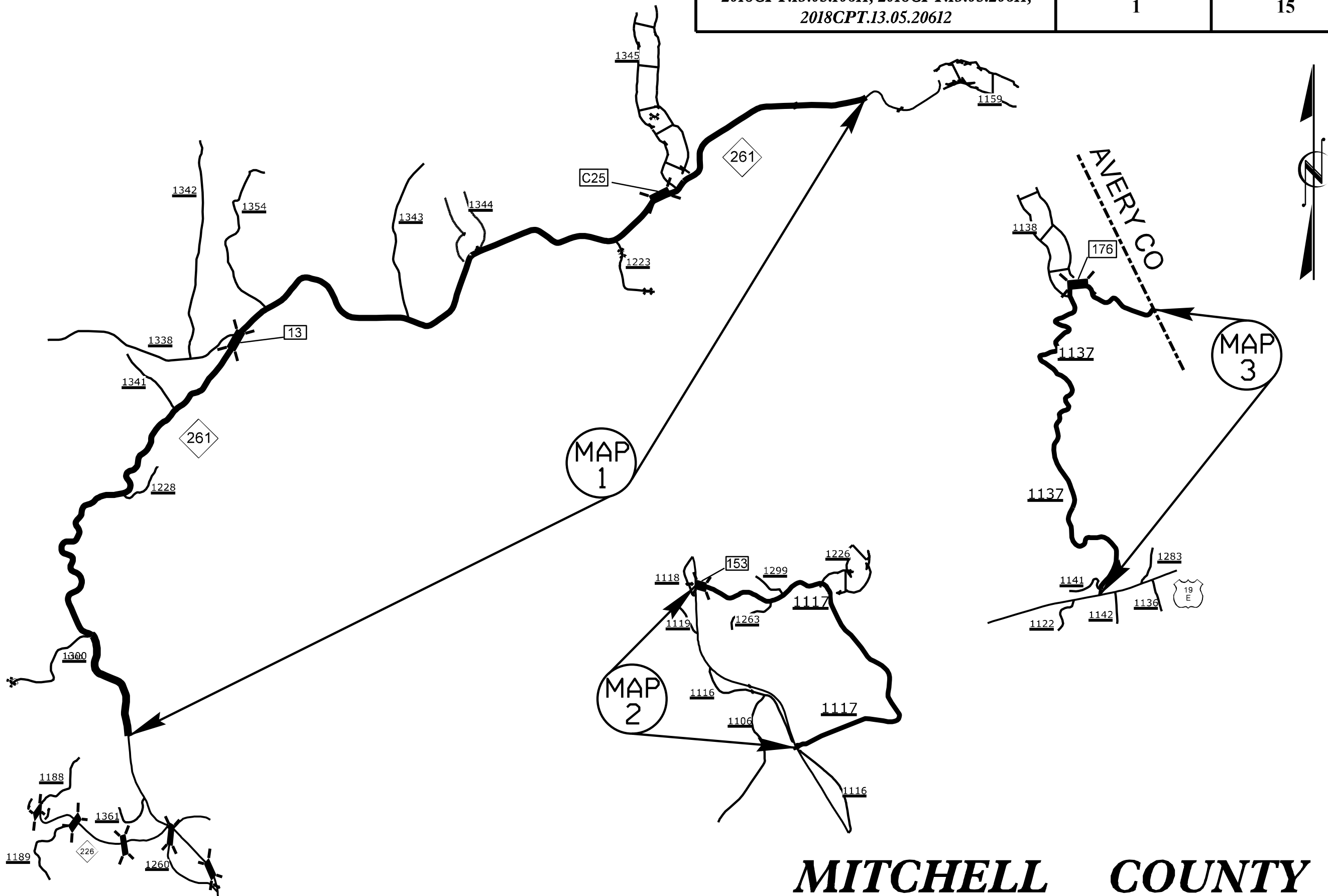
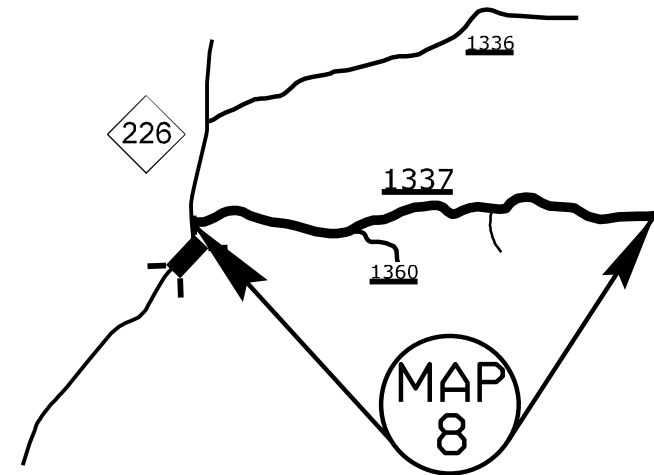
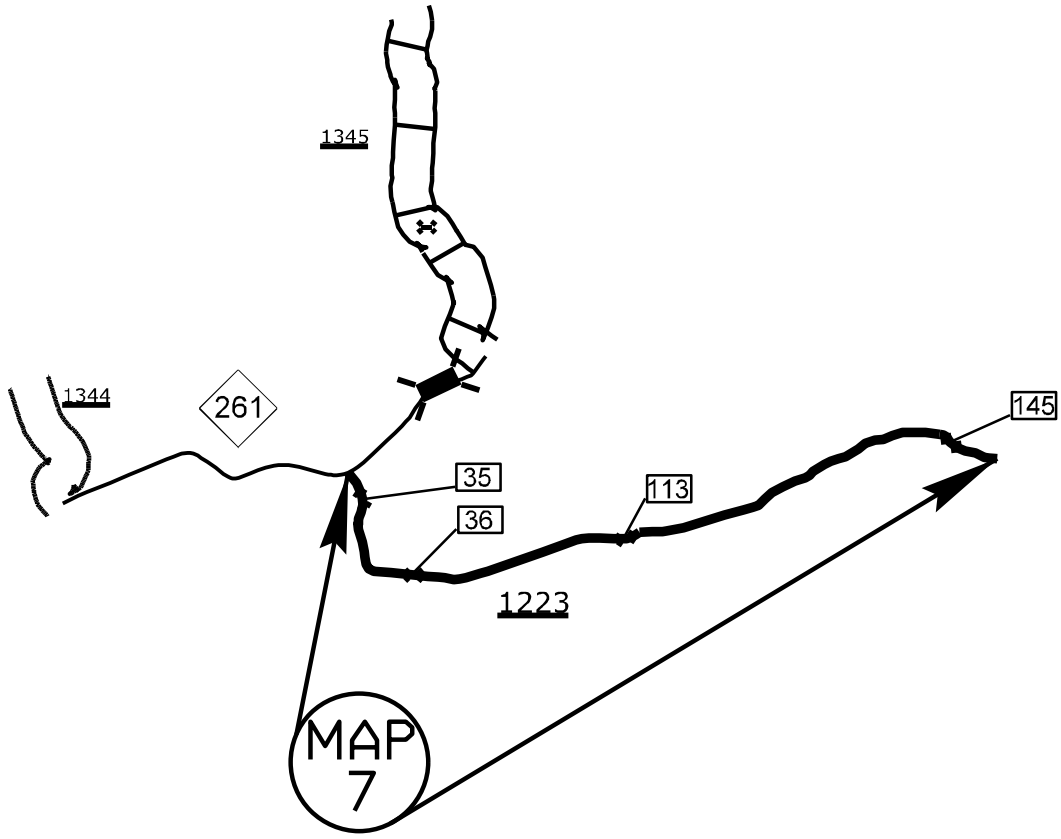
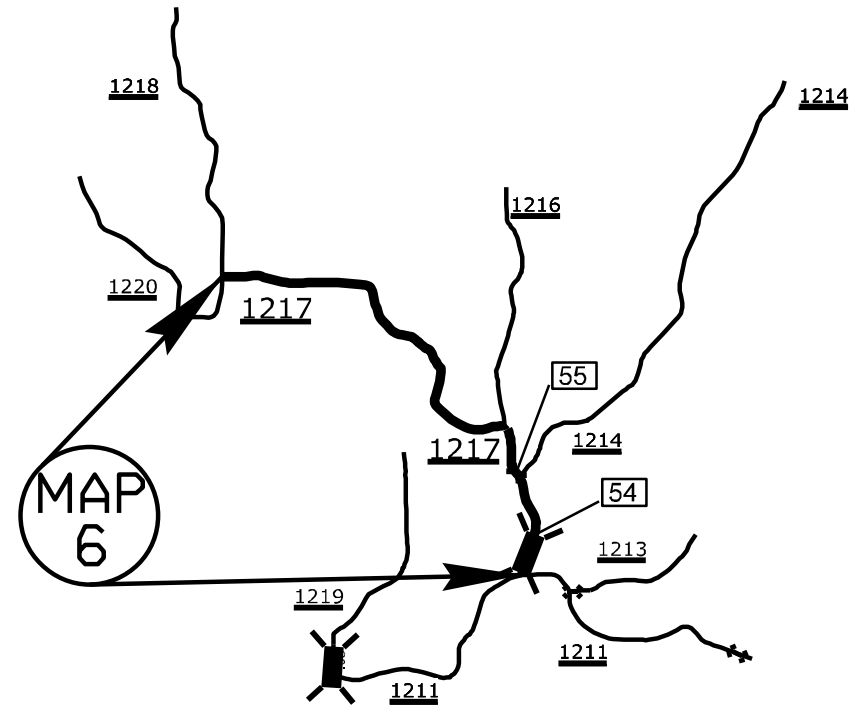
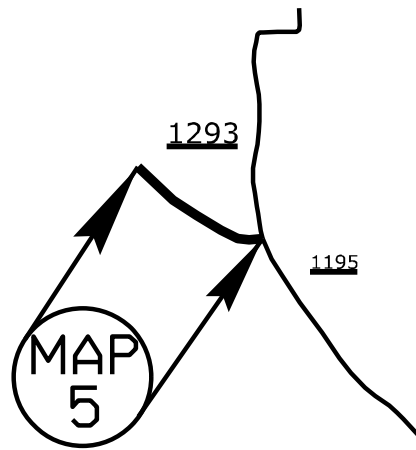
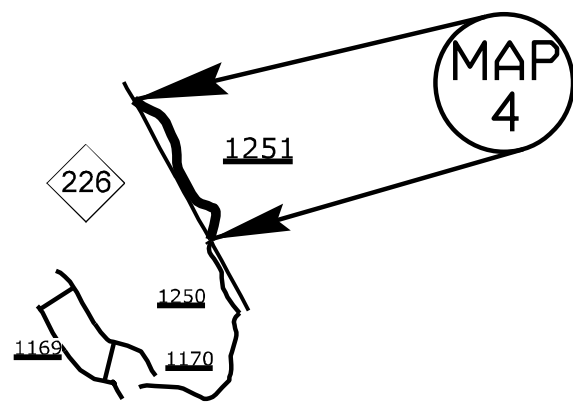


PROJECT NO.	SHEET NO.	TOTAL SHEETS
2018CPT.13.05.10611, 2018CPT.13.05.20611, 2018CPT.13.05.20612	1	15



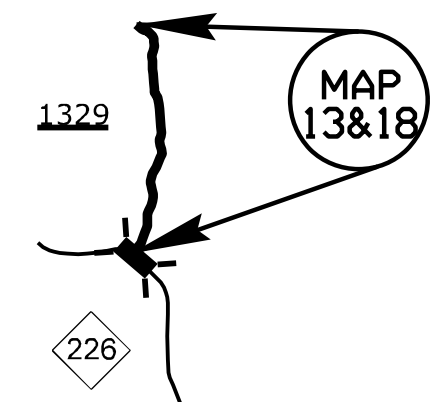
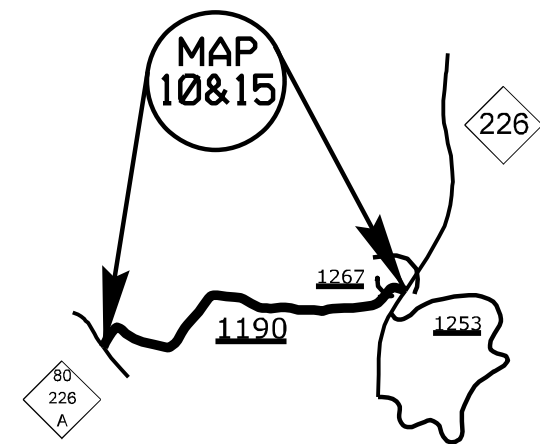
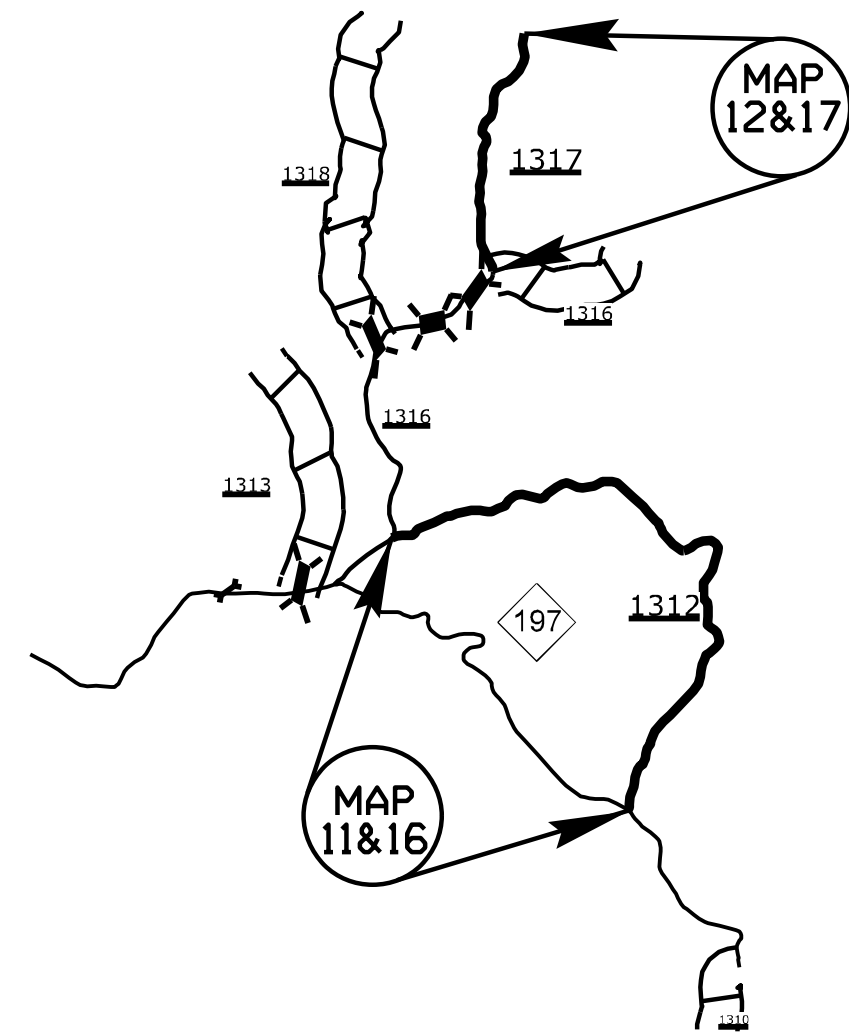
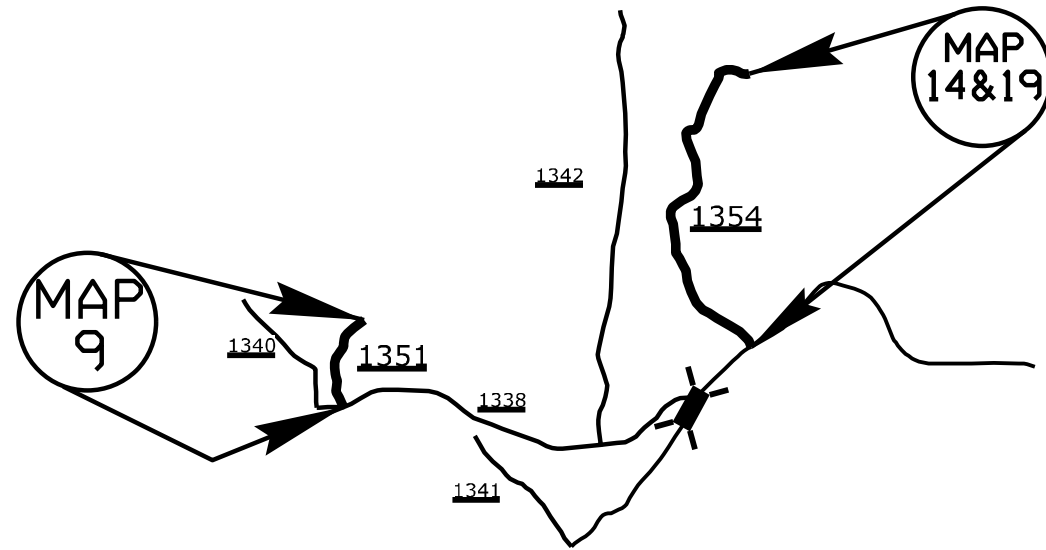
**MITCHELL COUNTY**

<i>PROJECT NO.</i>	<i>SHEET NO.</i>	<i>TOTAL SHEETS</i>
<i>2018CPT.13.05.10611, 2018CPT.13.05.20611, 2018CPT.13.05.20612</i>	2	15



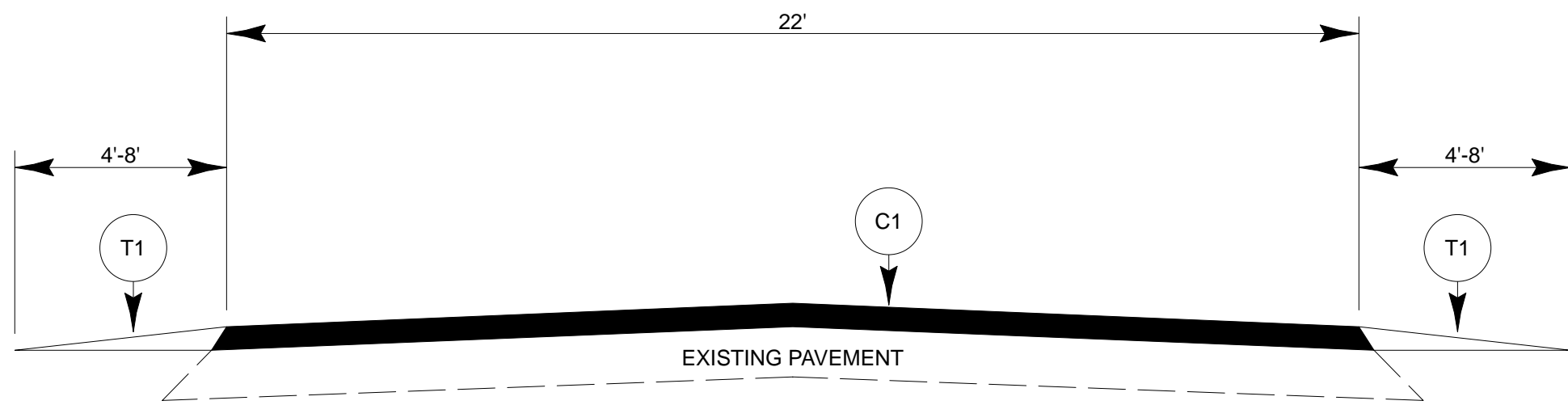
**MITCHELL COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2018CPT.13.05.10611, 2018CPT.13.05.20611, 2018CPT.13.05.20612	3	15

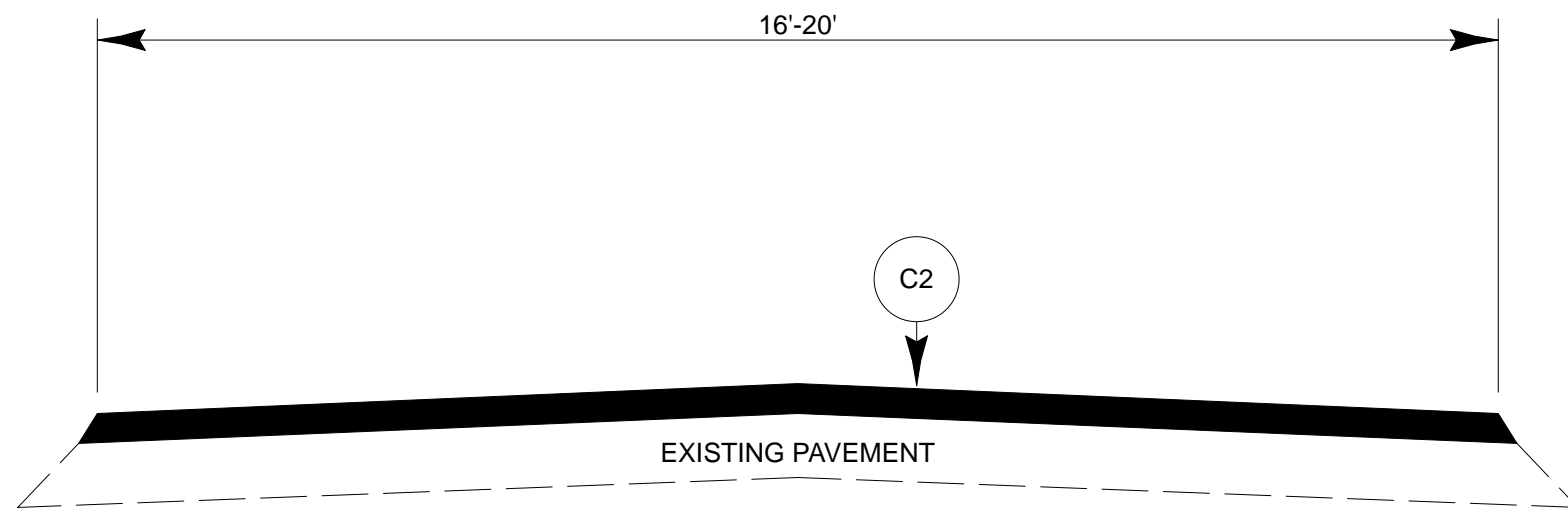
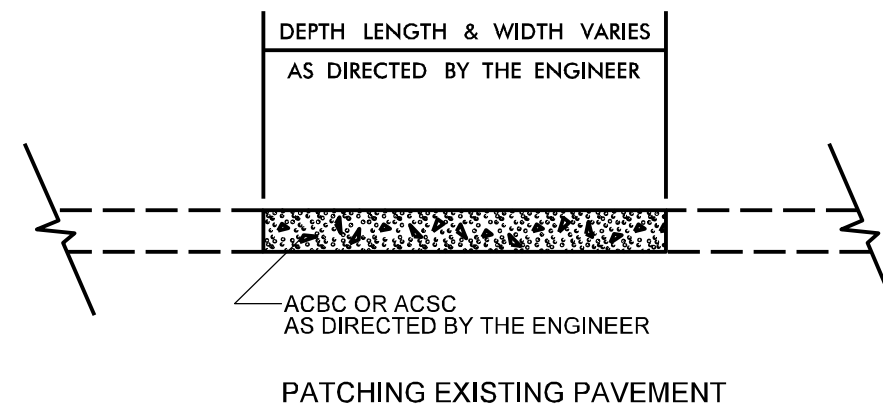


**MITCHELL COUNTY**

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2018CPT.13.05.10611, 2018CPT.13.05.20611, 2018CPT.13.05.20612	4	15



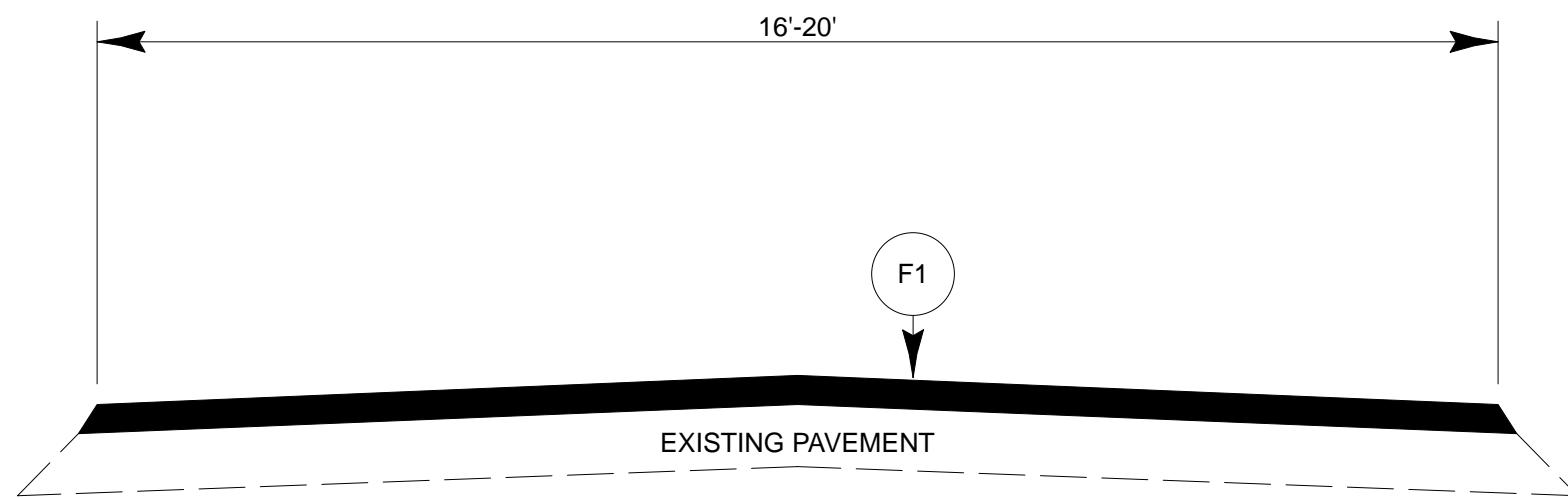
TYPICAL SECTION NO. 1



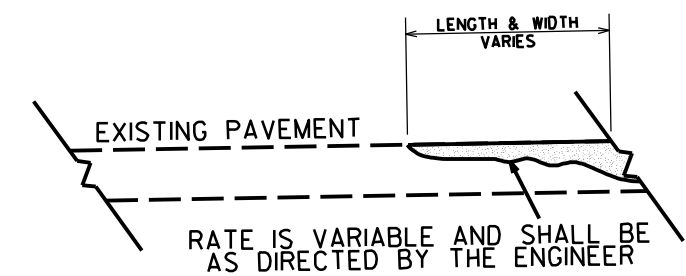
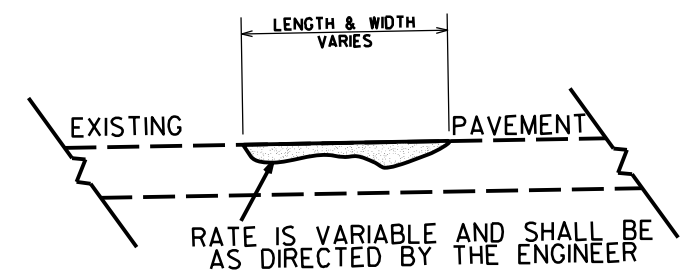
TYPICAL SECTION NO. 2

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD
C2	PROP. APPROX. 1-1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS.
F1	ASPHALT SURFACE TREATMENT, DOUBLE
T1	SHOULDER RECONSTRUCTION
V1	INCIDENTAL MILLING

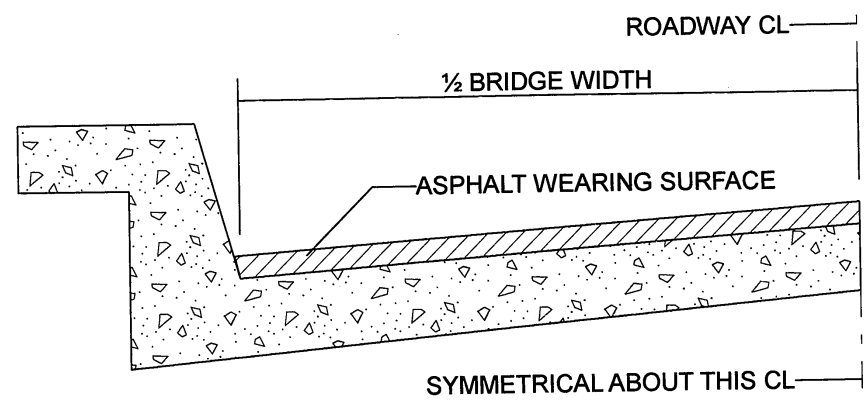
PROJECT NO.	SHEET NO.	TOTAL SHEETS
2018CPT.13.05.10611, 2018CPT.13.05.20611, 2018CPT.13.05.20612	5	15



TYPICAL SECTION NO. 3



**DETAIL SHOWING METHOD OF WEDGING**



BRIDGE HALF TYPICAL SECTION

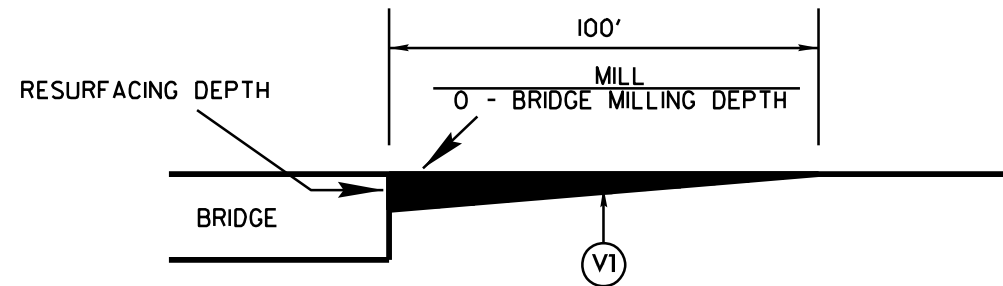
FOR BRIDGES WITH FLOOR DRAINS, CARE SHALL BE EXERCISED IN PLACING THE WEARING SURFACE AROUND FLOOR DRAINS SO AS NOT TO HINDER EFFECTIVE DRAINAGE. ALL DRAINS SHALL BE LEFT OPEN

THE PROPOSED WEARING SURFACE SHALL VARY IN THICKNESS AS NECESSARY TO PROVIDE A SMOOTH RIDING SURFACE. THE MINIMUM THICKNESS SHOULD DEPEND ON PAVEMENT TYPE AS FOLLOWS: S4.75A 1/2", SF9.5A 1.0", S9.5X 1.5", S12.5X 2.0", ULTRATHIN HOT MIX ASPHALT-TYPE A 3/4", ULTRATHIN HOT MIX ASPHALT-TYPE B 5/8", ULTRATHIN HOT MIX ASPHALT-TYPE C 1/2". THE MAXIMUM THICKNESS SHOULD DEPEND ON PAVEMENT TYPE AS FOLLOWS: S4.75A 1.0", SF9.5A 1.5", S9.5X 2.0", S12.5X 2.0", ULTRATHIN HOT MIX ASPHALT-TYPE A 3/4", ULTRATHIN HOT MIX ASPHALT-TYPE B 5/8", ULTRATHIN HOT MIX ASPHALT-TYPE C 1/2".

**NOTES**

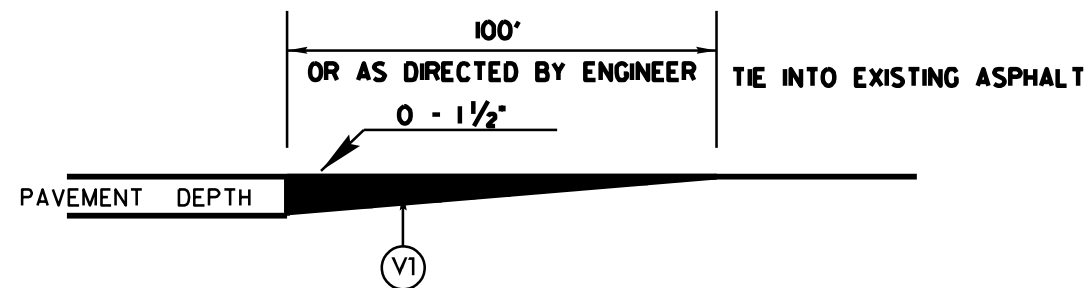
ALL UNPAVED ROADS TO BE RESURFACED 50' FROM EDGE OF PAVEMENT OF MAIN PROJECT.  
 ALL PAVED S.R. ROADS TO BE RESURFACED TO THE ENDS OF THE RADII, OR AS DIRECTED BY THE ENGINEER.  
 EDGES, PAVEMENT WIDENING, INTERSECTIONS AND BRIDGE FLARES ARE INCLUDED IN THE TABLE OF QUANTITIES.  
 SHOULDERS AND DITCHES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

PROJECT NO.	SHEET NO.	TOTAL SHEETS
2018CPT.13.05.10611, 2018CPT.13.05.20611, 2018CPT.13.05.20612	6	15



### **MILLING DETAIL AT BRIDGE APPROACHES**

**WHERE BRIDGES WILL NOT BE RESURFACED, OR WILL BE MILLED AND RESURFACED.  
THIS WILL BE PAID FOR AS INCIDENTAL MILLING.  
USE AT BRIDGE NUMBERS: 13 ON MAP 1, 176 ON MAP 3,  
AND 54 ON MAP 6.**



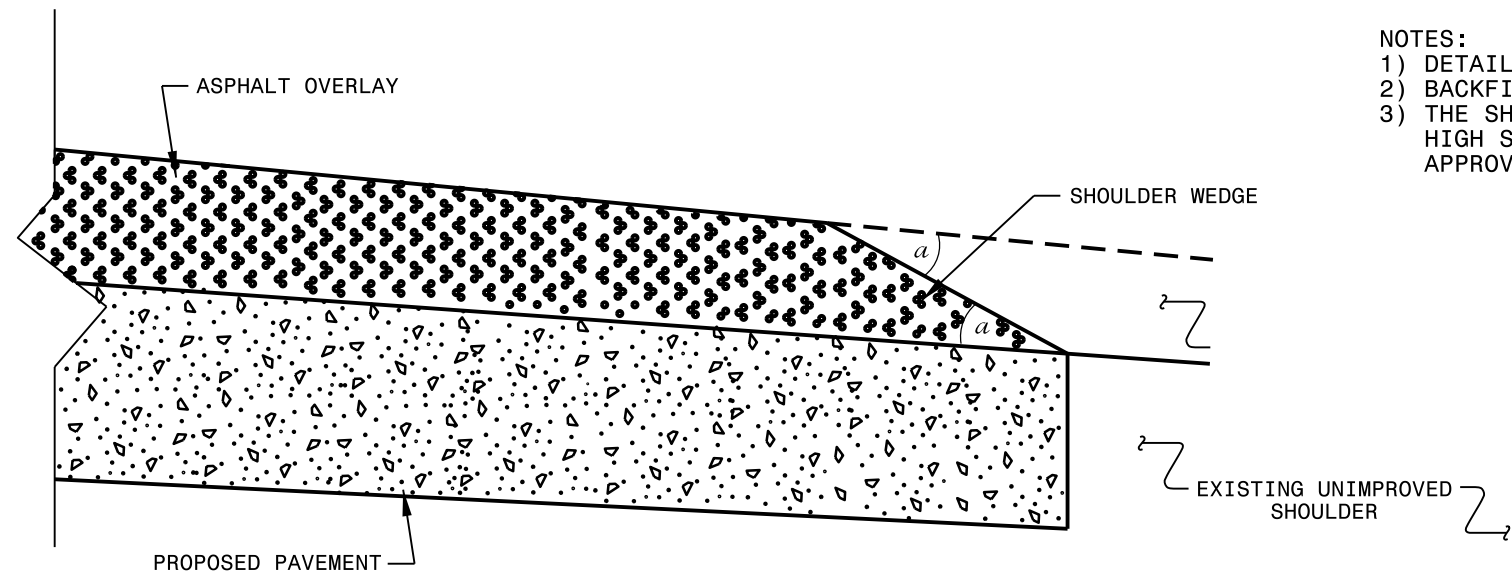
### **DETAIL TO TIE INTO EXIST PAVEMENT**

**THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE FACT THAT HE WILL BE REQUIRED TO MILL THE EXISTING ASPHALT PAVEMENT TO ENSURE A PROPER TIE-IN WITH THE EXISTING SURFACE AT THE BEGINNING, END AND Y LINES OF EACH MAP TO BE RESURFACED WITH ASPHALT CONC SURFACE COURSE, TYPE S9.5B.  
THIS WILL BE PAID FOR AS INCIDENTAL MILLING.**

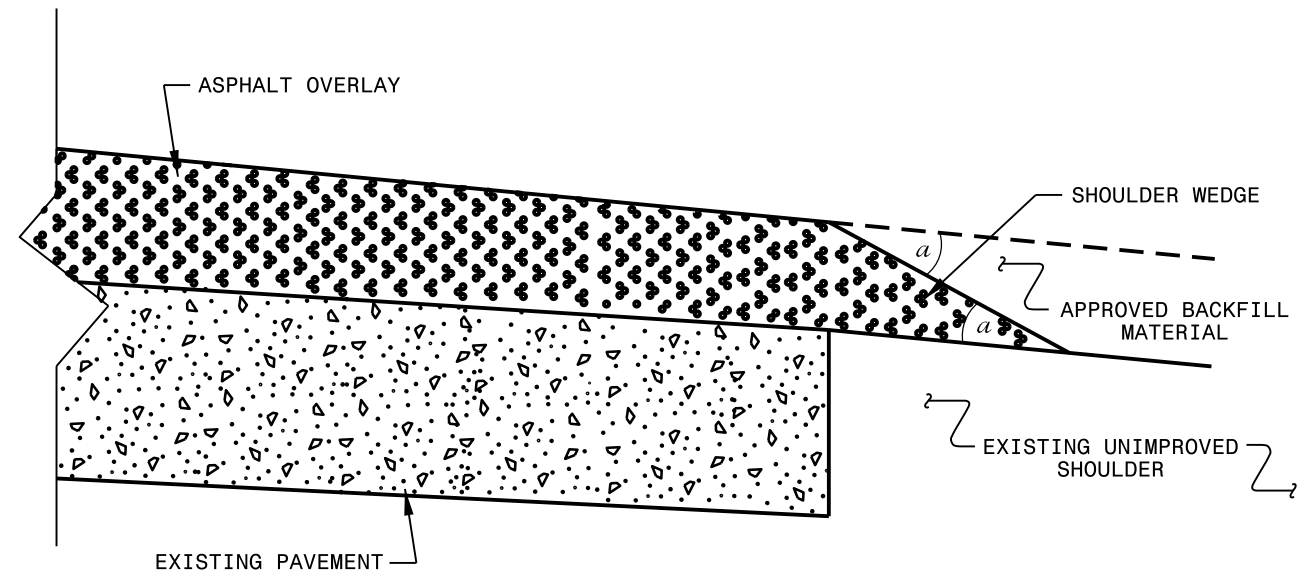
**MITCHELL COUNTY**

**NOTES:**

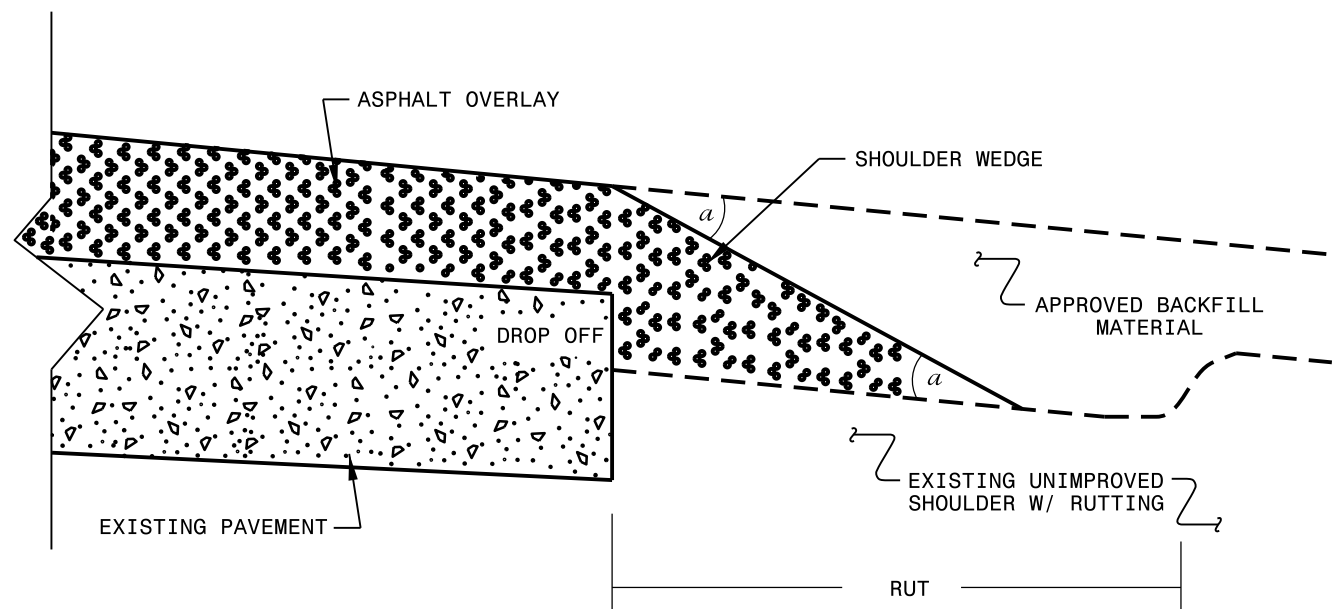
- 1) DETAIL DOES NOT APPLY TO OGAFB AND ULTRA-THIN BONDED WEARING COURSE.
- 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
- 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS, SIDE STREETS, HIGH SHOULDERS, AND OTHER LOCATIONS NOT FEASIBLE TO CONSTRUCT AS APPROVED BY THE ENGINEER.



**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.: susr/details/stand/shoulderwedgedetail.dgn			

SYSTEMS DESIGN  
USER NAME

PROJECT NO. 2018CPT.13.05.10611, 2018CPT.13.05.20611, 2018CPT.13.05.20612	SHEET NO. <b>8</b>	TOTAL NO. <b>15</b>
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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 MI	WIDTH FT	INCIDENTAL STONE BASE TON	SHOULDER RECONSTRUCTION SMI	MILLING ASPHALT PAVEMENT, 1" DEPTH SY	MILLING ASPHALT PAVEMENT, 1-1/2" DEPTH SY	INCIDENTAL MILLING SY	ASPHALT CONC SURFACE COURSE, TYPE S9.5B TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A TON	ASPHALT BINDER FOR PLANT MIX TON	PATCHING EXISTING PAVEMENT TON	ASPHALT SURFACE TREATMENT, DOUBLE SEAL SY	EMULSION FOR ASPHALT SURFACE TREATMENT GAL	VACUUM TRUCK WK	INDUCTIVE LOOP SAWCUT LF	
2018CPT.13.05.10611	Mitchell	1	NC 261	FROM SR 1361 +0.35 MILES TO 0.5 MILES S OF SR 1159 ( MP 0.550 - MP 7.932 )	1	2	2WU	NO	YES	7.382	22	369	14.76			2,330	8,854		531	1,080					
<b>TOTAL FOR PROJ NO. 2018CPT.13.05.10611</b>										<b>7.382</b>		<b>369</b>	<b>14.76</b>			<b>2,330</b>	<b>8,854</b>		<b>531</b>	<b>1,080</b>					
2018CPT.13.05.20611	Mitchell	2	SR 1117	FROM NC 226 TO NC 226 ( MP 0.000 - MP 2.282 )	2	2	2WU	NO	NO	2.282	20	114			160	445		2,445	164	620				200	
		3	SR 1137	FROM US 19 TO AVERY CO ( MP 0.000 - MP 2.940 )	2	2	2WU	NO	NO	2.940	18-20	147						2,994	201	380					
		4	SR 1251	FROM NC 226 TO NC 226 ( MP 0.000 - MP 0.490 )	2	2	2WU	NO	NO	0.490	16-17	25						434	29	150					
		5	SR 1293	FROM SR 1195 TO END MAINT ( MP 0.000 - MP 0.200 )	2	2	2WU	NO	NO	0.200	18	10						193	13	30					
		6	SR 1217	FROM SR 1218 TO SR 1211 ( MP 1.141 - MP 2.619 )	3	2	2WU	NO	NO	1.478	18-20			190		335		50	3	190	16,475	9,061	1		
		7	SR 1223	FROM NC 261 TO END MAINT ( MP 0.000 - MP 2.131 )	3	2	2WU	NO	NO	2.131	18									150	22,503	12,377			
		8	SR 1337	FROM NC 226 TO END PVMT ( MP 0.000 - MP 1.103 )	3	2	2WU	NO	NO	1.103	18							25	2	155	11,648	6,407			
		9	SR 1351	FROM SR 1338 TO DEAD END ( MP 0.000 - MP 0.241 )	3	2	2WU	NO	NO	0.241	16-18									25	2,404	1,322			
		10	SR 1190	FROM NC 226 ALT TO NC 226 ( MP 0.000 - MP 0.980 )		2	2WU	NO	NO	0.980	18							25	2	130					
		11	SR 1312	FROM SR 1316 TO NC 197 ( MP 0.200 - MP 2.11 )		2	2WU	NO	NO	1.910	18							60	4	255					
		12	SR 1317	FROM SR 1316 TO END MAINT ( MP 0.000 - MP 0.730 )		2	2WU	NO	NO	0.730	17-18									90					
		13	SR 1329	FROM US 226 TO END MAINT ( MP 0.000 - MP 0.680 )		2	2WU	NO	NO	0.680	18									40					
		14	SR 1354	FROM NC 261 TO END MAINT ( MP 0.000 - MP 1.020 )		2	2WU	NO	NO	1.020	18									100					
<b>TOTAL FOR PROJ NO. 2018CPT.13.05.20611</b>										<b>16.185</b>		<b>296</b>		<b>190</b>	<b>160</b>	<b>780</b>		<b>6,226</b>	<b>418</b>	<b>2,315</b>	<b>53,030</b>	<b>29,167</b>	<b>1</b>	<b>200</b>	
2018CPT.13.05.20612	Mitchell	15	SR 1190	FROM NC 226 ALT TO NC 226 ( MP 0.000 - MP 0.980 )	3	2	2WU	NO	NO	0.980	18										10,349	5,692	1		
		16	SR 1312	FROM SR 1316 TO NC 197 ( MP 0.200 - MP 2.11 )	3	2	2WU	NO	NO	1.910	18										20,170	11,094			
		17	SR 1317	FROM SR 1316 TO END MAINT ( MP 0.000 - MP 0.730 )	3	2	2WU	NO	NO	0.730	17-18										7,495	4,122			
		18	SR 1329	FROM US 226 TO END MAINT ( MP 0.000 - MP 0.680 )	3	2	2WU	NO	NO	0.680	18										7,181	3,950			
		19	SR 1354	FROM NC 261 TO END MAINT ( MP 0.000 - MP 1.020 )	3	2	2WU	NO	NO	1.020	18										10,771	5,924			
<b>TOTAL FOR PROJ NO. 2018CPT.13.05.20612</b>										<b>5.320</b>											<b>55,966</b>	<b>30,782</b>	<b>1</b>		
<b>GRAND TOTAL</b>										<b>28.887</b>		<b>665</b>	<b>14.76</b>		<b>190</b>	<b>160</b>	<b>3,110</b>	<b>8,854</b>	<b>6,226</b>	<b>949</b>	<b>3,395</b>	<b>108,996</b>	<b>59,949</b>	<b>2</b>	<b>200</b>

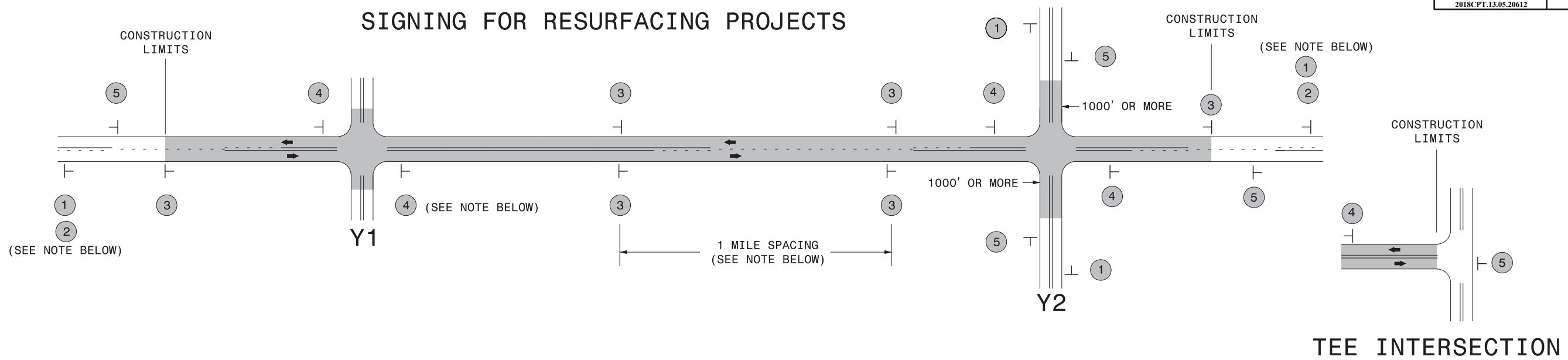


PROJECT NO. 2018CPT.13.05.10611, 2018CPT.13.05.20611, 2018CPT.13.05.20612	SHEET NO. <b>9</b>	TOTAL NO. <b>15</b>
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### THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LANE TYPE	LENGTH	WIDTH	4400000000-E	4457000000-N	4710000000-E	4721000000-E	4810000000-E		4847000000-E		4905000000-N		
										WORK ZONE SIGNS (STATIONARY)	TEMPORARY TRAFFIC CONTROL	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS) WHITE	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS) SCHOOL	PAINT PAVEMENT MARKING LINES (4") WHITE	PAINT PAVEMENT MARKING LINES (4") YELLOW	POLYUREA PAVEMENT MARKING LINES (4") WHITE (HIGHLY REFLECTIVE ELEMENTS)	POLYUREA PAVEMENT MARKING LINES (4") YELLOW (HIGHLY REFLECTIVE ELEMENTS)	SNOWPLOWABLE PAVEMENT MARKERS		
										SF	LS	LF	EA	LF	LF	LF	LF	EA		
2018CPT.13.05.10611	Mitchell	1	NC 261	FROM SR 1361 +0.35 MILES TO 0.5 MILES S OF SR 1159 ( MP 0.550 - MP 7.932 )	1	2	2WU	7.382	22	830	*	40	12			77,954	77,954	780		
<b>TOTAL FOR PROJ NO. 2018CPT.13.05.10611</b>							<b>7.382</b>			<b>830</b>		<b>40</b>	<b>12</b>			<b>77,954</b>	<b>77,954</b>	<b>780</b>		
																<b>155,908</b>				
2018CPT.13.05.20611	Mitchell	2	SR 1117	FROM NC 226 TO NC 226 ( MP 0.000 - MP 2.282 )	2	2	2WU	2.282	20	1,237	*			48,196	48,196					
		3	SR 1137	FROM US 19 TO AVERY CO ( MP 0.000 - MP 2.940 )	2	2	2WU	2.940	18-20							62,093	62,093			
		4	SR 1251	FROM NC 226 TO NC 226 ( MP 0.000 - MP 0.490 )	2	2	2WU	0.490	16-17											
		5	SR 1293	FROM SR 1195 TO END MAINT ( MP 0.000 - MP 0.200 )	2	2	2WU	0.200	18											
		6	SR 1217	FROM SR 1218 TO SR 1211 ( MP 1.141 - MP 2.619 )	3	2	2WU	1.478	18-20							31,215	31,215			
		7	SR 1223	FROM NC 261 TO END MAINT ( MP 0.000 - MP 2.131 )	3	2	2WU	2.131	18							45,007	45,007			
		8	SR 1337	FROM NC 226 TO END PVMT ( MP 0.000 - MP 1.103 )	3	2	2WU	1.103	18							23,295	23,295			
		9	SR 1351	FROM SR 1338 TO DEAD END ( MP 0.000 - MP 0.241 )	3	2	2WU	0.241	16-18											
		10	SR 1190	FROM NC 226 ALT TO NC 226 ( MP 0.000 - MP 0.980 )		2	2WU	0.980	18											
		11	SR 1312	FROM SR 1316 TO NC 197 ( MP 0.200 - MP 2.11 )		2	2WU	1.910	18											
		12	SR 1317	FROM SR 1316 TO END MAINT ( MP 0.000 - MP 0.730 )		2	2WU	0.730	17-18											
		13	SR 1329	FROM US 226 TO END MAINT ( MP 0.000 - MP 0.680 )		2	2WU	0.680	18											
		14	SR 1354	FROM NC 261 TO END MAINT ( MP 0.000 - MP 1.020 )		2	2WU	1.020	18											
<b>TOTAL FOR PROJ NO. 2018CPT.13.05.20611</b>							<b>16.185</b>					<b>1,237</b>				<b>209,806</b>	<b>209,806</b>			
																<b>419,612</b>				
2018CPT.13.05.20612	Mitchell	15	SR 1190	FROM NC 226 ALT TO NC 226 ( MP 0.000 - MP 0.980 )	3	2	2WU	0.980	18	607	*			20,698	20,698					
		16	SR 1312	FROM SR 1316 TO NC 197 ( MP 0.200 - MP 2.11 )	3	2	2WU	1.910	18							40,339	40,339			
		17	SR 1317	FROM SR 1316 TO END MAINT ( MP 0.000 - MP 0.730 )	3	2	2WU	0.730	17-18											
		18	SR 1329	FROM US 226 TO END MAINT ( MP 0.000 - MP 0.680 )	3	2	2WU	0.680	18											
		19	SR 1354	FROM NC 261 TO END MAINT ( MP 0.000 - MP 1.020 )	3	2	2WU	1.020	18							21,542	21,542			
<b>TOTAL FOR PROJ NO. 2018CPT.13.05.20612</b>							<b>5.320</b>			<b>607</b>				<b>82,579</b>	<b>82,579</b>					
																<b>165,158</b>				
<b>GRAND TOTAL</b>							<b>28.887</b>			<b>2,674</b>	<b>1</b>	<b>40</b>	<b>12</b>	<b>292,385</b>	<b>292,385</b>	<b>77,954</b>	<b>77,954</b>	<b>780</b>		
																<b>584,770</b>	<b>155,908</b>			

# SIGNING FOR RESURFACING PROJECTS



LEGEND	
┆	STATIONARY SIGN
←	DIRECTION OF TRAFFIC FLOW

## MAINLINE (-L-) SIGNING

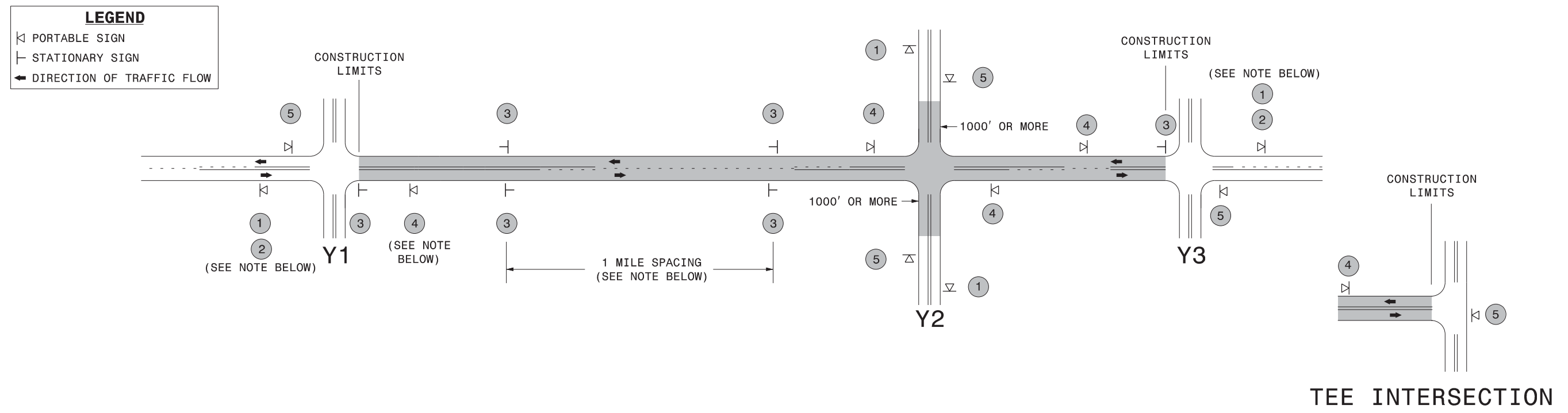
## -Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	1	 <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 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 style="text-align: center;"><b>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</b></p> <ol style="list-style-type: none"> <li>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>2) SUBDIVISION ROADS</li> <li>3) DEAD END ROADS</li> </ol> <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; align-items: center;"> <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 style="text-align: center;">PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.</p>
	2	 <small>W7-3aP 24" X 18"</small>		
	3	 <small>SP 13107 48" X 48"</small>	<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 0.5 MILE FROM INTERSECTION AND SPACE 1 MILE APART THEREAFTER.</li> </ul>	
	4	 <small>SP 13106 48" X 48"</small>	<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	 <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.	

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

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## SIGNING FOR ASPHALT SURFACE TREATMENT



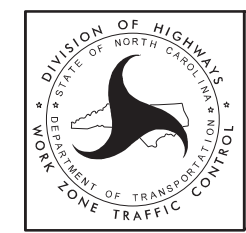
### MAINLINE (-L-) SIGNING

### -Y- LINE SIGNING

<b>SIGNING NOTES AND PLACEMENT PER DIRECTION</b>	 	<p>- PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.</p> <p>- SIGN #2 ONLY USED WHEN RESURFACING LIMITS ARE 2 OR MORE MILES IN LENGTH. ROUND UP TO THE NEAREST WHOLE NUMBER. DO NOT USE FRACTIONAL OR DECIMAL NUMBERS.</p>	<p><b>STATIONARY SIGNING NOT REQUIRED FOR THE FOLLOWING -Y- LINE CONDITIONS:</b></p> <ol style="list-style-type: none"> <li>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>2) SUBDIVISION ROADS</li> <li>3) 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; align-items: center;"> <div style="text-align: center;">             PLACED 500' IN ADVANCE OF FLAGGER.         </div> <div style="text-align: center;">             PLACED 250' IN ADVANCE OF FLAGGER.         </div> </div>
	 	<p>- ALTERNATE THE FOLLOWING TWO SIGNS:</p> <p>- STARTING WITH "LOOSE GRAVEL" (W8-7) FOLLOWED BY "UNMARKED PAVEMENT".</p> <p>- PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER.</p> <p>- AT TEE INTERSECTIONS INSTALL INITIALLY 0.5 MILE FROM INTERSECTION AND SPACE 1 MILE APART THEREAFTER.</p>	
		<p>- THESE ARE FOR -Y- LINES THAT ARE "THROUGH" ROADWAYS. DEAD END AND SUBDIVISION ROADS ARE NOT "THROUGH" ROADWAYS.</p> <p>- INSTALL 500' +/- FROM EACH -Y- LINE APPROACH AS SHOWN ABOVE.</p> <p>- 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.</p> <p>- 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 OR AS SHOWN WHEN WORK ENDS AT A 3-WAY TEE INTERSECTION.</p>	
	<p>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.</p>		

**MAPS LESS THAN 2 MILES**

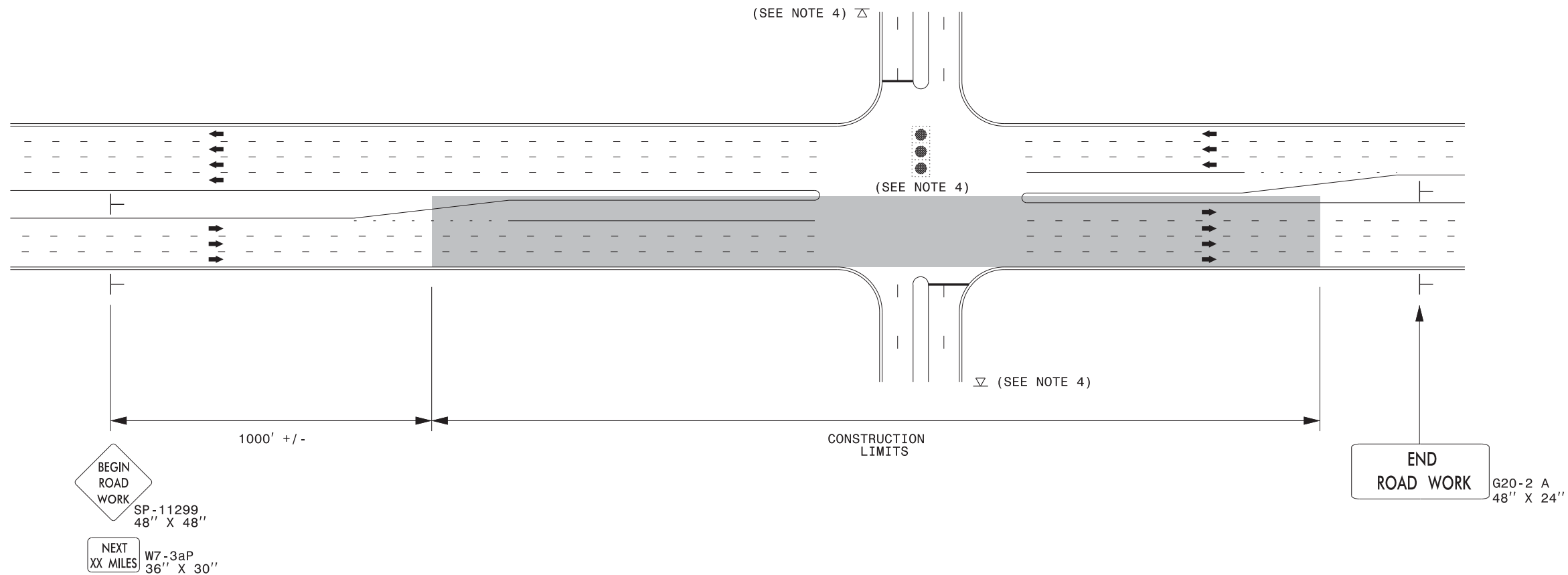
FOR AST RESURFACING MAPS WITH CONSTRUCTION LIMITS LESS THAN 2 MILES IN LENGTH, USE A STATIONARY "LOOSE GRAVEL" SIGN AT THE BEGINNING CONSTRUCTION LIMIT FOLLOWED BY AN "UNMARKED PAVEMENT" SIGN MIDWAY THROUGH AND AN "END ROAD WORK" SIGN AT THE END CONSTRUCTION LIMIT.



**ADVANCE WARNING SIGNS FOR 2-LANE ROADWAY ASPHALT SURFACE TREATMENT**

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## URBAN / SUBURBAN WORKZONES

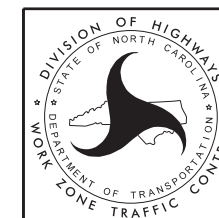


### NOTES:

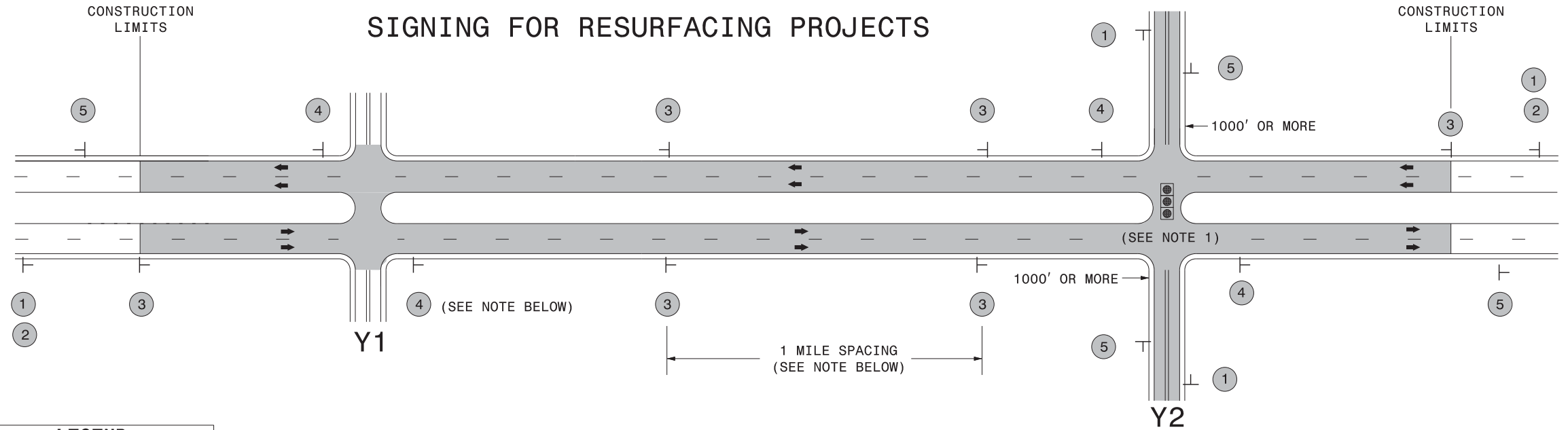
- 1) 48" x 48" SIZED SIGNS (SP- 11299) MAY BE REDUCED TO 36" X 36" ON ROADWAYS WITH SPEED LIMITS OF 40 MPH OR LESS.
- 2) MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. 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**



**LEGEND**  
 | STATIONARY SIGN  
 ← DIRECTION OF TRAFFIC FLOW

**MAINLINE (-L-) SIGNING**

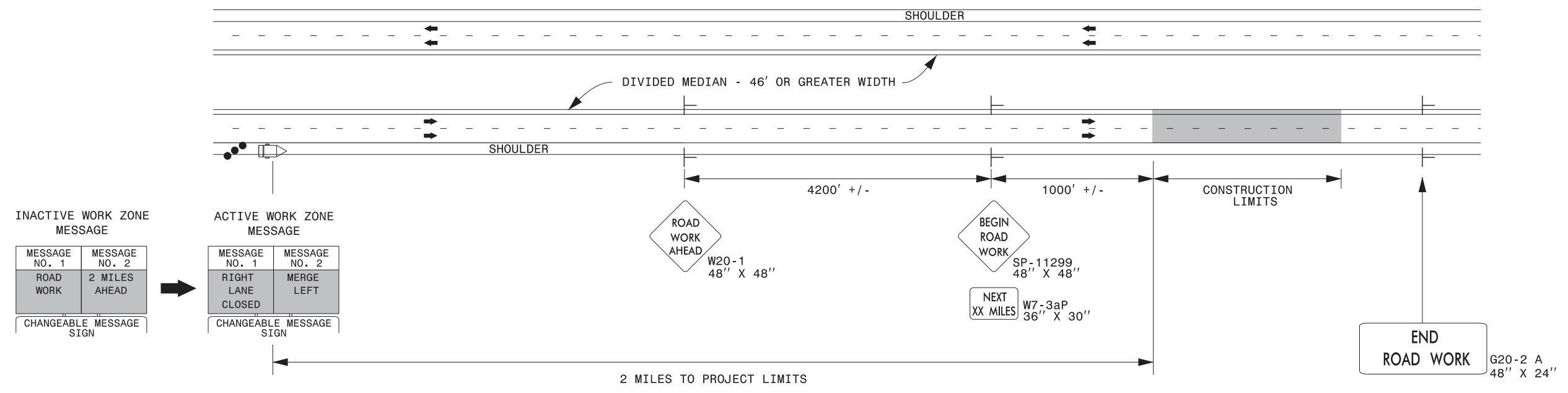
**-Y- LINE SIGNING**

<b>SIGNING NOTES AND PLACEMENT PER DIRECTION</b>	 	<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><b>NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:</b></p> <ol style="list-style-type: none"> <li>1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE</li> <li>2) SUBDIVISION ROADS</li> <li>3) DEAD END ROADS</li> </ol> <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><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>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.</li> </ol>
		<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>	

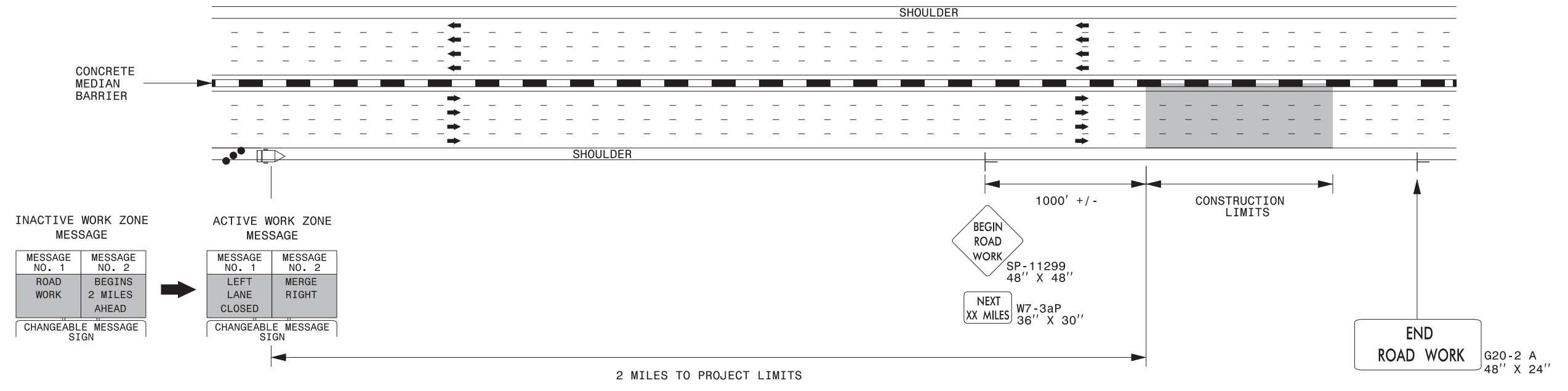
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**RESURFACING  
ADVANCE WARNING SIGNS  
FOR RURAL AND SUBURBAN  
MULTI-LANE ROADWAYS  
W/ SHOULDER SECTIONS**

### DIVIDED MEDIANS WITH WIDTHS 46' OR GREATER



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

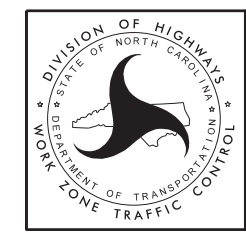


**NOTES:**

- 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**

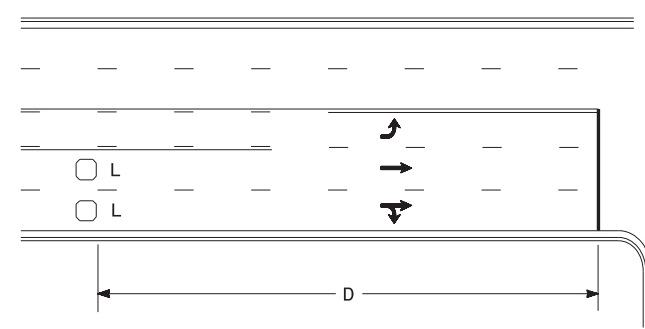
- CHANGEABLE MESSAGE SIGN (CMS)
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW
- TRAFFIC DRUM



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

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### High Speed Detection (≥40 mph)

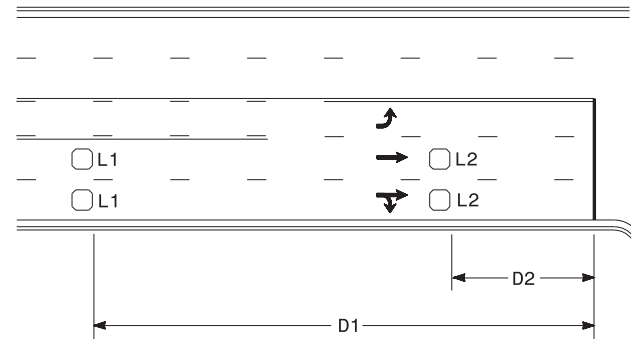


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

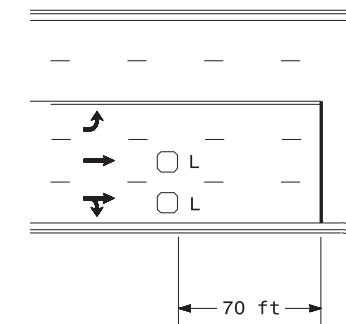


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

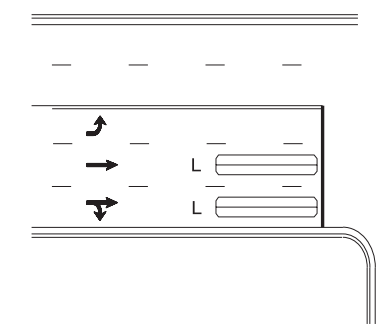
"Stretch" Operation

### Low Speed Detection (≤35 mph)



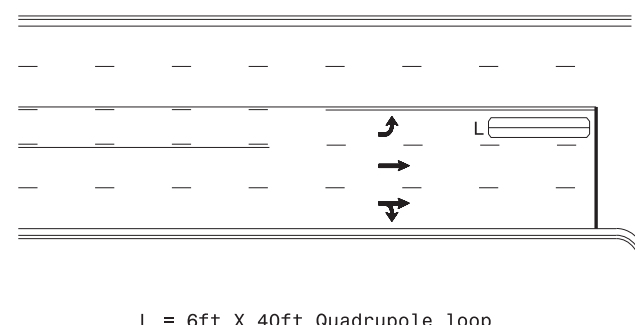
L = 6ft X 6ft  
Wired in series

OR



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

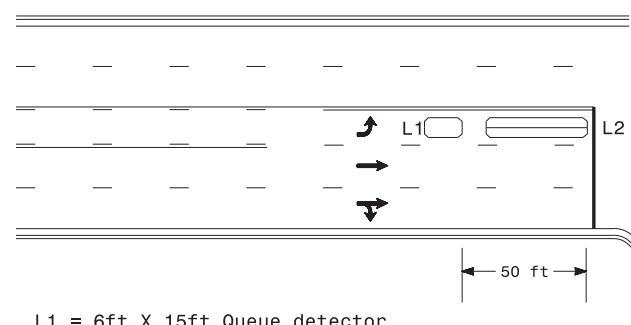
### Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

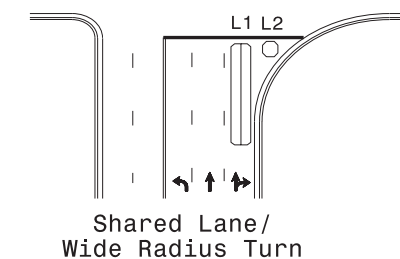
OR



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

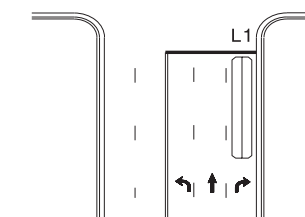
Queue Loop Detection

### Right Turn Lane Detection

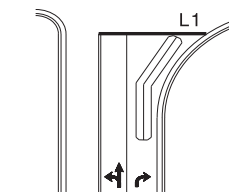


Shared Lane/  
Wide Radius Turn

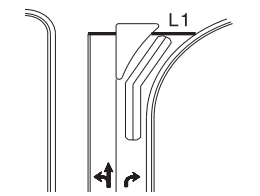
L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately



Standard Turn

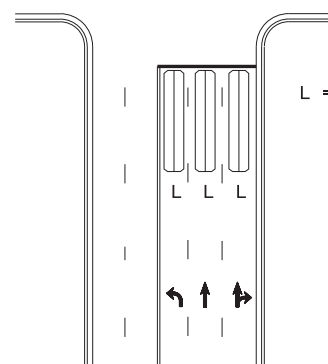


Wide Radius Turn



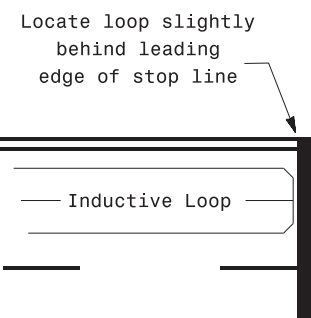
Channelized Turn

### 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

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: N/A

Typical Signal Loop Locations

PLAN DATE: January 2015	REVIEWED BY: JPG
PREPARED BY: PLA	REVIEWED BY:
REVISIONS	INIT. DATE

1/30/2015  
DATE

SIG. INVENTORY NO.