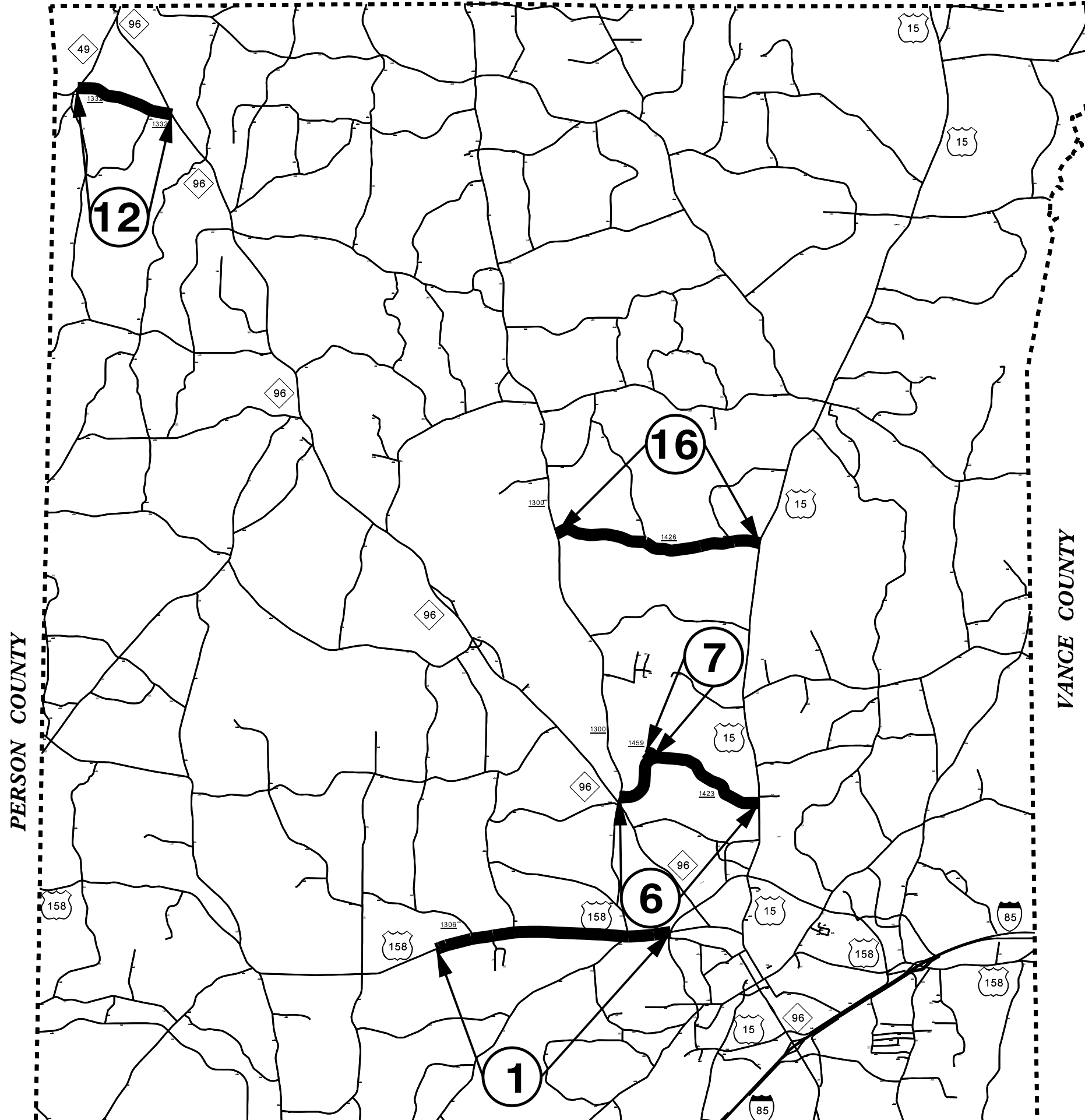


**This electronic collection of documents is provided
for the convenience of the user
and is Not a Certified Document –**

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

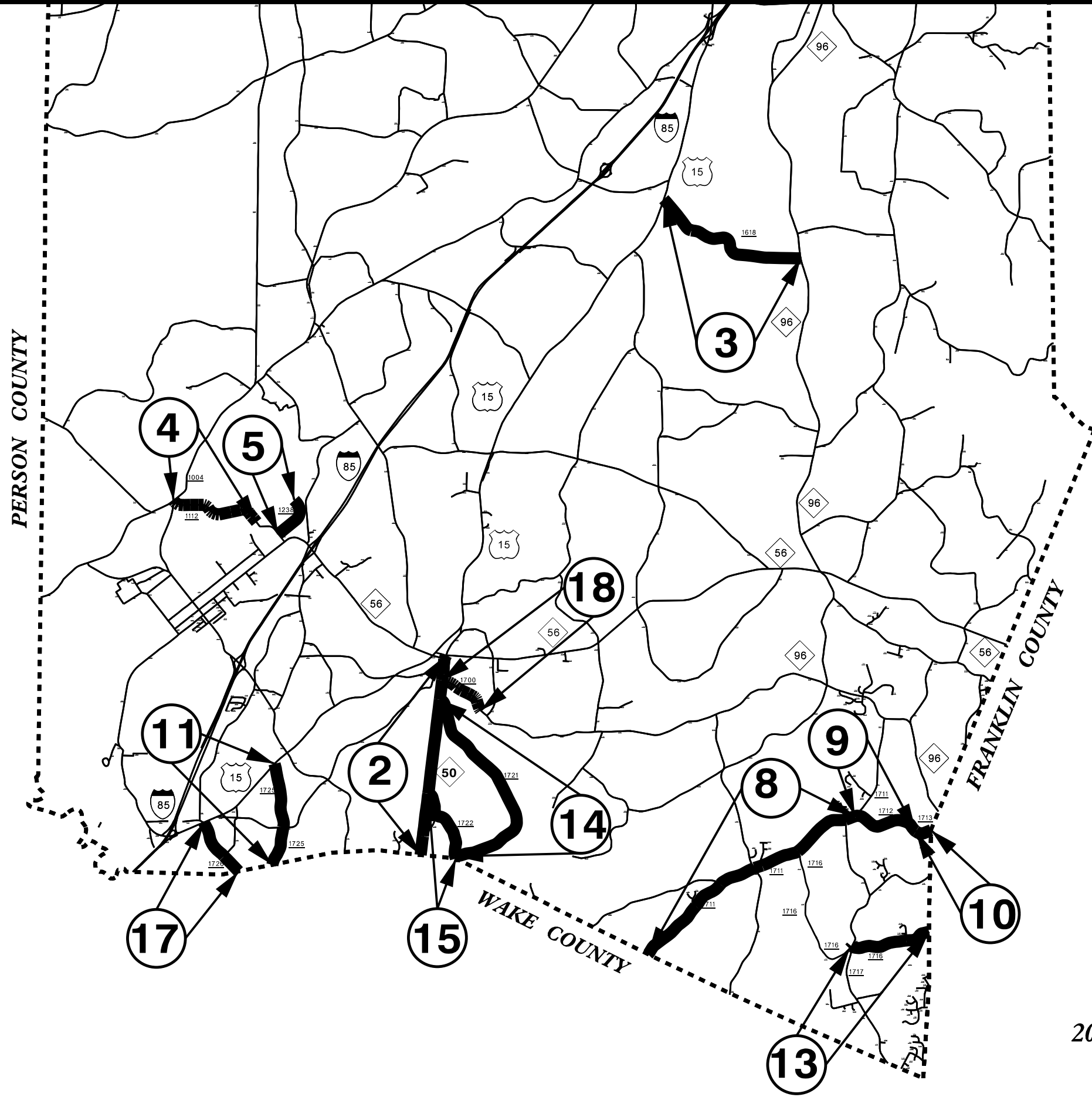
**This file or an individual page
shall not be considered a certified document.**

VIRGINIA



**2016 GRANVILLE COUNTY
RESURFACING**

5/14/09
SYTIME
LIONS
LIONS



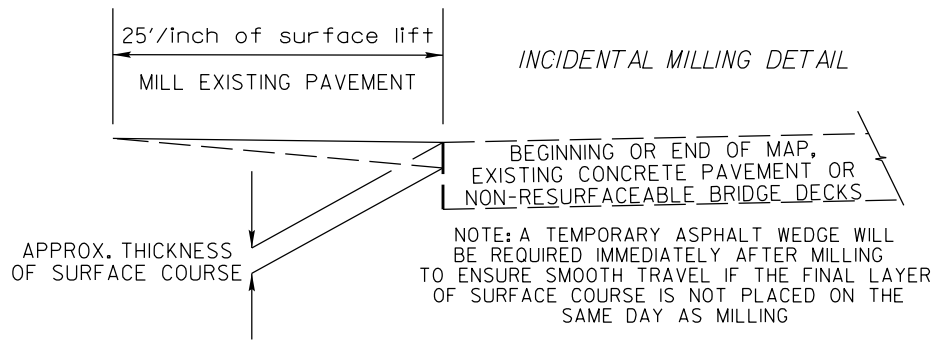
**2016 GRANVILLE COUNTY
RESURFACING**

5/14/09

 C:\Users\jgibson\Documents\2016CPT\05\07\J0391J\Map\Map.dwg

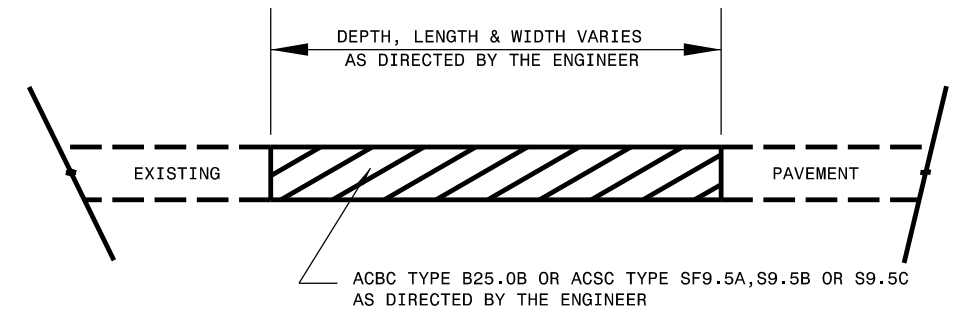
PAVEMENT SCHEDULE

C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
S	PROP. SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	1½" MILLING
V2	2" MILLING

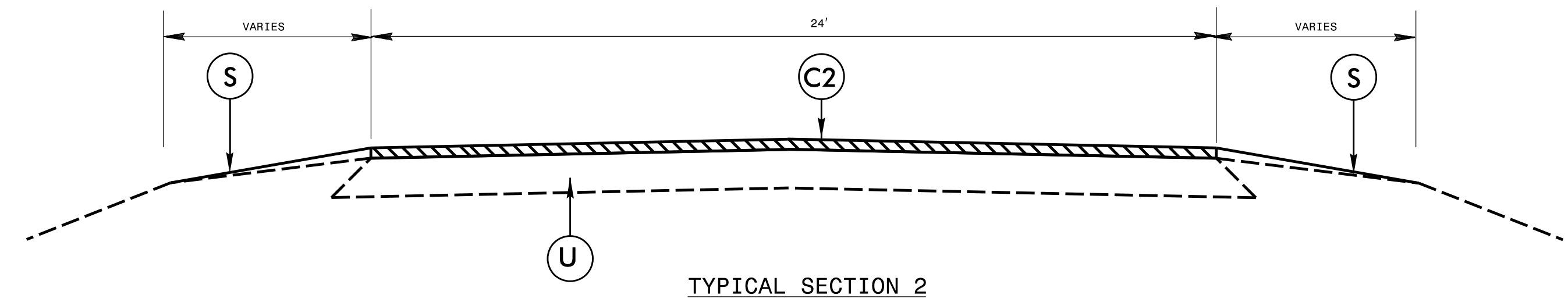
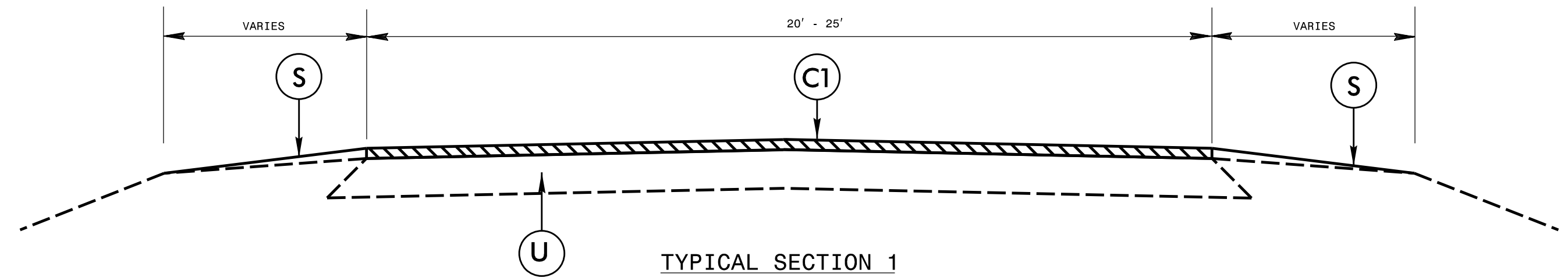


NOTES

ALL UNPAVED S.R. 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.
 BRIDGES TO BE RESURFACED AT LOCATIONS AND TO DEPTH AS DIRECTED BY THE ENGINEER.

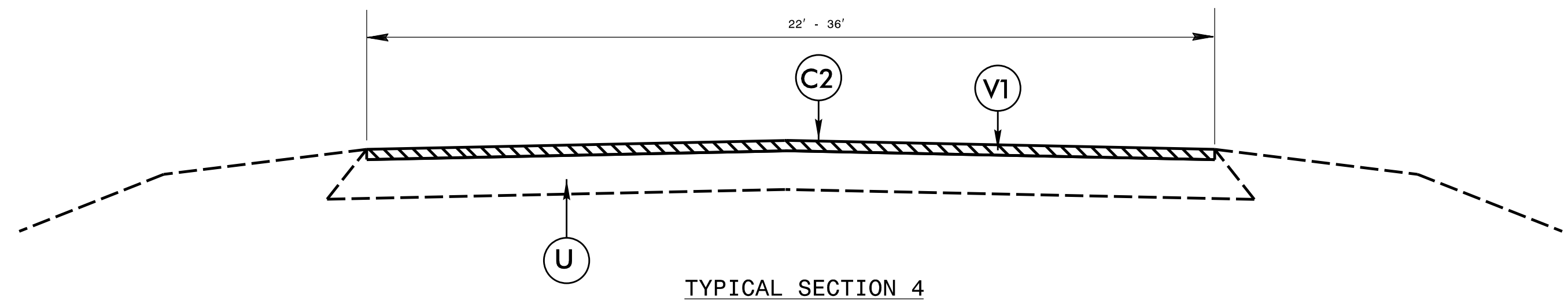
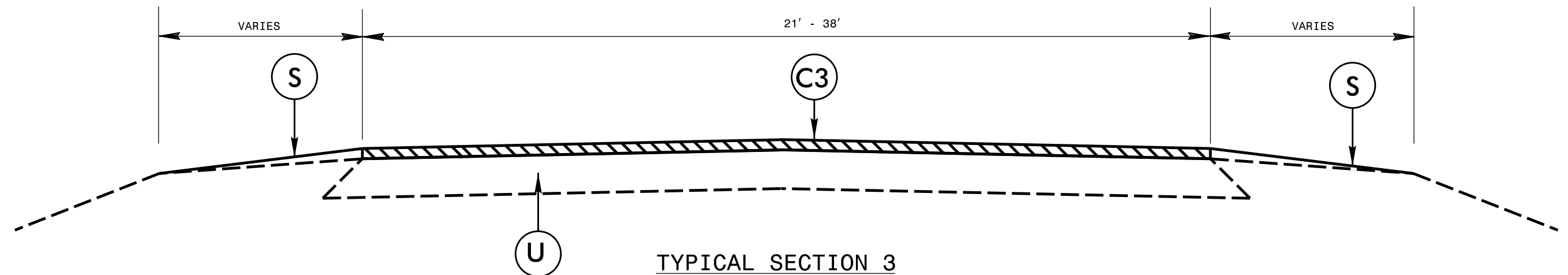
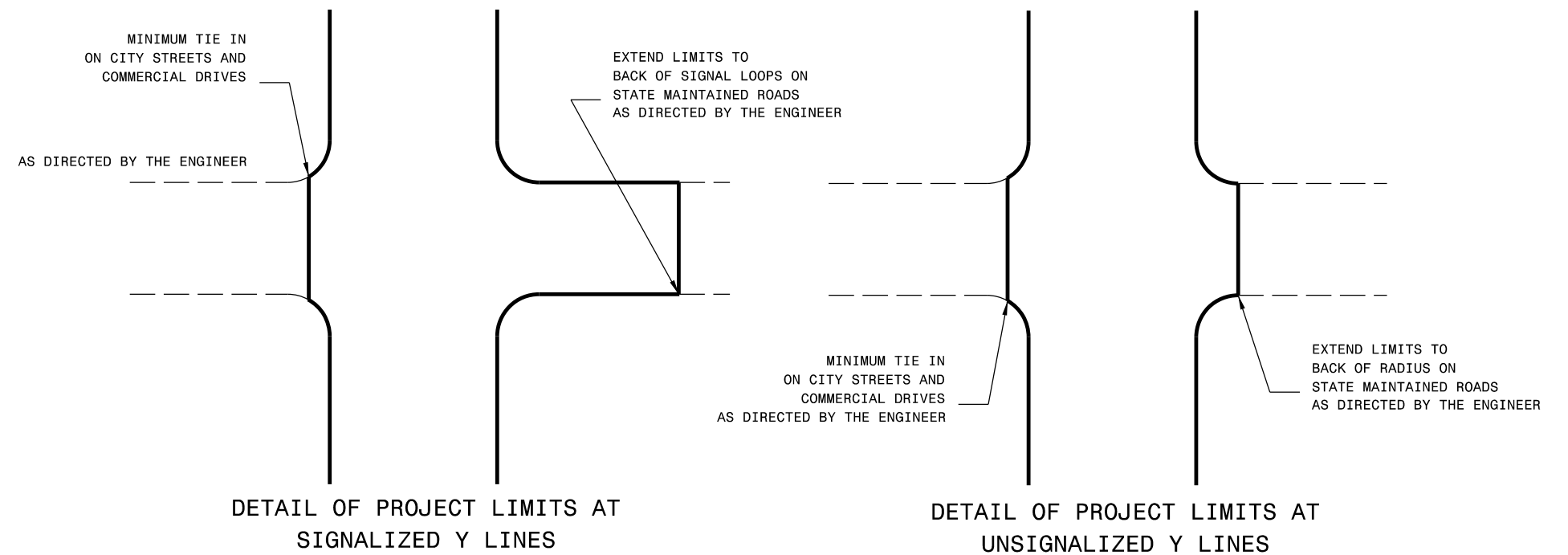


PATCHING EXISTING PAVEMENT
 MILLING (IF REQUIRED BY TYPICAL) TO BE PERFORMED PRIOR TO PATCHING



PAVEMENT SCHEDULE

C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
S	PROP. SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	1½" MILLING
V2	2" MILLING

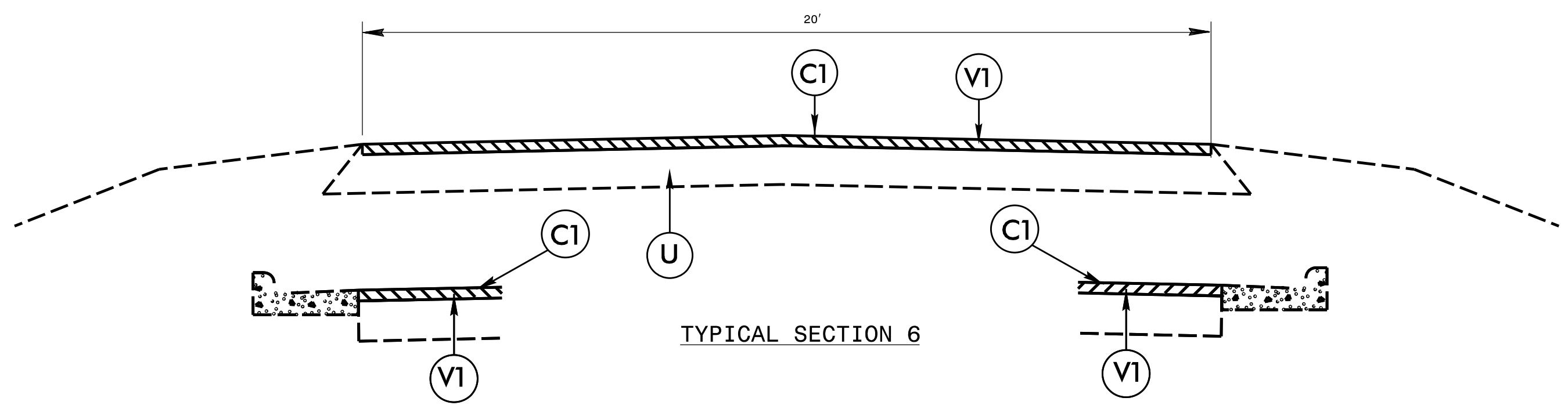
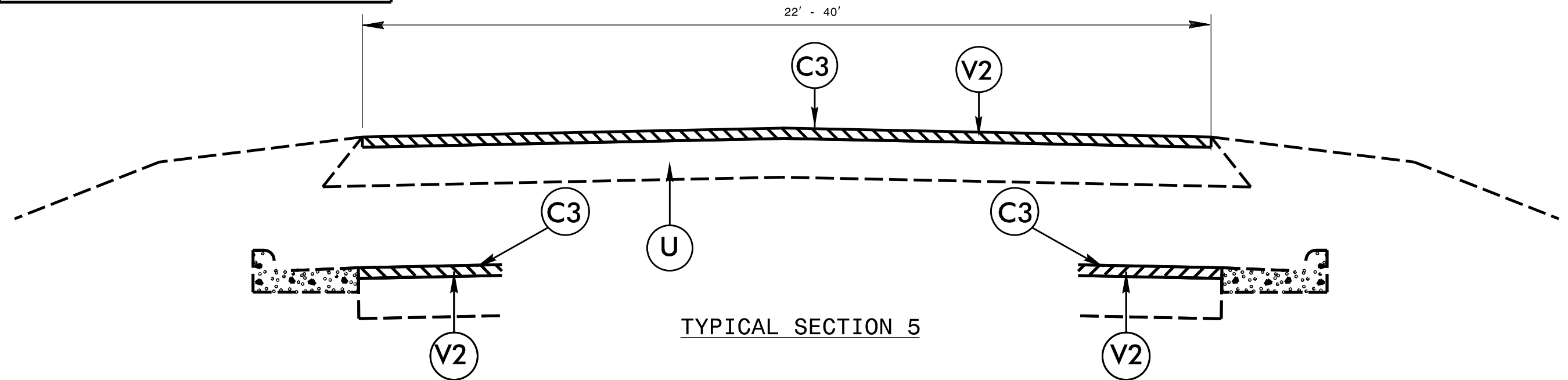


PAVEMENT SCHEDULE

PROJECT REFERENCE NO.
2016CPT.05.07.J0391J, etc.

SHEET NO.
5

C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
S	PROP. SHOULDER RECONSTRUCTION
U	EXISTING PAVEMENT
V1	1½" MILLING
V2	2" MILLING



PROJECT NO.	SHEET NO.	TOTAL NO.
2016CPT.05.07.10391.1, etc.	7	

SUMMARY OF QUANTITIES

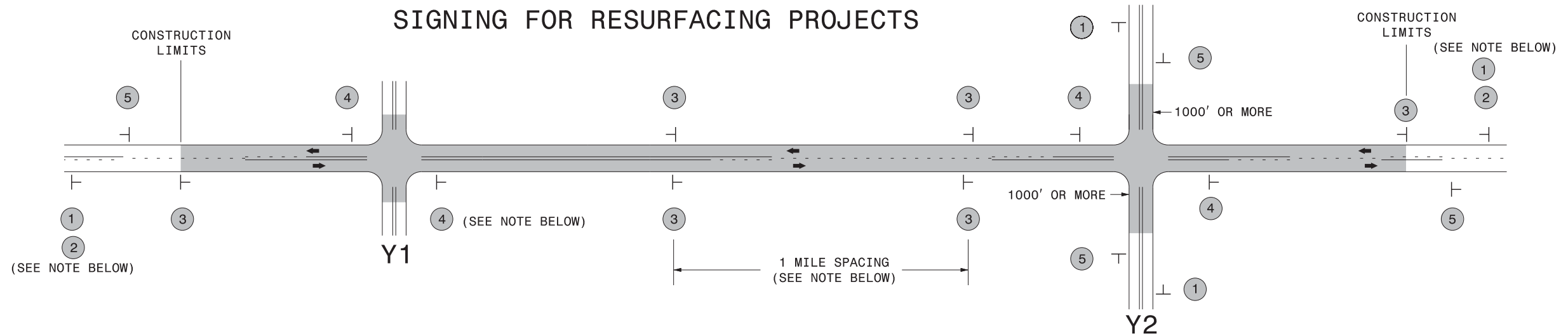
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	BORROW CY	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	2" MILLING SY	1½" MILLING SY	INCIDENTAL MILLING SY	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, SF9.5A TON	ASPHALT BINDER FOR PLANT MIX TON	PATCHING EXISTING PAVEMENT TONS	ADJUST METER OR VALVE BOX EA	TEMPORARY SILT FENCE LF	WATTLE LF	SEED & MULCHING AC	INDUCTIVE LOOP LF		
2016CPT.05.07.10391.1	Granville	1	US 158	PVMT JT .6 MI W OF SR 1306 - CURRIN RD TO US 158 BUS	3	2	NO	NO	3.914	24-38	783	195	7.83			2,130	6,935	416			568	1,420	5.68	1,045			
		2	NC 50	WAKE CO. TO NC 56	5	2	NO	NO	3.28	22-40		140		48,746			5,770	346	75					1,330			
TOTAL FOR PROJ NO. 2016CPT.05.07.10391.1									7.194		783	335	7.83	48,746		2,130	12,705	762	75		568	1,420	5.68	2,375			
2016CPT.05.07.20391.1	Granville	3	SR 1618 - SAM USRY RD	NC 96 TO US 15	1	2	NO	NO	2.64	21	528	132	5.28			145	2,834	190	500		383	960	3.83				
		4	SR 1112 - THIRTY THIRD ST	MP .638 TO SR 1004 - BUTNER RD	1	2	NO	NO	1.5	22-23	300	75	3.00				260	1,751	117	50		217	550	2.17	625		
		5	SR 1238 - EAST D ST	SR 1112 - THIRTY THIRD ST TO DEAD END	2	2	NO	NO	0.724	24	144	37	1.45				315	904	54	25	1	105	270	1.05			
		6	SR 1423 - STERLING CARRINGTON RD	SR 1300 - CORNWALL RD TO US 15	1	2	NO	NO	2.991	20-21	598	150	5.98				276	3,095	207	350		434	1,090	4.34			
		7	SR 1459 - LANDFILL	SR 1423 - STERLING CARRINGTON RD TO DEAD END	1	2	NO	NO	0.184	21	37	9	0.37				140	198	13			27	70	0.27			
		8	SR 1711 - GARNER RD	WAKE CO TO SR 1712 - GARNER RD	4	2	NO	NO	4.189	24-36				209		62,830		5,569	334	80							
		9	SR 1712 - MAYS STORE RD	SR 1711 - WAYSIDE FARM RD TO SR 1713 - BRUCE GARNER RD	4	2	NO	NO	1.153	24-25				58		16,719		1,482	89	100							
		10	SR 1713 - GARNER RD	SR 1712 - MAYS STORE RD TO FRANKLIN CO	4	2	NO	NO	0.254	22				13		3,423		304	18								
		11	SR 1725 - MUNNS RD	US 15 TO WAKE CO	1	2	NO	NO	1.698	19-20	340	170	3.40				310	1,729	116	250		246	620	2.46			
		12	SR 1332 - BLUE WING RD	NC 49 TO NC 96	3	2	NO	NO	1.618	21-22	324	81	3.24				267	2,383	143	150		235	590	2.35			
		13	SR 1716 - SHEARON RD	SR 1717 - WOODLAND CH RD TO FRANKLIN CO	1	2	NO	NO	1.38	20-22	276	69	2.76				314	1,512	101	175		200	500	2.00			
		14	SR 1721 - DOVE RD	NC 50 TO SR 1722 - BEAVER DAM RD	1	2	NO	NO	3.82	20	764	191	7.64				165	3,907	262	185		554	1,390	5.54			
		15	SR 1722 - BEAVER DAM RD	NC 50 TO WAKE CO	1	2	NO	NO	1.249	20-21	250	62	2.50				206	1,254	84	250		181	460	1.81			
		16	SR 1426 - GELA RD	US 15 TO SR 1300 - CORNWALL RD	1	2	NO	NO	3.5	20-21	700	175	7.00				364	3,684	247	1,250		508	1,270	5.08			
		17	SR 1726 - WILL SUITT RD	US 15 TO WAKE CO	1	2	NO	NO	0.997	24-25	199	50	1.99				474	1,289	86	525		145	370	1.45			
		18	SR 1700 - CHURCH ST	NC 50 TO EAST CITY LIMIT CREEDMORE	6	2	NO	NO	0.765	20				38		8,976		782	52	50							
		TOTAL FOR PROJ NO. 2016CPT.05.07.20391.1									28.662		4,460	1,519	44.61		91,948	3,236	10,642	22,035	2,113	3,940	1	3,235	8,140	32.35	625
		GRAND TOTAL									35.856		5,243	1,854	52.44	48,746	91,948	5,366	23,347	22,035	2,875	4,015	1	3,803	9,560	38.03	3,000

PROJECT NO.	SHEET NO.	TOTAL NO.
2016CPT.05.07.10391.1, etc.	8	

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	LANES	LENGTH	WIDTH	4413000000-E	4457000000-N	4685000000-E	4686000000-E			4695000000-E	4697000000-E	4710000000-E	4721000000-E	4725000000-E			4905000000-N			
									WORK ZONE ADVANCE/GENERAL WARNING SIGNING SF	TEMPORARY TRAFFIC CONTROL LS	4" X 90 M WHITE THERMO LF	4" X 120 M WHITE THERMO LF	4" X 120 M YELLOW THERMO LF	8" X 90 M YELLOW THERMO LF	8" X 120 M WHITE THERMO LF	24" X 120 M WHITE THERMO LF	THERMO MSG SCHOOL 120 M EA	THERMO LT ARROW 90 M EA	THERMO RT ARROW 90 M EA	THERMO STR & RT ARROW 90 M EA	SNOW PLOWABLE MARKERS EA				
2016CPT.05.07.10391.1	Granville	1	US 158	PVMT JT .6 MI W OF SR 1306 - CURRIN RD TO US 158 BUS	3	2	3.914	24-38	439	0.15	42,115	477	30,980	26			186	6	3			275			
		2	NC 50	WAKE CO. TO NC 56	5	2	3.28	22-40	368	0.12	30,360	816	27,600	120	100	365			9	1	3	260			
TOTAL FOR PROJ NO. 2016CPT.05.07.10391.1								7.194	807	0.27	72,475	1,293	58,580	146	100	551	6	12	1	3	535				
											59,873			16											
2016CPT.05.07.20391.1	Granville	3	SR 1618 - SAM USRY RD	NC 96 TO US 15	1	2	2.64	21	296	0.07	28,406		22,600												
		4	SR 1112 - THIRTY THIRD ST	MP .638 TO SR 1004 - BUTNER RD	1	2	1.5	22-23	168	0.04	16,140	75	13,390							1	1				
		5	SR 1238 - EAST D ST	SR 1112 - THIRTY THIRD ST TO DEAD END	2	2	0.724	24	82	0.02															
		6	SR 1423 - STERLING CARRINGTON RD	SR 1300 - CORNWALL RD TO US 15	1	2	2.991	20-21	335	0.07	32,183	33	32,183												
		7	SR 1459 - LANDFILL	SR 1423 - STERLING CARRINGTON RD TO DEAD END	1	2	0.184	21	21	0.01															
		8	SR 1711 - GARNER RD	WAKE CO TO SR 1712 - GARNER RD	4	2	4.189	24-36	470	0.11	45,074	728	44,125	160						3	1				
		9	SR 1712 - MAYS STORE RD	SR 1711 - WAYSIDE FARM RD TO SR 1713 - BRUCE GARNER RD	4	2	1.153	24-25	130	0.03	12,406	79	11,207												
		10	SR 1713 - GARNER RD	SR 1712 - MAYS STORE RD TO FRANKLIN CO	4	2	0.254	22	28	0.01	2,733	19	2,733												
		11	SR 1725 - MUNNS RD	US 15 TO WAKE CO	1	2	1.698	19-20	191	0.04	18,270	80	18,270												
		12	SR 1332 - BLUE WING RD	NC 49 TO NC 96	3	2	1.618	21-22	182	0.06	17,410	20	15,415												
		13	SR 1716 - SHEARON RD	SR 1717 - WOODLAND CH RD TO FRANKLIN CO	1	2	1.38	20-22	128	0.04	14,849	80	14,538												
		14	SR 1721 - DOVE RD	NC 50 TO SR 1722 - BEAVER DAM RD	1	2	3.82	20	428	0.08	41,103		33,230												
		15	SR 1722 - BEAVER DAM RD	NC 50 TO WAKE CO	1	2	1.249	20-21	140	0.03	13,439	62	13,090												
		16	SR 1426 - GELA RD	US 15 TO SR 1300 - CORNWALL RD	1	2	3.5	20-21	392	0.07	37,660	74	35,540												
		17	SR 1726 - WILL SUITT RD	US 15 TO WAKE CO	1	2	0.997	24-25	112	0.03	10,728	25	10,140												
		18	SR 1700 - CHURCH ST	NC 50 TO EAST CITY LIMIT CREEDMORE	6	2	0.765	20	86	0.02	8,231	95	8,231												
		TOTAL FOR PROJ NO. 2016CPT.05.07.20391.1								28.662	3,189	0.73	298,632	1,370	274,692	160				4	2				
													276,062			6									
GRAND TOTAL											35.856		3,996	1.00	371,107	2,663	333,272	306	100	551	6	16	3	3	535
											335,935			22											

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.		

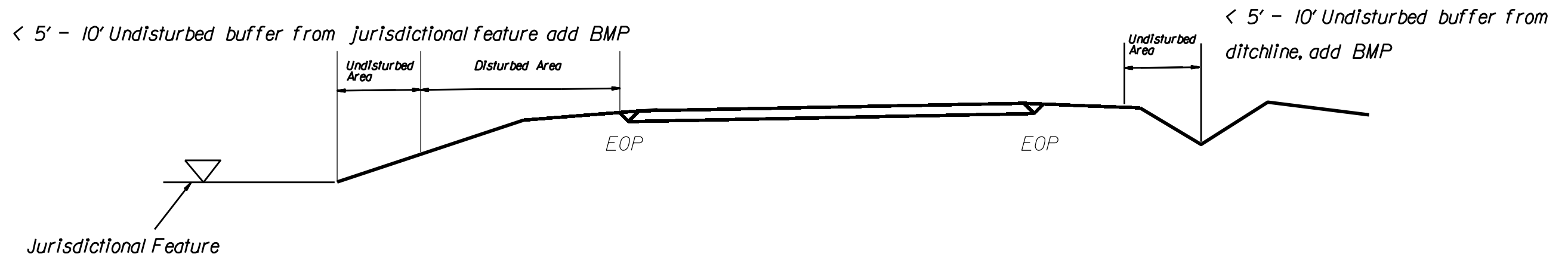
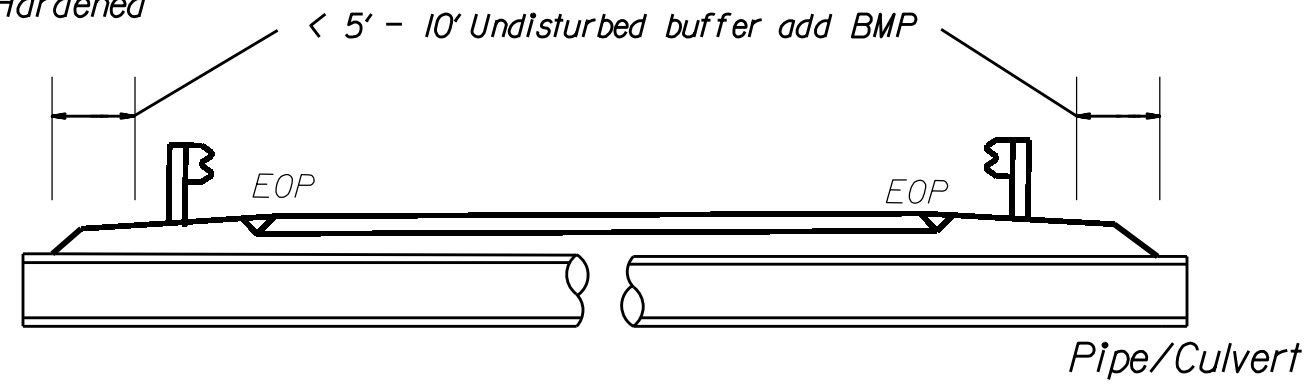
3/19/2015
 C:\Users\rmgarrett\Downloads\Resurfacing_AdvWarn_2Ln (2).dgn
 User:rmgarrett

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

NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle, Silt Fence or Hardened Aggregate.

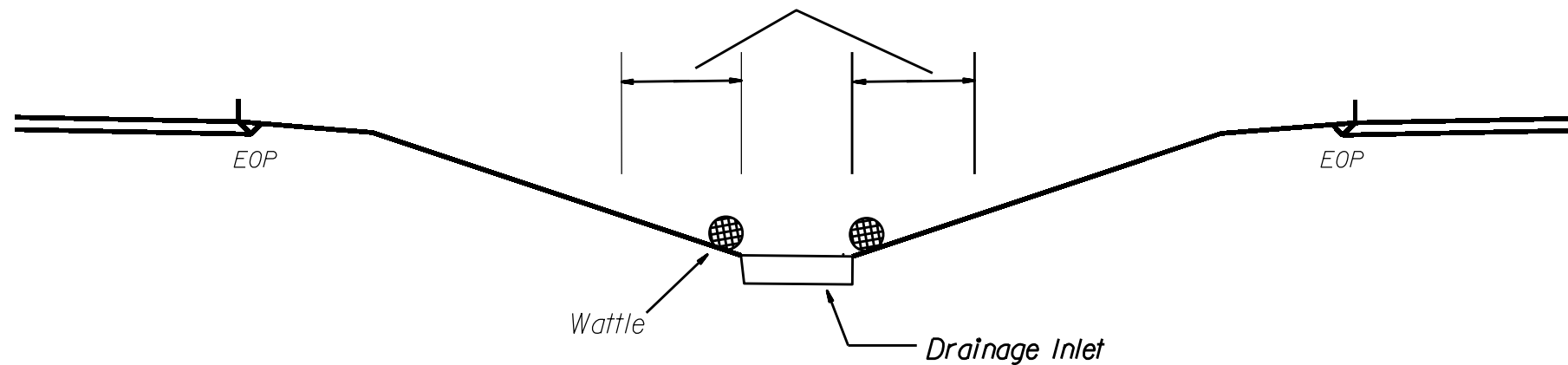
EROSION CONTROL DETAIL



Use BMP's if shoulders and/or frontslopes and/or ditchline and/or backslopes are disturbed

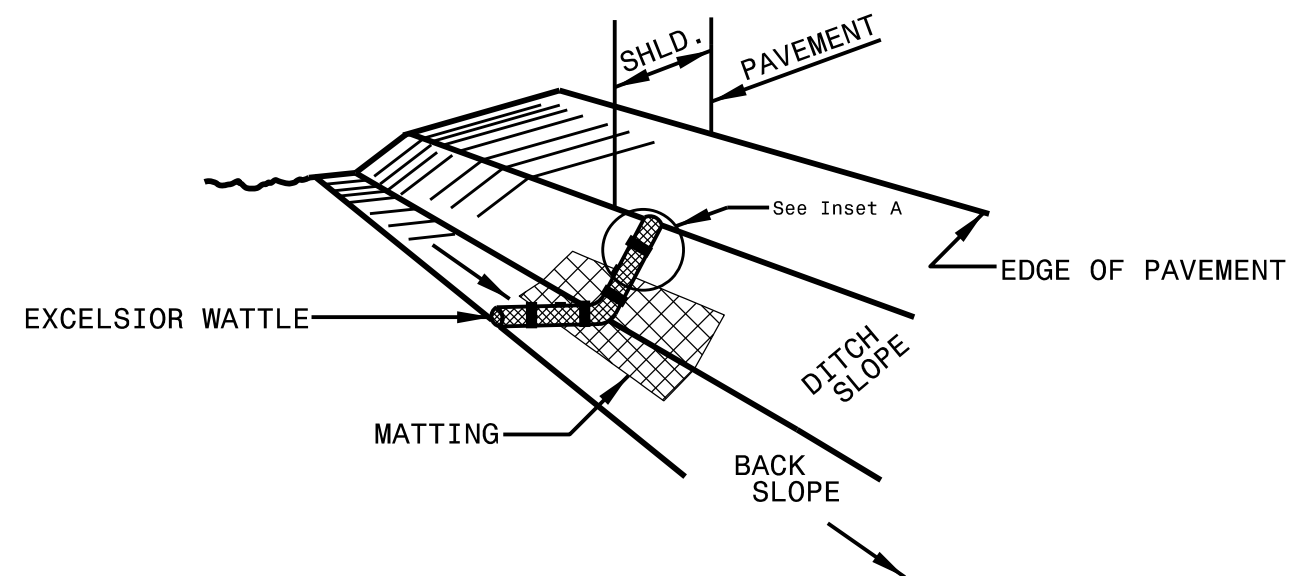


< 5' - 10' Undisturbed buffer from inlet, add wattle

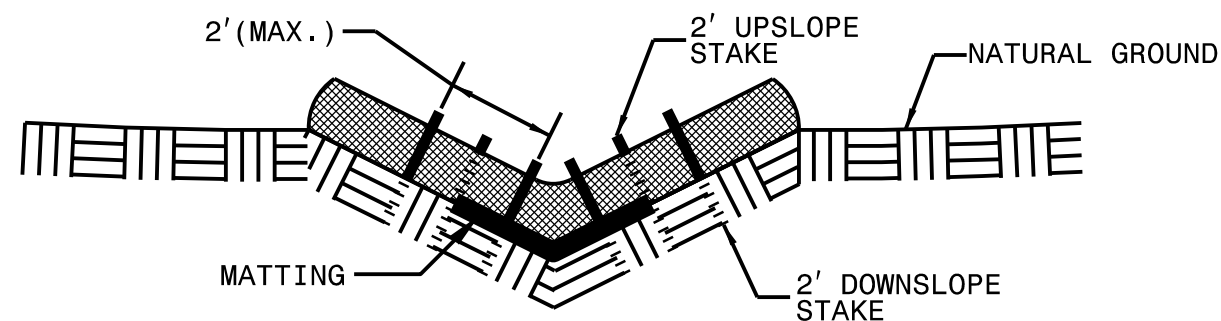


NOT TO SCALE

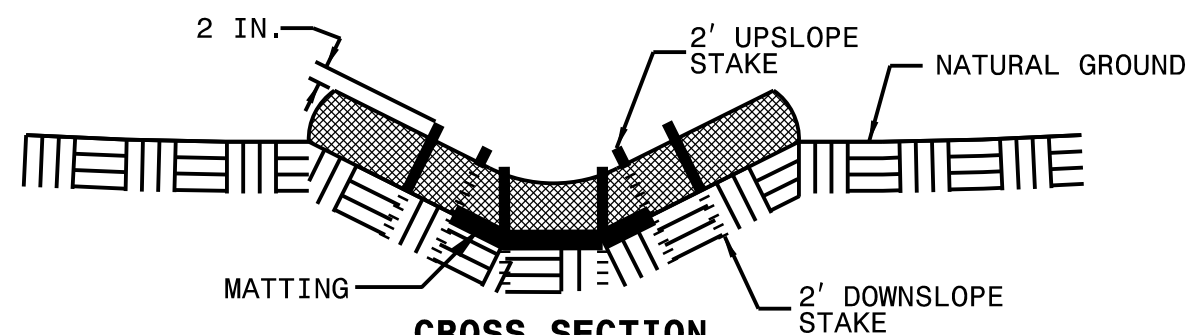
WATTLE DETAIL



ISOMETRIC VIEW



**CROSS SECTION
VEE DITCH**



**CROSS SECTION
TRAPEZOIDAL DITCH**

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

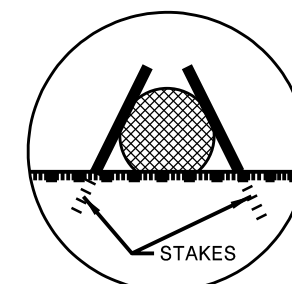
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

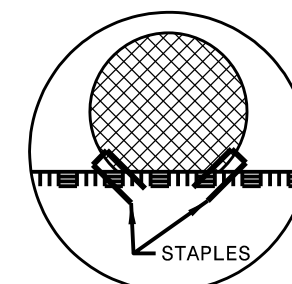
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

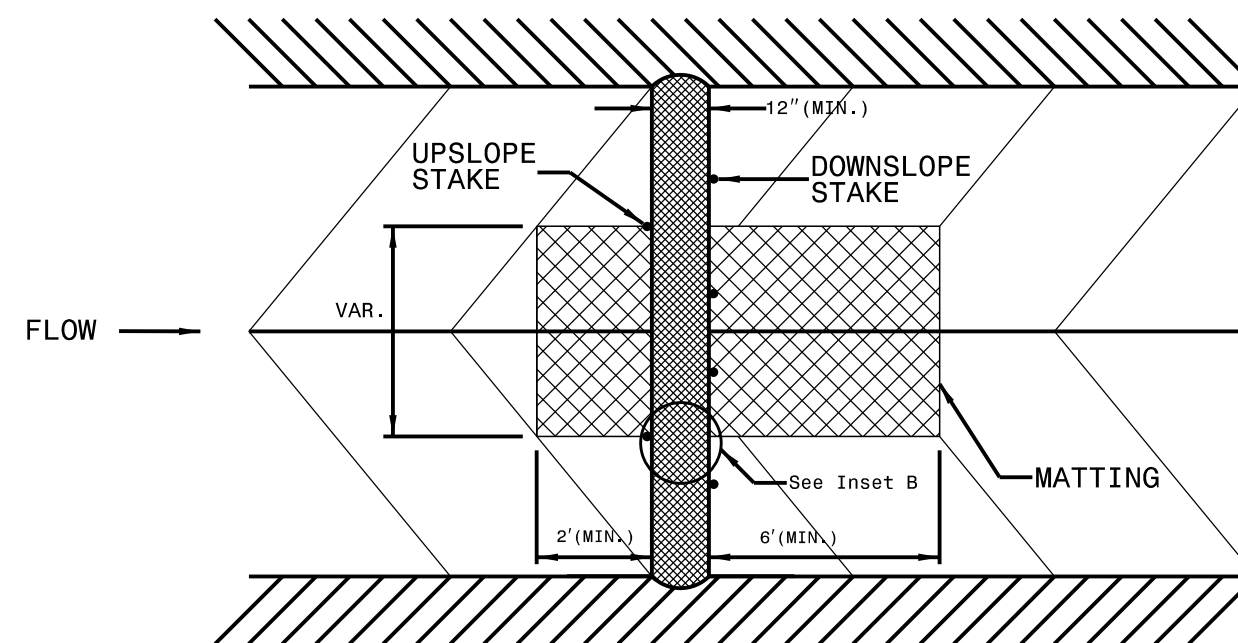
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A

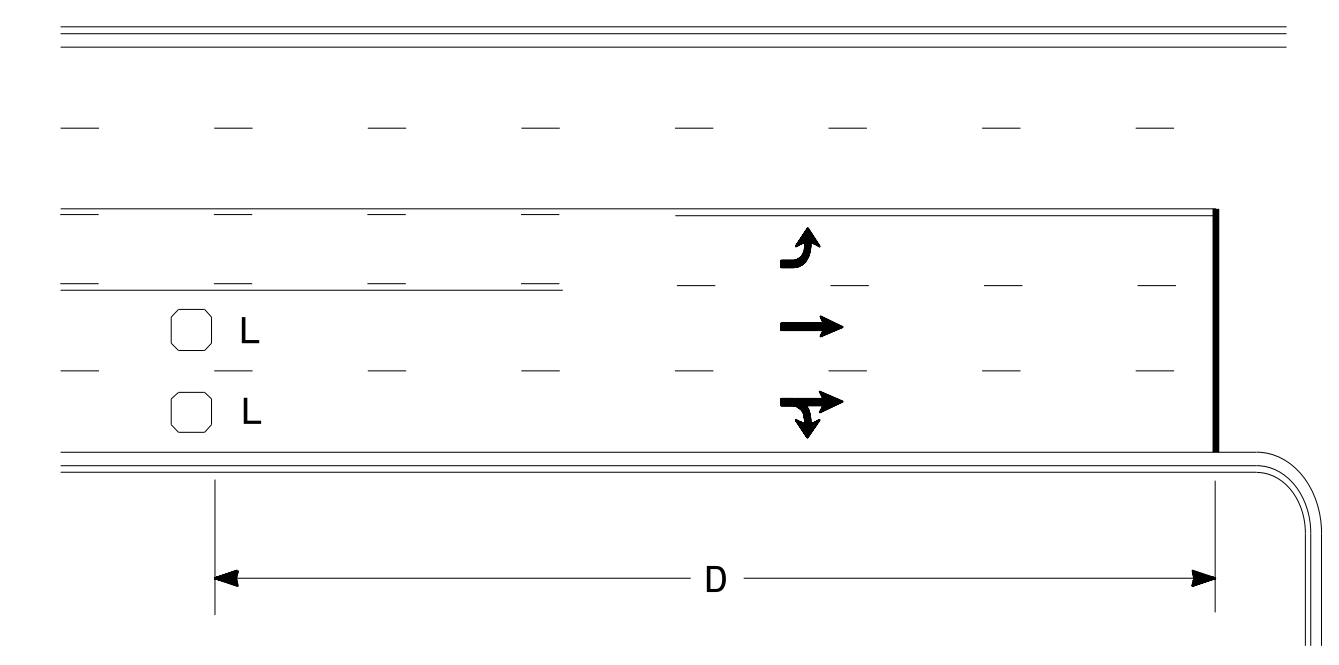


INSET B



TOP VIEW

High Speed Detection (≥40 mph)

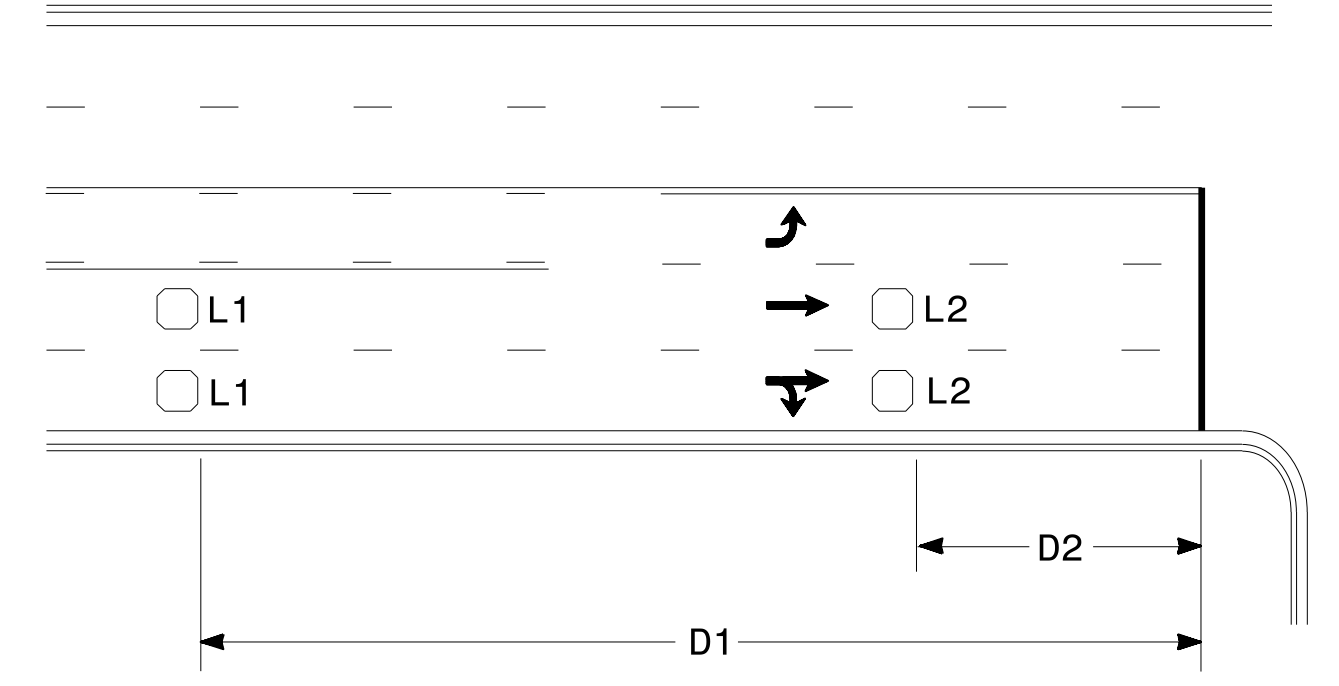


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

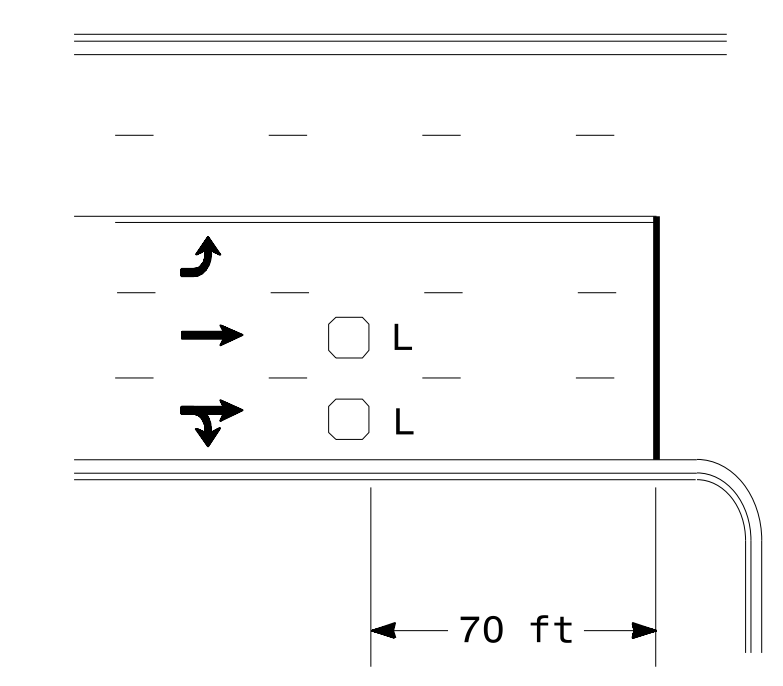


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

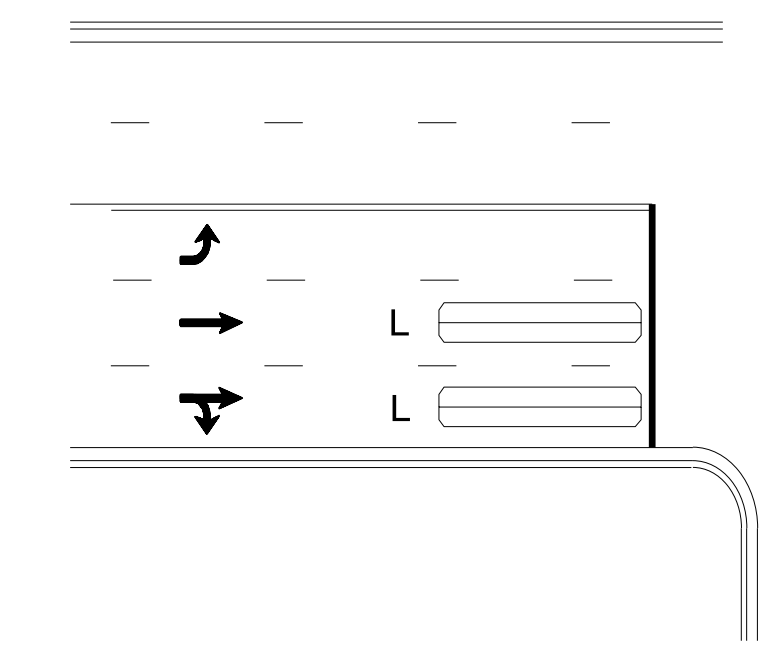
"Stretch" Operation

Low Speed Detection (≤35 mph)



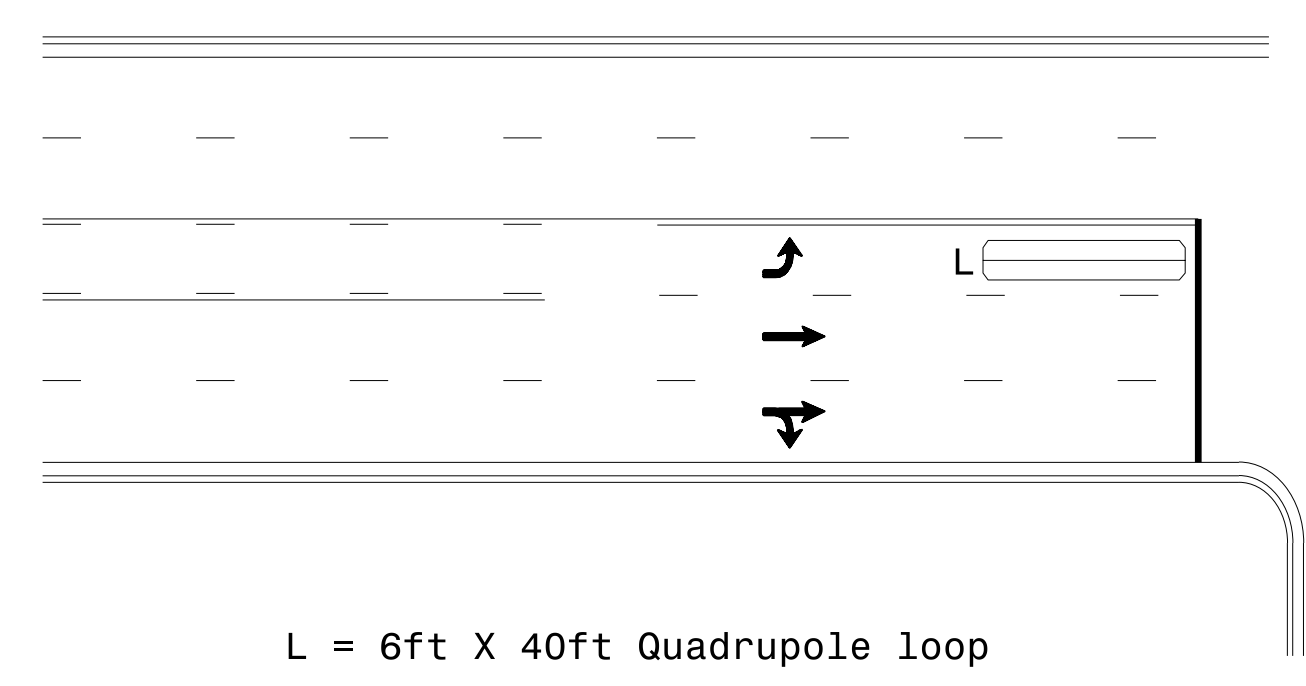
L = 6ft X 6ft
Wired in series

OR



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

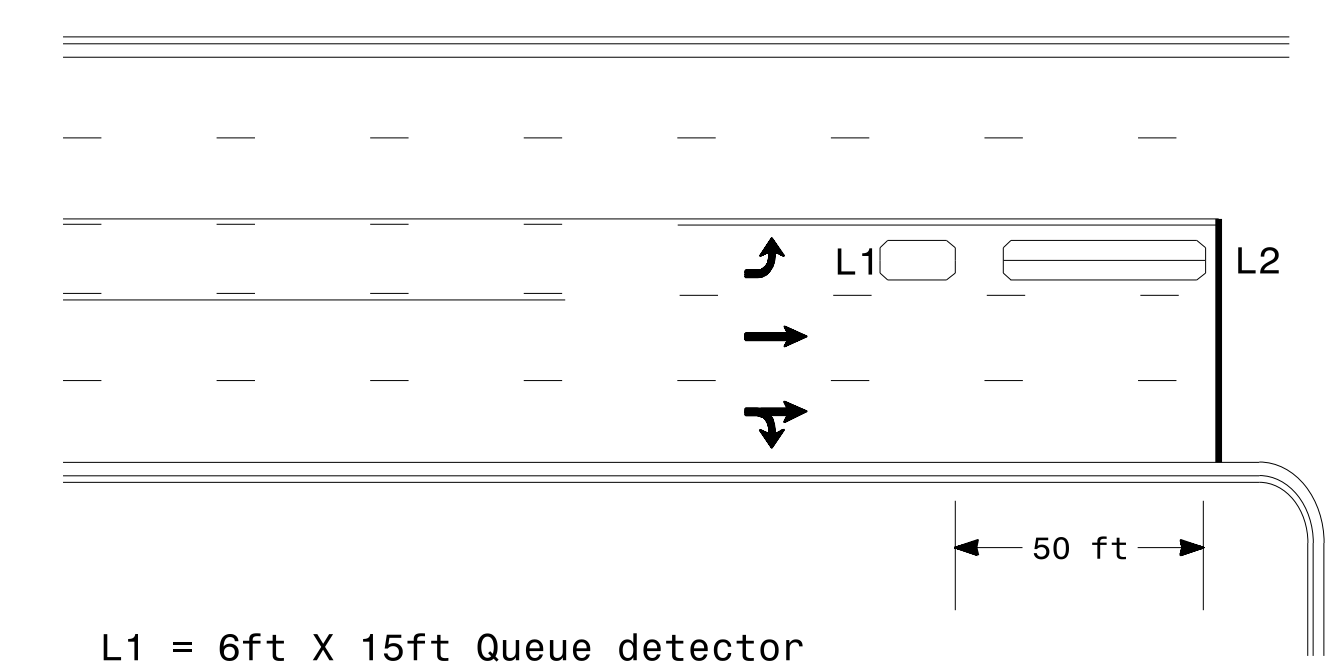
Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

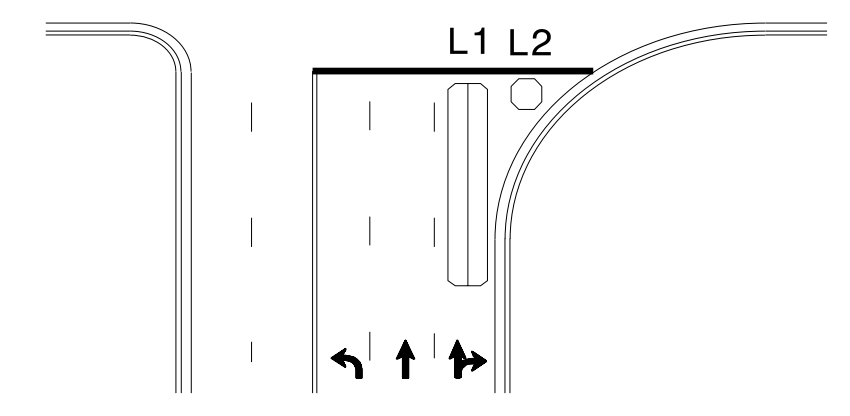
OR



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

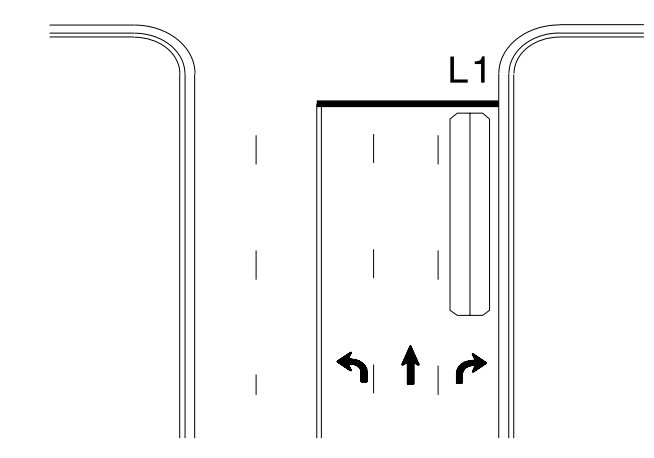
Queue Loop Detection

Right Turn Lane Detection

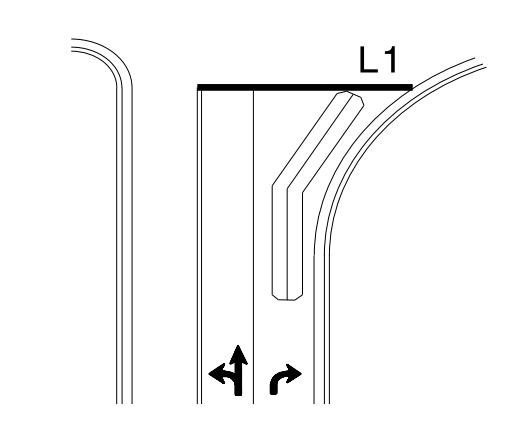


Shared Lane/
Wide Radius Turn

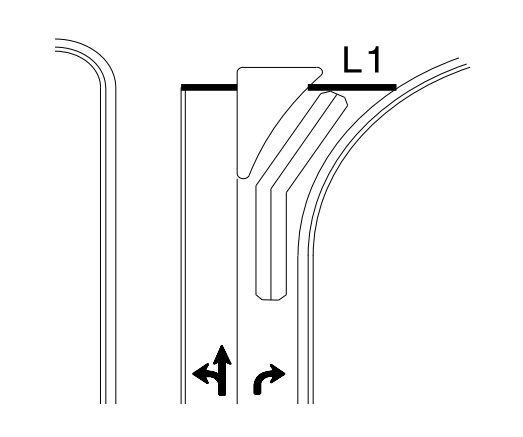
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

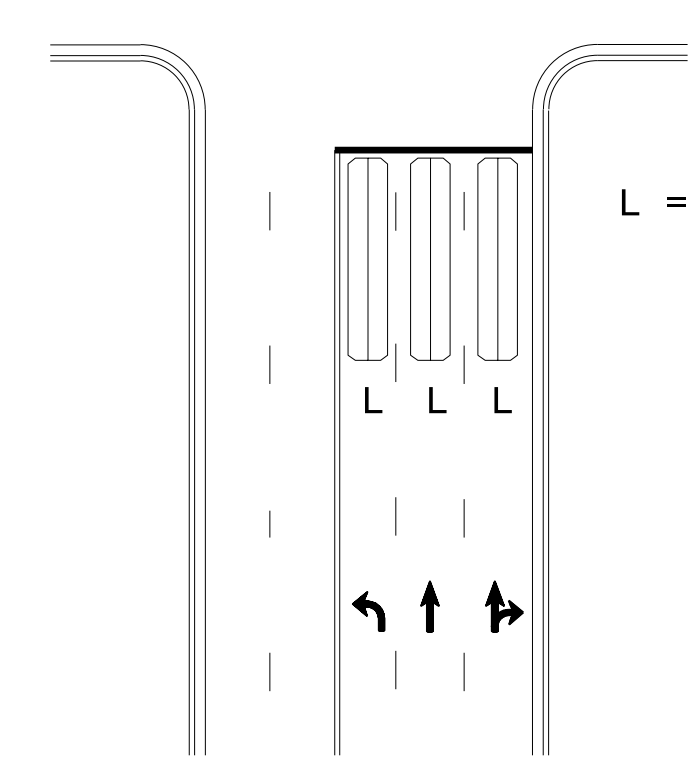


Wide Radius Turn



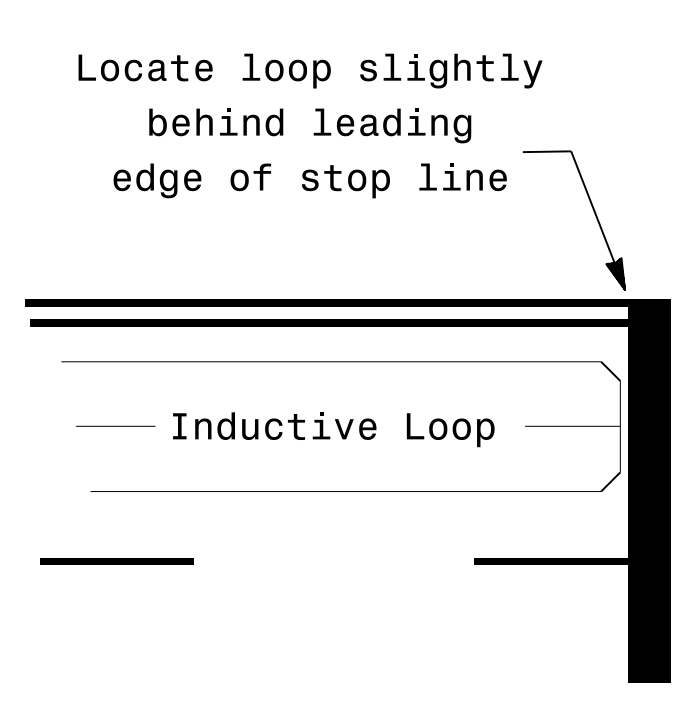
Channelized Turn

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

Inductive Loop

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

SIG. INVENTORY NO.

3D:\146-2015-12-29
 S:\146\2015-12-29\Signal Design\Section\Eastern\Region\loop\yp\lca\2015.dgn
 paalexander