

1

3

2

4

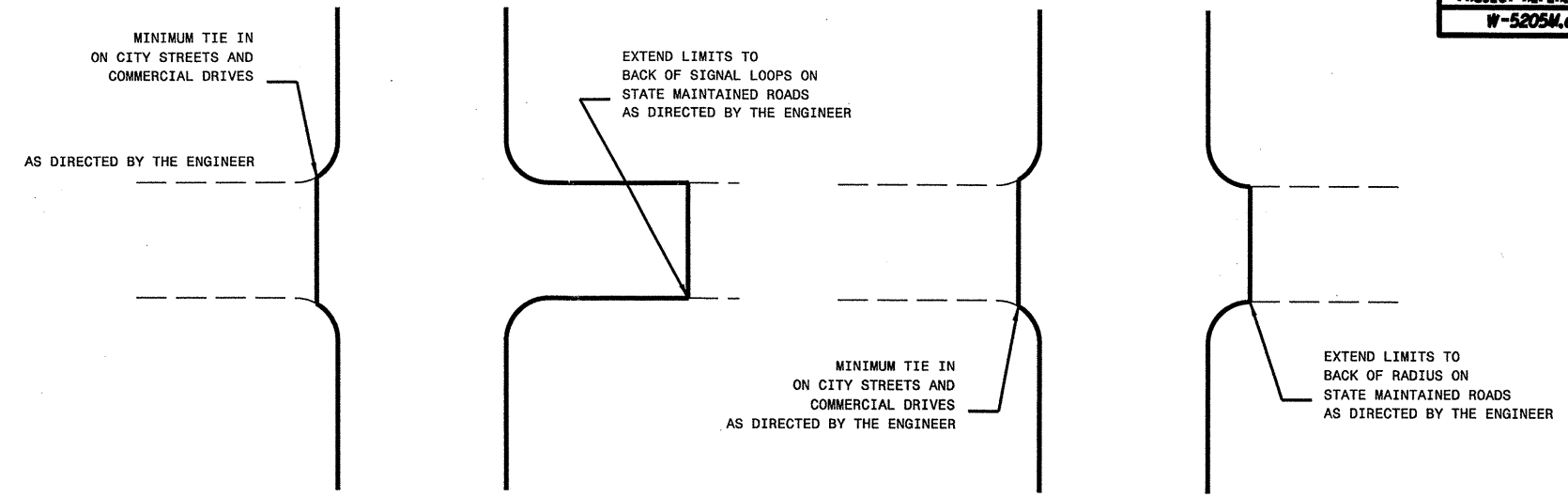
CATCH BASIN LOCATIONS

Limit at start of taper for left turn lane.

Limit at project B-4946.

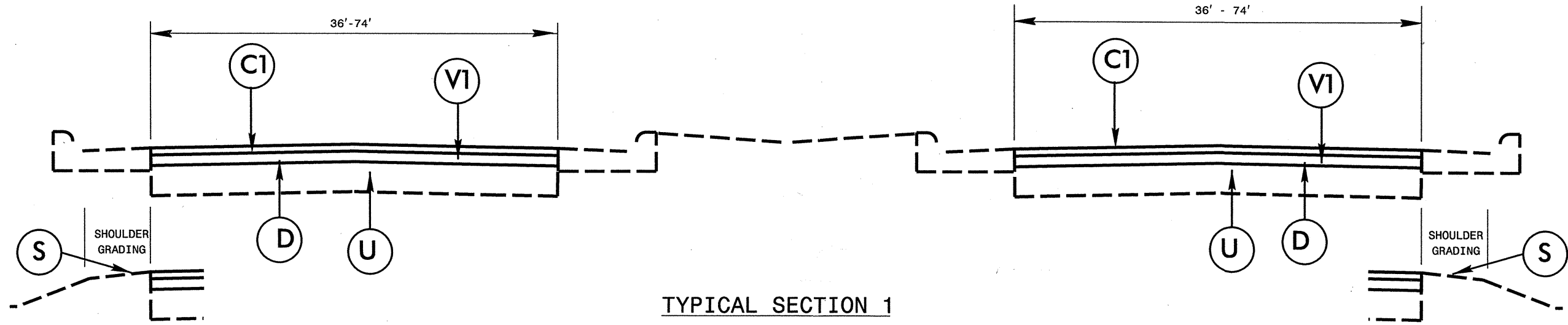
PAVEMENT SCHEDULE

C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
R	5" MONOLITHIC CONCRETE ISLAND (KEYED IN)
S	PROP. SHOULDER GRADING
U	EXISTING PAVEMENT
V1	4½" MILLING
V2	1½" MILLING

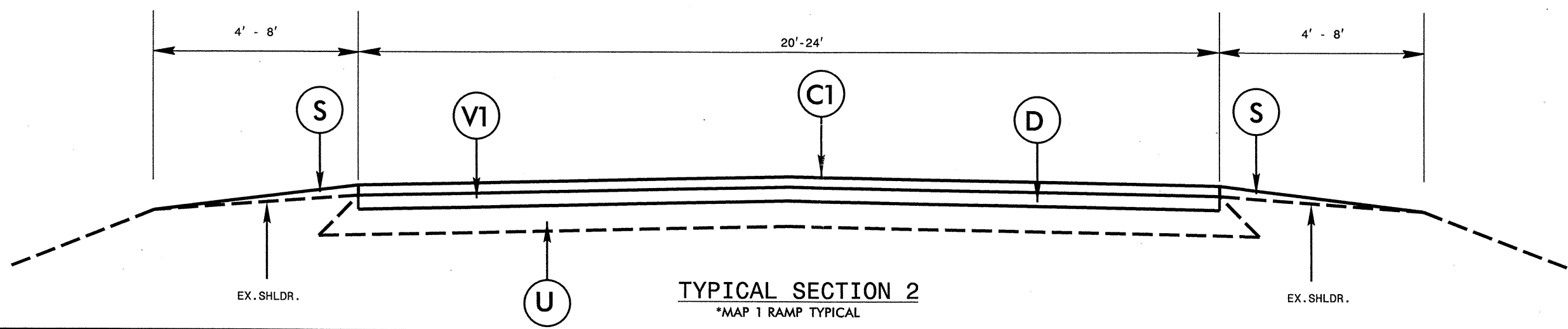


DETAIL OF PROJECT LIMITS AT SIGNALIZED Y LINES

DETAIL OF PROJECT LIMITS AT UNSIGNALIZED Y LINES



TYPICAL SECTION 1



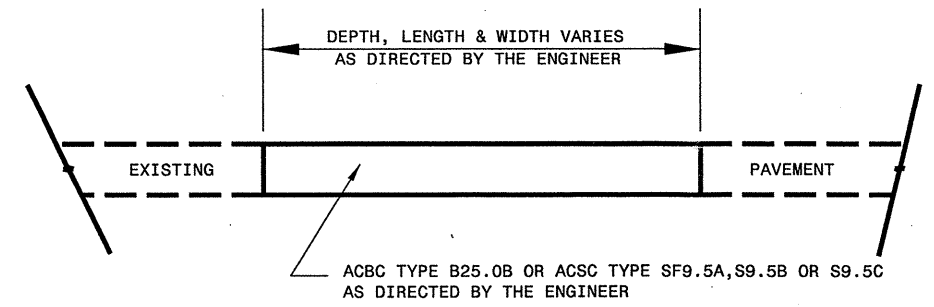
TYPICAL SECTION 2
*MAP 1 RAMP TYPICAL

PAVEMENT SCHEDULE

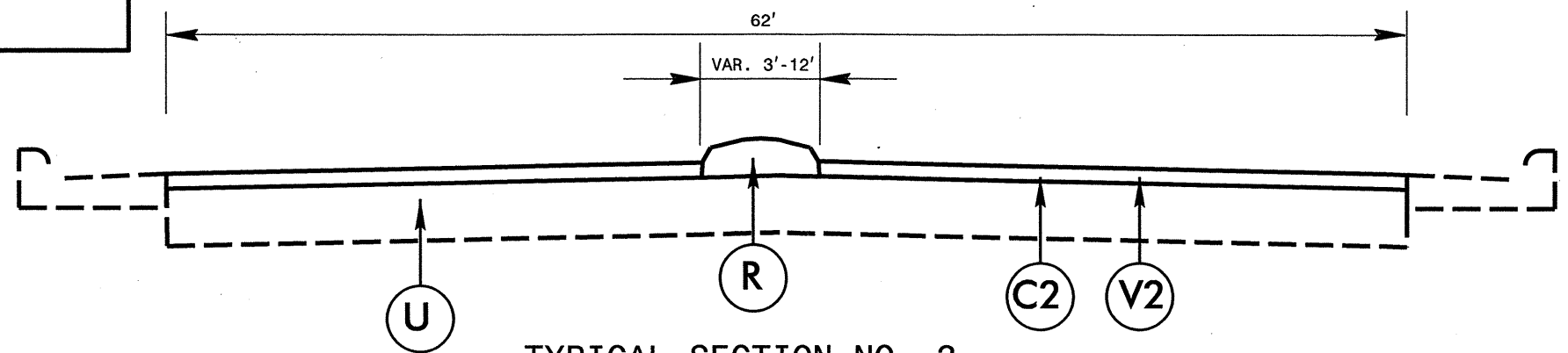
C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D	3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
R	5" MONOLITHIC CONCRETE ISLAND (KEYED IN)
S	PROP. SHOULDER GRADING
U	EXISTING PAVEMENT
V1	4½" MILLING
V2	1½" MILLING

NOTES

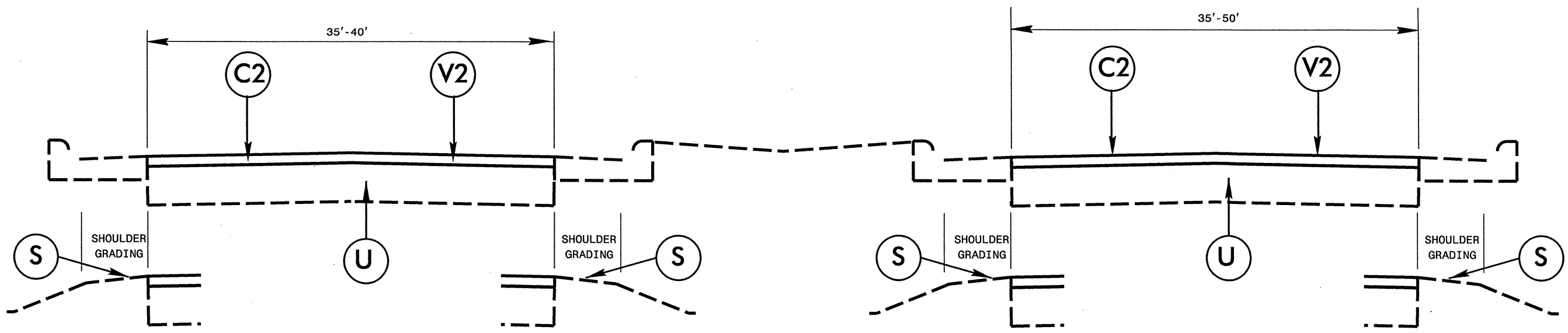
ALL UNPAVED S.R. ROADS TO BE RESURFACED 50' FROM EDGE OF PAVEMENT OF MAIN PROJECT
 ALL PAVED S.R. ROADS TO BE RESURFACED TO THE ENDS OF THE RADII, OR AS DIRECTED BY THE ENGINEER.
 EDGES, PAVEMENT WIDENING, INTERSECTIONS AND BRIDGE FLARES ARE INCLUDED IN THE TABLE OF QUANTITIES.
 BRIDGES TO BE RESURFACED AT LOCATIONS AND TO DEPTH AS DIRECTED BY THE ENGINEER.



PATCHING EXISTING PAVEMENT



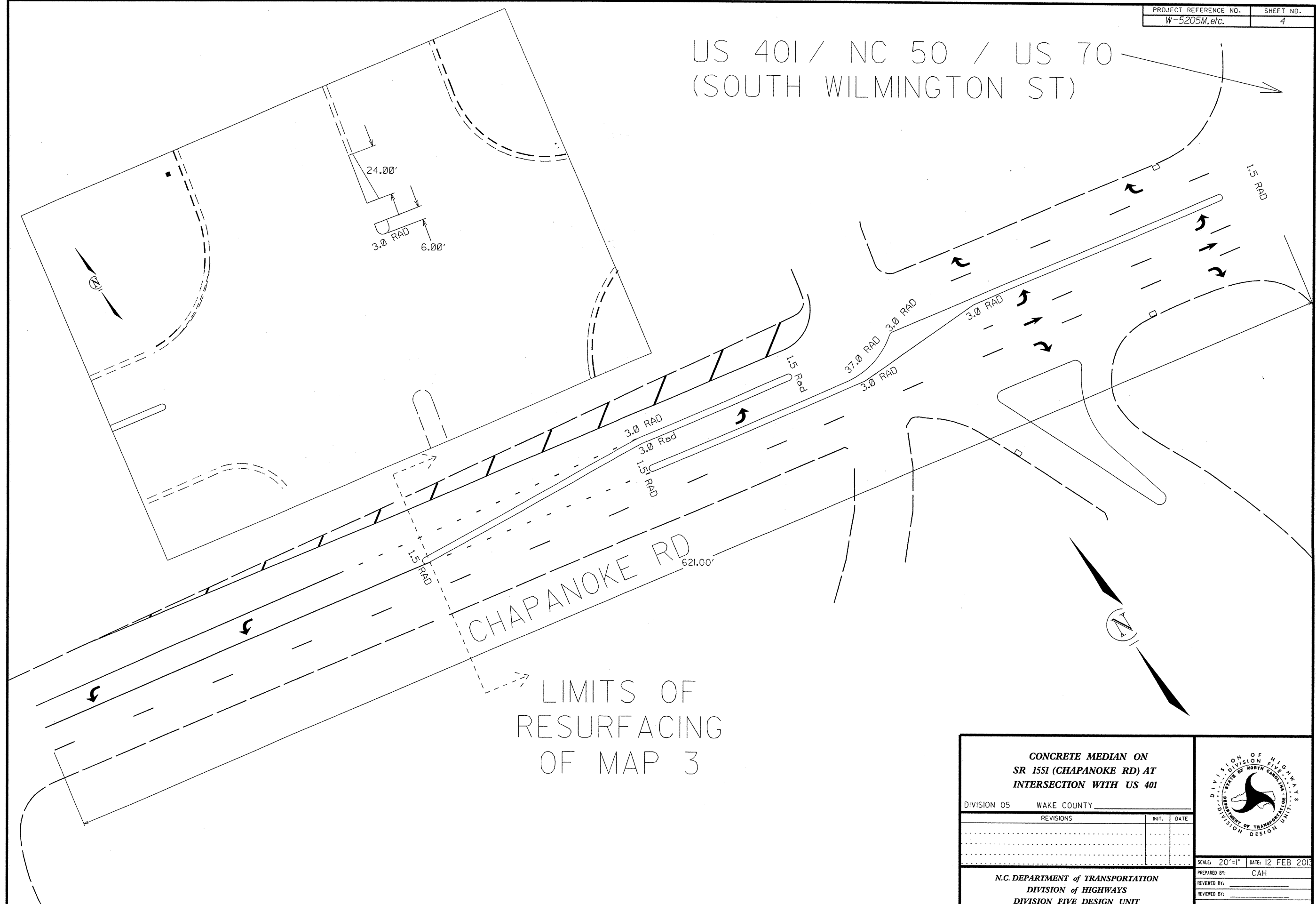
TYPICAL SECTION NO. 3



TYPICAL SECTION NO. 4

NOTE: CRACK SEAL MAP 2 AFTER MILLING OPERATION

US 401 / NC 50 / US 70
(SOUTH WILMINGTON ST)

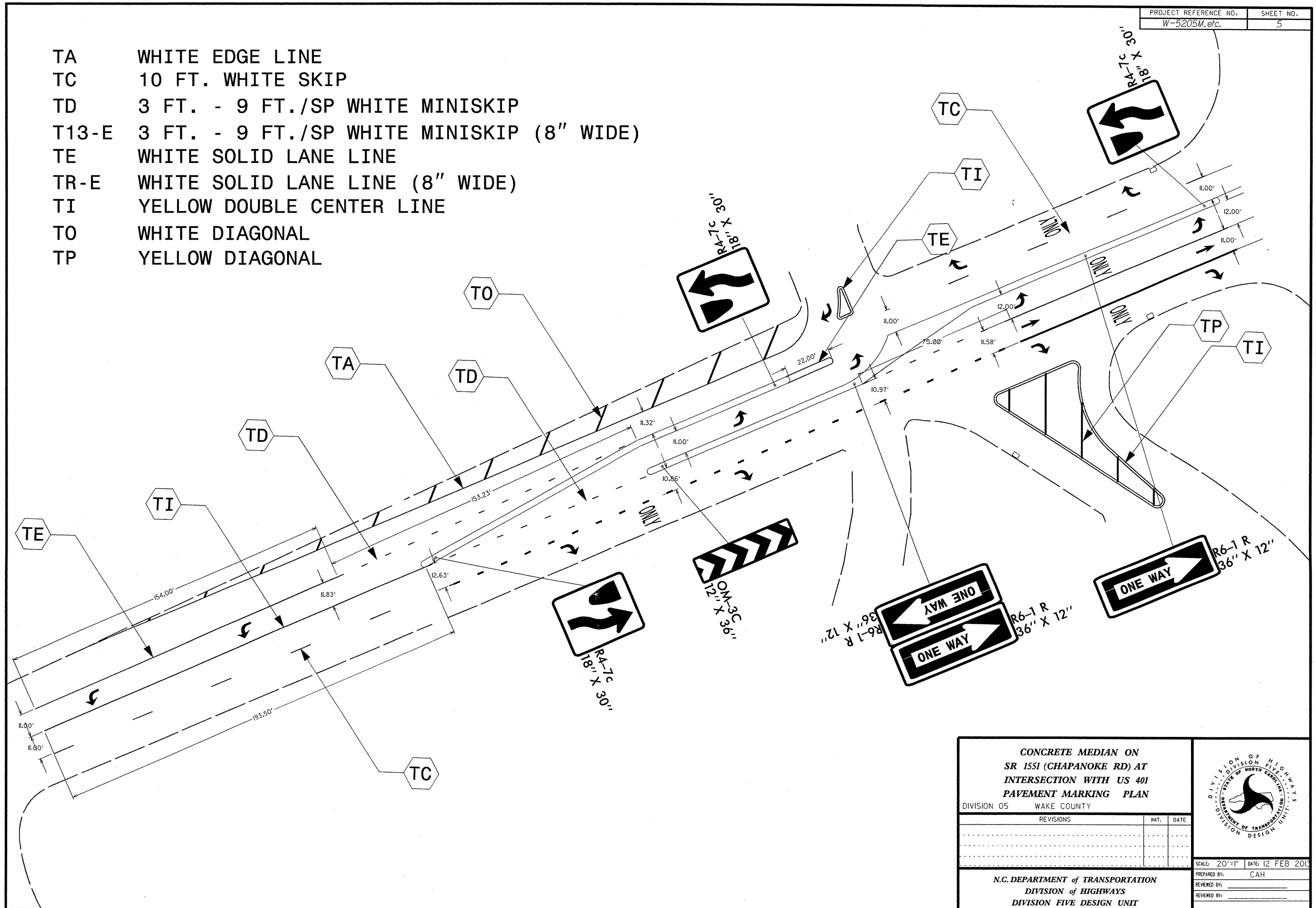


CHAPANOKE RD
621.00'

LIMITS OF
RESURFACING
OF MAP 3

CONCRETE MEDIAN ON SR 1551 (CHAPANOKE RD) AT INTERSECTION WITH US 401		
DIVISION 05 WAKE COUNTY		
REVISIONS	INIT.	DATE
N.C. DEPARTMENT of TRANSPORTATION DIVISION of HIGHWAYS DIVISION FIVE DESIGN UNIT		SCALE: 20'=1" DATE: 12 FEB 2011 PREPARED BY: CAH REVIEWED BY:

- TA WHITE EDGE LINE
- TC 10 FT. WHITE SKIP
- TD 3 FT. - 9 FT./SP WHITE MINISKIP
- T13-E 3 FT. - 9 FT./SP WHITE MINISKIP (8" WIDE)
- TE WHITE SOLID LANE LINE
- TR-E WHITE SOLID LANE LINE (8" WIDE)
- TI YELLOW DOUBLE CENTER LINE
- TO WHITE DIAGONAL
- TP YELLOW DIAGONAL



**CONCRETE MEDIAN ON
SR 1551 (CHAPANOKE RD) AT
INTERSECTION WITH US 401
PAVEMENT MARKING PLAN**

DIVISION 05 WAKE COUNTY

REVISIONS	INT.	DATE

SCALE: 20'=1" | DATE: 12 FEB 2013

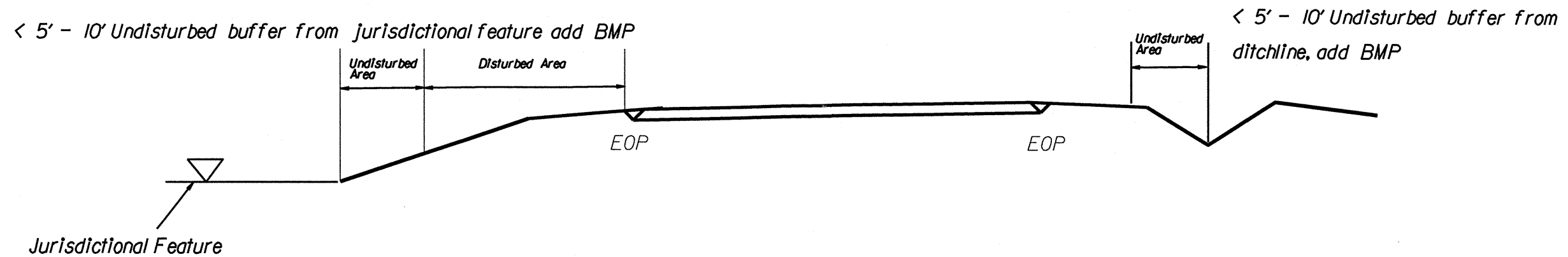
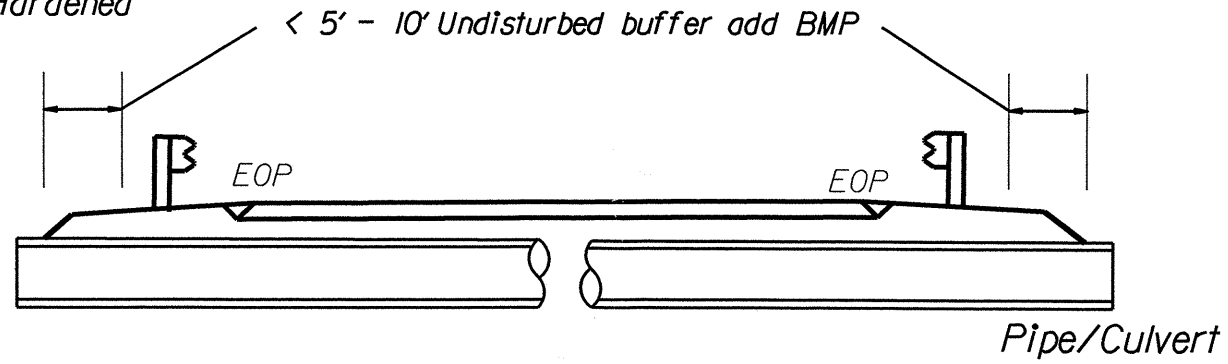
PREPARED BY: CAH
REVIEWED BY: _____
REVIEWED BY: _____

**N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
DIVISION FIVE DESIGN UNIT**

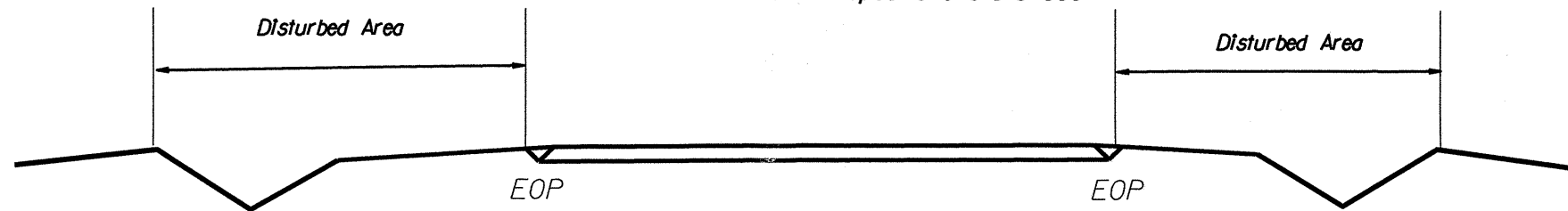
NOTES: Less than 5' - 10' undisturbed buffer from ROW, ditchline, water feature, or drainage inlet, add BMP.

BMP Options: Wattle, Silt Fence or Hardened Aggregate.

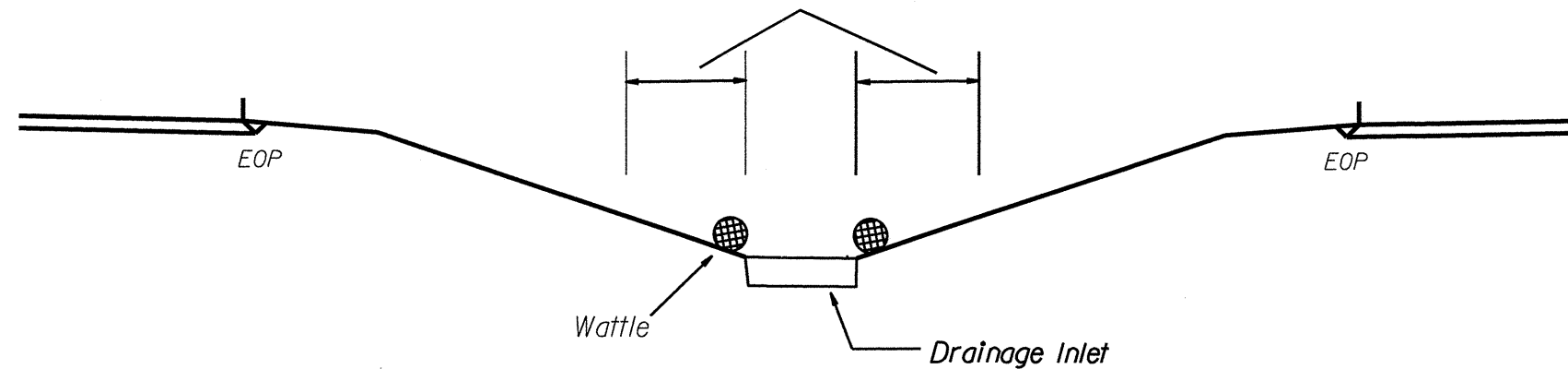
EROSION CONTROL DETAIL



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

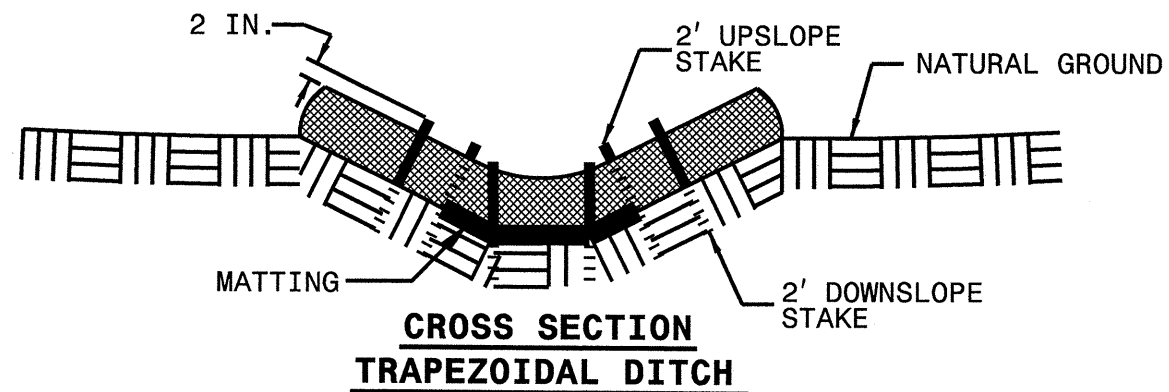
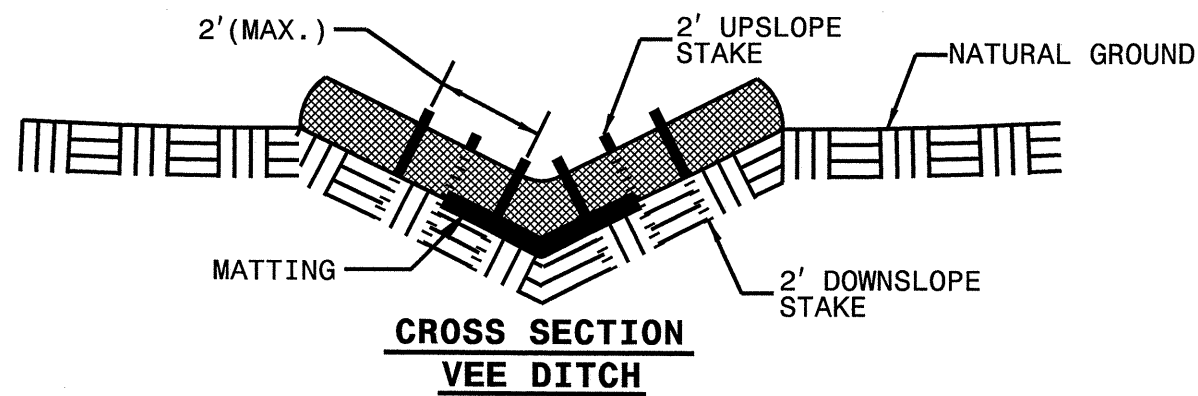
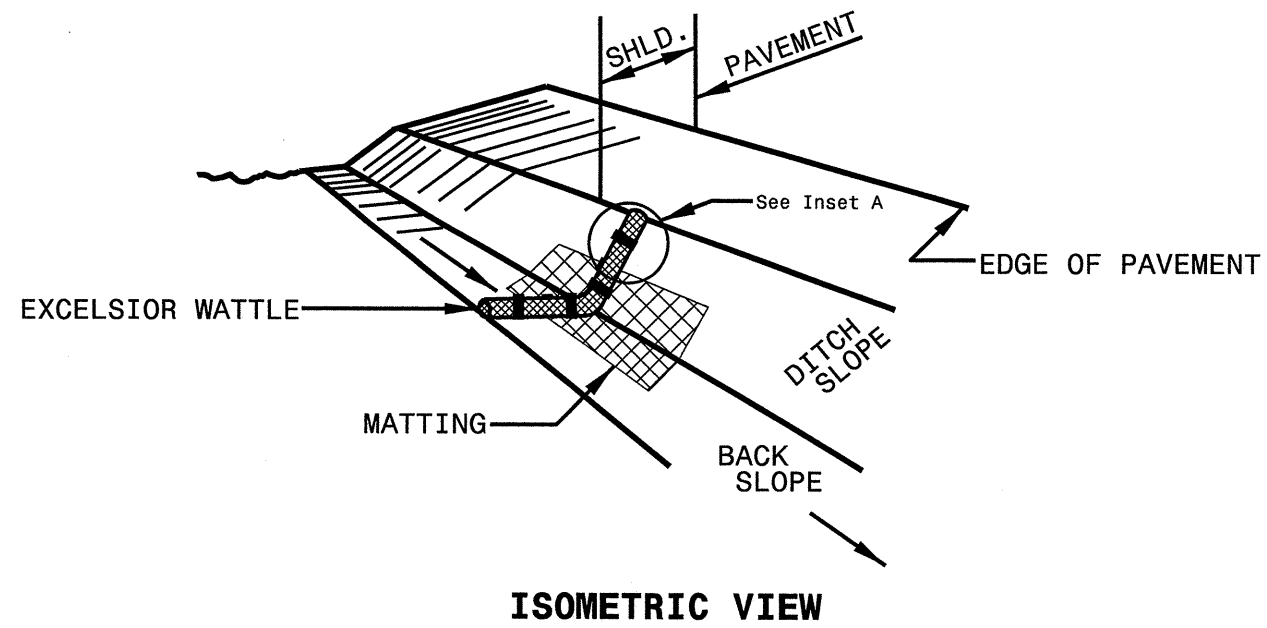


< 5' - 10' Undisturbed buffer from inlet, add wattle



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.

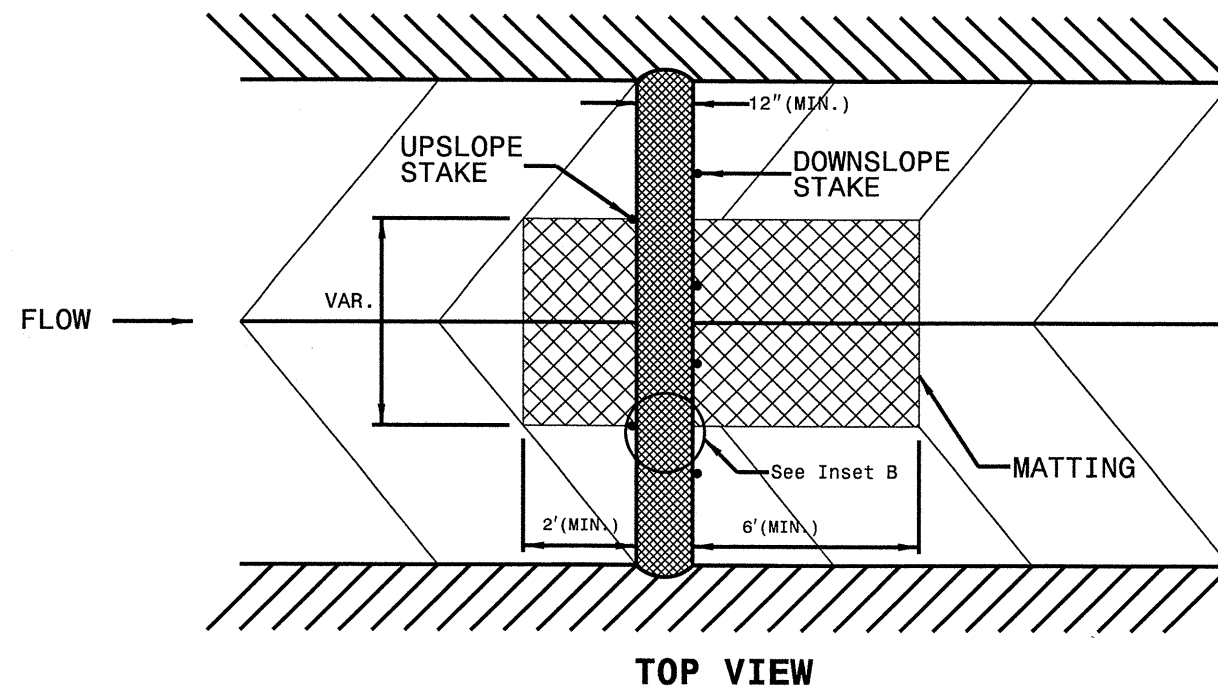
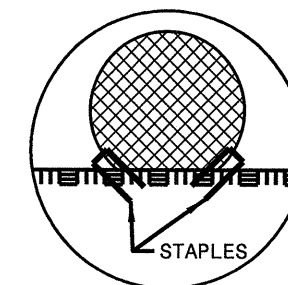
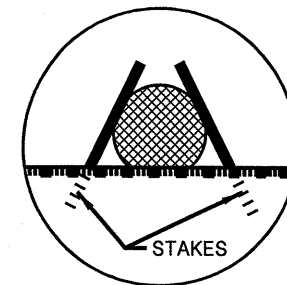
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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.



**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

PROJECT REFERENCE NO.	SHEET NO.
121-5205	9

SCR. 10291.40, ETC

SOIL STABILIZATION TIMEFRAMES

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

PROJECT NO.	SHEET NO.	TOTAL NO.
W-5205M, etc.	10	

SUMMARY OF QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	BORROW CY	SHOULDER GRADING SMI	INCIDENTAL STONE BASE TONS	1½" MILLING SY	4 1/2" MILLING SY	INTERMEDIATE COURSE, I19.0C TONS	SURFACE COURSE, S9.5B TONS	SURFACE COURSE, S9.5C TONS	ASPHALT BINDER FOR PLANT MIX TON	SEALING EXISTING PAVEMENT CRACKS & JOINTS LB	PATCHING EXISTING PAVEMENT TONS	5" MONOLITHIC CONCRETE ISLANDS(KEYED IN) SY	REMOVAL OF EXISTING ISLAND SY
W-5205M	Wake	3	SR 1551 - CHAPANOKE RD	US 70/401 TO END OF PROJECT LIMIT	3	NO	NO	0.118	62				2,915			257		15		6	195	
TOTAL FOR MAP NO. 3								0.118					2,915			257		15		6	195	
TOTAL FOR PROJ NO. 45335.3.13								0.118					2,915			257		15		6	195	
5CR.10921.46	Wake	1	US 70/401 - SOUTH SAUNDERS ST	JOINT NORTH OF I-40 TO LIMIT AT PROJECT B-4946 (SOUTH OF TRYON)	1,2	NO	NO	1.79	24-148	71	0.71	36		115,582	20,404		10,206	1,582		500	10	8
TOTAL FOR MAP NO. 1								1.79		71	0.71	36		115,582	20,404		10,206	1,582		500	10	8
TOTAL FOR PROJ NO. 5CR.10921.46								1.79		71	0.71	36		115,582	20,404		10,206	1,582		500	10	8
5CR.20921.46	Wake	2	SR 1564 - WILMINGTON ST	US 70/401 - SOUTH SAUNDERS TO RUSH STREET	4	NO	YES	0.257	70-90	47	0.47	24	10,131			938		56	1,125	55		
TOTAL FOR MAP NO. 2								0.257		47	0.47	24	10,131			938		56	1,125	55		
5CR.20921.46	Wake	4	SR 2684 - TRYON RD	FROM US 70-401 TO JOINT PAST S. WILMINGTON ST	1	NO	NO	0.058	77					2,776	476		245	37				
TOTAL FOR MAP NO. 4								0.058						2,776	476		245	37				
TOTAL FOR PROJ NO. 5CR.20921.46								0.315		47	0.47	24	10,131	2,776	476	938	245	93	1,125	55		
GRAND TOTAL								2.223		118	1.18	60	13,046	118,358	20,880	1,195	10,451	1,690	1,125	561	205	8

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP	FINAL SURFACE TESTING REQUIRED	WARM MIX ASPHALT REQUIRED	LENGTH MI	WIDTH FT	ADJUST CATCH BASIN EA	ADJUST MANHOLES EA	ADJUST METER OR VALVE BOX EA	PORTABLE LIGHTING LS	TEMPORARY SILT FENCE LF	WATTLE LF	SEED & MULCHING AC	SIGNAL CABLE LF	VEHICLE SIGNAL HEAD (12" 3 SECT) EA	VEHICLE SIGNAL HEAD (12", 5 SECTION) EA	INDUCTIVE LOOP LF	LEAD-IN CABLE (14-2) LF	SIGN FOR SIGNALS EA
W-5205M	Wake	3	SR 1551 - CHAPANOKE RD	US 70/401 TO END OF PROJECT LIMIT	3	NO	NO	0.118	62				1				400	1	2	1,850	6,150	2.00
TOTAL FOR MAP NO. 3								0.118					*				400	1	2	1,850	6,150	2.00
TOTAL FOR PROJ NO. 45335.3.13								0.118					*				400	1	2	1,850	6,150	2.00
5CR.10921.46	Wake	1	US 70/401 - SOUTH SAUNDERS ST	JOINT NORTH OF I-40 TO LIMIT AT PROJECT B-4946 (SOUTH OF TRYON)	1,2	NO	NO	1.79	24-148	3	37	9	*	50	130	0.51				7,755		
TOTAL FOR MAP NO. 1								1.79		3	37	9	*	50	130	0.51				7,755		
TOTAL FOR PROJ NO. 5CR.10921.46								1.79		3	37	9	*	50	130	0.51				7,755		
5CR.20921.46	Wake	2	SR 1564 - WILMINGTON ST	US 70/401 - SOUTH SAUNDERS TO RUSH STREET	4	NO	YES	0.257	70-90			7	*	34	90	0.34				385		
TOTAL FOR MAP NO. 2								0.257				7	*	34	90	0.34				385		
5CR.20921.46	Wake	4	SR 2684 - TRYON RD	FROM US 70-401 TO JOINT PAST S. WILMINGTON ST	1	NO	NO	0.058	77		1	1										
TOTAL FOR MAP NO. 4								0.058			1	1										
TOTAL FOR PROJ NO. 5CR.20921.46								0.315			1	8	*	34	90	0.34				385		
GRAND TOTAL								2.223		3	38	17	1	84	220	0.85	400	1	2	9,990	6,150	2.00

PROJECT NO.	SHEET NO.	TOTAL NO.
W-5205M, ETC.	11	

THERMOPLASTIC AND PAINT QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	LENGTH	WIDTH	4072000000-E	4102000000-N	4399000000-N	4510000000-N	4685000000-E		4686000000-E		4697000000-E	4695000000-E		4710000000-E	4721000000-E	4725000000-E				
							SUPPORTS, 3-LB STEEL U-CHANNEL	SIGN ERECTION, TYPE E	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 YELLOW THERMO	8" X 120 M WHITE THERMO	8" X 90 M YELLOW THERMO	8" X 90 M WHITE THERMO	24" X 120 M WHITE THERMO	THERMO MSG ONLY 120 M	THERMO LT ARROW 90 M	THERMO RT ARROW 90 M	THERMO STR ARROW 90 M	THERMO STR & LT ARROW 90 M	THERMO STR & RT ARROW 90 M
NO							LF	EA	LS	HR	LF	LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA		
W-5205M	Wake	3	SR 1551 - CHAPANOKE RD	US 70/401 TO END OF PROJECT LIMIT	0.118	62	76.00	7.00	1	10	400		489	480	180	83	100		12	6	5	2		
TOTAL FOR MAP NO. 3					0.118		76	7	1	10	400		489	480	180	83	100		12	6	5	2		
TOTAL FOR PROJ NO. 45335.3.13					0.118		76	7	1	10	400		489	480	180	83	100		12	6	5	2		
											400		969		180		183						13	
SCR.10921.46	Wake	1	US 70/401 - SOUTH SAUNDERS ST	JOINT NORTH OF I-40 TO LIMIT AT PROJECT B-4946 (SOUTH OF TRYON)	1.79	24-148			*	100	4,375	4,375	16,585	660			1,166	1,150	32	46	19	74	1	13
TOTAL FOR MAP NO. 1					1.79				*	100	4,375	4,375	16,585	660			1,166	1,150	32	46	19	74	1	13
TOTAL FOR PROJ NO. SCR.10921.46					1.79				*	100	4,375	4,375	16,585	660			1,166	1,150	32	46	19	74	1	13
									*		8,750		17,245			1,166								153
SCR.20921.46	Wake	2	SR 1564 - WILMINGTON ST	US 70/401 - SOUTH SAUNDERS TO RUSH STREET	0.257	70-90			*	10	840	2,220	986					52		3	3			
TOTAL FOR MAP NO. 2					0.257				*	10	840	2,220	986					52		3	3			
SCR.20921.46	Wake	4	SR 2684 - TRYON RD	FROM US 70-401 TO JOINT PAST S. WILMINGTON ST	0.058	77			*	5			170							4	1	1		
TOTAL FOR MAP NO. 4					0.058				*	5			170							4	1	1		
TOTAL FOR PROJ NO. SCR.20921.46					0.315				*	15	840	2,220	1,156					52		7	4	1		
									*		3,060		1,156											12
GRAND TOTAL					2.223		76	7	1	125	5,615	6,595	18,230	1,140	180	83	1,266	1,202	44	59	28	77	1	13
											12,210		19,370			1,349								178

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	LENGTH	WIDTH	4770000000-E		4810000000-E		4820000000-E		4835000000-E	4840000000-N	4845000000-N					4850000000-E	4875000000-N	4905000000-N		
							4" WHITE COLD APPLIED PLASTIC, TYPE III	4" YELLOW COLD APPLIED PLASTIC, TYPE III	4" WHITE PAINT	4" YELLOW PAINT	8" WHITE PAINT	8" YELLOW PAINT	24" WHITE PAINT	PAINT MSG ONLY	PAINT LT ARROW	PAINT RT ARROW	PAINT STR ARROW	PAINT STR & LT ARROW	PAINT STR & RT ARROW	4" LINE REMOVAL	REML OF PVMT MRKG SYMBOLS & CHARACTERS	SNOW PLOWABLE MARKERS		
NO							LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA	
W-5205M	Wake	3	SR 1551 - CHAPANOKE RD	US 70/401 TO END OF PROJECT LIMIT	0.118	62			889	480	280	83		12	6	5	2					500	2	
TOTAL FOR MAP NO. 3					0.118				889	480	280	83		12	6	5	2					500	2	
TOTAL FOR PROJ NO. 45335.3.13					0.118				889	480	280	83		12	6	5	2					500	2	
									1,369		363						13							
SCR.10921.46	Wake	1	US 70/401 - SOUTH SAUNDERS ST	JOINT NORTH OF I-40 TO LIMIT AT PROJECT B-4946 (SOUTH OF TRYON)	1.79	24-148			20,960	5,035	1,166			32	46	19	74	1	13				1,200	
TOTAL FOR MAP NO. 1					1.79				20,960	5,035	1,166			32	46	19	74	1	13					1,200
TOTAL FOR PROJ NO. SCR.10921.46					1.79				20,960	5,035	1,166			32	46	19	74	1	13					1,200
									25,995		1,166						153							
SCR.20921.46	Wake	2	SR 1564 - WILMINGTON ST	US 70/401 - SOUTH SAUNDERS TO RUSH STREET	0.257	70-90	490	405	1,826	2,220			52		3	3					895		65	
TOTAL FOR MAP NO. 2					0.257		490	405	1,826	2,220			52		3	3						895		65
SCR.20921.46	Wake	4	SR 2684 - TRYON RD	FROM US 70-401 TO JOINT PAST S. WILMINGTON ST	0.058	77			170					4	1	1							10	
TOTAL FOR MAP NO. 4					0.058				170					4	1	1								10
TOTAL FOR PROJ NO. SCR.20921.46					0.315		490	405	1,996	2,220			52		7	4	1					895		75
									895		4,216						12							
GRAND TOTAL					2.223		490	405	23,845	7,735	1,446	83	1,202	44	59	28	77	1	13	1,395	2			1,275
									895		31,580		1,529				178							

Project: W-5205M

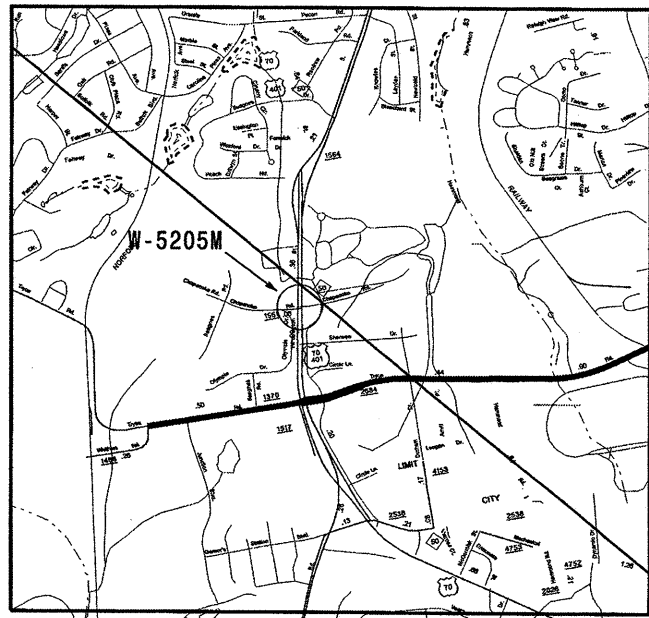
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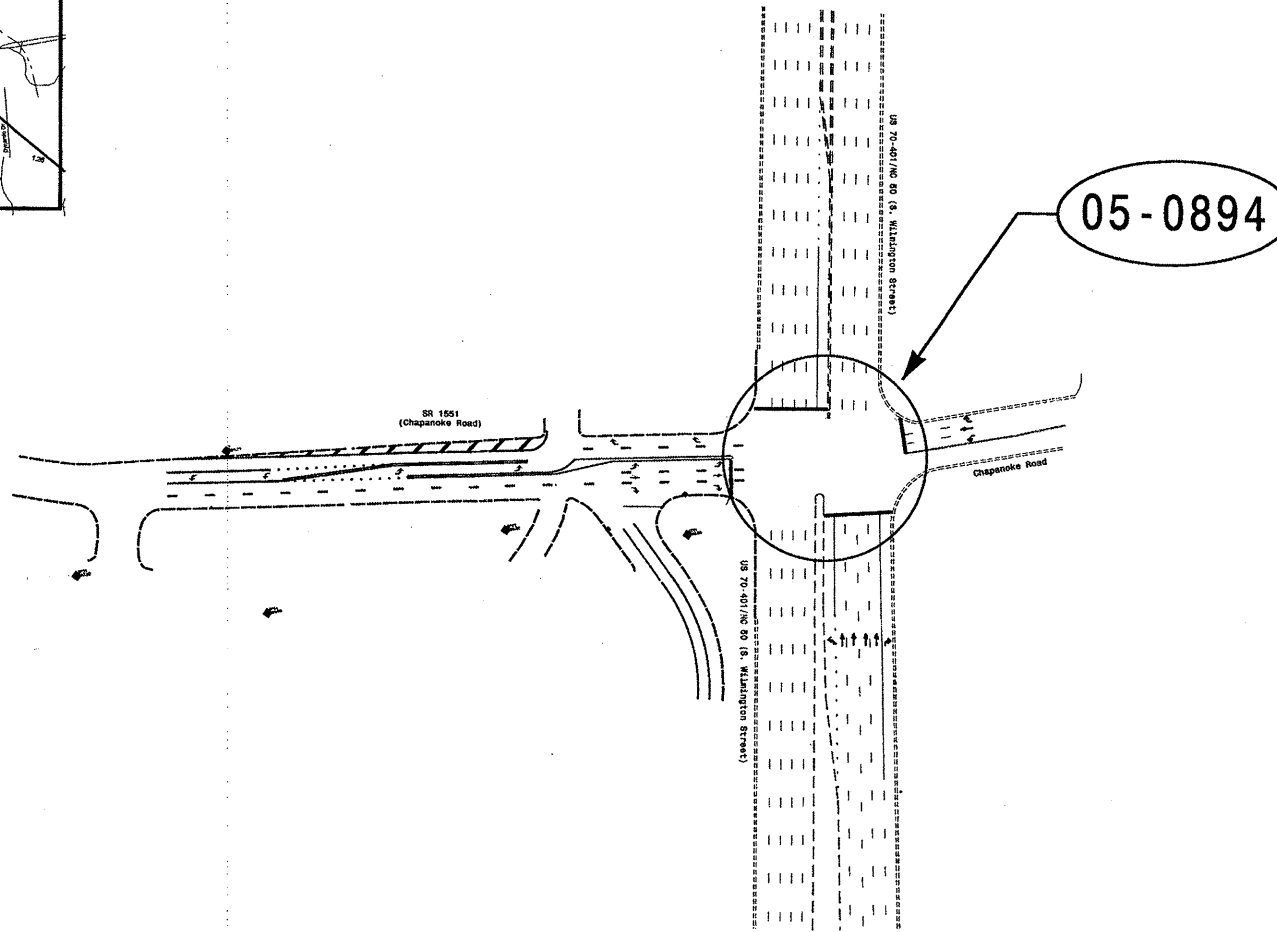
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Project No. W-5205M
Sheet No. Sig. 1

Vicinity



LOCATION: SR 1551 (Chapanoke Road) West of US 70/
US 40/NC 50 (Wilmington Street)
in Raleigh
TYPE OF WORK: Traffic Signals



Refer to "Roadway Standard Drawings
NCDOT" dated January 2012 and
"Standard Specifications for Roads
and Structures" dated January 2012.

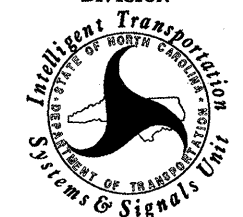
Index of Plans

Sheet #	Sig. Inv. No.	Location/Description
Sig. 1		Title Sheet
Sig. 2-3	05-0894	US 70-40/NC 50 (S. Wilmington St.) at Chapanoke Rd.

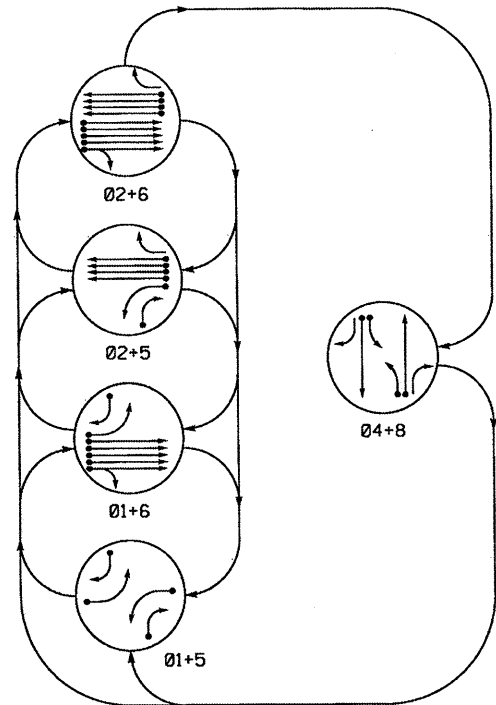
INTELLIGENT TRANSPORTATION AND SIGNALS UNIT
Contacts:

Robert J. Ziembra, PE - Central Region Signals Project Engineer
John T. Rowe Jr., PE - Signal Equipment Design Engineer

Prepared In the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY
DIVISION



PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

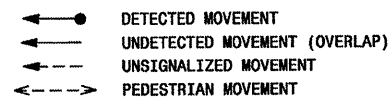
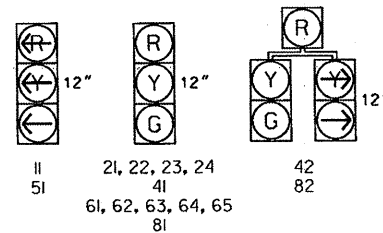


TABLE OF OPERATION

SIGNAL FACE	PHASE					FLASH
	01+5	01+6	02+5	02+6	04+8	
II	←	←	←	←	←	—
21, 22, 23, 24	R	R	G	G	R	Y
41	R	R	R	R	G	R
42	R	R	R	R	G	R
51	←	←	←	←	←	—
61, 62, 63, 64, 65	R	G	R	G	R	Y
81	R	R	R	R	G	R
82	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



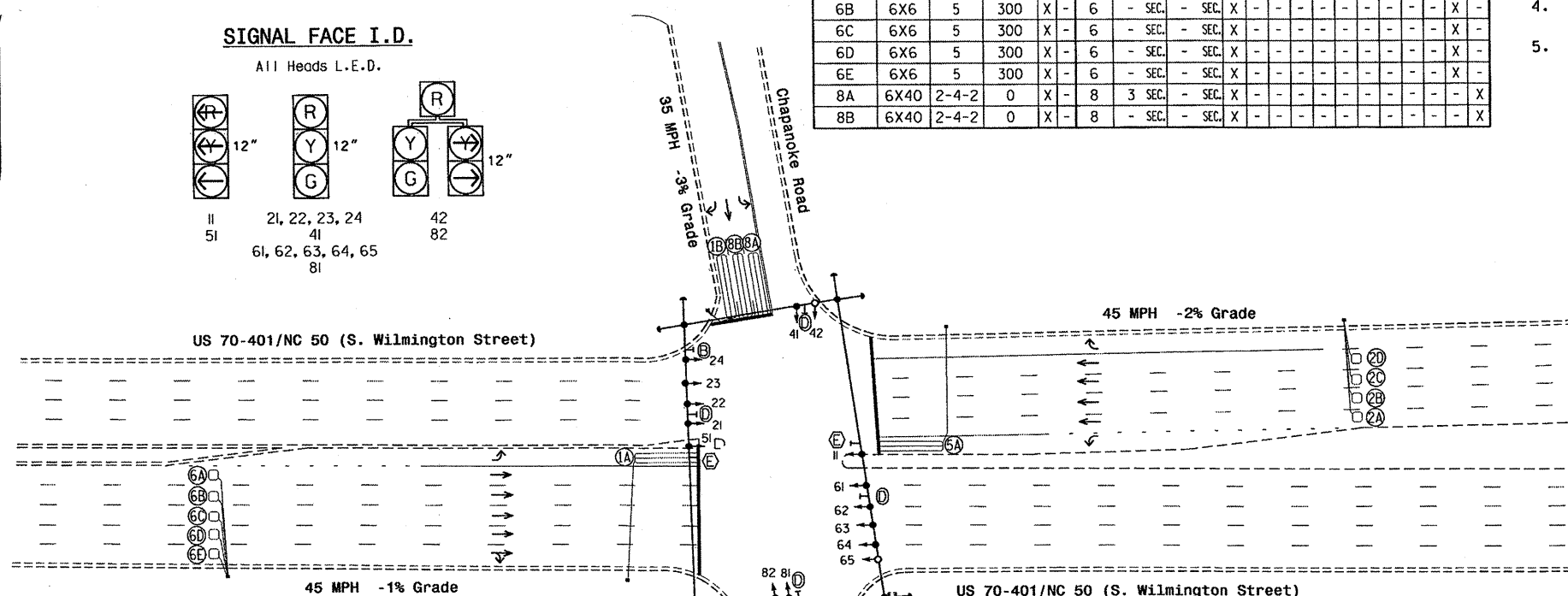
SE-PAC 2070 LOOP & DETECTOR UNIT INSTALLATION CHART

LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	ASSIGNED PHASE	TIMING		DETECTOR PROGRAMMING										STATUS			
							DELAY	EXTEND (STRETCH)	OPERATION MODE													
									VEHICLE	PEDESTRIAN	1 CALL	STOP A	STOP B	PROPER PROX/PER THROUGH	AND	SWITCH	SYSTEM	NEW		EXISTING		
1A	6X40	2-4-2	+5	X	-	1	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
1B	6X40	2-4-2	0	X	-	1	15 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
2A	6X6	5	300	X	-	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
2B	6X6	5	300	X	-	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
2C	6X6	5	300	X	-	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
2D	6X6	5	300	X	-	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
4A	6X40	2-4-2	0	X	-	4	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
4B	6X40	2-4-2	0	X	-	4	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
5A	6X40	2-4-2	+5	X	-	5	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
5B	6X40	2-4-2	0	X	-	5	15 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
6A	6X6	5	300	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
6B	6X6	5	300	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
6C	6X6	5	300	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
6D	6X6	5	300	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
6E	6X6	5	300	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
8A	6X40	2-4-2	0	X	-	8	3 SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X
8B	6X40	2-4-2	0	X	-	8	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-	-	-	-	-	X

5 Phase Fully Actuated (Raleigh Signal System)

NOTES

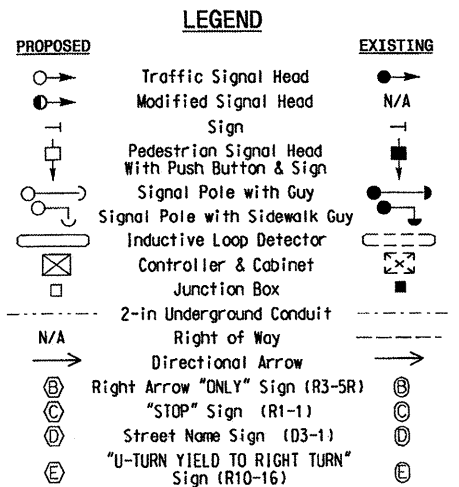
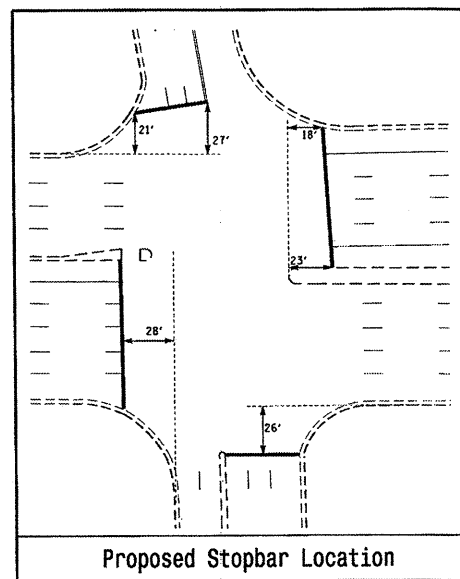
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



SE-PAC 2070 TIMING CHART

FEATURE	PHASE						
	1	2	4	5	6	8	
Min Green *	7	12	7	7	12	7	
Passage Gap *	2.0	6.0	2.0	2.0	6.0	2.0	
Maximum Green *	25	90	20	25	90	20	
Yellow Change	3.0	4.7	3.8	3.0	4.6	4.1	
Red Clear	3.3	1.4	3.2	3.5	1.5	3.1	
Walk *	-	-	-	-	-	-	
Pedestrian Clear	-	-	-	-	-	-	
Added Initial *	-	1.5	-	-	1.5	-	
Maximum Initial *	-	34	-	-	34	-	
Time Before Reduction *	-	20	-	-	20	-	
Time To Reduce *	-	40	-	-	40	-	
Minimum Gap	-	3.0	-	-	3.0	-	
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-	
Vehicle Call Memory	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	LOCK	NON-LOCK	
Dual Entry	-	-	ON	-	-	ON	
Simultaneous Gap	ON	ON	ON	ON	ON	ON	

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Signal Upgrade

Prepared in the Office of:
Transportation Mobility and Safety Division
Division 5
Wake County
Raleigh

US 70-401/NC 50 (S. Wilmington Street) at Chapanoke Road

Division 5
Wake County
Raleigh

PLAN DATE: January 2013
REVIEWED BY: R. Hough

PREPARED BY: C.E. Carter
REVIEWED BY:

REVISIONS: _____ INIT. DATE

SCALE: 1" = 50'

SIG. INVENTORY NO. 05-0894

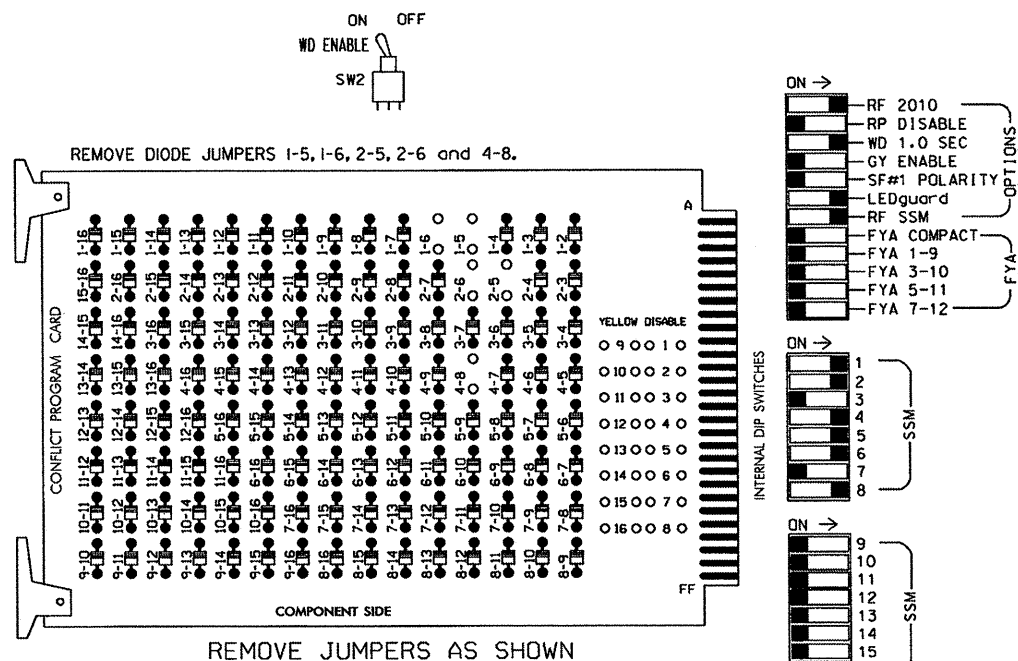
SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER ROBERT J. ZIEMBA

DATE: 1/19/13

21-FEB-2013 13:30 S:\MTCASUM\175_Signals\Signal Design\Central Region\01\W-5205-0884\050894_Sig.dwg, 20130219-dgn PZlembo

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 3,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program controller to start up in phases 2 and 6 green.
4. Enable simultaneous gap-out feature, on controller unit, for all phases.
5. Program phases 4 and 8, on controller unit, for dual entry.
6. Program phases 2 and 6, on controller unit, for volume density operation.
7. The cabinet and controller are part of the Raleigh City Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	11	82	21,22, 23,24	NU	41,42	NU	42	51	61, 62,63, 64,65	NU	81,82	NU
RED		128			101				134			107
YELLOW		129			102				135			108
GREEN		130			103				136			109
RED ARROW	125								131			
YELLOW ARROW	126	126						132	132			
GREEN ARROW	127	127						133	133			

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332
 SOFTWARE.....SE-PAC2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S8
 PHASES USED.....1,2,4,5,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

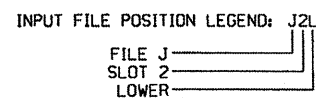
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	∅ 1	∅ 2	∅ 2	S	S	∅ 4	S	S	∅ 1	S	S	S	S	FS
"I" L	1A	2A	2C	ST	ST	4A	ST	ST	1B	ST	ST	ST	ST	DC ISOLATOR
FILE "J" U	NOT USED	∅ 2	∅ 2	Y	Y	4B	Y	Y	NOT USED	Y	Y	Y	Y	DC ISOLATOR
"J" L		2B	2D	Y	Y		Y	Y		Y	Y	Y	Y	
	∅ 5	∅ 6	∅ 6	∅ 6	S	∅ 8	S	S	∅ 5	S	S	S	S	S
	5A	6A	6C	6E	ST	8A	ST	ST	5B	ST	ST	ST	ST	ST
	NOT USED	∅ 6	∅ 6	NOT USED	Y	8B	Y	Y	NOT USED	Y	Y	Y	Y	Y
		6B	6D		Y		Y	Y		Y	Y	Y	Y	

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	DELAY TIME	EXTEND (STRETCH) TIME
1A	TB2-1,2	I1U	56	1	1		
1B	TB6-9,10	I9U	60	17	1		15
2A	TB2-5,6	I2U	39	3	2		
2B	TB2-7,8	I2L	43	4	2		
2C	TB2-9,10	I3U	63	5	2		
2D	TB2-11,12	I3L	76	6	2		
4A	TB4-9,10	I6U	41	11	4		
4B	TB4-11,12	I6L	45	12	4		
5A	TB3-1,2	J1U	55	19	5		
5B	TB7-9,10	J9U	59	37	5		15
6A	TB3-5,6	J2U	40	21	6		
6B	TB3-7,8	J2L	44	22	6		
6C	TB3-9,10	J3U	64	23	6		
6D	TB3-11,12	J3L	77	24	6		
6E	TB5-1,2	J4U	48	25	6		
8A	TB5-9,10	J6U	42	31	8		3
8B	TB5-11,12	J6L	46	32	8		



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 05-0894
 DESIGNED: January 2013
 SEALED: 2/19/13
 REVISED: N/A

Signal Upgrade

Electrical and Programming Details For:

US 70-401/NC 50
(S. Wilmington Street)
at
Chapanoke Road

Division 5 Wake County Raleigh

PLAN DATE: February 2013 REVIEWED BY: JTR

PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS INIT. DATE

750 Greenfield Parkway, Garner, NC 27529

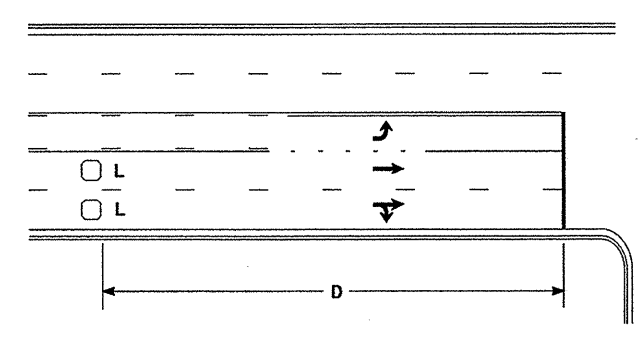
Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 008453 JOHN T. ROWE, JR.

SIGNATURE: [Signature] DATE: 2-20-13

SIG. INVENTORY NO. 05-0894

05-FEB-2013 09:28
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 scarmstrong

High Speed Detection [≥40 mph (64 km/hr)]

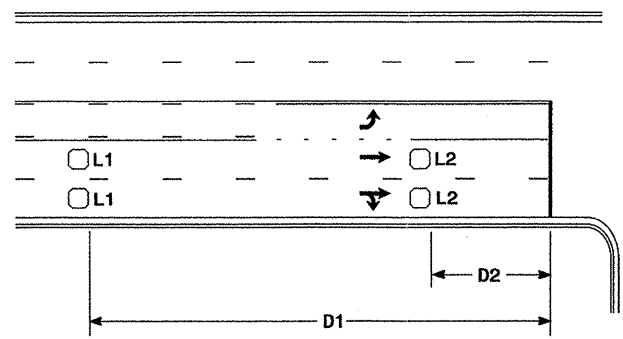


Speed Limit mph (km/hr)	D ft (m)
40 (64)	250 (75)
45 (72)	300 (90)
50 (80)	355 (110)
55 (88)	420 (130)

L = 6ft X 6ft (1.8m X 1.8m)
Wired in series for TS1
Controllers
Wired separately for TS2,
170, and 2070L Controllers

Volume Density Operation

OR

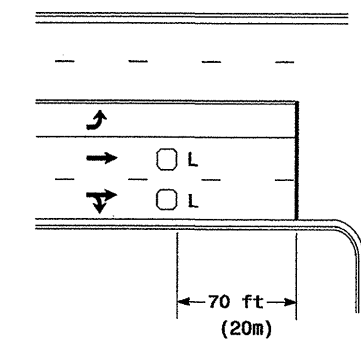


Speed Limit mph (km/hr)	D1 ft (m)	D2 ft (m)
40 (64)	250 (75)	80 (25)
45 (72)	300 (90)	90 (27)
50 (80)	355 (110)	100 (30)
55 (88)	420 (130)	110 (35)

L1 = 6ft X 6ft
(1.8m X 1.8m)
Wired in series
L2 = 6ft X 6ft
(1.8m X 1.8m)
Wired in series

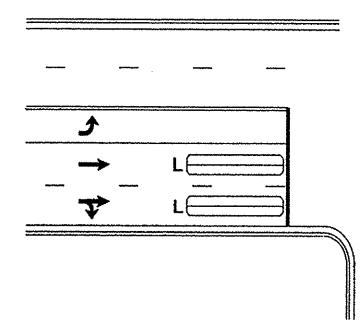
"Stretch" Operation

Low Speed Detection [≤35 mph (56 km/hr)]



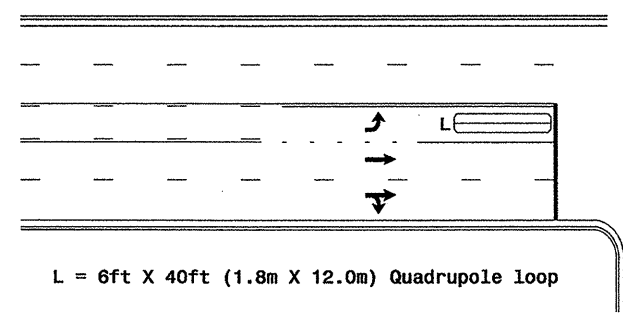
L = 6ft X 6ft (1.8m X 1.8m)
Wired in series

OR



L = 6ft X 40ft (1.8m X 12.0m)
Quadrupole loop, wired separately

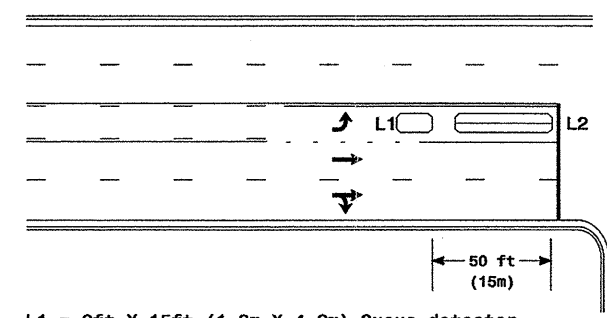
Left Turn Lane Detection



L = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

Presence Loop Detection

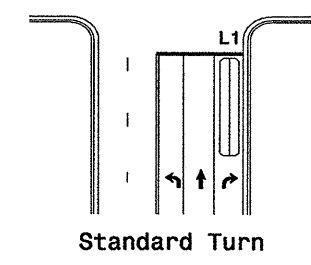
OR



L1 = 6ft X 15ft (1.8m X 4.6m) Queue detector
L2 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop

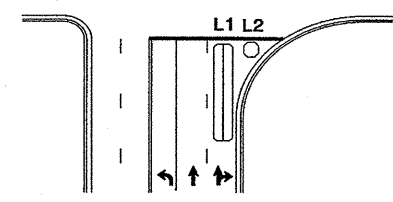
Queue Loop Detection

Right Turn Lane Detection

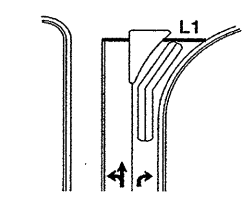


Standard Turn

L1 = 6ft X 40ft (1.8m X 12.0m) Quadrupole loop
L2 = 6ft X 6ft (1.8m X 1.8m) [Minimum] Presence loop
Wired separately
L3 = 6ft X 20ft (1.8m X 6.0m) Quadrupole loop
Wired in series

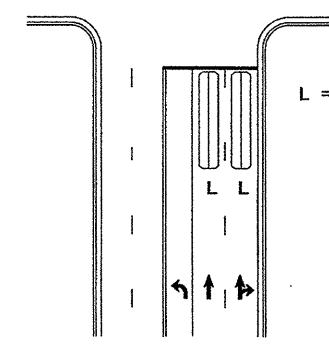


Wide Radius Turn



Channelized Turn

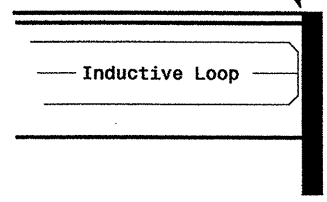
Side Street Detection



L = 6ft X 40ft (1.8m X 12.0m)
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 when stop line is
greater than 15' (4.5m) from edge
of intersecting roadway; or, when
loop detects a permissive or
protected/permissive left turn.

Recommended Number of Turns

Single 6' X 6' (1.8m X 1.8m)
loop (wired separately):

Length of Lead-in ft (m)	Number of Turns
< 250 (75)	3
250-375 (75-115)	4
375-525 (115-160)	5
> 525 (160)	6

Quadrupole loops: Use 2-4-2 turns
6' X 15' (1.8m X 4.6m) Loops:
Lead-in < 150' (45 m), use 2 turns
Lead-in > 150' (45 m), use 3 turns

	<p>Typical Loop Locations</p>	
	<p>PLAN DATE: June 2006</p> <p>REVIEWED BY:</p>	<p>PREPARED BY: P. L. Alexander</p> <p>REVIEWED BY:</p>
<p>SCALE: N/A</p>	<p>REVISIONS</p> <p>Revise pavement markings</p>	<p>SIGNATURE: [Signature]</p> <p>DATE: [Date]</p> <p>SIG. INVENTORY NO.</p>