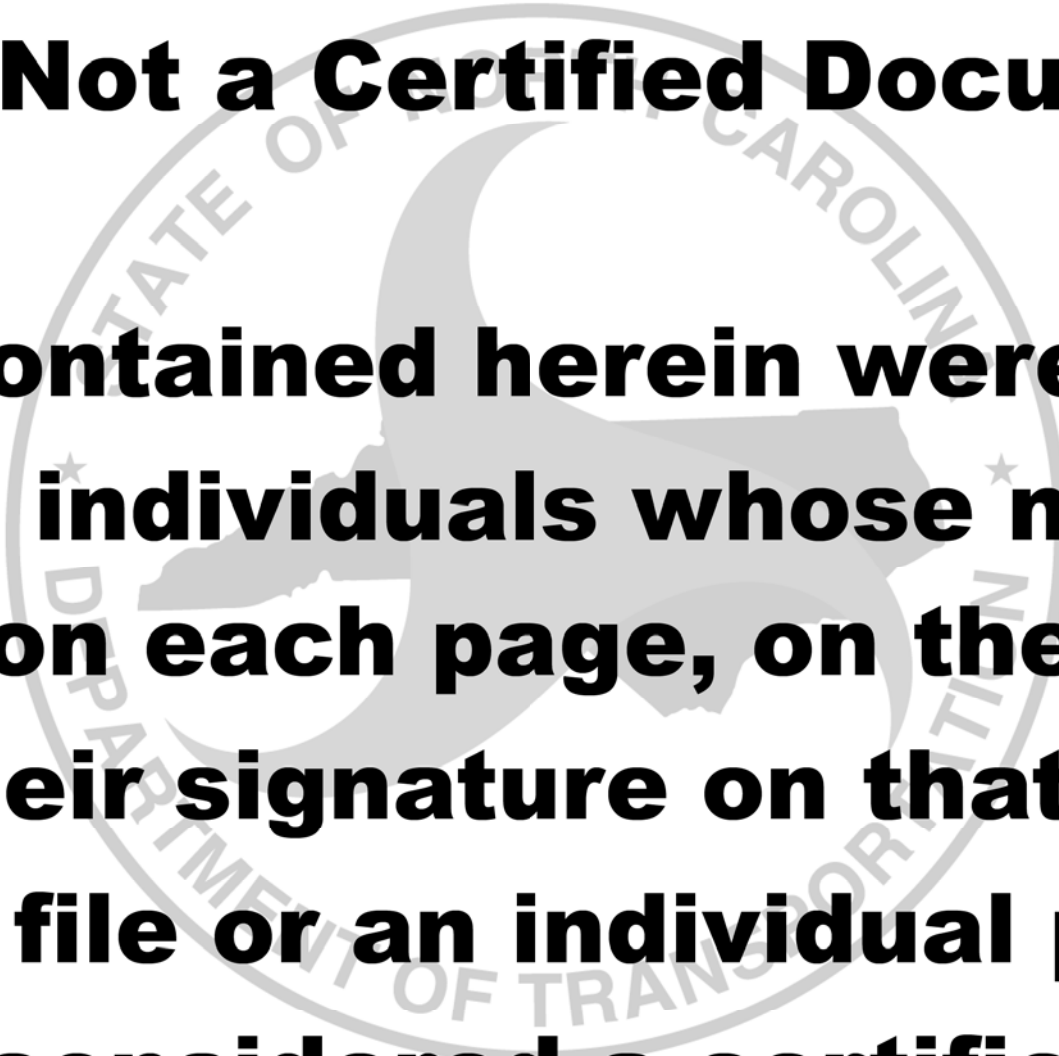
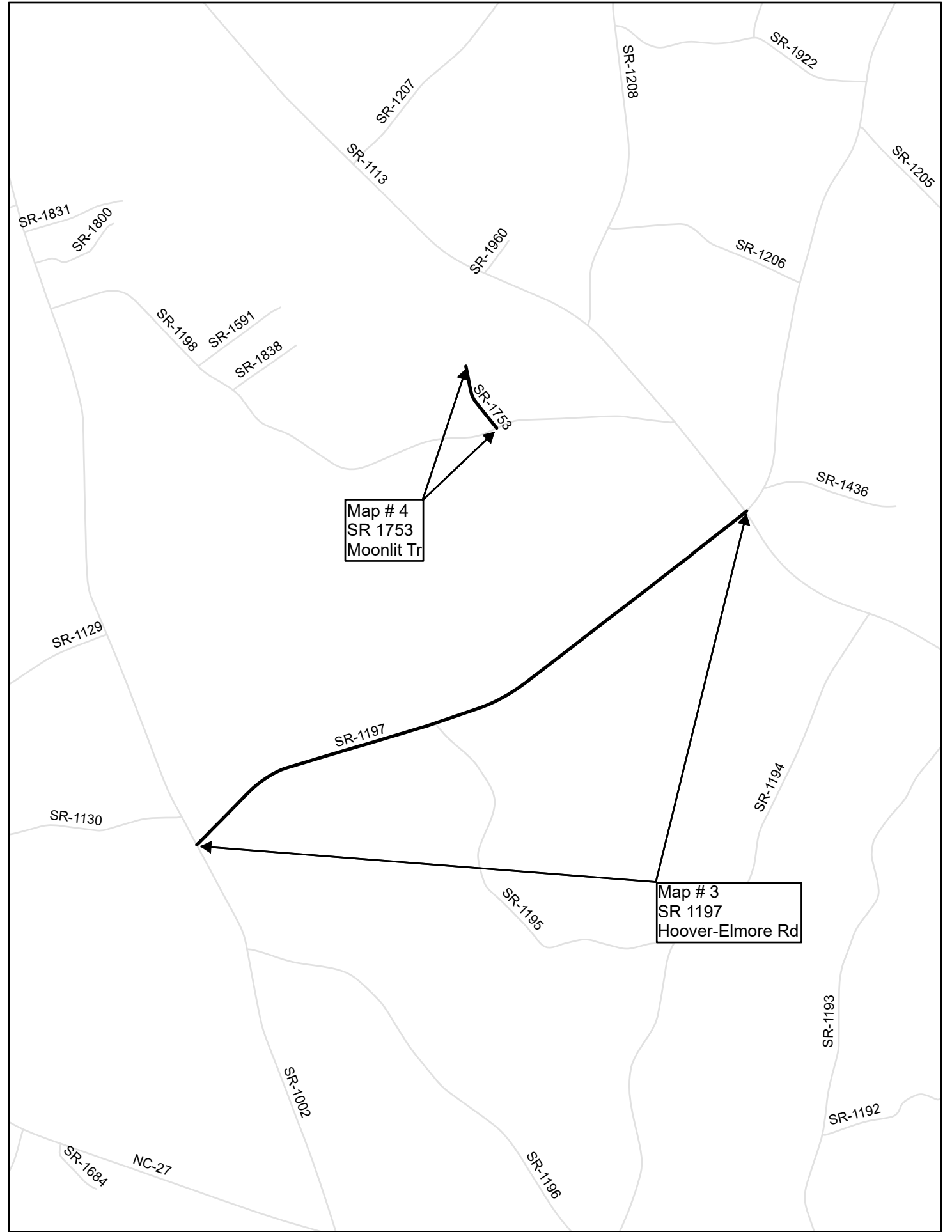
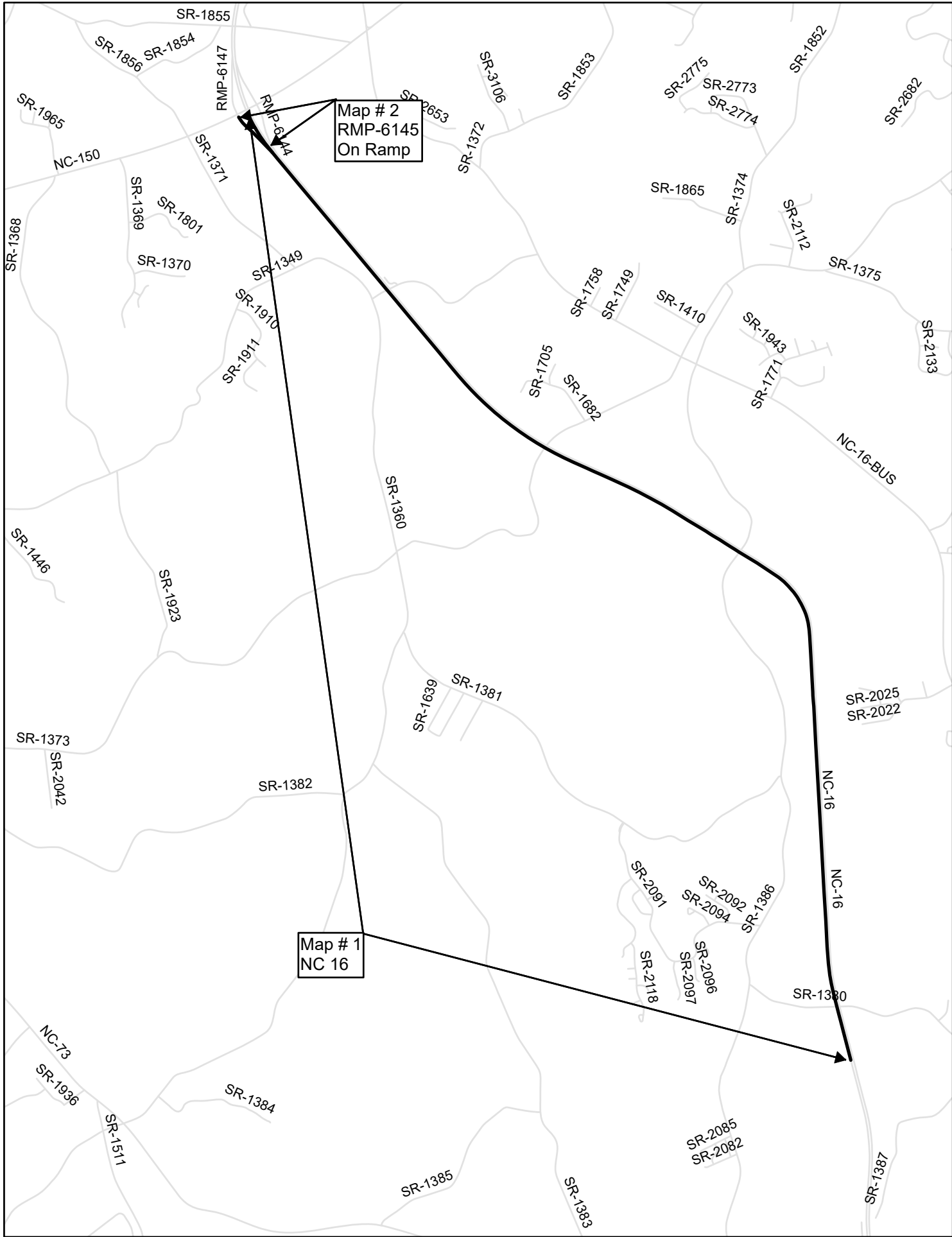


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**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

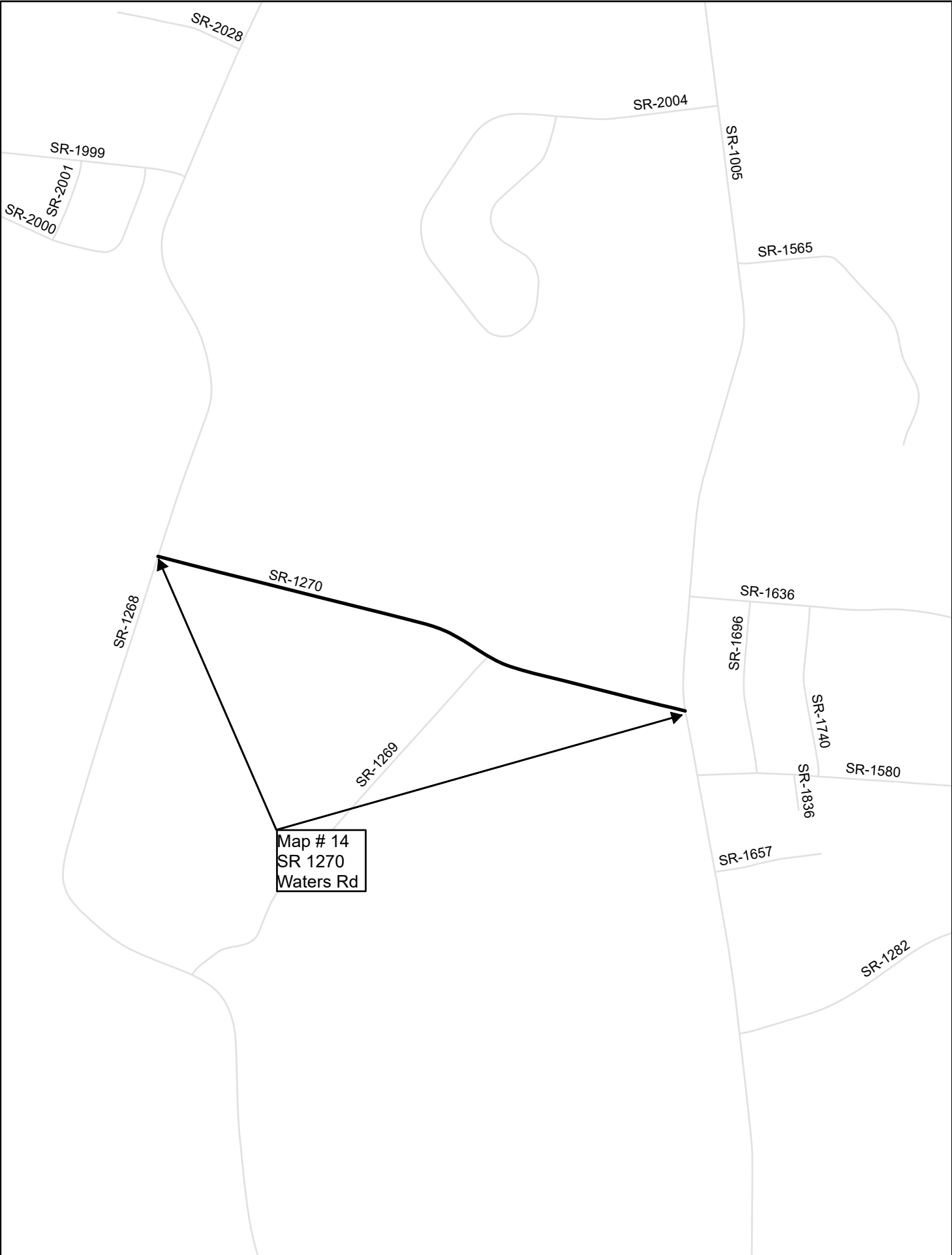
**This file or an individual page  
shall not be considered a certified document.**

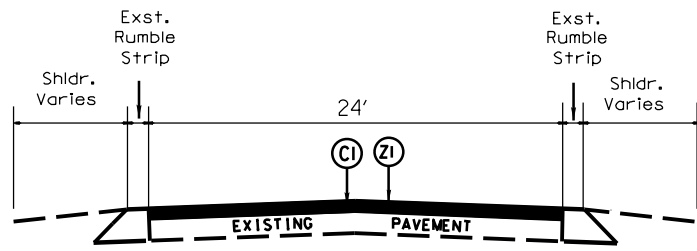




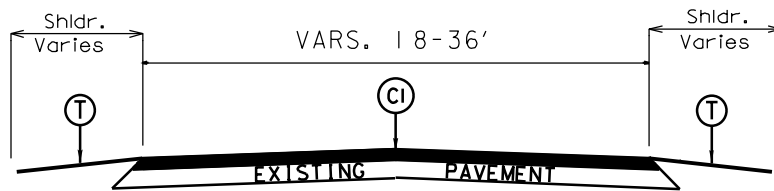






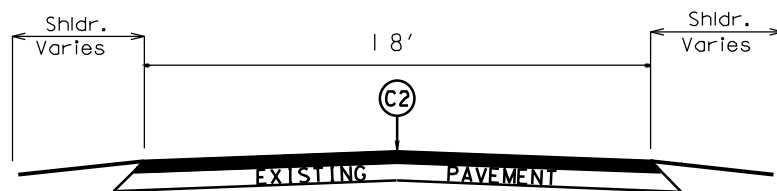


TYPICAL SECTION NO. 1  
MAP # 1 - ENTIRE MAP

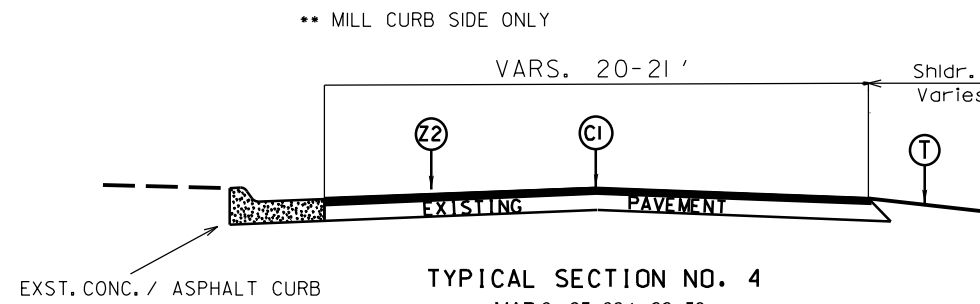


TYPICAL SECTION NO. 2

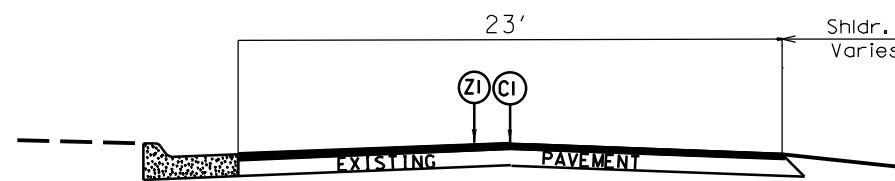
MAP 2 - ENTIRE MAP  
 MAP 3 - 0+00 to 95+00  
           99+50 to 100+25  
 MAP 5 - ENTIRE MAP  
 MAP 6 - ENTIRE MAP  
 MAP 8 - ENTIRE MAP  
 MAP 9 - 6+48 to 11+08  
 MAP 5 - ENTIRE MAP  
 MAP 11 - 0+60 to 45+41  
 MAP 12 - ENTIRE MAP  
 MAP 13 - ENTIRE MAP  
 MAP 14 - ENTIRE MAP  
 MAP 15 - ENTIRE MAP  
 MAP 16 - 0+00 to 20+82  
           21+79 to 33+26



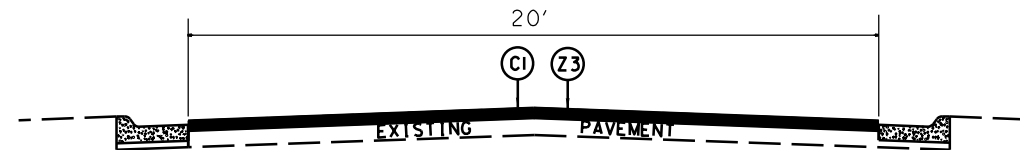
TYPICAL SECTION NO. 3  
 MAP 4 - ENTIRE MAP  
 MAP 7 - ENTIRE MAP



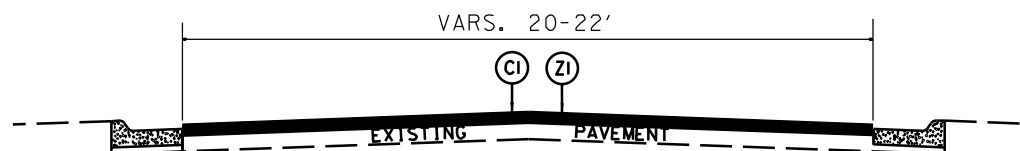
TYPICAL SECTION NO. 4  
 MAP 3 - 95+00 to 99+50  
 MAP 9 - 0+00 to 6+48



TYPICAL SECTION NO. 5  
 MAP 10 - 0+00 to 12+07



TYPICAL SECTION NO. 6  
 MAP 10 - 12+07 to 21+97



TYPICAL SECTION NO. 7  
 MAP 11 - 0+00 to 0+60  
 MAP 16 - 20+82 to 21+79

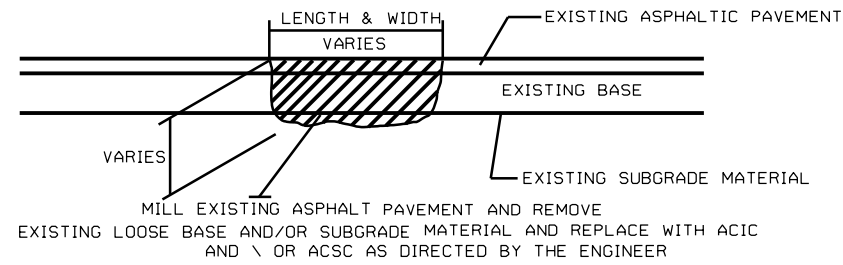
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD.
Z1	MILL EXST. ASPHALT PAVEMENT APPROX. 1 1/2" IN DEPTH
Z2	MILL EXST. ASPHALT PAVEMENT APPROX. 0 - 1 1/2" IN DEPTH
Z3	MILL EXST. ASPHALT PAVEMENT APPROX. 3" IN DEPTH
T	AGGREGATE SHOULDER BORROW (SHOULDER RECONSTRUCTION, WIDTH VARIES 2'-6')
Y1	INCIDENTAL MILLING

Checked by:

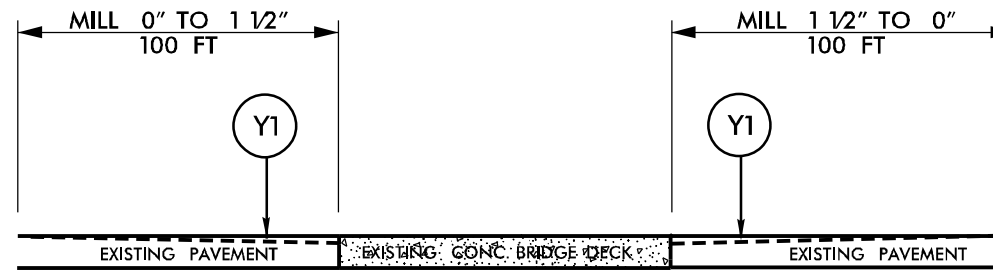
Drawn by: G. Brittain

STATE	PROJECT WBS	SHEET NUMBER
NC	2024CPT.12.06.10551	7
	2024CPT.12.06.20551	

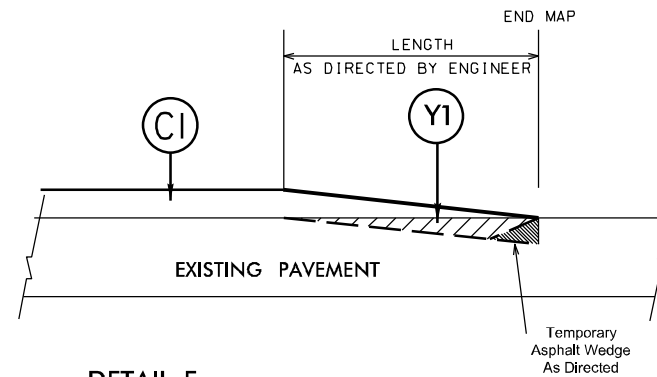
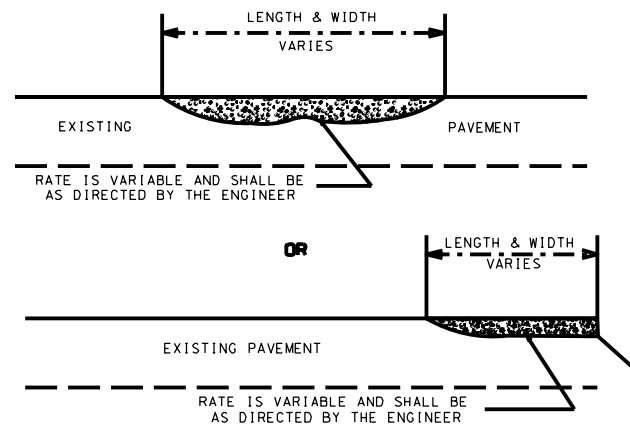
**DETAIL A**  
**PATCHING EXISTING PAVEMENT**



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

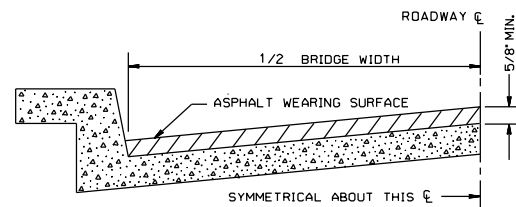


**DETAIL B**  
**ASPHALT CONCRETE SURFACE COURSE**  
**TYPE S9.5C (LEVELING COURSE)**



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

**DETAIL C**  
**BRIDGE HALF TYPICAL SECTION**

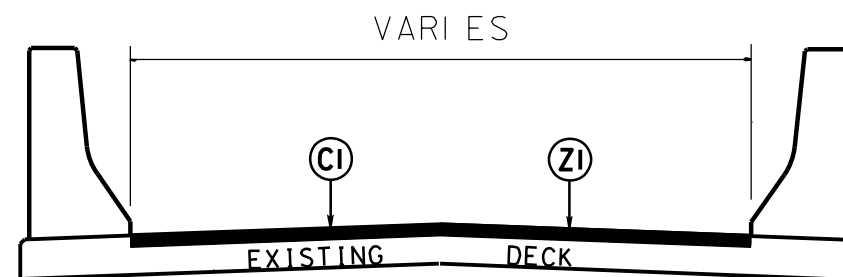


FOR BRIDGES WITH FLOOR DRAINS, CARE SHALL BE EXERCISED IN PLACING THE WEARING SURFACE AROUND FLOOR DRAINS SO AS NOT TO HINDER EFFECTIVE DRAINAGE. ALL DRAINS SHALL BE LEFT OPEN.

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**

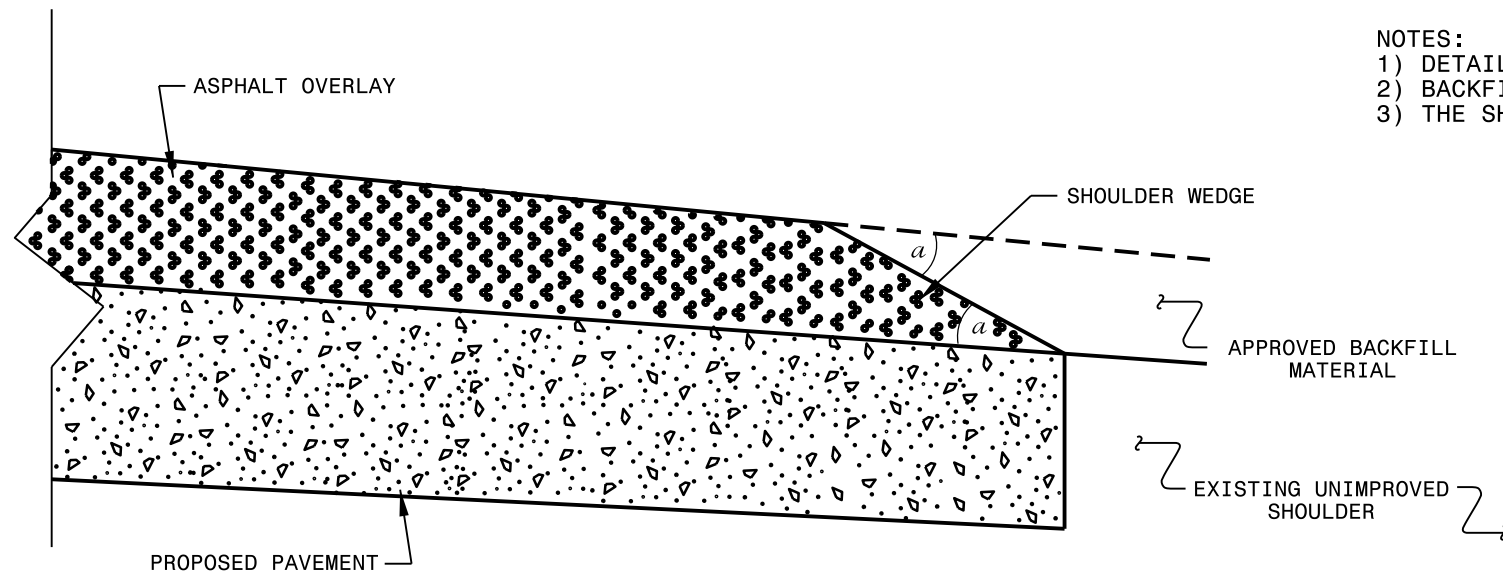
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD.
Z1	MILL EXST. ASPHALT PAVMENT APPROX. 1 1/2" IN DEPTH
Z2	MILL EXST. ASPHALT PAVMENT APPROX. 0 - 1 1/2" IN DEPTH
Z3	MILL EXST. ASPHALT PAVMENT APPROX. 3" IN DEPTH
T	AGGREGATE SHOULDER BORROW (SHOULDER RECONSTRUCTION, WIDTH VARIES 2'-6')
Y1	INCIDENTAL MILLING

**Lincoln County Resurfacing**  
**Typical Sections**

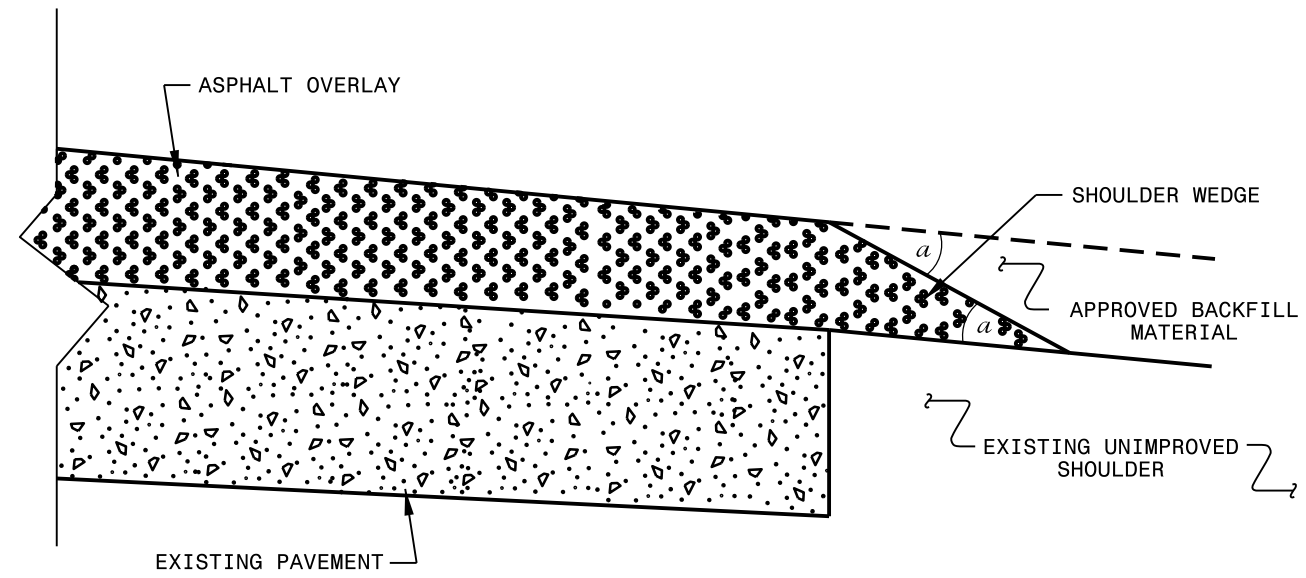
Checked by:

Drawn by: G. Brittain

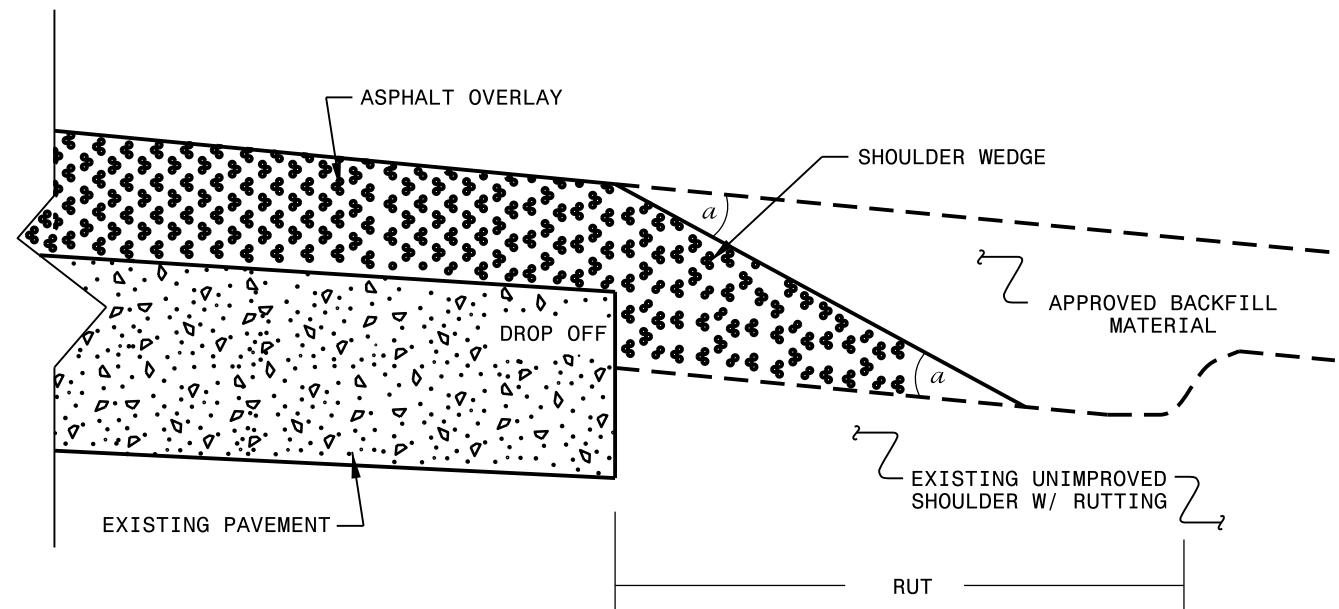
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFc AND ULTRA-THIN BONDED WEARING COURSE.
  - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
  - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



**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)

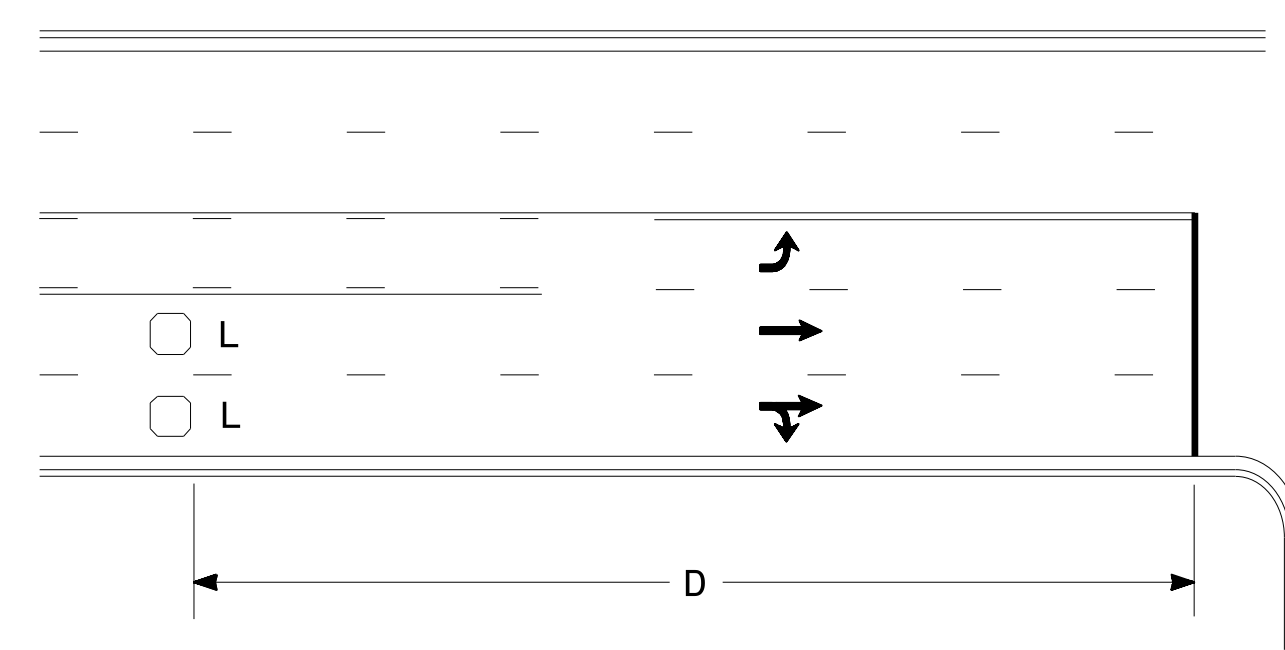
- SHOULDER WEDGE ANGLE = 30°

<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	

SYSTEM: 11/11/11  
 USER: T.SPELL  
 FILE: susr/details/stand/shoulderwedgedetail.dgn



### High Speed Detection (≥40 mph)

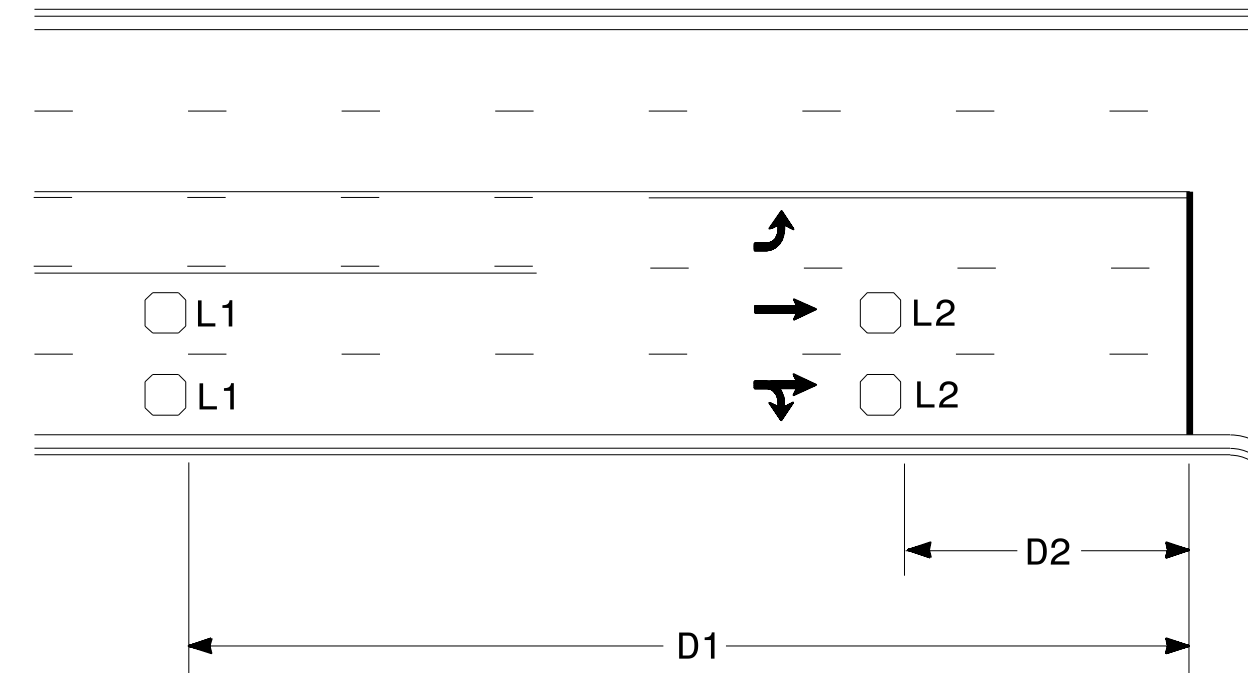


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

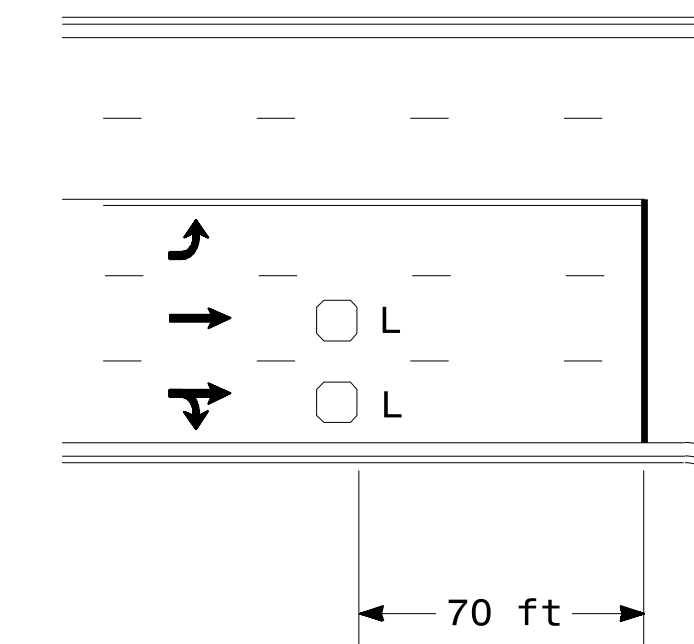


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

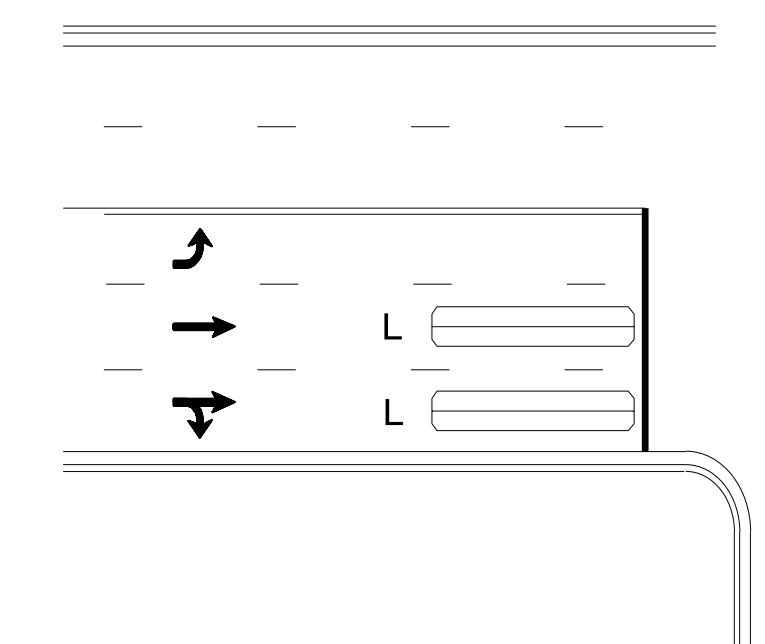
"Stretch" Operation

### Low Speed Detection (≤35 mph)



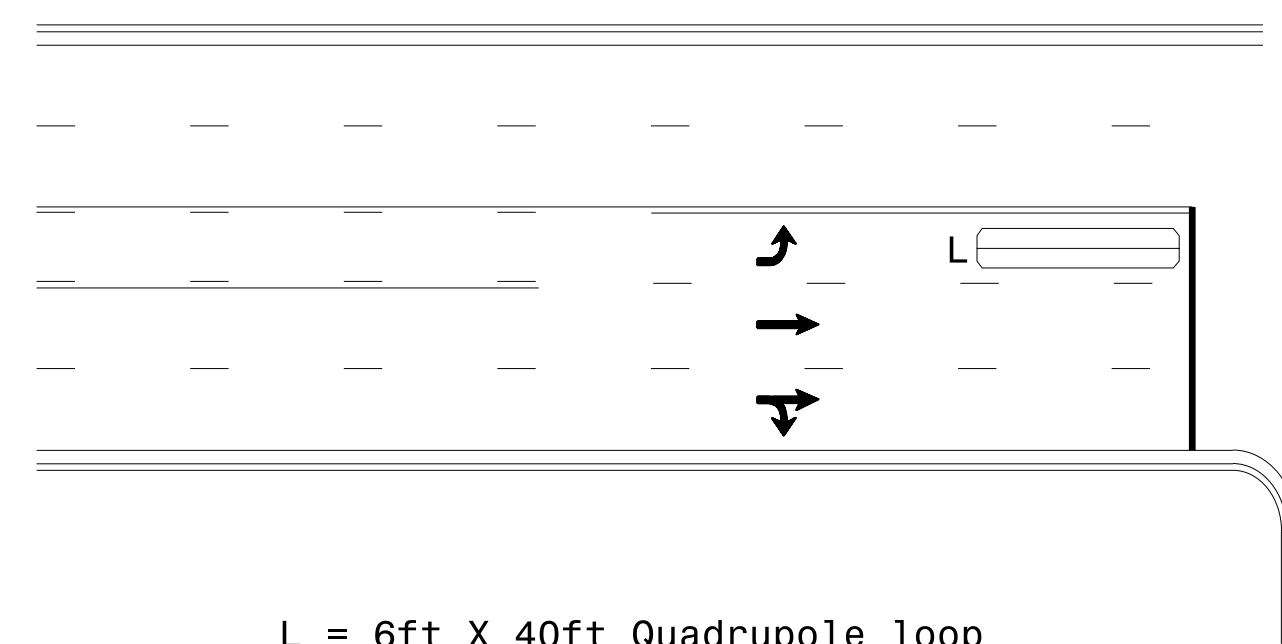
L = 6ft X 6ft  
Wired in series

OR



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

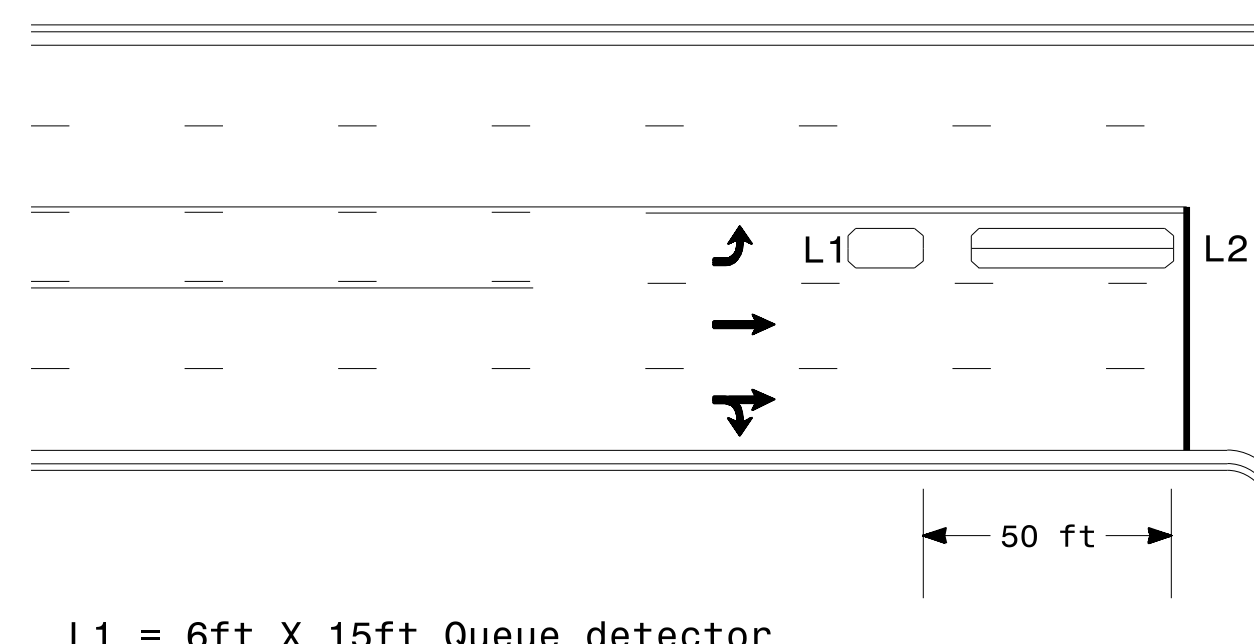
### Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

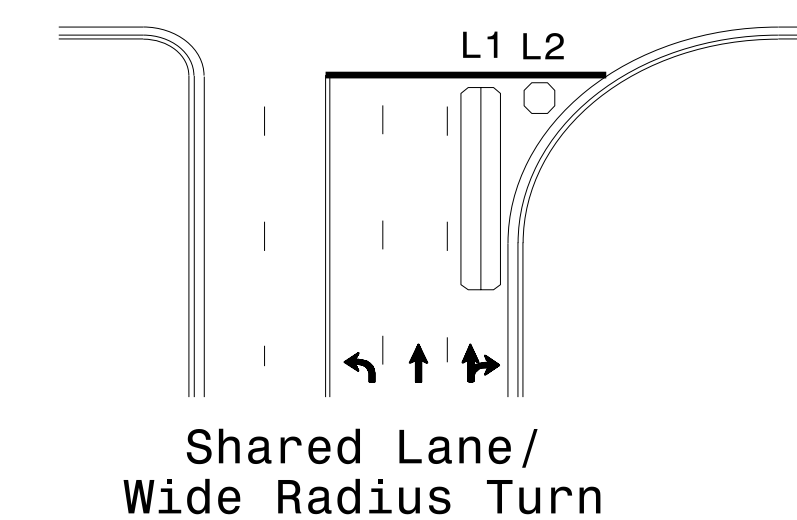
OR



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

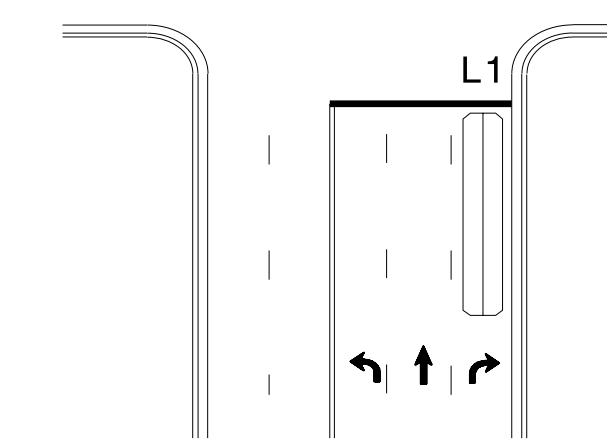
Queue Loop Detection

### Right Turn Lane Detection

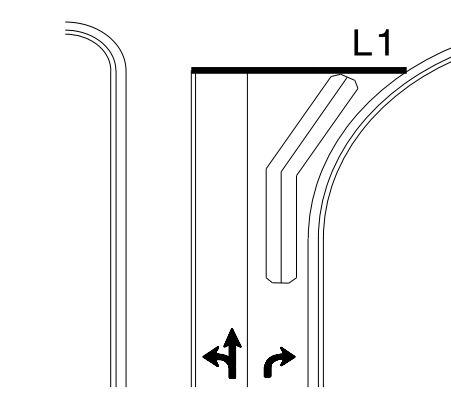


Shared Lane/  
Wide Radius Turn

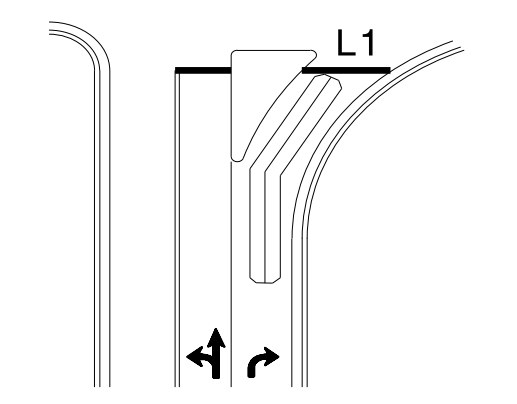
L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately



Standard Turn

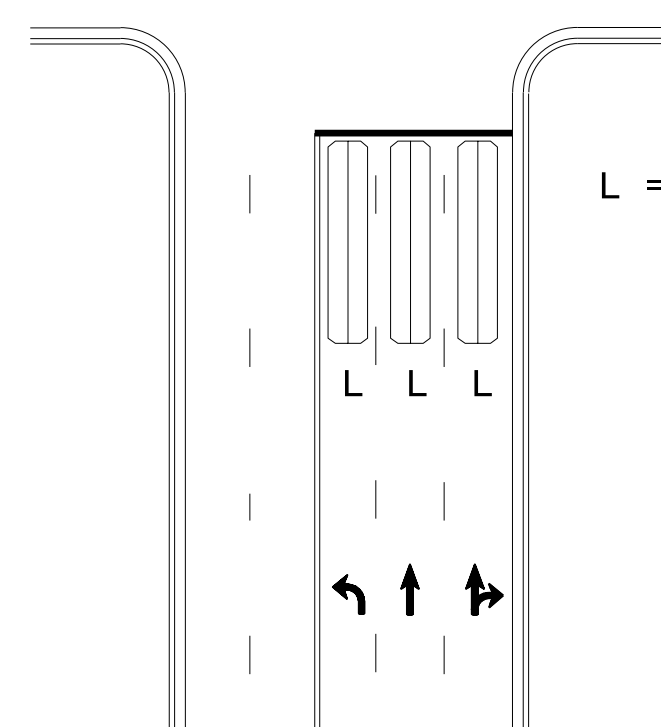


Wide Radius Turn



Channelized Turn

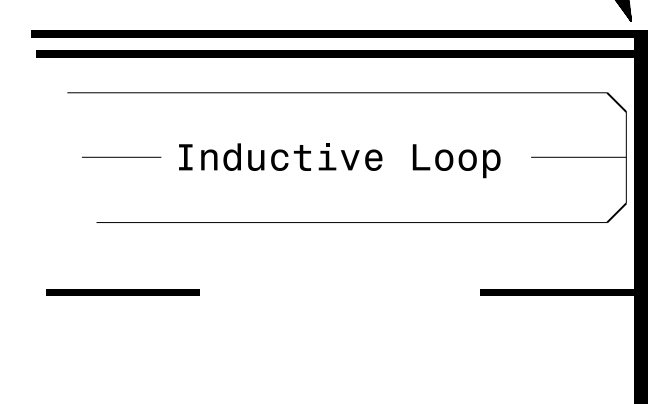
### Side Street Detection



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>Typical Signal Loop Locations</p>		<p>PLAN DATE: January 2015 REVIEWED BY: JPG PREPARED BY: PLA REVIEWED BY:</p>	
<p>SCALE N/A</p>	<p>REVISIONS</p>	<p>INIT.</p>	<p>DATE</p>	<p>1/30/2015 DATE</p>



PROJECT NO.	SHEET NO.	TOTAL NO.
2024CPT.12.06.10551, 2024CPT.12.0620551		

**THERMOPLASTIC AND PAINT QUANTITIES**

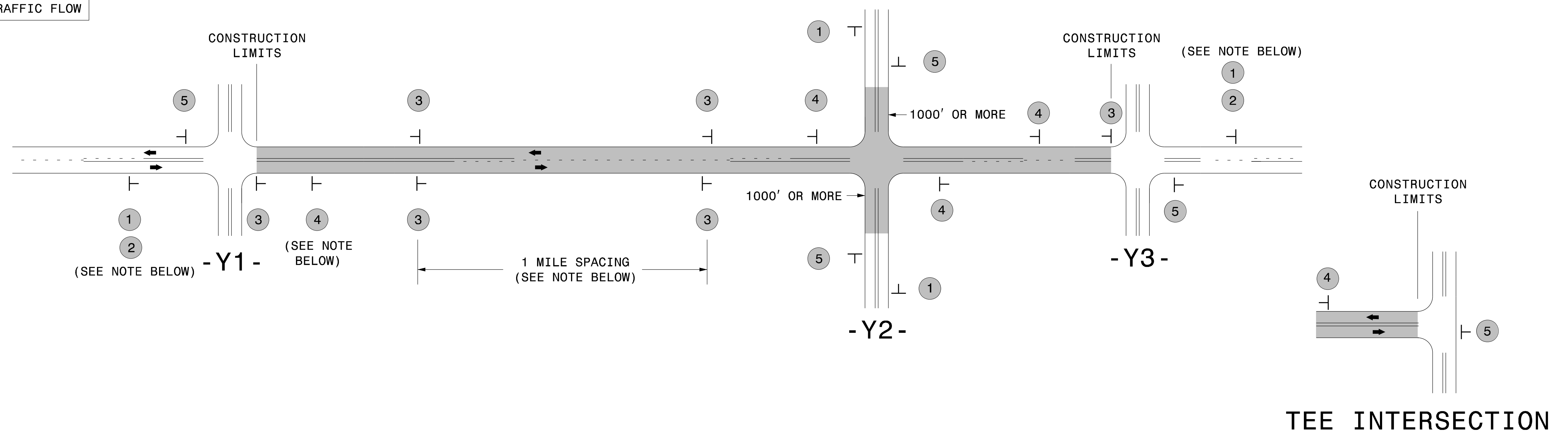
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4400000000-N	4413000000-E	4423000000-N	4424000000-N	4434000000-N	4457000000-N	4510000000-N	4685000000-E		4688000000-E		4695000000-E		4700000000-E		4704000000-E		4709000000-E		4720000000-E		4725000000-E						4810000000-E		4905000000-N
										WORK ZONE SIGNS (STA.)	WORK ZONE ADVANCE GENERAL WARNING	WORK ZONE DIGITAL SPEED LIMIT SIGNS	WORK ZONE PRESENCE LIGHTING	SEQUENTIAL FLASHING WARNING LIGHTS	TEMP TRAFFIC CONTROL	LAW ENFORCEMENT	4" X 90 M WHITE THERMO	4" X 90 M YELLOW THERMO	6" X 90M WHITE THERMO	6" X 90M YELLOW THERMO	8" X 90 M WHITE THERMO	8" X 90 M YELLOW THERMO	12" X 90 M WHITE THERMO	16" X 90 MIL WHITE THERMO	24" X 90 M WHITE THERMO	THERMO MSG SCHOOL 120 M	THERMO RXR 120 M	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO MERGE ARROW 90 M	THERMO YIELD TRIANGLE 90 M	THERMO STR & LT ARROW 90 M	THERMO STR & RT ARROW 90 M	4" WHITE PAINT	4" YELLOW PAINT	SNOW PLOWABLE MARKERS			
MI	FT	SF	SF	EA	EA	EA	LS	HR	LF	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA					
2024CPT.12.06.10551	Lincoln	1	NC-16 SB LANES	FROM NC 150 OVERPASS BRIDGE TO RR OVERPASS BRIDGE	1	2	MD	7.03	24	304		5	14	12		250			50,500	37,181	250	250	3,350		72			12	6	3	6					500			
2024CPT.12.06.10551	Lincoln	2	NC-16 SB RAMP	FROM NC 150 TO NC 16 S BOUND	2	2	MD	0.23	22	96		5	14	12		250	1,250	1,250	50,500	37,181	250	250	3,350		12			12	6	3	6					2			
<b>TOTAL FOR PROJ NO. 2024CPT.12.06.10551</b>																	2,500		87,681		500																	502	
2024CPT.12.06.20551	Lincoln	3	SR-1197 / HOOVER-ELMORE RD	FROM SR 1002 (CAT SQUARE RD) TO SR 1113 (REEPSVILLE RD)	2	2	2WU	1.91	21		224				*										48	6								40,350	40,350				
2024CPT.12.06.20551	Lincoln	4	SR-1753 / MOONLIT TR	FROM SR 1198 (BILL SAIN RD) TO CUL-DE-SAC	3	2	2WU	0.21	18						*																								
2024CPT.12.06.20551	Lincoln	5	SR-1431/1183 DAVIS RD/BOB BURGIN RD	FROM NC 27 TO NC 27	2	2	2WU	0.86	20		72				*																			18,200	18,200				
2024CPT.12.06.20551	Lincoln	6	SR-1173 / GASTON WEBBS CHAPEL RD	FROM SR 2098 ( OLD NC 150) TO GASTON CO	2	2	2WU	0.53	20		72				*									80	60		4							11,250	11,250				
2024CPT.12.06.20551	Lincoln	7	SR-1220 / LORE RD	FROM SR 1008 (REEPSVILLE RD) TO DEAD END	3	2	2WU	0.27	18		72				*																								
2024CPT.12.06.20551	Lincoln	8	SR-1225 / HILLTOP RD	FROM NC 182 TO SR 1222 (S GROVE ST EXT)	2	2	2WU	0.84	20		176				*																			17,750	17,750				
2024CPT.12.06.20551	Lincoln	9	SR-1267 / SIGMON RD	FROM 321 BUS TO SR 1405 (N ASPEN ST)	2,4	2	2WU	0.21	20		120				*	2,000	2,800										4								30				
2024CPT.12.06.20551	Lincoln	10	SR-1286 / NEWBOLD ST	FROM NC 27 TO CUL-DE-SAC	5,6	2	2WU	0.42	23		48				*																								
2024CPT.12.06.20551	Lincoln	11	SR-1419 / E GASTON STREET EXT	FROM NC 27 TO US 321 BUS FROM NC 150 TO SR 1252 (LABORATORY RD)	2,7	2	2WU	0.86	22		48				*	9,000	9,150			50				88	150		4	1	1			1	1						
2024CPT.12.06.20551	Lincoln	12	SR-1236 / RIVERVIEW RD		2	2	2WU	1.59	18		232				*	16,790	16,790																						
2024CPT.12.06.20551	Lincoln	13	SR-1239 / GASTON WEBBS CHAPEL RD	FROM GASTON CO TO GASTON CO FROM SR 1005 (STARTOWN RD) TO SR 1268 (RIVER RD)	2	2	2WU	0.74	18		72				*																			15,650	15,650				
2024CPT.12.06.20551	Lincoln	14	SR-1270 / WATERS RD		2	2	2WU	0.79	20		120				*											40	6							16,700	16,700				
2024CPT.12.06.20551	Lincoln	15	SR-1339 / SHUFORD RD	FROM SR 1003 (BUFFALO SHOALS RD) TO NC 150	2	2	2WU	1.41	22		176				*	14,785	14,785																						
2024CPT.12.06.20551	Lincoln	16	SR-1334 / MCALISTER RD	FROM SR 1003 (BUFFALO SHOALS RD) TO DEAD END	2,7	2	2WU	0.63	20		72				*	6,500	6,500																						
<b>TOTAL FOR PROJ NO. 2024CPT.12.0620551</b>																	99,100				50			168	372	12	8	5	4			1	1	119,900	119,900	30			
<b>GRAND TOTAL</b>																	101,600		87,681		550			3,350	168	456	12	8	17	10	3		1	1	119,900	119,900	532		

# SIGNING FOR RESURFACING PROJECTS

**LEGEND**

┆ STATIONARY SIGN

← DIRECTION OF TRAFFIC FLOW



## MAINLINE (-L-) SIGNING

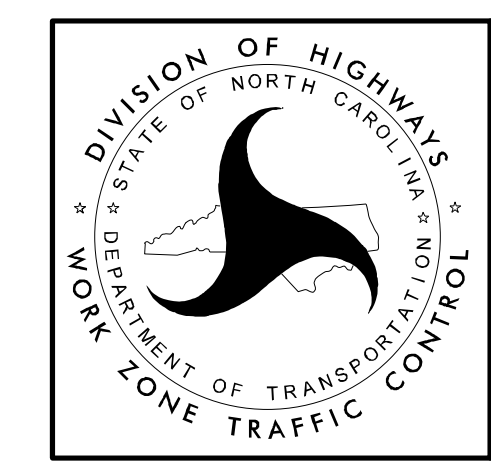
## -Y- LINE SIGNING

<b>SIGNING NOTES AND PLACEMENT PER DIRECTION</b>	1		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		<ul style="list-style-type: none"> <li>PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACE 1 MILE APART THEREAFTER.</li> <li>AT TEE INTERSECTIONS INSTALL INITIALLY 1/2 MILE FROM INTERSECTION AND SPACE 1 MILE APART THEREAFTER.</li> </ul>	
	4		<ul style="list-style-type: none"> <li>THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS.</li> <li>DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS.</li> <li>INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE.</li> <li>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.</li> <li>A MAXIMUM OF 2 SIGN SETS PER MILE. DO NOT INSTALL WHEN -Y- LINES ARE WITHIN 0.5 MILES FROM "END ROAD WORK" SIGN.</li> <li>FOR TEE INTERSECTIONS, INSTALL WITHIN 500' +/- OF THE INTERSECTION ALONG -L- LINE.</li> </ul>	
	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

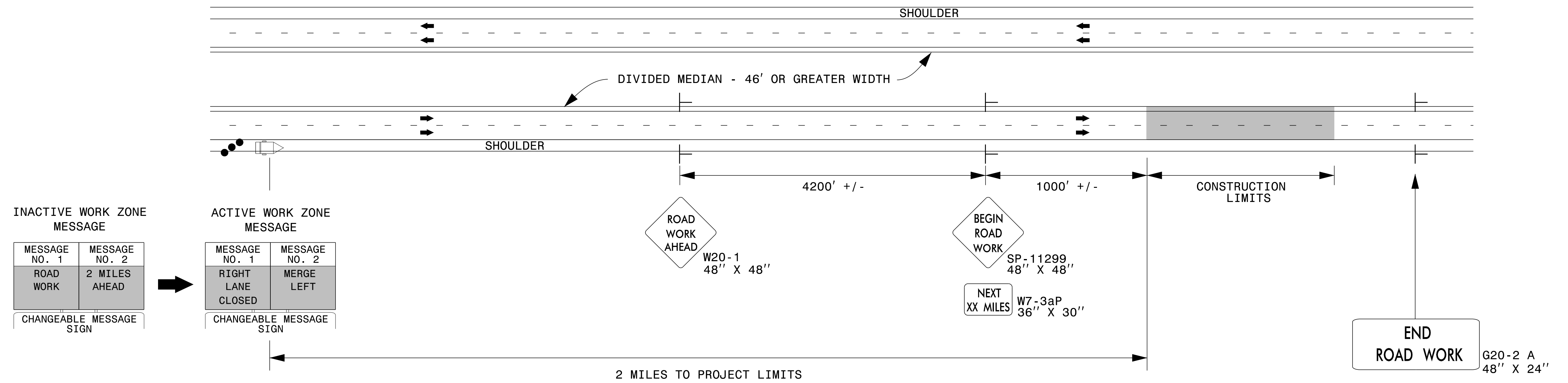
FOR RESURFACING MAPS WITH CONSTRUCTION LIMITS LESS THAN 2 MILES IN LENGTH, NO STATIONARY SIGNS ARE REQUIRED. USE PORTABLE "ROAD UNDER CONSTRUCTION" OR "ROAD WORK AHEAD" SIGNS IN LIEU OF STATIONARY ADVANCE WARNINGS SIGNS.



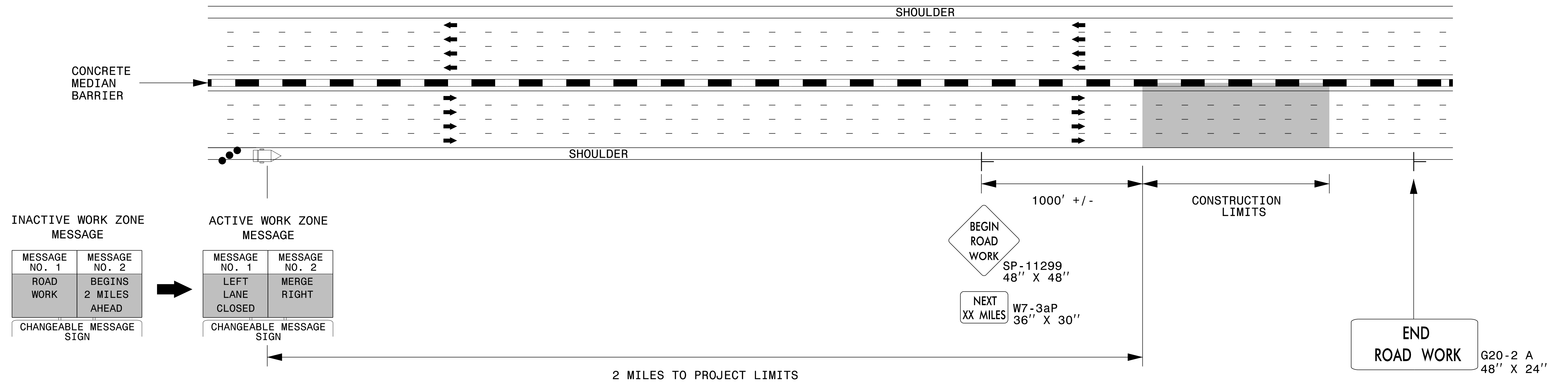
**ADVANCE WARNING SIGNS FOR RURAL AND SUBURBAN 2-LANE ROADWAY RESURFACING**

5/15/2017 S:\TUXWZTC\Resurfacing\2L2W & AST Resurfacing Details\Resurfacing\_AdvWarn\_2Ln.dgn User:kadai

## DIVIDED MEDIANS WITH WIDTHS 46' OR GREATER



## DIVIDED MEDIANS WITH WIDTHS LESS THAN 46' OR WITH PERMANENT MEDIAN BARRIER

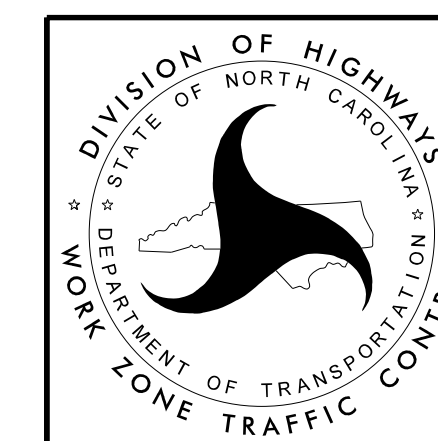


### NOTES:

- 1) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 6' AS MEASURED FROM THE EDGE OF PAVEMENT.
- 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) FOR MEDIAN WIDTHS LESS THAN 46' (MEASURED EDGELINE TO EDGELINE) USE THE BOTTOM DRAWING.
- 4) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 5) INSTALL "ROAD WORK AHEAD" (W20-1) ALONG ENTRANCE RAMP 500' PRIOR TO RAMP TERMINAL, AND "END ROAD WORK" (G20-2a) AT THE END OF EXIT RAMP WITHIN THE WORK ZONE.
- 6) 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 AND WITH DIVIDED MEDIANS OF 46' OR GREATER. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

### LEGEND

- CHANGEABLE MESSAGE SIGN (CMS)
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- TRAFFIC DRUM



**RESURFACING ADVANCE  
WARNING SIGNS FOR  
HIGH SPEED FACILITIES  
≥ 60 MPH**