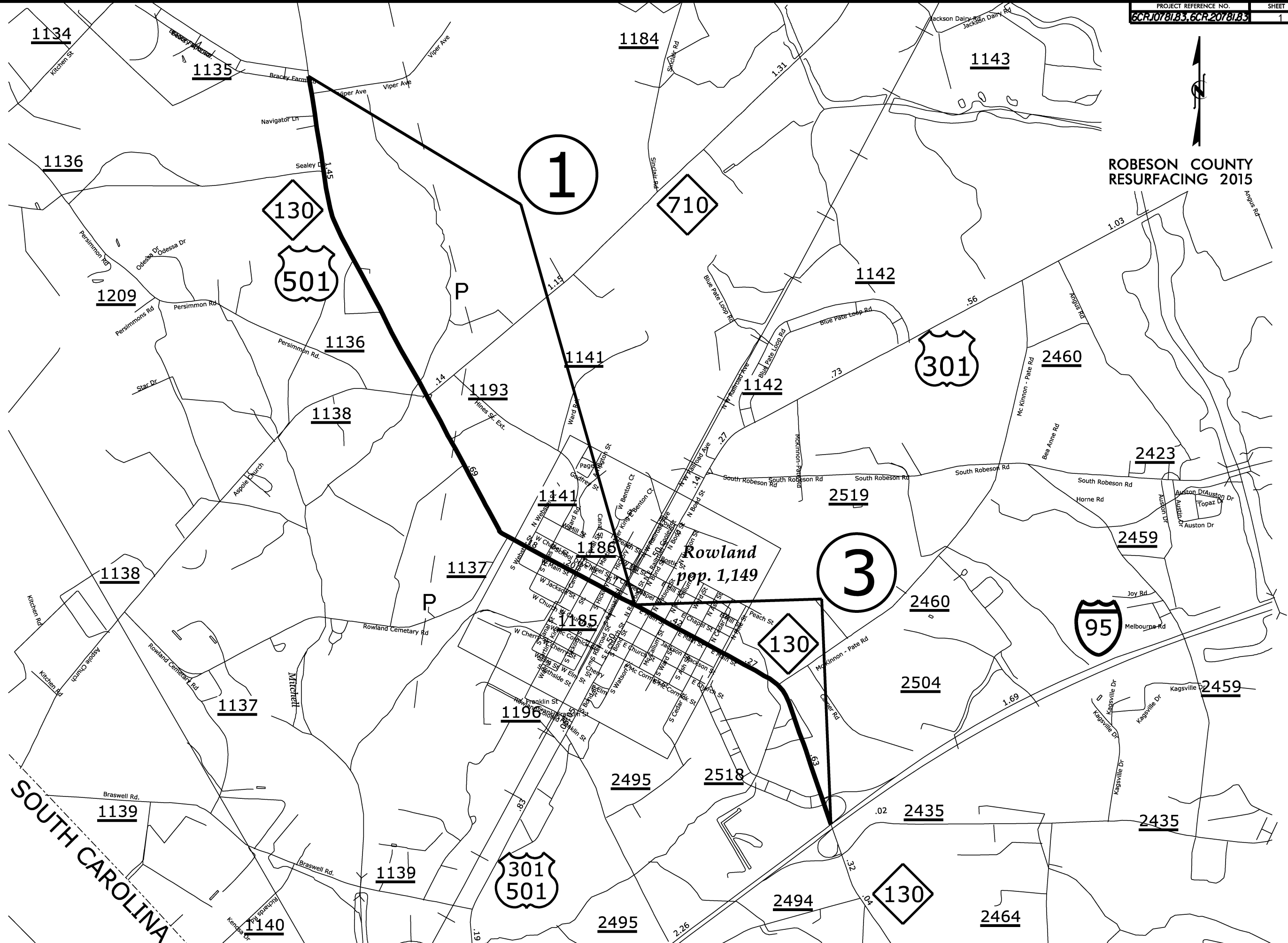


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ROBESON COUNTY RESURFACING 2015



1

3

Rowland
pop. 1,149

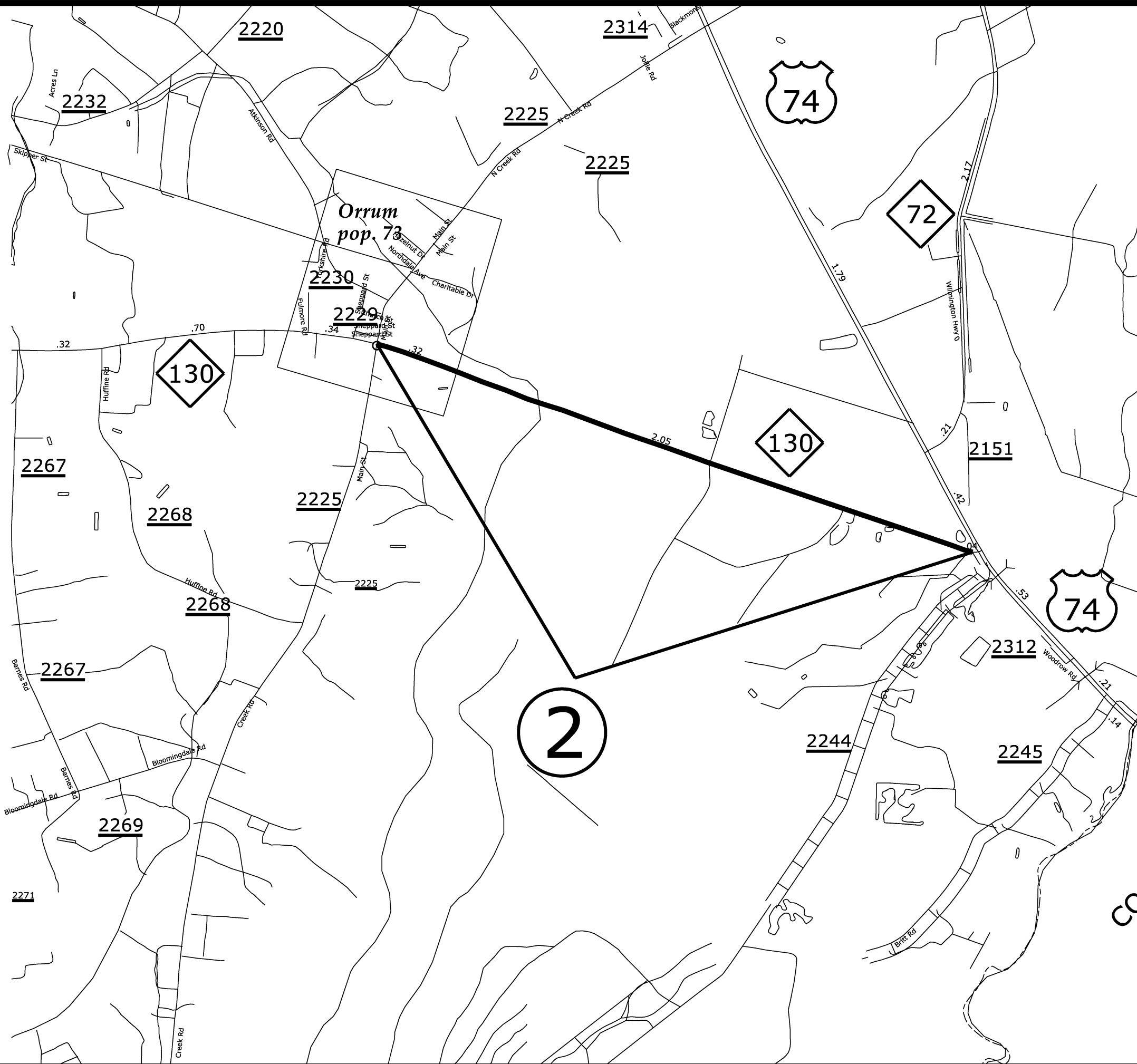
SOUTH CAROLINA

8/17/99
REVISIONS
SYTIME
DGN
SUS



ROBESON COUNTY
RESURFACING 2015

COLUMBUS COUNTY

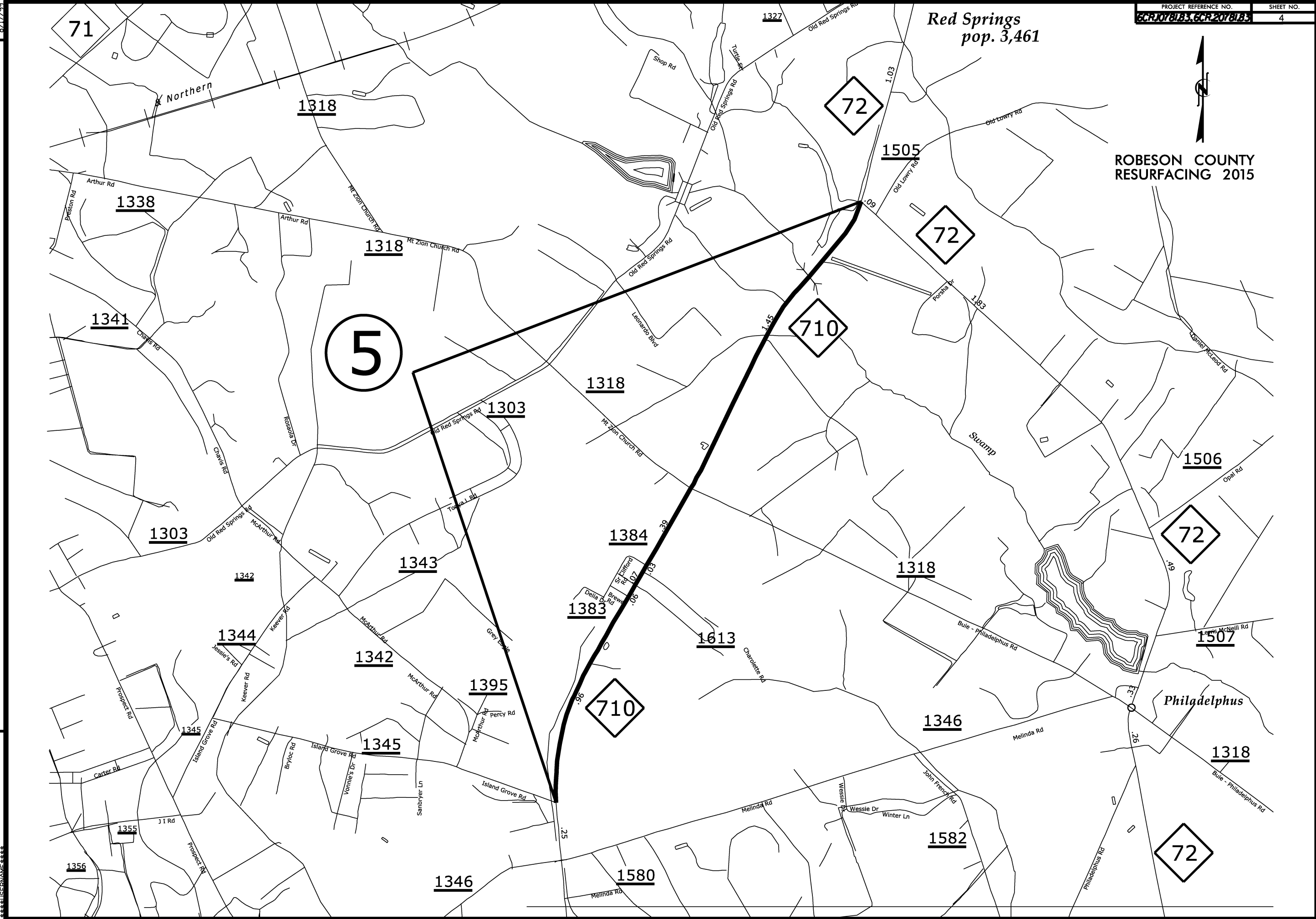


REVISIONS

8/17/99
SYSTEMS DESIGN
SERVICES

Red Springs
pop. 3,461

ROBESON COUNTY
RESURFACING 2015



REVISIONS

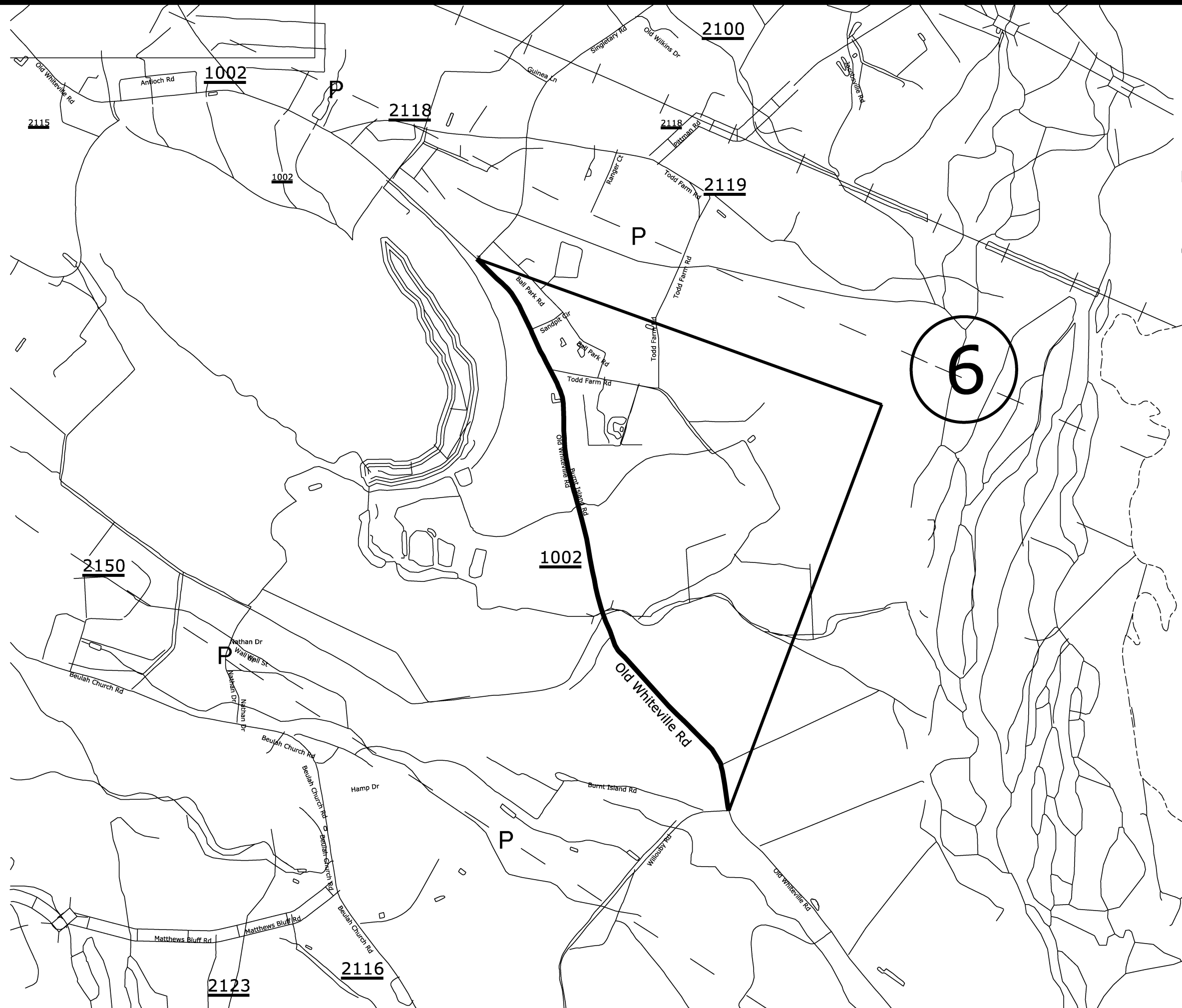
8/17/99



**ROBESON COUNTY
RESURFACING 2015**

BLADEN COUNTY

6



REVISIONS

8/17/99

SYSTEMS
CONSULTANTS
INC.

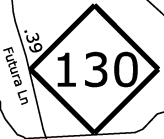
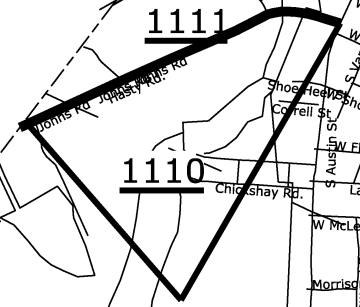
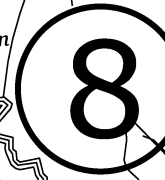
ROBESON COUNTY RESURFACING 2015



Maxton
pop. 2,537



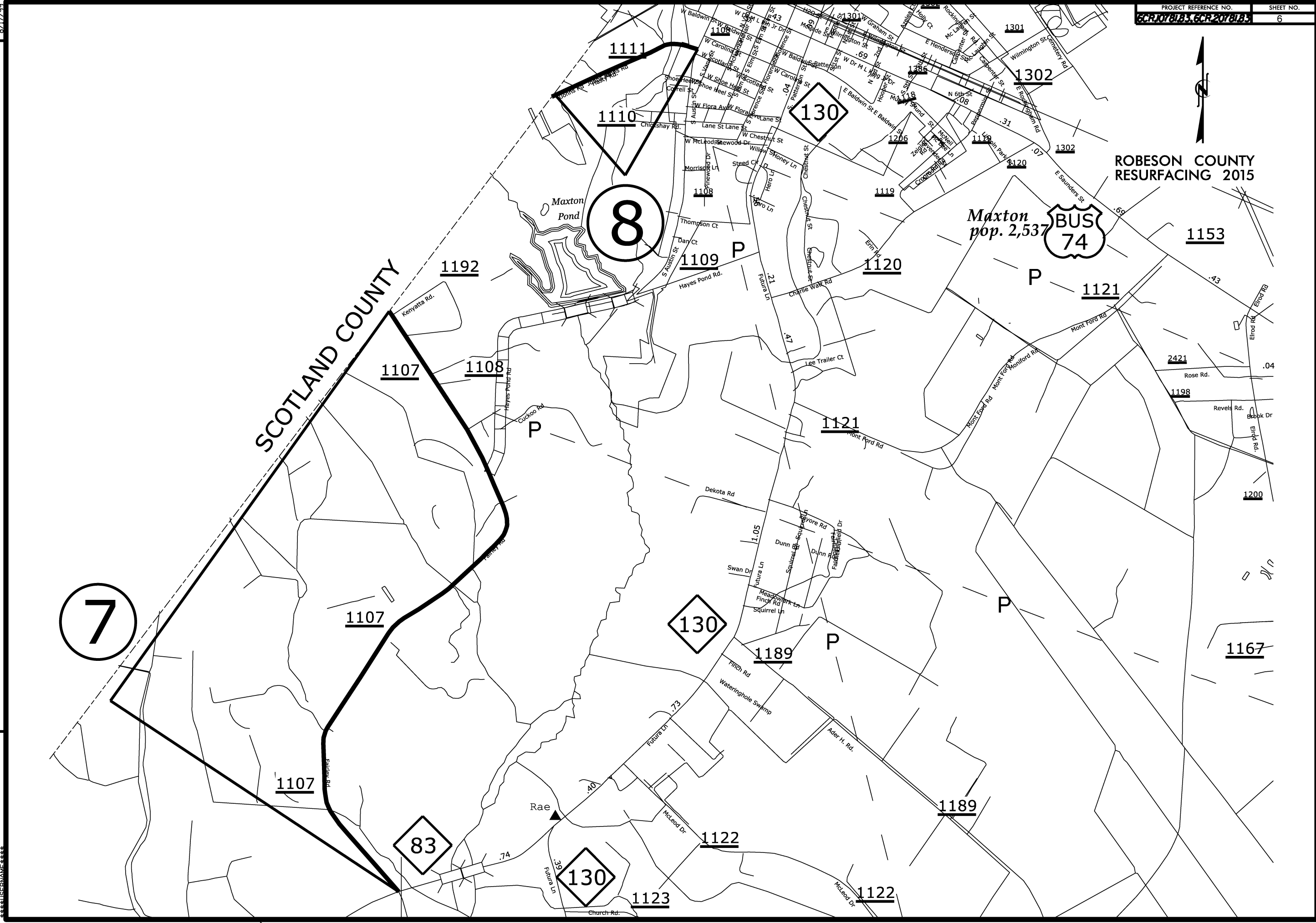
SCOTLAND COUNTY



8/17/99

REVISIONS

SYSTEMS ADDITIONS
REVISIONS
DATE





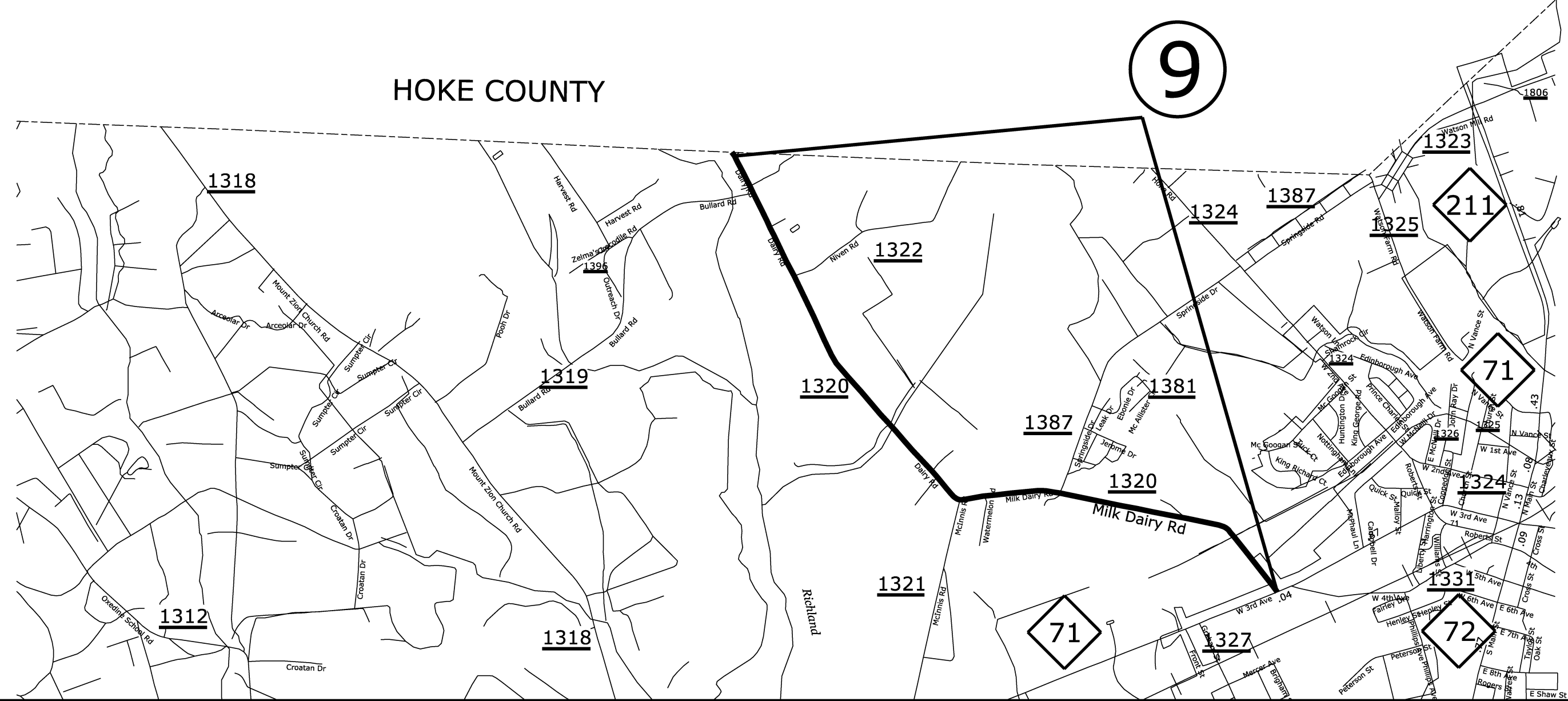
ROBESON COUNTY RESURFACING 2015

REVISIONS

8/17/99

HOKE COUNTY

9



SYSTEMS
TIME
DATE



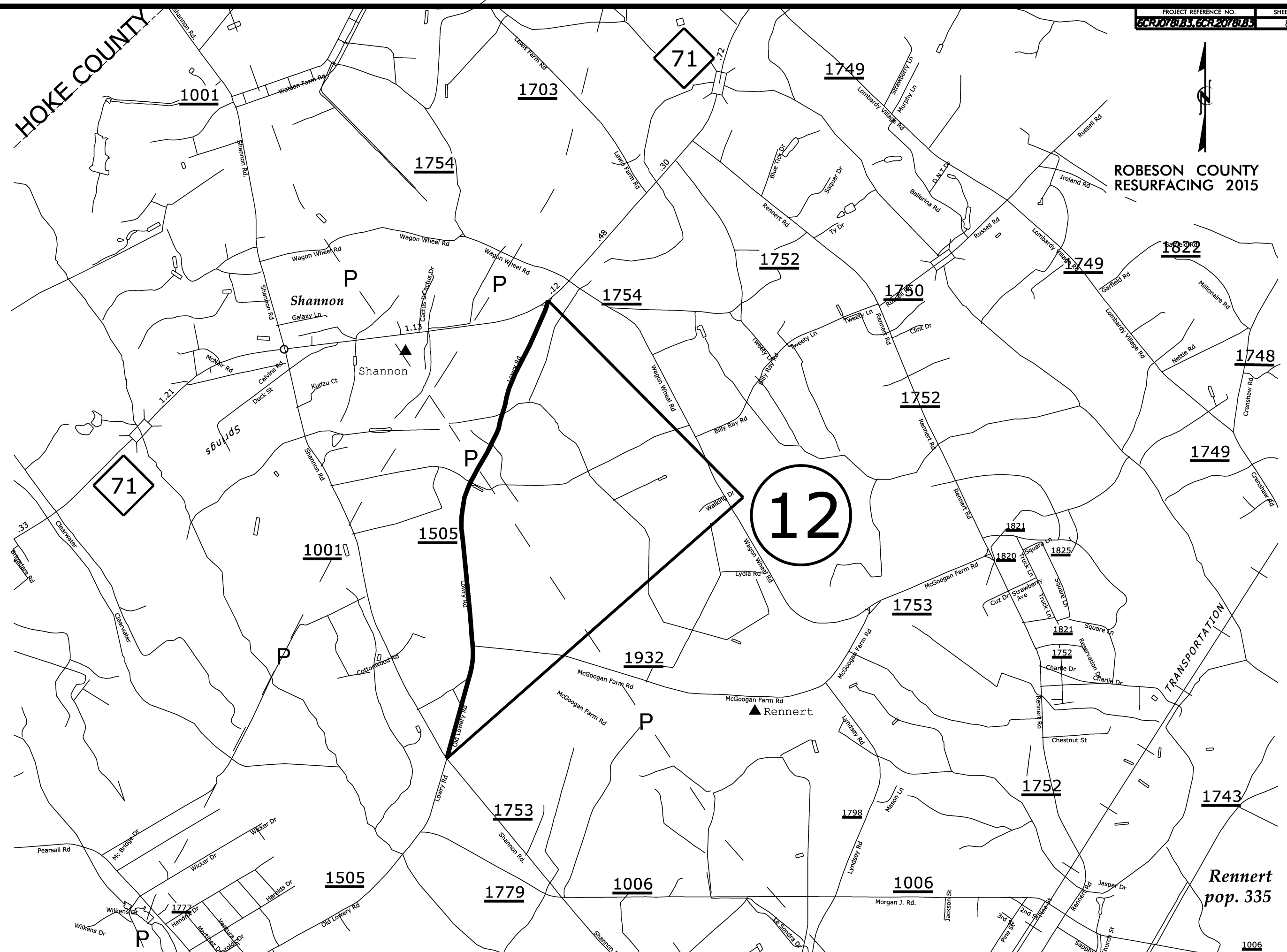
ROBESON COUNTY RESURFACING 2015

HOKE COUNTY

REVISIONS

8/17/99

***** SYSTEMS *****
***** DESIGN *****
***** DRAWING *****
***** DATE *****



Rennert
pop. 335

1006

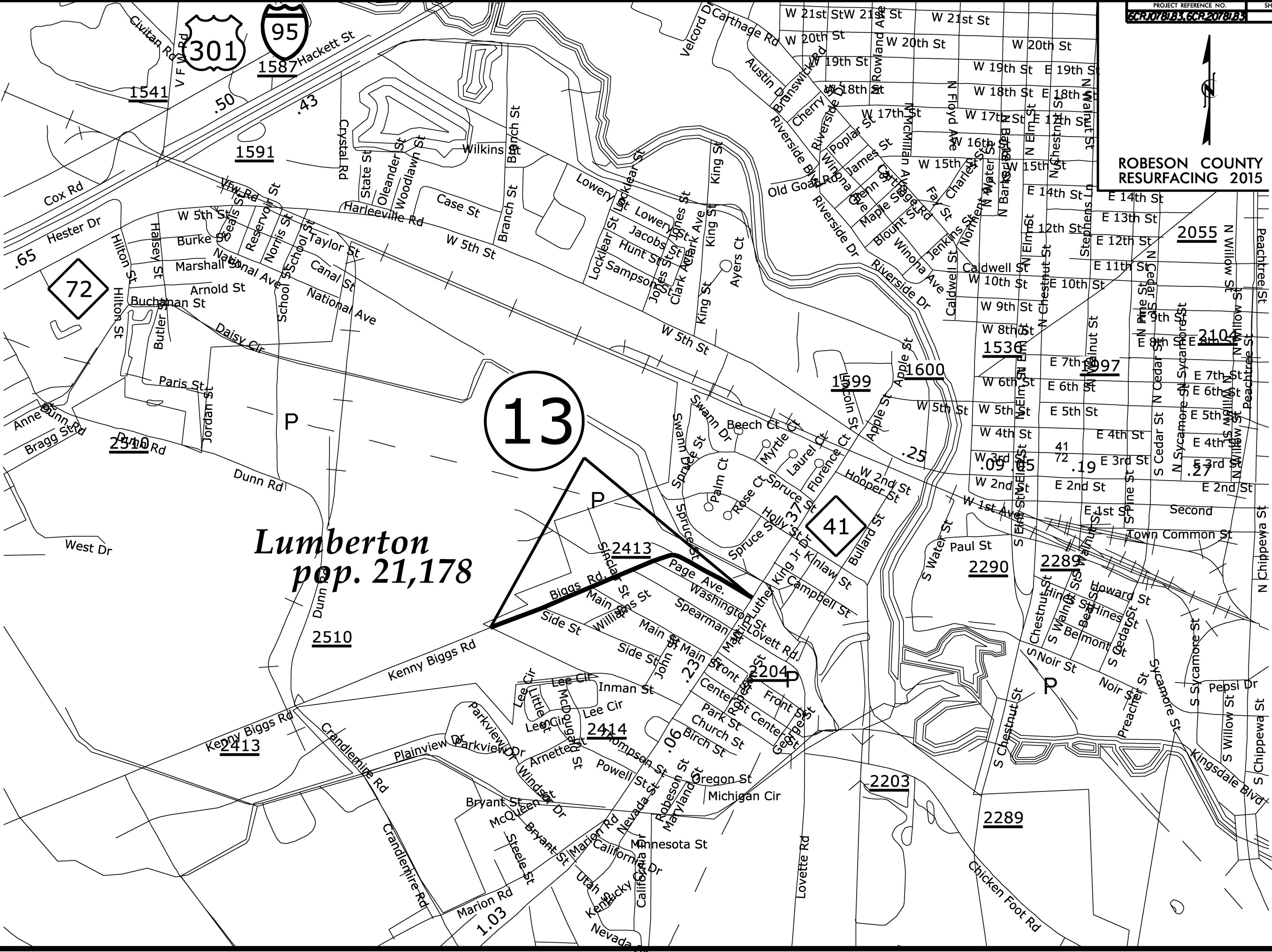
**ROBESON COUNTY
RESURFACING 2015**



13

**Lumberton
pop. 21,178**

41

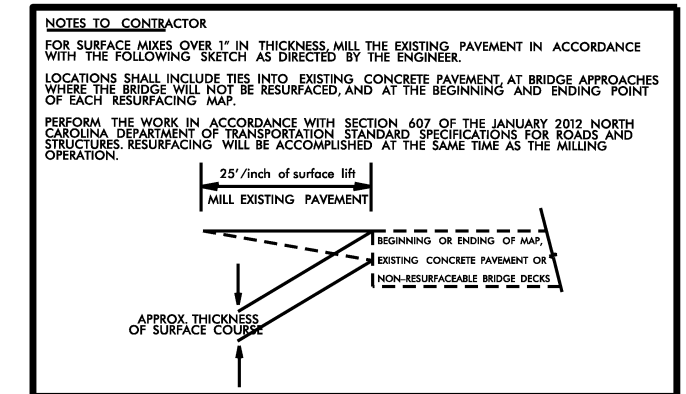
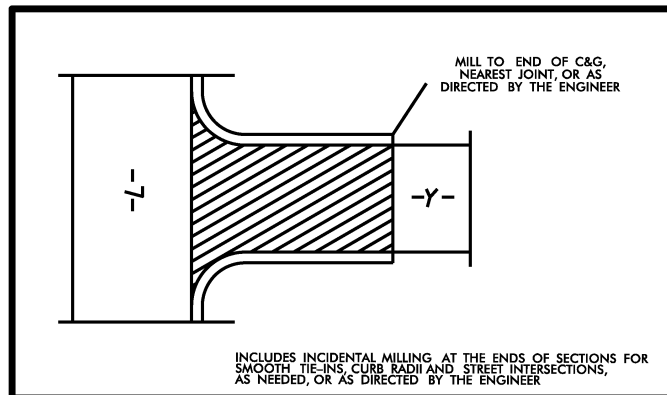
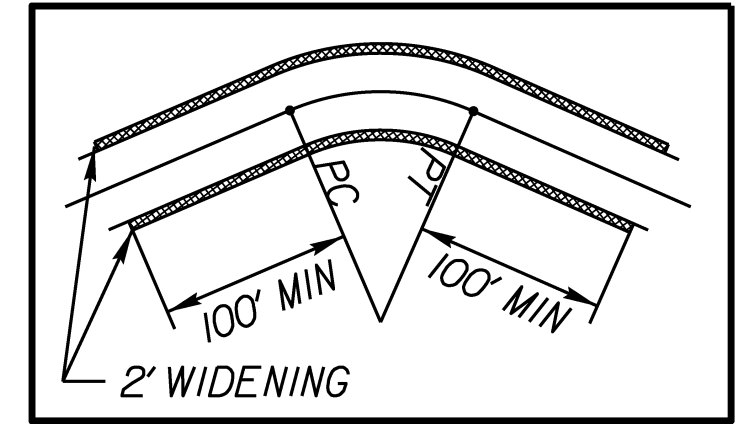
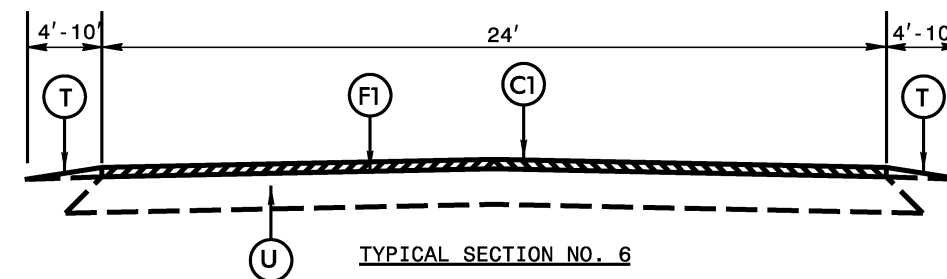
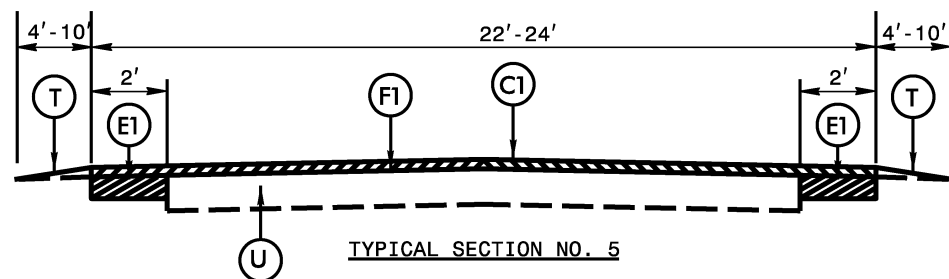
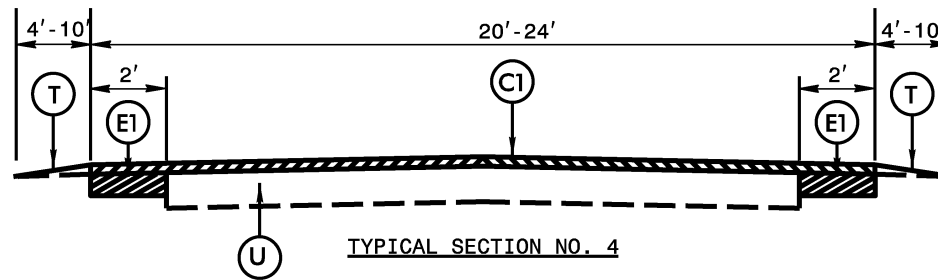
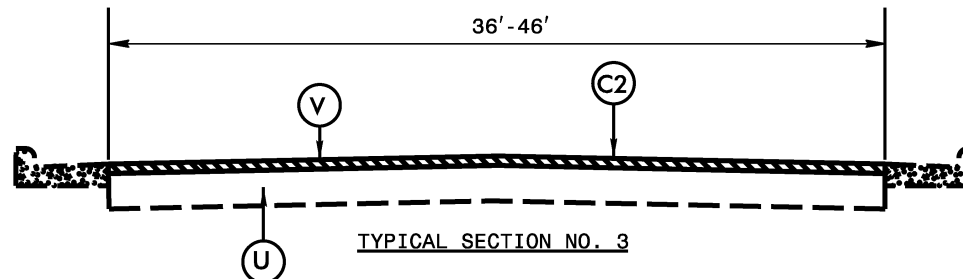
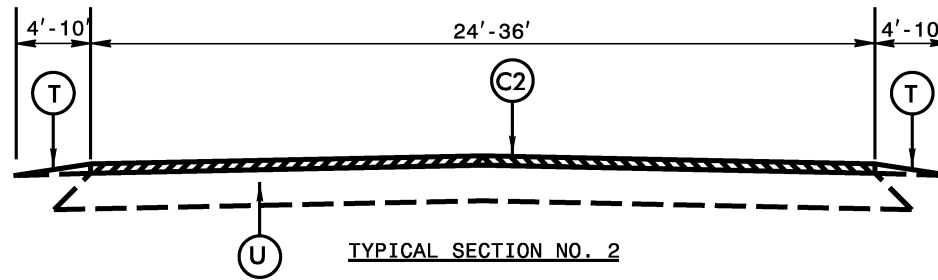
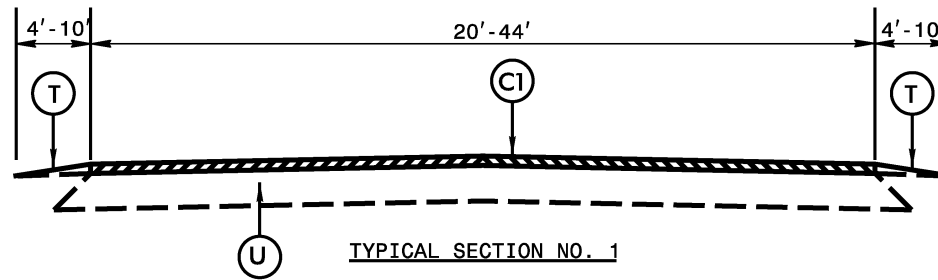


REVISIONS

8/17/99

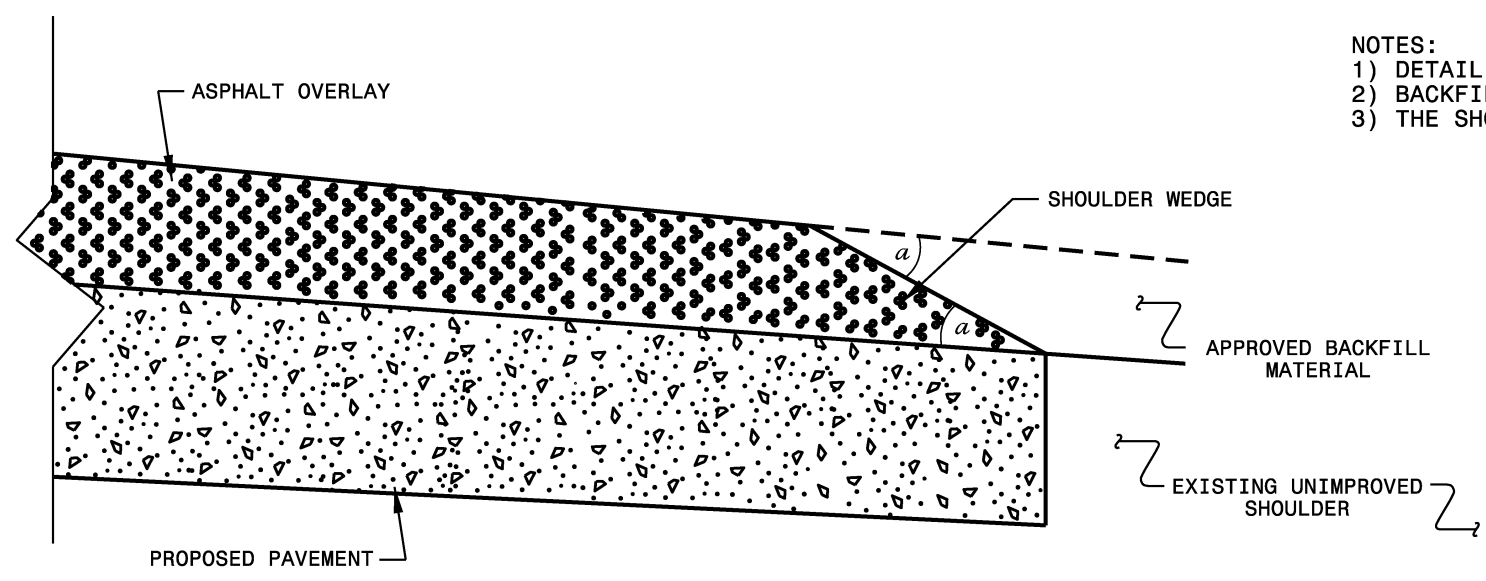
SYSTEM TIME
DATE
TIME
USER
NAME

PAVEMENT SCHEDULE	
C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
F1	#6M MAT COAT; TO BE PLACED AHEAD OF THE HOT MIX ASPHALT IN ACCORDANCE WITH THE PROVISION
T	AGGREGATE SHOULDER BORROW
U	EXISTING PAVEMENT
V	1½" MILLING

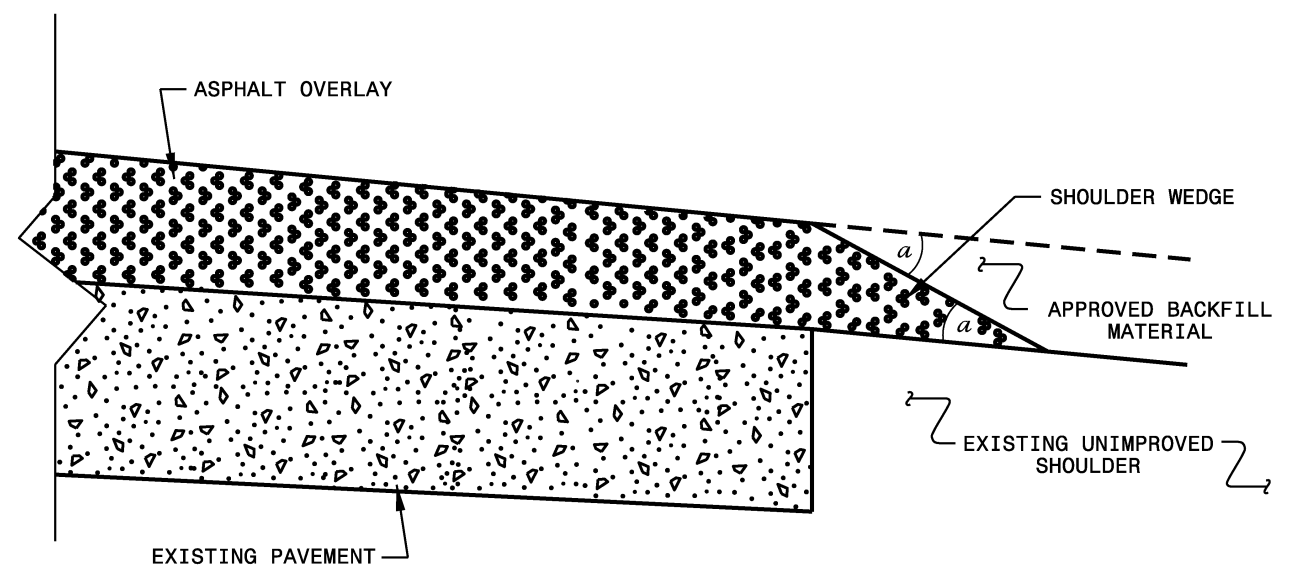


SYSTEMS
 DIVISION
 11/11/11

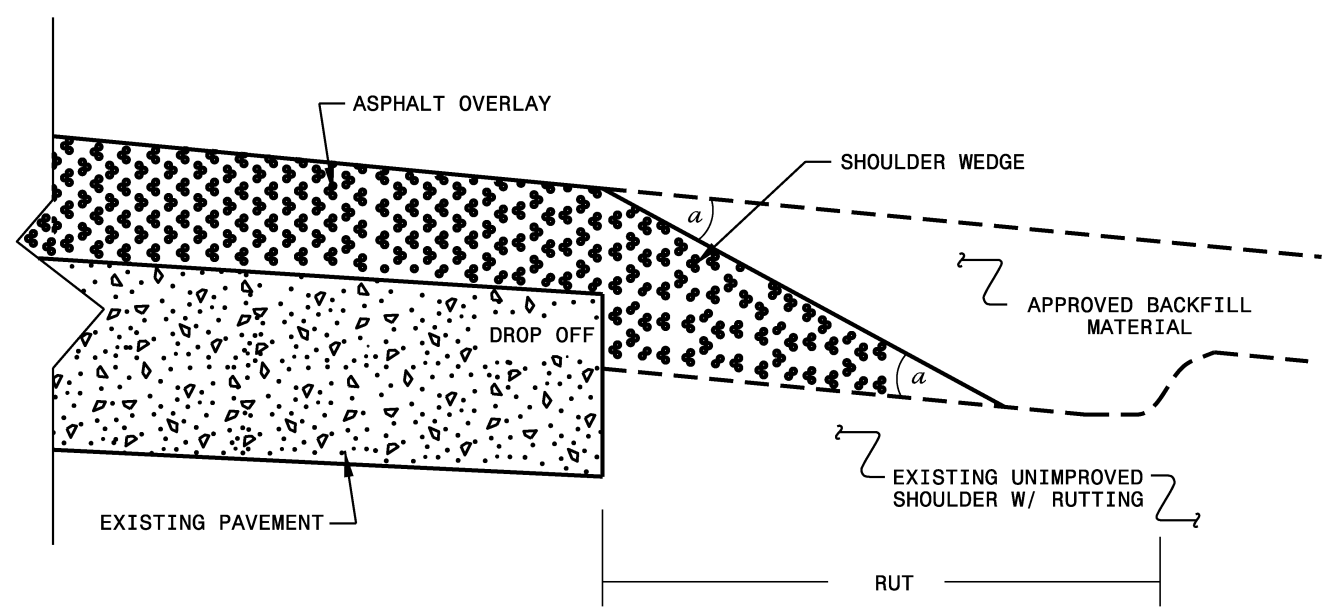
- NOTES:
 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



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°

CONTRACT STANDARDS AND DEVELOPMENT UNIT			
Office 919-707-6950		FAX 919-250-4119	
SHOULDER WEDGE DETAILS			
ORIGINAL BY: T. SPELL	DATE: 7-19-11		
MODIFIED BY:	DATE: 10/16/12		
CHECKED BY:	DATE:		
FILE SPEC.:	s:\usr\details\stand\shoulderwedgedetail.dgn		

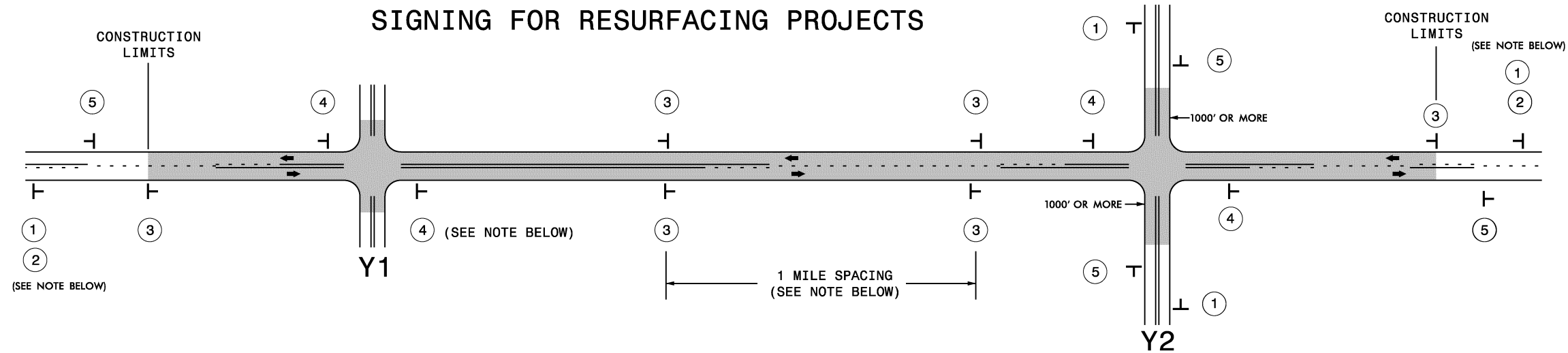
*****SYTIME*****
 *****PLANNING*****
 *****DESIGN*****
 *****CONSTRUCTION*****
 *****OPERATION*****

PROJECT NO.	SHEET NO.	TOTAL NO.
6CR.10781.83, 6CR.20781.83	12	

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	AGGREGATE SHOULDER BORROW TON	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	1/2" MILLING SY	INCIDENTAL MILLING SY	BASE COURSE, B25.0B TONS	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, SF9.5A TONS	ASPHALT BINDER FOR PLANT MIX TONS	ASPHALT SURFACE TREATMENT, MATCOAT, #6M STONE SY	EMULSION FOR ASPHALT SURFACE TREATMENT GAL	ADJ. OF MANHOLES EA	ADJ. OF METER OR VALVE BOX EA	PAVED TRENCHING (1,2") LF	UNPAVED TRENCHING (1,2") LF	JUNCTION BOX (STANDARD SIZE) EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY) EA	2" RISER WITH WEATHERHEAD EA	INDUCTIVE LOOP LF	LEAD-IN CABLE (14-2) LF	
6CR.10781.83	Robeson	1	US 501	US 301 MP 2.66 TO CANAL ST MP 2.96	3	4	MU	NO	NO	0.3	46				8,096			741		44			6	3	10	100	1	1	1	320	100	
		"	"	CANAL ST MP 2.96 TO SR 1141 MP 3.09	3	4	MU	NO	NO	0.13	36				3,046			266		16			2	1								
		"	"	SR 1141 MP 3.09 TO SR 1135 MP 5.41	2	2	2WU	NO	NO	2.3	26	744	23	4.60		150		3,001		180			2									
TOTAL FOR MAP NO. 1										2.73		744	23	4.60	11,142	150		4,008		240			10	4	10	100	1	1	1	320	100	
6CR.10781.83	Robeson	2	NC 130	US 74 MP 0.88 TO SR 2225 MP 3.28	2	2	2WU	NO	NO	2.4	24	776	24	4.80		300		2,853		171												
TOTAL FOR MAP NO. 2										2.4		776	24	4.80	300		2,853		171													
6CR.10781.83	Robeson	3	NC 130	CJ W OF I-95 MP 21.45 TO SR 2518 MP 22.23	2	2	2WU	NO	NO	0.78	24	252	8	1.56		150		962		58			1		10	100	1	1	1	320	100	
		"	"	SR 2518 MP 22.23 TO US 501 MP 22.65	3	3	MU	NO	NO	0.42	44				10,842	150		1,038		62			6	6								
TOTAL FOR MAP NO. 3										1.2		252	8	1.56	10,842	150		2,000		120			7	6	10	100	1	1	1	320	100	
6CR.10781.83	Robeson	4	NC 710	NC 711 MP 10.77 TO SR 1340 13.37	2	2	2WU	NO	NO	2.6	24	841	26	5.20		300		3,154		189												
TOTAL FOR MAP NO. 4										2.6		841	26	5.20	300		3,154		189													
6CR.10781.83	Robeson	5	NC 710	SR 1345 MP 15.7 TO NC 72 MP 18.6	2	2	2WU	NO	NO	2.9	24	938	29	5.80		300		3,486		209												
TOTAL FOR MAP NO. 5										2.9		938	29	5.80	300		3,486		209													
TOTAL FOR PROJ NO. 6CR.10781.83										11.83		3,551	110	21.96	21,984	1,350		15,501		929			17	10	20	200	2	2	2	640	200	
6CR.20781.83	Robeson	6	SR 1002	SR 2100 MP 6.2 TO SR 2121 MP 8.6	1	2	2WU	NO	NO	2.4	22	776	24	4.80				2,570		172												
TOTAL FOR MAP NO. 6										2.4		776	24	4.80				2,570		172												
6CR.20781.83	Robeson	7	SR 1107	SCOTLAND CL MP 0.0 TO NC 83 MP 3.09	1	2	2WU	NO	NO	3.09	22	999	31	6.18				3,430		230												
		"	"	NC 83 MP 3.09 TO US 301 MP 4.74	4	2	2WU	NO	NO	1.65	24	534	17	3.30			1,353		1,927		189											
TOTAL FOR MAP NO. 7										4.74		1,533	48	9.48			1,353		5,357		419											
6CR.20781.83	Robeson	8	SR 1111	SCOTLAND CL MP 0.0 TO WCL MAXTON MP 0.49	1	2	2WU	NO	NO	0.49	20	158	5	0.98				477		32												
		"	"	WCL MAXTON MP 0.49 TO SR 1108 MP 0.69	1	2	2WU	NO	NO	0.2	24	65	2	0.40				234		16												
TOTAL FOR MAP NO. 8										0.69		223	7	1.38				711		48												
6CR.20781.83	Robeson	9	SR 1320	HOKE CL MP 0.0 TO NC 71 MP 2.67	5	2	2WU	NO	NO	2.67	22	841	26	5.34			2,189		2,859		288		34,461	15,037								
TOTAL FOR MAP NO. 9										2.67		841	26	5.34			2,189		2,859		288		34,461	15,037								
6CR.20781.83	Robeson	10	SR 1340 CURVE WIDENING	NC 710 MP 4.54 TO BEG C&C MP 6.62	4	2	2WU	NO	NO	2.08	24	673	21	4.16			1,059		2,561		218											
TOTAL FOR MAP NO. 10										2.08		673	21	4.16			1,059		2,561		218											
6CR.20781.83	Robeson	11	SR 1373	US 74 MP 0.0 TO NC 710 MP 1.53	6	2	2WU	NO	NO	1.53	24	495	15	3.06				1,787		120												
TOTAL FOR MAP NO. 11										1.53		495	15	3.06				1,787		120												
6CR.20781.83	Robeson	12	SR 1505	SR 1001MP 0.0 TO NC 71 MP 2.02	4	2	MU	NO	NO	2.02	24	653	20	4.00			1,656		2,359		231											
TOTAL FOR MAP NO. 12										2.02		653	20	4.00			1,656		2,359		231											
6CR.20781.83	Robeson	13	SR 2413	LUMBERTON CL MP 3.05 TO NC 41 MP 3.61	1	2	2WU	NO	NO	0.56	24	181	6	1.10				491		33					10	100	1	1	1	175	100	
TOTAL FOR MAP NO. 13										0.56		181	6	1.10				491		33					10	100	1	1	1	175	100	
TOTAL FOR PROJ NO. 6CR.20781.83										16.69		5,375	167	33.32			6,257		18,695		1,529		56,003	23,654	10	100	1	1	1	175	100	
GRAND TOTAL										28.52		8,926	277	55.28	21,984	1,350		6,257	15,501	18,695	2,458	56,003	23,654	17	10	30	300	3	3	3	815	300

SIGNING FOR RESURFACING PROJECTS



LEGEND	
T	STATIONARY SIGN
←	DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

-Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION		
1	 <small>W20-1 48" X 48"</small>	<p>PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.</p> <p>#2 SIGN ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER. (NO FRACTIONAL OR DECIMAL NUMBERS)</p>
2	 <small>W7-3aP 24" X 18"</small>	
3	 <small>SP 13107 48" X 48"</small>	<p>PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER. IF NO -Y- LINES EXIST, PLACE 2ND SET 1/2 MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.</p>
4	 <small>SP 13106 48" X 48"</small>	<p>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.</p>
5	 <small>G20-2 A 48" X 24"</small>	<p>PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.</p>

NO REQUIRED STATIONARY SIGNING 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, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.



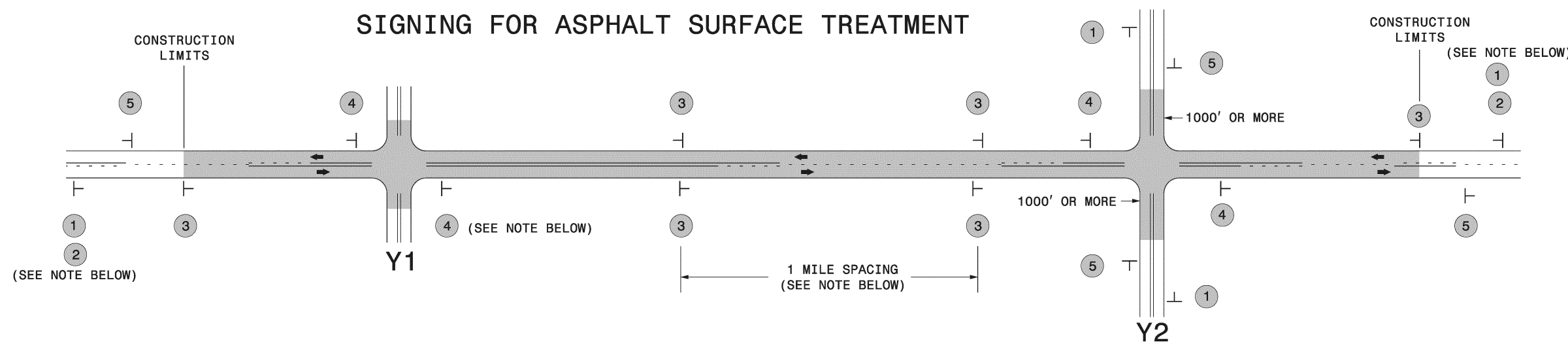
PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.

8/8/2013 S:\TMD\WZTC\Resurfacing\2013\Documents\New_Procedures\05_09_2013\Resurfacing_AdvWarn_2Ln.dgn User:rmarrrett



**RESURFACING
ADVANCE WARNING SIGNS
FOR
RURAL AND SUBURBAN
2 LANE ROADWAYS**

SIGNING FOR ASPHALT SURFACE TREATMENT

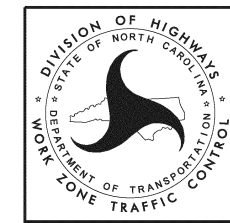


LEGEND	
	STATIONARY SIGN
←	DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

-Y- LINE SIGNING

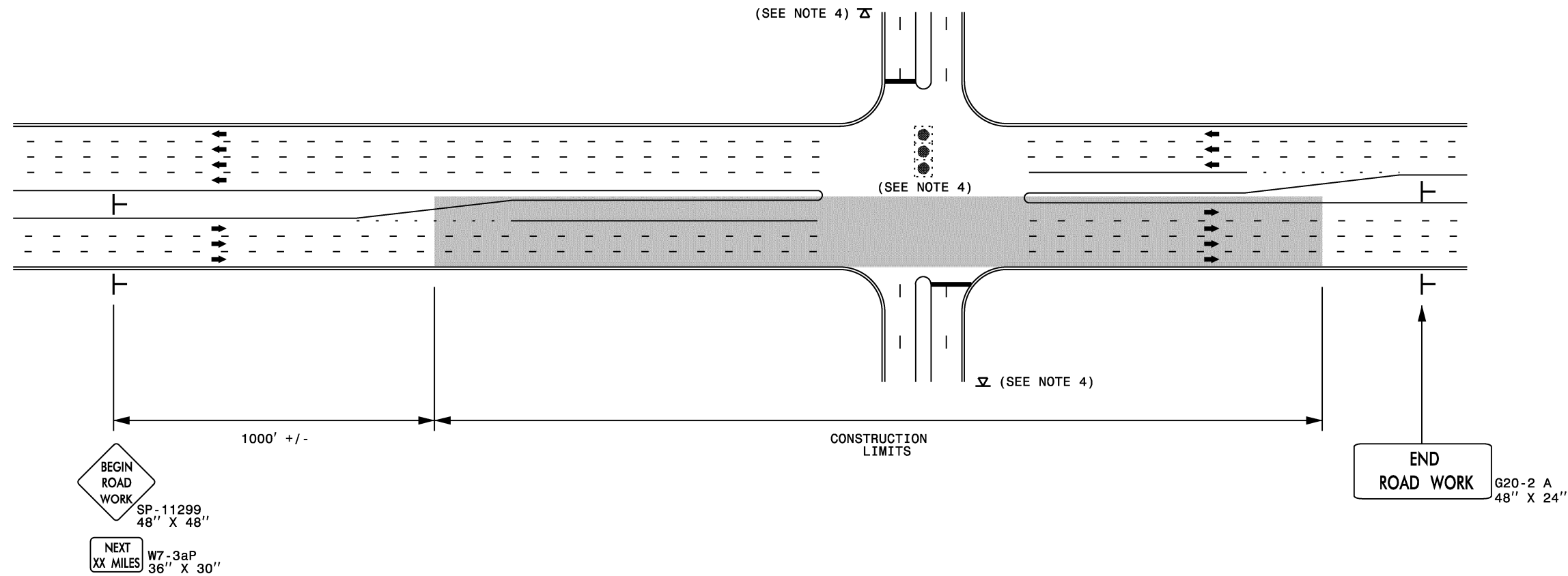
SIGNING NOTES AND PLACEMENT PER DIRECTION	1	 <small>W20-1 48" X 48"</small>	PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	<p style="text-align: center;">NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</p> <p>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE 2) SUBDIVISION ROADS 3) DEAD END ROADS</p> <p>WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, ADVANCE WARNING PORTABLE 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; align-items: center;"> <div style="text-align: center;"> <small>W20-1 48" X 48"</small> </div> <div style="text-align: center;"> <small>W20-7 A 48" X 48"</small> </div> </div> <p style="text-align: center;">PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.</p>
	2	 <small>W7-3aP 24" X 18"</small>	#2 SIGN ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO NEXT WHOLE NUMBER. (NO FRACTIONAL OR DECIMAL NUMBERS)	
	3	 <small>W8-7 48" X 48"</small> <small>SP 48" X 48"</small>	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. IF NO -Y- LINES EXIST, PLACE 2ND SET 1/2 MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.	
	4	 <small>SP 13106 48" X 48"</small>	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	 <small>G20-2 A 48" X 24"</small>	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.	



**ADVANCE WARNING SIGNS
FOR
ASPHALT SURFACE TREATMENTS
2 LANE ROADWAYS**

12/22/2014 S:\YU\WZ\TC\Apps\WorkZoneGenerator\ExternalWebPage\Desires\Resurfacing\Resurfacing_AdvWarn_2Ln - AST.dgn User:mgarrrett

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.

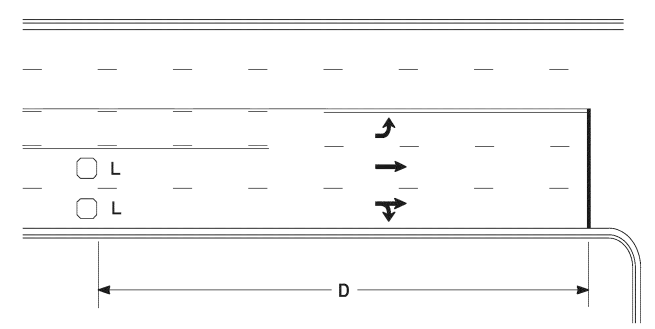
LEGEND

- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW



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

High Speed Detection (≥40 mph)

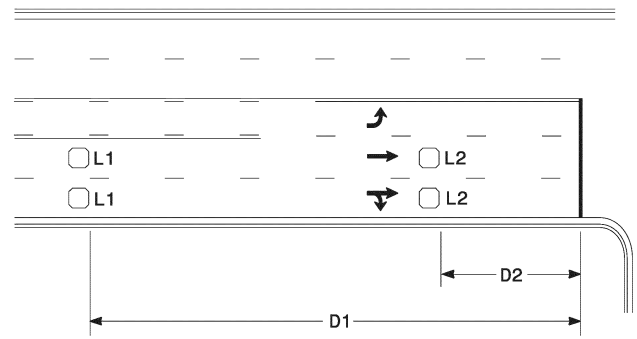


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

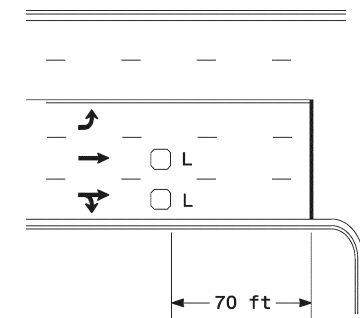


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

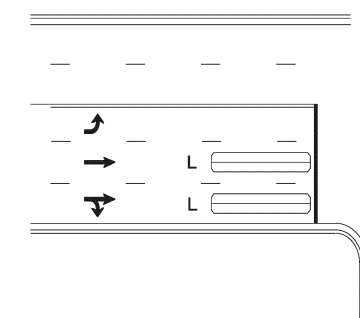
"Stretch" Operation

Low Speed Detection (≤35 mph)



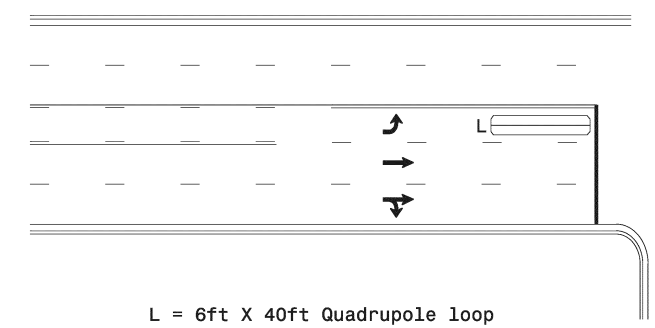
L = 6ft X 6ft
Wired in series

OR



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

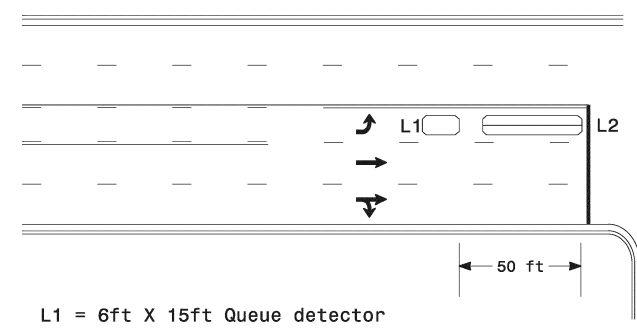
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

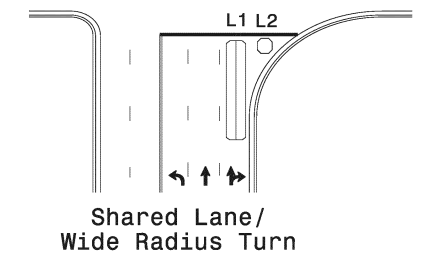
OR



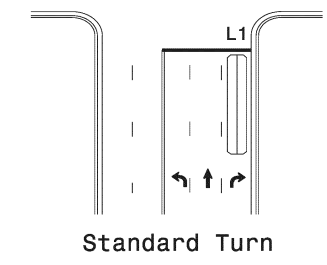
L1 = 6ft X 15ft Queue detector
L2 = 6ft X 40ft Quadrupole loop

Queue Loop Detection

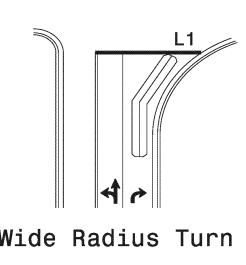
Right Turn Lane Detection



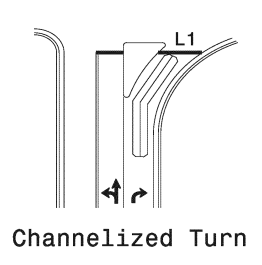
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

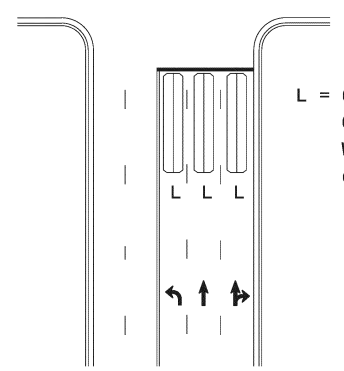


Wide Radius Turn



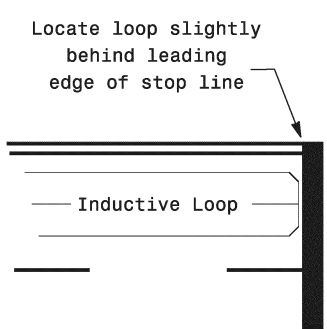
Channelized Turn

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

	Typical Signal Loop Locations		
	PLAN DATE: January 2015 PREPARED BY: PLA	REVIEWED BY: JPG REVIEWED BY:	
750 N. Greenfield Pkwy, Garner, NC 27529			1/30/2015 DATE