

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

↓ Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2070
DESIGNED: March 2018
SEALED: 6/7/2018
REVISED: N/A

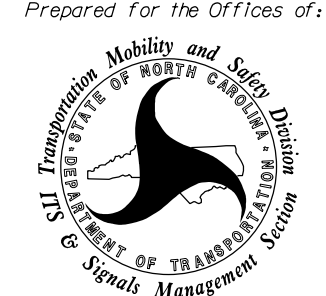
09-JUN-2018 14:15
D:\Consolidation\Facilities\Task\00056469 U-6015 B-G S19 SysTask 05_11_Signal\Des\gn\07-2070E.dgn
ALEX3361 AT LUS210649

Electrical Details - Sheet 2 of 2

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1226 (University Drive) at SR 1300 (Rural Retreat Road)	
Division 7	Alamance County Burlington
PLAN DATE: March 2018	REVIEWED BY: AM Encarnacion
PREPARED BY: NA Ptak	REVIEWED BY: PL Alexander
REVISIONS	INIT. DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
023489
ENGINEER
PAMELA L. ALEXANDER

6/9/2018

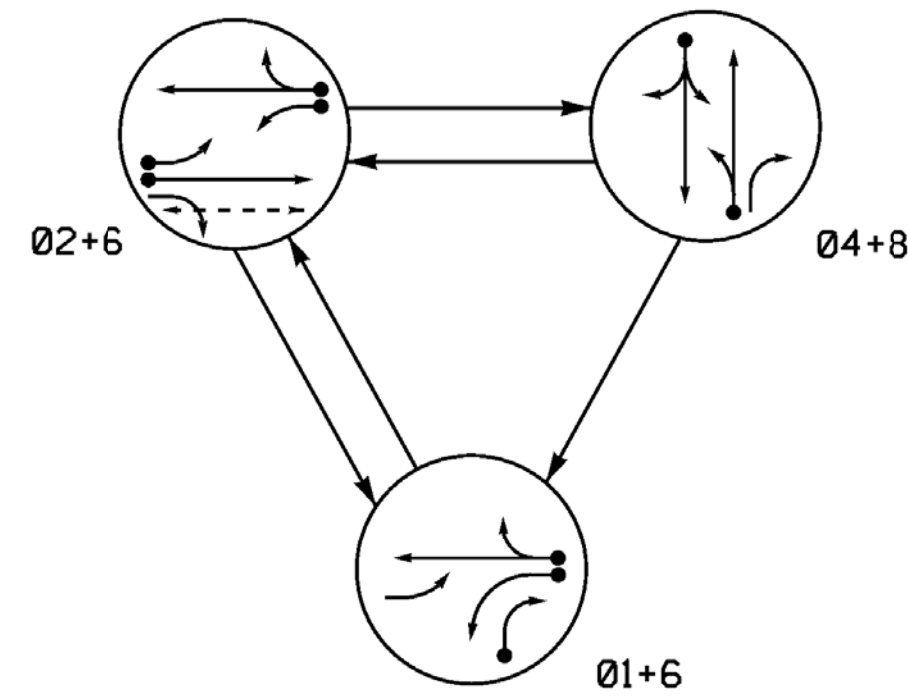
PAMELA L. ALEXANDER DATE

SIG. INVENTORY NO. 07-2070

ATKINS

1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEEES #F-0326

PHASING DIAGRAM



SIGNAL FACE	PHASE			
	01+6	02+6	04+8	FLASH
11	-	F	R	-
21, 22	R	G	R	Y
23	F	F	R	-
41, 42	R	R	G	R
61, 62	G	G	R	Y
81	R	R	G	R
82	R	R	G	R
P21, P22	DW	W	DW	DRK

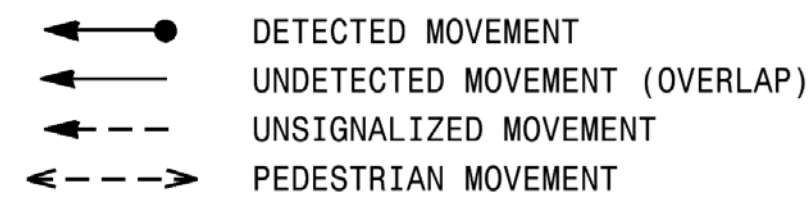
ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6x40	0	2-4-2	-	1	Yes	-	15	-	S	-	X
					6	Yes	-	3	-	S	-	X
1B	6x40	0	2-4-2	-	1	Yes	-	15	-	S	-	X
2A	6x6	70	EXIST.	-	2	Yes	-	-	-	S	-	X
2B	6x40	0	2-4-2	-	2	Yes	-	-	-	S	-	X
4A	6x40	0	2-4-2	-	4	Yes	-	5	-	S	-	X
6A	6x6	70	EXIST.	-	6	Yes	-	-	-	S	-	X
8A	6x40	0	2-4-2	-	8	Yes	-	3	-	S	-	X

3 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

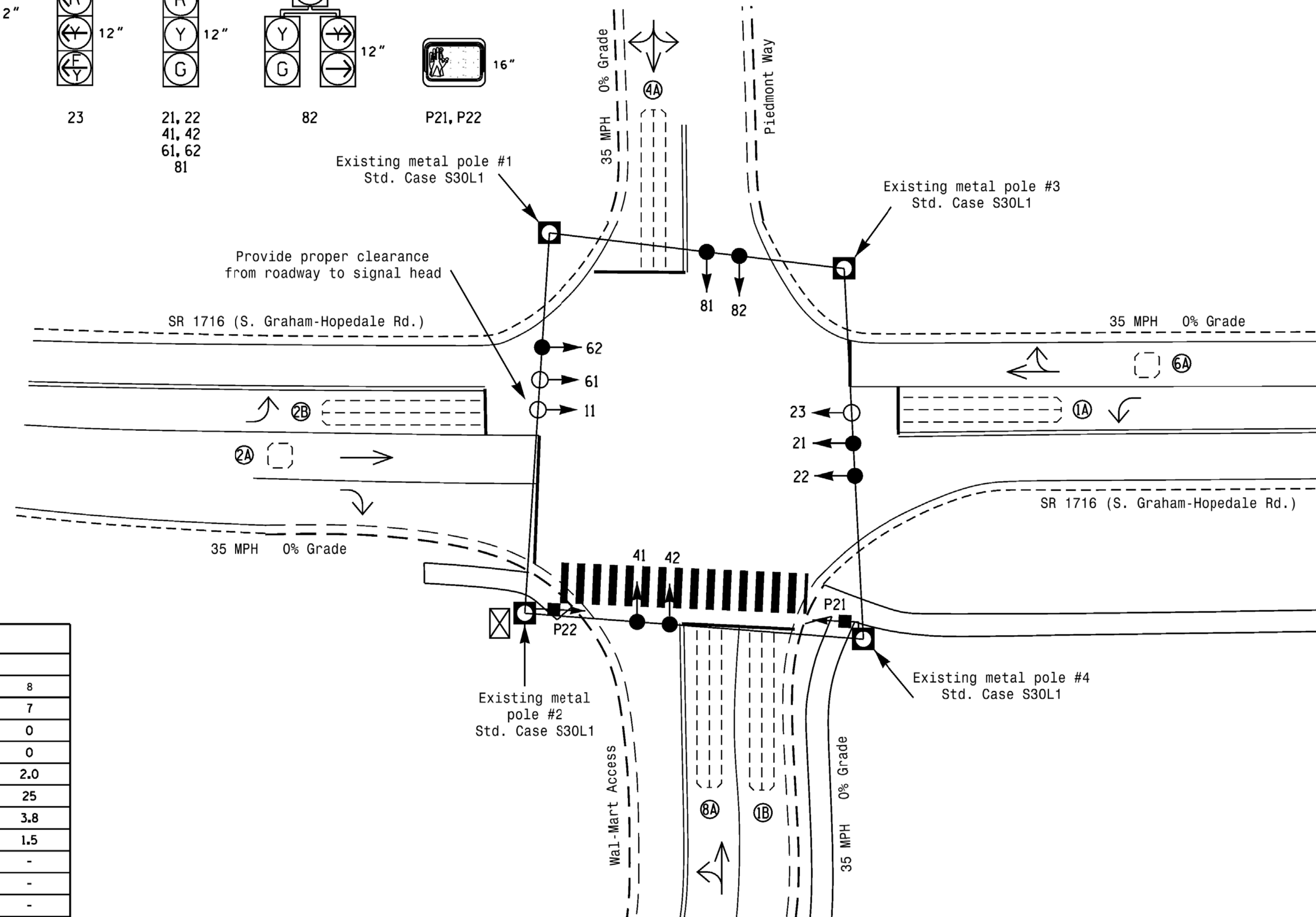
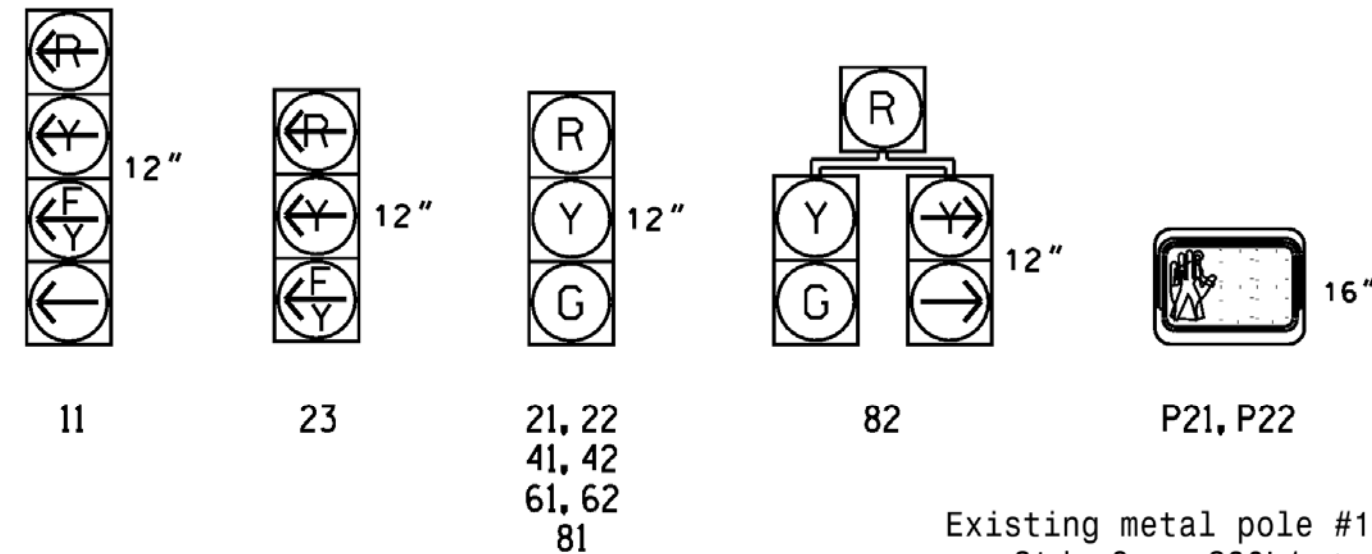
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be lagged.
- Reposition existing signal heads numbered 21, 22, and 62.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- 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.

PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.

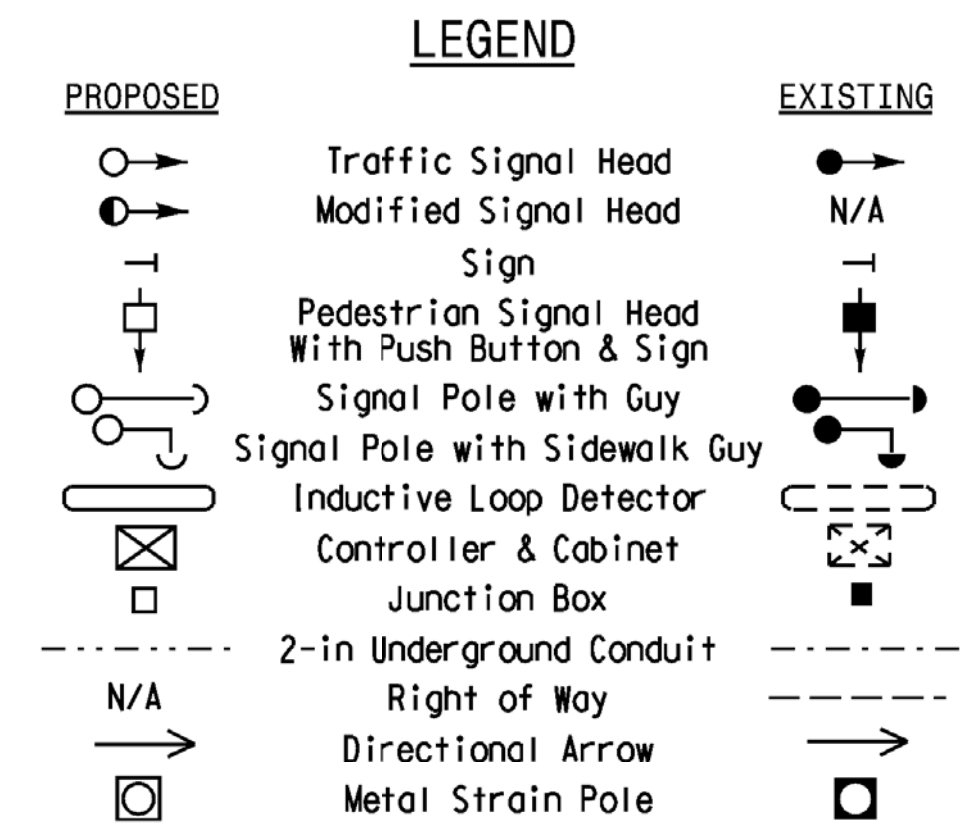
All Heads L.E.D.



ASC/3 TIMING CHART

FEATURE	PHASE				
	1	2	4	6	8
Min Green *	7	10	7	10	7
Walk *	0	4	0	0	0
Ped Clear	0	15	0	0	0
Veh. Extension *	2.0	3.0	2.0	3.0	2.0
Max 1 *	15	45	25	45	25
Yellow	3.0	3.8	3.8	3.8	3.8
Red Clear	2.4	1.6	1.5	1.6	1.5
Actuations B4 Add *	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-
Max Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Locking Detector	-	X	-	X	-
Recall Position	-	VEH. RECALL	-	VEH. RECALL	-
Dual Entry	-	-	X	-	X
Simultaneous Gap	X	X	X	X	X

* 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.



*****SYTIME*****
*****BUSERNAME*****



12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

Signal Upgrade

Prepared for the Offices of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

SCALE
0 20
1"=20'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SR 1716 (S. Graham-Hopedale Rd.)
at
Piedmont Way

Division 7 Alamance County Burlington

PLAN DATE: September 2017 REVIEWED BY: JB Voso

PREPARED BY: SE Wilson REVIEWED BY:

REVISIONS

INIT. DATE

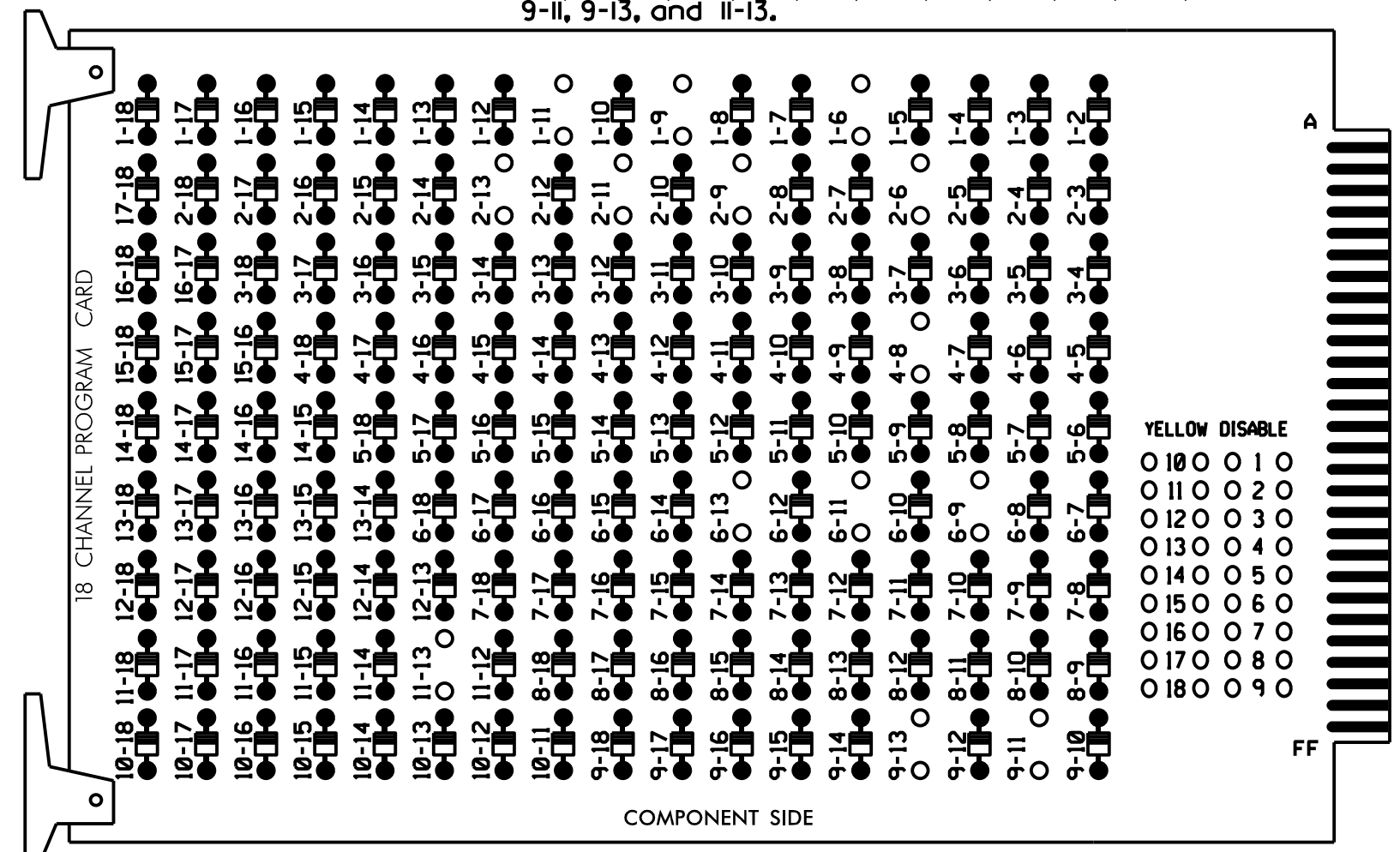
SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
JAMES B. VOSO
022599
6/13/2018
DATE

SIG. INVENTORY NO. 07-2073

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-6, 1-9, 1-11, 2-6, 2-9, 2-11, 2-13, 4-8, 6-9, 6-11, 6-13, 9-11, 9-13, and 11-13.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Walk and 6 Green.
- The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S8,S11,AUX S1,AUX S4
 PHASES USED.....1,2,2PED,4,6,8
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	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*	82	21,22	P21, P22	NU	41,42	NU	61,62	NU	81,82	NU	11*	NU	NU	23*	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																
Hand																		
Person																		

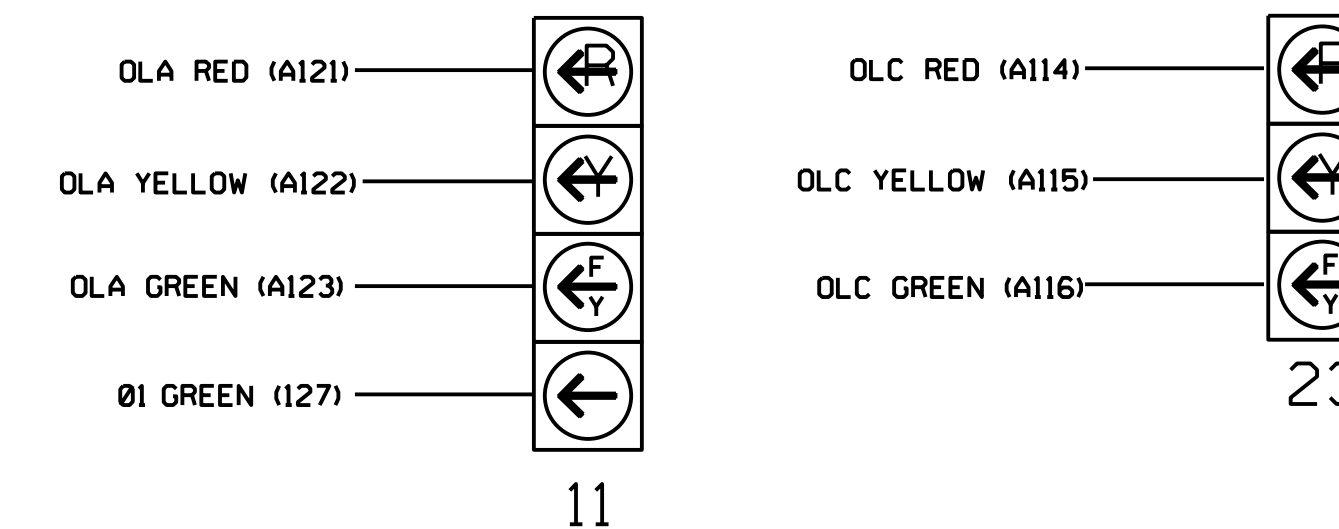
NU = Not Used

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

★ See pictorial of head wiring in detail below.

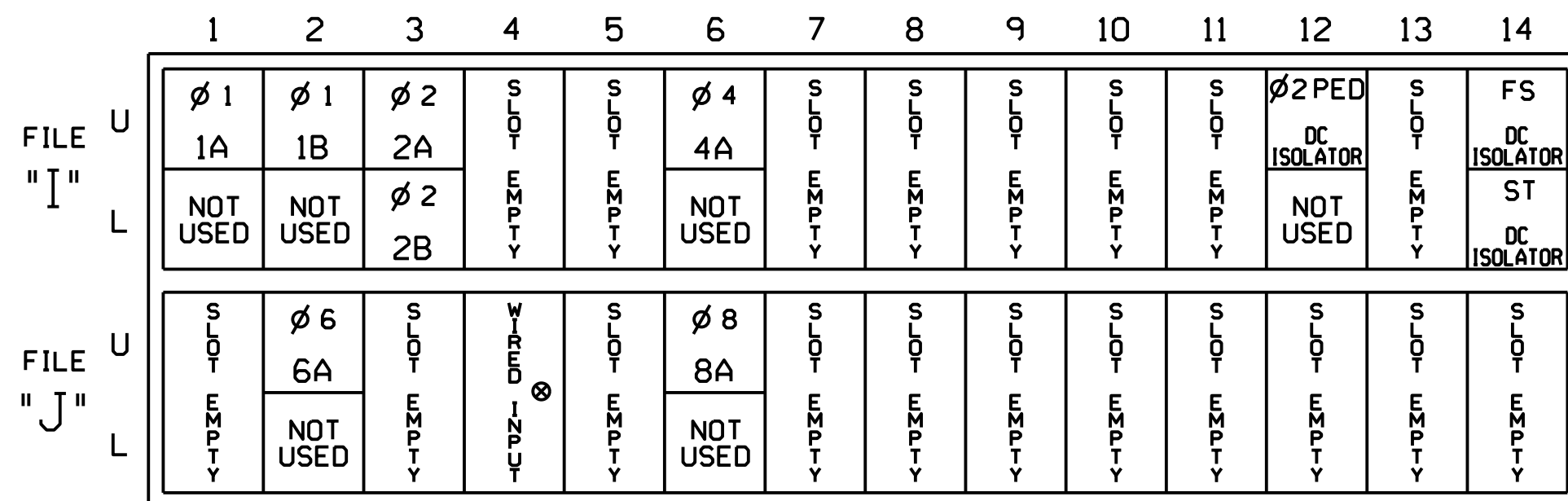
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

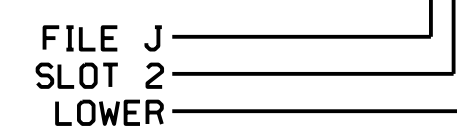
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1	1	YES		15		S
	-	J4U	48	26	6	YES		3		S
1B	TB2-5,6	I2U	39	2	1	YES		15		S
2A	TB2-9,10	I3U	63	32	2	YES				S
2B	TB2-11,12	I3L	76	42	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES		5		S
6A	TB3-5,6	J2U	40	6	6	YES				S
8A	TB5-9,10	J6U	42	8	8	YES		3		S
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					

NOTE:
INSTALL DC ISOLATOR IN INPUT FILE SLOT 112.

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

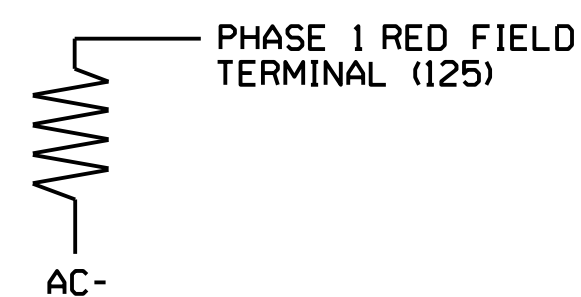
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

VALUE (ohms)	WATTAGE
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: 07-2073
 DESIGNED: September 2017
 SEALED: 6/13/2018
 REVISED: NA

Electrical Detail - Sheet 1 of 2

Mattern & Craig
ENGINEERS • SURVEYORS

12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

Electrical and Programming Details For: SR 1716 (S.Graham-Hopedale Rd.) at Piedmont Way

Division 7 Alamance County Burlington

PLAN DATE: September 2017 REVIEWED BY: JB Voso

PREPARED BY: SE Wilson REVIEWED BY:

REVISIONS INIT. DATE

750 N. Greenfield Pkwy, Corner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 022599
 JAMES B. VOSO
 6/13/2018
 DATE

SIG. INVENTORY NO. 07-2073

PHASING DIAGRAM

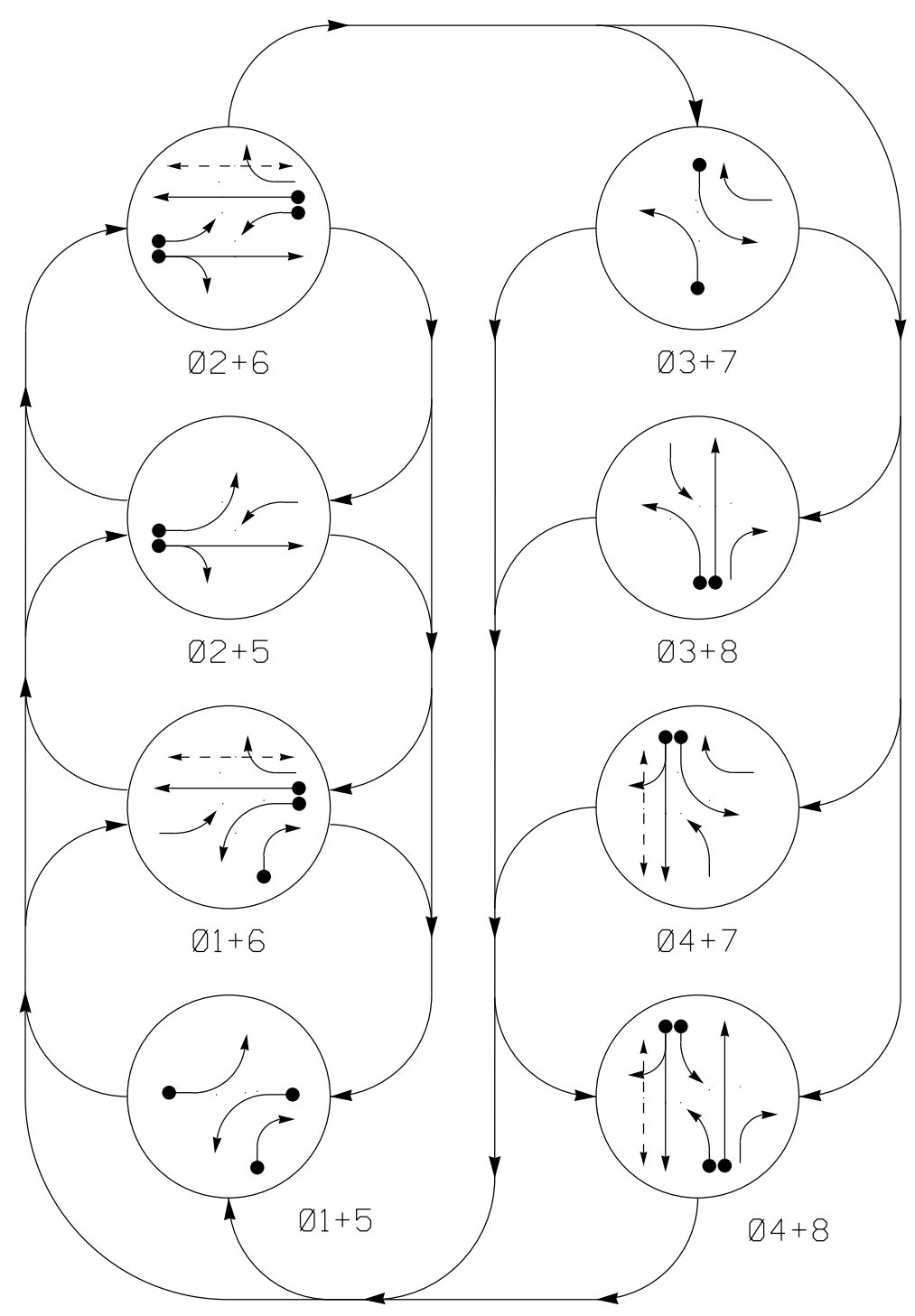
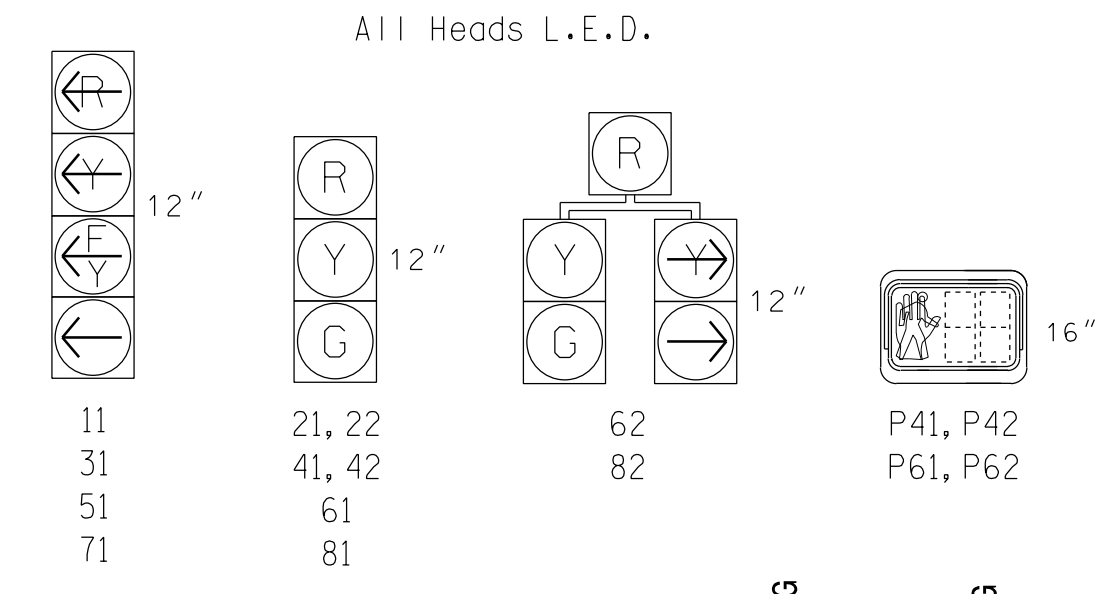


TABLE OF OPERATION

SIGNAL FACE	PHASE								
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	FLASH
11	←	←	←	←	←	←	←	←	Y
21, 22	R	R	G	G	R	R	R	R	Y
31	←	←	←	←	←	←	←	←	Y
41, 42	R	R	R	R	R	R	G	G	R
51	←	←	←	←	←	←	←	←	Y
61	R	G	R	G	R	R	R	R	Y
62	R	G	R	G	R	R	R	R	Y
71	←	←	←	←	←	←	←	←	Y
81	R	R	R	R	R	G	G	R	R
82	R	R	R	R	R	G	G	R	R
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DRK	DRK

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

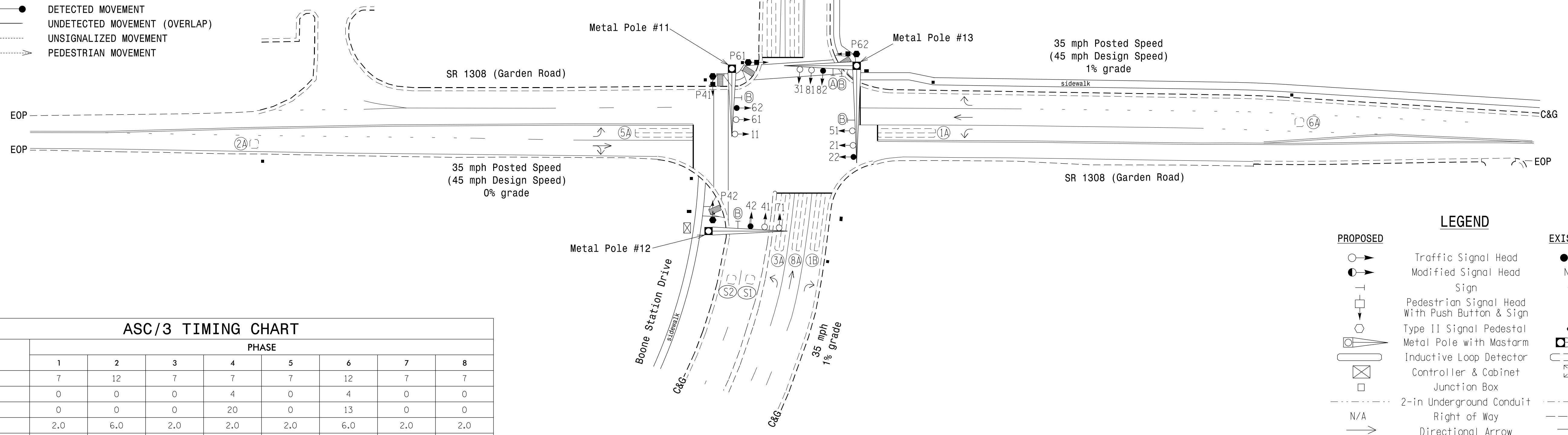
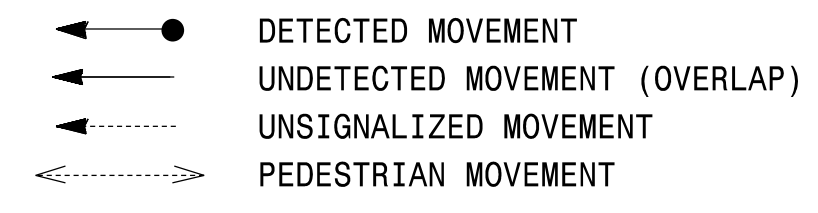
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6x40	0	2-4-2	-	1	Yes	-	15	-	S	-	X
					6	Yes	-	3	-	G	-	X
1B	6x40	0	2-4-2	-	1	Yes	-	15	-	S	-	X
2A	6x6	300	EXIST	-	2	Yes	-	-	-	X	N	-
3A	6x40	0	2-4-2	-	3	Yes	-	15	-	S	-	X
					8	Yes	-	-	-	S	-	X
4A	6x40	0	2-4-2	-	4	Yes	-	10	-	S	-	X
5A	6x40	0	2-4-2	-	5	Yes	-	15	-	S	-	X
					2	Yes	-	3	-	G	-	X
6A	6x6	300	EXIST	-	6	Yes	-	-	-	X	N	-
7A	6x40	0	2-4-2	-	7	Yes	-	15	-	S	-	X
					4	Yes	-	3	-	S	-	X
8A	6x40	0	2-4-2	-	8	Yes	-	-	-	S	-	X
S1	6x6	+150	EXIST	-	-	No	-	-	-	N	X	X
S2	6x6	+150	EXIST	-	-	No	-	-	-	N	X	X

8 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
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. Phase 3 and/or phase 7 may be lagged.
5. Reposition existing signal heads numbered 22 and 42.
6. Set all detector units to presence mode.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
9. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
10. Pavement markings are existing.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system supersede these values.

PHASING DIAGRAM DETECTION LEGEND

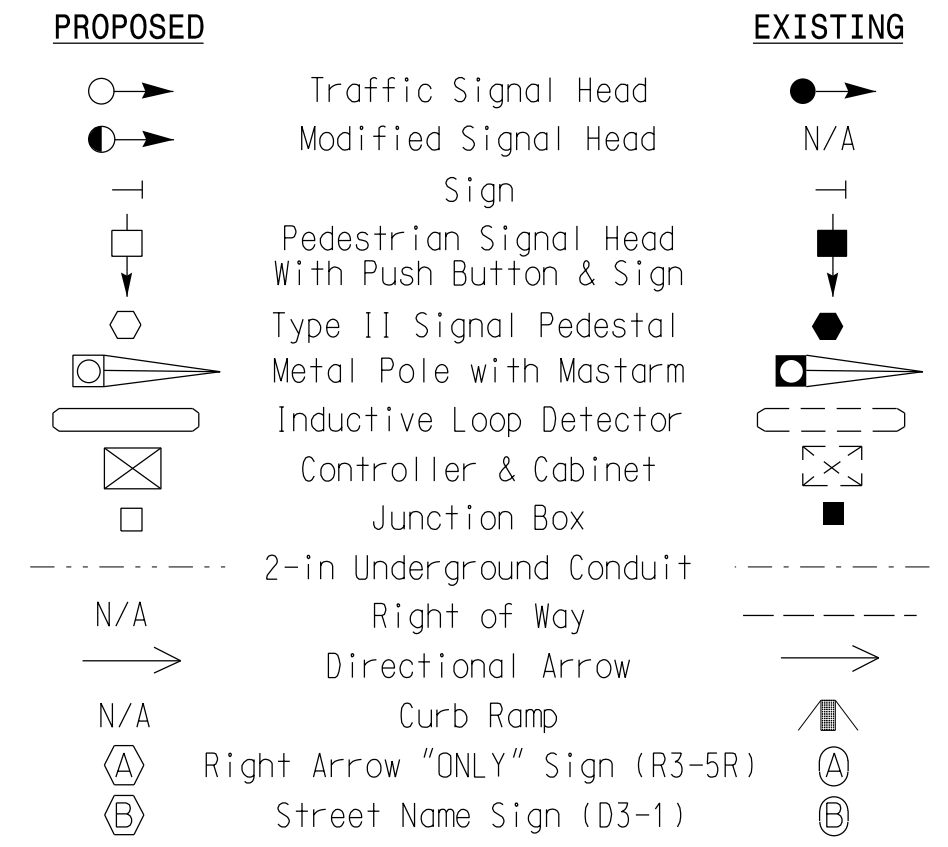


ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	12	7	7	7	12	7	7
Walk *	0	0	0	4	0	4	0	0
Ped Clear	0	0	0	20	0	13	0	0
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	20	90	20	40	20	90	20	40
Yellow	3.0	4.5	3.0	4.1	3.0	4.5	3.0	4.1
Red Clear	2.8	1.6	2.4	1.7	3.1	1.6	2.3	1.7
Actuations B4 Add *	-	0	-	-	-	0	-	-
Seconds /Actuation *	-	2.5	-	-	-	2.5	-	-
Max Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	X	-	-	-	X
Simultaneous Gap	X	X	X	X	X	X	X	X

* 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 for the Offices of:

SR 1308 (Garden Road) at Boone Station Drive

Division 7 Alamance County Burlington

PLAN DATE: March 2018 REVIEWED BY: PL Alexander

PREPARED BY: AM Encarnacion REVIEWED BY:

REVISIONS: INIT. DATE

SCALE: 1"=40'

6/7/2018

SIG. INVENTORY NO. 07-2094

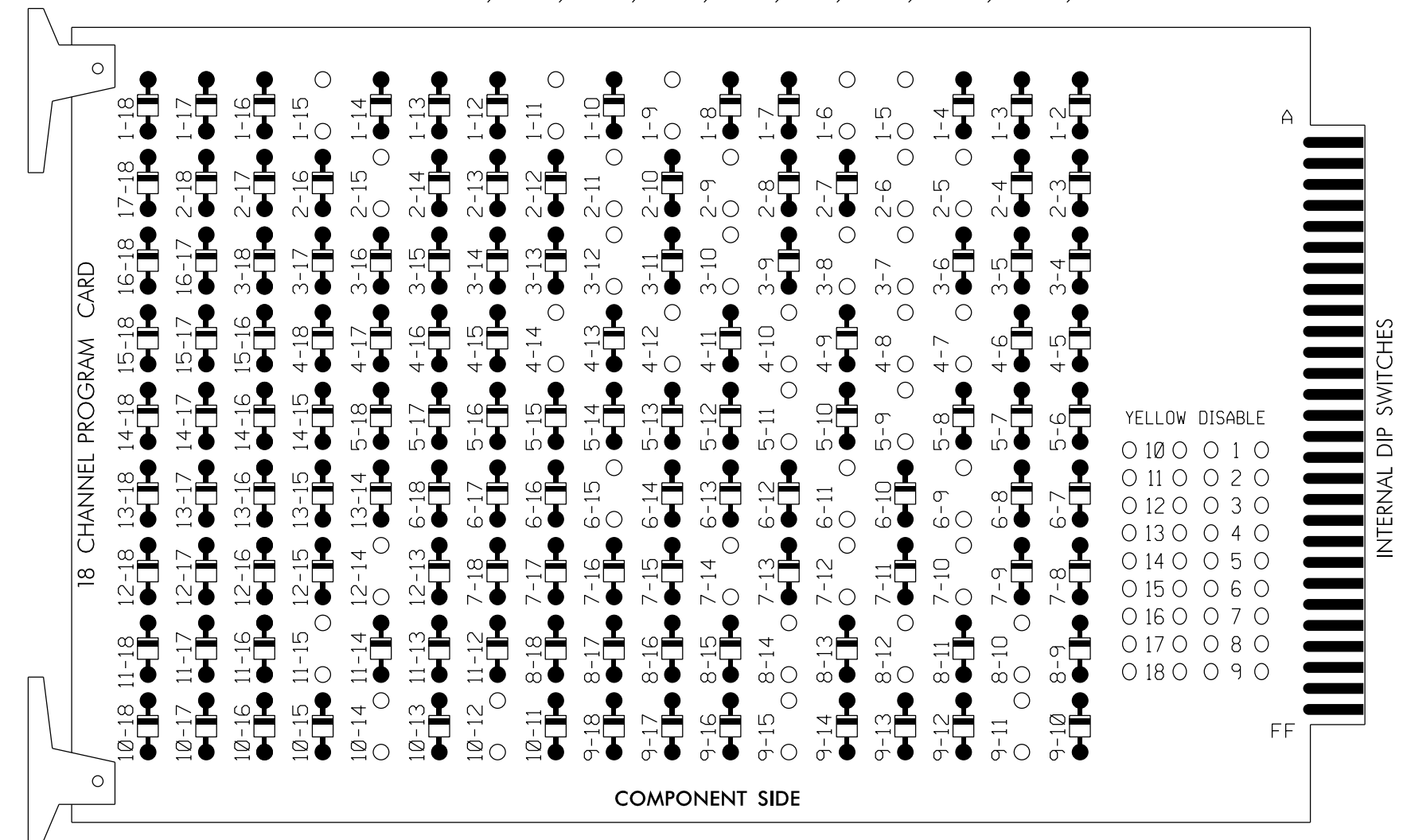
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

07-JUN-2018 11:15 D:\Projects\atkins\Traffic\00056469 U-6015 B-G S1g SysteTask 05_11_Signal\Des\gpm07-2014.dgn ALEX3361 AT LUS510649

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-15, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 4-14, 5-9, 5-11, 6-9, 6-11, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 9-11, 9-15, 10-12, 10-14, 11-15 and 12-14.



REMOVE JUMPERS AS SHOWN

- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - Ensure that Red Enable is active at all times during normal operation.
 - Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Walk.
- The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S6,S7,S8,S9,S10,S11,
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,3,4,4PED,5,6,6PED,7,8
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

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.

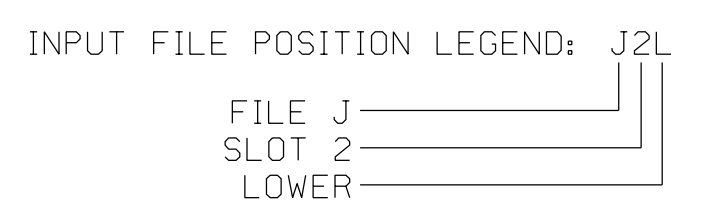
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1	1	YES		15		S
	-	J4U	48	26	6	YES		3		G
1B	TB2-5,6	I2U	39	2	1	YES		15		S
	2A	TB2-9,10	I3U	63	2	YES			X	N
3A ²	TB4-5,6	I5U	58	3	3	YES		15		S
	-	J8U	50	28	8	YES				S
4A	TB4-9,10	I6U	41	4	4	YES		10		S
	* S1	TB6-9,10	I9U	60	11	SYS	NO			N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N
5A ³	TB3-1,2	J1U	55	5	5	YES		15		S
	-	I4U	47	22	2	YES		3		G
6A	TB3-5,6	J2U	40	6	6	YES			X	N
	7A ⁴	TB5-5,6	J5U	57	7	YES		15		S
-	I8U	49	24	4	YES		3		S	
8A	TB5-9,10	J6U	42	8	8	YES				S

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

* System detector only. Remove any assigned vehicle phase.

¹Add jumper from I1-W to J4-W, on rear of input file.
²Add jumper from I5-W to J8-W, on rear of input file.
³Add jumper from J1-W to I4-W, on rear of input file.
⁴Add jumper from J5-W to I8-W, on rear of input file.



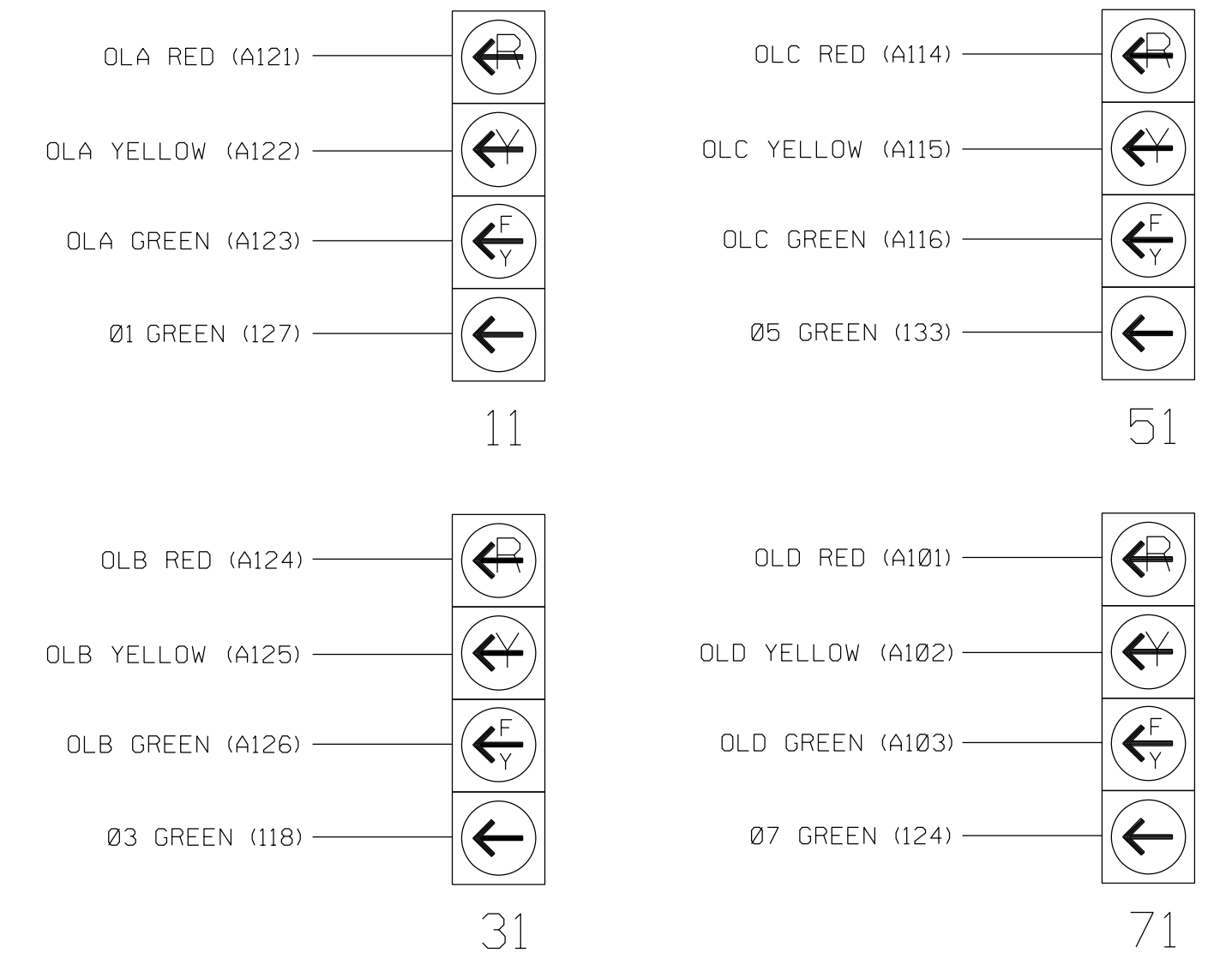
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	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	82	21,22	NU	31	41,42	P41, P42	51	61,62	P61, P62	62	71	81,82	NU	11	31	NU	51	71
RED	*	128			101			134		*	107								
YELLOW		129		*	102		*	135			108								
GREEN		130			103			136			109								
RED ARROW													A121	A124		A114	A101		
YELLOW ARROW		126								123			A122	A125		A115	A102		
FLASHING YELLOW ARROW													A123	A126		A116	A103		
GREEN ARROW	127	127			118			133		124	124								
Hand								104		119									
Walker								106		121									

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
	∅ 1 1A	∅ 1 1B	∅ 2 2A	∅ 3 3A	∅ 4 4A	∅ 5 5A	∅ 6 6A	∅ 7 7A	∅ 8 8A	∅ 9 9A	∅ 10 10A	∅ 11 11A	∅ 12 12A	∅ 13 13A	∅ 14 14A
	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
FILE "J"															

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

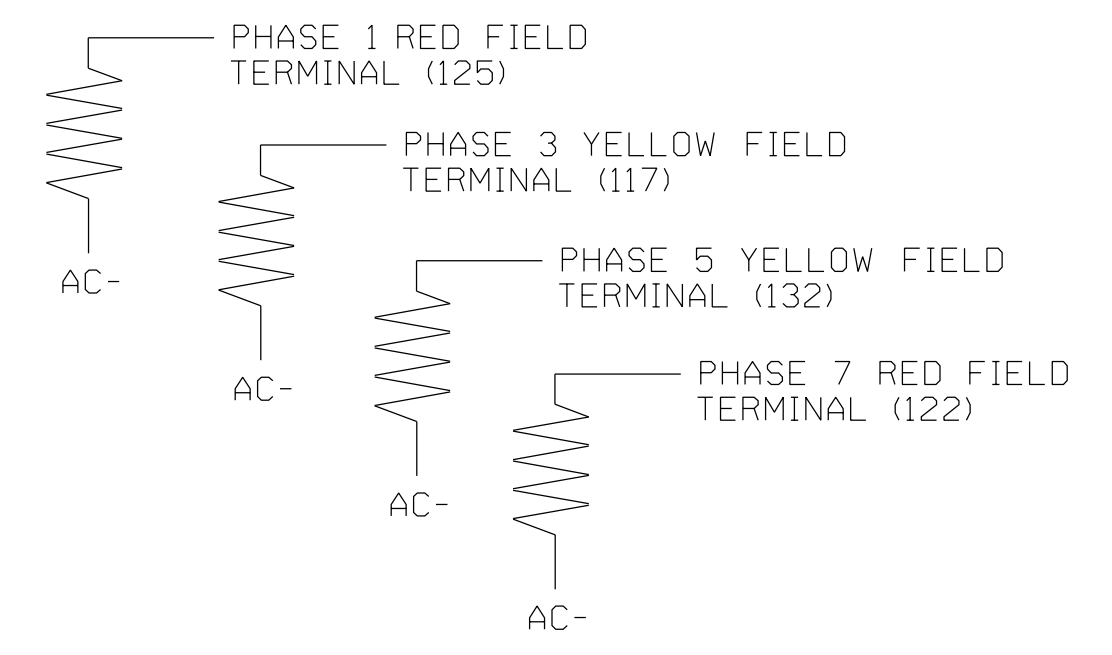
⊗ Wired Input - Do not populate slot with detector card

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2094
 DESIGNED: March 2018
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	SR 1308 (Garden Road) at Boone Station Drive		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 023489 DATE: 6/9/2018
	Division 7 PLAN DATE: March 2018 PREPARED BY: AM Encarnacion	Alamance County REVIEWED BY: PL Alexander REVIEWED BY:	
REVISIONS INIT. DATE			SIG. INVENTORY NO. 07-2094

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

TMG VEH OVLP... [A] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 1

OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'PPLT FYA'

TMG VEH OVLP... [B] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 3

OPPOSING THROUGH..... PHASE 4

FLASHING ARROW OUTPUT.....CH10 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP... [C] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'PPLT FYA'

TMG VEH OVLP... [D] TYPE:PPLT FYA

PROTECTED LEFT TURN.... PHASE 7

OPPOSING THROUGH..... PHASE 8

FLASHING ARROW OUTPUT.....CH12 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

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: 07-2094

DESIGNED: March 2018

SEALED: 6/7/2018

REVISED: N/A

Electrical Detail - Sheet 2 of 2

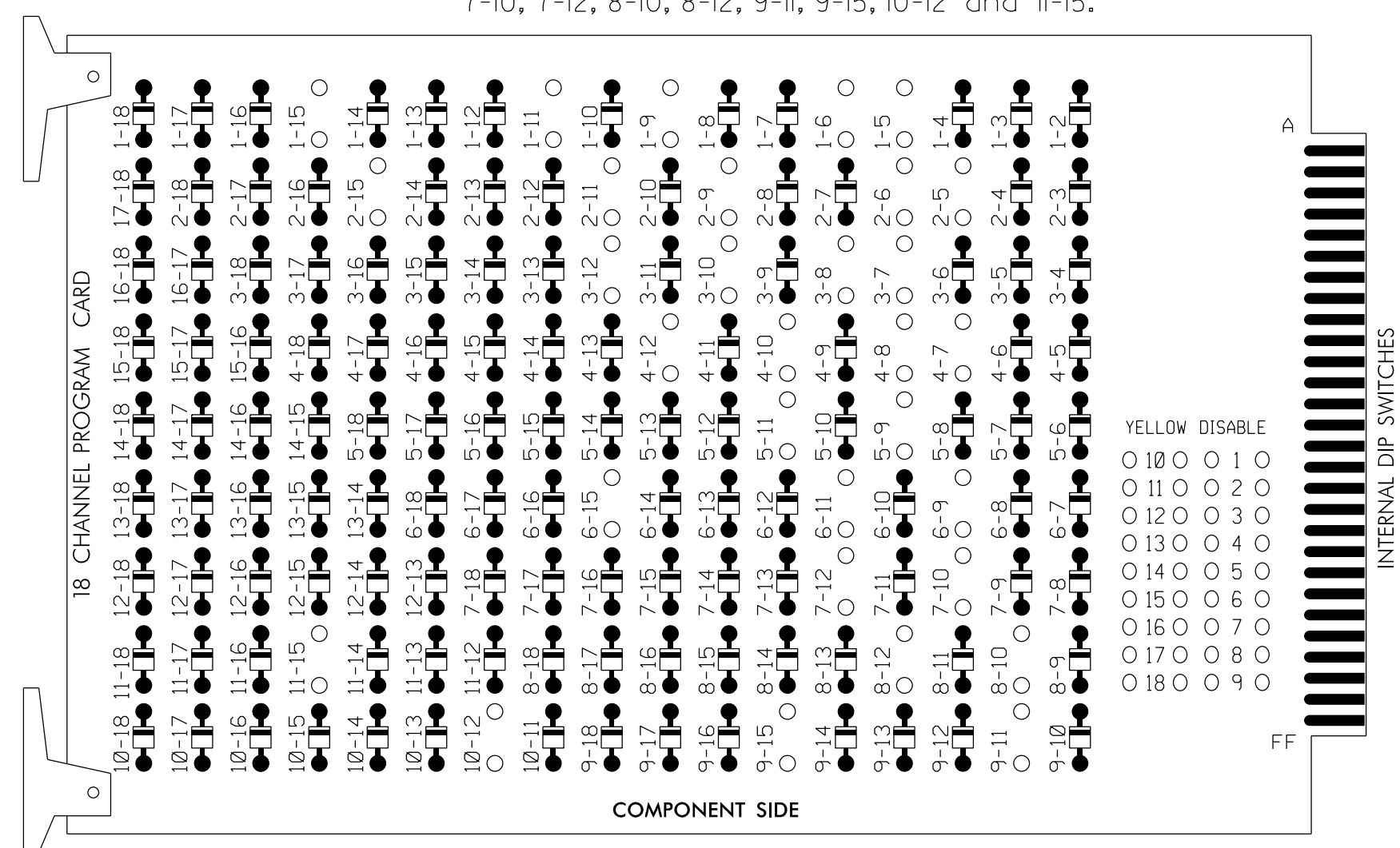
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<p style="font-size: x-small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared for the Offices of:</p> <p style="font-size: x-small;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>SR 1308 (Garden Road) at Boone Station Drive</p> <p style="font-size: x-small;">Division 7 Alamance County Burlington</p> <p style="font-size: x-small;">PLAN DATE: March 2018 REVIEWED BY: PL Alexander</p> <p style="font-size: x-small;">PREPARED BY: AM Encarnacion REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <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> </tbody> </table>	REVISIONS	INIT.	DATE							<p style="font-size: x-small;">SEAL</p> <p style="font-size: x-small;">PAMELA L. ALEXANDER</p> <p style="font-size: x-small;">6/9/2018</p> <p style="font-size: x-small;">DATE</p> <p style="font-size: x-small;">SIC. INVENTORY NO. 07-2094</p>
REVISIONS	INIT.	DATE									

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

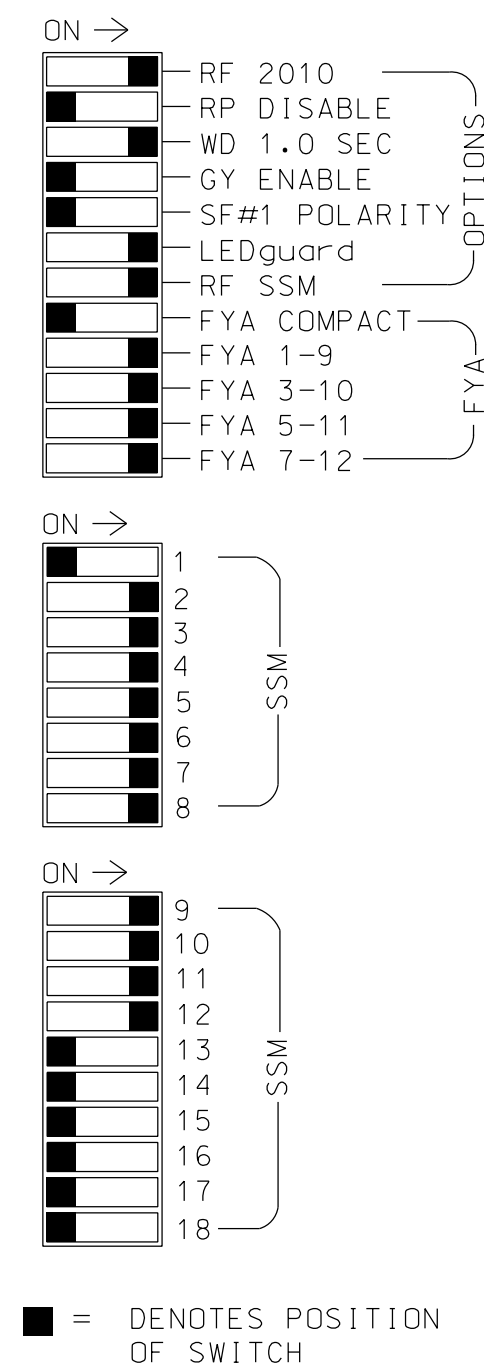
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-15, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 6-15, 7-10, 7-12, 8-10, 8-12, 9-11, 9-15, 10-12 and 11-15.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.



NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Walk.
- The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S9,S10,S11,
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,3,4,5,6,6PED,7,8
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*

* See overlap programming detail on sheet 2

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.

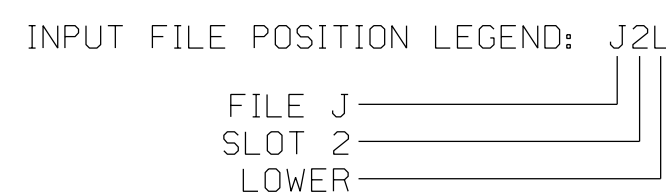
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1	1	YES		15		S
	-	J4U	48	26	6	YES				S
2A,2B	TB2-5,6	I2U	39	2	2	YES				S
3A ²	TB4-5,6	I5U	58	3	3	YES		15		S
	-	J8U	50	28	8	YES		3		S
4A	TB4-9,10	I6U	41	4	4	YES		3		S
*S1	TB6-9,10	I9U	60	11	SYS	NO				N
*S2	TB6-11,12	I9L	62	13	SYS	NO				N
5A ²	TB3-1,2	J1U	55	5	5	YES		15		S
	-	I4U	47	22	2	YES				S
5B	TB3-5,6	J2U	40	6	5	YES				S
5C	TB3-7,8	J2L	44	16	5	YES		15		S
6A,6B	TB3-9,10	J3U	64	36	6	YES				S
7A ⁴	TB5-5,6	J5U	57	7	7	YES		15		S
	-	I8U	49	24	4	YES		3		S
8A	TB5-9,10	J6U	42	8	8	YES		3		S
PED PUSH BUTTONS										
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					

NOTE:
 INSTALL DC ISOLATOR IN INPUT FILE SLOT I13.

* System detector only. Remove any assigned vehicle phase.

- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.



INPUT FILE POSITION LAYOUT

(front view)

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

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

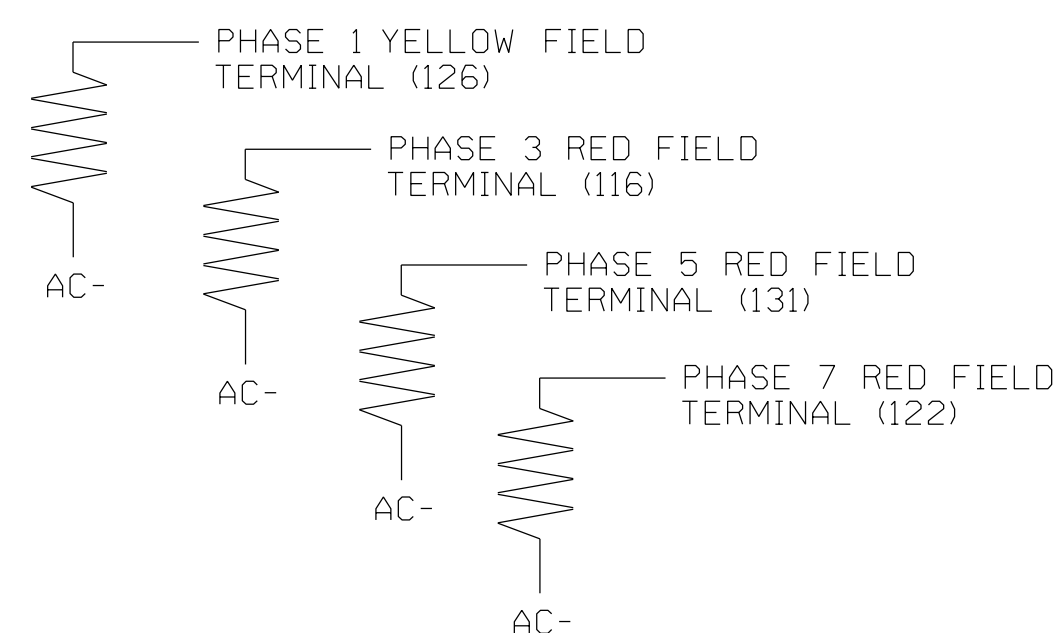
FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

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



SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6		
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18		
PHASE	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	NU	22	31	41,42,43	NU	42	51	61,62	P61, P62	62	71	81,82	NU	11	31	51	71	
RED		128			*	101			*	134			*	107						
YELLOW	*	129				102				135				108						
GREEN		130				103				136				109						
RED ARROW																A121	A124	A114	A101	
YELLOW ARROW						117				132				123		A122	A125	A115	A102	
FLASHING YELLOW ARROW																A123	A126	A116	A103	
GREEN ARROW	127					118	118			133	133			124	124					
Hand icon																			119	
Walking person icon																				121

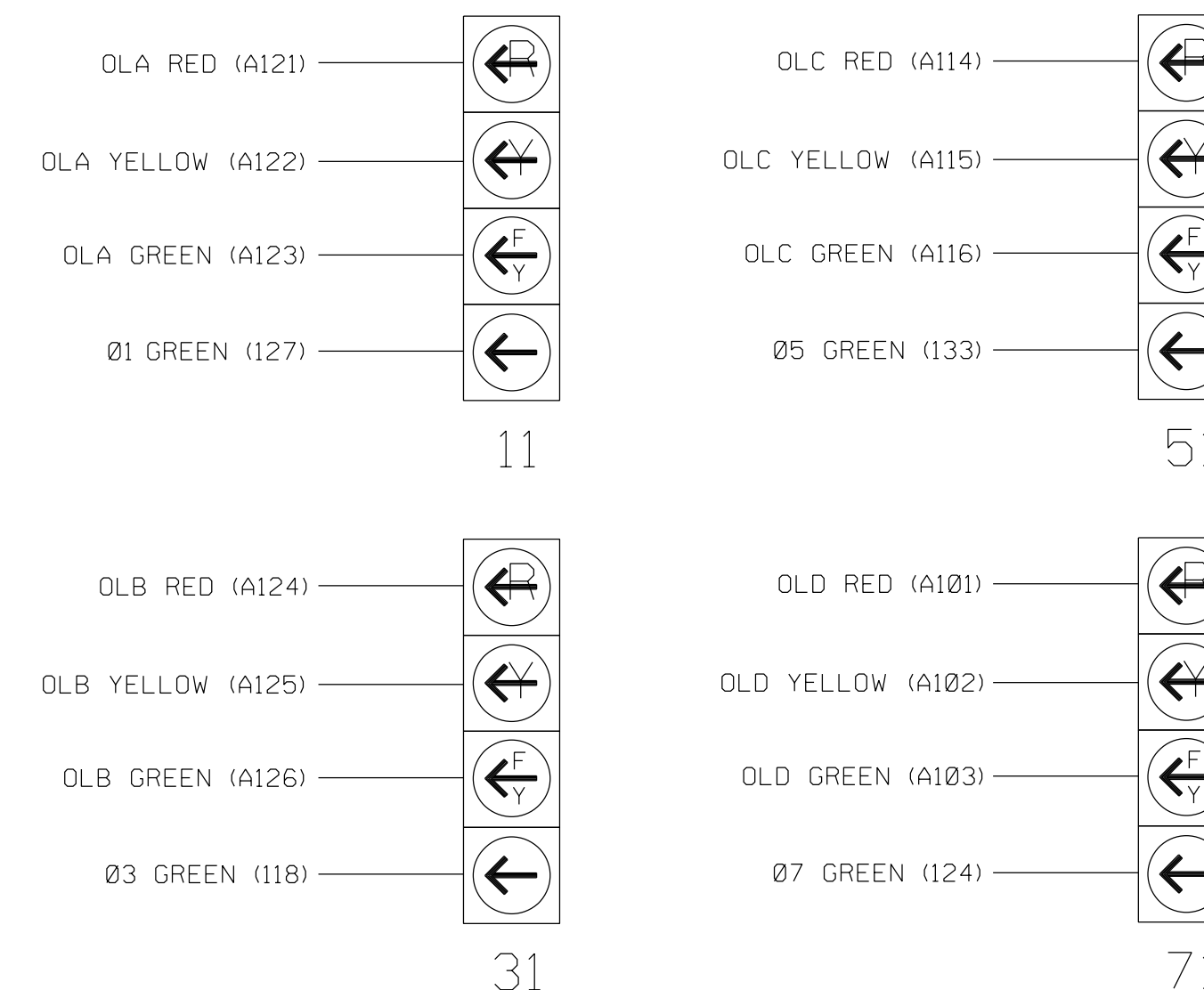
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2095
 DESIGNED: February 2018
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

Electrical and Programming Details For:
 Prepared for the Offices of:

 SR 1301 (Boone Station Drive) / Boone Station Drive at SR 1301 (St. Marks Church Road) / Java Lane
 Division 7 Alameda County Burlington
 PLAN DATE: February 2018 REVIEWED BY: PL Alexander
 PREPARED BY: JA Wiles REVIEWED BY:
 REVISIONS INIT. DATE

DATE	6/9/2018
BY	PL Alexander
DATE	
BY	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 PAMELA L. ALEXANDER
 SEAL 023489
 DATE 6/9/2018
 SIG. INVENTORY NO. 07-2095

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

TMG VEH OVLP...[A] TYPE: PPLT FYA	
PROTECTED LEFT TURN....	PHASE 1
OPPOSING THROUGH.....	PHASE 2
FLASHING ARROW OUTPUT.....CH9 ISOLATE	
DELAY START OF: FYA..0.0 CLEARANCE..0.0	
ACTION PLAN SF BIT DISABLE..... 0	

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'PPLT FYA'

TMG VEH OVLP...[B] TYPE: PPLT FYA	
PROTECTED LEFT TURN....	PHASE 3
OPPOSING THROUGH.....	PHASE 4
FLASHING ARROW OUTPUT.....CH10 ISOLATE	
DELAY START OF: FYA..0.0 CLEARANCE..0.0	
ACTION PLAN SF BIT DISABLE..... 0	

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

TMG VEH OVLP...[C] TYPE: PPLT FYA	
PROTECTED LEFT TURN....	PHASE 5
OPPOSING THROUGH.....	PHASE 6
FLASHING ARROW OUTPUT.....CH11 ISOLATE	
DELAY START OF: FYA..0.0 CLEARANCE..0.0	
ACTION PLAN SF BIT DISABLE..... 0	

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'PPLT FYA'

TMG VEH OVLP...[D] TYPE: PPLT FYA	
PROTECTED LEFT TURN....	PHASE 7
OPPOSING THROUGH.....	PHASE 8
FLASHING ARROW OUTPUT.....CH12 ISOLATE	
DELAY START OF: FYA..0.0 CLEARANCE..0.0	
ACTION PLAN SF BIT DISABLE..... 0	

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

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

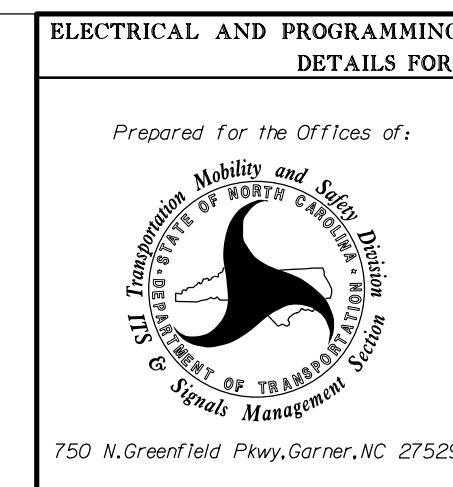
1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2095
 DESIGNED: February 2018
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail - Sheet 2 of 2

09-JUN-2018 14:16 D:\Transportation\Projects\00056469 U-6015 B-6 Sig Sys\Task 05_11_Signal\Drawings\Task 05_11_Signal.dwg:ring07-2095E.dgn



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1301 (Boone Station Drive)/ Boone Station Drive at SR 1301 (St. Marks Church Road)/ Java Lane	
Prepared for the Offices of:		Division 7 Alamance County Burlington	
PLAN DATE: February 2018	REVIEWED BY: PL Alexander		
PREPARED BY: JA Wiles	REVIEWED BY:		
REVISIONS	INIT.	DATE	

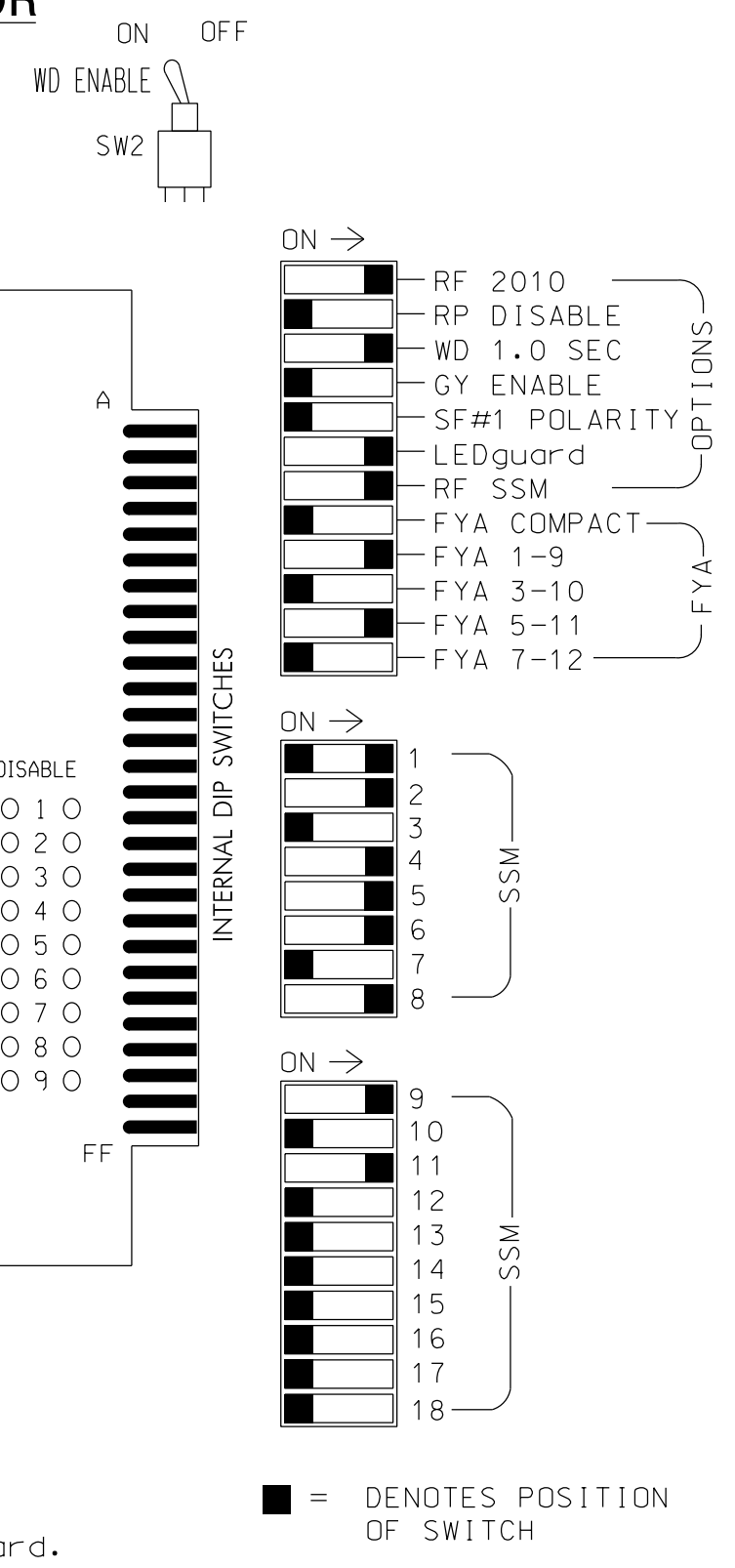
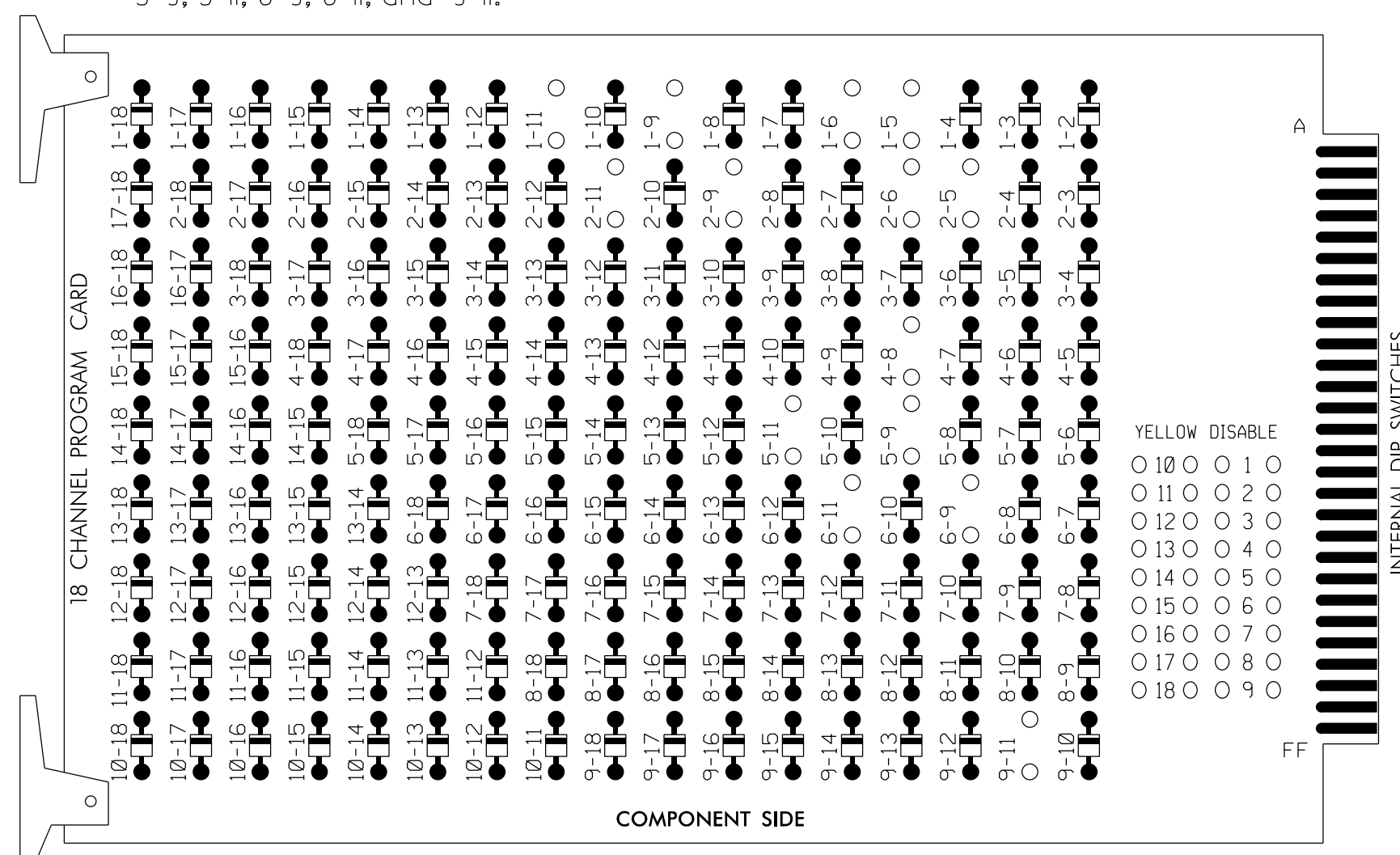
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL	6/9/2018
	DATE
Designed by: <u>Pamela Alexander</u>	DATE
SIG. INVENTORY NO. 07-2095	

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 4-8, 5-9, 5-11, 6-9, 6-11, and 9-11.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S11,
 AUX S1,AUX S4
 PHASES USED.....1,2,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	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	82	21,22	NU	NU	41,42	NU	42	51	61,62	NU	NU	81,82	NU	11	NU	NU	51	NU
RED	*	128				101			*	134			107						
YELLOW		129				102				135			108						
GREEN		130				103				136			109						
RED ARROW													A121					A114	
YELLOW ARROW	126								132										A115
FLASHING YELLOW ARROW													A123						A116
GREEN ARROW	127	127								133	133								

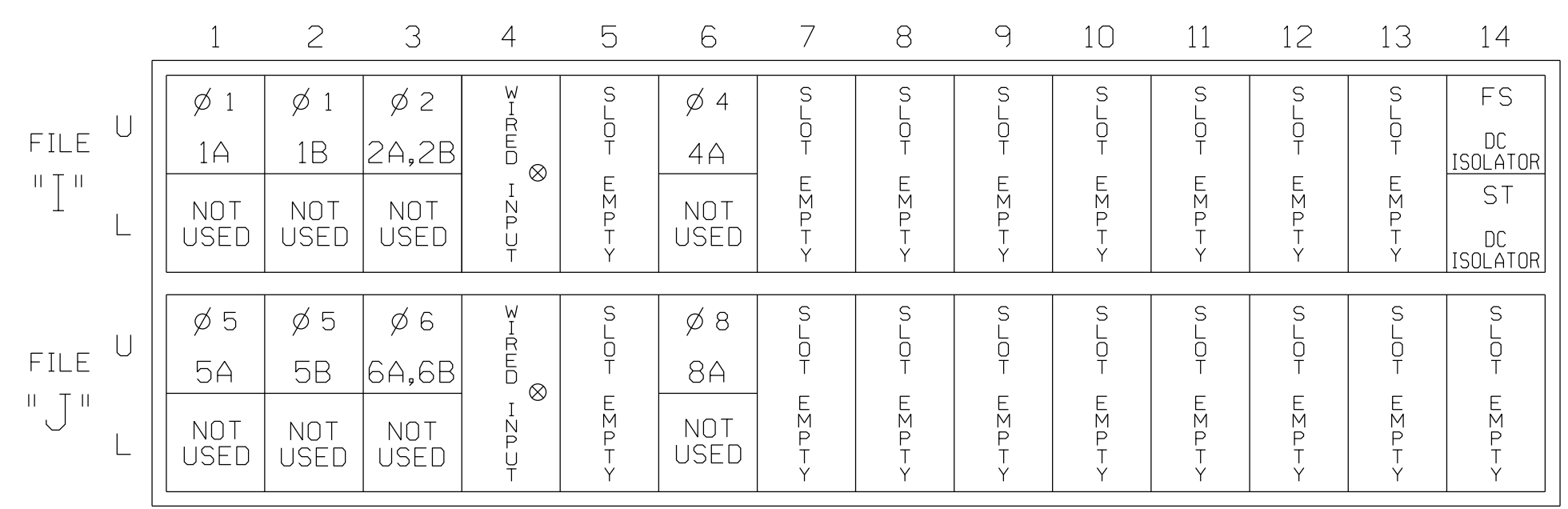
NU = Not Used

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

★ See pictorial of head wiring in 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

FS = FLASH SENSE
 ST = STOP TIME

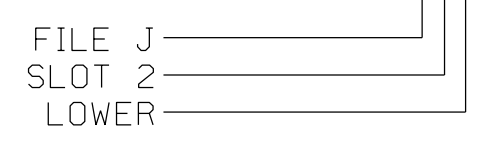
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1	1	YES		15		S
	-	J4U	48	26	6	YES		3		G
1B	TB2-5,6	I2U	39	2	1	YES		15		S
	2A,2B	TB2-9,10	I3U	63	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		3		S
	5A ²	TB3-1,2	J1U	55	5	YES		15		S
5B	-	I4U	47	22	2	YES		3		G
	TB3-5,6	J2U	40	6	5	YES		15		S
6A,6B	TB3-9,10	J3U	64	36	6	YES			X	N
	8A	TB5-9,10	J6U	42	8	YES		3		S

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

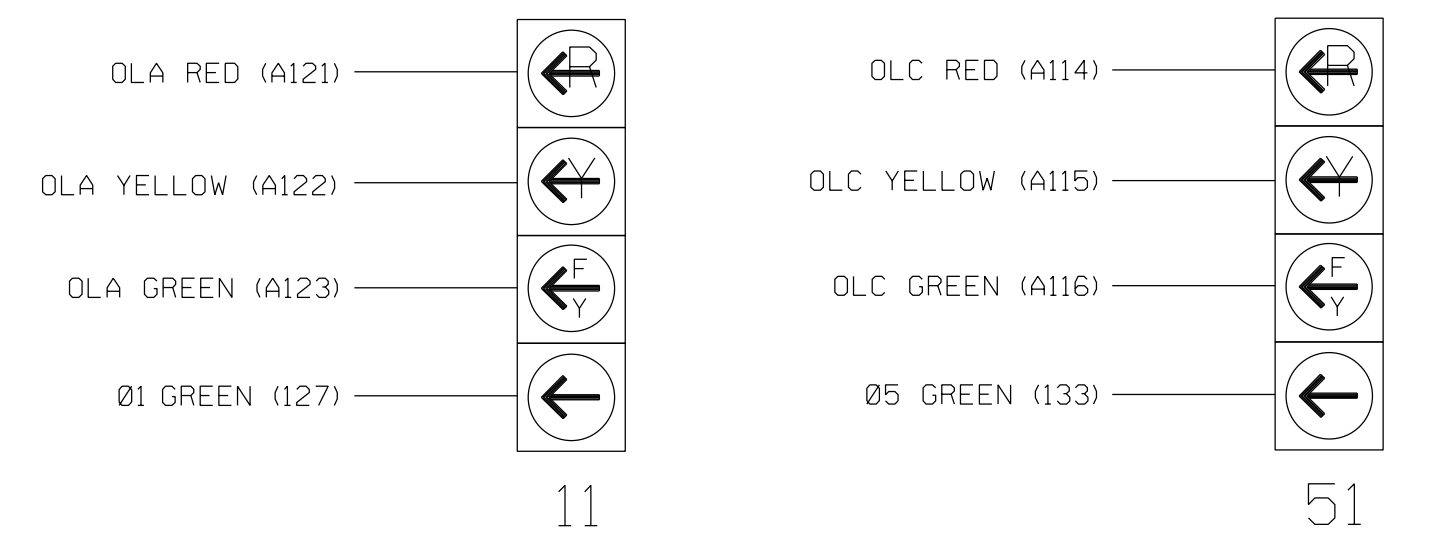
²Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

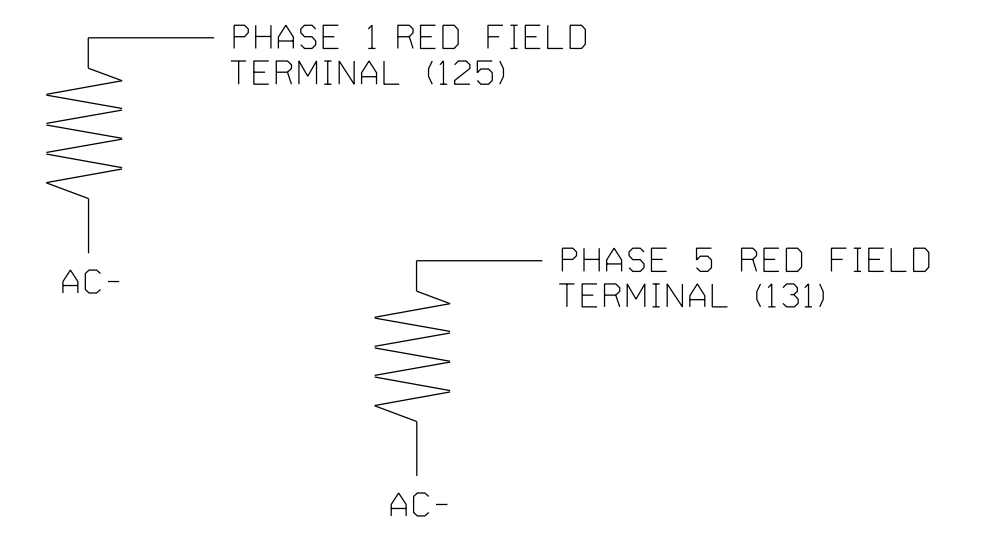


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2096
 DESIGNED: January 2018
 SEALED: 6/7/2018
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

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



Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	US 70 (S. Church Street) at Tribek Drive		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER SEAL 023489
	Division 7 PLAN DATE: January 2018 PREPARED BY: JA Wiles	Alamance County REVIEWED BY: PL Alexander REVIEWED BY:	
REVISIONS INIT. DATE	REVISIONS INIT. DATE	REVISIONS INIT. DATE	REVISIONS INIT. DATE

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: .....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: .....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-2096
 DESIGNED: January 2018
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 14:16
 ***SIGNALS-COMPOJECT\KLSRLA\Transportation\Traffic\Curr*00056469 U-6015 B-s Sig Sys*Task 05-11-SIGNALS\08as\gn\WIF.rng\07-2096E.dgn
 ALEX3361 AT LUS210649

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

<p style="font-size: x-small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared for the Offices of:</p> <p style="font-size: x-small;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p style="font-size: large; font-weight: bold;">US 70 (S. Church Street) at Tribek Drive</p> <p style="font-size: x-small;">Division 7 Alamance County Burlington</p> <p style="font-size: x-small;">PLAN DATE: January 2018 REVIEWED BY: PL Alexander</p> <p style="font-size: x-small;">PREPARED BY: JA Wiles REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <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 style="text-align: center; font-size: x-small;">SEAL</p> <p style="font-size: x-small;">Designed by: <u>Pamela Alexander</u> 6/11/2018</p> <p style="font-size: x-small;">DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-2096</p>
REVISIONS	INIT.	DATE												

ATKINS

1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEES #F-0326

PHASING DIAGRAM

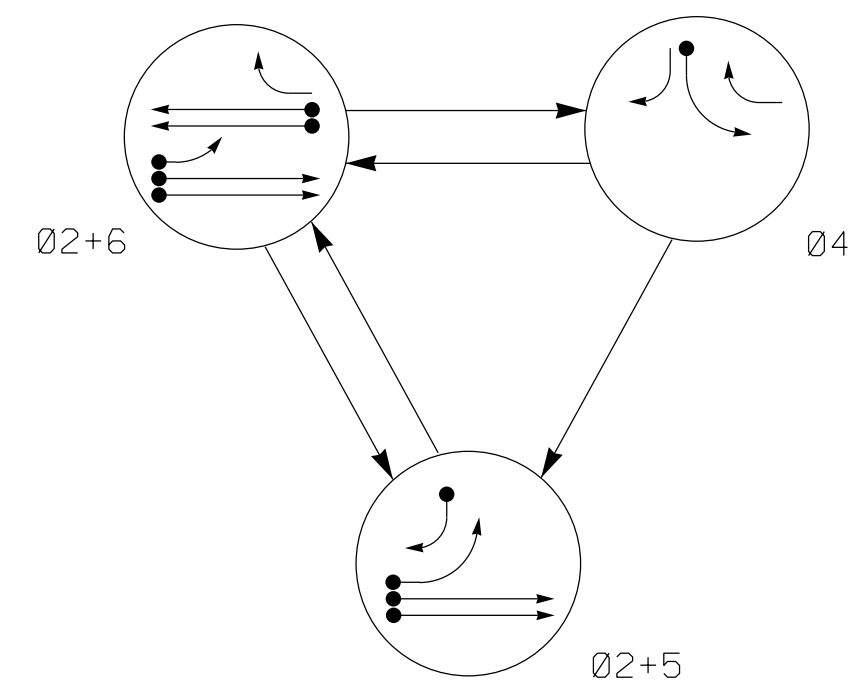
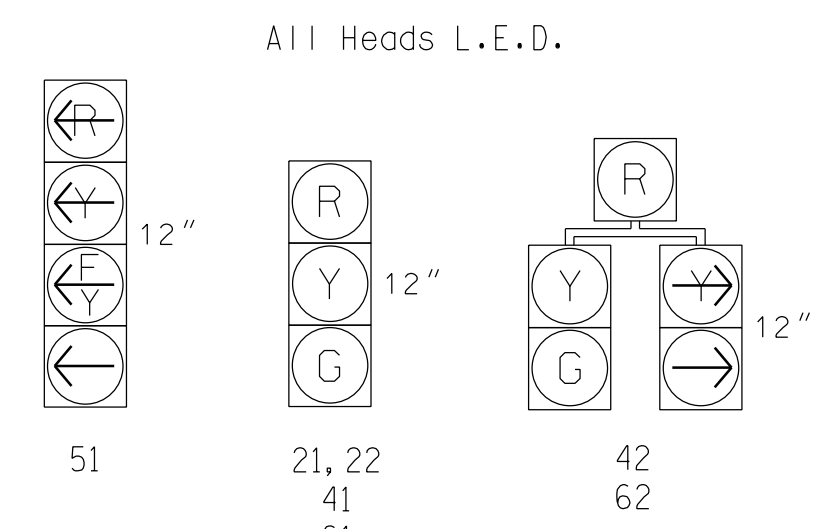


TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø 2+5	Ø 2+6	Ø 4	FLSH
21, 22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	←	←	←	←
61	R	G	R	Y
62	R	G	R	Y

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

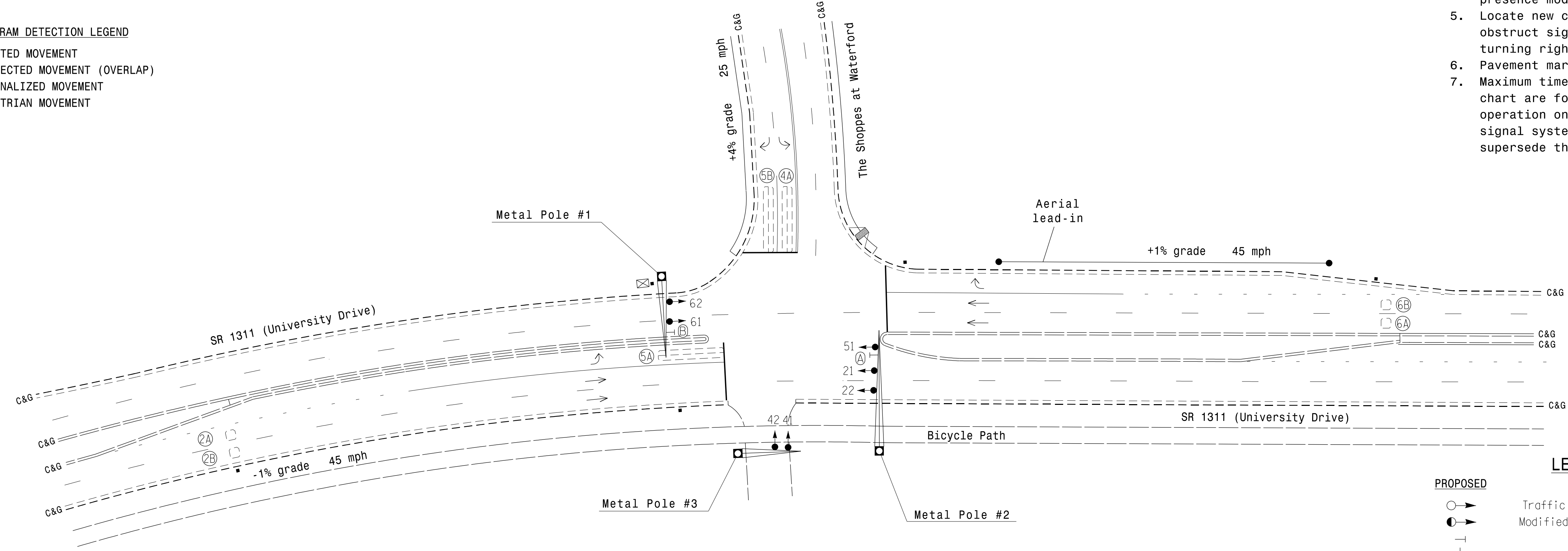
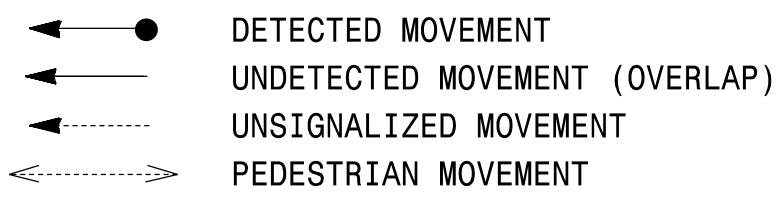
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	PROGRAMMING							
				NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP
2A	6X6	300	EXIST	2	Yes	-	-	X	N	-	X
2B	6X6	300	EXIST	2	Yes	-	-	X	N	-	X
4A	6X40	0	2-4-2	-	4	Yes	-	3	-	S	-
5A	6X40	0	2-4-2	-	5	Yes	-	15	-	S	-
5B	6X40	0	2-4-2	-	5	Yes	-	3	-	G	-
6A	6X6	300	EXIST	-	6	Yes	-	-	X	N	-
6B	6X6	300	EXIST	-	6	Yes	-	-	X	N	-

3 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND

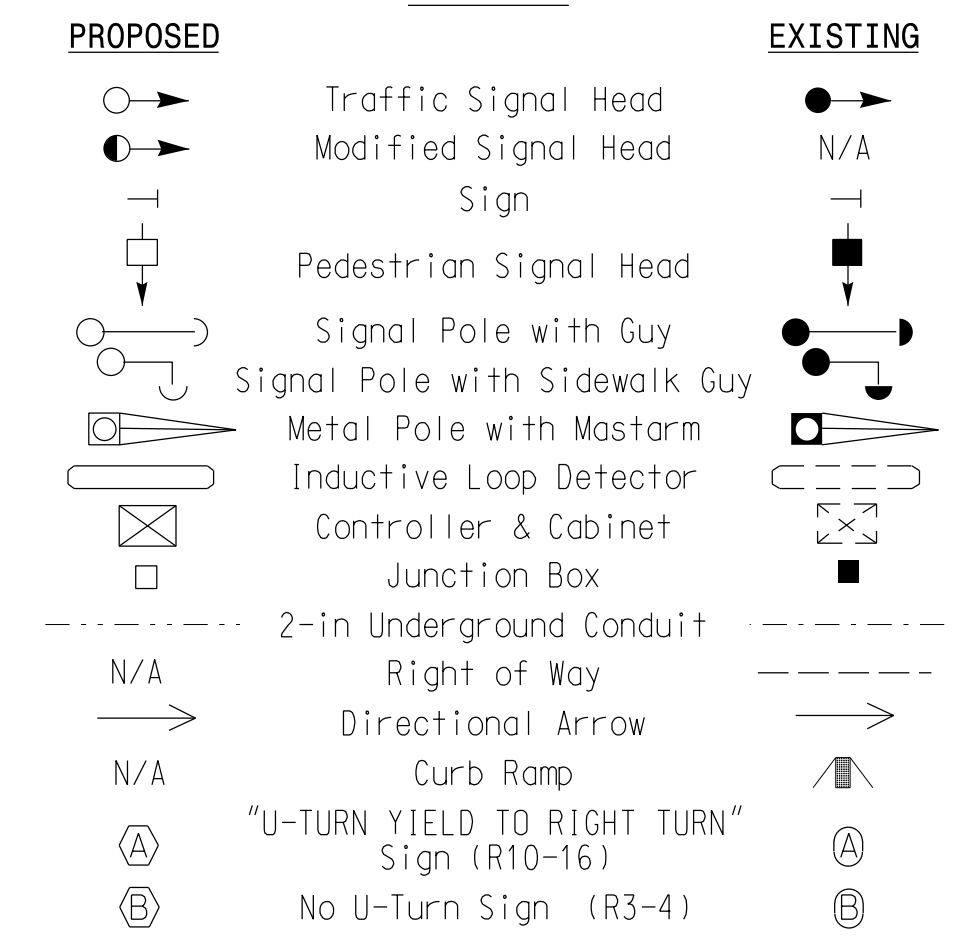


ASC/3 TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green *	12	7	7	12
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	6.0	2.0	2.0	6.0
Max 1 *	90	20	20	90
Yellow	4.6	3.0	3.0	4.6
Red Clear	1.4	2.8	2.6	1.4
Actuations B4 Add *	0	-	-	0
Seconds / Actuation *	1.8	-	-	1.8
Max Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Locking Detector	X	-	-	X
Recall Position	VEH, RECALL	-	-	VEH, RECALL
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

* 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

1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBES #F-0326

SR 1311 (University Drive) at The Shoppes at Waterford

Division 7 Alamance County Burlington

PLAN DATE: December 2017 REVIEWED BY: AM Encarnacion

PREPARED BY: JA Wiles REVIEWED BY: PL Alexander

SCALE: 1"=40'

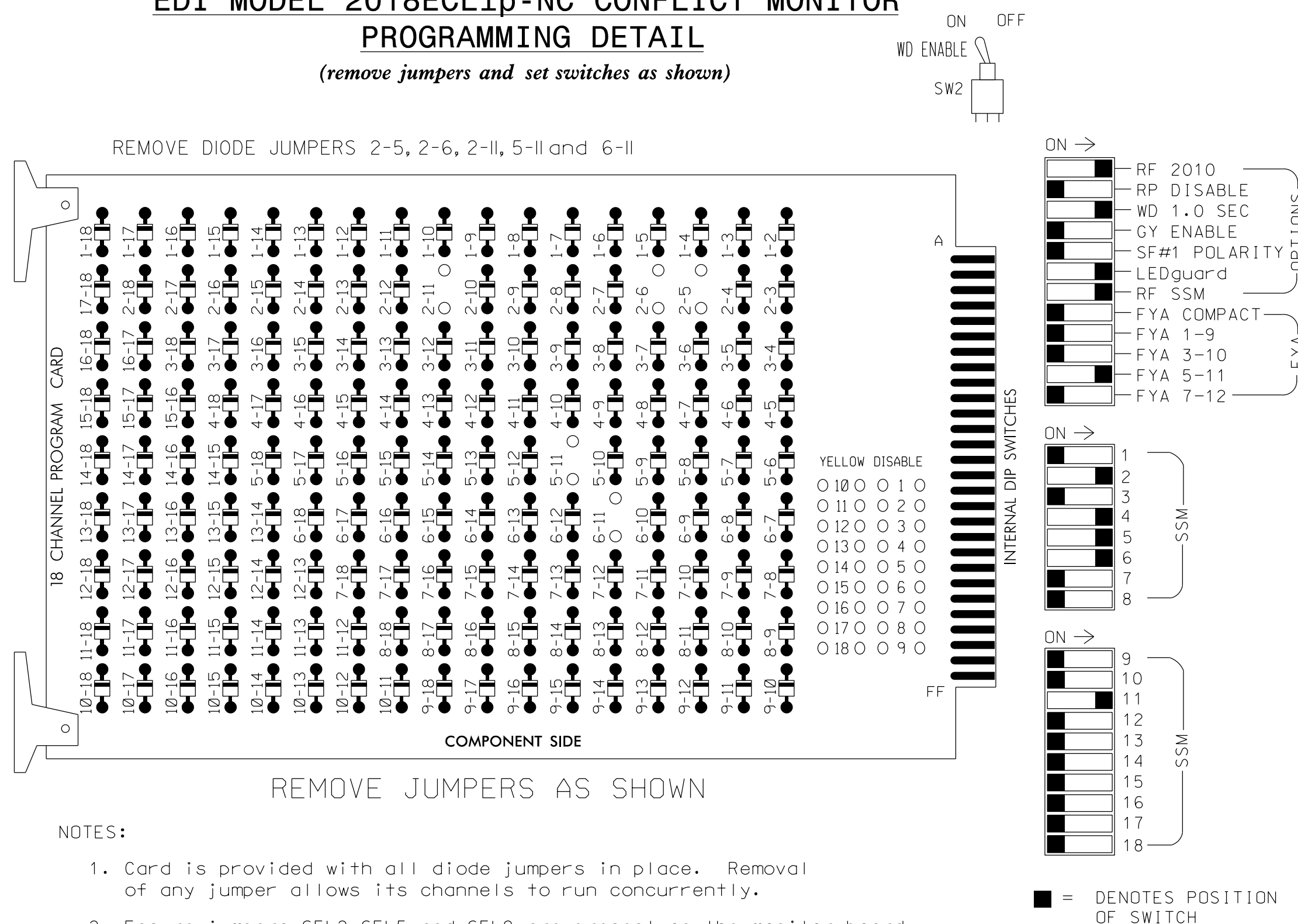
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
PANELA ALEXANDER
ENGINEER
DATE: 6/7/2018

07-JUN-2018 11:15 C:\Users\raht\OneDrive\Work\Projects\U-6015 B-C Sig Sys\Task 05_11_Signal\Signal\07-2115.dgn

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S8,AUX S4
 PHASES USED.....2,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

PROJECT REFERENCE NO.	SHEET NO.
U-6015	Sig.161.1

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	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.	NU	21,22	NU	NU	41,42	62	NU	42	51	61,62	NU	NU	NU	NU	NU	51	NU	NU	
RED		128			101			*		134									
YELLOW		129			102					135									
GREEN		130			103					136									
RED ARROW																		A114	
YELLOW ARROW					102			132											A115
FLASHING YELLOW ARROW																			A116
GREEN ARROW					103			133	133										

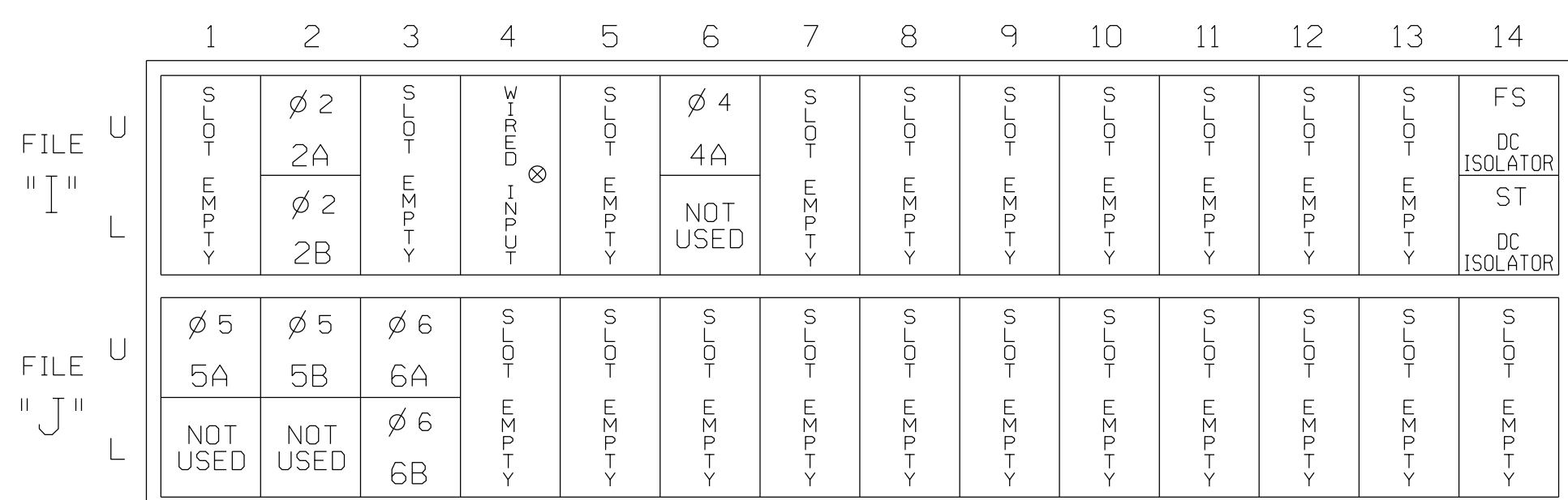
NU = Not Used

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

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

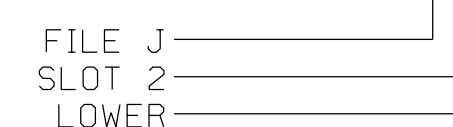
⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES			X	N
2B	TB2-7,8	I2L	43	12	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		3		S
5A ¹	TB3-1,2	J1U	55	5	5	YES		15		S
	-	I4U	47	22	2	YES		3		G
5B	TB3-5,6	J2U	40	6	5	YES		15		S
6A	TB3-9,10	J3U	64	36	6	YES			X	N
6B	TB3-11,12	J3L	77	46	6	YES			X	N

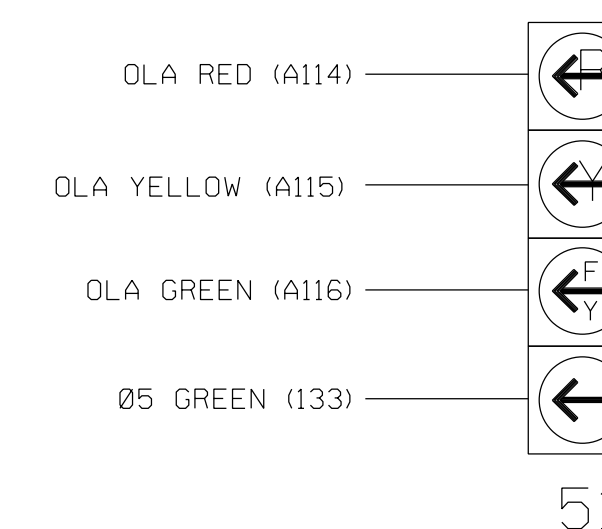
¹Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal head as shown)

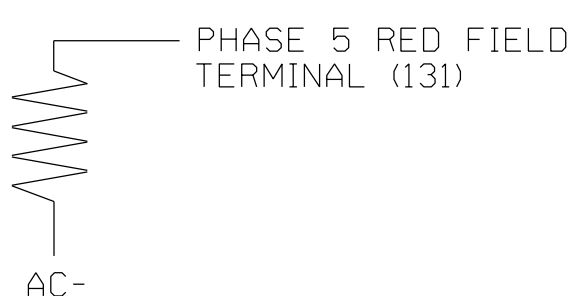


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2115
 DESIGNED: December 2017
 SEALED: 6/7/2018
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 Prepared for the Offices of:

SR 1311 (University Drive)
 at
 The Shoppes at Waterford

Division 7 Alamance County Burlington

PLAN DATE: December 2017 REVIEWED BY: AM Encarnacion
 PREPARED BY: JA Wiles REVIEWED BY: PL Alexander

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 PAMELA L. ALEXANDER
 SEAL 023489

6/9/2018
 DATE
 SIG. INVENTORY NO. 07-2115

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

750 N. Greenfield Pkwy, Garner, NC 27529

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
 2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS
- Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: .....PPLT FYA
PROTECTED PHASE (LEFT TURN)..... 5
PERMISSIVE PHASE (OPPOSING TURN)... 6
FLASHING ARROW OUTPUT.....CH11 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-2115
 DESIGNED: December 2017
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 14:16
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 ALEX3561 AT LUS240619

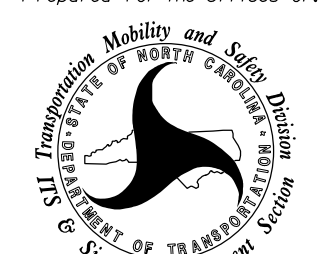
Electrical Detail - Sheet 2 of 2

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

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEE5 #F-0326

ELECTRICAL AND PROGRAMMING
 DETAILS FOR:


Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1311 (University Drive) at The Shoppes at Waterford	
Division 7	Alamance County Burlington
PLAN DATE: December 2017	REVIEWED BY: AM Encarnacion
PREPARED BY: JA Wiles	REVIEWED BY: PL Alexander
REVISIONS	INIT. DATE

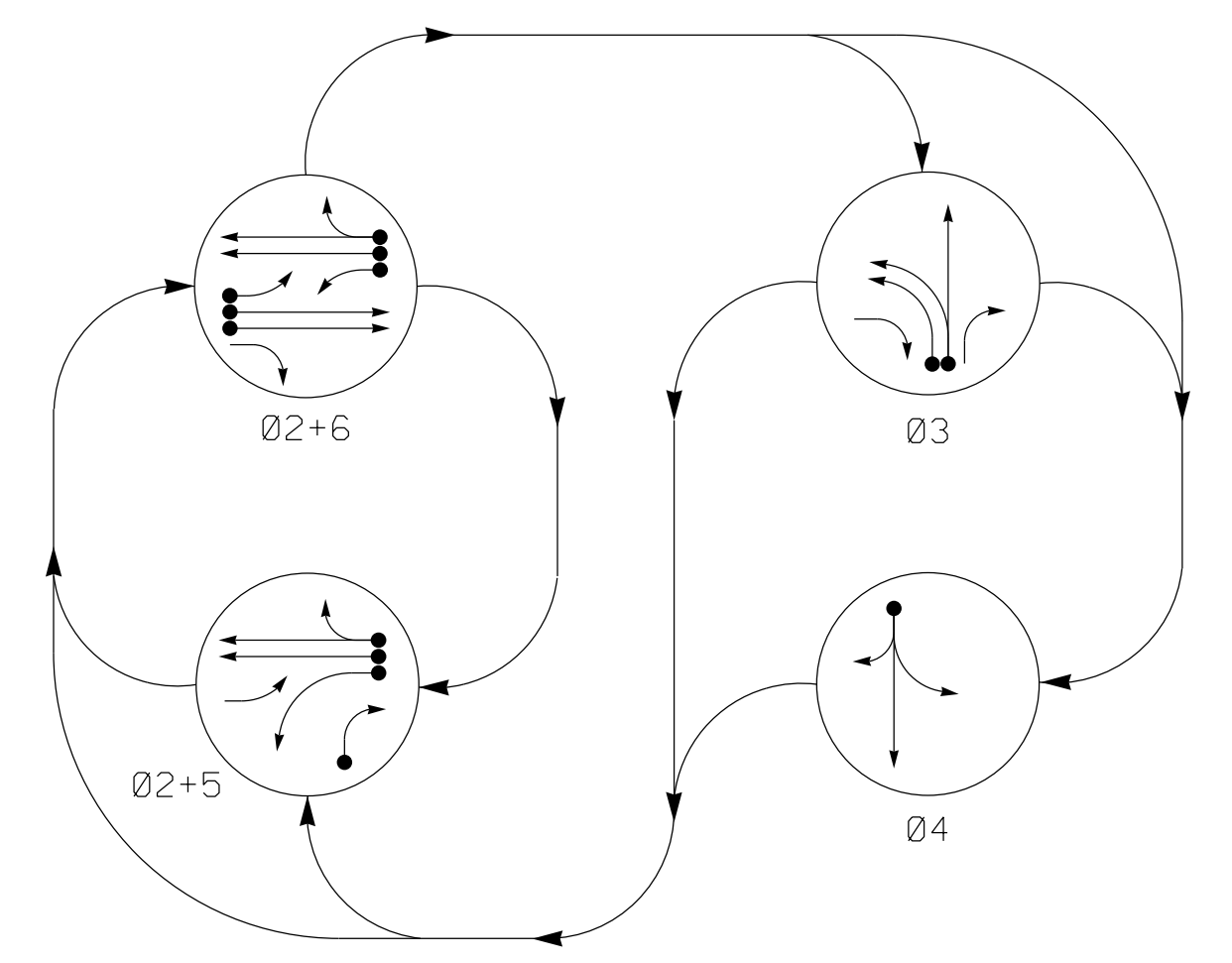
SEAL



SEAL
023489
ENGINEER
PAMELA L. ALEXANDER

Designed by: Pamela Alexander 6/9/2018
 DATE
 SIG. INVENTORY NO. 07-2115

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

EV PREEMPT PHASES
(Medium Priority)

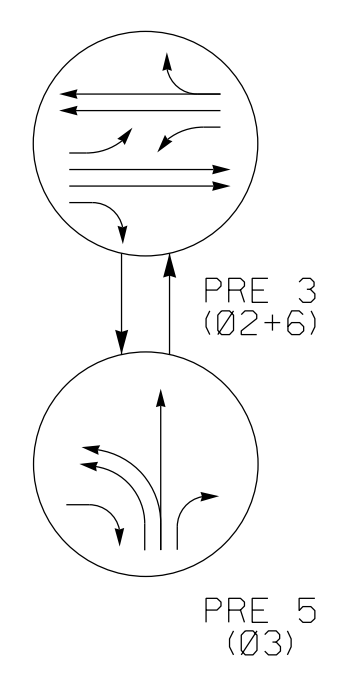


TABLE OF OPERATION

SIGNAL FACE	PHASE									
	02+5	02+6	03	04	PRE 3	PRE 5	FLASH	FL	SH	
21,22	G	G	R	R	G	R	Y			
31	R	R	G	R	R	G	R			
32	R	R	G	R	R	G	R			
41	R	R	R	G	R	R	R			
42	R	R	R	G	R	R	R			
51	←	←	←	←	←	←	←			
61	←	←	←	←	←	←	←			
62	R	G	R	R	G	R	Y			
63	R	G	R	R	G	R	Y			

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6X6	300	EXIST	-	2	Yes	-	-	X	N	-	X
2B	6X6	300	EXIST	-	2	Yes	-	-	X	N	-	X
3A	6X40	0	2-4-2	-	3	Yes	-	3	-	S	-	X
3B	6X40	0	2-4-2	-	3	Yes	-	-	-	S	-	X
4A	6X15	0	EXIST	-	4	Yes	-	5	-	S	-	X
5A	6X40	0	2-4-2	-	2	Yes	-	3	-	G	-	X
5B	6X40	0	2-4-2	-	5	Yes	-	15	-	S	-	X
6A	6X6	300	EXIST	-	6	Yes	-	-	X	N	-	X
6B	6X6	300	EXIST	-	6	Yes	-	-	X	N	-	X
6C	6X40	0	2-4-2	-	6	Yes	-	3	-	G	-	X

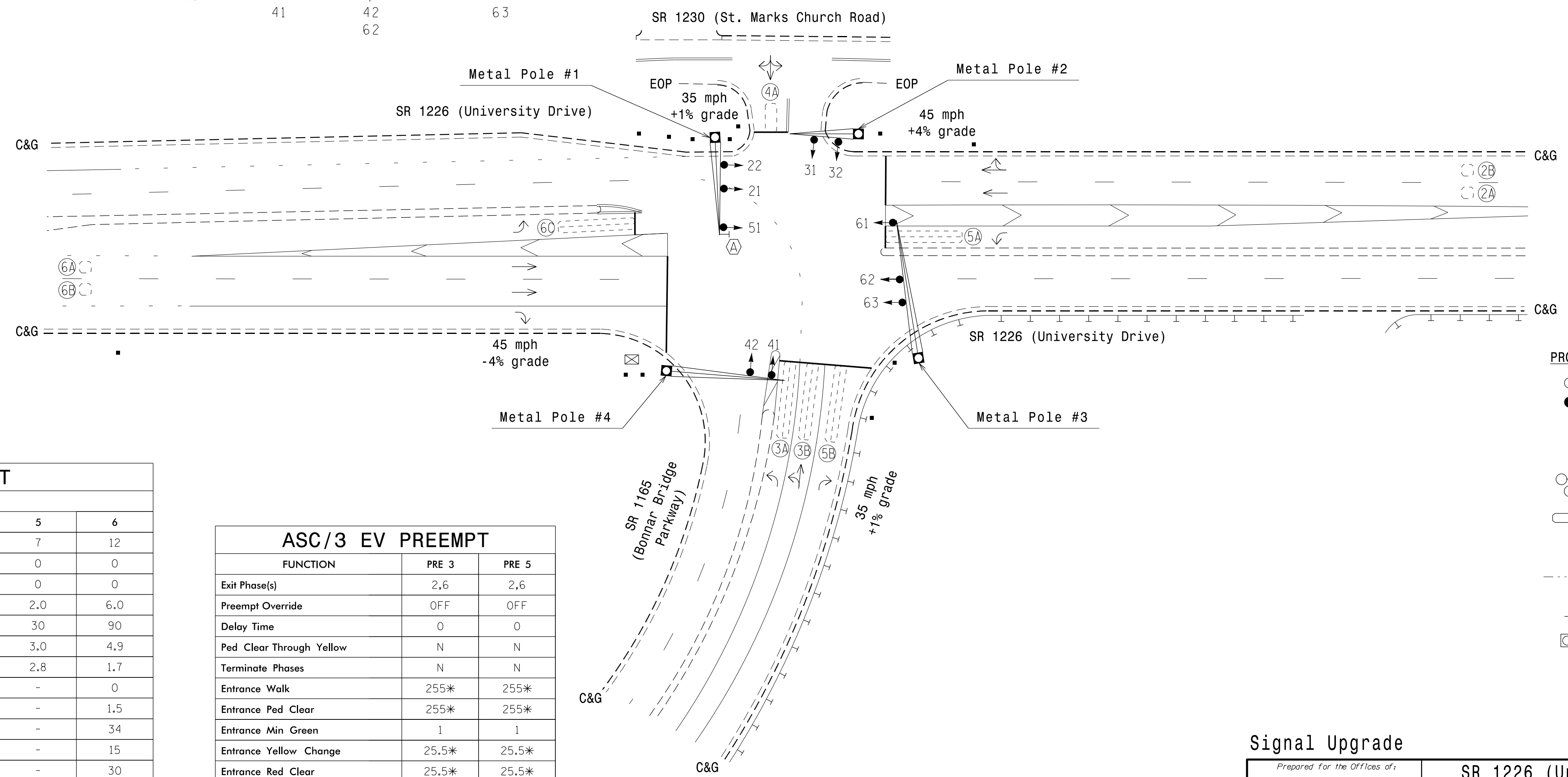
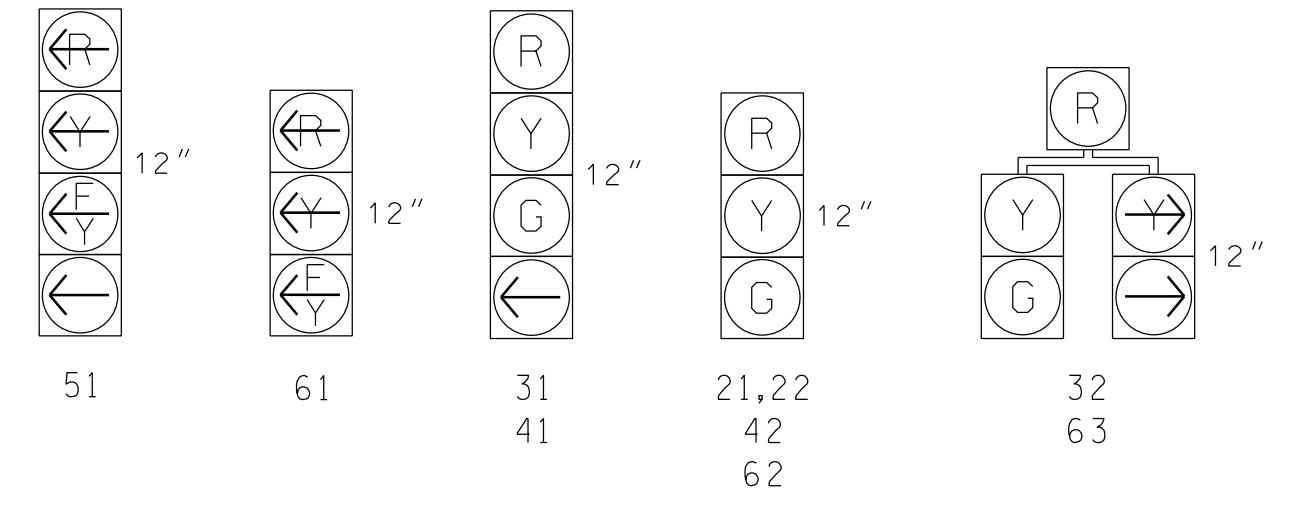
4 Phase Fully Actuated w/ EV Preemption (Burlington-Graham Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by Engineer.
- Phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- This intersection features an optical GPS preemption system.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 TIMING CHART

FEATURE	PHASE				
	2	3	4	5	6
Min Green *	12	7	7	7	12
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
Veh. Extension *	6.0	2.0	2.0	2.0	6.0
Max I *	90	30	15	30	90
Yellow	4.9	3.8	3.8	3.0	4.9
Red Clear	1.7	2.5	2.3	2.8	1.7
Actuations B4 Add *	0	-	-	-	0
Seconds / Actuation *	1.5	-	-	-	1.5
Max Initial *	34	-	-	-	34
Time Before Reduction *	15	-	-	-	15
Time To Reduce *	30	-	-	-	30
Minimum Gap	3.0	-	-	-	3.0
Locking Detector	X	-	-	-	X
Recall Position	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X

ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2,6	2,6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	N	N
Terminate Phases	N	N
Entrance Walk	255*	255*
Entrance Ped Clear	255*	255*
Entrance Min Green	1	1
Entrance Yellow Change	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Minimum Dwell Time	12	7
Preempt Input Extension Time	2	2
Preempt Max Time	30	30
Exit Yellow Change	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

LEGEND

- | PROPOSED | EXISTING |
|--|--|
| ○→ Traffic Signal Head | ●→ N/A |
| ○→ Modified Signal Head | ○→ N/A |
| ⊥ 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 | --- Right of Way |
| → Directional Arrow | → Directional Arrow |
| ○→ Metal Pole with Mastarm | ○→ Metal Pole with Mastarm |
| ⊙ "U-Turn Yield to Right Turn" Sign (R10-16) | ⊙ "U-Turn Yield to Right Turn" Sign (R10-16) |

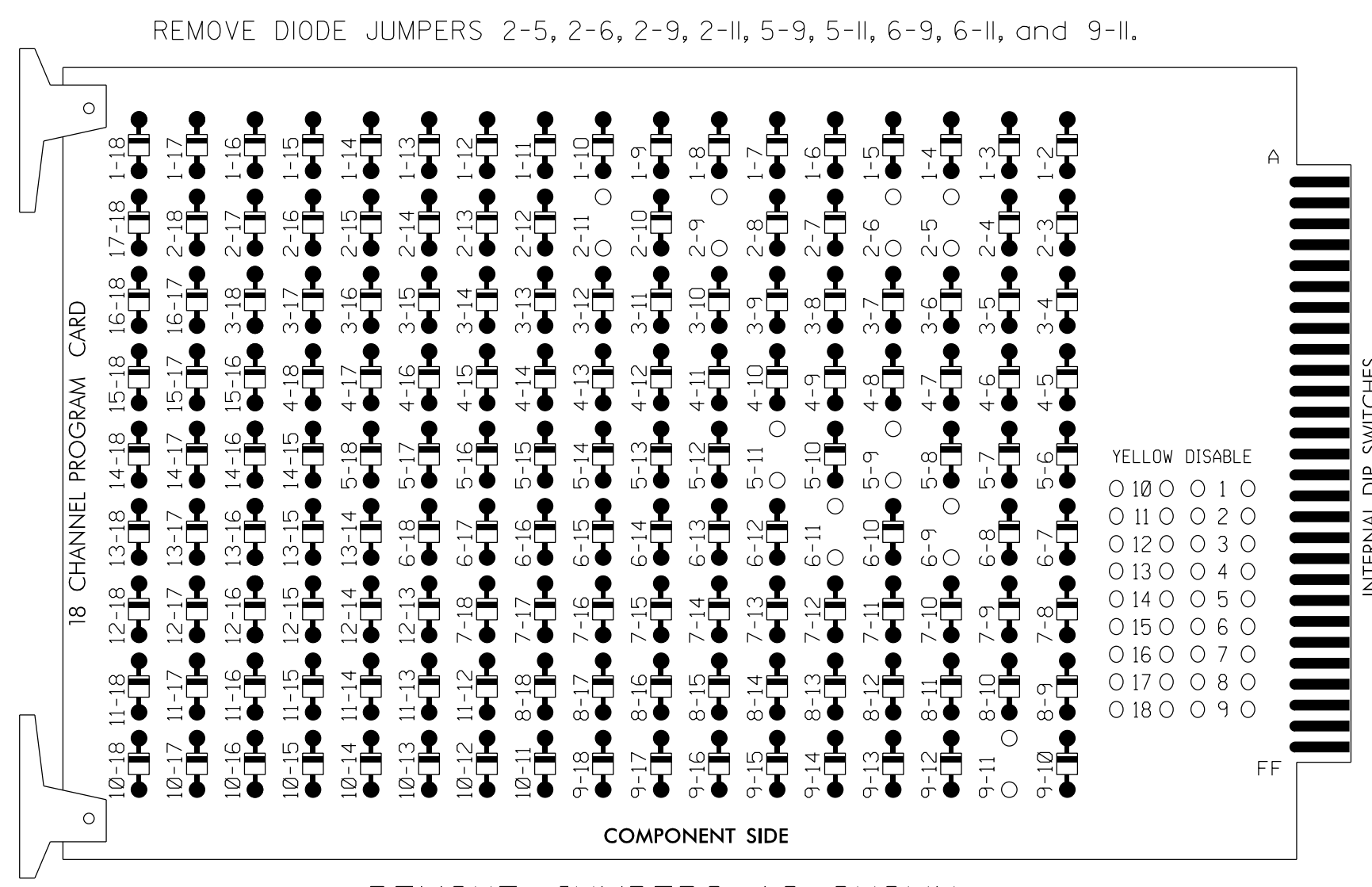
Signal Upgrade

Prepared for the Offices of:
SR 1226 (University Drive) at SR 1165 (Bonnar Bridge Parkway) / SR 1230 (St. Marks Church Road)
 Division 7 Alamance County Burlington
 PLAN DATE: March 2018 REVIEWED BY: PL Alexander
 PREPARED BY: NA Ptak REVIEWED BY: AM Encarnacion
 SCALE: 1"=40'
 REVISIONS: INIT. DATE
 6/7/2018
 SEAL: PAMELA L. ALEXANDER, PROFESSIONAL ENGINEER, NO. 023489
 SIG. INVENTORY NO. 07-2117

07-JUN-2018 11:15 U:\Projects\Traffic\Task 05_11_Signals\Des\gn*07-2117.dgn ALEX3361 AT LUS340649

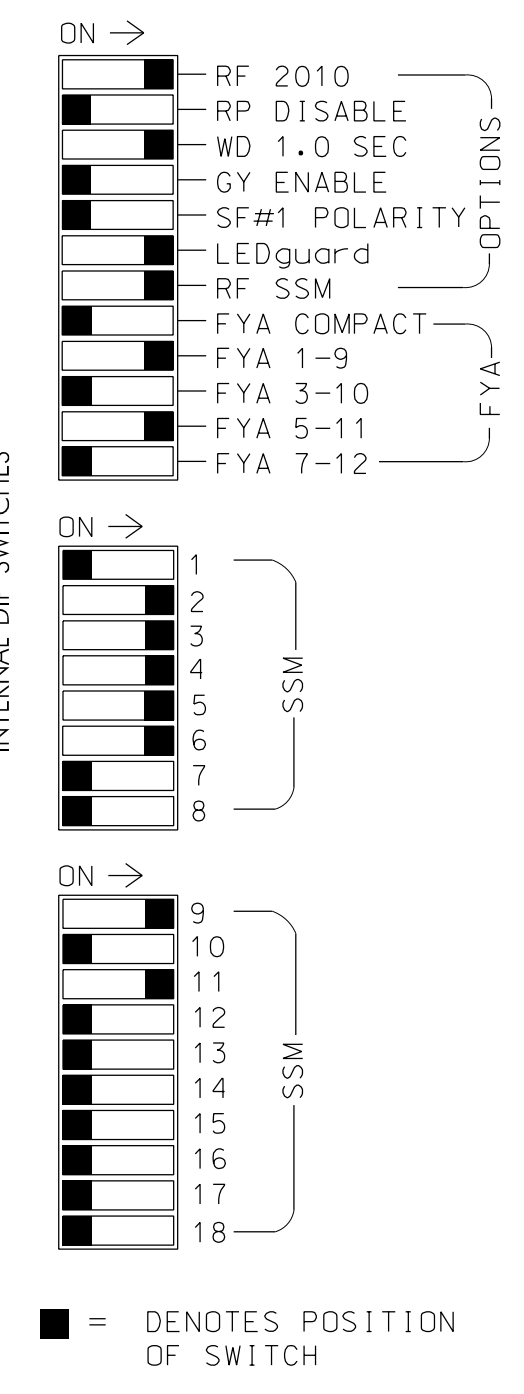
EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.



NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 2 Green and 6 Green.
3. The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S4,S5,S7,S8,AUX S1,
 AUX S4
 PHASES USED.....2,3,4,5,6
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

PROJECT REFERENCE NO.	SHEET NO.
U-6015	Sig. 162.1

SIGNAL HEAD HOOK-UP CHART

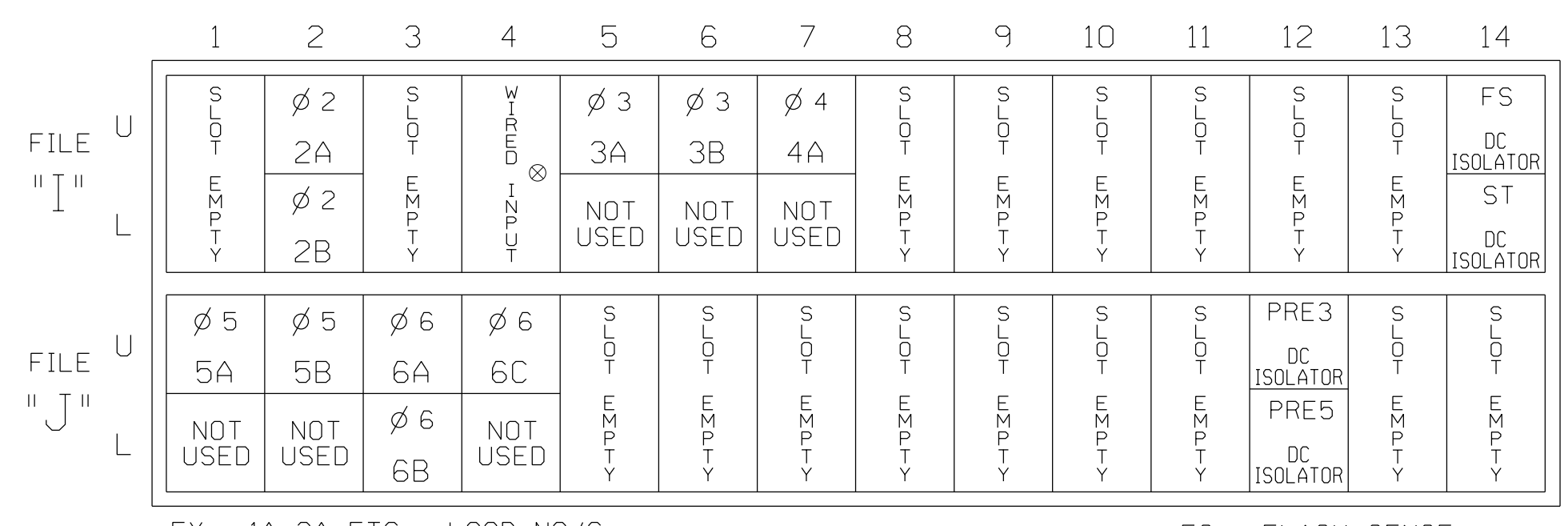
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6			
CHU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18			
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE			
SIGNAL HEAD NO.	NU	21,22	NU	31	32	63	41	42	NU	32	51	62,63	NU	NU	NU	61	NU	51	NU		
RED		128		116	116		101	101		*		134									
YELLOW		129		117	117		102	102				135									
GREEN		130		118	118		103	103				136									
RED ARROW																			A121	A114	
YELLOW ARROW								117												A122	A115
FLASHING YELLOW ARROW																				A123	A116
GREEN ARROW																					

NU = Not Used

- * Denotes install load resistor. See load resistor installation detail this sheet.
- ★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



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

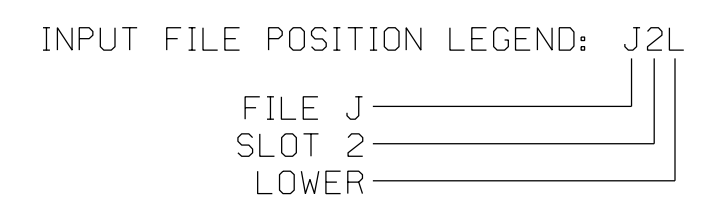
FS = FLASH SENSE
 ST = STOP TIME
 PRE = PREEMPT

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

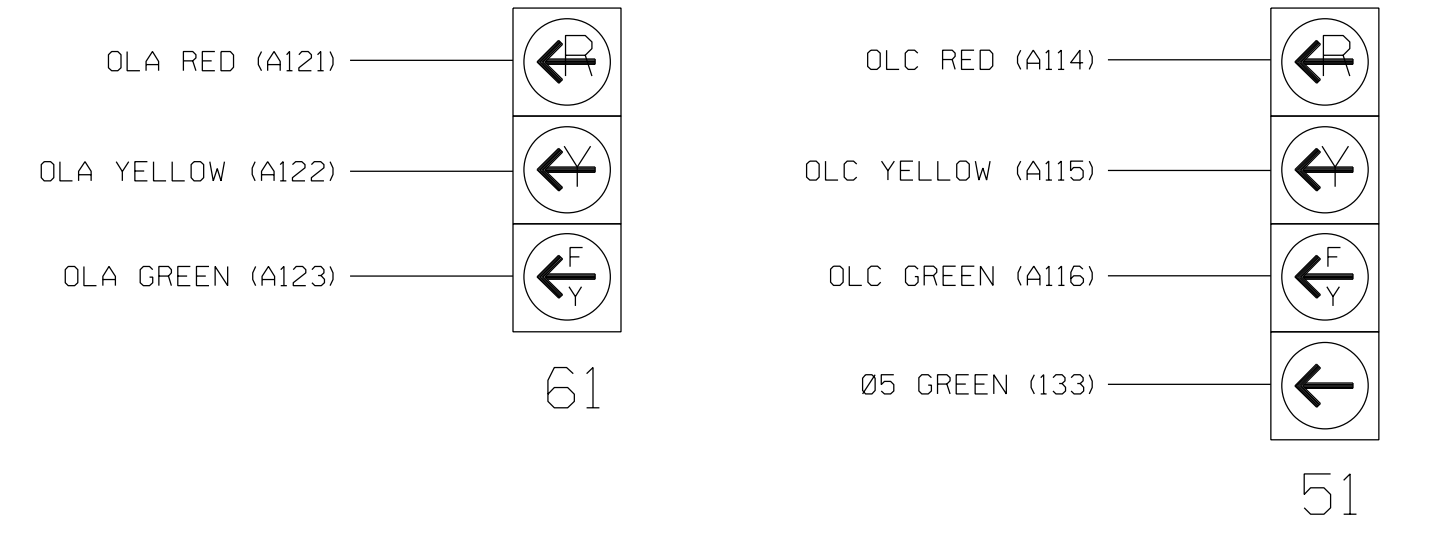
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES			X	N
2B	TB2-7,8	I2L	43	12	2	YES			X	N
3A	TB4-5,6	I5U	58	3	3	YES		3		S
3B	TB4-9,10	I6U	41	4	3	YES				S
4A	TB6-1,2	I7U	65	34	4	YES		5		S
5A ¹	TB3-1,2	J1U	55	5	5	YES		15		S
		I4U	47	22	2	YES		3		G
5B	TB3-5,6	J2U	40	6	5	YES		15		S
6A	TB3-9,10	J3U	64	36	6	YES			X	N
6B	TB3-11,12	J3L	77	46	6	YES			X	N
6C	TB5-1,2	J4U	48	26	6	YES				G

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



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

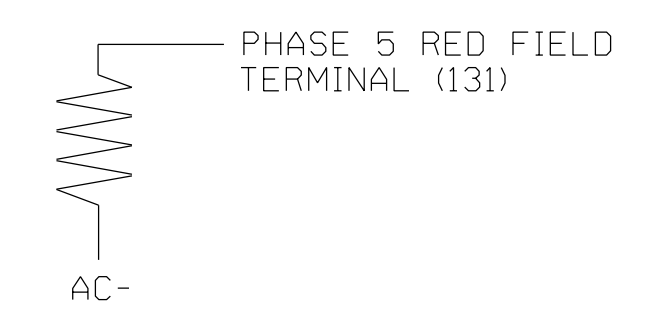


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2117
 DESIGNED: March 2018
 SEALED: 6/7/2018
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



Electrical Details - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	SR 1226 (University Drive) at SR 1165 (Bonnar Bridge Parkway) / SR 1230 (St. Marks Church Road)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER SEAL 023489 DATE
	Division 7 PLAN DATE: March 2018 PREPARED BY: NA Ptak	Alamance County Burlington REVIEWED BY: PL Alexander REVIEWED BY: AM Encarnacion	

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBES #F-0326

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL *(program controller as shown)*

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YESIPMT OVRIDE...INTERLOCK. NO
DET LOCK... XIDELAY.. OINHIBIT... 0
OVERIDE FL. IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 12I 2.0I 30I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

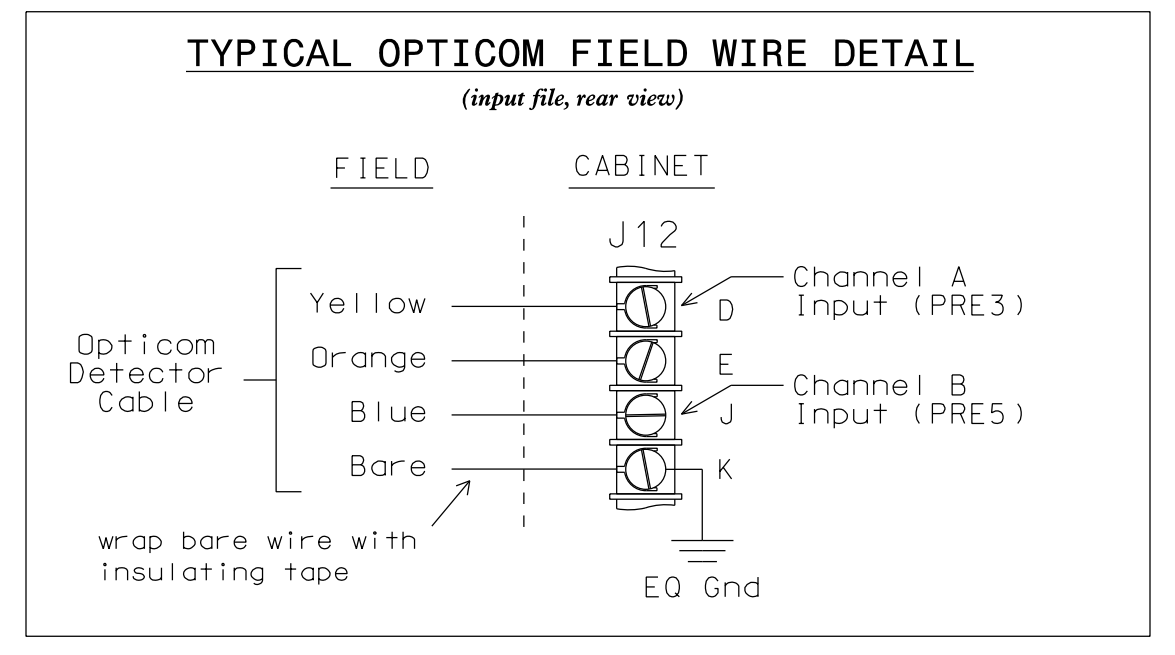
ENABLE... YESIPMT OVRIDE...INTERLOCK. NO
DET LOCK... XIDELAY.. OINHIBIT... 0
OVERIDE FL. IDURATION OICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...OIX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...OIRE-SERV.. OIFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 30I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

- (program controller as shown)*
- From Main Menu select 4. PREEMPTOR/TSP
 - From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED...BYPASSED..
2 ...BYPASSED...BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED...BYPASSED..
7 ..BYPASSED...BYPASSED..
8 ...BYPASSED...BYPASSED..
9 ...BYPASSED...BYPASSED..
10 ...BYPASSED...BYPASSED..
    
```



ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL *(program controller as shown)*

- From Main Menu select 2. CONTROLLER
- From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A
Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[A] TYPE:OTHER/ECONOLITE
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .
LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
    
```

↓ Toggle Twice

OVERLAP C
Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6
FLASHING ARROW OUTPUT....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2117
DESIGNED: March 2018
SEALED: 6/7/2018
REVISED: N/A

09-JUN-2018 14:16 D:\P\consort\at\work\off\c\curr\100056469 U-6015 B-G Sig Sys\Task 05_11_Signal\Des\g\m\l\ing\07-2117E.dgn ALEX3361 AT LUS210649

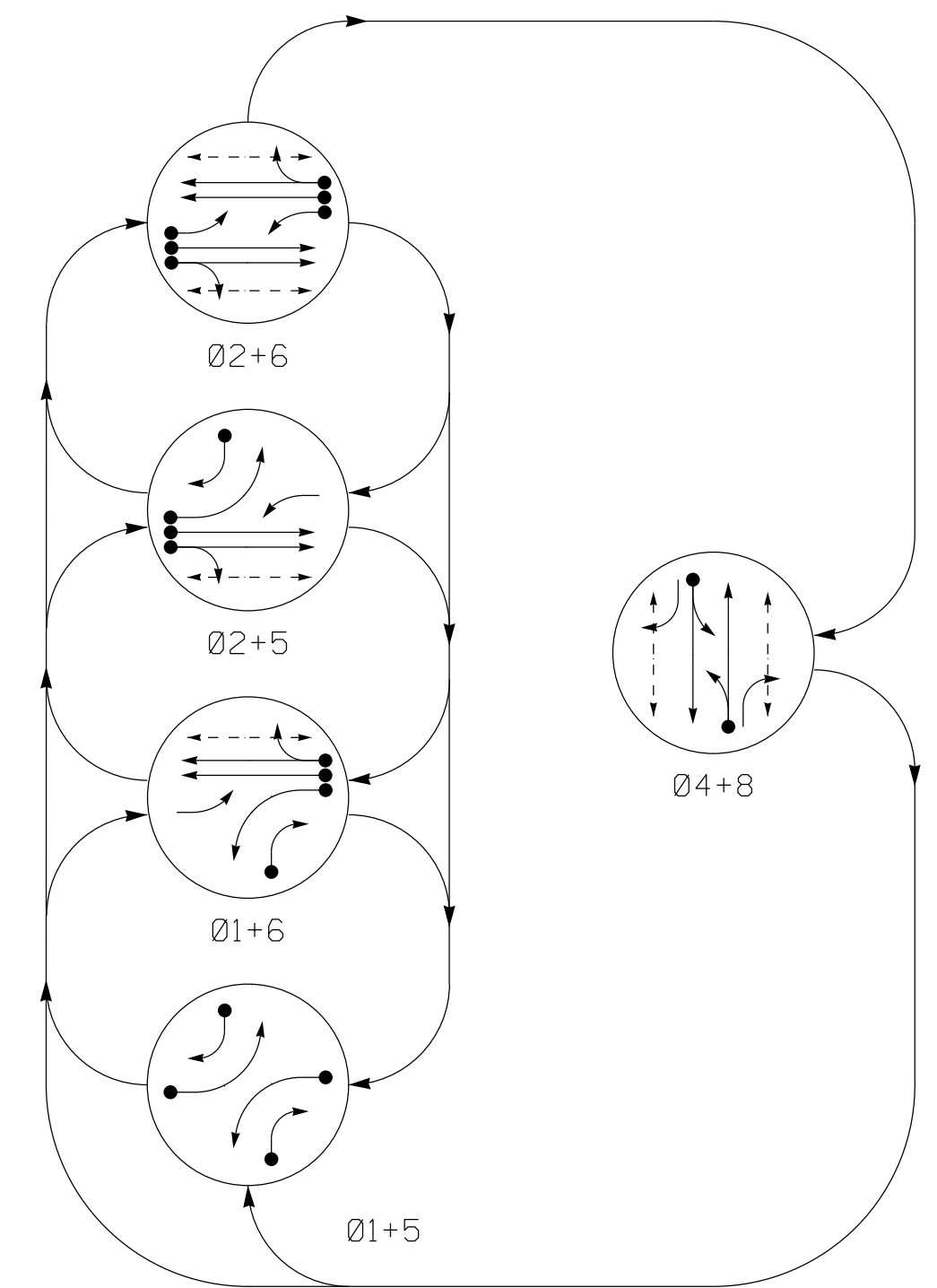
Electrical Details - Sheet 2 of 2

<p>Prepared for the Offices of:</p>	<p>SR 1226 (University Drive) at SR 1165 (Bonnar Bridge Parkway)/ SR 1230 (St. Marks Church Road)</p> <p>Division 7 Alamance County Burlington</p> <p>PLAN DATE: March 2018 REVIEWED BY: AM Encarnacion PREPARED BY: NA Ptak REVIEWED BY: PL Alexander</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REVISIONS	INIT.	DATE				<p style="text-align: center; font-weight: bold;">DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <div style="text-align: center;"> <p>SEAL PAMELA L. ALEXANDER ENGINEER 023489</p> </div> <p style="text-align: center;">6/9/2018 PAMELA L. ALEXANDER DATE</p> <p style="text-align: center;">SIG. INVENTORY NO. 07-2117</p>
REVISIONS	INIT.	DATE						

ATKINS

1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEEES #F-0326

PHASING DIAGRAM



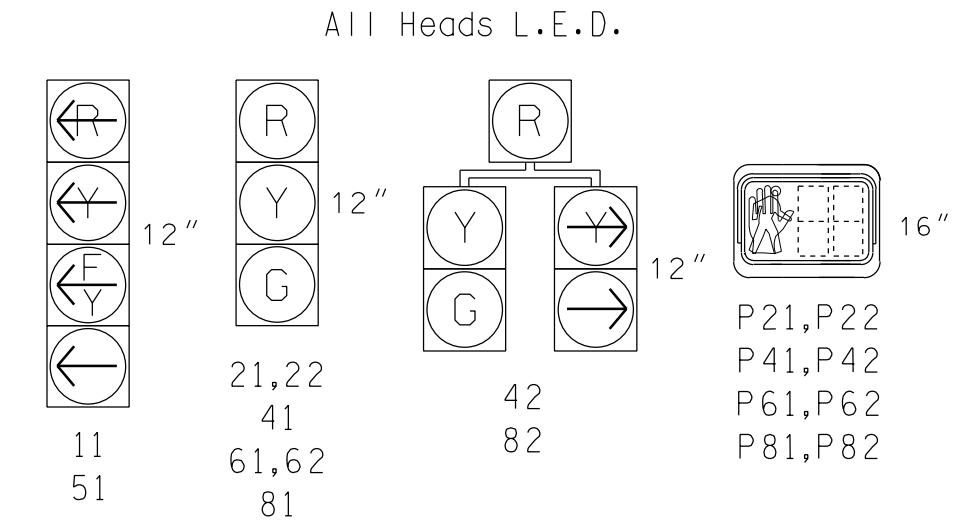
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE				
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø4+8
11	←	←	←	←	←
21,22	R	R	G	G	R
41	R	R	R	R	G
42	R	R	R	R	G
51	←	←	←	←	←
61,62	R	G	R	G	R
81	R	R	R	R	G
82	R	R	R	R	G
P21,P22	DW	DW	W	W	DRK
P41,P42	DW	DW	DW	DW	DRK
P61,P62	DW	W	DW	W	DRK
P81,P82	DW	DW	DW	W	DRK

SIGNAL FACE I.D.



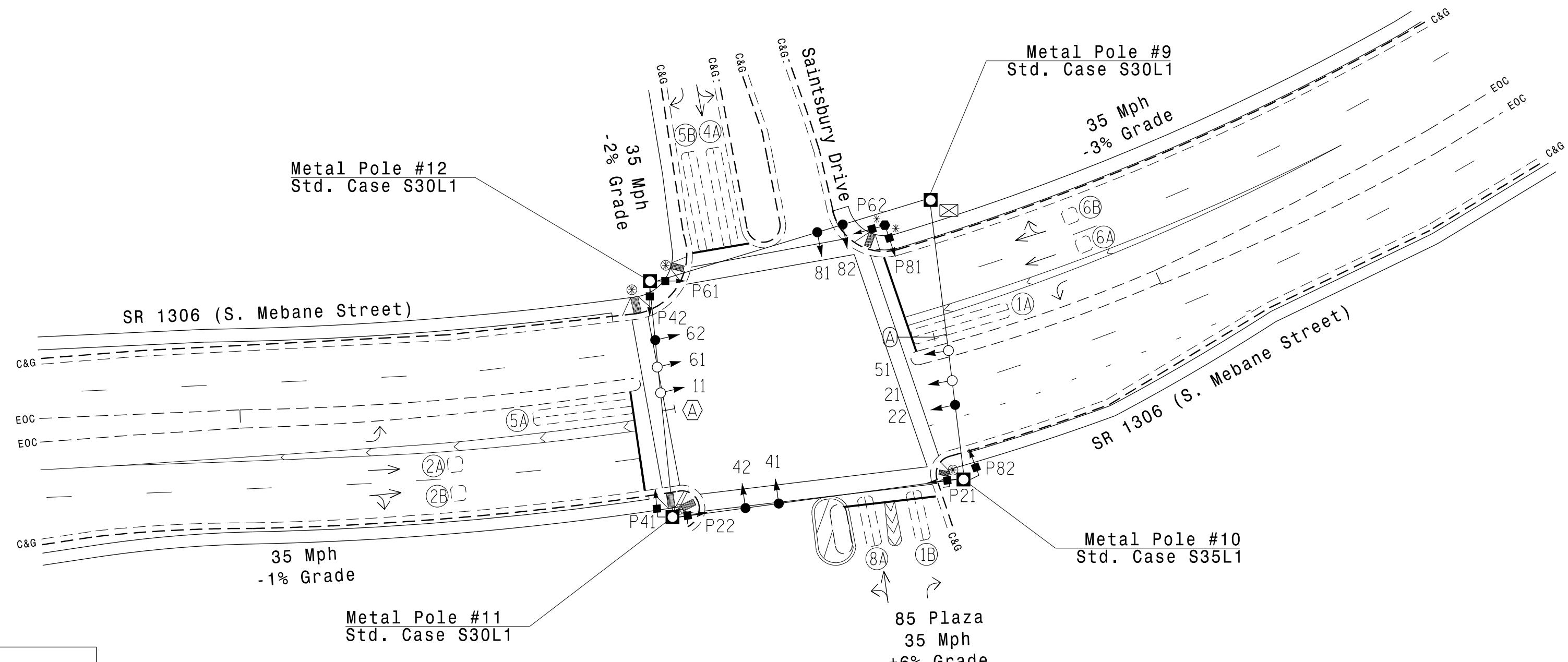
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	-	1	Yes	-	15	-	S	-	X
1B	6X20	+3	2-4-2	-	6	Yes	-	-	-	S	-	X
2A	6X6	70	EXIST	-	2	Yes	-	15	-	S	-	X
2B	6X6	70	EXIST	-	2	Yes	-	-	-	S	-	X
4A	6X40	0	2-4-2	-	4	Yes	-	-	-	S	-	X
5A	6X40	0	2-4-2	-	2	Yes	-	15	-	S	-	X
5B	6X40	0	2-4-2	-	5	Yes	-	-	-	S	-	X
6A	6X6	70	EXIST	-	6	Yes	-	-	-	S	-	X
6B	6X6	70	EXIST	-	6	Yes	-	-	-	S	-	X
8A	6X20	+3	2-4-2	-	8	Yes	-	-	-	S	-	X

5 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Reposition existing signal heads numbered 22 and 62.
- 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.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

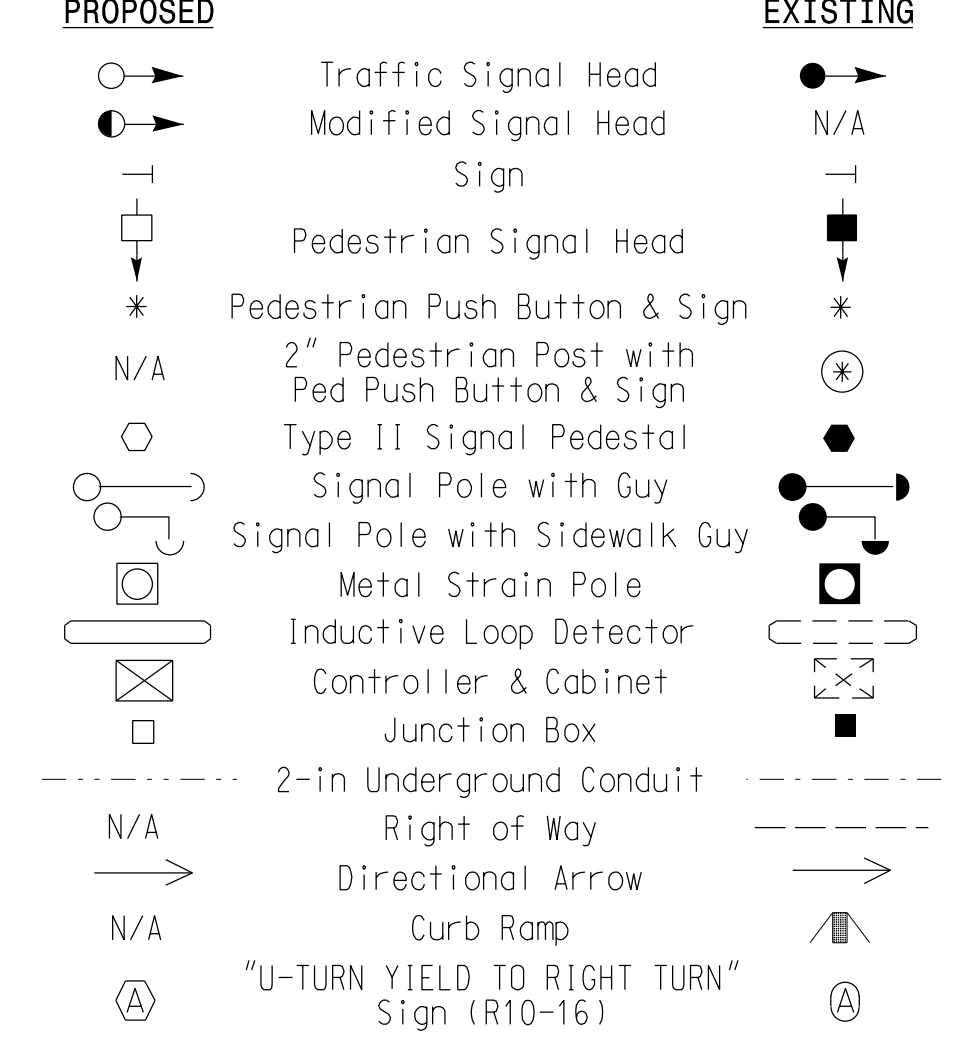


ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green *	7	10	7	7	10	7
Walk *	0	4	4	0	4	4
Ped Clear	0	23	17	0	16	23
Veh. Extension *	3.0	5.0	3.0	3.0	5.0	3.0
Max 1 *	20	45	30	20	45	30
Yellow	3.0	4.1	4.0	3.0	4.1	3.5
Red Clear	2.6	2.2	2.0	3.1	2.2	2.8
Actuations B4 Add *	-	-	-	-	-	-
Seconds/Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Locking Detector	-	X	-	-	X	-
Recall Position	-	VEH. RECALL	-	-	VEH. RECALL	-
Dual Entry	-	-	X	-	-	X
Simultaneous Gap	X	X	X	X	X	X

* 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 for the Offices of:
SR 1306 (S. Mebane Street) at 85 Plaza/Saintsbury Drive

Division 7 Alamance County Burlington
 PLAN DATE: December 2017 REVIEWED BY: AM Encarnacion
 PREPARED BY: NA Ptak REVIEWED BY: PL Alexander

750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE: 1"=40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

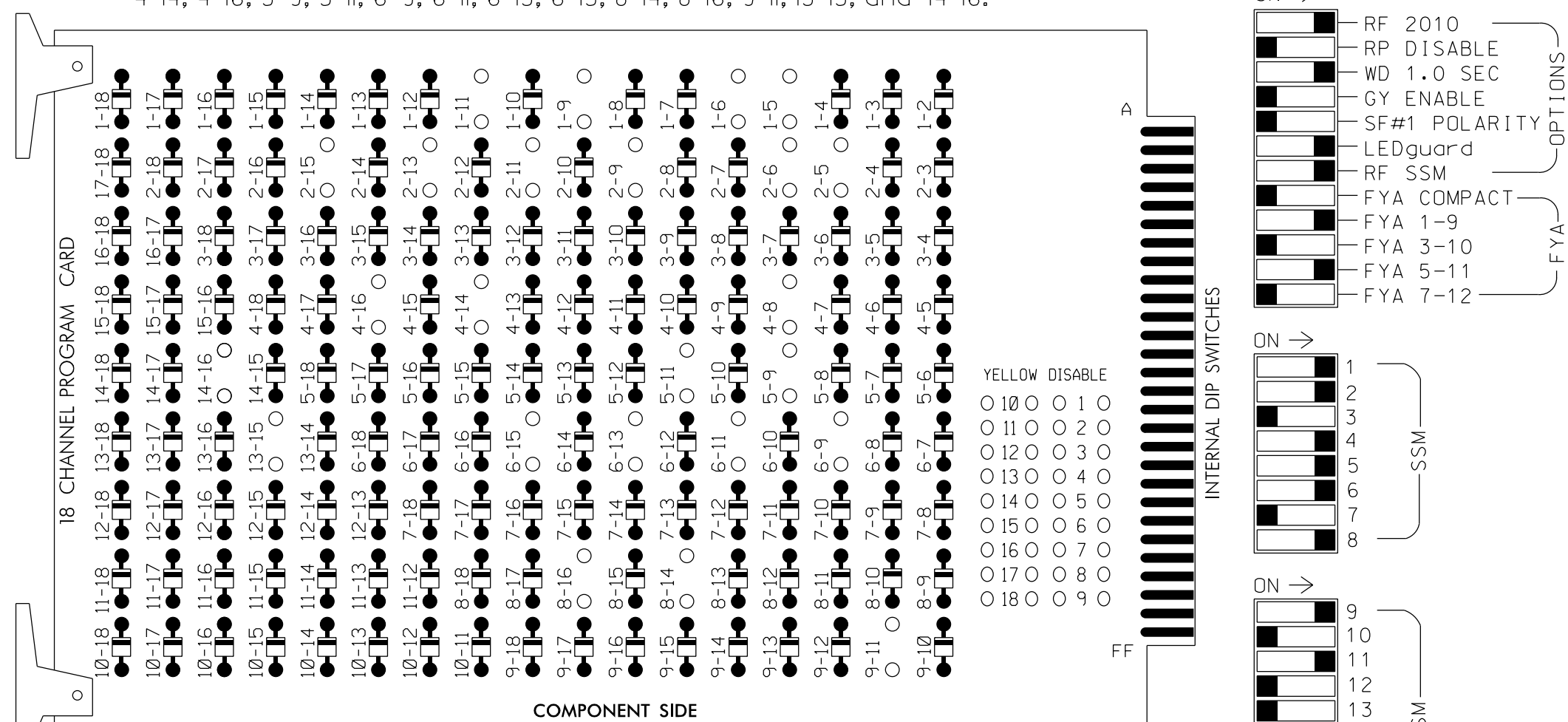
SEAL: PAMELA L. ALEXANDER, PROFESSIONAL ENGINEER, NO. 023489, DATE: 6/7/2018

07-JUN-2018 11:15 D:\working\atkins\proj\offices\cur\100056469 U-6015 B-G Siga Sys\Task 05-11_Signal\Design\07-2128.dgn ALEX3561 AT U0534069

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 4-8, 4-14, 4-16, 5-9, 5-11, 6-9, 6-11, 6-13, 6-15, 8-14, 8-16, 9-11, 13-15, and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Walk and 6 Walk.
- The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9
 S11,S12,AUX S1, AUX S4
 PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

PROJECT REFERENCE NO.	SHEET NO.
U-6015	Sig. 163.1

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	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★	82	21,22	P21, P22	NU	41,42	P41, P42	42	51★	61,62	P61, P62	NU	81,82	P81, P82	11★	41	NU	51★	NU
RED	*	128			101			*	134		107								
YELLOW		129			102				135		108								
GREEN		130			103				136		109								
RED ARROW													A121					A114	
YELLOW ARROW	126							132					A122					A115	
FLASHING YELLOW ARROW													A123					A116	
GREEN ARROW	127	127						133	133										
Hand icon								113		104			119					110	
Walking person icon								115		106			121					112	

NU = Not Used

* Install load resistor. See load resistor installation detail this sheet.

★ See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)

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

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

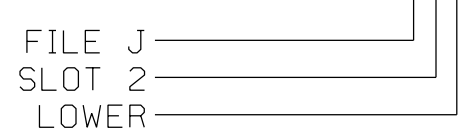
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1	1	YES		15		S
	-	J4U	48	26	6	YES				S
1B	TB2-5,6	I2U	39	2	1	YES		15		S
2A	TB2-9,10	I3U	63	32	2	YES				S
2B	TB2-11,12	I3L	76	42	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES				S
5A ²	TB3-1,2	J1U	55	5	5	YES		15		S
	-	I4U	47	22	2	YES				S
5B	TB3-5,6	J2U	40	6	5	YES		15		S
6A	TB3-9,10	J3U	64	36	6	YES				S
6B	TB3-11,12	J3L	77	46	6	YES				S
8A	TB5-9,10	J6U	42	8	8	YES				S
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2	PED				
P41,P42	TB8-5,6	I12L	69	PED 4	4	PED				
P61,P62	TB8-7,9	I13U	68	PED 6	6	PED				
P81,P82	TB8-8,9	I13L	70	PED 8	8	PED				

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

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

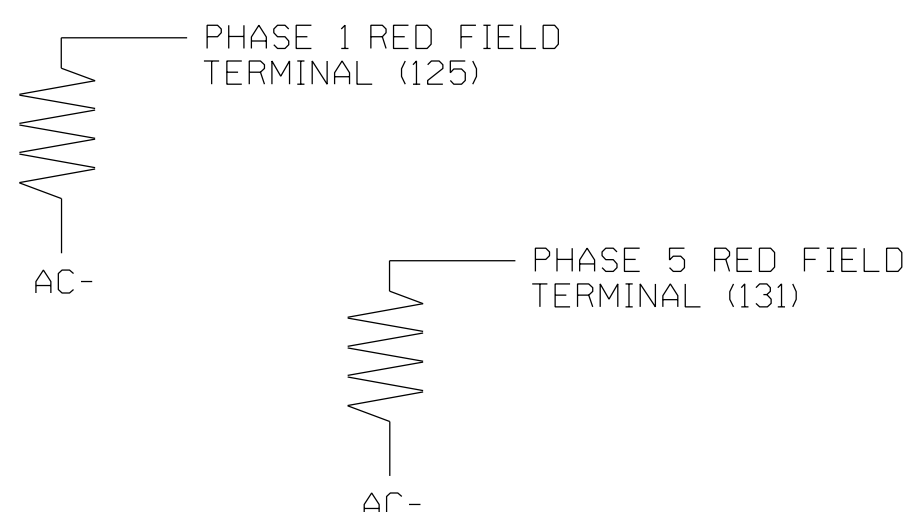


LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

ACCEPTABLE VALUES

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

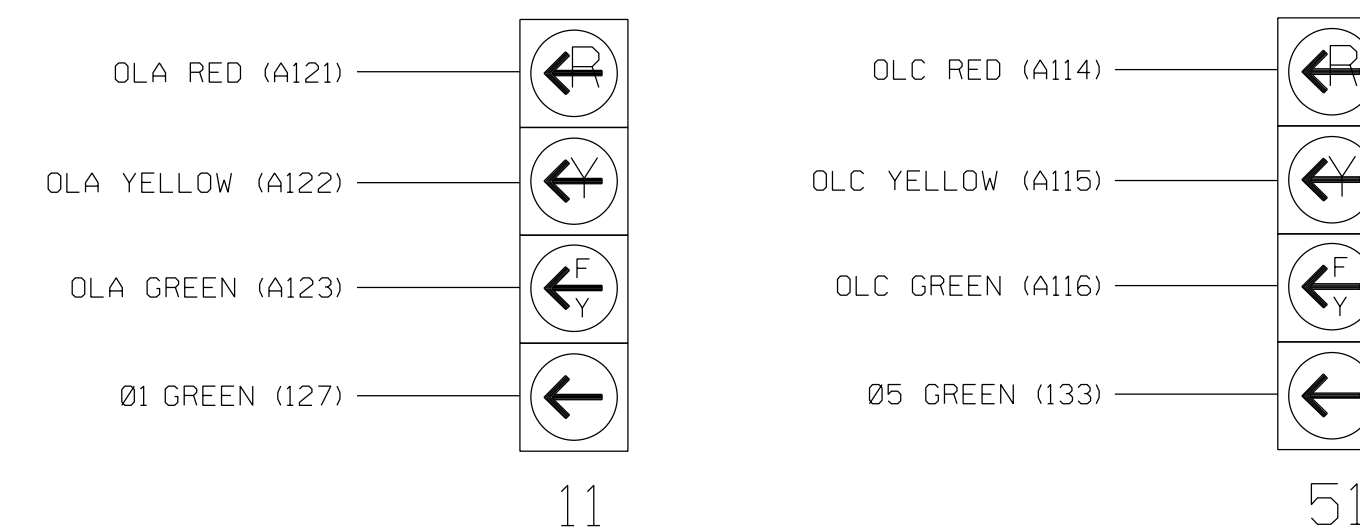


COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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.

FYA PPLT SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2128
 DESIGNED: December 2017
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	SR 1306 (S. Mebane Street) at 85 Plaza/Saintsbury Drive		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER SEAL 023489 DATE 6/9/2018
	Division 7 PLAN DATE: December 2017 PREPARED BY: NA Ptak	Alamance County Burlington REVIEWED BY: AM Encarnacion REVIEWED BY: PL Alexander	

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

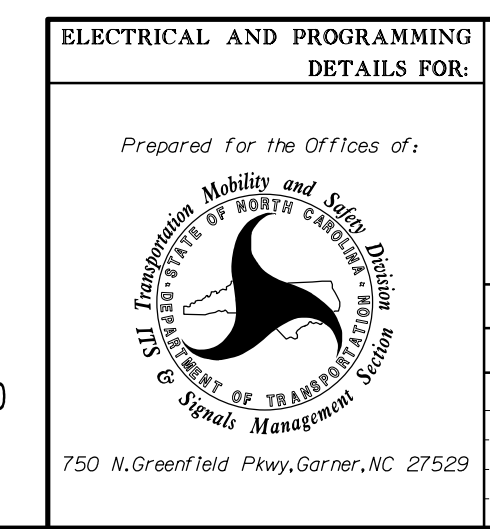
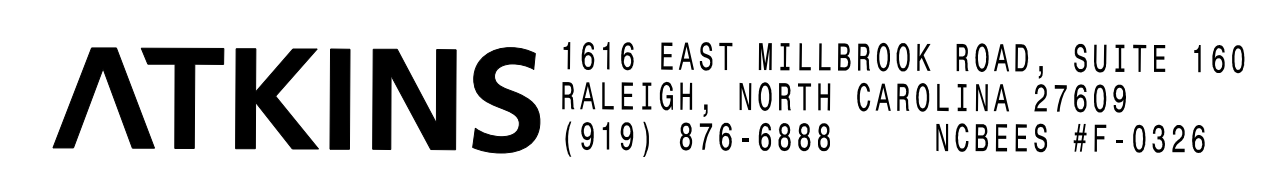
FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2128
DESIGNED: December 2017
SEALED: 6/7/2018
REVISED: N/A

09-JUN-2018 14:16
 D:\Consolidation\Projects\00056469 U-6015 B-G S19 SysTask 05_11_Signal\Des\gn\wlr\Inq07-2128.dgn
 ALEX3361 AT LUS240649

Electrical Detail - Sheet 2 of 2



ELECTRICAL AND PROGRAMMING DETAILS FOR:	
SR 1306 (S. Mebane Street) at 85 Plaza/Saintsbury Drive	
Division 7	Alamance County Burlington
PLAN DATE: December 2017	REVIEWED BY: AM Encarnacion
PREPARED BY: NA Ptak	REVIEWED BY: PL Alexander
REVISIONS	INIT. DATE

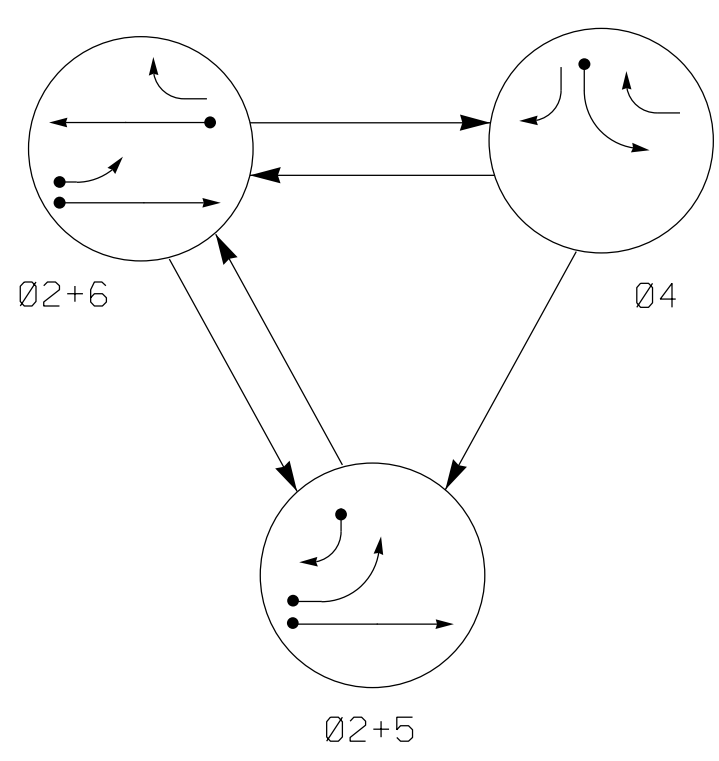
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
023489
ENGINEER
PAMELA L. ALEXANDER

6/9/2018

SIG. INVENTORY NO. 07-2128

PHASING DIAGRAM



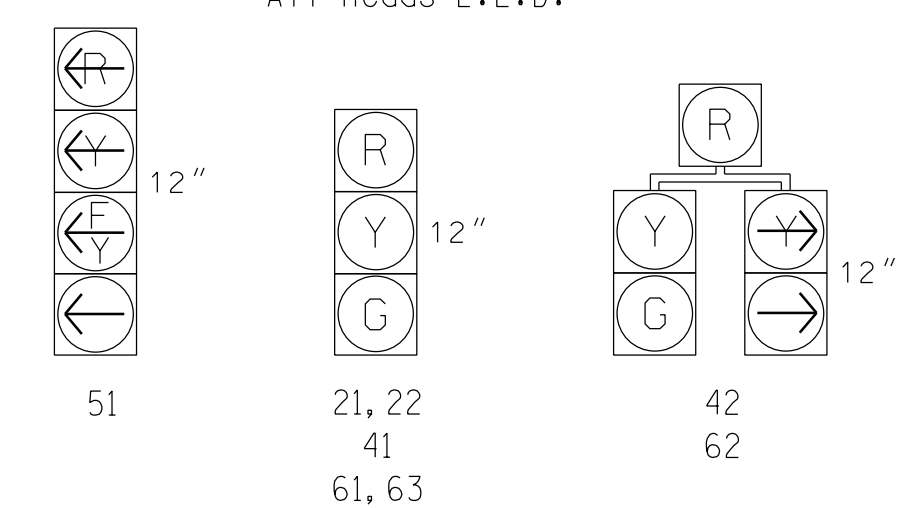
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE			
	Ø 2 + 5	Ø 2 + 6	Ø 4	HOV 3
21, 22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	←	←	←	←
61, 63	R	G	R	Y
62	R	G	←	Y

SIGNAL FACE I.D.

All Heads L.E.D.

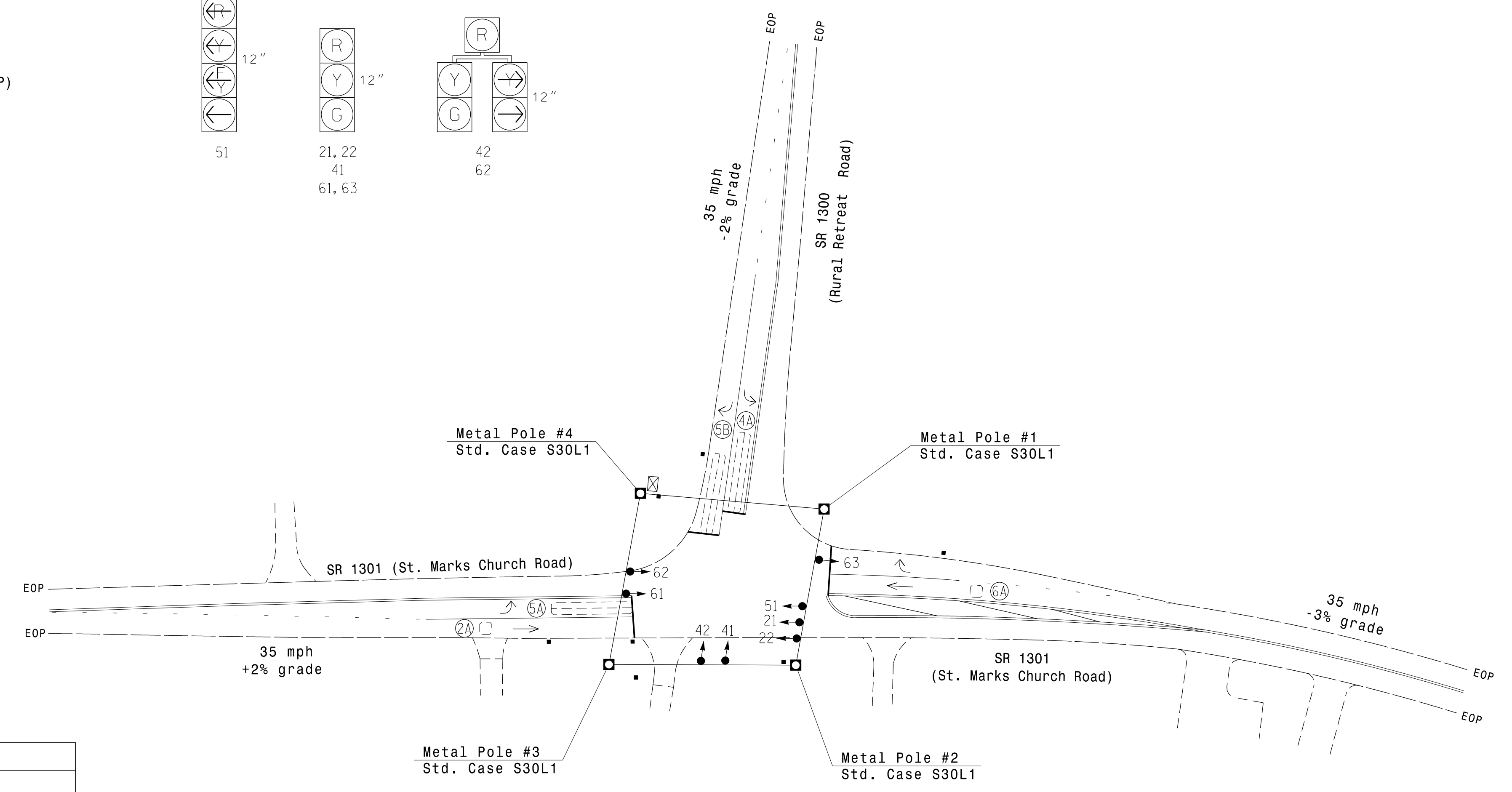


LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6X6	70	EXIST	-	2	Yes	-	-	-	S	-	X
4A	6X40	0	2-4-2	-	4	Yes	-	3	-	S	-	X
5A	6X40	0	2-4-2	-	5	Yes	-	15	-	S	-	X
5B	6X40	0	2-4-2	-	5	Yes	-	15	-	S	-	X
6A	6X6	70	EXIST	-	6	Yes	-	-	-	S	-	X

3 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



FEATURE	PHASE			
	2	4	5	6
Min Green *	10	7	7	10
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	3.0	2.0	2.0	3.0
Max 1 *	50	30	20	50
Yellow	4.1	3.0	3.0	4.1
Red Clear	1.7	2.1	2.4	1.7
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	x	-	-	x
Recall Position	VEH. RECALL	-	-	VEH. RECALL
Dual Entry	-	-	-	-
Simultaneous Gap	x	x	x	x

* 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	EXISTING
○→ Traffic Signal Head	●→ N/A
○→ Modified Signal Head	○→ N/A
○→ Sign	○→ N/A
○→ Pedestrian Signal Head	○→ N/A
○→ Signal Pole with Guy	○→ N/A
○→ Signal Pole with Sidewalk Guy	○→ N/A
○→ Metal Strain Pole	○→ 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

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

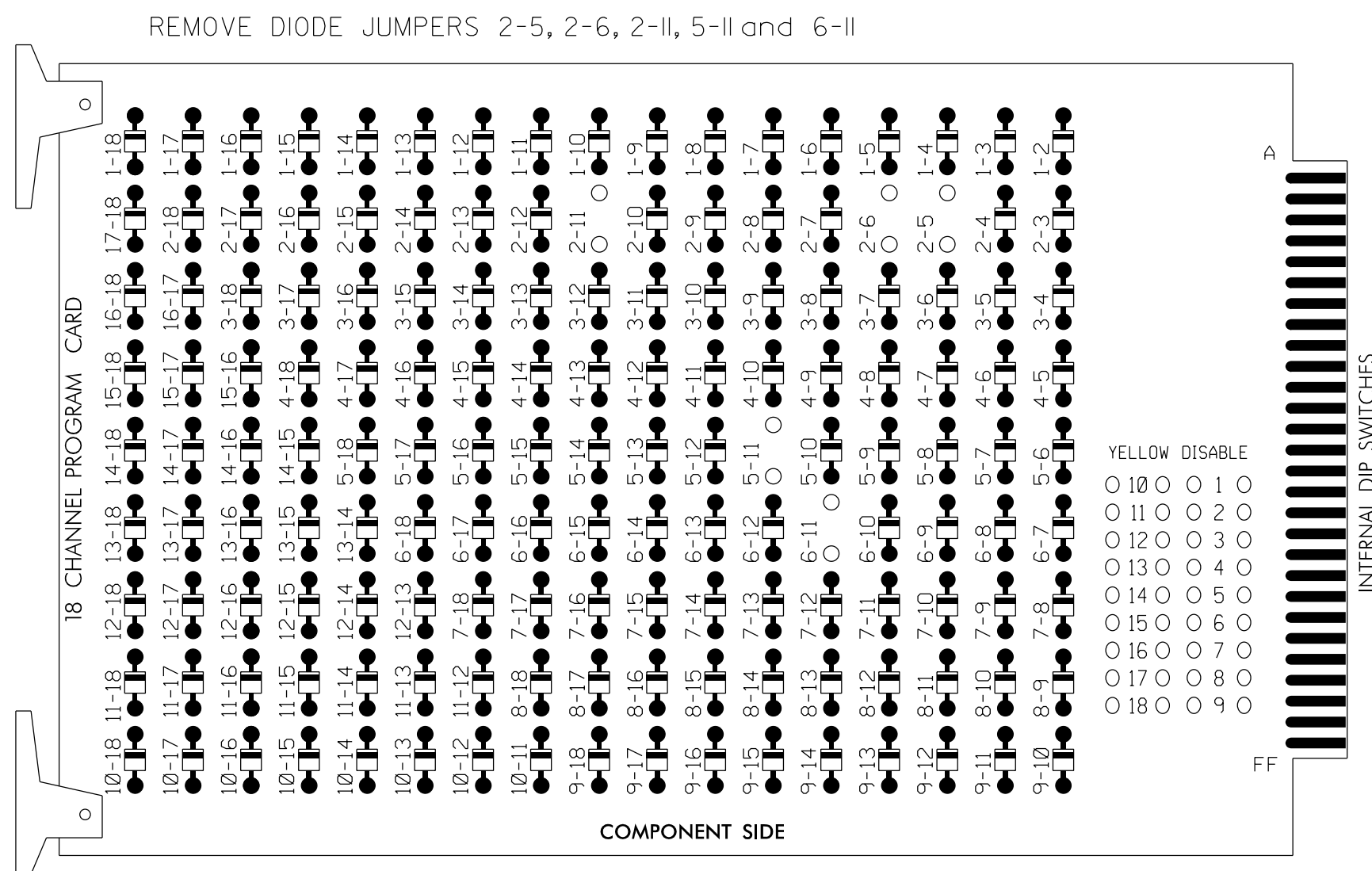
	SR 1301 (St. Marks Church Road) at SR 1300 (Rural Retreat Road)		
	Division 7 Alamance County Burlington	PREPARED BY: JA Wiles REVIEWED BY: PL Alexander	
SCALE: 1"=40'	REVISIONS:	INIT. DATE	DATE: 6/7/2018

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBES #F-0326

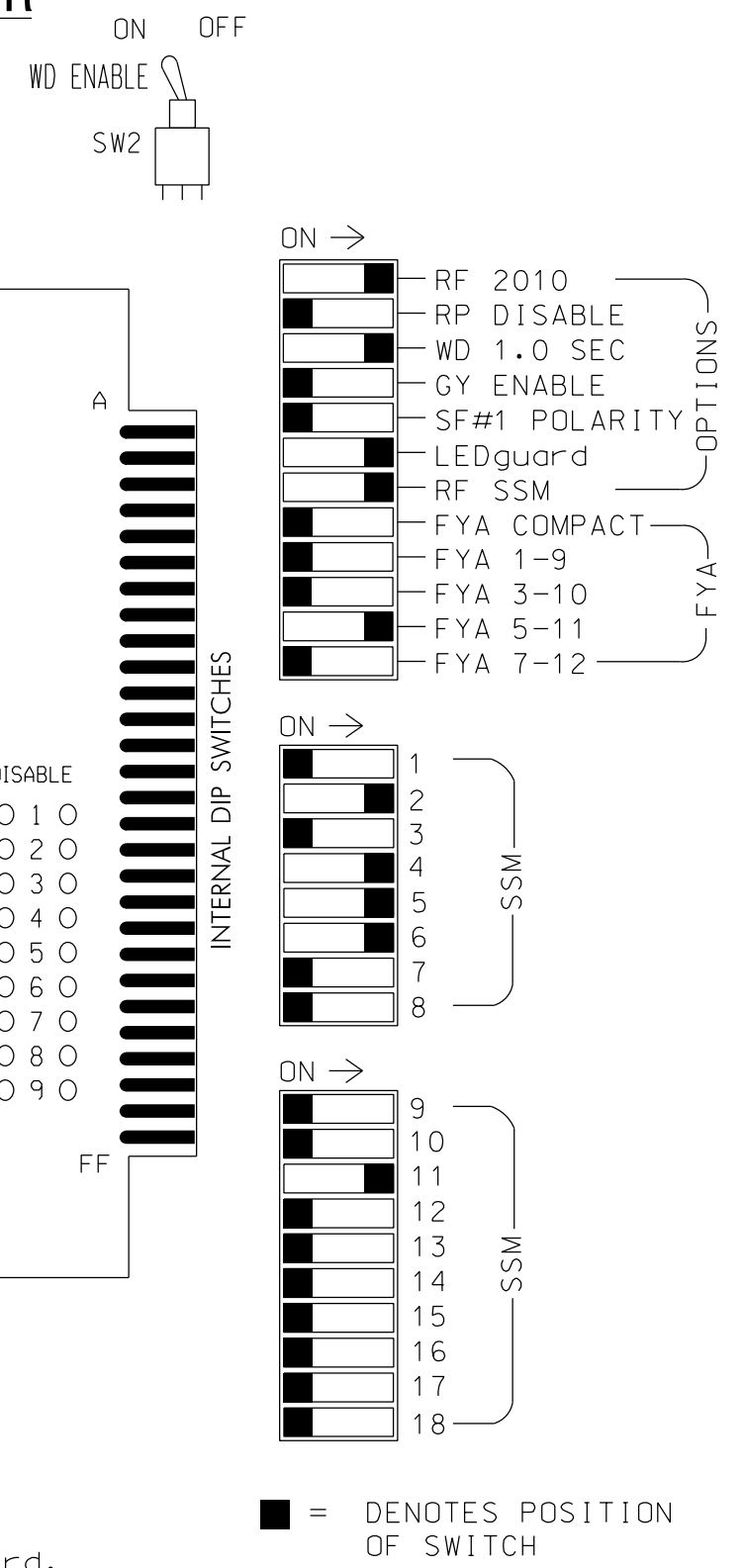
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 41 L034049

EDI MODEL 2018ECLIP-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. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 3. Ensure that Red Enable is active at all times during normal operation.
 4. Integrate monitor with Ethernet network in cabinet.



NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 2 Green and 6 Green.
3. The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S8,AUX S4
 PHASES USED.....2,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

PROJECT REFERENCE NO.	SHEET NO.
U-6015	Sig.164.1

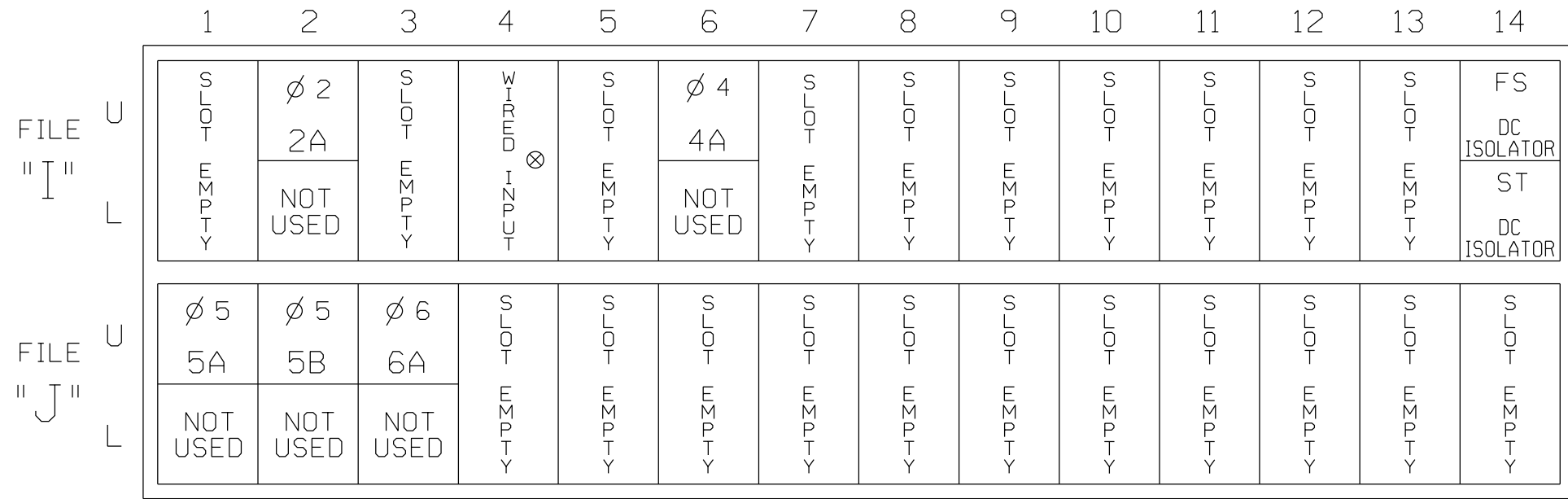
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	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.	NU	21,22	NU	NU	41,42	62	NU	42	51	61,62,63	NU	NU	NU	NU	NU	51	NU	NU
RED		128			101			*		134								
YELLOW		129			102					135								
GREEN		130			103					136								
RED ARROW																		A114
YELLOW ARROW					102		132											A115
FLASHING YELLOW ARROW																		A116
GREEN ARROW					103		133	133										

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

INPUT FILE POSITION LAYOUT

(front view)

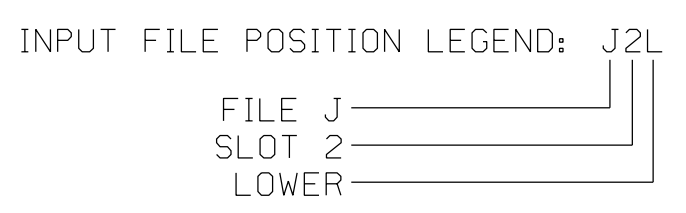


EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

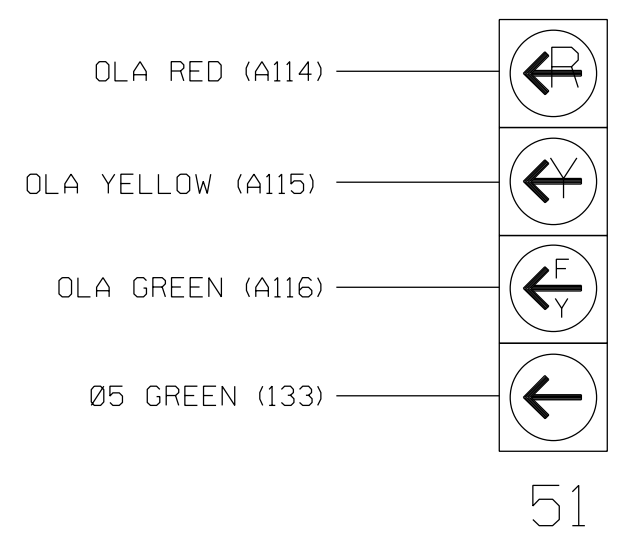
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES		3		S
5A ¹	TB3-1,2	J1U	55	5	5	YES		15		S
5B	TB3-5,6	J2U	40	6	5	YES		15		S
6A	TB3-9,10	J3U	64	36	6	YES				S

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



FYA SIGNAL WIRING DETAIL

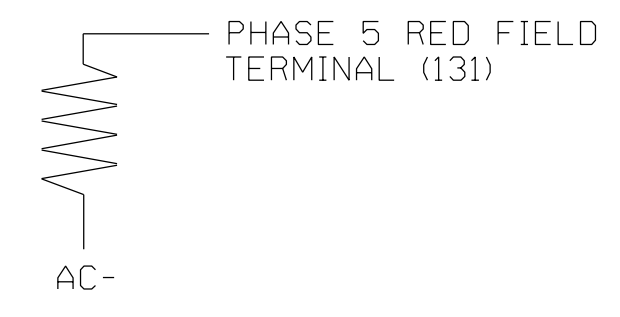
(wire signal head as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	SR 1301 (St. Marks Church Road) at SR 1300 (Rural Retreat Road)		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER SEAL 023489 6/9/2018 DATE SIG. INVENTORY NO. 07-2203
	Division 7 Alamance County Burlington	PLAN DATE: December 2017 PREPARED BY: JA Wiles	
REVISIONS INIT. DATE			DATE

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEES #F-0326

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS
Toggle Twice

```

OVERLAP C
Select TMG VEH OVLP [C] and 'PPLT FYA'
TMG VEH OVLP...[C] TYPE: .....PPLT FYA
PROTECTED PHASE (LEFT TURN)..... 5
PERMISSIVE PHASE (OPPOSING TURN)... 6
FLASHING ARROW OUTPUT.....CH11 ISOLATE

DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

```

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-2203
 DESIGNED: December 2017
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail - Sheet 2 of 2

<p style="font-size: small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared for the Offices of:</p> <p style="font-size: x-small;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>SR 1301 (St. Marks Church Road) at SR 1300 (Rural Retreat Road)</p> <p>Division 7 Alamance County Burlington</p> <p>PLAN DATE: December 2017 REVIEWED BY: AM Encarnacion</p> <p>PREPARED BY: JA Wiles REVIEWED BY: PL Alexander</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="font-size: x-small;">REVISIONS</th> <th style="font-size: x-small;">INIT.</th> <th style="font-size: x-small;">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 style="font-size: x-small; text-align: center;">DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <div style="text-align: center;"> </div> <p style="font-size: x-small;">Seal of Pamela L. Alexander, Engineer, State of North Carolina, License No. 023489</p> <p style="font-size: x-small;">Signature: <i>Pamela Alexander</i> DATE: 6/9/2018</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-2203</p>
REVISIONS	INIT.	DATE												

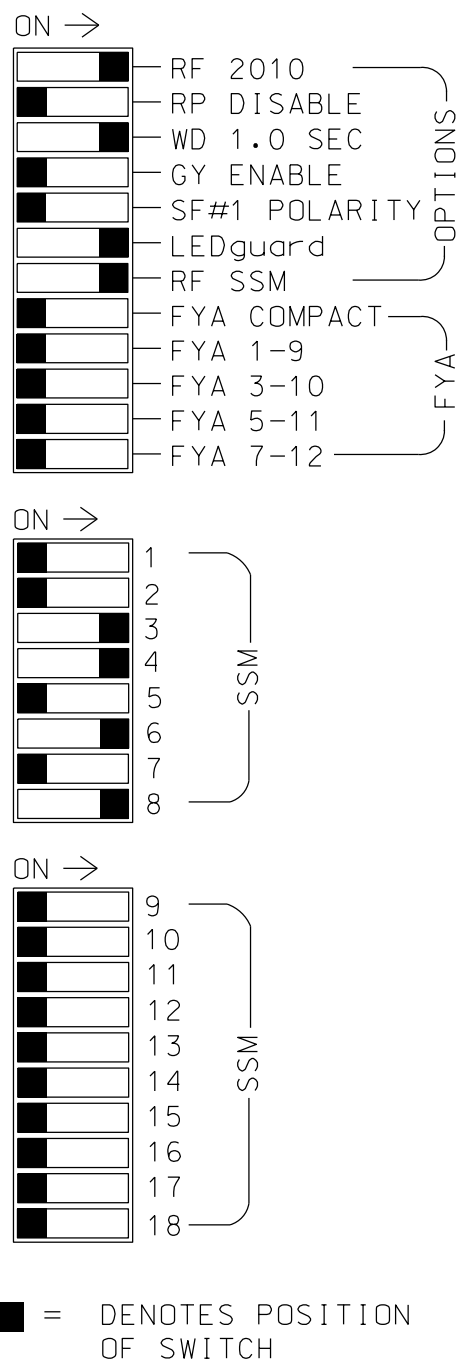
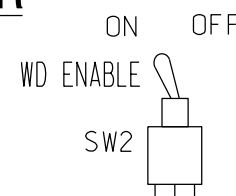
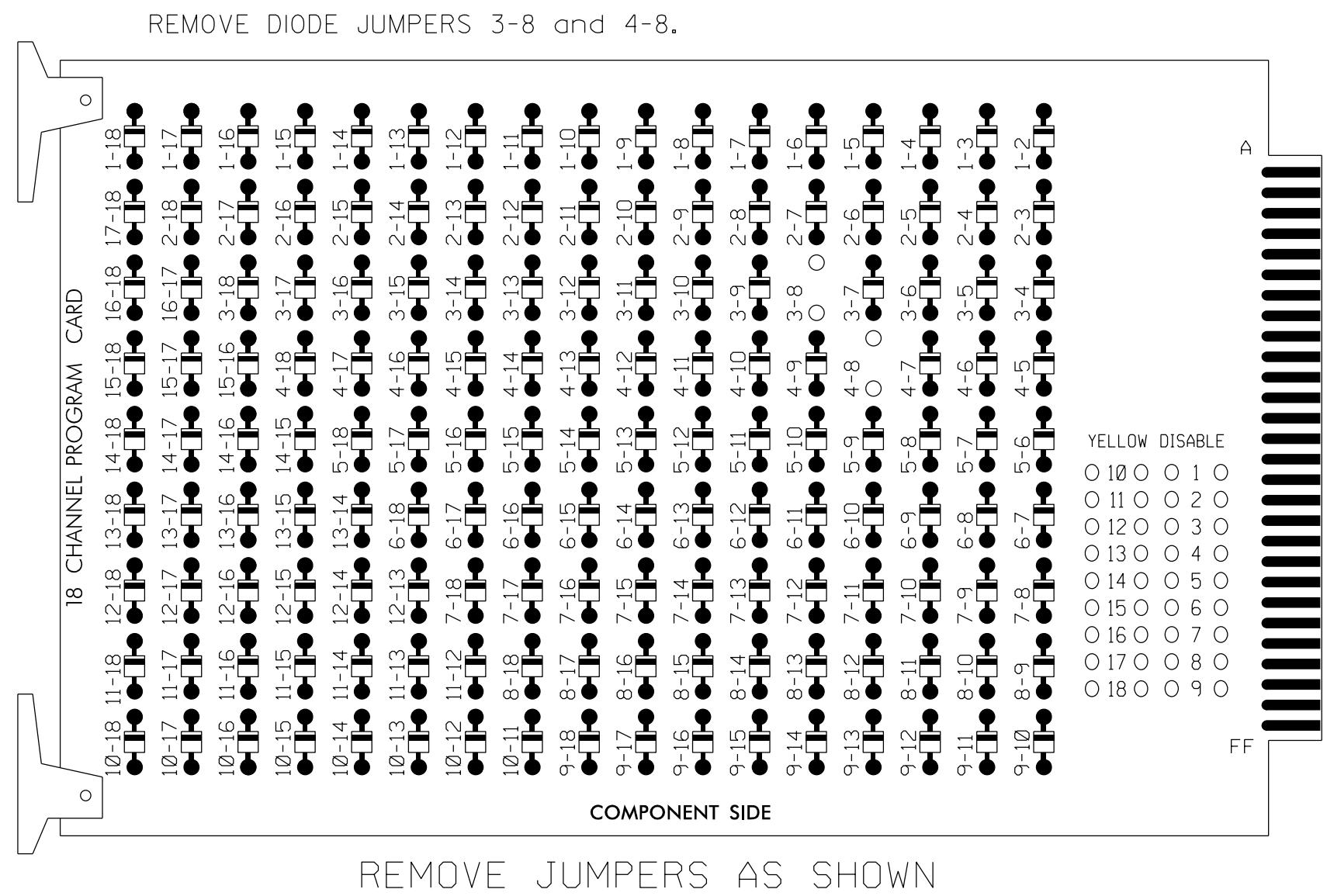
ATKINS

1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEES #F-0326

09-JUN-2018 14:16
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 ALX381 AT_LUS48649

EDI MODEL 2018ECLip-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. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 6 Green.
4. The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S4,S5,S8,S11
 PHASES USED.....3*,4,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

* PHASE USED DURING BACKUP PREEMPT ONLY.

SIGNAL HEAD HOOK-UP CHART

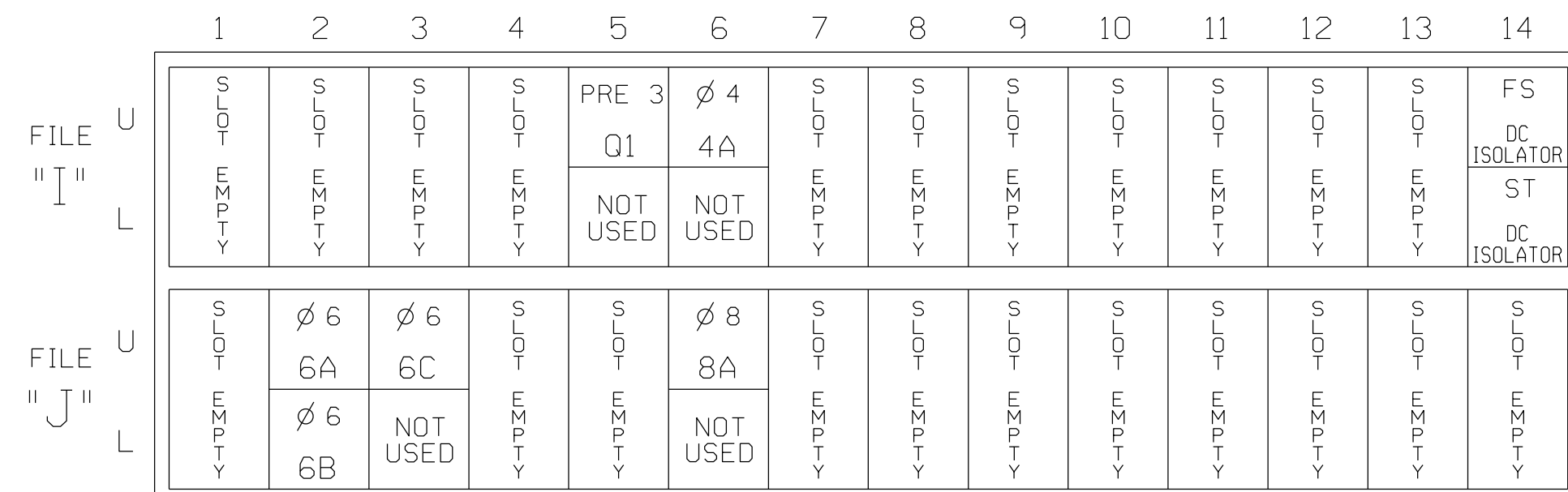
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	NU	NU	81	41,42	NU	NU	61,62,63	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED				*	101			134			107							
YELLOW					102			135			108							
GREEN					103			136			109							
RED ARROW																		
YELLOW ARROW					117													
GREEN ARROW					118													

NU = Not Used

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

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.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
** 01	TB4-5,6	I5U	58	3	PRE 3	NO				N
4A	TB4-9,10	I6U	41	4	4	YES		10		S
6A	TB3-5,6	J2U	40	6	6	YES			X	S
6B	TB3-7,8	J2L	44	16	6	YES			X	S
6C	TB3-9,10	J3U	64	6	6	YES			X	S
8A	TB5-9,10	J6U	42	8	8	YES		3		S

** Queue backup detector, see programming on sheet 2.

INPUT FILE POSITION LEGEND: J2L



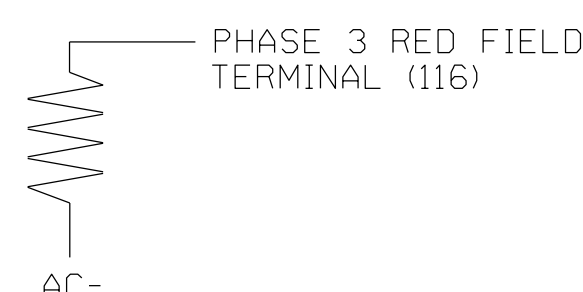
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2204
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED:

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

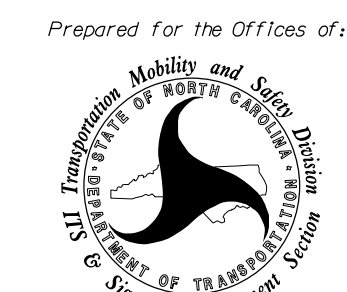
ACCEPTABLE VALUES

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



Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

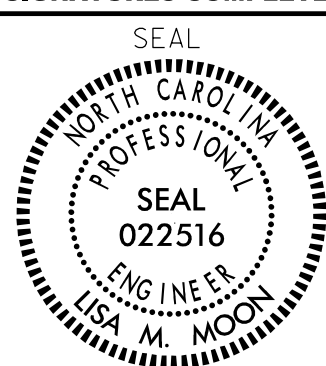


US 70 (N. Fisher Street) at Fulton Street

Division 7 Alamance County Burlington
 PLAN DATE: November 2017 REVIEWED BY: AJ Davis
 PREPARED BY: RD Lawton REVIEWED BY: LM Moon

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSigned by: Lisa M. Moon 6/13/2018
 DATE: 6/13/2018
 SIG. INVENTORY NO. 07-2204

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL FOR BACKUP PREEMPT AND PREEMPT ONLY PHASE OMIT

(program controller as shown)

ECONOLITE ASC/3-2070 BACKUP PREEMPT PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMPTOR/TSP
- From PREEMTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

```

PREEMPT PLAN [ 3 ]   ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . . X . . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . . . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YESIPMT OVRIDE. IINTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL NOITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT....0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 255I 255I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 10I 0.0I 35I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
    
```

PHASES	1	2	3	4	5	6	7	8
PR RTN%	0	0	0	0	0	0	0	0
PHASES	9	10	11	12	13	14	15	16
PR RTN%	0	0	0	0	0	0	0	0

- From Main Menu select 1. CONFIGURATION
- From CONFIGURATION Submenu select 8. LOGIC PROCESSOR
- From LOGIC PROCESSOR Submenu select 2. LOGIC STATEMENTS

ENTER A "1" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```

LP#: 1 COPY FROM: 1 ACTIVE: M (T/F)
IF DET 3 IS ON
THEN LP DELAY FOR 5.0 SECONDS
PMT CALL PMT SEQ 3 ON
ELSE
    
```

ENTER A "2" IN THE LP# FIELD, PRESS 'ENTER', AND PROGRAM AS SHOWN.

```

LP#: 2 COPY FROM: 2 ACTIVE: M (T/F)
IF PMT PREEMPT ACTIVE 3 IS OFF
THEN CTR OMIT PHASE 3 ON
ELSE
    
```

LOGIC FOR OMITTING PHASE 3 AT STARTUP AND/OR WHEN NOT IN PREEMPT

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2204
DESIGNED: NOVEMBER 2017
SEALED: 06-13-2018
REVISED:

- From LOGIC PROCESSOR Submenu select 1. LOGIC STATEMENT CONTROL

ENABLE LOGIC PROCESSOR STATEMENTS 1 AND 2 BY POSITIONING THE CURSOR OVER THE FIELDS SHOWN BELOW AND USING THE TOGGLE KEY TO ENABLE THEM.

```

LOGIC STATEMENT CONTROL
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
LP 1-15 E E . . . . .
LP 16-30 . . . . .
LP 31-45 . . . . .
LP 46-60 . . . . .
LP 61-75 . . . . .
LP 76-90 . . . . .
    
```

END PROGRAMMING

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 4. PREEMTOR/TSP
- From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED...BY PASSED..
2 ...BYPASSED...BY PASSED..
3 ..PREEMPT 3...BY PASSED..
4 ..PREEMPT 4...BY PASSED..
5 ..PREEMPT 5...BY PASSED..
6 ..PREEMPT 6...BY PASSED..
7 ...BY PASSED...BY PASSED..
8 ...BY PASSED...BY PASSED..
9 ...BY PASSED...BY PASSED..
10 ...BY PASSED...BY PASSED..
    
```

Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Plans Prepared By:

DRMP, Inc.
8000 Regency Parkway, Suite 175
Cary, NC 27519
NC License No. C-2213 (919) 650-1038

US 70 (N. Fisher Street)
at
Fulton Street

Division 7 Alamance County Burlington

PLAN DATE: November 2017	REVIEWED BY: AJ Davis
PREPARED BY: RD Lawton	REVIEWED BY: LM Moon

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED


SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
LISA M. MOON

DocuSigned by:
Lisa M. Moon 6/13/2018
SIC-ESMBD300421 DATE
SIC. INVENTORY NO. 07-2204

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18-JUN-2018 15:12
 work in progress
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 P183636 AT US40718

Signal Upgrade

 Prepared for the Offices of: TRANSPORTATION MOBILITY AND SAFETY DIVISION DEPARTMENT OF TRANSPORTATION STATE OF NORTH CAROLINA Signal Design Section 750 N. Greenfield Pkwy, Garner, NC 27529	SR 1158 (Huffman Mill Road)	
	at Alamance Regional Medical Center Entrance (Future)	
	Division 7	Alamance County Burlington
	PLAN DATE: June 2018	REVIEWED BY: MBT
PREPARED BY: NAP	REVIEWED BY: AME	
SCALE	REVISIONS	INIT. DATE
NTS		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL
SIGNATURE _____ DATE _____
SIG. INVENTORY NO. 07-XXXX

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEE #F-0326

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18-JUN-2018 15:12
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 P183836 AT US40718

Signal Upgrade



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1213 (Grand Oaks Blvd)
 at
 Alamance Regional Medical Center
 Entrance (Future)
 Division 7 Alamance County Burlington

PLAN DATE:	June 2018	REVIEWED BY:	MBT
PREPARED BY:	NAP	REVIEWED BY:	AME
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL	
SIGNATURE	DATE
SIG. INVENTORY NO.	07-XXXX


ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEE #F-0326

SCALE
NTS

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18-JUN-2018 15:12
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 P183636 AT US40718

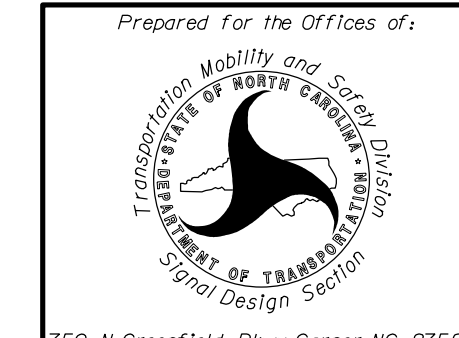
ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEE #F-0326

Signal Upgrade		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
 <small>Prepared for the Offices of: TRANSPORTATION MOBILITY AND SAFETY DIVISION DEPARTMENT OF TRANSPORTATION STATE OF NORTH CAROLINA Signal Design Section</small> <small>750 N. Greenfield Pkwy, Garner, NC 27529</small>	US 70 (S. Church Street/ Burlington Road) at Ashley Woods Drive		SEAL	
	Division 7 Alamance County Burlington			
	PLAN DATE: June 2018	REVIEWED BY: MBT		
	PREPARED BY: NAP	REVIEWED BY: AME		
	SCALE	INIT.	DATE	
	NTS			
		SIGNATURE	DATE	
		SIG. INVENTORY NO.	07-XXXX	

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 P183636 AT US40718

Signal Upgrade



750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE
 NTS

NC 87-100 (W. Webb Avenue) at SR 1515 (Flora Avenue)	
Division 7	Alamance County Burlington
PLAN DATE: June 2018	REVIEWED BY: MBT
PREPARED BY: NAP	REVIEWED BY: AME
REVISIONS	INIT. DATE

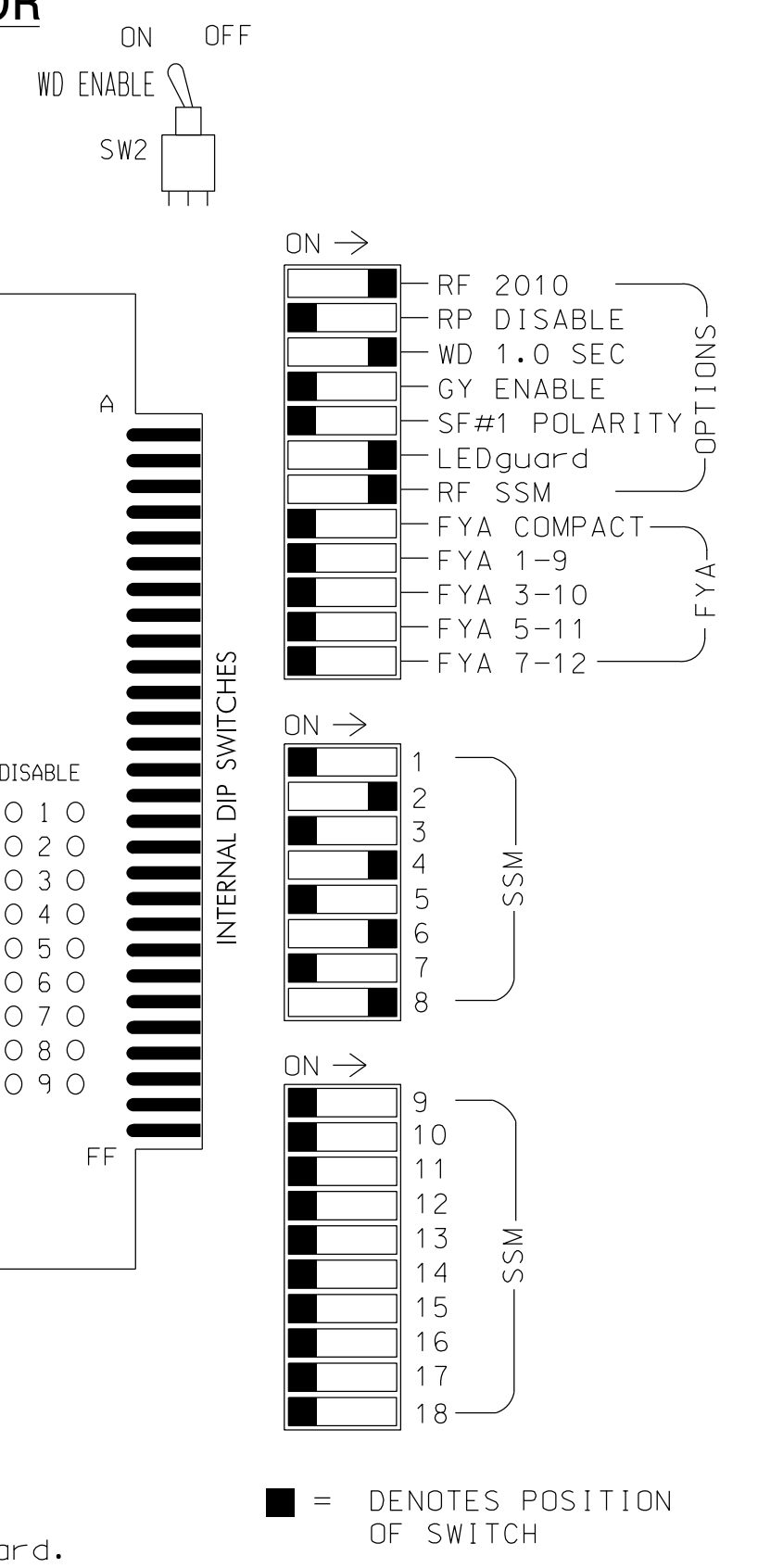
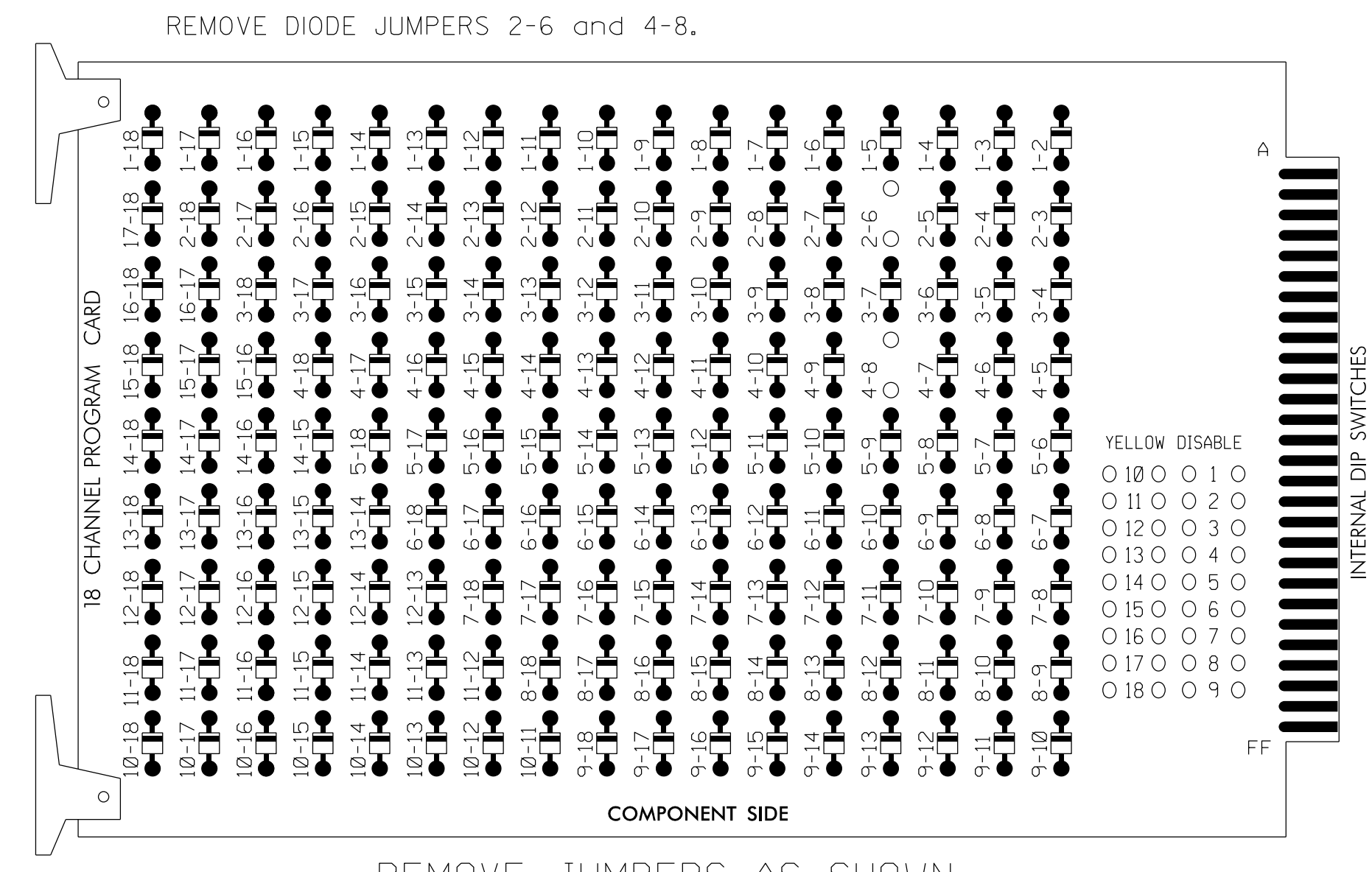
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL	
SIGNATURE	DATE
SIG. INVENTORY NO. 07-XXXX	

ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160
 RALEIGH, NORTH CAROLINA 27609
 (919) 876-6888 NCBEEES #F-0326

EDI MODEL 2018ECLip-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. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green and 6 Green.
4. The cabinet and controller are part of the Burlington-Graham Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
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												

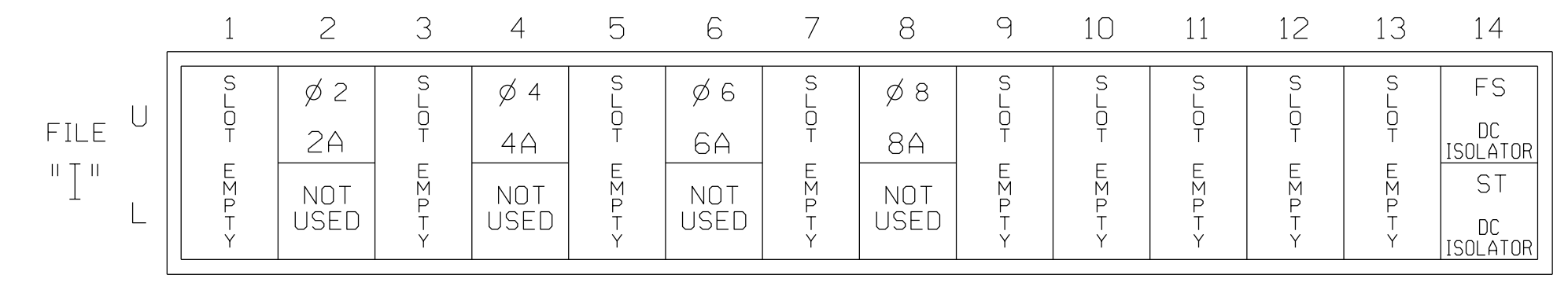
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)



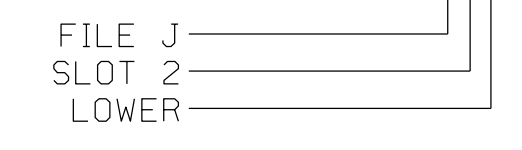
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB21-3,4	12U	39	2	2	YES				S
4A	TB21-7,8	14U	41	4	4	YES		10		S
6A	TB21-11,12	16U	40	6	6	YES				S
8A	TB22-1,2	18U	42	8	8	YES		10		S

INPUT FILE POSITION LEGEND: J2L

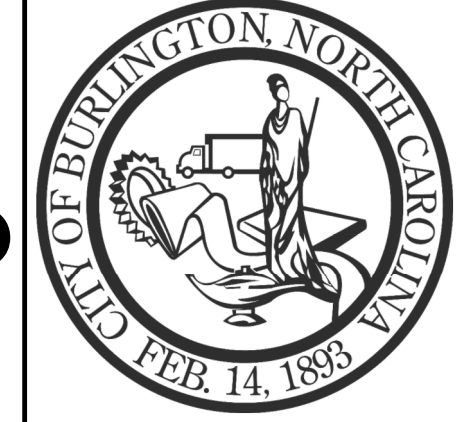


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: B0001
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2108
 REVISED: N/A

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 KANDERSON AT CHA-KANDERSON

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:



W. Davis Street
 at
 Trollinger Street/
 Fountain Place

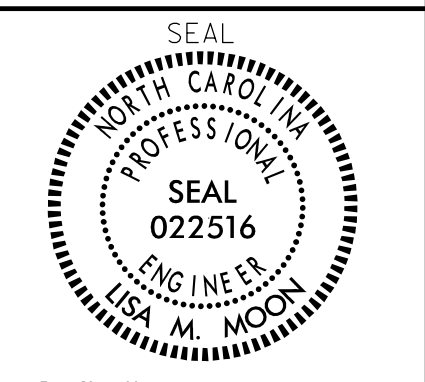
Division 7 Alamance County Burlington

PLAN DATE: November 2017 REVIEWED BY: AJ Davis

PREPARED BY: DJ White REVIEWED BY: LM Moon

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

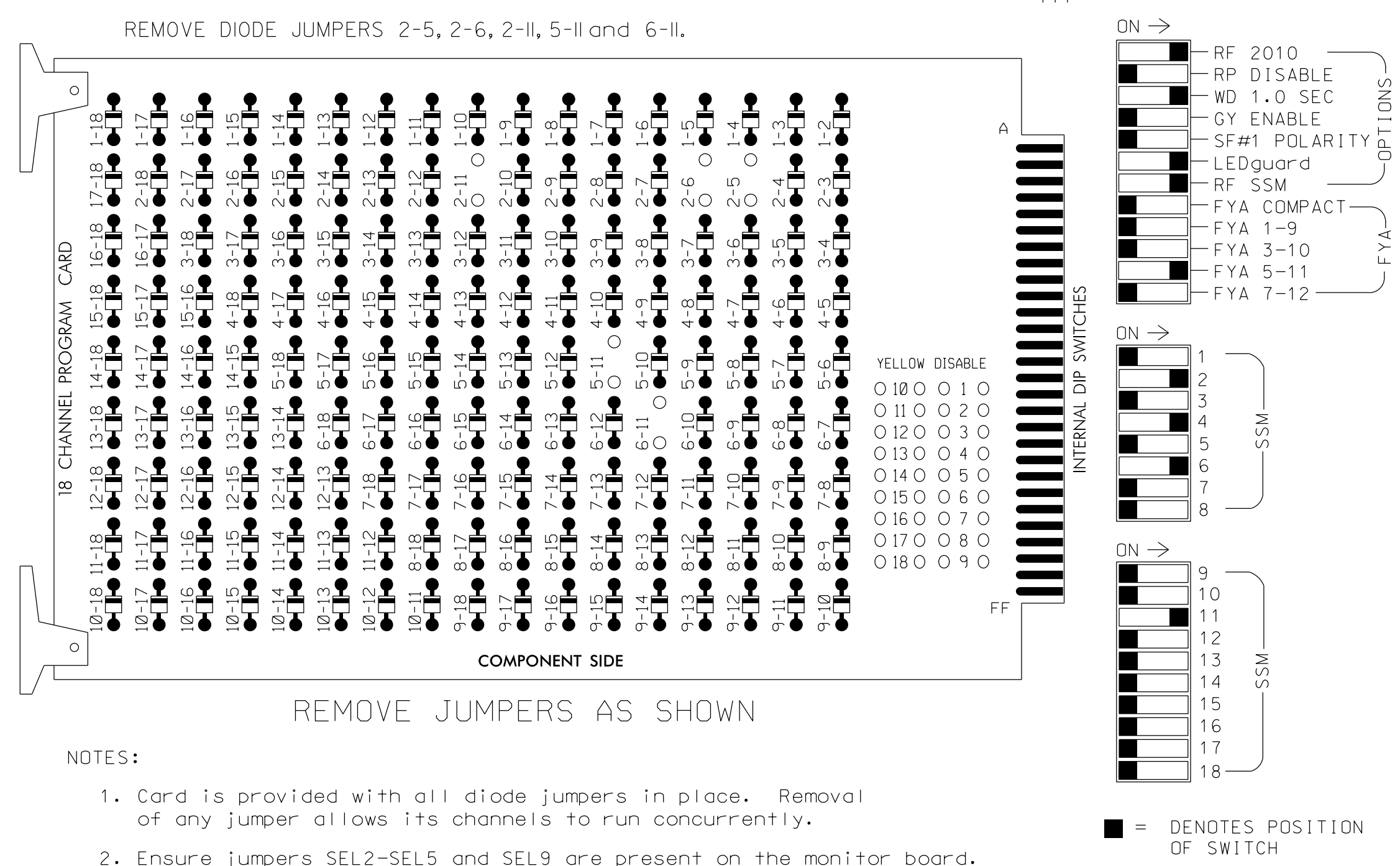


DocuSigned by:
 Lisa M. Moon
 6/13/2018
 DATE: 6/13/2018
 SIG. INVENTORY NO. B0001



EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



- NOTES:
- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
 - Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
 - Ensure that Red Enable is active at all times during normal operation.
 - Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S8,AUX S4
 PHASES USED.....2,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

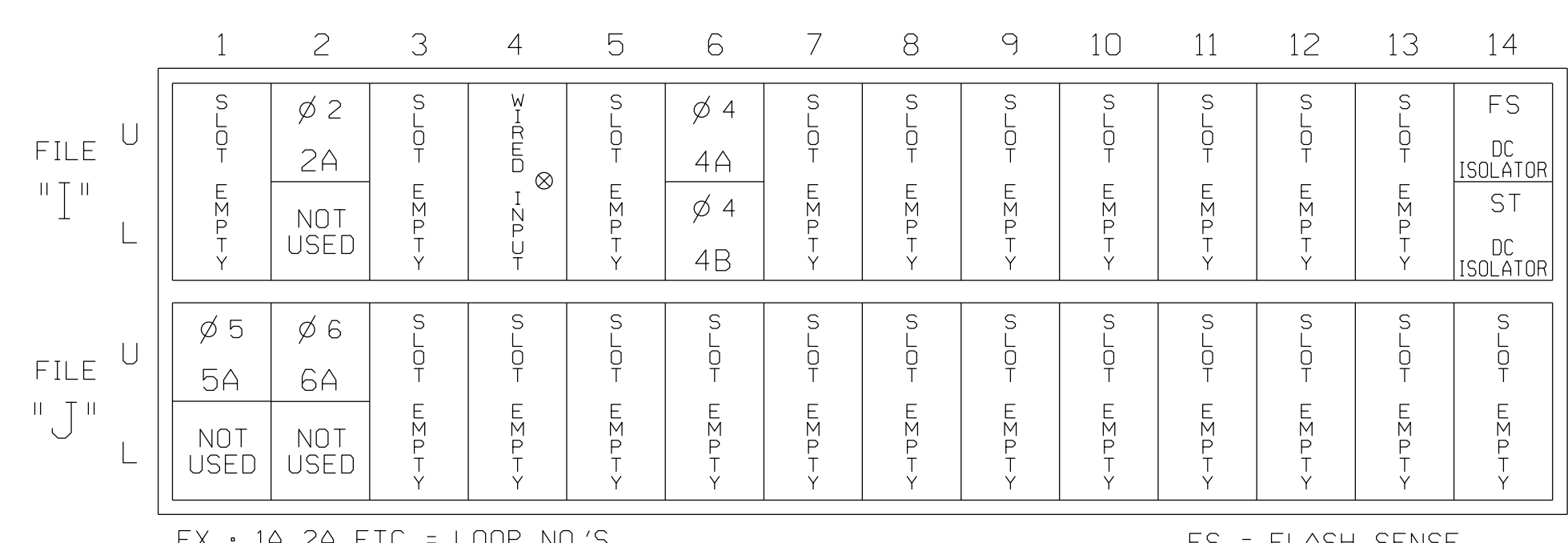
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CNU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	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.	NU	21,22	NU	NU	41,42	NU	51*	61,62	NU	NU	NU	NU	NU	NU	NU	51*	NU	NU	
RED		128			101			134											
YELLOW		129			102		*	135											
GREEN		130			103			136											
RED ARROW																		A114	
YELLOW ARROW																			A115
FLASHING YELLOW ARROW																			A116
GREEN ARROW								133											

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

INPUT FILE POSITION LAYOUT

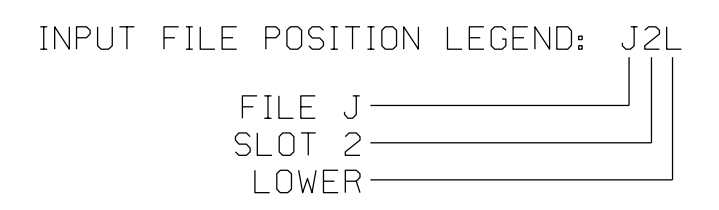
(front view)



INPUT FILE CONNECTION & PROGRAMMING CHART

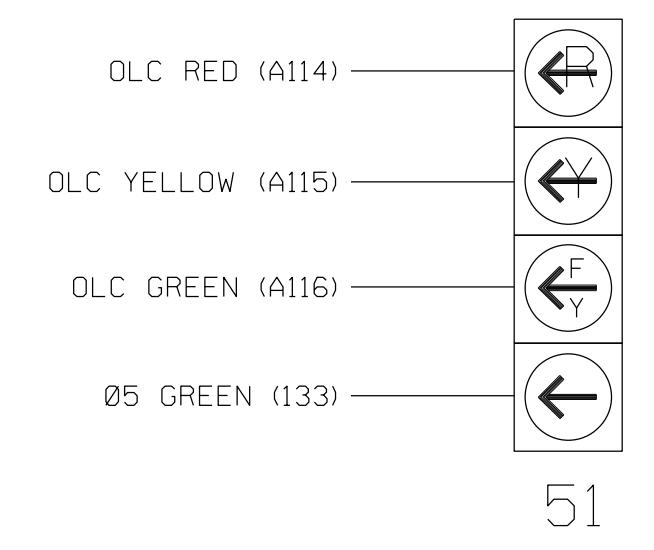
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES				S
4B	TB4-11,12	I6L	45	14	4	YES		10		S
5A ¹	TB3-1,2	J1U	55	5	5	YES		15		S
	-	I4U	47	22	2	YES				S
6A	TB3-5,6	J2U	40	6	6	YES				S

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



FYA SIGNAL WIRING DETAIL

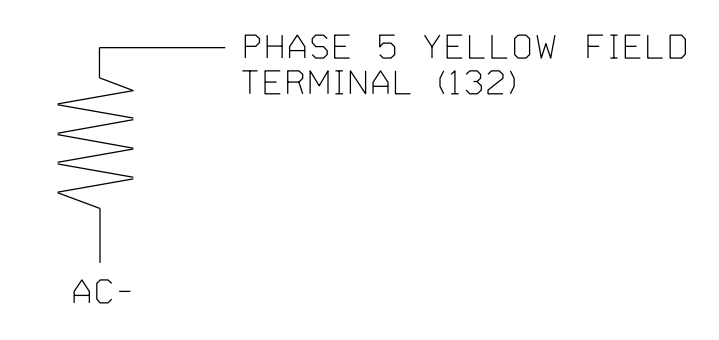
(wire signal head as shown)



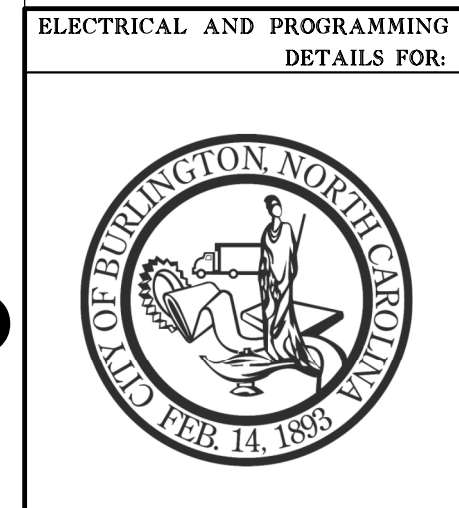
LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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

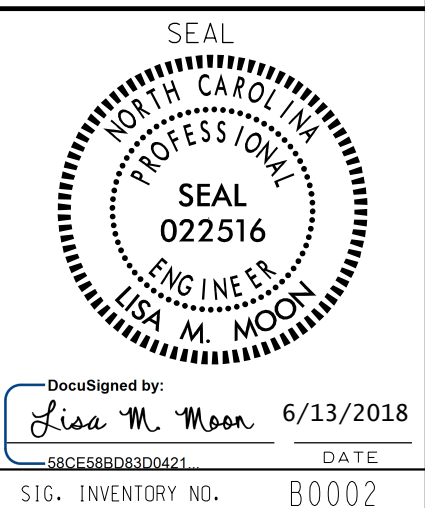


Electrical Detail - Sheet 1 of 2



W. Davis Street
 at
 Hillcrest Elementary School
 Division 7 Alamance County Burlington
 PLAN DATE: December 2017 REVIEWED BY: AJ Davis
 PREPARED BY: DJ White REVIEWED BY: LM Moon

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS
Toggle Twice

```

OVERLAP C
Select TMG VEH OVLP [C] and 'PPLT FYA'
TMG VEH OVLP...[C] TYPE: .....PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

```

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: B0002
 DESIGNED: DECEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail - Sheet 2 of 2

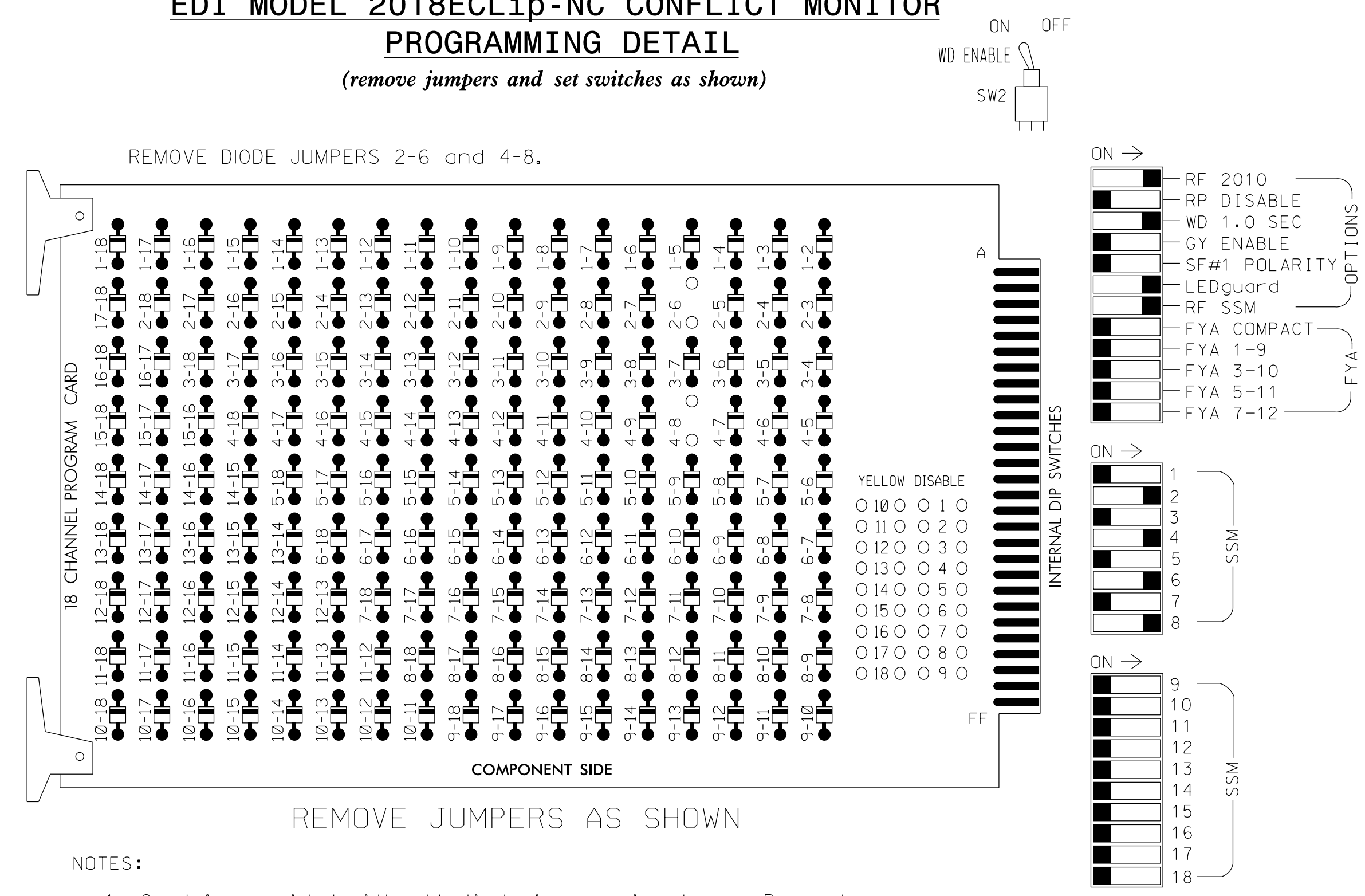
**DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED**

<p><small>ELECTRICAL AND PROGRAMMING DETAILS FOR:</small></p>	<p>W. Davis Street at Hillcrest Elementary School</p> <p>Division 7 Alamance County Burlington</p> <p>PLAN DATE: December 2017 REVIEWED BY: AJ Davis</p> <p>PREPARED BY: DJ White REVIEWED BY: LM Moon</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										
REVISIONS	INIT.	DATE												
<p><small>Plans Prepared By:</small></p> <p><small>DRMP, Inc. 8000 Regency Parkway, Suite 175 Cary, NC 27519 NC License No. C-2213 (919) 650-1038</small></p>		<p><small>DocuSigned by:</small> <i>Lisa M. Moon</i> 6/13/2018</p> <p><small>SIG. INVENTORY NO. B0002</small></p>												

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 KANDERSON AT CHA-KANDERSON

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Burlington-Graham Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	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	NU	NU	41,42	NU	51	61,62	NU	NU	81,82	NU	11	NU	NU	51	NU	NU
RED	128				101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW																		
FLASHING YELLOW ARROW																		
GREEN ARROW																		

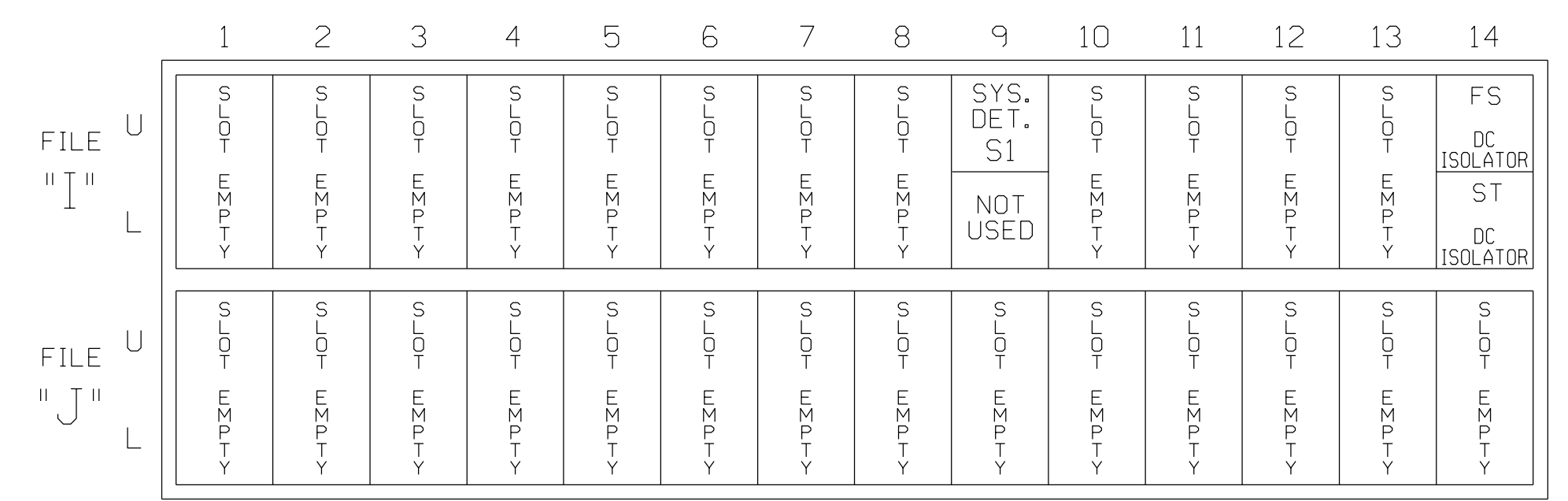
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

INPUT FILE POSITION LAYOUT

(front view)



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

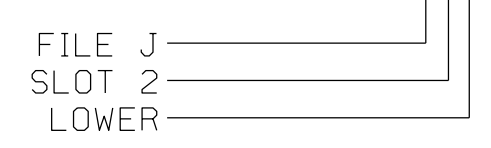
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
* S1	TB6-9,10	I9U	60	11	SYS	NO				N

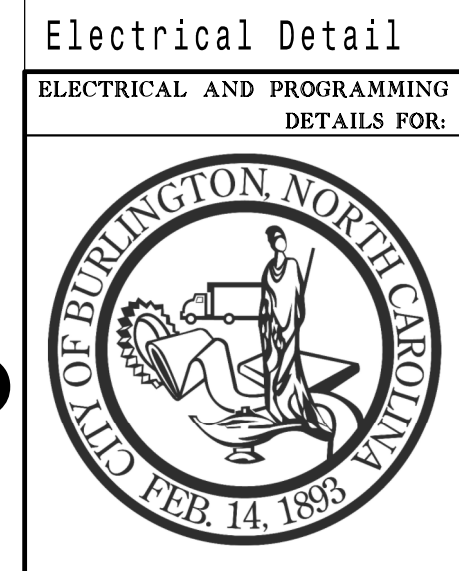
* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L

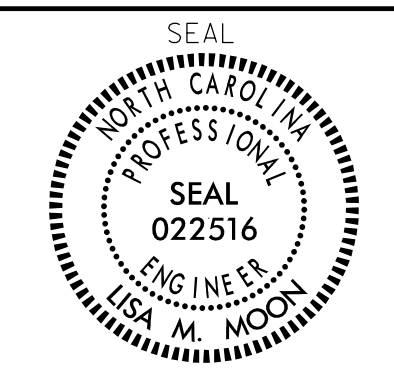


THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: B0003
 DESIGNED: DECEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

13-Jul-2018 18:01 R:\66015\17\off\c\k\gnols\design\wiring\B0003a.dgn C:\Users\AT\OneDrive\AT_CAD-R\LAWTON-W7



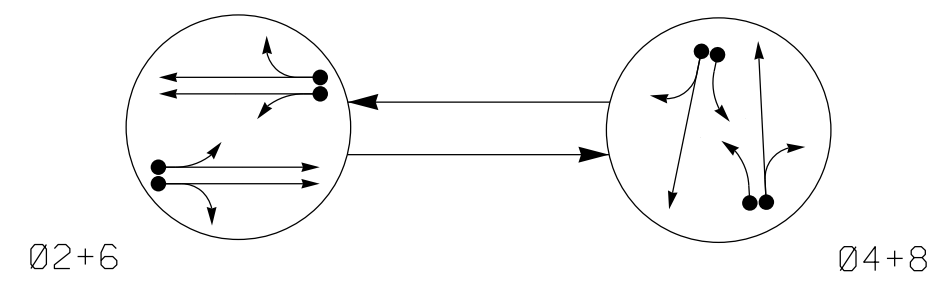
Electrical Detail
 E. Davis Street
 at
 Everett Street
 Division 7 Alamance County Burlington
 PLAN DATE: December 2017 REVIEWED BY: AJ Davis
 PREPARED BY: DJ White REVIEWED BY: LM Moon



DocuSigned by:
 Lisa M. Moon
 6/13/2018
 DATE: _____
 SIG. INVENTORY NO. B0003

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

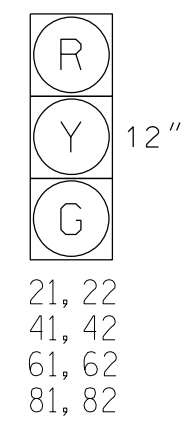
- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UNSIGNALIZED MOVEMENT
- ⚡ ← PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02+6	04+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM NEW CARD	
2A	6X20	60	EXIST	-	2	Yes	-	-	-	S	-	X
4A	6X40	+5	2-4-2	-	4	Yes	-	3	-	S	-	X
4B	6X40	+5	2-4-2	-	4	Yes	-	10	-	S	-	X
6A	6X20	60	EXIST	-	6	Yes	-	-	-	S	-	X
8A	6X40	+5	2-4-2	-	8	Yes	-	3	-	S	-	X
8B	6X40	+5	2-4-2	-	8	Yes	-	10	-	S	-	X
S1	6X6	+205	4	X	-	No	-	-	-	N	X	X
S2	6X6	+205	4	X	-	No	-	-	-	N	X	X

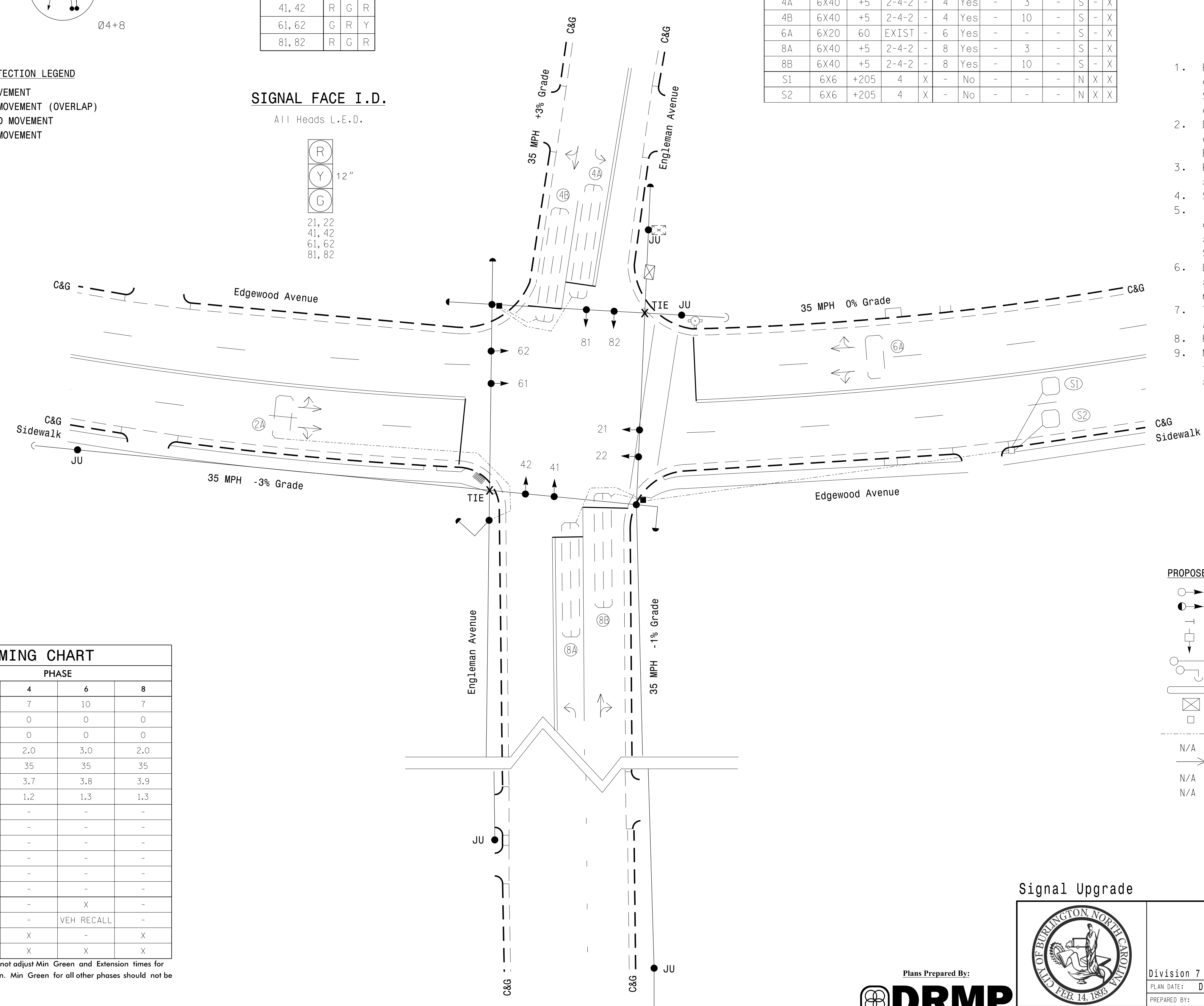
2 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Reposition existing signal heads 81 and 82 as shown on plan.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- The cabinet should be designed to include an Auxiliary Output file for future use.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

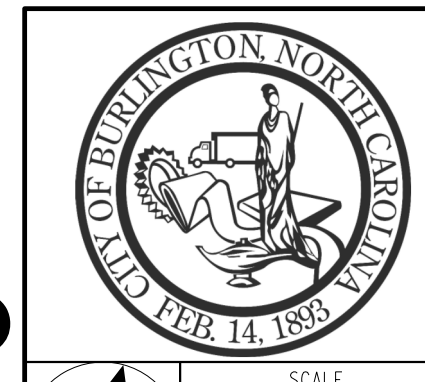
FEATURE	PHASE			
	2	4	6	8
Min Green *	10	7	10	7
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	3.0	2.0	3.0	2.0
Max 1 *	35	35	35	35
Yellow	4.1	3.7	3.8	3.9
Red Clear	1.3	1.2	1.3	1.3
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	X	-
Recall Position	VEH RECALL	-	VEH RECALL	-
Dual Entry	-	X	-	X
Simultaneous Gap	X	X	X	X

* 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.

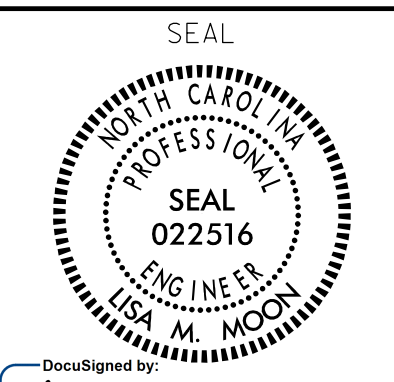


PROPOSED		EXISTING	
○ →	Traffic Signal Head	● →	N/A
○ →	Modified Signal Head	○ →	N/A
○ →	Sign	○ →	N/A
○ →	Pedestrian Signal Head With Push Button & Sign	○ →	N/A
○ →	Signal Pole with Guy	○ →	N/A
○ →	Signal Pole with Sidewalk Guy	○ →	N/A
□	Inductive Loop Detector	□	N/A
□	Controller & Cabinet	□	N/A
□	Junction Box	□	N/A
---	2-in Underground Conduit	---	N/A
N/A	Right of Way	N/A	N/A
→	Directional Arrow	→	N/A
N/A	Fire Hydrant	⊕	N/A
N/A	Truncated Domes	▒	N/A

Signal Upgrade



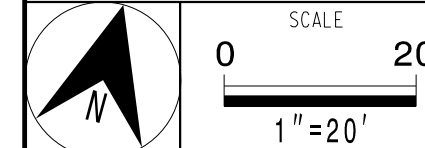
Edgewood Avenue at Engleman Avenue
 Division 7 Alamance County Burlington
 PLAN DATE: December 2017 REVIEWED BY: AJ Davis
 PREPARED BY: J Le REVIEWED BY: LM Moon



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared By:

 DRMP, Inc.
 8000 Regency Parkway, Suite 175
 Cary, NC 27519
 NC License No. C-2213 (919) 650-1038



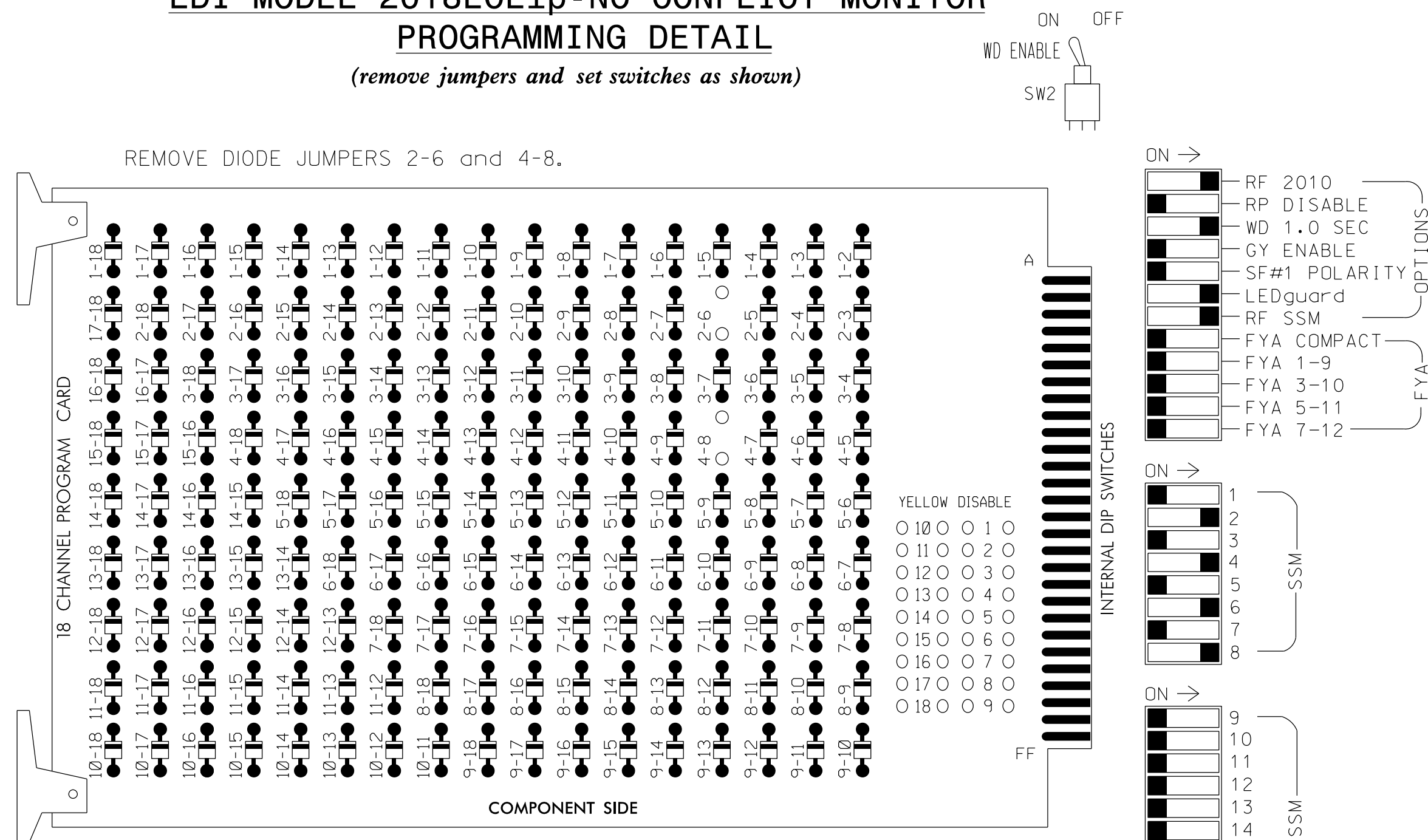
REVISIONS	INIT.	DATE

DocuSigned by:
 Lisa M. Moon 6/13/2018
 SIGNATURE DATE
 SIG. INVENTORY NO. B0004

13-JUN-2018 11:54
 R:\6015\Fr\Projects\Signal\022516\0004.dgn
 KANDERSON AT CHA-K.ANDERSON

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
- Ensure that Red Enable is active at all times during normal operation.
- Integrate monitor with Ethernet network in cabinet.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

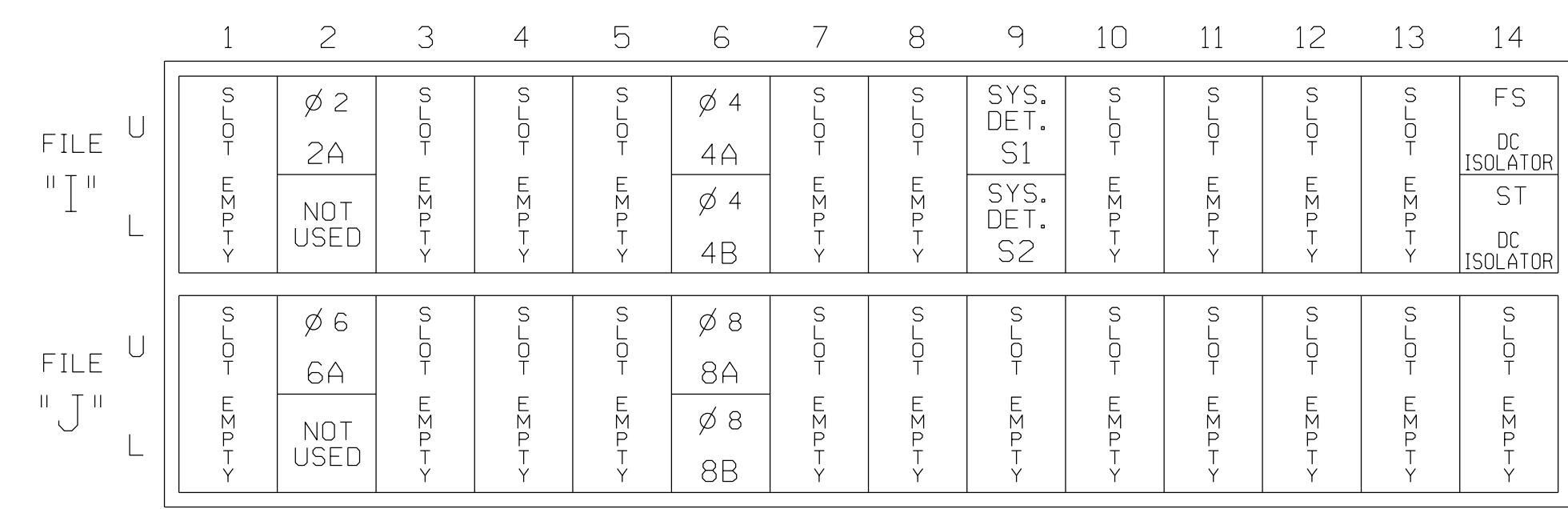
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	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.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	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

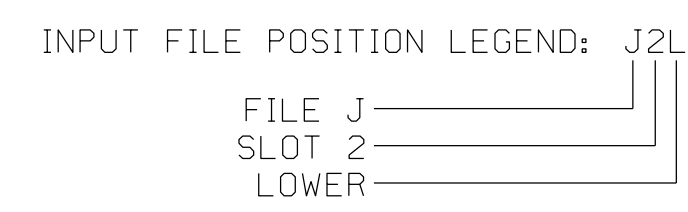
(front view)



INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES		3		S
4B	TB4-11,12	I6L	45	14	4	YES		10		S
* S1	TB6-9,10	I9U	60	11	SYS	NO				N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N
6A	TB3-5,6	J2U	40	6	6	YES				S
8A	TB5-9,10	J6U	42	8	8	YES		3		S
8B	TB5-11,12	J6L	46	18	8	YES		10		S

* System detector only. Remove any assigned vehicle phase.

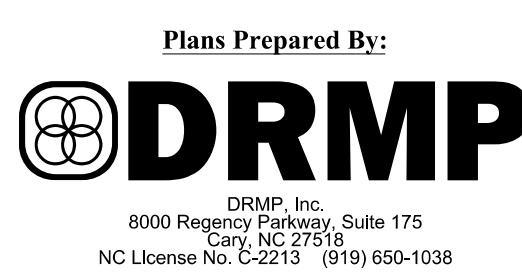


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: B0004
 DESIGNED: DECEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

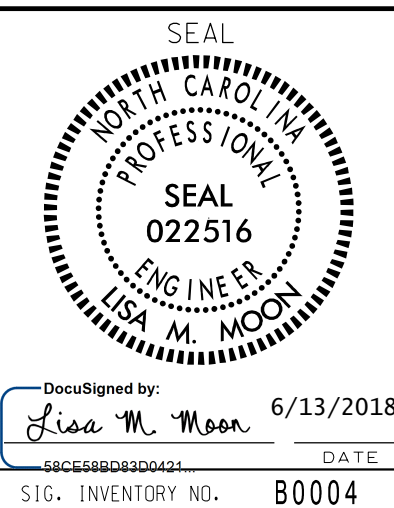
13-JUN-2018 17:55 R:\66015\T\off\ck\signal\des\gn\w\ir\ng\B0004e.dgn KANDERSON AT CHA-KANDERSON

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

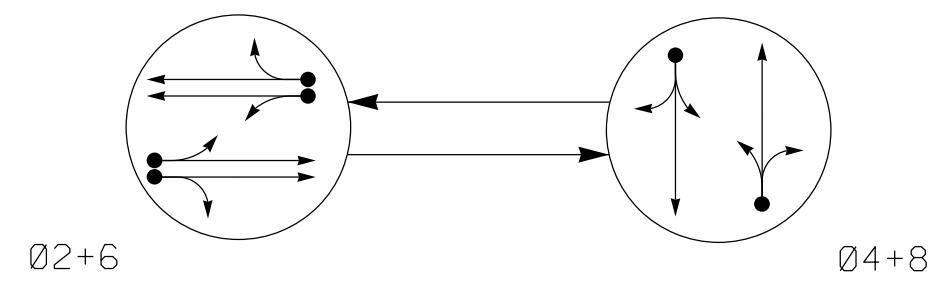


Edgewood Avenue at Engleman Avenue	
Division 7	Alamance County Burlington
PLAN DATE: December 2017	REVIEWED BY: AJ Davis
PREPARED BY: DJ White	REVIEWED BY: LM Moon
REVISIONS	INIT. DATE



DocuSigned by: Lisa M. Moon 6/13/2018
 DATE: 6/13/2018
 SIG. INVENTORY NO. B0004

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

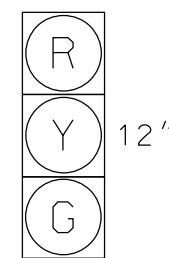
- DETECTED MOVEMENT
- ◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄ UNSIGNALIZED MOVEMENT
- ◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02+6	04+8	FLASH
21, 22	G	R	Y
41, 42	R	G	R
61, 62	G	R	Y
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



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

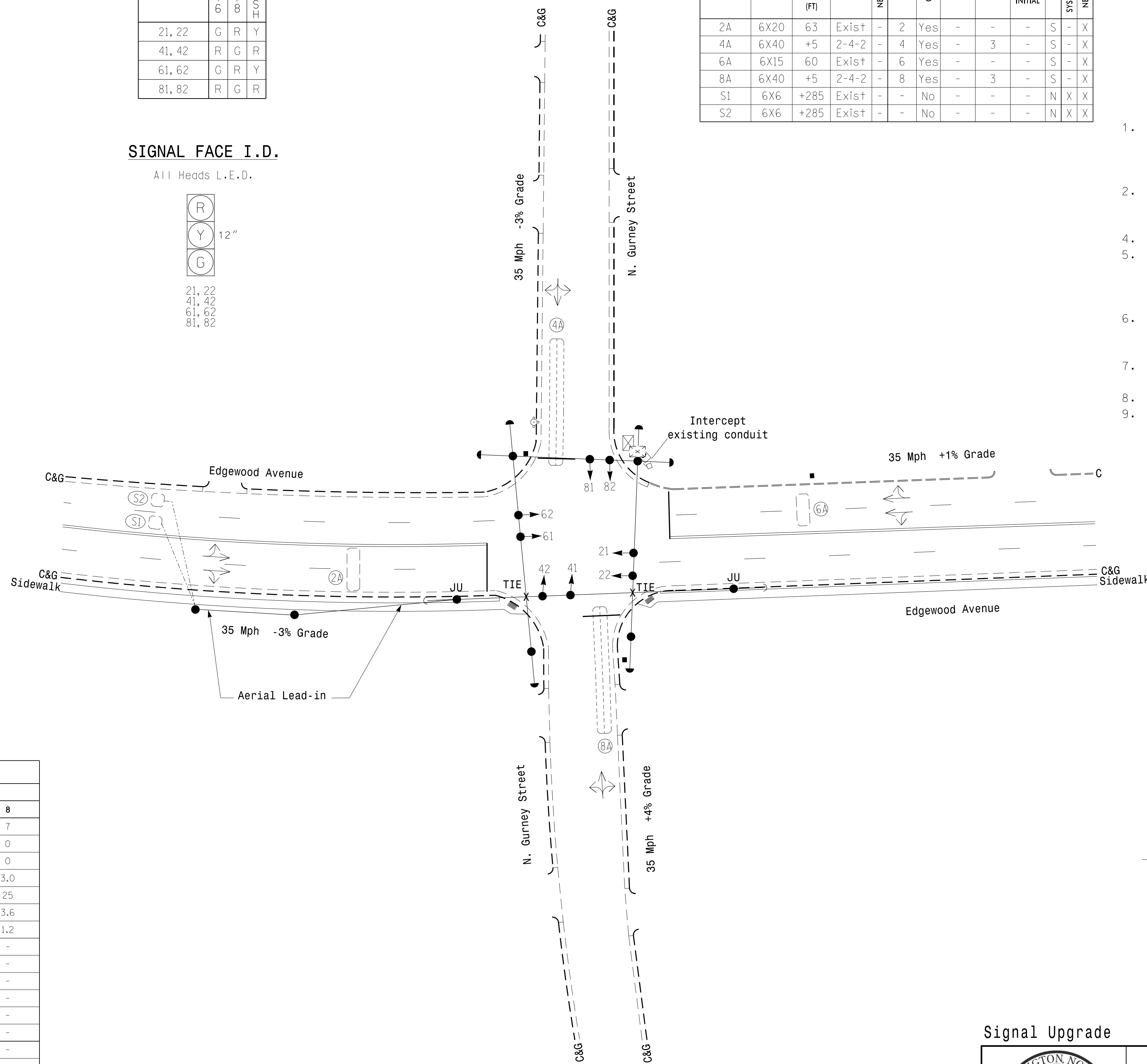
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP NEW CARD	
2A	6X20	63	Exist	-	2	Yes	-	-	-	S	-	X
4A	6X40	+5	2-4-2	-	4	Yes	-	3	-	S	-	X
6A	6X15	60	Exist	-	6	Yes	-	-	-	S	-	X
8A	6X40	+5	2-4-2	-	8	Yes	-	3	-	S	-	X
S1	6X6	+285	Exist	-	-	No	-	-	-	N	X	X
S2	6X6	+285	Exist	-	-	No	-	-	-	N	X	X

2 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- 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 ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- The cabinet should be designed to include an Auxiliary Output file for future use.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



ASC/3 TIMING CHART

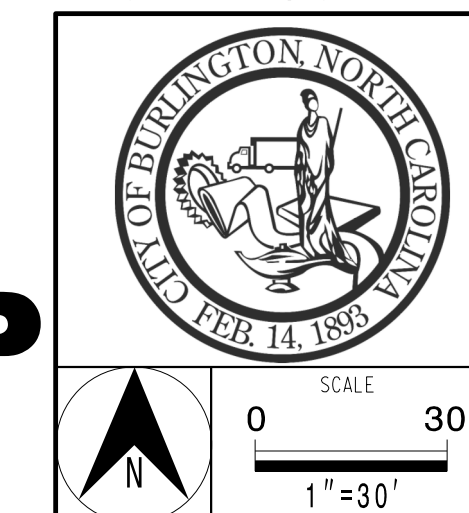
FEATURE	PHASE			
	2	4	6	8
Min Green *	10	7	10	7
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	6.0	3.0	6.0	3.0
Max 1 *	35	25	35	25
Yellow	4.1	4.1	3.8	3.6
Red Clear	1.2	1.3	1.2	1.2
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	X	-
Recall Position	VEH RECALL	-	VEH RECALL	-
Dual Entry	-	X	-	X
Simultaneous Gap	X	X	X	X

* 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

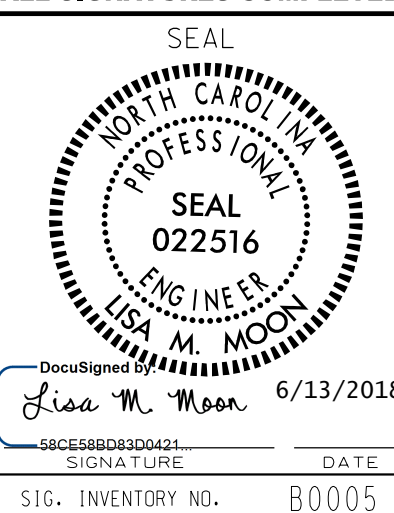
- | | |
|--|--|
| PROPOSED | EXISTING |
| ○ Traffic Signal Head | ● Traffic Signal Head |
| ◐ Modified Signal Head | N/A |
| ◑ Sign | N/A |
| ◒ Pedestrian Signal Head With Push Button & Sign | ◒ Pedestrian Signal Head With Push Button & Sign |
| ◓ Signal Pole with Guy | ◓ Signal Pole with Guy |
| ◔ Signal Pole with Sidewalk Guy | ◔ Signal Pole with Sidewalk Guy |
| ▭ Inductive Loop Detector | ▭ Inductive Loop Detector |
| ⊠ Controller & Cabinet | ⊠ Controller & Cabinet |
| □ Junction Box | □ Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A Right of Way | --- Right of Way |
| → Directional Arrow | → Directional Arrow |
| N/A Fire Hydrant | ⊕ Fire Hydrant |
| N/A Wheelchair Ramp | ▬ Wheelchair Ramp |
| ▭ Terminal Splice Box | ▭ Terminal Splice Box |

Signal Upgrade



Edgewood Avenue at N. Gurney Street

Division 7	Alamance County	Burlington
PLAN DATE: December 2017	REVIEWED BY: AJ Davis	
PREPARED BY: J Le	REVIEWED BY: LM Moon	
REVISIONS	INIT.	DATE



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

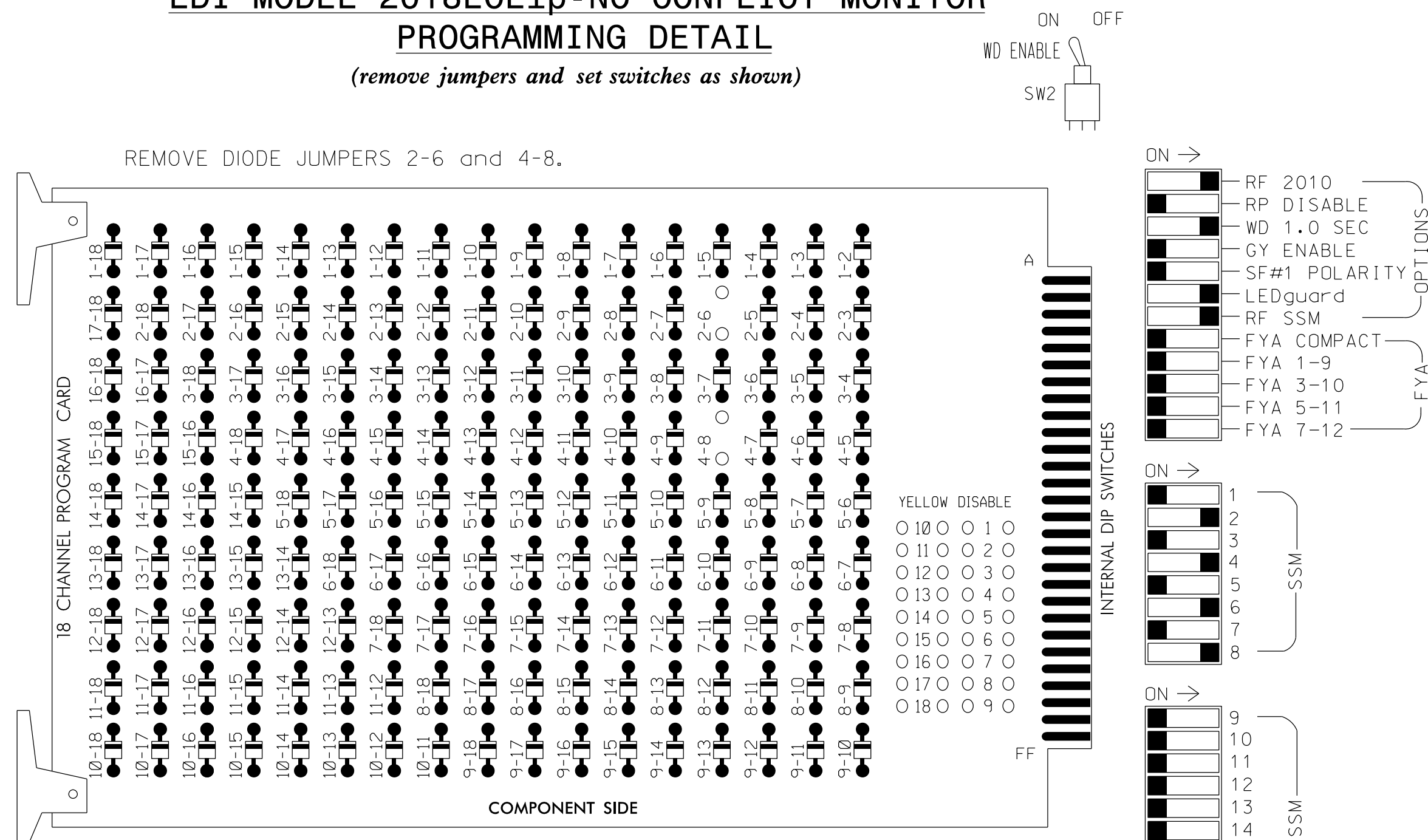
Plans Prepared By:

DRMP, Inc.
8000 Regency Parkway, Suite 175
Cary, NC 27519
NC License No. 6-2213 (919) 650-1038

13-JUN-2018 17:55 R:\66015\Traffic\Signal\Burlington\Signal\00005.dgn KANDERSON AT CHA-Y ANDERSON

EDI MODEL 2018ECLip-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. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green and 6 Green.
4. The cabinet and controller are part of the Burlington-Graham Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	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.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW																		
GREEN ARROW																		

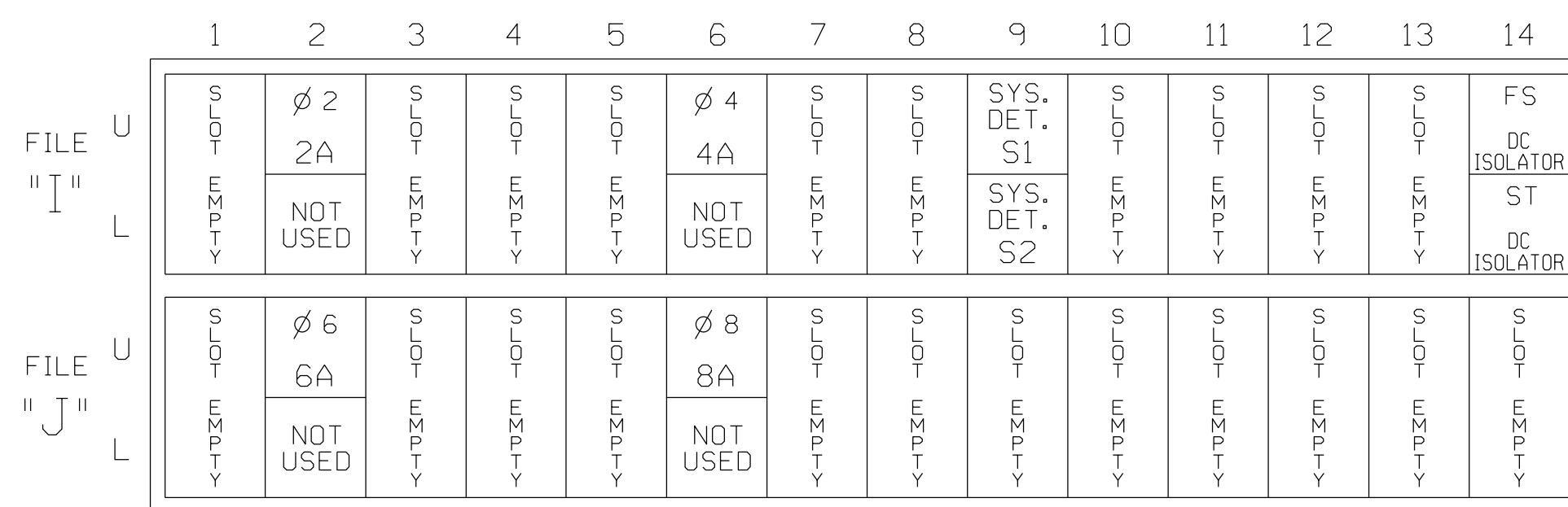
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

INPUT FILE POSITION LAYOUT

(front view)



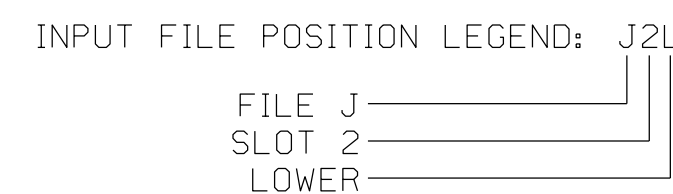
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES		3		S
* S1	TB6-9,10	I9U	60	11	SYS	NO				N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N
6A	TB3-5,6	J2U	40	6	6	YES				S
8A	TB5-9,10	J6U	42	8	8	YES		3		S

* System detector only. Remove any assigned vehicle phase.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: B0005
 DESIGNED: DECEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

13-JUN-2018 17:55 R:\66015\Prof\ek\signal\design\wiring\B0005a.dgn KANDERSON AT CHA-YANDERSON

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



Edgewood Avenue at N. Gurney Street
 Division 7 Alamance County Burlington
 PLAN DATE: December 2017 REVIEWED BY: AJ Davis
 PREPARED BY: DJ White REVIEWED BY: LM Moon



DocuSigned by: Lisa M. Moon 6/13/2018
 SIG. INVENTORY NO. B0005

PHASING DIAGRAM

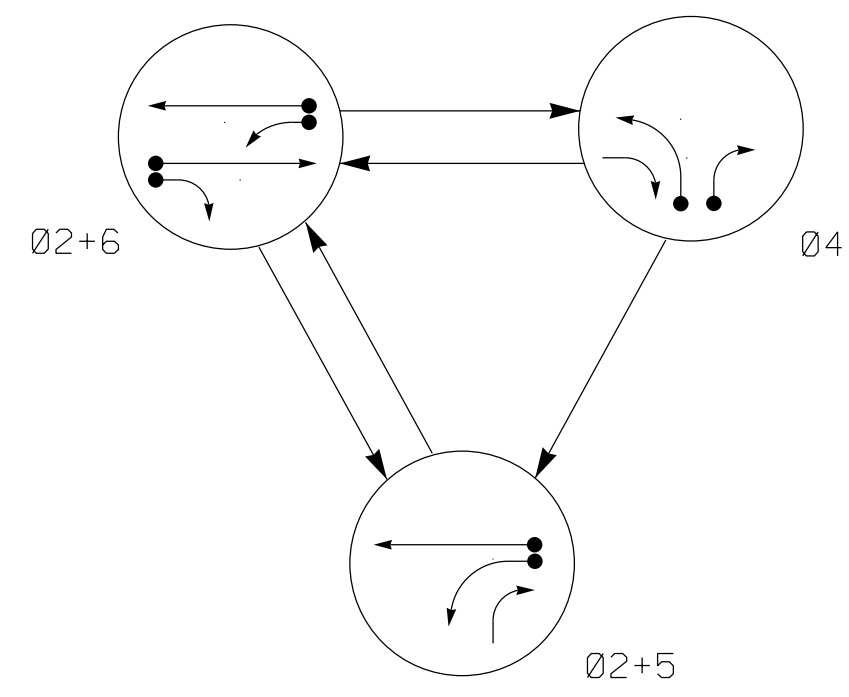


TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø 2+5	Ø 2+6	Ø 4	FLASH
21,22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	R	G	R	Y
61	R	G	R	Y
62	R	G	R	Y

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DETECTOR			PROGRAMMING							
		DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP	NEW CARD
2A	6X20	60	EXIST	-	2	Yes	-	-	-	S	-	X
4A	6X40	+5	2-4-2	-	4	Yes	-	-	-	S	-	X
4B	6X40	+5	2-4-2	-	4	Yes	-	15	-	S	-	X
5A	6X40	+5	2-4-2	-	5	Yes	-	15	-	S	-	X
6A	6X20	60	EXIST	-	6	Yes	-	-	-	S	-	X

3 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

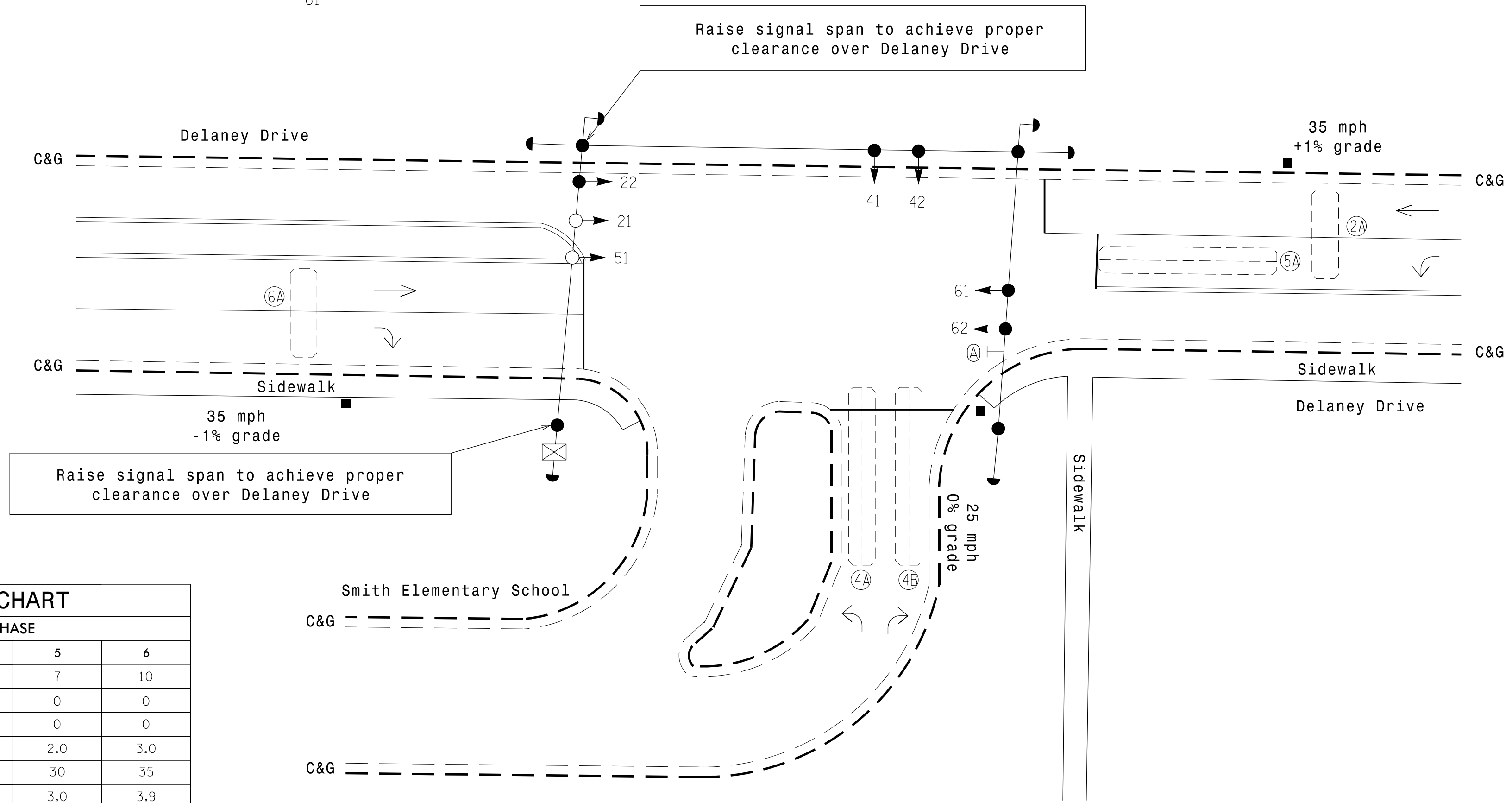
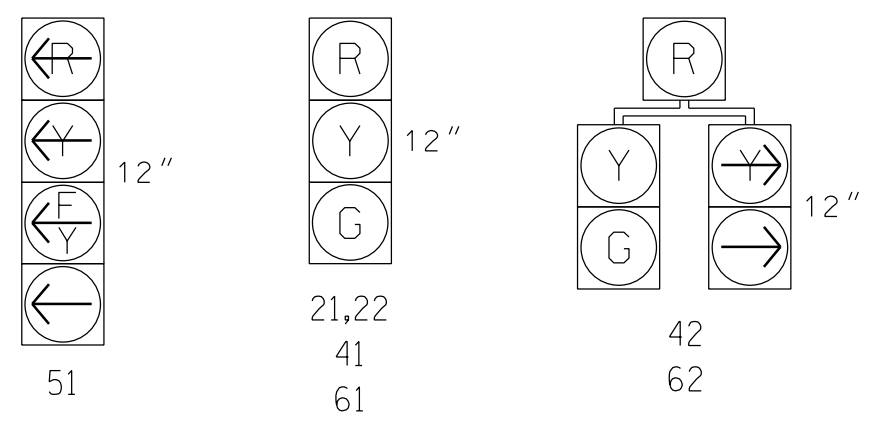
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Reposition existing signal head numbered 22.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distances of vehicles turning right on red.
8. Pavement markings are existing.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supercedes these values.

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 TIMING CHART

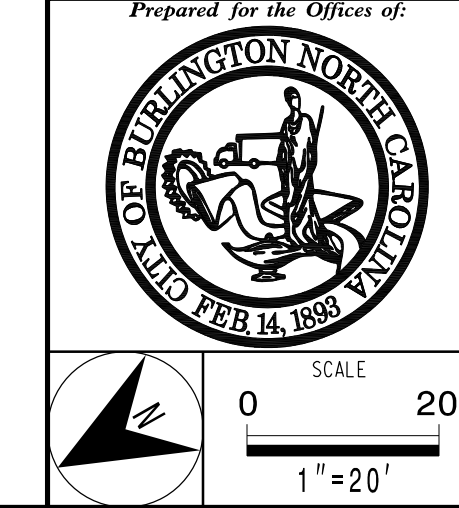
FEATURE	PHASE			
	2	4	5	6
Min Green *	10	7	7	10
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	3.0	2.0	2.0	3.0
Max 1 *	35	50	30	35
Yellow	3.9	3.0	3.0	3.9
Red Clear	2.0	2.4	2.9	2.0
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	-	X
Recall Position	VEH. RECALL	-	-	VEH. RECALL
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

* 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 |
| N/A → Right of Way | N/A → N/A |
| → Directional Arrow | → Directional Arrow |
| ⊙ "NO TURN ON RED" Sign (R10-11) | ⊙ "NO TURN ON RED" Sign (R10-11) |

Signal Upgrade



Delaney Drive at Smith Elementary School

Division 7 Alamance County Burlington

PLAN DATE: January 2018 REVIEWED BY: AM Encarnacion

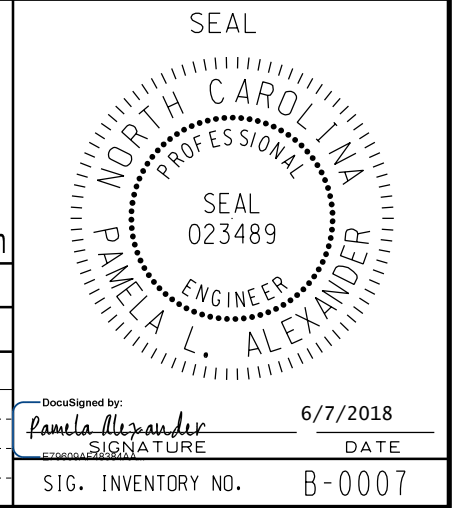
PREPARED BY: NA Ptak REVIEWED BY: PL Alexander

REVISIONS: INIT. DATE

DATE: 6/7/2018

SIG. INVENTORY NO. B-0007

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



07-JUN-2018 11:15 D:\Projects\2018\Traffic\00056469 U-6015 B-G S19 SysteTask 05_11_Signal\Des\gpmB-0007.dgn ALEX3361 AT LUS210649