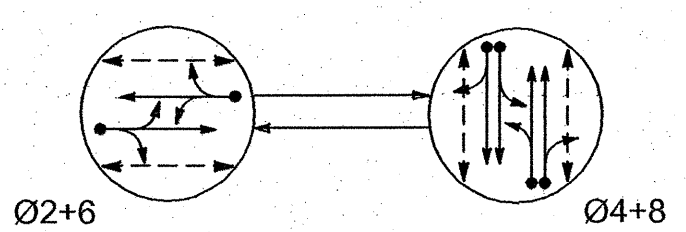


STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	-	C Sig-163	1
F.A. PROJECT NO. -			
PROJECT I.D. NO. -			

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

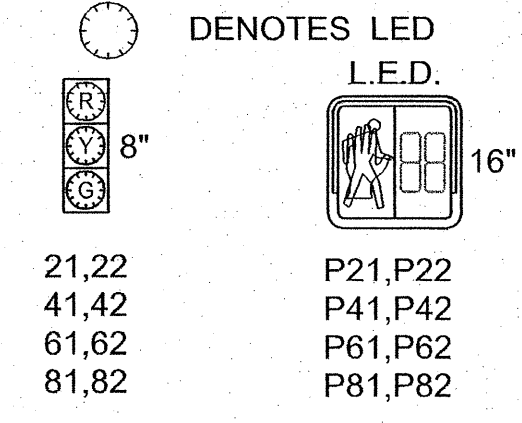
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

Signal Face	Phase	
	Ø	F L A S H
21,22	G R Y	
41,42	R G R	
61,62	G R Y	
81,82	R G R	
P21,P22	W D W *	
P41,P42	D W W *	
P61,P62	W D W *	
P81,P82	D W W *	

* - DARK

SIGNAL FACE I.D.



2070L LOOP AND 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
2A	6 x 6	70	4	-	2	Y	Y	-	-	-	-	Y
4A	6 x 40	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
4B	6 x 40	0	2-4-2	-	4	Y	Y	-	-	-	-	Y
6A	6 x 6	70	4	-	6	Y	Y	-	-	-	-	Y
8A	6 x 40	0	2-4-2	-	8	Y	Y	-	-	-	-	Y
8B	6 x 40	0	2-4-2	-	8	Y	Y	-	-	-	-	Y

2 - PHASE FULLY - ACTUATED WILMINGTON SIGNAL SYSTEM

NOTES:

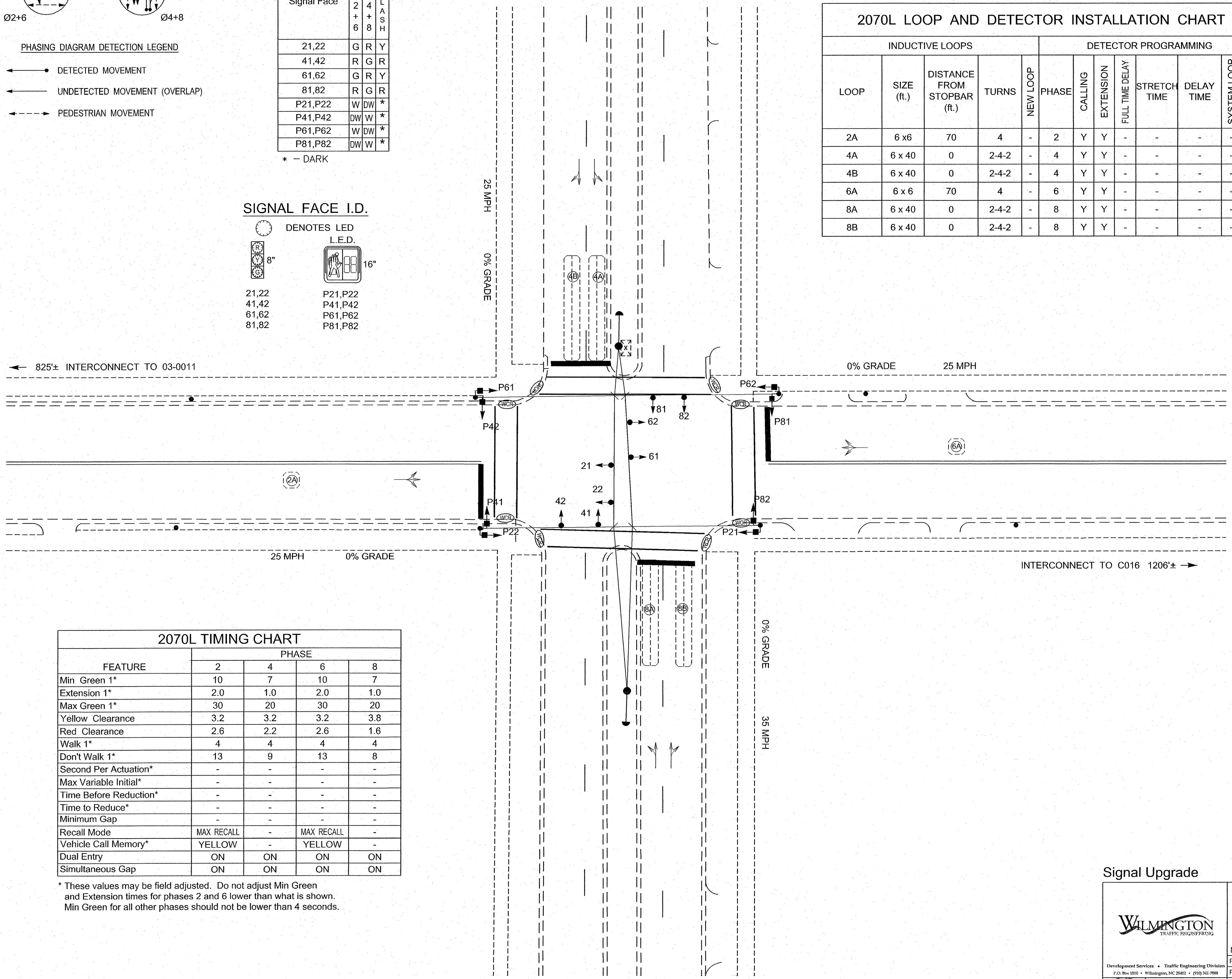
- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JULY 2006 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JULY 2006.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- SET ALL DETECTOR UNITS TO PRESENCE MODE.
- IN THE EVENT OF LOOP REPLACEMENT, REFER TO THE CURRENT NCDOT SIGNALS AND GEOMETRICS DESIGN MANUAL AND SUBMIT A PLAN OF RECORD TO THE CITY TRAFFIC ENGINEER.
- OMIT "WALK" AND FLASHING "DON'T WALK" WITH NO PEDESTRIAN CALLS.
- PROGRAM PEDESTRIAN HEADS TO COUNTDOWN THE FLASHING "DON'T WALK" TIME ONLY.
- PAVEMENT MARKINGS ARE EXISTING.
- MAXIMUM TIMES SHOWN IN TIMING CHART ARE FOR FREE-RUN OPERATION ONLY. COORDINATED SIGNAL SYSTEM TIMING VALUES SUPERSEDE THESE VALUES.
- THIS SIGNAL IS PART OF THE WILMINGTON SIGNAL SYSTEM. ASSET #4009

LEGEND

PROPOSED	EXISTING
	N/A
N/A	

FEATURE	PHASE			
	2	4	6	8
Min Green 1*	10	7	10	7
Extension 1*	2.0	1.0	2.0	1.0
Max Green 1*	30	20	30	20
Yellow Clearance	3.2	3.2	3.2	3.8
Red Clearance	2.6	2.2	2.6	1.6
Walk 1*	4	4	4	4
Don't Walk 1*	13	9	13	8
Second Per Actuation*	-	-	-	-
Max Variable Initial*	-	-	-	-
Time Before Reduction*	-	-	-	-
Time to Reduce*	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MAX RECALL	-	MAX RECALL	-
Vehicle Call Memory*	YELLOW	-	YELLOW	-
Dual Entry	ON	ON	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.



Signal Upgrade

Development Services • Traffic Engineering Division
P.O. Box 1850 • Wilmington, NC 28402 • (910) 341-7988

Castle Street at S. 5th Avenue

New Hanover County Wilmington

PLAN DATE: 27 March 2008 REVIEWED BY: DRB

PREPARED BY: Randall Glazier REVIEWED BY:

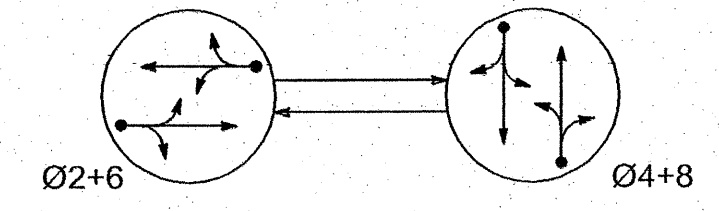
REVISIONS	INIT.	DATE

SCALE 20
1" = 20'

SIGNATURE: *[Signature]* DATE: 5/1/08

SIG. INVENTORY NO. C009

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

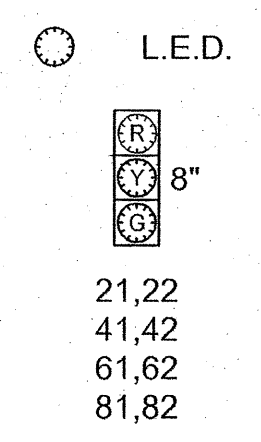
→ DETECTED MOVEMENT

← UNDETECTED MOVEMENT (OVERLAP)

Signal Face	Phase		
	Ø 2	Ø 4	F L A S H
21,22	G	R	Y
41,42	R	G	R
61,62	G	R	Y
81,82	R	G	R

* - DARK

SIGNAL FACE I.D.



2070L LOOP AND DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (ft.)	DISTANCE FROM STOPBAR (ft.)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6 x 60	+4	1	-	2	Y	Y	-	-	-	-	Y
4A	6 x 40	+2	2-4-2	-	4	Y	Y	-	-	5	-	Y
6A	6 x 60	+4	1	-	6	Y	Y	-	-	-	-	Y
8A	6 x 40	+2	2-4-2	-	8	Y	Y	-	-	5	-	Y

2 - PHASE FULLY - ACTUATED WILMINGTON SIGNAL SYSTEM

NOTES:

- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JULY 2006 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JULY 2006.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- SET ALL DETECTOR UNITS TO PRESENCE MODE. IN THE EVENT OF LOOP REPLACEMENT, REFER TO THE CURRENT NCDOT SIGNALS AND GEOMETRICS DESIGN MANUAL AND SUBMIT A PLAN OF RECORD TO THE CITY TRAFFIC ENGINEER.
- PAVEMENT MARKINGS ARE EXISTING.
- MAXIMUM TIMES SHOWN IN TIMING CHART ARE FOR FREE-RUN OPERATION ONLY. COORDINATED SIGNAL SYSTEM TIMING VALUES SUPERSEDE THESE VALUES.
- THIS SIGNAL IS PART OF THE WILMINGTON SIGNAL SYSTEM. ASSET #4016

LEGEND

PROPOSED	EXISTING
	N/A

2070L TIMING CHART				
FEATURE	PHASE			
	2	4	6	8
Min Green 1*	10	7	10	7
Extension 1*	2.0	1.0	2.0	1.0
Max Green 1*	30	15	30	15
Yellow Clearance	3.2	3.2	3.2	3.8
Red Clearance	1.7	1.7	1.7	1.2
Walk 1*	-	-	-	-
Don't Walk 1*	-	-	-	-
Second Per Actuation*	-	-	-	-
Max Variable Initial*	-	-	-	-
Time Before Reduction*	-	-	-	-
Time to Reduce*	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory*	YELLOW	-	YELLOW	-
Dual Entry	ON	ON	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.

SIGNAL UPGRADE

Development Services • Traffic Engineering Division
P.O. Box 1010 • Wilmington, NC 28402 • (919) 341-7988

Castle Street at S. 8th Street

New Hanover County Wilmington

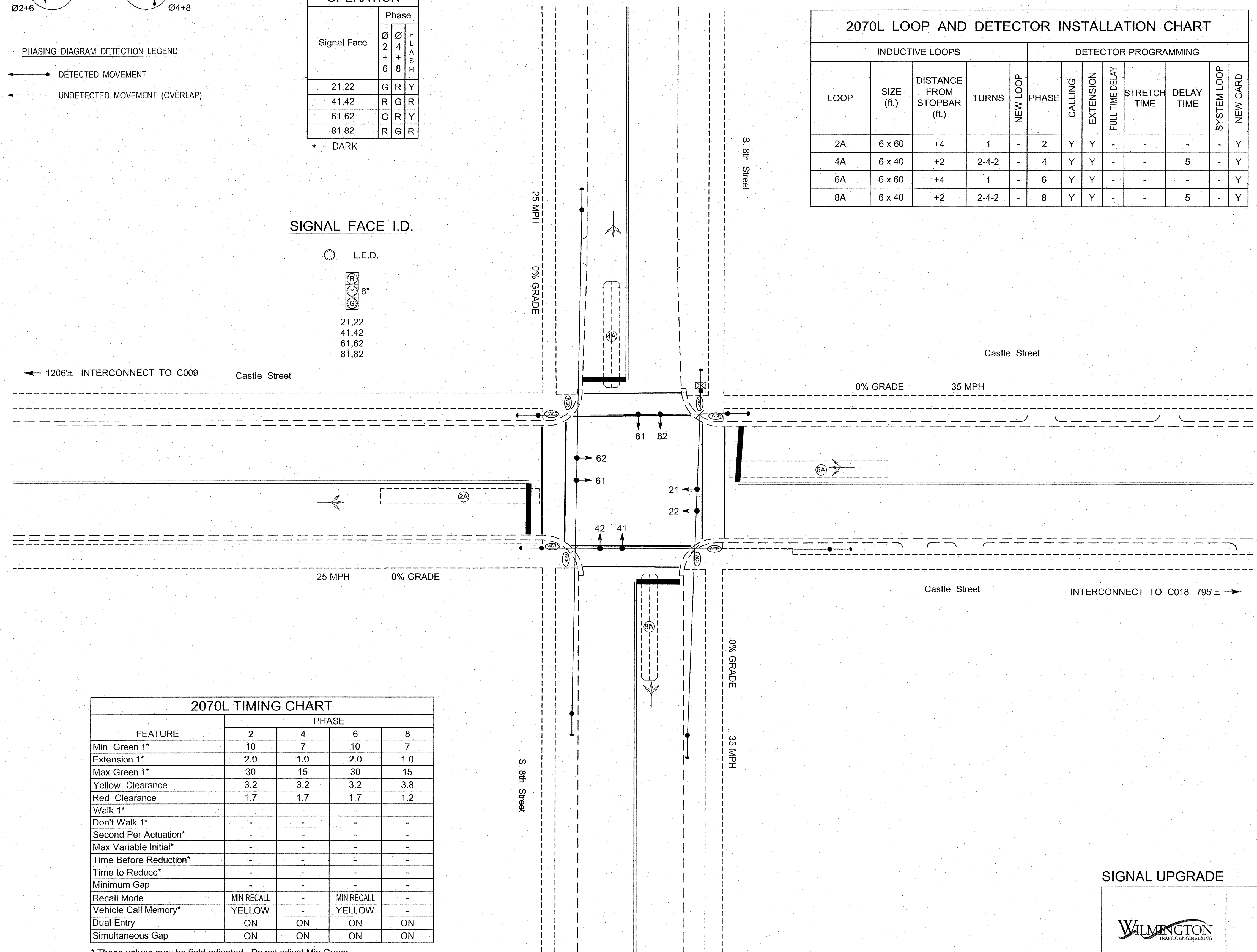
PLAN DATE: 24 April 2008 REVIEWED BY: DRB

PREPARED BY: Randall Glazier REVIEWED BY:

SIGNATURE: *R. Bennett* DATE: 5/1/08

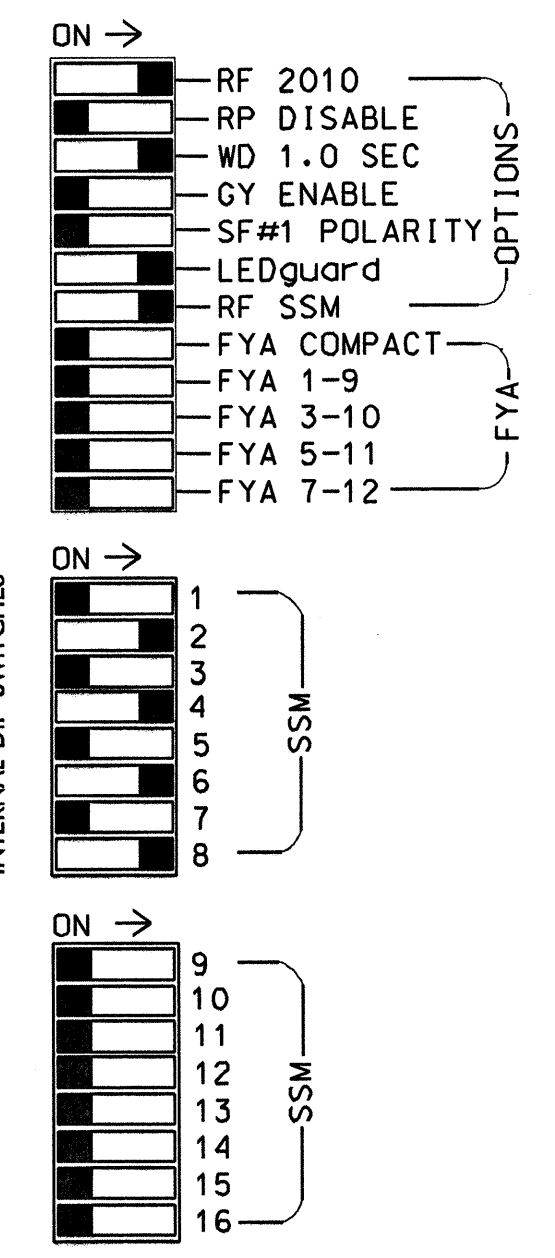
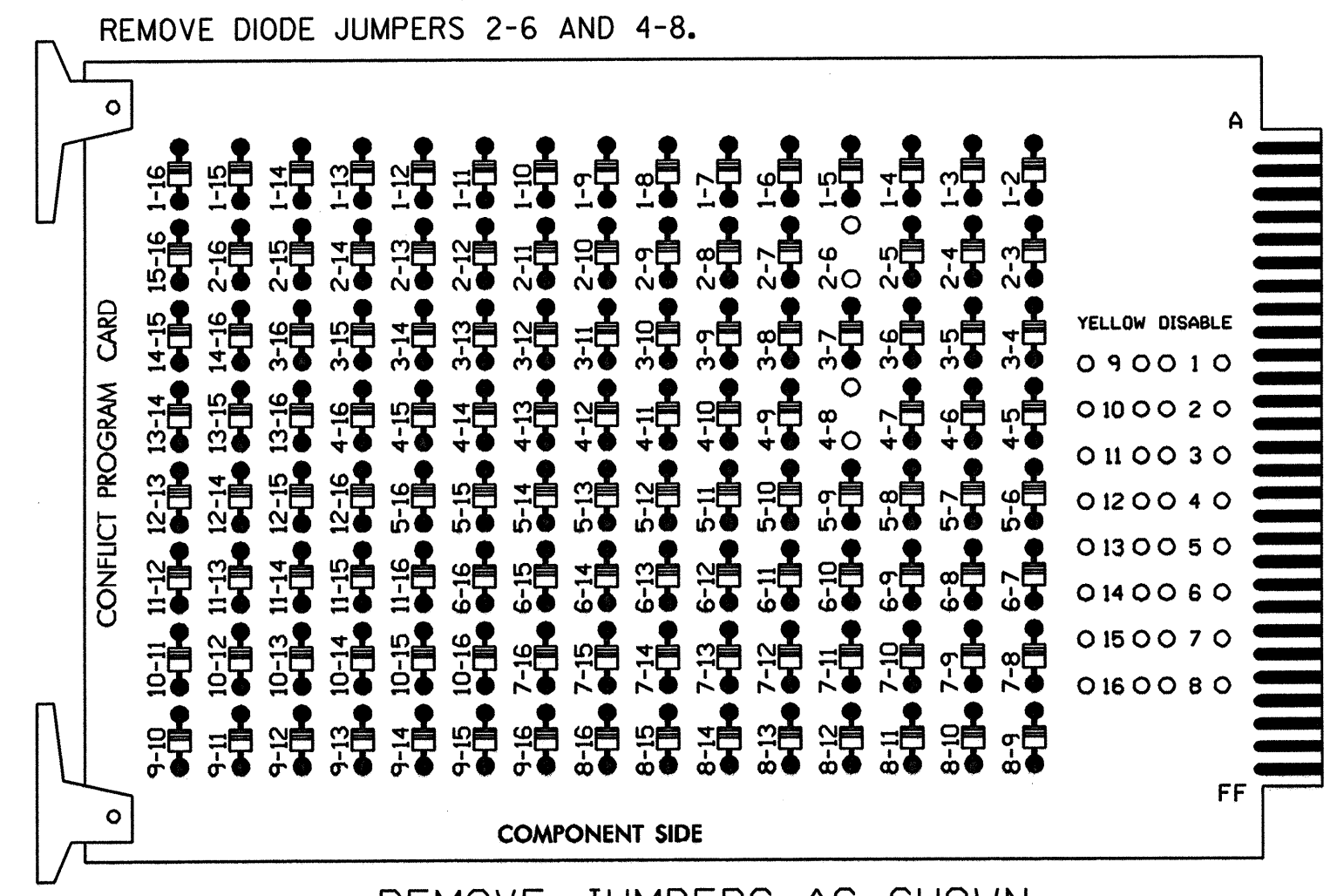
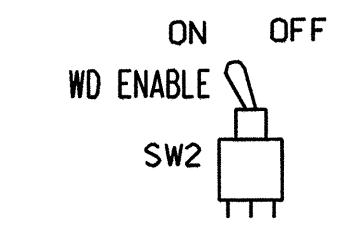
SIG. INVENTORY NO. C016

REVISIONS	INIT.	DATE



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 1,3,5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- The cabinet and controller are part of the Wilmington City Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	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												

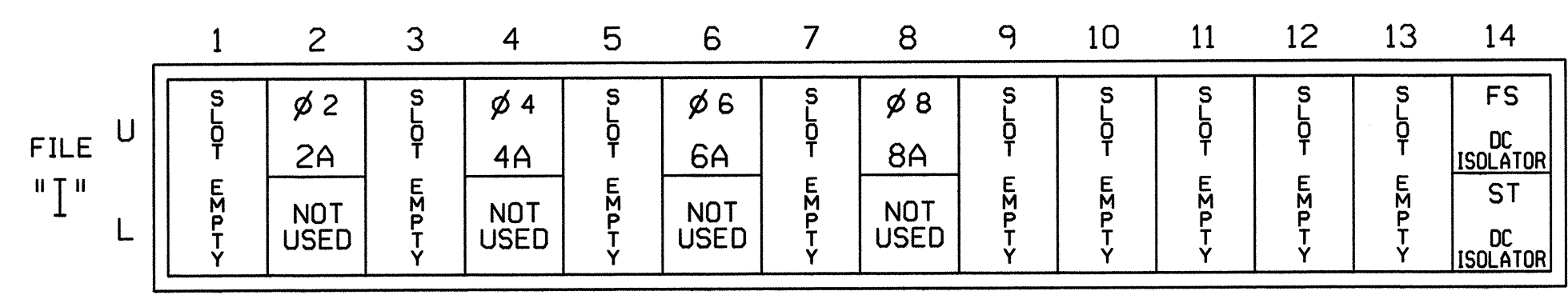
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
 CABINETCONTRACTOR SUPPLIED 336
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS..12
 LOAD SWITCHES USED.....S2,S4,S6,S8
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

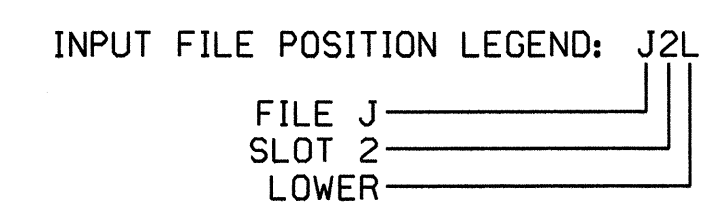


EX. : 1A, 2A, ETC. = LOOP NO.'S

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
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C016
 DESIGNED: 24 April 2008
 SEALED: 5/1/08
 REVISED:

Prepared in the offices of:

RAMEY KEMP ASSOCIATES, INC.
 Transportation Engineers
 5808 Farrington Place, Suite 100
 Raleigh, North Carolina 27609
 919-872-8116 Tel. 919-878-6416 Fax.
 www.rameykemp.com

Signal Upgrade

Development Services
 Traffic Engineering Division
 P.O. Box 1816, Wilmington, NC 28402
 (910) 341-7888

Electrical and Programming Details For:

Castle Street at South 8th Street

Division 03 New Hanover County Wilmington

PLAN DATE: Apr 2008 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity RKA PROJ. NO.: 07037 (040)

REVISIONS	INIT.	DATE

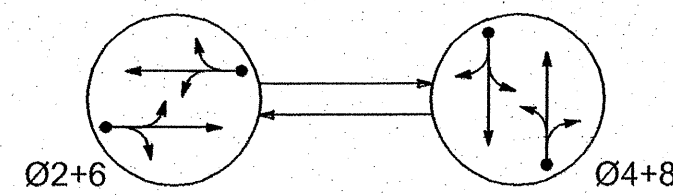
SEAL

SIGNATURE DATE
 SIG. INVENTORY NO. C016

*****SYSTEMS*****
 *****TRAFFIC*****
 *****ENGINEERING*****
 *****CORPORATION*****

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	-	Csig-167	
F.A. PROJECT NO.		-	
PROJECT I.D. NO.		-	

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ← ● → DETECTED MOVEMENT
- ← — → UNDETECTED MOVEMENT (OVERLAP)

Signal Face	Phase		
	Ø 2	Ø 4	FLASH
21,22	G R	Y	
41,42	R G	R	
61,62	G R	Y	
81,82	R G	R	

* - DARK

2070L LOOP AND 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
2A	6 x 60	+10	1	-	1	Y	Y	-	-	-	-	Y
4A	6 x 60	0	2-4-2	-	2	Y	Y	-	-	5	-	Y
6A	6 x 60	+2	1	-	2	Y	Y	-	-	-	-	Y
8A	6 x 60	0	1	-	3	Y	Y	-	-	5	-	Y

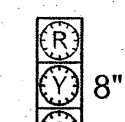
**2 - PHASE
FULLY - ACTUATED
WILMINGTON SIGNAL SYSTEM**

NOTES:

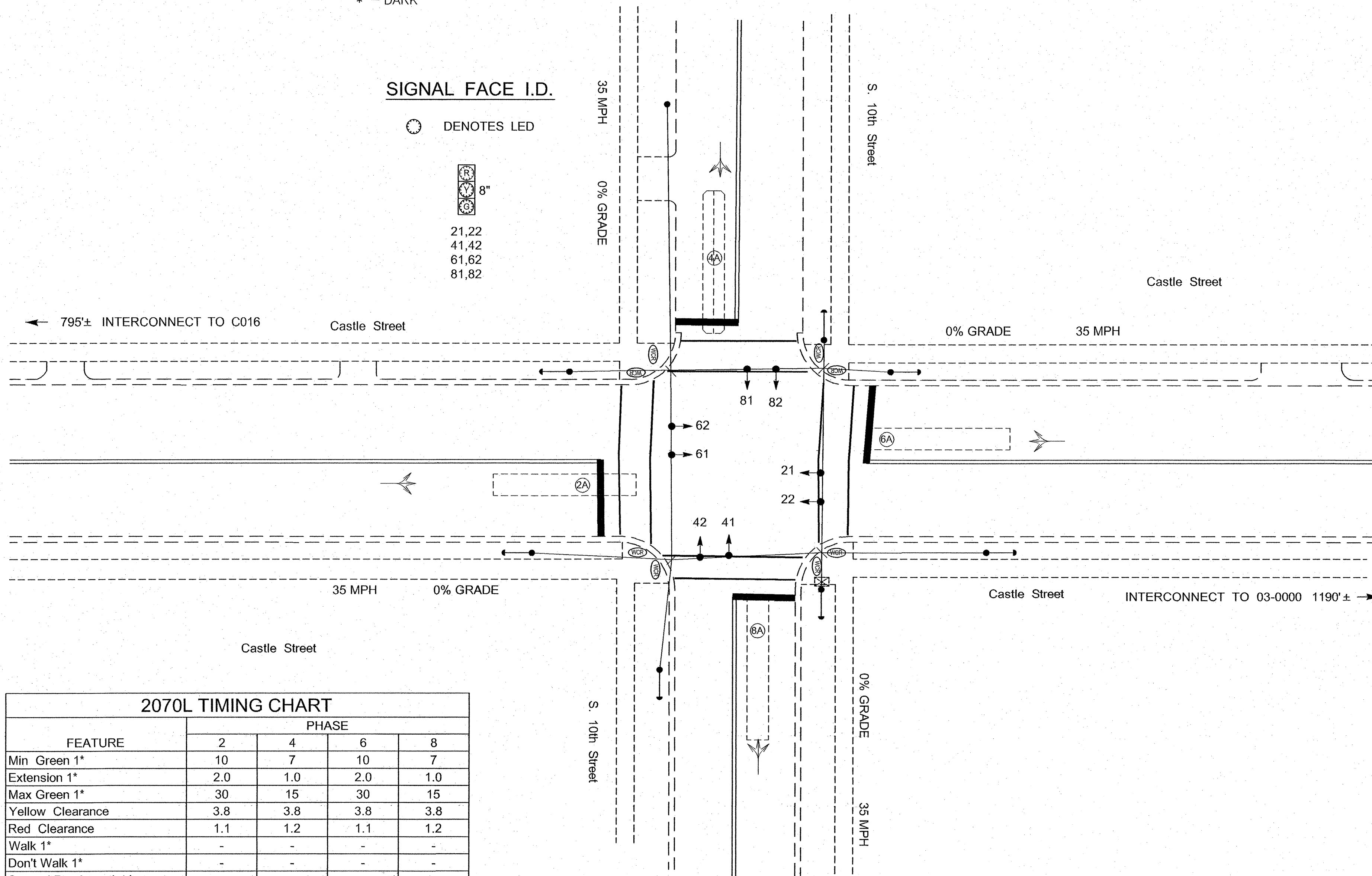
- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JULY 2006 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JULY 2006.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- SET ALL DETECTOR UNITS TO PRESENCE MODE.
- IN THE EVENT OF LOOP REPLACEMENT, REFER TO THE CURRENT NCDOT SIGNALS AND GEOMETRICS DESIGN MANUAL AND SUBMIT A PLAN OF RECORD TO THE CITY TRAFFIC ENGINEER.
- PAVEMENT MARKINGS ARE EXISTING.
- MAXIMUM TIMES SHOWN IN TIMING CHART ARE FOR FREE-RUN OPERATION ONLY. COORDINATED SIGNAL SYSTEM TIMING VALUES SUPERSEDE THESE VALUES.
- THIS SIGNAL IS PART OF THE WILMINGTON SIGNAL SYSTEM. ASSET #4018

SIGNAL FACE I.D.

○ DENOTES LED



21,22
41,42
61,62
81,82



2070L TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1*	10	7	10	7
Extension 1*	2.0	1.0	2.0	1.0
Max Green 1*	30	15	30	15
Yellow Clearance	3.8	3.8	3.8	3.8
Red Clearance	1.1	1.2	1.1	1.2
Walk 1*	-	-	-	-
Don't Walk 1*	-	-	-	-
Second Per Actuation*	-	-	-	-
Max Variable Initial*	-	-	-	-
Time Before Reduction*	-	-	-	-
Time to Reduce*	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory*	YELLOW	-	YELLOW	-
Dual Entry	ON	ON	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

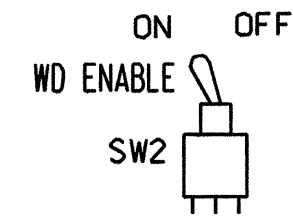
PROPOSED	EXISTING
○ →	● →
● →	N/A
—	—
□ →	□ →
○ —	● —
○ —	● —
□	□
□	■
—	—
—	—
→	→
N/A	WCR

PLAN OF RECORD

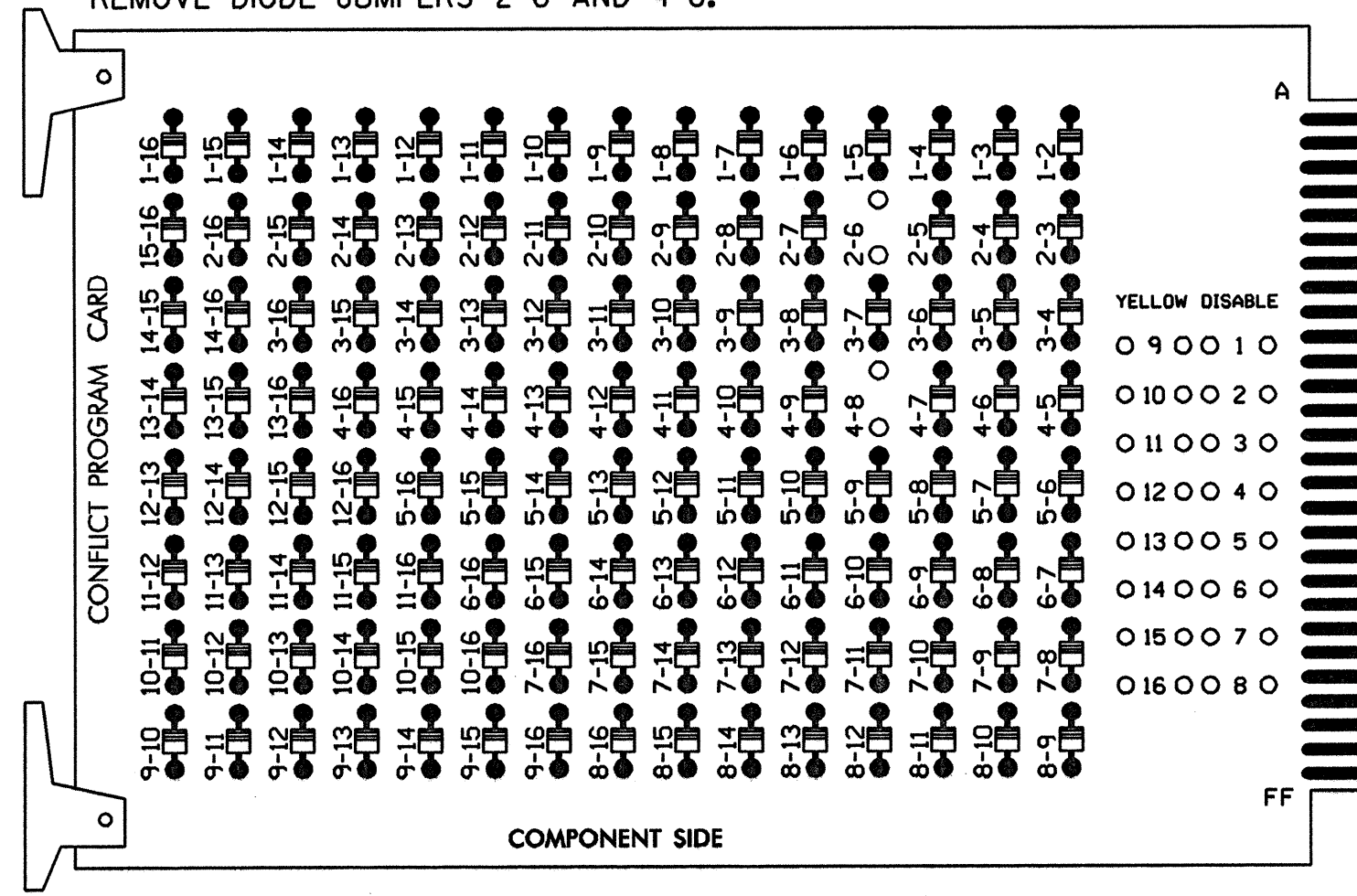
	Castle Street at S. 10th Street		
	New Hanover County Wilmington		
Development Services • Traffic Engineering Division P.O. Box 1910 • Wilmington, NC 28402 • (910) 341-2888	PLAN DATE: 27 March 2008 PREPARED BY: Randall Glazier	REVIEWED BY: DRB REVIEWED BY:	SIGNATURE: <i>[Signature]</i> DATE: 3/11/08
	REVISIONS:	INIT. DATE:	SIG. INVENTORY NO. C018

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



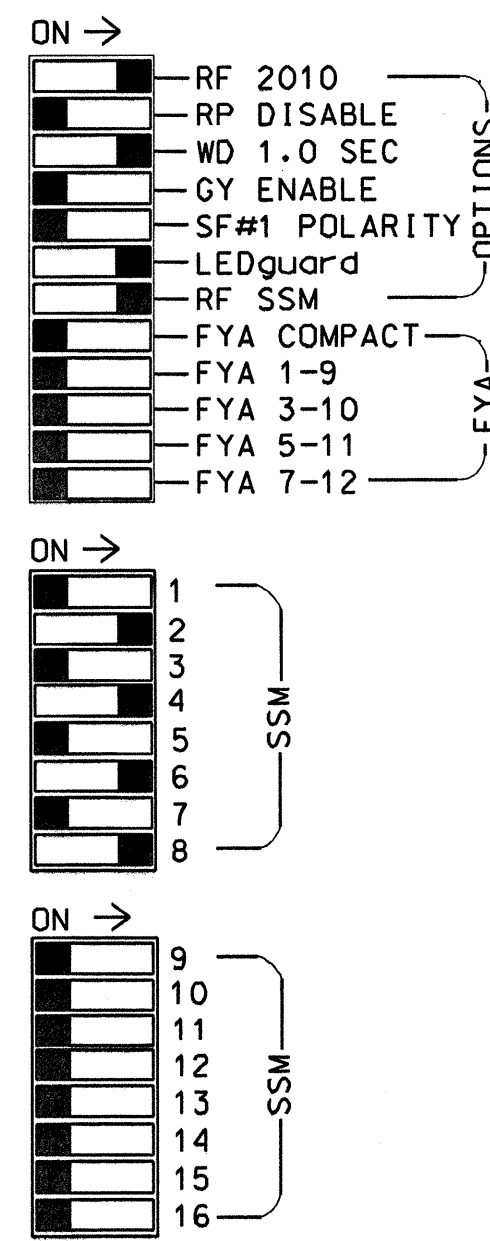
REMOVE DIODE JUMPERS 2-6 AND 4-8.



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.



■ = 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 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- The cabinet and controller are part of the Wilmington City Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
 CABINETCONTRACTOR SUPPLIED 336
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....POLE
 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	NU	NU	41,42	NU	NU	61,62	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												
Hand icon												
Person icon												

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

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

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	TB21-3,4	12U	39	1	2	2	Y	Y			
4A	TB21-7,8	14U	41	3	4	4	Y	Y			
6A	TB21-11,12	16U	40	2	6	6	Y	Y			
8A	TB22-1,2	18U	42	4	8	8	Y	Y			

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C018
 DESIGNED: 27 March 2008
 SEALED: 5/1/08
 REVISED:

Prepared in the offices of:

RAMEY KEMP & ASSOCIATES, INC.
 Transportation Engineers
 5008 Farrington Place, Suite 100
 Raleigh, North Carolina 27609
 919-872-5116 Tel. 919-878-5416 Fax.
 www.rameykemp.com

Signal Upgrade

WILMINGTON TRAFFIC ENGINEERING
 Development Services
 Traffic Engineering Division
 P.O. Box 1816, Wilmington, NC 28402
 (910) 341-7888

Division 03 New Hanover County Wilmington

Castle Street at South 10th Street

PLAN DATE: Mar 2008 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity RKA PROJ. NO.: 07037 (040)

REVISIONS	INIT.	DATE

SEAL

Professional Engineer Seal for Donald J. Darity, No. 19713, State of North Carolina, expires 12/31/13.

7-22-2008

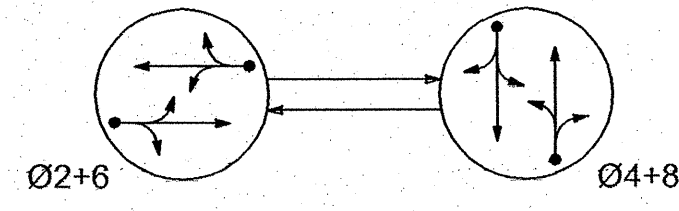
SIGNATURE DATE

SIG. INVENTORY NO. C018

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$

**2 - PHASE
FULLY - ACTUATED
WILMINGTON SIGNAL SYSTEM**

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

→ DETECTED MOVEMENT

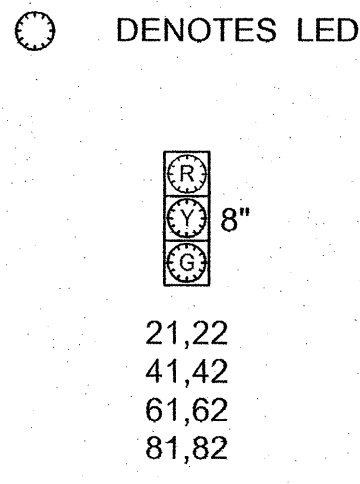
→ UNDETECTED MOVEMENT (OVERLAP)

TABLE OF OPERATION

Signal Face	Phase			FLASH
	Ø 2 + 6	Ø 4 + 8	Ø 6 + 8	
21,22	G	R	Y	
41,42	R	G	R	
61,62	G	R	Y	
81,82	R	G	R	

* - DARK

SIGNAL FACE I.D.



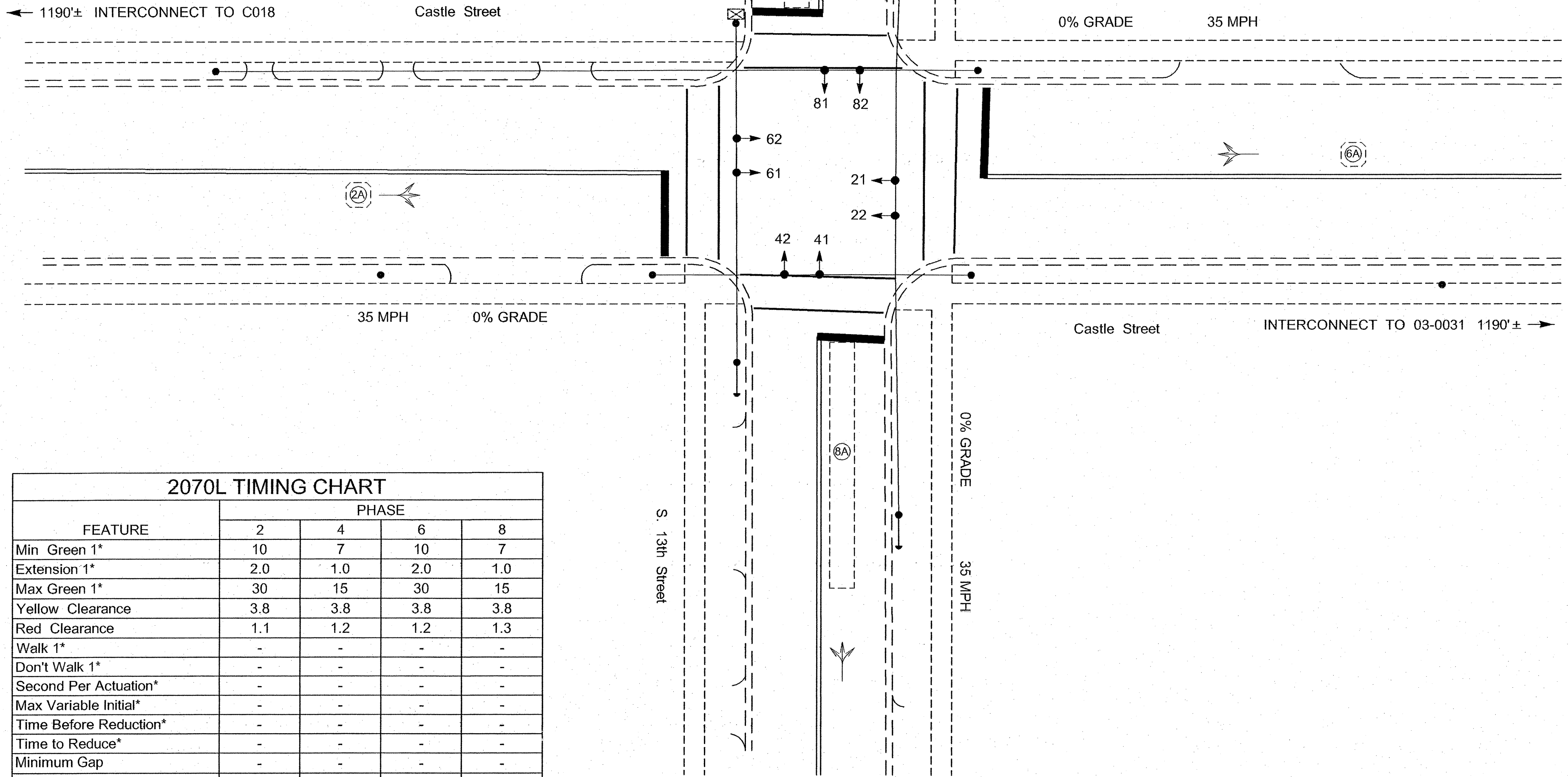
2070L LOOP AND DETECTOR INSTALLATION CHART

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
2A	6 x 6	74	4	-	2	Y	Y	-	-	-	-	Y
4A	6 x 6	0	2	-	4	Y	Y	-	-	5	-	Y
6A	6 x 60	90	3	-	6	Y	Y	-	-	-	-	Y
8A	6 x 60	0	2	-	8	Y	Y	-	-	5	-	Y

- NOTES:**
- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT DATED JULY 2006 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JULY 2006.
 - DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 - SET ALL DETECTOR UNITS TO PRESENCE MODE.
 - IN THE EVENT OF LOOP REPLACEMENT, REFER TO THE CURRENT NCDOT SIGNALS AND GEOMETRICS DESIGN MANUAL AND SUBMIT A PLAN OF RECORD TO THE CITY TRAFFIC ENGINEER.
 - PAVEMENT MARKINGS ARE EXISTING.
 - MAXIMUM TIMES SHOWN IN TIMING CHART ARE FOR FREE-RUN OPERATION ONLY. COORDINATED SIGNAL SYSTEM TIMING VALUES SUPERSEDE THESE VALUES.
 - THIS SIGNAL IS PART OF THE WILMINGTON SIGNAL SYSTEM. ASSET # 4020

LEGEND

PROPOSED	EXISTING
	N/A
N/A	



2070L TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1*	10	7	10	7
Extension 1*	2.0	1.0	2.0	1.0
Max Green 1*	30	15	30	15
Yellow Clearance	3.8	3.8	3.8	3.8
Red Clearance	1.1	1.2	1.2	1.3
Walk 1*	-	-	-	-
Don't Walk 1*	-	-	-	-
Second Per Actuation*	-	-	-	-
Max Variable Initial*	-	-	-	-
Time Before Reduction*	-	-	-	-
Time to Reduce*	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory*	YELLOW	-	YELLOW	-
Dual Entry	ON	ON	ON	ON
Simultaneous Gap	ON	ON	ON	ON

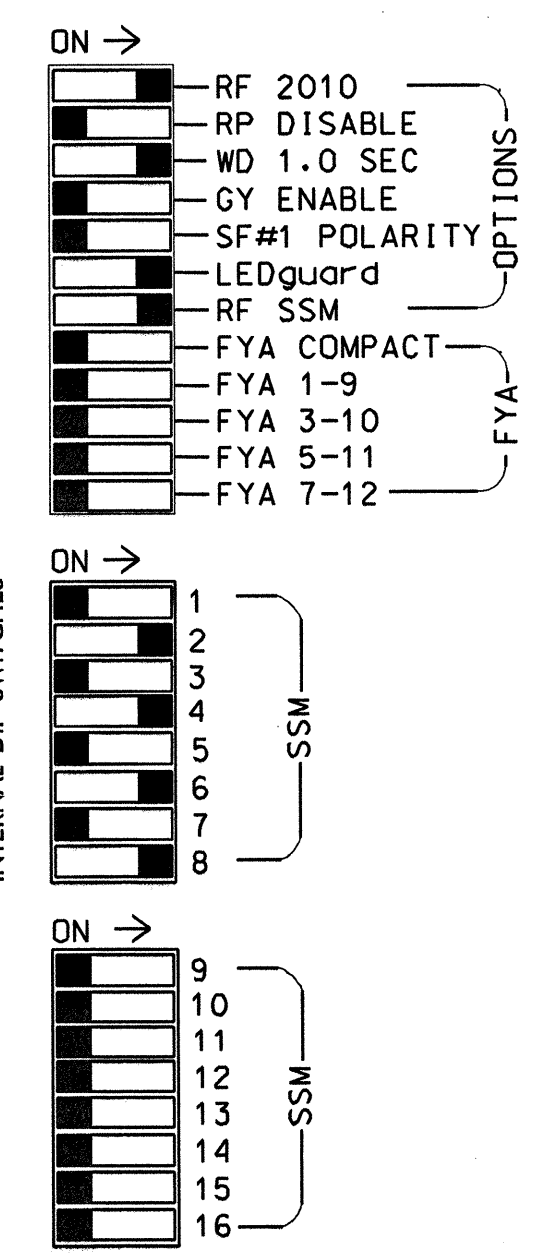
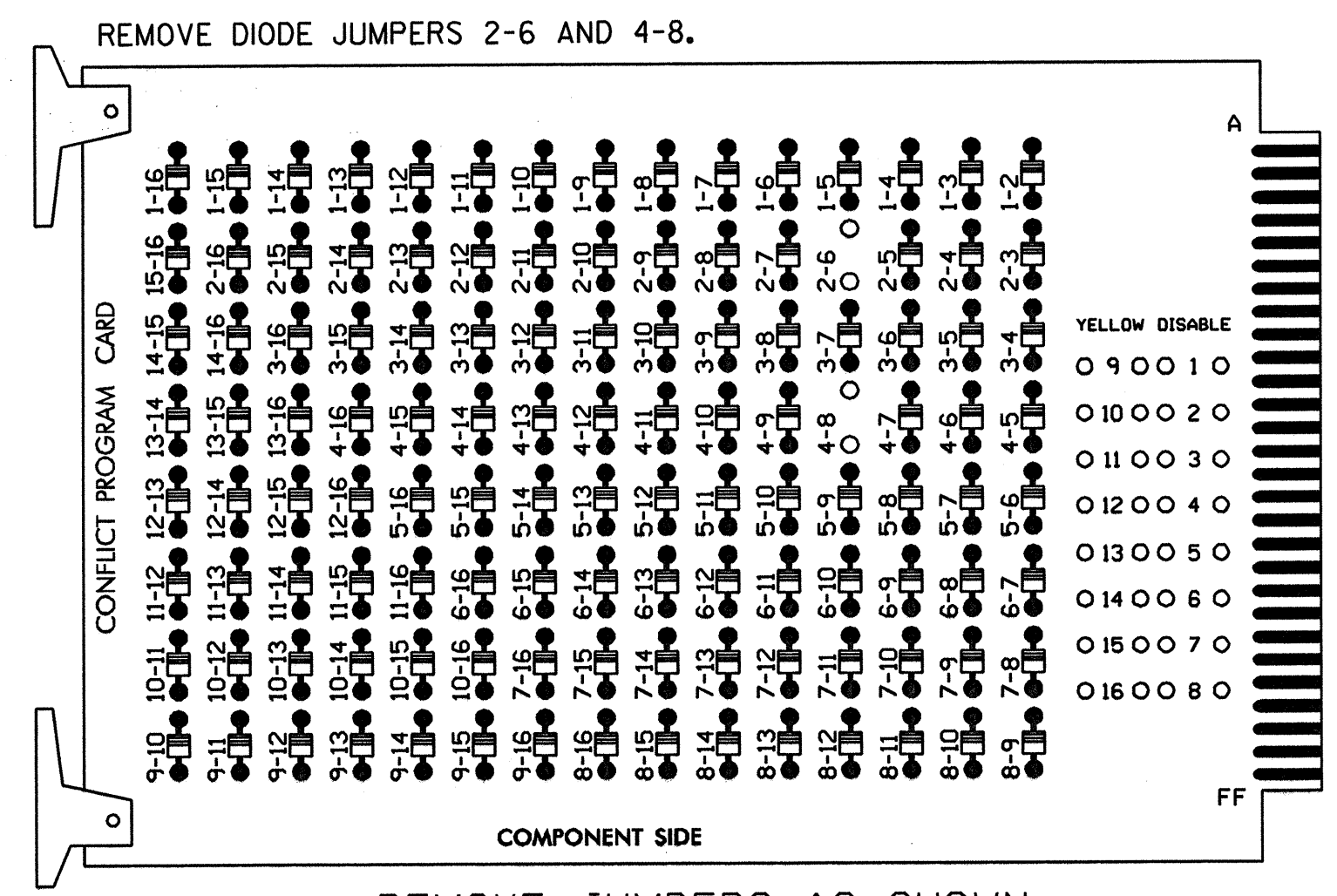
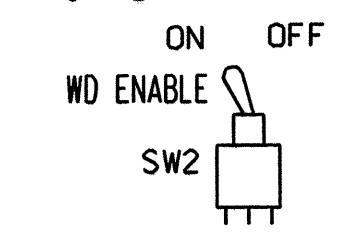
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

PLAN OF RECORD

 Development Services • Traffic Engineering Division P.O. Box 3550 • Wilmington, NC 28402 • (910) 343-7888	Castle Street at S. 13th Street		SEAL 						
	New Hanover County PLAN DATE: 27 March 2008 PREPARED BY: Randall Glazier	Wilmington REVIEWED BY: DRB REVIEWED BY:	REVISIONS <table border="1"> <tr> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	INIT.	DATE				
INIT.	DATE								

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 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 4 and 8, on the controller unit, for Dual Entry.
- The cabinet and controller are part of the Wilmington City Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	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												
Hand icon												
Person icon												

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
 CABINETCONTRACTOR SUPPLIED 336
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS..12
 LOAD SWITCHES USED.....S2,S4,S6,S8
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

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

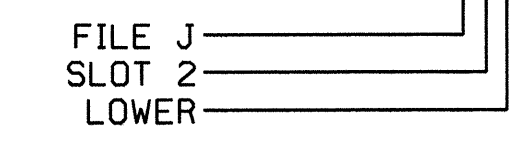
EX. : 1A, 2A, ETC. = LOOP NO.'S

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	TB21-3,4	I2U	39	1	2	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C020
 DESIGNED: 27 March 2008
 SEALED: 5/1/08
 REVISED:

Signal Upgrade

WILMINGTON TRAFFIC ENGINEERING
 Development Services
 Traffic Engineering Division
 P.O. Box 1816, Wilmington, NC 28402
 (910) 341-7888

Division 03 New Hanover County Wilmington

Castle Street at South 13th Street

PLAN DATE: Mar 2008	REVIEWED BY: D.J. Darity
PREPARED BY: D.J. Darity	RKA PROJ. NO.: 07037 (040)
REVISIONS	INIT. DATE

SEAL

SIGNATURE: _____ DATE: _____
 SIG. INVENTORY NO. C020

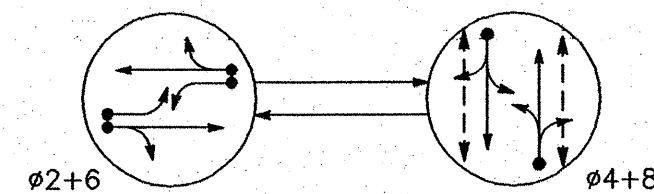
Prepared in the offices of:

RAMEY KEMP & ASSOCIATES, INC.
 Transportation Engineers
 6008 Farrington Place, Suite 100
 Raleigh, North Carolina 27609
 919-872-9116 Tel. 919-878-2416 Fax.
 www.rameykemp.com

*****SYTIME*****
 *****SERIAL*****

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	-	Csig-171	
F.A. PROJECT NO.		-	
PROJECT I.D. NO.		-	

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

Signal Face	Phase		
	Ø 2 + 6	Ø 4 + 8	FLASH
21,22	G	R	Y
41,42	R	G	R
61,62	G	R	Y
81,82	R	G	R
P41,P42	DW	W	*
P81,P82	DW	W	*

* - DARK

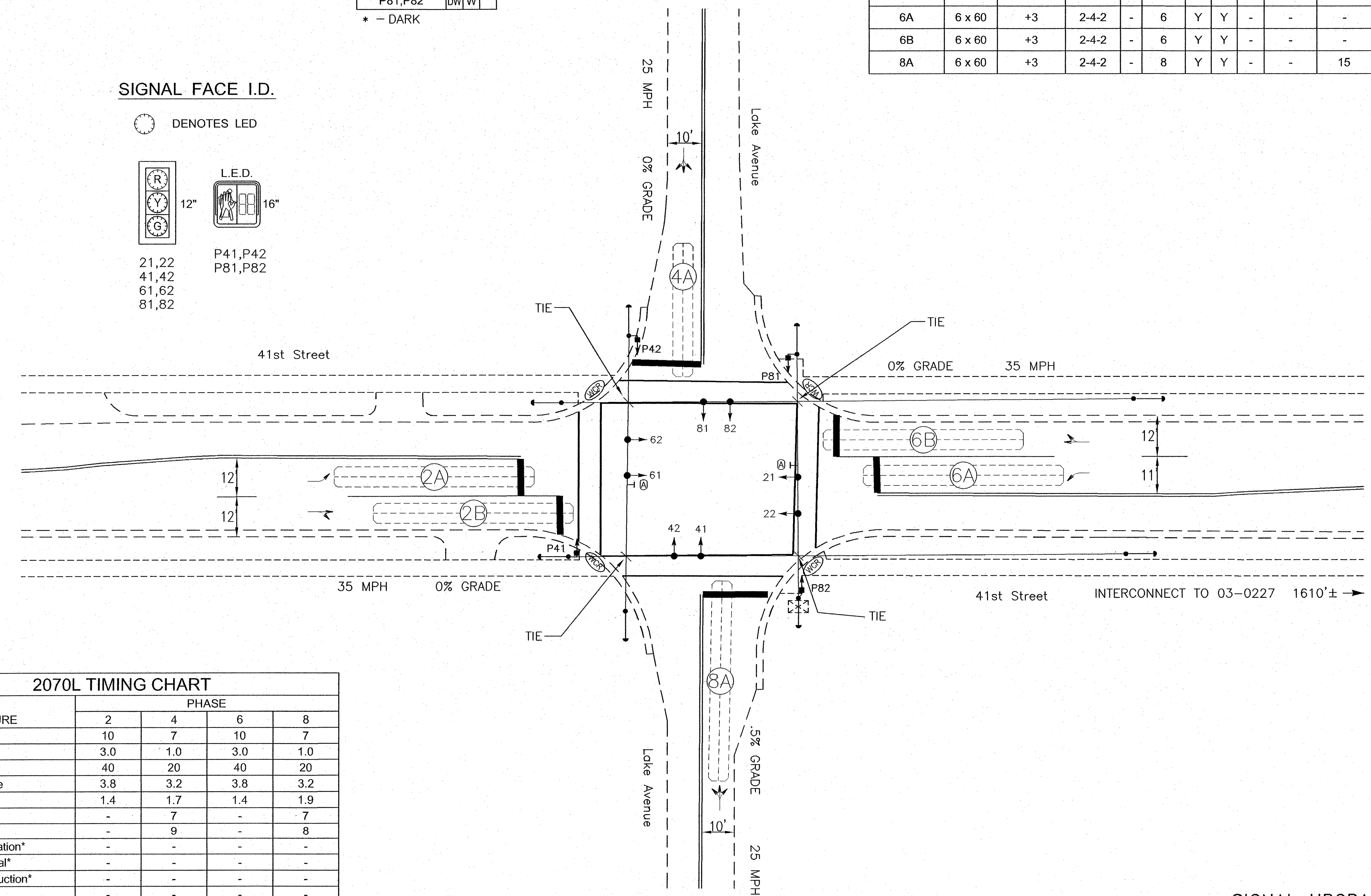
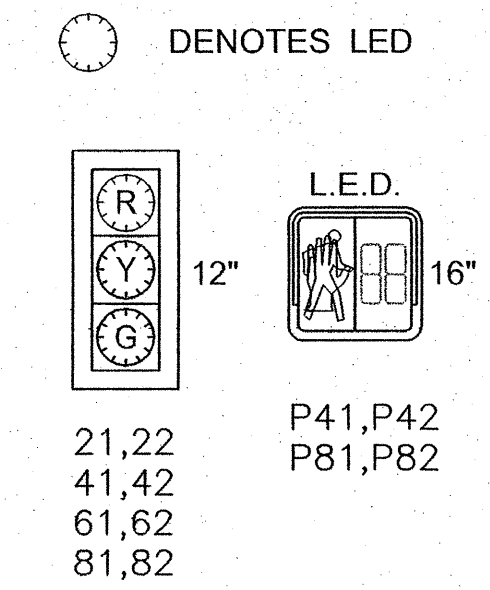
LOOP	SIZE (ft.)	DISTANCE FROM STOPBAR (ft.)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6 x 60	+3	2-4-2	-	2	Y	Y	-	-	-	-	Y
2B	6 x 60	+3	2-4-2	-	2	Y	Y	-	-	-	-	Y
4A	6 x 40	+3	2-4-2	-	4	Y	Y	-	-	15	-	Y
6A	6 x 60	+3	2-4-2	-	6	Y	Y	-	-	-	-	Y
6B	6 x 60	+3	2-4-2	-	6	Y	Y	-	-	-	-	Y
8A	6 x 60	+3	2-4-2	-	8	Y	Y	-	-	15	-	Y

2 - PHASE FULLY - ACTUATED WILMINGTON SIGNAL SYSTEM

NOTES:

- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JULY 2006 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JULY 2006.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- SET ALL DETECTOR UNITS TO PRESENCE MODE.
- IN THE EVENT OF LOOP REPLACEMENT, REFER TO THE CURRENT NCDOT SIGNALS AND GEOMETRICS DESIGN MANUAL AND SUBMIT A PLAN OF RECORD TO THE CITY TRAFFIC ENGINEER.
- OMIT "WALK" AND FLASHING "DON'T WALK" WITH NO PEDESTRIAN CALLS.
- PROGRAM PEDESTRIAN HEADS TO COUNTDOWN THE FLASHING "DON'T WALK" TIME ONLY.
- PAVEMENT MARKINGS ARE EXISTING.
- MAXIMUM TIMES SHOWN IN TIMING CHART ARE FOR FREE-RUN OPERATION ONLY. COORDINATED SIGNAL SYSTEM TIMING VALUES SUPERSEDE THESE VALUES.
- THIS SIGNAL IS PART OF THE WILMINGTON SIGNAL SYSTEM. ASSET #4022

SIGNAL FACE I.D.



LEGEND

PROPOSED	EXISTING
○ → Traffic Signal Head	● → Traffic Signal Head
● → Modified Traffic Signal Head	N/A
⊥ Sign	⊥ Sign
⊥ Pedestrian Signal Head With Push Button & Sign	⊥ Pedestrian Signal Head With Push Button & Sign
○ 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
□ Pull Box	■ Pull Box
--- 2" Underground Conduit	--- 2" Underground Conduit
◇ Interconnect Cable (Hardwire)	◇ Interconnect Cable (Hardwire)
▲ Right of Way with Marker	▲ Right of Way with Marker
→ Directional Arrow	→ Directional Arrow
→ Pavement Marking Arrow	→ Pavement Marking Arrow
⊠ "Left Turn Must Yield" Sign	⊠ "Left Turn Must Yield" Sign
⊠ Metal Strain Pole	⊠ Metal Strain Pole
○ Pedestrian Signal Pedestal	● Pedestrian Signal Pedestal
N/A	○ Wheelchair Ramp

FEATURE	PHASE			
	2	4	6	8
Min Green 1*	10	7	10	7
Extension 1*	3.0	1.0	3.0	1.0
Max Green 1*	40	20	40	20
Yellow Clearance	3.8	3.2	3.8	3.2
Red Clearance	1.4	1.7	1.4	1.9
Walk 1*	-	7	-	7
Don't Walk 1*	-	9	-	8
Second Per Actuation*	-	-	-	-
Max Variable Initial*	-	-	-	-
Time Before Reduction*	-	-	-	-
Time to Reduce*	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory*	YELLOW	-	YELLOW	-
Dual Entry	ON	ON	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.

SIGNAL UPGRADE

Development Services • Traffic Engineering Division
P.O. Box 1810 • Wilmington, NC 28402 • (919) 341-7888

41st Street at Lake Avenue

New Hanover County Wilmington

PLAN DATE: 20 February 2008 REVIEWED BY: DRB

PREPARED BY: Randall Glazier REVIEWED BY:

REVISIONS	INT.	DATE

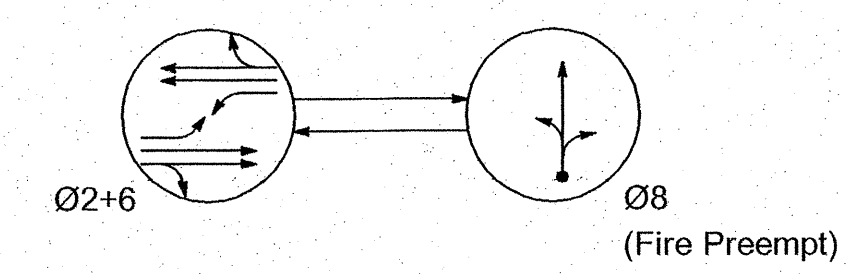
SIGNATURE: *Sl/ae* DATE: _____

SIG. INVENTORY NO. C022

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.		C5ig-173	
F.A. PROJECT NO.			
PROJECT I.D. NO.			

**2 - PHASE
SEMI-ACTUATED
w/ EMERGENCY PREEMPTION
WILMINGTON SIGNAL SYSTEM**

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

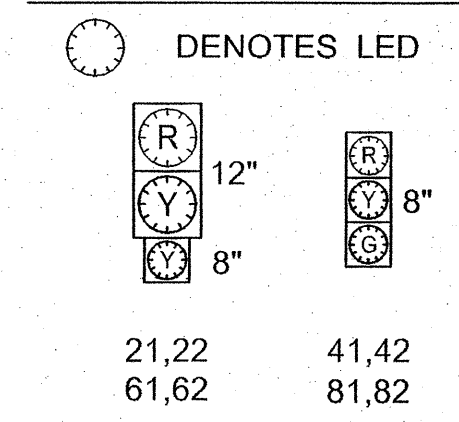
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

Signal Face	Phase		
	Ø	2	6
21,22	FY	R	Y
41,42	FR	R	R
61,62	FY	R	Y
81,82	FR	G	R

FY = 8" Flashing Yellow
FR = 8" Flashing Red

SIGNAL FACE I.D.



21,22 41,42
61,62 81,82

NOTES:

- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JULY 2006 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JULY 2006.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- PAVEMENT MARKINGS ARE EXISTING.
- LOCATE EMERGENCY VEHICLE PREEMPTION SWITCH IN FIRE STATION.
- THE CITY TRAFFIC ENGINEER WILL DETERMINE THE DELAY BEFORE PREEMPT AND PREEMPT DWELL MIN GREEN TIME FOR EMERGENCY VEHICLES.
- CLEAR SIGNAL HEADS 21, 22, 61 AND 62 FROM FLASHING 8" YELLOW TO STEADY 12" YELLOW DURING INTERVAL 1 AND STEADY RED DURING INTERVAL 2.
- CLEAR SIGNAL HEADS 41 AND 42 FROM FLASHING RED TO STEADY RED DURING INTERVAL 1 AND INTERVAL 2.
- THIS SIGNAL IS PART OF THE WILMINGTON SIGNAL SYSTEM. ASSET # 4027

LEGEND

PROPOSED	EXISTING
○ → Traffic Signal Head	● →
● → Modified Signal Head	N/A
— Sign	—
□ → Pedestrian Signal Head With Push Button & Sign	□ →
○ — Signal Pole with Guy	● —
○ — Signal Pole with Sidewalk Guy	● —
□ Inductive Loop Detector	□
□ Controller & Cabinet	□
□ Junction Box	□
--- 2" Underground Conduit	---
— Right of Way	---
→ Directional Arrow	→
N/A Wheelchair Ramp	○ WCR
Ⓐ "EMERGENCY SIGNAL" Sign (W3 - 8)	Ⓐ

2070L TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1*	10	7	10	7
Extension 1*	-	-	-	-
Max Green 1*	60	30	60	30
Yellow Clearance	4.5	3.2	4.6	3.8
Red Clearance	1.3	2.8	1.3	1.9
Walk 1*	-	-	-	-
Don't Walk 1*	-	-	-	-
Second Per Actuation*	-	-	-	-
Max Variable Initial*	-	-	-	-
Time Before Reduction*	-	-	-	-
Time to Reduce*	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	NONE	MIN RECALL	NONE
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.

2070L EV PREEMPTION

Interval 1 - Dwell Green	255
Interval 1 - Dwell Yellow	3.8
Interval 1 - Dwell Red	1.9
Interval 5 - Exit Green	1.0
Interval 5 - Yellow	0.0
Interval 5 - Red	0.0
Delay Time**	30
Min Green Before Pre	0.1
PED Clear Before Pre	0.0
Yellow Clear Before Pre*	0.0
Red Clear Before Pre*	0.0
Dwell Min Time**	45
Enable Backup Protection	N/A
PED Clear Through Yellow	N/A

* Clearance time defaults to times used for phase during normal operation

** See Note 5

PLAN OF RECORD

Development Services • Traffic Engineering Division
720 New 107th • Wilmington, NC 28405 • 910.341.7900

**US 76 (Oleander Dr)
at
S. Wallace Ave**

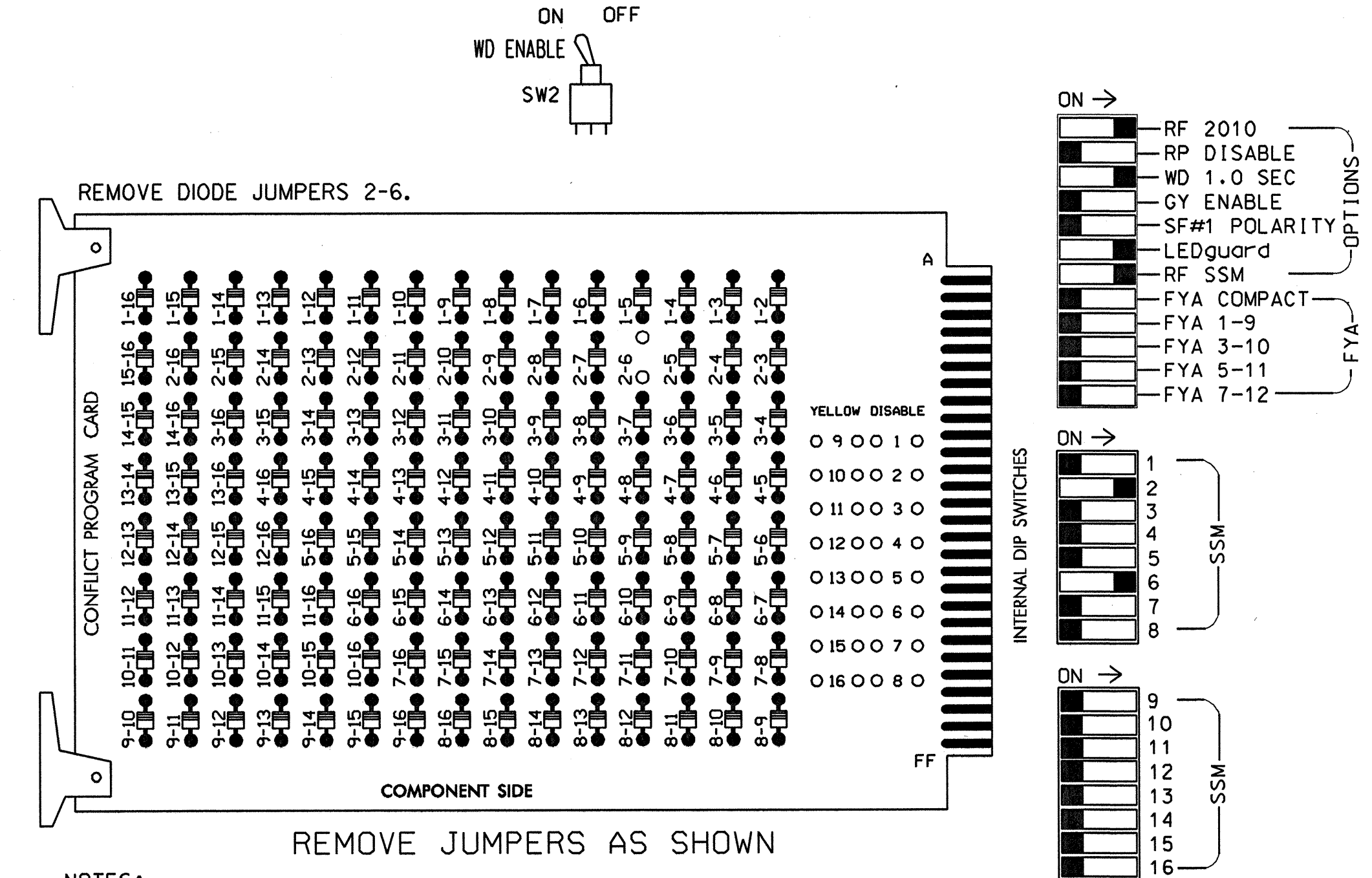
Division 3		New Hanover County		Wilmington	
PLAN DATE:	01 August 2007	REVIEWED BY:	DRB		
PREPARED BY:	Randall Glazier	REVIEWED BY:			
REVISIONS	INIT.	DATE			

SIGNATURE: *R. Glazier* DATE: 8/1/07

SIG. INVENTORY NO. C027

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 1,3,4,5,7,8,9, 10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.

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	4LB	4 PED	5	6	6 PED	7	8LA	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	81,82	NU	NU
RED		128			101			134				107
YELLOW		129			102			135				108
GREEN					103							109
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
↓												
↓												

8" FLASHING YELLOW → 130 136 ← 8" FLASHING YELLOW

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
 CABINETCONTRACTOR SUPPLIED 336
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS..12
 LOAD SWITCHES USED.....S2,S2P,S4,S6
 PHASES USED.....2,4,6,8
 OVERLAP A.....8
 OVERLAP B.....4

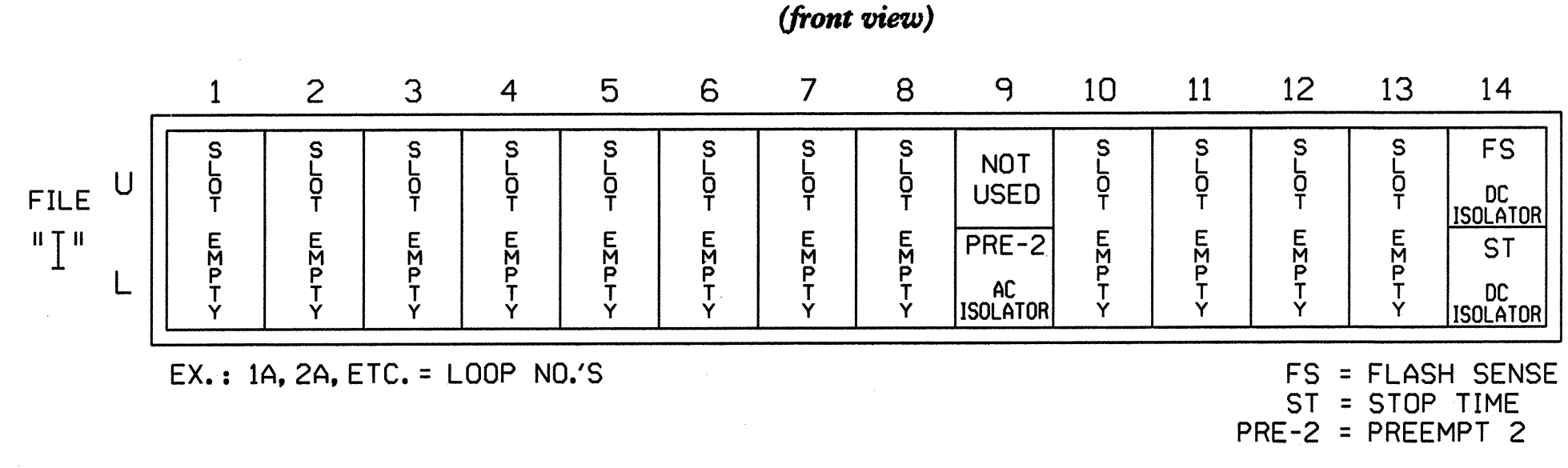
* Used During Preempt Only
 ** Used For Pilot Lamp (See Lamp #4 on Sheet 2)

PREEMPT ONLY PHASE OMIT NOTE

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program Phase 4 and Phase 8 for 'Omit Phase' and Phases 2 and 6 for 'Startup Calls'. This is to prevent Phase 4 and Phase 8 from being served when not in preempt.

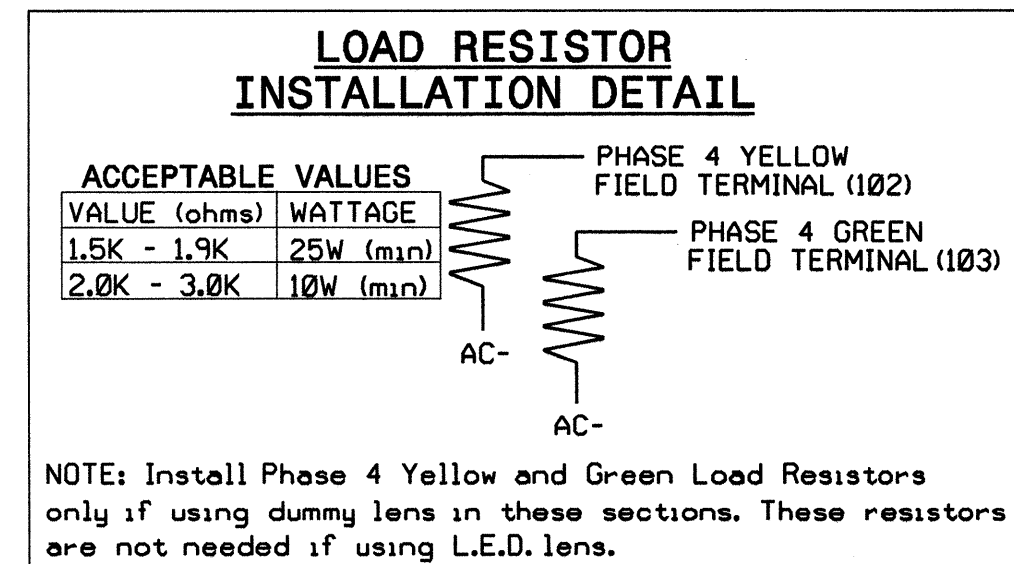
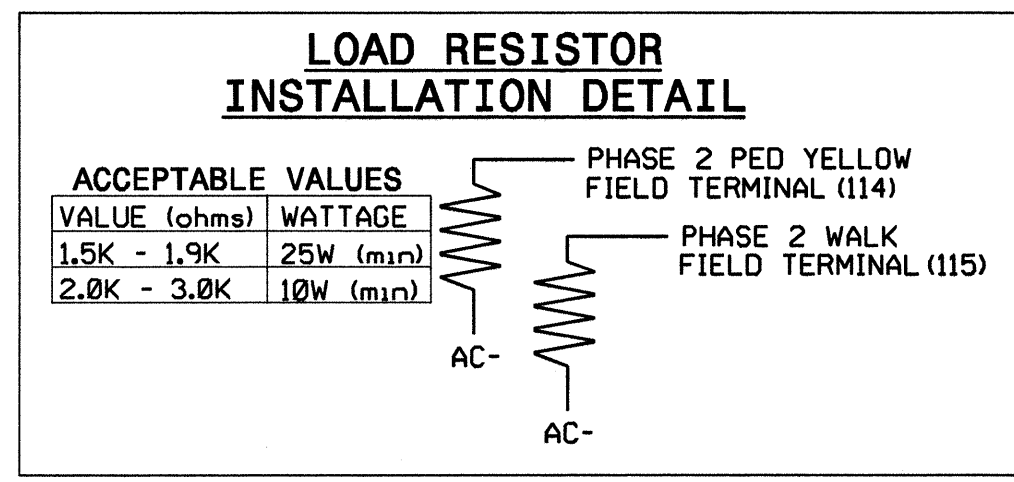
INPUT FILE POSITION LAYOUT



IN-CYCLE FLASH PROGRAMMING NOTE FOR HEADS 21,22,61 AND 62

(program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phases 2 and 6 for 'Green Int Flash'. This is done to flash phases 2 and 6 yellow when not in preempt.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C027
 DESIGNED: 01 August 2007
 SEALED: 5/1/08
 REVISED:

Signal Upgrade - Sheet 1 of 5

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SECTION\$\$\$\$\$
 \$\$\$USERNAME\$\$\$

Prepared in the offices of:

RAMEY KEMP ASSOCIATES, INC.
 Transportation Engineers
 8800 Farington Place, Suite 100
 Raleigh, North Carolina 27608
 919-872-4115 Tel. 919-878-5416 Fax.
 www.rameykemp.com

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 76 (Oleander Drive) at South Wallace Avenue

Division 03 New Hanover County Wilmington

PLAN DATE: Aug 2007 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity RKA PROJ. NO.: 07037 (040)

REVISIONS	INIT.	DATE

SIGNATURE: _____ DATE: _____

SIG. INVENTORY NO. C027

OVERLAP "A" OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 19, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

```

PAGE:1 C1 PIN:21 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....19
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y
    
```

PAGE:1 C1 PIN:21 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...1
SELECT COLOR (0=RED,1=YEL,2=GRN)...0

WHEN A "Y" IS ENTERED FOR "VEHICLE OVERLAP"
THE SCREEN SHOWN ABOVE WILL APPEAR.
ENTER DATA AS SHOWN.
PRESS ENTER AFTER ENTERING DATA, THEN ESC.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS "VEHICLE OVERLAP" AS SHOWN BELOW:

```

PAGE:1 C1 PIN:21 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....19
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y
    
```

VEHICLE OVERLAP A (RED) LOAD SWITCH S8

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 20, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

```

PAGE:1 C1 PIN:22 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....20
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y
    
```

PAGE:1 C1 PIN:22 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...1
SELECT COLOR (0=RED,1=YEL,2=GRN)...1

WHEN A "Y" IS ENTERED FOR "VEHICLE OVERLAP"
THE SCREEN SHOWN ABOVE WILL APPEAR.
ENTER DATA AS SHOWN.
PRESS ENTER AFTER ENTERING DATA, THEN ESC.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS "VEHICLE OVERLAP" AS SHOWN BELOW:

```

PAGE:1 C1 PIN:22 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....20
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y
    
```

VEHICLE OVERLAP A (YELLOW) LOAD SWITCH S8

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 21, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS "VEHICLE OVERLAP" AS SHOWN BELOW:

```

PAGE:1 C1 PIN:23 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....21
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y
    
```

PAGE:1 C1 PIN:23 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...1
SELECT COLOR (0=RED,1=YEL,2=GRN)...2

WHEN A "Y" IS ENTERED FOR "VEHICLE OVERLAP"
THE SCREEN SHOWN ABOVE WILL APPEAR.
ENTER DATA AS SHOWN.
PRESS ENTER AFTER ENTERING DATA, THEN ESC.

```

PAGE:1 C1 PIN:23 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....21
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....Y
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....Y
WATCHDOG.....Y
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....Y
RUN FREE.....Y
RESERVED.....Y
PREEMPT.....Y
SOFT PREEMPT.....Y
ANY PREEMPT.....Y
COORDINATION PLAN.....Y
OFFSET.....Y
PHASE CHECK.....Y
PHASE ON.....Y
PHASE NEXT.....Y
    
```

VEHICLE OVERLAP A (GREEN) LOAD SWITCH S8

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

```

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: |12345678910111213141516
VEH OVL PARENTS: | X
VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: X 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)...0
    
```

PRESS '+'

```

PAGE 1: VEHICLE OVERLAP 'B' 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: X 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)...0
    
```

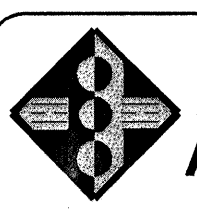
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: C027
DESIGNED: 01 August 2007
SEALED: 5/1/08
REVISED:

OVERLAP PROGRAMMING COMPLETE


Signal Upgrade - Sheet 3 of 5

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

Prepared in the offices of:



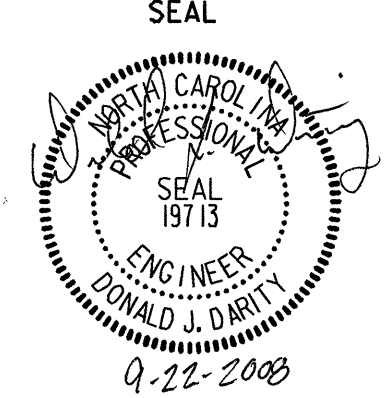
RAMEY KEMP ASSOCIATES, INC.
TRANSPORTATION ENGINEERS
4806 Farrington Place, Suite 100
Raleigh, North Carolina 27609
919-872-8116 Tel. 919-878-6418 Fax.
www.rameykemp.com



Development Services
Traffic Engineering Division
P.O. Box 1810, Wilmington, NC 28402
(910) 341-7888

US 76 (Oleander Drive) at South Wallace Avenue	
Division 03 New Hanover County Wilmington	
PLAN DATE: Aug 2007	REVIEWED BY: D.J. Darity
PREPARED BY: D.J. Darity	RKA PROJ. NO.: 07037 (040)
REVISIONS	INIT. DATE

SEAL



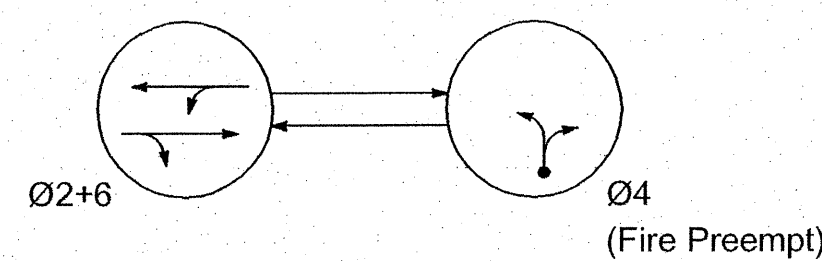
ENGINEER
DONALD J. DARTY
9-22-2008

SIGNATURE DATE
SIG. INVENTORY NO. C027

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	-	C51g-178	
F.A. PROJECT NO. -			
PROJECT I.D. NO. -			

**2 - PHASE
SEMI-ACTUATED
w/ EMERGENCY PREEMPTION
WILMINGTON SIGNAL SYSTEM**

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

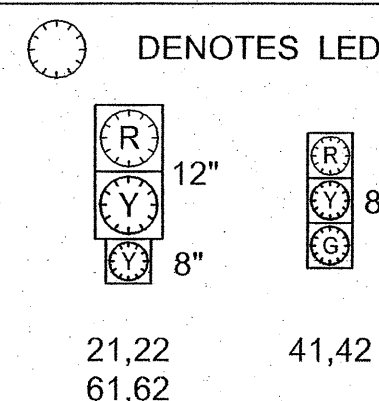
- DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

Signal Face	Phase		
	Ø	2	4
21,22	FY	R	Y
41,42	FR	G	R
61,62	FY	R	Y

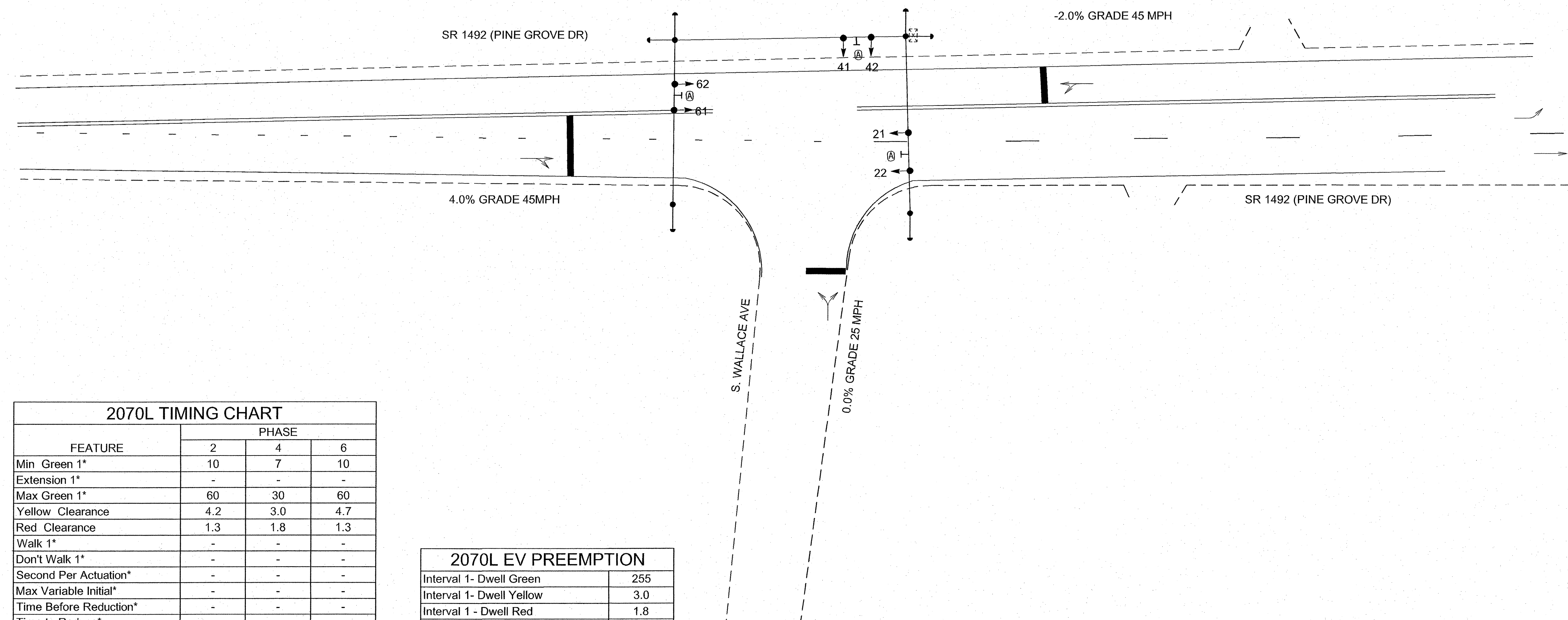
FY = 8" Flashing Yellow
FR = Flashing Red

SIGNAL FACE I.D.



NOTES:

- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JULY 2006 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JULY 2006.
- DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- PAVEMENT MARKINGS ARE EXISTING.
- LOCATE EMERGENCY VEHICLE PREEMPTION SWITCH IN FIRE STATION.
- THE CITY TRAFFIC ENGINEER WILL DETERMINE THE DELAY BEFORE PREEMPT AND PREEMPT DWELL MIN GREEN TIME FOR EMERGENCY VEHICLES.
- CLEAR SIGNAL HEADS 21, 22, 23 AND 24 FROM FLASHING 8" YELLOW TO STEADY 12" YELLOW DURING INTERVAL 1 AND STEADY RED DURING INTERVAL 2.
- CLEAR SIGNAL HEADS 41 AND 42 FROM FLASHING RED TO STEADY RED DURING INTERVAL 1 AND INTERVAL 2.
- THIS SIGNAL IS PART OF THE WILMINGTON SIGNAL SYSTEM. ASSET # 4028



LEGEND

PROPOSED	EXISTING
○→	●→
○→	N/A
+	+
□→	□→
○→	●→
○→	●→
□	□
□	■
---	---
---	---
→	→
N/A	⊕
⊕	⊕

FEATURE	PHASE		
	2	4	6
Min Green 1*	10	7	10
Extension 1*	-	-	-
Max Green 1*	60	30	60
Yellow Clearance	4.2	3.0	4.7
Red Clearance	1.3	1.8	1.3
Walk 1*	-	-	-
Don't Walk 1*	-	-	-
Second Per Actuation*	-	-	-
Max Variable Initial*	-	-	-
Time Before Reduction*	-	-	-
Time to Reduce*	-	-	-
Minimum Gap	-	-	-
Recall Mode	MIN RECALL	NONE	MIN RECALL
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.

Interval 1- Dwell Green	255
Interval 1- Dwell Yellow	3.0
Interval 1 - Dwell Red	1.8
Interval 5 - Exit Green	1.0
Interval 5 - Yellow	0.0
Interval 5 - Red	0.0
Delay Time**	30
Min Green Before Pre	0.1
PED Clear Before Pre	0.0
Yellow Clear Before Pre*	0.0
Red Clear Before Pre*	0.0
Dwell Min Time**	45
Enable Backup Protection	N/A
PED Clear Through Yellow	N/A

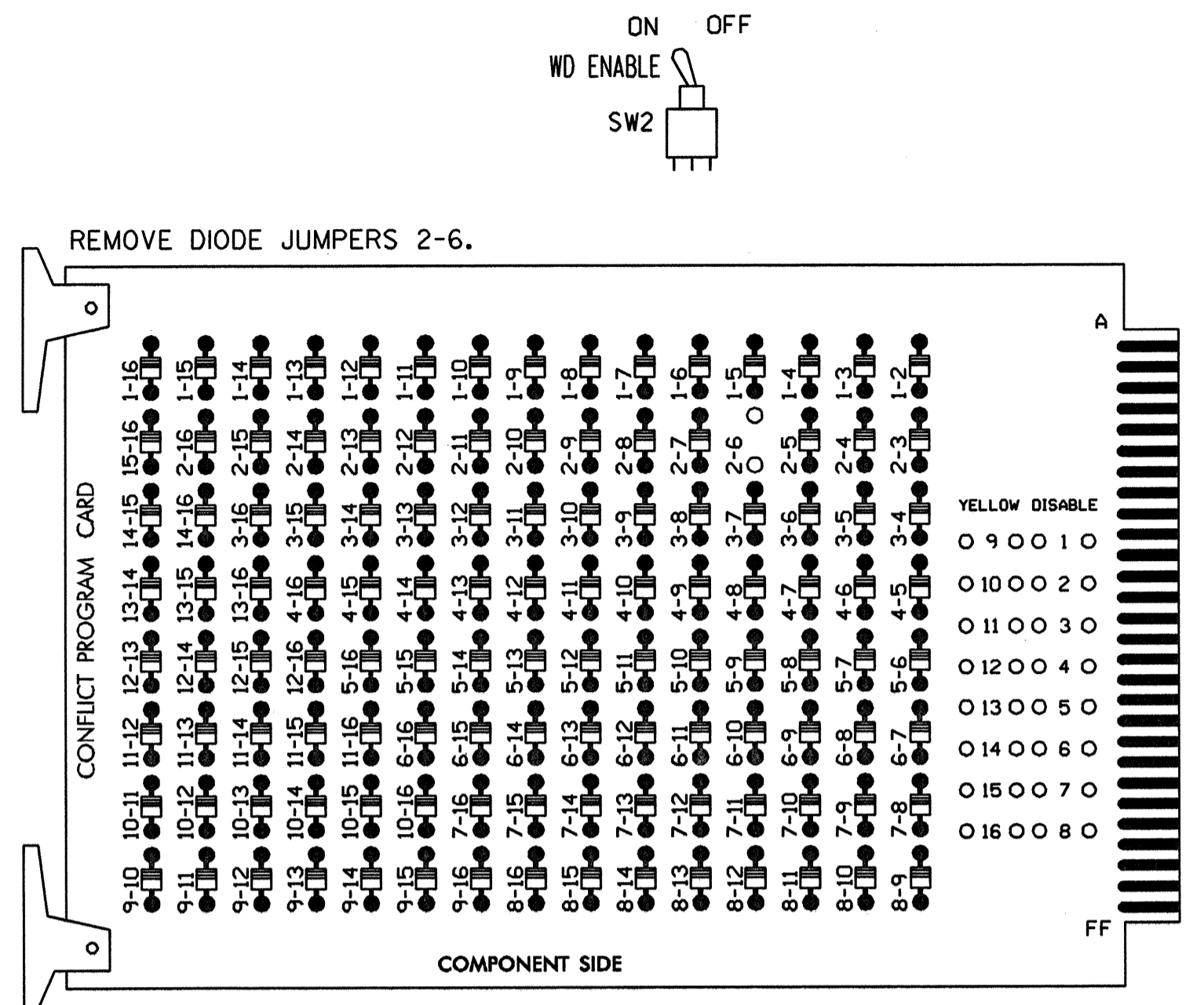
* Clearance time defaults to times used for phase during normal operation
** See Note 5

SIGNAL UPGRADE

	SR 1492 (Pine Grove Dr) at S. Wallace Ave		
	Division 3 PLAN DATE: 20 August 2007 PREPARED BY: Randall Glazier	New Hanover County REVIEWED BY: DRB REVIEWED BY:	
Development Services • Traffic Engineering Division P.O. Box 10311 • Wilmington, NC 28402 • 910.341.7200	SCALE 20 1" = 20'	REVISIONS INT. DATE	SIGNATURE: <i>5/1/08</i> DATE: 5/1/08 SIG. INVENTORY NO. C028

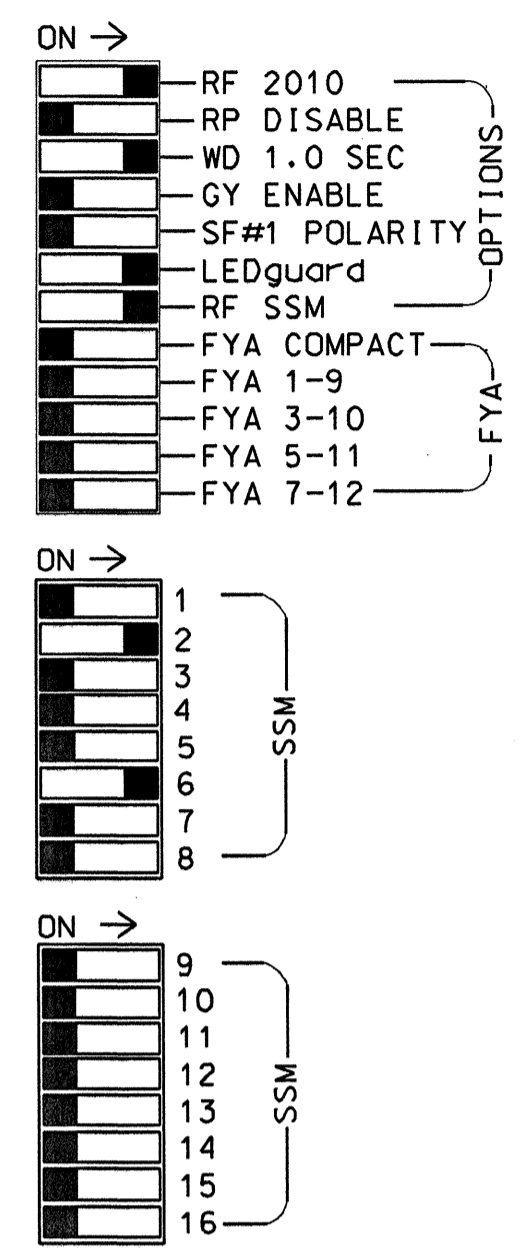
EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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 1,3,4,5,7,8,9, 10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.

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	OLA	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN					103							
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

8" FLASHING YELLOW → 130 136 ← 8" FLASHING YELLOW
 NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
 CABINETCONTRACTOR SUPPLIED 336
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS..12
 LOAD SWITCHES USED.....S2,S2P,S4,S6
 PHASES USED.....2,4,6
 OVERLAP A.....4
 * Used During Preempt Only
 ** Used For Pilot Lamp (See Lamp #4 on Sheet 2)

PREEMPT ONLY PHASE OMIT NOTE

(program controller as shown below)
 From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program Phase 4 for 'Omit Phase' and Phases 2 and 6 for 'Startup Calls'. This is to prevent Phase 4 from being served when not in preempt.

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	-0'S	-0'S	-0'S	-0'S	-0'S	-0'S	-0'S	-0'S	NOT USED	-0'S	-0'S	-0'S	-0'S	FS
"	-0'S	-0'S	-0'S	-0'S	-0'S	-0'S	-0'S	-0'S	PRE-2	-0'S	-0'S	-0'S	-0'S	DC ISOLATOR
L	-0'S	-0'S	-0'S	-0'S	-0'S	-0'S	-0'S	-0'S	AC ISOLATOR	-0'S	-0'S	-0'S	-0'S	DC ISOLATOR

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

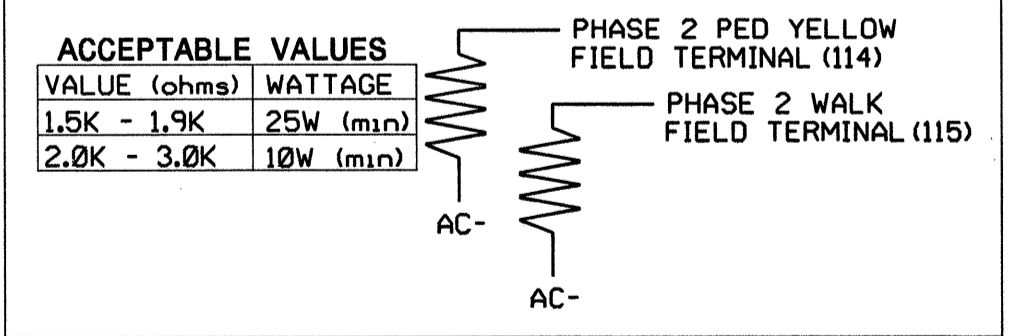
FS = FLASH SENSE
 ST = STOP TIME
 PRE-2 = PREEMPT 2

IN-CYCLE FLASH PROGRAMMING NOTE

FOR HEADS 21,22,61 AND 62
 (program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phases 2 and 6 for 'Green Int Flash'. This is done to flash phases 2 and 6 yellow when not in preempt.

LOAD RESISTOR INSTALLATION DETAIL



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C028
 DESIGNED: 20 August 2007
 SEALED: 5/1/08
 REVISED:

Signal Upgrade - Sheet 1 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1492 (Pine Grove Drive) at S. Wallace Avenue

Division 03 New Hanover County Wilmington

PLAN DATE: Aug 2007 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity RKA PROJ. NO.: 07037 (040)

REVISIONS: INIT. DATE

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 1973 DONALD J. DARTY

SIGNATURE: DATE: SIG. INVENTORY NO. C028

Prepared in the offices of:

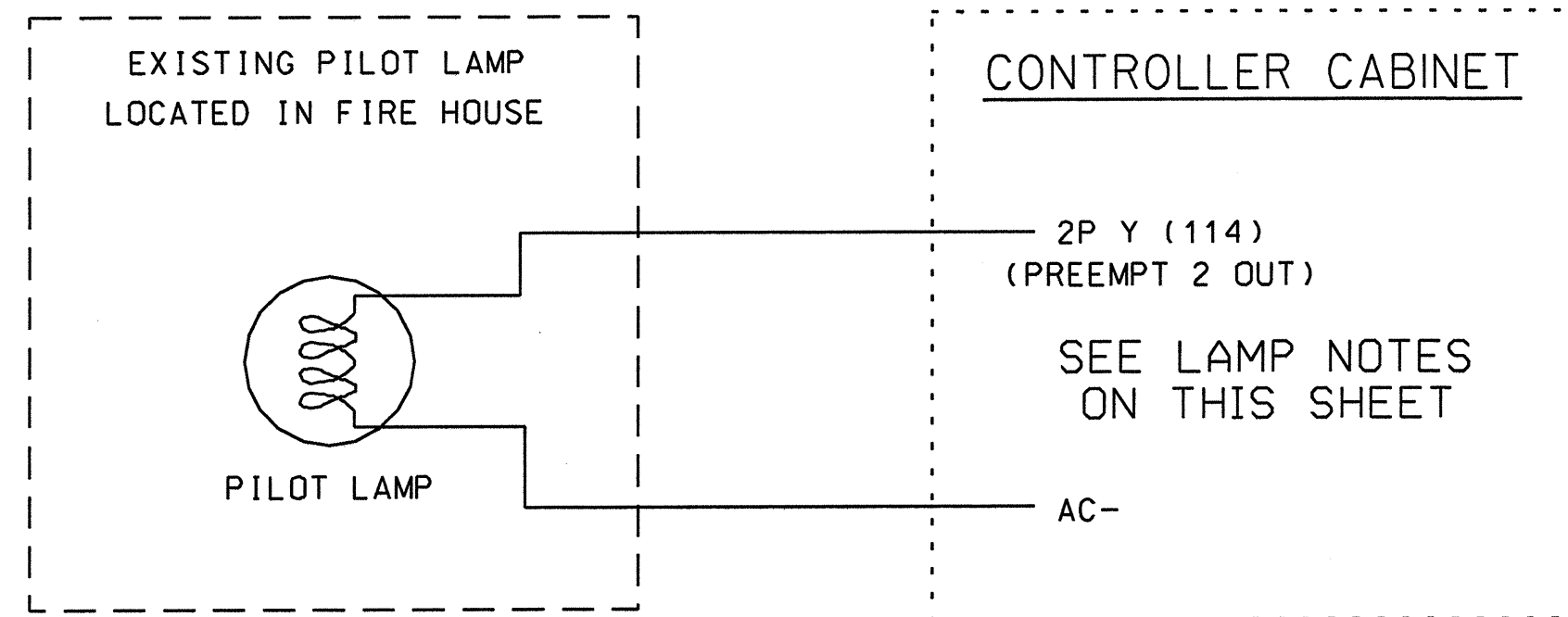
RAMEY KEMP ASSOCIATES, INC.
 Transportation Engineers
 6808 Farrington Place, Suite 100
 Raleigh, North Carolina 27609
 919-872-5115 Tel. 919-878-5416 Fax.
 www.rameykemp.com

City of **WILMINGTON**
 TRAFFIC ENGINEERING

Development Services
 Traffic Engineering Division
 P.O. Box 1810, Wilmington, NC 28402
 (910) 341-7888

*****SYTIME*****
 *****DONS*****
 *****RAMEY*****

EV PREEMPT PILOT LAMP WIRING DETAIL



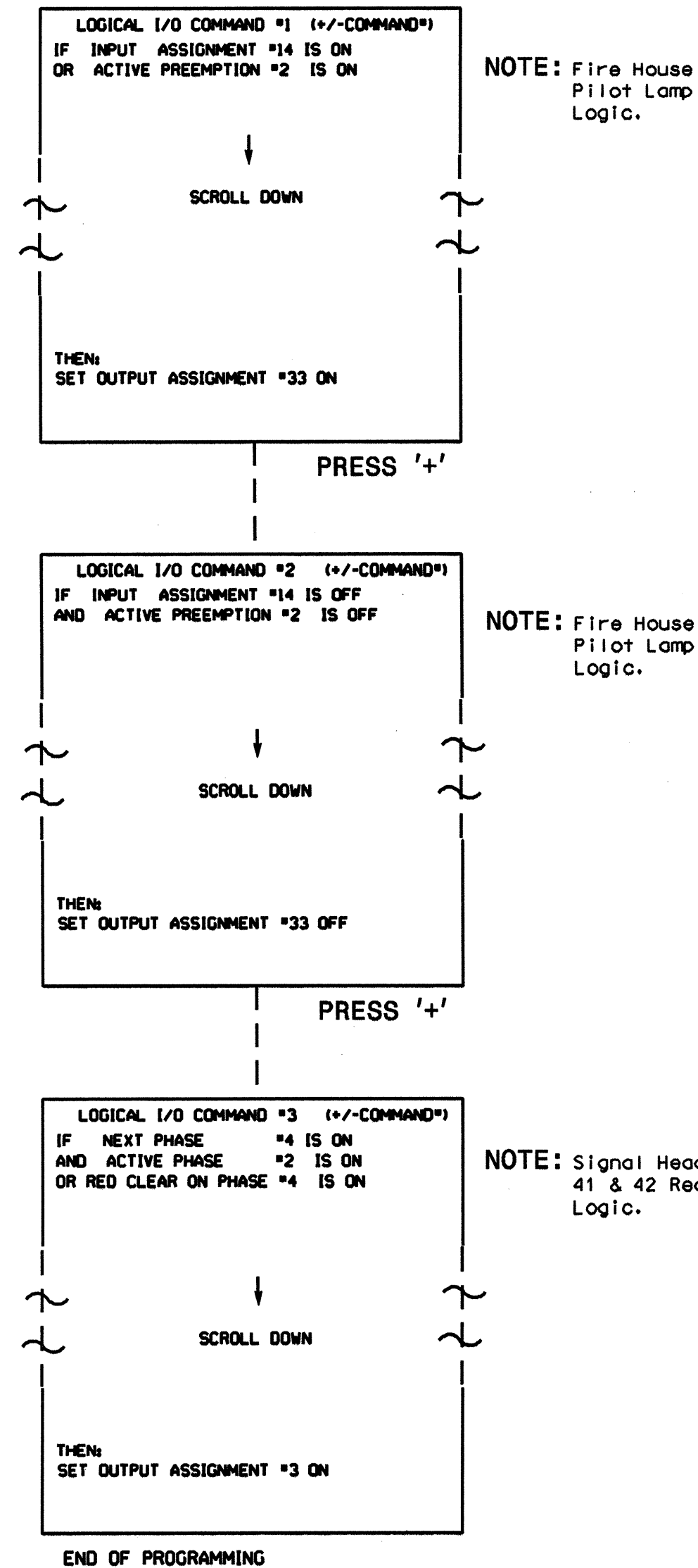
LAMP NOTES

1. If field terminal 114 has a conflict monitor wire attached, remove, tape, and label wire.
2. Make sure load resistors are in place as shown in the Load Resistor Installation Detail.
3. Install a loadswitch in Output File Slot S2P.

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL FOR SPECIAL OUTPUT CONTROL

(program controller as shown below)

1. From Main Menu: Press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Act Logic Commands 1, 2 and 3.
2. From Main Menu: Press '6' (Outputs), then select '3' (Logical I/O Processor).



NOTE: Fire House Pilot Lamp Logic.

NOTE: Fire House Pilot Lamp Logic.

NOTE: Signal Head 41 & 42 Red Logic.

EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' to advance to Preemption #2.

PREEMPTION #2	INTERVAL/TIMING	SETTINGS (NEXT:1-10)
	GRN YEL RED	CLEAR/DWELL PHASES
1	255 0.0 0.0	12345678910111213141516
2	0 0.0 0.0	X
3	0 0.0 0.0	
4	0 0.0 0.0	
5	1 0.0 0.0	X X

EXIT CALLS

OPTIONS

PRIORITY (Y/N TO SELECT)MED

DELAY TIMER (0-255 SEC)*

MIN GREEN BEFORE PRE (0= DEFAULT)....0

PED CLEAR BEFORE PRE (0= DEFAULT)....0

YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0

RED CLEAR BEFORE PRE (0= DEFAULT)....0.0

DWELL MIN TIMER (0-255 SEC)*

DWELL MAX TIMER (0=OFF,1-255MIN)0

DWELL HOLD-OVER TIMER (0-255)0

LATCH CALL?Y

LINK TO NEXT PREEMPT?N

ENABLE BACKUP PROTECTION?N

HOLD CLEAR 1 PHASES DURING DELAY? ...N

FAST GREEN FLASH DWELL PHASES?N

PED CLEARANCE THROUGH YELLOW?N

INHIBIT OVERLAP GREEN EXTENSION?N

SERVICE DURING SOFTWARE FLASH?N

REST IN RED DURING DWELL INTERVAL? ..N

FLASH DWELL INTERVAL?N

ALLOW PEDS IN DWELL INTERVAL?N

RE-TIME DWELL INTERVAL?Y

OVERLAPS: ABCDEFGHIJKLMNPO

DWELL INT FLASH YELLOW

OMIT OVERLAPS:

* Denotes timing to be determined in field.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C0280
 DESIGNED: 20 August 2007
 SEALED: 5/1/08
 REVISED:

Signal Upgrade - Sheet 2 of 4

Prepared in the offices of:

RAMEY KEMP ASSOCIATES, INC.
 Transportation Engineers
 6808 Farington Place, Suite 100
 Raleigh, North Carolina 27609
 919-873-5115 Tel. 919-878-5416 Fax.
 www.rameykemp.com

ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1492 (Pine Grove Drive) at S. Wallace Avenue

Division 03 New Hanover County Wilmington

PLAN DATE: Aug 2007 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity RKA PROJ. NO.: 07037 (040)

REVISIONS	INIT.	DATE

Development Services Traffic Engineering Division
 P.O. Box 1810, Wilmington, NC 28402
 (910) 341-7888

SEAL

SIGNATURE DATE
 SIG. INVENTORY NO. C028

 SYSTEMS

OVERLAP "A" OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 3, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

```

PAGE:1 C1 PIN:4 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....3
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

SCROLL DOWN TO VIEW ALL DATA

```

PAGE:1 C1 PIN:4 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...1
SELECT COLOR (0=RED,1=YEL,2=GRN).....0
    
```

WHEN A "Y" IS ENTERED FOR "VEHICLE OVERLAP" THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN. PRESS ENTER AFTER ENTERING DATA, THEN ESC.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS "VEHICLE OVERLAP" AS SHOWN BELOW:

```

PAGE:1 C1 PIN:4 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....3
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

VEHICLE OVERLAP A (RED) LOAD SWITCH S4

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 5, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

```

PAGE:1 C1 PIN:6 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....5
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

SCROLL DOWN TO VIEW ALL DATA

```

PAGE:1 C1 PIN:6 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...1
SELECT COLOR (0=RED,1=YEL,2=GRN).....2
    
```

WHEN A "Y" IS ENTERED FOR "VEHICLE OVERLAP" THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN. PRESS ENTER AFTER ENTERING DATA, THEN ESC.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS "VEHICLE OVERLAP" AS SHOWN BELOW:

```

PAGE:1 C1 PIN:6 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....5
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

VEHICLE OVERLAP A (GREEN) LOAD SWITCH S4

- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS).
- WITH CURSOR IN "OUTPUT ASSIGNMENT #" FIELD, USE + KEY TO FIND THE OUTPUT ASSIGNMENT NUMBER 4, AS SHOWN BELOW.
- PROGRAM CONTROLLER AS SHOWN:

```

PAGE:1 C1 PIN:5 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....4
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

SCROLL DOWN TO VIEW ALL DATA

```

PAGE:1 C1 PIN:5 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...1
SELECT COLOR (0=RED,1=YEL,2=GRN).....1
    
```

WHEN A "Y" IS ENTERED FOR "VEHICLE OVERLAP" THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN. PRESS ENTER AFTER ENTERING DATA, THEN ESC.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS "VEHICLE OVERLAP" AS SHOWN BELOW:

```

PAGE:1 C1 PIN:5 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....4
FREQUENCY (0=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID, 1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

VEHICLE OVERLAP A (YELLOW) LOAD SWITCH S4

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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

```

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

NOTICE RED FLASH →

OVERLAP PROGRAMMING COMPLETE


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C028
DESIGNED: 20 August 2007
SEALED: 5/1/08
REVISED:

Prepared in the offices of:



RAMEY KEMP ASSOCIATES, INC.
Transportation Engineers
8008 Fortington Place, Suite 100
Raleigh, North Carolina 27608
919-872-8116 Tel. 919-872-8416 Fax.
www.rameykemp.com

Signal Upgrade - Sheet 3 of 4

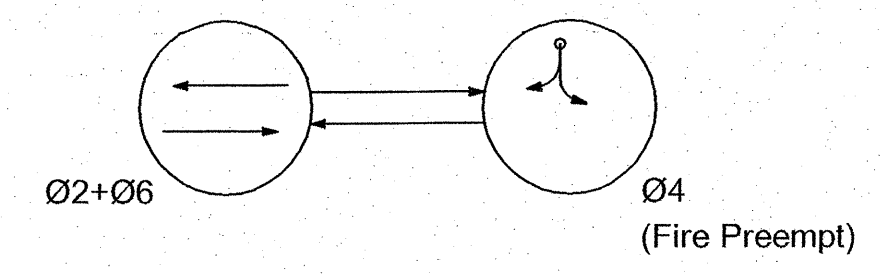
ELECTRICAL AND PROGRAMMING DETAILS FOR	SR 1492 (Pine Grove Drive) at S. Wallace Avenue	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER 19713 DONALD J. DARTY 9-22-2008
	Division 03 New Hanover County Wilmington PLAN DATE: Aug 2007 REVIEWED BY: D.J. Darity PREPARED BY: D.J. Darity RKA PROJ. NO.: 07037 (040)	SIGNATURE DATE SIG. INVENTORY NO. C028

*****STANDARD*****
 *****DRAWING*****
 *****DATE*****
 *****USER*****

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	-	C51g-183	
F.A. PROJECT NO.		-	
PROJECT I.D. NO.		-	

**2 - PHASE
SEMI-ACTUATED
w/ EMERGENCY PREEMPTION
WILMINGTON SIGNAL SYSTEM**

PHASING DIAGRAM



- PHASING DIAGRAM DETECTION LEGEND**
- ← ○ → DETECTED MOVEMENT
 - ← — — — → UNDETECTED MOVEMENT (OVERLAP)
 - ← - - - - - → UNSIGNALIZED MOVEMENT
 - ← - - - - - → PEDESTRIAN MOVEMENT

SIGNAL FACE I.D.

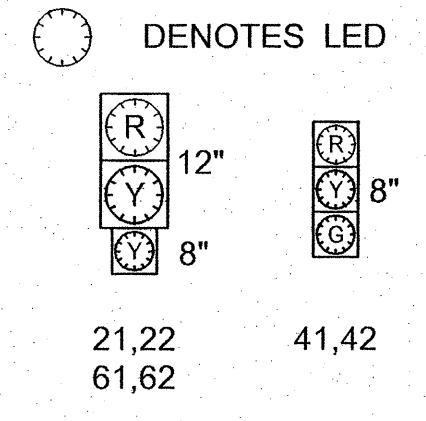
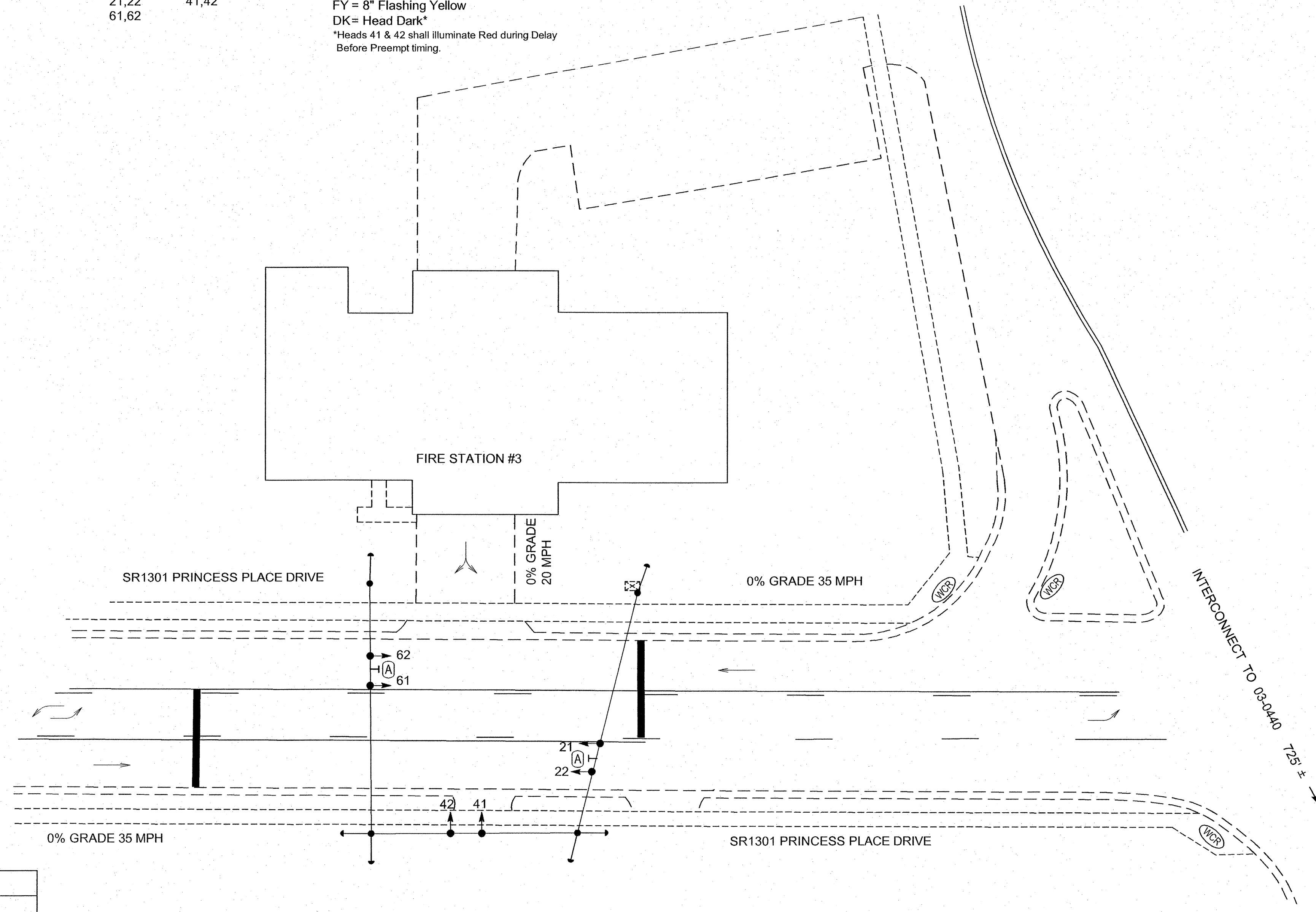


TABLE OF OPERATION

Signal Face	Phase			FLASH
	Ø 2	Ø 4	Ø 6	
21,22	FY	R	Y	
41,42	DK*	G	R	
61,62	FY	R	Y	

FY = 8" Flashing Yellow
DK = Head Dark*
*Heads 41 & 42 shall illuminate Red during Delay Before Preempt timing.



- NOTES:**
- REFER TO "ROADWAY STANDARD DRAWINGS NCDOT" DATED JULY 2006 AND "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JULY 2006.
 - DO NOT PROGRAM SIGNAL FOR LATE NIGHT FLASHING OPERATION UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 - PAVEMENT MARKINGS ARE EXISTING.
 - LOCATE EMERGENCY VEHICLE PREEMPTION SWITCH IN FIRE STATION.
 - THE CITY TRAFFIC ENGINEER WILL DETERMINE THE DELAY BEFORE PREEMPT AND PREEMPT DWELL MIN GREEN TIME FOR EMERGENCY VEHICLES.
 - CLEAR SIGNAL HEADS 21, 22, 61 AND 62 FROM FLASHING 8" YELLOW TO STEADY 12" YELLOW DURING INTERVAL 1 AND STEADY RED DURING INTERVAL 2.
 - THIS SIGNAL IS PART OF THE WILMINGTON SIGNAL SYSTEM. ASSET # 5529

LEGEND

- | | | | |
|--|---|--|---|
| | PROPOSED Traffic Signal Head | | EXISTING Traffic Signal Head |
| | PROPOSED Modified Signal Head | | 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" Underground Conduit | | EXISTING 2" Underground Conduit |
| | PROPOSED Right of Way | | EXISTING Right of Way |
| | PROPOSED Directional Arrow | | EXISTING Directional Arrow |
| | PROPOSED Wheelchair Ramp | | EXISTING Wheelchair Ramp |
| | PROPOSED "EMERGENCY SIGNAL" Sign (W3 - 8) | | EXISTING "EMERGENCY SIGNAL" Sign (W3 - 8) |

2070L TIMING CHART

FEATURE	PHASE		
	2	4	6
Min Green 1*	10	7	10
Extension 1*	-	-	-
Max Green 1*	60	30	60
Yellow Clearance	3.8	3.0	3.8
Red Clearance	1.8	2.4	1.3
Walk 1*	-	-	-
Don't Walk 1*	-	-	-
Second Per Actuation*	-	-	-
Max Variable Initial*	-	-	-
Time Before Reduction*	-	-	-
Time to Reduce*	-	-	-
Minimum Gap	-	-	-
Recall Mode	MIN RECALL	NONE	MIN RECALL
Vehicle Call Memory*	-	-	-
Dual Entry	-	-	-
Simultaneous Gap	-	-	-

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

2070L EV PREEMPTION

Interval 1 - Dwell Green	255
Interval 1 - Dwell Yellow	3.8
Interval 1 - Dwell Red	1.3
Interval 5 - Exit Green	1
Interval 5 - Yellow	0.0
Interval 5 - Red	0.0
Delay Time **	**
Min Green Before Pre	-
PED Clear Before Pre	-
Yellow Clear Before Pre *	*
Red Clear Before Pre *	*
Dwell Min Time **	**
Enable Backup Protection	-
PED Clear Through Yellow	-

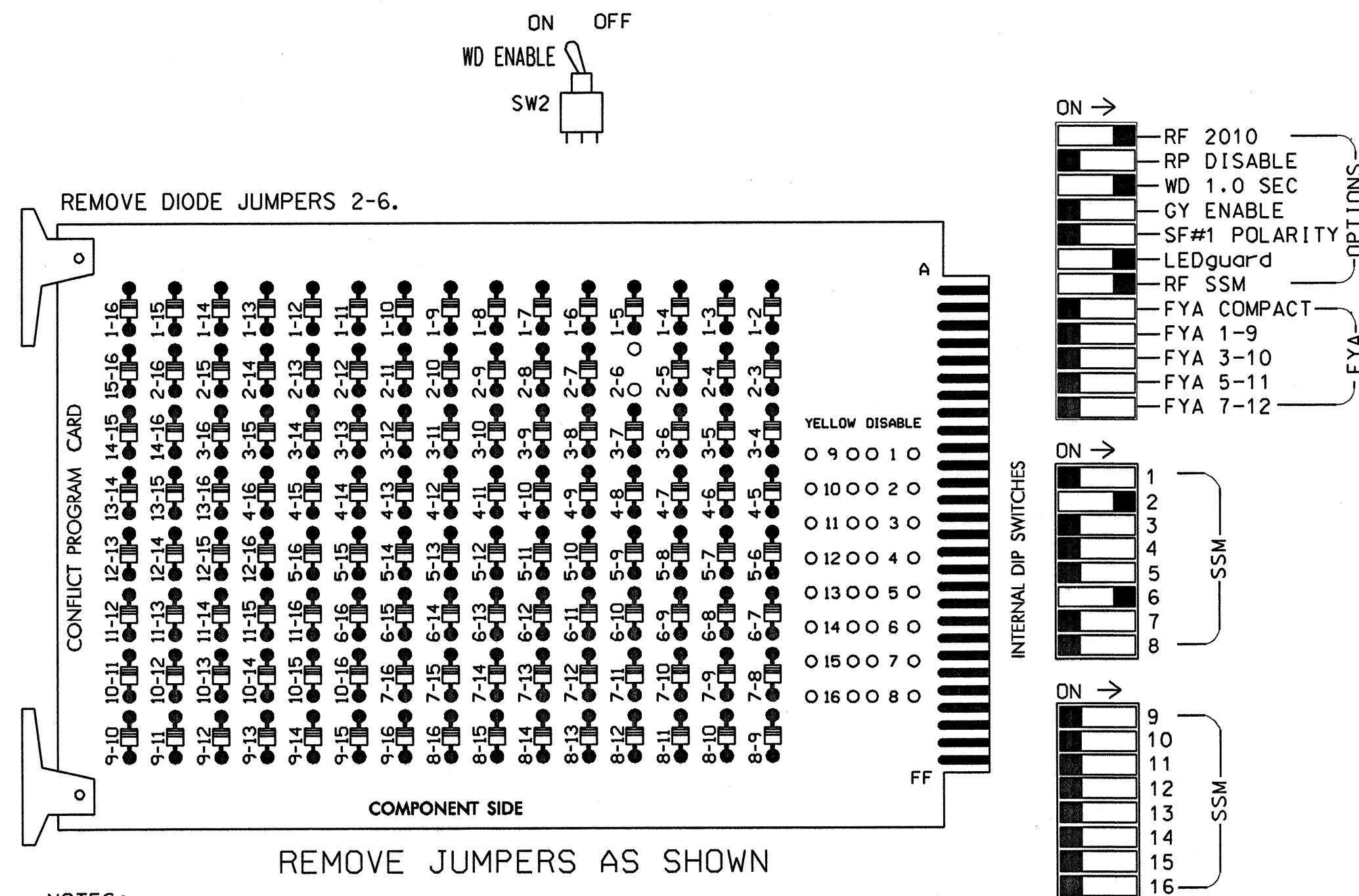
* Clearance time defaults to times used for phase during normal operation
** See Note 5

PLAN OF RECORD

 Development Services • Traffic Engineering Division P.O. Box 1010 • Wilmington, NC 28402 • (910) 343-7000	SR1301 (Princess Place Drive) at Fire Station #3		
	Division 3 New Hanover County Wilmington PLAN DATE: 15 January 2008 REVIEWED BY: DRB PREPARED BY: Randall Glazier REVIEWED BY:	REVISIONS INIT. DATE	

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 1,3,4,5,7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.

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	OLA	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN					103							
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
↓												
↓												

8" FLASHING YELLOW → 130 136 ← 8" FLASHING YELLOW
 NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
 CABINETCONTRACTOR SUPPLIED 336
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS..12
 LOAD SWITCHES USED.....S2*,S2P,S4,S6
 PHASES USED.....2*,4,6
 OVERLAP A.....4
 * Used During Preempt Only
 ** Used For Pilot Lamp (See Lamp #4 on Sheet 2)

PREEMPT ONLY PHASE OMIT NOTE

(program controller as shown below)
 From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program Phase 4 for 'Omit Phase' and Phases 2 and 6 for 'Startup Calls'. This is to prevent Phase 4 from being served when not in preempt.

INPUT FILE POSITION LAYOUT

(front view)

FILE	U	1	2	3	4	5	6	7	8	9	10	11	12	13	14	FS
U		FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	DC ISOLATOR
L		FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	ST
		FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	DC ISOLATOR

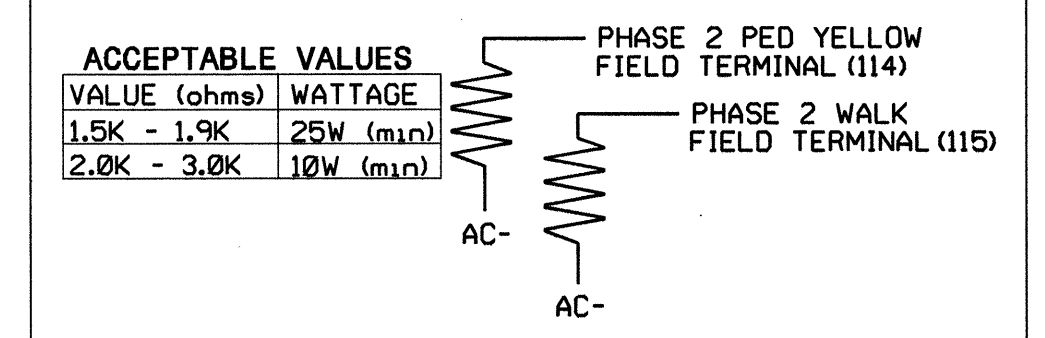
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME
 PRE-2 = PREEMPT 2

IN-CYCLE FLASH PROGRAMMING NOTE
 FOR HEADS 21,22,61 AND 62
 (program controller as shown below)

From Main Menu press '2' (Phase Control), then '1' (Phase Control Functions). Program phases 2 and 6 for 'Green Int Flash'. This is done to flash phases 2 and 6 yellow when not in preempt.

LOAD RESISTOR INSTALLATION DETAIL



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C029
 DESIGNED: 15 January 2008
 SEALED: 1/29/08
 REVISED:

Signal Upgrade - Sheet 1 of 4

*****SYTIME*****
 *****SERIAL*****

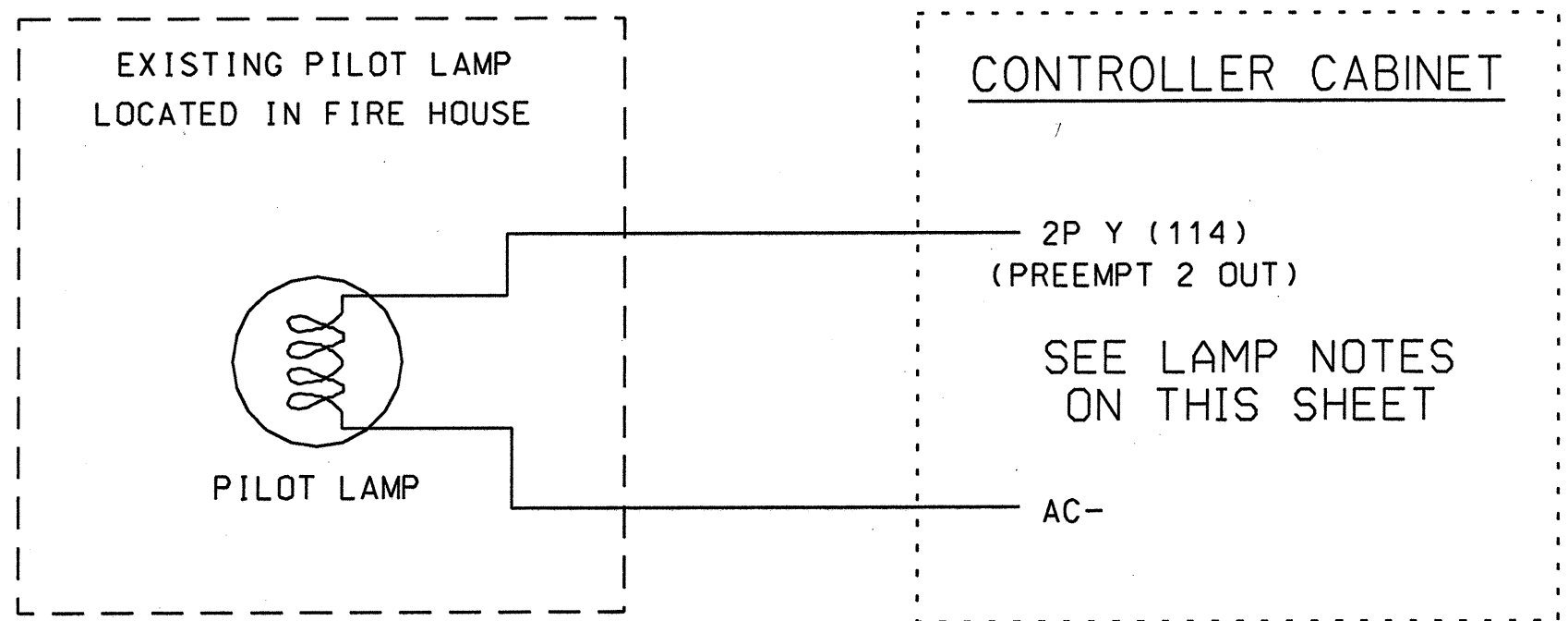
Prepared in the offices of:

RAMEY KEMP ASSOCIATES, INC.
 Transportation Engineers
 6808 Farington Place, Suite 100
 Raleigh, North Carolina 27609
 919-872-5116 Tel. 919-878-8416 Fax.
 www.rameykemp.com

ELECTRICAL AND PROGRAMMING DETAILS FOR:
SR 1301 (Princess Place Drive) at Fire Station #3
 Division 03 New Hanover County Wilmington
 PLAN DATE: Jan 2008 REVIEWED BY: D.J. Darity
 PREPARED BY: D.J. Darity RKA PROJ. NO.: 07037 (040)
 REVISIONS: INIT. DATE
 SEAL

 SIGNATURE: DATE
 SIG. INVENTORY NO. C029

EV PREEMPT PILOT LAMP WIRING DETAIL



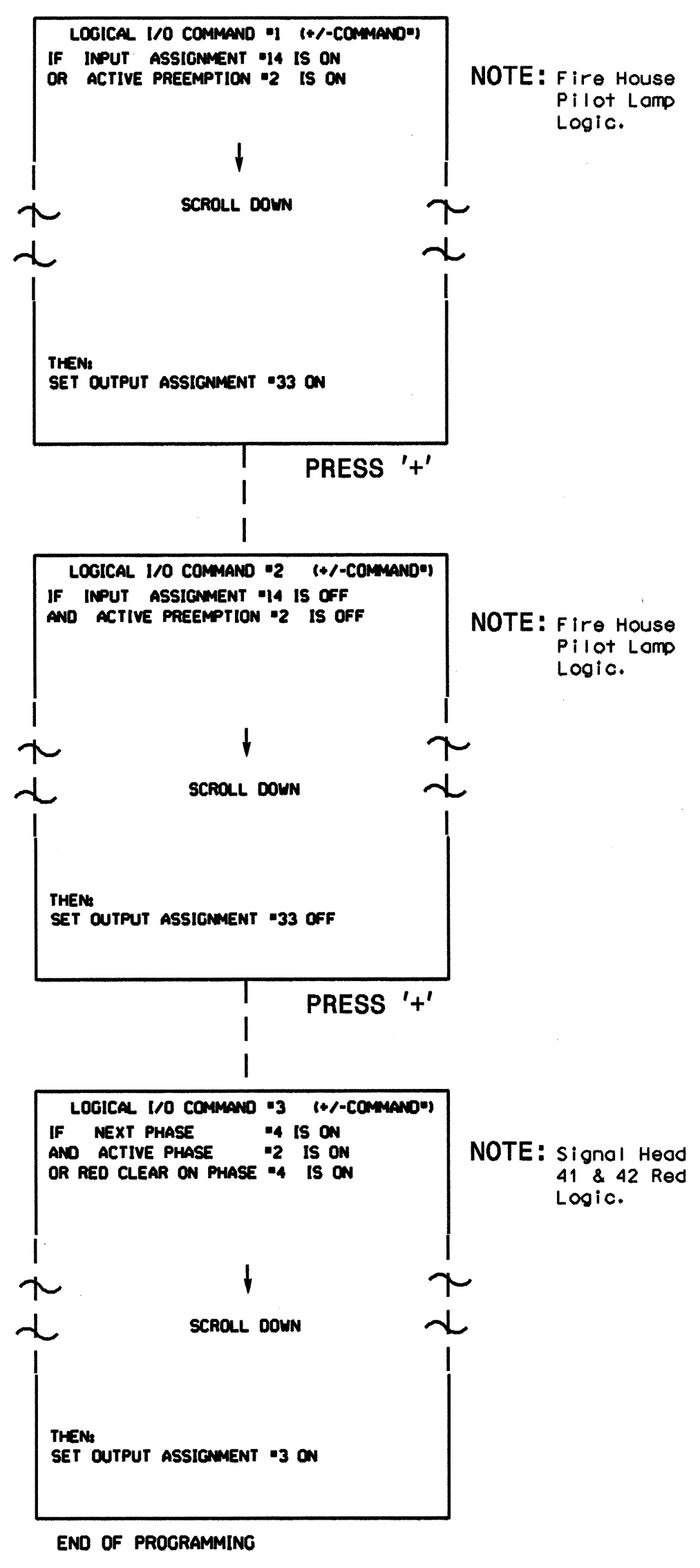
LAMP NOTES

1. If field terminal 114 has a conflict monitor wire attached, remove, tape, and label wire.
2. Make sure load resistors are in place as shown in the Load Resistor Installation Detail.
3. Install a loadswitch in Output File Slot S2P.

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL FOR SPECIAL OUTPUT CONTROL

(program controller as shown below)

1. From Main Menu: Press '2' (Phase Control), then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Act Logic Commands 1, 2 and 3.
2. From Main Menu: Press '6' (Outputs), then select '3' (Logical I/O Processor).



EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' to advance to Preemption #2.

PREEMPTION #2	INTERVAL/TIMING	SETTINGS (NEXT:1-10)	CLEAR/DWELL PHASES
1	255 0.0 0.0	GRN YEL RED	12345678910111213141516
2	0 0.0 0.0		X
3	0 0.0 0.0		
4	0 0.0 0.0		
5	1 0.0 0.0		X X

EXIT CALLS

OPTIONS

PRIORITY (Y/N TO SELECT)MED

DELAY TIMER (0-255 SEC)*

MIN GREEN BEFORE PRE (0= DEFAULT)....0

PED CLEAR BEFORE PRE (0= DEFAULT)....0

YELLOW CLEAR BEFORE PRE (0= DEFAULT).0.0

RED CLEAR BEFORE PRE (0= DEFAULT)....0.0

DWELL MIN TIMER (0-255 SEC)*

DWELL MAX TIMER (0=OFF,1-255MIN)0

DWELL HOLD-OVER TIMER (0-255)0

LATCH CALL?Y

LINK TO NEXT PREEMPT?N

ENABLE BACKUP PROTECTION?N

HOLD CLEAR 1 PHASES DURING DELAY? ...N

FAST GREEN FLASH DWELL PHASES?N

PED CLEARANCE THROUGH YELLOW?N

INHIBIT OVERLAP GREEN EXTENSION?N

SERVICE DURING SOFTWARE FLASH?N

REST IN RED DURING DWELL INTERVAL? ..N

FLASH DWELL INTERVAL?N

ALLOW PEDS IN DWELL INTERVAL?N

RE-TIME DWELL INTERVAL?Y

OVERLAPS: ABCDEFGHIJKLMNPO

DWELL INT FLASH YELLOW

OMIT OVERLAPS:

* Denotes timing to be determined in field.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C029
 DESIGNED: 15 January 2008
 SEALED: 1/29/08
 REVISED:

Signal Upgrade - Sheet 2 of 4

***** SYSTEM *****
 ***** WIRE *****
 ***** TERMINALS *****

Prepared in the offices of:

RAMEY KEMP ASSOCIATES, INC.
 Transportation Engineers
 6808 Farrington Place, Suite 100
 Raleigh, North Carolina 27609
 919-872-5116 Tel. 919-878-6416 Fax.
 www.rameykemp.com

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1301 (Princess Place Drive) at Fire Station #3

Division 03 New Hanover County Wilmington

PLAN DATE: Jan 2008 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity RKA PROJ. NO.: 07037 (040)

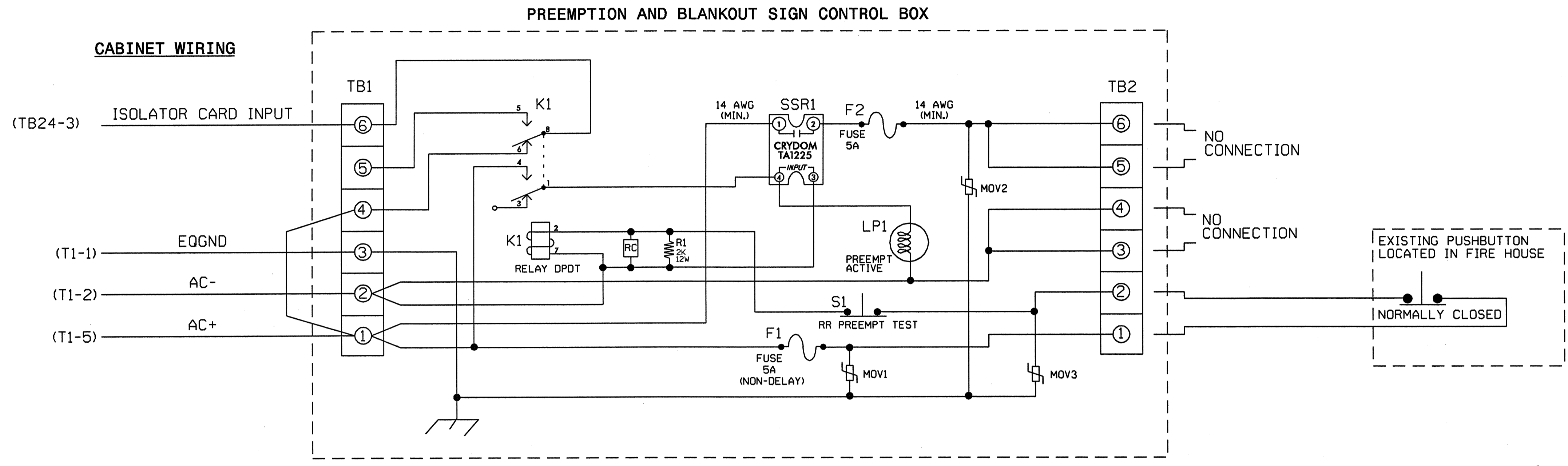
REVISIONS: INIT. DATE

SEAL

SIGNATURE: DATE: SIG. INVENTORY NO. C029

EMERGENCY VEHICLE PREEMPTION WIRING DETAIL

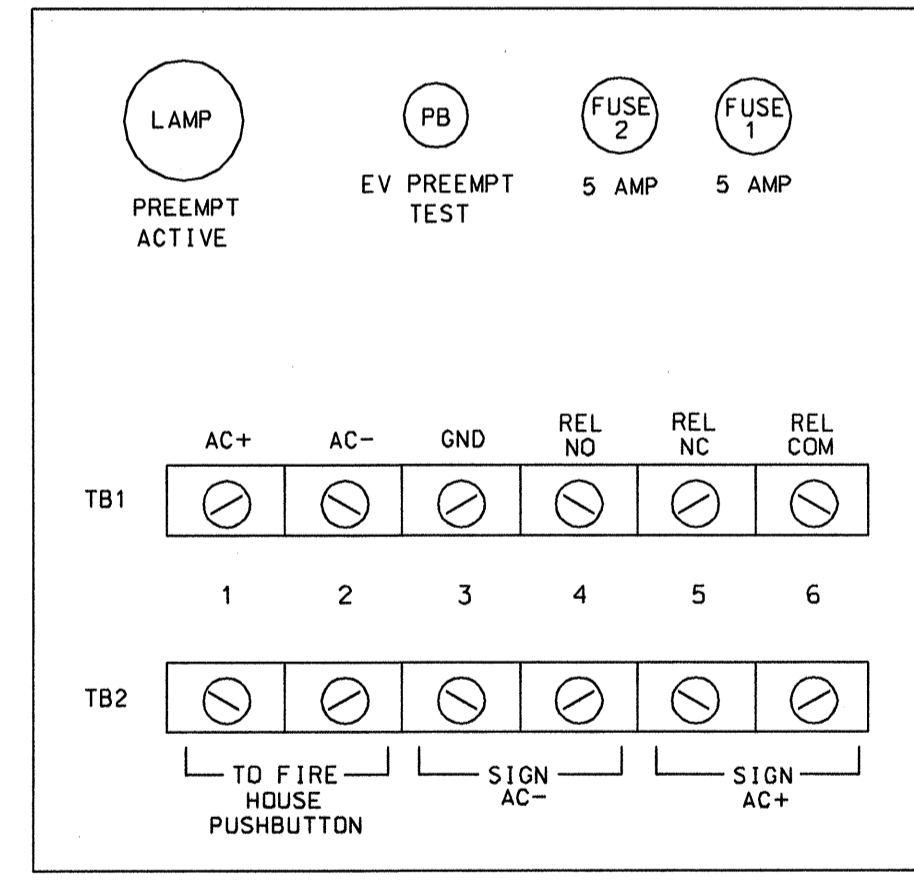
(wire as shown below)



NOTES

1. Relay K1 is shown in the energized (Preempt not active) normal operation state.
 2. Relay K1 is a Potter & Brumfield KRP11AG DPDT Relay with 120VAC coil and octal base.
 3. Relay SSR1 is a Crydom TA1225 SPST (normally open) Solid State Relay with AC input and AC (25 Amp) output. Dot Material# 625028740.
 4. AC Isolator Card shall activate preemption upon removal of AC+ from the input (as shown above). To accomplish this set invert dip switch on AC Isolator Card.
 5. Resistor is valued at 2K ohm, 12 watt. Clarostat part no. VPR10F-2K; DOT Material# 625011550.
 6. RC network is valued at .1 microfarad, 100 ohm.
 7. If replacement movs are needed, GE part no. V150LA20A (Dot Material# 106023975) may be used.
 8. Preemption and Blankout Sign Control Box is a Control Technologies Part No. 2299-101. DOT Material # 619033450.
9. IMPORTANT!! Terminal TB24-4 (on input panel) shall be connected to AC neutral (jumper may have to be added).

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C029
 DESIGNED: 15 January 2008
 SEALED: 1/29/08
 REVISED:

Signal Upgrade - Sheet 4 of 4

Prepared in the offices of:

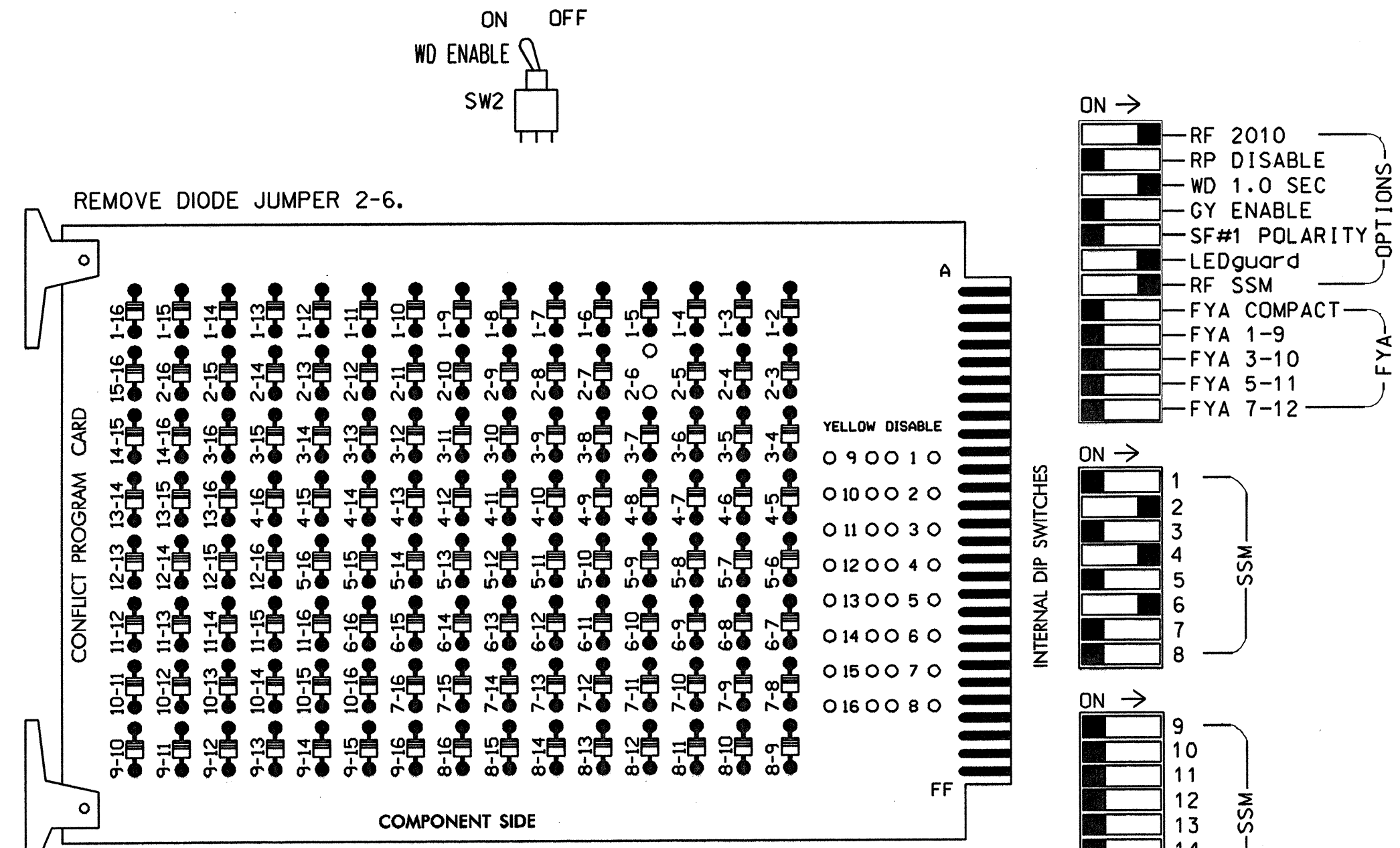
RAMEY KEMP & ASSOCIATES, INC.
 Transportation Engineers
 6508 Farrington Place, Suite 100
 Raleigh, North Carolina 27609
 919-872-9116 Tel. 919-878-6416 Fax.
 www.rameykemp.com

ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1301 (Princess Place Drive) at Fire Station #3		
Division 03 New Hanover County Wilmington		Division 03 New Hanover County Wilmington		
PLAN DATE: Jan 2008	REVIEWED BY: D.J. Darity	PREPARED BY: D.J. Darity	RKA PROJ. NO.: 07037 (040)	
REVISIONS	INIT.	DATE		
SIGNATURE			DATE	
SIG. INVENTORY NO.			C029	

\$\$\$\$\$\$SYTIME\$\$\$\$\$\$
 \$\$\$\$PLANTIME\$\$\$\$\$\$
 \$\$\$\$DRAWING\$\$\$\$\$\$
 \$\$\$\$DATE\$\$\$\$\$\$

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 1,3,5,7,8,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- The cabinet and controller are part of the Wilmington City Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
Hand												
Person												

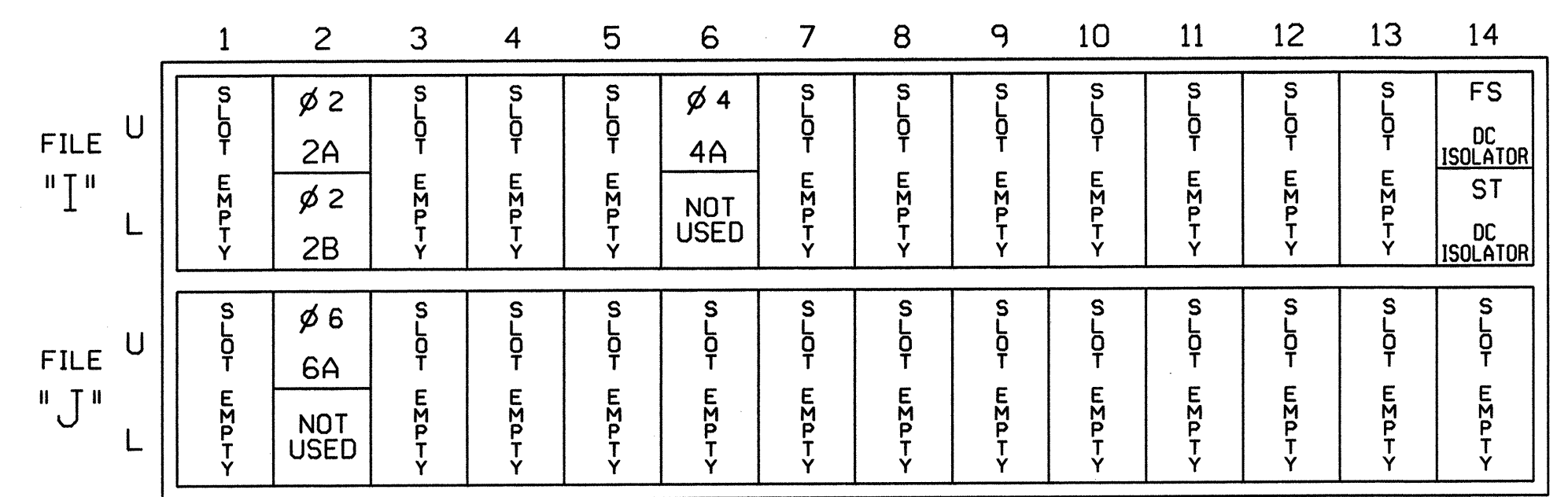
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
 CABINETCONTRACTOR SUPPLIED 332
 SOFTWAREECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS..12
 LOAD SWITCHES USED.....S2,S4,S6
 PHASES USED.....2,4,6
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

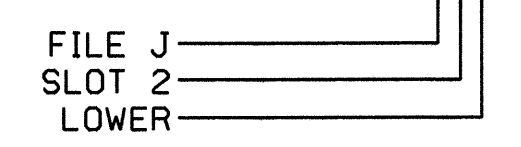
(front view)



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			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C035
 DESIGNED: 25 February 2008
 SEALED: 5/1/08
 REVISED:

Prepared in the offices of:

RAMEY KEMP ASSOCIATES, INC.
 Transportation Engineers
 6508 Faringdon Place, Suite 100
 Raleigh, North Carolina 27608
 919-872-3115 Tel. 919-872-5418 Fax.
 www.rameykemp.com

Signal Upgrade

ELECTRICAL AND PROGRAMMING DETAILS FOR:

CITY OF WILMINGTON
 TRAFFIC ENGINEERING

Development Services
 Traffic Engineering Division
 P.O. Box 1010, Wilmington, NC 28402
 (910) 341-7888

Randall Drive at University Center Drive

Division 03 New Hanover County Wilmington

PLAN DATE: Feb 2008 REVIEWED BY: D.J. Darity

PREPARED BY: D.J. Darity RKA PROJ. NO.: 07037 (040)

REVISIONS	INIT.	DATE

SEAL

SEAL 19713

ENGINEER DONALD J. DARTY

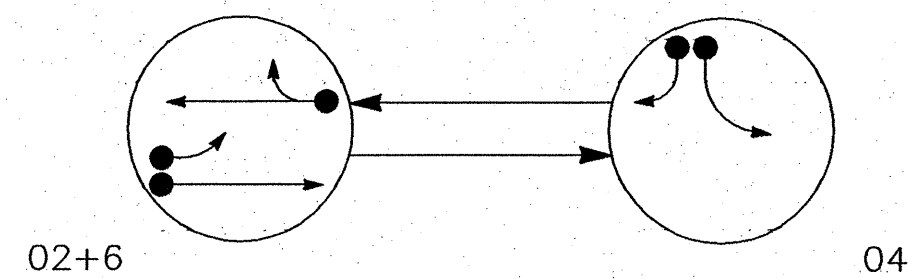
7/22/2008

SIGNATURE DATE

SIG. INVENTORY NO. C035

*****SYSTEMS*****
 *****SERIALS*****
 *****SOFTWARE*****

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

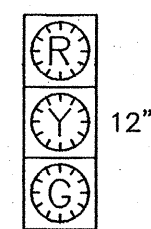
- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT (OVERLAP)
- ←○→ UNSIGNALIZED MOVEMENT
- ←○→ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02+6	04	FLASH
21,22	G	R	Y
41,42	R	G	R
61,62	G	R	Y

SIGNAL FACE I.D.

⊙ Denotes L.E.D.



21,22
41,42
61,62

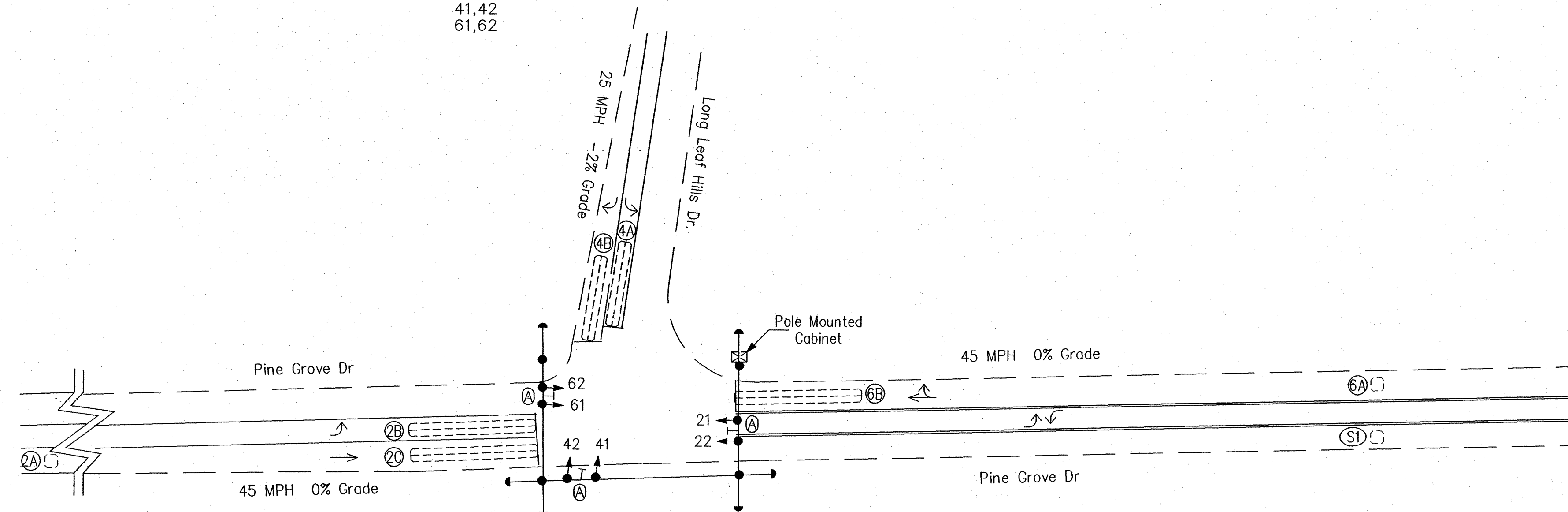
2070L LOOP AND DETECTOR INSTALLATION CHART

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
2A	6 x 6	300	5	Y	2	-	Y	-	-	-	-	Y
2B	6 x 60	0	2-4-2	-	2	Y	Y	Y	2.0	5	-	Y
2C	6 x 60	0	2-4-2	-	2	Y	Y	Y	2.0	5	-	Y
4A	6 x 40	0	2-4-2	-	4	Y	Y	-	-	3	-	Y
4B	6 x 40	0	2-4-2	-	4	Y	Y	-	-	15	-	Y
6A	6 x 6	300	EXISTING	-	6	-	Y	-	-	-	-	Y
6B	6 x 60	0	2-4-2	-	6	Y	Y	Y	2.0	5	-	Y
SD1	6 x 6	+390	EXISTING	-	-	-	-	-	-	-	Y	Y

2 Phase Fully Actuated (Wilmington Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. In the event of loop replacement, refer to the current NCDOT Signals and Geometrics Design Manual and submit a Plan of Record to the City Traffic Engineer.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
8. Signal system data: Controller Asset #4040.



FEATURE	2070L TIMING CHART		
	PHASE 2	PHASE 4	PHASE 6
Min Green 1*	12	7	12
Extension 1*	6.0	2.0	6.0
Max Green 1*	90	20	90
Yellow Clearance	4.5	3.0	4.5
Red Clearance	1.0	2.1	1.3
Walk 1*	-	-	-
Don't Walk 1*	-	-	-
Second Per Actuation*	-	-	-
Max Variable Initial*	-	-	-
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	-
Simultaneous Gap	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.

PROPOSED	LEGEND	EXISTING
⊙	Traffic Signal Head	●
⊙	Modified Signal Head	N/A
⊙	Sign	N/A
⊙	Pedestrian Signal Head With Push Button & Sign	⊙
⊙	Signal Pole with Guy	⊙
⊙	Signal Pole with Sidewalk Guy	⊙
⊙	Inductive Loop Detector	⊙
⊙	Controller & Cabinet	⊙
⊙	Junction Box	⊙
⊙	2-in Underground Conduit	⊙
⊙	Right of Way	⊙
⊙	Directional Arrow	⊙
⊙	Street Sign	⊙

Signal Upgrade

Development Services • Traffic Engineering Division
P.O. Box 1819 • Wilmington, NC 28402 • (919) 341-7888

Pine Grove Drive at Long Leaf Hills Drive

Division 3 New Hanover County Wilmington

PLAN DATE: July 8 2008 REVIEWED BY: DRB

PREPARED BY: Randall Glazier REVIEWED BY:

SEAL

SCALE: 1"=40'

REVISIONS: [Table with columns for Description, Date, Initials]

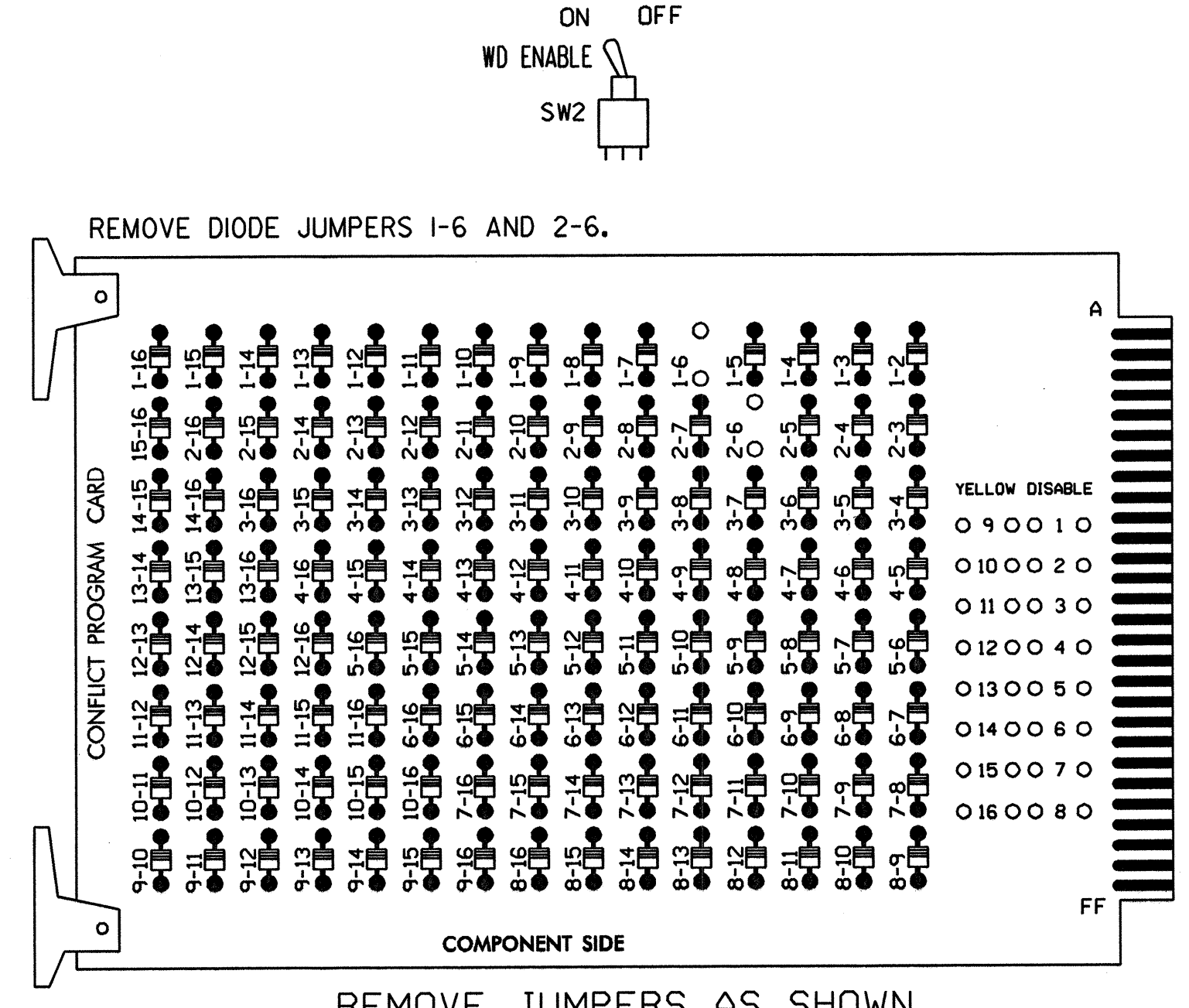
**This plan was updated to conform to 2070 format, geometric data was obtained from existing NCDOT plan.

SIGNATURE: [Signature] DATE: 7/18/08

SG. INVENTORY NO. C040

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 3,5,7,8,9,10, 11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 2 and 6, on the controller unit, for Start Up In Green.
- Enable Simultaneous Gap-Out, on the controller unit, for all phases.
- Program phases 2 and 6, on the controller unit, for Variable Initial and Gap Reduction.
- The cabinet and controller are part of the Wilmington Signal System.

SIGNAL HEAD HOOK-UP CHART

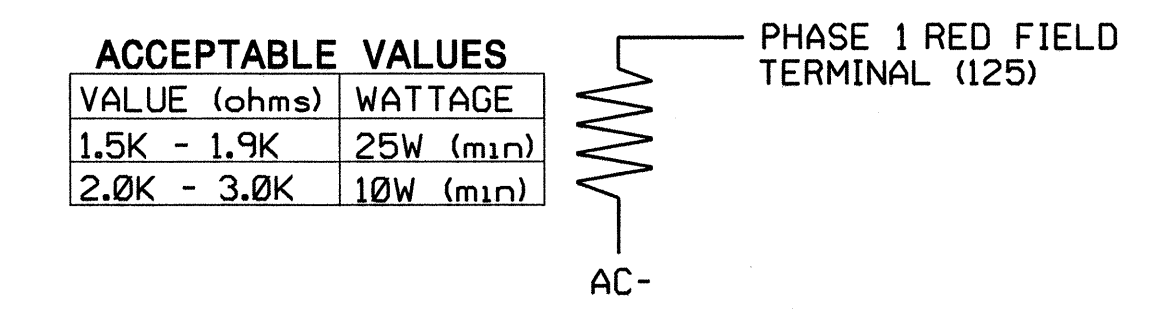
LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61,42	21,22	NU	NU	41,42	22	NU	NU	61,62	NU	NU	NU
RED	*	128			101				134			
YELLOW		129			102				135			
GREEN		130			103				136			
RED ARROW												
YELLOW ARROW	126											
GREEN ARROW	127											
Hand icon					102							
Person icon					103							

NU = Not Used
* Denotes install load resistor. See Load Resistor Installation Detail this sheet.

EQUIPMENT INFORMATION

CONTROLLER.....CONTRACTOR SUPPLIED 2070L
CABINETCONTRACTOR SUPPLIED 332
SOFTWAREECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS..12
LOAD SWITCHES USED.....S1,S2,S4,S6
PHASES USED.....1,2,4,6
OVERLAPS.....NONE

LOAD RESISTOR INSTALLATION DETAIL



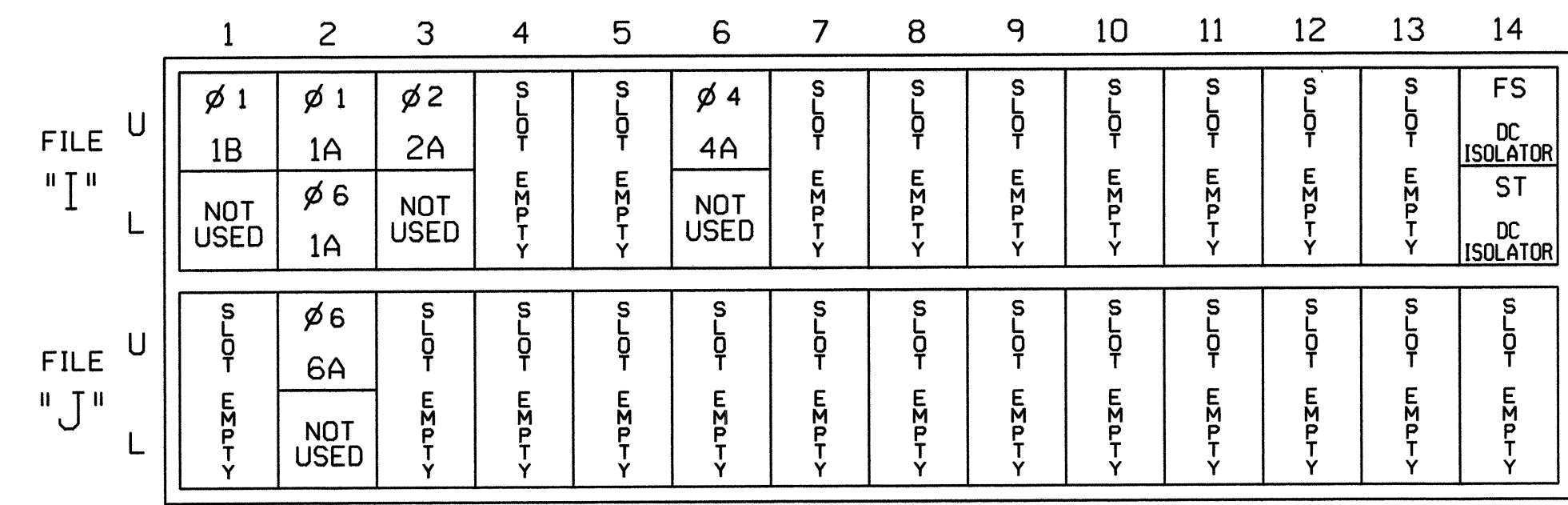
ACCEPTABLE VALUES

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

NOTE: The purpose of this resistor is to load the channel red monitor input 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.

INPUT FILE POSITION LAYOUT

(front view)



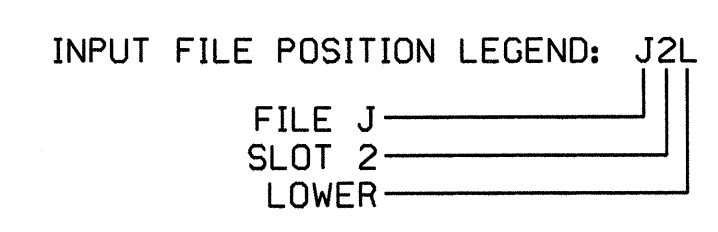
EX.: 1A, 2A, ETC. = LOOP NO.'S

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 ¹	TB2-5,6	I2U	39	1	2	1	Y	Y			15
	TB2-7,8	I2L	43	5	12	6	Y	Y	Y		3
1B	TB2-1,2	I1U	56	18	1	1	Y	Y			15
2A	TB2-9,10	I3U	63	25	32	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			

¹Add jumpers from TB2-5 to TB2-7, and from TB2-6 to TB2-8.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: C041
DESIGNED: July 8, 2008
SEALED: 7/18/08
REVISED:

Prepared in the offices of:

RAMEY KEMP ASSOCIATES, INC.
Transportation Engineers
5808 Farrington Place, Suite 100
Raleigh, North Carolina 27609
919-872-6119 Tel. 919-878-6416 Fax.
www.rameykemp.com

Signal Upgrade

Prepared for:

CITY OF WILMINGTON
TRAFFIC ENGINEERING

Development Services
Traffic Engineering Division
P.O. Box 1810, Wilmington, NC 28402
(910) 341-7888

Pine Grove Drive
at
Greenville Loop Road

Division 3 New Hanover County Wilmington

PLAN DATE: July 2008 REVIEWED BY: D.J. Darity
PREPARED BY: D.J. Darity RFA PROJ. NO.: 07037 (040)

SCALE: NONE

REVISIONS: _____ INIT. DATE

SIGNATURE: _____ DATE: 7-20-2008
SIC. INVENTORY NO. C041

*****SYTIME*****
*****RUSERNAME*****