

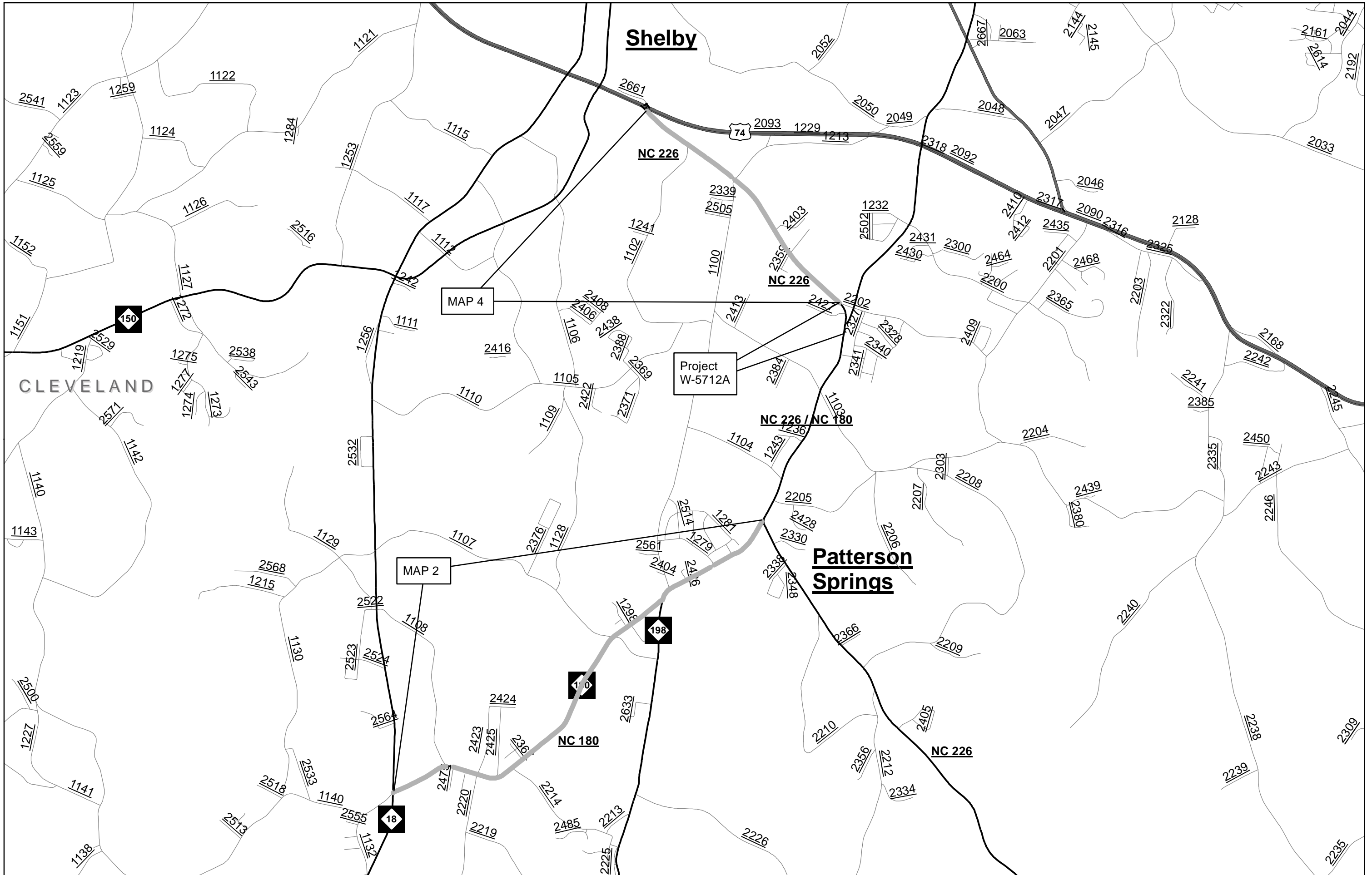
Map 3 locations of convert exi. drop inlet to catch basin

\*near intersection corner of NC 182 & SR 1004

\*approx. 100 ft west of NC 182 & SR 1813 intersection

\*near east entrance of Lawndale Baptist Church





CLEVELAND

**Shelby**

**Patterson Springs**

NC 226

NC 226

NC 226 / NC 180

NC 180

NC 226

74

150

198

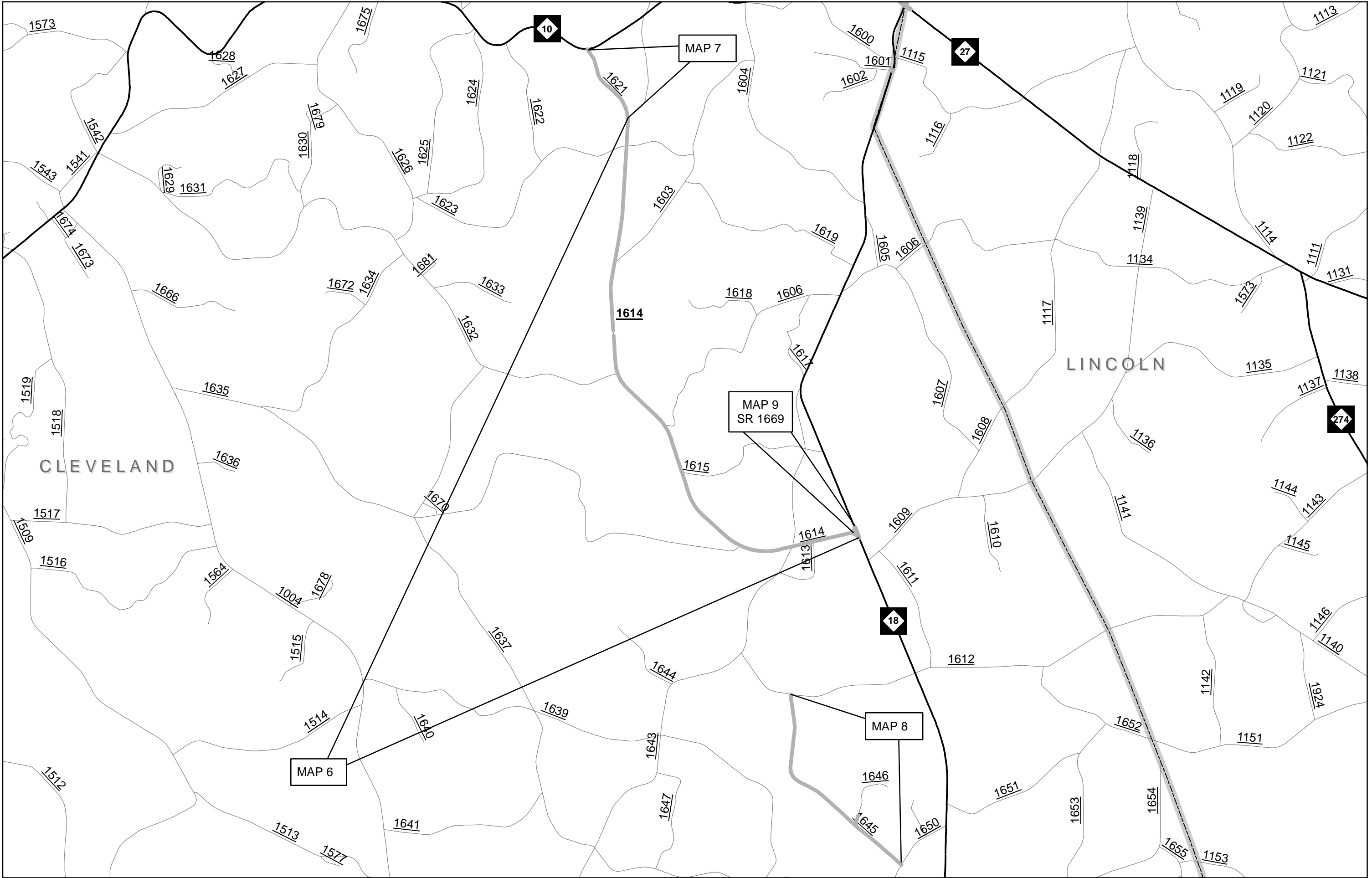
18

MAP 4

MAP 2

Project W-5712A





CLEVELAND

LINCOLN

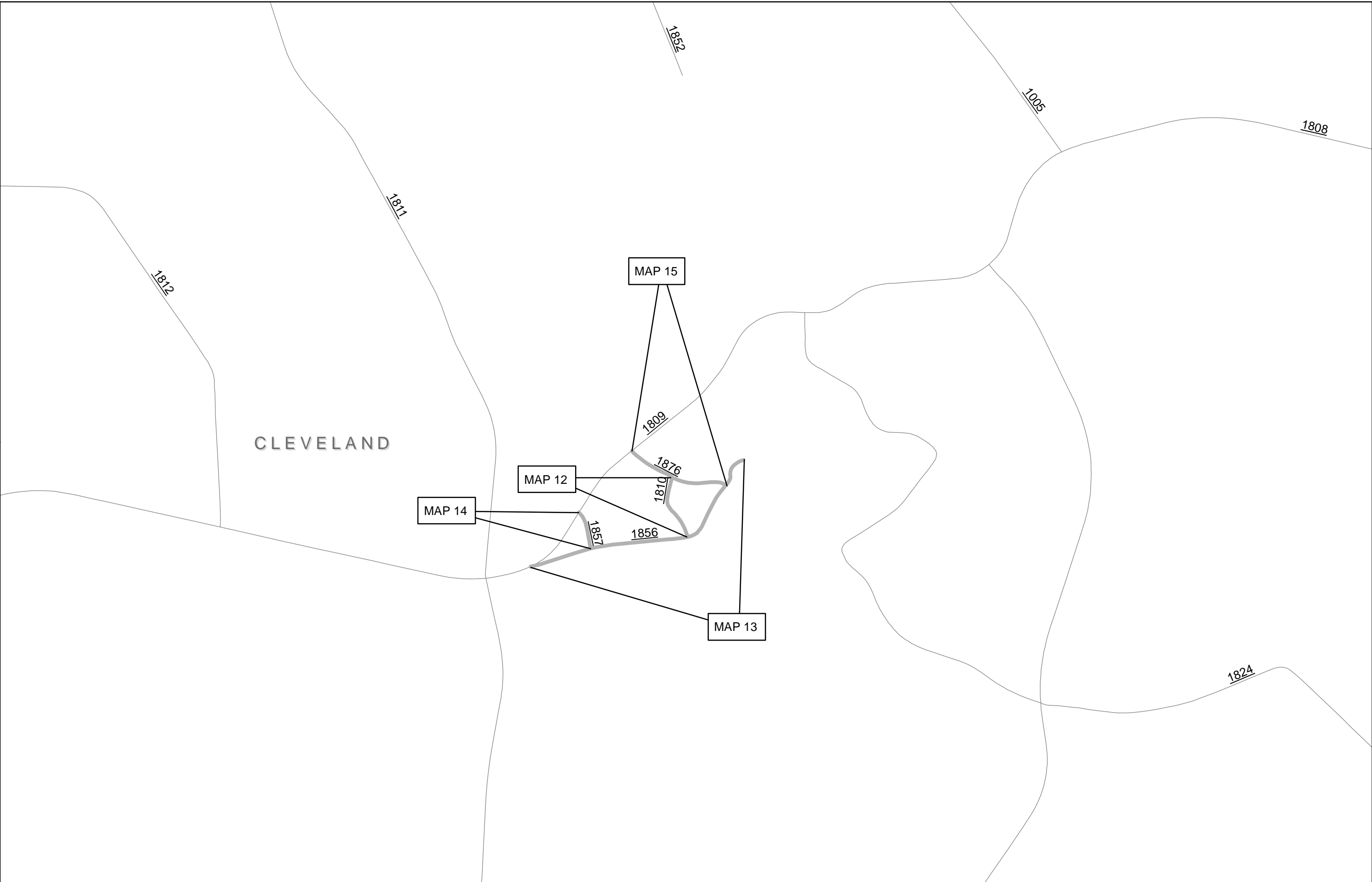
MAP 7

MAP 9  
SR 1669

MAP 8

MAP 6





CLEVELAND

MAP 14

MAP 12

MAP 15

MAP 13

1852

1811

1812

1809

1876

1810

1857

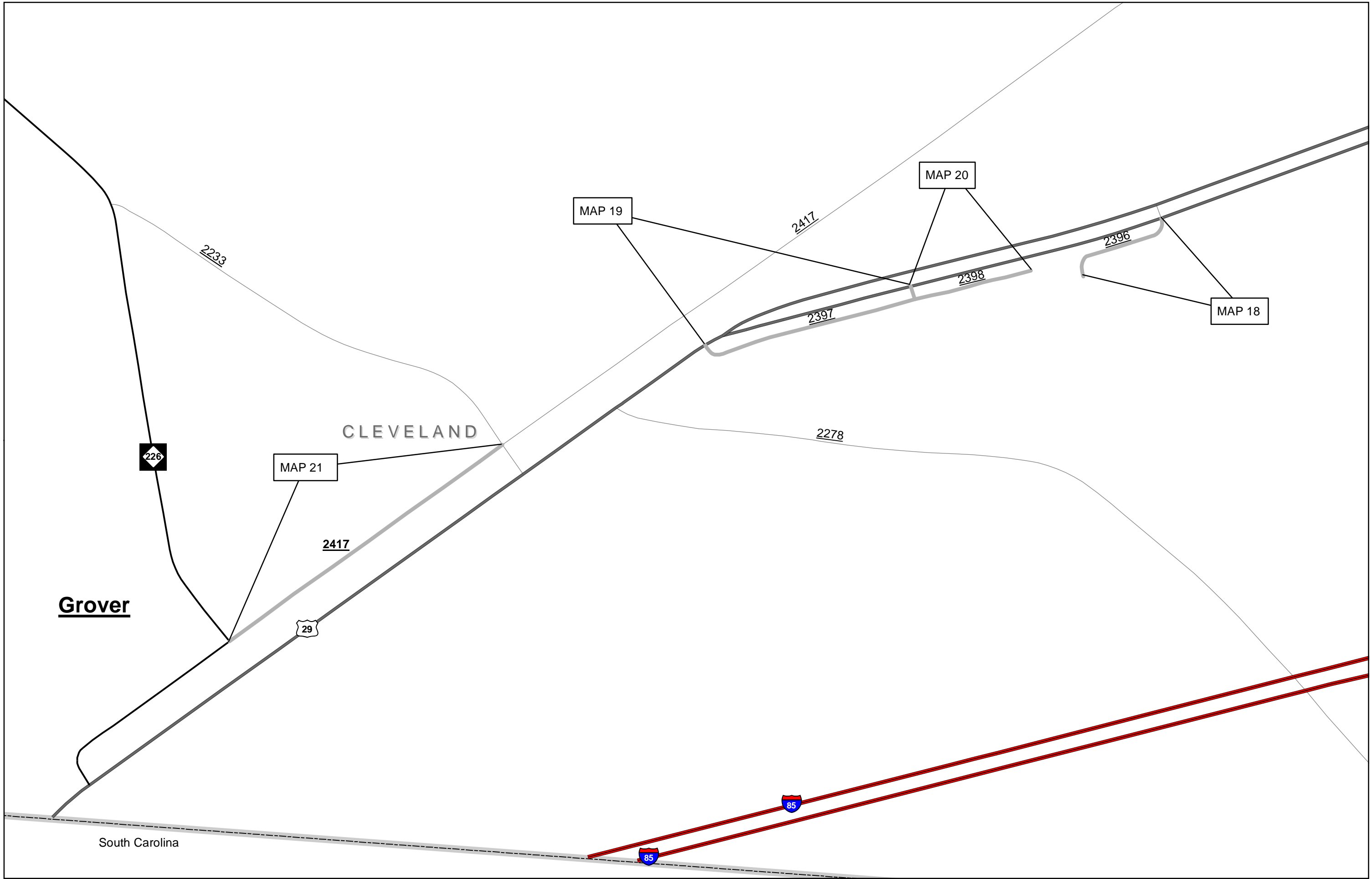
1856

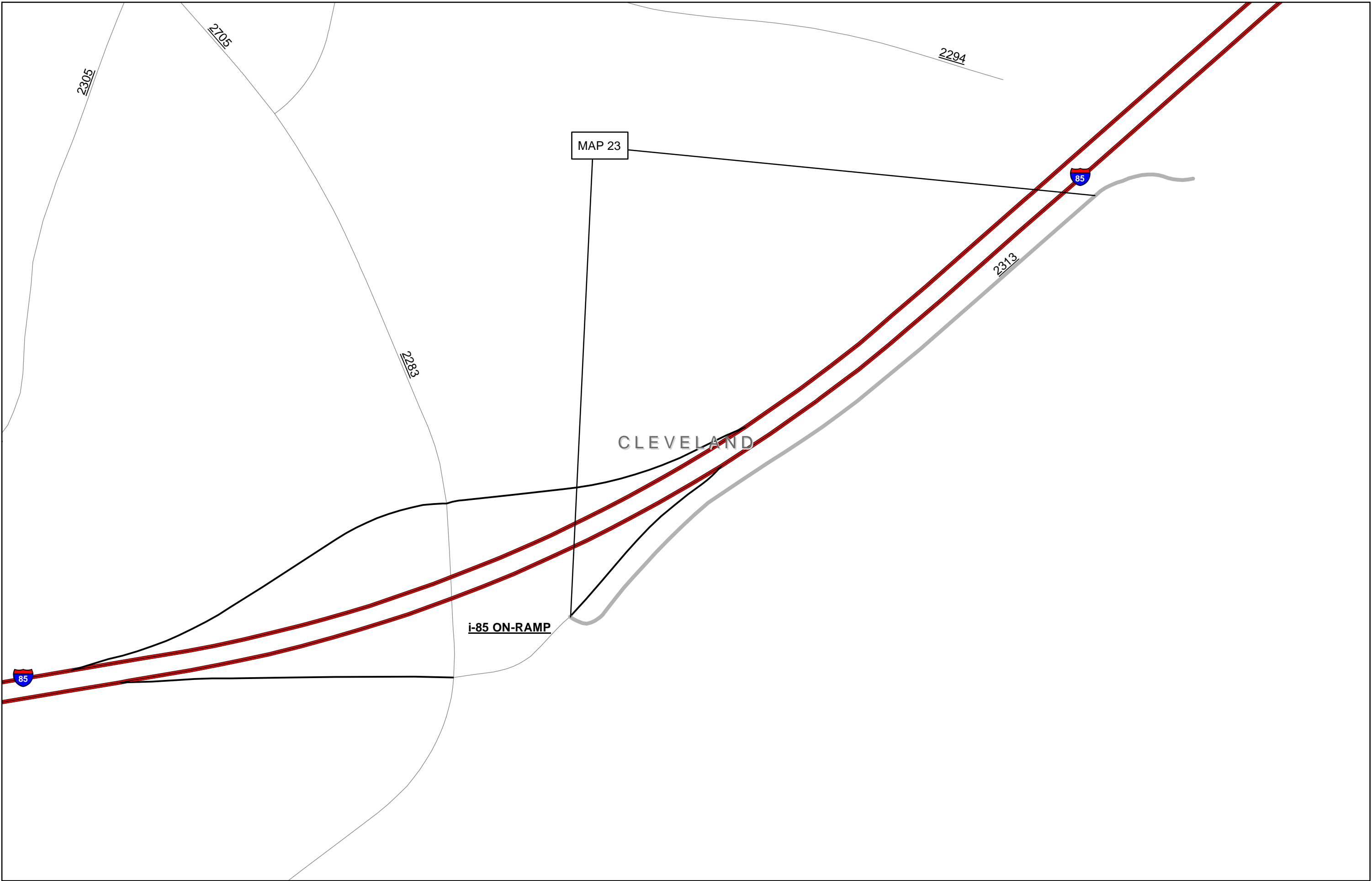
1005

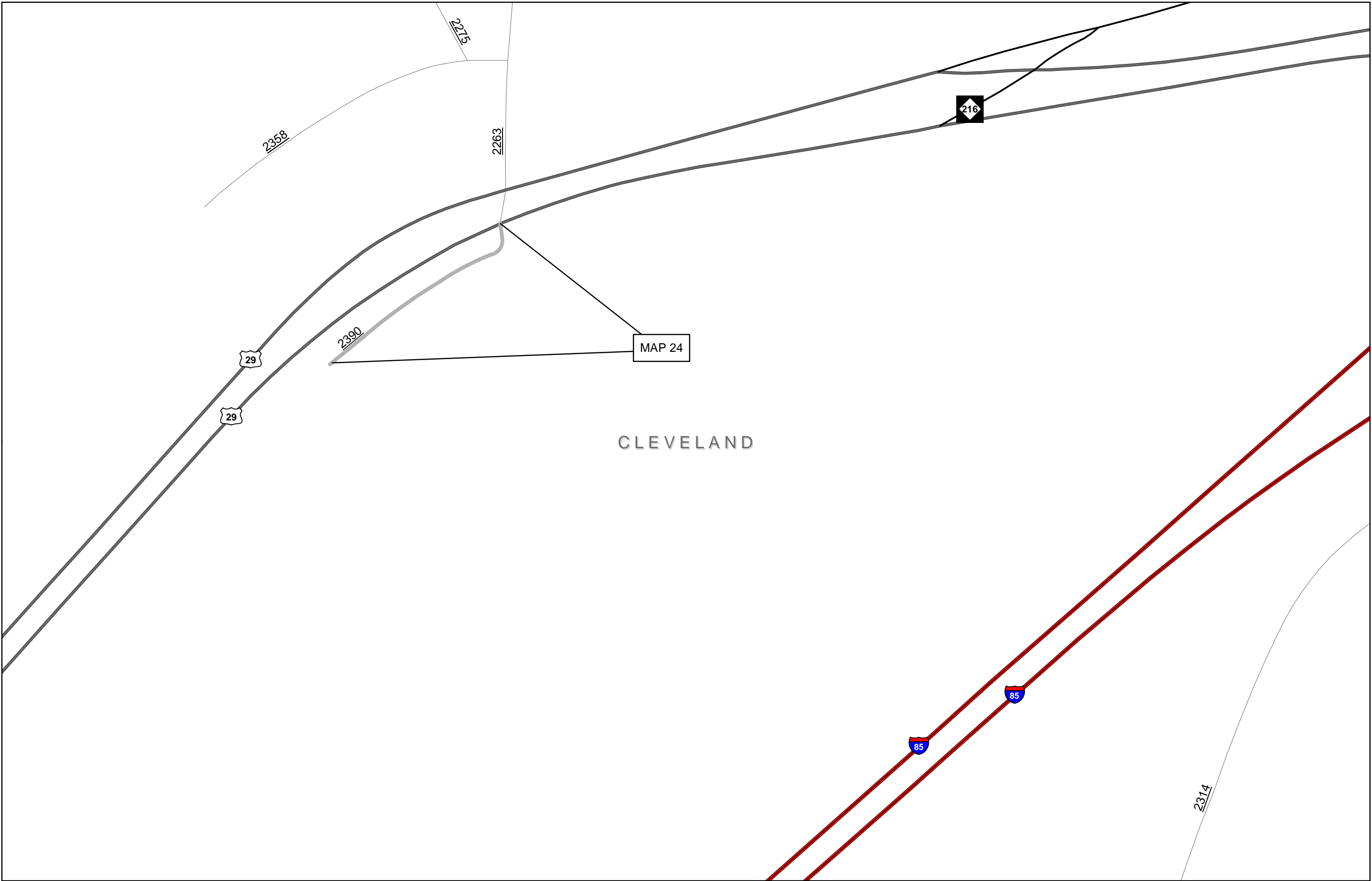
1808

1824



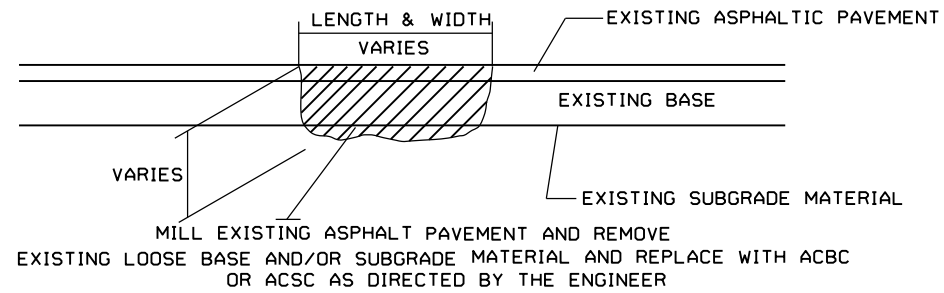




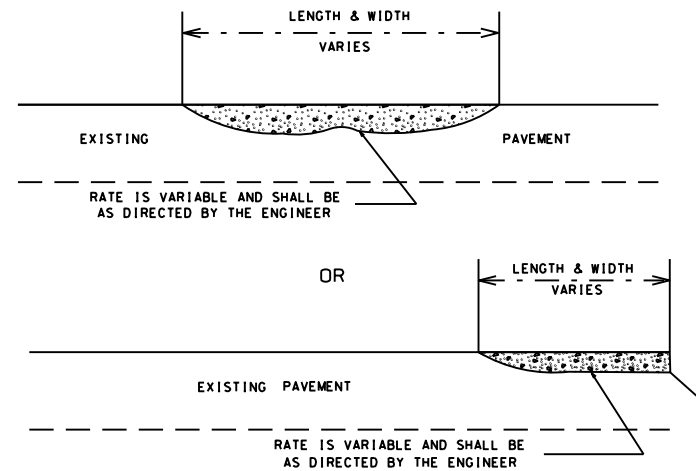


PAVEMENT SCHEDULE	
Y	SHOULDER RECONSTRUCTION
C1	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
F1	ASPHALT SURFACE TREATMENT, MATCOAT #6M STONE
V1	MILL ASPHALT PAVEMENT APPROX. 1½" AS DIRECTED BY THE ENGINEER.
V2	MILL ASPHALT PAVEMENT APPROX. 3" - 5" AS DIRECTED BY THE ENGINEER.
Z	INCIDENTAL MILLING

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.  
MILL BRIDGE APPROACHES 100' TO PROVIDE A SMOOTH TRANSITION AS DIRECTED.  
MILL INTO GUTTER LINE WHERE SHOWN AND AS DIRECTED.  
MAINTAIN PROPER CROWN FOR DRAINAGE OF THE ROAD SURFACE.

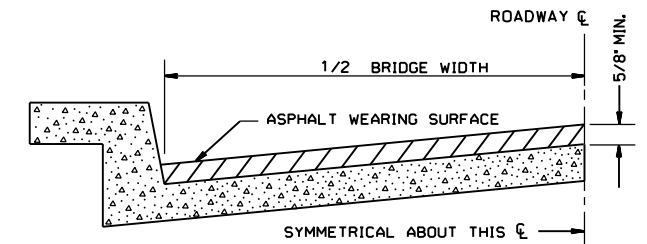


**PATCHING EXISTING PAVEMENT**



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

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
CLEVELAND CO. 2019-2020	8	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
2019CPT.12.01.10231		
2019CPT.12.01.20231		



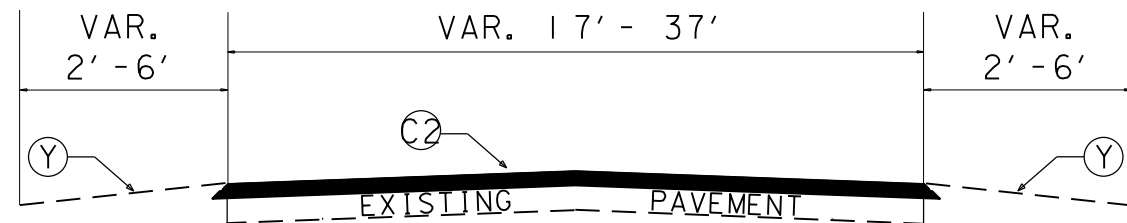
BRIDGE HALF TYPICAL SECTION

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.

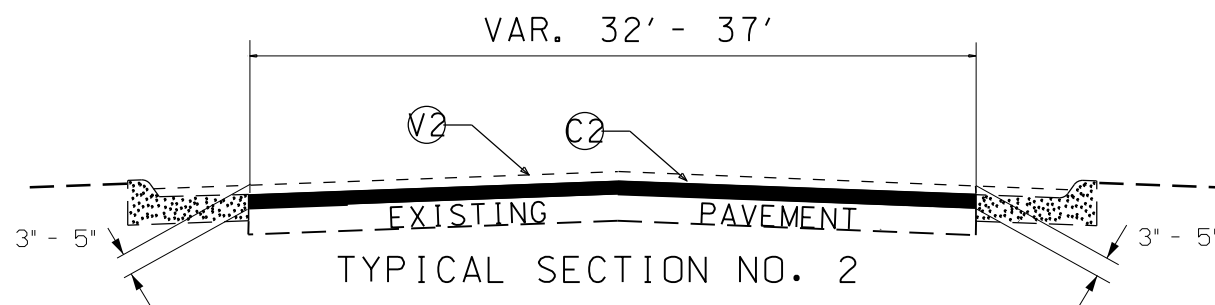
NOTES

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.



**TYPICAL SECTION NO. 1**

(MAP 2-11, 13-17, 23, 24)



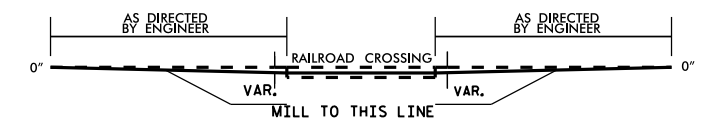
**TYPICAL SECTION NO. 2**

(MAP 3)

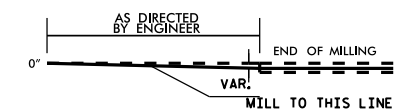
**INCIDENTAL MILLING DETAILS**



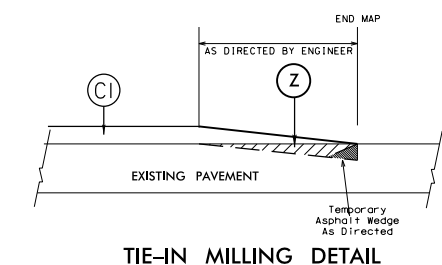
**BRIDGE PROFILE**



**RAILROAD PROFILE**



**END OF MILLING PROFILE**



**TIE-IN MILLING DETAIL**



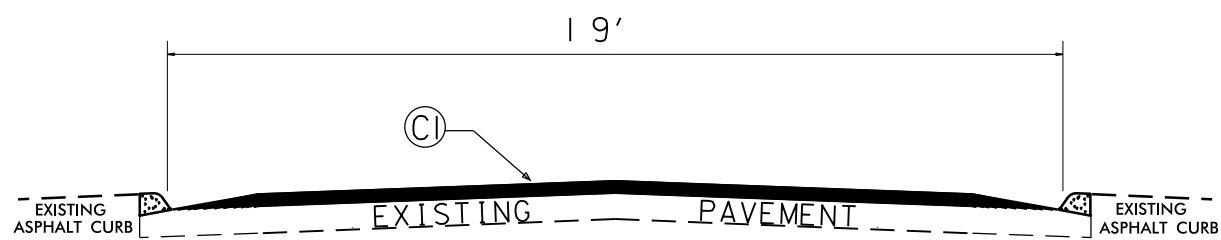
PAVEMENT SCHEDULE	
Y	SHOULDER RECONSTRUCTION
C1	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
F1	ASPHALT SURFACE TREATMENT, MATCOAT #6M STONE
V1	MILL ASPHALT PAVEMENT APPROX. 1½" AS DIRECTED BY THE ENGINEER.
V2	MILL ASPHALT PAVEMENT APPROX. 3" - 5" AS DIRECTED BY THE ENGINEER.
Z	INCIDENTAL MILLING

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

MILL BRIDGE APPROACHES 100' TO PROVIDE A SMOOTH TRANSITION AS DIRECTED.

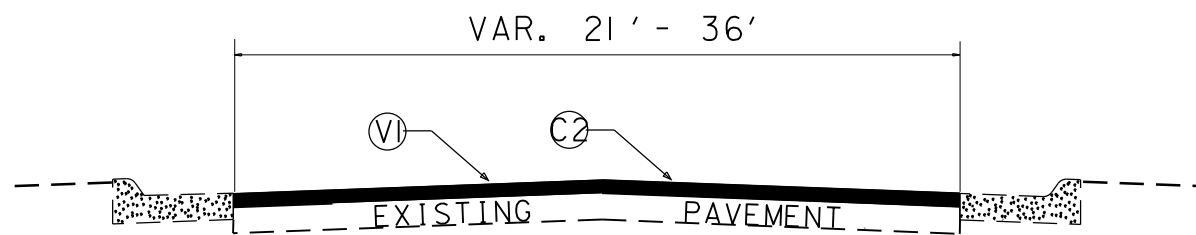
MILL INTO GUTTER LINE WHERE SHOWN AND AS DIRECTED.

MAINTAIN PROPER CROWN FOR DRAINAGE OF THE ROAD SURFACE.



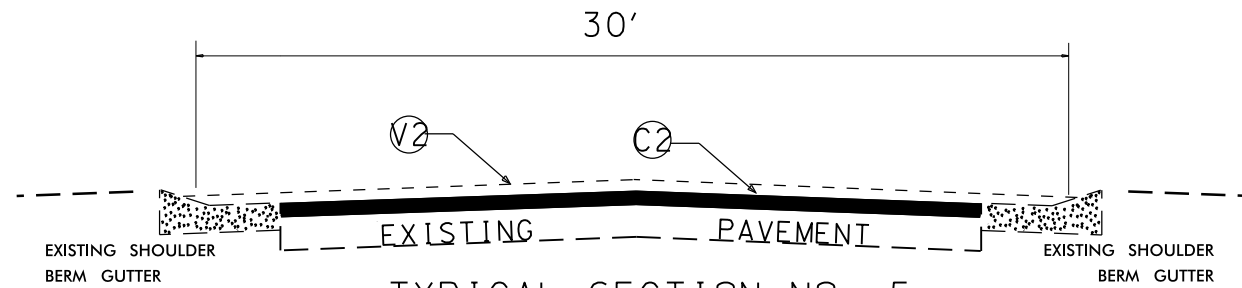
TYPICAL SECTION NO. 3

(MAP 12)



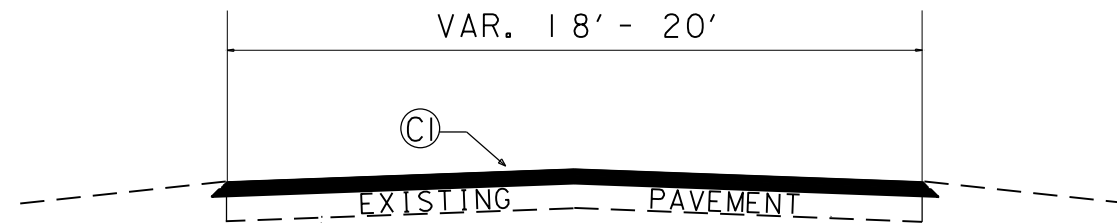
TYPICAL SECTION NO. 4

(MAP 4)



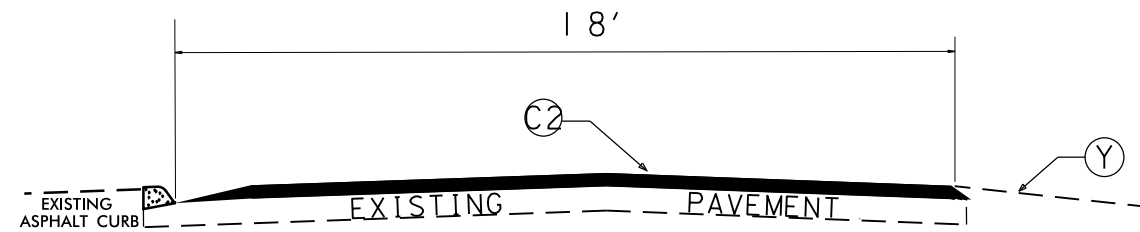
TYPICAL SECTION NO. 5

(MAP 17)



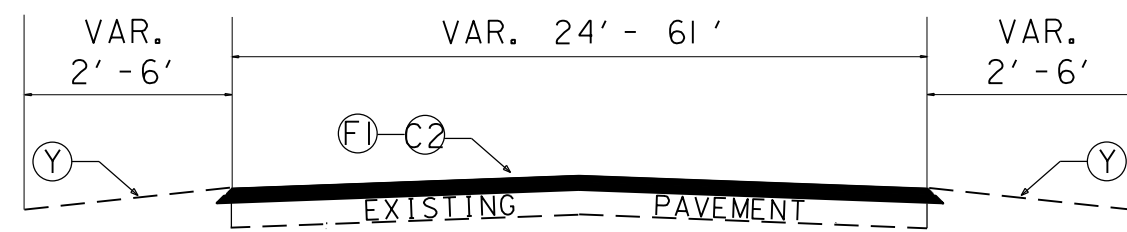
TYPICAL SECTION NO. 6

(MAP 18-20, 22)



TYPICAL SECTION NO. 7

(MAP 21)



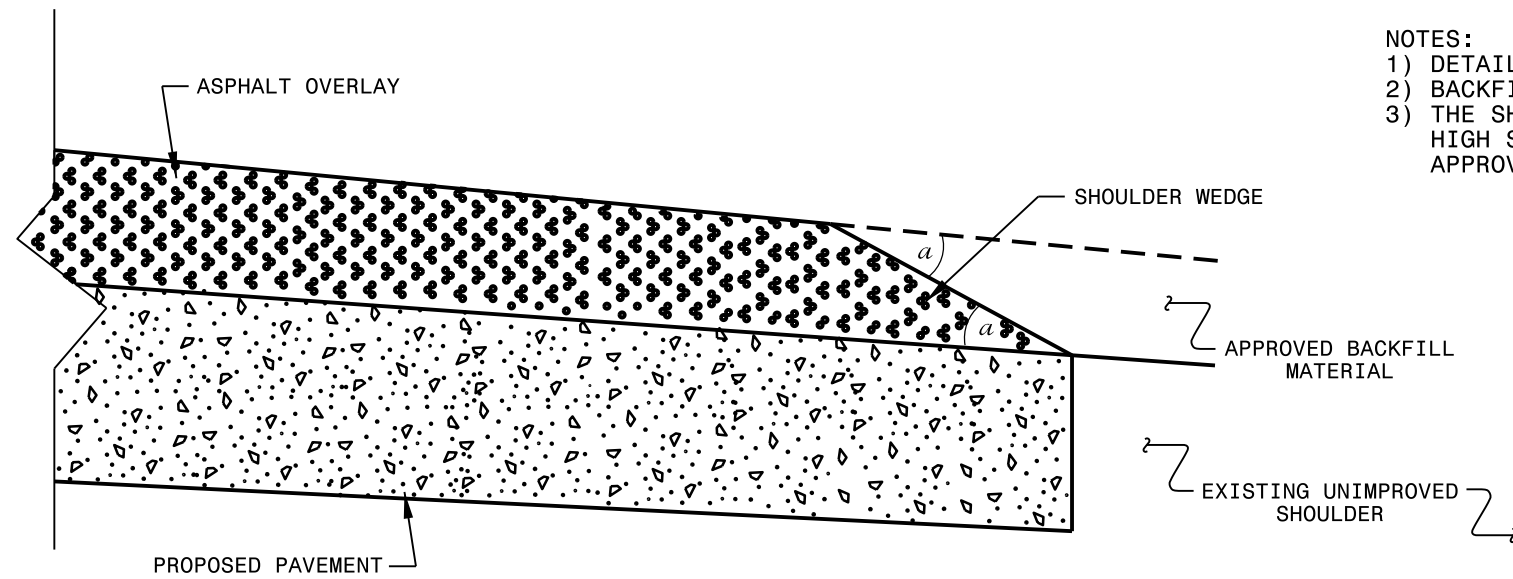
TYPICAL SECTION NO. 8

(MAP 1)

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
CLEVELAND CO. 2019-2020	9	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
2019CPT.12.01.10231		
2019CPT.12.01.20231		

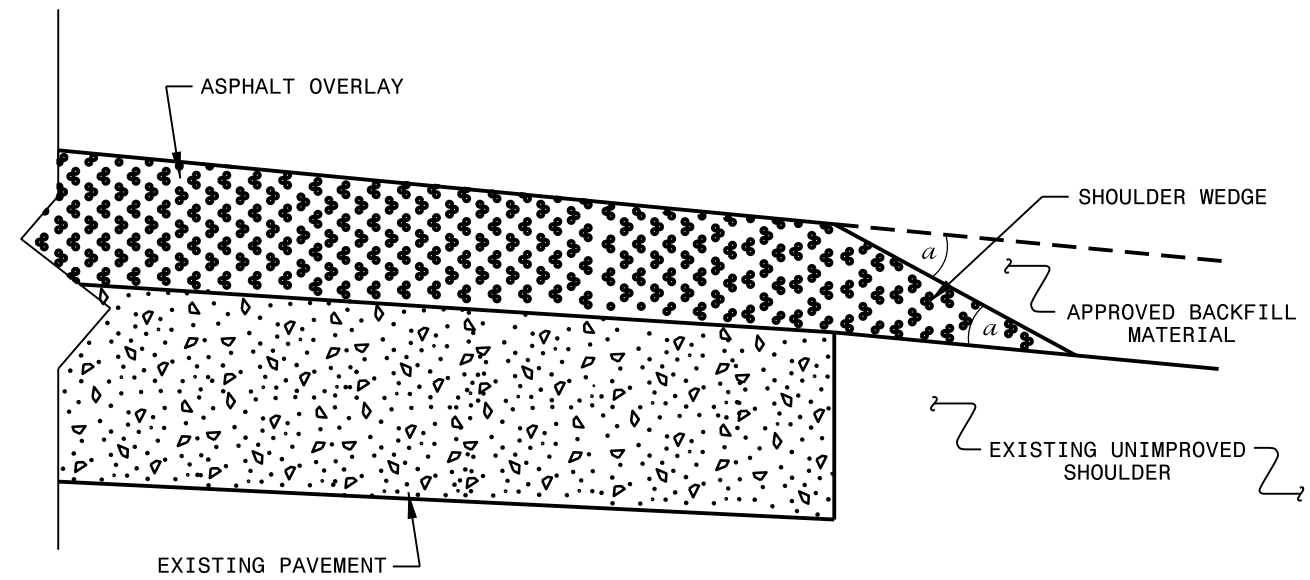
NOTES:

- 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.



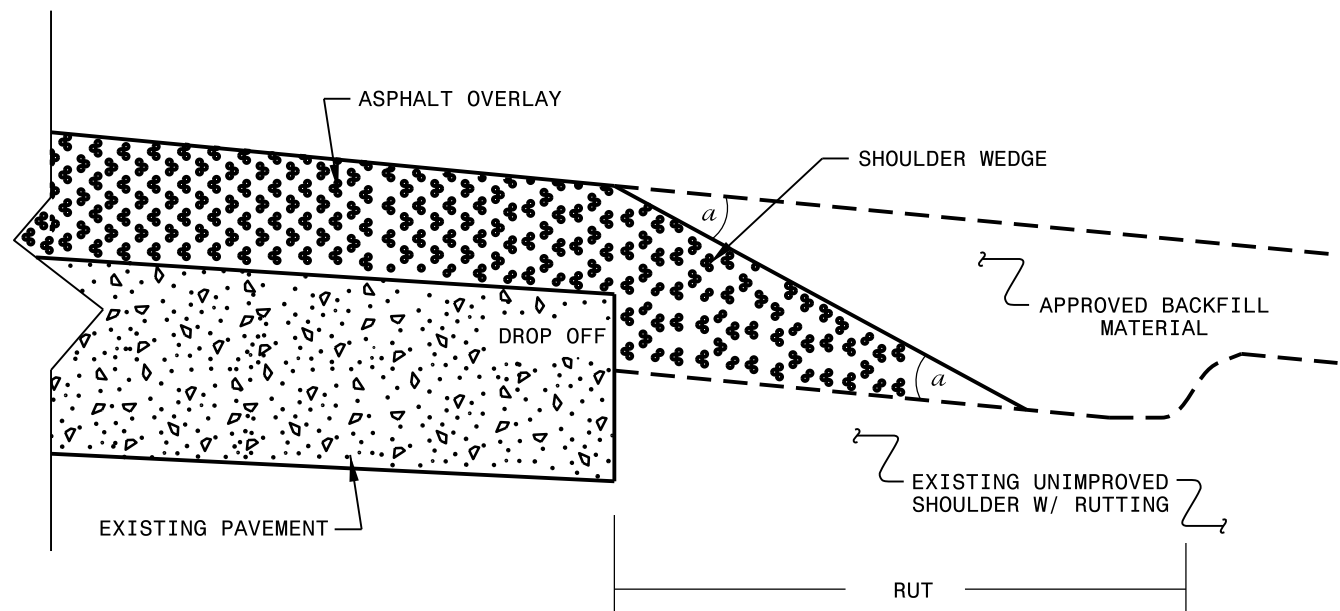
**SHOULDER WEDGE DETAIL**

(Resurfacing Projects w/ Widening or with Existing Paved Shoulder having no dropoffs)



**SHOULDER WEDGE DETAIL**

(Resurfacing Projects w/ NO Widening)

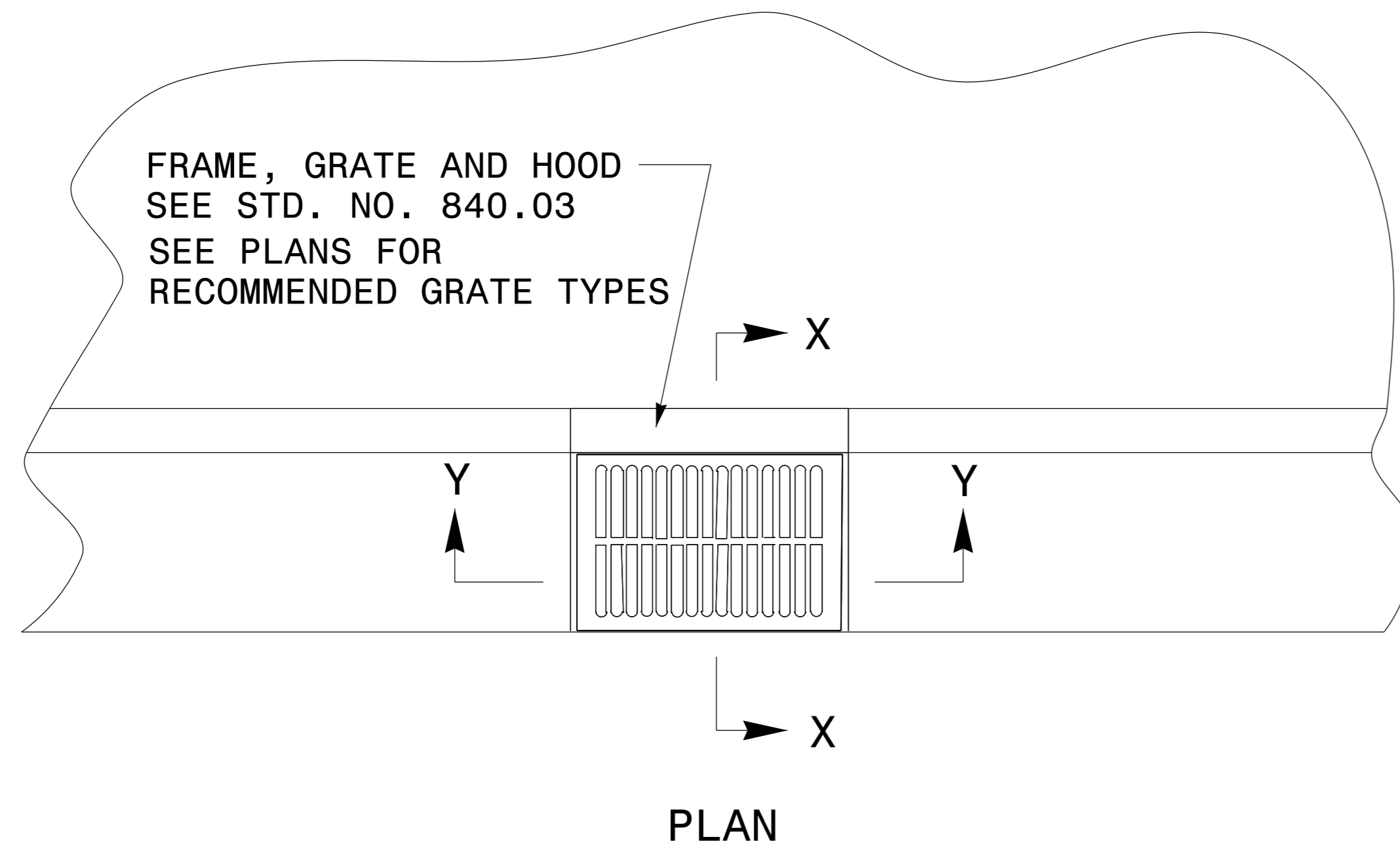


**SHOULDER WEDGE DETAIL**

(Resurfacing Adjacent to Rutted Shoulder)

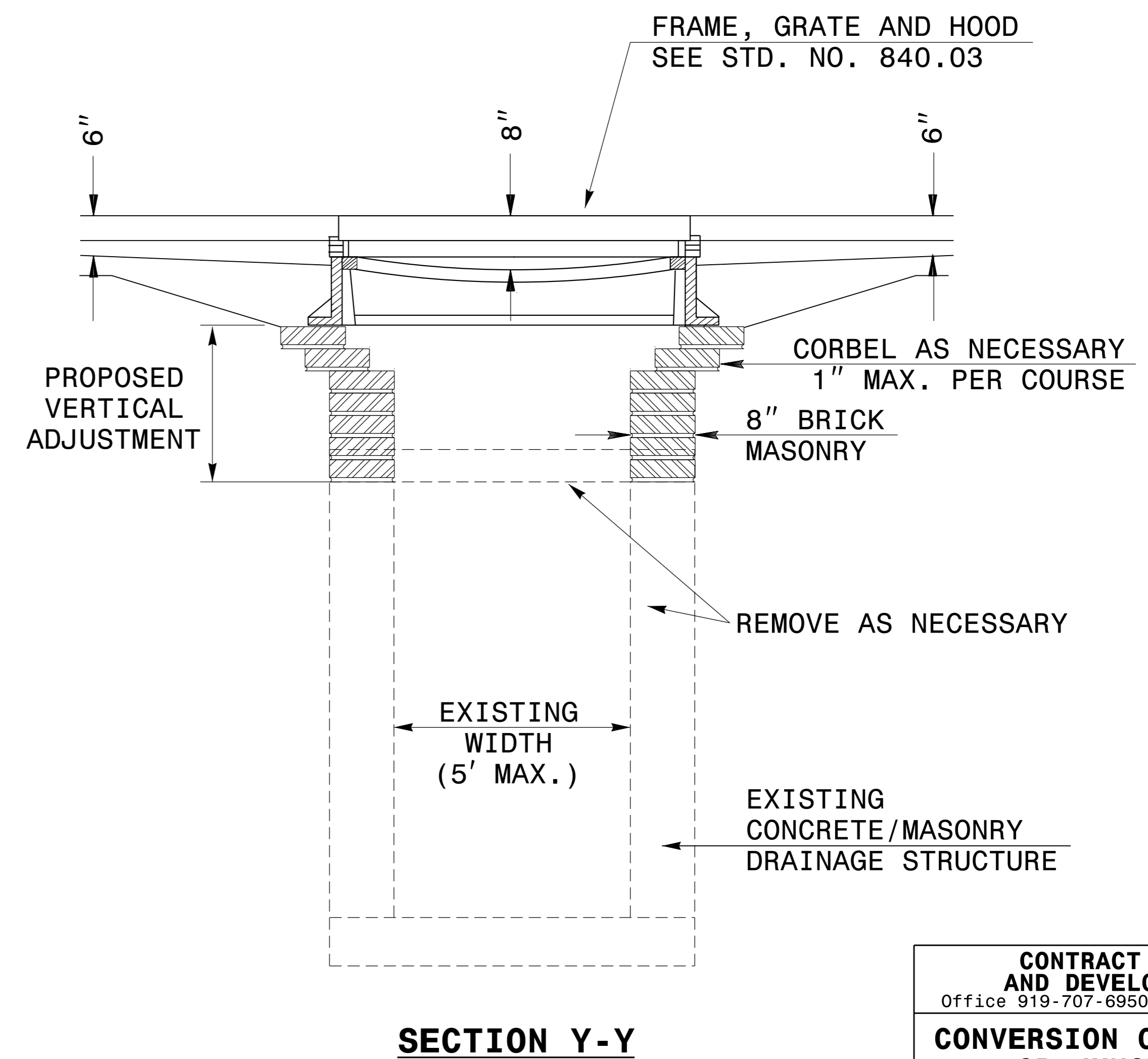
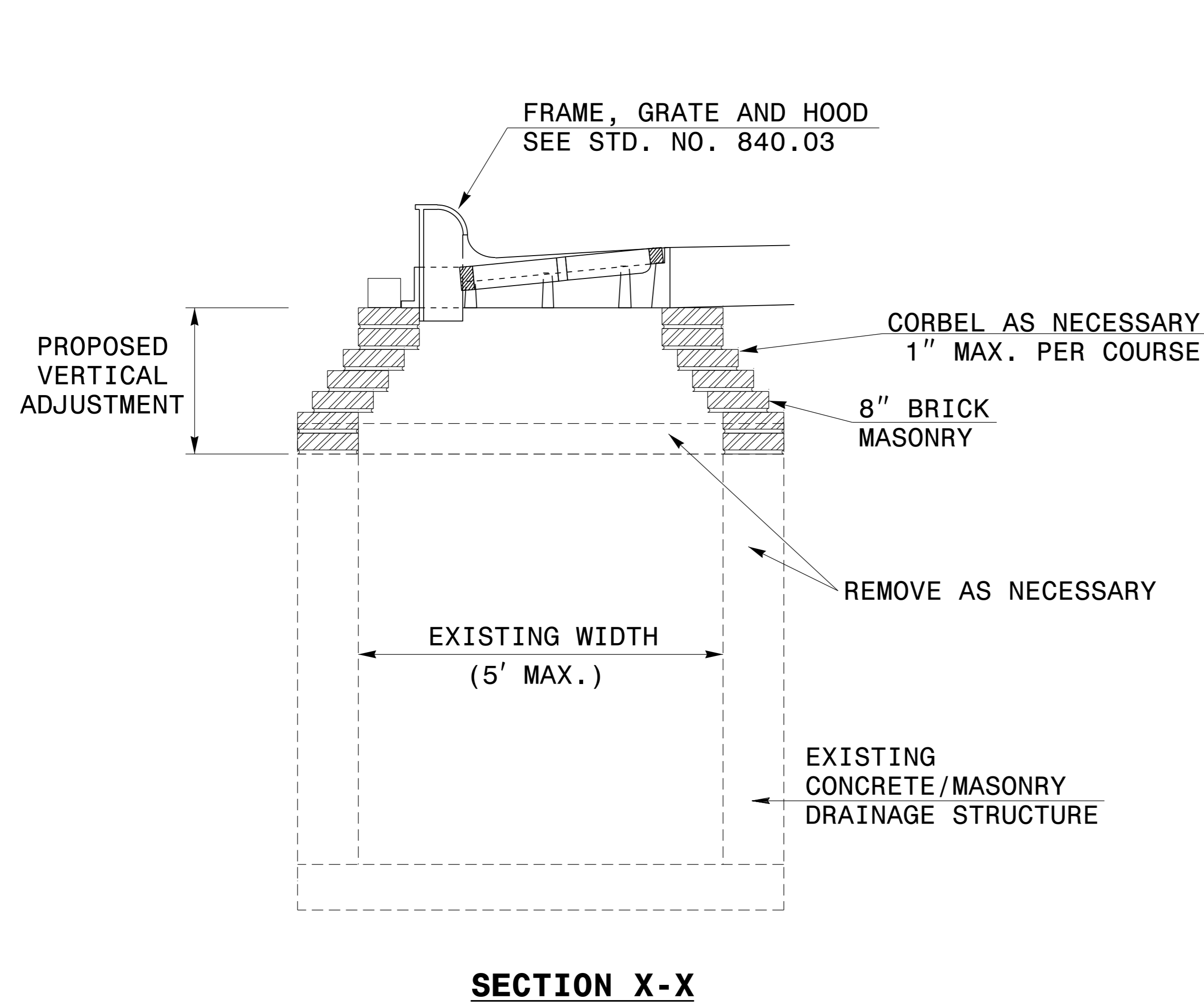
- SHOULDER WEDGE ANGLE = 30°

<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.: szusr/details/stand/shoulderwedgedetail.dgn		



GENERAL NOTES:

- THE ROADWAY PLANS INDICATE STRUCTURES TO BE CONVERTED.
- AFTER REMOVAL, STORE GRATES AND FRAMES AS DIRECTED BY THE ENGINEER.
- 4" SOLID CLAY BRICK, JUMBO BRICK, CONCRETE, OR 4" SOLID CONCRETE BLOCK MAY BE USED FOR VERTICAL ADJUSTMENT OF THE STRUCTURE.
- CONVERT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.



CONTRACT STANDARDS  
AND DEVELOPMENT UNIT  
Office 919-707-6950 FAX 919-250-4119

**CONVERSION OF DROP INLET  
OR JUNCTION BOX  
TO CATCH BASIN**

ORIGINAL BY: E.E. WARD DATE: 11-97  
MODIFIED BY: DATE:  
CHECKED BY: DATE:  
FILE SPEC.: DS37:usr\details\stand\jbtocb.dgn

5/14/99  
C:\TIME\CON\CON\USER\NAME

PROJECT NO.	SHEET NO.	TOTAL NO.
2019CPT.12.01.10231, etc	12	

### SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WAR M MIX ASPHALT REQUIRE D	LENGTH		PORTABLE LIGHTING	AGGREGATE SHOULD BORROW	INCIDENTAL STONE BASE	SHOULDER RECONSTRUCTION	1½" MILLING	3" - 5" MILLING	INCIDENTAL MILLING	SURFACE COURSE, \$9.5B	LEVELING COURSE, \$9.5B	SURFACE COURSE, \$9.5C	LEVELING COURSE, \$9.5C	AS-PHALT BINDER FOR PLANT MIX	PATCHING EXISTING PAVEMENT	ASPHALT SURFACE TREATMENT, MATCOAT, #6M STONE	EMULSION FOR ASPHALT SURFACE TREATMENT	ADJ. OF COM MUNI CATIONS MAN HOLES	ADJ. OF MAN HOLES	ADJ. OF METER OR VALVE BOXES	FRAME W/ GRATE & HOOD STD 840.03 TYPE	CONVERT EXISTING DROP INLET TO CATCH BASIN	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAW CUT	LEAD-IN CABLE (14-2)									
										MI	FT																								LS	TON	TONS	SMI	SY	SY	SY	TONS	TONS
2019CPT.12.01.10231	Cleveland	1	NC 18 (FALLSTON RD)	END C&G TO 512' S OF SR 1800	8	2	2WU	NO	NO	5.03	24-61		1,900	360	10.06			330			7,238	1,087	500	1,530	85,628	34,251																	
		2	NC 180 (S. POST ROAD)	NC 18 TO NC 226 / NC 180	1	2	2WU	NO	NO	3.56	21-33	1	1,246	106	7.12			500			4,724	232	297	897			1						1	550	250								
		3	NC 182 (STAGECOACH TR)	NC 226 TO SR 1004	1	2	2WU	NO	NO	4.23	24-26		1,484	311	8.46		20,610	160			8,262	1,371	578	1,371			3					3	3	1	190	80							
		4	NC 226 (EARL RD)	US 74 TO 790' N OF SR 2427 (TROUTMAN LN)	1	2	2WU	NO	NO	1.85	21-24	1	648	122	3.70	3,800			475			2,522	234	165	695								1	520	220								
<b>TOTAL FOR PROJ NO. 2019CPT.12.01.10231</b>																																											
2019CPT.12.01.20231	Cleveland	5	SR 1005 (BALL PARK RD)	NC 182 TO SR 1809 (EXCEPTING THAT 0.07 MILE PORTION WITHIN THE LIMITS OF NEW BRIDGE CONSTRUCTION)	1	2	2WU	NO	NO	2.45	20-22		882	150	4.90			210			2,779	197		465																			
		6	SR 1614 (CARPENTER'S GROVE RD)	NC 18 TO SR 1621	1	2	2WU	NO	NO	4.31	20-21		1,509	259	8.62			500			4,912	741	339	786																			
		7	SR 1621 (CARPENTER'S GROVE RD)	NC 10 TO SR 1614	1	2	2WU	NO	NO	0.59	20		207	19	1.18			75			644	97	44	97																			
		8	SR 1645 (FLAT ROCK RD)	SR 1650 TO SR 1612	1	2	2WU	NO	NO	1.61	17-18		564	97	3.22			140			1,582	238	109	317																			
		9	SR 1669 (CARPENTERS GROVE CH RD)	SR 1614 TO NC 18	1	2	2WU	NO	NO	0.05	20-21		18		0.10			70			57	3	4	8																			
		10	SR 1808 (E. DOUBLE SHOALS RD)	NC 18 TO SR 1005	1	2	2WU	NO	NO	2.22	21-22		777	70	4.44			90			2,638	133	166	318																			
		11	SR 1809 (W. DOUBBLE SHOALS RD)	SR 1005 TO NC 226	1	2	2WU	NO	NO	3.31	19-22		1,159	198	6.62			600			3,629	291	235	762																			
		12	SR 1810 (CHAMPION ST)	SR 1876 TO SR 1856	3	2	2WU	NO	NO	0.12	19				12					81	5			6	12																		
		13	SR 1856 (OLD MILL RD)	SR 1809 TO DEAD END	1	2	2WU	NO	NO	0.47	19-20		165	89	0.94						464	42	30	84																			
		14	SR 1857 (HOLY RD)	SR 1809 TO SR 1856	1	2	2WD	NO	NO	0.07	19-20		24		0.14						73	4	5	10																			
		15	SR 1876 (MOSS RD)	SR 1809 TO SR 1856	1	2	2WU	NO	NO	0.19	17-18		67	23	0.38						186	10	12	21																			
		16	SR 1908 (NEW PROSPECT CH RD)	NC 18 TO SR 1913	1	2	2WU	NO	NO	4.51	19-30		1,579	195	9.02			890			5,238	1,185	385	1,205																			
		17	SR 1950 (WYKE RD)	NC 150 TO NC 18	1	2	2WU	NO	NO	0.87	24-37	1	304		1.74	3,098		910			1,727	170	114	298				3	4				1	490	200								
		18	SR 2396 (STAR DR)	US 29 TO END MAINT	6	2	2WU	NO	NO	0.09	18				8					58	2			4	6																		
		19	SR 2397 (SERVICE RD)	US 29 TO US 29	6	2	2WU	NO	NO	0.17	18				13					109	5			8	10																		
		20	SR 2398 (SERVICE RD)	SR 2397 TO DEAD END	6	2	2WU	NO	NO	0.1	18				10					64	5			5	9																		
		21	SR 2417 (N. MAIN ST.)	NC 226 TO SR 2233	7	2	2WU	NO	NO	0.24	18				0.24				120		10	236		14	20																		
		22	SR 2698 (FAIRMONT DR.)	SR 2685 TO CULDESAC	6	2	2WU	NO	NO	0.2	18-20									142	36			12	28																		
		23	SR 2313 (GAGE RD.)	I-85 ON-RAMP TO END PAVEMENT	1	2	2WU	NO	NO	0.5	18-19				235	30	1.00			70			505	130	38	101																	
		24	SR 2390 (SERVICE RD.)	US 29 TO DEAD END	1	2	2WU	NO	NO	0.11	18				38		0.22					108	5	7	12																		
		<b>TOTAL FOR PROJ NO. 2019CPT.12.01.20231</b>																																									
		<b>GRAND TOTAL</b>																																									
												38.07		1	12,848	2,072	72.10	3,800	23,708	5,140	454	63	47,524	6,170	3,256	9,062	85,628	34,251	4	3	4	3	3	4	1,750	750							

PROJECT NO.	SHEET NO.	TOTAL NO.
2019CPT.12.01.10231, etc	13	

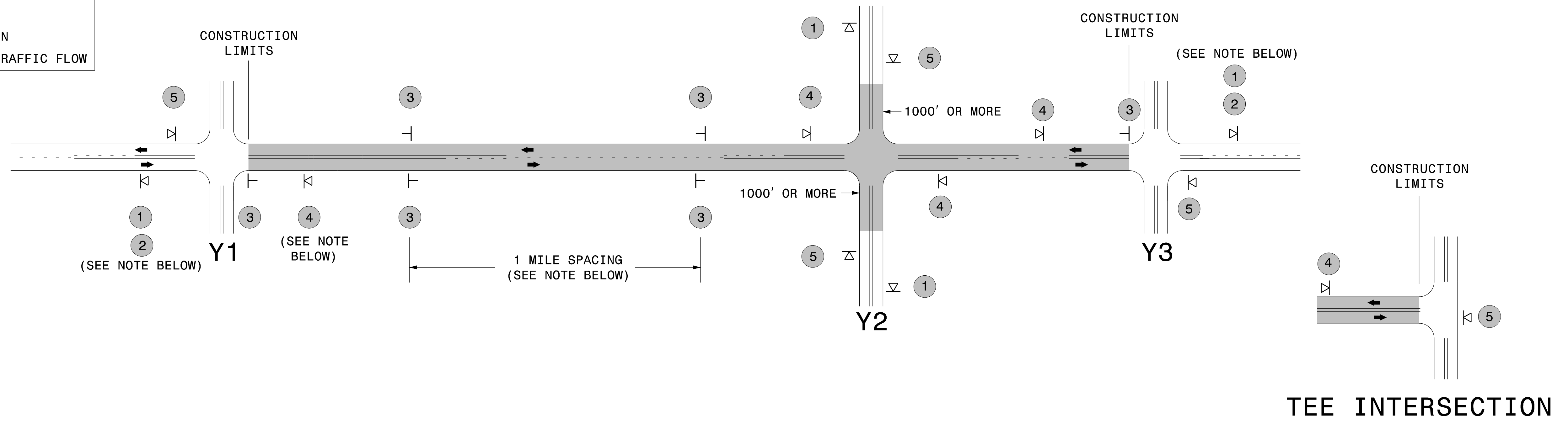
## THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4413000000-E	445700	45100	469000	46950000	4697000	4705000	471000	4721000000-E	4725000000-E			4810000000-E		483500	484500	4905...			
										WORK ZONE	TEMP.	LAW	6" X	8" X 90	8" X	16" X	24" X	THER	THER	THER	THERM	THERM	THERM	4" WHITE	4"	24"	PAINT	SNOW	
										ADVANCE/GENERAL WARNING SIGNING	TRAF-FIC CONTR OL	ENFO RCEM ENT	120 M WHITE THERMO	M YELLOW THERMO	120 M WHITE THERMO	120 M WHITE THERMO	120 M WHITE THERMO	MO MSG RXR 120 M	MO MSG SCHO OL 120	MO LT ARRO W 90 M	OR T ARRO W 90 M	O STR ARROW 90 M	PAINT	YELLOW PAINT	WHITE PAINT	LT ARRO W	ABLE MARKE RS		
							MI	FT	SF	LS	HR	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA				
2019CPT.12.01.10231	Cleveland	1	NC 18 (FALLSTON RD)	END C&G TO 512' S OF SR 1800	8	2	2WU	5.03	24-61	388																			
		2	NC 180 (S. POST ROAD)	NC 18 TO NC 226 / NC 180	1	2	2WU	3.56	21-33	324																			
		3	NC 182 (STAGECOACH TR)	NC 226 TO SR 1004	1 2	2 2	2WU	4.23 0.89	24-26 30-37	244	*																		
		4	NC 226 (EARL RD)	US 74 TO 790' N OF SR 2427 (TROUTMAN LN)	1 4	2 2	2WU	1.85 0.17	21-24 21-36	340		20		25				101			8								
<b>TOTAL FOR PROJ NO. 2019CPT.12.01.10231</b>								<b>15.73</b>		<b>1,296</b>		<b>20</b>		<b>210</b>	<b>75</b>	<b>100</b>	<b>206</b>	<b>4</b>		<b>12</b>		<b>318,668</b>	<b>292,036</b>	<b>307</b>	<b>8</b>	<b>1,079</b>			
																	<b>4</b>	<b>12</b>	<b>610,704</b>										
2019CPT.12.01.20231	Cleveland	5	SR 1005 (BALL PARK RD)	NC 182 TO SR 1809 (EXCEPTING THAT 0.07 MILE PORTION WITHIN THE LIMITS OF NEW BRIDGE CONSTRUCTION)	1	2	2WU	2.45	20-22	196																			
		6	SR 1614 (CARPENTER'S GROVE RD)	NC 18 TO SR 1621	1	2	2WU	4.31	20-21	308																			
		7	SR 1621 (CARPENTER'S GROVE RD)	NC 10 TO SR 1614	1	2	2WU	0.59	20	180																			
		8	SR 1645 (FLAT ROCK RD)	SR 1650 TO SR 1612	1	2	2WU	1.61	17-18	116																			
		9	SR 1669 (CARPENTERS GROVE CH RD)	SR 1614 TO NC 18	1	2	2WU	0.05	20-21	84																			
		10	SR 1808 (E. DOUBLE SHOALS RD)	NC 18 TO SR 1005	1	2	2WU	2.22	21-22	148																			
		11	SR 1809 (W. DOUBLBLE SHOALS RD)	SR 1005 TO NC 226	1	2	2WU	3.31	19-22	180								110											
		12	SR 1810 (CHAMPION ST)	SR 1876 TO SR 1856	9	2	2WU	0.12	19	84																			
		13	SR 1856 (OLD MILL RD)	SR 1809 TO DEAD END	1	2	2WU	0.47	19-20	84																			
		14	SR 1857 (HOLY RD)	SR 1809 TO SR 1856	1	2	2WD	0.07	19-20	84	*																		
		15	SR 1876 (MOSS RD)	SR 1809 TO SR 1856	1	2	2WU	0.19	17-18	84																			
		16	SR 1908 (NEW PROSPECT CH RD)	NC 18 TO SR 1913	1	2	2WU	4.51	19-30	308																			
		17	SR 1950 (WYKE RD)	NC 150 TO NC 18	1 5	2 2	2WU	0.87 0.16	24-37 30	212		120	90				100	215	4	12	15	6	4						
		18	SR 2396 (STAR DR)	US 29 TO END MAINT	6	2	2WU	0.09	18	84																			
		19	SR 2397 (SERVICE RD)	US 29 TO US 29	6	2	2WU	0.17	18	84																			
		20	SR 2398 (SERVICE RD)	SR 2397 TO DEAD END	6	2	2WU	0.1	18	84																			
		21	SR 2417 (N. MAIN ST.)	NC 226 TO SR 2233	7	2	2WU	0.24	18	180																			
		22	SR 2698 (FAIRMONT DR)	SR 2685 TO CULDESAC	6	2	2WU	0.2	18-20	84																			
		23	SR 2313 (GAGE RD.)	I-85 ON-RAMP TO END PAVEMENT	1	2	2WU	0.5	18-19	84																			
		24	SR 2390 (SERVICE RD.)	US 29 TO DEAD END	1	2	2WU	0.11	18	84																			
		<b>TOTAL FOR PROJ NO. 2019CPT.12.01.20231</b>								<b>22.34</b>		<b>2,752</b>		<b>120</b>	<b>90</b>		<b>100</b>	<b>375</b>	<b>4</b>	<b>12</b>	<b>15</b>	<b>6</b>	<b>4</b>	<b>460,424</b>	<b>433,535</b>	<b>75</b>		<b>498</b>	
																			<b>16</b>	<b>25</b>	<b>893,959</b>								
		<b>GRAND TOTAL</b>								<b>38.07</b>		<b>4,048</b>	<b>1</b>	<b>140</b>	<b>90</b>	<b>210</b>	<b>75</b>	<b>200</b>	<b>581</b>	<b>8</b>	<b>12</b>	<b>27</b>	<b>6</b>	<b>4</b>	<b>779,092</b>	<b>725,571</b>	<b>382</b>	<b>8</b>	<b>1,577</b>
																			<b>20</b>	<b>37</b>	<b>1,504,663</b>								

# SIGNING FOR ASPHALT SURFACE TREATMENT

**LEGEND**

- ▷ PORTABLE SIGN
- └ STATIONARY SIGN
- ← DIRECTION OF TRAFFIC FLOW



## MAINLINE (-L-) SIGNING

## -Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	1	 W20-1 48" X 48"	- PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	STATIONARY SIGNING NOT REQUIRED FOR THE FOLLOWING -Y- LINE CONDITIONS: 1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE 2) SUBDIVISION ROADS 3) DEAD END ROADS  WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, PORTABLE ADVANCE WARNING SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.	
	2	 W7-3qP 24" X 18"	- 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.		
	3	 W8-7 48" X 48"	- ALTERNATE THE FOLLOWING TWO SIGNS: - STARTING WITH "LOOSE GRAVEL" (W8-7) FOLLOWED BY "UNMARKED PAVEMENT". - PLACE INITIALLY AT THE CONSTRUCTION LIMITS AND SPACED 1 MILE APART THEREAFTER.		
		 SP 48" X 48"	- AT TEE INTERSECTIONS INSTALL INITIALLY 0.5 MILE FROM INTERSECTION AND SPACE 1 MILE APART THEREAFTER.		
	4	 SP 13106 48" X 48"	- 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.		
5	 G20-2 A 48" X 24"	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS OR AS SHOWN WHEN WORK ENDS AT A 3-WAY TEE INTERSECTION.	 W20-1 48" X 48"	PLACED 500' IN ADVANCE OF FLAGGER.	
				 W20-7 A 48" X 48"	PLACED 250' IN ADVANCE OF FLAGGER.

THE ABOVE SIGNS ARE ALL THAT ARE REQUIRED FOR A CONTRACTOR TO BEGIN A RESURFACING CONTRACT. ANY ADDITIONAL SIGNS REQUESTED BY NCDOT DIVISIONS SHALL BE INSTALLED WITHIN 7 BUSINESS DAYS OF THE START OF CONTRACT WORK.

**MAPS LESS THAN 2 MILES**

FOR 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**

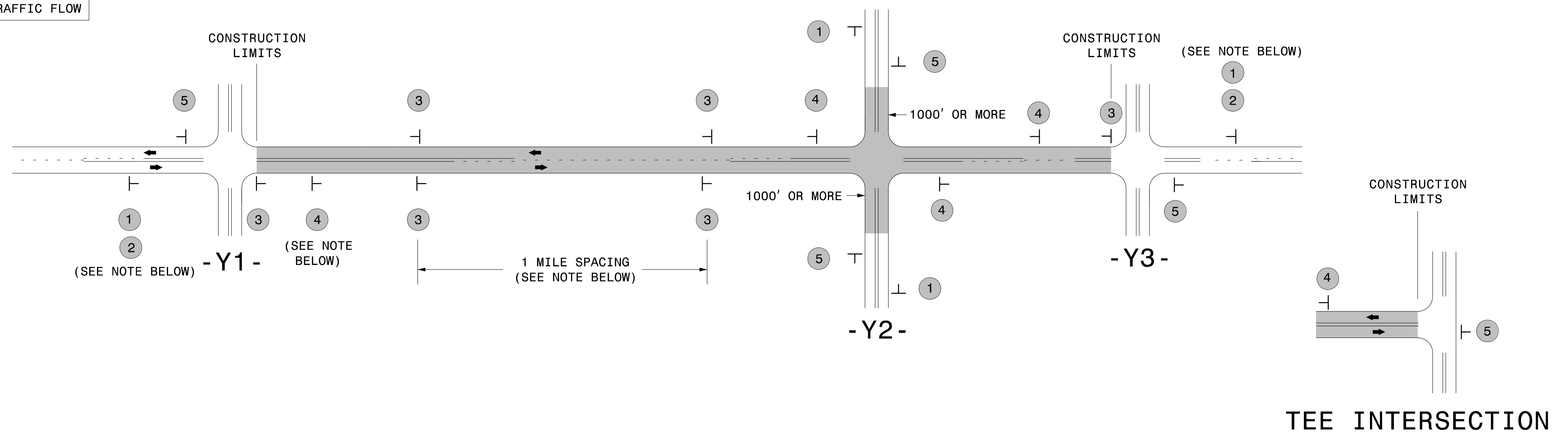
5/12/2017 S:\TUXWZTC\Resurfacing\2L2W & AST Resurfacing Details\Resurfacing\_AdvWarn\_2Ln - AST.dgn User:kadais

# SIGNING FOR RESURFACING PROJECTS

**LEGEND**

┃ STATIONARY SIGN

← DIRECTION OF TRAFFIC FLOW



## MAINLINE (-L-) SIGNING

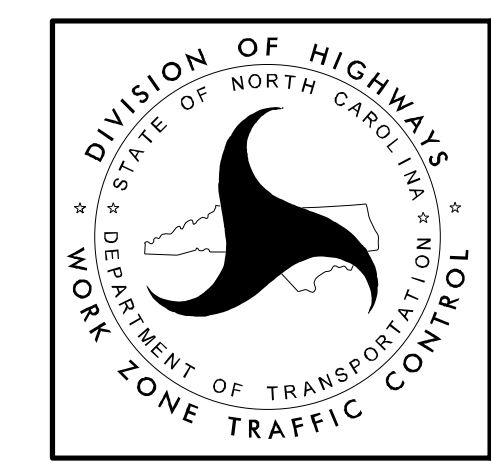
## -Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	1	 W20-1 48" X 48"	PLACE 1000' PRIOR TO BEGINNING OF CONSTRUCTION LIMITS. ONLY USED ON -Y- LINES IF RESURFACING LIMITS EXTEND 1000' ALONG -Y- LINE.	NO REQUIRED STATIONARY SIGNING FOR THE FOLLOWING -Y- LINE CONDITIONS:  1) LESS THAN 1000' OF RESURFACING ALONG -Y- LINE 2) SUBDIVISION ROADS 3) DEAD END ROADS  WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, PORTABLE ADVANCE WARNING SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.  <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	 W7-3aP 24" X 18"	#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	 SP 13107 48" X 48"	- 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	 SP 13106 48" X 48"	- 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	 G20-2 A 48" X 24"	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

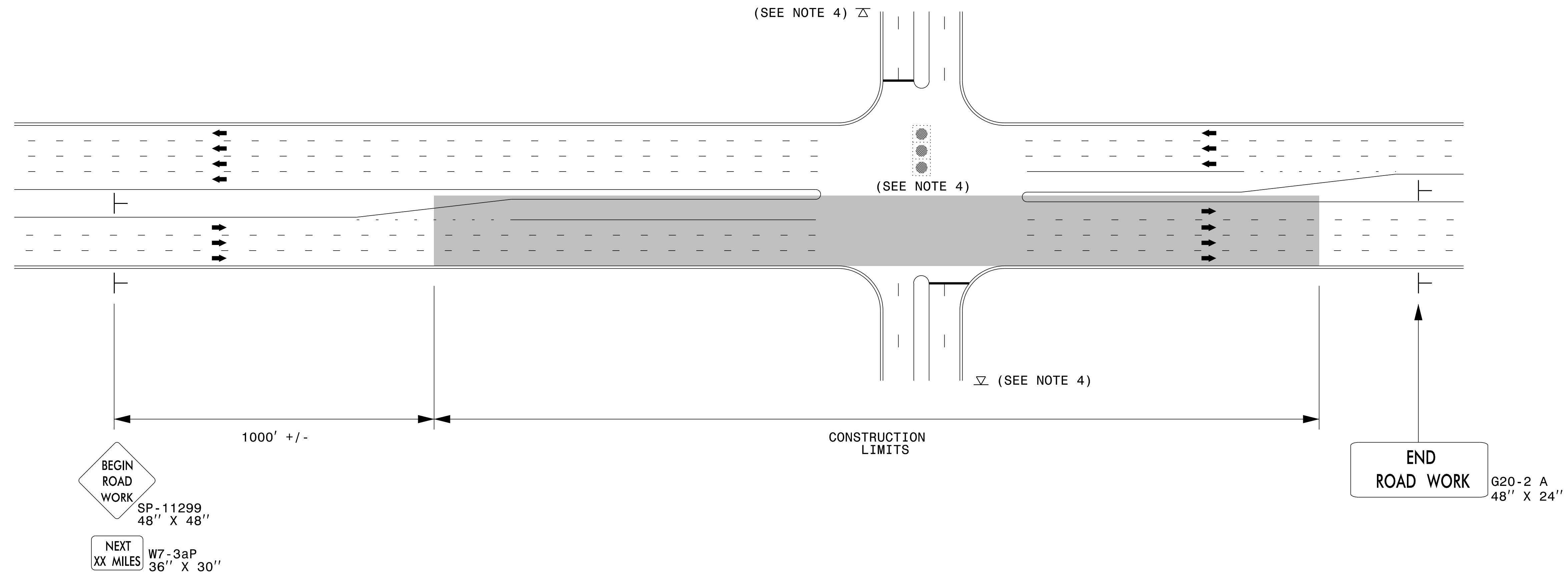
FOR RESURFACING MAPS WITH CONSTRUCTION LIMITS LESS THAN 2 MILES IN LENGTH, NO STATIONARY SIGNS ARE REQUIRED. USE PORTABLE "ROAD UNDER CONSTRUCTION" OR "ROAD WORK AHEAD" SIGNS IN LIEU OF STATIONARY ADVANCE WARNINGS SIGNS.



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

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

## URBAN / SUBURBAN WORKZONES

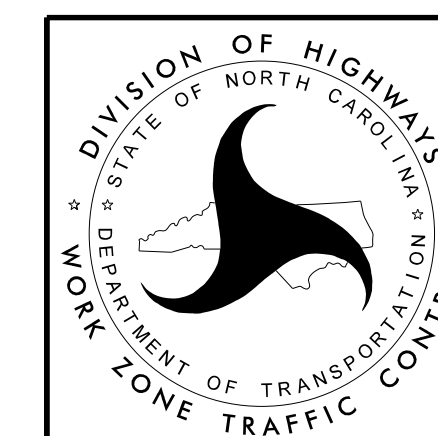


### NOTES:

- 1) 48" x 48" SIZED SIGNS (SP- 11299) MAY BE REDUCED TO 36" X 36" ON ROADWAYS WITH SPEED LIMITS OF 40 MPH OR LESS.
- 2) MOUNT SIGNS THAT ARE LARGER THAN 10 SQUARE FEET IN AREA ON TWO OR MORE WOOD OR U-CHANNEL SUPPORTS. PERFORATED SQUARE TUBING SUPPORT SYSTEMS MAY SUPPORT LARGER AREAS ON A SINGLE SUPPORT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. THESE SYSTEMS SHALL BE NCHRP 350 COMPLIANT AND NCDOT APPROVED.
- 3) ADVANCE WARNING SIGNS NOT REQUIRED ON NON-SIGNALIZED SIDE STREETS.
- 4) MAY USE LAW ENFORCEMENT TO CONTROL TRAFFIC AT SIGNALIZED INTERSECTIONS AS DIRECTED BY THE ENGINEER. PROVIDE PORTABLE "ROAD WORK AHEAD" (W20-1) SIGNS 500' IN ADVANCE ALONG BOTH APPROACHES FROM THE SIDE STREETS WHEN PAVING PROCEEDS THROUGH THE INTERSECTION.
- 5) LATERAL CLEARANCE AT ALL SIGN LOCATIONS SHALL BE 2' AS MEASURED FROM THE EDGE OF PAVEMENT OR THE FACE OF THE CURB. WHEN UNABLE TO OBTAIN THE LATERAL CLEARANCE WITHIN THE MEDIAN AREA USE SHOULDER MOUNTS ONLY.
- 6) SIGN MOUNT LOCATIONS SHALL NOT BLOCK SIDEWALKS OR DRIVEWAYS.
- 7) IF STATIONARY GENERAL WARNING SIGNS ARE USED, THEY WILL BE PAID FOR PER SECTION 104 OF THE NCDOT STANDARD SPECIFICATIONS AS EXTRA WORK.
- 8) IF MILLED AREAS ARE NOT PAVED BACK BY THE END OF THE WORK DAY, PORTABLE SIGNS SHALL BE USED TO WARN DRIVERS OF THE PRESENT CONDITIONS. THESE ARE TO INCLUDE, BUT NOT LIMITED TO "ROUGH ROAD" W8-8, "UNEVEN LANES" W8-11, "GROOVED PAVEMENT" W8-15 w/MOTORCYCLE PLAQUE MOUNTED BELOW. THESE ARE TO BE DOUBLE INDICATED ON MULTI-LANE ROADWAYS WITH SPEED LIMITS 45 MPH AND GREATER WHERE LATERAL CLEARANCE CAN BE OBTAINED WITHIN THE MEDIAN AREAS. THESE PORTABLE SIGNS ARE INCIDENTAL TO THE OTHER ITEMS OF WORK INCLUDED IN THE TEMPORARY TRAFFIC CONTROL (LUMP SUM) PAY ITEM.

### LEGEND

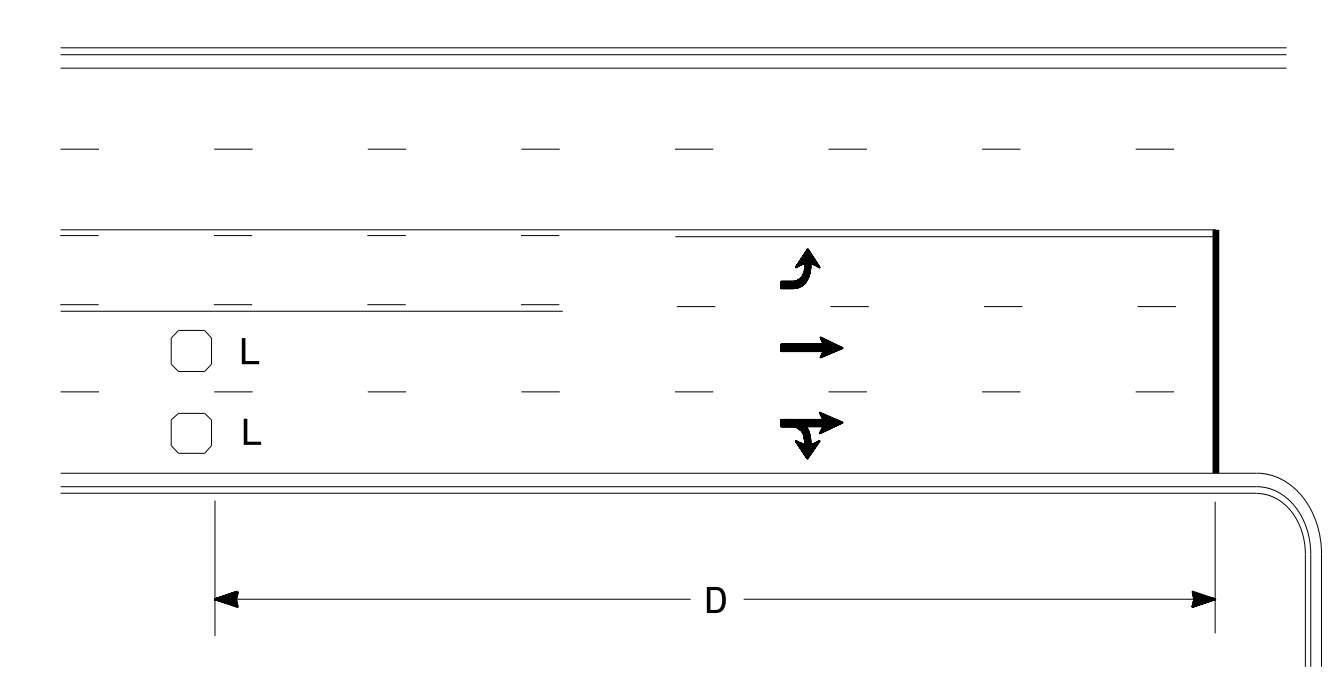
- ┆ STATIONARY SIGN
- ➔ DIRECTION OF TRAFFIC FLOW



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



### High Speed Detection (≥40 mph)

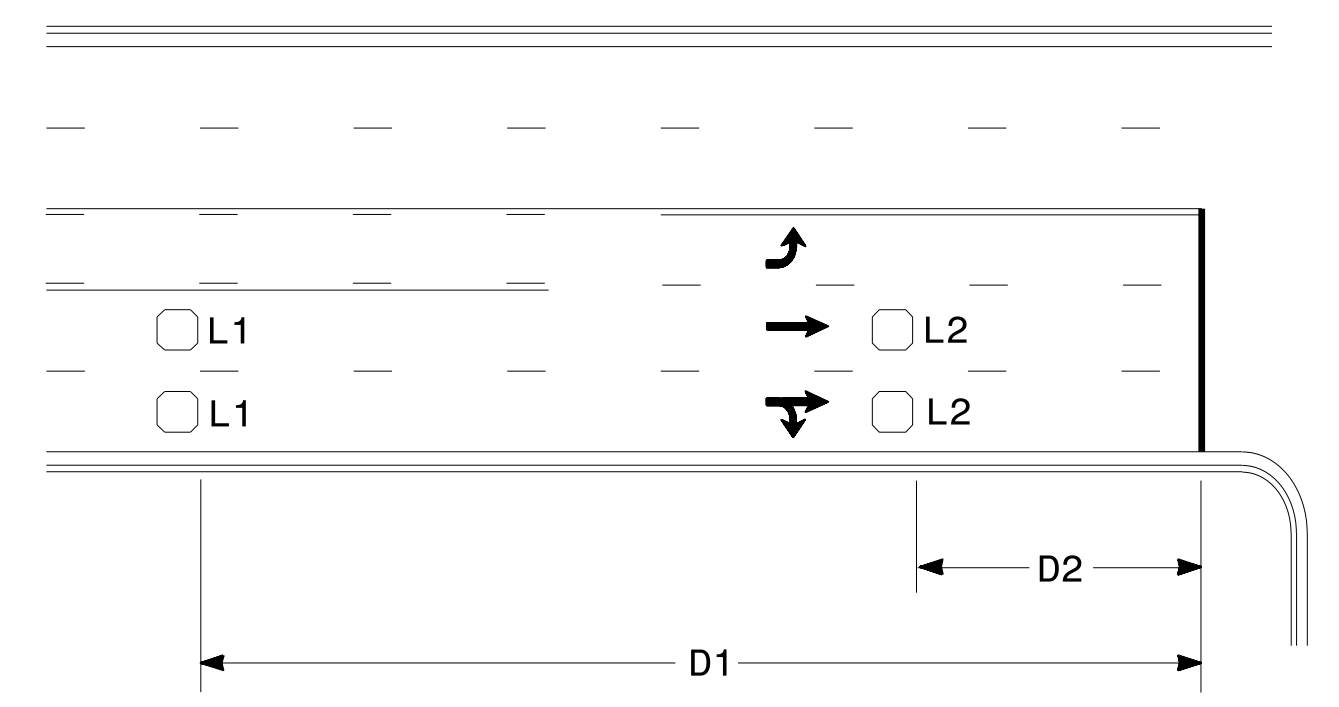


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

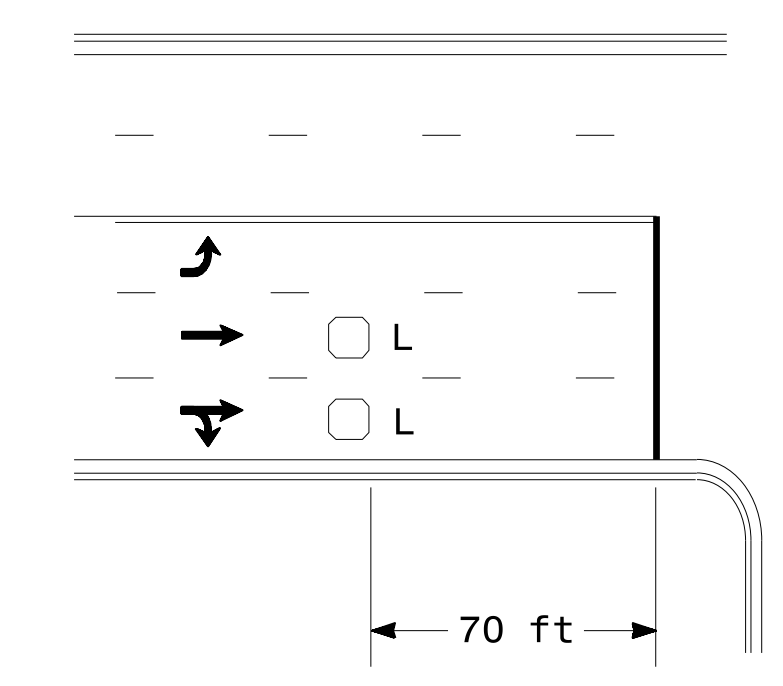


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

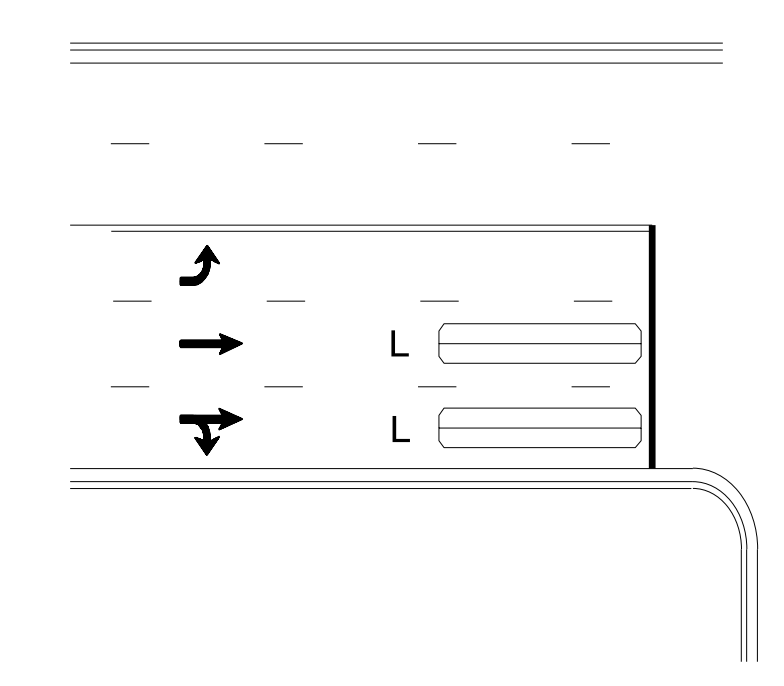
"Stretch" Operation

### Low Speed Detection (≤35 mph)



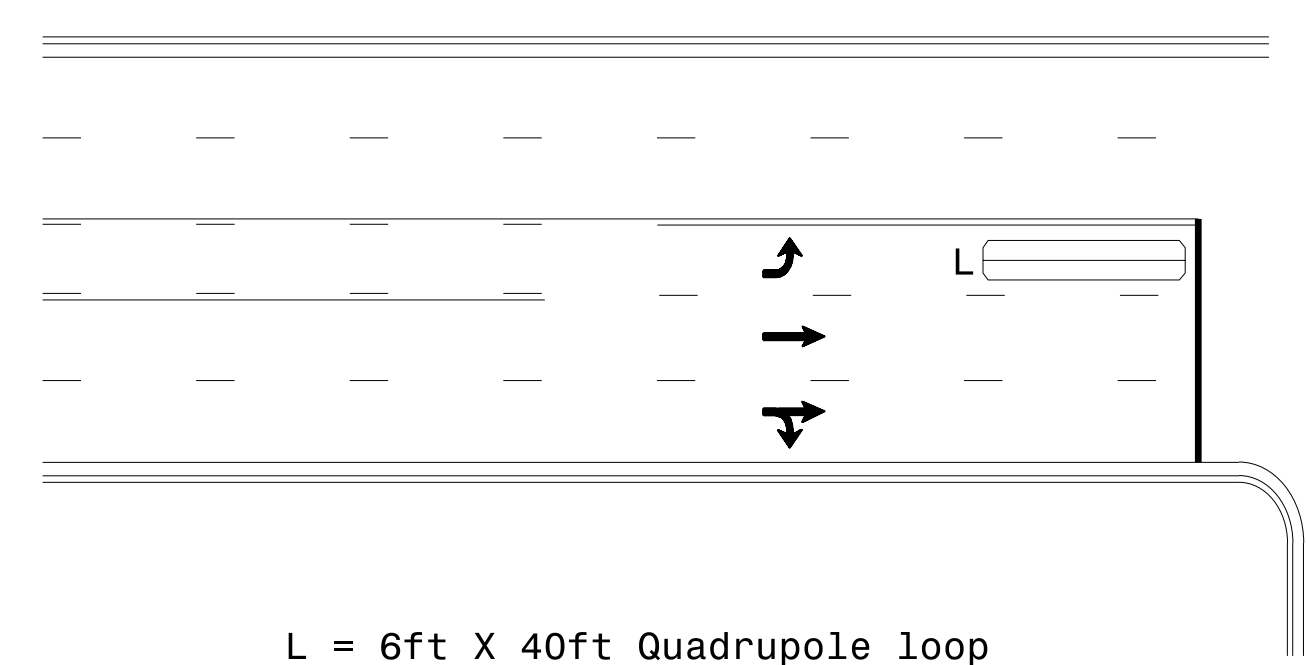
L = 6ft X 6ft  
Wired in series

OR



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

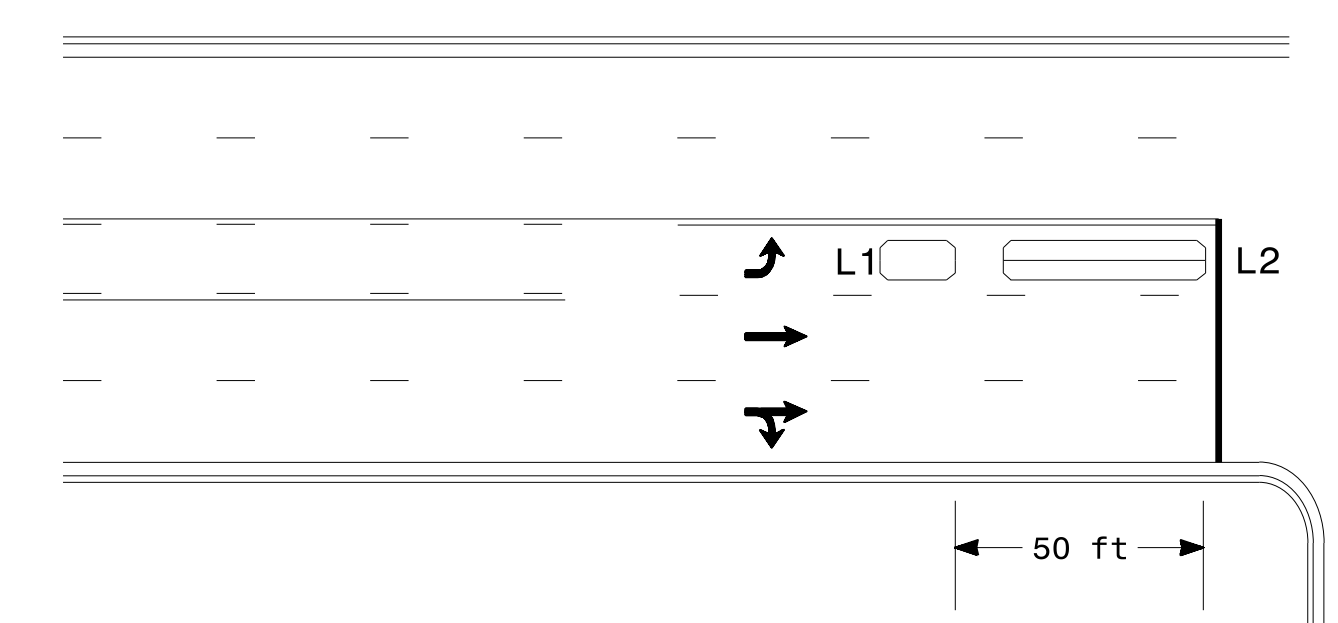
### Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

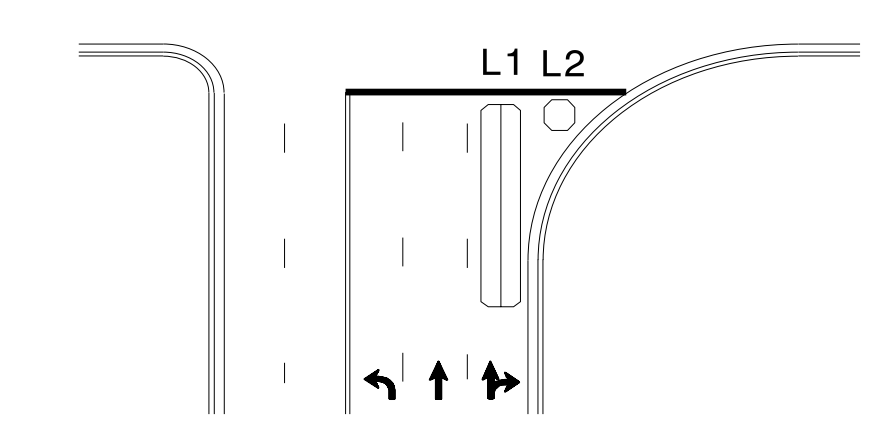
OR



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

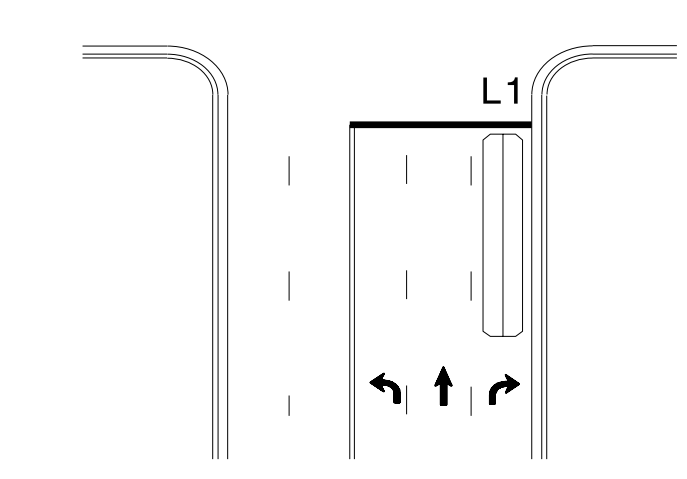
Queue Loop Detection

### Right Turn Lane Detection

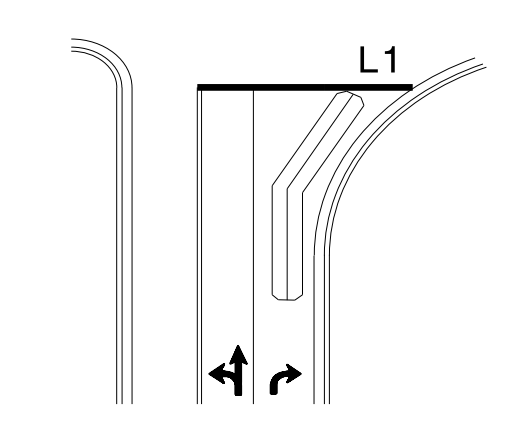


Shared Lane/  
Wide Radius Turn

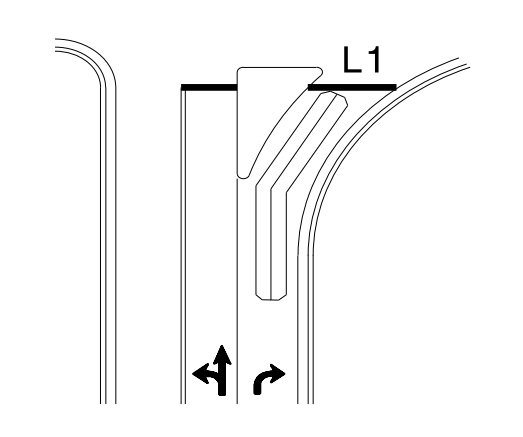
L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately



Standard Turn

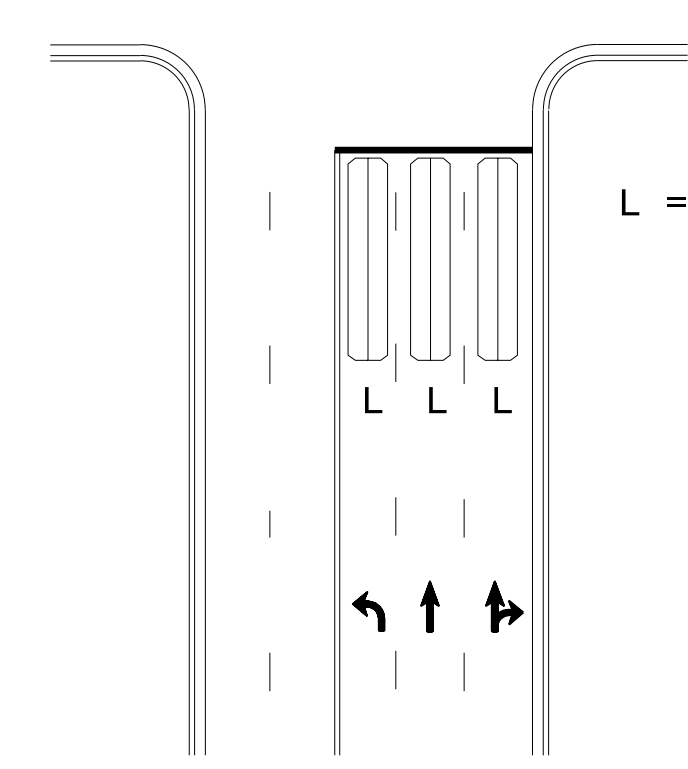


Wide Radius Turn



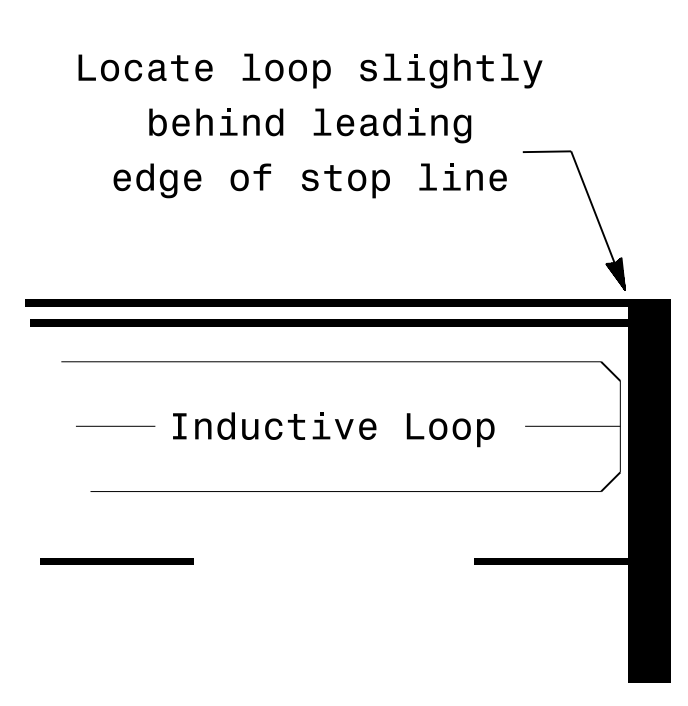
Channelized Turn

### 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

750 N. Greenfield Pkwy, Garner, NC 27529

#### Typical Signal Loop Locations

PLAN DATE: January 2015 REVIEWED BY: JPG  
PREPARED BY: PLA REVIEWED BY:

SEAL  
NORTH CAROLINA  
PROFESSIONAL ENGINEER  
PAMELA L. ALEXANDER  
23489

SCALE: N/A

REVISIONS: \_\_\_\_\_ INIT. DATE \_\_\_\_\_

DocuSigned by: P. Alexander 1/30/2015 10:45:00 AM  
B4756E00CE4E4ED DATE

SIG. INVENTORY NO. \_\_\_\_\_

3D:\AH\2015\12\29  
 S:\ITS\AS\15\SIGNAL\Signal Design\Section\Eastern\Region\loop\yp\ca\2015.dgn  
 paalexander