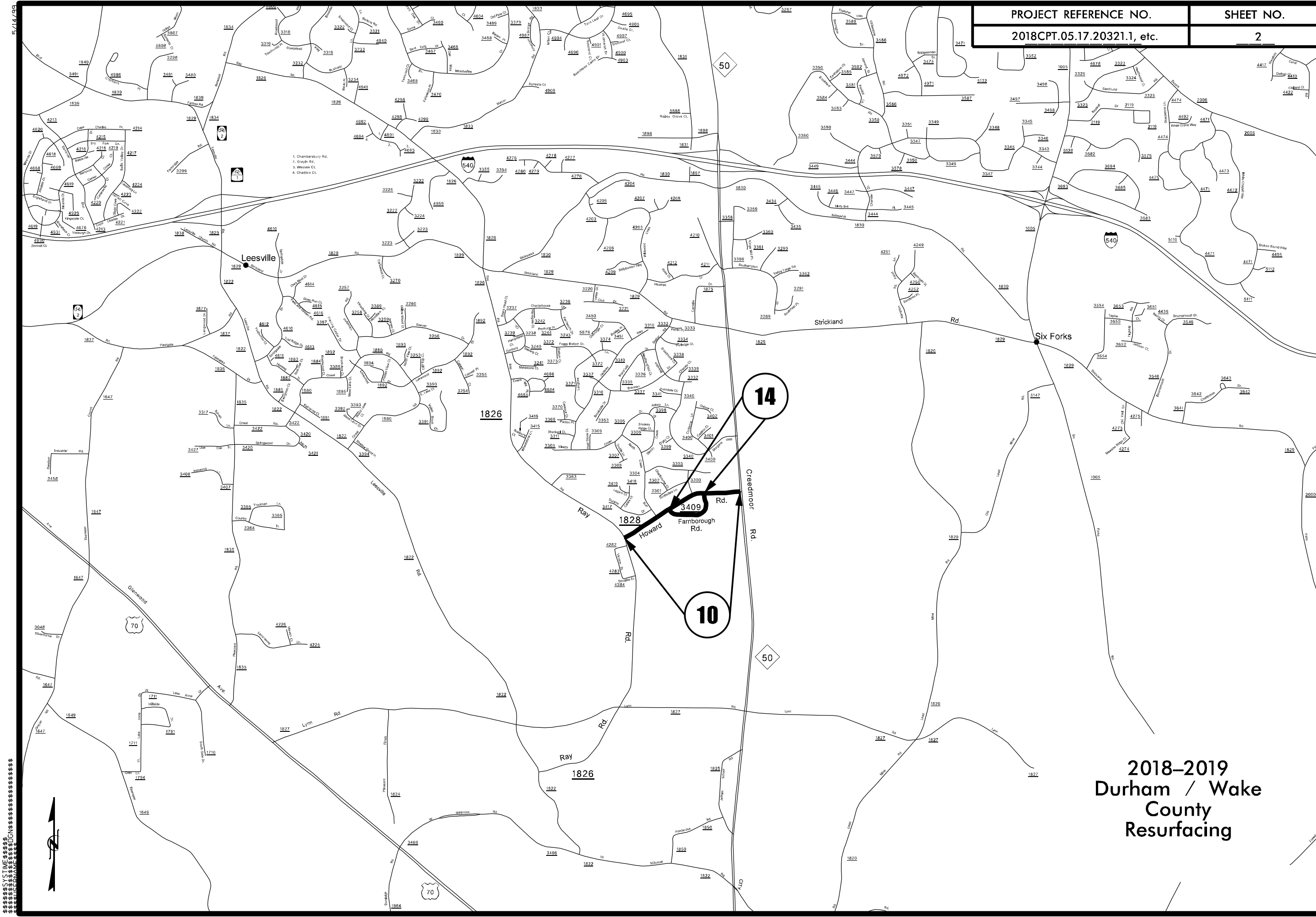


2018-2019  
Durham / Wake  
County  
Resurfacing

5/14/19

- 1. Chamberlary Rd.
- 2. Grange Rd.
- 3. Wessex Ct.
- 4. Charter Ct.



**2018-2019  
Durham / Wake  
County  
Resurfacing**



CONTRACT NO. 2018-01-0001  
 DRAWING NO. 2018-01-0001-01  
 SHEET NO. 2  
 DATE: 05/17/2018  
 PROJECT: 2018-2019 DURHAM / WAKE COUNTY RESURFACING

**PAVEMENT SCHEDULE**

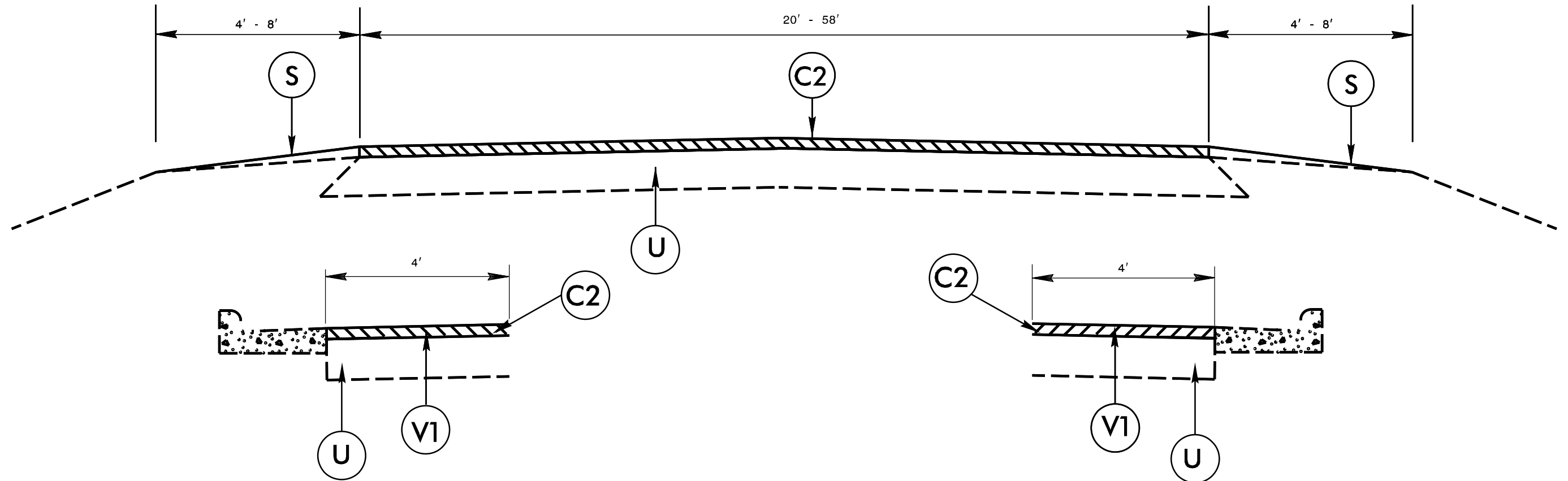
PROJECT REFERENCE NO.

SHEET NO.

2018CPT.05.17.20321.1, etc.

3

		U	EXISTING PAVEMENT
C1	1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.	V1	0-1½" MILLING
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	V2	4" MILLING
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	V3	1½" MILLING
M	CONTINUOUS MILLED RUMBLE STRIP, AS DIRECTED BY ENGINEER	V4	2½" MILLING
S	SHOULDER GRADING ASB REQUIRED (EXCEPT AT RESIDENTIAL AREAS)	V5	1" MILLING

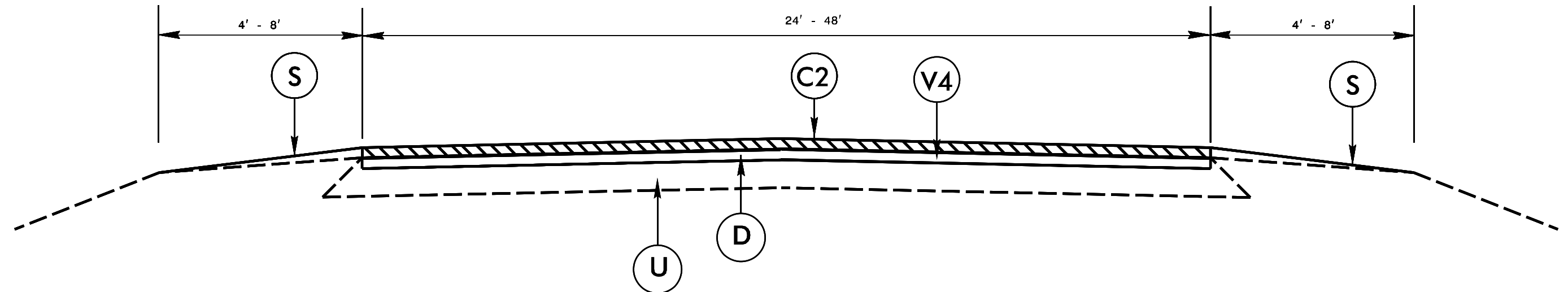
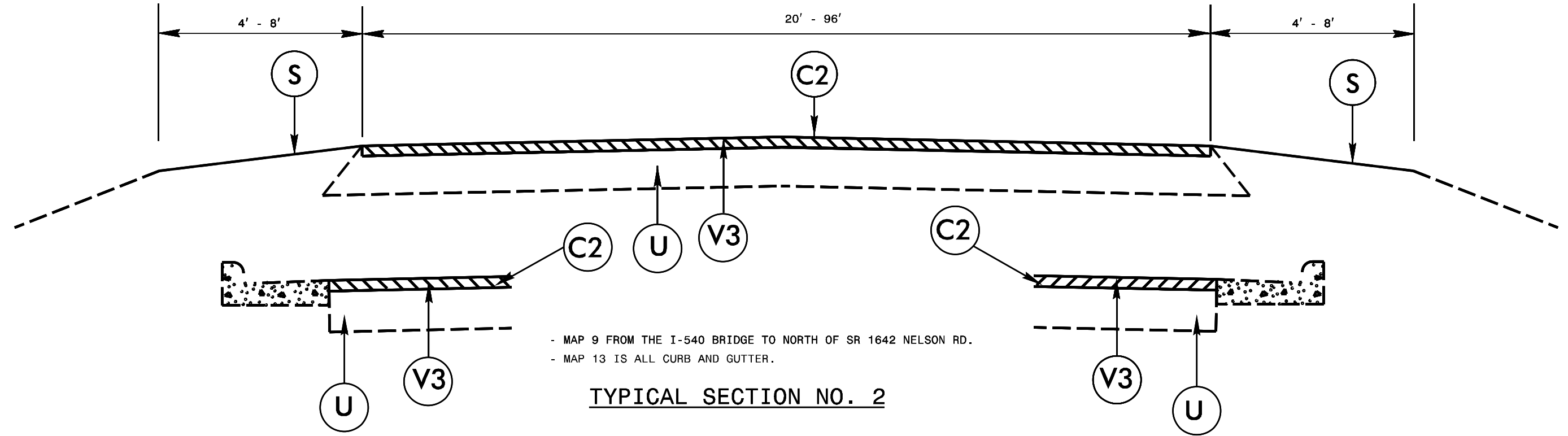


- MAPS 2, 3 AND 9 DO NOT REQUIRE 0-1.5" MILLING  
 - MAP 4 USE FROM THE JOINT 975' SOUTH OF SR 2028 TW ALEXANDER RD. TO THE END OF CURB AND GUTTER  
 - MAP 9 USE FROM THE DURHAM COUNTY LINE TO THE SCHOOL PROJECT JOINT

TYPICAL SECTION NO. 1

**PAVEMENT SCHEDULE**

		U	EXISTING PAVEMENT
C1	1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.	V1	0-1½" MILLING
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	V2	4" MILLING
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	V3	1½" MILLING
M	CONTINUOUS MILLED RUMBLE STRIP, AS DIRECTED BY ENGINEER	V4	2½" MILLING
S	SHOULDER GRADING ASB REQUIRED (EXCEPT AT RESIDENTIAL AREAS)	V5	1" MILLING

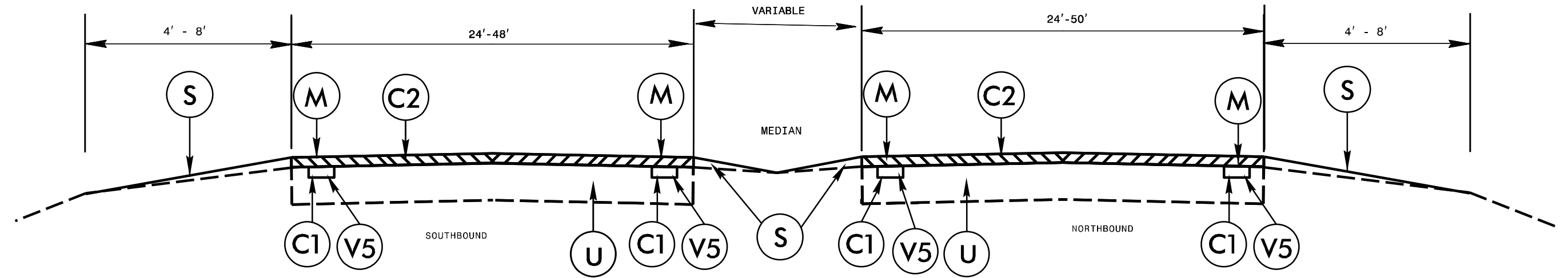


**PAVEMENT SCHEDULE**

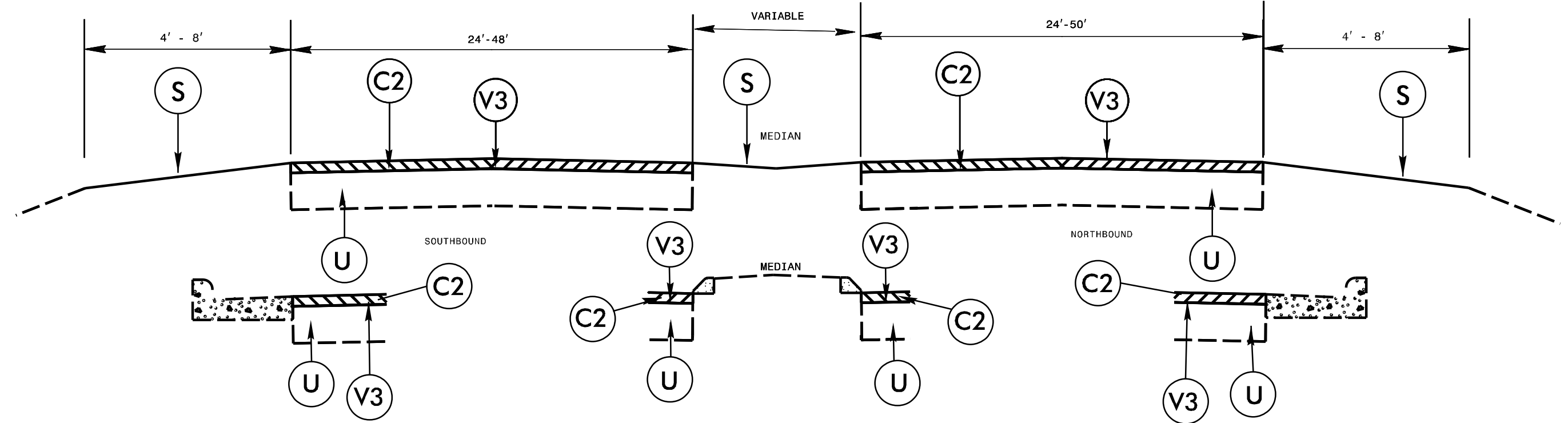
**PROJECT REFERENCE NO.**  
2018CPT.05.17.20321.1, etc.

**SHEET NO.**  
5

		U	EXISTING PAVEMENT
C1	1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.	V1	0-1½" MILLING
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	V2	4" MILLING
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	V3	1½" MILLING
M	CONTINUOUS MILLED RUMBLE STRIP, AS DIRECTED BY ENGINEER	V4	2½" MILLING
S	SHOULDER GRADING ASB REQUIRED (EXCEPT AT RESIDENTIAL AREAS)	V5	1" MILLING



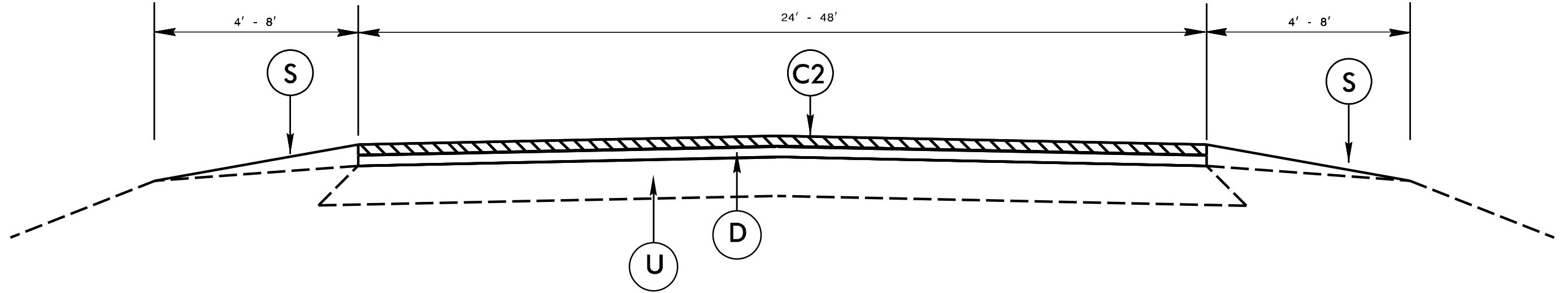
**TYPICAL SECTION NO. 4**



**TYPICAL SECTION NO. 5**

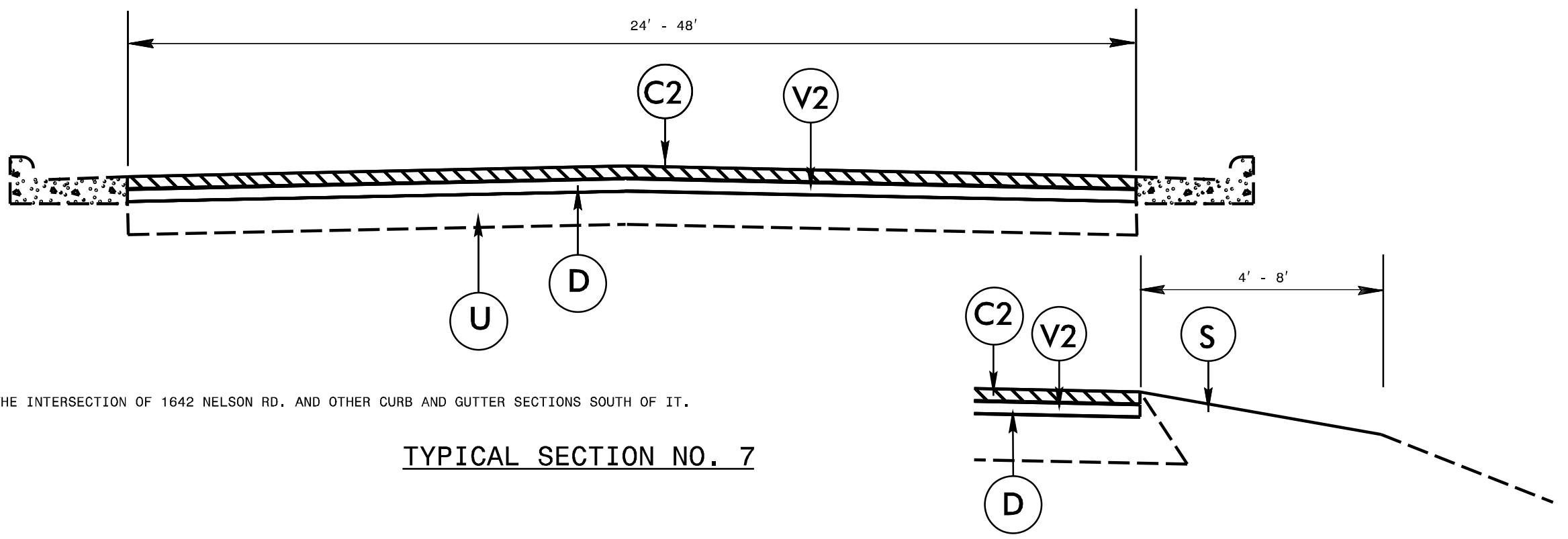
# PAVEMENT SCHEDULE

		U	EXISTING PAVEMENT
C1	1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.	V1	0-1½" MILLING
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	V2	4" MILLING
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	V3	1½" MILLING
M	CONTINUOUS MILLED RUMBLE STRIP, AS DIRECTED BY ENGINEER	V4	2½" MILLING
S	SHOULDER GRADING ASB REQUIRED (EXCEPT AT RESIDENTIAL AREAS)	V5	1" MILLING



- MAP 9 ON SHOULDER SECTIONS SOUTH OF SR 1642 NELSON RD.

TYPICAL SECTION NO. 6



- MAP 9 THE INTERSECTION OF 1642 NELSON RD. AND OTHER CURB AND GUTTER SECTIONS SOUTH OF IT.

TYPICAL SECTION NO. 7

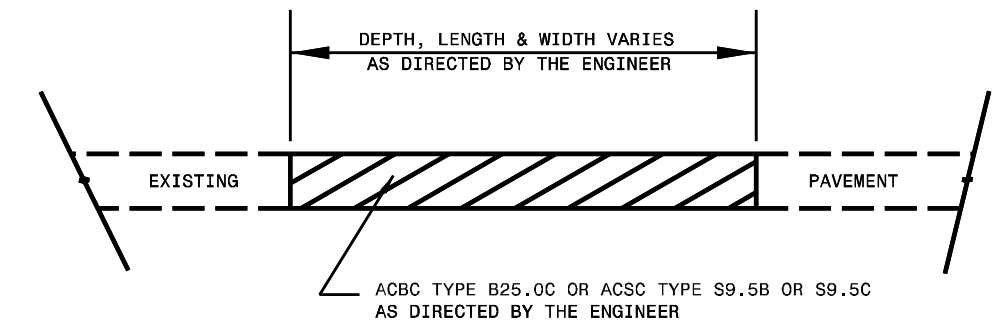
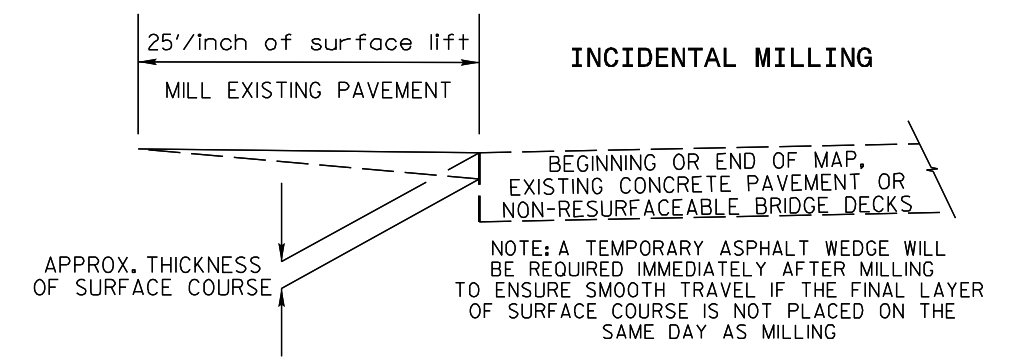
**PAVEMENT SCHEDULE**

		U	EXISTING PAVEMENT
C1	1" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.	V1	0-1½" MILLING
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	V2	4" MILLING
D	2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	V3	1½" MILLING
M	CONTINUOUS MILLED RUMBLE STRIP, AS DIRECTED BY ENGINEER	V4	2½" MILLING
S	SHOULDER GRADING ASB REQUIRED (EXCEPT AT RESIDENTIAL AREAS)	V5	1" MILLING

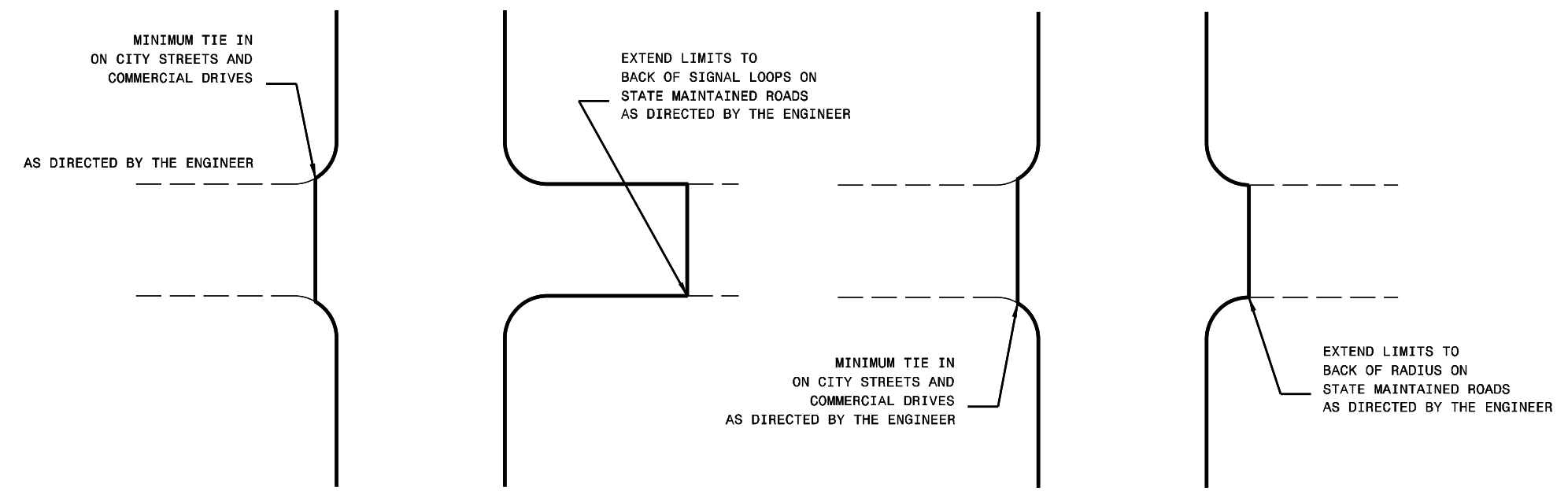
<b>PROJECT REFERENCE NO.</b>	<b>SHEET NO.</b>
2018CPT.05.17.20321.1, etc.	7

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 TO BE PERFORMED PRIOR TO PATCHING



**DETAIL OF PROJECT LIMITS AT SIGNALIZED Y LINES**

**DETAIL OF PROJECT LIMITS AT UNSIGNALIZED Y LINES**

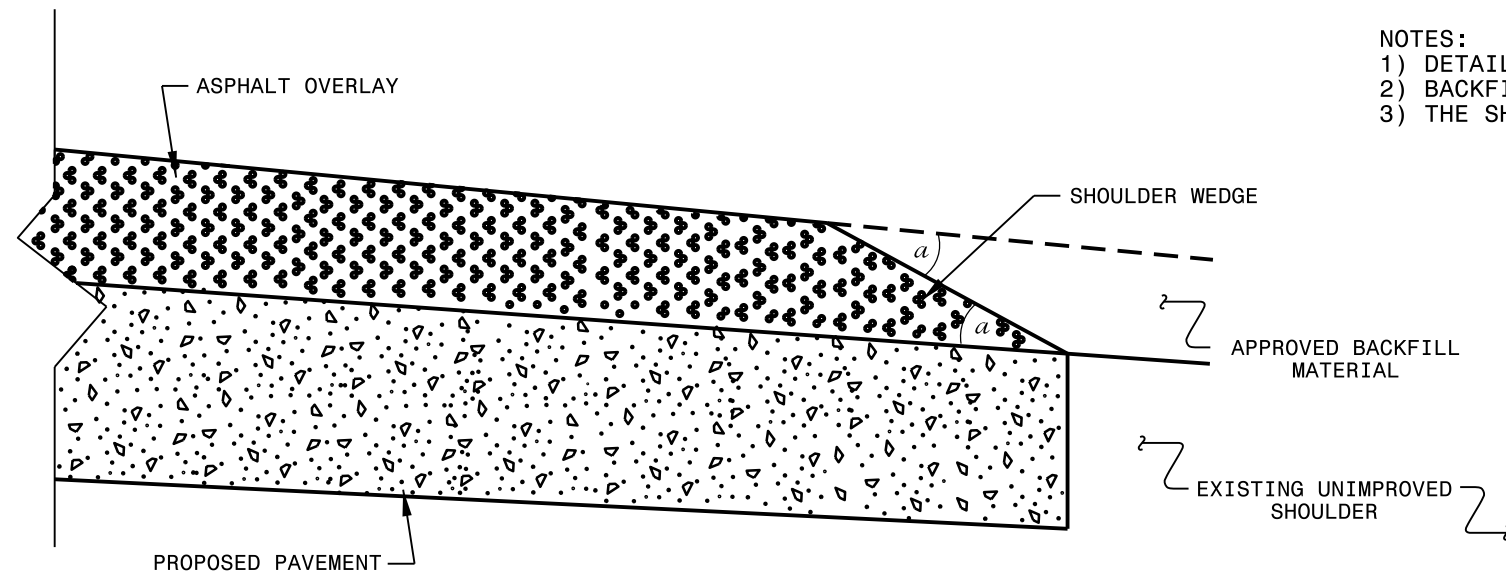
**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

***SOIL STABILIZATION TIMEFRAMES***

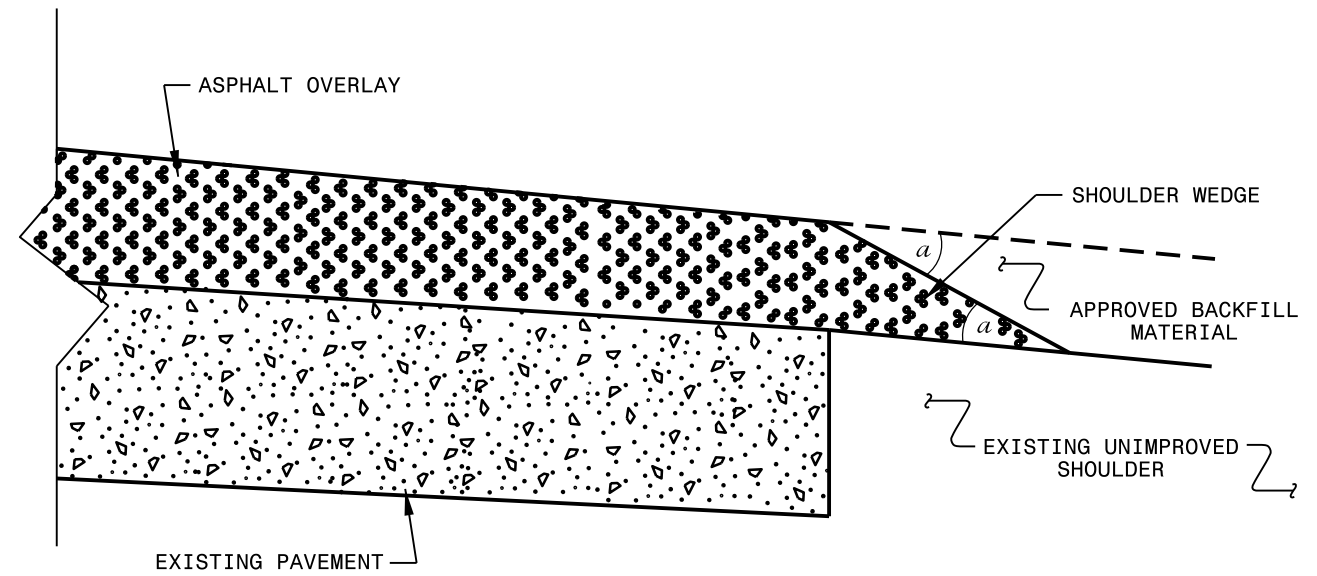
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
<b>PERIMETER DIKES, SWALES, DITCHES AND SLOPES</b>	<b>7 DAYS</b>	<b>NONE</b>
<b>HIGH QUALITY WATER (HOW) ZONES</b>	<b>7 DAYS</b>	<b>NONE</b>
<b>SLOPES STEEPER THAN 3:1</b>	<b>7 DAYS</b>	<b>IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.</b>
<b>SLOPES 3:1 OR FLATTER</b>	<b>14 DAYS</b>	<b>7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.</b>
<b>ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1</b>	<b>14 DAYS</b>	<b>NONE, EXCEPT FOR PERIMETERS AND HOW ZONES.</b>



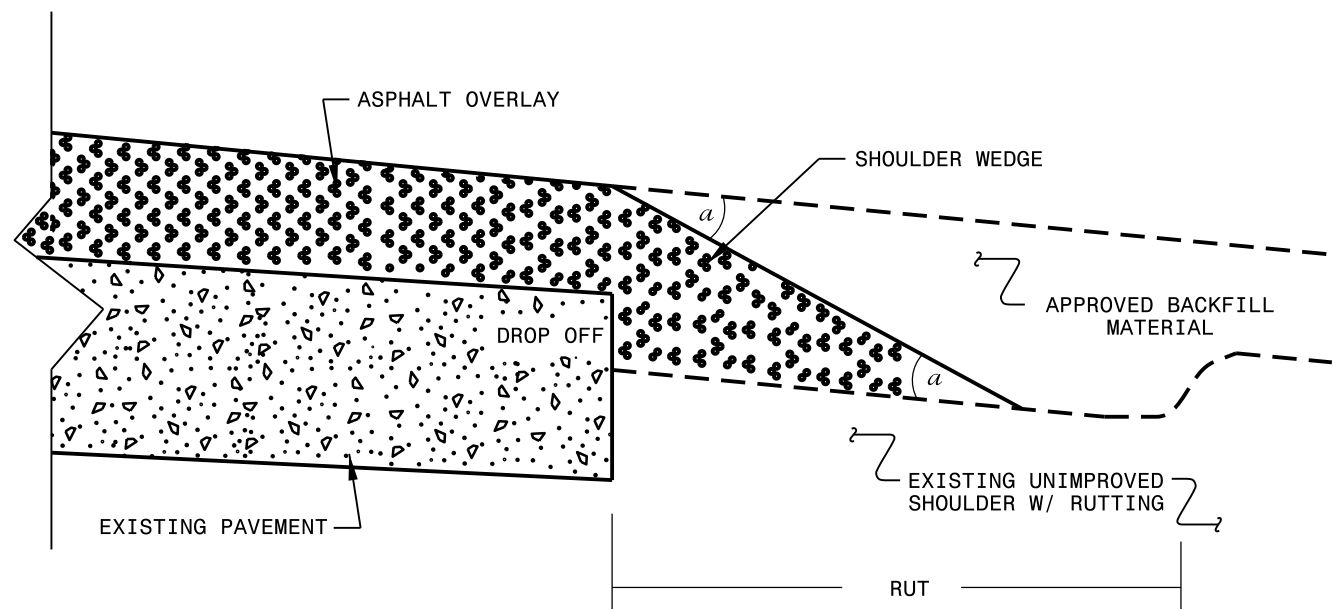
- NOTES:
- 1) DETAIL DOES NOT APPLY TO OGAFc AND ULTRA-THIN BONDED WEARING COURSE.
  - 2) BACKFILL SHOULDER WITH APPROVED MATERIAL.
  - 3) THE SHOULDER WEDGE DEVICE MAY BE DISENGAGED AT PAVED DRIVEWAYS AND SIDE STREETS.



**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°

<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: 10/16/12		
CHECKED BY:	DATE:		
FILE SPEC.: susr/details/stand/shoulderwedgedetail.dgn			

SYSTEMS DESIGN  
 USER NAME

PROJECT NO.	SHEET NO.	TOTAL NO.
2018CPT.05.17.20321.1, etc.	10	

## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	0106000000-E	1260000000-E	0264000000-E	1220000000-E	1297000000-E				1308000000-E	1330000000-E	1503000000-E	1519000000-E	1575000000-E	1704000000-E	1840000000-E		
											BORROW	AGGREGATE SHOULDER BORROW	SHOULDER GRADING	INCIDENTAL STONE BASE	1½" MILLING	2.5" MILLING	4" MILLING	1" MILLING	0" TO 1.5" MILLING	INCIDENTAL MILLING	INTERMEDIATE COURSE, I19.0C	SURFACE COURSE, S9.5B	ASPHALT BINDER FOR PLANT MIX	PATCHING EXISTING PAVEMENT	MILLED RUMBLE STRIPS (ASPHALT CEMENT CONCRETE)		
									MI	FT	CY	TON	SMI	TONS	SY	SY	SY	SY	SY	SY	TONS	TONS	TON	TONS	LF		
2018CPT.05.17.20321.1	Durham	1	SR 1969 - CHIN PAGE RD	SR 1959 - S MIAMI BLVD TO SR 1973 - PAGE RD	2	2	NO	NO	1.560	22-34	73	139	2.90	72	25,728					409			2,274	152	422		
		2	SR 1970 - GLOBE RD	SR 1973 - PAGE RD TO WAKE CO	1	2	NO	NO	0.250	20-38	26		0.51	13						292			551	37	69		
		3	SR 1971 - AIRPORT RD	JOINT 500' +/- S OF SR 1973 - PAGE RD TO WAKE CO	1	2	NO	NO	0.070	22			17	0.18	5							92		79	5	20	
		4	SR 1973 - PAGE RD	350' E OF SR 1969 - CHIN PAGE RD TO 975' SOUTH OF SR 2028 - TW ALEXANDER DR (OMIT SECTIONS AT SR 1970 - GLOBE RD AND SR 1971 - AIRPORT RD)	1,3	2	NO	NO	0.945	22-36	93		86	1.80	45		12,702				126	1,095	1,900	1,493	191	20	
		5	SR 1973 - PAGE RD	350' EAST OF SR 1969 - CHIN PAGE RD TO FIRST RAMP AT I-40	1	2	NO	NO	1.530	22-58	60		115	2.39	60					1,578	830			4,236	284	240	
		6	SR 1999 - DAVIS DR	SR 1121 - E CORNWALLIS RD TO NC 54 - NELSON CHAPEL HILL HWY	5	4	NO	NO	0.870	48-90	41			1.74	43	34,569					1,322			3,115	209	401	
<b>TOTAL FOR PROJ NO. 2018CPT.05.17.20321.1</b>									<b>5.225</b>		<b>293</b>	<b>357</b>	<b>9.52</b>	<b>238</b>	<b>60,297</b>	<b>12,702</b>			<b>1,704</b>	<b>4,040</b>	<b>1,900</b>	<b>11,748</b>	<b>878</b>	<b>1,172</b>			
															<b>72,999</b>												
2018CPT.05.17.20921.1	Wake	7	SR 1644 - GLOBE RD	DURHAM CO TO END C&G	2	3	NO	NO	1.530	34-54	31		0.61	15	39,209					2,516			3,624	243	182		
		8	SR 1645 - LUMLEY RD	SR 3109 - BRIER CREEK PKWY TO SR 3099 - MT HERMAN RD	2	5	NO	NO	1.170	56-96			11	0.12	3	41,742					2,615			3,850	258	146	
		9	SR 1789 - PLEASANT GROVE CHURCH RD	.26 MI NORTH OF SR 3015 - AIRPORT BLVD TO DURHAM CO (OMIT NEWLY PAVED SECTION AT THE SCHOOL)	1,2,6,7	2	YES	NO	1.683	24-72	77		227	2.94	74	6,006		11,827			3,337	3,650	3,449	231	697		
		10	SR 1828 - HOWARD RD	NC 50 - CREEDMOOR RD TO SR 1826 - RAY RD	2	2	NO	NO	0.670	22-34	57			1.14	29	10,140					1,023			987	66	16	
		11	SR 3097 - AVIATION PKWY	SR 1644 - GLOBE RD TO PVMNT JT BEFORE AIRPORT EXIT RAMPS	4	4	NO	NO	2.260	80-104	526			10.52	130						2,285			10,830	726	263	30,614
		12	SR 3102 - ARCO CORPORATE DR	SR 3109 - BRIER CREEK PKWY TO END MAINT US 70 - GLENWOOD AVE TO SR 1644 - GLOBE RD	2	2	NO	NO	0.450	28-40	17		22	0.32	8	8,424					836			802	54	25	
		13	SR 3109 - BRIER CREEK PKWY	SR 1828 - HOWARD RD TO SR 1828 - HOWARD RD	2	4	NO	NO	1.920	48-72						75,285					4,856			6,954	466	192	
		14	SR 3409 - FARNBOROUGH RD	SR 1828 - HOWARD RD TO SR 1828 - HOWARD RD	2	2	NO	NO	0.280	20	28			0.56	15	3,285								286	19	17	
<b>TOTAL FOR PROJ NO. 2018CPT.05.17.20921.1</b>									<b>9.963</b>		<b>736</b>	<b>260</b>	<b>16.21</b>	<b>274</b>	<b>184,091</b>		<b>11,827</b>	<b>6,804</b>		<b>17,468</b>	<b>3,650</b>	<b>30,782</b>	<b>2,063</b>	<b>1,538</b>	<b>30,614</b>		
															<b>202,722</b>												
<b>GRAND TOTAL</b>									<b>15.188</b>		<b>1,029</b>	<b>617</b>	<b>25.73</b>	<b>512</b>	<b>244,388</b>	<b>12,702</b>	<b>11,827</b>	<b>6,804</b>	<b>1,704</b>	<b>21,508</b>	<b>5,550</b>	<b>42,530</b>	<b>2,941</b>	<b>2,710</b>	<b>30,614</b>		
															<b>275,721</b>												

PROJECT NO.	SHEET NO.	TOTAL NO.
2018CPT.05.17.20321.1, etc.	11	

## SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH	WIDTH	2830000000-N	2845000000-N	6000000000-E	6071010000-E	6084000000-E	7444000000-E
											ADJUST MANHOLES	ADJUST METER OR VALVE BOX	TEMPORARY SILT FENCE	WATTLE	SEED & MULCHING	INDUCTIVE LOOP SAWCUT
											EA	EA	LF	LF	AC	LF
2018CPT.05.17.20321.1	Durham	1	SR 1969 - CHIN PAGE RD	SR 1959 - S MIAMI BLVD TO SR 1973 - PAGE RD	2	2	NO	NO	1.560	22-34	3	1	105	270	1.05	216
		2	SR 1970 - GLOBE RD	SR 1973 - PAGE RD TO WAKE CO	1	2	NO	NO	0.250	20-38			37	100	0.37	
		3	SR 1971 - AIRPORT RD	JOINT 500' +/- S OF SR 1973 - PAGE RD TO WAKE CO	1	2	NO	NO	0.070	22						
		4	SR 1973 - PAGE RD	350' E OF SR 1969 - CHIN PAGE RD TO 975' SOUTH OF SR 2028 - TW ALEXANDER DR (OMIT SECTIONS AT SR 1970 - GLOBE RD AND SR 1971 - AIRPORT RD)	1,3	2	NO	NO	0.945	22-36			65	170	0.65	
		5	SR 1973 - PAGE RD	350' EAST OF SR 1969 - CHIN PAGE RD TO FIRST RAMP AT I-40	1	2	NO	NO	1.530	22-58	8	7	87	220	0.87	708
		6	SR 1999 - DAVIS DR	SR 1121 - E CORNWALLIS RD TO NC 54 - NELSON CHAPEL HILL HWY	5	4	NO	NO	0.870	48-90			126	320	1.26	
<b>TOTAL FOR PROJ NO. 2018CPT.05.17.20321.1</b>									<b>5.225</b>		<b>11</b>	<b>8</b>	<b>420</b>	<b>1,080</b>	<b>4.20</b>	<b>924</b>
2018CPT.05.17.20921.1	Wake	7	SR 1644 - GLOBE RD	DURHAM CO TO END C&G	2	3	NO	NO	1.530	34-54	1	1	44	120	0.44	798
		8	SR 1645 - LUMLEY RD	SR 3109 - BRIER CREEK PKWY TO SR 3099 - MT HERMAN RD	2	5	NO	NO	1.170	56-96						2,964
		9	SR 1789 - PLEASANT GROVE CHURCH RD	.26 MI NORTH OF SR 3015 - AIRPORT BLVD TO DURHAM CO (OMIT NEWLY PAVED SECTION AT THE SCHOOL)	1,2,6,7	2	YES	NO	1.683	24-72	5	6	43	110	0.43	
		10	SR 1828 - HOWARD RD	NC 50 - CREEDMOOR RD TO SR 1826 - RAY RD	2	2	NO	NO	0.670	22-34		4	83	210	0.83	246
		11	SR 3097 - AVIATION PKWY	SR 1644 - GLOBE RD TO PVMNT JT BEFORE AIRPORT EXIT RAMPS	4	4	NO	NO	2.260	80-104			765	1,920	7.65	
		12	SR 3102 - ARCO CORPORATE DR	SR 3109 - BRIER CREEK PKWY TO END MAINT	2	2	NO	NO	0.450	28-40			23	60	0.23	
		13	SR 3109 - BRIER CREEK PKWY	US 70 - GLENWOOD AVE TO SR 1644 - GLOBE RD	2	4	NO	NO	1.920	48-72						3,930
		14	SR 3409 - FARNBOROUGH RD	SR 1828 - HOWARD RD TO SR 1828 - HOWARD RD	2	2	NO	NO	0.280	20			44	110	0.44	
<b>TOTAL FOR PROJ NO. 2018CPT.05.17.20921.1</b>									<b>9.963</b>		<b>6</b>	<b>11</b>	<b>1,002</b>	<b>2,530</b>	<b>10.02</b>	<b>7,938</b>
<b>GRAND TOTAL</b>									<b>15.188</b>		<b>17</b>	<b>19</b>	<b>1,422</b>	<b>3,610</b>	<b>14.22</b>	<b>8,862</b>

PROJECT NO.	SHEET NO.	TOTAL NO.
2018CPT.05.17.20321.1, etc.	12	

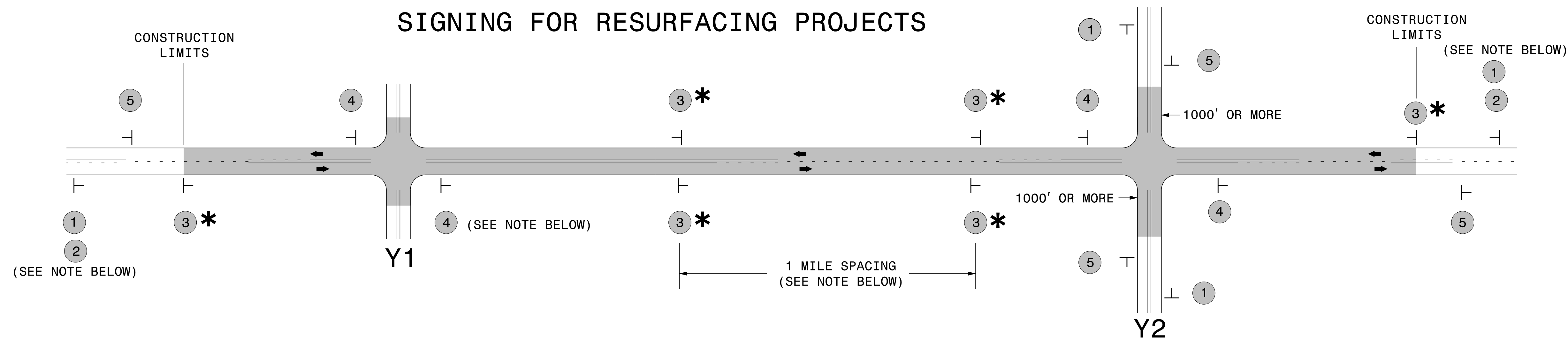
Refer to standard drawing 1205.06 for pavement marking lane drops

## THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LENGTH	WIDTH	4413000000-E	4457000000-N	4510000000-N	4685000000-E		4686000000-E		4695000000-E	4697000000-E	4700000000-E		4710000000-E		4725000000-E		477000										
									WORK ZONE ADVANCE/GENERAL WARNING SIGNING	TEMPORARY TRAFFIC CONTROL	LAW ENFORCEMENT	4" X 90 M WHITE THERMO	4" X 90 M YELLOW THERMO	4" X 120 M WHITE THERMO	4" X 120 M WHITE THERMO	8" X 90 M WHITE THERMO	8" X 120 M WHITE THERMO	12" X 90 M YELLOW THERMO	12" X 90 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO MSG ONLY 120 M	THERMO MSG SCHOOL 120 M	THERMO RT ARROW 90 M	THERMO LT ARROW 90 M	THERMO STR & LT ARROW 90 M	THERMO STR ARROW 90 M	THERMO STR & RT ARROW 90 M	THERMO MERGE ARROW 90 M	4" WHITE COLD APPLIED PLASTIC, TYPE II					
									SF	LS	HR	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	LF								
2018CPT.05.17.20321.1	Durham	1	SR 1969 - CHIN PAGE RD	SR 1959 - S MIAMI BLVD TO SR 1973 - PAGE RD	2	2	1.560	22-34	175				15,159		20,408	1,499			642		42			5	9	5								
		2	SR 1970 - GLOBE RD	SR 1973 - PAGE RD TO WAKE CO	1	2	0.250	20-38	126				2,690		2,944	208				50				1	2									
		3	SR 1971 - AIRPORT RD	JOINT 500' +/- S OF SR 1973 - PAGE RD TO WAKE CO	1	2	0.070	22	10				753		753																			
		4	SR 1973 - PAGE RD	350' E OF SR 1969 - CHIN PAGE RD TO 975' SOUTH OF SR 2028 - TW ALEXANDER DR (OMIT SECTIONS AT SR 1970 - GLOBE RD AND SR 1971 - AIRPORT RD)	1,3	2	0.945	22-36	104		*		40	9,459		10,984	473				180				3	5								
		5	SR 1973 - PAGE RD	350' EAST OF SR 1969 - CHIN PAGE RD TO FIRST RAMP AT I-40	1	2	1.530	22-58	171				40	11,263		20,409	2,067	280	307		821	1,036	44	4		7	12		2	2	1			
		6	SR 1999 - DAVIS DR	SR 1121 - E CORNWALLIS RD TO NC 54 - NELSON CHAPEL HILL HWY	5	4	0.870	48-90	97				160	5,642	5,406	360	8,095	712	421				497	8		12	24		19			819		
<b>TOTAL FOR PROJ NO. 2018CPT.05.17.20321.1</b>									<b>683</b>	<b>*</b>	<b>240</b>	<b>44,966</b>	<b>5,406</b>	<b>55,858</b>	<b>12,342</b>	<b>992</b>	<b>728</b>	<b>1,693</b>	<b>1,036</b>	<b>583</b>	<b>12</b>	<b>28</b>	<b>52</b>	<b>5</b>	<b>21</b>	<b>2</b>	<b>1</b>	<b>819</b>						
												<b>50,372</b>		<b>68,200</b>				<b>2,729</b>		<b>583</b>	<b>12</b>		<b>109</b>			<b>1,3</b>								
2018CPT.05.17.20921.1	Wake	7	SR 1644 - GLOBE RD	DURHAM CO TO END C&G	2	3	1.530	34-54	161				6,297		17,822	4,078	852	498		312	148	504	16	30	22	36		12		3	640			
		8	SR 1645 - LUMLEY RD	SR 3109 - BRIER CREEK PKWY TO SR 3099 - MT HERMAN RD	2	5	1.170	56-96	131				160	1,215		15,810	5,338	1,213	260		978	191	642	20		17	24		29	5		958		
		9	SR 1789 - PLEASANT GROVE CHURCH RD	.26 MI NORTH OF SR 3015 - AIRPORT BLVD TO DURHAM CO (OMIT NEWLY PAVED SECTION AT THE SCHOOL)	1,2,6,7	2	1.683	24-72	188				40	17,143		23,107	2,552				460	126	100		12	6	6		6	3	3	826		
		10	SR 1828 - HOWARD RD	NC 50 - CREEDMOOR RD TO SR 1826 - RAY RD	2	2	0.670	22-34	75				4,759		6,978	388			159		42		40			2	7		1					
		11	SR 3097 - AVIATION PKWY	SR 1644 - GLOBE RD TO PVMNT JT BEFORE AIRPORT EXIT RAMP	4	4	2.260	80-104	590		*		40	24,770	23,866	822	7,327	3,874							8		3	3			15	1,890		
		12	SR 3102 - ARCO CORPORATE DR	SR 3109 - BRIER CREEK PKWY TO END MAINT	2	2	0.450	28-40	50					2,250		4,808	237				265	40				1	4			6				
			SR 3109 - BRIER CREEK PKWY	US 70 - GLENWOOD AVE TO SR 1644 - GLOBE RD	2	4	1.920	48-72	430				80	718	1,329	186	11,868	2,818	1,215				35	505	2,596		12	27	49	2	65			
			SR 3409 - FARNBOROUGH RD	SR 1828 - HOWARD RD TO SR 1828 - HOWARD RD	2	2	0.280	20	34																									
<b>TOTAL FOR PROJ NO. 2018CPT.05.17.20921.1</b>									<b>1,659</b>	<b>*</b>	<b>320</b>	<b>57,152</b>	<b>25,195</b>	<b>69,533</b>	<b>31,788</b>	<b>8,757</b>	<b>2,132</b>	<b>2,092</b>	<b>1,010</b>	<b>3,882</b>	<b>44</b>	<b>54</b>	<b>78</b>	<b>129</b>	<b>2</b>	<b>119</b>	<b>8</b>	<b>21</b>	<b>4,314</b>					
												<b>82,347</b>		<b>101,321</b>				<b>3,102</b>		<b>3,882</b>	<b>98</b>		<b>357</b>			<b>8,1</b>								
<b>GRAND TOTAL</b>												<b>15,188</b>		<b>2,342</b>	<b>1.00</b>	<b>560</b>	<b>102,118</b>	<b>30,601</b>	<b>125,391</b>	<b>44,130</b>	<b>9,749</b>	<b>2,860</b>	<b>3,785</b>	<b>2,046</b>	<b>4,465</b>	<b>56</b>	<b>54</b>	<b>106</b>	<b>181</b>	<b>7</b>	<b>140</b>	<b>10</b>	<b>22</b>	<b>5,133</b>
												<b>132,719</b>		<b>169,521</b>						<b>5,831</b>		<b>4,465</b>	<b>110</b>		<b>466</b>			<b>9,5</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	 <small>W7-3aP 24" X 18"</small>	#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 *	 <small>SP 13107 48" X 48"</small>	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	 <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.		
	5	 <small>G20-2 A 48" X 24"</small>	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.		

**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

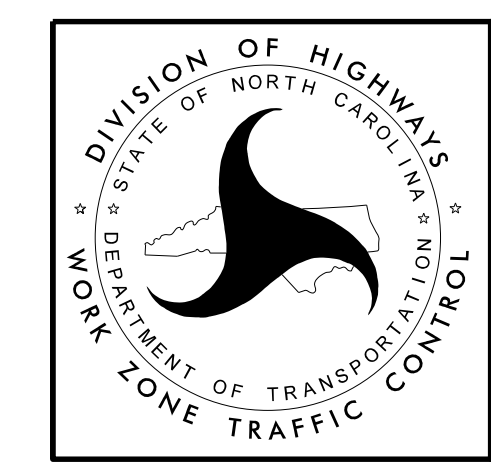
WHEN PAVING/CONSTRUCTION ACTIVITIES PROCEED ACROSS AN UNSIGNED -Y- LINE, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.



PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.

### \* SIGNING FOR ASPHALT SURFACE TREATMENTS (ONLY)

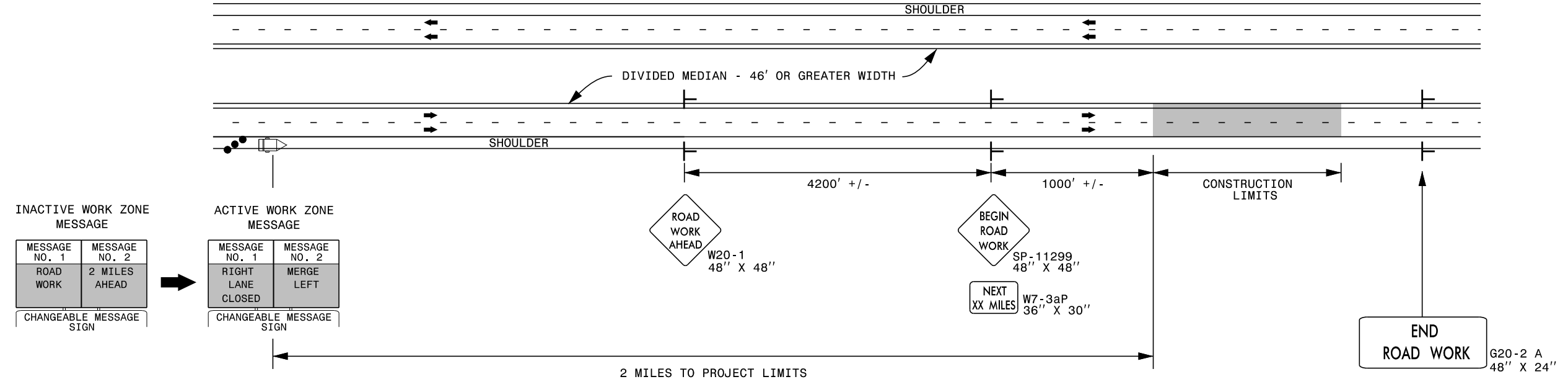
SUBSTITUTE LOW/SOFT SHOULDER SIGNS BY ALTERNATING THE FOLLOWING TWO SIGNS:  
 STARTING WITH "UNMARKED PAVEMENT AHEAD" (SP 06026) FOLLOWED BY "LOOSE GRAVEL" (W8-7).



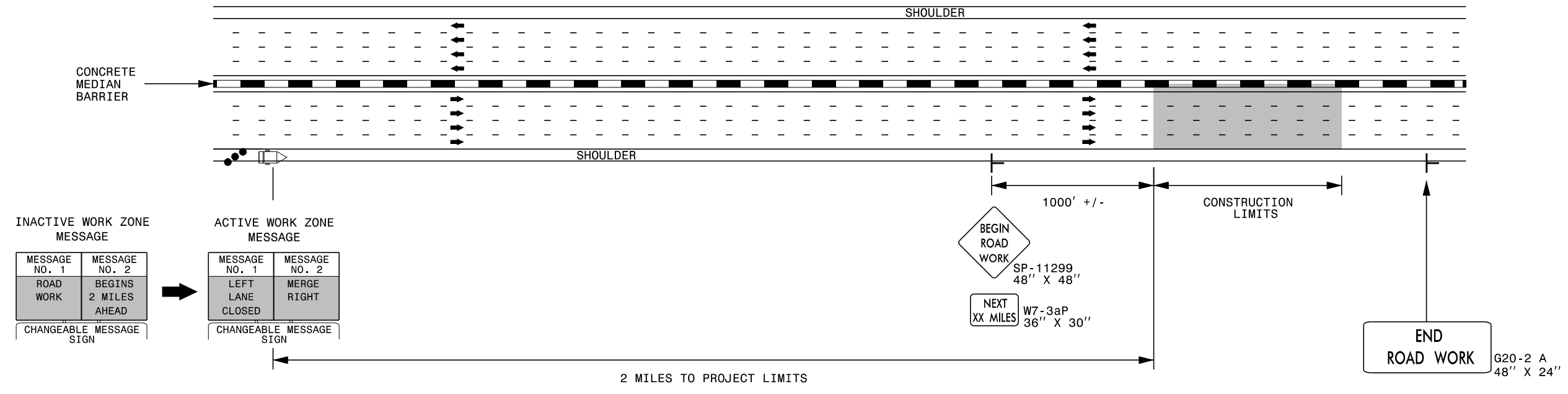
**RESURFACING  
ADVANCE WARNING SIGNS  
FOR  
RURAL AND SUBURBAN  
2 LANE ROADWAYS**

6/3/2014 S:\TMU\WZTC\Apps\WorkZoneGeneral\ExternalWebPage\DesRes\Resurfacing\Resurfacing\_AdvWarn\_2Ln.dgn User:rmgarr.eht

### 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.

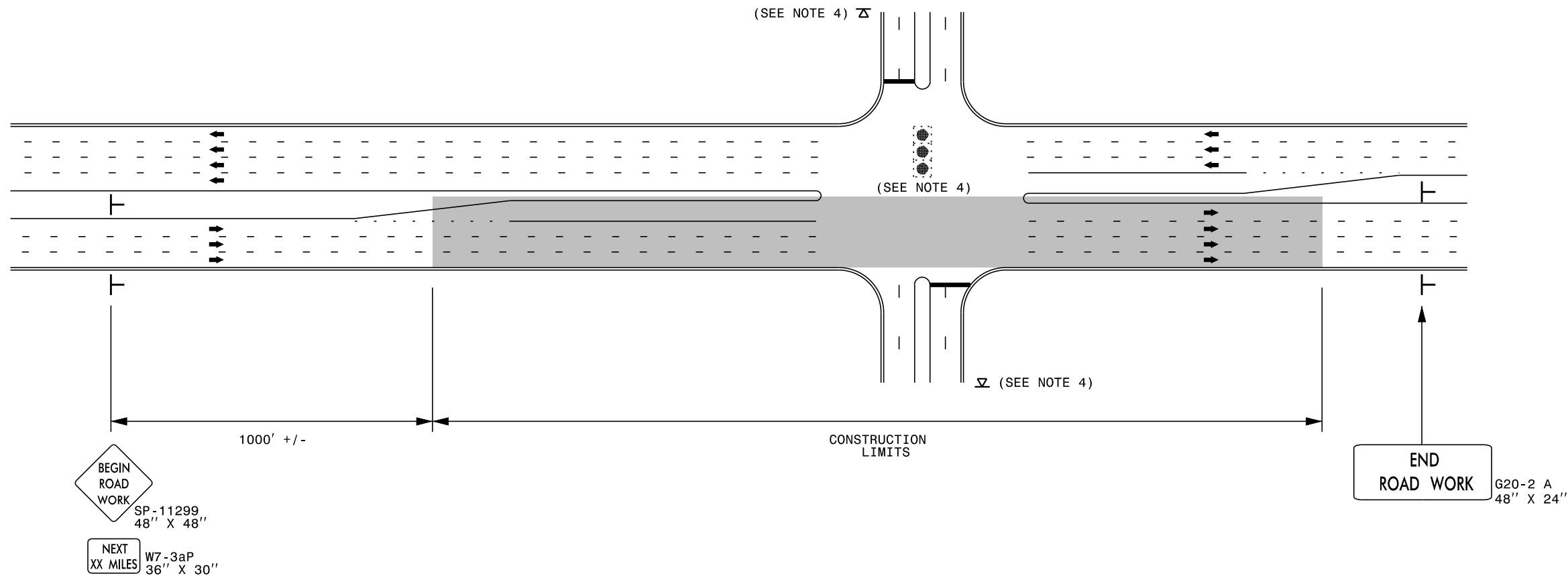
**LEGEND**

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

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

10/3/2013 5:11:10 PM S:\T\U\W\ZTC\Resurfacing\2013\Documents\New\_Procedures\_05\_09\_2013\Resurfacing\_AdvWarn\_HSpd.dgn User:frmgarratt

## URBAN / SUBURBAN WORKZONES

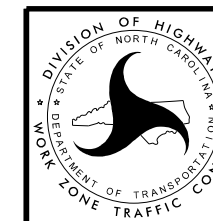


### NOTES:

- 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

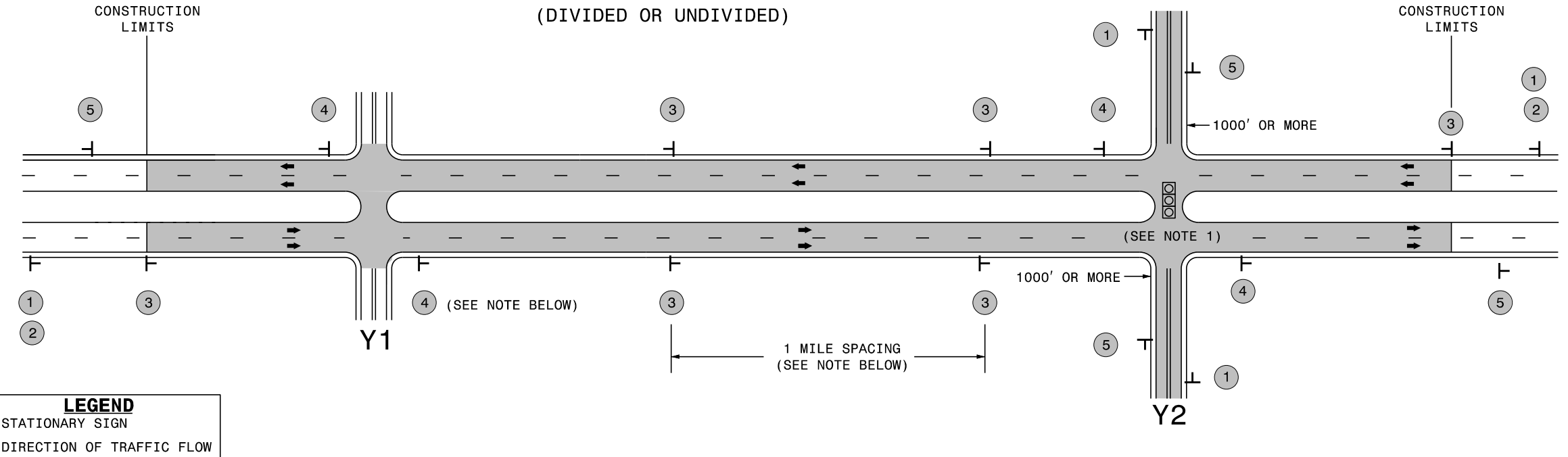
- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW



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



## SIGNING FOR RURAL AND SUBURBAN MULTI-LANE ROADWAYS WITH SHOULDER SECTIONS (DIVIDED OR UNDIVIDED)



### MAINLINE (-L-) SIGNING

### -Y- LINE SIGNING

<b>SIGNING NOTES AND PLACEMENT PER DIRECTION</b>	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 RESURFACING 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 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	 <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.		
	5	 <small>G20-2 A 48" X 24"</small>	PLACE 500' FOLLOWING THE END OF CONSTRUCTION LIMITS.		

**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, ADVANCE WARNING PORTABLE SIGNS SHALL BE USED ALONG THE -Y- LINE AS SHOWN BELOW. REMOVE UPON COMPLETION OF WORK.



PLACED 500' IN ADVANCE OF FLAGGER. PLACED 250' IN ADVANCE OF FLAGGER.

**NOTES:**

- 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.

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
WORK ZONE TRAFFIC CONTROL

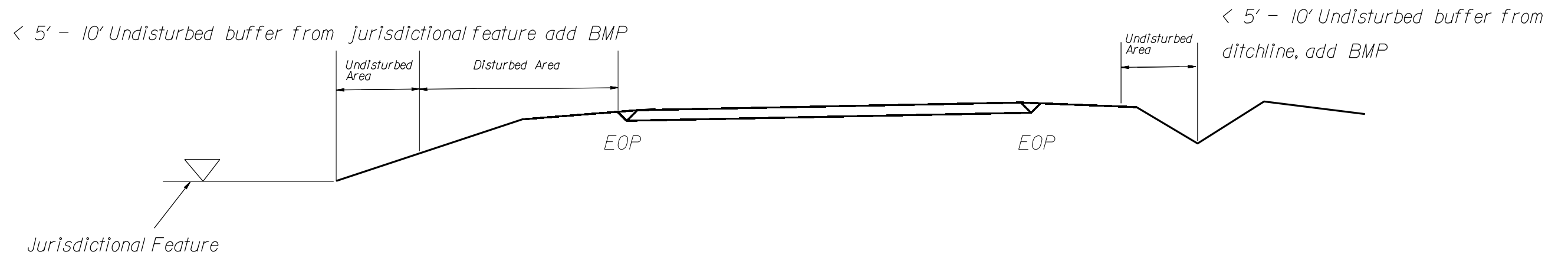
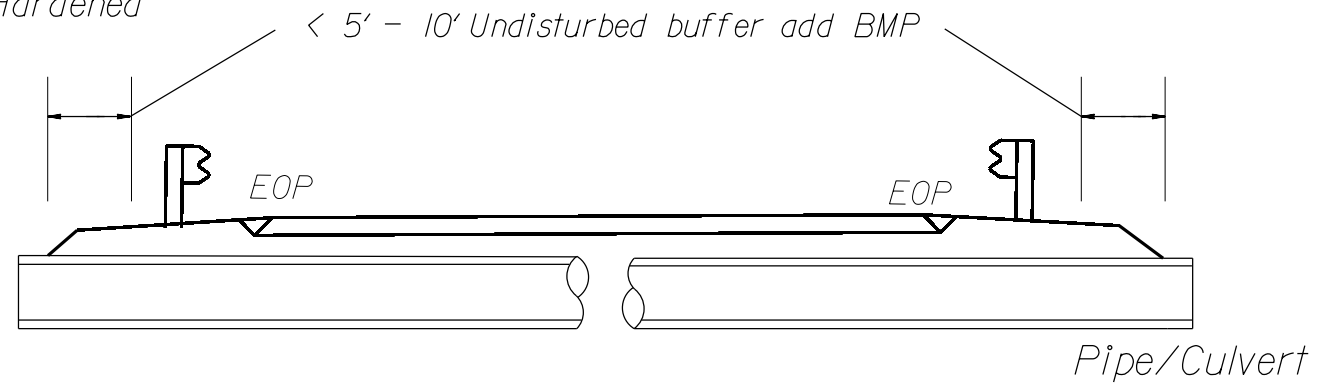
**RESURFACING  
ADVANCE WARNING SIGNS  
FOR RURAL AND SUBURBAN  
MULTI-LANE ROADWAYS  
W/ SHOULDER SECTIONS**

2/24/2014 5:11:10 PM \\TMC\ZTC\Resurfacing\2013\Documents\New\_Procedures\05\_09\_2013\Resurfacing\_AdvWarn\_UrSu\_Shldr.dgn User:rmgarratt

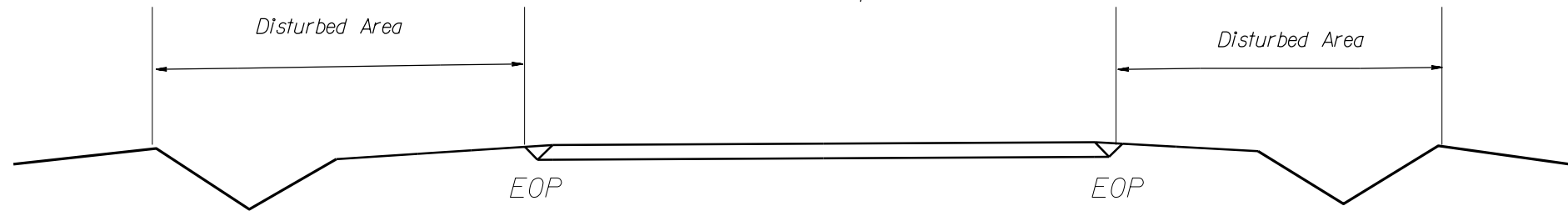
NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle, Silt Fence or Hardened Aggregate.

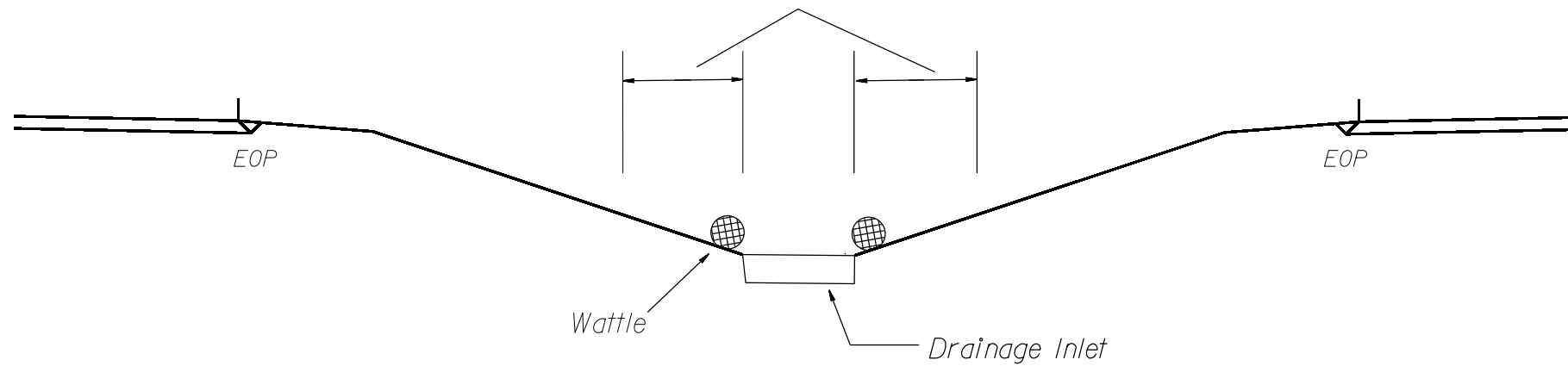
# EROSION CONTROL DETAIL



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

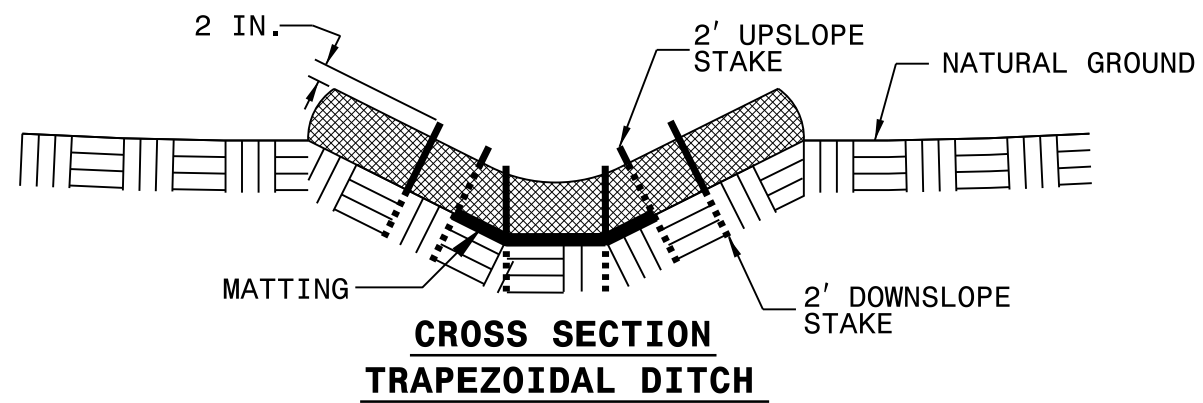
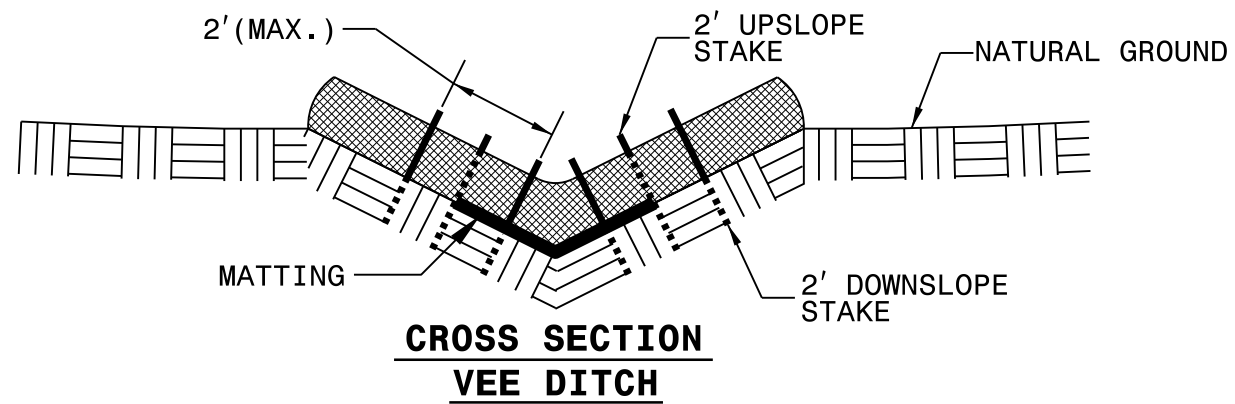
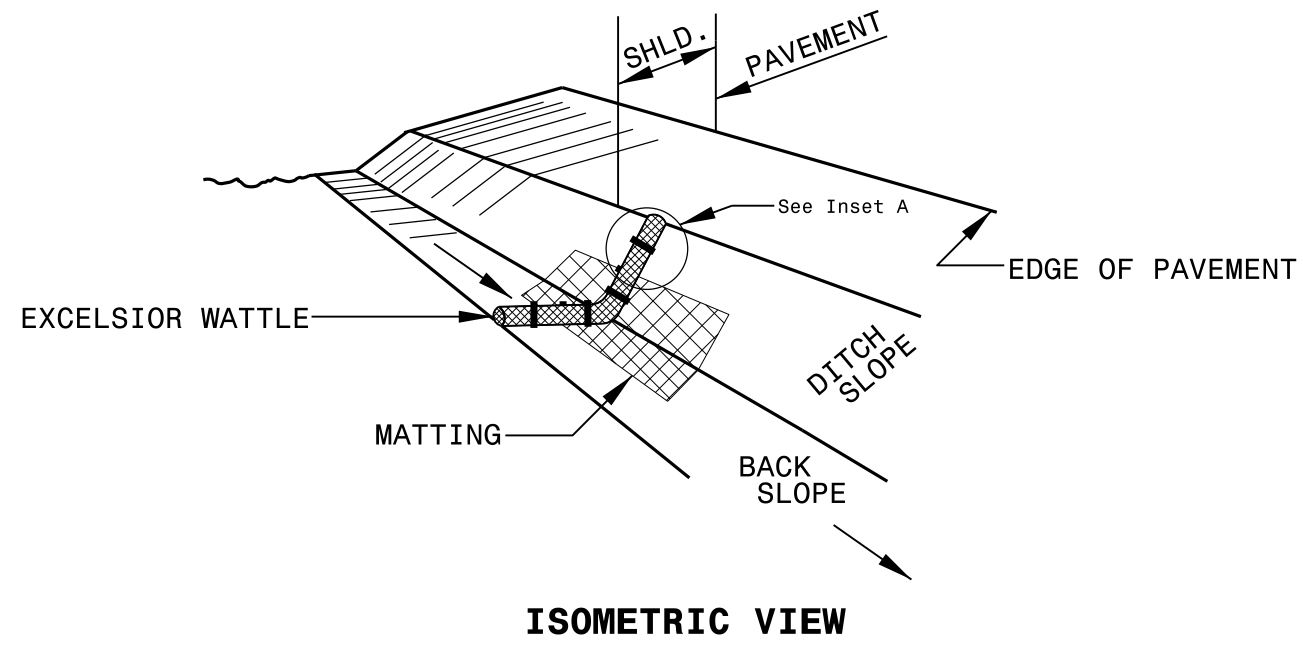


< 5' - 10' Undisturbed buffer from inlet, add wattle



NOT TO SCALE

# WATTLE DETAIL



NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.

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

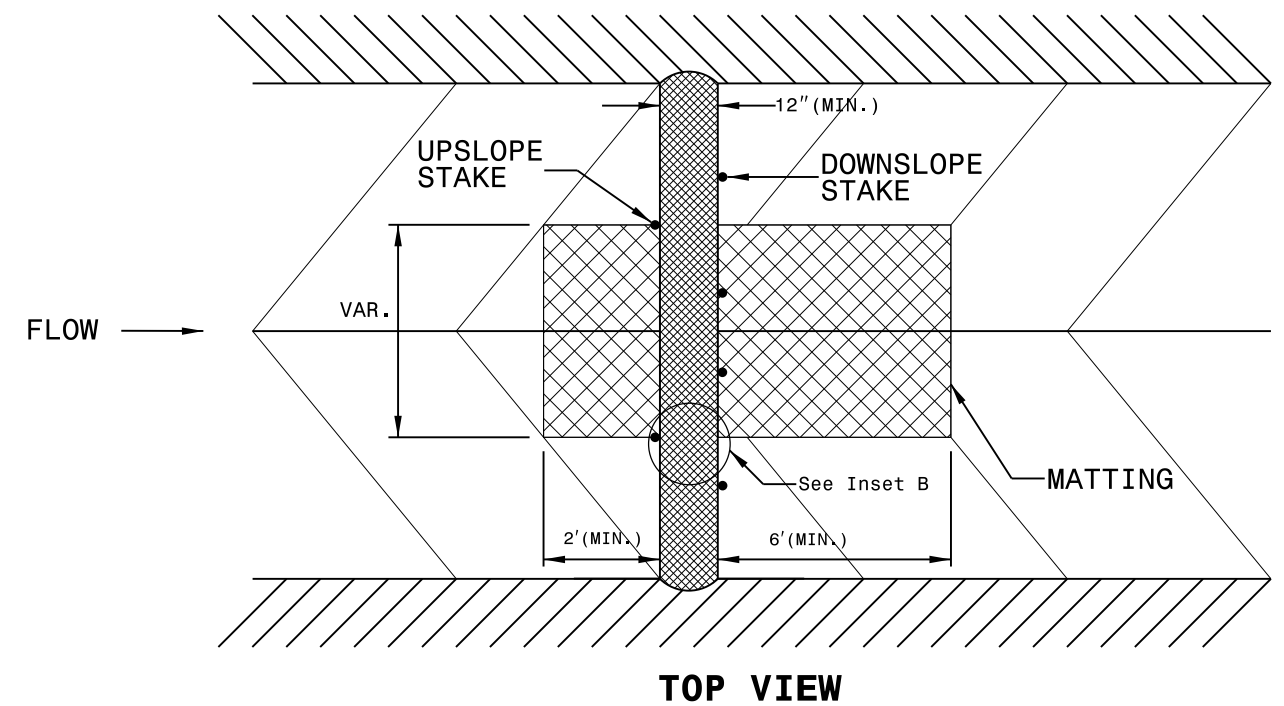
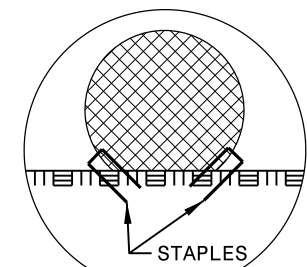
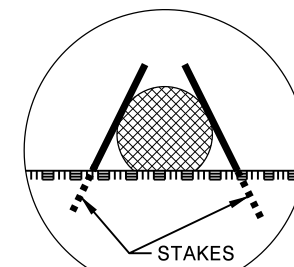
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

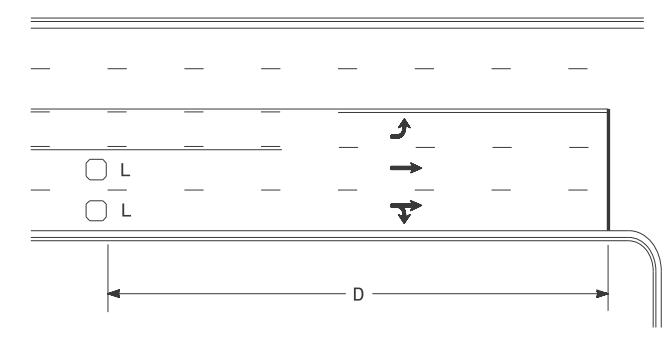
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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.



### High Speed Detection (≥40 mph)

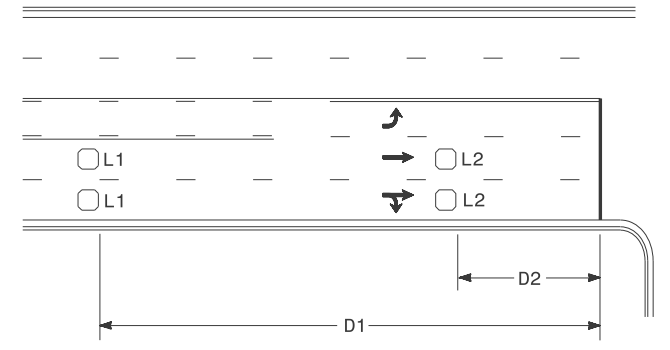


Speed Limit mph	D ft
40	250
45	300
50	355
55	420

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

Volume Density Operation

OR

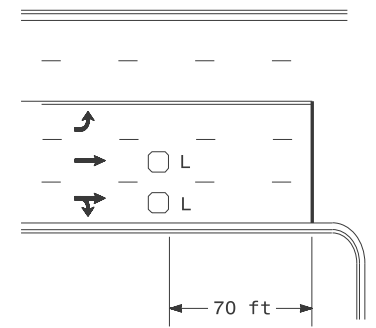


Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

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

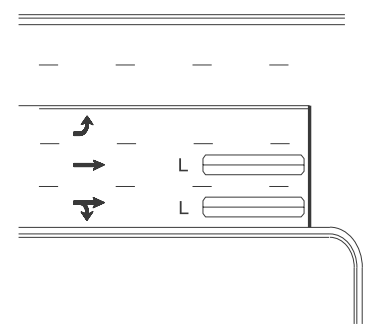
"Stretch" Operation

### Low Speed Detection (≤35 mph)



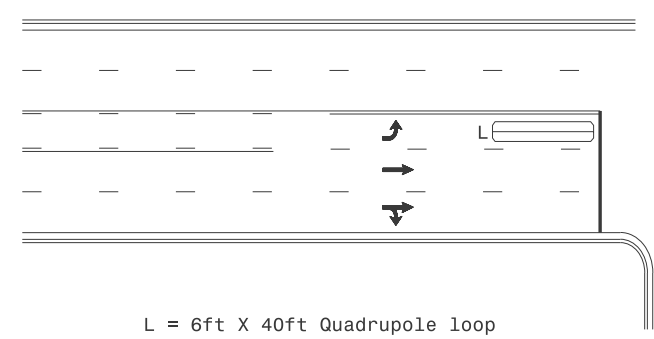
L = 6ft X 6ft  
Wired in series

OR



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

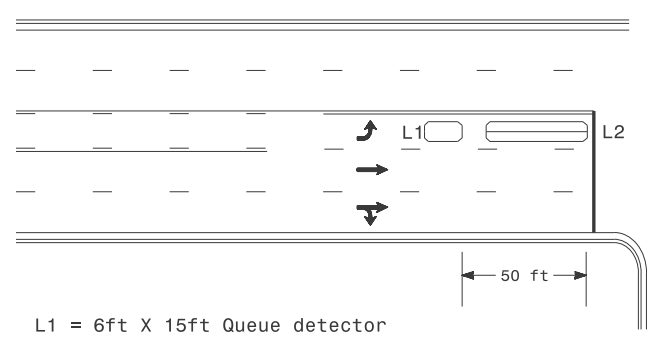
### Left Turn Lane Detection



L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

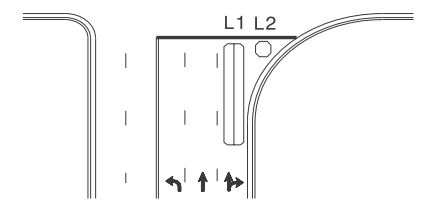
OR



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

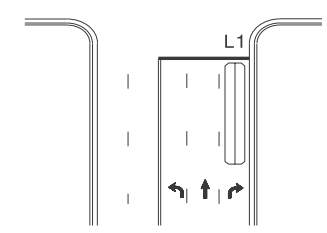
Queue Loop Detection

### Right Turn Lane Detection

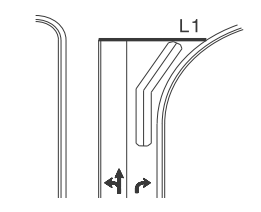


Shared Lane/  
Wide Radius Turn

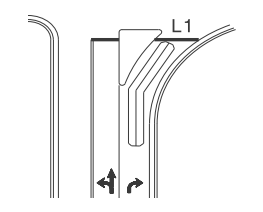
L1 = 6ft X 40ft Quadrupole loop  
L2 = 6ft X 6ft [Minimum] Presence loop  
Wired separately



Standard Turn

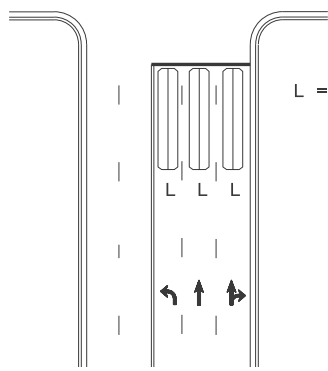


Wide Radius Turn



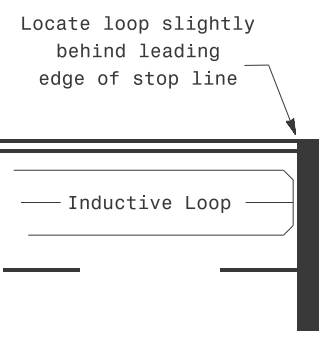
Channelized Turn

### 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

SEAL

1/30/2015  
DATE

SIG. INVENTORY NO.

30-JAN-2015 12:39 S:\IT\ASU\15\SIGNAL\SIGNAL\Eastern\_Regional\loop\sig\2015.dgn pal/alexander