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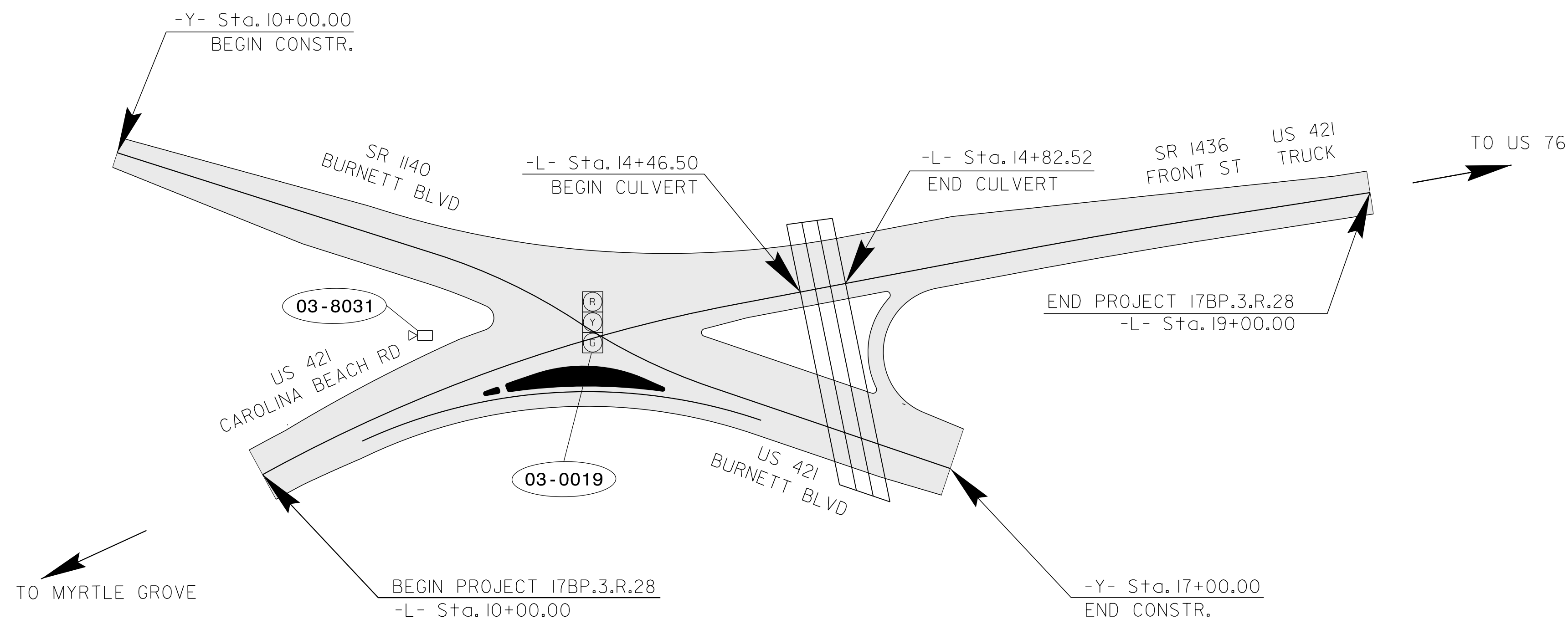
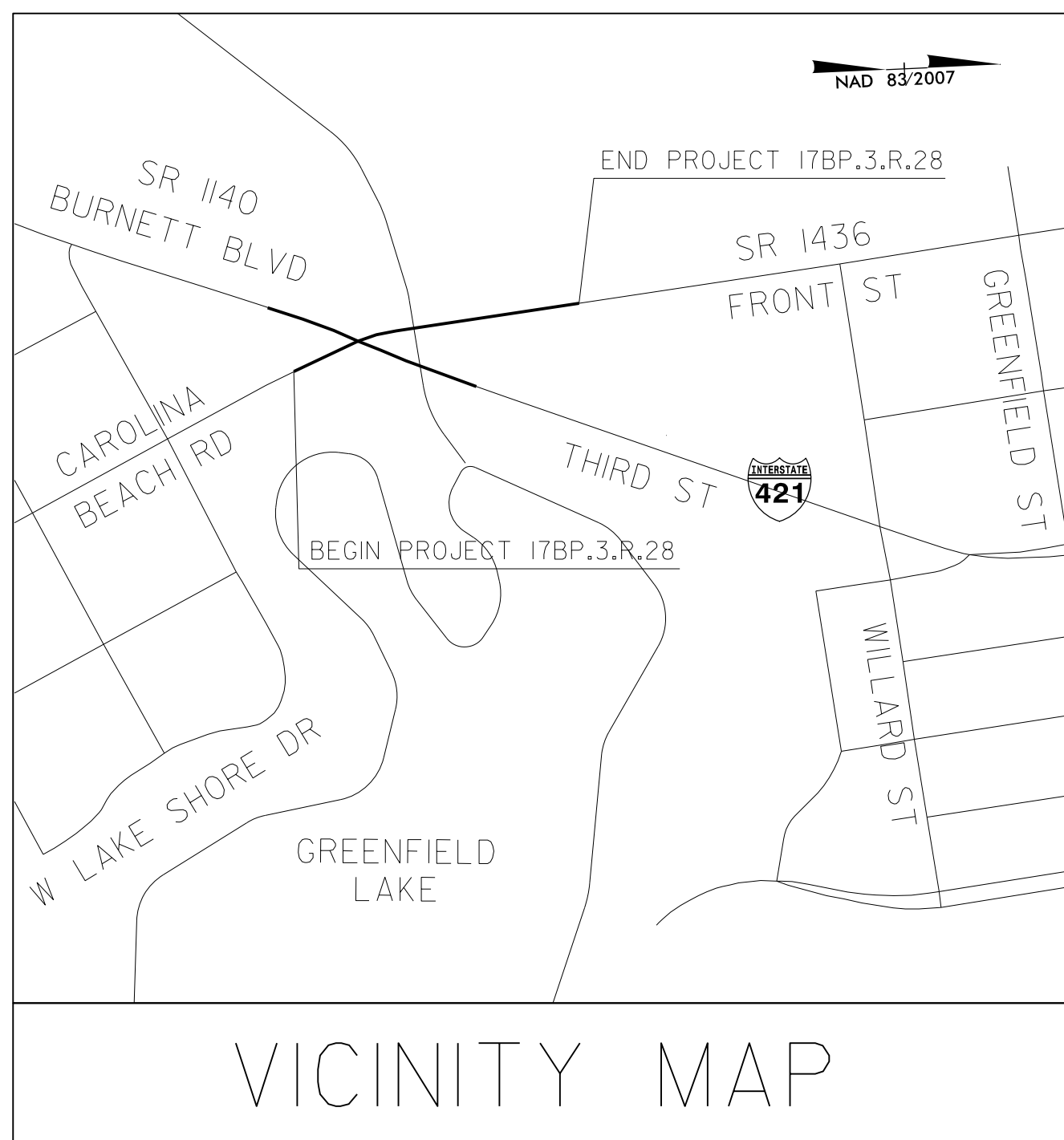
TIP PROJECT: 17BP.3.R.28

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEW HANOVER COUNTY

**LOCATION: INTERSECTION OF SR 1436 /US 421 TRUCK
(FRONT STREET) AND SR 1140 (BURNETT BOULEVARD)
SOUTH OF WILLARD STREET**

TYPE OF WORK: TRAFFIC SIGNALS



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

Sheet #	Reference #	Index of Plans Location/Description
Sig. 1	-----	Title Sheet
Sig. 2 - Sig. 4	03-0019T1	US 421 (Carolina Beach Road) /US 421 Truck - SR 1436 (Front Street) at SR 1140 (Burnett Boulevard)
Sig. 5 - Sig. 7	03-0019T2	US 421 (Carolina Beach Road) /US 421 Truck - SR 1436 (Front Street) at SR 1140 (Burnett Boulevard)
Sig. 8 - Sig. 10	03-0019T3	US 421 (Carolina Beach Road) /US 421 Truck - SR 1436 (Front Street) at SR 1140 (Burnett Boulevard)
Sig. 11 - Sig. 13	03-0019 Final	US 421 (Carolina Beach Road) /US 421 Truck - SR 1436 (Front Street) at US 421/SR 1140 (Burnett Boulevard)

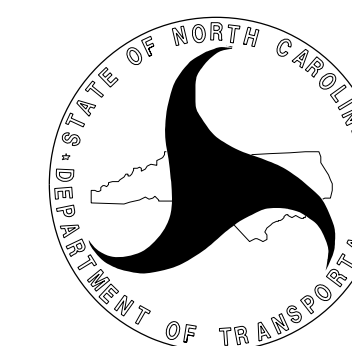
ATKINS 1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEEES #F-0326

Melissa B. Toth, P.E. - Project Manager

Contacts:

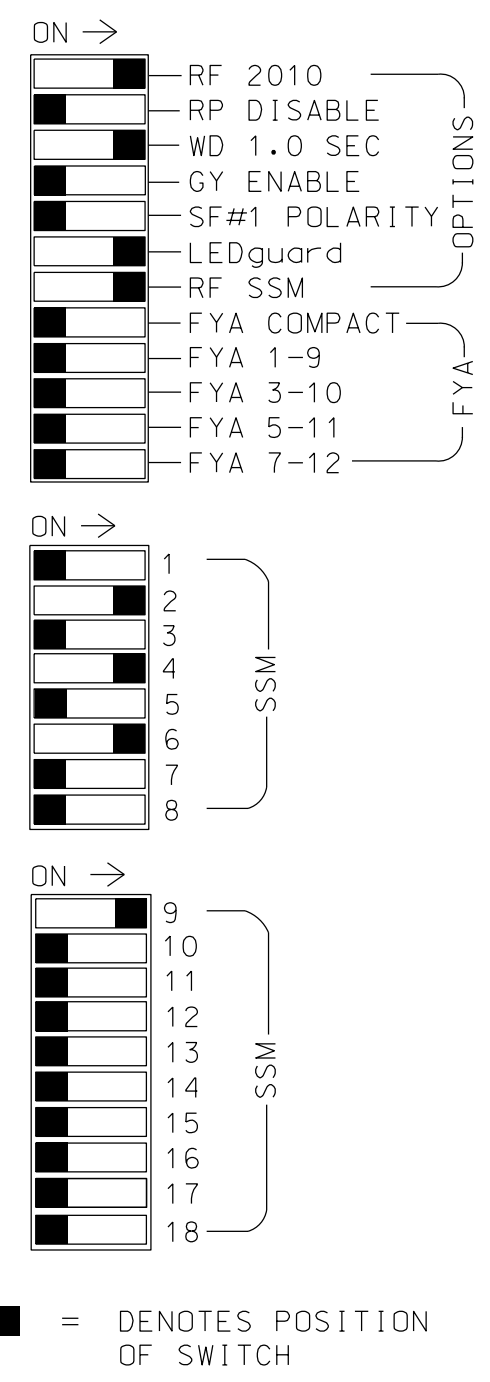
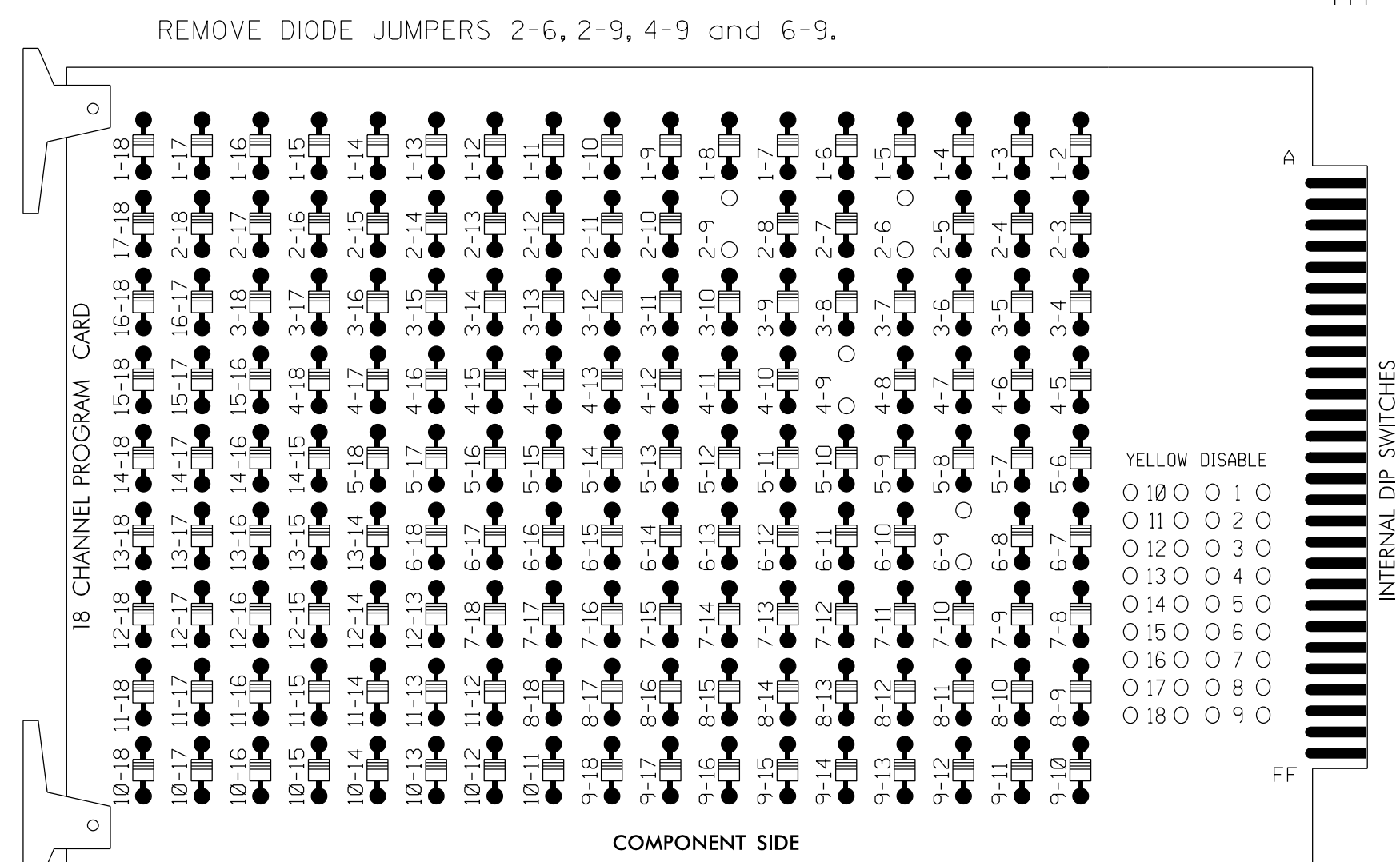
Trevor Carroll, PE - Resident Engineer
Jason Galloway, PE - Eastern Region Signals Engineer

Prepared for the Office of:
DIVISION OF HIGHWAYS
HIGHWAY DIVISION 3



EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

- 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.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as wag overlap.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....EXISTING 2070L
 CABINET.....EXISTING 332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S8,AUX S1.
 PHASES USED.....2,4,6.
 OVERLAP "A".....4+6
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

PROJECT REFERENCE NO.	SHEET NO.
17.BP.3.R.28	Sig. 3

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CNU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	4	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	63	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU	63	NU	NU	NU	NU	NU
RED		128			101			134										
YELLOW		129			102			135										
GREEN		130			103			136										
RED ARROW													A121					
YELLOW ARROW													A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW	103																	

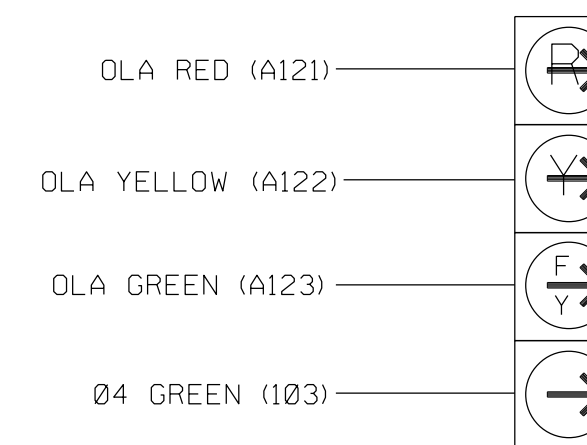
NU = Not Used

★ See pictorial of head wiring in detail below.

NOTE: Load Switch S1 require output assignment remapping. See Sheet 2 of this electrical detail for instructions.

4 SECTION FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



63

NOTE

- The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

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

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

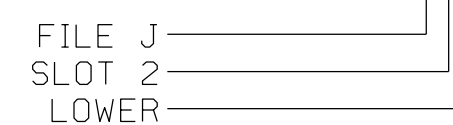
FS = FLASH SENSE
 ST = STOP TIME

Reuse existing detector cards for temporary and final signal designs.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y	-	---	---
4A	TB4-9,10	I6U	41	3	4	4	Y	Y	-	---	---
4B	TB4-11,12	I6L	45	7	14	4	Y	Y	-	---	---
6A	TB3-5,6	J2U	40	2	6	6	Y	Y	-	---	---

INPUT FILE POSITION LEGEND: J2L



Signal Upgrade - Temporary Design 1 (Electrical Detail Sheet 1 of 2)

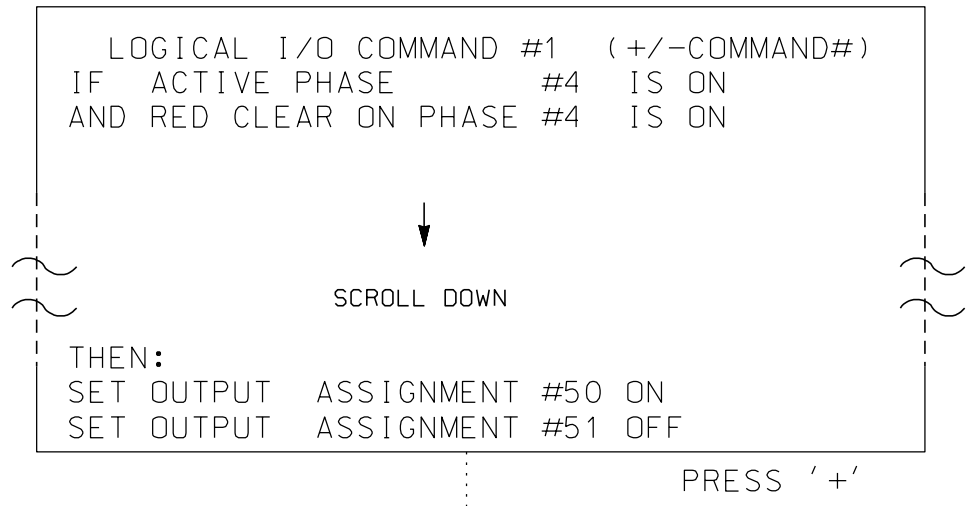
ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	US 421 (Carolina Beach Road)/ US 421 Truck-SR 1436 (Front St) at SR 1140 (Burnett Boulevard)		SEAL NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOOTH
	Division 03 PLAN DATE: May 2014 PREPARED BY: AM Encarnacion	New Hanover County REVIEWED BY: LM Moon REVIEWED BY: MB Toth	

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 BERO550 AT LUS250293

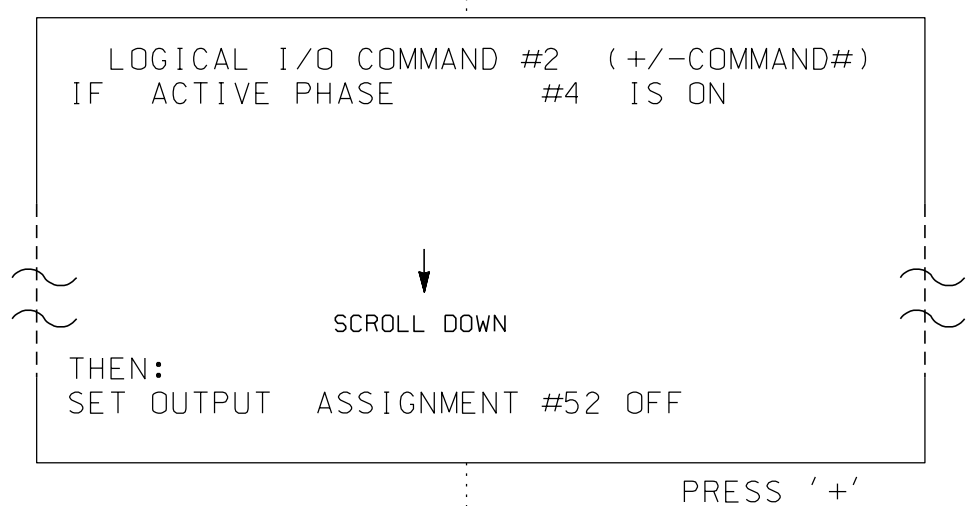
LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

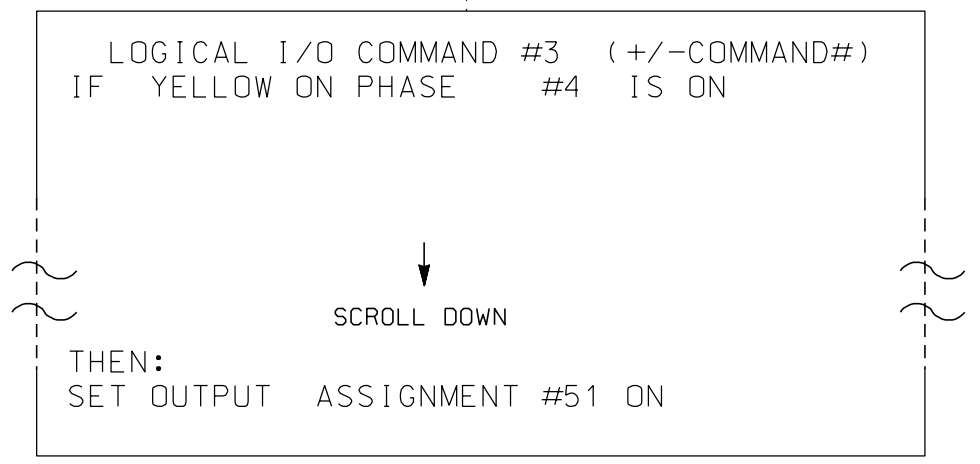
1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



NOTE: LOGIC FOR PHASE 4 RED CLEAR WHEN TRANSITIONING FROM PHASE 4 TO PHASE 6 ACROSS THE BARRIER (HEAD 63).



NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 4 (HEAD 63).



NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 4 (HEAD 63).

OUTPUT REFERENCE SCHEDULE	
OUTPUT 50 =	Overlap A Red
OUTPUT 51 =	Overlap A Yellow
OUTPUT 52 =	Overlap A Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE:      12345678910111213141516
VEH OVL PARENTS:  X X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR:  _ RED _ YELLOW _ GREEN
FLASH COLORS:  _ RED _ YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)..0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
    
```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

PHASE 4 PROGRAMMING DETAIL

(program controller as shown below)

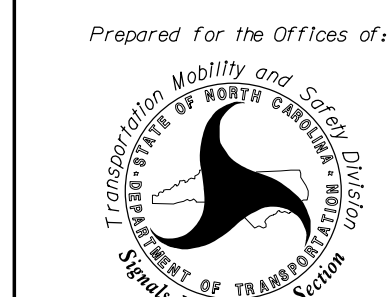
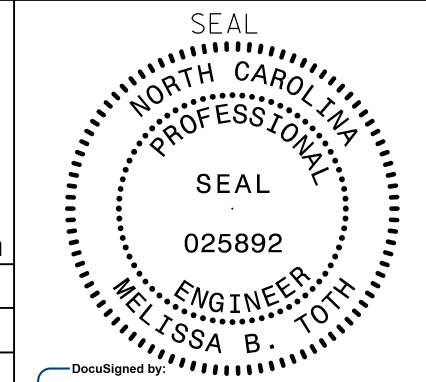

CHANGING OUTPUT ASSIGNMENTS

1. FROM MAIN MENU SELECT '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS)
2. ENTER 14 (PHASE 1 RED) FOR OUTPUT ASSIGNMENT #.
3. SCROLL DOWN TO 'VEHICLE PHASE' AND ENTER 'Y' REGARDLESS OF DEFAULT PROGRAMMING!
4. ENTER '4' FOR 'SELECT VEHICLE PHASE'. NO CHANGE NEEDED FOR 'SELECT COLOR'
5. BACKUP TO 'OUTPUT ASSIGNMENTS AND SETTINGS MENU:' BY PRESSING THE 'ESC' BUTTON ON KEYBOARD.
6. SELECT '1' (OUTPUT ASSIGNMENTS)
7. ENTER 15 (PHASE 1 YELLOW) FOR OUTPUT ASSIGNMENT #.
8. REPEAT STEPS # 3 THRU # 6.
9. ENTER 16 (PHASE 1 GREEN) FOR OUTPUT ASSIGNMENT #.
10. REPEAT STEPS # 3 AND # 4.

PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 03-0019T1
 DESIGNED: May 2014
 SEALED: July 21, 2016
 REVISED: _____

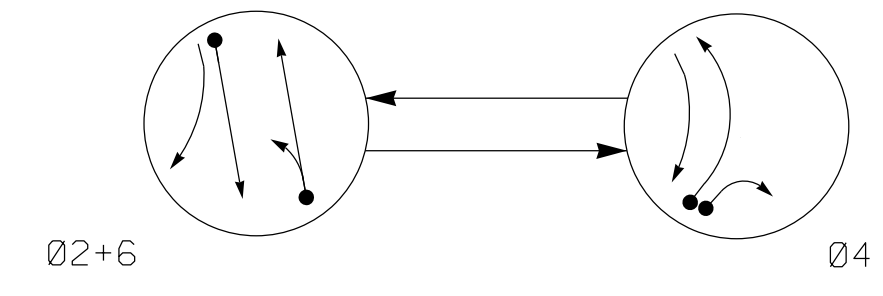
Signal Upgrade - Temporary Design 1 (Electrical Detail Sheet 2 of 2)

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	US 421 (Carolina Beach Road)/ US 421 Truck-SR 1436 (Front St)	
	at SR 1140 (Burnett Boulevard)	
Division 03 New Hanover County Wilmington	PLAN DATE: May 2014 REVIEWED BY: LM Moon	
PREPARED BY: AM Encarnacion REVIEWED BY: MB Toth	REVISIONS INIT. DATE	Documented by:  DATE: 10/12/2016
750 N. Greenfield Pkwy, Garner, NC 27529	SIG. INVENTORY NO. 03-0019T1	

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 BR006650 AT LUS29293

2 Phase
Fully Actuated
(Wilmington Signal System)

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

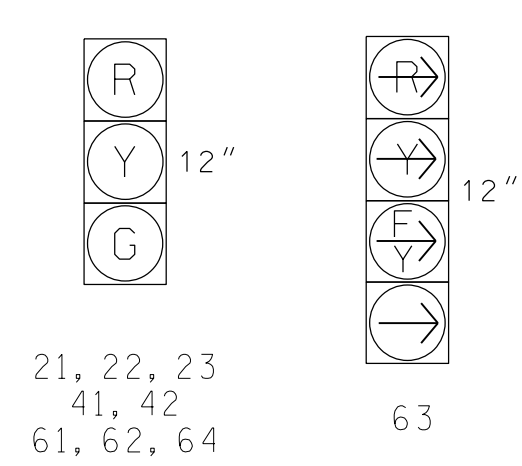
- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UN SIGNALIZED MOVEMENT
- ← PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE		
	02+6	04	F
21, 22, 23	G	R	Y
41, 42	R	G	R
61, 62, 64	G	R	Y
63	F	→	→

F = Flashing Yellow Arrow

SIGNAL FACE I.D.

All Heads L.E.D.



OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	STRETCH TIME		
2A	6'x40'	0'	2-4-2	Y	2	Y	Y	-	-	-
4A	6'x40'	0'	2-4-2	Y	4	Y	Y	-	-	3
4B	6'x40'	0'	2-4-2	Y	4	Y	Y	-	-	-
6A	6'x40'	0'	2-4-2	Y	6	Y	Y	-	-	-

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.
- Set all detector units to presence mode.
- Install new signal heads with enough signal cable to allow for the repositioning of signal heads as shown in the temporary and final signal designs.
- Reposition all signal heads as shown.
- Reposition all signs as shown.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

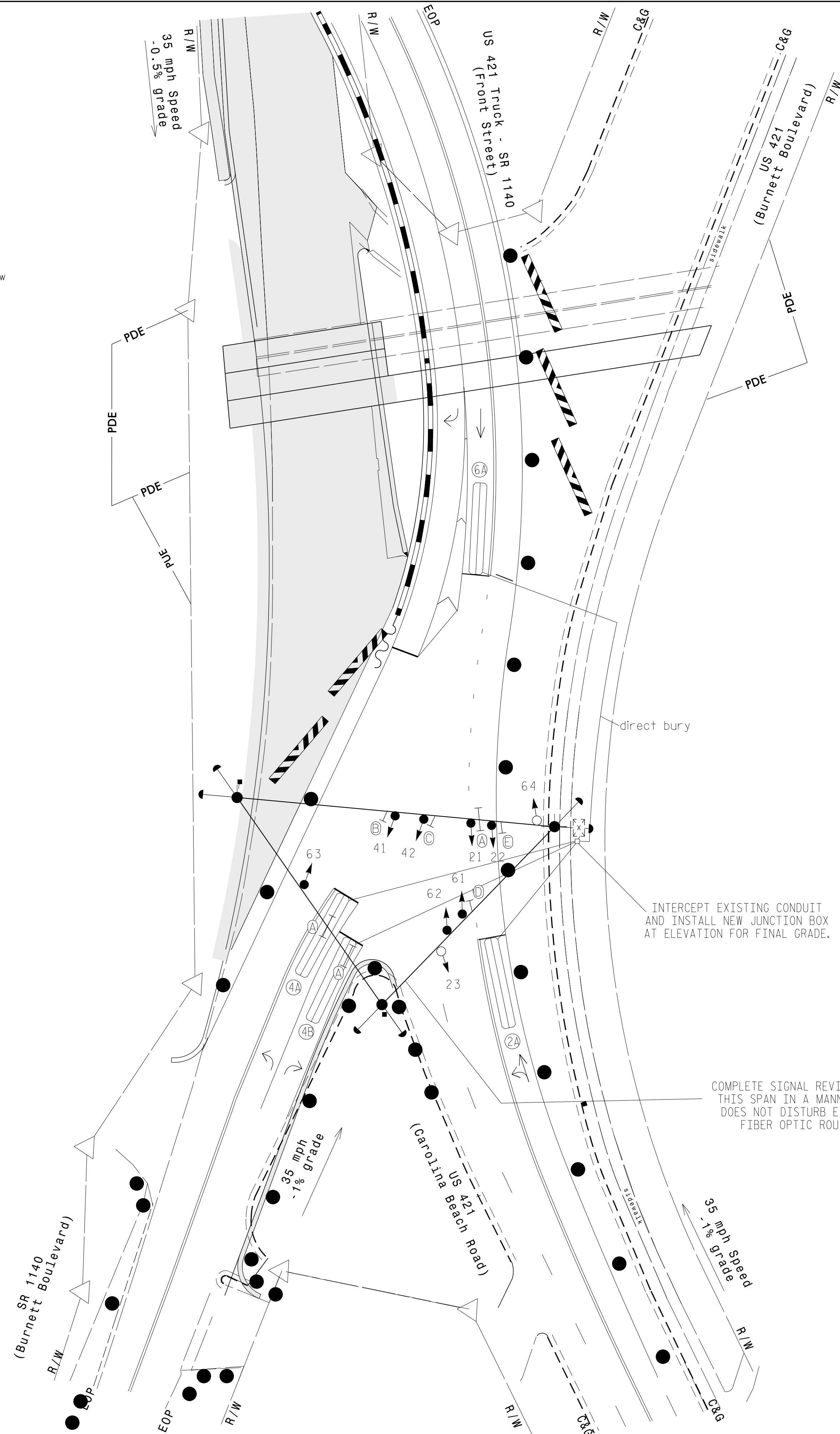
LEGEND

PROPOSED	EXISTING
○→ Traffic Signal Head	●→ N/A
●→ Modified Signal Head	N/A
⊥ Sign	⊥
⊥ Pedestrian Signal Head With Push Button & Sign	⊥
○ Signal Pole with Guy	⊥
○ Signal Pole with Sidewalk Guy	⊥
⊠ Inductive Loop Detector	⊠
□ Controller & Cabinet	□
□ Junction Box	□
--- 2-in Underground Conduit	---
N/A Right of Way	---
→ Directional Arrow	→
N/A Permanent Utility Easement	- PUE -
N/A Permanent Drainage Easement	- PDE -
Ⓐ Street Name Sign (Double Sided)	Ⓐ
Ⓑ Left Arrow "ONLY" Sign (R3-5L)	Ⓑ
Ⓒ Right Arrow "ONLY" Sign (R3-5R)	Ⓒ
Ⓓ No Left Turn Sign (R3-2)	Ⓓ
Ⓔ No Right Turn Sign (R3-1)	Ⓔ
■ Construction Zone	■
● Construction Zone Drums	●
▨ Construction Barricade	▨
▨ Crash Cushion	▨
▨ Portable Concrete Barrier	▨

OASIS 2070L TIMING CHART

FEATURE	PHASE		
	2	4	6
Min Green 1 *	10	7	10
Extension 1 *	2.0	3.0	2.0
Max Green 1 *	60	30	60
Yellow Clearance	3.9	3.0	3.9
Red Clearance	2.9	3.3	3.1
Red Revert	2.0	2.0	2.0
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	-	-
Max Variable Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	YELLOW
Dual Entry	-	-	-
Simultaneous Gap	ON	ON	ON

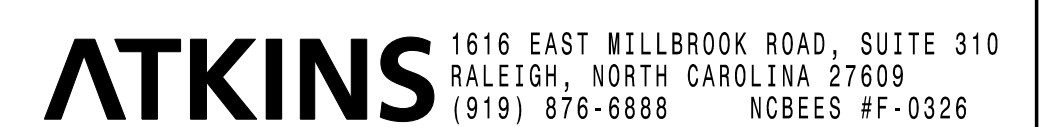
* These values may be field adjusted. Do not adjust Min Green and Extension times for phase 2 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



INTERCEPT EXISTING CONDUIT AND INSTALL NEW JUNCTION BOX AT ELEVATION FOR FINAL GRADE.

COMPLETE SIGNAL REVISIONS TO THIS SPAN IN A MANNER THAT DOES NOT DISTURB EXISTING FIBER OPTIC ROUTING

Temporary Design 2
Traffic Control Phase II

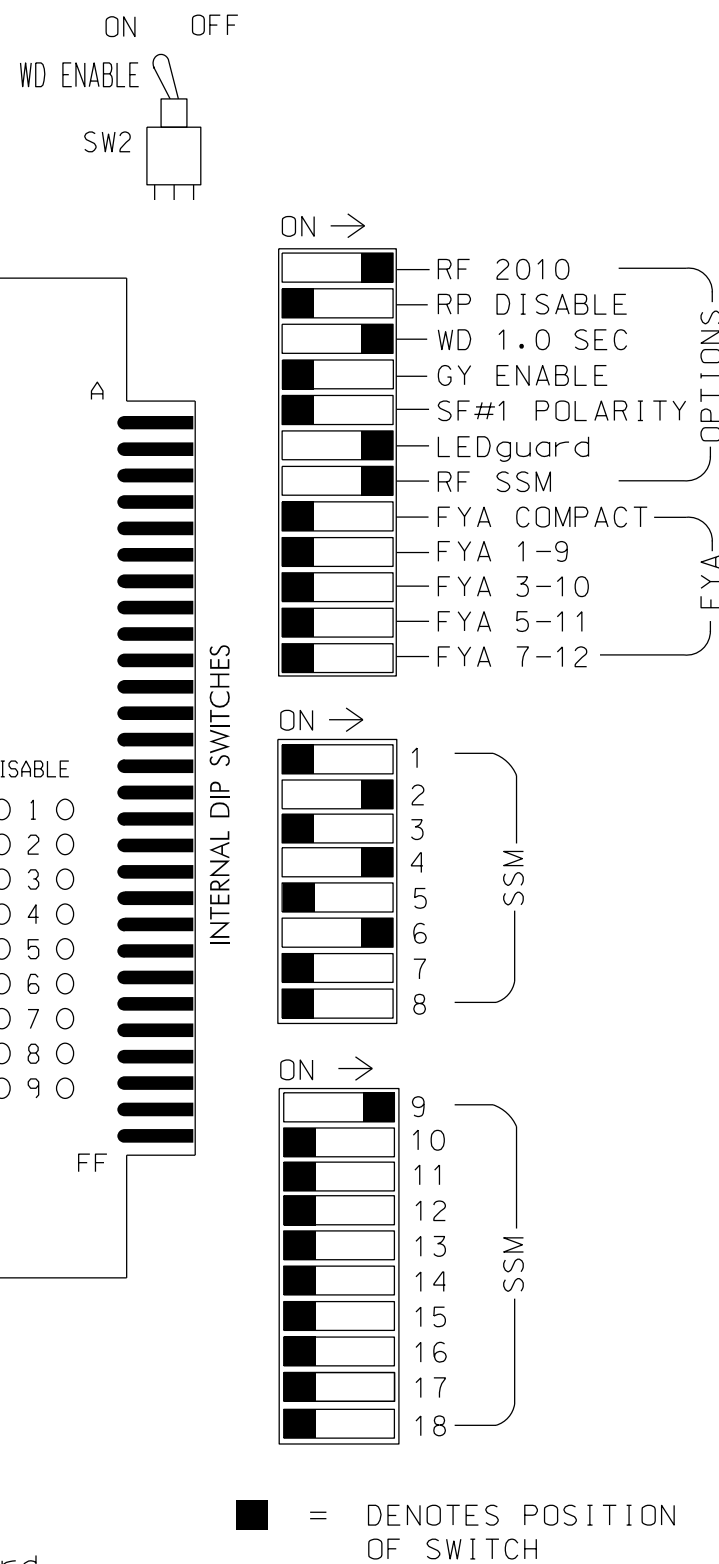
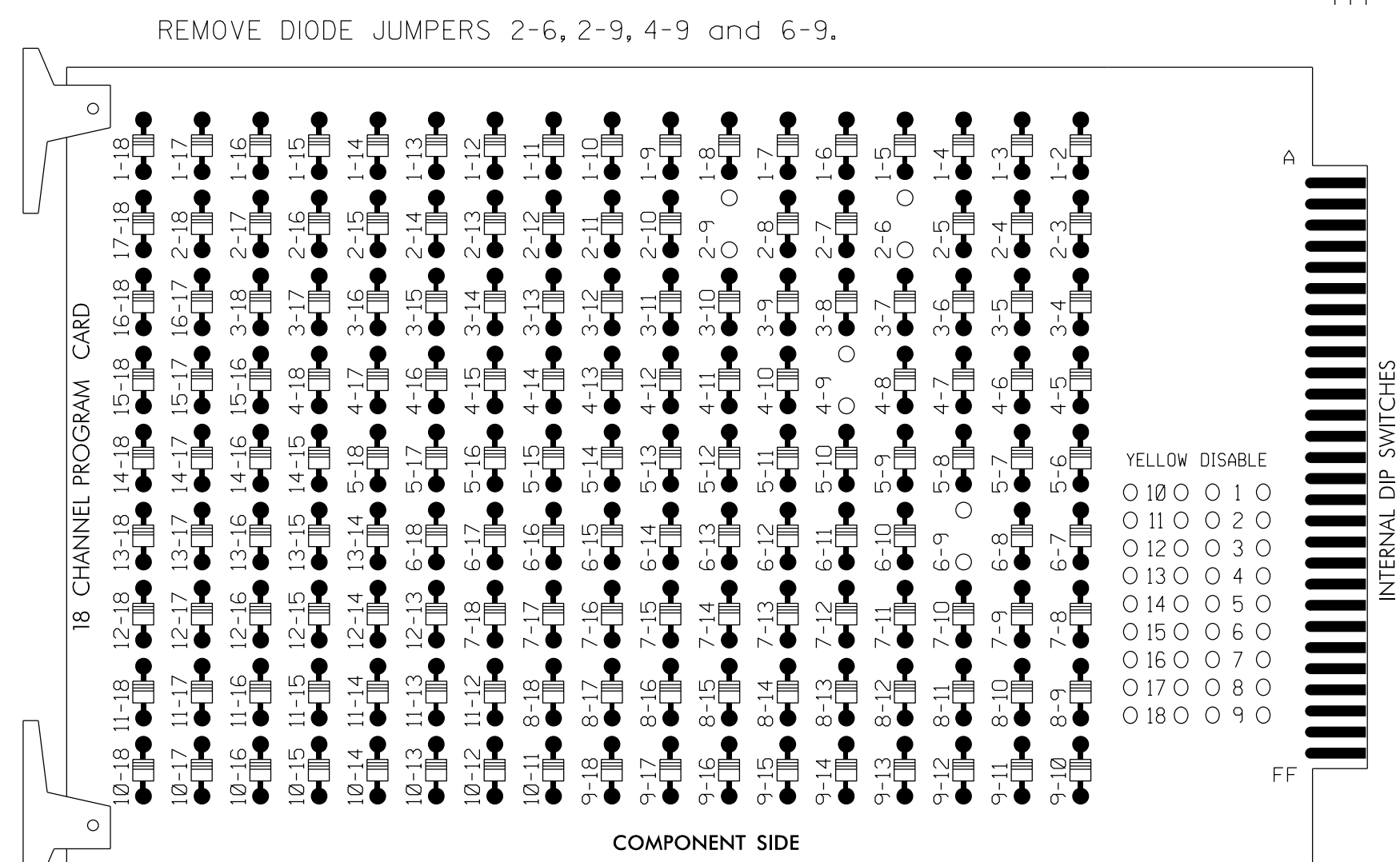


	US 421 (Carolina Beach Road) / US 421 Truck-SR 1436 (Front St) at SR 1140 (Burnett Boulevard)		
	Division 03 New Hanover County Wilmington		
Prepared for the Offices of: 	PLAN DATE: May 2014 PREPARED BY: LMM	REVIEWED BY: MB Toth REVIEWED BY:	SCALE: 1"=30' REVISIONS:
750 N. Greenfield Pkwy, Garner, NC 27529	SIGNATURE:	DATE:	DATE:

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 BERO5650 AT LUS20293

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

- 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.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as wag overlap.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....EXISTING 2070L
 CABINET.....EXISTING 332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S8,AUX S1.
 PHASES USED.....2,4,6.
 OVERLAP "A".....4+6
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

PROJECT REFERENCE NO.	SHEET NO.
17.BP.3.R.28	Sig. 6

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CNU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	4	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	63	21,22,23	NU	NU	41,42	NU	NU	61,62,64	NU	NU	NU	NU	63	NU	NU	NU	NU	NU
RED		128			101			134										
YELLOW		129			102			135										
GREEN		130			103			136										
RED ARROW													A121					
YELLOW ARROW													A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW	103																	

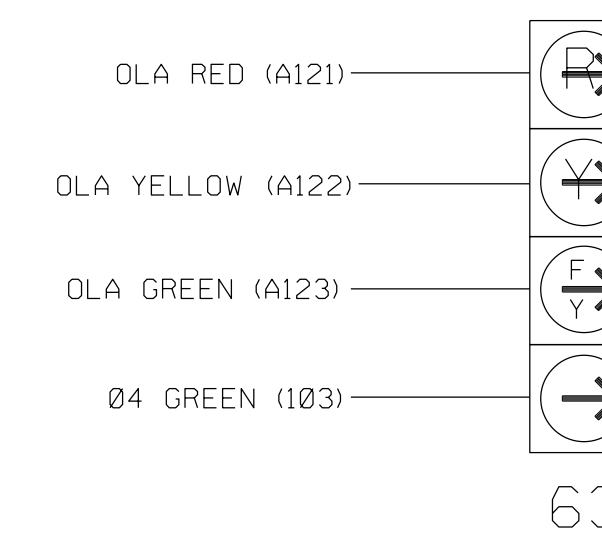
NU = Not Used

★ See pictorial of head wiring in detail below.

NOTE: Load Switch S1 require output assignment remapping. See Sheet 2 of this electrical detail for instructions.

4 SECTION FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

- The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

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

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

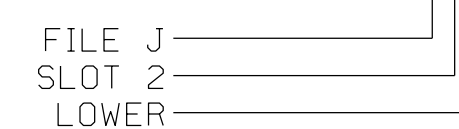
FS = FLASH SENSE
 ST = STOP TIME

Reuse existing detector cards for temporary and final signal designs.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y	-	---	---
4A	TB4-9,10	I6U	41	3	4	4	Y	Y	-	---	3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y	-	---	---
6A	TB3-5,6	J2U	40	2	6	6	Y	Y	-	---	---

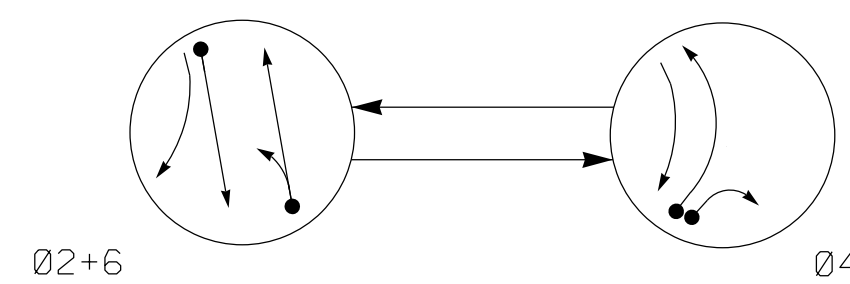
INPUT FILE POSITION LEGEND: J2L



Signal Upgrade - Temporary Design 2 (Electrical Detail Sheet 1 of 2)

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	US 421 (Carolina Beach Road)/ US 421 Truck-SR 1436 (Front St) at SR 1140 (Burnett Boulevard)		SEAL NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOOTH
	Division 03 PLAN DATE: May 2014 PREPARED BY: AM Encarnacion	New Hanover County REVIEWED BY: LM Moon REVIEWED BY: MB Toth	

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

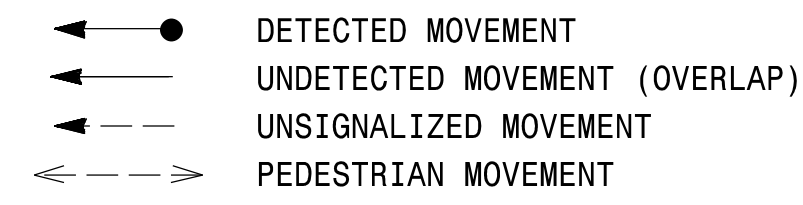
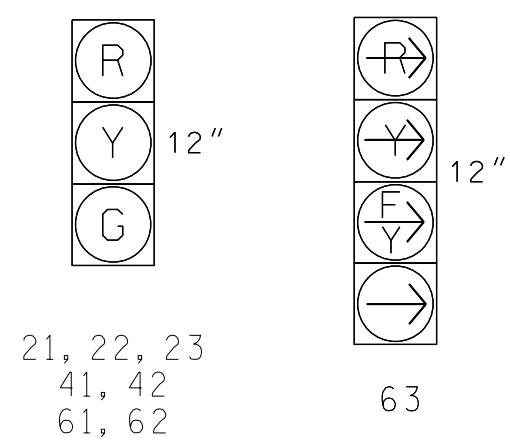


TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø 2+6	Ø 4	F
21, 22, 23	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
63	F		Y

SIGNAL FACE I.D.

All Heads L.E.D.



2 Phase Fully Actuated (Wilmington Signal System)

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						SYSTEM LOOP	NEW CARD	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME			
2A	6'x40'	0'	2-4-2	Y	2	Y	Y	-	-	-	-	-	-
4A	6'x40'	0'	2-4-2	Y	4	Y	Y	-	-	-	-	-	-
4B	6'x40'	0'	2-4-2	Y	4	Y	Y	-	-	-	-	-	-
6A	6'x40'	0'	2-4-2	Y	6	Y	Y	-	-	-	-	-	-

NOTES

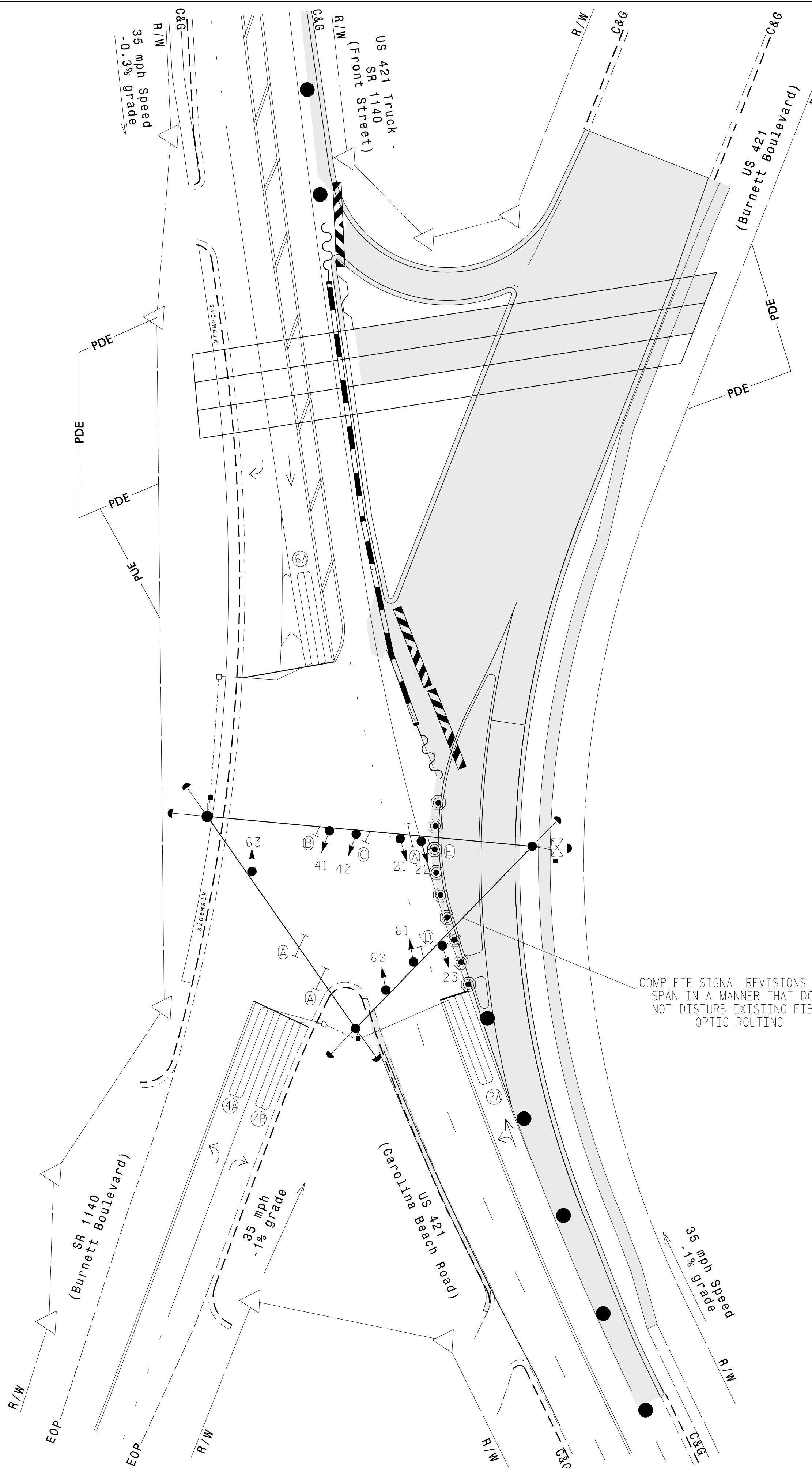
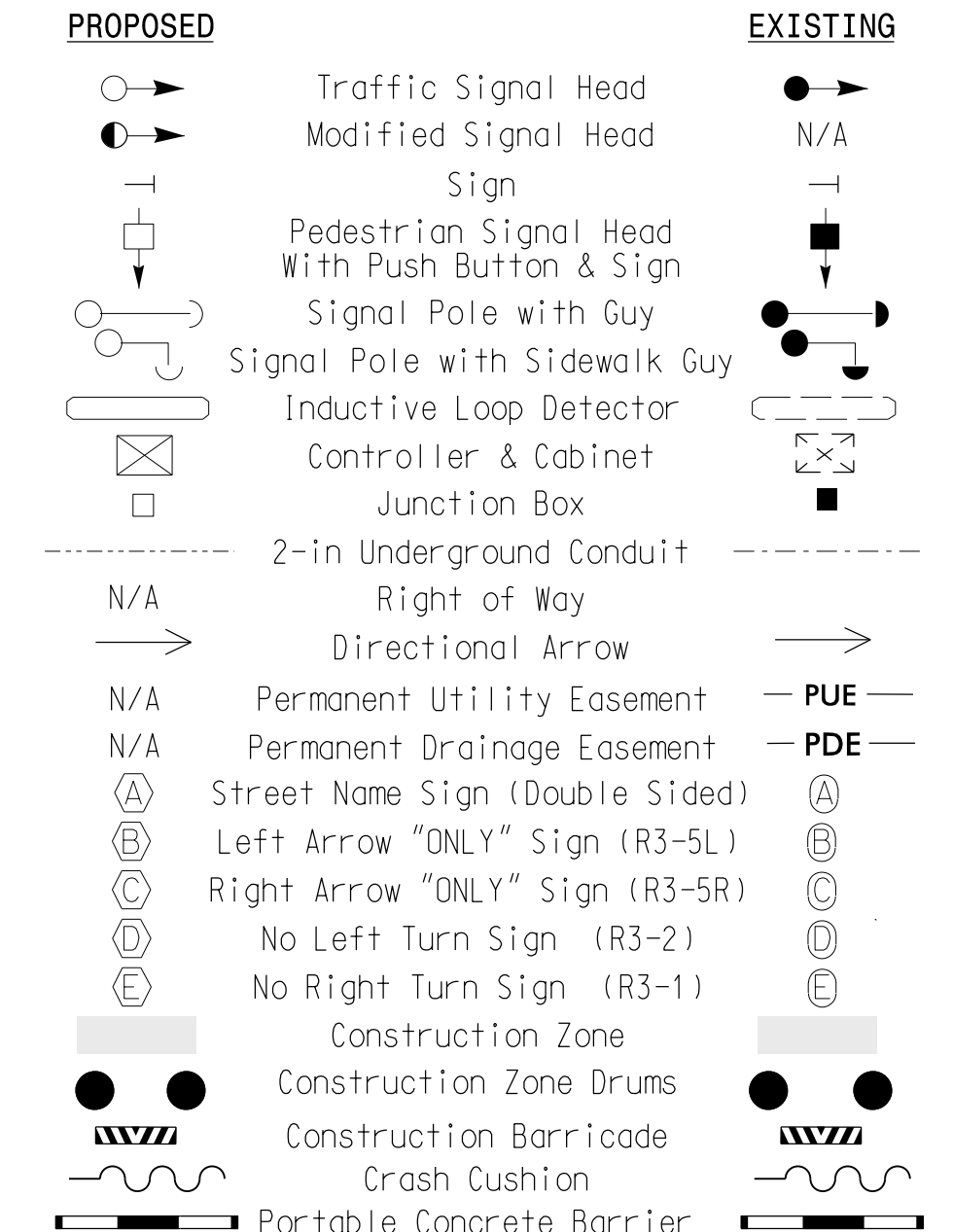
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Reposition all signal heads as shown.
5. Reposition all signs as shown.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

OASIS 2070L TIMING CHART

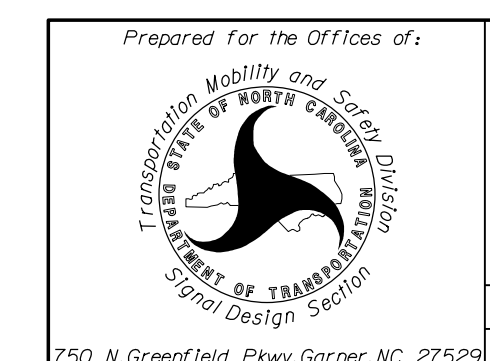
FEATURE	PHASE		
	2	4	6
Min Green 1 *	10	7	10
Extension 1 *	2.0	3.0	2.0
Max Green 1 *	60	30	60
Yellow Clearance	3.9	3.0	3.9
Red Clearance	3.6	3.8	2.5
Red Revert	2.0	2.0	2.0
Walk 1 *	-	-	-
Don't Walk 1	-	-	-
Seconds Per Actuation *	-	-	-
Max Variable Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	YELLOW
Dual Entry	-	-	-
Simultaneous Gap	ON	ON	ON

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

LEGEND



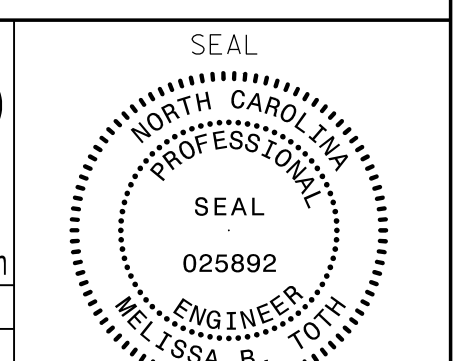
Temporary Design 3
 Traffic Control Phase III



ATKINS
 1616 EAST MILLBROOK ROAD, SUITE 310
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCEES #F-0326

US 421 (Carolina Beach Road) /
 US 421 Truck-SR 1436 (Front St)
 at
 SR 1140 (Burnett Boulevard)

Division 03 New Hanover County Wilmington
 PLAN DATE: May 2014 REVIEWED BY: MB Toth
 PREPARED BY: LMM REVIEWED BY: LMM



REVISIONS	INIT.	DATE

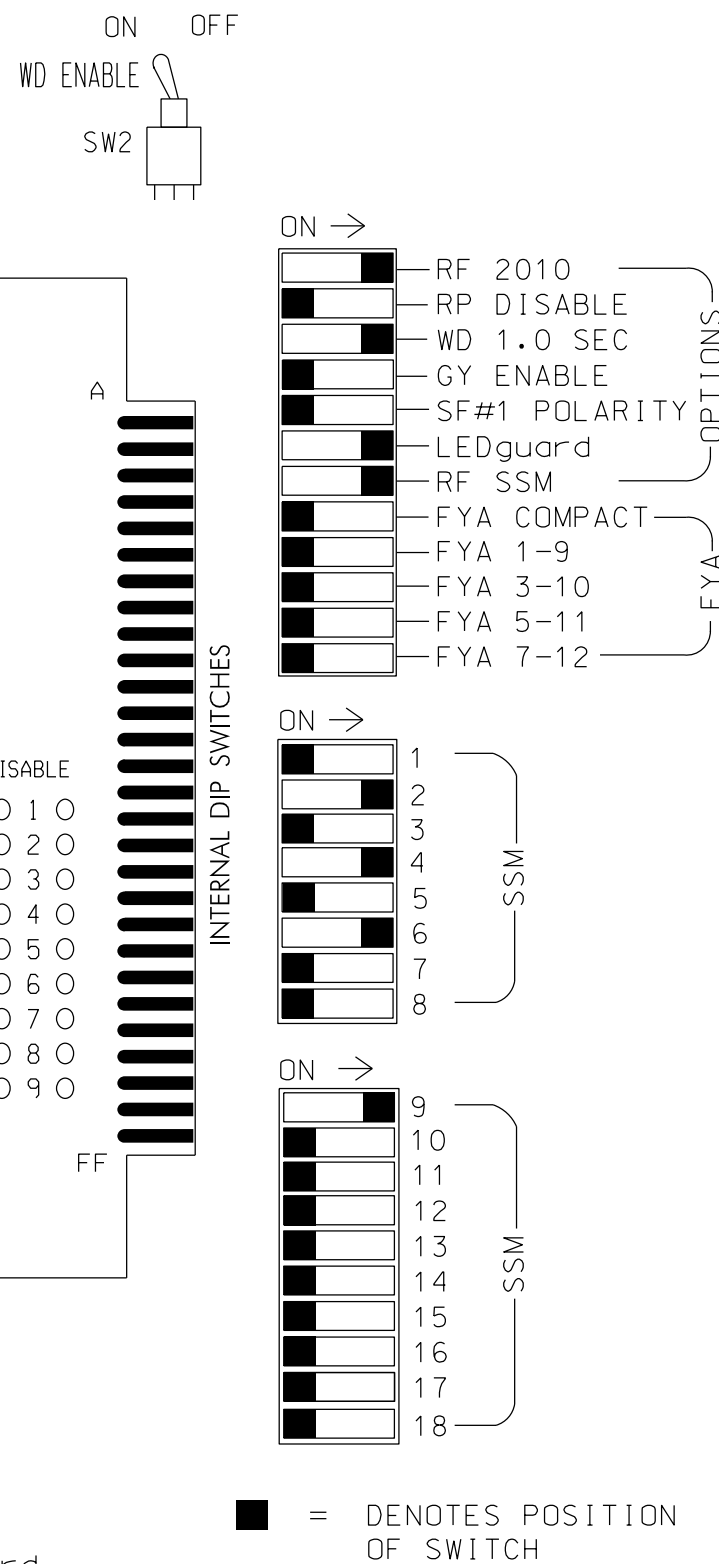
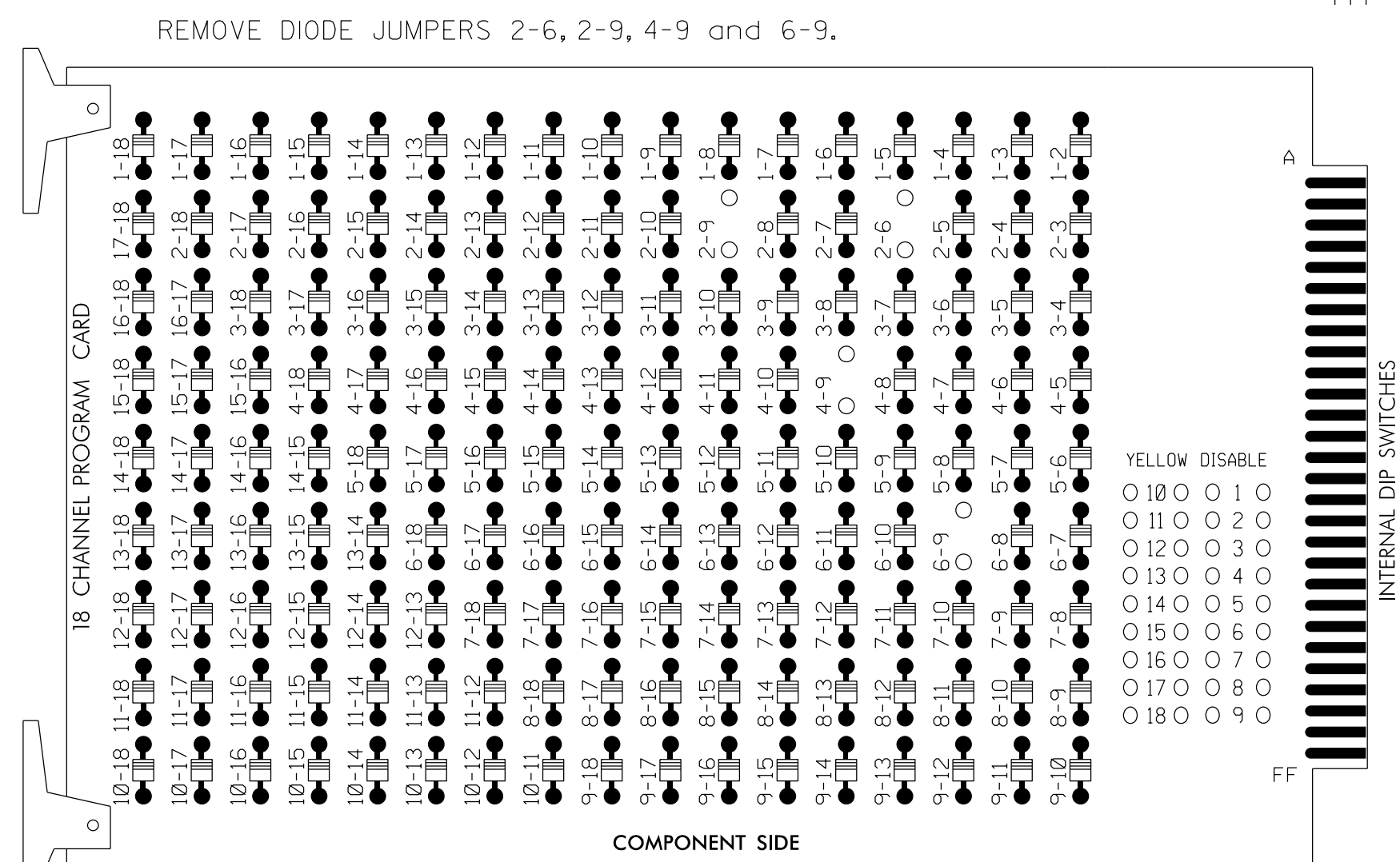
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SIGNATURE: _____ DATE: 10/12/2016
 SIGNATURE: _____ DATE: _____

13-SEP-2016 16:32
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 17.BP.3.R.28 - AT 13220283

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

- 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.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as wag overlap.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....EXISTING 2070L
 CABINET.....EXISTING 332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S8,AUX S1.
 PHASES USED.....2,4,6.
 OVERLAP "A".....4+6
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

PROJECT REFERENCE NO.	SHEET NO.
17.BP.3.R.28	Sig. 9

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CNU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	4	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	63	21,22,23	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU	63	NU	NU	NU	NU	NU
RED		128			101			134										
YELLOW		129			102			135										
GREEN		130			103			136										
RED ARROW													A121					
YELLOW ARROW													A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW	103																	

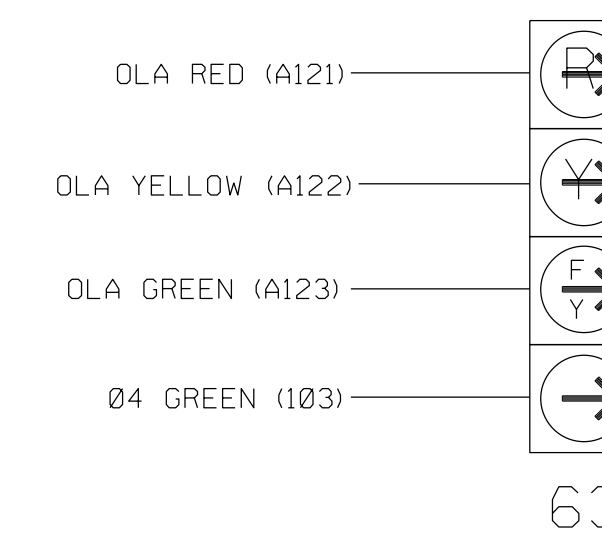
NU = Not Used

★ See pictorial of head wiring in detail below.

NOTE: Load Switch S1 require output assignment remapping. See Sheet 2 of this electrical detail for instructions.

4 SECTION FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

- The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

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

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

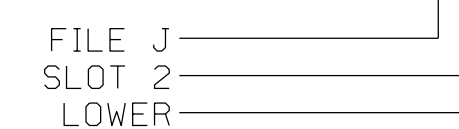
FS = FLASH SENSE
 ST = STOP TIME

Reuse existing detector cards for temporary and final signal designs.

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y	-	---	---
4A	TB4-9,10	I6U	41	3	4	4	Y	Y	-	---	---
4B	TB4-11,12	I6L	45	7	14	4	Y	Y	-	---	---
6A	TB3-5,6	J2U	40	2	6	6	Y	Y	-	---	---

INPUT FILE POSITION LEGEND: J2L



Signal Upgrade - Temporary Design 3 (Electrical Detail Sheet 1 of 2)

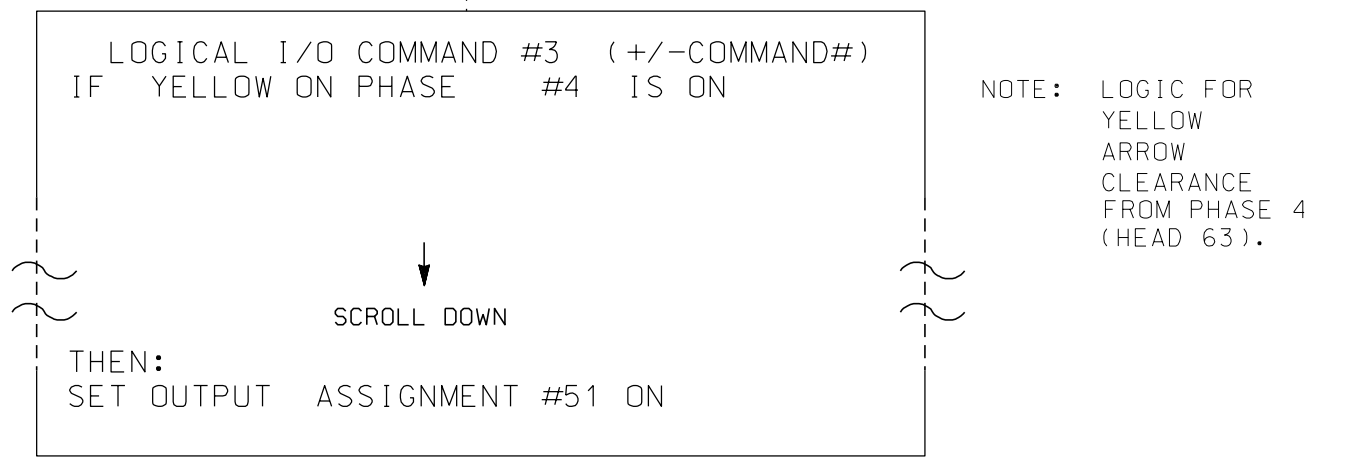
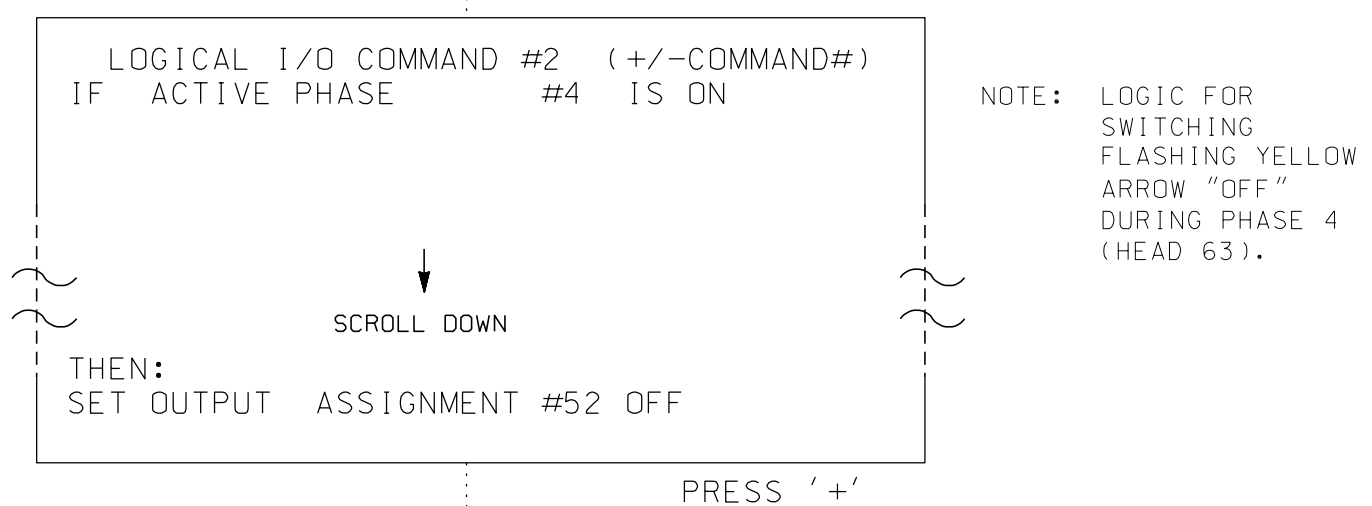
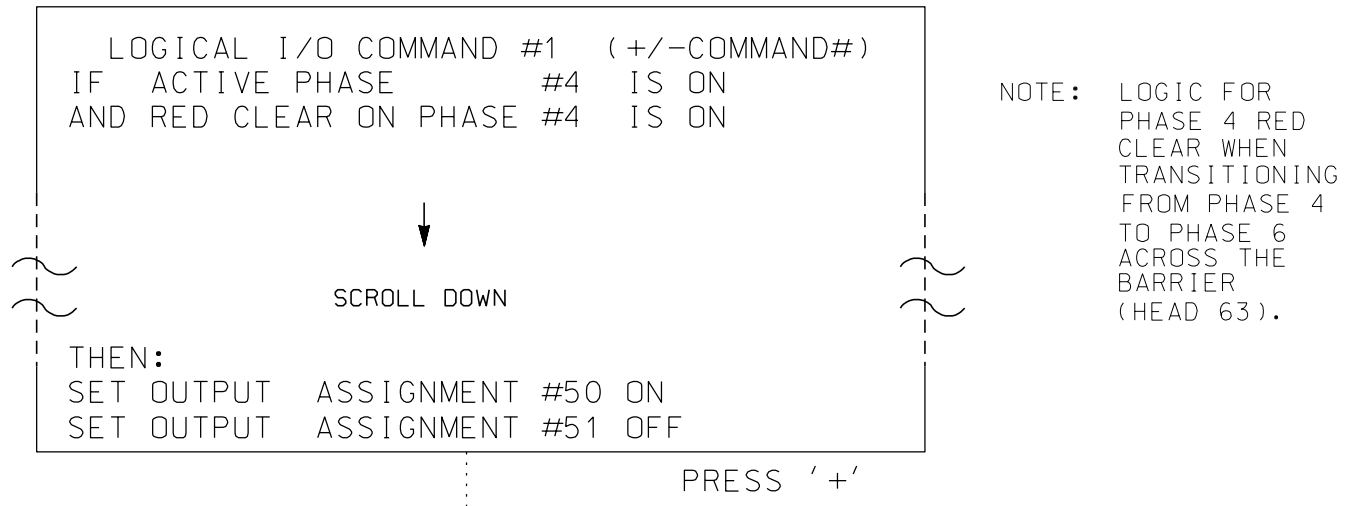
ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	US 421 (Carolina Beach Road)/ US 421 Truck-SR 1436 (Front St) at SR 1140 (Burnett Boulevard)		SEAL NORTH CAROLINA PROFESSIONAL SEAL 025892 ENGINEER MELISSA B. TOBIN
	Division 03 PLAN DATE: May 2014 PREPARED BY: AM Encarnacion	New Hanover County REVIEWED BY: LM Moon REVIEWED BY: MB Toth	

13-SEP-2016 16:32
 O:\Forsor\atkins\product\on\tr\ons\m\001\01\vis\on\03\4\green\rel\0\lake\Traffic\Signal\Des\gn\w\ir\ing\03-001913e.dgn
 BERO550 AT LUS29293

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



OUTPUT REFERENCE SCHEDULE

OUTPUT 50 = Over lap A Red
OUTPUT 51 = Over lap A Yellow
OUTPUT 52 = Over lap A Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

```

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X X
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW X GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0=255 SEC)...0
YELLOW CLEAR (0=PARENT,3=25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1=25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

```

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

PHASE 4 PROGRAMMING DETAIL

(program controller as shown below)

CHANGING OUTPUT ASSIGNMENTS

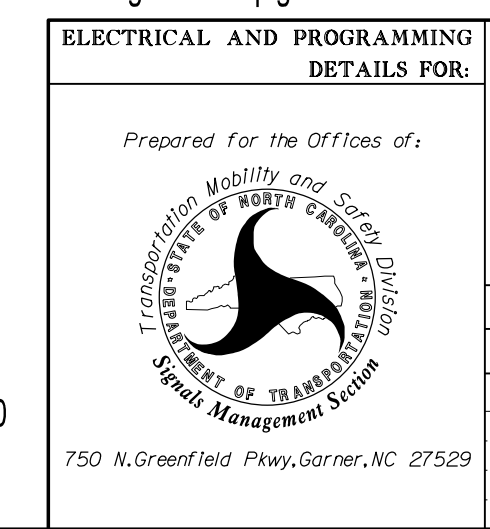
- FROM MAIN MENU SELECT '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS)
- ENTER 14 (PHASE 1 RED) FOR OUTPUT ASSIGNMENT #.
- SCROLL DOWN TO 'VEHICLE PHASE' AND ENTER 'Y' REGARDLESS OF DEFAULT PROGRAMMING
- ENTER '4' FOR 'SELECT VEHICLE PHASE'. NO CHANGE NEEDED FOR 'SELECT COLOR'
- BACKUP TO 'OUTPUT ASSIGNMENTS AND SETTINGS MENU:' BY PRESSING THE 'ESC' BUTTON ON KEYBOARD.
- SELECT '1' (OUTPUT ASSIGNMENTS)
- ENTER 15 (PHASE 1 YELLOW) FOR OUTPUT ASSIGNMENT #.
- REPEAT STEPS # 3 THRU # 6.
- ENTER 16 (PHASE 1 GREEN) FOR OUTPUT ASSIGNMENT #.
- REPEAT STEPS # 3 AND # 4.

PROGRAMMING COMPLETE

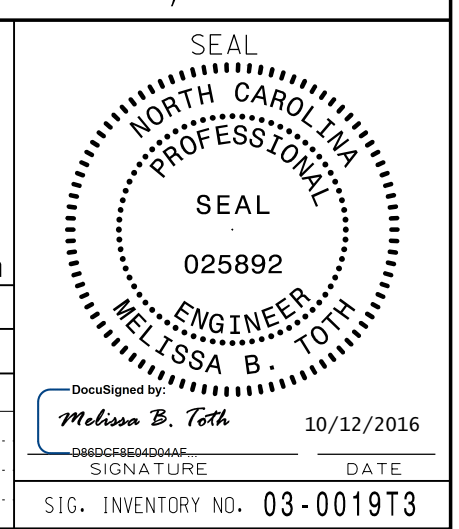
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0019T3
DESIGNED: May 2014
SEALED: July 21, 2016
REVISED: _____

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BER05650 AT LUS20295

Signal Upgrade - Temporary Design 3 (Electrical Detail Sheet 2 of 2)



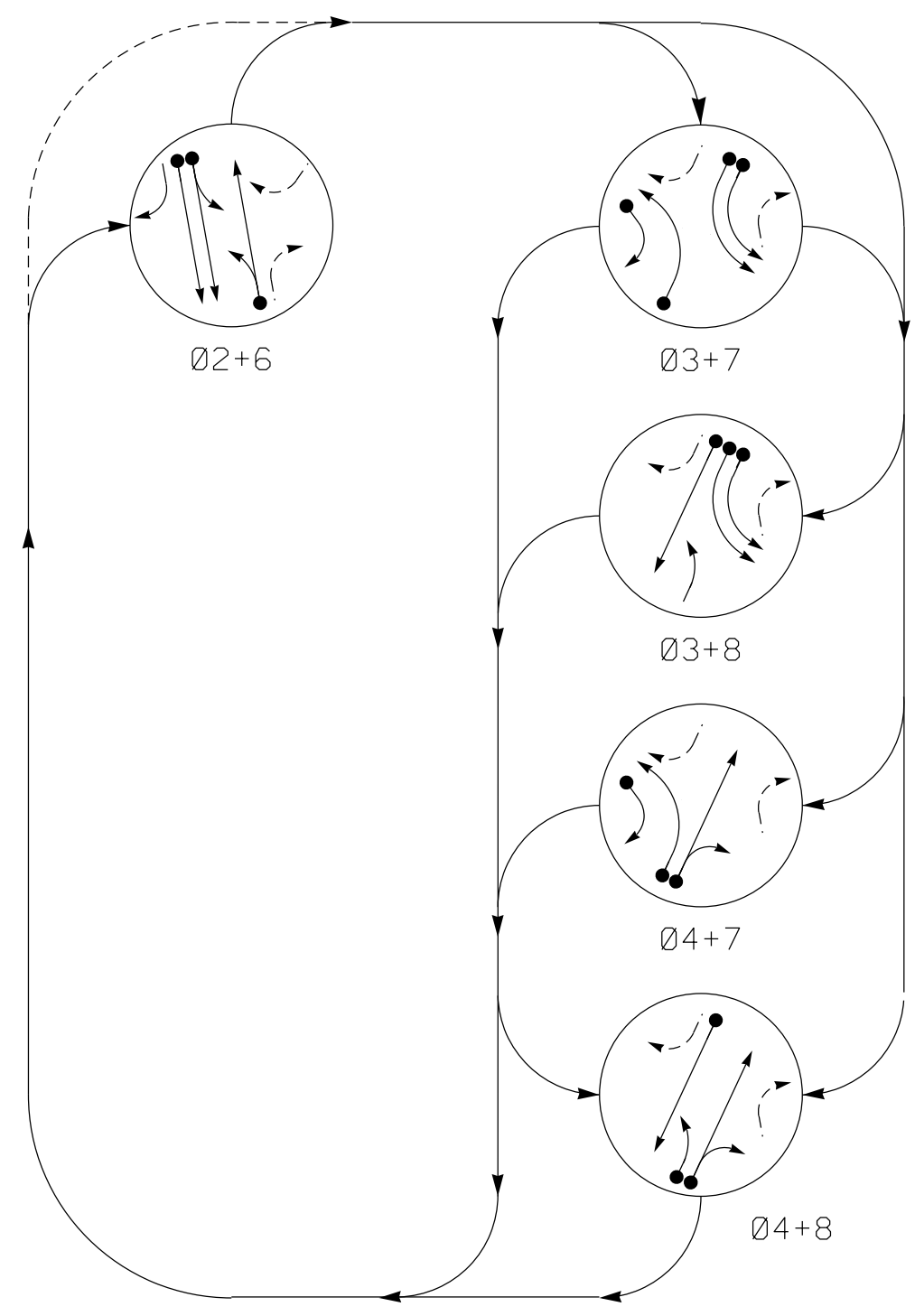
ELECTRICAL AND PROGRAMMING DETAILS FOR:		US 421 (Carolina Beach Road)/ US 421 Truck-SR 1436 (Front St) at SR 1140 (Burnett Boulevard)	
Prepared for the Offices of:		Division 03	New Hanover County
PLAN DATE:	May 2014	REVIEWED BY:	LM Moon
PREPARED BY:	AM Encarnacion	REVIEWED BY:	MB Toth
REVISIONS	INIT.	DATE	



ATKINS 1616 EAST MILLBROOK ROAD, SUITE 310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEES #F-0326

Documented by: Melissa B. Toth
Signature: _____ Date: 10/12/2016
SIG. INVENTORY NO. 03-0019T3

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

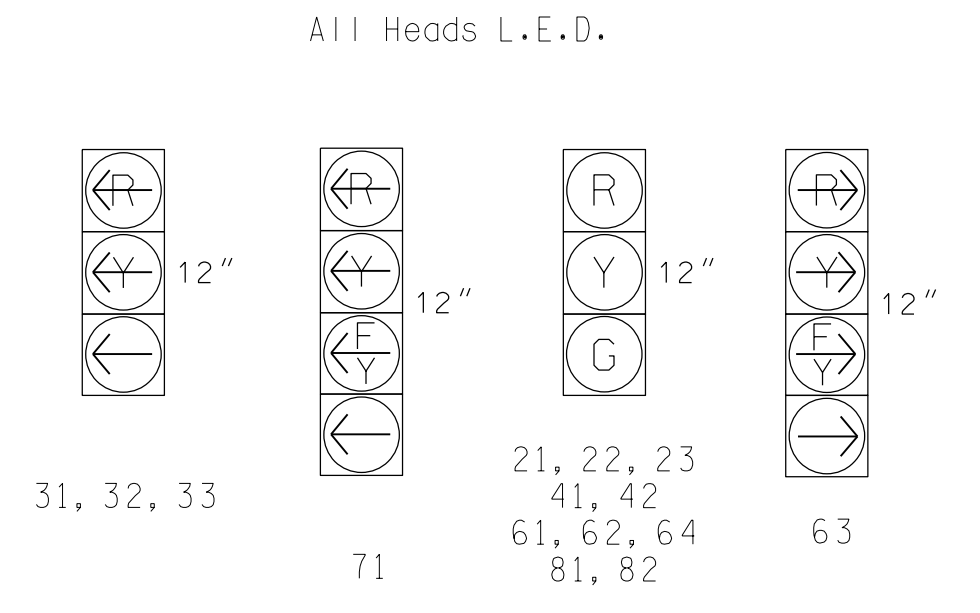


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	02+6	03+7	03+8	04+7	04+8	F	S	H
21, 22, 23	G	R	R	R	R	Y		
31, 32, 33	R	←	←	←	←			
41, 42	R	R	R	G	G	R		
61, 62, 64	G	R	R	R	R	Y		
63	←	←	←	←	←	Y		
71	←	←	←	←	←			
81, 82	R	R	G	R	G	R		

Y = Flashing Yellow Arrow

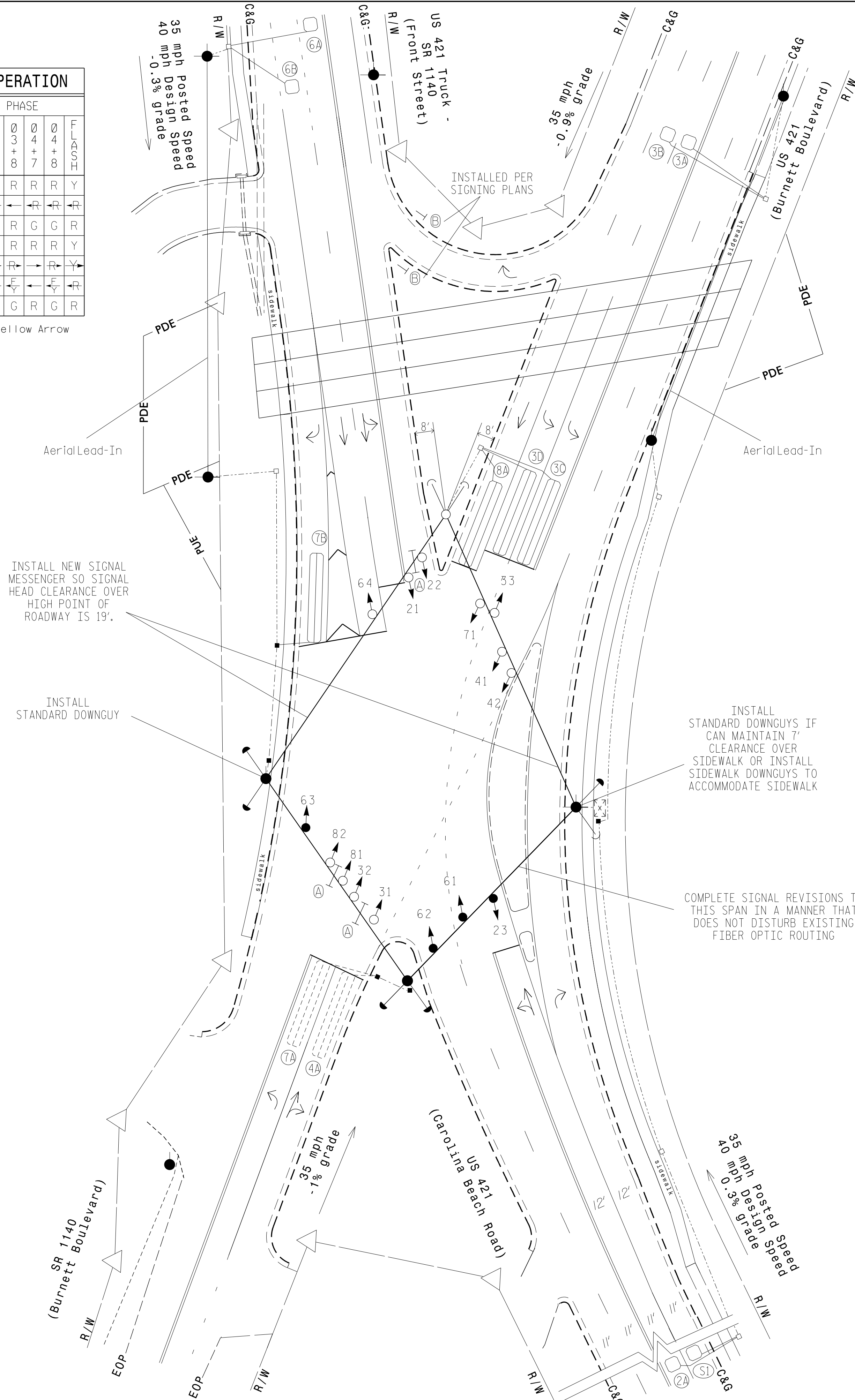
5 Phase Fully Actuated (Wilmington Signal System)

OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD	
2A	6'x6'	250'	5	Y	2	Y	Y	-	-	-	-	-
3A	6'x6'	200'	5	Y	3	-	Y	-	2.3	-	-	-
3B	6'x6'	200'	5	Y	3	-	Y	-	2.3	-	-	-
3C	6'x40'	0'	2-4-2	Y	3	Y	Y	-	2	5	-	-
3D	6'x40'	0'	2-4-2	Y	3	Y	Y	-	2	5	-	-
4A	6'x40'	0'	2-4-2	-	4	Y	Y	-	-	-	-	-
6A	6'x6'	250'	5	Y	6	Y	Y	-	-	-	-	-
6B	6'x6'	250'	5	Y	6	Y	Y	-	-	-	-	-
7A	6'x40'	0'	2-4-2	-	4	Y	Y	-	-	-	-	-
7B	6'x40'	0'	2-4-2	Y	7	Y	Y	-	-	15	-	-
8A	6'x40'	0'	2-4-2	Y	8	Y	Y	-	-	-	-	-
S1	6'x6'	250'	5	Y	-	-	-	-	-	-	Y	Y

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 3 and/or phase 7 may be lagged.
- Relocate existing signal heads numbered 23, 62, and 63.
- Relocate existing street name signs for Carolina Beach Road and Front Street as shown.
- Relocate street name sign for Burnett Blvd as shown.
- 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.



LEGEND

	Proposed Traffic Signal Head		Existing Traffic Signal Head
	Proposed Modified Signal Head		Existing Modified Signal Head
	Proposed Pedestrian Signal Head		Existing Pedestrian Signal Head
	Proposed Signal Pole with Guy		Existing Signal Pole with Guy
	Proposed Signal Pole with Sidewalk Guy		Existing Signal Pole with Sidewalk Guy
	Proposed Inductive Loop Detector		Existing Inductive Loop Detector
	Proposed Controller & Cabinet		Existing Controller & Cabinet
	Proposed Junction Box		Existing Junction Box
	Proposed 2-in Underground Conduit		Existing 2-in Underground Conduit
	Proposed Right of Way		Existing Right of Way
	Proposed Directional Arrow		Existing Directional Arrow
	Proposed Street Name Sign (Double Sided)		Existing Street Name Sign
	Proposed "YIELD" Sign (R1-2)		Existing "YIELD" Sign
	Proposed Permanent Utility Easement		Existing Permanent Utility Easement
	Proposed Permanent Drainage Easement		Existing Permanent Drainage Easement

OASIS 2070L TIMING CHART

FEATURE	PHASE							
	2	3	4	6	7	8		
Min Green 1 *	12	7	7	12	7	7		
Extension 1 *	6.0	5.0	2.0	6.0	3.0	2.0		
Max Green 1 *	60	45	25	60	20	25		
Yellow Clearance	4.2	3.2	3.9	4.2	3.0	3.9		
Red Clearance	2.7	3.4	3.3	2.0	4.2	3.3		
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0		
Walk 1 *	-	-	-	-	-	-		
Don't Walk 1	-	-	-	-	-	-		
Seconds Per Actuation *	2.5	-	-	1.8	-	-		
Max Variable Initial *	31	-	-	31	-	-		
Time Before Reduction *	15	5	-	15	-	-		
Time To Reduce *	30	15	-	30	-	-		
Minimum Gap	3.3	3.0	-	3.3	-	-		
Recall Mode	SOFT RECALL	-	-	SOFT RECALL	-	-		
Vehicle Call Memory	YELLOW	-	-	YELLOW	-	-		
Dual Entry	-	-	-	-	-	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 Final Design

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 310 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEES #F-0326

Prepared for the Offices of: **US 421 (Carolina Beach Road)/ US 421 Truck-SR 1436 (Front St) at US 421/SR 1140 (Burnett Blvd)**

Division 03 New Hanover County Wilmington

PLAN DATE: May 2014 REVIEWED BY: MB Toth

PREPARED BY: LMM REVIEWED BY:

SCALE: 1"=30'

10/12/2016

SIGNATURE: Melissa B. Toth DATE: 10/12/2016

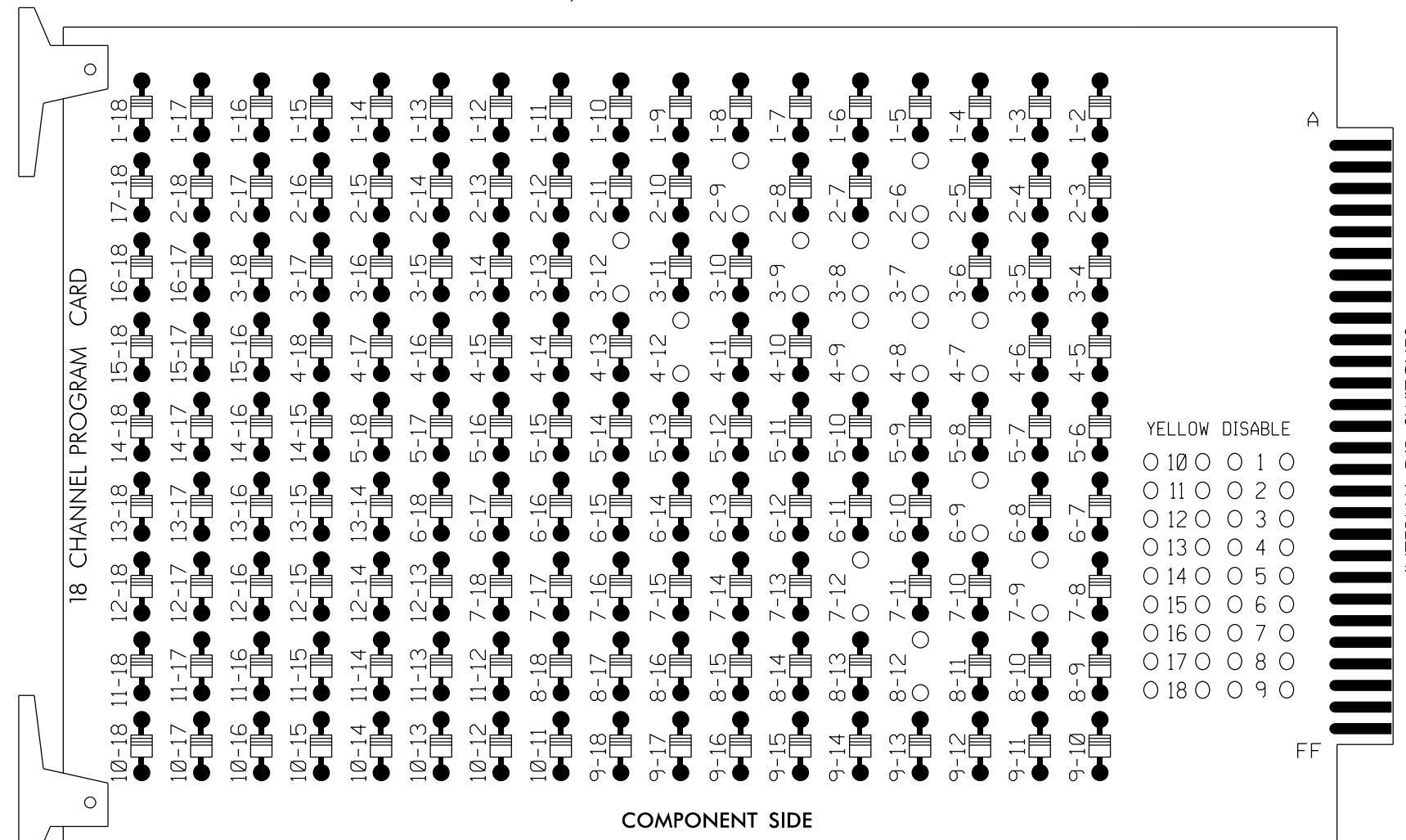
SIG. INVENTORY NO. 03-0019

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 BE00550 AT LUS20293

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

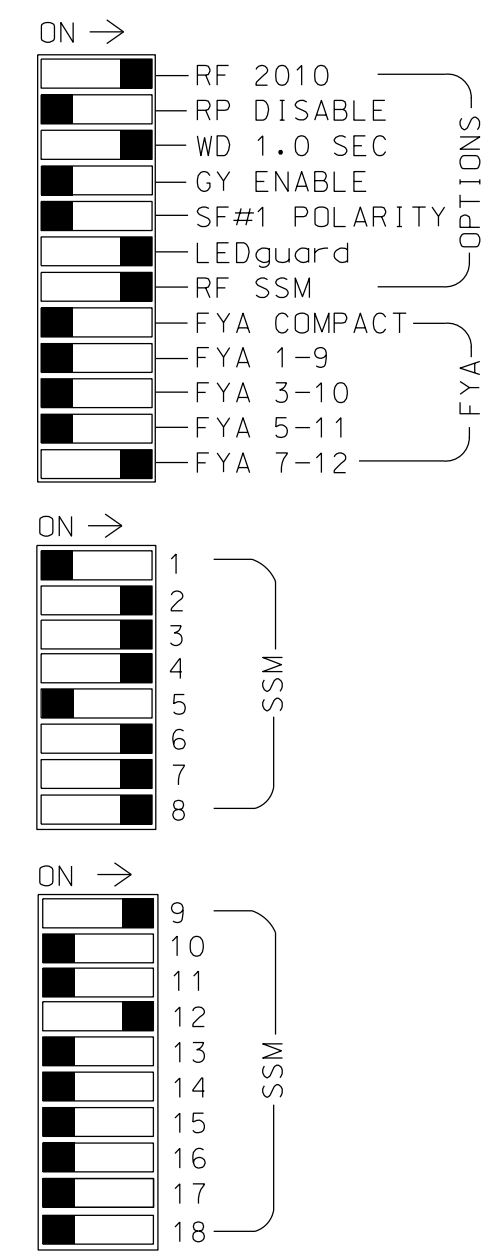
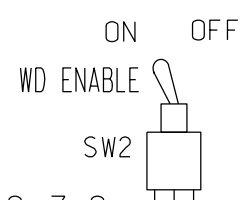
REMOVE DIODE JUMPERS 2-6, 2-9, 3-7, 3-8, 3-9, 3-12, 4-7, 4-8, 4-9, 4-12, 6-9, 7-9, 7-12, and 8-12.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.



■ = DENOTES POSITION OF SWITCH

NOTES

- 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.
- Program phase 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as wag overlap.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....EXISTING 2070L
 CABINET.....EXISTING 332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S4,S5,S8,S10,S11,AUX S1,AUX S5.
 PHASES USED.....2,3,4,6,7,8.
 OVERLAP "A".....6+7
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....7+8

PROJECT REFERENCE NO.	SHEET NO.
17.BP.3.R.28	Sig. 12

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	7	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	DLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	63	21,22,23	NU	31,32,33	41,42	NU	NU	61,62,64	NU	71	81,82	NU	63	NU	NU	NU	71	NU	
RED		128			101			134			107								
YELLOW	*	129			102			135			108								
GREEN		130			103			136			109								
RED ARROW					116								A121					A101	
YELLOW ARROW					117								A122						A102
FLASHING YELLOW ARROW													A123						A103
GREEN ARROW	127				118						124								

NU = Not Used

* Denotes install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail below.

NOTE: Load Switch S1 require output assignment remapping. See Sheet 2 of this electrical detail for instructions.

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	S 2A	∅ 2 3C	∅ 3 3D	S 3A	∅ 3 3B	∅ 4 4A	S 4B	SYS. DET. S1	S 5A	S 5B	S 5C	S 5D	S 5E	FS DC ISOLATOR ST
FILE "J"	S 6A	∅ 6 6B	S 6C	S 6D	S 6E	∅ 7 7A	∅ 8 8A	S 7B	S 7C	S 7D	S 7E	S 7F	S 7G	S 7H

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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

Reuse existing detector cards for temporary and final signal designs.

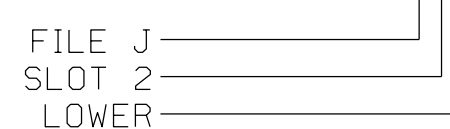
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
3A	TB4-9,10	I6U	41	3	4	3	-	Y		2,3	
3B	TB4-11,12	I6L	45	7	14	3	-	Y		2,3	
3C	TB2-9,10	I3U	63	25	32	3	Y	Y	Y	2	5
3D	TB2-11,12	I3L	76	38	42	3	Y	Y	Y	2	5
4A	TB6-1,2	I7U	65	27	34	4	Y	Y			
* S1	TB6-9,10	I9U	60	22	11	SYS					
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A	TB5-9,10	J6U	42	4	8	7	Y	Y			15
		I8U	49	11	24	4	Y	Y			
7B	TB5-11,12	J6L	46	8	18	7	Y	Y			15
8A	TB7-1,2	J7U	66	28	38	8	Y	Y			

* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

1 Add jumpers from J6-F to 18-W, on rear of input file..

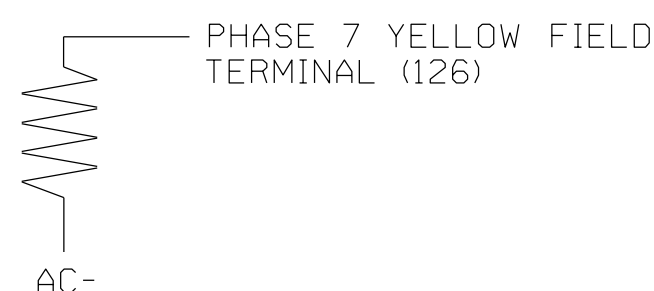
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

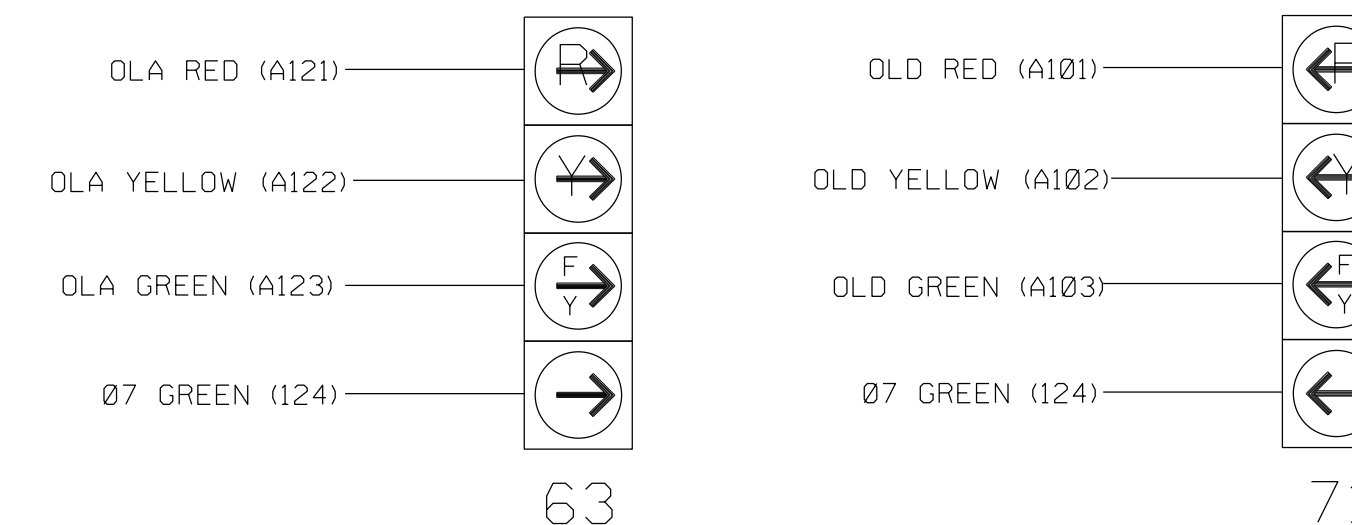
(install resistors as shown below)

VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



4 SECTION FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

- The sequence display for this signal requires special logic programming. See sheet 2 of 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0019
 DESIGNED: May 2014
 SEALED: July 21, 2016
 REVISED:

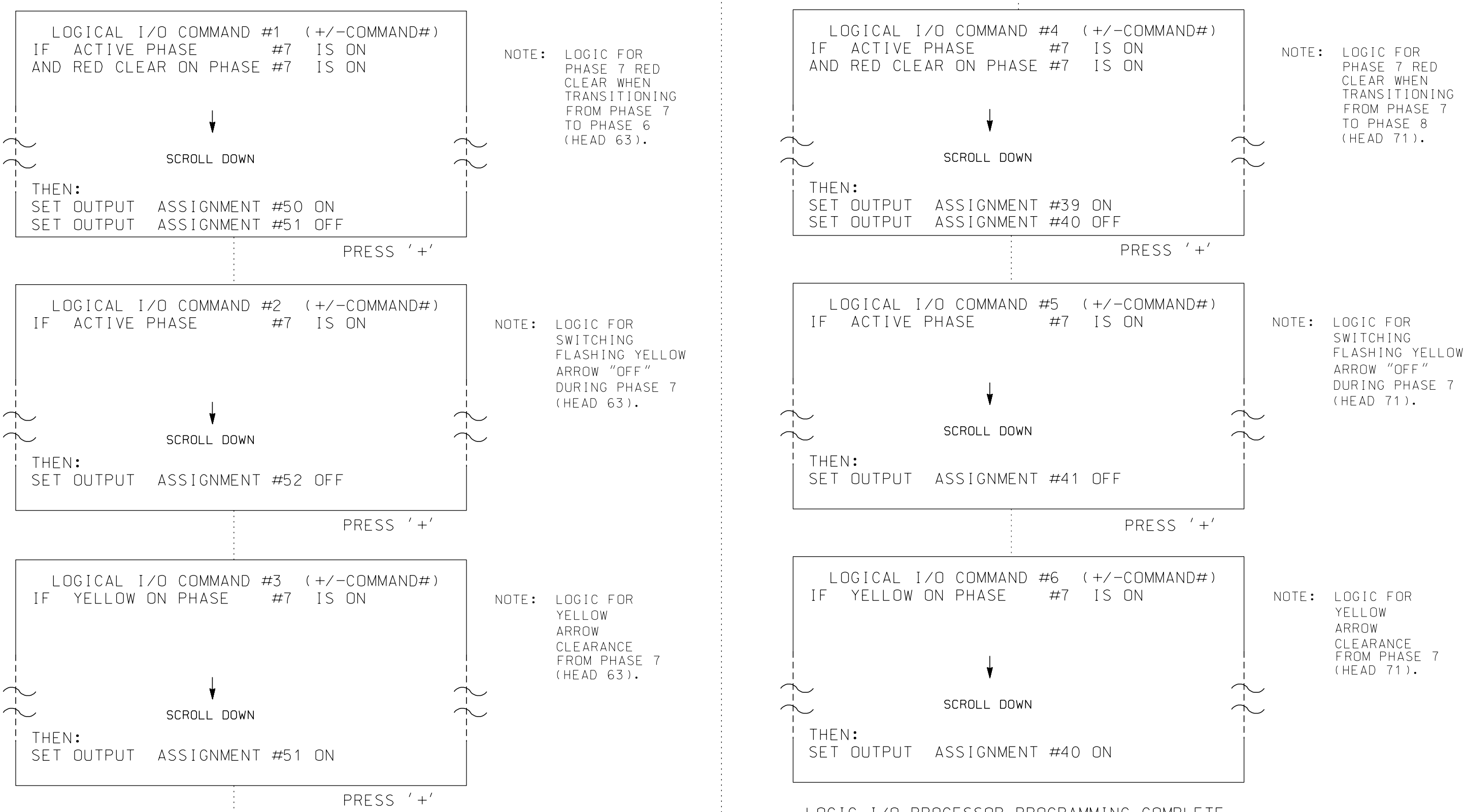
Signal Upgrade - Final Design (Electrical Detail Sheet 1 of 2)

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	US 421 (Carolina Beach Road)/ US 421 Truck-SR 1436 (Front St) at US 421/SR 1140 (Burnett Blvd)	SEAL
	Division 03 New Hanover County Wilmington PLAN DATE: May 2014 REVIEWED BY: LM Moon PREPARED BY: AM Encarnacion REVIEWED BY: MB Toth	REVISIONS INIT. DATE

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

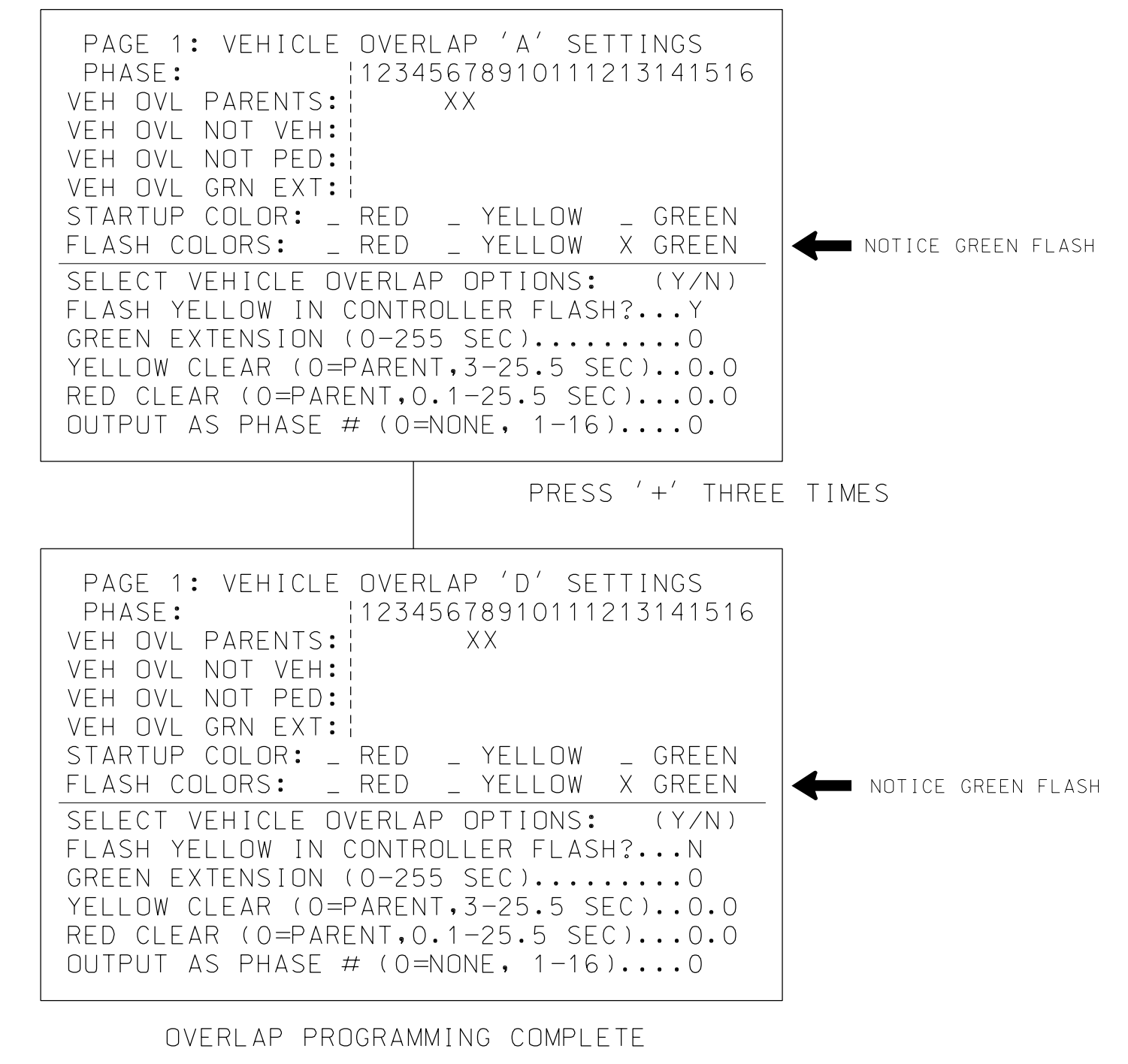


OUTPUT REFERENCE SCHEDULE
OUTPUT 39 = Over lap D Red
OUTPUT 40 = Over lap D Yellow
OUTPUT 41 = Over lap D Green
OUTPUT 50 = Over lap A Red
OUTPUT 51 = Over lap A Yellow
OUTPUT 52 = Over lap A Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).



PHASE 7 PROGRAMMING DETAIL

(program controller as shown below)

CHANGING OUTPUT ASSIGNMENTS

- FROM MAIN MENU SELECT '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS)
- ENTER 14 (PHASE 1 RED) FOR OUTPUT ASSIGNMENT #.
- SCROLL DOWN TO 'VEHICLE PHASE' AND ENTER 'Y' REGARDLESS OF DEFAULT PROGRAMMING
- ENTER '7' FOR 'SELECT VEHICLE PHASE'. NO CHANGE NEEDED FOR 'SELECT COLOR'
- BACKUP TO 'OUTPUT ASSIGNMENTS AND SETTINGS MENU:' BY PRESSING THE 'ESC' BUTTON ON KEYBOARD.
- SELECT '1' (OUTPUT ASSIGNMENTS)
- ENTER 15 (PHASE 1 YELLOW) FOR OUTPUT ASSIGNMENT #.
- REPEAT STEPS # 3 THRU # 6.
- ENTER 16 (PHASE 1 GREEN) FOR OUTPUT ASSIGNMENT #.
- REPEAT STEPS # 3 AND # 4.

PROGRAMMING COMPLETE

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0019
DESIGNED: May 2014
SEALED: July 21, 2016
REVISED:

Signal Upgrade - Final Design (Electrical Detail Sheet 2 of 2)

	ELECTRICAL AND PROGRAMMING DETAILS FOR:		US 421 (Carolina Beach Road)/ US 421 Truck-SR 1436 (Front St) at US 421/SR 1140 (Burnett Blvd)			
	Division 03		New Hanover County			Wilmington
	PLAN DATE: May 2014	REVIEWED BY: LM Moon	PREPARED BY: AM Encarnacion	REVIEWED BY: MB Toth		
REVISIONS		INIT.	DATE			

Designed by: Melissa B. Toth 10/12/2016
Signature: _____ Date: _____
SIG. INVENTORY NO. 03-0019

13-SEP-2016 16:32
01:Encarnacion\mencarnacion\projects\03-0019\03-0019a.dgn
ENCARNACION, MELISSA B. AT 13-SEP-2016 16:32