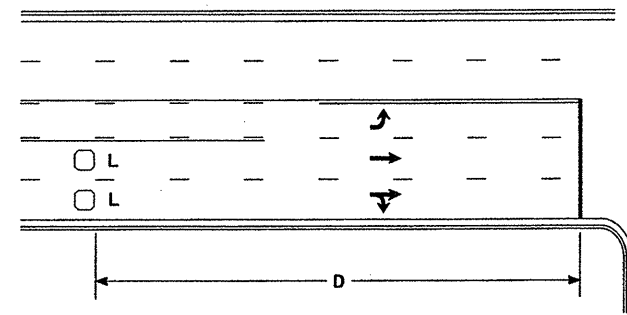
SHEET 1 OF 1

APPROVED: _____	DATE: _____	DETAIL DRAWING FOR FREEWAYS WORK ZONE WARNING SIGNS	
SEAL			
SCALE: NONE	REVISIONS		
DATE: _____	7-98 10/01		
DWG. BY: _____	10-98 03/04		
DESIGN BY: _____	01/01 11/04		
REVIEWED BY: _____	CADD FILE		

03-NOV-2006 12:14 \\DOT\DFSROOT\TON\GROU\PS-WZT\CCC\design\group4\resurfacing\resurfacing2006\div06\6cr1026123\etccumharn\6CR1026123\Free4lanesgreat\July2006.dgn pseymore AT WZT206427



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

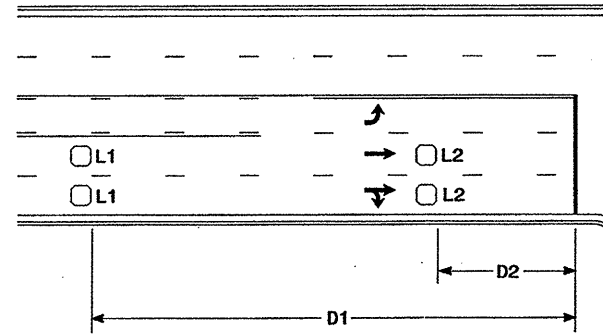


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series for TS1  
Controllers  
Wired separately for TS2,  
170, and 2070L Controllers

Volume Density Operation

OR

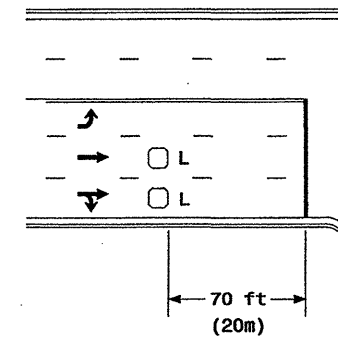


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

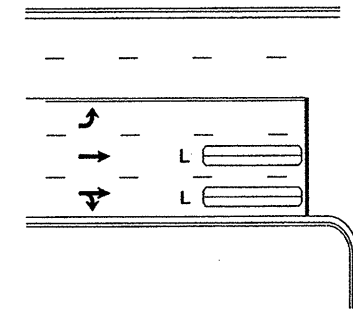
"Stretch" Operation

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



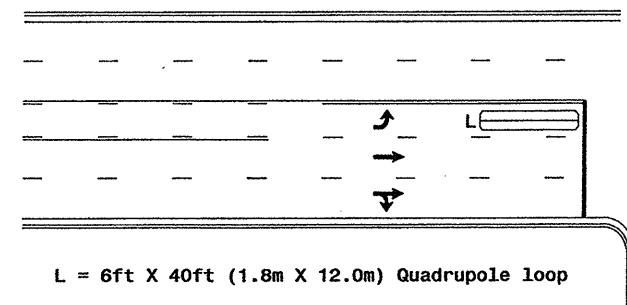
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

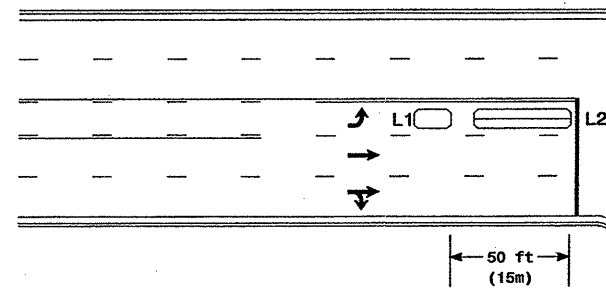
### Left Turn Lane Detection



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

Presence Loop Detection

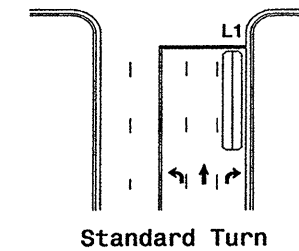
OR



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

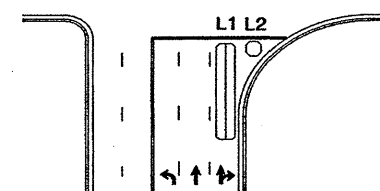
Queue Loop Detection

### Right Turn Lane Detection

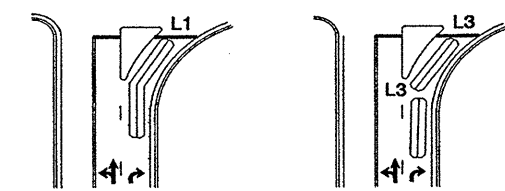


Standard Turn

L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop  
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop  
Wired separately  
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop  
Wired in series

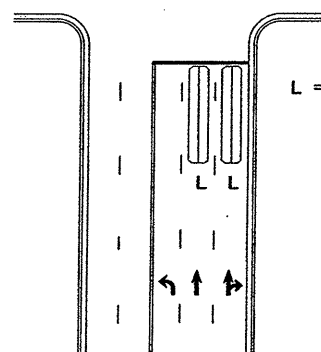


Wide Radius Turn



Channelized Turn

### Side Street Detection

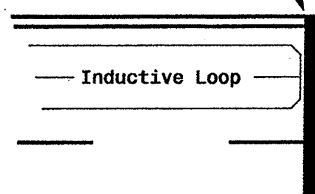


L = 6ft X 40ft (1.8m X 12.0m)  
Quadrupole loop  
Wired to separate  
detectors/channels

Side Street Detection

### 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.

Inductive Loop


### 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:  
  
 122 N. McDowell St., Raleigh, NC 27603

SCALE  
N/A

Typical Loop Locations

PLAN DATE: June 2006  
 PREPARED BY: P. L. Alexander  
 REVIEWED BY: [Signature]

REVISIONS  
 INIT. DATE

SEAL  
 NORTH CAROLINA  
 PROFESSIONAL ENGINEER  
 SEAL 23489  
 [Signature]  
 SIGNATURE DATE  
 SIG. INVENTORY NO.