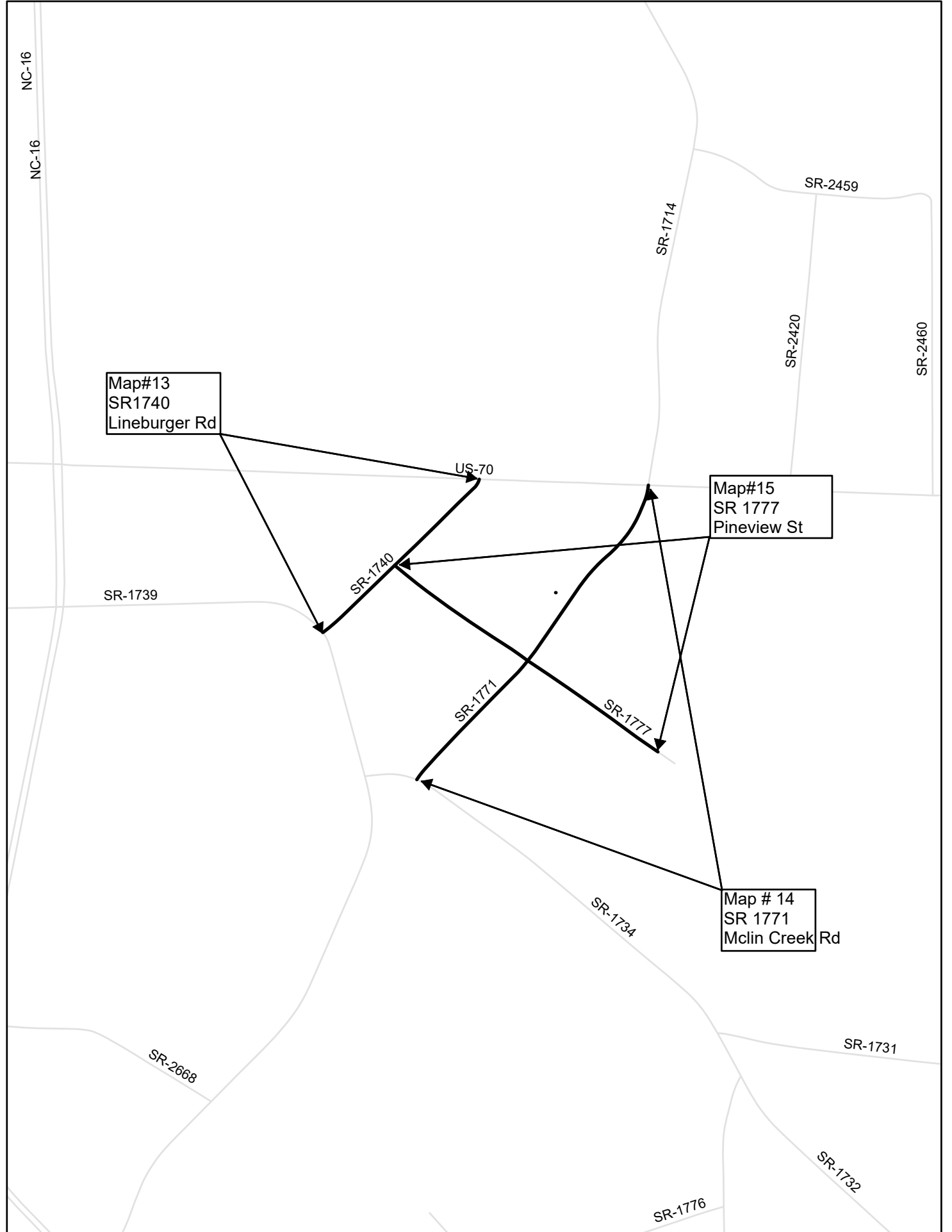
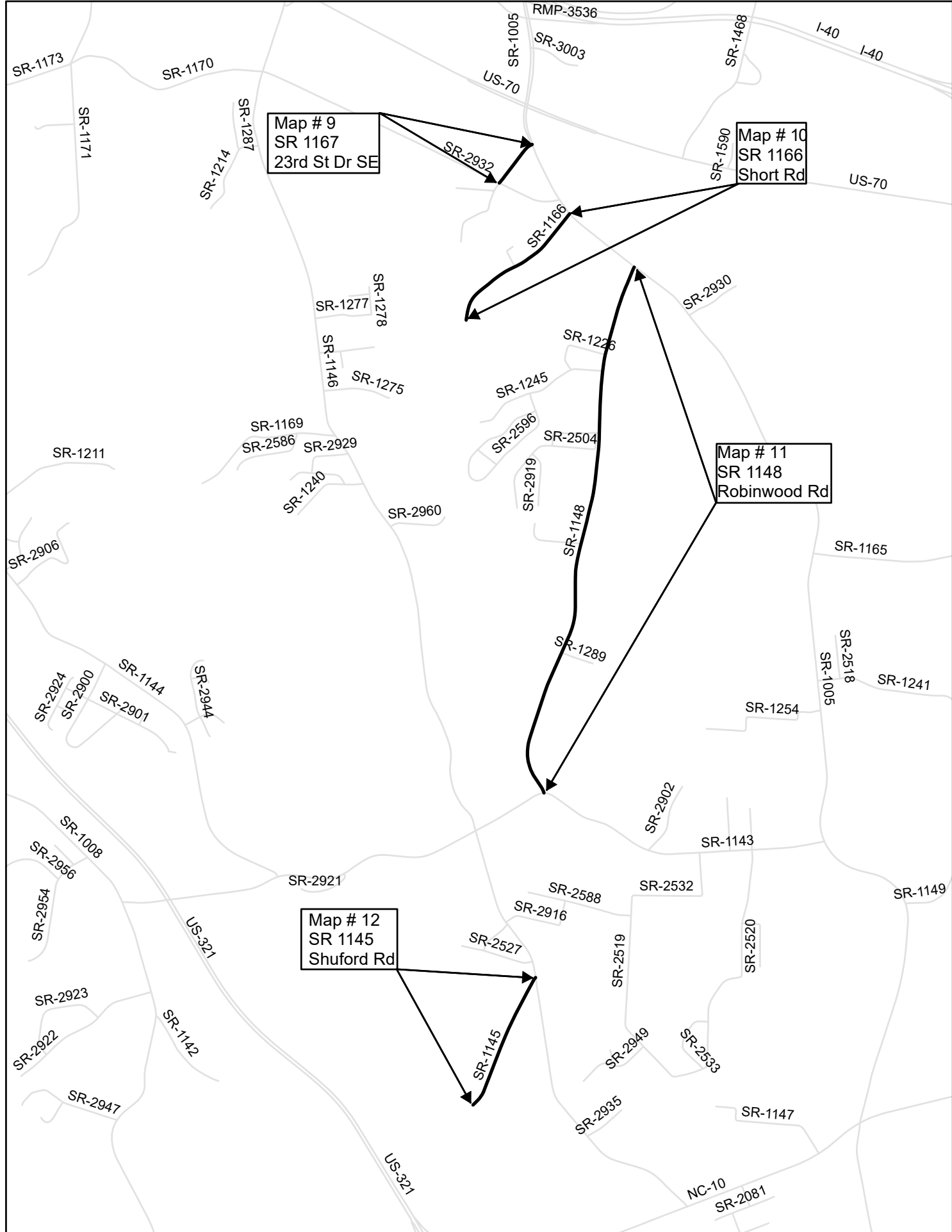
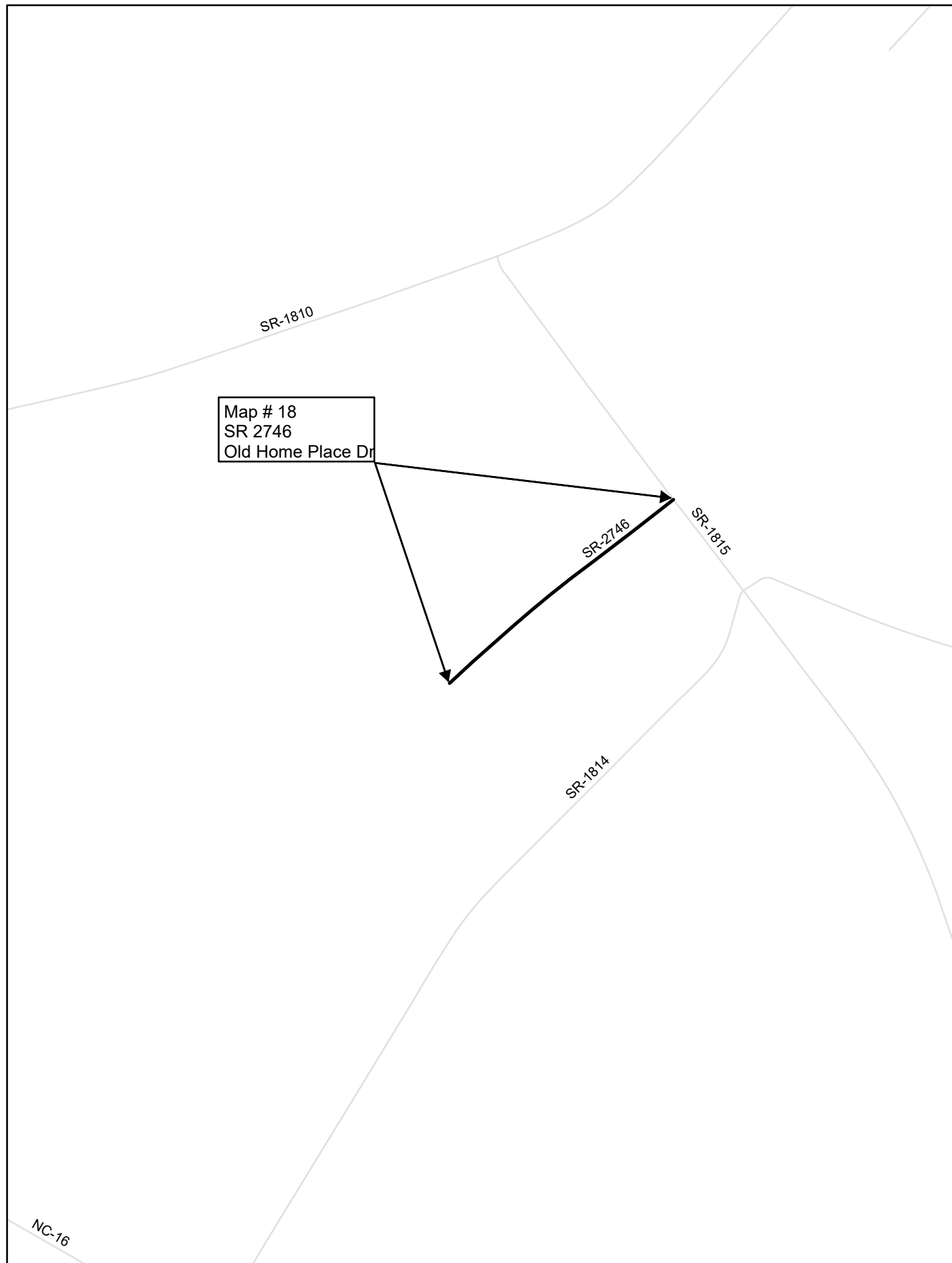
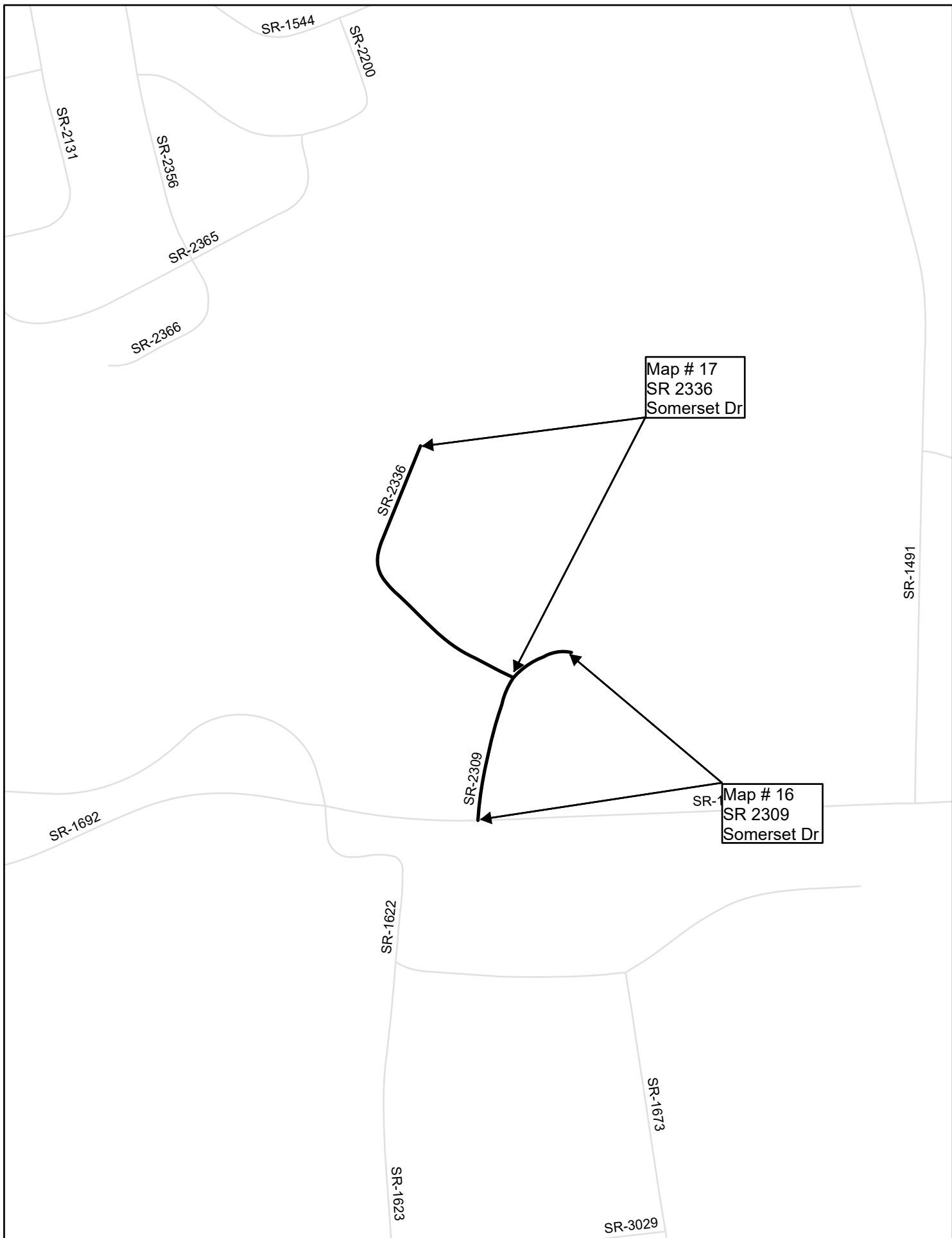


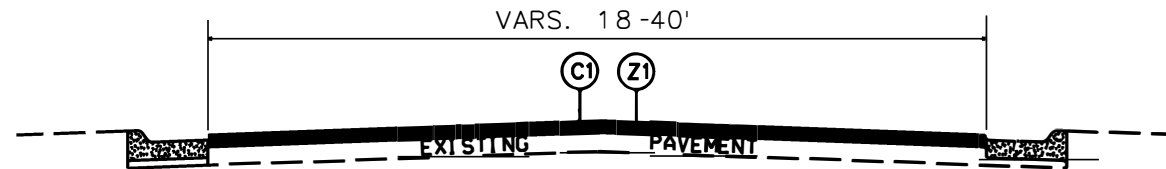
Map # 2  
NC 10





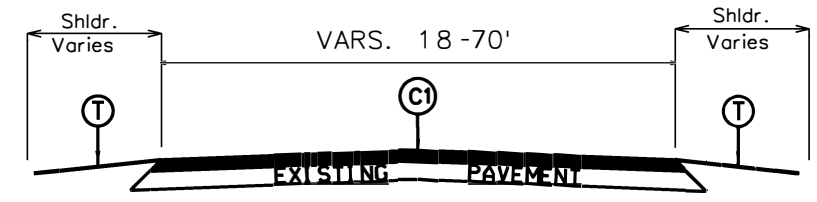






**TYPICAL SECTION NO. 1**

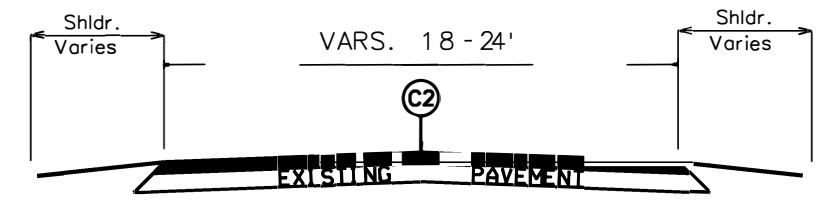
MAP 1 - 0+00 to 44+52  
 MAP 2 - 432+95 to 435+45  
 Map 2 - 617+76 to 620+60  
 MAP 16 - ENTIRE MAP



**TYPICAL SECTION NO. 2**

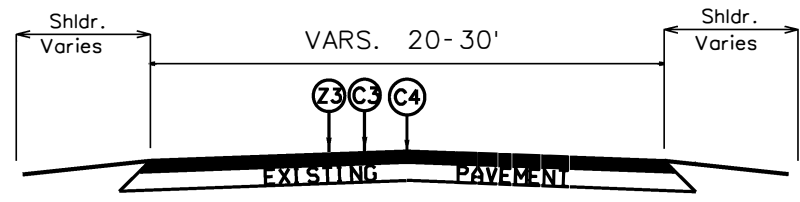
MAP 1 - 44+52 to 270+34  
 MAP 2 - 0+00 to 432+95  
 MAP 2 - 435+45 to 617+76  
 MAP 2 - 620+60 to 665+50  
 MAP 2 - 672+97 to 799+40  
 MAP 3 - ENTIRE MAP  
 MAP 5 - ENTIRE MAP  
 MAP 10 - ENTIRE MAP  
 MAP 11 - 0+00 to 26+97  
 MAP 11 - 30+66 to 108+77  
 MAP 12 - ENTIRE MAP  
 MAP 13 - ENTIRE MAP  
 MAP 14 - 4+87 to 25+34  
 MAP 15 - ENTIRE MAP

\*NOTE: SECTION BETWEEN 665+50 AND 672+97 OF MAP 2 WILL BE SKIPPED DUE TO TURN LANE INSTALLATION BY OTHERS.



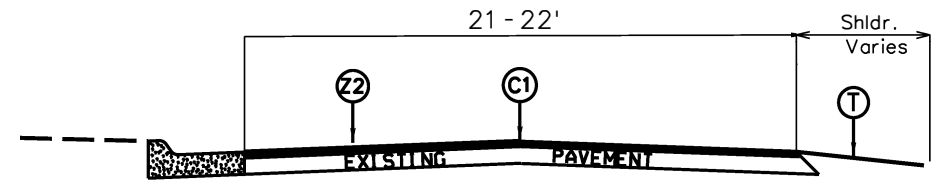
**TYPICAL SECTION NO. 3**

MAP 4 - ENTIRE MAP  
 MAP 6 - ENTIRE MAP  
 MAP 7 - ENTIRE MAP  
 MAP 8 - ENTIRE MAP  
 MAP 18 - ENTIRE MAP



**TYPICAL SECTION NO. 4**

MAP 9 - ENTIRE MAP  
 MAP 17 - ENTIRE MAP



**TYPICAL SECTION NO. 5**

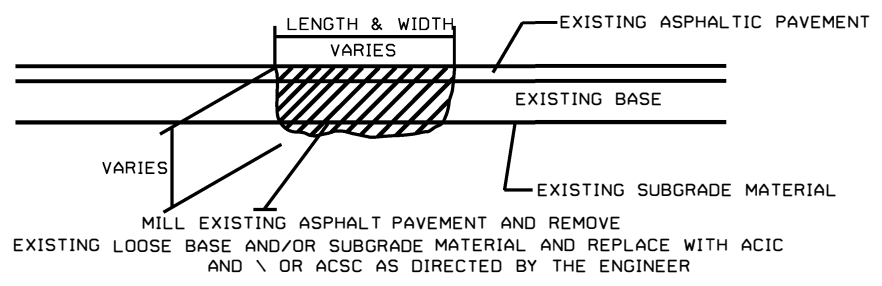
MAP 11 - 26+97 to 30+66  
 MAP 14 - 0+00 to 4+87

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD.
C3	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C4	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
Z1	MILL EXST. ASPHALT PAVMENT APPROX. 1 1/2" IN DEPTH
Z2	MILL EXST. ASPHALT PAVMENT APPROX. 0 - 1 1/2" IN DEPTH
Z3	MILL EXST. ASPHALT PAVMENT APPROX. 5" IN DEPTH
T	AGGREGATE SHOULDER BORROW (SHOULDER RECONSTRUCTION, WIDTH VARIES 2'-6')
Y1	INCIDENTAL MILLING

Checked by:

Drawn by: G. Brittain

**DETAIL A**  
**PATCHING EXISTING PAVEMENT**



**DETAIL D**  
**MILLING BRIDGE APPROACHES**

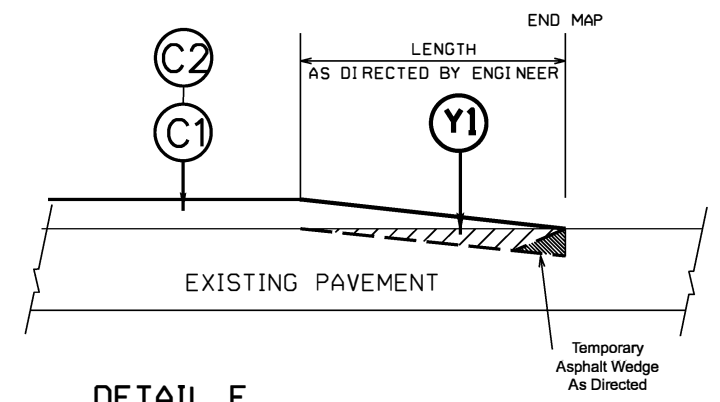
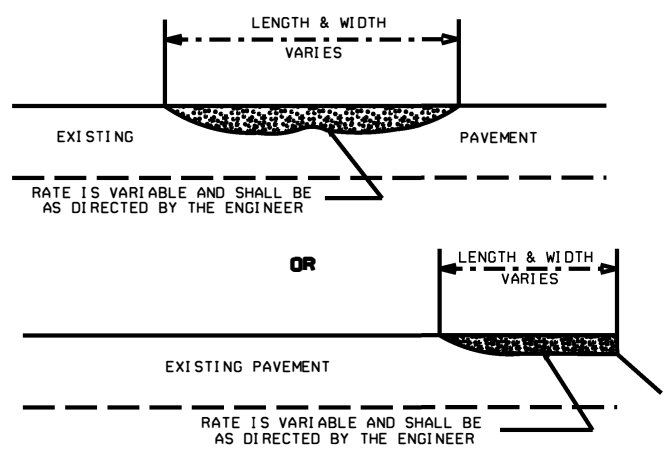


Checked by:

Drawn by: G. Brittain

**DETAIL B**

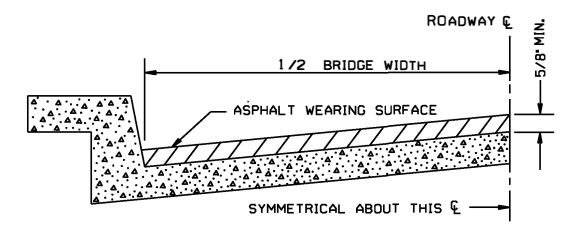
**ASPHALT CONCRETE SURFACE COURSE**  
**TYPE S9.5C (LEVELING COURSE)**



**DETAIL E**  
**TIE-IN (INCIDENTAL) MILLING DETAIL**

**DETAIL C**

**BRIDGE HALF TYPICAL SECTION**

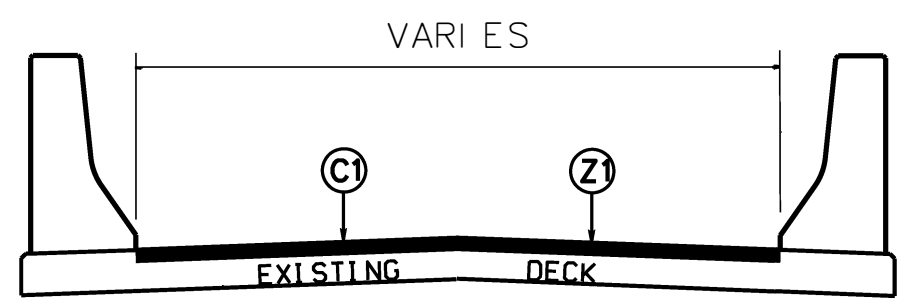


FOR BRIDGES WITH FLOOR DRAINS, CARE SHALL BE EXERCISED IN PLACING THE WEARING SURFACE AROUND FLOOR DRAINS SO AS NOT TO HINDER EFFECTIVE DRAINAGE. ALL DRAINS SHALL BE LEFT OPEN.

THE PROPOSED WEARING SURFACE SHALL VARY IN THICKNESS AS NECESSARY TO PROVIDE A SMOOTH RIDING SURFACE. A THICKNESS OF NOT LESS THAN 5/8" SHALL BE PROVIDED. THE MAXIMUM THICKNESS SHALL PREFERABLY BE 1-1/2" UNLESS IT IS IMPRACTICAL TO PROVIDE A SMOOTH RIDING SURFACE OTHERWISE.

**NOTES**

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



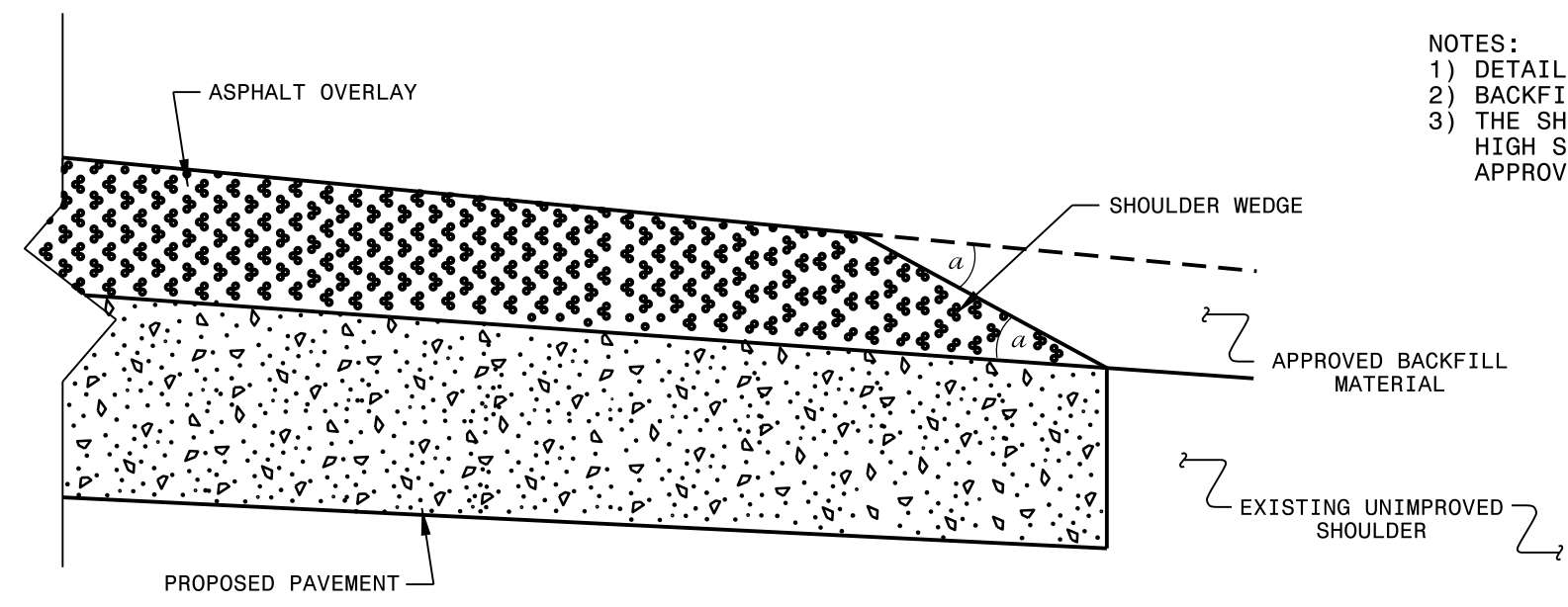
**ASPHALT BRIDGE SECTION**

Use for all asphalt bridges

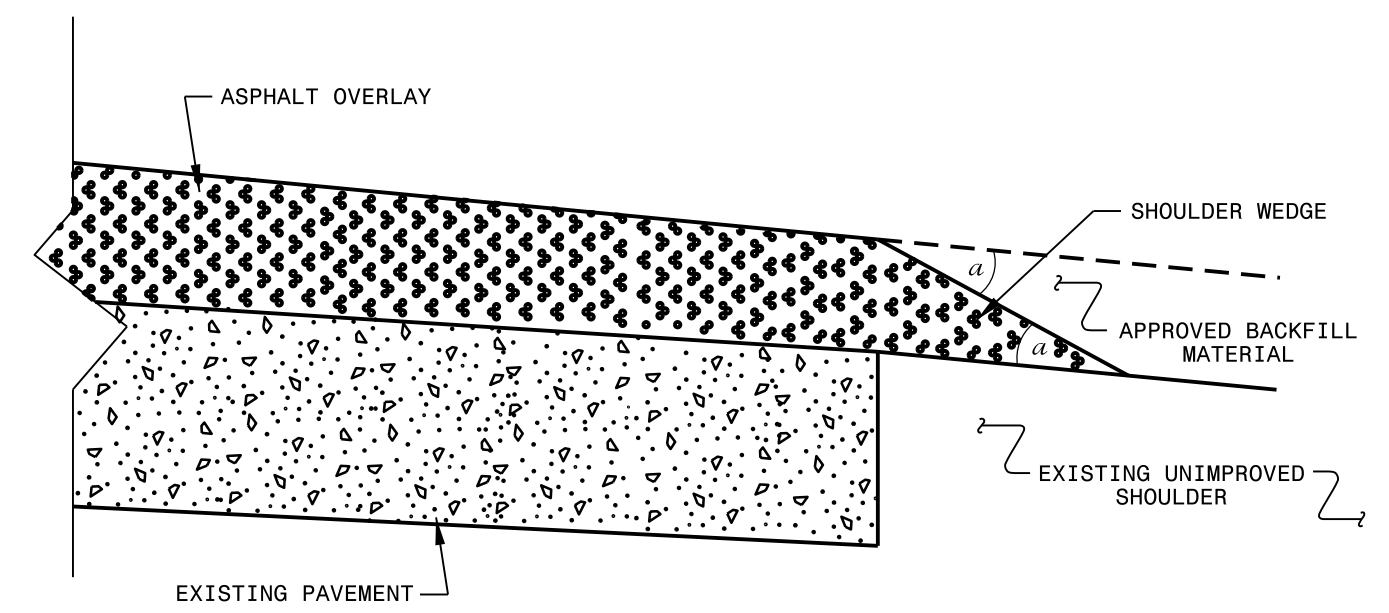
**PAVEMENT SCHEDULE**

C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD.
C3	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C4	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
Z1	MILL EXST. ASPHALT PAVMENT APPROX. 1 1/2" IN DEPTH
Z2	MILL EXST. ASPHALT PAVMENT APPROX. 0 - 1 1/2" IN DEPTH
Z3	MILL EXST. ASPHALT PAVMENT APPROX. 5" IN DEPTH
T	AGGREGATE SHOULDER BORROW (SHOULDER RECONSTRUCTION, WIDTH VARIES 2'-6')
Y1	INCIDENTAL MILLING

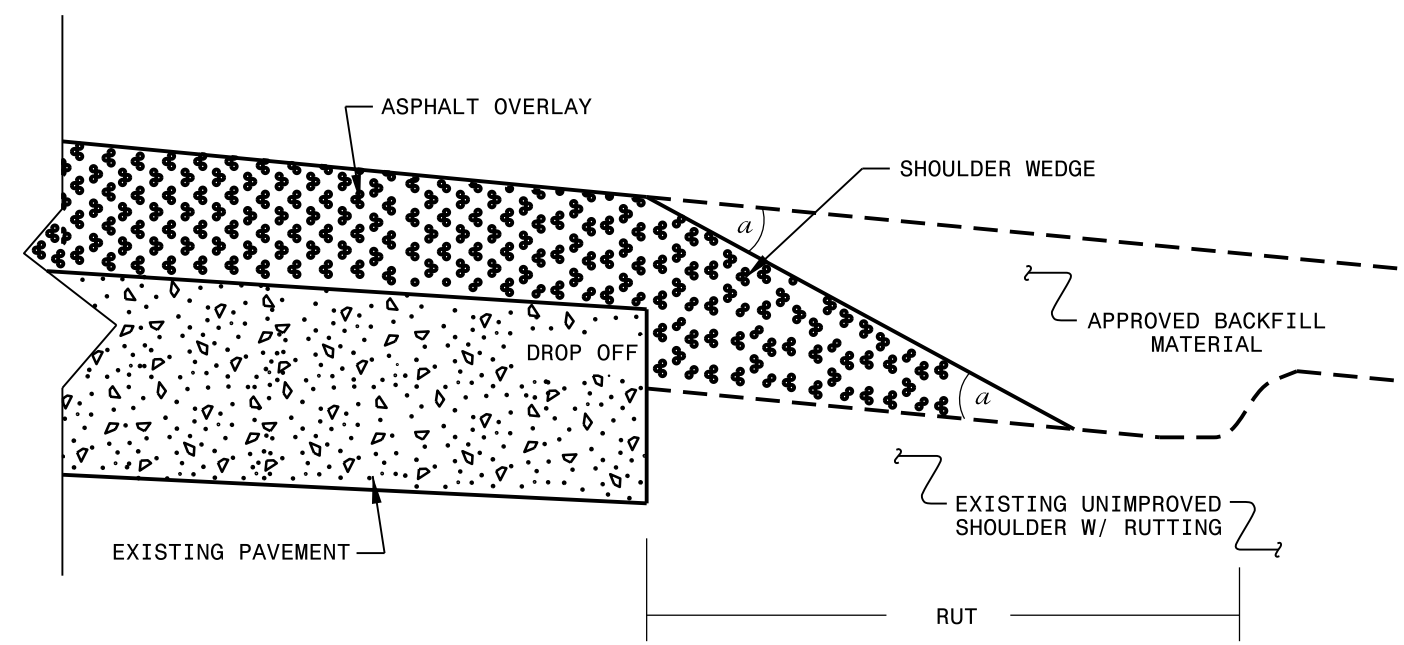
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
  - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
  - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



**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.: s:\usr\detatl1s\stand\shoulderwedgedetatl1.dgn	

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

\$\$\$SYTIME\$\$\$  
\$\$\$USERNAME\$\$\$



PROJECT NO. 2023CPT.12.02.10181, 2023CPT.12.02.20181	SHEET NO. 9	TOTAL NO.
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**SUMMARY OF QUANTITIES**

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	1220000000-E	1245000000-E	1260000000-E	1297000000-E	1308000000-E	1330000000-E	1491000000-E	1523000000-E	1524000000-E	1575000000-E	1704000000-E	1880000000-E	2830000000-N	2845000000-N	5255000000-N	7324000000-N	7444000000-E	7456000000-E										
												INCIDENTAL STONE BASE	SHOULDER RECONSTRUCTION	AGGREGATE SHOULDER BORROW	1 1/2" MILLING	5" MILLING	0" TO 1.5" MILLING	INCIDENTAL MILLING	ASPHALT CONC BASE COURSE, TYPE B25.0C	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	ASPHALT CONC SURFACE COURSE, TYPE S9.5C (LEVELING COURSE)	ASPHALT BINDER FOR PLANT MIX	PATCHING EXISTING PAVEMENT	BLOTTING SAND	ADJUSTMENT OF MANHOLES	ADJUSTMENT OF METER BOXES OR VALVE BOXES	PORTABLE LIGHTING	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (14-2)									
												MI	FT	TONS	SMI	TON	SY	SY	SY	SY	TON	TON	TON	TONS	TONS	TON	EA	EA	LS	EA	LF	LF							
2023CPT.12.02.10181	Catawba	1	US 70	FROM SR 1715 (N OXFORD ST) TO IREDELL CO	1, 2	2	ZWU	NO	NO	5.12	24-40	150	8.55	520	20,000		1,300		7,056		427	75		13	19	*	1	500	100										
2023CPT.12.02.10181	Catawba	2	NC 10	FROM LINCOLN COUNTY TO SR 1005 (STARTOWN RD)	1, 2	2	ZWU	NO	NO	15.14	26-70	850	30.28	1,820	7,000		1,200		20,952	45	1,265	100	10			*	1	1,500	500										
<b>TOTAL FOR PROJ NO. 2023CPT.12.02.10181</b>												<b>20.26</b>		<b>1,000</b>	<b>38.83</b>	<b>2,340</b>	<b>27,000</b>		<b>2,500</b>		<b>28,008</b>	<b>45</b>	<b>1,692</b>	<b>175</b>	<b>10</b>	<b>13</b>	<b>19</b>		<b>2</b>	<b>2,000</b>	<b>600</b>								
2023CPT.12.02.20181	Catawba	3	SR 1810 (PROVIDENCE MILL RD)	FROM BRIDGE TO NC 16	2	2	ZWU	NO	NO	3.94	20		7.88	475			2,000		4,085		252	140																	
2023CPT.12.02.20181	Catawba	4	SR 1938 (POND RD)	FROM SR 1810 (PROVIDENCE MILL RD) TO END MAINT	3	2	ZWU	NO	NO	0.20	20	20							142		10	40																	
2023CPT.12.02.20181	Catawba	5	SR 2012 (SIGMON DAIRY RD)	FROM SR 2007 (W MAIDEN RD) TO PVMT JOINT	2	2	ZWU	NO	NO	0.99	20	60	1.98	120		800		1,024	525	96																			
2023CPT.12.02.20181	Catawba	6	SR 1909 (CRESTVIEW DR)	FROM NC 16 TO SR 1884 SMYRE FARM RD	3	2	ZWU	NO	NO	0.22	24	20				180		184		15	75																		
2023CPT.12.02.20181	Catawba	7	SR 1910/1911 (HILLSIDE DR)	FROM SR 1909 (CRESTVIEW DR) TO SR 1884 (SMYRE FARM RD)	3	2	ZWU	NO	NO	0.28	18	40				60		174	184	30	150																		
2023CPT.12.02.20181	Catawba	8	SR 1912 (ARBOR LN)	FROM SR 1909 (CRESTVIEW DR) TO SR 1911 (HILLSIDE DR)	3	2	ZWU	NO	NO	0.12	18							79	60	12	75																		
2023CPT.12.02.20181	Catawba	9	SR 1167 (23RD ST DR SE)	FROM SR 1005 (STARTOWN RD) TO SR 2932 (CATAWBA VALLEY BLVD)	4	2	ZWU	NO	NO	0.20	21					2,464	604	281		44						*													
2023CPT.12.02.20181	Catawba	10	SR 1166 (SHORT RD)	FROM SR 1005 (STARTOWN RD) TO END MAINT	2	2	ZWU	NO	NO	0.54	20-36	60	1.08	65		380		562		39	100																		
2023CPT.12.02.20181	Catawba	11	SR 1148 (ROBINWOOD RD)	FROM SR 1005 (STARTOWN RD) TO SR 1143 (SANDYFORD RD)	2, 5	2	ZWU	NO	NO	2.06	21	100	4.28	260		150	170		2,145		131	40																	
2023CPT.12.02.20181	Catawba	12	SR 1145 (SHUFORD RD)	FROM SR 1146 (ROBINSON RD) TO CUL-DE-SAC	2	2	ZWU	NO	NO	0.56	18	20	1.12	68		100		540		37	100																		
2023CPT.12.02.20181	Catawba	13	SR 1740 (LINEBURGER RD)	FROM US 70 TO SR 1739 (EMANUEL CH RD)	2	2	ZWU	NO	NO	0.28	20	40	0.56	35		200		294		20	50																		
2023CPT.12.02.20181	Catawba	14	SR 1771 (MCLIN CREEK RD)	FROM US 70 TO SR 1734 (EMANUEL CH RD)	2, 5	2	ZWU	NO	NO	0.48	22	20	0.96	60		675	550		551		43	200				2		1	300	75									
2023CPT.12.02.20181	Catawba	15	SR 1777 (PINEVIEW ST)	FROM SR 1740 (LINEBURGER RD) TO END MAINT	2	2	ZWU	NO	NO	0.39	20		0.78	47			275		404	100	44	275																	
2023CPT.12.02.20181	Catawba	16	SR 2309 (SOMERSET DR)	FROM SR 1007 (1ST ST W) TO END MAINT	1	2	ZWU	NO	NO	0.17	33				3,300				294		21	80		2	7	*													
2023CPT.12.02.20181	Catawba	17	SR 2336 (SOMERSET DR)	FROM SR 2309 (SOMERSET DR) TO CUL-DE-SAC	4	2	ZWU	NO	NO	0.25	30					4,700		1,155	551		85			1	3	*													
2023CPT.12.02.20181	Catawba	18	SR 2746 (OLD HOME PLACE DR)	FROM SR 1815 (LITTLE MT RD) TO CUL-DE-SAC	3	2	ZWU	NO	NO	0.23	19	20					175		151		10	25																	
<b>TOTAL FOR PROJ NO. 2023CPT.12.02.20181</b>												<b>10.91</b>		<b>400</b>	<b>18.64</b>	<b>1,130</b>	<b>3,300</b>	<b>7,164</b>	<b>825</b>	<b>4,890</b>	<b>1,759</b>	<b>11,461</b>	<b>869</b>	<b>889</b>	<b>1,350</b>		<b>3</b>	<b>12</b>			<b>1</b>	<b>300</b>	<b>75</b>						
<b>GRAND TOTAL</b>													<b>31.17</b>	<b>1,400</b>	<b>57.47</b>	<b>3,470</b>	<b>30,300</b>	<b>7,164</b>	<b>825</b>	<b>7,390</b>	<b>1,759</b>	<b>39,469</b>	<b>914</b>	<b>2,581</b>	<b>1,525</b>	<b>10</b>	<b>16</b>	<b>31</b>	<b>1</b>	<b>3</b>	<b>2,300</b>	<b>675</b>							

PROJECT NO.	SHEET NO.	TOTAL NO.
2023CPT.12.02.10181, 2023CPT.12.02.20181	10	

## THERMOPLASTIC AND PAINT QUANTITIES

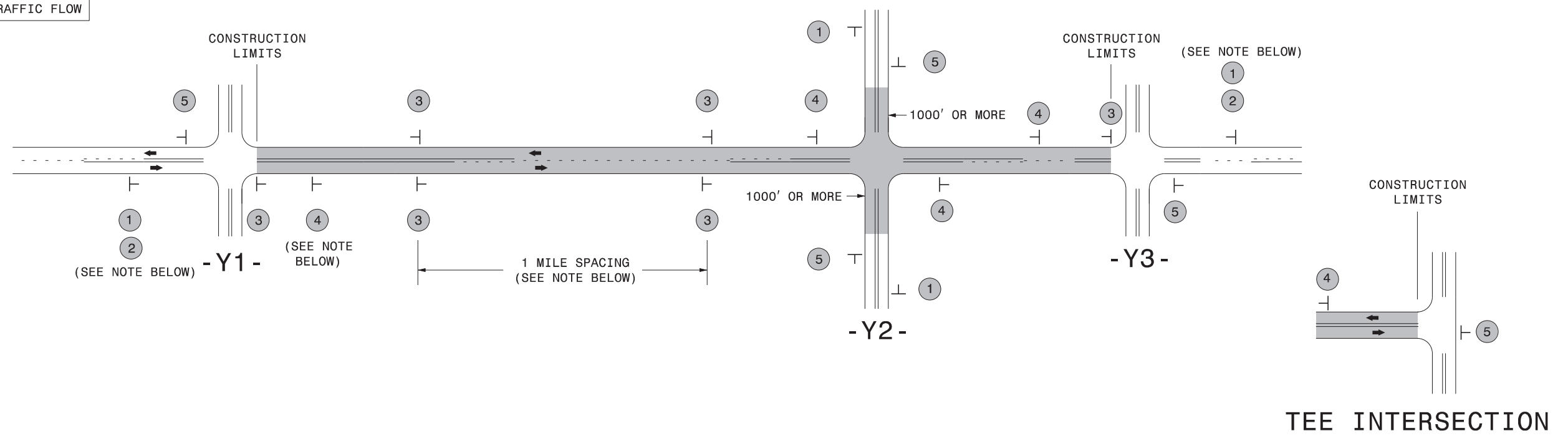
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH		WORK ZONE ADVANCE GENERAL WARNING SIGNING	TEMP TRAFFIC CONTROL	4685000000-E		4695000000-E	4709000000-E	4720000000-E	4725000000-E				4810000000-E		4870000000-E	4875000000-N	4905100000-N			
								MI	FT			4" X 90 MILS YELLOW THERMO	4" X 90 MILS WHITE THERMO	8" X 90 MILS YELLOW THERMO	24" X 90 MILS WHITE THERMO	THERMO PAVEMENT MARKING CHARACTER (90 MILS)	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR & RT ARROW 90 M	THERMO STR ARROW 90 M	THERMO MERGE ARROW (90 MILS)	4" YELLOW PAINT	4" WHITE PAINT	24" LINE REMOVAL	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	NON-CAST IRON SNOWPLOW- ABLE PAVEMENT MARKER		
								SF	LS			LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
2023CPT.12.02.10181	Catawba	1	US 70	FROM SR 1715 (N OXFORD ST) TO IREDELL CO	1, 2	2	2WU	5.12	24-40	405	*		54,100	54,100		1,740	12	6	1	5			54,100	54,100	100	8	350	
2023CPT.12.02.10181	Catawba	2	NC 10	FROM LINCOLN COUNTY TO SR 1005 (STARTOWN RD)	1, 2	2	2WU	15.14	26-70	1,180		160,000	160,000	800	820	24	40	18	4	15			80,000	80,000		101	1,050	
<b>TOTAL FOR PROJ NO. 2023CPT.12.02.10181</b>								<b>20.26</b>		<b>1,585</b>	<b>*</b>	<b>214,100</b>	<b>214,100</b>	<b>800</b>	<b>2,560</b>	<b>36</b>	<b>46</b>	<b>19</b>	<b>9</b>	<b>15</b>			<b>134,100</b>	<b>134,100</b>	<b>100</b>	<b>109</b>	<b>1,400</b>	
												<b>428,200</b>								<b>89</b>			<b>268,200</b>					
2023CPT.12.02.20181	Catawba	3	SR 1810 (PROVIDENCE MILL RD)	FROM BRIDGE TO NC 16	2	2	2WU	3.94	20	350													83,225	83,225				
2023CPT.12.02.20181	Catawba	4	SR 1938 (POND RD)	FROM SR 1810 (PROVIDENCE MILL RD) TO END MAINT	3	2	2WU	0.2	20																			
2023CPT.12.02.20181	Catawba	5	SR 2012 (SIGMON DAIRY RD)	FROM SR 2007 (W MAIDEN RD) TO PVMT JOINT	2	2	2WU	0.99	20	160													21,120	21,120				
2023CPT.12.02.20181	Catawba	6	SR 1909 (CRESTVIEW DR)	FROM NC 16 TO SR 1884 SMYRE FARM RD	3	2	2WU	0.22	24														4,650	4,650				
2023CPT.12.02.20181	Catawba	7	SR 1910/1911 (HILLSIDE DR)	FROM SR 1909 (CRESTVIEW DR) TO SR 1884 (SMYRE FARM RD)	3	2	2WU	0.28	18														5,925	5,925				
2023CPT.12.02.20181	Catawba	8	SR 1912 (ARBOR LN)	FROM SR 1909 (CRESTVIEW DR) TO SR 1911 (HILLSIDE DR)	3	2	2WU	0.12	18																			
2023CPT.12.02.20181	Catawba	9	SR 1167 (23RD ST DR SE)	FROM SR 1005 (STARTOWN RD) TO SR 2932 (CATAWBA VALLEY BLVD)	4	2	2WU	0.2	21	96													4,225	4,225				
2023CPT.12.02.20181	Catawba	10	SR 1166 (SHORT RD)	FROM SR 1005 (STARTOWN RD) TO END MAINT	2	2	2WU	0.54	20-36	48							1	1					1,600	1,600				
2023CPT.12.02.20181	Catawba	11	SR 1148 (ROBINWOOD RD)	FROM SR 1005 (STARTOWN RD) TO SR 1143 (SANDYFORD RD)	2, 5	2	2WU	2.06	21	120	*												45,200	45,200				
2023CPT.12.02.20181	Catawba	12	SR 1145 (SHUFORD RD)	FROM SR 1146 (ROBINSON RD) TO CUL-DE-SAC	2	2	2WU	0.56	18	48																		
2023CPT.12.02.20181	Catawba	13	SR 1740 (LINEBURGER RD)	FROM US 70 TO SR 1739 (EMANUEL CH RD)	2	2	2WU	0.28	20	96													5,925	5,925				
2023CPT.12.02.20181	Catawba	14	SR 1771 (MCLIN CREEK RD)	FROM US 70 TO SR 1734 (EMANUEL CH RD)	2, 5	2	2WU	0.48	22	96				36									10,340	10,340		40		
2023CPT.12.02.20181	Catawba	15	SR 1777 (PINEVIEW ST)	FROM SR 1740 (LINEBURGER RD) TO END MAINT	2	2	2WU	0.39	20														8,250	8,250				
2023CPT.12.02.20181	Catawba	16	SR 2309 (SOMERSET DR)	FROM SR 1007 (1ST ST W) TO END MAINT	1	2	2WU	0.17	33	48				52		1	1						3,600					
2023CPT.12.02.20181	Catawba	17	SR 2336 (SOMERSET DR)	FROM SR 2309 (SOMERSET DR) TO CUL-DE-SAC	4	2	2WU	0.25	30														5,300	5,300				
2023CPT.12.02.20181	Catawba	18	SR 2746 (OLD HOME PLACE DR)	FROM SR 1815 (LITTLE MT RD) TO CUL-DE-SAC	3	2	2WU	0.23	19	48																		
<b>TOTAL FOR PROJ NO. 2023CPT.12.02.20181</b>								<b>10.91</b>		<b>1,110</b>	<b>*</b>			<b>88</b>				<b>2</b>	<b>2</b>					<b>199,360</b>	<b>195,760</b>			<b>40</b>
																							<b>395,120</b>					
<b>GRAND TOTAL</b>								<b>31.17</b>		<b>2,695</b>	<b>1</b>	<b>214,100</b>	<b>214,100</b>	<b>800</b>	<b>2,648</b>	<b>36</b>	<b>48</b>	<b>21</b>	<b>9</b>	<b>15</b>			<b>333,460</b>	<b>329,860</b>	<b>100</b>	<b>109</b>	<b>1,440</b>	
												<b>428,200</b>							<b>93</b>			<b>663,320</b>						

# SIGNING FOR RESURFACING PROJECTS

**LEGEND**

┆ STATIONARY SIGN

← DIRECTION OF TRAFFIC FLOW



## MAINLINE (-L-) SIGNING

## -Y- LINE SIGNING

<b>SIGNING NOTES AND PLACEMENT PER DIRECTION</b>	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.	
	2	 <small>W7-3aP 24" X 18"</small>	#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	 <small>SP 13107 48" X 48"</small>	- 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	 <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. - FOR TEE INTERSECTIONS, INSTALL WITHIN 500' +/- OF THE INTERSECTION ALONG -L- LINE.	
	5	 <small>G20-2 A 48" X 24"</small>	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS OR AS SHOWN WHEN WORK ENDS AT A 3-WAY TEE INTERSECTION.	

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

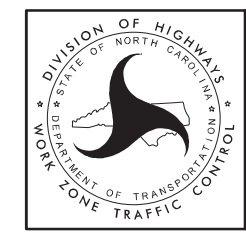
WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, PORTABLE ADVANCE WARNING SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.

 <small>W20-1 48" X 48"</small> PLACED 500' IN ADVANCE OF FLAGGER.	 <small>W20-7 A 48" X 48"</small> 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.

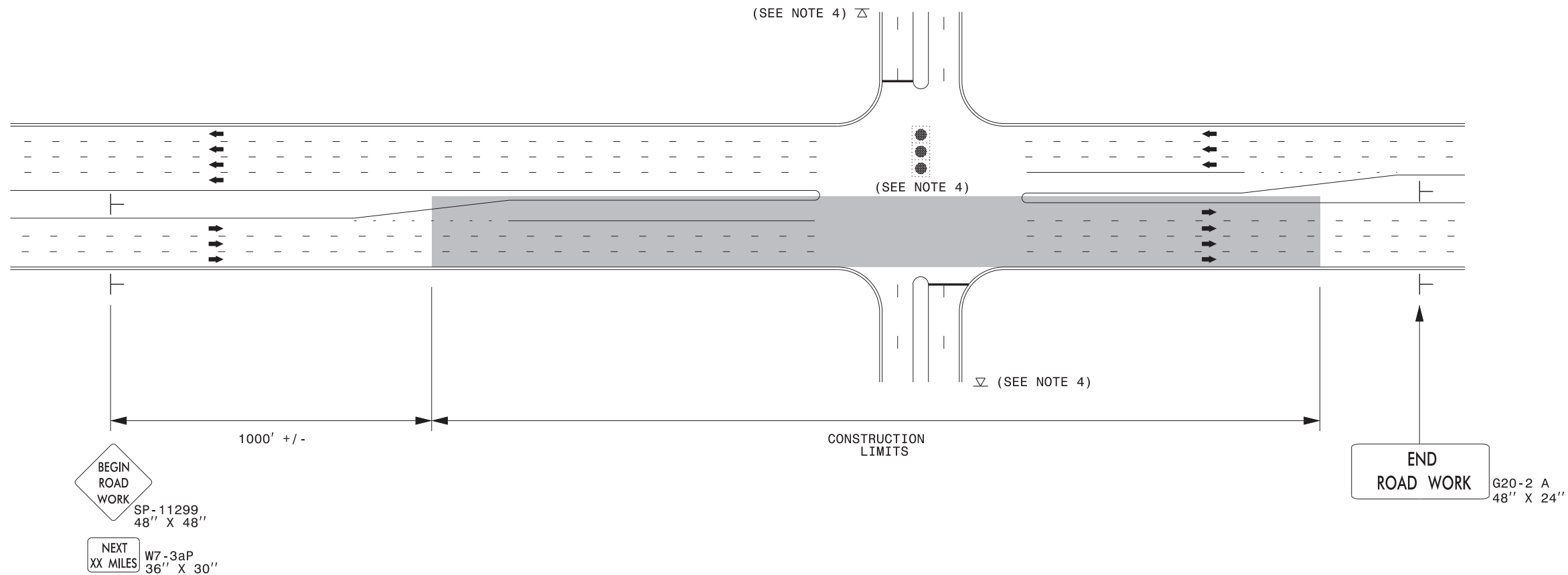
### MAPS LESS THAN 2 MILES

FOR 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**

## URBAN / SUBURBAN WORKZONES

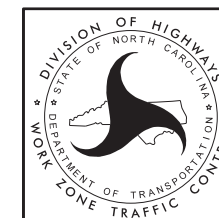


### NOTES:

- 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.

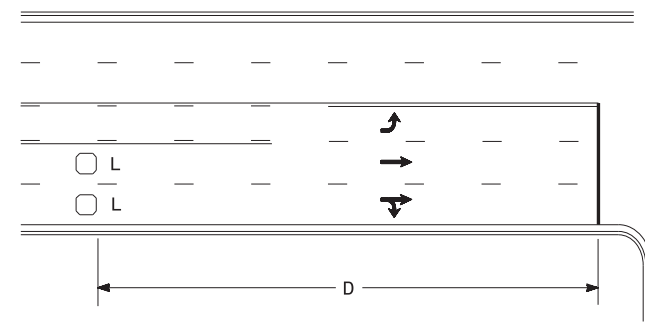
### LEGEND

- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW



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

### High Speed Detection (≥40 mph)

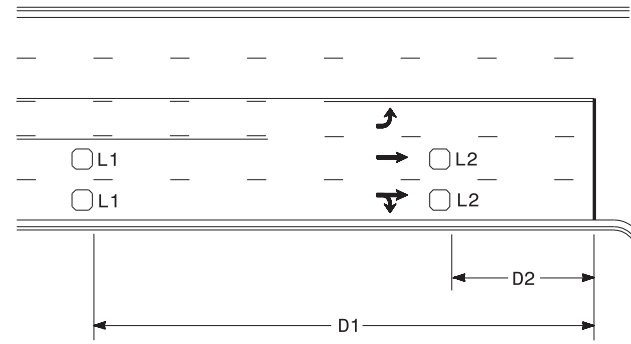


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

L = 6ft X 6ft  
Wired separately

Volume Density Operation

OR

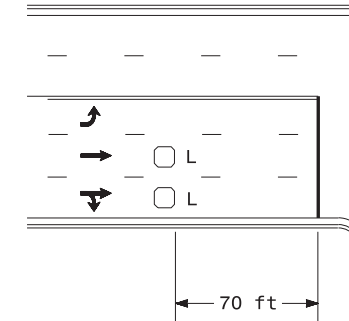


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

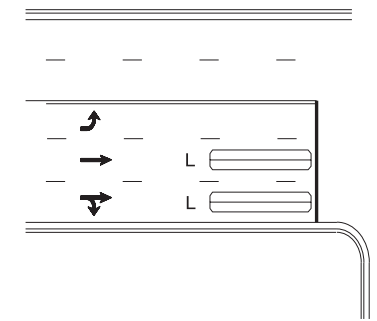
"Stretch" Operation

### Low Speed Detection (≤35 mph)



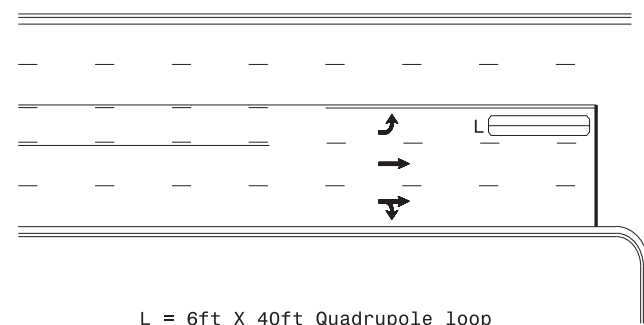
L = 6ft X 6ft  
Wired in series

OR



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

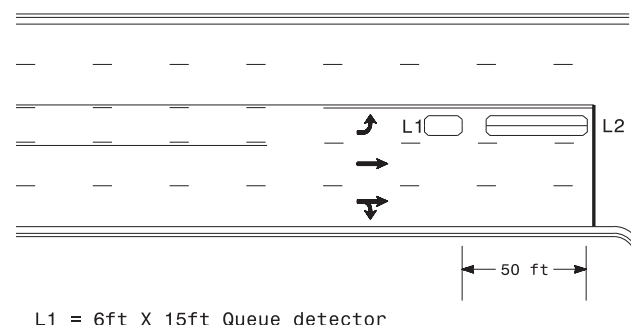
### Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

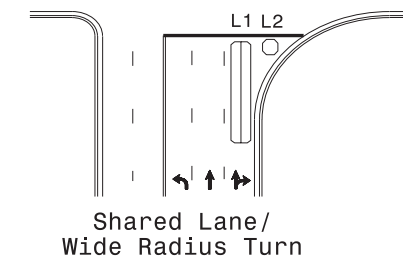
OR



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

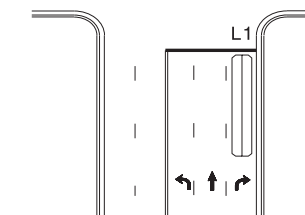
Queue Loop Detection

### Right Turn Lane Detection

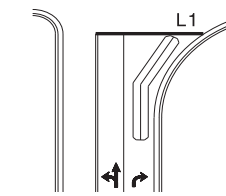


Shared Lane/  
Wide Radius Turn

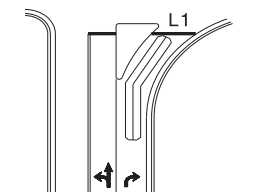
L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately



Standard Turn

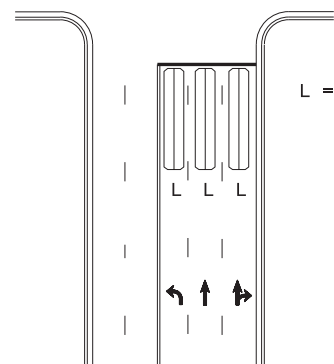


Wide Radius Turn



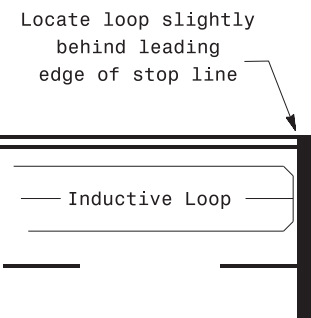
Channelized Turn

### 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

Prepared in the Offices of:

TRANSPORTATION MOBILITY AND SAFETY DIVISION  
STATE OF NORTH CAROLINA  
STATE OF TRANSPORTATION  
Signal Design Section

SEAL  
NORTH CAROLINA  
PROFESSIONAL ENGINEER  
029904  
JASON P. GALLOWAY

Typical Signal Loop Locations	
PLAN DATE: September 2020	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:
SCALE: N/A	REVISIONS: INIT. DATE

9/8/2020  
DATE

SIG. INVENTORY NO.