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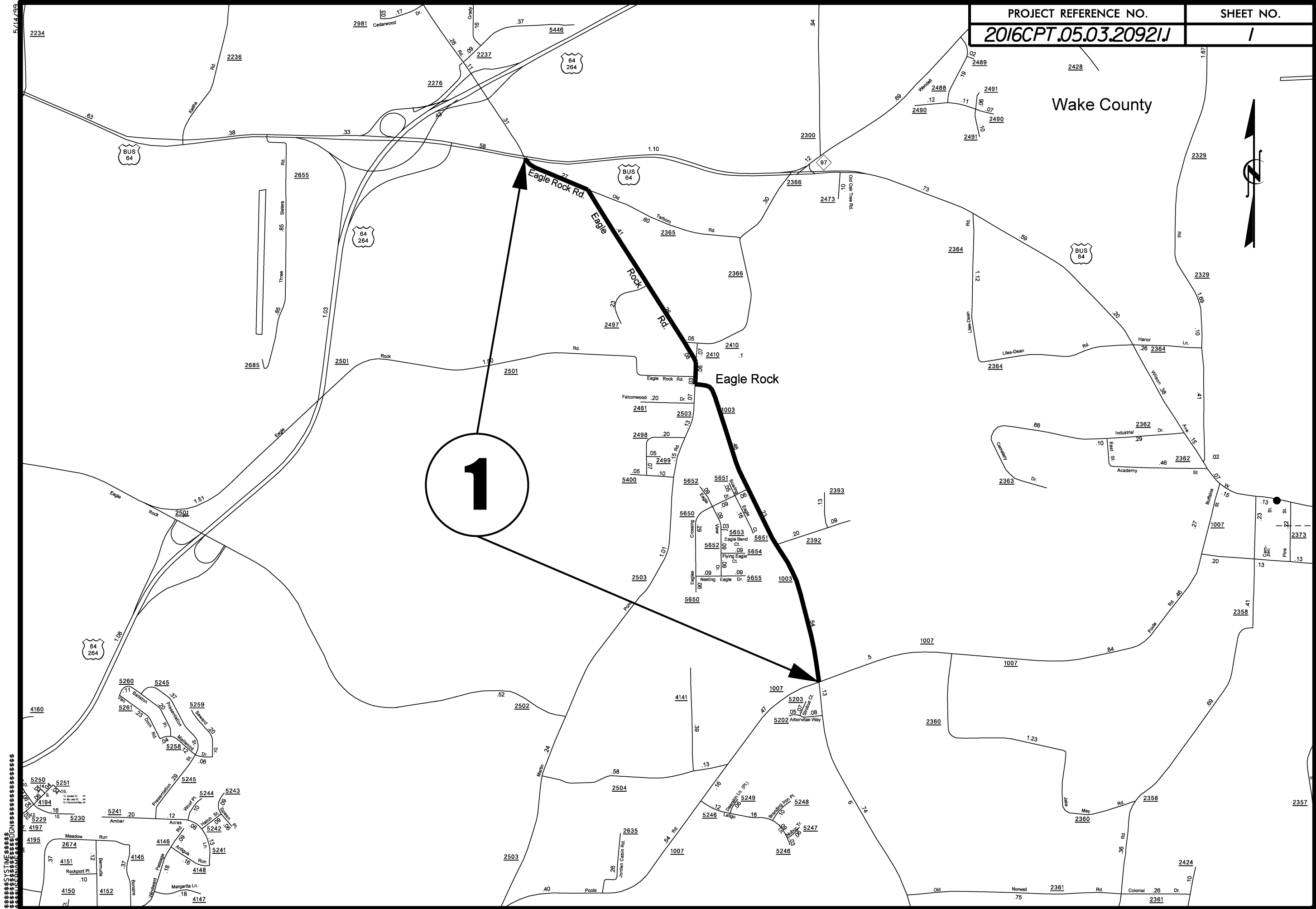
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Wake County



1

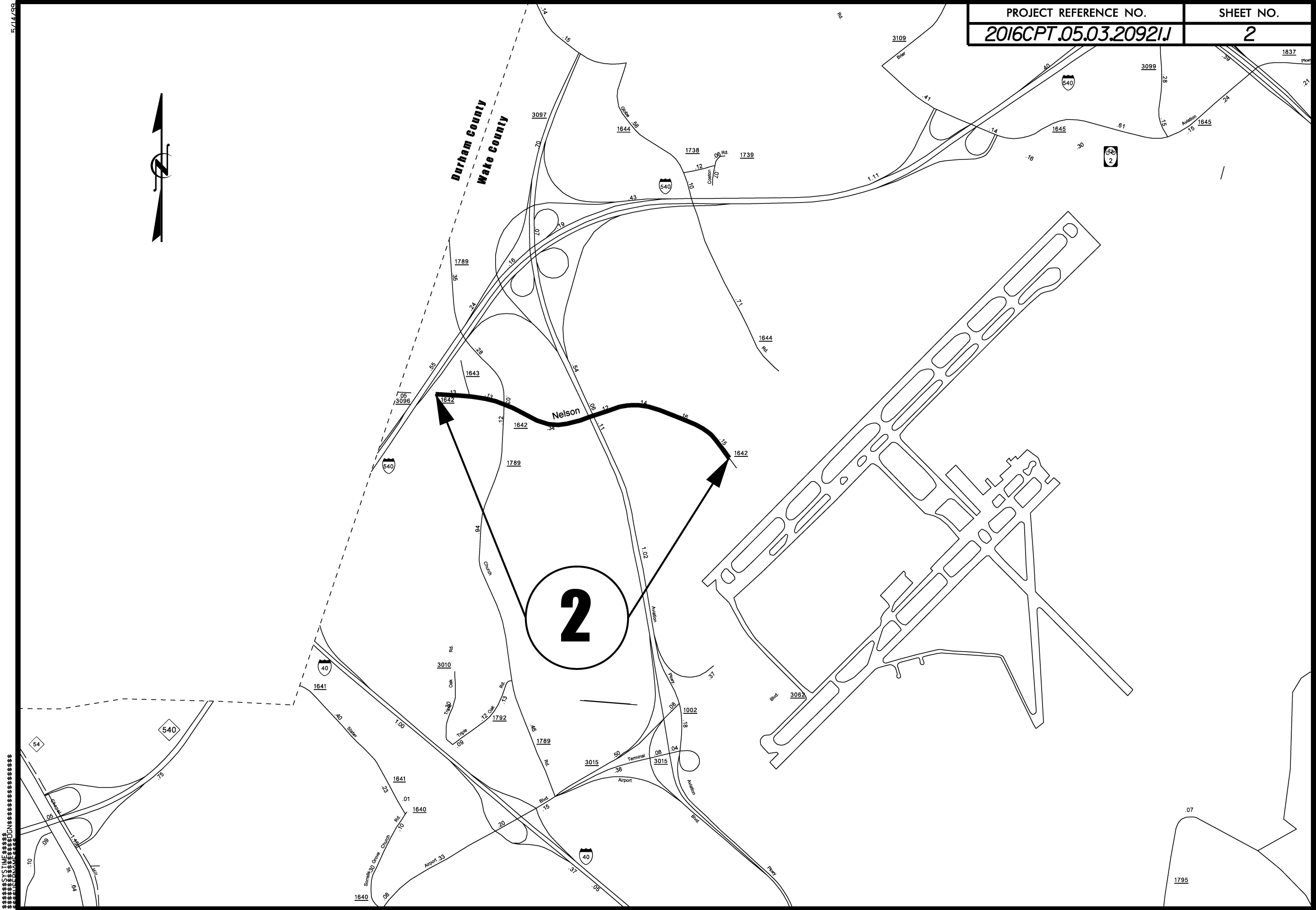




Durham County
Wake County

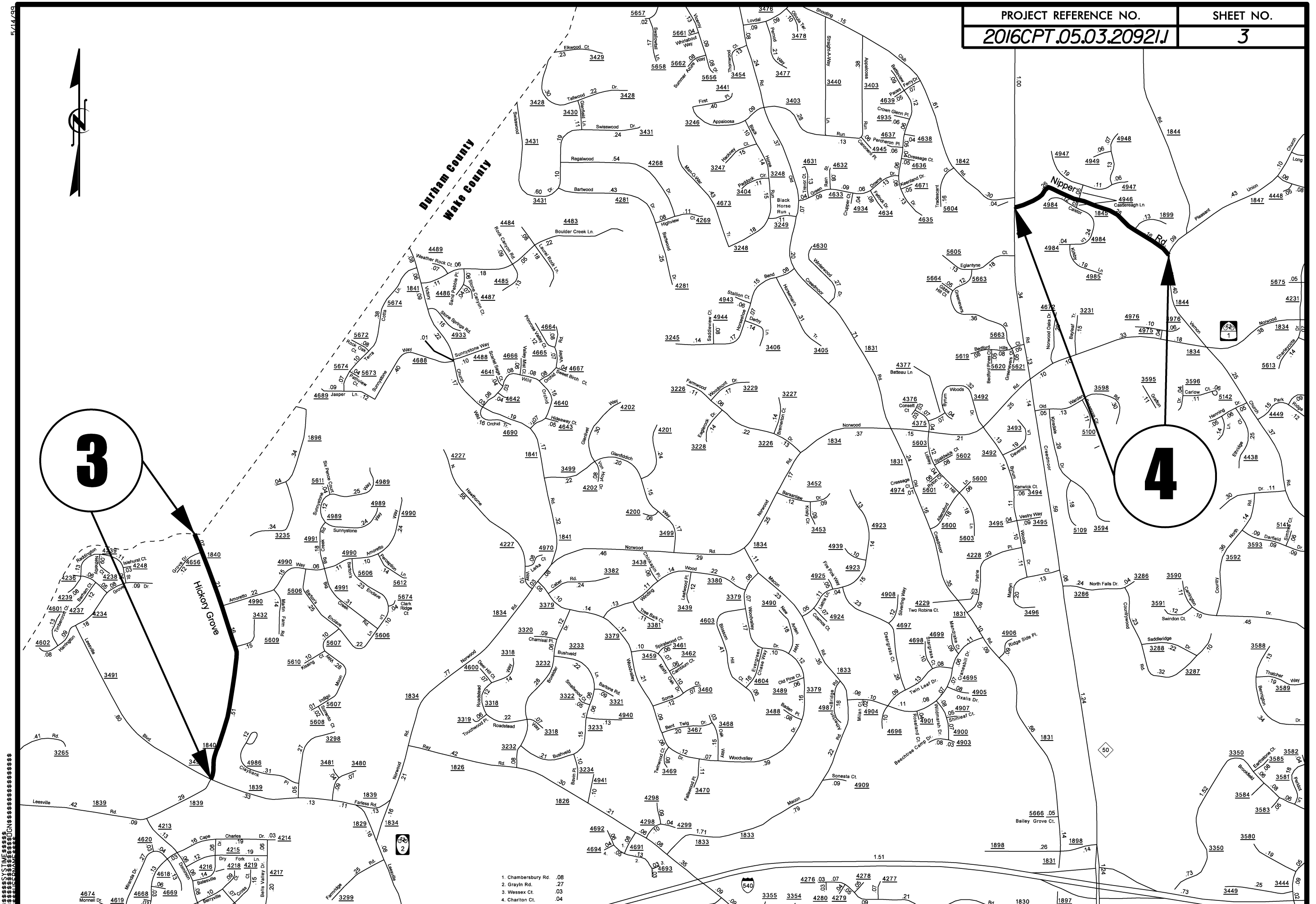
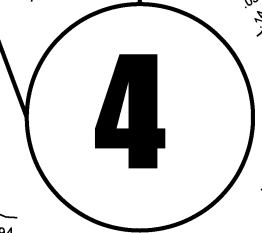
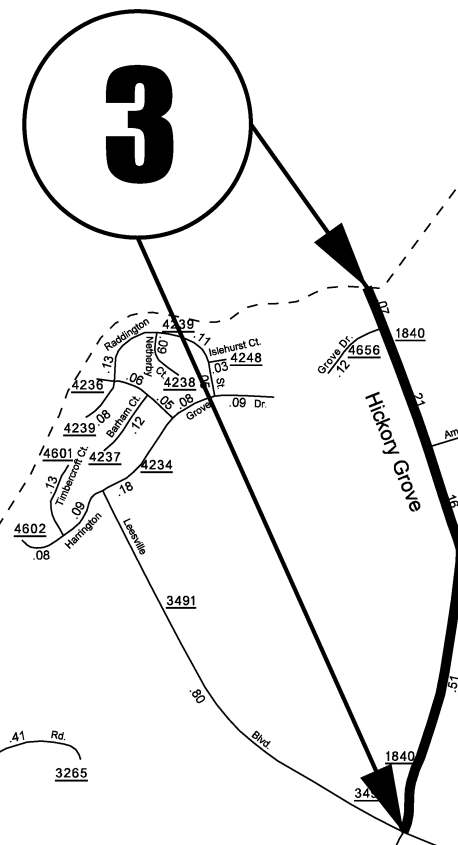
2

Nelson





Durham County
Wake County



- 1. Chambersbury Rd .08
- 2. Grayn Rd .27
- 3. Wessex Ct .03
- 4. Charlton Ct .04

SYSTEMS
DCN
SNA

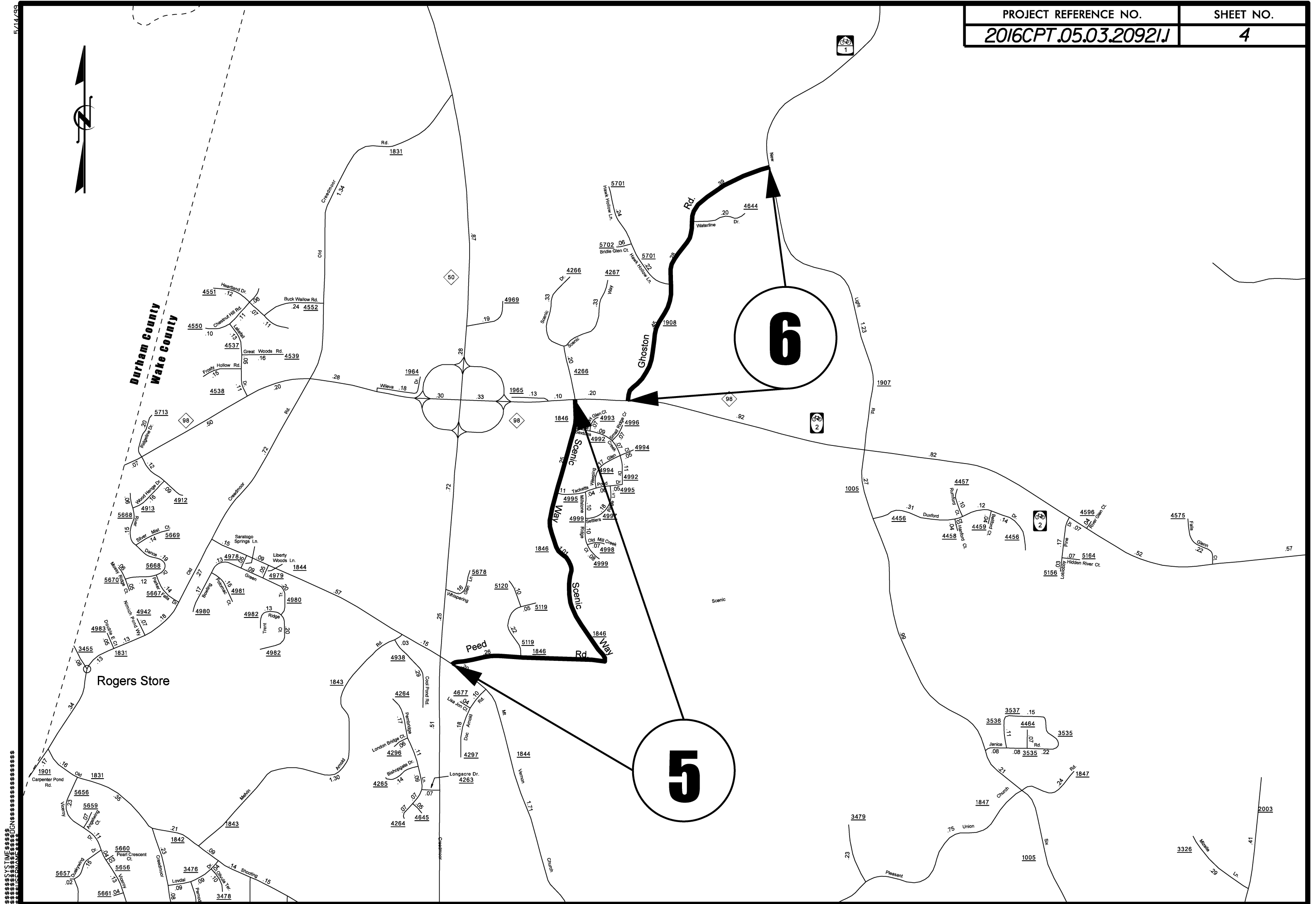


Durham County
Wake County

Rogers Store

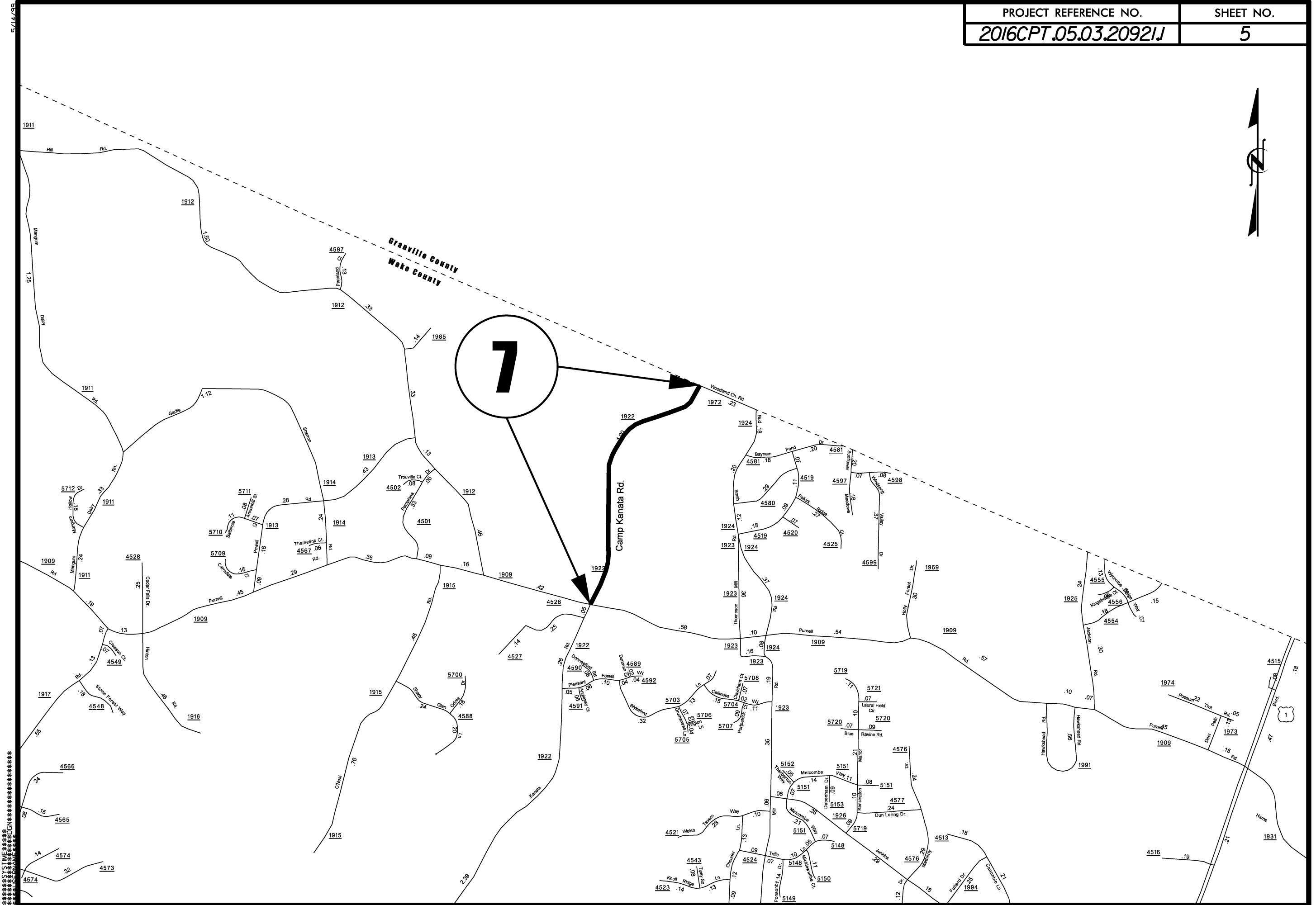
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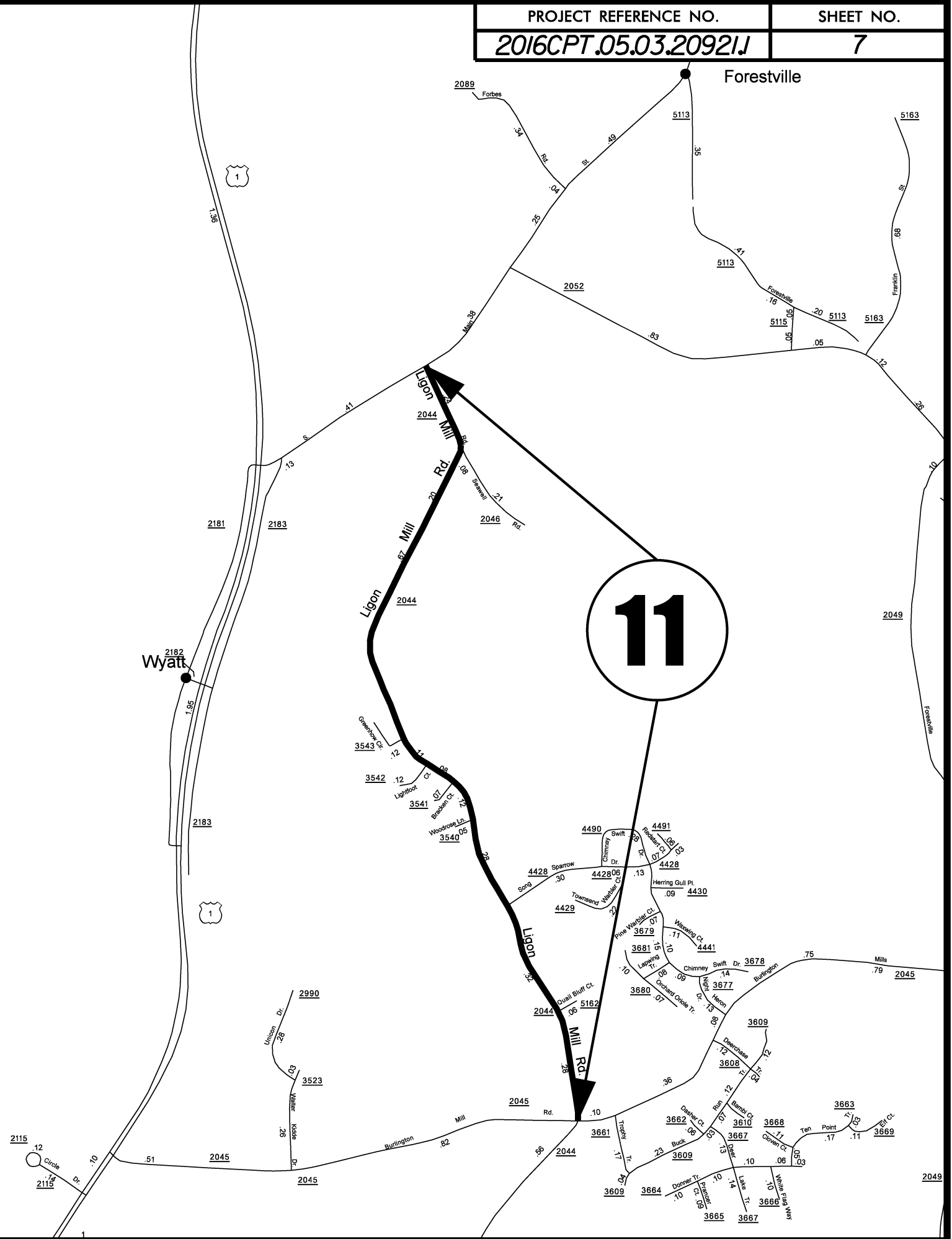
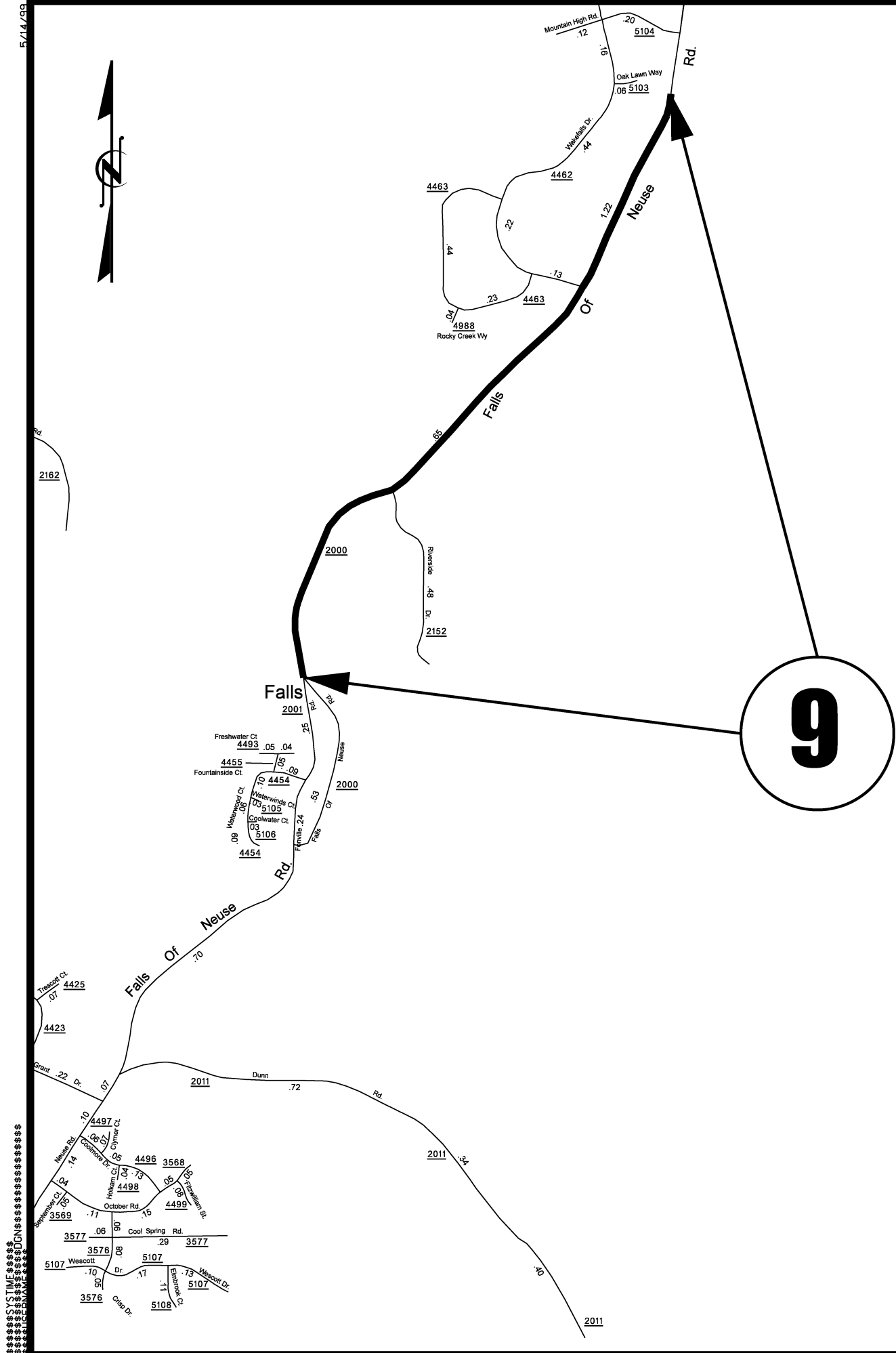
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7

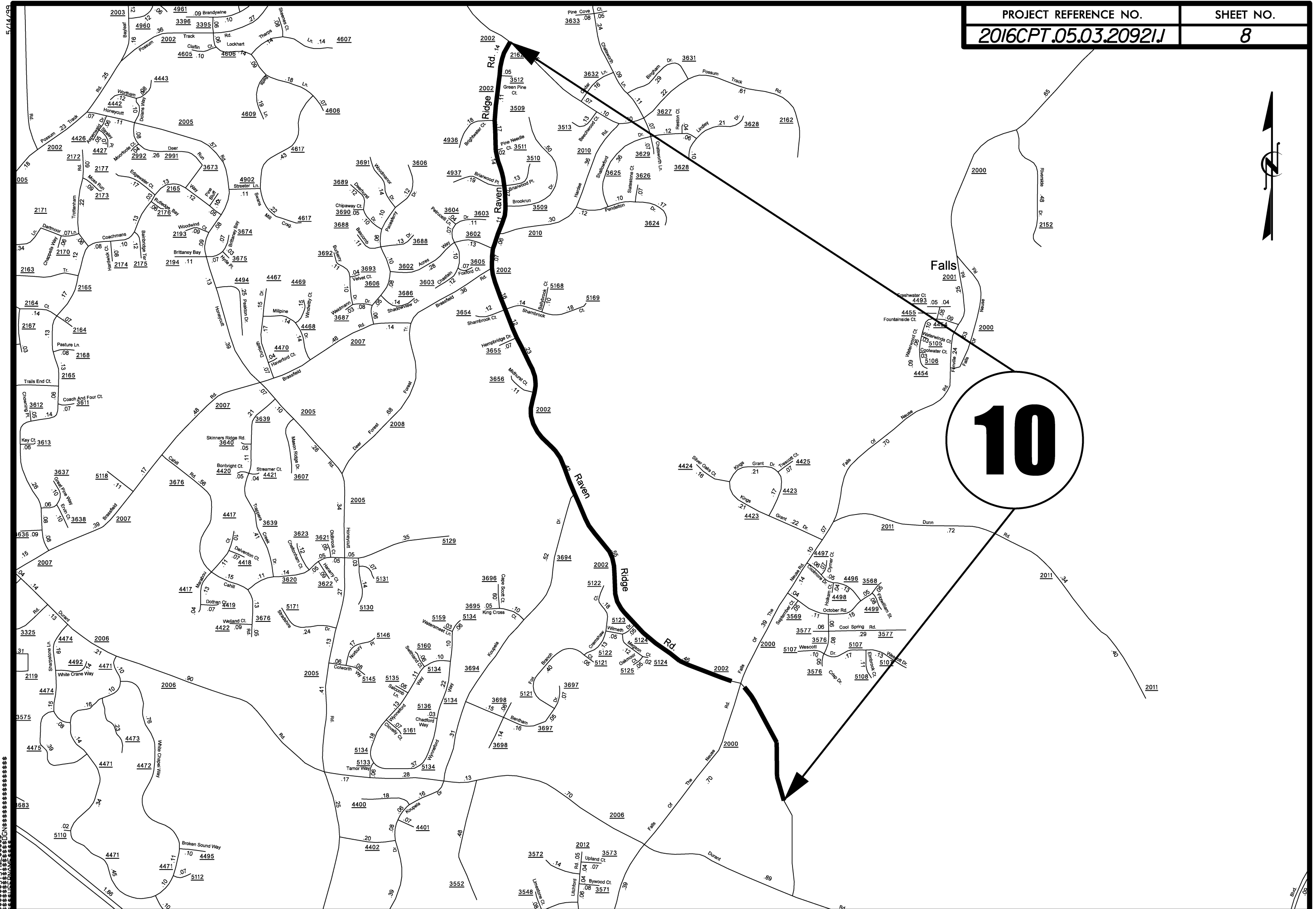




SYSTEMS



10



5/14/09
*****SYSTEMS DESIGN*****

14

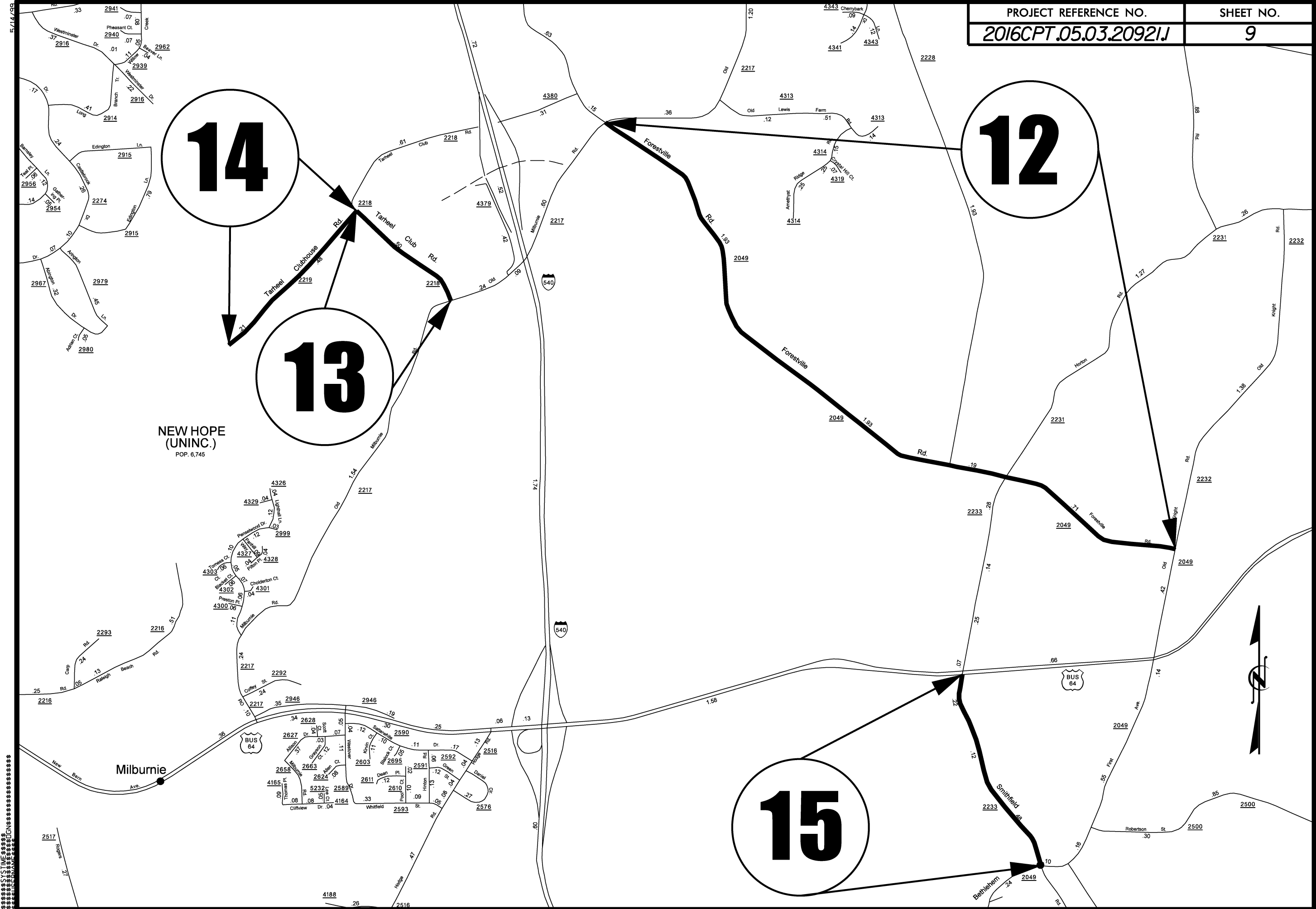
12

13

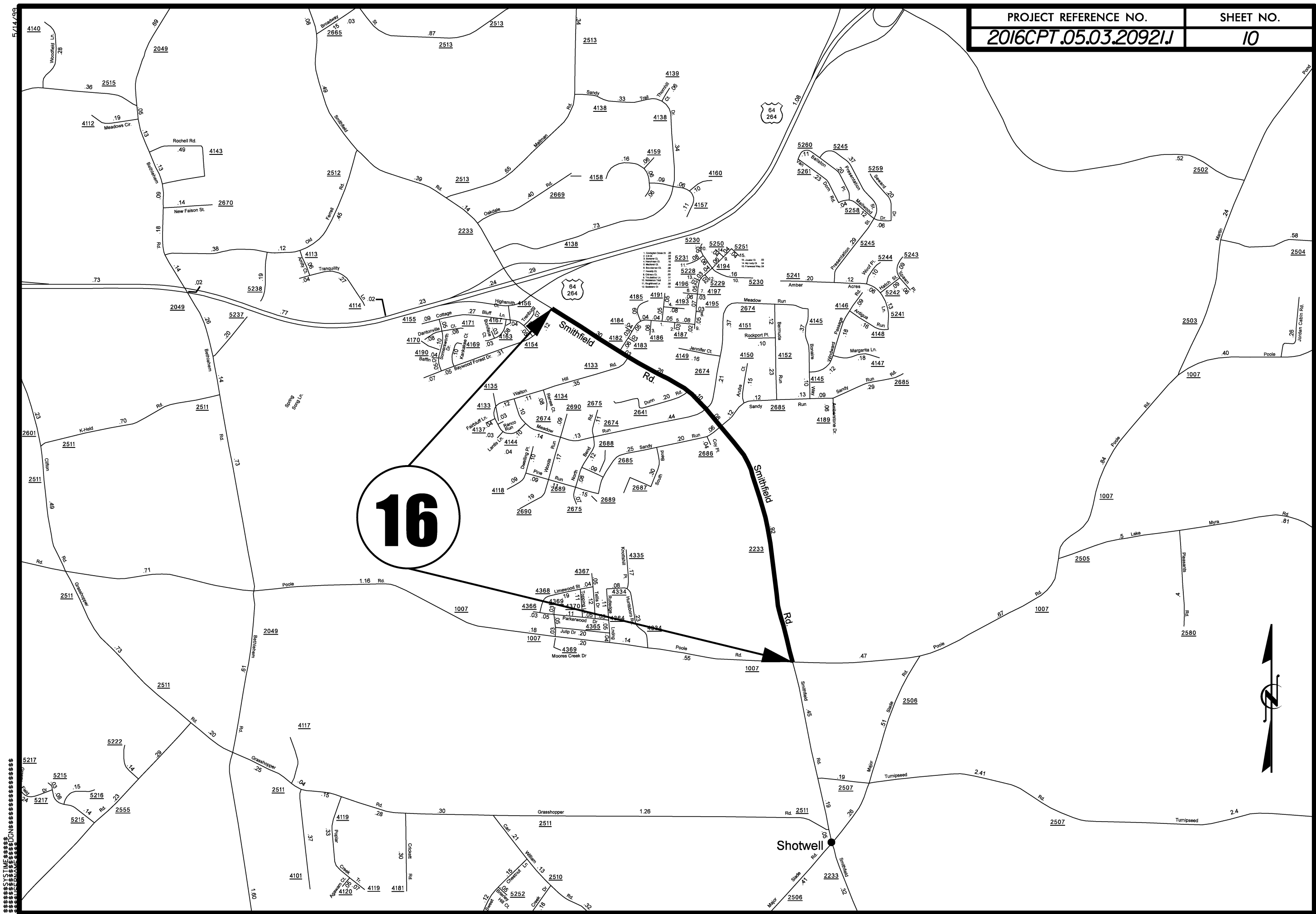
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NEW HOPE
(UNINC.)
POP. 6,745

Milburnie



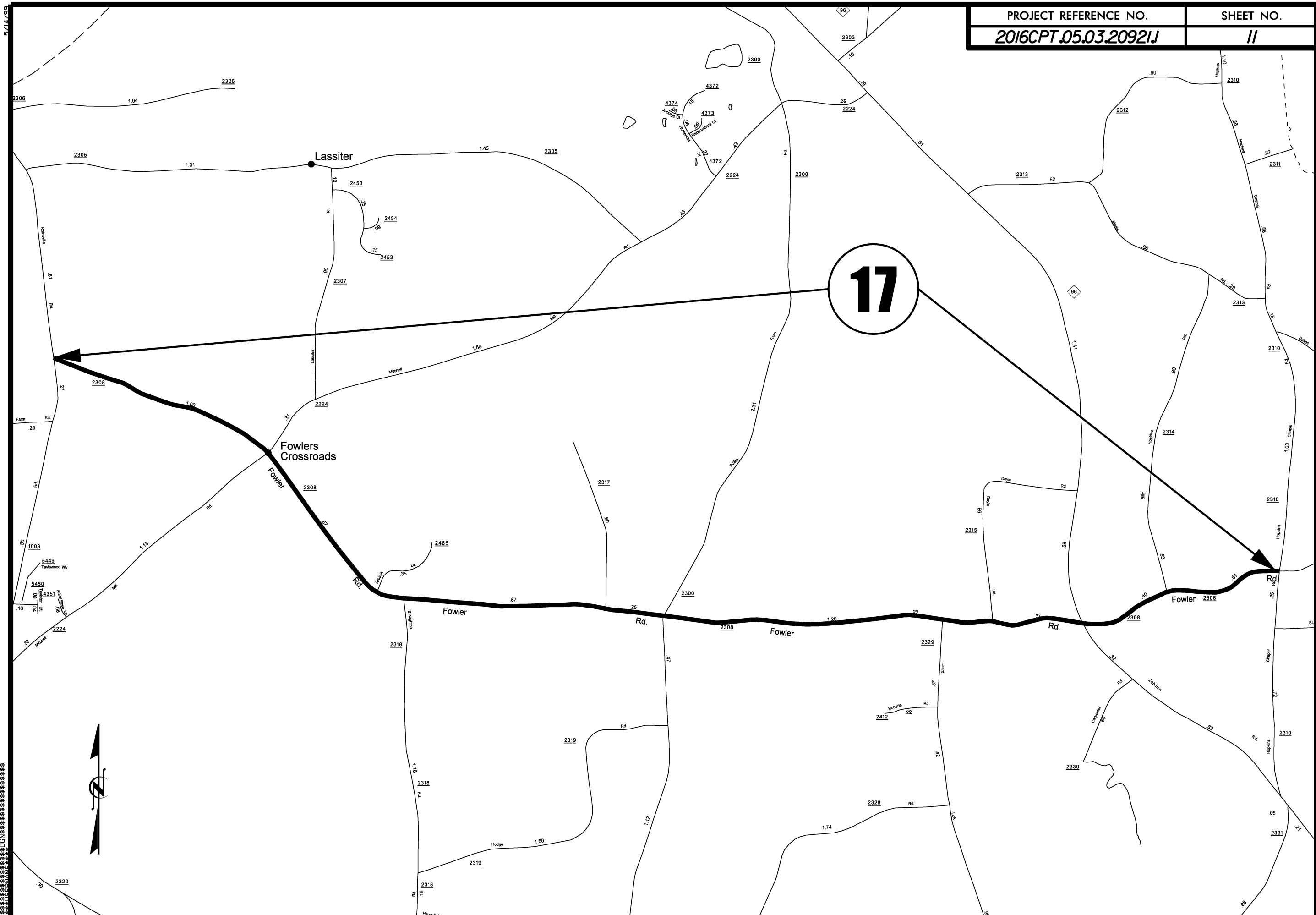
SYSTEMS



5/14/99

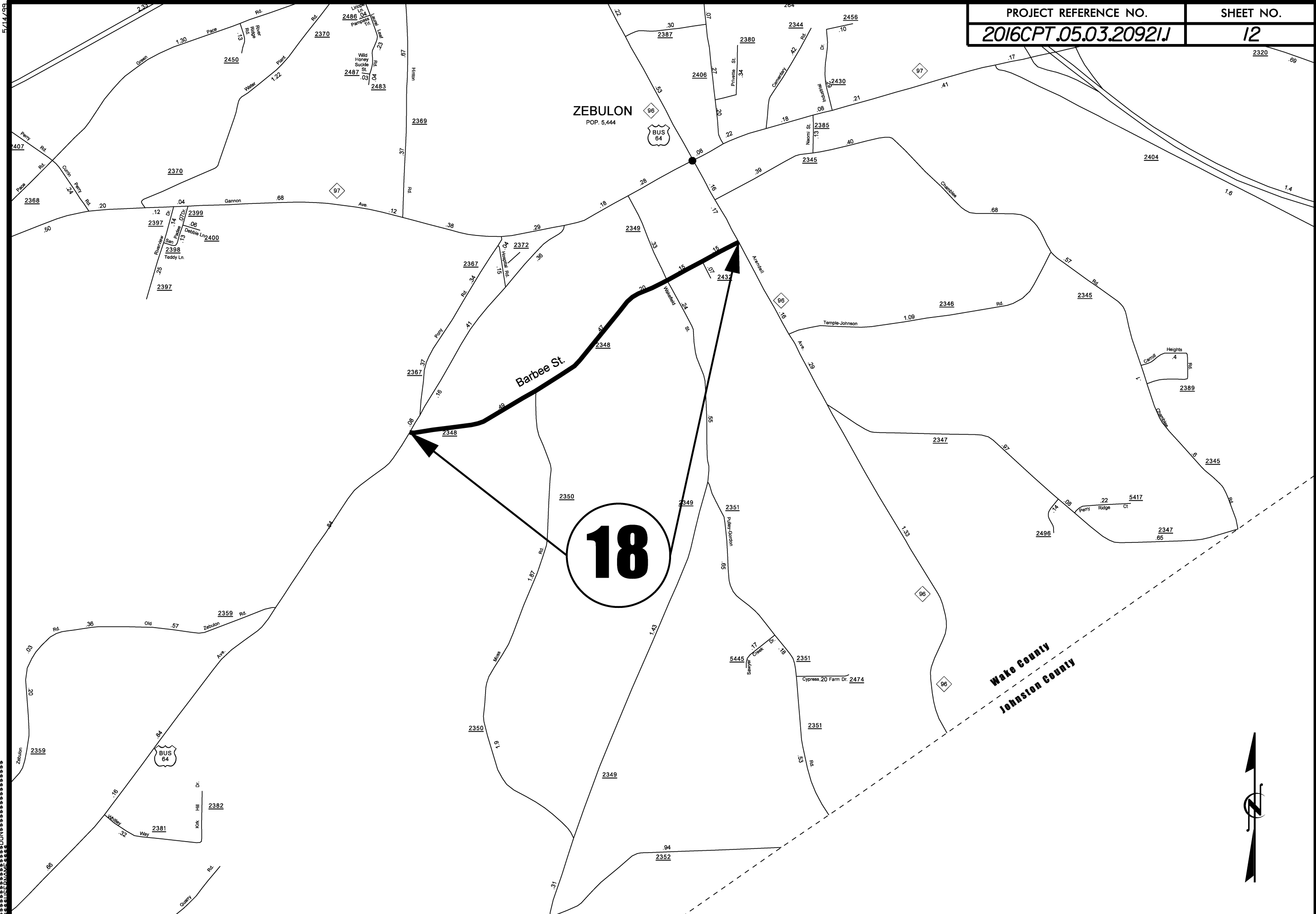
SECTION 16
TOWNSHIP 10N
RANGE 10E





5/14/09

SYSTIME
ADDONS
LIVE



18

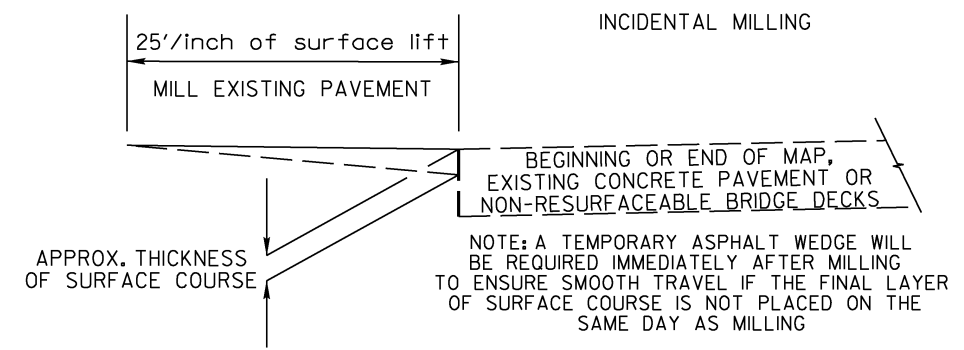
**Wake County
Johnston County**



PAVEMENT SCHEDULE

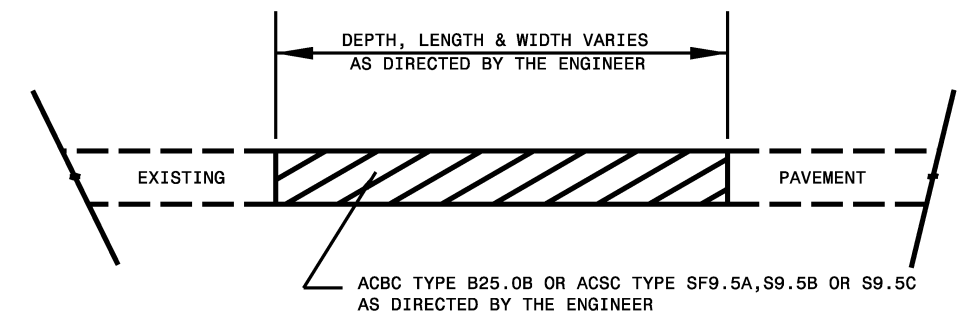
C	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
S	PROP. SHOULDER GRADING, AS DIRECTED BY THE ENGINEER
U	EXISTING PAVEMENT
V1	1½" MILLING
V2	0" - 1½" MILLING NEW ASPHALT TO BE PAVED BACK FLUSH

PROJECT REFERENCE NO. 2016CPT.05.03.20921J	SHEET NO. 13
--	------------------------

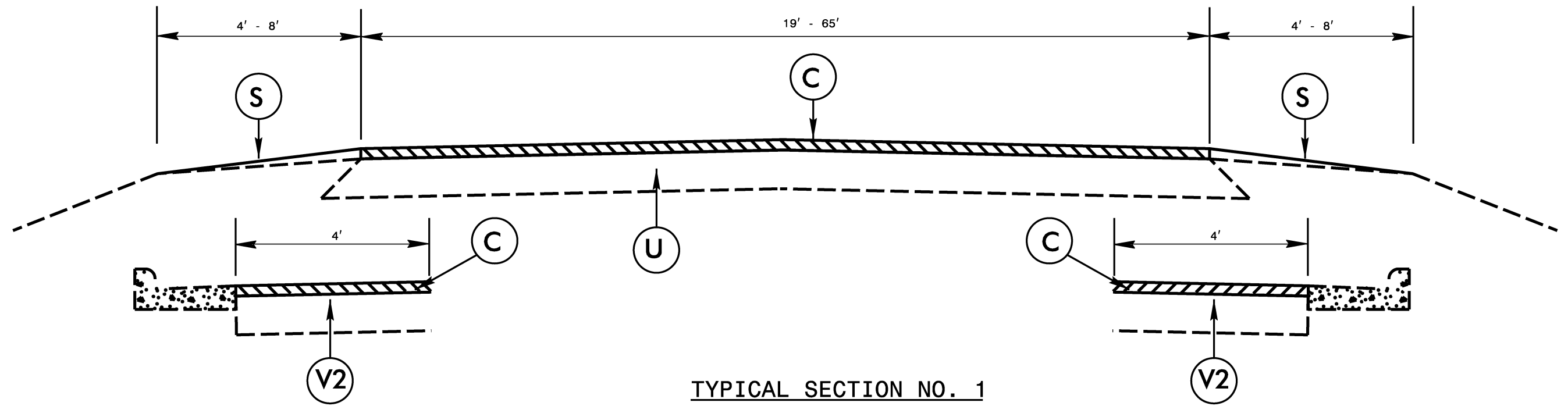


NOTES

ALL UNPAVED S.R. 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.
 BRIDGES TO BE RESURFACED AT LOCATIONS AND TO DEPTH AS DIRECTED BY THE ENGINEER.



PATCHING EXISTING PAVEMENT
 PATCHING TO BE PERFORMED PRIOR TO MILL AND FILL OPERATION



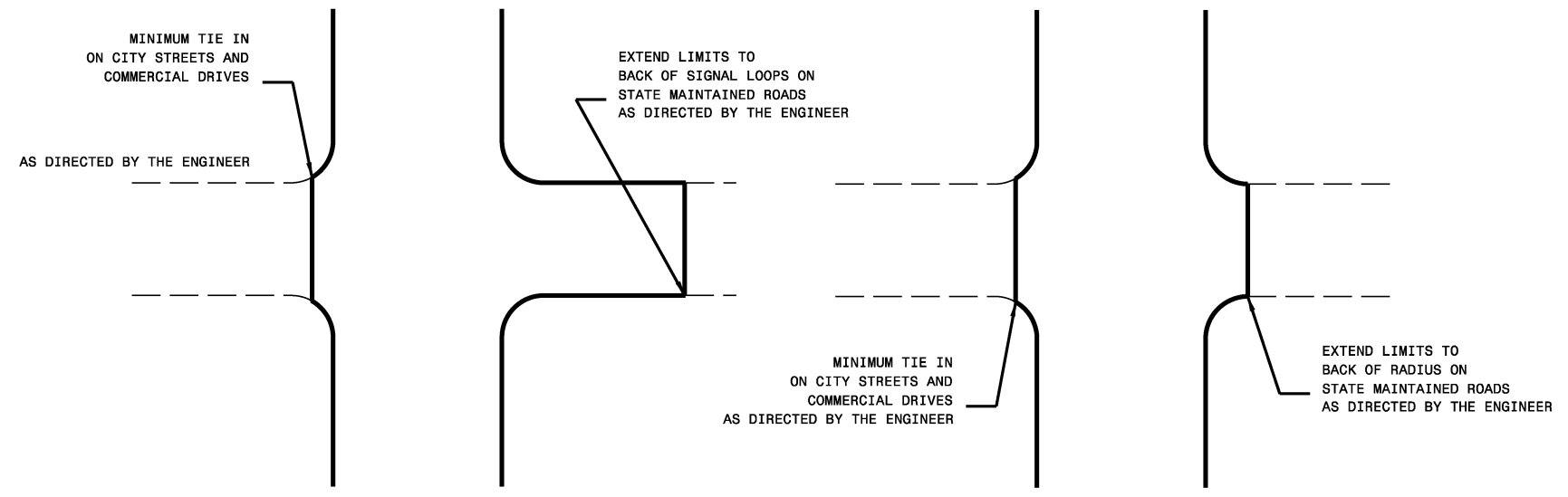
TYPICAL SECTION NO. 1

PAVEMENT SCHEDULE

C	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
S	PROP. SHOULDER GRADING, AS DIRECTED BY THE ENGINEER
U	EXISTING PAVEMENT
V1	1½" MILLING
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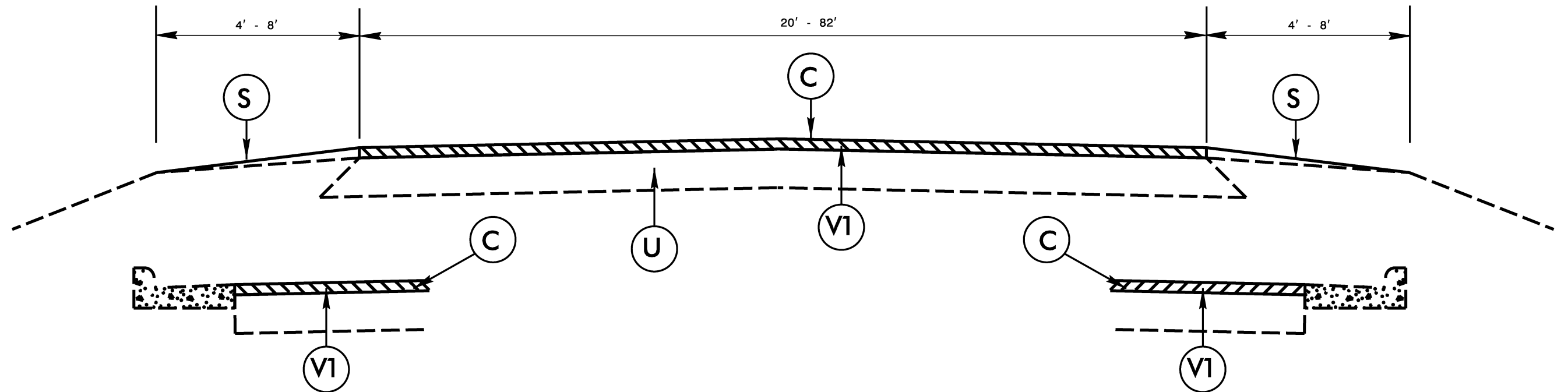
PROJECT REFERENCE NO.
2016CPT.05.03.20921.1

SHEET NO.
14



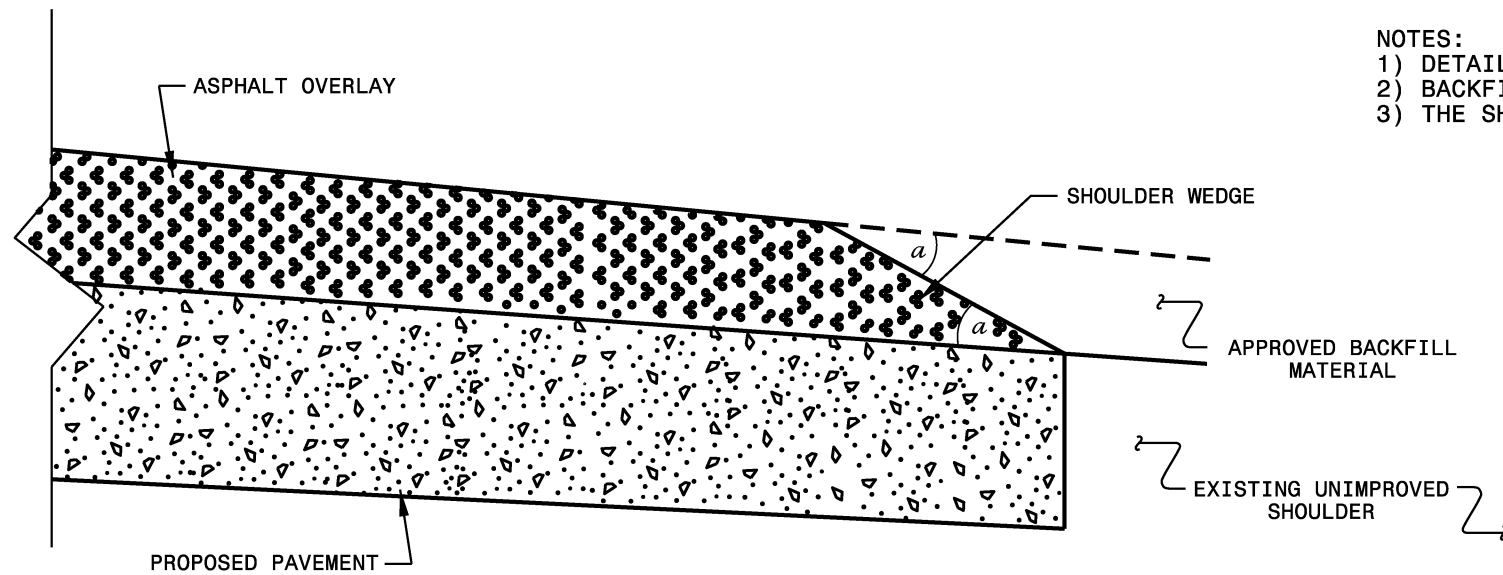
DETAIL OF PROJECT LIMITS AT SIGNALIZED Y LINES

DETAIL OF PROJECT LIMITS AT UNSIGNALIZED Y LINES

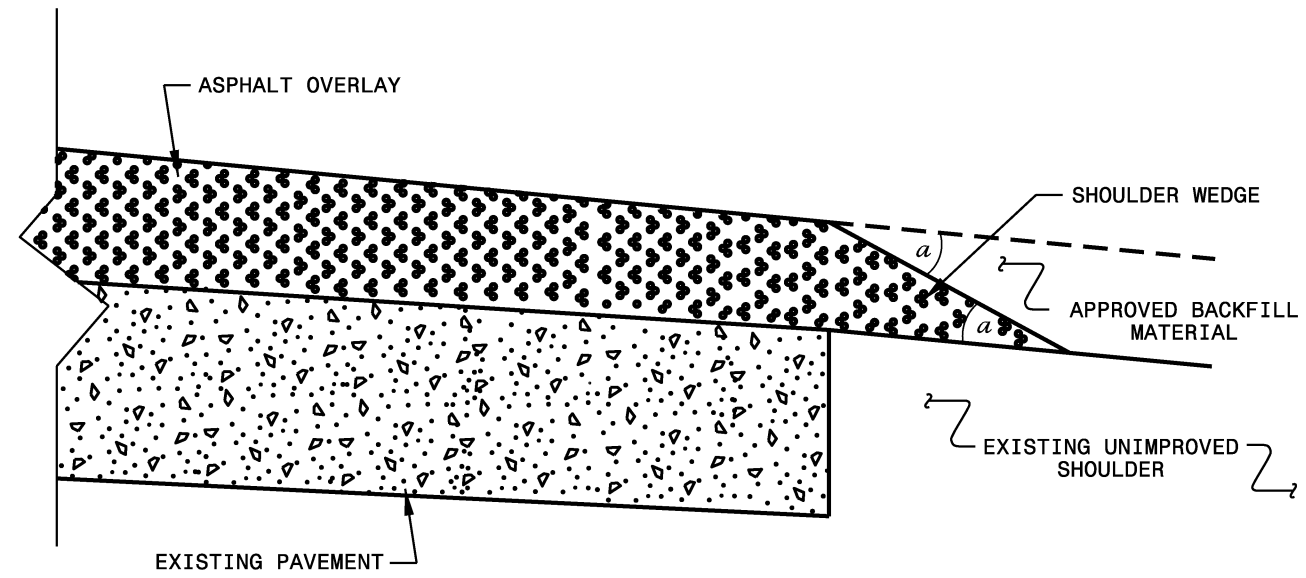


TYPICAL SECTION NO. 2

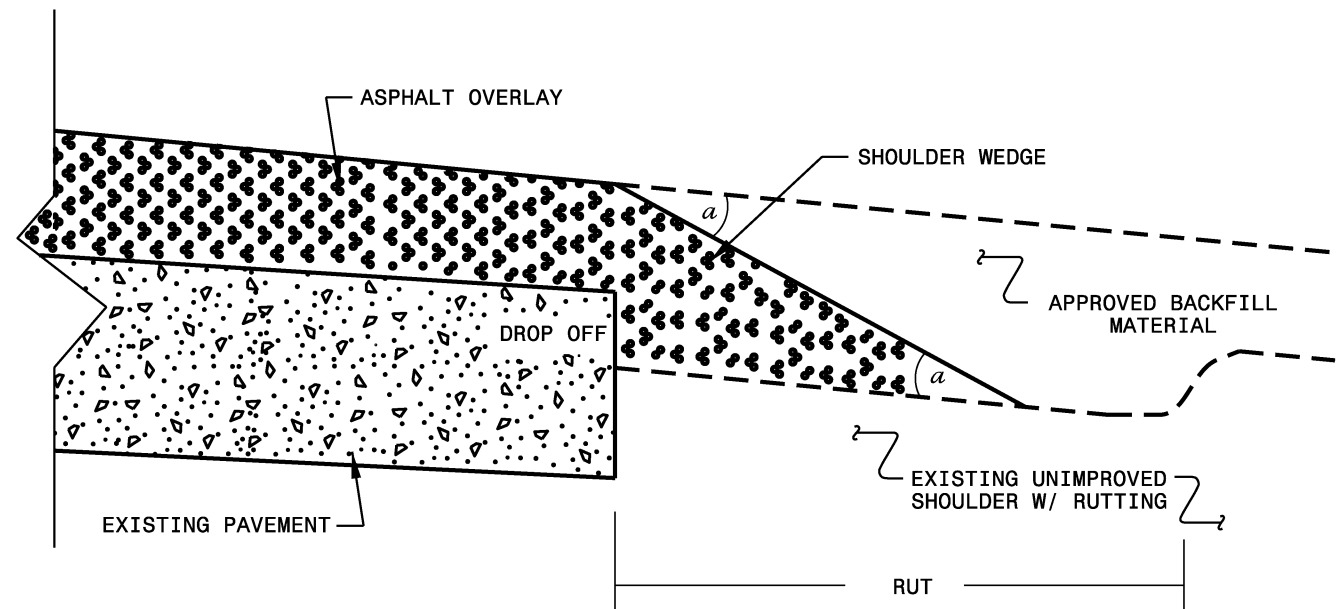
- NOTES:
 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



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: 10/18/12		
CHECKED BY:	DATE:		
FILE SPEC.: s:\usr\details\stand\shoulderwedgedetail.dgn			

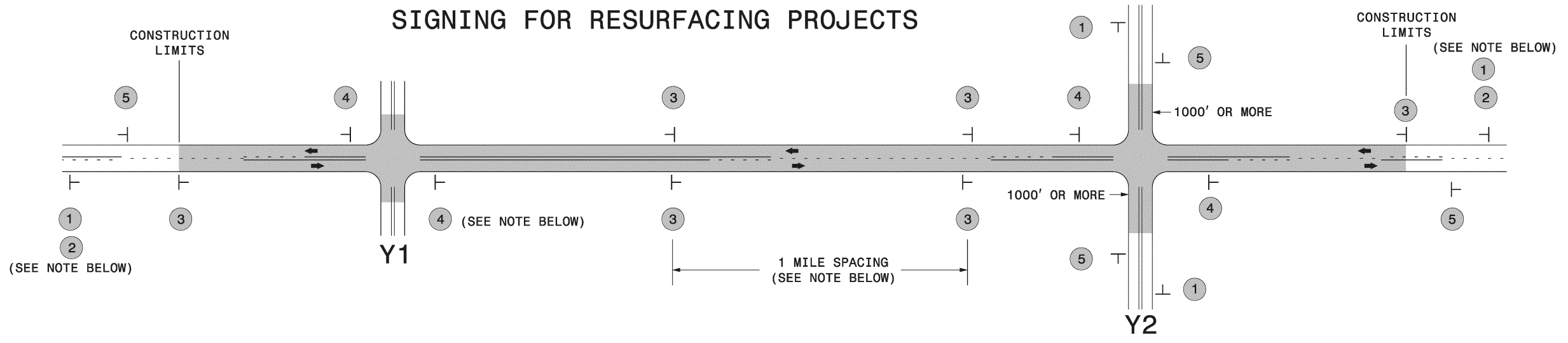
SYSTEMS DESIGN USER NAME

PROJECT NO.	SHEET NO.	TOTAL NO.
2016CPT.05.03.20921.1	16	

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	BORROW CY	SHOULDER GRADING SMI	INCIDENTAL STONE BASE TONS	1½" MILLING SY	0" TO 1.5" MILLING SY	INCIDENTAL MILLING SY	SURFACE COURSE, S9.5B TONS	ASPHALT BINDER FOR PLANT MIX TON	PATCHING EXISTING PAVEMENT TONS	ADJUST MANHOLES EA	ADJUST METER OR VALVE BOX EA	TEMP SILT FENCE LF	WATTLE LF	SEED & MULCHING AC	INDUCTIVE LOOP LF		
2016CPT.05.03.20921.1	Wake	1	SR 1003 - EAGLE ROCK RD	US 64 BUS TO SR 1007 - POOLE RD	1	2		NO	NO	2.329	24-25	466	4.66	117			682	3,175	190	233			338	530	3.38			
		2	SR 1642 - NELSON RD	EOM TO FENCE	1	2		NO	NO	1.185	30-60	156	1.56	39		1,895	933	2,522	151	119	4	5	113	290	1.13	396		
		3	SR 1840 - HICKORY GROVE	DURHAM CO TO SR 1839 - LEESVILLE RD	1	2		NO	NO	0.939	20-40	174	1.74	44			320	430	1,312	79	100			126	320	1.26	216	
		4	SR 1845 - NIPPER RD	SR 1844 - MT VERNON CH RD TO NC 50	1	2		NO	NO	0.681	20-21	136	1.36	34				1,100	817	49	69			99	250	0.99		
		5	SR 1846 - PEED RD/SCENIC WAY	SR 1844 - MT VERNON CH RD TO NC 98	1	2		NO	NO	1.627	20-21	325	3.25	82					285	1,832	110	163			236	590	2.36	
		6	SR 1908 - GHOSTON RD	SR 1907- NEW LIGHT RD TO NC 98	1	2		NO	NO	1.109	20-21	221	2.21	56					288	1,248	75	111			161	410	1.61	
		7	SR 1922 - CAMP KANATA RD	SR 1972 - WOODLAND CH RD TO SR 1909 - PURNELL RD	2	2		NO	NO	1.015	20	203	2.03	51	11,909			165	1,057	63	101			147	720	1.47		
		8	SR 1929 - WAKE UNION CH RD	US 1 TO NC 98	2	2		NO	NO	1.044	21-41	190	1.90	48	16,290				1,444	87	105			138	350	1.38		
		9	SR 2000 - FALLS OF NEUSE RD	FALLS OF NEUSE BRIDGE TO .15 MI SOUTH OF SR 5104 - MOUNTAIN HIGH RD	2	2		NO	NO	1.632	24-50	296	2.96	74	31,455				2,785	167	163			216	540	2.16	1,035	
		10	SR 2002 - RAVEN RIDGE RD	SR 2162 - POSSUM TRACK RD TO .35 MI N OF SR 2006 - DURANT RD (skip intersection at Falls of Neuse Rd.)	2	2		NO	NO	3.15	20-50	623	6.23	156	44,390				3,936	236	315			454	1,140	4.54	408	
		11	SR 2044 - LIGON MILL RD	SR 2045 - BURLINGTON MILL RD TO US1 ALT - S MAIN ST	1	2		NO	NO	2.301	25-52	347	3.47	87			2,645	1,175	3,926	236	230	4	4	252	630	2.52	75	
		12	SR 2049 - FORESTVILLE RD	SR 2217 - OLD MILBURNIE RD TO SR 2232 - OLD KNIGHT RD	2	2		NO	NO	2.857	24-64	210	2.10	53	51,392				4,551	273	285			153	390	1.53	416	
		13	SR 2218 - TARHEEL CLUB RD	SR 2219 - TARHEEL CLUBHOUSE RD TO SR 2217 - OLD MILBURNIE RD	2	2		NO	NO	0.46	20	92	0.92	23	5,397				479	29	46			67	170	0.67		
		14	SR 2219 - TARHEEL CLUBHOUSE RD	SR 2218 - TARHEEL CLUB RD TO EOM	2	2		NO	NO	0.53	20-21	106	1.06	27	6,613				587	35	53			77	200	0.77		
		15	SR 2233 - SMITHFIELD RD	US 64 BUS TO SR 2049 - BETHLEHEM RD	1	2		NO	NO	0.792	24-65	84	0.84	21			1,930	820	1,797	108	80	4	1	61	160	0.61	1,280	
		16	SR 2233 - SMITHFIELD RD	SR 4154 - BAYWOOD FOREST DR TO SR 1007 - POOLE RD	1	2		NO	NO	1.708	24-38	341	3.41	86				560	2,578	155	170			248	620	2.48		
		17	SR 2308 - FOWLER RD	SR 2310 - HOPKINS CHAPEL RD TO SR 1003 - ROLESVILLE RD	1	2		NO	YES	5.686	20-21	1,137	11.37	285					1,430	6,457	387	569			824	2,060	8.24	
		18	SR 2348 - BARBEE ST	US 64 BUS TO NC 96	1	2		NO	NO	1.446	19-28	252	2.52	63			870	626	1,735	104	145	5		183	460	1.83		
TOTAL FOR PROJ NO. 2016CPT.05.03.20921.1										30.491		5,359	53.59	1,346	167,446	7,660	8,494	42,238	2,534	3,057	17	10	3,893	9,830	38.93	3,826		
GRAND TOTAL										30.491		5,359	53.59	1,346	167,446	7,660	8,494	42,238	2,534	3,057	17	10	3,893	9,830	38.93	3,826		

SIGNING FOR RESURFACING PROJECTS



LEGEND	
┆	STATIONARY SIGN
←	DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

-Y- LINE SIGNING

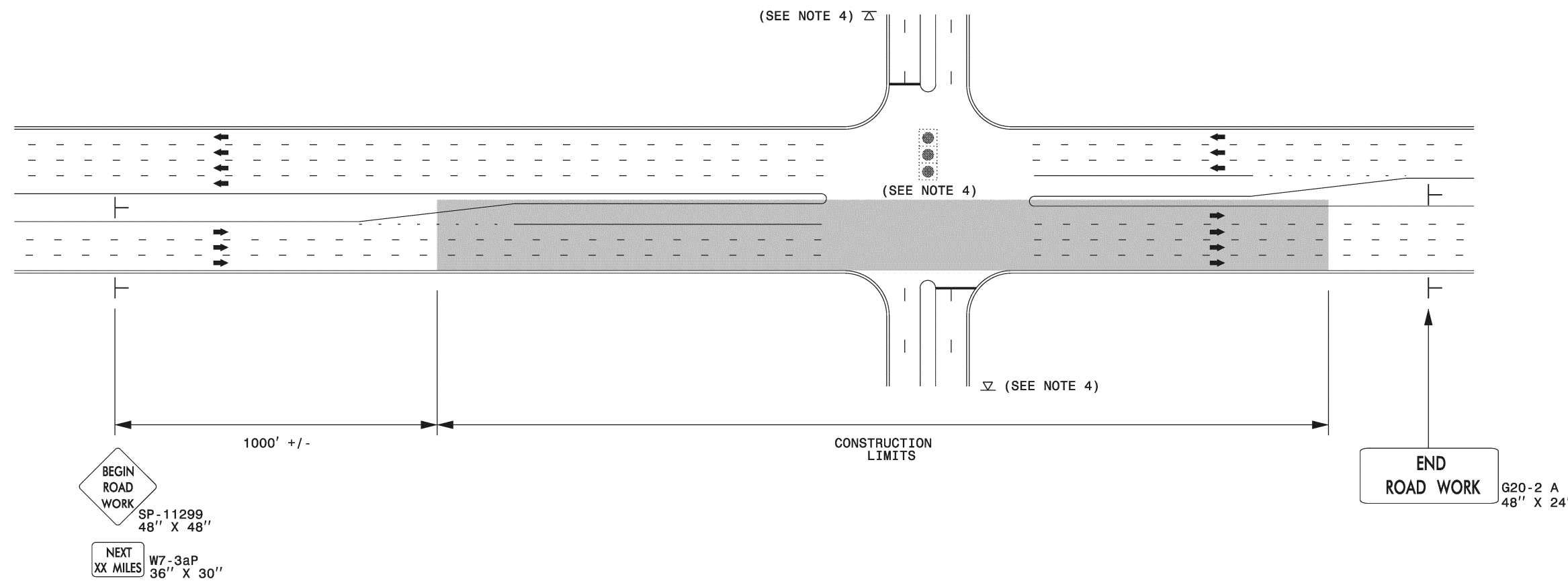
SIGNING NOTES AND PLACEMENT PER DIRECTION	1	2	3	4	5	
						<p>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</p> <ol style="list-style-type: none"> 1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE 2) SUBDIVISION ROADS 3) DEAD END ROADS <p>WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED 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;"> <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>PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.</p>
	<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>					
	<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>					
<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>						
<p>PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.</p>						

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ZONE TRAFFIC CONTROL

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

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

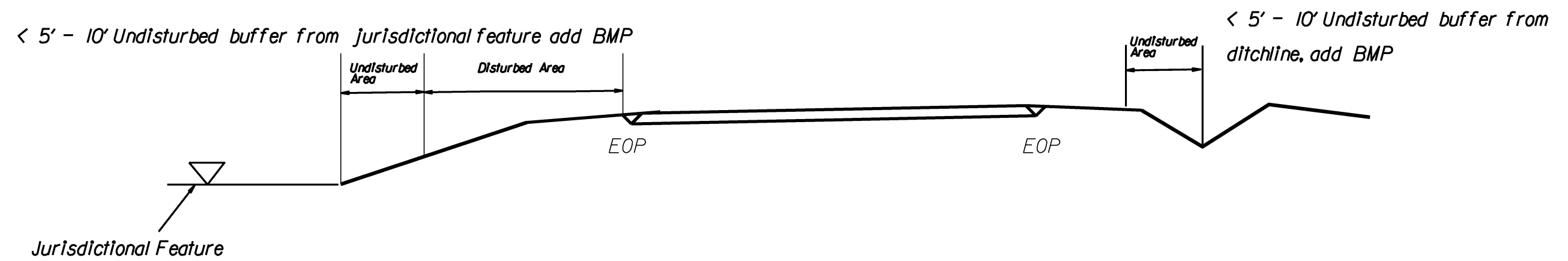
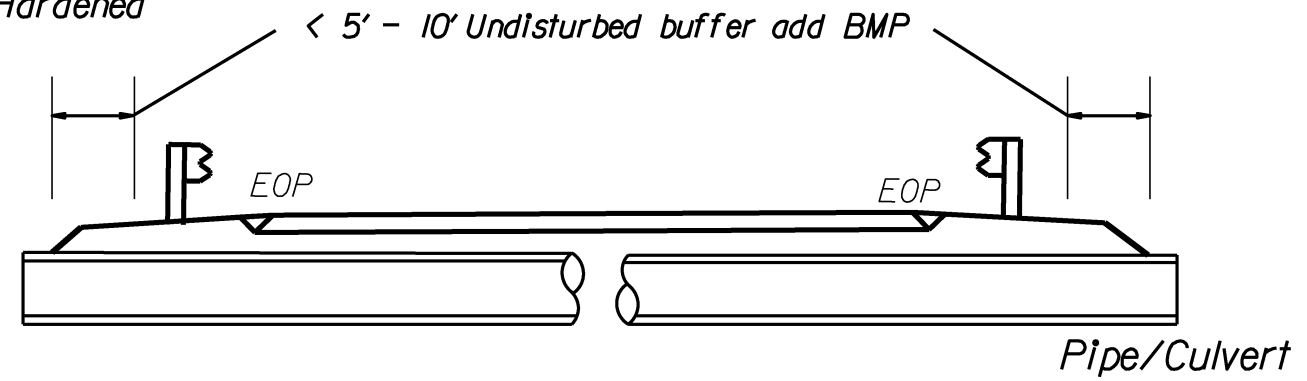
	<p>RESURFACING ADVANCE WARNING SIGNS FOR URBAN / SUBURBAN FACILITIES</p>
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4/8/2015
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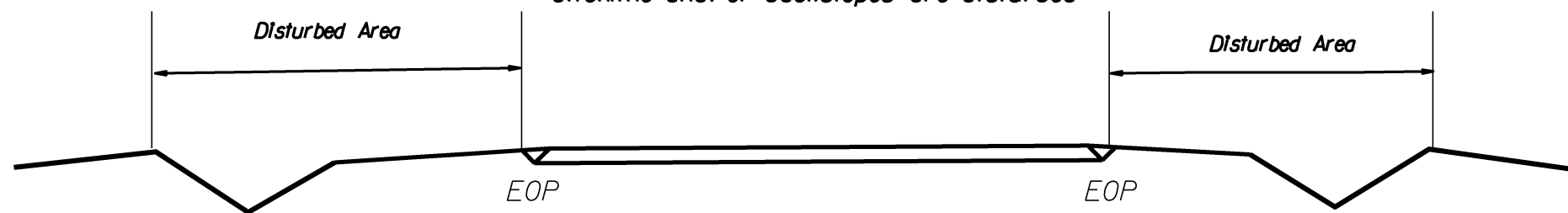
NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle, Silt Fence or Hardened Aggregate.

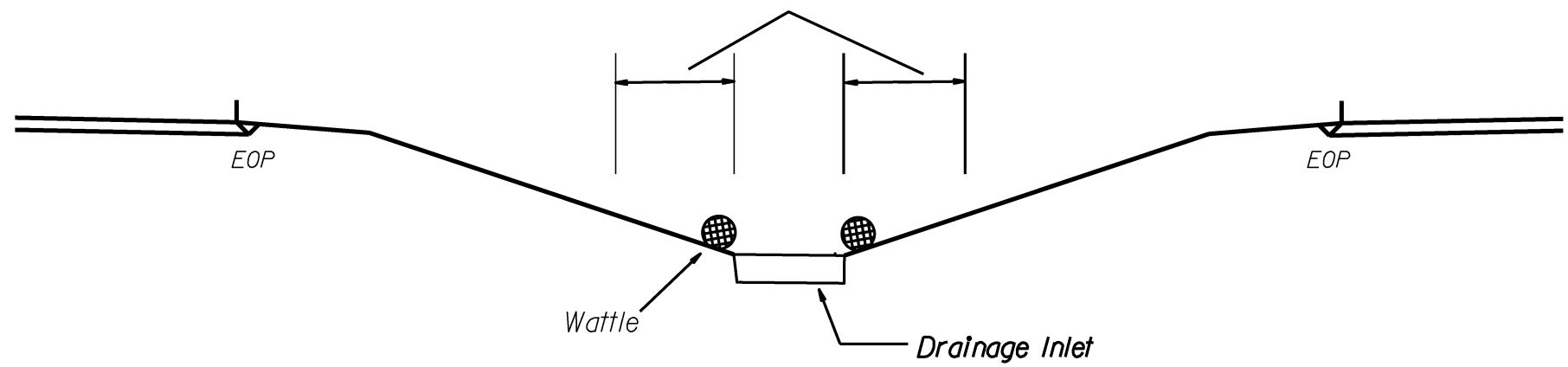
EROSION CONTROL DETAIL



Use BMP's If shoulders and/or frontslopes and/or ditchline and/or backslopes are disturbed

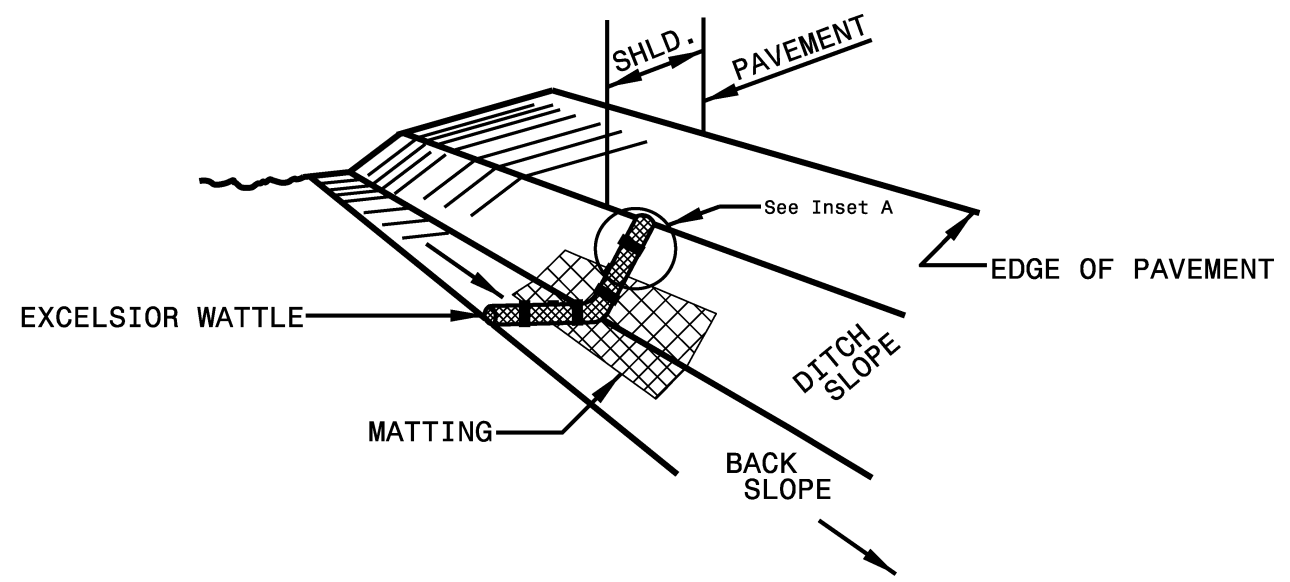


< 5' - 10' Undisturbed buffer from inlet, add wattle

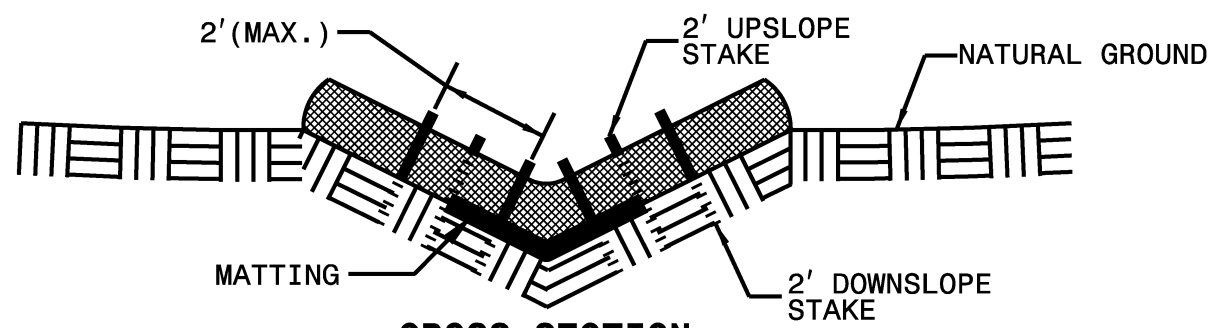


NOT TO SCALE

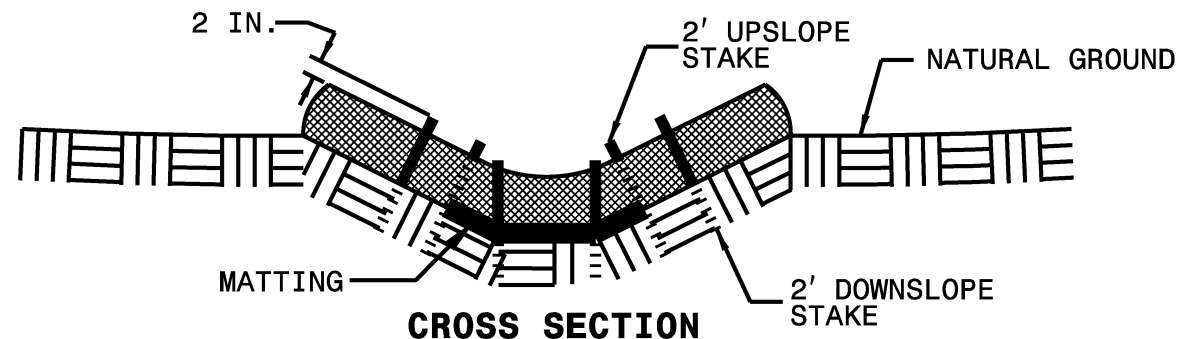
WATTLE DETAIL



ISOMETRIC VIEW



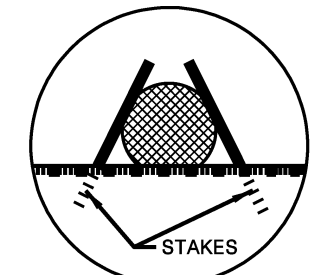
CROSS SECTION VEE DITCH



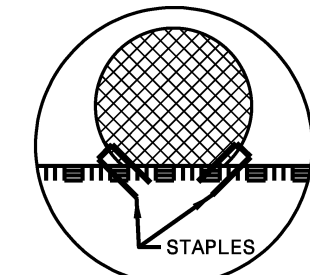
CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

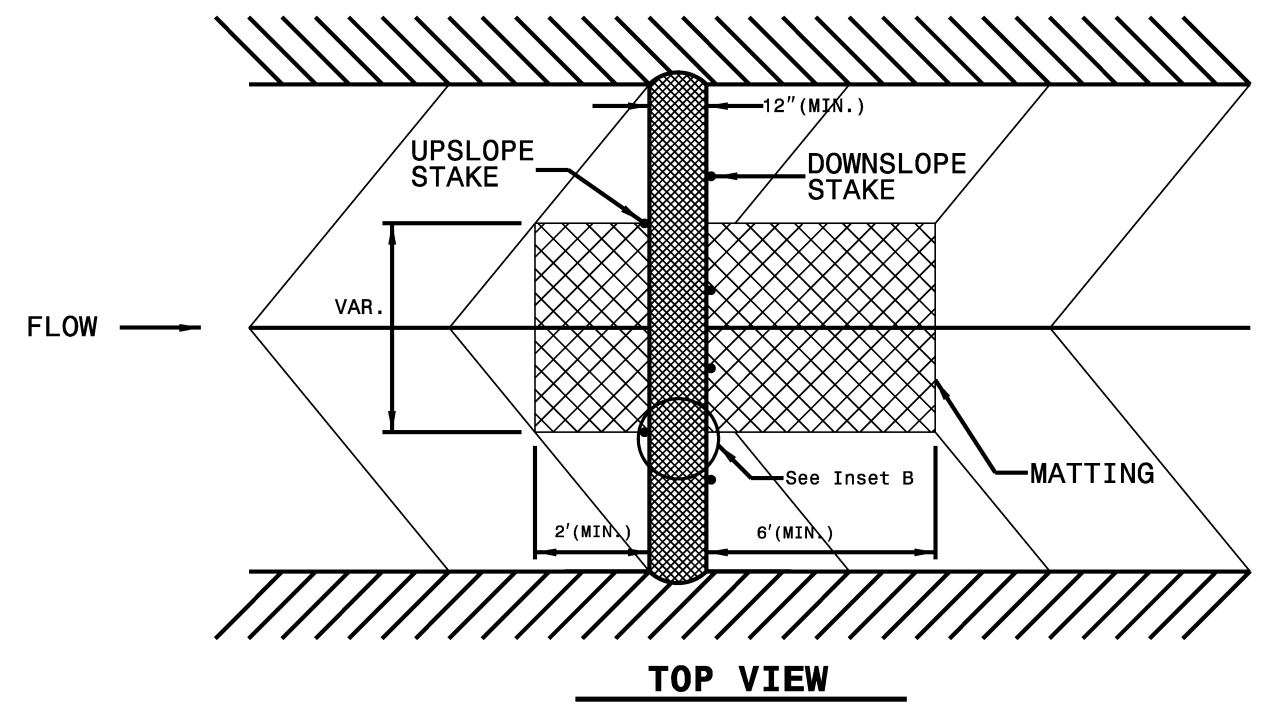
- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
- PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
- INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
- INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



INSET B



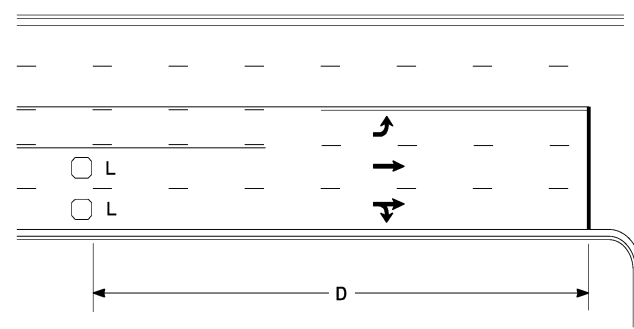
TOP VIEW

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HOW ZONES.

High Speed Detection (≥40 mph)

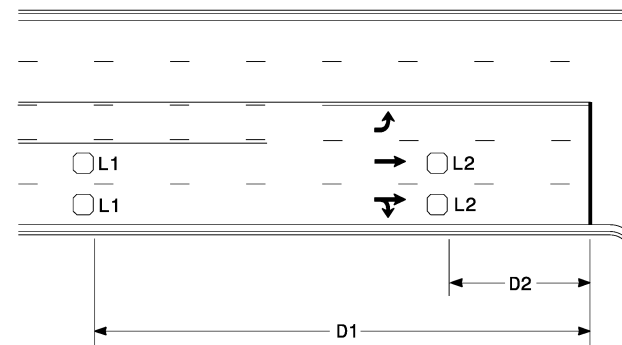


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

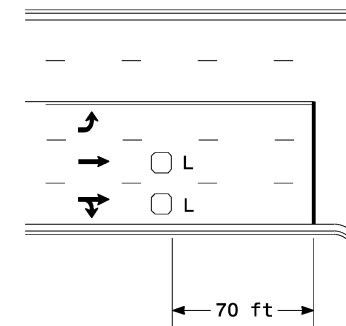


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

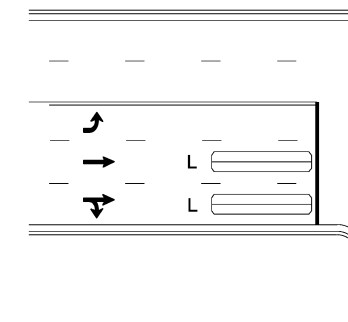
"Stretch" Operation

Low Speed Detection (≤35 mph)



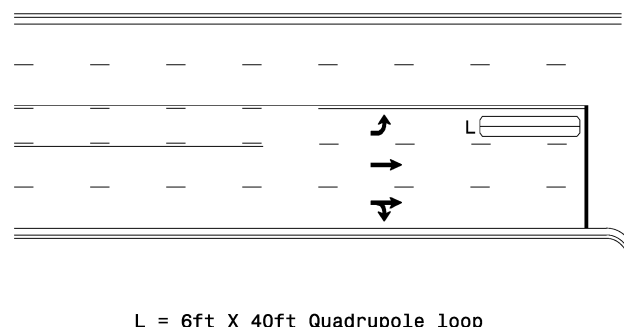
L = 6ft X 6ft
Wired in series

OR



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

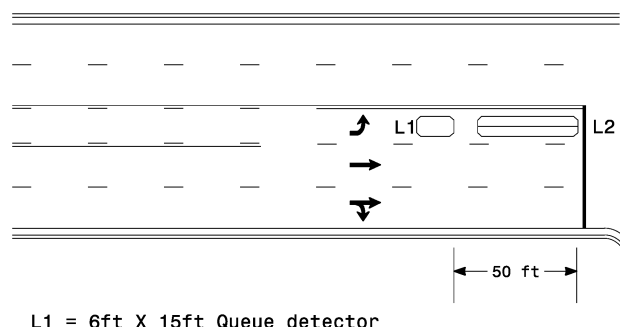
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

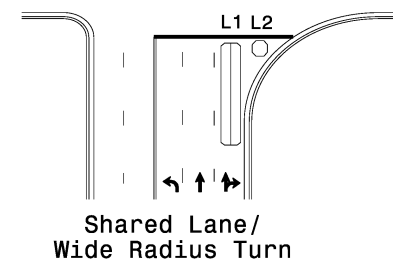
OR



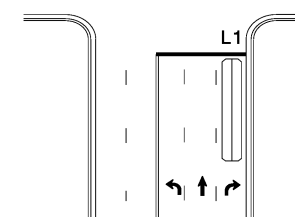
L1 = 6ft X 15ft Queue detector
L2 = 6ft X 40ft Quadrupole loop

Queue Loop Detection

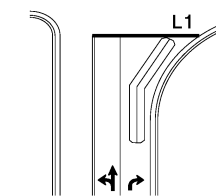
Right Turn Lane Detection



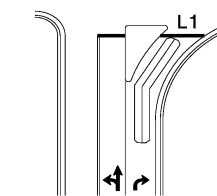
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

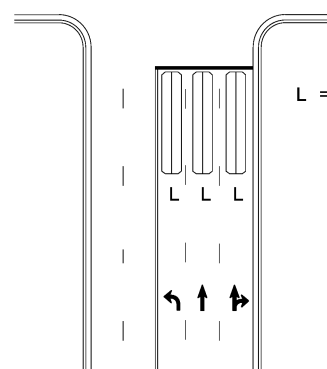


Wide Radius Turn



Channelized Turn

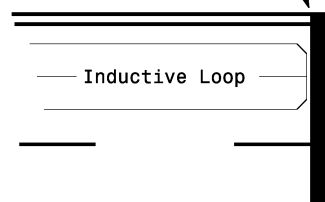
Side Street Detection



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:	
REVISIONS:		INIT. DATE:	DATE: 1/30/2015 SIG. INVENTORY NO.: