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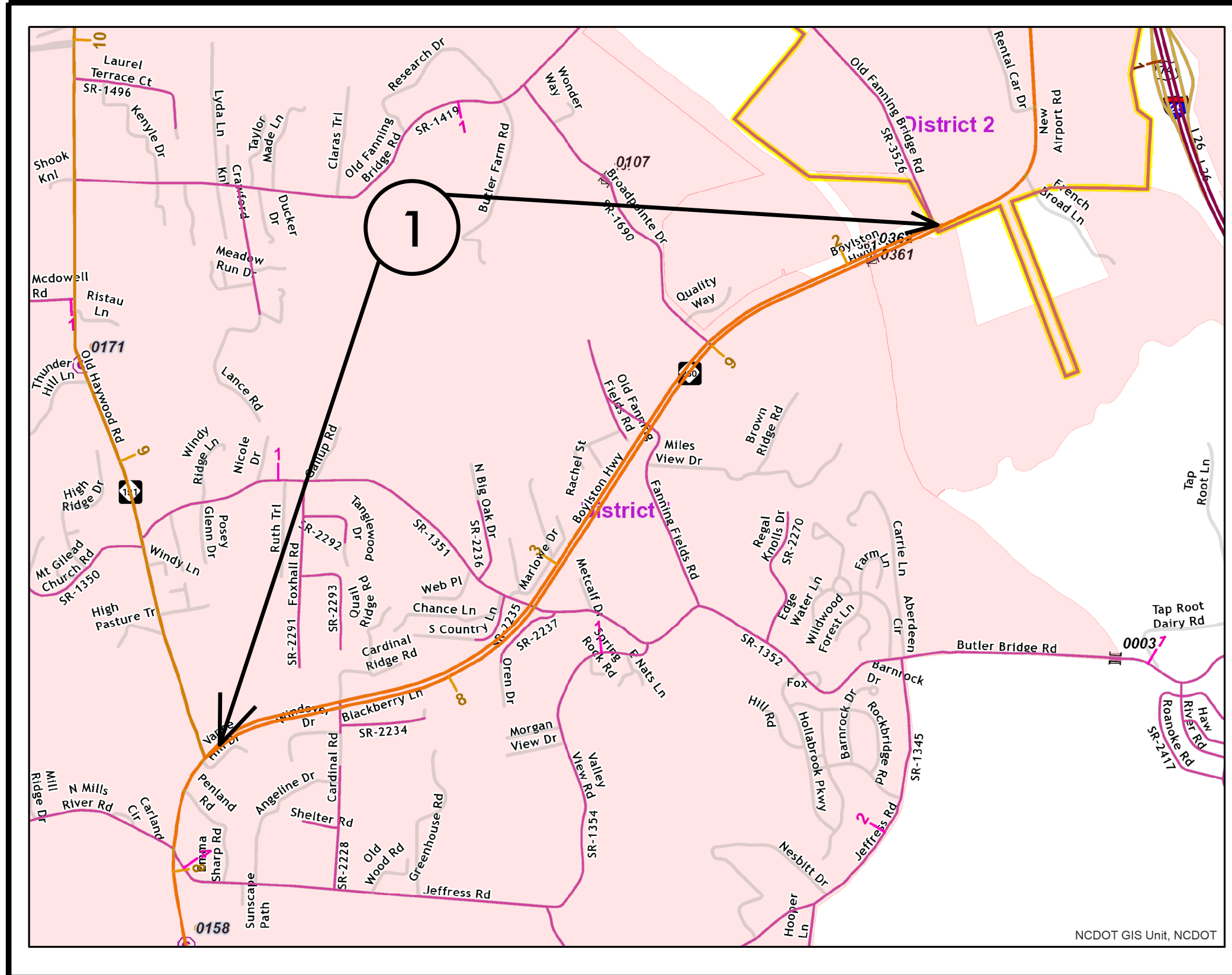
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TIP PROJECT: N/A

CONTRACT: DN00683

HENDERSON COUNTY

PROJECT REFERENCE NO.		SHEET NO.
2020CPI.14.06.10451		
STATE PROJECT	F.A. PROJECT NO.	DESCRIPTION
		DN00683



EAST & WEST MAP 1

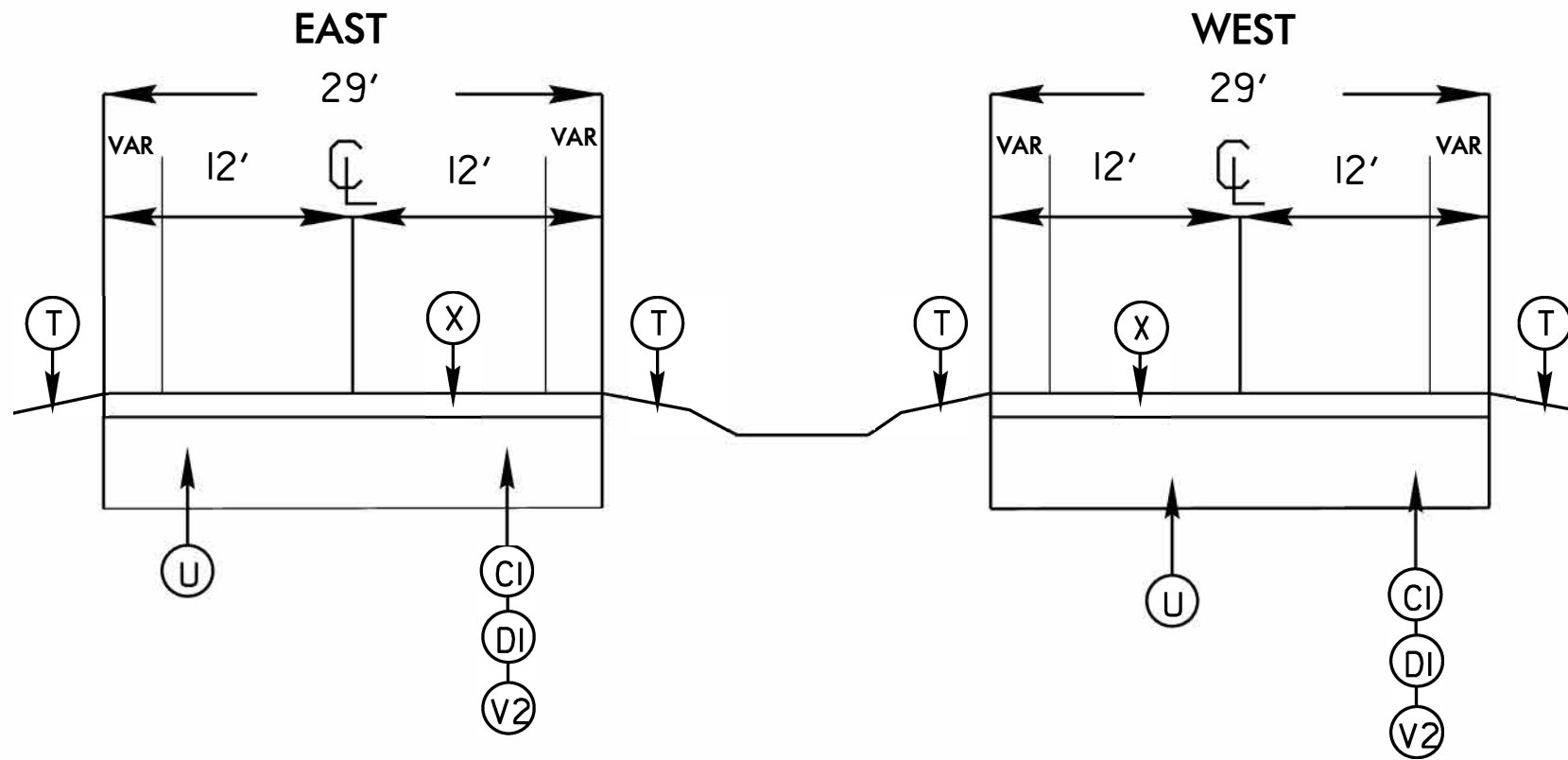


BEG

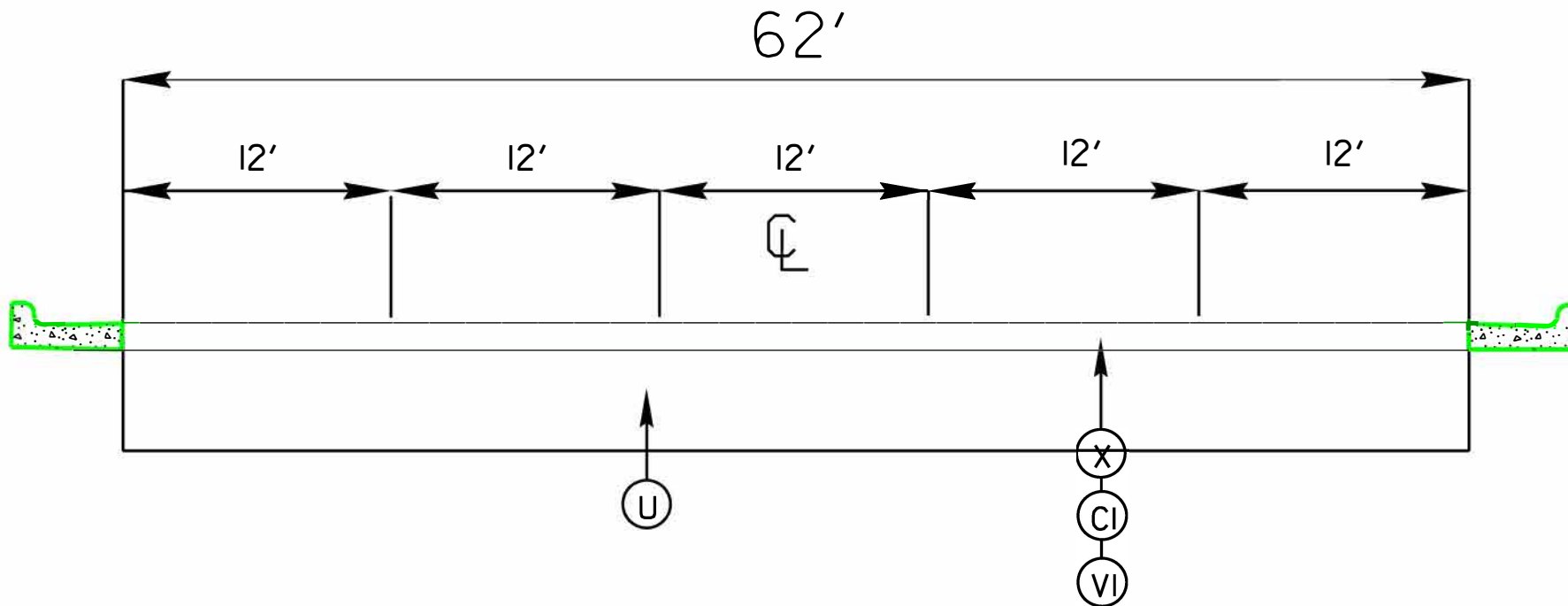
END

PROJECT REFERENCE NO.		SHEET NO.
2020CPT.14.06.10451		3
STATE PROJECT	F.A. PROJECT NO.	DESCRIPTION
		DN00683

TYPICAL 1



TYPICAL 2



SURFACING SCHEDULE

ITEM NO	DESCRIPTION
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS.PER.SQ.YD
D1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 342 LBS.PER.SQ.YD
U	EXISTING ASPHALT
V1	MILLED ASPHALT PAVEMENT 2 1/4 IN DEPTH IN LOCATIONS AS DIRECTED BY PROJECT ENGINEER
V2	MILLED ASPHALT PAVEMENT 3" IN DEPTH IN LOCATIONS AS DIRECTED BY PROJECT ENGINEER
T	SHOULDER RECONSTRUCTION
X	PROP. APPROX. 3/4" ASPHALT CONCRETE ULTRA THIN BOND WEAR COURSE, AT A AVERAGE RATE OF 70 LBS PER SQ.YD.

PROJECT NO.	SHEET NO.
2020CPT.14.06.10451	4

SUMMARY OF QUANTITIES

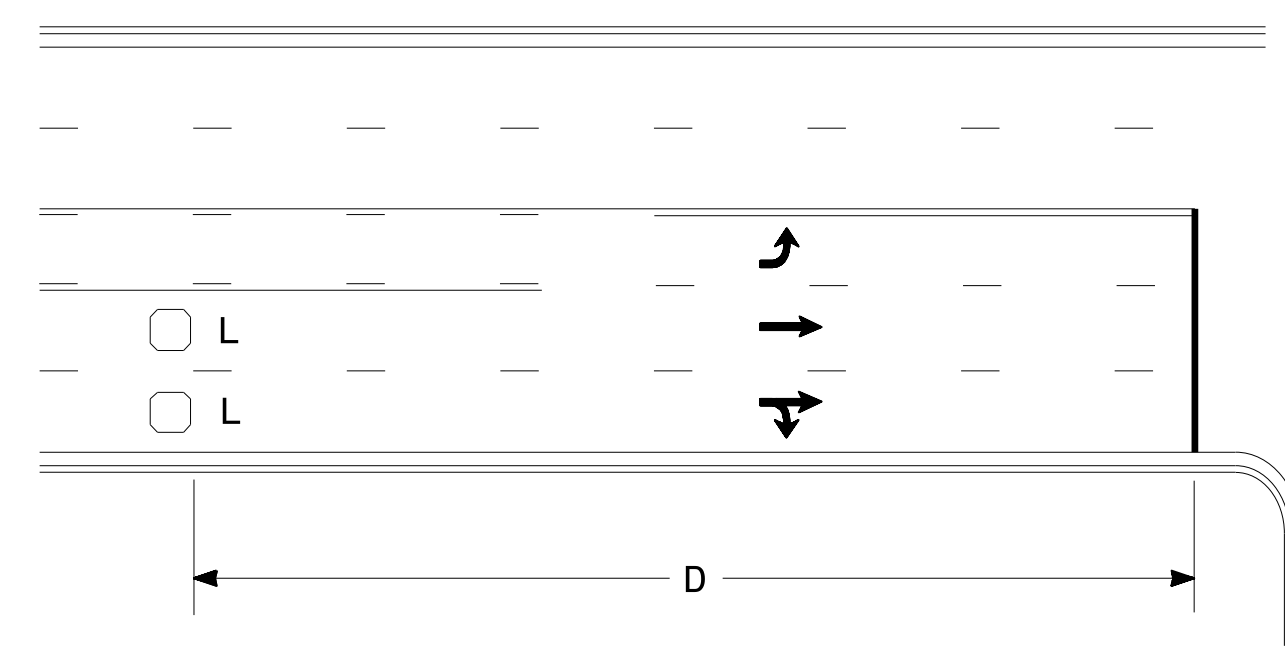
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	1245000000-E	1297000000-E	1503000000-E	1523000000-E	1575000000-E	1577000000-E	1704000000-E	1839140000-E	2815000000-N	2830000000-N	2845000000-N	5255000000-N	7444000000-E		
												SHOULDER RECONSTRUCTION	3" MILLING	2 1/4" MILLING	INTERMEDIATE COURSE, 119.0C	SURFACE COURSE, 59.5C	ASPHALT BINDER FOR PLANT MIX	POLYMER MODIFIED ASPHALT BINDER FOR PLANT MIX	PATCHING EXISTING PAVEMENT	ULTRA-THIN BONDED WEARING COURSE	ADJ. OF DROP INLET	ADJ. OF MANHOLES	ADJ. OF METER OR VALVE BOX	PORTABLE LIGHTING	INDUCTIVE LOOP	
											MI	FT	SMI	SY	SY	TONS	TONS	TONS	TONS	TONS	EA	EA	EA	EA	EA	
2020CPT.14.06.10451	Henderson	1	NC-280 EAST AND WEST BOUND	FROM BUNCOMDE CO. LINE TO NC-191	1	4	MD	NO	NO	2.05	58	8.20	69,754		13,177	6,459	1,020	136		2,610				1	1,856	
TOTAL FOR MAP NO. 1											2.05		8.20	69,754		13,177	6,459	1,020	136		2,610			1	1,856	
2020CPT.14.06.10451	Henderson	2	NC-280 / NC191 (5 LANE SECTION)	FROM NC-191 TO NC-191	2	5	MU	NO	NO	1.15	62			50,014		4,280	257	91	165	1,757	1	1	2		1,272	
TOTAL FOR MAP NO. 2											1.15				50,014		4,280	257	91	165	1,757	1	1	2		1,272
TOTAL FOR PROJ NO. 2020CPT.14.06.10451											3.2		8.20	69,754	50,014	13,177	10,739	1,277	227	165	4,367	1	1	2	1	3,128
GRAND TOTAL											3.2		8.20	69,754	50,014	13,177	10,739	1,277	227	165	4,367	1	1	2	1	3,128

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	413000000-E	57000000-E	4695000000-E	4710000000-E	4725000000-E				4810000000-E		4820000000-E	4835000000-E					
										WORK ZONE ADVANCE GENERAL WARNING SIGNING	TEMP TRAFFIC CONTROL	8" X 90 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO LT ARROW 90 M	THERMO STR ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR & LT ARROW 90 M	THERMO STR & RT ARROW 90 M	4" WHITE PAINT	4" YELLOW PAINT	8" WHITE PAINT	24" WHITE PAINT				
										MI	FT	SF	LS	LF	LF	EA	EA	EA	EA	EA	LF	LF	LF	LF		
2020CPT.14.06.10451	Henderson	1	NC-280 EAST AND WEST BOUND	FROM BUNCOMDE CO. LINE TO NC-191	1	4	MD	2.05	29	460	1.00	244	726	19	6	10	3			27,142	21,648	726	2,440			
TOTAL FOR MAP NO. 1											2.05		460	1	244	726	19	6	10	3			27,142	21,648	726	2,440
2020CPT.14.06.10451	Henderson	2	NC-280 / NC191 (5 LANE SECTION)	FROM NC-191 TO NC-191	2	5	MU	1.15	62	129		100	1,218	28	19	29	2	11		3,082	18,256	100	609			
TOTAL FOR MAP NO. 2											1.15		129		100	1,218	28	19	29	2	11		3,082	18,256	100	609
TOTAL FOR PROJ NO. 2020CPT.14.06.10451											3.2		589	1	344	1,944	47	25	39	5	11		30,224	39,904	826	3,049
GRAND TOTAL											3.2		589	1	344	1,944	47	25	39	5	11		30,224	39,904	826	3,049

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4845000000-N					4890000000-E		4905000000-N	4940000000-N				
										PAINT LT ARROW	PAINT STR ARROW	PAINT RT ARROW	PAINT STR & LT ARROW	PAINT STR & RT ARROW	GENERIC PAVE. MARK ITEM 4" X 60 MIL WHITE THERMO	GENERIC PAVE. MARK ITEM 4" X 60 MIL YELLOW THERMO.	SNOW PLOWABLE MARKERS	FLEXIBLE DELINEATORS (YELLOW) ^ EA				
										MI	FT	EA	EA	EA	EA	EA	EA	EA				
2020CPT.14.06.10451	Henderson	1	NC-280 EAST AND WEST BOUND	FROM BUNCOMDE CO. LINE TO NC-191	1	4	MD	2.05	29	19	13	10	3			27,142	21,648	310	90.00			
TOTAL FOR MAP NO. 1											2.05		19	13	10	3			27,142	21,648	310	90
2020CPT.14.06.10451	Henderson	2	NC-280 / NC191 (5 LANE SECTION)	FROM NC-191 TO NC-191	2	5	MU	1.15	62	28		29		2		3,082	18,256	76				
TOTAL FOR MAP NO. 2											1.15		28		29		2		3,082	18,256	76	
TOTAL FOR PROJ NO. 2020CPT.14.06.10451											3.2		47	13	39	3	2		30,224	39,904	386	90
GRAND TOTAL											3.2		47	13	39	3	2		30,224	39,904	386	90

High Speed Detection (≥40 mph)

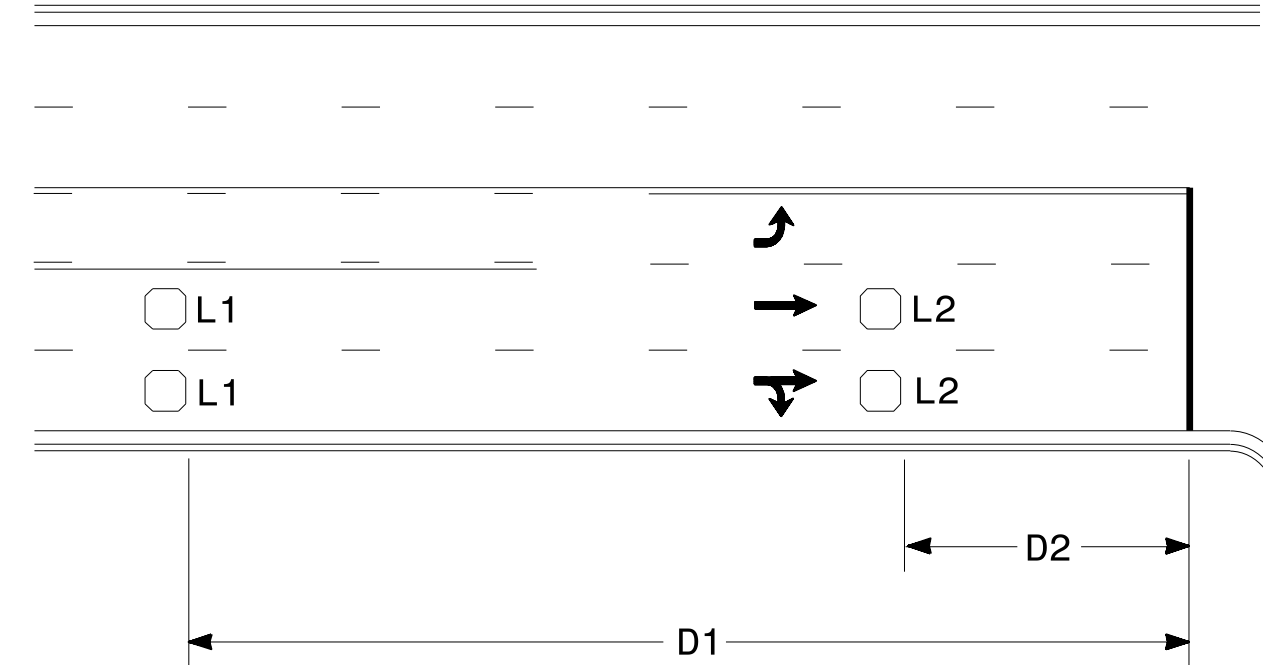


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

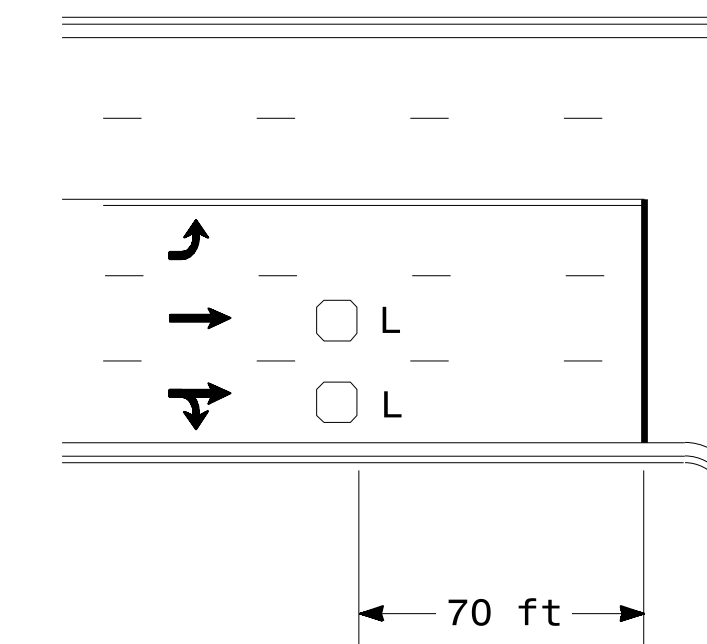


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

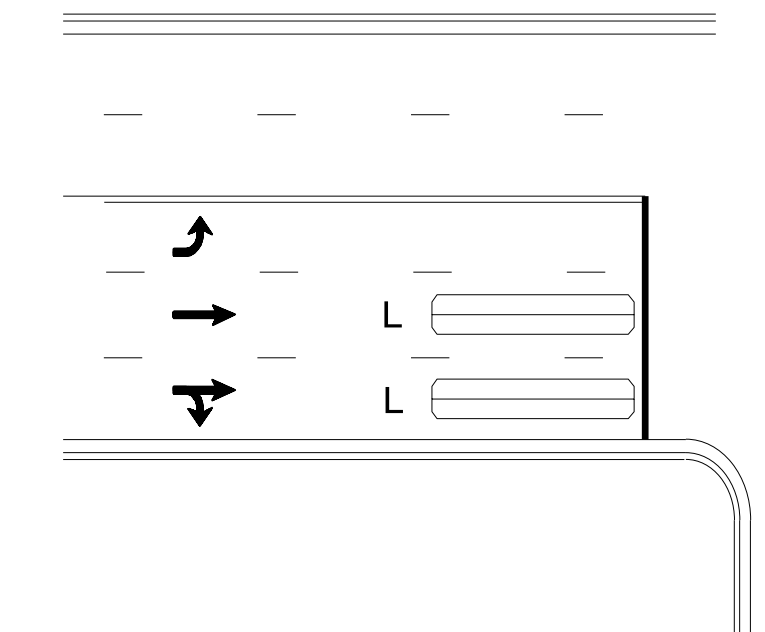
"Stretch" Operation

Low Speed Detection (≤35 mph)



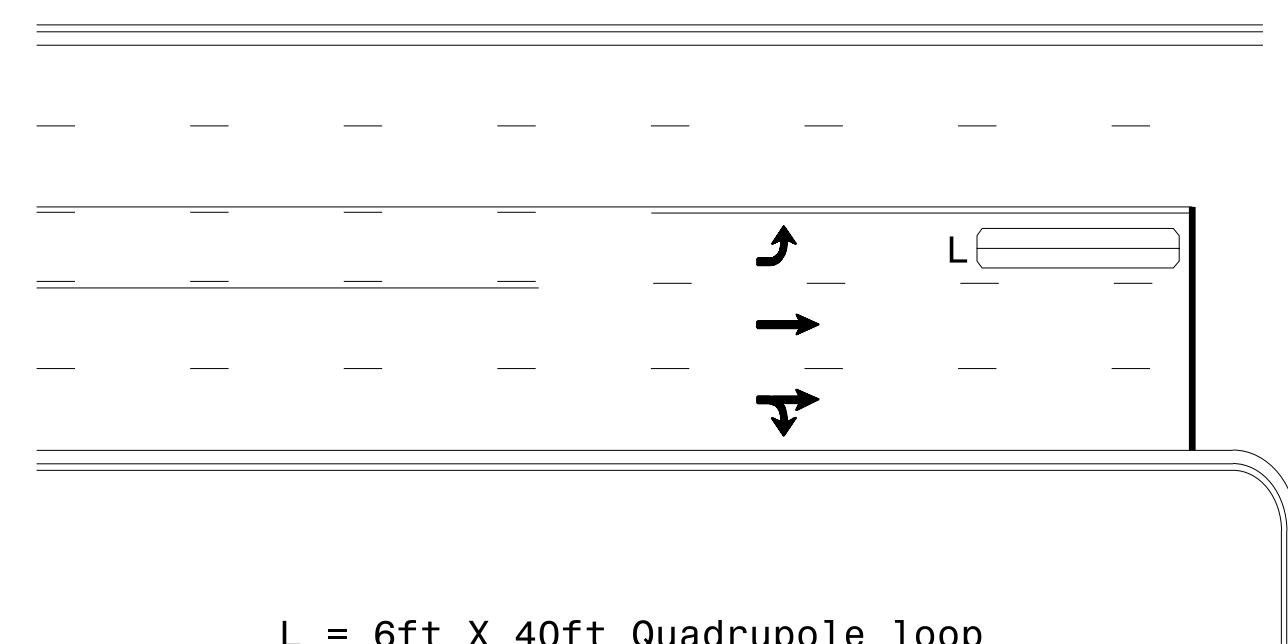
L = 6ft X 6ft
Wired in series

OR



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

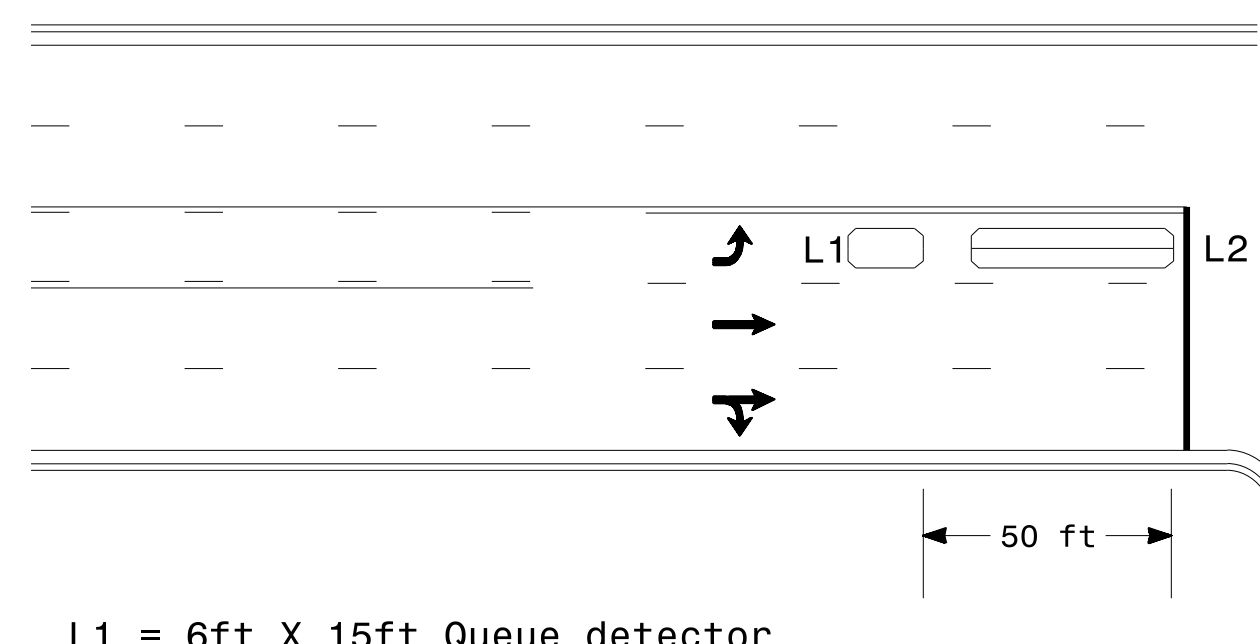
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

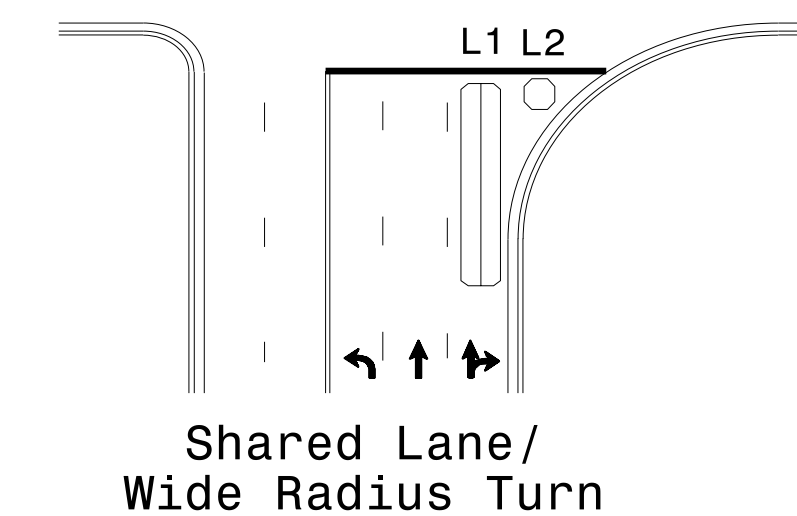
OR



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

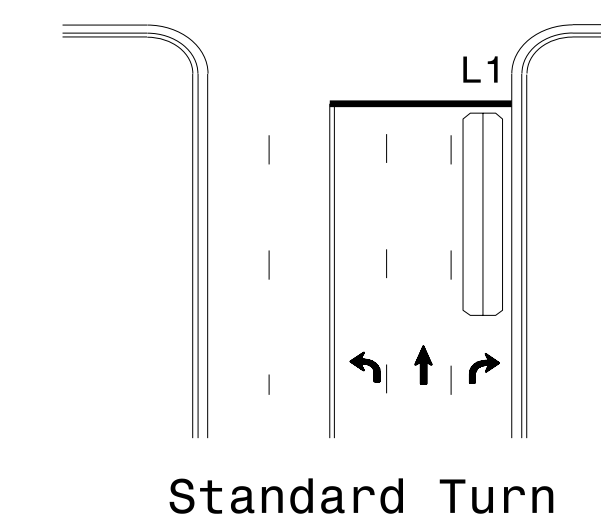
Queue Loop Detection

Right Turn Lane Detection

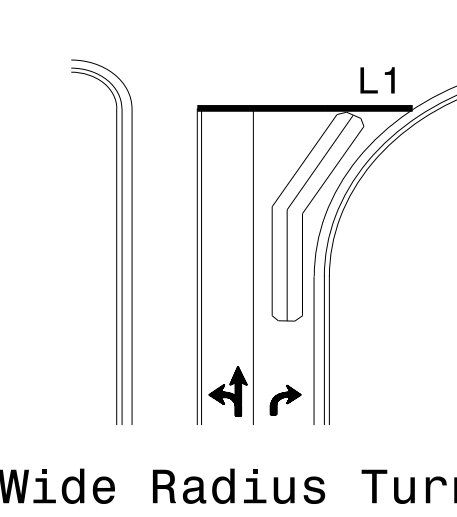


Shared Lane/
Wide Radius Turn

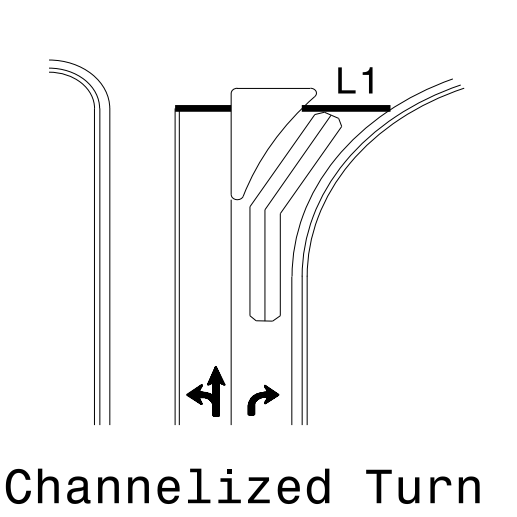
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

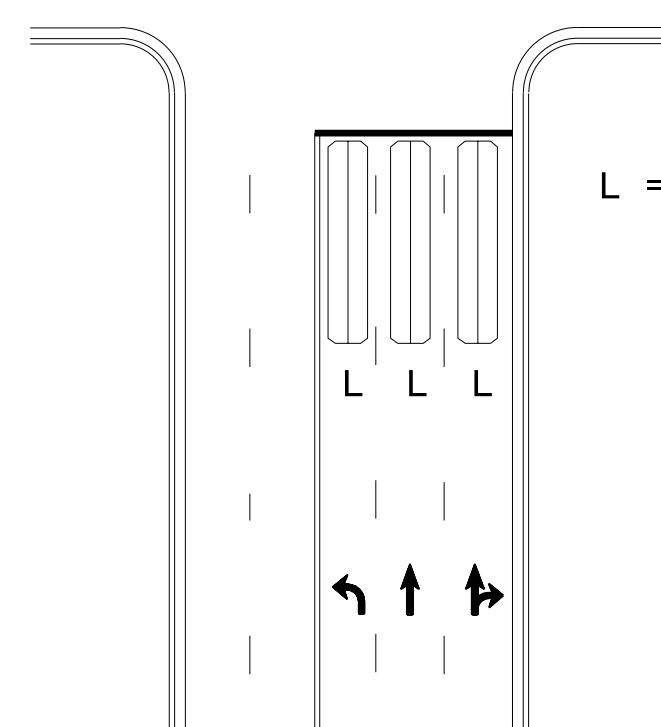


Wide Radius Turn



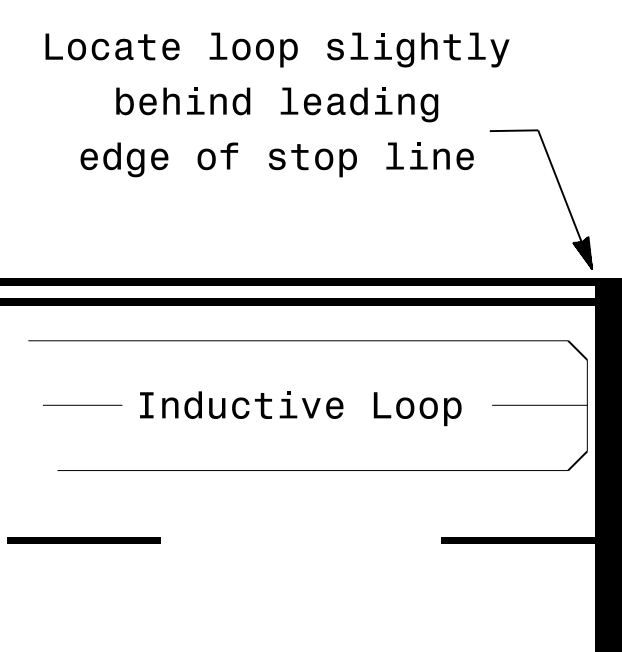
Channelized Turn

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):

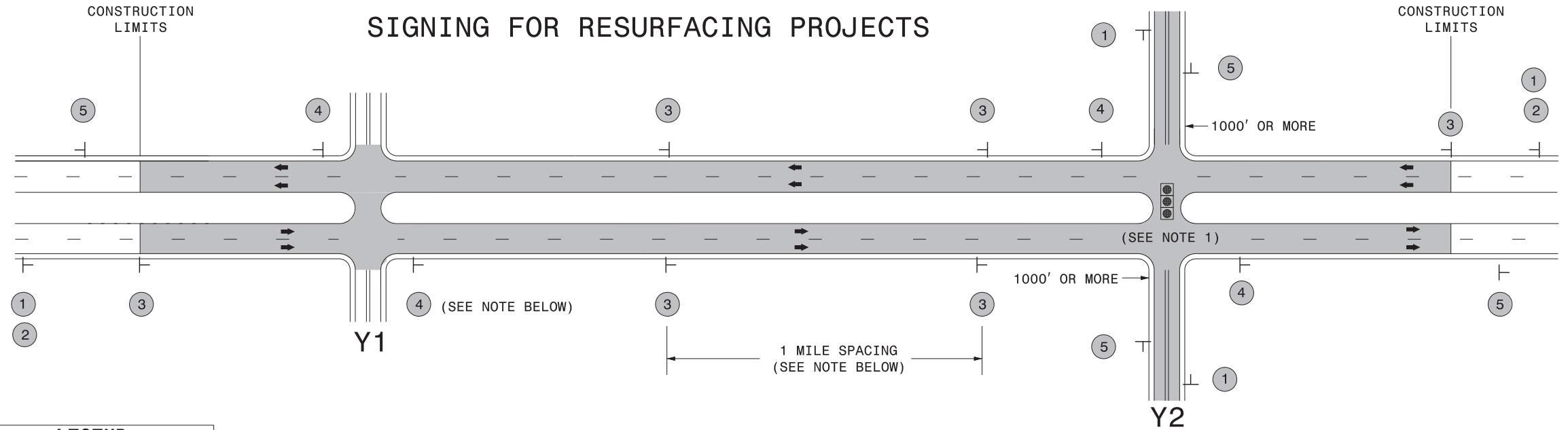
Length of Lead-in ft	Number of Turns
< 250	3
250-375	4
375-525	5
> 525	6

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: TRANSPORTATION MOBILITY AND SAFETY SOLUTIONS, INC. SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 23489</p>	
	<p>Typical Signal Loop Locations</p>	
<p>SCALE N/A</p>	<p>PLAN DATE: January 2015 PREPARED BY: PLA</p>	<p>REVIEWED BY: JPG REVIEWED BY:</p>
	<p>REVISIONS</p>	<p>INIT. DATE</p>
		<p>DocuSigned by: P. Alexander 1/30/2015 10:44:44 AM B4756E00CE4E4ED DATE</p>
		<p>SIG. INVENTORY NO.</p>



LEGEND
 | STATIONARY SIGN
 ← DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

-Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	 	<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>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>NOTES:</p> <ol style="list-style-type: none"> 1) 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.
		<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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**RESURFACING
ADVANCE WARNING SIGNS
FOR RURAL AND SUBURBAN
MULTI-LANE ROADWAYS
W/ SHOULDER SECTIONS**