

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 6

PLANS

Letting Date: March 17, 2021

CONTRACT ID: DF00278

TIP NO.: -----

FEDERAL AID NO.: STATE FUNDED

WBS ELEMENT NO.: 2021CPT.06.12.10781.1

ROUTE NO.: NC 211 & NC 711

LOCATION: VARIOUS

COUNTY: ROBESON

LENGTH OF PROJECT: 14.54 MILES

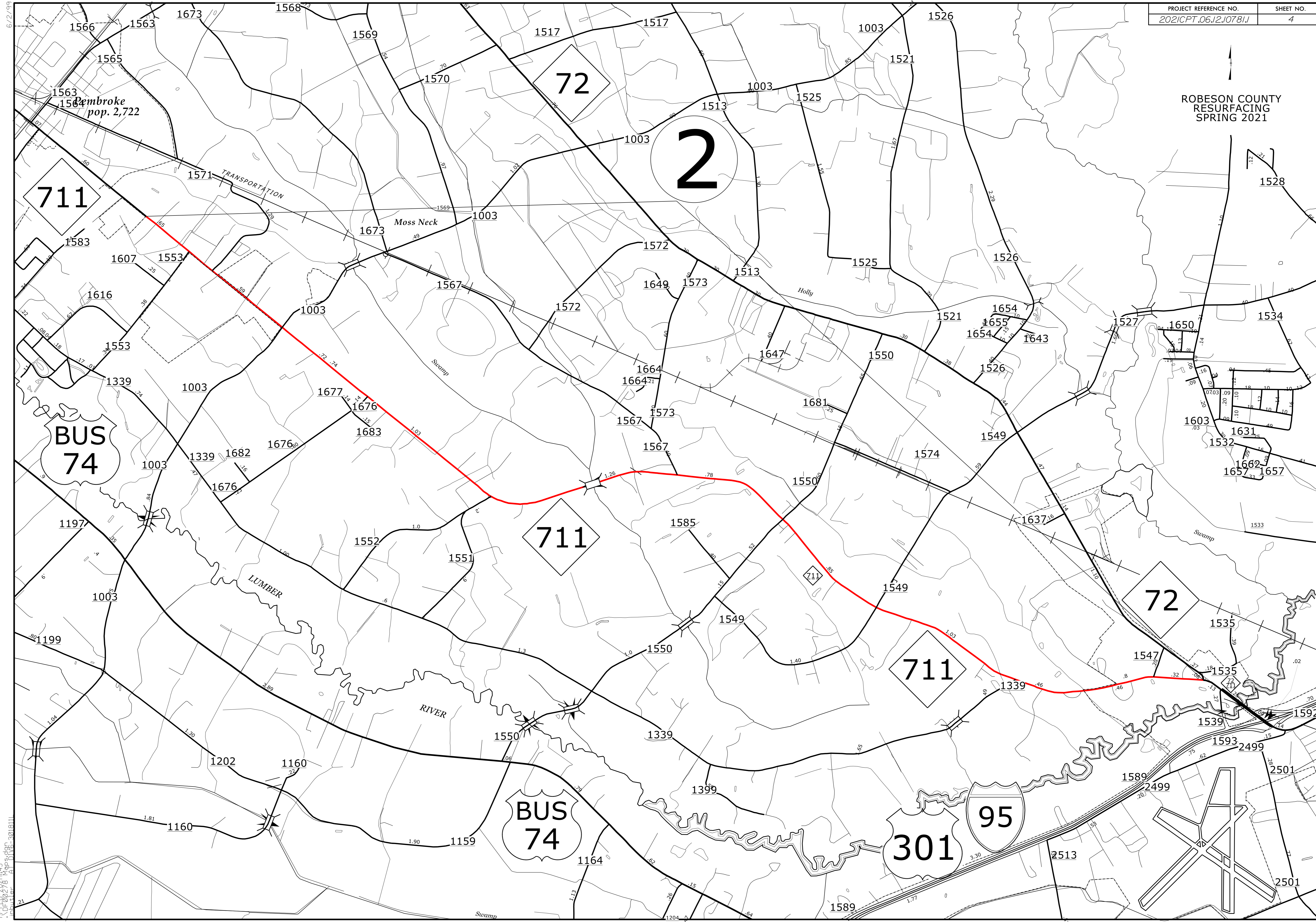
TYPE OF WORK: RESURFACING, MILLING & PVT. MKGS.

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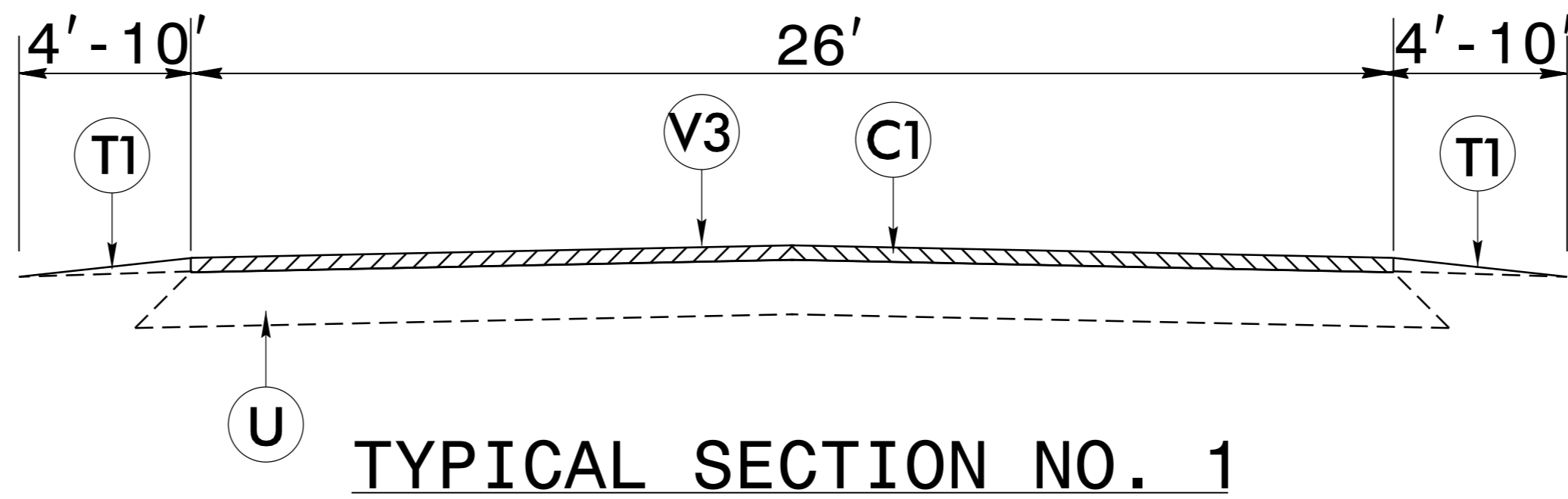
ROBESON COUNTY
RESURFACING
SPRING 2021



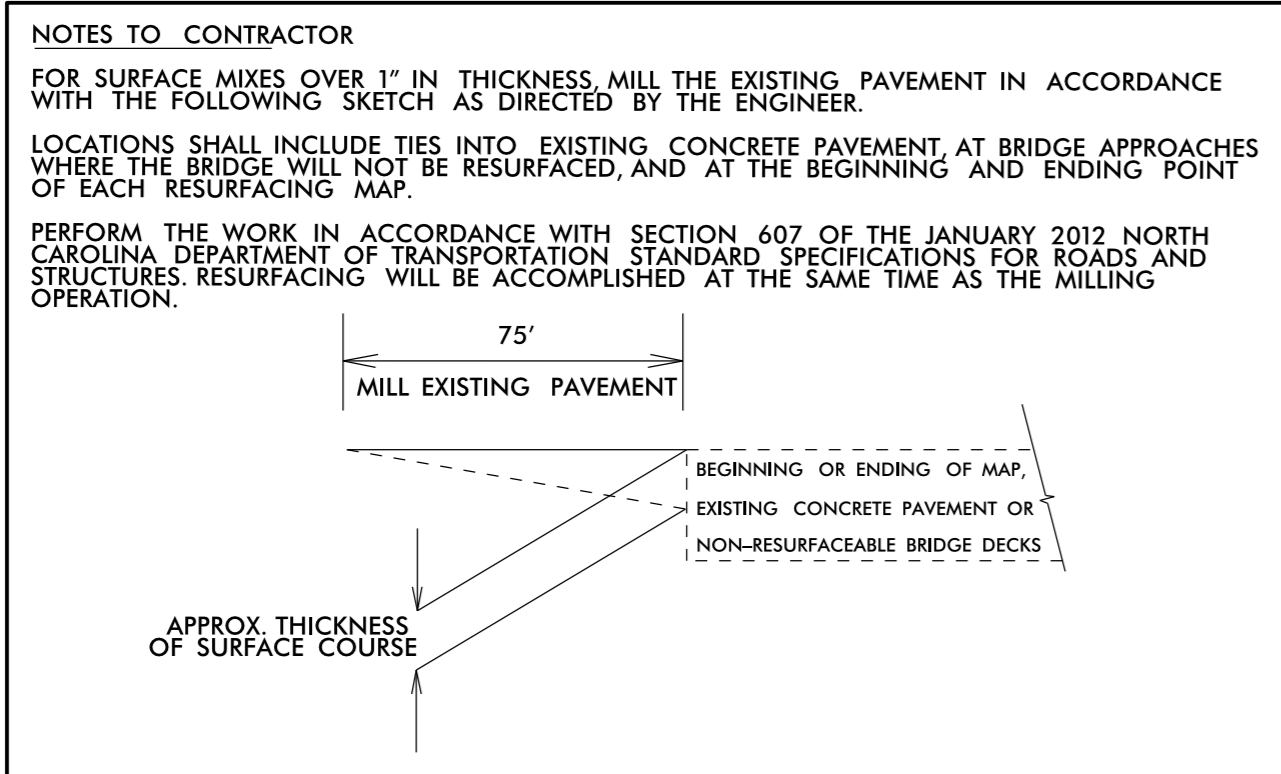
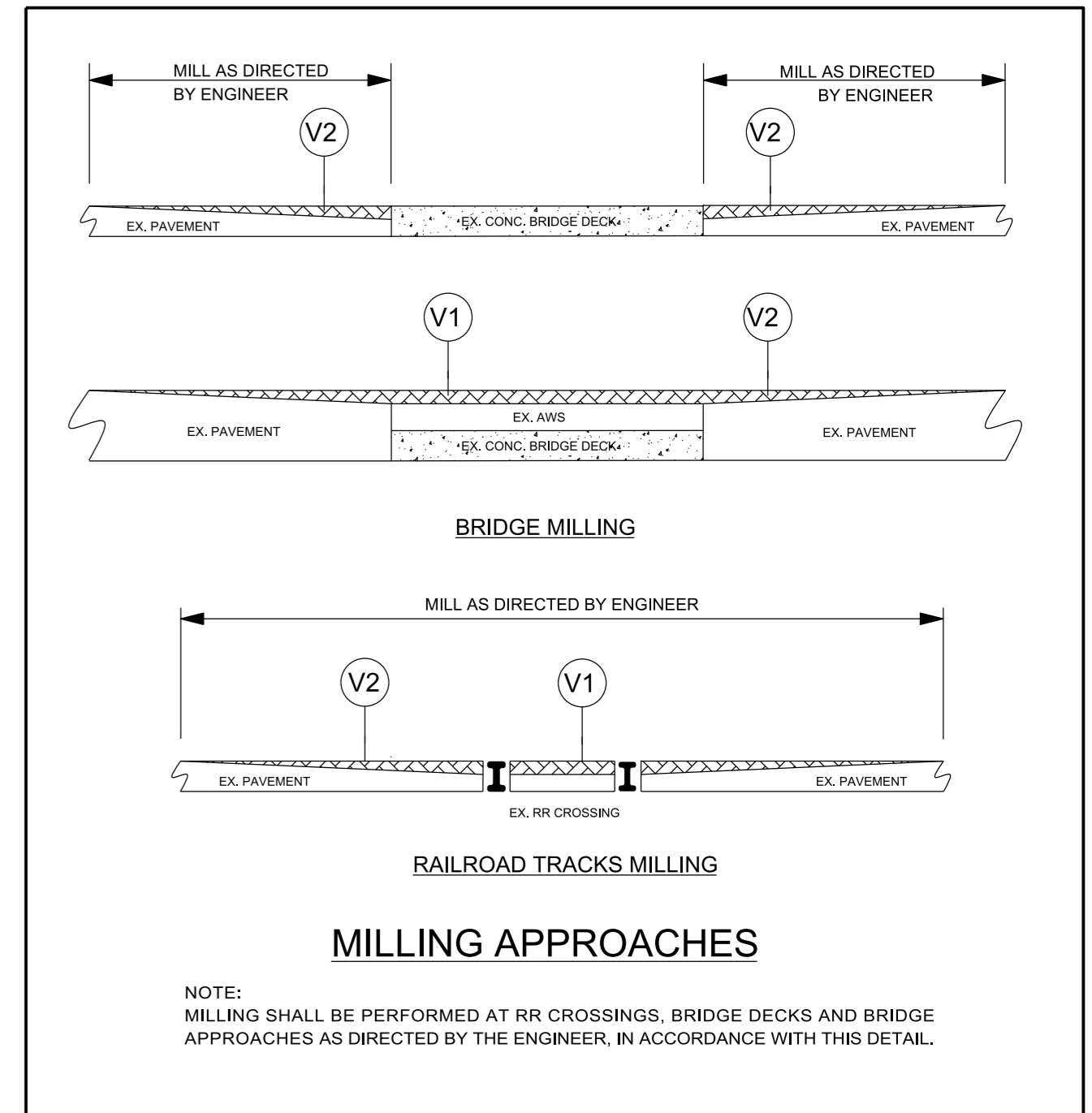
6/2/199
19-FEB-2021 11:43
D:\06278\MapInfo\DC-2018111

PAVEMENT SCHEDULE

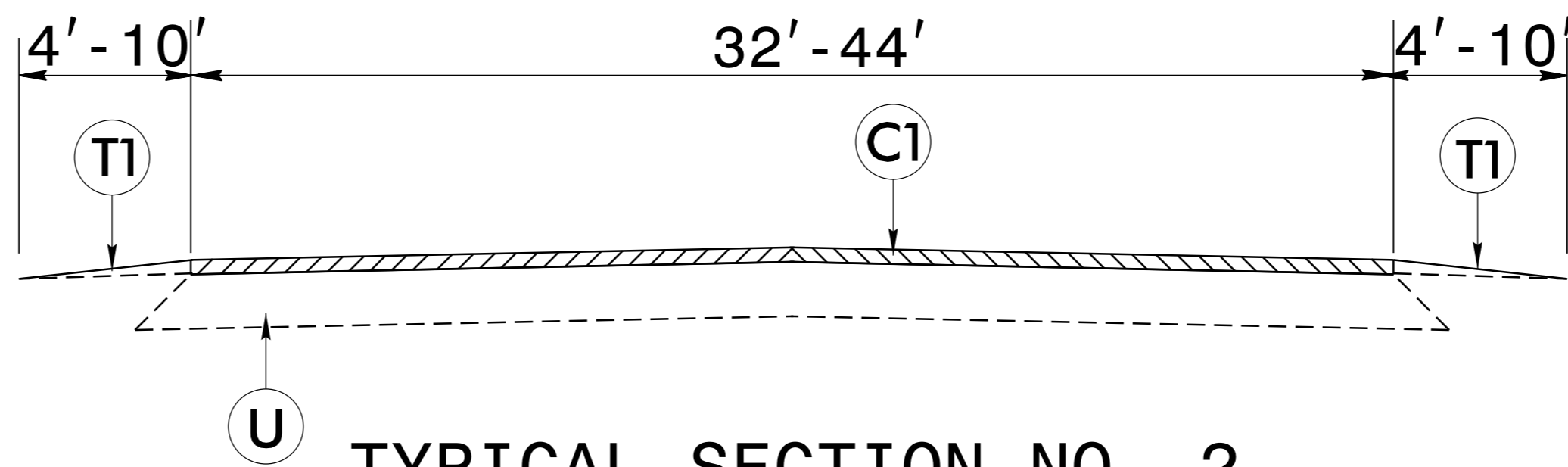
C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
T1	SHOULDER RECONSTRUCTION WITH AGGREGATE SHOULDER BORROW
U	EXISTING ASPHALT
V1	1½" MILLING
V2	0" - 1½" MILLING
V3	½" PROFILE MILLING



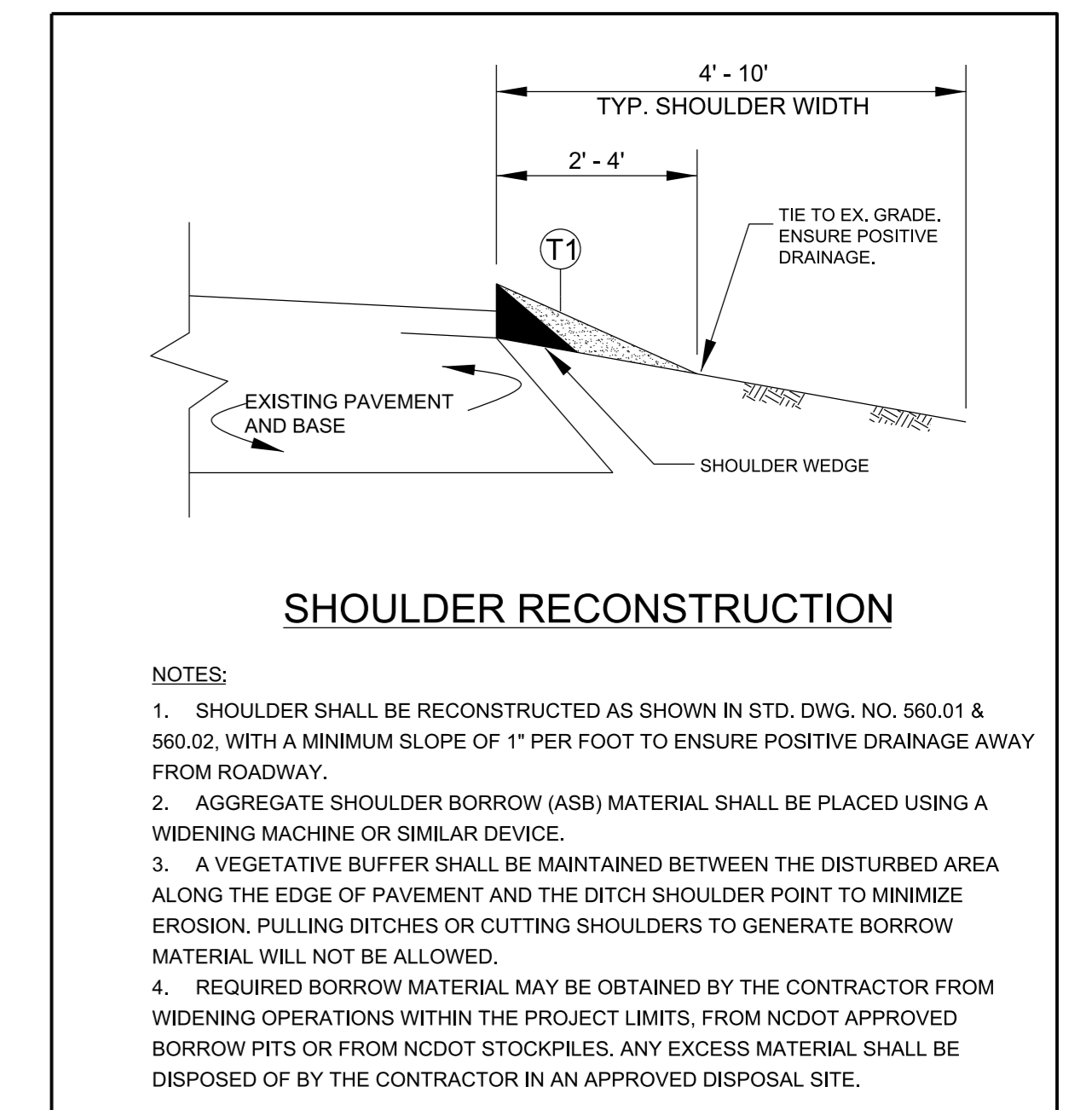
TYPICAL SECTION NO. 1



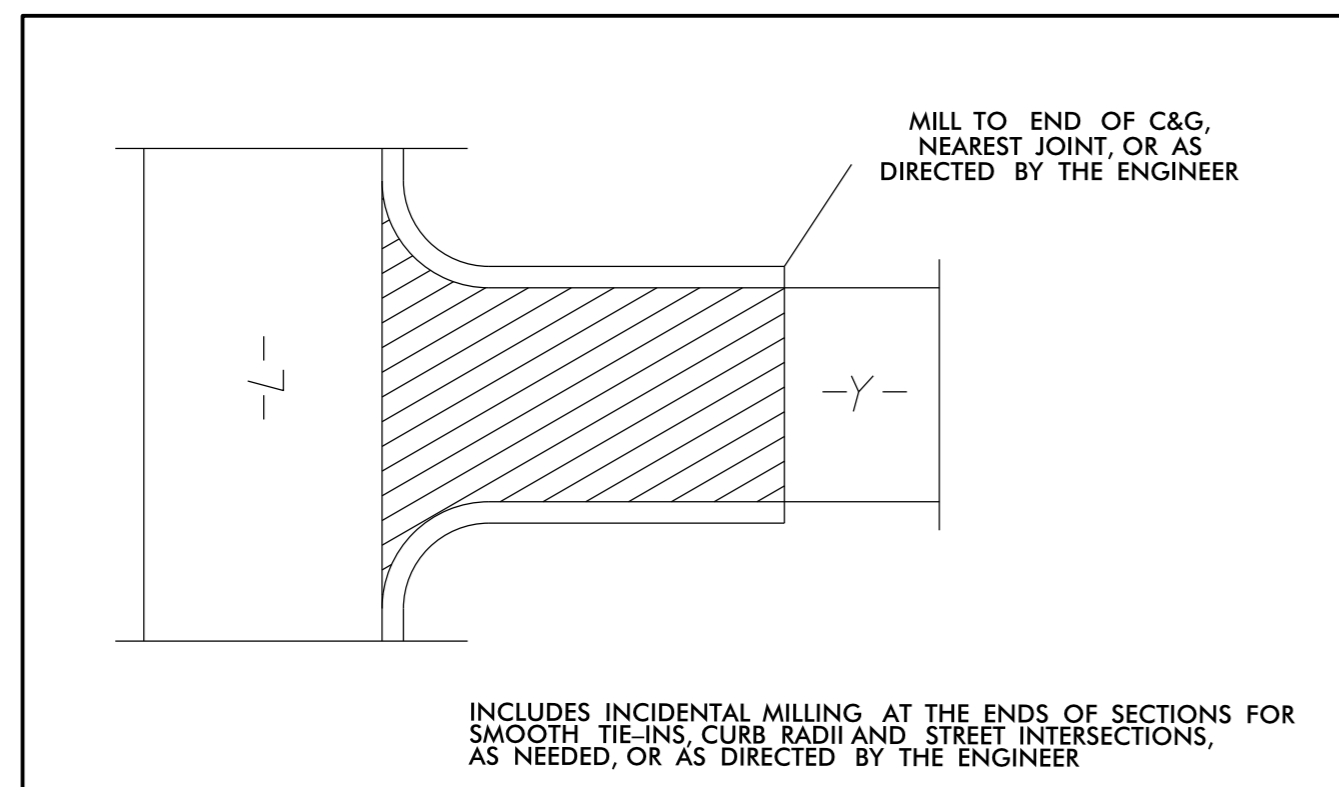
MILLING AT PAVEMENT TIE-INS DETAIL



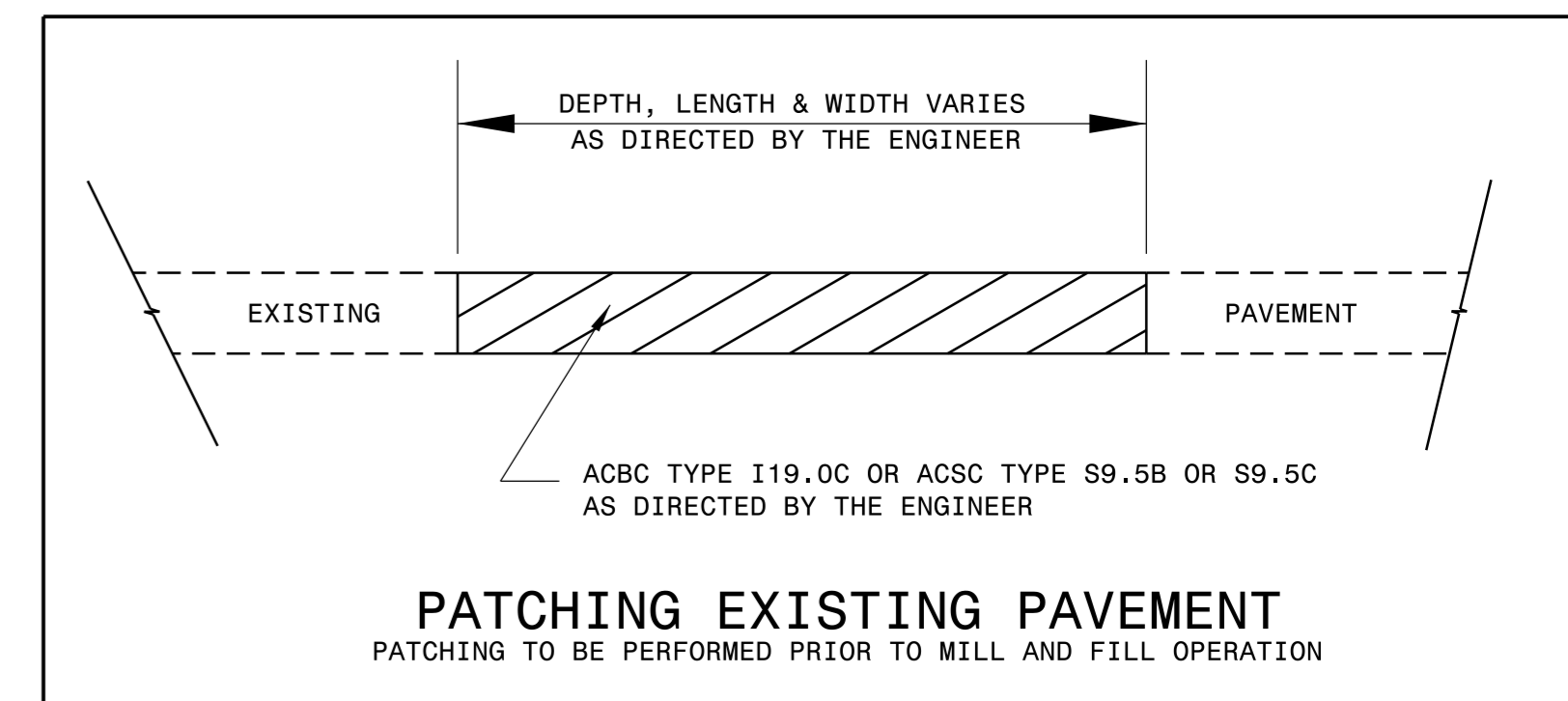
TYPICAL SECTION NO. 2



SHOULDER RECONSTRUCTION



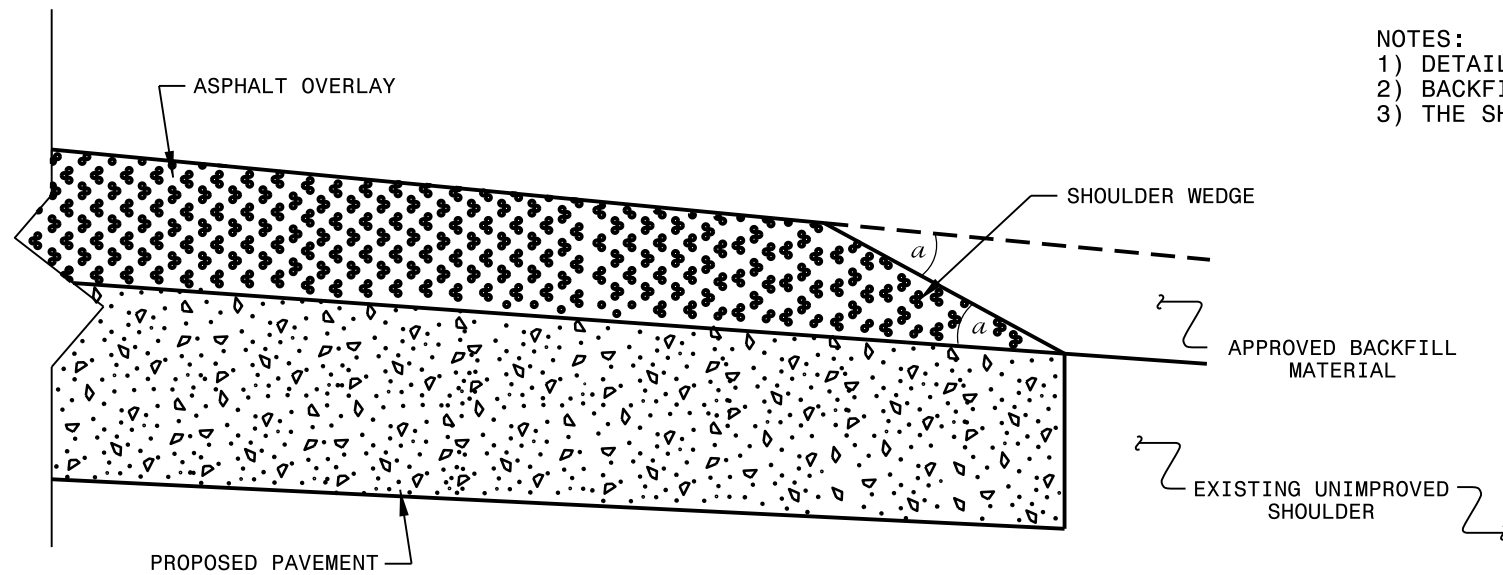
MILLING AT CURB AND GUTTER INTERSECTIONS



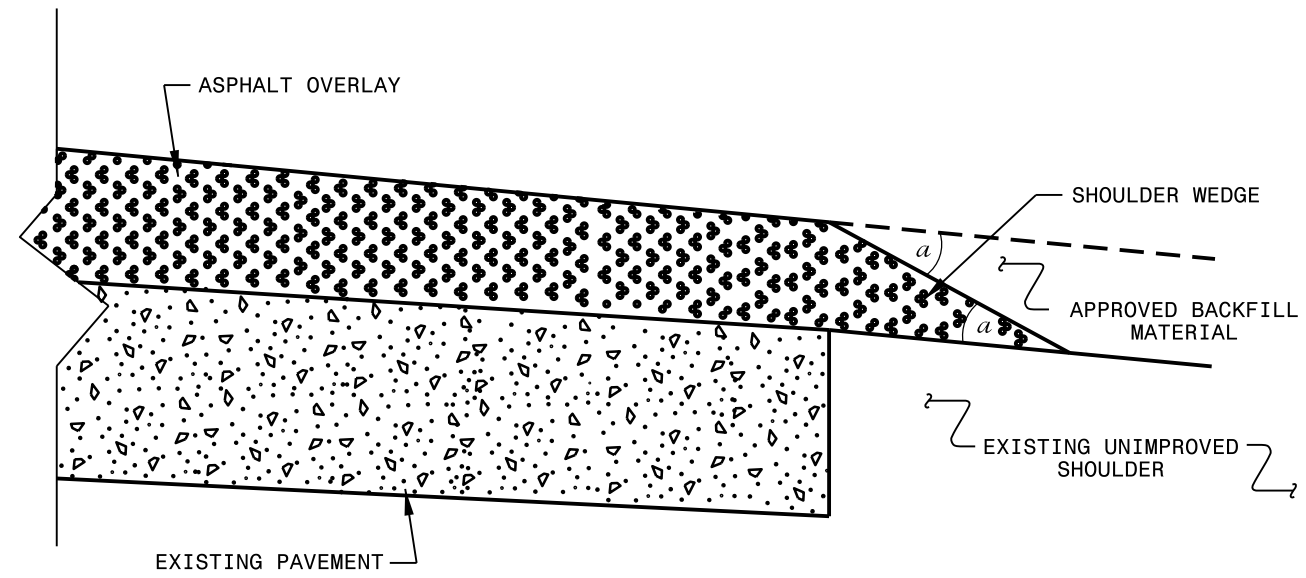
PATCHING EXISTING PAVEMENT

6/2/09 22-FEB-2021 02:33 Work Files\Projects\Resurfacing\2021 Spring\DI\278\Resurf_Typical.s.dgn

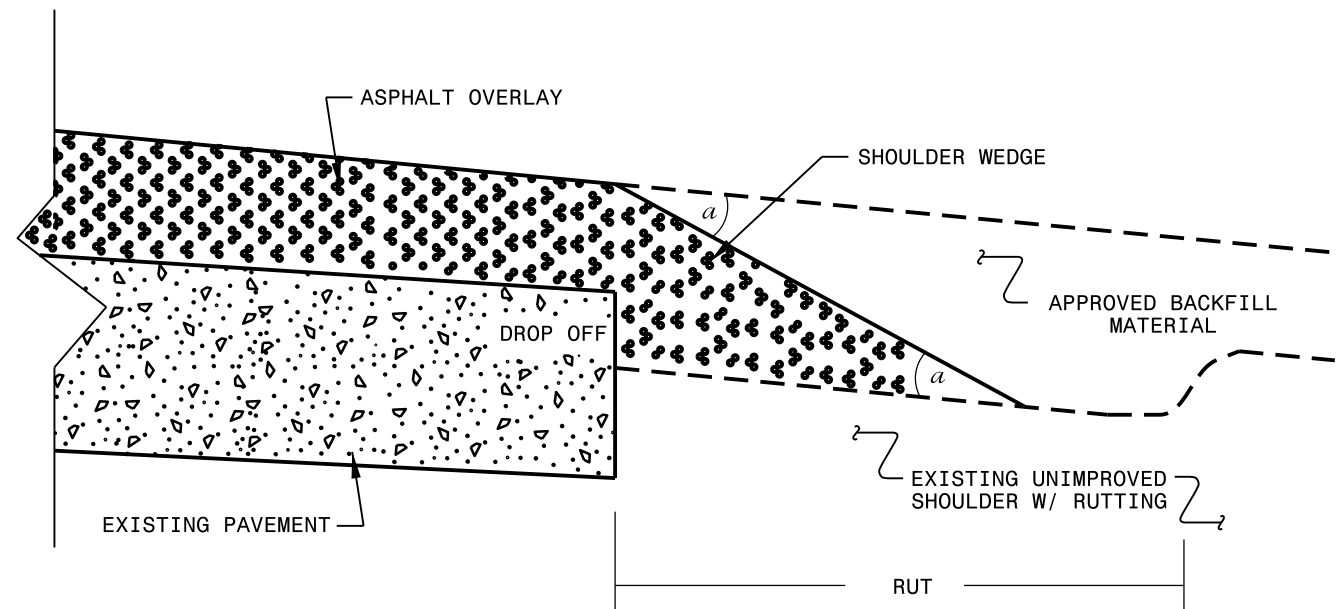
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFc AND ULTRA-THIN BONDED WEARING COURSE.
 - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
 - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



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



SHOULDER WEDGE DETAIL
 (Resurfacing Projects w/ NO Widening)



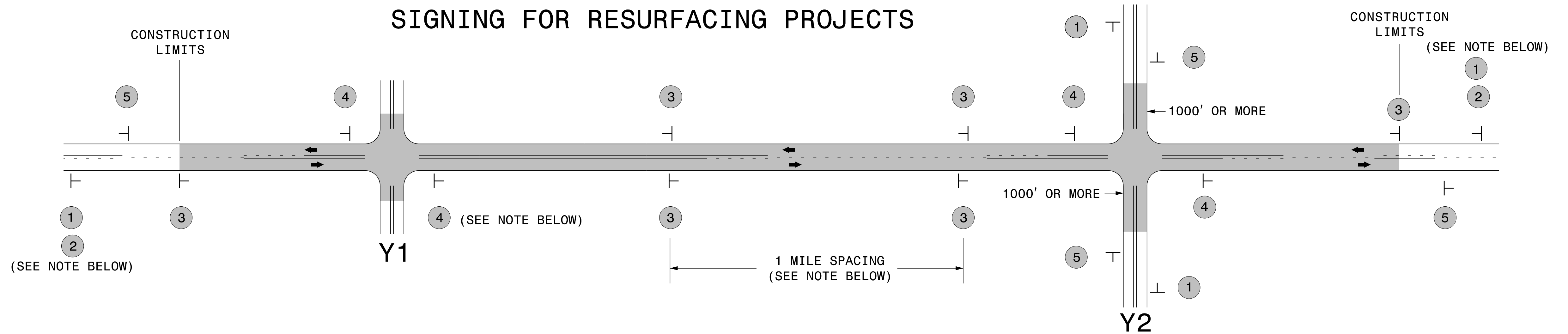
SHOULDER WEDGE DETAIL
 (Resurfacing Adjacent to
 Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
SHOULDER WEDGE DETAILS	
ORIGINAL BY: T.SPELL	DATE: 7-19-11
MODIFIED BY:	DATE: 10/16/12
CHECKED BY:	DATE:
FILE SPEC.: susr/details/stand/shoulderwedgedetail.dgn	

SYSTEMS DESIGN
 USER NAME

SIGNING FOR RESURFACING PROJECTS

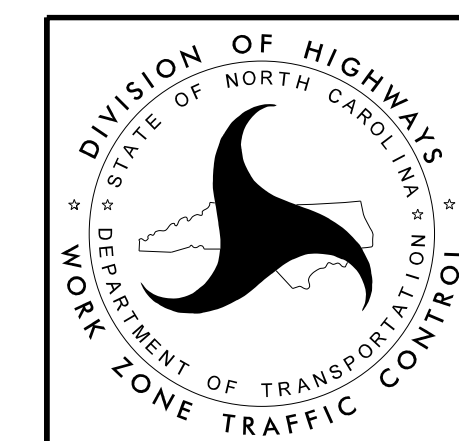


LEGEND	
┆	STATIONARY SIGN
←	DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

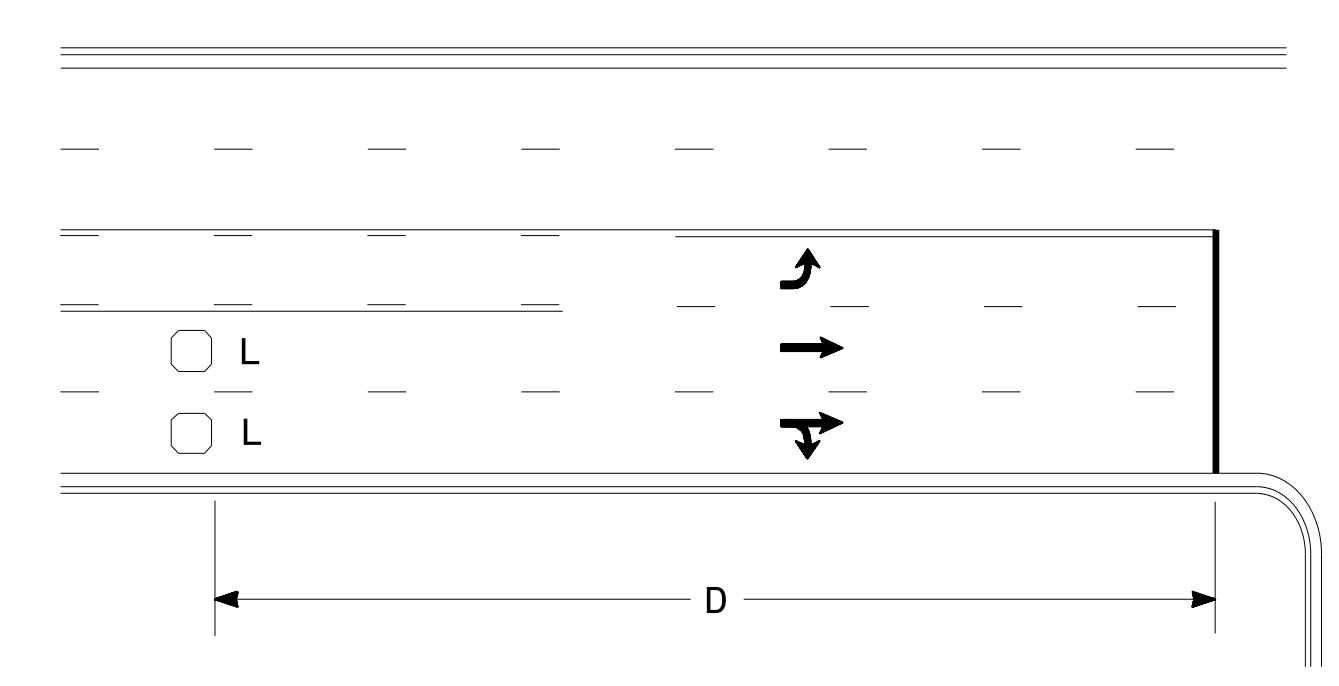
-Y- LINE SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION	MAINLINE (-L-) SIGNING		-Y- LINE SIGNING	
	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.	<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;"> W20-1 48" X 48" </div> <div style="text-align: center;"> W20-7 A 48" X 48" </div> </div> <p>PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.</p>
	2	 W7-3aP 24" X 18"	#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)	
	3	 SP 13107 48" X 48"	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.	
	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.		



RESURFACING
ADVANCE WARNING SIGNS
FOR
RURAL AND SUBURBAN
2 LANE ROADWAYS

High Speed Detection (≥40 mph)

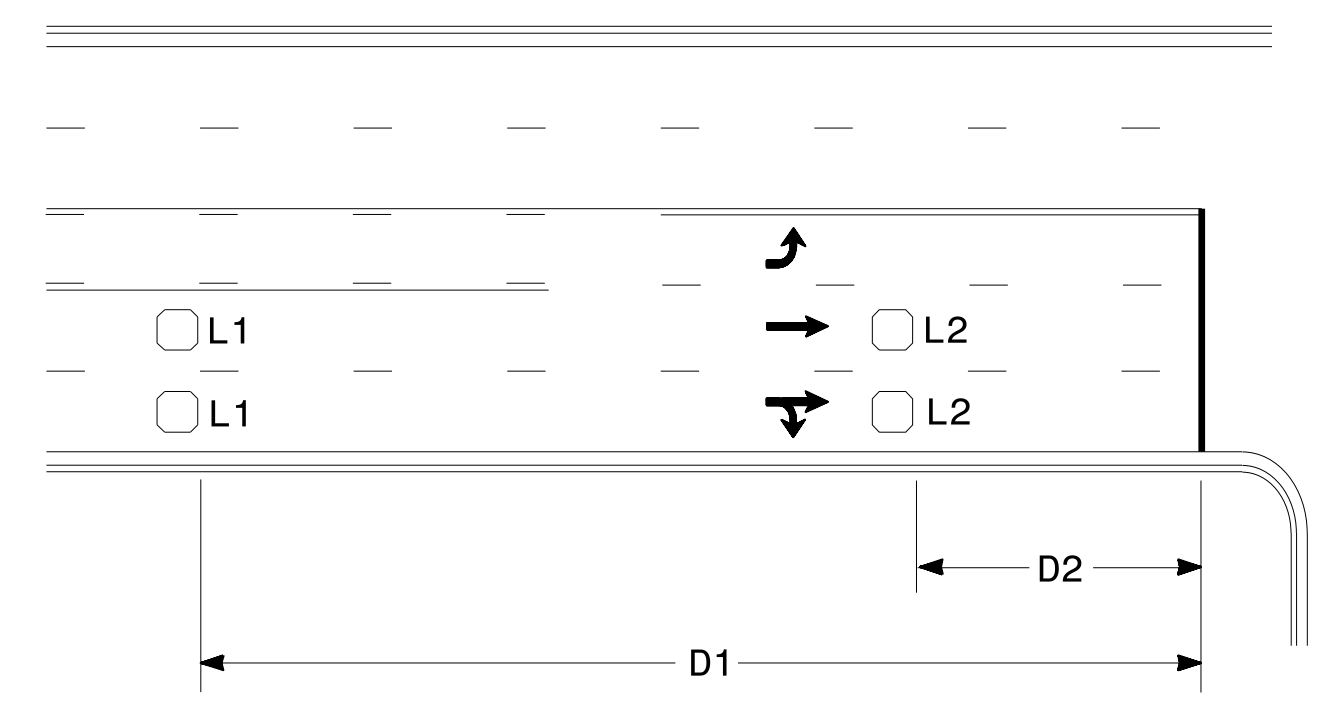


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

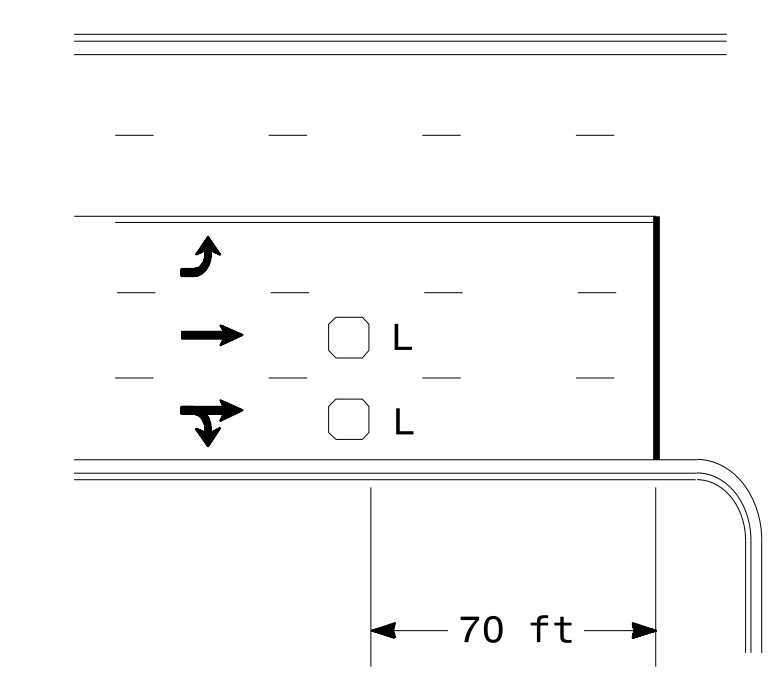


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

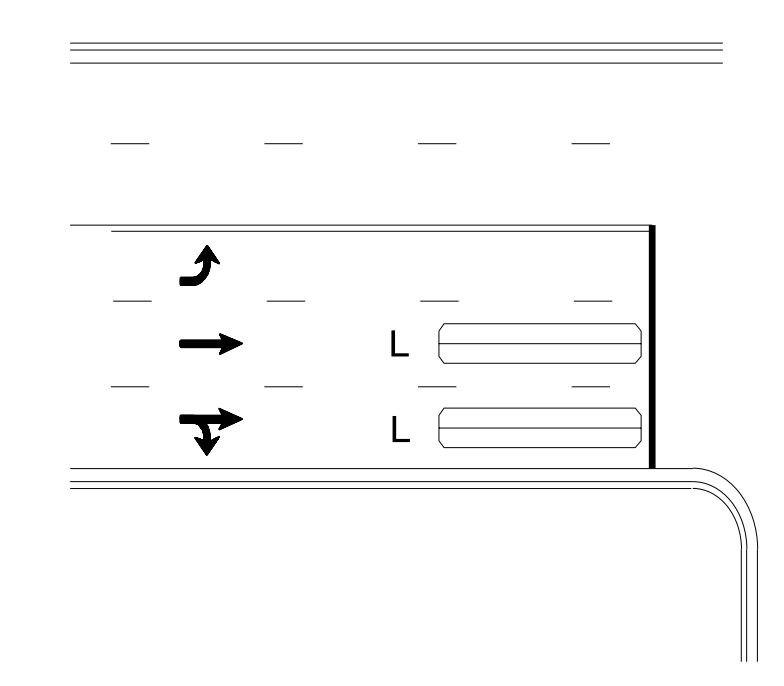
"Stretch" Operation

Low Speed Detection (≤35 mph)



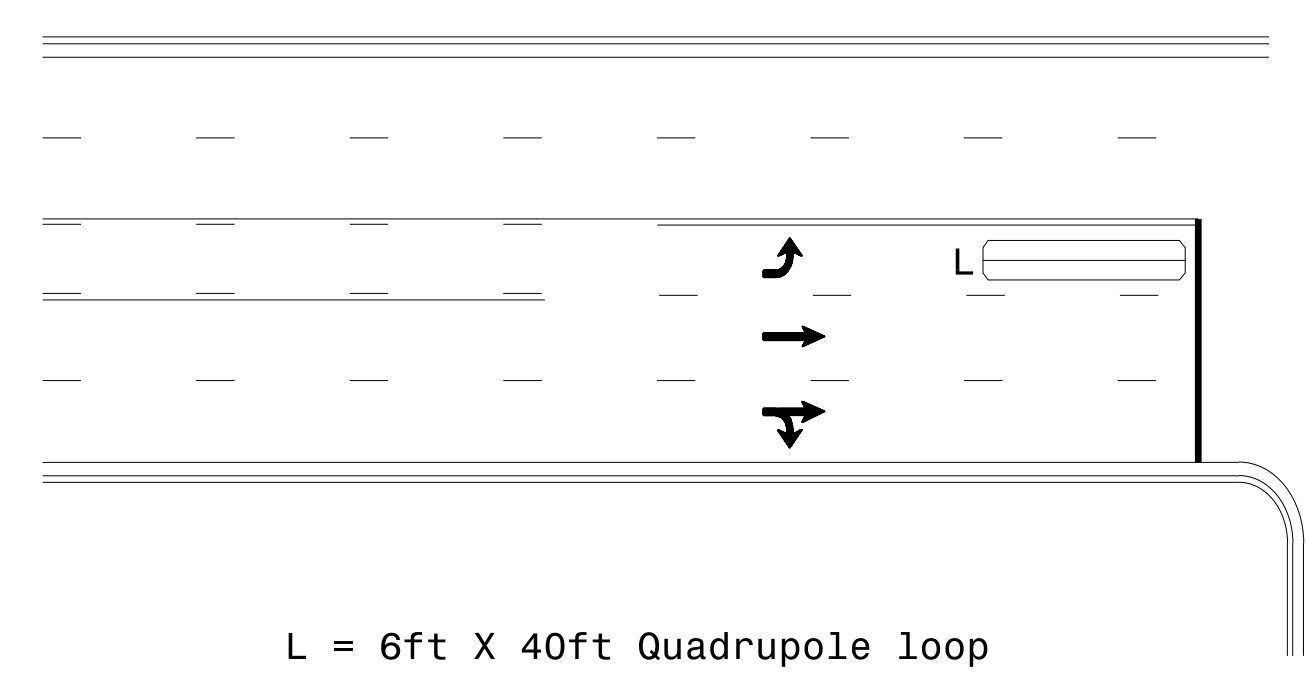
L = 6ft X 6ft
Wired in series

OR



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

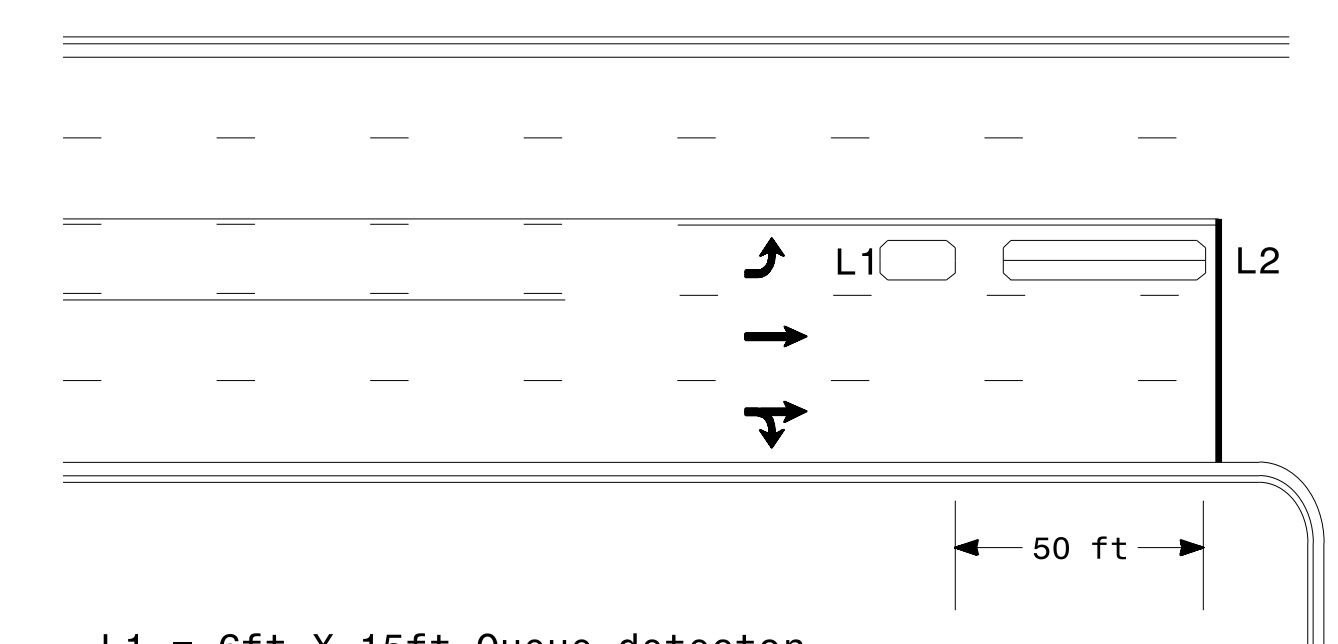
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

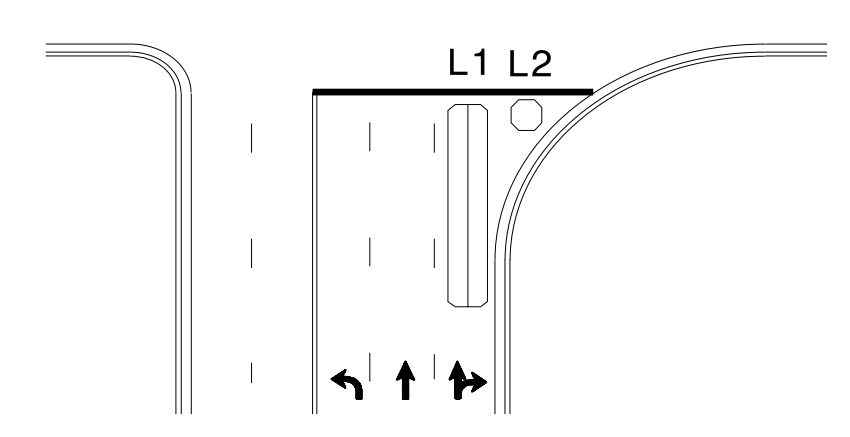
OR



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

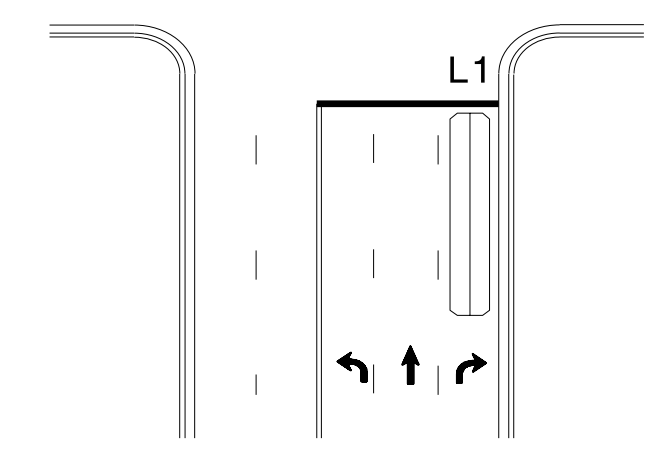
Queue Loop Detection

Right Turn Lane Detection

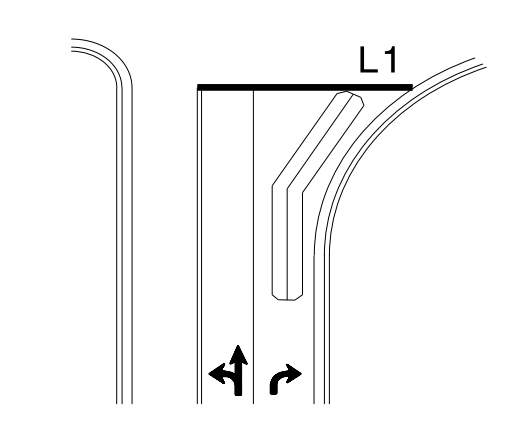


Shared Lane/
Wide Radius Turn

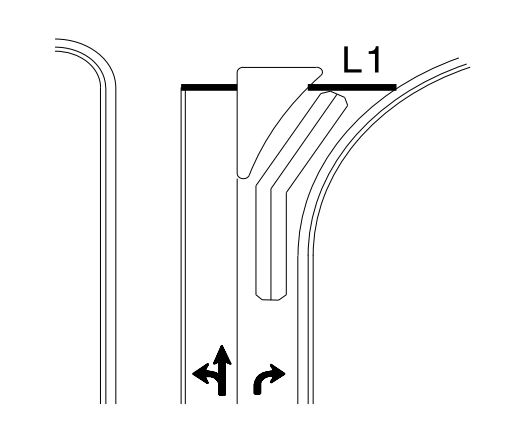
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

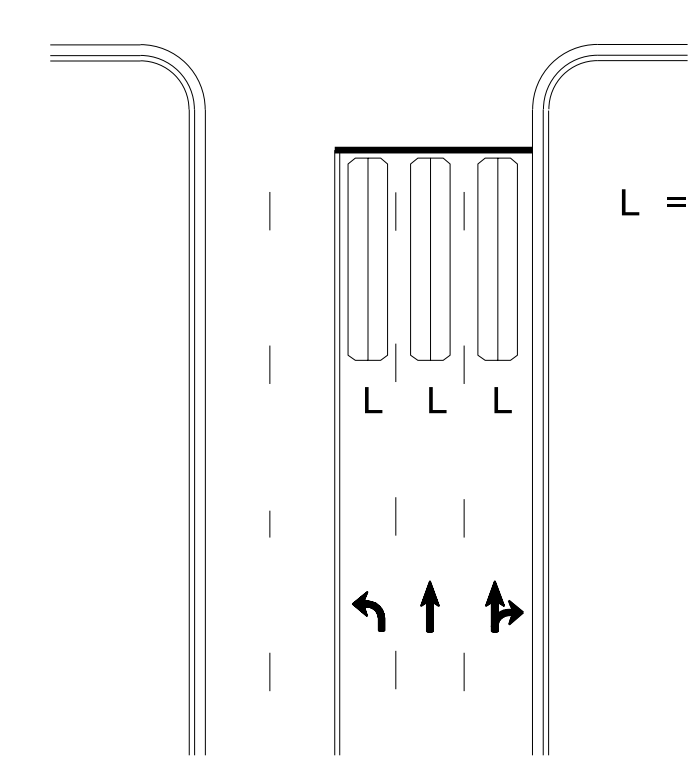


Wide Radius Turn



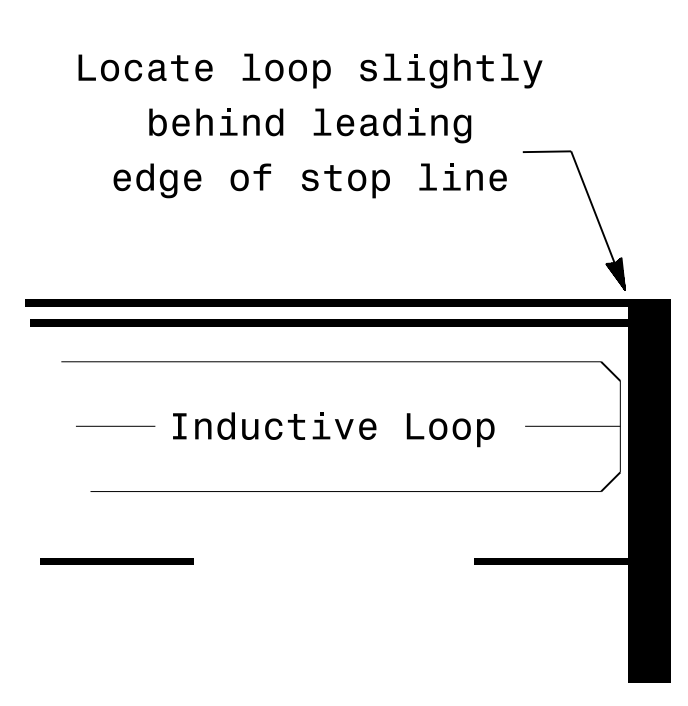
Channelized Turn

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:
REVISIONS	INIT. DATE

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
PAMELA L. ALEXANDER
23489

DocuSigned by:
P. Alexander
1/30/2015 10:44:44 AM
B4756E00CE4E4ED
SIG. INVENTORY NO.

3D:\146-2015-12-29-SIGNAL\Signal Design\Section\Eastern\Region\loop\yp\ca\2015.dgn
 P:\alexander

GUIDELINES FOR LANE WIDTHS ON RESURFACING PROJECTS

Contractor shall place the new pavement markings in accordance with this table and detail unless otherwise directed by the Engineer.

TWO LANE - TWO WAY ROADWAY - 55 MPH		
ROADWAY WIDTH	LANE WIDTH	SHOULDER WIDTH
18'	9' *	0'
20'	10' *	0'
22'	10'	1'
24'	10'	2'
26'	11'	2'
28'	12'	2'
32'	12'	4'

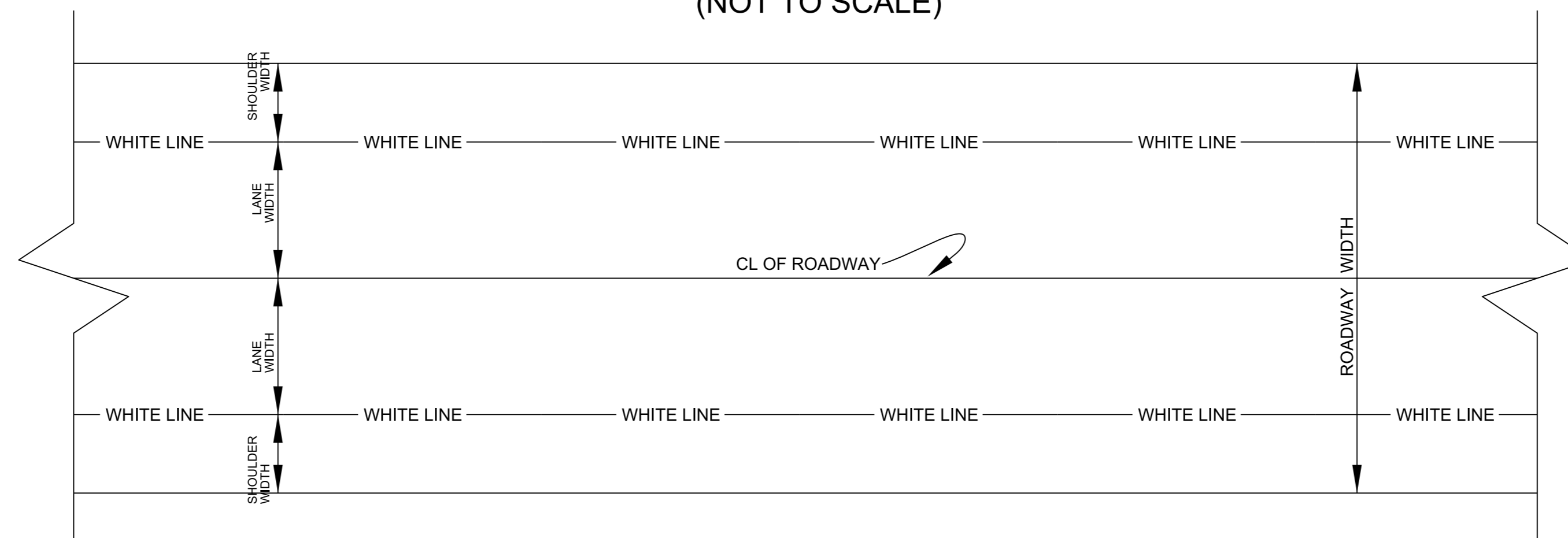
* May vary due to pavement width

TWO LANE - TWO WAY ROADWAY		50
MPH OR LESS		
ROADWAY WIDTH	LANE WIDTH	SHOULDER WIDTH
18'	9' *	0'
20'	10' *	0'
22'	10'	1'
24'	10'	2'
26'	11'	2'
28'	11'	3'
32'	11'	5'

* May vary due to pavement width

SCHEMATIC OF ROADWAY

(NOT TO SCALE)



SUMMARY OF QUANTITIES

												PROJECT NO.		SHEET NO.	TOTAL NO.		
												2021CPT.06.12.10781.1					
												1245000000-E	1260000000-E	1297000000-E		1308000000-E	1330000000-E
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	SHOULDER RECONSTRUCTION	AGGREGATE SHOULDER BORROW	0.5" MILLING	1½" MILLING	0" TO 1.5" MILLING	INCIDENTAL MILLING
										MI	FT	SMI	TON	SY	SY	SY	SY
2021CPT.06.12.10781.1	Robeson	1	NC 211	FROM BCL (MM0) TO SR 2110 (MM6.5)	1	2	2WU	NO	NO	6.5	26	13.00	2,828	99,147	1,369	1,300	3,557
TOTAL FOR MAP NO. 1										6.5		13.00	2,828	99,147	1,369	1,300	3,557
2021CPT.06.12.10781.1	Robeson	2	NC 711	FROM BEG C&G (MM3.15) TO SR 1553 (MM3.5)	2	2	2WU	NO	NO	0.35	32	0.70	152				380
		"	"	FROM SR 1553 (MM 3.5) TO SR 1003 (MM 4.29)	2	2	2WU	NO	NO	0.79	44	1.58	344				
		"	"	FROM SR 1003 (MM 4.29) TO MM (9.53)	2	2	MU	NO	NO	5.24	32	10.48	2,279		267	500	
		"	"	FROM MM 9.53 TO NC 72 (MM 11.19)	2	2		NO	NO	1.66	44	3.32	722				367
TOTAL FOR MAP NO. 2										8.04		16.08	3,497		267	500	747
TOTAL FOR PROJ NO. 2021CPT.06.12.10781.1										14.54		29.08	6,325	99,147	1,636	1,800	4,304
												100,783					
GRAND TOTAL										14.54		29.08	6,325	99,147	1,636	1,800	4,304
												100,783					

												1523000000-E	1575000000-E	1704000000-E	7444000000-E	7456000000-E
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	SURFACE COURSE, S9.5C	ASPHALT BINDER FOR PLANT MIX	PATCHING EXISTING PAVEMENT	INDUCTIVE LOOP SAWCUT	LEAD-IN CABLE (14-2)
										MI	FT	TONS	TONS	TONS	LF	LF
2021CPT.06.12.10781.1	Robeson	1	NC 211	FROM BCL (MM0) TO SR 2110 (MM6.5)	1	2	2WU	NO	NO	6.5	26	11,913	715			
TOTAL FOR MAP NO. 1										6.5		11,913	715			
2021CPT.06.12.10781.1	Robeson	2	NC 711	FROM BEG C&G (MM3.15) TO SR 1553 (MM3.5)	2	2	2WU	NO	NO	0.35	32	554	33			
		"	"	FROM SR 1553 (MM 3.5) TO SR 1003 (MM 4.29)	2	2	2WU	NO	NO	0.79	44	1,714	103		150	
		"	"	FROM SR 1003 (MM 4.29) TO MM (9.53)	2	2	MU	NO	NO	5.24	32	8,197	492		900	100
		"	"	FROM MM 9.53 TO NC 72 (MM 11.19)	2	2		NO	NO	1.66	44	3,640	218	102	650	100
TOTAL FOR MAP NO. 2										8.04		14,105	846	102	1,700	200
TOTAL FOR PROJ NO. 2021CPT.06.12.10781.1										14.54		26,018	1,561	102	1,700	200
GRAND TOTAL										14.54		26,018	1,561	102	1,700	200

THERMOPLASTIC AND PAINT QUANTITIES											PROJECT NO.		SHEET NO.	TOTAL NO.							
											2021CPT.06.12.10781.1										
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4413000000-E	4457000000-N	4685000000-E		4695000000-E	4700000000-E	4725000000-E				4810000000-E	
										WORK ZONE ADVANCE/GENERAL WARNING SIGNING	TEMPORARY TRAFFIC CONTROL	4" X 90 M WHITE THERMO	4" X 90 M YELLOW THERMO	8" X 90 M WHITE THERMO	12" X 90 M YELLOW THERMO	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR ARROW 90 M	THERMO STR & RT ARROW 90 M	4" WHITE PAINT	4" YELLOW PAINT
										SF	LS	LF	LF	LF	LF	EA	EA	EA	EA	LF	LF
2021CPT.06.12.10781.1	Robeson	1	NC 211	FROM BCL (MM0) TO SR 2110 (MM6.5)	1	2	2WU	6.5	26	310	1	69,940	57,069	200	1,400	14				65,260	57,069
TOTAL FOR MAP NO. 1							6.5			310	1	69,940	57,069	200	1,400	14				65,260	57,069
2021CPT.06.12.10781.1	Robeson	2	NC 711	FROM BEG C&G (MM3.15) TO SR 1553 (MM3.5)	2	2	2WU	0.35	32	75		3,850	3,988	24	36	4	2	2	1	3,873	4,023
		"	"	FROM SR 1553 (MM 3.5) TO SR 1003 (MM 4.29)	2	2	2WU	0.79	44			8,773	9,088	54	81	9	2	2	1	8,828	9,169
		"	"	FROM SR 1003 (MM 4.29) TO MM (9.53)	2	2	MU	5.24	32	144		58,369	60,460	362	542	15	2	2	1	58,731	61,002
		"	"	FROM MM 9.53 TO NC 72 (MM 11.19)	2	2		1.66	44	91		18,441	19,102	114	171	47	2	2	1	18,556	19,273
TOTAL FOR MAP NO. 2							8.04			310		89,433	92,638	554	830	75	8	8	4	89,988	93,467
TOTAL FOR PROJ NO. 2021CPT.06.12.10781.1							14.54			620	1	159,373	149,707	754	2,230	89	8	8	4	155,248	150,536
GRAND TOTAL							14.54			620	1	159,373	149,707	754	2,230	89	8	8	4	155,248	150,536
											309,080				109				305,784		
											309,080				109				305,784		

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	4820000000-E		4845000000-N				4891000000-E	4900000000-N	
										8" WHITE PAINT	8" YELLOW PAINT	PAINT LT ARROW	PAINT STR ARROW	PAINT LT & RT ARROW	PAINT STR & RT ARROW	24" X 90 M WHITE THERMO	YELLOW & YELLOW MARKERS	CRYSTAL & RED MARKERS
										LF	LF	EA	EA	EA	EA	LF	EA	EA
2021CPT.06.12.10781.1	Robeson	1	NC 211	FROM BCL (MM0) TO SR 2110 (MM6.5)	1	2	2WU	6.5	26	50		14				50	510	75
TOTAL FOR MAP NO. 1							6.5			50		14				50	510	75
2021CPT.06.12.10781.1	Robeson	2	NC 711	FROM BEG C&G (MM3.15) TO SR 1553 (MM3.5)	2	2	2WU	0.35	32	40	36	4	2	1		8	29	15
		"	"	FROM SR 1553 (MM 3.5) TO SR 1003 (MM 4.29)	2	2	2WU	0.79	44	16	81	9	2	1		16	65	34
		"	"	FROM SR 1003 (MM 4.29) TO MM (9.53)	2	2	MU	5.24	32	104	542	15		2		104	432	226
		"	"	FROM MM 9.53 TO NC 72 (MM 11.19)	2	2		1.66	44	33	171	47	2		1	33	137	71
TOTAL FOR MAP NO. 2							8.04			193	830	75	6	4	1	161	663	346
TOTAL FOR PROJ NO. 2021CPT.06.12.10781.1							14.54			243	830	89	6	4	1	211	1,173	421
GRAND TOTAL							14.54			243	830	89	6	4	1	211	1,173	421
											1,073		830		100		1,594	