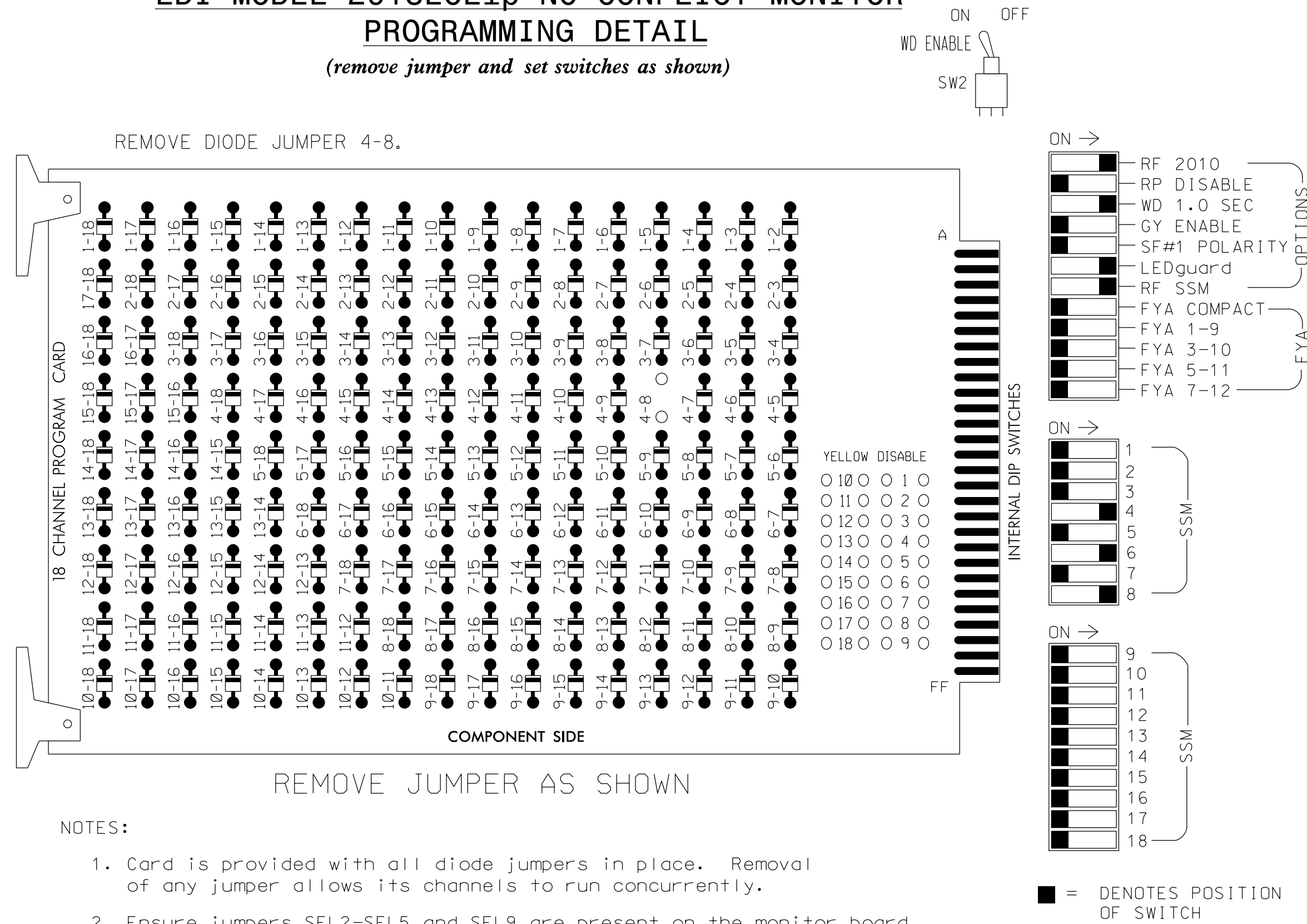


EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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 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
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S5,S8,S11
 PHASES USED.....4,6,8
 OVERLAPS.....NONE

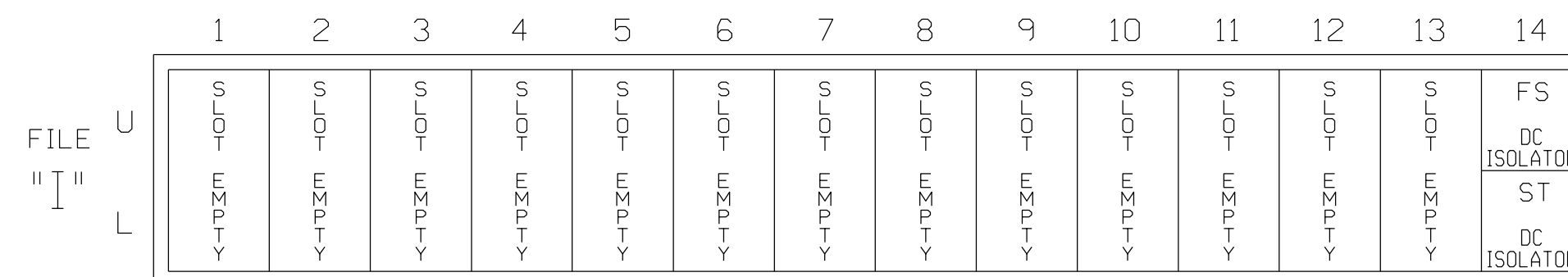
SIGNAL HEAD HOOK-UP CHART

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	NU	NU	NU	41,42, 43	NU	NU	61,62, 63	NU	NU	81,82	NU
RED					101			134			107	
YELLOW					102			135			108	
GREEN					103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



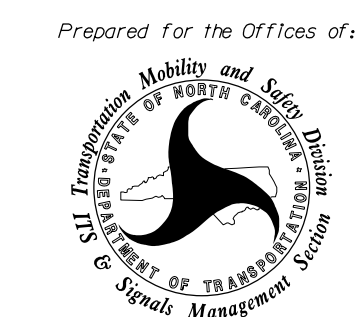
EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-0981
 DESIGNED: SEPT-2017
 SEALED: 06-13-2018
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:



750 N. Greenfield Pkwy, Garner, NC 27529

Plans Prepared By:

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

US 70-NC 62 (S. Fisher Street)
 at
 W. Davis Street

Division 7 Alamance County Burlington

PLAN DATE: September 2017 REVIEWED BY: LM Moon

PREPARED BY: AJ Davis REVIEWED BY:

REVISIONS INIT. DATE

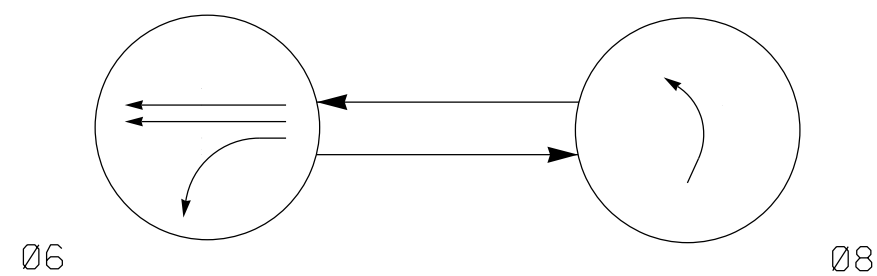
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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

ELECTRICAL INVENTORY NO. 07-0981

PHASING DIAGRAM



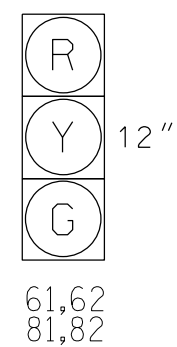
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE		
	Ø 6	Ø 8	FLASH
61,62	G	R	Y
81,82	R	G	R

SIGNAL FACE I.D.

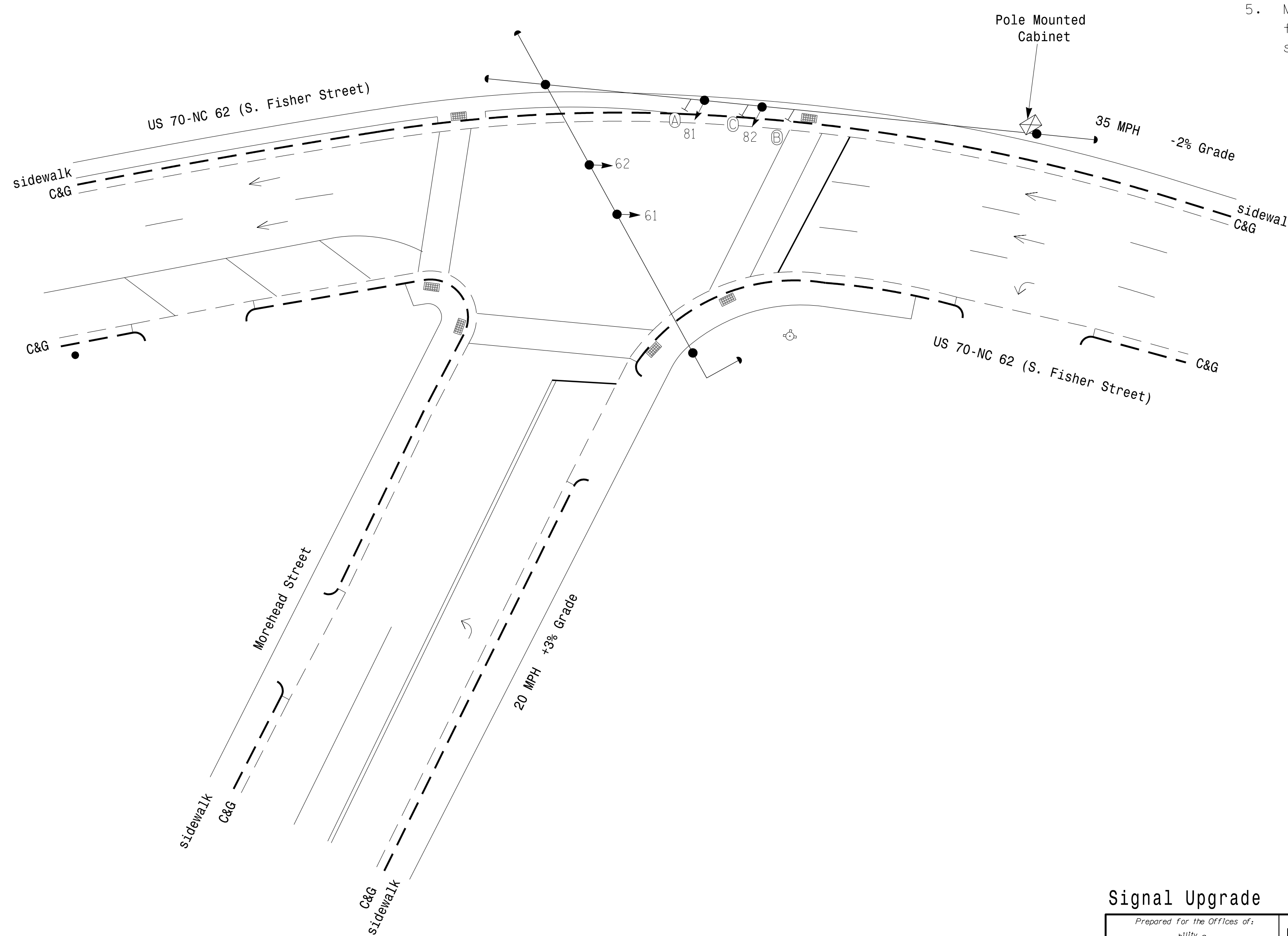
All Heads L.E.D.



2 Phase Pretimed
(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.



FEATURE	PHASE	
	6	8
Min Green *	10	7
Walk *	0	0
Ped Clear	0	0
Veh. Extension *	0.0	0.0
Max 1 *	34	34
Yellow	4.0	3.0
Red Clear	2.0	2.4
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

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

PROPOSED	LEGEND	EXISTING
○ →	Traffic Signal Head	● →
◐ →	Modified Signal Head	N/A
— →	Sign	— →
□ →	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	---
N/A	Right of Way	---
→	Directional Arrow	→
N/A	Truncated Dome	■
N/A	Fire Hydrant	⊕
(A)	Left Arrow "ONLY" Sign (R3-5L)	(A)
(B)	"No Right Turn" Sign (R3-1)	(B)
(C)	"ONE WAY" Sign (R6-1)	(C)

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

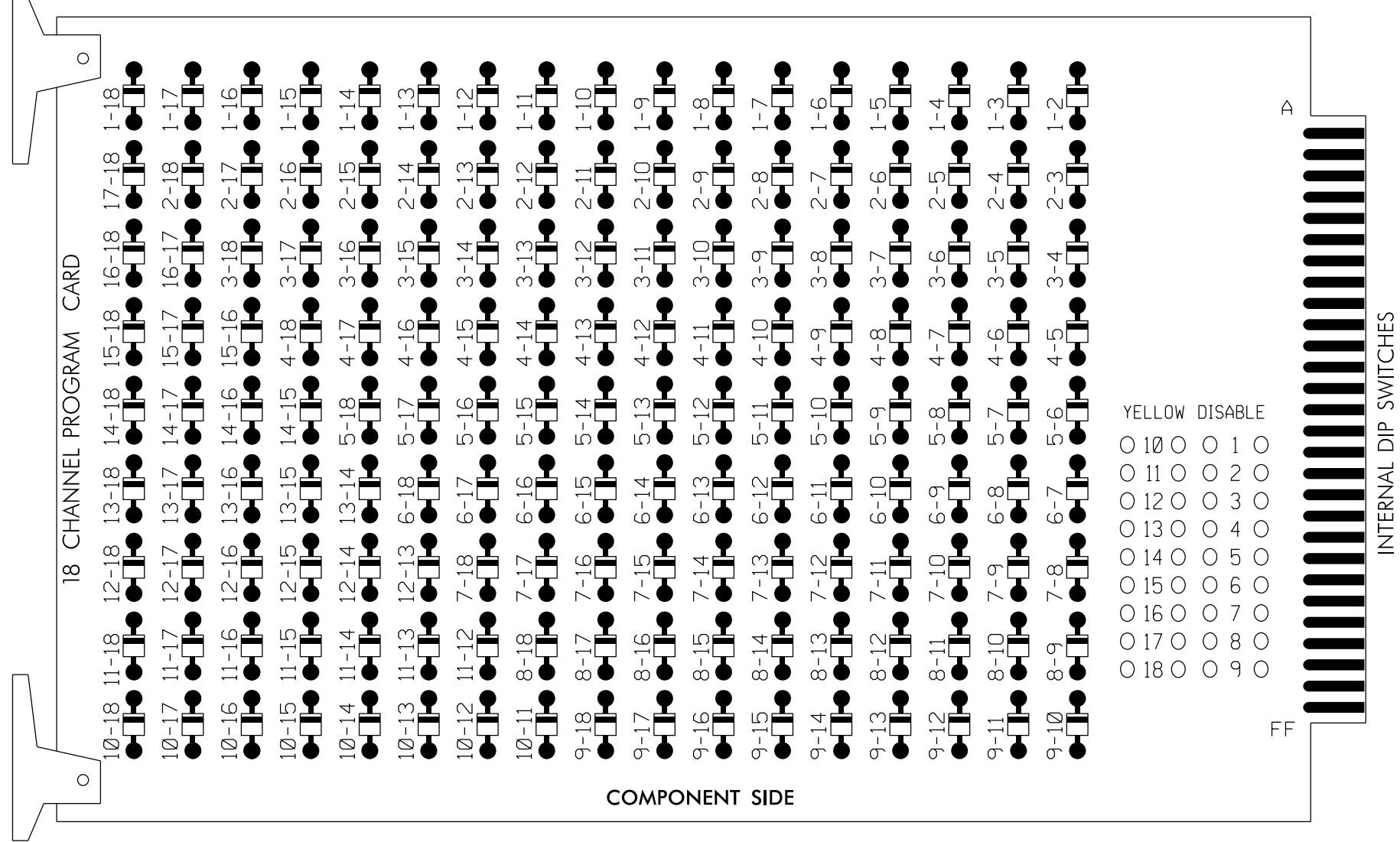
<p>DRMP, Inc. 8000 Regency Parkway, Suite 175 Cary, NC 27519 NC License No. C-2213 (919) 650-1038</p>	<p>Prepared For the Office of: </p>	<p>US 70-NC 62 (S. Fisher Street) at Morehead Street</p>	<p>SEAL </p>
	<p>Plans Prepared By: </p>	<p>Division 7 Alamance County Burlington</p> <p>PLAN DATE: November 2017 REVIEWED BY: AJ Davis</p> <p>PREPARED BY: RD Lawton REVIEWED BY: LM Moon</p>	<p>Division 7 Alamance County Burlington</p> <p>PLAN DATE: November 2017 REVIEWED BY: AJ Davis</p> <p>PREPARED BY: RD Lawton REVIEWED BY: LM Moon</p>

13-JUN-2018 17:44
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 KANDERSON AT CHA-YANDERSON

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(set switches as shown)

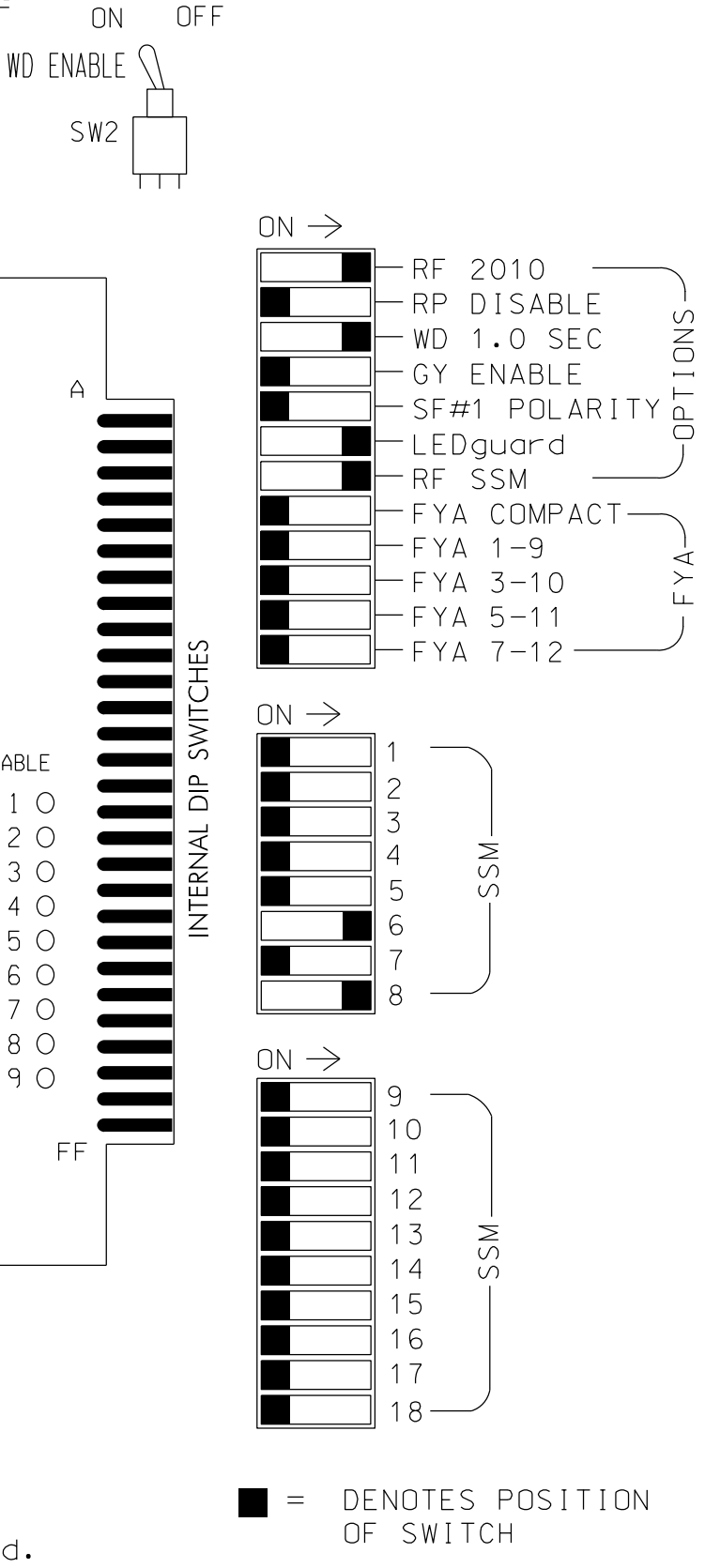
DO NOT REMOVE ANY JUMPERS



DO NOT REMOVE ANY JUMPERS

NOTES:

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



NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 6 Green.
3. 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	NU	NU	NU	NU	NU	NU	61,62	NU	NU	81,82	NU
RED								134			107	
YELLOW								135			108	
GREEN								136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												

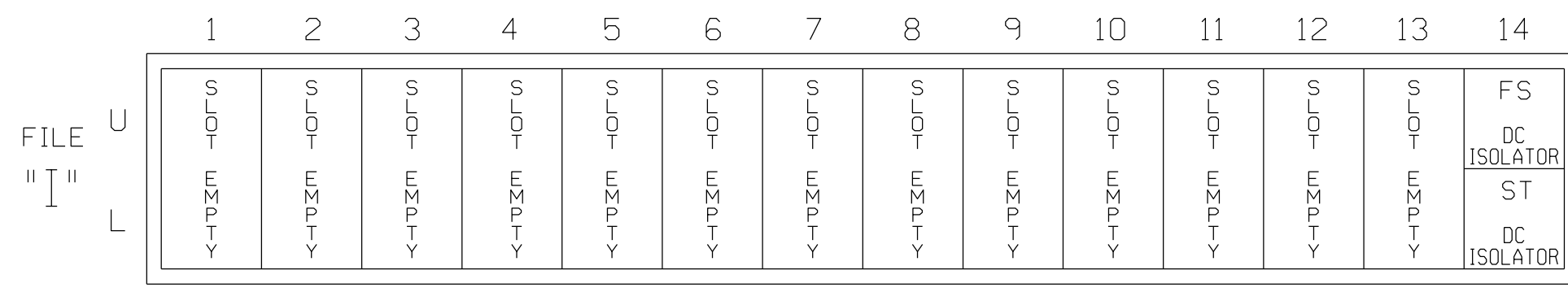
NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....336
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S8,S11
 PHASES USED.....6,8
 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: 07-0982
 DESIGNED: NOVEMBER 2017
 SEALED: 06-13-2018
 REVISED: N/A

13-UNA-2018.17-44 R:\66015\17\off\ek\signo\design\wiring\07-0982e.dgn KANDERSON AT CHA-KANDERSON

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

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

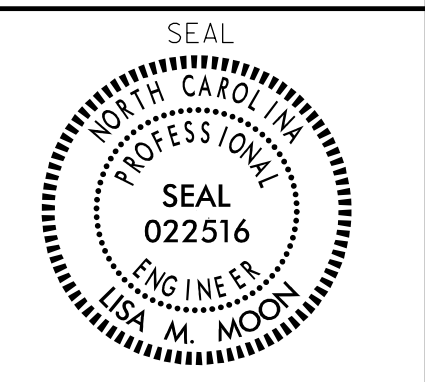
Division 7 Alamance County Burlington

PLAN DATE: November 2017 REVIEWED BY: AJ Davis

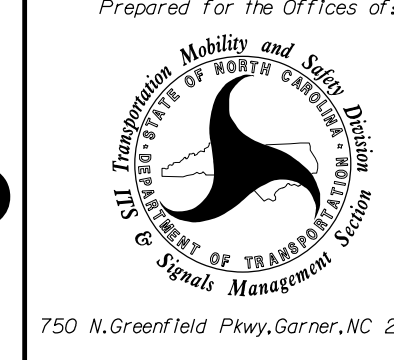
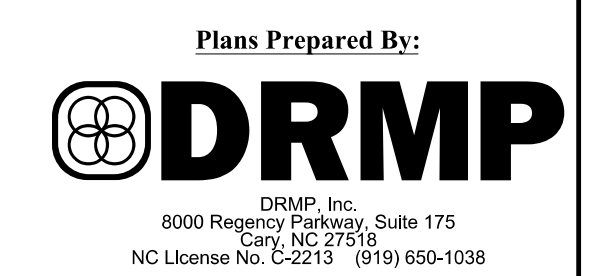
PREPARED BY: RD Lawton REVIEWED BY: LM Moon

REVISIONS	INIT.	DATE

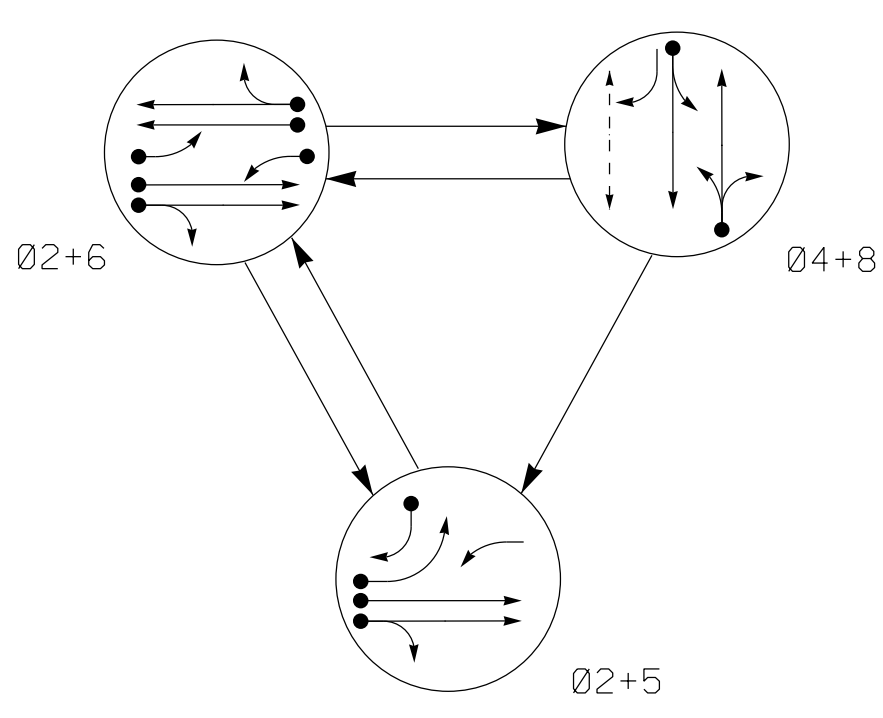
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSigned by: Lisa M. Moon 6/13/2018
 sig. INVENTORY NO. 07-0982



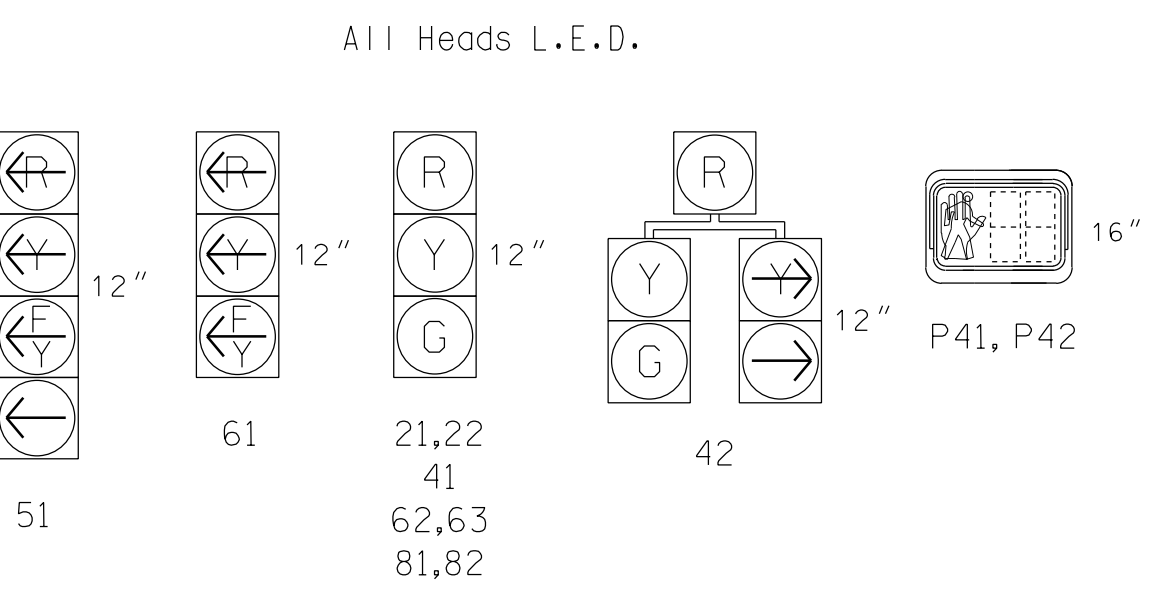
DEFAULT PHASING DIAGRAM



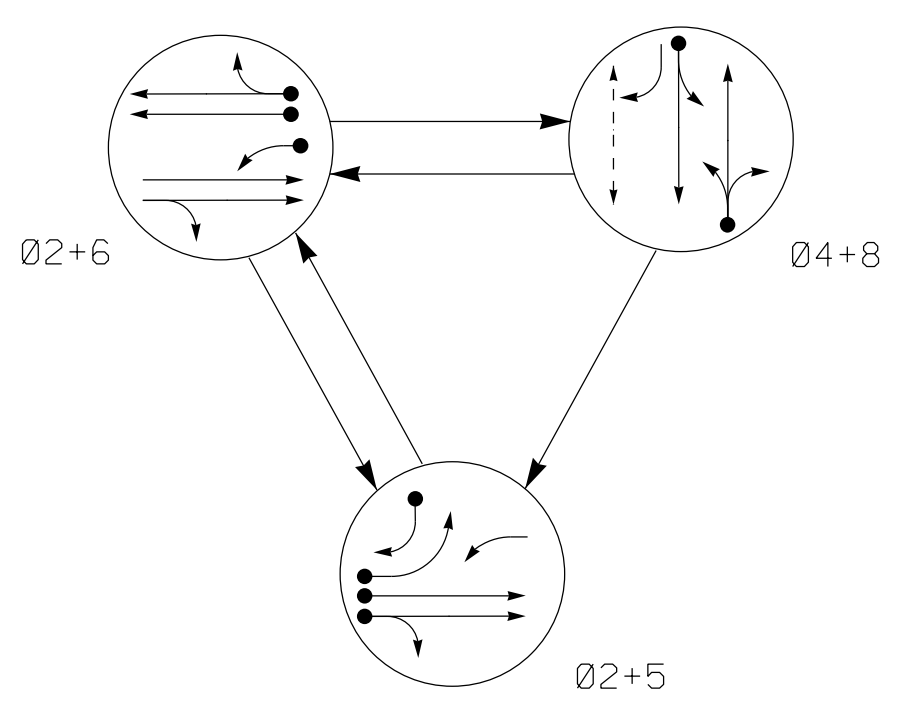
DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø 2+5	Ø 2+6	Ø 4+8	FLASH
21,22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	F	F	FR	FR
61	F	F	FR	FR
62,63	R	G	R	Y
81,82	R	R	G	R
P41,P42	DW	DW	W	DRK

SIGNAL FACE I.D.



ALTERNATE PHASING DIAGRAM



ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø 2+5	Ø 2+6	Ø 4+8	FLASH
21,22	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	F	F	FR	FR
61	F	F	FR	FR
62,63	R	G	R	Y
81,82	R	R	G	R
P41,P42	DW	DW	W	DRK

3 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. Reposition existing signal heads numbered 62 and 63.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Omit "Walk" and flashing "Don't Walk" time only.
9. Program pedestrian heads as to countdown the flashing "Don't Walk" time only.
10. Pavement markings are existing.
11. The City Traffic Engineer will determine the hours of use for each phasing plan.
12. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

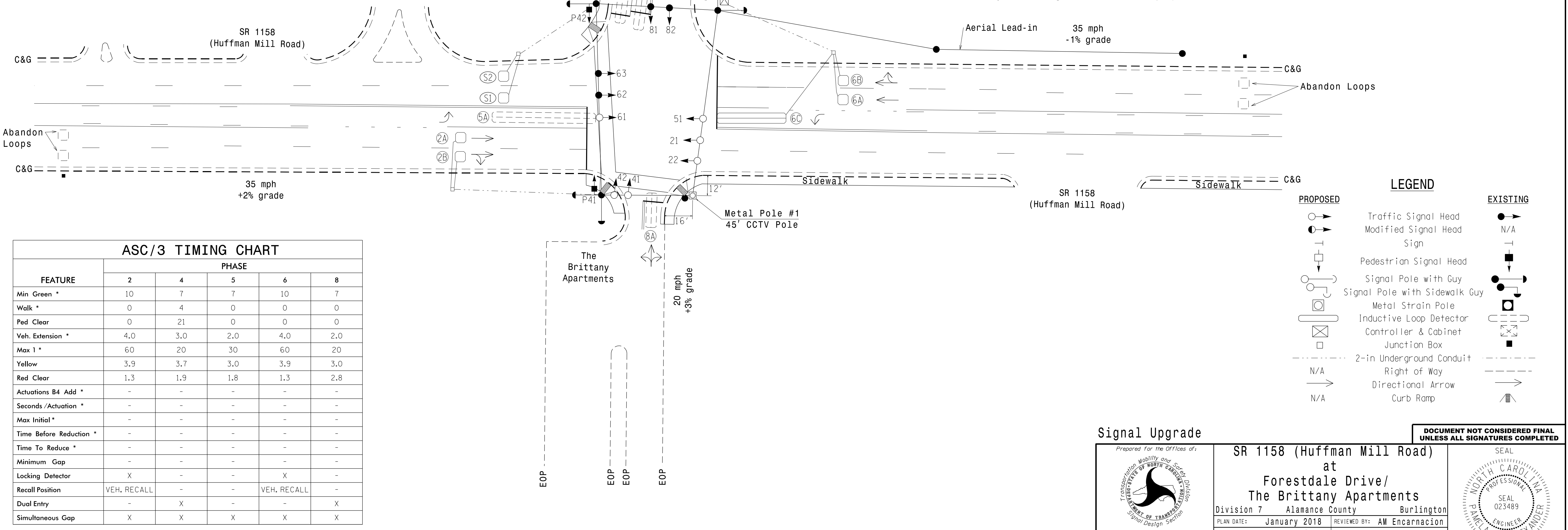
PHASING DIAGRAM DETECTION LEGEND

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

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	LOOP	CARD
2A,2B	6X6	70	3	X	2	Yes	-	-	-	S	-	X
4A	6X60	+10	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,6B	6X6	70	3	X	6	Yes	-	-	-	S	-	X
6C	6X40	0	2-4-2	X	6	Yes	-	-	-	S	-	X
8A	6X20	+5	2-4-2	-	8	Yes	-	5	-	S	-	X
S1	6X6	+120	3	X	-	No	-	-	-	N	X	X
S2	6X6	+120	3	X	-	No	-	-	-	N	X	X

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

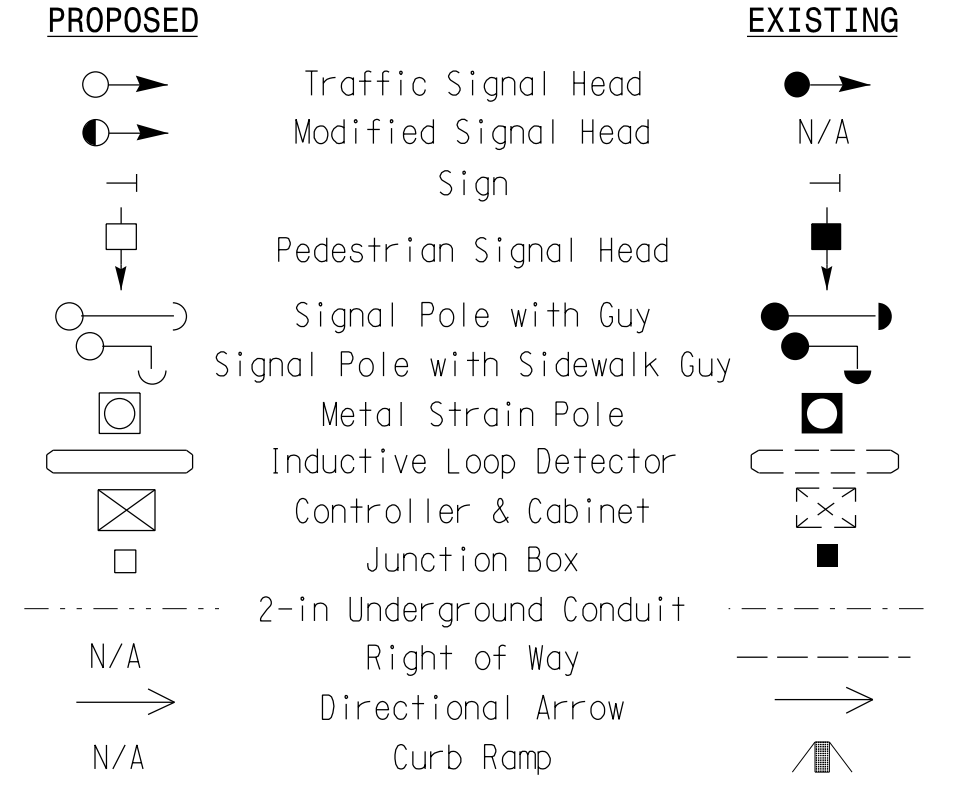


ASC/3 TIMING CHART

FEATURE	PHASE				
	2	4	5	6	8
Min Green *	10	7	7	10	7
Walk *	0	4	0	0	0
Ped Clear	0	21	0	0	0
Veh. Extension *	4.0	3.0	2.0	4.0	2.0
Max I *	60	20	30	60	20
Yellow	3.9	3.7	3.0	3.9	3.0
Red Clear	1.3	1.9	1.8	1.3	2.8
Actuations B4 Add *	-	-	-	-	-
Seconds /Actuation *	-	-	-	-	-
Max Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Lacking Detector	X	-	-	X	-
Recall Position	VEH. RECALL	-	-	VEH. RECALL	-
Dual Entry	-	X	-	-	X
Simultaneous Gap	X	X	X	X	X

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

LEGEND



Signal Upgrade

Prepared for the Offices of:

SR 1158 (Huffman Mill Road) at Forestdale Drive/ The Brittany Apartments

Division 7 Alamance County Burlington

PLAN DATE: January 2018 REVIEWED BY: AM Encarnacion

PREPARED BY: VJ Paul REVIEWED BY: PL Alexander

REVISIONS INIT. DATE

SCALE: 1"=30'

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Seal of the State of North Carolina Professional Engineer License No. 023489
 Pamela Alexander
 6/7/2018
 DATE

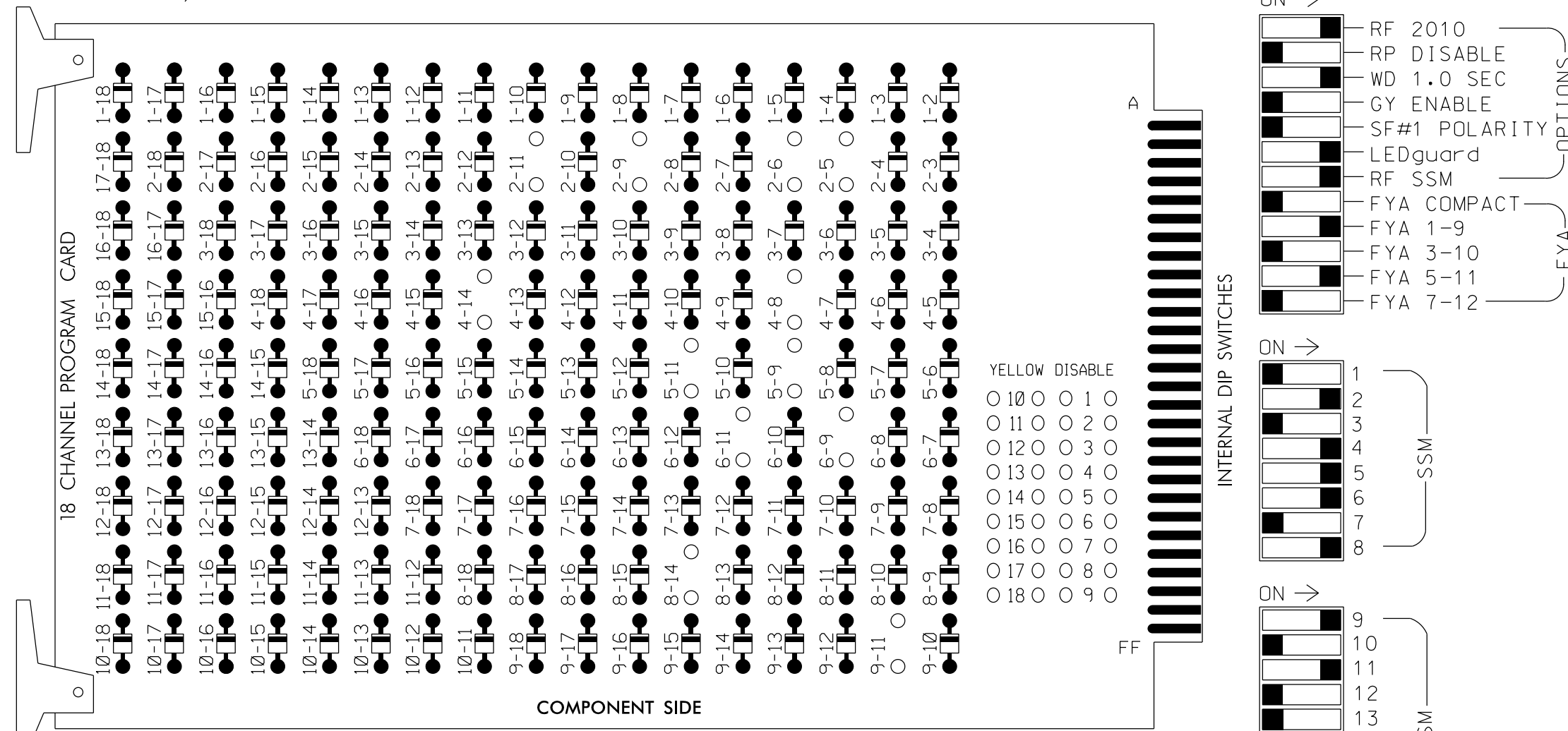
SIG. INVENTORY NO. 07-1026

07-JUN-2018 11:15 D:\Forsdorfer\atkins\Traffic\sig\U-6015_B-G_Sig_System\Task_05_11_Signal\Des\gpm07-1026.dgn ALEX3361 AT LUS336069

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-11, 4-8, 4-14, 5-9, 5-11, 6-9, 6-11, 8-14, and 9-11.



REMOVE JUMPERS AS SHOWN

NOTES:

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

NOTES

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

EQUIPMENT INFORMATION

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

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	P41, P42	42	51*	62,63	NU	NU	81,82	NU	61*	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							132							A122			A115	
FLASHING YELLOW ARROW														A123			A116	
GREEN ARROW							133	133										
Hand							104											
Walker							106											

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

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

FS = FLASH SENSE
ST = STOP TIME

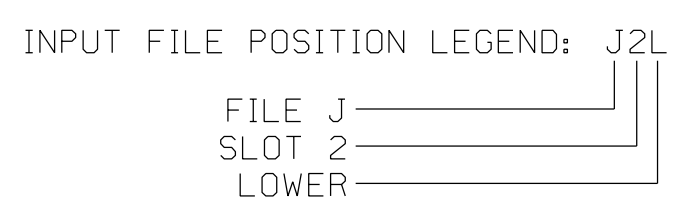
⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A,2B	TB2-5,6	I2U	39	2	2	YES				S
4A	TB4-9,10	I6U	41	4	4	YES		3		S
* S1	TB6-9,10	I9U	60	11	SYS	NO				N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N
5A ¹	TB3-1,2	J1U	55	5 ★	5	YES		15		S
	-	I4U	47	22 ★	2	YES				S
5B	TB3-5,6	J2U	40	6	5	YES		15		S
6A,6B	TB3-9,10	J3U	64	36	6	YES				S
6C	TB3-11,12	J3L	77	46	6	YES				S
8A	TB5-9,10	J6U	42	8	8	YES		5		S
PED PUSH BUTTONS										
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					

NOTE:
INSTALL DC ISOLATOR IN INPUT FILE SLOT 112.

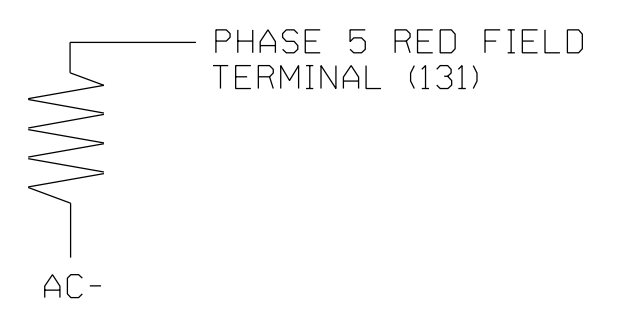
- * System detector only. Remove any assigned vehicle phase.
- ★ See the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheet 2.
- ¹ Add jumper from J1-W to I4-W, on rear of input file.



LOAD RESISTOR INSTALLATION DETAIL

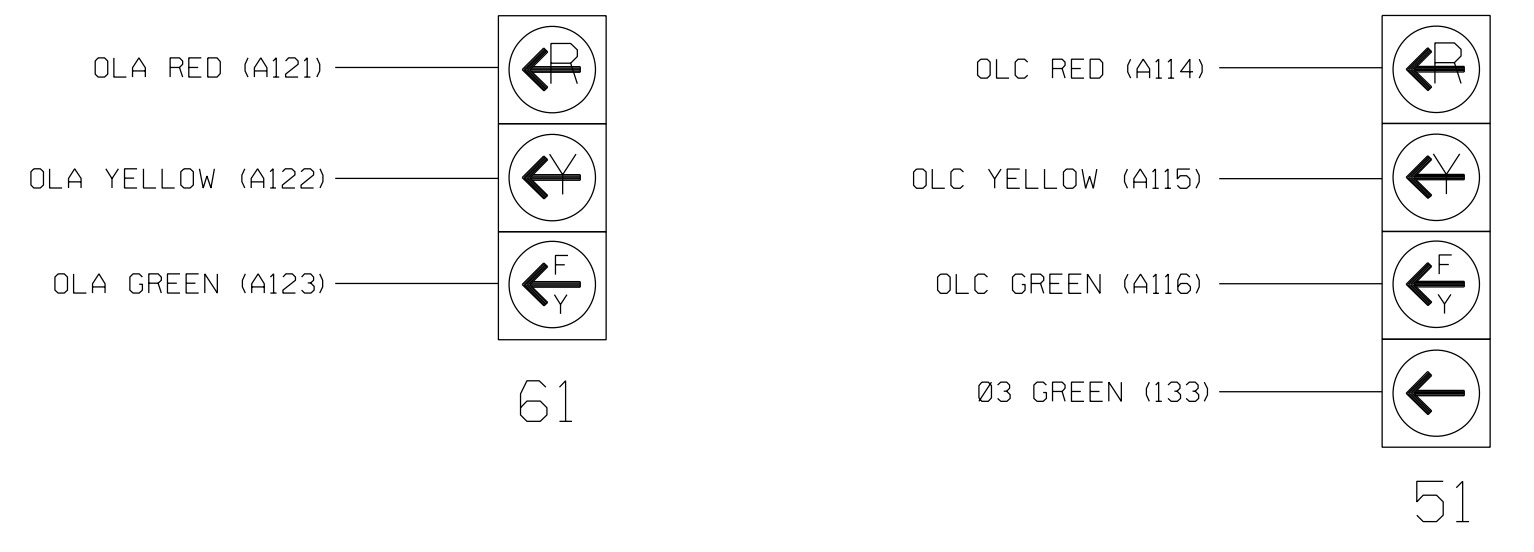
(install resistor as shown)

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



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



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: 07-1026
 DESIGNED: January 2018
 SEALED: 6/7/2018
 REVISED: N/A

Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR: 	SR 1158 (Huffman Mill Road)		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER PAMELA L. ALEXANDER SEAL 023489 DATE 6/9/2018
	at Forestdale Drive/ The Brittany Apartments		
Division 7 PLAN DATE: January 2018 PREPARED BY: VJ Paul	Alamance County REVIEWED BY: AM Encarnacion REVIEWED BY: PL Alexander	Burlington DATE DATE	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

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

```

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

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

Toggle Twice

OVERLAP C

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

```

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

 FLASHING ARROW OUTPUT.....CH11 ISOLATE
 DELAY START OF: FYA..0.0 CLEARANCE..0.0
 ACTION PLAN SF BIT DISABLE..... 5
    
```

NOTICE ACTION
PLAN SF BIT "5"

END PROGRAMMING

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL

FOR ALTERNATE PHASING LOOP 5A

(program controller as shown)

IMPORTANT!

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

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

```

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

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

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

```

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

NOTICE VEH
DET PLAN 2

ENSURE DELAY
IS SET TO '0'

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

ENSURE PHASE
IS SET TO "0"

```

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

NOTICE VEH
DET PLAN 2

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-1026
DESIGNED: January 2018
SEALED: 6/7/2018
REVISED: N/A

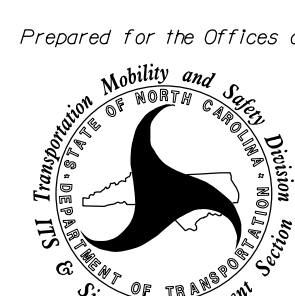
END PROGRAMMING

Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

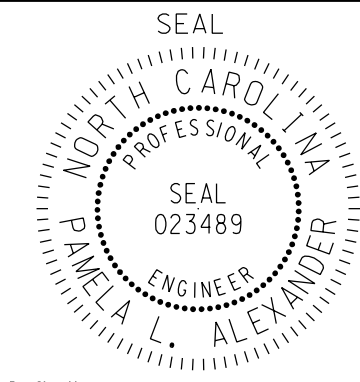
Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1158 (Huffman Mill Road) at Forestdale Drive/ The Brittany Apartments	
Division 7	Alamance County
PLAN DATE: January 2018	REVIEWED BY: AM Encarnacion
PREPARED BY: VJ Paul	REVIEWED BY: PL Alexander
REVISIONS	INIT. DATE

SEAL



SEAL
023489
PAMELA L. ALEXANDER
ENGINEER

6/9/2018
DATE

SIG. INVENTORY NO. 07-1026

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 5.

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

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

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

ALTERNATE PHASING CHANGE SUMMARY

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

SF BIT 5: Modifies overlap parent phases for head 51 to run protected turns only.

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

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

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

```

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

```

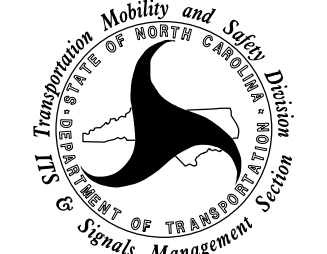
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1026
DESIGNED: January 2018
SEALED: 6/7/2018
REVISED: N/A

Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

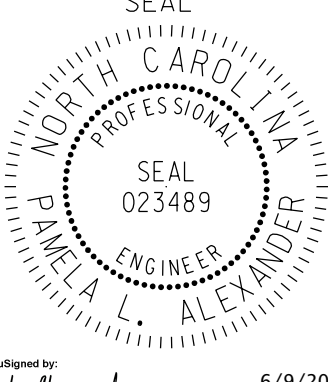
Prepared for the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

SR 1158 (Huffman Mill Road) at Forestdale Drive/ The Brittany Apartments	
Division 7	Alamance County Burlington
PLAN DATE: January 2018	REVIEWED BY: AM Encarnacion
PREPARED BY: VJ Paul	REVIEWED BY: PL Alexander
REVISIONS	INIT. DATE

SEAL



SEAL
023489
PAMELA L. ALEXANDER
ENGINEER

6/9/2018
DATE

SIG. INVENTORY NO. 07-1026

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

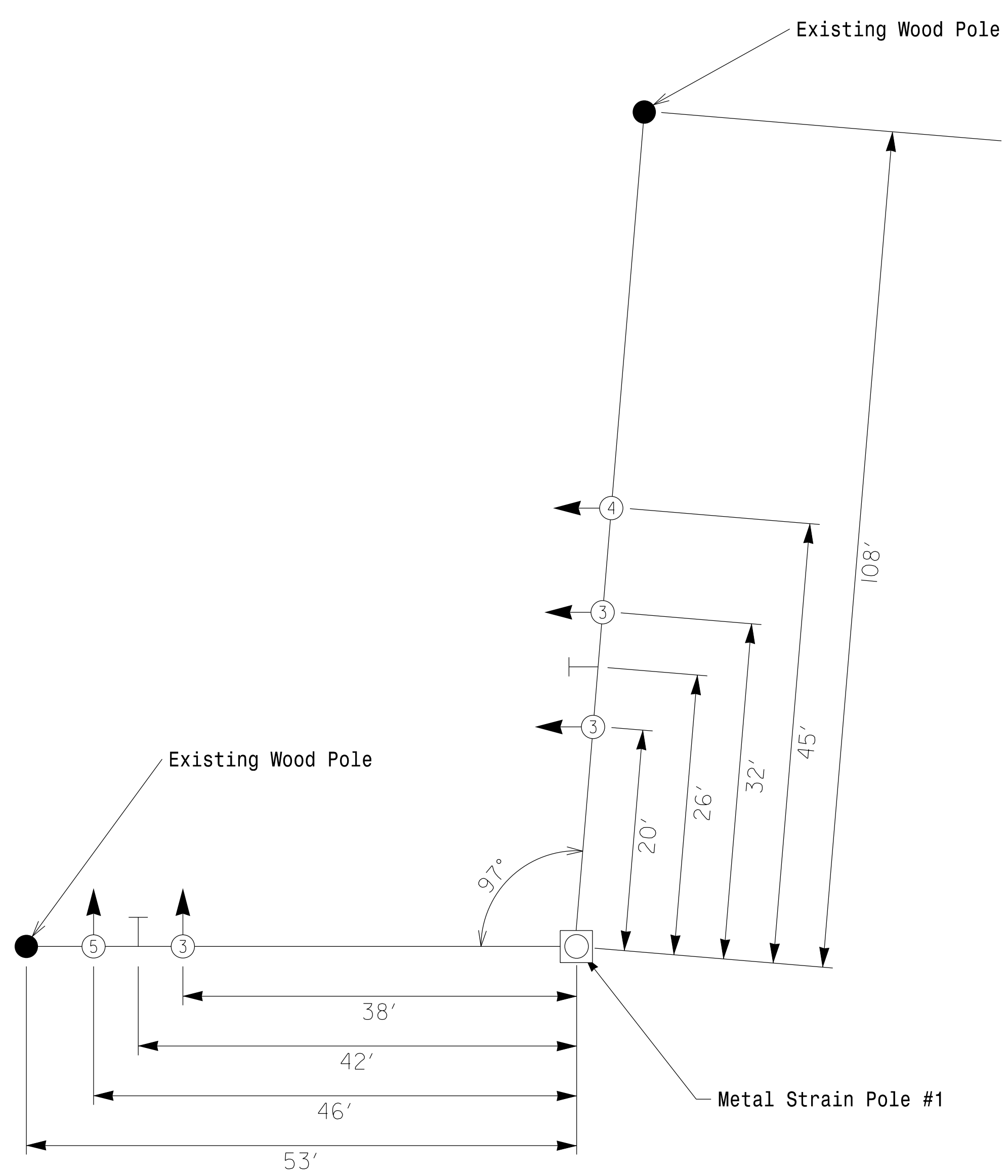
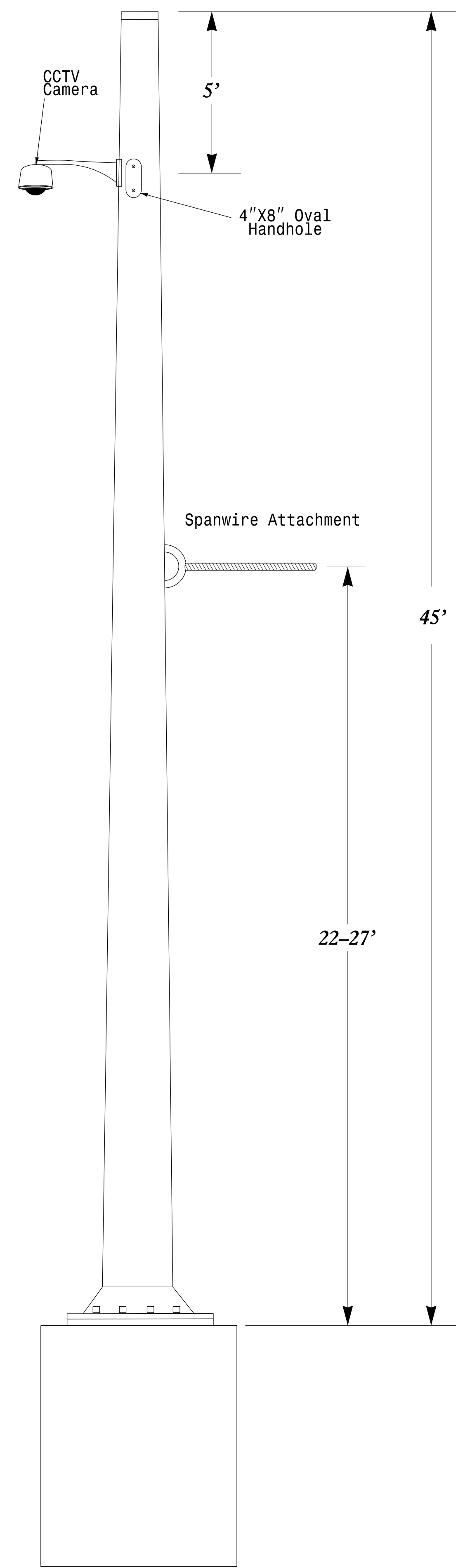
NOTES

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.



NCDOT Wind Zone 4 (90 mph) Strain Pole Loading Detail

	SR 1158 (Huffman Mill Road)		
	at Forestdale Drive/ The Brittany Apartments		
Division 7	Alamance County	Burlington	
PLAN DATE: January 2018	REVIEWED BY: AM Encarnacion		
PREPARED BY: VJ Paul	REVIEWED BY: PL Alexander		
SCALE	REVISIONS	INIT.	DATE
NTS			

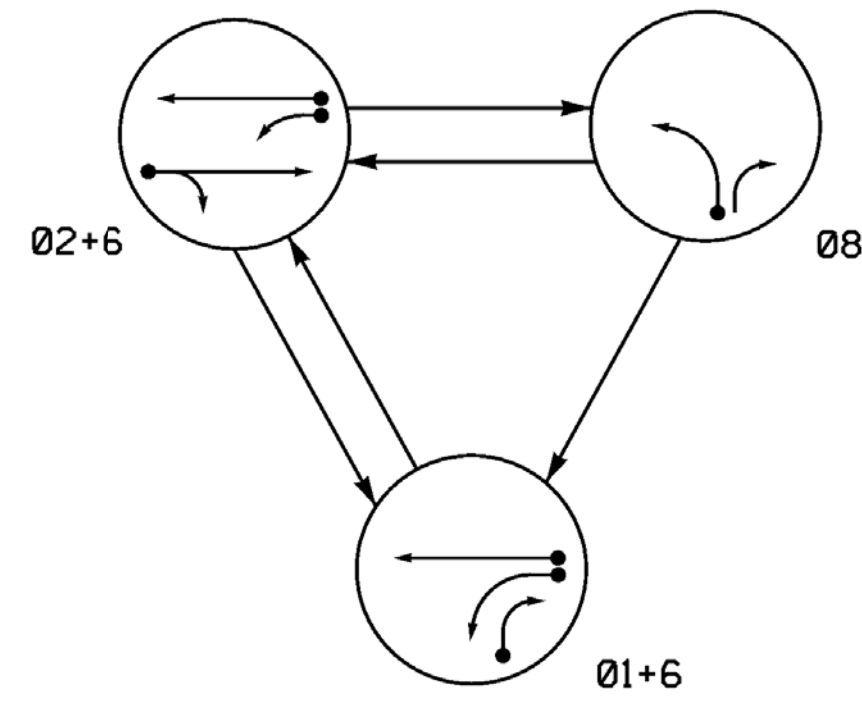
750 N. Greenfield Pkwy, Garner, NC 27529

6/7/2018
Pamela Alexander
DATE

SIG. INVENTORY NO. 07-1026

07-JUN-2018 11:15
 ***DOT/ITS-CON/PROJECT/ITS/TRANS/PORT/IT/ON/Traffic/Curr/00056469 U-6015 B-6 Sig Sys*Task 05-11-15/Signal/IS/04/05/107-1026mp.dgn
 ALEX3361 AT LUS210649

PHASING DIAGRAM



SIGNAL FACE	PHASE			
	01+6	02+6	08	FLASH
11	-	Y	R	Y
21, 22	R	G	R	Y
81	R	R	G	R
82	R	R	G	R
61, 62	G	G	R	Y

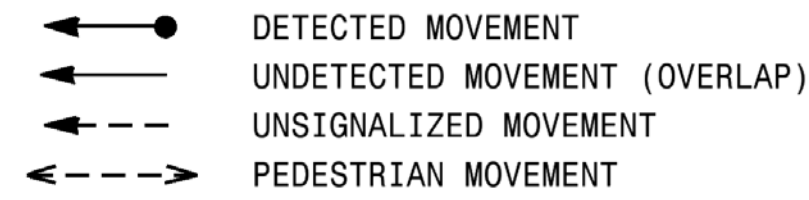
ASC/3 DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	NEW LOOP SYSTEM LOOP NEW CARD
1A	6x60	+5	2-4-2	-	1	Yes	-	15	-	S	- X
					6	Yes	-	3	-	G	- X
1B	6x60	+10	2-4-2	-	1	Yes	-	15	-	S	- X
2A	6x6	330	EXIST.	-	2	Yes	-	-	X	N	- X
6A	6x6	330	EXIST.	-	6	Yes	-	-	X	N	- X
8A	6x60	+10	2-4-2	-	8	Yes	-	3	-	S	- X
S1	6x6	+230	EXIST.	-	-	No	-	-	-	N	X X

3 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

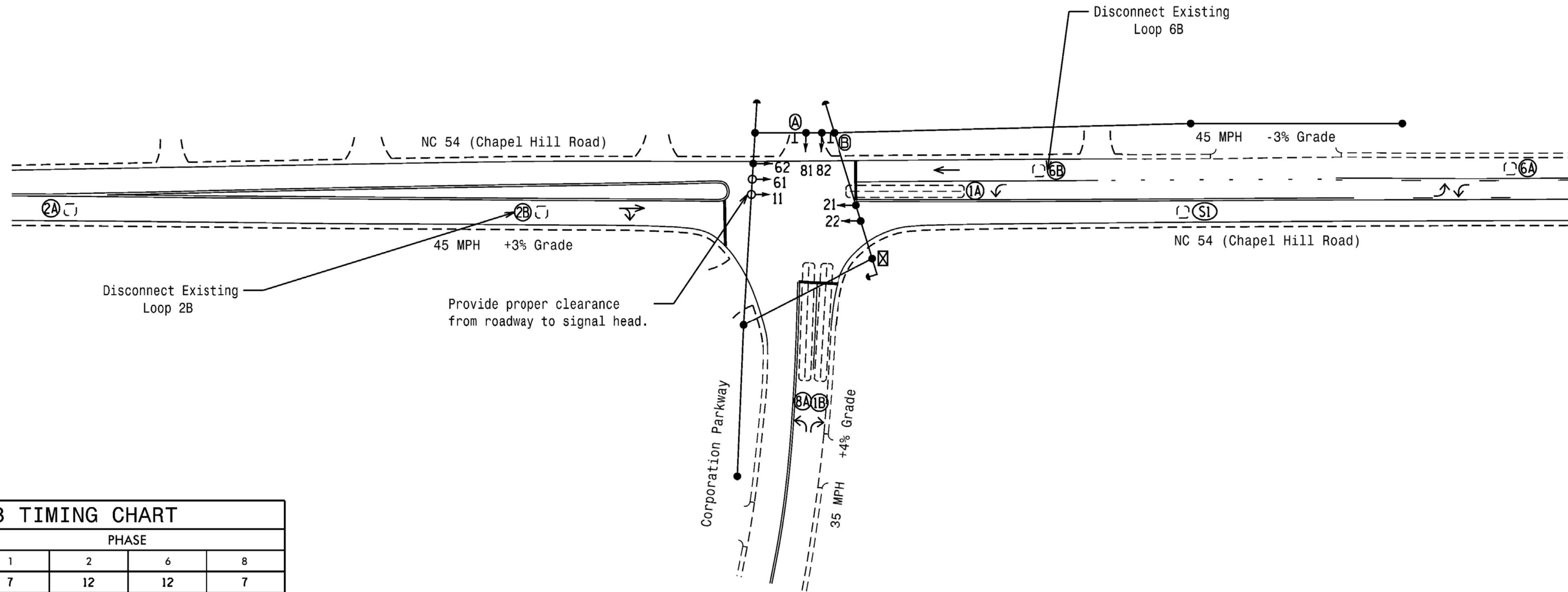
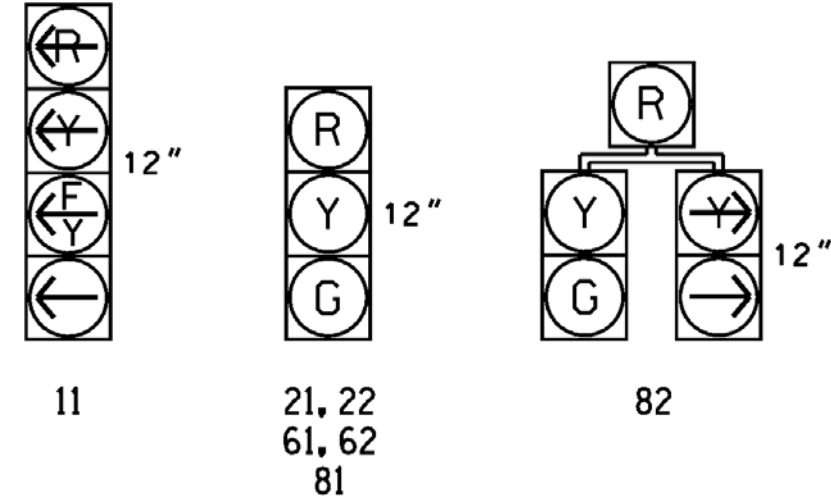
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be lagged.
- Reposition existing signal head numbered 62.
- 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 Yield on Green" ball sign (R10-12).
- Existing lane control signs (R3-5L and R3-5R) may be removed at the discretion of the Regional Traffic Engineer.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.

All Heads L.E.D.

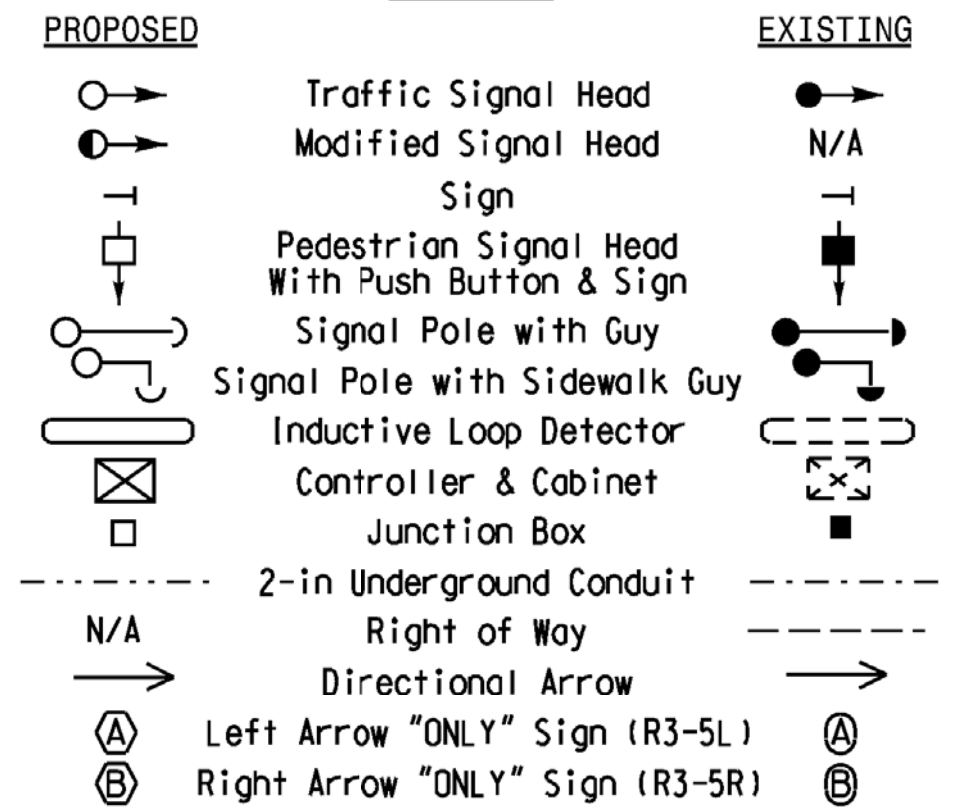


ASC/3 TIMING CHART

FEATURE	PHASE			
	1	2	6	8
Min Green *	7	12	12	7
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	1.0	6.0	6.0	1.0
Max 1 *	15	90	90	25
Yellow	3.0	4.8	4.8	3.0
Red Clear	1.4	1.0	1.0	2.1
Actuations B4 Add *	-	0	0	-
Seconds / Actuation *	-	2.5	2.5	-
Max Initial *	-	37	37	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	45	45	-
Minimum Gap	-	3.0	3.0	-
Locking Detector	-	X	X	-
Recall Position	-	VEH. RECALL	VEH. RECALL	-
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

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

LEGEND



Mattern & Craig
ENGINEERS • SURVEYORS

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

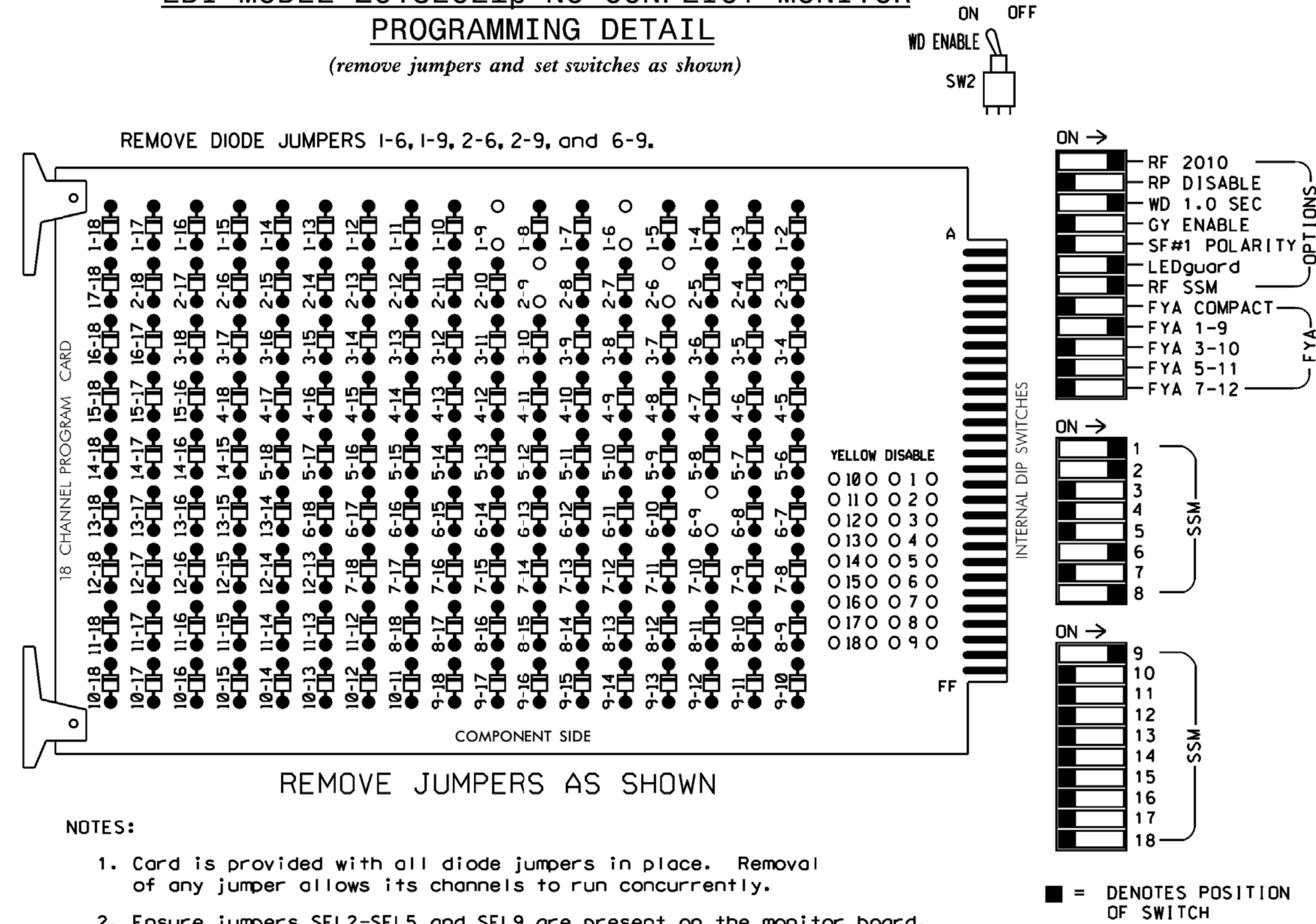
Signal Upgrade

	Prepared for the Offices of: TRANSPORTATION MOBILITY AND SAFETY DIVISION SIGNAL DESIGN SECTION 750 N. Greenfield Pkwy, Garner, NC 27529		NC 54 (Chapel Hill Road) at Corporation Parkway		SEAL STATE OF NORTH CAROLINA PROFESSIONAL ENGINEER JAMES B. VOSO License No. 022599 Date: 6/13/2018
	Division 7 Alamance County Burlington		PLAN DATE: January 2018 REVIEWED BY: JB Voso		REVISIONS INIT. DATE
	PREPARED BY: SE Greene REVIEWED BY:		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
	SCALE 0 40 1"=40'		SIG. INVENTORY NO. 07-1030		

EDI MODEL 2018EClip-NC CONFLICT MONITOR

PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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

NOTES

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

EQUIPMENT INFORMATION

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

* See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

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

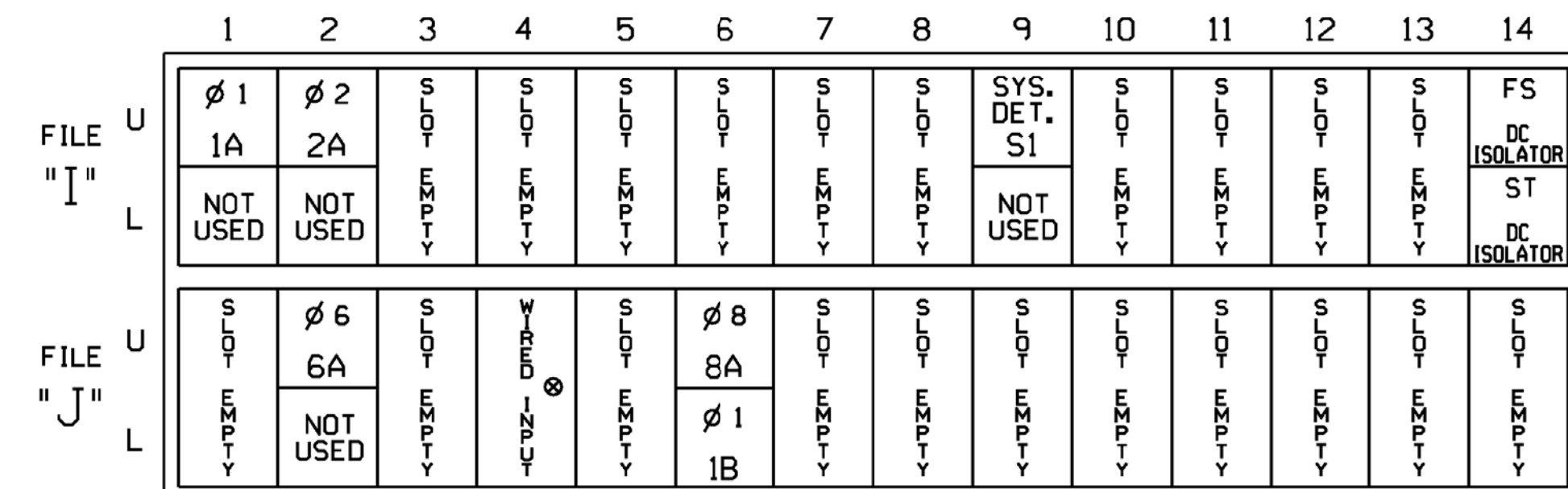
NU = Not Used

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

* See pictorial of head wiring in detail this sheet.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

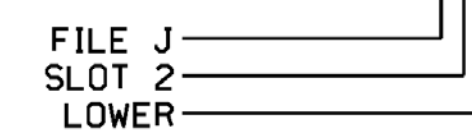
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-1,2	11U	56	1	1	YES		15		S
	-	J4U	48	26	6	YES		3		G
2A	TB2-5,6	12U	39	2	2	YES			X	N
* S1	TB6-9,10	19U	60	11	SYS	NO				N
6A	TB3-5,6	J2U	40	6	6	YES			X	S
8A	TB5-9,10	J6U	42	8	8	YES		3		S
1B	TB5-11,12	J6L	46	32	1	YES		15		S

¹Add jumper from 11-W to J4-W. on rear of input file.

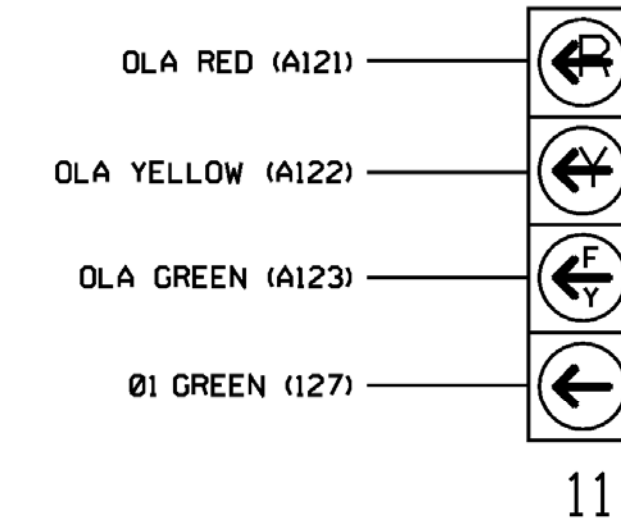
* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

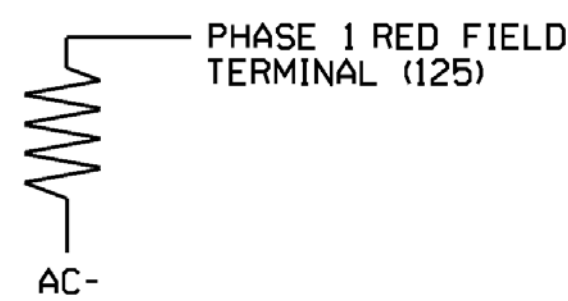
(wire signal head as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install 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: 07-1030
 DESIGNED: January 2018
 SEALED: 6/13/2018
 REVISED: NA

ELECTRICAL AND PROGRAMMING DETAILS FOR:



NC 54 (Chapel Hill Road)
 at
 Corporation Parkway

Division 7 Alamance County Burlington

PLAN DATE: January 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS INIT. DATE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 022599
 JAMES B. VOSO
 DocuSigned By: James Voso 6/13/2018
 DATE



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

*****SYTIME*****
 *****DIDONES*****
 *****USERNAME*****

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

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

OVERLAP A

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

```

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

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

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-1030
 DESIGNED: January 2018
 SEALED: 6/13/2018
 REVISED: NA


Electrical Detail - Sheet 2 of 2

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

**ELECTRICAL AND PROGRAMMING
 DETAILS FOR:**

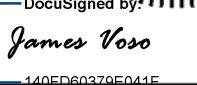
Prepared for the Offices of:

 City of Alamance
 Signal Management

750 N. Greenfield Hwy, Garner, NC 27529

NC 54 (Chapel Hill Road) at Corporation Parkway	
Division 7	Alamance County
PREPARED BY: SE Greene	REVIEWED BY: JB Voso
REVISIONS	INIT. DATE

SEAL

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 022599
 ENGINEERS
 JAMES B. VOSO

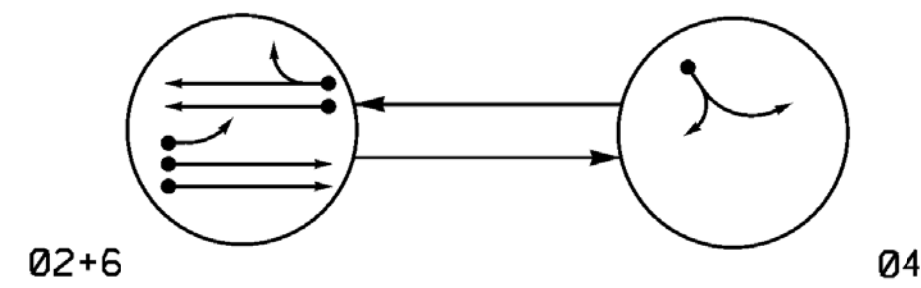
DocuSigned by:

 James Voso 6/13/2018

DATE

SIG. INVENTORY NO. 07-1030

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

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

ASC/3 DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	NEW CARD
2A	6x20	300	EXIST.	-	2	Yes	-	-	X	N	- X
4A	6x40	+5	2-4-2	-	4	Yes	-	5	-	S	- X
6A	6x20	300	EXIST.	-	6	Yes	-	-	X	N	- X
S1	6x6	+150	4	X	-	No	-	-	-	N	X X
S2	6x6	+150	4	X	-	No	-	-	-	N	X X

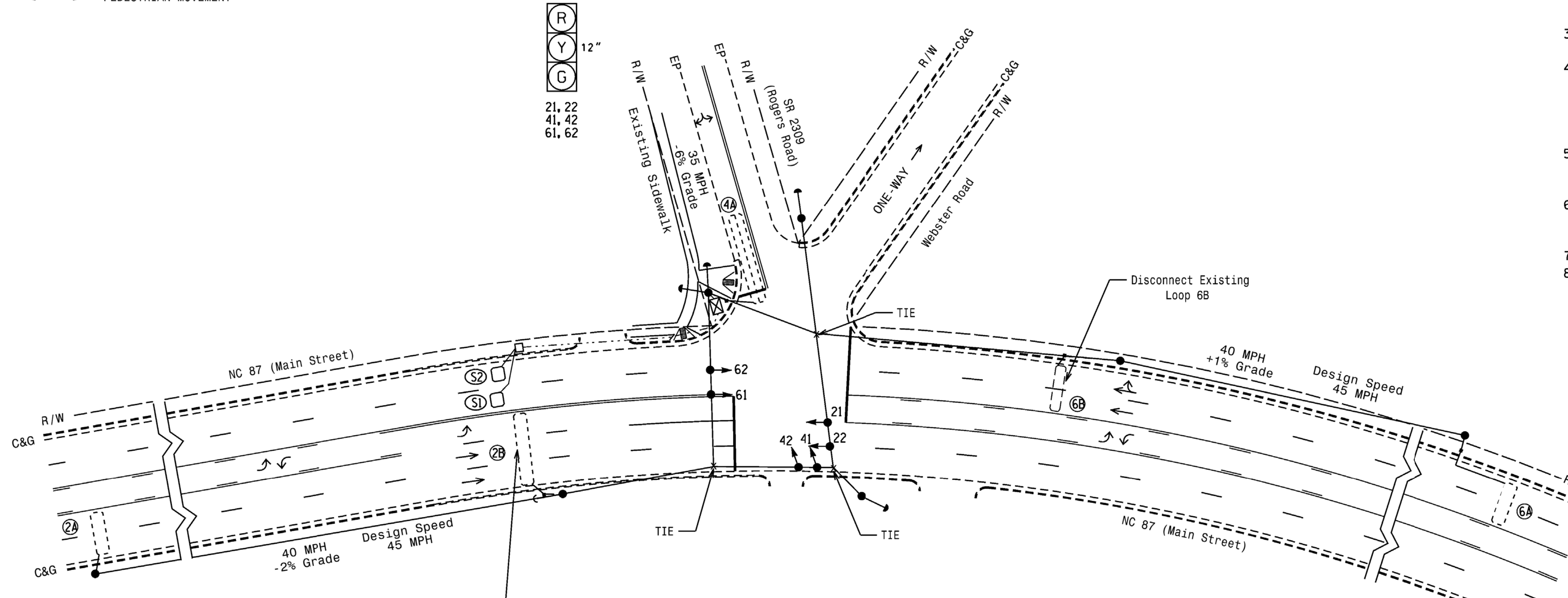
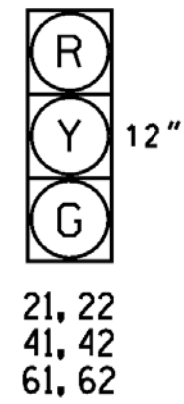
2 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

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

SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 TIMING CHART

FEATURE	PHASE		
	2	4	6
Min Green *	12	7	12
Walk *	0	0	0
Ped Clear	0	0	0
Veh. Extension *	6.0	1.0	6.0
Max I *	90	20	90
Yellow	4.7	3.1	4.4
Red Clear	1.0	2.6	1.0
Actuations B4 Add *	0	-	0
Seconds / Actuation *	1.5	-	1.5
Max Initial *	34	-	34
Time Before Reduction *	15	-	15
Time To Reduce *	45	-	45
Minimum Gap	3.0	-	3.0
Locking Detector	X	-	X
Recall Position	VEH. RECALL	-	VEH. 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 | ○ → N/A |
| ○ → Sign | ○ → N/A |
| ○ → Pedestrian Signal Head | ○ → N/A |
| ○ → With Push Button & Sign | ○ → N/A |
| ○ → Signal Pole with Guy | ○ → N/A |
| ○ → Signal Pole with Sidewalk Guy | ○ → N/A |
| ○ → Inductive Loop Detector | ○ → N/A |
| ○ → Controller & Cabinet | ○ → N/A |
| ○ → Junction Box | ○ → N/A |
| ○ → 2-in Underground Conduit | ○ → N/A |
| ○ → Right of Way | ○ → N/A |
| ○ → Directional Arrow | ○ → N/A |
| ○ → Right-of-Way | ○ → N/A |
| ○ → Wheelchair Ramp | ○ → N/A |

Mattern & Craig
ENGINEERS • SURVEYORS

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

Signal Upgrade

Prepared for the Offices of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
DEPARTMENT OF TRANSPORTATION
Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

NC 87 (Main Street) at SR 2309 (Rogers Road) / Webster Road
Alamance County Graham

Division 7
PLAN DATE: March 2018 REVIEWED BY: JB Voso
PREPARED BY: SE Greene REVIEWED BY:

REVISIONS

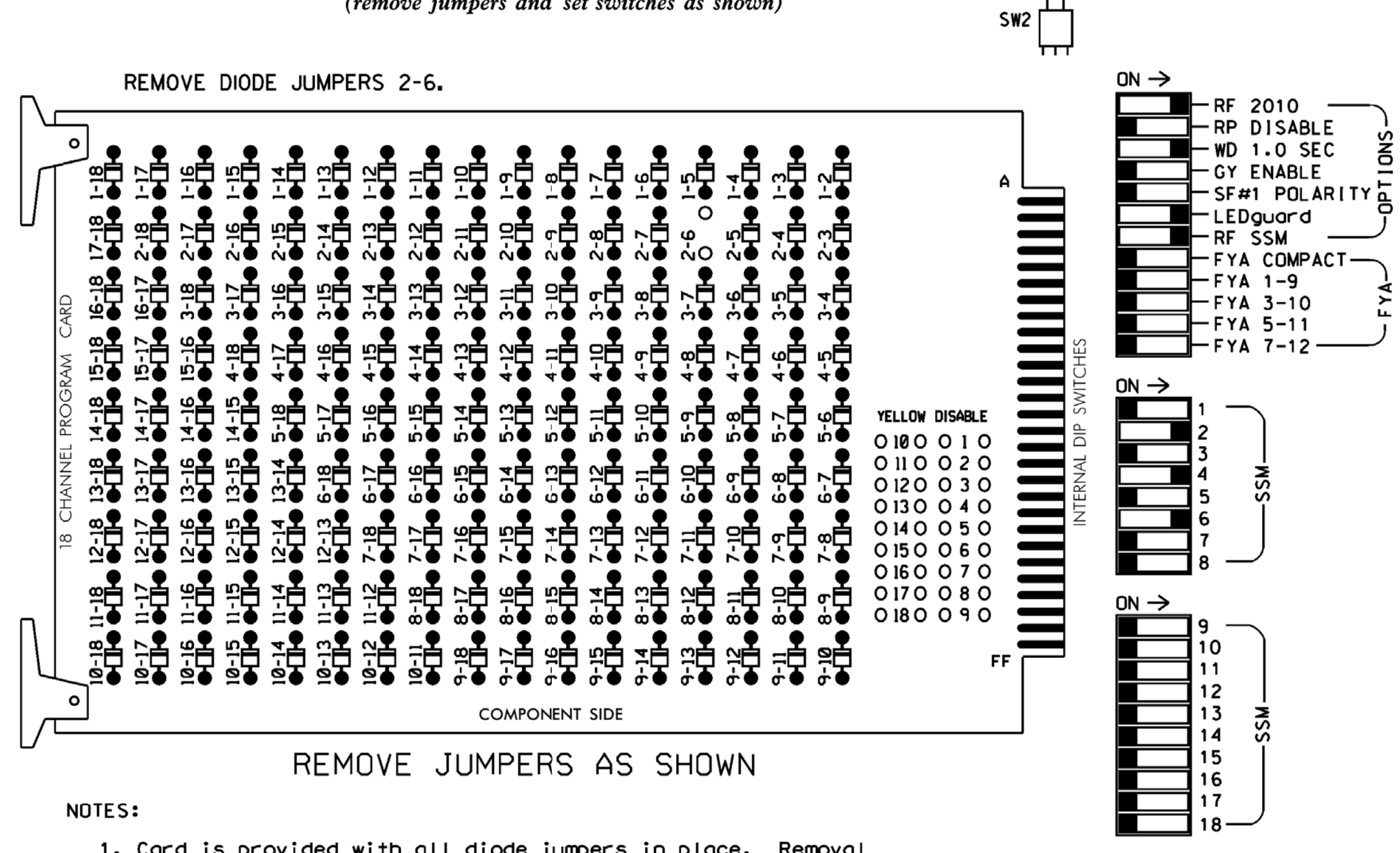
SCALE 0 30
1"=30'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
JAMES B. VOSO
022599
6/13/2018
SIG. INVENTORY NO. 07-1038

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

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



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

NOTES

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

SIGNAL HEAD HOOK-UP CHART

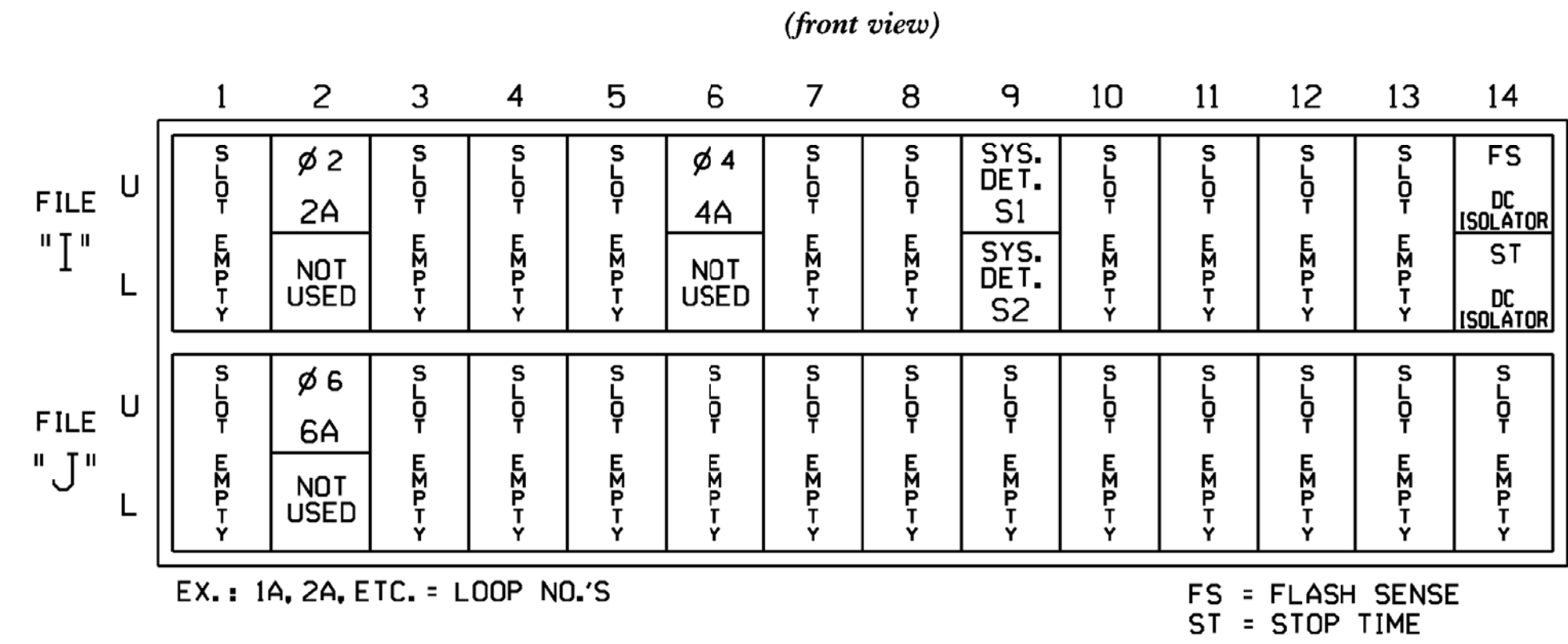
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU	NU	NU	NU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

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
 PHASES USED.....2,4,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

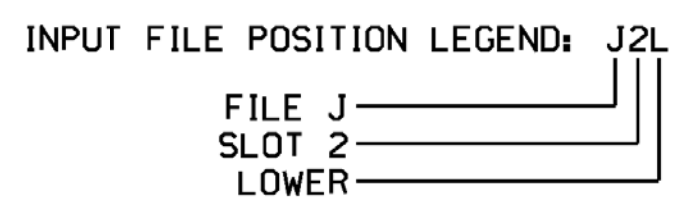
INPUT FILE POSITION LAYOUT



INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	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
* 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: 07-1038
 DESIGNED: March 2018
 SEALED: 6/13/2018
 REVISED: NA

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for the Offices of:
 CITY OF ALAMANCE
 DEPARTMENT OF PUBLIC UTILITIES
 Signal Management

NC 87 (Main Street)
 at
 SR 2309 (Rogers Road)
 /Webster Road

Division 7 Alamance County Graham

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

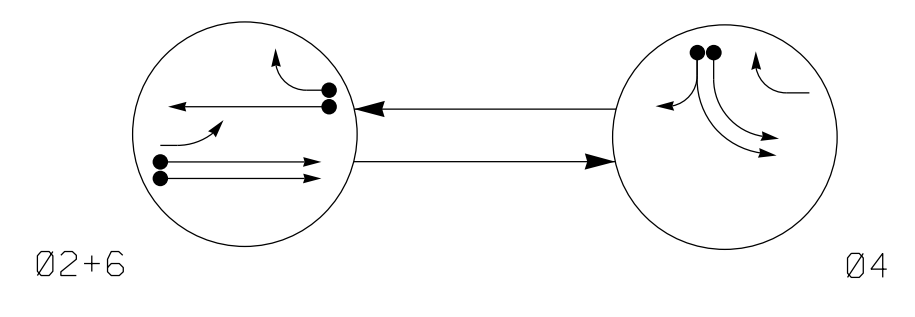
REVISIONS

NO.	INIT.	DATE

James Voso
 PROFESSIONAL ENGINEER
 SEAL 022599
 DATE 6/13/2018

SIG. INVENTORY NO. 07-1038

PHASING DIAGRAM



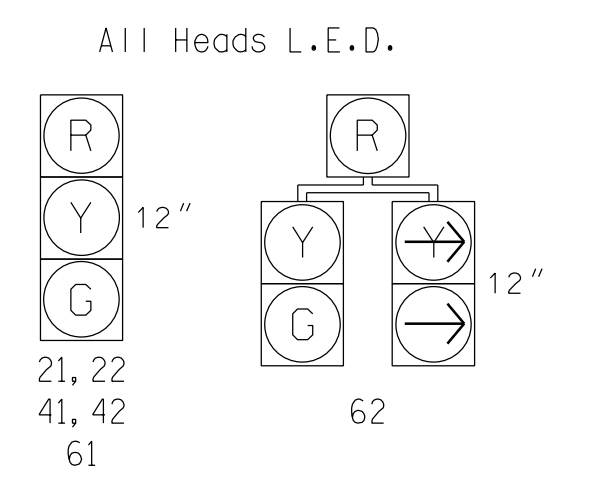
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE (02+6, 04, FLASH), and values for faces 21, 22, 41, 42, 61, 62.

SIGNAL FACE I.D.

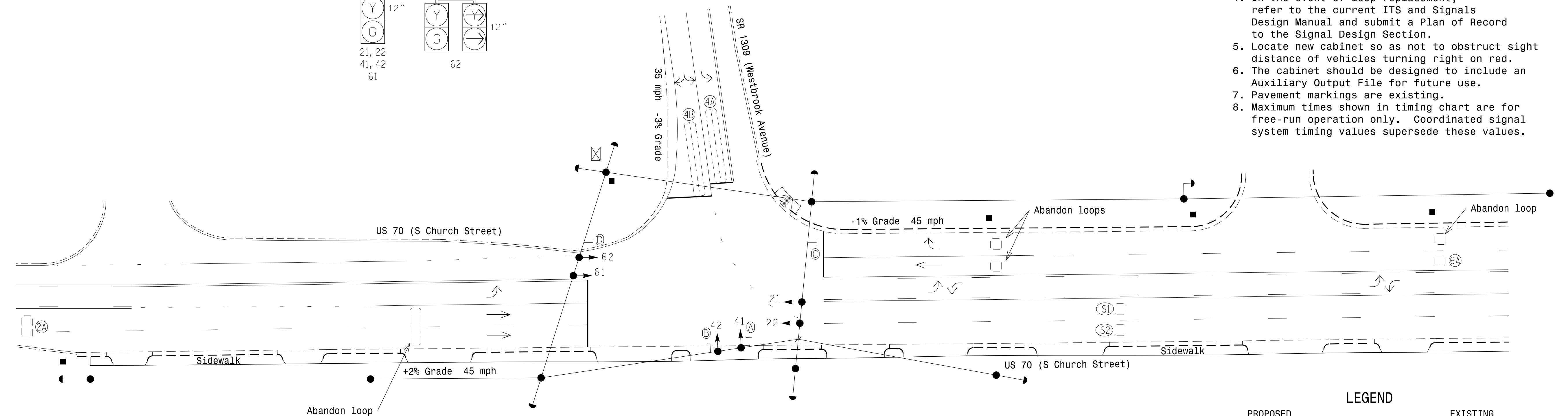


ASC/3 DETECTOR INSTALLATION CHART table with columns: LOOP, SIZE (FT), DISTANCE FROM STOPBAR (FT), TURNS, NEW LOOP, PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, LOOP SYSTEM, NEW CARD.

2 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018...
2. Do not program signal for late night flashing operation unless otherwise directed by 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...
5. Locate new cabinet so as not to obstruct sight distance...
6. The cabinet should be designed to include an Auxiliary Output File...
7. Pavement markings are existing.
8. Maximum times shown in timing chart are for free-run operation only.



ASC/3 TIMING CHART table with columns: FEATURE, PHASE (2, 4, 6) and values for Min Green, Walk, Ped Clear, Veh. Extension, Max 1, 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.

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

LEGEND table with columns: PROPOSED, EXISTING and descriptions for Traffic Signal Head, Pedestrian Signal Head, Signal Pole, Inductive Loop Detector, Controller & Cabinet, Junction Box, Right of Way, Directional Arrow, Curb Ramp, and various sign types.

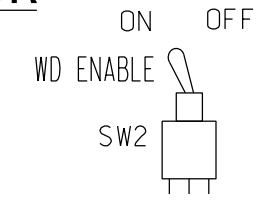
07-JUN-2018 11:15 ***SIGNALING DESIGN SECTION*** U-6015 B-0 Sig. 97.0

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

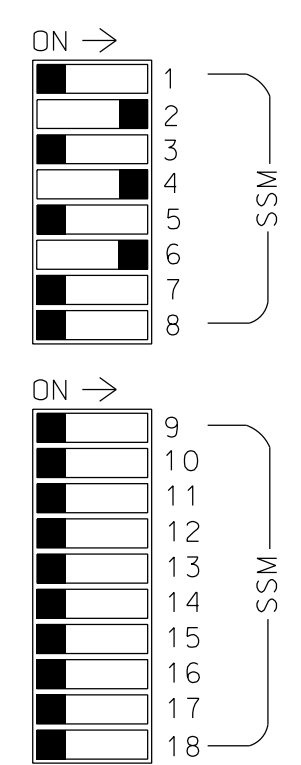
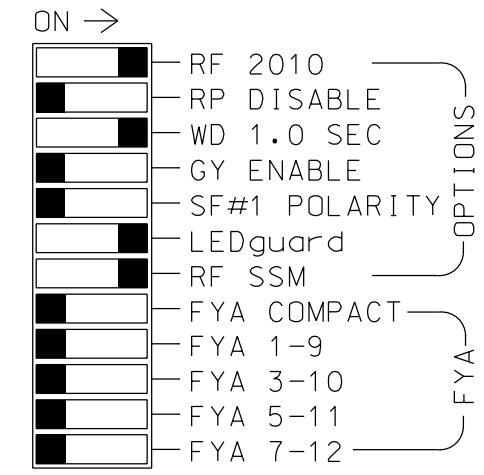
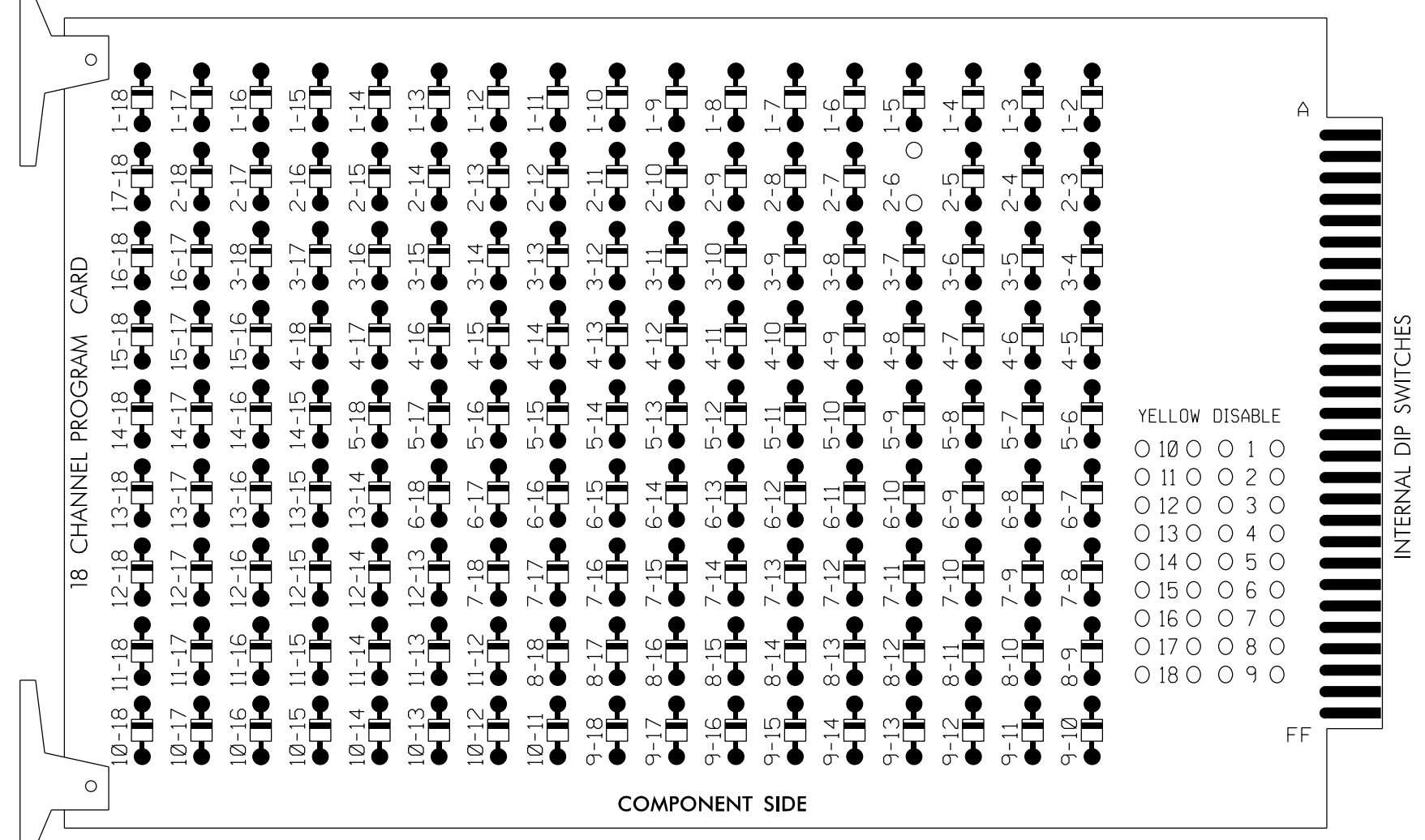
Signal Upgrade title block containing project name (US 70 (S. Church Street) at SR 1309 (Westbrook Avenue)), division (7), county (Alamance), city (Burlington), plan date (December 2017), reviewer (MB Toth), preparer (PL Alexander), and a professional seal for Pamela L. Alexander, Engineer, No. 023489, dated 6/7/2018.

EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



REMOVE DIODE JUMPER 2-6.



■ = DENOTES POSITION OF SWITCH

REMOVE JUMPER AS SHOWN

NOTES:

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

NOTES

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

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONDLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S8
 PHASES USED.....2,4,6
 OVERLAPS.....NONE

PROJECT REFERENCE NO.	SHEET NO.
U-6015	Fig. 97.1

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	62	NU	NU	61,62	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128			101				134									
YELLOW		129			102				135									
GREEN		130			103				136									
RED ARROW																		
YELLOW ARROW					123													
GREEN ARROW					124													

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	S	Ø 2	S	S	S	Ø 4	S	S	SYS. DET. S1	S	S	S	S	FS DC ISOLATOR
	L	2A	NOT USED	S	S	4A	S	S	SYS. DET. S2	S	S	S	S	ST DC ISOLATOR
U	S	Ø 6	S	S	S	S	S	S	S	S	S	S	S	S
	L	6A	NOT USED	S	S	S	S	S	S	S	S	S	S	S

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

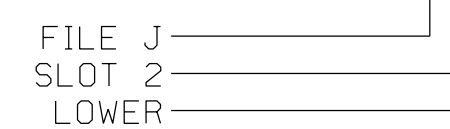
FS = FLASH SENSE
ST = STOP TIME

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
2A	TB2-5,6	I2U	39	2	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		3		S
4B	TB4-11,12	I6L	45	14	4	YES		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	0.5		X	N

* System detector only. Remove any assigned vehicle phase.

INPUT FILE POSITION LEGEND: J2L



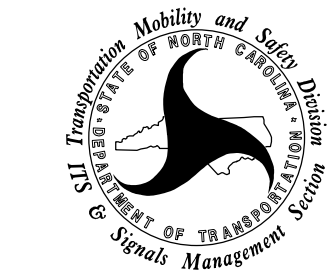
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-1049
 DESIGNED: December 2017
 SEALED: 6/7/2018
 REVISED: N/A

09-JUN-2018 14:14 ***SHEET: TNS-COMPGPJCTI18URLA*TransportationTraffic*Curri*00056469 U-6015 B-C Sig Sys*Task 05.11.15Signal*04as*gn*WIF*Prog07-1049E-dgn ALEX3361 AT LUS330649

Electrical Detail

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared for the Offices of:



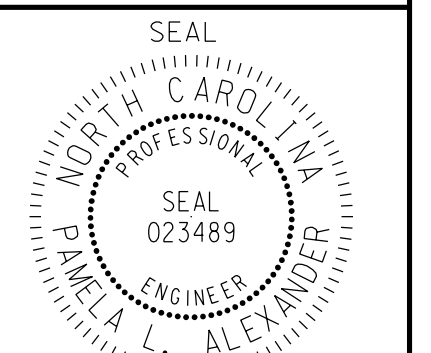
750 N. Greenfield Pkwy, Garner, NC 27529

US 70 (S. Church Street) at SR 1309 (Westbrook Avenue)

Division 7 Alamance County Burlington
 PLAN DATE: December 2017 REVIEWED BY: MB Toth
 PREPARED BY: PL Alexander REVIEWED BY:

REVISIONS	INIT.	DATE

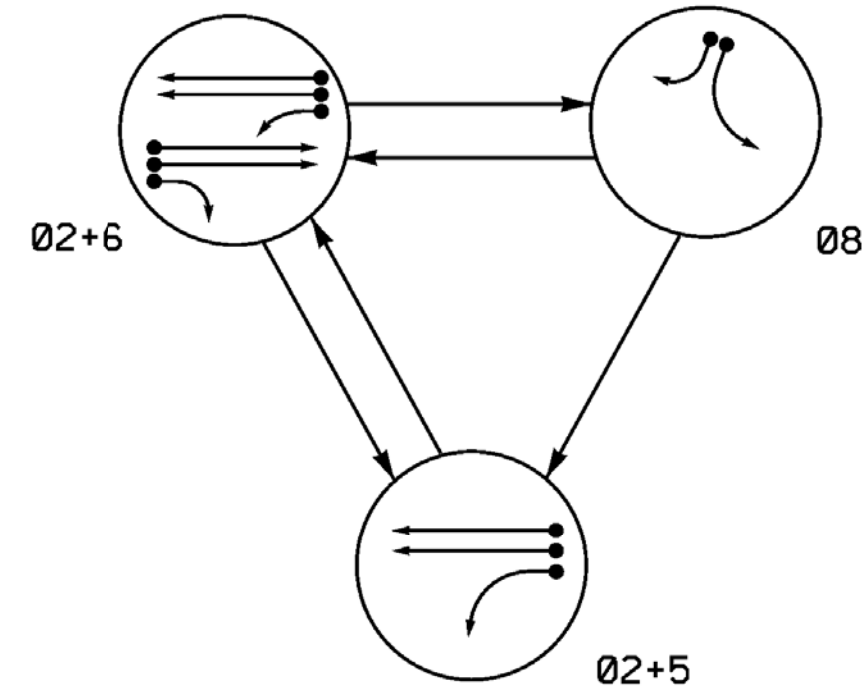
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



Drawn by: Pamela Alexander DATE: 6/9/2018
 Checked by: DATE:
 SIG. INVENTORY NO. 07-1049

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

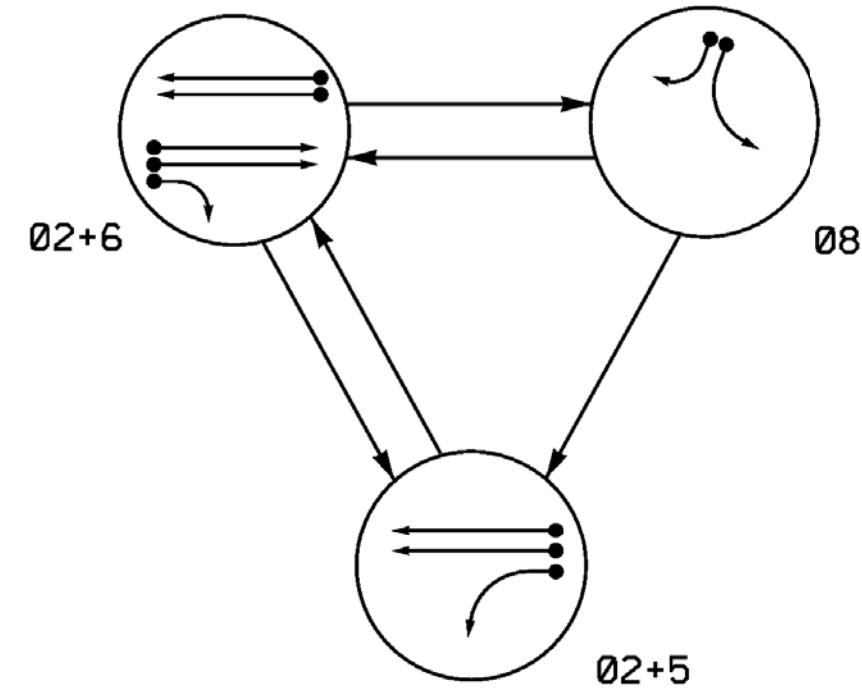
DEFAULT PHASING DIAGRAM



DEFAULT TABLE OF OPERATION

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

ALTERNATE PHASING DIAGRAM



ALTERNATE TABLE OF OPERATION

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

ASC/3 DETECTOR INSTALLATION CHART

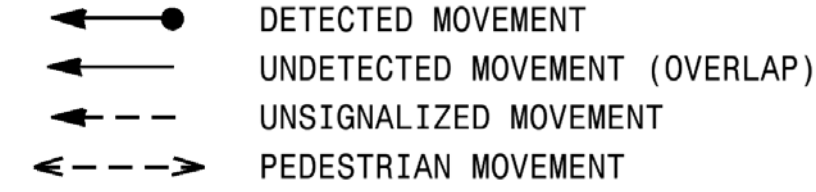
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING								
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD	
2A	6x20	300	EXIST.	-	2	Yes	-	-	-	X	N	-	X
5A	6x60	+5	2-4-2	-	5	Yes	-	15*	-	S	-	X	
6A	6x20	300	EXIST.	-	6	Yes	-	3	-	G	-	X	
8A	6x60	+5	2-4-2	-	8	Yes	-	-	-	S	-	X	
8B	6x60	+5	2-4-2	-	8	Yes	-	10	-	S	-	X	
S1	6x6	+150	4	X	-	No	-	-	-	N	X	X	
S2	6x6	+150	4	X	-	No	-	-	-	N	X	X	

3 Phase Fully Actuated (Burlington-Graham Signal System)

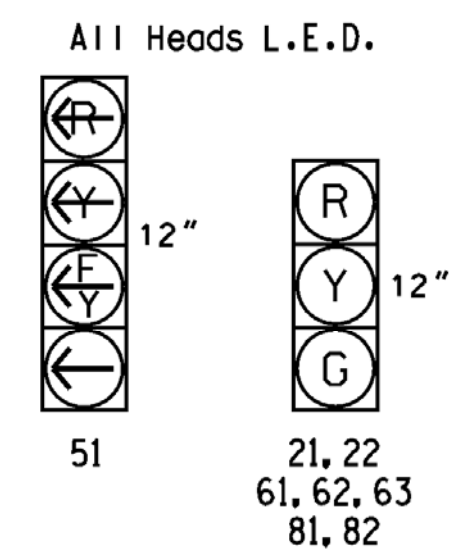
NOTES

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

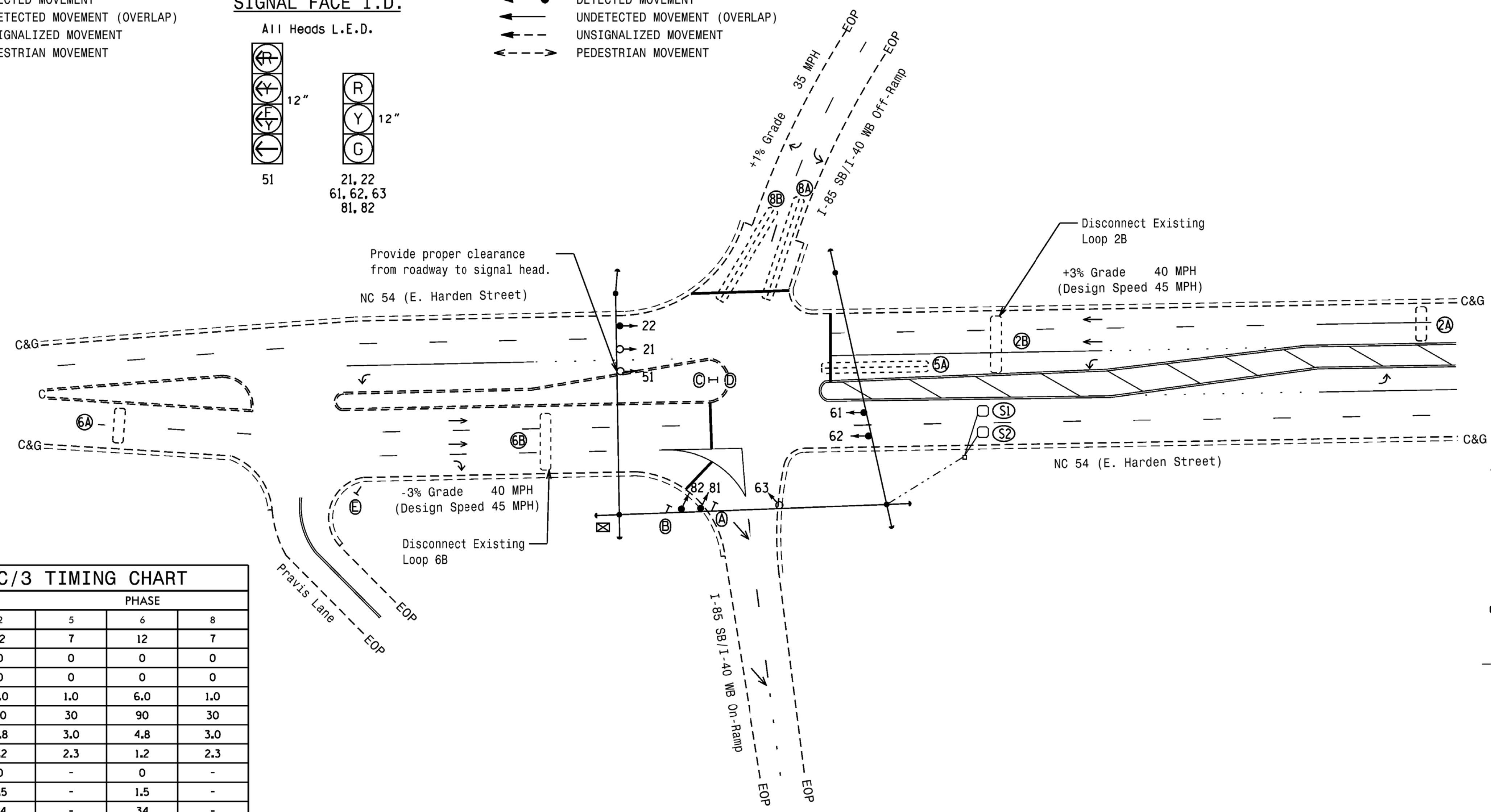
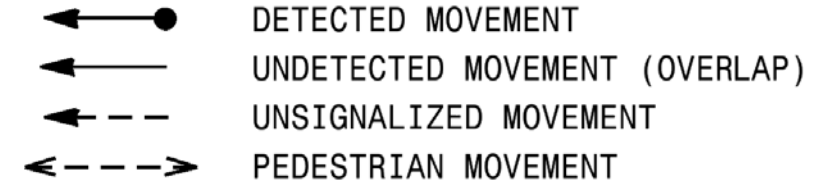
PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.



PHASING DIAGRAM DETECTION LEGEND



ASC/3 TIMING CHART

FEATURE	PHASE			
	2	5	6	8
Min Green *	12	7	12	7
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	6.0	1.0	6.0	1.0
Max 1 *	90	30	90	30
Yellow	4.8	3.0	4.8	3.0
Red Clear	1.2	2.3	1.2	2.3
Actuations 34 Add *	0	-	0	-
Seconds / Actuation *	1.5	-	1.5	-
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

* 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	
(A) Left Arrow "ONLY" Sign (R3-5L)	(A) Left Arrow "ONLY" Sign (R3-5L)
(B) Right Arrow "ONLY" Sign (R3-5R)	(B) Right Arrow "ONLY" Sign (R3-5R)
(C) No Left Turn Sign (R3-2)	(C) No Left Turn Sign (R3-2)
(D) Keep Right Sign (R4-7A)	(D) Keep Right Sign (R4-7A)
(E) "STOP" Sign (R1-1)	(E) "STOP" Sign (R1-1)



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NC LIC. NO. C-1154

Signal Upgrade

Prepared for the Offices of:

NC 54 (E. Harden Street) at I-85 SB/I-40 WB Ramps

Division 7 Alamance County Graham

PLAN DATE: March 2018 REVIEWED BY: JB Voso

PREPARED BY: SE Greene REVIEWED BY:

REVISIONS

SCALE 0 40 1"=40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

STATE OF NORTH CAROLINA PROFESSIONAL ENGINEER JAMES B. VOSO 022599

6/13/2018

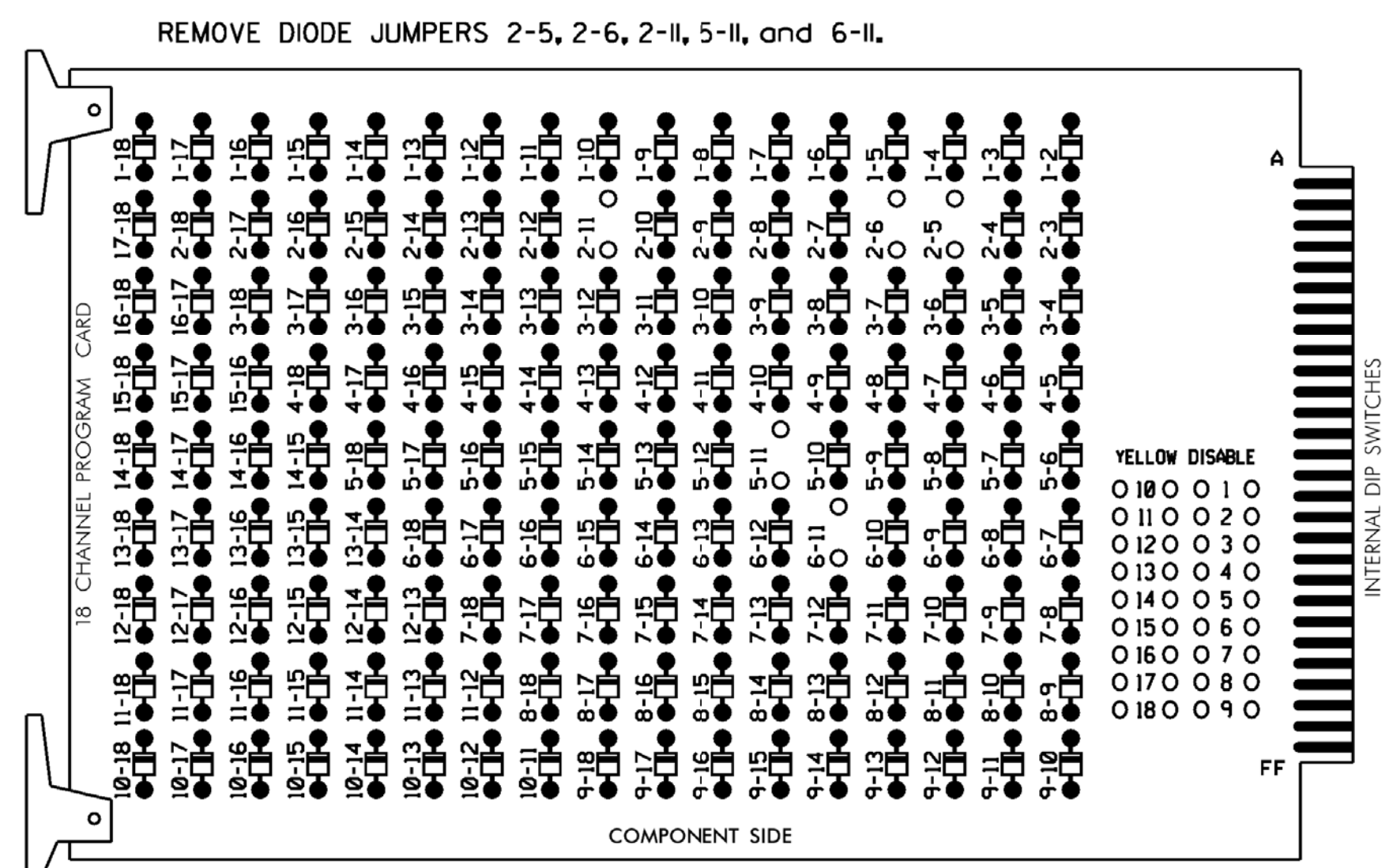
SIGNATURE DATE

SIG. INVENTORY NO. 07-1051

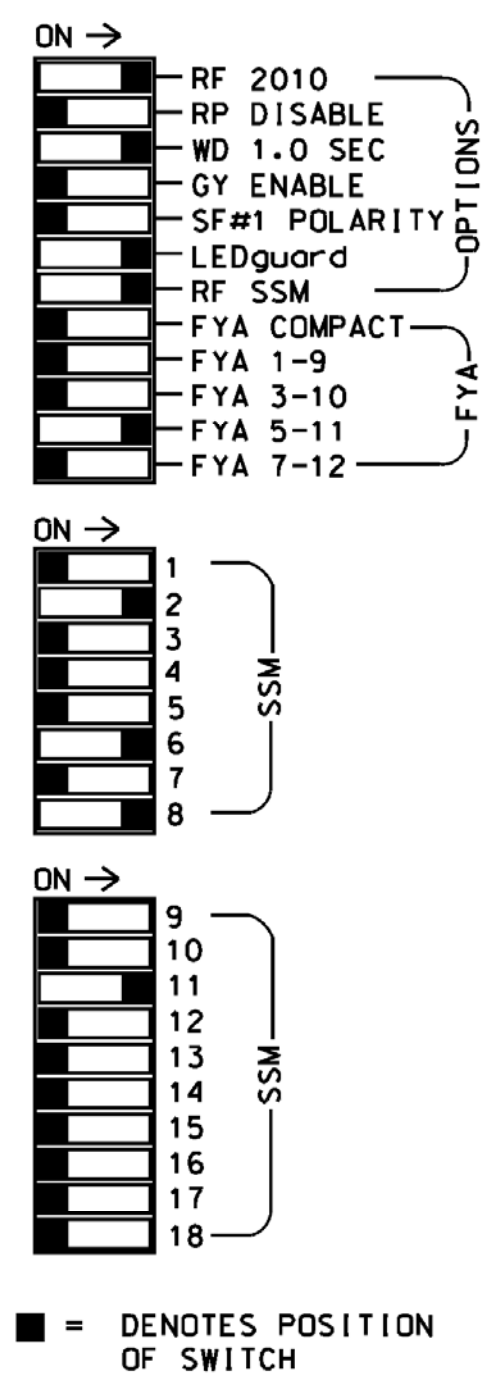
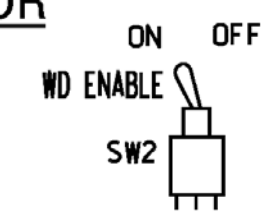
*****SYTIME*****
*****BUSRMAK*****

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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



NOTES

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

EQUIPMENT INFORMATION

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

* See overlap programming detail on sheet 2

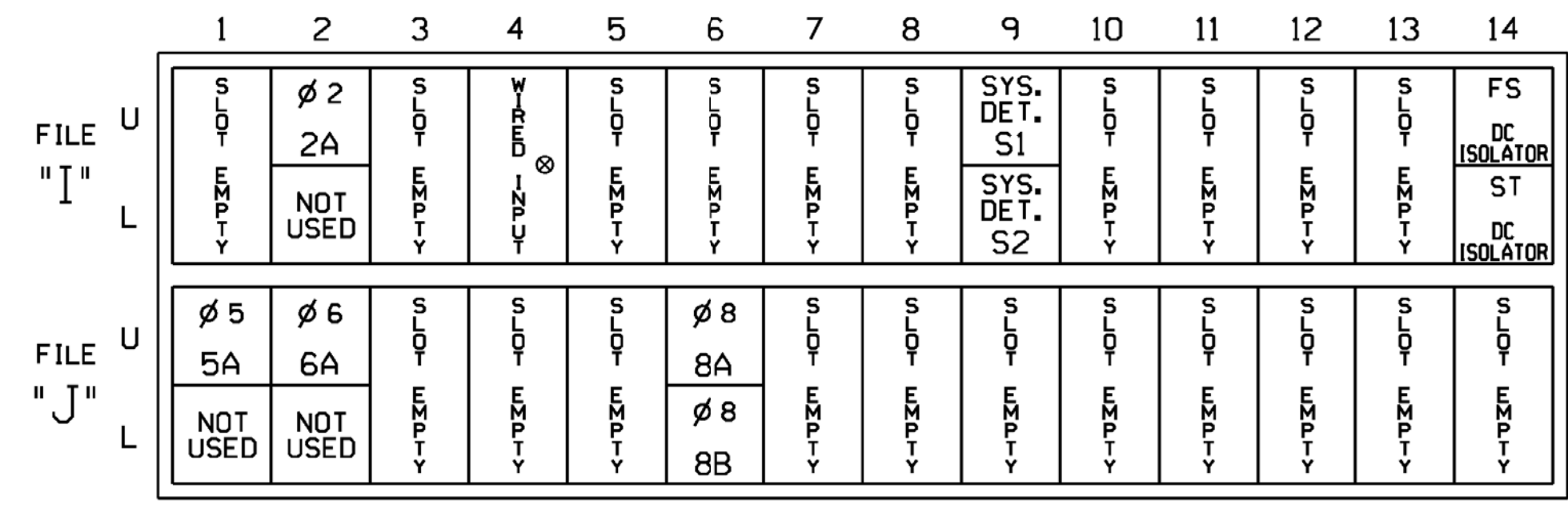
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
P-HASE	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	51	61,62,63	NU	NU	81,82	NU	NU	NU	NU	51	NU	NU	
RED		128						134		107									
YELLOW		129					*	135		108									
GREEN		130						136		109									
RED ARROW																		A114	
YELLOW ARROW																			A115
FLASHING YELLOW ARROW																			A116
GREEN ARROW								133											

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

INPUT FILE POSITION LAYOUT

(front view)



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

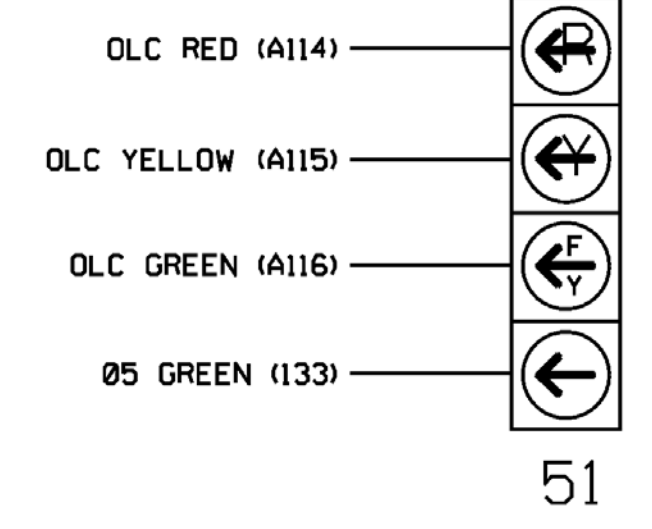
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES			X	N
5A ¹	TB3-1,2	J1U	55	5	5	YES		15		S
		I4U	47	22	2	YES		3		G
6A	TB3-5,6	J2U	40	6	6	YES			X	N
8A	TB5-9,10	J6U	42	8	8	YES				S
8B	TB5-11,12	J6L	46	18	8	YES		10		S
* S1	TB6-9,10	I9U	60	11	SYS	NO				N
* S2	TB6-11,12	I9L	62	13	SYS	NO				N

- ¹Add jumper from J1-W to I4-W, on rear of input file.
 * 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 any assigned vehicle phase.
- INPUT FILE POSITION LEGEND: J2L
- FILE J
 SLOT 2
 LOWER

FYA SIGNAL WIRING DETAIL

(wire signal head as shown)

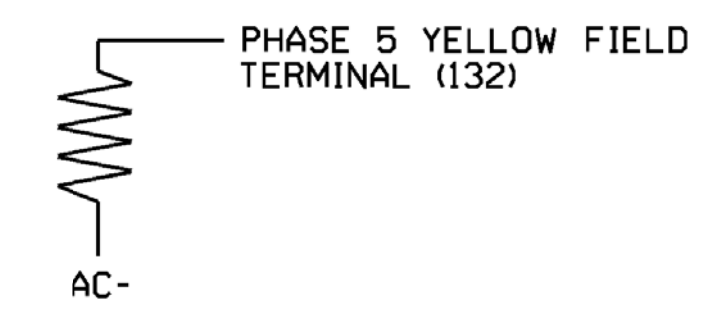


LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

ACCEPTABLE VALUES

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



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Electrical Detail - Sheet 1 of 4

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

NC 54 (E. Harden Street) at I-85 SB/I-40 WB Ramps

Division 7 Alamance County Graham

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

REVISIONS: INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING

LOOP 5A

(program controller as shown)

IMPORTANT!

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

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

```

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

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

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

```

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

← NOTICE VEH
DET PLAN 2

← ENSURE DELAY
IS SET TO '0'

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

```

VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
      22 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
    
```

← NOTICE VEH
DET PLAN 2

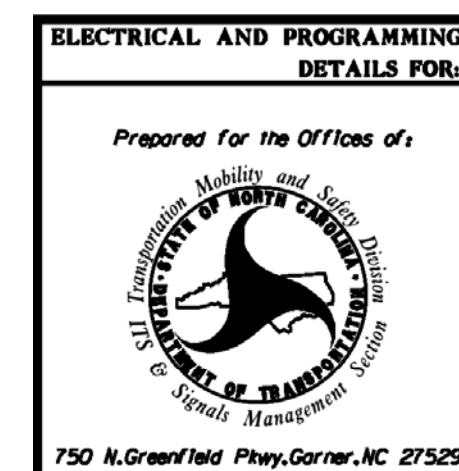
→ ENSURE PHASE
IS SET TO "0"

END PROGRAMMING

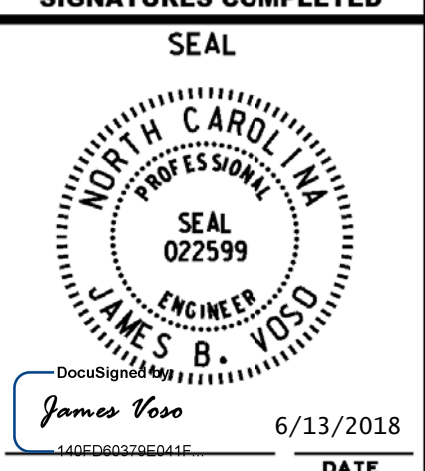
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-1051
DESIGNED: March 2018
SEALED: 6/13/2018
REVISED: NA

Electrical Detail - Sheet 3 of 4

DOCUMENT NOT CONSIDERED
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SIGNATURES COMPLETED



NC 54 (E. Harden Street) at I-85 SB/I-40 WB Ramps	
Division 7	Alamance County
Prepared by: SE Greene	Reviewed by: JB Voso
DATE: March 2018	DATE: 6/13/2018
REVISIONS	INIT. DATE



SIG. INVENTORY NO. 07-1051

*****SYTIME*****
*****USER*****
*****USER*****

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

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

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

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

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

ALTERNATE PHASING CHANGE SUMMARY

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

SF BIT 5: Modifies overlap parent phases for head 51 to run protected turns only.

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

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

ACTION PLAN... [1]

PATTERN.....AUTO SYS OVERRIDE.... NO

TIMING PLAN..... 0 SEQUENCE..... 0

VEH DETECTOR PLAN.. 2 DET LOG.....NONE

FLASH..... -- RED REST..... NO

VEH DET DIAG PLN... 0 PED DET DIAG PLN..0

DIMMING ENABLE.. NO PRIORITY RETURN. NO

PED PR RETURN.. NO QUEUE DELAY..... NO

PMT COND DELAY NO

PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
PED RCL	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
WALK 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
VEX 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
VEH RCL	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
MAX RCL	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
MAX 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
MAX 3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CS INH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OMIT	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
SPC FCT	.	.	.	.	X	.	.	.	.	.	.	.	.	.	.	(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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FAX (828) 254-4562
NC LIC. NO. C-1154

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-1051
DESIGNED: March 2018
SEALED: 6/13/2018
REVISED: NA

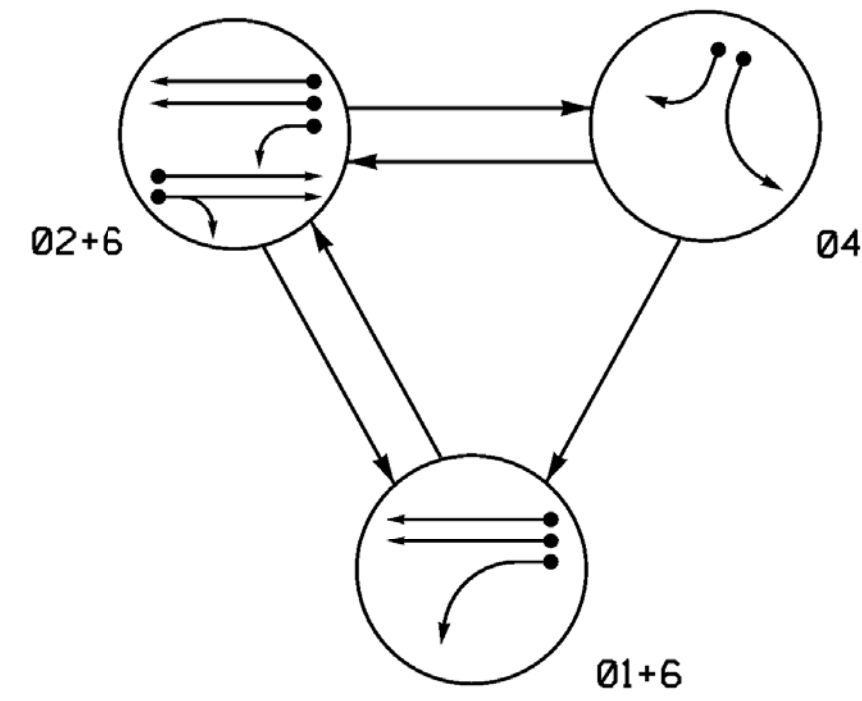
Electrical Detail - Sheet 4 of 4

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<p style="font-size: x-small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared for the Offices of:</p> <p style="font-size: x-small;">150 N. Greenfield Hwy, Garner, NC 27529</p>	<p>NC 54 (E. Harden Street) at I-85 SB/I-40 WB Ramps</p> <p style="font-size: x-small;">Division 7 Alamance County Graham</p> <p style="font-size: x-small;">PLAN DATE: March 2018 REVIEWED BY: JB Voso</p> <p style="font-size: x-small;">PREPARED BY: SE Greene REVIEWED BY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="font-size: x-small;">REVISIONS</th> <th style="font-size: x-small;">INIT.</th> <th style="font-size: x-small;">DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	REVISIONS	INIT.	DATE				<p style="font-size: x-small;">SEAL</p> <p style="font-size: x-small;">James Voso 6/13/2018 DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-1051</p>
REVISIONS	INIT.	DATE						

*****SYSTEM*****
*****USER*****

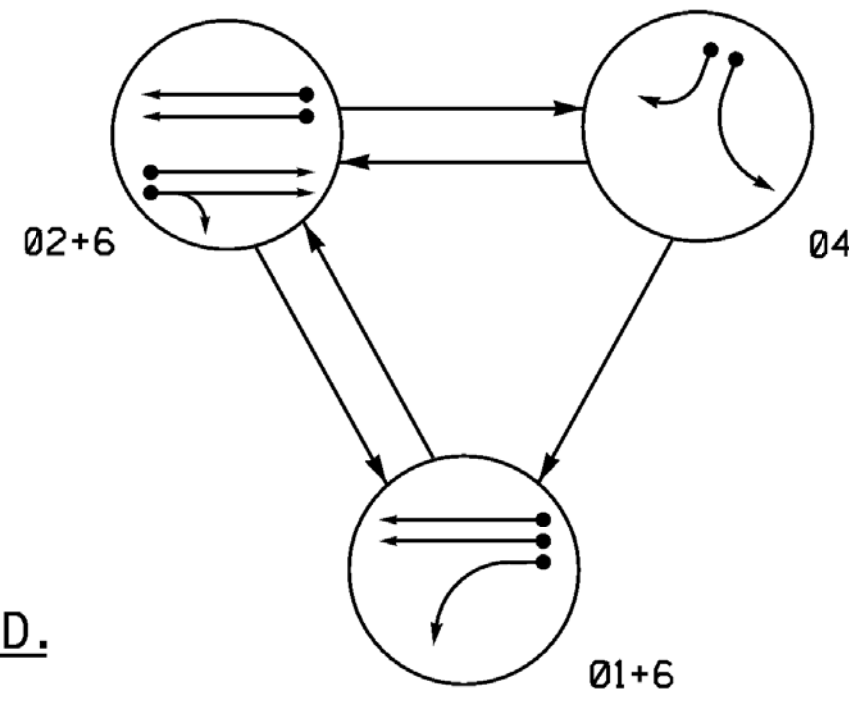
DEFAULT PHASING DIAGRAM



DEFAULT TABLE OF OPERATION

SIGNAL FACE	PHASE			
	01+6	02+6	04	FLASH
11	Y	R	R	Y
21, 22	R	G	R	Y
41, 42	R	R	G	R
61, 62	G	G	R	Y

ALTERNATE PHASING DIAGRAM



ALTERNATE TABLE OF OPERATION

SIGNAL FACE	PHASE			
	01+6	02+6	04	FLASH
11	Y	R	R	Y
21, 22	R	G	R	Y
41, 42	R	R	G	R
61, 62	G	G	R	Y

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6x60	+5	2-4-2	-	1	Yes	-	15*	-	S	-	X
2A	6x20	330	EXIST.	-	2	Yes	-	-	X	N	-	X
4A	6x60	+5	2-4-2	-	4	Yes	-	-	-	S	-	X
4B	6x60	+5	2-4-2	-	4	Yes	-	10	-	S	-	X
6A	6x20	330	EXIST.	-	6	Yes	-	-	X	N	-	X
S1	6x6	+80	EXIST.	-	-	No	-	-	-	N	X	X
S2	6x6	+80	EXIST.	-	-	No	-	-	-	N	X	X

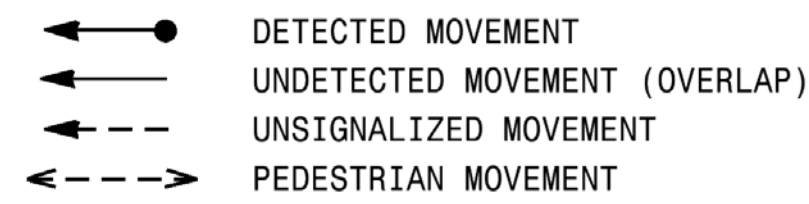
* Disable Delay During Alternate Phasing Operation.
 ** Disable Phase 6 Call for Loop 1A during Alternate Phasing Operation.

3 Phase Fully Actuated (Burlington-Graham Signal System)

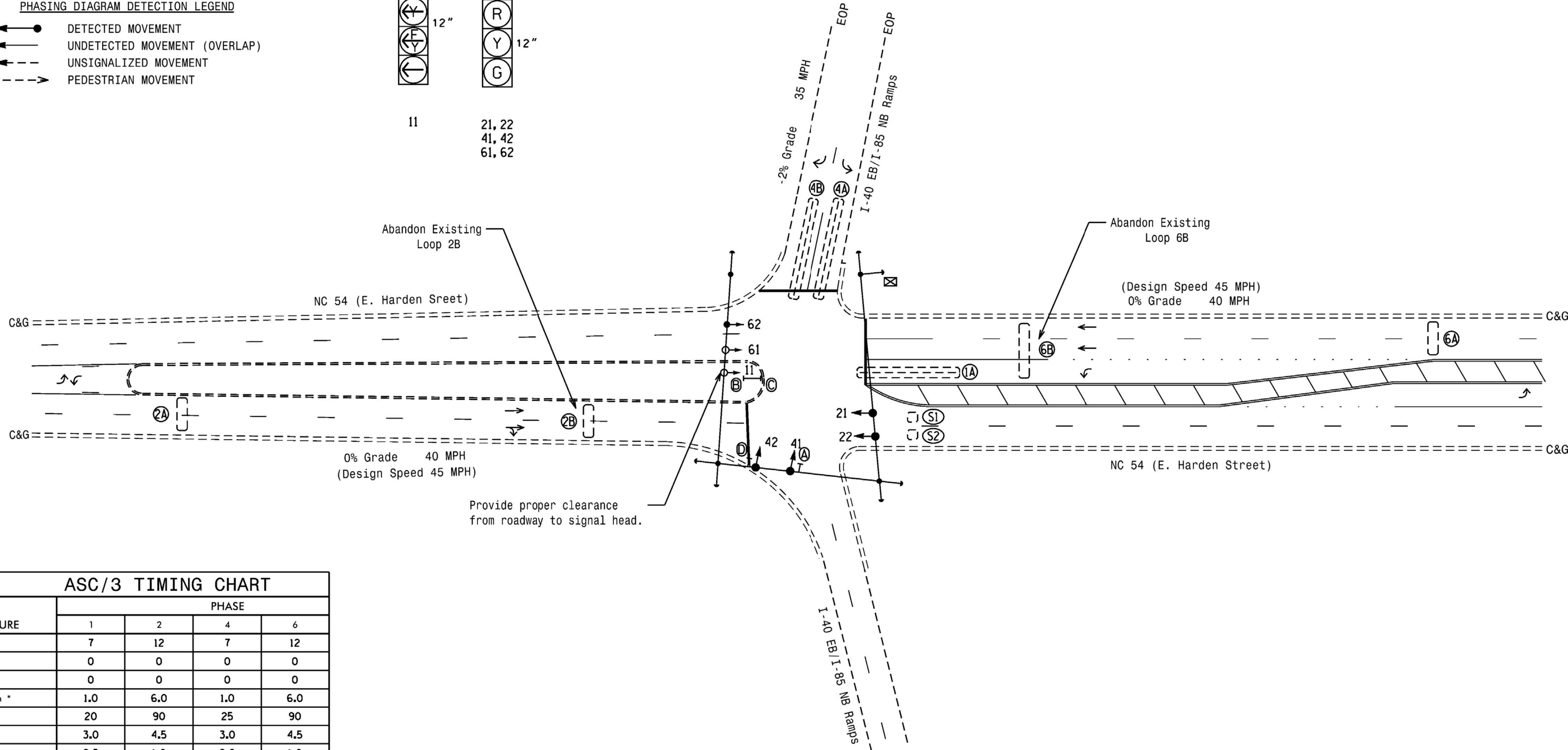
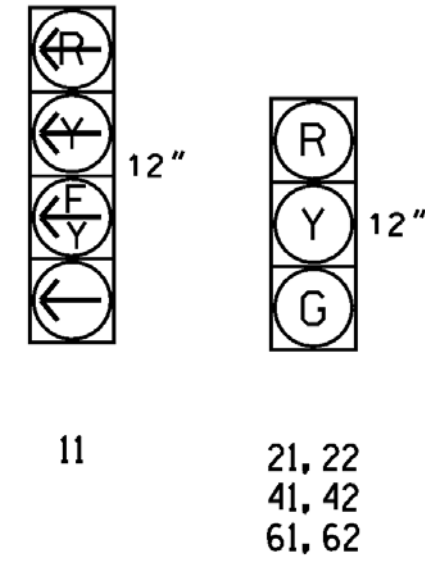
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 may be lagged.
4. Reposition existing signal head numbered 62.
5. Set all detector units to presence mode.
6. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
7. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
8. Pavement markings are existing.
9. The City Traffic Engineer will determine the hours of use for each phasing plan.
10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

PHASING DIAGRAM DETECTION LEGEND



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

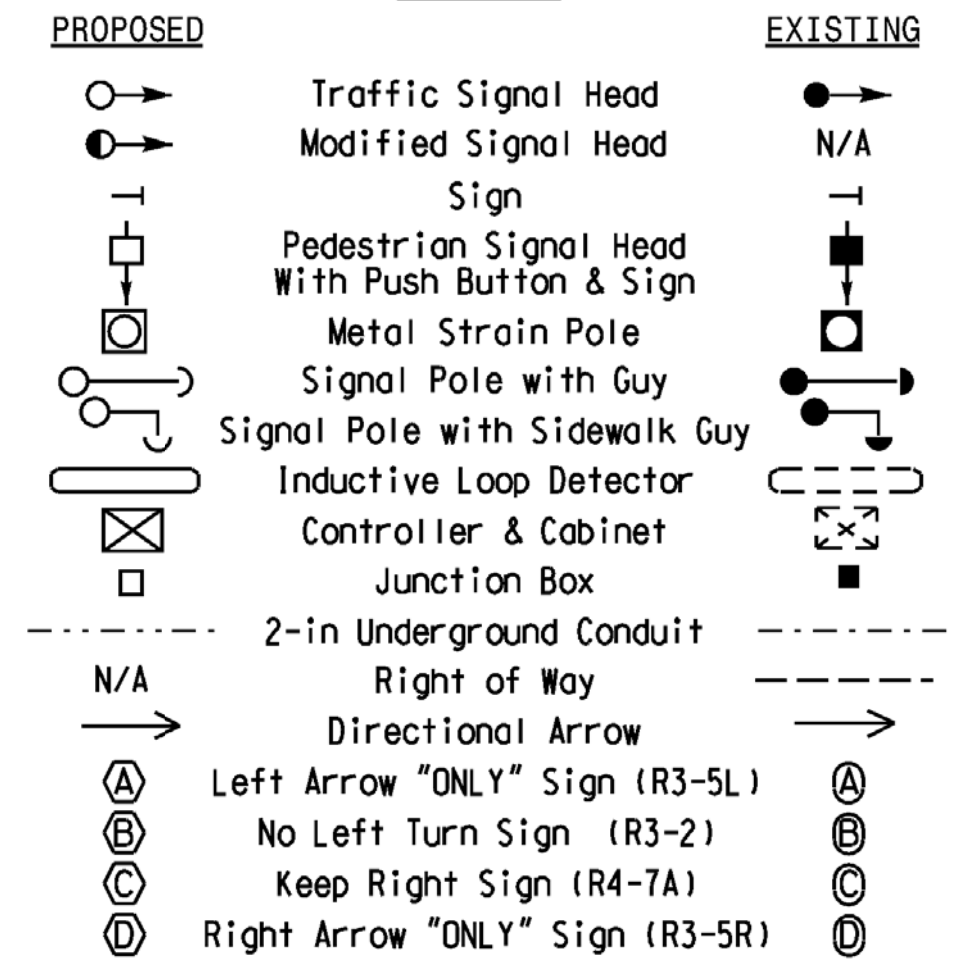


ASC/3 TIMING CHART

FEATURE	PHASE			
	1	2	4	6
Min Green *	7	12	7	12
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	1.0	6.0	1.0	6.0
Max I *	20	90	25	90
Yellow	3.0	4.5	3.0	4.5
Red Clear	2.3	1.0	2.6	1.0
Actuations 34 Add *	-	0	-	0
Seconds / Actuation *	-	1.5	-	1.5
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

* 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



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



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 (828) 254-2201
 FAX (828) 254-4562
 NC LIC. NO. C-1154

Signal Upgrade

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

750 N. Greenfield Pkwy, Garner, NC 27529

NC 54 (E. Harden Street) at I-40 EB/I-85 NB Ramps

Division 7 Alamance County Graham

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

REVISIONS

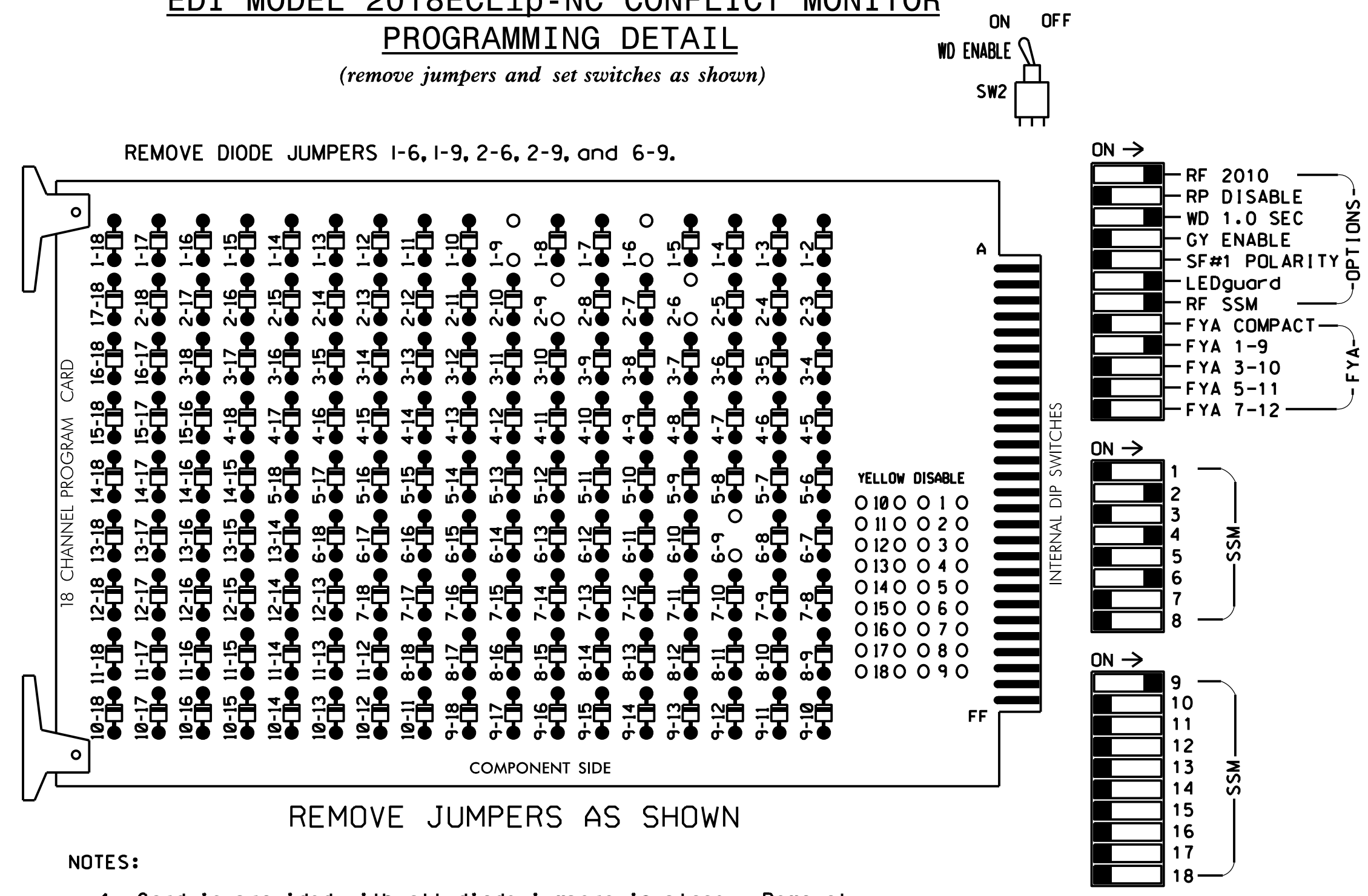
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SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JAMES S. B. VOSO
 SEAL 022599
 James Voso 6/13/2018
 SIGNATURE DATE
 SIG. INVENTORY NO. 07-1052

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

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

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU	11	NU	NU	NU	NU	NU
RED		128			101			134										
YELLOW	*	129			102			135										
GREEN		130			103			136										
RED ARROW													A121					
YELLOW ARROW													A122					
FLASHING YELLOW ARROW													A123					
GREEN ARROW	127																	

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

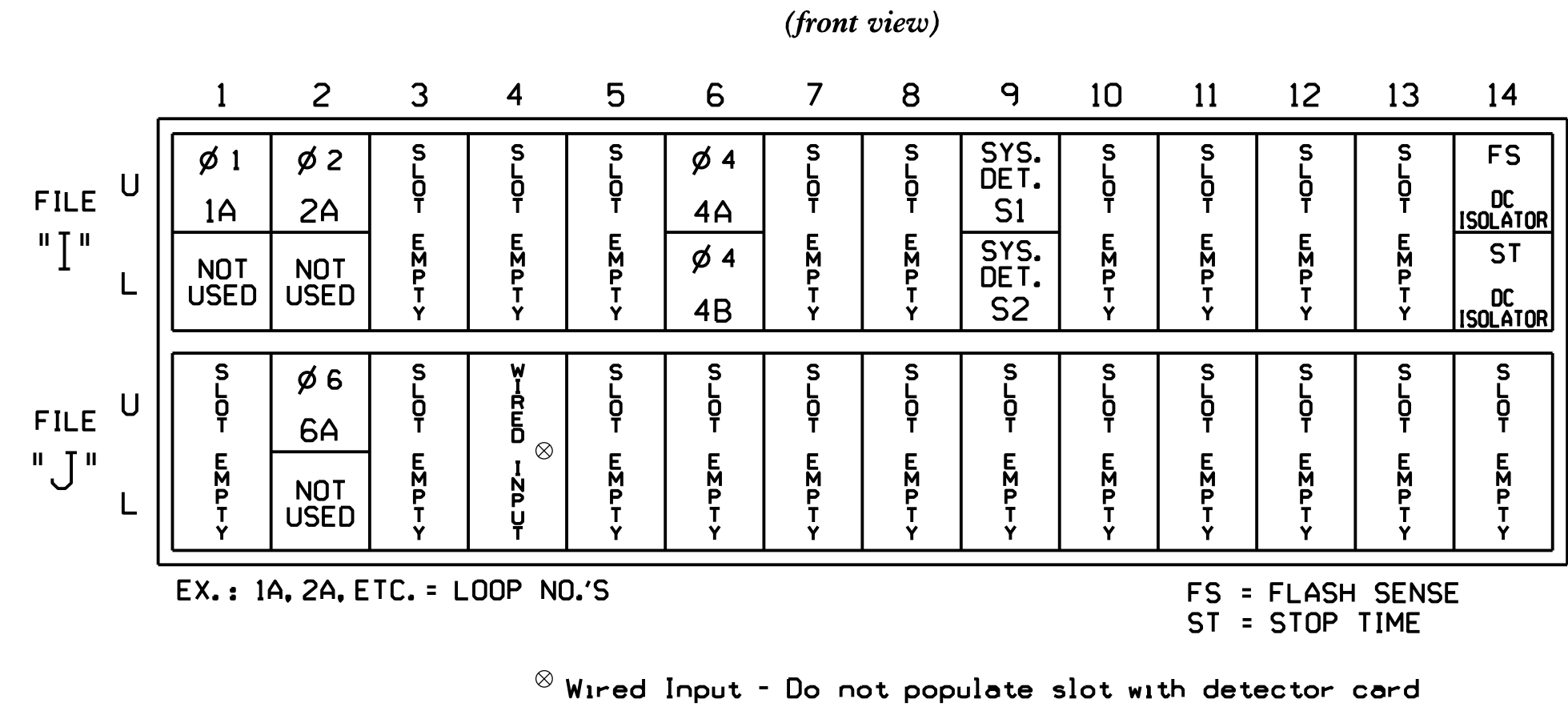
EQUIPMENT INFORMATION

CONTROLLER.....2070LX
 CABINET.....332 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE

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

* See overlap programming detail on sheet 2

INPUT FILE POSITION LAYOUT

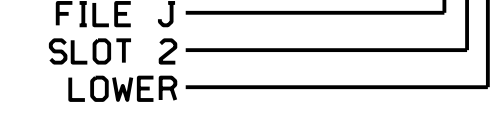


INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		S
		J4U	48	26 ★	6	YES		3		G
2A	TB2-5,6	I2U	39	2	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES				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			X	N

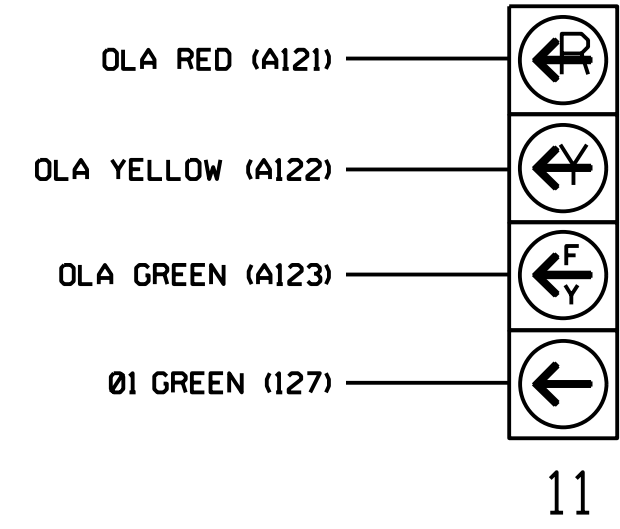
* System detector only. Remove any assigned vehicle phase.
¹Add jumper from I1-W to J4-W, on rear of input file.
 ★ For the detectors to work as shown on the signal design plan, see the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheet 3.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

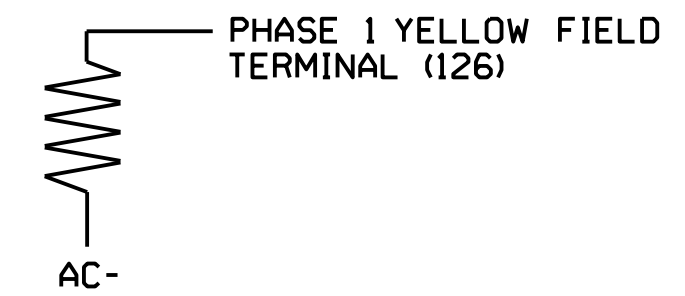
(wire signal head as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



Electrical Detail - Sheet 1 of 4

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Prepared for the Offices of:
 North Carolina Department of Transportation
 Signal Management Section
 750 N. Greenfield Pkwy, Corner, NC 27529

NC 54 (E. Harden Street)
 at
 I-40 EB/I-85 NB Ramps

Division 7 Alamance County Graham

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

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 JAMES B. VOSO
 No. 022599

6/13/2018
 DATE

SIG. INVENTORY NO. 07-1052

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

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

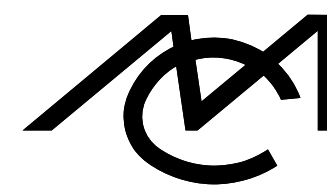
THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 1 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

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.

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

ACTION PLAN...[1]																	
PATTERN.....	AUTO	SYS OVERRIDE....		NO													
TIMING PLAN.....	0	SEQUENCE.....		0													
VEH DETECTOR PLAN..	2	DET LOG.....		NONE													
FLASH.....	--	RED REST.....		NO													
VEH DET DIAG PLN...	0	PED DET DIAG PLN..		0													
DIMMING ENABLE..	NO	PRIORITY RETURN.		NO													
PED PR RETURN..	NO	QUEUE DELAY.....		NO													
PMT COND DELAY	NO																
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	
PED RCL	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
WALK 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
VEX 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
VEH RCL	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
MAX RCL	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
MAX 2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
PHASE	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	
MAX 3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
CS INH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
OMIT	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
SPC FCT	X	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	(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

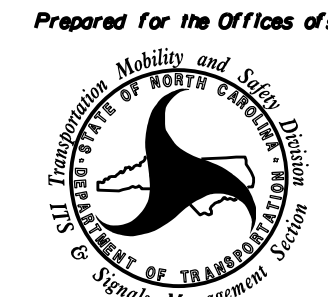
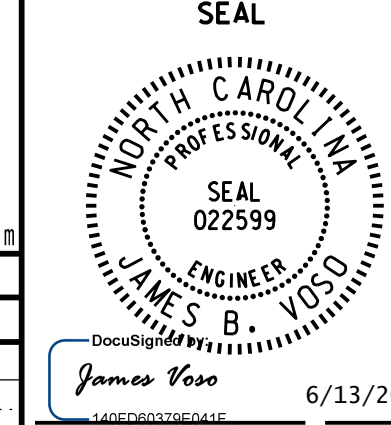


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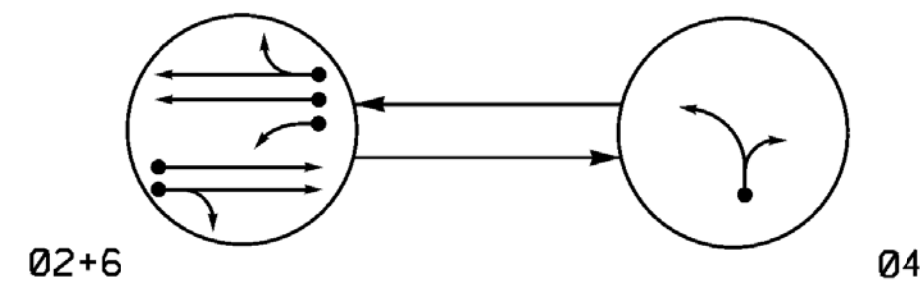
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-1052
DESIGNED: March 2018
SEALED: 6/13/2018
REVISED: NA

Electrical Detail - Sheet 4 of 4

<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 (E. Harden Street) at I-40 EB/I-85 NB Ramps</p> <p style="font-size: x-small;">Division 7 Alamance County Graham</p> <p>PLAN DATE: March 2018 REVIEWED BY: JB Voso</p> <p>PREPARED BY: SE Greene REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REVISIONS	INIT.	DATE							<p style="font-size: x-small;">DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p style="text-align: center;">SEAL</p>  <p style="font-size: x-small;">James Voso 6/13/2018 DATE</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 07-1052</p>
REVISIONS	INIT.	DATE									

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$DOCS\$\$\$\$\$
\$\$\$\$\$SERIAL\$\$\$\$\$

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

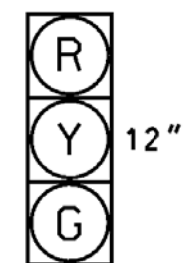
- ←●→ DETECTED MOVEMENT
- ←○→ UNDETECTED MOVEMENT (OVERLAP)
- ←---→ UNSIGNALIZED MOVEMENT
- ←- - -> PEDESTRIAN MOVEMENT

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.



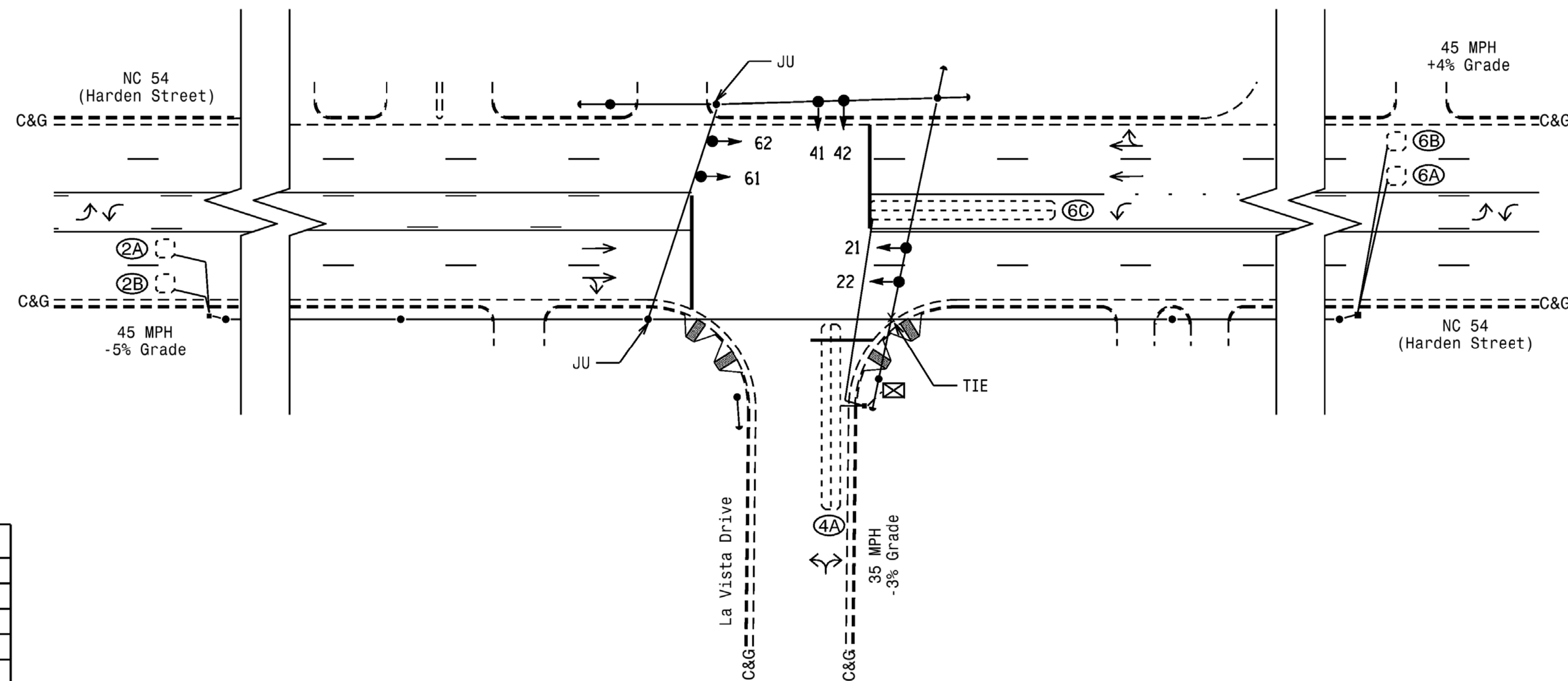
21, 22
41, 42
61, 62

ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6x6	300	EXIST.	-	2	Yes	-	-	X	N	-	X
2B	6x6	300	EXIST.	-	2	Yes	-	-	X	N	-	X
4A	6x60	+5	2-4-2	-	4	Yes	-	10	-	S	-	X
6A	6x6	300	EXIST.	-	6	Yes	-	-	X	N	-	X
6B	6x6	300	EXIST.	-	6	Yes	-	-	X	N	-	X
6C	6x60	0	2-4-2	-	6	Yes	-	3	-	G	-	X

2 Phase Fully Actuated (Burlington-Graham Signal System)

NOTES

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



ASC/3 TIMING CHART

FEATURE	PHASE		
	2	4	6
Min Green *	12	7	12
Walk *	0	0	0
Ped Clear	0	0	0
Veh. Extension *	6.0	2.0	6.0
Max I *	60	40	60
Yellow	5.0	3.0	4.2
Red Clear	1.0	2.1	1.0
Actuations B4 Add *	0	-	0
Seconds / Actuation *	1.5	-	1.5
Max Initial *	34	-	34
Time Before Reduction *	15	-	15
Time To Reduce *	15	-	15
Minimum Gap	3.0	-	3.0
Locking Detector	X	-	X
Recall Position	VEH. RECALL	-	VEH. 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	↯ Curb Ramp
→ Directional Arrow	↯ Curb Ramp

*****SYSTEM*****
 *****USER*****
 *****SERIAL*****

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Signal Upgrade

Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529
 SCALE 0 30
 1"=30'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NC 54 (Harden Street) at La Vista Drive

Division 7 Alamance County Burlington

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

REVISIONS	INIT.	DATE

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
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