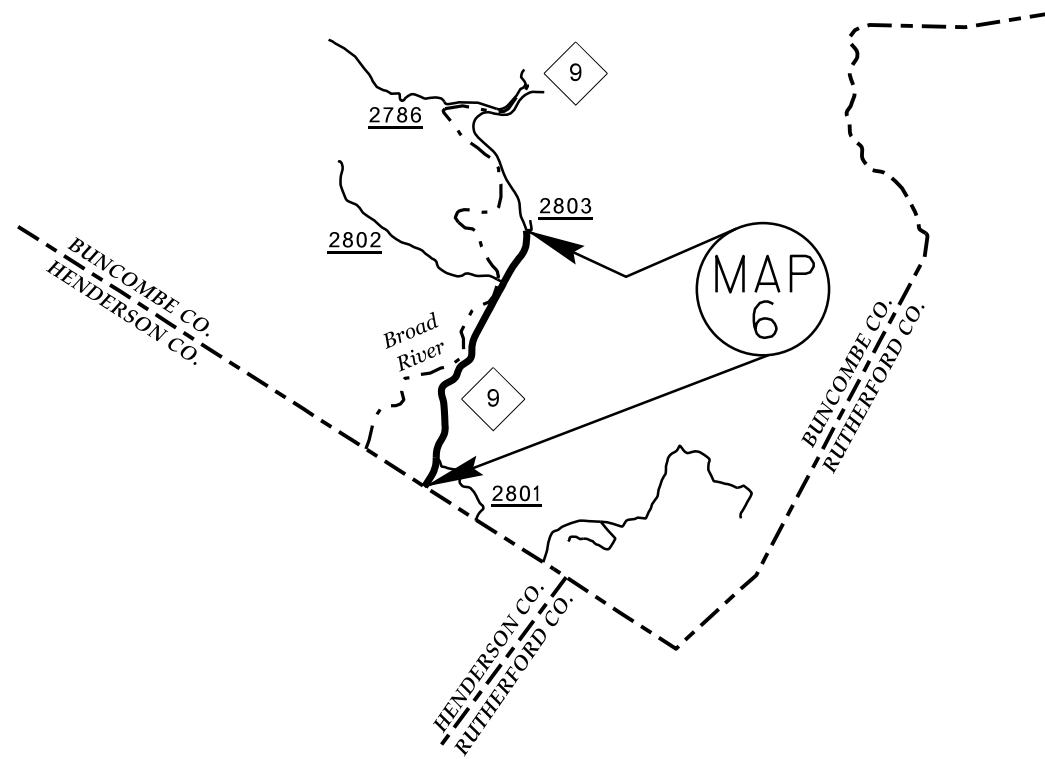
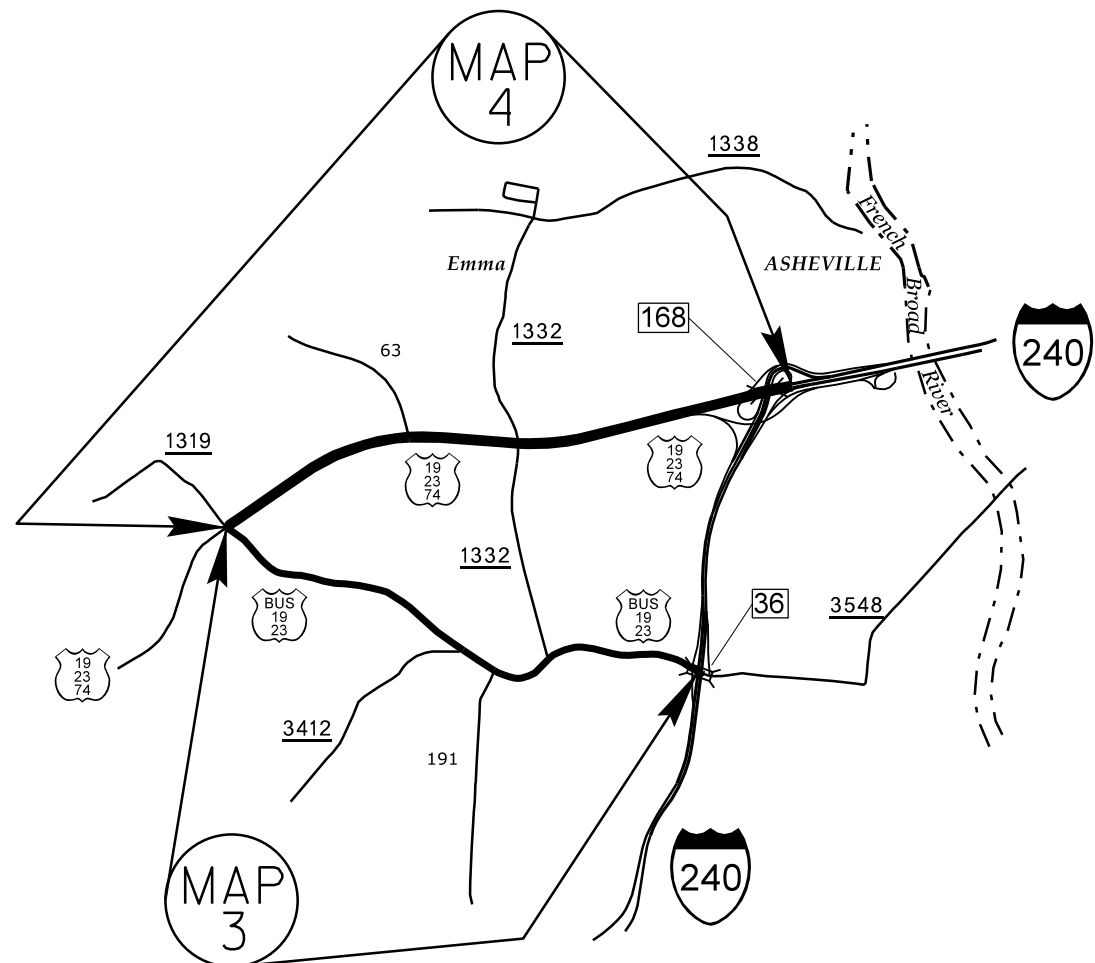
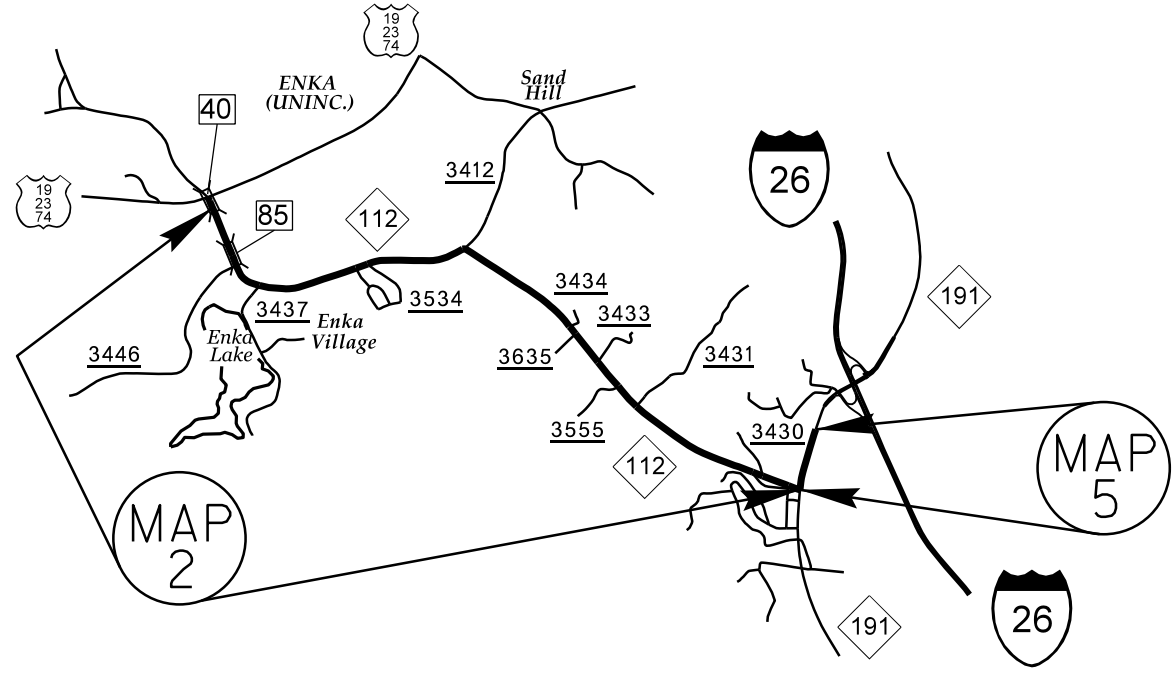
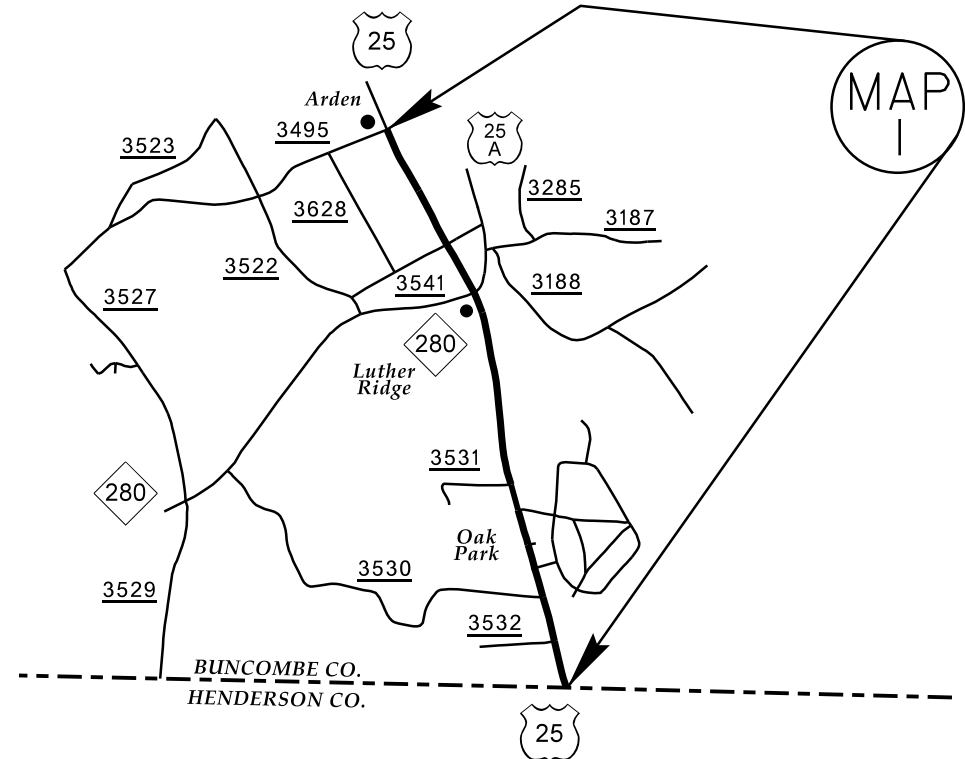


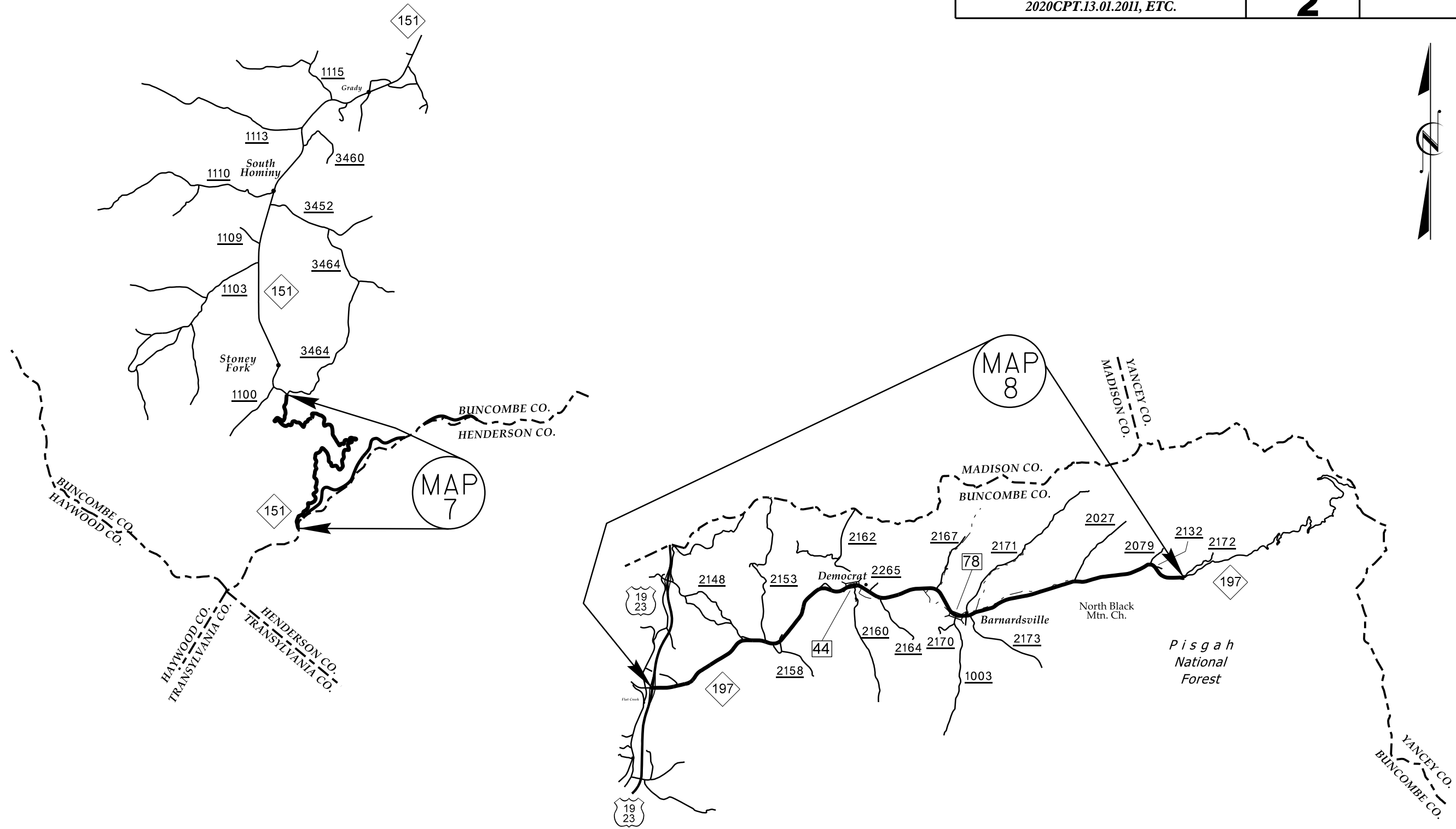
PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>1</b>	



**BUNCOMBE COUNTY**

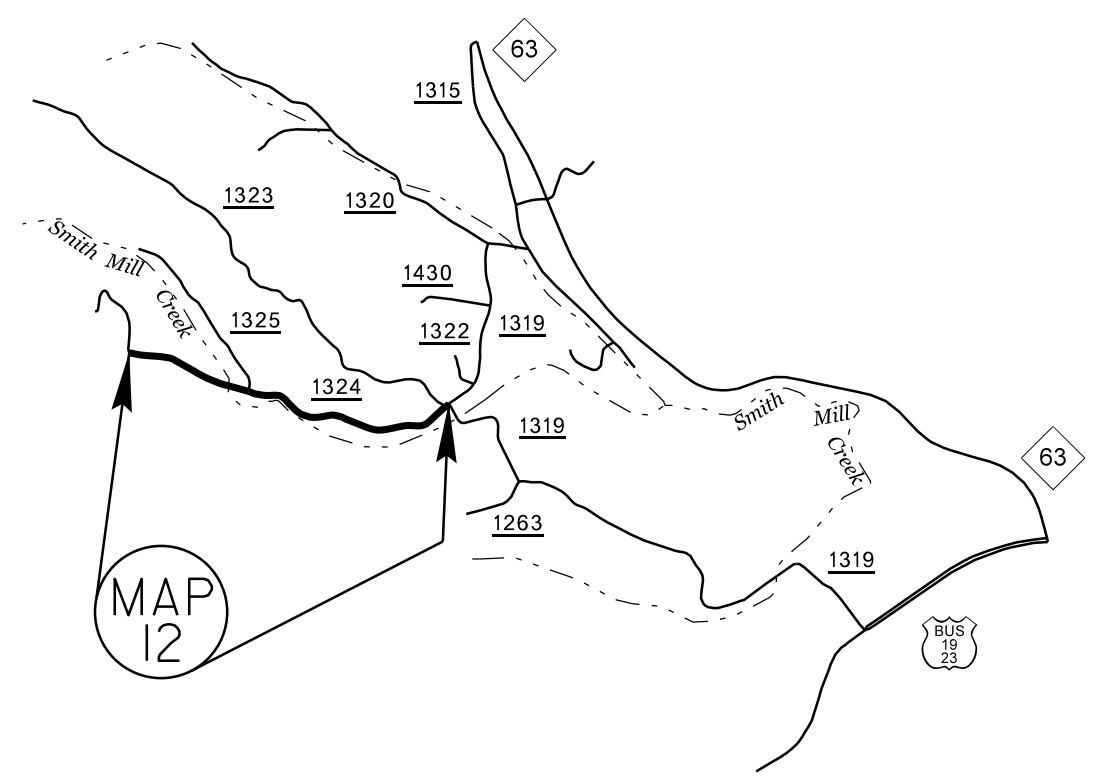
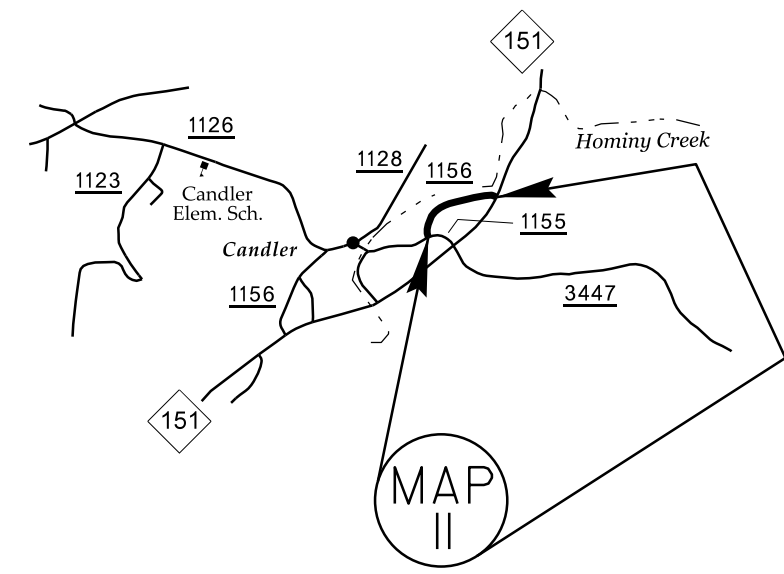
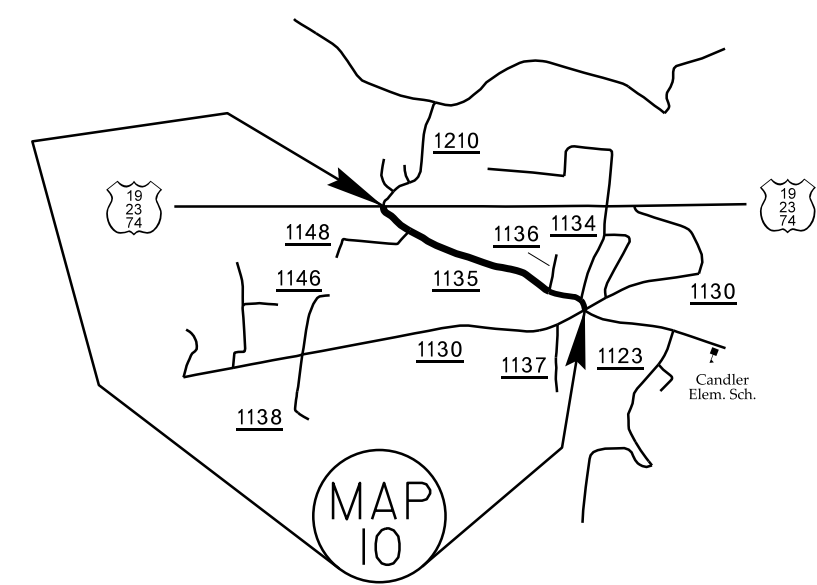
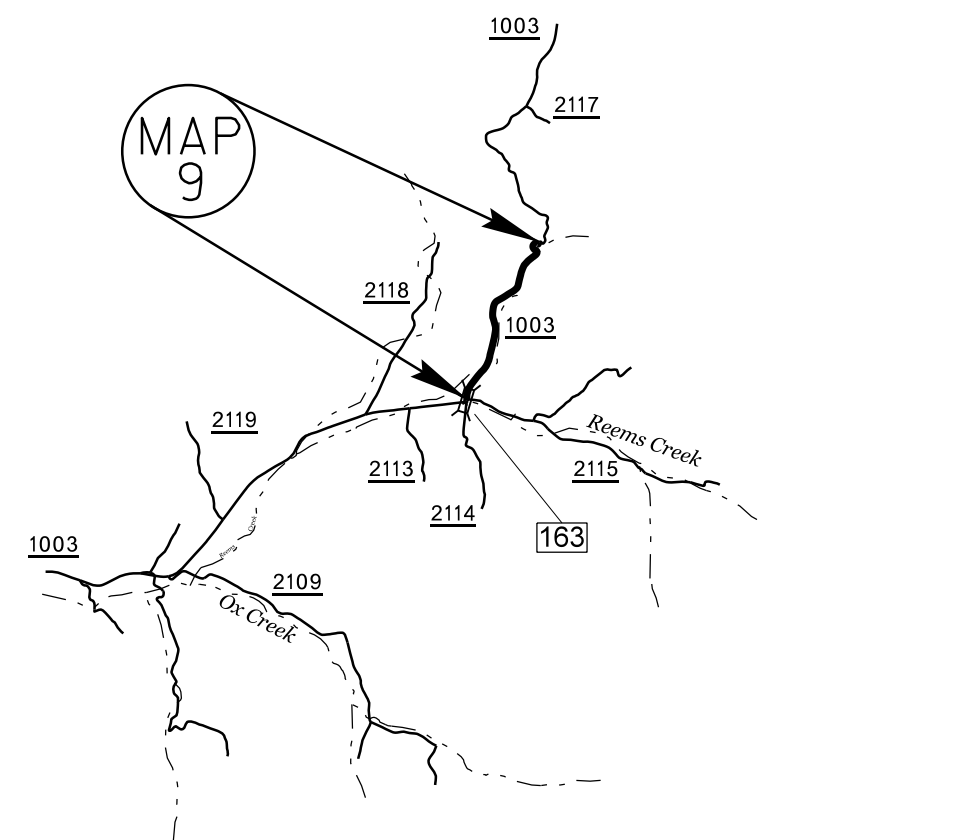


PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>2</b>	



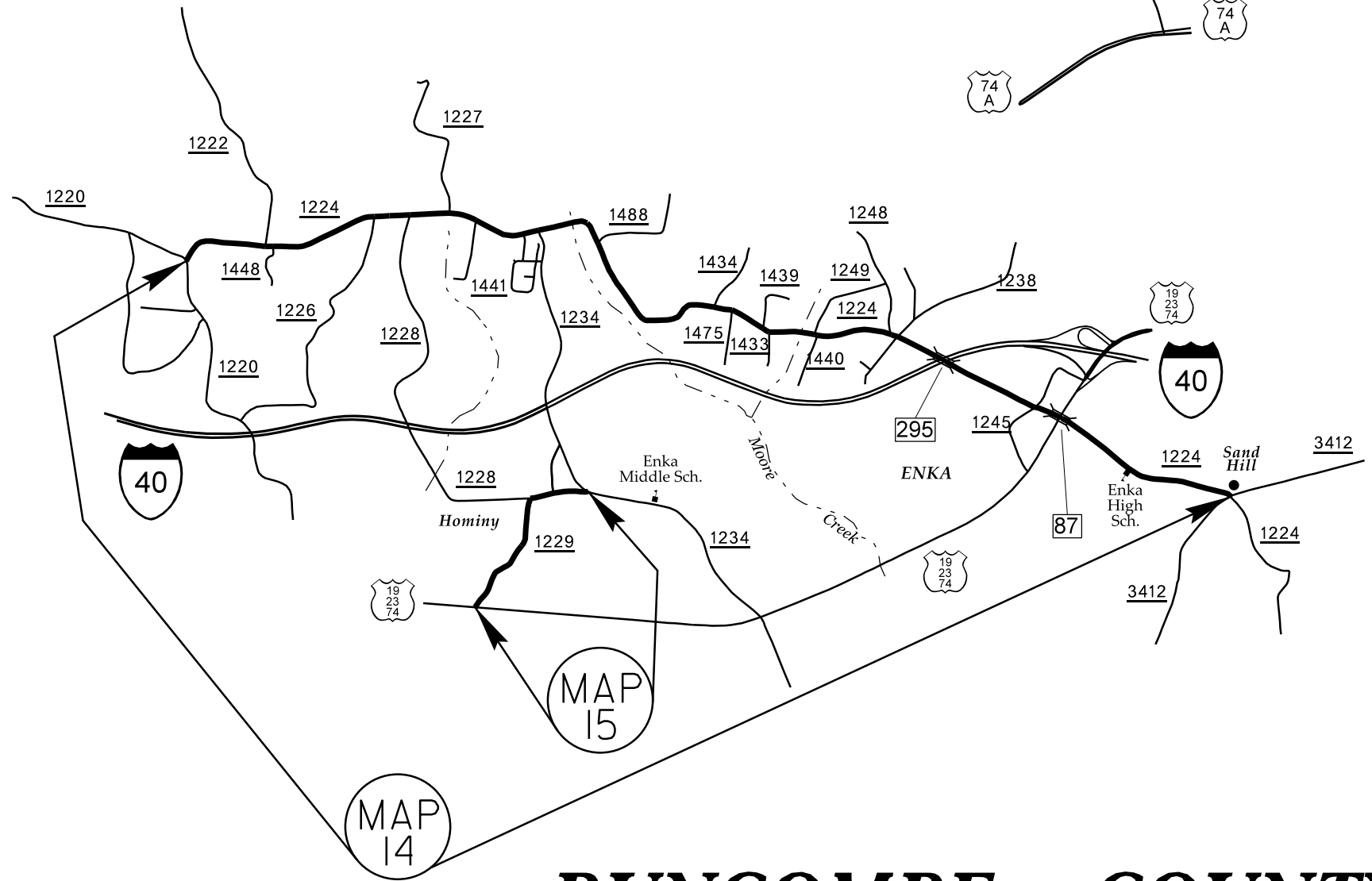
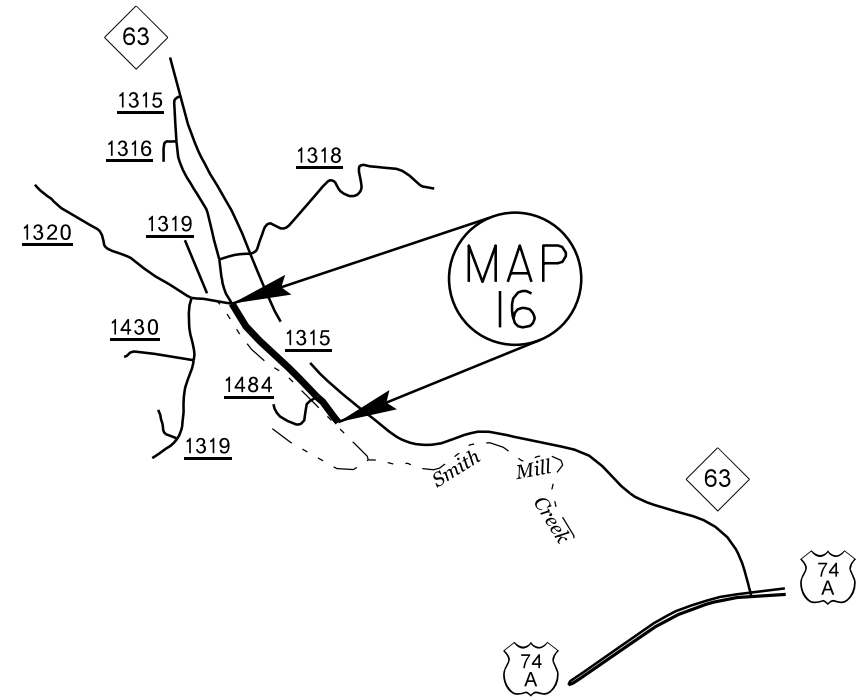
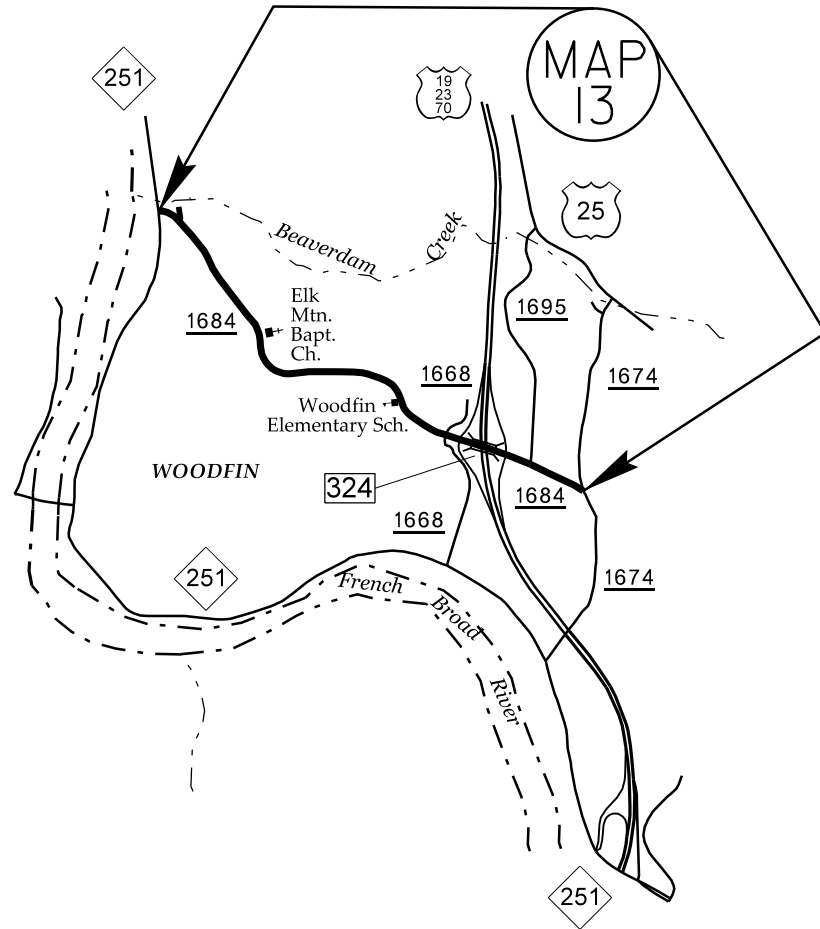
# BUNCOMBE COUNTY

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>3</b>	



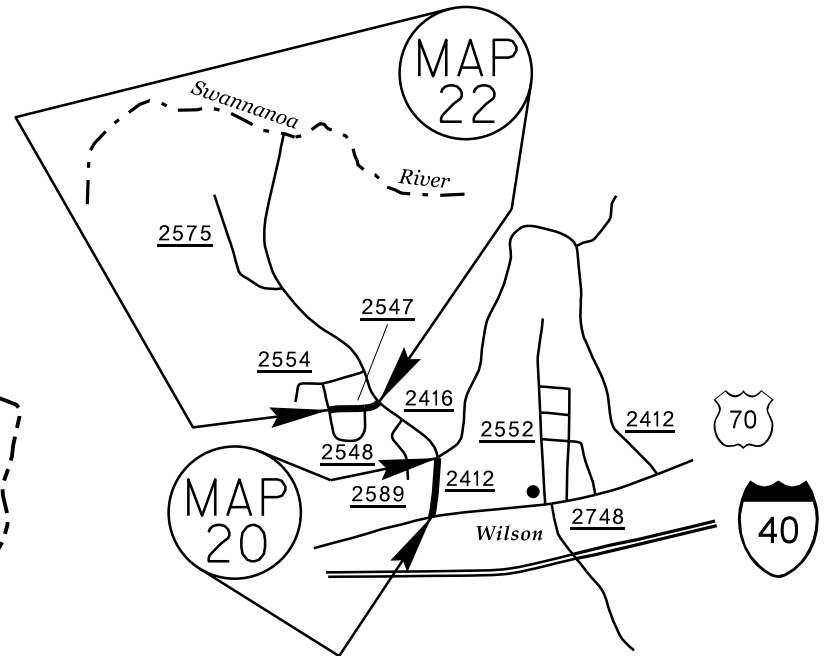
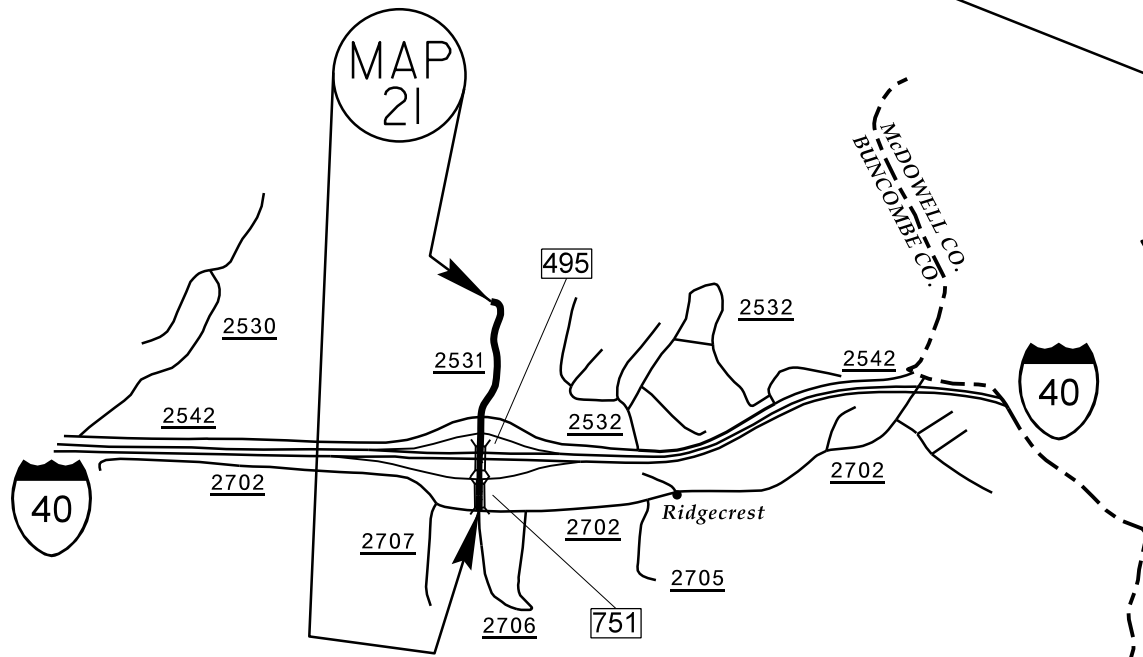
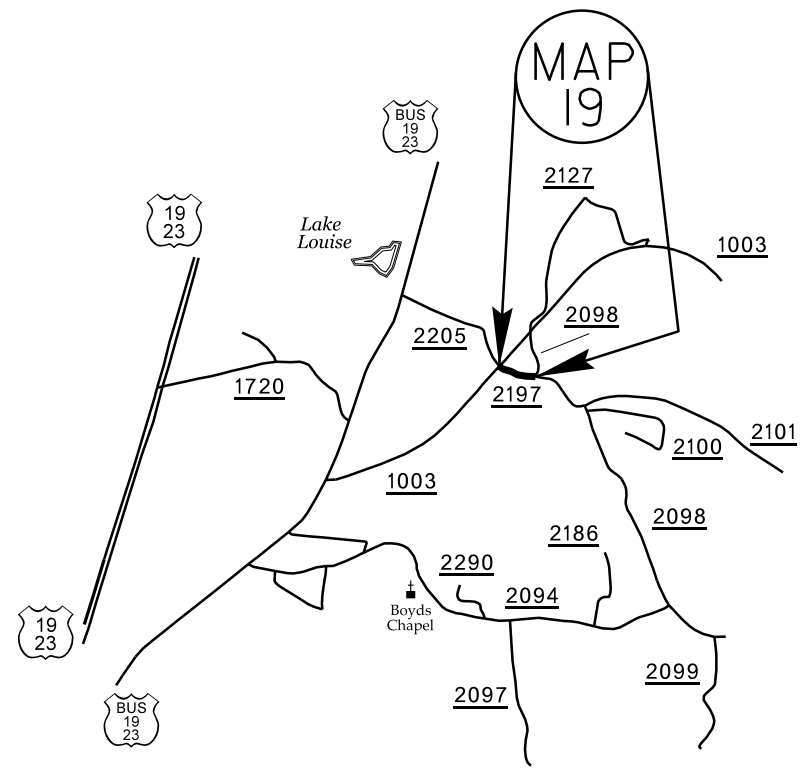
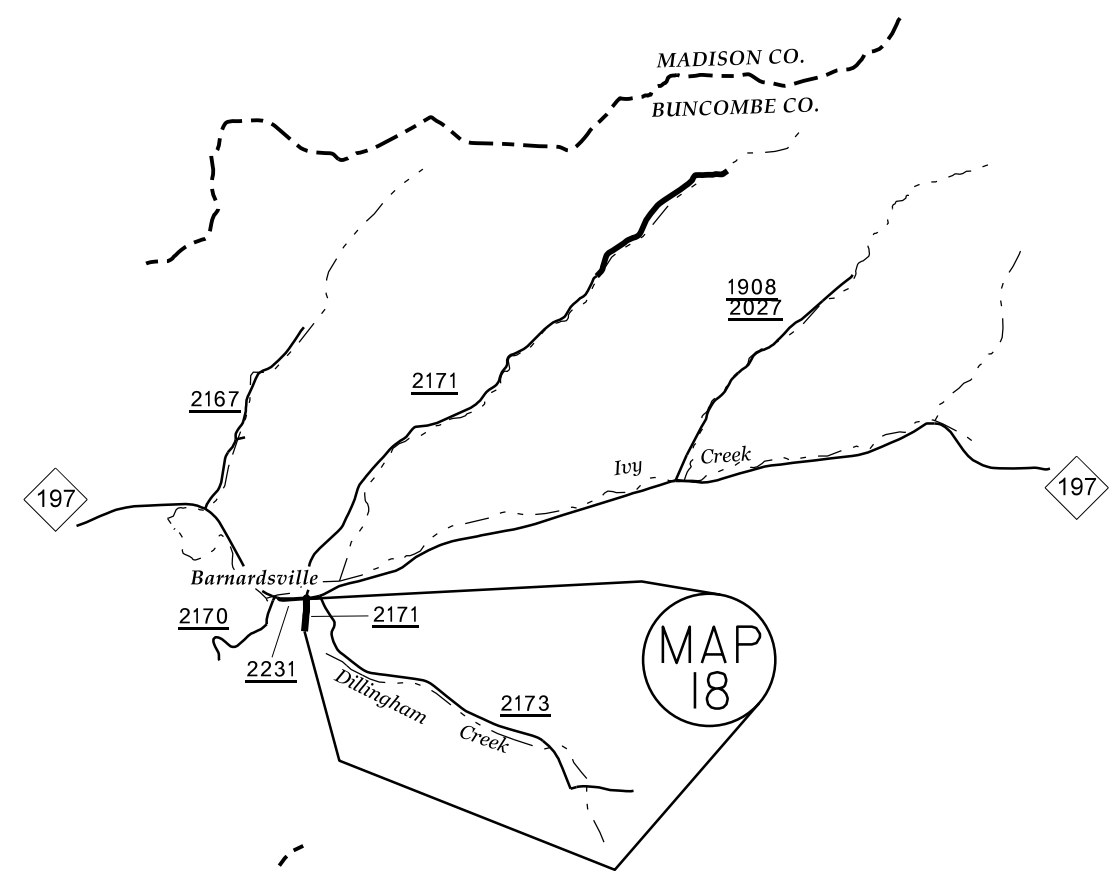
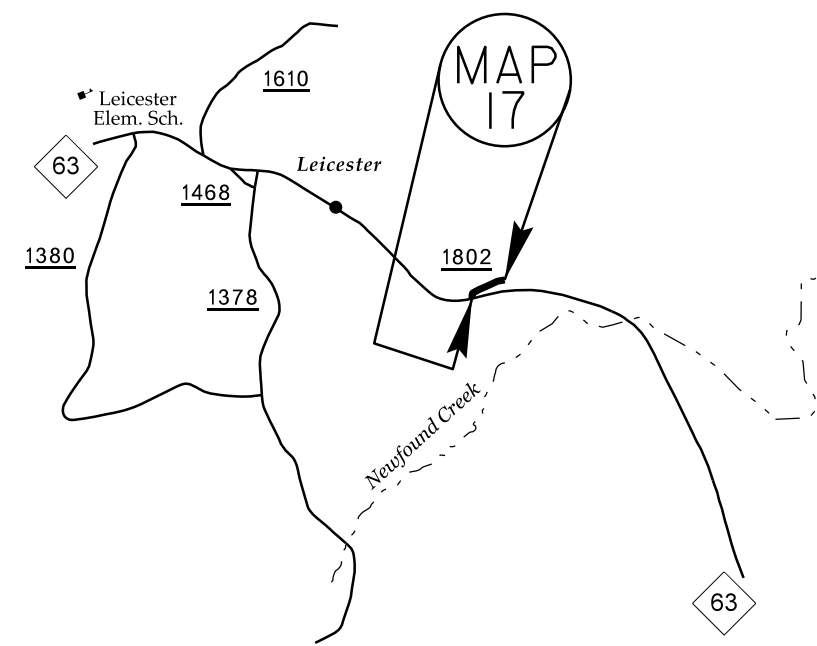
**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>4</b>	



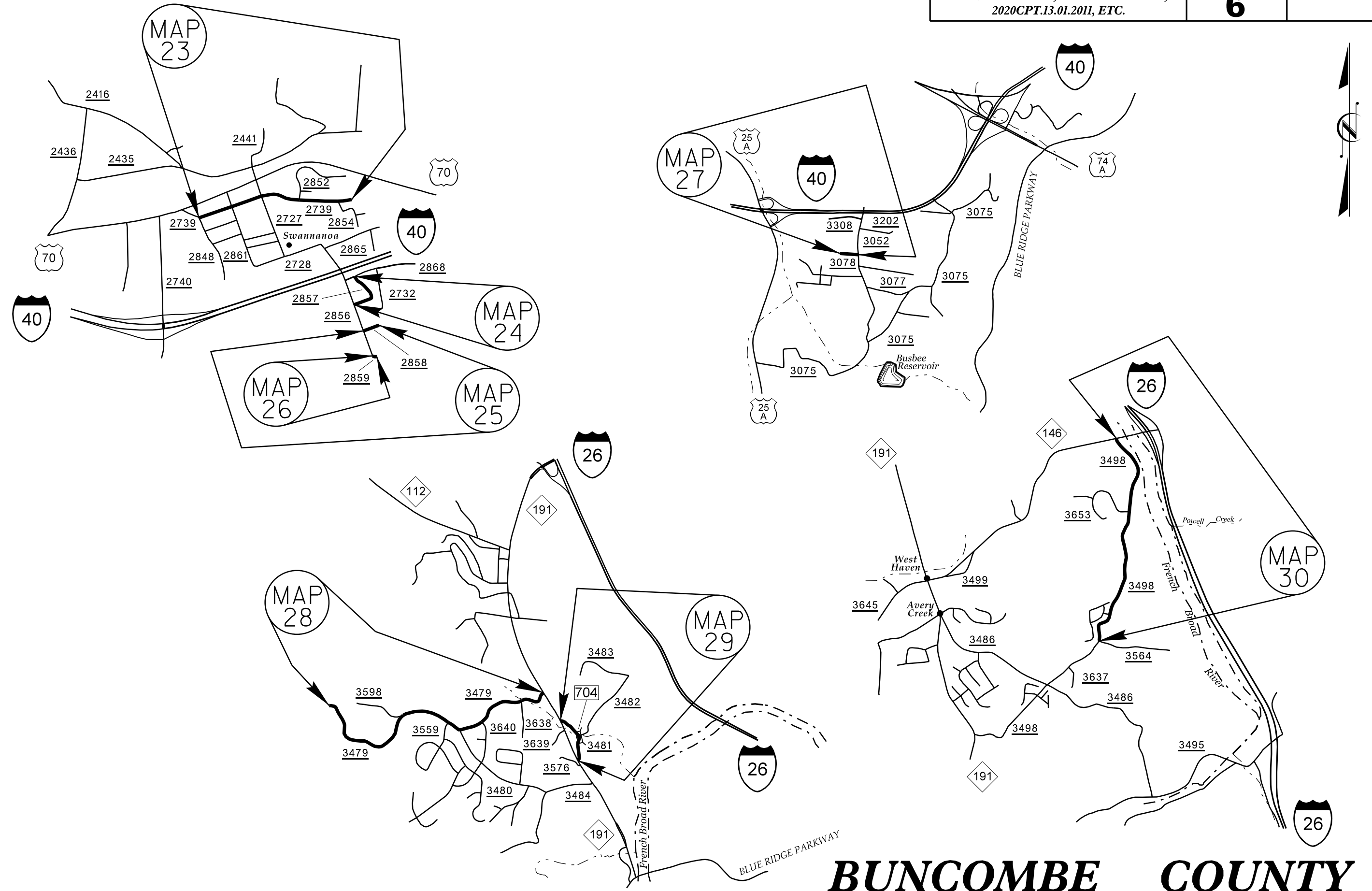
**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>5</b>	



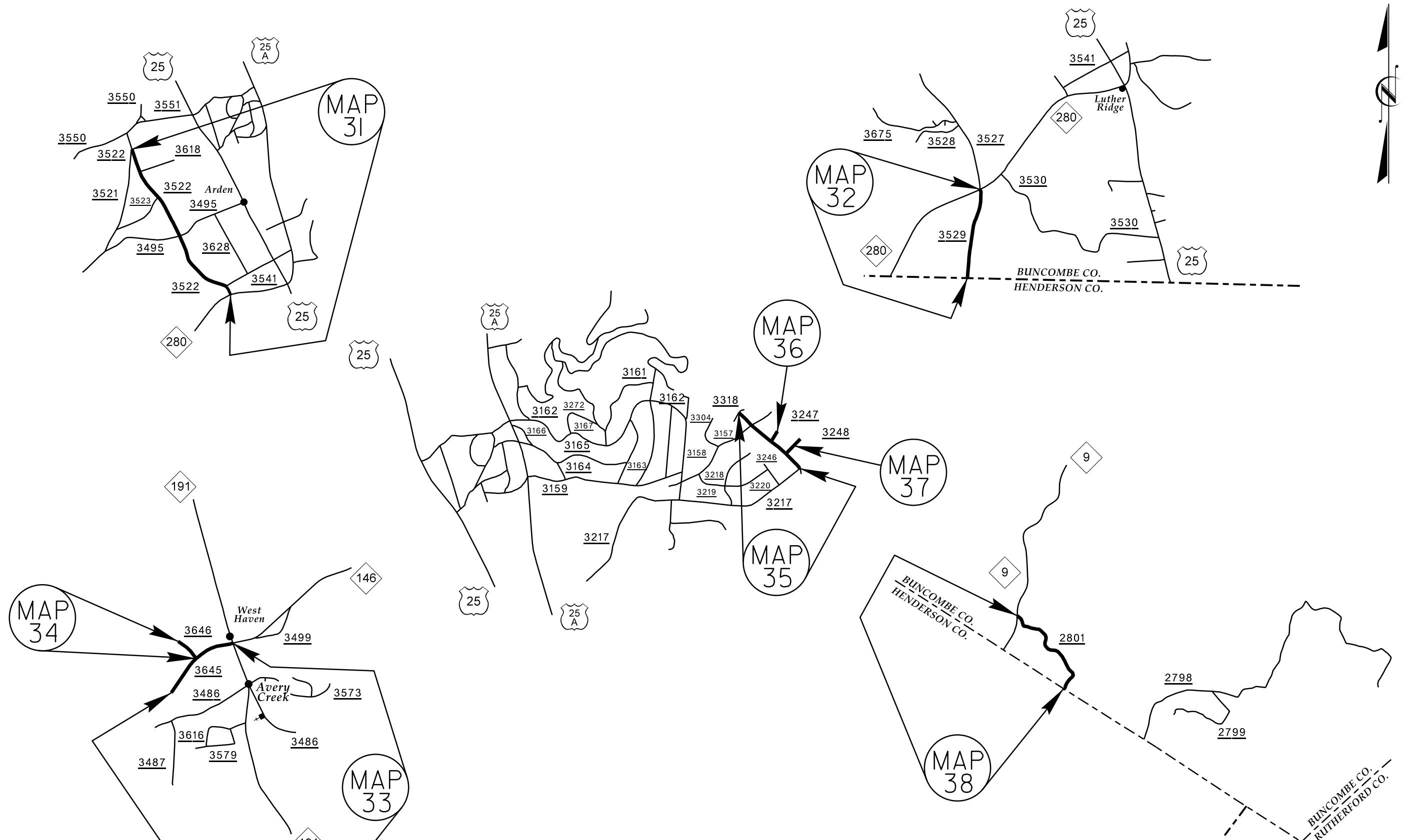
# BUNCOMBE COUNTY

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.1011, 2020CPT.13.01.1012, 2020CPT.13.01.2011, ETC.	<b>6</b>	



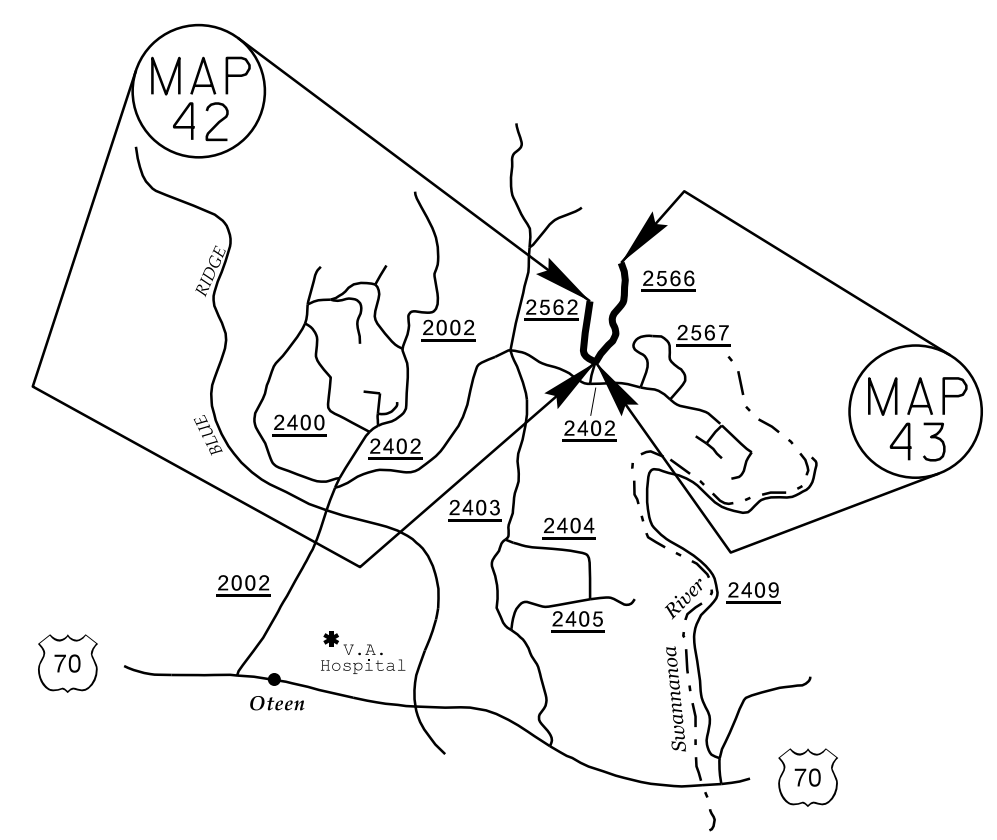
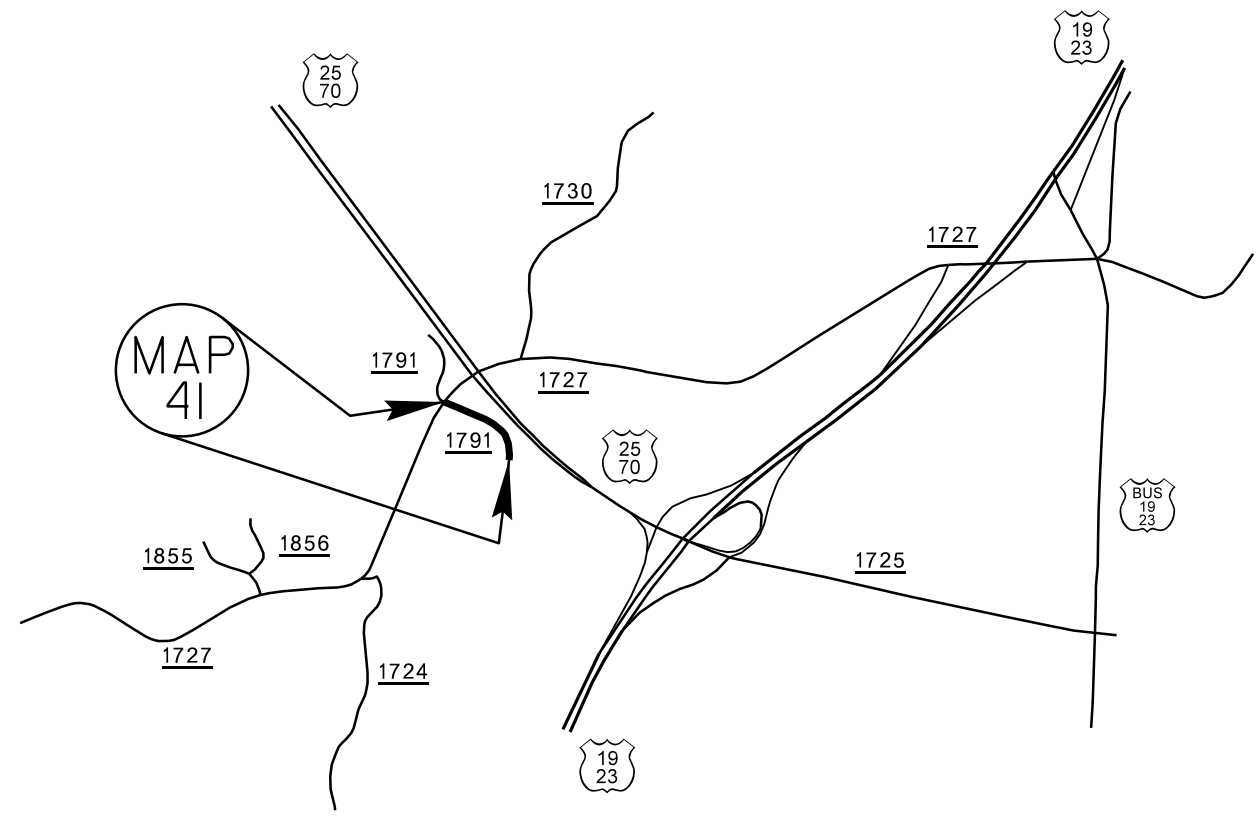
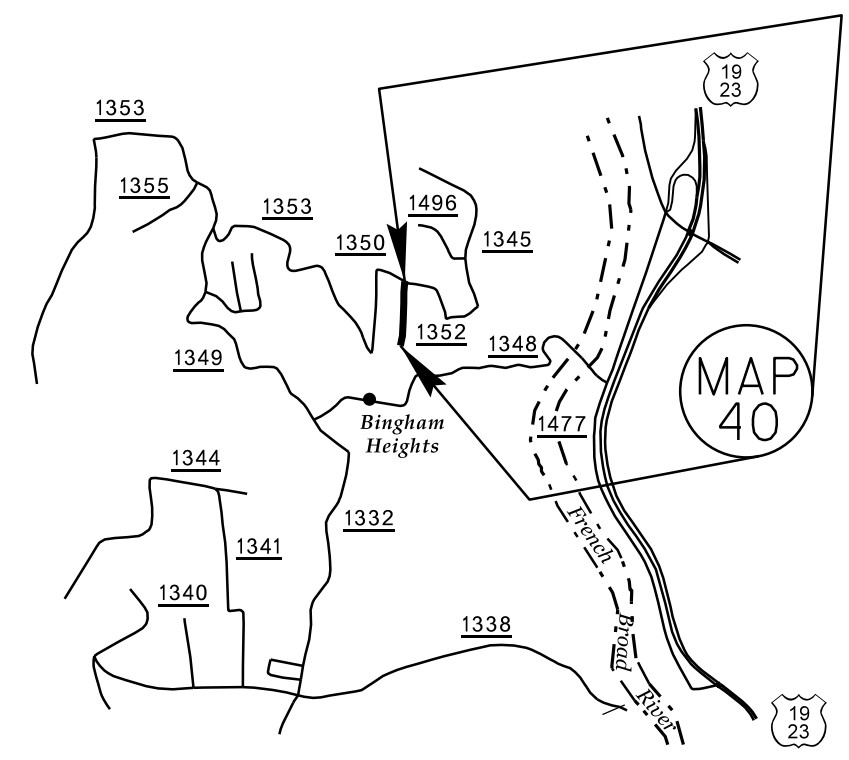
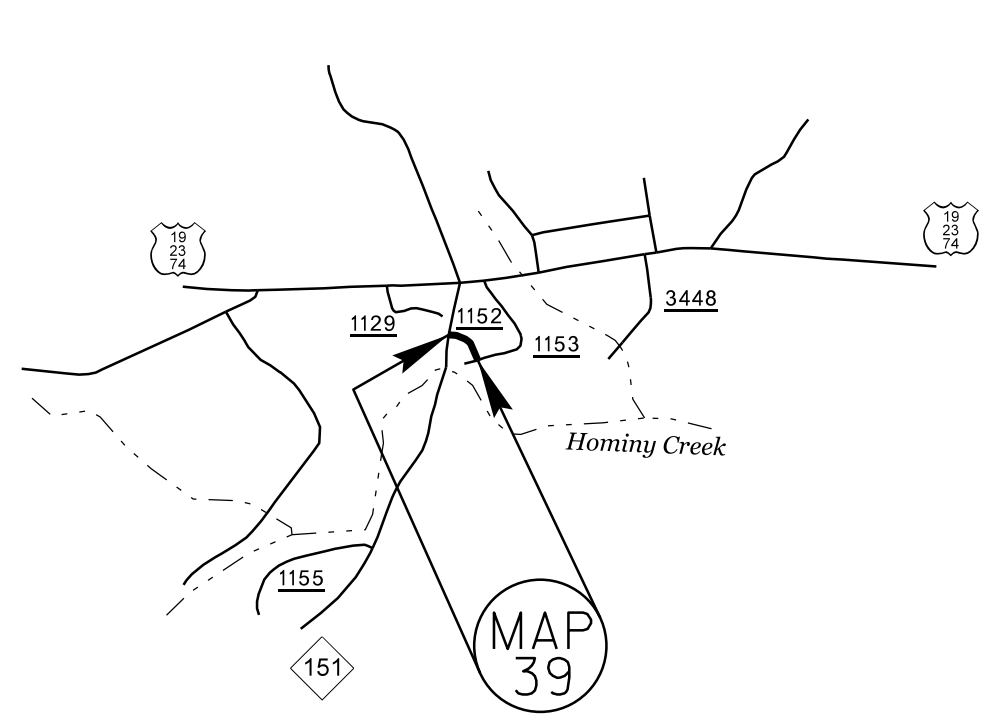
**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>7</b>	



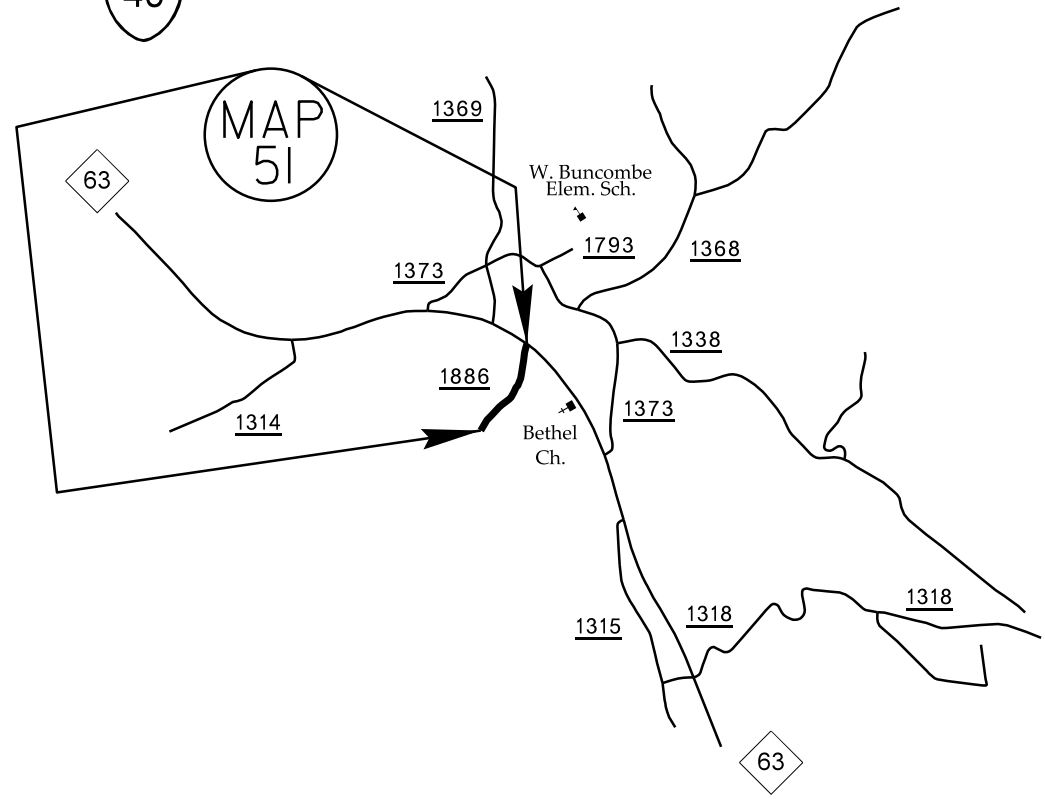
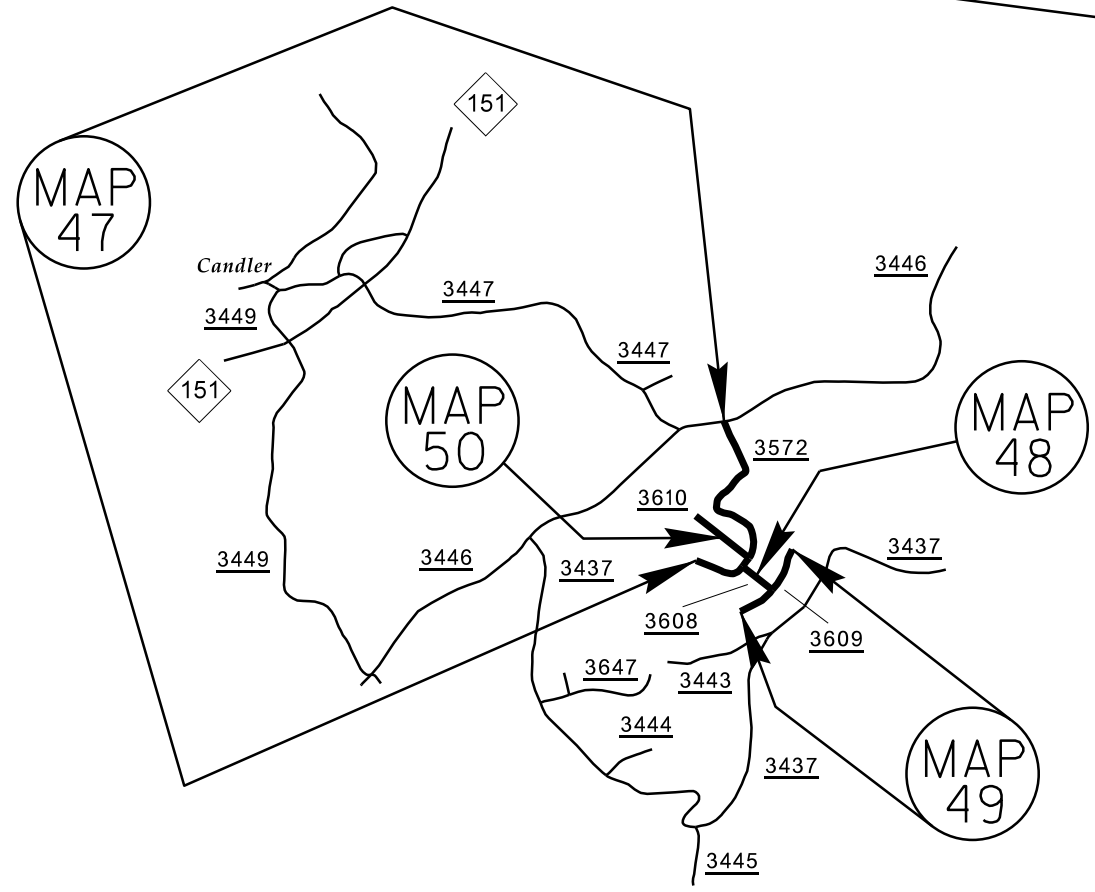
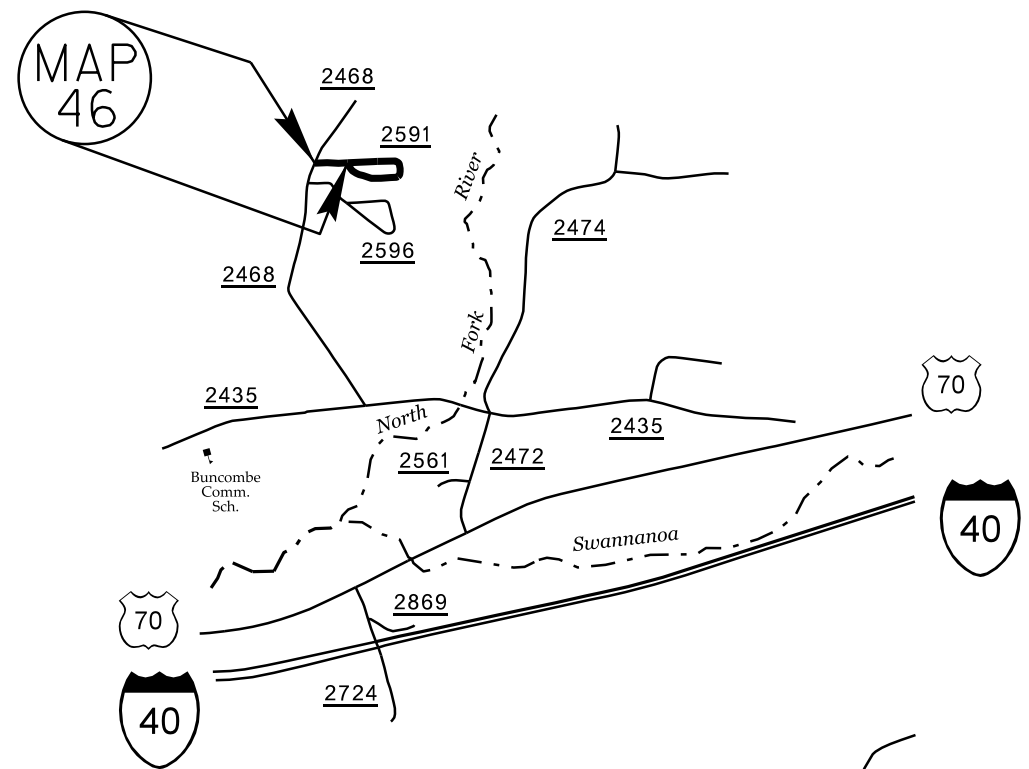
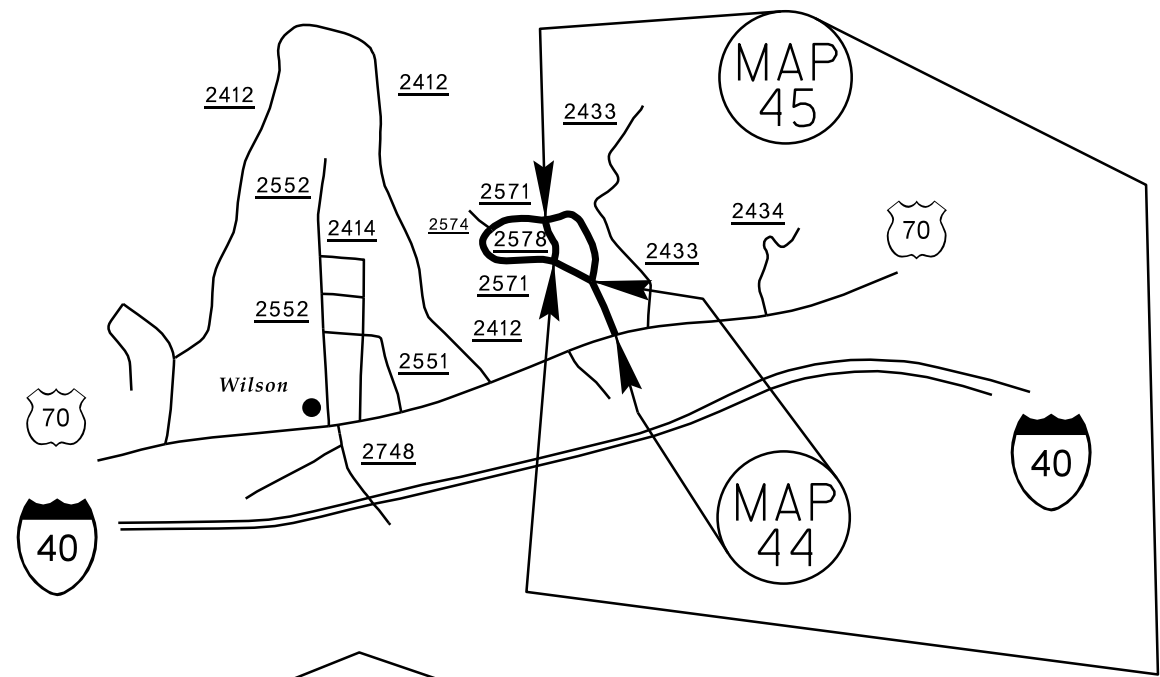
**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>8</b>	



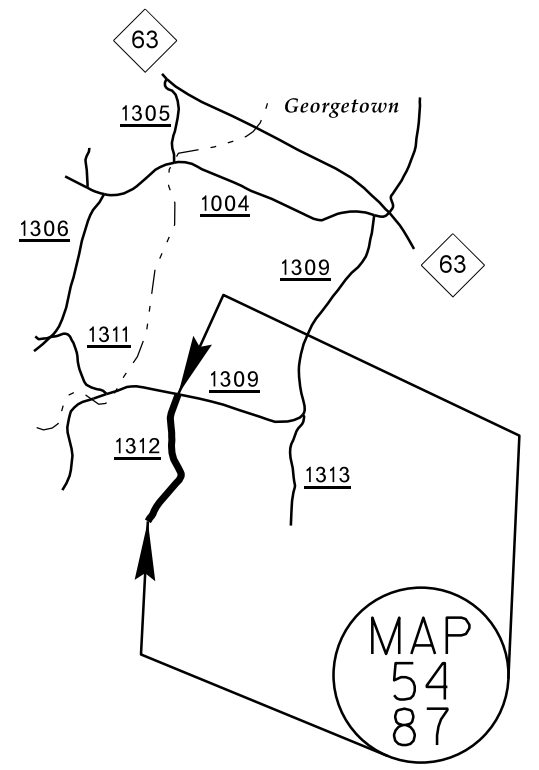
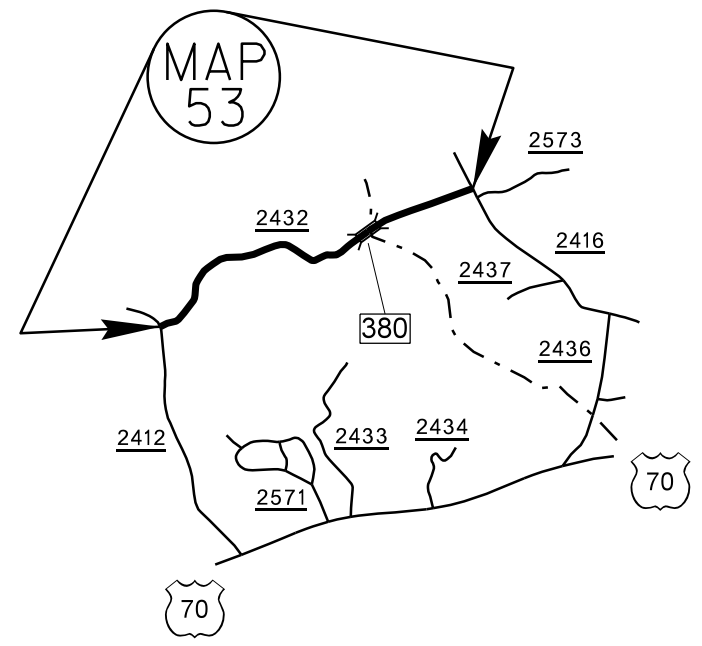
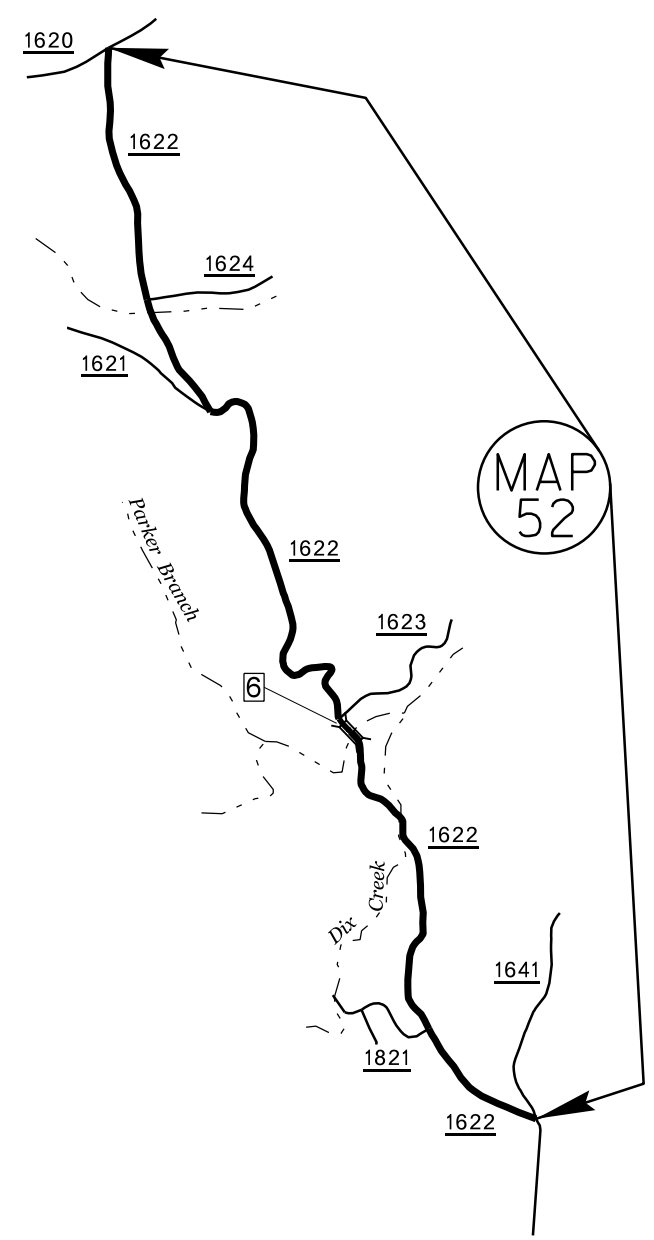
**BUNCOMBE COUNTY**





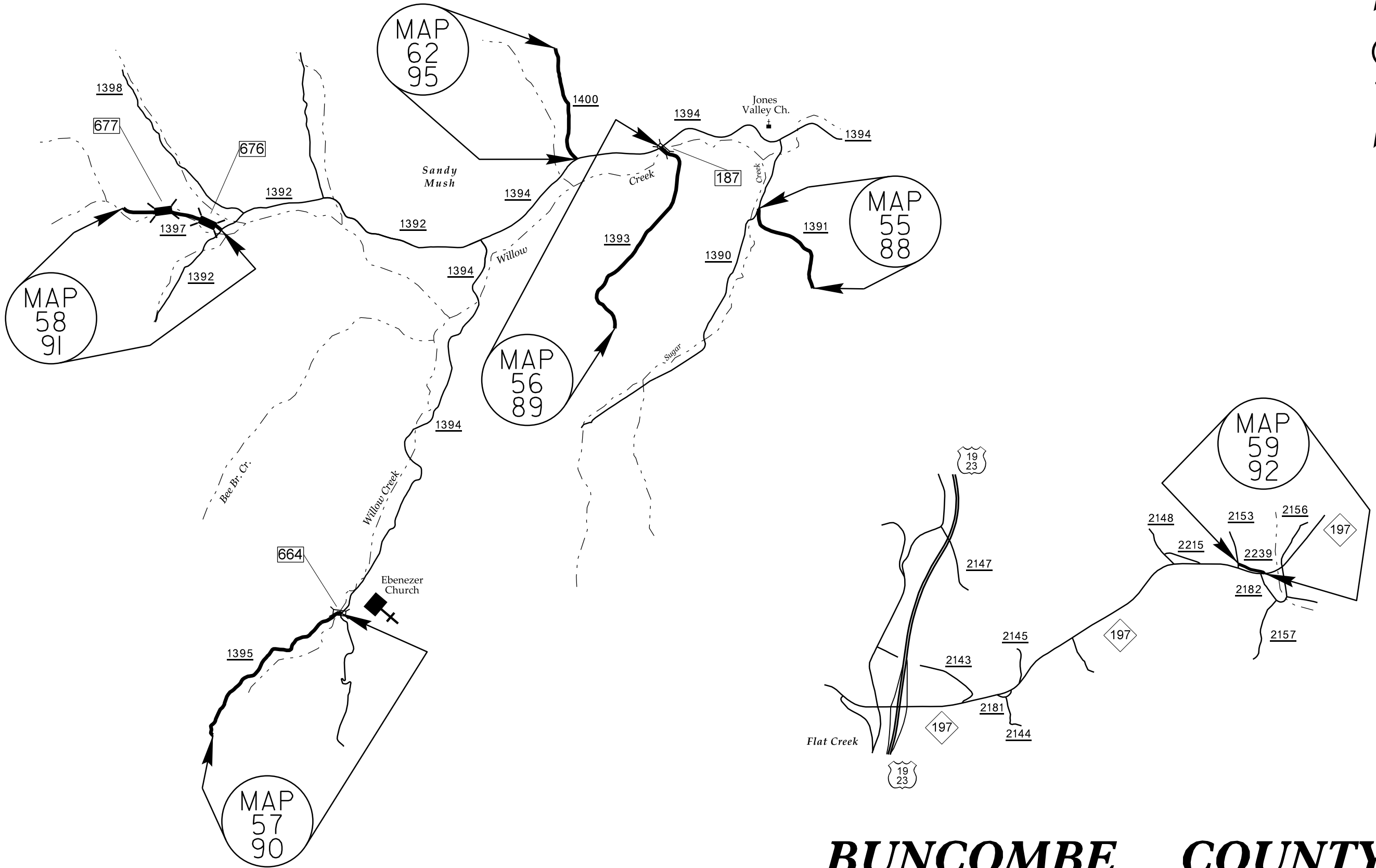
# BUNCOMBE COUNTY

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>10</b>	



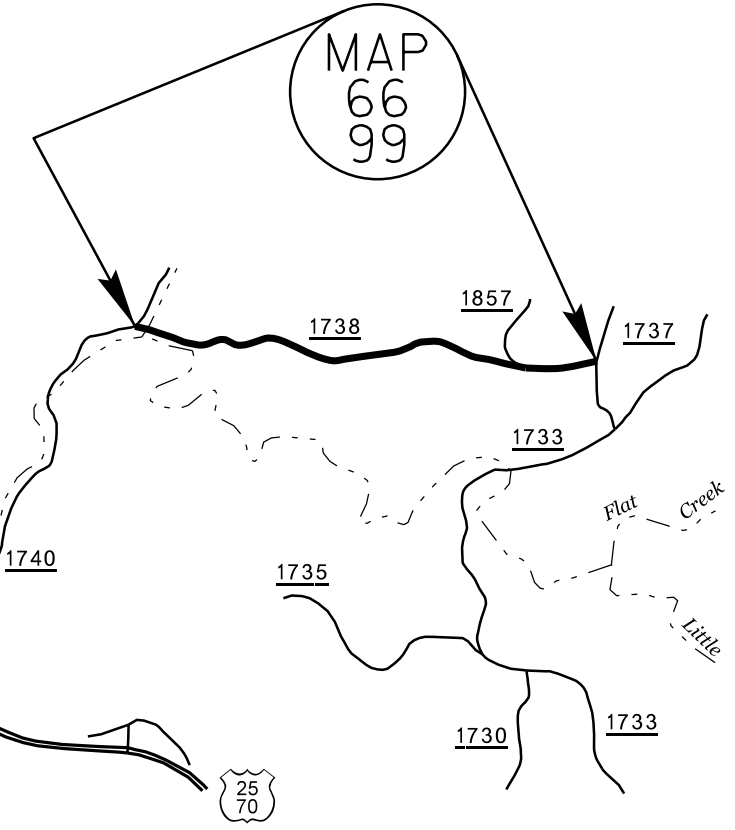
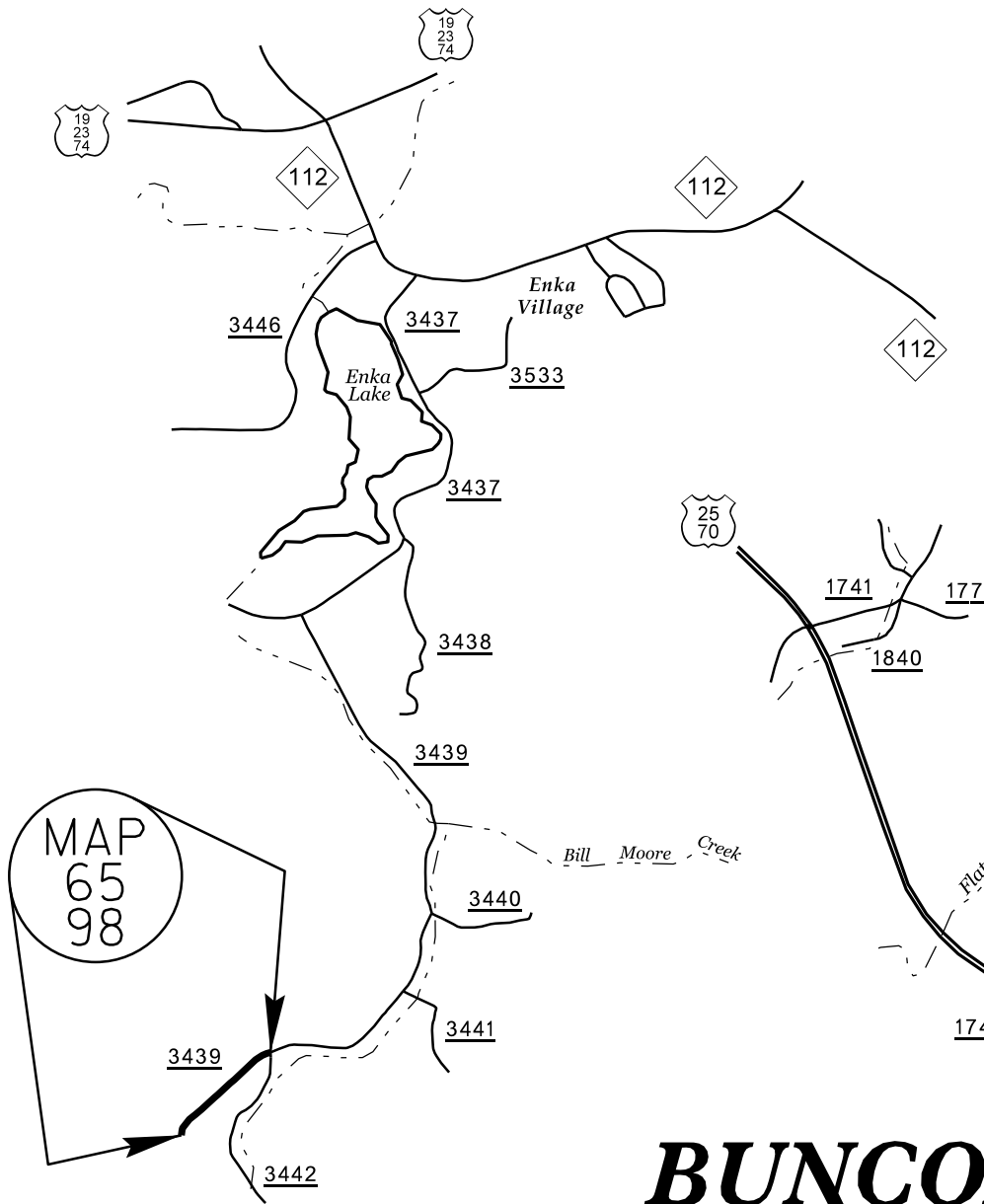
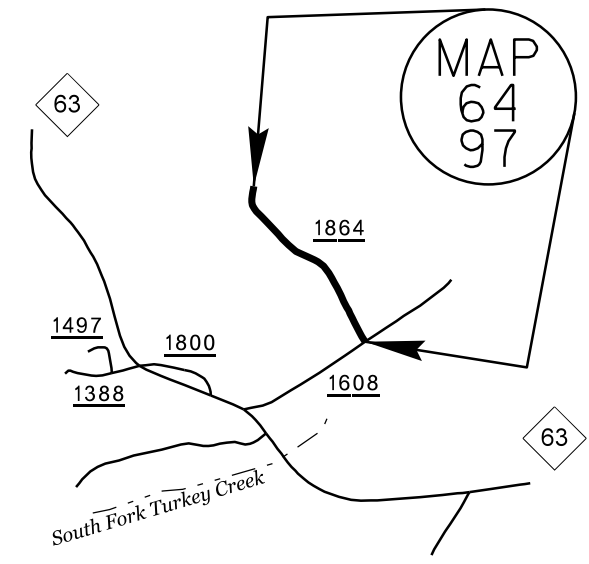
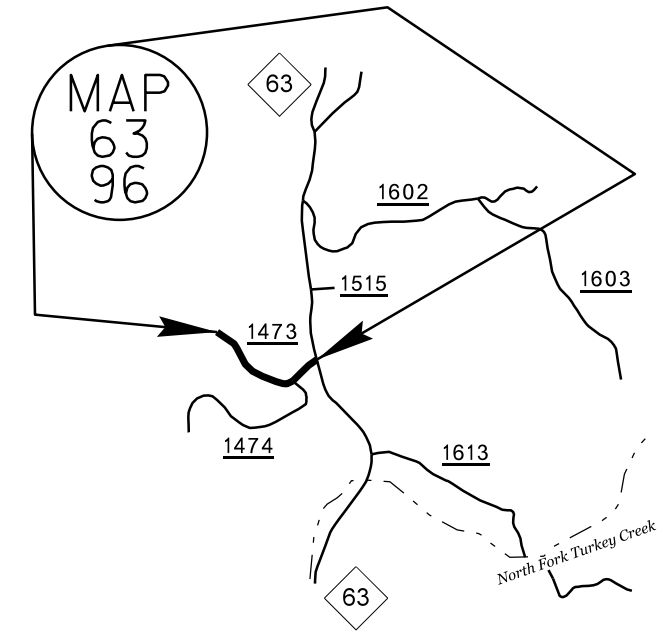
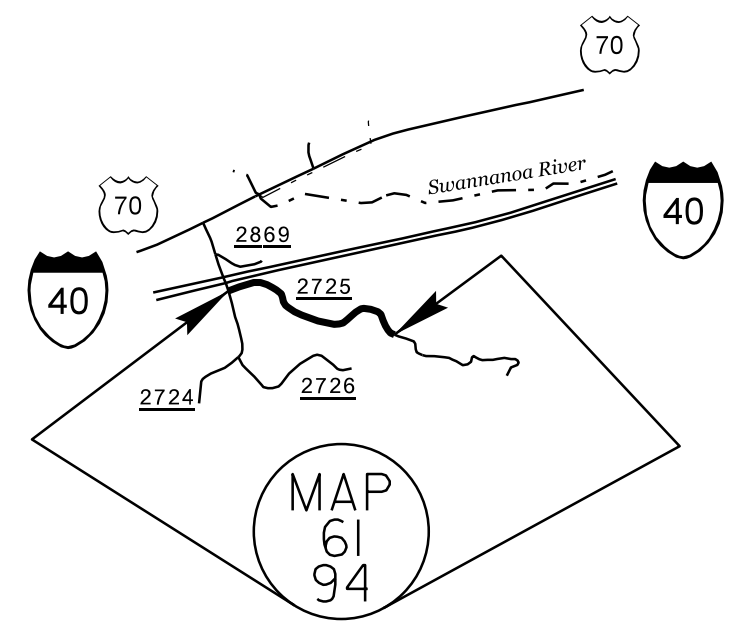
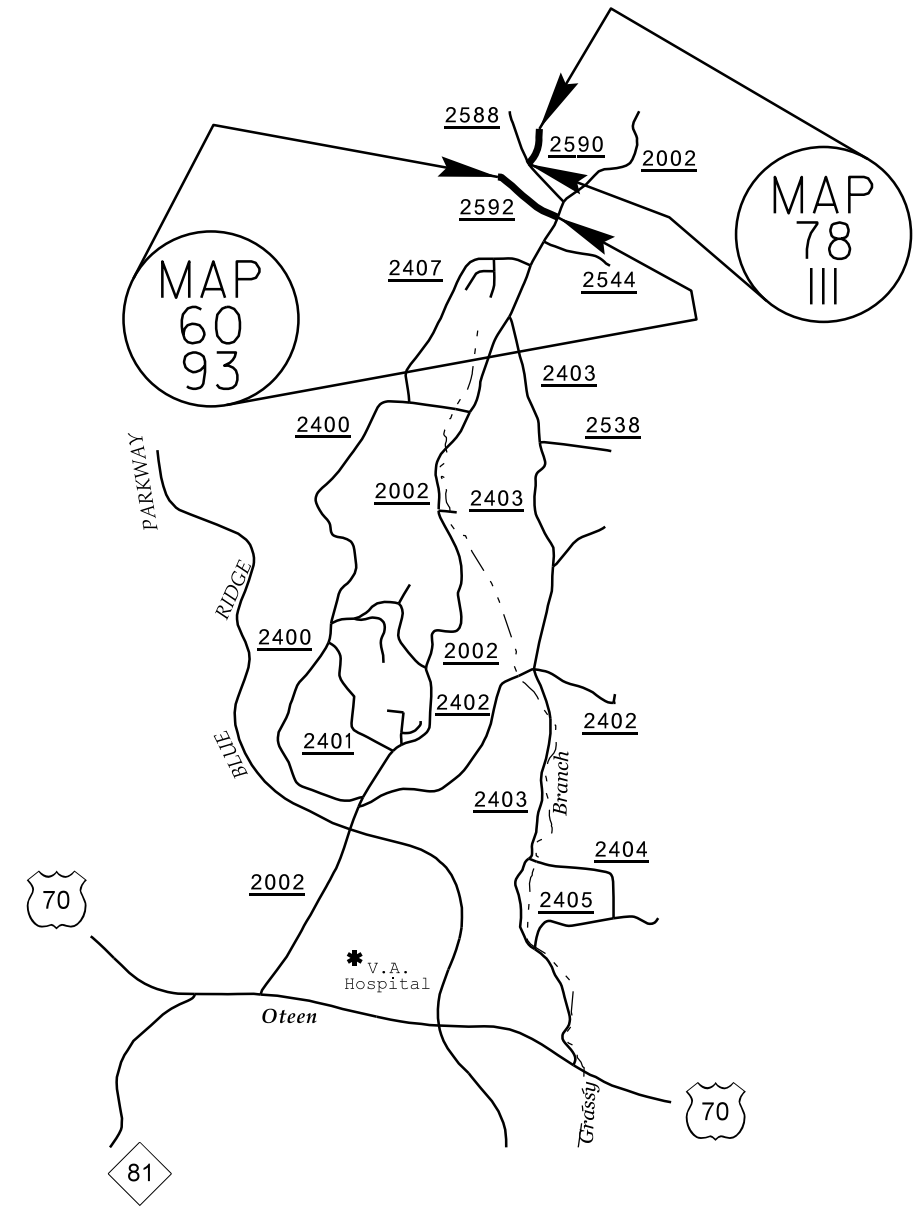
**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>11</b>	

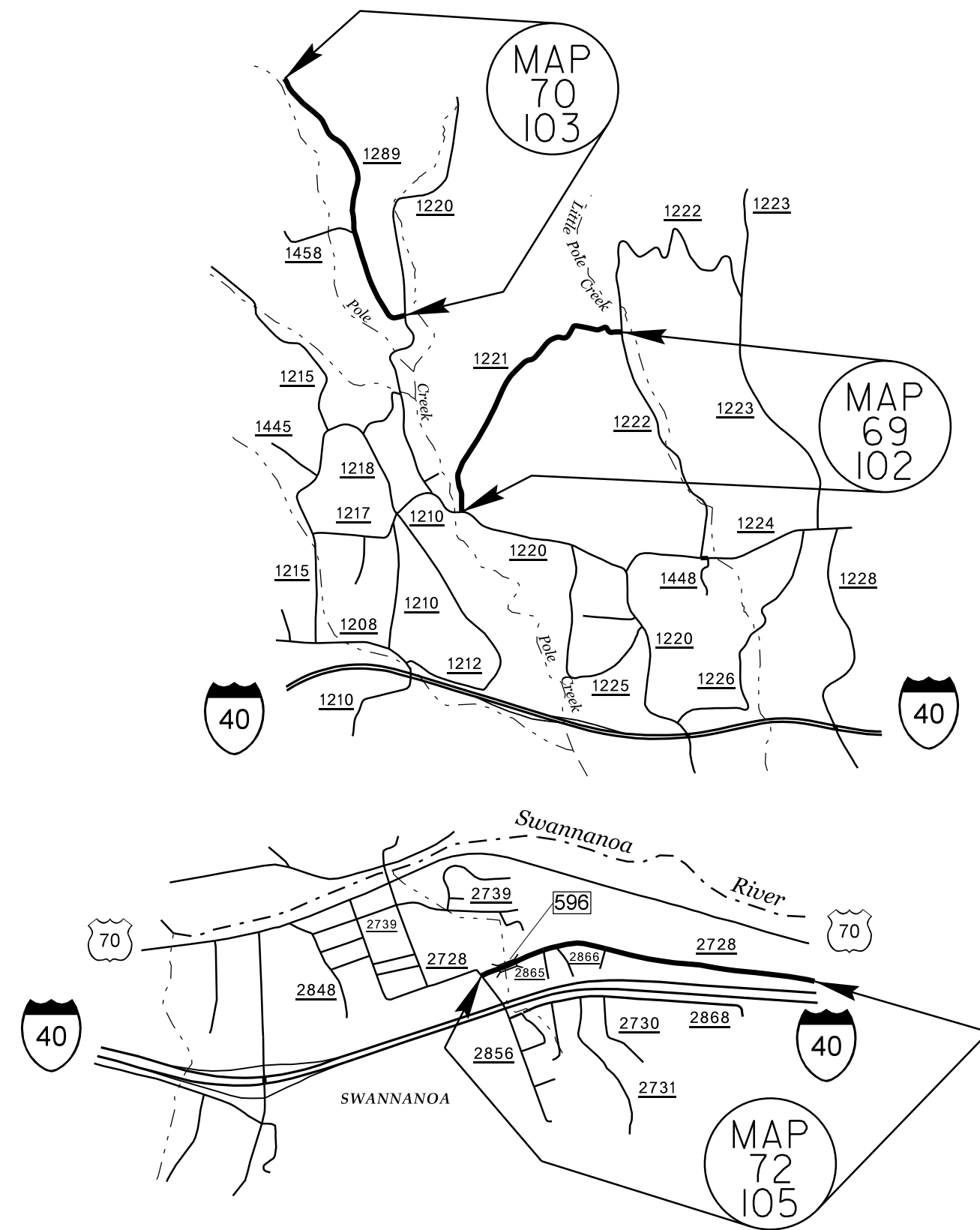
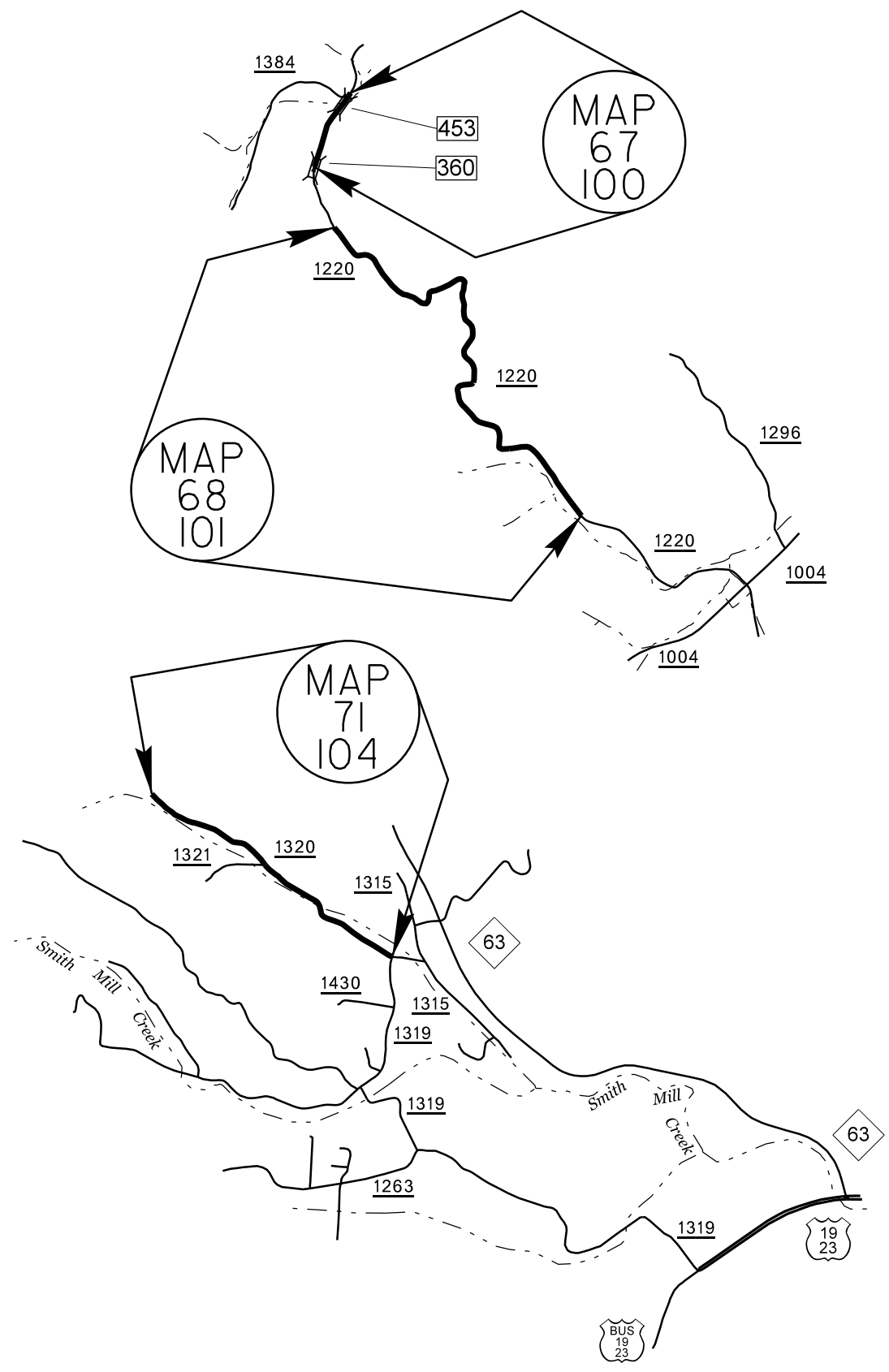


**BUNCOMBE COUNTY**

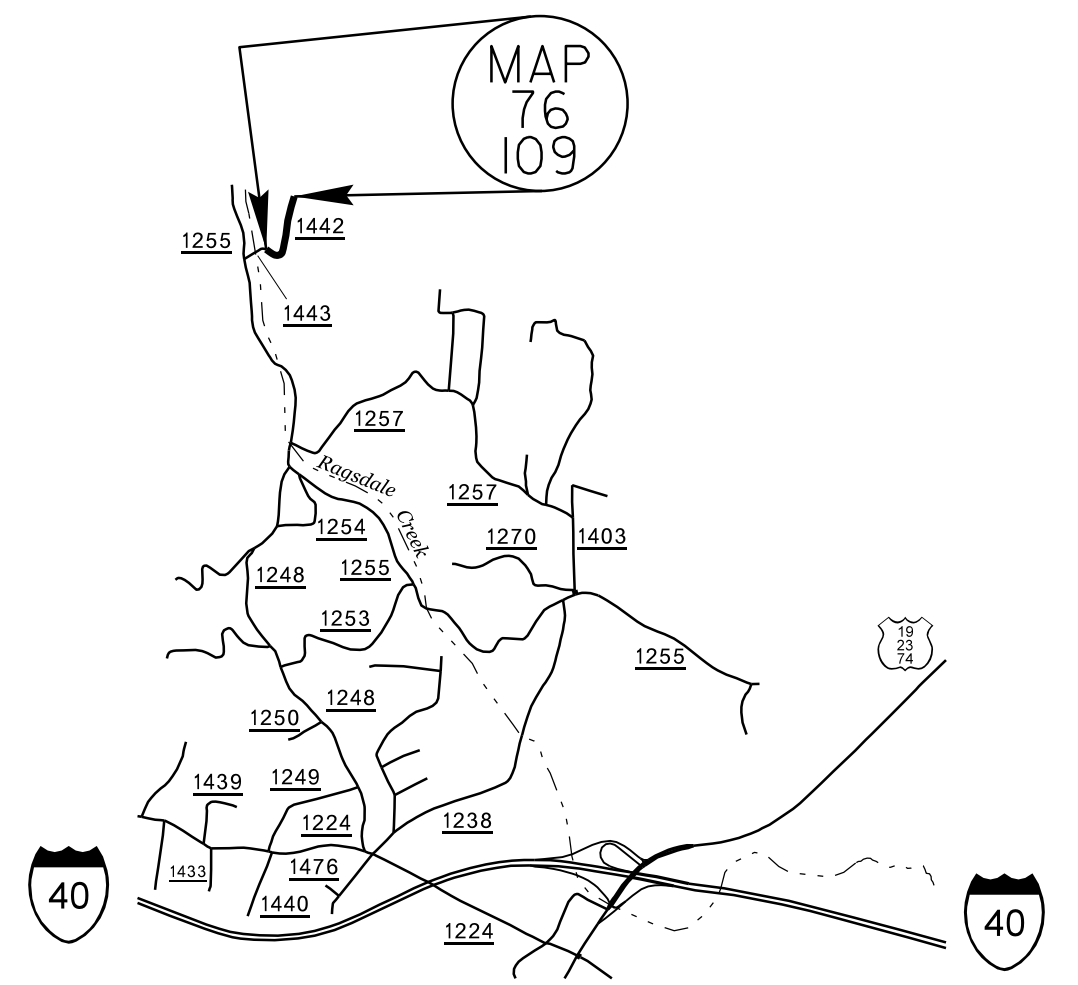
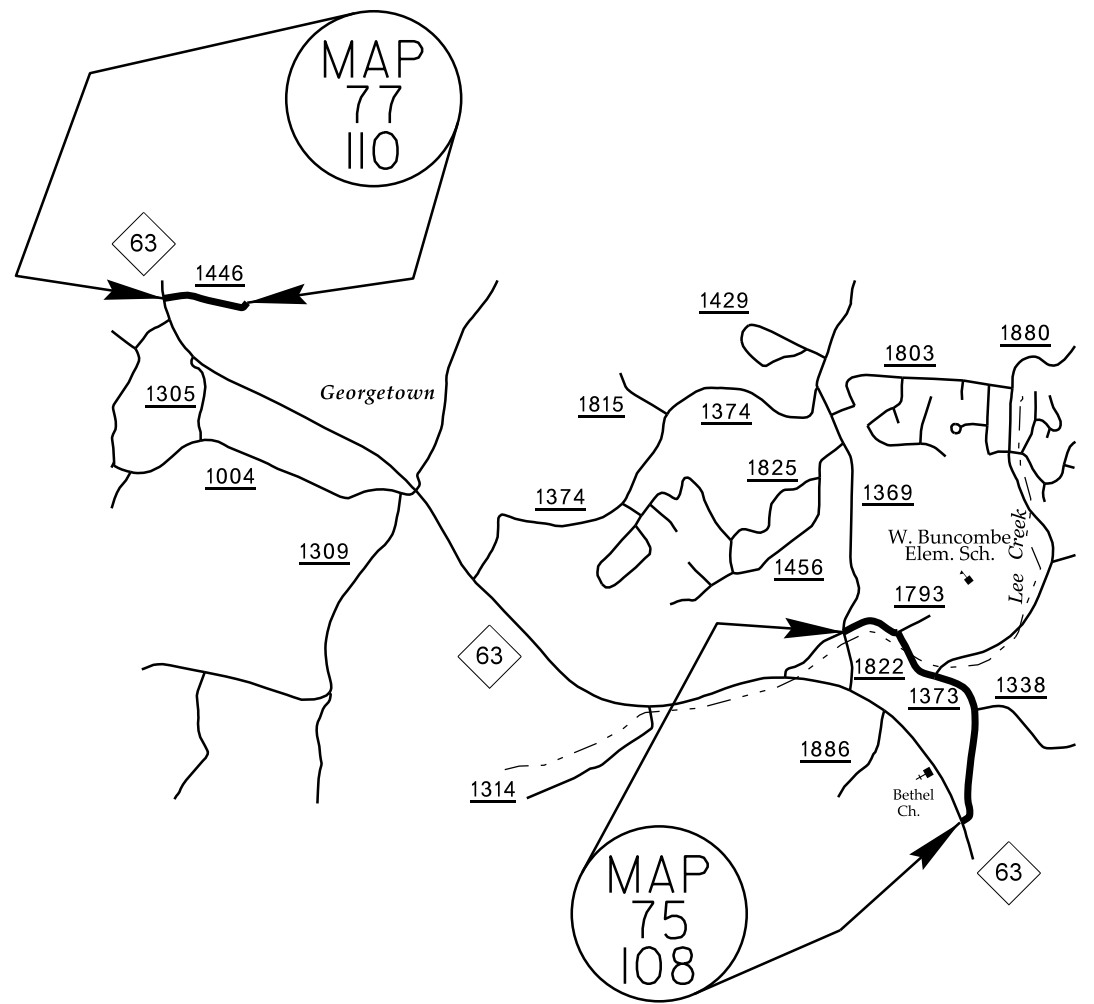
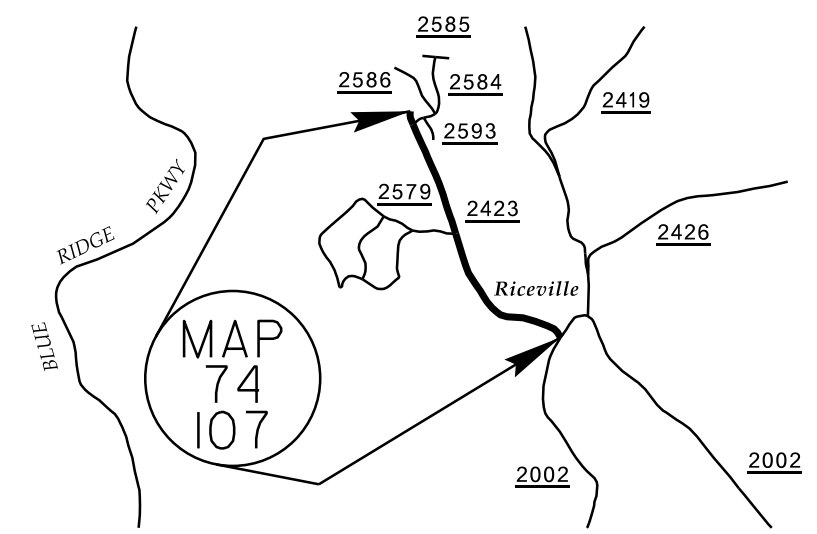
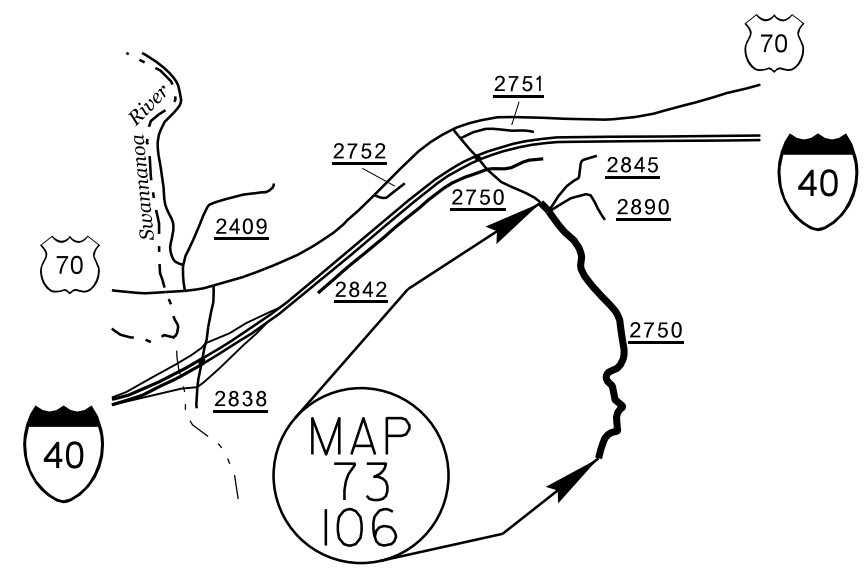
PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>12</b>	



**BUNCOMBE COUNTY**

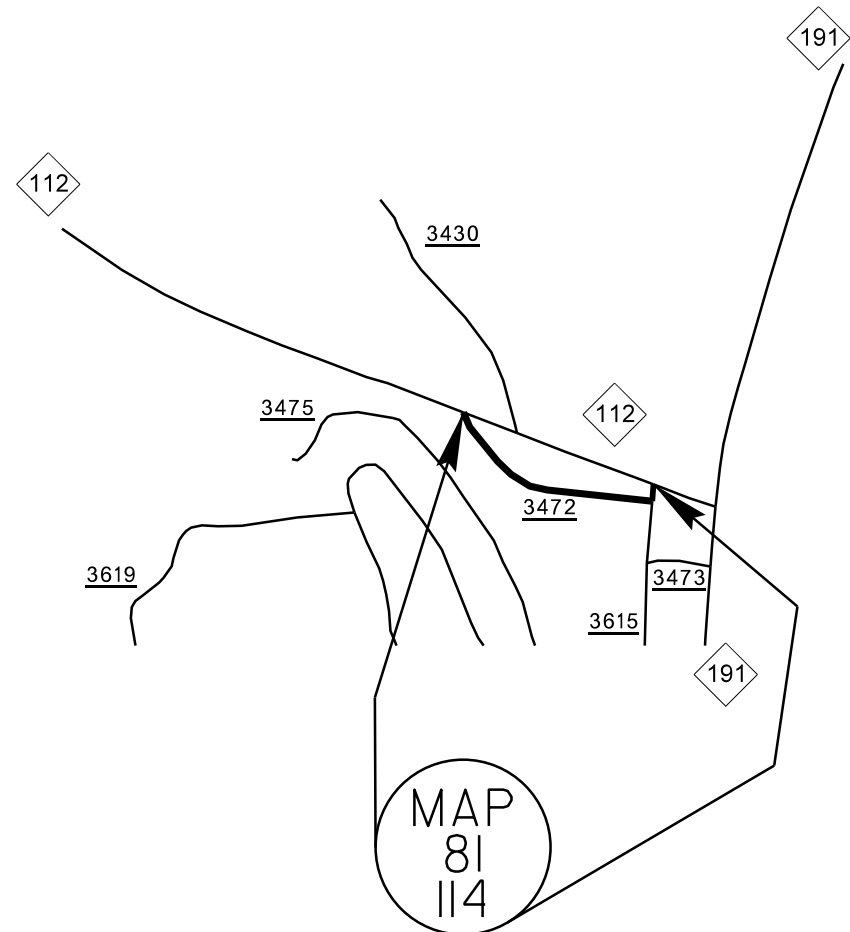
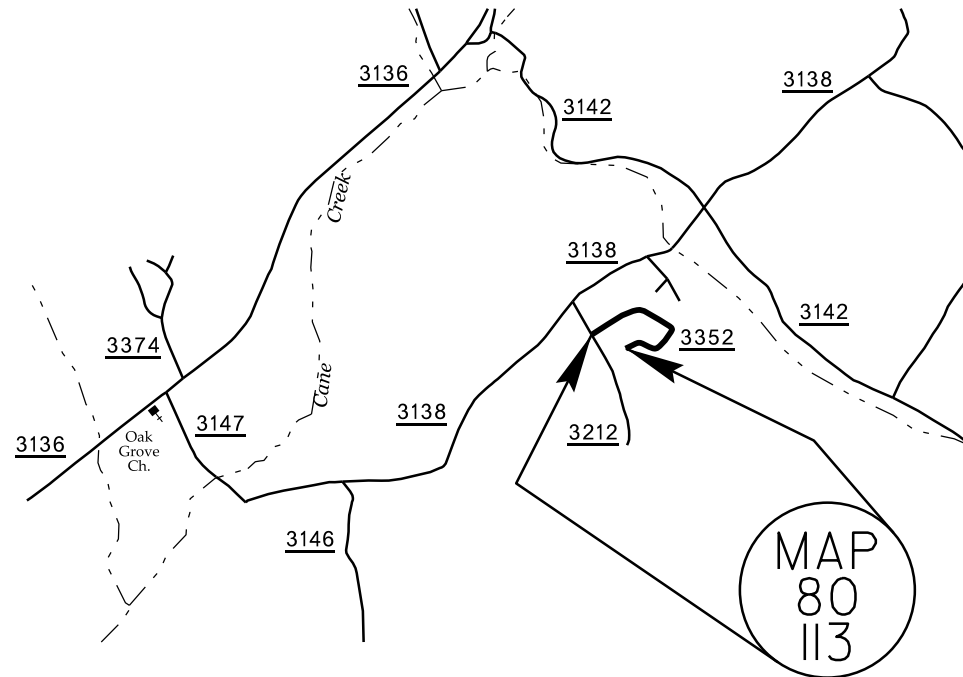
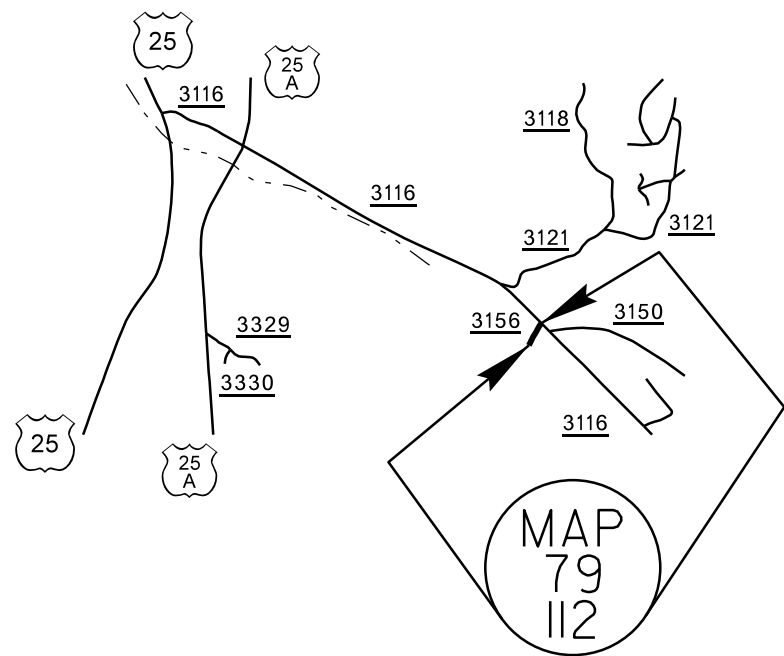


**BUNCOMBE COUNTY**



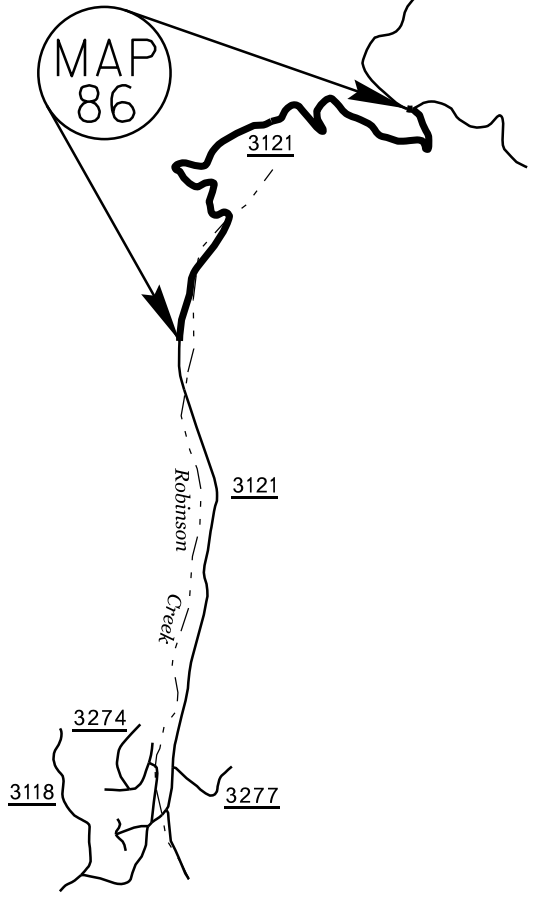
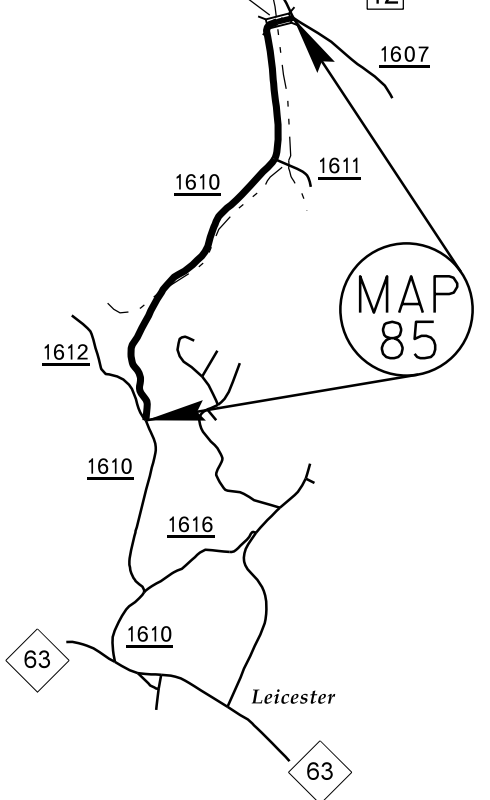
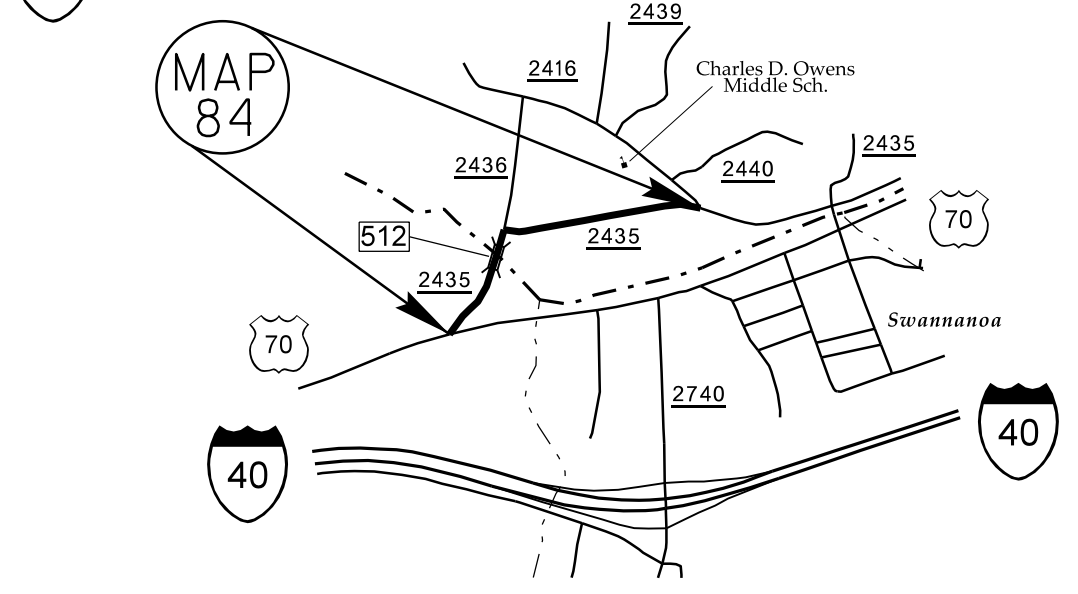
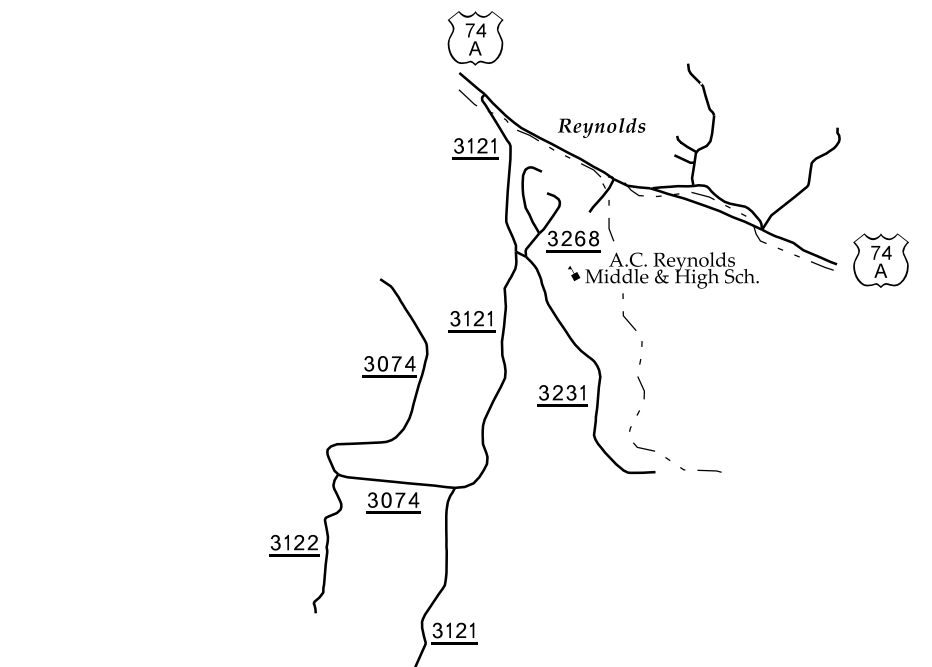
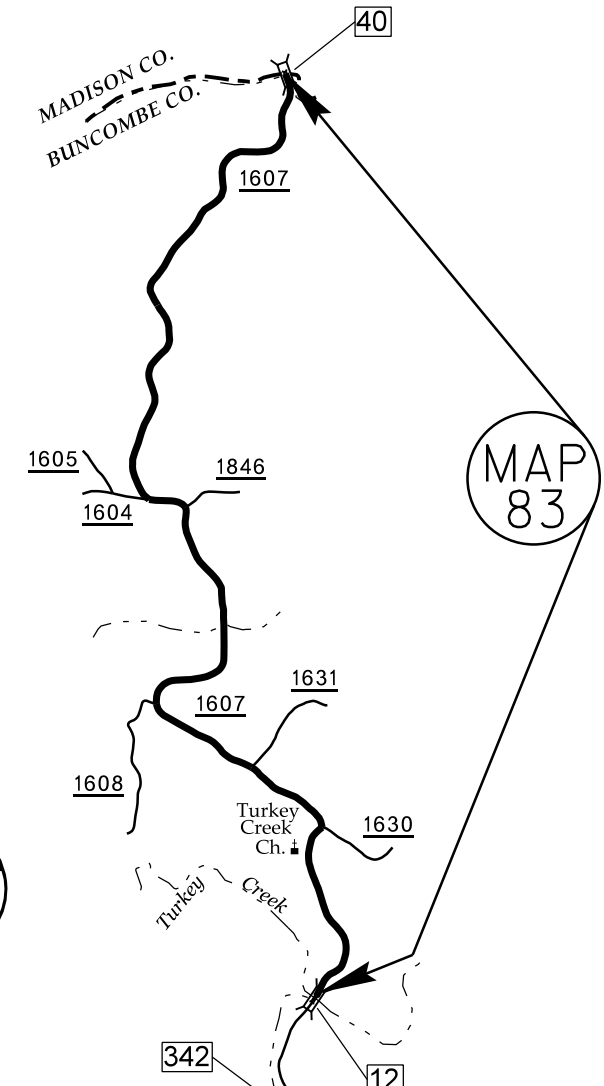
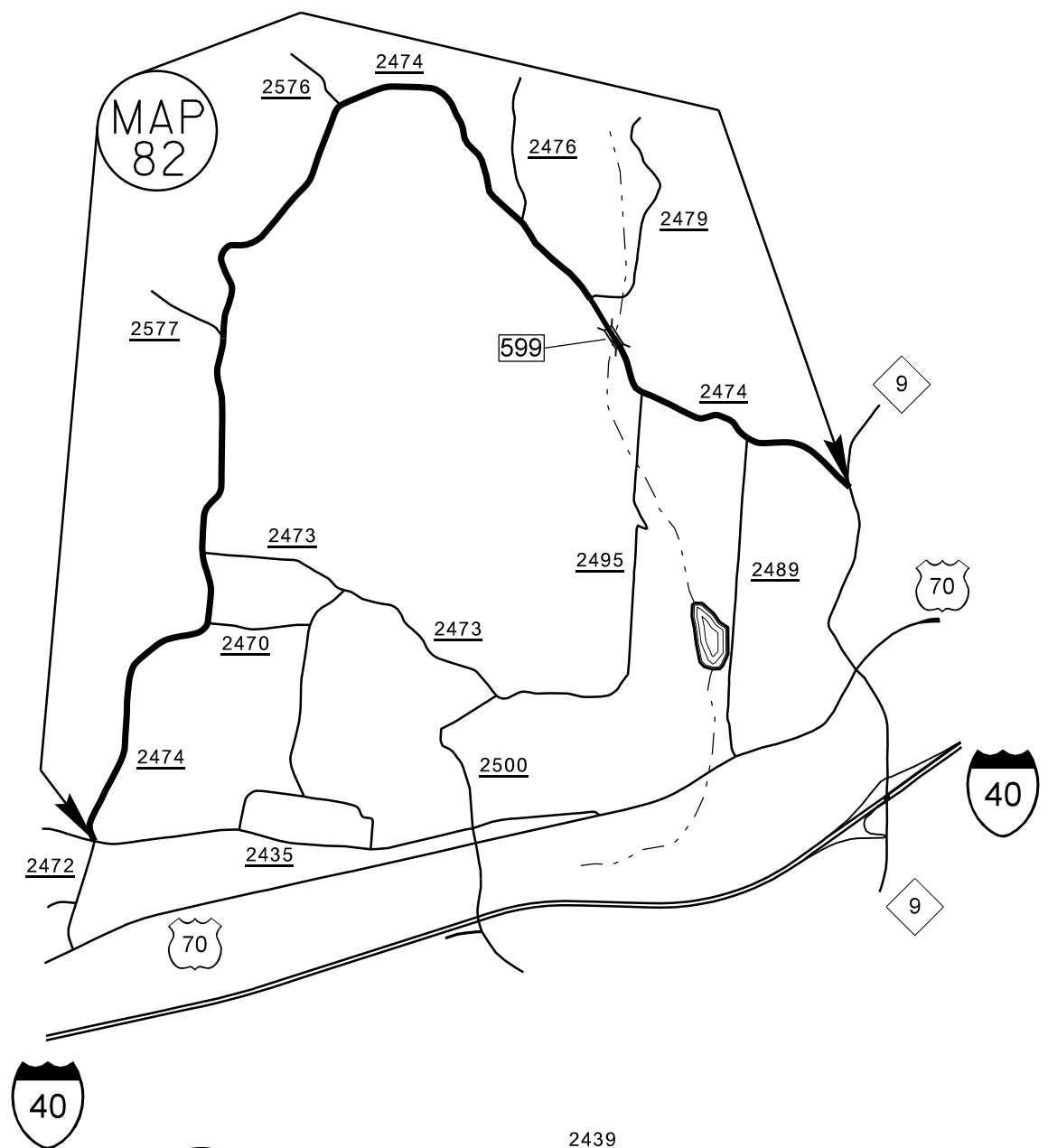
**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>15</b>	



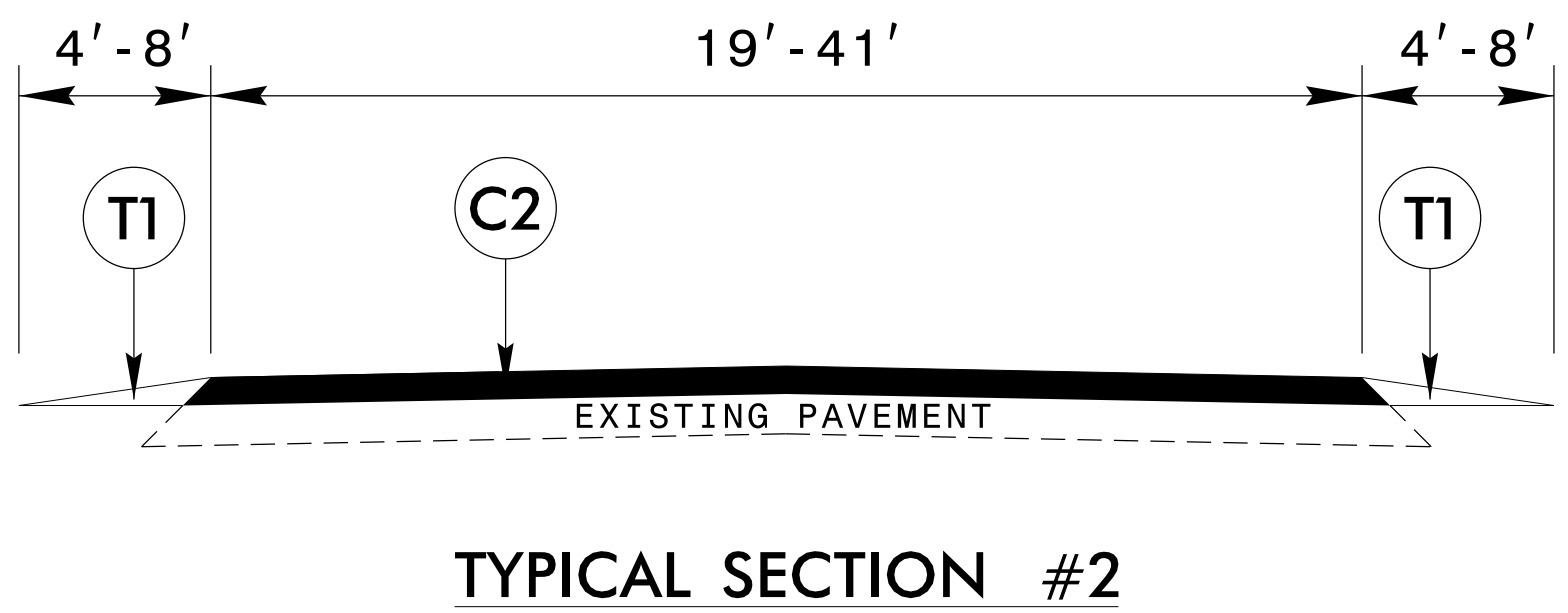
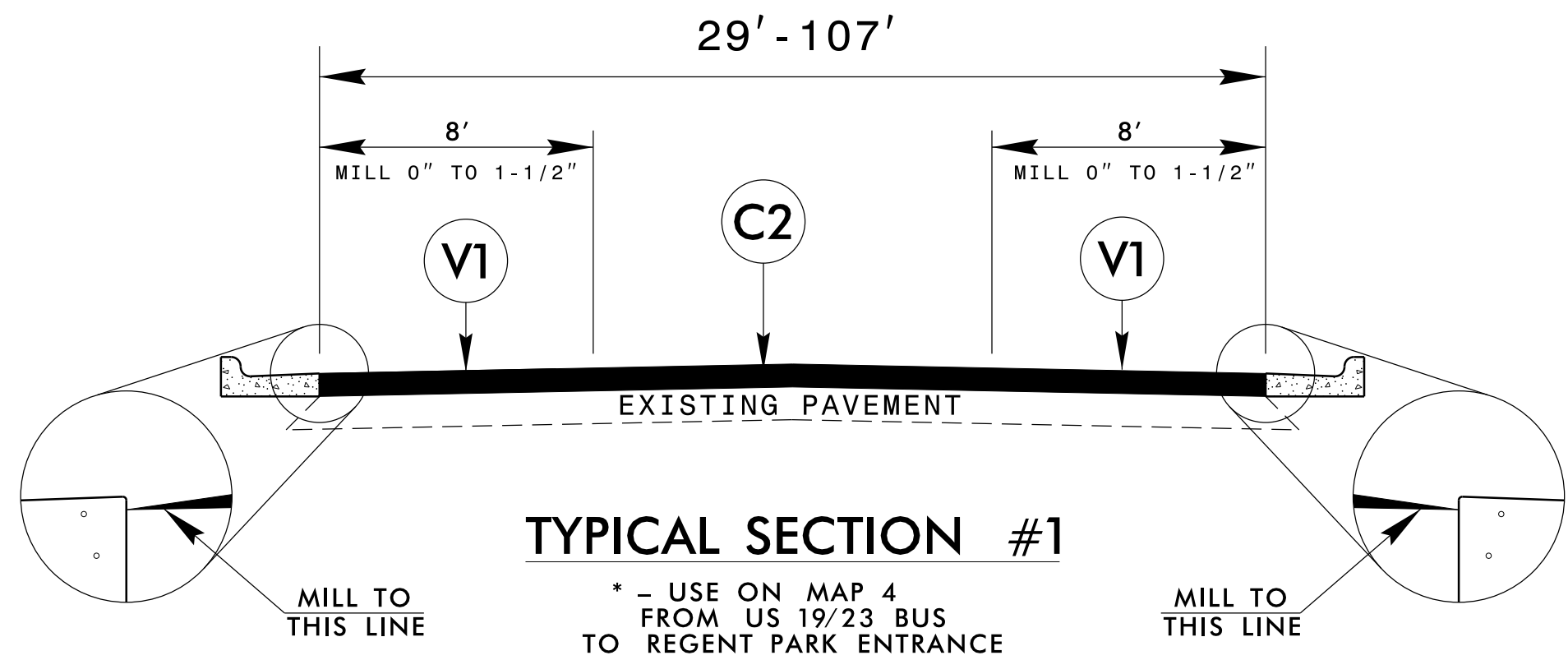
**BUNCOMBE COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2020CPT.13.01.10111, 2020CPT.13.01.10112, 2020CPT.13.01.2011, ETC.	<b>16</b>	



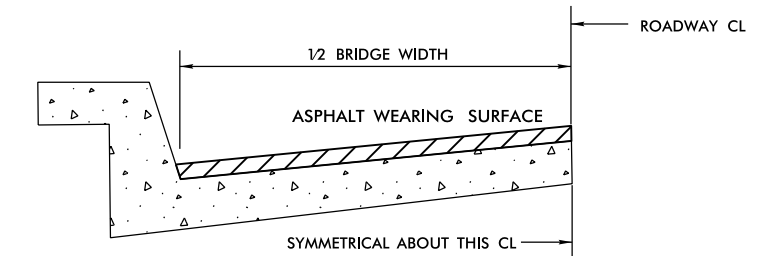
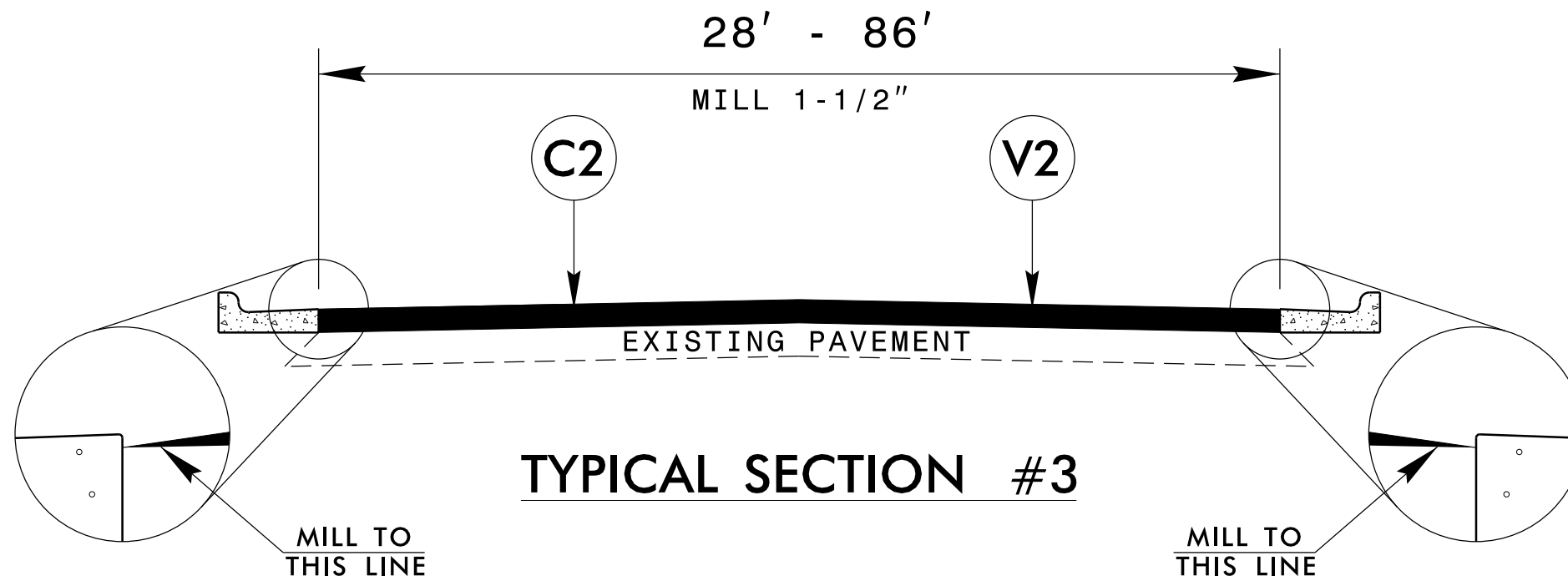
**BUNCOMBE COUNTY**





PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YARD
C2	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD
F1	ASPHALT SURFACE TREATMENT, DOUBLE SEAL
F2	ASPHALT SURFACE TREATMENT, FOG SEAL
T1	SHOULDER RECONSTRUCTION (AS DIRECTED BY THE ENGINEER)
V1	MILLING ASPHALT PAVEMENT, 0" TO 1-1/2" DEPTH
V2	MILLING ASPHALT PAVEMENT, 1-1/2" DEPTH
V3	INCIDENTAL MILLING
V4	MILLING ASPHALT PAVEMENT, 5/8" DEPTH
Y1	LATEX MODIFIED MICRO-SURFACING, TYPE III
Y2	SEALING EXISTING PAVEMENT CRACKS
Y3	ULTRA-THIN BONDED WEARING COURSE

6/2/99  
 19-NOV-2018 09:03  
 33-111-10111.dgn  
 Buncombe\2020\_Bunc-Resurf\_Typicals (Revised 11/19/18).dgn



**BRIDGE HALF TYPICAL SECTION**

FOR BRIDGES WITH FLOOR DRAINS, CARE SHALL BE EXERCISED IN PLACING THE WEARING SURFACE AROUND FLOOR DRAINS SO AS NOT TO HINDER EFFECTIVE DRAINAGE. ALL DRAINS SHALL BE LEFT OPEN.

THE PROPOSED WEARING SURFACE SHALL VARY IN THICKNESS AS NECESSARY TO PROVIDE A SMOOTH RIDING SURFACE. THE MINIMUM THICKNESS SHOULD DEPEND ON PAVEMENT TYPE AS FOLLOWS: S4.75A 1/2", S9.5B 1", S9.5C,D 1.5" - 2". ULTRA-THIN HOT MIX ASPHALT - TYPE A 3/4". ULTRA-THIN HOT MIX ASPHALT - TYPE B 5/8". ULTRA-THIN HOT MIX ASPHALT - TYPE C 1/2". THE MAXIMUM THICKNESS SHOULD DEPEND ON PAVEMENT TYPE AS FOLLOWS: S4.75A 1", S9.5B 1.5", S9.5C,D 2". ULTRA-THIN HOT MIX ASPHALT - TYPE A 3/4", ULTRA-THIN HOT MIX ASPHALT - TYPE B 5/8", ULTRA-THIN HOT MIX ASPHALT - TYPE C 1/2".

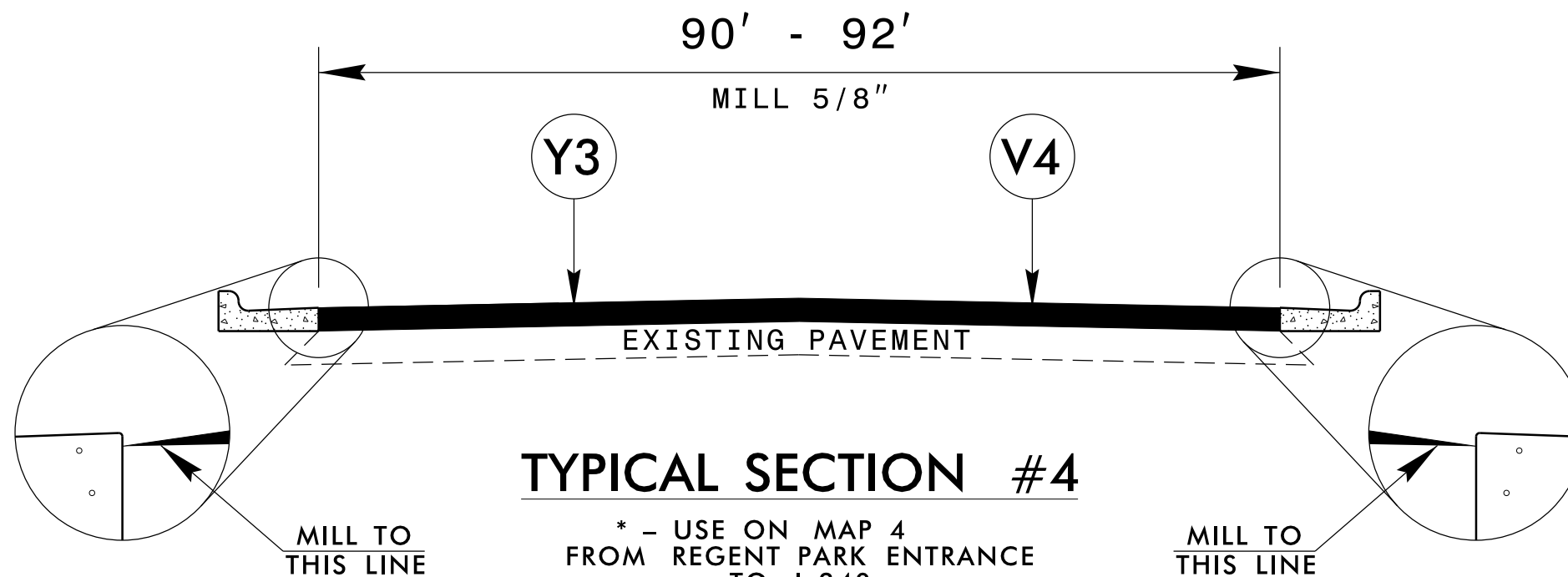
**NOTES**

ALL UNPAVED ROADS TO BE RESURFACED 50' FROM EDGE OF PAVEMENT OF MAIN PROJECT. ALL PAVED S. R. ROADS TO BE RESURFACED TO THE ENDS OF THE RADII, OR AS DIRECTED BY THE ENGINEER.

EDGES, PAVEMENT WIDENING, INTERSECTIONS AND BRIDGE FLARES ARE INCLUDED IN THE TABLE OF QUANTITIES.

SHOULDERS AND DITCHES ARE TO BE CONSTRUCTED BY OTHERS UNLESS OTHERWISE INDICATED.

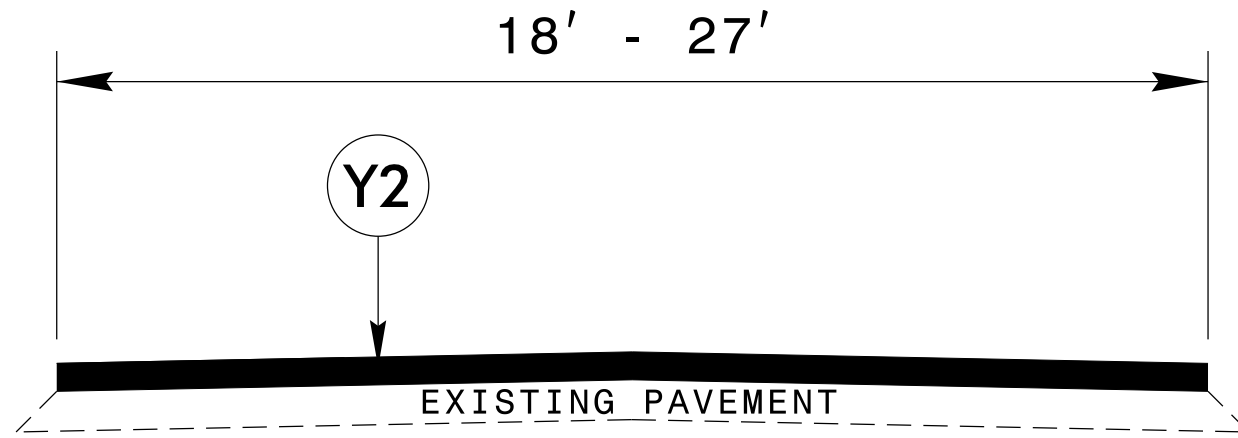
BRIDGES ARE TO BE RESURFACED AT LOCATIONS AND TO DEPTH AS DIRECTED BY THE ENGINEER.



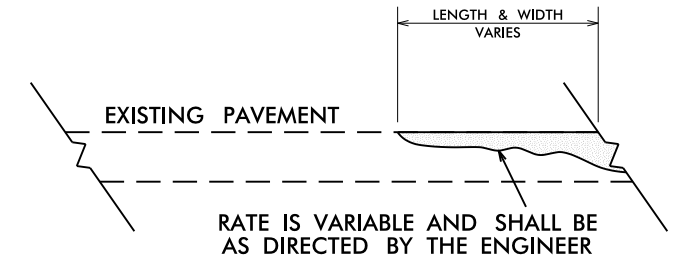
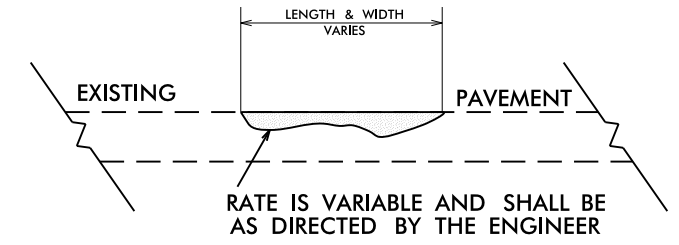
\* - USE ON MAP 4 FROM REGENT PARK ENTRANCE TO I-240

**PAVEMENT SCHEDULE**

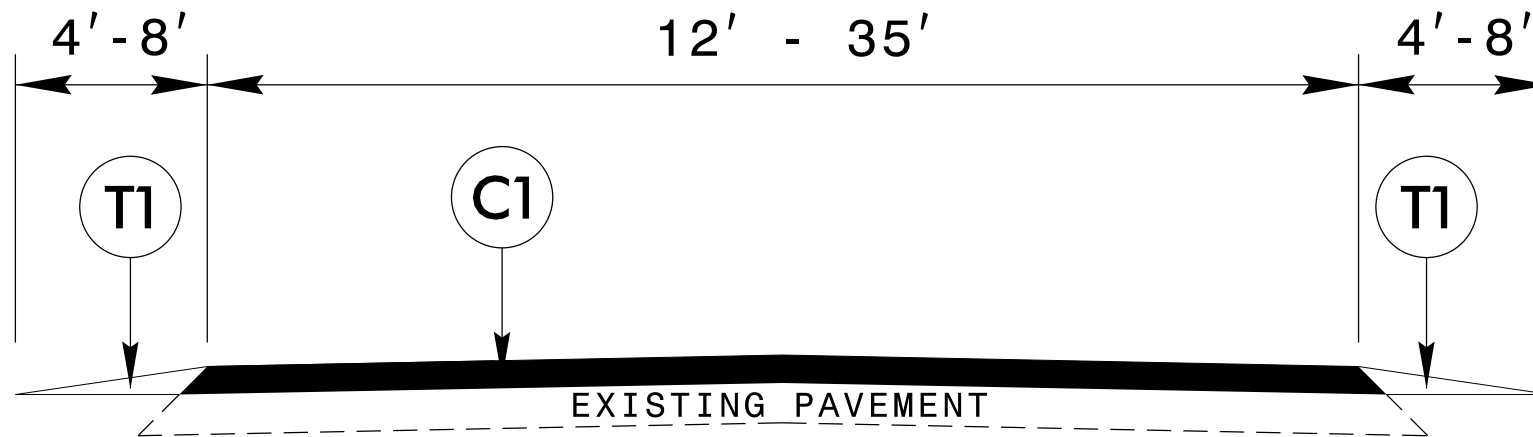
C2	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD
V2	MILLING ASPHALT PAVEMENT, 1-1/2" DEPTH
V4	MILLING ASPHALT PAVEMENT, 5/8" DEPTH
Y3	ULTRA-THIN BONDED WEARING COURSE



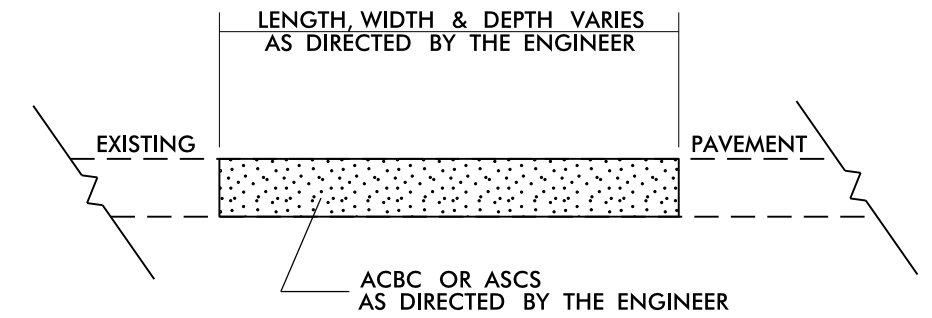
**TYPICAL SECTION #5**



**DETAIL SHOWING METHOD OF WEDGING**



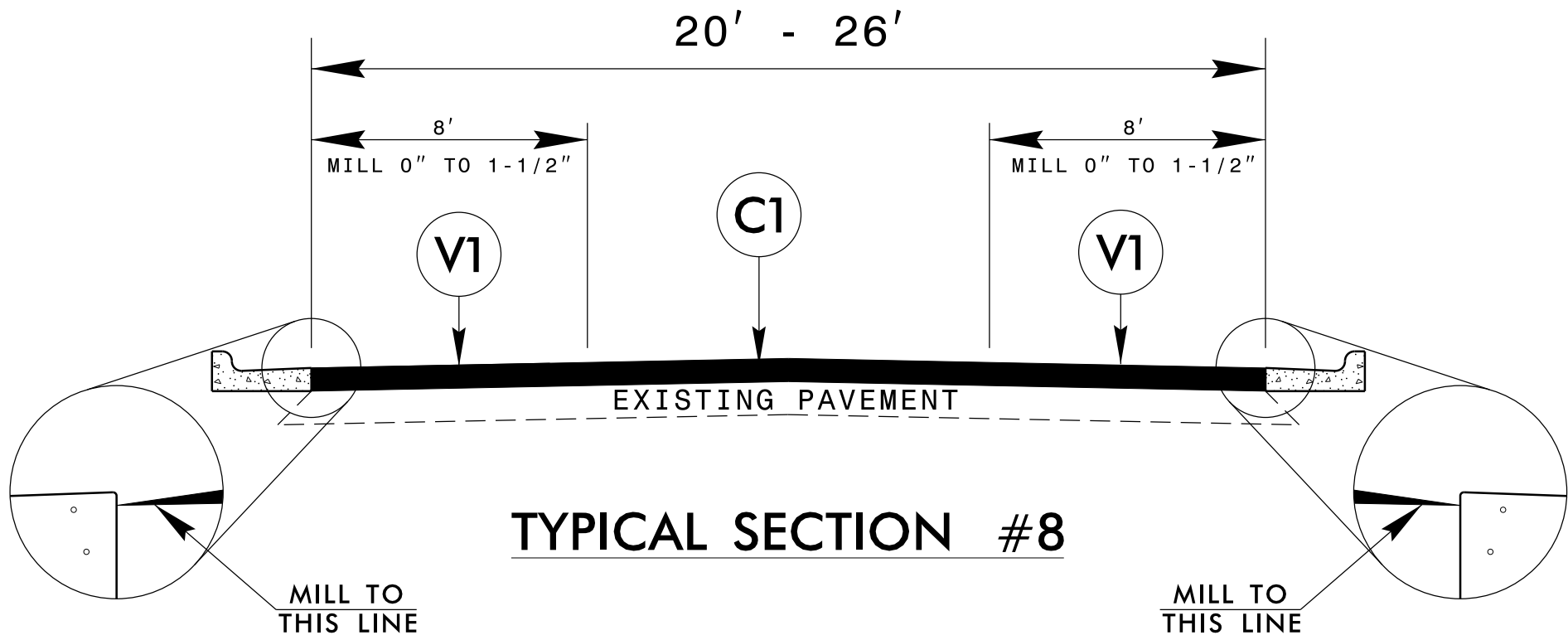
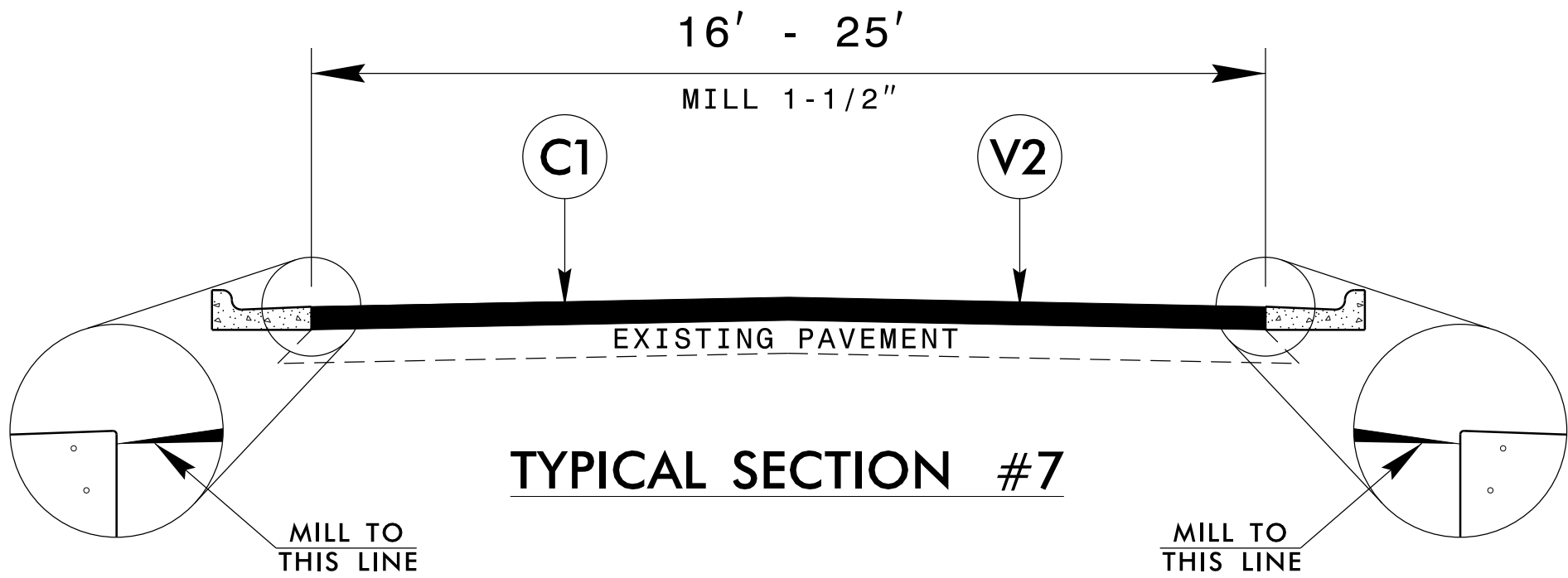
**TYPICAL SECTION #6**



**PATCHING EXISTING PAVEMENT**

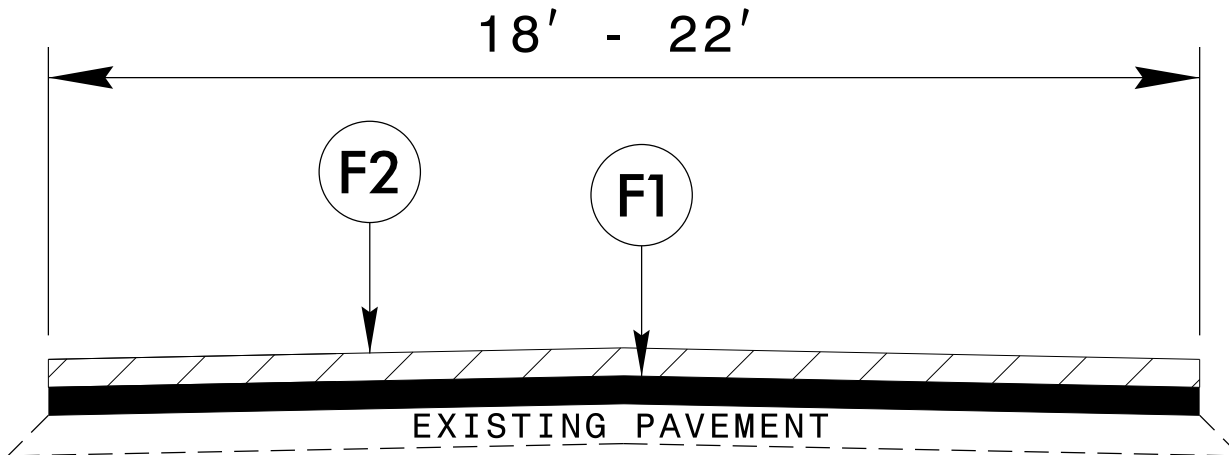
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YARD
T1	SHOULDER RECONSTRUCTION (AS DIRECTED BY THE ENGINEER)
Y2	SEALING EXISTING PAVEMENT CRACKS

6/2/99  
 19-NOV-2018 09:04  
 33-33112-01.dwg  
 Buncombe\2020\_Buncombe\2020\_Bunc-Resurf\_Typicals (Revised 11/9/18).dgn

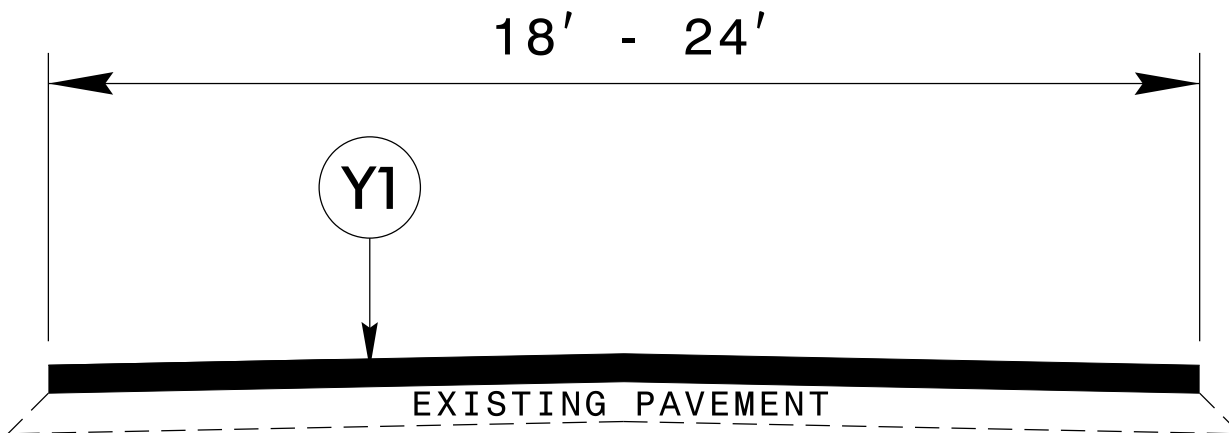


PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YARD
V1	MILLING ASPHALT PAVEMENT, 0" TO 1-1/2" DEPTH
V2	MILLING ASPHALT PAVEMENT, 1-1/2" DEPTH

6/12/99  
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 Buncombe\2020\_Bunc\_Resurf\_Typical1.dgn



**TYPICAL SECTION #9**

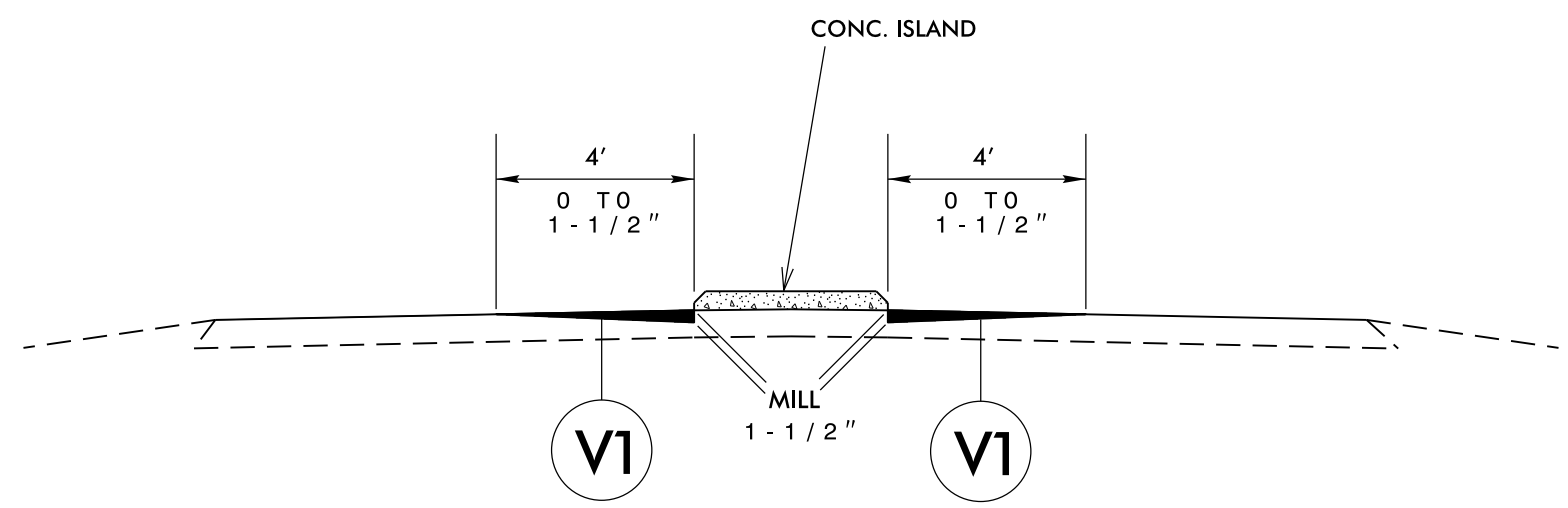


**TYPICAL SECTION #10**

PAVEMENT SCHEDULE	
F1	ASPHALT SURFACE TREATMENT, DOUBLE SEAL
F2	ASPHALT SURFACE TREATMENT, FOG SEAL
Y1	LATEX MODIFIED MICRO-SURFACING, TYPE III

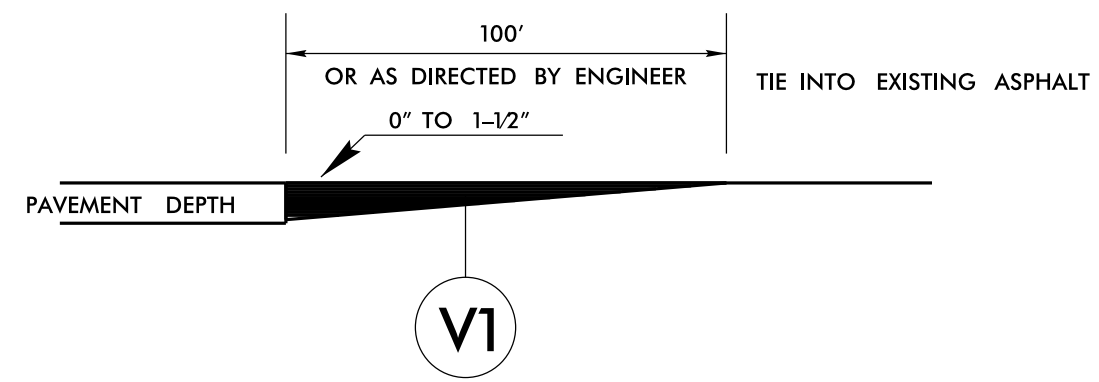
6/2/99

12-NOV-2018 18:28  
 C:\Users\jwong\OneDrive\Documents\2020 Buncombe\2020 Buncombe\Resurf\_Typical.s.dgn



**MILLING DETAIL**

SPECIAL MILLING DETAIL TO BE USED AT LOCATIONS WITH CONCRETE MONOLITHIC ISLANDS



**DETAIL TO TIE INTO EXIST PAVEMENT**

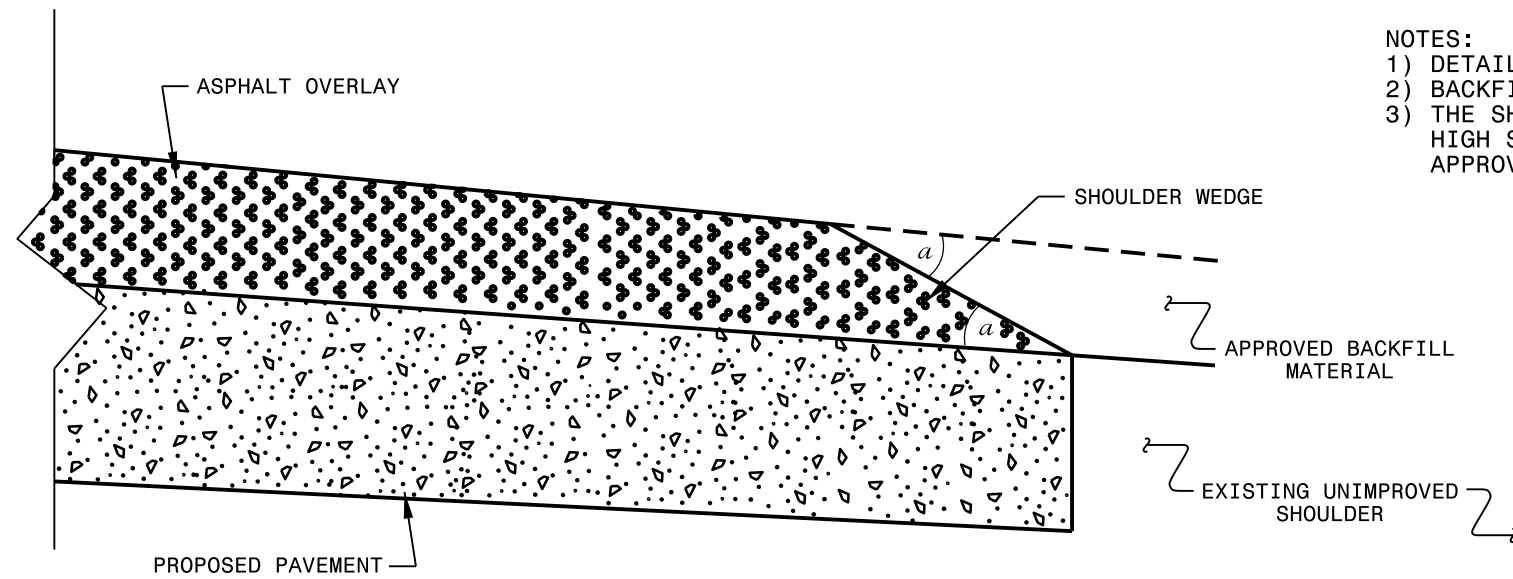
THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT HE WILL BE REQUIRED TO MILL THE EXISTING ASPHALT PAVEMENT TO ENSURE A PROPER TIE-IN WITH THE EXISTING SURFACE AT THE BEGINNING, END AND Y LINES OF EACH MAP TO BE RESURFACED WITH ASPHALT CONC SURFACE COURSE, TYPE S9.5C. THIS WILL BE PAID FOR AS INCIDENTAL MILLING.

PAVEMENT SCHEDULE	
V1	MILLING ASPHALT PAVEMENT, 0" TO 1-1/2" DEPTH

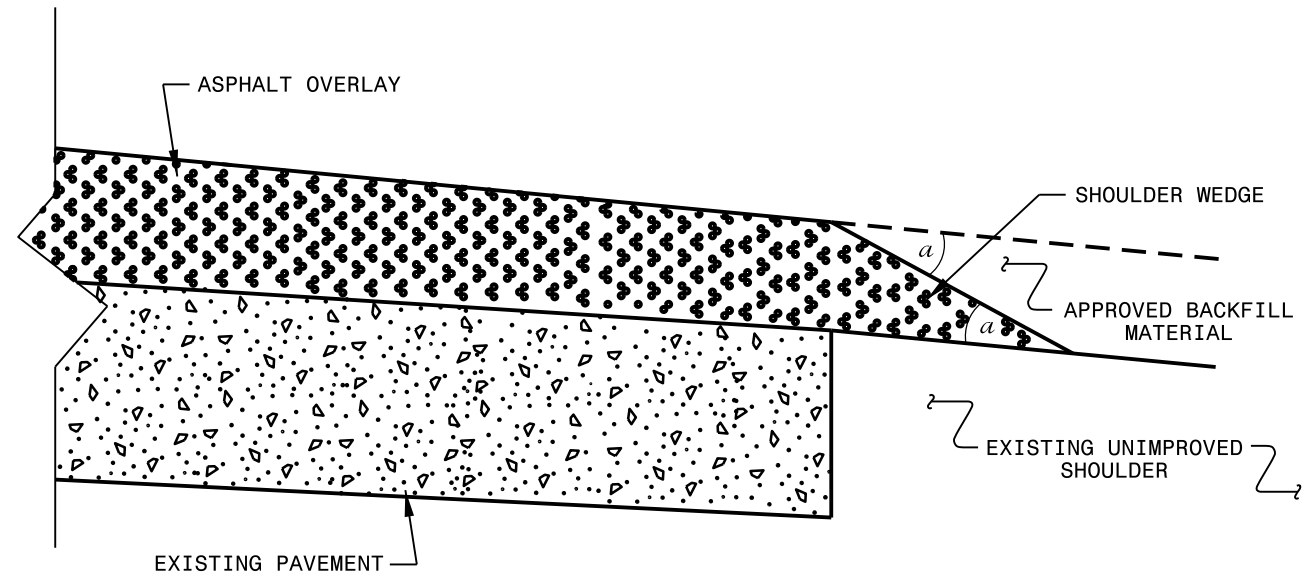


**NOTES:**

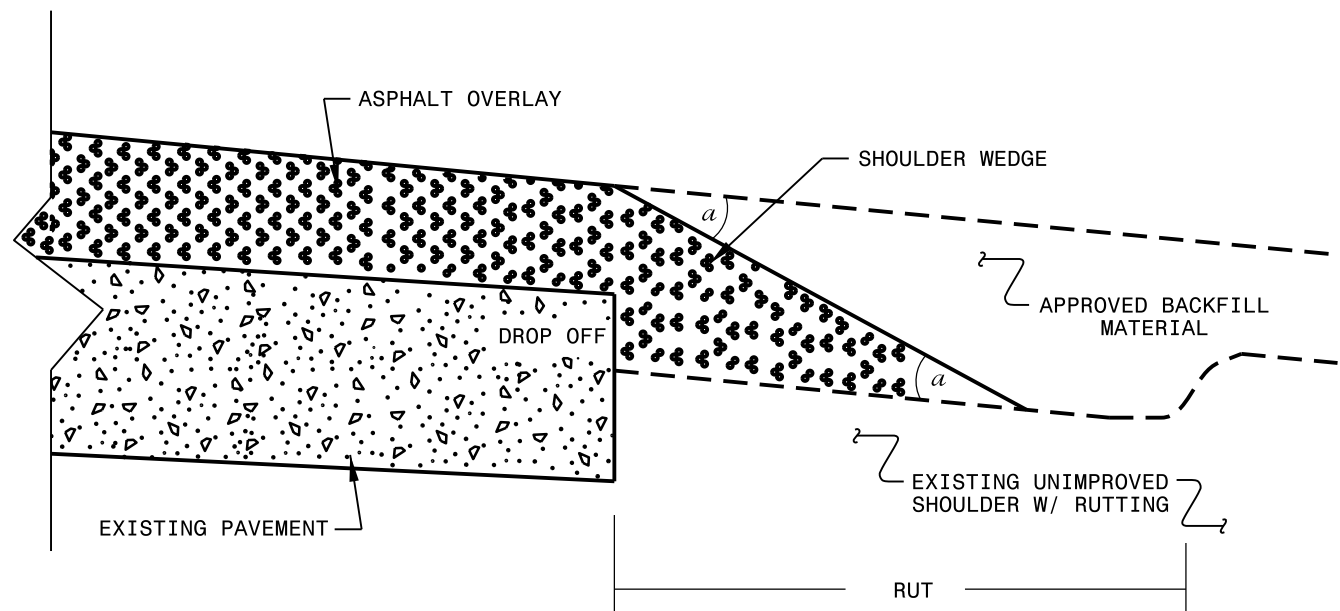
- 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
- 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
- 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



**SHOULDER WEDGE DETAIL**  
 (Resurfacing Projects w/ Widening or  
 with Existing Paved Shoulder having no dropoffs)



**SHOULDER WEDGE DETAIL**  
 (Resurfacing Projects w/ NO Widening)



**SHOULDER WEDGE DETAIL**  
 (Resurfacing Adjacent to  
 Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>		
Office 919-707-6950 FAX 919-250-4119		
<b>SHOULDER WEDGE DETAILS</b>		
ORIGINAL BY: T.SPELL	DATE: 7-19-11	
MODIFIED BY:	DATE: 2/2/16	
CHECKED BY:	DATE:	
FILE SPEC.: szusr/details/stand/shoulderwedgedetail.dgn		



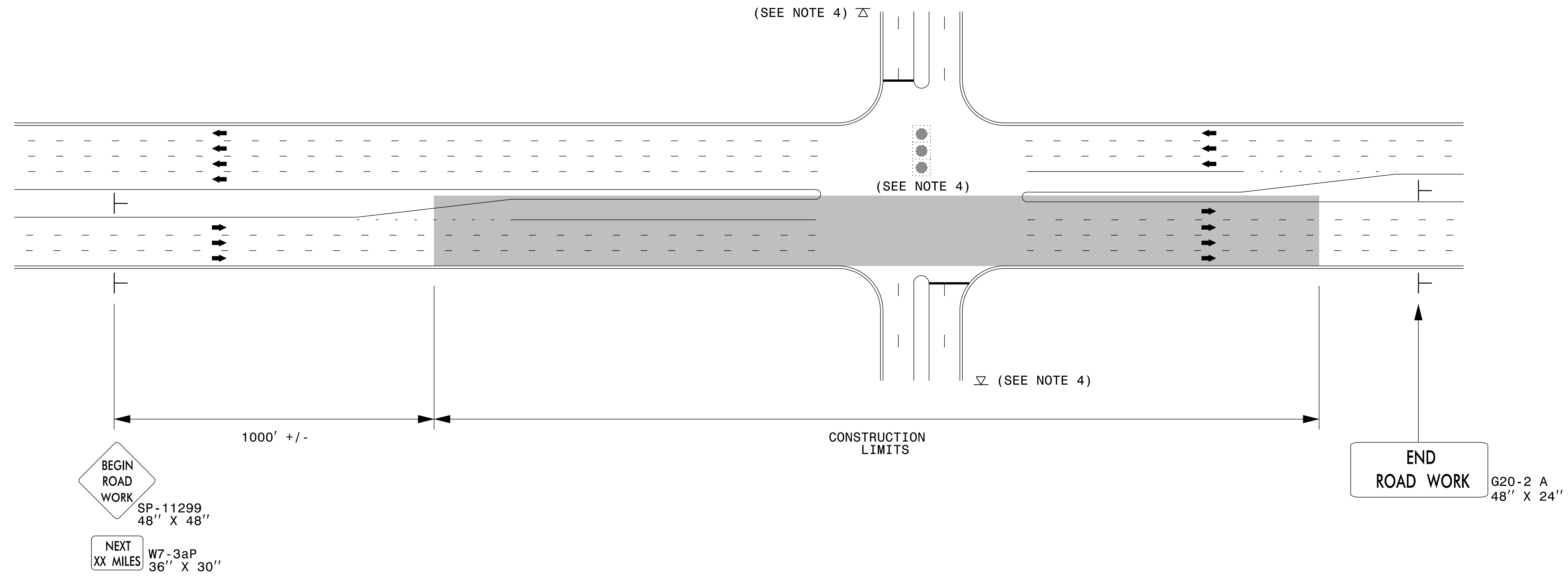








## URBAN / SUBURBAN WORKZONES



### NOTES:

- 1) 48" x 48" SIZED SIGNS (SP- 11299) MAY BE REDUCED TO 36" X 36" ON ROADWAYS WITH SPEED LIMITS OF 40 MPH OR LESS.
- 2) MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
- 3) ADVANCE WARNING SIGNS NOT REQUIRED ON NON-SIGNALIZED SIDE STREETS.
- 4) MAY USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AS DIRECTED BY THE ENGINEER. PROVIDE PORTABLE "ROAD WORK AHEAD" (W20-1) SIGNS 500' IN ADVANCE ALONG BOTH APPROACHES FROM THE SIDE STREETS WHEN PAVING PROCEEDS THROUGH THE INTERSECTION.
- 5) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 2' AS MEASURED FROM THE EDGE OF PAVEMENT OR THE FACE OF THE CURB. WHEN UNABLE TO OBTAIN THE LATERAL CLEARANCE WITHIN THE MEDIAN AREA USE SHOULDER MOUNTS ONLY.
- 6) SIGN MOUNT LOCATIONS SHALL NOT BLOCK SIDEWALKS OR DRIVEWAYS.
- 7) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 8) IF MILLED AREAS ARE NOT PAVED BACK BY THE END OF THE WORK DAY, PORTABLE SIGNS SHALL BE USED TO WARN DRIVERS OF THE PRESENT CONDITIONS. THESE ARE TO INCLUDE, BUT NOT LIMITED TO "ROUGH ROAD" W8-8, "UNEVEN LANES" W8-11, "GROOVED PAVEMENT" W8-15 w/MOTORCYCLE PLAQUE MOUNTED BELOW. THESE ARE TO BE DOUBLE INDICATED ON MULTI-LANE ROADWAYS WITH SPEED LIMITS 45 MPH AND GREATER WHERE LATERAL CLEARANCE CAN BE OBTAINED WITHIN THE MEDIAN AREAS. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

### LEGEND

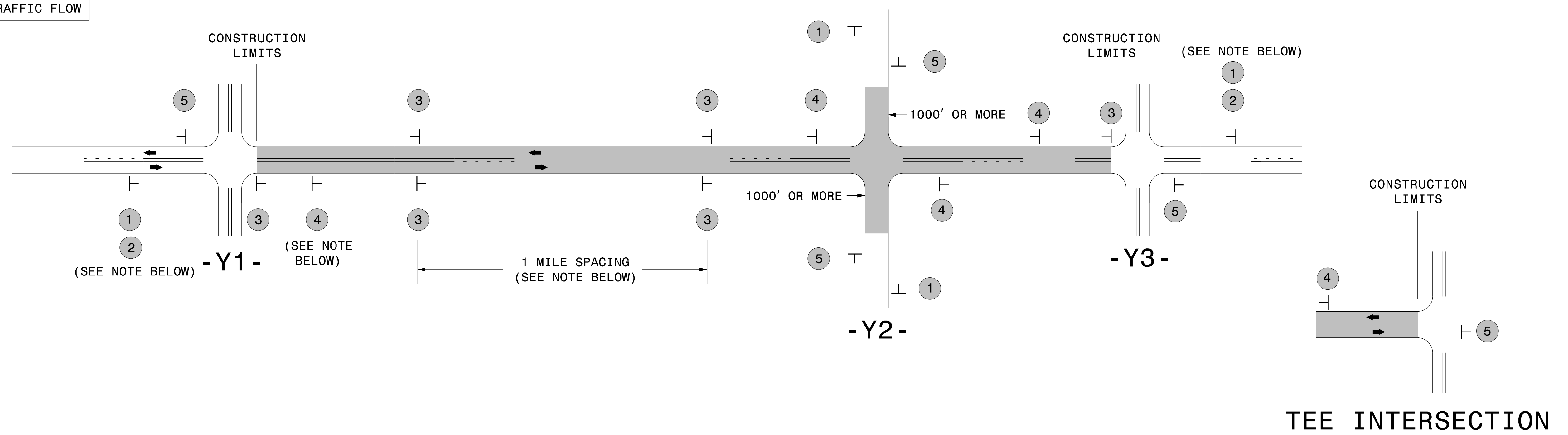
- ┆ STATIONARY SIGN
- ➔ DIRECTION OF TRAFFIC FLOW



**RESURFACING ADVANCE  
WARNING SIGNS FOR  
URBAN / SUBURBAN  
FACILITIES**

# SIGNING FOR RESURFACING PROJECTS

**LEGEND**  
 ┆ STATIONARY SIGN  
 ← DIRECTION OF TRAFFIC FLOW



## MAINLINE (-L-) SIGNING

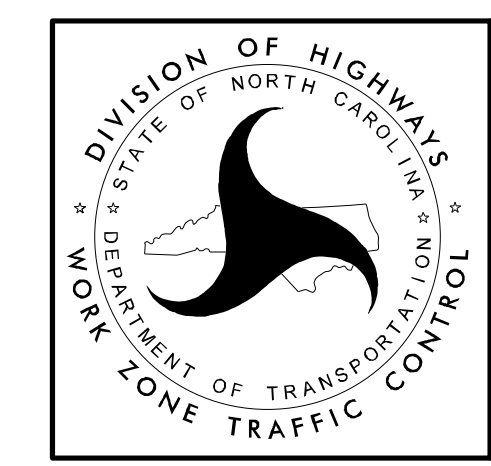
## -Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	1		PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	<p>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</p> <ol style="list-style-type: none"> <li>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>2) SUBDIVISION ROADS</li> <li>3) DEAD END ROADS</li> </ol> <p>WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, PORTABLE ADVANCE WARNING SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">               W20-1 48" X 48"              PLACED 500' IN ADVANCE OF FLAGGER.         </div> <div style="text-align: center;">               W20-7 A 48" X 48"              PLACED 250' IN ADVANCE OF FLAGGER.         </div> </div>
	2		#2 SIGN ONLY USED WHEN CONSTRUCTION LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER. (NO FRACTIONAL OR DECIMAL NUMBERS)	
	3		- PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACE 1 MILE APART THEREAFTER. - AT TEE INTERSECTIONS INSTALL INITIALLY 1/2 MILE FROM INTERSECTION AND SPACE 1 MILE APART THEREAFTER.	
	4		- THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. - DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. - INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. - FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. - A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN. - FOR TEE INTERSECTIONS, INSTALL WITHIN 500' +/- OF THE INTERSECTION ALONG -L- LINE.	
	5		PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS OR AS SHOWN WHEN WORK ENDS AT A 3-WAY TEE INTERSECTION.	

THE ABOVE SIGNS ARE ALL THAT ARE REQUIRED FOR A CONTRACTOR TO BEGIN A RESURFACING CONTRACT. ANY ADDITIONAL SIGNS REQUESTED BY NCDOT DIVISIONS SHALL BE INSTALLED WITHIN 7 BUSINESS DAYS OF THE START OF CONTRACT WORK.

**MAPS LESS THAN 2 MILES**

FOR RESURFACING MAPS WITH CONSTRUCTION LIMITS LESS THAN 2 MILES IN LENGTH, NO STATIONARY SIGNS ARE REQUIRED. USE PORTABLE "ROAD UNDER CONSTRUCTION" OR "ROAD WORK AHEAD" SIGNS IN LIEU OF STATIONARY ADVANCE WARNINGS SIGNS.



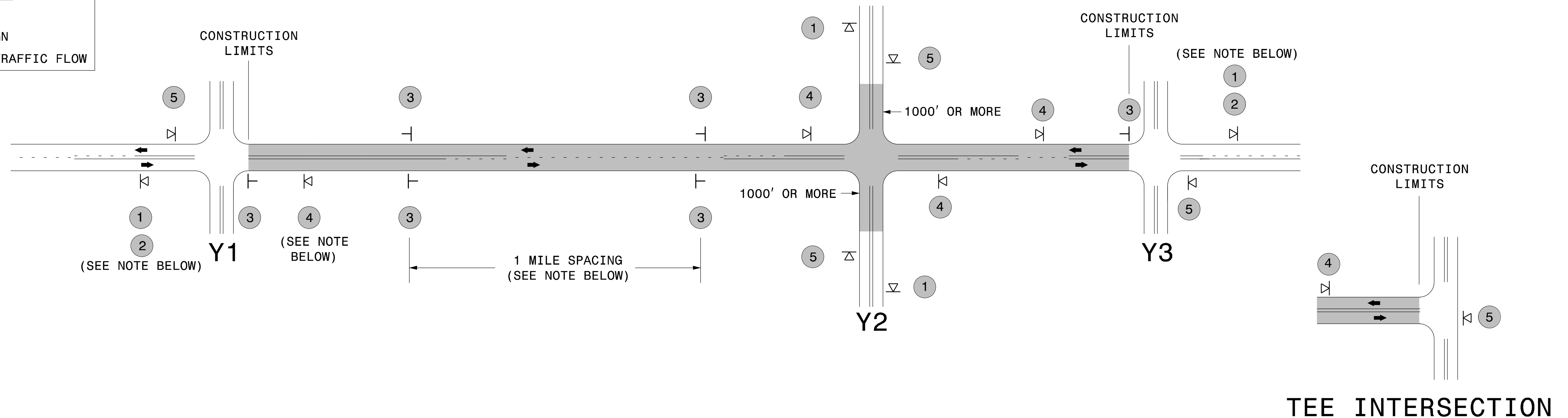
**ADVANCE WARNING SIGNS FOR RURAL AND SUBURBAN 2-LANE ROADWAY RESURFACING**

5/15/2017 S:\TMU\WZTC\Resurfacing\2L2W & AST Resurfacing Details\Resurfacing\_AdvWarn\_2Ln.dgn User:kadai

# SIGNING FOR ASPHALT SURFACE TREATMENT

**LEGEND**

- ▷ PORTABLE SIGN
- └ STATIONARY SIGN
- ← DIRECTION OF TRAFFIC FLOW



## MAINLINE (-L-) SIGNING

## -Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	1	 W20-1 48" X 48"	- PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	STATIONARY SIGNING NOT REQUIRED FOR THE FOLLOWING -Y- LINE CONDITIONS: 1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE 2) SUBDIVISION ROADS 3) DEAD END ROADS  WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, PORTABLE ADVANCE WARNING SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.	
	2	 W7-3qP 24" X 18"	- SIGN #2 ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO THE NEAREST WHOLE NUMBER. DO NOT USE FRACTIONAL OR DECIMAL NUMBERS.		
	3	 W8-7 48" X 48"	- ALTERNATE THE FOLLOWING TWO SIGNS: - STARTING WITH "LOOSE GRAVEL" (W8-7) FOLLOWED BY "UNMARKED PAVEMENT". - PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER.		
		 SP 48" X 48"	- AT TEE INTERSECTIONS INSTALL INITIALLY 0.5 MILE FROM INTERSECTION AND SPACE 1 MILE APART THEREAFTER.		
	4	 SP 13106 48" X 48"	- THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS. - INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE. - FOR MULTIPLE -Y- LINES THAT ARE SEPARATED BY 0.25 MILES OR LESS, TREAT AS A SINGLE UNIT AND INSTALL WITHIN 500' OF EACH APPROACH. - A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN.		
5	 G20-2 A 48" X 24"	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS OR AS SHOWN WHEN WORK ENDS AT A 3-WAY TEE INTERSECTION.	 W20-1 48" X 48"	PLACED 500' IN ADVANCE OF FLAGGER.	
				 W20-7 A 48" X 48"	PLACED 250' IN ADVANCE OF FLAGGER.

THE ABOVE SIGNS ARE ALL THAT ARE REQUIRED FOR A CONTRACTOR TO BEGIN A RESURFACING CONTRACT. ANY ADDITIONAL SIGNS REQUESTED BY NCDOT DIVISIONS SHALL BE INSTALLED WITHIN 7 BUSINESS DAYS OF THE START OF CONTRACT WORK.

**MAPS LESS THAN 2 MILES**

FOR AST RESURFACING MAPS WITH CONSTRUCTION LIMITS LESS THAN 2 MILES IN LENGTH, USE A STATIONARY "LOOSE GRAVEL" SIGN AT THE BEGINNING CONSTRUCTION LIMIT FOLLOWED BY AN "UNMARKED PAVEMENT" SIGN MIDWAY THROUGH AND AN "END ROAD WORK" SIGN AT THE END CONSTRUCTION LIMIT.

**ADVANCE WARNING SIGNS FOR 2-LANE ROADWAY ASPHALT SURFACE TREATMENT**

5/12/2017 S:\TUXWZTC\Resurfacing\2L2W & AST Resurfacing Details\Resurfacing\_AdvWarn\_2Ln - AST.dgn User:kadais

SIGN NUMBER: 11299

BACKG COLOR: Fluorescent Orange

DESIGN BY: WJ

CHECKED BY:

2020CPT.13.01.10111, etc TMP-4

TYPE: B

COPY COLOR: Black

PROJECT ID: ALL

DIV: ALL

DATE: Jun 22, 2011

QUANTITY: SEE PLANS

SYMBOL	X	Y	WID	HT

SIGN WIDTH: 5'-6"

HEIGHT: 5'-6"

# SP 11299

TOTAL AREA: 30.5 Sq.Ft.

BORDER TYPE: INSET

RECESS: 0.59"

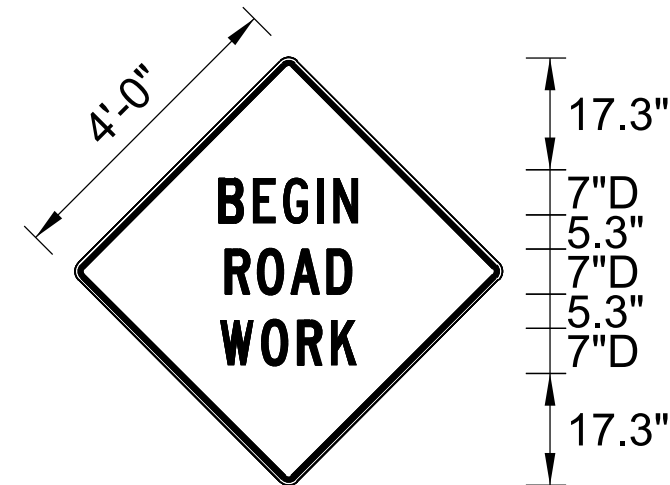
WIDTH: 0.75"

RADII: 1.38"

NO. Z BARS: N/A

LENGTH: N/A

MAT'L: 0.125" (3.2 mm) ALUMINUM



BORDER

R=1.38"

TH=0.75"

IN=0.59"

Spacing Factor is 1 unless specified otherwise

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

### LETTER POSITIONS

Letter spacings are to start of next letter

Series/Size  
Text Length

Letter spacings are to start of next letter																	Series/Size Text Length	
		B	E	G	I	N												D 2000
	20.5	6	5.4	6.3	2.8	4.8	20.5											25.2
		R	O	A	D													D 2000
	21.4	5.8	5.9	7	4.8	21.4												23.5
		W	O	R	K													D 2000
	20.9	7.1	6.5	5.9	4.9	20.9												24.5



**SIGN NUMBER:** SP13106      **BACKG COLOR:** Fluorescent Orange  
**TYPE:** STATIONARY      **COPY COLOR:** Black  
**QUANTITY:** SEE PLANS

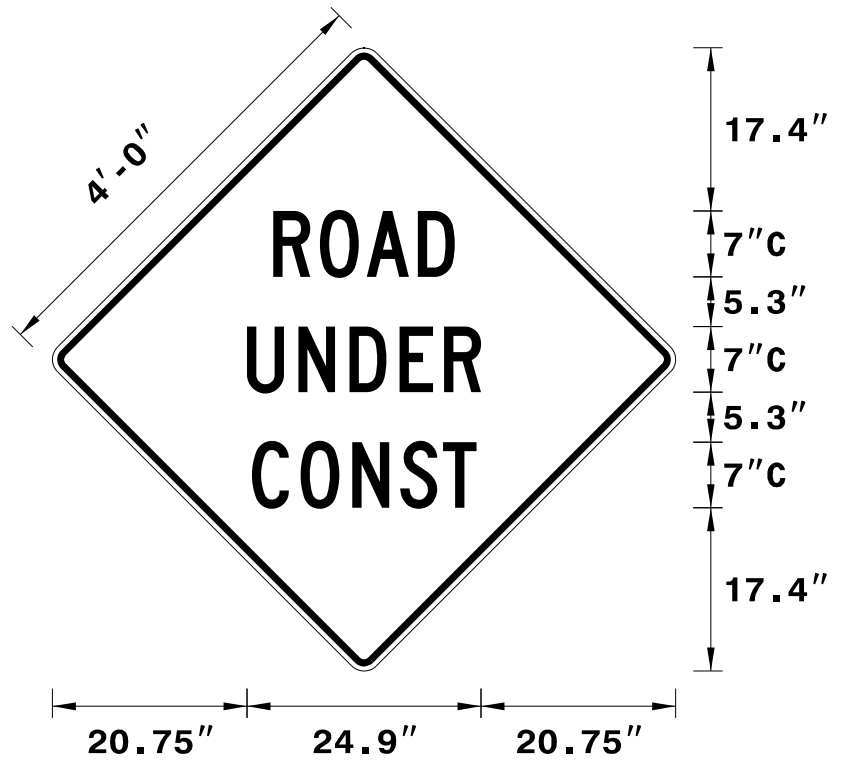
SYMBOL	X	Y	WID	HT

**SIGN WIDTH:** 4'-0"  
**HEIGHT:** 4'-0"  
**TOTAL AREA:** 16.00 Sq.Ft.

**BORDER TYPE:** INSET  
**RECESS:** 0.75"  
**WIDTH:** 1.25"  
**RADII:** 3"

**NO. Z BARS:**      **MAT'L:** 0.080" (2.0 mm) ALUMINUM  
**LENGTH:**

**DESIGN BY:** B. RASHID      **CHECKED BY:** AIA  
**PROJECT ID:**      **DIV:**      **DATE:** Apr 26, 2013



Spacing Factor is 1 unless specified otherwise

**USE NOTES:** 1,2

- Legend and border shall be direct applied black non-reflective sheeting.
- Background shall be NC GRADE B fluoesent orange retroreflective sheeting.

**LETTER POSITIONS**

Letter spacings are to start of next letter																				Series/Size Text Length	
		R	O	A	D																C 2000
	23.5	5	5	5.5	3.9	23.5															19.3
		U	N	D	E	R															C 2000
	20.7	5.5	5.5	5.3	4.8	3.9	20.7														24.9
		C	O	N	S	T															C 2000
	21.2	5.2	5.5	5.1	4.6	3.6	21.2														23.9

**SIGN NUMBER:** SP13107      **BACKG COLOR:** Fluorescent Orange  
**TYPE:** STATIONARY      **COPY COLOR:** Black  
**QUANTITY:** SEE PLANS

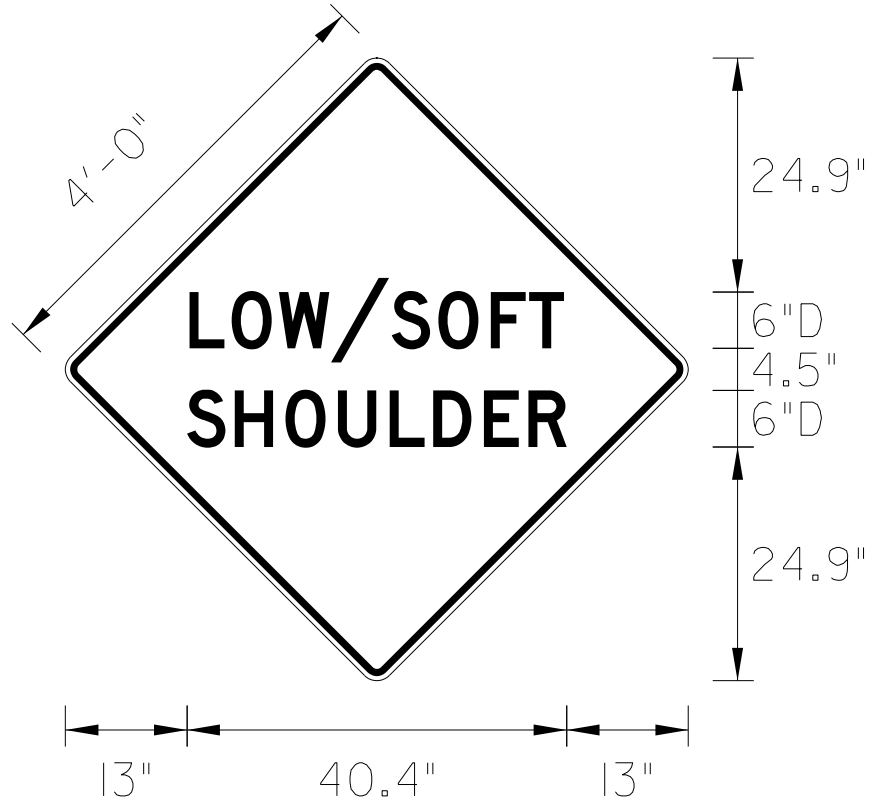
SYMBOL	X	Y	WID	HT

**SIGN WIDTH:** 4'-0"  
**HEIGHT:** 4'-0"  
**TOTAL AREA:** 16.00 Sq.Ft.

**BORDER TYPE:** INSET  
**RECESS:** 0.75"  
**WIDTH:** 1.25"  
**RADII:** 3"

**NO. Z BARS:**      **MAT'L:** 0.080" (2.0 mm) ALUMINUM  
**LENGTH:**

**DESIGN BY:** B. RASHID      **CHECKED BY:** AIA      **DATE:** Apr 26, 2013  
**PROJECT ID:**      **DIV:**



Spacing Factor is 1 unless specified otherwise

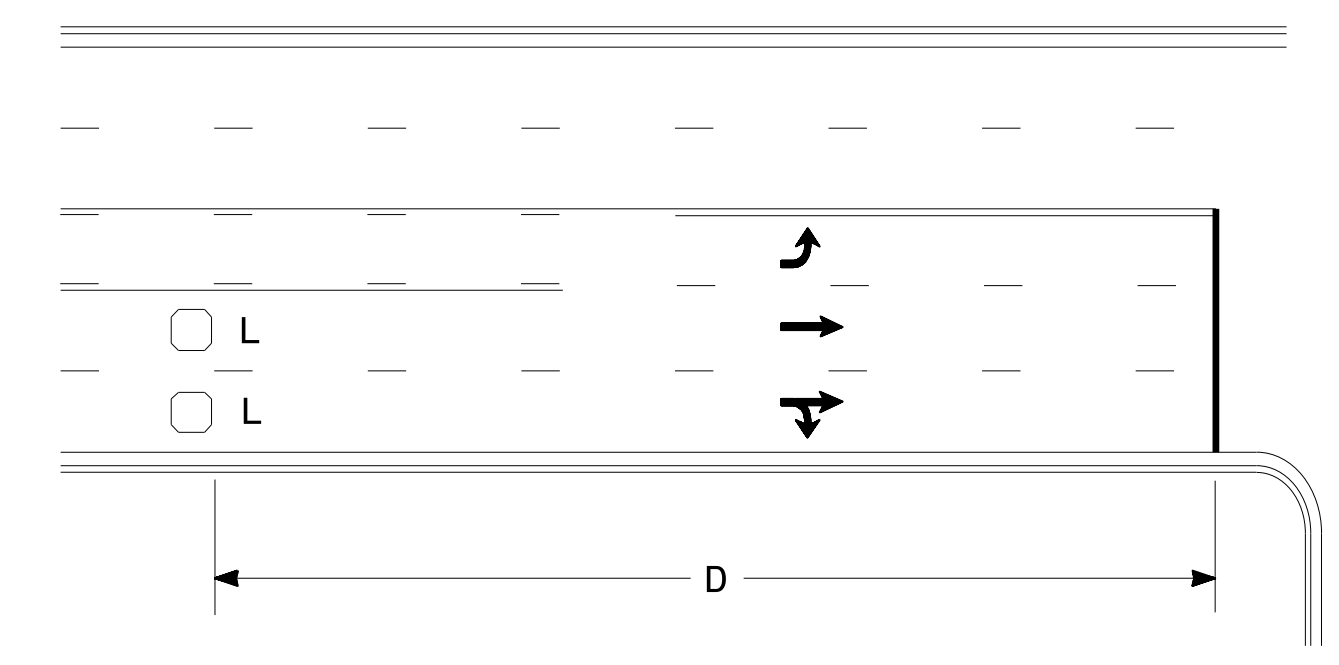
**USE NOTES: 1,2**

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluoesent orange retroreflective sheeting.

**LETTER POSITIONS**

Letter spacings are to start of next letter											Series/Size Text Length	
	L	O	W	/	S	O	F	T				D 2000
13.2	4.5	5	5.5	6.5	5	5.6	4.1	3.7	13.2			39.9
	S	H	O	U	L	D	E	R				D 2000
13	5.1	5.4	5.6	5.5	4.6	5.4	4.7	4.1	13			40.4

### High Speed Detection (≥40 mph)

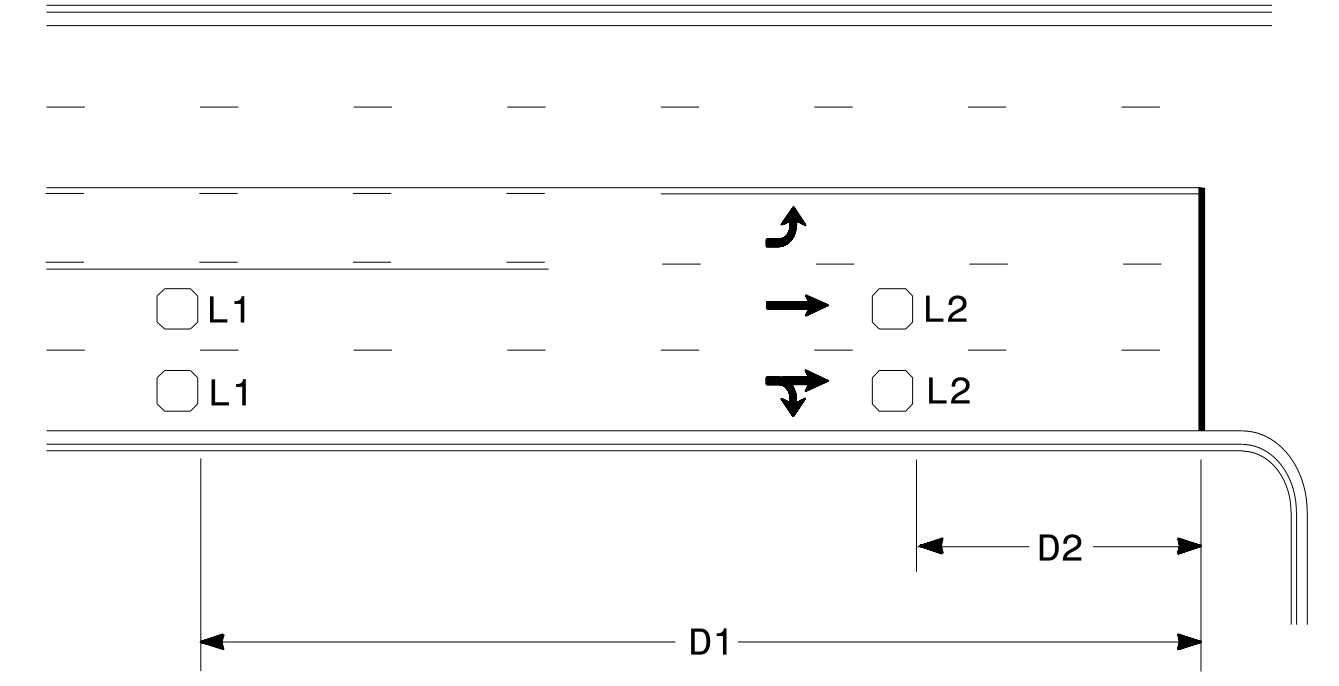


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

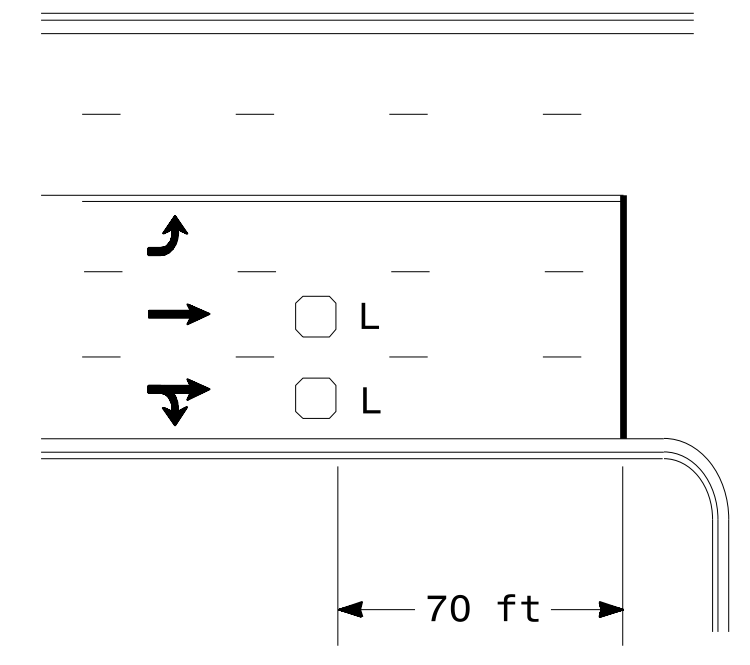


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft  
Wired in series  
L2 = 6ft X 6ft  
Wired in series

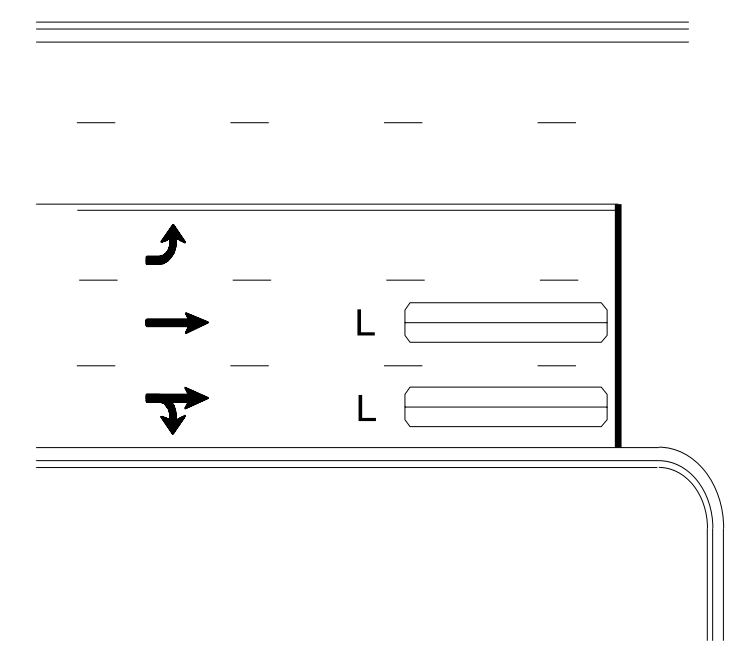
"Stretch" Operation

### Low Speed Detection (≤35 mph)



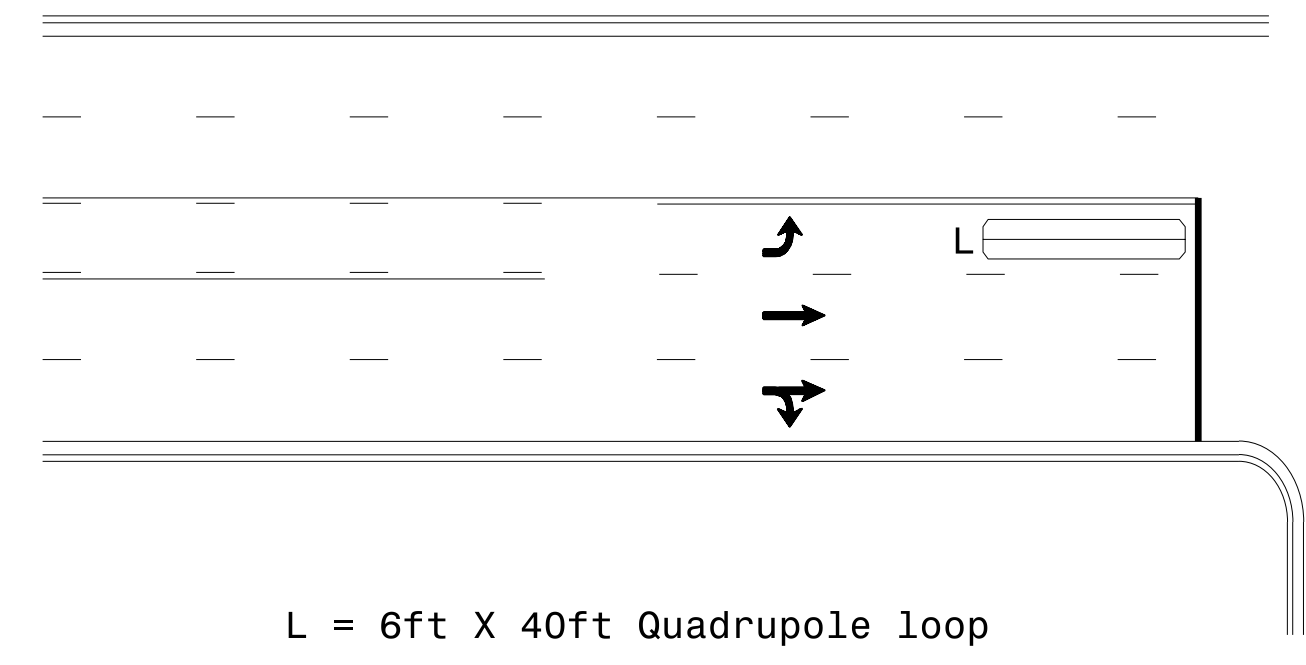
L = 6ft X 6ft  
Wired in series

OR



L = 6ft X 40ft  
Quadrupole loop, wired separately

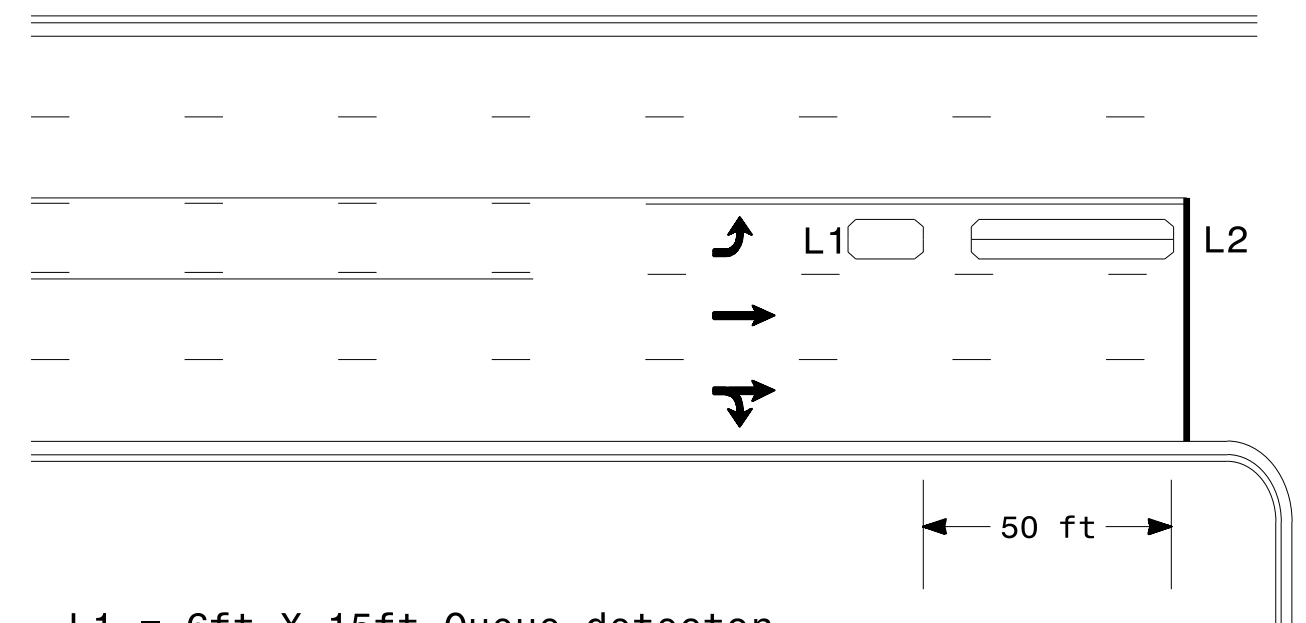
### Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

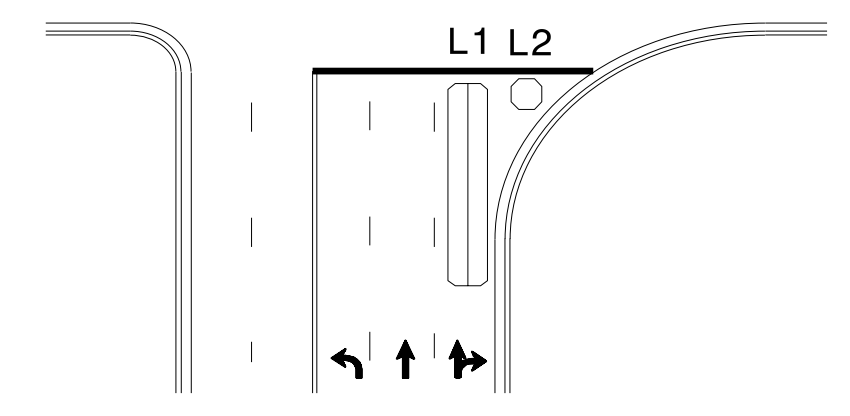
OR



L1 = 6ft X 15ft Queue detector  
L2 = 6ft X 40ft Quadrupole loop

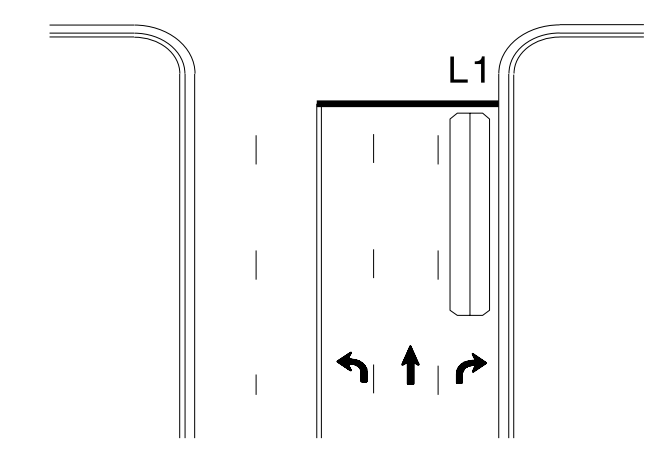
Queue Loop Detection

### Right Turn Lane Detection

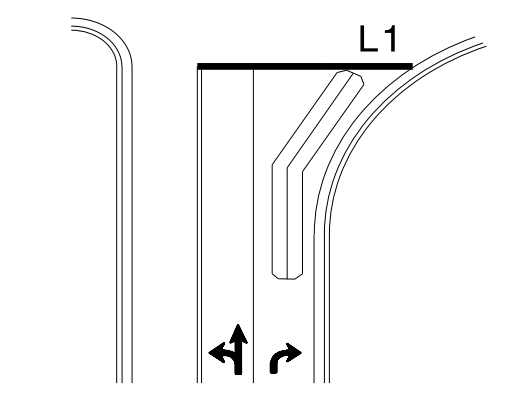


Shared Lane/  
Wide Radius Turn

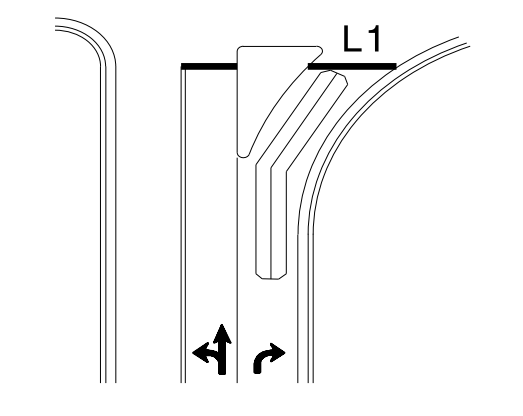
L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately



Standard Turn

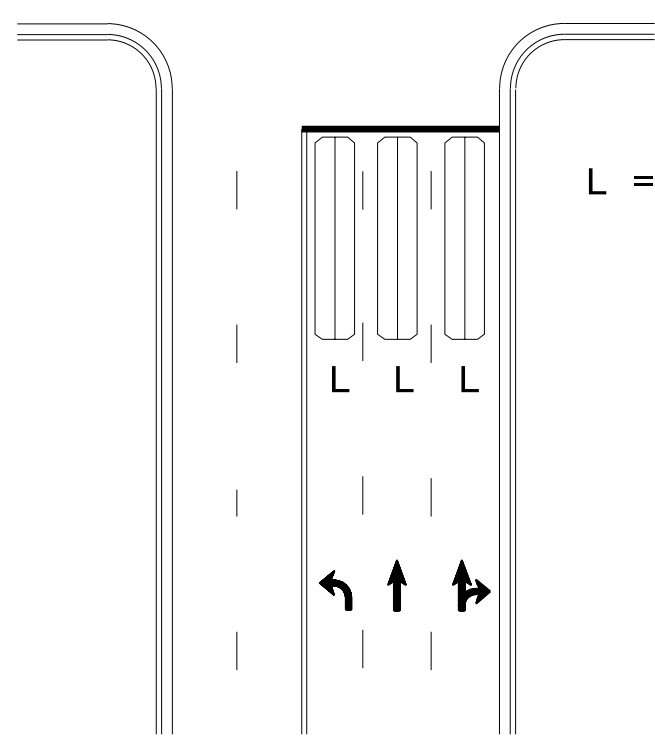


Wide Radius Turn



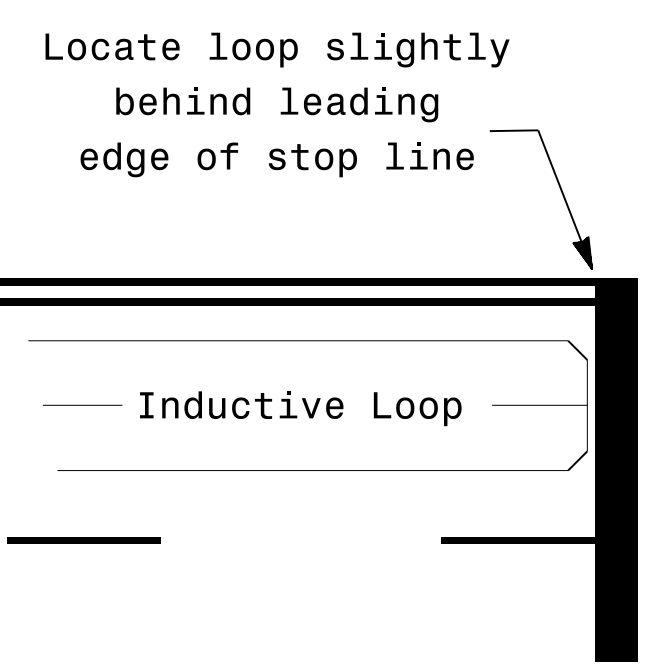
Channelized Turn

### Side Street Detection



L = 6ft X 40ft  
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 under any of the  
following conditions:
- 1) stop line is greater than 15' from edge of intersecting roadway
  - 2) loop detects a permissive or protected/permissive left turn
  - 3) for an exclusive right turn lane

### Recommended Number of Turns

Single 6' X 6' loop  
(when wired separately):

Length of Lead-in ft	Number of Turns
< 250	3
250-375	4
375-525	5
> 525	6

Quadrupole loops: Use 2-4-2 turns  
6' X 15' Loops:  
Lead-in < 150', use 2 turns  
Lead-in > 150', use 3 turns

750 N. Greenfield Pkwy, Garner, NC 27529

#### Typical Signal Loop Locations

PLAN DATE: January 2015 REVIEWED BY: JPG  
PREPARED BY: PLA REVIEWED BY:

SEAL  
NORTH CAROLINA  
PROFESSIONAL ENGINEER  
PAMELA L. ALEXANDER  
23489

SCALE: N/A

REVISIONS: \_\_\_\_\_ INIT. DATE \_\_\_\_\_

SIG. INVENTORY NO. \_\_\_\_\_ DATE \_\_\_\_\_

3D:\4146-2015\_12\319  
 S:\4146\4146115\SIGNAL\Signal Design\Section\Eastern\Region\loop\ypj\ca\2015.dgn  
 paalexander