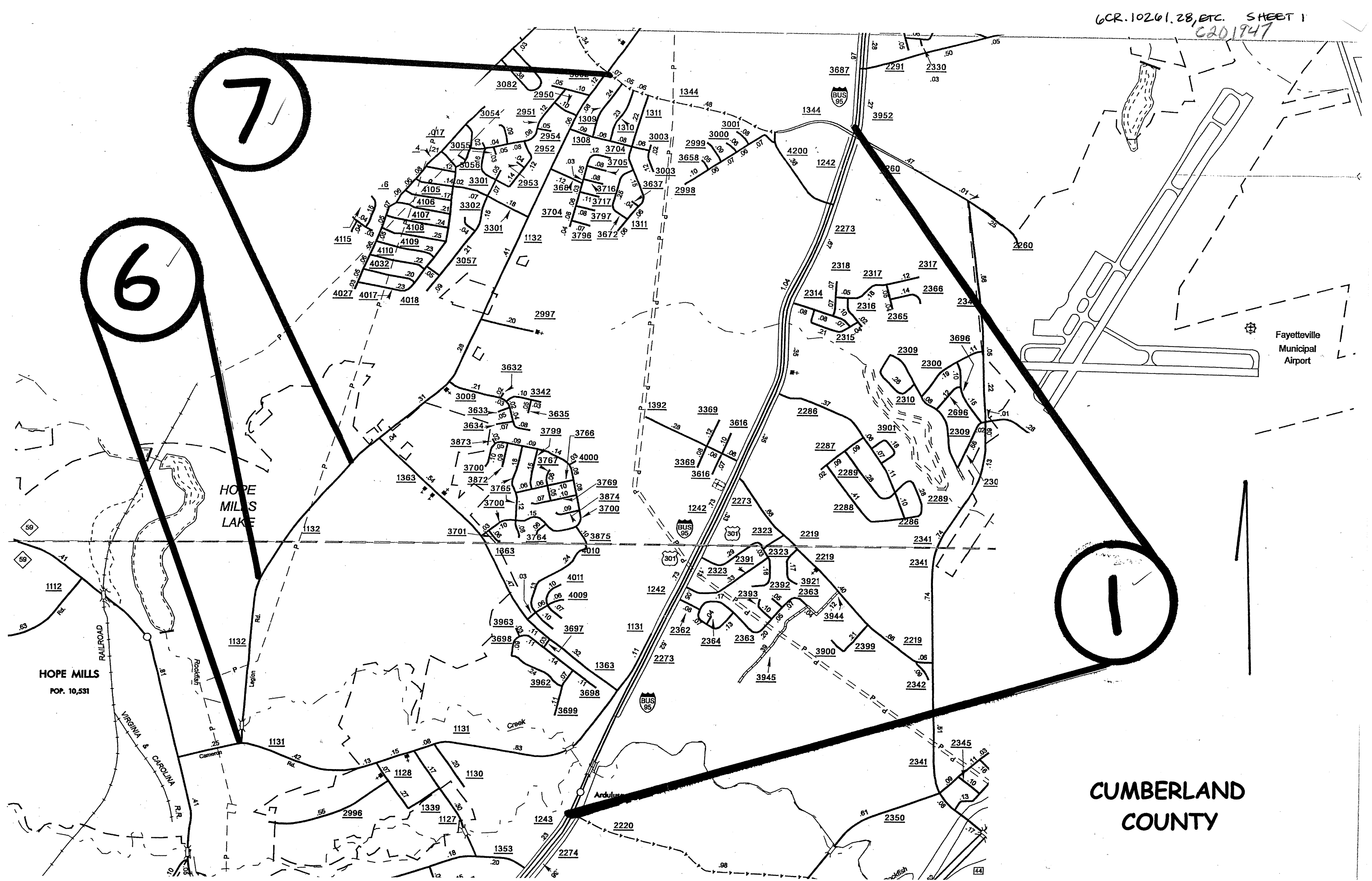


7

6

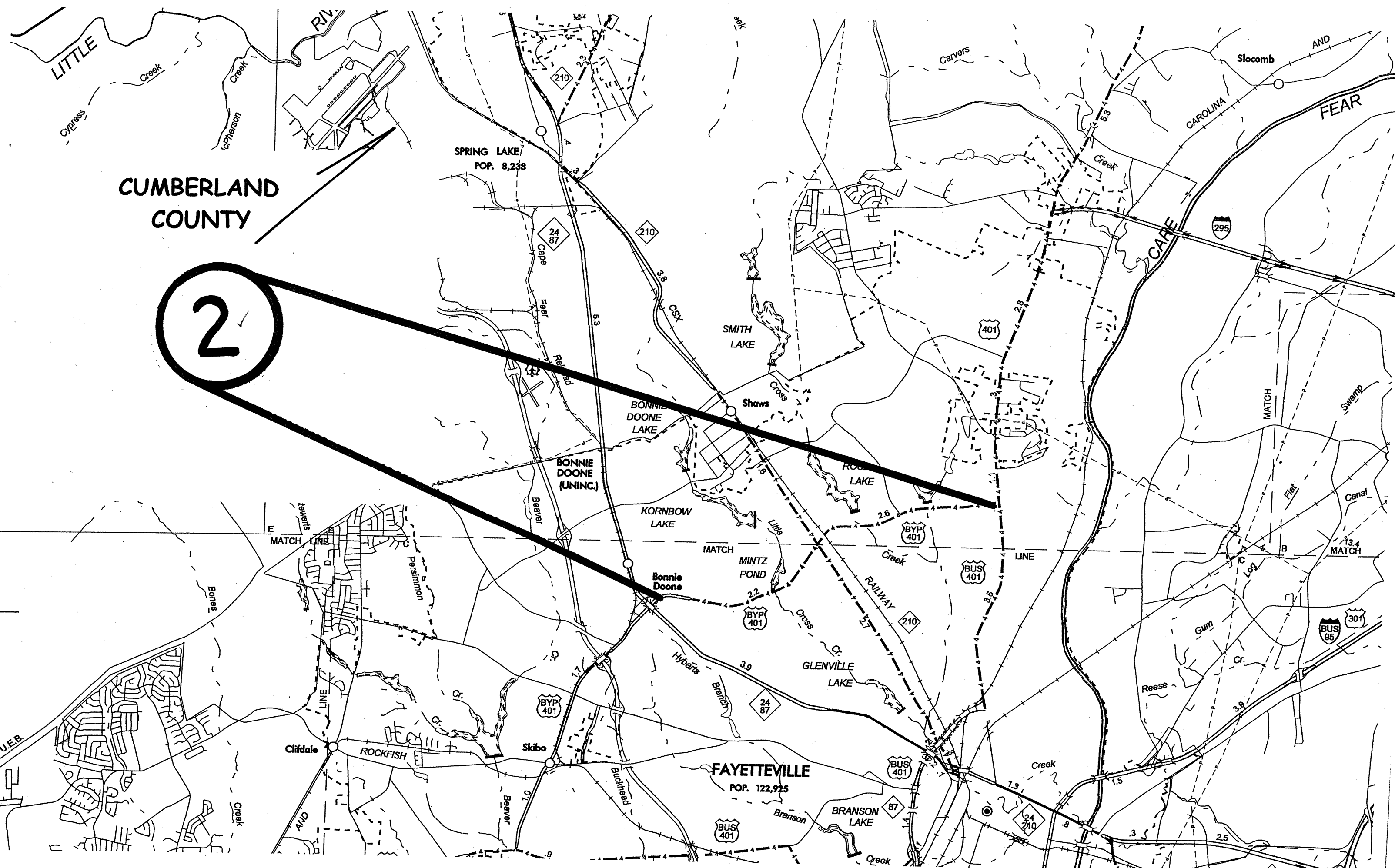
1



HOPE MILLS  
POP. 10,531

Fayetteville  
Municipal  
Airport

CUMBERLAND  
COUNTY



LITTLE  
Cypress Creek  
Creek

RIV.

CUMBERLAND  
COUNTY

2

SPRING LAKE  
POP. 8,238

SMITH  
LAKE

BONNIE  
DOONE  
LAKE

BONNIE  
DOONE  
(UNINC.)

KORNBOW  
LAKE

MINTZ  
POND

Bonnie Doone

FAYETTEVILLE  
POP. 122,925

BRANSON  
LAKE

Slocomb

CAROLINA

FEAR

CAPE

295

401

BYP  
401

BUS  
401

BUS  
95

301

BYP  
401

BUS  
401

24  
210

2.5

E MATCH LINE

MATCH

LINE

13.4 MATCH

Clifdale

ROCKFISH

Skibo

Branson

87

Creek

1.5

3

2.5

U.E.B.

Bones

persimmon

Creek

AND

Beaver

Beaufort

Hybarts

Branch

GLENVILLE  
LAKE

RAILWAY

210

Creek

2.6

ROS  
LAKE

Shaws

Cross

5.3

210

24  
87

Cape

Feat

Railroad

3.8

CSX

Carvers

Creek

5.3

Slocomb

AND

MATCH

Swamp

Canal

13.4 MATCH

Log

Gum

Reese

3.9

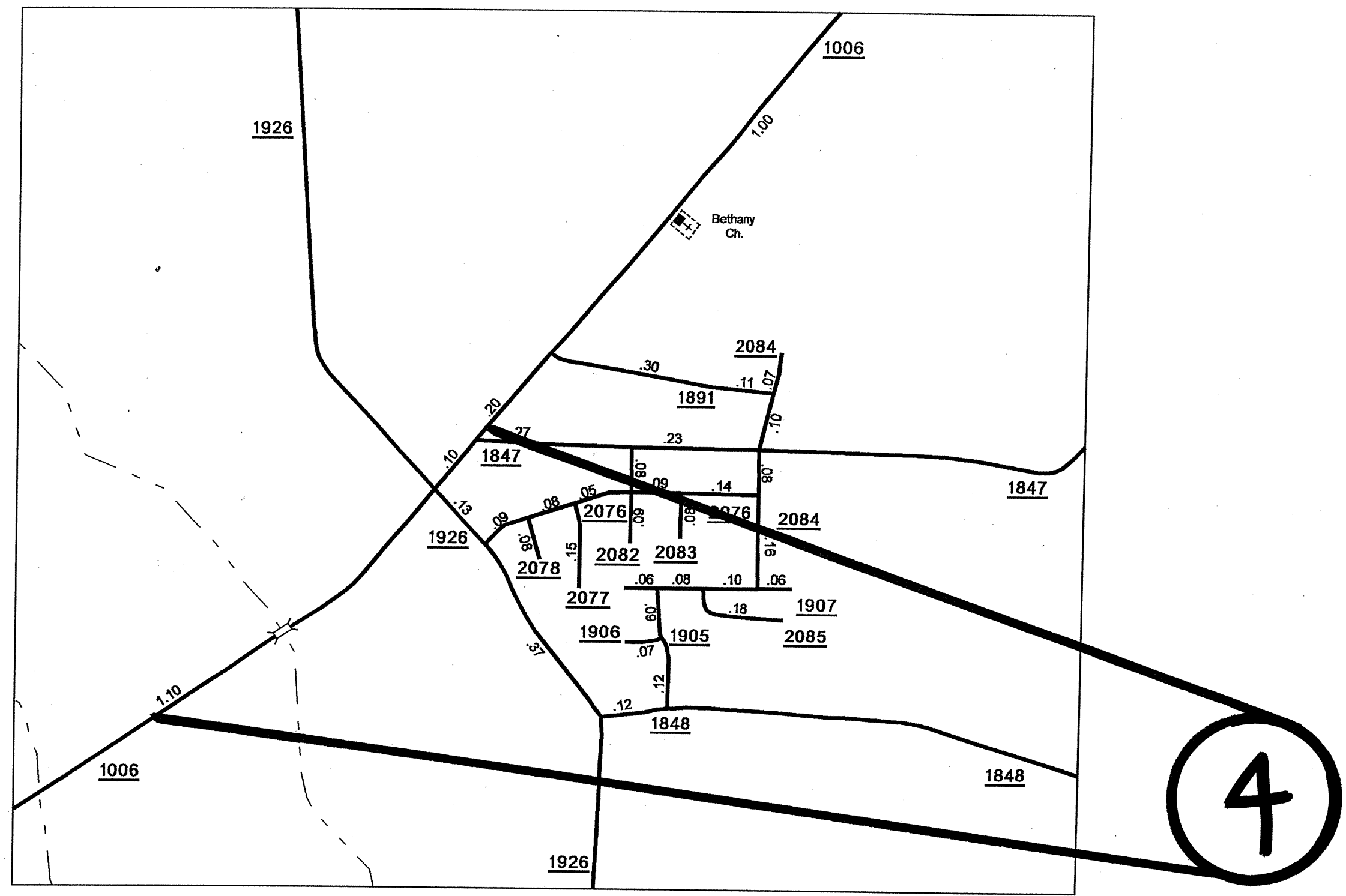
1.3

3

2.5



Hope Mi



Inset 2

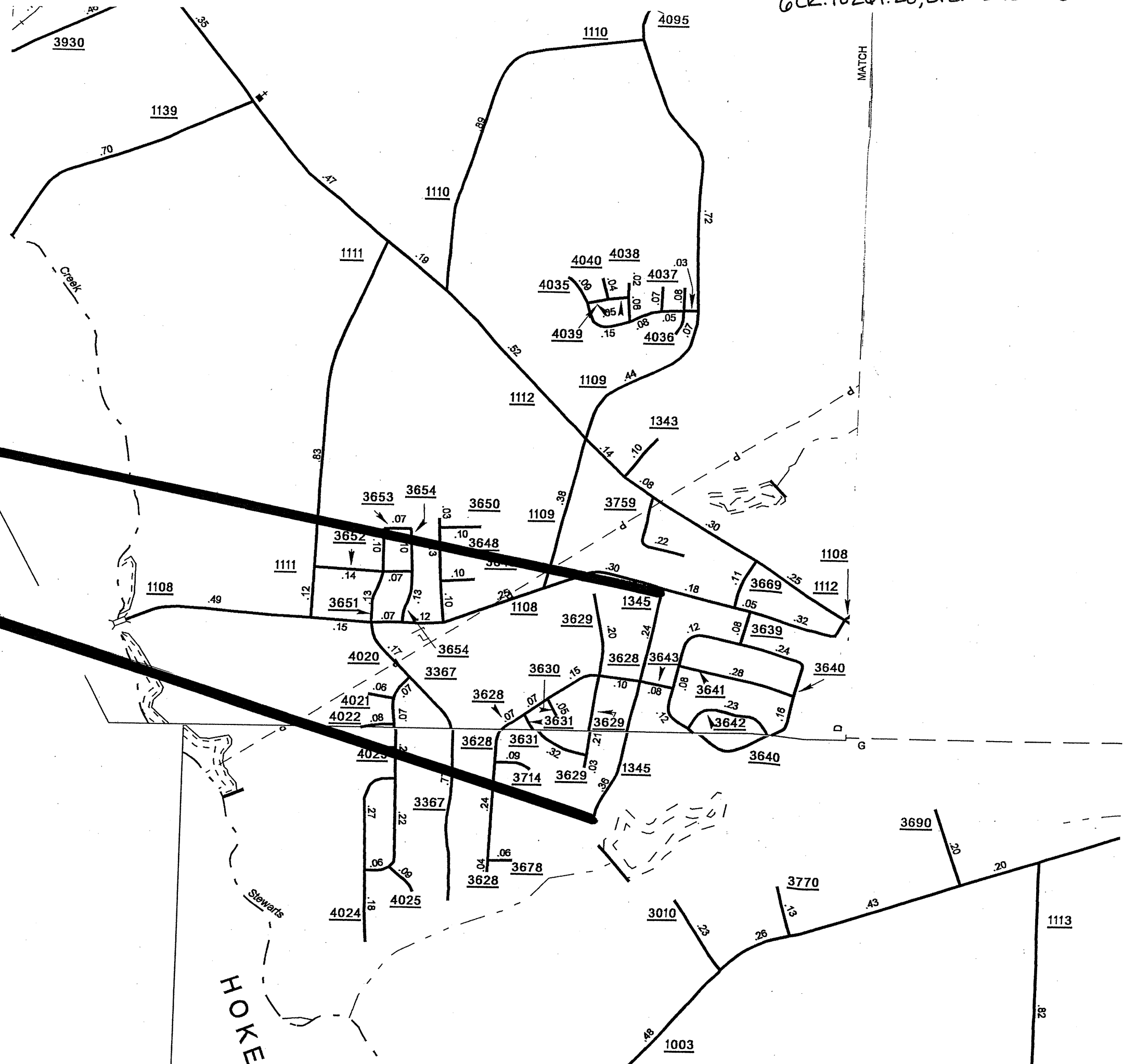
CUMBERLAND  
COUNTY



10

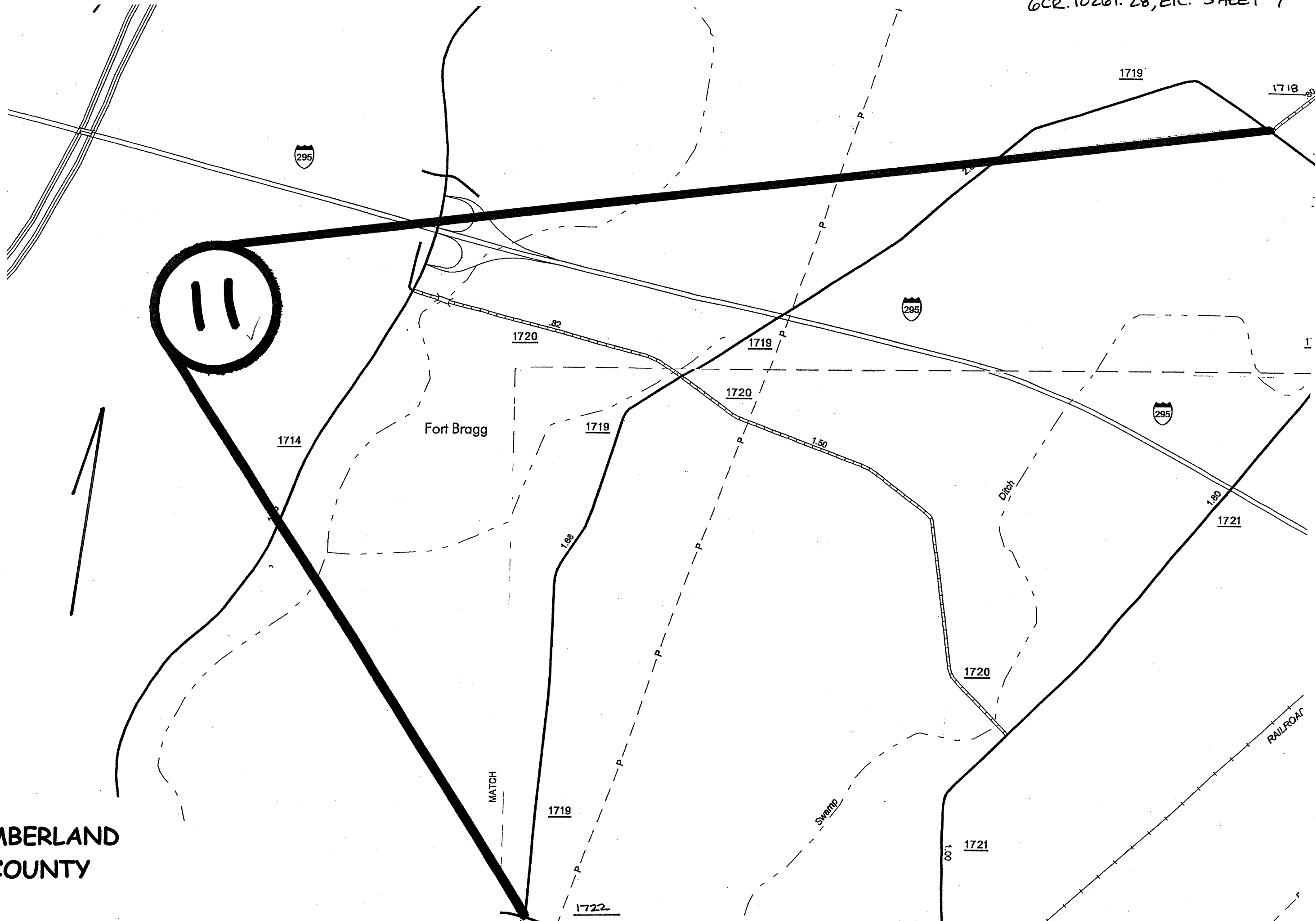
CUMBERLAND COUNTY

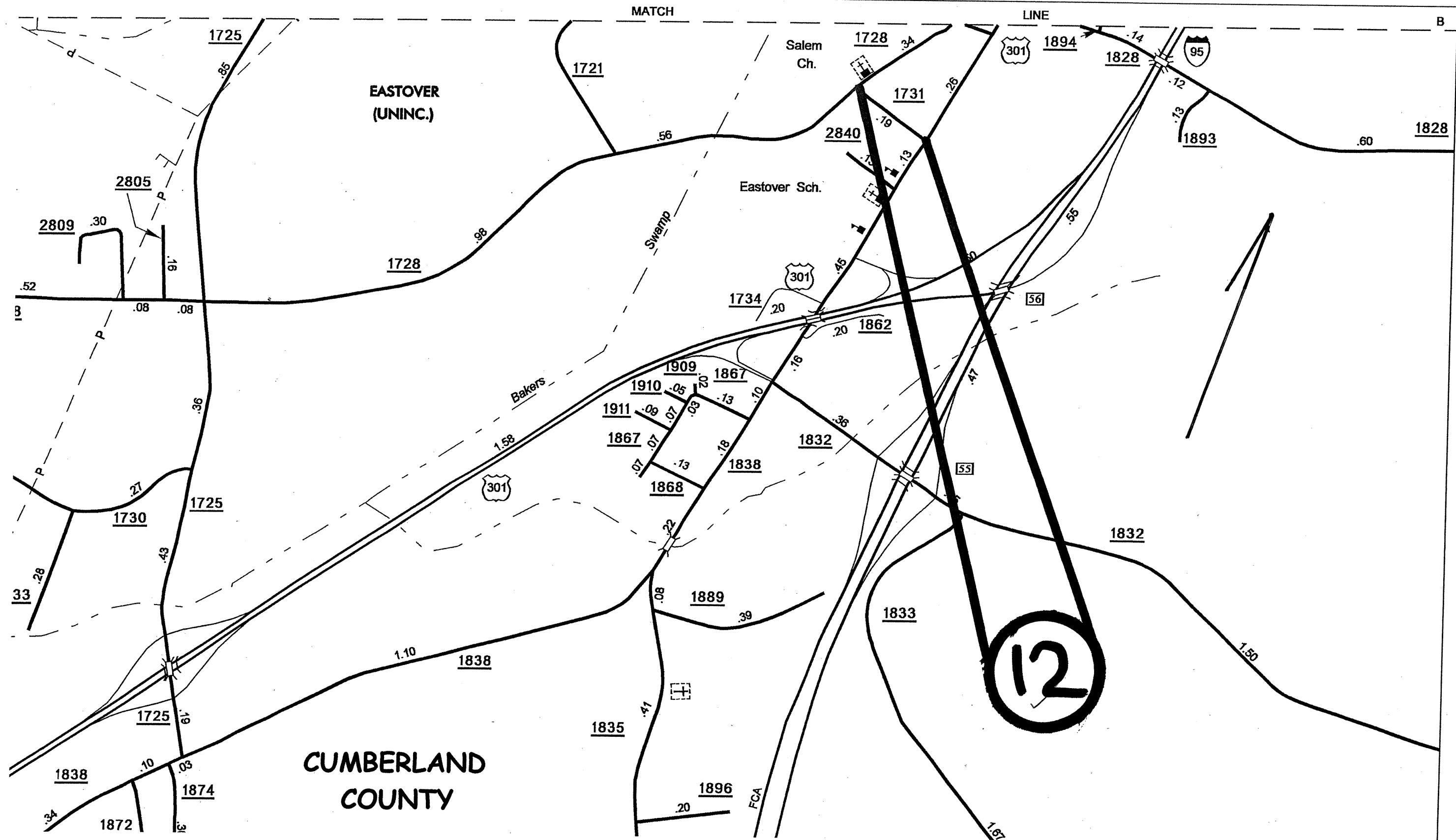
HOKE



CUMBERLAND COUNTY

11

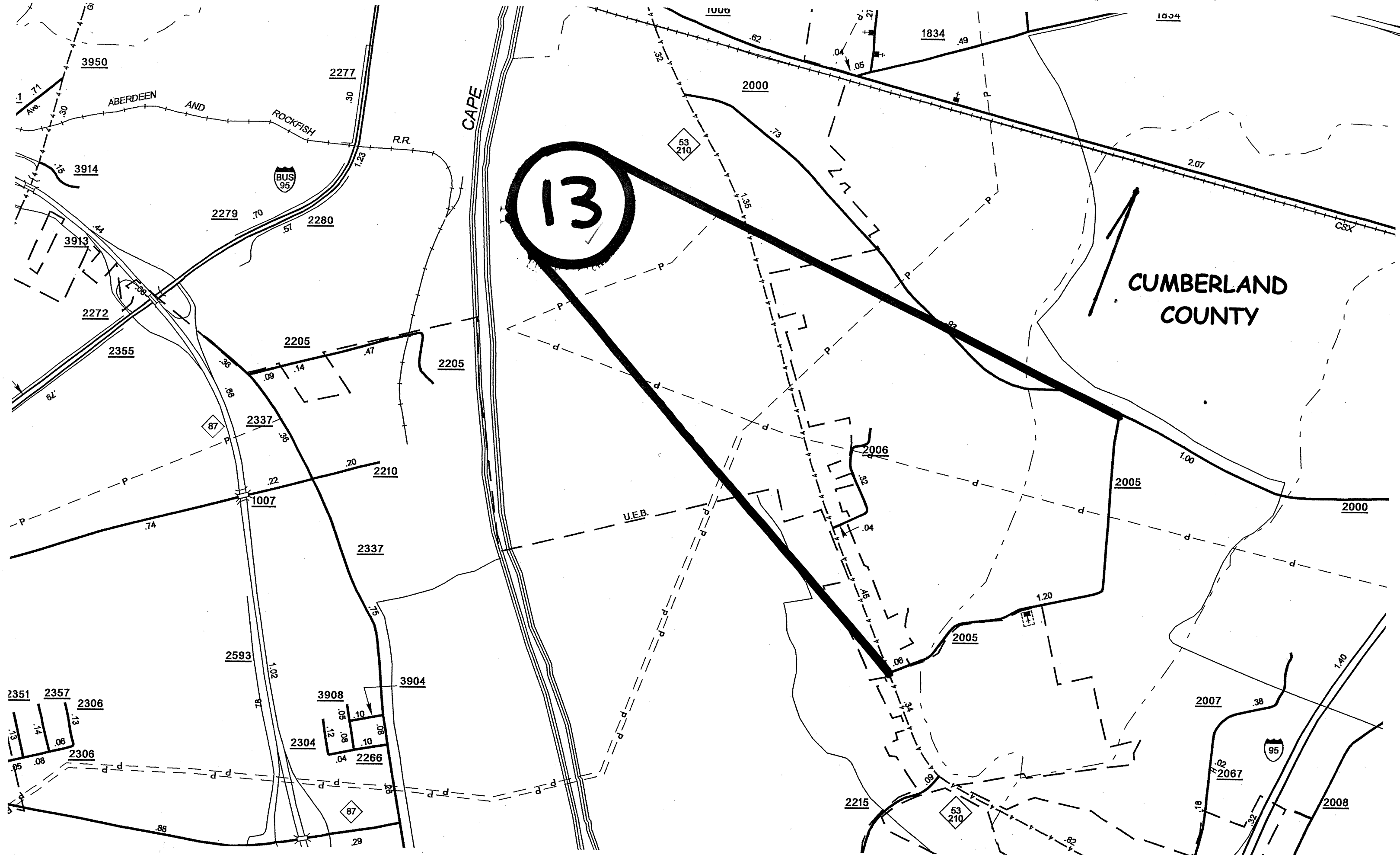






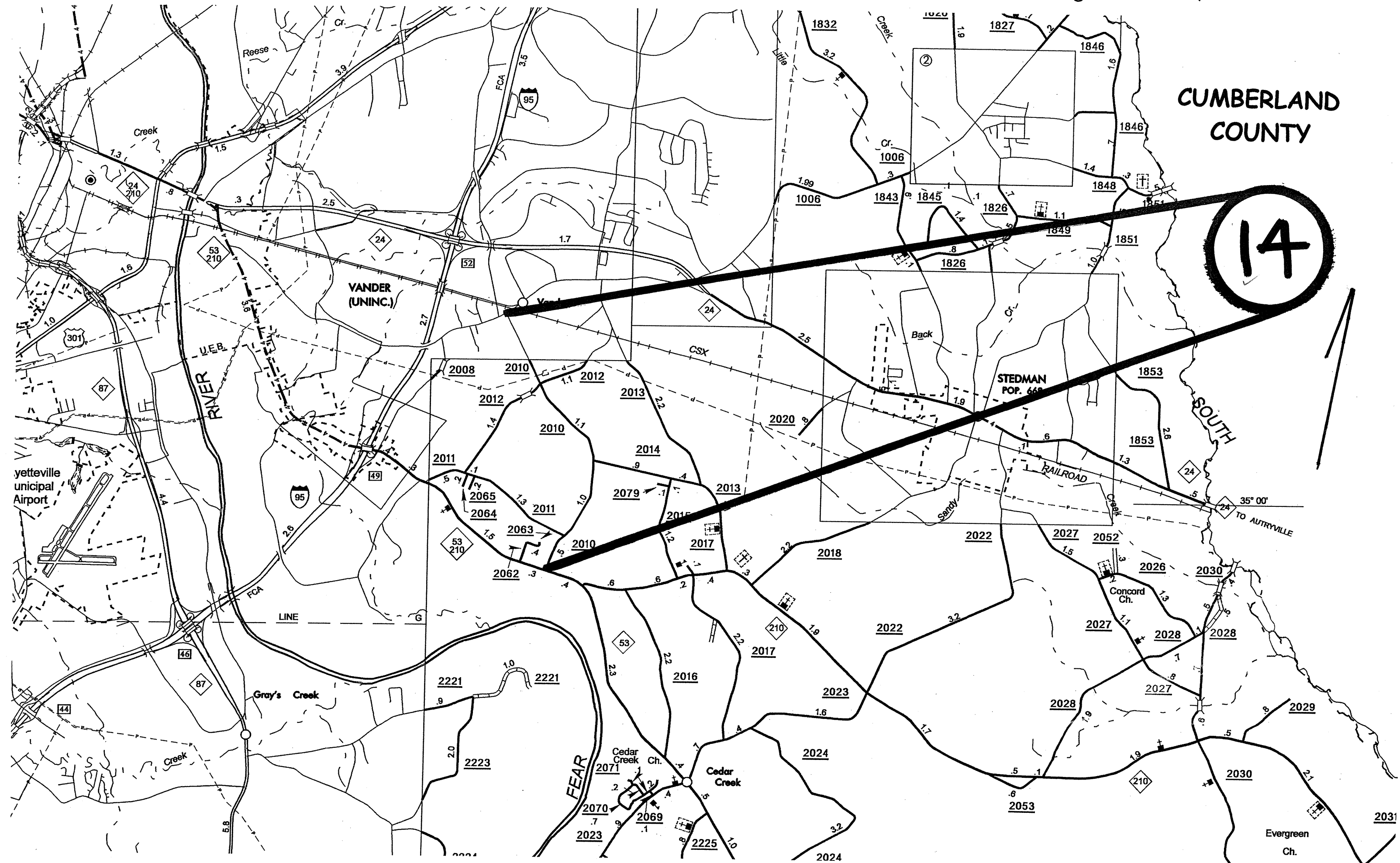
**13**

CUMBERLAND COUNTY



# CUMBERLAND COUNTY

# 14



Yetteville Municipal Airport

U.S. RIVER

VANDER (UNINC.)

STEDMAN POP. 668

RAILROAD

SOUTH

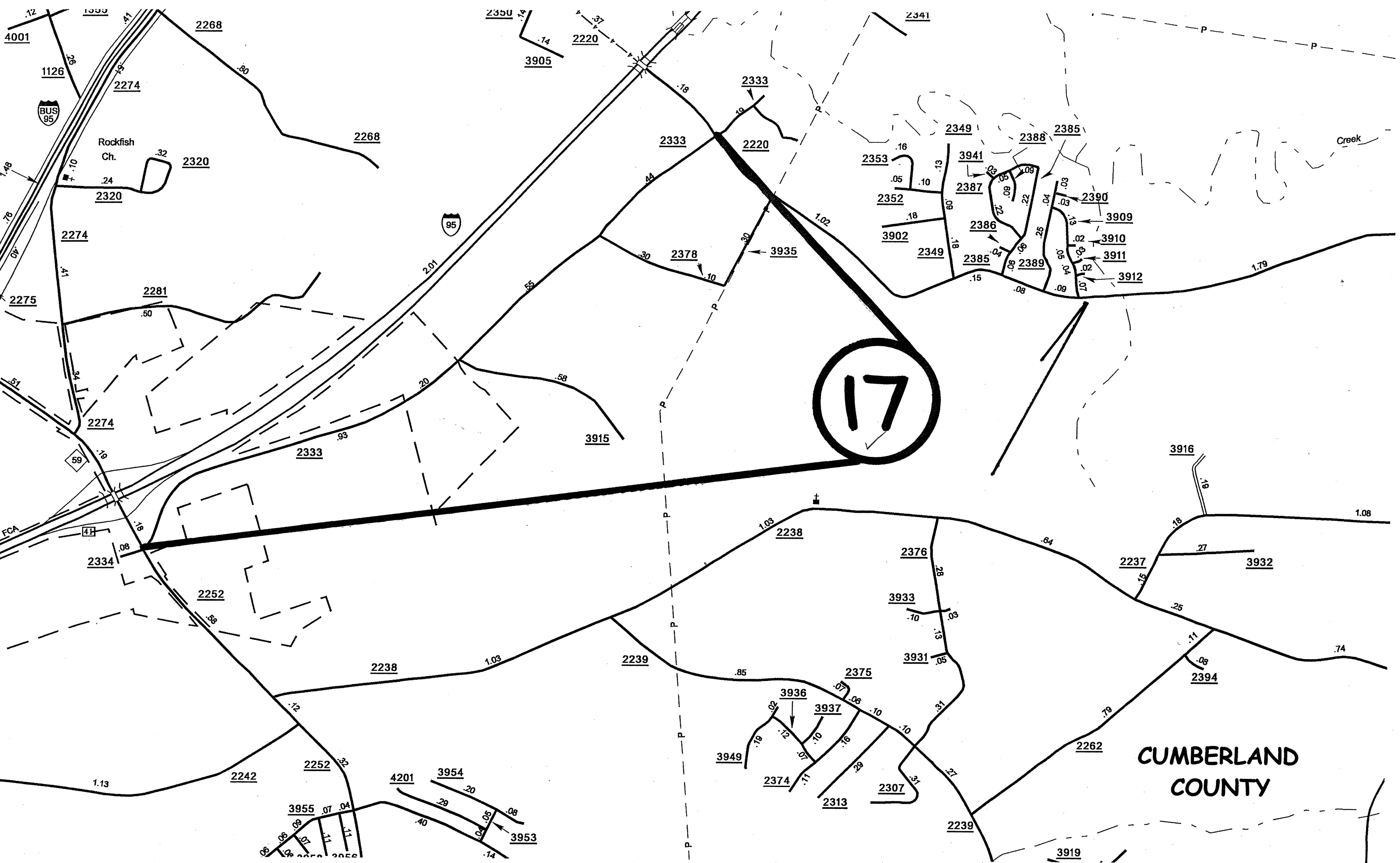
FEAR

Cedar Creek Ch.

Cedar Creek

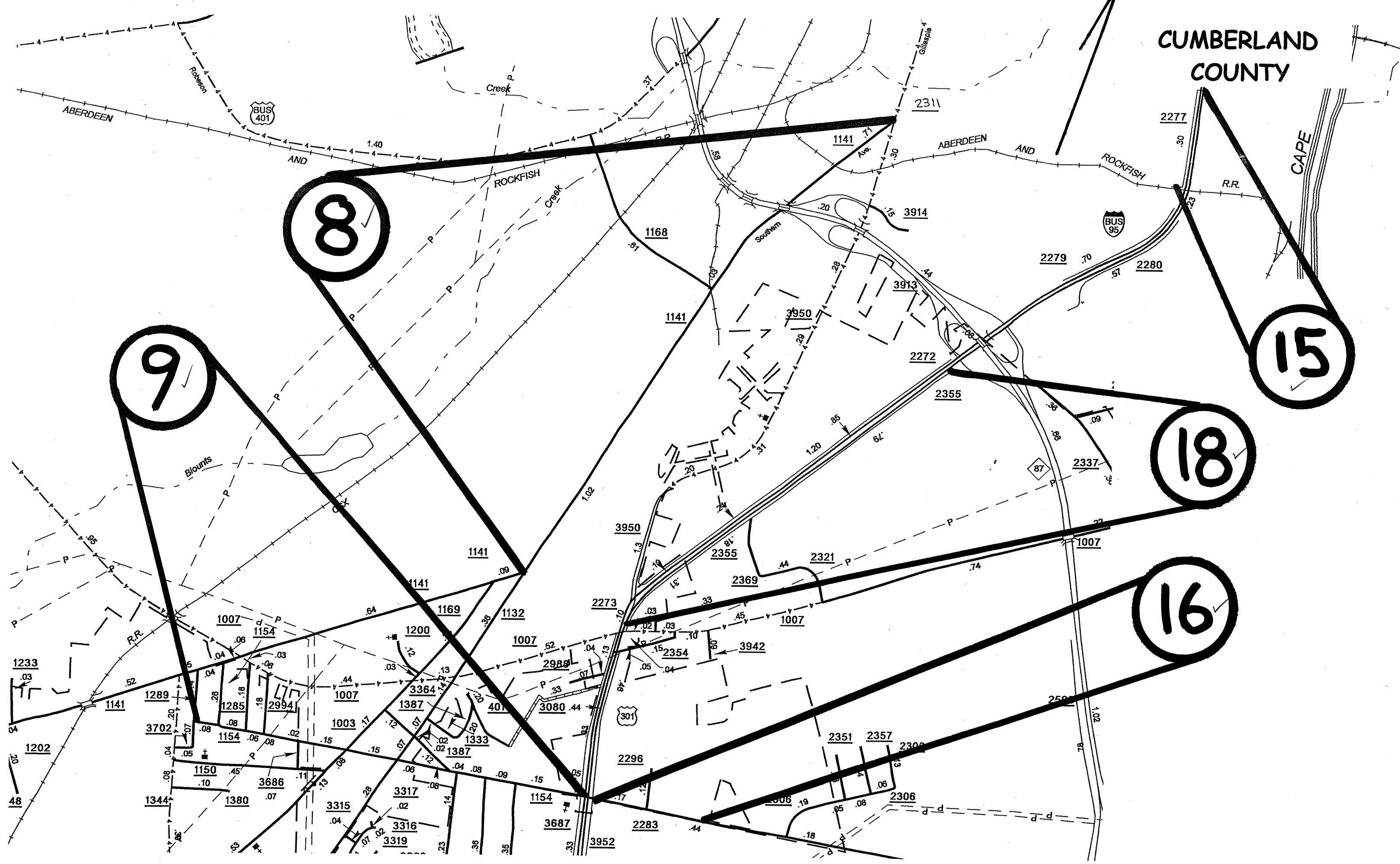
Evergreen Ch.

35° 00' TO AUTRYVILLE



CUMBERLAND COUNTY

# CUMBERLAND COUNTY



23

19

22

21

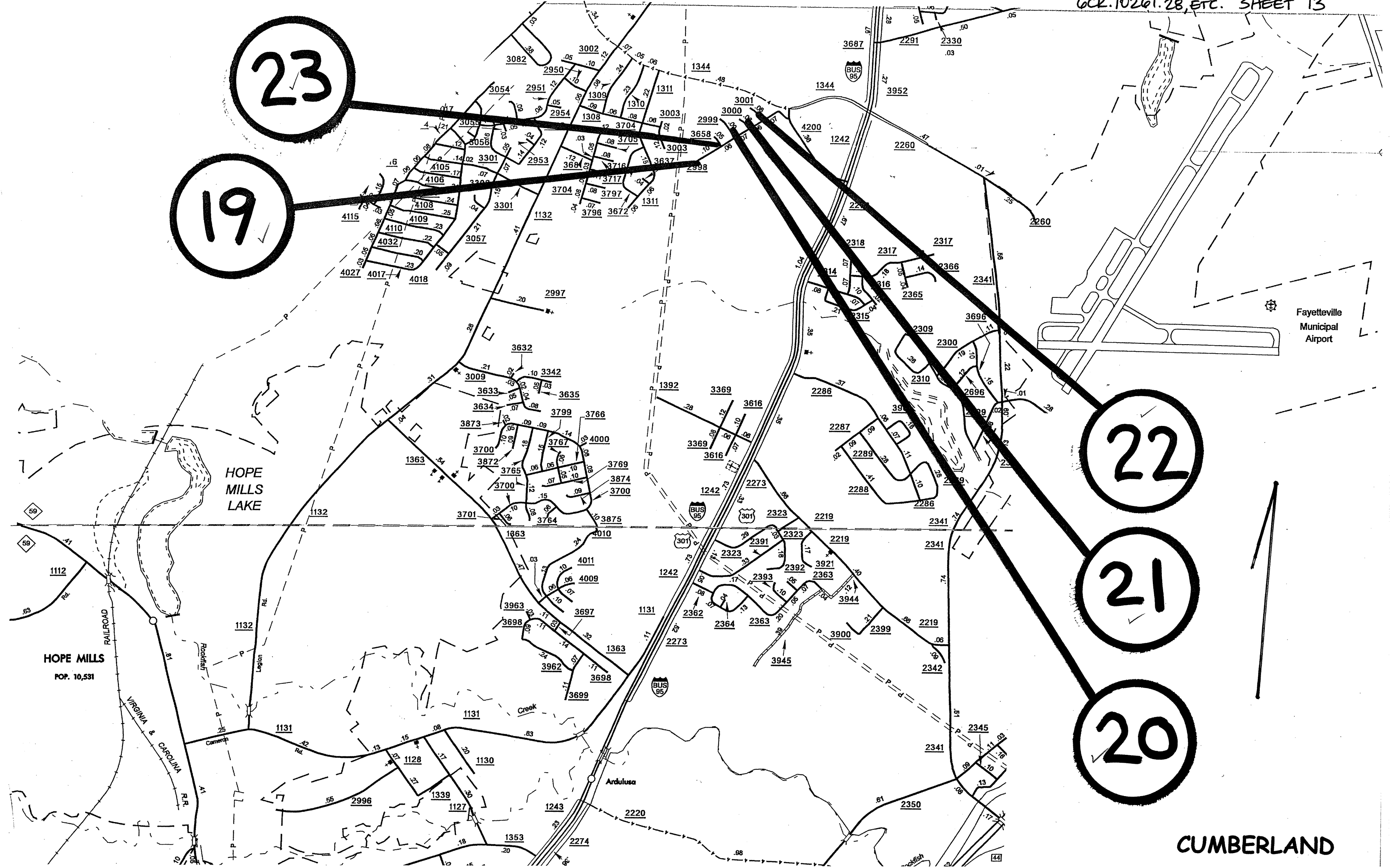
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Fayetteville Municipal Airport

HOPE MILLS LAKE

HOPE MILLS  
POP. 10,531

CUMBERLAND



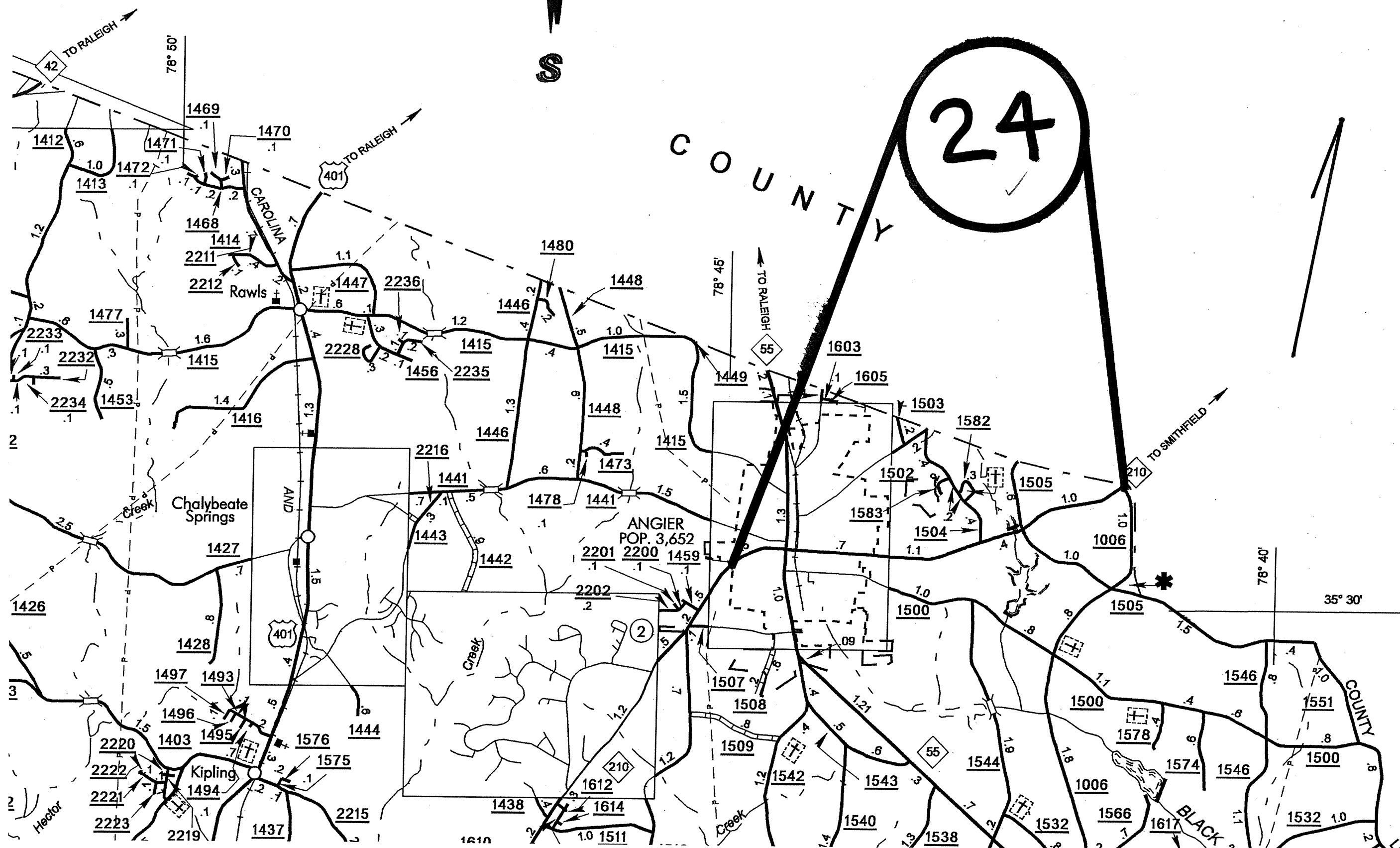
WAKE



HARNETT COUNTY

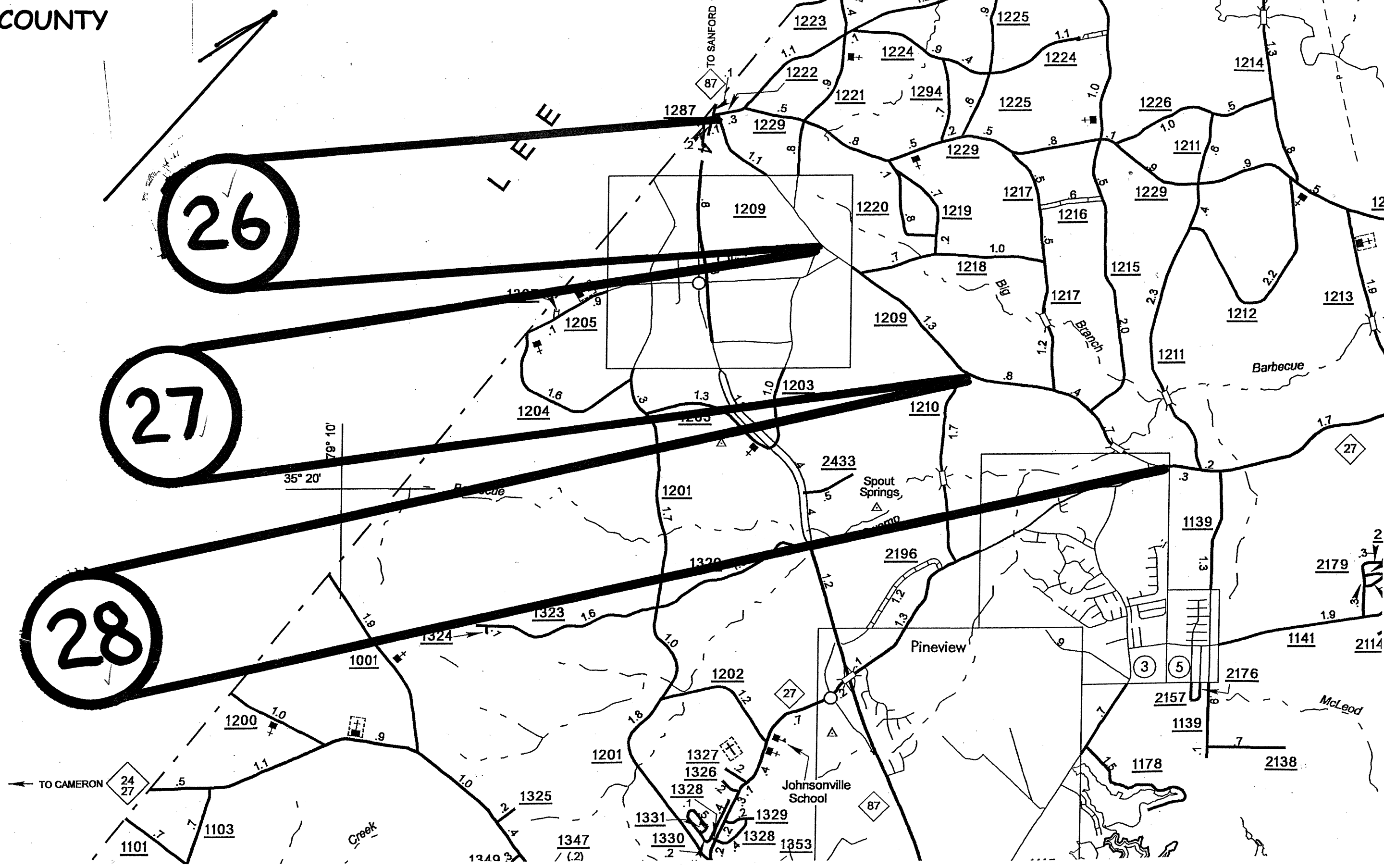
COUNTY

24



JOHNS

HARNETT COUNTY

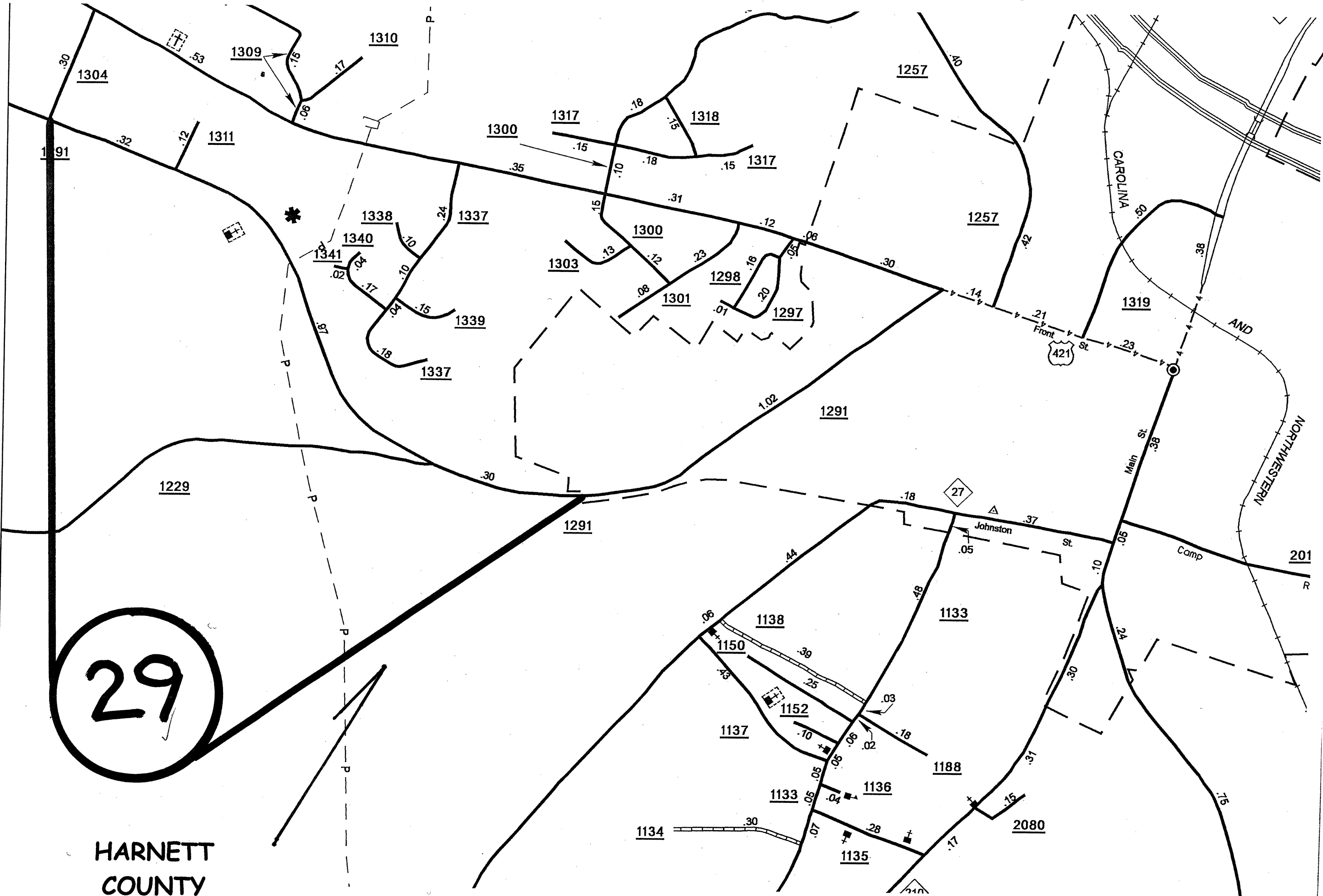


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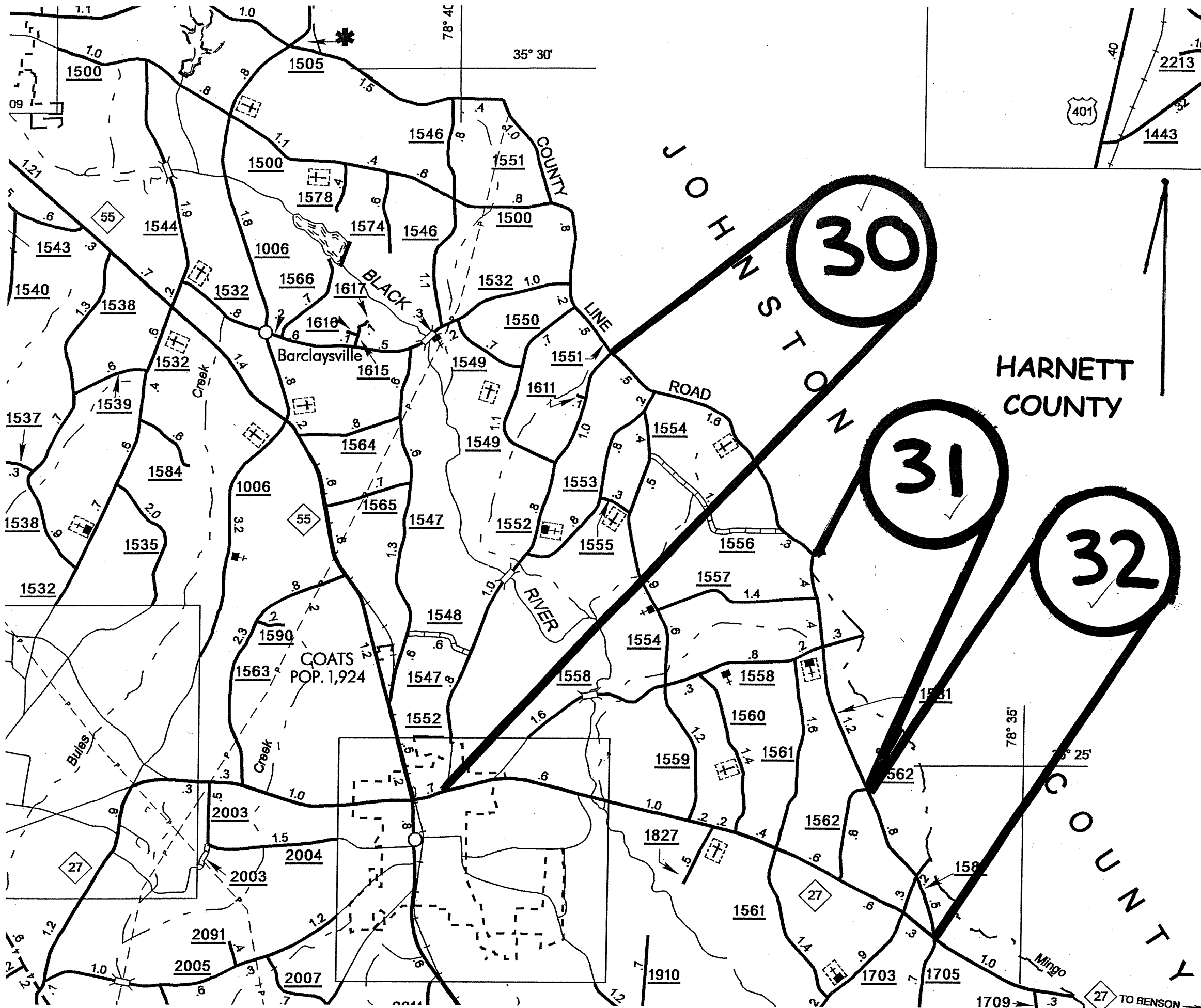




29

HARNETT COUNTY

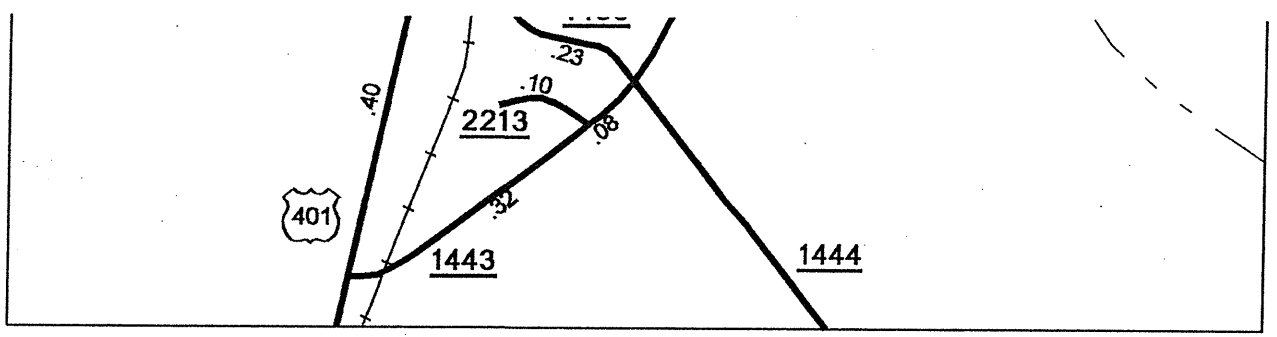




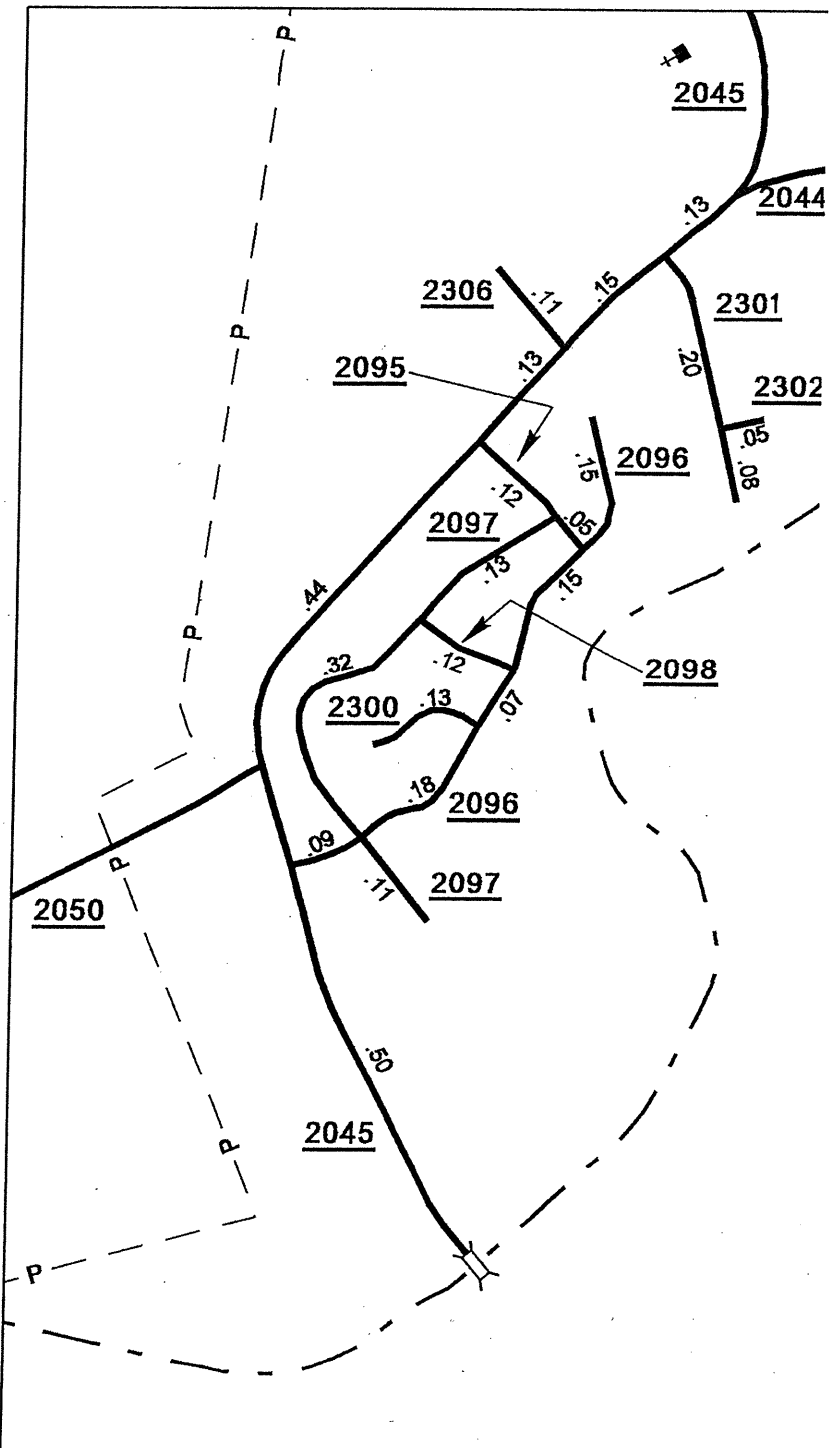
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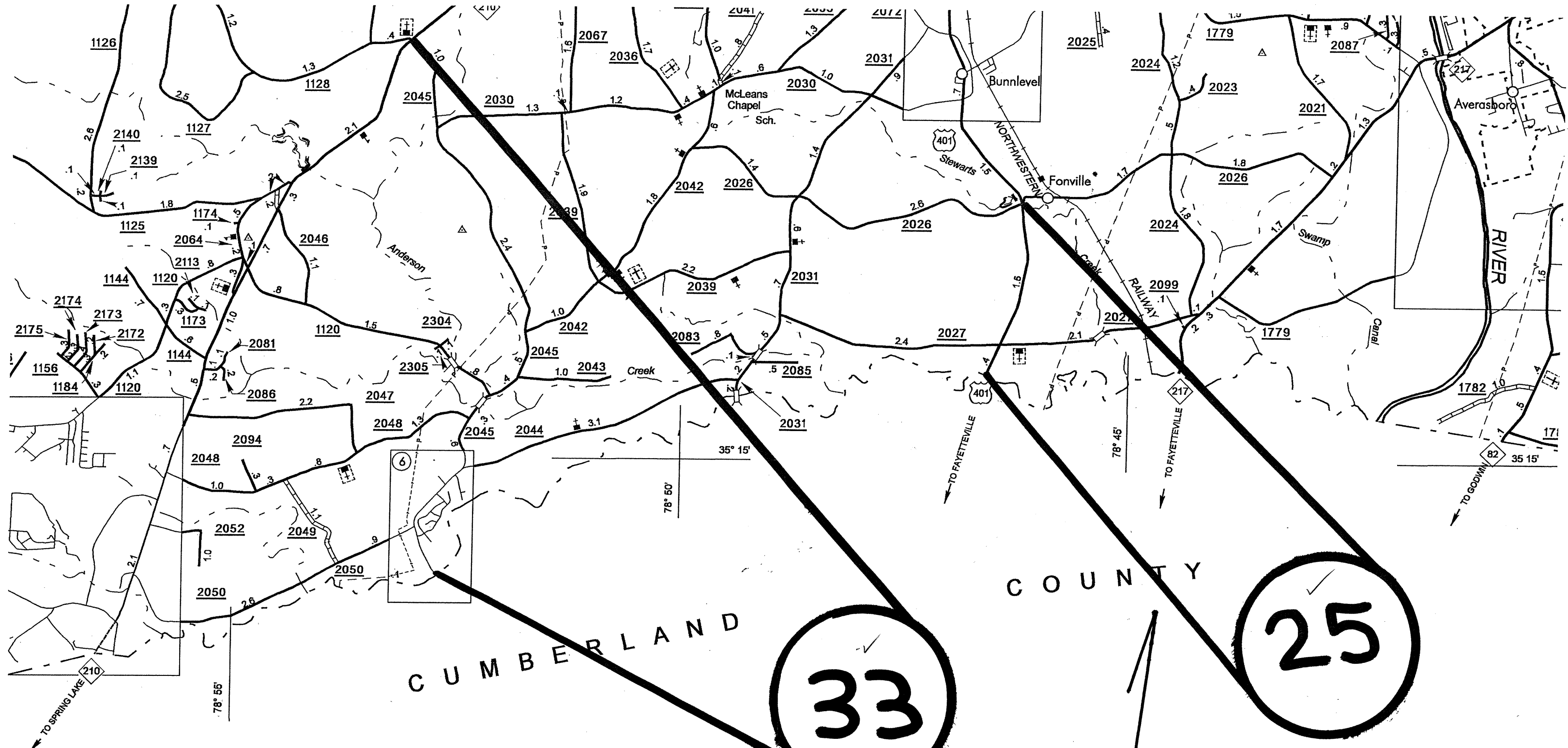
31

32



Chalybeate





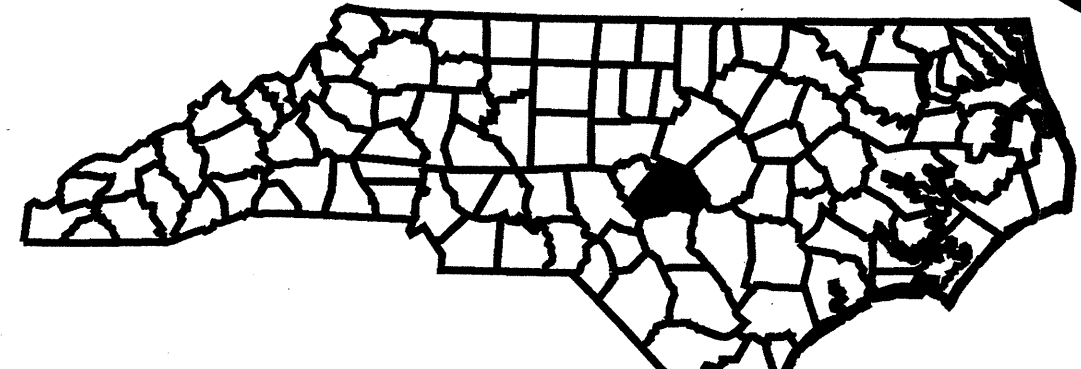
CUMBERLAND

COUNTY

33

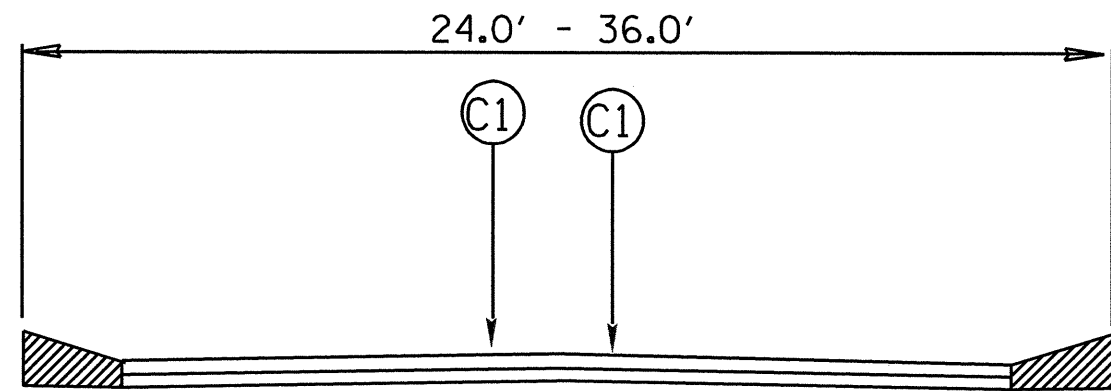
25

HARNETT COUNTY

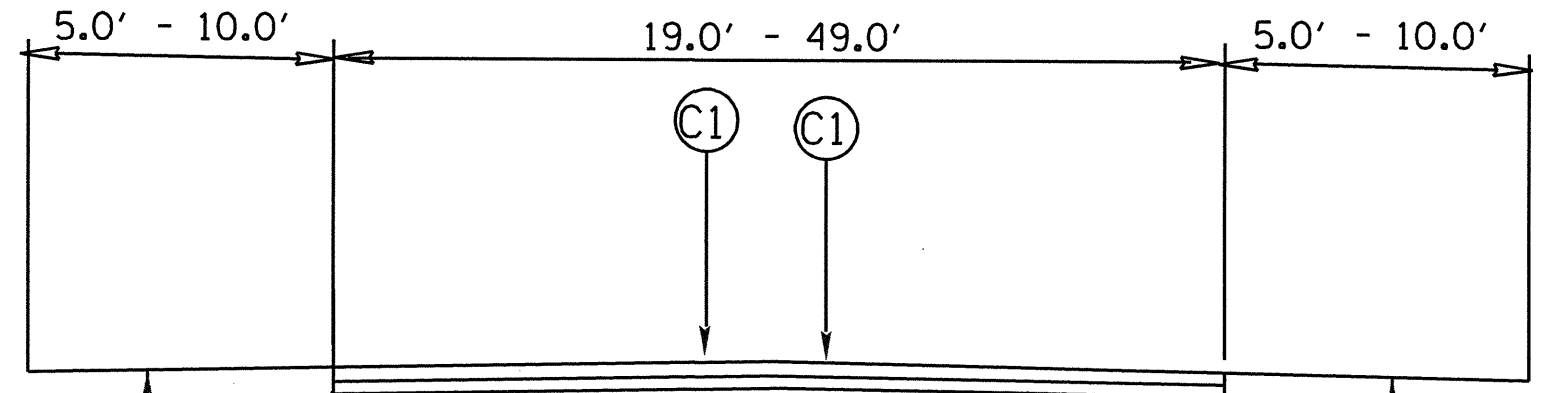


24  
27

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 138 LBS. PER SQ. YD.
C3	PROP. APPROX. 1.50" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C4	PROP. APPROX. 1.50" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C5	PROP. APPROX. 5.00" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
M1	MILLING AT A DEPTH OF 0" TO 1.00" TO BE MILLED TO A DEPTH OF 1.00" BELOW THE GUTTER AT EP AS DIRECTED BY THE ENGINEER.
M2	MILLING AT A DEPTH OF 0" TO 1.50" TO BE MILLED TO A DEPTH OF 1.50" BELOW THE GUTTER AT EP AS DIRECTED BY THE ENGINEER.
T	SHOULDER RECONSTRUCTION

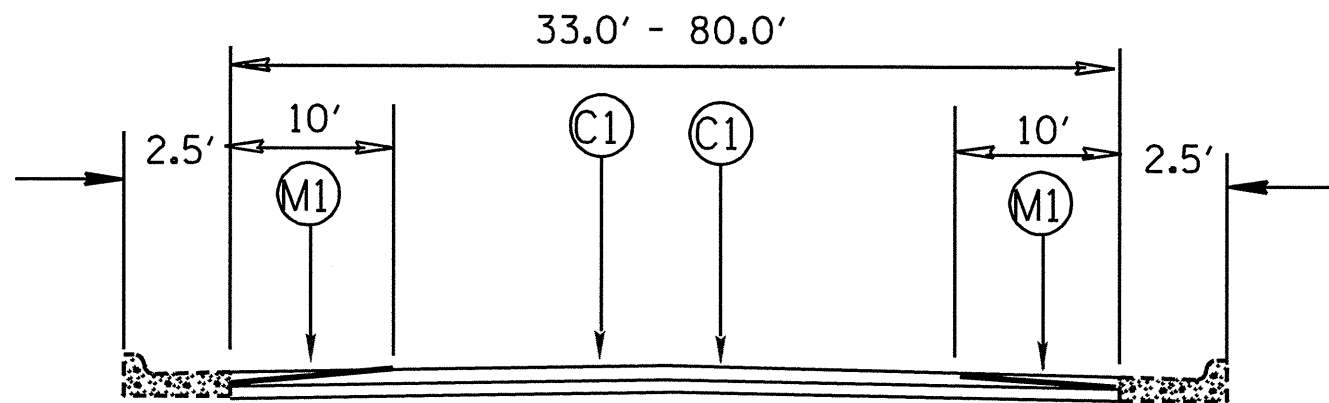


TYPICAL SECTION NO. 1 ✓



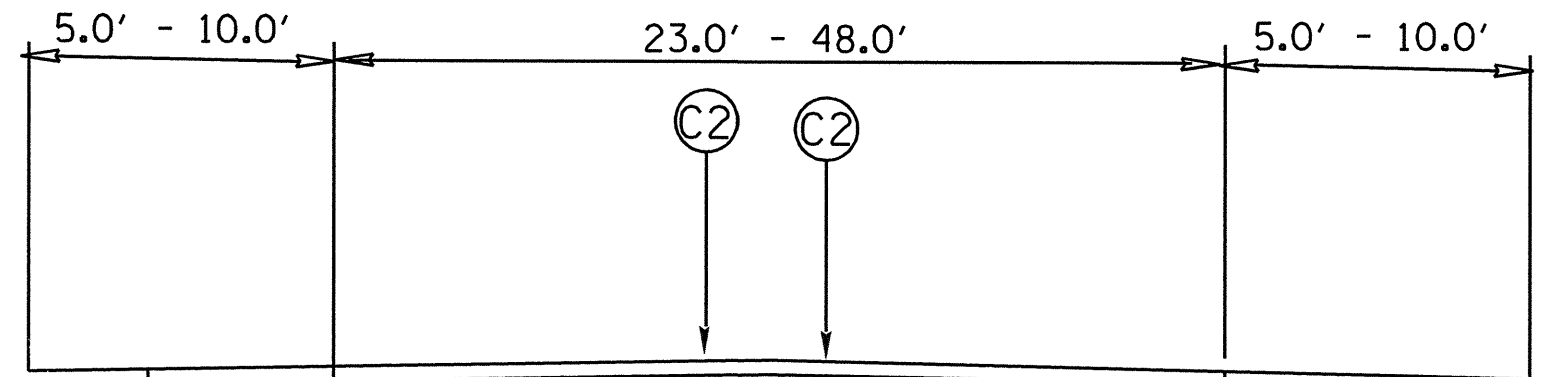
TYPICAL SECTION NO. 2 ✓

\* SEE SPECIAL PROVISIONS FOR THE MILLING



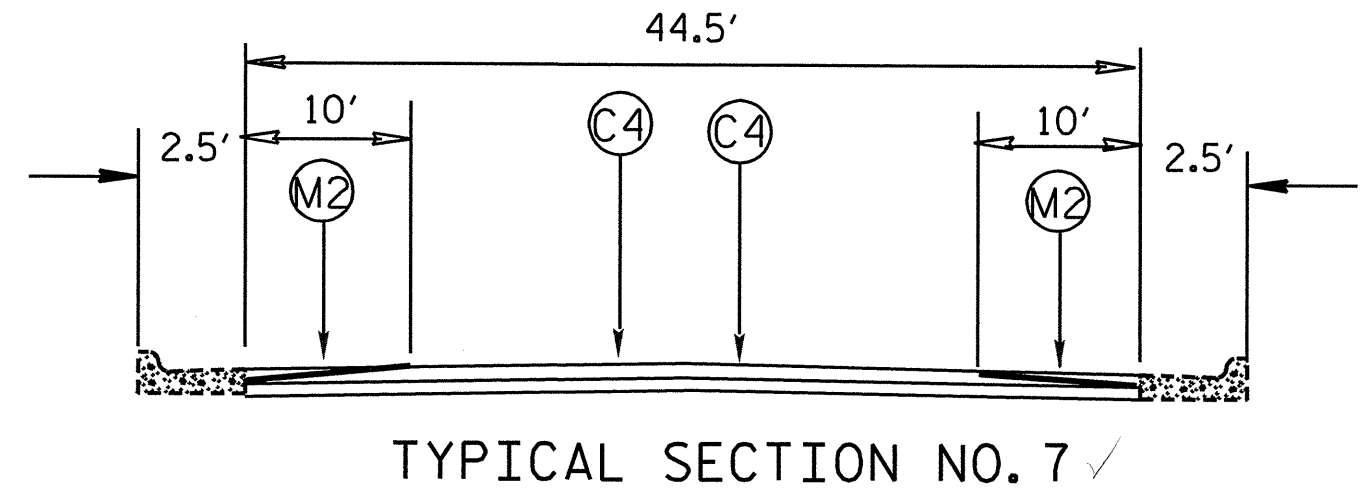
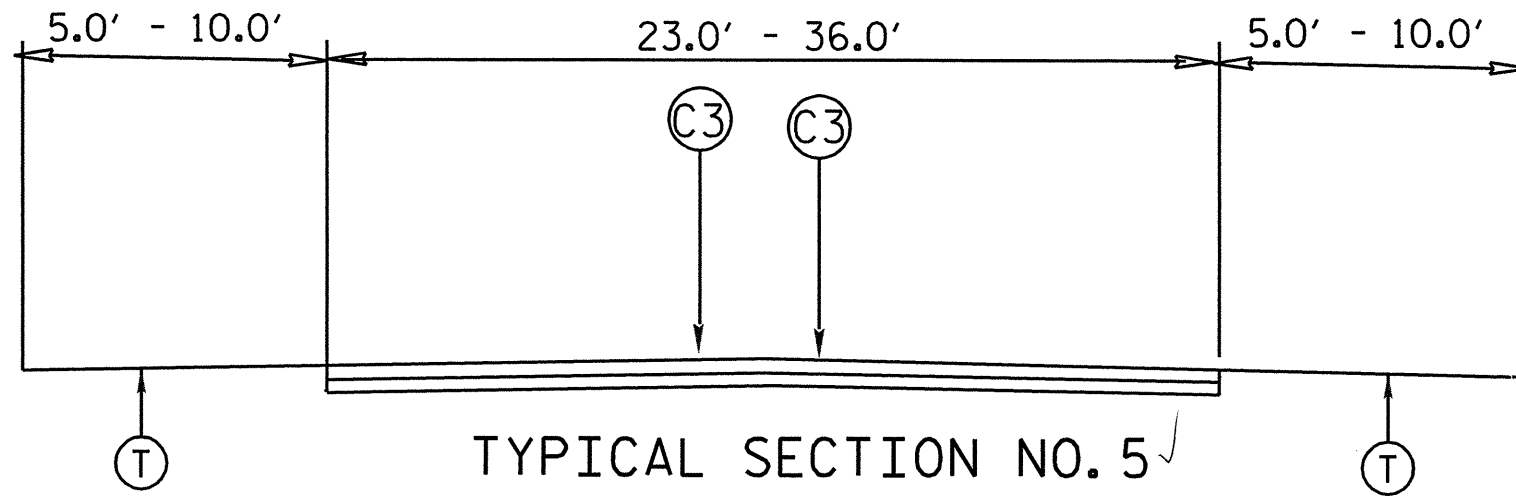
TYPICAL SECTION NO. 3 ✓

\* SEE SPECIAL PROVISIONS FOR THE MILLING

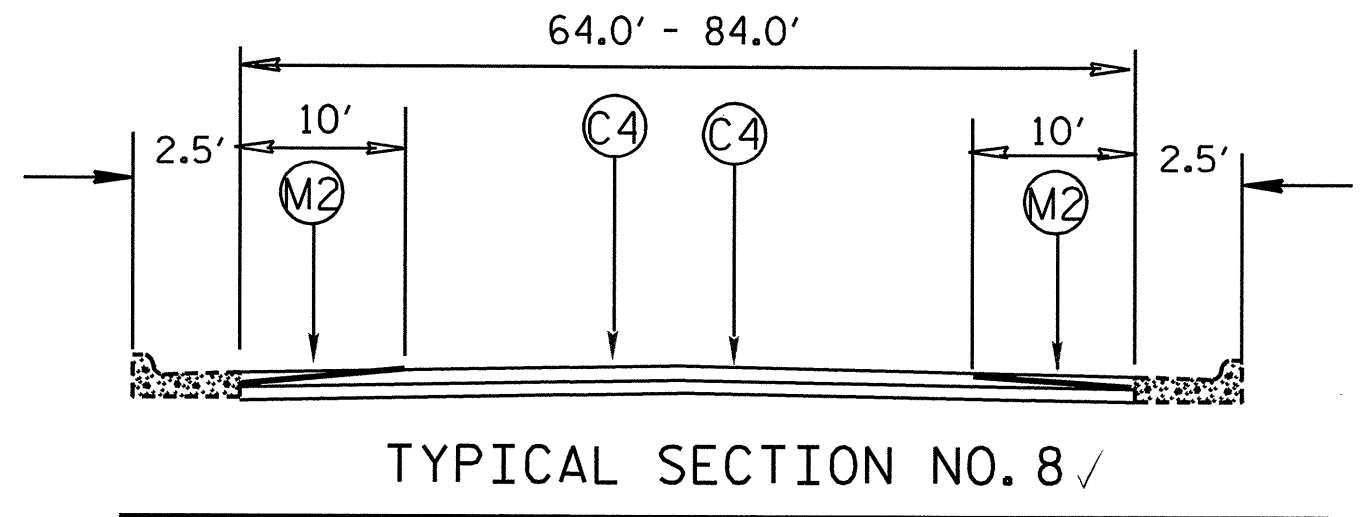
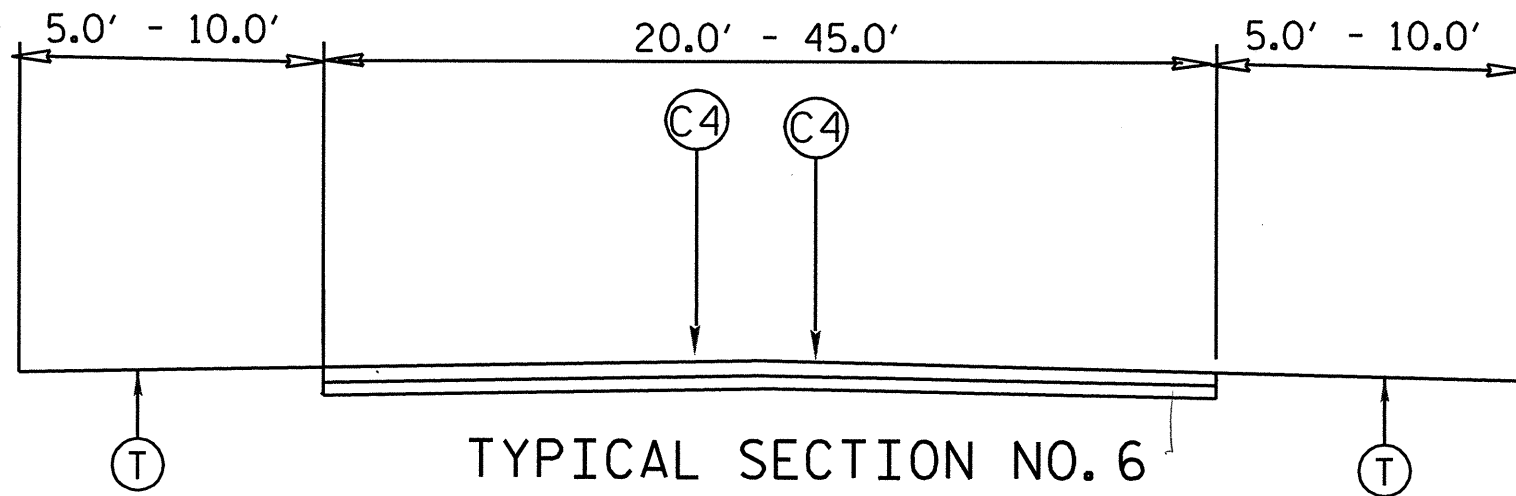


TYPICAL SECTION NO. 4 ✓

\* SEE SPECIAL PROVISIONS FOR THE MILLING

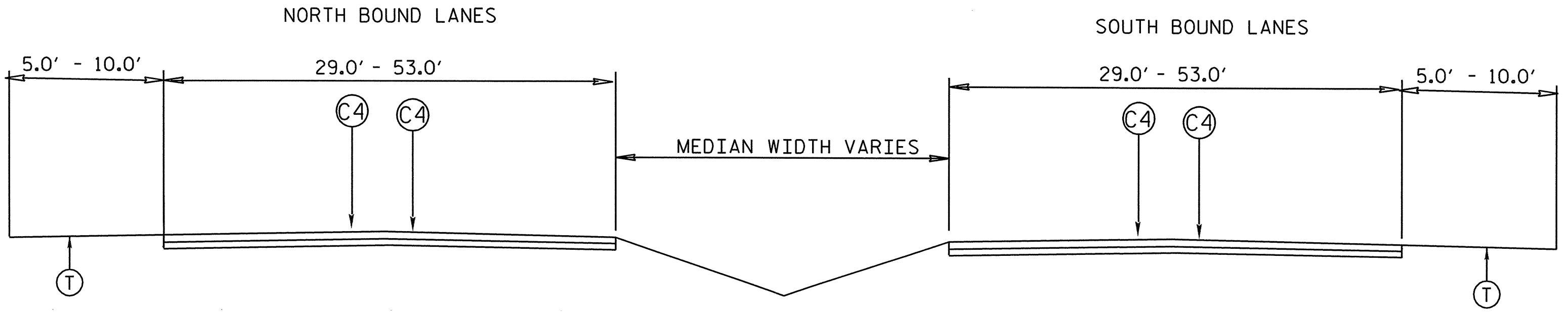


\* SEE SPECIAL PROVISIONS FOR THE MILLING



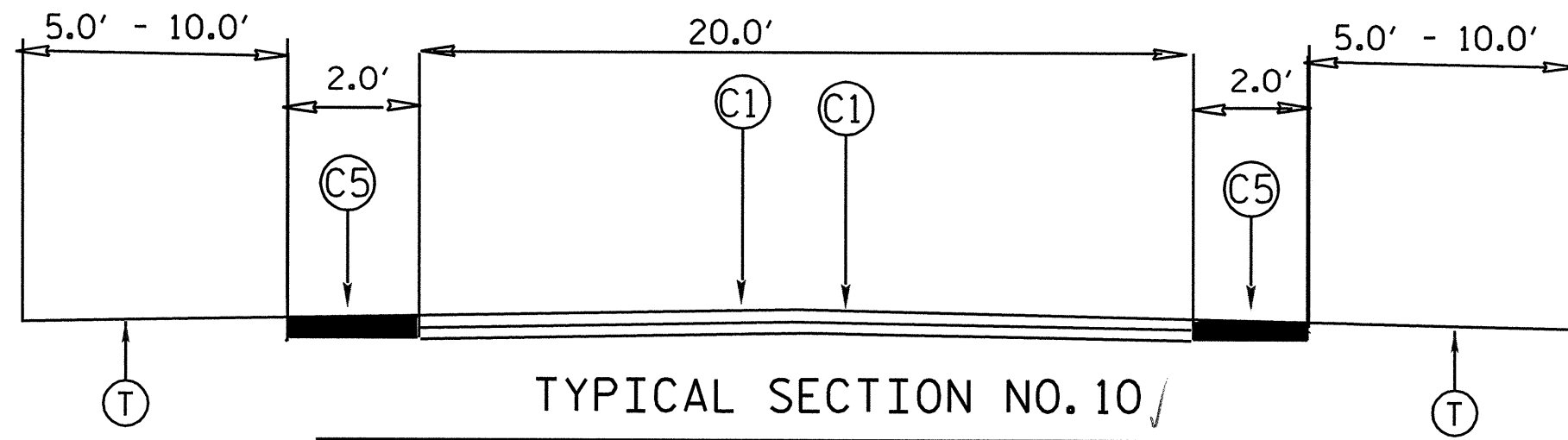
\* SEE SPECIAL PROVISIONS FOR THE MILLING

\* SEE SPECIAL PROVISIONS FOR THE MILLING



TYPICAL SECTION NO. 9 /

\* SEE SPECIAL PROVISIONS FOR THE MILLING



TYPICAL SECTION NO. 10 /

\* SEE SPECIAL PROVISIONS FOR THE MILLING

\* 2.0' SYM. WIDENING TO BE OVERLAYED WITH C1

PROJECT NO.	SHEET NO.	TOTAL NO.
6CR.10261.28, 6CR.20261.28 6CR.10431.28, ETC.	23	

## SUMMARY OF QUANTITIES

PROJECT NO.	COUNTY	MAP NO.	ROUTE	DESCRIPTION	TYP	LENGTH MI	WIDTH FT	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	0.0" TO 1.5" MILLING SY	0.0" TO 1.25" MILLING SY	0.0" TO 1.00" MILLING SY	BASE COURSE, B25.0B TONS	SURFACE COURSE, SF9.5A TONS	SURFACE COURSE, S9.5B TONS	PG 64-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	WHEELCHAIR RAMPS EA	MANHOLES EA	METER OR VALVE BOX EA	SEED & MULCHING AC	PAVED TRENCHING FT	UNPAVED TRENCHING FT	JUNCTION BOX (STANDARD) EA	2" RISER WITH WEATHERHEAD EA	INDUCTIVE LOOP LF	LEAD-IN CABLE 14/2 LF	2" PVC CONDUIT FT	1" PVC CONDUIT FT	
6CR.10261.28	Cumberland	1	US 301	FROM PAVT JT @ SR 1344 TO SR 2220	9	2.66	29		2.66	1871					3965	238	30		1	1	6.45	10.00	100.00	2.00	2.00	2,100	100	50.00	30.00	
<b>TOTAL FOR MAP NO. 1</b>					9	2.66	29		2.66	1871					5094	306	30		1	1	6.45									
		2	US 401 BYPASS	FROM PAVT JT @ RAMSEY ST TO PAVT JT @ NC 24	8	4.45	64.5			56373					14987	899	100		111	51		10.00	100.00	2.00	2.00	5,300	100	100.00	30.00	
<b>TOTAL FOR PROJ NO. 6CR.10261.28</b>						9.77			5.32	60115					24046	1443	160		113	53	12.90	20.00	200.00	4.00	4.00	7,400	200	150.00	60.00	
6CR.20261.28	Cumberland	3	SR 1003	FROM SR 1112 TO PAVT JT @ NC 59	5	1.19	24	29	2.38					1647		107	50		1	1	2.88	10.00	50.00	2.00	2.00	400	100	50.00	30.00	
		4	SR 1006	FROM PAVT JT TP PAVT JT 690' E. OF SR 1826	4	0.88	23	21	1.76		1484			1005		65	10		1	1	2.13									
		5	SR 1103	FROM PAVT JT @ HOKE CO LINE TO SR 1102	2	0.95	19	23	1.9					607		40	8			1	2.30									
		6	SR 1132	FROM SR 1131 TO PAVT JT @ LAKEVIEW DR.	2	0.56	24	13	1.12			1384		558		36	20		3	3	1.36	10.00	50.00	2.00	2.00	400	100	50.00	30.00	
		7	SR 1132	FROM PAVT JT @ SR 1363 TO PAVT JT @ SR 1344	2	1.45	25	35	2.9					1560		102	50		1	7	3.52	10.00	50.00	2.00	2.00	200	100	50.00	30.00	
		8	SR 1141	FROM SR 1132 TO SR 2311	3	1.73	33				25527			1890		123	80	2	40	23		10.00	50.00	2.00	2.00	400	200	50.00	30.00	
		9	SR 1154	FROM US 301 TO SR 1289	2	1.28	22	31	2.56					1016		66	40		4	10	3.10	10.00	50.00	2.00	2.00	100	100	50.00	30.00	
		10	SR 1345	FROM SR 1108 TO DE	2	0.55	19	13	1.1					362		24	25			3	1.33									
		11	SR 1719	FROM PAVT JT @ SR 1718 TO SR 1722	2	3.53	21	85	7.06			2094		2514		164	10													
		12	SR 1731	FROM SR 1728 TO US 301	1	0.19	24							164		11	10													
		13	SR 2005	FROM SR 2000 TO NC 53	2	1.2	21	29	2.4					830		54	80		2	2	2.91									
		14	SR 2010	FROM SR 2000 TO NC 53	2	3.49	20	84	6.98					2302		150	60		1	1	8.46									
		15	SR 2277	FROM US 301 TO DE	2	0.28	19	7	0.56					188		12	60		2	2	0.68									
		16	SR 2283	FROM US 301 TO PAVT JT @ OWEN DR. EXT.	2	0.52	24	12	1.04					477		31	20		1	1	1.26	10.00	50.00	2.00	2.00	100	100	50.00	30.00	
		17	SR 2333	FROM SR 2252 TO SR 2220	6	0.3	30	7	0.6						456	27	6				0.73									
<b>TOTAL FOR MAP NO. 17</b>					6	1.81	25	43	3.62					2404	144	50				3	4.39									
		18	SR 2355	FROM BEGIN MAINT. TO PAVT JT.	2	1.11	20	27	2.22	0	0	0		0	2860	171	56	0		3	5.12									
		19	SR 2998	FROM PAVT JT TO END OF MAINT.	1	0.33	27							320		21	20		2	2	2.69									
		20	SR 2999	FROM SR 2298 TO DE	1	0.09	27							87		6	10		8	1										
		21	SR 3000	FROM SR 2998 TO DE	1	0.06	26							59		4	5		2	1										
		22	SR 3001	FROM SR 2998 TO DE	1	0.08	26							75		5	5		2	1										
		23	SR 3658	FROM SR 2998 TO END MAINT.	1	0.07	27							69		4	5													
<b>TOTAL FOR PROJ NO. 6CR.20261.28</b>						21.65		459	38.2	0	1484	29005		16479	2860	1245	664	2	72	63	46.30	60.00	300.00	12.00	12.00	1,600	700	300.00	180.00	
6CR.10431.28	Hamett	24	NC 210	FROM PAVT JT W. OF NC 55 TO PAVT JT @ SR 1006	7	0.34	44.5			3989					771	46	10		8	4		10.00	50.00	2.00	2.00	800	100	50.00	30.00	
<b>TOTAL FOR MAP NO. 24</b>					6	2.69	24.5	65	5.38	3989	0	0			3286	197	30		5	2	6.52									
		25	US 401	FROM SR 2026 TO CUMB CO LINE	6	2.02	29	48	4.04	1021					2990	179	5		1		4.90									
<b>TOTAL FOR PROJ NO. 6CR.10431.28</b>						5.05		113	9.42	5010	0	0		0	7047	422	45	0	14	6	11.42	10.00	50.00	2.00	2.00	800	100	50.00	30.00	
6CR.20431.28	Hamett	26	SR 1209	FROM SR 1229 TO SR 1208	2	1.49	22	36	2.98					1082		70	5				3.61									
		27	SR 1209	FROM SR 1208 TO 1210	2	1.75	23	42	3.5					1332		87	10				4.24									
		28	SR 1209	FROM SR 1210 TO NC 27	2	2.01	23	48	4.02		1484			1525		99	10				4.87									
		29	SR 1291	FROM SR 1304 TO PAVT JT @ CL LILLINGTON	2	1.63	22	39	3.26					1182		77	10			2	3.95									
		30	SR 1552	FROM NC 27 TO SR 1551	10	3.96	24	95	7.92		1226	2649		3116		316	30		1	1	9.60									
		31	SR 1581	FROM SR 1551 TO SR 1562	5	2.03	23	49	4.06					2359		153	10				4.92									
		32	SR 1581	FROM SR 1562 TO NC 27	5	1.39	24	33	2.78					1676		109	15				3.37									
		33	SR 2045	FROM NC 210 TO CUMBERLAND CO LINE	2	6.64	24	159	13.28			2394		5241		340	30			1	16.10									
<b>TOTAL FOR PROJ NO. 6CR.20431.28</b>						20.9		501	41.8	0	0	5104	2649	17513	0	1251	120	0	1	4	50.66									
<b>GRAND TOTAL</b>						57.37		1073	94.74	65125	1484	34109	2649	33992	33953	4361	989	2	200	126	121.28	90.00	550.00	18.00	18.00	9,800	1,000	500.00	270.00	

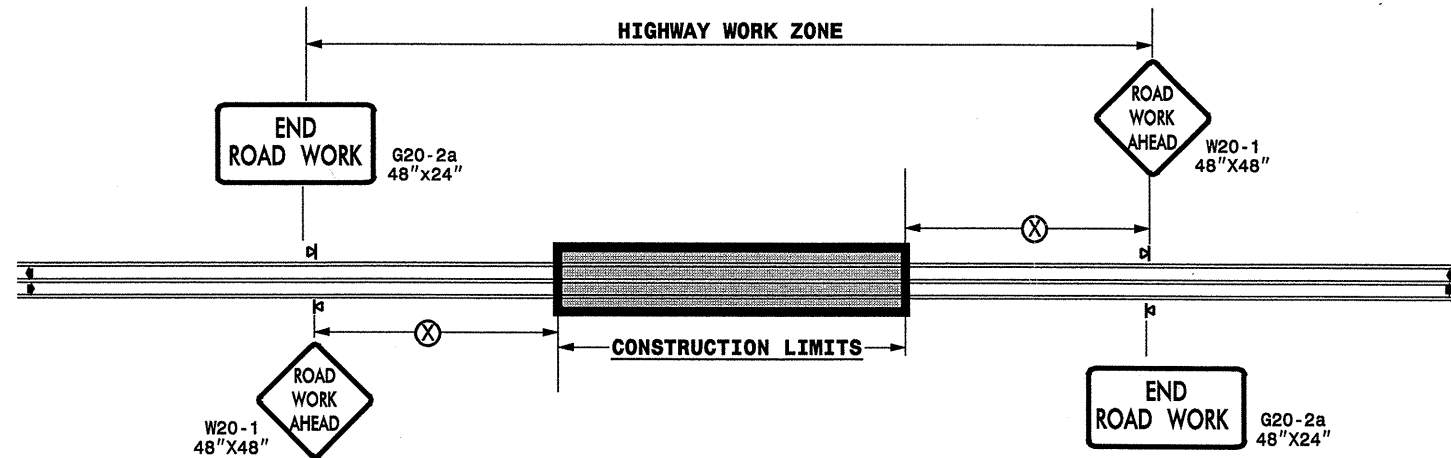
PROJECT NO.	SHEET NO.	TOTAL NO.
6CR.10261.28, 6CR.20261.28, 6CR.10431.28, ETC.	24	

## THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	4685000000-E		4686000000-E			4695000000-E		4697000000-E-4705000000-E-4710000000-E					4721000000-E					4725000000-E					4810000000-E		4835000000-E		4900000000-N		4905000000-N
					4" X 90 M WHITE THERMO	4" X 120 M WHITE THERMO	4" X 120 M YELLOW THERMO	8" X 90 M WHITE THERMO	8" X 120 M WHITE THERMO	8" X 120 M YELLOW THERMO	16" X 120 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO RXR 120 M	THERMO MSG STOP 120 M	THERMO MSG ONLY 120 M	THERMO MSG SCHOOL 120 M EA	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR ARROW 90 M	THERMO STR & RT ARROW 90 M EA	THERMO STR & LT ARROW 90 M EA	4" WHITE PAINT	4" YELLOW PAINT	24" WHITE PAINT	YELLOW & YELLOW MARKERS	CRYSTAL & RED MARKERS	SNOW PLOWABLE MARKERS						
NO		NO			LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA				
6CR.10261.28	Cumberland	1	US 301	FROM PAVT JT @ SR 1344 TO SR 2220	22,500	6,000	19,000											40	5	60	40								325				
<b>TOTAL FOR MAP NO. 1</b>					22,500	6,000	19,000											40	5	60	40								325				
		2	US 401 BYPASS	FROM PAVT JT @ RAMSEY ST TO PAVT JT @ NC 24	2,500	14,000		1,750	100	125	200	900	8	8	8			225	20	50	10								1,700				
<b>TOTAL FOR PROJ NO. 6CR.10261.28</b>					25,000	20,000	19,000	1,750	100	125	200	1,100	8	8	8			265	25	110	50								2,025				
					39,000		225			24					450																		
6CR.20261.28	Cumberland	3	SR 1003	FROM SR 1112 TO PAVT JT @ NC 59	15,000		16,500			350		30						3	5			3							105				
		4	SR 1006	FROM PAVT JT TP PAVT JT 690' E. OF SR 1826	10,500		10,500																						65				
		5	SR 1103	FROM PAVT JT @ HOKE CO LINE TO SR 1102																				12,500	12,500								
		6	SR 1132	FROM SR 1131 TO PAVT JT @ LAKEVIEW DR.	1,500		8,000			150								5	3										75				
		7	SR 1132	FROM PAVT JT @ SR 1363 TO PAVT JT @ SR 1344	17,500	20,100		200							4			12	11										325				
		8	SR 1141	FROM SR 1132 TO SR 2311	350	250	45,000	125	250	100	200	325	8					75	5	7													
		9	SR 1154	FROM US 301 TO SR 1289																				29,000	29,000								
		10	SR 1345	FROM SR 1108 TO DE																			12,000	12,000									
		11	SR 1719	FROM PAVT JT @ SR 1718 TO SR 1722																			45,000	45,000									
		12	SR 1731	FROM SR 1728 TO US 301																			5,000	5,000									
		13	SR 2005	FROM SR 2000 TO NC 53																			16,000	16,000									
		14	SR 2010	FROM SR 2000 TO NC 53																			81,000	81,000									
		15	SR 2277	FROM US 301 TO DE																			8,000	8,000									
		16	SR 2283	FROM US 301 TO PAVT JT @ OWEN DR. EXT.														1				1	12,000	12,000					45				
		17	SR 2333	FROM SR 2252 TO SR 2220														1				1	50,000	50,000	25	160	10						
<b>TOTAL FOR MAP NO. 17</b>																		1				1	50,000	50,000	25	160	10						
		18	SR 2355	FROM BEGIN MAINT. TO FPAVT JT.																			26,000	26,000									
		19	SR 2998	FROM PAVT JT TO END OF MAINT.																			8,400	8,400									
		20	SR 2999	FROM SR 2298 TO DE																			2,200	2,200									
		21	SR 3000	FROM SR 2998 TO DE																			1,500	1,500									
		22	SR 3001	FROM SR 2998 TO DE																			1,600	1,600									
		23	SR 3658	FROM SR 2998 TO END MAINT.																			1,700	1,700									
<b>TOTAL FOR PROJ NO. 6CR.20261.28</b>					44,850	20,350	80,000	325	250	600	200	355	8		4	12		97	24	7	1	4	311,900	311,900	25	495	10	430					
					100,350		850			24					133					623,800		505											
6CR.10431.28	Harnett	24	NC 210	FROM PAVT JT W. OF NC 55 TO PAVT JT @ SR 1006	35,000		35,000		225			125						3				3							265				
<b>TOTAL FOR MAP NO. 24</b>					35,000		35,000		225			125							3				3						265				
		25	US 401	FROM SR 2026 TO CUMB CO LINE	25,000		25,000											1											160				
<b>TOTAL FOR PROJ NO. 6CR.10431.28</b>					60,000		60,000		225			125						4				3							425				
					60,000		225			125					7																		
6CR.20431.28	Harnett	26	SR 1209	FROM SR 1229 TO SR 1208																			36,000	36,000									
		27	SR 1209	FROM SR 1208 TO 1210																			44,000	44,000									
		28	SR 1209	FROM SR 1210 TO NC 27																			50,000	50,000					150				
		29	SR 1291	FROM SR 1304 TO PAVT JT @ CL LILLINGTON																									160				
		30	SR 1552	FROM NC 27 TO SR 1551																			40,000	40,000					150				
		31	SR 1581	FROM SR 1551 TO SR 1562																			94,000	94,000									
		32	SR 1581	FROM SR 1562 TO NC 27																			50,000	50,000					150				
		33	SR 2045	FROM NC 210 TO CUMBERLAND CO LINE																			32,000	32,000					100				
<b>TOTAL FOR PROJ NO. 6CR.20431.28</b>																							160,000	160,000					500				
					1,013,210															506,000		1,210											
<b>GRAND TOTAL</b>					129,850	40,350	159,000	2,075	575	725	400	1,580	16	8	12	12		366	49	117	54	4	817,900	817,900	25	1,705	10	2,880					
					199,350		1,300			48					590					1,635,800		1,715											



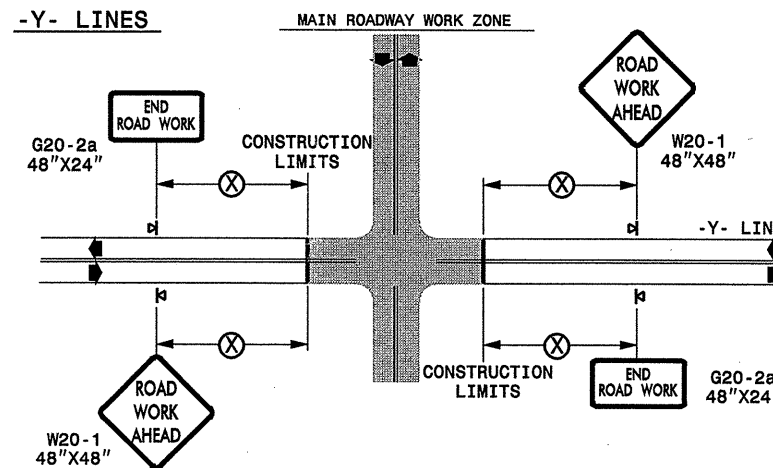
**TWO-WAY UNDIVIDED \*\* (L-LINES)**



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

STATE OF NORTH CAROLINA  
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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 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.

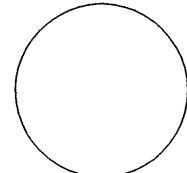

**LEGEND**

◀ PORTABLE SIGN

➡ DIRECTION OF TRAFFIC FLOW

DETAIL DRAWING  
FOR TWO-WAY UNDIVIDED  
WORK ZONE WARNING SIGNS

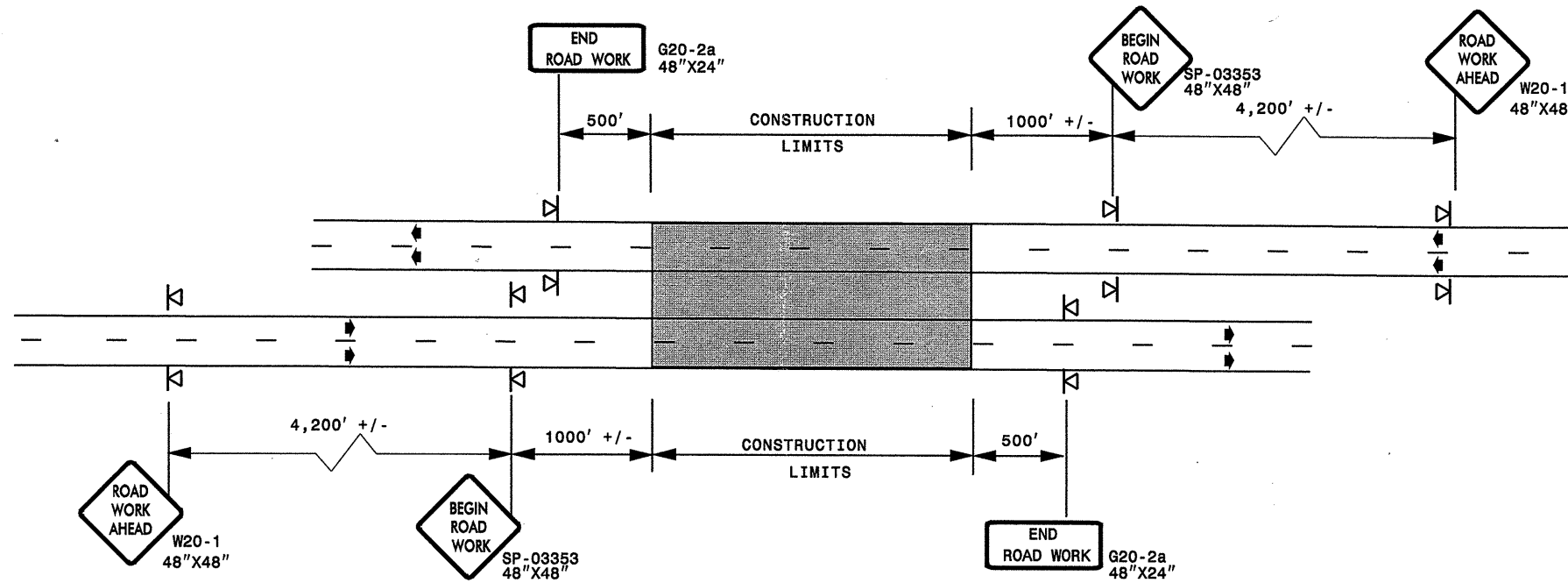
SHEET 1 OF 1

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

30-OCT-2007 18:13  
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 pseymore AT WZTC237502

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

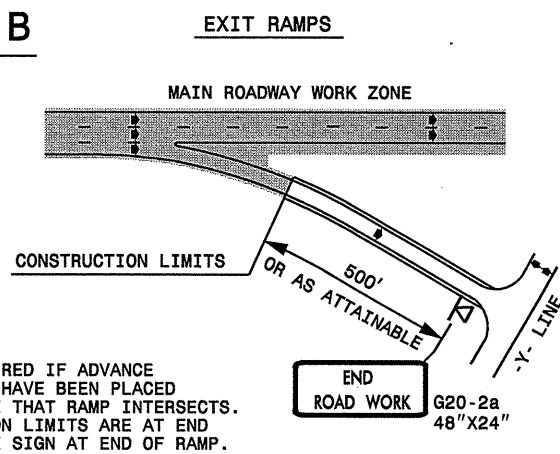
**DETAIL A**



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DIVISION OF HIGHWAYS  
RALEIGH, N.C.

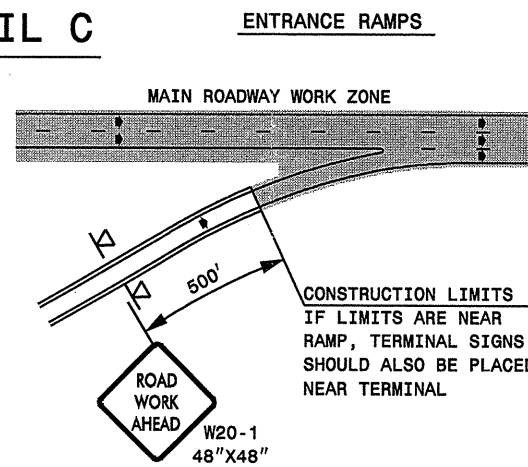
**ROADWAYS INTERSECTING ALONG FREEWAY WORK ZONE (Y-LINES)**

**DETAIL B**



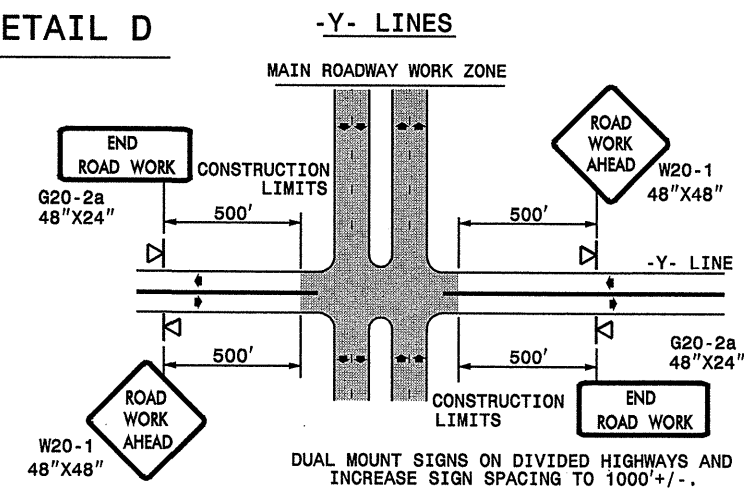
NOTE:  
SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

**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' +/-.

**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 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)

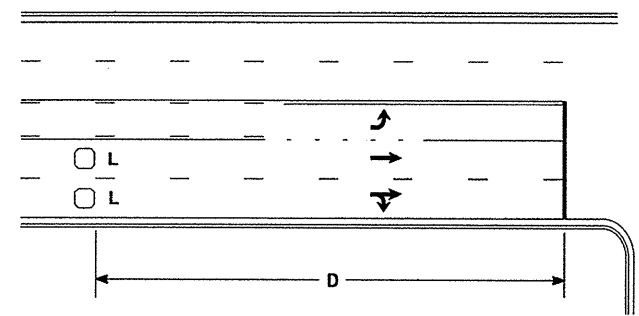
SHEET 1 OF 1

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

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 psey@more AT WZTCCC



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

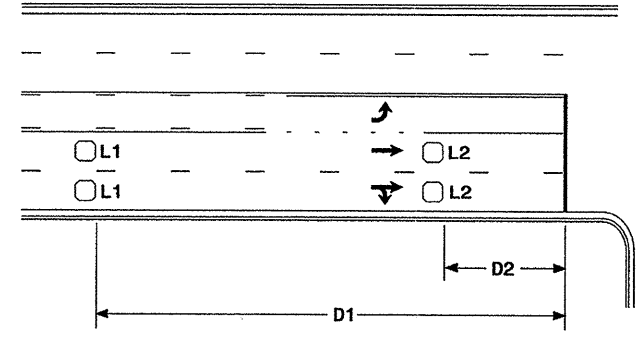


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

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

Volume Density Operation

OR

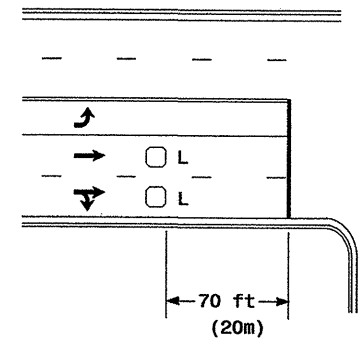


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

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

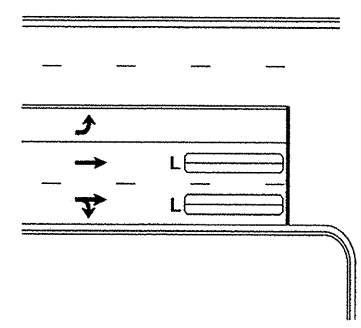
"Stretch" Operation

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



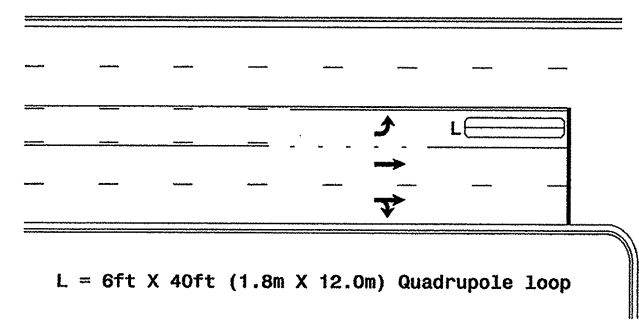
L = 6ft X 6ft (1.8m X 1.8m)  
Wired in series

OR



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

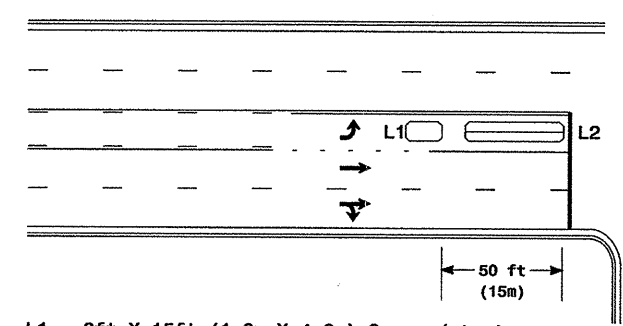
### Left Turn Lane Detection



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

Presence Loop Detection

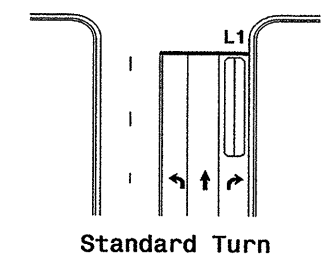
OR



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

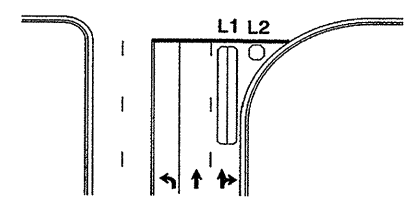
Queue Loop Detection

### Right Turn Lane Detection

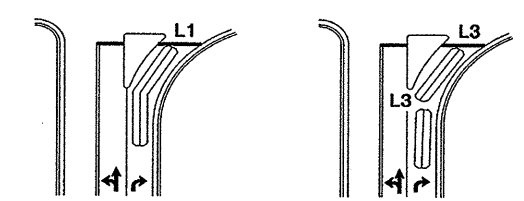


Standard Turn

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

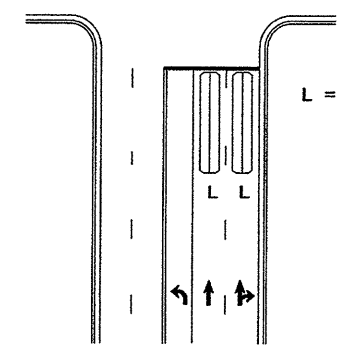


Wide Radius Turn



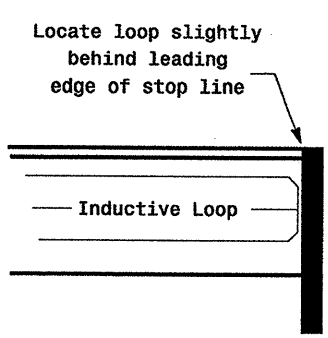
Channelized Turn

### Side Street Detection



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

### Presence Loop Placement at Stop Lines



Locate loop slightly  
behind leading  
edge of stop line

Note:  
Loop may be located in advance  
of stop line when stop line is  
greater than 15' (4.5m) from edge  
of intersecting roadway; or, when  
loop detects a permissive or  
protected/permissive left turn.

### Recommended Number of Turns

Single 6' X 6' (1.8m X 1.8m)  
loop (wired separately):

Length of Lead-in ft (m)	Number of Turns
< 250 (75)	3
250-375 (75-115)	4
375-525 (115-160)	5
> 525 (160)	6

Quadrupole loops: Use 2-4-2 turns  
6' X 15' (1.8m X 4.6m) Loops:  
Lead-in < 150' (45 m), use 2 turns  
Lead-in > 150' (45 m), use 3 turns

222 N. McDowell St., Raleigh, NC 27603

#### Typical Loop Locations

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

REVISIONS: *Revise pavement markings* INIT. DATE  
*ac* *12/1/06*

SCALE: N/A

SEAL

SIGNATURE: *P. I. Alexander* DATE: *6/6/06*

SIG. INVENTORY NO.

19-16C-2006-1423  
01/10/06  
turn (mmi)scet/copt/pt/col/2006-dgn

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5-07

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

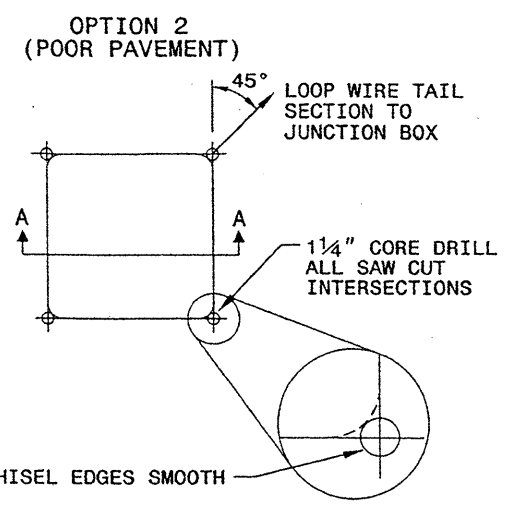
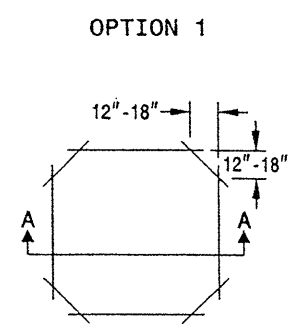
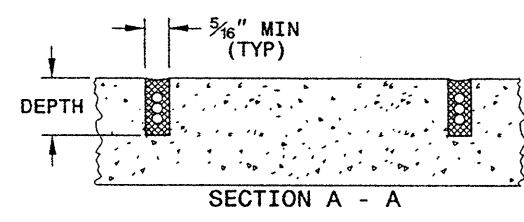
SHEET 1 OF 3  
**1725D01**

**CONVENTIONAL 4-SIDED LOOP**

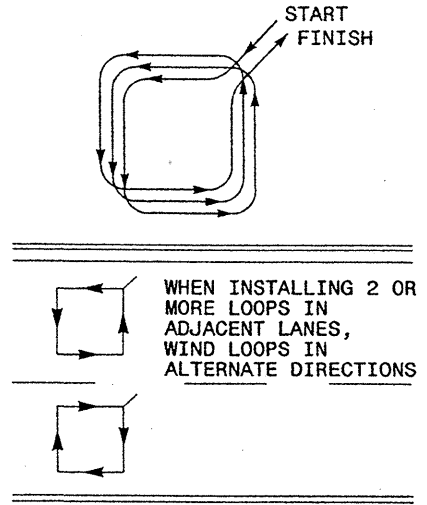
**SAW CUT OPTIONS**

**SAW SLOT DEPTH CHART**

DEPTH (IN)	NO. OF WIRE TURNS				
	2	3	4	5	6
CONCRETE	2.0	2.0	2.5	2.5	3.0
ASPHALT	2.0	2.5	3.0	3.0	3.0



**LOOP WINDING METHOD**



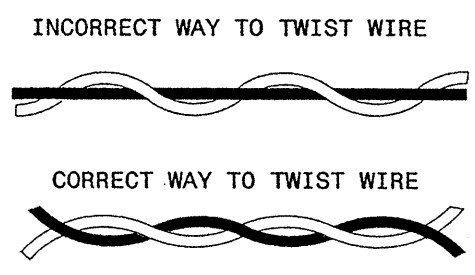
STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

5-07

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**

SHEET 1 OF 3  
**1725D01**

**LOOP WIRE TWISTING METHOD**

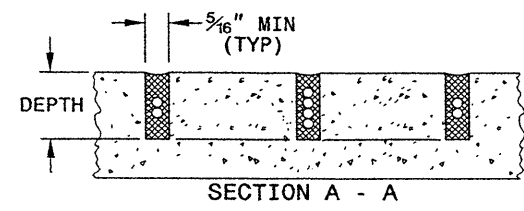
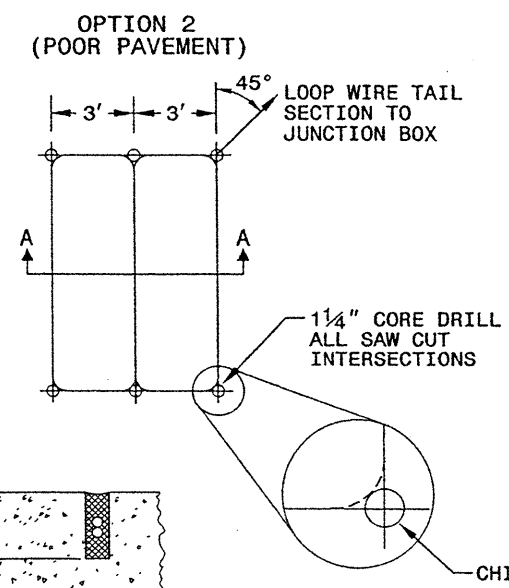
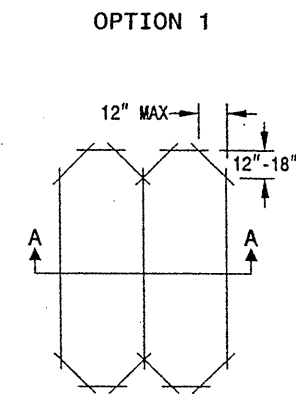


**NOTES**

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.

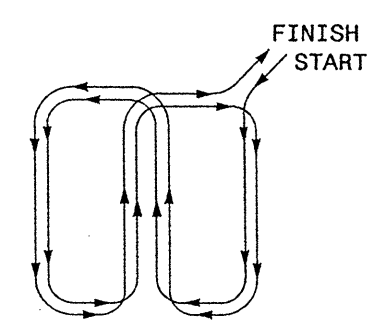
**QUADRUPOLE LOOP**

**SAW CUT OPTIONS**



DEPTH IS 2.5" FOR CONCRETE AND 3.0" FOR ASPHALT

**LOOP WINDING METHOD**



See Plate for Title

Prepared in the Offices of:

750 N. Greenfield Parkway  
Garner, NC 27529

SEAL

SEAL 016286  
ENGINEER  
MILTON I. DEAN

*Milton I. Dean* 9/5/07  
SIGNATURE DATE

05-SEP-2007 14:00  
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STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

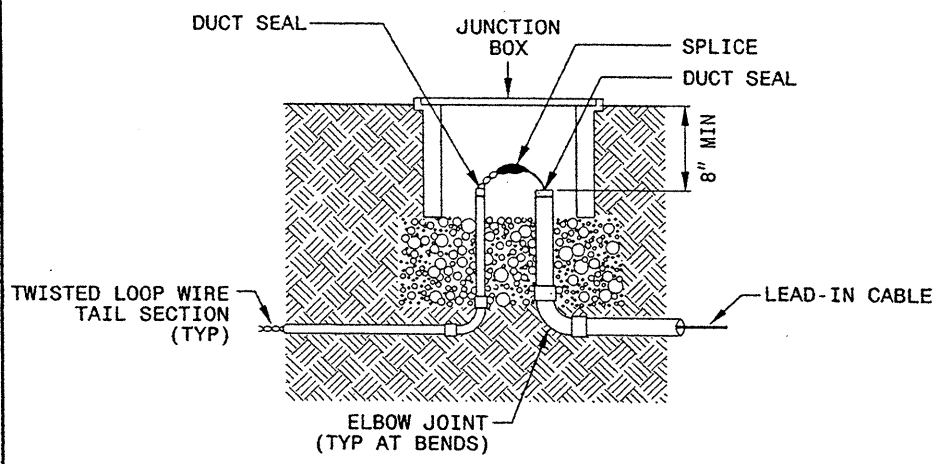
5-07

ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
 LOOP WIRE DETAILS

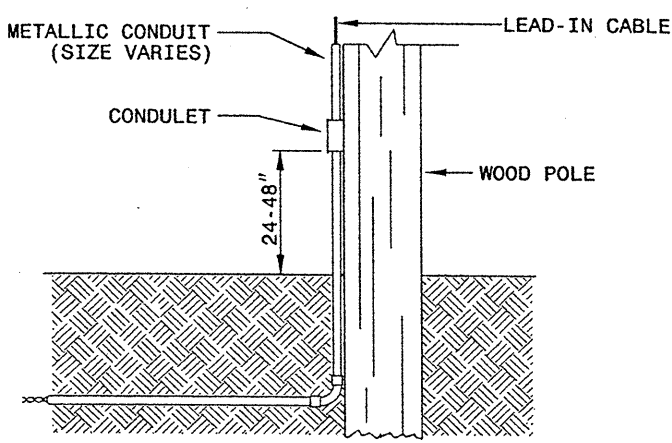
SHEET 2 OF 3  
**1725D01**

**LOOP WIRE SPLICE POINT DETAILS**

**LOOP WIRE AT JUNCTION BOX**



**LOOP WIRE AT POLE**

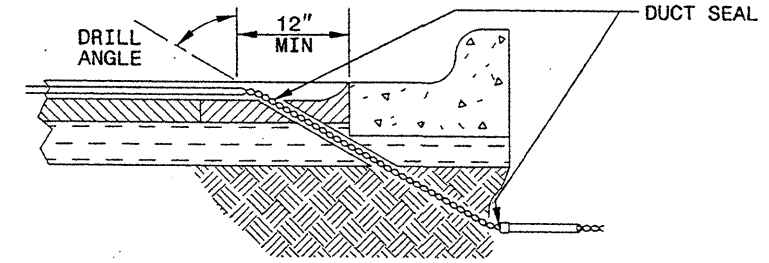


**NOTE**

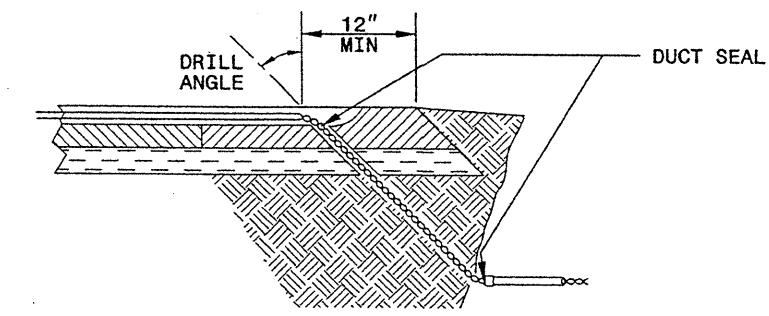
SPLICE ALL LOOP WIRE TAIL SECTIONS/LEAD-IN CABLE IN JUNCTION BOXES OR APPROVED CONDULETS.

**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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 RALEIGH, N.C.

5-07

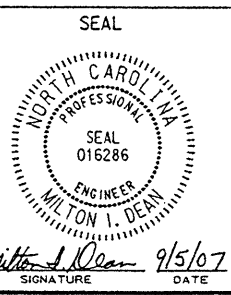
ENGLISH DETAIL DRAWING FOR  
**INDUCTIVE DETECTION LOOPS**  
 LOOP WIRE DETAILS

SHEET 2 OF 3  
**1725D01**

See Plate for Title



750 N. Greenfield Parkway  
 Garner, NC 27529



*Milton I. Dean* 9/5/07  
 SIGNATURE DATE

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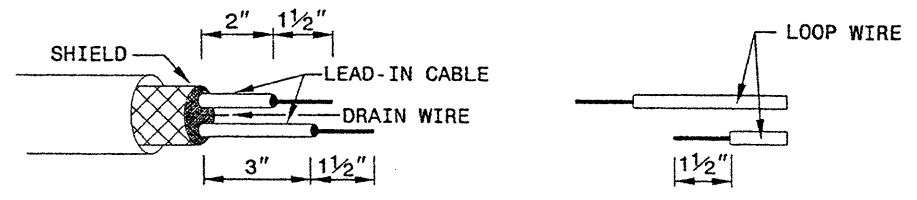
STATE OF  
NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

5-07

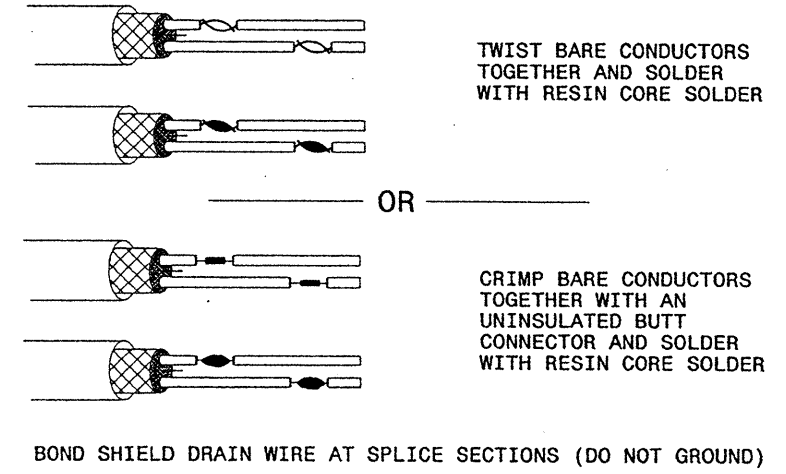
ENGLISH DETAIL DRAWING FOR  
**INDUCTION DETECTION LOOPS**  
SPlicing FOR LEAD-IN CABLE AND LOOP WIRE

SHEET 3 OF 3  
**1725D01**

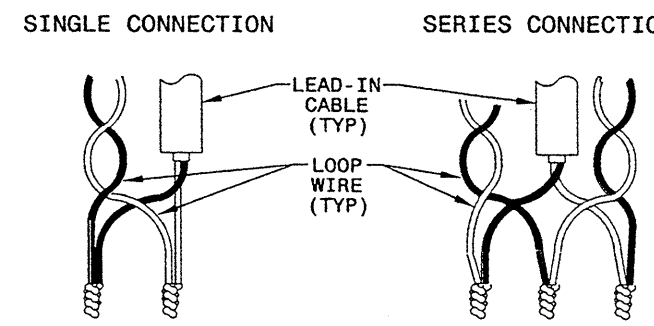
**STEP 1. STRIP LOOP WIRE AND LEAD-IN CABLE**



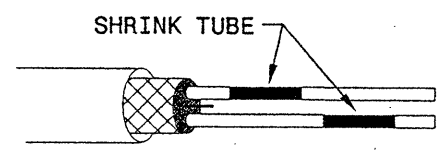
**STEP 2. CONNECT AND SOLDER**



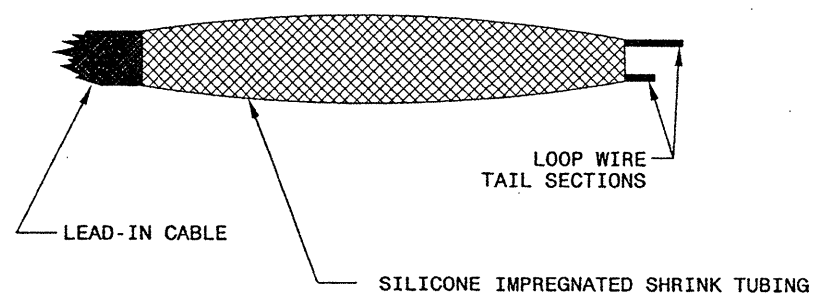
**LOOP WIRE AND LEAD-IN CABLE CONNECTION DETAILS**



**STEP 3. INSULATE EACH SOLDER JOINT SEPARATELY**



**STEP 4. ENVIRONMENTALLY PROTECT SPLICE**



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DIVISION OF HIGHWAYS  
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

Prepared in the Offices of:

750 N. Greenfield Parkway  
Garner, NC 27529

SEAL

Milton I. Dean 9/15/07  
SIGNATURE DATE

05-SEP-2007 14:01  
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zml1711e