

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION 6

PLANS

Letting Date: November 2, 2022

CONTRACT ID: DF00417

TIP NO.: -----

FEDERAL AID NO.: STATE FUNDED

WBS ELEMENT NO.: 2023CPT.06.06.10431.1 & 2023CPT.06.06.20431.1

ROUTE NO.: NC 210 & SR 1610

LOCATION: VARIOUS

COUNTY: HARNETT

LENGTH OF PROJECT: 10.20 MILES

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

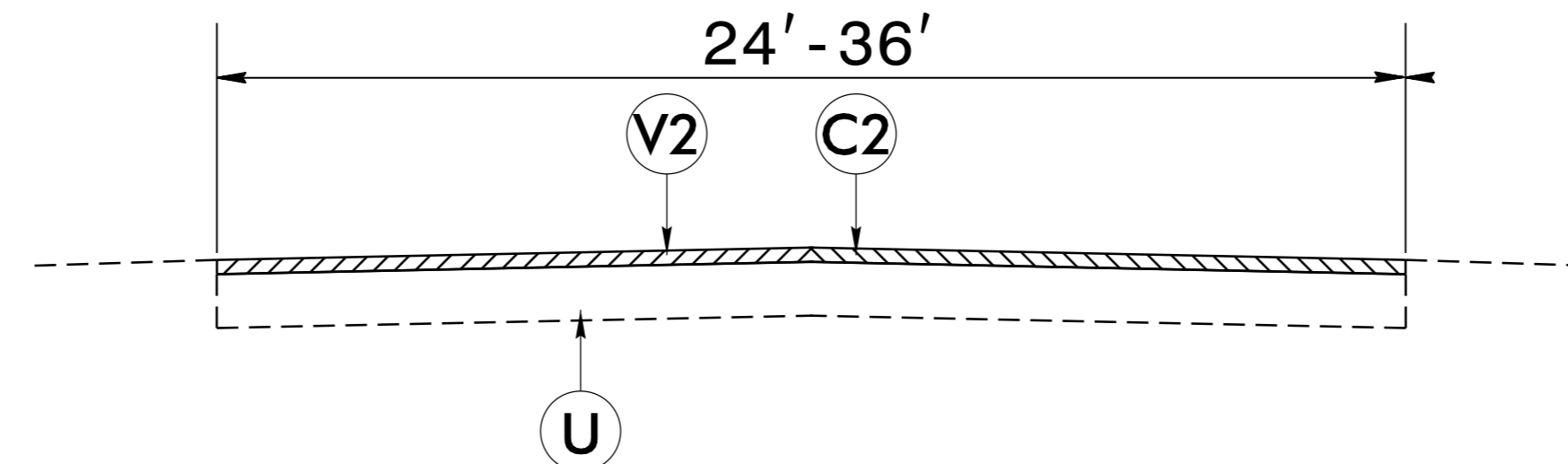
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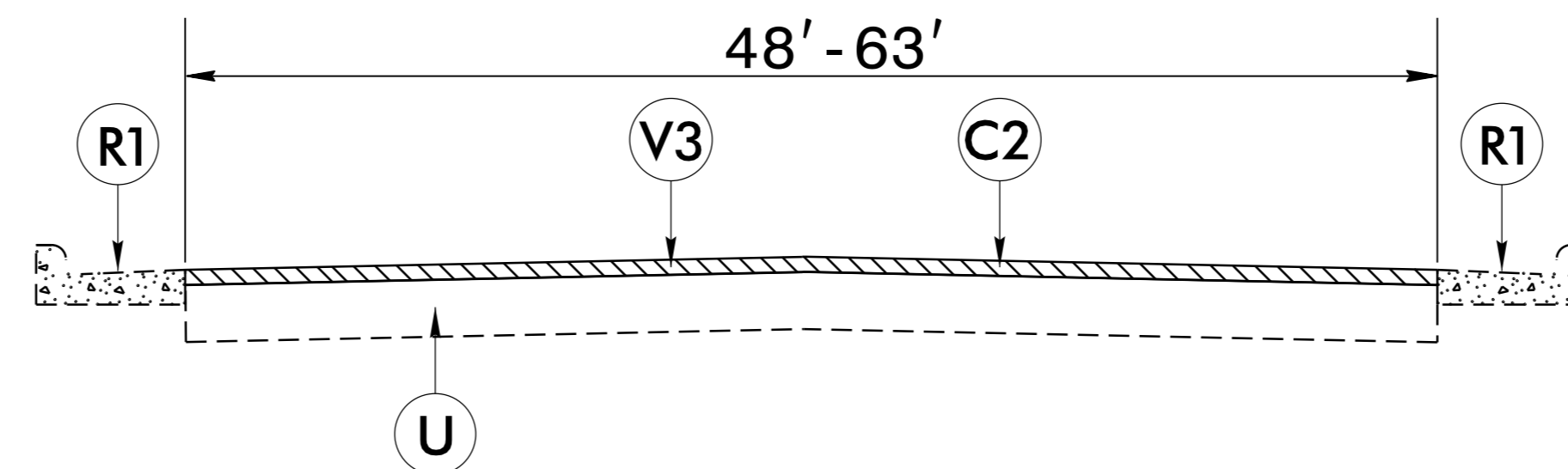
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PAVEMENT SCHEDULE

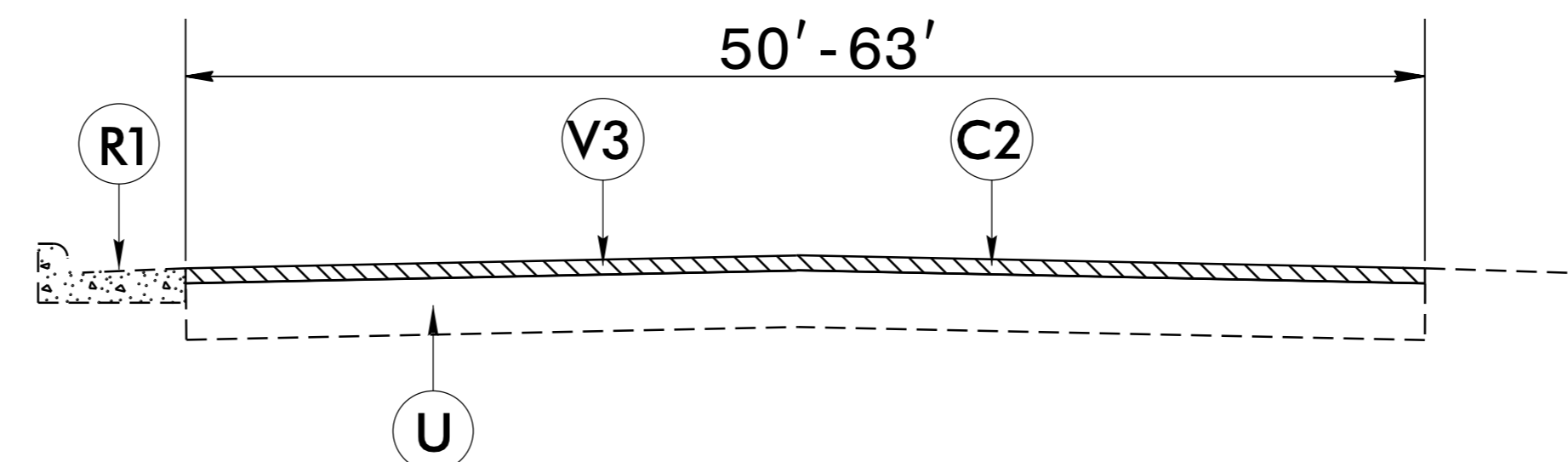
C1	1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
R1	EXISTING CURB AND GUTTER
U	EXISTING ASPHALT PAVEMENT
V1	0" - 1½" MILLING
V2	¾" MILLING
V3	1½" MILLING



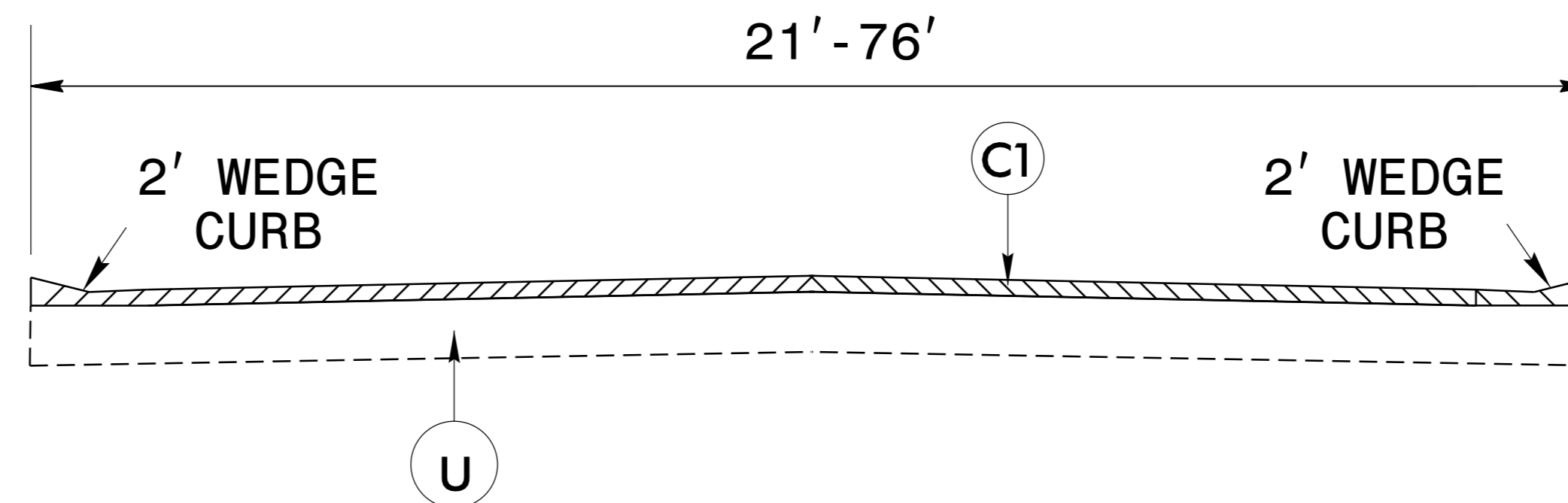
TYPICAL SECTION NO. 1



TYPICAL SECTION NO. 2



TYPICAL SECTION NO. 3



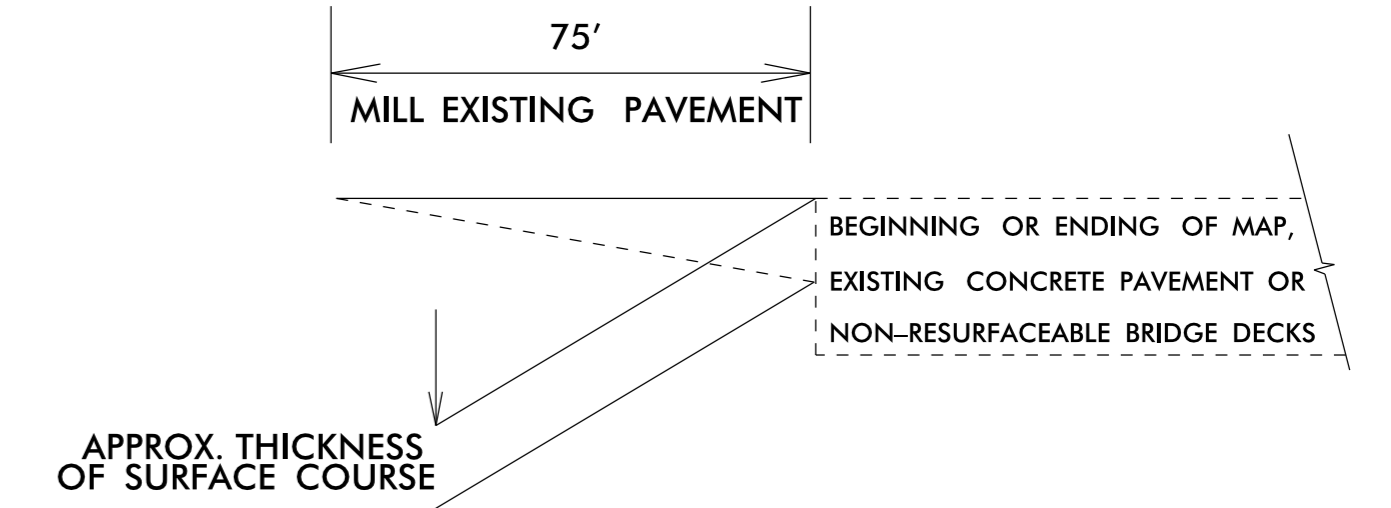
TYPICAL SECTION NO. 4

NOTES TO CONTRACTOR

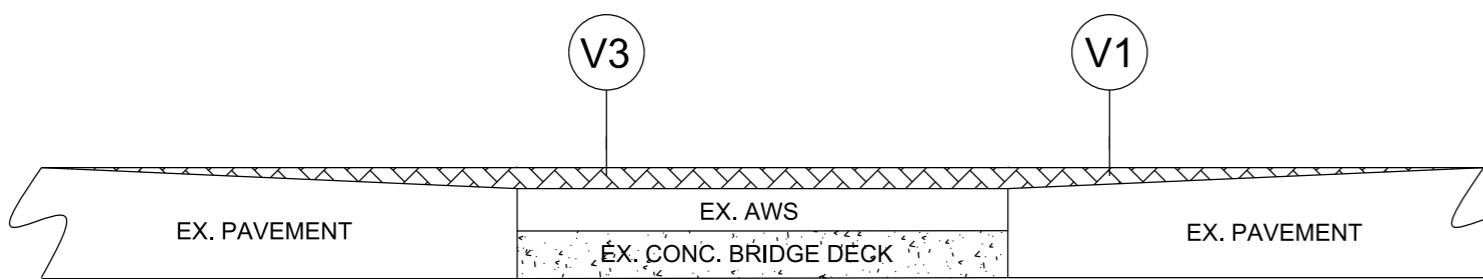
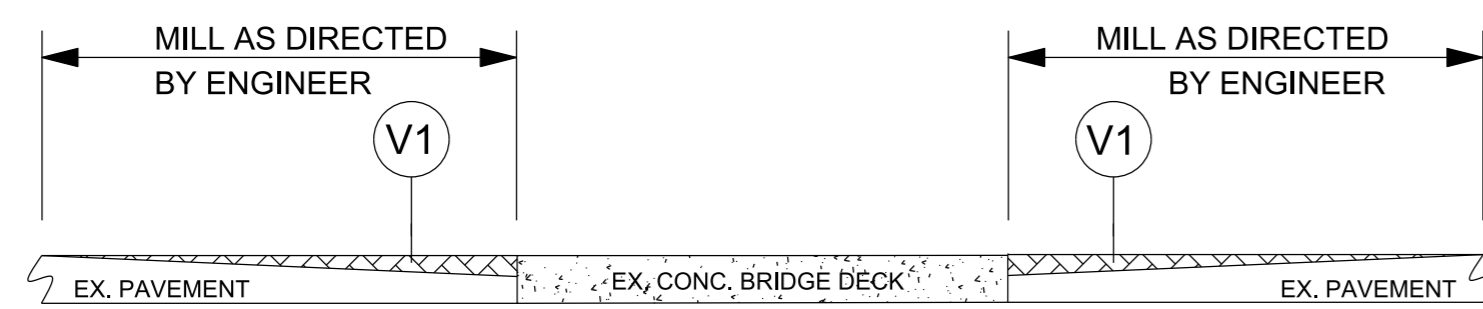
FOR SURFACE MIXES OVER 1" IN THICKNESS, MILL THE EXISTING PAVEMENT IN ACCORDANCE WITH THE FOLLOWING SKETCH AS DIRECTED BY THE ENGINEER.

LOCATIONS SHALL INCLUDE TIES INTO EXISTING CONCRETE PAVEMENT, AT BRIDGE APPROACHES WHERE THE BRIDGE WILL NOT BE RESURFACED, AND AT THE BEGINNING AND ENDING POINT OF EACH RESURFACING MAP.

PERFORM THE WORK IN ACCORDANCE WITH SECTION 607 OF THE JANUARY 2018 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. RESURFACING WILL BE ACCOMPLISHED AT THE SAME TIME AS THE MILLING OPERATION.

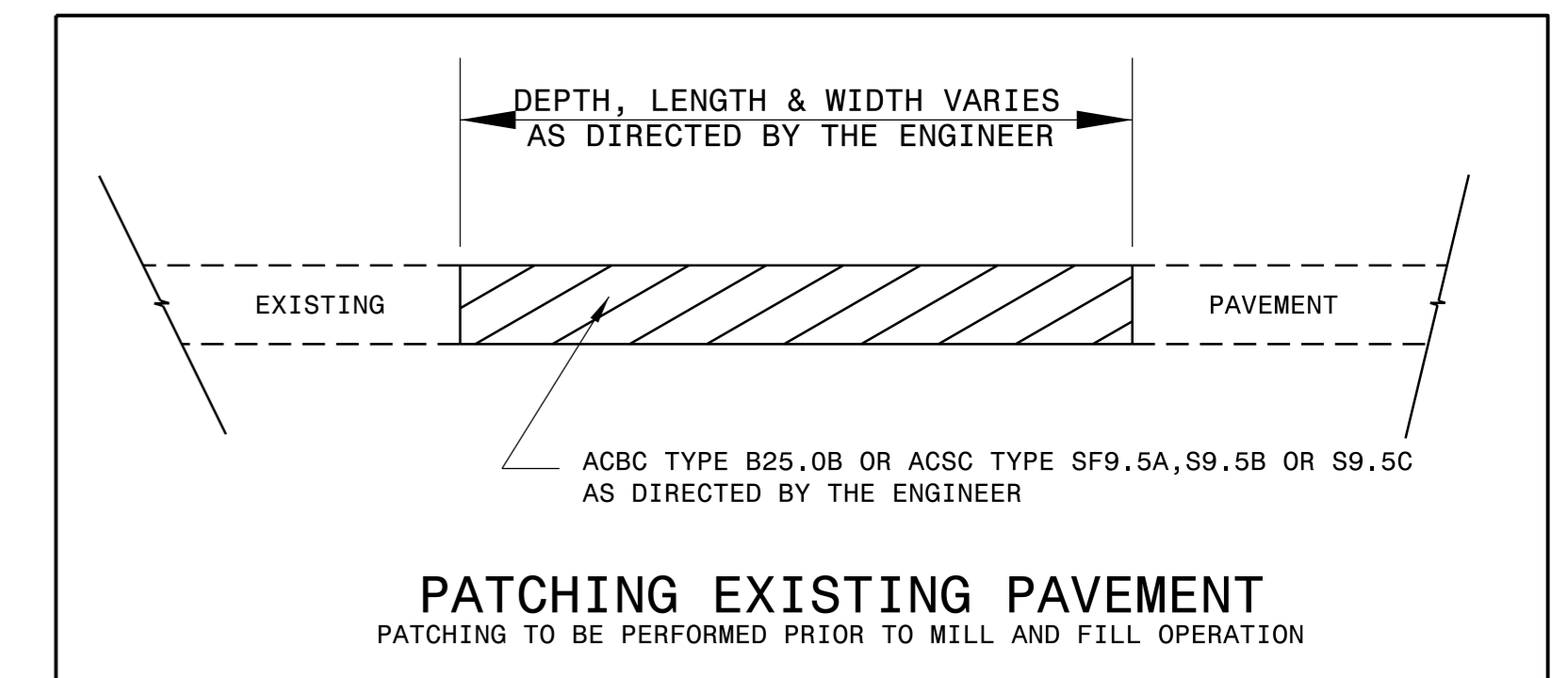


MILLING AT PAVEMENT TIE-INS DETAIL



MILLING APPROACHES

NOTE: MILLING SHALL BE PERFORMED AT RR CROSSINGS, BRIDGE DECKS AND BRIDGE APPROACHES AS DIRECTED BY THE ENGINEER, IN ACCORDANCE WITH THIS DETAIL.

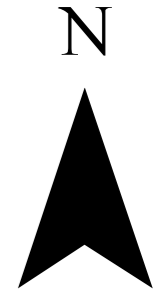
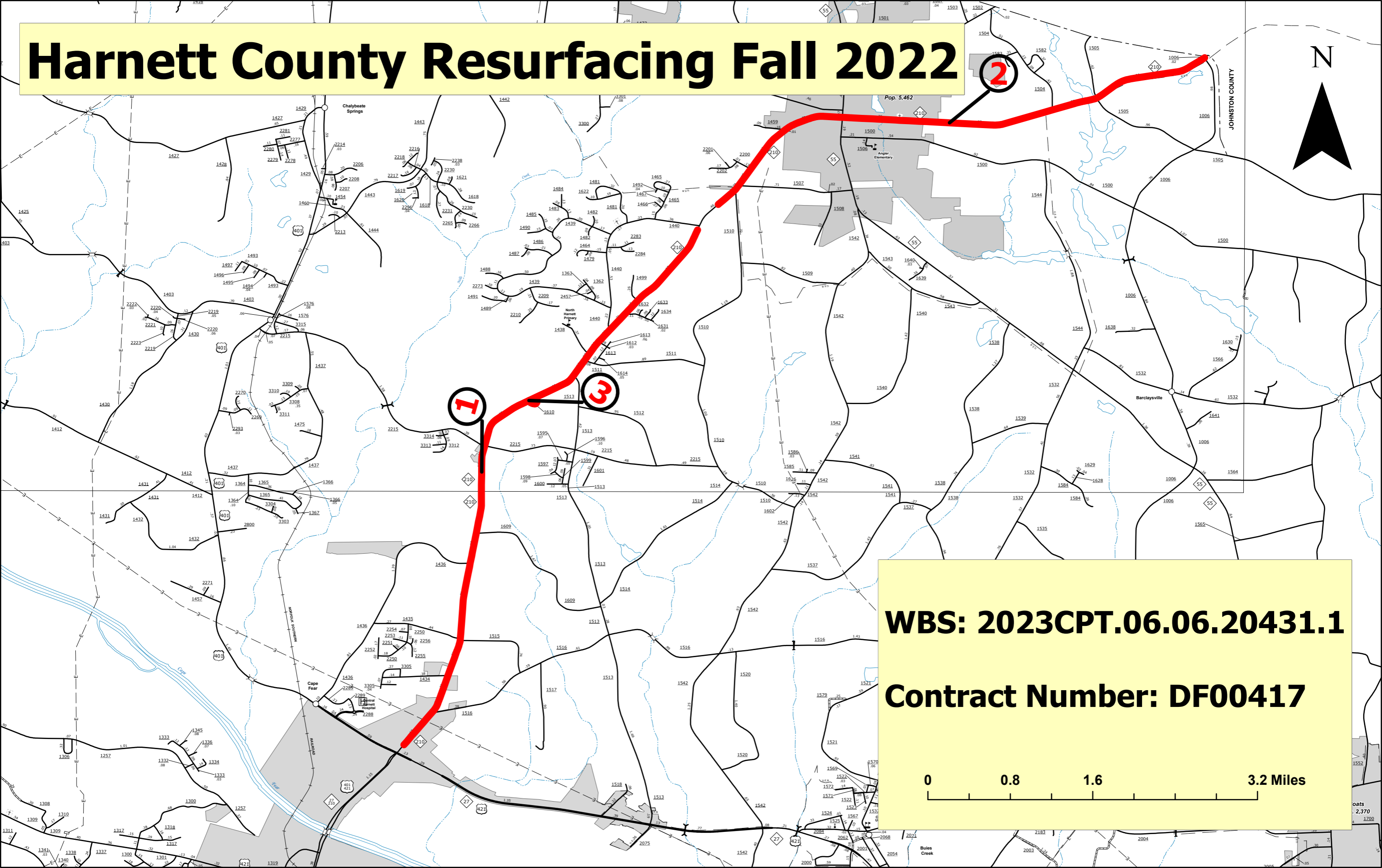


PATCHING EXISTING PAVEMENT
PATCHING TO BE PERFORMED PRIOR TO MILL AND FILL OPERATION

6/2/99

28 SEP 2022 10:16 AM k Files\Projects\Resurfacing\2022 Fall\ND2\Harnett\typ.dgn

Harnett County Resurfacing Fall 2022

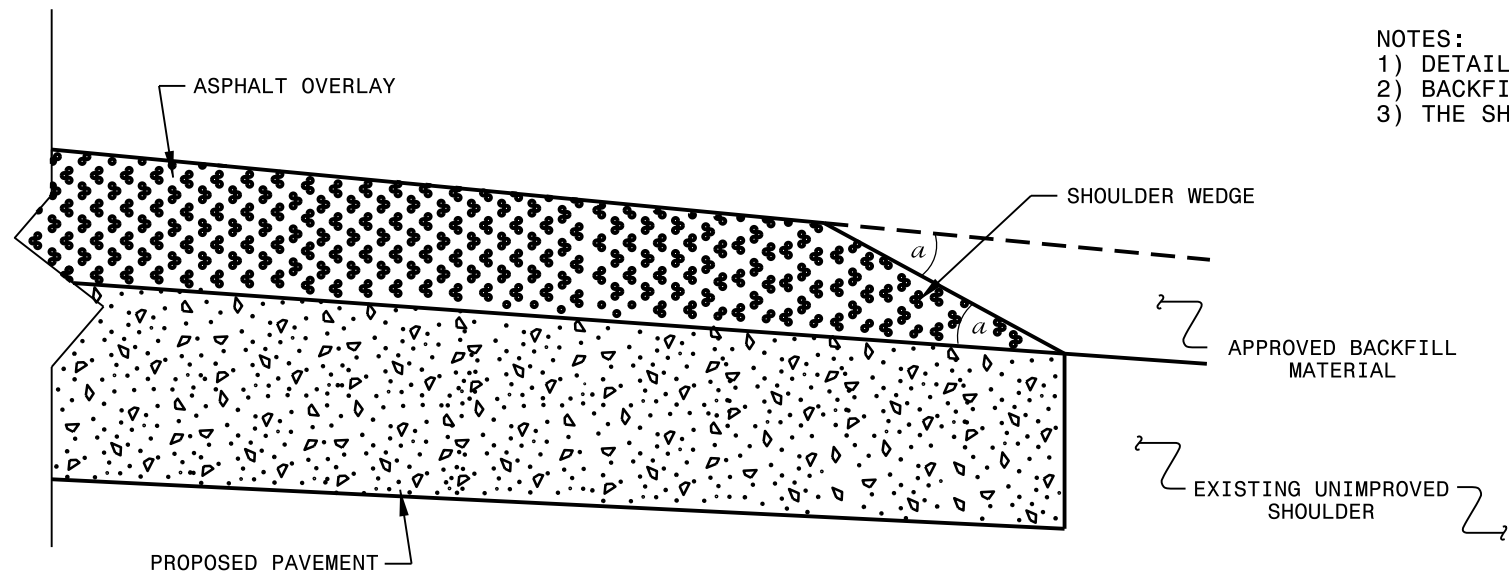


WBS: 2023CPT.06.06.20431.1

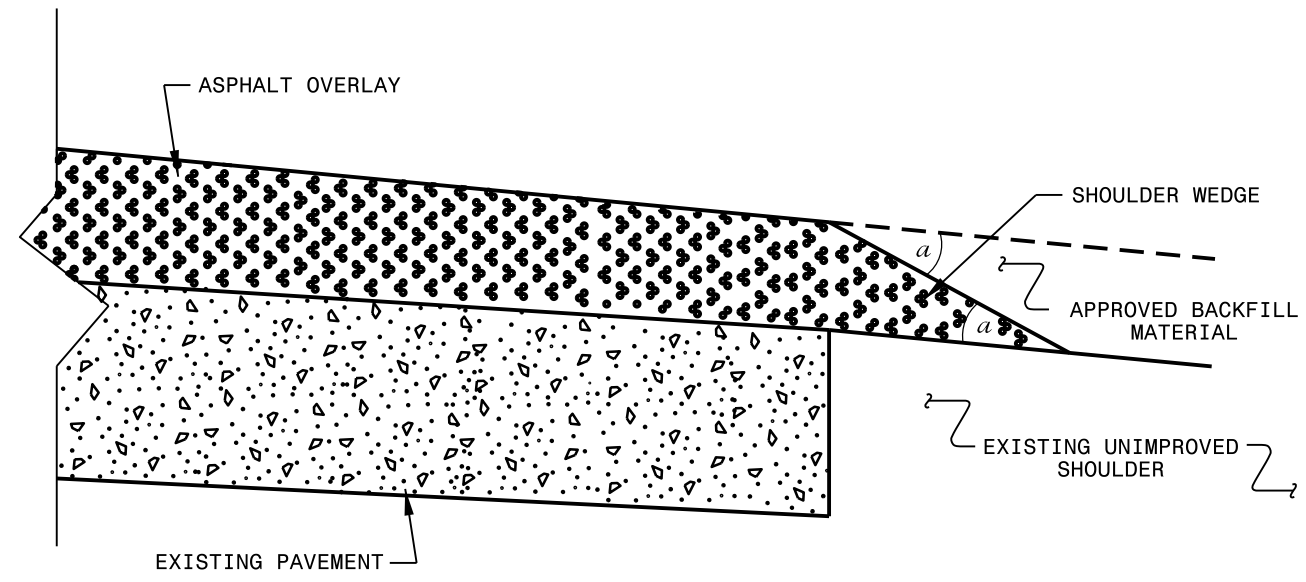
Contract Number: DF00417

0 0.8 1.6 3.2 Miles

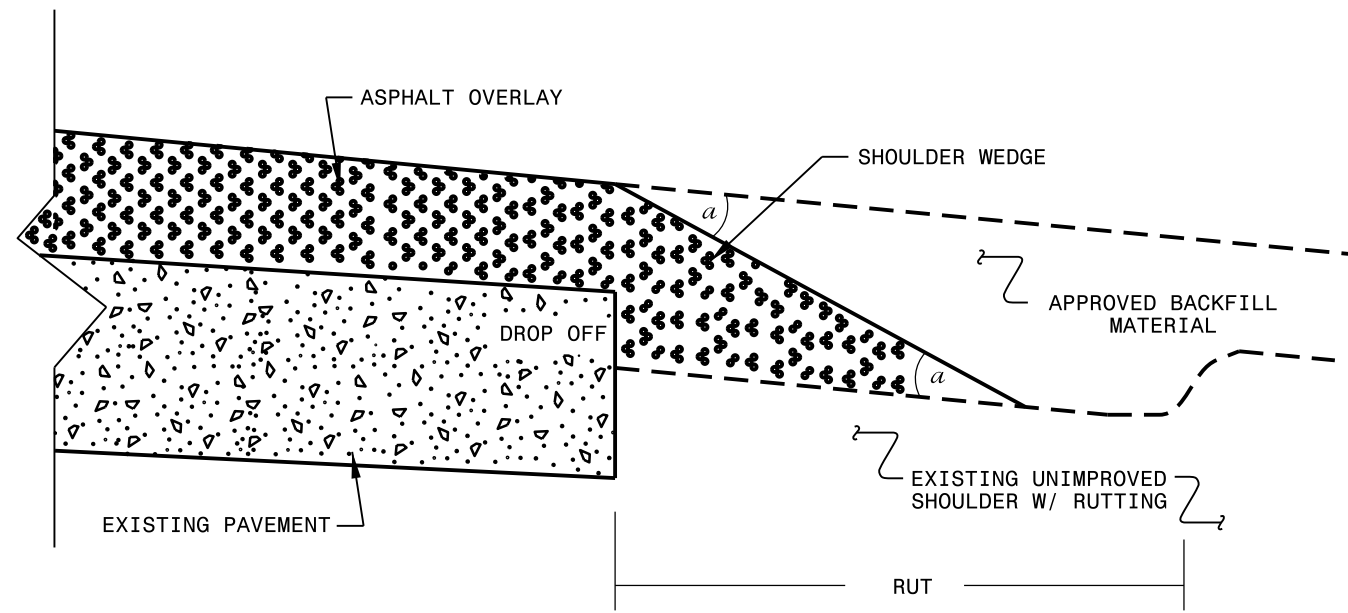
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFD AND ULTRA-THIN BONDED WEARING COURSE.
 - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
 - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



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			

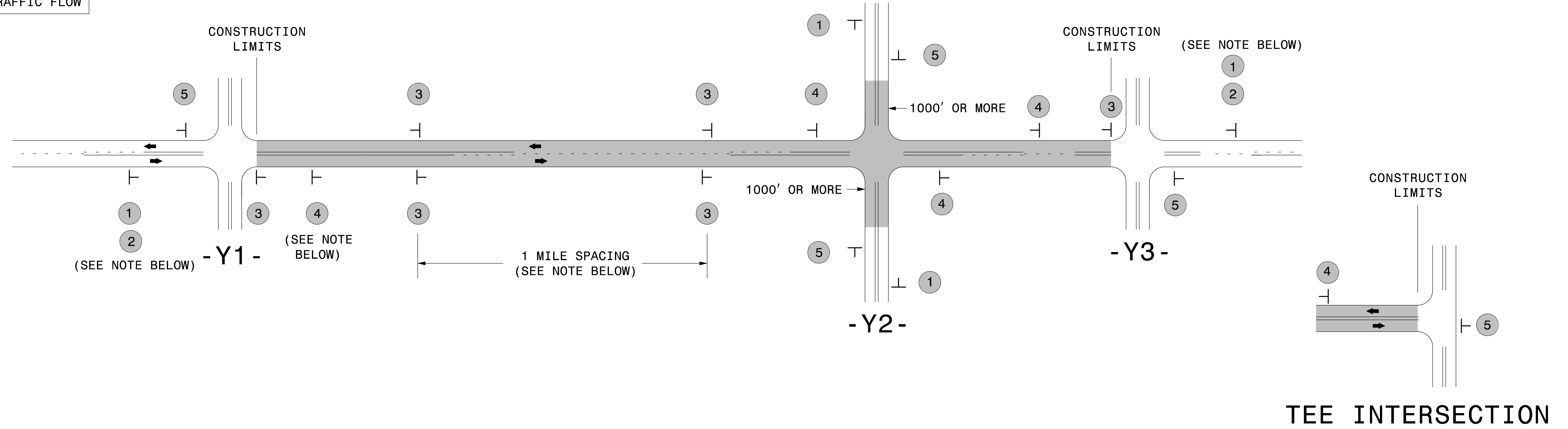
SYSTEM: 06/06/11
 USER: T.SPELL
 FILE: susr/details/stand/shoulderwedgedetail.dgn

SIGNING FOR RESURFACING PROJECTS

LEGEND

┆ STATIONARY SIGN

← DIRECTION OF TRAFFIC FLOW



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	 <small>W7-3aP 24" X 18"</small>	#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	 <small>SP 13107 48" X 48"</small>	- 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	 <small>SP 13106 48" X 48"</small>	- 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	 <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.

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.

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 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

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)



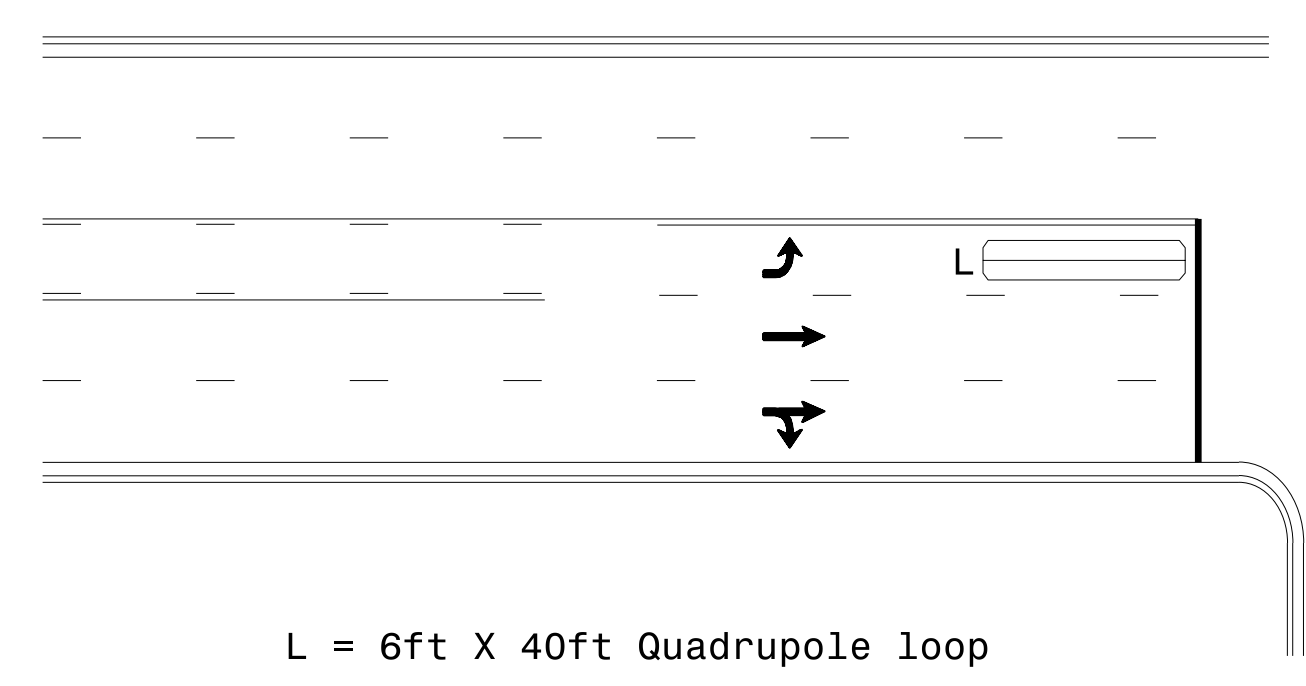
L = 6ft X 6ft
Wired in series

OR



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

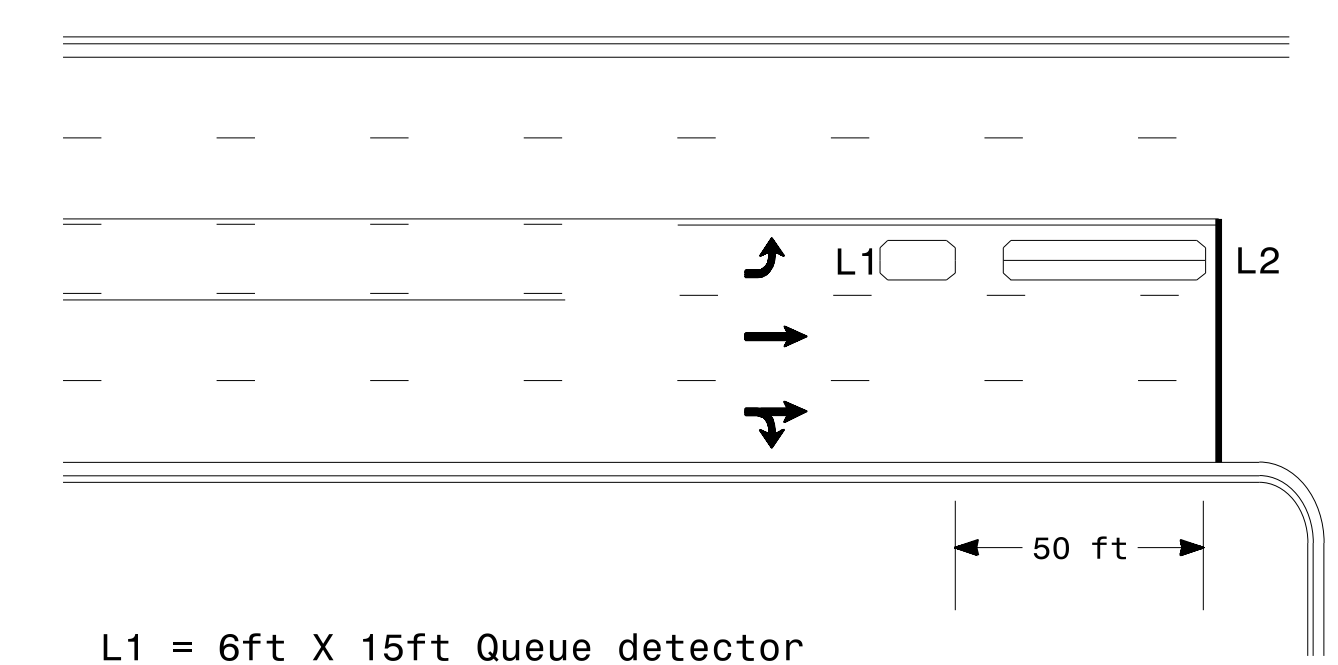
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

OR



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

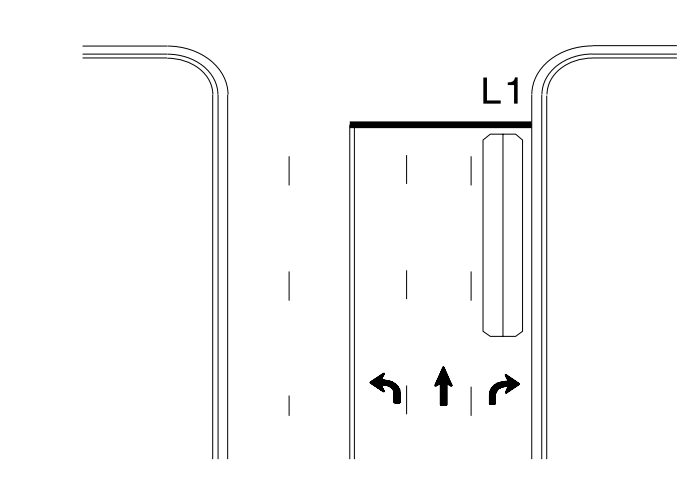
Queue Loop Detection

Right Turn Lane Detection



Shared Lane/
Wide Radius Turn

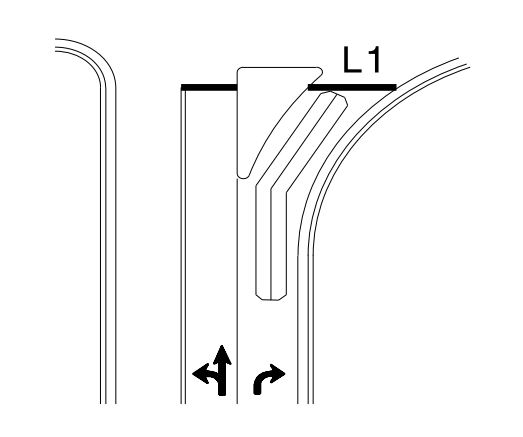
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



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

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'

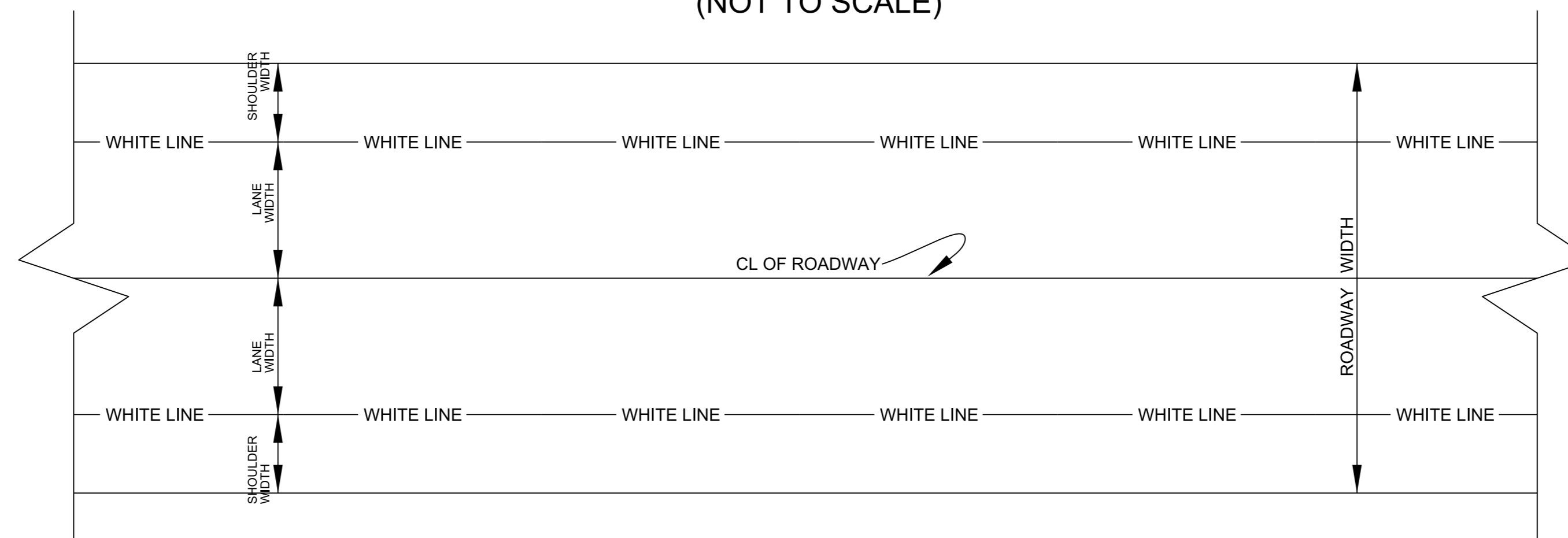
* May vary due to pavement width

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.			
													2023CPT.06.06.10431.1, 2023CPT.06.06.20431.1						
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	1220000000-E	1297000000-E		1330000000-E	1519000000-E	1523000000-E	1575000000-E	
												INCIDENTAL STONE BASE	0.75" MILLING	1½" MILLING	INCIDENTAL MILLING	SURFACE COURSE, S9.5B	SURFACE COURSE, S9.5C	ASPHALT BINDER FOR PLANT MIX	
												MI	FT	TONS	SY	SY	SY	TONS	TONS
2023CPT.06.06.10431.1	Harnett	1	NC HWY 210A	FROM US HWY 401/421 PVMT JT MP 16.24 TO BEGIN B-5705A PROJECT LIMITS MP 22.01	1, 2 & 3	2	2WU	NO	NO	5.77	24	108	96,589	4,230	3,360		8,379	502	
TOTAL FOR MAP NO. 1										5.77		108	96,589	4,230	3,360		8,379	502	
2023CPT.06.06.10431.1	Harnett	2	NC HWY 210B	FROM END B-5705A PROJECT LIMITS MP 22.31 TO JOHNSTON CO MP 26.72	1, 2 & 3	2	2WU	NO	NO	4.33	24	103	60,192	4,646	2,160		5,559	333	
TOTAL FOR MAP NO. 2										4.33		103	60,192	4,646	2,160		5,559	333	
TOTAL FOR PROJ NO. 2023CPT.06.06.10431.1										10.10		211	156,781	8,876	5,520		13,938	835	
													165,657						
2023CPT.06.06.20431.1	Harnett	3	SR 1610	FROM NC HWY 210 MP 0.00 TO CUL-DE-SAC MP 0.10	4	2	2WU	NO	NO	0.10	21					95		7	
TOTAL FOR MAP NO. 3										0.10						95		7	
TOTAL FOR PROJ NO. 2023CPT.06.06.20431.1										0.10						95		7	
GRAND TOTAL										10.20		211	156,781	8,876	5,520		95	13,938	842
													165,657						

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	1704000000-E	2815000000-N	2830000000-N	2845000000-N	7324000000-N	7444000000-E
												PATCHING EXISTING PAVEMENT	ADJ. OF DROP INLET	ADJ. OF MANHOLES	ADJ. OF METER OR VALVE BOX	JUNCTION BOX (STANDARD SIZE)	INDUCTIVE LOOP SAWCUT
												MI	FT	TONS	EA	EA	EA
2023CPT.06.06.10431.1	Harnett	1	NC HWY 210A	FROM US HWY 401/421 PVMT JT MP 16.24 TO BEGIN B-5705A PROJECT LIMITS MP 22.01	1, 2 & 3	2	2WU	NO	NO	5.77	24		1	4	6	2.00	1,000.00
TOTAL FOR MAP NO. 1										5.77			1	4	6	2.00	1,000.00
2023CPT.06.06.10431.1	Harnett	2	NC HWY 210B	FROM END B-5705A PROJECT LIMITS MP 22.31 TO JOHNSTON CO MP 26.72	1, 2 & 3	2	2WU	NO	NO	4.33	24		4	9	10	2.00	1,050.00
TOTAL FOR MAP NO. 2										4.33			4	9	10	2.00	1,050.00
TOTAL FOR PROJ NO. 2023CPT.06.06.10431.1										10.10			5	13	16	4.00	2,050.00
2023CPT.06.06.20431.1	Harnett	3	SR 1610	FROM NC HWY 210 MP 0.00 TO CUL-DE-SAC MP 0.10	4	2	2WU	NO	NO	0.10	21	8					
TOTAL FOR MAP NO. 3										0.10			8				
TOTAL FOR PROJ NO. 2023CPT.06.06.20431.1										0.10			8				
GRAND TOTAL										10.20		8	5	13	16	4.00	2,050.00

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO.	SHEET NO.	TOTAL NO.
2023CPT.06.02.10261.1, 2023CPT.06.02.20261.1		

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH		WIDTH	4413000000-E	4457000000-N	4685000000-E		4695000000-E	4700000000-E	4720000000-E			
								MI	FT		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 MSG SCHOOL 90 M	THERMO MSG ONLY 90 M		
											SF	LS	LF	LF	LF	LF	EA	EA		
2023CPT.06.06.10431.1	Harnett	1	NC HWY 210A	FROM US HWY 401/421 PVMT JT MP 16.24 TO BEGIN B-5705A PROJECT LIMITS MP 22.01	1, 2 & 3	2	2WU	5.77	24		662	1.00	61,880	65,280	240	1,251	12	4		
TOTAL FOR MAP NO. 1								5.77			662	1	61,880	65,280	240	1,251	12	4		
2023CPT.06.06.10431.1	Harnett	2	NC HWY 210B	FROM END B-5705A PROJECT LIMITS MP 22.31 TO JOHNSTON CO MP 26.72	1, 2 & 3	2	2WU	4.33	24		510		46,569	40,728	700	730				
TOTAL FOR MAP NO. 2								4.33			510		46,569	40,728	700	730				
TOTAL FOR PROJ NO. 2023CPT.06.06.10431.1								10.10			1,172	1	108,449	106,008	940	1,981	12	4		
													214,457				16			
2023CPT.06.06.20431.1	Harnett	3	SR 1610	FROM NC HWY 210 MP 0.00 TO CUL-DE-SAC MP 0.10	4	2	2WU	0.10	21		11									
TOTAL FOR MAP NO. 3								0.10			11									
TOTAL FOR PROJ NO. 2023CPT.06.06.20431.1								0.10			11									
GRAND TOTAL								10.20			1,183	1	108,449	106,008	940	1,981	12	4		
													214,457				16			

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH		WIDTH	4725000000-E			4810000000-E		4820000000-E	4825000000-E	4835000000-E	4840000000-N			
								MI	FT		THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR & RT ARROW 90 M	4" WHITE PAINT	4" YELLOW PAINT	8" WHITE PAINT	12" YELLOW PAINT	24" WHITE PAINT	PAINT MSG SCHOOL	PAINT MSG ONLY		
											EA	EA	EA	LF	LF	LF	LF	LF	EA	EA		
2023CPT.06.06.10431.1	Harnett	1	NC HWY 210A	FROM US HWY 401/421 PVMT JT MP 16.24 TO BEGIN B-5705A PROJECT LIMITS MP 22.01	1, 2 & 3	2	2WU	5.77	24		46	6	4	65,291	65,280	240	1,251	210	12	4		
TOTAL FOR MAP NO. 1								5.77			46	6	4	65,291	65,280	240	1,251	210	12	4		
2023CPT.06.06.10431.1	Harnett	2	NC HWY 210B	FROM END B-5705A PROJECT LIMITS MP 22.31 TO JOHNSTON CO MP 26.72	1, 2 & 3	2	2WU	4.33	24		7		4	47,319	40,728	700	730	275				
TOTAL FOR MAP NO. 2								4.33			7		4	47,319	40,728	700	730	275				
TOTAL FOR PROJ NO. 2023CPT.06.06.10431.1								10.10			53	6	8	112,610	106,008	940	1,981	485	12	4		
												67		218,618				16				
2023CPT.06.06.20431.1	Harnett	3	SR 1610	FROM NC HWY 210 MP 0.00 TO CUL-DE-SAC MP 0.10	4	2	2WU	0.10	21													
TOTAL FOR MAP NO. 3								0.10														
TOTAL FOR PROJ NO. 2023CPT.06.06.20431.1								0.10														
GRAND TOTAL								10.20			53	6	8	112,610	106,008	940	1,981	485	12	4		
												67		218,618				16				

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH		WIDTH	4845000000-N			4891000000-E		4900000000-N		
								MI	FT		PAINT LT ARROW	PAINT RT ARROW	PAINT STR & RT ARROW	GENERIC MARKING, 4" X 90 M WHITE THERMO (SKIP & MINI SKIP)	GENERIC MARKING, 24" X 90 M WHITE THERMO	CRYSTAL & RED MARKERS	YELLOW & YELLOW MARKERS	
											EA	EA	EA	LF	LF	EA	EA	
2023CPT.06.06.10431.1	Harnett	1	NC HWY 210A	FROM US HWY 401/421 PVMT JT MP 16.24 TO BEGIN B-5705A PROJECT LIMITS MP 22.01	1, 2 & 3	2	2WU	5.77	24		46	6	4	3,411	210	170	525	
TOTAL FOR MAP NO. 1								5.77			46	6	4	3,411	210	170	525	
2023CPT.06.06.10431.1	Harnett	2	NC HWY 210B	FROM END B-5705A PROJECT LIMITS MP 22.31 TO JOHNSTON CO MP 26.72	1, 2 & 3	2	2WU	4.33	24		7		4	750	275	40	303	
TOTAL FOR MAP NO. 2								4.33			7		4	750	275	40	303	
TOTAL FOR PROJ NO. 2023CPT.06.06.10431.1								10.10			53	6	8	4,161	485	210	828	
												67		4,646		1,038		
2023CPT.06.06.20431.1	Harnett	3	SR 1610	FROM NC HWY 210 MP 0.00 TO CUL-DE-SAC MP 0.10	4	2	2WU	0.10	21									
TOTAL FOR MAP NO. 3								0.10										
TOTAL FOR PROJ NO. 2023CPT.06.06.20431.1								0.10										
GRAND TOTAL								10.20			53	6	8	4,161	485	210	828	
												67		4,646		1,038		