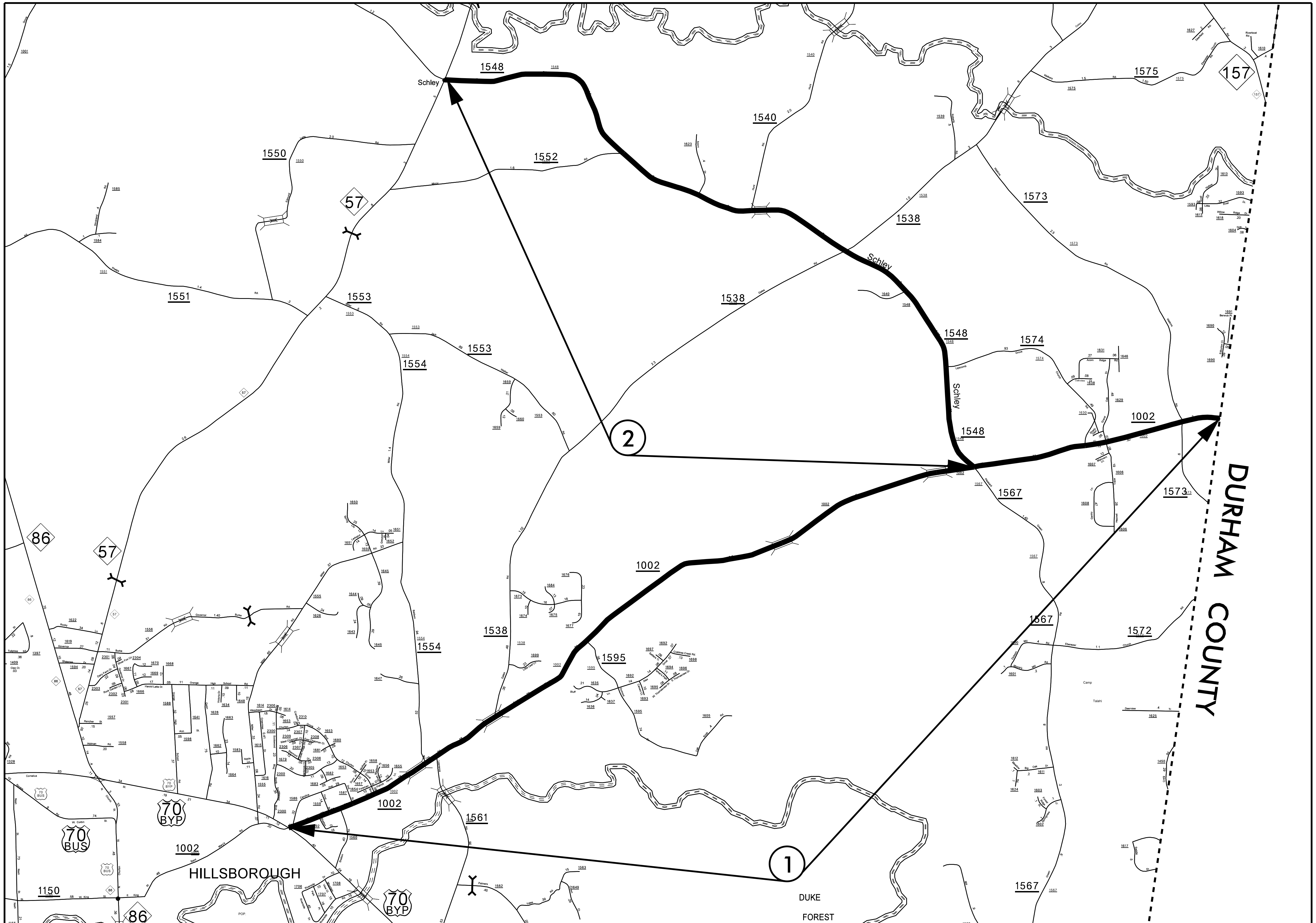
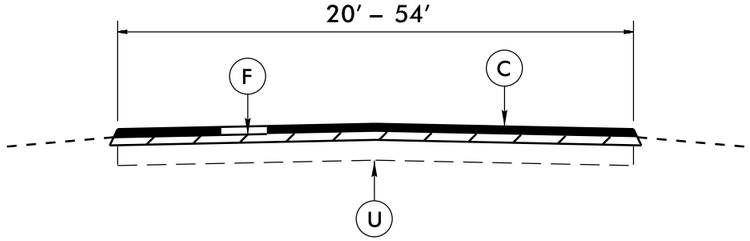
PROJECT REFERENCE NO.	SHEET NO.
2017CPT.07.03.20681	1

ORANGE COUNTY



5/14/99
25-JUL-2016 11:59
Contracts\Orange\2017CPT.07.03.20681\CADD\2017CPT_07_03_20681_PSH1.dgn

PROJECT REFERENCE NO.	SHEET NO.
2017CPT.07.03.20681	2



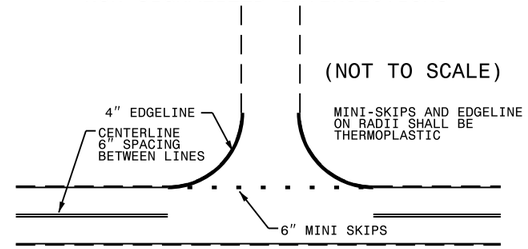
TYPICAL SECTION NO. 1

TO BE USED ON MAP 1

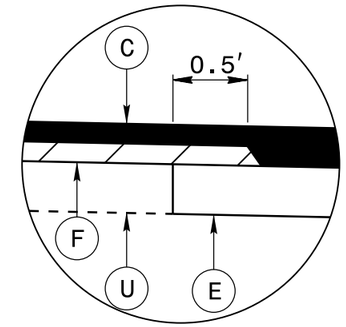
MAP 1: STA. 00+00 TO STA. 78+90
STA. 316+20 TO STA. 317+60

TO BE USED AT ALL
NON-SIGNALIZED INTERSECTIONS

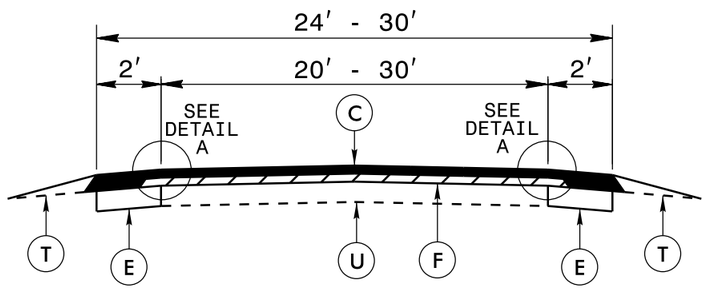
(NOT TO SCALE)



NOTE: MINI SKIPS SHALL BE PLACED ON A 8′ CYCLE, CONTAINING AN 6′ AND 2′ SKIP, THE WIDTH OF THE SKIP SHALL BE 6″.



DETAIL A



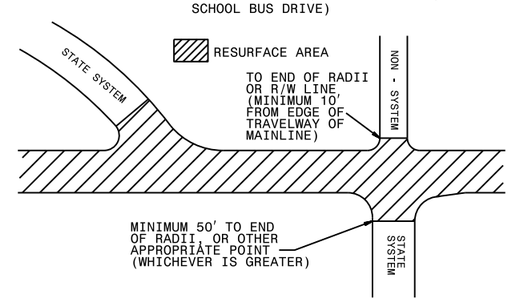
TYPICAL SECTION NO. 7

TO BE USED ON MAP 1, 2

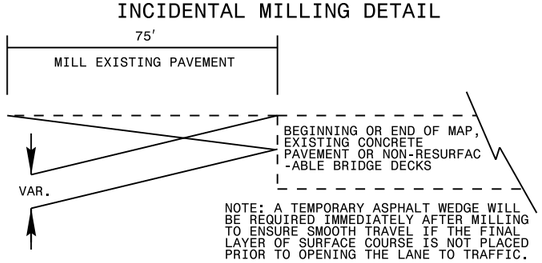
MAP 1: STA. 78+90 TO STA. 316+20
STA. 317+60 TO STA. 357+65

PAVING DETAIL 1
MAIN LINE IS BEING RESURFACED

NOTE: NON-SYSTEM (CITY STREET, PRIVATE DRIVE, SCHOOL BUS DRIVE)

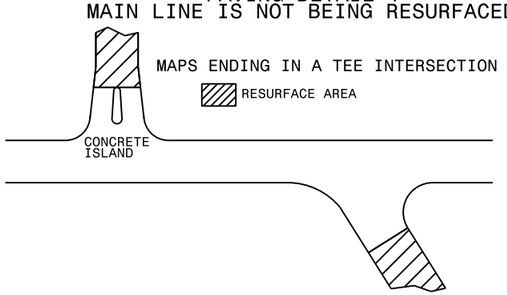


INCIDENTAL MILLING DETAIL



NOTE: A TEMPORARY ASPHALT WEDGE WILL BE REQUIRED IMMEDIATELY AFTER MILLING TO ENSURE SMOOTH TRAVEL IF THE FINAL LAYER OF SURFACE COURSE IS NOT PLACED PRIOR TO OPENING THE LANE TO TRAFFIC.

PAVING DETAIL 1
MAIN LINE IS NOT BEING RESURFACED



PAVEMENT SCHEDULE

C	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
E	PROP. APPROX. 7″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
F	ASPHALT SURFACE TREATMENT, #67 STONE
T	SHOULDER RECONSTRUCTION, AS DIRECTED BY THE ENGINEER.
U	EXISTING PAVEMENT.

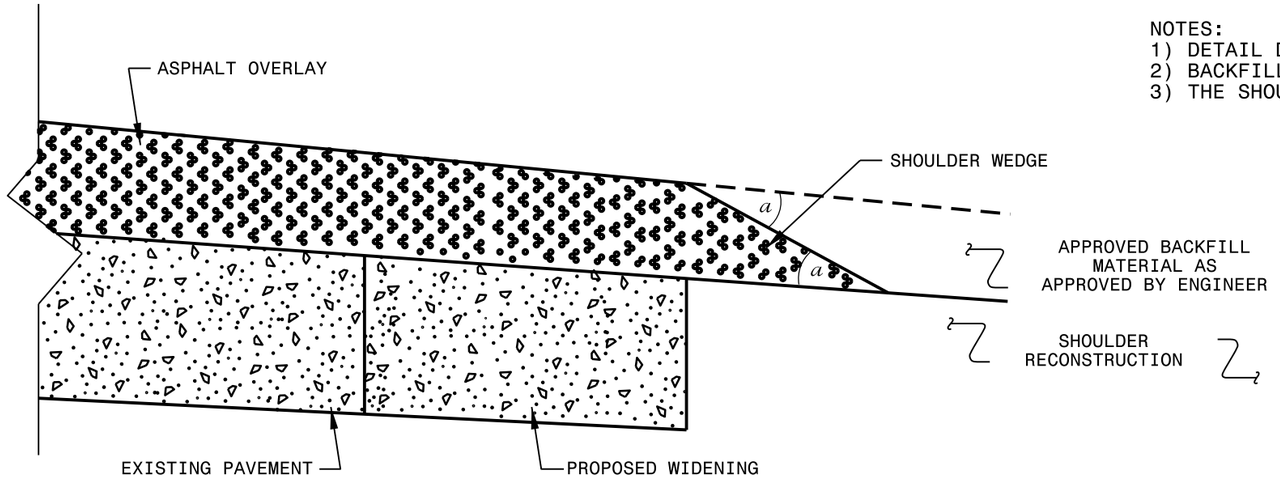
REVISIONS

8/17/99

25-JUL-2016 11:59
S:\Resurfacing Projects\2017 PO Contracts\Orange\2017CPT.07.03.20681\CADD\2017CPT.07.03.20681_PSH2.dgn
cthusons AT 07CADD271374

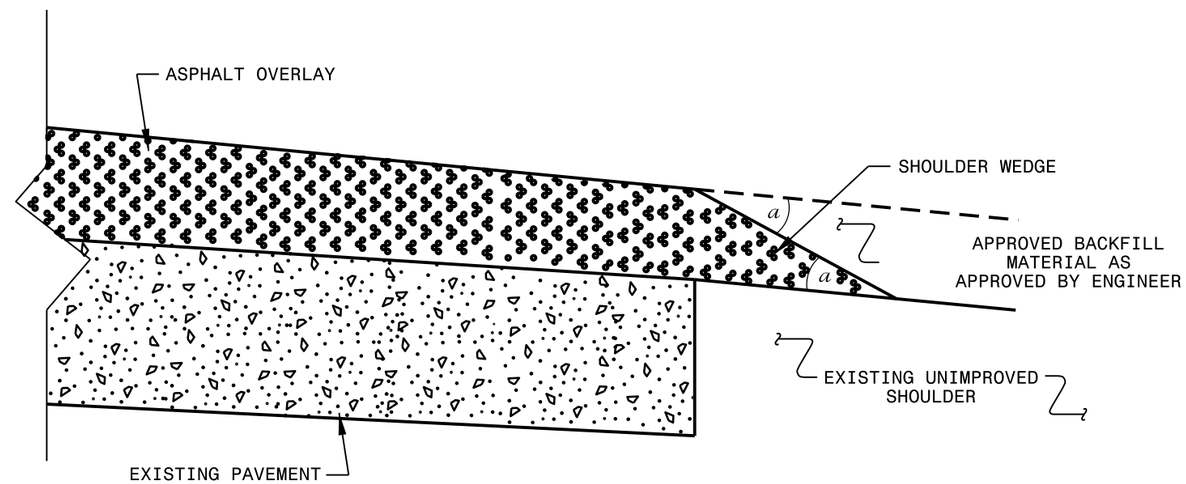
PROJECT REFERENCE NO.	SHEET NO.
2017CPT.07.03_20681	3

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.



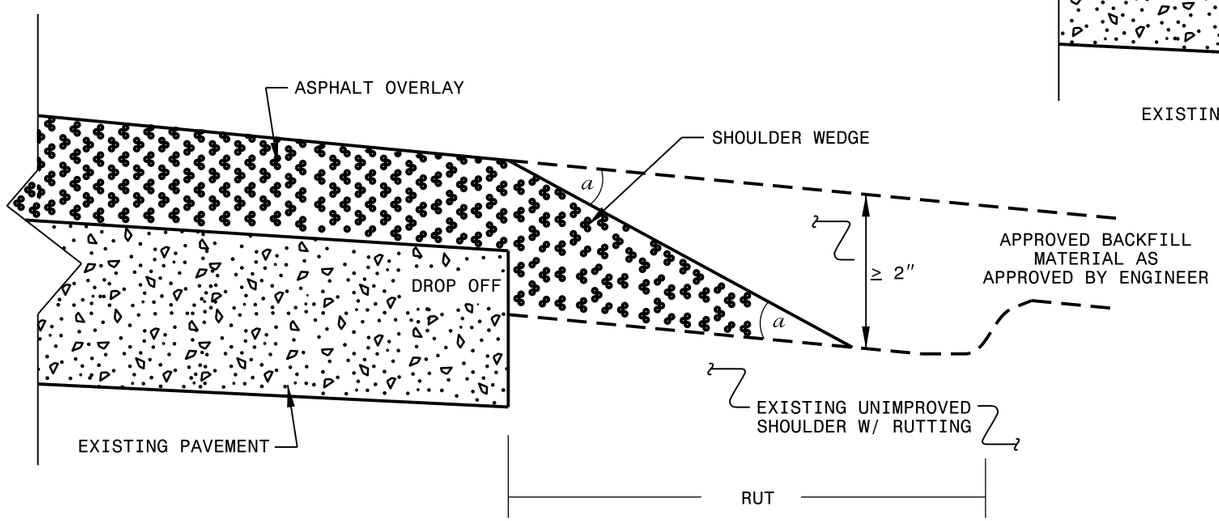
SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ Widening)



SHOULDER WEDGE DETAIL

(Resurfacing Projects w/ NO Widening Or Existing Paved Shoulder having no dropoffs)



SHOULDER WEDGE DETAIL

(Resurfacing Adjacent to Rutted Shoulder)

- SHOULDER WEDGE ANGLE = 30°

REV. DIV 7 5/6/2016

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

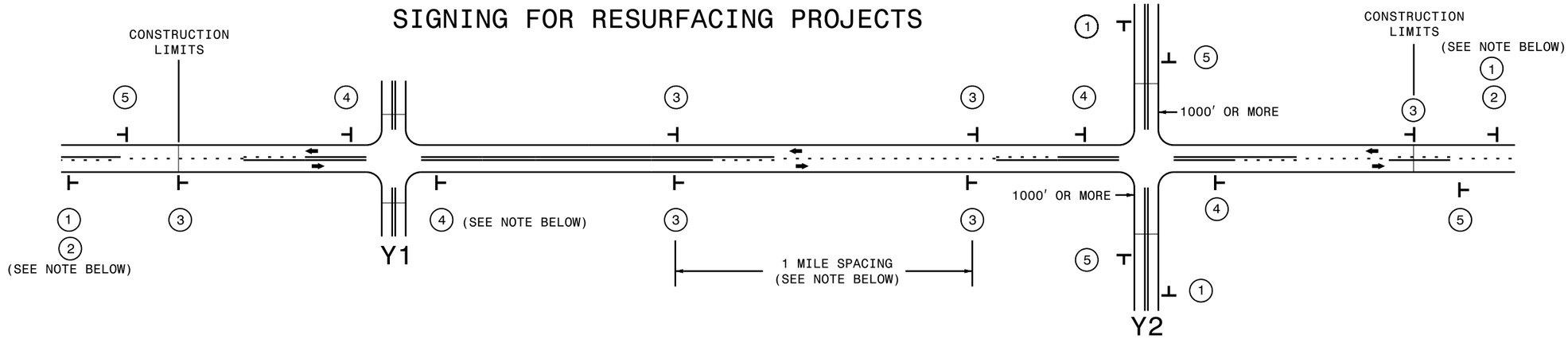
SHOULDER WEDGE DETAILS

ORIGINAL BY:	T.SPELL	DATE:	7-19-11
MODIFIED BY:		DATE:	10/16/12
CHECKED BY:		DATE:	
FILE SPEC.:	s:usr/details/stand/shoulderwedgedetail.dgn		

25-JUL-2016 11:59
S:\Resurfacing Projects\2017 PO Contracts\Orange\2017CPT.07.03.20681\CADD\2017CPT_07.03_20681_PSH3.dgn
cthuskins AT D7CADD271374

PROJ. REFERENCE NO.	SHEET NO.
2017CPT.07.03.20681	4

SIGNING FOR RESURFACING PROJECTS



LEGEND

- STATIONARY SIGN
- DIRECTION OF TRAFFIC FLOW

MAINLINE (-L-) SIGNING

SIGNING NOTES AND PLACEMENT PER DIRECTION

1	ROAD WORK AHEAD 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.
2	NEXT XX MILES 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	LOW/SOFT SHOULDER 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 ½ MILE FROM THE CONSTRUCTION LIMITS AND THEN SPACE 1 MILE THEREAFTER.
4	ROAD UNDER CONST 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	END ROAD WORK G20-2 A 48″ X 24″	PLACE 500′ FOLLOWING THE END OF CONSTRUCTION LIMITS.

-Y- LINE SIGNING

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.

ROAD WORK AHEAD
W20-1
48″ X 48″

PLACED 500′ IN ADVANCE OF FLAGGER.

W20-7 A
48″ X 48″

PLACED 250′ IN ADVANCE OF FLAGGER.

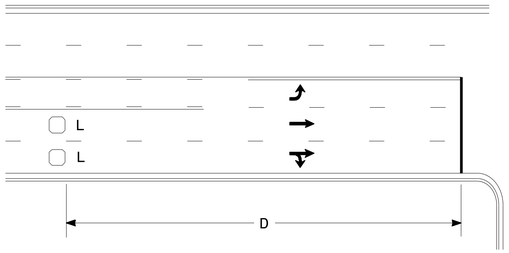
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

RESURFACING
ADVANCE WARNING SIGNS
FOR
RURAL AND SUBURBAN
2 LANE ROADWAYS

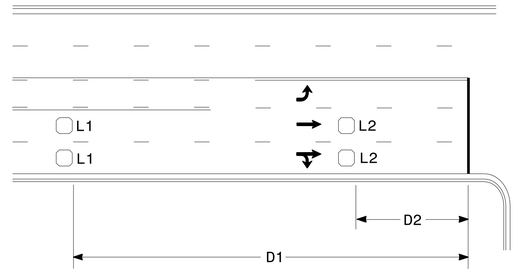
25-JUL-2016 11:59
S:\Resurfacing Projects\2017 PO Contracts\Orange\2017CPT.07.03.20681\CADD\2017CPT_07_03_20681_PSH4.dgn
cthuskins AT D7CADD271374

PROJECT REFERENCE NO.	SHEET NO.
2017CPT.07.03.20681	5

High Speed Detection
(≥40 mph)



OR



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

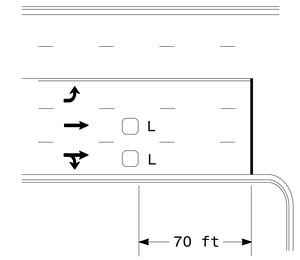
Speed Limit mph	D1 ft	D2 ft
40	250	80
45	300	90
50	355	100
55	420	110

L1 = 6ft X 6ft
Wired in series

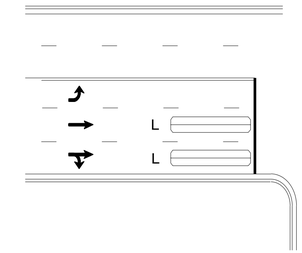
L2 = 6ft X 6ft
Wired in series

"Stretch" Operation

Low Speed Detection
(≤35 mph)



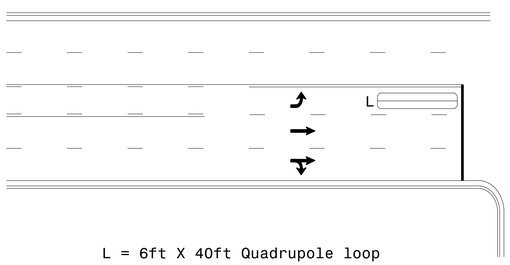
OR



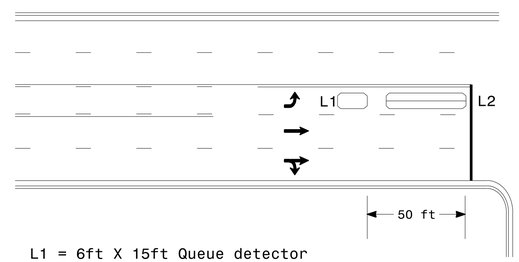
L = 6ft X 6ft
Wired in series

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

Left Turn Lane Detection



OR



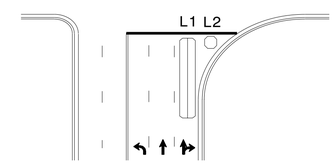
L = 6ft X 40ft Quadrupole loop

Presence Loop Detection

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

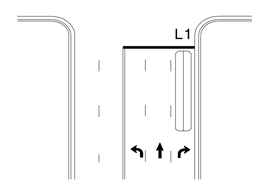
Queue Loop Detection

Right Turn Lane Detection

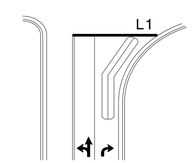


Shared Lane/
Wide Radius Turn

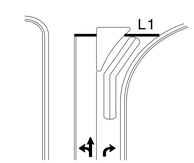
L1 = 6ft X 40ft Quadrupole loop
L2 = 6ft X 6ft [Minimum] Presence loop
Wired separately



Standard Turn

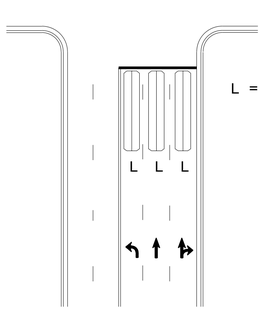


Wide Radius Turn



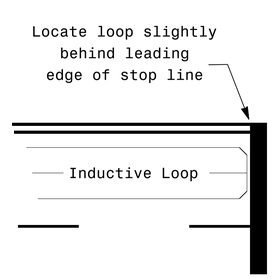
Channelized Turn

Side Street Detection



L = 6ft X 40ft
Quadrupole loop
Wired to separate detectors/channels

Presence Loop Placement at Stop Lines



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:
Transportation Mobility and Safety Division
Signal Design Section
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

SCALE
N/A

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 23489 ENGINEER PAMELA L. ALEXANDER

DocuSigned by:
P L Alexander
B4756E00CE4E46D...
1/30/2015
DATE

SIG. INVENTORY NO.

30-JAN-2015 12:39
S:*ITS&SU*ITS Signals*Signal Design Section*Eastern Region*looptypical2015.dgn
palexander

PROJECT NO.	SHEET NO.	TOTAL NO.
2017CPT.07.03.20681	6	7

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	BORROW EXCAVATION CY	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	INCIDENTAL MILLING SY	ASPHALT CONC BASE COURSE, TYPE B25.0B TONS	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A TONS	ASPHALT BINDER FOR PLANT MIX TONS	EMULSION FOR ASPHALT SURFACE TREATMENT GAL	ASPHALT SURFACE TREATMENT, MAT COAT, #67 STONE SY	SEEDING & MULCHING AC	GENERIC EROSION CONTROL ITEM - [RESIDENTIAL SEEDING] AC	JUNCTION BOX (STANDARD SIZE) EA	INDUCTIVE LOOP SAW CUT LF	LEAD-IN CABLE (14-2) LF
2017CPT.07.03.20681	Orange	1	ST. MARY'S ROAD (SR 1002)	FROM US 70 (MP 1.3) TO DURHAM COUNTY (MP 8.09)	1	2	2WU	NO	NO	0.028	33		338		175		45	3	206	542			1	600	500
					1	2	2WU	NO	NO	0.065	27						85	6	391	1,030					
					1	2	2WU	NO	NO	0.332	21				700		459	31	1,554	4,090					
					1	2	2WU	NO	NO	0.116	29.5						166	11	763	2,008					
					1	2	2WU	NO	NO	0.027	38						50	3	229	602					
					1	2	2WU	NO	NO	0.022	54				175		98	7	265	697					
					1	2	2WU	NO	NO	0.043	43						90	6	412	1,085					
					1	2	2WU	NO	NO	0.066	29.5						95	6	434	1,142					
					1	2	2WU	NO	NO	0.124	20				175		121	8	553	1,455					
					1	2	2WU	NO	NO	0.126	20														
					1	2	2WU	NO	NO	0.542	20				700		608	41	2,417	6,359					
					1	2	2WU	NO	NO	0.003	22														
					2	2	2WU	NO	NO	2.279	20	10		4.56	700	2,445	2,755	292	10,389	28,077	0.91	0.91			
					1	2	2WU	NO	NO	0.003	22														
					2	2	2WU	NO	NO	1.105	20			2.21	350	1,186	1,297	139	5,037	13,614	0.66	0.22			
					1	2	2WU	NO	NO	0.003	22														
					2	2	2WU	NO	NO	1.041	20			2.08	700	1,117	1,342	139	4,745	12,825	0.62	0.21			
					2	2	2WU	NO	NO	0.063	25			0.13		68	90	9	356	961	0.03	0.03			
					1	2	2WU	NO	NO	0.027	30				350		119	8	181	475					
					2	2	2WU	NO	NO	0.058	25			0.12		62	83	8	327	885	0.01	0.03			
					2	2	2WU	NO	NO	0.701	20			1.41	350	752	903	94	3,195	8,636	0.42	0.14			
TOTAL FOR MAP NO. 1										**6.774**		**10**	**338**	**10.50**	**4,375**	**5,630**	**8,406**	**811**	**31,454**	**84,483**	**2.66**	**1.54**	**1**	**600**	**500**
2017CPT.07.03.20681	Orange	2	SCHLEY ROAD (SR 1548)	FROM NC 57 (MP 3.07) TO ST MARYS ROAD (SR 1002, MP 7.91)	2	2	2WU	NO	NO	2.425	20	10	265	4.85	350	2,602	3,356	339	11,054	29,876	1.45	0.49			
					1	2	2WU	NO	NO	0.009	25														
					2	2	2WU	NO	NO	2.347	20			4.69	1,225	2,518	3,369	337	10,698	28,915	1.40	0.47			
TOTAL FOR MAP NO. 2										**4.781**		**10**	**265**	**9.54**	**1,575**	**5,120**	**6,725**	**676**	**21,752**	**58,791**	**2.85**	**0.95**			
TOTAL FOR PROJ NO. 2017CPT.07.03.20681										**11.555**		**20**	**603**	**20.04**	**5,950**	**10,750**	**15,131**	**1,487**	**53,206**	**143,274**	**5.51**	**2.50**	**1**	**600**	**500**
GRAND TOTAL										**11.555**		**20**	**603**	**20.04**	**5,950**	**10,750**	**15,131**	**1,487**	**53,206**	**143,274**	**5.51**	**2.50**	**1**	**600**	**500**

PROJECT NO.	SHEET NO.	TOTAL NO.
2017CPT.07.03.20681	7	7

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LANES	LANE TYPE	LENGTH	WIDTH	TEMPORARY TRAFFIC CONTROL LS	WORK ZONE ADVANCE/GENERAL WARNING SIGNING SF	4" X 90 M WHITE THERMO LF	4" X 120 M YELLOW THERMO LF	6" X 120 M WHITE THERMO LF	8" X 90 M YELLOW THERMO LF	24" X 120 M WHITE THERMO LF	THERMO LT ARROW 90 M EA	THERMO STR & RT ARROW 90 M EA	THERMO RT ARROW 90 M EA	4" WHITE PAINT LF	4" YELLOW PAINT LF
2017CPT.07.03.20681	Orange	1	ST. MARY'S ROAD (SR 1002)	FROM US 70 (MP 1.3) TO DURHAM COUNTY (MP 8.09)	1	2	2WU	0.028	33	1	759	73,290	73,856	196	480	177	9	2	1		
					1	2	2WU	0.065	27												
					1	2	2WU	0.332	21												
					1	2	2WU	0.116	29.5												
					1	2	2WU	0.027	38												
					1	2	2WU	0.022	54												
					1	2	2WU	0.043	43												
					1	2	2WU	0.066	29.5												
					1	2	2WU	0.124	20												
					1	2	2WU	0.126	20												
					1	2	2WU	0.542	20												
					1	2	2WU	0.003	22												
					2	2	2WU	2.279	20												
					1	2	2WU	0.003	22												
					2	2	2WU	1.105	20												
					1	2	2WU	0.003	22												
					2	2	2WU	1.041	20												
					2	2	2WU	0.063	25												
					1	2	2WU	0.027	30												
					2	2	2WU	0.058	25												
					2	2	2WU	0.701	20												
TOTAL FOR MAP NO. 1								**6.774**		**1**	**759**	**73,290**	**73,856**	**196**	**480**	**177**	**9**	**2**	**1**		
2017CPT.07.03.20681	Orange	2	SCHLEY ROAD (SR 1548)	FROM NC 57 (MP 3.07) TO ST MARYS ROAD (SR 1002, MP 7.91)	2	2	2WU	2.425	20		537	550		109						51,212	51,212
					1	2	2WU	0.009	25												
					2	2	2WU	2.347	20												
TOTAL FOR MAP NO. 2								**4.781**			**537**	**550**		**109**						**51,212**	**51,212**
TOTAL FOR PROJ NO. 2017CPT.07.03.20681								**11.555**		**1**	**1,296**	**73,840**	**73,856**	**305**	**480**	**177**	**9**	**2**	**1**	**51,212**	**51,212**
																	12			**102,424**	
GRAND TOTAL								**11.555**		**1**	**1,296**	**73,840**	**73,856**	**305**	**480**	**177**	**9**	**2**	**1**	**51,212**	**51,212**
																	12			**102,424**	