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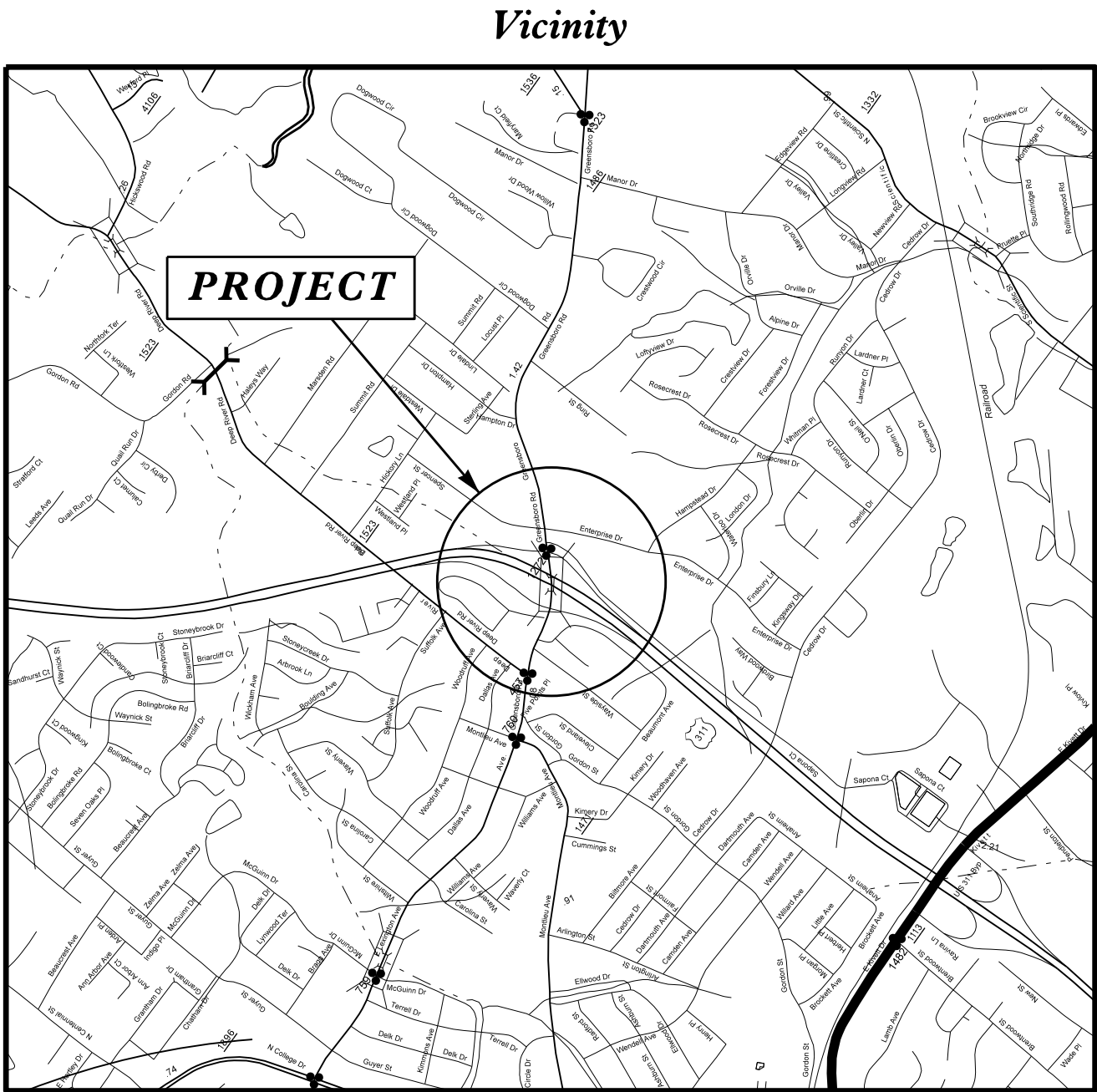
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Project: HS-2007D

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

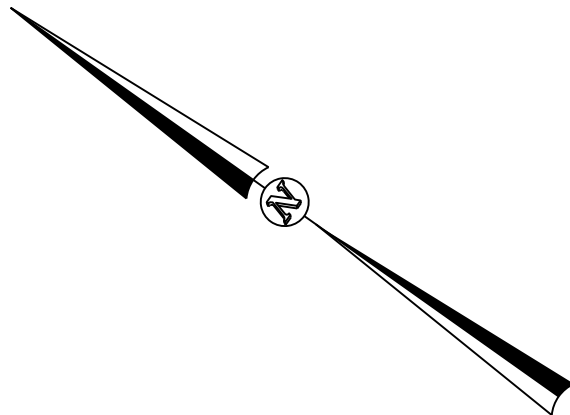
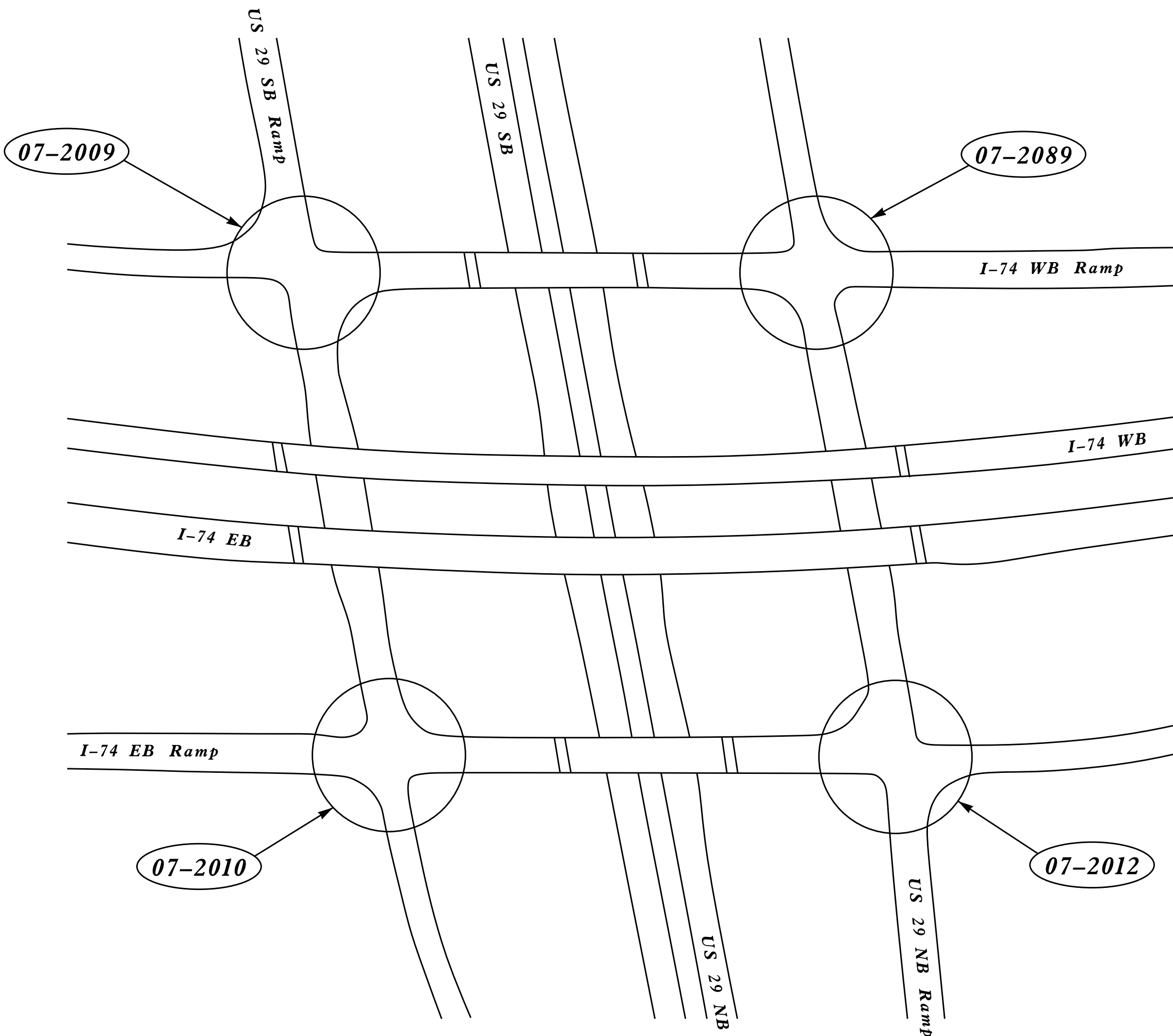
Project No.	Sheet No.
HS-2007D	Sig. 1.0



GUILFORD COUNTY

LOCATION: I-74 AT US 29

TYPE OF WORK: TRAFFIC SIGNALS



Refer to "Roadway Standard Drawings
NCDOT" dated January 2024 and
"Standard Specifications for Roads
and Structures" dated January 2024.

Sheet #
Sig. 1.0
Sig. 2.0-2.3
Sig. 3.0-3.3
Sig. 4.0-4.3
Sig. 5.0-5.3

Reference #
07-2009
07-2010
07-2012
07-2089

Index of Plans

Title Sheet
I-74 WB Ramp at US 29 SB Ramp
US 29 SB Ramp at I-74 EB Ramp
I-74 EB Ramp at US 29 NB Ramp
US 29 NB Ramp at I-74 WB Ramp

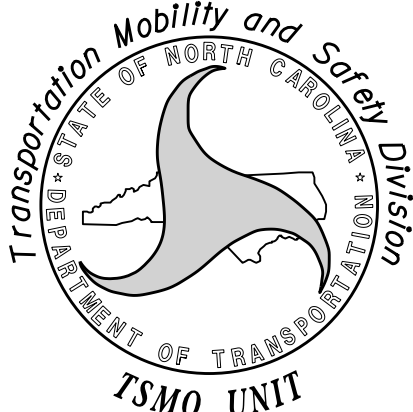
Location/Description

TRANSPORTATION SYSTEMS
MANAGEMENT & OPERATIONS

Contacts:

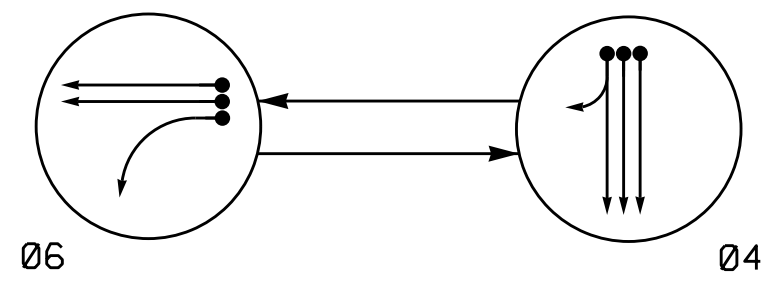
Robert J. Ziemba, PE - Central Region Signals Engineer
Ryan W. Hough, PE - Signal Equipment Design Engineer

Prepared In the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY & SAFETY DIVISION



750 N. Greenfield Parkway, Garner, NC 27529

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

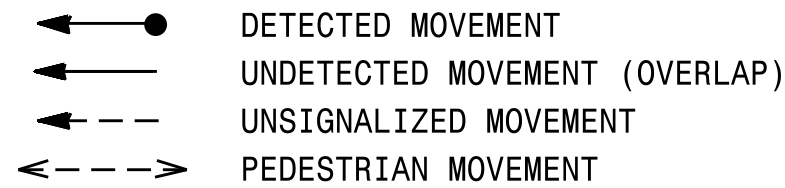


TABLE OF OPERATION			
SIGNAL FACE	PHASE		
	Ø 6	Ø 4	FLASH
41, 42	R	↑	R
43	R	G	R
44, 46	ON	OFF	OFF
45, 47	ON	OFF	OFF
61	←	→	→
62, 63	↑	R	R

BEACON TABLE OF OPERATION		
SIGNAL FACE	INTERVAL	
	1	2
44, 46	ON	OFF
45, 47	OFF	ON

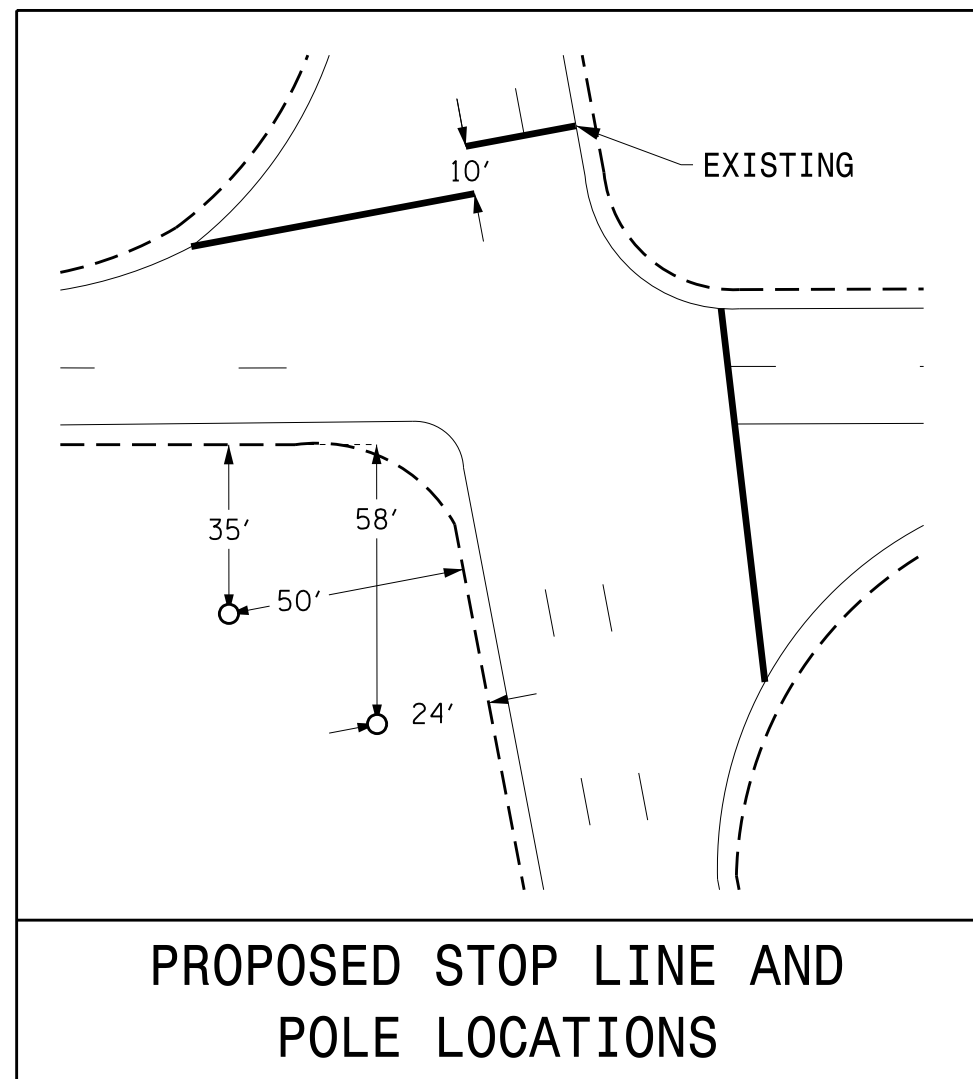
ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP / ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
4A	6X6	300	EXIST	-		DISCONNECT AND ABANDON						
4B	6X6	300	EXIST	-		DISCONNECT AND ABANDON						
4C	6X6	300	EXIST	-		DISCONNECT AND ABANDON						
4D	6X40	0	2-4-2	-	4	Yes	-	-	-	G	-	-
4E	6X40	0	2-4-2	-	4	Yes	-	-	-	G	-	-
4F	6X40	0	2-4-2	X	4	Yes	-	10	-	G	-	-
4G	6X20	0	2-4-2	X	4	Yes	-	15	-	G	-	-
6A	6X60	0	2-4-2	-	6	Yes	2.0	5	-	G	-	-
6B	6X60	0	2-4-2	-	6	Yes	2.0	5	-	G	-	-
6C	6X60	0	2-4-2	-	6	Yes	2.0	5	-	G	-	-
6D*	6X6	300	*	X	6	Yes	-	-	-	N	-	*
6E*	6X6	300	*	X	6	Yes	-	-	-	N	-	*

* Video Detection Zone

2 Phase
Fully Actuated
(High Point Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Disconnect and abandon existing loops 4A, 4B, and 4C.
- 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.
- Install reflective backplates on signal heads 41, 42, 43, 61, 62, and 63.
- Activate beacons 44, 45, 46, and 47 three seconds before the end of phase 4 green.
- Remove existing Through Arrow "ONLY" (R3-5A) lane control signs.
- Pavement markings are existing unless otherwise shown.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



PROPOSED STOP LINE AND
POLE LOCATIONS

ASC/3 TIMING CHART		
FEATURE	PHASE	
	4	6
Min Green *	12	12
Walk *	-	-
Ped Clear	-	-
Veh. Extension *	2.0	6.0
Max 1 *	30	30
Yellow	4.4	4.4
Red Clear	1.2	1.0
Red Revert	2.0	2.0
Actuations B4 Add *	-	-
Seconds / Actuation *	-	-
Max Initial *	-	-
Time Before Reduction *	-	5
Time To Reduce *	-	15
Minimum Gap	-	3.0
Locking Detector	-	-
Recall Position	-	VEH. 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.

SIGNAL FACE I.D.

All Heads L.E.D.

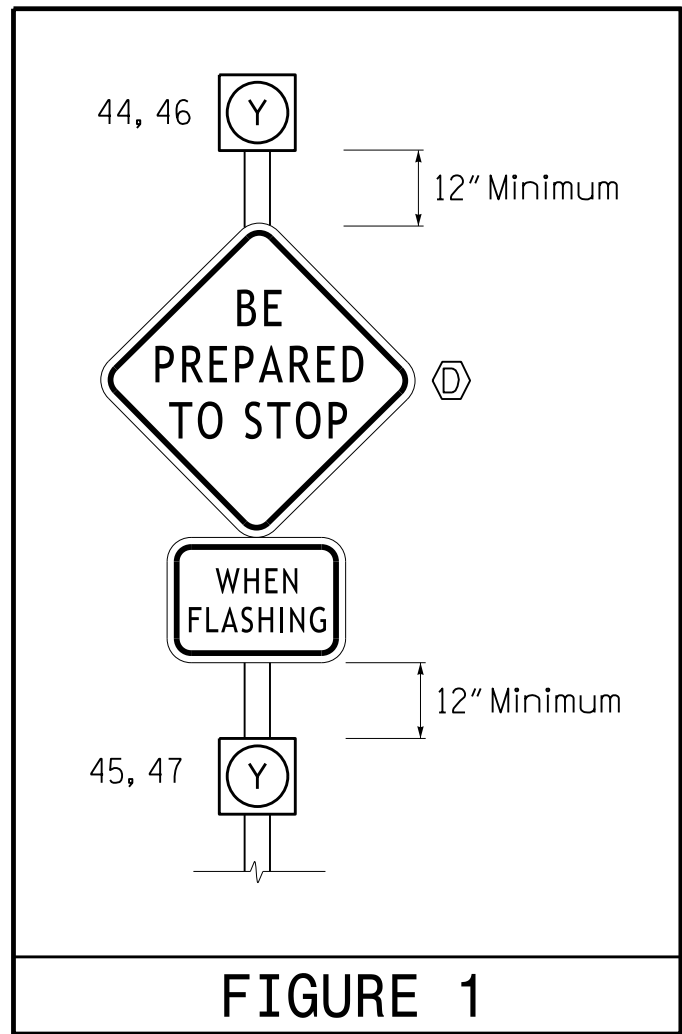
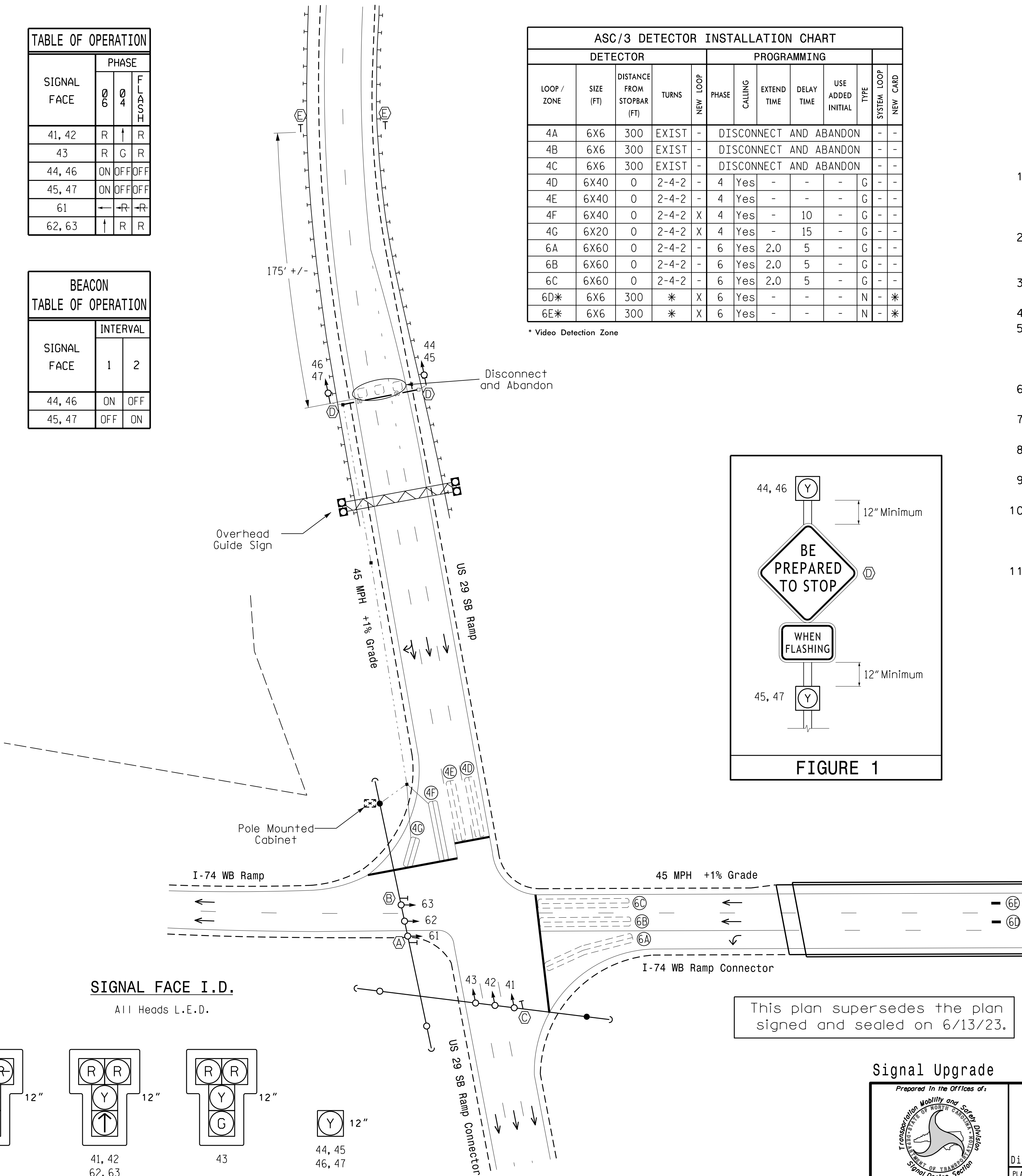
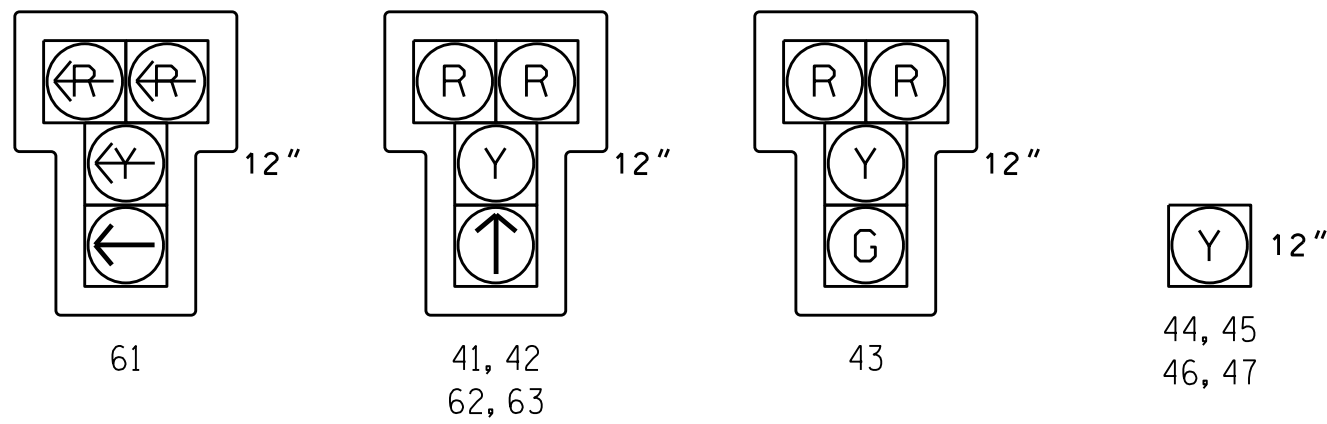


FIGURE 1

LEGEND

PROPOSED	EXISTING

Signal Upgrade

 750 N. Greenfield Pkwy, Garner, NC 27529	I-74 WB Ramp at US 29 SB Ramp		
	Division 7 Guilford County High Point		
	PLAN DATE: January 2025	REVIEWED BY:	
	PREPARED BY: J.A. Lohr	REVIEWED BY:	
REVISIONS		INIT.	DATE
SCALE 0 40 1"=40'			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		SEAL	

(remove jumpers and set switches as shown)

18 CHANNEL PROGRAM CARD

COMPONENT SIDE

INTERNAL DIP SWITCHES

YELLOW DISABLE

REMOVE JUMPERS AS SHOWN

-
- ON OFF
- WD ENABLE
- SW2
- A
- INTERNAL DIP SWITCHES
- ON →
- RF 2010
- RP DISABLE
- WD 1.0 SEC
- GY ENABLE
- SF#1 POLARITY
- LEDguard
- RF SSM
- FYA COMPACT
- FYA 1-9
- FYA 3-10
- FYA 5-11
- FYA 7-12
- OPTIONS
- FYA
- ON →
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- SSM
- ON →
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- SSM
- FF
- ABLE
- 1 O
- 2 O
- 3 O
- 4 O
- 5 O
- 6 O
- 7 O
- 8 O
- 9 O
- FF
- = DENOTES POSITION OF SWITCH

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 High Point Signal System.

```

CONTROLLER.....2070LX
CABINET.....336
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S3*,S5,S8,S9*
PHASES USED.....2#,4,6
OVERLAP G.....4

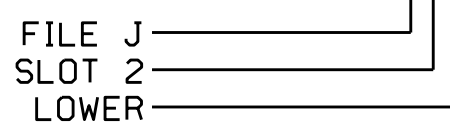
* Used for Advance Beacons only.
# Required to make the Advance Beacon function properly

```

(front view)



INPUT FILE POSITION LEGEND: J2L



(install resistors as shown)

PHASE 2 WALK FIELD TERMINAL (115)

PHASE 6 WALK FIELD TERMINAL (121)

AC-

AC-

For detection zones 6D and 6E, install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection scheme shown on the Signal Design Plan.

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	ADVANCE BEACON	3	OLG		4 PED	5	6		6 PED	ADVANCE BEACON	7	8	8 PED
SIGNAL HEAD NO.	NU	NC	NU	44,46	NU	41,42	43	NU	NU	61	62,63	NU	45,47	NU	NU	NU
RED						101	101				134					
YELLOW						102	102				135					
GREEN							103									
RED ARROW										134						
YELLOW ARROW										135						
GREEN ARROW					103					136	136					
PED YELLOW			**	114								**	120			
		*									*					

Electrical Detail - Sheet 1 of 3

This plan supersedes the plan signed and sealed on 6/14/23.

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

SEAL

CAO

CAROL

PROFESSIONAL

SEAL

036833

ENGINEER

W. HOU

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3. DAT

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(program controller as shown)

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

USED TO FLASH
SIGNAL HEADS
44,46

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

USED TO FLASH
SIGNAL HEADS
45,47

END PROGRAMMING

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

END PROGRAMMING

(program controller as shown)

- Toggle to reach
Overlap 'G'

OVERLAP G

Select TMG VEH OVLP [G] and 'NORMAL'

END PROGRAMMING

(program controller as shown)

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

(wire flashers as shown below)

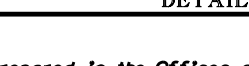
14 AWG. (min.)



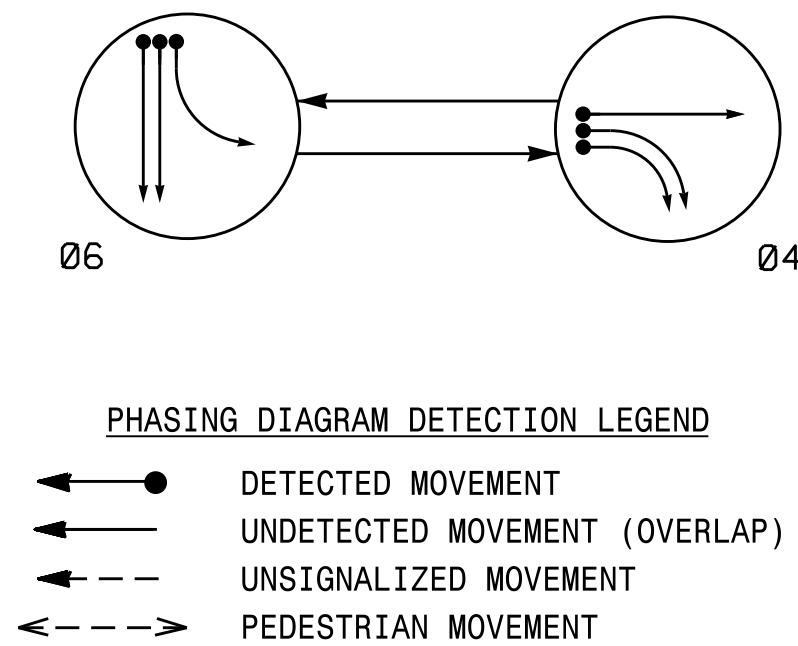
1. INSERT LOADSWITCH FOR S3 AND S9.
2. MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN IN LOAD RESISTOR INSTALLATION DETAIL ON THIS SHEET.

This plan supersedes the plan signed and sealed on 6/14/23.

Electrical Detail - Sheet 2 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR: <i>Prepared In the Offices of:</i>  750 N.Greenfield Pkwy,Garner,NC 27529	I-74 WB Ramp at US 29 SB Ramp	SEAL  Signed by: _____ Ryan W. Hough (403020F-A6286C3) DATE: _____ 01/31/2025																		
Division 7 Gulford County High Point																				
PLAN DATE: January 2025 REVIEWED BY: _____																				
PREPARED BY: Tim Langston REVIEWED BY: _____																				
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REVISONS	INIT.	DATE																		
SIG. INVENTORY NO. _____ 07-2009																				

PHASING DIAGRAM



SIGNAL FACE	PHASE		
	Ø 6	Ø 4	FLASH
41, 42	R	↑	R
43, 44	R	→	R
45, 47	ON	OFF	OFF
46, 48	ON	OFF	OFF
61	←	←R	←R
62, 63	↑	R	R

BEACON TABLE OF OPERATION		
SIGNAL FACE	INTERVAL	
	1	2
45, 47	ON	OFF
46, 48	OFF	ON

ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR				PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
4A	6X6	300	EXIST	-	4	No	-	-	-	N	-	-
4B	6X6	300	EXIST	-	DISCONNECT AND ABANDON							
4C	6X6	300	EXIST	-	DISCONNECT AND ABANDON							
4D	6X40	0	2-4-2	-	4	Yes	2.0	5	-	G	-	-
4E	6X40	0	2-4-2	-	4	Yes	-	15	-	N	-	-
4F	6X40	0	2-4-2	-	4	Yes	-	15	-	N	-	-
6A	6X6	300	EXIST	-	6	Yes	-	-	-	N	-	-
6B	6X6	300	EXIST	-	6	Yes	-	-	-	N	-	-
6C	6X6	300	EXIST	-	6	Yes	-	-	-	N	-	-
6D	6X60	0	2-4-2	-	6	Yes	2.0	5	-	G	-	-
6E	6X60	0	2-4-2	-	6	Yes	2.0	5	-	G	-	-
6F	6X60	0	2-4-2	-	6	Yes	2.0	5	-	G	-	-

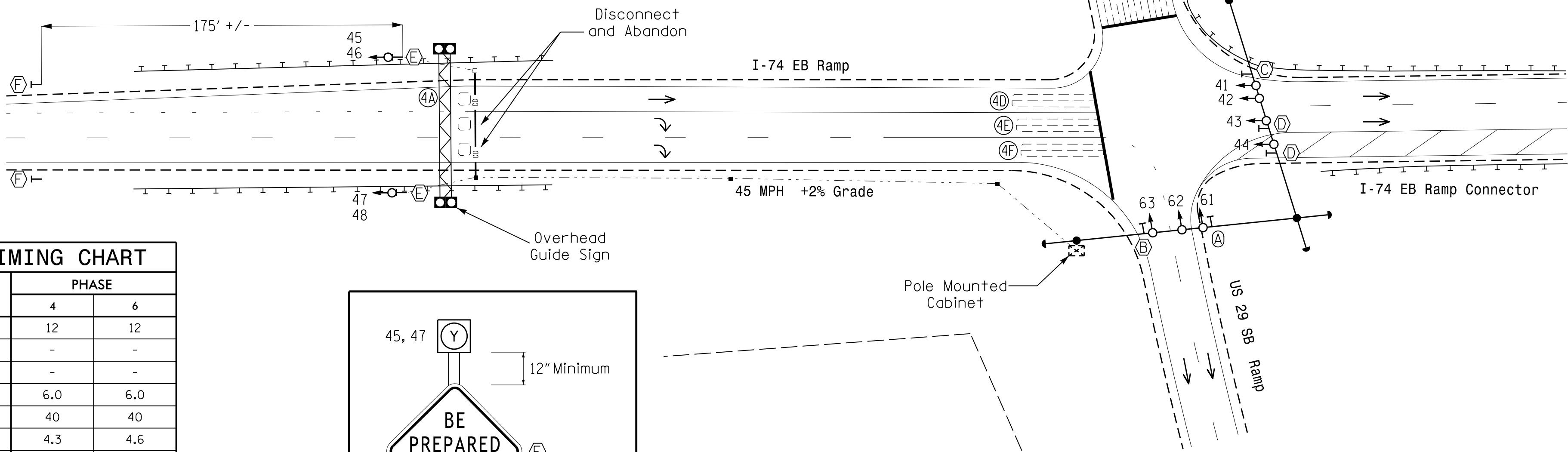
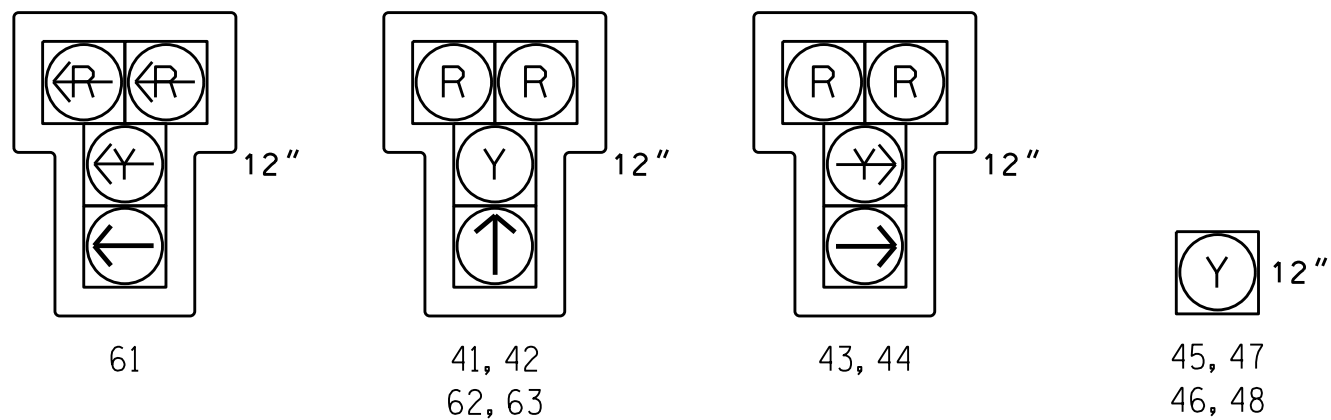
2 Phase
Fully Actuated
(High Point Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Disconnect and abandon existing loops 4B and 4C.
- 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.
- Install reflective backplates on signal heads 41, 42, 43, 44, 61, 62, and 63.
- Activate beacons 45, 46, 47, and 48 three seconds before the end of phase 4 green.
- Remove existing Through Arrow "ONLY" (R3-5A) lane control signs.
- Pavement markings are existing unless otherwise shown.
- 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	
	4	6
Min Green *	12	12
Walk *	-	-
Ped Clear	-	-
Veh. Extension *	6.0	6.0
Max 1 *	40	40
Yellow	4.3	4.6
Red Clear	1.0	1.0
Red Revert	2.0	2.0
Actuations B4 Add *	-	-
Seconds / Actuation *	-	-
Max Initial *	-	-
Time Before Reduction *	5	5
Time To Reduce *	15	15
Minimum Gap	3.0	3.0
Locking Detector	-	-
Recall Position	-	VEH. 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.

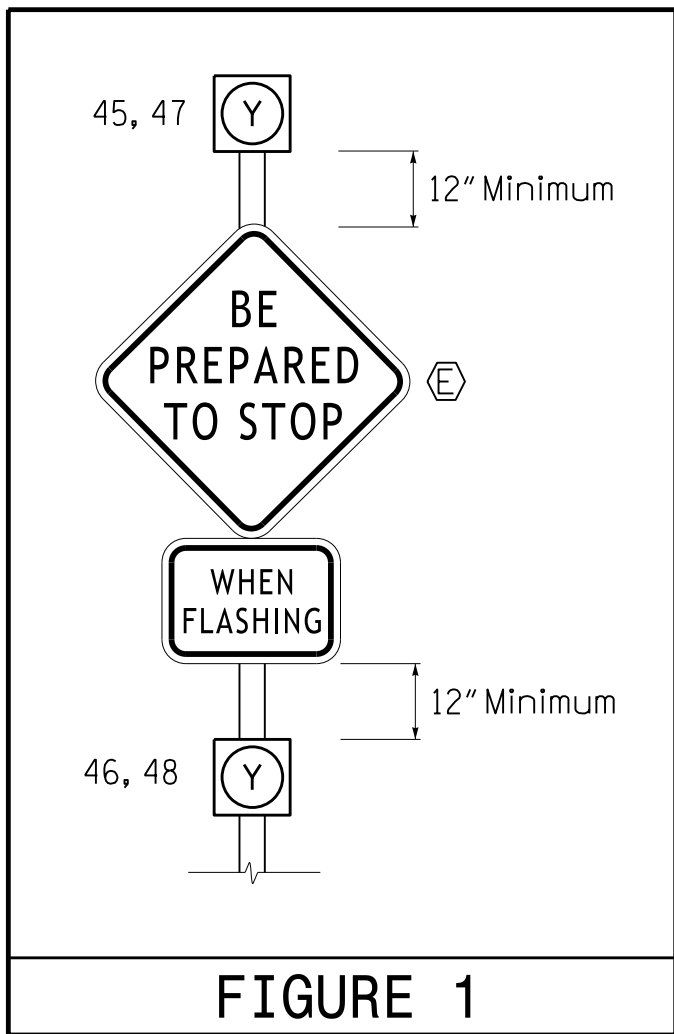


FIGURE 1

PROPOSED		EXISTING
	Traffic Signal Head	N/A
	Modified Signal Head	N/A
	Pedestrian Signal Head	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
	Directional Drill	N/A
	Guardrail	N/A
	Left Arrow "ONLY" Sign (R3-5L)	(A)
	No Right Turn Sign (R3-1)	(B)
	No Left Turn Sign (R3-2)	(C)
	Right Arrow "ONLY" Sign (R3-5R)	(D)
	"BE PREPARED TO STOP" Sign (W3-4) with "WHEN FLASHING" Sign (W16-13) See Figure 1	(E)
	Signal Ahead Sign (W3-3)	(F)

This plan supersedes the plan signed and sealed on 6/13/23.

Signal Upgrade

Prepared In the Offices of:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
STATE OF NORTH CAROLINA
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

0 40
1"=40'

US 29 SB Ramp
at
I-74 EB Ramp

Division 7
Guilford County
High Point

PLAN DATE: January 2025
PREPARED BY: J.A. Lohr
REVISIONS
INIT. DATE

REVIEWED BY:
REVIEWED BY:
INIT. DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
026486
ROBERT J. ZIEMBA
DocuSigned By:
Robert J. Ziemba
01/28/2025
DATE
180648007246484
SIG. INVENTORY NO. 07-2010

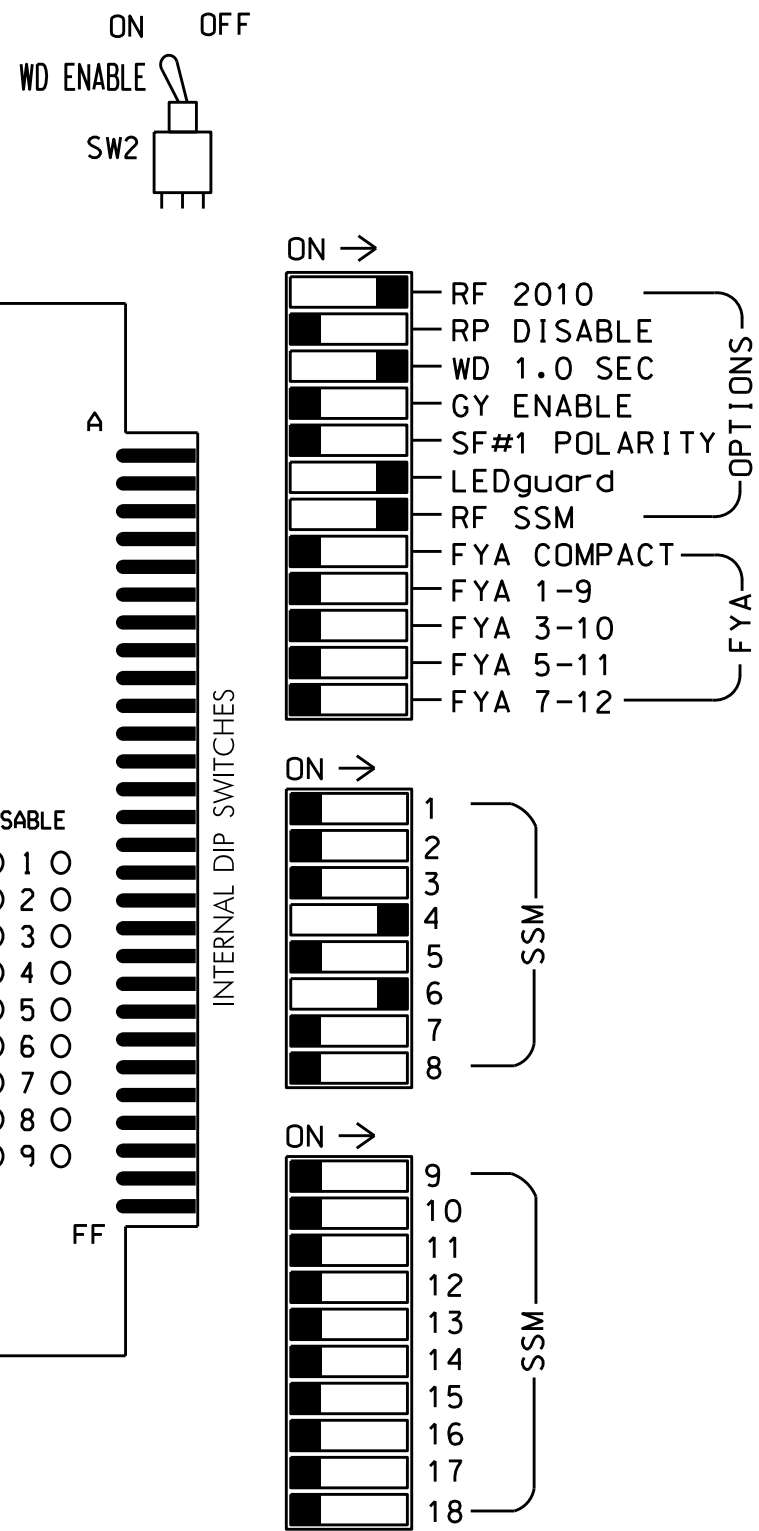
(remove jumpers and set switches as shown)

18 CHANNEL PROGRAM CARD

COMPONENT SIDE

REMOVE JUMPERS AS SHOWN

- rd. ■ = DENOTES POSITION
OF SWITCH



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 High Point Signal System.

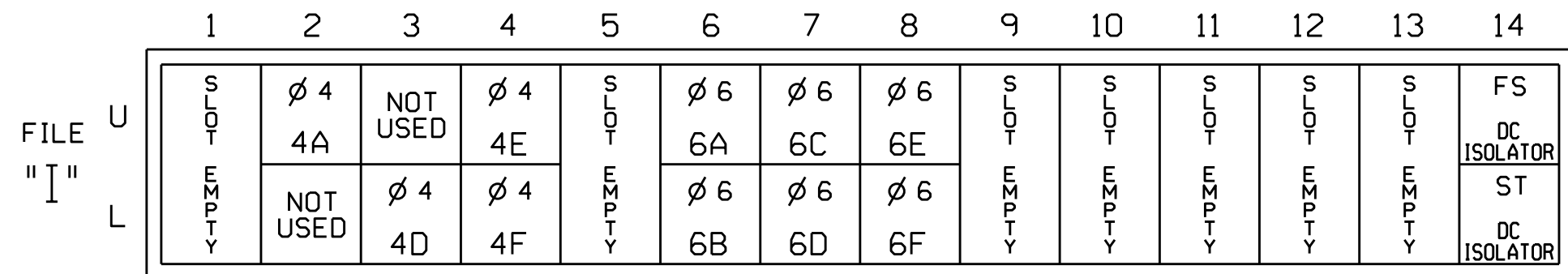
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CONTROLLER.....2070LX
CABINET.....336
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S3*,S5,S8,S9*
PHASES USED.....2#,4,6
OVERLAP G.....4

```

```
# Required to make the Advance Beacon function properly
```

(front view)



FS = FLASH SENSE
ST = STOP TIME

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A	TB21-3,4	12U	39	2	4	NO				N
4D	TB23-5,6	13L	49	24	4	YES	2.0	5		G
4E	TB21-7,8	14U	41	4	4	YES		15		N
4F	TB23-7,8	14L	45	14	4	YES		15		N
6A	TB21-11,12	16U	40	6	6	YES				N
6B	TB23-11,12	16L	44	16	6	YES				N
6C	TB21-13,14	17U	57	7	6	YES				N
6D	TB23-13,14	17L	50	28	6	YES	2.0	5		G
6E	TB22-1,2	18U	42	8	6	YES	2.0	5		G
6F	TB24-1,2	18L	46	18	6	YES	2.0	5		G

(install resistors as shown)

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.
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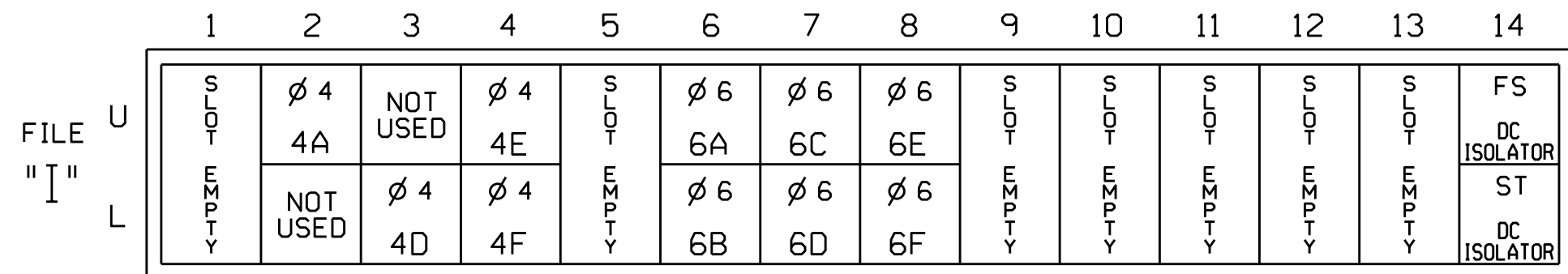
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CONTROLLER.....2070LX
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CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS..12
LOAD SWITCHES USED.....S3*,S5,S8,S9*
PHASES USED.....2#,4,6
OVERLAP G.....4
```

```
# Required to make the Advance Beacon function properly
```

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	ADVANCE BEACON	3	OLG		4 PED	5	6		6 PED	ADVANCE BEACON	7	8	8 PED
SIGNAL HEAD NO.	NU	NC	NU	45,47	NU	41,42	43,44	NU	NU	61	62,63	NU	46,48	NU	NU	NU
RED						101	101				134					
YELLOW						102					135					
GREEN																
RED ARROW										134						
YELLOW ARROW							102			135						
GREEN ARROW						103	103			136	136					
PED YELLOW				** 114								** 120				
			*									*				

NOTE: Output for S5 has been reassigned. See sheet 2 for details.

(front view)



FS = FLASH SENSE
ST = STOP TIME

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A	TB21-3,4	12U	39	2	4	NO				N
4D	TB23-5,6	13L	49	24	4	YES	2.0	5		G
4E	TB21-7,8	14U	41	4	4	YES		15		N
4F	TB23-7,8	14L	45	14	4	YES		15		N
6A	TB21-11,12	16U	40	6	6	YES				N
6B	TB23-11,12	16L	44	16	6	YES				N
6C	TB21-13,14	17U	57	7	6	YES				N
6D	TB23-13,14	17L	50	28	6	YES	2.0	5		G
6E	TB22-1,2	18U	42	8	6	YES	2.0	5		G
6F	TB24-1,2	18L	46	18	6	YES	2.0	5		G

(install resistors as shown)

FILE J _____
SLOT 2 _____
LOWER _____

This plan supersedes the plan signed and sealed on 6/14/23.

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

US 29 SB Ramp
at
I-74 EB Ramp

[illegible]

430320FAA2854C3...	DATE
07 0010	

INVENTORY NO. 07-2010

(program controller as shown)

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

USED TO FLASH
SIGNAL HEADS
45.47

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

USED TO FLASH
SIGNAL HEADS
46,48

END PROGRAMMING

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

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

END PROGRAMMING

(program controller as shown)

- Toggle to reach
Overlap 'G'

OVERLAP G

Select TMG VEH OVLP [G] and 'NORMAL'

LAG GRN 3.0 YEL 4.3 RED 1.0

END PROGRAMMING

(program controller as shown)

To assign load switch S5 as OLG program LD SWITCH 4 as OVLP '7' TYPE '0' as shown below.

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

(wire flashers as shown below)



IMPORTANT

1. INSERT LOADSWITCH FOR S3 AND S9.
2. MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN IN LOAD RESISTOR INSTALLATION DETAIL ON THIS SHEET.

This plan supersedes the plan signed and sealed on 6/14/23.

Electrical Detail - Sheet 2 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:	US 29 SB Ramp at I-74 EB Ramp	SEAL 																		
Prepared In the Offices of:	Division 7 Guilford County High Point																			
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">PLAN DATE: January 2025</td> <td style="width: 50%;">REVIEWED BY:</td> </tr> <tr> <td>PREPARED BY: Tim Langston</td> <td>REVIEWED BY:</td> </tr> <tr> <td style="text-align: center;">REVISIONS</td> <td style="text-align: center;">INIT. DATE</td> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>		PLAN DATE: January 2025	REVIEWED BY:	PREPARED BY: Tim Langston	REVIEWED BY:	REVISIONS	INIT. DATE												
PLAN DATE: January 2025	REVIEWED BY:																			
PREPARED BY: Tim Langston	REVIEWED BY:																			
REVISIONS	INIT. DATE																			
750 N. Greenfield Pkwy, Garner, NC 27529	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"> Signed by:  430320F-AA2B54C3 </td> <td style="width: 40%; text-align: right;"> 01/31/2025 DATE </td> </tr> <tr> <td colspan="2" style="text-align: right;"> SIG. INVENTORY NO. 07-2010 </td> </tr> </table>		Signed by:  430320F-AA2B54C3	01/31/2025 DATE	SIG. INVENTORY NO. 07-2010															
Signed by:  430320F-AA2B54C3	01/31/2025 DATE																			
SIG. INVENTORY NO. 07-2010																				

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash.
Logic Statement 100 must be modified as shown when running Red-Red flash.

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

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key, then hit "ENTER", select "LP SET CIB ON", hit "C", and then set the number to 427.

```

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

```

THIS STATEMENT IS USED
TO CONTROL THE FLASH
SENSE INPUT WHEN RUNNING
RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL", next verify that LP#100 is ENABLED.

END PROGRAMMING

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select **2. CONTROLLER**
2. From CONTROLLER Submenu select **5. START/FLASH**

START/FLASH DATA																
-----START UP-----																
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
PHASE	G					G										
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
OVERLAP	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
FLASH>MON.	NO FL					TIMECD> 0 ALL RED...										
PWR START SEQ..	1					MUTCD> YES Y- G: NO										

Scroll down on this screen and set "Exit FI" to Green "G"

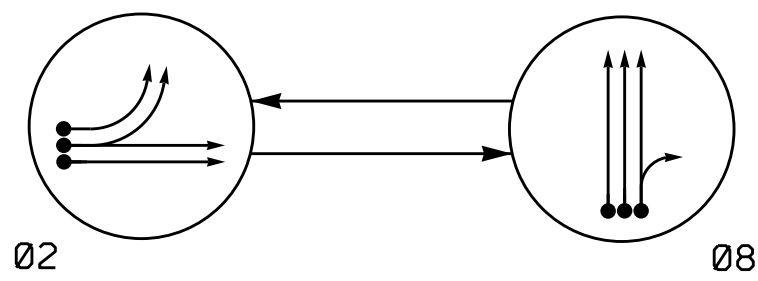
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2010
DESIGNED: January 2025
SEALED: 01/28/2025
REVISED: N/A

This plan supersedes the plan signed and sealed on 6/14/23.

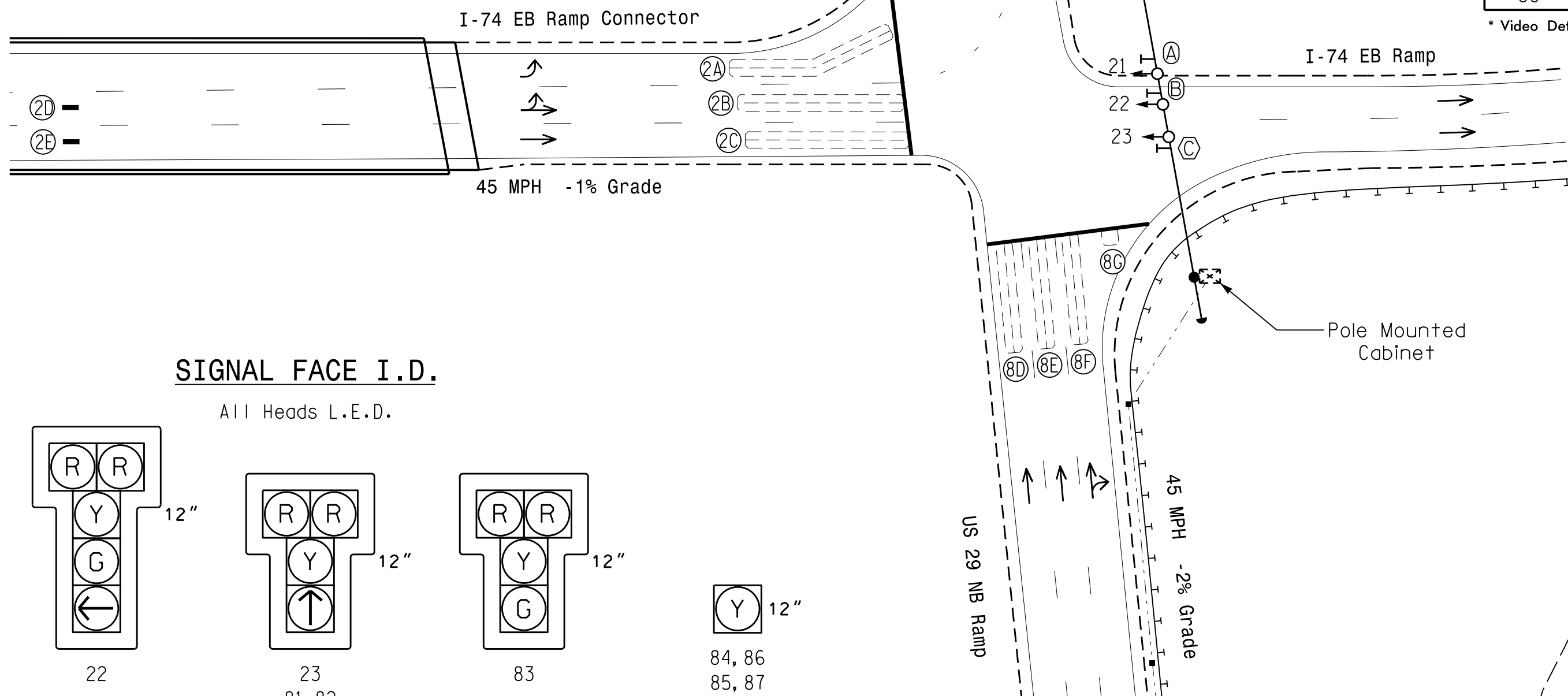
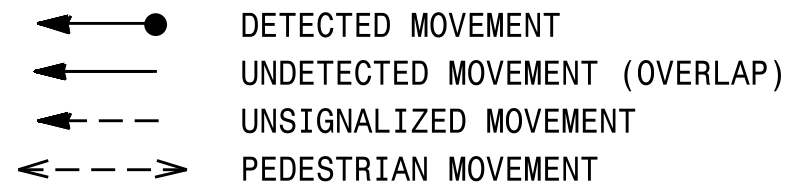
Electrical Detail - Sheet 3 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:	US 29 SB Ramp at I-74 EB Ramp	SEAL 								
<i>Prepared In the Offices of:</i>  750 N.Greenfield Pkwy,Garner,NC 27529	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="padding: 5px;">Division 7 Guilford County High Point</th> </tr> <tr> <td style="width: 50%; padding: 5px;">PLAN DATE: January 2025</td> <td style="width: 50%; padding: 5px;">REVIEWED BY:</td> </tr> <tr> <td style="padding: 5px;">PREPARED BY: Tim Langston</td> <td style="padding: 5px;">REVIEWED BY:</td> </tr> <tr> <td style="height: 40px; vertical-align: bottom; padding: 5px;"> REVISIONS </td> <td style="height: 40px; vertical-align: bottom; padding: 5px;"> INIT. DATE </td> </tr> </table>	Division 7 Guilford County High Point		PLAN DATE: January 2025	REVIEWED BY:	PREPARED BY: Tim Langston	REVIEWED BY:	REVISIONS	INIT. DATE	Signed by: _____ Ryan W. Hough 01/31/2025 #A3030EAA2B54C-A DATE SIG. INVENTORY NO. 07-2010
Division 7 Guilford County High Point										
PLAN DATE: January 2025	REVIEWED BY:									
PREPARED BY: Tim Langston	REVIEWED BY:									
REVISIONS	INIT. DATE									

PHASING DIAGRAM

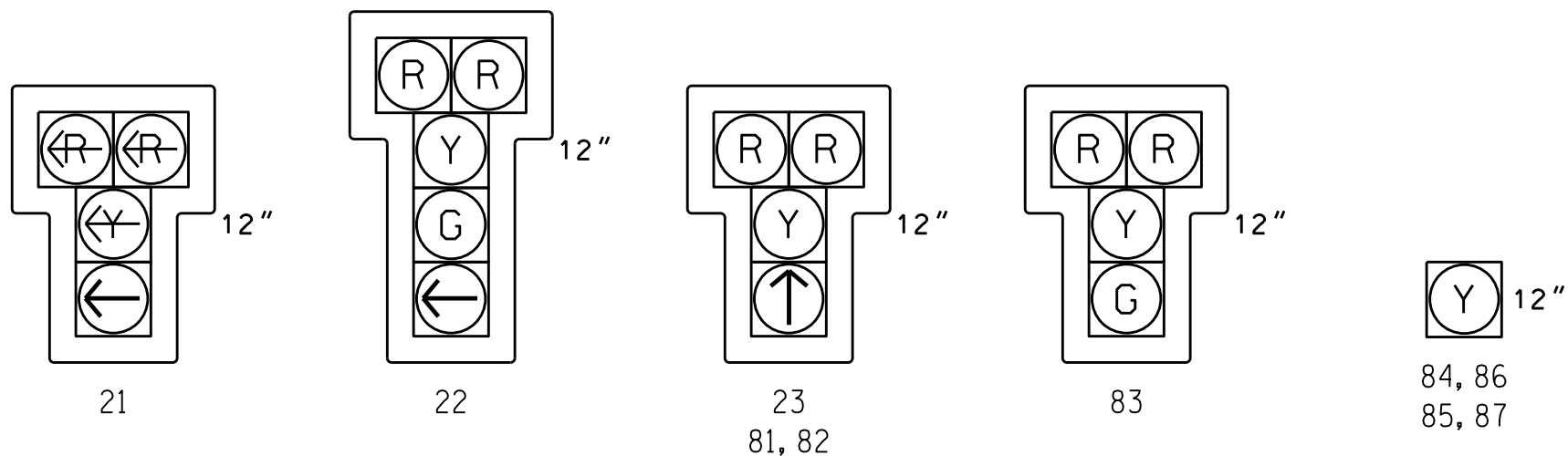


PHASING DIAGRAM DETECTION LEGEND



SIGNAL FACE I.D.

All Heads L.E.D.



ASC/3 TIMING CHART		
FEATURE	PHASE	
	2	8
Min Green *	12	12
Walk *	-	-
Ped Clear	-	-
Veh. Extension *	6.0	6.0
Max I *	30	30
Yellow	4.6	4.7
Red Clear	1.0	1.0
Red Revert	2.0	2.0
Actuations B4 Add *	-	-
Seconds / Actuation *	-	-
Max Initial *	-	-
Time Before Reduction *	5	5
Time To Reduce *	15	15
Minimum Gap	3.0	3.0
Locking Detector	-	-
Recall Position	VEH. 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.

TABLE OF OPERATION				
SIGNAL FACE	PHASE		FLASH	FL
	Ø2	Ø8		
21	←	→	R	R
22	←	→	R	R
23	↑	→	R	R
81, 82	R	↑	R	R
83	R	G	R	R
84, 86	ON	OFF	OFF	OFF
85, 87	ON	OFF	OFF	OFF

BEACON TABLE OF OPERATION			
SIGNAL FACE	INTERVAL		FL
	1	2	
84, 86	ON	OFF	OFF
85, 87	OFF	ON	OFF

ASC/3 DETECTOR INSTALLATION CHART											
DETECTOR						PROGRAMMING					
LOOP / ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW	LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE
2A	6X60	0	2-4-2	-	2	Yes	2.0	5	-	G	-
2B	6X60	0	2-4-2	-	2	Yes	2.0	5	-	G	-
2C	6X60	0	2-4-2	-	2	Yes	2.0	5	-	G	-
2D*	6X6	300	*	X	2	Yes	-	-	-	N	*
2E*	6X6	300	*	X	2	Yes	-	-	-	N	*
8A	6X6	300	EXIST	-	8	No	-	-	-	N	-
8B	6X6	300	EXIST	-	8	No	-	-	-	N	-
8C	6X6	300	EXIST	-	8	No	-	-	-	N	-
8D	6X40	0	2-4-2	-	8	Yes	2.0	5	-	G	-
8E	6X40	0	2-4-2	-	8	Yes	2.0	5	-	G	-
8F	6X40	0	2-4-2	-	8	Yes	2.0	10	-	G	-
8G	6X6	0	EXIST	-	8	Yes	-	20	-	G	-

* Video Detection Zone

2 Phase
Fully Actuated
(High Point Signal System)

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- 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.
- Install reflective backplates on signal heads 21, 22, 23, 81, 82, and 83.
- Activate beacons 84, 85, 86, and 87 three seconds before the end of phase 8 green.
- Pavement markings are existing unless otherwise shown.
- This intersection uses video detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND

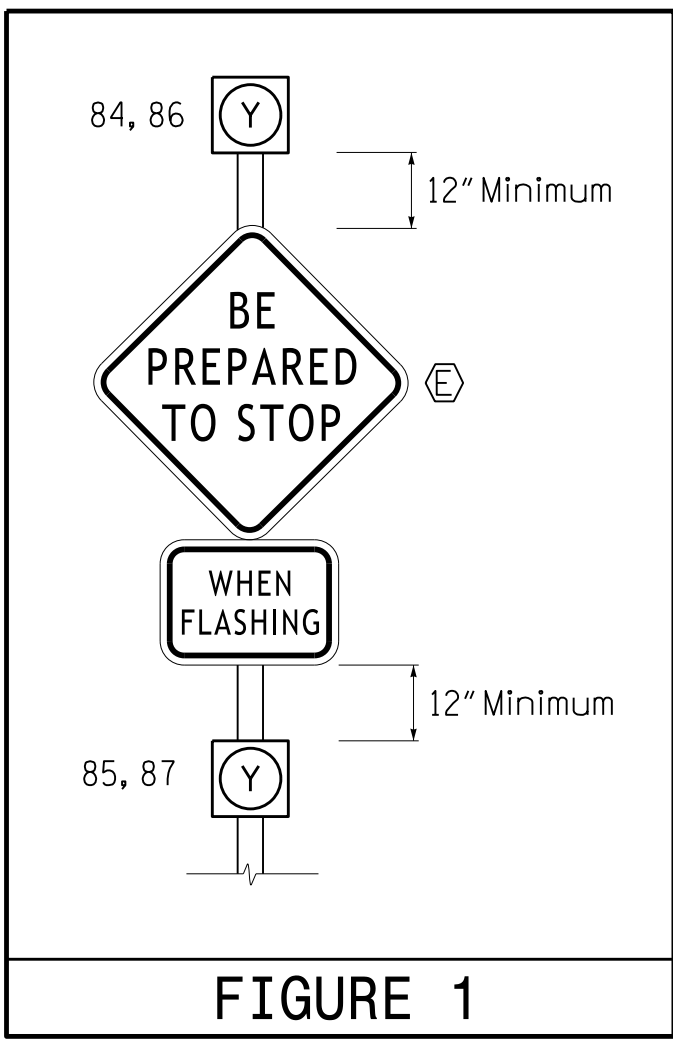
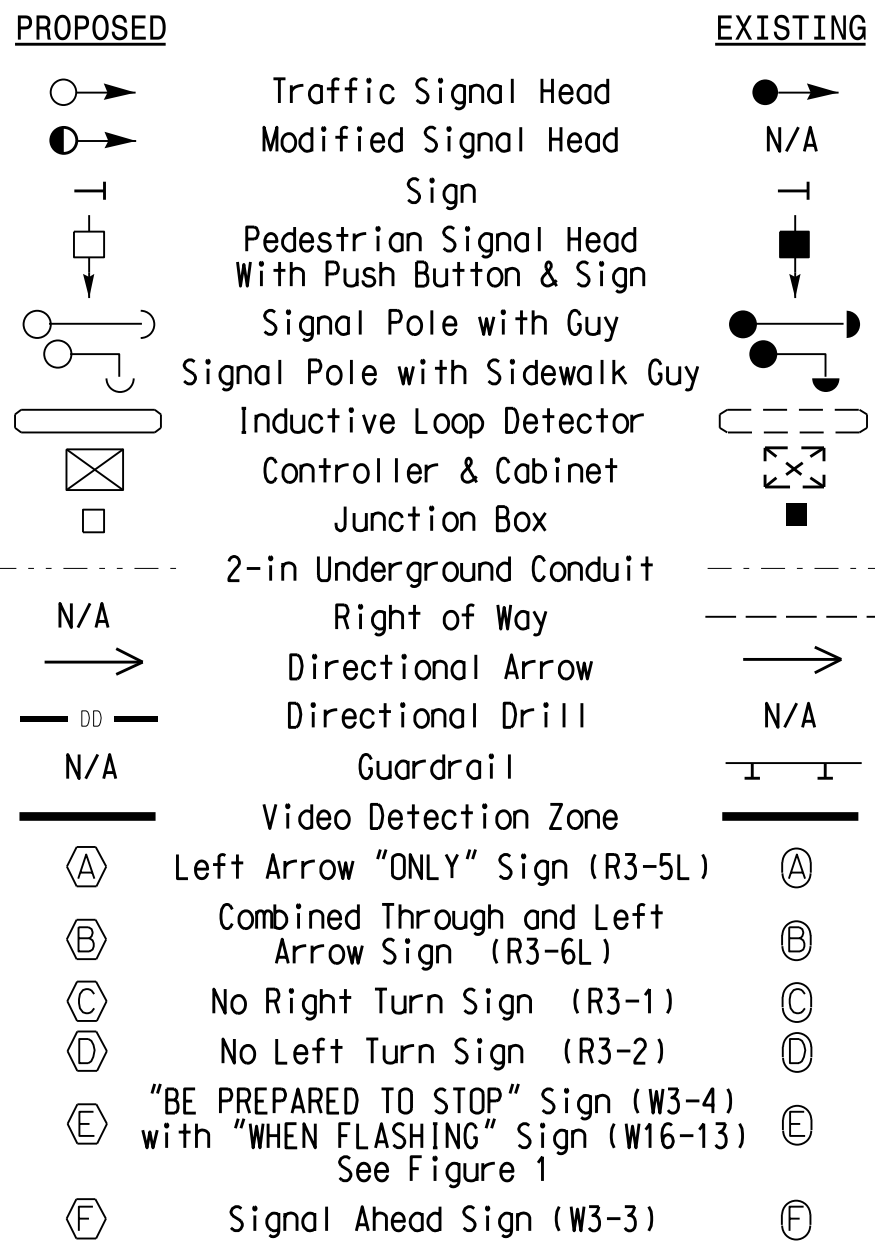


FIGURE 1

This plan supersedes the plan signed and sealed on 6/13/23.

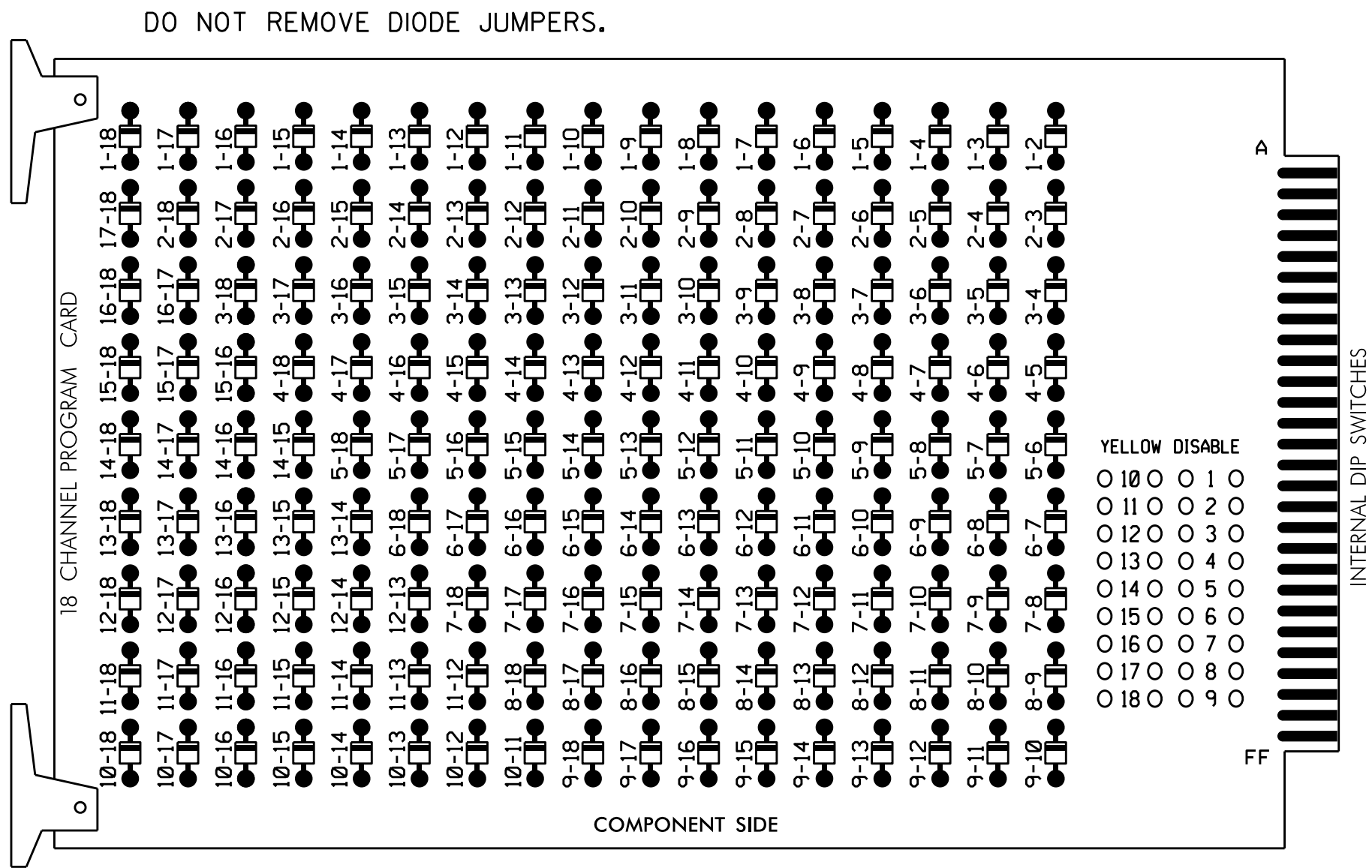
Signal Upgrade

Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529		I-74 EB Ramp at US 29 NB Ramp Division 7 Guilford County High Point PLAN DATE: January 2025 PREPARED BY: J.A. Lohr REVISIONS: _____ INIT: _____ DATE: _____		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL 01/28/2025 DATE SIG. INVENTORY NO. 07-2012	
---	--	--	--	---	--

31-Jan-2025 09:49
S:\IT&S\ITS\Sig\Signal\Workgroups\Signal Design\Active Projects\Signal\ongston\G11ng-F-Rev\aw#5-2007D402012_sml.e.yxyymda.dgn
ts.ongston

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

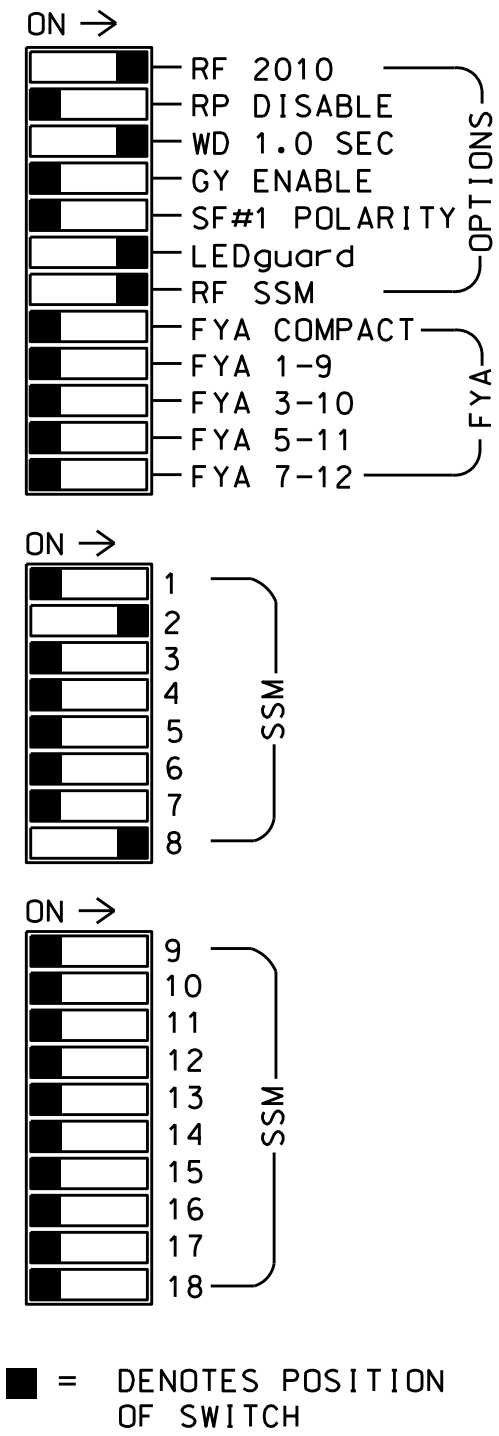
(remove jumpers and set switches as shown)



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.

REMOVE JUMPERS 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.
- The cabinet and controller are part of the High Point Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
CABINET.....336
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S3*,S9*,S11
PHASES USED.....2,6#,8
OVERLAP G.....8

* Used for Advance Beacons only.

Required to make the Advance Beacon function properly

INPUT FILE POSITION LAYOUT

(front view)

FILE	U	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		NOT USED	Ø 2	S	S	Ø 8	Ø 8	Ø 8	Ø 8	S	S	S	S	S	FS
		2A	2A	Ø 2	Ø 2	8A	8B	8D	8F	Ø 2	Ø 2	Ø 2	Ø 2	Ø 2	DC ISOLATOR
		2C	2B	Ø 2	Ø 2	NOT USED	Ø 8	Ø 8	Ø 8	Ø 2	Ø 2	Ø 2	Ø 2	Ø 2	ST
				Ø 2	Ø 2	8C	8E	8G		Ø 2	Ø 2	Ø 2	Ø 2	Ø 2	DC ISOLATOR

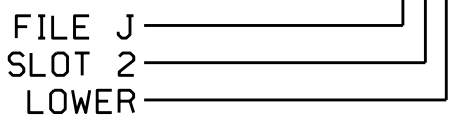
EX. : 1A, 2A, ETC. = LOOP NO.'S

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
2C	TB23-1,2	IIL	47	22	2	YES	2.0	5		G
2A	TB21-3,4	I2U	39	2	2	YES	2.0	5		G
2B	TB23-3,4	I2L	43	12	2	YES	2.0	5		G
8A	TB21-9,10	I5U	55	5	8	NO				N
8B	TB21-11,12	I6U	40	6	8	NO				N
8C	TB23-11,12	I6L	44	16	8	NO				N
8D	TB21-13,14	I7U	57	7	8	YES	2.0	5		G
8E	TB23-13,14	I7L	50	28	8	YES	2.0	5		G
8F	TB22-1,2	I8U	42	8	8	YES	2.0	10		G
8G	TB24-1,2	I8L	46	18	8	YES		20		G

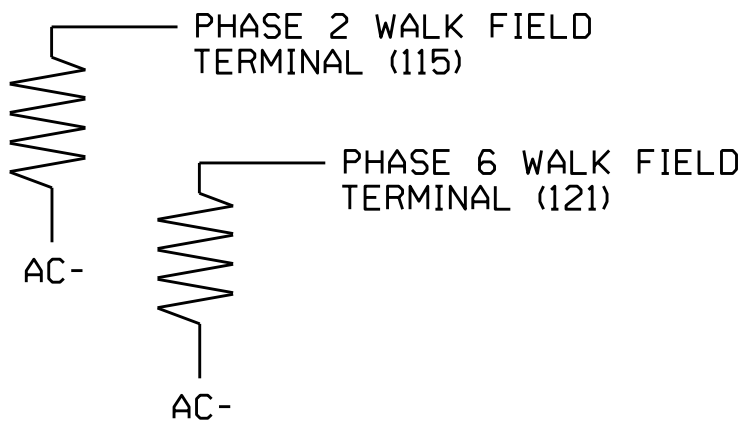
INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

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



SPECIAL DETECTOR NOTE

For detection zones 2D and 2E, install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection scheme shown on the Signal Design Plan.

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	ADVANCE BEACON	3	4	4 PED	5	6	6 PED	ADVANCE BEACON	7	OLG		8 PED
SIGNAL HEAD NO.	NU	21	22	23	NU	84,86	NU	NU	NU	NU	NC	NU	85,87	NU	81,82	83	NU				
RED			128	128														107	107		
YELLOW			129	129														108	108		
GREEN			130																109		
RED ARROW		128																			
YELLOW ARROW		129																			
GREEN ARROW		130	130	130														109			
																					
PED YELLOW						** 114								** 120							
				*								*									

(program controller as shown)

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

USED TO FLASH
SIGNAL HEADS
45.47

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

USED TO FLASH
SIGNAL HEADS
46,48

END PROGRAMMING

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

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

END PROGRAMMING

(program controller as shown)

- Toggle to reach
Overlap 'G'

OVERLAP G

Select TMG VEH OVLP [G] and 'NORMAL'

LAG GRN 3.0 YEL 4.7 RED 1.0

END PROGRAMMING

(program controller as shown)

To assign load switch S11 as OLG program LD SWITCH 8 as OVLP '7' TYPE '0' as shown below.

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

(wire flashers as shown below)



1. INSERT LOADSWITCH FOR S3 AND S9.
2. MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN IN LOAD RESISTOR INSTALLATION DETAIL ON THIS SHEET.

This plan supersedes the plan signed and sealed on 6/14/23.

Electrical Detail - Sheet 2 of 3

31-JAN-2025 09:51
 C:\Users\jtsarston\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\XVWJ7S1T\Sig_MonitoringForRevIEWS-2007070212_sm_e_yyyymmdd.docx

Z:\JAN-2025_09\F3
S:\JTS\SUM\TJS\SIGNAL\WORKGROUPS\Signal\WorkGroups\Projects\Signal\Design\Active Projects\Signal\Longston\G1+ing-For-Rev\aw#HS-2007D#G2012.sm\le.e.yyyymda.dgn
tsi longston

ASC/3 FLASH SENSE INPUT CONTROL
FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash.
Logic Statement 100 must be modified as shown when running Red-Red flash.

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

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key, then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE

THIS STATEMENT IS USED
TO CONTROL THE FLASH
SENSE INPUT WHEN RUNNING
RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL",
next verify that LP#100 is ENABLED.

END PROGRAMMING

PROJECT REFERENCE NO.	SHEET NO.
HS-2007D	Sig. 4.3

ECONOLITE ASC/3-2070 STARTUP AND
SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 5. START/FLASH

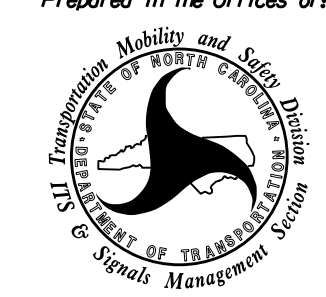
START/FLASH DATA
-----START UP-----
1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE G G
A B C D E F G H I J K L M N O P
OVERLAP X X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO

Scroll down on this screen and set "Exit Fl" to Green "G"

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 07-2012
DESIGNED: January 2025
SEALED: 01/28/2025
REVISED: N/A

This plan supersedes the plan
signed and sealed on 6/14/23.

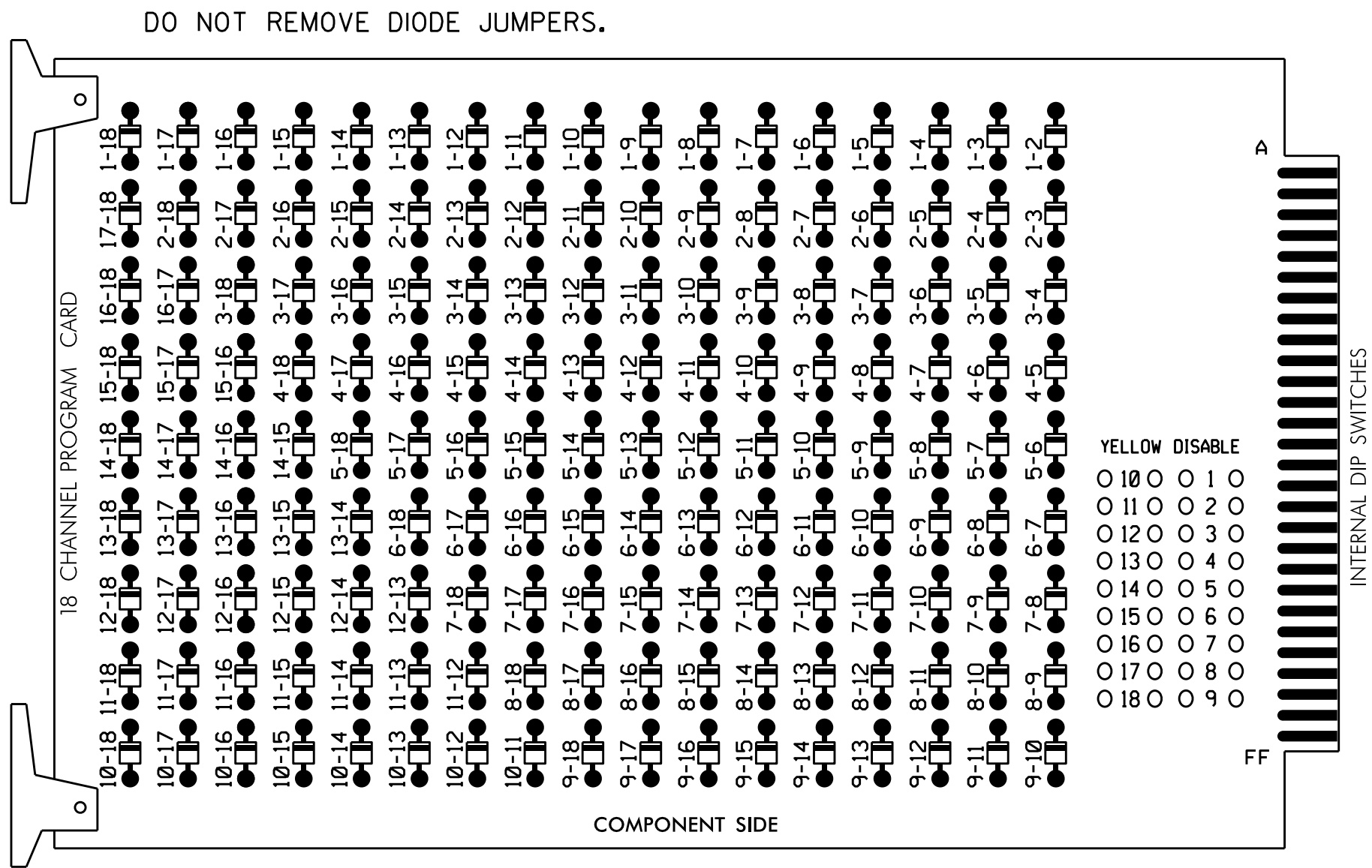
Electrical Detail - Sheet 3 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:		I-74 EB Ramp at US 29 NB Ramp		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529		Division 7 PLAN DATE: January 2025 PREPARED BY: Tim Longston		Guilford County REVIEWED BY: REVIEWED BY:	
		REVISIONS		INIT. DATE	
				Signed by: Ryan W. Hough 01/31/2025 DATE	
				SIG. INVENTORY NO. 07-2012	

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ts.longs

18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

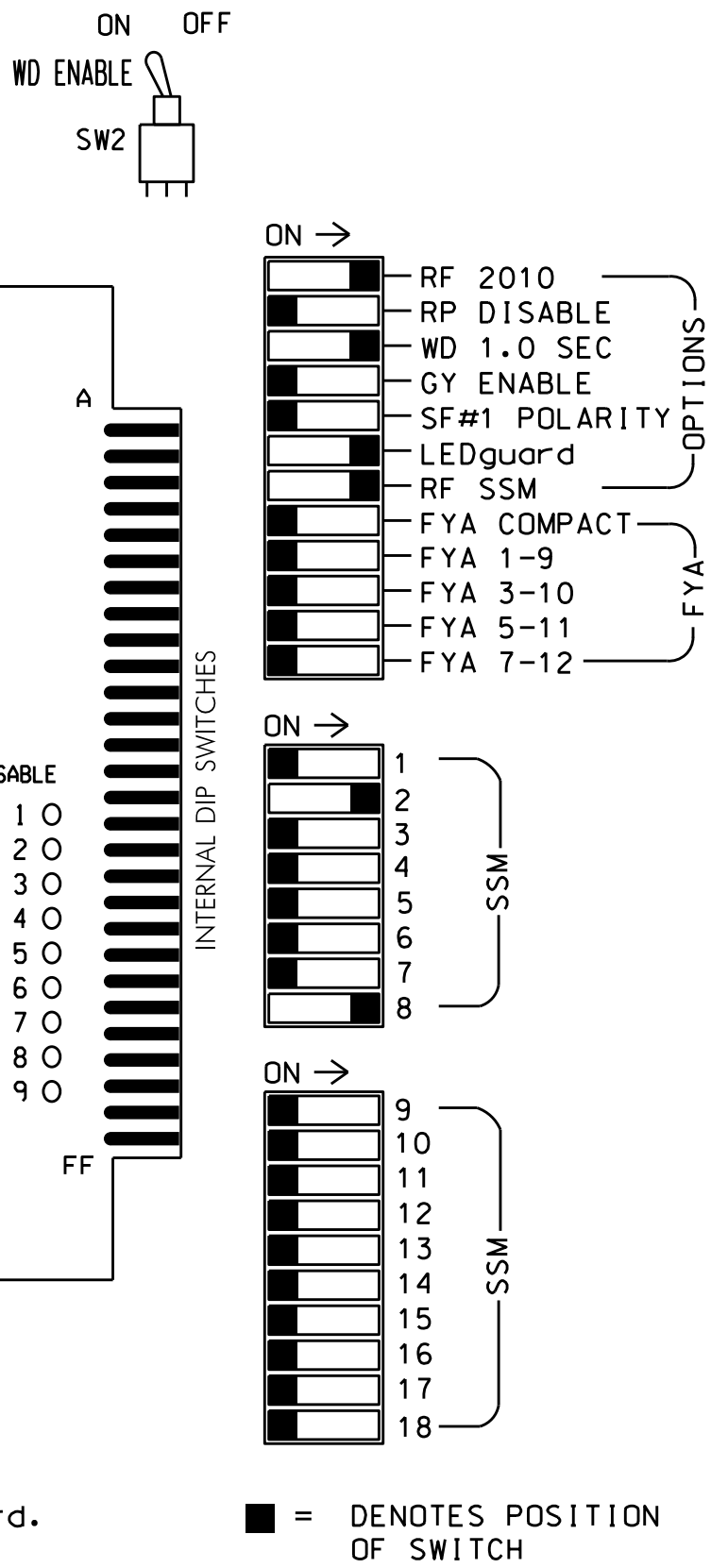
(remove jumpers and set switches as shown)



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.

REMOVE JUMPERS 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.
- The cabinet and controller are part of the High Point Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070LX
CABINET.....336
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....POLE
OUTPUT FILE POSITIONS...12
LOAD SWITCHES USED.....S2,S3*,S9*,S11
PHASES USED.....2,6#,8
OVERLAP G.....8

* Used for Advance Beacons only.
Required to make the Advance Beacon function properly

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	ADVANCE BEACON	3	4	4 PED	5	6	6 PED	ADVANCE BEACON	7	OLG	8 PED	
SIGNAL HEAD NO.	NU	21	22	23	NU	84,86	NU	NU	NU	NU	NC	NU	85,87	NU	81,82	83	NU
RED			128	128											107	107	
YELLOW			129	129											108	108	
GREEN			130													109	
RED ARROW		128															
YELLOW ARROW		129															
GREEN ARROW		130	130	130											109		
																	
PED YELLOW						** 114							** 120				
				*								*					

NU = Not Used

NC = No Connection

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

** S3-Y and S9-Y are used for advance beacons. See sheet 2 for wiring and programming details.

NOTE: Output for S11 has been reassigned. See sheet 2 for details.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U L	Ø 2	Ø 2	Ø 2	S Ø F	S Ø F	Ø 8	Ø 8	Ø 8	S Ø F	S Ø F	S Ø F	S Ø F	S Ø F	FS DC ISOLATOR
		2A	2C	2E					8A						
		Ø 2	Ø 2	Ø 2	Y Ø F	Y Ø F	Ø 8	Ø 8	Ø 8	Y Ø F	Y Ø F	Y Ø F	Y Ø F	Y Ø F	ST DC ISOLATOR
		2B	2D	2F					8B						

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	TB21-1,2	I1U	56	1	2	YES				N
2B	TB23-1,2	I1L	47	22	2	YES				N
2C	TB21-3,4	I2U	39	2	2	YES				N
2D	TB23-3,4	I2L	43	12	2	YES	2.0	5		G
2E	TB21-5,6	I3U	58	3	2	YES	2.0	5		G
2F	TB23-5,6	I3L	49	24	2	YES	2.0	5		G
8A	TB21-11,12	I6U	40	6	8	NO				N
8B	TB23-11,12	I6L	44	16	8	NO				N
8C	TB21-13,14	I7U	57	7	8	NO				N
8D	TB23-13,14	I7L	50	28	8	YES	2.0	5		G
8E	TB22-1,2	I8U	42	8	8	YES	2.0	5		G
8F	TB24-1,2	I8L	46	18	8	YES	2.0	10		G

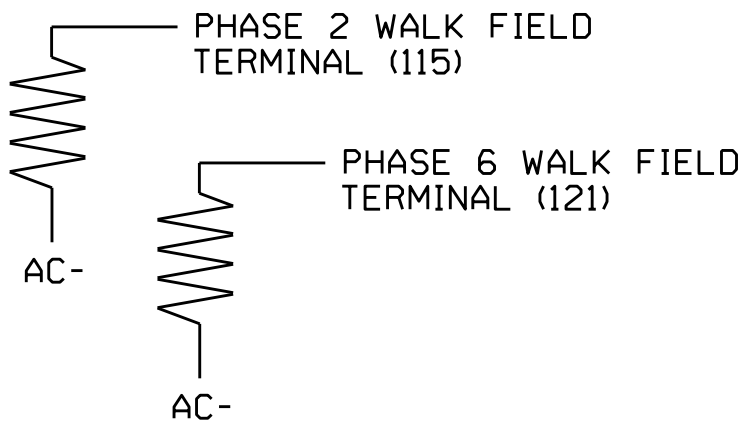
INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

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



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DESIGNED: January 2025
SEALED: 01/28/2025
REVISED: N/A

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Electrical Detail - Sheet 1 of 3

ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 29 NB Ramp
at
I-74 WB Ramp

Division 7 Guilford County High Point

PLAN DATE: January 2025 REVIEWED BY:

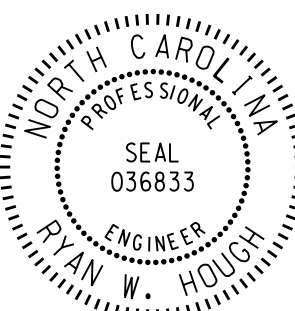
PREPARED BY: Tim Langston REVIEWED BY:

REVISIONS INIT. DATE

DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL



Signed by: Ryan W. Hough 01/31/2025

DATE

SIG. INVENTORY NO. 07-2089

(program controller as shown)

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

USED TO FLASH
SIGNAL HEADS
45, 47

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

USED TO FLASH
SIGNAL HEADS
46, 48

END PROGRAMMING

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

END PROGRAMMING

(program controller as shown)

- Toggle to reach
Overlap 'G'

OVERLAP G

Select TMG VEH OVLP [G] and 'NORMAL'

END PROGRAMMING

(program controller as shown)

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

(wire flashers as shown below)



- Electrical Detail - Sheet 2 of 3

Seal of the Professional Engineer, Ryan W. Hough, State of North Carolina. The seal is circular with the text "NORTH CAROLINA" at the top, "PROFESSIONAL" at the top, "ENGINEER" at the bottom, and "RYAN W. HOUGH" at the bottom. The center contains the text "SEAL" and "036833".

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tsi.langston

ASC/3 FLASH SENSE INPUT CONTROL FOR RED-RED FLASH

*The NCDOT default database is programmed to addresss Yellow-Red flash.
Logic Statement 100 must be modified as shown when running Red-Red flash.

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

Change the "LP" to 100 and move the cursor down. Delete the two "CTR-SET" statements by moving the cursor over them and hitting the "C" key, then hit "ENTER", select "LP SET CIB ON", hit "ENT", and then set the number to 427.

```
LP#:100 COPY FROM:100 ACTIVE: M FALSE
IF LP CIB CODE ON 331 F

THEN LP DELAY FOR 1.0 SECONDS
LP SET CIB ON 427

ELSE
```

THIS STATEMENT IS USED
TO CONTROL THE FLASH
SENSE INPUT WHEN RUNNING
RED-RED FLASH OPERATION.

Hit "ESC", then 1 for "LOGIC STATEMENT CONTROL",
next verify that LP#100 is ENABLED.

END PROGRAMMING

PROJECT REFERENCE NO.	SHEET NO.
HS-2007D	Sig. 5.3

ECONOLITE ASC/3-2070 STARTUP AND SOFTWARE FLASH PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select 2. CONTROLLER
- From CONTROLLER Submenu select 5. START/FLASH

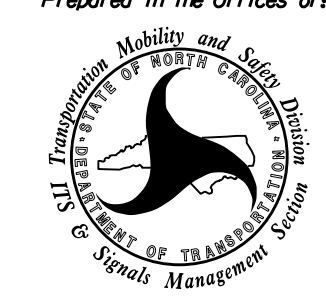
```
START/FLASH DATA
-----START UP-----
      1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PHASE      G      G
          A B C D E F G H I J K L M N O P
OVERLAP    X X X X X X X X X X X X X X
FLASH>MON. NO FL TIME.. 0 ALL RED... 6
PWR START SEQ.. 1 MUTCD> YES Y- G: NO
```

Scroll down on this screen and set "Exit Fl" to Green "G"

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THE SIGNAL DESIGN: 07-2089
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Electrical Detail - Sheet 3 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:		US 29 NB Ramp at I-74 WB Ramp		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529		Division 7 PLAN DATE: January 2025 PREPARED BY: Tim Langston		Guilford County REVIEWED BY: REVIEWED BY:	
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				Signed by: <u>Ryan W. Hough</u> 01/31/2025 DATE 130320CA0285AC3	
				SIG. INVENTORY NO. 07-2089	