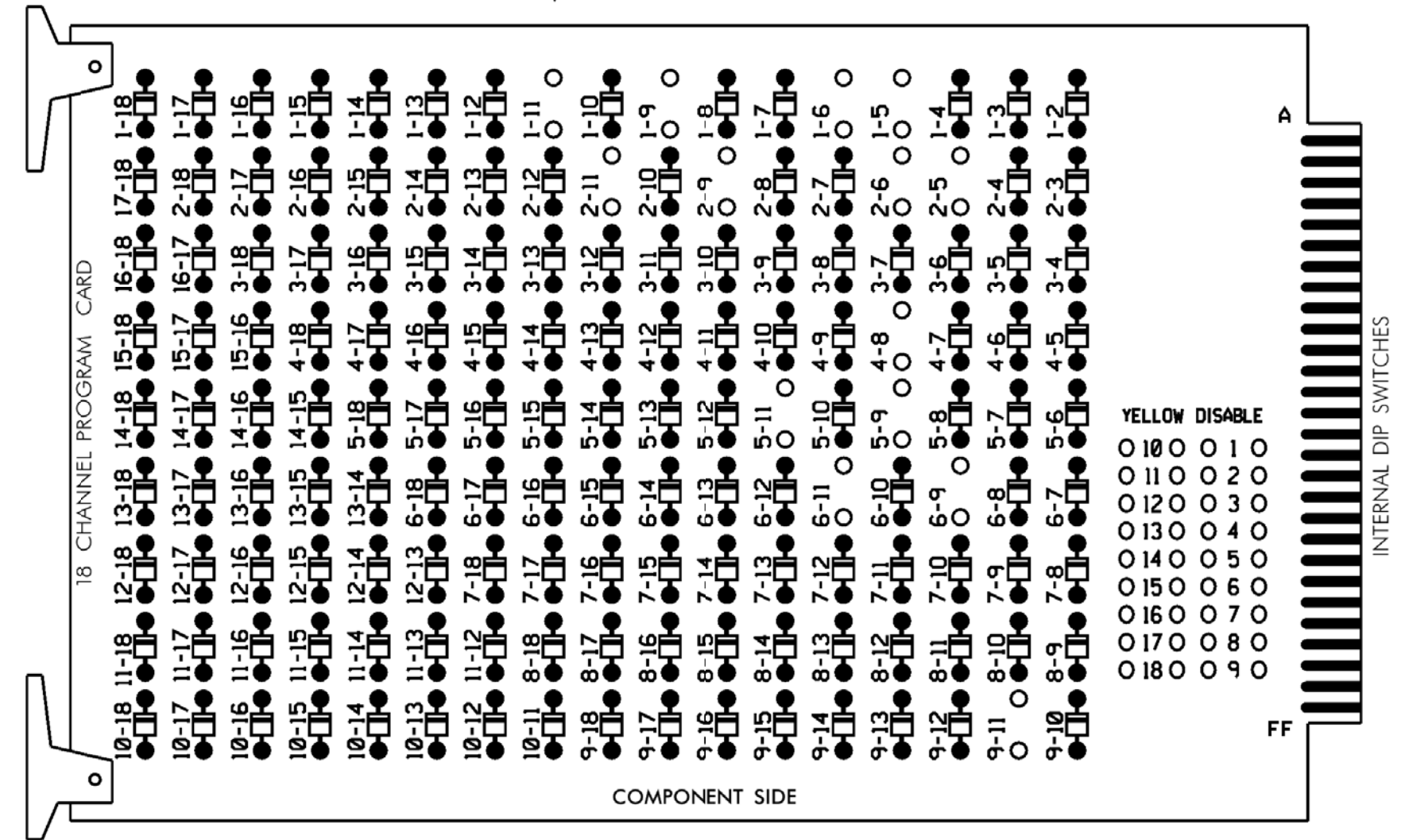


EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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	PED	3	4	PED	5	6	PED	7	8	PED	OLA	DLB	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													A121					A114	
YELLOW ARROW														A122					A115
FLASHING YELLOW ARROW														A123					A116
GREEN ARROW	127								133										

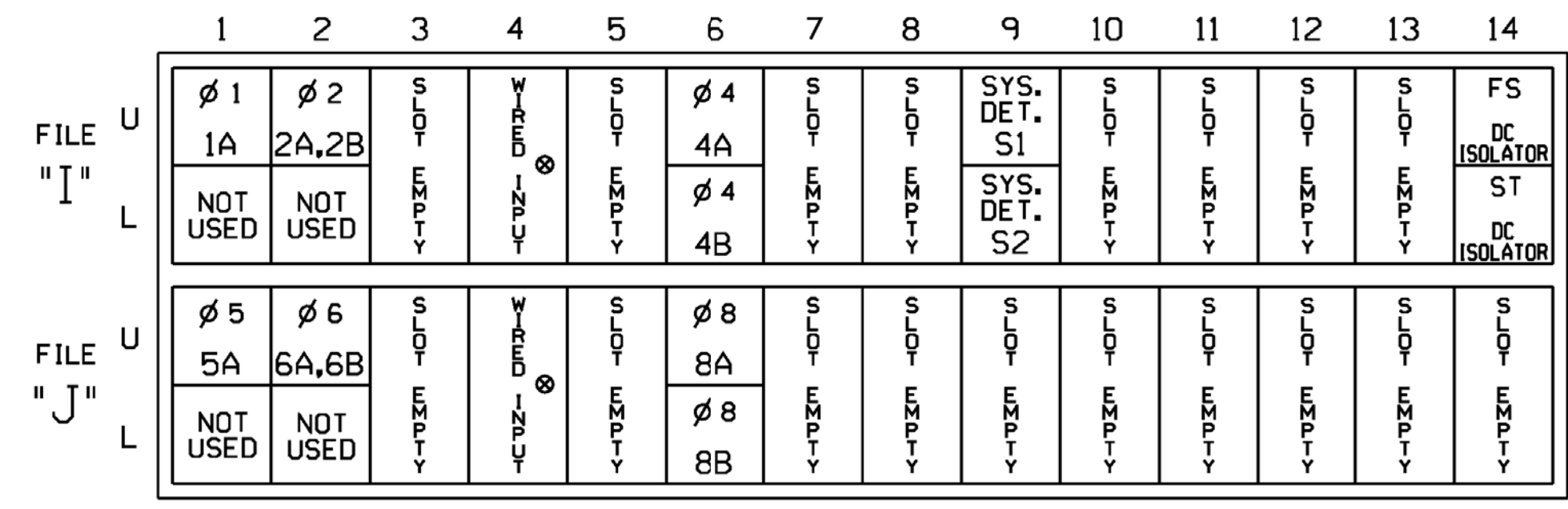
NU = Not Used

* 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

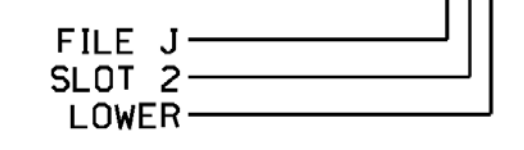
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
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
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	YES				N
* S2	TB6-11,12	I9L	62	13	SYS	YES				N
5A ²	TB3-1,2	J1U	55	5	5	YES		15		S
		I4U	47	22	2	YES				S
6A, 6B	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

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.

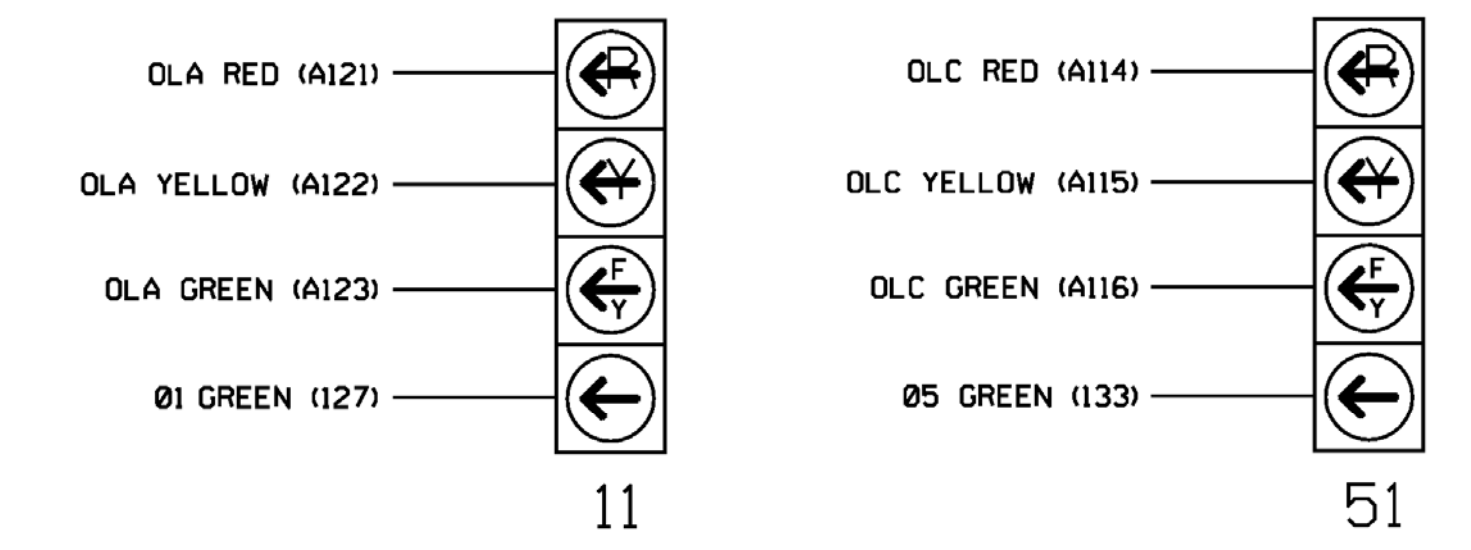
* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

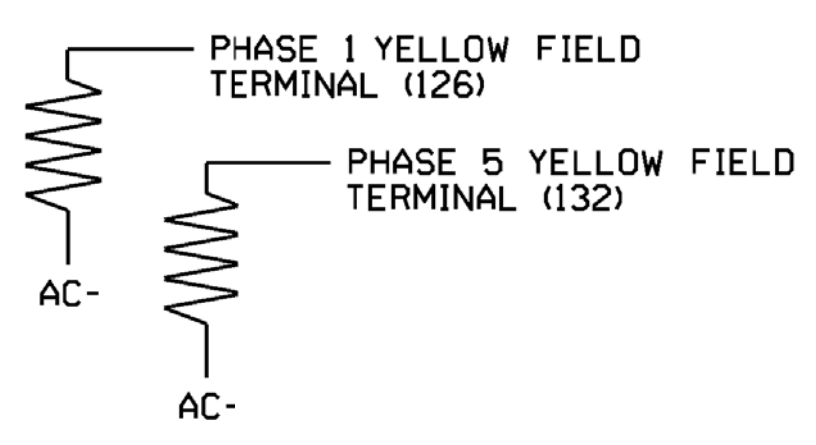
(wire signal heads as shown)



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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Management

Mattern & Craig
 ENGINEERS • SURVEYORS

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

NC 49 (Maple Avenue)
 at
 SR 2304 (Hanford Road)

Division 7 Alamance County Burlington

PLAN DATE: January 2018 REVIEWED BY: JB Voso
 PREPARED BY: SE Greene REVIEWED BY:

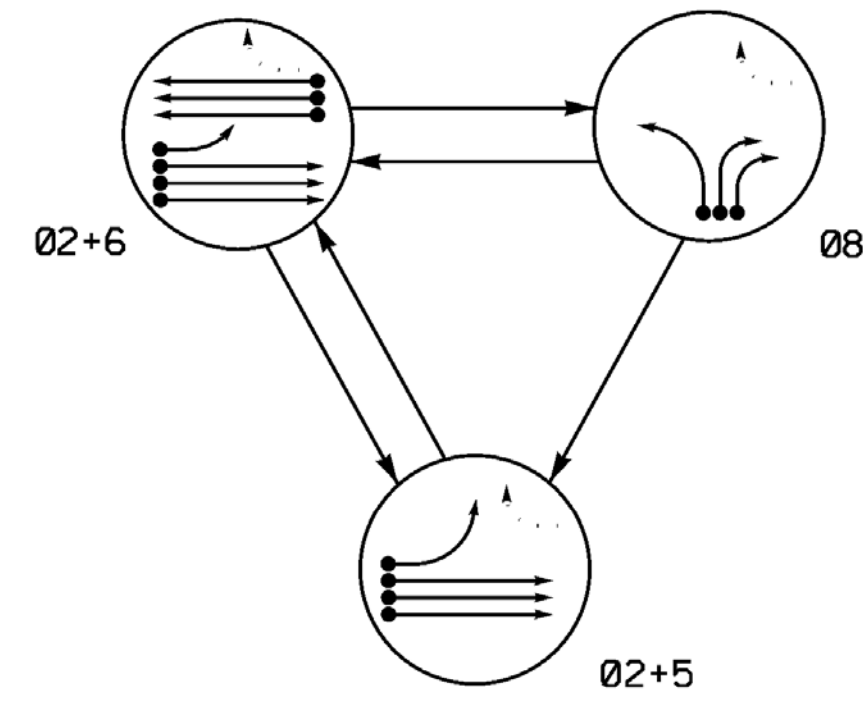
REVISIONS: INIT. DATE

James Voso
 6/13/2018

SIG. INVENTORY NO. 07-0159

*****SYTIME*****
 *****D*****
 *****USER*****

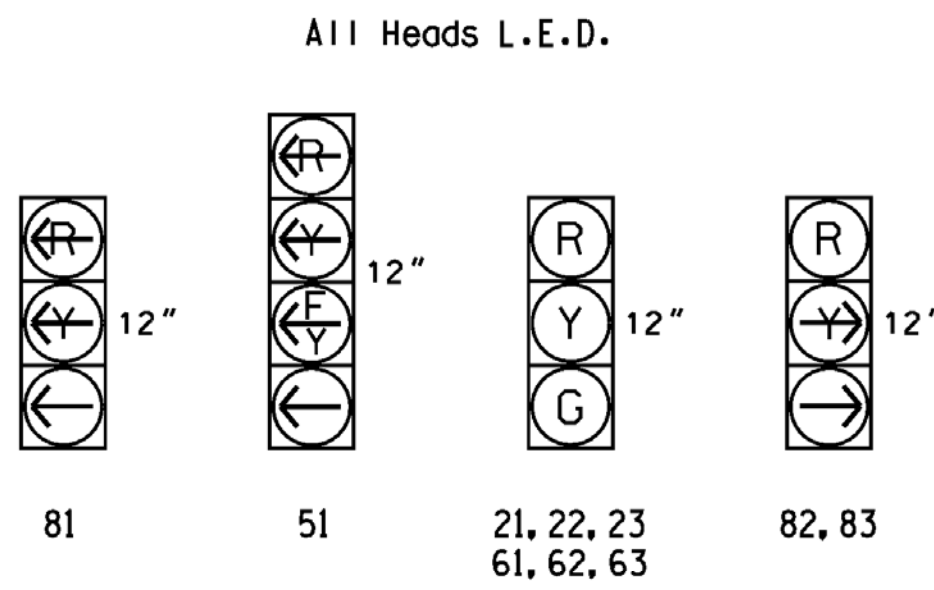
DEFAULT PHASING DIAGRAM



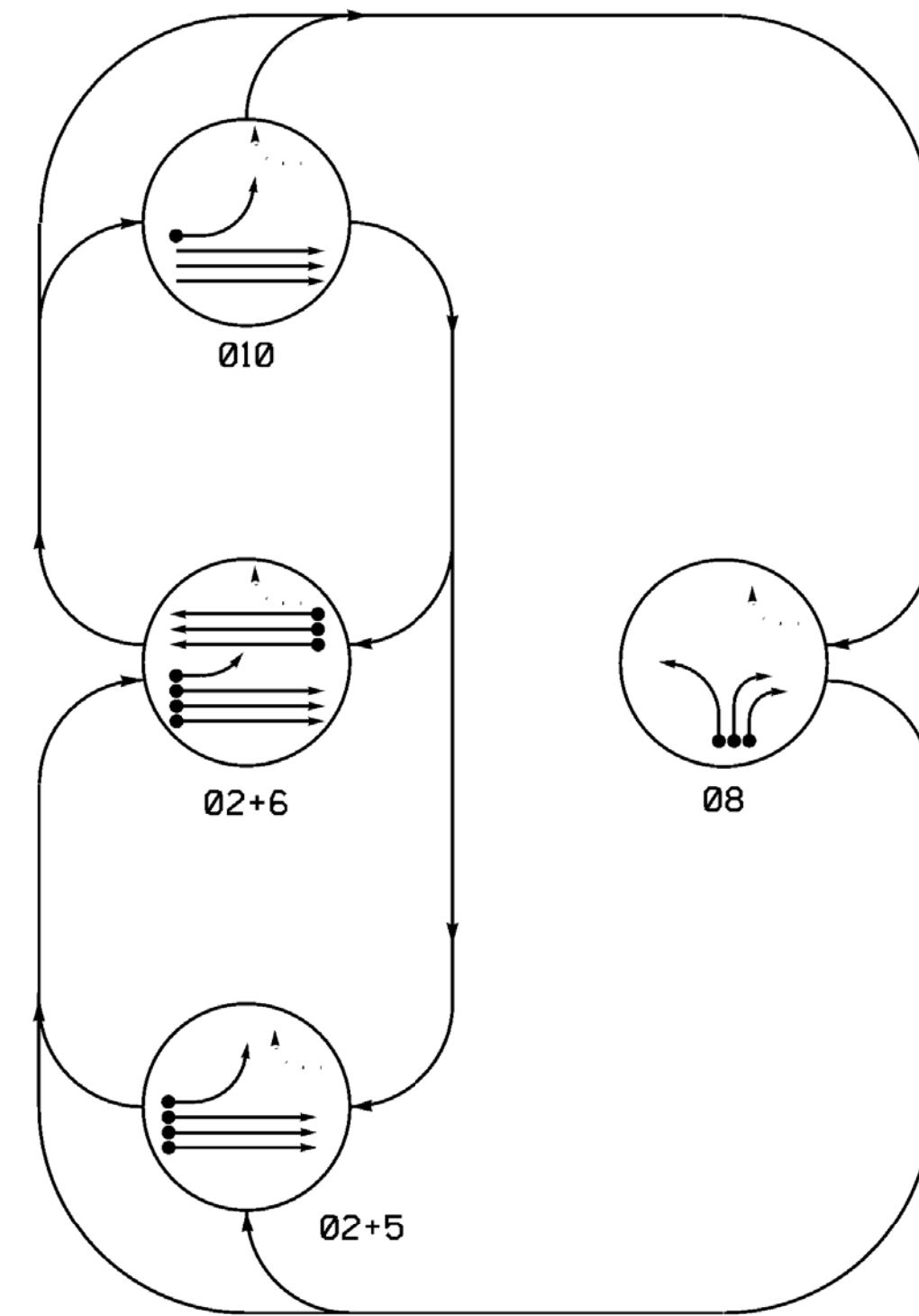
DEFAULT TABLE OF OPERATION

SIGNAL FACE	PHASE			
	02+5	02+6	08	FLASH
21, 22, 23	G	G	R	Y
51	-	F	R	Y
61, 62, 63	R	G	R	Y
81	R	R	-	R
82, 83	R	R	-	R

SIGNAL FACE I.D.



ALTERNATE PHASING DIAGRAM



ALTERNATE TABLE OF OPERATION

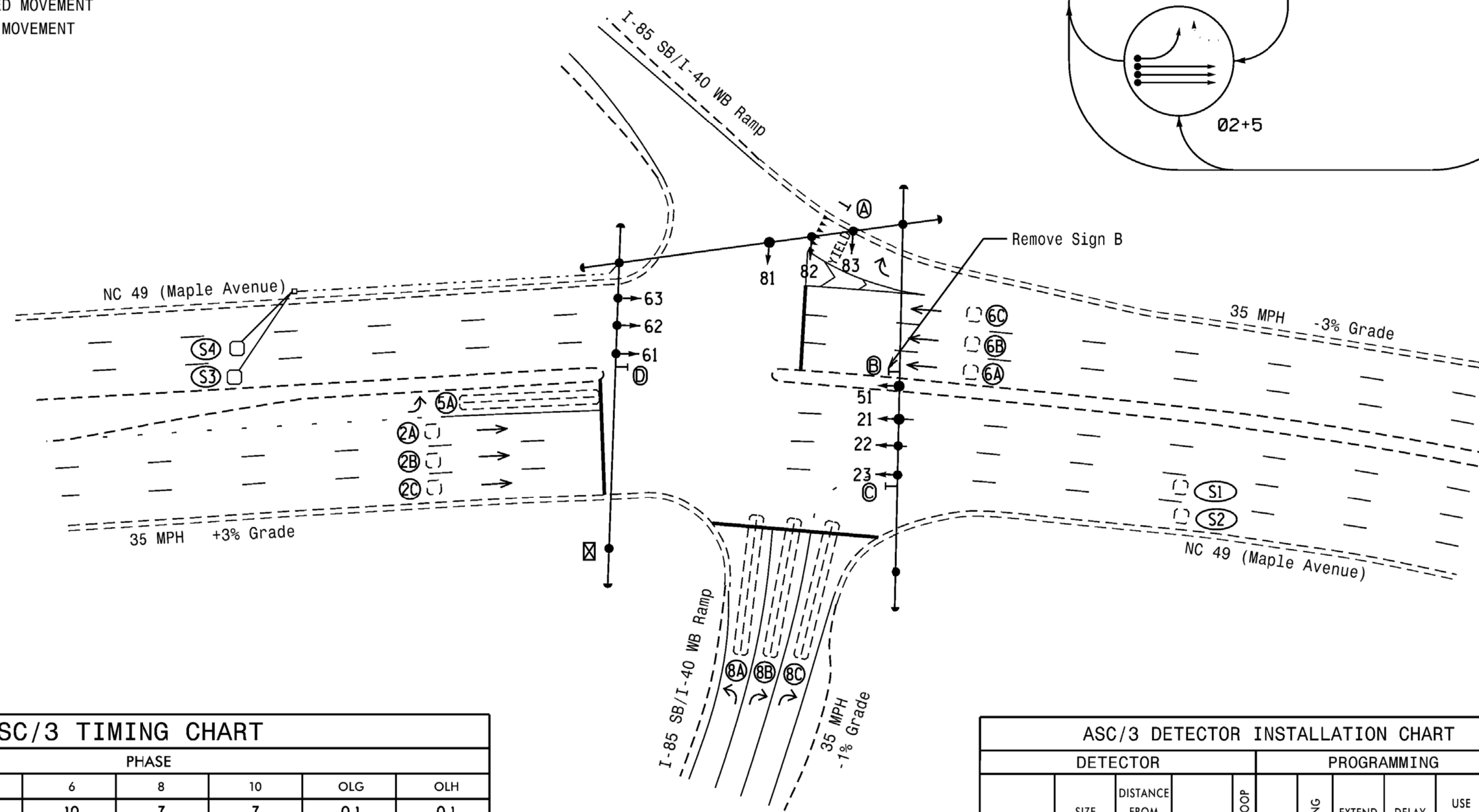
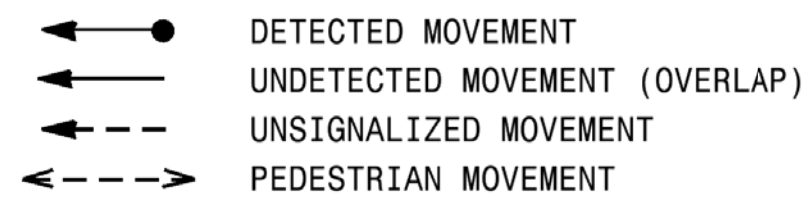
SIGNAL FACE	PHASE			
	02+5	02+6	08	FLASH
21, 22, 23	G	G	R	Y
51	-	F	R	Y
61, 62, 63	R	G	R	Y
81	R	R	-	R
82, 83	R	R	-	R

3 Phase Fully Actuated (Burlington-Graham Signal System)

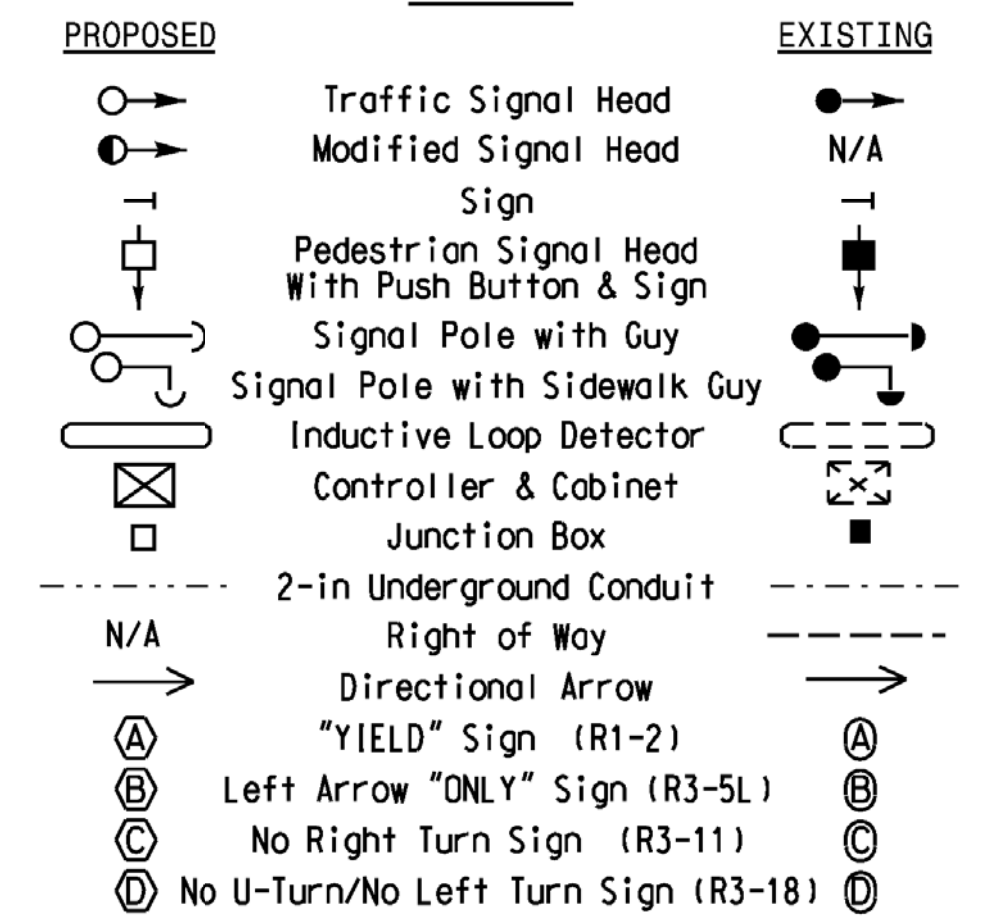
NOTES

- 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.
- 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.
- Pavement markings are existing.
- The City Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND



LEGEND



ASC/3 TIMING CHART

FEATURE	PHASE					OLG	OLH
	2	5	6	8	10		
Min Green *	10	7	10	7	7	0.1	0.1
Walk *	0	0	0	0	0		
Ped Clear	0	0	0	0	0		
Veh. Extension *	3.0	1.0	3.0	1.0	1.0		
Max I *	45	15	45	30	15		
Yellow	4.1	3.0	4.1	3.0	3.0	4.1	3.0
Red Clear	2.3	2.8	2.3	2.8	2.8	2.3	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	-	-	-	-	-		
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.

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	70	EXIST.	-	2	Yes	-	-	-	S	-	X
2B	6x6	70	EXIST.	-	2	Yes	-	-	-	S	-	X
2C	6x6	70	EXIST.	-	2	Yes	-	-	-	S	-	X
5A	6x60	0	2-4-2	-	5/10	Yes	-	15	-	S	-	X
6A	6x6	70	EXIST.	-	6	Yes	-	-	-	S	-	X
6B	6x6	70	EXIST.	-	6	Yes	-	-	-	S	-	X
6C	6x6	70	EXIST.	-	6	Yes	-	-	-	S	-	X
8A	6x60	+5	2-4-2	-	8	Yes	-	-	-	S	-	X
8B	6x60	+5	2-4-2	-	8	Yes	-	15	-	S	-	X
8C	6x60	+5	2-4-2	-	8	Yes	-	15	-	S	-	X
S1	6x6	+245	EXIST.	-	-	No	-	-	-	N	X	X
S2	6x6	+245	EXIST.	-	-	No	-	-	-	N	X	X
S3	6x6	+245	4	X	-	No	-	-	-	N	X	X
S4	6x6	+245	4	X	-	No	-	-	-	N	X	X

Mattern & Craig
ENGINEERS • SURVEYORS

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

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
SIGNAL DESIGN SECTION

NC 49 (Maple Avenue) at I-85 SB / I-40 WB Ramps

Division 7 Alamance County Burlington

PLAN DATE: April 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS

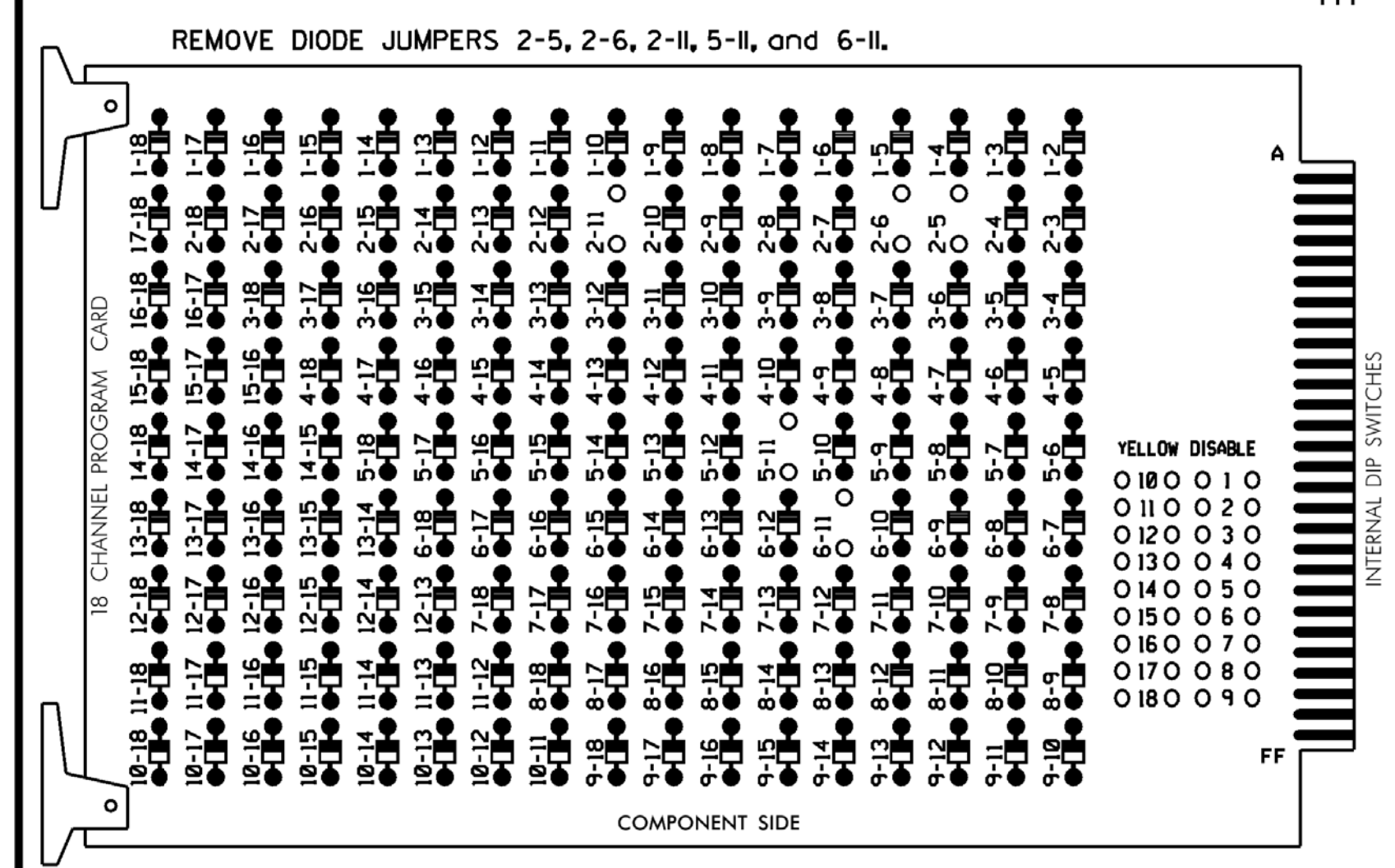
SCALE 0 40 1"=40'

6/13/2018

SIG. INVENTORY NO. 07-0162

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.

■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and phase 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,S7,S8,S11,AUX S4
 PHASES USED.....2,5,6,8,10**
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 OVERLAP "G".....2+10
 OVERLAP "H".....5+10

* See overlap programming detail on sheet 2
 ** Used for timing purposes 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	DLG	2 PED	3	4	4 PED	OLH	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22,23	NU	NU	NU	NU	51*	61,62,63	NU	NU	81	82,83	NU	NU	NU	51*	NU	NU
RED		128						134			107							
YELLOW		129					*	135										
GREEN		130						136										
RED ARROW											107						A114	
YELLOW ARROW											108	108						A115
FLASHING YELLOW ARROW																		A116
GREEN ARROW							133			109	109							

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 * See pictorial of head wiring in detail below.
 NOTE: outputs for loadswitches S2 and S7 have been remapped. See sheet 2.

INPUT FILE POSITION LAYOUT

(front view)

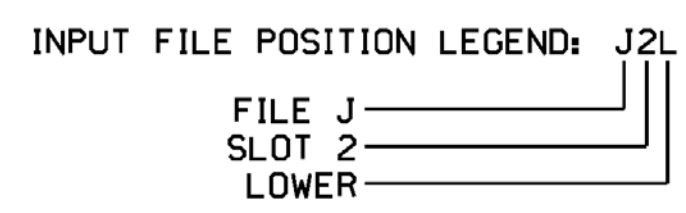
FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	S	∅ 2	∅ 2	∅ 2C	S	S	S	S	SYS. DET. S1	S	S	S	S	FS
L	∅ 2B	NOT USED	∅ 2B	∅ 2B	∅ 2B	∅ 2B	∅ 2B	∅ 2B	SYS. DET. S2	∅ 2B	∅ 2B	∅ 2B	∅ 2B	DC ISOLATOR
U	∅ 5/10	∅ 6	∅ 6	∅ 6	S	S	S	S	SYS. DET. S3	S	S	S	S	DC ISOLATOR
L	NOT USED	∅ 6	NOT USED	∅ 6	∅ 8	∅ 8	∅ 8	∅ 8	SYS. DET. S4	∅ 8	∅ 8	∅ 8	∅ 8	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

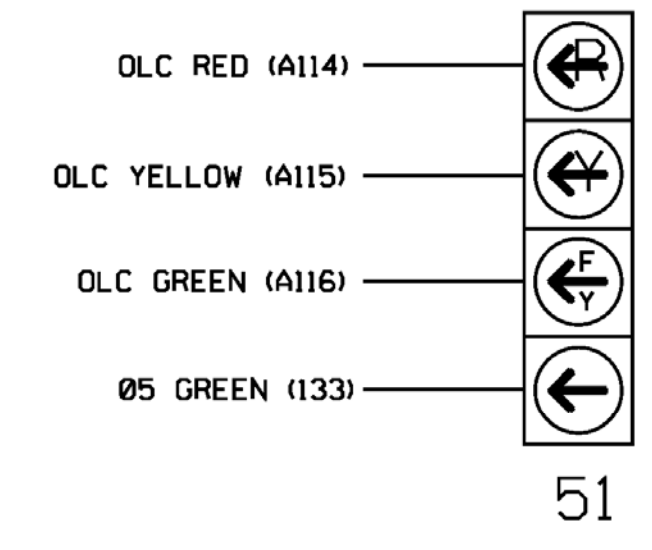
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES				S
2B	TB2-7,8	I2L	43	12	2	YES				S
2C	TB2-9,10	I3U	63	32	2	YES				S
5A ¹	TB3-1,2	J1U	55	5	5	YES		15		S
		I4U	47	22	2	YES				S
6A	TB3-5,6	J2U	40	6	6	YES				S
6B	TB3-7,8	J2L	44	16	6	YES				S
6C	TB3-9,10	J3U	64	36	6	YES				S
8A	TB5-9,10	J6U	42	8	8	YES				S
8B	TB5-11,12	J6L	46	18	8	YES		15		S
8C	TB7-1,2	J7U	66	39	8	YES		15		S
* S1	TB6-9,10	I9U	60	11	SYS	NO				N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N
* S3	TB7-9,10	J9U	59	15	SYS	NO				N
* S4	TB7-11,12	J9L	61	17	SYS	NO				N

¹Add jumper from J1-W to I4-W. on rear of input file.
 * System detector only. Remove any assigned vehicle phase.



FYA SIGNAL WIRING DETAIL

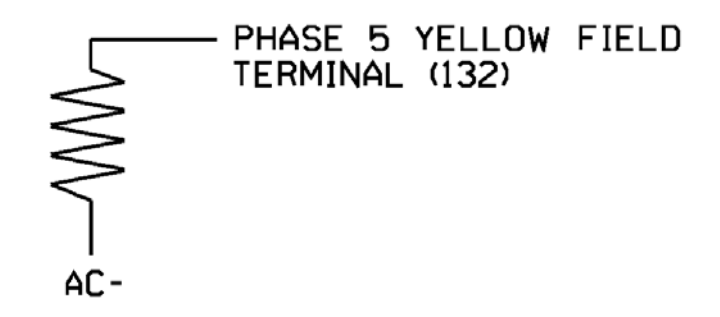
(wire signal head as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

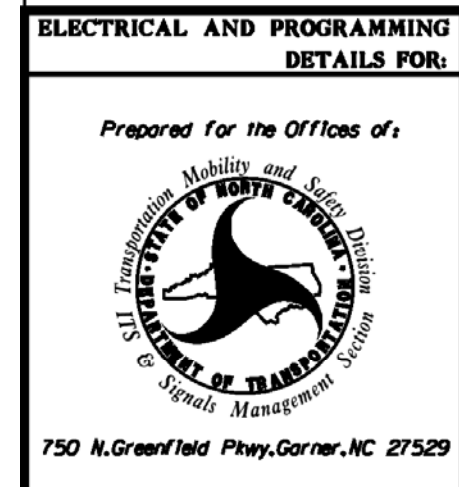
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



Electrical Detail - Sheet 1 of 5



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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0162
 DESIGNED: April 2018
 SEALED: 6/13/2018
 REVISED: NA

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Division 7	Alamance County	Burlington
PLAN DATE: April 2018	REVIEWED BY: JB Voso	
PREPARED BY: SE Greene	REVIEWED BY:	

*****SYTIME*****
 *****D*****
 *****USER*****

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**
Toggle 4 Times

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 Twice

OVERLAP G
Select TMG VEH OVLP [E] AND "NORMAL"

```

TMG VEH OVLP...[E] TYPE: .....NORMAL
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . . . . . X . . . . .
LAG GRN 0.1 YEL 4.1 RED 2.3
    
```

Toggle Once

OVERLAP H
Select TMG VEH OVLP [F] AND "NORMAL"

```

TMG VEH OVLP...[F] TYPE: .....NORMAL
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . X . . . . X . . . . .
LAG GRN 0.1 YEL 3.0 RED 2.8
    
```

END PROGRAMMING

ECONOLITE ASC/3-2070 LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

To assign load switches S2 and S7 as OLE and OLF, program LD SWITCH 2 as OVLP '5' TYPE 'O' and LD SWITCH 5 as OVLP '6' TYPE 'O' as shown below.

- From Main Menu select **1. CONFIGURATION**
- From CONFIGURATION Submenu select **3. LOAD SW ASSIGN**


LD SWITCH ASSIGN	PHASE /OVLP	TYPE	DIMMING			---FLASH---			
			R	Y	G	D	PWR	AUT	TGR
1	1	V	.	.	.	+	A	R	X
2	7	O	.	.	.	+	A	Y	.
3	3	V	.	.	.	+	A	R	X
4	4	V	.	.	.	+	A	R	.
5	8	O	.	.	.	-	A	Y	.
6	6	V	.	.	.	-	A	Y	X
7	7	V	.	.	.	-	A	R	.
8	8	V	.	.	.	-	A	R	X
9	1	O	.	.	.	+	A	R	X
10	2	O	.	.	.	+	A	R	X
11	3	O	.	.	.	-	A	R	.
12	4	O	.	.	.	-	A	R	.
13	2	P	.	.	.	+	A	.	.
14	4	P	.	.	.	-	A	.	.
15	6	P	.	.	.	+	A	.	.
16	8	P	.	.	.	-	A	.	.

NOTICE OVLP 5 ASSIGNED TO LD SWITCH 2 →

NOTICE OVLP 6 ASSIGNED TO LD SWITCH 5 →

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0162
DESIGNED: April 2018
SEALED: 6/13/2018
REVISED: NA


Electrical Detail - Sheet 2 of 5



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:

Prepared for the Offices of:

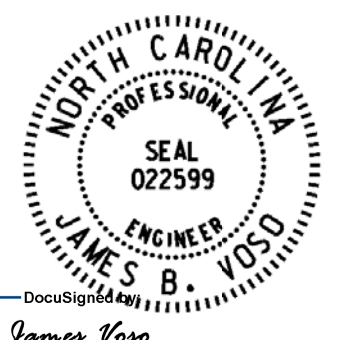


750 N. Greenfield Pkwy, Garner, NC 27529

NC 49 (Maple Avenue) at I-85 SB / I-40 WB Ramps		
Division 7 Alamance County Burlington		
PLAN DATE: April 2018	REVIEWED BY: JB Voso	
PREPARED BY: SE Greene	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL



James Voso
6/13/2018
DATE

SIG. INVENTORY NO. 07-0162

*****SYTIME*****
*****D*****
*****USERNAME*****

ECONOLITE ASC/3-2070 CONTROLLER SEQUENCE [1] - DEFAULT PHASING PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 1. CONTROLLER SEQ
3. From CONTROLLER SEQUENCE Submenu select 1. PHASE RING SEQUENCE AND ASSIGNMENT

NOTICE PHASE 10 IN SEPARATE BARRIER →

```

CONTROLLER SEQUENCE [ 1 ]
SEQUENCE COMMANDS . HW ALT SEQ ENA. NO
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16
BC-B - B - B - B - B - - - - - - - - -
R1-1 . 21 . 101 . .1 . .1 . . . . . . . . . .
R2-1 5 61 . .1 . 81 . .1 . . . . . . . . . .
R3-1 . .1 . .1 . .1 . .1 . . . . . . . . . .
R4-1 . .1 . .1 . .1 . .1 . . . . . . . . . .

R1-R4=RING 1-4. DATA ENTRY. PHASES 1-16
BC=BARRIER CONTROL. VALUES: B.C
B=BARRIER MODE
C=COMPATIBILITY MODE
    
```

END PROGRAMMING

ECONOLITE ASC/3-2070 CONTROLLER SEQUENCE [2] - ALTERNATE PHASING PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 1. CONTROLLER SEQ
3. From CONTROLLER SEQUENCE Submenu select 1. PHASE RING SEQUENCE AND ASSIGNMENT

NOTICE CONTROLLER SEQUENCE "2" →

NOTICE PHASE 10 IN SEPARATE BARRIER →

```

CONTROLLER SEQUENCE [ 2 ]
SEQUENCE COMMANDS . HW ALT SEQ ENA. NO
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16
BC-B - B - B - B - B - - - - - - - - -
R1-1 . 21 . 101 . .1 . .1 . . . . . . . . . .
R2-1 5 61 . .1 . 81 . .1 . . . . . . . . . .
R3-1 . .1 . .1 . .1 . .1 . . . . . . . . . .
R4-1 . .1 . .1 . .1 . .1 . . . . . . . . . .

R1-R4=RING 1-4. DATA ENTRY. PHASES 1-16
BC=BARRIER CONTROL. VALUES: B.C
B=BARRIER MODE
C=COMPATIBILITY MODE
    
```

END PROGRAMMING

ECONOLITE ASC/3-2070 "PHASES IN USE" PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 1. CONFIGURATION

```

CONFIGURATION SUBMENU
1. CONTROLLER SEQ      5. COMMUNICATIONS
2. PHASES IN USE/PED  6. ENABLE LOGGING
3. LOAD SW ASSIGN      7. DISPLAY/ACCESS
4. PORT 1 (SDLC)      8. LOGIC PROCESSOR


PRESS KEYS 1..8 TO SELECT
    
```

PHASES IN USE / EXCLUSIVE PED		PHASE 1 2 3 4 5 6 7 8							
IN USE.....			X			X	X		X
EXCLUSIVE PED									
PHASES IN USE / EXCLUSIVE PED		PHASE 9 10 11 12 13 14 15 16							
IN USE.....			X						
EXCLUSIVE PED									

 SYSTEM TIME *****

 USER NAME *****

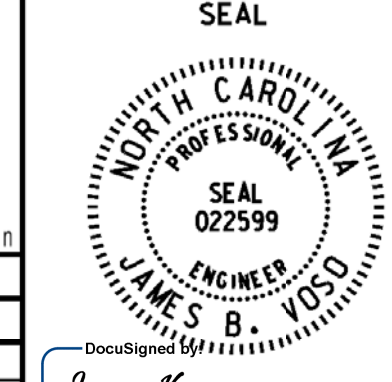

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0162
 DESIGNED: April 2018
 SEALED: 6/13/2018
 REVISED: NA



Mattern & Craig
ENGINEERS • SURVEYORS

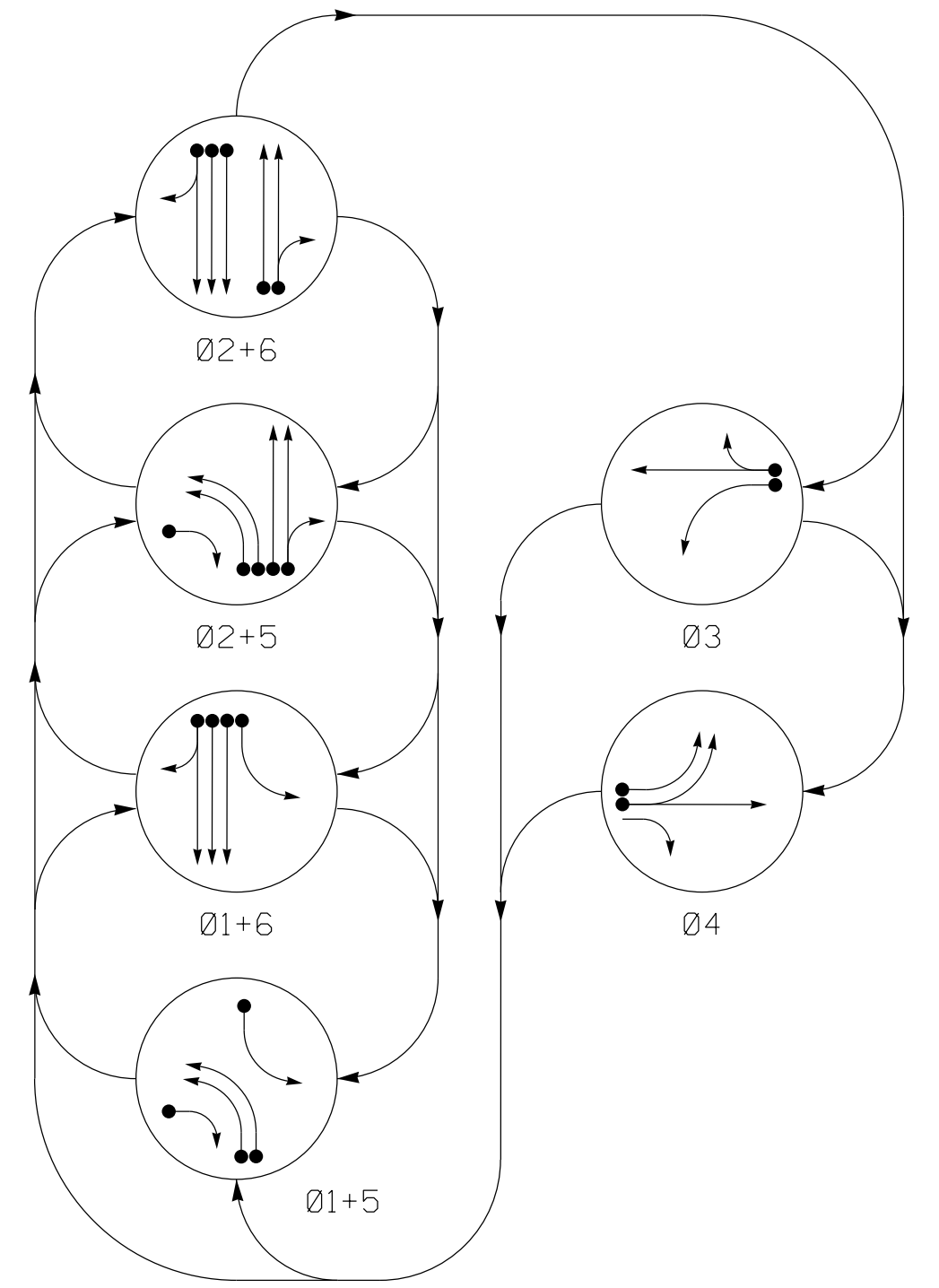
12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154

Electrical Detail - Sheet 3 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:	NC 49 (Maple Avenue) at I-85 SB / I-40 WB Ramps		SEAL  SEAL 022599 JAMES B. VOSS
	Prepared for the Offices of:  City of Alamance, North Carolina Department of Signal Management	Division 7 Alamance County Burlington PLAN DATE: April 2018 REVIEWED BY: JB Voso PREPARED BY: SE Greene REVIEWED BY:		DocuSign James Voss 6/13/2018 DATE
750 N. Greenfield Pkwy, Garner, NC 27529	REVISIONS		SIG. INVENTORY NO. 07-0162

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PHASING DIAGRAM



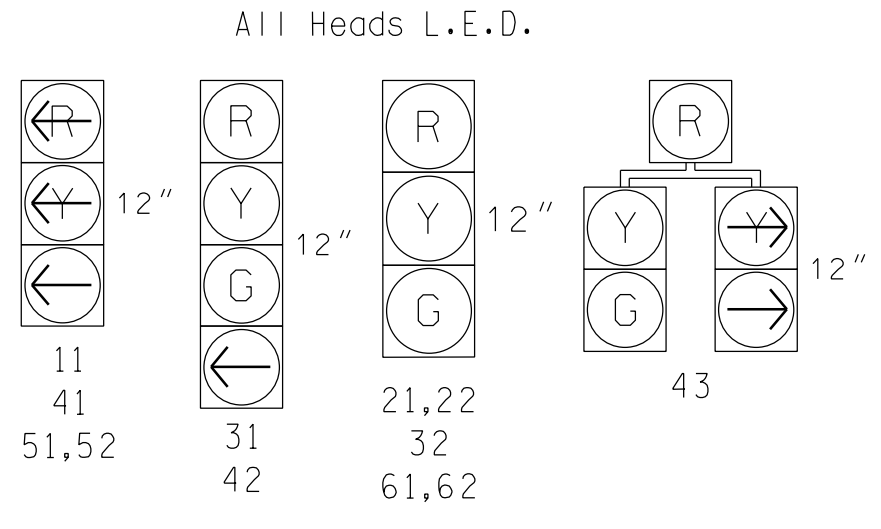
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE					
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3	Ø 4
11	←	←	←	←	←	←
21,22	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	←	←	←	←	←	←
42	R	R	R	R	G	R
43	R	R	R	R	G	R
51,52	←	←	←	←	←	←
61,62	R	G	R	G	R	Y

SIGNAL FACE I.D.



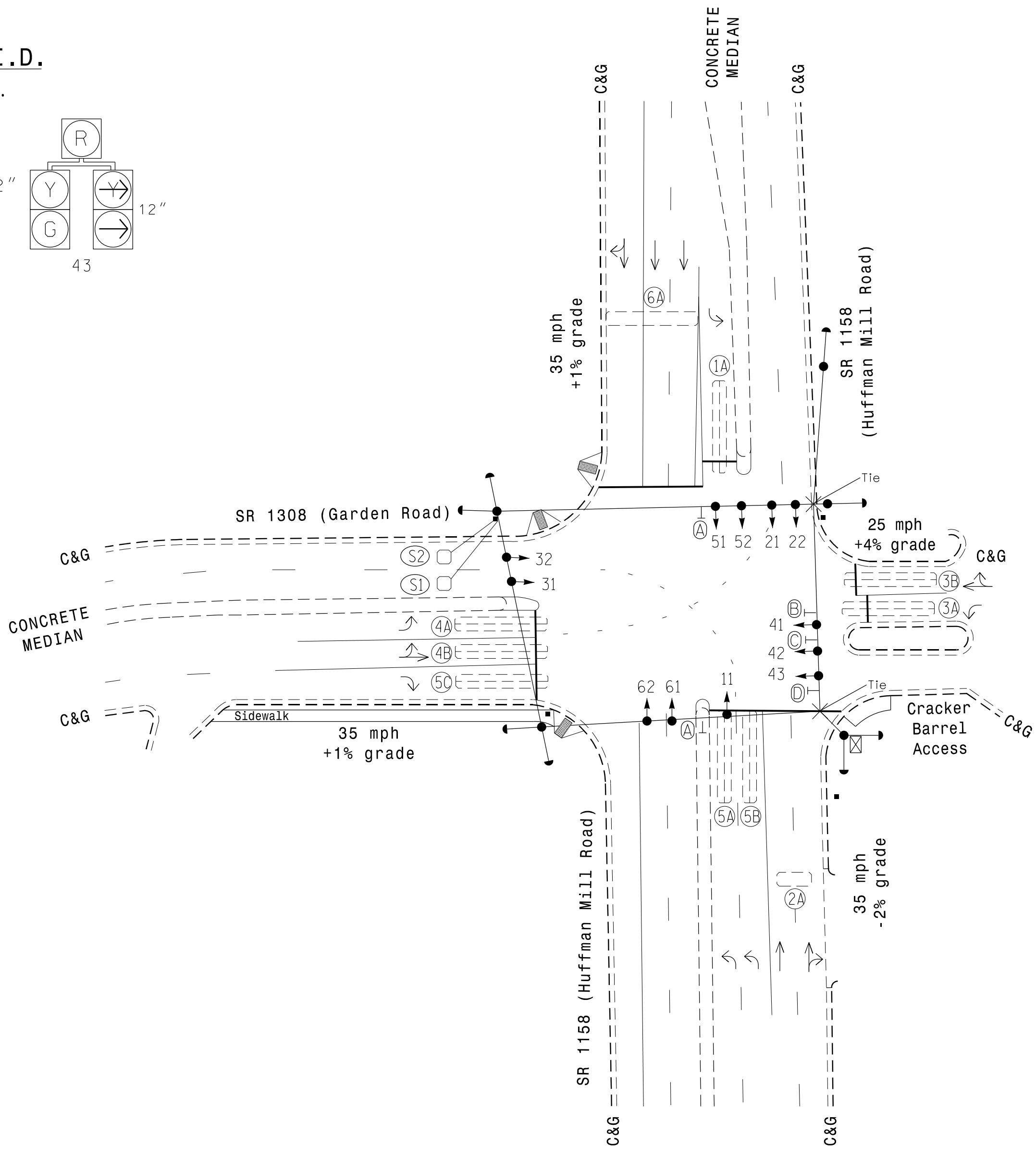
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
1A	6X40	+5	2-4-2	-	1	Yes	-	-	-	S	-	X
2A	6X15	70	EXIST	-	2	Yes	-	-	-	S	-	X
3A,3B	6X40	+11,+5	2-4-2	-	3	Yes	-	-	-	S	-	X
4A,4B	6X40	+5	2-4-2	-	4	Yes	-	-	-	S	-	X
5A,5B	6X40	0	2-4-2	-	5	Yes	-	-	-	S	-	X
5C	6X40	+5	2-4-2	-	5	Yes	-	15	-	S	-	X
6A	6X40	70	EXIST	-	6	Yes	-	-	-	S	-	X
S1	6X6	+175	4	X	-	No	-	-	-	N	X	X
S2	6X6	+175	4	X	-	No	-	-	-	N	X	X

6 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. The order of phase 3 and phase 4 may be reversed.
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 distance of vehicles turning right on red.
8. The cabinet should be designed to include an Auxiliary Output File for future use.
9. Pavement markings are existing.
10. 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	3	4	5	6
Min Green *	7	12	7	7	7	12
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Veh. Extension *	2.0	3.0	3.0	4.0	2.0	3.0
Max 1 *	20	50	20	35	30	50
Yellow	3.0	4.0	3.0	3.8	3.0	3.8
Red Clear	3.3	1.4	3.1	2.8	3.2	1.9
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	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
→ → Directional Arrow	→ → N/A
⊠ → No U-Turn Sign (R3-4)	⊠ → N/A
⊠ → Left Arrow "ONLY" Sign (R3-5L)	⊠ → N/A
⊠ → Combined Through and Left Arrow Sign (R3-6L)	⊠ → N/A
⊠ → Right Arrow "ONLY" Sign (R3-5R)	⊠ → N/A

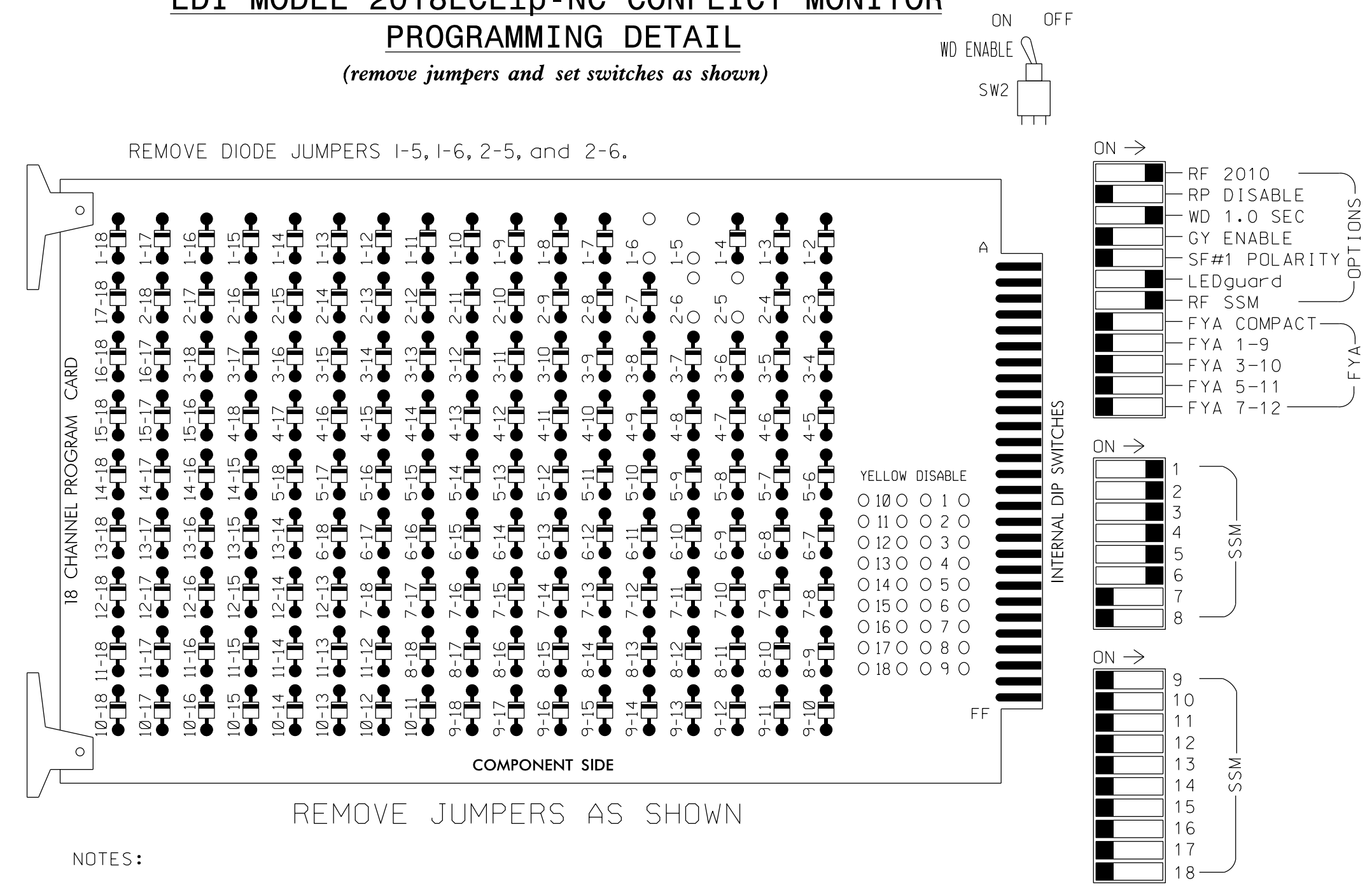
Signal Upgrade

Prepared for the Offices of:
SR 1158 (Huffman Mill Road) at SR 1308 (Garden Road)/ Cracker Barrel Access
 Division 7 Alamance County Burlington
 PLAN DATE: November 2017 REVIEWED BY: AM Encarnacion
 PREPARED BY: NA Ptak REVIEWED BY: PL Alexander
 SCALE: 0 40 1"=40'
 REVISIONS: INIT. DATE
 6/7/2018
 SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SIG. INVENTORY NO. 07-0170

07-JUN-2018 11:11 0:\projects\atkins\work\trf\c\k\ur\100056469 U-6015 B-G S10 Sys\Task 05_11_Signals\Design\07-0170.dgn ALEX361 AT LUS340649

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 W/AUX OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8
 PHASES USED.....1,2,3,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

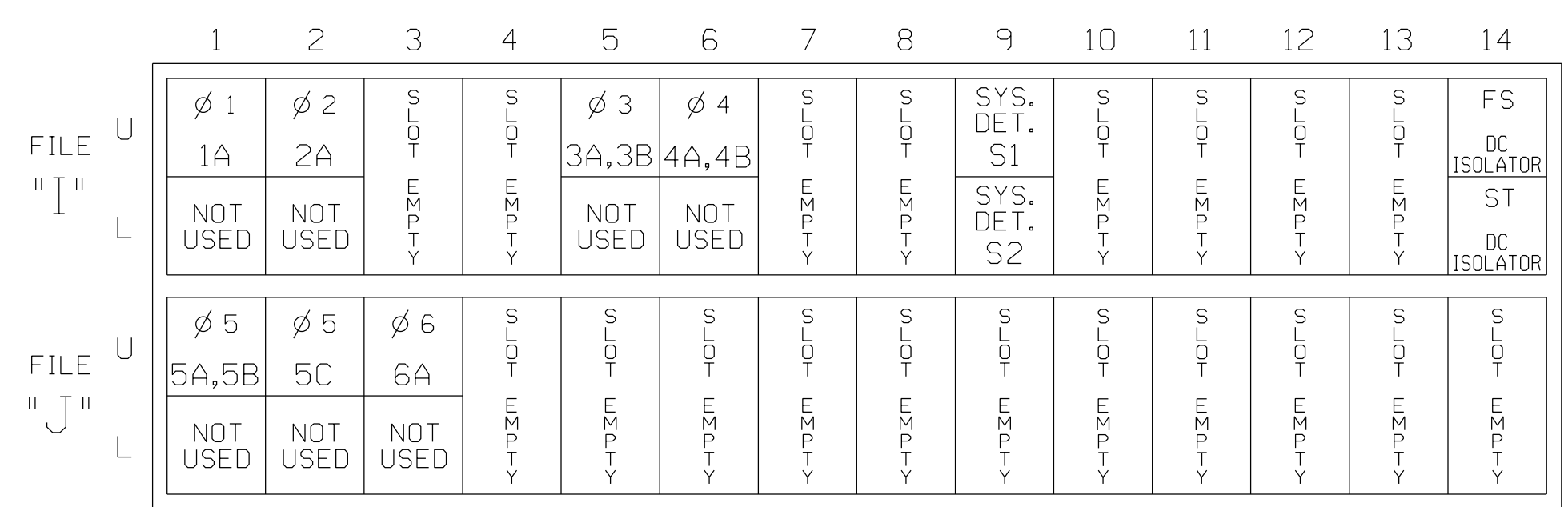
SIGNAL HEAD HOOK-UP CHART

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	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	31	32	41	42	43	NU	43	51,52	61,62	NU	NU	NU	NU	NU	NU
RED	128			116	116	101	101					134						
YELLOW		129		117	117	102	102					135						
GREEN		130		118	118	103	103					136						
RED ARROW	125					101						131						
YELLOW ARROW	126					102						132	132					
GREEN ARROW	127					103	103					133	133					

NU = Not Used

INPUT FILE POSITION LAYOUT

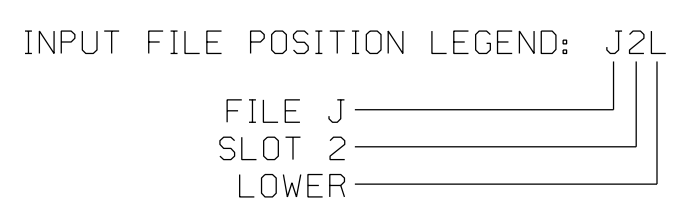
(front view)



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

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-1,2	I1U	56	1	1	YES				S
2A	TB2-5,6	I2U	39	2	2	YES				S
3A,3B	TB4-5,6	I5U	58	3	3	YES				S
4A,4B	TB4-9,10	I6U	41	4	4	YES				S
* S1	TB6-9,10	I9U	60	11	SYS	NO				N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N
5A,5B	TB3-1,2	J1U	55	5	5	YES				S
5C	TB3-5,6	J2U	40	6	5	YES		15		S
6A	TB3-9,10	J3U	64	36	6	YES				S



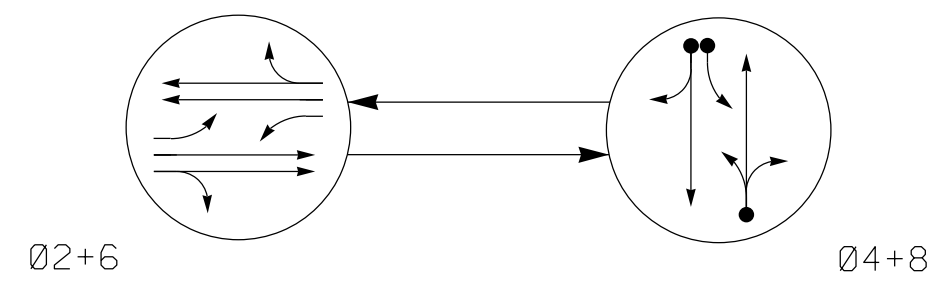
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0170
 DESIGNED: November 2017
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 14:13 D:\Transpor\at\work\Traffic\curr\100056469 U-6015 B-G S1g Sys\Task 05_11_Signal\Des\gpr\wlr\ing\07-0170E.dgn ALEX3361 AT LUS510649

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	SR 1158 (Huffman Mill Road) at SR 1308 (Garden Road)/ Cracker Barrel Access		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
	Division 7 PLAN DATE: November 2017 PREPARED BY: NA Ptak	Alamance County REVIEWED BY: AM Encarnacion REVIEWED BY: PL Alexander		Burlington DATE: 6/9/2018 DATE:

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

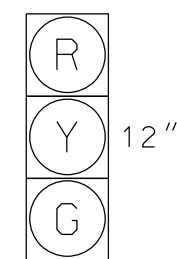
- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UNSIGNALIZED MOVEMENT
- ← → PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø2+6	Ø4+8	FLASH
2l, 2r	G	R	Y
4l, 4r	R	G	R
6l, 6r	G	R	Y
8l, 8r	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



2l, 2r
4l, 4r
6l, 6r
8l, 8r

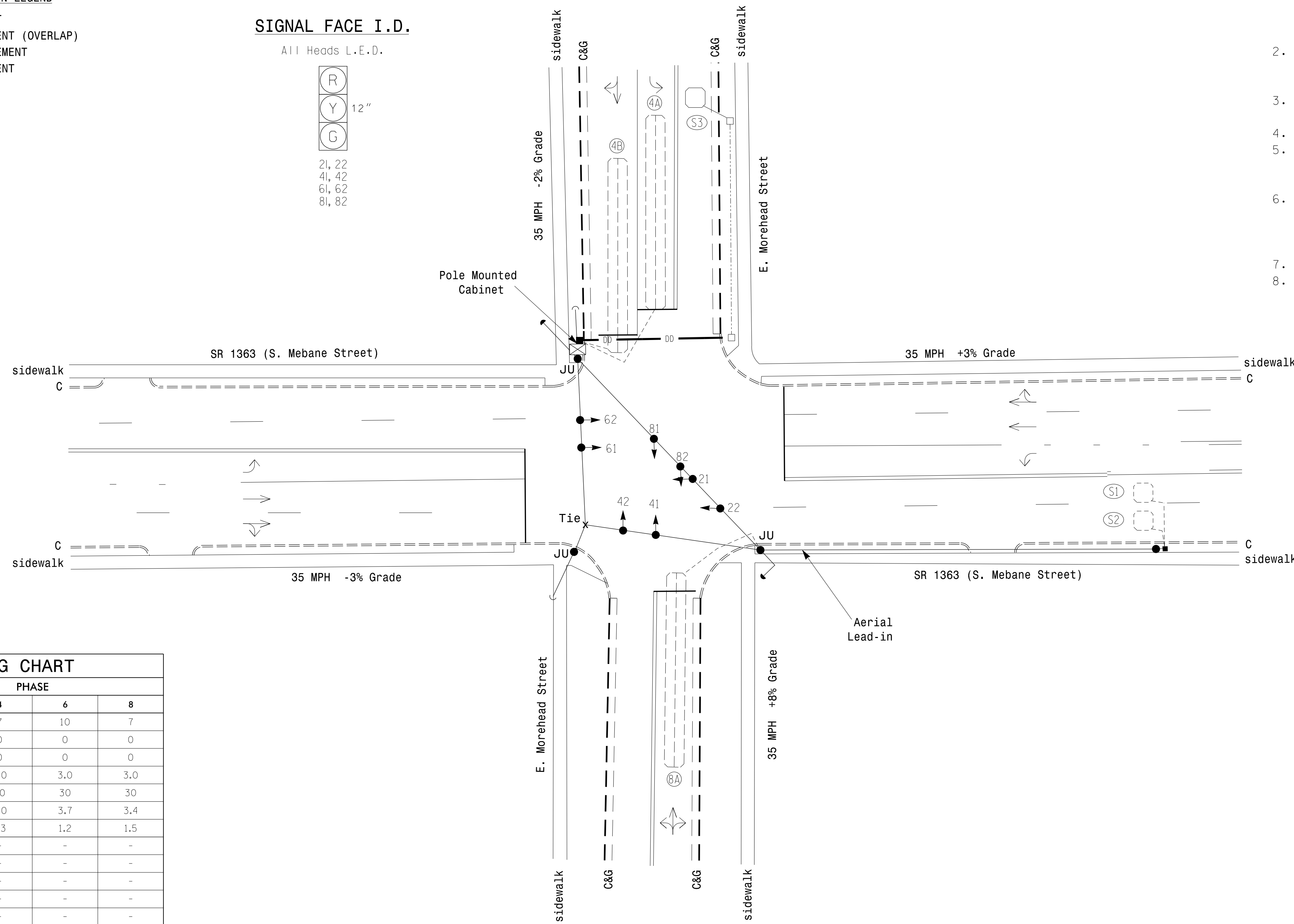
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	USE ADDED INITIAL	DELAY TIME	TYPE	SYSTEM LOOP	NEW CARD
4A	6X60	0	2-4-2	-	4	Yes	-	-	3	S	-	X
4B	6X60	+3	2-4-2	-	4	Yes	-	-	10	S	-	X
8A	6X60	+5	2-4-2	-	8	Yes	-	-	5	S	-	X
S1	6X6	+185	EXIST	-	-	No	-	-	-	N	X	X
S2	6X6	+185	EXIST	-	-	No	-	-	-	N	X	X
S3	6X6	+147	3	X	-	No	-	-	-	N	X	X

2 Phase Semi 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.
- Loop data based on previous plan and field observations.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- 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.
- 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 *	3.0	2.0	3.0	3.0
Max 1 *	30	30	30	30
Yellow	4.1	4.0	3.7	3.4
Red Clear	1.1	1.3	1.2	1.5
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	-	-	-	-
Recall Position	MAX RECALL	-	MAX 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
□ → Pedestrian Signal Head With Push Button & Sign	□ → Pedestrian Signal Head
○ → Signal Pole with Guy	○ → Signal Pole with Guy
○ → Signal Pole with Sidewalk Guy	○ → Signal Pole with Sidewalk Guy
□ → Inductive Loop Detector	□ → Inductive Loop Detector
□ → Controller & Cabinet	□ → Controller & Cabinet
□ → Junction Box	□ → Junction Box
□ → 2-in Underground Conduit	□ → 2-in Underground Conduit
N/A	→ Right of Way
→	→ Directional Arrow

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

SR 1363 (S. Mebane Street) at E. Morehead 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: _____

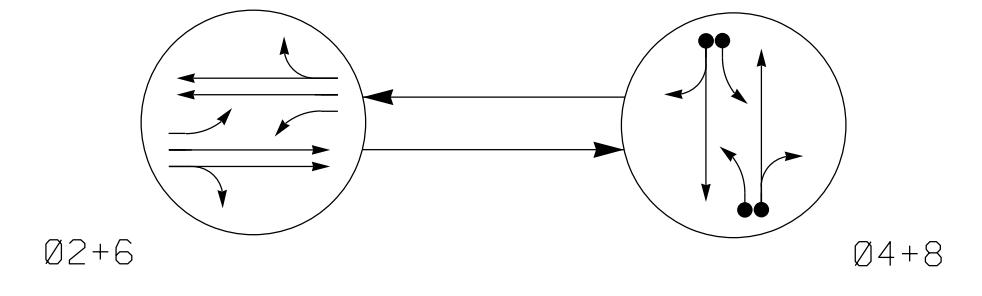
SCALE: 0 20
1" = 20'

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

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 022516
 LISA M. MOON
 DocuSigned by: Lisa M. Moon 6/13/2018
 SIGNATURE DATE: _____
 SIG. INVENTORY NO. 07-0174

13-JUN-2018 17:40
 R:\66015\1707\1\off\caks\gnals\022516\07-0174.dgn
 KANDERSON AT CHA-Y.ANDERSON

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

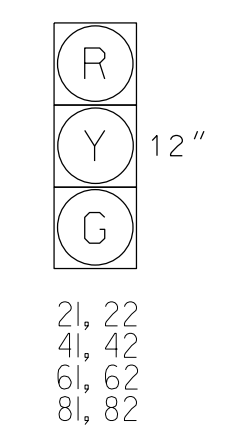
- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UNSIGNALIZED MOVEMENT
- ⊔ ← PEDESTRIAN MOVEMENT

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.



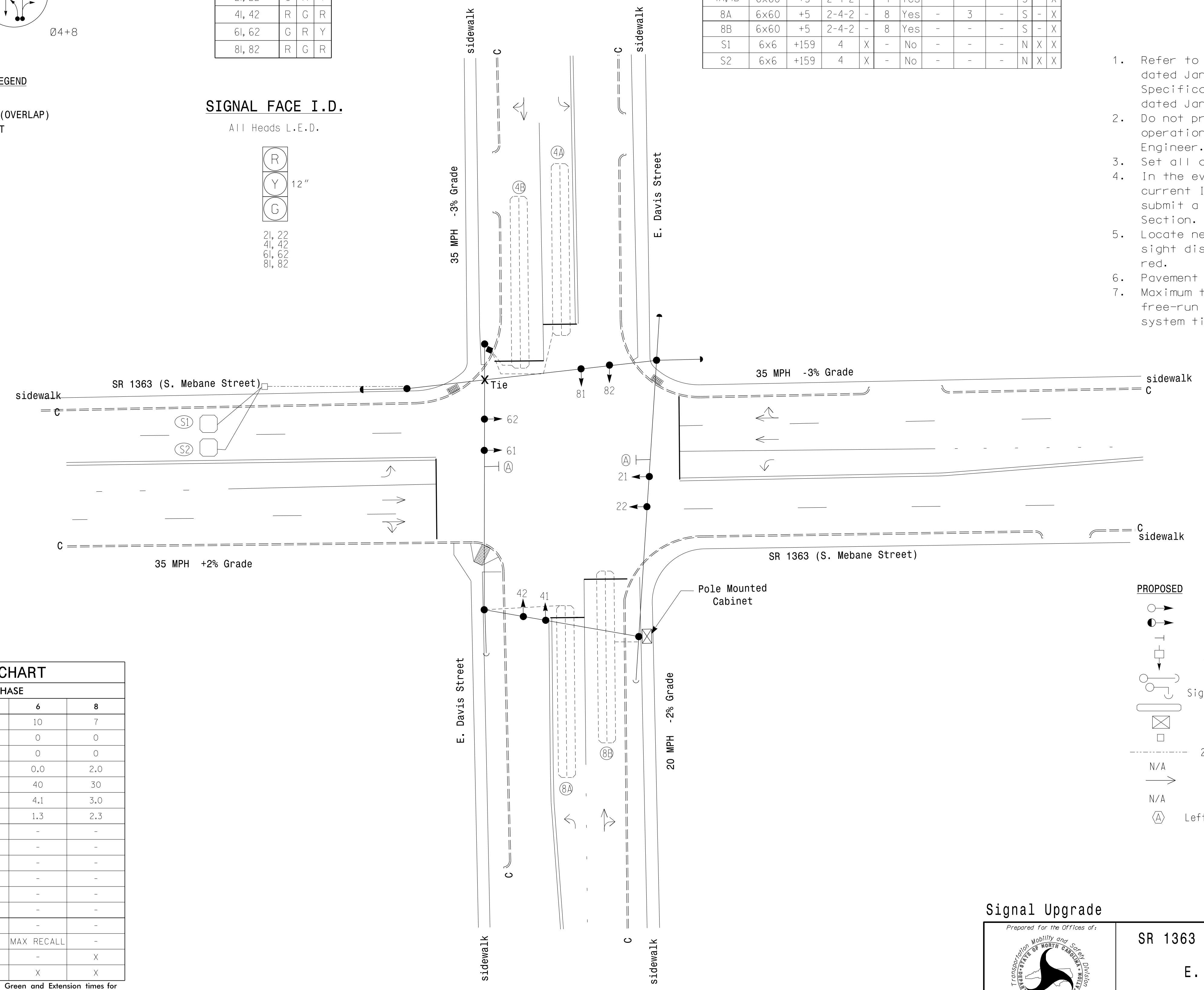
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
4A, 4B	6x60	+5	2-4-2	-	4	Yes	-	-	-	S	-	X
8A	6x60	+5	2-4-2	-	8	Yes	-	3	-	S	-	X
8B	6x60	+5	2-4-2	-	8	Yes	-	-	-	S	-	X
S1	6x6	+159	4	X	-	No	-	-	-	N	X	X
S2	6x6	+159	4	X	-	No	-	-	-	N	X	X

2 Phase Semi-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.
- 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 *	0.0	2.0	0.0	2.0
Max 1 *	40	30	40	30
Yellow	3.7	4.1	4.1	3.0
Red Clear	1.4	1.3	1.3	2.3
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	-	-	-	-
Recall Position	MAX RECALL	-	MAX 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 | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ⊔ → Sign | ⊔ → N/A |
| ⊔ → Pedestrian Signal Head With Push Button & Sign | ⊔ → N/A |
| ⊔ → Signal Pole with Guy | ⊔ → N/A |
| ⊔ → Signal Pole with Sidewalk Guy | ⊔ → N/A |
| ⊔ → Inductive Loop Detector | ⊔ → N/A |
| ⊔ → Controller & Cabinet | ⊔ → N/A |
| ⊔ → Junction Box | ⊔ → N/A |
| ⊔ → 2-in Underground Conduit | ⊔ → N/A |
| — → Right of Way | — → N/A |
| → → Directional Arrow | → → N/A |
| ⊔ → Truncated Domes | ⊔ → N/A |
| ⊔ → Left Arrow "ONLY" Sign (R3-5L) | ⊔ → N/A |

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

SR 1363 (S. Mebane Street) at E. Davis Street

Division 7	Alamance County	Burlington
PLAN DATE: Sept 2017	REVIEWED BY: AJ Davis	
PREPARED BY: RD Lawton	REVIEWED BY: LM Moon	
REVISIONS	INIT.	DATE

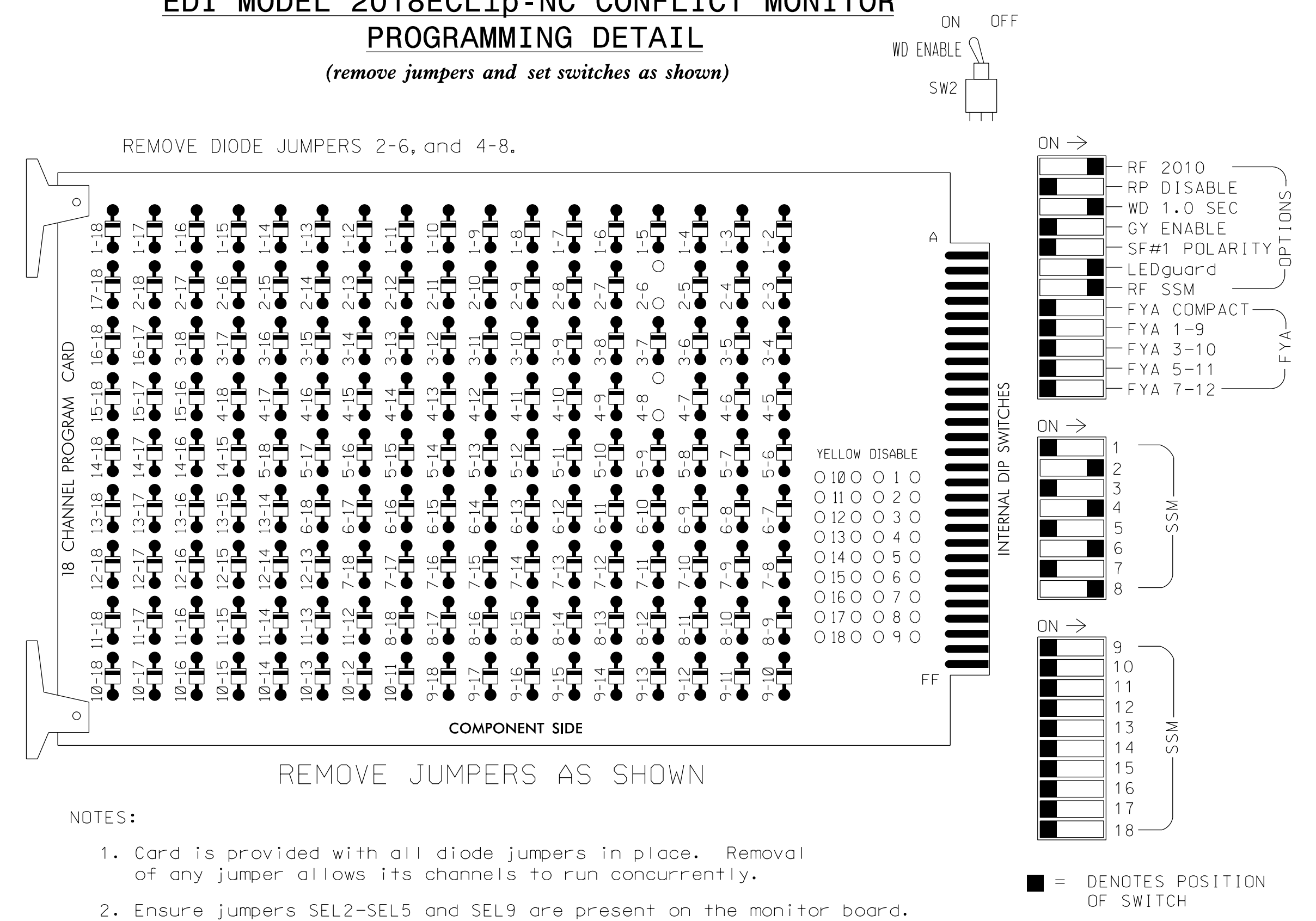
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 022516
 LISA M. MOON
 DocuSigned by:
 Lisa M. Moon 6/13/2018
 SIGNATURE DATE
 SIG. INVENTORY NO. 07-0175

13-JUN-2018 17:41
 R:\66015\1707\1\c\k\signal\02sig\02sig\02-0175.dgn
 KANDERSON AT CHA-KANDERSON

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)

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

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

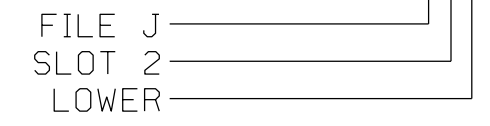
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A,4B	TB21-7,8	I4U	41	4	4	YES				S
* S1	TB21-13,14	I7U	57	7	SYS	NO				N
* S2	TB23-13,14	I7L	50	28	SYS	NO				N
8A	TB22-1,2	I8U	42	8	8	YES		3		S
8B	TB24-1,2	J6L	46	18	8	YES				S

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0175
 DESIGNED: SEPT-2017
 SEALED: 06-13-2018
 REVISED: N/A

13-UNA-2018-17-41 R:\66015\T\off\ek\sign\des\gn\w\ir\ng\07-0175e.dgn KANDERSON AT CHA-KANDERSON



Electrical Detail

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

 750 N. Greenfield Pkwy, Garner, NC 27529

SR 1363 (S. Mebane Street) at E. Davis Street

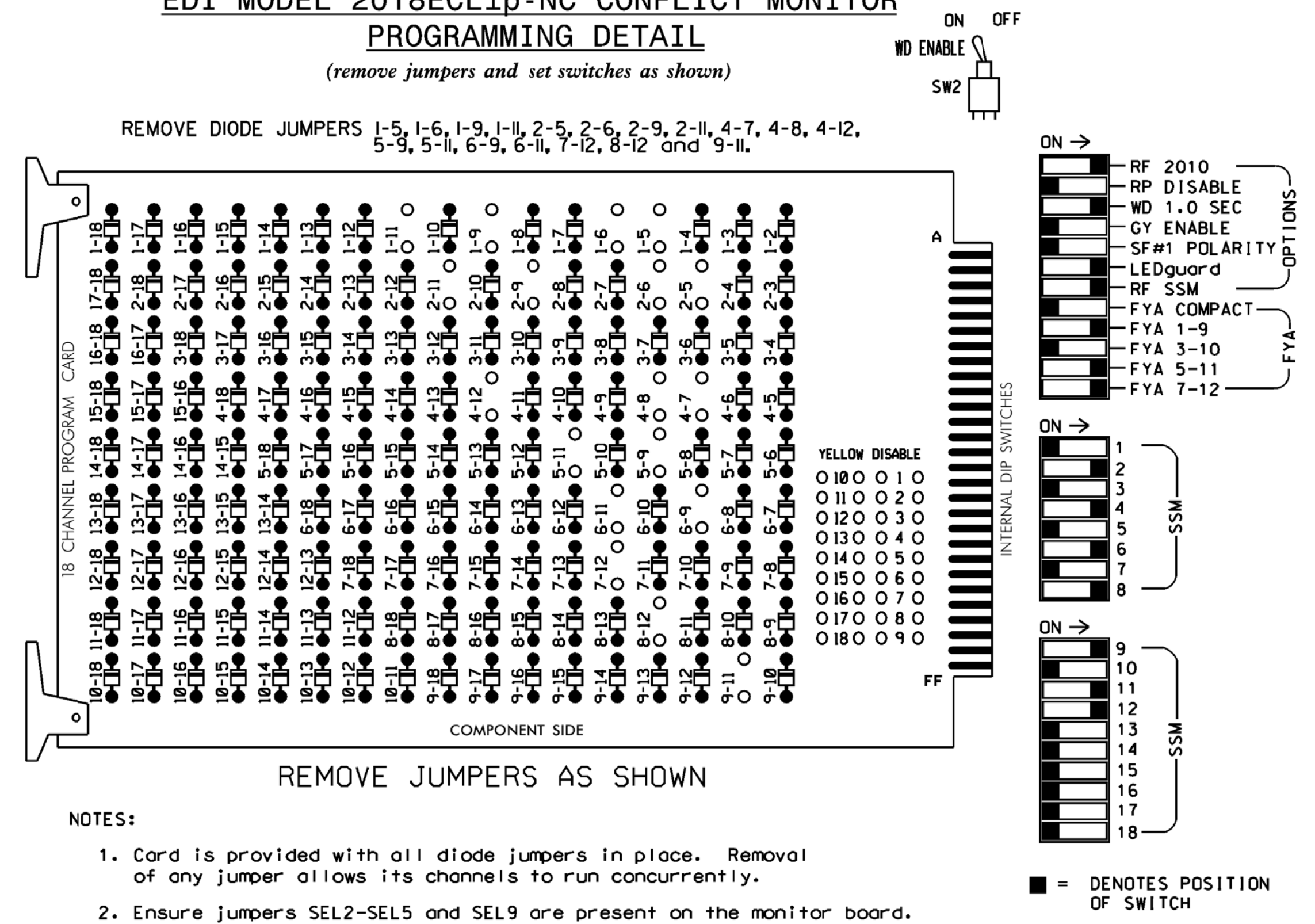
Division 7	Alamance County	Burlington
PLAN DATE: September 2017	REVIEWED BY: LM Moon	
PREPARED BY: AJ Davis	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSigned by:
 Lisa M. Moon
 6/13/2018
 DATE
 SIG. INVENTORY NO. 07-0175

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

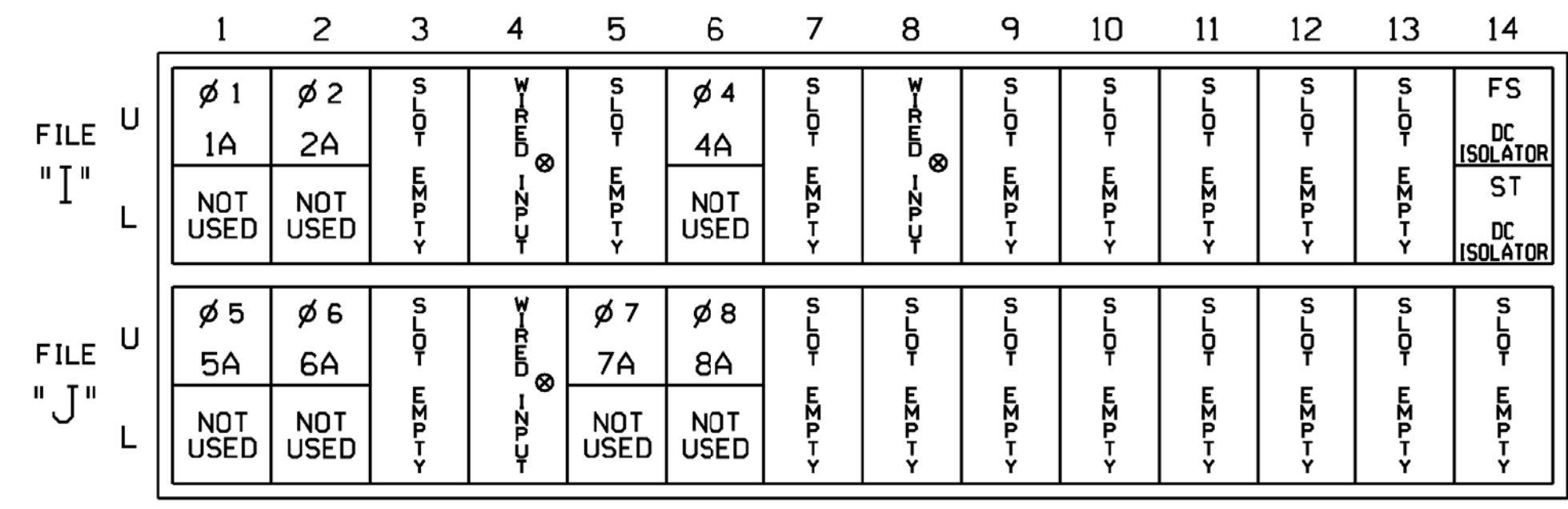
CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1.S2.S5.S7.S8.S10.S11.
 AUX S1.AUX S4.AUX S5
 PHASES USED.....1.2.4.5.6.7.8
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....*
 * 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	21,22	NU	NU	41,42	NU	51	61,62	NU	71	81,82	NU	11	NU	NU	51	71	NU
RED	128				101			134			107							
YELLOW	*	129			102		*	135		*	108							
GREEN		130			103			136			109							
RED ARROW													A121			A114	A101	
YELLOW ARROW													A122			A115	A102	
FLASHING YELLOW ARROW													A123			A116	A103	
GREEN ARROW	127							133		124								

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)

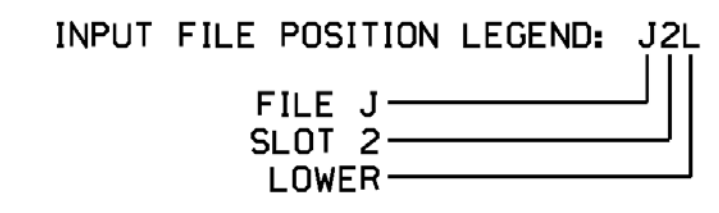


EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 * Wired Input - Do not populate slot with detector card

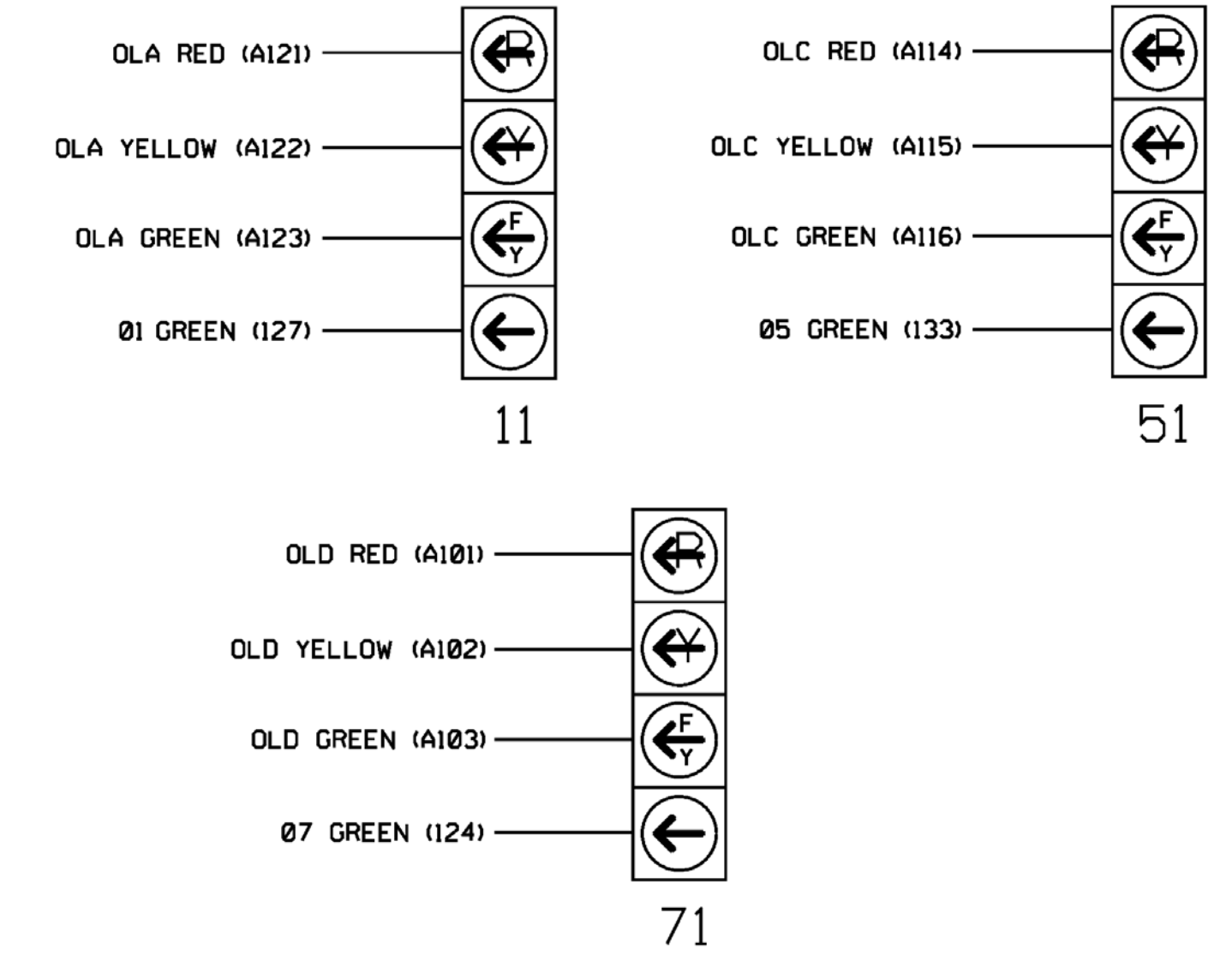
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-1,2	I1U	56	1	1	YES		15		S
	-	J4U	48	26	6	YES				S
2A	TB2-5,6	I2U	39	2	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES		10		S
5A	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
7A	TB5-5,6	J5U	57	7	7	YES		15		S
	-	I8U	49	24	4	YES				S
8A	TB5-9,10	J6U	42	8	8	YES		5		S

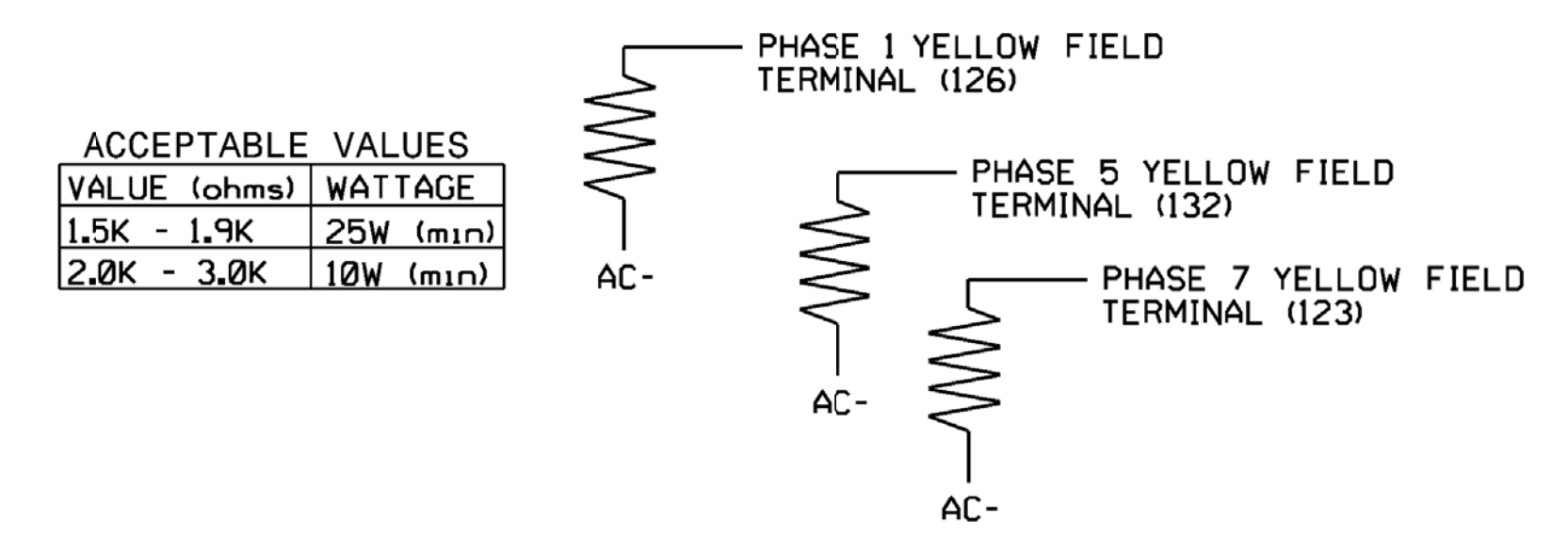
- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.



FYA SIGNAL WIRING DETAIL
(wire signal heads as shown)



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)

Electrical Detail - Sheet 1 of 2



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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For: SR 1719 (Sellars Mill Road) at N. Mebane Street

Prepared for the Offices of: [Seal of North Carolina State Engineer]

Division 7 Alamance County Burlington

PLAN DATE: January 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS: [Table with columns for REVISIONS, INIT., DATE]

James Voso 6/13/2018

SIG. INVENTORY NO. 07-0178

*****SYSTEMS*****
 *****DIAGNOSTICS*****
 *****SOFTWARE*****
 *****HARDWARE*****
 *****USER*****

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	

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.



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

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0178
DESIGNED: January 2018
SEALED: 6/13/2018
REVISED: NA

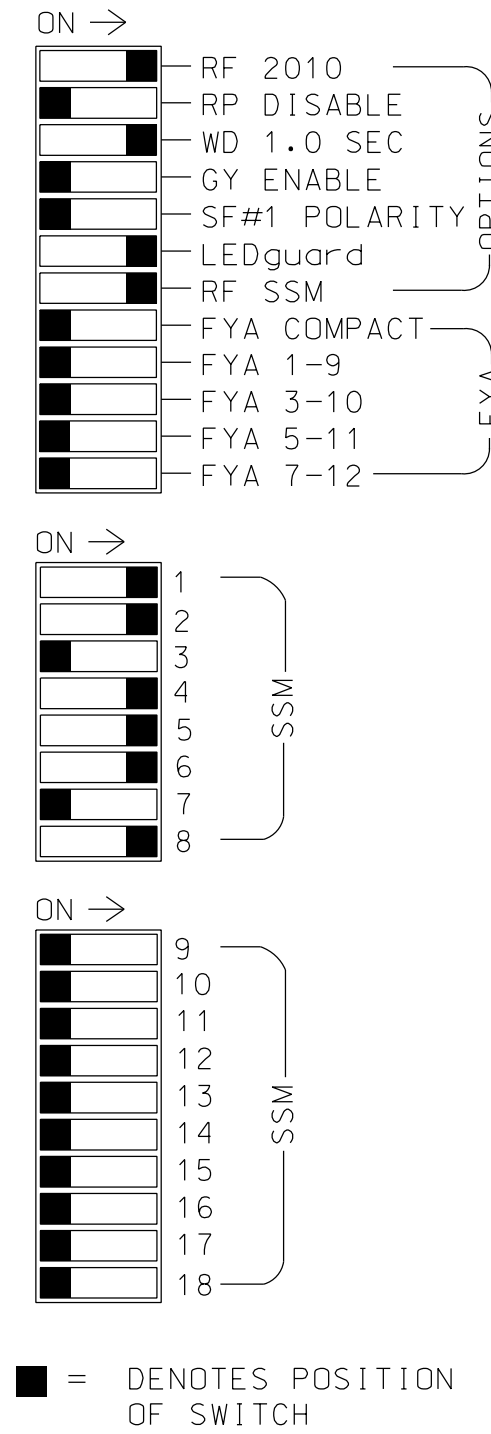
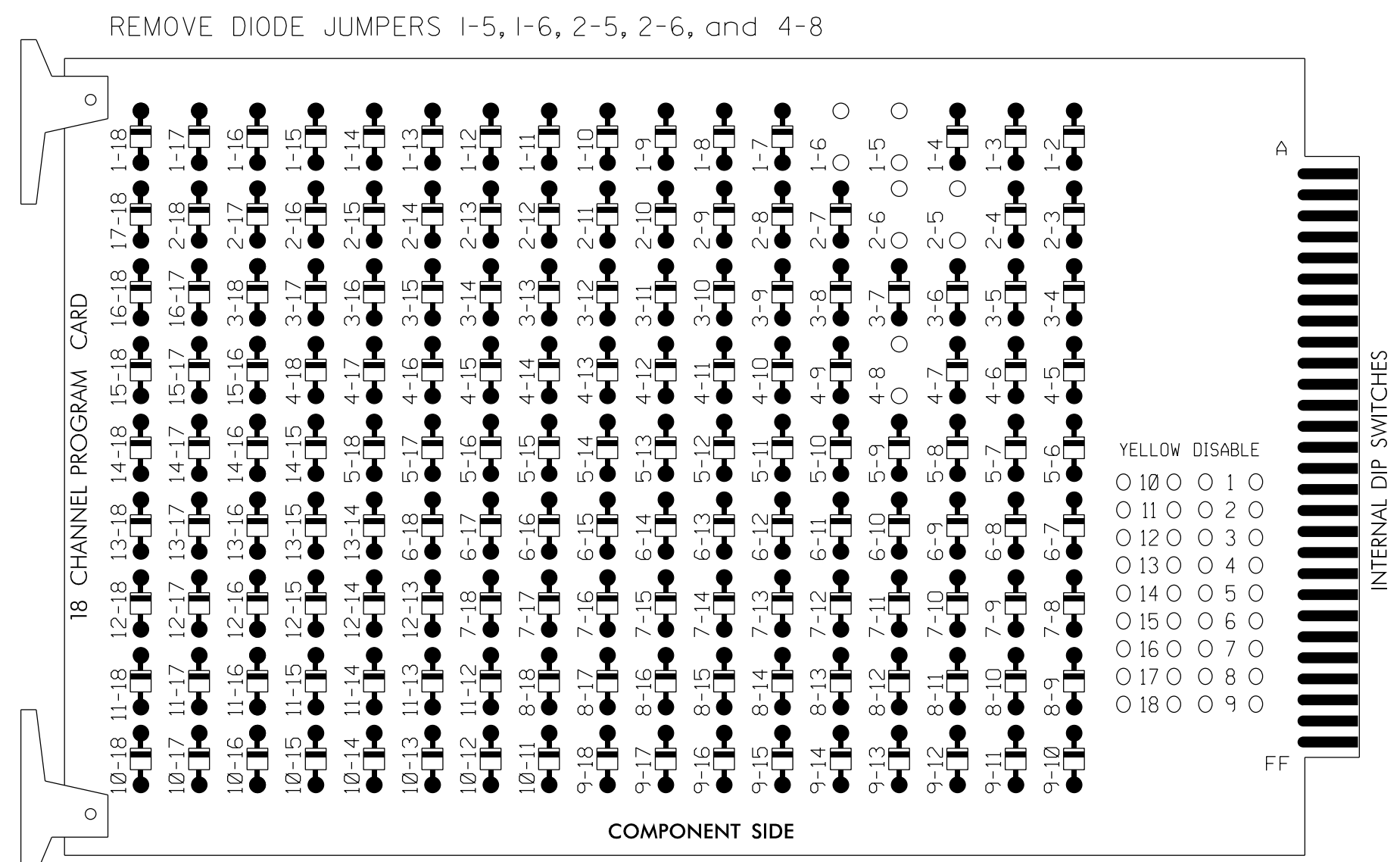
Electrical Detail - Sheet 2 of 2

<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, Corner, NC 27529</p>	<p>SR 1719 (Sellars Mill Road) at N. Mebane Street</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: JB Voso</p> <p style="font-size: x-small;">PREPARED BY: SE Greene REVIEWED BY:</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> </tbody> </table>	REVISIONS	INIT.	DATE				<p style="font-size: x-small;">DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p style="text-align: center;">SEAL</p> <p style="font-size: x-small;">James Voso 6/13/2018 DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-0178</p>
REVISIONS	INIT.	DATE						

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

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.

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
 PHASES USED.....1,2,4,5,6,8
 OVERLAPS.....NONE

PROJECT REFERENCE NO. U-6015	SHEET NO. Sig. 73.1
---------------------------------	------------------------

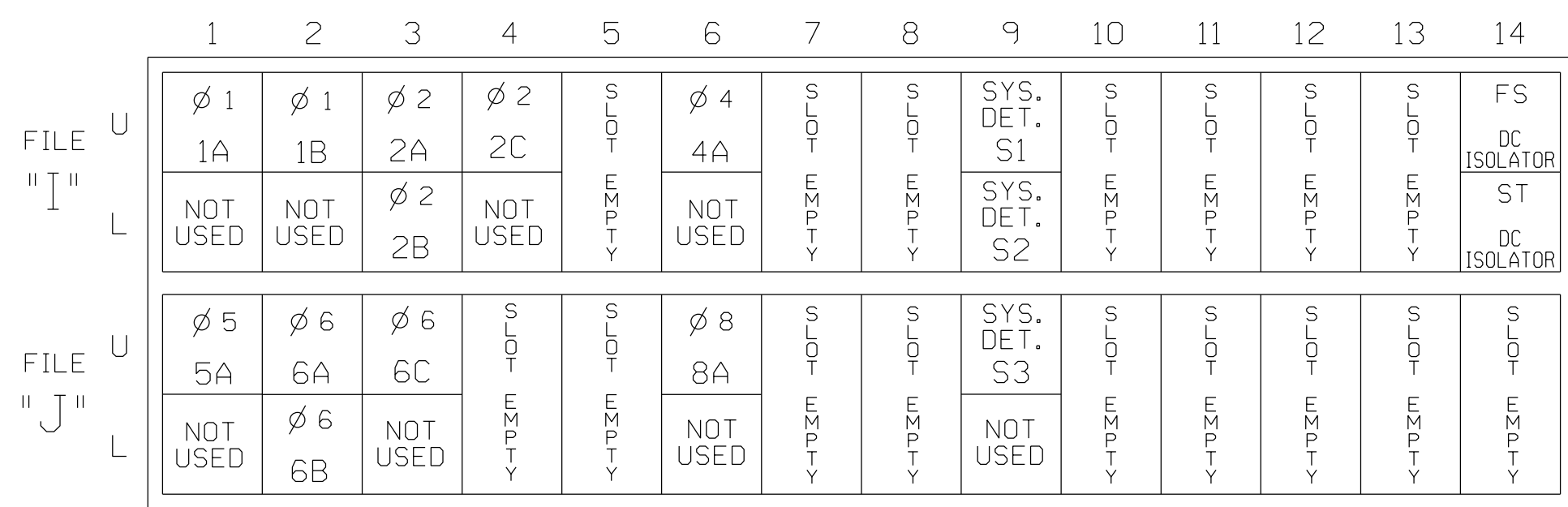
SIGNAL HEAD HOOK-UP CHART

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
EMU 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	83	21,22, 23	NU	NU	41,42	NU	51	61,62, 63	NU	NU	81,82, 83	NU	NU	NU	NU	NU	NU
RED		128			101			134				107						
YELLOW		129			102			135				108						
GREEN		130			103			136				109						
RED ARROW	125							131										
YELLOW ARROW	126	126						132										
GREEN ARROW	127	127						133										

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

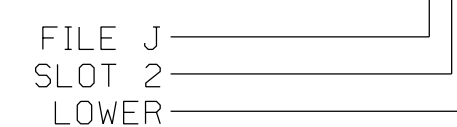
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-1,2	I1U	56	1	1	YES		3		S
1B	TB2-5,6	I2U	39	2	1	YES		15		S
2A	TB2-9,10	I3U	63	32	2	YES			X	N
2B	TB2-11,12	I3L	76	42	2	YES			X	N
2C	TB4-1,2	I4U	47	22	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		10		S
* S1	TB5-9,10	I9U	60	11	SYS	NO				N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N
5A	TB3-1,2	J1U	55	5	5	YES		3		S
6A	TB3-5,6	J2U	40	6	6	YES			X	N
6B	TB3-7,8	J2L	44	16	6	YES			X	N
6C	TB3-9,10	J3U	64	36	6	YES			X	N
8A	TB5-9,10	J6U	42	8	8	YES				S
* S3	TB7-9,10	J9U	59	15	SYS	NO				N

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0201
 DESIGNED: NOVEMBER 2017
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail

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

 750 N. Greenfield Pkwy, Garner, NC 27529

US 70 (N. Church Street) at N. Main Street/Holly Street	
Division 7	Alamance County
PLAN DATE: November 2017	REVIEWED BY: AM Encarnacion
PREPARED BY: JA Wiles	REVIEWED BY: PL Alexander
REVISIONS	INIT. DATE

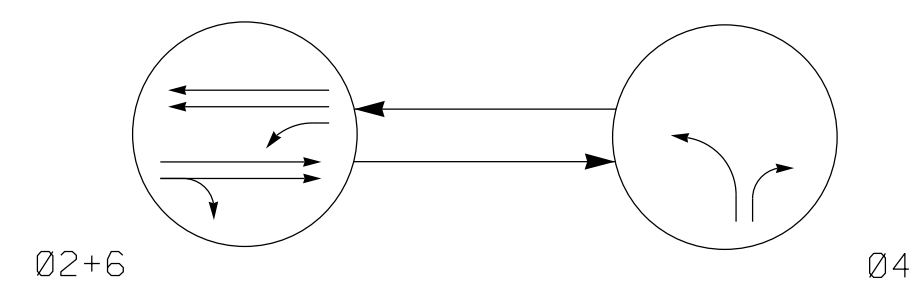
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 PAMELA L. ALEXANDER
 SEAL 023489

6/9/2018
 DATE

SIG. INVENTORY NO. 07-0201

PHASING DIAGRAM



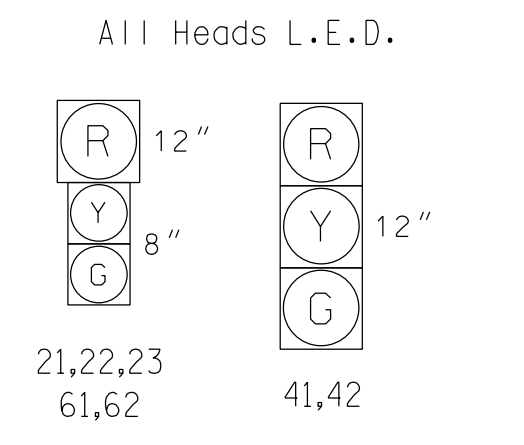
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø2+6	Ø4	FLASH
21,22,23	G	R	Y
41,42	R	G	R
61,62	G	R	Y

SIGNAL FACE I.D.



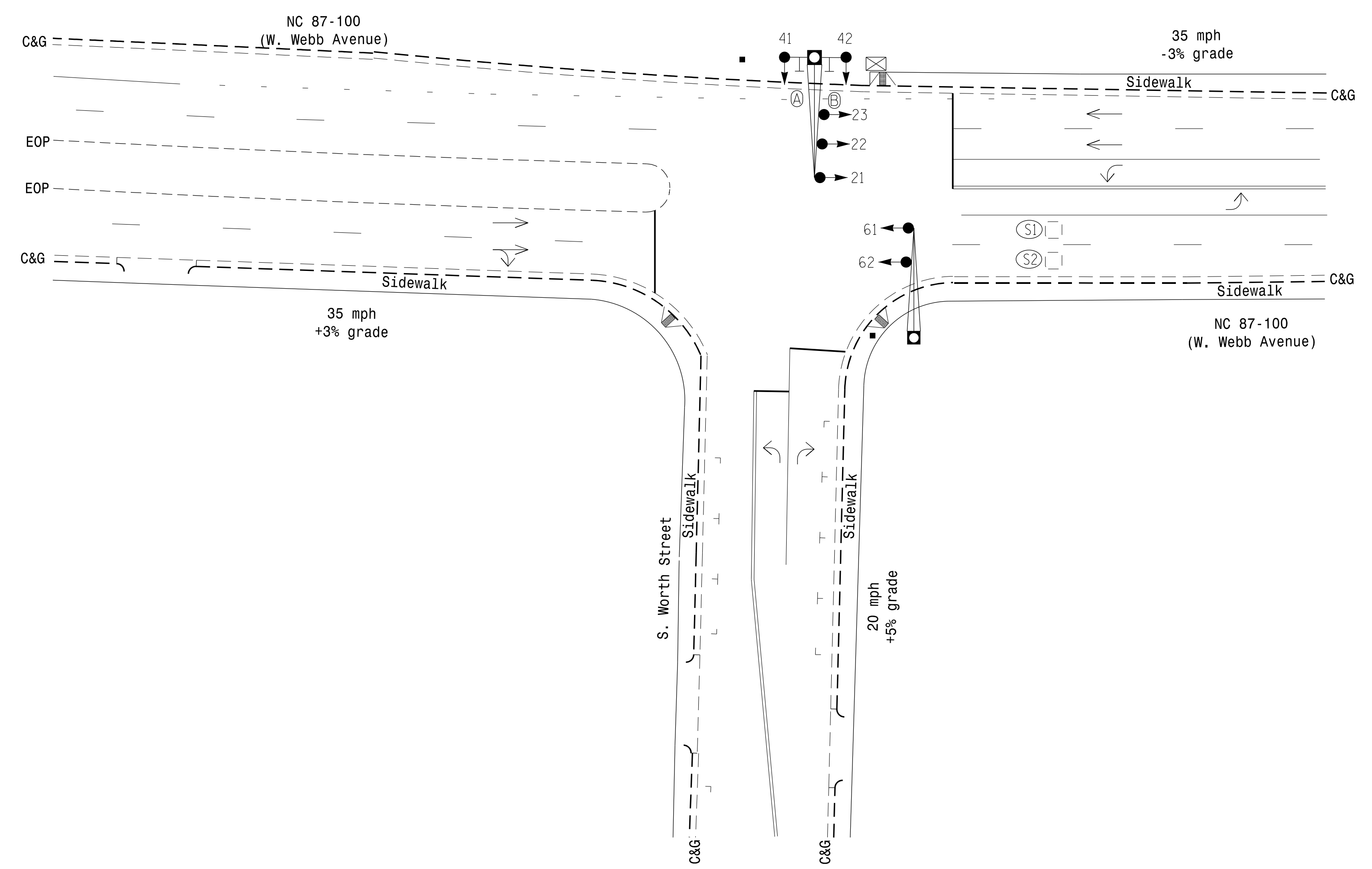
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	PROGRAMMING								
			DETECTOR	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
S1	6X6	+141	EXIST	-	No	-	-	-	N	X	X
S2	6X6	+141	EXIST	-	No	-	-	-	N	X	X

2 Phase Pre-Timed (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.
- 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
Min Green *	10	7	10
Walk *	0	0	0
Ped Clear	0	0	0
Veh. Extension *	-	-	-
Max 1 *	50	20	50
Yellow	4.1	3.0	3.7
Red Clear	1.8	3.1	1.4
Actuations B4 Add *	-	-	-
Seconds /Actuation *	-	-	-
Max Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Locking Detector	-	-	-
Recall Position	MAX RECALL	MAX RECALL	MAX RECALL
Dual Entry	-	-	-
Simultaneous Gap	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	— Sign
○ → Pedestrian Signal Head	● → Signal Pole with Guy
○ → Signal Pole with Guy	● → Signal Pole with Sidewalk Guy
○ → Signal Pole with Sidewalk Guy	○ → Metal Pole with Mastarm
○ → Metal Pole with Mastarm	□ → Inductive Loop Detector
□ → Inductive Loop Detector	□ → Junction Box
□ → Junction Box	--- 2-in Underground Conduit
--- 2-in Underground Conduit	--- Right of Way
--- Right of Way	→ Directional Arrow
→ Directional Arrow	→ Curb Ramp
→ Curb Ramp	Ⓐ Left Arrow "ONLY" Sign (R3-SL)
Ⓐ Left Arrow "ONLY" Sign (R3-SL)	Ⓑ Right Arrow "ONLY" Sign (R3-5R)
Ⓑ Right Arrow "ONLY" Sign (R3-5R)	

Signal Upgrade

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

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 0 30
1"=30'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC 87-100 (W. Webb Avenue) at S. Worth Street

Division 7 Alamance County Burlington

PLAN DATE: August 2017 REVIEWED BY: AM Encarnacion

PREPARED BY: VJ Paul REVIEWED BY: MB Toth

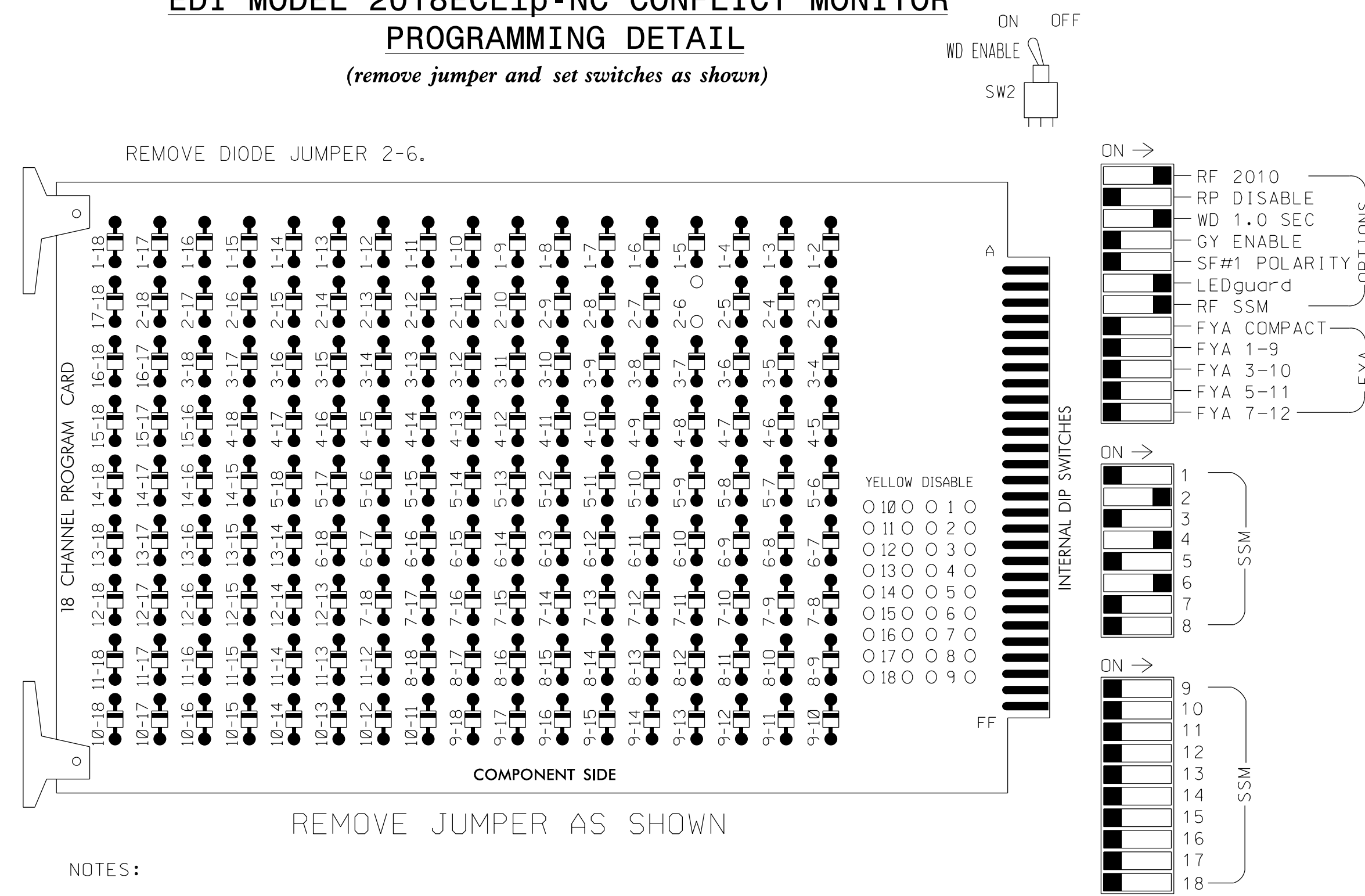
REVISIONS	INIT.	DATE

Developed by: Melissa B. Toth 6/7/2018
 SIGNATURE: _____ DATE: _____
 SIG. INVENTORY NO. 07-0210

07-JUN-2018 11:14
 ***SIGNALING-COMING-PROJECTSIGNALING-TRANSPORTATION-TRAFFIC-CURR#100056469 U-6015 B-0 S1g S1g*task 05.11.15 signal is 00056469-0210.dgn
 ALEX3361 AT LUS210849

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper 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.

PROJECT REFERENCE NO.	SHEET NO.
U-6015	Sig. 75.1

SIGNAL HEAD HOOK-UP CHART

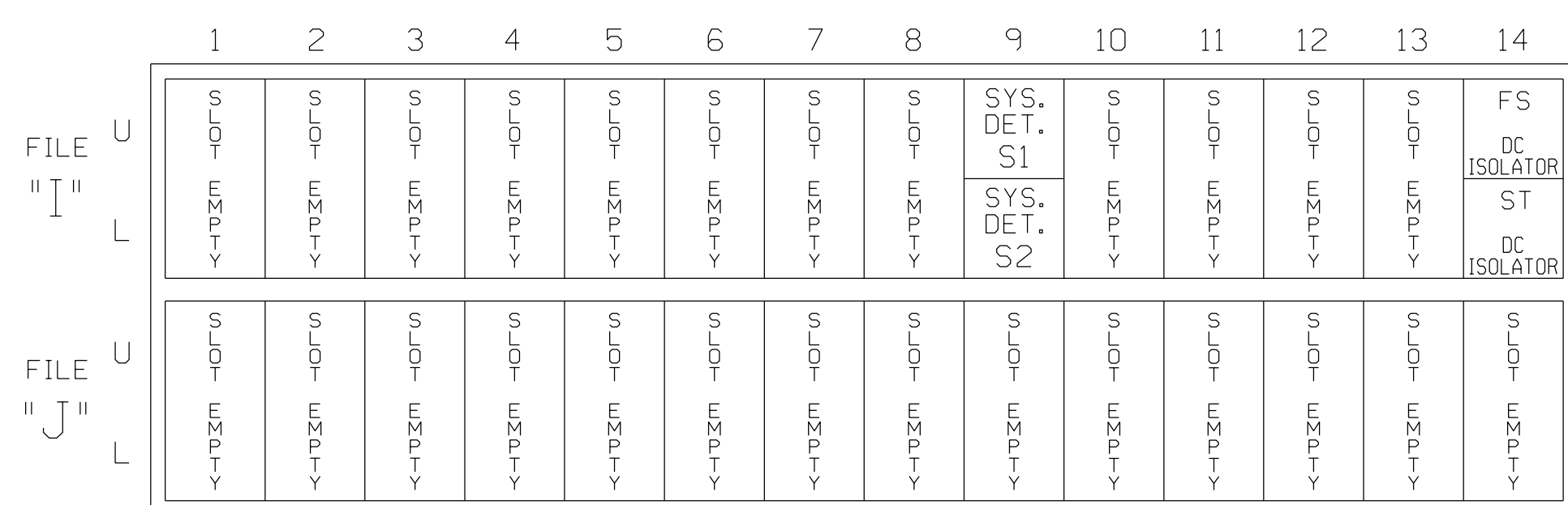
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22 23	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU	NU	NU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

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
 PHASES USED.....2,4,6
 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

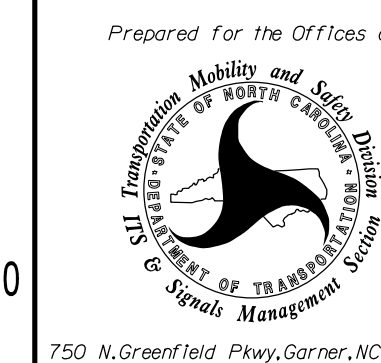
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
*S1	TB6-9,10	I9U	60	11	SYS	NO				N
*S2	TB6-11,12	I9L	62	13	SYS	NO				N

* System detector only. Remove any assigned vehicle phase.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0210
 DESIGNED: August 2017
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

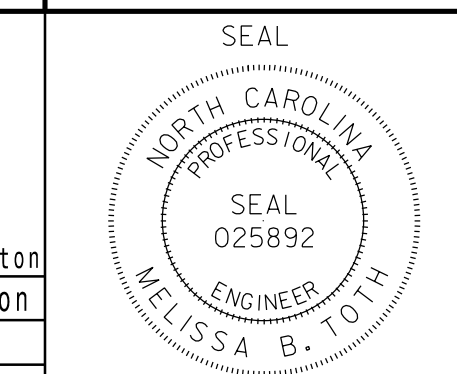


NC 87-100 (W. Webb Avenue) at S. Worth Street

Division 7 Alamance County Burlington
 PLAN DATE: August 2017 REVIEWED BY: AM Encarnacion
 PREPARED BY: VJ Paul REVIEWED BY: MB Toth

REVISIONS	INIT.	DATE

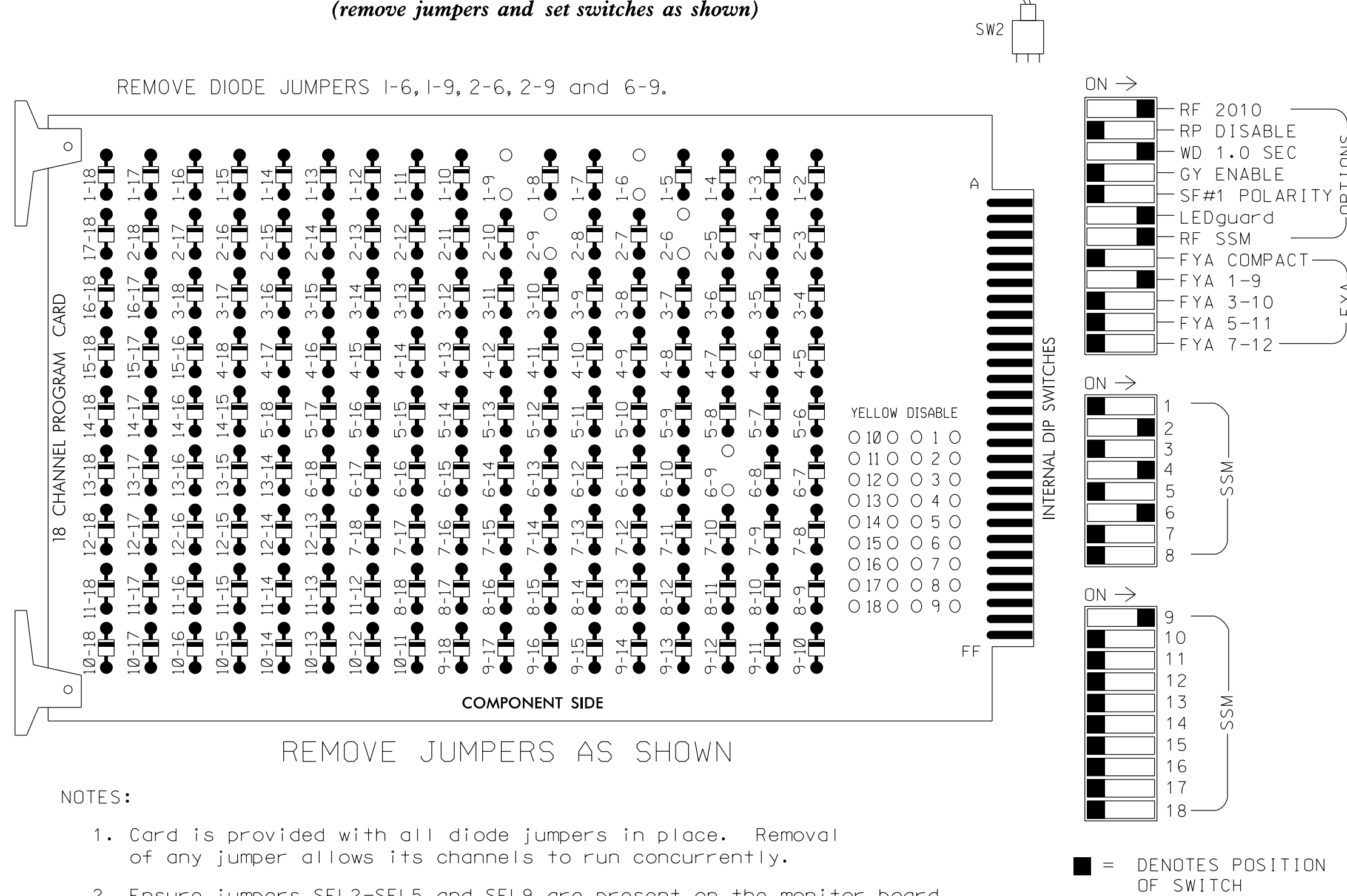
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



Designed by: Melissa B. Toth 6/11/2018
 DATE: _____
 SIG. INVENTORY NO. 07-0210

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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.

PROJECT REFERENCE NO.	SHEET NO.
U-6015	Fig. 76.1

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	21,22	NU	NU	41	42	NU	NU	61,62	NU	NU	NU	11	NU	NU	NU	NU	NU
RED		128			101	101			134									
YELLOW	*	129			102	102			135									
GREEN		130			103	103			136									
RED ARROW													A121					
YELLOW ARROW													A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW	127				103													

NU = Not Used

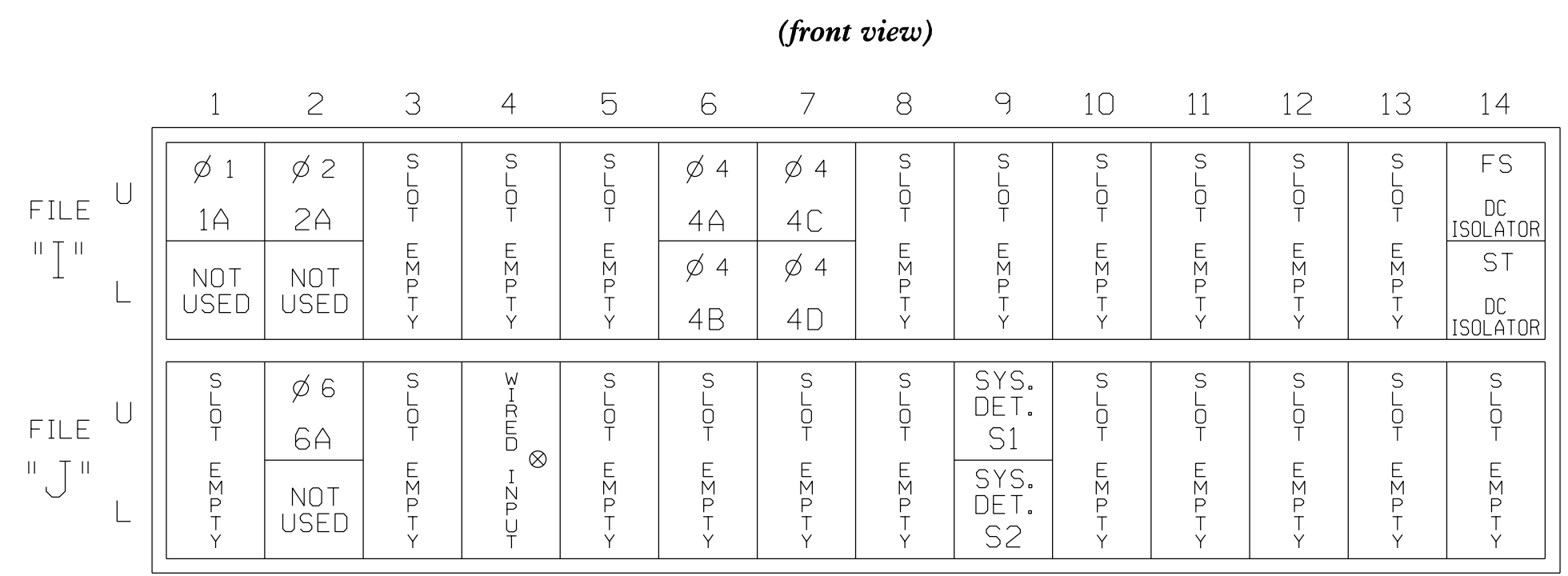
- ★ See pictorial of head wiring in detail this sheet.
- * Denotes install load resistor. See load resistor installation detail this sheet.

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.....S1,S2,S5,S8,AUX S1
 PHASES USED.....1,2,4,6
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2.

INPUT FILE POSITION LAYOUT

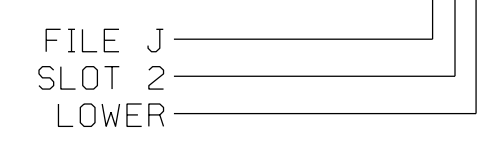


INPUT FILE CONNECTION & PROGRAMMING CHART

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
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				S
4C	TB6-1,2	I7U	65	34	4	YES		15		S
4D	TB6-3,4	I7L	78	44	4	YES		15		S
6A	TB3-5,6	J2U	40	6	6	YES				S
* S1	TB7-9,10	J9U	59	15	SYS	NO				N
* S2	TB7-11,12	J9L	61	17	SYS	NO				N

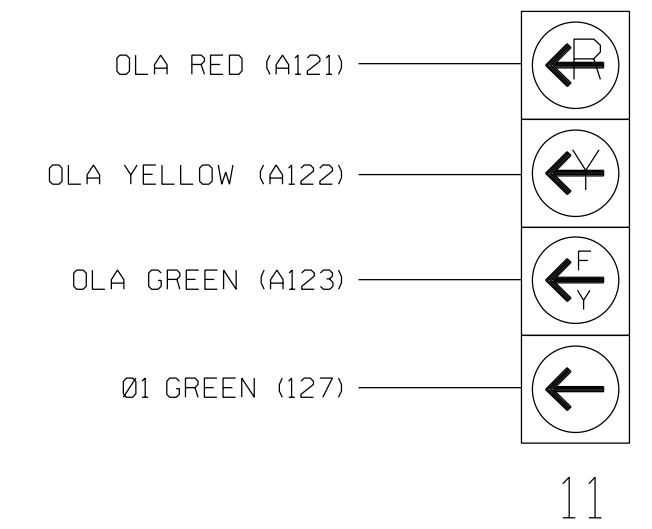
- ¹Add jumper from I1-W to J4-W, on rear of input file.
- * System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



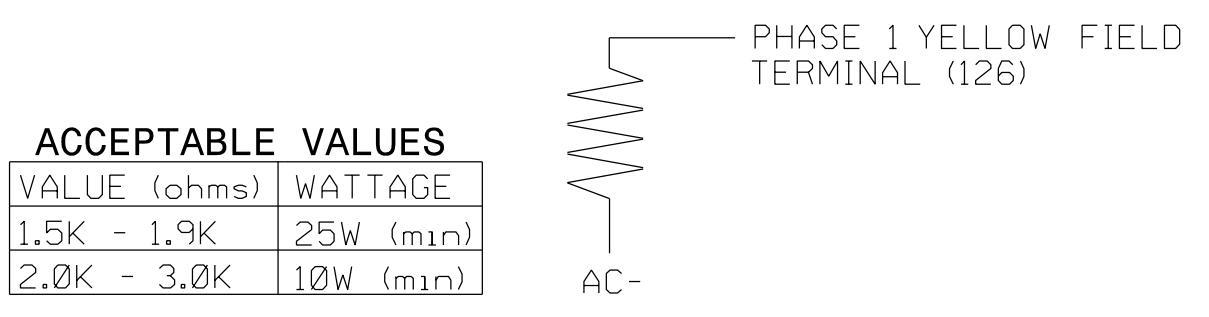
FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)



Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	NC 62 (Alamance Road) at I-40 EB-85 NB Ramps		SEAL
	Division 7 Alamance County Burlington		
PLAN DATE: October 2017	REVIEWED BY: AM Encarnacion		
PREPARED BY: NA PtaK	REVIEWED BY: MB Toth		
REVISIONS	INIT.	DATE	
Prepared by: <i>Melissa B. Toth</i>			DATE: 6/11/2018
SIG. INVENTORY NO. 07-0220			

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
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0220
 DESIGNED: October 2017
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 13:38
 D:\Consolidation\Projects\00056469 U-6015 B-G Sig Sys\Task 05_11_Signal\Des\gn\wlr\Inq07-0220E.dgn
 ALEX3361 AT LUS30669

Electrical Detail - Sheet 2 of 2

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

<p style="text-align: center; font-size: small;">Prepared for the Offices of:</p> <p style="text-align: center; font-size: x-small;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>NC 62 (Alamance Road) at I-40 EB-85 NB Ramps</p> <p style="font-size: x-small;">Division 7 Alamance County Burlington</p> <p style="font-size: x-small;">PLAN DATE: October 2017 REVIEWED BY: AM Encarnacion</p> <p style="font-size: x-small;">PREPARED BY: NA Ptak REVIEWED BY: MB Toth</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;">SEAL 025892 MELISSA B. TOTH</p>
REVISIONS	INIT.	DATE									
<p>Developed by: <u>Melissa B. Toth</u> DATE: <u>6/11/2018</u></p> <p>Checked by: _____ DATE: _____</p>		<p>SIG. INVENTORY NO. 07-0220</p>									

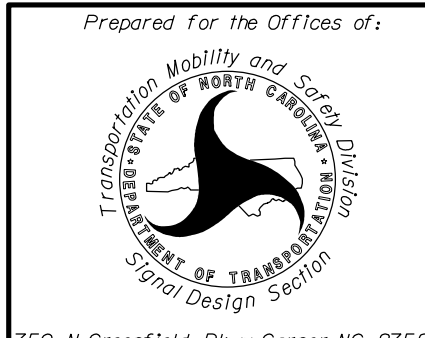
ATKINS

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

THIS SHEET LEFT INTENTIONALLY BLANK

18-JUN-2018 15:10
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 P:\US\636 - AT US\40718

Signal Upgrade



750 N. Greenfield Pkwy, Garner, NC 27529

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

NTS

SR 1716 (N. Graham-Hopedale Rd) at SR 1343 (Martin Street) (Future)	
Division 7	Alamance County Burlington
PLAN DATE: June 2018	REVIEWED BY: MBT
PREPARED BY: NAP	REVIEWED BY: AME
REVISIONS	INIT. DATE

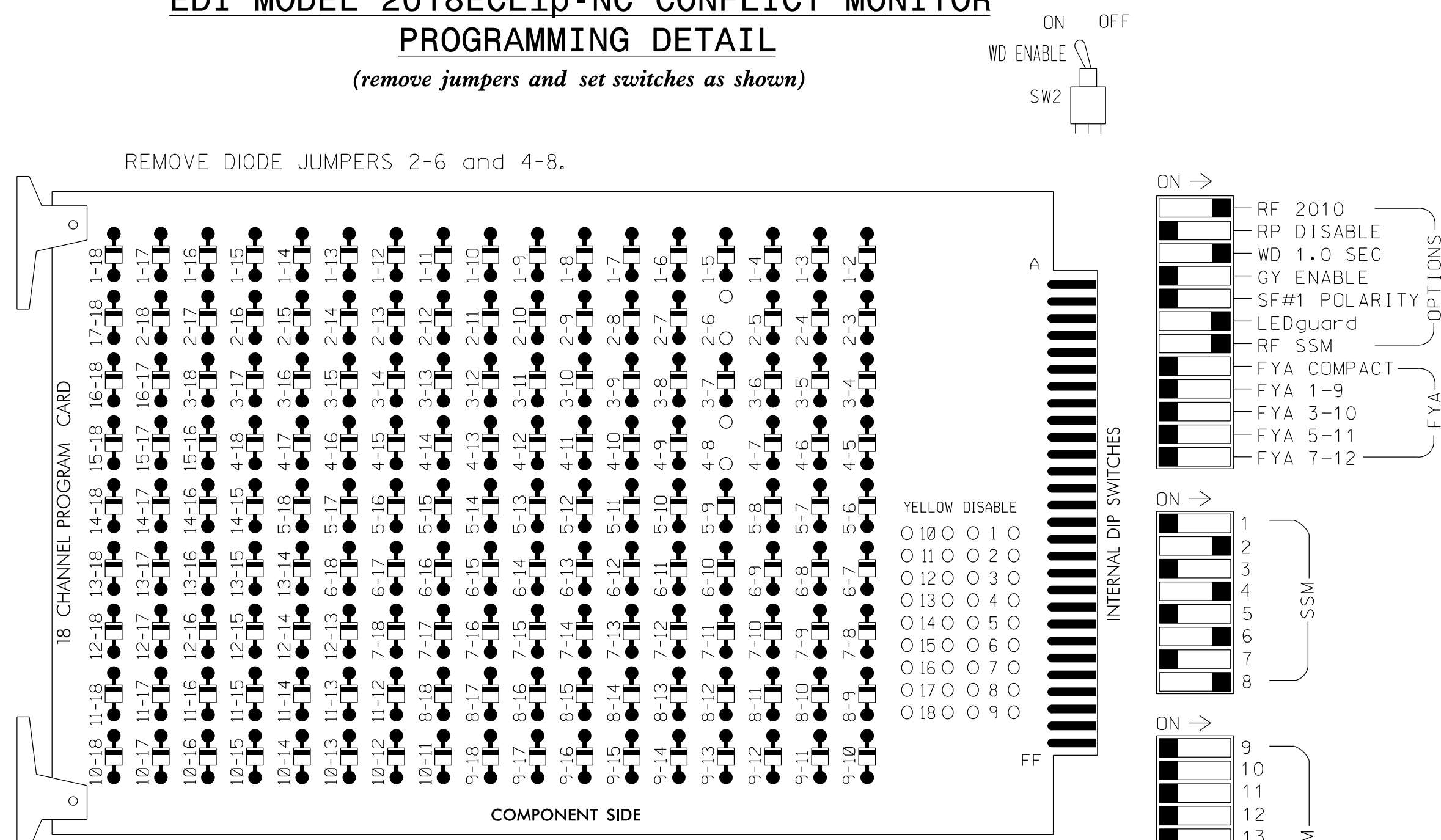
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

SEAL

SIGNATURE _____ DATE _____
 SIG. INVENTORY NO. 07-0263

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	3	4	4	5	6	6	7	8	8	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																		

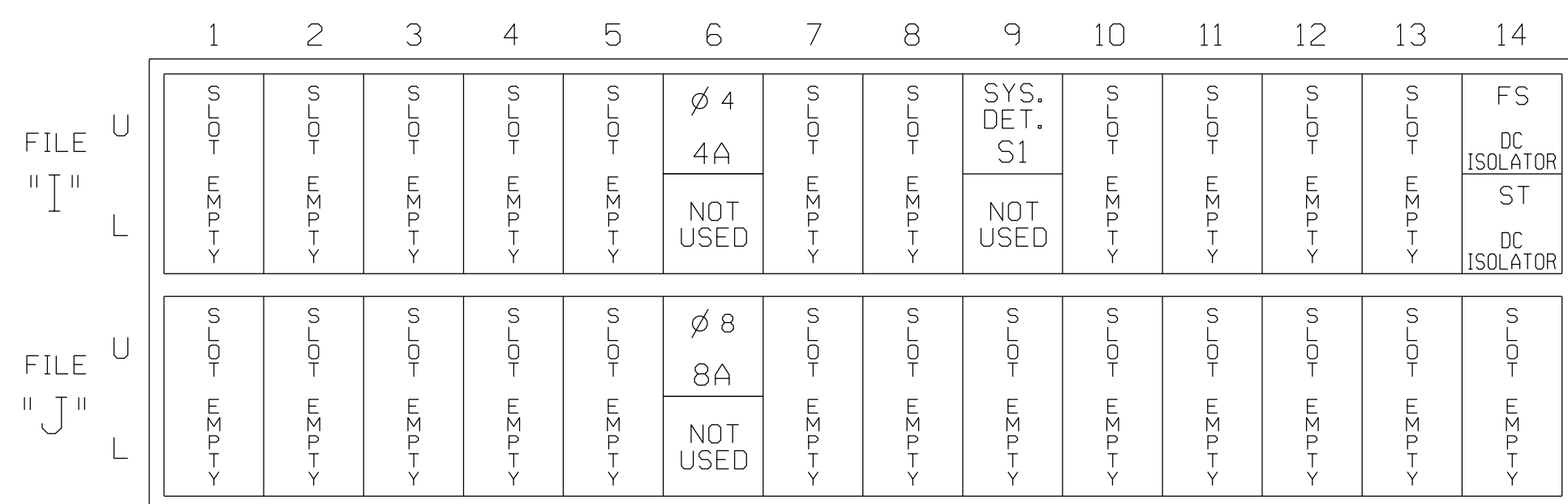
NU = Not Used

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

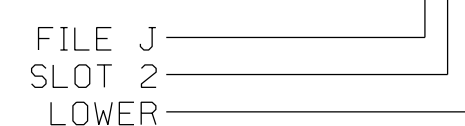
FS = FLASH SENSE
 ST = STOP TIME

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
4A	TB4-9,10	I6U	41	4	4	YES		5		S
* S1	TB6-9,10	I9U	60	11	SYS	NO				N
8A	TB5-9,10	J6U	42	8	8	YES		5		S

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L

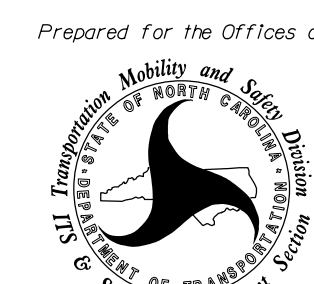


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0292
 DESIGNED: MARCH 2018
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 14:13 D:\transortat\om\Facility\cur\100056469 U-6015 B-G S1g Sys\Task 05_11_Signal\Des\gmr\img\07-0292.dgn ALEX3361 AT LUS210649

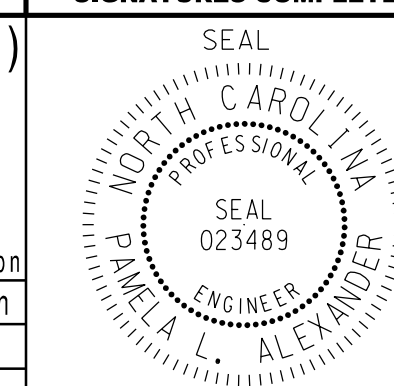
Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:



SR 1716 (S. Graham-Hopedale Rd)
 at
 SR 1720 (W. Hanover Road) /
 W. Hanover Road
 Division 7 Alameda County Burlington
 PLAN DATE: March 2018 REVIEWED BY: AM Encarnacion
 PREPARED BY: VJ Paul REVIEWED BY: PL Alexander

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



750 N. Greenfield Pkwy, Garner, NC 27529

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

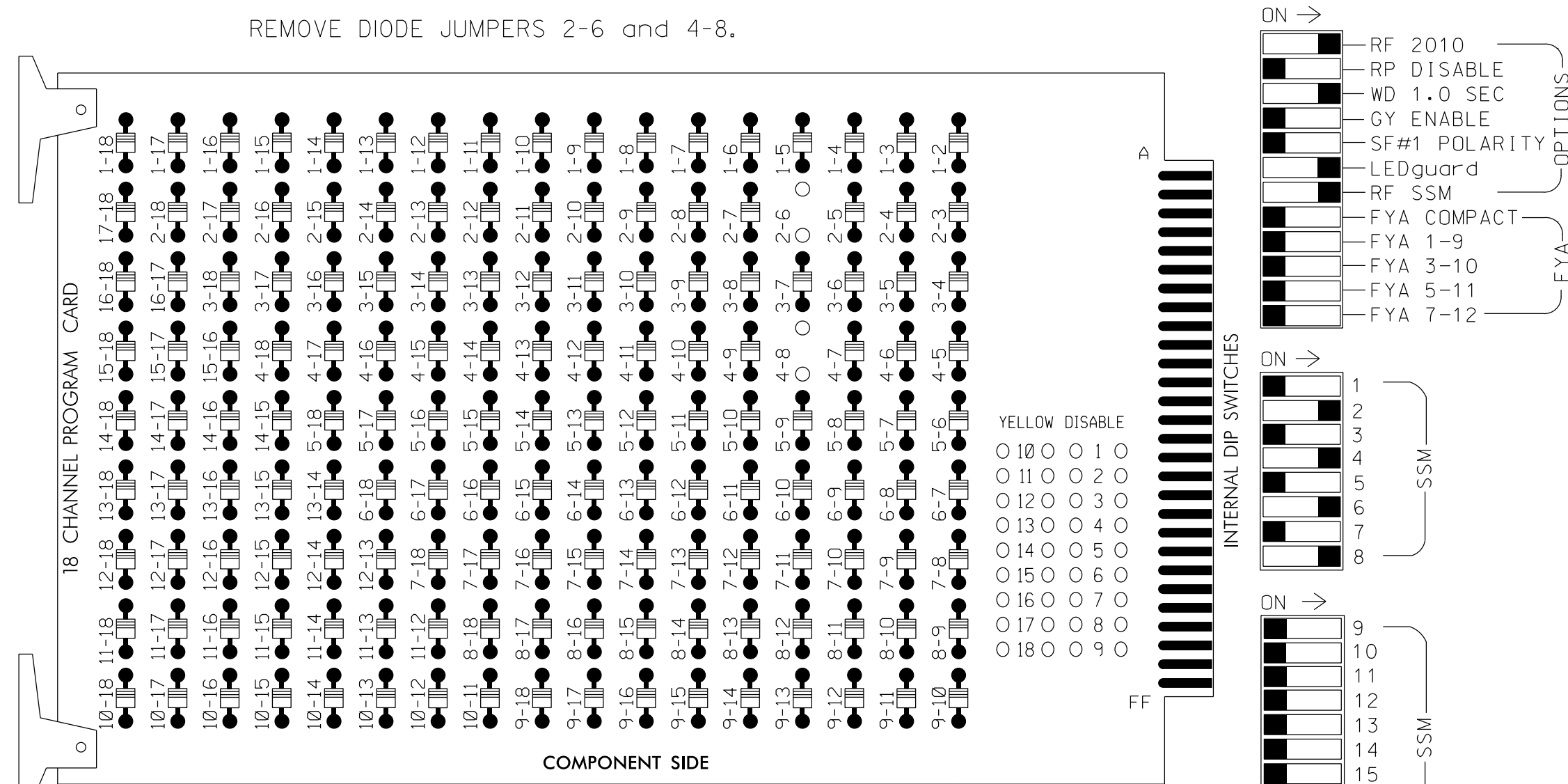
6/9/2018
 Pamela Alexander
 DATE

SIG. INVENTORY NO. 07-0292

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	Z PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	QLA	QLB	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
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

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

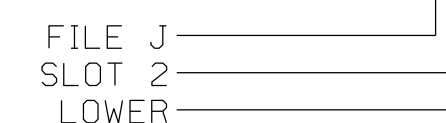
EX. : 1A, 2A, ETC. = LOOP NO.'S

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			X	N
2B	TB2-7,8	I2L	43	12	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		5		S
6A	TB3-5,6	J2U	40	6	6	YES			X	N
8A	TB5-9,10	J6U	42	8	8	YES		5		S

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0350
 PREPARED: April 2018
 SEALED: 5/16/2018
 REVISED: N/A

*****SYSTEMS*****
 *****DESIGN*****
 *****DRAWING*****
 *****DATE*****

Prepared in the Office of:

NC FIRM LICENSE No: P-0339
 504 Meadowlands Drive
 Hillsborough, NC 27278
 (919) 732-3883
 (919) 732-6676 (FAX)

Electrical and Programming Details For:

750 N. Greenfield Pkwy, Garner, NC 27529

NC 62 (Rauhut Street)
 at
 SR 1537 (Sharpe Road)

Division 7 Alamance County Burlington

PLAN DATE: April 2018 REVIEWED BY: E. W. Sirgany

PREPARED BY: J. Smith REVIEWED BY:

REVISIONS INIT. DATE

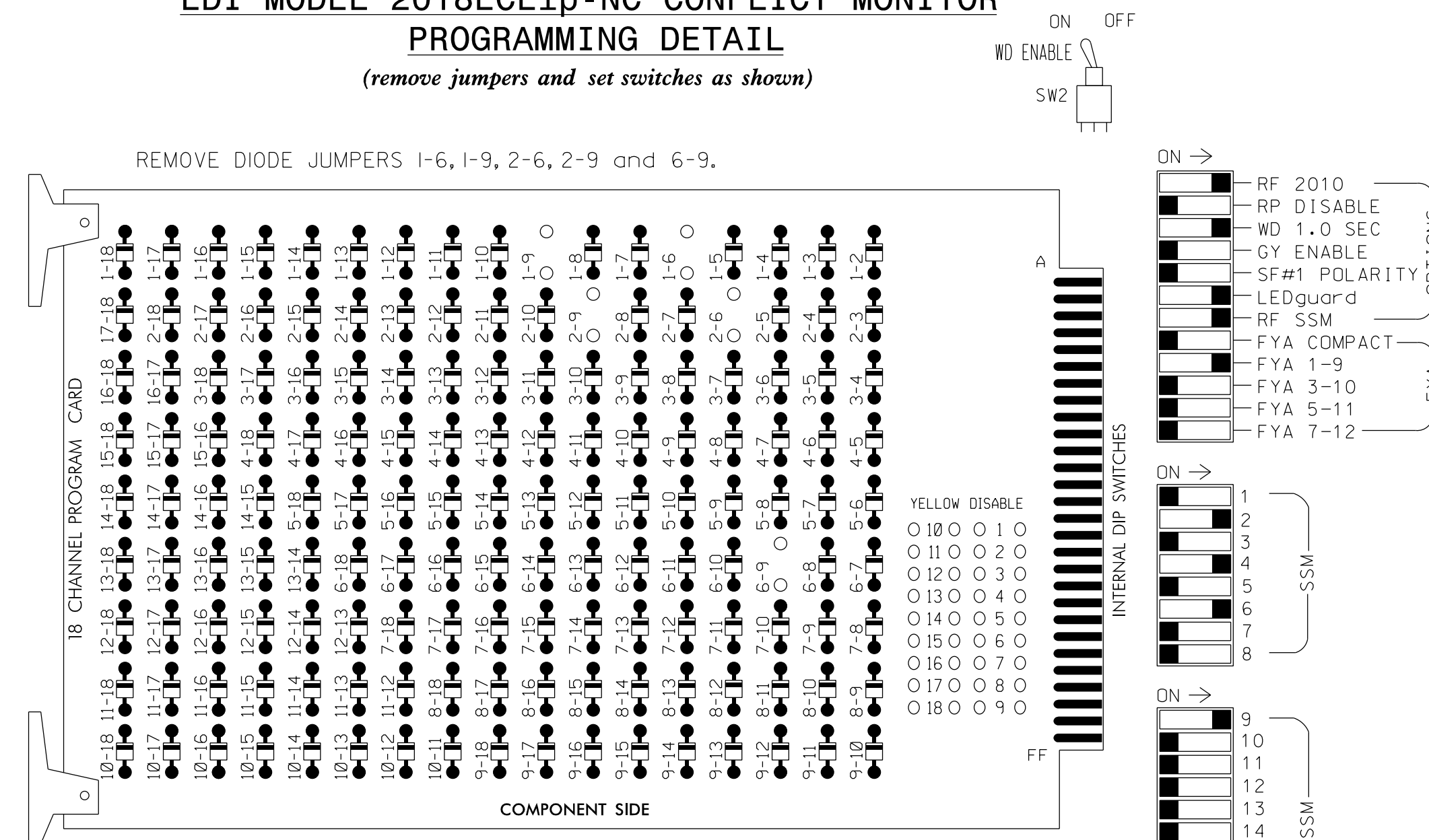
DocuSign by: Edward W. Sirgany 5/16/2018

SIG. INVENTORY NO. 07-0350

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.....S1,S2,S5,S8,AUX S1
 PHASES USED.....1,2,4,6
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2

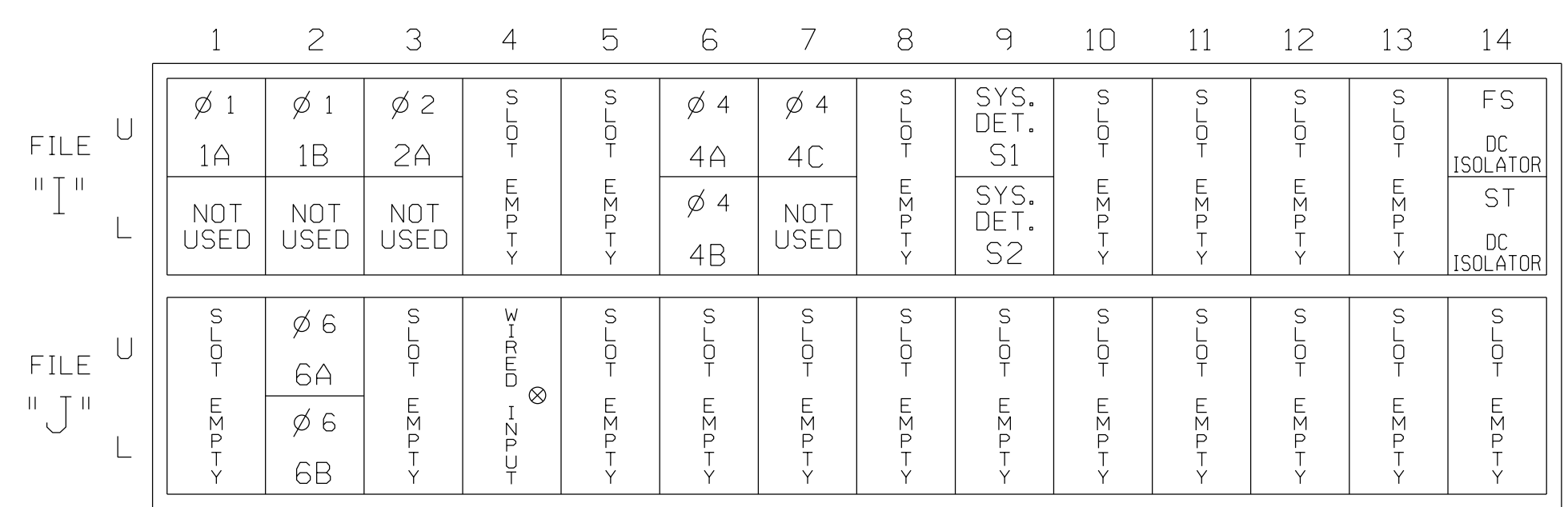
SIGNAL HEAD HOOK-UP CHART

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.	11,12	21,22	NU	NU	41	42,43	NU	NU	61,62	NU	NU	NU	11,12	NU	NU	NU	NU	NU
RED		128			101	101			134									
YELLOW	*	129			102	102			135									
GREEN		130			103	103			136									
RED ARROW													A121					
YELLOW ARROW													A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW	127					103												

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)



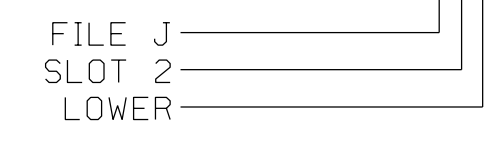
EX. : 1A, 2A, ETC. = LOOP NO.*
 FS = FLASH SENSE
 ST = STOP TIME
 * Wired Input - Do not populate slot with detector card

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 ²	TB2-5,6	I2U	39	2 ★	1	YES		15		S
	-	J4U	48	26 ★	6	YES				S
2A	TB2-9,10	I3U	63	32	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES				S
4B	TB4-11,12	I6L	45	14	4	YES				S
4C	TB6-1,2	I7U	65	34	4	YES		15		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
6B	TB3-7,8	J2L	44	16	6	YES				S

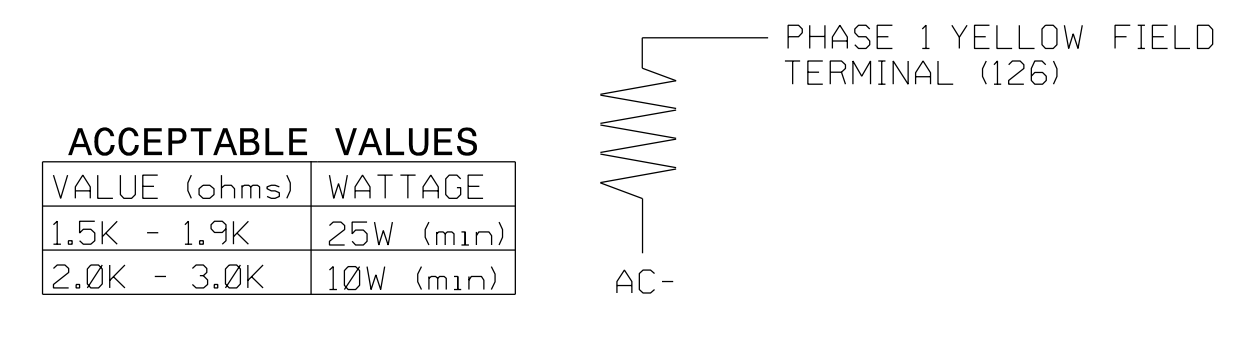
- * System detector only. Remove any assigned vehicle phase.
¹Add jumper from I1-W to J4-W, on rear of input file.
²Add jumper from I2-W to J4-W, on rear of input file.
 ★ See the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheet 2.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

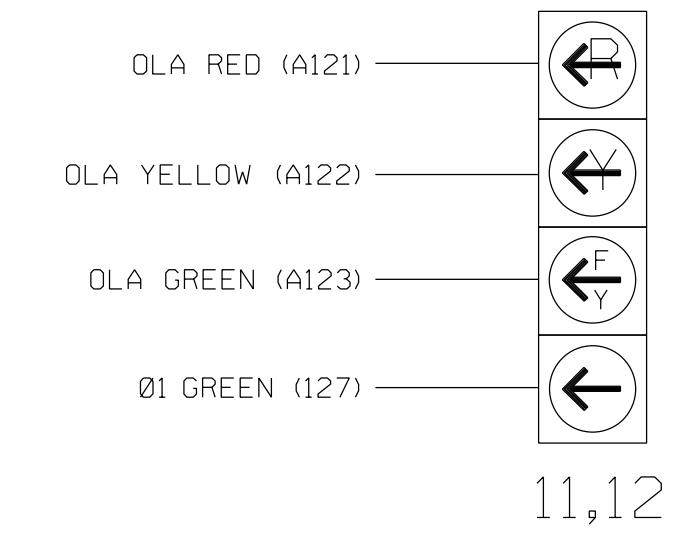
(install resistor as shown)



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

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0410
 DESIGNED: February 2018
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	SR 1158 (Huffman Mill Road) at I-40 EB-85 NB Ramps		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
	Division 7 PLAN DATE: February 2018 PREPARED BY: NA Ptak	Alamance County REVIEWED BY: AM Encarnacion REVIEWED BY: PL Alexander		Burlington DATE: 6/9/2018 DATE:

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A AND 1B

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING... . > PHASE TIMING... .
TIMING PLAN.... . > TIMING PLAN.... .
PH DET OPT PLAN. . > PH DET OPT PLAN. .
DETECTOR PLAN.. 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
    
```

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "0".

```

VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
  1 1 . . . . .
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "2".
- Set delay time to "0".

```

VEH DETECTOR [ 2]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
  2 1 . . . . .
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
 26 0 . . . . .
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

← NOTICE VEH DET PLAN 2

→ ENSURE PHASE IS SET TO "0"

END PROGRAMMING

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..... 1
    
```

← NOTICE ACTION PLAN SF BIT "1"

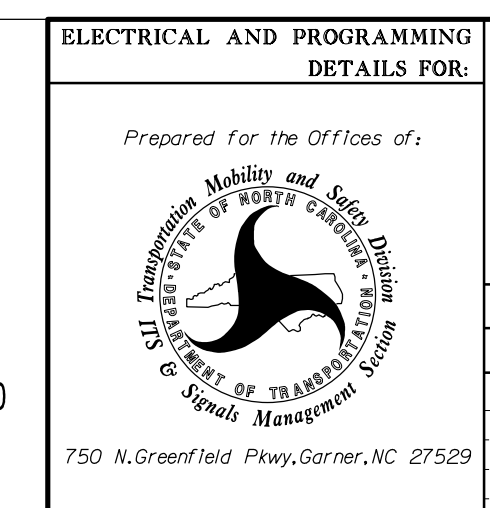
END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0410
DESIGNED: February 2018
SEALED: 6/7/2018
REVISED: N/A

09-JUN-2018 14:13 D:\Consolidator\offices\curry\00056469 U-6015 B-G S1g SysTask 05_11_Signal\Des\gn\wlr\ing07-0410E.dgn ALEX3361 AT LUS33069

Electrical Detail - Sheet 2 of 3

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



ELECTRICAL AND PROGRAMMING DETAILS FOR:	
Prepared for the Offices of:	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>STATE OF NORTH CAROLINA</p> </div> <div style="text-align: center;"> <p>Division 7</p> <p>Alamance County</p> <p>Burlington</p> </div> </div>	
PLAN DATE: February 2018	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 ENGINEER

PAMELA L. ALEXANDER

SEAL 023489

DATE 6/9/2018

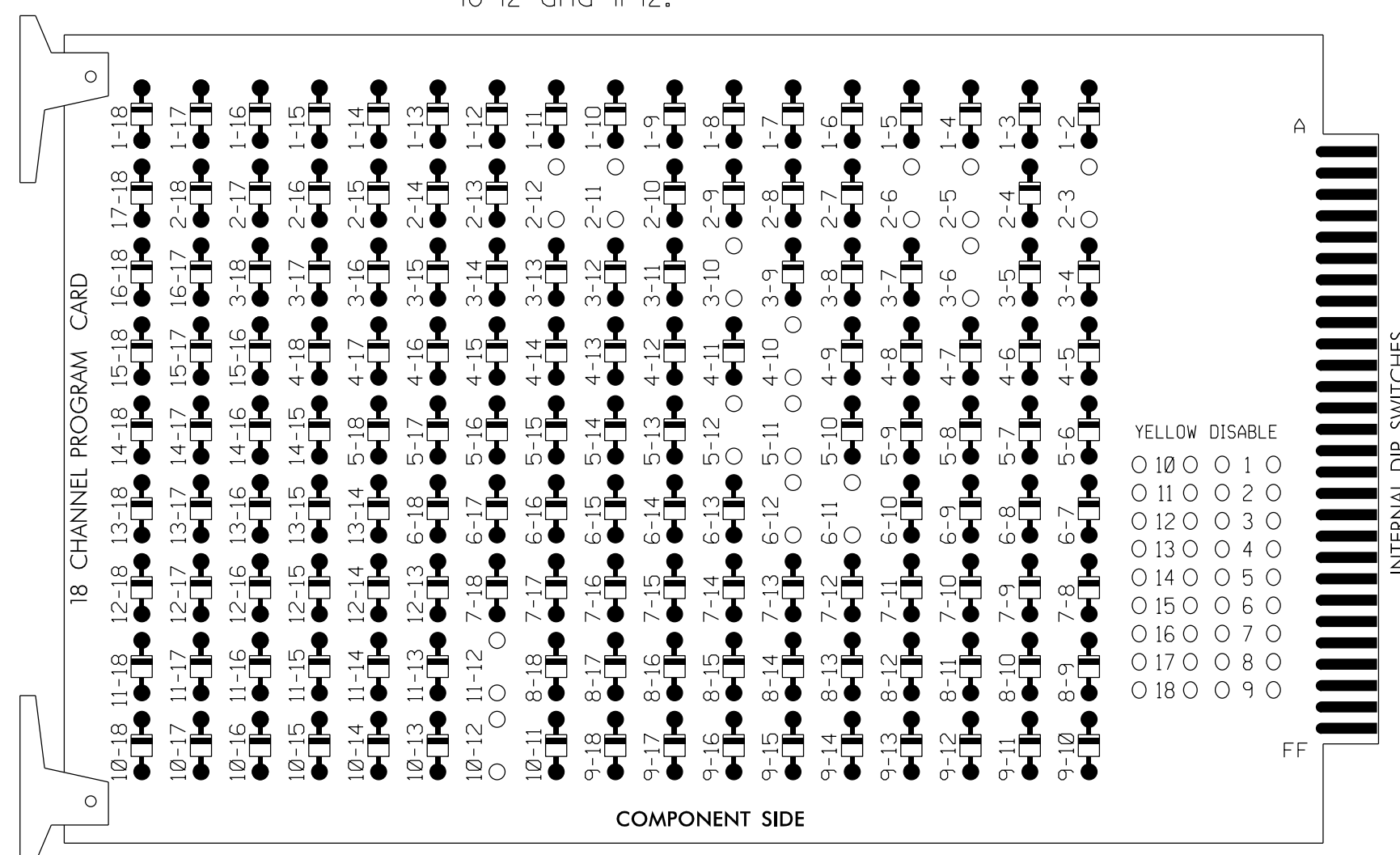
DATE

SIG. INVENTORY NO. 07-0410

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

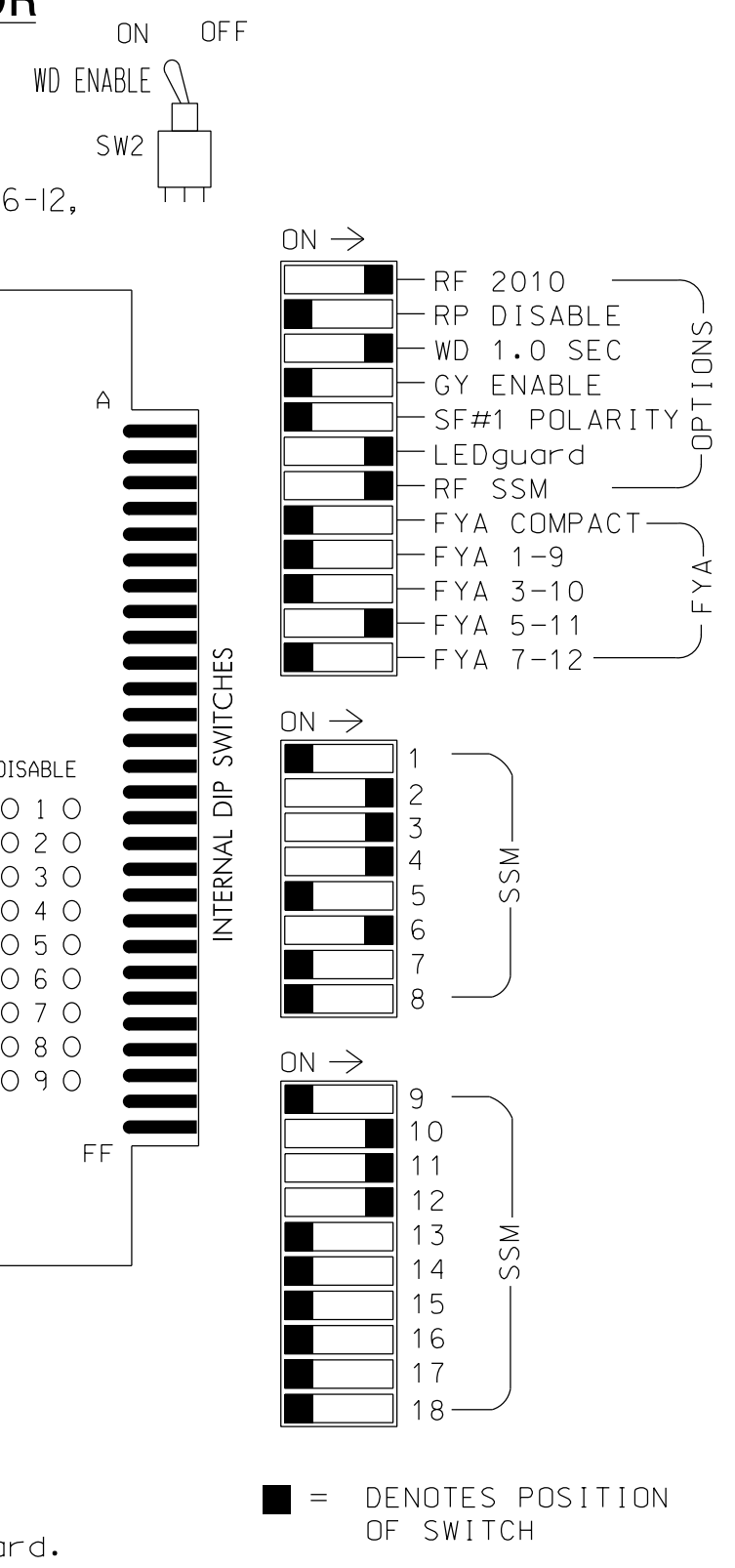
REMOVE DIODE JUMPERS 2-3, 2-5, 2-6, 2-11, 2-12, 3-6, 3-10, 4-10, 5-11, 5-12, 6-11, 6-12, 10-12 and 11-12.



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program 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.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S4,S5,S7,S8,AUX S2,
 AUX S4,AUX S5
 PHASES USED.....2,3,4,5,6,**9,**10
 OVERLAP "A".....NOT USED
 OVERLAP "B".....3+4+9 TOL
 OVERLAP "C".....*
 OVERLAP "D".....5+6+9 TOL
 OVERLAP "G".....2+10
 OVERLAP "H".....3+10
 OVERLAP "I".....6+10

* See overlap programming detail on sheet 2
 ** Denotes phases 9 and 10 used in preemption sequence only.
 See sheet 4 for phase sequence details for phase 9 and 10 programming.

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	OLG	2 PED	OLH	4	4 PED	5	OLI	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE			
SIGNAL HEAD NO.	NU	21,22	NU	31,32, 33,34	41	42	NU	51	61,62	NU	NU	NU	NU	43,44	NU	51	63	64	NU		
RED	128			116	101	101			134								A124		A101	A101	
YELLOW		129		117	102	102		*	135								A125		A102	A102	
GREEN		130		118	103	103			136								A126		A103	A103	
RED ARROW																				A114	
YELLOW ARROW																					A115
FLASHING YELLOW ARROW																					A116
GREEN ARROW						103			133												A103

NU = Not Used

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

* See pictorial of head wiring in detail this sheet.

NOTE: Output functions for load switches S2, S4, and S8 have been reassigned. See Sheet 2 for details

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 2	∅ 2	∅ 3	∅ 3	∅ 3	∅ 3	∅ 4	∅ 4	SYS. DET. S1	∅ 5	∅ 5	∅ 5	∅ 5	FS DC ISOLATOR
L	NOT USED	2A	NOT USED	3A	3B	4A	4C	NOT USED	NOT USED	∅ 6	∅ 6	∅ 6	∅ 6	ST
U	∅ 5	∅ 6	∅ 7	∅ 7	∅ 7	∅ 7	∅ 7	∅ 7	∅ 7	∅ 7	∅ 7	∅ 7	∅ 7	RR AC ISOLATOR
L	NOT USED	6A	NOT USED	7A	7B	7C	7D	7E	7F	7G	7H	7I	7J	NOT USED

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

FS = FLASH SENSE
 ST = STOP TIME
 RR = RAILROAD PREEMPT

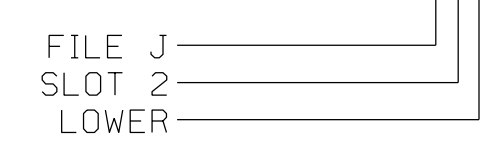
⊗ Wired Input - Do not populate slot with detector card

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				S
3A	TB4-5,6	I5U	58	3	3	YES		3		S
3B	TB4-9,10	I6U	41	4	3	YES		10		S
3C	TB4-11,12	I6L	45	14	3	YES				S
4A	TB6-1,2	I7U	65	34	4	YES		3		S
4B	TB6-3,4	I7L	78	44	4	YES				S
4C	TB6-5,6	I8U	49	24	4	YES		5		S
* S1	TB6-9,10	I9U	60	11	SYS NO					N
5A ¹	TB3-1,2	J1U	55	5	5	YES		15		S
6A	TB3-5,6	J2U	40	6	6	YES				S
6B	TB3-7,8	J2L	44	16	6	YES				S

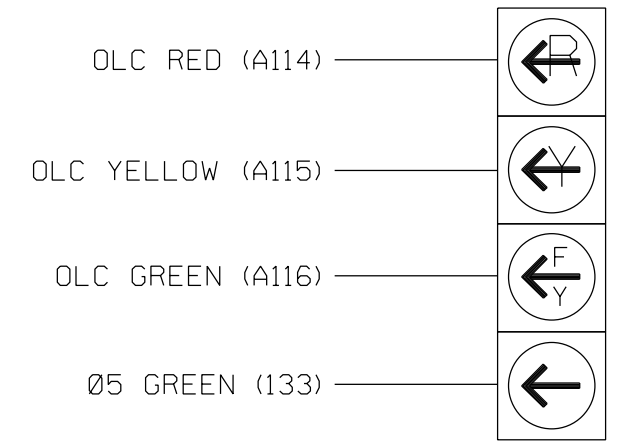
¹Add jumper from J1-W to 14-W, on rear of input file.
 * System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



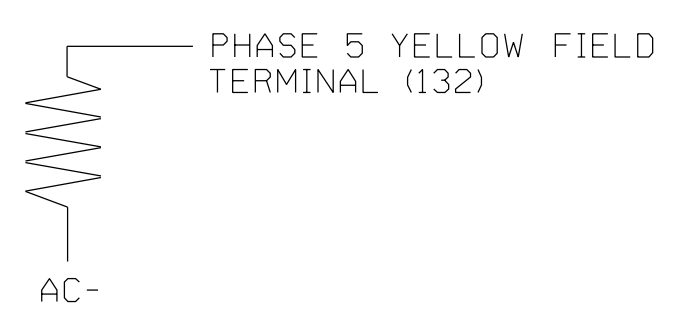
51

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0415
 DESIGNED: October 2017
 SEALED: 6/8/2018
 REVISED: N/A

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 4

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	NC 87-100 (W. Webb Avenue) at SR 1530 (Elmira Street) and SR 1522 (N. Park Avenue)		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL SEAL 025892 ENGINEER MELISSA B. TOTH
	Division 7 PLAN DATE: October 2017 PREPARED BY: AM Encarnacion	Alamance County REVIEWED BY: MB Toth REVIEWED BY:		Burlington DATE: 6/11/2018 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

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'OTHER/ECONOLITE'

```

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

LAG GRN 3.0 YEL 3.0 RED 1.6
    
```

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 'OTHER/ECONOLITE'

```

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

LAG GRN 3.0 YEL 4.0 RED 1.0
    
```

Toggle 3 Times

OVERLAP G

Select TMG VEH OVLP [G] and 'NORMAL'

```

TMG VEH OVLP...[G] TYPE: NORMAL
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . . . . . X . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0
    
```

Toggle Once

OVERLAP H

Select TMG VEH OVLP [H] and 'NORMAL'

```

TMG VEH OVLP...[H] TYPE: NORMAL
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . X . . . . . X . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0
    
```

Toggle Once

OVERLAP I

Select TMG VEH OVLP [I] and 'NORMAL'

```

TMG VEH OVLP...[I] TYPE: NORMAL
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . X . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0415
DESIGNED: October 2017
SEALED: 6/8/2018
REVISED: N/A

ECONOLITE ASC/3-2070 LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

To assign load switches S2, S3 and S6 as OLG, OLG and OLI, program LD SWITCH 2 as OVLP '7' TYPE '0', LD SWITCH 3 as OVLP '8' TYPE '0' and LD SWITCH 6 as OVLP '9' TYPE '0' as shown below.

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

NOTICE OVLP 5 ASSIGNED TO LD SWITCH 2 →

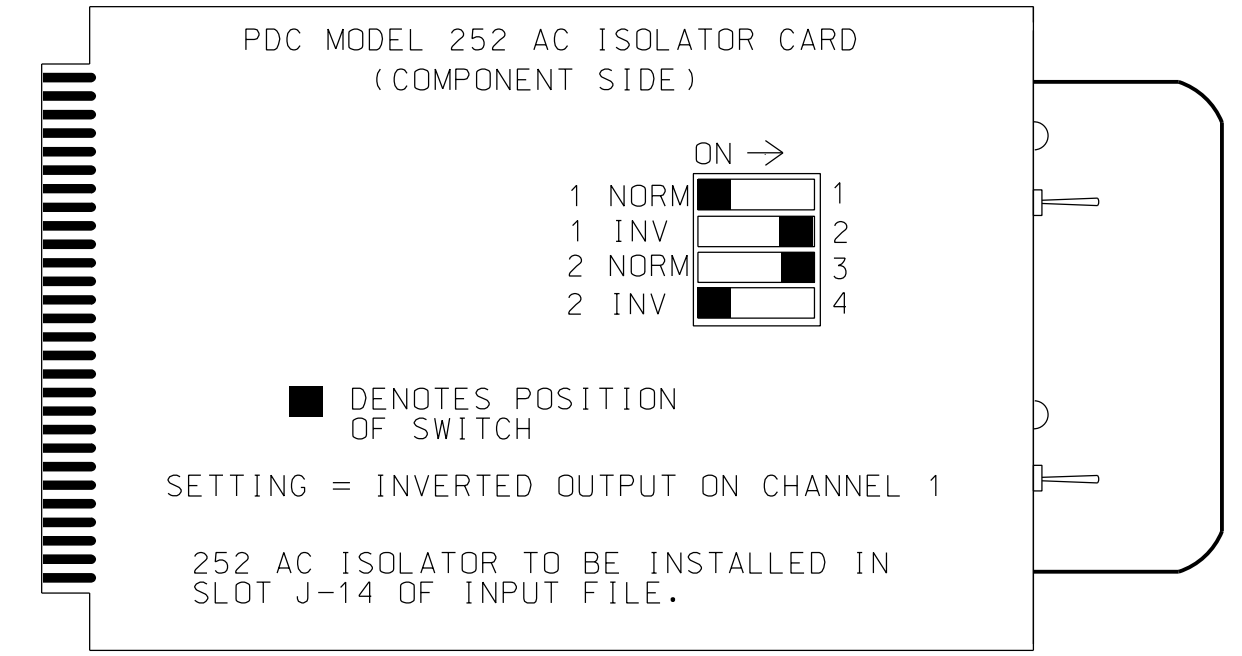
NOTICE OVLP 6 ASSIGNED TO LD SWITCH 3 →

NOTICE OVLP 7 ASSIGNED TO LD SWITCH 6 →

LD SWITCH ASSIGN									
PHASE /OVLP	TYPE	DIMMING	---FLASH---						
		R	Y	G	D	PWR	AUT	TGR	
1	1	V	.	.	.	+	A	R	X
2	7	0	.	.	.	+	A	Y	.
3	8	0	.	.	.	+	A	R	X
4	4	V	.	.	.	+	A	R	.
5	5	V	.	.	.	-	A	R	.
6	9	0	.	.	.	-	A	Y	X
7	7	V	.	.	.	-	A	R	.
8	8	V	.	.	.	-	A	R	X
9	1	0	.	.	.	+	A	R	X
10	2	0	.	.	.	+	A	R	X
11	3	0	.	.	.	-	A	R	.
12	4	0	.	.	.	-	A	R	.
13	2	P	.	.	.	+	A	.	.
14	4	P	.	.	.	-	A	.	.
15	6	P	.	.	.	+	A	.	.
16	8	P	.	.	.	-	A	.	.

PREEMPT 1 AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)



NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

Electrical Detail - Sheet 2 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	NC 87-100 (W. Webb Avenue) at SR 1530 (Elmira Street) and SR 1522 (N. Park Avenue)		SEAL MELISSA B. TOTH ENGINEER	
	Division 7 Alamance County Burlington		SEAL 025892 ENGINEER	
	PLAN DATE: October 2017	REVIEWED BY: MB Toth	PREPARED BY: AM Encarnacion	REVIEWED BY:
	REVISIONS		INIT. DATE	DATE

ATKINS

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

09-JUN-2018 13:38
 D:\Consolidation\Projects\00056469 U-6015 B-G S19 SystemTask 05_11_Signal\Des\gn\mfr\mg07-0415E.dgn
 ALEX3361 AT LUS210649

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Drawn by: Melissa B. Toth 6/11/2018
 CHECKED BY: DATE
 SIG. INVENTORY NO. 07-0415

ECONOLITE ASC/3-2070 RAILROAD 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

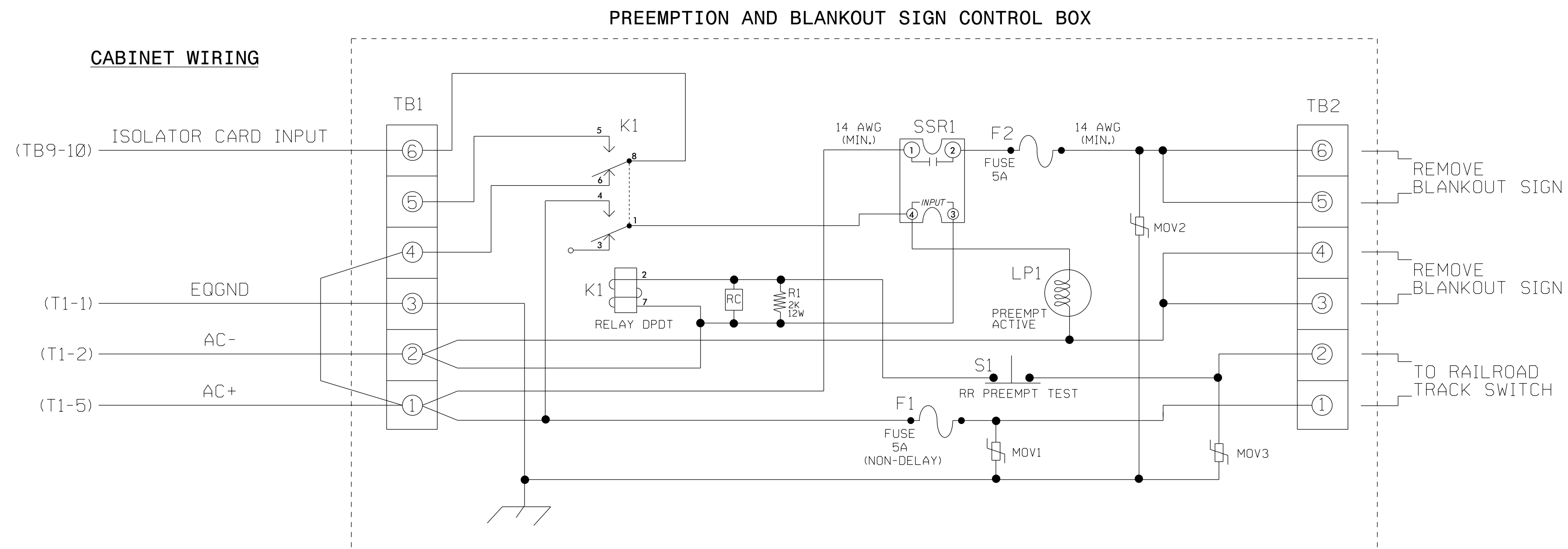
Place cursor in [] next to Preempt Plan and press 1. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Railroad Preempt #1.

PREEMPT PLAN [1]	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 X	
TRKCLR O . X . X	
ENA TRL	
DWEL VEH X	
DWEL PED	
DWEL OLP	
CYC VEH	
CYC PED	
CYC OLP	
EXIT PH . . . X	
EXIT CAL	
SP FUNC	

ENABLE... YES	IPMT	OVRIDE.XI	INTERLOCK. NO
DET LOCK... X	IDELAY..	OINHIBIT... 0	
OVERIDE FL. .	IDURATION	OICLR=GRN... NO	
TERM OLP. NO	IPC>YEL	NOITERM PH NO	
PED DARK.. NO	ITC RESRV	YESIDWELL FL OFF	
LINK PMT....O	IX FLCOLR	REDIEXIT OPT. OFF	
X TMG PLN...O	IRE-SERV..	OIFLT TYPE.HARD	
FREE DUR PMT	IR1 NOIR2	NOIR3 NOIR4 NO	
--TIMING----	WALKIPED	CLIMN GRI YELI RED	
ENTRANCE TM.	255I 255I	1125.5125.5	
-----MIN	GRIEXT GRIMX	GRI YELI RED	
TRACK CLEAR	12I 0I	0I 4.0I 1.0	
-----MIN	DLIPMTEXTIMX	TMI YELI RED	
DWL/CYC-EXIT	10I 0.0I	0I25.5I25.5	
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		

RAILROAD PREEMPTION WIRING DETAIL

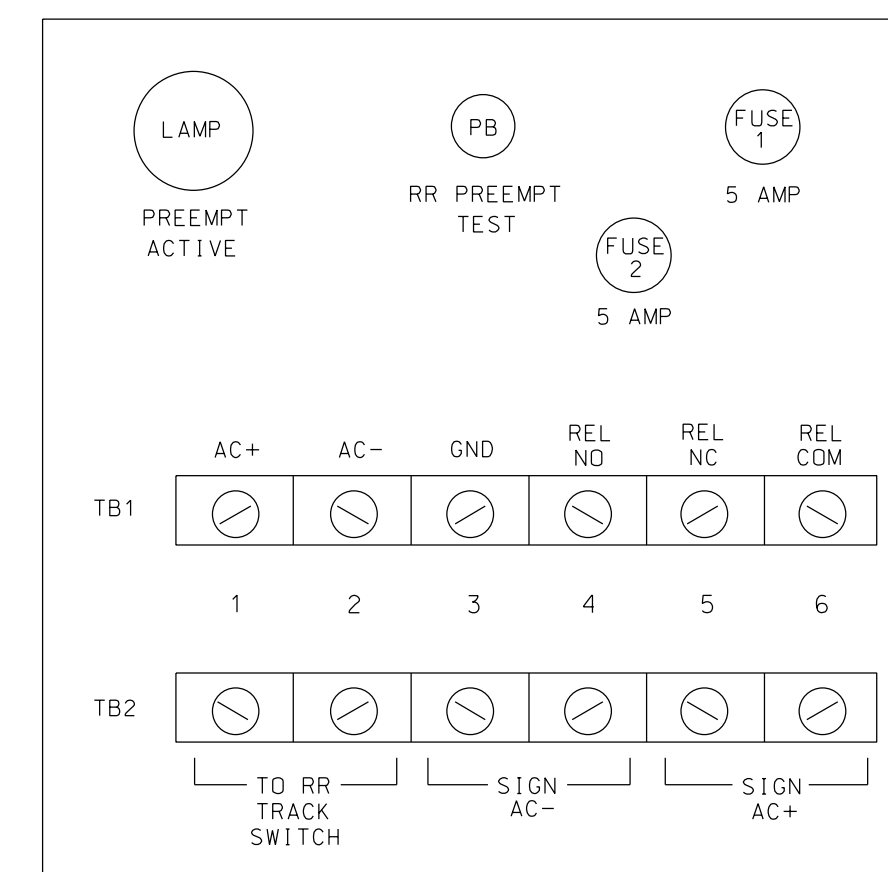
(wire as shown below)



NOTES

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

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0415
 DESIGNED: October 2017
 SEALED: 6/8/2018
 REVISED: N/A

Electrical Detail - Sheet 3 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	NC 87-100 (W. Webb Avenue) at SR 1530 (Elmira Street) and SR 1522 (N. Park Avenue)		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL MELISSA B. TOTH ENGINEER
	Division 7 PLAN DATE: October 2017 PREPARED BY: AM Encarnacion	Alamance County REVIEWED BY: MB Toth REVIEWED BY:		Burlington DATE: 6/11/2018 DATE:

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL FOR PHASE 9 AND 10 OMIT

(program controller as shown)

The following logic processor programming ensures phase 9 and 10 is only served during preemption. This logic will ensure phase 9 and 10 is not served during startup.

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 8. LOGIC PROCESSOR
3. 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 TRUE
IF   CTR SEQUENCE #         IS 1 T
THEN CTR OMIT PHASE         9   ON
```

LOGIC FOR OMITTING PHASE 9 WHILE IN NORMAL PHASING

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

```
LP#: 2 COPY FROM: 1 ACTIVE: M TRUE
IF   CTR SEQUENCE #         IS 1 T
THEN CTR OMIT PHASE         10  ON
```

LOGIC FOR OMITTING PHASE 10 WHILE IN NORMAL PHASING

END PROGRAMMING

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 8. LOGIC PROCESSOR
3. From LOGIC PROCESSOR Submenu select 1. LOGIC STATEMENT CONTROL

ENABLE LOGIC PROCESSOR STATEMENTS 1 & 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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0415
DESIGNED: October 2017
SEALED: 6/8/2018
REVISED: N/A

ECONOLITE ASC/3-2070 CONTROLLER SEQUENCE PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 1. CONTROLLER SEQ
3. From CONTROLLER SEQUENCE Submenu select 1. PHASE RING SEQUENCE AND ASSIGNMENT

CONTROLLER SEQUENCE [1]


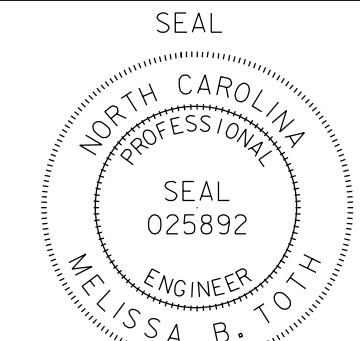
SEQUENCE COMMANDS	. HW ALT SEQ ENA.	NO.
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16		
BC=B	-	-
R1-	.	.
R2-	.	.
R3-	.	.
R4-	.	.

R1-R4=RING 1-4, DATA ENTRY, PHASES 1-16
BC=BARRIER CONTROL, VALUES: B,C
B=BARRIER MODE
C=COMPATIBILITY MODE

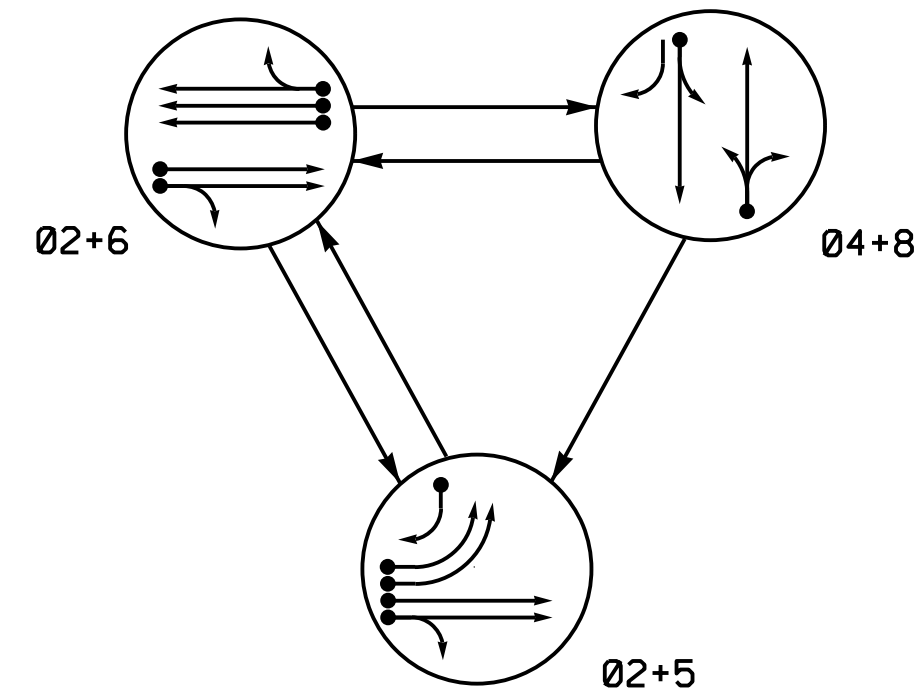
END PROGRAMMING

Electrical Detail - Sheet 4 of 4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	<p style="text-align: center;">NC 87-100 (W. Webb Avenue) at SR 1530 (Elmira Street) and SR 1522 (N. Park Avenue)</p> <p style="text-align: center;">Division 7 Alamance County Burlington</p> <p>PLAN DATE: October 2017 REVIEWED BY: MB Toth</p> <p>PREPARED BY: AM Encarnacion REVIEWED BY:</p>										
	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">REVISIONS</th> <th style="text-align: center;">INIT.</th> <th style="text-align: center;">DATE</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;"> </td> <td> </td> <td> </td> </tr> <tr> <td style="height: 20px;"> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REVISIONS	INIT.	DATE							<p style="font-size: x-small;">Developed by: <u>Melissa B. Toth</u> 6/11/2018</p> <p style="font-size: x-small;">Checked by: _____ DATE _____</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-0415</p>
REVISIONS	INIT.	DATE									

PHASING DIAGRAM



SIGNAL FACE	PHASE			
	02+5	02+6	04+8	FLASH
21, 22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51, 52	-	-R	-R	-R
61, 62	R	G	R	Y
81, 82	R	R	G	R

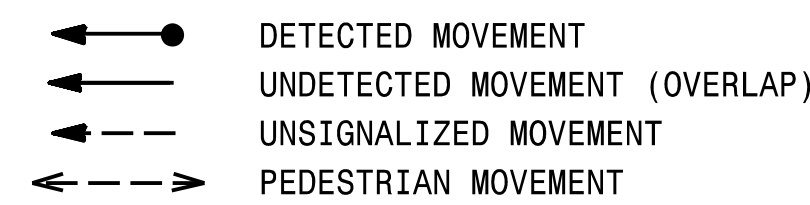
ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR						PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A,2B	6x6	70	EXIST.	-	2	Yes	-	-	-	S	-	X
4A	6x60	+5	2-4-2	-	4	Yes	-	3	-	S	-	X
5A	6x60	+5	2-4-2	-	5	Yes	-	-	-	S	-	X
5B	6x60	+5	2-4-2	-	5	Yes	-	-	-	S	-	X
5C	6x60	+5	2-4-2	-	5	Yes	-	15	-	S	-	X
6A,6B,6C	6x6	70	EXIST.	-	6	Yes	-	-	-	S	-	X
8A	8x20	+5	2-4-2	-	8	Yes	-	5	-	S	-	X
S1	6x6	145	EXIST.	-	-	No	-	-	-	N	X	X
S2	6x6	145	EXIST.	-	-	No	-	-	-	N	X	X

3 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

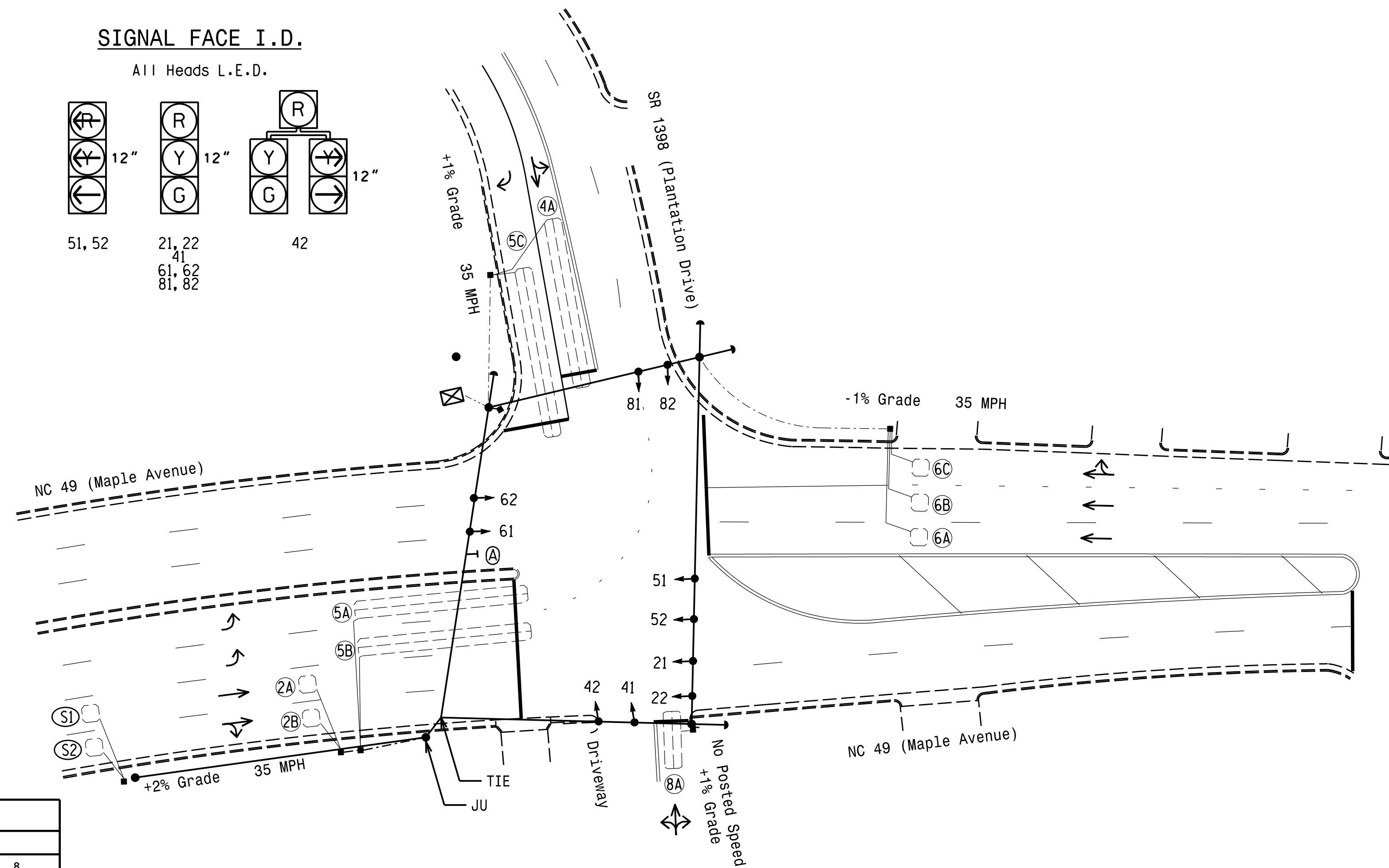
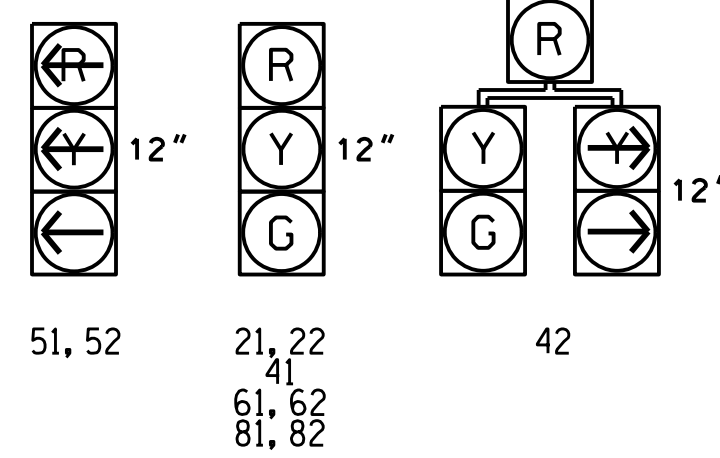
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- 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.
- 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.

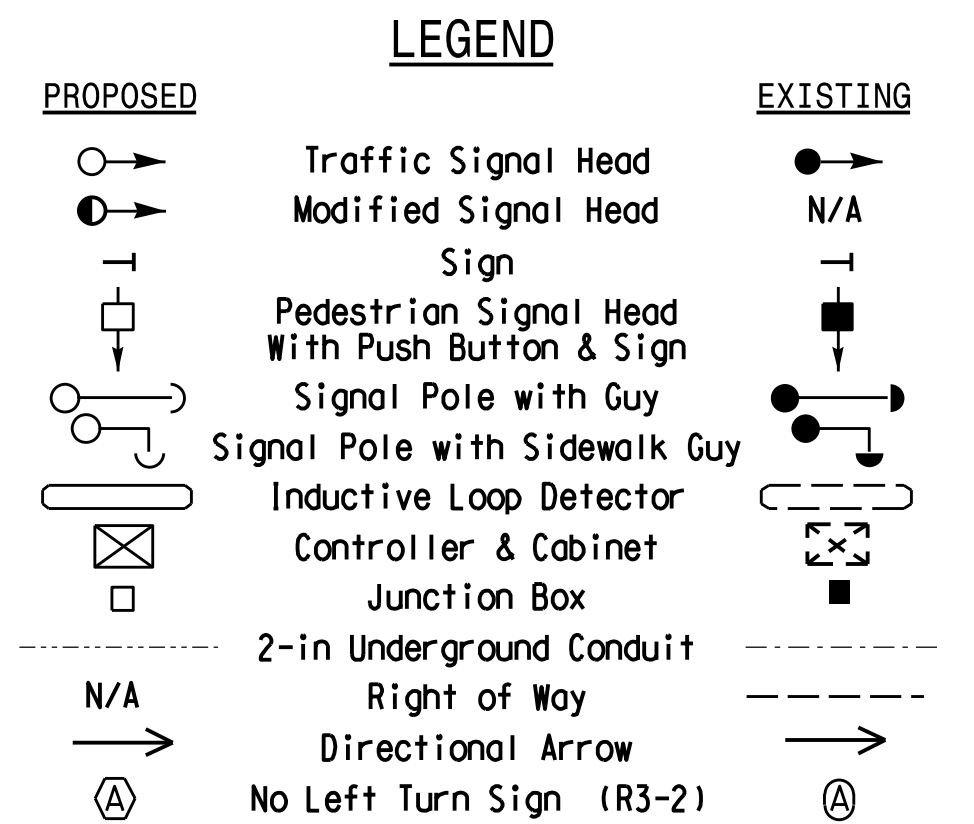
All Heads L.E.D.



ASC/3 TIMING CHART

FEATURE	PHASE				
	2	4	5	6	8
Min Green *	10	7	7	10	7
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
Veh. Extension *	3.0	1.0	1.0	3.0	1.0
Max 1 *	54	23	21	54	23
Yellow	3.9	3.8	3.0	3.9	3.1
Red Clear	2.2	2.4	2.9	2.2	2.6
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\$\$\$\$\$\$
 \$\$\$\$\$\$DATE\$\$\$\$\$\$
 \$\$\$\$\$\$DRAWING\$\$\$\$\$\$
 \$\$\$\$\$\$SERIAL\$\$\$\$\$\$



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
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Design Section
 750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE 0 30
 1"=30'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC 49 (Maple Avenue) at SR 1398 (Plantation Drive)

Division 7 Alamance County Burlington

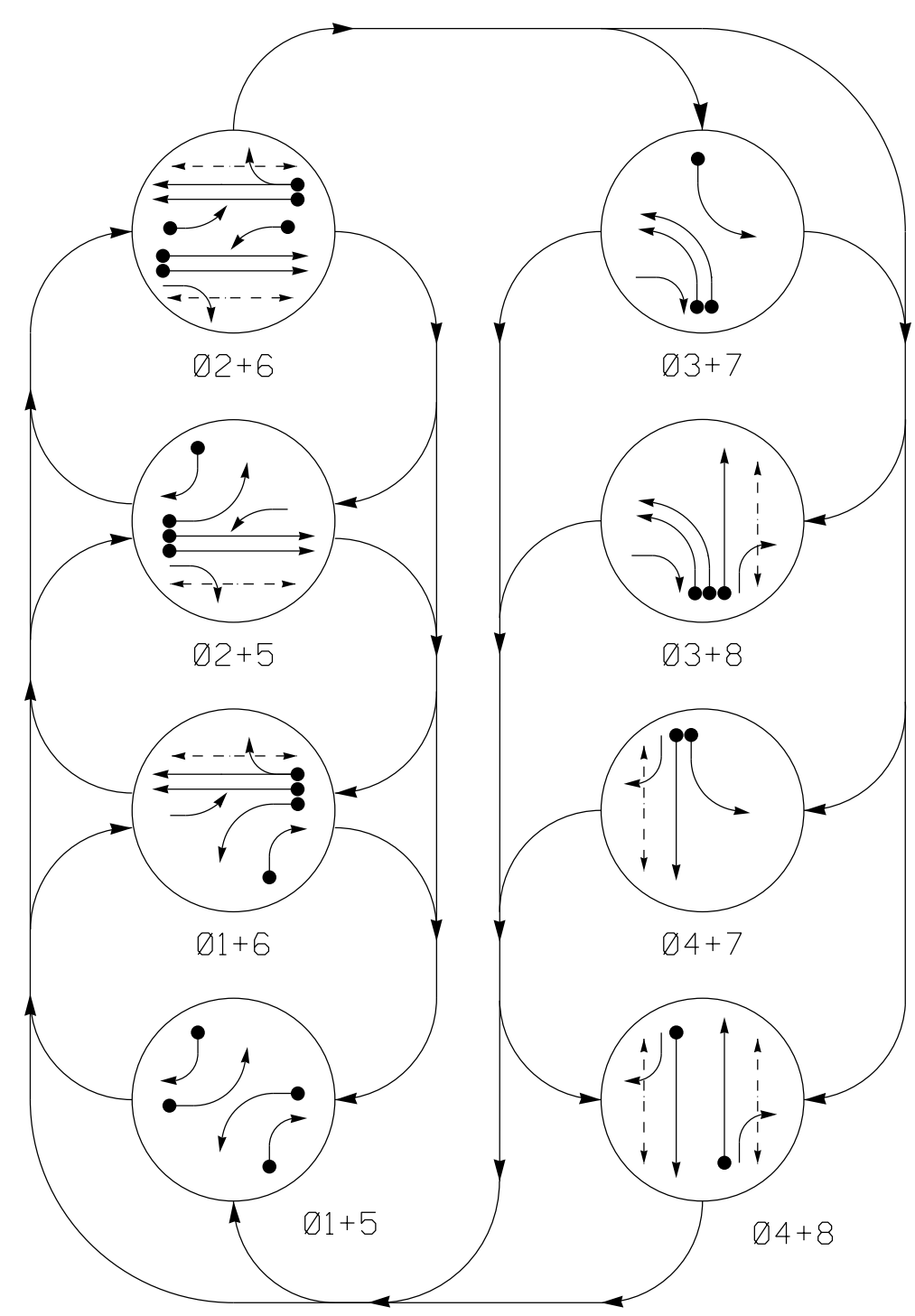
PLAN DATE: January 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

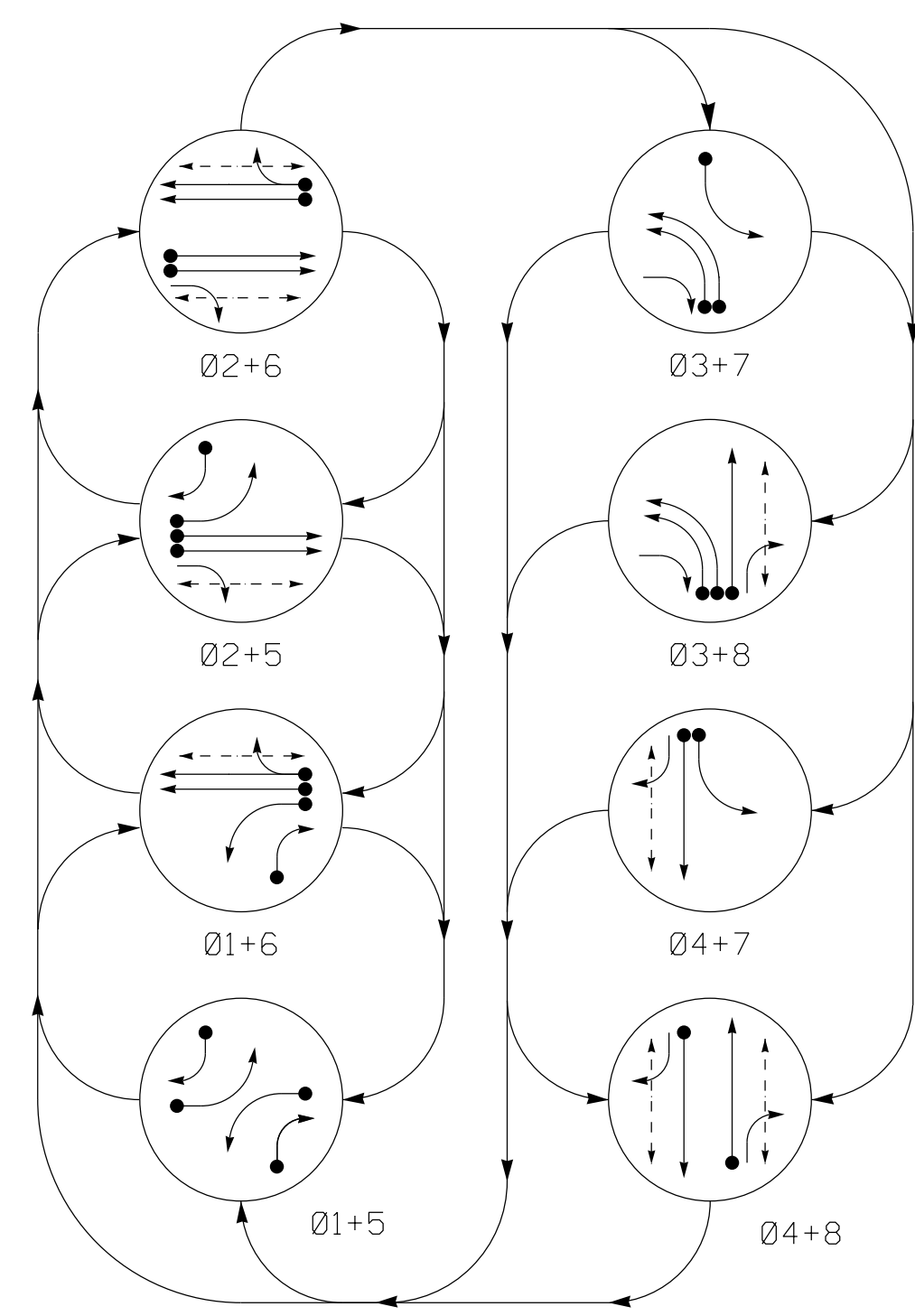
REVISIONS INIT. DATE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 022599
 JAMES B. VOSO
 6/13/2018
 DATE
 SIG. INVENTORY NO. 07-0857

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM

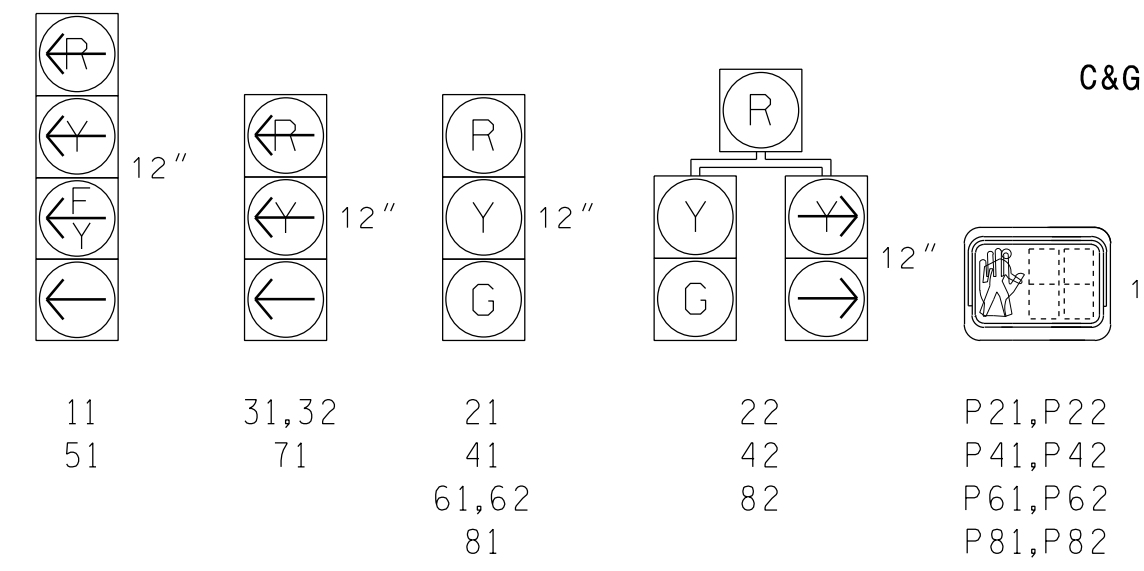


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

All Heads L.E.D.



DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE								FLASH
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	
11	←	←	←	←	←	←	←	←	Y
21	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R	R	R	R	Y
31,32	R	R	R	R	←	←	←	←	R
41	R	R	R	R	R	R	G	G	R
42	R	R	R	R	R	R	G	G	R
51	←	←	←	←	←	←	←	←	Y
61,62	R	G	R	G	R	R	R	R	Y
71	←	←	←	←	←	←	←	←	R
81	R	R	R	R	R	R	G	G	R
82	R	R	R	R	R	R	G	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DRK	
P41,P42	DW	DW	DW	DW	DW	DW	W	DRK	
P61,P62	DW	W	DW	W	DW	DW	DW	DRK	
P81,P82	DW	DW	DW	DW	DW	W	DW	DRK	

ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE								FLASH
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	
11	←	←	←	←	←	←	←	←	Y
21	R	R	G	G	R	R	R	R	Y
22	R	R	G	G	R	R	R	R	Y
31,32	R	R	R	R	←	←	←	←	R
41	R	R	R	R	R	R	G	G	R
42	R	R	R	R	R	R	G	G	R
51	←	←	←	←	←	←	←	←	Y
61,62	R	G	R	G	R	R	R	R	Y
71	←	←	←	←	←	←	←	←	R
81	R	R	R	R	R	R	G	G	R
82	R	R	R	R	R	R	G	G	R
P21,P22	DW	DW	W	W	DW	DW	DW	DRK	
P41,P42	DW	DW	DW	DW	DW	DW	W	DRK	
P61,P62	DW	W	DW	W	DW	DW	DW	DRK	
P81,P82	DW	DW	DW	DW	DW	W	DW	DRK	

ASC/3 DETECTOR INSTALLATION CHART

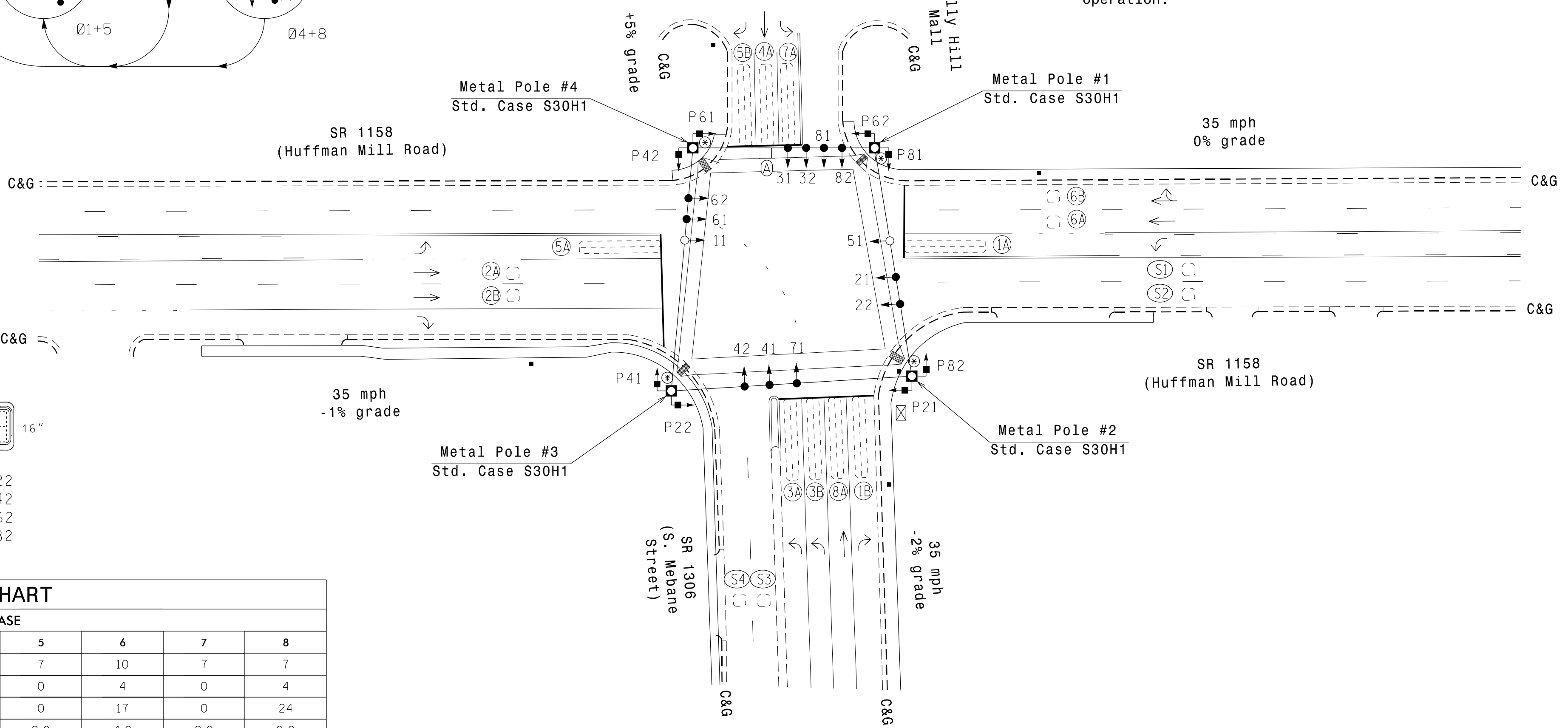
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	NEW CARD	SYSTEM LOOP
1A	6X40	0	2-4-2	-	1	Yes	-	*15	-	S	X	-
1B	6X40	0	2-4-2	-	1	Yes	-	-	-	S	X	-
2A	6X6	70	EXIST	-	2	Yes	-	-	-	S	X	-
2B	6X6	70	EXIST	-	2	Yes	-	-	-	S	X	-
3A	6X40	0	2-4-2	-	3	Yes	-	3	-	S	X	-
3B	6X40	0	2-4-2	-	3	Yes	-	-	-	S	X	-
4A	6X40	0	2-4-2	-	4	Yes	-	-	-	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	-
6B	6X6	70	EXIST	-	6	Yes	-	-	-	S	X	-
7A	6X40	0	2-4-2	-	7	Yes	-	3	-	S	X	-
8A	6X40	0	2-4-2	-	8	Yes	-	-	-	S	X	-
S1	6X6	+255	EXIST	-	-	NO	-	-	-	N	X	X
S2	6X6	+255	EXIST	-	-	NO	-	-	-	N	X	X
S3	6X6	+220	EXIST	-	-	NO	-	-	-	N	X	X
S4	6X6	+220	EXIST	-	-	NO	-	-	-	N	X	X

* Disable delay during alternate phasing operation.
 ** Disable phases 2 & 6 call during alternate phasing operation.

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 Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red WALK with no pedestrian calls.
7. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
8. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
9. Pavement markings are existing.
10. The City Traffic Engineer will determine the hours of use for each phasing plan.
11. 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	3	4	5	6	7	8
Min Green *	7	10	7	7	7	10	7	7
Walk *	0	4	0	4	0	4	0	4
Ped Clear	0	25	0	25	0	17	0	24
Veh. Extension *	2.0	4.0	2.0	2.0	2.0	4.0	2.0	2.0
Max 1 *	20	50	30	30	20	50	20	30
Yellow	3.0	3.9	3.0	3.0	3.0	3.9	3.0	4.0
Red Clear	3.1	2.3	3.4	3.3	2.9	2.3	2.6	2.3
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	-	-	-	-	-	-	-	-
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

- | PROPOSED | EXISTING |
|--|--|
| ○ → Traffic Signal Head | ● → N/A |
| ○ → Modified Signal Head | ○ → N/A |
| ○ → Pedestrian Signal Head | ○ → N/A |
| N/A | ○ → 2" Pedestrian Post with Ped Push Button & Sign |
| ○ → Signal Pole with Sidewalk Guy | ○ → Signal Pole with Guy |
| ○ → Metal Strain Pole | ○ → Metal Strain Pole |
| ○ → Inductive Loop Detector | ○ → Inductive Loop Detector |
| ○ → Controller & Cabinet | ○ → Controller & Cabinet |
| ○ → Junction Box | ○ → Junction Box |
| ○ → 2-in Underground Conduit | ○ → 2-in Underground Conduit |
| N/A | ○ → Right of Way |
| ○ → Directional Arrow | ○ → Directional Arrow |
| N/A | ○ → Curb Ramp |
| ○ → "U-Turn Yield To Right Turn" Sign (R10-16) | ○ → "U-Turn Yield To Right Turn" Sign (R10-16) |

Signal Upgrade

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

Prepared For the Offices of:

SR 1158 (Huffman Mill Road) at SR 1306 (S. Mebane Street)/Holly Hill Mall

Division 7 Alamance County Burlington

PLAN DATE: February 2018 REVIEWED BY: AM Encarnacion

PREPARED BY: NA Ptak REVIEWED BY: PL Alexander

SCALE: 1"=40'

DATE: 6/7/2018

SIG. INVENTORY NO. 07-0868

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
PAMELA L. ALEXANDER
023489

DATE: 6/7/2018

07-JUN-2018 11:15
 U:\Projects\2018\06\07\00056469 U-6015 B-G Sig Sys\Task 05_11_Signal\Design\07-0868.dgn
 ALEX3361 AT LUS340649

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

- From Main Menu select **8. UTILITIES**
- From UTILITIES Submenu select **1. COPY/CLEAR**
- Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING... > PHASE TIMING...
TIMING PLAN... > TIMING PLAN...
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
  
```

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
- Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "0".

```

VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

← ENSURE PHASE IS SET TO "0"

- Place cursor in VEH DETECTOR [] position and enter "5".
- Set delay time to "0".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "22".
- Set assigned phase to "0".

```

VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH DET PLAN 2

← ENSURE PHASE IS SET TO "0"

END PROGRAMMING

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 '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..... 1
  
```

← NOTICE ACTION PLAN SF BIT "1"

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..... 5
  
```


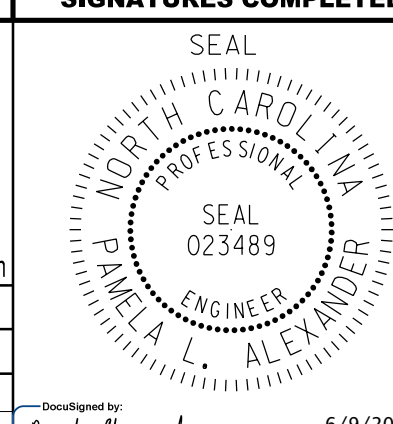
← NOTICE ACTION PLAN SF BIT "5"

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0868
DESIGNED: February 2018
SEALED: 6/7/2018
REVISED: N/A

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1158 (Huffman Mill Road) at SR 1306 (S. Mebane Street)/ Holly Hill Mall		
	Prepared for the Offices of: Division 7 Alamance County Burlington	PLAN DATE: February 2018 PREPARED BY: NA Ptak REVISIONS:	
1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBEEES #F-0326		6/9/2018 Pamela Alexander DATE SIG. INVENTORY NO. 07-0868	

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 AND 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 AND 5.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1, 5

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

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BITS 1 AND 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

- SF BITS 1,5: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.
- VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

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

1. From Main Menu select 5. TIME BASE
2. From TIME BASE Submenu select 2. ACTION PLAN

```

ACTION PLAN...[ 1]
PATTERN.....AUTO  SYS OVERRIDE.... NO
TIMING PLAN..... 0  SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --  RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY..... NO
PMT COND DELAY  NO
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  X  .  .  .  X  .  .  .  (1-8)
AUX FCT  .  .  .  (1-3)
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
    
```

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0868
DESIGNED: February 2018
SEALED: 6/7/2018
REVISED: N/A

Electrical Detail - Sheet 3 of 3

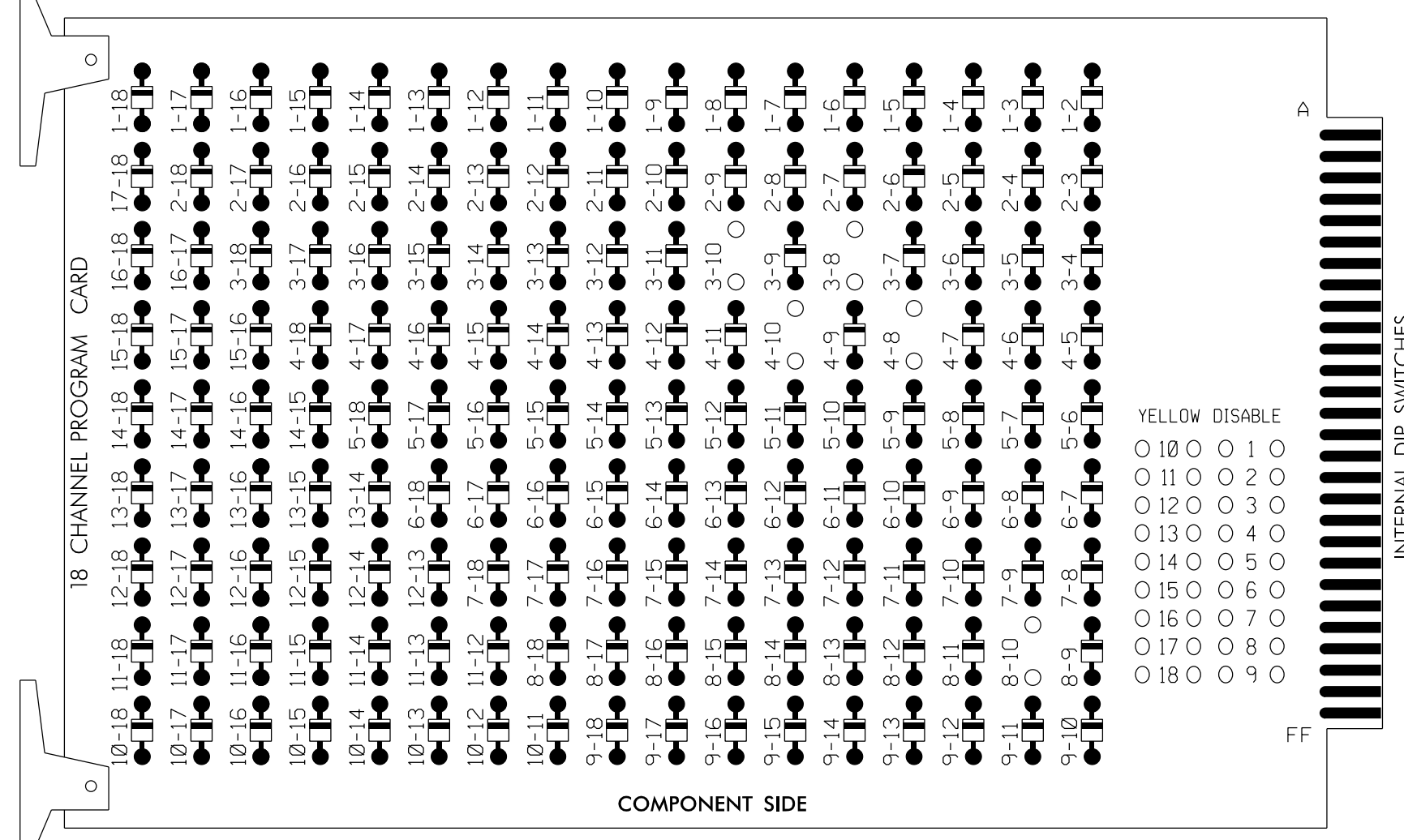
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

	ELECTRICAL AND PROGRAMMING DETAILS FOR: SR 1158 (Huffman Mill Road) at SR 1306 (S. Mebane Street)/ Holly Hill Mall	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 023489
Prepared for the Offices of: 	Division 7 Alamance County Burlington PLAN DATE: February 2018 REVIEWED BY: AM Encarnacion PREPARED BY: NA Ptak REVIEWED BY: PL Alexander	6/9/2018 Pamela Alexander DATE
	REVISIONS INIT. DATE	6/9/2018 DATE
		SIG. INVENTORY NO. 07-0868

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

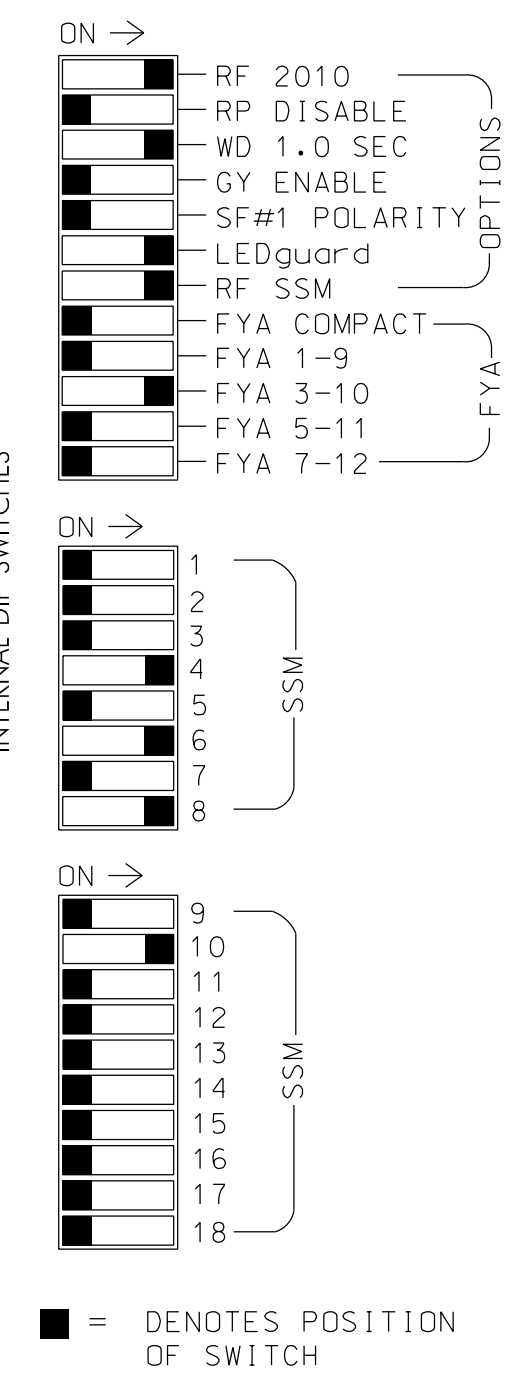
REMOVE DIODE JUMPERS 3-8, 3-10, 4-8, 4-10 and 8-10.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. 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 6 Green.
3. Program phase 2 for Red Flash.
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,AUX S2
 PHASES USED.....3,4,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....*
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

* See overlap programming detail on sheet 2.

SIGNAL HEAD HOOK-UP CHART

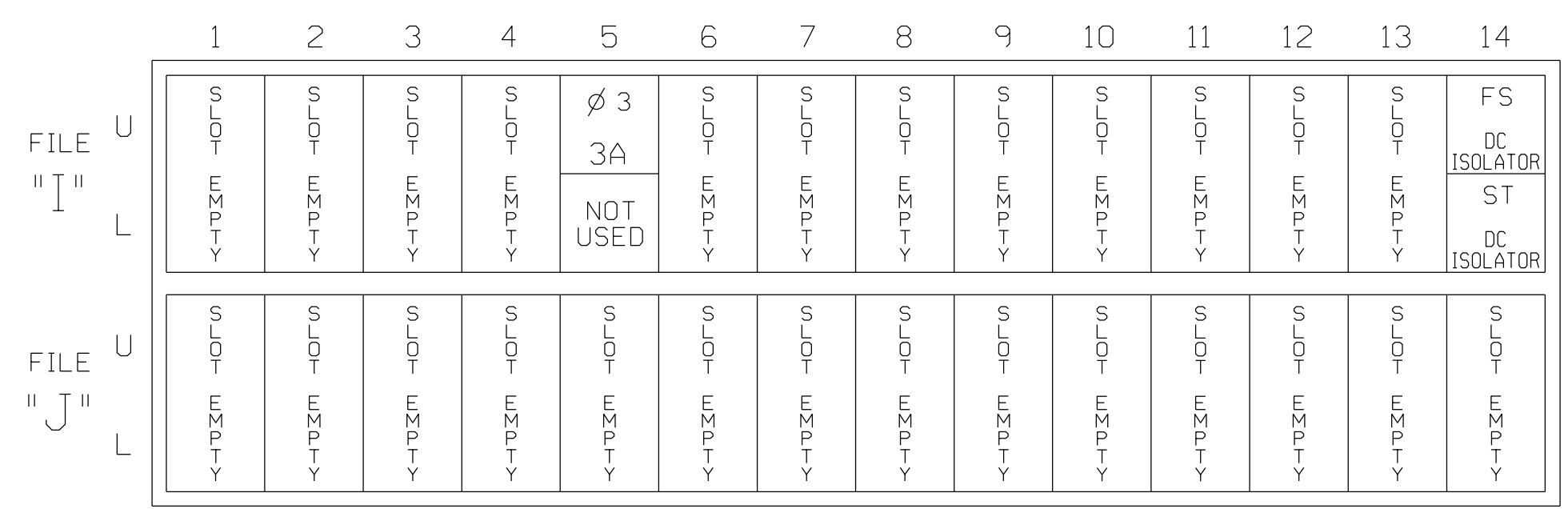
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	NU	NU	NU	31	41,42	NU	NU	61,62,63	NU	NU	81,82	NU	NU	31	NU	NU	NU	NU	
RED					101			134			107								
YELLOW				*	102			135			108								
GREEN					103			136			109								
RED ARROW																		A124	
YELLOW ARROW																			A125
FLASHING YELLOW ARROW																			A126
GREEN ARROW					118														

NU = Not Used

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

INPUT FILE POSITION LAYOUT

(front view)



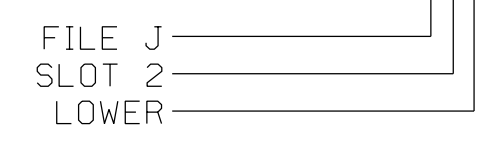
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

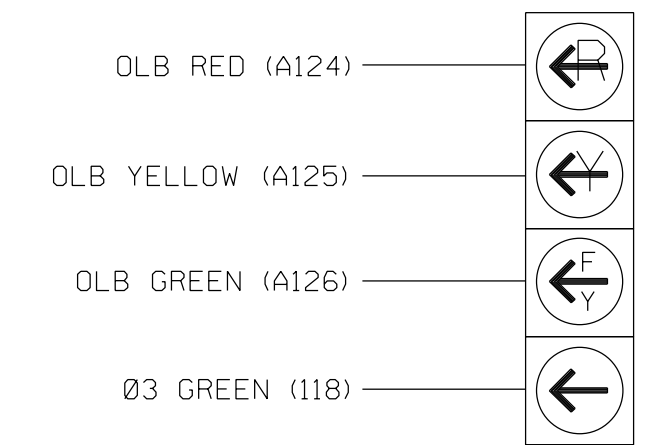
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
3A	T84-5,6	15U	58	3	3	YES		15		S

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



31

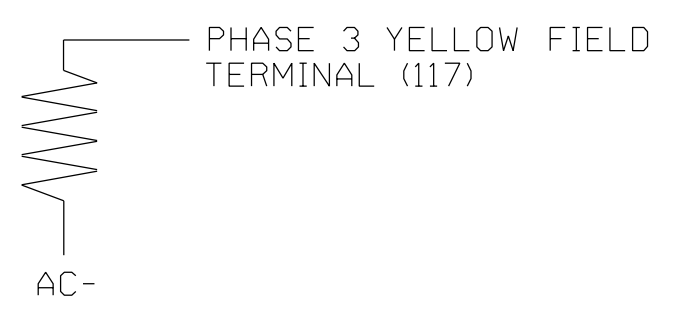
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0873
 DESIGNED: October 2017
 SEALED: 6/7/2018
 REVISED: N/A

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

Prepared for the Offices of:

 Department of Transportation and Safety
 State of North Carolina

US 70 WB (S. Fisher Street) at NC 87-100 (Webb Avenue)	
Division 7	Alamance County
PLAN DATE: October 2017	REVIEWED BY: AM Encarnacion
PREPARED BY: NA Ptak	REVIEWED BY: MB Toth
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

 MELISSA B. TOTH
 ENGINEER

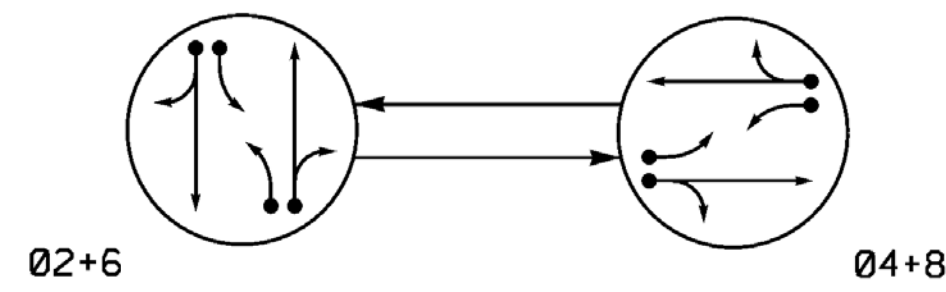
6/11/2018
 DATE

SIG. INVENTORY NO. 07-0873

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

750 N. Greenfield Pkwy, Garner, NC 27529

PHASING DIAGRAM



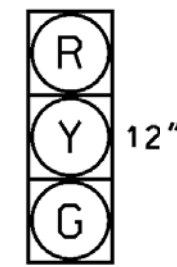
PHASING DIAGRAM DETECTION LEGEND

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

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.



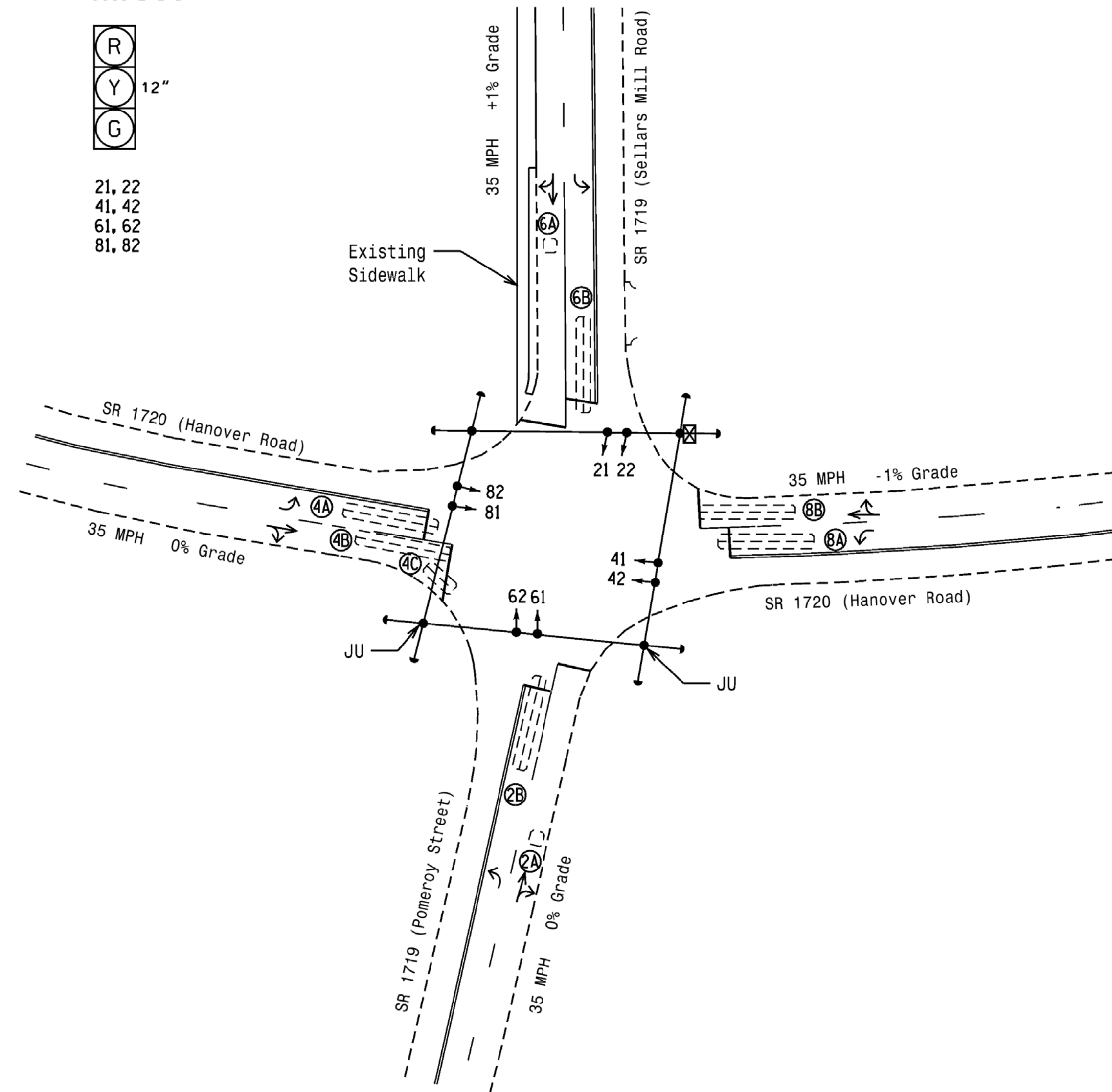
21, 22
41, 42
61, 62
81, 82

ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
2A	6x6	70	4	-	2	Yes	-	-	-	S	-	X
2B	6x40	+5	2-4-2	-	2	Yes	-	-	-	S	-	X
4A,4B	6x40	+5	2-4-2	-	4	Yes	-	3	-	S	-	X
4C	6x15	+5	2-4-2	-	4	Yes	-	15	-	S	-	X
6A	6x6	70	4	-	6	Yes	-	-	-	S	-	X
6B	6x40	+5	2-4-2	-	6	Yes	-	-	-	S	-	X
8A	6x40	+5	2-4-2	-	8	Yes	-	3	-	S	-	X
8B	6x40	0	2-4-2	-	8	Yes	-	10	-	S	-	X

2 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

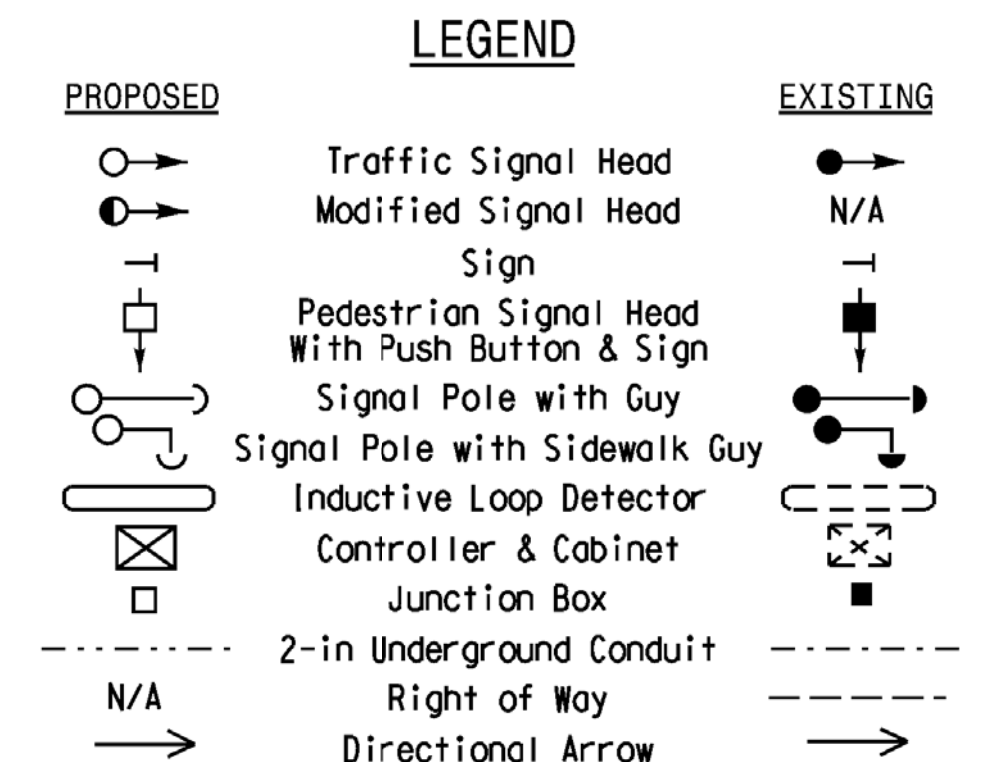
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- Locate new cabinet 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.



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 *	3.0	2.0	3.0	2.0
Max I *	30	30	30	30
Yellow	3.8	3.8	3.8	3.9
Red Clear	1.8	2.0	1.6	1.9
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.



Mattern & Craig
ENGINEERS • SURVEYORS

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

SR 1719 (Pomeroy Street) / (Sellers Mill Road) at SR 1720 (Hanover Road)

Division 7 Alamance County Graham

PLAN DATE: January 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS	INIT.	DATE

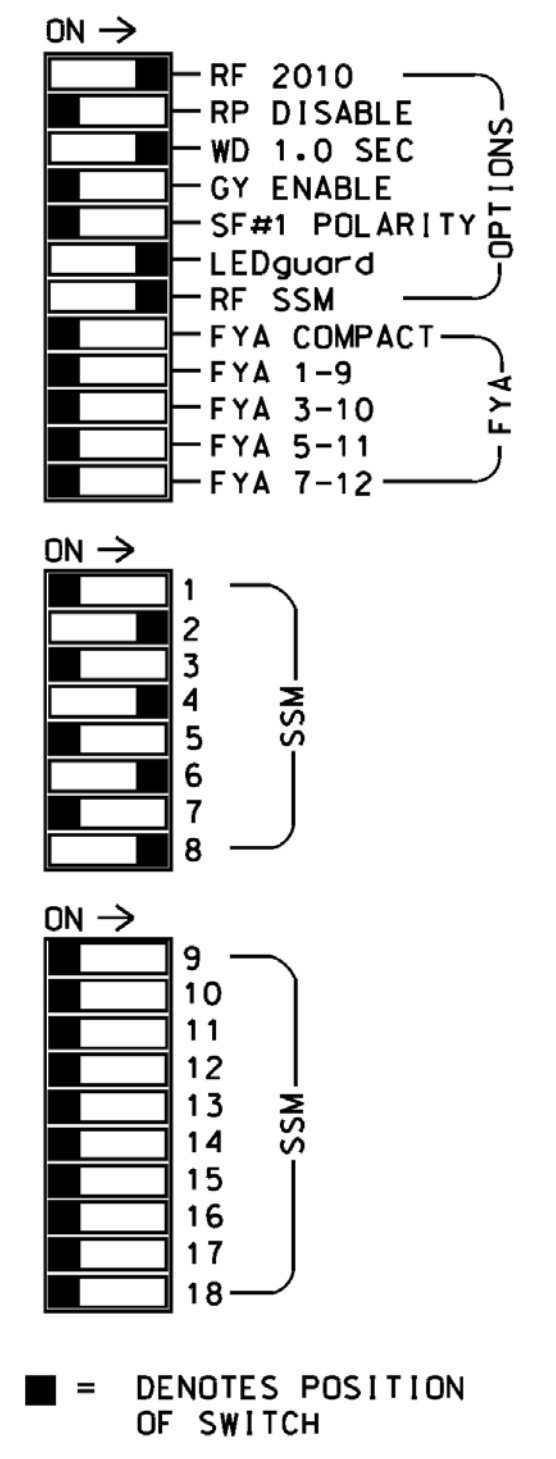
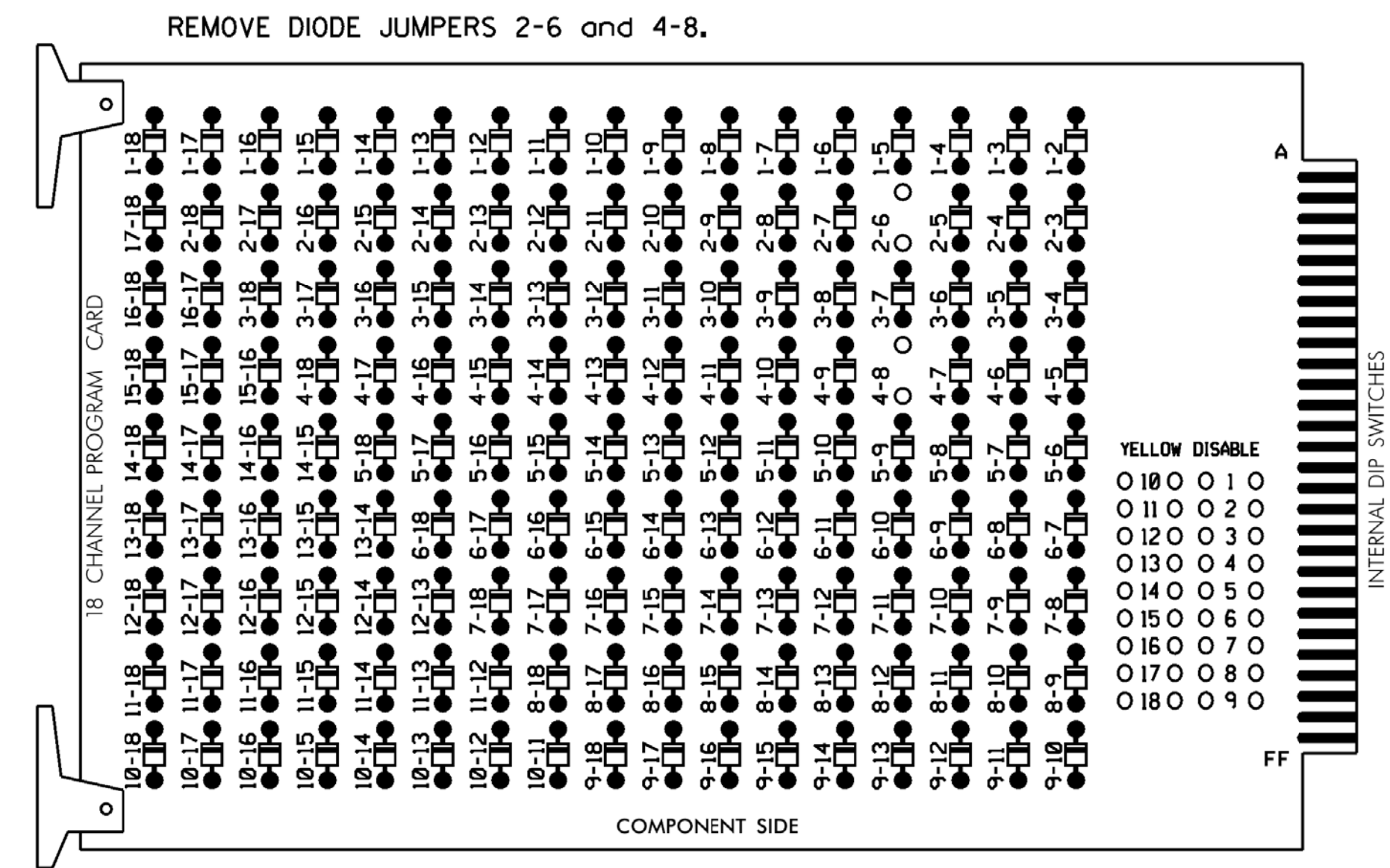
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
MATTEN & CRAIG
PROFESSIONAL ENGINEER
JAMES B. VOSO
6/13/2018
DATE
SIGNATURE
SIG. INVENTORY NO. 07-0891

*****SYSTEM *****
*****BUSINESS *****

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.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONOLITE 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

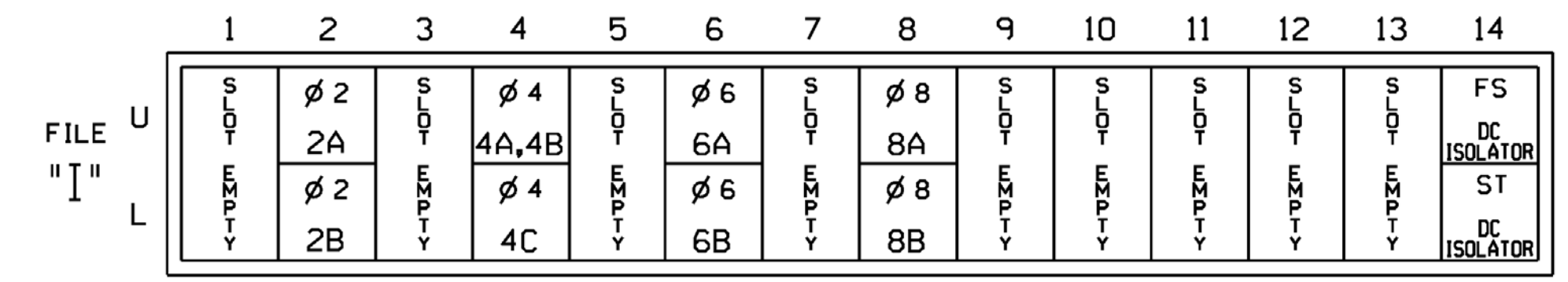
SIGNAL HEAD HOOK-UP CHART

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

INPUT FILE POSITION LAYOUT

(front view)



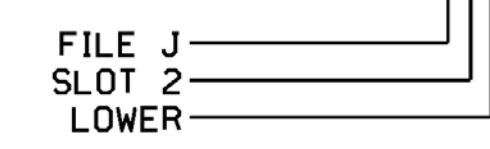
EX.: 1A, 2A, ETC. = LOOP NO.'S

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	I2U	39	2	2	YES				S
2B	TB23-3,4	I2L	43	12	2	YES				S
4A,4B	TB21-7,8	I4U	41	4	4	YES		3		S
4C	TB23-7,8	I4L	45	14	4	YES		15		S
6A	TB21-11,12	I6U	40	6	6	YES				S
6B	TB23-11,12	I6L	44	16	6	YES				S
8A	TB22-1,2	I8U	42	8	8	YES		3		S
8B	TB24-1,2	I8L	46	18	8	YES		5		S

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0891
 DESIGNED: January 2018
 SEALED: 6/13/2018
 REVISED: NA

*****SYTIME*****
 *****D*****
 *****USER*****



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

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:



SR 1719 (Pomeroy Street)
 / (Sellars Mill Road)
 at
 SR 1720 (Hanover Road)

Division 7	Alamance County	Graham
PLAN DATE: January 2018	REVIEWED BY: JB Voso	
PREPARED BY: SE Greene	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JAMES B. VOSO
 022599
 6/13/2018
 DATE
 SIG. INVENTORY NO. 07-0891

PHASING DIAGRAM

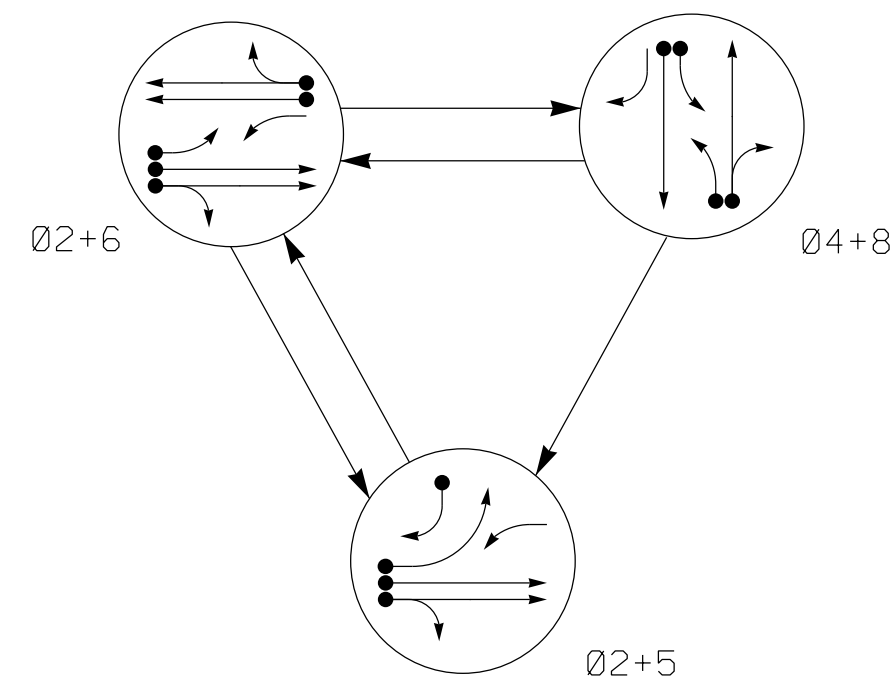


TABLE OF OPERATION

SIGNAL FACE	PHASE				
	02+5	02+6	04+8	F L R	Y
21,22	G	G	R	Y	
41	R	R	F	R	
42,44	R	R	G	R	
43	R	R	G	R	
51	F	F	R	Y	
61	F	F	R	Y	
62,63	R	G	R	Y	
81	R	R	F	R	
82,83	R	R	G	R	

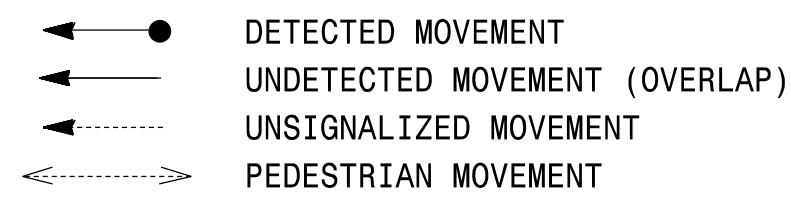
ASC/3 DETECTOR INSTALLATION CHART											
DETECTOR				PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	NEW CARD
2A,2B	6X6	300	EXIST	-	2	Yes	-	-	X	N	- X
4A	6X40	0	2-4-2	-	4	Yes	-	3	-	S	- X
4B	6X40	0	2-4-2	-	4	Yes	-	-	-	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,6B	6X6	300	EXIST	-	6	Yes	-	-	X	N	- X
6C	6X60	+5	2-4-2	-	6	Yes	-	3	-	G	- X
8A	6X60	0	2-4-2	-	8	Yes	-	-	-	S	- X
8B	6X60	0	2-4-2	-	8	Yes	-	10	-	S	- X

3 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

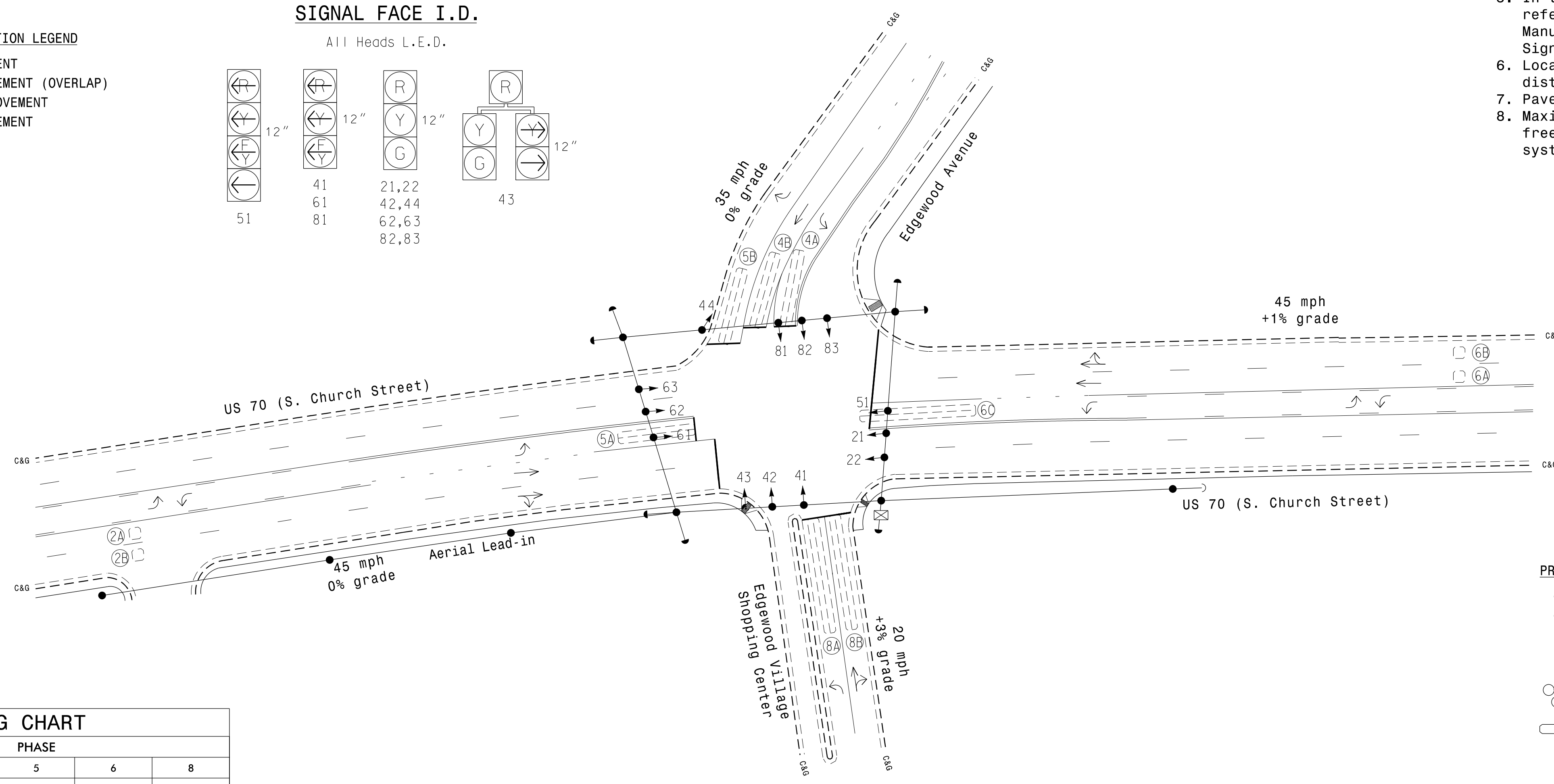
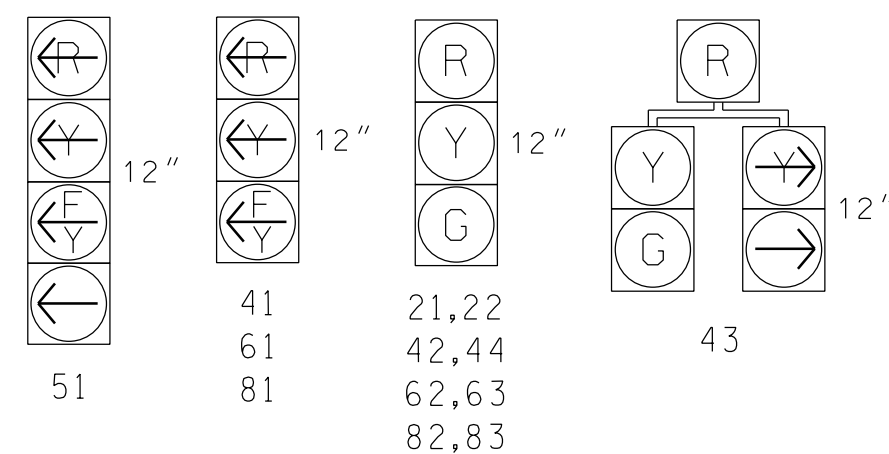
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Records to the Signal Design Section.
- Locate new cabinet so as not to obstruct sight distances 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



SIGNAL FACE I.D.

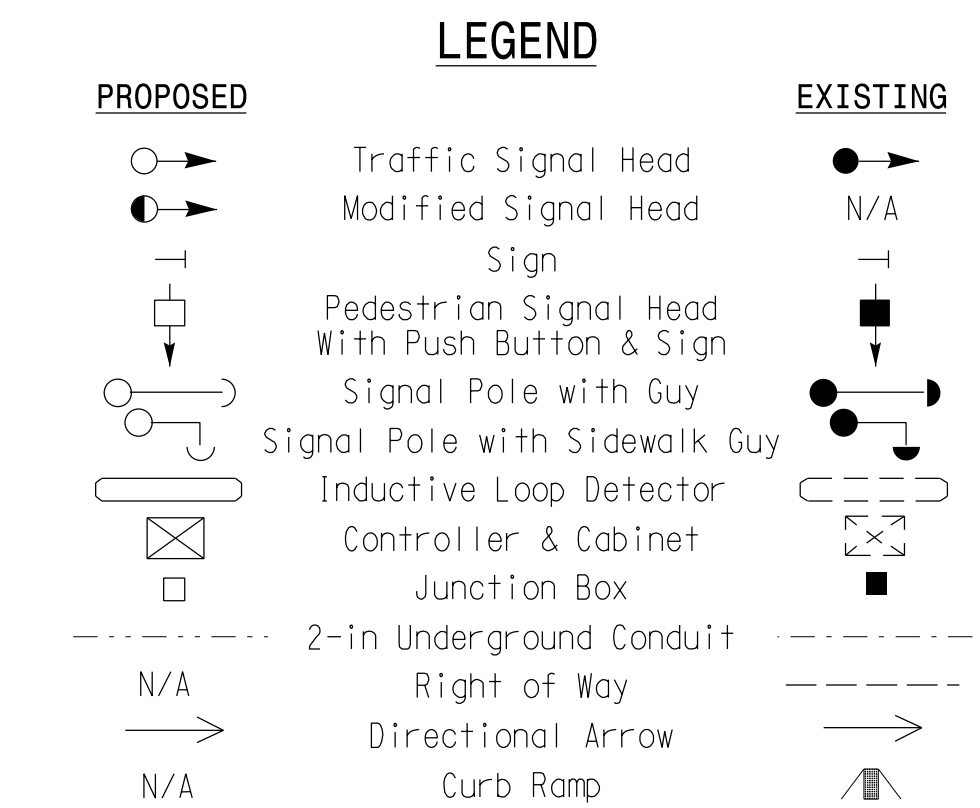
All Heads L.E.D.



ASC/3 TIMING CHART

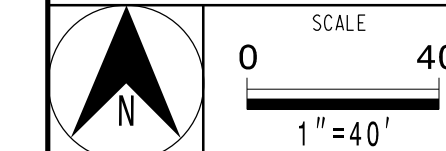
FEATURE	PHASE				
	2	4	5	6	8
Min Green *	12	7	7	12	7
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
Veh. Extension *	6.0	2.0	2.0	6.0	2.0
Max 1 *	90	30	25	90	20
Yellow	4.5	3.8	3.0	4.5	3.8
Red Clear	1.3	3.1	2.4	1.3	3.1
Actuations B4 Add *	0	-	-	0	-
Seconds / Actuation *	2.0	-	-	2.0	-
Max Initial *	34	-	-	34	-
Time 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

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



Signal Upgrade

	US 70 (S. Church Street) at Edgewood Avenue/ Edgewood Village Shopping Center		
	Division 7 Alamance County Burlington		
Prepared for the Offices of: TRANSPORTATION AND SAFETY DIVISION STATE OF NORTH CAROLINA SIGNAL DESIGN SECTION	PLAN DATE: December 2017 PREPARED BY: NA Ptak	REVIEWED BY: AM Encarnacion REVIEWED BY: PL Alexander	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL PAMELA L. ALEXANDER PROFESSIONAL ENGINEER No. 023489 DATE: 6/8/2018 SIG. INVENTORY NO. 07-0932

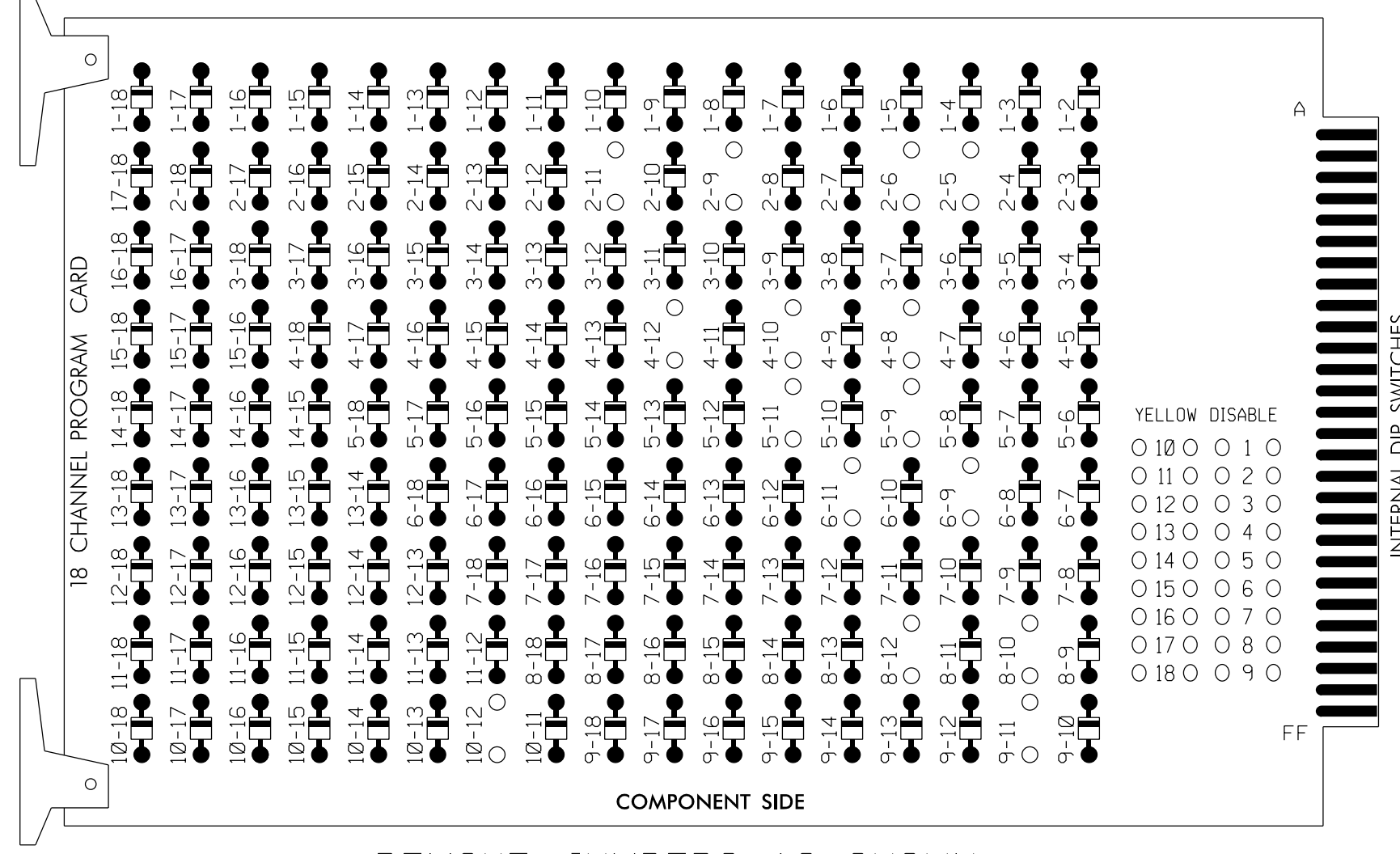


11-JUN-2018 17:52
 D:\Transportation\Tr-off\cnc\cur\100056469 U-6015 B-6 Sig Sys\Task 05_11_Signal\sig0as\gn07-0932.dgn
 ALEX3361 AT LUS40649

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

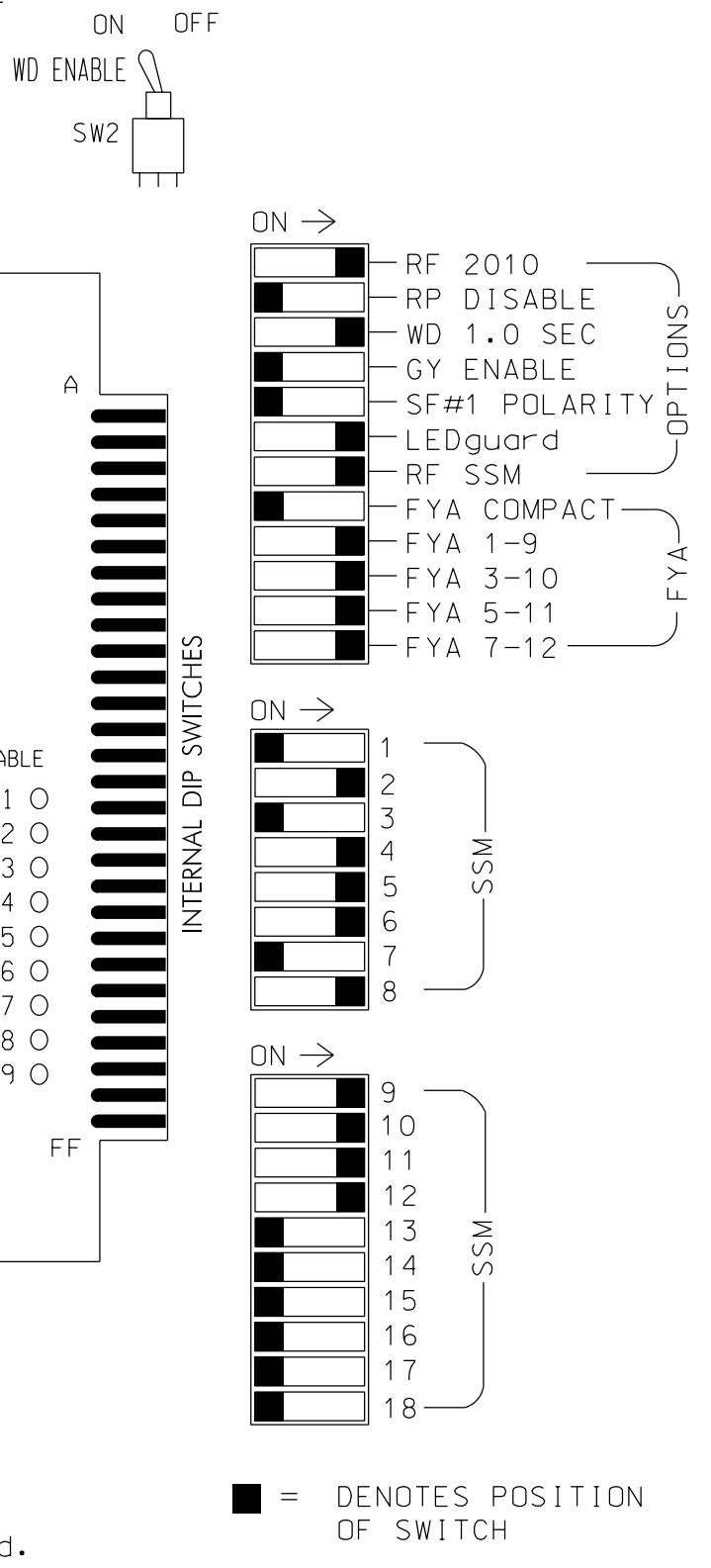
REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-11, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 8-10, 8-12, 9-11, and 10-12.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. 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.

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,S5,S7,S8,S11,AUX S1,
 AUX S2,AUX S4,AUX S5
 PHASES USED.....2,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*

* See sheet 2 for overlap programming.

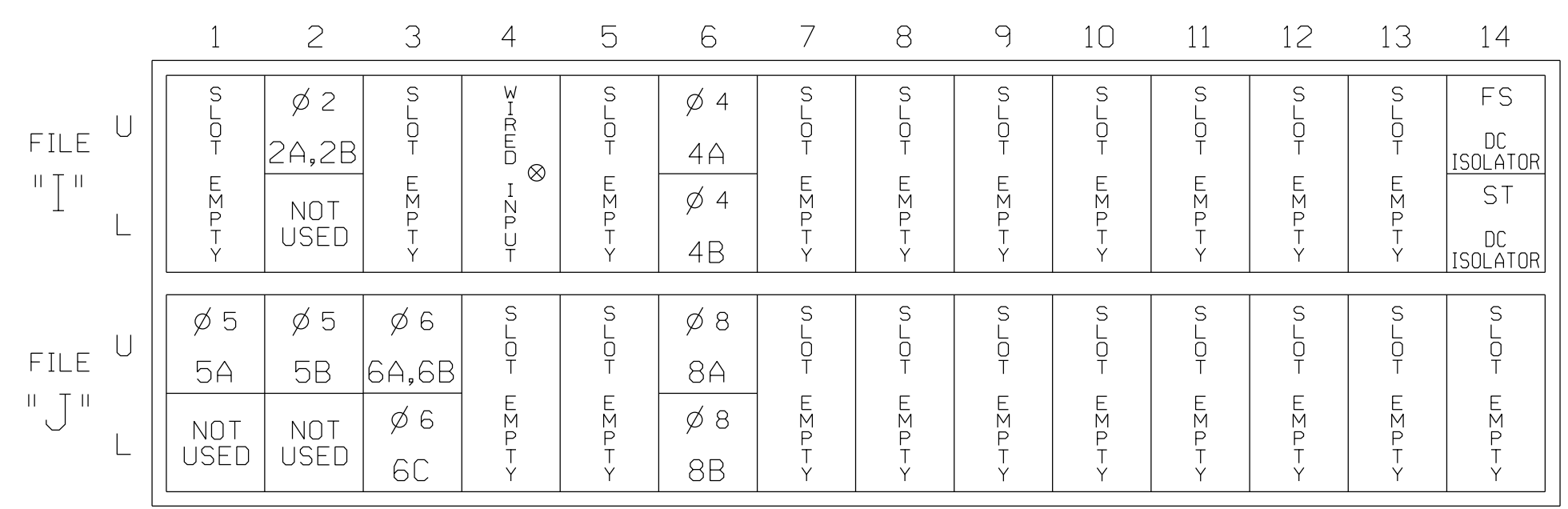
SIGNAL HEAD HOOK-UP CHART

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	42,43 44	NU	43	51*	62,63	NU	NU	82,83	NU	61*	81*	NU	51*	41*	NU
RED		128			101			*	134			107							
YELLOW		129			102				135			108							
GREEN		130			103				136			109							
RED ARROW															A121	A124		A114	A101
YELLOW ARROW									132						A122	A125		A115	A102
FLASHING YELLOW ARROW															A123	A126		A116	A103
GREEN ARROW									133	133									

NU = Not Used
 * See pictorial of head wiring in detail this sheet.
 * 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

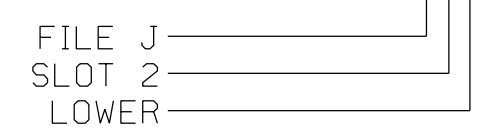
⊗ Wired Input - Do not populate slot with detector card

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,2B	TB2-5,6	I2U	39	2	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		3		S
4B	TB4-11,12	I6L	45	14	4	YES				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,6B	TB3-9,10	J3U	64	36	6	YES			X	N
6C	TB3-11,12	J3L	77	46	6	YES		3		G
8A	TB5-9,10	J6U	42	8	8	YES				S
8B	TB5-11,12	J6L	46	18	8	YES		10		S

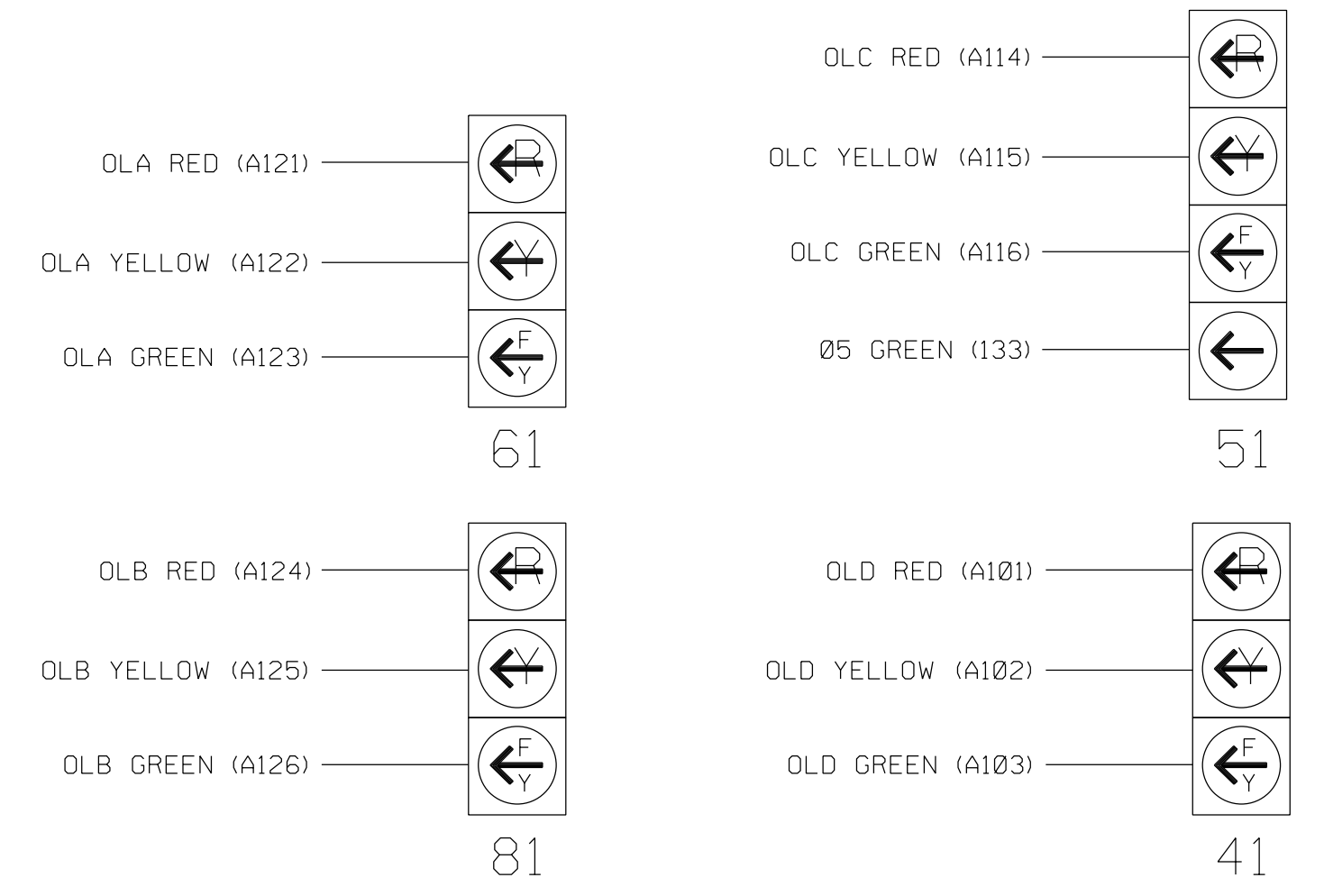
¹Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

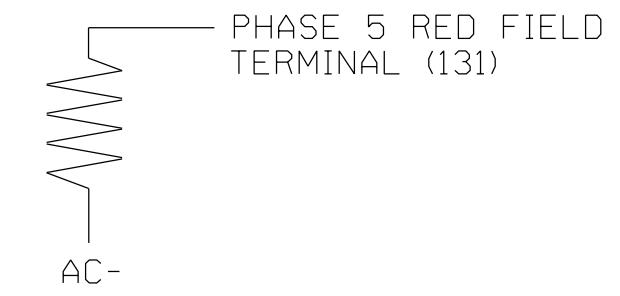


LOAD RESISTOR INSTALLATION DETAIL

(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 (S. Church Street) at Edgewood Avenue/Edgewood Village Shopping Center**

Division 7 Alamance County Burlington

Prepared by: **NA Ptak** Reviewed by: **AM Encarnacion**

Plan Date: **December 2017** Reviewed by: **PL Alexander**

Revisions: _____ Init. _____ Date _____

Seal: **PANELA L. ALEXANDER**, PROFESSIONAL ENGINEER, NORTH CAROLINA, SEAL 023489

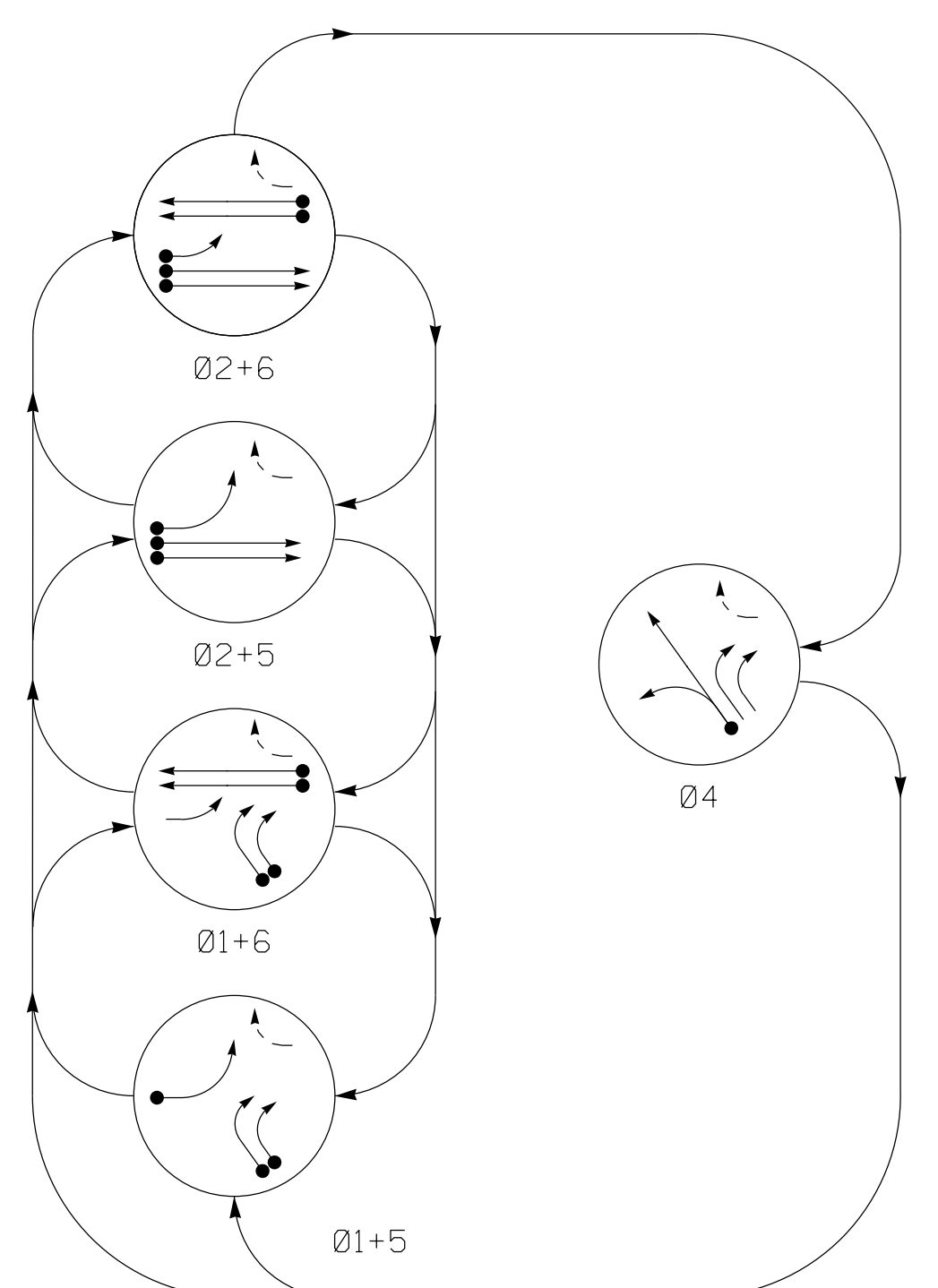
Prepared for the Offices of: **ATKINS**, 1616 EAST MILLBROOK ROAD, SUITE 160, RALEIGH, NORTH CAROLINA 27609, (919) 876-6888, NCBEES #F-0326

750 N. Greenfield Pkwy, Garner, NC 27529

6/9/2018

SIG. INVENTORY NO. **07-0932**

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

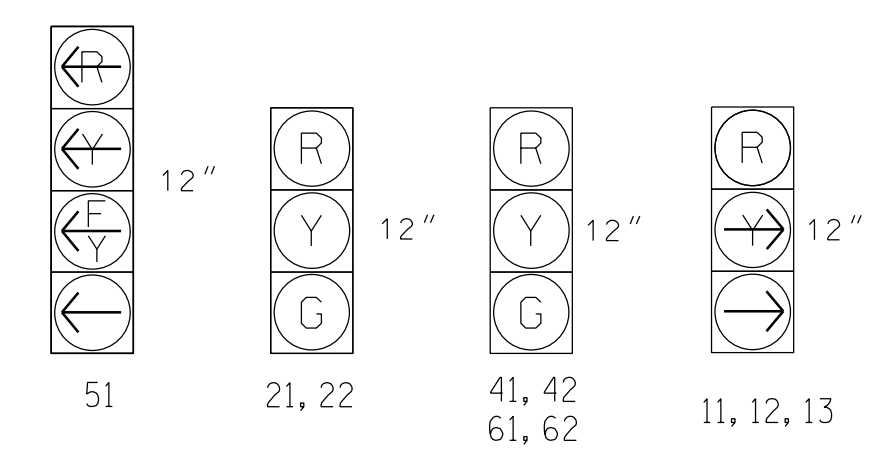
- ◄● DETECTED MOVEMENT
- ◄◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄◄◄ UNSIGNALIZED MOVEMENT
- ◄◄◄◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE				
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 4
11, 12, 13	→	→	R R	→	R
21, 22	R	R	G G	R	Y
41, 42	R	R	R R	G	R
51	←	←	←	←	←
61, 62	R	G	R G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



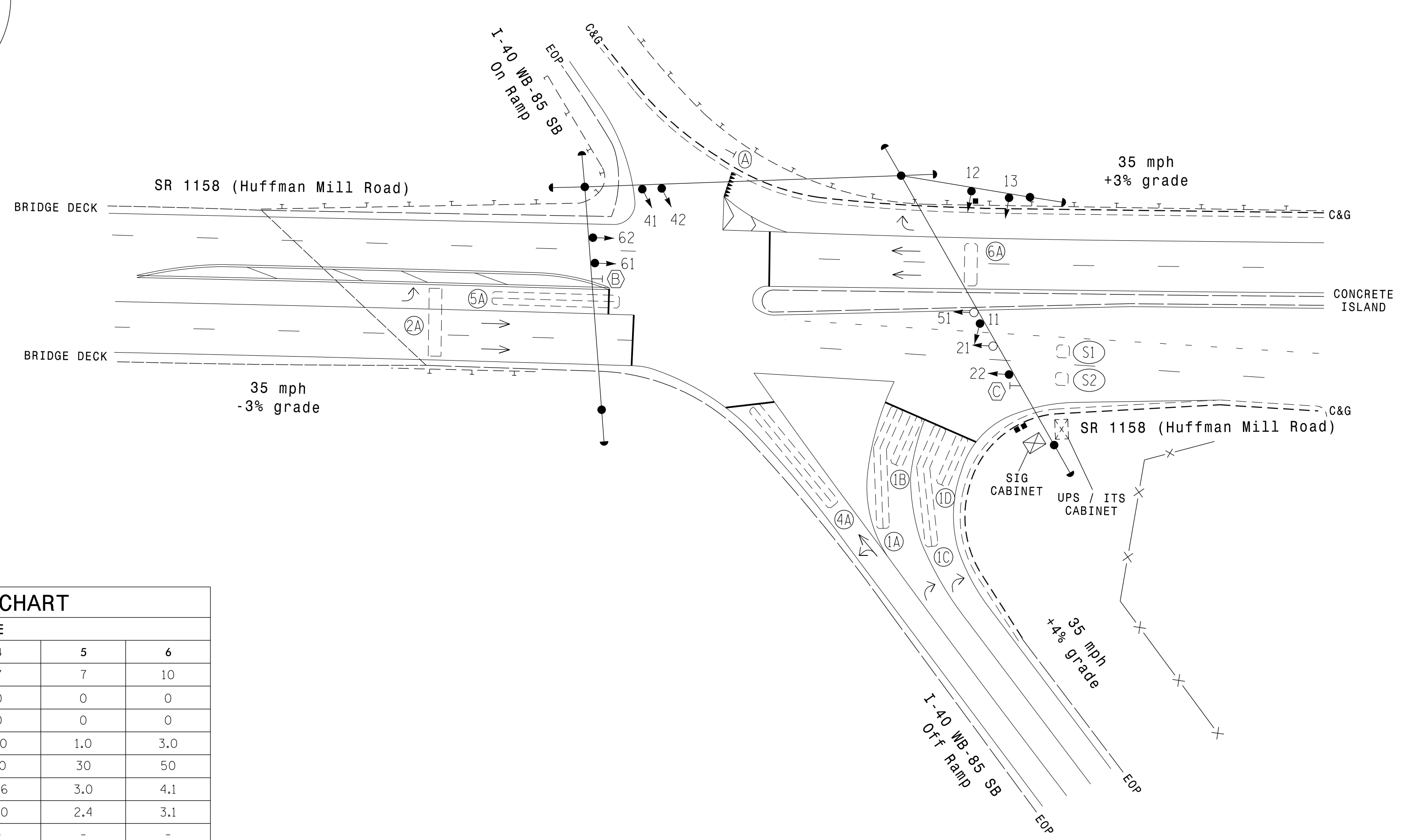
ASC/3 DETECTOR INSTALLATION CHART

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	6X60	0	2-4-2	-	1	Yes	-	15	-	S	-	X
1B	6X25	0	2-4-2	-	1	Yes	-	15	-	S	-	X
1C	6X60	0	2-4-2	-	1	Yes	-	15	-	S	-	X
1D	6X25	0	2-4-2	-	1	Yes	-	15	-	S	-	X
2A	6X32	90	EXIST	-	2	Yes	-	-	-	S	-	X
4A	6X60	0	2-4-2	-	4	Yes	-	-	-	S	-	X
5A	6X60	+5	2-4-2	-	5	Yes	-	15	-	S	-	X
6A	6X20	92	EXIST	-	6	Yes	-	-	-	S	-	X
S1	6X6	+200	EXIST	-	-	No	-	-	-	N	X	X
S2	6X6	+200	EXIST	-	-	No	-	-	-	N	X	X

5 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 may be lagged.
4. Reposition existing signal heads numbered 11 and 22.
5. Install backplates for signal heads numbered 51 & 21.
6. Set all detector units to presence mode.
7. 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.
8. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
9. Pavement markings are existing.
10. 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
Min Green *	7	10	7	7	10
Walk *	0	0	0	0	0
Ped Clear	0	0	0	0	0
Veh. Extension *	1.0	3.0	1.0	1.0	3.0
Max 1 *	30	50	20	30	50
Yellow	3.6	4.1	3.6	3.0	4.1
Red Clear	2.0	3.1	2.0	2.4	3.1
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	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
⊥ Right of Way	⊥ N/A
→ Directional Arrow	→ N/A
(A) "YIELD" Sign (R1-2)	(A) N/A
(B) No U-Turn/No Left Turn Sign (R3-18)	(B) N/A
(C) No Right Turn Sign (R3-1)	(C) N/A

Signal Upgrade

Prepared for the Offices of:

SR 1158 (Huffman Mill Road) at I-40 WB-85 SB Ramps

Division 7 Alamance County Burlington

PLAN DATE: October 2017 REVIEWED BY: AM Encarnacion

PREPARED BY: JA Wiles REVIEWED BY: MB Toth

SCALE: 1"=40'

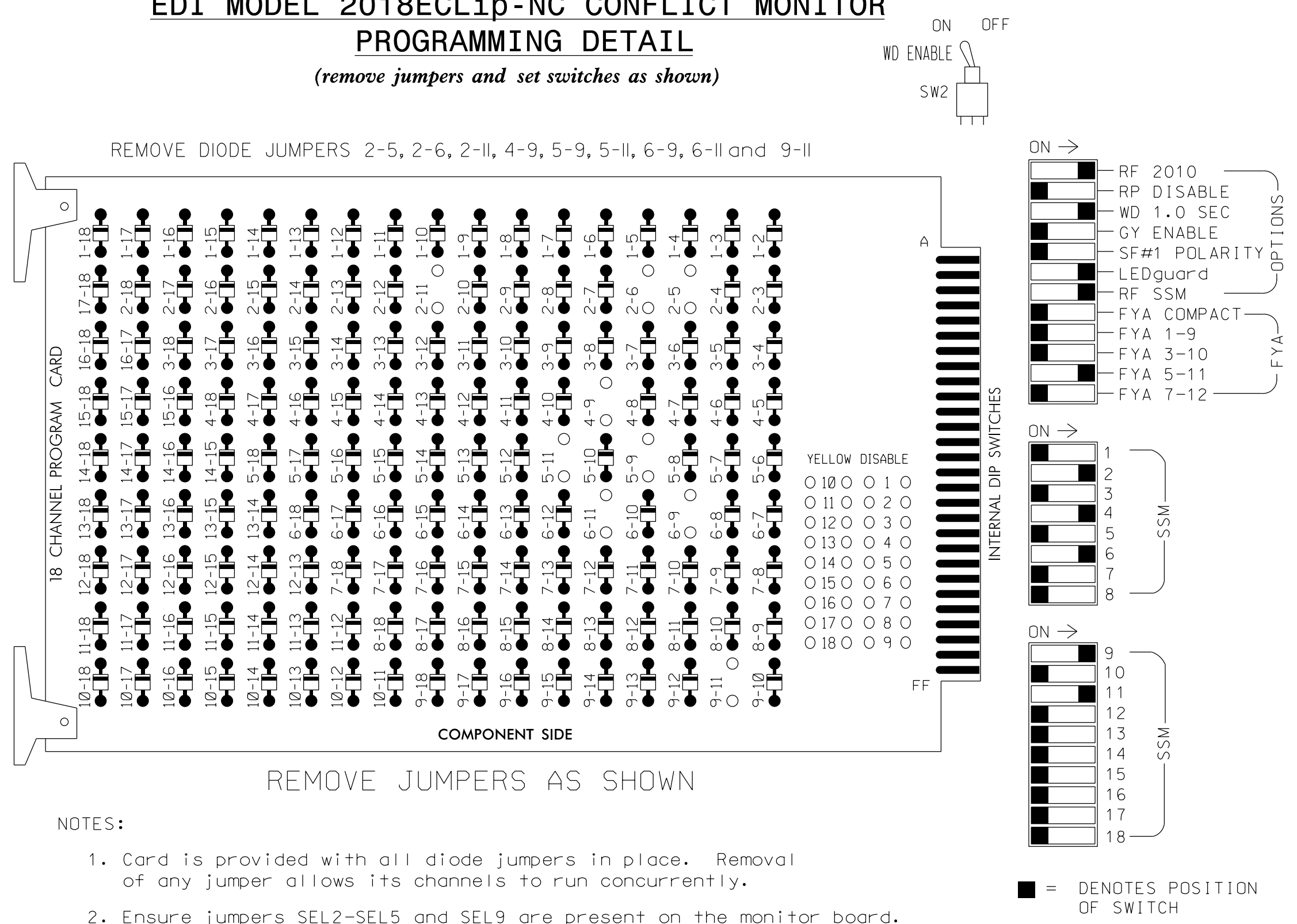
6/7/2018

SIG. INVENTORY NO. 07-0955

07-JUN-2018 11:15 D:\Transpor\at\at\proj\off\c\cur\100056469 U-6015 B-G S19 Sys\Task 05_11_Signal\Des\gn\07-0955.dgn ALEX3361 AT LUS210649

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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 S1,AUX S4
 PHASES USED.....1,2,4,5,6
 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.	NC	21,22	NU	NU	41,42	NU	51	61,62	NU	NU	NU	NU	11,12,13	NU	NU	51	NU	NU
RED		128			101			134					A121					
YELLOW		129			102		*	135										
GREEN		130			103			136										
RED ARROW																		A114
YELLOW ARROW													A122					A115
FLASHING YELLOW ARROW																		A116
GREEN ARROW							133						A123					

NU = Not Used
 NC = Phase used for timing only
 * 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)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1 1A,1B	∅ 2 2A	∅ 1 1C,1D	∅ 4 4A	∅ 5 5A	∅ 6 6A	∅ 7 7A	∅ 8 8A	∅ 9 9A	∅ 10 10A	∅ 11 11A	∅ 12 12A	∅ 13 13A	∅ 14 14A
L	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
U	∅ 5 5A	∅ 6 6A	∅ 7 7A	∅ 8 8A	∅ 9 9A	∅ 10 10A	∅ 11 11A	∅ 12 12A	∅ 13 13A	∅ 14 14A	∅ 15 15A	∅ 16 16A	∅ 17 17A	∅ 18 18A
L	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

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

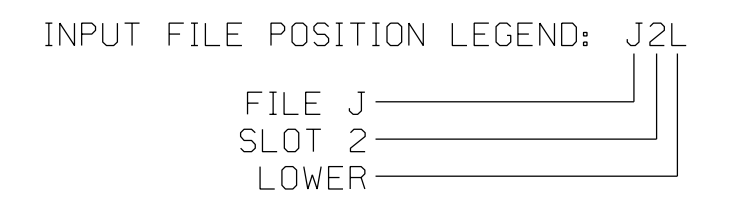
FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

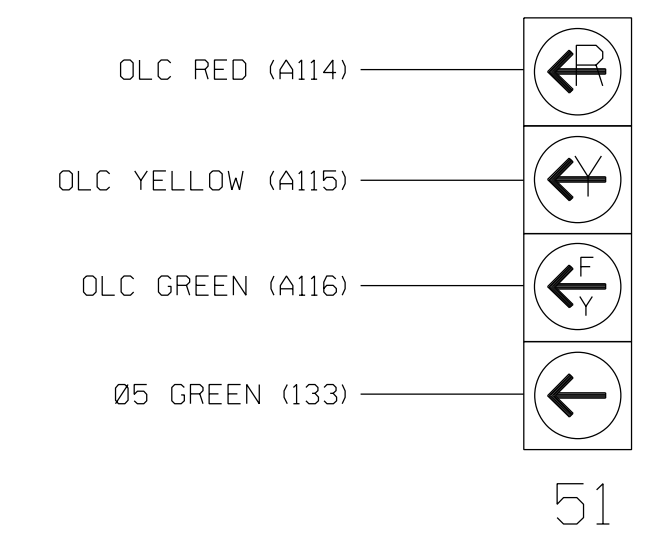
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A,1B	TB2-1,2	I1U	56	1	1	YES		15		S
1C,1D	TB2-9,10	I3U	63	32	1	YES		15		S
2A	TB2-5,6	I2U	39	2	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES				S
* S1	TB6-9,10	I9U	60	11	SYS	NO				N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N
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

* System detector only. Remove any assigned vehicle phase.
¹Add jumper from J1-W to I4-W, on rear of input file.



FYA SIGNAL WIRING DETAIL

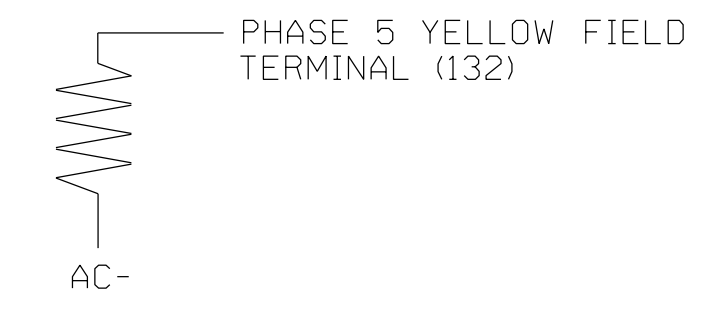
(wire signal head as shown)



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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: TRANSPORTATION MOBILITY AND SAFETY PLANNING AUTHORITY OF NORTH CAROLINA 750 N. Greenfield Pkwy, Garner, NC 27529	SR 1158 (Huffman Mill Road) at I-40 WB-85 SB Ramps		SEAL MELISSA B. TOTH ENGINEER
	Division 7 Alamance County Burlington		
	PLAN DATE: October 2017 PREPARED BY: JA Wiles	REVIEWED BY: AM Encarnacion REVIEWED BY: MB Toth	
	REVISIONS INIT. DATE	DATE	

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

09:UN-2018 13:38
 D:\Transportation\tr-off\c\curr*100056469 U-6015 B-6 Sig Sys*task 05-11-15\signal\04as\gn\Wf\ing\07-0955E.dgn
 ALEX3361 AT LUS240619

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 'NORMAL'

```

TMG VEH OVLP...[A] TYPE: .....NORMAL
  PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED X . . X . . . . .
LAG GRN 0.0 YEL 0.0 RED 0.0
        
```

Toggle Twice

OVERLAP C

Select TMG VEH DVLP [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: 07-0955
 DESIGNED: October 2017
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 13:38
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 ALEX3361 AT LUS240619

Electrical Detail - Sheet 2 of 2

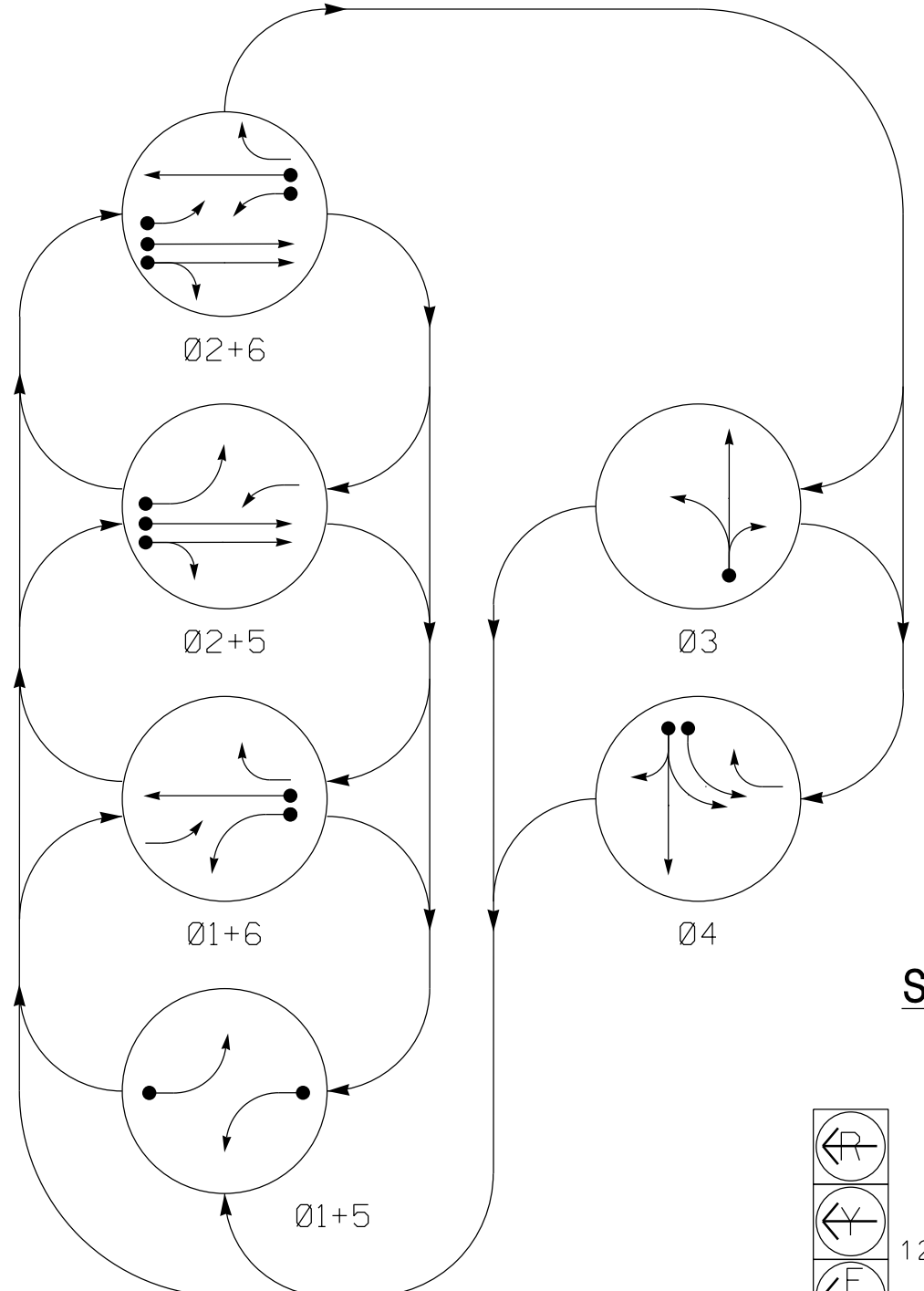
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

<p style="font-size: x-small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small; text-align: center;">Prepared for the Offices of:</p> <p style="font-size: x-small; text-align: center;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p style="font-weight: bold; font-size: large;">SR 1158 (Huffman Mill Road) at I-40 WB-85 SB Ramps</p> <p style="font-size: x-small;">Division 7 Alamance County Burlington</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: x-small;">PLAN DATE: October 2017</td> <td style="font-size: x-small;">REVIEWED BY: AM Encarnacion</td> </tr> <tr> <td style="font-size: x-small;">PREPARED BY: JA Wiles</td> <td style="font-size: x-small;">REVIEWED BY: MB Toth</td> </tr> </table> <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>	PLAN DATE: October 2017	REVIEWED BY: AM Encarnacion	PREPARED BY: JA Wiles	REVIEWED BY: MB Toth	REVISIONS	INIT.	DATE							<p style="font-size: x-small;">SEAL</p> <p style="font-size: x-small;">SEAL 025892 ENGINEER MELISSA B. TOTH</p> <p style="font-size: x-small;">Decided by: 6/11/2018 Melissa B. Toth DATE SIG. INVENTORY NO. 07-0955</p>
PLAN DATE: October 2017	REVIEWED BY: AM Encarnacion														
PREPARED BY: JA Wiles	REVIEWED BY: MB Toth														
REVISIONS	INIT.	DATE													

ATKINS

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

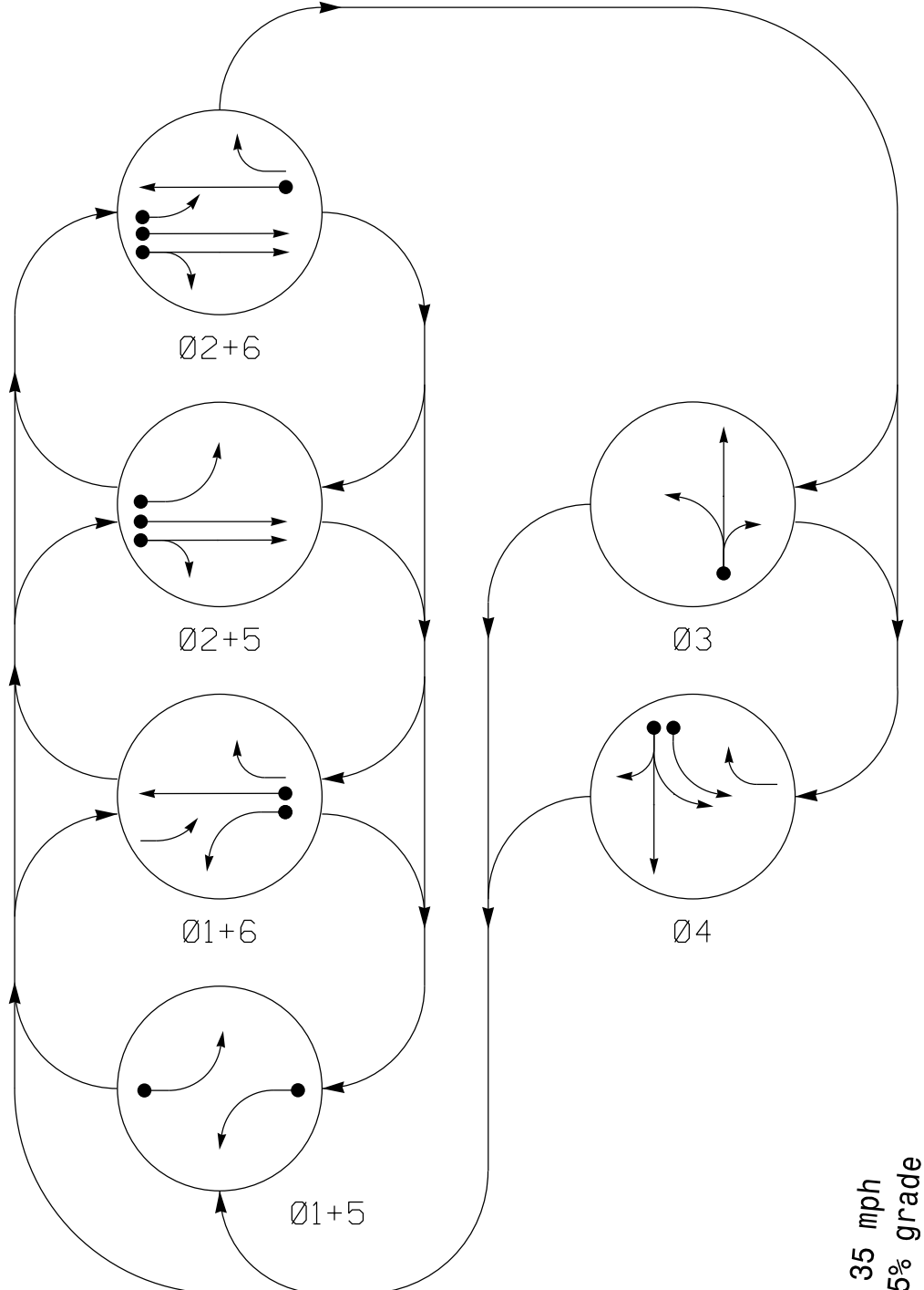
DEFAULT PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

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

ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION

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

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
1A	6X40	0	2-4-2	-	1	Yes	-	*15	-	S	-	X
2A,2B	6X6	70	EXIST	-	2	Yes	-	-	-	S	-	X
3A	6X40	0	2-4-2	-	3	Yes	-	5	-	S	-	X
4A	6X40	0	2-4-2	-	4	Yes	-	3	-	S	-	X
4B	6X40	0	2-4-2	-	4	Yes	-	10	-	S	-	X
5A	6X40	0	2-4-2	-	5	Yes	-	15	-	S	-	X
6A	6X6	70	EXIST	-	6	Yes	-	-	-	S	-	X

* Disable Delay During Alternate Phasing Operation.
** Disable Phase 6 Call For Loop 1A During Alternate Phasing Operation.

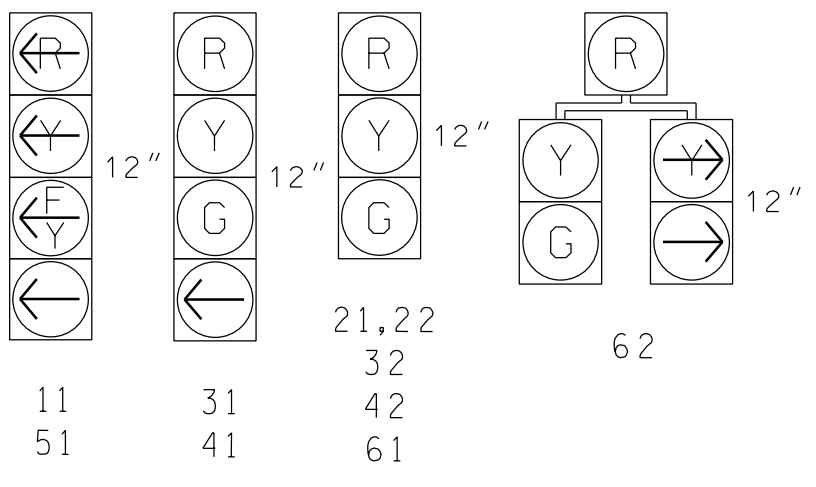
6 Phase Fully Actuated (Burlington-Graham Signal System)

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.
- 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 vehicles turning right on red.
- Pavement markings are existing.
- The City Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

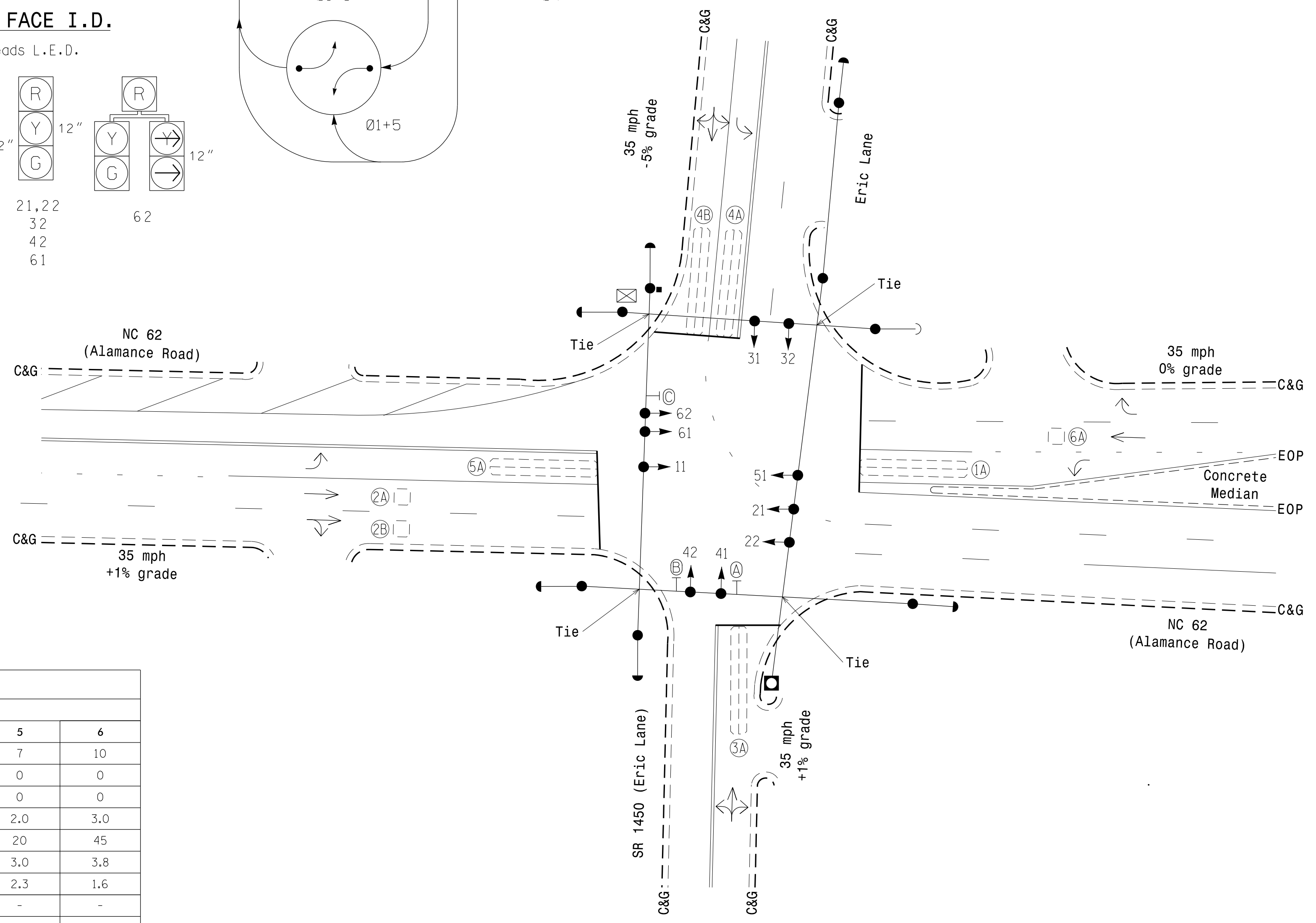
SIGNAL FACE I.D.

All Heads L.E.D.



PHASING DIAGRAM DETECTION LEGEND

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



ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green *	7	10	7	7	7	10
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Veh. Extension *	2.0	3.0	2.0	4.0	2.0	3.0
Max 1 *	15	45	15	40	20	45
Yellow	3.0	3.8	3.8	4.2	3.0	3.8
Red Clear	2.4	1.6	1.8	1.7	2.3	1.6
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	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

- | | | | |
|--|-----------------------------------|--|----------|
| | Traffic Signal Head | | EXISTING |
| | Modified Signal Head | | N/A |
| | Sign | | N/A |
| | Pedestrian Signal Head | | N/A |
| | Signal Pole with 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 |
| | Left Arrow "ONLY" Sign (R3-5L) | | N/A |
| | Dual Turn and Through Arrows Sign | | N/A |
| | Right Arrow "ONLY" Sign (R3-5R) | | N/A |

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

NC 62 (Alamance Road) at SR 1450 (Eric Lane)/Eric Lane
 Division 7 Alamance County Burlington
 PLAN DATE: January 2018 REVIEWED BY: AM Encarnacion
 PREPARED BY: VJ Paul REVIEWED BY: PL Alexander

REVISIONS: _____ INIT: _____ DATE: _____

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

SCALE: 0 30
1"=30'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 PAMELA L. ALEXANDER
 023489
 6/7/2018
 PANELA ALEXANDER
 DATE
 SIG. INVENTORY NO. 07-0961

07-JUN-2018 11:15
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 ALEX3361 AT LUS336069

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOP 1A *(program controller as shown)*

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

1. From Main Menu select 8. UTILITIES
2. From UTILITIES Submenu select 1. COPY/CLEAR
3. Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM           TO
PHASE TIMING... > PHASE TIMING...
TIMING PLAN... > TIMING PLAN...
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
    
```

4. From Main Menu select 6. DETECTORS
5. From DETECTOR Submenu select 2. VEHICLE DETECTOR SETUP
6. Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "0".

```

VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

- Place cursor in VEH DETECTOR [] position and enter "26".
- Set assigned phase to "0".

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

END PROGRAMMING

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..... 1
    
```

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: 07-0961
DESIGNED: JANUARY 2018
SEALED: 6/7/2018
REVISED: N/A

Electrical Detail - Sheet 2 of 3

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REVISIONS	INIT.	DATE						
Prepared by: Pamela Alexander DATE: 6/9/2018 Signature: _____ DATE: _____		SIG. INVENTORY NO. 07-0961						

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 1.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BITS 1 and 5.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	1

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

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 1 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

SF BIT 1: Modifies overlap parent phases for head 11 to run protected turns only.

VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

- From Main Menu select 5. TIME BASE
- From TIME BASE Submenu select 2. ACTION PLAN

```

ACTION PLAN...[ 1]
PATTERN.....AUTO   SYS OVERRIDE.... NO
TIMING PLAN..... 0   SEQUENCE..... 0
VEH DETECTOR PLAN.. 2 DET LOG.....NONE
FLASH..... --      RED REST..... NO
VEH DET DIAG PLN... 0 PED DET DIAG PLN..0
DIMMING ENABLE.. NO PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY..... NO
PMT COND DELAY NO
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  X  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
AUX FCT  .  .  .  (1-3)
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0961
 DESIGNED: JANUARY 2018
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail - Sheet 3 of 3

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ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	NC 62 (Alamance Road) at SR 1450 (Eric Lane)/ Eric Lane Division 7 Alamance County Burlington PLAN DATE: January 2018 REVIEWED BY: AM Encarnacion PREPARED BY: VJ Paul REVIEWED BY: PL Alexander	SEAL SEAL 023489 PAMELA L. ALEXANDER ENGINEER DATE: 6/9/2018 SIG. INVENTORY NO. 07-0961
	1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBES #F-0326	REVISIONS INIT. DATE _____ _____ _____

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