09/08/99

TIP PROJECT: HS2006AA&AE

CONTRACT: DF00498

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

STATE	STATE PROJECT REFERENCE NO.		SHEET NO.	TOTAL SHEETS
N.C.	HS2006AA&AE		1	
	STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
HS–2006AA	49312.1.31	4931205	PE	
	49312.3.31	4931205	CONST	
HS–2006AE	49312.1.35	4931209	PE	
	49312.3.35	4931209	CONST	

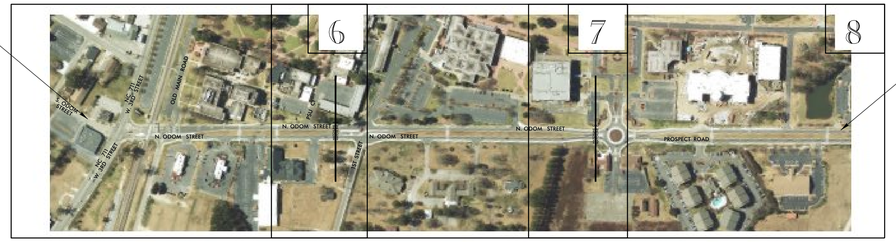
LOCATION: *NC 711 (Third Street) at SR 1340 (Odom Street) Intersection and SR 1340 (Odom Street/Prospect Road) between NC 711 and SR 1566 (Corinth Road). SR 1561 (University Road) from NC 711 to Hawk Drive*

TYPE OF WORK: *Install crosswalks pedestrian signal heads with LPI and pedestrian refuge island on Odom Street at signalized intersection with NC 711*
Install RRFB's at five existing mid–block crosswalks on SR 1340.
Install RRFB's at five proposed mid–block crosswalks on SR 1561.

BEGIN TIP PROJECT HS–2006AE

END TIP PROJECT HS–2006AE

BEGIN TIP PROJECT HS–2006AA



END TIP PROJECT HS–2006AA

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT HS–2006AE = 0.498 MILES

LENGTH OF ROADWAY TIP PROJECT HS–2006AA = 0.674 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
431 Transportation Dr. Fayetteville NC,28301

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
OCTOBER 2, 2024

JOHN GAUTHIER
PROJECT ENGINEER

ALEX HENDERSON
PROJECT DESIGN ENGINEER

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

10-SEP-2024 15:47
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
HS-2006AE	04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROP. 10' HiVis PEDESTRIAN CROSSINGS

PROP. 6' CROSSWALK

DOGWOOD LANE

COLLEGE TERRACE

UNIVERSITY ROAD

PROP. 10' HiVis PEDESTRIAN CROSSINGS

PROP. YIELD LINE

INSTALL 2 EA. RECTANGULAR RAPID FLASHING BEACONS

PROP. 6' CROSSWALK

PROP. STOP BAR

OLD MAIN ROAD

PROP. STOP BAR

PROP. YIELD LINE

INSTALL 2 EA. RECTANGULAR RAPID FLASHING BEACONS

UNIVERSITY ROAD

PROP. YIELD LINE

PROP. 6' CROSSWALK

PROP. STOP BAR

FACULTY ROW

PROP. YIELD LINE

PROP. 10' HiVis PEDESTRIAN CROSSINGS

MATCHLINE A

BEGIN TIP PROJECT HS-2006AE

ALL RRFBs SHALL BE PLACED ON TYPE II PEDESTALS

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
HS-2006AE	05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ALL RRFBs SHALL BE PLACED ON TYPE II PEDESTALS

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$$$$Current User$$$$

PROJECT REFERENCE NO.	SHEET NO.
HS-2006AA	06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ALL RRFBs SHALL BE PLACED ON TYPE II PEDESTALS

5/14/99

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
HS-2006AA	07
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ALL RRFBs SHALL BE PLACED ON TYPE II PEDESTALS

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
HS-2006AA	08
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ALL RRFBs SHALL BE PLACED ON TYPE II PEDESTALS

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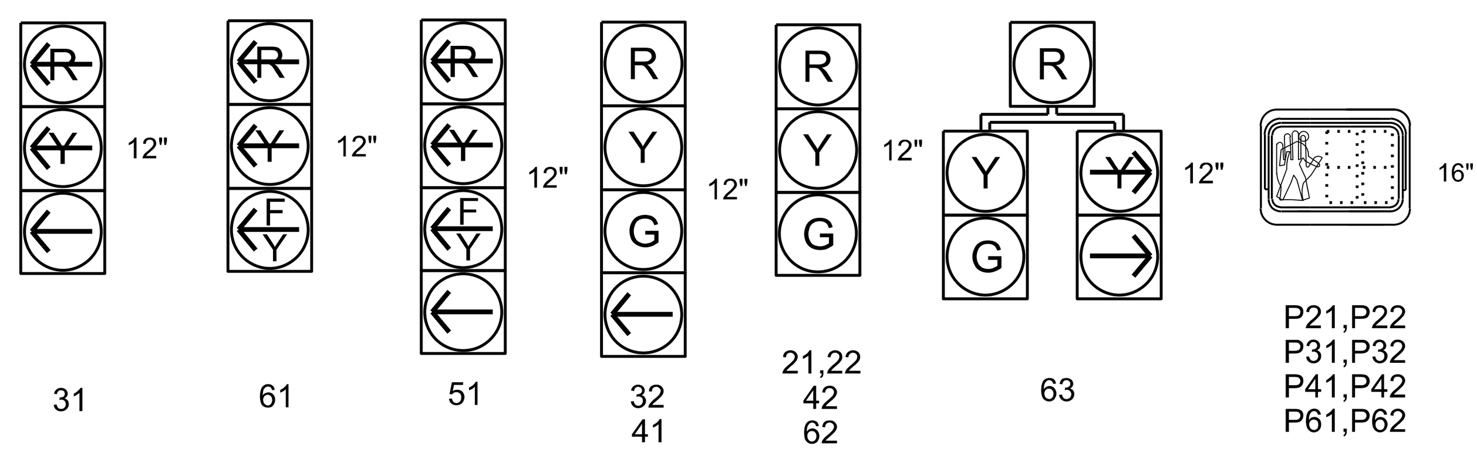
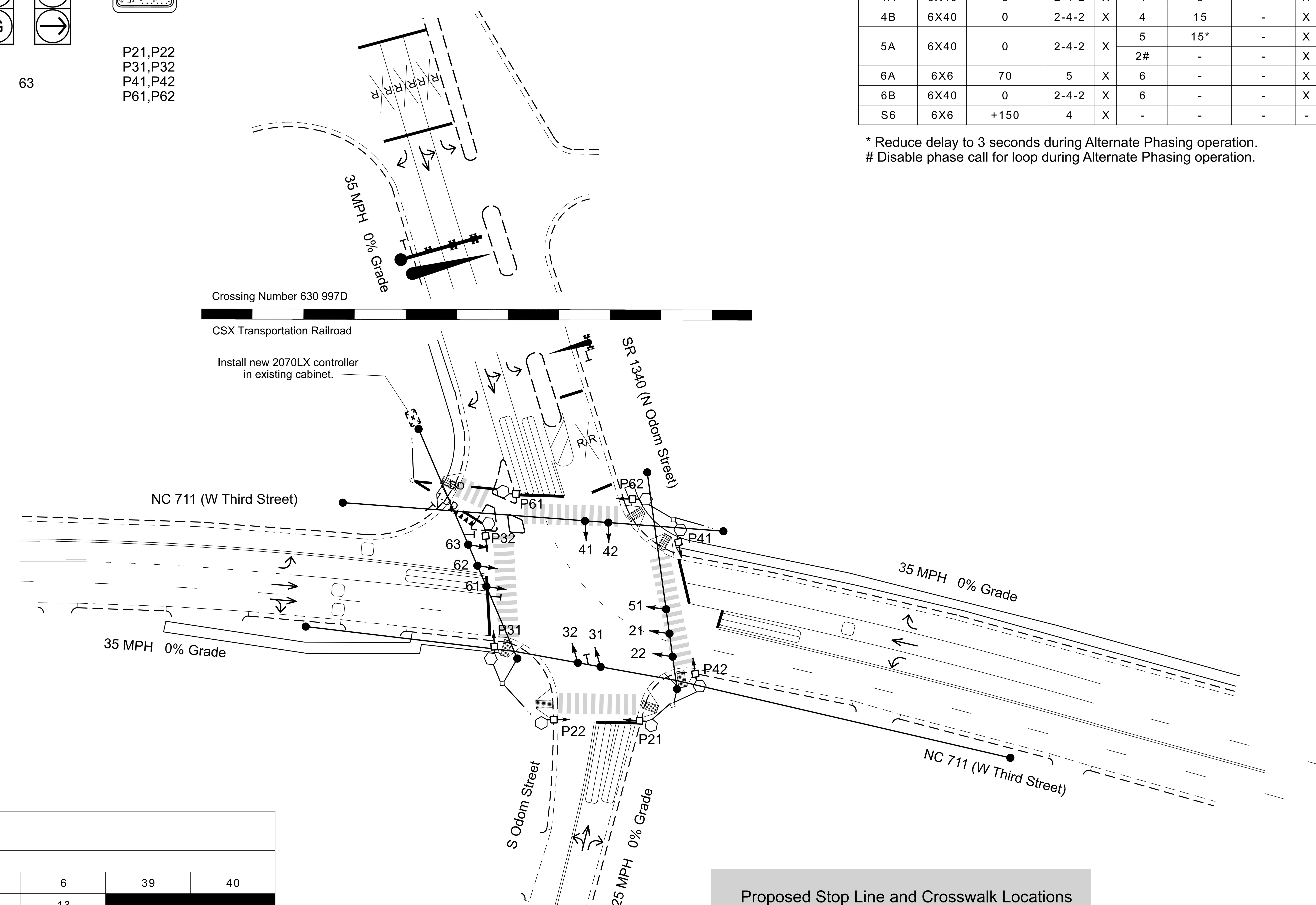
PROJECT REFERENCE NO.	SHEET NO.
HS-2006AA	Sig.1.0

SIGNAL FACE I.D.

All Heads L.E.D.





MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
2A	6X6	70	5	X	2	-	-	X	-	X	-	-
2B	6X6	70	5	X	2	-	-	X	-	X	-	-
3A	6X40	0	2-4-2	X	3	3	-	X	-	X	-	-
3B	6X40	0	2-4-2	X	3	-	-	X	-	X	-	-
4A	6X40	0	2-4-2	X	4	3	-	X	-	X	-	-
4B	6X40	0	2-4-2	X	4	15	-	X	-	X	-	-
5A	6X40	0	2-4-2	X	5	15*	-	X	-	X	-	-
					2#	-	-	X	-	X	-	-
6A	6X6	70	5	X	6	-	-	X	-	X	-	-
6B	6X40	0	2-4-2	X	6	-	-	X	-	X	-	-
S6	6X6	+150	4	X	-	-	-	-	-	-	-	-

* Reduce delay to 3 seconds during Alternate Phasing operation.
# Disable phase call for loop during Alternate Phasing operation.

4 Phase
Fully Actuated
with RR Preemption
D06-22_Pembroke

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Ensure Flashing operation does not alter operation of blankout signs.
11. Program phase 40 to run concurrently with all phases during normal operation.
12. Phase 39 should be incompatible with phase 40 and included as a track clear phase.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Modified Signal Head	N/A
	Sign	
	Pedestrian Signal Head	
	Signal Pole with Guy	
	Signal Pole with Sidewalk Guy	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
X-UC	2-in Underground Conduit	UC
N/A	Right of Way	
	Directional Arrow	
	Type II Signal Pedestal	
N/A	Curb Ramp	
N/A	Railroad Tracks	
N/A	Railroad Gate and Flasher	
N/A	Railroad Cantilever	
A	"NO RIGHT TURN - TRAIN" Fiber Optic Blankout Sign	A
B	Left Arrow "ONLY" Sign (R3-5L)	B
C	Combined Through and Left Arrow Sign (R3-6L)	C
D	"DO NOT STOP ON TRACKS" Sign (R8-8)	D
E	"YIELD" Sign (R1-2)	E

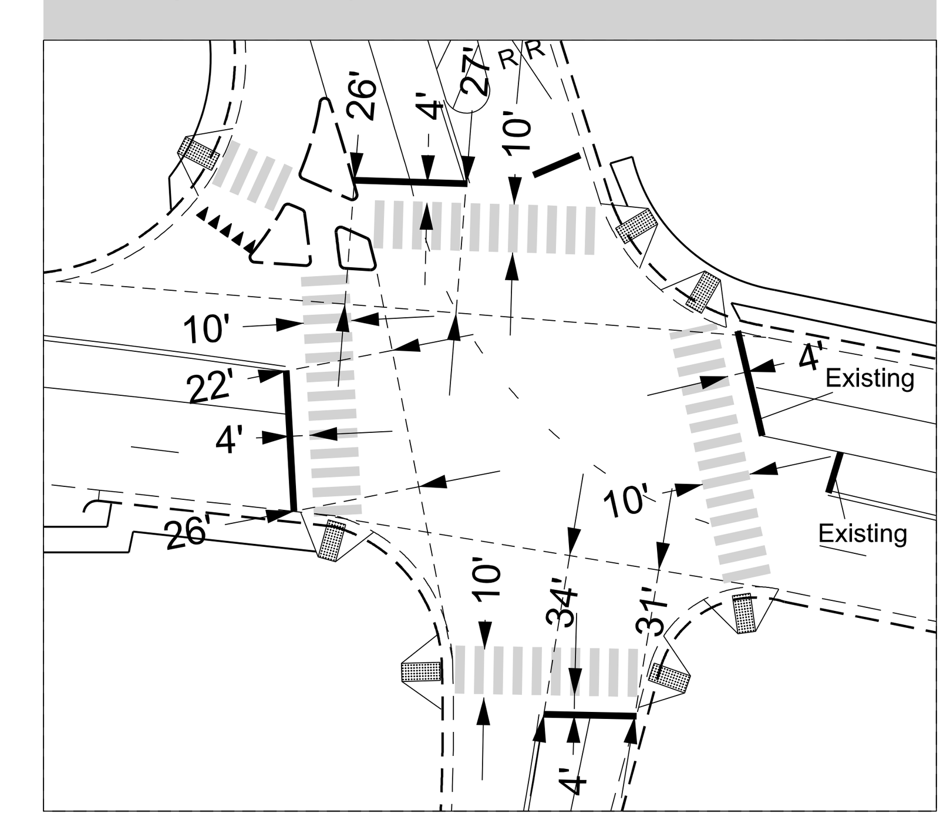
MAXTIME TIMING CHART

FEATURE	PHASE						
	2	3	4	5	6	39	40
Walk *	13	7	12	0	13		
Ped Clear	9	12	14	0	12		
Min Green *	10	10	10	7	10	1	1
Passage *	3.0	2.0	2.0	2.0	3.0		
Max 1 *	45	30	30	30	45	0	0
Yellow Change	3.8	3.8	3.2	3.2	3.8	3.8	3.8
Red Clear	1.8	2.3	2.8	1.5	1.8	2.3	2.8
Added Initial *	-	-	-	-	-		
Maximum Initial *	-	-	-	-	-		
Time Before Reduction *	-	-	-	-	-		
Time To Reduce *	-	-	-	-	-		
Minimum Gap	-	-	-	-	-		
Advance Walk	6	-	5	-	6		
Non Lock Detector	-	X	X	X	-		
Vehicle Recall	MIN RECALL	-	-	-	MIN RECALL	-	MIN RECALL
Dual Entry	-	-	-	-	-		

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

This signal is designed for ADVANCE preemption.

Proposed Stop Line and Crosswalk Locations



Signal Upgrade - Corr. File No. 06-23-70516 - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Transportation Mobility and Safety Division
State of North Carolina Department of Transportation
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 711 (3rd Street) at SR 1340 (N Odom Street)/ S Odom Street

Division 6 | Robeson County | Pembroke

PLAN DATE:	March 2024	REVIEWED BY:	ZML
PREPARED BY:	BMH	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

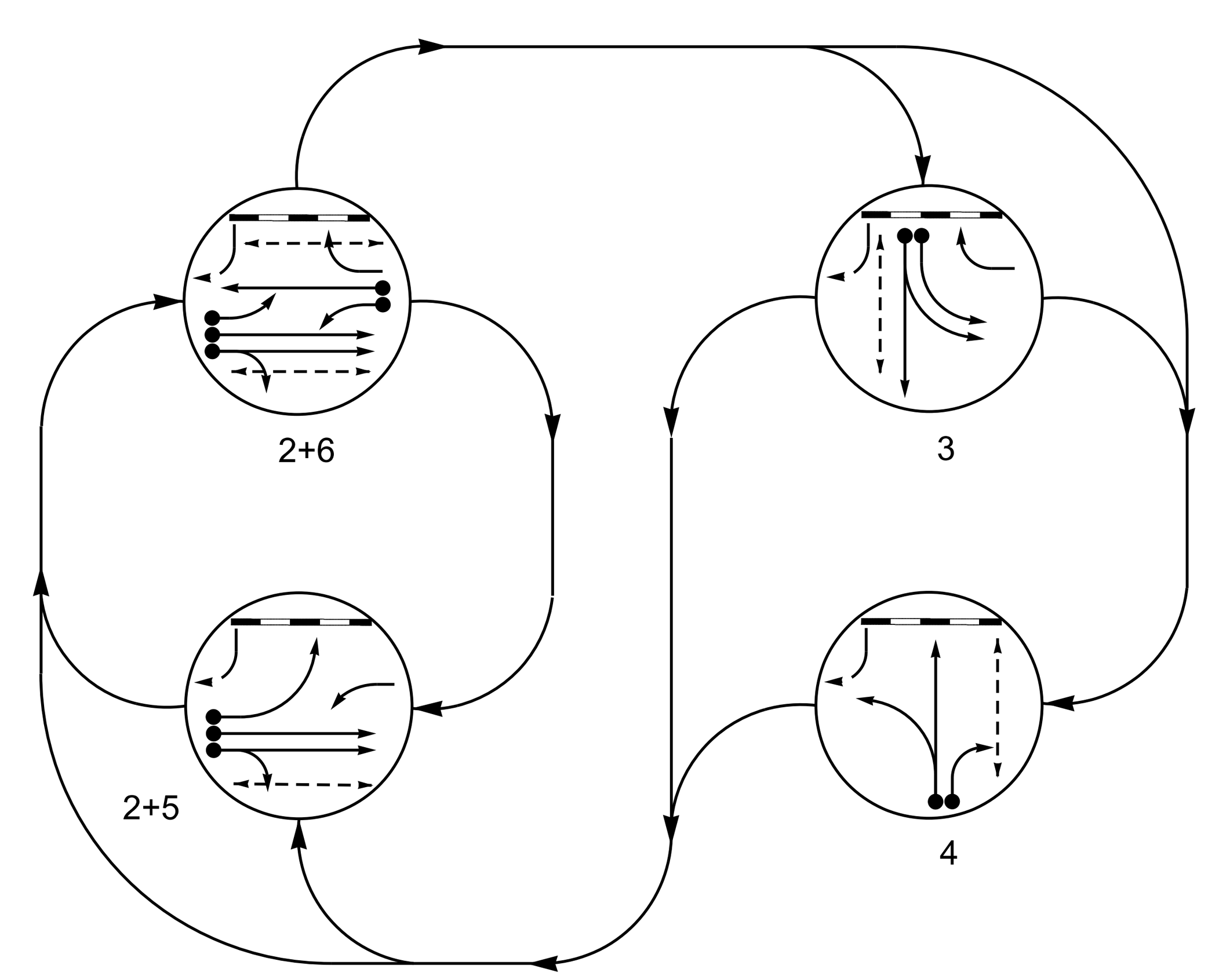
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 030530 ENGINEER ZACHARY M. LITTLE

DocuSigned by: Zachary M. Little 05/16/2024
0C21EFD94F5341F...
DATE

SIG. INVENTORY NO. 06-0229

4 Phase
Fully Actuated
with RR Preemption
D06-22_Pembroke

DEFAULT PHASING DIAGRAM

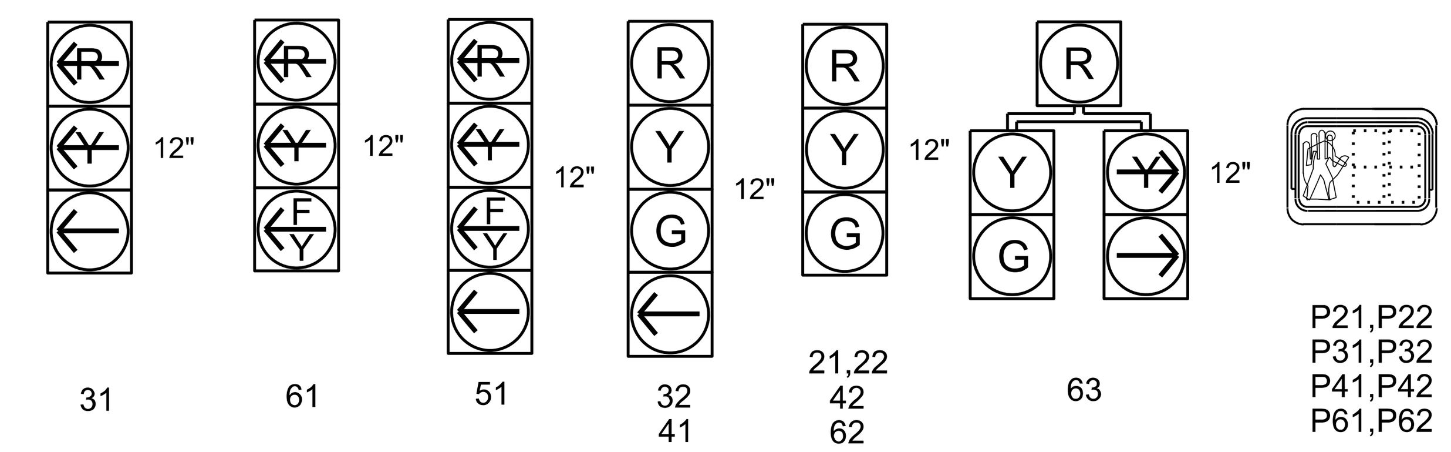


DEFAULT PHASING TABLE OF OPERATION							
SIGNAL FACE	PHASE						
	2+5	2+6	3	4	TRACK CLEAR	DWELL	FLASH
21,22	G	G	R	R	R	G	R
31	←R	←R	←	←R	←	←R	←R
32	R	R	G ←	R	G ←	R	R
41	R	R	R	G ←	R	R	R
42	R	R	R	G	R	R	R
51	←	F/Y ←	←R	←R	←R	←R	←R
61	F/Y ←	F/Y ←	←R	←R	←R	F/Y ←	←R
62	R	G	R	R	R	G	R
63	R	G	R / →	R	R	G	R
P21,P22	W	W	DW	DW	DW	W	DRK
P31,P32	DW	DW	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	W	DW	DW	DRK
P61,P62	DW	W	DW	DW	DW	W	DRK
SIGN A	OFF	OFF	OFF	OFF	ON	ON	*

*See Note 10.

SIGNAL FACE I.D.

All Heads L.E.D.



NOTES

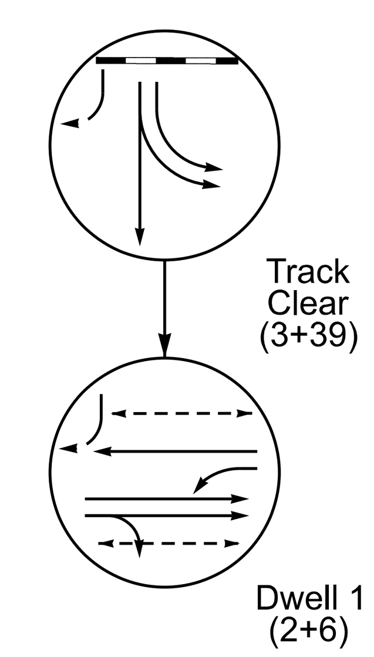
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
2. This location contains railroad preemption phasing. Do not program signal for late night flashing operation.
3. Phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Ensure Flashing operation does not alter operation of blankout signs.
11. Program phase 40 to run concurrently with all phases during normal operation.
12. Phase 39 should be incompatible with phase 40 and included as a track clear phase.

PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

RAIL PREEMPT PHASES

(High Priority)

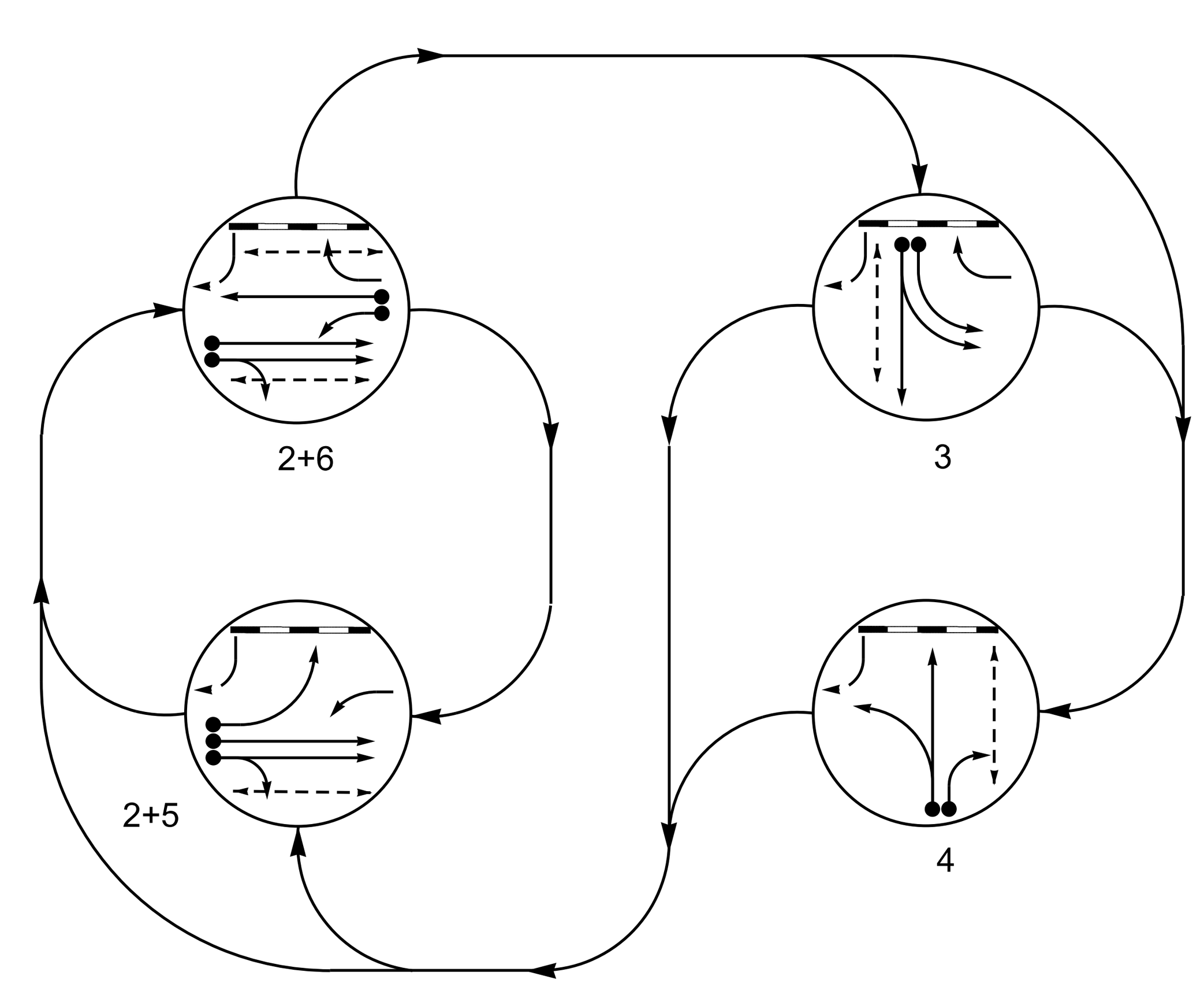


MAXTIME PREEMPTION CHART	
FUNCTION	PRE 1
Type	RAIL ROAD
Exit Phases	2+6
Delay	0
Max Presence	0
Enter Min Green	1
Enter Walk	0
Enter Ped Clear	3
Enter Yellow Change	3.8
Enter Red Clear	2.8
Track Green	25
Track Yellow Change	3.8
Track Red Clear	2.3
Dwell Green	0
Exit Min Green	255*
Exit Yellow Change	25.5*
Exit Red Clear	25.5*
Dwell Extend Time	1.0
Exit Type	EXIT PHASES
Ped Clear Through Yellow	Y
Require All Red Entry	-

* Directs controller to use default phase timing.

This signal is designed for ADVANCE preemption.

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION							
SIGNAL FACE	PHASE						
	2+5	2+6	3	4	TRACK CLEAR	DWELL	FLASH
21,22	G	G	R	R	R	G	R
31	←R	←R	←	←R	←	←R	←R
32	R	R	G ←	R	G ←	R	R
41	R	R	R	G ←	R	R	R
42	R	R	R	G	R	R	R
51	←	←R	←R	←R	←R	←R	←R
61	F/Y ←	F/Y ←	←R	←R	←R	F/Y ←	←R
62	R	G	R	R	R	G	R
63	R	G	R / →	R	R	G	R
P21,P22	W	W	DW	DW	DW	W	DRK
P31,P32	DW	DW	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	W	DW	DW	DRK
P61,P62	DW	W	DW	DW	DW	W	DRK
SIGN A	OFF	OFF	OFF	OFF	ON	ON	*

*See Note 10.

Signal Upgrade - Corr. File No. 06-23-70516 - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

NC 711 (3rd Street)
at
SR 1340 (N Odom Street)/
S Odom Street

Division 6 | Robeson County | Pembroke

PLAN DATE:	March 2024	REVIEWED BY:	ZML
PREPARED BY:	BMH	REVIEWED BY:	

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030530 ZACHARY M. LITTLE

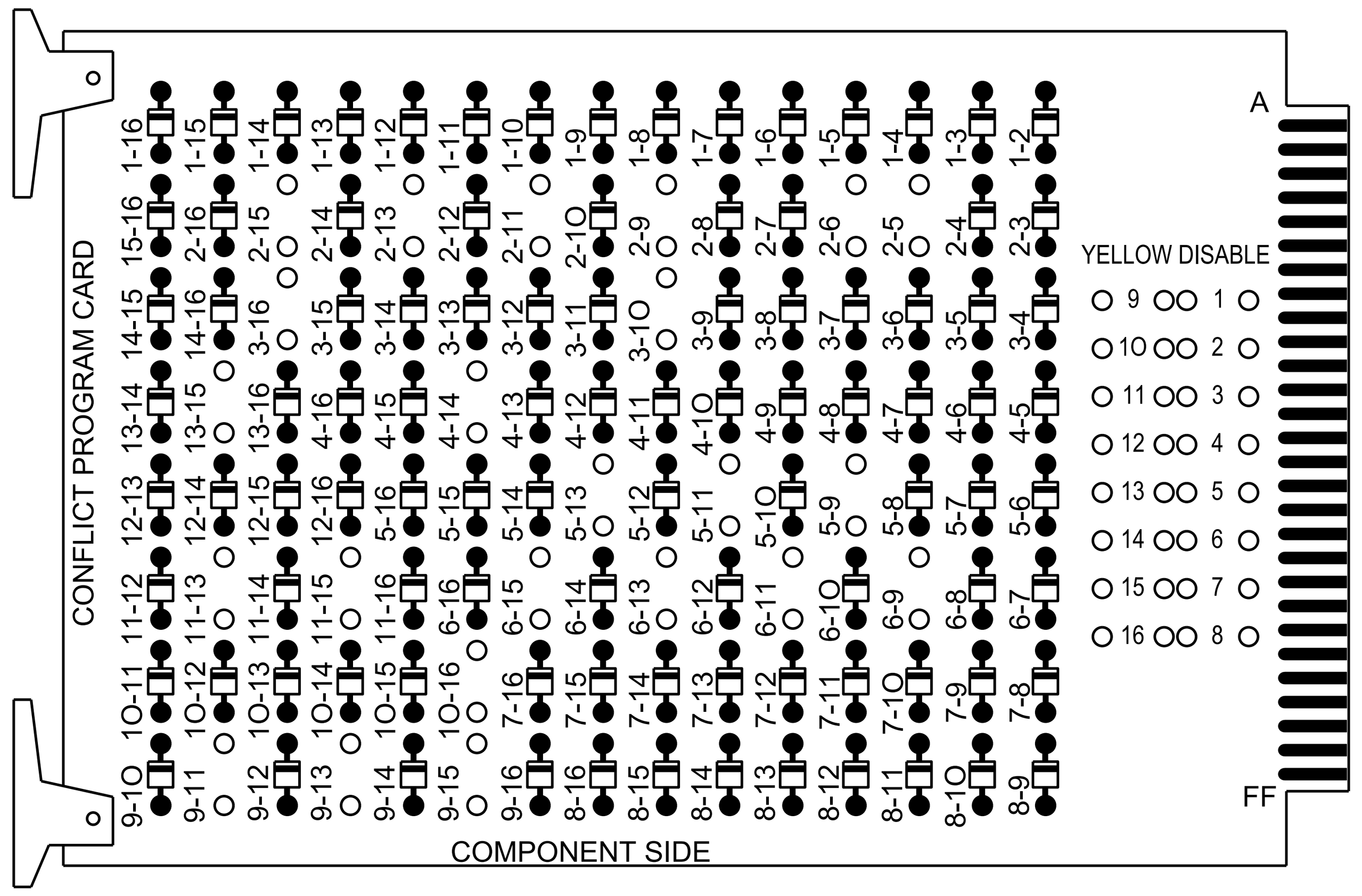
DocuSigned by: Zachary M. Little 05/16/2024
0C21EFD94F5341F...
DATE

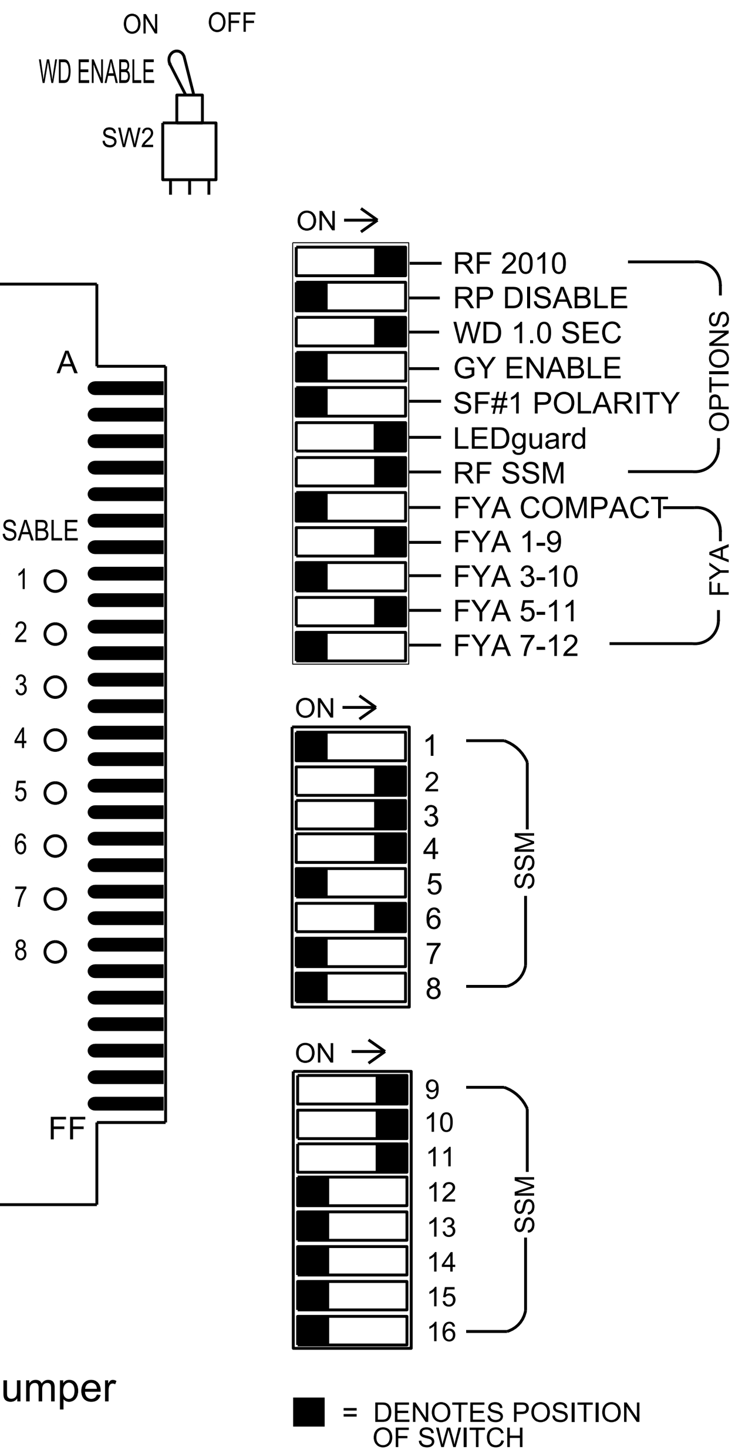
SIG. INVENTORY NO. 06-0229

16 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-10, 3-16, 4-14, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 9-11, 9-13, 9-15, 10-16, 11-13, 11-15, and 13-15.





REMOVE JUMPERS 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 plan.
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 1,5,7,8, 12,13,14,15, & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program controller to start up in phase 2 Green No Walk, 6 Green No Walk, 39 Phase Not On, and 40 Green No Walk.
4. Program Phase 39 for No Startup Veh Call.
5. Program Phase 40 for Min Recall.
6. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
7. The cabinet and controller are part of the D06-22_Pembroke System.

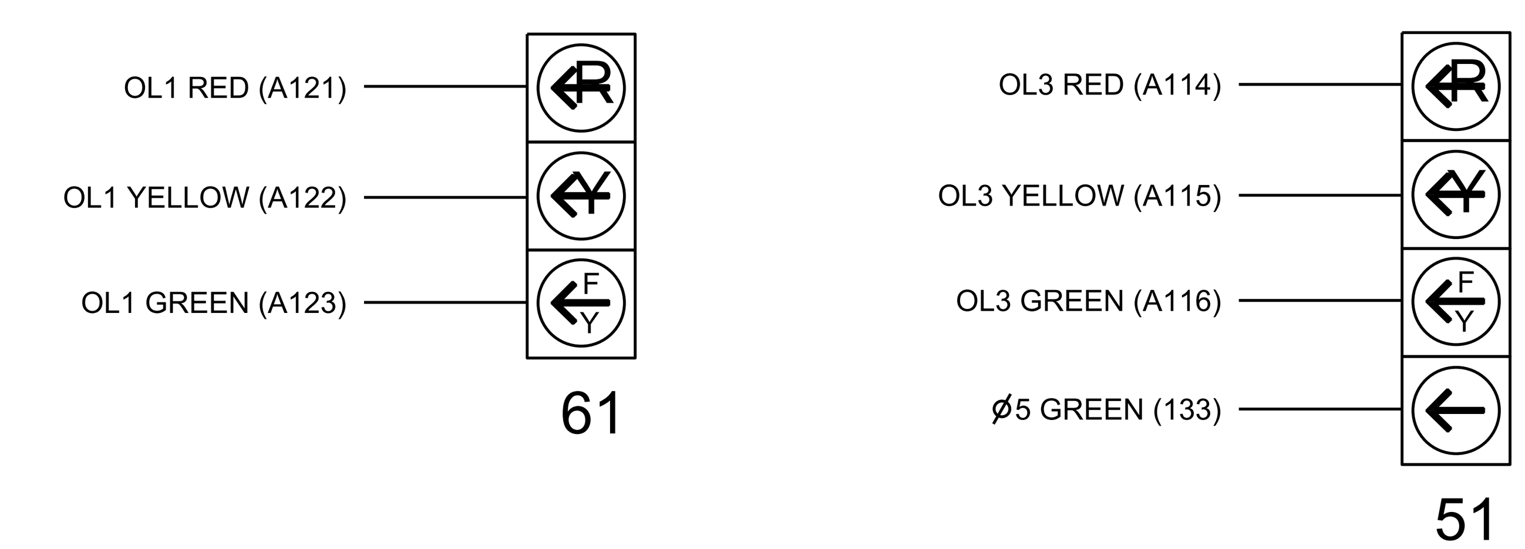
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3		S4		S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
CMU CHANNEL NO.	1	2	13	3		4		14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3		4		4 PED	5	6	6 PED	7	8	3 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21,22	P21, P22	31	32	41	42	P41, P42	51★	62,63	P61, P62	NU	NU	P31, P32	61★	63	NU	51★	NU	NU
RED		128			116	101	101			134						*				
YELLOW		129			117	102	102		*	135										
GREEN		130			118	103	103			136										
RED ARROW				116											A121			A114		
YELLOW ARROW				117											A122	A125		A115		
FLASHING YELLOW ARROW															A123			A116		
GREEN ARROW				118	118	103			133							A126				
✋			113					104			119			110						
🚶			115					106			121			112						

* Denotes install load resistor. See load resistor installation detail this sheet.
★ See pictorial of head wiring in detail this sheet.
NU = Not Used

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

EQUIPMENT INFORMATION

Controller..2070LX
Cabinet..332 w/ Aux
Software..Q-Free MAXTIME
Cabinet Mount...................................Base
Output File Positions..........................18 With Aux. Output File
Load Switches Used...........................S2, S2P, S3, S4, S4P, S5, S6, S6P, S8P, S9, S10, S12
Phases Used.....................................2, 2PED, 3, 3PED, 4, 4PED, 5, 6, 6PED, 39**, 40**
Overlap "1"...*
Overlap "2"...*
Overlap "3"...*
Overlap "4"...NOT USED

*See overlap programming detail on Sheet 2.
**Phase used for preemption timing purposes only.

INPUT FILE POSITION LAYOUT

(front view)

FILE		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SYS. DET. S6	SLOT EMPTY	SLOT EMPTY	Ø 2 PED DC ISOLATOR	Ø 6 PED DC ISOLATOR	FS DC ISOLATOR
	L		Ø 2 2B				Ø 4 4B			NOT USED			Ø 4 PED DC ISOLATOR	Ø 3 PED DC ISOLATOR	ST DC ISOLATOR
FILE "J"	U	Ø 5 5A	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	Ø 3 3A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	PRE1 AC ISOLATOR
	L	NOT USED		Ø 6 6B			Ø 3 3B								NOT USED

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

FS = FLASH SENSE
ST = STOP TIME
PRE = PREEMPT

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	TB2-5,6	I2U	39	1	2	2			X		X	
2B	TB2-7,8	I2L	43	5	3	2			X		X	
3A	TB5-9,10	J6U	42	4	22	3	3		X		X	
3B	TB5-11,12	J6L	46	8	23	3			X		X	
4A	TB4-9,10	I6U	41	3	8	4	3		X		X	
4B	TB4-11,12	I6L	45	7	9	4	15		X		X	
5A	TB3-1,2	J1U	55	17	15★	5	15		X		X	
				-	31★	2			X		X	
6A	TB3-9,10	J3U	64	30	18	6			X		X	
6B	TB3-11,12	J3L	77	43	19	6			X		X	
*S6	TB6-9,10	I9U	60	22	13	SYS						
PED PUSH BUTTONS												
P21,P22	TB8-4,6	I12U	67	33	2	PED 2						
P31,P32	TB8-8,9	I13L	70	36	8	PED 3						
P41,P42	TB8-5,6	I12L	69	35	4	PED 4						
P61,P62	TB8-7,9	I13U	68	34	6	PED 6						

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

* SYSTEM DETECTOR ONLY. REMOVE ANY ASSIGNED VEHICLE PHASE.

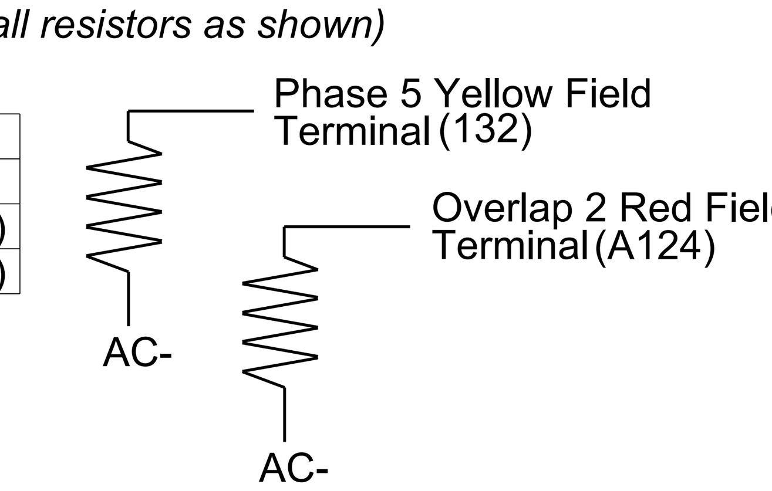
★ FOR THE DETECTORS TO WORK AS SHOWN ON THE SIGNAL PLAN, SEE THE DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING ON SHEET 2 OF THIS PLAN.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES	
Value (ohms)	Wattage
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0229
DESIGNED: March 2024
SEALED: 5/16/2024
REVISED:

MAXTIME STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Unit

Web Interface
Home >Controller >Unit

Modify parameters as shown below and save changes.

Start Up Parameters

StartUp Clearance Hold
6

Unit Flash Parameters

All Red Flash Exit Time
6

Electrical Detail - Sheet 1 of 3

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Electrical and Programming Details For:

NC 711 (3rd Street)
at
SR 1340 (N Odom Street)/
S Odom Street

Prepared in the Offices of:
Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

Division 6 — Robeson County — Pembroke

PLAN DATE: May 2024	REVIEWED BY: D.T.J.
PREPARED BY: D.J. Craddock	REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031001 D. TODD JOYCE

DocuSigned by: D. Todd Joyce — A90CADEDBD4241D — 05/16/2024 DATE

SIG. INVENTORY NO. 06-0229

PROJECT REFERENCE NO.	SHEET NO.
HS-2006AA	Sig. 1.3

PED 3 PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Detector >Ped Det Plans

Web Interface
Home >Controller >Detector Configuration >Pedestrian Detector

Plan 1

Detector	Descripton	Call Phase	Call Overlap
2		2	0
4		4	0
6		6	0
8		3	0

NOTICE PHASE 3 PED ASSIGNED TO DETECTOR 8 PED

Front Panel
Main Menu >Controller >More>Channels>Channels Config

Web Interface
Home >Controller >Advanced IO>Channels>Channel Configuration

Channel Configuration

Channel	Control Type	Control Source	Flash Yellow	Flash Red	Flash Alt	MMU Channel
1	Phase Vehicle	1		X	X	1
2	Phase Vehicle	2		X		2
3	Phase Vehicle	3		X	X	3
4	Phase Vehicle	4		X		4
5	Phase Vehicle	5		X		5
6	Phase Vehicle	6		X	X	6
7	Phase Vehicle	7		X		7
8	Phase Vehicle	8		X	X	8
9	Overlap	1		X	X	9
10	Overlap	2		X	X	10
11	Overlap	3		X		11
12	Overlap	4		X		12
13	Phase Ped	2				13
14	Phase Ped	4				14
15	Phase Ped	6				15
16	Phase Ped	3				16
17	Overlap	5		X	X	17
18	Overlap	6		X		18

NOTICE: FLASH RED

NOTICE PHASE 3 PED ASSIGNED TO CHANNEL 16

MAXTIME ALTERNATE PHASING ACTIVATION DETAIL

To run alternate phasing, select a Pattern that is programmed to run Overlap Plan 2 and Detector Plan 2.
A Pattern can be selected through the scheduler or manually by changing the Operational Mode.

PHASING	OVERLAP PLAN	VEH DET PLAN
ACTIVE PLAN REQUIRED TO RUN DEFAULT PHASING	1	1
ACTIVE PLAN REQUIRED TO RUN ALTERNATE PHASING	2	2

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN OVERLAP PLAN 2 AND VEHICLE DETECTOR PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAP PLAN 2: Modifies overlap included phases for head 51 to run protected turns only.

VEH DET PLAN 2: Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3 seconds.

MAXTIME ALTERNATE PHASING PATTERN PROGRAMMING DETAIL

Front Panel
Main Menu >Controller >Coordination >Patterns

Web Interface
Home >Controller >Coordination >Patterns

Pattern Parameters

Pattern	Veh Det Plan	Overlap Plan
*	2	2

* The Pattern number(s) are to be determined by the Division and/or City Traffic Engineer.

MAXTIME DETECTOR PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 5A

Front Panel
Main Menu >Controller >Detector >Veh Det Plans

Web Interface
Home >Controller >Detector Configuration >Vehicle Detectors

In the table view of web interface right click on "Detector" in the top left corner of the table. Copy the entire contents of Detector Plan 1. Paste Detector Plan 1 into Detector Plan 2. Modify Detector Plan 2 as shown below and save changes.

Plan 2

	Detector	Call Phase	Delay
5A	15	5	3
	31	0	-

MAXTIME OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	2	3	4
Type	FYA 4 - Section	Normal	FYA 4 - Section	Off
Included Phases	2	3	6	-
Modifier Phases	-	-	5	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

MAXTIME OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

In the table view of the web interface, right click on "Overlap" in the top left corner of the table. Copy the entire contents of Overlap Plan 1. Paste Overlap Plan 1 into Overlap Plan 2. Modify Overlap Plan 2 as shown below and save changes.

Overlap Plan 2

Overlap	1	2	3	4
Type	FYA 4 - Section	Normal	FYA 4 - Section	Off
Included Phases	2	3	-	-
Modifier Phases	-	-	5	-
Trail Green	0	0	0	0
Trail Yellow	0.0	0.0	0.0	0.0
Trail Red	0.0	0.0	0.0	0.0

NOTICE INCLUDED PHASES

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0229
DESIGNED: March 2024
SEALED: 5/16/2024
REVISED:

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

NC 711 (3rd Street)
at
SR 1340 (N Odom Street)/
S Odom Street

Division 6 — Robeson County — Pembroke

PLAN DATE: May 2024	REVIEWED BY: D.T.J.
PREPARED BY: D.J. Craddock	REVIEWED BY:

REVISIONS	INIT.	DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division
ITS & Signals Management Section
State of North Carolina Department of Transportation
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 05/16/2024
DATE

SIG. INVENTORY NO. 06-0229

PREEMPTION PROGRAMMING

Front Panel
Main Menu >Controller >Preemption >Preempt Phasing/Preempt Parameters

Web Interface
Home >Controller >Preempt Configuration >Preempts

Preempt Configuration

Preempt	1
Enabled	Enabled
Type	Rail Road
Track Phases	3,39
Track Overlaps	-
Dwell Phases	2,6
Dwell Overlaps	1
Cycling Phases	-
Cycling Overlaps	-
Exit Phases	2,6
Exit Overlaps	1,3
Delay	0
Max Presence	0
Max Pres Act	Terminate
Enter Min Green	1
Enter Walk	0
Enter Ped Clear	3
Enter Yellow Change	3.8
Enter Red Clear	2.8
Track Green	25
Track Yellow Clr	3.8
Track Red Clear	2.3
Dwell Green	0
Exit Min Green	255
Exit Yellow Change	25.5
Exit Red Clear	25.5
Dwell Ext Time	1.0
Exit Type	Exit Phases
Non Locking Memory	X
Not Ovrd Flash	X
Not Ovrd Nxt Pre	-
Require All Red Entry	-
Track Clear Ovrd	X
Ped Clear During Yellow	X
Entry Omit OLTG	X

SEQUENCE DETAIL

Front Panel
Main Menu >Controller >Sequence & Phs Config >Sequences

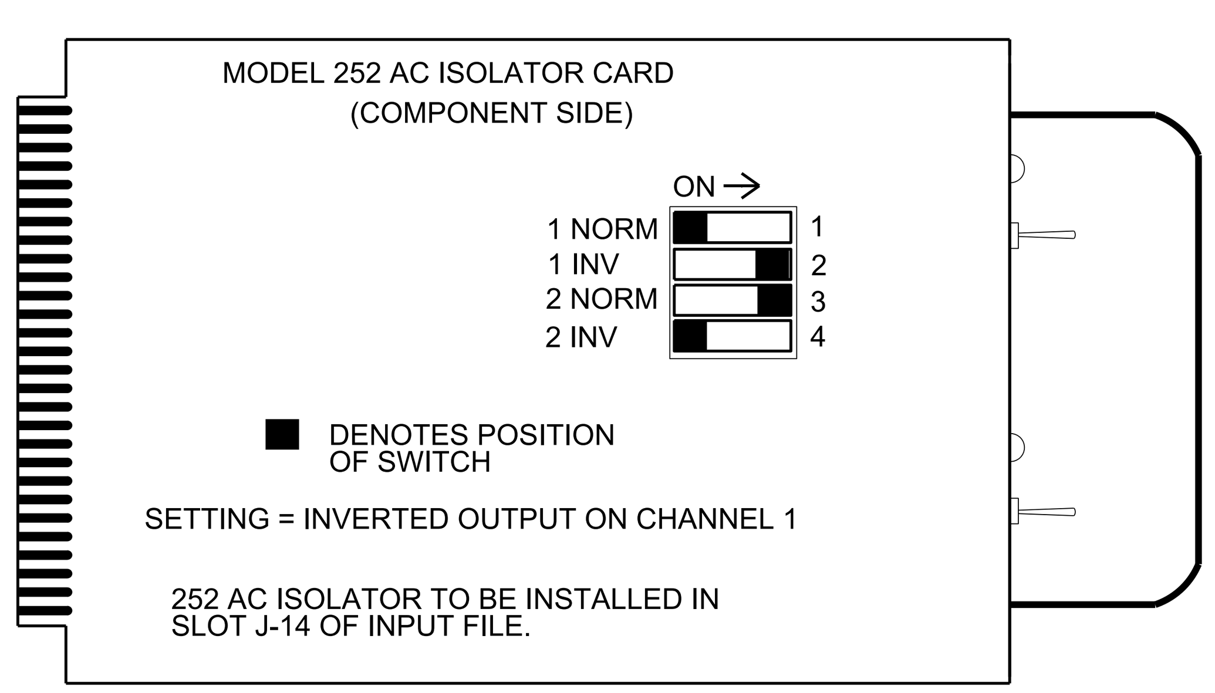
Web Interface
Home >Controller >Sequence

Sequence 1

Ring	Sequence Data
1	2,a,3,4,b
2	5,6,a,b
3	39,c,40,d

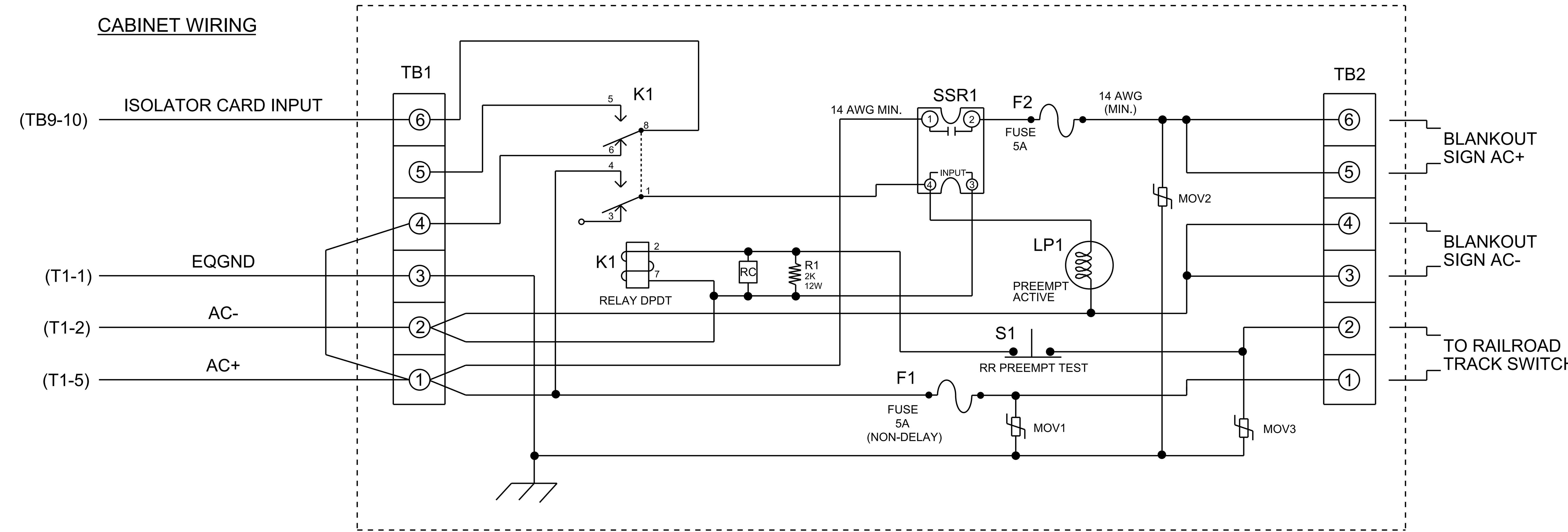
PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)



RAILROAD PREEMPTION WIRING DETAIL

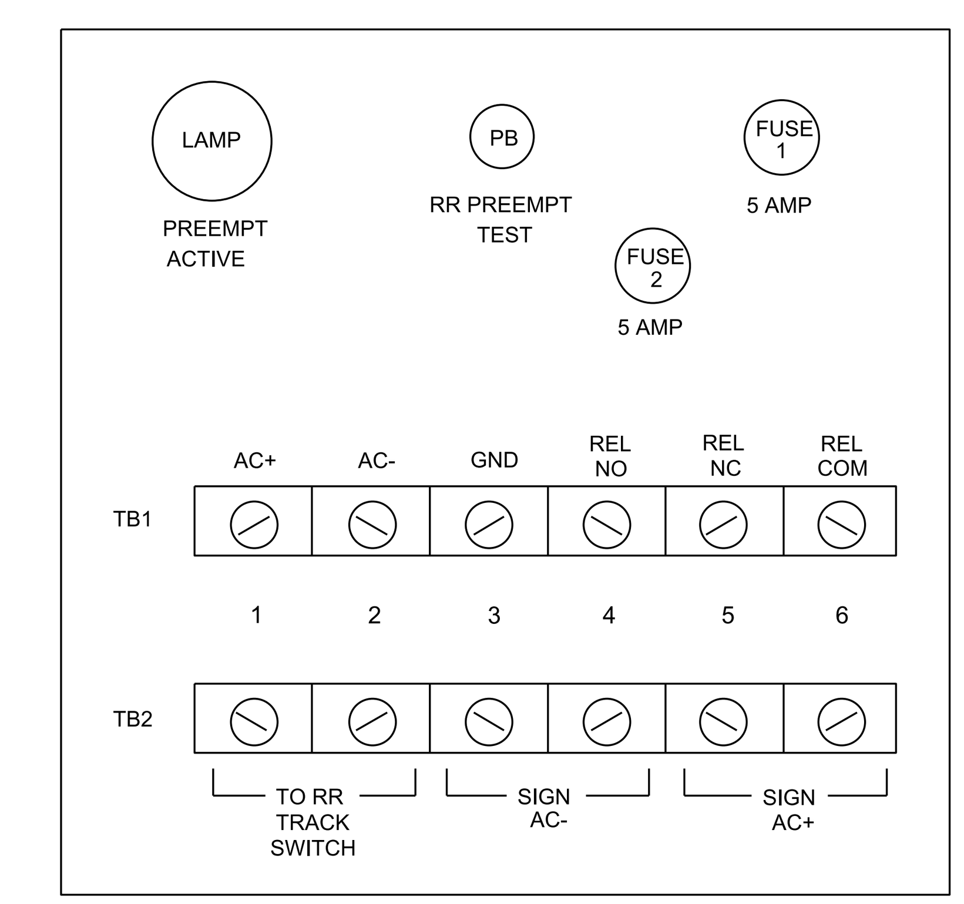
(wire as shown below)



NOTES

1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
2. Relay K1 is a DPDT with 120VAC coil with octal base.
3. Relay SSR1 is a SPST (normally open) Solid State Relay with AC input and AC (25 amp) output.
4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
5. IMPORTANT!! A jumper must be added between input file terminals J14-E and J14-K if not already present. Also, terminal TB9-12 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0229
DESIGNED: March 2024
SEALED: 5/16/2024
REVISED:

Electrical Detail - Sheet 3 of 3

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Electrical and Programming Details For:

NC 711 (3rd Street) at SR 1340 (N Odom Street)/ S Odom Street

Division 6 Robeson County Pembroke

PLAN DATE: May 2024 REVIEWED BY: D.T.J.
PREPARED BY: D.J. Craddock REVIEWED BY:

REVISIONS INIT. DATE

Prepared in the Offices of:
Transportation Mobility and Safety Division
ITS & Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

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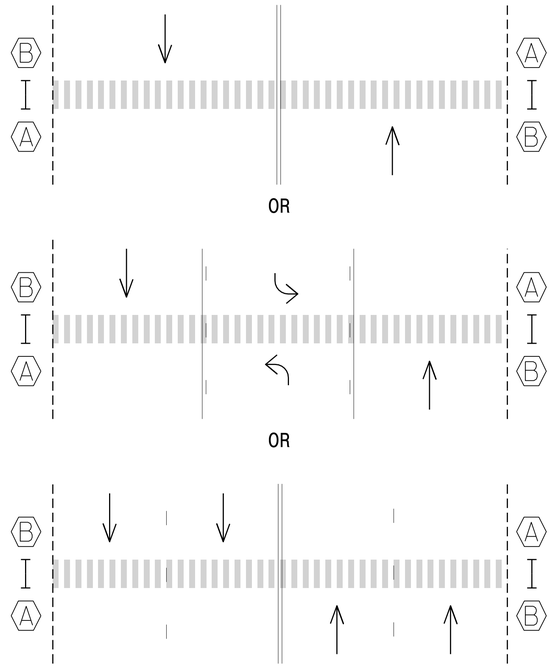
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031001 D. TODD JOYCE

DocuSigned by: D. Todd Joyce 05/16/2024
DATE

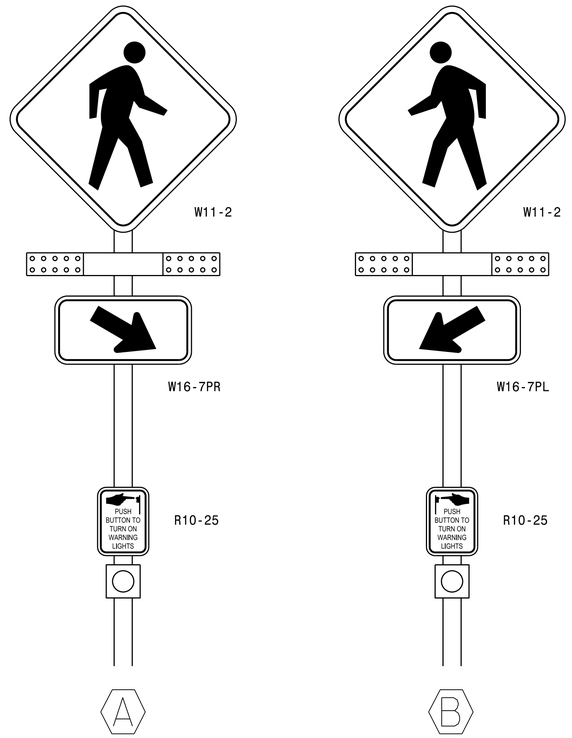
SIG. INVENTORY NO. 06-0229

PROJECT REFERENCE NO.	SHEET NO.
HS-2006AA/AE	SIG 1.5

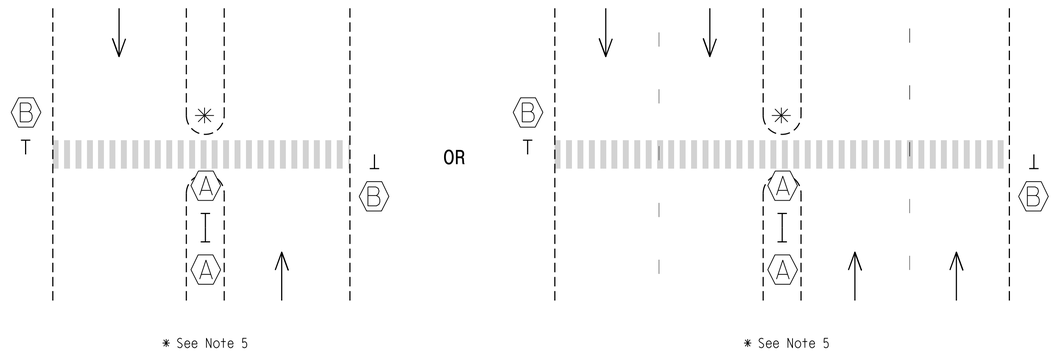
Two to Four Lanes, Undivided



RRFB Sign Detail



Two or Multi-Lanes, Divided



✱ See Note 5

✱ See Note 5

Notes

1. Design the RRFB in accordance with the 2023 MUTCD, 11th Edition, Chapter 4L: Rectangular Rapid-Flashing Beacons. The RRFB unit associated with a post-mounted sign and plaque should be located between the pedestrian crossing warning (W11-2) sign and the supplemental downward diagonal arrow plaque (W16-7p).
2. If needed, a supplemental RRFB with an "AHEAD" (W16-9P) or distance (W16-2P) plaque may be installed on the approach in advance of the crosswalk. The addtional RRFB shall be a supplemental to and not a replacement for the RRFB at the actual crosswalk.
3. When practical, the RRFB and mounting post on the right side of the road shall be mounted on the approach side of the crosswalk closest to approaching traffic.
4. When practical, the RRFB and mounting post on the left side of the road may be mounted on the back of the post for the opposing approach.
5. A RRFB on the left side of the roadway or in the median may be individually mounted on the approach side of the crosswalk closest to approaching traffic, or, when practical, may be mounted back to back on the same post and mounted on either side of the crosswalk in the median.
6. Locate push button sign (R10-25) and push button to face crosswalk, even if it is mounted on the back side of the sign.
7. All RRFB units associated with a given crosswalk (including those with an advance crossing sign) shall, when actuated, simultaneously commence operation of their rapid-flashing indications and shall cease operation simultaneously.
8. For quantitative purposes, a single sided, post mounted RRFB is one assembly unit. A double sided RRFB mounted on the same post is counted as two (2) assemblies.
9. For additional information, see Version 24 of the Transportation Systems Management and Operations (TSMO) Unit Project Special Provisions (PSP).

Timing of RRFBs

When actuated, the two yellow indications in each RRFB unit shall flash in a rapidly flashing sequence.

The RRFB shall flashing sequence shall provide enough time for pedestrians to cross from curb to curb. It is recommened to be a minimum of 7 seconds plus the crossing distance (D) divided by 3.5 feet/per sec., rounded up to the next whole second:

$$\text{Flash Time (sec.)} = 7 + D/3.5$$

Per Section 4L.03 of the 2023 MUTCD, RRFBs shall provide 75 flashing sequences per minute. During each 800 millisecond flashing sequence, the left and right RRFB indications shall operate using the following sequence:

- The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds. Both RRFB indications shall be dark for approximately 50 milliseconds.
- The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds. Both RRFB indications shall be dark for approximately 50 milliseconds.
- The RRFB indication on the left-hand side shall be illuminated for approximately 50 milliseconds. Both RRFB indications shall be dark for approximately 50 milliseconds.
- The RRFB indication on the right-hand side shall be illuminated for approximately 50 milliseconds. Both RRFB indications shall be dark for approximately 50 milliseconds.
- Both RRFB indications shall be illuminated for approximately 50 milliseconds. Both RRFB indications shall be dark for approximately 50 milliseconds.
- Both RRFB indications shall be illuminated for approximately 50 milliseconds. Both RRFB indications shall be dark for approximately 250 milliseconds.

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Standard Drawing for Rectangular Rapid Flashing Beacon

Prepared in the Offices of:

Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •
TSMO Unit

750 N. Greenfield Parkway
Garner, NC 27529

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 026486 ENGINEER ROBERT J. ZIEMBA

DocuSigned by: Robert J Ziemba
SIGNATURE

05/30/2024
DATE

30-MAY-2024 16:59
S:\Traffic\Signals\Signal Design Section\Central Region\Rob's Files\RRFB Stds\rrfb Updated 5-24.dgn
rjziemba