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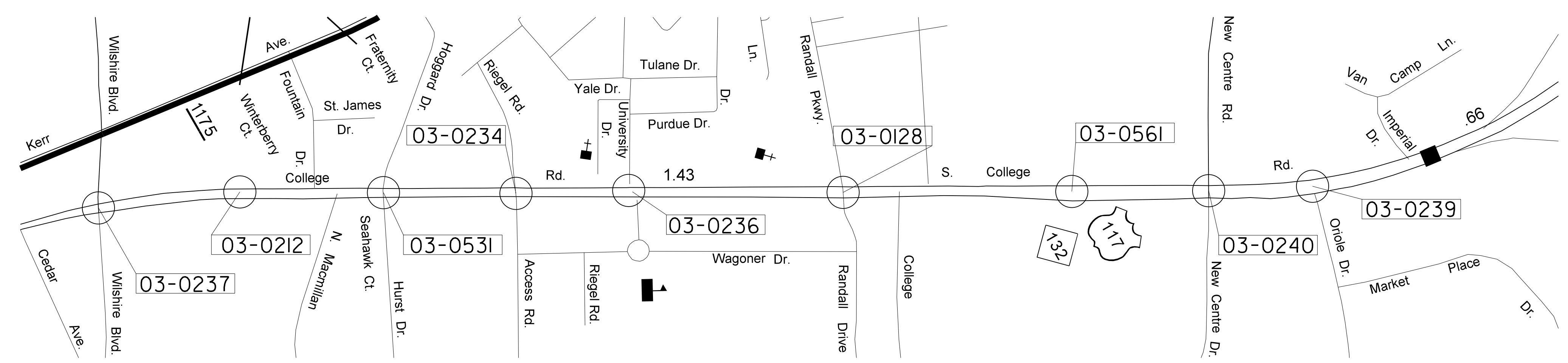
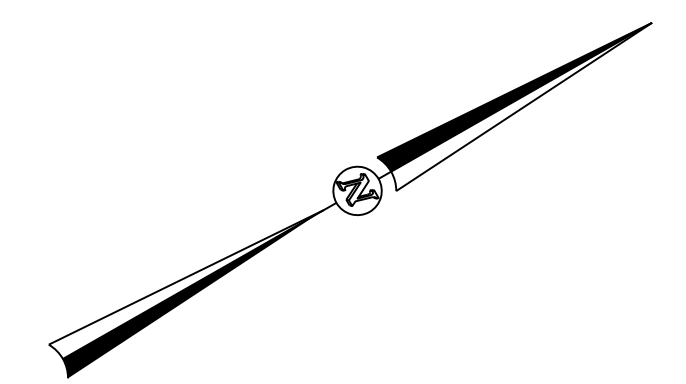
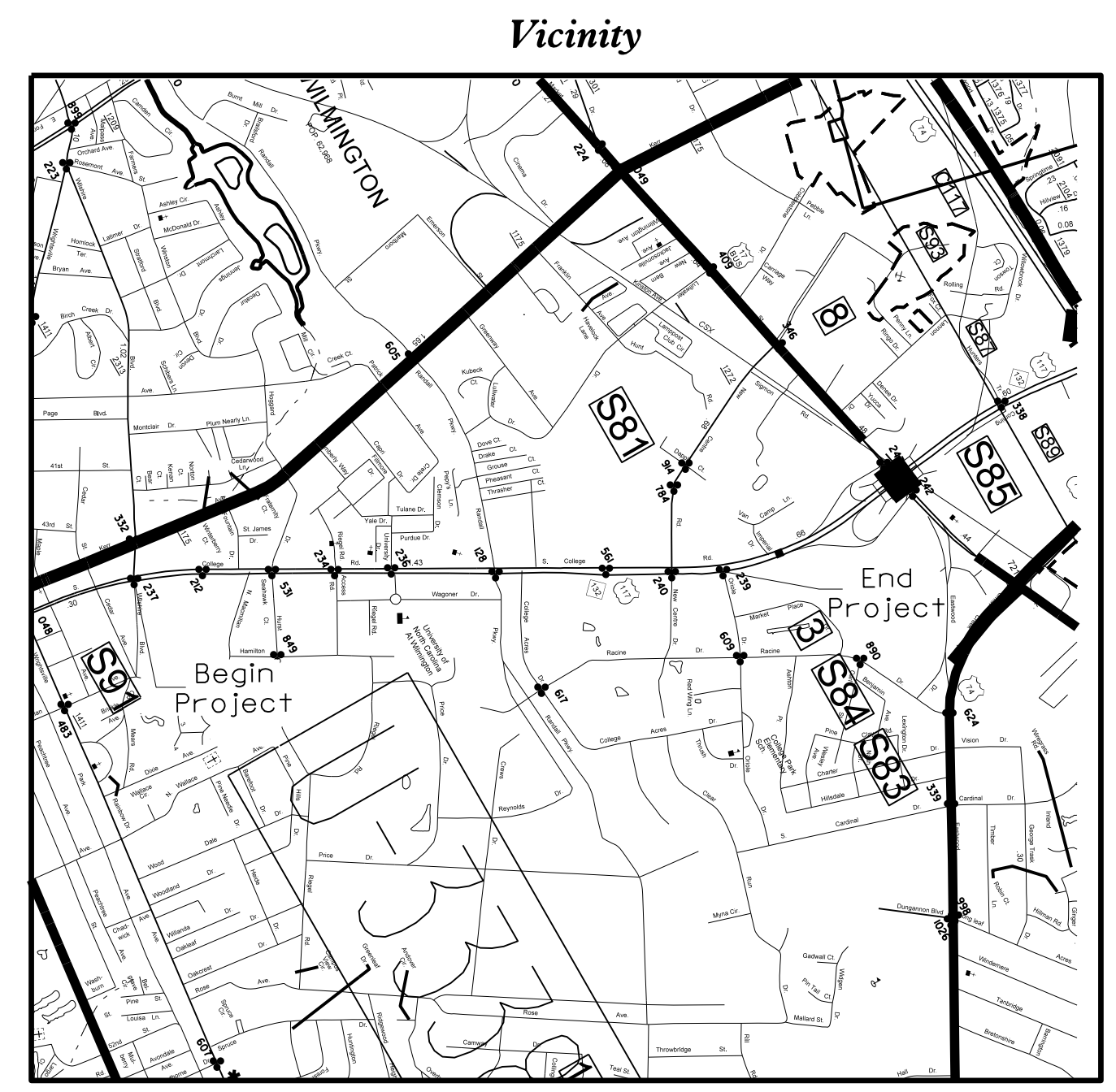
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 2017CPT.03.01.10651
 W-5203AA
 W-5601BB

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

New Hanover County

**LOCATION: US 117-NC 132 (S COLLEGE ROAD) FROM
 SR 2313 (WILSHIRE BOULEVARD) TO ORIOLE
 DRIVE IN WILMINGTON**
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 #	Location/Description
Index of Plans		
<i>Title Sheet</i>		
Sig. 1.0	---	US 117 - NC 132 (S College Road) at SR 2313 (Wilshire Blvd)
Sig. 2.0-2.2	03-0237	US 117 - NC 132 (S College Road) at Big K / Dick's Sporting Goods
Sig. 3.0-3.5	03-0212	US 117 - NC 132 (S College Road) at Hoggard Drive / Hurst Drive
Sig. 4.0-4.5	03-0531	US 117 - NC 132 (S College Road) at Crews Drive / St. Matthews Church Entrance
Sig. 5.0-5.1	03-0234	US 117 - NC 132 (S College Road) at University Drive
Sig. 6.0-6.2	03-0236	US 117 - NC 132 (S College Road) at Randall Pkwy / Randall Drive
Sig. 7.0-7.2	03-0128	US 117 - NC 132 (S College Road) at University Centre / University Commons
Sig. 8.0-8.1	03-0561	US 117 - NC 132 (S College Road) at SR 1272 (New Centre Drive)
Sig. 9.0-9.1	03-0240	US 117 - NC 132 (S College Road) at Oriole Drive
Sig. 10.0-10.1	03-0239	Pushbutton location details
Sig. P1-P3	---	

INTELLIGENT TRANSPORTATION AND SIGNALS UNIT
 Contacts:
Pamela Alexander, PE - Eastern Region Signals Engineer
Keith M. Mims, PE - Signal Equipment Design Engineer

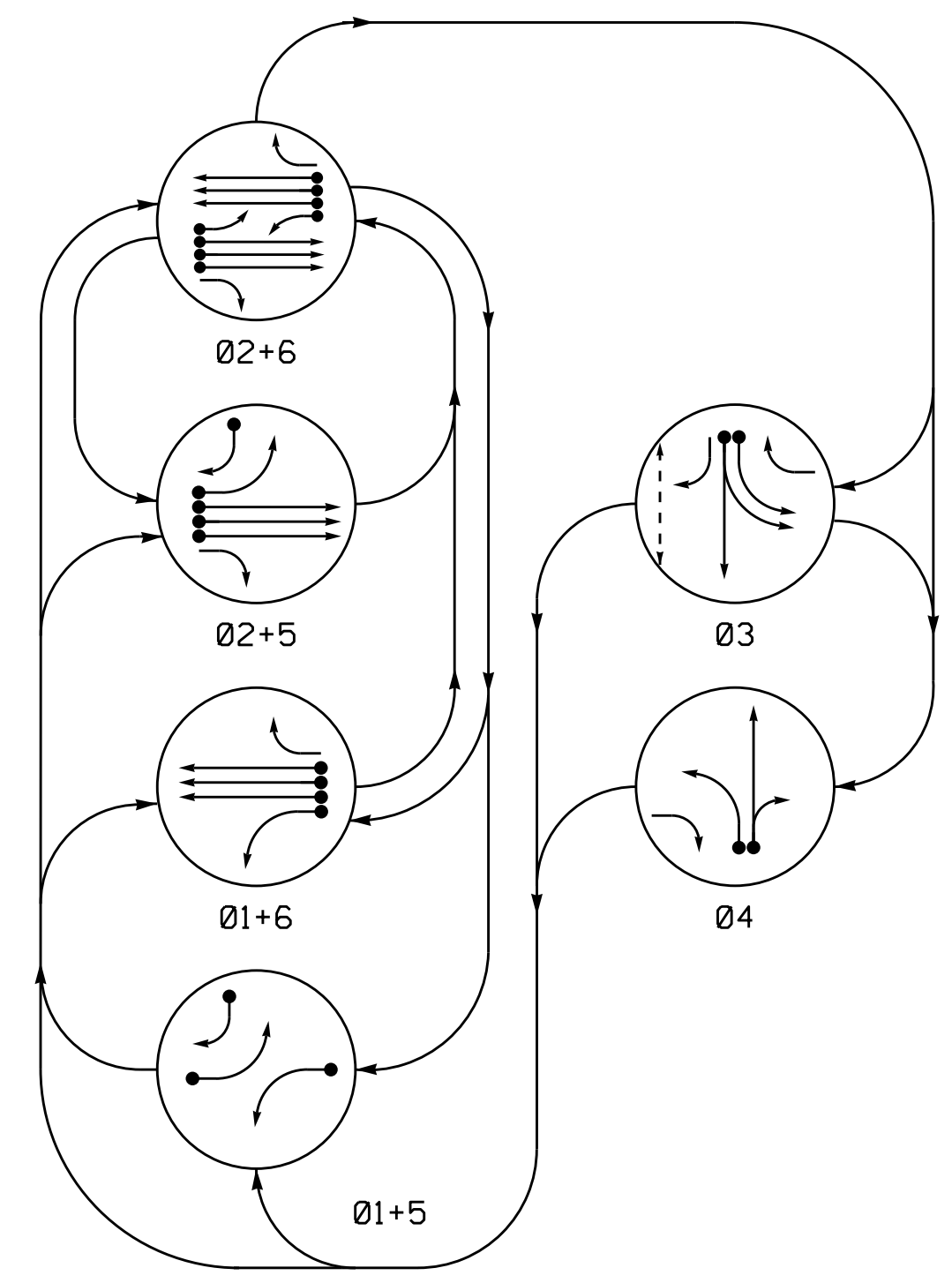
Prepared In the Office of:
 DIVISION OF HIGHWAYS
 TRANSPORTATION MOBILITY AND SAFETY
 DIVISION

750 N. Greenfield Parkway, Garner, NC 27529

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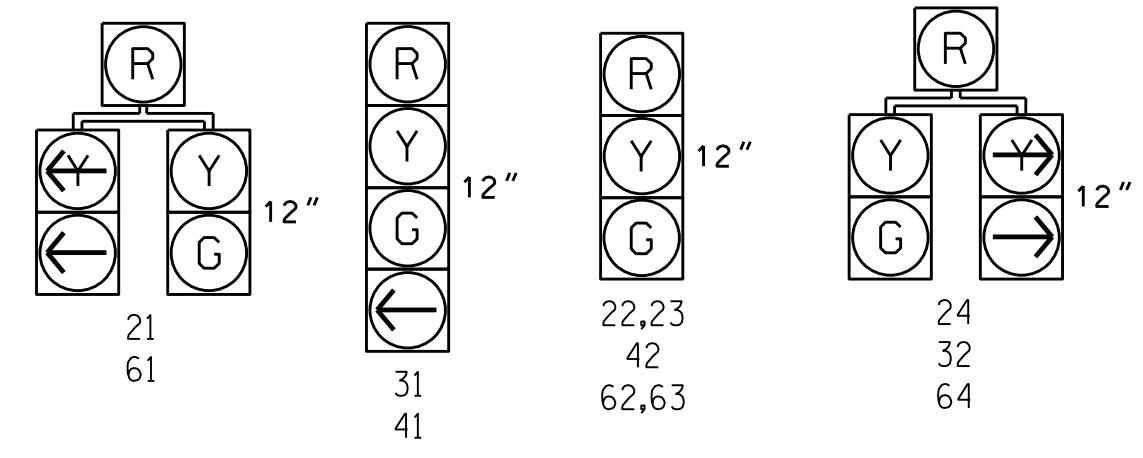
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PHASING DIAGRAM



SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	03	04
21	R	R	G	G	R	Y
22, 23	R	R	G	G	R	Y
24	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	R	R	R	R	G	R
42	R	R	R	R	G	R
61	R	G	R	G	R	Y
62, 63	R	G	R	G	R	Y
64	R	G	R	G	R	Y
P31, P32	DW	DW	DW	DW	W	DRK

SIGNAL FACE I.D.
All Heads L.E.D.

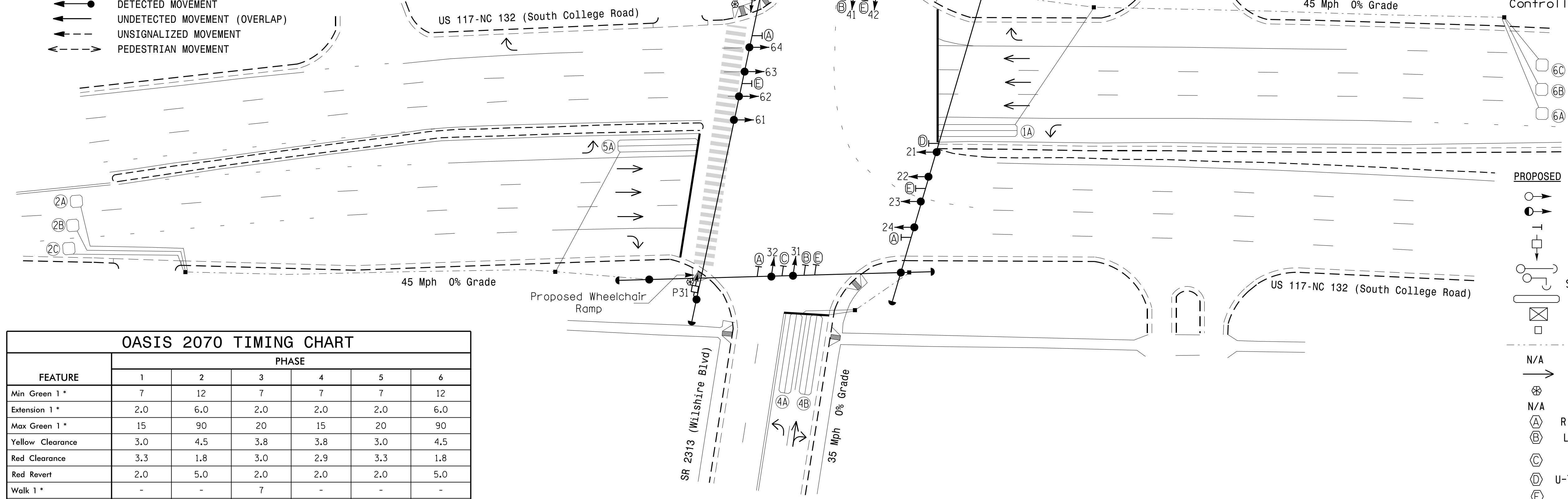
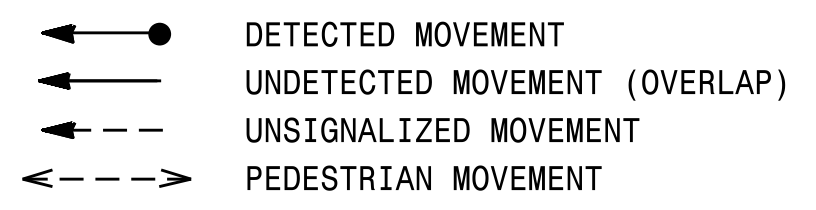


INDUCTIVE LOOPS				DETECTOR PROGRAMMING			
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION
1A	6X40	0	2-4-2	Y	1	Y	Y
2A	6X6	300	5	Y	2	Y	Y
2B	6X6	300	5	Y	2	Y	Y
2C	6X6	300	5	Y	2	Y	Y
3A	6X40	0	2-4-2	Y	3	Y	Y
3B	6X40	0	2-4-2	Y	3	Y	Y
4A	6X40	0	2-4-2	Y	4	Y	Y
4B	6X40	0	2-4-2	Y	4	Y	Y
5A	6X40	0	2-4-2	Y	5	Y	Y
5B	6X40	0	2-4-2	Y	5	Y	Y
6A	6X6	300	5	Y	6	Y	Y
6B	6X6	300	5	Y	6	Y	Y
6C	6X6	300	5	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.
- Enable Backup Protect for phase 2 and 6 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal system data: Controller Asset # 0237.

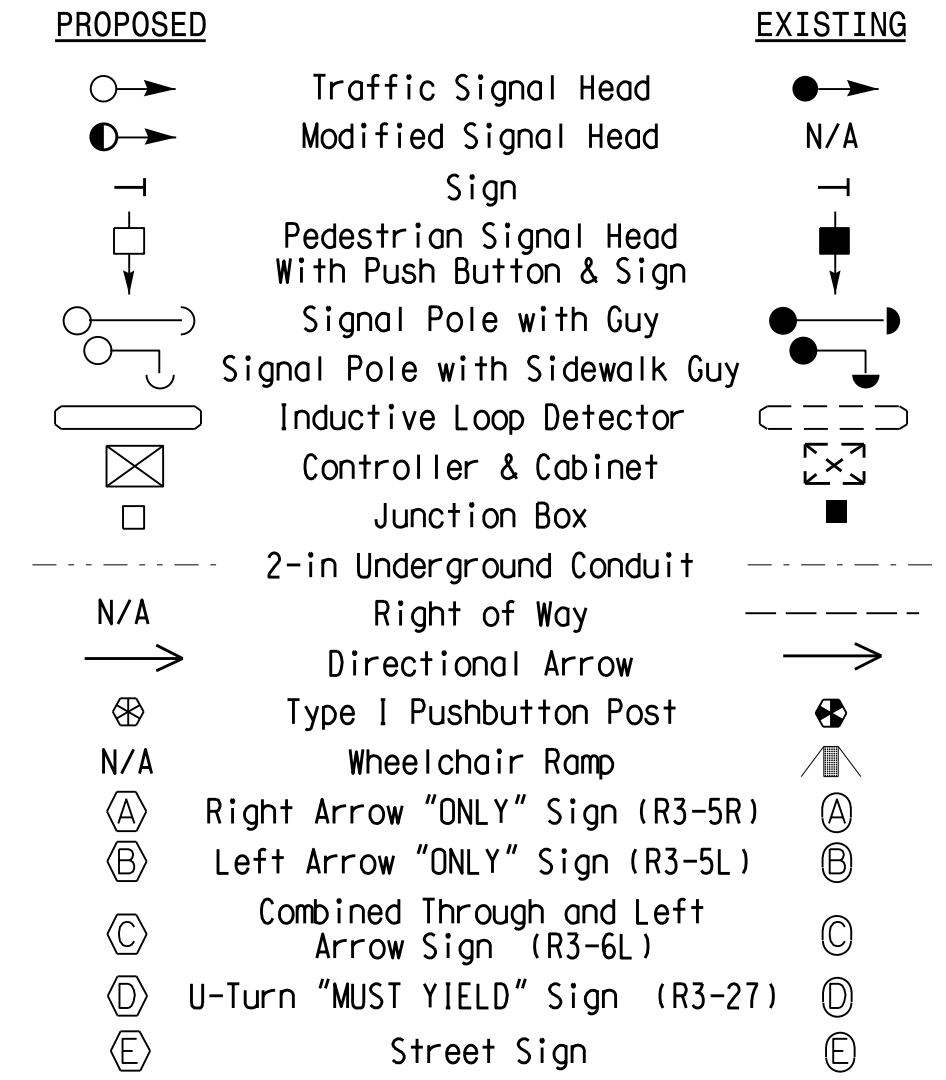
PHASING DIAGRAM DETECTION LEGEND



FEATURE	PHASE					
	1	2	3	4	5	6
Min Green 1 *	7	12	7	7	7	12
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0
Max Green 1 *	15	90	20	15	20	90
Yellow Clearance	3.0	4.5	3.8	3.8	3.0	4.5
Red Clearance	3.3	1.8	3.0	2.9	3.3	1.8
Red Revert	2.0	5.0	2.0	2.0	2.0	5.0
Walk 1 *	-	-	7	-	-	-
Don't Walk 1	-	-	34	-	-	-
Seconds Per Actuation *	-	1.2	-	-	-	1.2
Max Variable Initial *	-	34	-	-	-	34
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	34
Minimum Gap	-	3.2	-	-	-	3.2
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
Dual Entry	-	-	-	-	-	-
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.

LEGEND



Signal Upgrade

750 N. Greenfield Pkwy, Garner, NC 27529

US 117 - NC 132 (S College Rd)
at
SR 2313 (Wilshire Blvd)

Division 3 New Hanover County Wilmington

PLAN DATE: April 2016 REVIEWED BY: PLA

PREPARED BY: Jeff Spence REVIEWED BY:

SEAL

4/18/2016

DATE

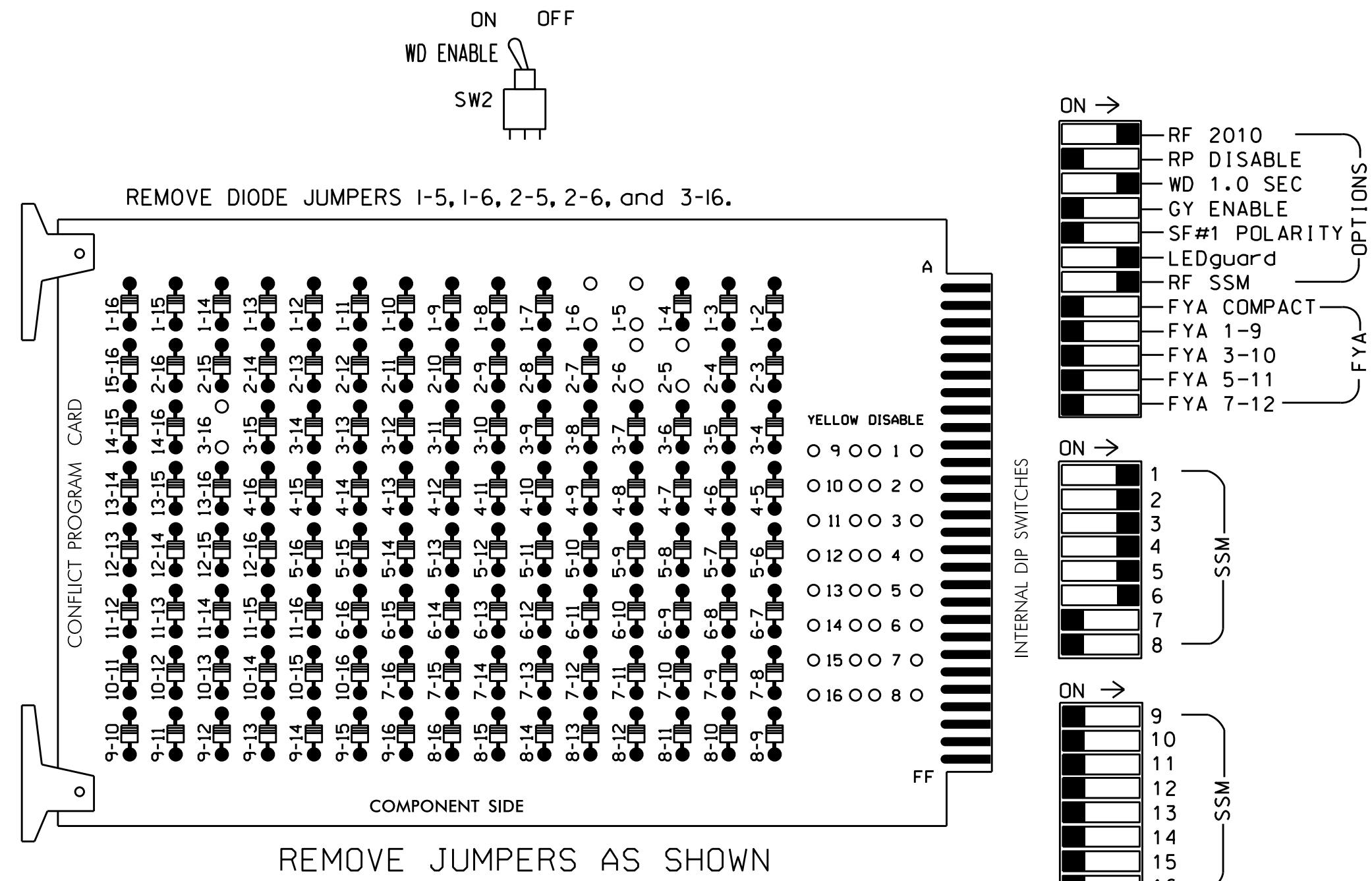
SIG. INVENTORY NO. 03-0237

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EDI MODEL 2010ECL-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.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

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.
- 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 7,8,9, 10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- 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 phase 3 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S8P
PHASES USED.....1,2,3,3PED,4,5,6
OVERLAPS.....NONE

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	3 PED
SIGNAL HEAD NO.	61	21,22 23,24	NU	31 32 64	41 42 24	NU	21,32	61,62 63,64	NU	NU	NU	P31, P32
RED	*	128		116 116	101 101		*	134				
YELLOW		129		117 117	102 102			135				
GREEN		130		118 118	103 103			136				
RED ARROW												
YELLOW ARROW	126			117		102	132					
GREEN ARROW	127			118	118 103	103	133					
Hand icon												110
Person icon												112

NU = Not Used

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

BACKUP PROTECTION NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phases 2 and 6 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 2	∅ 2	∅ 3	∅ 3	∅ 4	∅ 4	∅ 5	∅ 5	∅ 6	∅ 6	∅ 7	∅ 7	∅ 8
L	1A	2A	2C	3A	3B	4A	4B	5A	5B	6A	6B	7A	7B	8A
U	NOT USED	∅ 2	NOT USED	∅ 3	∅ 4	∅ 5	∅ 5	∅ 6	∅ 6	∅ 7	∅ 7	∅ 8	∅ 8	∅ 9
L	NOT USED	2B	NOT USED	3C	4C	5C	6C	7C	8C	9C	10C	11C	12C	13C

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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

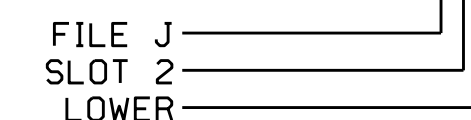
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			10
2A	TB2-5,6	I2U	39	10	2	2	Y	Y	Y		3
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y			
3A	TB4-9,10	I6U	41	3	4	3	Y	Y			3
3B	TB4-11,12	I6L	45	7	14	3	Y	Y			
4A	TB6-1,2	I7U	65	27	34	4	Y	Y			3
4B	TB6-3,4	I7L	78	40	44	4	Y	Y			10
5A ²	TB3-1,2	J1U	55	17	5	5	Y	Y			10
		I4U	47	9	22	2	Y	Y	Y		3
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			15
6A	TB3-7,8	J2L	44	6	16	6	Y	Y			
6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
6C	TB3-11,12	J3L	77	39	46	6	Y	Y			
PED PUSH BUTTONS											
P31,P32	TB8-8,9	I13L	70	32	PED 8	3 PED					

NOTE:
INSTALL DC ISOLATOR
IN INPUT FILE SLOT I13.

¹Add jumper from I1-W to J4-W, on rear of input file.

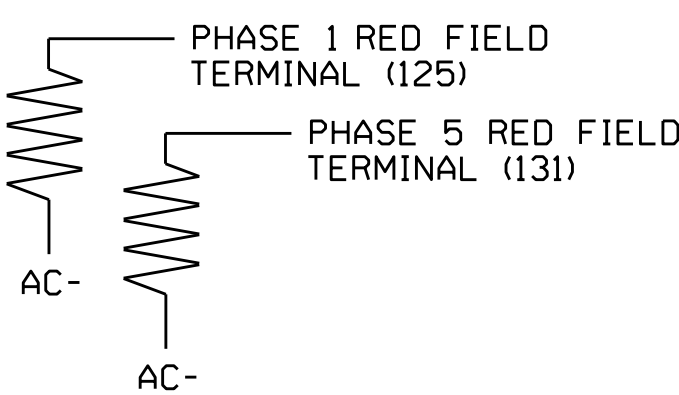
²Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

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



NOTE: The purpose of these resistors is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

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.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0237
DESIGNED: April 2016
SEALED: 4/18/2016
REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
Traffic Engineering and Safety Services, Inc.
MEMBER OF THE ASSOCIATION OF PROFESSIONAL SIGNAL MANAGEMENT SPECIALISTS

US 117-NC 132 (S. College Rd) at SR 2313 (Wilshire Blvd)

Division 3 New Hanover County Wilmington

PLAN DATE: April 2016 REVIEWED BY: BAS

PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS INIT. DATE

Seal: KEITH M. MIMS ENGINEER 036880

Keith M. Mims 4/20/2016

750 N. Greenfield Pkwy, Garner, NC 27529

SIG. INVENTORY NO. 03-0237

PED 3 PROGRAMMING DETAIL

(program controller as shown below)

CHANGING OUTPUT ASSIGNMENTS

1. FROM MAIN MENU SELECT '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS)
2. ENTER 17 (PHASE 8 DW) FOR OUTPUT ASSIGNMENT #.
3. SCROLL DOWN TO 'PEDESTRIAN PHASE' AND ENTER 'Y' **REGARDLESS OF DEFAULT PROGRAMMING**
4. ENTER '3' FOR 'SELECT PEDESTRIAN 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 18 (PHASE 8 W) FOR OUTPUT ASSIGNMENT #.
8. REPEAT STEPS # 3 AND # 4.

CHANGING INPUT ASSIGNMENTS

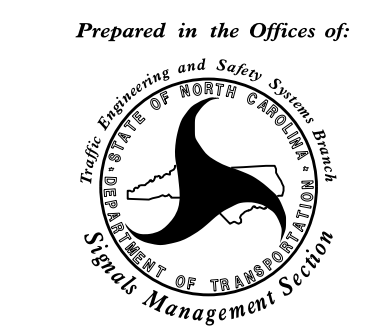
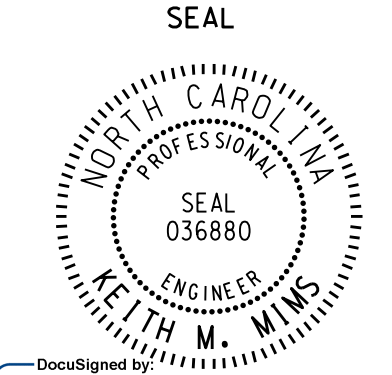
1. FROM MAIN MENU SELECT '7' (DETECTORS), THEN '2' (PEDESTRIAN DETECTOR ASSIGNMENTS)
2. CYCLE TO PED DETECTOR #8 BY REPEATEDLY DEPRESSING '+' KEY
3. MODIFY PHASE ASSIGNED TO PED DETECTOR # 8 FROM PHASE 8 TO PHASE 3

PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 03-0237
 DESIGNED: April 2016
 SEALED: 4/18/2016
 REVISED: N/A

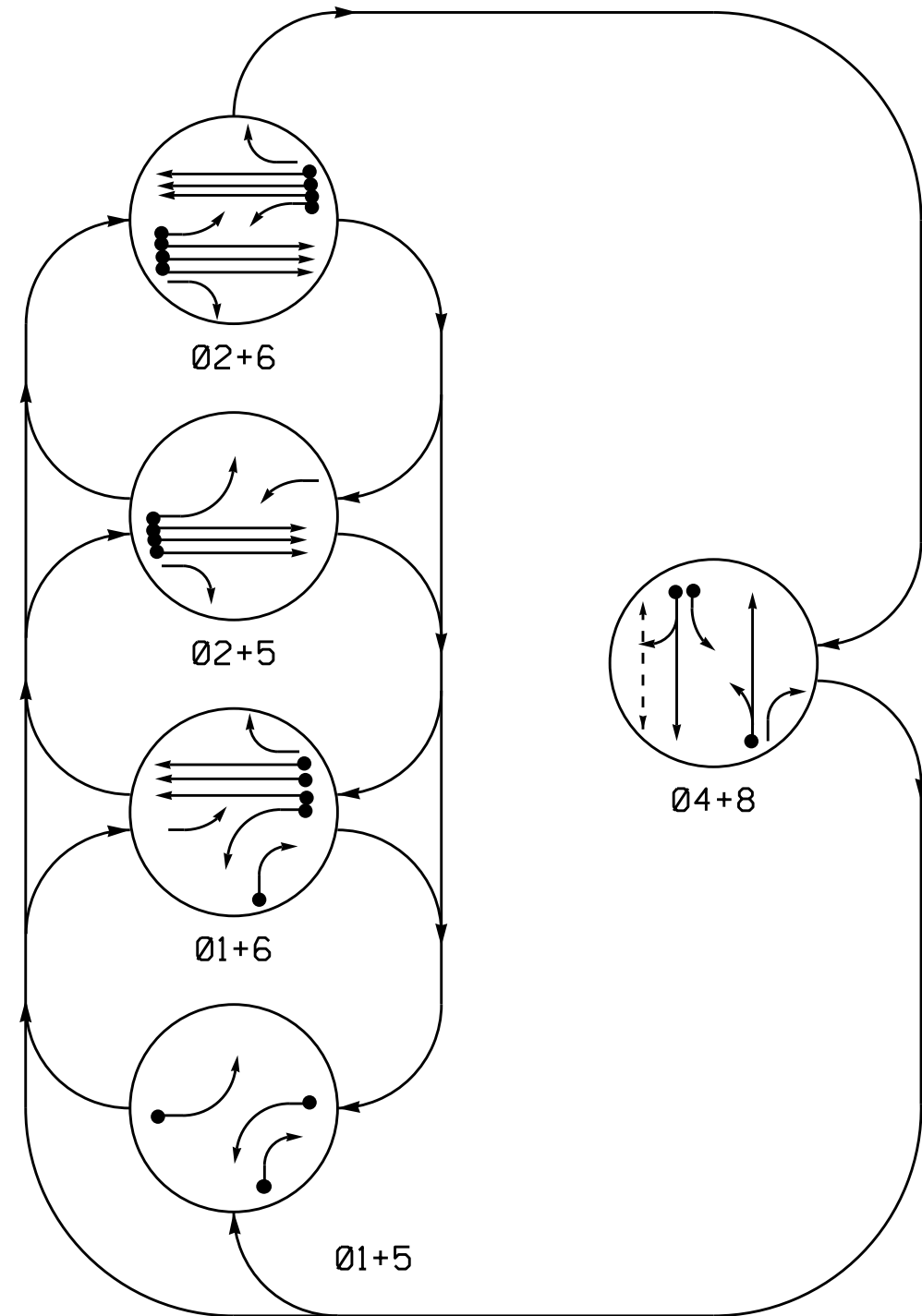
Electrical Detail - Sheet 2 of 2

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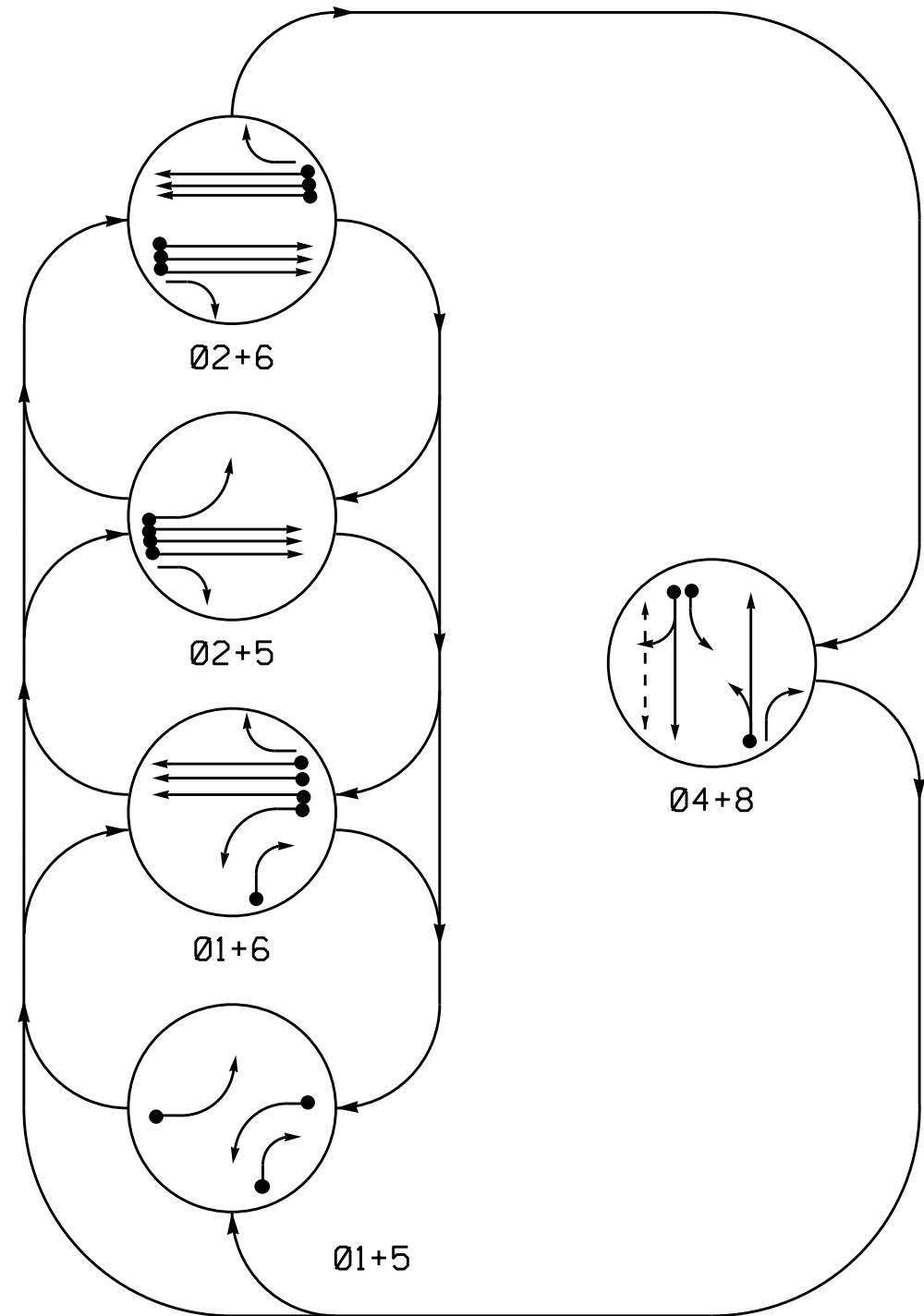
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PLAN DATE:	April 2016	REVIEWED BY:	BAS																			
PREPARED BY:	S. Armstrong	REVIEWED BY:																				
REVISIONS	INIT.	DATE																				

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sarmstrong

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT (OVERLAP)
- ←- - -> UNSIGNALIZED MOVEMENT
- ←- - -> PEDESTRIAN MOVEMENT

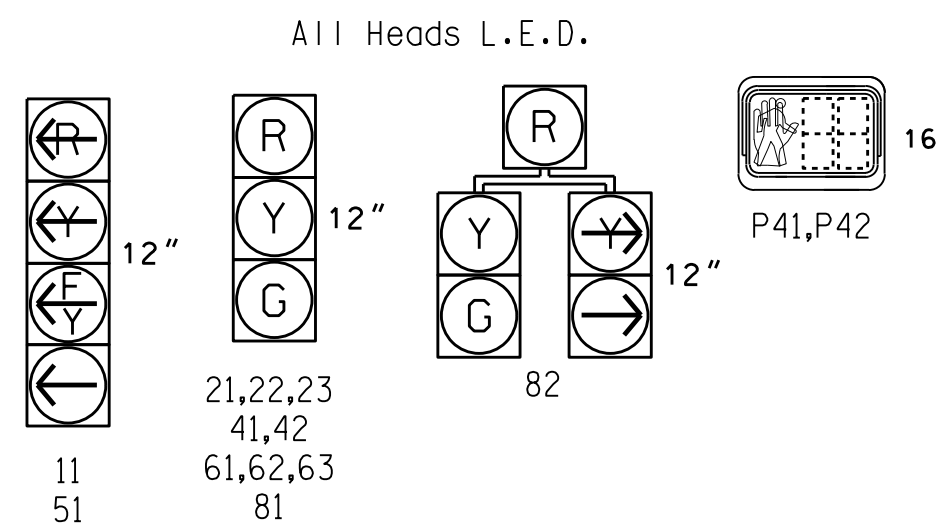
DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	04+8	FLASH
11	←	←	←	←	←	←
21, 22, 23	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
51	←	←	←	←	←	←
61, 62, 63	R	G	R	G	R	Y
81	R	R	R	R	G	R
82	R	R	R	R	G	R
P41, P42	DW	DW	DW	W	DRK	

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	04+8	FLASH
11	←	←	←	←	←	←
21, 22, 23	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
51	←	←	←	←	←	←
61, 62, 63	R	G	R	G	R	Y
81	R	R	R	R	G	R
82	R	R	R	R	G	R
P41, P42	DW	DW	DW	W	DRK	

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

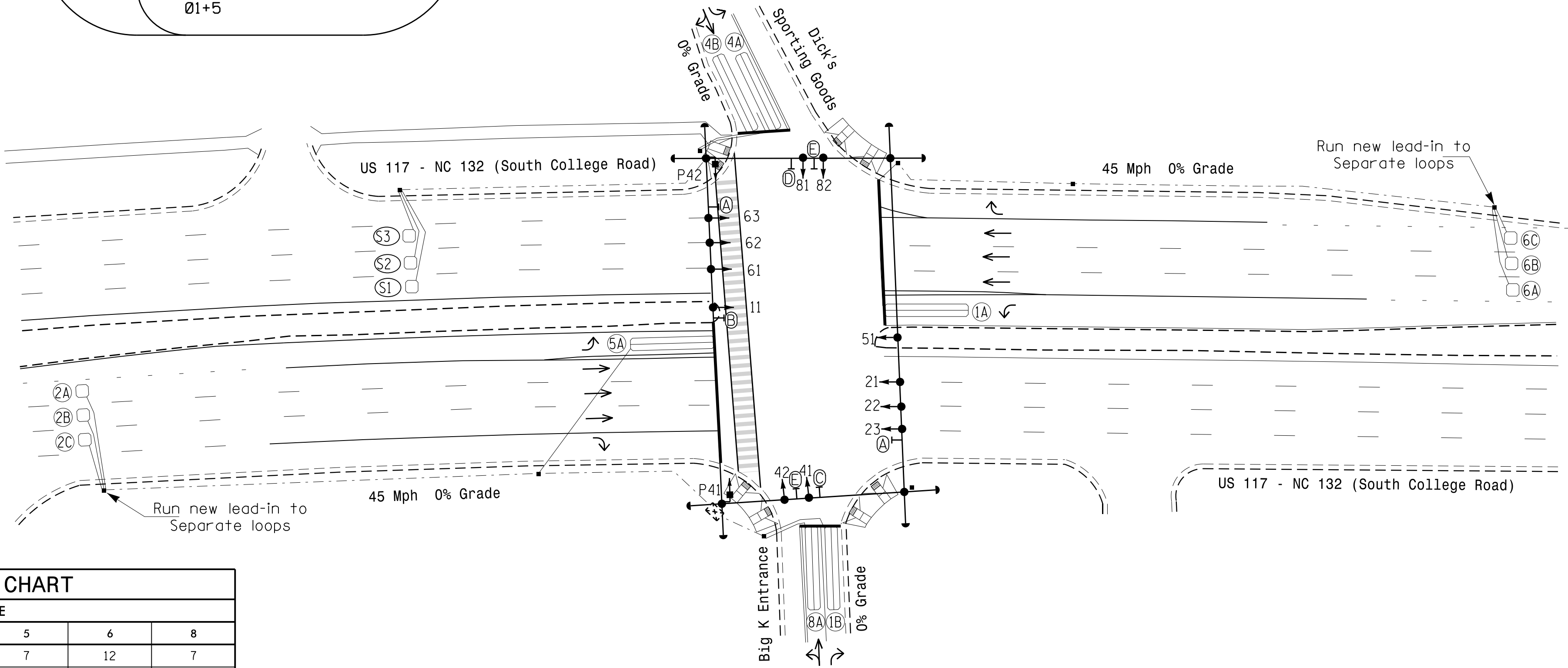
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	*10	-	-
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	3	-	-
2A	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
2C	6X6	300	4	Y	2	Y	Y	-	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	*10	-	-
6A	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
6C	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	-
S1	6X6	+220	5	Y	-	-	-	-	-	-	Y	-
S2	6X6	+220	5	Y	-	-	-	-	-	-	Y	-
S3	6X6	+220	5	Y	-	-	-	-	-	-	Y	-

- * Disable Phase 2 or 6 call for loops 1A and 5A during Alternate Phasing Operation.
- ** Disable Delay during Alternate Phasing Operation.

5 Phase Fully Actuated Wilmington Signal System

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. Phase 1 and/or phase 5 may be logged.
4. Set all detector units to presence mode.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. The Wilmington City Traffic Engineer will determine the hours of use for each phasing plan.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Signal system data: Controller Asset # 0212.



OASIS 2070 TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green 1 *	7	12	7	7	12	7
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	15	90	20	15	90	20
Yellow Clearance	3.0	4.5	3.2	3.0	4.5	3.2
Red Clearance	3.1	1.7	3.7	3.2	1.7	3.7
Walk 1 *	-	-	7	-	-	-
Don't Walk 1	-	-	40	-	-	-
Seconds Per Actuation *	-	1.2	-	-	1.2	-
Max Variable Initial *	-	34	-	-	34	-
Time Before Reduction *	-	15	-	-	15	-
Time To Reduce *	-	30	-	-	30	-
Minimum Gap	-	3.0	-	-	3.0	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-
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.

LEGEND

- | PROPOSED | EXISTING |
|---|----------|
| ○→ Traffic Signal Head | ●→ N/A |
| ○→ Modified Signal Head | ○→ N/A |
| ○→ Sign | ○→ N/A |
| ○→ Pedestrian Signal Head With Push Button & Sign | ○→ N/A |
| ○→ Signal Pole with Guy | ○→ N/A |
| ○→ Signal Pole with Sidewalk Guy | ○→ N/A |
| ○→ Inductive Loop Detector | ○→ N/A |
| ○→ Controller & Cabinet | ○→ N/A |
| ○→ Junction Box | ○→ N/A |
| ○→ 2-in Underground Conduit | ○→ N/A |
| ○→ Right of Way | ○→ N/A |
| ○→ Directional Arrow | ○→ N/A |
| ○→ Right Arrow "ONLY" Sign (R3-5R) | ○→ (A) |
| ○→ U-Turn "MUST YIELD" Sign (R3-27) | ○→ (B) |
| ○→ Left Arrow "ONLY" Sign (R3-5L) | ○→ (C) |
| ○→ Combined Through and Left Arrow Sign (R3-6L) | ○→ (D) |
| ○→ Street Sign | ○→ (E) |

Signal Upgrade

750 N. Greenfield Pkwy, Garner, NC 27529

US 117 - NC 132 (S College Rd) at Big K / Dick's Sporting Goods

Division 3 New Hanover County Wilmington

PLAN DATE: September 2015 PREPARED BY: Jeff Spence REVIEWED BY: PLA

REVISIONS: _____ INIT. DATE: _____

SCALE: 0 40 1"=40'

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER

PAULELLA L. ALEXANDER

023489

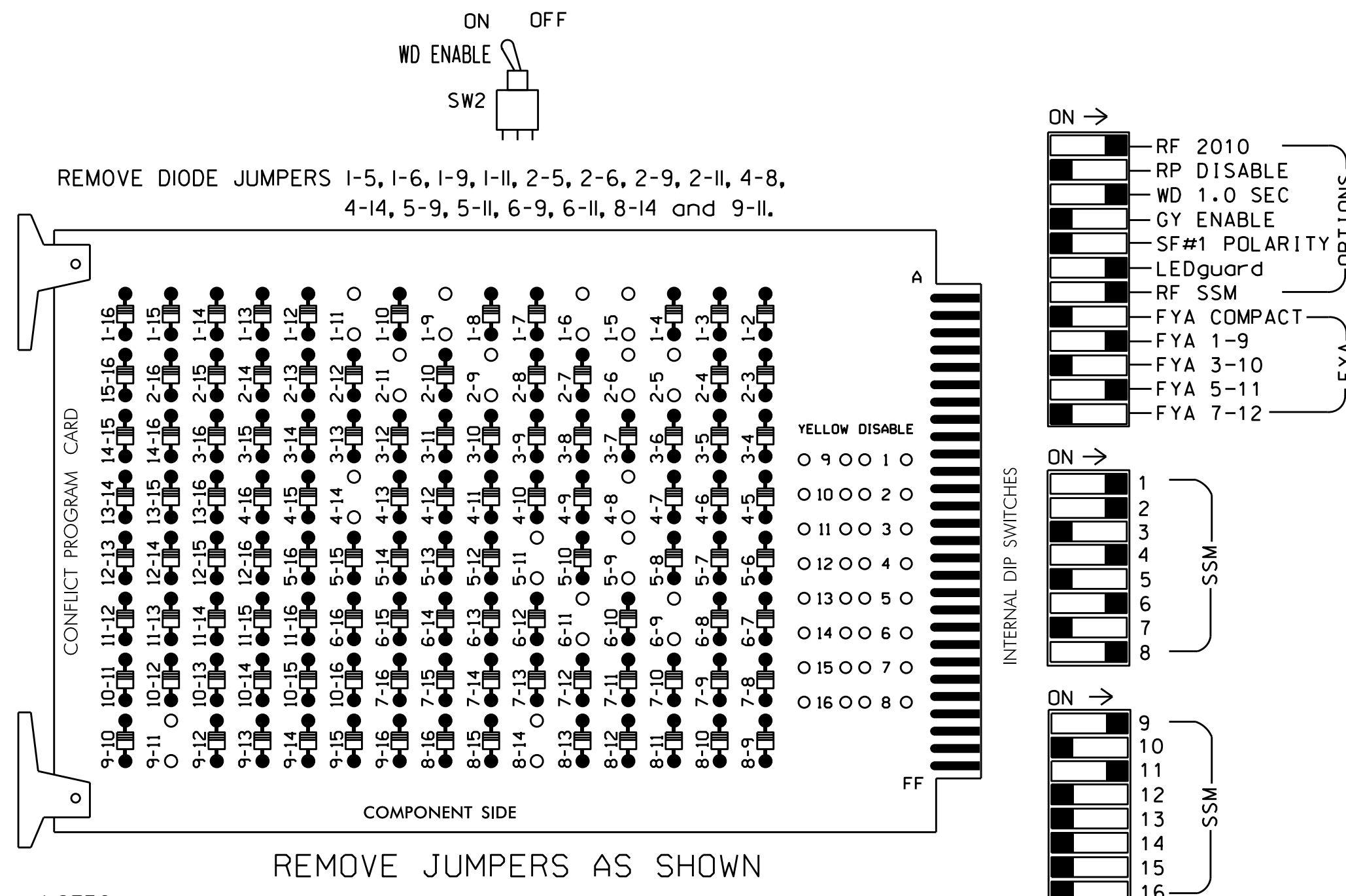
3/30/16

SIG. INVENTORY NO. 03-0212

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 7:residence

EDI MODEL 2010ECL-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.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = 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.
- 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 3,5,7, 10,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 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 phase 4 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S4P,S5,S6,S8,S9,S12
 PHASES USED.....1,2,4,4 PED,5,6,8
 OVERLAP "A".....1+2
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 OVERLAP "D".....NOT USED

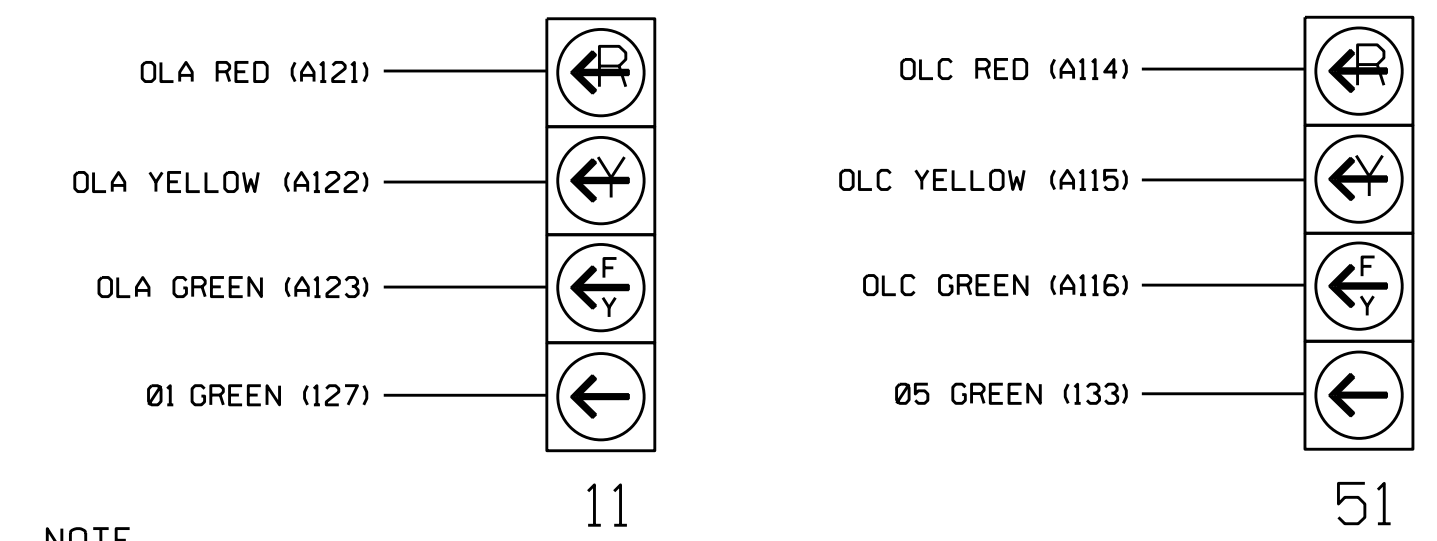
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	9	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	82	21, 22,23	NU	41,42	P41, P42	51★	61, 62,63	NU	81,82	NU	11★	NU	NU	51★	NU	NU	NU	
RED	*	128			101			134		107									
YELLOW		129			102		*	135		108									
GREEN		130			103			136		109									
RED ARROW														A121			A114		
YELLOW ARROW		126												A122			A115		
FLASHING YELLOW ARROW														A123			A116		
GREEN ARROW	127	127						133											
Hand icon																			
Person icon																			

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

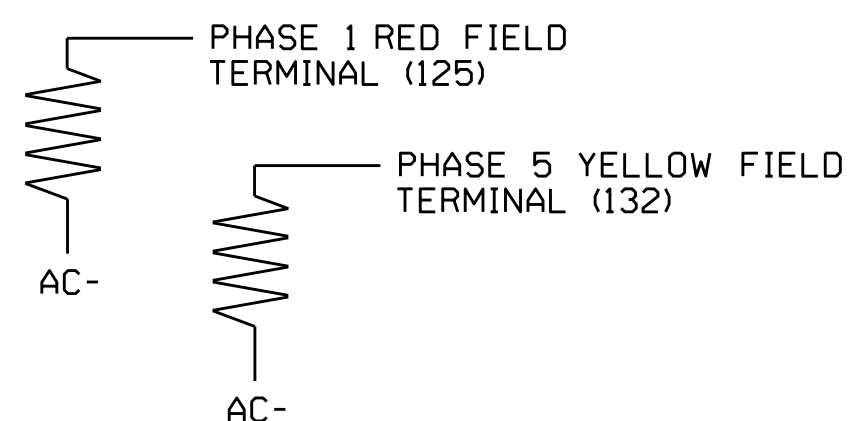
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	∅ 1	∅ 1	∅ 2	∅ 2	∅ 3	∅ 4	S	S	SYS. DET. S1	S	S	NOT USED	S	FS
FILE "I" L	1A	1B	2B	2C	∅ 4	4A	S	S	SYS. DET. S2	S	S	∅ 4 PED	S	DC ISOLATOR
FILE "J" U	∅ 5	∅ 6	∅ 6	∅ 8	∅ 8	8A	S	S	SYS. DET. S3	S	S	S	S	S
FILE "J" L	5A	6A	6C	NOT USED	NOT USED	NOT USED	S	S	NOT USED	S	S	S	S	S

EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



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
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			10
	-	J4U	48	18★	26	6	Y	Y	Y		3
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
2A	TB2-7,8	I2L	43	5	12	2	Y	Y			
2B	TB2-9,10	I3U	63	25	32	2	Y	Y			
2C	TB2-11,12	I3L	76	38	42	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			10
5A ²	TB3-1,2	J1U	55	17	5	5	Y	Y			10
	-	I4U	47	9★	22	2	Y	Y	Y		3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
6C	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
* S1	TB6-9,10	I9U	60	22	11	SYS					
* S2	TB6-11,12	I9L	62	24	13	SYS					
* S3	TB7-9,10	J9U	59	21	15	SYS					
PED PUSH BUTTONS											
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					

NOTE:
 INSTALL DC ISOLATOR IN INPUT FILE SLOT I12.

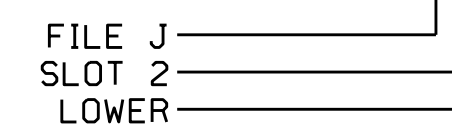
- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.

★ See Input Page Assignment programming details on sheets 3-4.

* System detector only. Remove the vehicle phase assigned to this detector in the default programming.

Remove the following jumpers, if present:
 From TB2-5 to TB2-7, and from TB2-6 to TB2-8
 From TB3-5 to TB3-7, and from TB3-6 to TB3-8

INPUT FILE POSITION LEGEND: J2L



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.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0212
 DESIGNED: September 2015
 SEALED: 3/30/2016
 REVISED: N/A

Electrical Detail - Sheet 1 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	US 117-NC 132 (S College Rd) at Big K/Dick's Sporting Goods	SEAL
	Division 3 New Hanover County PLAN DATE: March 2016 REVIEWED BY: BAS PREPARED BY: S. Armstrong REVIEWED BY: REVISIONS INIT. DATE DocuSigned by: Keith M. Mims 4/11/2016 SIG. INVENTORY NO. 03-0212	

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).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON
AND RED CLEAR ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #50 ON
SET OUTPUT ASSIGNMENT #51 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #42 ON
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(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: :XX
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
RED CLEAR (0=PARENT.0.1-25.5 SEC)...0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: :12345678910111213141516
VEH OVL PARENTS: :XX
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
RED CLEAR (0=PARENT.0.1-25.5 SEC)...0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS), PRESS 'NEXT' TO ADVANCE TO PAGE 2.

PAGE 2: VEHICLE OVERLAP 'A' SETTINGS
PHASE: :12345678910111213141516
VEH OVL PARENTS: :X
VEH OVL NOT VEH: :
VEH OVL NOT PED: :
VEH OVL GRN EXT: :
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - 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
RED CLEAR (0=PARENT.0.1-25.5 SEC)...0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

PRESS '+' TWICE

PAGE 2: VEHICLE OVERLAP 'C' SETTINGS
PHASE: :12345678910111213141516
VEH OVL PARENTS: :X
VEH OVL NOT VEH: :
VEH OVL NOT PED: :
VEH OVL GRN EXT: :
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - 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
RED CLEAR (0=PARENT.0.1-25.5 SEC)...0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0212
DESIGNED: September 2015
SEALED: 3/30/2016
REVISED: N/A

Electrical Detail - Sheet 2 of 5

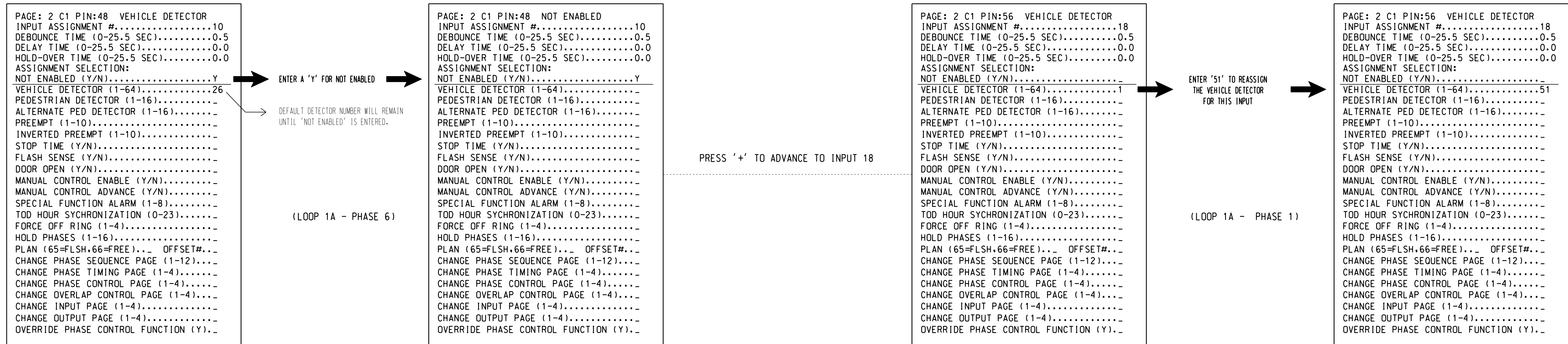
	ELECTRICAL AND PROGRAMMING DETAILS FOR: US 117-NC 132 (S College Rd) at Big K/Dick's Sporting Goods		SEAL
	Division 3 New Hanover County Wilmington	PREPARED BY: S. Armstrong REVIEWED BY: BAS DATE: March 2016	
REVISIONS		INIT.	DATE
DocuSigned by: Keith M. Mims		4/11/2016	
SIG. INVENTORY NO. 03-0212		DATE	

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 1A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #10 (DETECTOR 26) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 6 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 51 TO INPUT #18 SO THAT THE DELAY ON LOOP 1A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 10 IS REACHED.

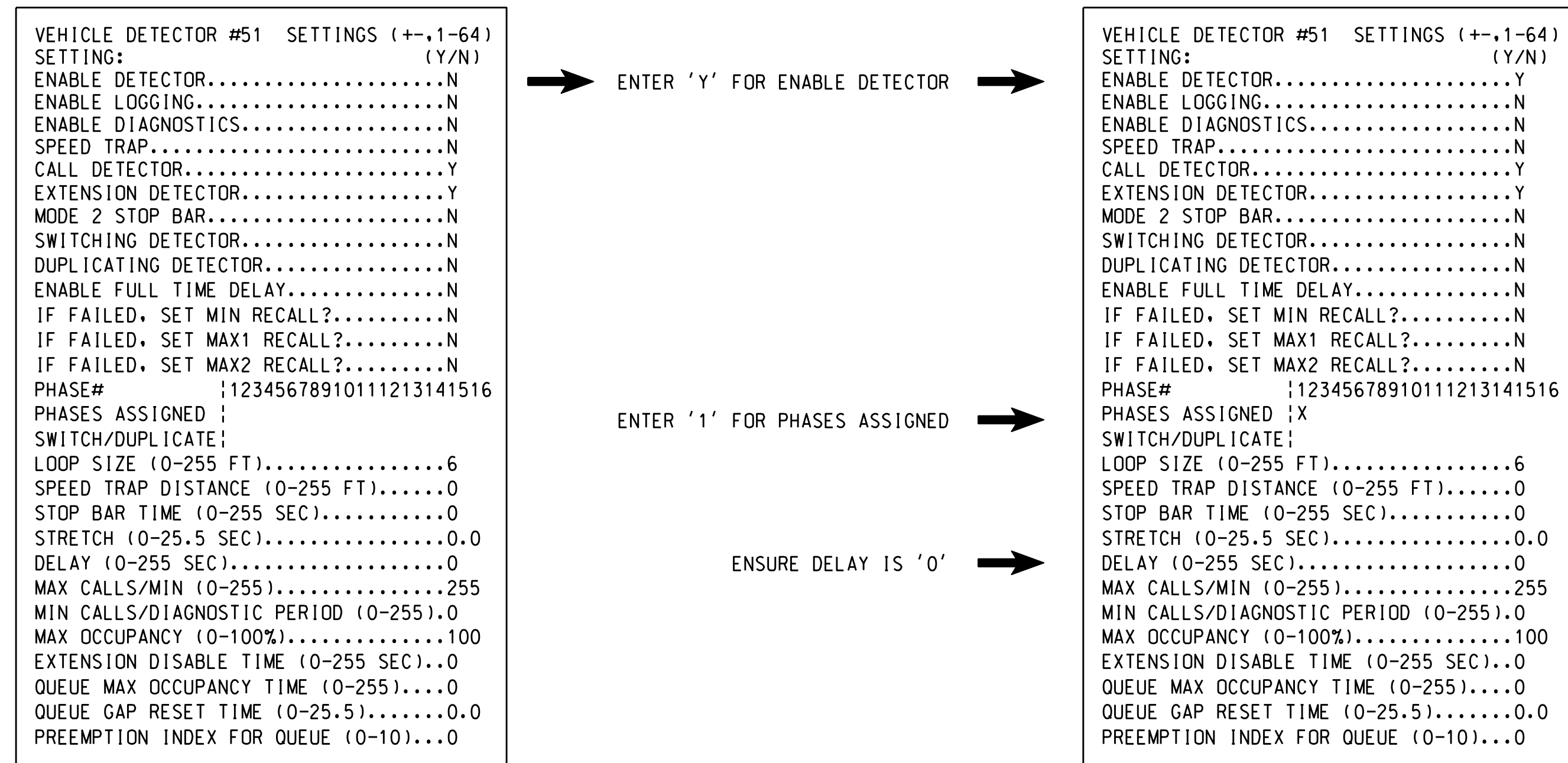


PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 1A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #51.



DETECTOR PROGRAMMING COMPLETE

NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0212
DESIGNED: September 2015
SEALED: 3/30/2016
REVISED: N/A

Electrical Detail - Sheet 3 of 5

	ELECTRICAL AND PROGRAMMING DETAILS FOR: US 117-NC 132 (S College Rd) at Big K/Dick's Sporting Goods		SEAL
	Division 3 New Hanover County PLAN DATE: March 2016 PREPARED BY: S. Armstrong	Wilmington REVIEWED BY: BAS REVIEWED BY:	

SIG. INVENTORY NO. 03-0212

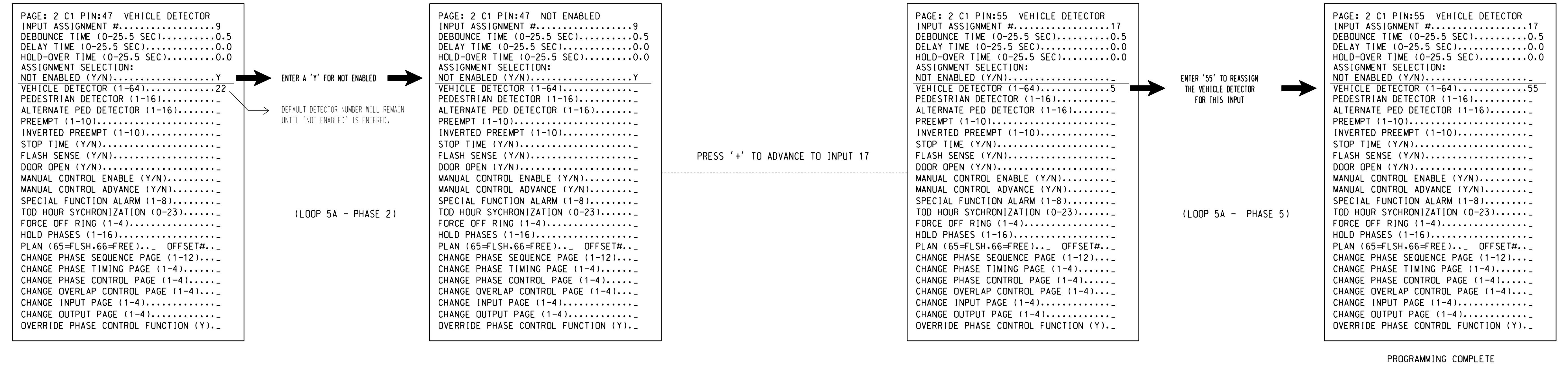
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INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9 (DETECTOR 22) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 2 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 55 TO INPUT #17 SO THAT THE DELAY ON LOOP 5A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

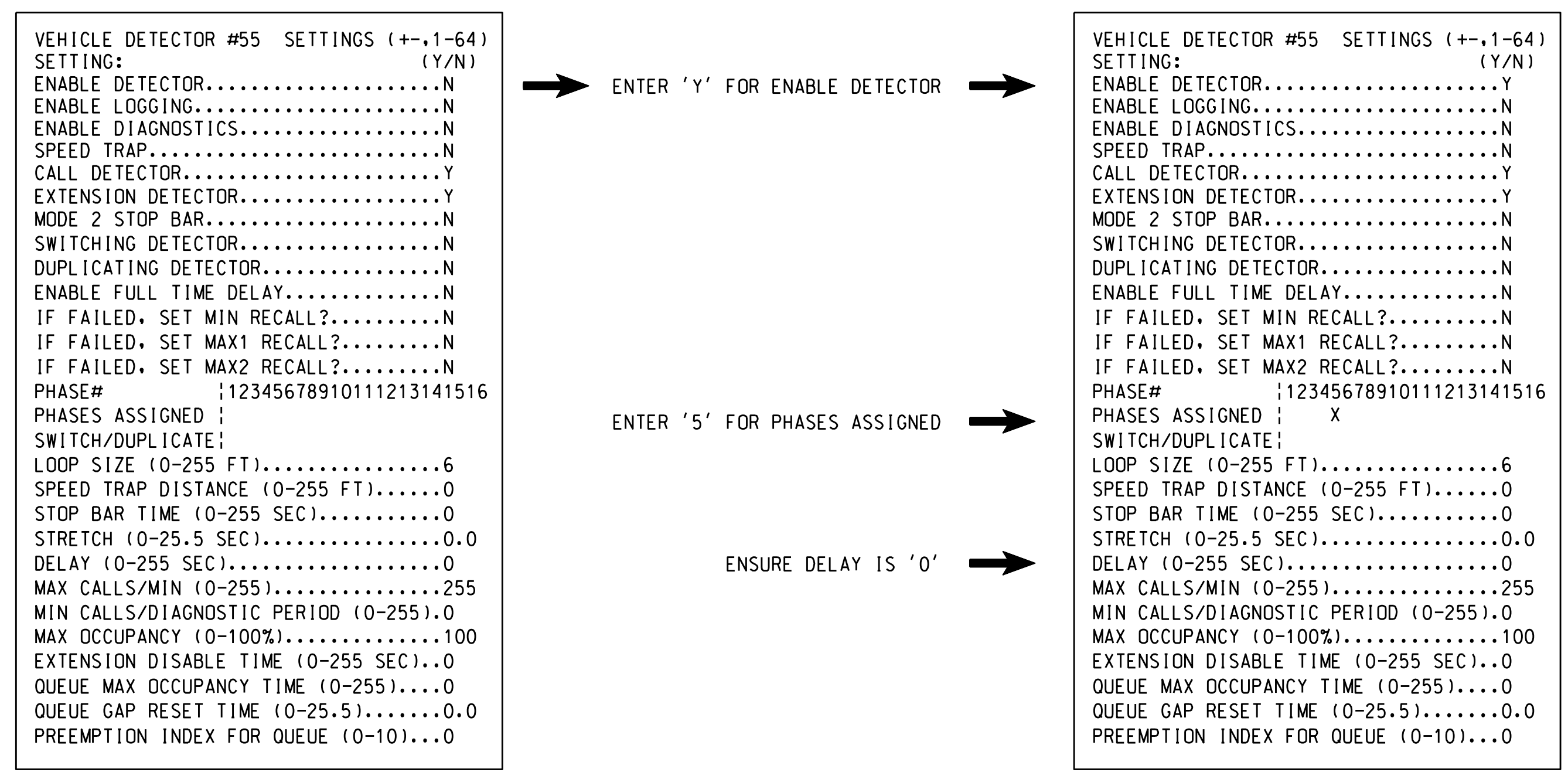
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 9 IS REACHED.



SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 5A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.



NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0212
DESIGNED: September 2015
SEALED: 3/30/2016
REVISED: N/A

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Electrical Detail - Sheet 4 of 5

	DETAILS FOR: US 117-NC 132 (S College Rd) at Big K/Dick's Sporting Goods		SEAL
	Division 3 New Hanover County Wilmington		
PLAN DATE: March 2016	REVIEWED BY: BAS		
PREPARED BY: S. Armstrong	REVIEWED BY:		
REVISIONS	INIT.	DATE	
DocuSigned by: Keith M. Minus 4/11/2016			DATE
SIG. INVENTORY NO. 03-0212			

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

<u>PHASING</u>	<u>INPUTS PAGE</u>	<u>OVERLAPS PAGE</u>
ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	1
ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY PAGE CHANGE EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN PAGE CHANGE EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

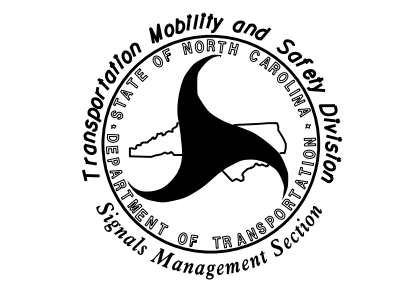
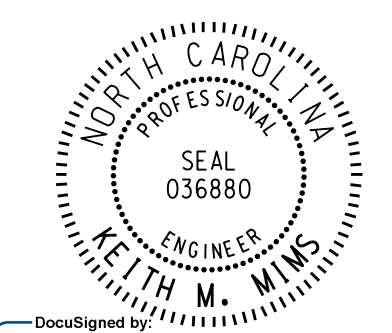
OVERLAPS PAGE 2: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.

INPUTS PAGE 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 03-0212
DESIGNED: September 2015
SEALED: 3/30/2016
REVISED: N/A

Electrical Detail - Sheet 5 of 5

<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p>Prepared In the Offices of:</p>  <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 117-NC 132 (S College Rd) at Big K/Dick's Sporting Goods</p> <p>Division 3 New Hanover County Wilmington</p> <p>PLAN DATE: March 2016 REVIEWED BY: BAS</p> <p>PREPARED BY: S. Armstrong REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISIONS	INIT.	DATE										<p>SEAL</p>  <p>DocuSigned by: Keith M. Mims 4/11/2016</p> <p>SIG. INVENTORY NO. 03-0212</p>
REVISIONS	INIT.	DATE												

31-0486-2016-13154
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 sarmstrong

PHASING DIAGRAM

ALTERNATE PHASING DIAGRAM

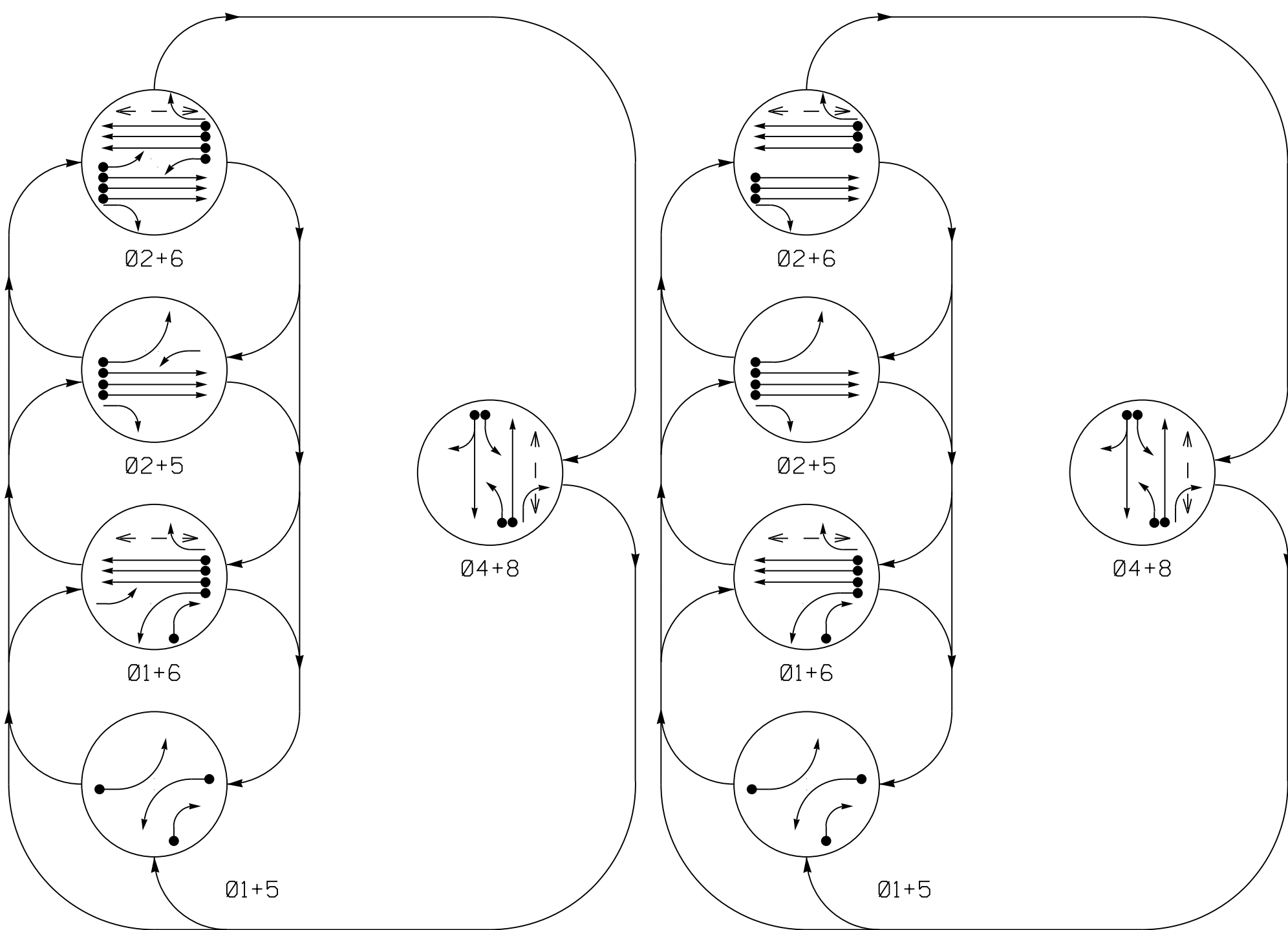


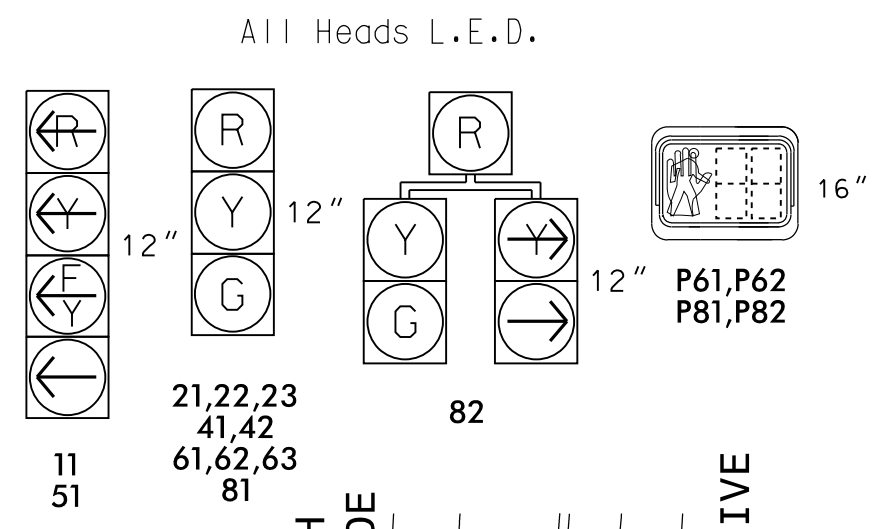
TABLE OF OPERATION

Table with 7 columns: SIGNAL FACE, PHASE (01+5, 02+5, 02+6, 04+8, FLASH), and movement indicators (R, G, Y, W, DW, DRK).

ALTERNATE PHASING TABLE OF OPERATION

Table with 7 columns: SIGNAL FACE, PHASE (01+5, 02+5, 02+6, 04+8, FLASH), and movement indicators (R, G, Y, W, DW, DRK).

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

Table with columns: LOOP, SIZE (FT), DISTANCE FROM STOPBAR (FT), TURNS, NEW LOOP, PHASE, CALLING, EXTENSION, FULL TIME DELAY, STRETCH TIME, DELAY TIME, SYSTEM LOOP, NEW CARD.

* Disable Delay During Alternate Phasing Operation.
** Disable Phase 2+6 Call for Loop 1A and 5A During Alternate Phasing.

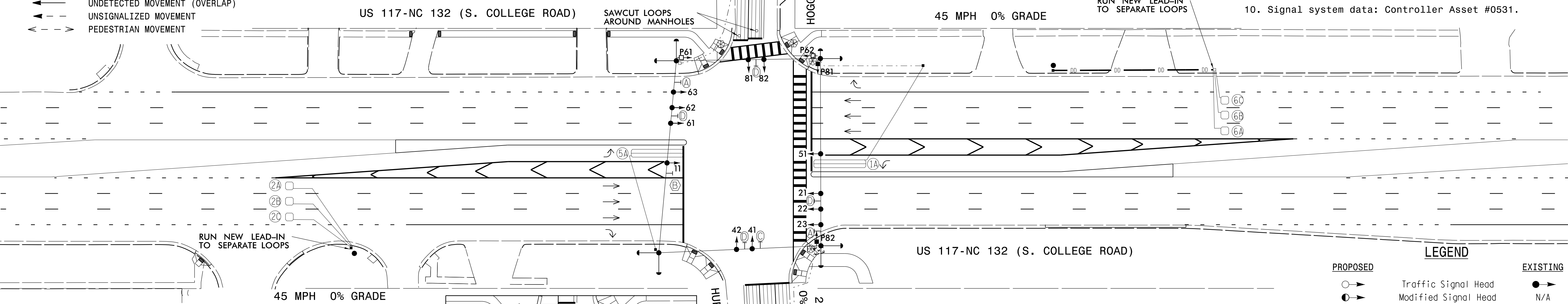
5 Phase Fully Actuated (Wilmington Signal System)

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. Reposition existing signal heads numbered 11 and 51.
4. Phase 1 and/or phase 5 may be lagged.
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. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
10. Signal system data: Controller Asset #0531.

PHASING DIAGRAM DETECTION LEGEND

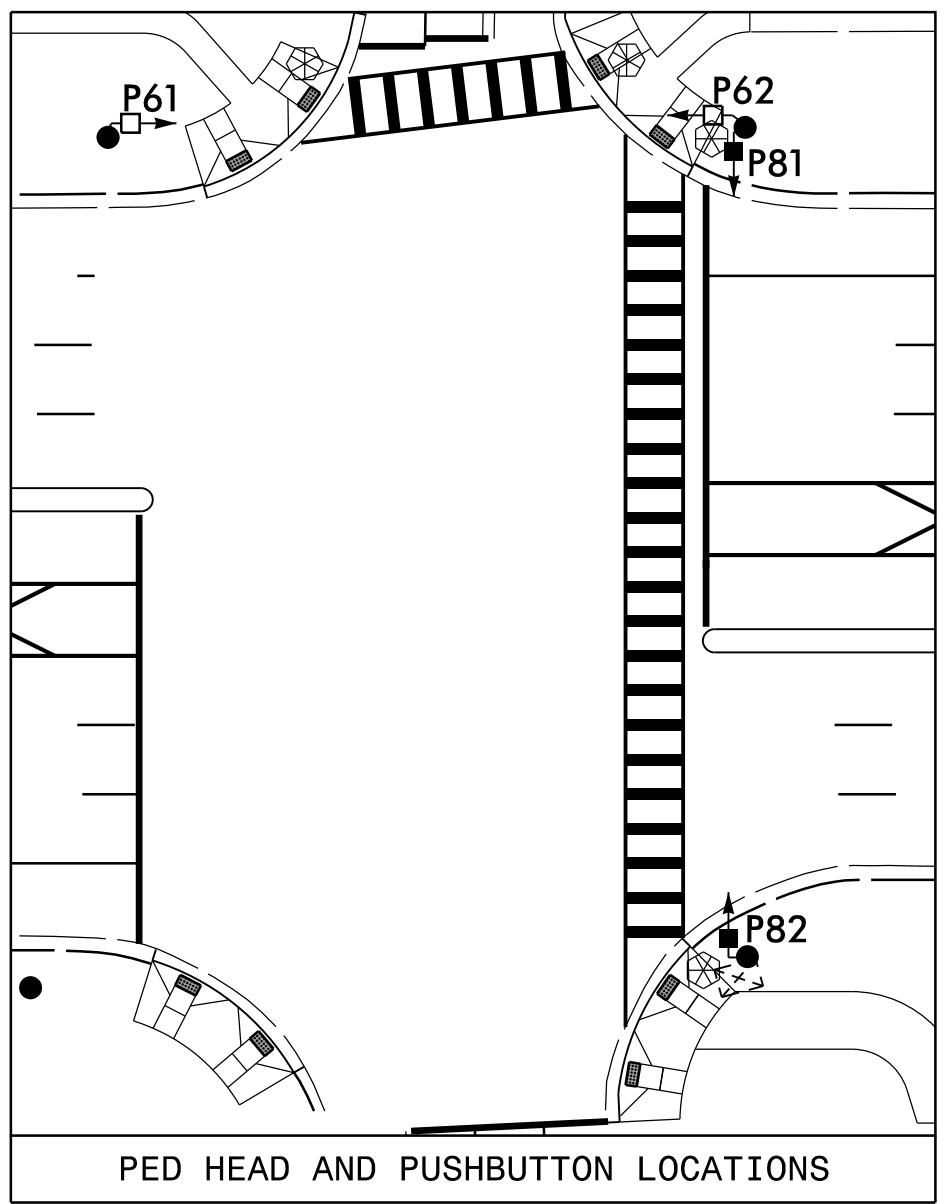
- DETECTED MOVEMENT
UNDETECTED MOVEMENT (OVERLAP)
UNSIGNALIZED MOVEMENT
PEDESTRIAN MOVEMENT



OASIS 2070 TIMING CHART

Timing chart table with columns: FEATURE, PHASE (1, 2, 4, 5, 6, 8), and timing values for Min Green, Extension, Max Green, Yellow Clearance, Red Clearance, Walk, Don't Walk, Seconds Per Actuation, Max Variable Initial, Time Before Reduction, Time To Reduce, Minimum Gap, Recall Mode, Vehicle Call Memory, Dual Entry, Simultaneous Gap.

* 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.



LEGEND

- PROPOSED: Traffic Signal Head, Modified Signal Head, Sign, Pedestrian Signal Head, Signal Pole with Guy, Inductive Loop Detector, Junction Box, 2-in Underground Conduit, Right of Way, Directional Arrow, Wheelchair Ramp, Type I Pushbutton Post & Sign, Directional Drill.
EXISTING: N/A, N/A, N/A, N/A, N/A, N/A, N/A, N/A.

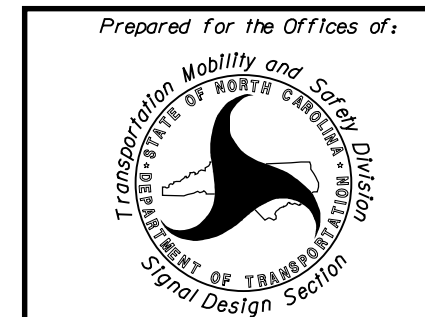
SIGNS

- PROPOSED: (A) Right Arrow "ONLY" Sign (R3-5R), (B) "U-TURN YIELD TO RIGHT TURN" Sign (R10-16), (C) Left Arrow "ONLY" Sign (R3-5L), (D) Street Name Sign.
EXISTING: (A) Right of Way, (B) Directional Arrow, (C) Wheelchair Ramp, (D) Type I Pushbutton Post & Sign.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY: PARSONS
5540 CENTERVIEW DR., SUITE 201
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO. F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION



US 177-NC 132 (S. College Road) at Hoggard Drive / Hurst Drive
Division 3 New Hanover County Wilmington
PLAN DATE: March 2016
REVIEWED BY: J. M. Pickens

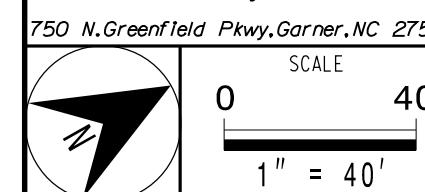
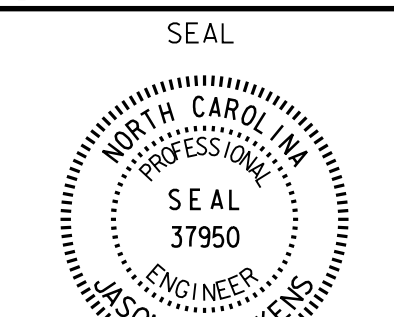


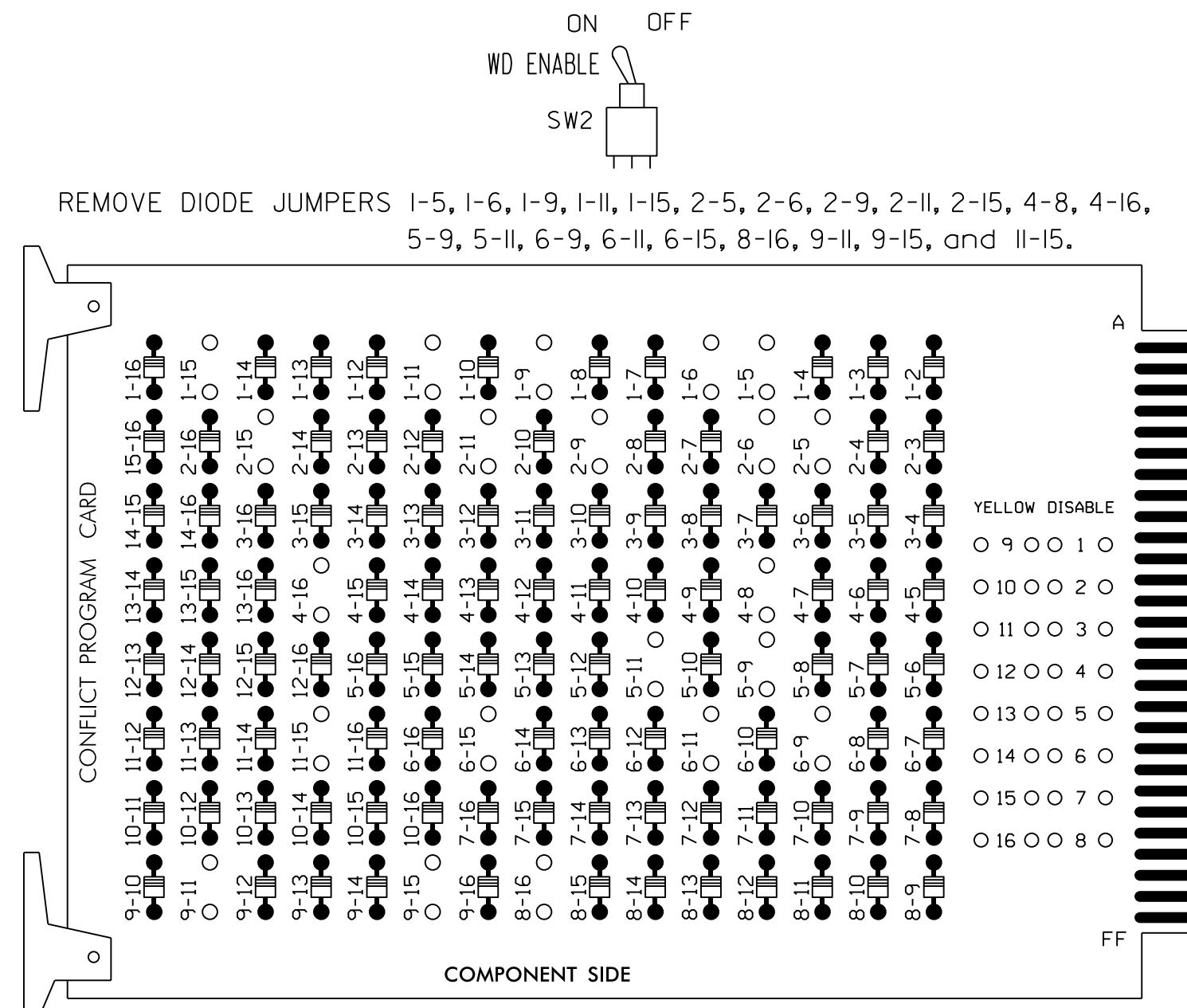
Table with columns: REVISIONS, INIT., DATE.

Drawn by: Jason M. Pickens 5/5/2016
DATE:
SIG. INVENTORY NO. 03-0531

05-MAY-2016 13:05
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\$\$\$\$\$USERNAME\$\$\$\$\$

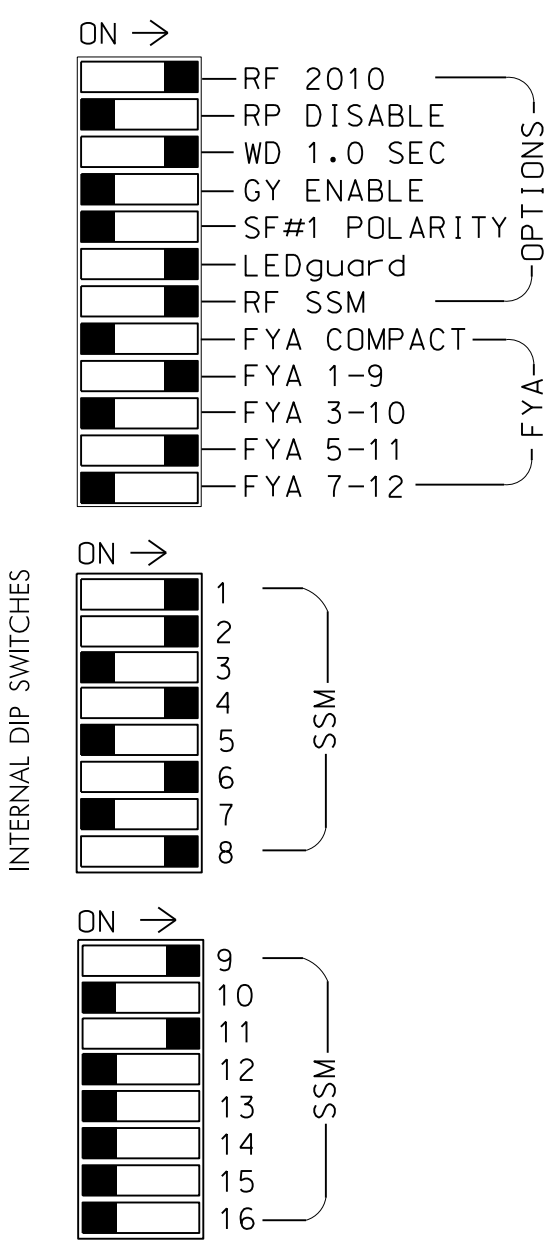
EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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.



■ = DENOTES POSITION OF SWITCH

NOTES

- 1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file.
2. Ensure that Red Enable is active at all times during normal operation.
3. Program phases 4 and 8 for Dual Entry.
4. Enable Simultaneous Gap-Out for all phases.
5. Program phase 2 and 6 for Variable Initial and Gap Reduction.
6. Program phases 2 and 6 for Start Up In Green.
7. Program phases 6 and 8 for 'STARTUP PED CALL'.
8. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
9. The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET332 W/ AUX
SOFTWAREECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..18 WITH AUX.
LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S6P,S8,S8P,S9,S12
PHASES USED.....1,2,4,5,6,8,6PED,8PED
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

Table with columns for LOAD SWITCH NO., PHASE, SIGNAL HEAD NO., and columns for signal head terminals (S1-S14). Includes rows for RED, YELLOW, GREEN, and flashing arrows.

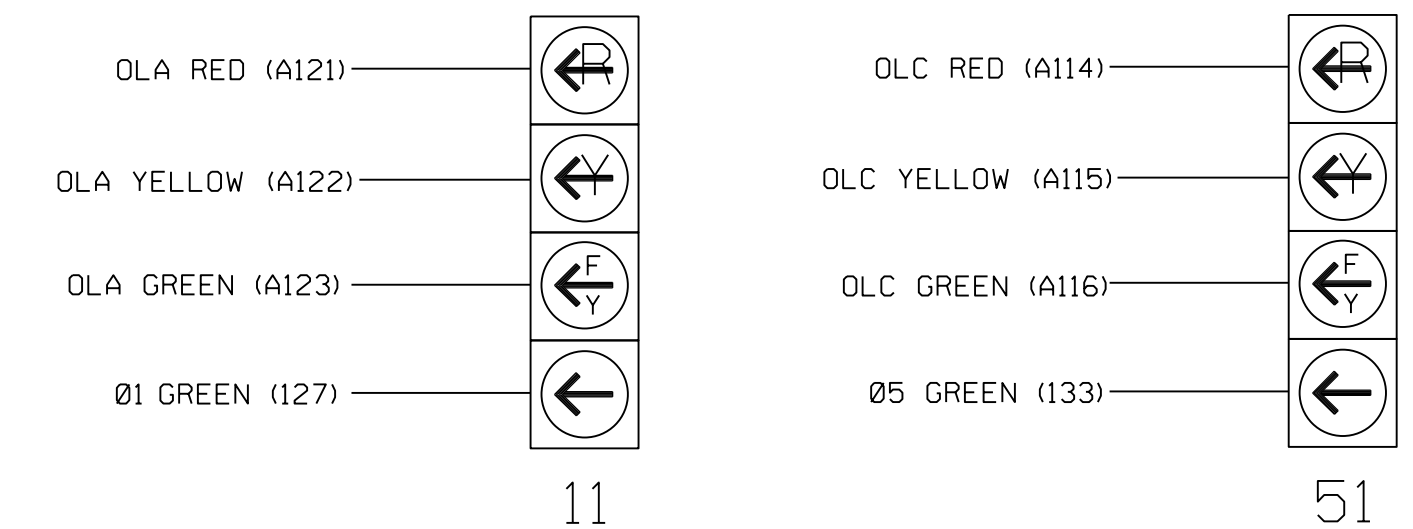
NU = Not Used

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

* See pictorial of head wiring in detail below.

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 for programming instructions.

INPUT FILE POSITION LAYOUT

(front view)

Table showing input file positions 1-14 with columns for FILE U, FILE L, and various terminal assignments (e.g., 1A, 1B, 2B, 4A, 4B, 5A, 6A, 6C, 8A, 8B).

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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

Table with columns: 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. Includes rows for 1A, 2A, 2B, 2C, 4A, 4B, 5A, 6A, 6B, 6C, 8A, 8B, PED PUSH BUTTONS, P61,P62, P81,P82.

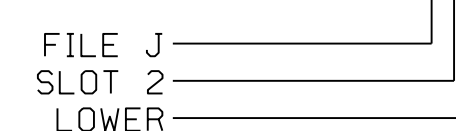
NOTE:

INSTALL DC ISOLATORS IN INPUT FILE SLOT I13.

- 1 Add jumper from I1-W to J4-W, on rear of input file.
2 Add jumper from J1-W to I4-W, on rear of input file.

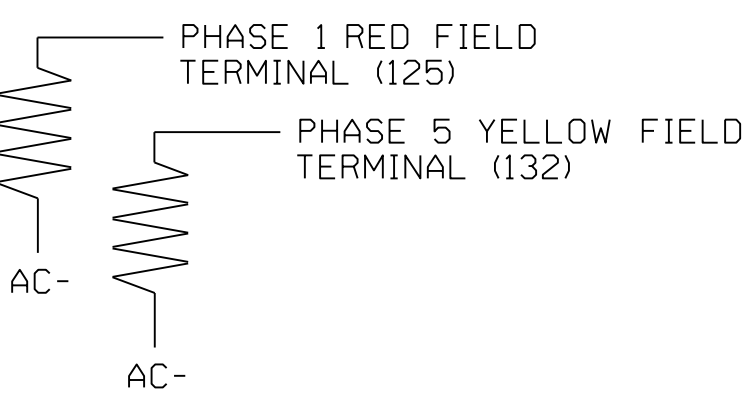
* See Input Page Assignment programming details on sheets 3 and 4.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

Table with columns: ACCEPTABLE VALUES, VALUE (ohms), WATTAGE. Values: 1.5K - 1.9K, 25W (min); 2.0K - 3.0K, 10W (min).



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.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0531
DESIGNED: March 2016
SEALED: March 30, 2016
REVISED:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade Electrical Detail Sheet 1 of 5. Includes project details for US 117-NC 132, Hoggard Drive / Hurst Drive, and signatures of Jason M. Pickens.

PLANS PREPARED BY: PARSONS. 5640 CENTERVIEW DR., SUITE 217, RALEIGH, NORTH CAROLINA 27606. NC LICENSE NO: F-0246. FOR NORTH CAROLINA DEPT. OF TRANSPORTATION.

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).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON
AND RED CLEAR ON PHASE #1 IS ON

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #50 ON
SET OUTPUT ASSIGNMENT #51 OFF

PRESS '+'

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #1 IS ON

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #42 ON
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE

- OUTPUT 42 = Overlap C Red
- OUTPUT 43 = Overlap C Yellow
- OUTPUT 44 = Overlap C Green
- OUTPUT 50 = Overlap A Red
- OUTPUT 51 = Overlap A Yellow
- OUTPUT 52 = Overlap A Green

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(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: XX
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)...0.0

← NOTICE GREEN FLASH

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
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)...0.0

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS 'NEXT' TO ADVANCE TO PAGE 2.

NOTICE PAGE 2 →

PAGE 2: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH: :
VEH OVL NOT PED: :
VEH OVL GRN EXT: :
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW _ 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)...0.0

← NOTICE GREEN FLASH

PRESS '+' TWICE

NOTICE PAGE 2 →

PAGE 2: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X
VEH OVL NOT VEH: :
VEH OVL NOT PED: :
VEH OVL GRN EXT: :
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW _ 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)...0.0

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0531
DESIGNED: March 2016
SEALED: March 30, 2016
REVISED:

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

Signal Upgrade Electrical Detail Sheet 2 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 117-NC 132 (S. College Road) at Hoggard Drive / Hurst Drive

Prepared for the Offices of: Mobility and Safety Division, STATE OF NORTH CAROLINA, Signal Management Section

750 N. Greenfield Pkwy, Garner, NC 27529

PLANS PREPARED BY: **PARSONS**
5640 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO: F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

Division 3 New Hanover County Wilmington

PLAN DATE: March 2016 REVIEWED BY:

PREPARED BY: J. M. Pickens REVIEWED BY:

REVISIONS: INIT. DATE

DocuSigned by: Jason M. Pickens 3/30/2016
SEAL 37950
NORTH CAROLINA PROFESSIONAL ENGINEER
JASON M. PICKENS

SIG. INVENTORY NO. 03-0531

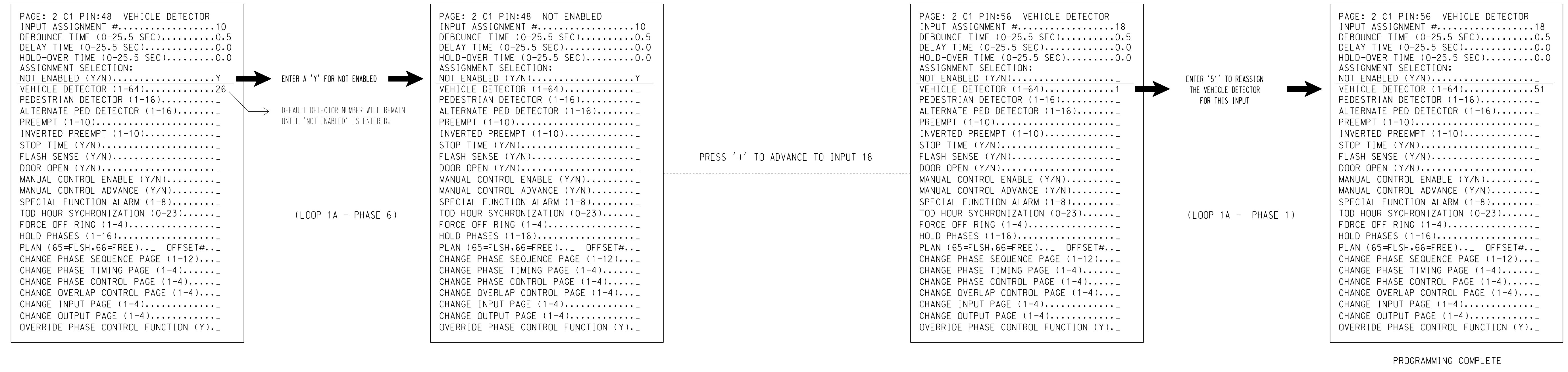
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INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 1A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #10 (DETECTOR 26) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 6 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 51 TO INPUT #18 SO THAT THE DELAY ON LOOP 1A CAN BE REDUCED FROM 10 SECONDS TO 0 SECONDS.

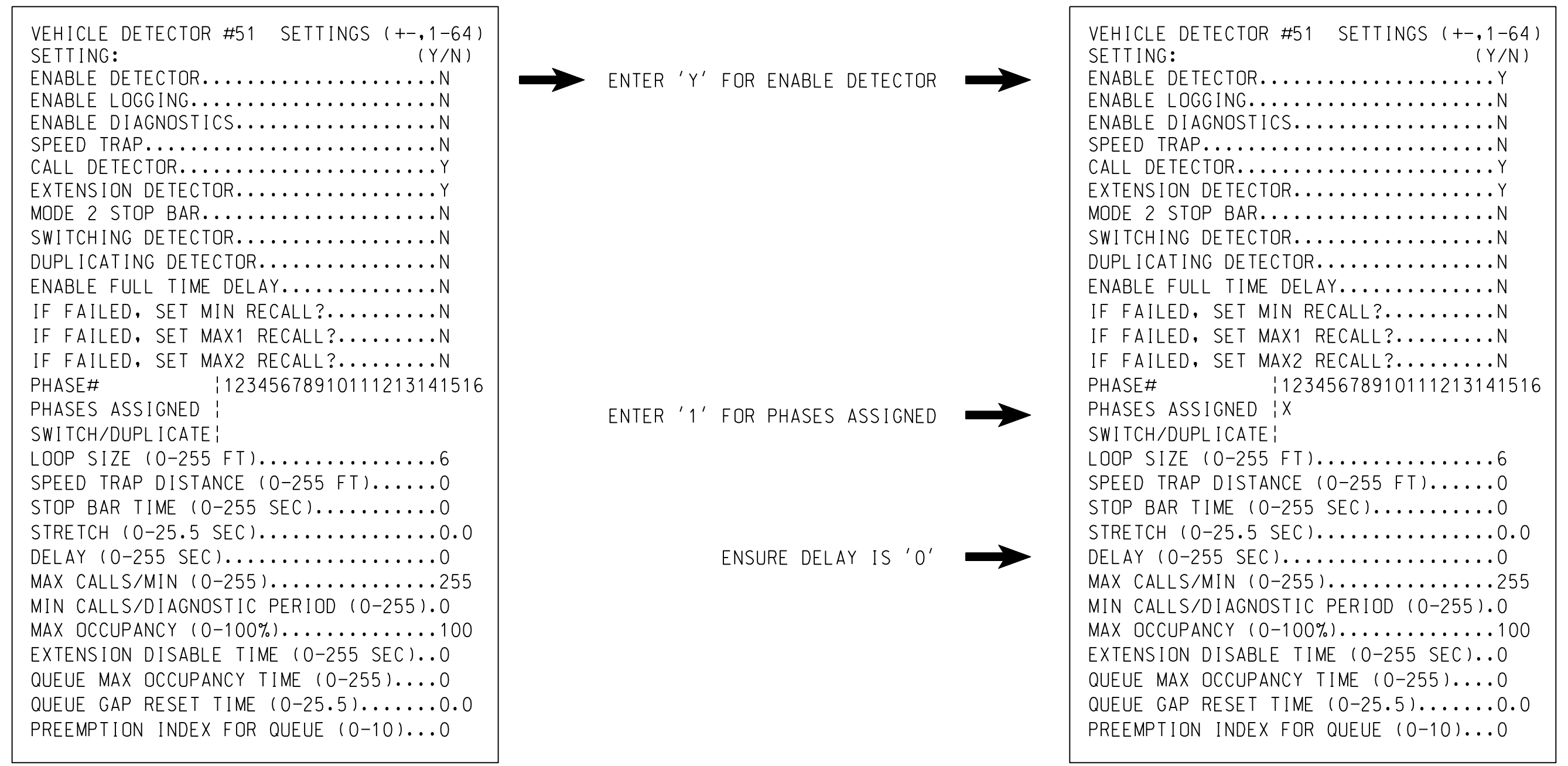
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 10 IS REACHED.



SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 1A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #51.



NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0531
DESIGNED: March 2016
SEALED: March 30, 2016
REVISED:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade Electrical Detail Sheet 3 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 117-NC 132 (S. College Road) at Hoggard Drive / Hurst Drive

Division 3 New Hanover County Wilmington

PLAN DATE: March 2016 REVIEWED BY:

PREPARED BY: J. M. Pickens REVIEWED BY:

REVISIONS: INIT. DATE

DocuSigned by: Jason M. Pickens 3/30/2016

SIG. INVENTORY NO. 03-0531

PLANS PREPARED BY:

PARSONS

5640 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27608
NC LICENSE NO: F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

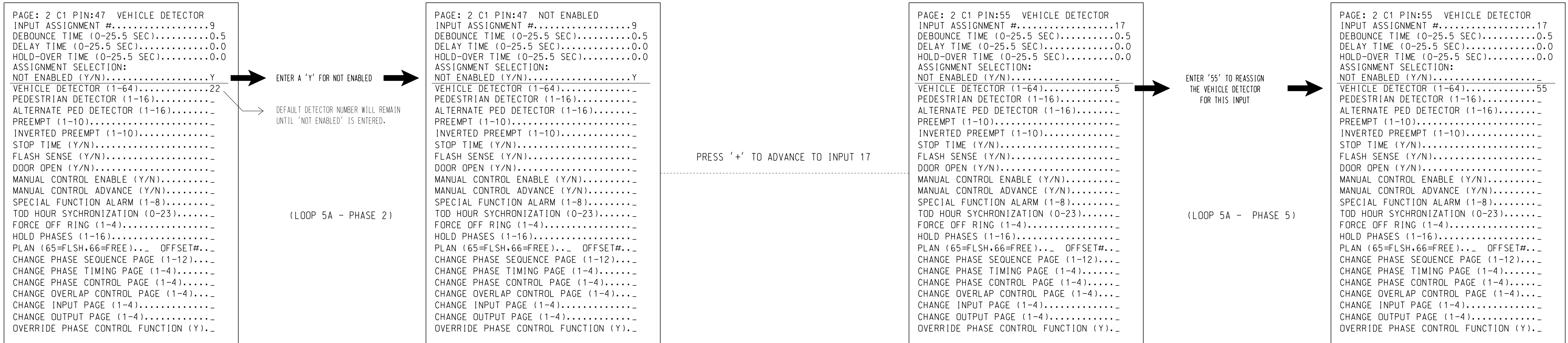
30-MAR-2016 11:37 J:\W-5203AA\T\OFF\c\k\gnal\sk\Des\gn\W-5203AA_S1C_03-0531-ELEC3.dgn

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9 (DETECTOR 22) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 2 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 55 TO INPUT #17 SO THAT THE DELAY ON LOOP 5A CAN BE REDUCED FROM 10 SECONDS TO 0 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 9 IS REACHED.

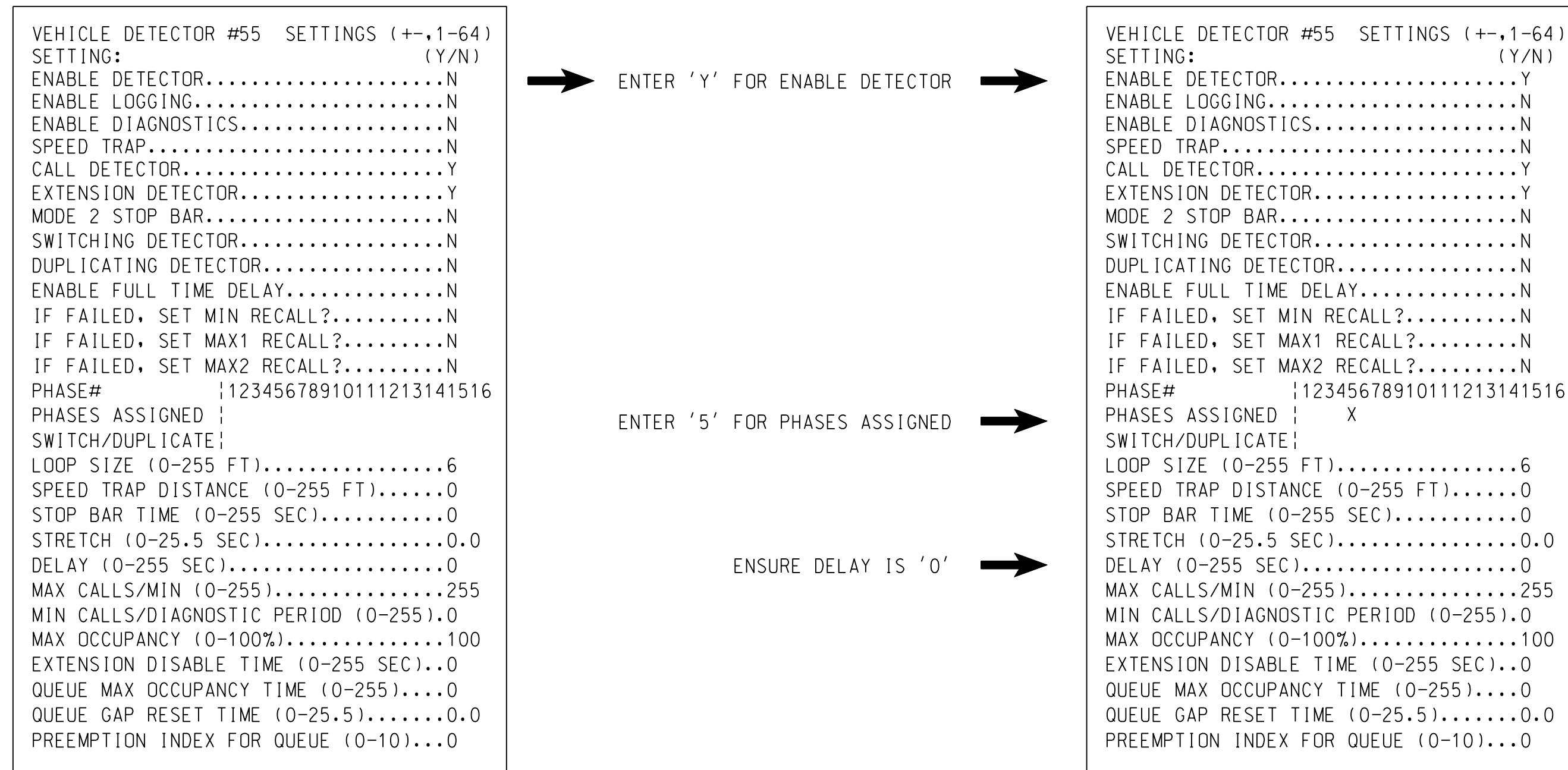


PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 5A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.



DETECTOR PROGRAMMING COMPLETE

NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0531
DESIGNED: March 2016
SEALED: March 30, 2016
REVISED:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade Electrical Detail Sheet 4 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 117-NC 132 (S. College Road) at Hoggard Drive / Hurst Drive

Division 3 New Hanover County Wilmington

PLAN DATE: March 2016 REVIEWED BY:

PREPARED BY: J. M. Pickens REVIEWED BY:

REVISIONS	INIT.	DATE

DocuSigned by: Jason M. Pickens 3/30/2016

750 N. Greenfield Pkwy, Garner, NC 27529

PARSONS
5640 CENTERVIEW DR., SUITE 217
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NC LICENSE NO: F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
JASON M. PICKENS
37950

SIG. INVENTORY NO. 03-0531

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

<u>PHASING</u>	<u>INPUTS PAGE</u>	<u>OVERLAPS PAGE</u>
ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	1
ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

IMPORTANT: IF ALT. PHASING IS USED DURING FREE RUN AND COORDINATION, DO NOT OPERATE TIME OF DAY PAGE CHANGE EVENTS CONCURRENTLY WITH COORDINATION PLAN EVENTS IN THE EVENT SCHEDULER. (EX. FREE RUN PAGE CHANGE EVENT SHOULD END BEFORE COORDINATION PLAN EVENT STARTS AND VICE-VERSA).

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.

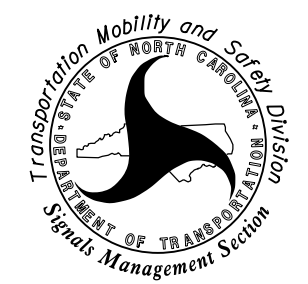

INPUTS PAGE 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0531
DESIGNED: March 2016
SEALED: March 30, 2016
REVISED:

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

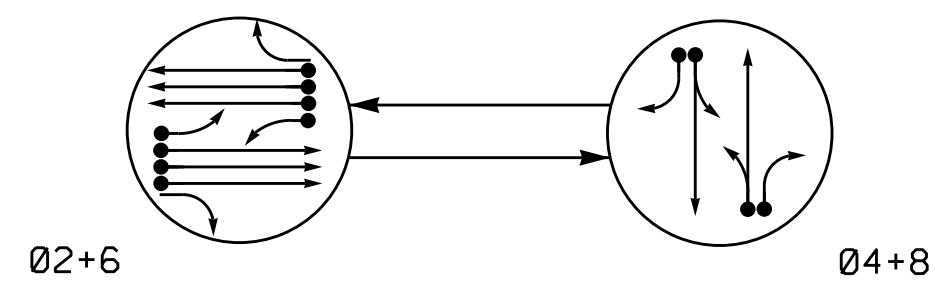
Signal Upgrade Electrical Detail Sheet 5 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 117-NC 132 (S. College Road) at Hoggard Drive / Hurst Drive		
	Division 3 PLAN DATE: March 2016 PREPARED BY: J. M. Pickens	New Hanover County REVIEWED BY: REVIEWED BY:	
REVISIONS			DocuSigned by: Jason M. Pickens 2025-03-30 10:46:16 AM EST
INIT. DATE			SIG. INVENTORY NO. 03-0531

PLANS PREPARED BY:
PARSONS
5540 CENTERVIEW DR., SUITE 217
RALEIGH, NORTH CAROLINA 27606
NC LICENSE NO: F-0246
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

2 Phase Fully Actuated Wilmington Signal System

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

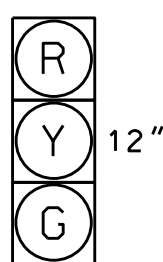
- ←● DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ←--- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø 2+6	Ø 4+8	FLIGHT
21,22,23,24	G	R	Y
41,42	R	G	R
61,62,63,64	G	R	Y
81,82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.

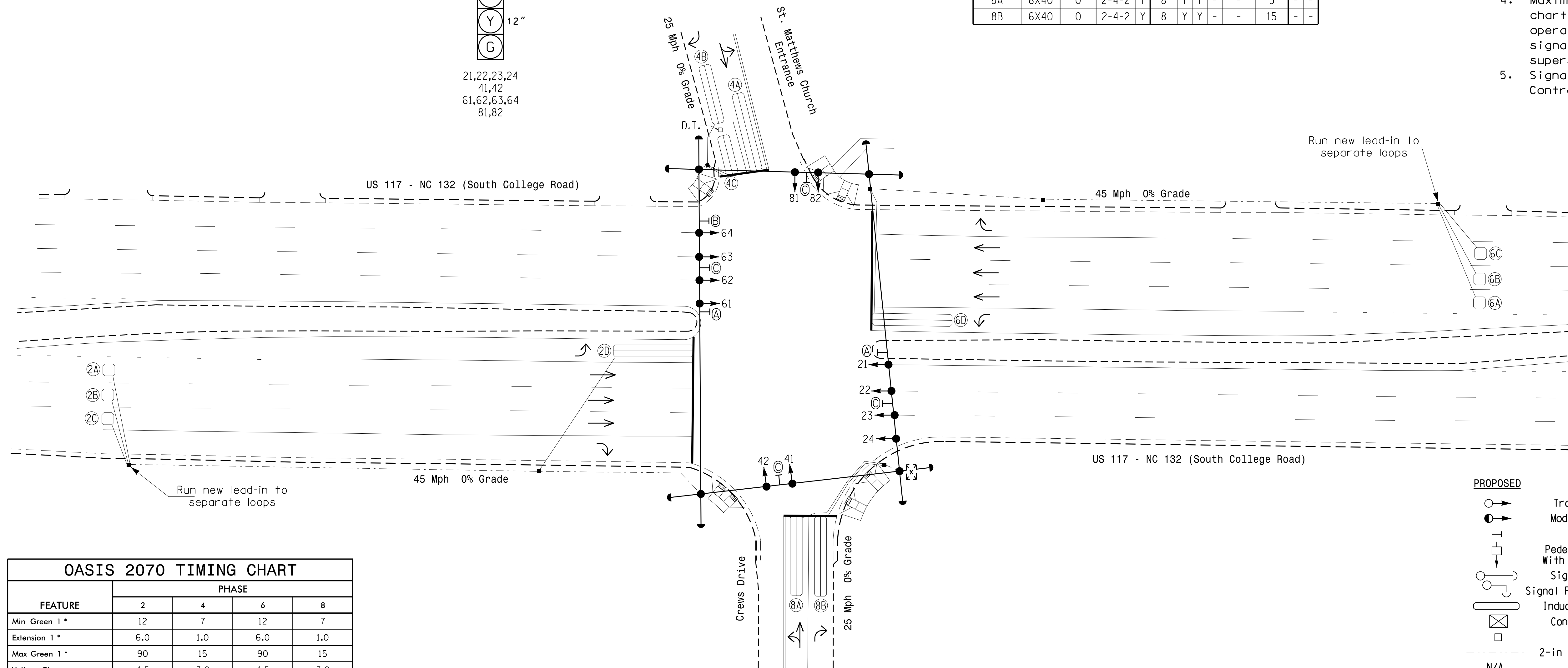


21,22,23,24
41,42
61,62,63,64
81,82

LOOP	INDUCTIVE LOOPS				DETECTOR PROGRAMMING							
	SIZE	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
2C	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
2D	6X40	0	2-4-2	Y	2	Y	Y	Y	-	3	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	3	-	-
4B	6X30	30	2-4-2	Y	4	Y	Y	-	-	15	-	-
4C	6X20	0	2-4-2	Y	4	Y	Y	-	-	15	-	-
6A	6X6	300	5	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	5	Y	6	Y	Y	-	-	-	-	-
6C	6X6	300	5	Y	6	Y	Y	-	-	-	-	-
6D	6X40	0	2-4-2	Y	6	Y	Y	Y	-	3	-	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	-	15	-	-

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.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal system data: Controller Asset # 0234.



FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	12	7	12	7
Extension 1 *	6.0	1.0	6.0	1.0
Max Green 1 *	90	15	90	15
Yellow Clearance	4.5	3.2	4.5	3.2
Red Clearance	1.6	3.5	1.6	3.7
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	1.2	-	1.2	-
Max Variable Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	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.

LEGEND

- | | | | |
|-----|---|-----|---|
| ○→ | PROPOSED Traffic Signal Head | ●→ | EXISTING Traffic Signal Head |
| ○→ | PROPOSED Modified Signal Head | N/A | EXISTING Modified Signal Head |
| ⊥ | PROPOSED Sign | ⊥ | EXISTING Sign |
| ⊥ | PROPOSED Pedestrian Signal Head With Push Button & Sign | ⊥ | EXISTING Pedestrian Signal Head With Push Button & Sign |
| ○→ | 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 |
| (A) | PROPOSED U-Turn "MUST YIELD" Sign (R3-27) | (A) | EXISTING U-Turn "MUST YIELD" Sign (R3-27) |
| (B) | PROPOSED Right Arrow "ONLY" Sign (R3-5R) | (B) | EXISTING Right Arrow "ONLY" Sign (R3-5R) |
| (C) | PROPOSED Street Sign | (C) | EXISTING Street Sign |

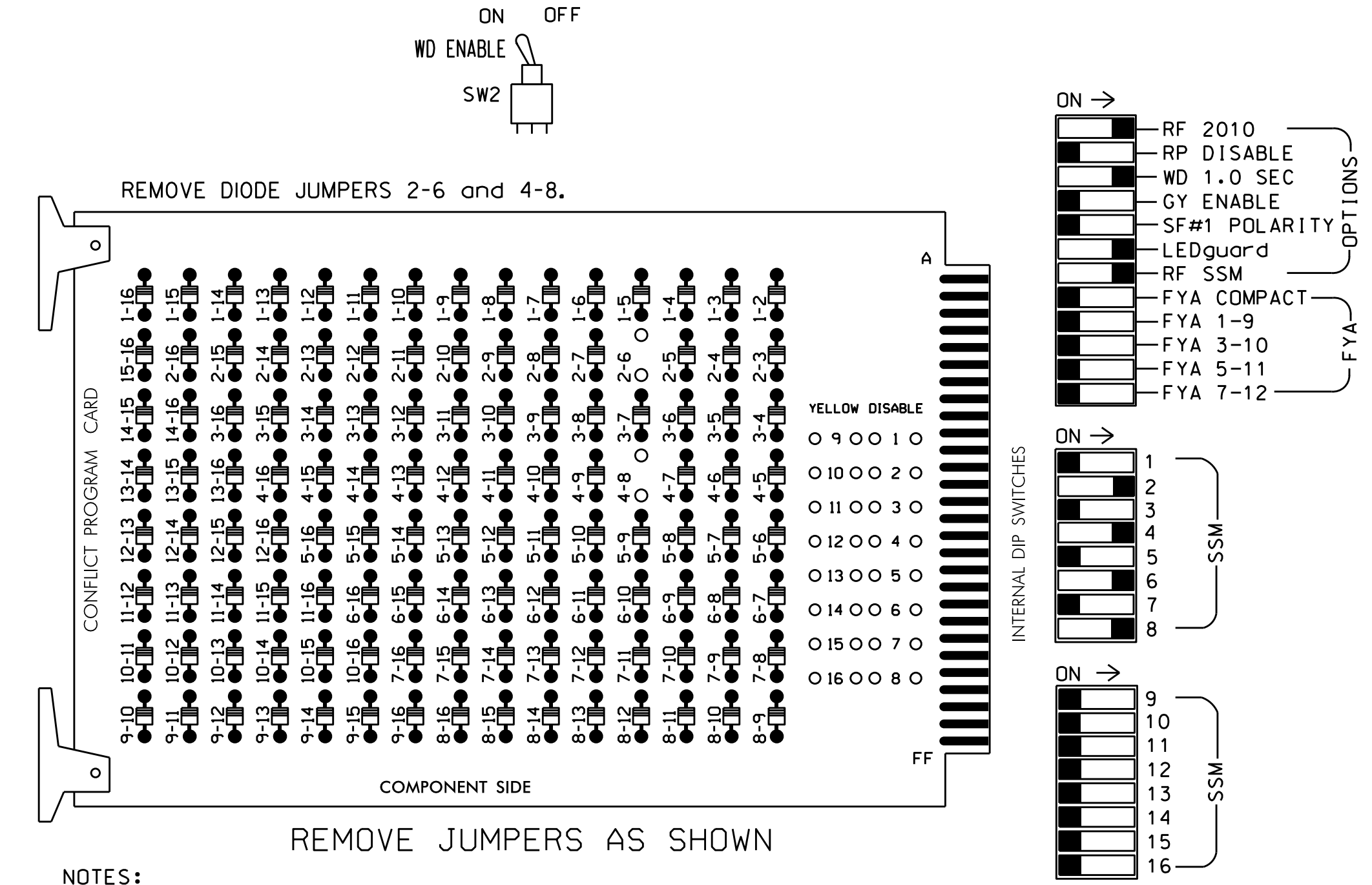
Signal Upgrade

	Prepared In the Offices of: US 117 - NC 132 (S College Rd) at Crews Drive / St. Matthews Church Entrance Division 3 - New Hanover County - Wilmington PLAN DATE: September 2015 REVIEWED BY: PLA PREPARED BY: Jeff Spence REVIEWED BY:		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 023489 10/27/15 DATE SIG. INVENTORY NO. 03-0234
	750 N. Greenfield Pkwy, Garner, NC 27529 SCALE 0 30 1"=30'	REVISIONS INIT. DATE	

31-1485-2015-14-29
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 J. Spence

**EDI MODEL 2010ECL-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.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = 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.
- 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 1,3,5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 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.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S4,S6,S8
PHASES USED.....2,4,6,8
OVERLAPS.....NONE

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.	NU	21,22 23,24	NU	NU	41,42	NU	NU	61,62 63,64	NU	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

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

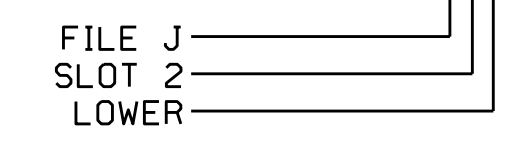
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	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			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y			
2D	TB2-11,12	I3L	76	38	42	2	Y	Y	Y		3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			15
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			15
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
6C	TB3-9,10	J3U	64	26	36	6	Y	Y			
6D	TB3-11,12	J3L	77	39	46	6	Y	Y	Y		3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			15

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0234
DESIGNED: September 2015
SEALED: 10/27/2015
REVISED: N/A

Electrical Detail

REVISION SEAL

Prepared in the Offices of:

KEITH M. MIMS
ENGINEER

10/28/2015

Electrical and Programming Details For:

US 117-NC 132 (S College Rd) at Crews Drive/ St. Matthews Church Entrance

Division 3 New Hanover County Wilmington

PLAN DATE: September 2007 REVIEWED BY:

PREPARED BY: G. C. BROWN REVIEWED BY:

REVISIONS

10/28/2015

SEAL

Not a certified document as to the Original Document but Only as to the Revisions - This document originally issued and sealed by George C. Brown, #022013, on 3/4/08. This document is only certified as to the revisions.

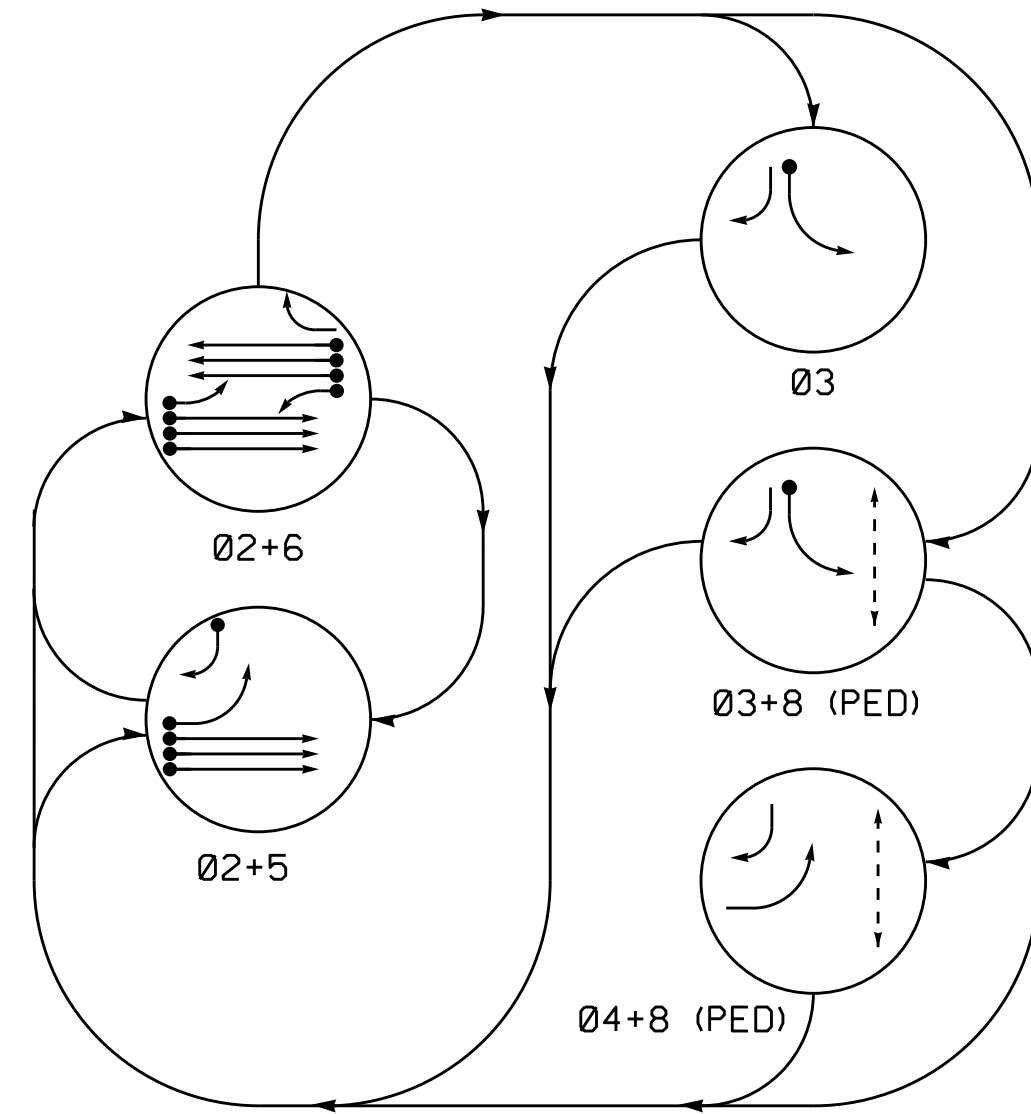
SIGNATURE DATE

SIG. INVENTORY NO. 03-0234

28-0075-2015 11-15
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somstrcong

6 Phase Fully Actuated Wilmington Signal System

PHASING DIAGRAM



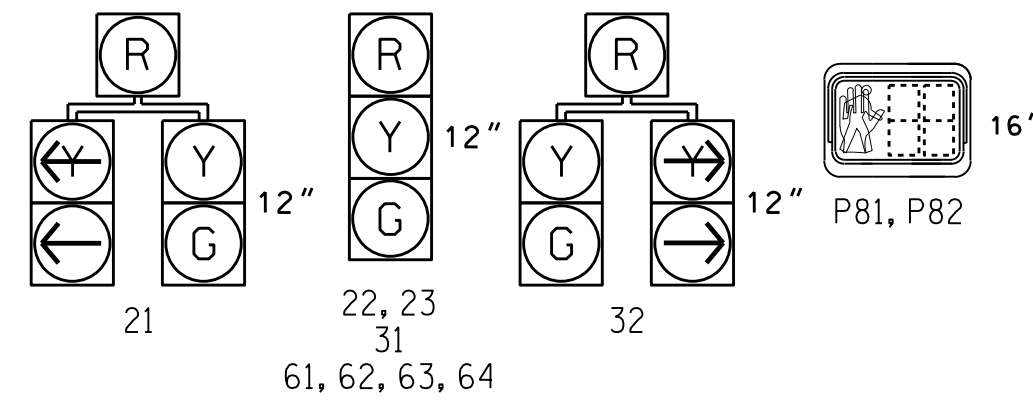
PHASING DIAGRAM DETECTION LEGEND

- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ←--- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE					
	02+5	02+6	03	03+8	04+8	LEFT
21	G	G	R	R	R	Y
22, 23	G	G	R	R	R	Y
31	R	R	G	G	R	R
32	R	R	G	G	R	R
61, 62, 63, 64 P81, P82	R	G	R	R	R	Y
	DW	DW	DW	W	W	DRK

SIGNAL FACE I.D.



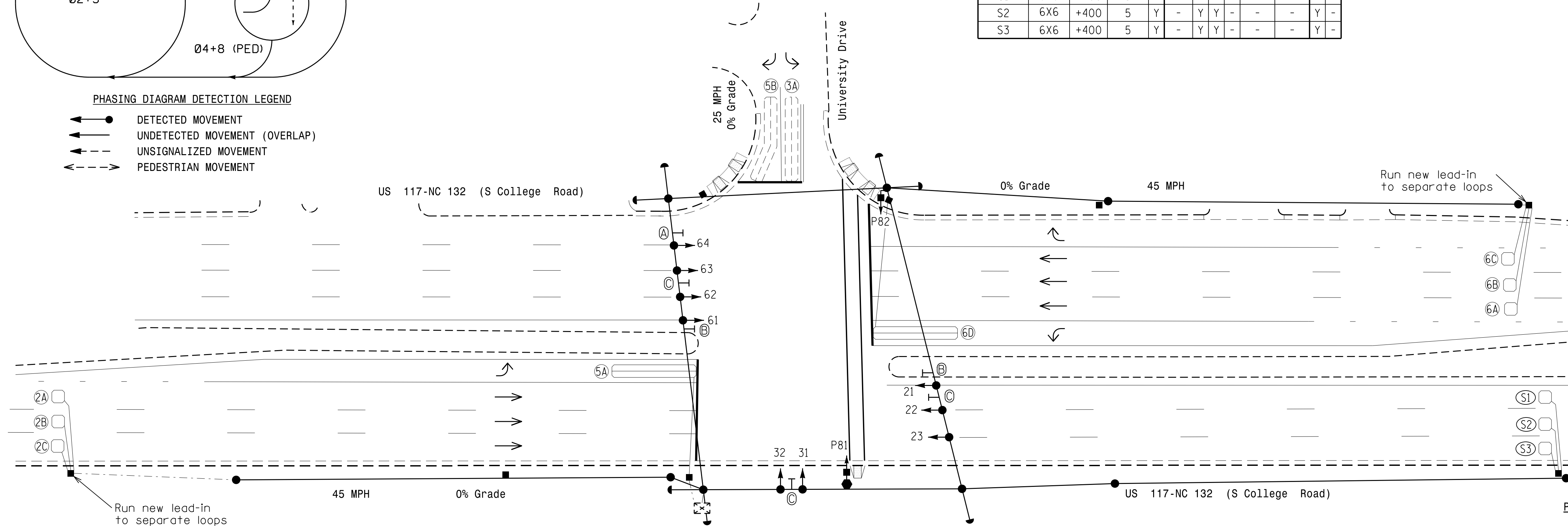
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	INDUCTIVE LOOPS				DETECTOR PROGRAMMING							
	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
2C	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	2	-	-
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
5B	6X40	0	2-4-2	-	5	Y	Y	-	-	15	-	-
6A	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
6C	6X6	300	6	Y	6	Y	Y	-	-	-	-	-
6D	6X40	0	2-4-2	Y	6	Y	Y	Y	-	3	-	-
S1	6X6	+400	5	Y	-	Y	Y	-	-	-	Y	-
S2	6X6	+400	5	Y	-	Y	Y	-	-	-	Y	-
S3	6X6	+400	5	Y	-	Y	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. Omit phase 8 during phase 3 on.
4. Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
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. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Signal system data:
Controller Asset #0236.

US 117-NC 132 (S College Road)



OASIS 2070 TIMING CHART

FEATURE	PHASE					
	2	3	4	5	6	8
Min Green 1 *	12	7	4	7	12	7
Extension 1 *	6.0	2.0	0.0	2.0	6.0	0.0
Max Green 1 *	90	15	4	15	90	30
Yellow Clearance	4.5	3.0	3.0	3.0	4.5	3.0
Red Clearance	1.8	3.3	3.3	3.3	1.1	0.0
Red Revert	5.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	7
Don't Walk 1	-	-	-	-	-	35
Seconds Per Actuation *	1.2	-	-	-	1.2	-
Max Variable Initial *	34	-	-	-	34	-
Time Before Reduction *	15	-	-	-	15	-
Time To Reduce *	30	-	-	-	30	-
Minimum Gap	3.0	-	-	-	3.0	-
Recall Mode	MIN RECALL	-	-	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	-	-	YELLOW	-
Dual Entry	-	-	-	-	-	-
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.

LEGEND

- | PROPOSED | | EXISTING |
|----------|----------------------------------|----------|
| | Traffic Signal Head | N/A |
| | Modified Signal Head | N/A |
| | Signal | |
| | Pedestrian Signal Head | |
| | Signal Pole with Guy | |
| | Signal Pole with Sidewalk Guy | |
| | Inductive Loop Detector | |
| | Controller & Cabinet | |
| | Junction Box | |
| | 2-in Underground Conduit | |
| | Right of Way | |
| | Directional Arrow | |
| | Signal Pedestal | |
| | Right Arrow "ONLY" Sign (R3-5R) | (A) |
| | U-Turn "MUST YIELD" Sign (R3-27) | (B) |
| | Street Name Sign | (C) |

Signal Upgrade

US 117-NC 132 (S College Road)
at
University Drive

Division 3 New Hanover County Wilmington

PLAN DATE: September 2015 REVIEWED BY: JPG

PREPARED BY: PLA REVIEWED BY:

REVISIONS: _____ INIT: _____ DATE: _____

SCALE: 1"=30'

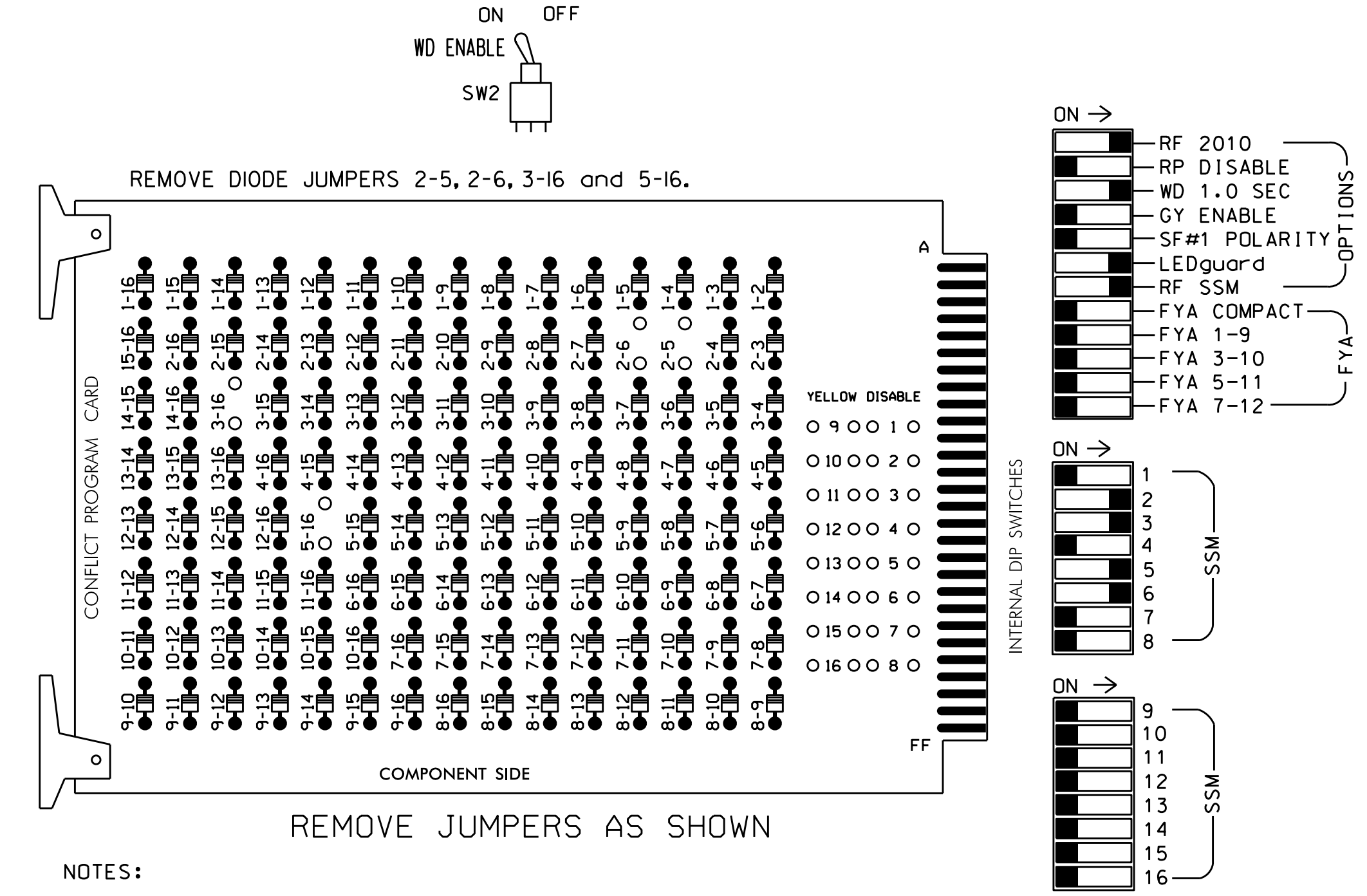
10/21/15

SIG. INVENTORY NO. 03-0236

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 paxalexander

EDI MODEL 2010ECL-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.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

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.
- 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 1,4,7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- 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 phase 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

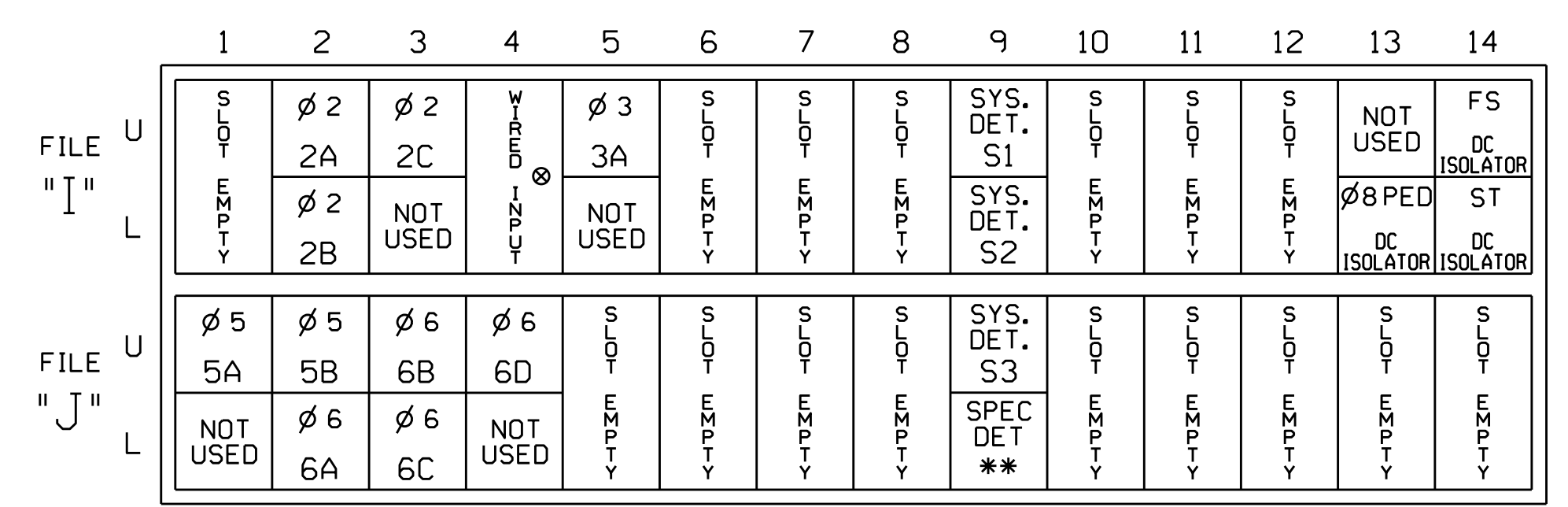
CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S3,S5,S6,S8P
 PHASES USED.....2,3,4*,5,6,8*,8 PED
 OVERLAP A.....4+5
 * Phase used for timing purposes only.

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	OLA	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21, 22,23	NU	31,32	NC	NU	21,32	61,62, 63,64	NU	NU	NC	P81, P82
RED		128		116			*	134				
YELLOW		129		117				135				
GREEN		130		118				136				
RED ARROW												
YELLOW ARROW							132					
GREEN ARROW							133					
												110
												112

NU = Not Used
 NC = No Connection, phase used for timing purposes only.
 * Denotes install load resistor. See load resistor installation detail this sheet.

INPUT FILE POSITION LAYOUT (front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 * Wired Input - Do not populate slot with detector card
 ** Loop 5A has a "Special Function" used by the Logical I/O Processor. Turn off Channel 2 on this detector card. See sheet 2 for details.

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			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			2
5A'	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y	Y		3
	-	J9L	61	23	17 ★	5	Y	Y			
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			15
6A	TB3-7,8	J2L	44	6	16	6	Y	Y			
6B	TB3-9,10	J3U	64	26	36	6	Y	Y			
6C	TB3-11,12	J3L	77	39	46	6	Y	Y			
6D	TB5-1,2	J4U	48	10	26	6	Y	Y	Y		3
* S1	TB6-9,10	I9U	60	22	11	SYS					
* S2	TB6-11,12	I9L	62	24	13	SYS					
* S3	TB7-9,10	J9U	59	21	15	SYS					
PED PUSH BUTTONS											
P81,P82	TB8-8,9	I13L	70	32		PED 8	8 PED				

NOTE:
 INSTALL DC ISOLATOR IN INPUT FILE SLOT 113.

- ^ Add jumper from J1-W to I4-W, on rear of input file.
- * System detector only. Remove the vehicle phase assigned to this detector in the default programming.

★ Detector 17 (INPUT 23) is a "virtual" detector used by the Logical I/O Processor. See sheet 2 for details.

BACKUP PROTECTION NOTE

(program controller as shown below)
 From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phase 2 for 'Backup Protect'. Make sure the Red Revert times shown on the Signal Design Plans are programmed in the 'Phase Timing' menu.

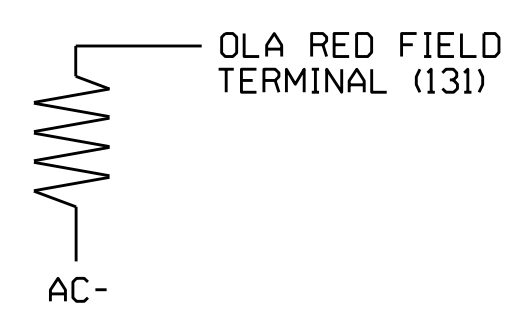
COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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.

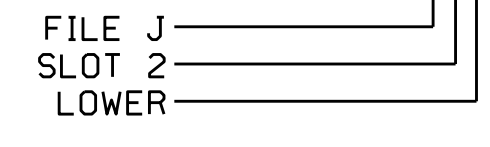
LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

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



INPUT FILE POSITION LEGEND: J2L



Electrical Detail - Sheet 1 of 2

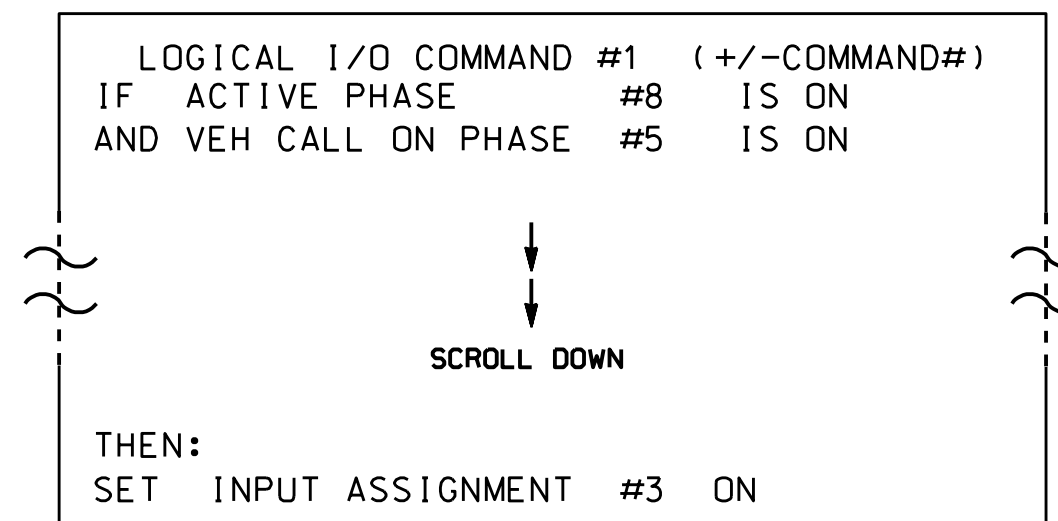
ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: Keith M. Minns Professional Engineer 750 N. Greenfield Pkwy, Garner, NC 27529	US 117-NC 132 (S. College Rd.) at University Drive		SEAL Keith M. Minns Professional Engineer 2987868EC03445 10/27/2015 DATE SIG. INVENTORY NO. 03-0236
	Division 3 PLAN DATE: October 2015 PREPARED BY: S. Armstrong	New Hanover County REVIEWED BY: T. Joyce REVIEWED BY:	

27-007-2015 14:55
 S:\IT\SS\117S\Sig\Work\hgr\edp\sig\Mon\strm\strm030236_sig.ele.xxx.dgn
 sarmstrong

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

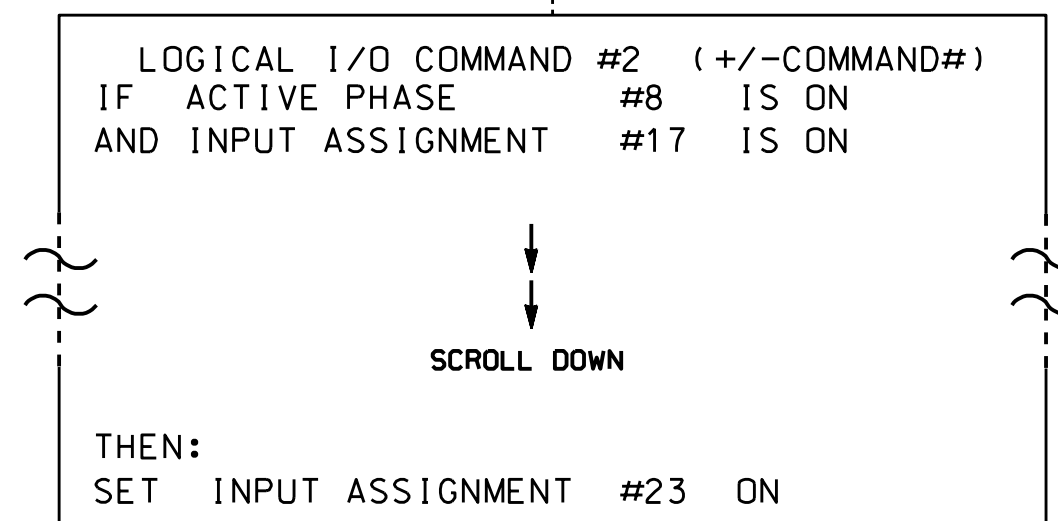
(program controller as shown below)

- 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 and 2.
- From Main Menu press '6' (Outputs), then '3' (Logical I/O Processor).
- The programming shown below is necessary for signals to operate as shown on the signal design plans.



If the controller is serving phase 8 (PED) and a vehicle call exists on phase 5, the I/O processor will set a phase 4 vehicle call and serve the protected turn and the right turn overlap.

PRESS '+'



If the controller is serving phase 8 (PED) and a vehicle call is placed on the main street phase 5 loop, the I/O processor will set a phase 5 vehicle call with NO DELAY and serve the protected turn and the right turn overlap.

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

INPUT REFERENCE SCHEDULE

INPUT 3 = Phase 4 Veh Call
 INPUT 17 = Phase 5 Veh Call (main street loop)
 INPUT 23 = Phase 5 Veh Call (virtual detector)

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: ; XX
VEH OVL NOT VEH: ;
VEH OVL NOT PED: ;
VEH OVL GRN EXT: ;
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW _ GREEN
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
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)...5
    
```

OVERLAP PROGRAMMING COMPLETE

DYNAMIC BACK-UP CONTROL PROGRAMMING

(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 Dynamic/Backup Control Function 1.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

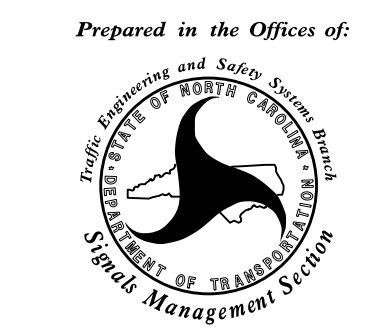
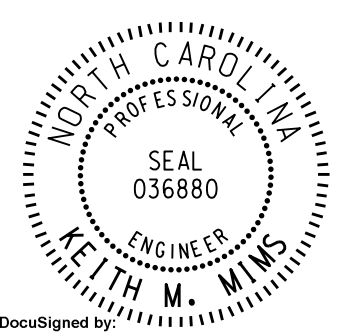
```

DYNAMIC/BACKUP CONTROL FUNCTION #01
OVERLAPS: ; ABCDEFGHIJKLMNPO
IF OVERLAPS ARE ACTIVE ;
OR PHASES: ;12345678910111213141516
IF PHASES ARE ON ; X
OMIT PHASES ; X
CALL PHASES ;
    
```

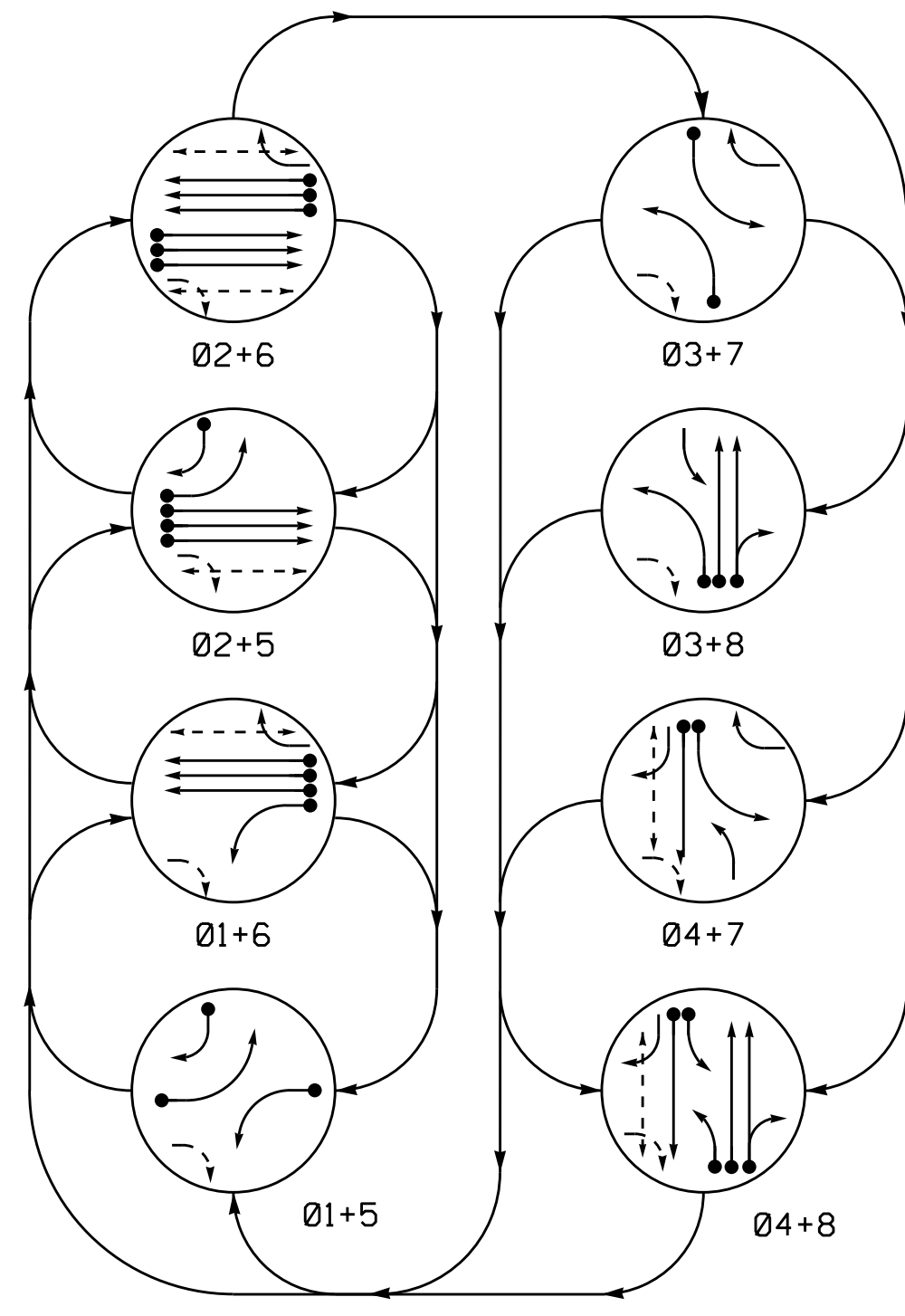
BACKUP PROTECTION PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 03-0236
 DESIGNED: September 2015
 SEALED: 10/21/2015
 REVISED: N/A

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	US 117-NC 132 (S. College Rd.) at University Drive		SEAL  KEITH M. MINUS ENGINEER
	Division 3 PLAN DATE: October 2015 PREPARED BY: S. Armstrong	New Hanover County REVIEWED BY: T. Joyce REVIEWED BY:	
REVISIONS			INIT. DATE
SIG. INVENTORY NO. 03-0236			DATE

PHASING DIAGRAM

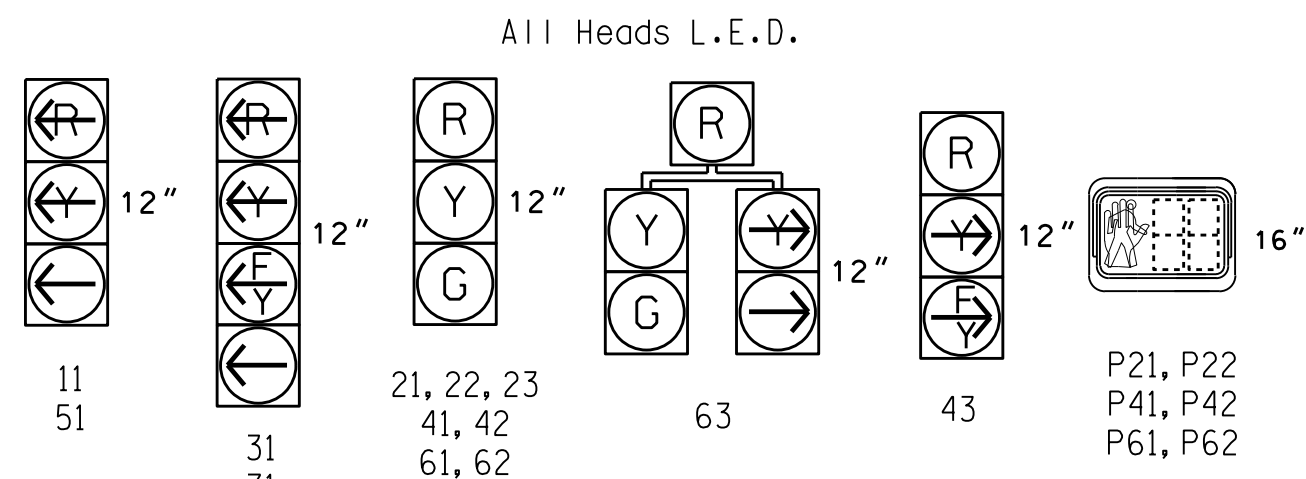


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE							
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8
11	---	---	---	---	---	---	---	---
21, 22, 23	R	R	G	G	R	R	R	Y
31	---	---	---	---	---	---	---	---
41, 42	R	R	R	R	R	R	G	G
43	F	F	F	F	F	F	F	F
51	---	---	---	---	---	---	---	---
61, 62	R	G	R	G	R	R	R	Y
63	R	G	R	G	R	R	R	Y
71	---	---	---	---	---	---	---	---
81, 82	R	R	R	R	R	G	R	G
P21, P22	DW	DW	W	W	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DRK

SIGNAL FACE I.D.



OASIS 2070 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		
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	-
2A	6X6	300	5	Y	2	Y	Y	-	-	-
2B	6X6	300	5	Y	2	Y	Y	-	-	-
2C	6X6	300	5	Y	2	Y	Y	-	-	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	10	-
3B	6X6	300	5	Y	3	Y	Y	-	3	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-
5B	6X40	0	2-4-2	-	5	Y	Y	-	15	-
6A	6X6	300	5	Y	6	Y	Y	-	-	-
6B	6X6	300	5	Y	6	Y	Y	-	-	-
6C	6X6	300	5	Y	6	Y	Y	-	-	-
7A	6X40	0	2-4-2	-	7	Y	Y	-	10	-
7B	6X6	300	5	Y	7	Y	Y	-	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	-
8B	6X40	0	2-4-2	-	8	Y	Y	-	-	-

8 Phase Fully Actuated Wilmington 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.
- Phase 3 and/or phase 7 may be lagged.
- Reposition existing signal heads numbered 41.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal system data: Controller Asset # 0128.

LEGEND

- | | |
|--|--|
| PROPOSED | EXISTING |
| ○ Traffic Signal Head | ● Traffic Signal Head |
| ○ Modified Signal Head | N/A |
| ○ Sign | ○ Sign |
| ○ Pedestrian Signal Head With Push Button & Sign | ○ Pedestrian Signal Head |
| ○ Signal Pole with Guy | ○ Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ○ Signal Pole with Sidewalk Guy |
| ○ Inductive Loop Detector | ○ Inductive Loop Detector |
| ○ Controller & Cabinet | ○ Controller & Cabinet |
| ○ Junction Box | ○ Junction Box |
| ○ 2-in Underground Conduit | ○ 2-in Underground Conduit |
| N/A | ○ Right of Way |
| ○ Directional Arrow | ○ Directional Arrow |
| (A) Right Arrow "ONLY" Sign (R-3-5R) | (A) Right Arrow "ONLY" Sign (R-3-5R) |
| (B) "U-TURN YIELD TO RIGHT TURN" | (B) "U-TURN YIELD TO RIGHT TURN" |
| (C) "YIELD" Sign (R1-2) | (C) "YIELD" Sign (R1-2) |
| (D) Yield Ahead Sign (W3-2) | (D) Yield Ahead Sign (W3-2) |
| (E) "TURNING VEHICLES YIELD TO Pedestrians Sign (R10-15) | (E) "TURNING VEHICLES YIELD TO Pedestrians Sign (R10-15) |
| (F) Street Name Sign | (F) Street Name Sign |

OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	15	100	15	20	15	100	15	20
Yellow Clearance	3.0	4.5	3.0	4.2	3.0	4.5	3.0	4.2
Red Clearance	3.2	1.3	3.5	2.8	3.3	1.6	3.7	2.8
Walk 1 *	-	7	-	7	-	7	-	-
Don't Walk 1	-	15	-	29	-	22	-	-
Seconds Per Actuation *	-	1.3	-	-	-	1.3	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	45	-	-	-	45	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	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

US 117-NC 132 (S College Rd) at Randall Parkway/Randall Drive

Division 3 New Hanover County Wilmington

PLAN DATE: May 2016 REVIEWED BY: PLA

PREPARED BY: Jeff Spence REVIEWED BY:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

REVISIONS

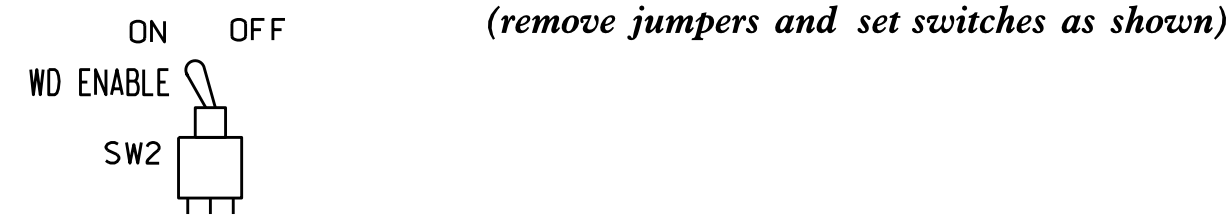
INIT. DATE

SIG. INVENTORY NO. 03-0128

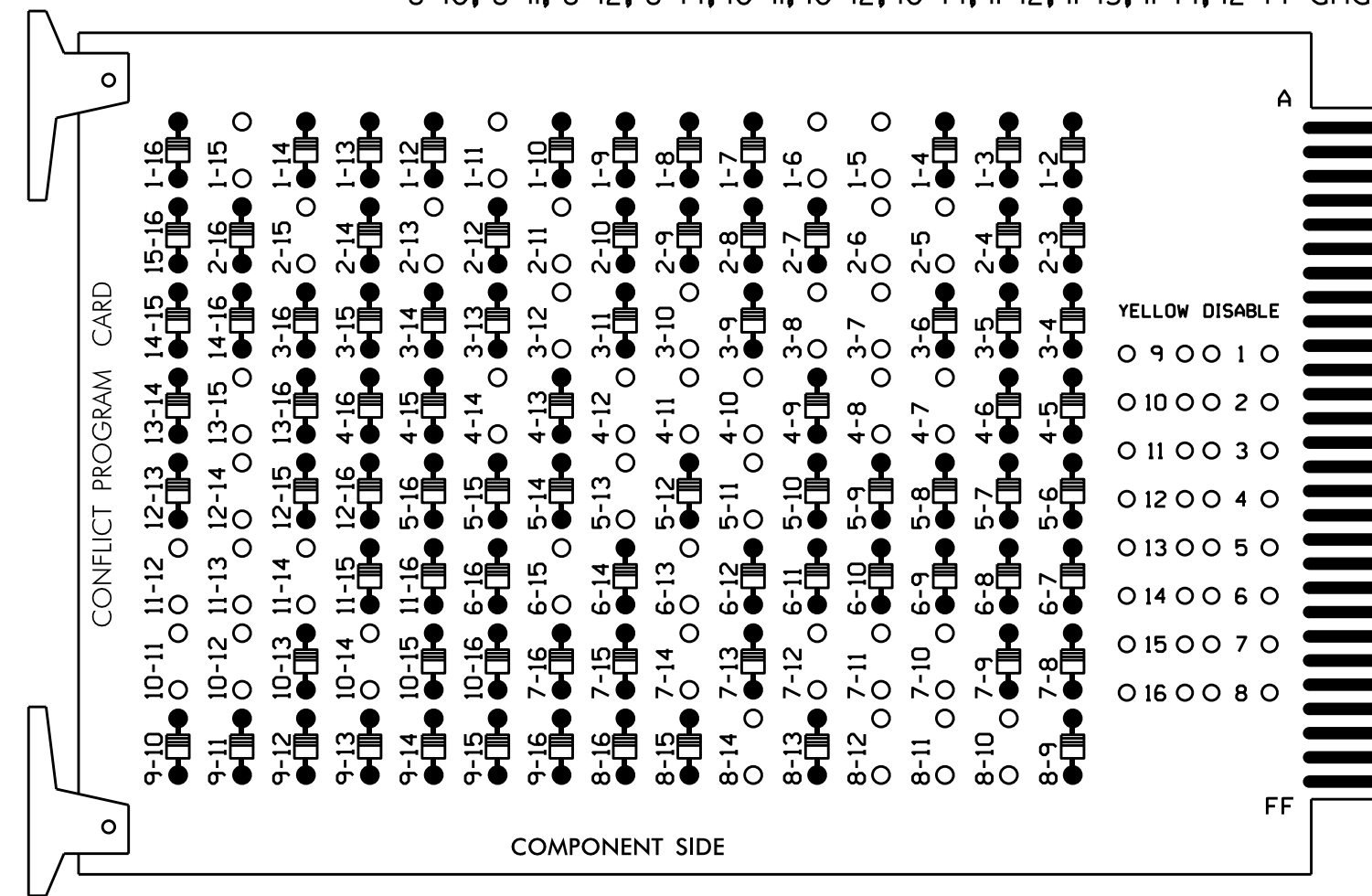
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 J. Spence

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL



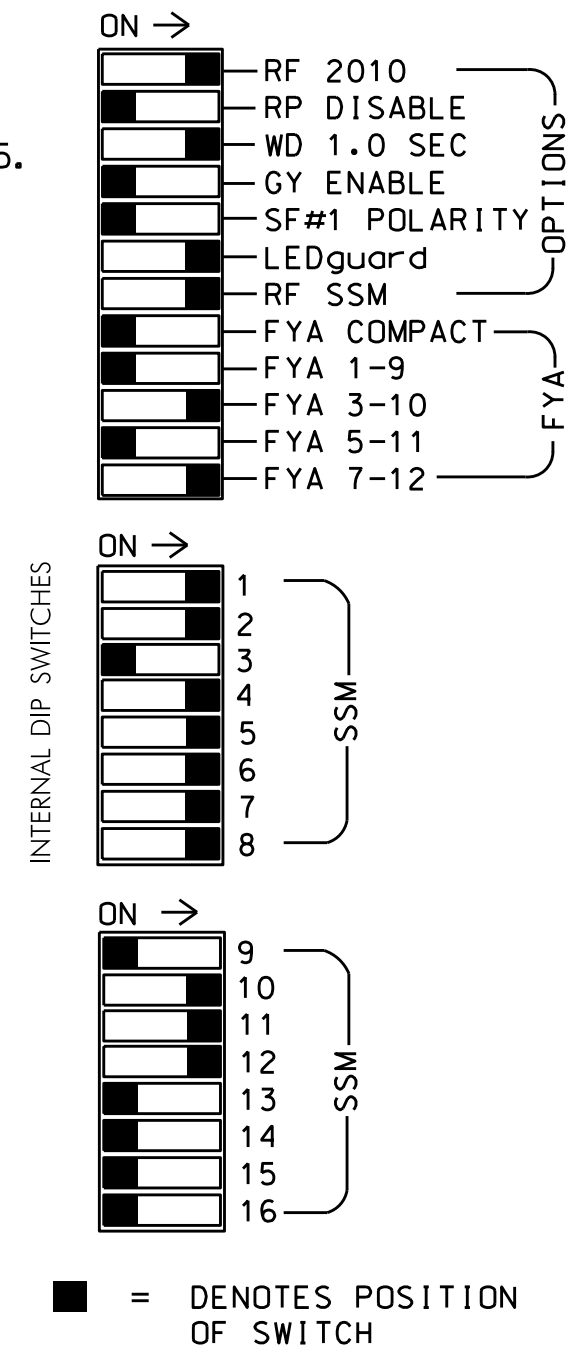
REMOVE DIODE JUMPERS 1-5, 1-6, 1-11, 1-15, 2-5, 2-6, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-11, 4-12, 4-14, 5-11, 5-13, 6-13, 6-15, 7-10, 7-11, 7-12, 7-14, 8-10, 8-11, 8-12, 8-14, 10-11, 10-12, 10-14, 11-12, 11-13, 11-14, 12-14 and 13-15.



REMOVE JUMPERS AS SHOWN

NOTES:

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



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.
- 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 3,9, 13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 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, 4 and 6 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash and Overlap 2 as WAG Overlaps.
- The cabinet and controller are part of the Wilmington Signal System.

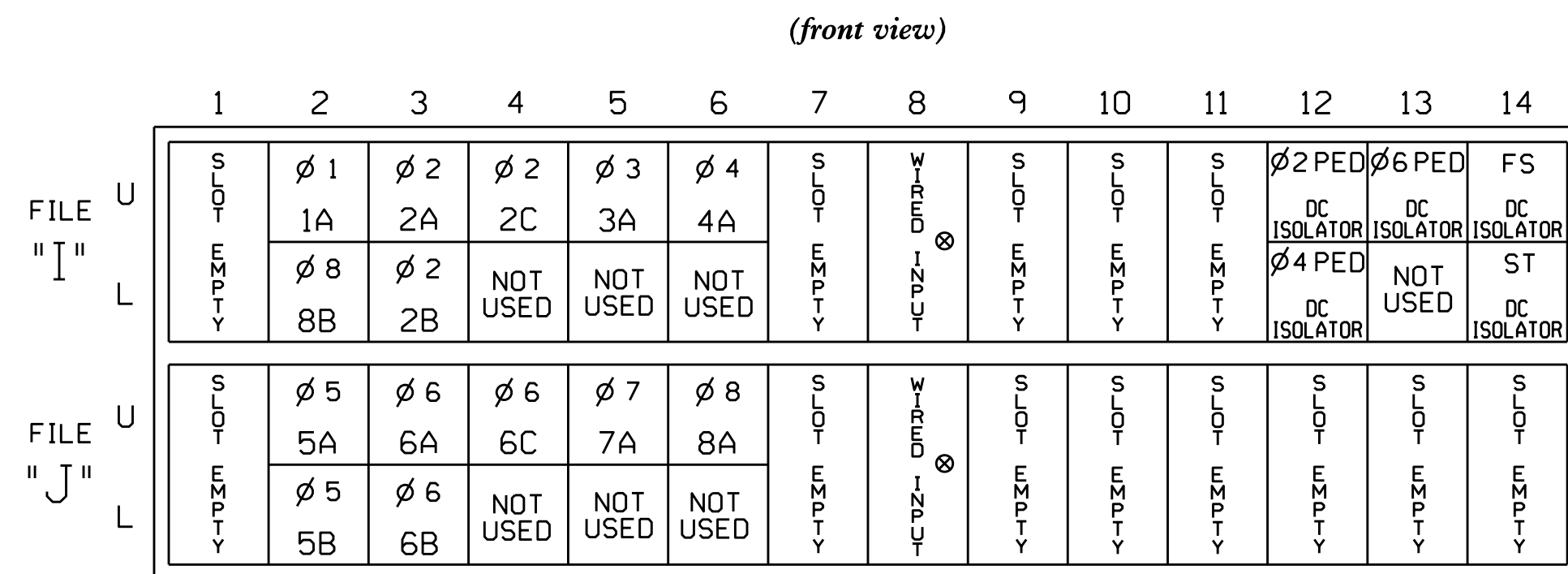
EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX FILE
 LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,
 S6,S6P,S7,S8,S10,S12,S13
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,7,8
 OVERLAP "A".....NONE
 OVERLAP "B".....3+4
 OVERLAP "C".....4+5
 OVERLAP "D".....7+8

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
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22, 23	P21, P22	31*	41,42	P41, P42	51	61,62, 63	P61, P62	63	71*	81,82	NU	NU	31*	43*	71*	NU
RED	128				101			134		*		107					A114	
YELLOW	129			*	102			135				108						
GREEN	130				103			136				109						
RED ARROW	125						131								A124		A101	
YELLOW ARROW	126						132			123					A125		A115	A102
FLASHING YELLOW ARROW															A126		A116	A103
GREEN ARROW	127			118			133			124	124							
Hand				113			104			119								
Walker				115			106			121								

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

INPUT FILE POSITION LAYOUT



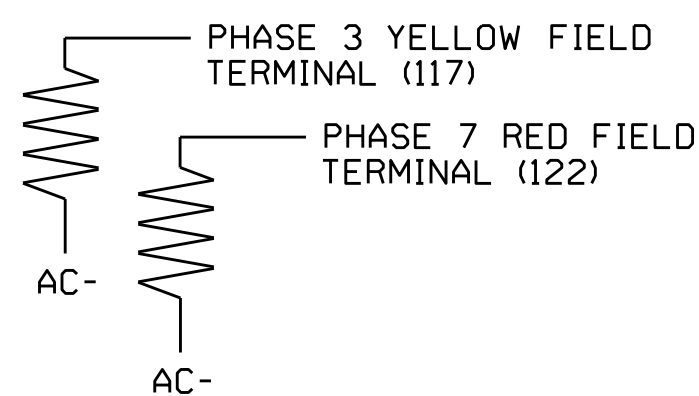
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

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



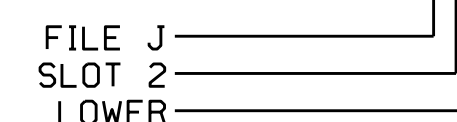
INPUT FILE CONNECTION & PROGRAMMING CHART

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
1A	TB2-5,6	I2U	39	1	2	1	Y	Y			
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
2B	TB2-11,12	I3L	76	38	42	2	Y	Y			
2C	TB4-1,2	I4U	47	9	22	2	Y	Y			
3A ¹	TB4-5,6	I5U	58	20	3	3	Y	Y			10
		J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			15
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y			
6C	TB5-1,2	J4U	48	10	26	6	Y	Y			
7A ²	TB5-5,6	J5U	57	19	7	7	Y	Y			10
		I8U	49	11	24	4	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			
8B	TB2-7,8	I2L	43	5	12	8	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

NOTE:
 Install DC isolators in input file slots 112 and 113.

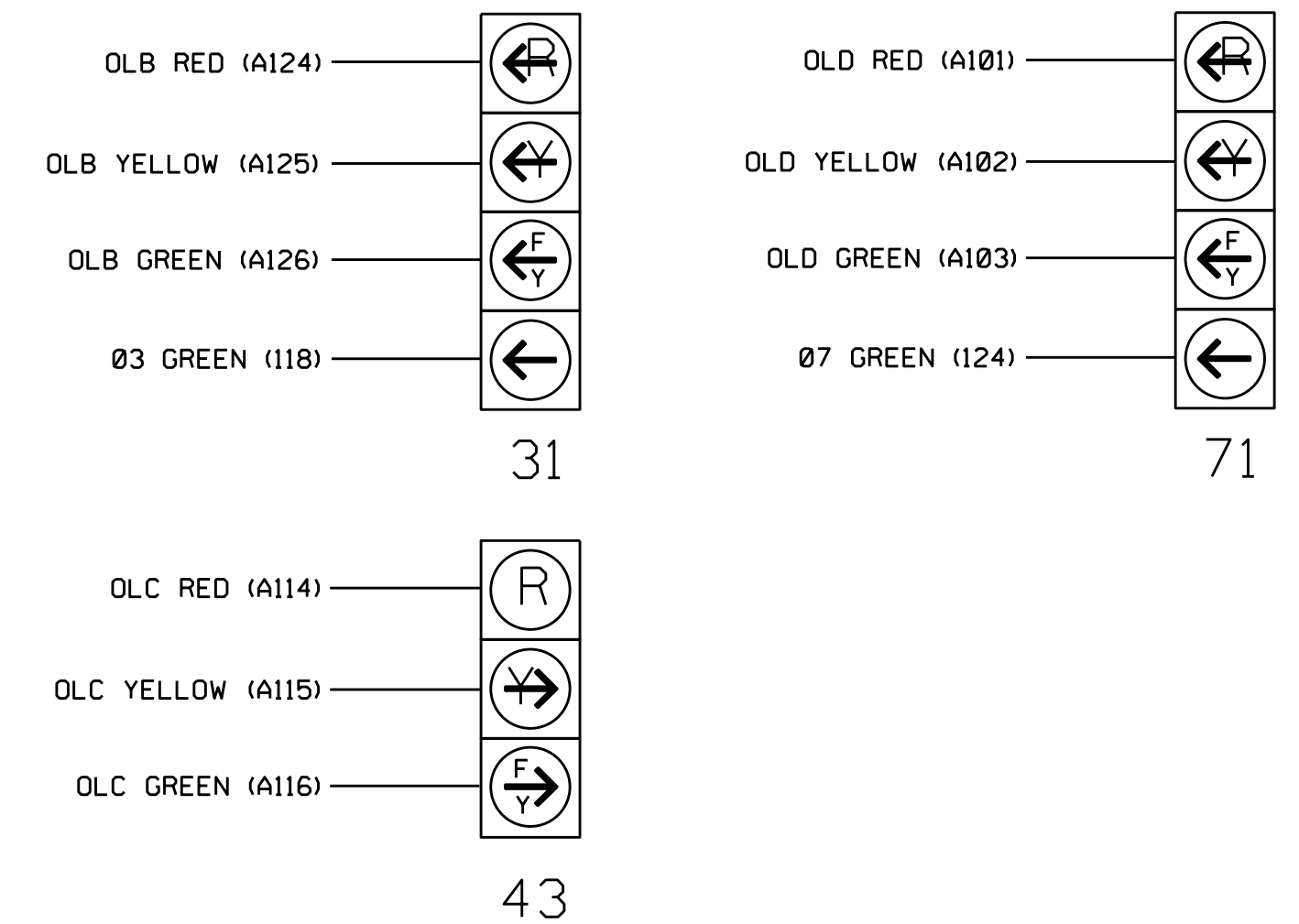
- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 31 and 71 requires special logic programming. See sheet 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0128
 DESIGNED: May 2016
 SEALED: 5/23/2016
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For: US 117-NC 132 (S College Rd) at Randall Pkwy/Randall Drive

Division 3 New Hanover County Wilmington

PLAN DATE: May 2016 REVIEWED BY: BAS

PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER KEITH M. MIAS 036880

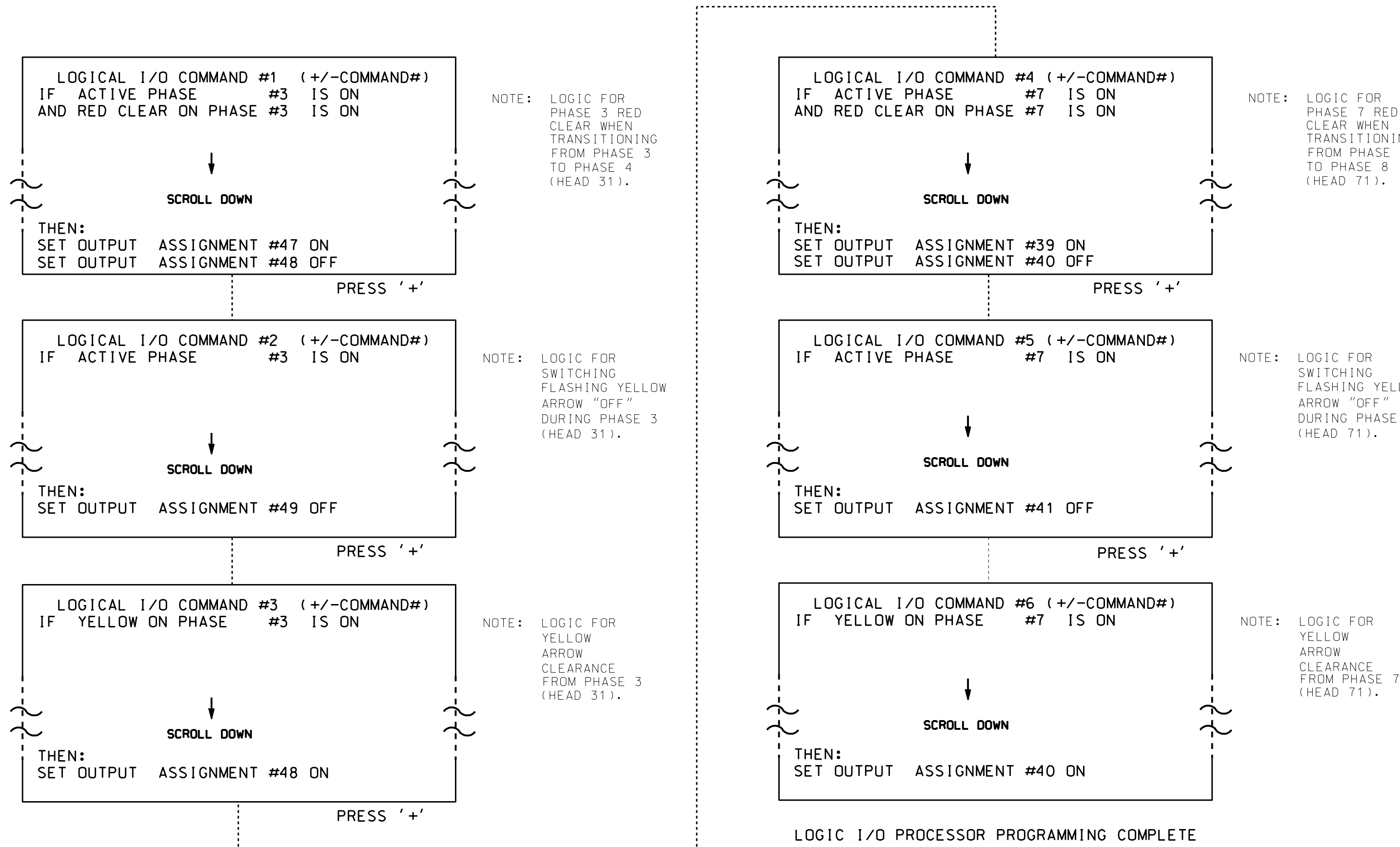
DocuSigned by: Keith M. Mias 5/24/2016

SIG. INVENTORY NO. 03-0128

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, 3, 4, 5 AND 6.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



OUTPUT REFERENCE SCHEDULE

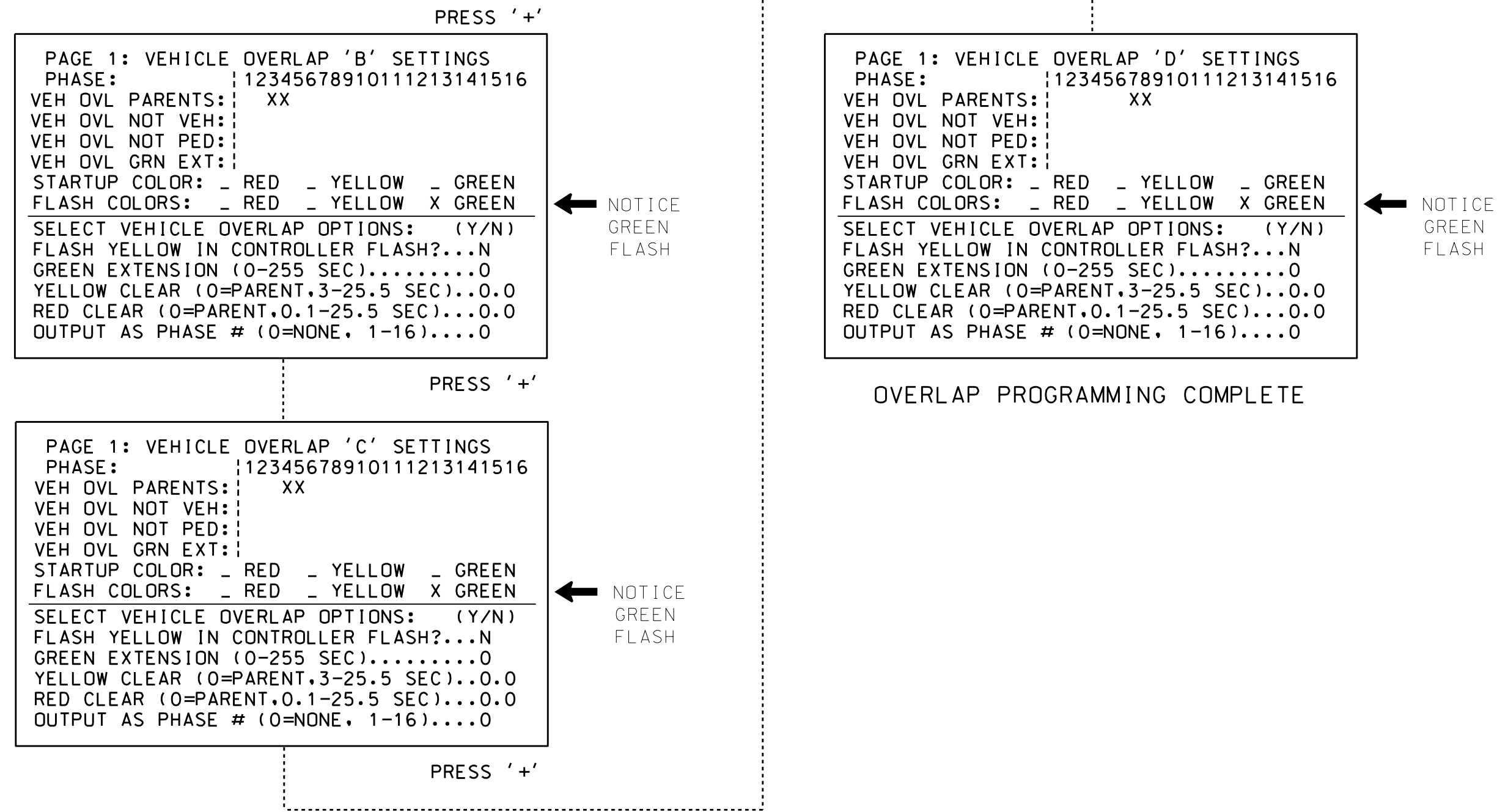
USE TO INTERPRET LOGIC PROCESSOR

- OUTPUT 39 = Overlap D Red
- OUTPUT 40 = Overlap D Yellow
- OUTPUT 41 = Overlap D Green
- OUTPUT 47 = Overlap B Red
- OUTPUT 48 = Overlap B Yellow
- OUTPUT 49 = Overlap B Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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



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.

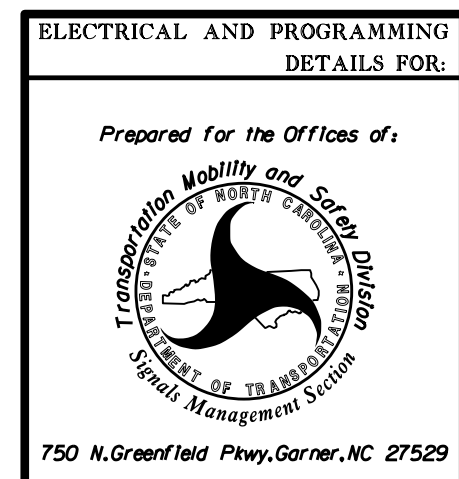
FLASHER CIRCUIT MODIFICATION DETAIL

In order to ensure that signals flash concurrently on the same approach, make the following flasher circuit changes:

1. On rear of PDA - Remove wire from Term. T2-4 and terminate on T2-2.
2. On rear of PDA - Remove wire from Term. T2-5 and terminate on T2-3.
3. Remove Flasher Unit 2.

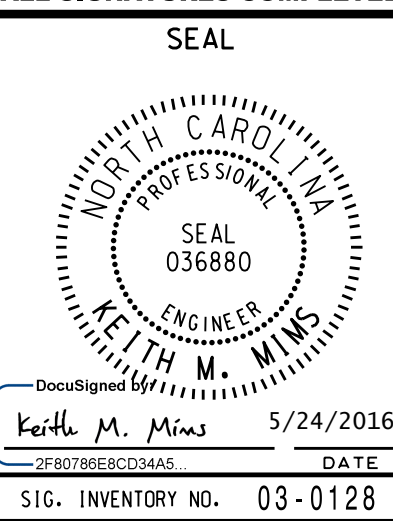
The changes listed above ties all phases and overlaps to Flasher Unit 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0128
DESIGNED: May 2016
SEALED: 5/23/2016
REVISED: N/A



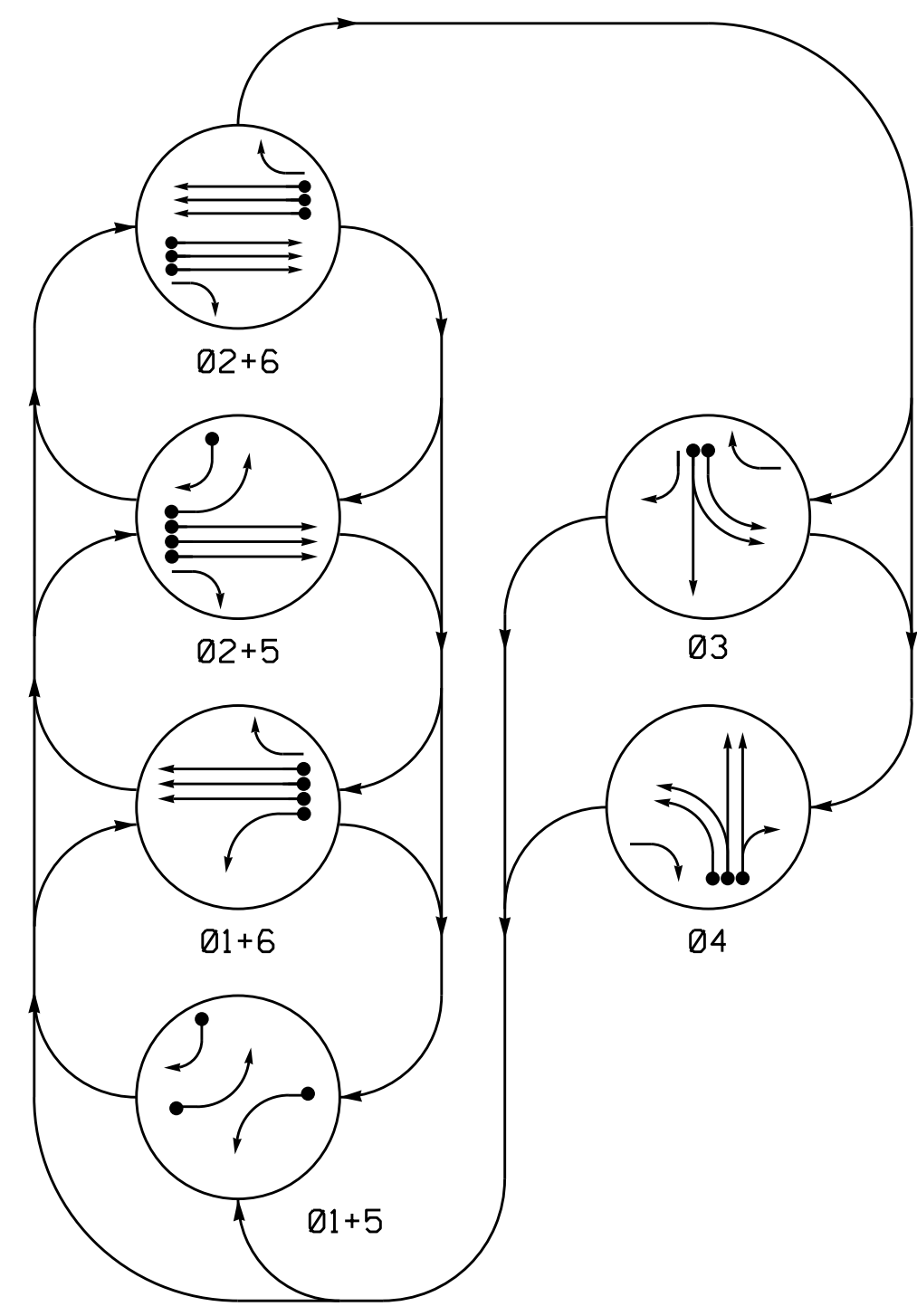
US 117-NC 132 (S College Rd)
at
Randall Pkwy/Randall Drive

Division 3		New Hanover County		Wilmington	
PLAN DATE:	May 2016	REVIEWED BY:	BAS		
PREPARED BY:	S. Armstrong	REVIEWED BY:			
REVISIONS		INIT.		DATE	



23-May-2016 15:11 S:\MITS\Signal\work\hgr\cds\g_Maps\mstrm\030128_sml.ele.xxx.dgn sarmstrong

PHASING DIAGRAM



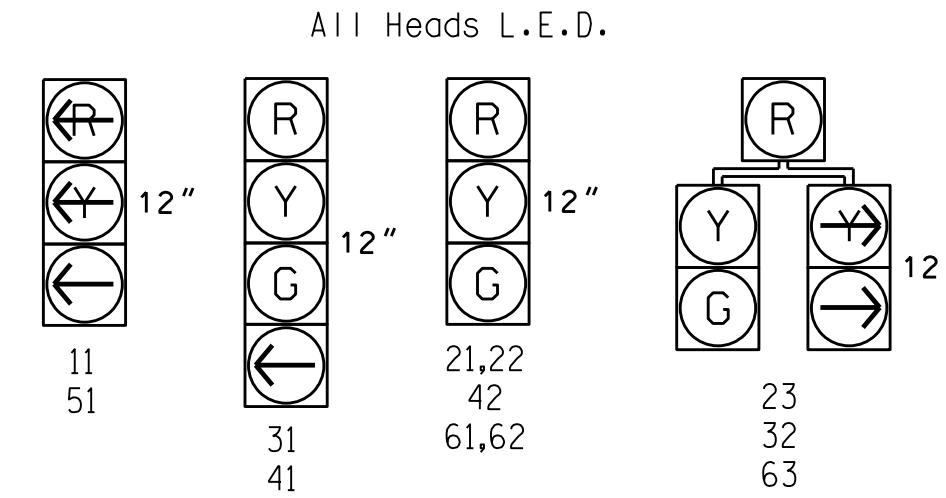
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE											
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4	F	L	S	H	S	F
11	-	-	+	+	+	+	+	+	+	+	+	+
21, 22	R	R	G	G	R	R	R	R	R			Y
23	R	R	G	G	R	R	R	R	R			Y
31	R	R	R	R	G	R	R	R	R			
32	R	R	R	R	G	R	R	R	R			
41	R	R	R	R	R	G	R	R	R			
42	R	R	R	R	R	G	R	R	R			
51	-	+	+	+	+	+	+	+	+	+	+	+
61, 62	R	G	R	G	R	R	R	R	R			Y
63	R	G	R	G	R	R	R	R	R			Y

SIGNAL FACE I.D.



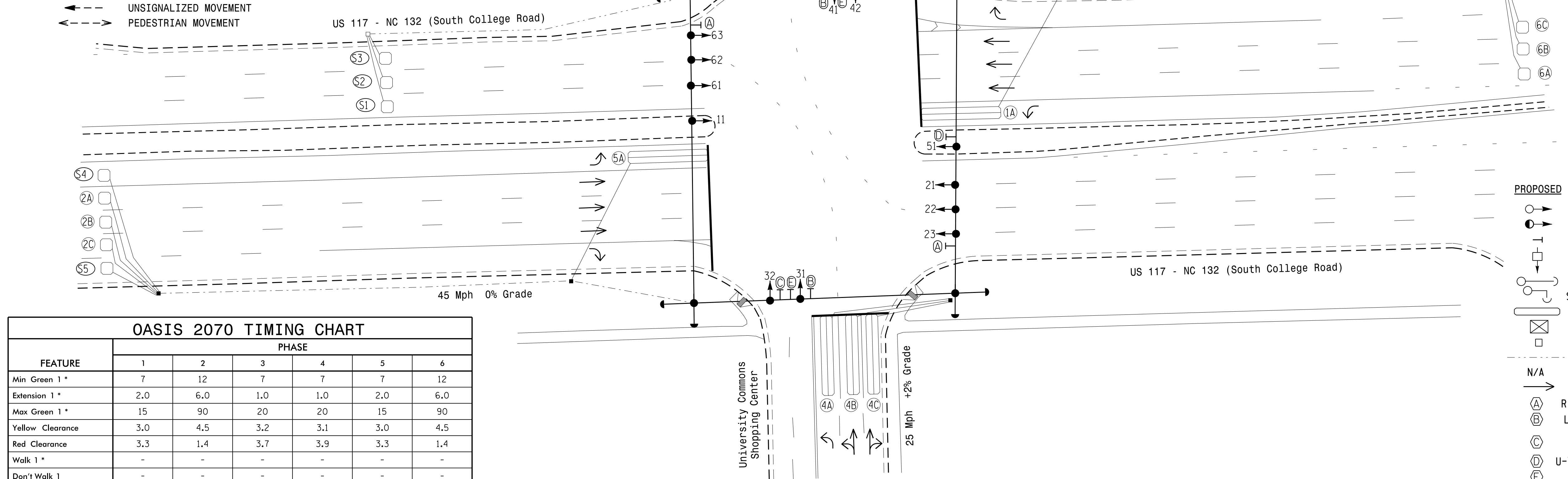
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING			STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION FULL TIME DELAY				
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	-	-
2A	6X6	300	6	Y	2	Y	Y	-	-	-	-
2B	6X6	300	6	Y	2	Y	Y	-	-	-	-
2C	6X6	300	6	Y	2	Y	Y	-	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-
3B	6X40	0	2-4-2	Y	3	Y	Y	-	-	-	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	3	-	-
4B	6X40	0	2-4-2	Y	4	Y	Y	-	-	-	-
4C	6X40	0	2-4-2	Y	4	Y	Y	-	-	10	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-
5B	6X40	0	2-4-2	Y	5	Y	Y	-	15	-	-
6A	6X6	300	4	Y	6	Y	Y	-	-	-	-
6B	6X6	300	4	Y	6	Y	Y	-	-	-	-
6C	6X6	300	4	Y	6	Y	Y	-	-	-	Y
S1	6X6	+270	5	Y	-	-	-	-	-	Y	-
S2	6X6	+270	5	Y	-	-	-	-	-	Y	-
S3	6X6	+270	5	Y	-	-	-	-	-	Y	-
S4	6X6	300	6	Y	-	-	-	-	-	Y	-
S5	6X6	300	6	Y	-	-	-	-	-	Y	-

6 Phase Fully Actuated Wilmington Signal System

NOTES

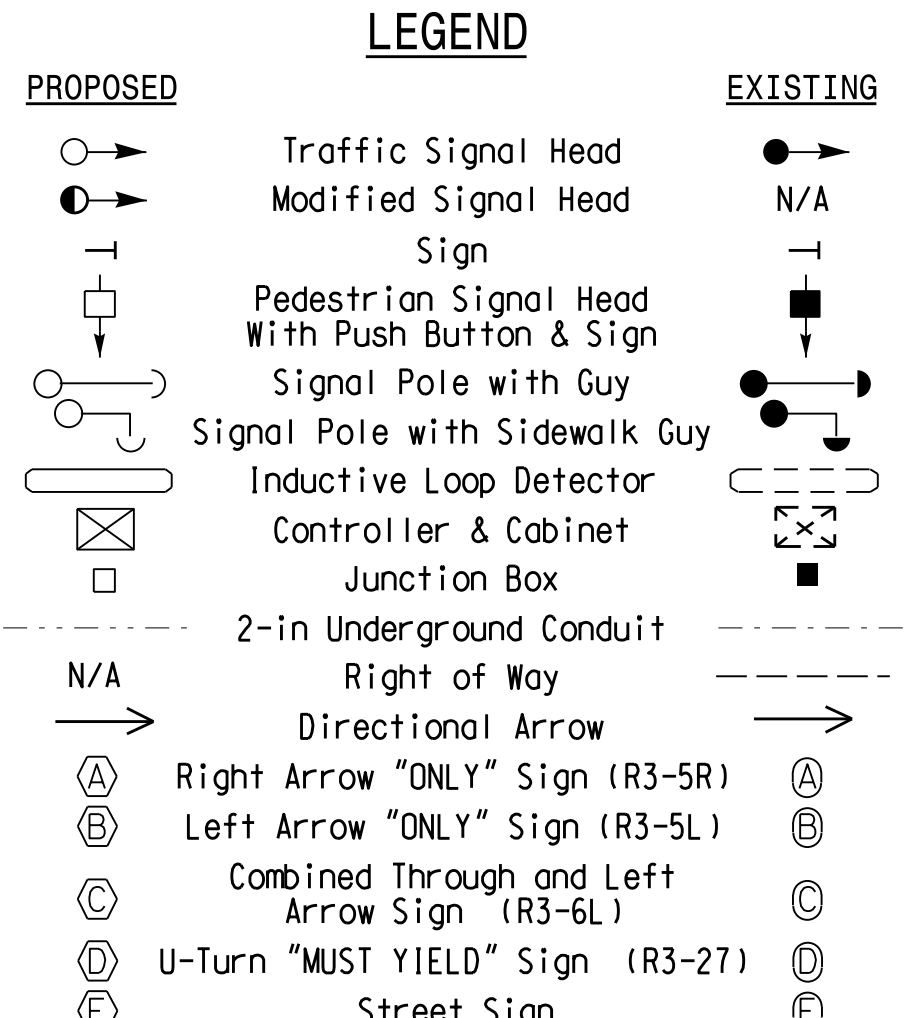
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Signal system data: Controller Asset # 0561.



OASIS 2070 TIMING CHART

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green 1 *	7	12	7	7	7	12
Extension 1 *	2.0	6.0	1.0	1.0	2.0	6.0
Max Green 1 *	15	90	20	20	15	90
Yellow Clearance	3.0	4.5	3.2	3.1	3.0	4.5
Red Clearance	3.3	1.4	3.7	3.9	3.3	1.4
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.2	-	-	-	1.2
Max Variable Initial *	-	34	-	-	-	34
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
Dual Entry	-	-	-	-	-	-
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.

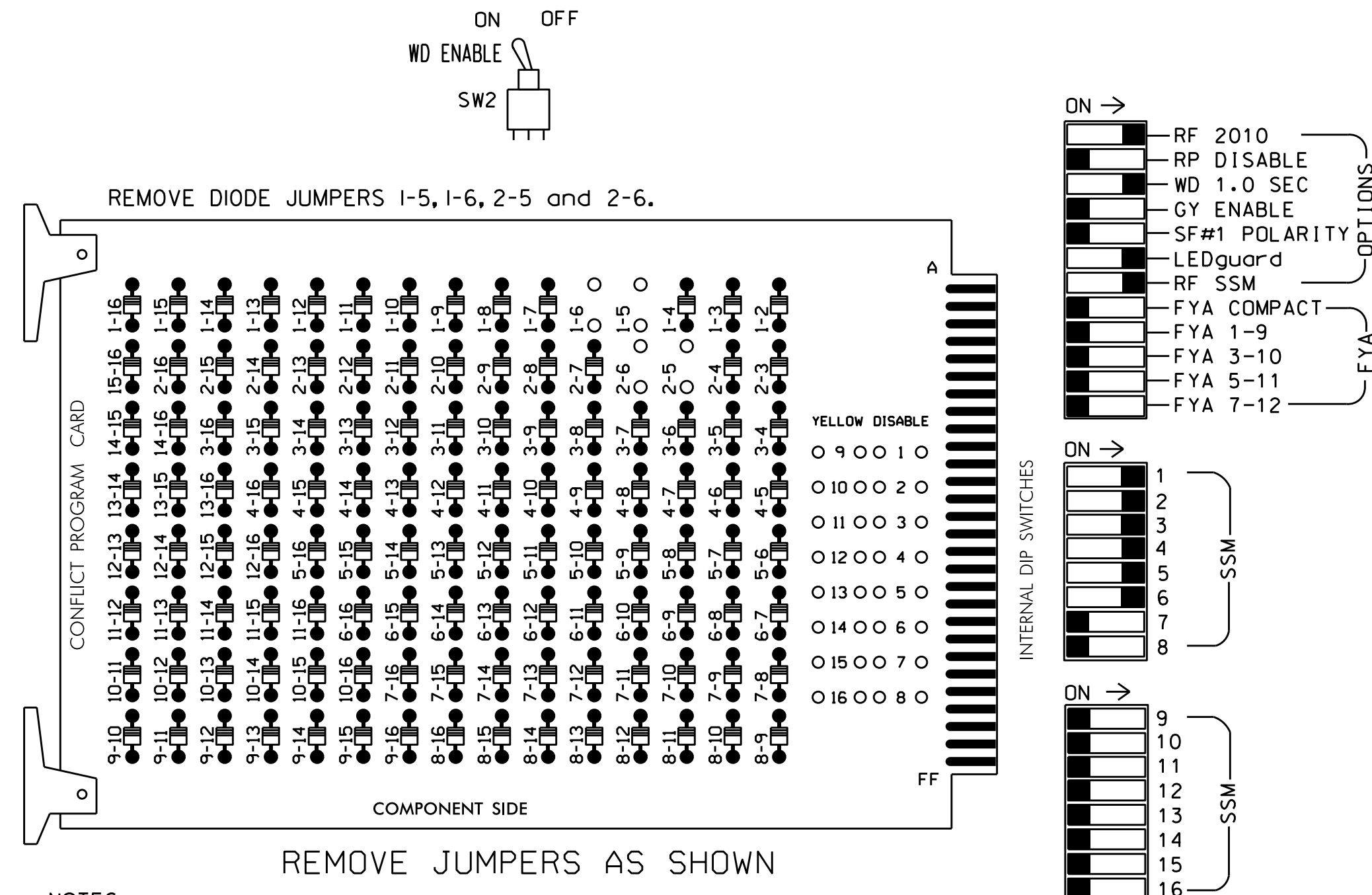


Signal Upgrade

	Prepared In the Offices of:	US 117 - NC 132 (S College Rd) at University Centre / University Commons	
		Division 3 New Hanover County	Wilmington
	750 N. Greenfield Pkwy, Garner, NC 27529	PLAN DATE: September 2015	REVIEWED BY: PLA
		PREPARED BY: Jeff Spence	REVIEWED BY:

EDI MODEL 2010ECL-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.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

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.
- 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 7,8,9, 10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6 for Start Up In Green.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6
 PHASES USED.....1,2,3,4,5,6
 OVERLAPS.....NONE

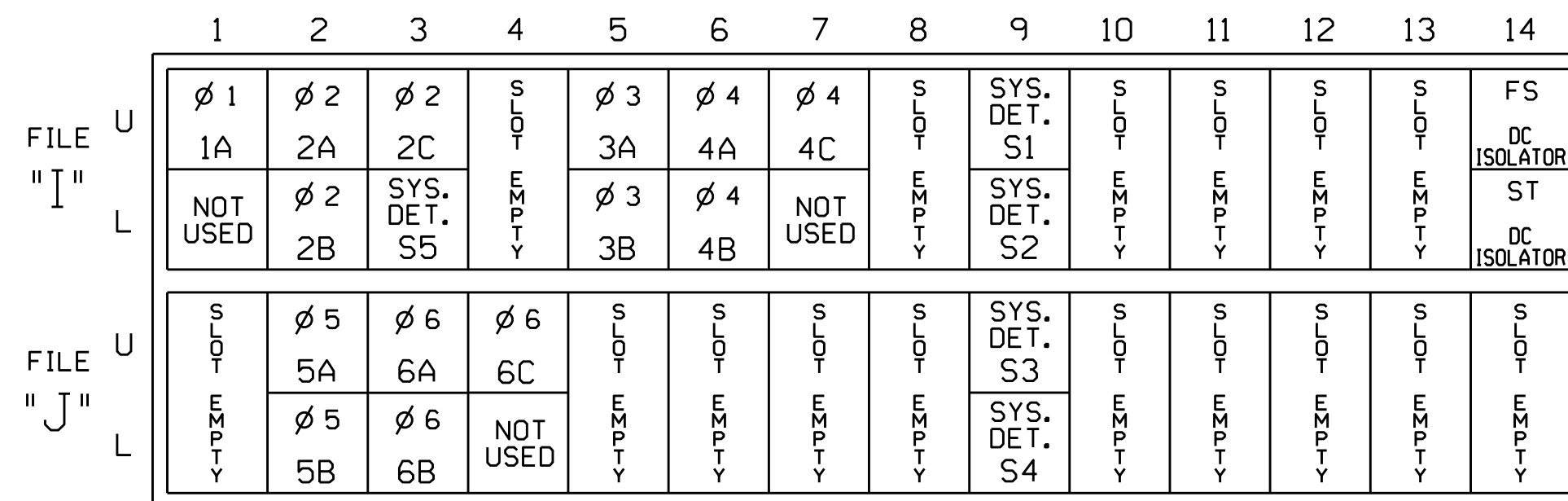
SIGNAL HEAD HOOK-UP CHART

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	21 22,23	NU	31 32 63	41 42 23	NU	51 32	61 62,63	NU	NU	NU	NU
RED		128		116 116	101 101			134				
YELLOW		129		117 117	102 102			135				
GREEN		130		118 118	103 103			136				
RED ARROW	125						131					
YELLOW ARROW	126			117	102		132 132					
GREEN ARROW	127			118 118	103 103		133 133					

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

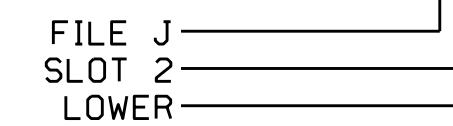
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			
3B	TB4-7,8	I5L	58	20	3	3	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			
4C	TB6-1,2	I7U	65	27	34	4	Y	Y			10
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			15
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y			
6C	TB5-1,2	J4U	48	10	26	6	Y	Y			
* S1	TB6-9,10	I9U	60	22	11	SYS					
* S2	TB6-11,12	I9L	62	24	13	SYS					
* S3	TB7-9,10	J9U	59	21	15	SYS					
* S4	TB7-11,12	J9L	61	23	17	SYS					
* S5	TB2-11,12	I3L	76	38	42	SYS					

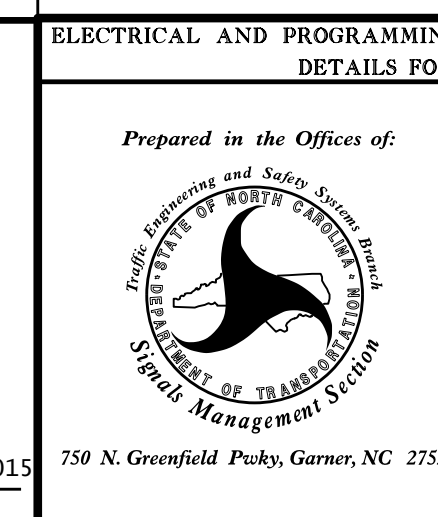
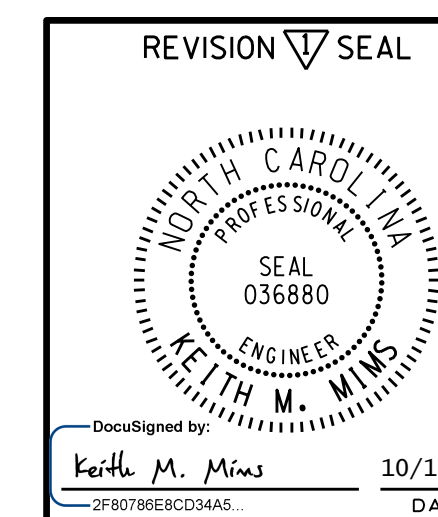
* SYSTEM DETECTOR ONLY. REMOVE THE VEHICLE PHASE ASSIGNED TO THIS DETECTOR IN THE DEFAULT PROGRAMMING.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0561
 DESIGNED: September 2015
 SEALED: 10/15/2015
 REVISED: N/A

Electrical Detail



US117-NC 132 (S. College Rd.)
 at
 University Centre/
 University Commons

Division 3	New Hanover County	Wilmington
PLAN DATE: September 2007	REVIEWED BY:	
PREPARED BY: G. C. BROWN	REVIEWED BY:	
DATE: 10/15/2015	DATE:	

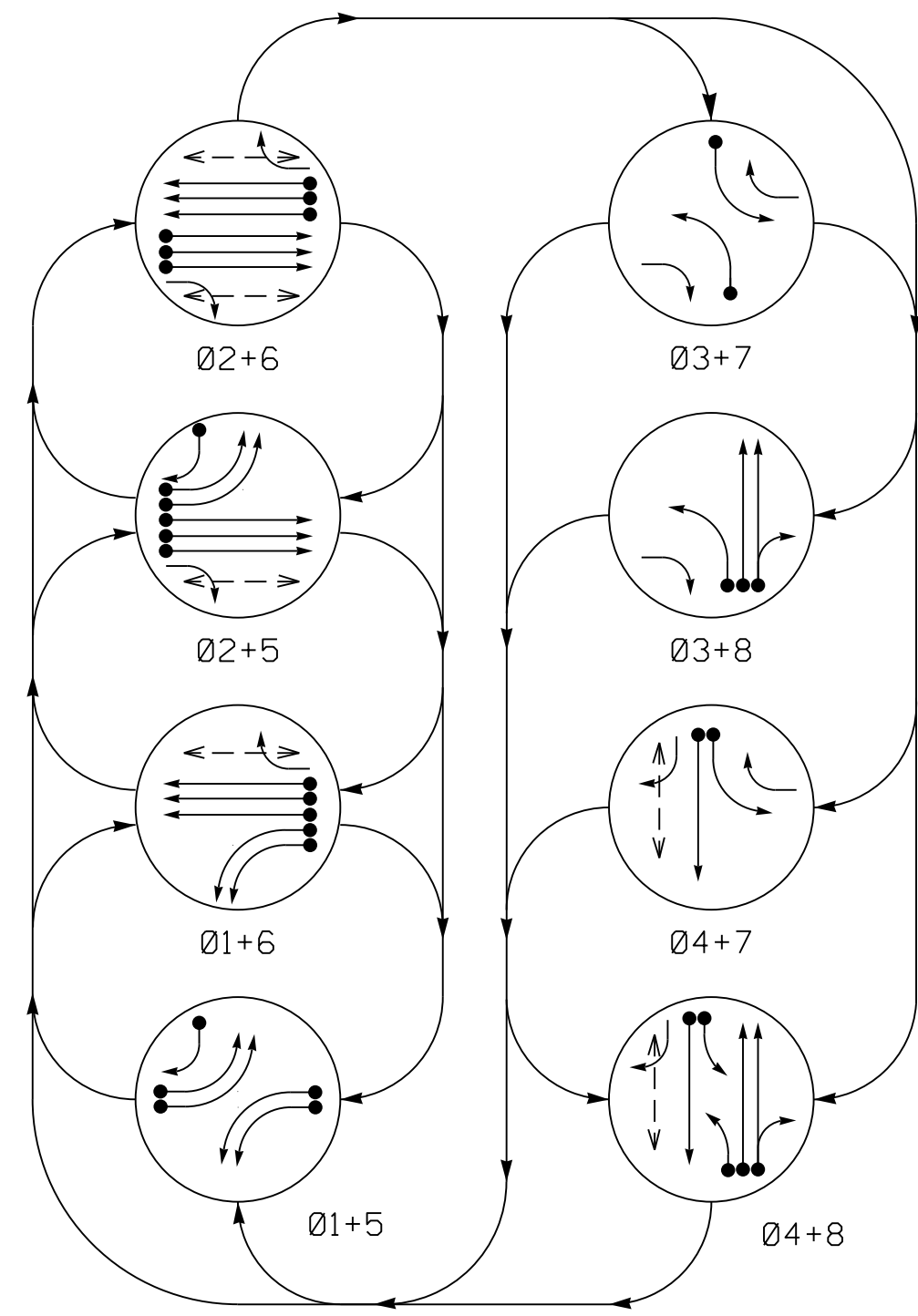
Reconfigured Input File, added Volume Density. (WSA) (DTJ 10/16/15)

SEAL

Not a certified document as to the Original Document but only as to the Revisions - This document originally issued and sealed by George C. Brown, #022013, on 3/10/08. This document is only certified as to the revisions.

SIGNATURE	DATE
SIG. INVENTORY NO. 03-0561	

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

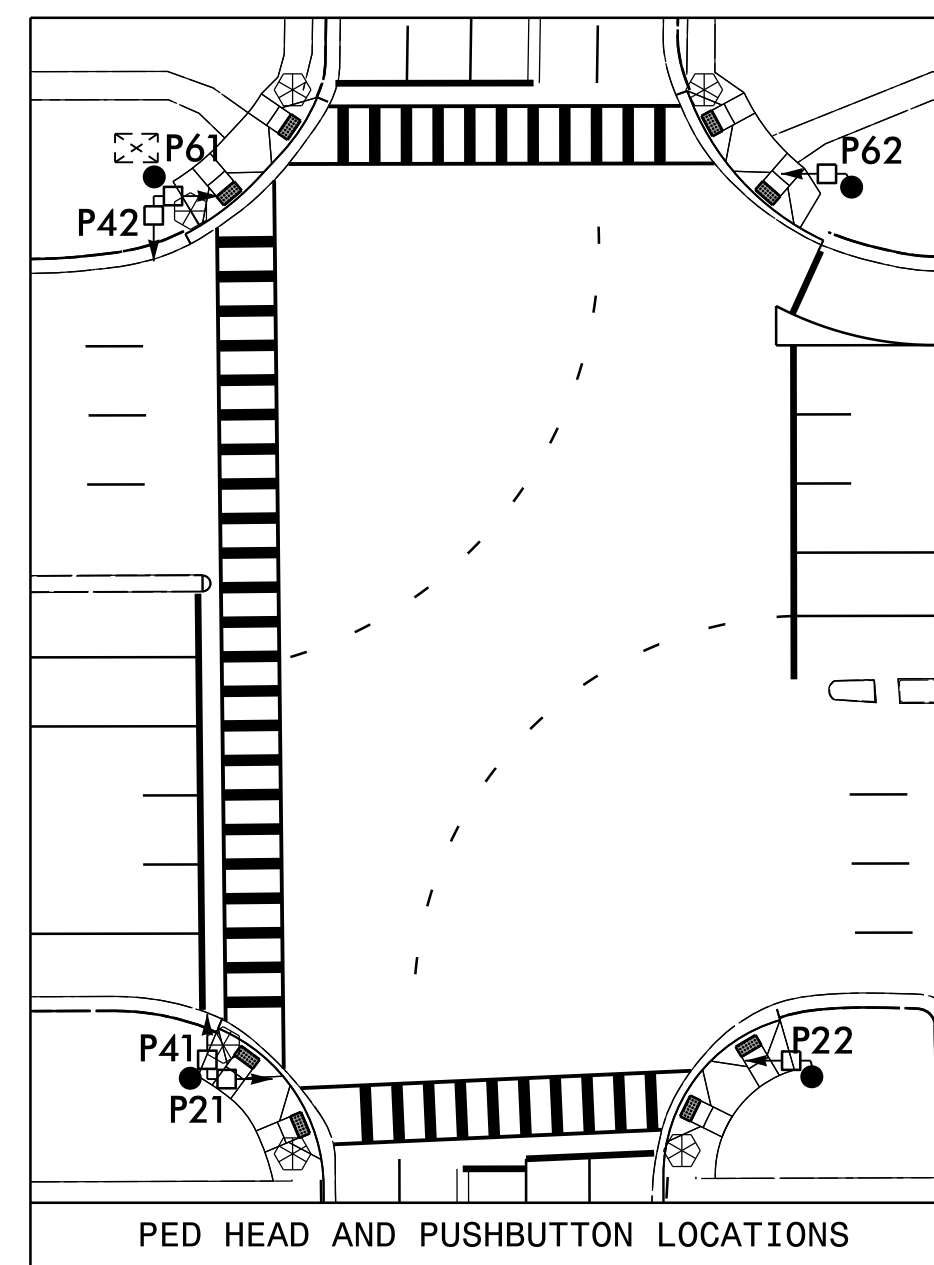
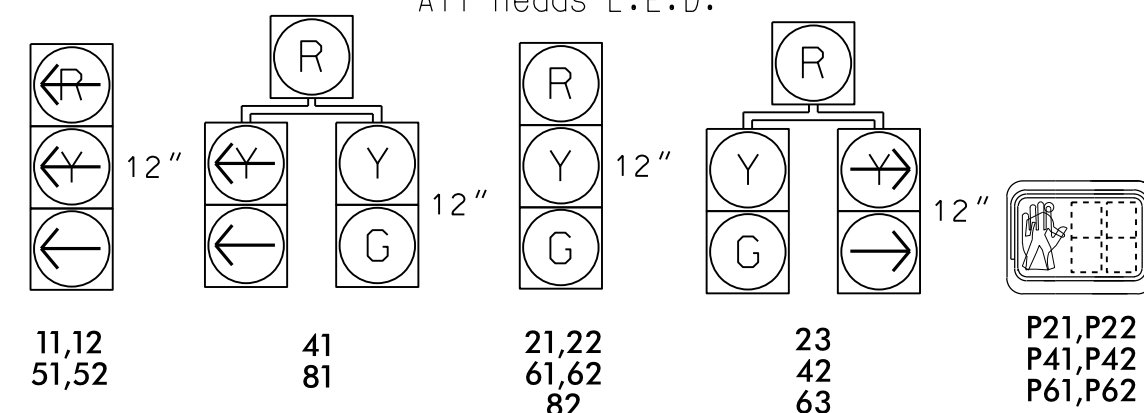
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE							
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8
11,12	←	←	←	←	←	←	←	←
21,22	R	R	G	G	R	R	R	Y
23	R	R	G	G	R	R	R	Y
41	R	R	R	R	R	R	G	R
42	R	R	R	R	R	R	G	R
51,52	←	←	←	←	←	←	←	←
61,62	R	G	R	G	R	R	R	Y
63	R	G	R	G	R	R	R	Y
81	R	R	R	R	R	R	G	R
82	R	R	R	R	R	R	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DRK

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		
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	-
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	-
2A	6X6	300	6	Y	2	Y	Y	-	-	-
2B	6X6	300	6	Y	2	Y	Y	-	-	-
2C	6X6	300	6	Y	2	Y	Y	-	-	-
3A	6X40	0	2-4-2	Y	3	Y	Y	-	15	-
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	-
5C	6X40	0	2-4-2	Y	5	Y	Y	-	15	-
6A	6X6	300	5	Y	6	Y	Y	-	-	-
6B	6X6	300	5	Y	6	Y	Y	-	-	-
6C	6X6	300	5	Y	6	Y	Y	-	-	-
7A	6X40	0	2-4-2	Y	7	Y	Y	-	15	-
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	-
8B	6X40	0	2-4-2	Y	8	Y	Y	-	10	-

8 Phase Fully Actuated (Wilmington Signal System)

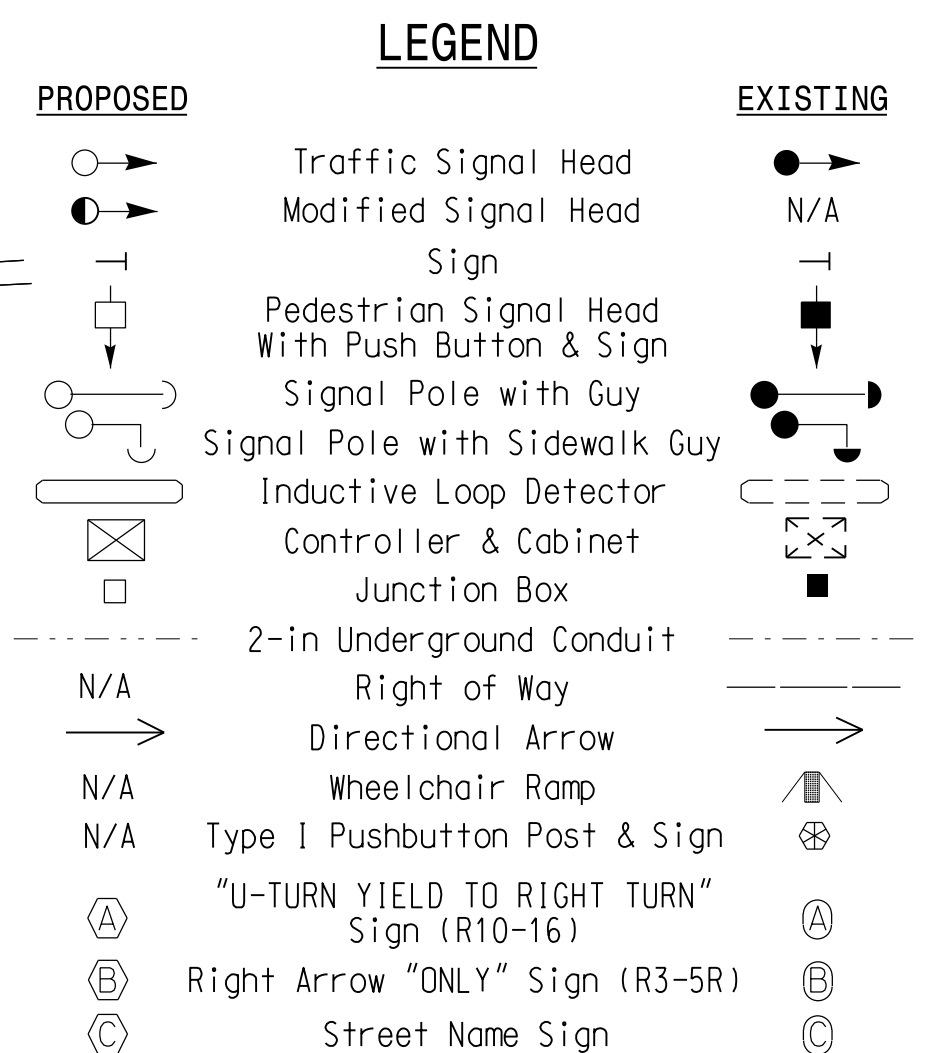
NOTES

- 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.
- Omit phase 3 during phase 4 on.
- Omit phase 7 during phase 8 on.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
- Program pedestrian heads to countdown the flashing "DON'T WALK" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Signal system data: Controller Asset #0240.

OASIS 2070L TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	5	12	5	5	5	12	5	5
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	20	90	20	20	30	90	20	20
Yellow Clearance	3.0	4.4	3.0	3.7	3.0	4.6	3.0	3.8
Red Clearance	3.8	1.3	3.5	3.3	3.9	1.4	3.5	3.3
Walk 1 *	-	7	-	7	-	7	-	-
Don't Walk 1	-	15	-	38	-	16	-	-
Seconds Per Actuation *	-	1.2	-	-	-	1.2	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	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.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

Prepared for the Offices of:
 Transportation Mobility and Safety Division
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 117-NC 132 (S. College Road) at SR 1272 (New Centre Drive)

Division 3 New Hanover County Wilmington

PLAN DATE: March 2016 REVIEWED BY:

PREPARED BY: J. M. Pickens REVIEWED BY:

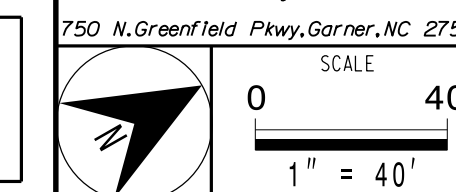
REVISIONS: _____ INIT. DATE

Seal: JASON M. PICKENS, ENGINEER, SEAL 37950

DocuSigned by: Jason M. Pickens 3/30/2016

SIG. INVENTORY NO. 03-0240

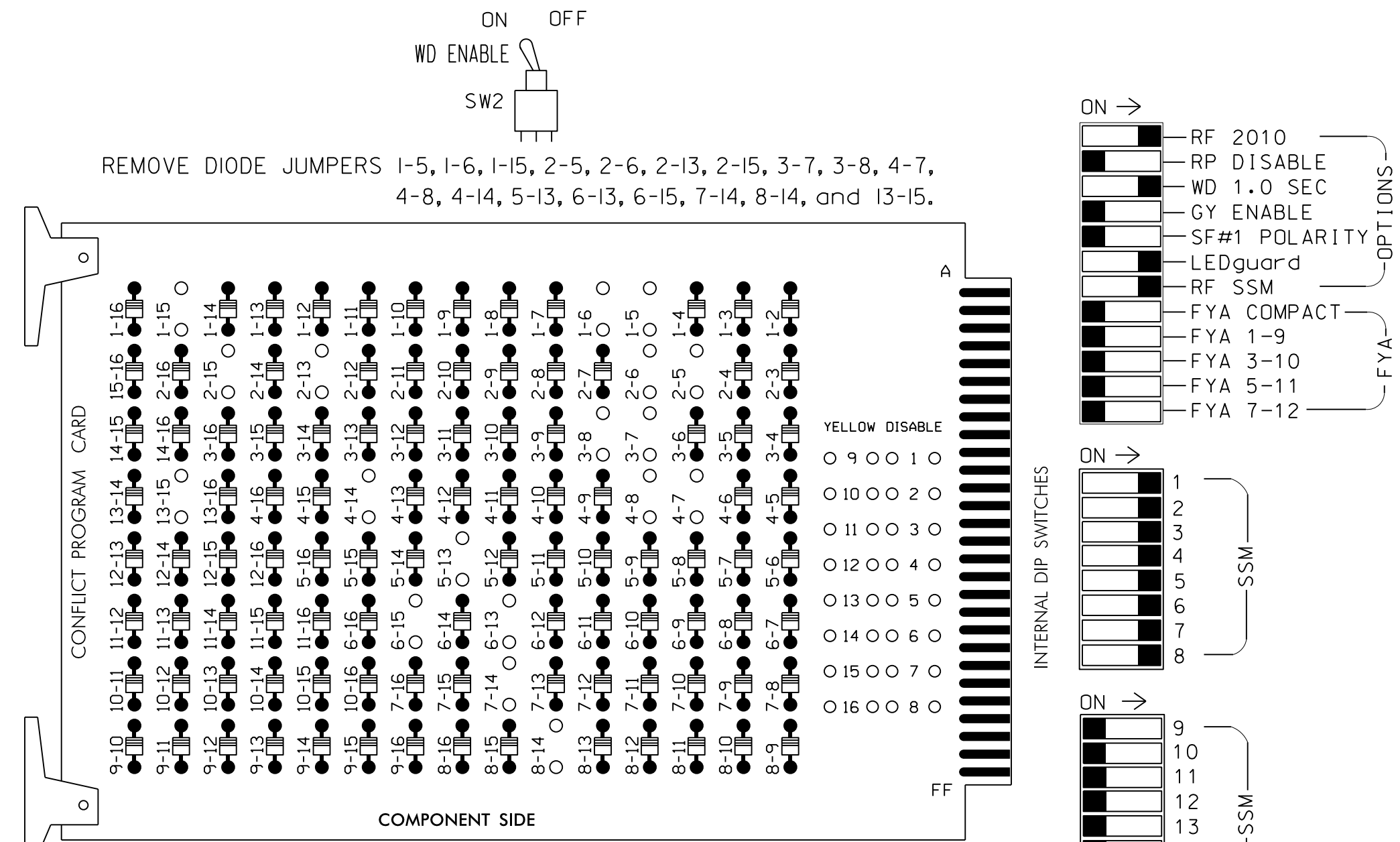
PLANS PREPARED BY:
PARSONS
 5540 CENTERVIEW DR., SUITE 217
 RALEIGH, NORTH CAROLINA 27606
 NC LICENSE NO: F-0246
 FOR NORTH CAROLINA DEPT. OF TRANSPORTATION



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EDI MODEL 2010ECL-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.
 - Make sure jumpers SEL2-SEL5 are present on the monitor board.

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.
- 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 9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 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, 4, and 6 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET332
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS..12
 LOAD SWITCHES USED....S1,S2,S2P,S3,S4,S4P,S5,S6,S6P,S7,S8
 PHASES USED.....1,2,3,4,5,6,7,8,2PED,4PED,6PED
 OVERLAPS.....NONE

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.	11,12	21,22, 23	P21, P22	23,81	41,42	P41, P42	42	51,52	61,62, 63	P61, P62	41,63	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			117			132	132			123		
GREEN ARROW	127			118			133	133			124		
Hand Icon			113			104				119			
Walking Person Icon			115			106				121			

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.

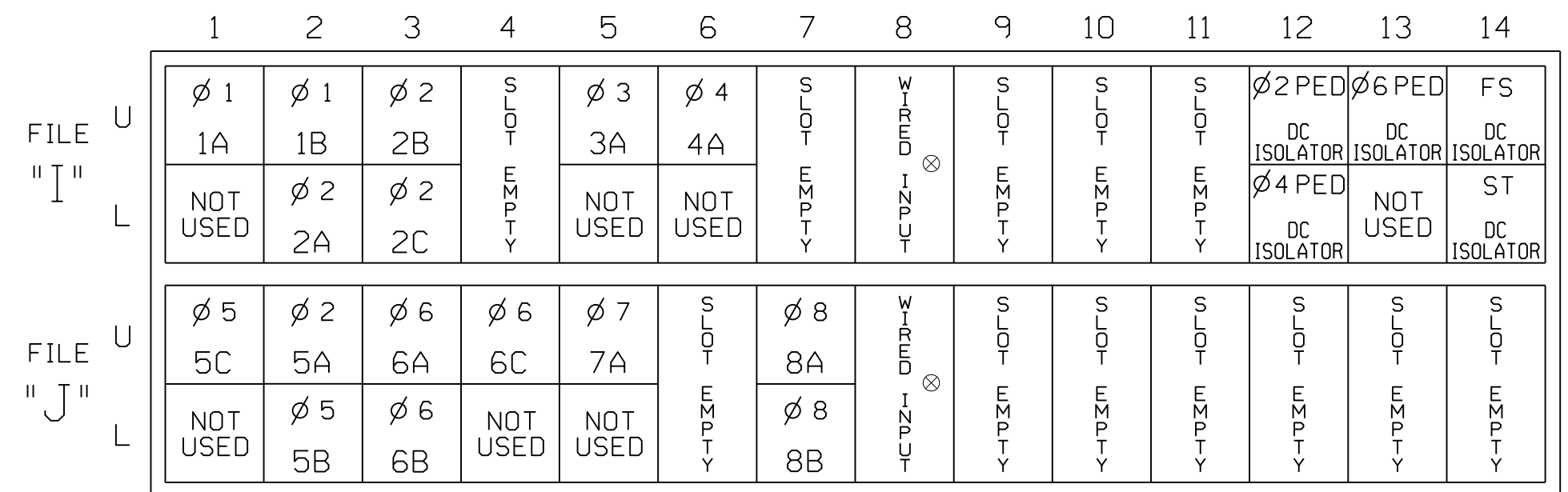
DYNAMIC BACK-UP CONTROL PROGRAMMING

(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 Dynamic/Backup Control Functions 1 and 2.
- From Phase Control Functions Menu press '2' (Dynamic/Backup Control Functions).

INPUT FILE POSITION LAYOUT

(from view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

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
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			
2A	TB2-7,8	I2L	43	5	12	2	Y	Y			
2B	TB2-9,10	I3U	63	25	32	2	Y	Y			
2C	TB2-11,12	I3L	76	38	42	2	Y	Y			
3A ¹	TB4-5,6	I5U	58	20	3	3	Y	Y			15
	-	J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			
5C	TB3-1,2	J1U	55	17	5	5	Y	Y			15
5A	TB3-5,6	J2U	40	2	6	5	Y	Y			
5B	TB3-7,8	J2L	44	6	16	5	Y	Y			
6A	TB3-9,10	J3U	64	26	36	6	Y	Y			
6B	TB3-11,12	J3L	77	39	46	6	Y	Y			
6C	TB5-1,2	J4U	48	10	26	6	Y	Y			
7A ²	TB5-5,6	J5U	57	19	7	7	Y	Y			15
	-	I8U	49	11	24	4	Y	Y			3
8A	TB7-1,2	J7U	66	28	38	8	Y	Y			
8B	TB7-3,4	J7L	79	41	48	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

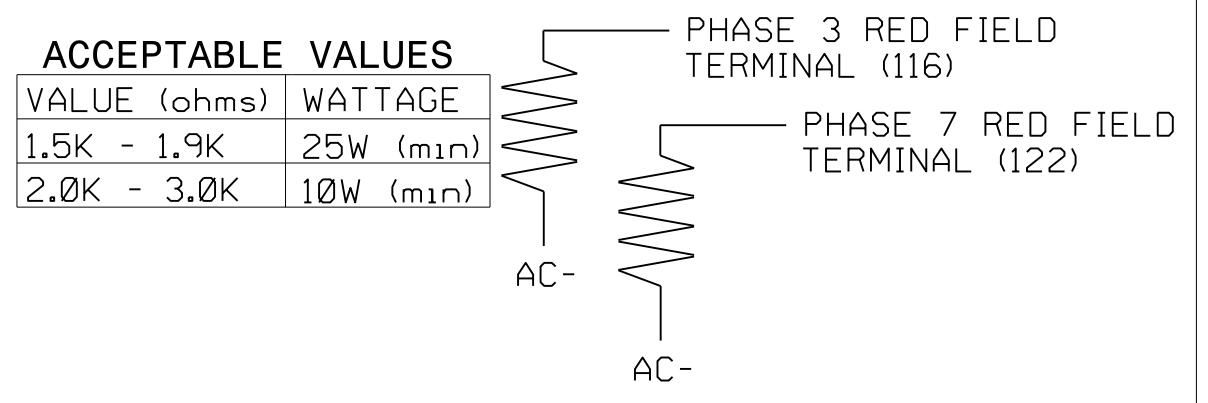
NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0240
 DESIGNED: March 2016
 SEALED: March 30, 2016
 REVISED:

INPUT FILE POSITION LEGEND: J2L
 FILE J
 SLOT 2
 LOWER

- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.

LOAD RESISTOR INSTALLATION DETAIL



NOTE: The purpose of these resistors is to load the channel red monitor inputs in order for the Signal Sequence Monitor to use the full signal sequence monitoring capability on channels that do not use the red display in the field.

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.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 117-NC 132 (S. College Road) at SR 1272 (New Centre Drive)

Division 3 New Hanover County Wilmington

PLAN DATE: March 2016 REVIEWED BY:

PREPARED BY: J. M. Pickens REVIEWED BY:

REVISIONS: INIT. DATE

DocuSigned by: Jason M. Pickens 3/30/2016

750 N. Greenfield Pkwy, Garner, NC 27529

PLANS PREPARED BY: PARSONS 5540 CENTERVIEW DR., SUITE 217 RALEIGH, NORTH CAROLINA 27606 NC LICENSE NO: F-0246 FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER JASON M. PICKENS 37950

SIG. INVENTORY NO. 03-0240

6 Phase Fully Actuated Wilmington Signal System

PHASING DIAGRAM

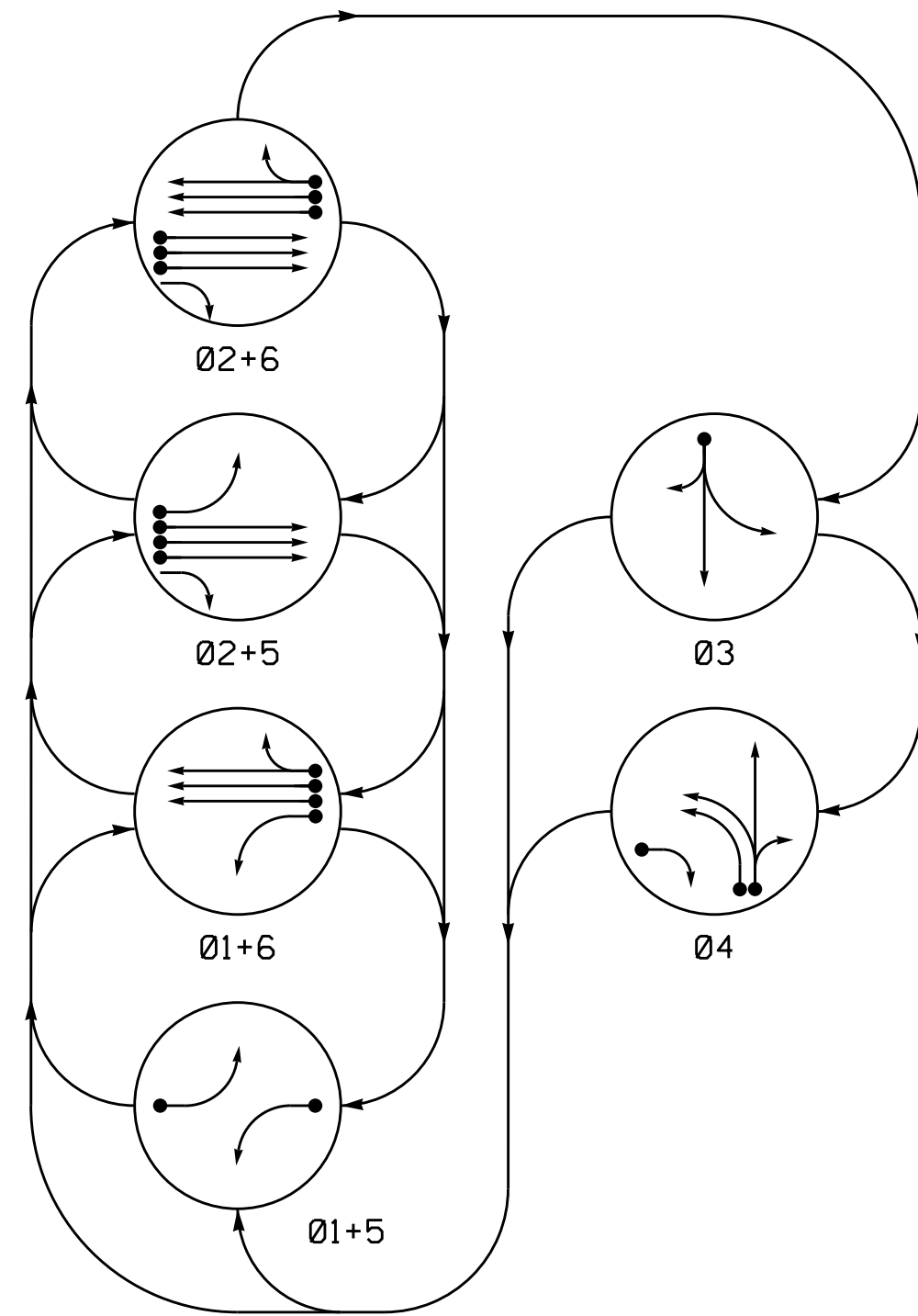


TABLE OF OPERATION

SIGNAL FACE	PHASE					
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 3	Ø 4
11						
21, 22	R	R	G	G	R	Y
23	R	R	G	G	R	/R
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	R	R	R	R	G	R
42	R	R	R	R	G	R
51						
61, 62	R	G	R	G	R	Y

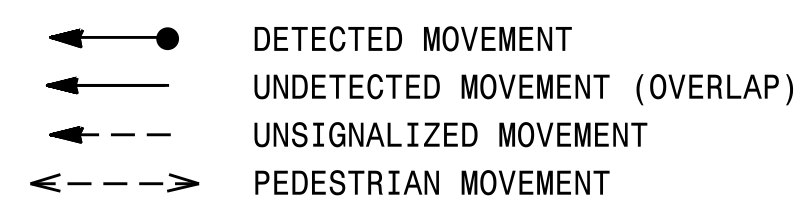
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	-	-	-
2A	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
2B	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
2C	6X6	300	5	Y	2	Y	Y	-	-	-	-	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	10	-	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	3	-	-
4B	6X40	0	2-4-2	-	4	Y	Y	-	-	10	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
6A	6X6	300	5	Y	6	Y	Y	-	-	-	-	-
6B	6X6	300	5	Y	6	Y	Y	-	-	-	-	-
6C	6X6	300	5	Y	6	Y	Y	-	-	-	-	-
S1	6X6	300	5	Y	-	-	-	-	-	-	Y	-

NOTES

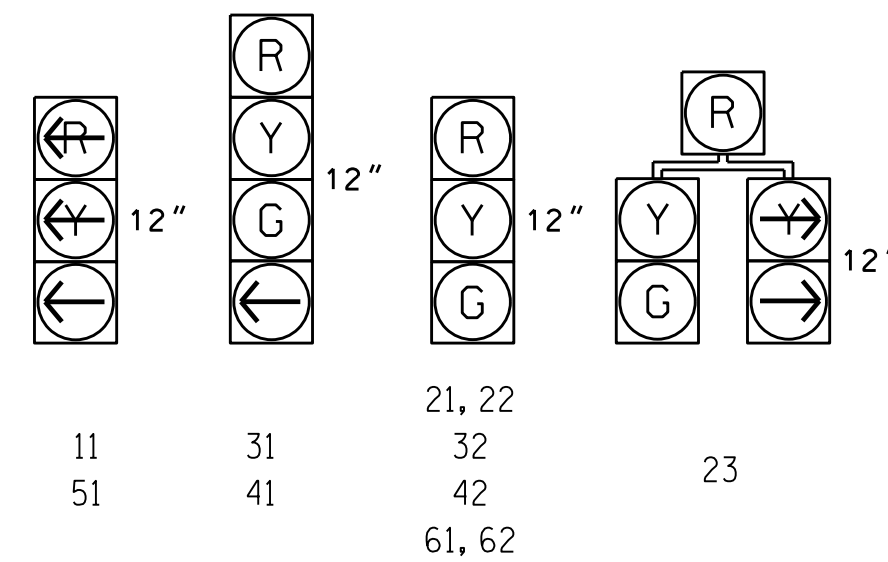
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Signal system data: Controller Asset #0239.

PHASING DIAGRAM DETECTION LEGEND



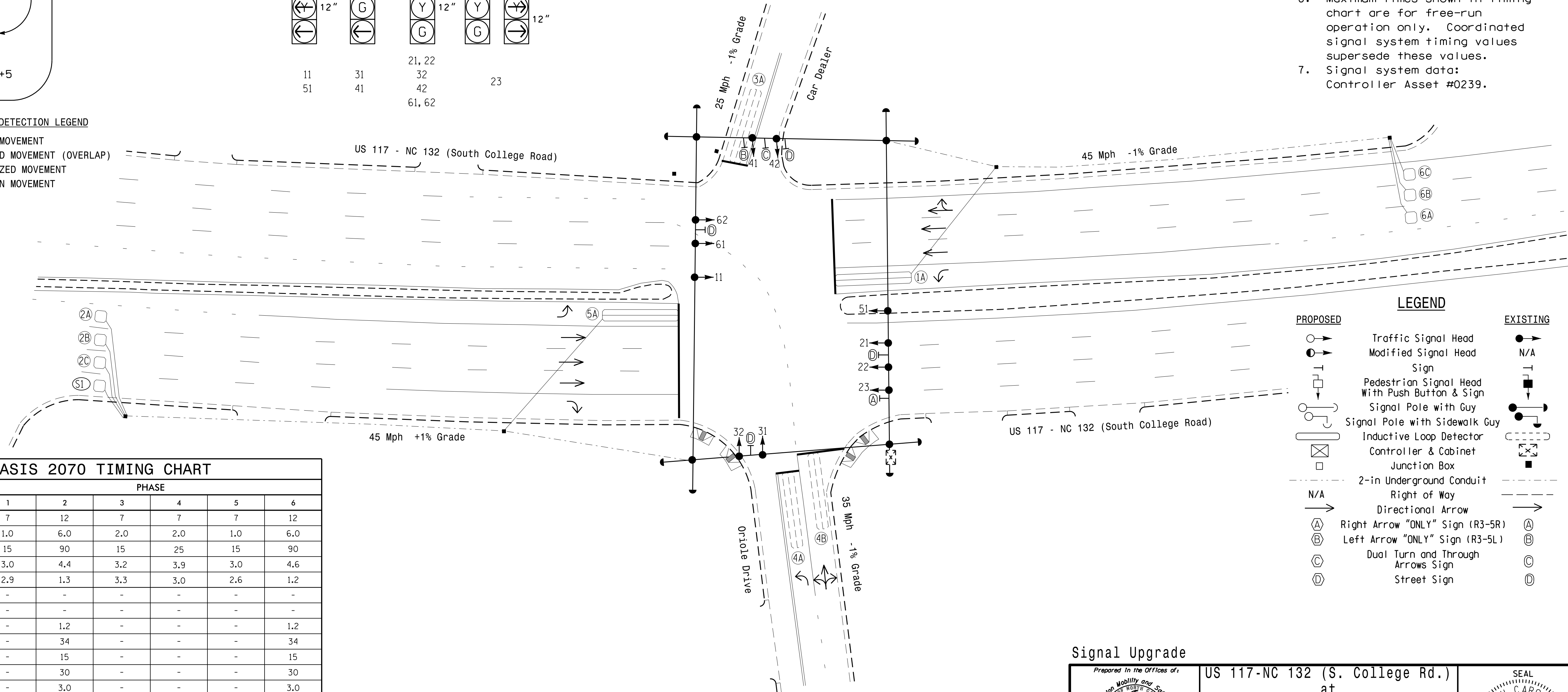
SIGNAL FACE I.D.

All Heads L.E.D.

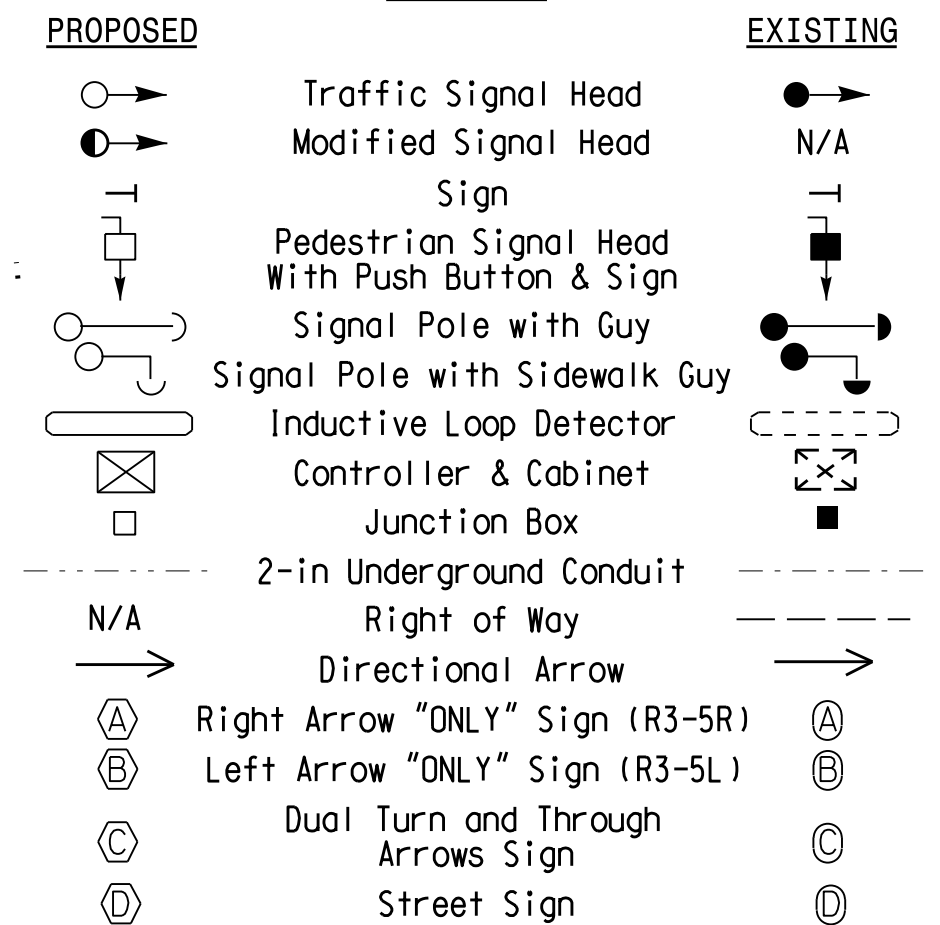


FEATURE	PHASE					
	1	2	3	4	5	6
Min Green 1 *	7	12	7	7	7	12
Extension 1	1.0	6.0	2.0	2.0	1.0	6.0
Max Green 1 *	15	90	15	25	15	90
Yellow Clearance	3.0	4.4	3.2	3.9	3.0	4.6
Red Clearance	2.9	1.3	3.3	3.0	2.6	1.2
Walk 1 *	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-
Seconds Per Actuation *	-	1.2	-	-	-	1.2
Max Variable Initial *	-	34	-	-	-	34
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
Dual Entry	-	-	-	-	-	-
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.



LEGEND



Signal Upgrade

Prepared In the Offices of:

 TRANSPORTATION MOBILITY AND SAFETY DIVISION
 STATE OF NORTH CAROLINA
 SIGNAL DESIGN SECTION
 750 N. Greenfield Pkwy, Garner, NC 27529

**US 117-NC 132 (S. College Rd.)
at
Oriole Drive**

Division 3 New Hanover County Wilmington

PLAN DATE: September 2015 REVIEWED BY: PLA

PREPARED BY: Jeff Spence REVIEWED BY:

SEAL

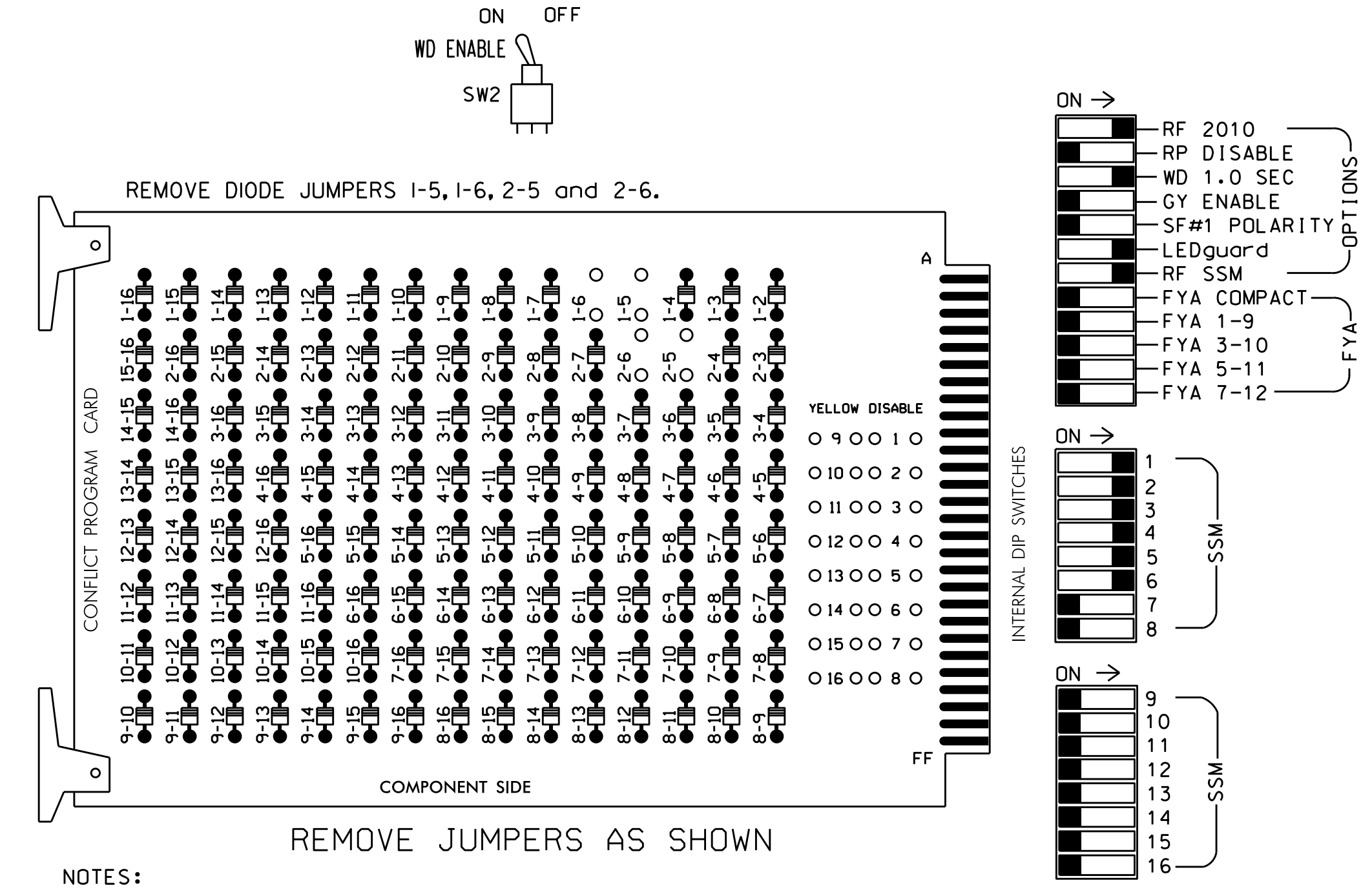
 PAMELA L. ALEXANDER
 ENGINEER

10/15/15 DATE

84789600004E4ED
SIG. INVENTORY NO. 03-0239

EDI MODEL 2010ECL-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.
 - Make sure jumpers SEL2-SEL5 are present on the monitor board.

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.
- 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 7,8,9, 10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- 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.
- The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6
 PHASES USED.....1,2,3,4,5,6
 OVERLAPS.....NONE

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	21, 22,23	NU	31, 32	23, 41, 42	NU	51	61,62	NU	NU	NU	NU
RED		128		116, 116	101, 101			134				
YELLOW		129		117, 117	102, 102			135				
GREEN		130		118, 118	103, 103			136				
RED ARROW	125						131					
YELLOW ARROW	126				102		132					
GREEN ARROW	127			118	103, 103		133					

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
U	∅ 1	∅ 2	∅ 2	∅ 3	∅ 4	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	FS
L	1A	2A	2C	3A	4A	5A	6A	7A	8A	9A	10A	11A	12A	13A	DC ISOLATOR
	NOT USED	∅ 2	NOT USED	NOT USED	∅ 4	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	DC ISOLATOR
U	∅ 5	∅ 6	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14	∅ 15	∅ 16	∅ 17	∅ 18
L	5A	6A	6C	7A	8A	9A	10A	11A	12A	13A	14A	15A	16A	17A	18A
	NOT USED	∅ 6	SYS. DET. S1	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14	∅ 15	∅ 16	∅ 17	∅ 18

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

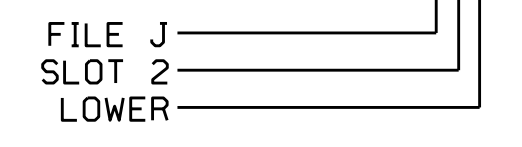
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB2-1,2	I1U	56	18	1	1	Y	Y			
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			10
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
6C	TB3-9,10	J3U	64	26	36	6	Y	Y			
* S1	TB3-11,12	J3L	77	39	46	SYS					

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

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0239
 DESIGNED: September 2015
 SEALED: 10/15/2015
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 117-NC 132 (S. College Rd.) at Oriole Drive

Prepared in the Offices of: Signal Management Systems, Inc.

Division 3 New Hanover County Wilmington

PLAN DATE: October 2015 REVIEWED BY: T. Joyce

PREPARED BY: S. Armstrong REVIEWED BY:

REVISIONS	INIT.	DATE

DocuSigned by: Keith M. Mims 10/19/2015

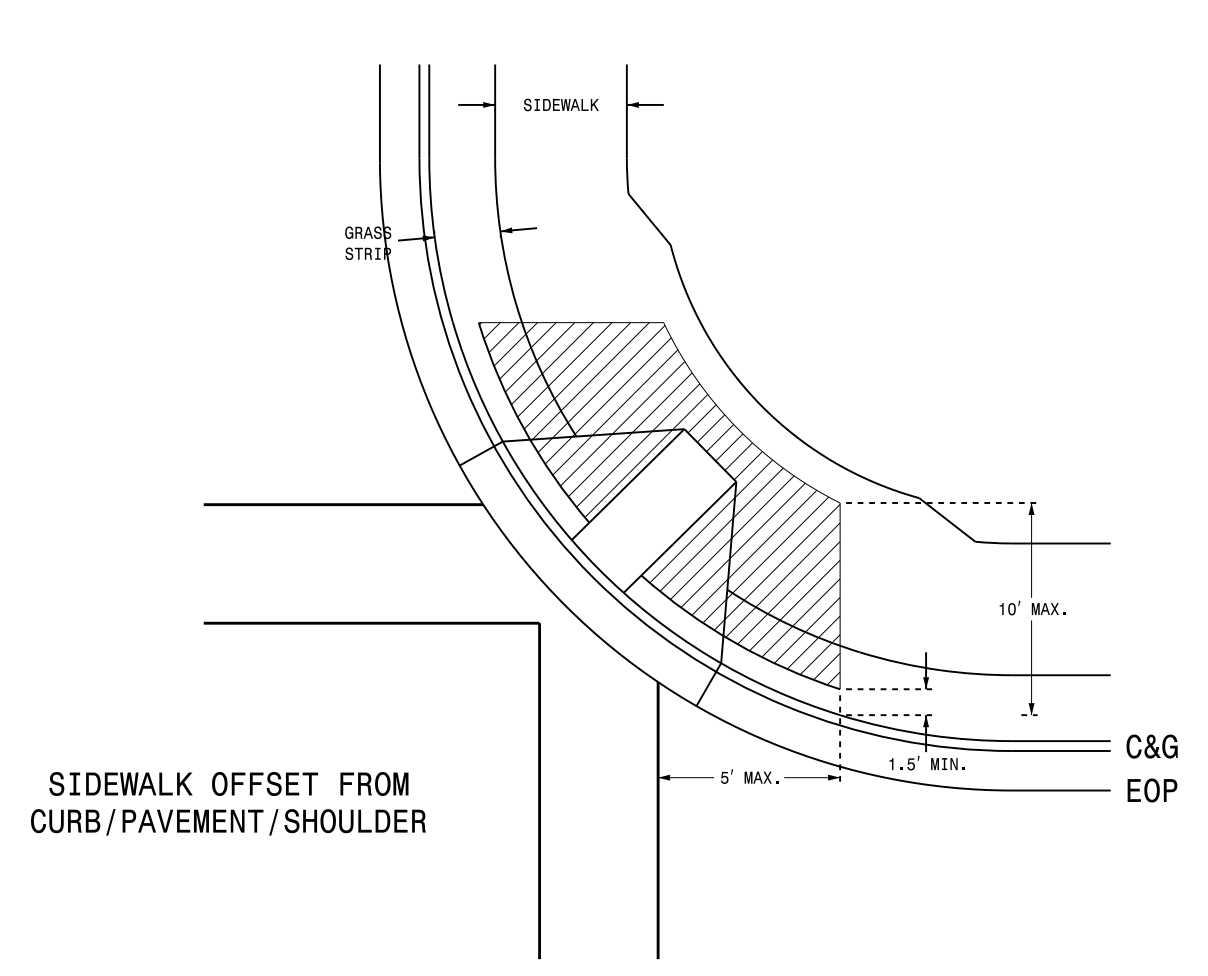
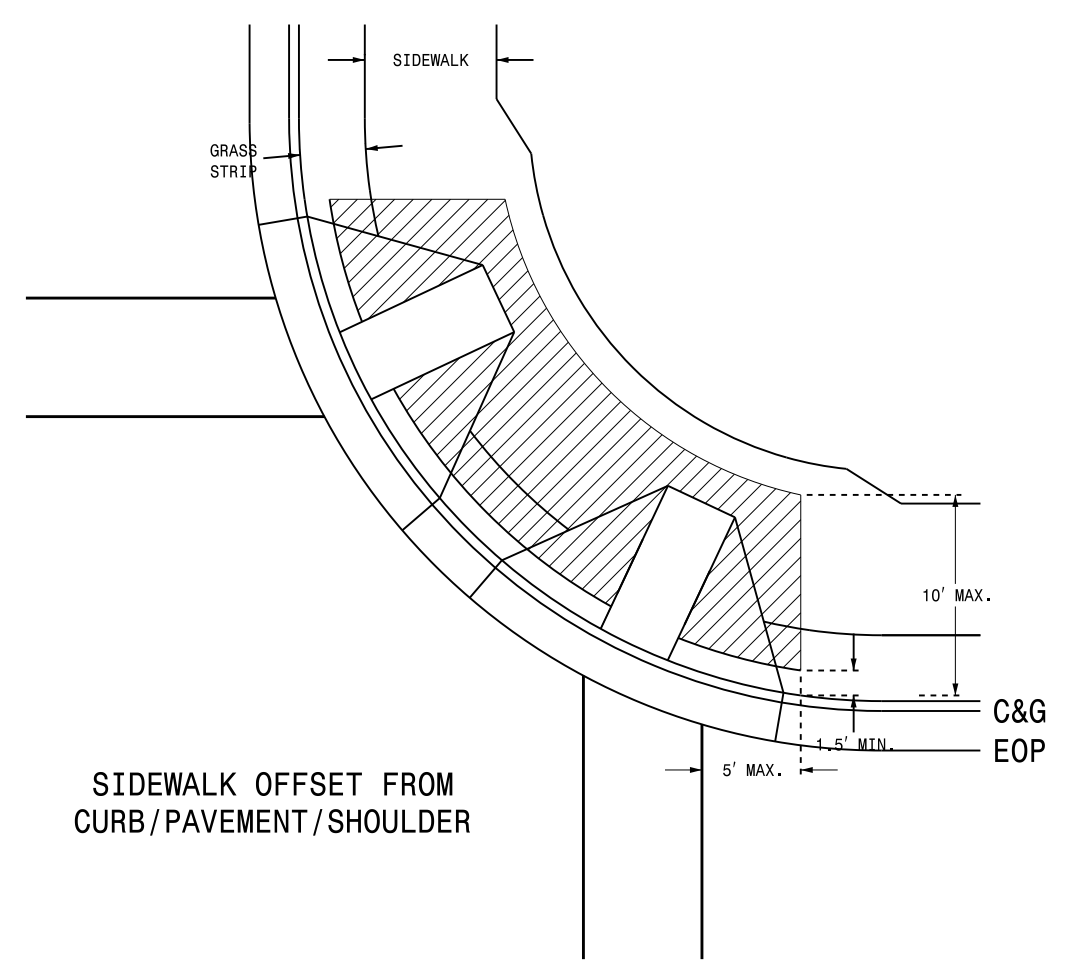
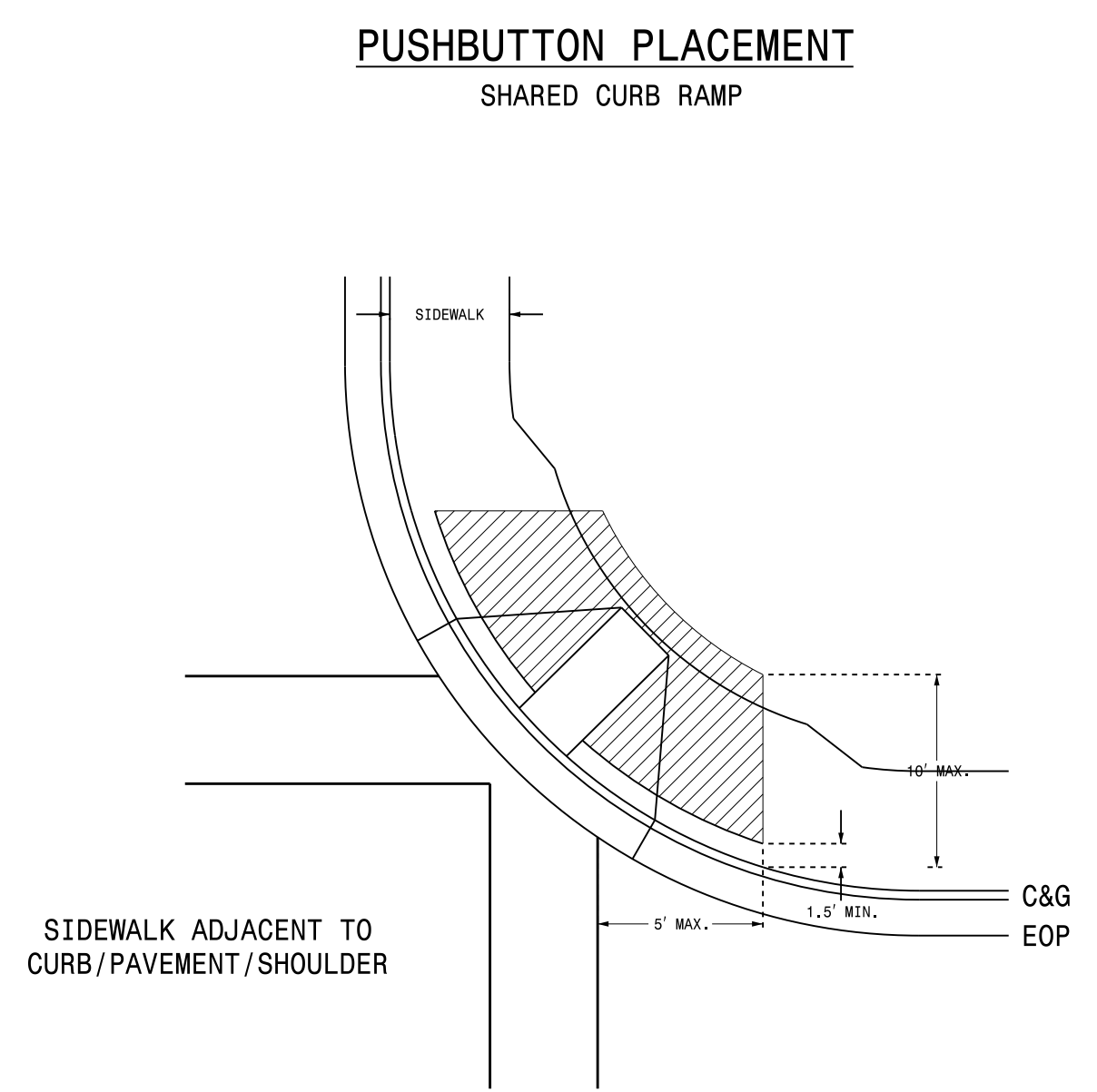
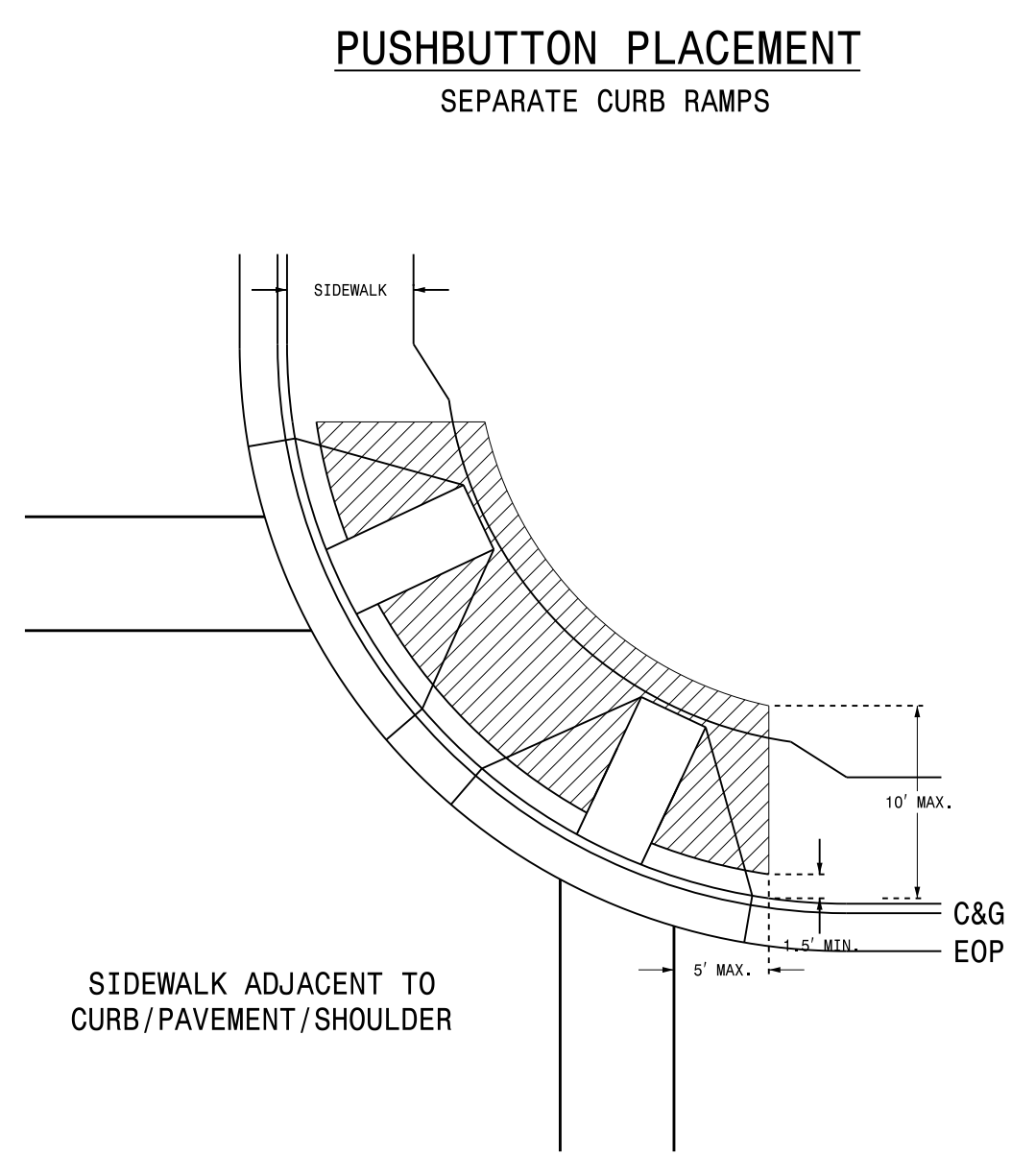
750 N. Greenfield Pkwy, Garner, NC 27529

SIG. INVENTORY NO. 03-0239

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
 PLACEMENT DETAIL

SHEET 1 OF 3
1705D01



- NOTES**
1. Pushbutton pedestals should not be located further than 10 feet from the edge of curb, shoulder, or pavement.
 2. The face of the pushbutton should be parallel to the applicable crosswalk.
 3. Separate pushbuttons used on the same corner should be separated by a distance of at least 10 feet.
 4. Pushbuttons shall be installed adjacent to a level surface with a maximum reach distance of 10 inches.
 5. Maintain 4 feet of clearance around pedestal if located in sidewalk.
 6. Refer to section 1705 of the 2012 NCDOT Roadway Standard Drawings for Pushbutton Assembly details.
 7. Refer to section 1743 of the 2012 NCDOT Roadway Standard Drawings for Pedestal details.
 8. Contact Division Traffic Engineer for pushbutton location approval prior to installation.
 9. Curb ramps are for symbolic use only and may not reflect actual design or field conditions.

PROPOSED	LEGEND
	Signal Pole
	Type I Pushbutton Post
	Type II Signal Pedestal
	Pushbutton & Sign
	Pedestrian Signal Head
	Curb Ramp
	Pushbutton Location Area

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
 PLACEMENT DETAIL

SHEET 1 OF 3
1705D01

See Plate for Title

Prepared in the Offices of:

750 N. Greenfield Parkway
Garner, NC 27529

SEAL

DocuSigned by:

 180848082744604

6/17/2014

SIGNATURE DATE

06-AUG-2014 16:37
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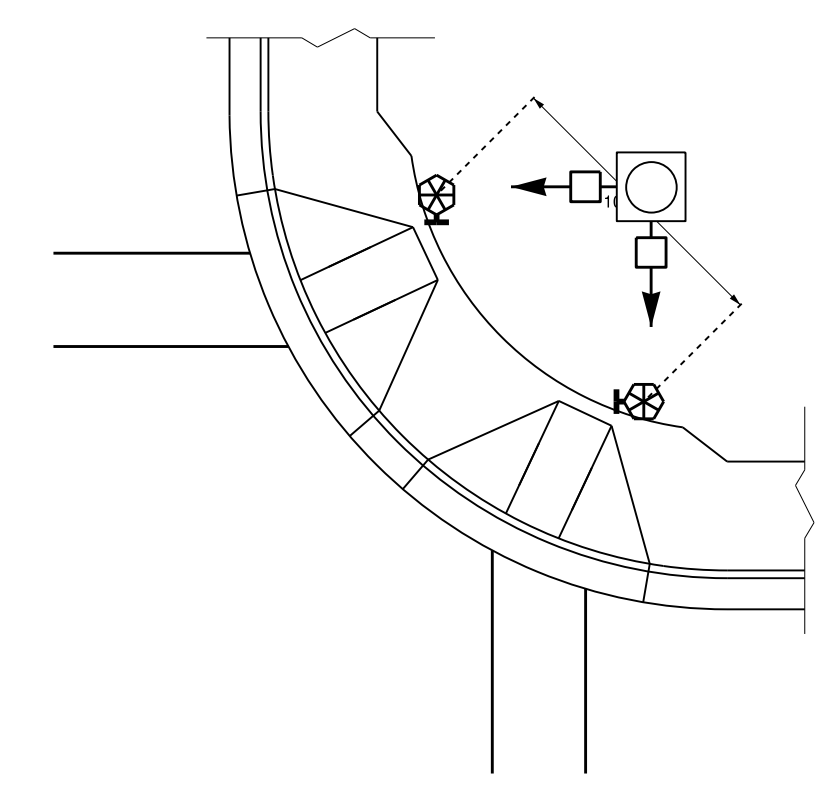
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

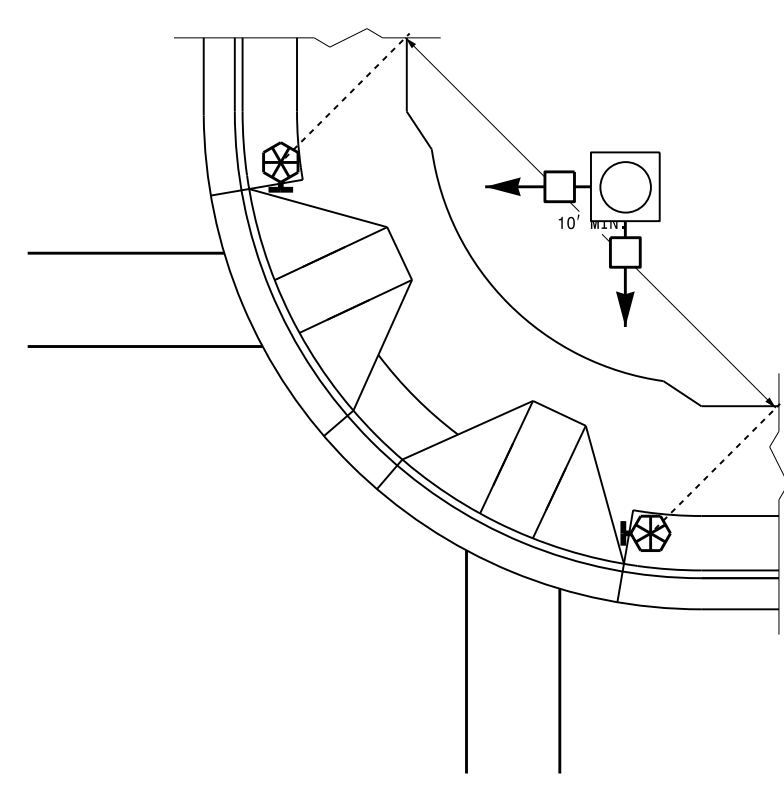
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 2 OF 3
1705D01

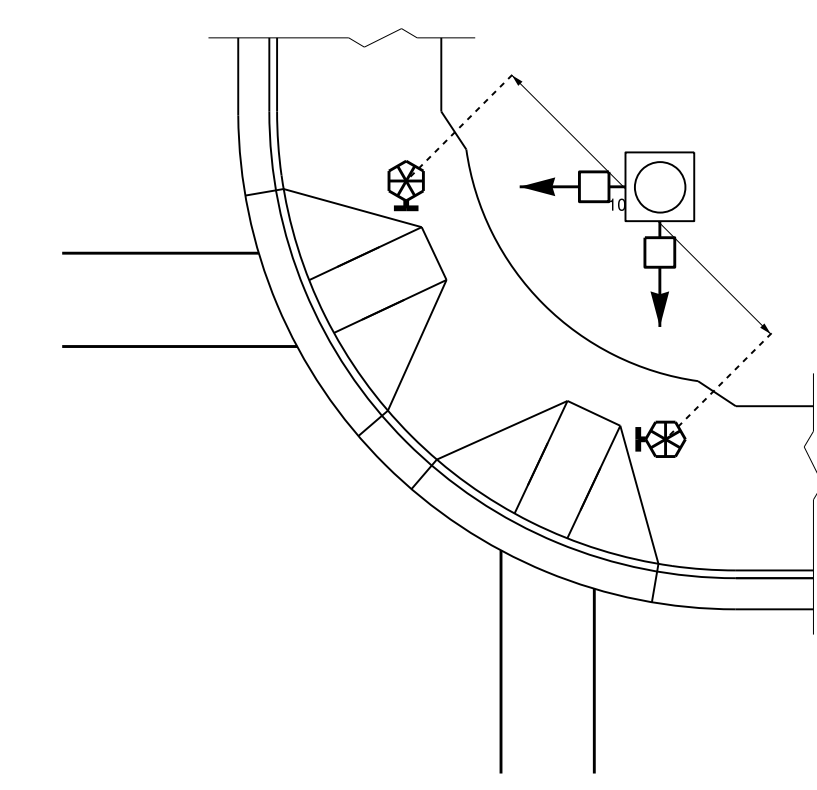
TYPICAL PUSHBUTTON LOCATIONS (CASE I)
SEPARATE CURB RAMPS W/ TYPE I PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER



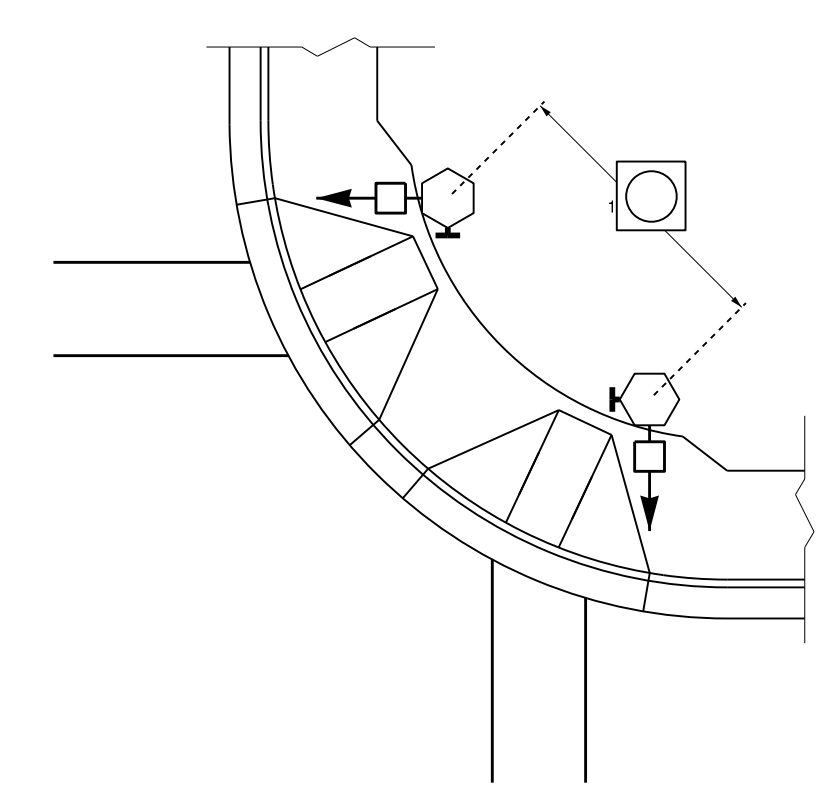
PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

PROPOSED

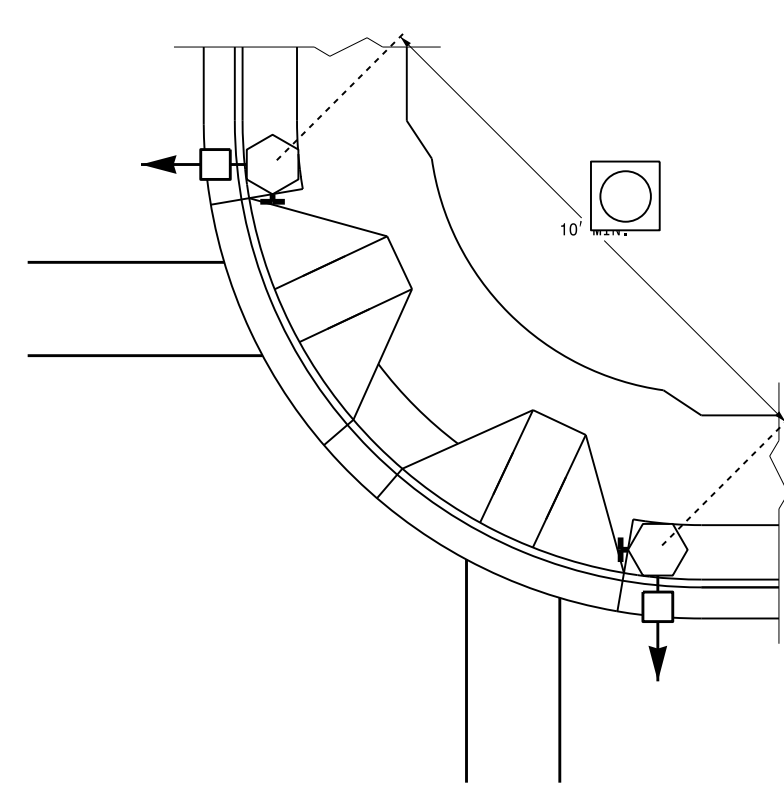
- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

LEGEND

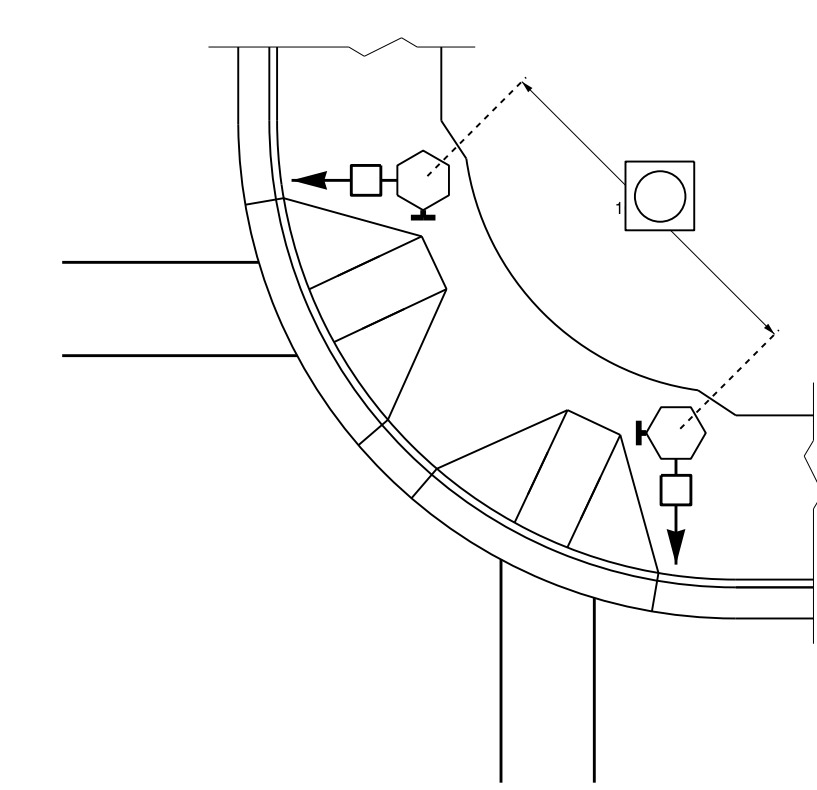
TYPICAL PUSHBUTTON LOCATIONS (CASE II)
SEPARATE CURB RAMPS W/ TYPE II PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER

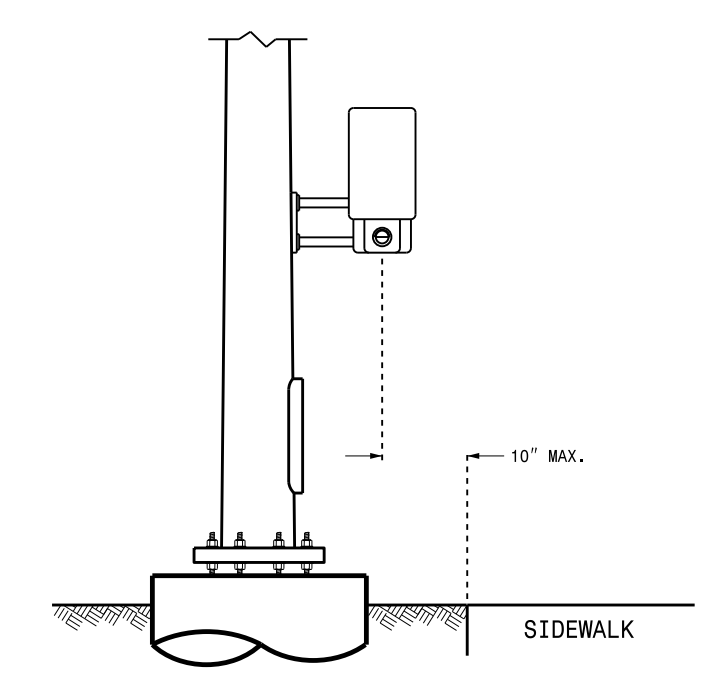


GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER



PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

OPTIONAL PUSHBUTTON EXTENSION
FACE OF PUSHBUTTON PARALLEL TO
APPLICABLE CROSSWALK



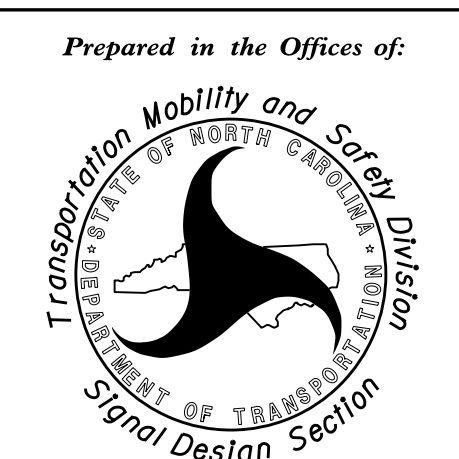
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

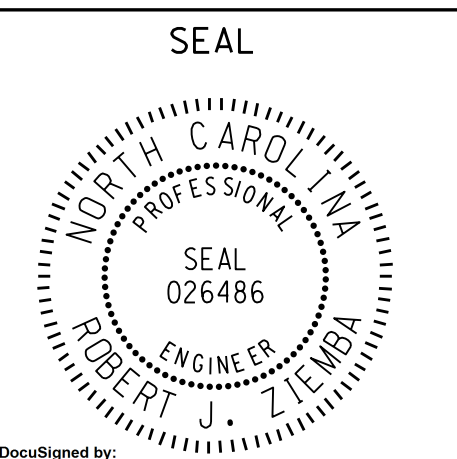
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 2 OF 3
1705D01

See Plate for Title



Prepared in the Offices of:
750 N. Greenfield Parkway
Garner, NC 27529



DocuSigned by:
Robert J. Ziemba
188B486274X404
SIGNATURE

6/17/2014
DATE

06-1406-2014, 16:38
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 rz1emba

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

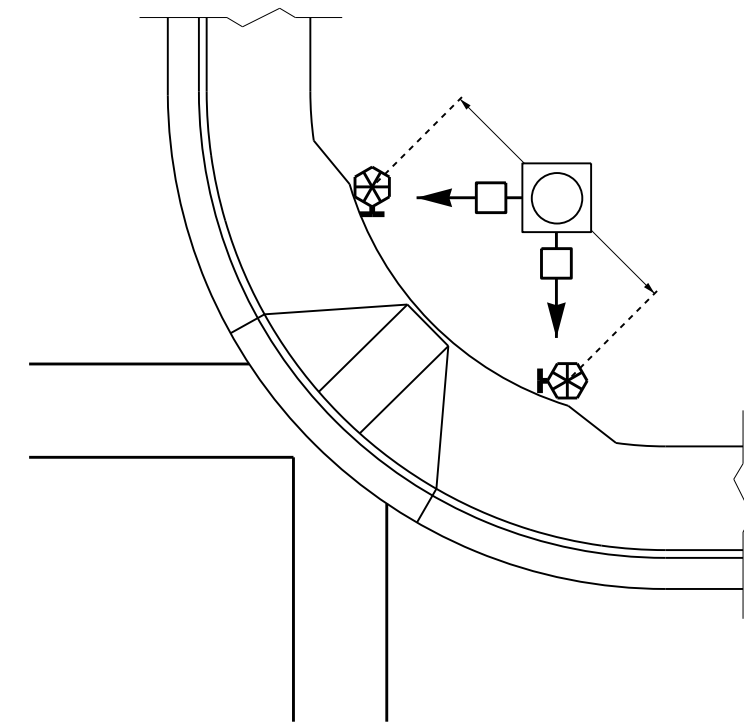
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 3 OF 3

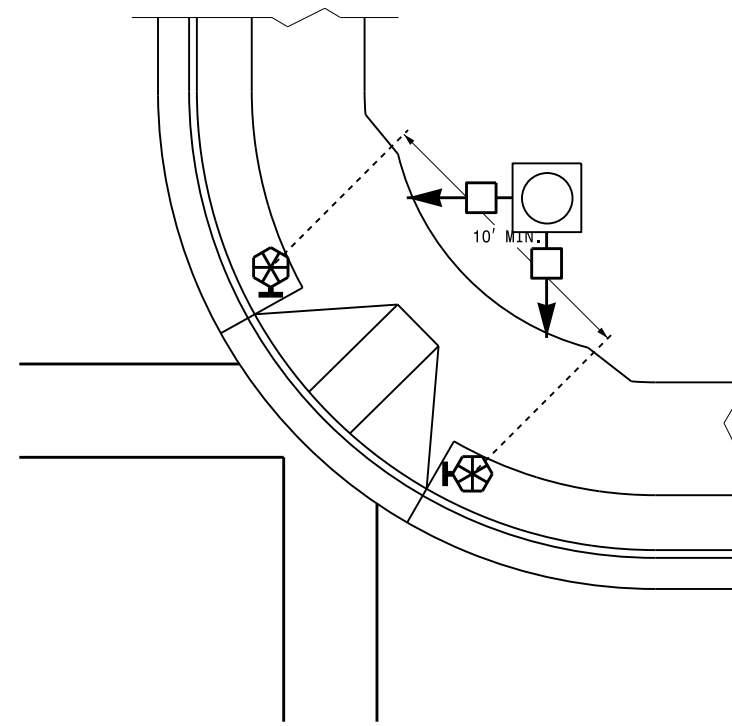
1705D01

TYPICAL PUSHBUTTON LOCATIONS (CASE III)

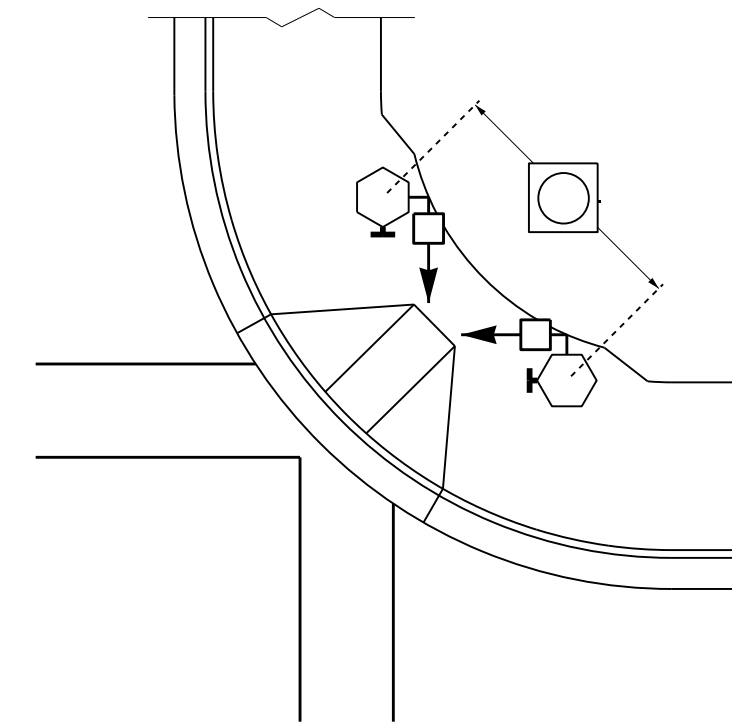
SHARED CURB RAMPS



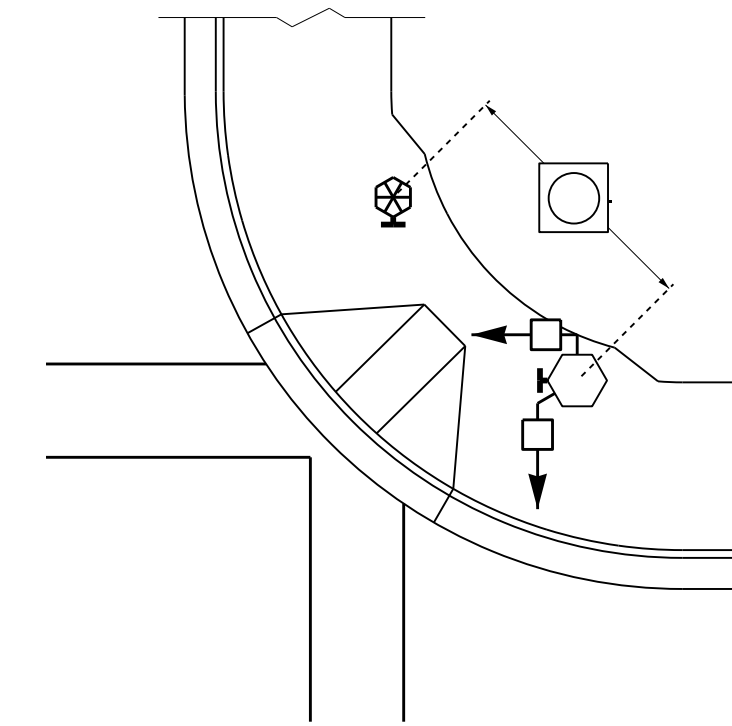
BACK OF SIDEWALK IS WITHIN 10' OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK OF SIDEWALK EXCEEDS 10' FROM CURB OR PAVEMENT/SHOULDER

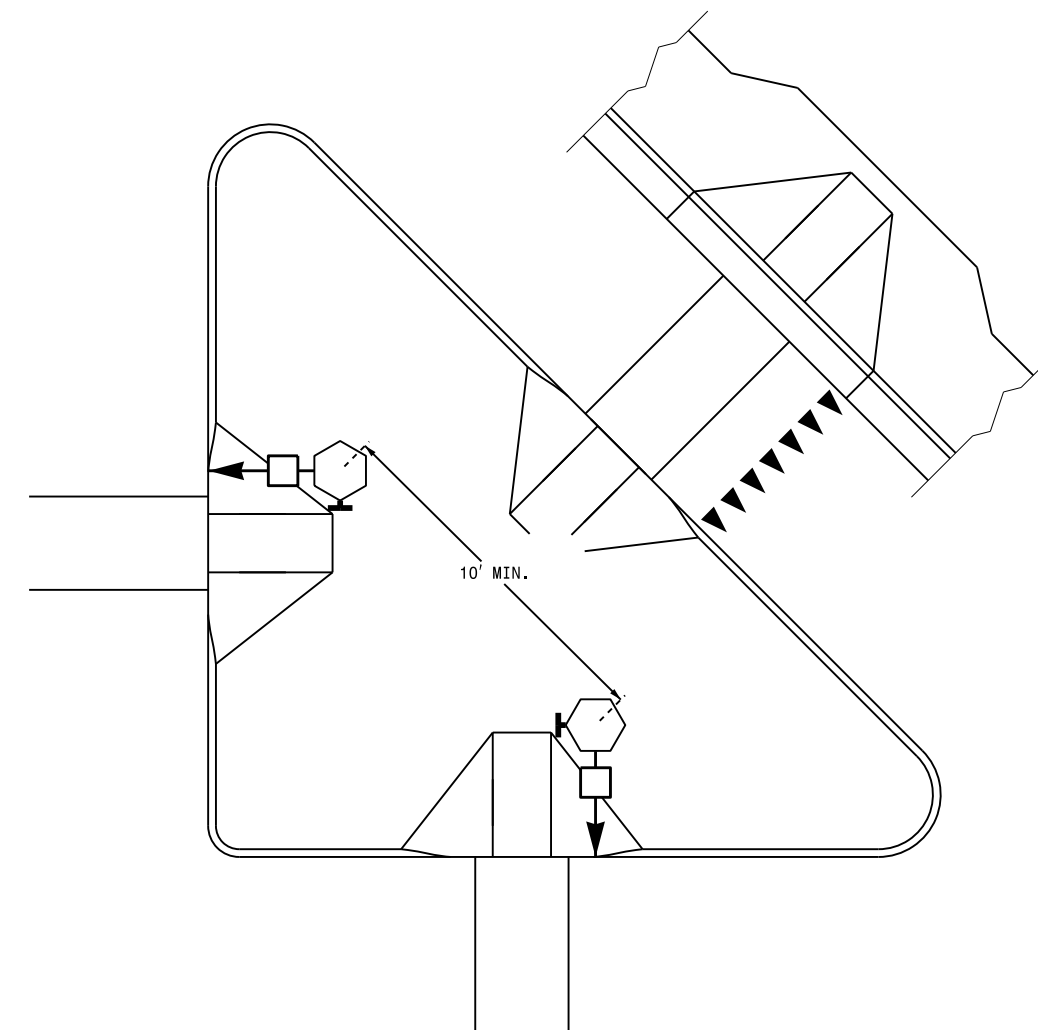


PUSHBUTTON PLACEMENT IN WIDE SIDEWALK (CORRESPONDING PUSHBUTTONS AND SIGNAL HEADS ON DIFFERENT PEDESTALS)

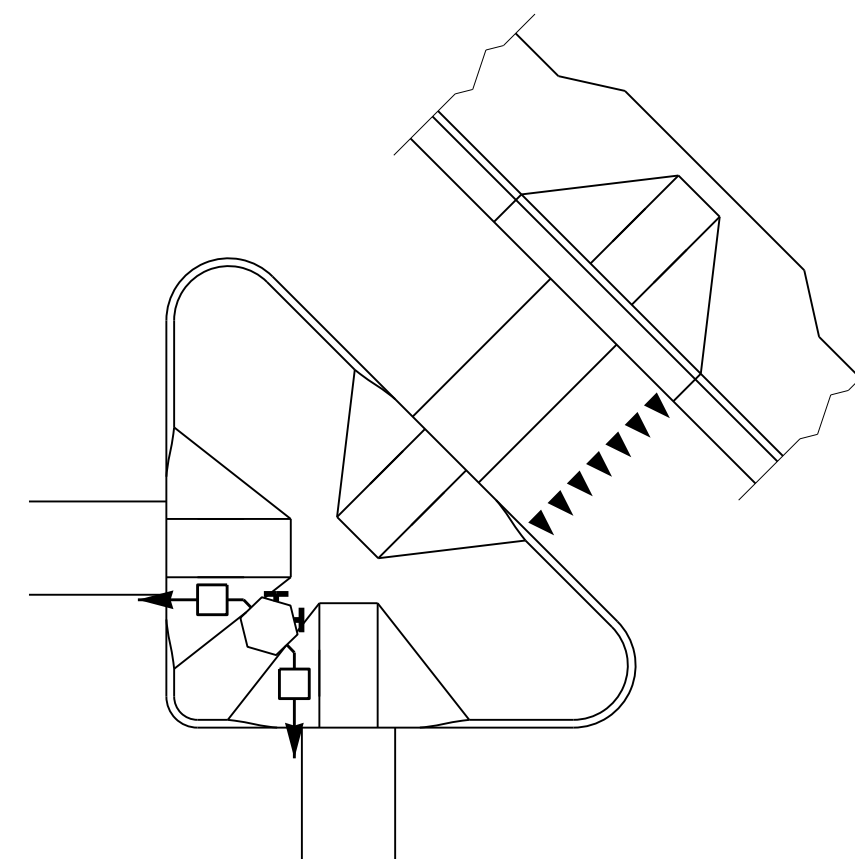


PUSHBUTTON PLACEMENT WITH SHARED TYPE II SIGNAL PEDESTAL AND TYPE I PUSHBUTTON POST

TRAFFIC ISLAND PUSHBUTTON LOCATIONS



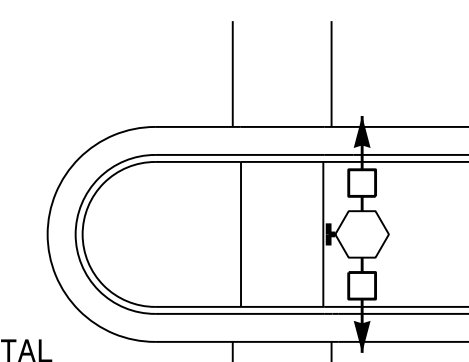
PUSHBUTTON PLACEMENT IN LARGE "PORK CHOP ISLAND" WITH SEPARATE PEDESTALS



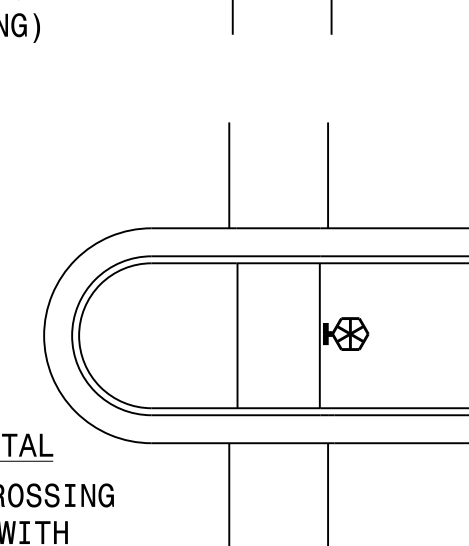
PUSHBUTTON PLACEMENT IN SMALL "PORK CHOP ISLAND" WITH SHARED PEDESTAL

PUSHBUTTON PLACEMENT IN MEDIAN

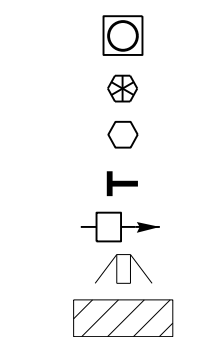
TYPE II PEDESTAL (FOR STAGED OR MULTI-PHASE CROSSING)



TYPE I PEDESTAL (FOR COMPLETE CROSSING CURB TO CURB WITH OPTIONAL REFUGE)



PROPOSED



LEGEND

- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

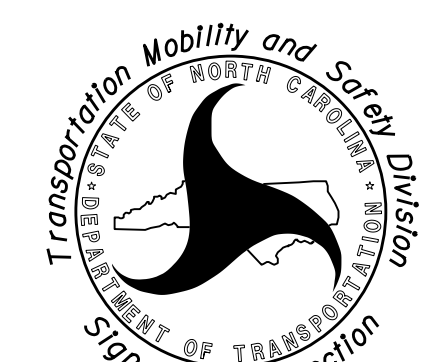
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 3 OF 3

1705D01

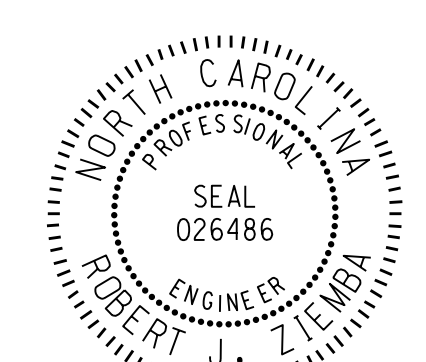
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