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**This file or an individual page
shall not be considered a certified document.**

SUMMARY OF WORK BY INTERSECTION


Reference Information					Conduit and Riser Work															Power Service																	
NCDOT / City Signal Inv. No.	Intersection Name	Cable Layout Sheet Number	Signal Design Sheet Number	In / near historically significant area (see box note at bottom of page)	Drill / Core Drill for 2" for FO or CAT6	Intercept and use 2" Spare for Signal Cable or Lead-in	Reuse Ex. 1" (pole) or 2" (base) HST Dedicated Riser for Comm (Heat Shrink Kit)	Reuse Ex. 2" (or 3") Dedicated Conduit Entrance for UG Comm	Use 2" Spare Conduit for UG Comm	Use 2" Spare Riser for Comm (Heat Shrink Tubing Kit)	New 2" Riser (HST) for Comm	New 1-1/4" Riser (HST) for Comm to pole mid cabinet	New 1" Short Riser for Sig-Replace short riser to cabinet	New UG Conduit for Comm Entrance	New Cabinet Entrance in New Foundation for Comm	New 1/2" Risers (WH) for Sig- Pedestrian Push Buttons	New 1" Risers (WH) for CCTV - CAT6	New 1" Risers (WH) for Sig- New Electrical Service Location	New 2" Risers (WH) for Sig- New Foundation	New 2" Risers (attach to splice box) for Sig- New Foundation Location	New 2" Risers (WH) for System Detector	New 2" Risers (WH) for New Detection Loops	New 2" Risers (WH) for Sig (replace existing)	New UG conduit to new foundation location for Sig	New 2" short Risers for Sig (from terminal splice box or from UG)	Modify Existing Power Service - Install New Service Wires in Existing Conduit	Modify Existing Power Service - Install New Service Wires in New Conduit	Install Service Disconnect by Signal Cabinet	Install 50 Amp Breaker for Signal (Replace Existing)	Install 5/8" x 10' Grounding Electrode	Install New Electrical Service						
193	B8027	Graham Street at Queen Ann Street	6.190	195.0							1																										
194	B8451	N. Beaumont Avenue at Vaughn Road	6.162	196.0																				2									1				
195	B8453	Graham Street at Beaumont Avenue	6.191	197.0		1																	1														
196	B8454	E. Front Street at S. Spring Street	6.117	198.0						1					1			1	2															3	1		
197	B8455	E. Davis Street at S. Spring Street	6.117	199.0	Y			1																													
198	B8456	S. Lexington Avenue at E. Davis Street	6.118	200.0	Y			1																													
199	B8457	Maple Avenue at S. Lexington Avenue	6.118	201.0	Y			1																													
200	B8458	S. Worth Street at W. Front Street	6.127	202.0				1																													
201	B9024	Boone Station Drive at Glidewell Drive/Tiki Lane	6.058	203.0				1																													
202	B9025	Boone Station Drive at Waltham Boulevard	6.059	204.0				1																													
203	G0100	Marshall Street at E. Elm Street	6.180	205.0			1																														
204	G0101	E. Pine Street at S. Marshall Street	6.180	206.0	Y		1																														
205	G0102	E. Pine Street at S. Melville Street	6.180	207.0			1																												1		
206	G0103	N. Marshall Street at Albright Avenue	6.181	208.0						1	1							1						2													
Total					6	2	95	48	4	4	32	8	1	10	18	4	2	6	23	10	19	9	14	6	10	14	19	3	90	51	7						

25-JUN-2018 17:23 ***S:\CHL\ins\com\cct\project\GIS\LA\Transportation\Traffic\Cur*100056469 U-6015 B-6 Sig. Sys*Task 05_11_Signal\Vol. III. Front Sheets\Sig. 2.25.dgn ALEX3361 AT LUS240649

- Work shown on this sheet is for the upgrade of the traffic signals, including installation of new controllers and cabinets, new or modified foundations, electrical service and miscellaneous signal related items. Additional information can be found in the signal plans in this Volume. Work to be done for fiber-optic cable routing and interconnection is shown on the cable layout plans and on the sheets entitled "Summary of Work by Cable Layout Plans" in Volume I of III.


- The items listed above are for informational purposes only and represent work that is necessary to complete the contract and are not necessarily pay items. See Summary of Quantities and the Project Special Provisions for defined Pay Items for this contract.

Areas within this project have been determined to contain properties with documented historical significance. If it is necessary to deviate from the plans in an area identified to contain properties with historic significance, alert the engineer to contact [Environmental Analysis Unit - Historic Architecture Group of North Carolina Department of Transportation](#) for an effects determination before proceeding.



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

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

Prepared for the Offices of:

**Burlington-Graham Signal System
Summary of Work by
Intersection (Sheet 2 of 3)**

Division 7 Alamance County Burlington & Graham

PLAN DATE: May 2018 REVIEWED BY: MB Toth

PREPARED BY: PL Alexander REVIEWED BY:

SCALE: NTS

REVISIONS: INIT. DATE:

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
MELISSA B. TOOTH
025892

Designed by: Melissa B. Toth 6/26/2018
DATE
CADD File name: Sig 2.25.dgn

SUMMARY OF WORK BY INTERSECTION

Reference Information					Signal Items																										
NCDOT / CITY SIGNAL INV. NO.	Intersection Name	Cable Layout Sheet Number	Signal Design Sheet Number	In / near historically significant area (see box note at bottom of page)	16-inch Countdown Pedestrian Signal Head	12-inch 3-Section Signal Head	12-inch 4-Section Signal Head	12-inch 5-Section Signal Head	Signal Cable	Adjust Span Attachment	Messenger Cable (3/8")	Underground Conduit (1, 2")	Underground Conduit (2, 2")	Directional Drill	Inductive Loop Sawcut	Loop Lead-in Cable	Sign	Wood Pole	Metal Strain Pole	Standard Down Guy Assembly	Sidewalk Guy Assembly	Type I Post with Foundation	Junction Box	Remove existing pedestrian signal	Louvers	Backplates	Remove Line 4"	Remove Line 24"	Thermoplastic Pavement Marking Line 24", 120 MILS	Thermoplastic Pavement Marking Lines (8", 120 MILS)	Thermoplastic White yield lines, 90 MILS
193	B8027	Graham Street at Queen Ann Street	6.190	195.0		8			850	2	740		20			1140				3											
194	B8451	N. Beaumont Avenue at Vaughn Road	6.162	196.0																											
195	B8453	Graham Street at Beaumont Avenue	6.191	197.0		8			620	2	320					410				3	1										
196	B8454	E. Front Street at S. Spring Street	6.117	198.0																											
197	B8455	E. Davis Street at S. Spring Street	6.117	199.0	Y																										
198	B8456	S. Lexington Avenue at E. Davis Street	6.118	200.0	Y																										
199	B8457	Maple Avenue at S. Lexington Avenue	6.118	201.0	Y																										
200	B8458	S. Worth Street at W. Front Street	6.127	202.0					20																						
201	B9024	Boone Station Drive at Glidewell Drive/Tiki Lane	6.058	203.0		2	1		580																						
202	B9025	Boone Station Drive at Waltham Boulevard	6.059	204.0																											
203	G0100	Marshall Street at E. Elm Street	6.180	205.0																											
204	G0101	E. Pine Street at S. Marshall Street	6.180	206.0	Y															3											
205	G0102	E. Pine Street at S. Melville Street	6.180	207.0																											
206	G0103	N. Marshall Street at Albright Avenue	6.181	208.0					420		60							1		1											
Total					4	285	97	8	53020	63	5637	4756	200	550	6360	66985	13	6	2	117	27	2	69	2	4	2	90	54	66	170	50


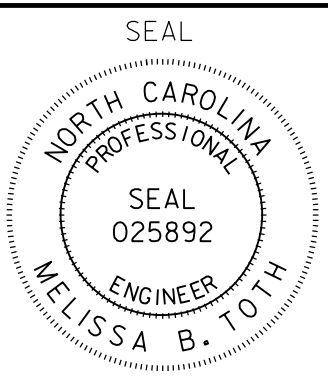
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 ALEX3361 AT_LUS340649

- Work shown on this sheet is for the upgrade of the traffic signals, including installation of new controllers and cabinets, new or modified foundations, electrical service and miscellaneous signal related items. Additional information can be found in the signal plans in this Volume. Work to be done for fiber-optic cable routing and interconnection is shown on the cable layout plans and on the sheets entitled "Summary of Work by Cable Layout Plans" in Volume I of III.
- The items listed above are for informational purposes only and represent work that is necessary to complete the contract and are not necessarily pay items. See Summary of Quantities and the Project Special Provisions for defined Pay Items for this contract.

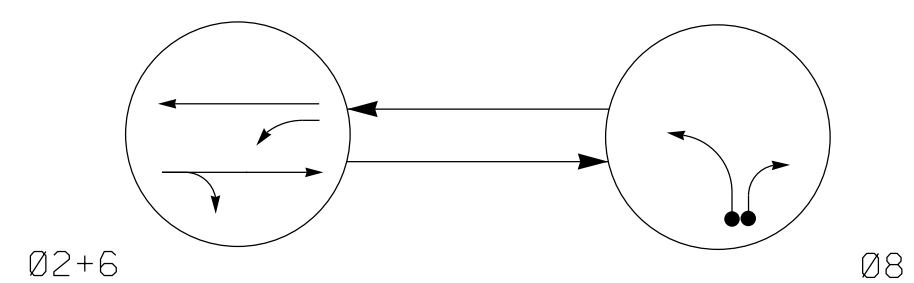
Areas within this project have been determined to contain properties with documented historical significance. If it is necessary to deviate from the plans in an area identified to contain properties with historic significance, alert the engineer to contact Environmental Analysis Unit - Historic Architecture Group of North Carolina Department of Transportation for an effects determination before proceeding.

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	Prepared for the Offices of: Department of Transportation, State of North Carolina		750 Greenfield Parkway, Garner, NC 27529	
	SCALE: NTS			
Burlington-Graham Signal System Summary of Work by Intersection (Sheet 3 of 3)		Division 7 Alamance County Burlington & Graham		
PLAN DATE: May 2018		REVIEWED BY: MB Toth		
PREPARED BY: PL Alexander		REVIEWED BY:		Designed by: <u>Melissa B. Toth</u> DATE: _____ CADD File name: Sig 2.26.dgn
REVISIONS:		INIT. DATE		

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

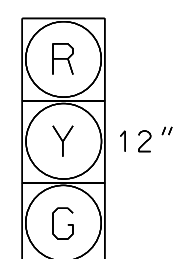
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø2+6	Ø8	FLASH
21,22	G	R	Y
61,62	G	R	Y
81,82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



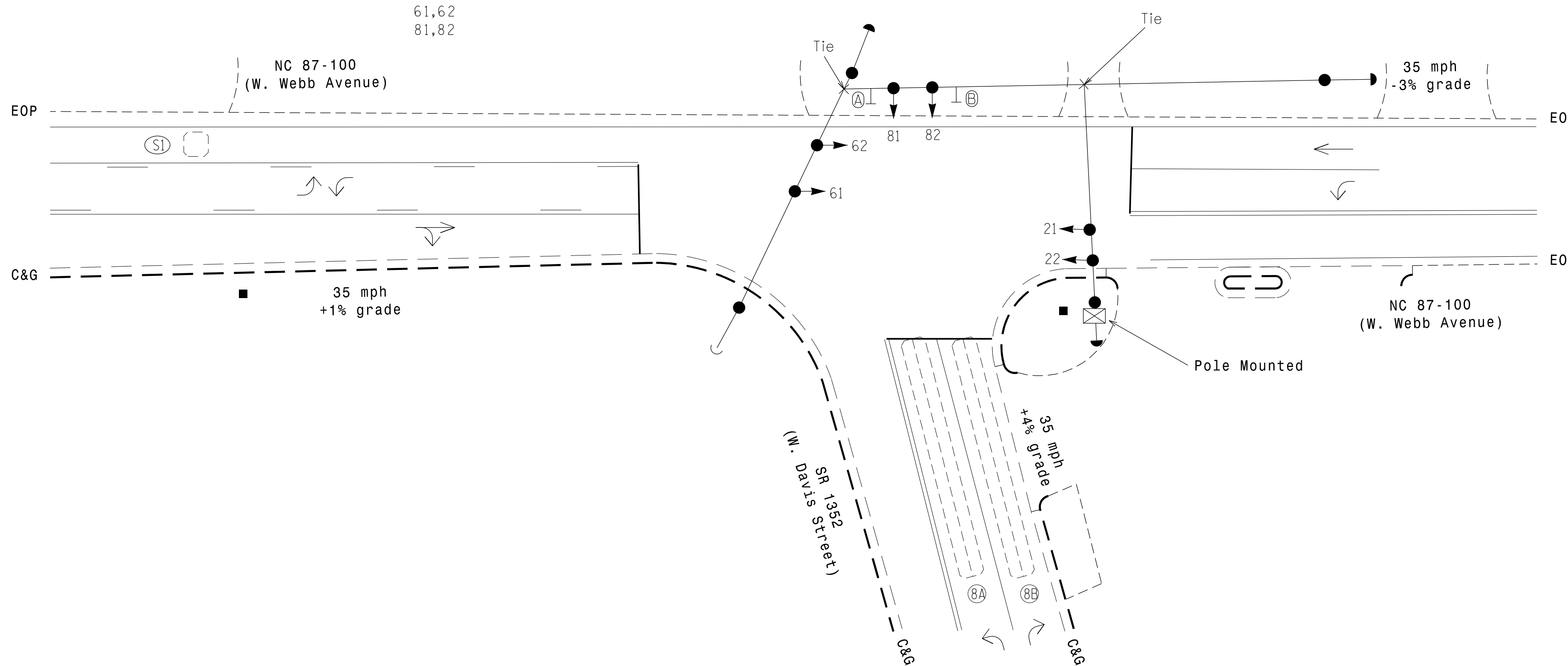
21,22
61,62
81,82

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	SYSTEM LOOP	NEW CARD
8A	6x60	0	2-4-2	-	8	Yes	-	3	-	S	-	X
8B	6x60	0	2-4-2	-	8	Yes	-	15	-	S	-	X
S1	6x6	+226	EXIST	-	-	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 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	6	8
Min Green *	10	10	7
Walk *	0	0	0
Ped Clear	0	0	0
Veh. Extension *	0.0	0.0	2.0
Max 1 *	35	35	25
Yellow	3.8	4.1	3.0
Red Clear	1.6	1.8	2.1
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	-	-	-
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.

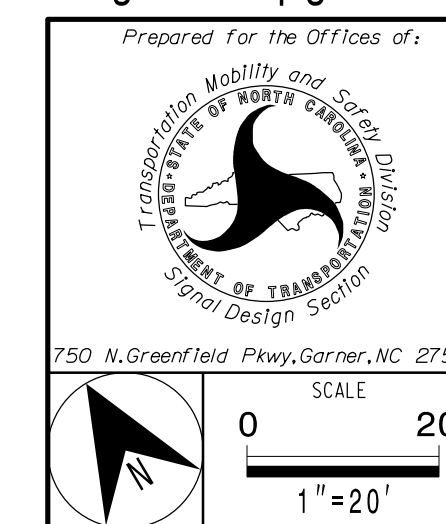
LEGEND

- | | |
|--|--|
| PROPOSED Traffic Signal Head | EXISTING Traffic Signal Head |
| PROPOSED Modified Signal Head | EXISTING Modified Signal Head |
| PROPOSED Pedestrian Signal Head | EXISTING Pedestrian Signal Head |
| PROPOSED Signal Pole with Guy | EXISTING Signal Pole with Guy |
| PROPOSED Signal Pole with Sidewalk Guy | EXISTING Signal Pole with Sidewalk Guy |
| PROPOSED Inductive Loop Detector | EXISTING Inductive Loop Detector |
| PROPOSED Controller & Cabinet | EXISTING Controller & Cabinet |
| PROPOSED Junction Box | EXISTING Junction Box |
| PROPOSED 2-in Underground Conduit | EXISTING 2-in Underground Conduit |
| PROPOSED Right of Way | EXISTING Right of Way |
| PROPOSED Directional Arrow | EXISTING Directional Arrow |
| PROPOSED Curb Ramp | EXISTING Curb Ramp |
| PROPOSED Left Arrow "ONLY" Sign (R3-5L) | EXISTING Left Arrow "ONLY" Sign (R3-5L) |
| PROPOSED Right Arrow "ONLY" Sign (R3-5R) | EXISTING Right Arrow "ONLY" Sign (R3-5R) |

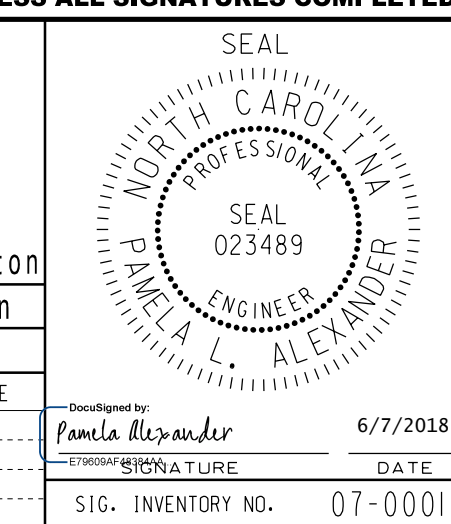
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Signal Upgrade

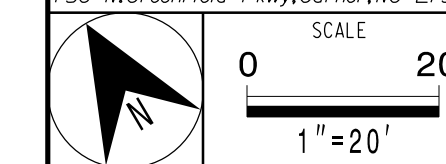
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NC 87-100 (W. Webb Avenue) at SR 1352 (W. Davis Street)	
Division 7	Alamance County
Burlington	
PLAN DATE: January 2018	REVIEWED BY: AM Encarnacion
PREPARED BY: NA Ptak	REVIEWED BY: PL Alexander
REVISIONS	INIT. DATE



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

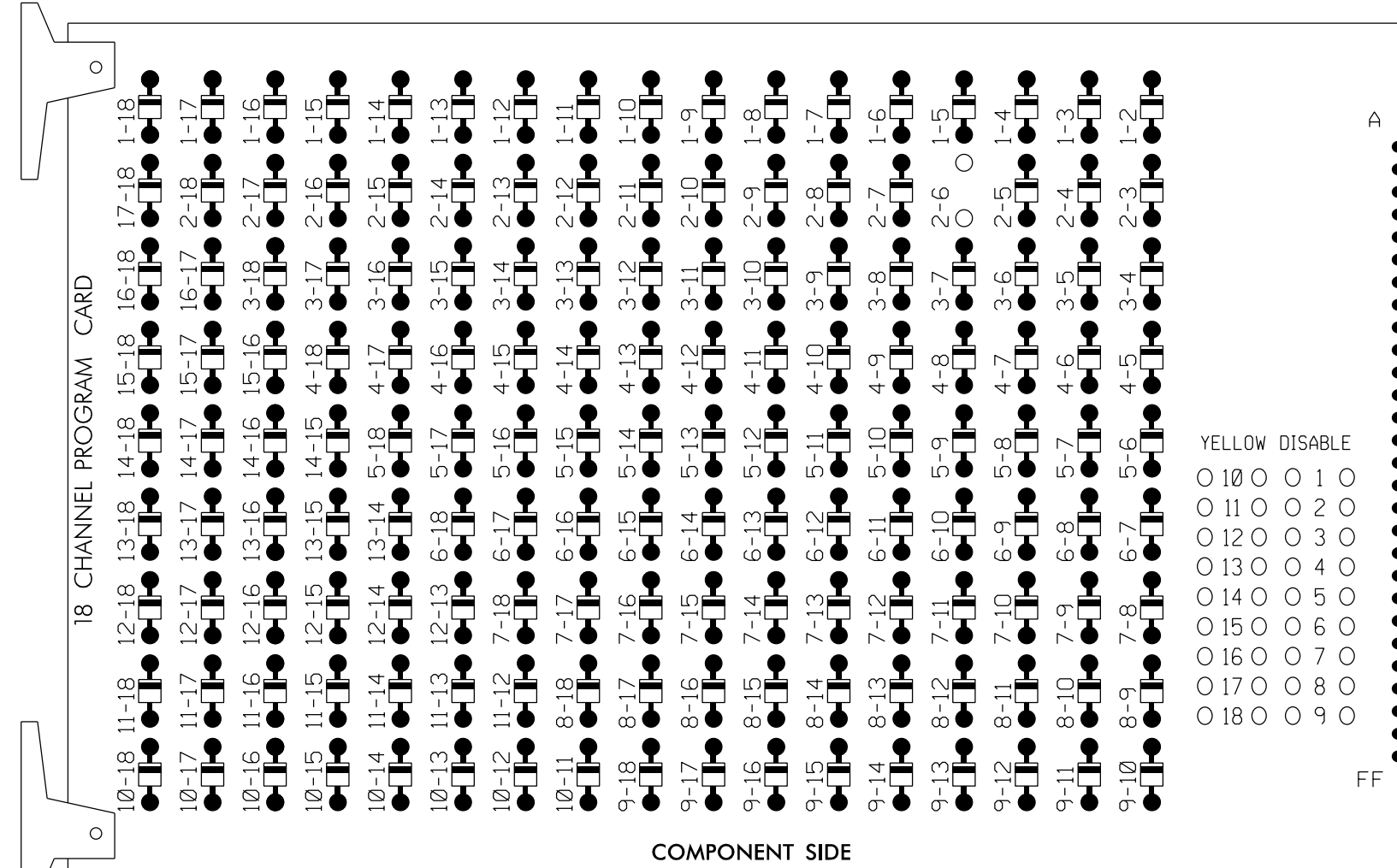


6/7/2018
 Pamela Alexander
 SIG. INVENTORY NO. 07-0001

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)

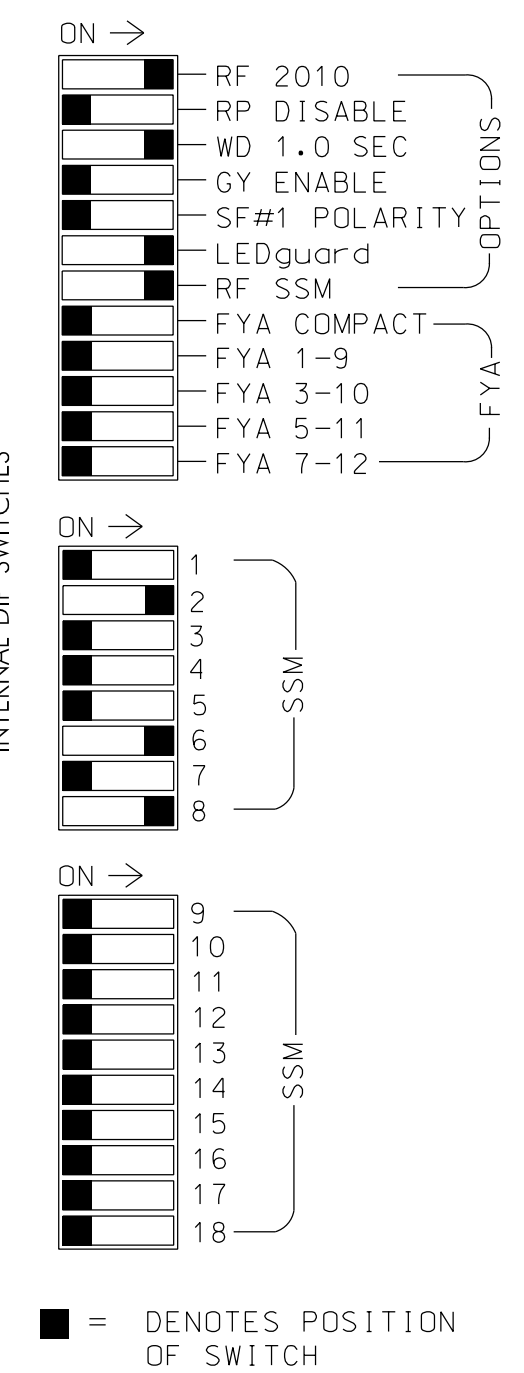
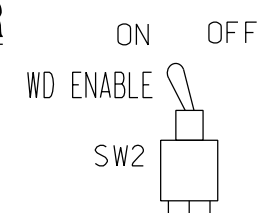
REMOVE DIODE JUMPER 2-6.



REMOVE JUMPER AS SHOWN

NOTES:

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



NOTES

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

EQUIPMENT INFORMATION

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

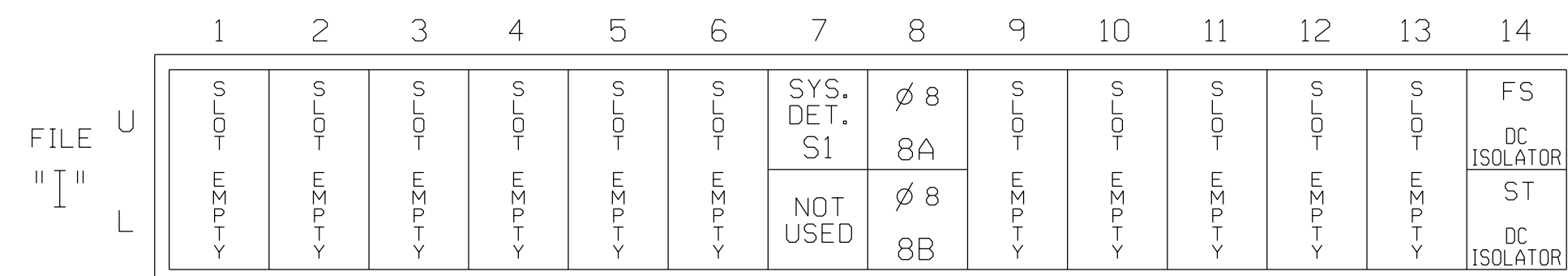
SIGNAL HEAD HOOK-UP CHART

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	NU	NU	NU	61,62	NU	NU	81,82	NU
RED		128						134			107	
YELLOW		129						135			108	
GREEN		130						136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

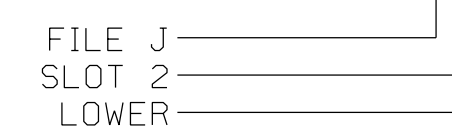
FS = FLASH SENSE
 ST = STOP TIME

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
* S1	TB21-13,14	I7U	57	7	SYS	No				N
8A	TB22-1,2	I8U	42	8	8	YES		3		S
8B	TB24-1,2	I8L	46	18	8	YES		15		S

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0001
 DESIGNED: January 2018
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 13:14
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 ALEX3361 AT LUS3369

Electrical Detail

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 1352 (W. Davis Street)	
Division 7	Alamance County
PLAN DATE: January 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

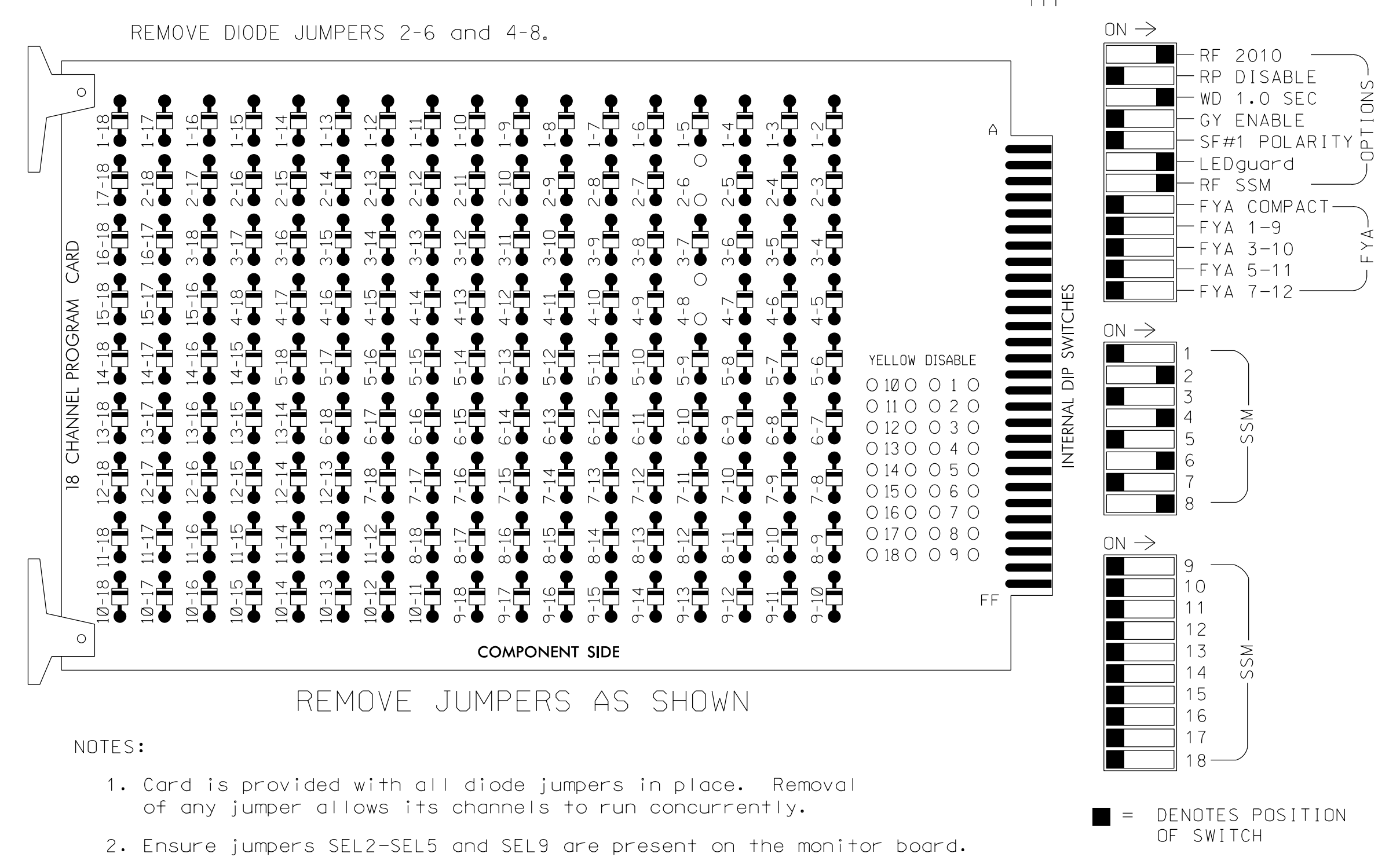
SEAL 023489
 PAMELA L. ALEXANDER
 ENGINEER

6/9/2018
 DATE

SIG. INVENTORY NO. 07-0001

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.

SIGNAL HEAD HOOK-UP CHART

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

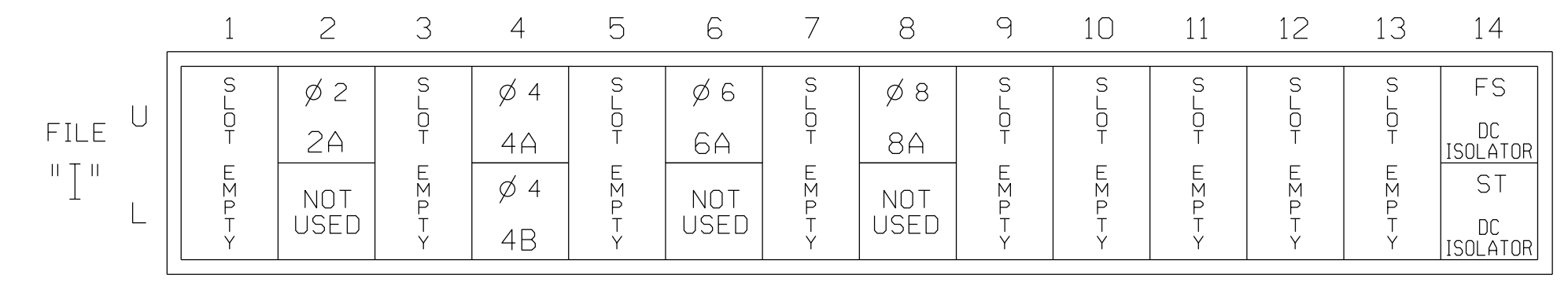
NU = Not Used

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



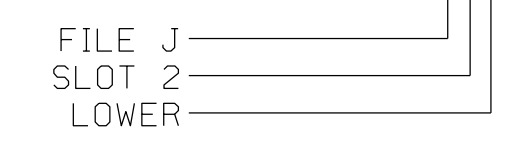
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB21-3,4	12U	39	2	2	YES				S
4A	TB21-7,8	14U	41	4	4	YES		3		S
4B	TB23-7,8	14L	45	14	4	YES		10		S
6A	TB21-11,12	16U	40	6	6	YES				S
8A	TB2-11,12	10L	42	8	8	YES		5		S

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0003
 DESIGNED: SEPT-2017
 SEALED: 06-13-2018
 REVISED: N/A

13-UNA-2018-17-12
 R:\66015\T\off\ek\signal\design\wiring\07-0003e.dgn
 7/10/2018 10:41:11 AM AT CAR-RLANDON-W7

Plans Prepared By:

DRMP, Inc.
 8000 Regency Parkway, Suite 175
 Cary, NC 27518
 NC License No. C-2213 (919) 650-1038

Electrical Detail

Electrical and Programming Details For:

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1323 (W. Front Street) at W. Davis Street

Division 7 Alamance County Burlington

PLAN DATE: August 2017 REVIEWED BY: LM Moon

PREPARED BY: AJ Davis REVIEWED BY:

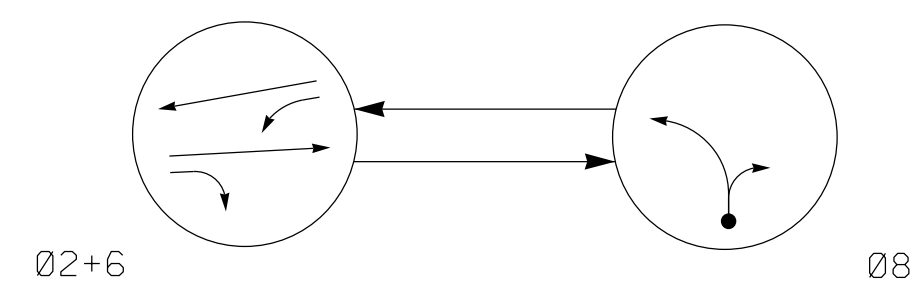
REVISIONS INIT. DATE

DocuSigned by: Lisa M. Moon 6/13/2018

SIG. INVENTORY NO. 07-0003

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

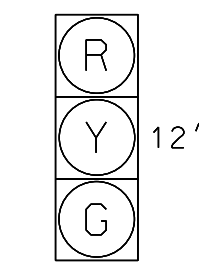
- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UNSIGNALIZED MOVEMENT
- ⚡ ← PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø2+6	Ø8	FLASH
21,22,23	G	R	Y
61,62	G	R	Y
81,82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



21,22,23
61,62
81,82

ASC/3 DETECTOR INSTALLATION CHART

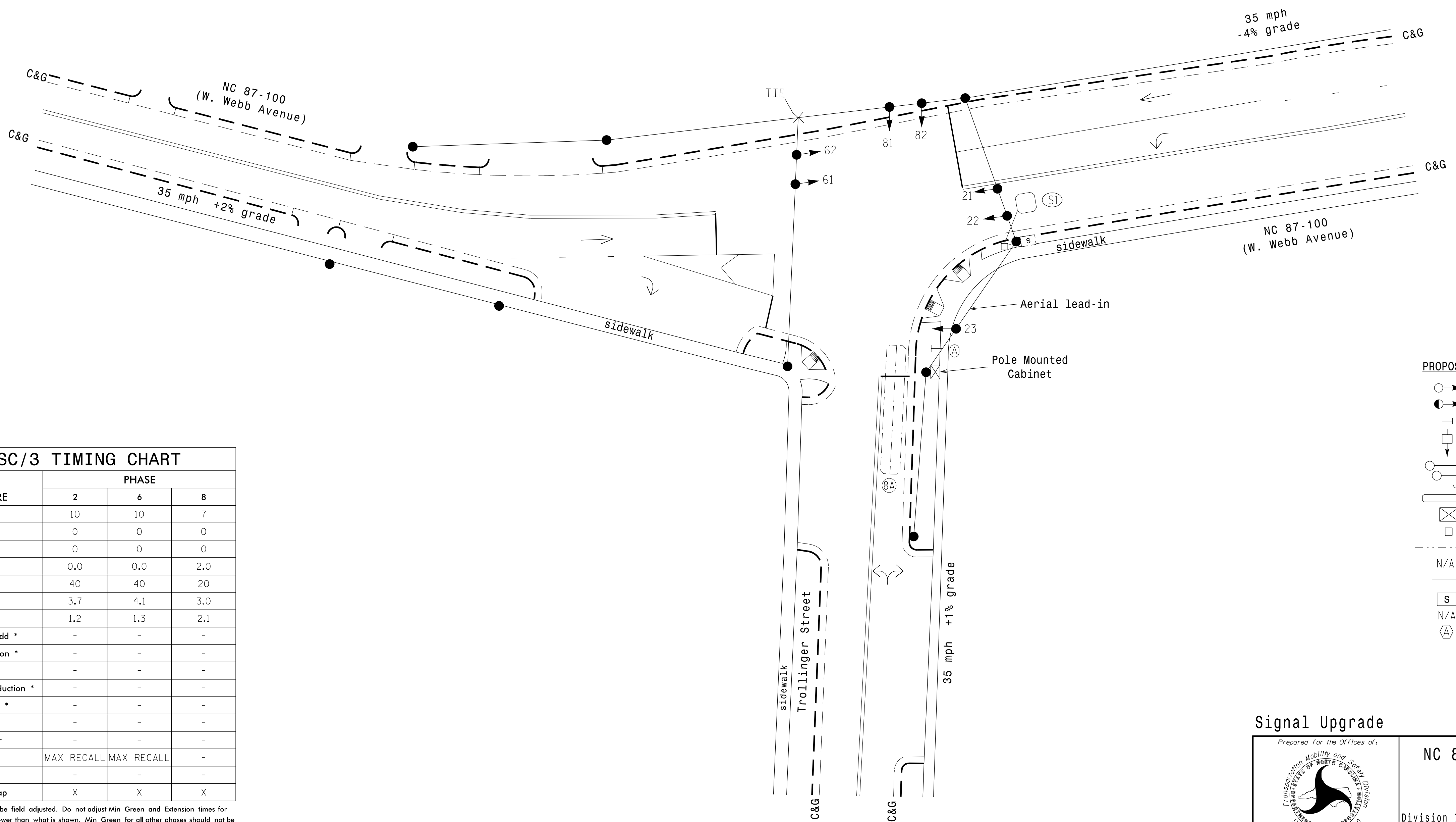
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
8A	6x40	+10	2-4-2	-	8	Yes	-	5	-	S	-	X
S1	6X6	+95	3	X	8	No	-	-	-	S	X	X

Remove Existing Pedestrian Signals and associated equipment

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	6	8
Min Green *	10	10	7
Walk *	0	0	0
Ped Clear	0	0	0
Veh. Extension *	0.0	0.0	2.0
Max 1 *	40	40	20
Yellow	3.7	4.1	3.0
Red Clear	1.2	1.3	2.1
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	-	-	-
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
⊥ With Push Button & Sign	⊥ Signal Pole with Sidewalk Guy
⊥ Signal Pole with Guy	⊥ Inductive Loop Detector
⊥ Signal Pole with Sidewalk Guy	⊥ Controller & Cabinet
⊥ Inductive Loop Detector	⊥ Junction Box
⊥ Controller & Cabinet	⊥ 2-in Underground Conduit
⊥ Junction Box	--- Right of Way
⊥ 2-in Underground Conduit	→ Directional Arrow
--- Right of Way	⊥ Terminal Splice Box
→ Directional Arrow	⊥ Curb Ramp
⊥ Terminal Splice Box	⊥ Right-turn "ONLY" Sign (R3-5R)
⊥ Curb Ramp	⊥
⊥ Right-turn "ONLY" Sign (R3-5R)	⊥

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

750 N. Greenfield Pkwy, Garner, NC 27529

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

Division 7 Alamance County Burlington

PLAN DATE: October 2017 REVIEWED BY: AM Encarnacion

PREPARED BY: NA Ptak REVIEWED BY: MB Toth

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 025892
MELISSA B. TOTH

SCALE
0 20
1"=20'

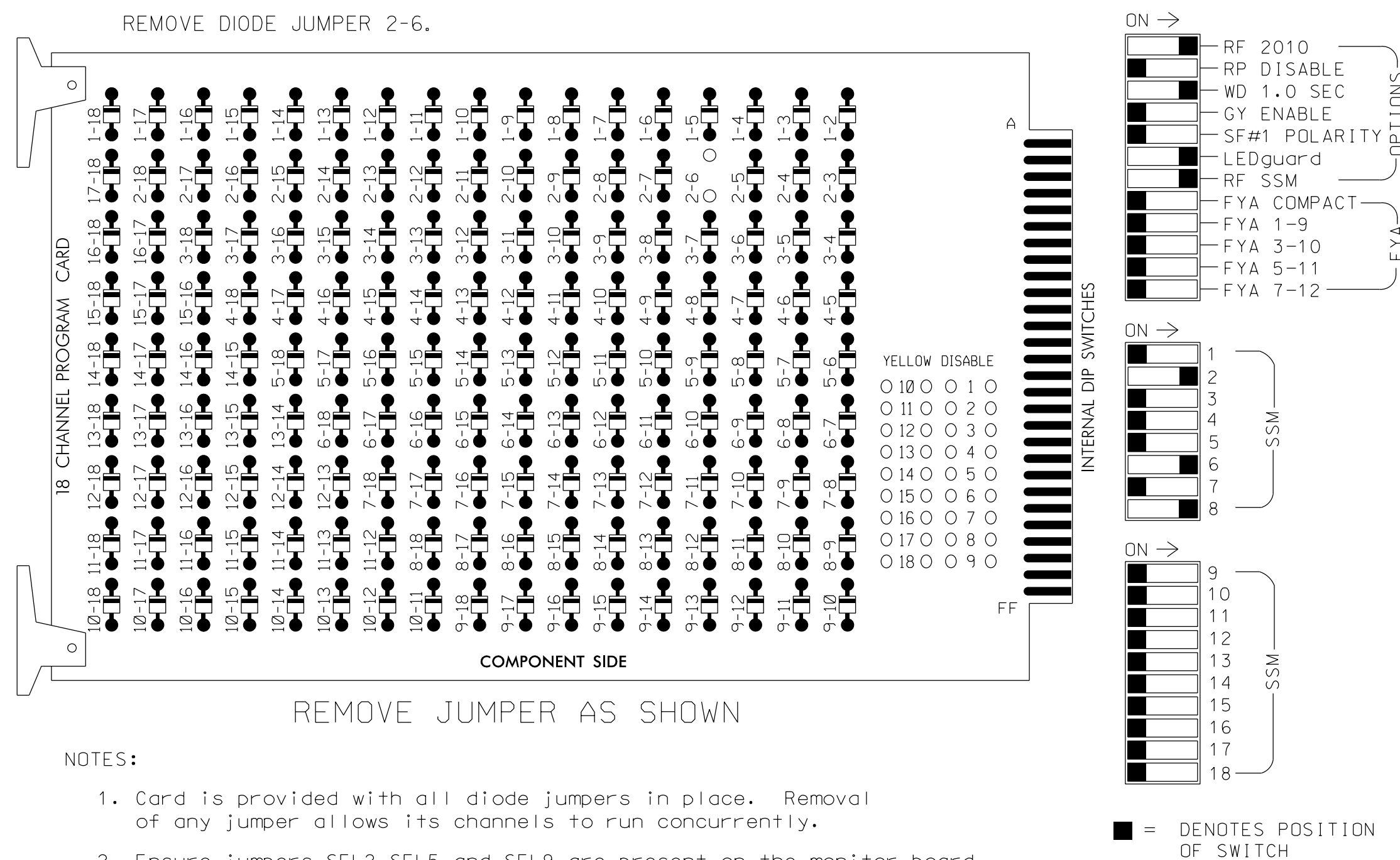
REVISIONS INIT. DATE

DocuSigned by:
Melissa B. Toth
6/7/2018

07-JUN-2018 11:10 O:\Projects\2018\07-0005\B-G Sig Sys\Task 05_11_11_Signals\Des\gn07-0005.dgn ALEX3361 AT LUS340649

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper 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.....336
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....POLE MOUNTED
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S8,S11
 PHASES USED.....2,6,8
 OVERLAPS.....NONE

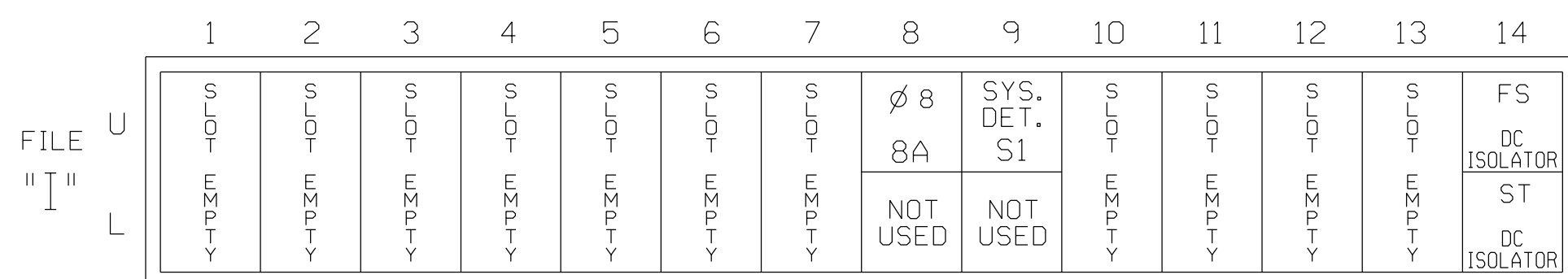
SIGNAL HEAD HOOK-UP CHART

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 23	NU	NU	NU	NU	NU	61,62	NU	NU	81,82	NU
RED		128						134			107	
YELLOW		129						135			108	
GREEN		130						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
8A	TB22-1,2	18U	42	8	8	YES		5		S
* S1	TB6-9,10	19U	60	11	SYS	NO				N

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L

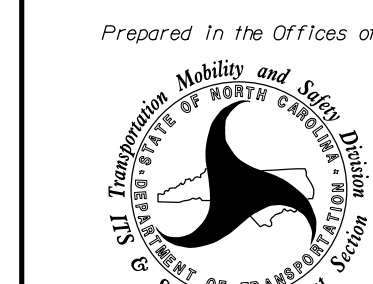


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0005
 DESIGNED: October 2017
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

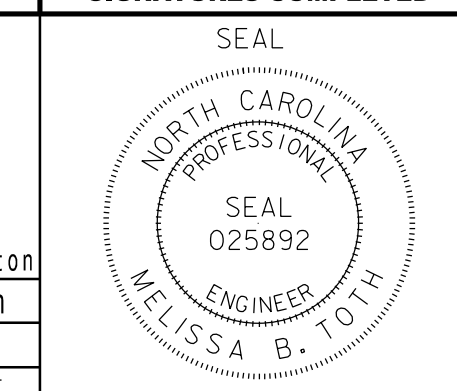


Division 7 Alamance County Burlington
 PLAN DATE: October 2017 REVIEWED BY: AM Encarnacion
 PREPARED BY: NA Ptak REVIEWED BY: MB Toth

750 N. Greenfield Pkwy, Garner, NC 27529

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

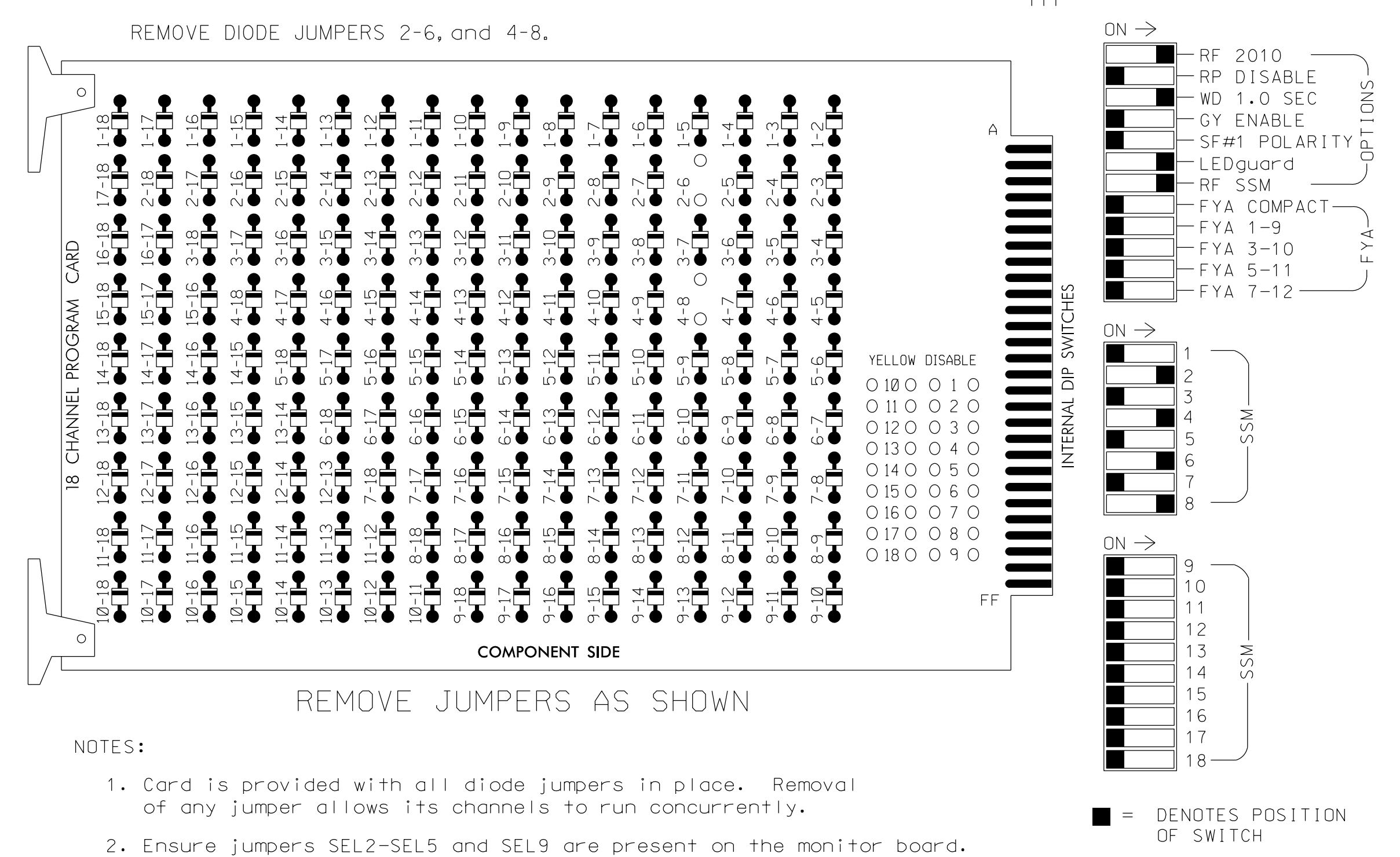
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



6/11/2018
 DATE
 SIG. INVENTORY NO. 07-0005

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.

SIGNAL HEAD HOOK-UP CHART

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

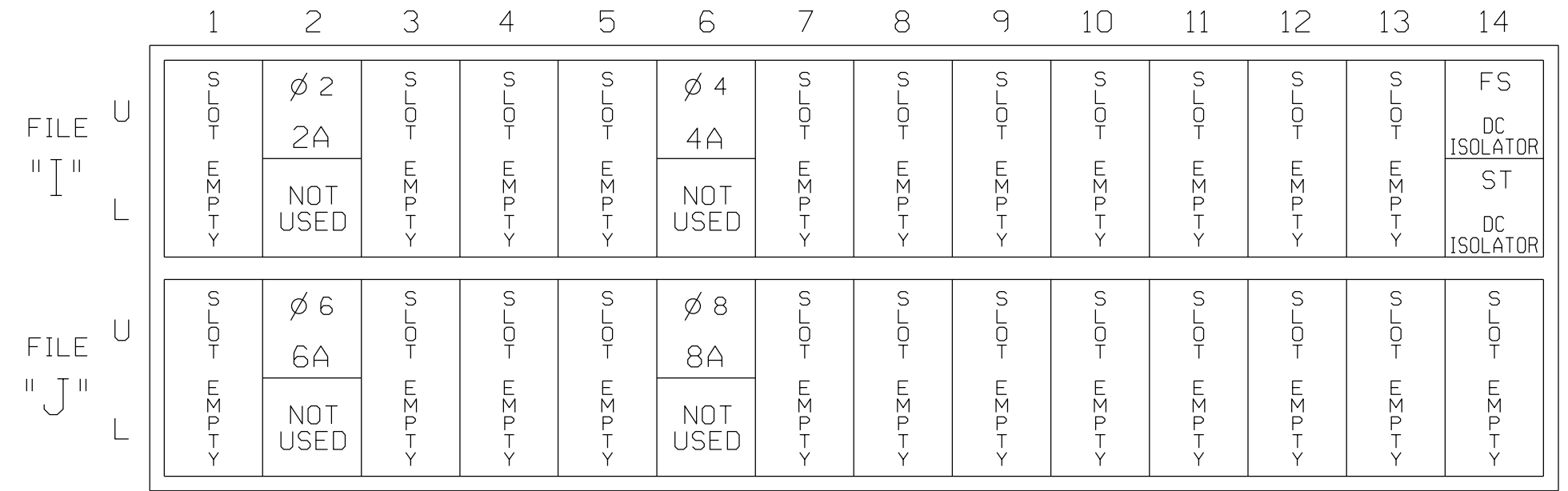
NU = Not Used

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)

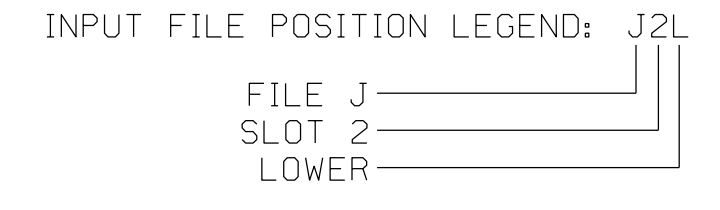


EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES				S
6A	TB3-5,6	J2U	40	6	6	YES				S
8A	TB5-9,10	J6U	42	8	8	YES				S



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0006
 DESIGNED: Sept-2017
 SEALED: 06-13-2018
 REVISED: N/A

13-UNA-2018-17-12
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 C:\Users\AT_CAB-R\AMT\W7



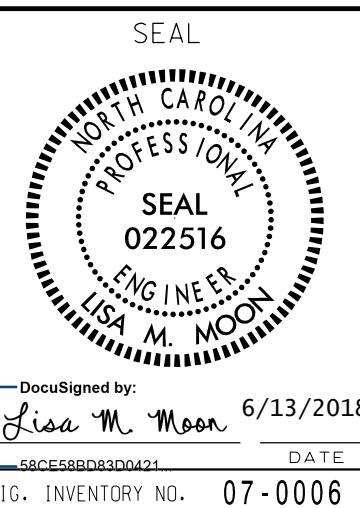
Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 Prepared for the Offices of:
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION & SAFETY

SR 1323 (W. Front Street) at Trollering Street

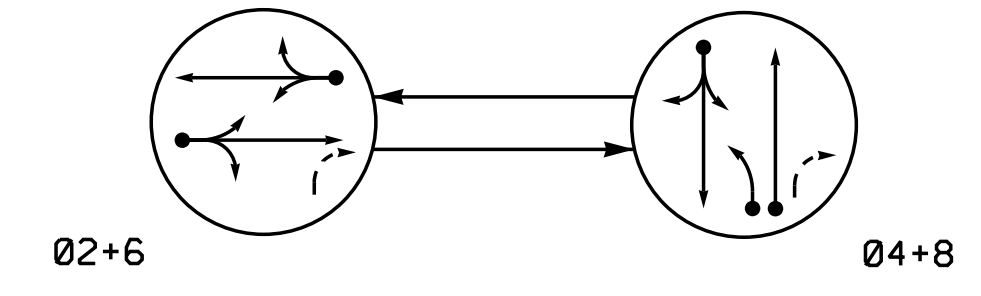
Division 7	Alamance County	Burlington
PLAN DATE: September 2017	REVIEWED BY: LM Moon	
PREPARED BY: AJ Davis	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



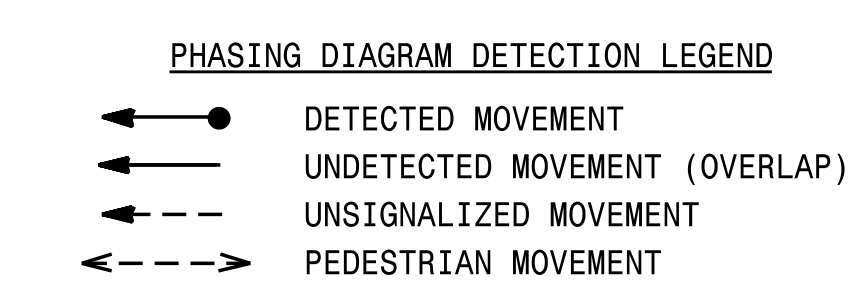
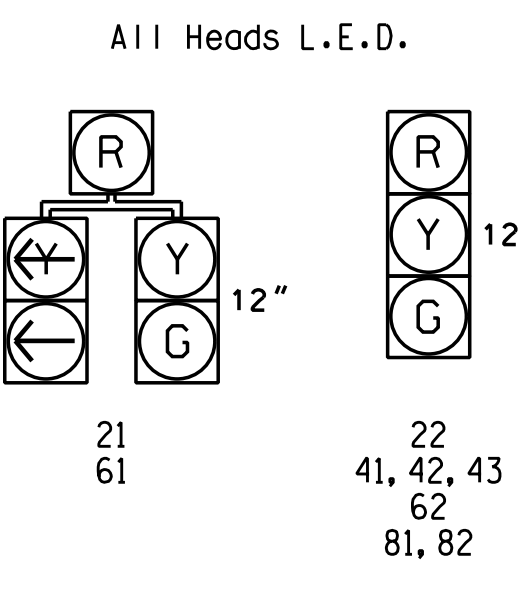
DocuSigned by:
 Lisa M. Moon
 6/13/2018
 SIG. INVENTORY NO. 07-0006

DEFAULT PHASING DIAGRAM

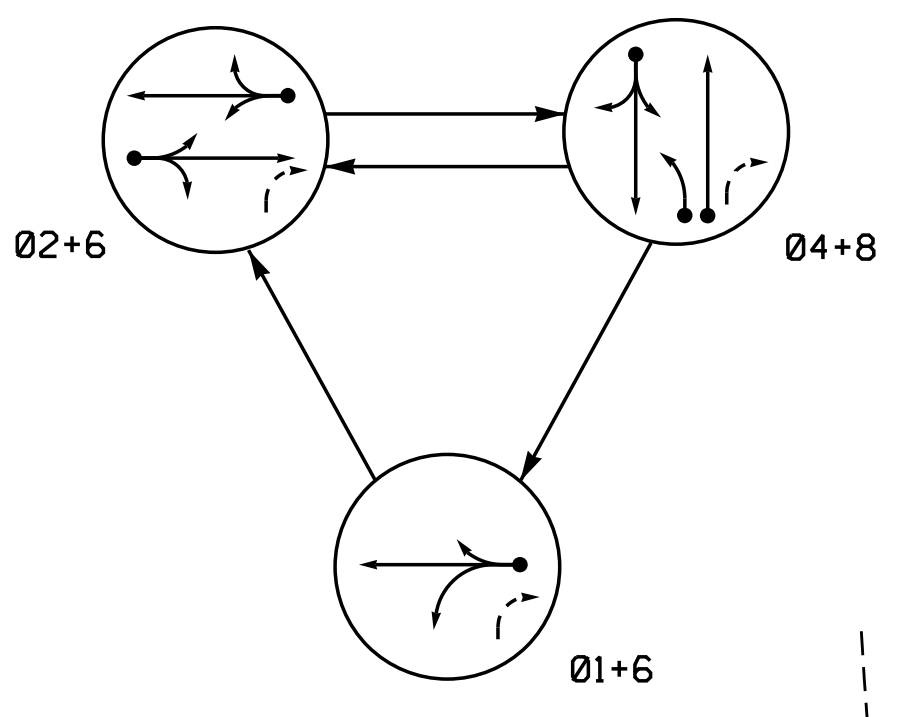


SIGNAL FACE	PHASE		
	02+6	04+8	FLASH
21	G	R	Y
22	G	R	Y
41, 42, 43	R	G	R
61	G	R	Y
62	G	R	Y
81, 82	R	G	R

SIGNAL FACE I.D.

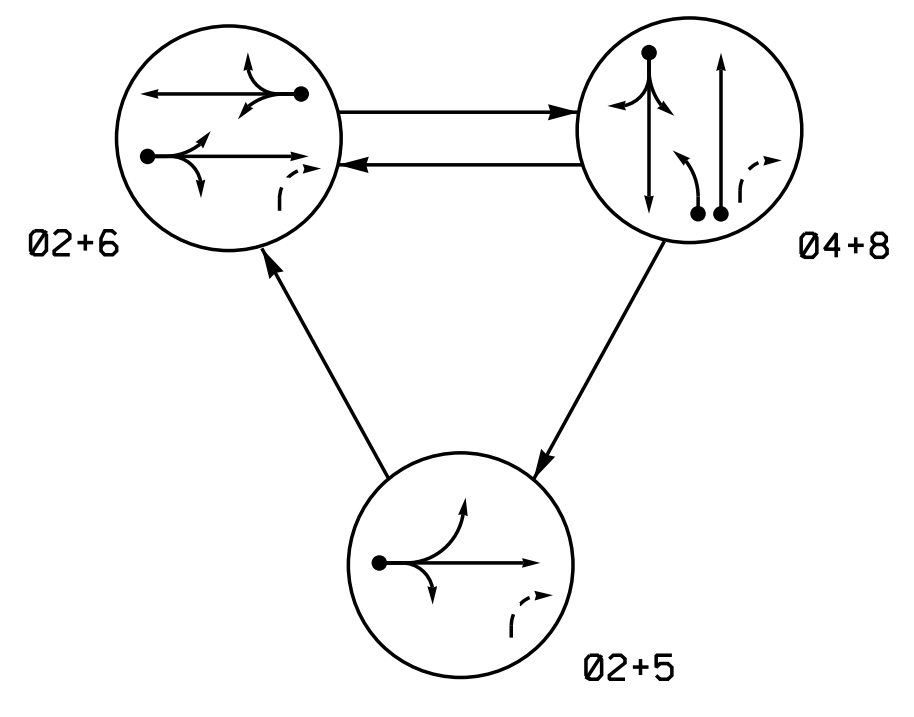


ALTERNATE 1 PHASING DIAGRAM



SIGNAL FACE	PHASE		
	01+6	02+6	04+8
21	R	G	R
22	R	G	R
41, 42, 43	R	R	G
61	G	R	Y
62	G	R	Y
81, 82	R	R	G

ALTERNATE 2 PHASING DIAGRAM

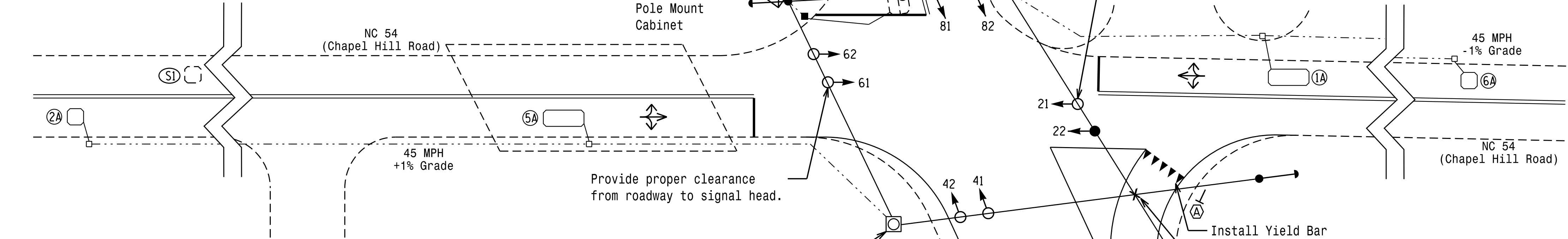


SIGNAL FACE	PHASE		
	02+5	02+6	04+8
21	G	R	Y
22	G	R	Y
41, 42, 43	R	R	G
61	R	G	R
62	R	G	R
81, 82	R	R	G

2 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. Omit phase 1 during phase 2 on.
4. Omit phase 5 during phase 6 on.
5. Program controller to clear from phase 2+6 to phase 1 and/or 5 by progressing through phase 4+8 (see Electrical Details).
6. Reposition existing signal head numbered 22.
7. Set all detector units to presence mode.
8. 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.
9. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
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.

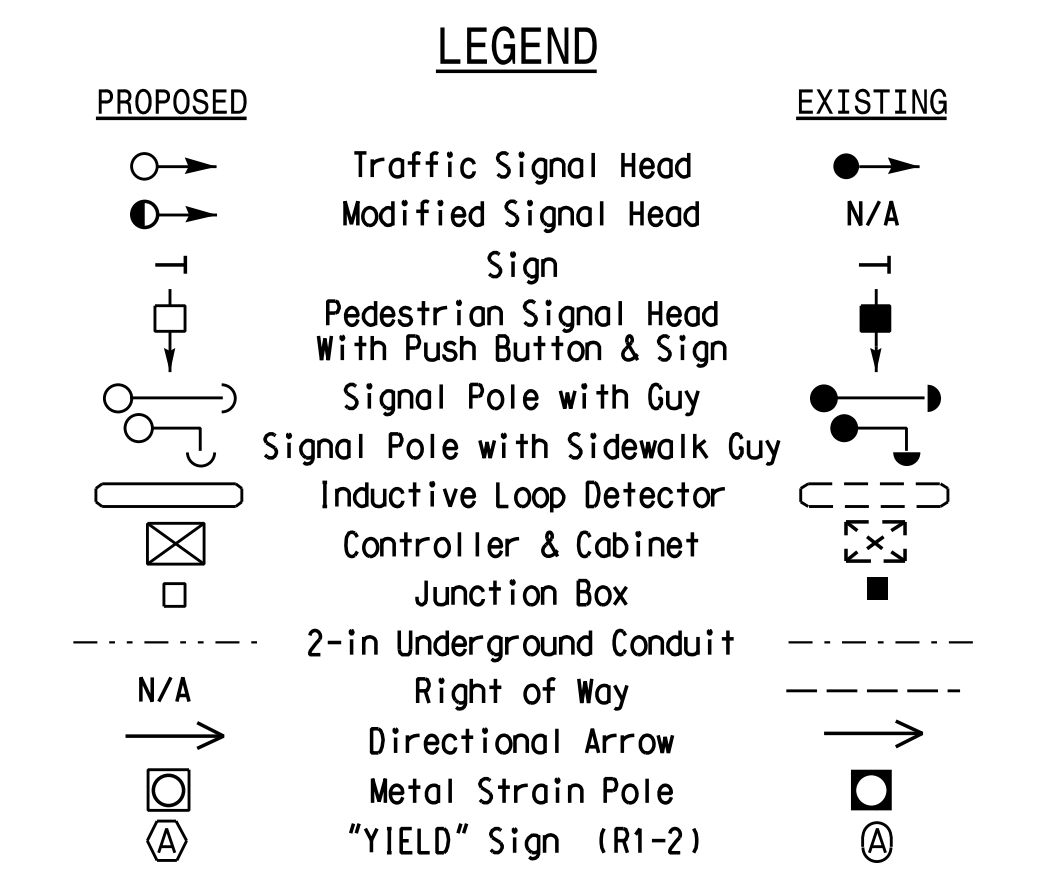


FEATURE	PHASE							
	1	2	4	5	6	8		
Min Green *	7	12	7	7	12	7		
Walk *	0	0	0	0	0	0		
Ped Clear	0	0	0	0	0	0		
Veh. Extension *	0.0	0.0	0.0	0.0	0.0	0.0		
Max 1 *	15	60	30	15	60	30		
Yellow	3.0	4.4	3.8	3.0	4.6	3.8		
Red Clear	1.8	1.3	1.0	2.3	1.0	1.6		
Actuations B4 Add *	-	0	-	-	0	-		
Seconds /Actuation *	-	2.5	-	-	2.5	-		
Max Initial *	-	34	-	-	34	-		
Time Before Reduction *	-	20	-	-	20	-		
Time To Reduce *	-	20	-	-	20	-		
Minimum Gap	-	3.0	-	-	3.0	-		
Locking Detector	-	X	-	-	X	-		
Recall Position	-	VEH. RECALL	-	-	VEH. RECALL	-		
Dual Entry	-	-	X	-	-	X		
Simultaneous Gap	X	X	X	X	X	X		

* 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											
DETECTOR				PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	SYSTEM LOOP	NEW CARD
1A	6x15	50	3	X	1*	Yes	-	15	-	S	-
2A	6x6	300	4	X	2	Yes	-	-	X	N	-
4A	6x60	0	2-4-2	-	4	Yes	-	5	-	S	-
5A	6x15	50	3	X	5**	Yes	-	15	-	S	-
6A	6x6	300	4	X	6	Yes	-	-	X	N	-
8A	6x50	+10	2-4-2	-	8	Yes	-	-	-	S	-
8B	6x40	+5	2-4-2	-	8	Yes	-	-	-	S	-
S1	6x6	+230	EXIST.	-	-	No	-	-	-	N	X

* Enable Loop 1A During Alternate 1 Phasing Operation Only.
** Enable Loop 5A During Alternate 2 Phasing Operation Only.



Signal Upgrade



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

Division 7 Alamance County Burlington

NC 54 (Chapel Hill Road) at Tucker Street

PLANNED BY: SE Greene REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY: JB Voso

SCALE: 1"=20'

750 N. Greenfield Hwy, Corner: NC 27529

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022599

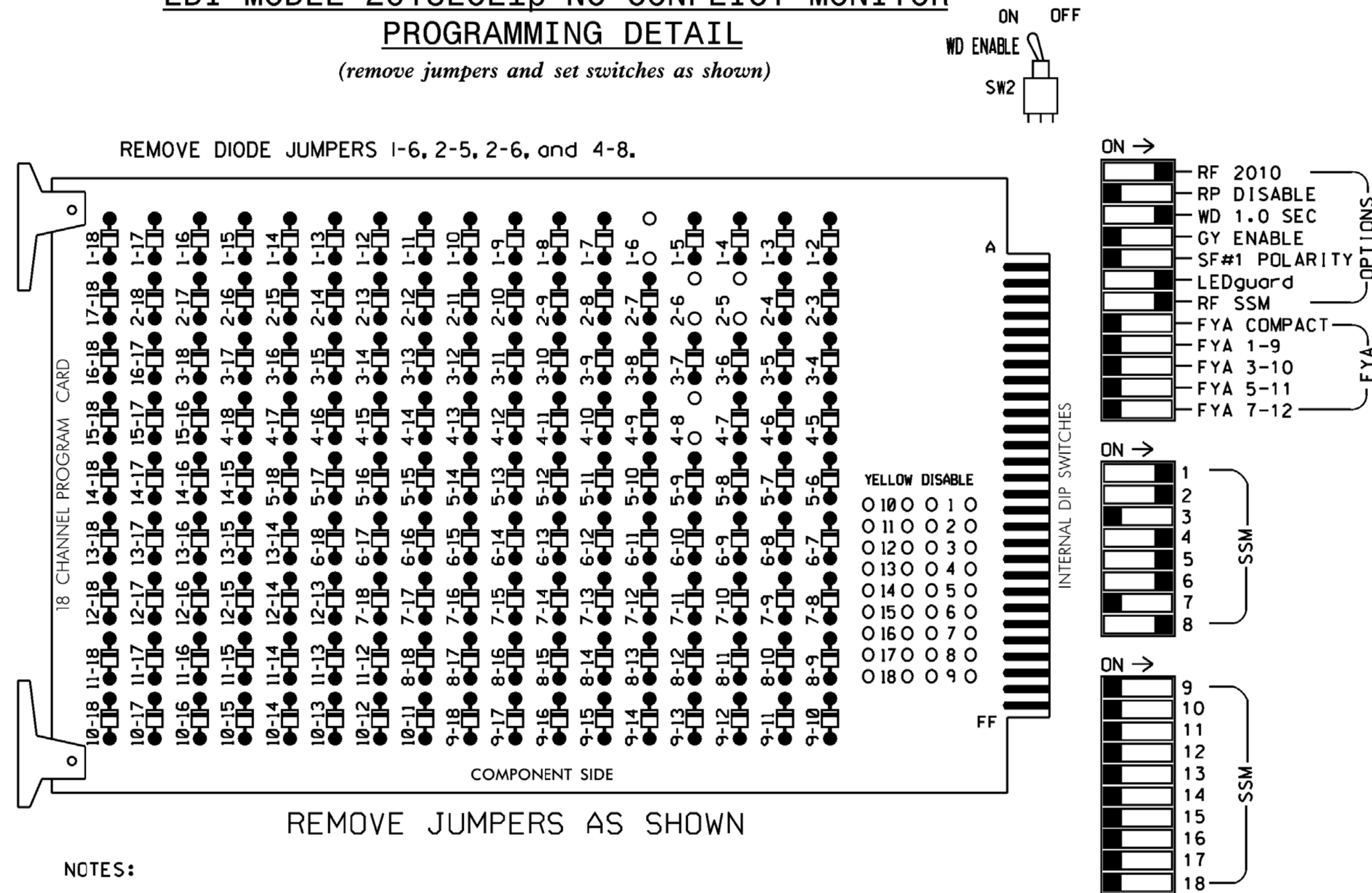
SIGNATURE: James Voso DATE: 7/2/2018

SIG. INVENTORY NO. 07-0008

10:38:25 AM I:\Projects\Burlington-Graham Signal System\06 Working Folders with NCDOT File Structure if Working on NCDOT Project\DWG or Dgn\07-0008\070008_sig.dwg_20110808.dgn

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.....S1,S2,S5,S7,S8,S11
 PHASES USED.....1,2,4,5,6,8
 OVERLAPS.....NONE

SIGNAL HEAD HOOK-UP CHART

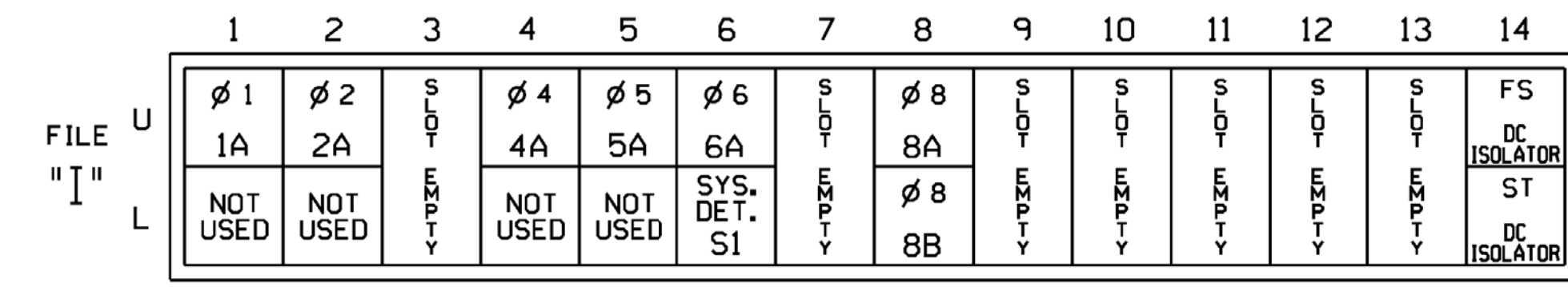
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	61	21,22	NU	NU	41,42,43	NU	21	61,62	NU	NU	81,82	NU
RED	*	128			101		*	134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW	126						132					
GREEN ARROW	127						133					

NU = Not Used

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

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB21-1,2	11U	56	1★	-	YES		15		S
2A	TB21-3,4	12U	39	2	2	YES			X	N
4A	TB21-7,8	14U	41	4	4	YES		5		S
5A	TB21-9,10	15U	55	5★	-	YES		15		S
6A	TB21-11,12	16U	40	6	6	YES			X	N
* S1	TB23-11,12	16L	44	16	SYS	NO				N
8A	TB22-1,2	18U	42	8	8	YES				S
8B	TB24-1,2	18L	46	18	8	YES				S

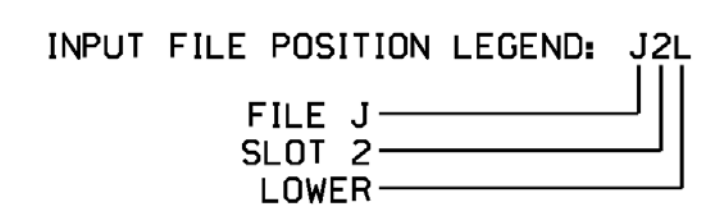
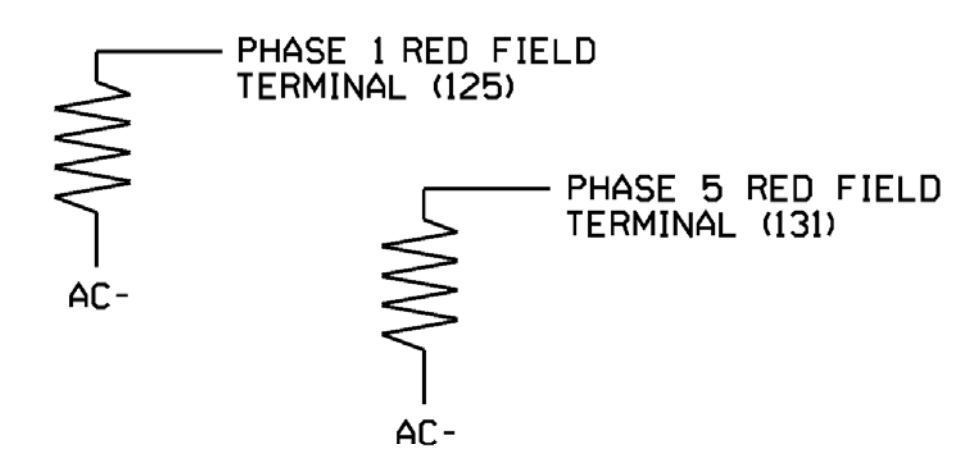
★ There is no assigned vehicle phase for detectors 1 and 5 during default phasing operation. For the detectors to work as shown on the signal design plan, see the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheet 3.

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0008
 DESIGNED: April 2018
 SEALED: 7/2/2018
 REVISED: NA

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

Electrical and Programming Details For:
 NC 54 (Chapel Hill Road)
 at
 Tucker Street

Division 7 Alamance County Burlington

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

REVISIONS: INIT. DATE

DocuSigned By: James Voso 7/2/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEERS
 SEAL 022599
 JAMES B. VOSO
 DATE 7/2/2018
 SIG. INVENTORY NO. 07-0008

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

**ECONOLITE ASC/3-2070 BACKUP
PREVENT ENABLE PROGRAMMING**
(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 3. BACKUP PREVENT PHASES

Follow programming as shown below. On the 'ENABLE BACKUP PREVENT' screen move cursor to the appropriate field and press 'YES/NO' on the controller keypad to toggle field value between 'X', 'B', 'C' and 'OFF'.

ENABLE	BACKUP	PREVENT														
TMG/BKUP	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
1
2	B	.	C	.	.	.	.	.	.	.	.	.	.	.	.	.
3
4
5
6	.	.	C	B	.	.	.	.	.	.	.	.	.	.	.	.
7
8
9
10
11
12
13
14
15
16

END PROGRAMMING

NOTE

1. 'B' with a 'C' programmed for the 'TIMING' (row) phase places a demand on that 'BACKUP' (column) phase. The controller will then service the called phase and proceed normally.

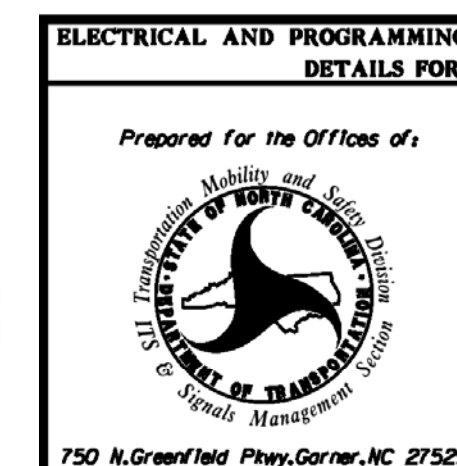
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0008
DESIGNED: April 2018
SEALED: 7/2/2018
REVISED: NA

Electrical Detail - Sheet 2 of 5

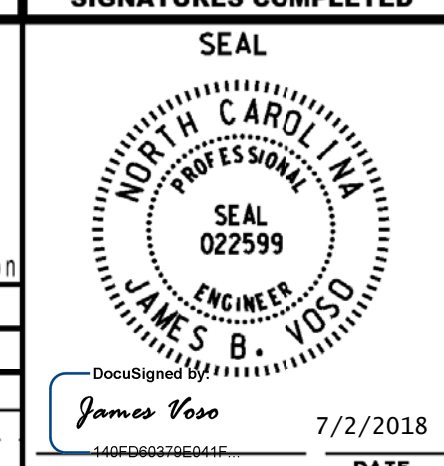
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12 BROAD STREET
ASHEVILLE, NORTH CAROLINA 28801
(828) 254-2201
FAX (828) 254-4562
NC LIC. NO. C-1154



ELECTRICAL AND PROGRAMMING DETAILS FOR:		NC 54 (Chapel Hill Road) at Tucker Street	
Prepared For the Offices of:	Division 7	Alamance County	Burlington
PLAN DATE: April 2018	REVIEWED BY: JB Voso		
PREPARED BY: SE Greene	REVIEWED BY:		
REVISIONS	INIT.	DATE	



DATE: 7/2/2018
SIG. INVENTORY NO. 07-0008

*****SYTIME*****
*****DONES*****
*****USERNAME*****

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

(program controller as shown)

ALTERNATE PHASING 1

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".
 - Ensure delay time to set to "15".

```

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... 15.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

END PROGRAMMING

ALTERNATE PHASING 2

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 "3".

```

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... 3
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 "3".
 - Place cursor in VEH DETECTOR [] position and enter "5".
 - Ensure delay time is set to "15".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 3]
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... 15.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

END PROGRAMMING

 SYSTEM TIME *****

 USER NAME *****




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THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0008
DESIGNED: April 2018
SEALED: 7/2/2018
REVISED: NA

Electrical Detail - Sheet 3 of 5

ELECTRICAL AND PROGRAMMING DETAILS FOR:	NC 54 (Chapel Hill Road) at Tucker Street	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022599 JAMES B. VOSO
Prepared for the Offices of:  150 N. Greenfield Pkwy, Garner, NC 27529	Division 7 Alamance County Burlington PLAN DATE: April 2018 REVIEWED BY: JB Voso PREPARED BY: SE Greene REVIEWED BY:	DocuSigned by: James Voso 7/2/2018 DATE
REVISIONS		SIG. INVENTORY NO. 07-0008

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL FOR PHASE 1 AND 5 OMIT - DEFAULT PHASING

(program controller as shown)

The following logic processor logic processor programming ensures phase 1 and 5 are only serviced during Alternate Phasing. This logic will ensure phases 1 and 5 are 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  DET PLAN NUM          IS  1 T
THEN CTR OMIT PHASE      1    ON
     CTR OMIT PHASE      5    ON
    
```

LOGIC FOR OMITTING
PHASE 1 AND 5 WHILE
IN DEFAULT PHASING

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

```

LP#:  2 COPY FROM:  1 ACTIVE: M TRUE
IF  DET PLAN NUM          IS  2 T
THEN CTR OMIT PHASE      5    ON
    
```

LOGIC FOR OMITTING
PHASE 5 WHILE IN
ALTERNATE 1 PHASING

ENTER A "3" IN THE LP# FIELD. PRESS 'ENTER'. AND PROGRAM AS SHOWN.

```

LP#:  3 COPY FROM:  1 ACTIVE: M TRUE
IF  DET PLAN NUM          IS  3 T
THEN CTR OMIT PHASE      1    ON
    
```

LOGIC FOR OMITTING
PHASE 1 WHILE IN
ALTERNATE 2 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 & 3 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	E
LP 16-30
LP 31-45
LP 46-60
LP 61-75
LP 76-90

END PROGRAMMING



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ASHEVILLE, NORTH CAROLINA 28801
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NC LIC. NO. C-1154

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0008
DESIGNED: April 2018
SEALED: 7/2/2018
REVISED: NA

<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>NC 54 (Chapel Hill Road) at Tucker Street</p> <p style="font-size: x-small;">Division 7 Alamance County Burlington</p> <p>PLAN DATE: April 2018 REVIEWED BY: JB Voso</p> <p>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> <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;">DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <div style="text-align: center;"> <p style="font-size: x-small;">James Voso 7/2/2018</p> <p style="font-size: x-small;">DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-0008</p> </div>
REVISIONS	INIT.	DATE												

*****SYSTEMS*****
*****SERIALS*****
*****USERNAME*****

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 FOR ALTERNATE 1 PHASING OPERATION AND VEH DET PLAN 3 FOR ALTERNATE 2 PHASING OPERATION.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 FOR ALTERNATE 1 PHASING OPERATION AND VEH DET PLAN 3 FOR ALTERNATE 2 PHASING OPERATION.

PHASING	VEH DET PLAN
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1
ACTIONS REQUIRED TO RUN <u>ALTERNATE 1 PHASING</u>	2
ACTIONS REQUIRED TO RUN <u>ALTERNATE 2 PHASING</u>	3

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 VEH DET PLAN 2 OR VEH DET PLAN 3 ACTIVATE TO CALL THE "ALTERNATE PHASING":

VEH DET PLAN 2: Enables phase 1 call on loop 1A.

VEH DET PLAN 3: Enables phase 5 call on loop 5A.

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 . . . . . (1-8)
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 . . . . .
  
```

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...[ 2]
PATTERN.....AUTO   SYS OVERRIDE.... NO
TIMING PLAN..... 0   SEQUENCE..... 0
VEH DETECTOR PLAN.. 3   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 . . . . . (1-8)
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 . . . . .
  
```

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THE SIGNAL DESIGN: 07-0008
DESIGNED: April 2018
SEALED: 7/2/2018
REVISED: NA

Electrical Detail - Sheet 5 of 5

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SEAL
NORTH CAROLINA PROFESSIONAL ENGINEERS
SEAL 022599
JAMES B. VOSO

Division 7 Alamance County Burlington

PLAN DATE: April 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS

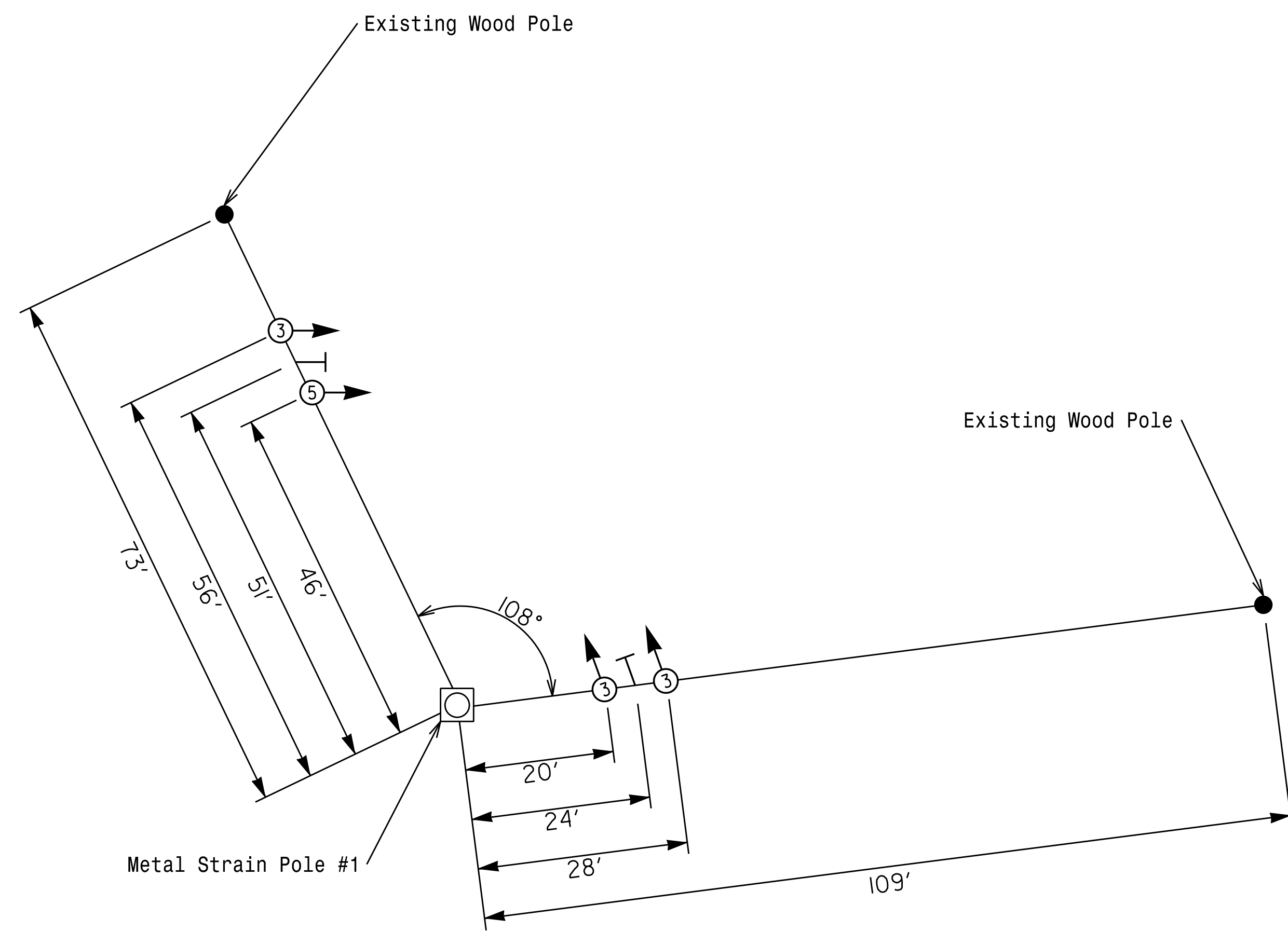
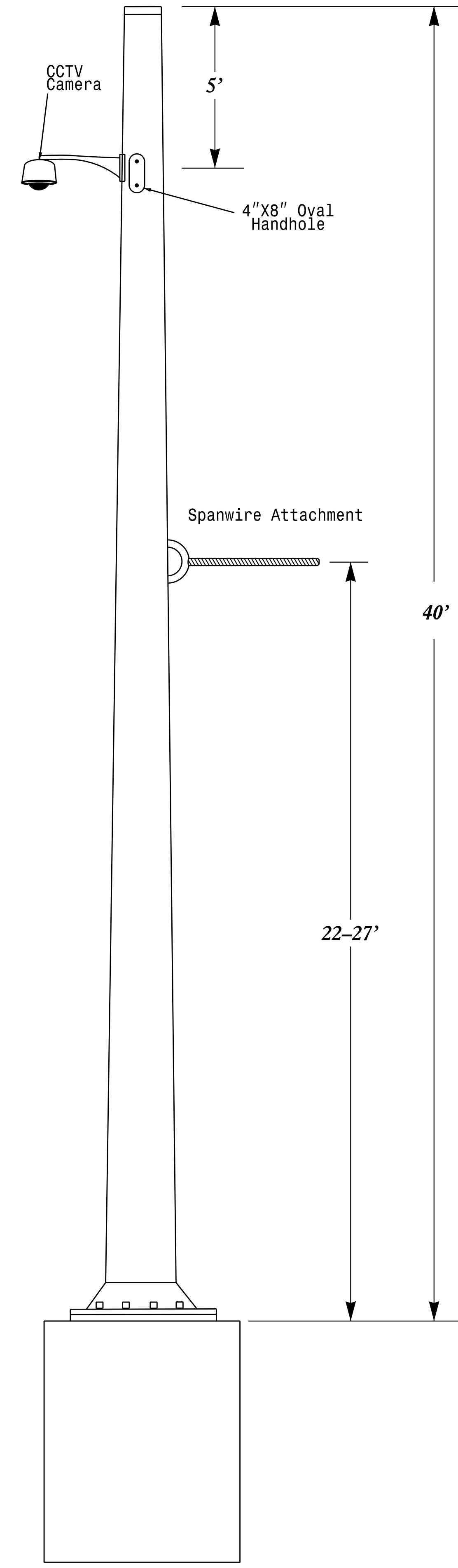
REVISIONS	INIT.	DATE

James Voso 7/2/2018

SIG. INVENTORY NO. 07-0008

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

METAL POLE No. 1



STRAIN POLE LOADING SCHEDULE					
SYMBOL	LOADING	DESCRIPTION	AREA	SIZE	WEIGHT
← ⑤		SIGNAL HEAD 12"-5 SECTION WITH BACKPLATE, HANGER AND BALANCE ADJUSTER	16.3 S.F.	42.0" W X 56.0" L	103 LBS
← ④		SIGNAL HEAD 12"-4 SECTION WITH BACKPLATE, HANGER AND BALANCE ADJUSTER	11.5 S.F.	25.5" W X 66.0" L	74 LBS
← ③		SIGNAL HEAD 12"-3 SECTION WITH BACKPLATE, HANGER AND BALANCE ADJUSTER	9.3 S.F.	25.5" W X 52.5" L	60 LBS
┴		STREET NAME SIGN WITH HANGER	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

- DESIGN REFERENCE MATERIAL
- Design the traffic signal structure and foundation in accordance with:
 - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
 - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
 - The 2018 NCDOT Roadway Standard Drawings.
 - The traffic signal project plans and special provisions.
 - The NCDOT "Metal Pole Standards" located at the following NCDOT website: <https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>
- DESIGN REQUIREMENTS
- Design the traffic signal structure using the loading conditions shown in the plan view. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
 - Design all signal support using stress ratios that do not exceed 0.9.
 - Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
 - Design 2 cable clamps for variable attachment height between 22 and 27 feet.
 - The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

10:36:35 AM I:\Projects\1811\1811789 - Burlington Graham Signal System\06 Working Folders with NCDOT File Structure - If Working on NCDOT Project\DWG or Dgn\07-0008-4070008_metalpole_20180612.dgn jbvoso

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(828) 254-2201
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NCDOT Wind Zone 4 (90 mph) Strain Pole Loading Detail

Prepared for the Offices of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
STATE OF NORTH CAROLINA
Signal Design Section

NC 54 (Chapel Hill Road)
at
Tucker Street

Division 7 Alamance County Burlington

PLAN DATE: April 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS

NO.	DATE	INIT.	DATE

SCALE: 0 NA

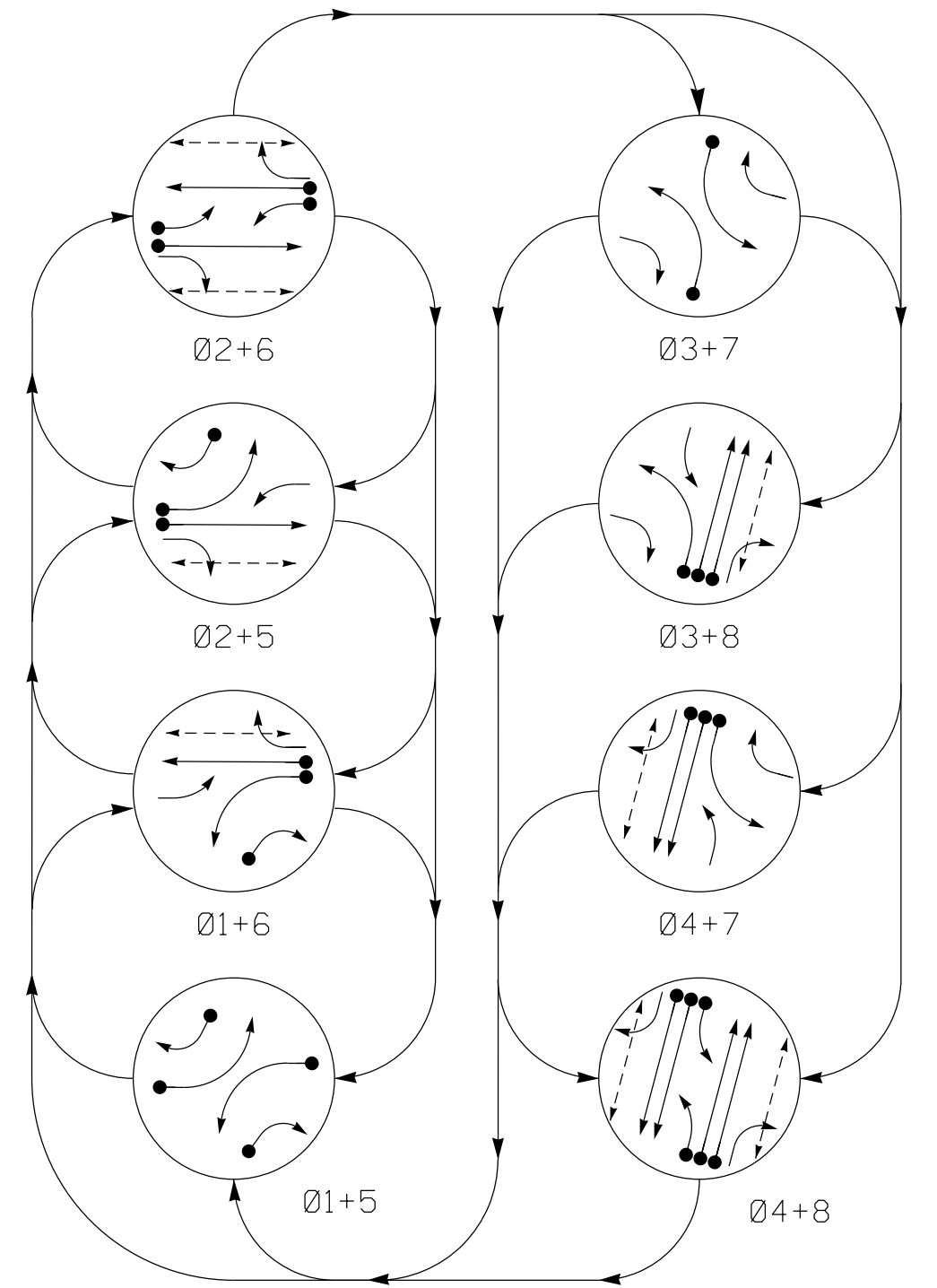
SEAL: JAMES B. VOSO, ENGINEER, 022599

DATE: 7/2/2018

SIG. INVENTORY NO. 07-0008

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PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

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

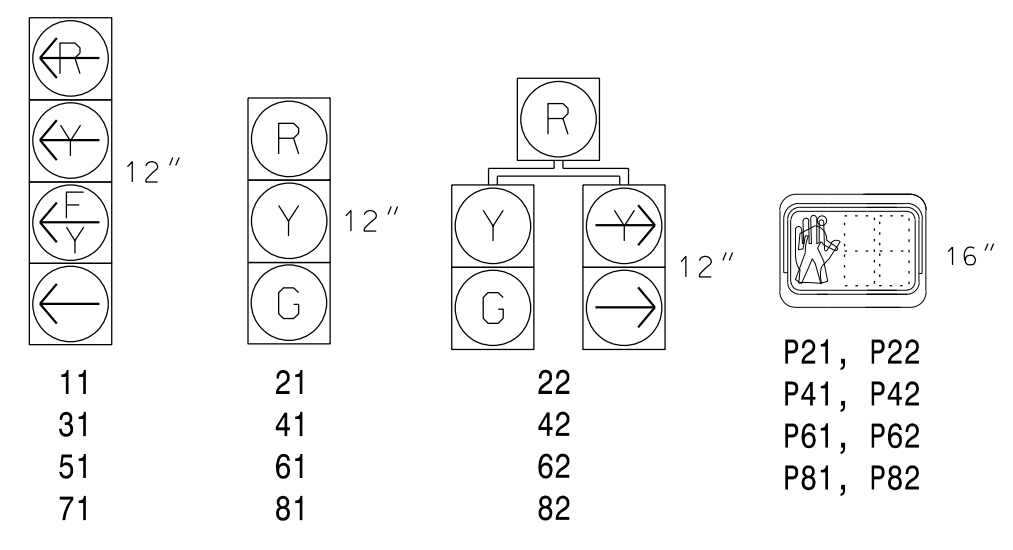


TABLE OF OPERATION

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

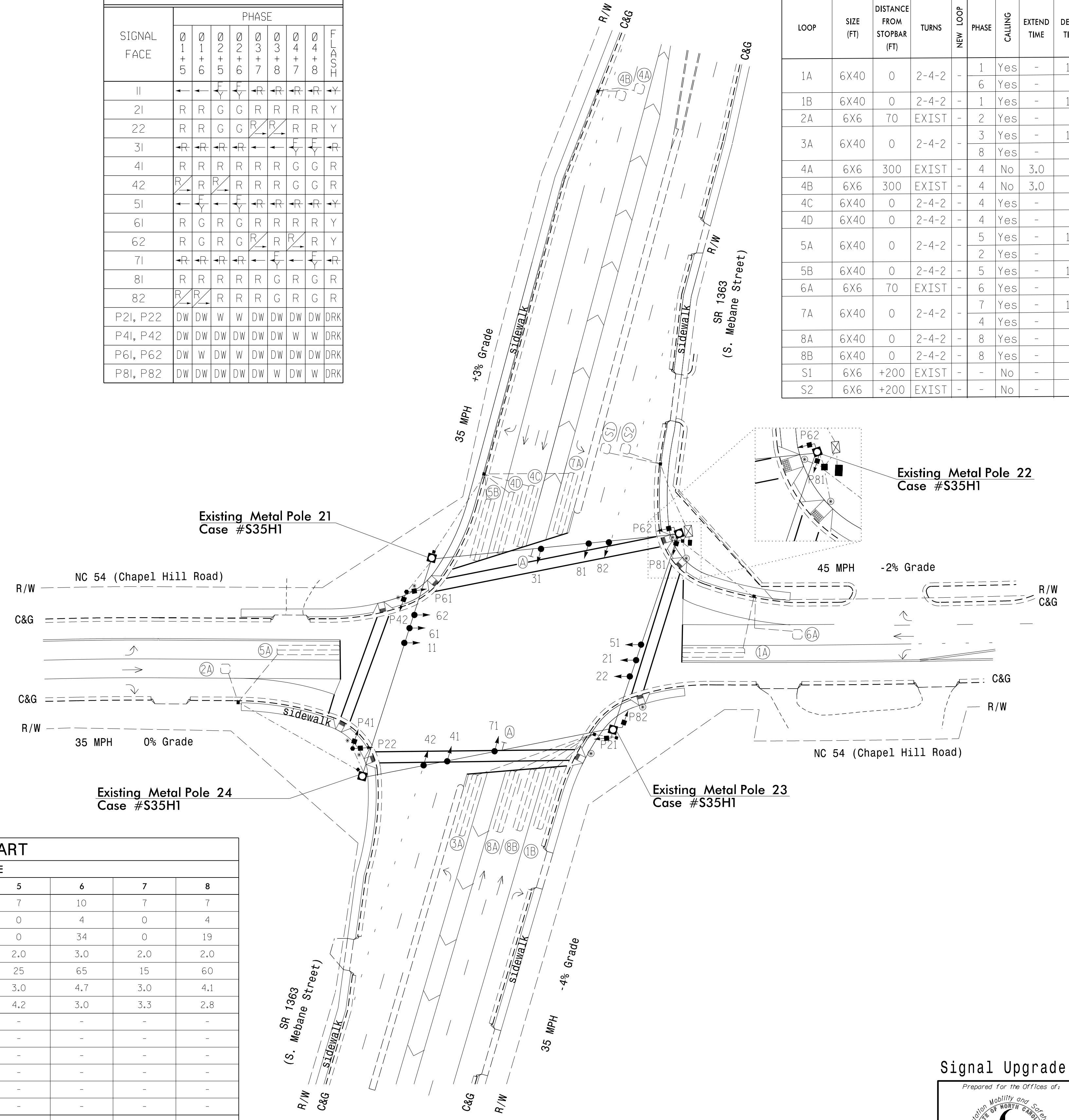
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						TYPE	SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL				
1A	6X40	0	2-4-2	-	1	Yes	-	15	-	S	-	X	
1B	6X40	0	2-4-2	-	6	Yes	-	-	-	S	-	X	
2A	6X6	70	EXIST	-	2	Yes	-	-	-	S	-	X	
3A	6X40	0	2-4-2	-	3	Yes	-	15	-	S	-	X	
4A	6X6	300	EXIST	-	4	No	3.0	-	-	S	-	X	
4B	6X6	300	EXIST	-	4	No	3.0	-	-	S	-	X	
4C	6X40	0	2-4-2	-	4	Yes	-	-	-	S	-	X	
4D	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	
7A	6X40	0	2-4-2	-	7	Yes	-	15	-	S	-	X	
8A	6X40	0	2-4-2	-	8	Yes	-	-	-	S	-	X	
8B	6X40	0	2-4-2	-	8	Yes	-	-	-	S	-	X	
S1	6X6	+200	EXIST	-	-	No	-	-	-	N	X	X	
S2	6X6	+200	EXIST	-	-	No	-	-	-	N	X	X	

8 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

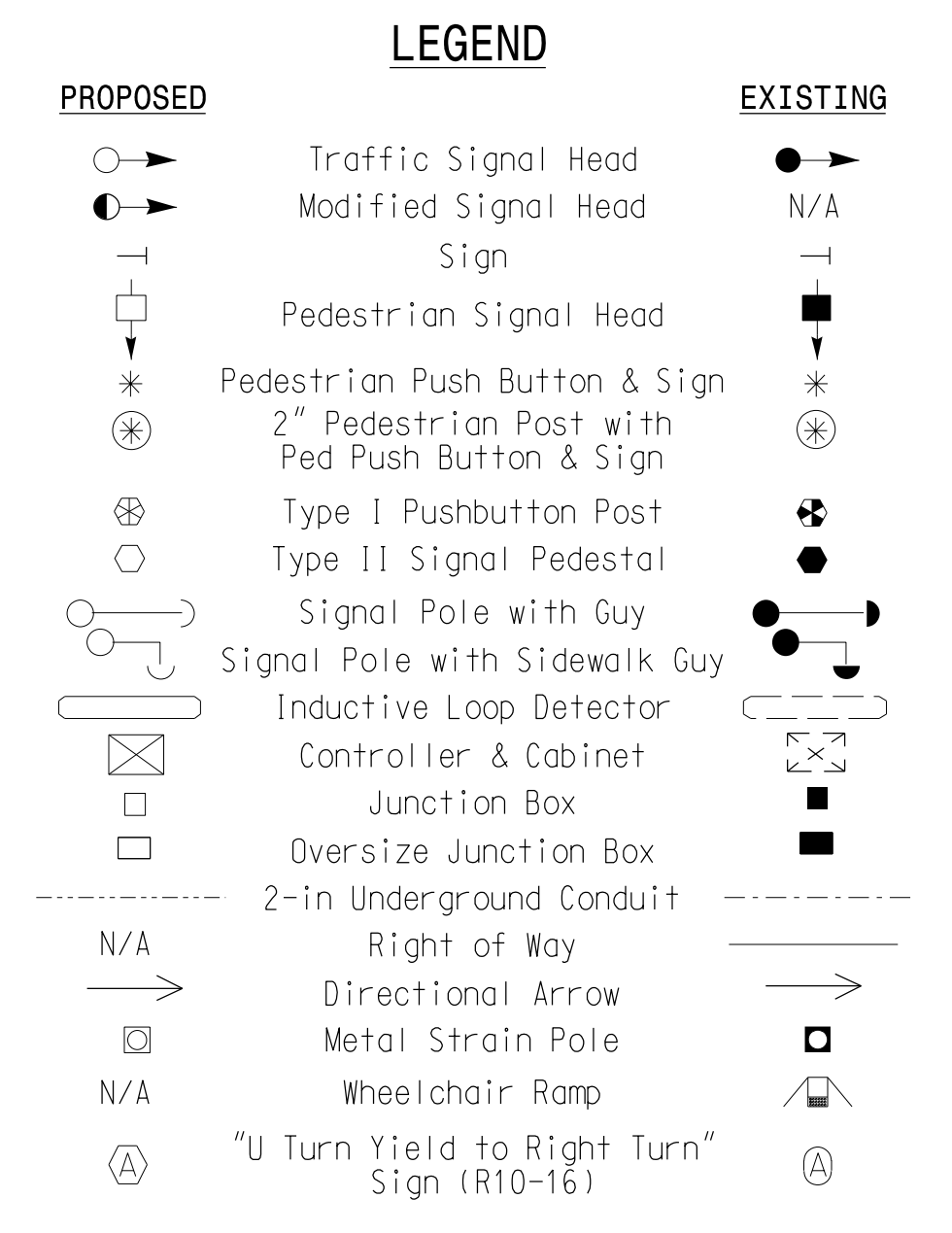
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase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



ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	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	31	0	16	0	34	0	19
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max I *	30	65	25	60	25	65	15	60
Yellow	3.0	4.7	3.0	4.1	3.0	4.7	3.0	4.1
Red Clear	4.1	3.0	3.4	2.8	4.2	3.0	3.3	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	-	-	-	X	-	-	-	X
Simultaneous Gap	X	X	X	X	X	X	X	X

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



Signal Upgrade

Prepared for the Offices of:

DRMP, Inc.
8000 Regency Parkway, Suite 175
Cary, NC 27518
NC License No. C-22113 (P19) 650-1038

NC 54 (Chapel Hill Road) at SR 1363 (S. Mebane Street)

Division 7 Alamance County Burlington

PLAN DATE: Sept 2017 REVIEWED BY: AJ Davis

PREPARED BY: RD Lawton REVIEWED BY: LM Moon

SCALE: 1" = 40'

SEAL: LISA M. MOON, ENGINEER, No. 022516

SIGNATURE: Lisa M. Moon, DATE: 6/13/2018

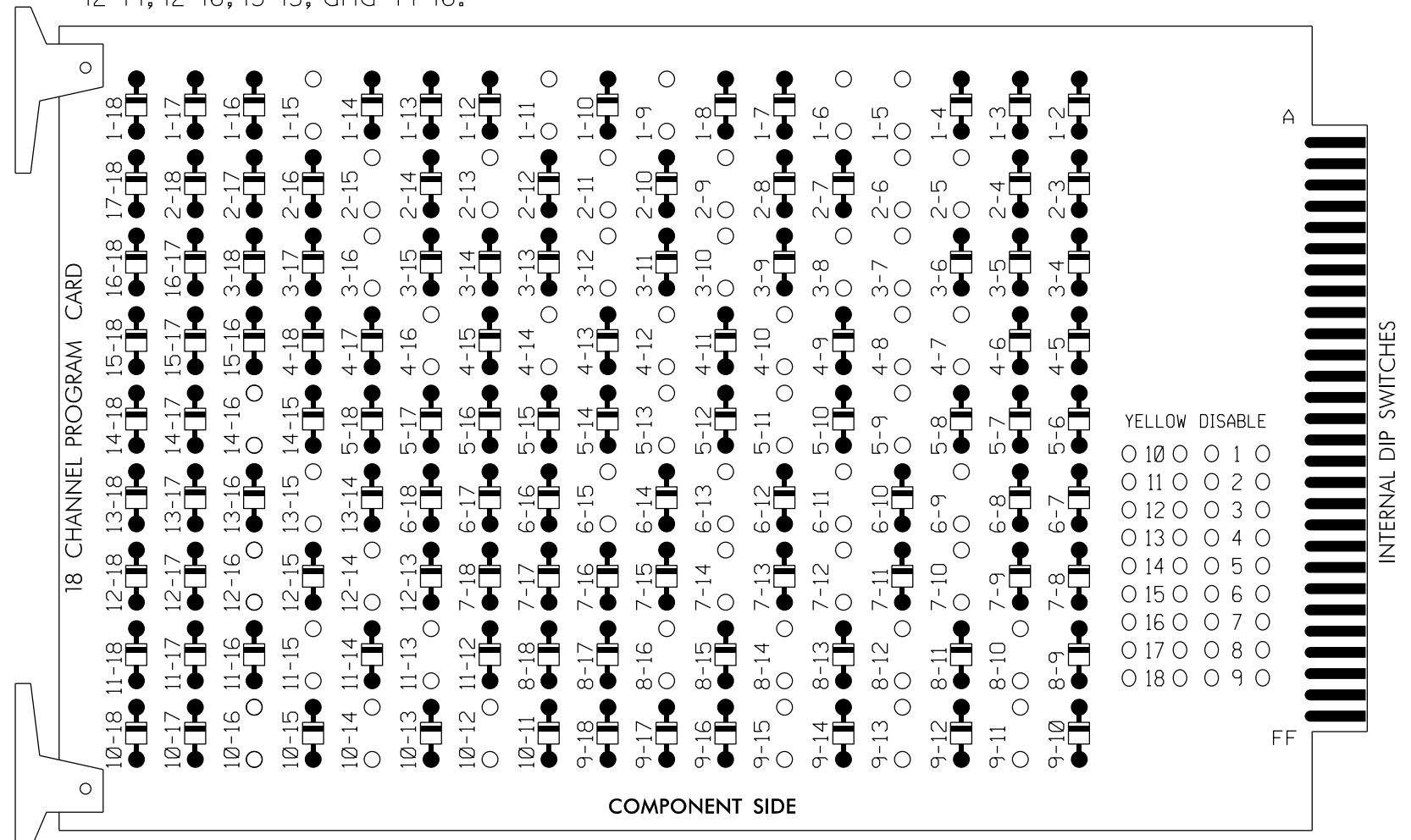
SIG. INVENTORY NO. 07-0009

13-July-2018 1:51
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 P:\lawton AT CAR-PLANTON-W7

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

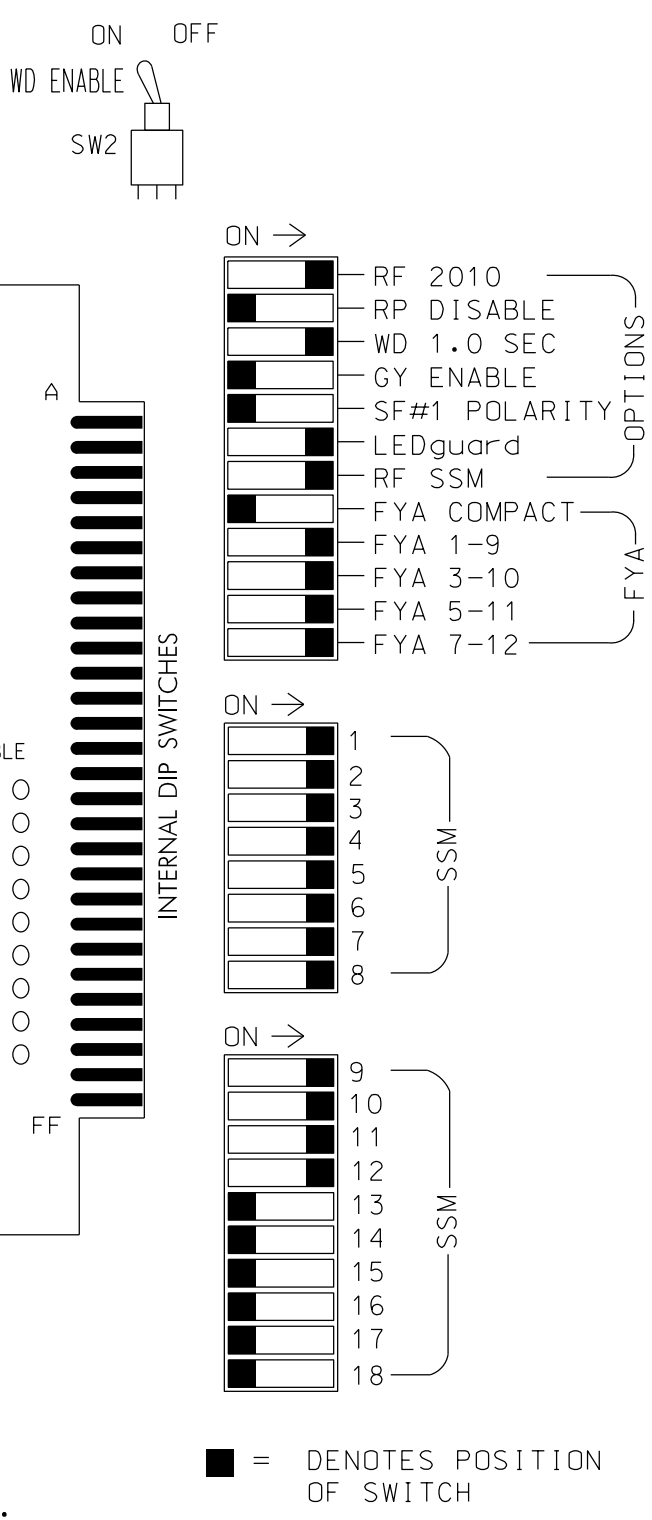
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15, and 14-16.



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.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Walk and 6 Walk.
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,S3,S4,S5,S6,S7,S8,S9, S10,S11,S12,AUX S1,AUX S2, AUX S4,AUX S5
PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED, 7,8,8PED

OVERLAP "A".....*
OVERLAP "B".....*
OVERLAP "C".....*
OVERLAP "D".....*
* See overlap programming detail on sheet 2

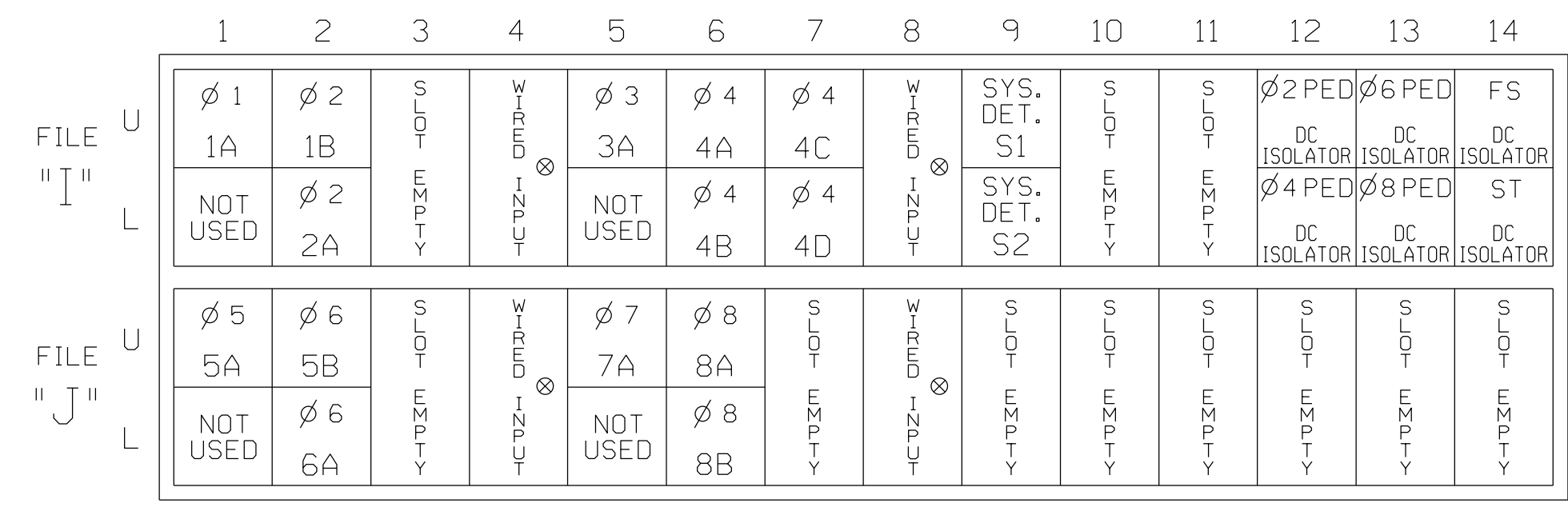
SIGNAL HEAD HOOK-UP CHART

Table with columns for LOAD SWITCH NO., S1-S12, AUX S1-S6, and rows for RED, YELLOW, GREEN, RED ARROW, YELLOW ARROW, FLASHING YELLOW ARROW, GREEN ARROW.

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

INPUT FILE POSITION LAYOUT

(front view)



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

Wired Input - Do not populate slot with detector cord

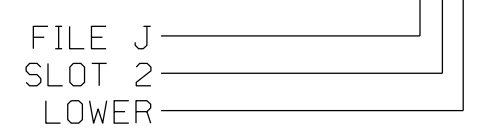
INPUT FILE CONNECTION & PROGRAMMING CHART

Table with columns: LOOP NO., LOOP TERMINAL, INPUT FILE POS., PIN NO., DETECTOR NO., NEMA PHASE, CALL, EXTEND TIME, DELAY TIME, ADDED INITIAL, DETECTOR TYPE.

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

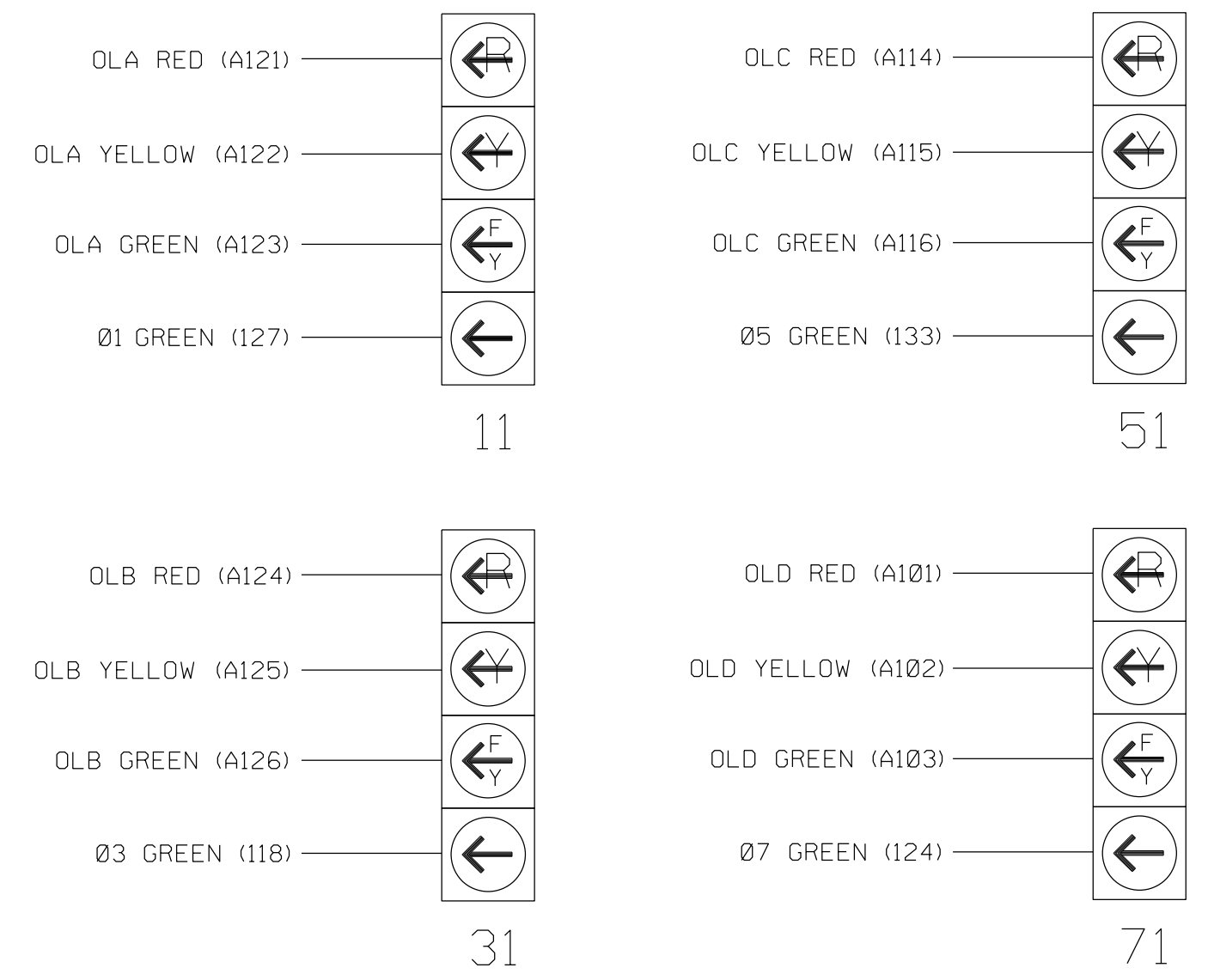
- * System detector only. Remove any assigned vehicle phase.
1 Add jumper from I1-W to J4-W, on rear of input file.
2 Add jumper from I5-W to J8-W, on rear of input file.
3 Add jumper from J1-W to I4-W, on rear of input file.
4 Add jumper from J5-W to I8-W, on rear of input file.

INPUT FILE POSITION LEGEND:



FYA SIGNAL WIRING DETAIL

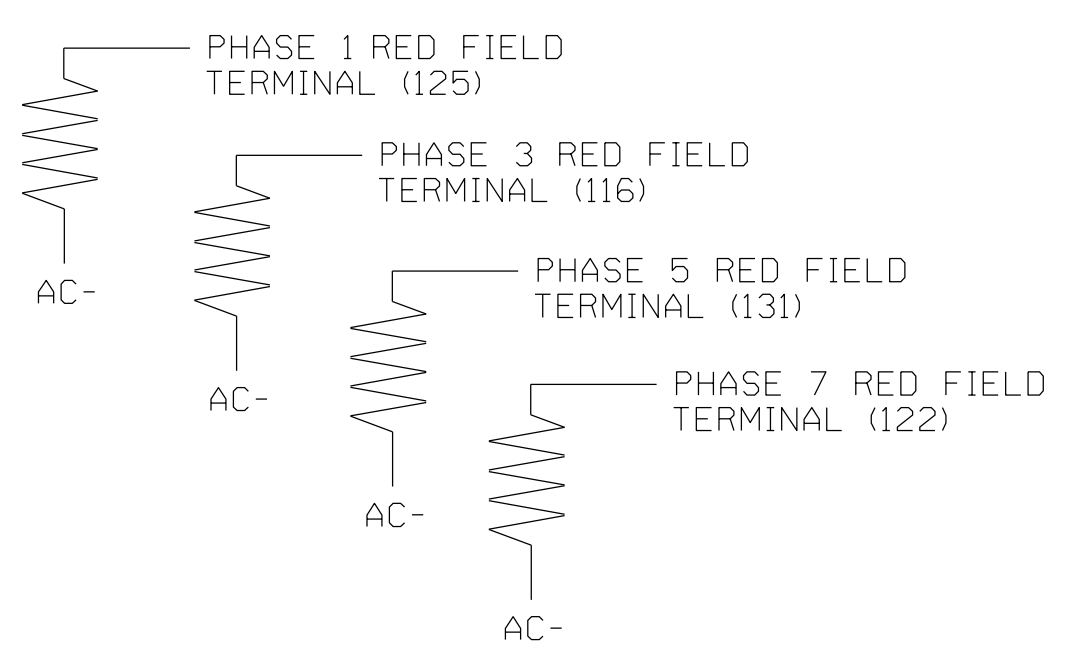
(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

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



Electrical Detail - Sheet 1 of 2

Professional seal and signature block for Lisa M. Moon, Engineer, dated 9/13/2017.

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

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..... 0

Toggle Once

OVERLAP B

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

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

PROTECTED LEFT TURN.... PHASE 3
OPPOSING THROUGH..... PHASE 4

FLASHING ARROW OUTPUT.....CH10 ISOLATE

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

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP C

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

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

PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

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

ACTION PLAN SF BIT DISABLE..... 0

Toggle Once

OVERLAP D

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

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

PROTECTED LEFT TURN.... PHASE 7
OPPOSING THROUGH..... PHASE 8

FLASHING ARROW OUTPUT.....CH12 ISOLATE

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

ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

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

- On rear of PDA - remove wire from Term. T2-4 and terminate on T2-2.
- On rear of PDA - remove wire from Term. T2-5 and terminate on T2-3.
- Remove flasher unit 2.

The changes listed above ties all phases and overlaps to flasher unit 1.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0009
DESIGNED: SEPT-2017
SEALED: 06-13-2018
REVISED:

Electrical Detail - Sheet 2 of 2

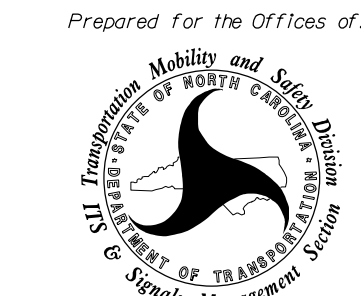
Plans Prepared By:



DRMP, Inc.
8000 Regency Parkway, Suite 175
Cary, NC 27518
NC License No. C-2213 (919) 650-1038

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

NC 54 (Chapel Hill Road)
at
SR 1363 (S. Mebane 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

SEAL

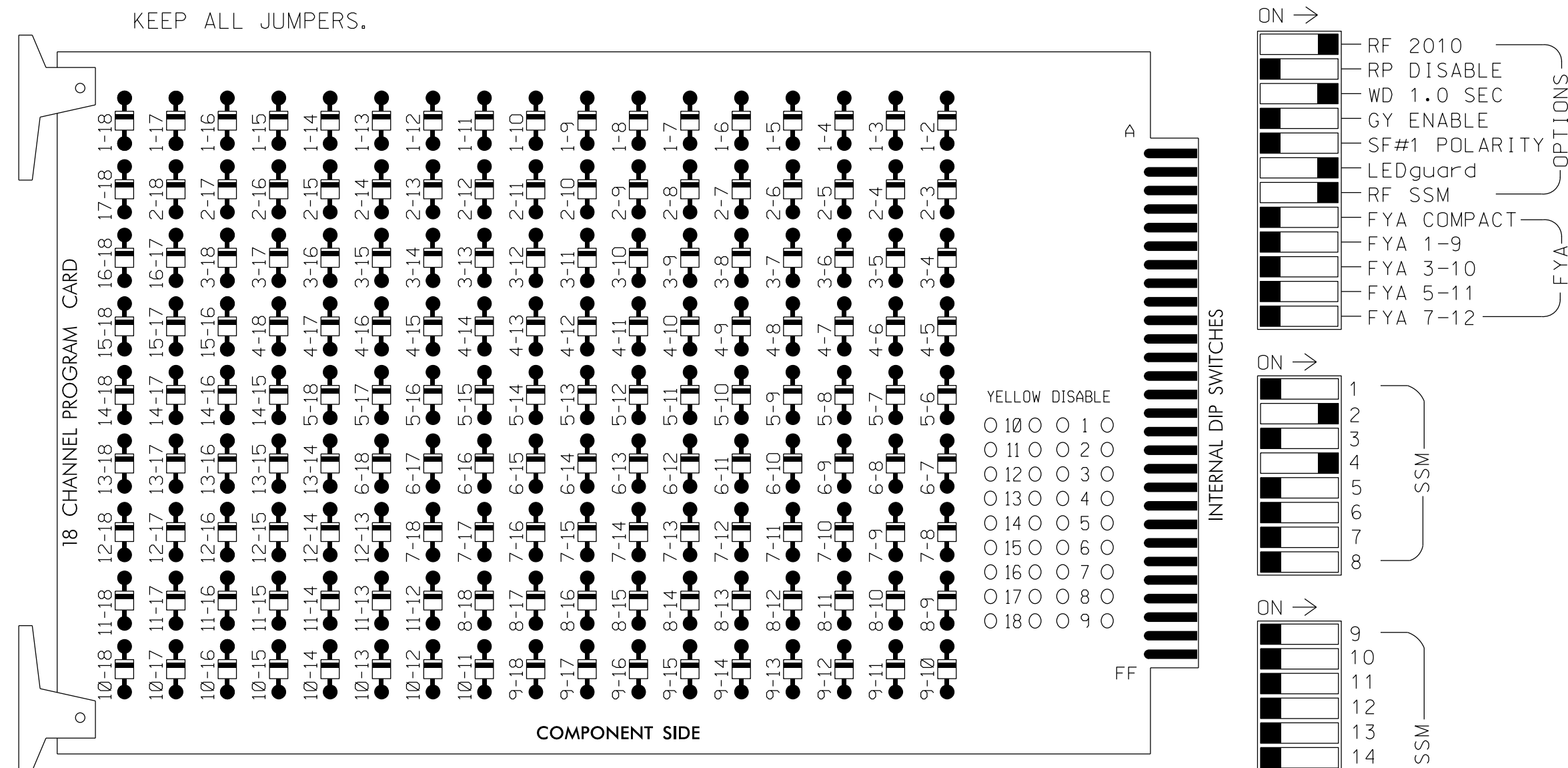


DocuSigned by:
Lisa M. Moon 6/13/2018

SIG. INVENTORY NO. 07-0009

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(keep jumpers and set switches as shown)



NOTES:

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

NOTES

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

EQUIPMENT INFORMATION

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

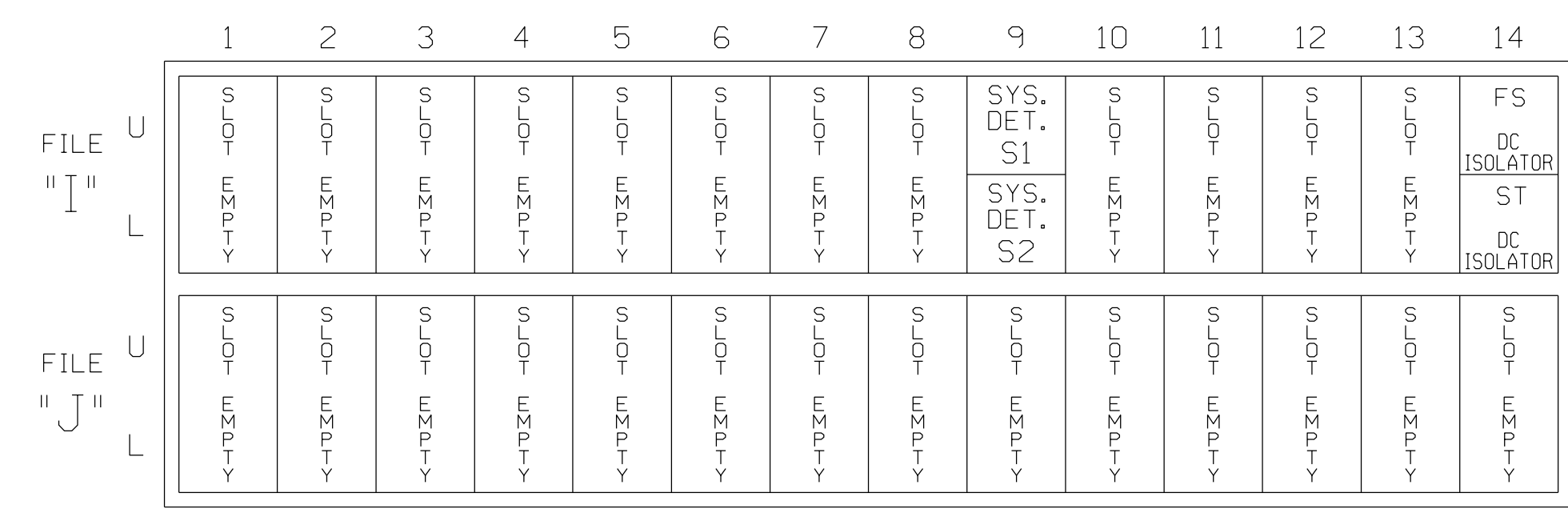
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22 23,24,25	NU	NU	41,42 43,44	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128			101													
YELLOW		129			102													
GREEN		130			103													
RED ARROW																		
YELLOW ARROW																		
GREEN ARROW																		

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



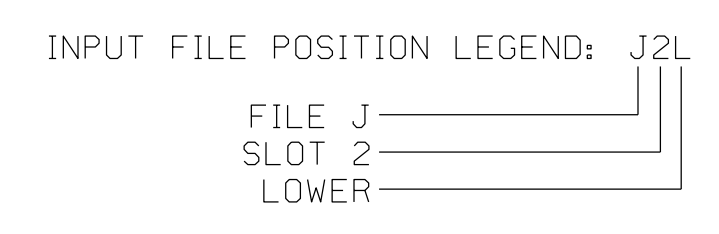
EX.: 1A, 2A, ETC. = LOOP NO.'S

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
* 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: 07-0011
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

13-Jul-2018 17:13 R:\66015\17\off\ek\sign\design\wlr\ing\07-0011e.dgn C:\Lawton AT CAR-RLAWTON-W7



Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

US 70 - NC 62 (S. Church Street) at W. Fifth Street

Division 7 Alamance County Burlington

PLAN DATE: November 2017 REVIEWED BY: AJ Davis

PREPARED BY: RD Lawton REVIEWED BY: LM Moon

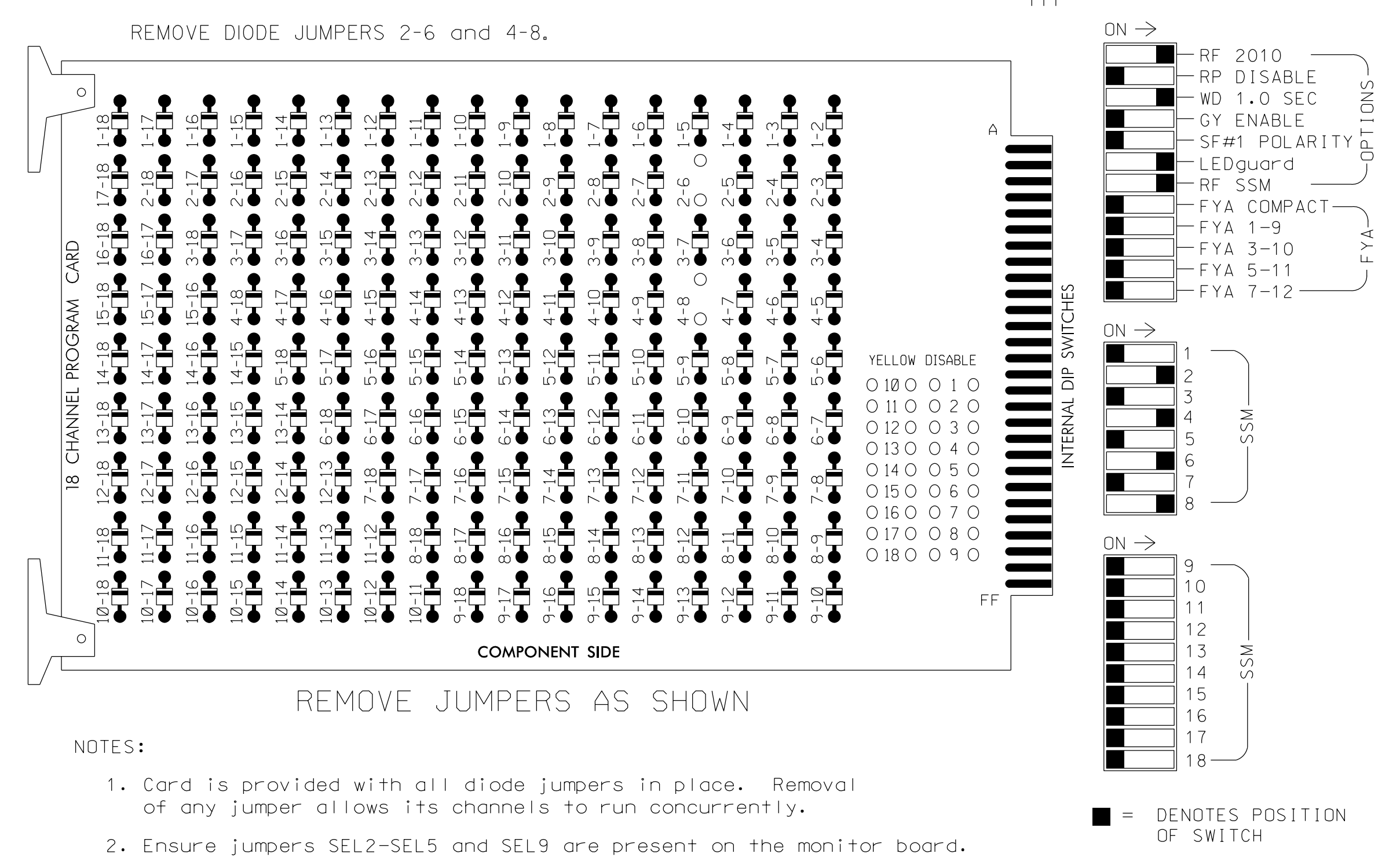
REVISIONS: INIT. DATE

DocuSigned by: Lisa M. Moon 6/13/2018

SIG. INVENTORY NO. 07-0011

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 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.

SIGNAL HEAD HOOK-UP CHART

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

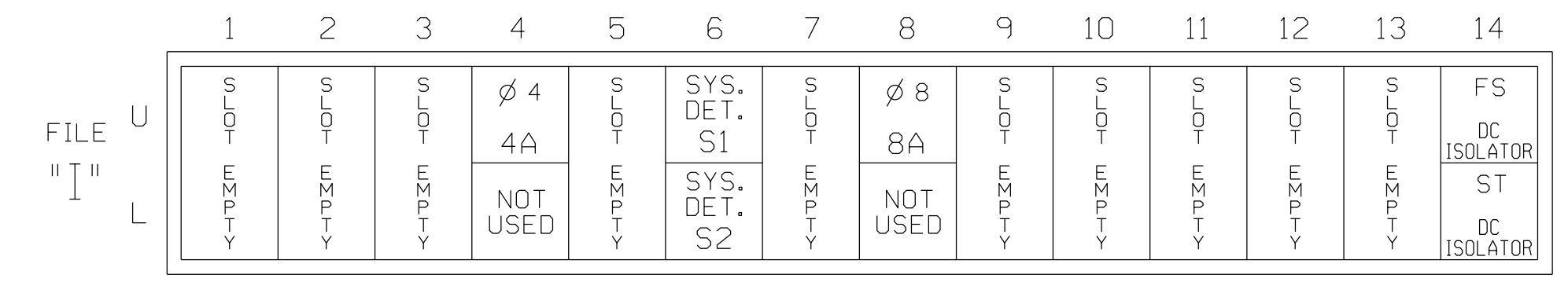
NU = Not Used

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



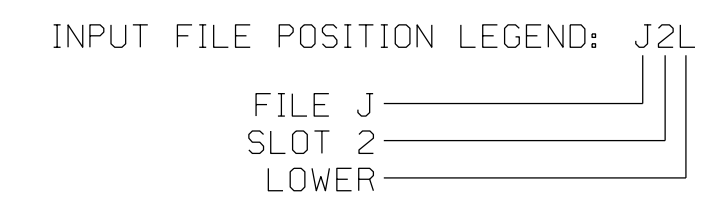
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A	TB21-7,8	14U	41	4	4	YES		5		S
* S1	TB21-11,12	16U	40	6	SYS	NO				N
* S2	TB23-11,12	16L	44	16	SYS	NO				N
8A	TB22-1,2	18U	42	8	8	YES		5		S

* System detector only. Remove any assigned vehicle phase.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0012
 DESIGNED: August-2017
 SEALED: 06-13-2018
 REVISED: N/A

13-UNA-2018-17-13
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 C:\ewton AT CAR-RLANDON-W7



Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

NC 87 (E. Webb Avenue) at Williamson Street

Division 7 Alamance County Burlington

PLAN DATE: August 2017 REVIEWED BY: LM Moon

PREPARED BY: AJ Davis REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

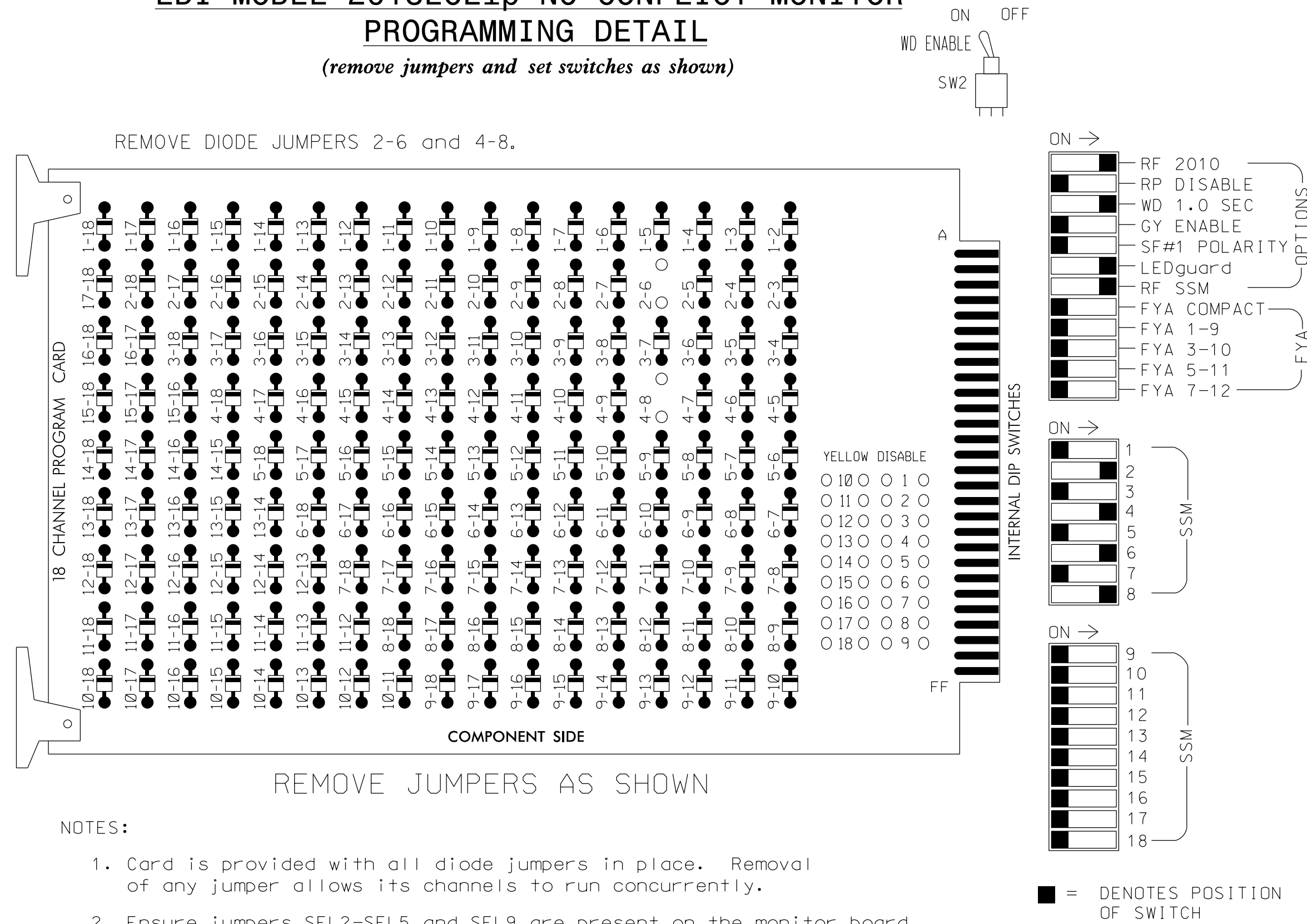
SEAL

DocuSigned by: Lisa M. Moon 6/13/2018

SIG. INVENTORY NO. 07-0012

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

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

SIGNAL HEAD HOOK-UP CHART

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

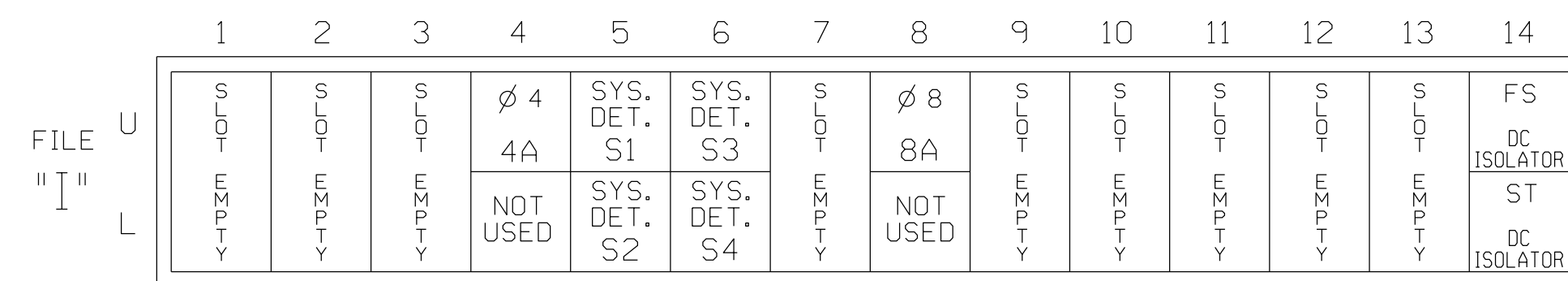
NU = Not Used

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



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

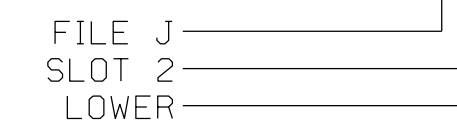
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A	TB21-7,8	I4U	41	4	4	YES		5		S
* S1	TB21-9,10	I5U	55	5	SYS	NO				N
* S2	TB23-9,10	I5L	48	26	SYS	NO				N
* S3	TB21-11,12	I6U	40	6	SYS	NO				N
* S4	TB23-11,12	I6L	44	16	SYS	NO				N
8A	TB22-1,2	I8U	42	8	8	YES		5		S

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



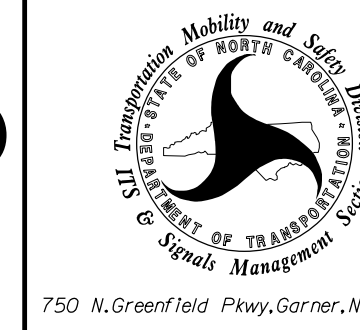
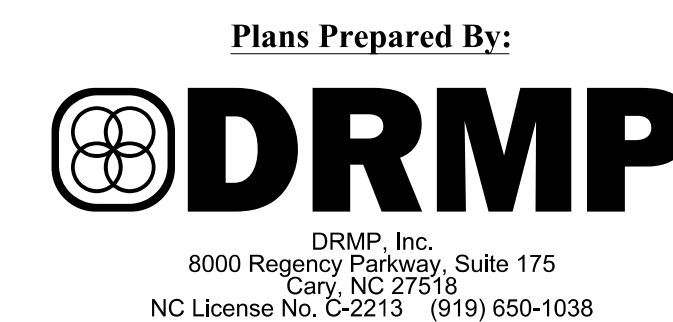
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0013
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

13-UNA-2018-17-13
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Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



NC 87-100 (E. Webb Ave.)
 at
 Flanner Street

Division 7 Alamance County Burlington

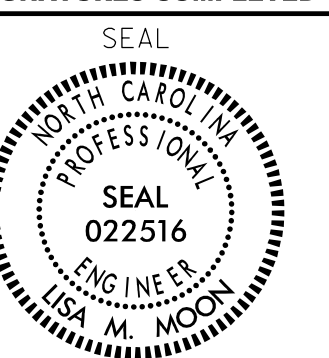
PLAN DATE: November 2017 REVIEWED BY: AJ Davis

PREPARED BY: DJ White REVIEWED BY: LM Moon

REVISIONS INIT. DATE

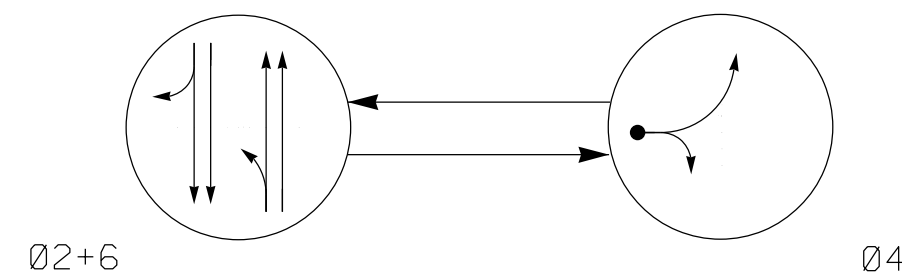
750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSigned by: Lisa M. Moon 6/13/2018
 DATE: 6/13/2018
 SIG. INVENTORY NO. 07-0013

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

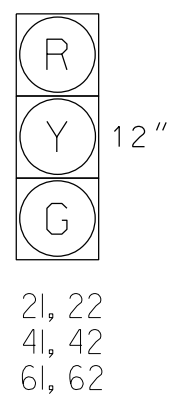
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

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

SIGNAL FACE I.D.

All Heads L.E.D.

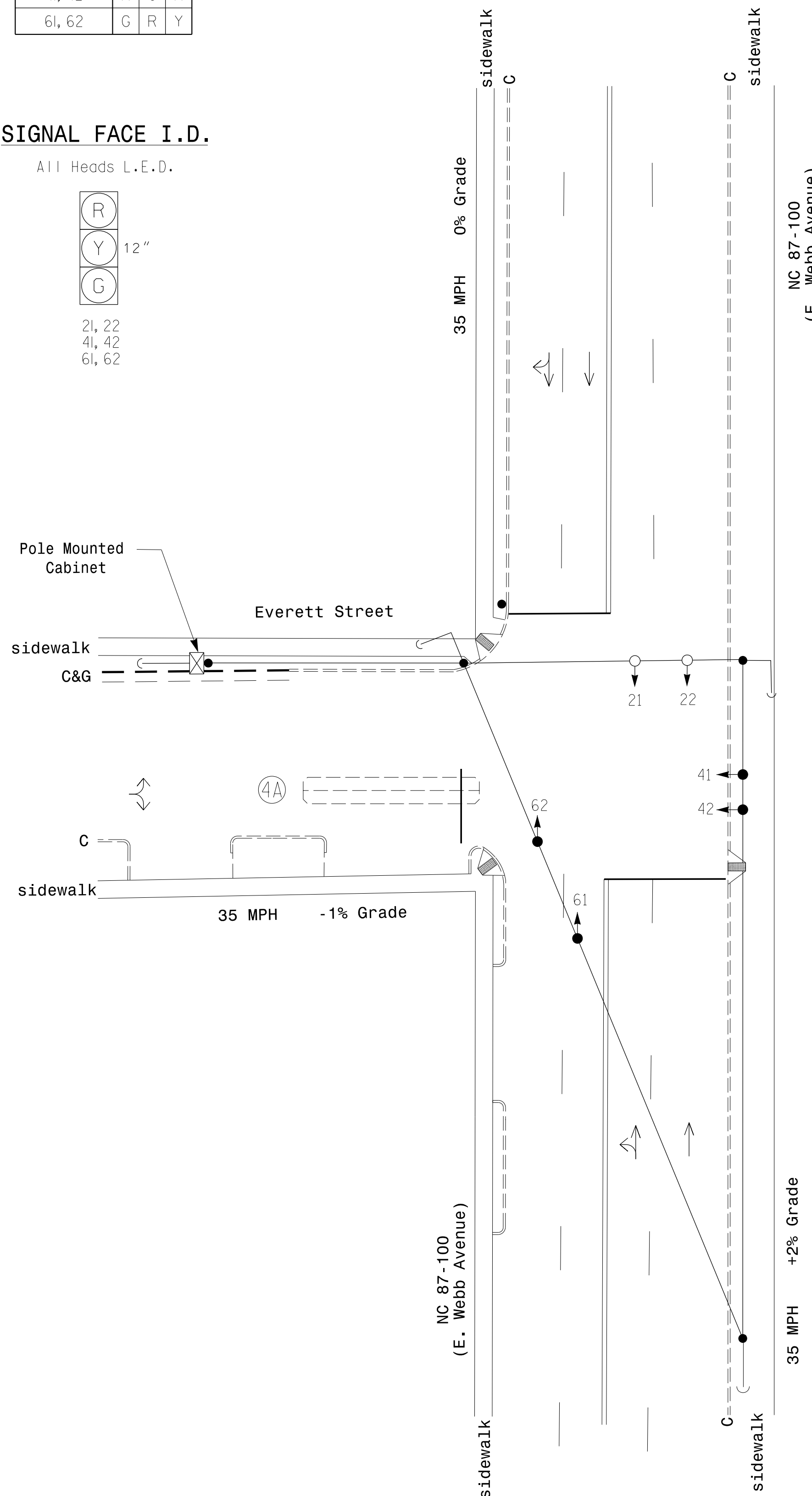


ASC/3 DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP NEW CARD
4A	6x40	+5	2-4-2	-	4	Yes	-	5	-	S	- X

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.
- Install new messenger for signal heads 21 and 22. Install to obtain a minimum clearance distance over roadway.
- Install new signal cable for signal heads 21, 22, 41 and 42.
- 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 *	0.0	2.0	0.0
Max 1 *	54	22	54
Yellow	3.7	3.0	3.8
Red Clear	1.0	1.9	1.1
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	-	-	-
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.

13-UNA-2018-1653
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C:\Lawton AT CAB-RLAWTON-W7

LEGEND

PROPOSED	EXISTING
	N/A
	N/A
N/A	
N/A	

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Plans Prepared By:

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

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

NC 87-100 (E. Webb Avenue) at Everett Street

Divison 7 Alamance County Burlington

PLAN DATE: Sept 2017 REVIEWED BY: AJ Davis

PREPARED BY: RD Lawton REVIEWED BY: LM Moon

REVISIONS	INIT.	DATE

SEAL

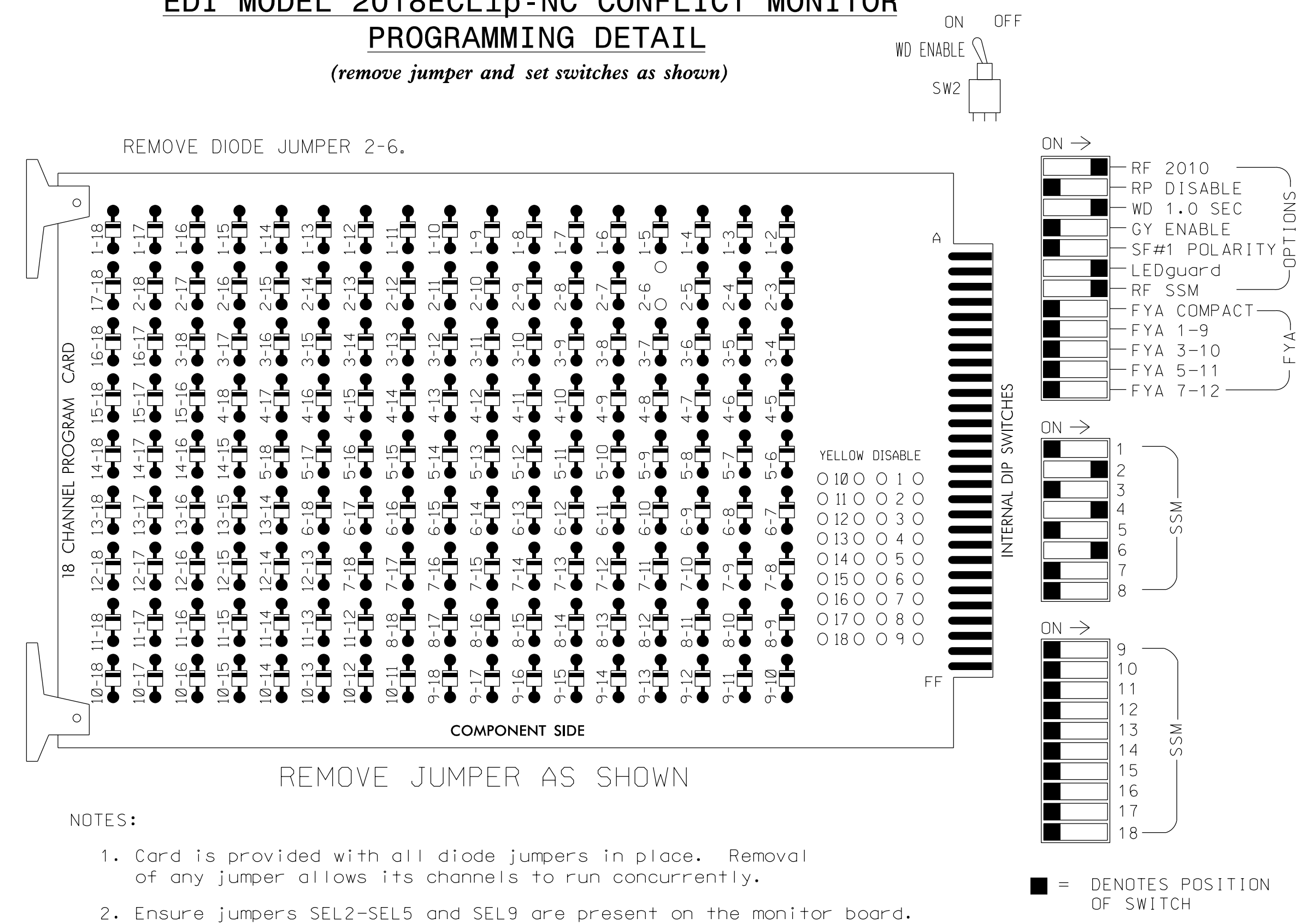
DocuSigned by:
Lisa M. Moon 6/13/2018

SIGNATURE DATE

SIG. INVENTORY NO. 07-0014

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



NOTES:

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

NOTES

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

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
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	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

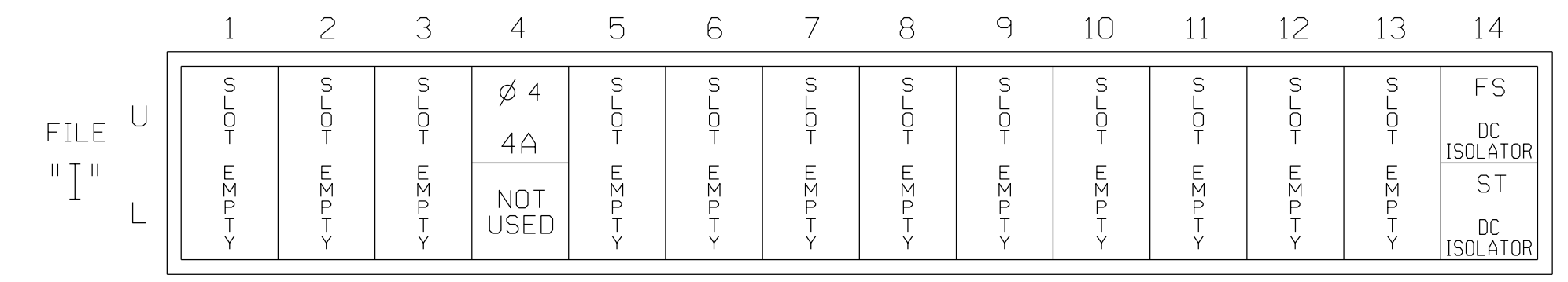
NU = Not Used

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



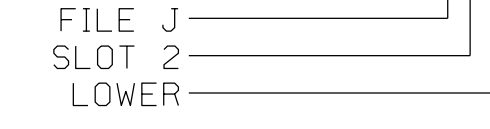
EX.: 1A, 2A, ETC. = LOOP NO.'S

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
4A	TB21-7,8	14U	41	4	4	YES		5		S

INPUT FILE POSITION LEGEND: J2L

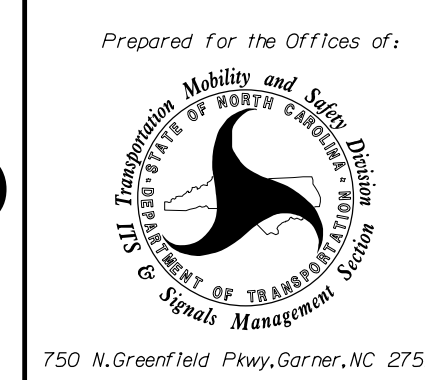


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0014
 DESIGNED: SEPT-2017
 SEALED: 06-13-2018
 REVISED: N/A

13-UNA-2018-17-14
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 C:\ewton AT CAR-RLANTON-W7

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

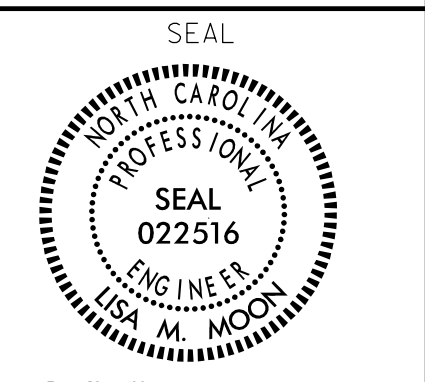


Plans Prepared By:
DRMP
 DRMP, Inc.
 8000 Regency Parkway, Suite 175
 Cary, NC 27518
 NC License No. C-2213 (919) 650-1038

NC 87-100 (E. Webb Avenue)
 at
 Everett Street

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

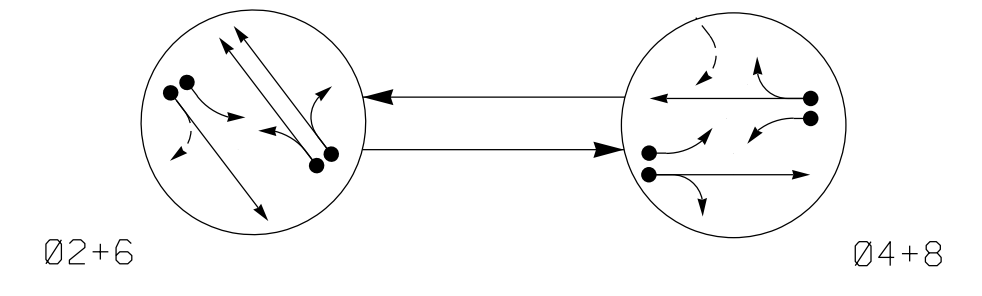
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DocuSigned by:
 Lisa M. Moon
 6/13/2018
 DATE
 SIG. INVENTORY NO. 07-0014

2 Phase Fully Actuated (Burlington-Graham Signal System)

PHASING DIAGRAM



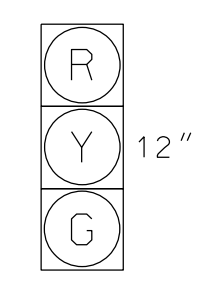
PHASING DIAGRAM DETECTION LEGEND
- ● -> DETECTED MOVEMENT
- -> UNDETECTED MOVEMENT (OVERLAP)
- - -> UNSIGNALIZED MOVEMENT
- - - -> PEDESTRIAN MOVEMENT

TABLE OF OPERATION

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

SIGNAL FACE I.D.

All Heads L.E.D.



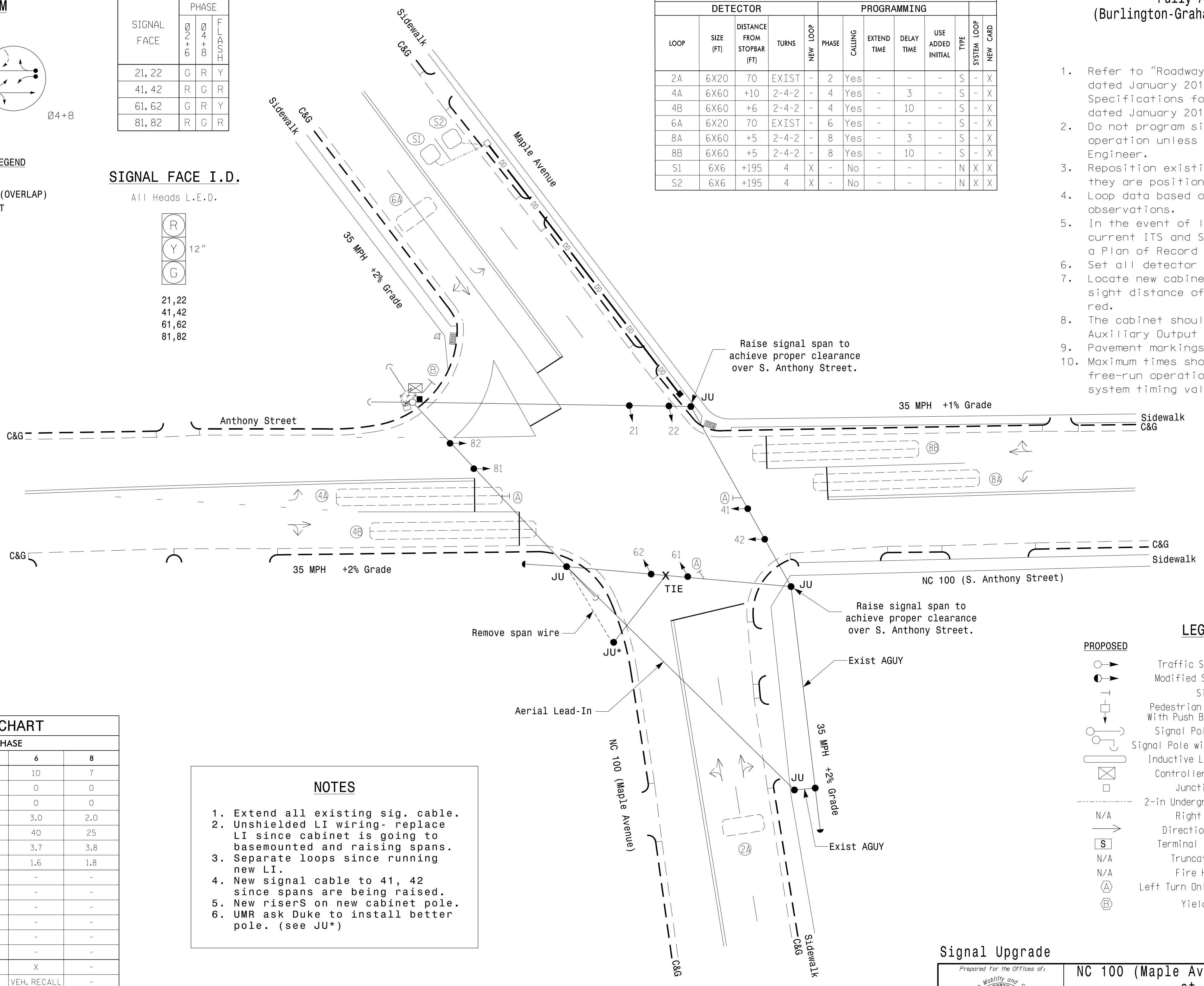
21, 22
41, 42
61, 62
81, 82

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE		
2A	6X20	70	EXIST	-	2	Yes	-	-	-	S	-	X
4A	6X60	+10	2-4-2	-	4	Yes	-	3	-	S	-	X
4B	6X60	+6	2-4-2	-	4	Yes	-	10	-	S	-	X
6A	6X20	70	EXIST	-	6	Yes	-	-	-	S	-	X
8A	6X60	+5	2-4-2	-	8	Yes	-	3	-	S	-	X
8B	6X60	+5	2-4-2	-	8	Yes	-	10	-	S	-	X
S1	6X6	+195	4	X	-	No	-	-	-	N	X	X
S2	6X6	+195	4	X	-	No	-	-	-	N	X	X

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Reposition existing signal heads 81 and 82 so they are positioned in front of thru lane.
- Loop data based on previous plan and/or field observations.
- 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.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- The cabinet should be designed to include an Auxiliary Output file for future use.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



ASC/3 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green *	10	7	10	7
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	3.0	2.0	3.0	2.0
Max 1 *	40	25	40	25
Yellow	3.7	3.7	3.7	3.8
Red Clear	1.5	2.1	1.6	1.8
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time to Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	X	-
Recall Position	VEH. RECALL	-	VEH. RECALL	-
Dual Entry	-	X	-	X
Simultaneous Gap	X	X	X	X

* 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.

NOTES

- Extend all existing sig. cable.
- Unshielded LI wiring- replace LI since cabinet is going to basemounted and raising spans.
- Separate loops since running new LI.
- New signal cable to 41, 42 since spans are being raised.
- New riserS on new cabinet pole.
- UMR ask Duke to install better pole. (see JU*)

LEGEND

PROPOSED	EXISTING
	N/A
N/A	
N/A	
N/A	

Signal Upgrade

Prepared for the Offices of:

 Department of Transportation
 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

NC 100 (Maple Ave)/Maple Ave at Anthony St

Division 7 Alamance County Burlington

PLAN DATE: November 2017 REVIEWED BY: AJ Davis

PREPARED BY: J Le REVIEWED BY: LM Moon

REVISIONS	INIT.	DATE

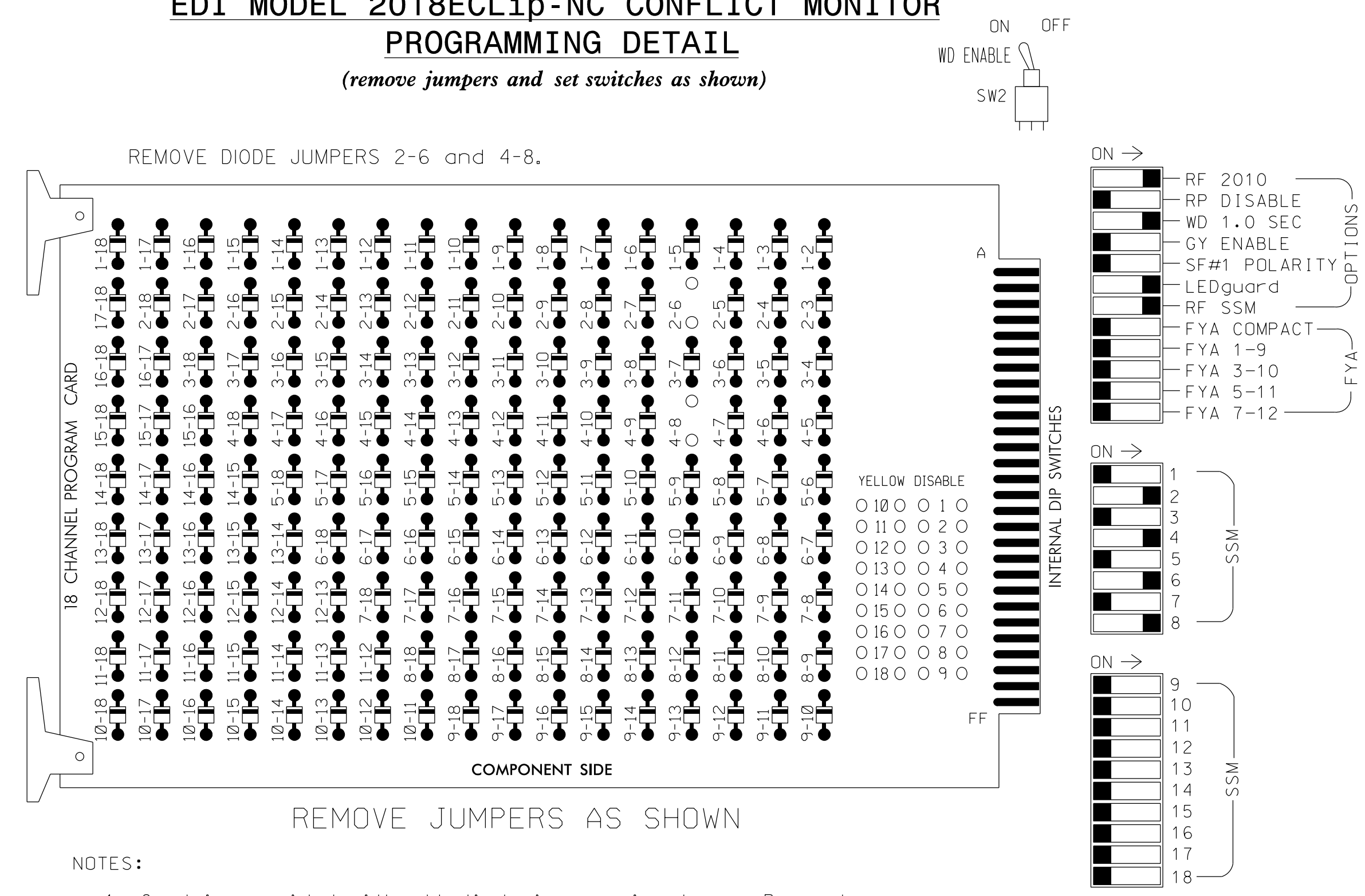
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SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 022516
 LISA M. MOON
 6/13/2018
 SIG. INVENTORY NO. 07-0015

13-UNA-2018-16-57
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EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

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

EQUIPMENT INFORMATION

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

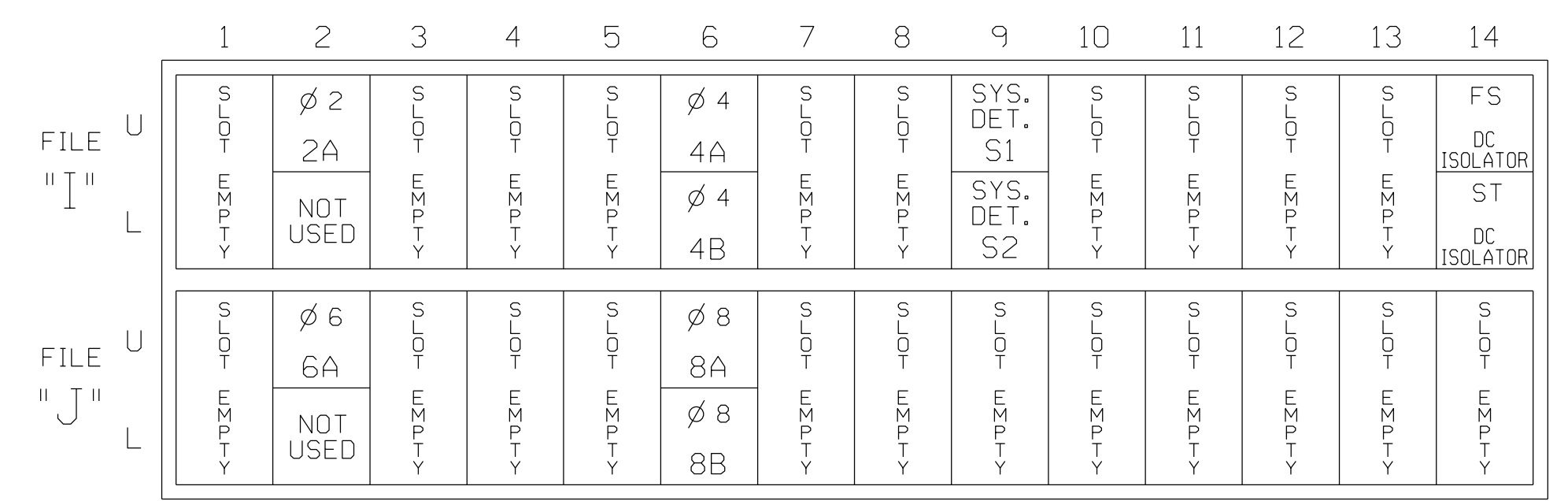
SIGNAL HEAD HOOK-UP CHART

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

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

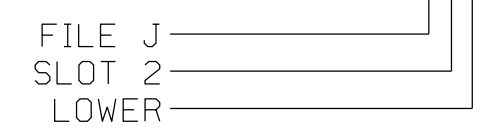
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

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

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0015
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

13-UNA-2018-17-14
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Electrical Detail

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:

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

NC 100 (Maple Ave)/Maple Ave
 at
NC 100 (S. Anthony St)/Anthony St
 Division 7 Alamance County Burlington

PLAN DATE: November 2017	REVIEWED BY: AJ Davis
PREPARED BY: DJ White	REVIEWED BY: LM Moon
REVISIONS	INIT. DATE

SEAL

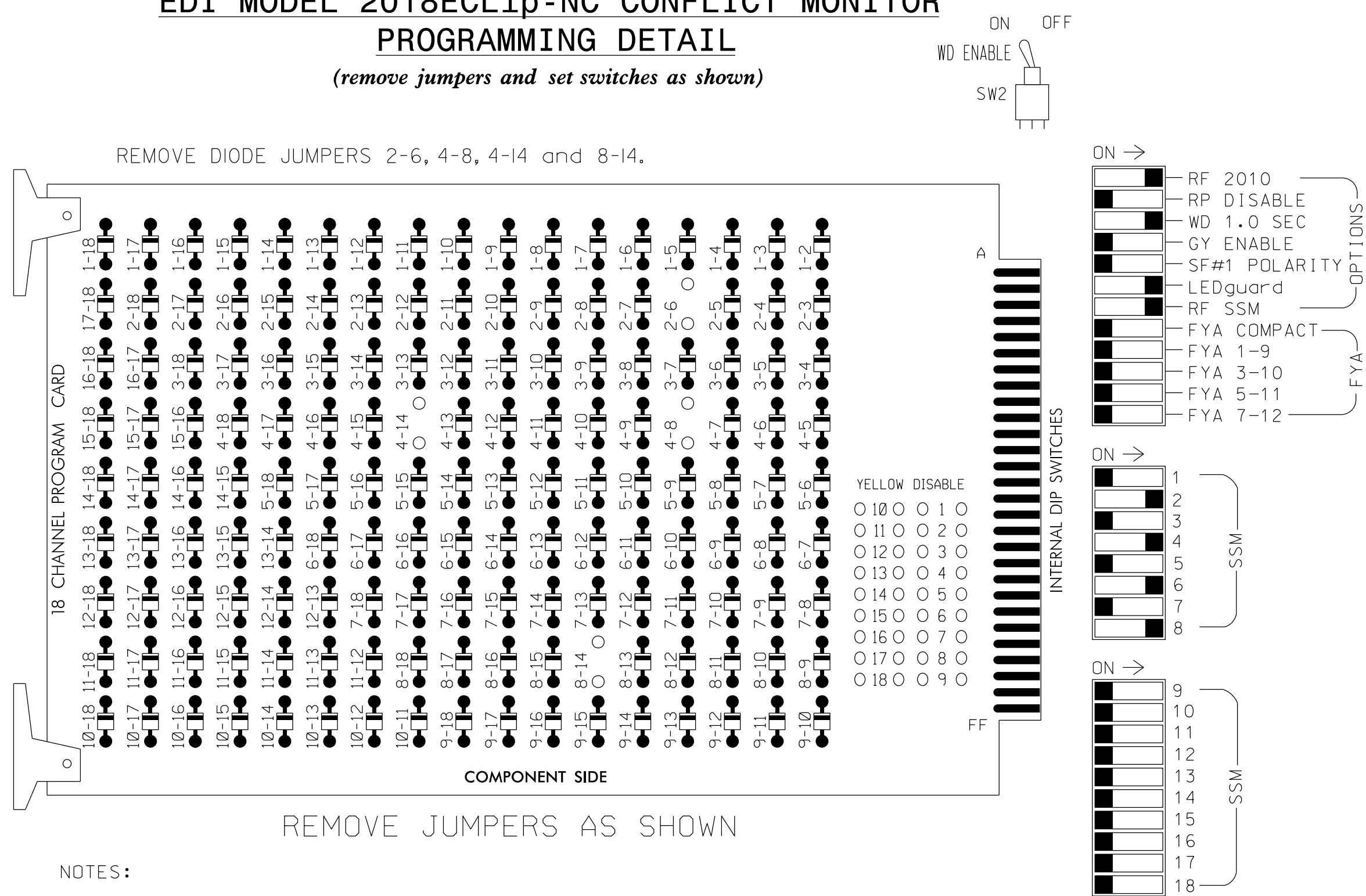
 SEAL 022516
 ENGINEER
 LISA M. MOON

DocuSigned by:

 6/13/2018
 DATE
 SIG. INVENTORY NO. 07-0015

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 w/AUX OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S6,S8,S11
 PHASES USED.....2,4,4PED,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

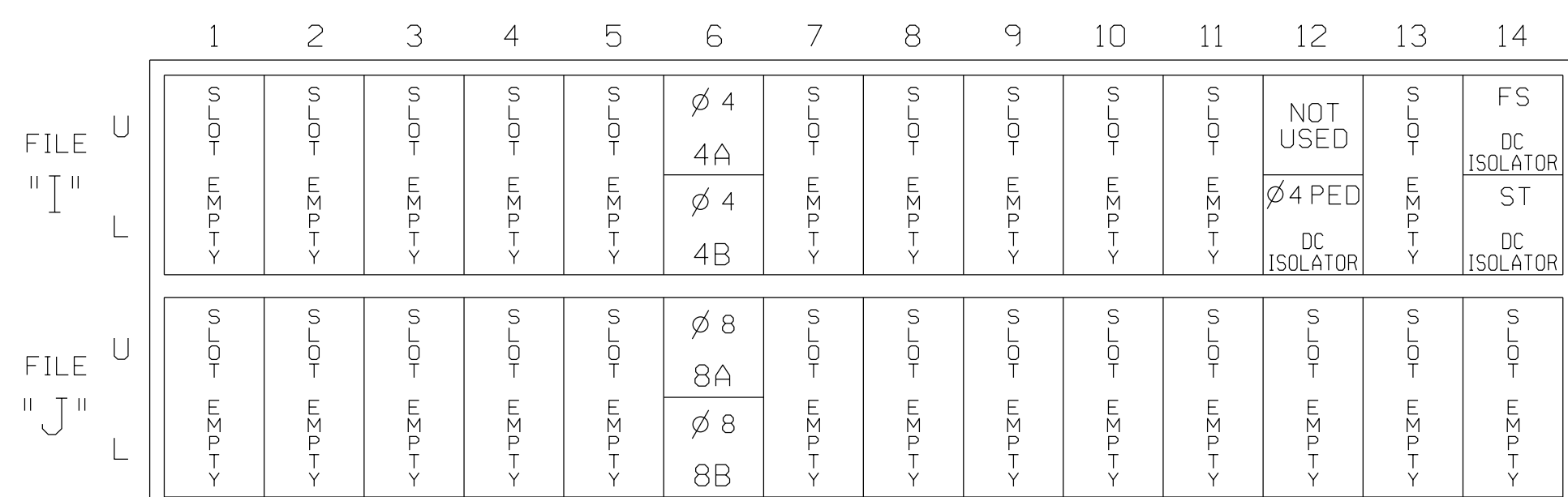
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	P41, P42	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																		
Hand icon																		104
Person icon																		106

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

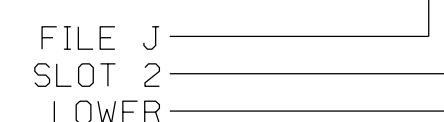
FS = FLASH SENSE
 ST = STOP TIME

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
4A	TB4-9,10	I6U	41	4	4	YES		3		S
4B	TB4-11,12	I6L	45	14	4	YES		10		S
8A	TB5-9,10	J6U	42	8	8	YES		3		S
8B	TB5-11,12	J6L	46	18	8	YES		10		S
PED PUSH BUTTONS										
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					

NOTE:
 INSTALL DC ISOLATOR IN INPUT FILE SLOT 112.

INPUT FILE POSITION LEGEND: J2L



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0016
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



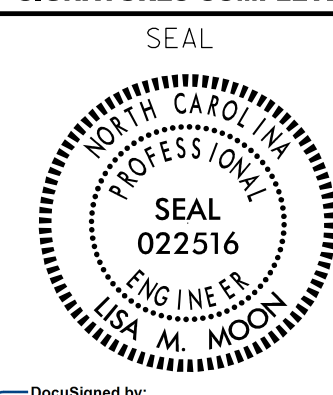
NC 87-100 (E. Webb Avenue)
 at
 NC 100 (Anthony Street)

Division 7 Alamance County Burlington

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

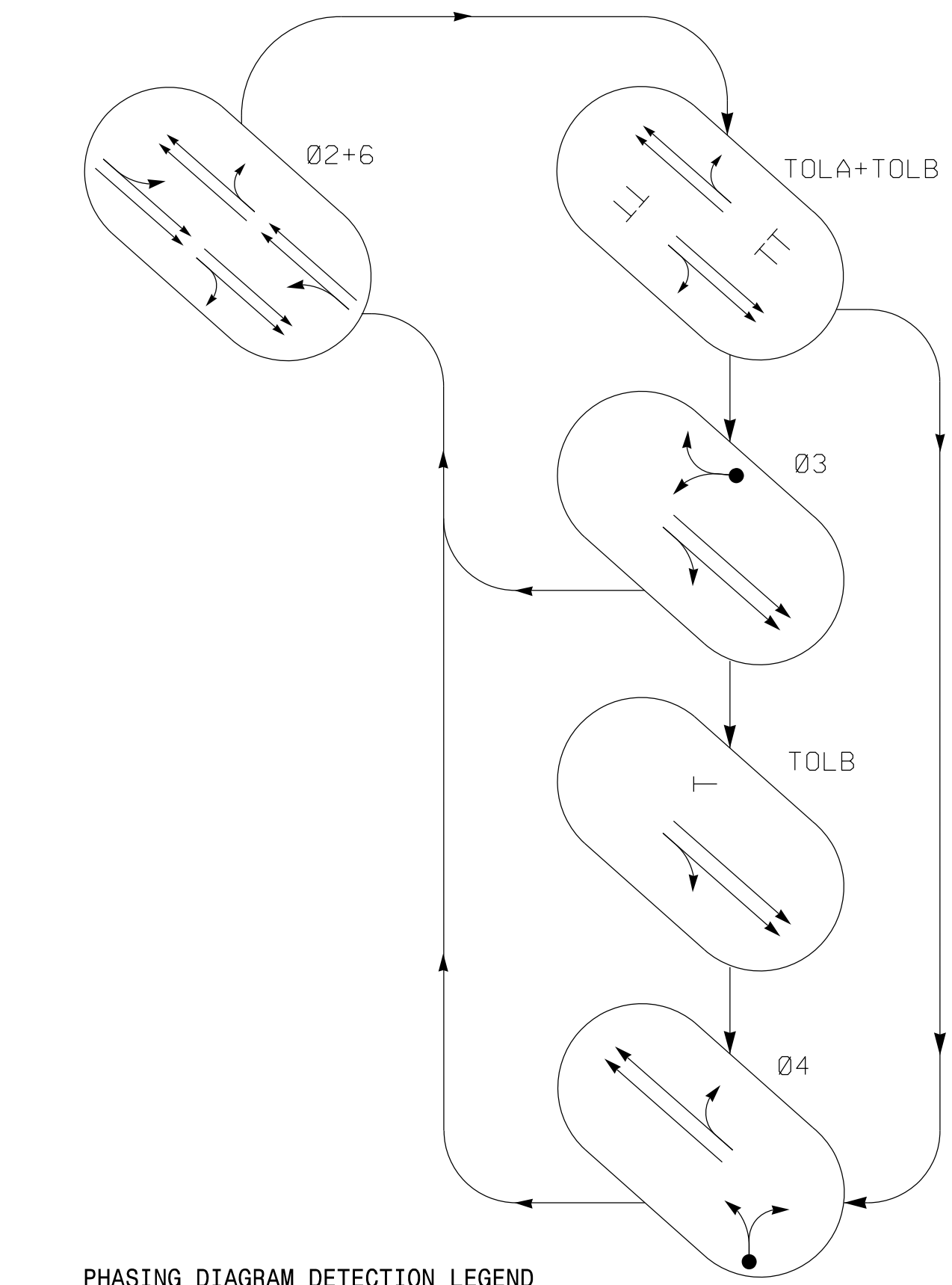
REVISIONS	INIT.	DATE

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DocuSigned by:
 Lisa M. Moon 6/13/2018
 DATE: 6/13/2018
 SIG. INVENTORY NO. 07-0016

PHASING DIAGRAM

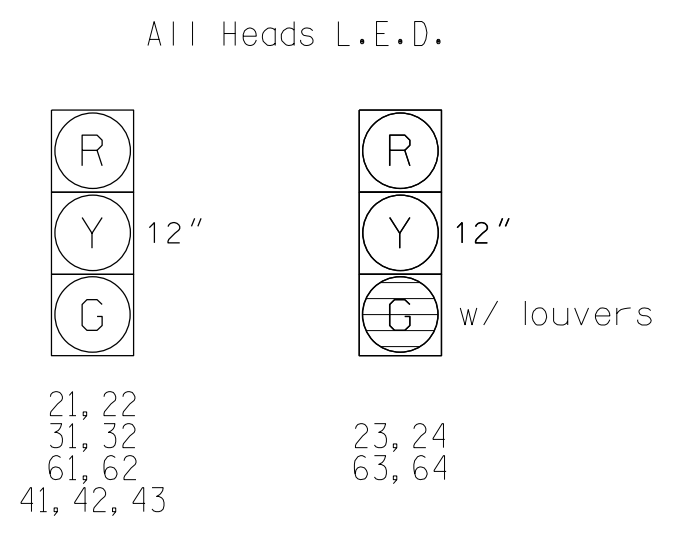


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE					
	Ø2+6	TOL A+TOL B	Ø3	TOL B	Ø4	FLASH
21, 22	G	R	R	R	R	Y
23, 24	G	G	R	R	G	Y
31, 32	R	R	G	R	R	R
61, 62	G	R	R	R	R	Y
63, 64	G	G	G	G	R	Y
41, 42, 43	R	R	R	R	G	R

SIGNAL FACE I.D.



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	SYSTEM LOOP	NEW CARD
3A	6X60	0	2-4-2	-	3	Yes	-	-	-	S	X
4A	6X60	+2	2-4-2	-	4	Yes	-	10	-	S	X

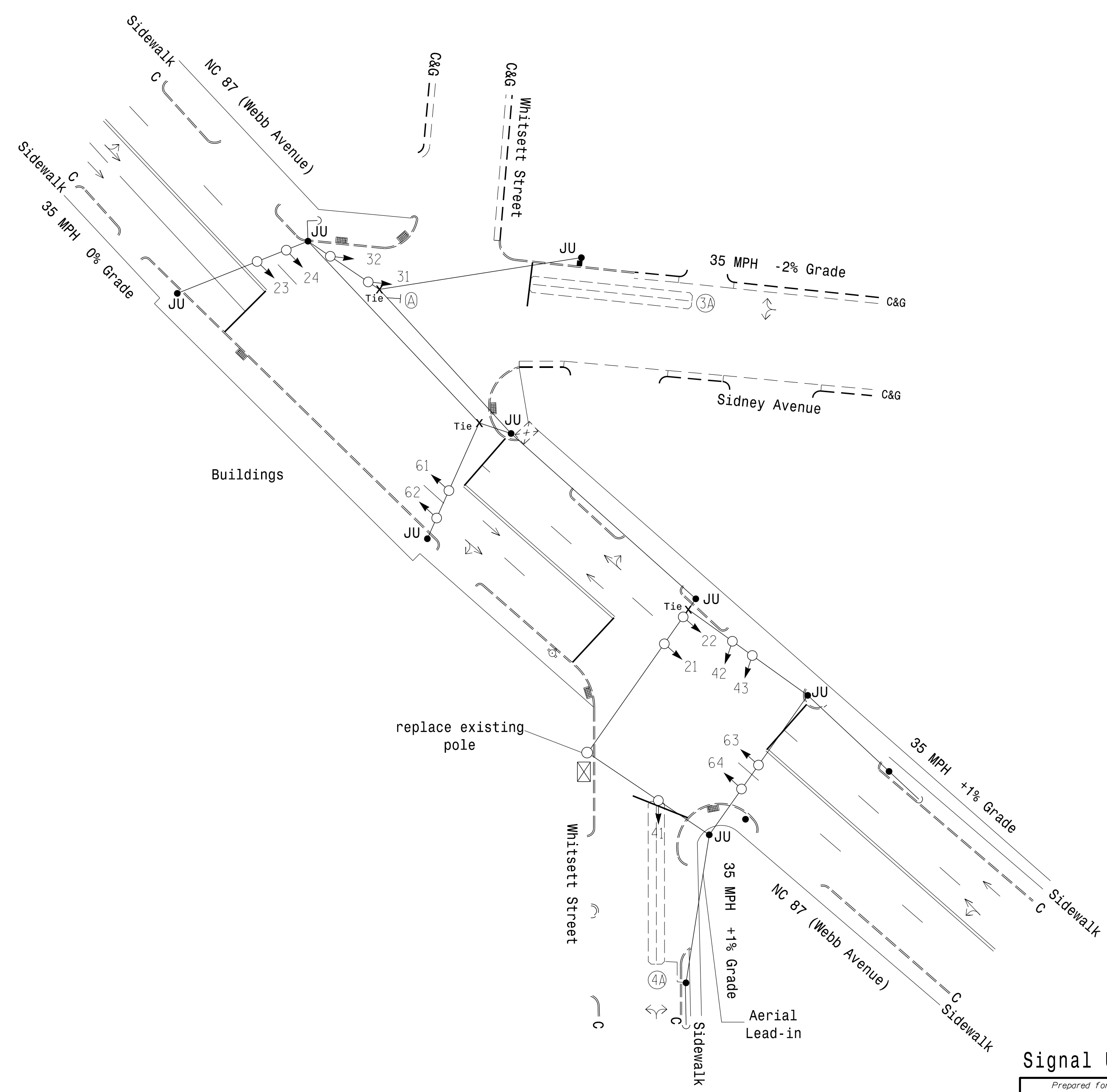
3 Phase Semi-Actuated (Burlington-Graham Signal System)

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. Set all detector units to presence mode.
4. 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.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
6. Pavement markings are existing.
7. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

FEATURE	PHASE				TOL A	TOL B
	2	3	4	6		
Min Green *	10	7	7	10	2.0	5.0
Walk *	0	0	0	0		
Ped Clear	0	0	0	0		
Veh. Extension *	0.0	1.0	1.0	0.0		
Max 1 *	35	20	25	35		
Yellow	3.8	3.0	3.0	3.8	3.8	3.8
Red Clear	1.5	3.7	2.3	1.7	2.1	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		
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 | ⊥ Sign |
| ⊥ Pedestrian Signal Head | ⊥ Pedestrian Signal Head |
| ⊥ With Push Button & Sign | ⊥ With Push Button & Sign |
| ⊥ Signal Pole with Guy | ⊥ Signal Pole with Guy |
| ⊥ Signal Pole with Sidewalk Guy | ⊥ Signal Pole with Sidewalk Guy |
| □ Inductive Loop Detector | □ Inductive Loop Detector |
| □ Controller & Cabinet | □ Controller & Cabinet |
| □ Junction Box | □ Junction Box |
| --- 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A Right of Way | N/A Right of Way |
| → Directional Arrow | → Directional Arrow |
| N/A Fire Hydrant | N/A Fire Hydrant |
| N/A Truncated Domes | N/A Truncated Domes |
| △ No Turn On Red Sign (R10-11) | △ No Turn On Red Sign (R10-11) |

Signal Upgrade

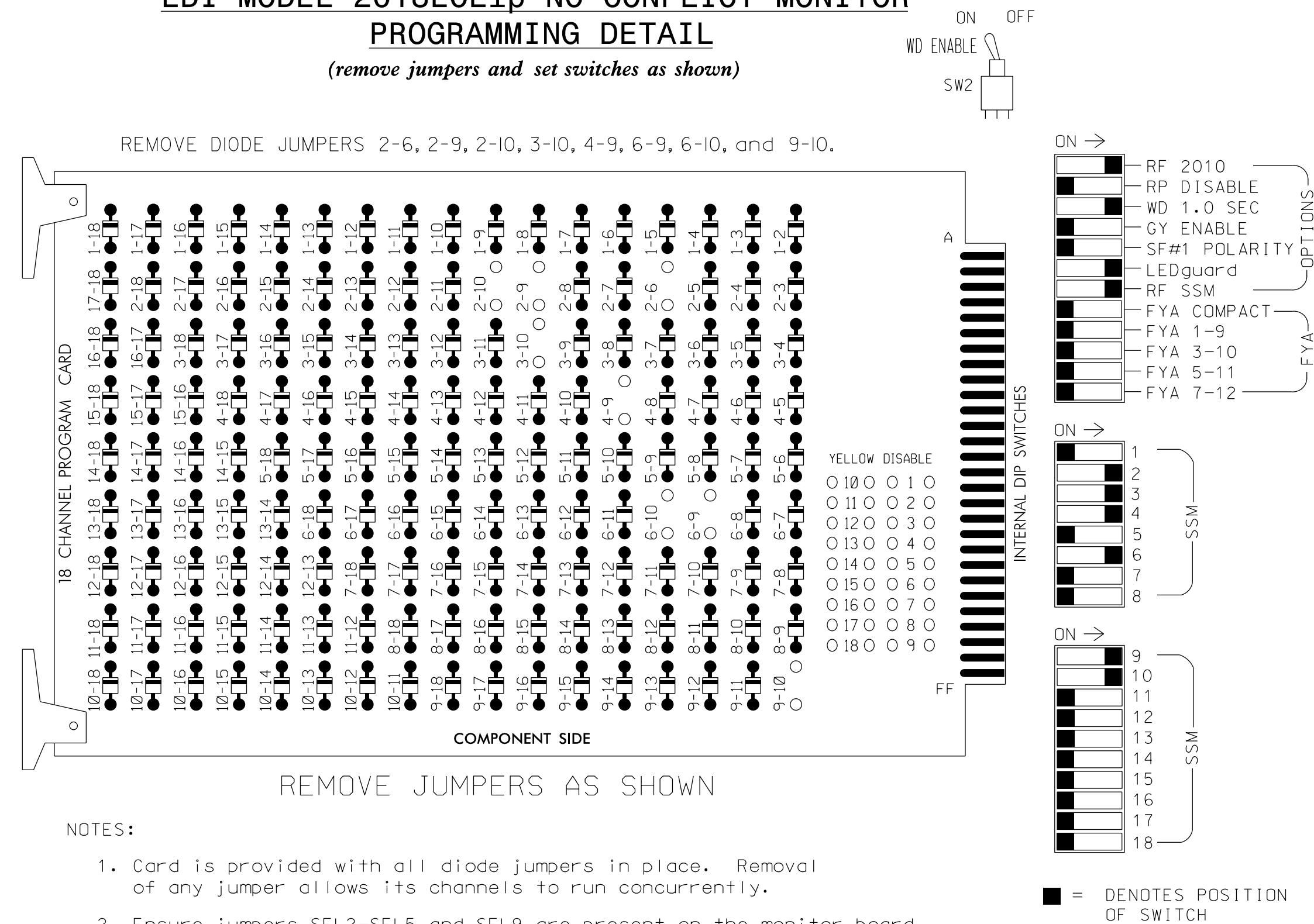
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

 DRMP, Inc. 8000 Regency Parkway, Suite 175 Cary, NC 27518 NC License No. C-2213 (919) 650-1038	Prepared for the Offices of: NC 87 (E. Webb Avenue) at Whitsett Street/Sidney Avenue	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER J. M. MOON 022516	
	Division 7 Alamance County Burlington PLAN DATE: December 2017 REVIEWED BY: AJ Davis PREPARED BY: J Le REVIEWED BY: LM Moon	DocuSigned by: Lisa M. Moon 6/13/2018 58c588d3d0421 SIGNATURE DATE	SIG. INVENTORY NO. 07-0017
	SCALE 0 30 1"=30'	REVISIONS INIT. DATE	DATE

13-JUN-2018 1:58 PM
 R:\6015\17\17071\17071.dgn
 AT CAR-PLANTON-W7

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.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CNU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	SPARE	SPARE	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	31,32	41,42, 43	NU	NU	61,62	NU	NU	NU	NU	23,24	63,64	NU	NU	NU	NU
RED		128		116	101			134					A121	A124				
YELLOW		129		117	102			135					A122	A125				
GREEN		130		118	103			136					A123	A126				
RED ARROW																		
YELLOW ARROW																		
GREEN ARROW																		

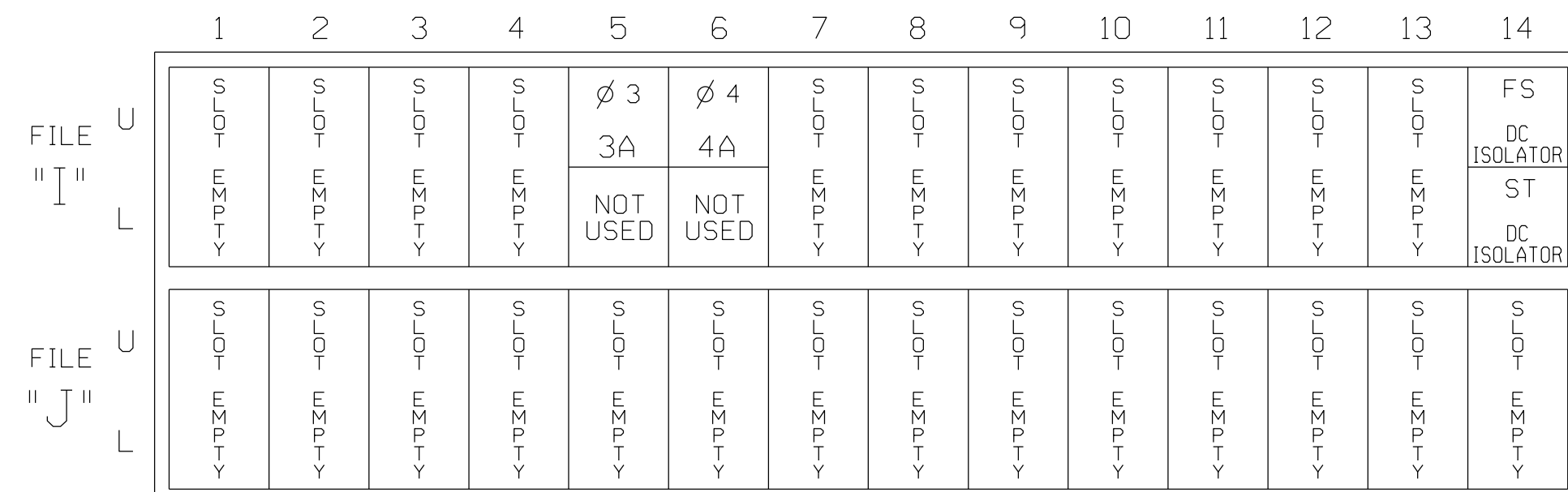
NU = Not Used

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,S4,S5,S8,AUXS1,AUXS2
 PHASES USED.....2,3,4,6
 OVERLAP "A".....2+4 TOL
 OVERLAP "B".....3+6 TOL
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

INPUT FILE POSITION LAYOUT

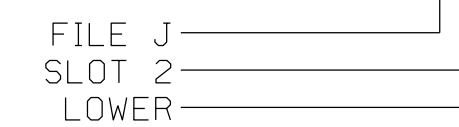
(front view)



INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
3A	TB4-5,6	15U	58	3	3	YES				S
4A	TB4-9,10	16U	41	4	4	YES		10		S

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0017
 DESIGNED: DECEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:

Plans Prepared By: **DRMP**

DRMP, Inc.
 8000 Regency Parkway, Suite 175
 Cary, NC 27518
 NC License No. C-2215 (019) 650-1038

750 N. Greenfield Pkwy, Garner, NC 27529

NC 87 (E. Webb Avenue) at Whitsett Street/Sidney Avenue

Division 7 Alamance County Burlington

PLAN DATE: December 2017 REVIEWED BY: AJ Davis
 PREPARED BY: J Le REVIEWED BY: LM Moon

REVISIONS INIT. DATE

DocuSigned by: Lisa M. Moon 6/13/2018
 SEAL 022516
 S16CES88D3100421 DATE
 SIG. INVENTORY NO. 07-0017

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 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[A] TYPE: OTHER/ECONLITE

  PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . .
LAG X PH . X . . . . .
LAG 2 PH . . . . .

LAG GRN 2.0 YEL 3.8 RED 2.1 ADV GRN 0.0
    
```

Toggle Once

OVERLAP B

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

```

TMG VEH OVLP...[B] TYPE: OTHER/ECONLITE

  PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . X . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . .
LAG X PH . . X . . X . . . . .
LAG 2 PH . . . . .

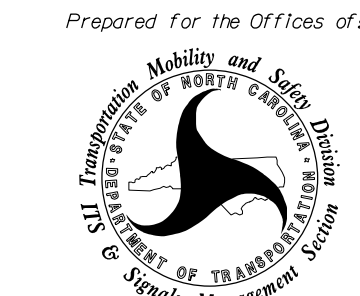

LAG GRN 5.0 YEL 3.8 RED 1.4 ADV GRN 0.0
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0017
 DESIGNED: DECEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail - Sheet 2 of 2

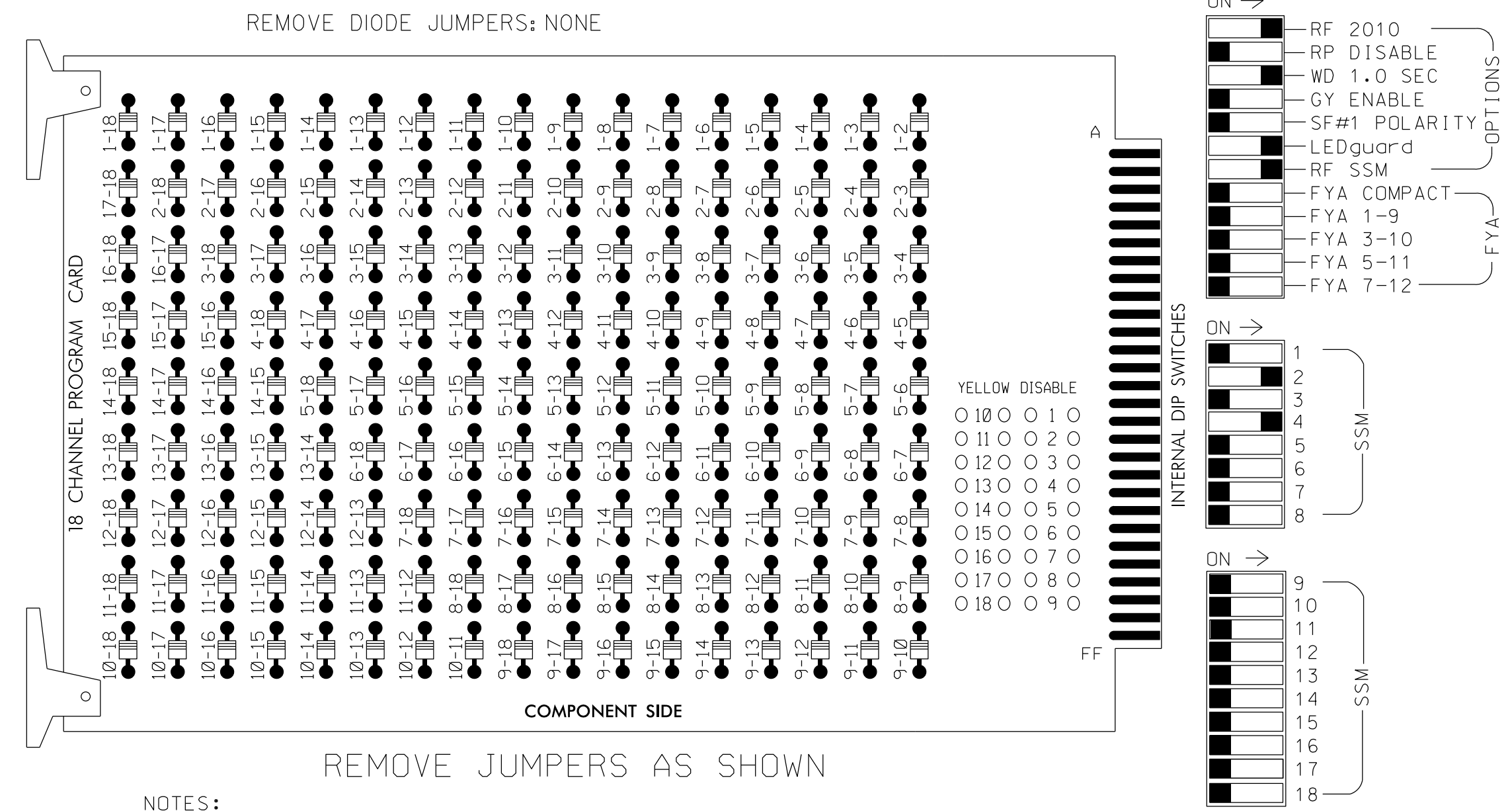
**DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED**

<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: small;">Prepared for the Offices of:</p> <div style="text-align: center;">  </div> <p style="font-size: x-small;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>NC 87 (E. Webb Avenue) at Whitsett Street/Sidney Avenue</p> <p>Division 7 Alamance County Burlington</p> <p>PLAN DATE: December 2017 REVIEWED BY: AJ Davis</p> <p>PREPARED BY: J Le REVIEWED BY: LM Moon</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISIONS	INIT.	DATE										<div style="text-align: center;">  </div> <p style="font-size: x-small;">DocuSigned by: Lisa M. Moon 6/13/2018</p> <p style="font-size: x-small;">DATE: _____ SIG. INVENTORY NO. 07-0017</p>
REVISIONS	INIT.	DATE												



**EDI MODEL 2018ECLip-NC CONFLICT MONITOR
PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

1. To prevent "Flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 2 Green.
3. 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.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5
 PHASES USED.....2,4
 OVERLAPS.....NONE

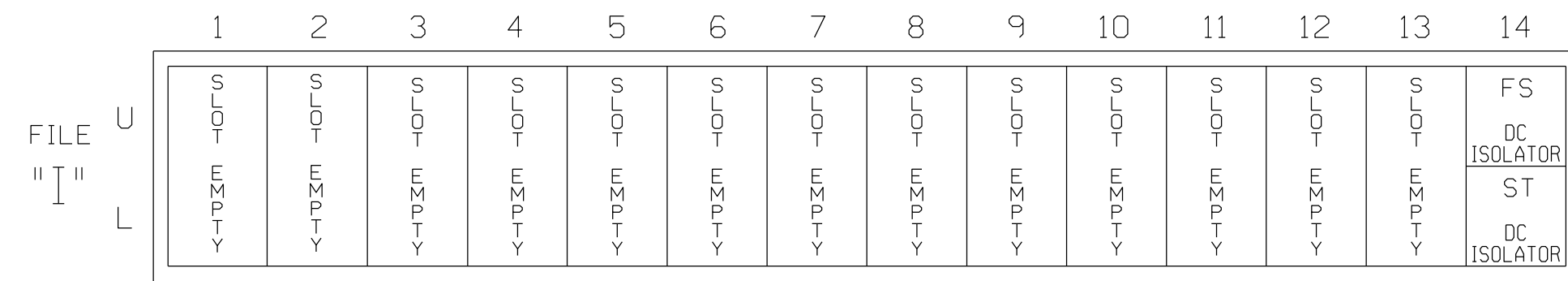
SIGNAL HEAD HOOK-UP CHART

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, 43,44	NU	NU	NU	NU	NU	NU	NU
RED		128			101							
YELLOW		129			102							
GREEN		130			103							
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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0018
 PREPARED: October 2017
 SEALED: 5/16/2018
 REVISED: N/A

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 Detail

Prepared For:

750 N. Greenfield Pkwy, Garner, NC 27529

US 70/NC 62 (Church Street)
 At
 Front Street

Division 7 Alamance County Burlington

PLAN DATE: October 2017 REVIEWED BY: E. W. Sirgany

PREPARED BY: J. Smith RKA PROJ. NO:

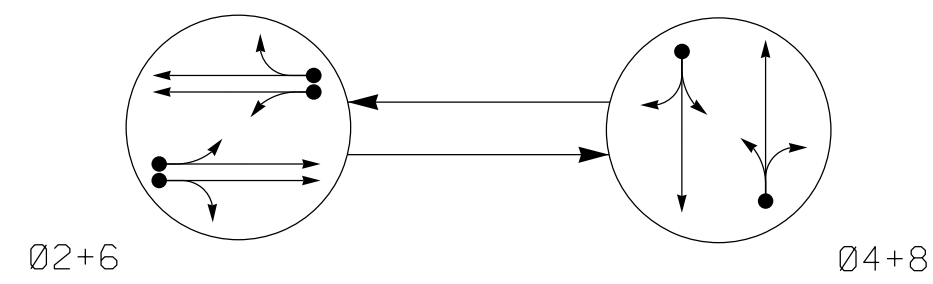
REVISIONS	INIT.	DATE

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

SIG. INVENTORY NO. 07-0018

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

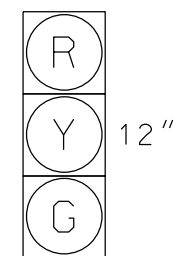
- ← DETECTED MOVEMENT
- ← UNDETECTED MOVEMENT (OVERLAP)
- ← UNSIGNALIZED MOVEMENT
- ← → PEDESTRIAN MOVEMENT

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, 83	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
41, 42
61, 62
81, 82, 83

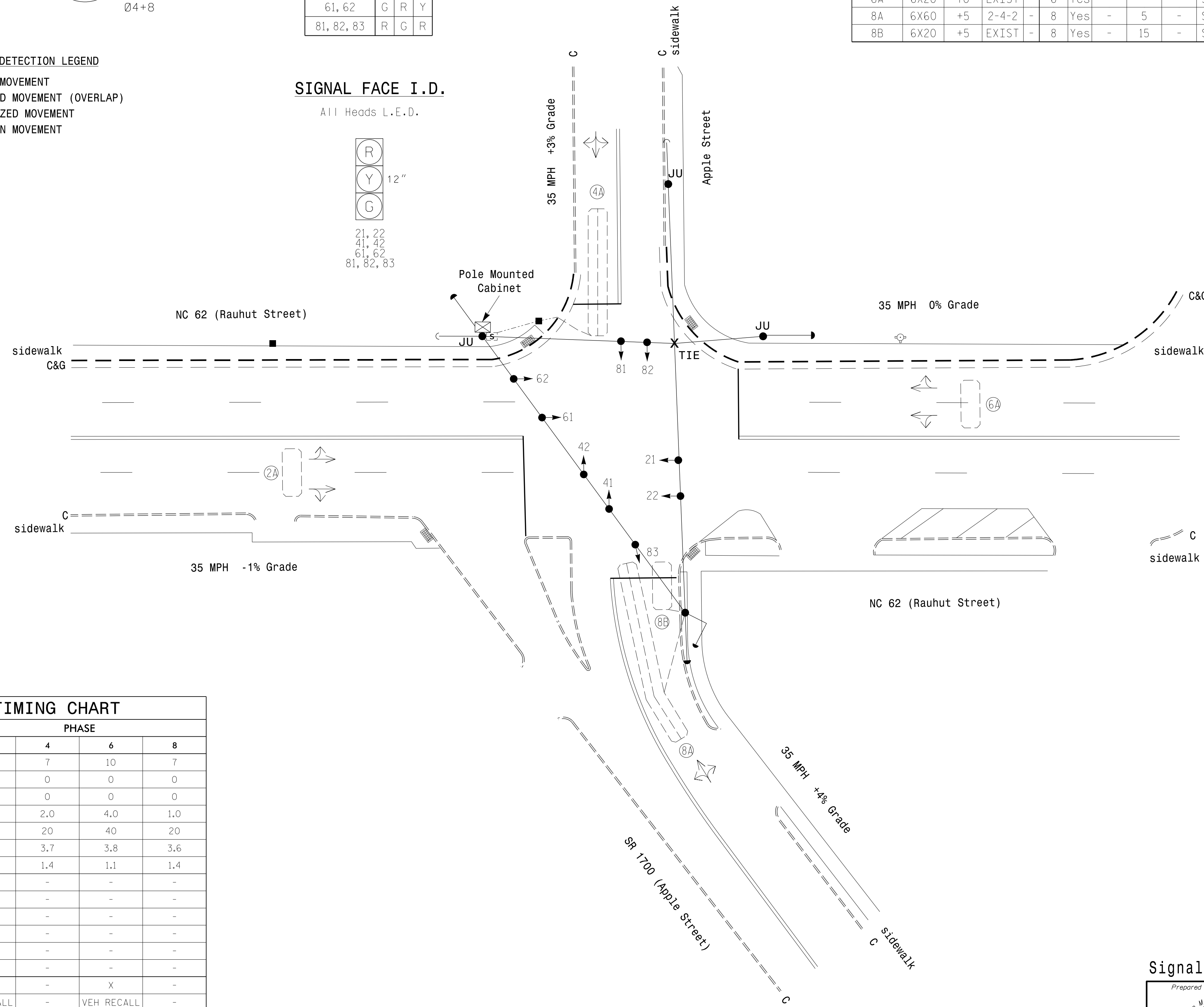
ASC/3 DETECTOR INSTALLATION CHART

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	6X20	70	EXIST	-	2	Yes	-	-	-	S	-	X
4A	6X40	+10	2-4-2	-	4	Yes	-	5	-	S	-	X
6A	6X20	70	EXIST	-	6	Yes	-	-	-	S	-	X
8A	6X60	+5	2-4-2	-	8	Yes	-	5	-	S	-	X
8B	6X20	+5	EXIST	-	8	Yes	-	15	-	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.
- 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.
- Remove existing "Left Turn Only" sign-(R3-5L) for the WB approach.
- 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 *	4.0	2.0	4.0	1.0
Max 1 *	40	20	40	20
Yellow	3.9	3.7	3.8	3.6
Red Clear	1.0	1.4	1.1	1.4
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	X	-
Recall Position	VEH RECALL	-	VEH RECALL	-
Dual Entry	-	X	-	X
Simultaneous Gap	X	X	X	X

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

LEGEND

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

Signal Upgrade

Prepared for the Offices of:

NC 62 (Rauhut Street) at SR 1700 (Apple Street) / Apple Street

Division 7 Alamance County Burlington

PLAN DATE: December 2017 REVIEWED BY: AJ Davis

PREPARED BY: J Le REVIEWED BY: LM Moon

REVISIONS: INIT. DATE

SCALE: 1"=20'

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

750 N. Greenfield Pkwy, Garner, NC 27529

SEAL PROFESSIONAL ENGINEER LISA M. MOON

DocuSigned by: Lisa M. Moon 6/13/2018

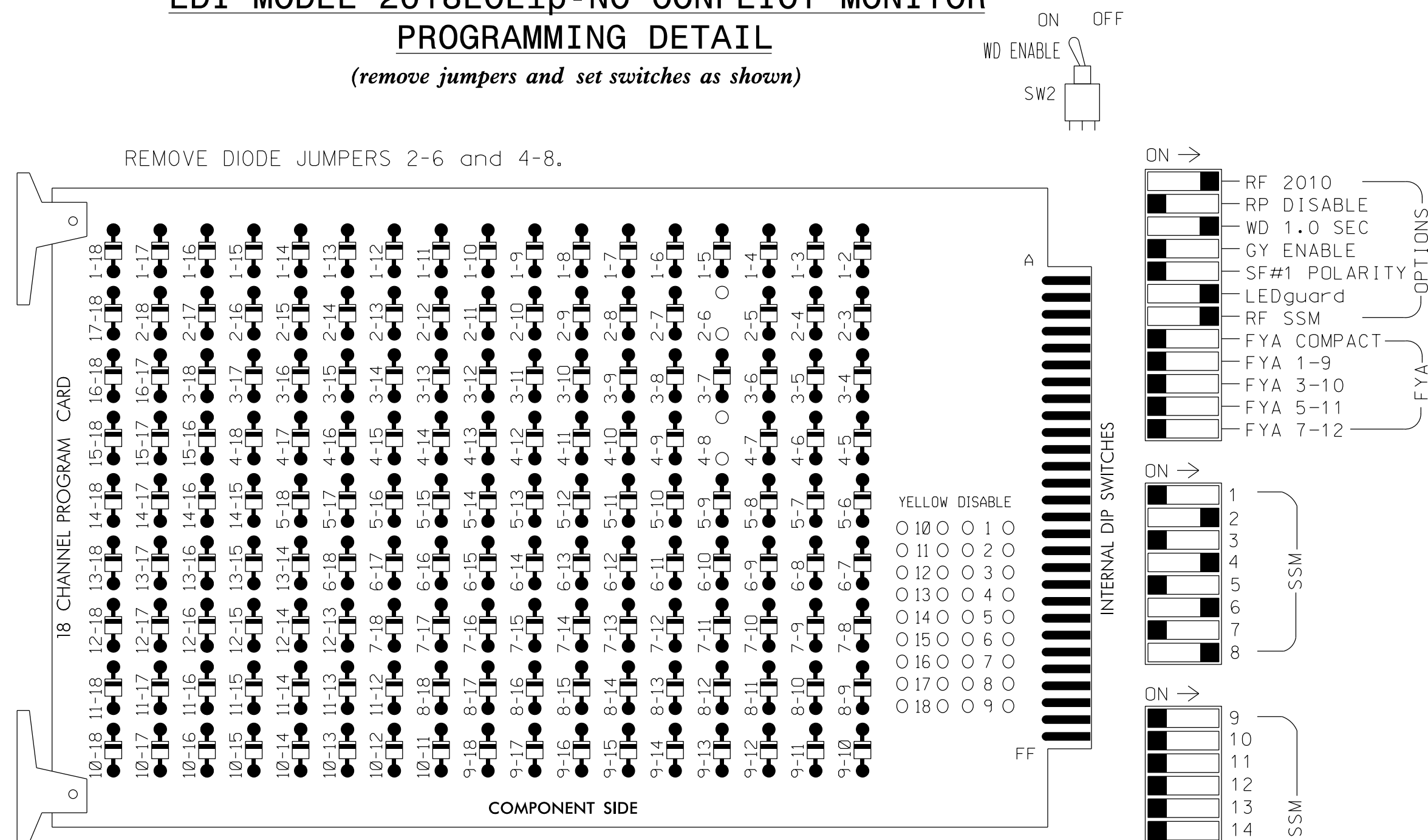
SIG. INVENTORY NO. 07-0020

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13-JUN-2018 16:59 R:\MUG015\MT\off\cfs\signal\Design\signal\07-0020.dgn P:\MTCH AT CAR-RLANTON-WT

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.

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	81,82,83	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.....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

INPUT FILE POSITION LAYOUT

(front view)

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

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

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB21-3,4	I2U	39	2	2	YES				S
4A	TB21-7,8	I4U	41	4	4	YES		5		S
6A	TB21-11,12	I6U	40	6	6	YES				S
8A	TB22-1,2	I8U	42	8	8	YES		5		S
8B	TB24-1,2	I8L	46	18	8	YES		15		S

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0020
 DESIGNED: DECEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

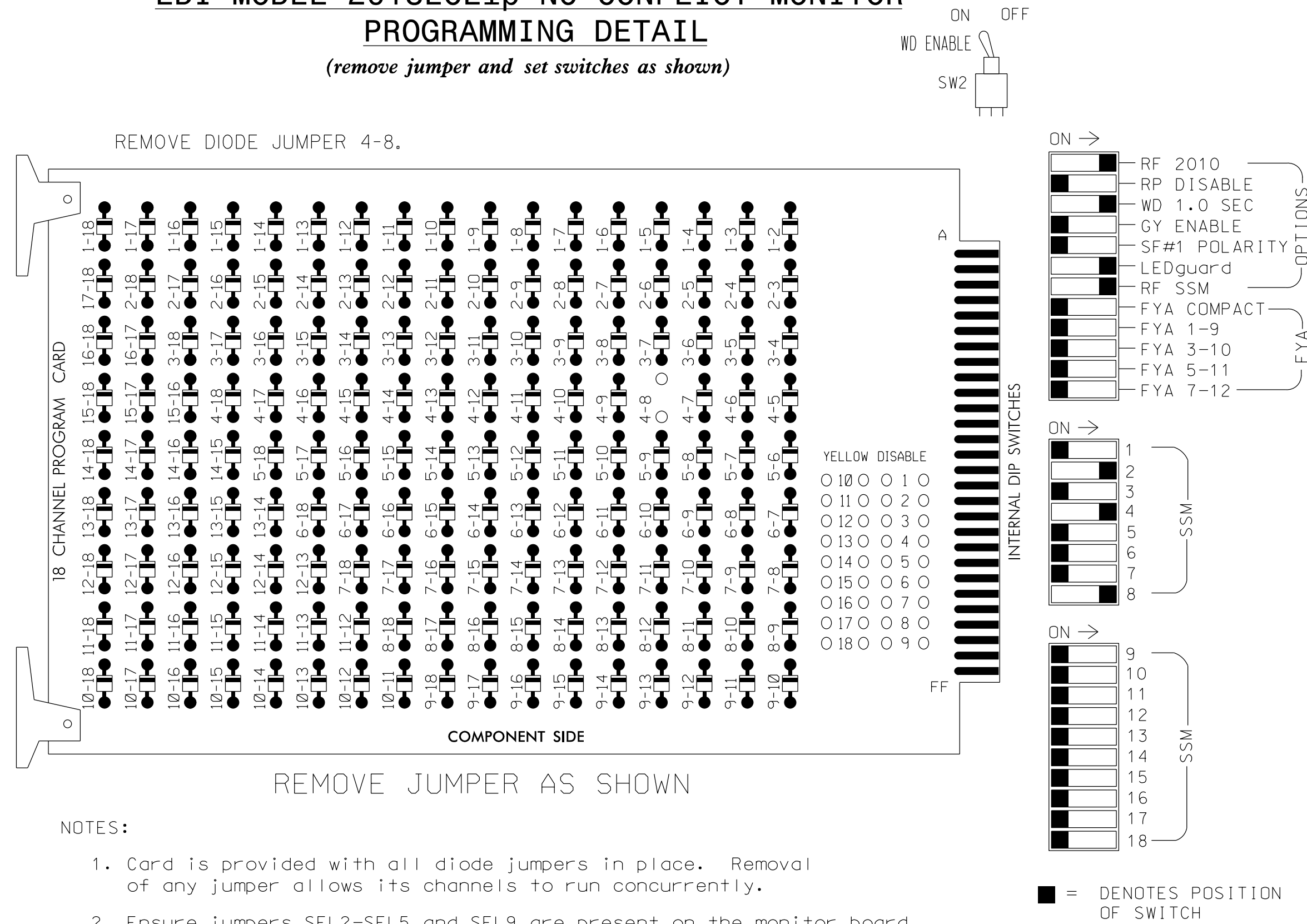
Electrical Detail

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

<p style="font-size: x-small;">Prepared for the Offices of:</p> <p style="font-size: x-small;">DRMP, Inc. 8000 Regency Parkway, Suite 175 Cary, NC 27519 NC License No. C-2213 (919) 650-1038</p>	<p style="font-weight: bold;">NC 62 (Rauhut Street) at SR 1700 (Apple Street) / Apple Street</p> <p style="font-size: x-small;">Division 7 Alamance County Burlington</p> <p style="font-size: x-small;">PLAN DATE: December 2017 REVIEWED BY: AJ Davis PREPARED BY: DJ White REVIEWED BY: LM Moon</p>	<p style="font-size: x-small;">SEAL</p> <p style="font-size: x-small;">DocuSigned by: Lisa M. Moon 6/13/2018</p>								
	<p style="font-size: x-small;">REVISIONS</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	NO.	DESCRIPTION	INIT.	DATE					<p style="font-size: x-small;">DATE</p>
NO.	DESCRIPTION	INIT.	DATE							

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.
3. The cabinet and controller are part of the Burlington-Graham Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22, 23	NU	NU	41,42	NU	NU	NU	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101						107							
YELLOW		129			102						108							
GREEN		130			103						109							
RED ARROW																		
YELLOW ARROW																		
GREEN ARROW																		

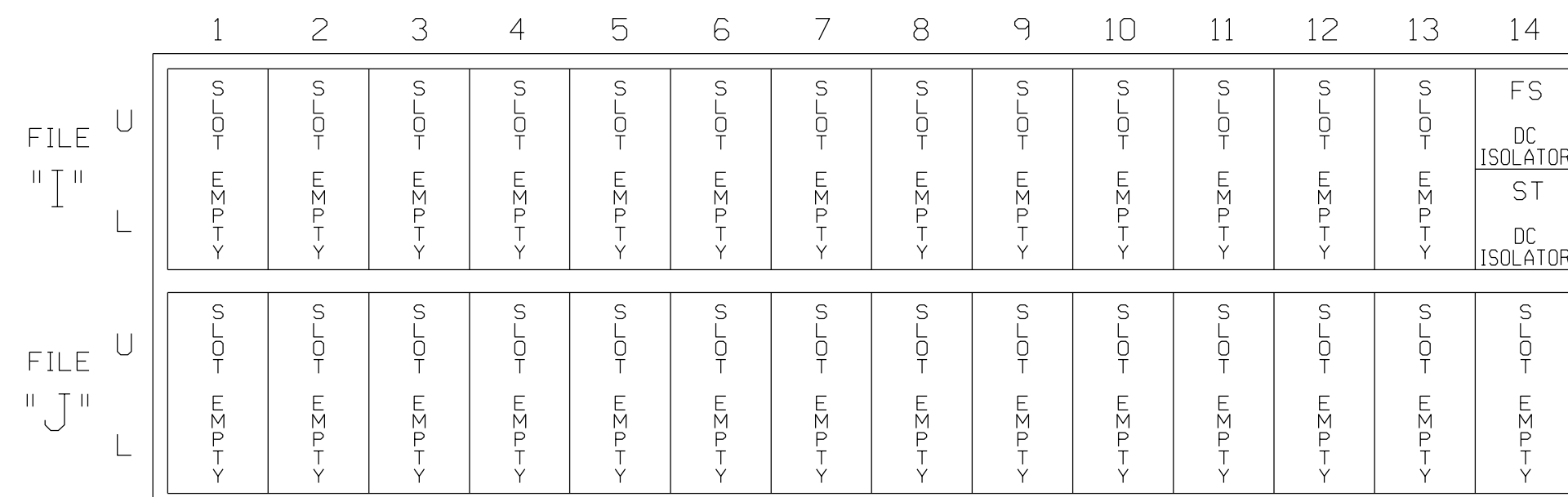
NU = Not Used

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,S11
 PHASES USED.....2,4,8
 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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0021
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

US 70-NC 62 (N. Church Street)

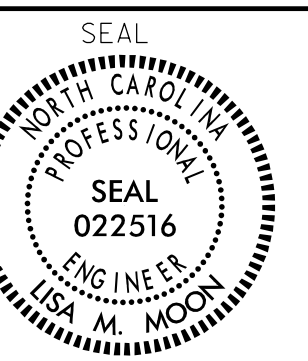
at
 NC 62 (W. Holt Street) /
 W. Holt Street
 Division 7 Alamance County Burlington

PLAN DATE: November 2017 REVIEWED BY: AJ Davis

PREPARED BY: DJ White REVIEWED BY: LM Moon

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSigned by:
 Lisa M. Moon
 6/13/2018
 DATE
 SIG. INVENTORY NO. 07-0021

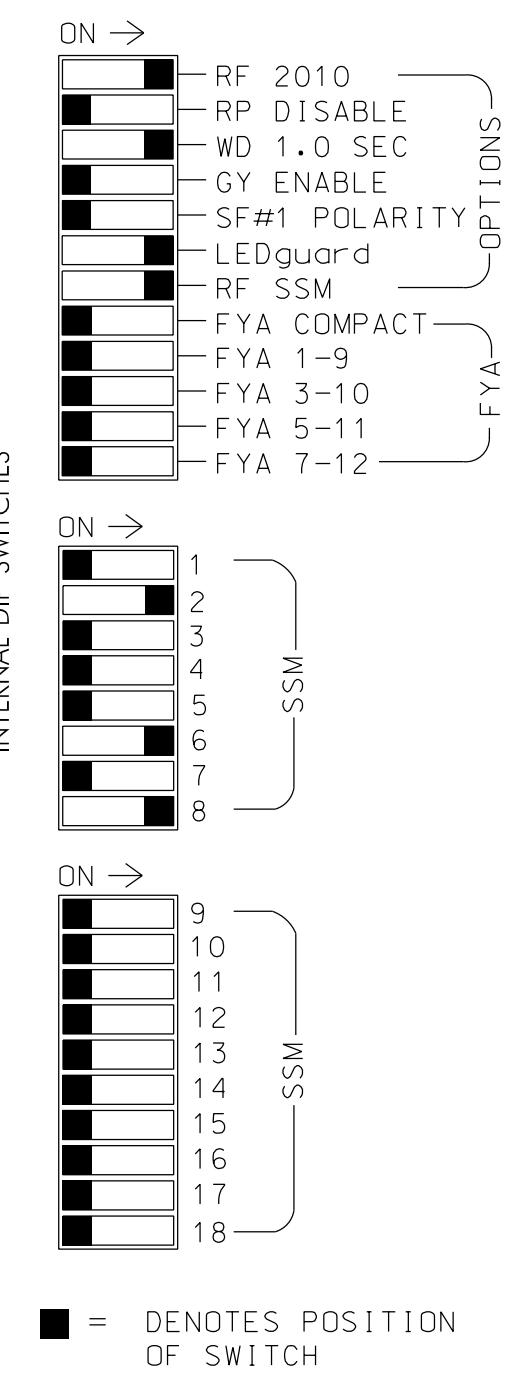
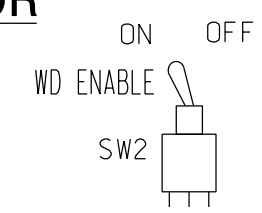
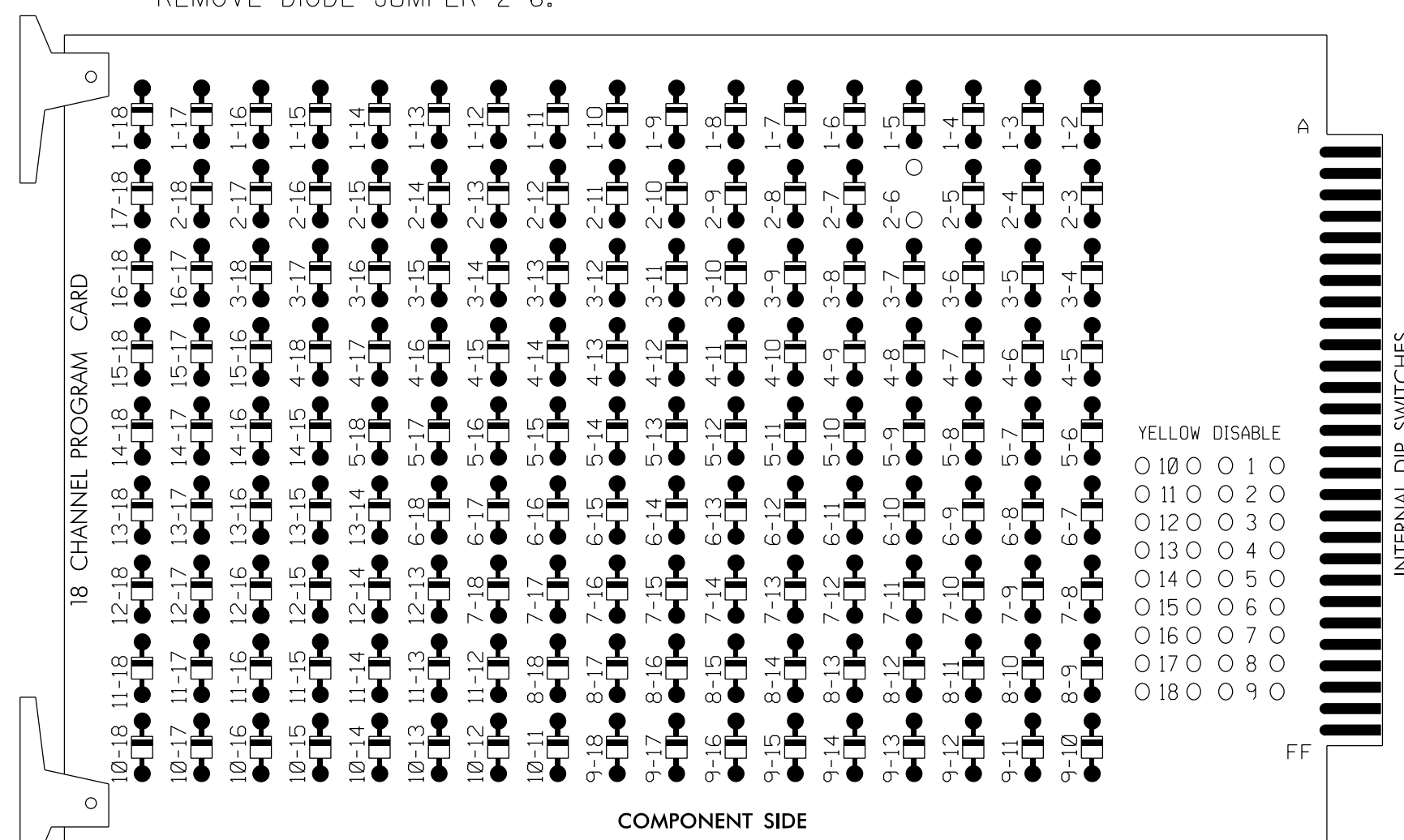


750 N. Greenfield Pkwy, Garner, NC 27529

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)

REMOVE DIODE JUMPER 2-6.



REMOVE JUMPER AS SHOWN

NOTES:

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

NOTES

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

EQUIPMENT INFORMATION

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

SIGNAL HEAD HOOK-UP CHART

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

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

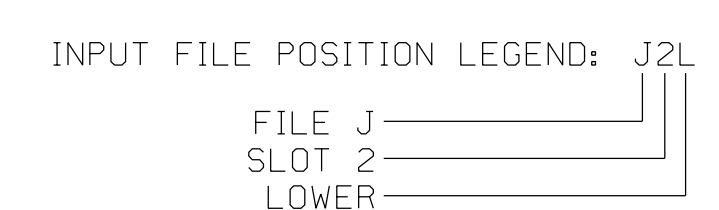
FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	FS DC ISOLATOR
L	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	ST DC ISOLATOR
U	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	∅ B	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	PRE1 AC ISOLATOR
L	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	∅ B	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	←-T-0-0	NOT USED

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

FS = FLASH SENSE
 ST = STOP TIME
 PRE = PREEMPT

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
8A	TB5-9,10	J6U	42	8	8	YES		3		S
8B	TB5-11,12	J6L	46	18	8	YES		15		S



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0022
 DESIGNED: January 2018
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 13:38
 ***DOTK:RIS.COM**C:\projects\BURLA\Transportation\Traffic\Currr#100056469 U-6015 B-G Sig Sys*Task 05_11_15\Signal#06as\gn\WIF:Rng07-0022E.dgn
 ALEX3361 AT LUS510649

Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

NC 87-100 (E. Webb Avenue)
 at
 Gilmer Street

Division 7 Alamance County Burlington

PLAN DATE: January 2018 REVIEWED BY: PL Alexander

PREPARED BY: AM Encarnacion REVIEWED BY: MB Toth

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Developed by: Melissa B. Toth DATE: 6/11/2018

SIG. INVENTORY NO. 07-0022

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

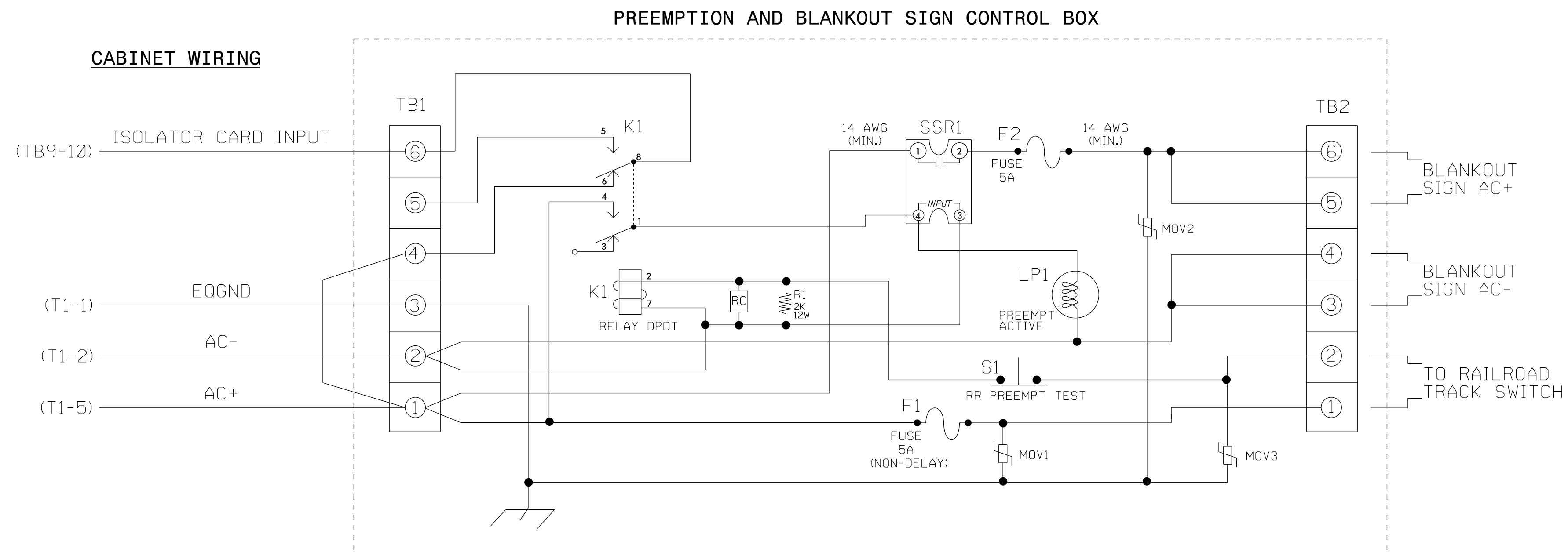
Place cursor in [] next to Preempt Plan and press 1. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Railroad Preempt #1.

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	
ENA TRL	
DWEL VEH . X X	
DWEL PED	
DWEL OLP	
CYC VEH	
CYC PED	
CYC OLP	
EXIT PH . X X	
EXIT CAL	
SP FUNC	

ENABLE... 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. 255	1 2551	1125.5125.5	
-----MIN	GRIEXT GRIMX	GRI YELI RED	
TRACK CLEAR 181	01 01	3.11 2.6	
-----MIN	DLIPMTEXTIMX	TMI YELI RED	
DWL/CYC-EXIT 101	0.01	0125.5125.5	
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

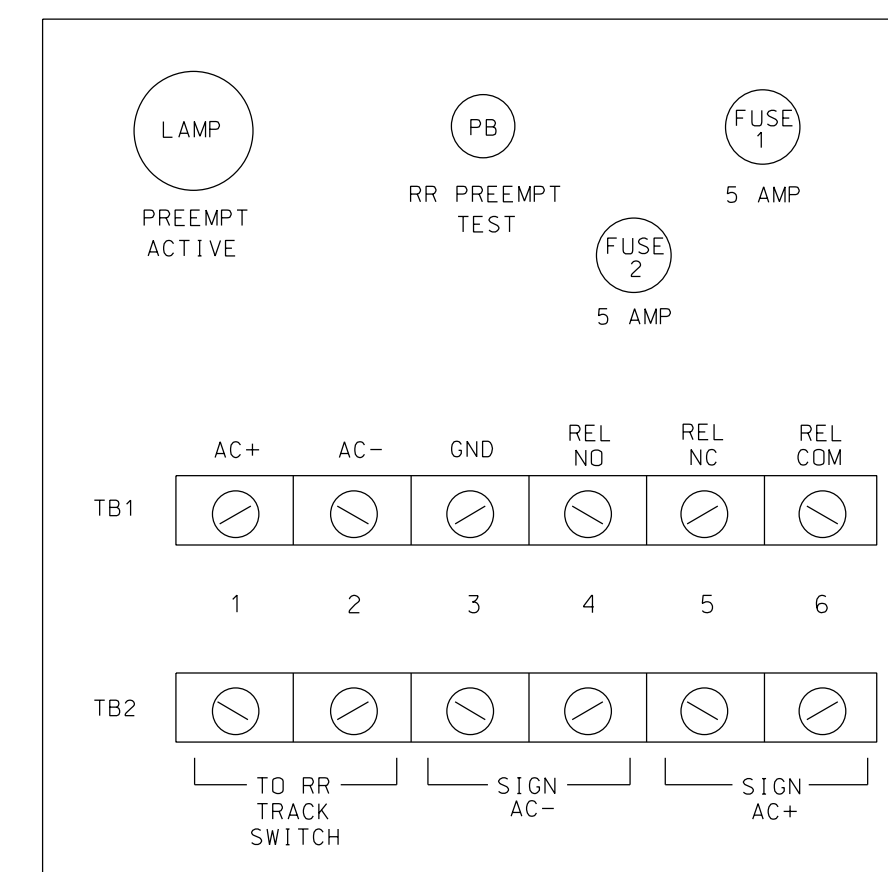
(wire as shown below)



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!! Terminal TB22-4 (on input panel) shall be connected to AC- (jumper may have to be added).

FRONT VIEW



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0022
 DESIGNED: January 2018
 SEALED: 6/7/2018
 REVISED: N/A

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

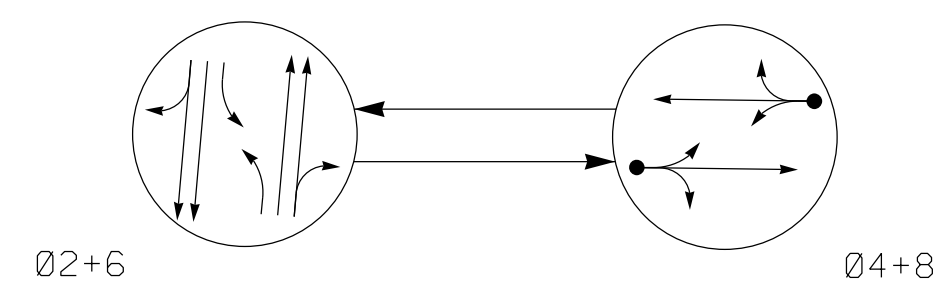
Electrical Detail - Sheet 2 of 2

	NC 87-100 (E. Webb Avenue) at Gilmer Street		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 025892 MELISSA B. TOTH
	Division 7 Alamance County Burlington PLAN DATE: January 2018 REVIEWED BY: PL Alexander PREPARED BY: AM Encarnacion REVIEWED BY: MB Toth	REVISIONS INIT. DATE _____ _____ _____	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/11/2018
 Melisa B. Toth
 DATE
 SIG. INVENTORY NO. 07-0022

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

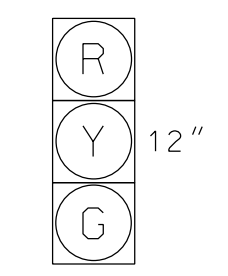
- ◄●► DETECTED MOVEMENT
- ◄◄◄ UNDETECTED MOVEMENT (OVERLAP)
- ◄◄◄ UNSIGNALIZED MOVEMENT
- ◄◄◄ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

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

SIGNAL FACE I.D.

All Heads L.E.D.



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

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
4A	6X60	+5	2-4-2	-	4	Yes	-	5	-	S	-	X
8A	6X60	+5	2-4-2	-	8	Yes	-	5	-	S	-	X

2 Phase Semi-Actuated (Burlington-Graham Signal System)

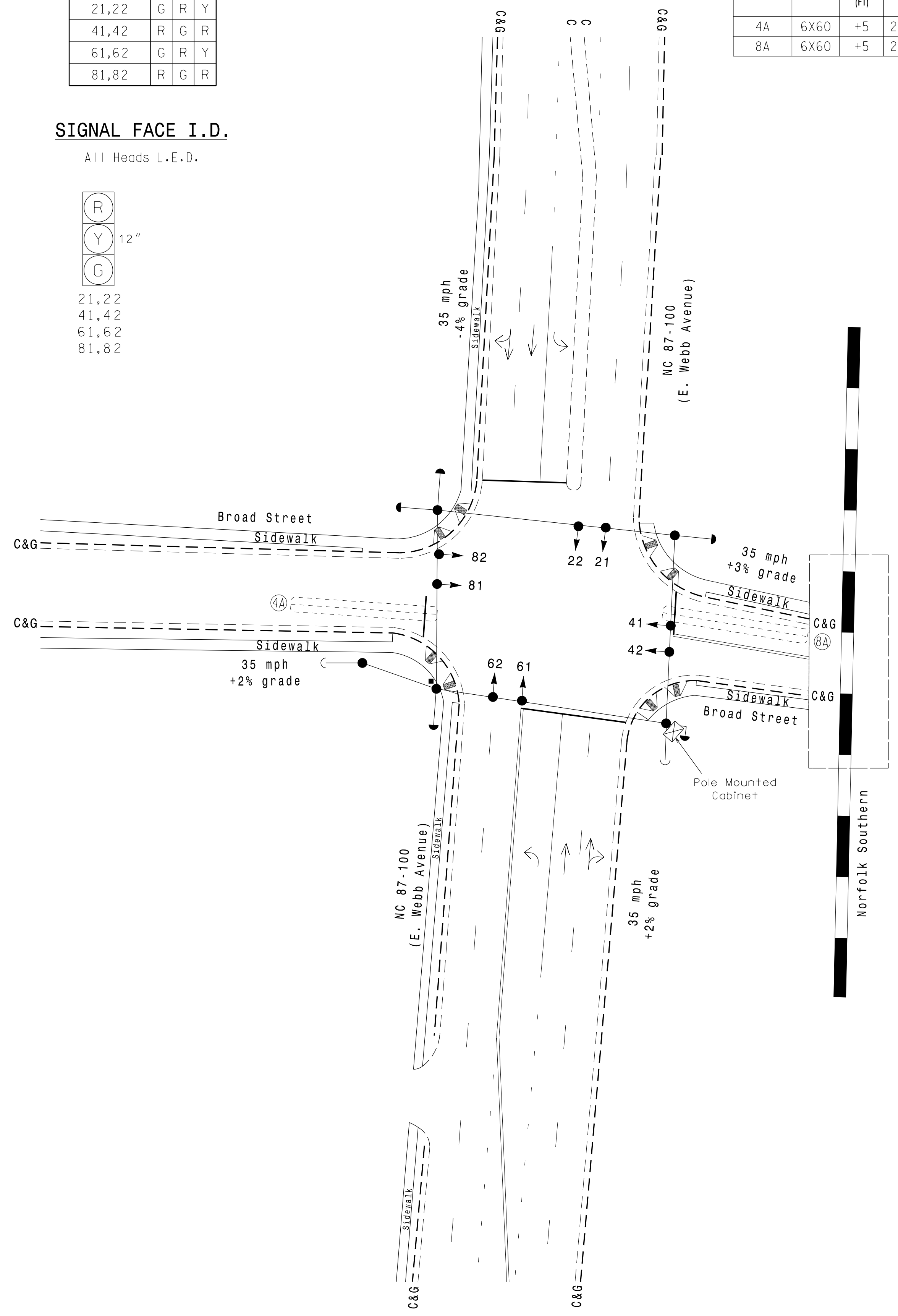
NOTES

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. 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.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Pavement markings are existing.
6. Set all detector units to presence mode.
7. 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	1.0	0.0	1.0
Max 1 *	45	20	45	20
Yellow	3.7	3.7	4.1	3.7
Red Clear	1.4	1.7	1.4	1.7
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 |
|----------|----------|
| | |
| | N/A |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| N/A | |
| | |
| N/A | |

Signal Upgrade

Prepared for the Offices of:

NC 87-100 (E. Webb Avenue) at Broad Street

Division 7 Alamance County Burlington

PLAN DATE: October 2017 REVIEWED BY: AM Encarnacion

PREPARED BY: VJ Paul REVIEWED BY: MB Toth

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 0 30 1"=30'

REVISIONS: INIT. DATE

DESIGNED BY: Melissa B. Toth 6/7/2018

SIGNATURE: DATE

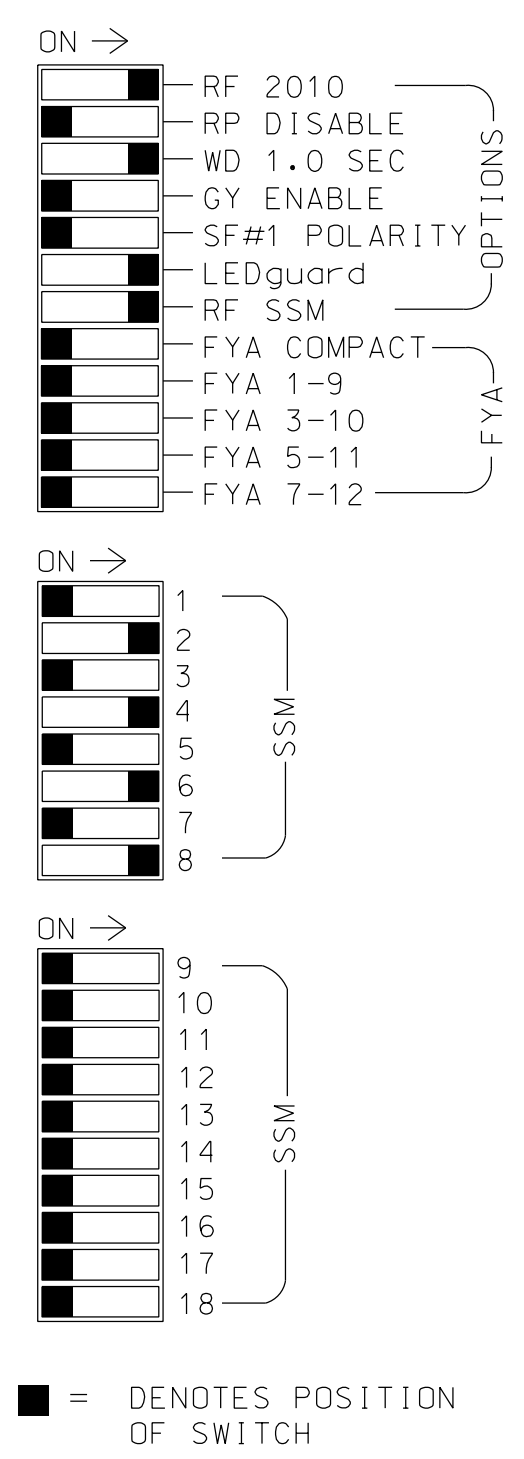
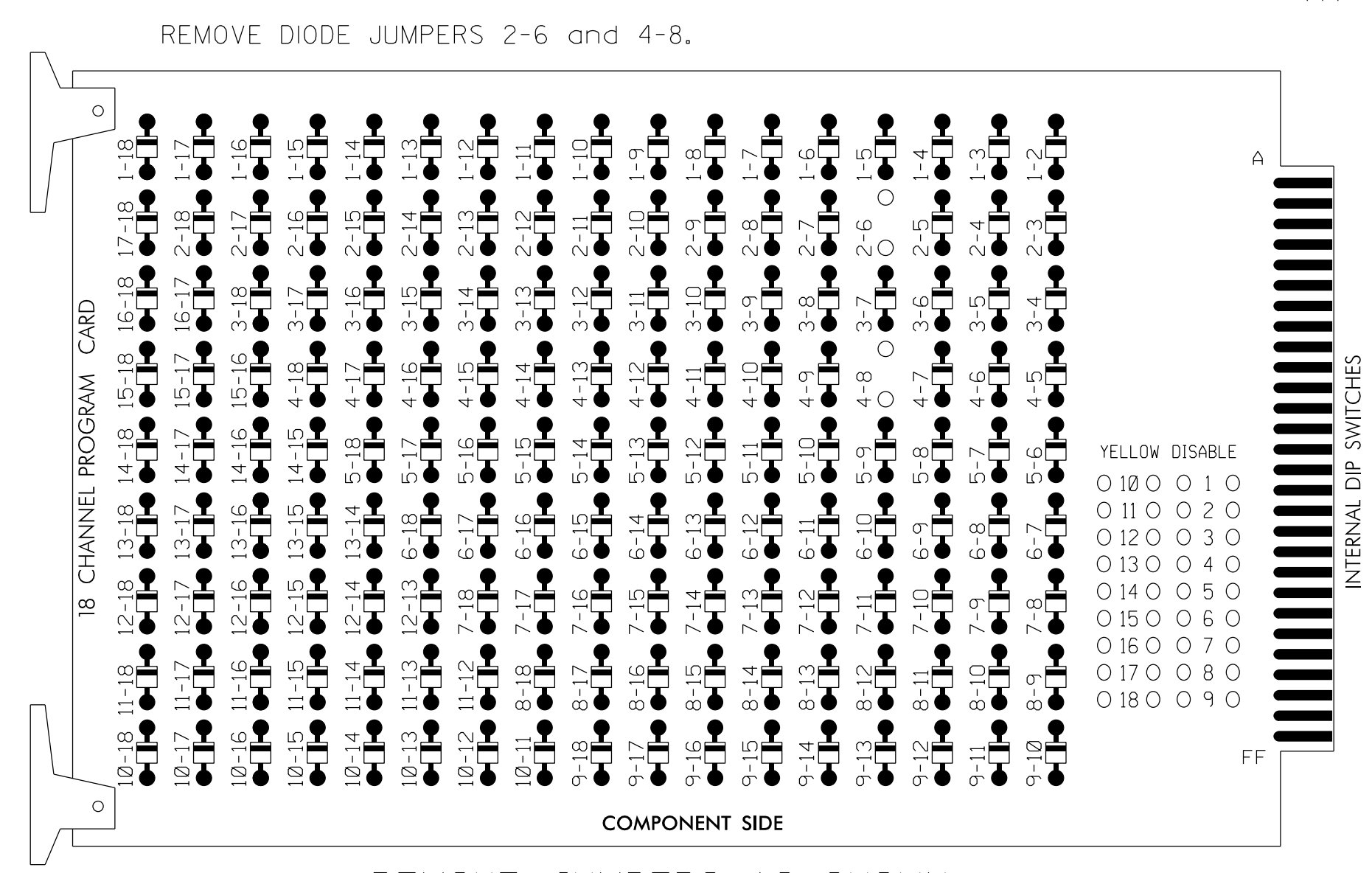
SIG. INVENTORY NO. 07-0023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

07-JUN-2018 11:11:01 D:\Projects\atkins\work\Projects\00056469 U-6015 B-G S19 SystemTask 05_11_Signal\Des\gpm07-0023.dgn ALEX3361 AT LUS310649

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.....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

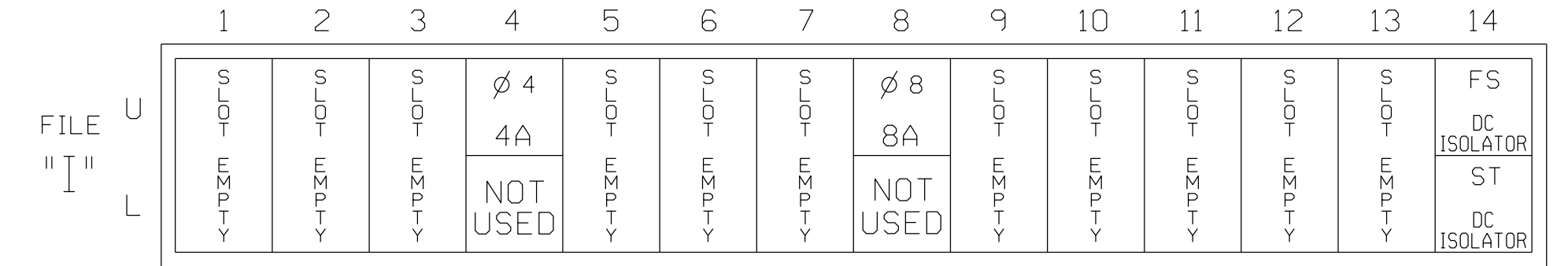
SIGNAL HEAD HOOK-UP CHART

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)



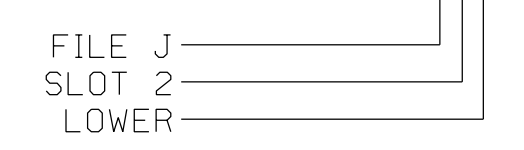
EX. : 1A, 2A, ETC. = LOOP NO.'S

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
4A	TB21-7,8	14U	41	4	4	YES		5		S
8A	TB22-1,2	18U	42	8	8	YES		5		S

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0023
 DESIGNED: OCTOBER 2017
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 13:38 D:\P\consort\atkins\Traffic\curry\00056469 U-6015 B-G S1g Sys\Task 05_11_Signal\Des\gym\tr-fig\07-0023E.dgn ALEX3361 AT LUS210649

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

Electrical Detail

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

 750 N. Greenfield Pkwy, Garner, NC 27529

NC 87-100 (E. Webb Avenue) at Broad Street	
Division 7	Alamance County Burlington
PLAN DATE: October 2017	REVIEWED BY: AM Encarnacion
PREPARED BY: VJ Paul	REVIEWED BY: MB Toth
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

 SEAL
 025892
 ENGINEER
 MELISSA B. TOTH

6/11/2018
 DATE
 DATE
 SIG. INVENTORY NO. 07-0023

PHASING DIAGRAM

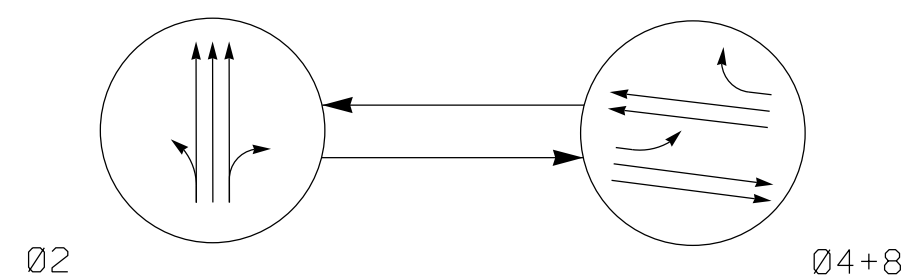
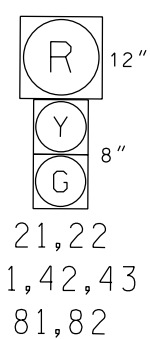


TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø2+6	Ø4+8	FLASH
21,22	G	R	Y
41,42,43	R	G	R
81,82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



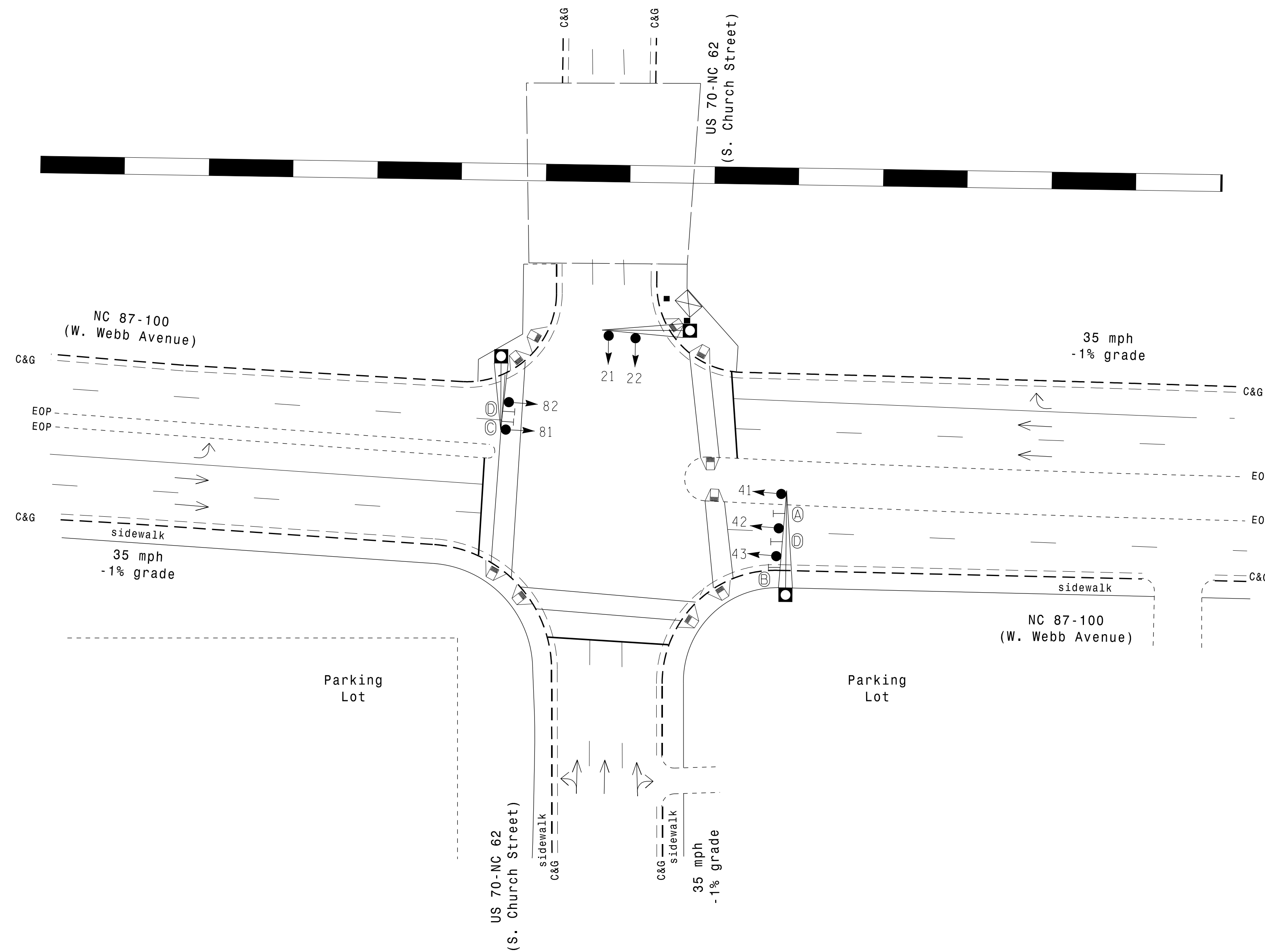
PHASING DIAGRAM DETECTION LEGEND

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

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.



LEGEND

PROPOSED	EXISTING
	N/A

ASC/3 TIMING CHART

FEATURE	PHASE		
	2	4	8
Min Green *	10	7	7
Walk *	0	0	0
Ped Clear	0	0	0
Veh. Extension *	-	-	-
Max I *	30	40	40
Yellow	3.9	3.9	3.9
Red Clear	2.1	1.9	1.8
Actuations B4 Add *	-	-	-
Seconds /Actuation *	-	-	-
Max Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Lacking 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 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

750 N. Greenfield Pkwy, Garner, NC 27529

US 70-NC 62 (S. Church Street) at NC 87-100 (W. Webb Avenue)

Division 7 Alamance County Burlington

PLAN DATE: September 2017 REVIEWED BY: AM Encarnacion

PREPARED BY: NA Ptak REVIEWED BY: MB Toth

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

SCALE: 1"=30'

6/7/2018

SIGNATURE: Melissa B. Toth

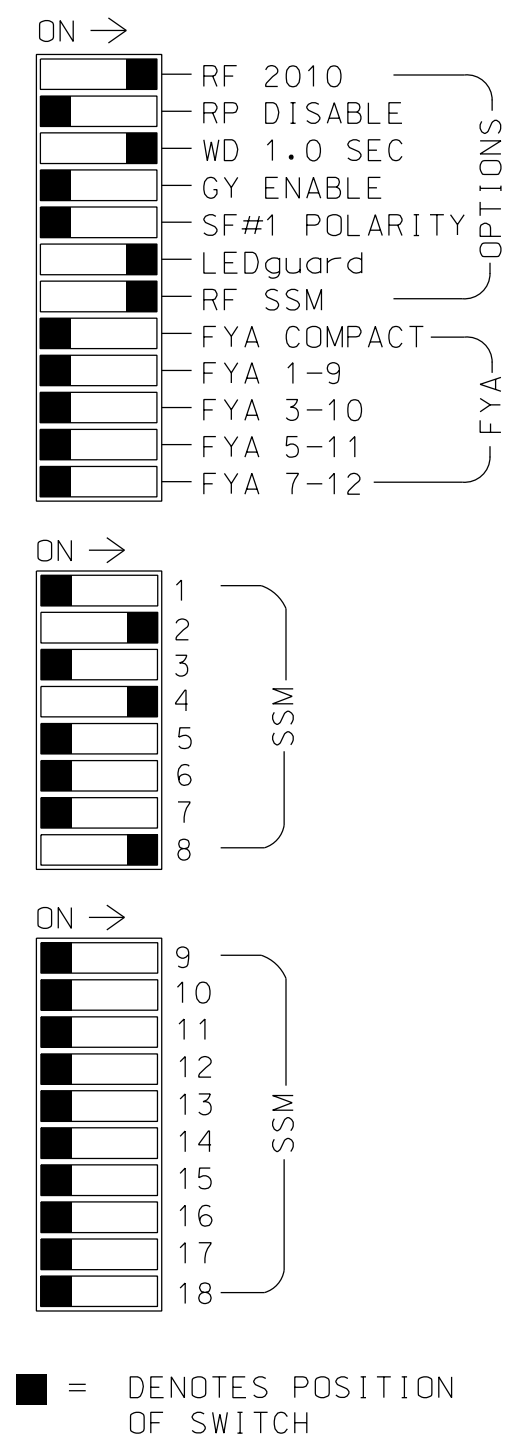
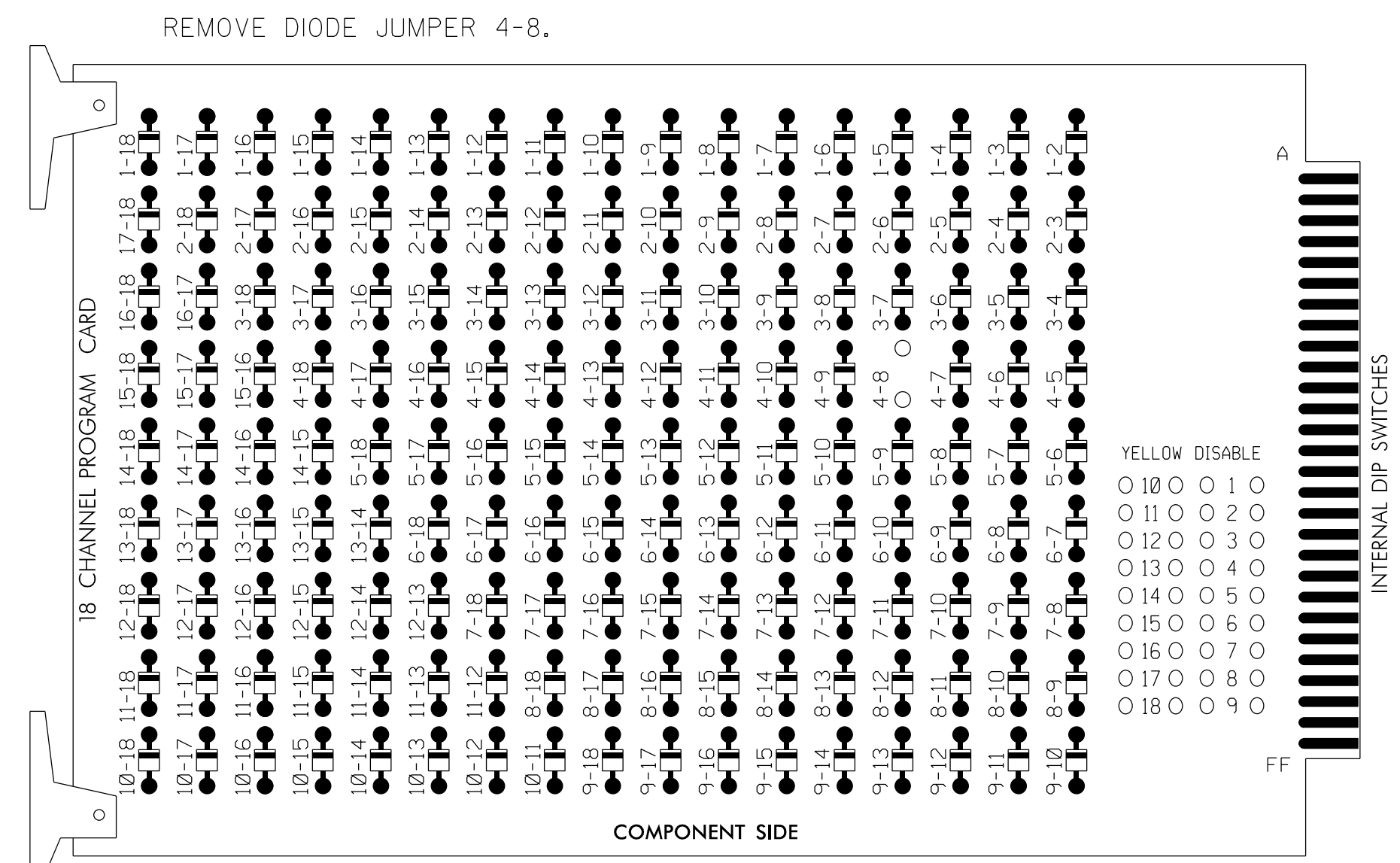
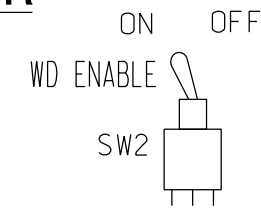
DATE: 6/7/2018

SIG. INVENTORY NO. 07-0027

07-JUN-2018 11:10
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 ALEX3361 AT LUS210649

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



REMOVE JUMPER 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.
3. Program phase 6 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.....S2,S5,S11
 PHASES USED.....2,4,8
 OVERLAPS.....NONE

PROJECT REFERENCE NO.	SHEET NO.
U-6015	Fig. 22.1

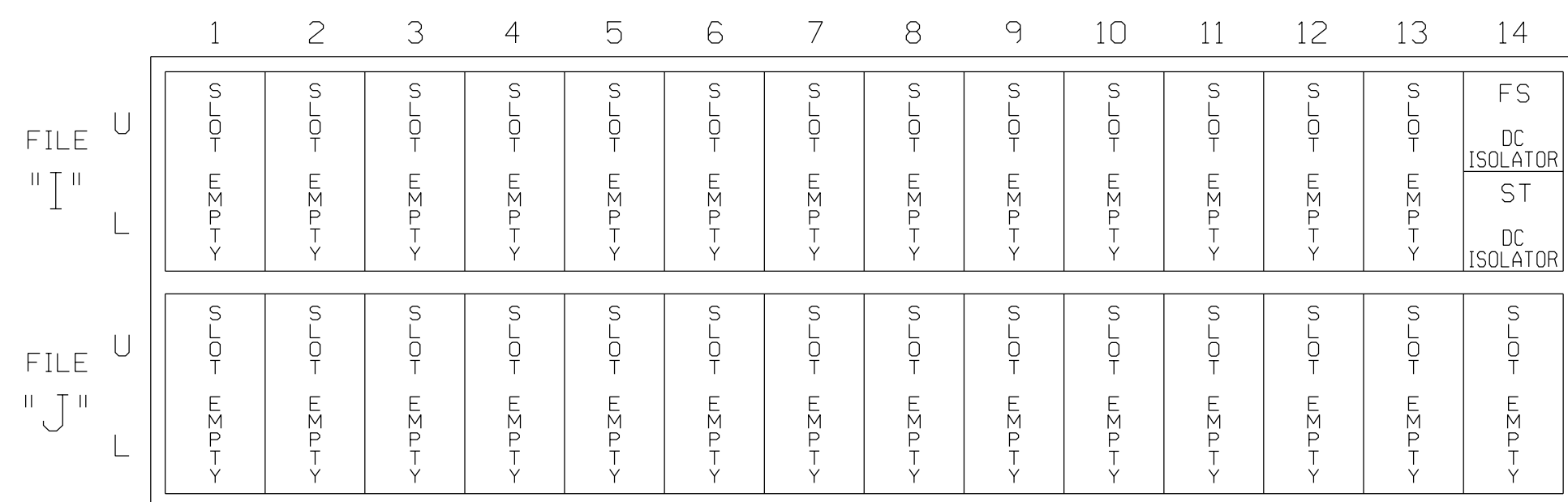
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42,43	NU	NU	NU	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101							107						
YELLOW		129			102							108						
GREEN		130			103							109						
RED ARROW																		
YELLOW ARROW																		
FLASHING 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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0027
 DESIGNED: September 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-NC 62 (S. Church Street) at NC 87-100 (W. Webb Avenue)	
Division 7	Alamance County Burlington
PLAN DATE: September 2017	REVIEWED BY: AM Encarnacion
PREPARED BY: NA Ptak	REVIEWED BY: MB Toth
REVISIONS	INIT. DATE

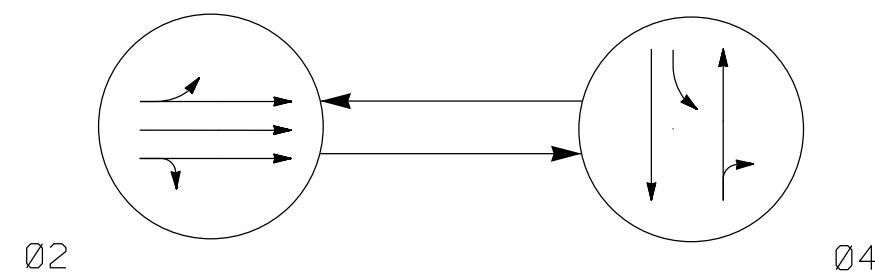
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

Melissa B. Toth
 6/11/2018

SIG. INVENTORY NO. 07-0027

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

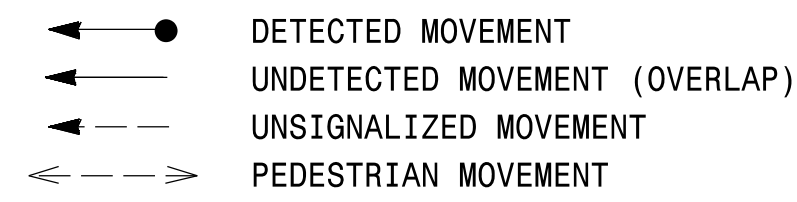
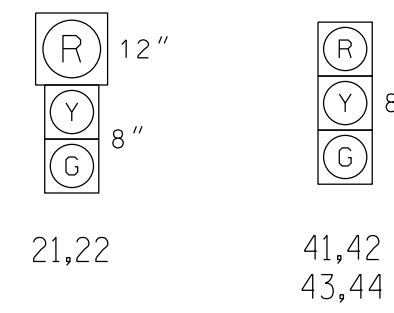


TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø2	Ø4	FLASH
21,22	G	R	Y
41,42,43,44	R	G	R

SIGNAL FACE I.D.

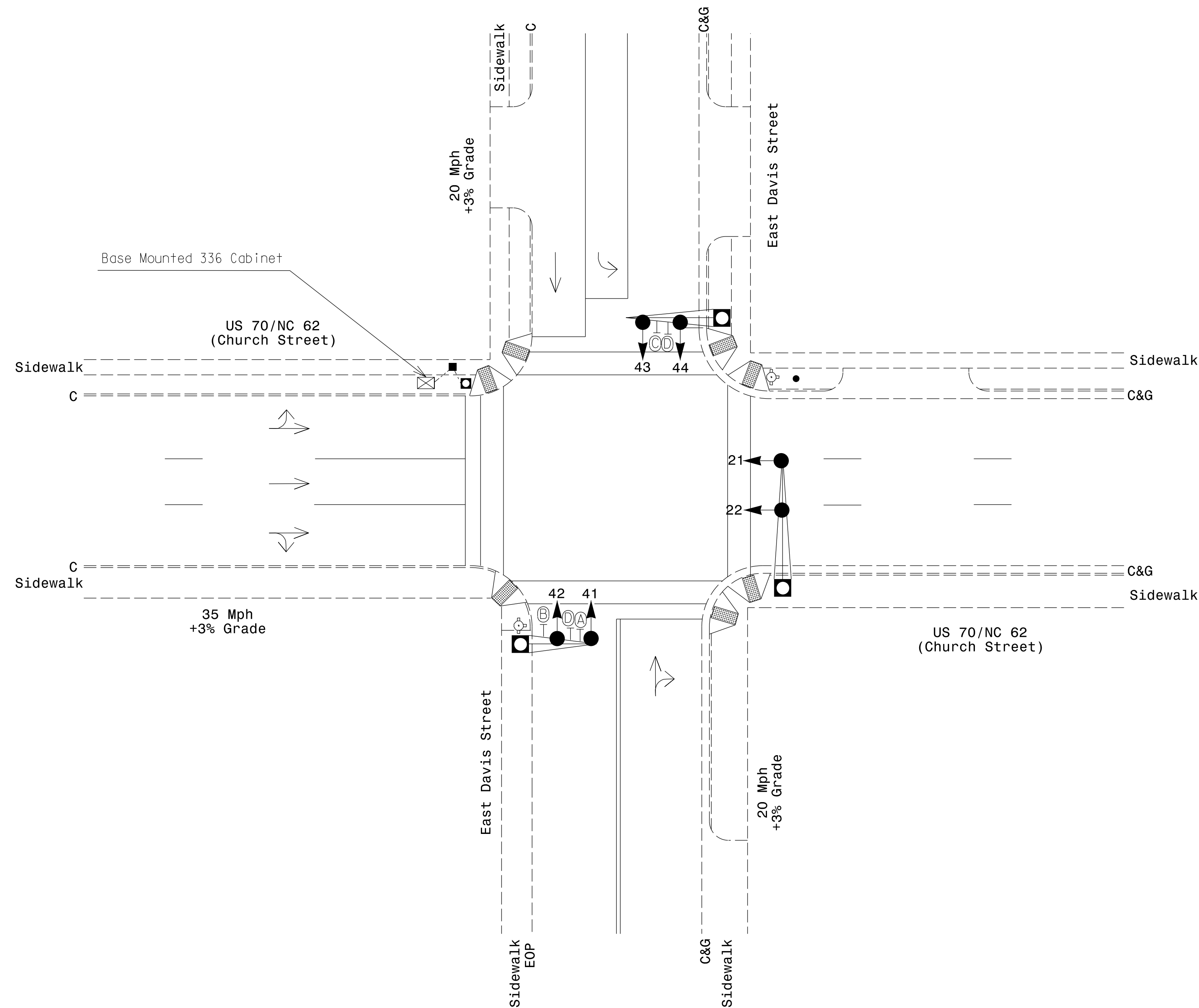
All Heads L.E.D.



2 Phase Pre-Timed
(Burlington-Graham Signal System)

NOTES

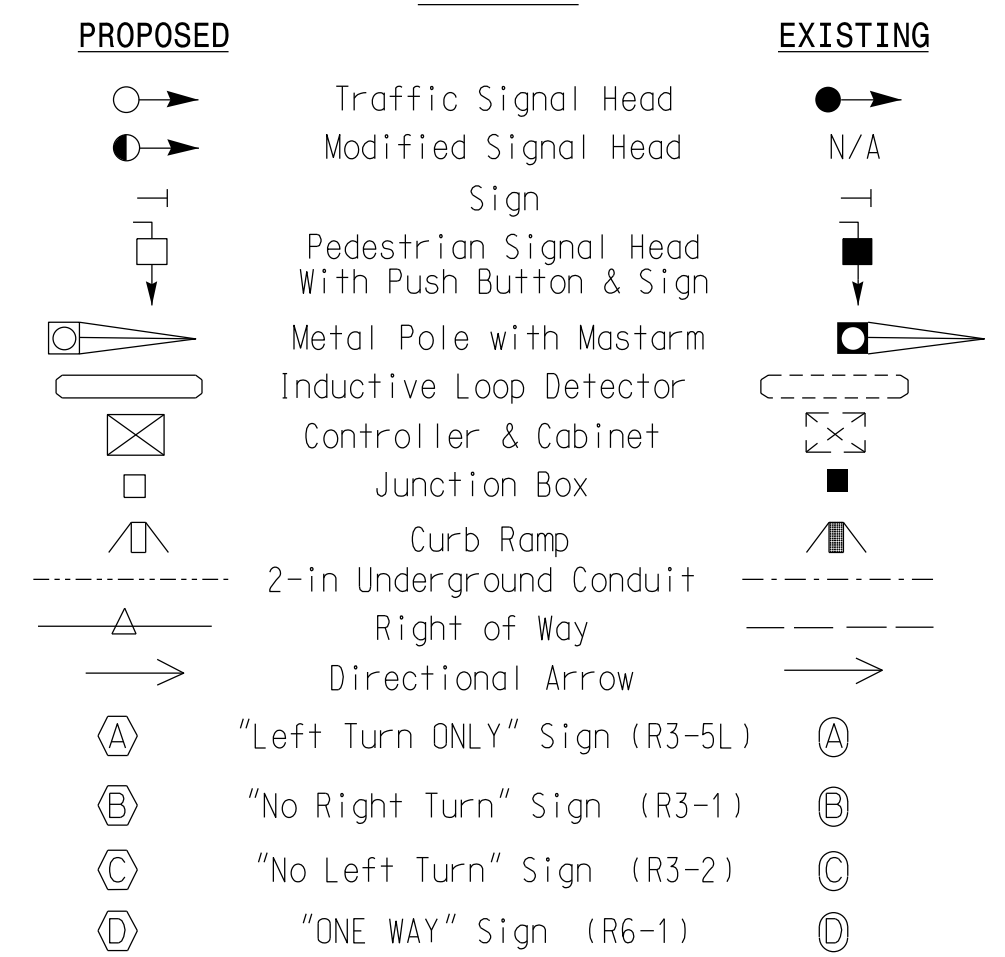
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Locate new cabinet so as not to obstruct sight distance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



FEATURE	PHASE	
	2	4
Min Green *	10	7
Walk *	-	-
Ped Clear	-	-
Veh. Extension *	0.0	0.0
Max I *	36	32
Yellow	3.7	3.0
Red Clear	1.4	2.8
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	-	-
Simultaneous Gap	X	X

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

LEGEND



Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of: NC FIRM LICENSE No: P-0339 504 Meadowlands Drive Hillsborough, NC 27278 (919) 732-3883 (919) 732-6676 (FAX)	Prepared For: TRANSPORTATION MOBILITY AND SAFETY DIVISION DEPARTMENT OF TRANSPORTATION Signal Design Section 750 N. Greenfield Pkwy, Garner, NC 27529	US 70/NC 62 (Church Street) At East Davis Street		SEAL SEAL 018174 EDWARD W. SIRGANY ENGINEER
		Division 7 Alamance County Burlington	PLAN DATE: October 2017 PREPARED BY: M. PARKER REVISIONS:		REVIEWED BY: E. W. Sirgany REVIEWED BY:	INIT. DATE 5/16/2018 DATE 07-0028

PHASING DIAGRAM

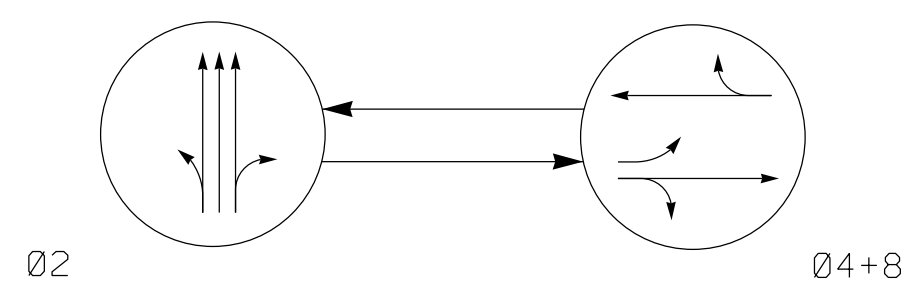


TABLE OF OPERATION

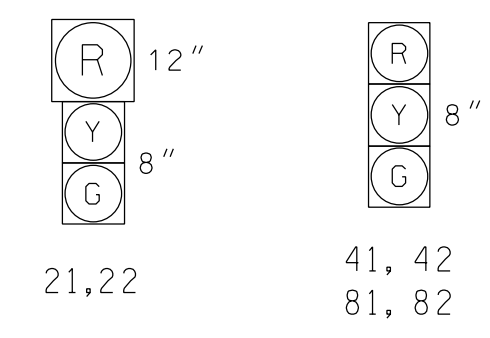
SIGNAL FACE	PHASE		
	02	04+8	FLASH
21,22	G	R	Y
41,42	R	G	R
81,82	R	G	R

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

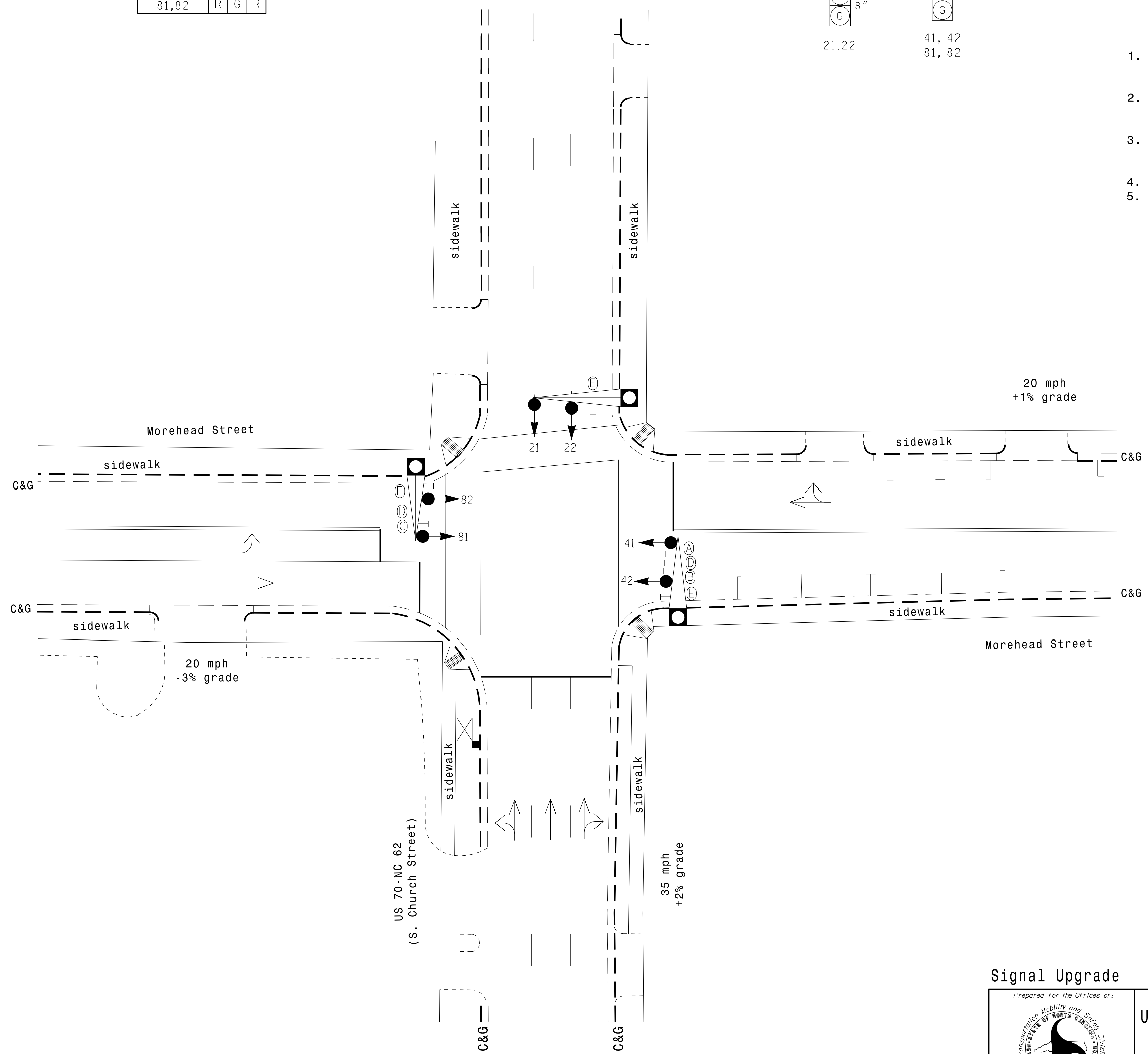
All Heads L.E.D.



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.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

PROPOSED	EXISTING
	N/A
N/A	
N/A	

ASC/3 TIMING CHART

FEATURE	PHASE		
	2	4	8
Min Green *	10	7	7
Walk *	0	0	0
Ped Clear	0	0	0
Veh. Extension *	0.0	0.0	0.0
Max 1 *	35	35	35
Yellow	3.7	3.0	3.0
Red Clear	1.4	2.3	2.1
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 phase 2 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

US 70-NC 62 (S. Church Street) at Morehead Street

Division 7 Alamance County Burlington

PLAN DATE: October 2017 REVIEWED BY: MB Toth

PREPARED BY: AM Encarnacion REVIEWED BY:

6/7/2018

SCALE: 0 20
1"=20'

REVISIONS	INIT.	DATE

Signed by: Melissa B. Toth DATE: 6/7/2018

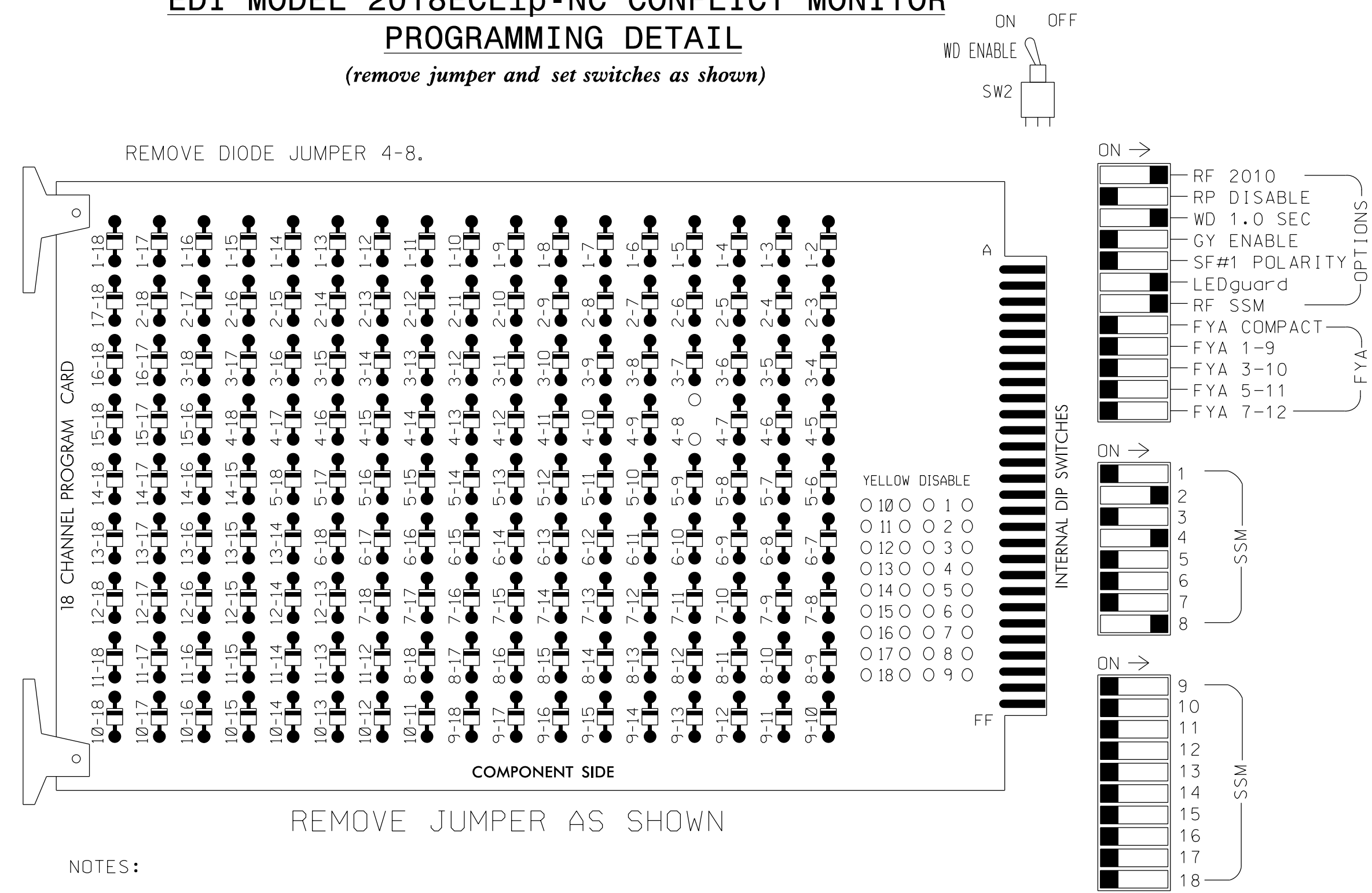
SIGNATURE DATE

SIG. INVENTORY NO. 07-0029

07-JUN-2018 11:10
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 ALEX3361 AT LUS3361

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.
3. 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.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S11
 PHASES USED.....2,4,8
 OVERLAPS.....NONE

PROJECT REFERENCE NO.	SHEET NO.
U-6015	Sig. 24.1

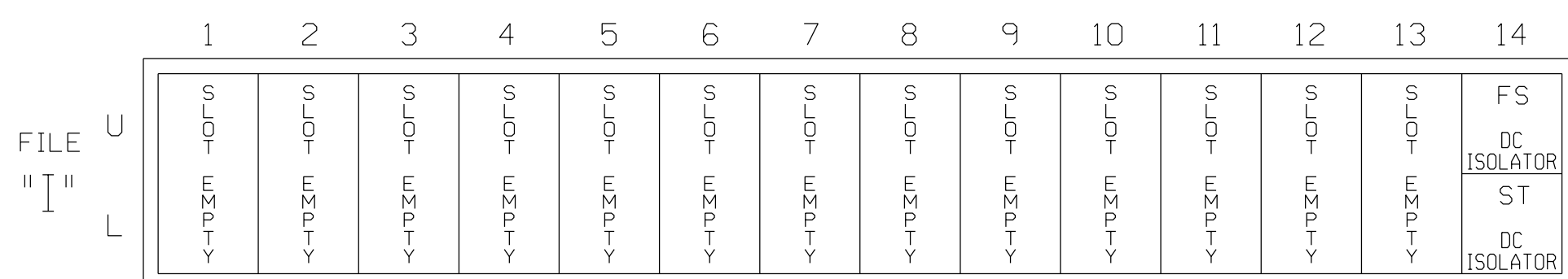
SIGNAL HEAD HOOK-UP CHART

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	NU	NU	NU	81,82	NU
RED		128			101						107	
YELLOW		129			102						108	
GREEN		130			103						109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

INPUT FILE POSITION LAYOUT

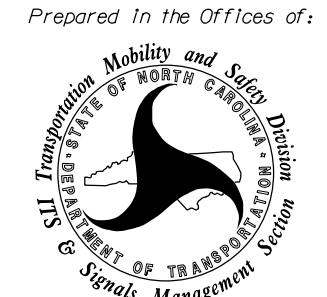
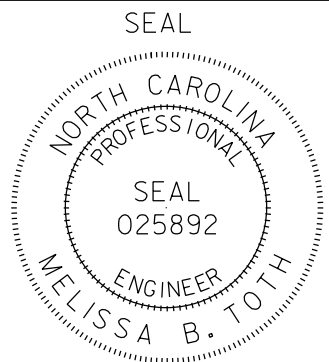
(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of:  TRANSPORTATION MANAGEMENT SYSTEMS	US 70-NC 62 (S. Church Street) at Morehead Street Division 7 Alamance County Burlington		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL  SEAL 025892 ENGINEER MELISSA B. TOTH
	PLAN DATE: October 2017 PREPARED BY: AM Encarnacion	REVIEWED BY: MB Toth REVIEWED BY:	

6/11/2018
 Melisa B. Toth
 DATE
 SIG. INVENTORY NO. 07-0029

09-JUN-2018 13:38
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 ALEX3361 AT LUS210649

PHASING DIAGRAM

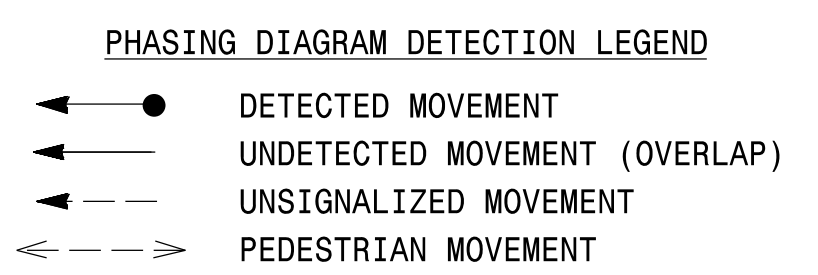
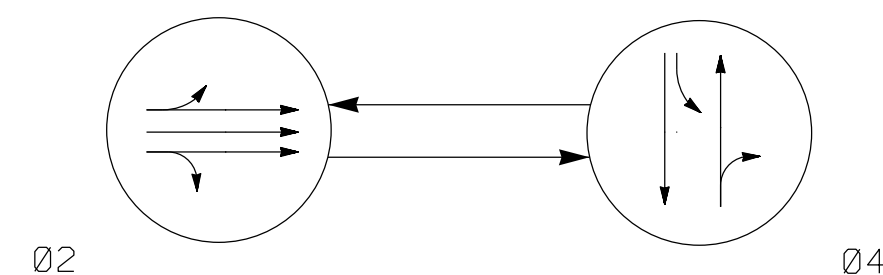
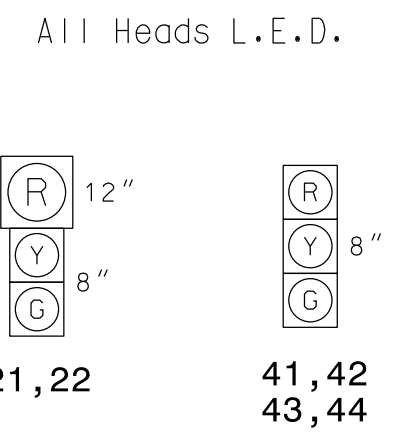


TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø2	Ø4	FLASH
21,22	G	R	Y
41,42,43,44	R	G	R

SIGNAL FACE I.D.



2 Phase Pre-Timed (Burlington-Graham Signal System)

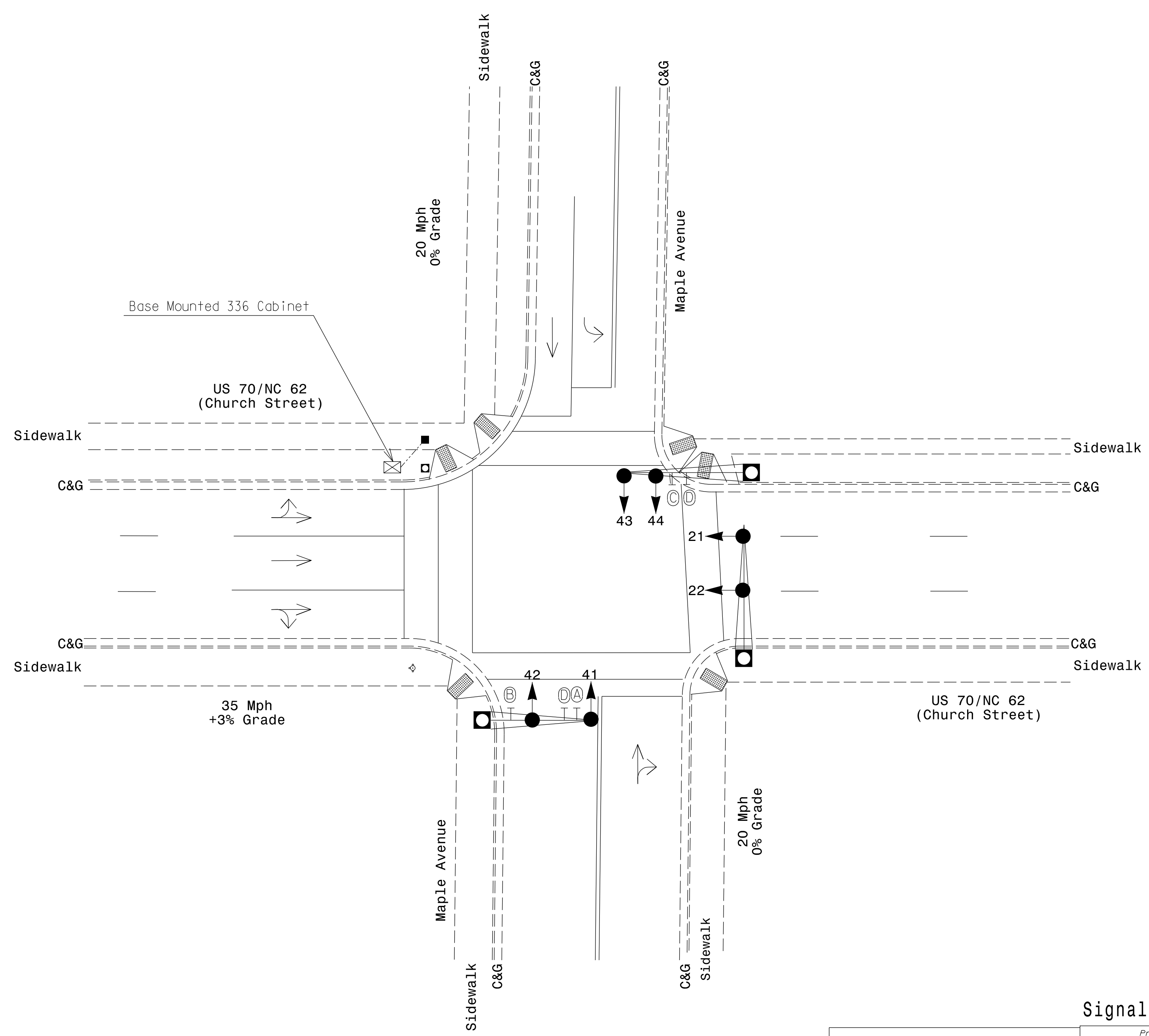
NOTES

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. Locate new cabinet so as not to obstruct sign distance of vehicles turning right on red.
4. Pavement markings are existing.
5. 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
Min Green *	10	7
Walk *	-	-
Ped Clear	-	-
Veh. Extension *	0.0	0.0
Max I *	38	30
Yellow	3.7	3.0
Red Clear	1.5	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	-	-
Simultaneous Gap	X	X

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



LEGEND

PROPOSED	EXISTING
	N/A
N/A	

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:

SUMMIT
DESIGN AND ENGINEERING SERVICES

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

Prepared For:

TRANSPORTATION MOBILITY AND SAFETY DIVISION
STATE OF NORTH CAROLINA
Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE
0 20
1" = 20'

**US 70/NC 62 (Church Street)
At
Maple Avenue**

Division 7 Alamance County Burlington

PLAN DATE: October 2017 REVIEWED BY: E. W. Sirgany

PREPARED BY: M. Parker REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL

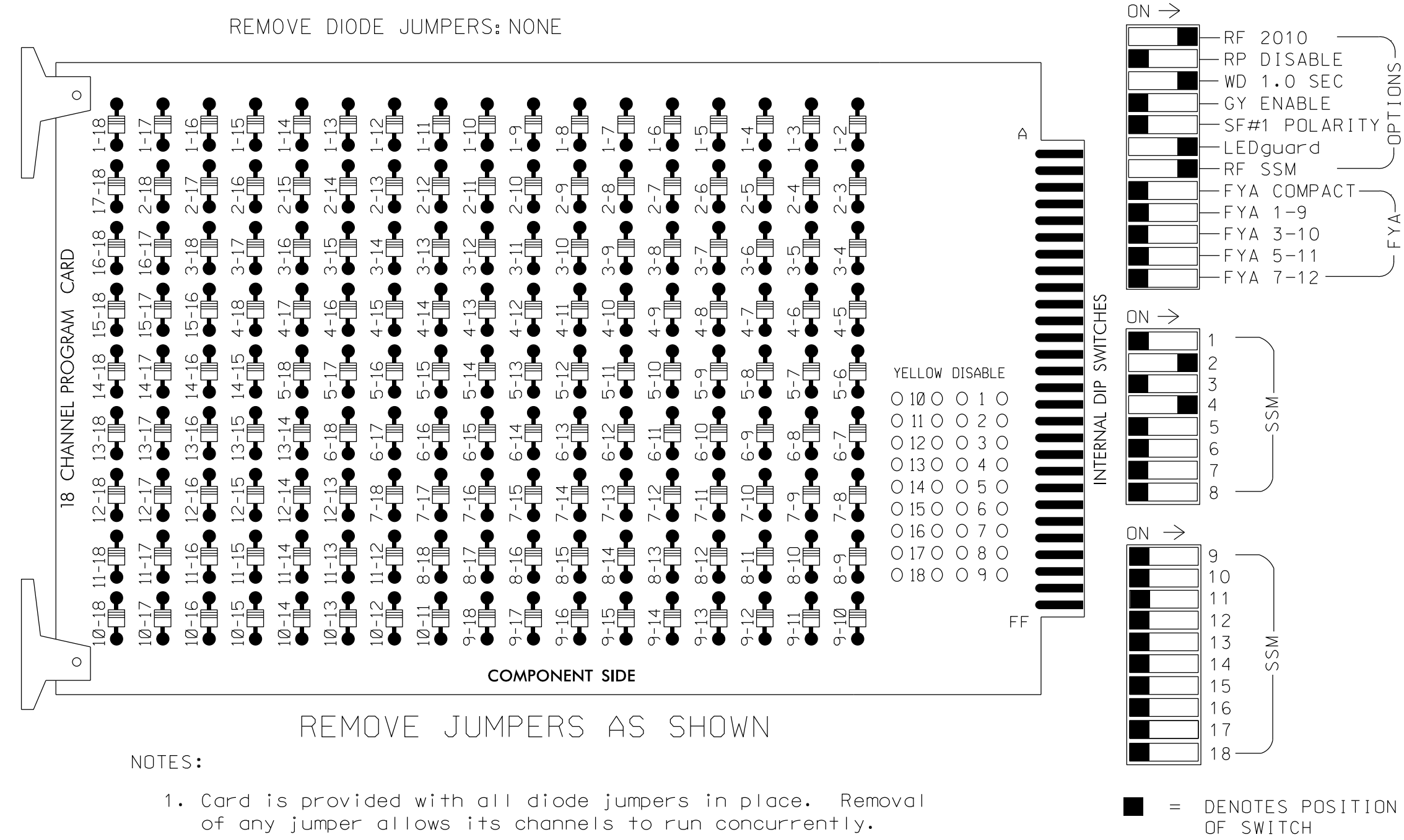
EDWARD W. SIRGANY
PROFESSIONAL ENGINEER
SEAL 018174

DocuSigned by:
Edward W Sirgany 5/16/2018

SIG. INVENTORY NO. 07-0030

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 2 Green.
3. 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.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5
 PHASES USED.....2,4
 OVERLAPS.....NONE

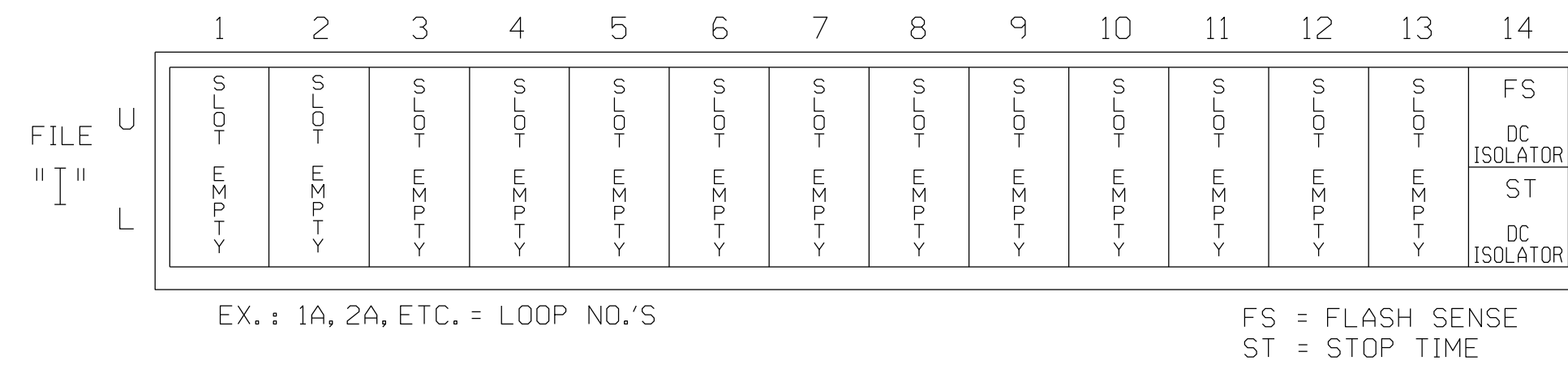
SIGNAL HEAD HOOK-UP CHART

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	41,42,43,44	NU	NU	NU	NU	NU	NU	NU
RED		128			101							
YELLOW		129			102							
GREEN		130			103							
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0030
 PREPARED: October 2017
 SEALED: 5/16/2018
 REVISED: N/A

Electrical Detail

Prepared in the Office of:



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

Prepared For:

 750 N. Greenfield Pkwy, Garner, NC 27529

US 70/NC 62 (Church Street)
 At
 Maple Avenue

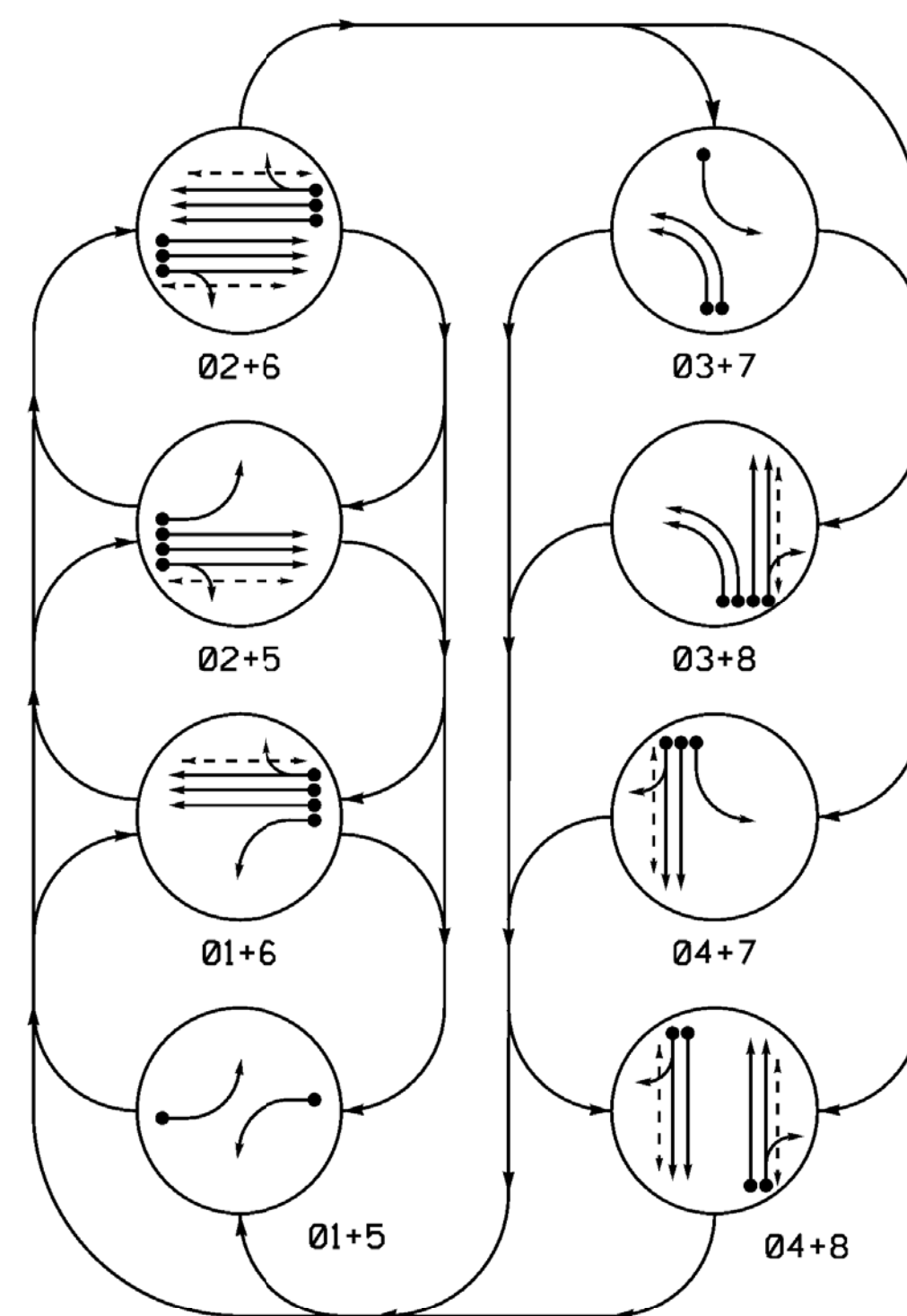
Division 7 Alamance County Burlington

PLAN DATE: October 2017	REVIEWED BY: E. W. Sirgany
PREPARED BY: J. Smith	RKA PROJ. NO:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 018174
 EDWARD W. SIRGANY
 DocuSigned by:
 Edward W. Sirgany 5/16/2018
 SIG. INVENTORY NO. 07-0030

PHASING DIAGRAM



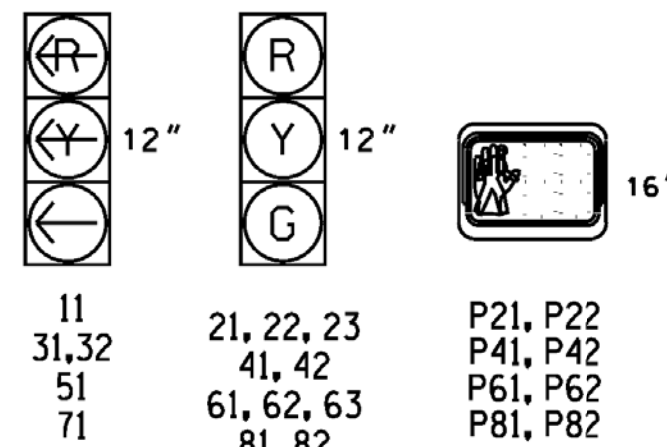
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE							
	01+5	02+6	03+7	04+8	01+6	02+5	03+8	04+7
11	---	---	---	---	---	---	---	---
21,22,23	R	R	G	G	R	R	R	Y
31,32	R	R	R	R	---	---	---	---
41,42	R	R	R	R	R	G	G	R
51	---	---	---	---	---	---	---	---
61,62,63	R	G	R	G	R	R	R	Y
71	R	R	R	R	---	---	---	---
81,82	R	R	R	R	G	R	G	R
P21, P22	DW	DW	W	W	DW	DW	DW	DRK
P41, P42	DW	DW	DW	DW	DW	W	W	DRK
P61, P62	DW	W	DW	W	DW	DW	DW	DRK
P81, P82	DW	DW	DW	DW	W	DW	W	DRK

SIGNAL FACE I.D.

All Heads L.E.D.

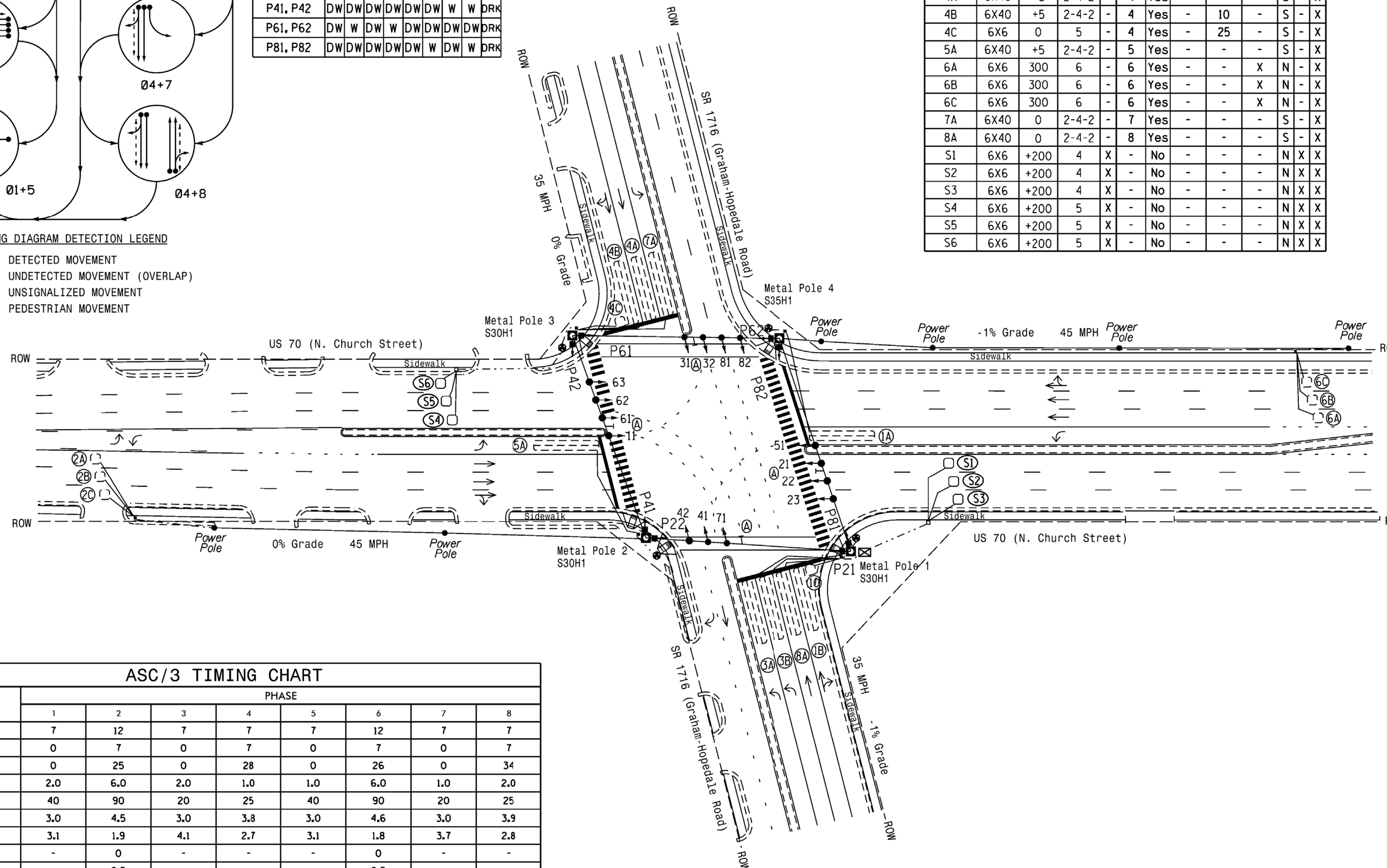


ASC/3 DETECTOR INSTALLATION CHART											
DETECTOR				PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	NEW CARD
1A	6X40	0	2-4-2	-	1	Yes	-	-	-	S	X
1B	6X40	0	2-4-2	-	1	Yes	-	10	-	S	X
1C	6X6	0	3	-	1	Yes	-	25	-	S	X
2A	6X6	300	6	-	2	Yes	-	-	X	N	X
2B	6X6	300	6	-	2	Yes	-	-	X	N	X
2C	6X6	300	6	-	2	Yes	-	-	X	N	X
3A	6X40	0	2-4-2	-	3	Yes	-	-	-	S	X
3B	6X40	0	2-4-2	-	3	Yes	-	-	-	S	X
4A	6X40	+5	2-4-2	-	4	Yes	-	-	-	S	X
4B	6X40	+5	2-4-2	-	4	Yes	-	10	-	S	X
4C	6X6	0	5	-	4	Yes	-	25	-	S	X
5A	6X40	+5	2-4-2	-	5	Yes	-	-	-	S	X
6A	6X6	300	6	-	6	Yes	-	-	X	N	X
6B	6X6	300	6	-	6	Yes	-	-	X	N	X
6C	6X6	300	6	-	6	Yes	-	-	X	N	X
7A	6X40	0	2-4-2	-	7	Yes	-	-	-	S	X
8A	6X40	0	2-4-2	-	8	Yes	-	-	-	S	X
S1	6X6	+200	4	X	-	No	-	-	-	N	X
S2	6X6	+200	4	X	-	No	-	-	-	N	X
S3	6X6	+200	4	X	-	No	-	-	-	N	X
S4	6X6	+200	5	X	-	No	-	-	-	N	X
S5	6X6	+200	5	X	-	No	-	-	-	N	X
S6	6X6	+200	5	X	-	No	-	-	-	N	X

8 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
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. 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	12	7	7	7	12	7	7
Walk *	0	7	0	7	0	7	0	7
Ped Clear	0	25	0	28	0	26	0	34
Veh. Extension *	2.0	6.0	2.0	1.0	1.0	6.0	1.0	2.0
Max 1 *	40	90	20	25	40	90	20	25
Yellow	3.0	4.5	3.0	3.8	3.0	4.6	3.0	3.9
Red Clear	3.1	1.9	4.1	2.7	3.1	1.8	3.7	2.8
Actuations B4 Add *	-	0	-	-	-	0	-	-
Seconds / Actuation *	-	2.5	-	-	-	2.5	-	-
Max Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	30	-	-	-	30	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	X	-	X	X	X	X	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 Sign | ● → Traffic Signal Head Sign |
| □ → Pedestrian Signal Head With Push Button & Sign | ■ → Pedestrian Signal Head With Push Button & Sign |
| □ → Metal Strain Pole | □ → Metal Strain Pole |
| ⊗ → Inductive Loop Detector | ⊗ → Inductive Loop Detector |
| ⊠ → Controller & Cabinet Junction Box | ⊠ → Controller & Cabinet Junction Box |
| - - - 2-in Underground Conduit | - - - 2-in Underground Conduit |
| N/A → Right of Way | N/A → Right of Way |
| → → Directional Arrow | → → Directional Arrow |
| - - - → Directional Drill | N/A → Directional Drill |
| ⊕ → Type I Pushbutton Post | ⊕ → Type I Pushbutton Post |
| ○ → Type II Signal Pedestal | ● → Type II Signal Pedestal |
| Ⓐ → Street Name Sign (D3-1) | Ⓐ → Street Name Sign (D3-1) |
| Ⓐ → Curb Ramp | Ⓐ → Curb Ramp |



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:

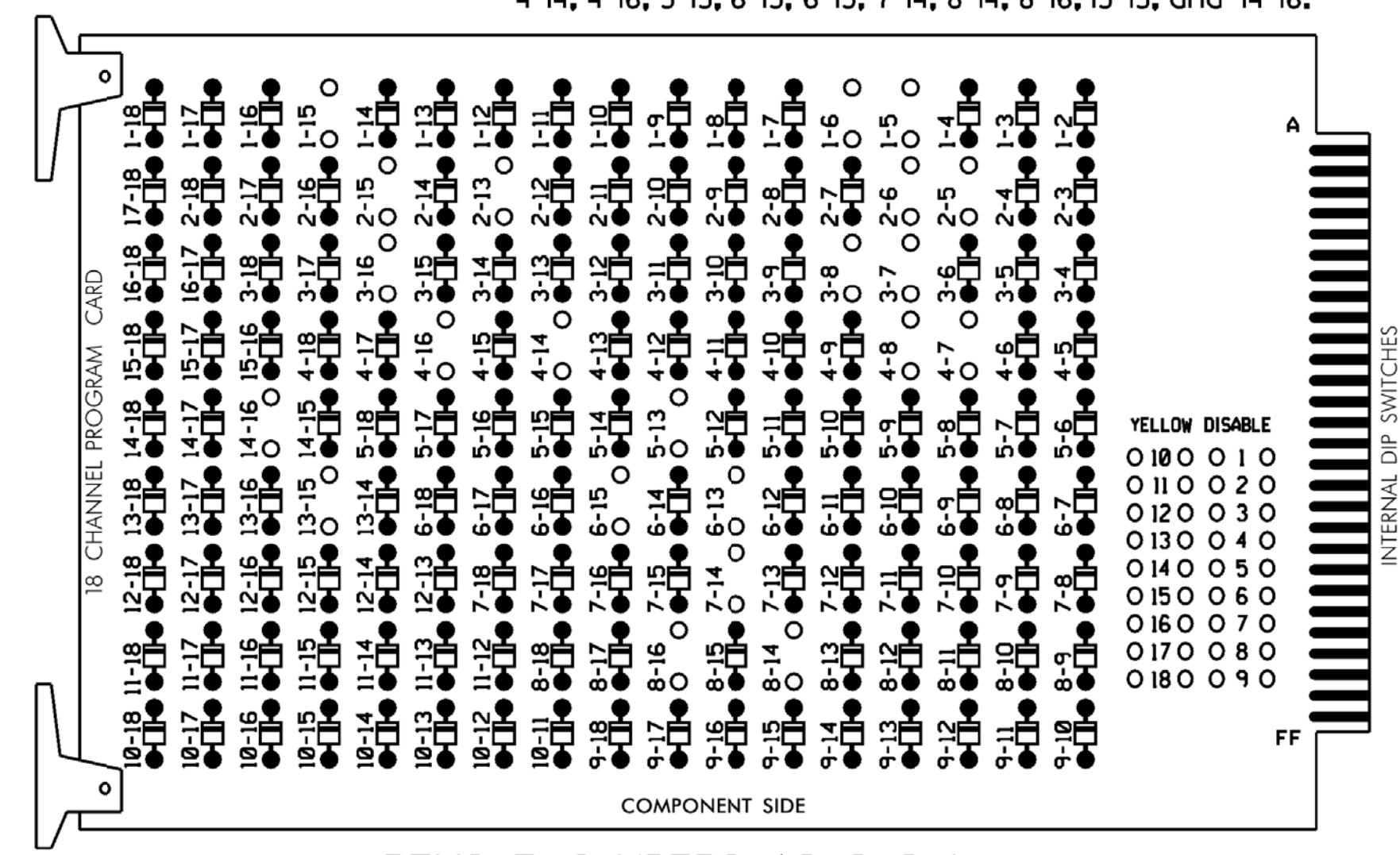
 750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE 0 40
 1"=40'

US 70 (N. Church Street)
 at
 SR 1716 (Graham-Hopedale Road)
 Division 7 Alamance County Burlington
 PLAN DATE: December 2017 REVIEWED BY: JB Voso
 PREPARED BY: SE Greene REVIEWED BY:
 REVISIONS INIT. DATE
 SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JAMES B. VOSO
 022599
 6/13/2018
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SIG. INVENTORY NO. 07-0032

*****SYTIME*****
 *****BUSINESS*****

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL
(remove jumpers and set switches as shown)

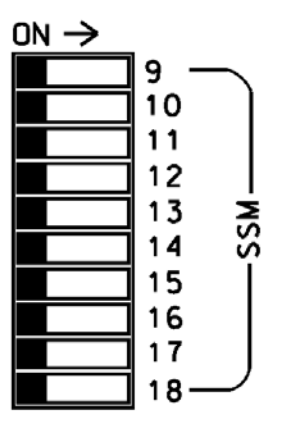
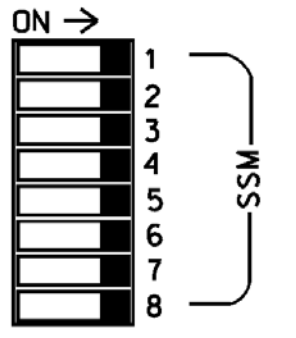
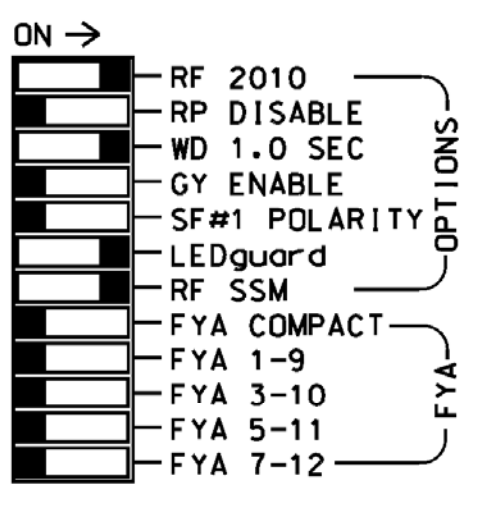
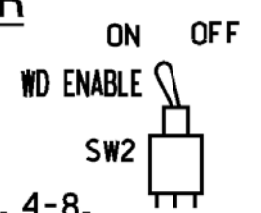
REMOVE DIODE JUMPERS 1-5, 1-6, 1-15, 2-5, 2-6, 2-13, 2-15, 3-7, 3-8, 3-16, 4-7, 4-8, 4-14, 4-16, 5-13, 6-13, 6-15, 7-14, 8-14, 8-16, 13-15, and 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = 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 Walk and 6 Walk.
- The cabinet and controller are part of the Burlington-Graham Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1.S2.S3.S4.S5.S6.S7.S8.S9.
 S10.S11.S12
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,7,8,8PED
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22,23	P21, P22	31,32	41,42	P41, P42	51	61,62,63	P61, P62	71	81,82	P81, P82	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125			116			131			122								
YELLOW ARROW	126			117			132			123								
GREEN ARROW	127			118			133			124								
Hand			113			104			119			110						
Walking			115			106			121			112						

NU = Not Used

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 1	∅ 2	∅ 2	∅ 3	∅ 4	∅ 4	S	SYS. DET. S1	S	S	∅ 2PED	∅ 6PED	FS
L	NOT USED	∅ 1	∅ 2	NOT USED	∅ 3	∅ 4	NOT USED	S	SYS. DET. S2	S	S	∅ 4PED	∅ 8PED	ST
U	∅ 5	∅ 6	∅ 6	S	∅ 7	∅ 8	SYS. DET. S5	S	SYS. DET. S3	S	S	S	S	S
L	NOT USED	∅ 6	NOT USED	S	NOT USED	NOT USED	SYS. DET. S6	S	SYS. DET. S4	S	S	S	S	S

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

FS = FLASH SENSE
 ST = STOP TIME

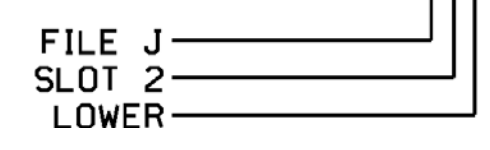
INPUT FILE CONNECTION & PROGRAMMING CHART

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
1B	TB2-5,6	I2U	39	2	1	YES		10		S
1C	TB2-7,8	I2L	43	12	1	YES		25		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
3A	TB4-5,6	I5U	58	3	3	YES				S
3B	TB4-5,6	I5L	58	3	3	YES				S
4A	TB4-9,10	I6U	41	4	4	YES				S
4B	TB4-11,12	I6L	45	14	4	YES		10		S
4C	TB6-1,2	I7U	65	34	4	YES		25		S
* S1	TB6-9,10	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				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
7A	TB5-5,6	J5U	57	7	7	YES				S
8A	TB5-9,10	J6U	42	8	8	YES				S
* S5	TB7-1,2	J7U	66	38	SYS	NO				N
* S6	TB7-3,4	J7L	79	48	SYS	NO				N
* S3	TB7-9,10	J9U	59	15	SYS	NO				N
* S4	TB7-11,12	J9L	61	17	SYS	NO				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

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

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0032
 DESIGNED: December 2017
 SEALED: 6/13/2018
 REVISED: NA



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

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical AND PROGRAMMING DETAILS FOR: SR 70 (N. Church Street) at SR 1716 (Graham-Hopedale Road)

Division 7 Alamance County Burlington

PLAN DATE: December 2017 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS: _____ INIT. DATE

James Voso 6/13/2018

750 N. Greenfield Pkwy, Corner, NC 27529

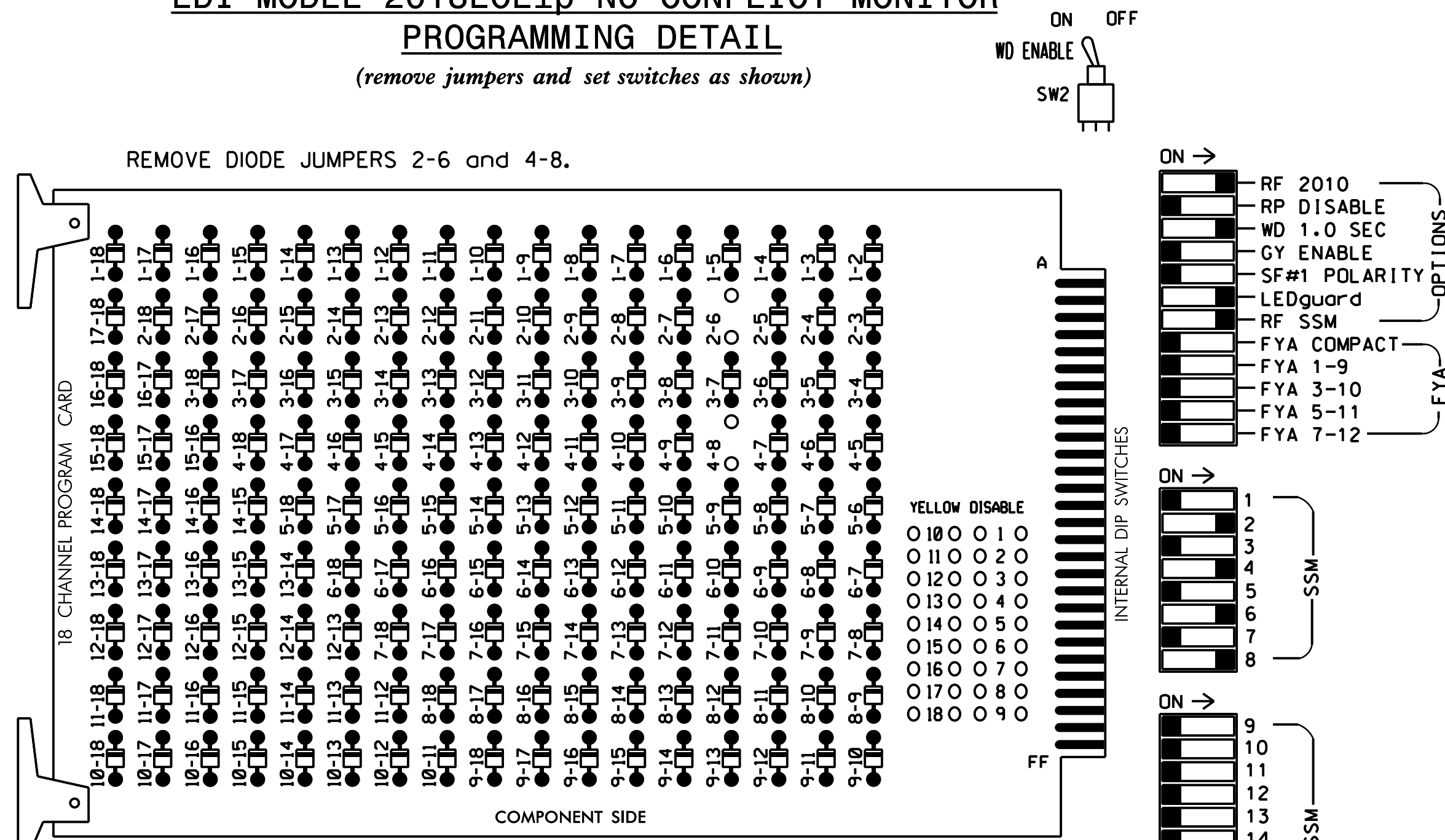
SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022599 JAMES B. VOSO

SIG. INVENTORY NO. 07-0032

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

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.....S2,S5,S8,S11
 PHASES USED.....2,4,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

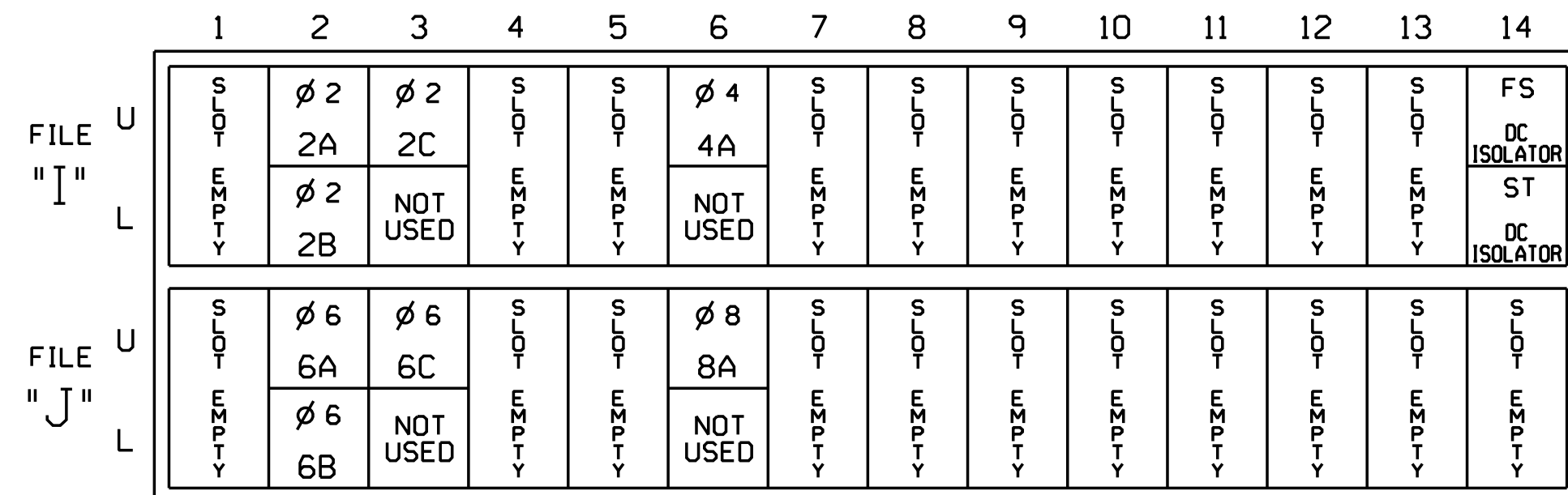
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22 23	NU	NU	41,42	NU	NU	61,62 63	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW																		
YELLOW ARROW																		
GREEN ARROW																		

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



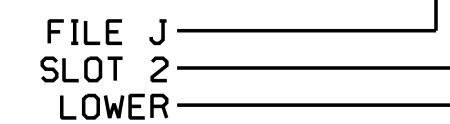
EX.: 1A, 2A, ETC. = LOOP NO.'S

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
2C	TB2-9,10	I3U	63	32	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
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		5		S

INPUT FILE POSITION LEGEND: J2L

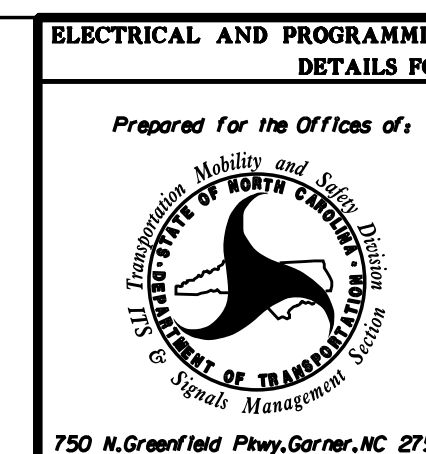


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0033
 DESIGNED: December 2017
 SEALED: 6/13/2018
 REVISED: NA

Electrical Detail



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



US 70 (Church Street) at Cobb Avenue

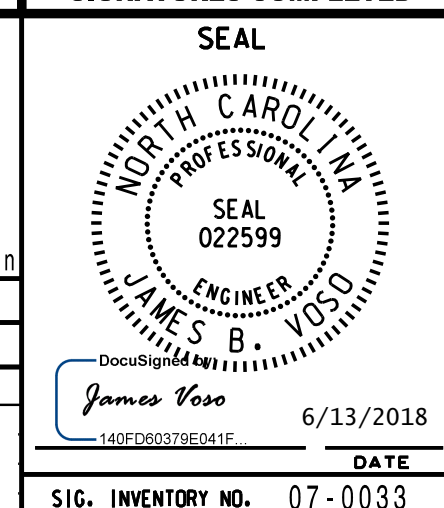
Division 7 Alamance County Burlington

PLAN DATE: December 2017 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PHASING DIAGRAM

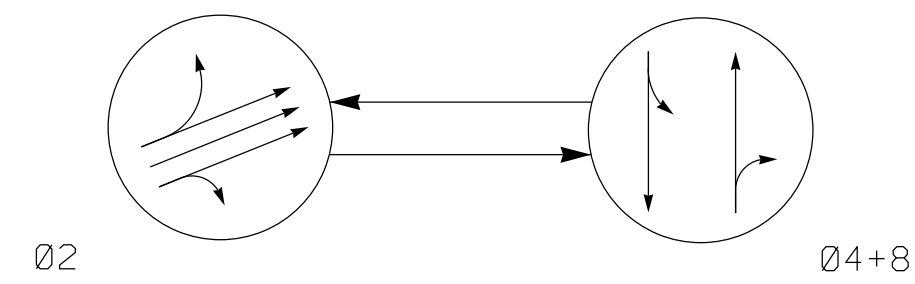


TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø 2	Ø 4 + 8	FLASH
21, 22, 23	G	R	Y
41, 42	R	G	R
81, 82	R	G	R

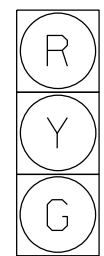
**2 Phase
Pretimed
(Burlington-Graham Signal System)**

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

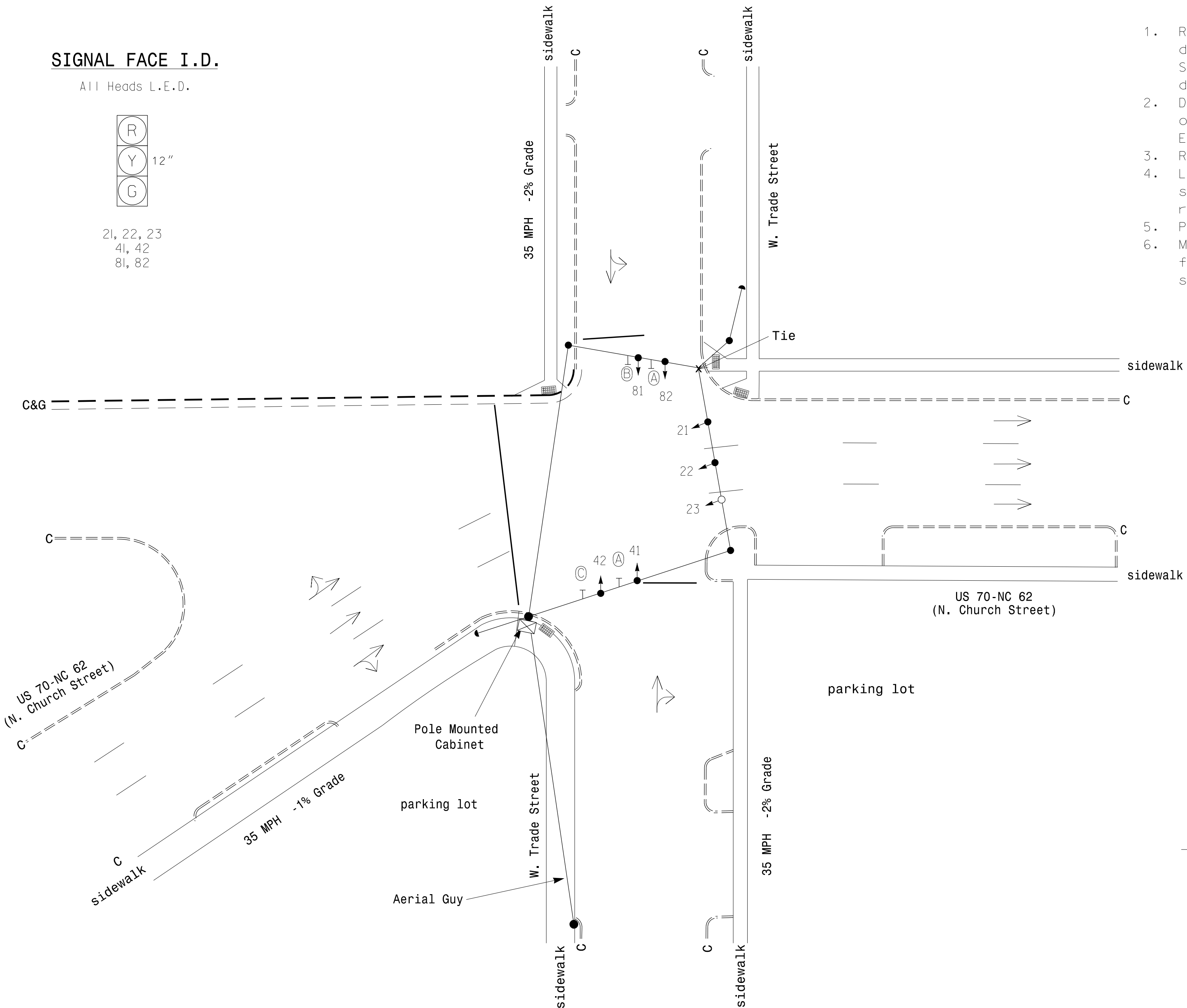
All Heads L.E.D.



21, 22, 23
41, 42
81, 82

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. Reposition existing signal head 21.
4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
5. Pavement markings are existing.
6. 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	8
Min Green *	10	7	7
Walk *	0	0	0
Ped Clear	0	0	0
Veh. Extension *	0.0	0.0	0.0
Max 1 *	42	26	26
Yellow	3.9	4.0	4.0
Red Clear	1.2	1.4	1.1
Actuations B4 Add *	-	-	-
Seconds / Actuation *	-	-	-
Max Initial *	-	-	-
Time Before Reduction *	-	-	-
Time To Reduce *	-	-	-
Minimum Gap	-	-	-
Locking Detector	-	-	-
Recall Position	MAX	RECALL	MAX
Dual Entry	-	-	-
Simultaneous Gap	X	X	X

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

PROPOSED		EXISTING	
○→	Traffic Signal Head	●→	N/A
◐→	Modified Signal Head		
⊥	Sign		
⊥	Pedestrian Signal Head With Push Button & Sign	⊥	
⊥	Signal Pole with Guy	⊥	
⊥	Signal Pole with Sidewalk Guy	⊥	
⊥	Inductive Loop Detector	⊥	
⊥	Controller & Cabinet	⊥	
⊥	Junction Box	⊥	
⊥	2-in Underground Conduit	⊥	
---	Right of Way	---	
→	Directional Arrow	→	
(A)	"ONE WAY" Sign (R6-1)	(A)	
(B)	No Left Turn Sign (R3-2)	(B)	
(C)	No Right Turn Sign (R3-1)	(C)	

Signal Upgrade

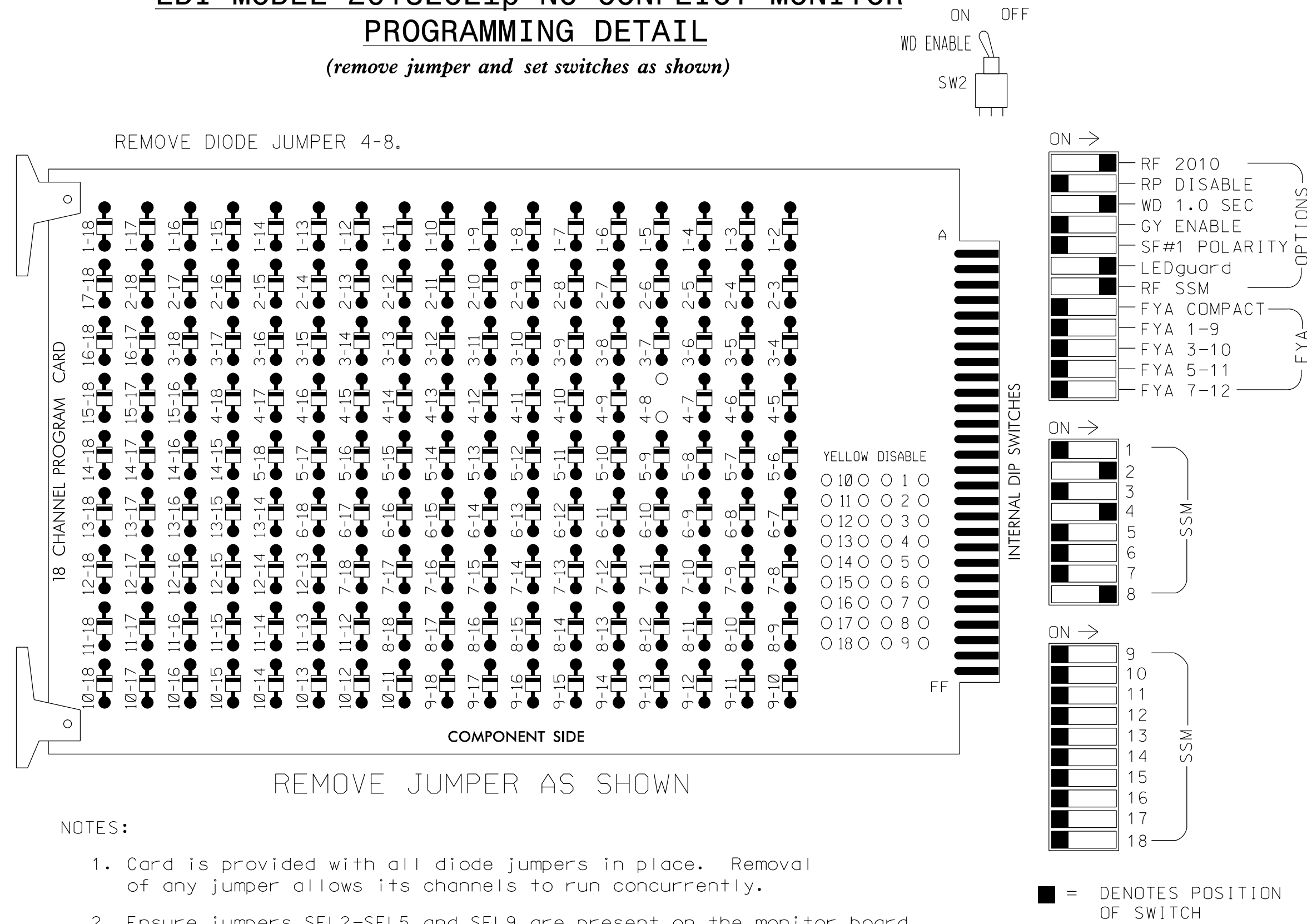
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

<p>DRMP, Inc. 8000 Regency Parkway, Suite 175 Cary, NC 27519 NC License No. C-2213 (919) 650-1038</p>	<p>Prepared for the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 70-NC 62 (N. Church Street) at W. Trade Street</p>	<p>SEAL NORTH CAROLINA PROFESSIONAL ENGINEER LISA M. MOON 022516</p>								
	<p>Plans Prepared By:</p> <p>DRMP</p>	<p>Division 7 Alamance County Burlington</p> <p>PLAN DATE: Sept 2017 REVIEWED BY: AJ Davis</p> <p>PREPARED BY: RD Lawton REVIEWED BY: LM Moon</p>	<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DESCRIPTION	INIT.	DATE				
NO.	DESCRIPTION	INIT.	DATE								

13-JUN-2018 17:00
 R:\66015\17\Traffic\Signal\Signal\Signal\07-0034.dgn
 C:\Users\AT\OneDrive\AT\Car-RLA\17-17

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.
3. 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, 23	NU	NU	41,42	NU	NU	NU	NU	NU	81,82	NU
RED		128			101						107	
YELLOW		129			102						108	
GREEN		130			103						109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

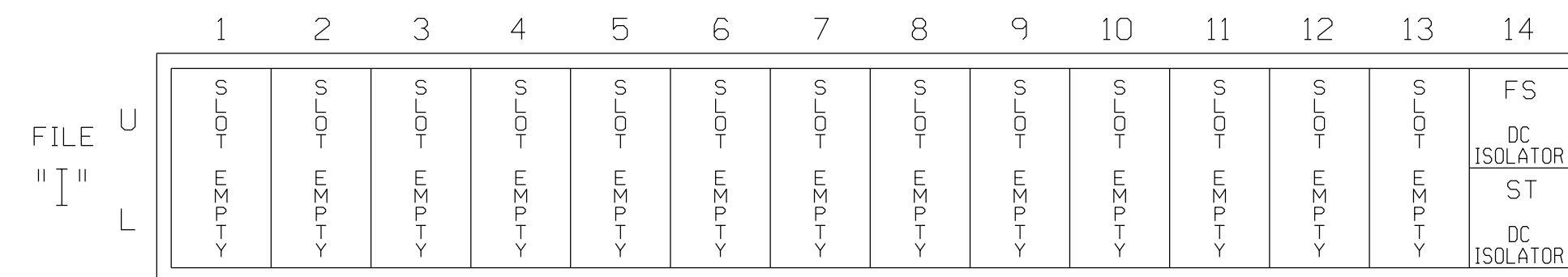
NU = Not Used

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



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

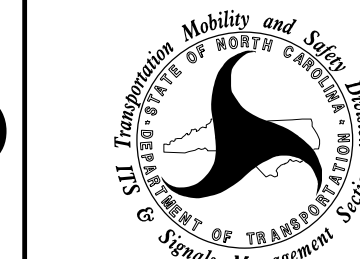
FS = FLASH SENSE
 ST = STOP TIME

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0034
 DESIGNED: SEPT-2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 70-NC 62 (N. Church Street) at W. Trade Street

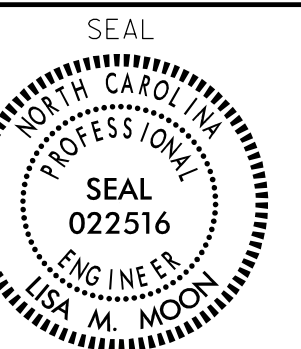
Division 7 Alamance County Burlington

PLAN DATE: September 2017 REVIEWED BY: LM Moon

PREPARED BY: AJ Davis REVIEWED BY:

REVISIONS INIT. DATE

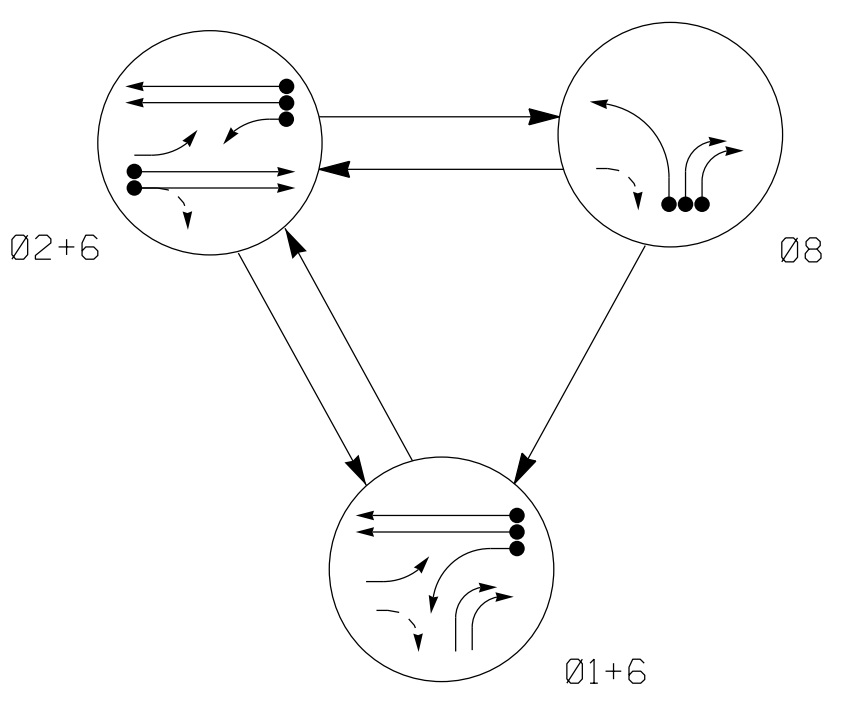
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



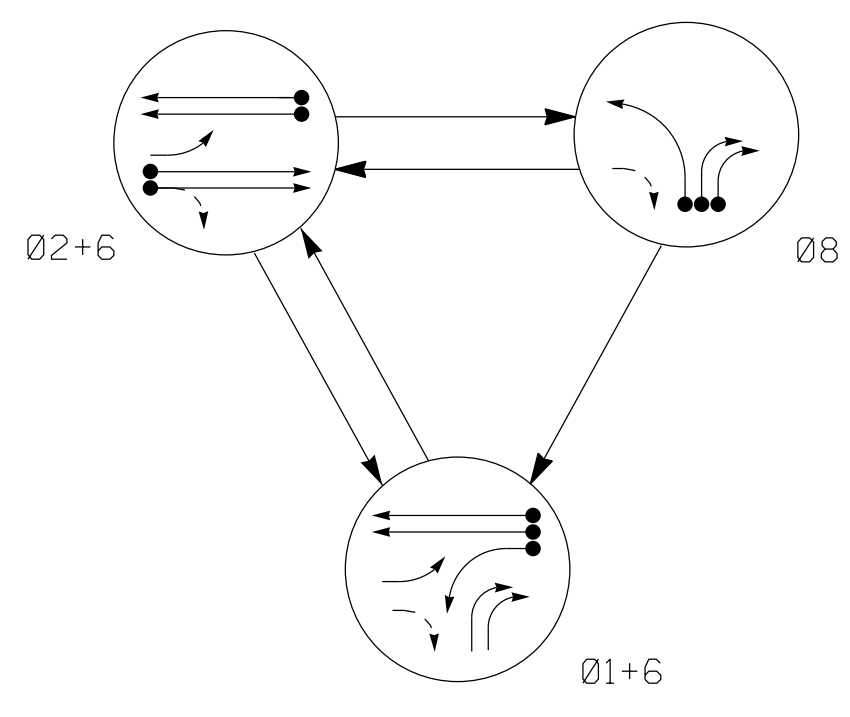
DocuSigned by: Lisa M. Moon 6/13/2018

SIG. INVENTORY NO. 07-0034

DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION. Table with columns: SIGNAL FACE, PHASE (01+6, 02+6, 08, FLASH), and movement indicators.

ALTERNATE PHASING TABLE OF OPERATION. Table with columns: SIGNAL FACE, PHASE (01+6, 02+6, 08, FLASH), and movement indicators.

ASC/3 DETECTOR INSTALLATION CHART. Table with columns: LOOP, SIZE (FT), DISTANCE FROM STOPBAR (FT), TURNS, NEW LOOP, PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD.

3 Phase Fully Actuated (Burlington-Graham Signal System)

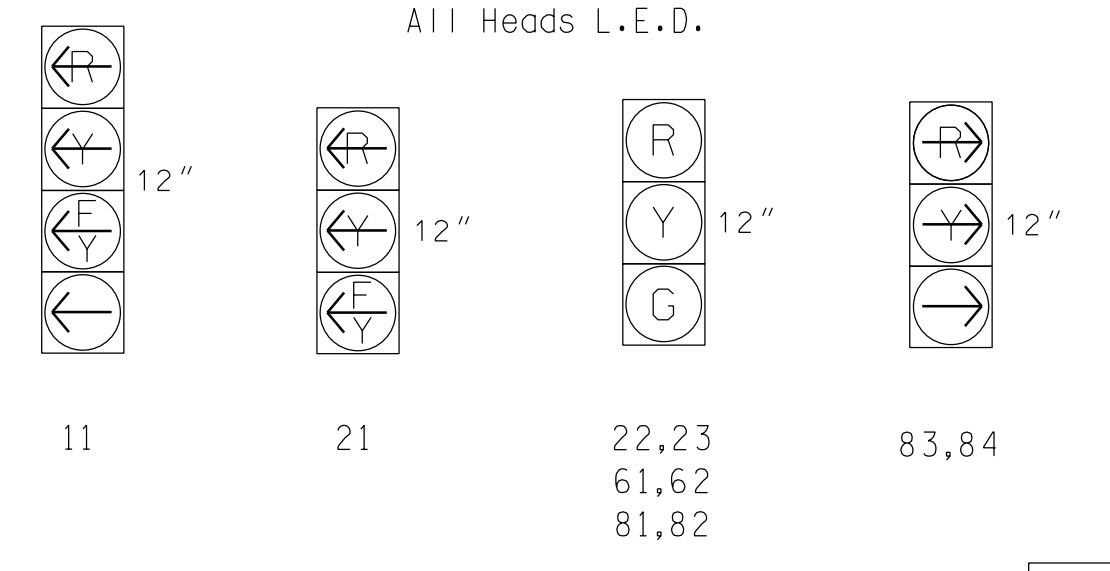
NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by Engineer.
3. Phase 1 may be lagged.
4. Set all detector units to presence mode.
5. 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.
6. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
7. Pavement markings are existing.
8. The City Traffic Engineer will determine the hours of use for each phasing plan.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

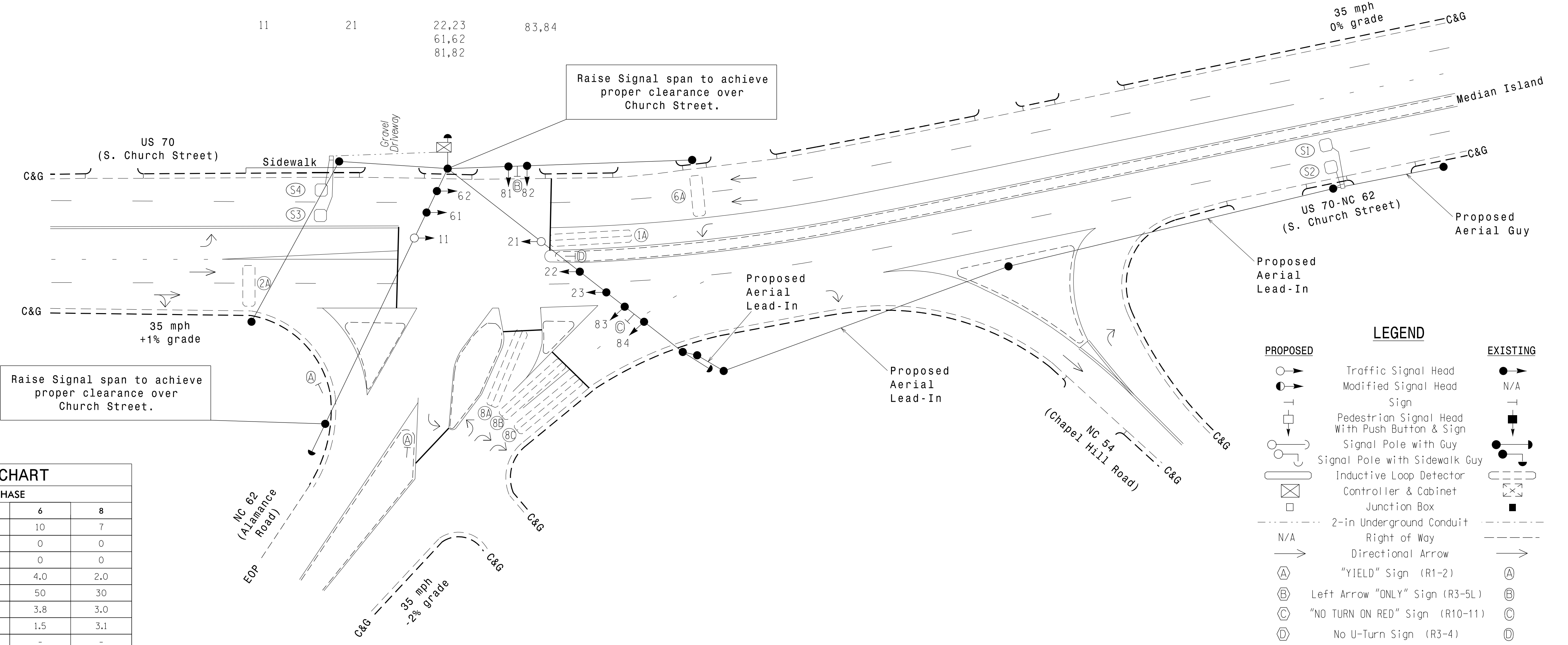
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.



- * Disable delay during alternate phasing operation.
** Disable phase 6 call for loop 1A during alternate phasing operation.



ASC/3 TIMING CHART. Table with columns: FEATURE, PHASE (1, 2, 6, 8), and timing values for Min Green, Walk, Ped Clear, Veh. Extension, Max I*, Yellow, Red Clear, Actuations B4 Add, Seconds/Actuation, Max Initial, Time Before Reduction, Time To Reduce, Minimum Gap, Locking Detector, Recall Position, Dual Entry, Simultaneous Gap.

LEGEND. Table with columns: PROPOSED, EXISTING, and symbols for Traffic Signal Head, Modified Signal Head, Sign, Pedestrian Signal Head, Signal Pole, Inductive Loop Detector, Junction Box, 2-in Underground Conduit, Right of Way, Directional Arrow, and various signs.

* 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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Professional seal and signature block for the State of North Carolina, including project name 'US 70/US 70-NC 62 (S. Church Street) at NC 62 (Alamance Road)', date 'March 2018', and signatures of NA Ptak and PL Alexander.

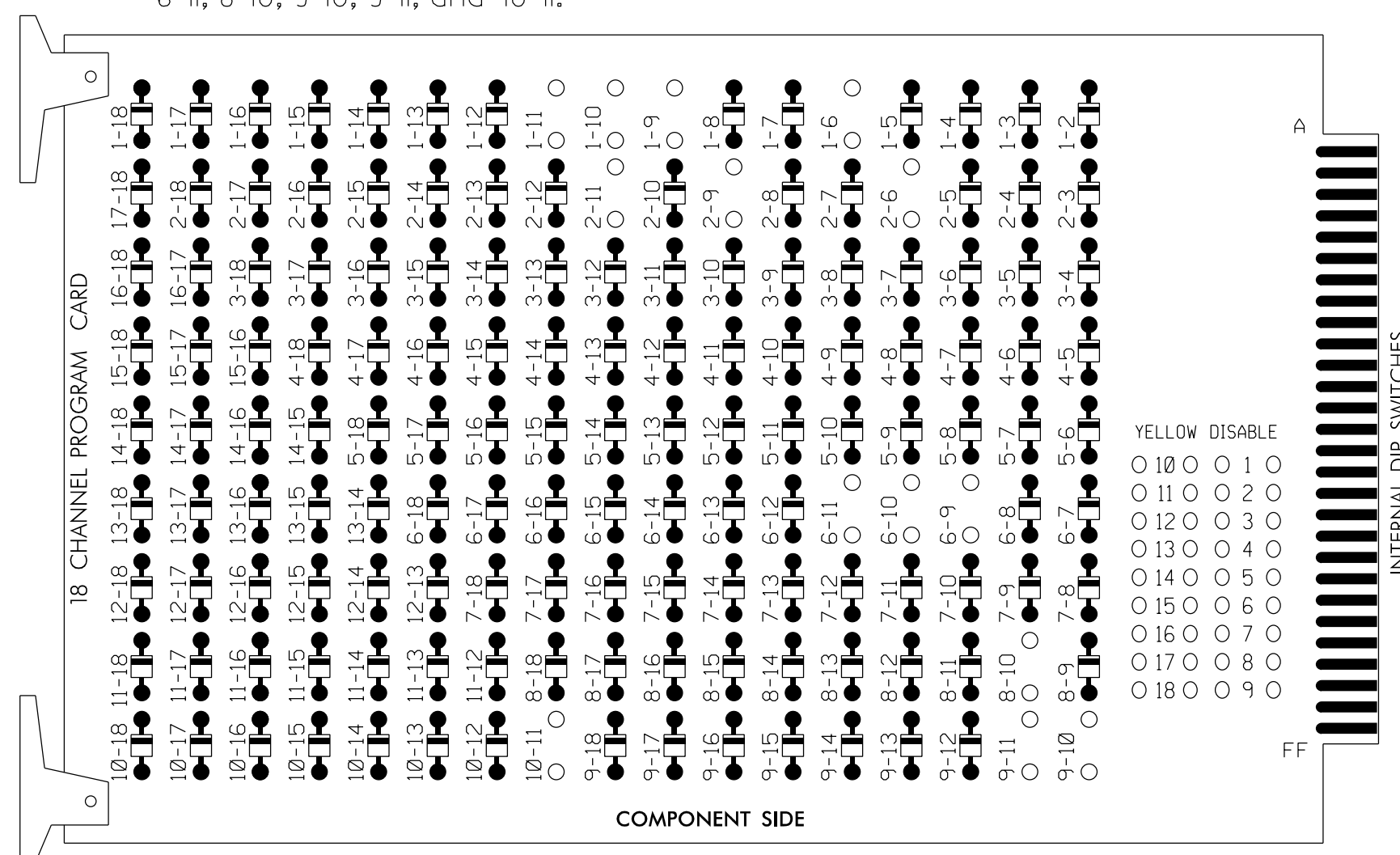
ATKINS 1616 EAST MILLBROOK ROAD, SUITE 160 RALEIGH, NORTH CAROLINA 27609 (919) 876-6888 NCBES #F-0326

07-JUN-2018 11:10 **wsk\k1ns.com\proj\atkins\USRLA*Transportation\Traffic*Curr*100056469 U-6015 B-G Sig Sys*Task 05_11_Signal\Design*07-0035.dgn ALEX3361 AT LUS340649

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

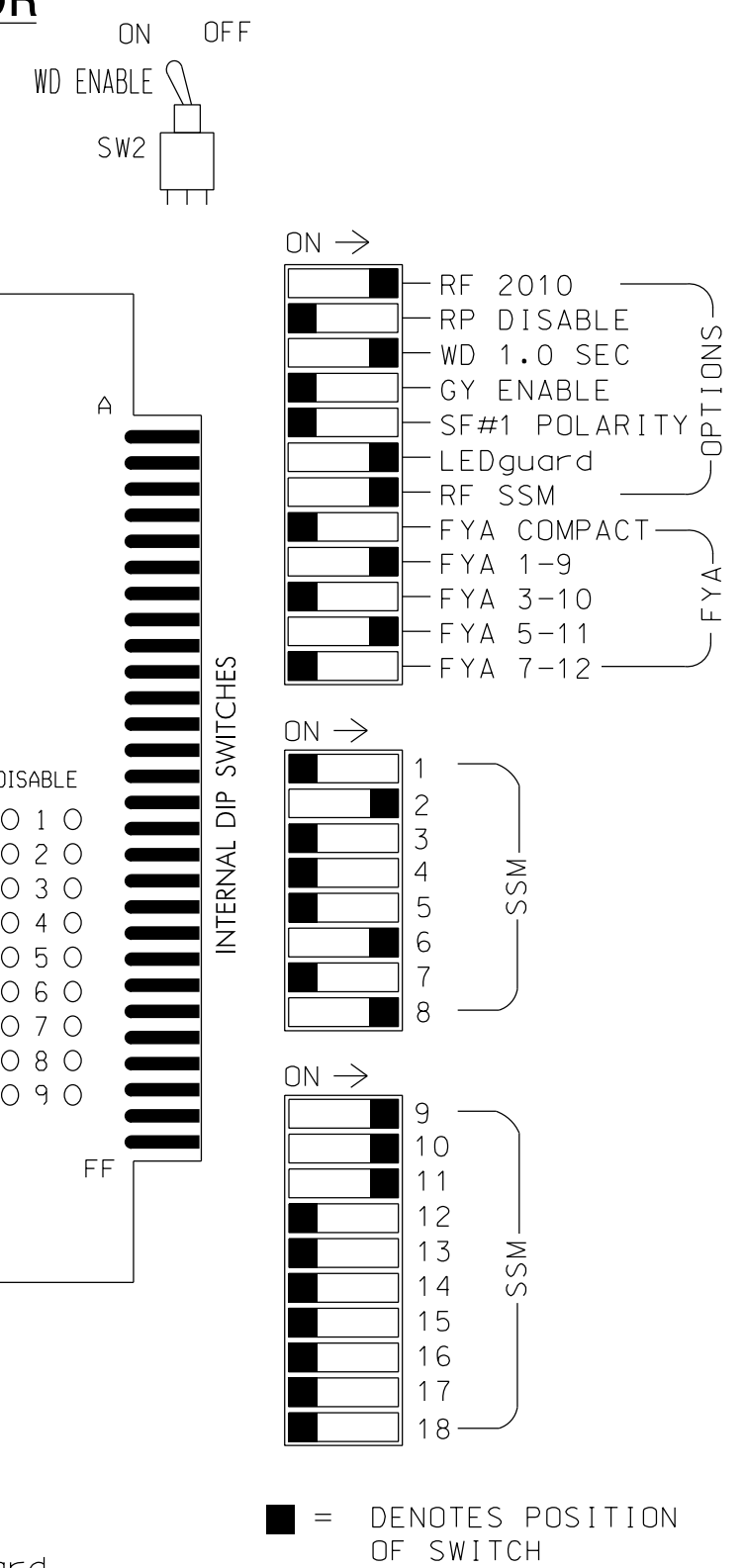
REMOVE DIODE JUMPERS 1-6, 1-9, 1-10, 1-11, 2-6, 2-9, 2-11, 6-9, 6-10, 6-11, 8-10, 9-10, 9-11, and 10-11.



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.



■ = DENOTES POSITION OF SWITCH

NOTES

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

EQUIPMENT INFORMATION

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

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11★	22,23	NU	NU	NU	NU	NU	61,62	NU	NU	81,82	NU	11★	83,84	NU	21★	NU	NU
RED		128						134			107							
YELLOW	*	129						135			108							
GREEN		130						136			109							
RED ARROW													A121	A124		A114		
YELLOW ARROW													A122	A125		A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127													A126				

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)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1 1A	∅ 2 2A	∅ 3 TOP	∅ 4 TOP	∅ 5 TOP	∅ 6 TOP	∅ 7 TOP	∅ 8 TOP	∅ 9 TOP	∅ 10 TOP	SYS. DET. S1	∅ 11 TOP	∅ 12 TOP	∅ 13 TOP
L	NOT USED	NOT USED	∅ 3 TOP	∅ 4 TOP	∅ 5 TOP	∅ 6 TOP	∅ 7 TOP	∅ 8 TOP	∅ 9 TOP	∅ 10 TOP	SYS. DET. S2	∅ 11 TOP	∅ 12 TOP	∅ 13 TOP
U	∅ 1 TOP	∅ 2 TOP	∅ 3 TOP	∅ 4 TOP	∅ 5 TOP	∅ 6 TOP	∅ 7 TOP	∅ 8 TOP	∅ 9 TOP	∅ 10 TOP	SYS. DET. S3	∅ 11 TOP	∅ 12 TOP	∅ 13 TOP
L	NOT USED	∅ 6 6A	∅ 3 TOP	∅ 4 TOP	∅ 5 TOP	∅ 6 TOP	∅ 7 TOP	∅ 8 TOP	∅ 9 TOP	∅ 10 TOP	SYS. DET. S4	∅ 11 TOP	∅ 12 TOP	∅ 13 TOP

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

FS = FLASH SENSE
 ST = STOP TIME

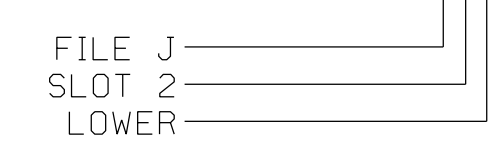
⊗ Wired Input - Do not populate slot with detector card

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	TB2-5,6	I2U	39	2	2	YES				S
* S1	TB6-9,10	I9U	60	11	SYS	NO				N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N
6A	TB3-5,6	J2U	40	6	6	YES				S
8A	TB5-9,10	J6U	42	8	8	YES				S
8B	TB5-11,12	J6L	46	18	8	YES				S
8C	TB7-1,2	J7U	66	38	8	YES				S
* S3	TB7-9,10	J9U	59	15	SYS	NO				N
* S4	TB7-11,12	J9L	61	17	SYS	NO				N

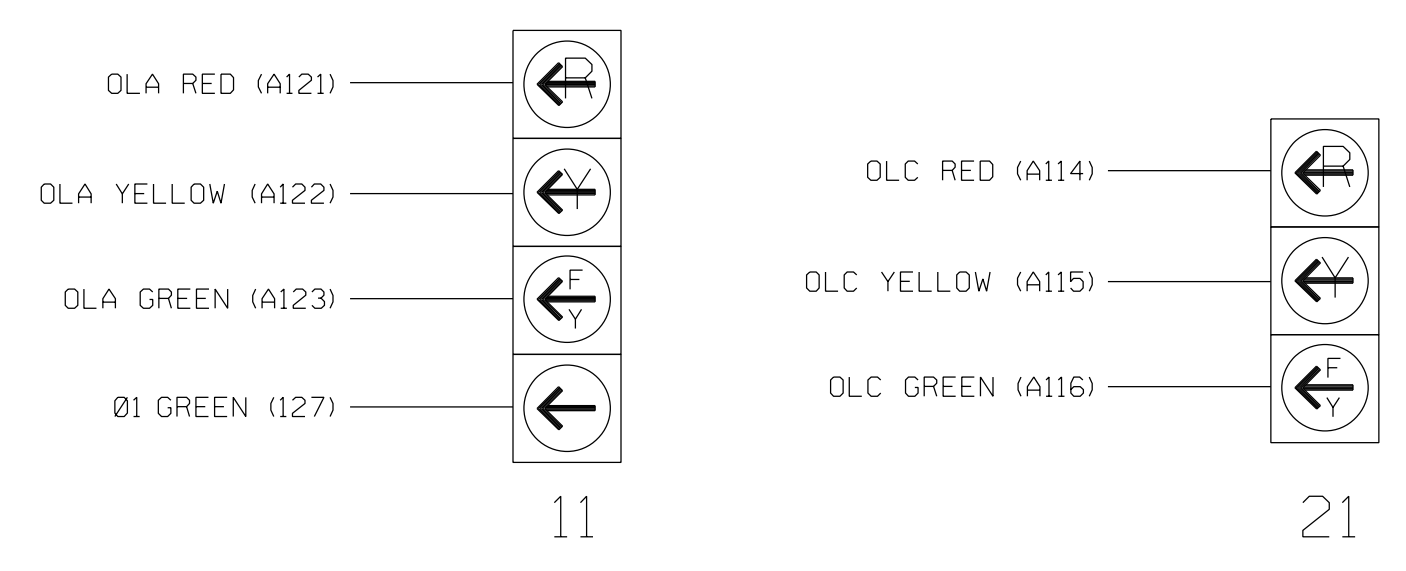
- * System detector only. Remove any assigned vehicle phase.
- ¹Add jumper from I1-W to J4-W, on rear of input file.
- ★ See the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheet 2.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

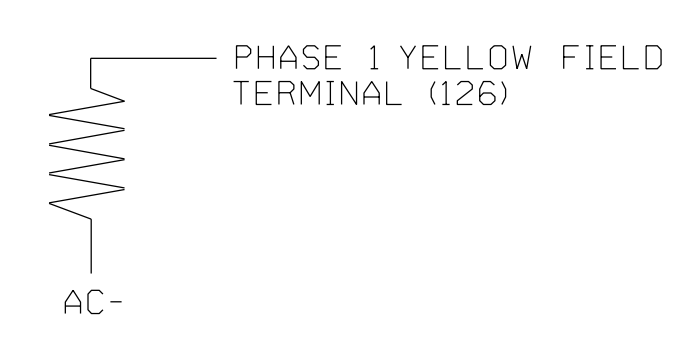


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0035
 DESIGNED: March 2018
 SEALED: 6/7/2018
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



Electrical Detail - Sheet 1 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	US 70/US 70-NC 62 (S. Church Street) at NC 62 (Alamance Road)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER SEAL 023489
	Division 7 Alamance County Burlington		
PLAN DATE: March 2018	REVIEWED BY: PL Alexander		
PREPARED BY: NA Ptak	REVIEWED BY: AM Encarnacion		
REVISIONS	INIT.	DATE	Date: 6/9/2018 Signature: Pamela Alexander
			SIG. INVENTORY NO. 07-0035

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
    
```

← 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".

ENSURE PHASE IS SET 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

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"

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'NORMAL'

```

TMG VEH OVLP...[B] 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 C

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

```

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

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
    
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-0035
DESIGNED: March 2018
SEALED: 6/7/2018
REVISED: N/A

Electrical Detail - Sheet 2 of 3

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

<p style="font-size: small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared for the Offices of:</p> <p style="font-size: x-small;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 70/US 70-NC 62 (S. Church Street) at NC 62 (Alamance Road)</p> <p style="font-size: x-small;">Division 7 Alamance County Burlington</p> <p>PLAN DATE: March 2018 REVIEWED BY: PL Alexander</p> <p>PREPARED BY: NA Ptak REVIEWED BY: AM Encarnacion</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> </tbody> </table>	REVISIONS	INIT.	DATE				<p style="font-size: x-small;">SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 023489</p> <p style="font-size: x-small;">6/9/2018</p> <p style="font-size: x-small;">DATE</p> <p style="font-size: x-small;">6/9/2018</p> <p style="font-size: x-small;">DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-0035</p>
REVISIONS	INIT.	DATE						

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 BIT 1.

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.. 0   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  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 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
    
```

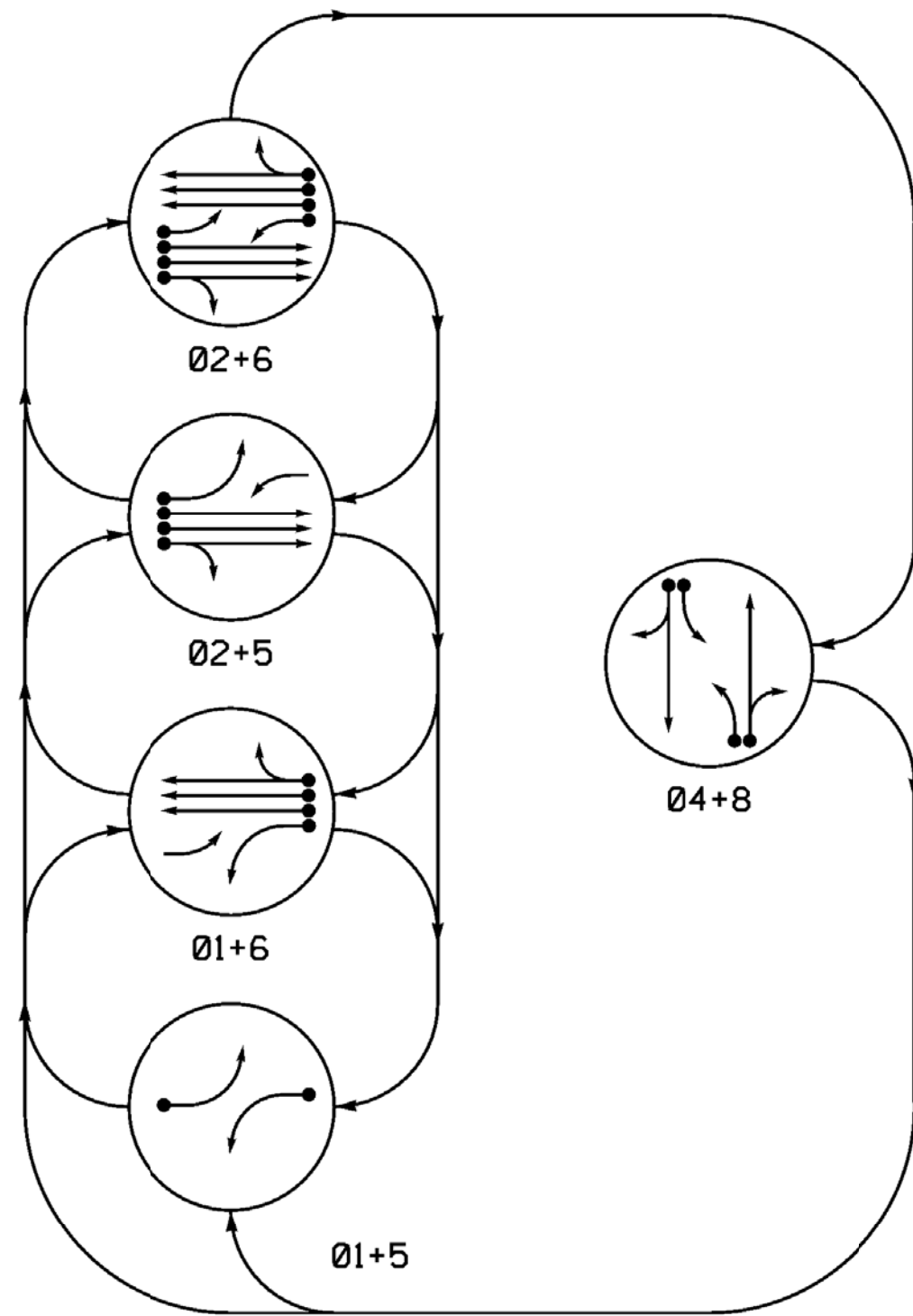
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0035
 DESIGNED: March 2018
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared for the Offices of: 	US 70/US 70-NC 62 (S. Church Street) at NC 62 (Alamance Road) Division 7 Alamance County Burlington	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER 023489
	PLAN DATE: March 2018 REVIEWED BY: AM Encarnacion PREPARED BY: NA Ptak REVIEWED BY: PL Alexander	
	REVISIONS INIT. DATE	
		6/9/2018 DATE Signature: <i>Pamela Alexander</i> DATE
		SIG. INVENTORY NO. 07-0035

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

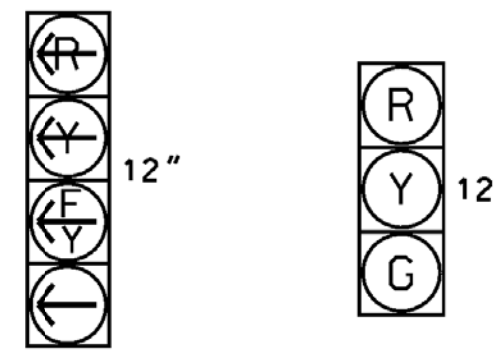
- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT (OVERLAP)
- ←---→ UNSIGNALIZED MOVEMENT
- ←- - -> PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	04+8	Footc
11	—	—	F	F	—	—
21, 22, 23	R	R	G	G	R	Y
41, 42	R	R	R	R	G	R
51	—	F	—	F	—	—
61, 62, 63	R	G	R	G	R	Y
81, 82	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



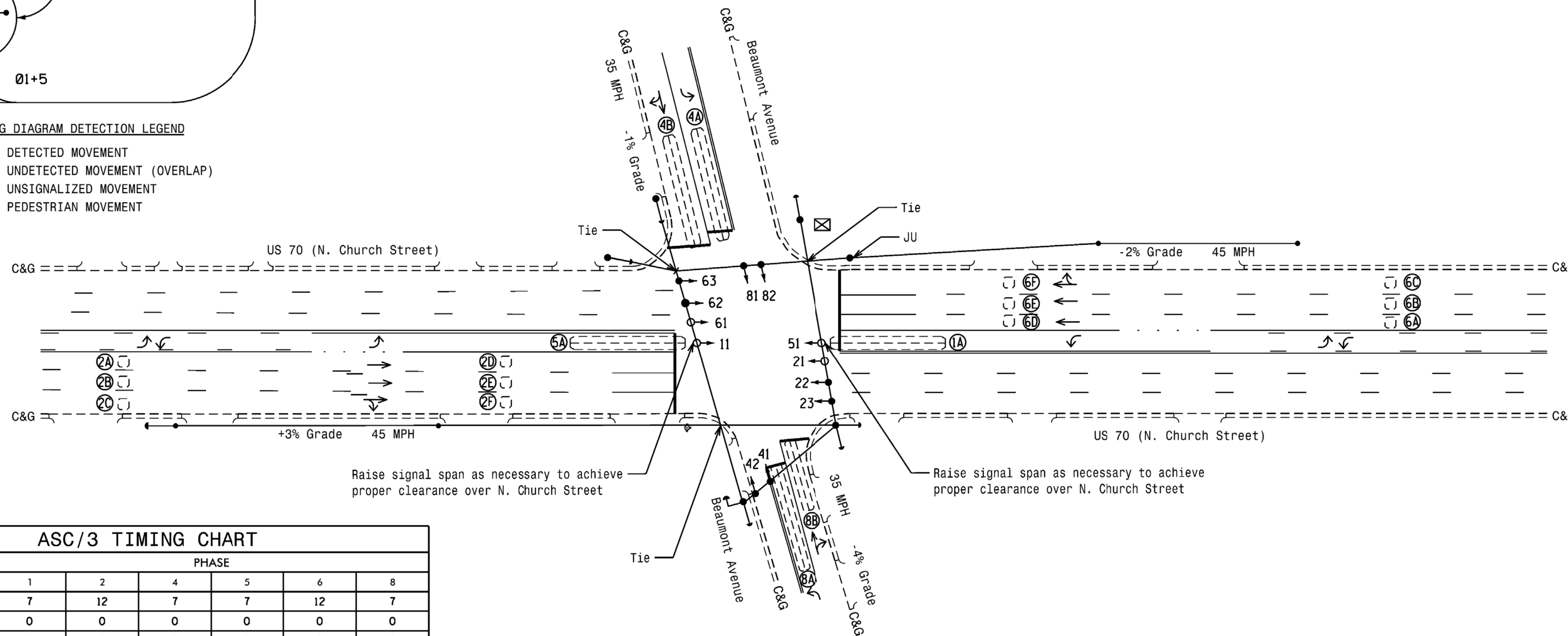
11
51
21, 22, 23
41, 42
61, 62, 63
81, 82

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	NEW CARD
1A	6x60	+5	2-4-2	-	1	Yes	-	15	-	S	- X
2A,2B,2C	6x6	300	EXIST.	-	2	Yes	1.6	-	-	S	- X
2D,2E,2F	6x6	90	EXIST.	-	2	Yes	-	-	-	S	- X
4A	6x60	+5	2-4-2	-	4	Yes	-	3	-	S	- X
4B	6x60	0	2-4-2	-	4	Yes	-	10	-	S	- X
5A	6x60	+5	2-4-2	-	5	Yes	-	15	-	S	- X
6A,6B,6C	6x6	300	EXIST.	-	2	Yes	1.6	-	-	S	- X
6D,6E,6F	6x6	90	EXIST.	-	6	Yes	-	-	-	S	- X
8A	6x60	0	2-4-2	-	8	Yes	-	3	-	S	- X
8B	6x40	0	2-4-2	-	8	Yes	-	10	-	S	- X

5 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Reposition existing signal heads numbered 22, 23, 62, and 63.
- 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.



Raise signal span as necessary to achieve proper clearance over N. Church Street

Raise signal span as necessary to achieve proper clearance over N. Church Street

ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	4	5	6	8
Min Green *	7	12	7	7	12	7
Walk *	0	0	0	0	0	0
Ped Clear	0	0	0	0	0	0
Veh. Extension *	2.0	2.0	2.0	2.0	2.0	2.0
Max 1 *	15	45	20	15	45	20
Yellow	3.0	4.7	3.9	3.0	4.7	4.1
Red Clear	2.4	1.5	2.0	2.3	1.5	2.1
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	-	-	X	-	-	X
Simultaneous Gap	X	X	X	X	X	X

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

LEGEND

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



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:

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

US 70 (N. Church Street) at Beaumont Avenue

Division 7 Alamance County Burlington

PLAN DATE: December 2017 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS

INIT. DATE

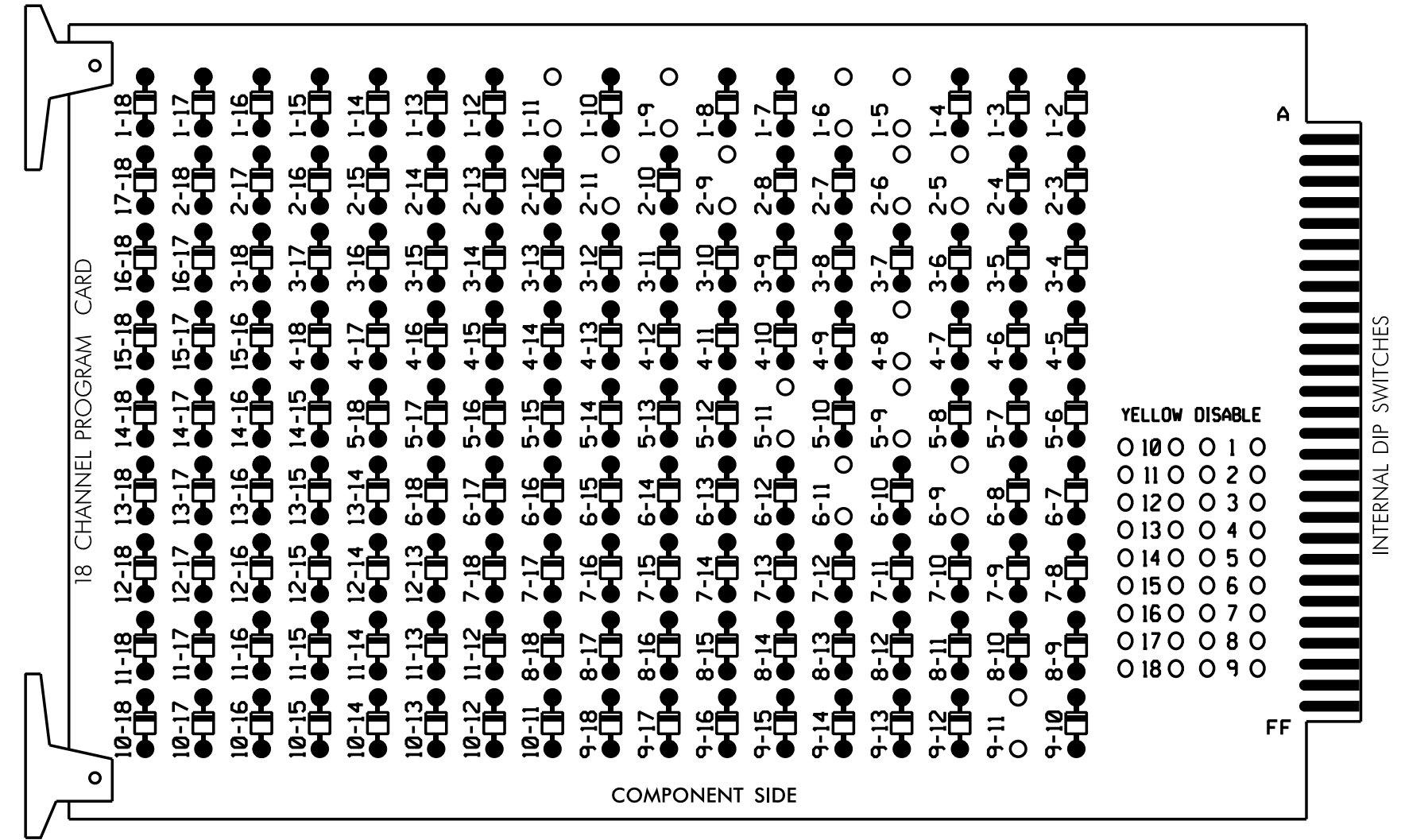
SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JAMES B. VOSO
 SEAL 022599
 James B. Voso
 6/13/2018
 SIGNATURE DATE
 SIG. INVENTORY NO. 07-0036

*****SYTIME*****
 *****BUSINESS*****

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.

■ = 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 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	
CNU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	11	21,22, 23	NU	NU	41,42	NU	51	61,62, 63	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)

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

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

FS = FLASH SENSE
 ST = STOP TIME

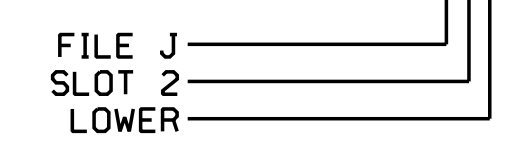
⊗ Wired Input - Do not populate slot with detector card

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,2C	TB2-5,6	I2U	39	2	2	YES	1.6			S
2D,2E,2F	TB2-7,8	I2L	43	12	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
5A ²	TB3-1,2	J1U	55	5	5	YES		15		S
		I4U	47	22	2	YES				S
6A,6B,6C	TB3-5,6	J2U	40	6	6	YES	1.6			S
6D,6E,6F	TB3-7,8	J2L	44	16	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

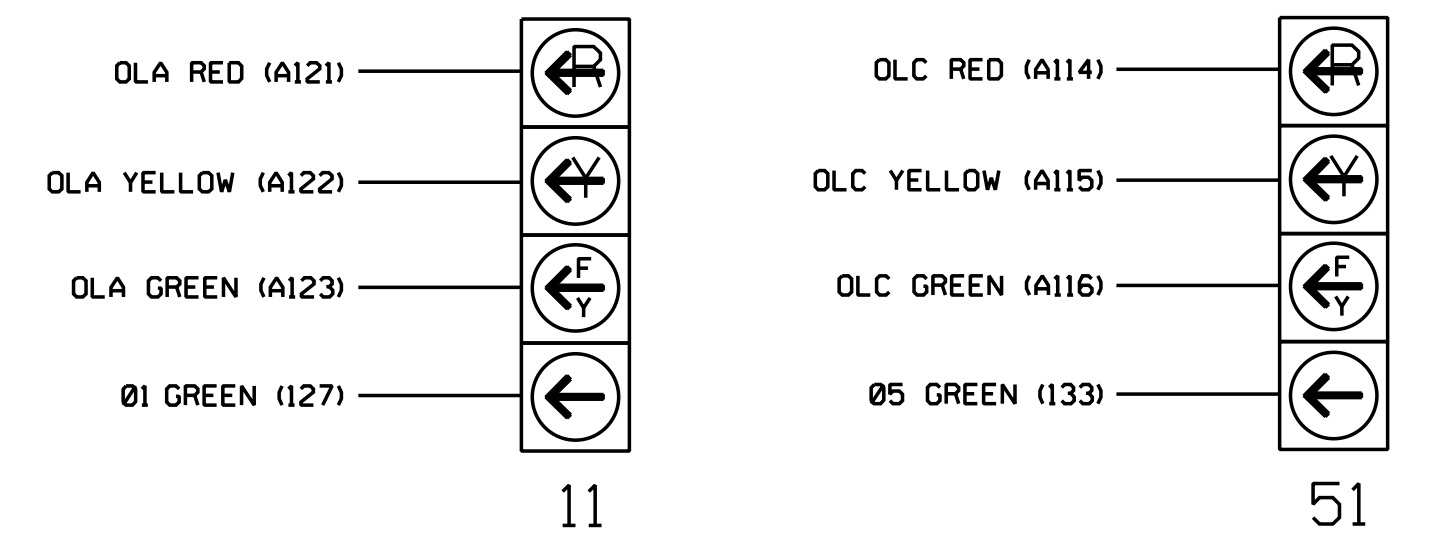
¹Add jumper from I1-W to J4-W, on rear of input file.
²Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

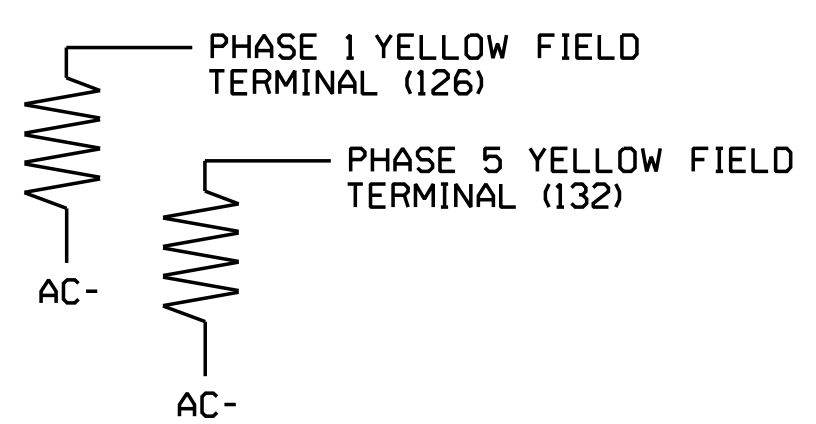
(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

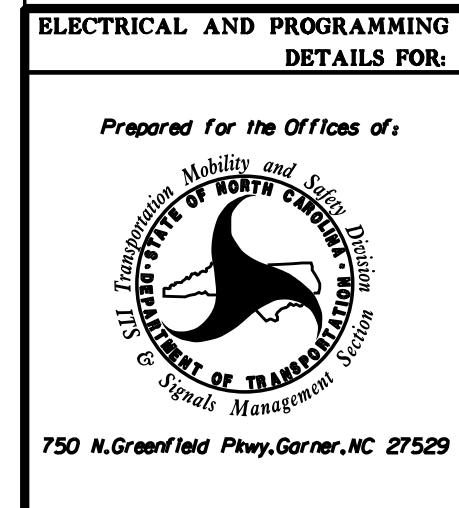
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



Electrical Detail - Sheet 1 of 2



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



US 70 (N. Church Street) at Beaumont Avenue	
Division 7	Alamance County
Prepared for the Offices of:	Burlington
PLAN DATE: December 2017	REVIEWED BY: JB Voso
PREPARED BY: SE Greene	REVIEWED BY:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL	DATE
	6/13/2018
SIG. INVENTORY NO. 07-0036	

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

OVERLAP A

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

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

PROTECTED LEFT TURN.... PHASE 1

OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE

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

ACTION PLAN SF BIT DISABLE..... 0

↓ Toggle Twice

OVERLAP C

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

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

PROTECTED LEFT TURN.... PHASE 5

OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE

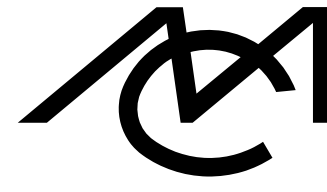
DELAY START OF: FYA..0.0 CLEARANCE..0.0

ACTION PLAN SF BIT DISABLE..... 0

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-0036
 DESIGNED: December 2017
 SEALED: 6/13/2018
 REVISED: NA

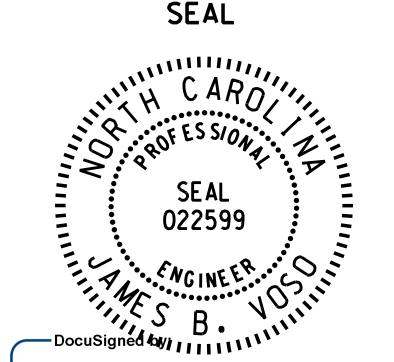
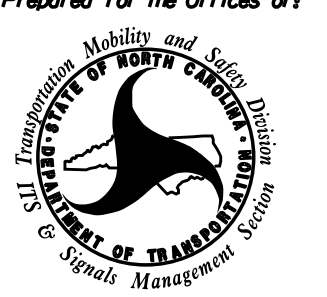
1:47:00 PM
 I:\3789 - Burlington Graham Signal System\06 Working Folders\Replace Sub-folders with NCDOT File Structure if Working on NCDOT Project\HWg or Dgn\07-0036\070036-sm.ele_20131223.dgn
 Local User



Mattern & Craig
 ENGINEERS & SURVEYORS

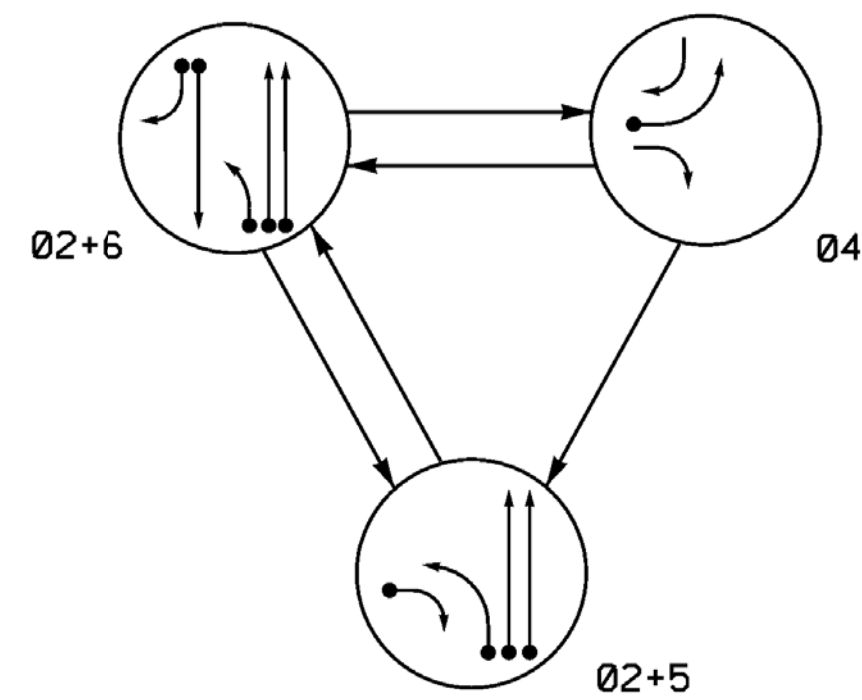
12 BROAD STREET
 ASHEVILLE, NORTH CAROLINA 28801
 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

Electrical Detail - Sheet 2 of 2

<p><small>ELECTRICAL AND PROGRAMMING DETAILS FOR:</small></p> <p style="text-align: center;">US 70 (N. Church Street) at Beaumont Avenue</p> <p><small>Division 7 Alamance County Burlington</small></p> <p><small>PREPARED BY: SE Greene REVIEWED BY: JB Voso</small></p>	<p style="text-align: center;"><small>SEAL</small></p> <div style="text-align: center;">  <p><small>SEAL 022599 JAMES B. VOSO ENGINEER</small></p> </div> <p><small>James Voso 6/13/2018</small></p> <p style="text-align: right;"><small>DATE</small></p>									
<p><small>Prepared for the Offices of:</small></p>  <p><small>750 N. Greenfield Pkwy, Corner, NC 27529</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"><small>REVISIONS</small></th> <th style="width: 20%;"><small>INIT.</small></th> <th style="width: 30%;"><small>DATE</small></th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p style="text-align: right;"><small>SIG. INVENTORY NO. 07-0036</small></p>	<small>REVISIONS</small>	<small>INIT.</small>	<small>DATE</small>						
<small>REVISIONS</small>	<small>INIT.</small>	<small>DATE</small>								

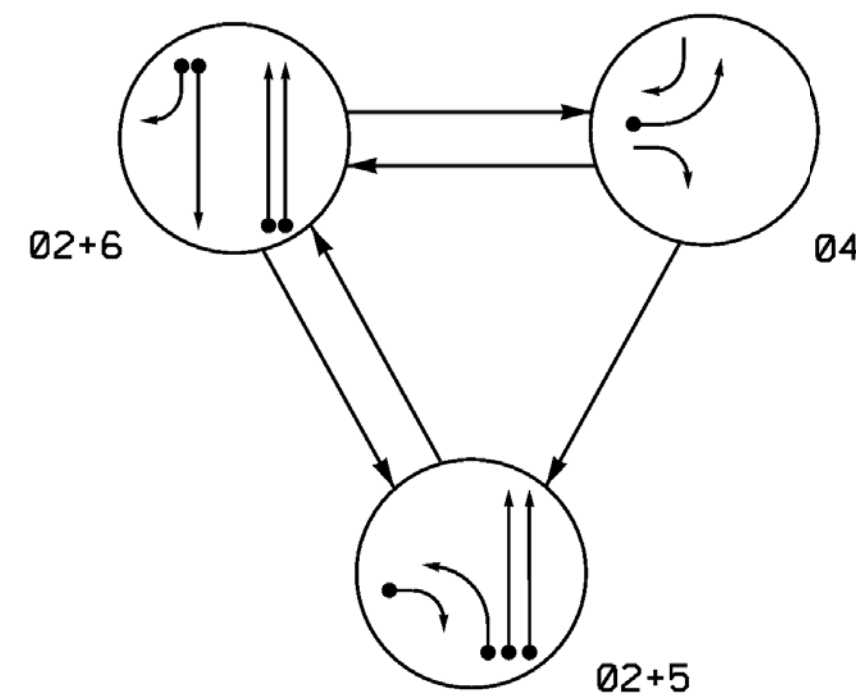
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DEFAULT PHASING DIAGRAM



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

ALTERNATE PHASING DIAGRAM



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

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 NEW CARD
2A	6x20	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	-	15*	-	S	- X
5B	6x60	+5	2-4-2	-	5	Yes	-	15	-	S	- X
6A	6x20	70	2-4-2	-	6	Yes	-	-	-	S	- X
S1	6x6	+150	4	X	-	No	-	-	-	N	X X
S2	6x6	+150	4	X	-	No	-	-	-	N	X X

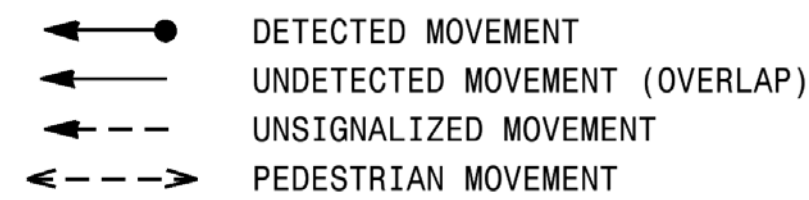
* Disable Delay During Alternate Phasing Operation.
 ** Disable Phase 2 Call for Loop 5A during Alternate Phasing Operation.

3 Phase Fully Actuated (Burlington-Graham Signal System)

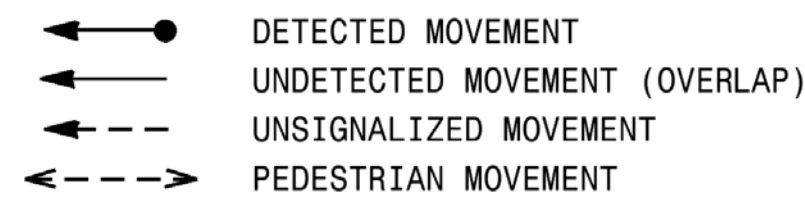
NOTES

- 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.
- Proposed cabinet shall accommodate existing school flashers.

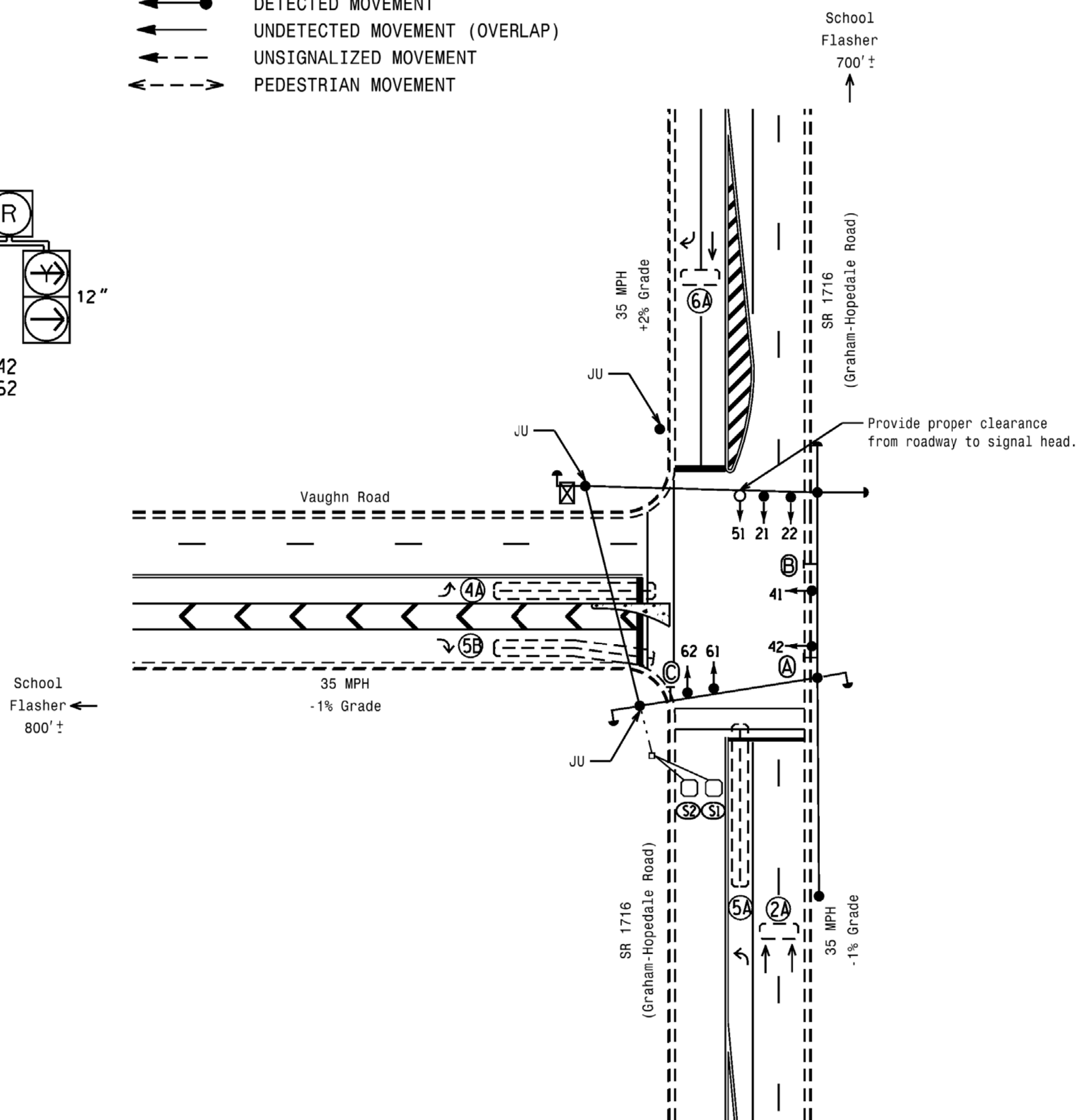
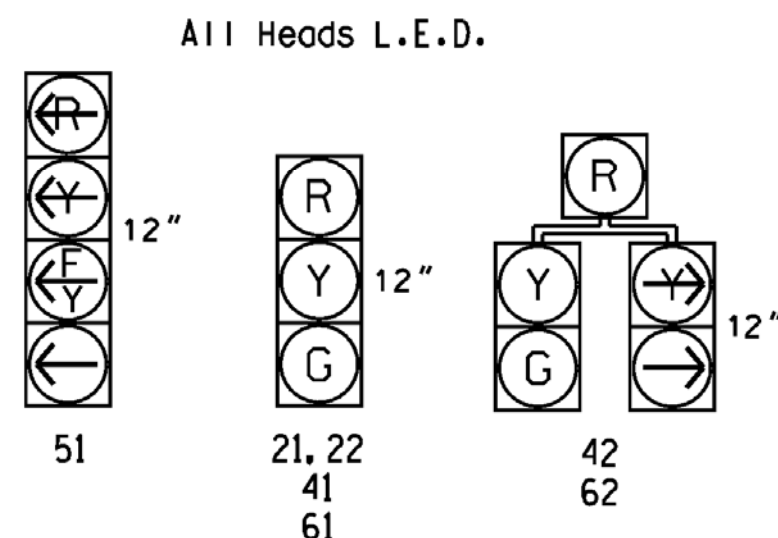
PHASING DIAGRAM DETECTION LEGEND



PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.



ASC/3 TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green *	10	7	7	10
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	3.0	1.0	1.0	3.0
Max I *	30	20	20	30
Yellow	3.9	3.0	3.0	3.9
Red Clear	2.3	1.9	2.6	2.3
Actuations 34 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Locking Detector	X	-	-	X
Recall Position	VEH. RECALL	-	-	VEH. RECALL
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

PROPOSED		EXISTING	
	Traffic Signal Head		Traffic Signal Head
	Modified Signal Head		N/A
	Pedestrian Signal Head		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
	Right of Way		Right of Way
	Directional Arrow		Directional Arrow
	Right Arrow "ONLY" Sign (R3-5R)		Right Arrow "ONLY" Sign (R3-5R)
	Left Arrow "ONLY" Sign (R3-5L)		Left Arrow "ONLY" Sign (R3-5L)
	"NO TURN ON RED" Sign (R10-11)		"NO TURN ON RED" Sign (R10-11)

*****SYTIME*****
 *****USERNAME*****

Mattern & Craig
 ENGINEERS • SURVEYORS

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Signal Upgrade

Prepared for the Offices of:

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SR 1716 (Graham-Hopedale Road) at Vaughn Road

Division 7 Alamance County Burlington

PLAN DATE: March 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS	INIT.	DATE

James B. Vosso
 ENGINEER
 6/13/2018
 SIG. INVENTORY NO. 07-0037