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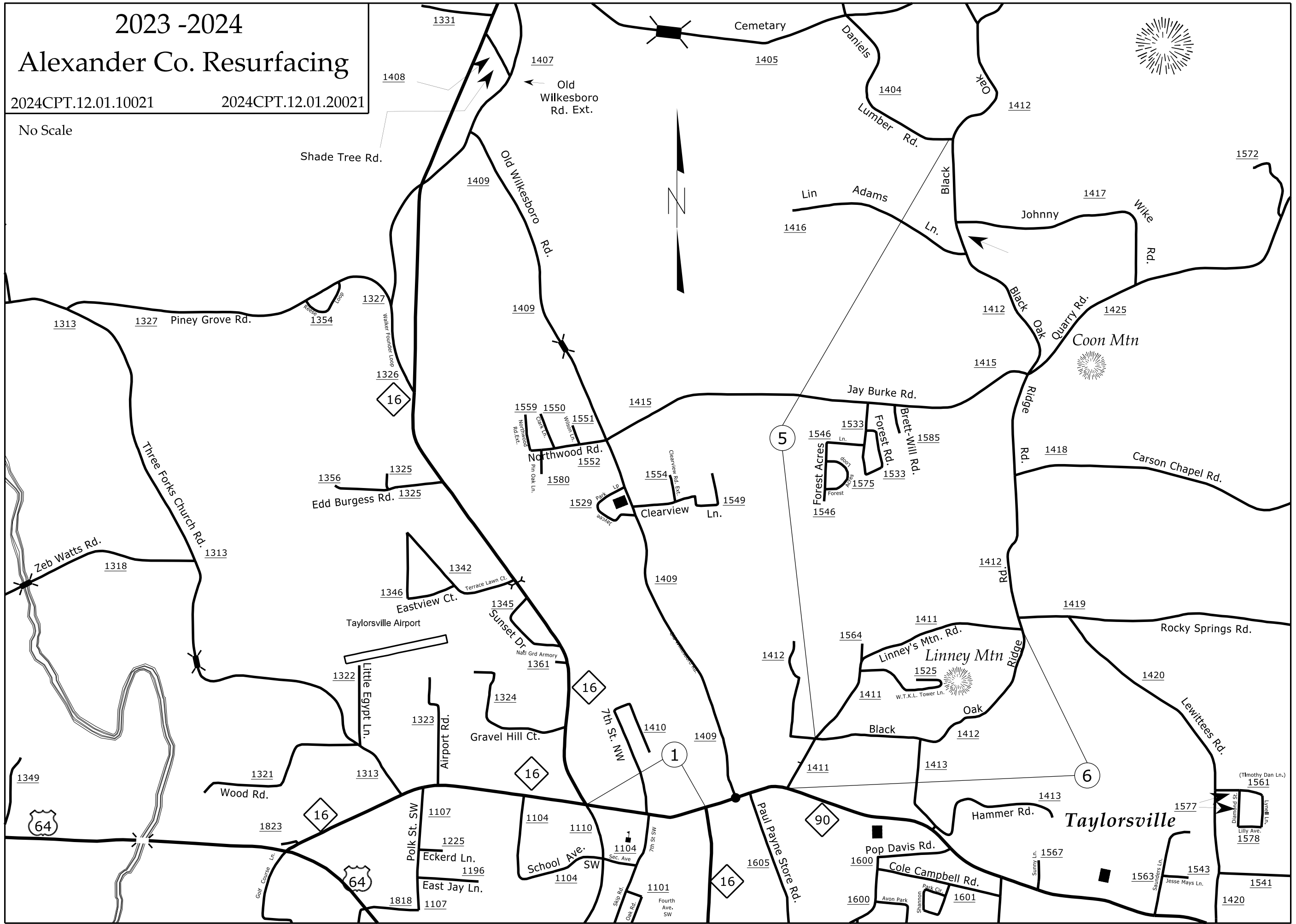
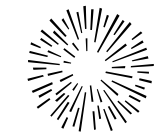
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# 2023 -2024 Alexander Co. Resurfacing

2024CPT.12.01.10021      2024CPT.12.01.20021

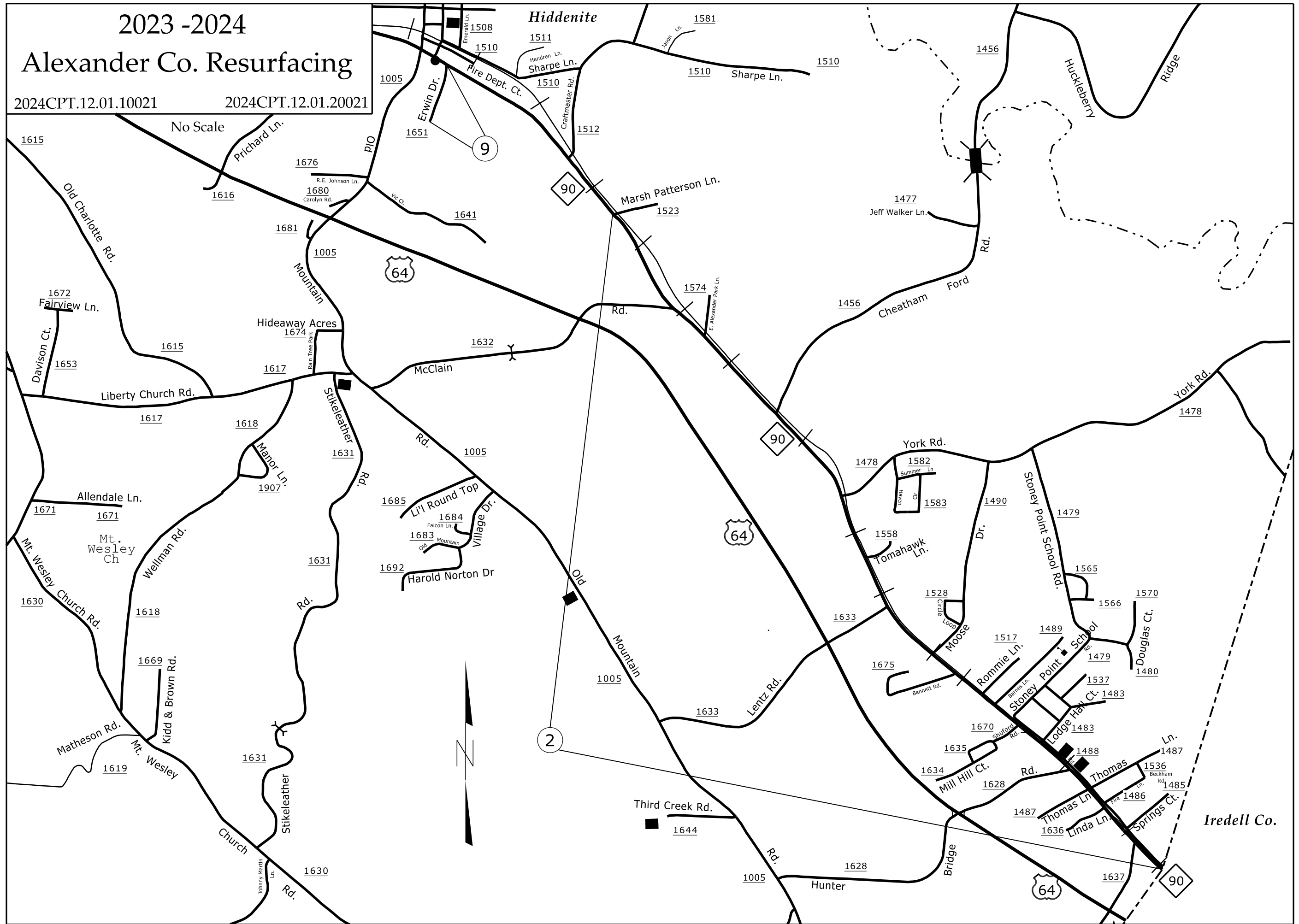
No Scale



# 2023 -2024 Alexander Co. Resurfacing

2024CPT.12.01.10021

2024CPT.12.01.20021



Iredell Co.

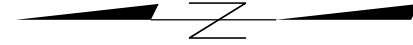
2023 -2024

# Alexander Co. Resurfacing

2024CPT.12.01.10021

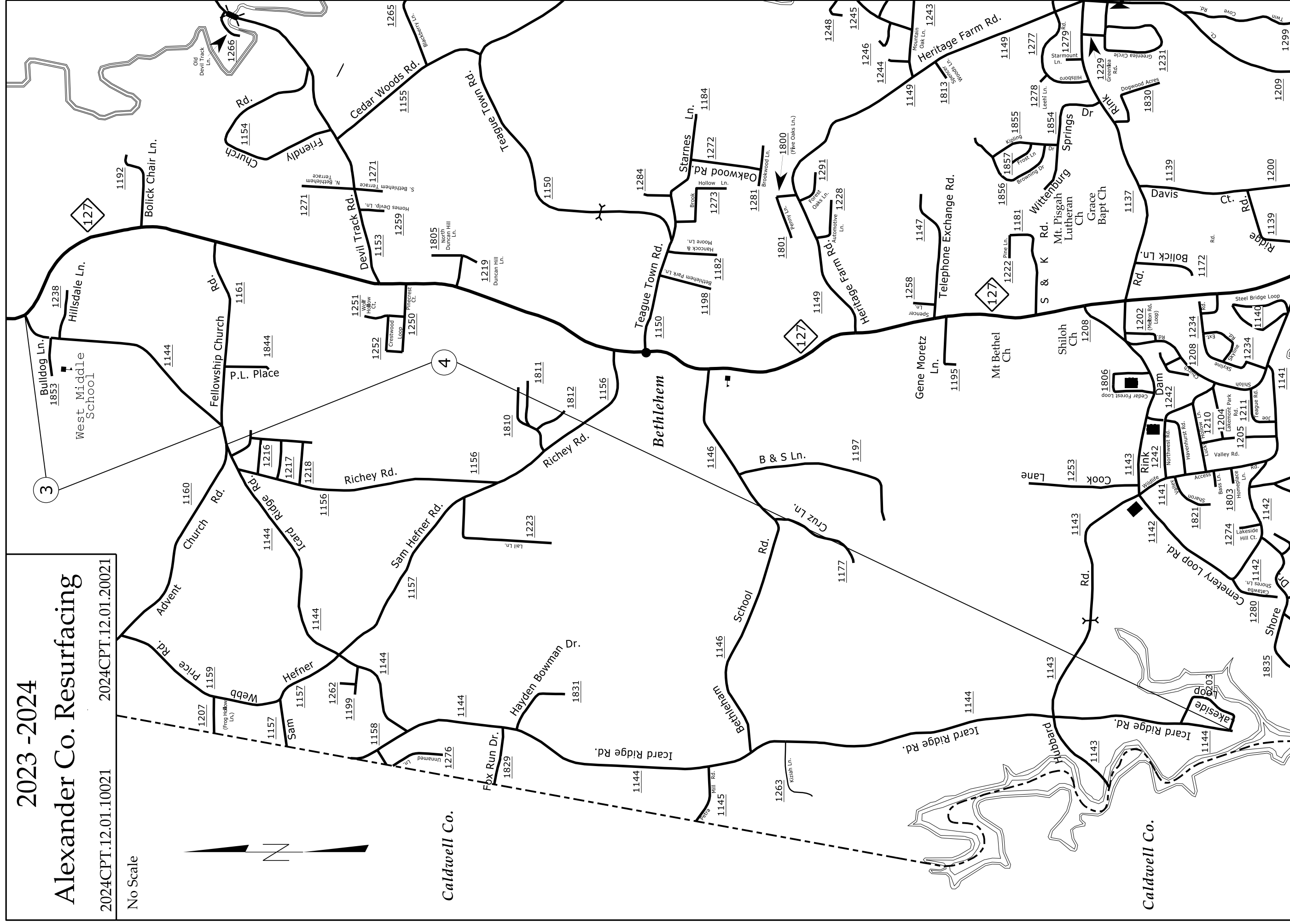
2024CPT.12.01.20021

No Scale



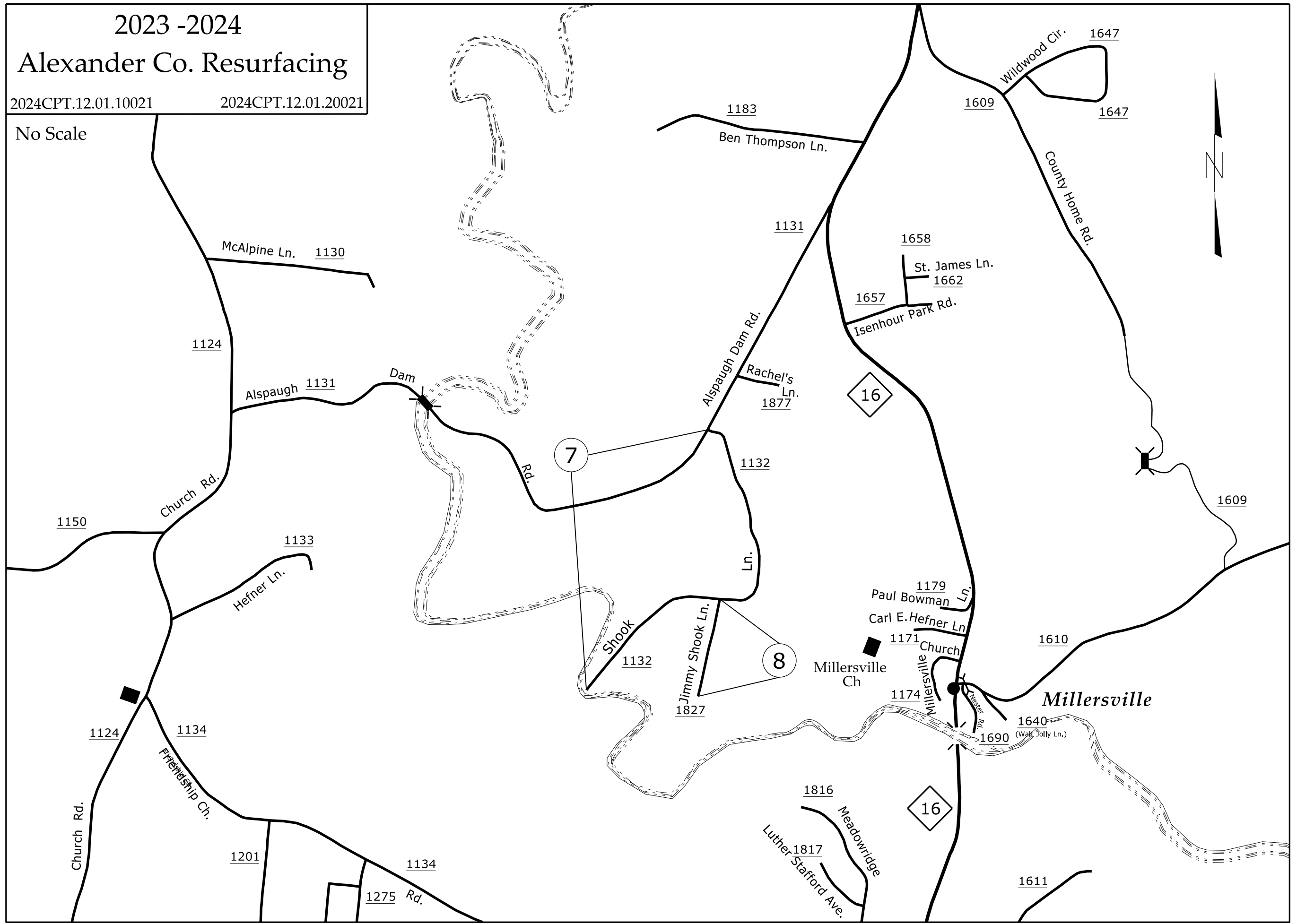
Caldwell Co.

Caldwell Co.

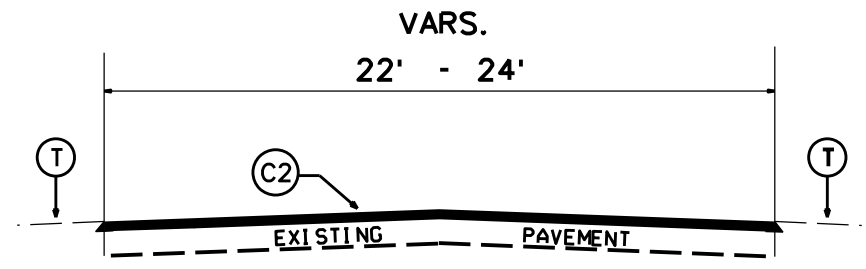


2023 -2024  
 Alexander Co. Resurfacing  
 2024CPT.12.01.10021      2024CPT.12.01.20021

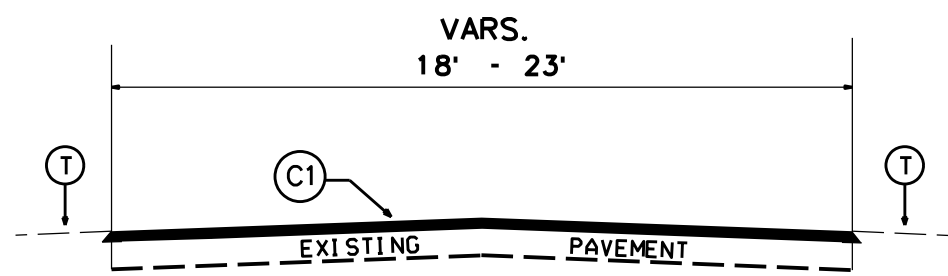
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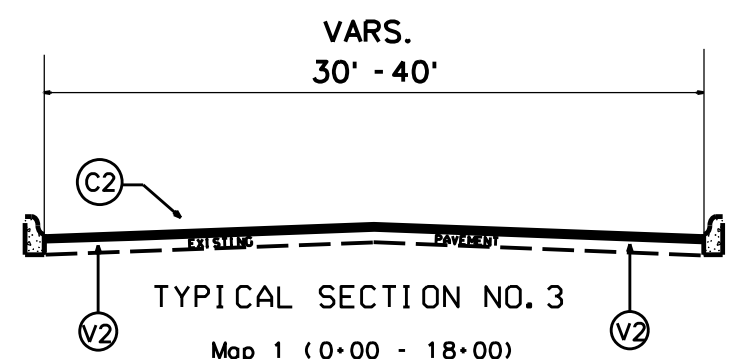
PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
IREDELL COUNTY		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
2024CPT.12.01.10021		PRIMARY RESURFACING
2024CPT.12.01.20021		SECONDARY RESURFACING



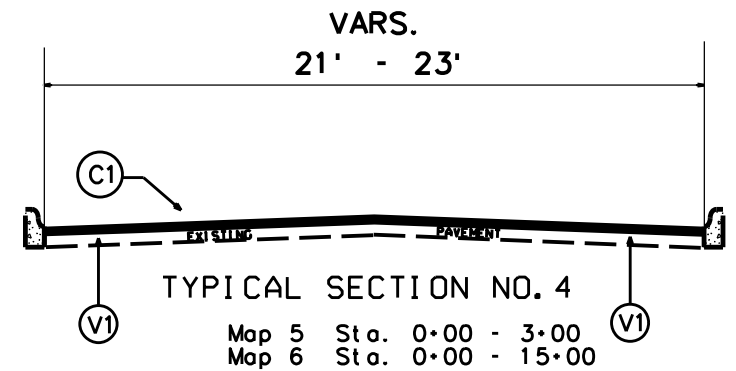
TYPICAL SECTION NO. 1  
Map 2 ALL



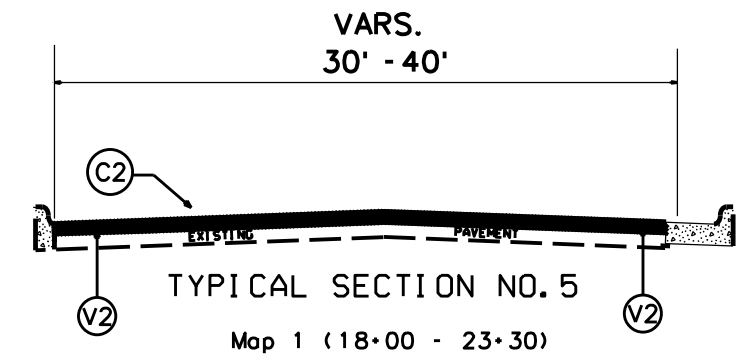
TYPICAL SECTION NO. 2  
Map 3, 4, 7, 8, 9 (ALL)  
Map 5 Sta. 3+00 - 159+98  
Map 6 Sta. 15+00 - 63+36



TYPICAL SECTION NO. 3  
Map 1 (0+00 - 18+00)



TYPICAL SECTION NO. 4  
Map 5 Sta. 0+00 - 3+00  
Map 6 Sta. 0+00 - 15+00



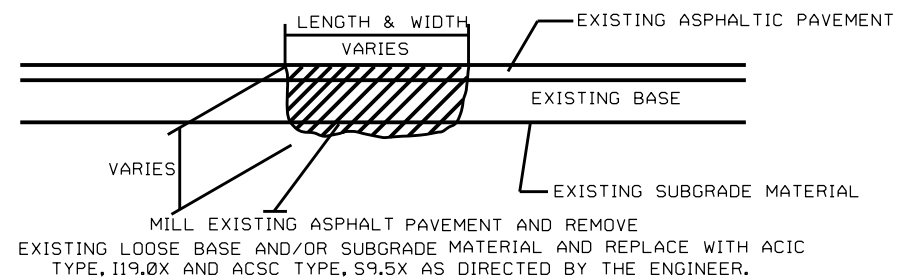
TYPICAL SECTION NO. 5  
Map 1 (18+00 - 23+30)

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
T	AGGREGATE SHOULDER BORROW (SHOULDER RECONSTRUCTION)
V1	MILL EXISTING ASPHALT PAVEMENT APPROX. 1" IN DEPTH
V2	MILL EXISTING ASPHALT PAVEMENT APPROX. 1.5" IN DEPTH

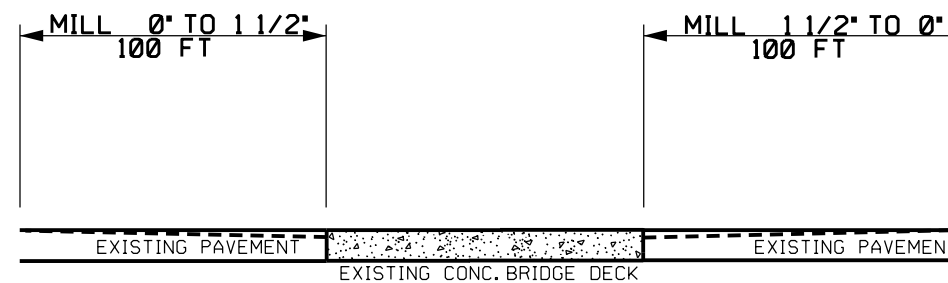
2023 - 2024  
Resurfacing Program  
Typical Sections  
Alexander County

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
IREDELL COUNTY		
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
2024CPT. 12. 01. 10021		PRIMARY RESURFACING
2024CPT. 12. 01. 20021		SECONDARY RESURFACING

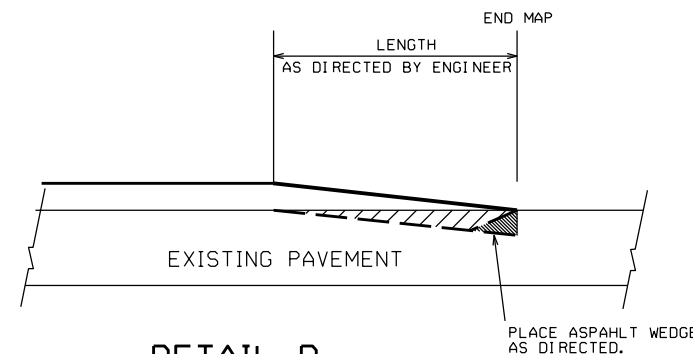
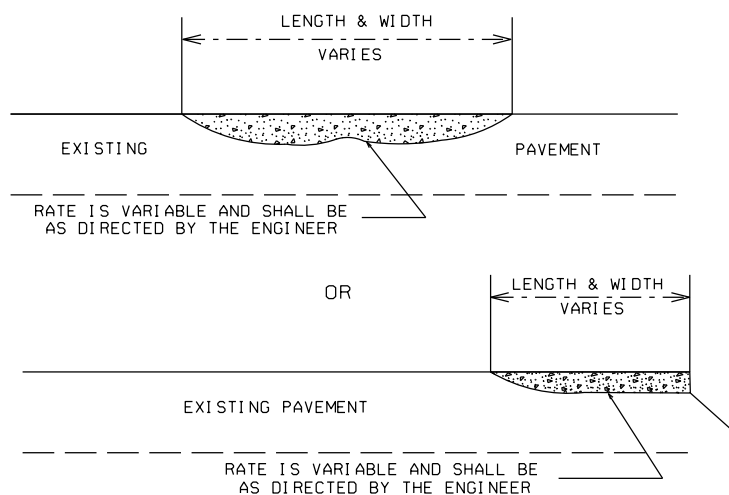
**DETAIL A**  
**PATCHING EXISTING PAVEMENT**



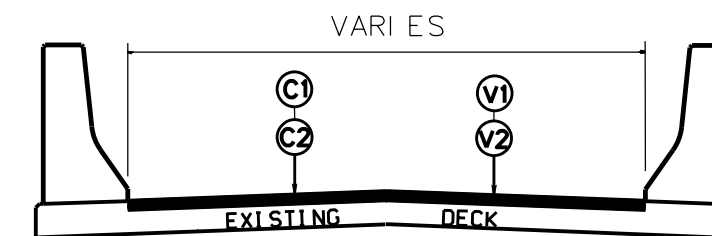
**DETAIL C**  
**MILLING BRIDGE APPROACHES**



**DETAIL B**  
**ASPHALT CONCRETE SURFACE COURSE**  
**TYPE S9.5X (LEVELING COURSE)**



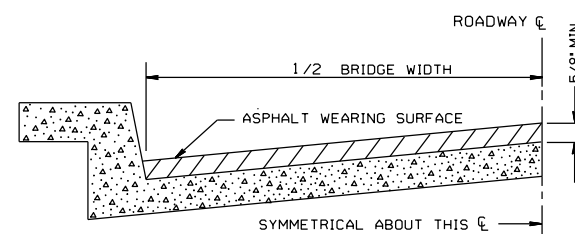
**DETAIL D**  
**TIE-IN (INCIDENTAL) MILLING DETAIL**



**ASPHALT BRIDGE SECTION**  
Use for all asphalt bridges

- \*\* Use C1 with V1 only
- \*\* Use C2 with V2 only

**DETAIL E**  
**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**

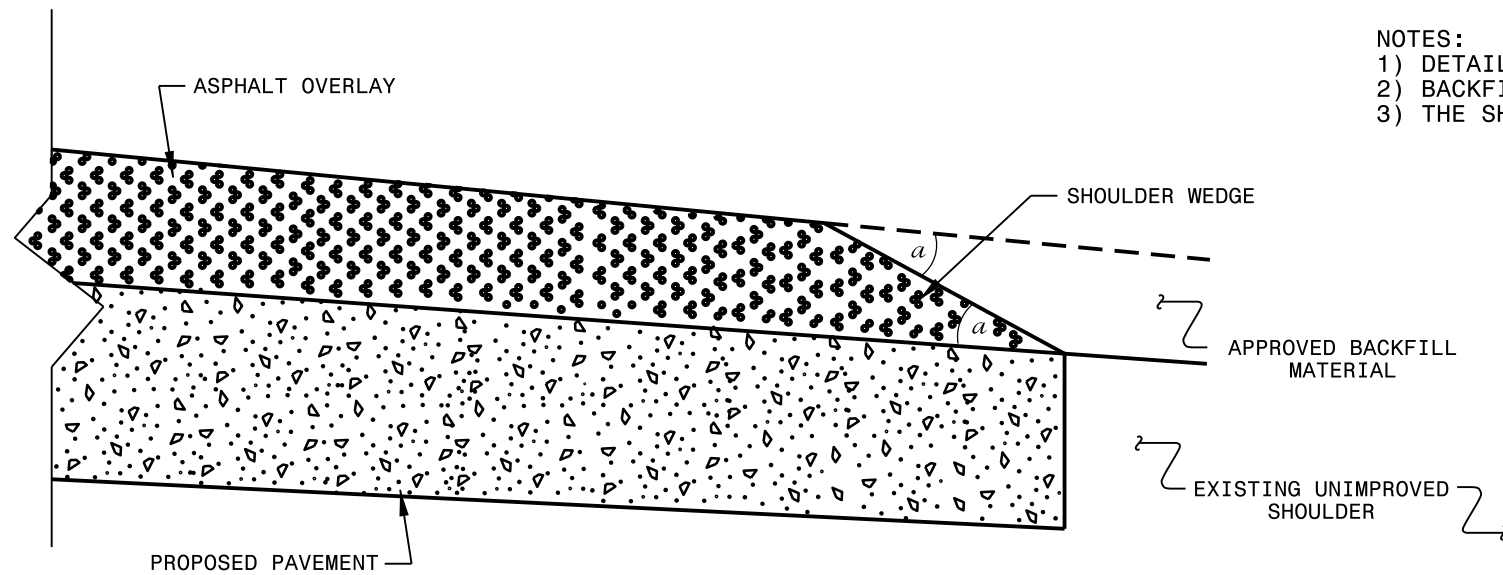
ALL UNPAVED S.R. ROADS TO BE SURFACED 50' FROM EDGE OF PAVEMENT OF MAIN PROJECT.  
ALL PAVED S.R. ROADS TO BE RESURFACED TO THE ENDS OF THE RADII, OR AS DIRECTED BY THE ENGINEER.  
EDGES, PAVEMENT WIDENING, INTERSECTIONS AND BRIDGE FLARES ARE INCLUDED IN THE TABLE OF QUANTITIES.  
SHOULDERS AND DITCHES ARE TO BE CONSTRUCTED BY OTHERS UNLESS OTHERWISE NOTED.  
BRIDGES TO BE RESURFACED AT LOCATIONS AND TO DEPTH AS DIRECTED BY THE ENGINEER.

**PAVEMENT SCHEDULE**

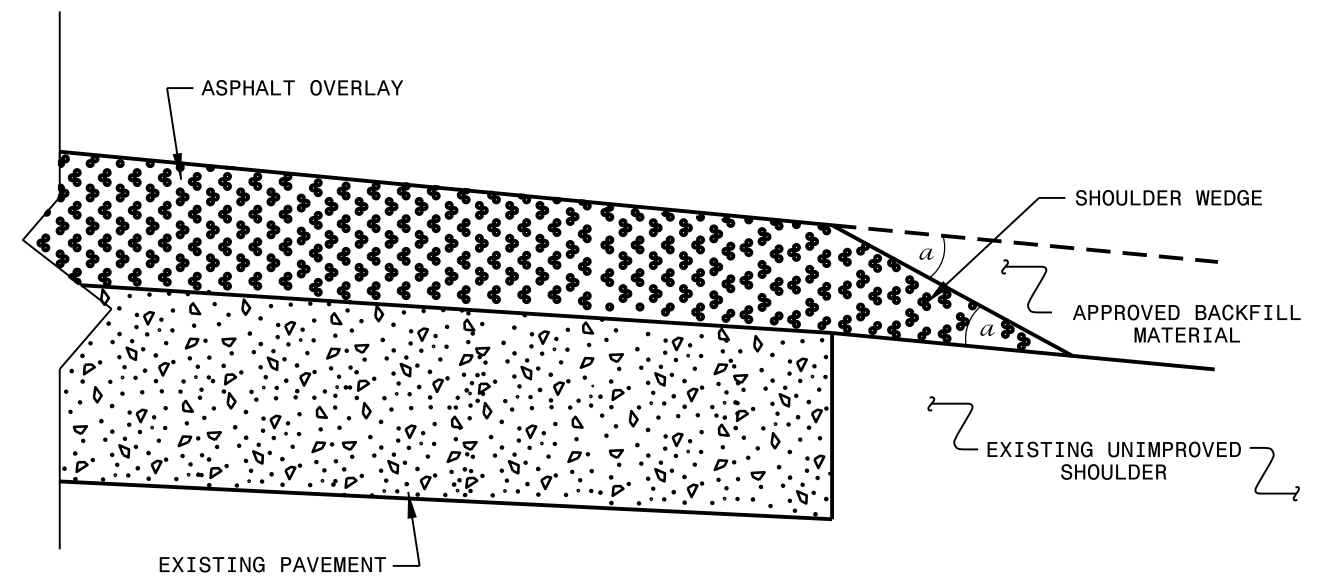
C1	PROP. APPROX. 1.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
T	AGGREGATE SHOULDER BORROW (SHOULDER RECONSTRUCTION)
V1	MILL EXISTING ASPHALT PAVEMENT APPROX. 1" IN DEPTH
V2	MILL EXISTING ASPHALT PAVEMENT APPROX. 1.5" IN DEPTH

**2023 - 2024**  
**Resurfacing Program**  
**Detail Sheet**  
**Alexander County**

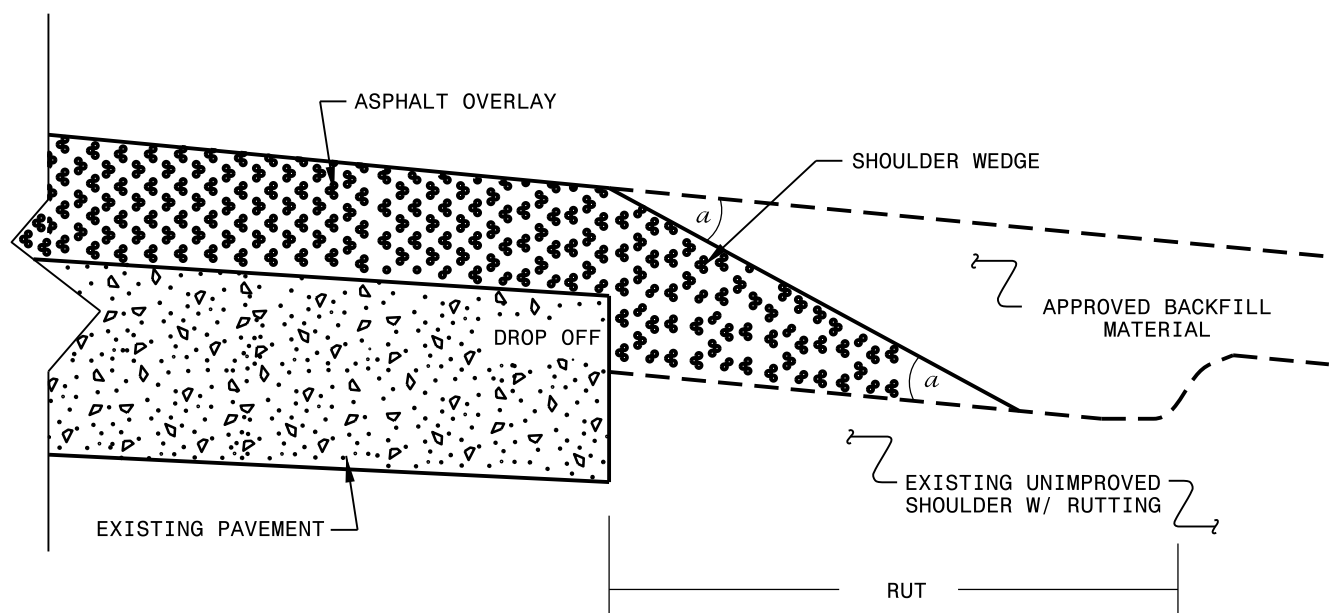
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFc AND ULTRA-THIN BONDED WEARING COURSE.
  - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
  - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



**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)

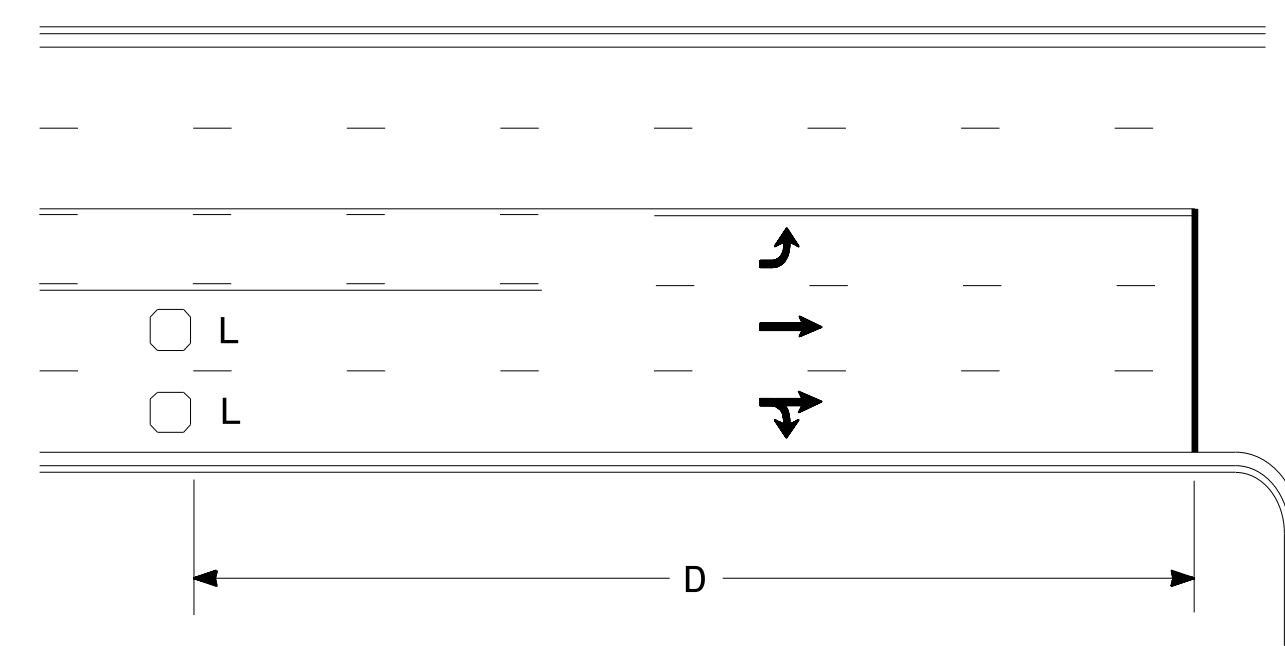
- SHOULDER WEDGE ANGLE = 30°

<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: 10/16/12		
CHECKED BY:	DATE:		
FILE SPEC.: susr/details/stand/shoulderwedgedetail.dgn			

SYSTEMS DESIGN USER NAME



### High Speed Detection (≥40 mph)

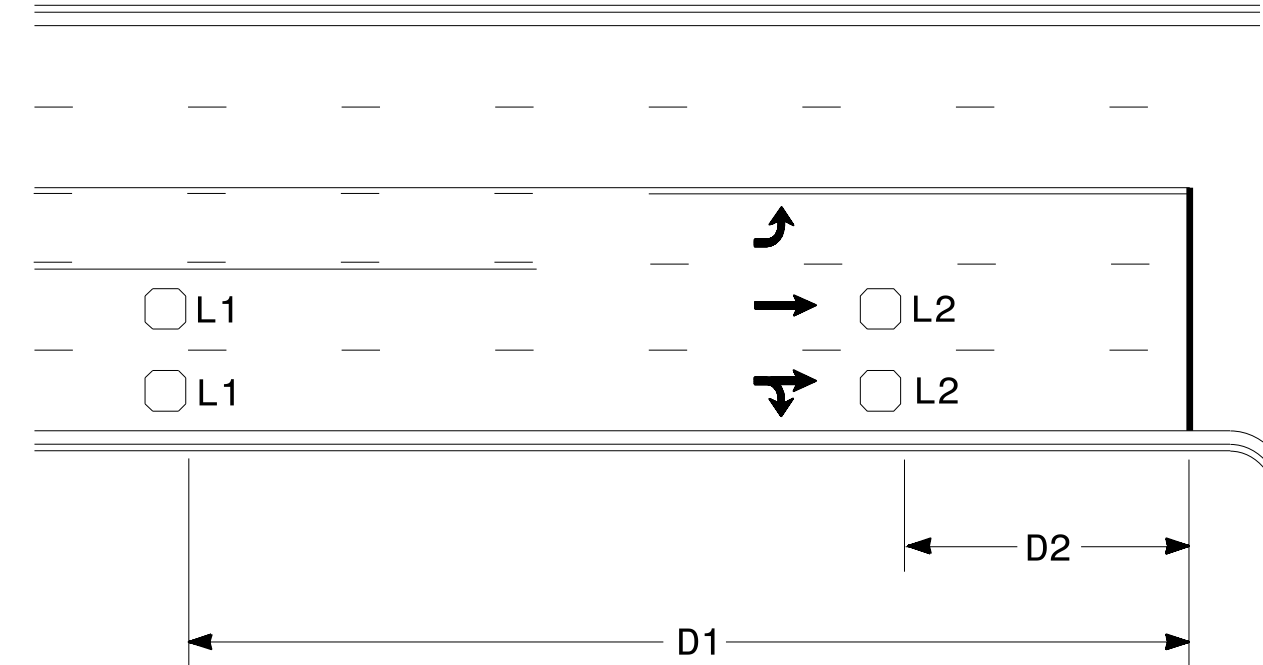


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

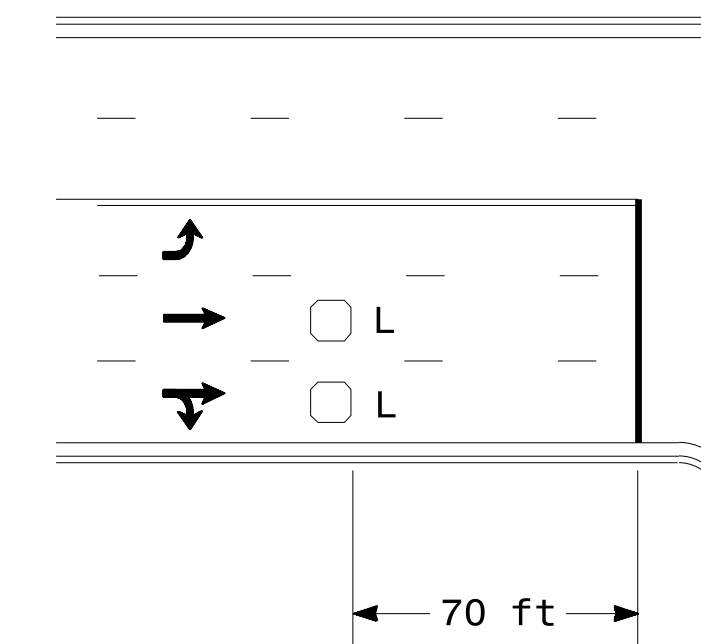


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

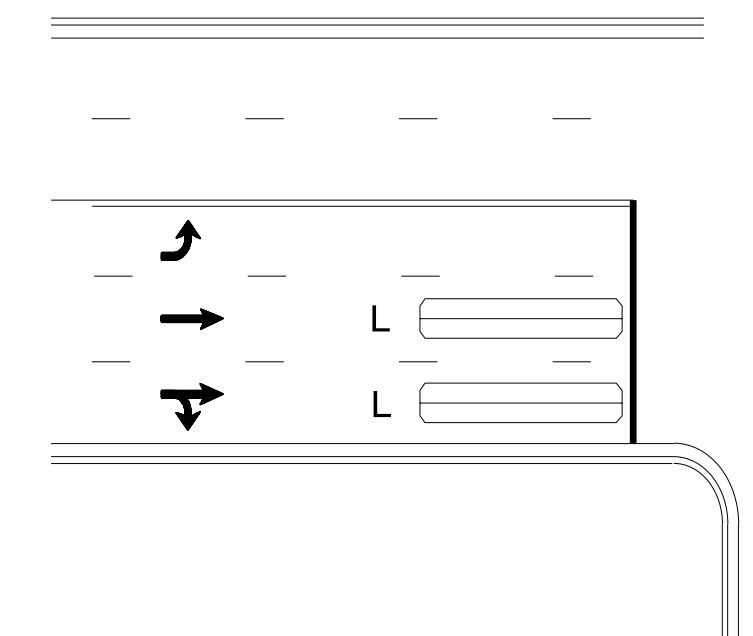
"Stretch" Operation

### Low Speed Detection (≤35 mph)



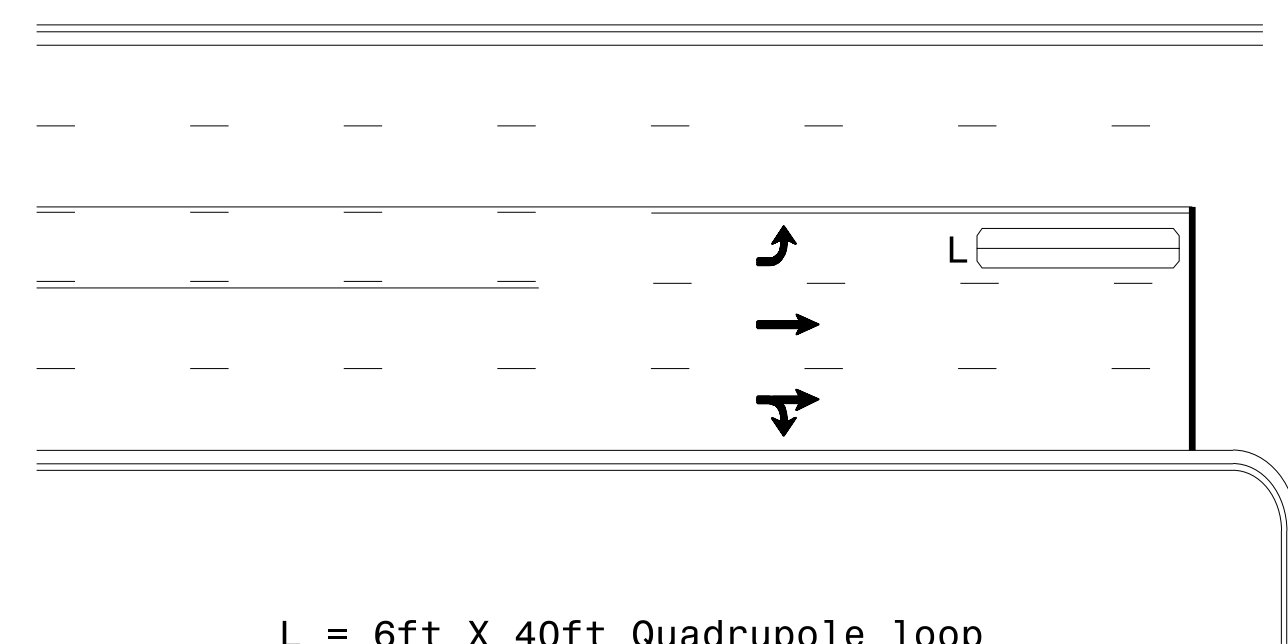
L = 6ft X 6ft  
Wired in series

OR



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

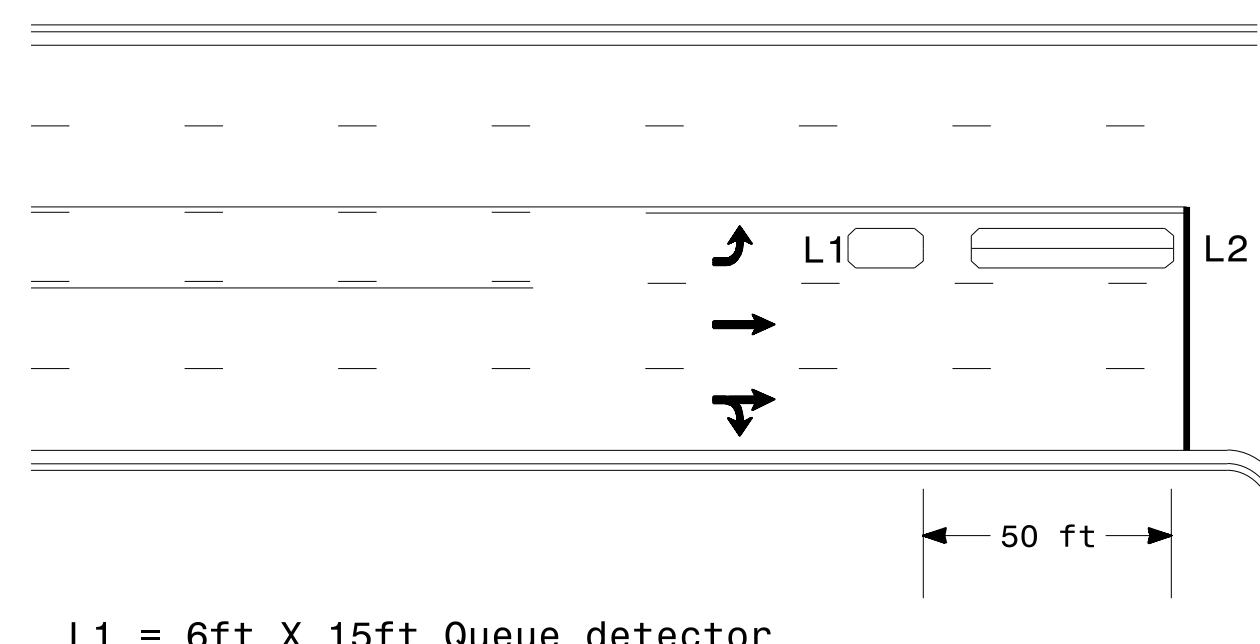
### Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

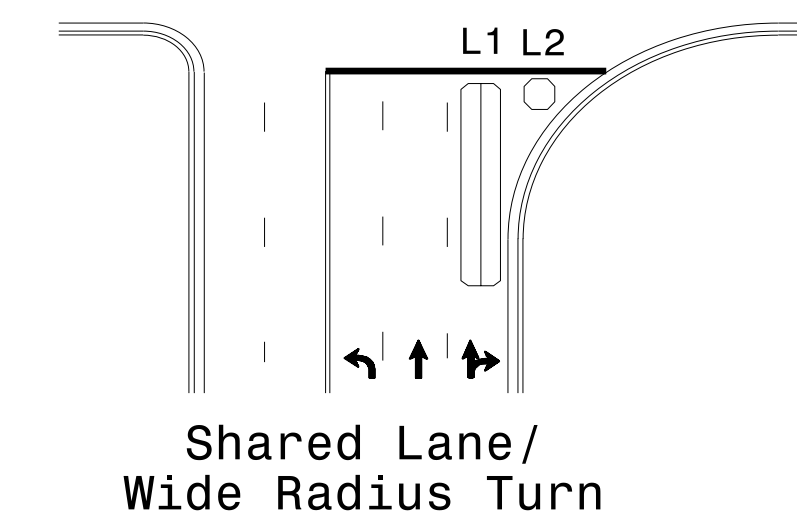
OR



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

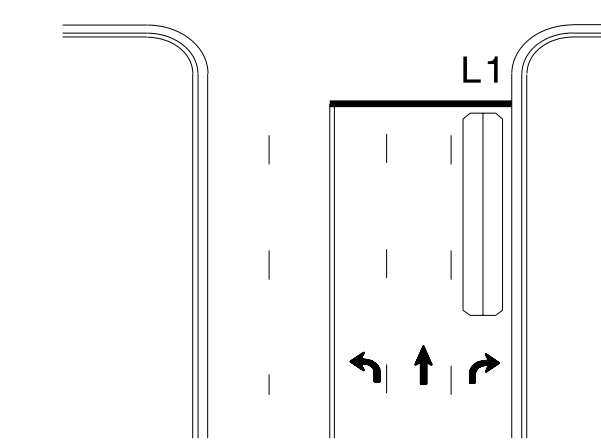
Queue Loop Detection

### Right Turn Lane Detection

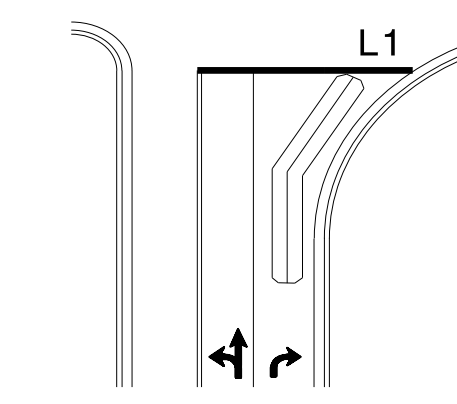


Shared Lane/  
Wide Radius Turn

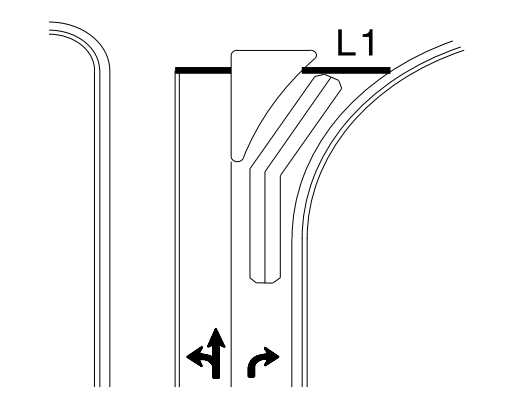
L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately



Standard Turn

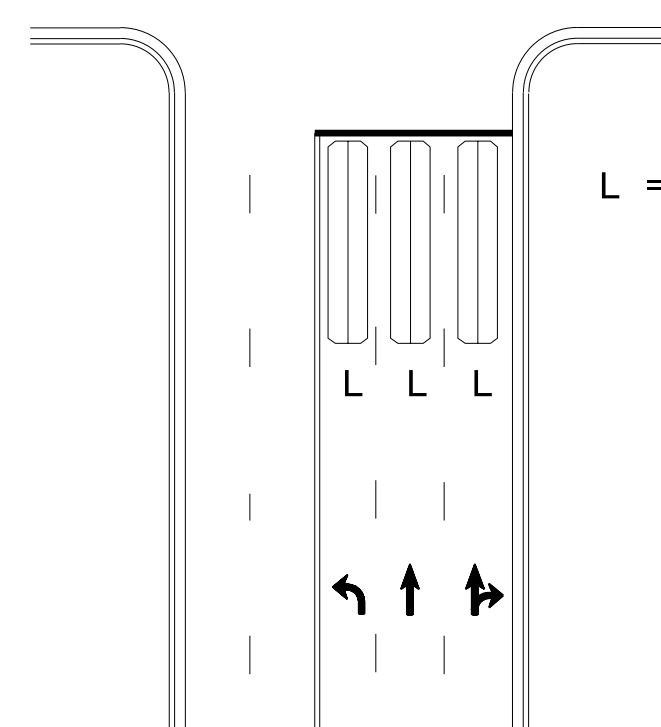


Wide Radius Turn



Channelized Turn

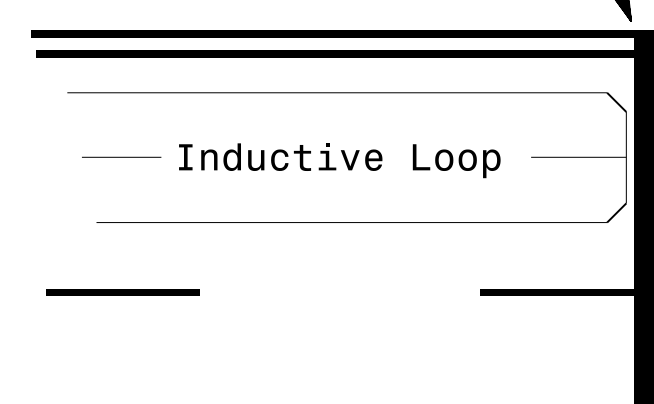
### Side Street Detection



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

	<p>Prepared In the Offices of:</p> <p>TRANSPORTATION MOBILITY AND SAFETY DIVISION DEPARTMENT OF TRANSPORTATION SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Garner, NC 27529</p>		<p>SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 23489</p>	
	<p>PLAN DATE: January 2015</p>		<p>REVIEWED BY: JPG</p>	
<p>PREPARED BY: PLA</p>		<p>REVIEWED BY:</p>		
<p>SCALE N/A</p>	<p>REVISIONS</p>	<p>INIT.</p>	<p>DATE</p>	<p>1/30/2015</p>
<p>SIG. INVENTORY NO.</p>				

PROJECT NO.	SHEET NO.	TOTAL NO.
2024CPT.12.01.10021		
2024CPT.12.01.20021		

**SUMMARY OF QUANTITIES**

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH		AGGREGATE SHOULDER BORROW	INCIDENTAL STONE BASE	SHOULDER RECONSTRUCTION	1 1/2" MILLING	1" MILLING	INCIDENTAL MILLING	1519000000-E SURFACE COURSE, S9.5B	1520000000-E LEVELING COURSE, S9.5B	1523000000-E SURFACE COURSE, S9.5C	1524000000-E LEVELING COURSE, S9.5C	1575000000-E ASPHALT BINDER FOR PLANT MIX	1704000000-E PATCHING EXISTING PAVEMENT	2800000000-N ADJ. OF CATCH BASIN	2815000000-N ADJ. OF DROP INLET	2830000000-N ADJ. OF MANHOLES	2845000000-N ADJ. OF METER OR VALVE BOX	7324000000-N JUNCTION BOX (STANDARD SIZE)	7440000000-E INDUCTIVE LOOP	7456000000-E LEAD-IN CABLE
									MI	FT																			
2024CPT.12.01.10021	Alexander	1	NC-16	FROM NC 90 TO NC 90	3,5	2	NO	NO	0.46	30-40									792	75	54	50	2	6	14	8	1	1,100	175
2024CPT.12.01.10021	Alexander	2	NC-90	FROM SR 1523 (MARSH PATTERSON LN.) TO IREDELL COUNTY LINE	1	2	NO	NO	3.25	22-24	1,073	195	6.50			300			4,055	250	256	50				2			
<b>TOTAL FOR PROJ NO. 2024CPT.12.01.10021</b>									<b>3.71</b>		<b>1,073</b>	<b>195</b>	<b>6.50</b>	<b>9,250</b>		<b>300</b>			<b>4,847</b>	<b>325</b>	<b>310</b>	<b>100</b>	<b>2</b>	<b>6</b>	<b>14</b>	<b>10</b>	<b>1</b>	<b>1,100</b>	<b>175</b>
2024CPT.12.01.20021	Alexander	3	SR-1144 / ICARD RIDGE RD	FROM NC 127 TO SR 1161 (FELLOWSHIP CH RD)	2	2	NO	NO	0.9	20	300	20	1.80			250	640	100			50	30							
2024CPT.12.01.20021	Alexander	4	SR-1144 / ICARD RIDGE RD	FROM SR 1160 (ADVENT CH RD) TO EOM JUST PAST SR 1203 (LAKESIDE LP)	2	2	NO	NO	4.53	18	1,490	75	9.06			250	2,900	1,900			317	100							
2024CPT.12.01.20021	Alexander	5	SR-1412 / BLACK OAK RIDGE RD	FROM SR 1411 (LINNEYS MTN RD) TO SR 1404 (DANIELS LUMBER RD)	2,4	2	NO	NO	3.03	21	1,000	55	6.00		600	125	2,300	350			177	100							
2024CPT.12.01.20021	Alexander	6	SR-1411 / LINNEYS MOUNTAIN RD	FROM NC 90 TO SR 1412 (BLACK OAK RIDGE RD)	2,4	2	NO	NO	1.2	23	400	20	1.84		3,600	125	1,000	110			75	50		2	12	8	1	150	25
2024CPT.12.01.20021	Alexander	7	SR-1132 / SHOOK LN	FROM FROM SR 1131 (ALSPAUGH DAM RD) TO END PAVEMENT	2	2	NO	NO	0.67	20	220	10	1.34			125	500	50			37	25							
2024CPT.12.01.20021	Alexander	8	SR-1827 / JIMMY SHOOK LN	FROM FROM SR 1132 (JIMMY SHOOK LN) TO DEAD END	2	2	NO	NO	0.28	19	90	5	0.56			125	200	50			17	25							
2024CPT.12.01.20021	Alexander	9	SR-1651 / ERVIN LN	FROM FROM NC 90 TO END MAINTENANCE	2	2	NO	NO	0.2	20-22	80	5	0.40			125	200	50			17	25		1	1				
<b>TOTAL FOR PROJ NO. 2024CPT.12.01.20021</b>									<b>10.81</b>		<b>3,580</b>	<b>190</b>	<b>21.00</b>		<b>4,200</b>	<b>1,125</b>	<b>7,740</b>	<b>2,610</b>			<b>690</b>	<b>355</b>		<b>3</b>	<b>13</b>	<b>8</b>	<b>1</b>	<b>150</b>	<b>25</b>
<b>GRAND TOTAL</b>									<b>14.52</b>		<b>4,653</b>	<b>385</b>	<b>27.50</b>	<b>9,250</b>	<b>4,200</b>	<b>1,425</b>	<b>7,740</b>	<b>2,610</b>	<b>4,847</b>	<b>325</b>	<b>1,000</b>	<b>455</b>	<b>2</b>	<b>9</b>	<b>27</b>	<b>18</b>	<b>2</b>	<b>1,250</b>	<b>200</b>

PROJECT NO.	SHEET NO.	TOTAL NO.
2024CPT.12.01.10021		
2024CPT.12.01.20021		

**THERMOPLASTIC AND PAINT QUANTITIES**

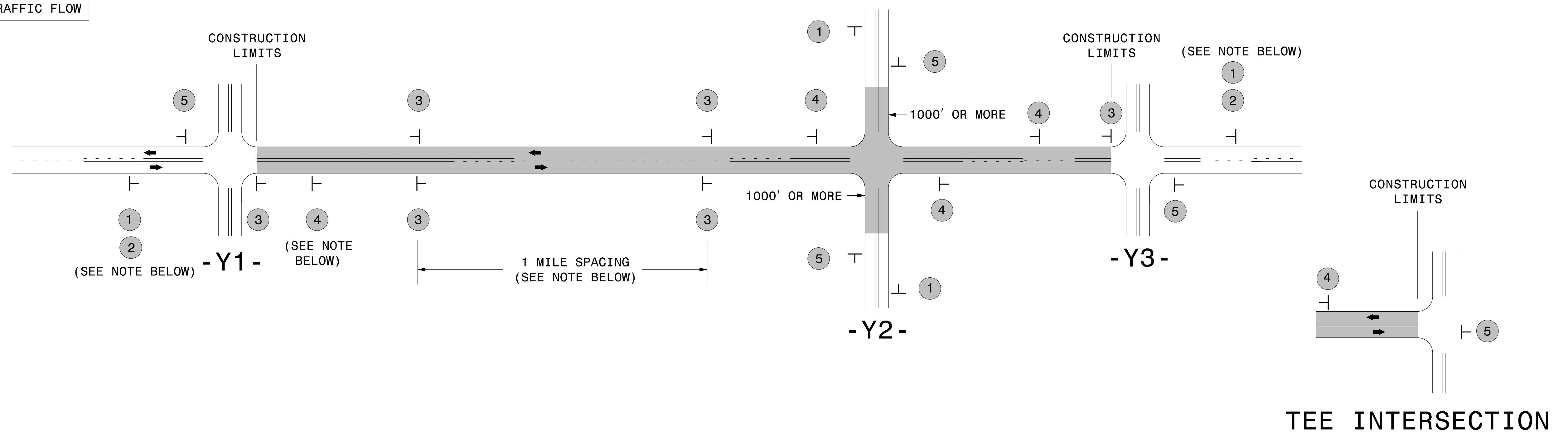
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4400000000-E	4457000000-N	4685000000-E		4695000000-E	4704000000-E	4709000000-E	4720000000-E		4725000000-E	4810000000-E		4905000000-N	5255000000-N
										WORK ZONE ADVANCE/GENERAL WARNING SIGNING	TEMPORARY TRAFFIC CONTROL	THERMO PAVEMENT MARKING LINES WHITE (4", 90 MILS)	THERMO PAVEMENT MARKING LINES YELLOW (4", 90 MILS)	THERMO PAVEMENT MARKING LINES WHITE (8", 90 MILS)	THERMO PAVEMENT MARKING LINES (16", 90 MILS)	THERMO PAVEMENT MARKING LINES (24", 90 MILS)	THERMO MSG RXR 90 M	THERMO MSG SCHOOL 90 M	THERMO LT ARROW 90 M	4" WHITE PAINT	4" YELLOW PAINT	SNOW PLOWABLE MARKERS	PORTABLE LIGHTING
								MI	FT	SF	LS	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	EA	LS
2024CPT.12.01.10021	Alexander	1	NC-16	FROM NC 90 TO NC 90	3, 5	2		0.46	30-40	200	*	1,220	4,600	200		150			4			40	1
2024CPT.12.01.10021	Alexander	2	NC-90	FROM SR 1523 (MARSH PATTERSON LN.) TO IREDELL COUNTY LINE	1	2		3.25	22-24	450	*	37,752	32,500		160	165	8					245	
<b>TOTAL FOR PROJ NO. 2024CPT.12.01.10021</b>								<b>3.71</b>		<b>650</b>	<b>*</b>	<b>38,972</b>	<b>37,100</b>	<b>200</b>	<b>160</b>	<b>315</b>	<b>8</b>		<b>4</b>			<b>285</b>	<b>1</b>
											<b>76,072</b>												
2024CPT.12.01.20021	Alexander	3	SR-1144 / ICARD RIDGE RD	FROM NC 127 TO SR 1161 (FELLOWSHIP CH RD)	2	2		0.9	20	115	*				80		12			20,909	20,909		
2024CPT.12.01.20021	Alexander	4	SR-1144 / ICARD RIDGE RD	FROM SR 1160 (ADVENT CH RD) TO EOM JUST PAST SR 1203 (LAKESIDE LP)	2	2		4.53	18	525	*				50					105,241	105,241		
2024CPT.12.01.20021	Alexander	5	SR-1412 / BLACK OAK RIDGE RD	FROM SR 1411 (LINNEYS MTN RD) TO SR 1404 (DANIELS LUMBER RD)	2, 4	2		3.03	21	355	*									70,393	69,793		
2024CPT.12.01.20021	Alexander	6	SR-1411 / LINNEYS MOUNTAIN RD	FROM NC 90 TO SR 1412 (BLACK OAK RIDGE RD)	2, 4	2		1.2	23	150	*			60	80	90	4			27,878	24,878		
2024CPT.12.01.20021	Alexander	7	SR-1132 / SHOOK LN	FROM FROM SR 1131 (ALSPAUGH DAM RD) TO END PAVEMENT	2	2		0.67	20	80	*									14,150	14,150		
2024CPT.12.01.20021	Alexander	8	SR-1827 / JIMMY SHOOK LN	FROM FROM SR 1132 (JIMMY SHOOK LN) TO DEAD END	2	2		0.28	19	48	*												
2024CPT.12.01.20021	Alexander	9	SR-1651 / ERVIN LN	FROM FROM NC 90 TO END MAINTENANCE	2	2		0.2	20-22	48	*												
<b>TOTAL FOR PROJ NO. 2024CPT.12.01.20021</b>								<b>10.81</b>		<b>1,321</b>	<b>*</b>			<b>60</b>	<b>80</b>	<b>220</b>	<b>4</b>	<b>12</b>		<b>238,571</b>	<b>234,971</b>		
											<b>16</b>												
<b>GRAND TOTAL</b>								<b>14.52</b>		<b>1,971</b>	<b>1</b>	<b>38,972</b>	<b>37,100</b>	<b>260</b>	<b>240</b>	<b>535</b>	<b>12</b>	<b>12</b>	<b>4</b>	<b>238,571</b>	<b>234,971</b>	<b>285</b>	<b>1</b>
											<b>76,072</b>												
											<b>24</b>												
											<b>473,542</b>												

# SIGNING FOR RESURFACING PROJECTS

**LEGEND**

┆ STATIONARY SIGN

← DIRECTION OF TRAFFIC FLOW



## MAINLINE (-L-) SIGNING

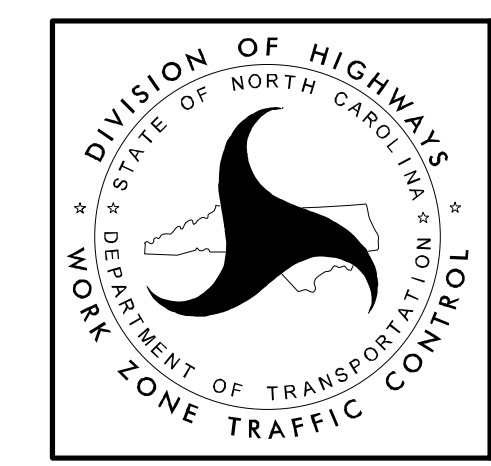
## -Y- LINE SIGNING

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><b>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</b></p> <ol style="list-style-type: none"> <li>LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>SUBDIVISION ROADS</li> <li>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**