

**TIP PROJECT: HS-2006A**

**CONTRACT: DF00431**

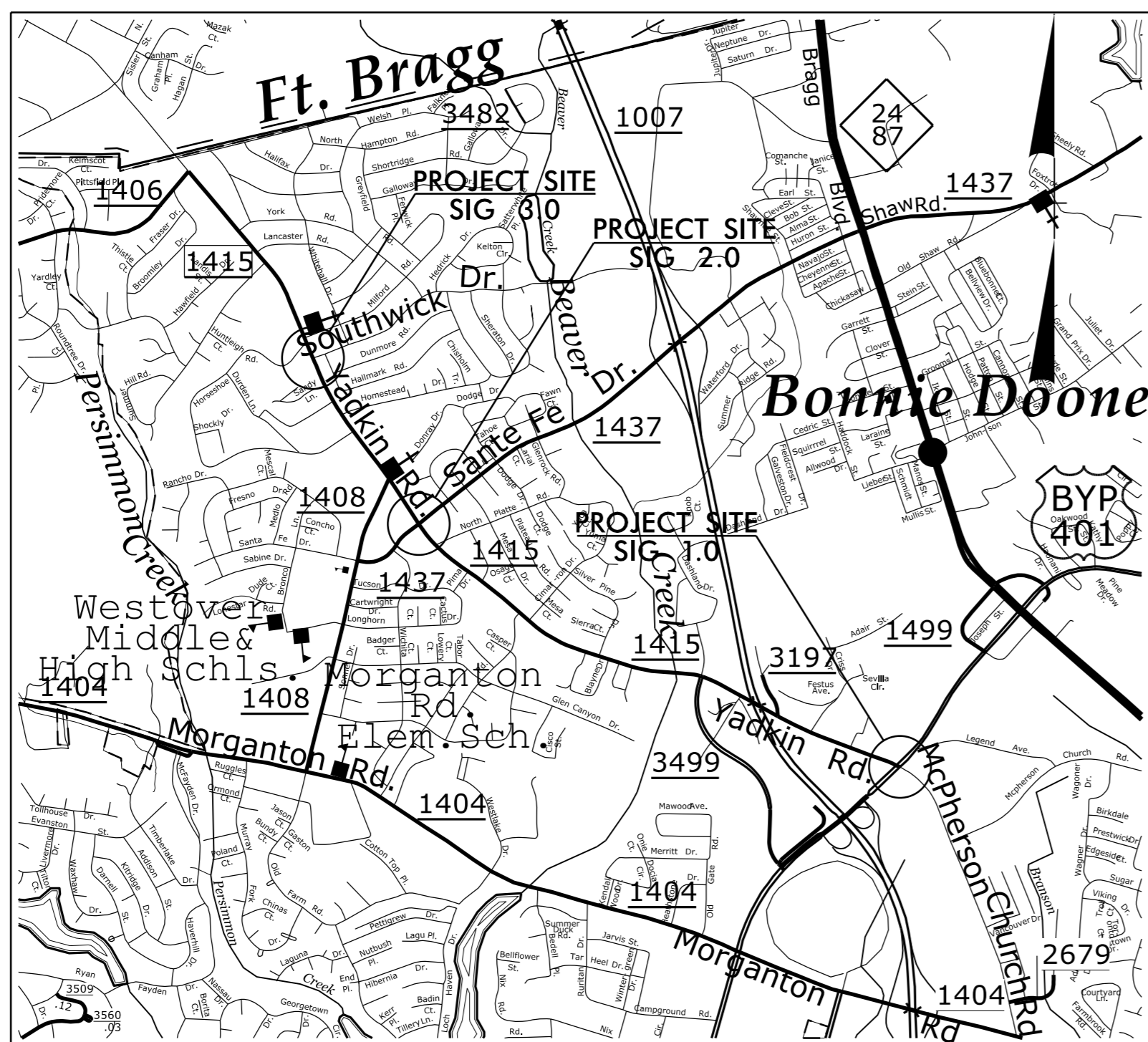
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**CUMBERLAND COUNTY**

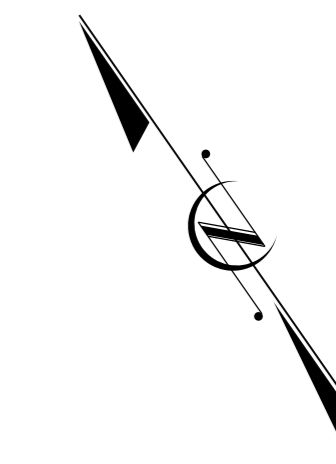
**LOCATION: SR 1415(YADKIN ROAD) AT US 401 BYP (SKIBO ROAD), AT SR 1437 (SANTE FE DRIVE), AND AT SOUTHWICK DRIVE**

**TYPE OF WORK: ADD SIGNALIZED PERDESTRIAN CROSSINGS TO ALL THREE INTERSECTIONS, AND UPGRADE SIGNAL AT SOUTHWICK DRIVE.**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HS-2006A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
49312.1.2	HSIP-1415 (005)	PE	
49312.3.2	HSIP-1415 (005)	CONST	



**VICINITY MAP**



**SHEET 4**

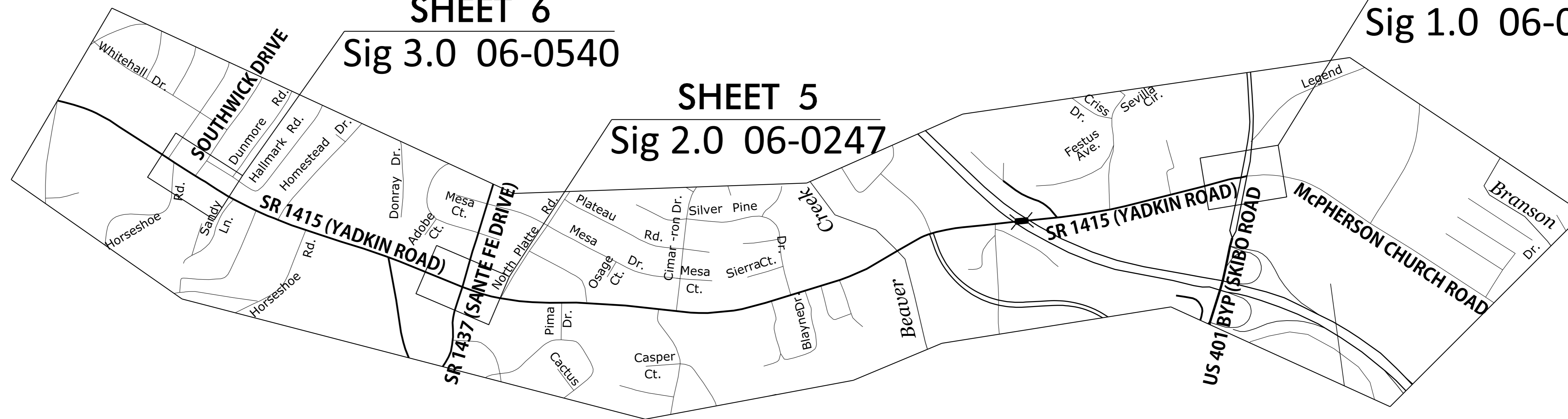
**Sig 1.0 06-0055**

**SHEET 6**

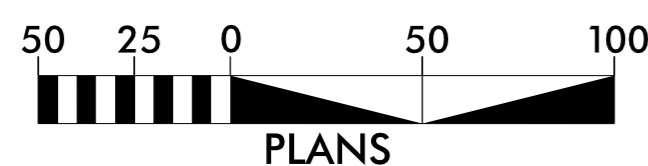
**Sig 3.0 06-0540**

**SHEET 5**

**Sig 2.0 06-0247**



**GRAPHIC SCALES**



**DESIGN DATA**

**PROJECT LENGTH**

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
DIVISION 6

431 Transportation Dr., Fayetteville NC, 28301

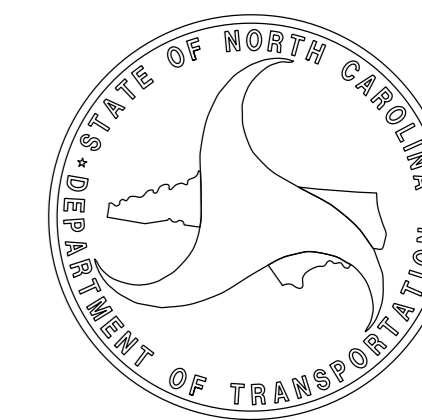
2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
N/A

**LETTING DATE:**  
MAY 17, 2023

**JOHN GAUTHIER**  
PROJECT ENGINEER

PROJECT DESIGN ENGINEER





PROJECT REFERENCE NO. <i>HS-2006A</i>	SHEET NO. <i>04</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



5/14/99

12-APR-2023 11:17  
 I:\projects\2006A\_Yadkin\Roadway\proj\HS-2006A\_Rdy\_psh\_04.dgn  
 3/23/2023 11:17 AM



PROJECT REFERENCE NO. <i>HS-2006A</i>	SHEET NO. <i>05</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



5/14/99

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11:33 AM 5/14/99

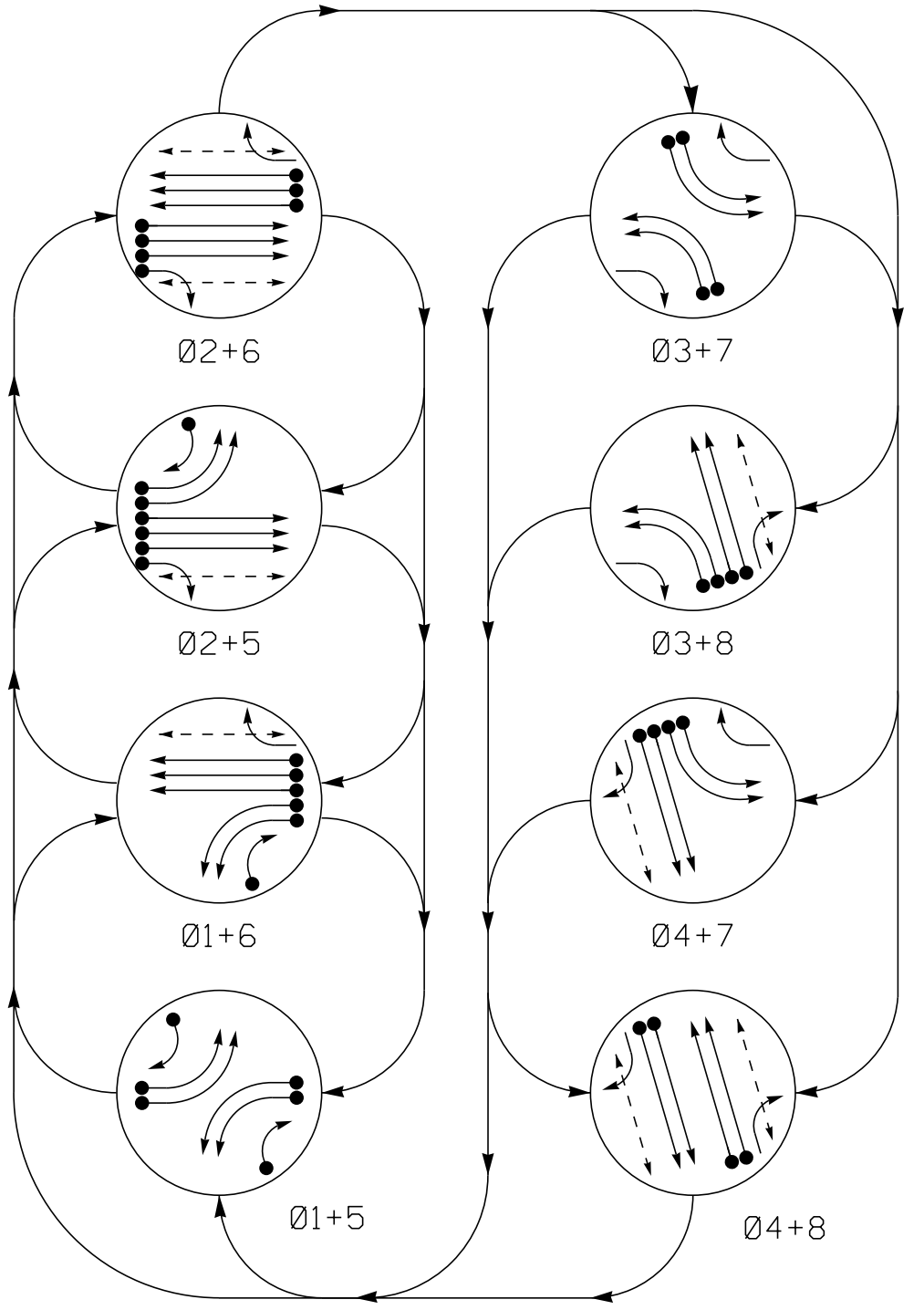




PROJECT REFERENCE NO. <i>HS-2006A</i>	SHEET NO. <i>06</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

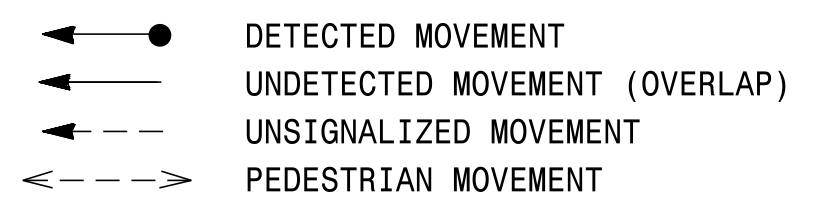
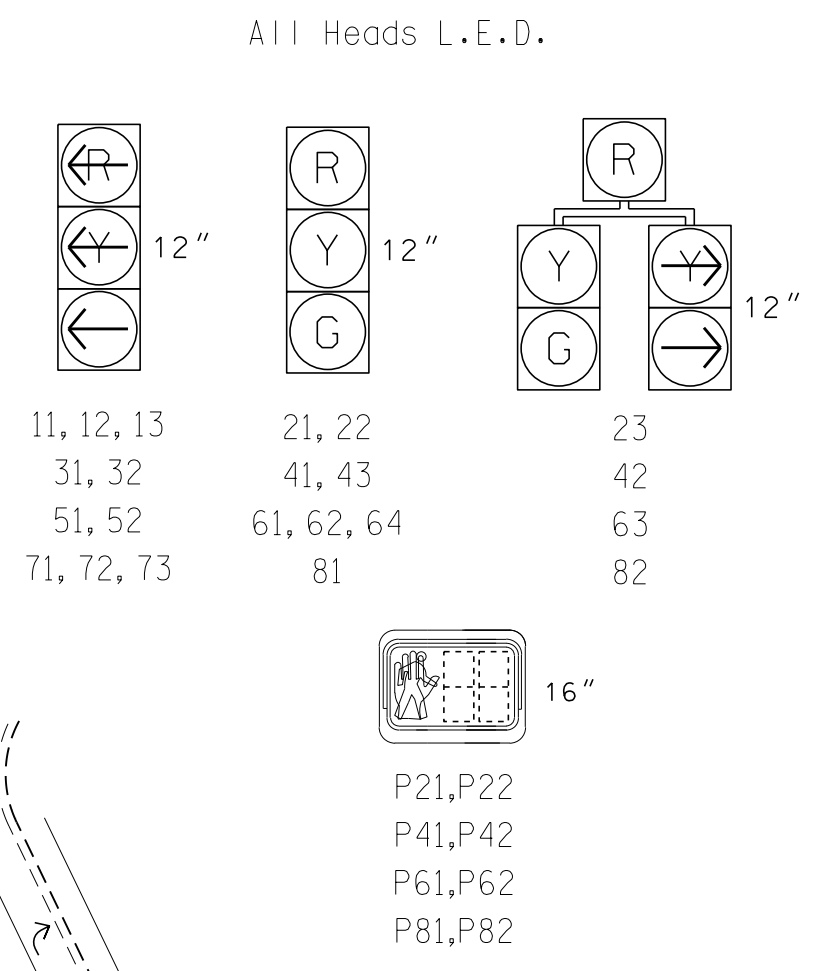


TABLE OF OPERATION

SIGNAL FACE	PHASE								FLASH	
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 3+7	Ø 3+8	Ø 4+7	Ø 4+8		
11,12,13	←	←	←	←	←	←	←	←	←	
21,22	R	R	G	G	R	R	R	R	Y	
23	R	R	G	G	R	R	R	R	Y	
31,32	←	←	←	←	←	←	←	←	←	
41,43	R	R	R	R	R	R	G	G	R	
42	R	R	R	R	R	R	G	G	R	
51,52	←	←	←	←	←	←	←	←	←	
61,62,64	R	G	R	G	R	R	R	R	Y	
63	R	G	R	G	R	R	R	R	Y	
71,72,73	←	←	←	←	←	←	←	←	←	
81	R	R	R	R	R	G	R	G	R	
82	R	R	R	R	R	G	R	G	R	
P21,P22	DW	DW	W	W	DW	DW	DW	DRK		
P41,P42	DW	DW	DW	DW	DW	W	W	DRK		
P61,P62	DW	W	DW	W	DW	DW	DW	DRK		
P81,P82	DW	DW	DW	DW	W	DW	W	DRK		

SIGNAL FACE I.D.



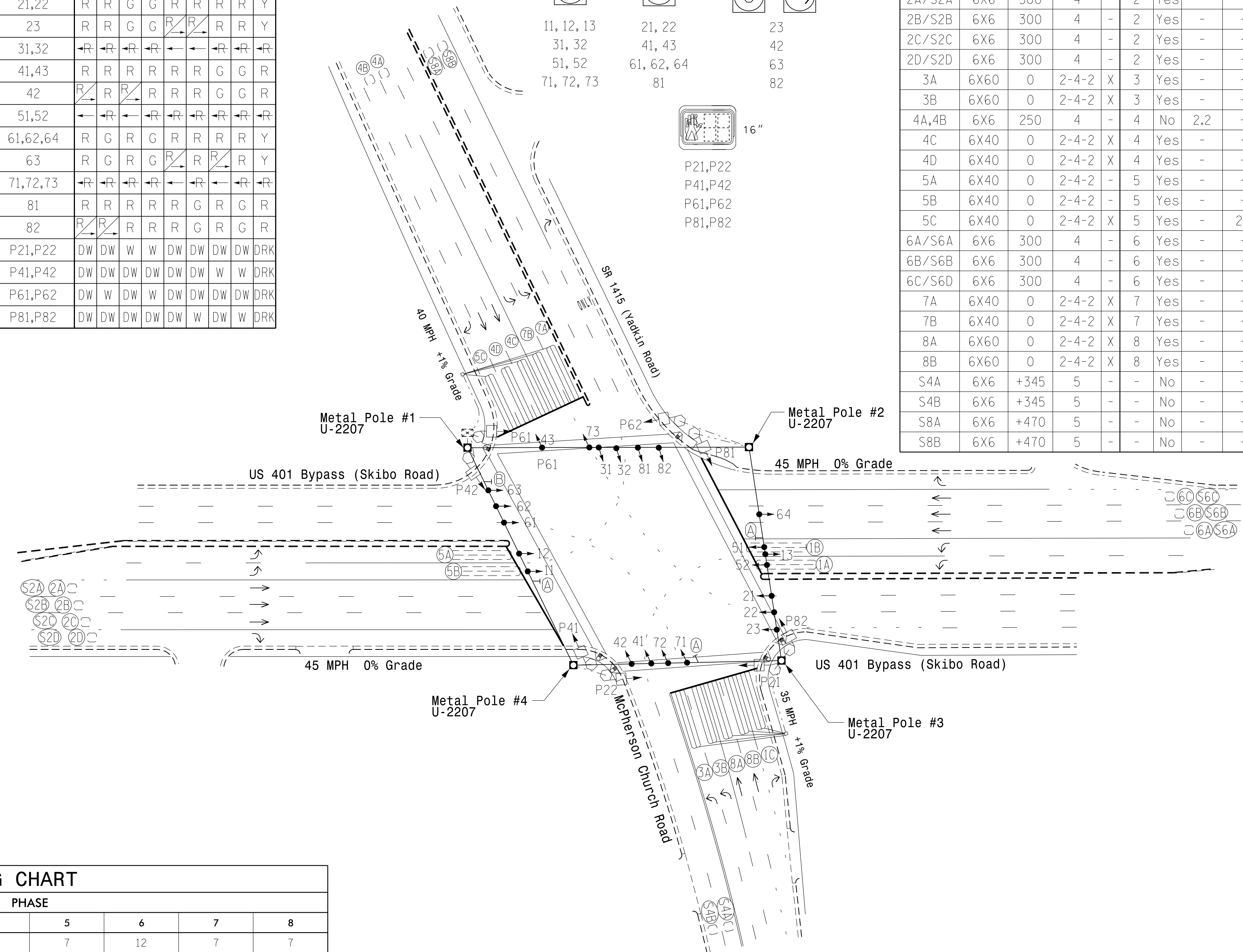
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING					
					PHASE	CALLING	EXTEND TIME	DELAY TIME	TYPE	SYSTEM LOOP NEW CARD
1A	6X40	0	2-4-2	-	1	Yes	-	-	N	-
1B	6X40	0	2-4-2	-	1	Yes	-	-	N	-
1C	6X60	0	2-4-2	X	1	Yes	-	20	N	-
2A/S2A	6X6	300	4	-	2	Yes	-	-	N	X
2B/S2B	6X6	300	4	-	2	Yes	-	-	N	X
2C/S2C	6X6	300	4	-	2	Yes	-	-	N	X
2D/S2D	6X6	300	4	-	2	Yes	-	-	N	X
3A	6X60	0	2-4-2	X	3	Yes	-	-	N	-
3B	6X60	0	2-4-2	X	3	Yes	-	-	N	-
4A,4B	6X6	250	4	-	4	No	2.2	-	N	-
4C	6X40	0	2-4-2	X	4	Yes	-	-	N	-
4D	6X40	0	2-4-2	X	4	Yes	-	-	N	-
5A	6X40	0	2-4-2	-	5	Yes	-	-	N	-
5B	6X40	0	2-4-2	-	5	Yes	-	-	N	-
5C	6X40	0	2-4-2	X	5	Yes	-	20	N	-
6A/S6A	6X6	300	4	-	6	Yes	-	-	N	X
6B/S6B	6X6	300	4	-	6	Yes	-	-	N	X
6C/S6C	6X6	300	4	-	6	Yes	-	-	N	X
6D/S6D	6X6	300	4	-	6	Yes	-	-	N	X
7A	6X40	0	2-4-2	X	7	Yes	-	-	N	-
7B	6X40	0	2-4-2	X	7	Yes	-	-	N	-
8A	6X60	0	2-4-2	X	8	Yes	-	-	N	-
8B	6X60	0	2-4-2	X	8	Yes	-	-	N	-
S4A	6X6	+345	5	-	-	No	-	-	N	X
S4B	6X6	+345	5	-	-	No	-	-	N	X
S8A	6X6	+470	5	-	-	No	-	-	N	X
S8B	6X6	+470	5	-	-	No	-	-	N	X

8 Phase Fully Actuated Fayetteville Signal System

NOTES

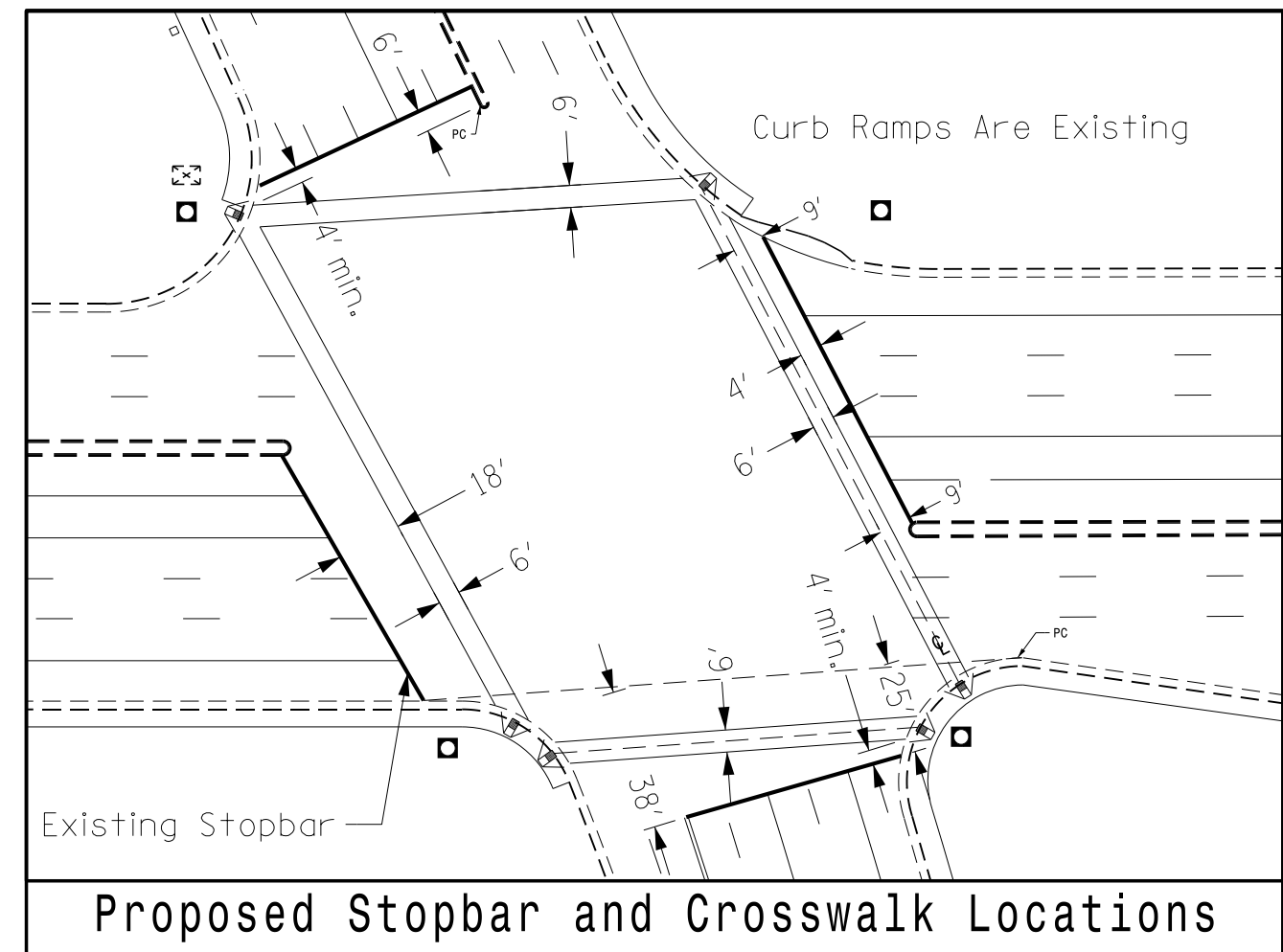
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Set all detector units to presence mode.
6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
7. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



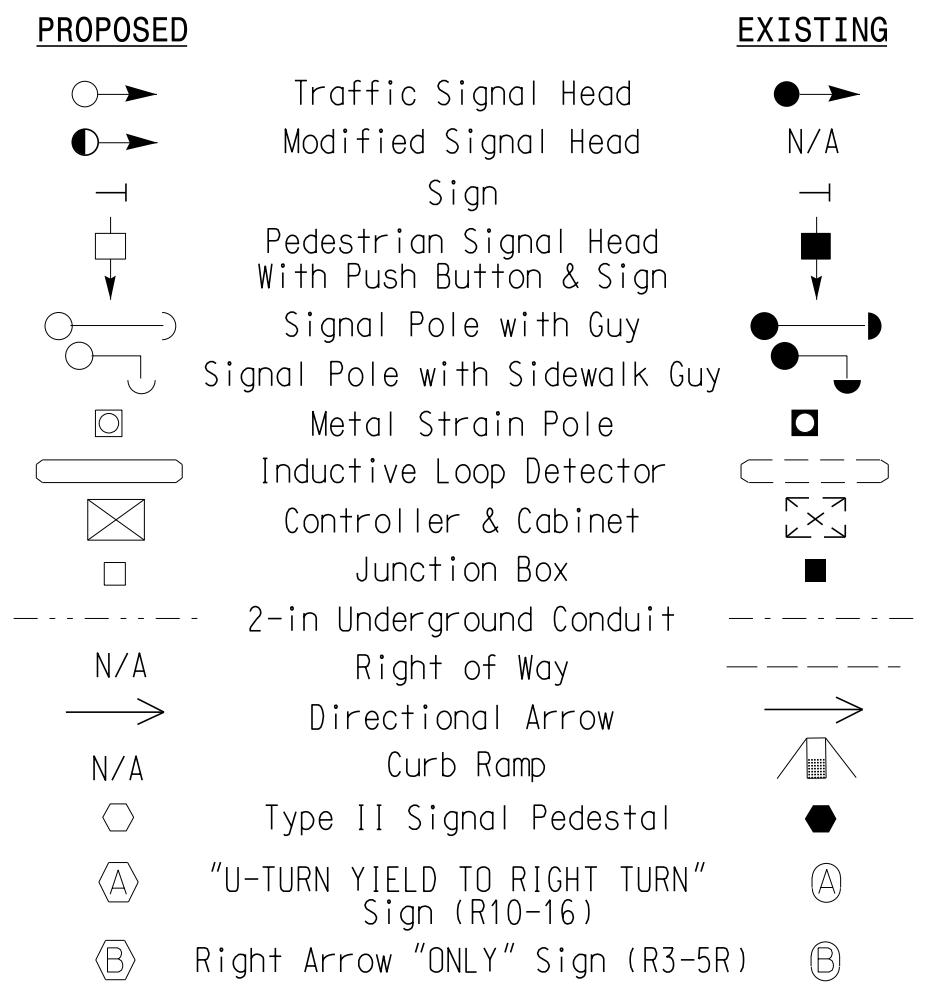
ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	12	7	7	7	12	7	7
Delay Green *	-	7	-	7	-	7	-	7
Walk *	-	7	-	7	-	7	-	7
Ped Clear	-	24	-	41	-	32	-	40
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	25	90	20	40	50	90	20	40
Yellow	3.0	4.5	3.0	4.1	3.0	4.5	3.0	3.8
Red Clear	3.4	2.2	4.2	3.0	3.5	2.1	4.7	3.2
Actions B4 Add *	-	-	-	-	-	-	-	-
Seconds / Actuation *	-	1.5	-	-	-	1.5	-	-
Max Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	20	-	-	-	20	-	-
Time To Reduce *	-	25	-	-	-	25	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Locking Detector	-	X	-	-	-	X	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL	-	-
Dual Entry	-	-	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X	X	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 - Corr. File No. 06-19-59136

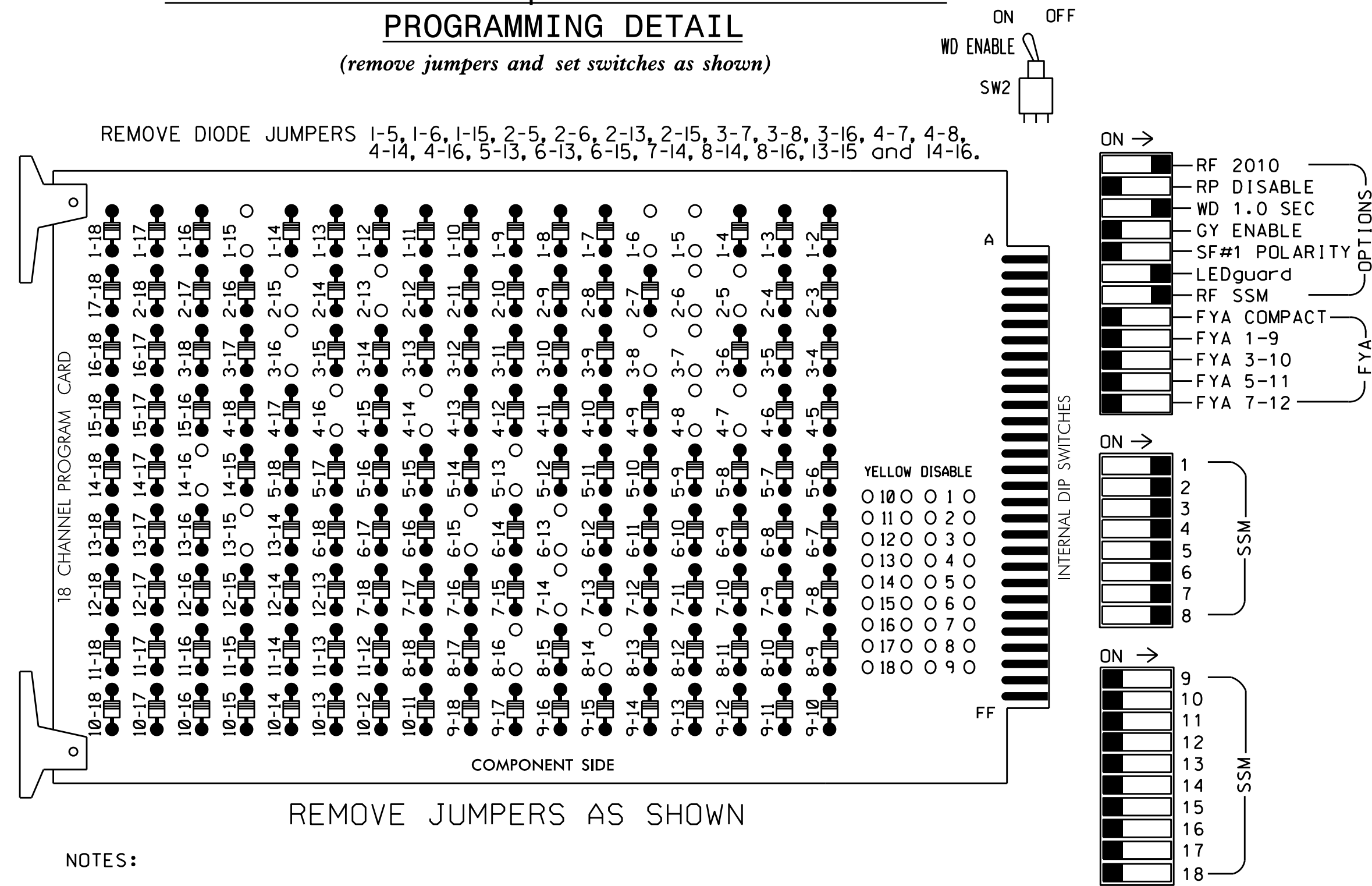
Prepared in the Offices of:  
**US 401 Bypass (Skibo Road) At SR 1415 (Yadkin Road) / McPherson Church Road**  
 Division 6 Cumberland County Fayetteville  
 PLAN DATE: December 2022 REVIEWED BY: ZML  
 PREPARED BY: KGP, Jr. REVIEWED BY:  
 REVISIONS: INIT. DATE  
 SCALE: 0 50  
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  
 SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 030530  
 ZACHARY M. LITTLE  
 02/01/2023  
 SIG. INVENTORY NO. 06-0055

01-FEB-2023 15:50  
 \\ms01\proj\0010140\roads-TECC\ITS\SASU\ITS\_Signal\845\Sig\06-19-59136\06-19-59136-0055.dgn  
 kpbredin



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

(remove jumpers and set switches as shown)



**NOTES**

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

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE ASC/3-2070  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,  
 S9,S10,S11,S12  
 PHASES USED.....1,2,2 PED,3,4,4 PED,5,6,  
 6 PED,7,8,8 PED  
 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.	11,12 13	82	21,22 23	P21, P22	23	31,32	41,42 43	P41, P42	42	51,52	61,62 63,64	P61, P62	63	71,72 73	81,82	P81, P82
RED		128			101			134				107				
YELLOW		129			102			135				108				
GREEN		130			103			136				109				
RED ARROW	125			116			131				122					
YELLOW ARROW	126	126		117	117		132	132			123	123				
GREEN ARROW	127	127		118	118		133	133			124	124				
Hand icon			113			104			119			110				
Walking person icon			115			106			121			112				

NU = Not Used

**COUNTDOWN PEDESTRIAN SIGNAL OPERATION**

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

**INPUT FILE POSITION LAYOUT**

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 1	∅ 2/SYS	∅ 2/SYS	S	∅ 3	∅ 4	∅ 4	SYS. DET. S4A	S	S	∅ 2 PED	∅ 6 PED	FS
L	1A	1C	2B/S2B	2D/S2D	∅ 2/SYS	3A	4A,4B	4D	SYS. DET. S4B	∅ 4 PED	∅ 8 PED	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	∅ 1	∅ 2/SYS	∅ 2/SYS	NOT USED	∅ 3	∅ 4	∅ 4	SYS. DET. S4B	S	S	S	S	S	S
L	1B	2A/S2A	2C/S2C	∅ 5	∅ 5	∅ 6/S6B	∅ 7	∅ 8	SYS. DET. S8A	∅ 7	∅ 8	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	∅ 5	∅ 6/SYS	∅ 6/SYS	∅ 5	∅ 5	∅ 6/S6B	∅ 7	∅ 8	SYS. DET. S8B	∅ 7	∅ 8	S	S	S
L	5B	6A/S6A	6C/S6C	∅ 5	∅ 5	∅ 6/S6B	∅ 7	∅ 8	SYS. DET. S8B	∅ 7	∅ 8	S	S	S

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

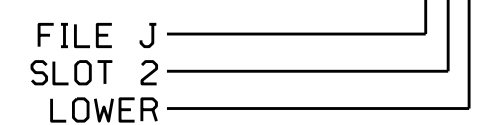
FS = FLASH SENSE  
 ST = STOP TIME

**INPUT FILE CONNECTION & PROGRAMMING CHART**

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-1,2	I1U	56	1	1	YES				N
1B	TB2-3,4	I1U	56	1	1	YES				N
1C	TB2-5,6	I2U	39	2	1	YES		20		N
2A/S2A	TB2-7,8	I2L	43	12	2/SYS	YES				N
2B/S2B	TB2-9,10	I3U	63	32	2/SYS	YES				N
2C/S2C	TB2-11,12	I3L	76	42	2/SYS	YES				N
2D/S2D	TB4-1,2	I4U	47	22	2/SYS	YES				N
3A	TB4-9,10	I6U	41	4	3	YES				N
3B	TB4-11,12	I6L	45	14	3	YES				N
4A,4B	TB6-1,2	I7U	65	34	4	NO	2,2			N
4C	TB6-3,4	I7L	78	44	4	YES				N
4D	TB6-5,6	I8U	49	24	4	YES				N
5A	TB3-1,2	J1U	55	5	5	YES				N
5B	TB3-3,4	J1U	55	5	5	YES				N
5C	TB3-5,6	J2U	40	6	5	YES		20		N
6A/S6A	TB3-7,8	J2L	44	16	6/SYS	YES				N
6B/S6B	TB3-9,10	J3U	64	36	6/SYS	YES				N
6C/S6C	TB3-11,12	J3L	77	46	6/SYS	YES				N
7A	TB5-9,10	J6U	42	8	7	YES				N
7B	TB5-11,12	J6L	46	18	7	YES				N
8A	TB7-1,2	J7U	66	38	8	YES				N
8B	TB7-3,4	J7L	79	48	8	YES				N
*S4A	TB6-9,10	I9U	60	11	SYS	NO				N
*S4B	TB6-11,12	I9L	62	13	SYS	NO				N
*S8A	TB7-9,10	J9U	59	15	SYS	NO				N
*S8B	TB7-11,12	J9L	61	17	SYS	NO				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

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

INPUT FILE POSITION LEGEND: J2L

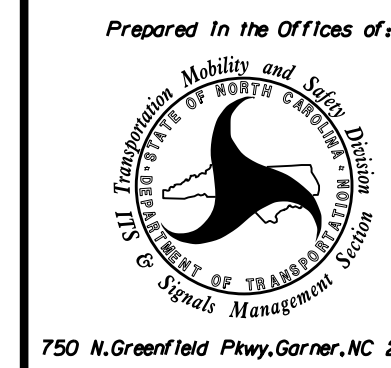


\* System detector only. Remove any assigned vehicle phase.

THIS ELECTRICAL DETAIL IS FOR  
 THE SIGNAL DESIGN: 06-0055  
 DESIGNED: December 2022  
 SEALED: 2/1/2023  
 REVISED: N/A

Electrical Detail

ELECTRICAL AND PROGRAMMING  
 DETAILS FOR:



US 401 Bypass (Skibo Road)  
 at  
 SR 1415 (Yadkin Road)/  
 McPherson Church Road

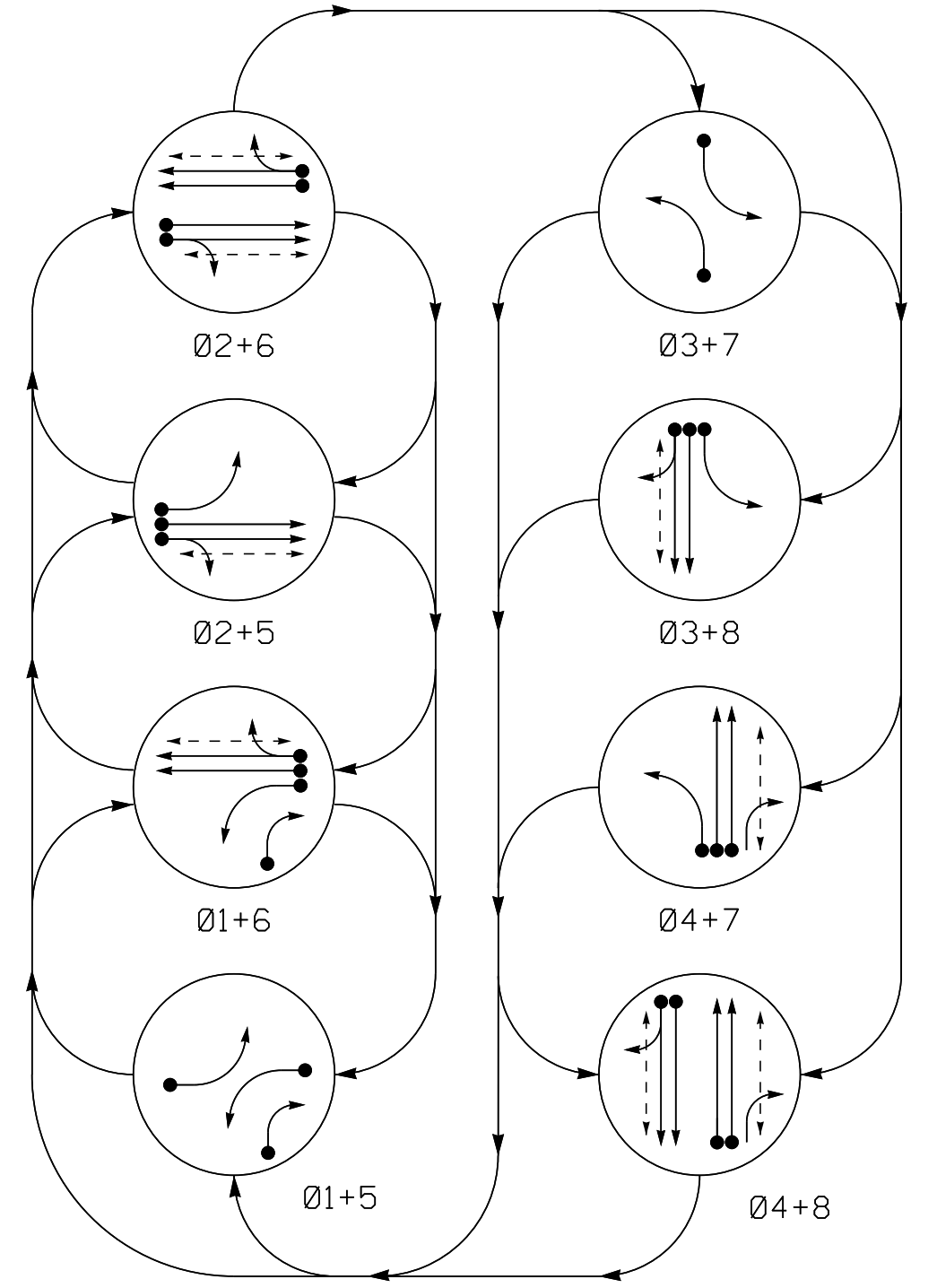
Division 6	Cumberland County	Fayetteville
PLAN DATE: January 2023	REVIEWED BY:	
PREPARED BY: Zarrar Zafar	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL  
 SIGNATURES COMPLETED

Seal area with signature and date: 02/02/2023



**PHASING DIAGRAM**

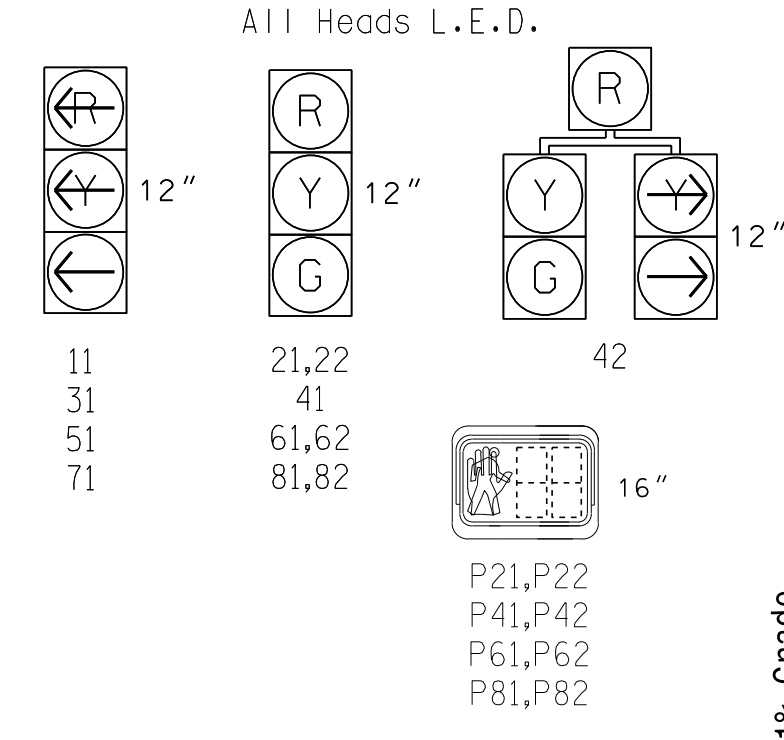


**PHASING DIAGRAM DETECTION LEGEND**

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

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

**SIGNAL FACE I.D.**

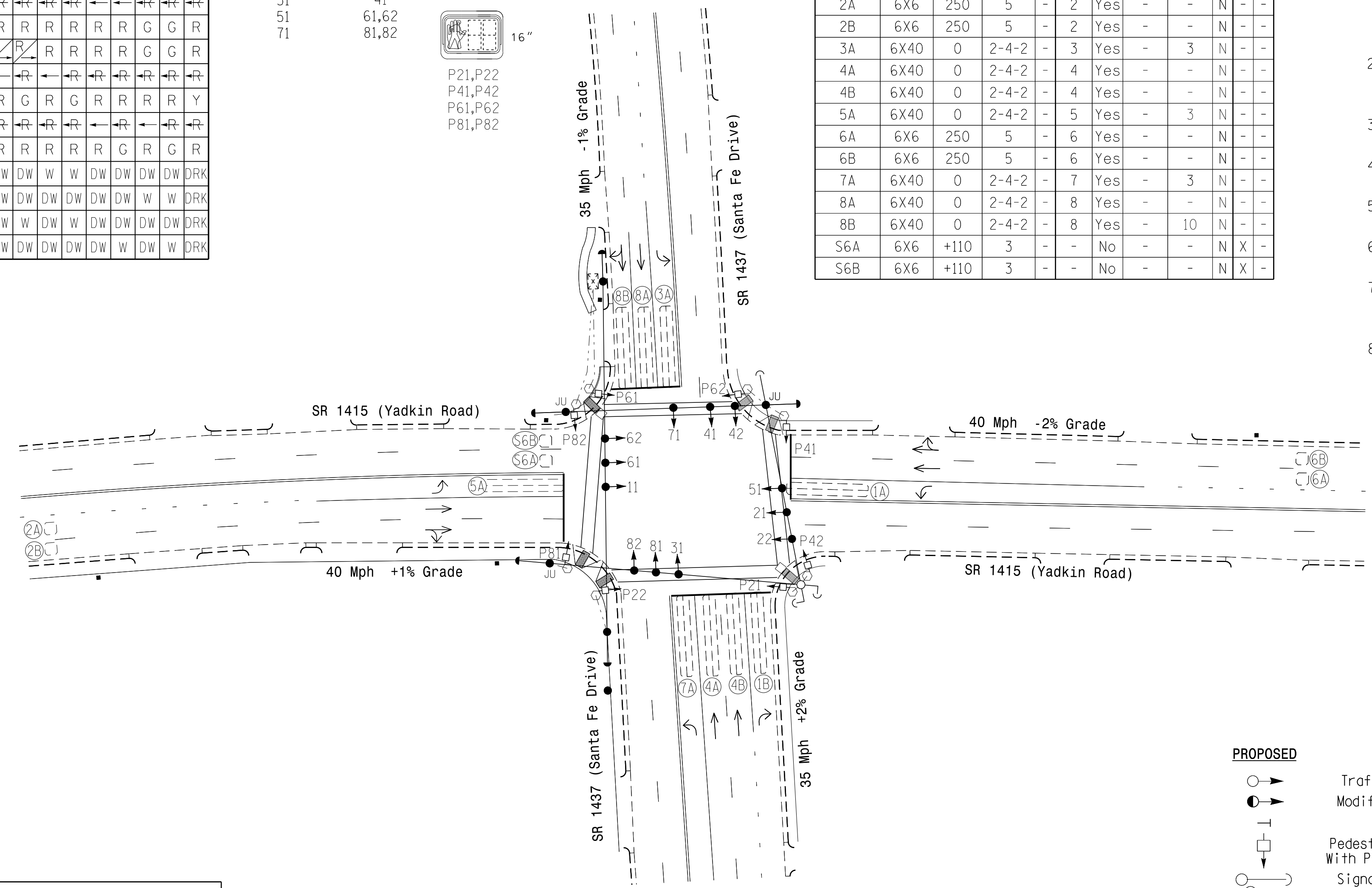


ASC/3 DETECTOR INSTALLATION CHART										
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING					
					PHASE	CALLING	EXTEND TIME	DELAY TIME	TYPE	SYSTEM LOOP
1A	6X40	+3	2-4-2	-	1	Yes	-	3	N	-
1B	6X40	0	2-4-2	-	1	Yes	-	15	N	-
2A	6X6	250	5	-	2	Yes	-	-	N	-
2B	6X6	250	5	-	2	Yes	-	-	N	-
3A	6X40	0	2-4-2	-	3	Yes	-	3	N	-
4A	6X40	0	2-4-2	-	4	Yes	-	-	N	-
4B	6X40	0	2-4-2	-	4	Yes	-	-	N	-
5A	6X40	0	2-4-2	-	5	Yes	-	3	N	-
6A	6X6	250	5	-	6	Yes	-	-	N	-
6B	6X6	250	5	-	6	Yes	-	-	N	-
7A	6X40	0	2-4-2	-	7	Yes	-	3	N	-
8A	6X40	0	2-4-2	-	8	Yes	-	-	N	-
8B	6X40	0	2-4-2	-	8	Yes	-	10	N	-
S6A	6X6	+110	3	-	-	No	-	-	N	X
S6B	6X6	+110	3	-	-	No	-	-	N	X

**8 Phase Fully Actuated Fayetteville Signal System**

**NOTES**

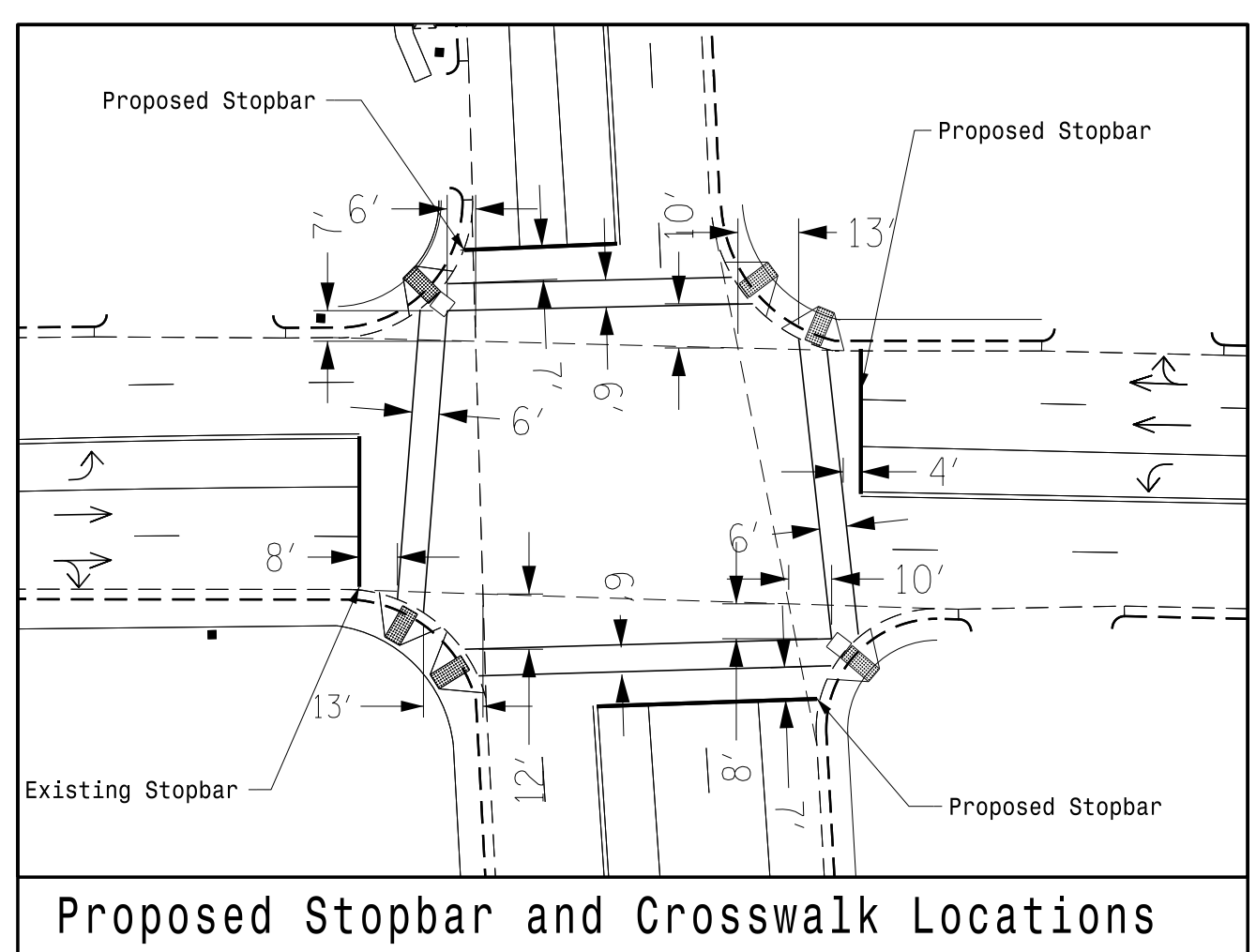
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- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



**ASC/3 TIMING CHART**

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	12	7	7	7	12	7	7
Delay Green *	0	7	0	7	0	6	0	6
Walk *	0	7	0	7	0	7	0	7
Ped Clear	0	21	0	17	0	17	0	17
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max 1 *	40	90	20	90	40	90	20	90
Yellow	3.0	4.3	3.0	3.9	3.0	4.3	3.0	3.9
Red Clear	2.6	1.8	2.8	1.8	2.4	1.7	2.6	1.8
Actuations B4 Add *	-	0	-	-	-	0	-	-
Seconds / Actuation *	-	1.5	-	-	-	1.5	-	-
Max Initial *	-	29	-	-	-	29	-	-
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	X	X	X	X

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



**LEGEND**

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

**Signal Upgrade - Corr. File No. 06-19-59136**

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	<b>SR 1415 (Yadkin Road) at SR 1437 (Santa Fe Drive)</b>		
	Division 6 Cumberland County Fayetteville		
PLAN DATE: December 2022 PREPARED BY: KGP, Jr.	REVIEWED BY: ZML REVIEWED BY:	INIT. DATE	DATE: 02/01/2023
SCALE: 1"=40'		REVISIONS	SIG. INVENTORY NO. 06-0247

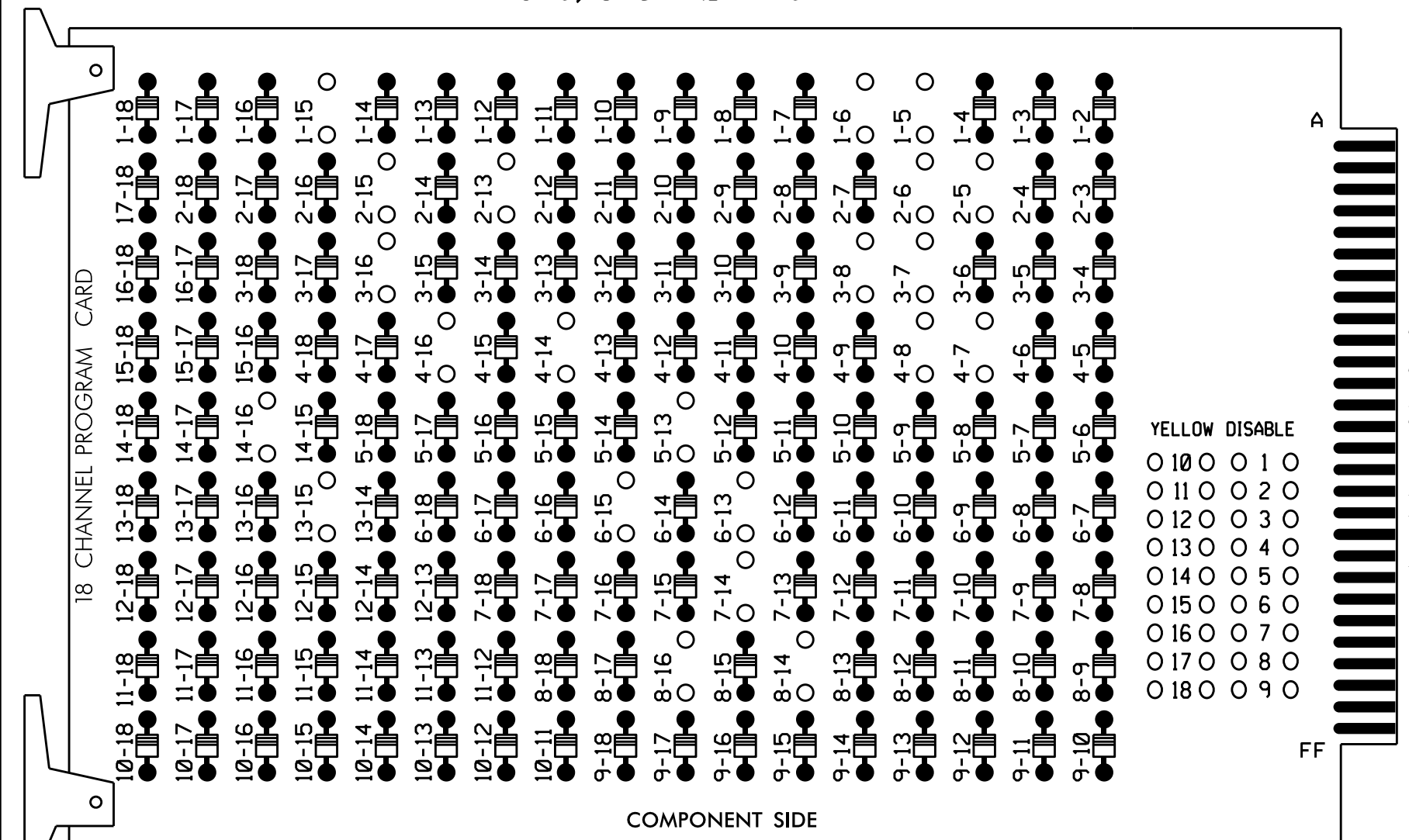
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 kgp/edc/in



### 18 CHANNEL IP CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

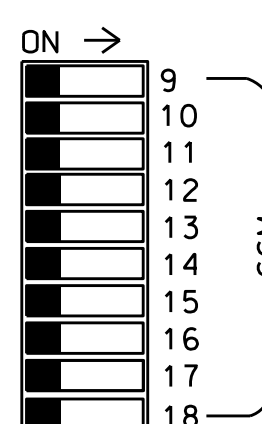
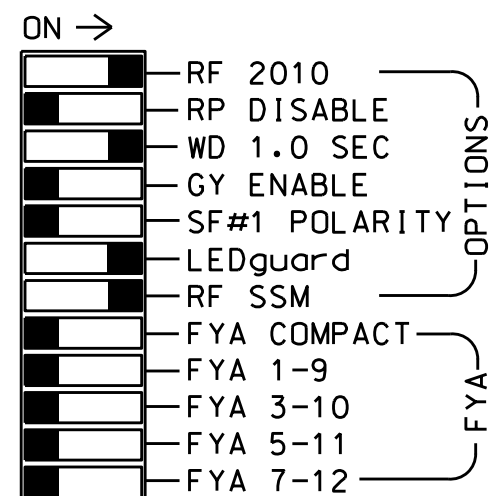
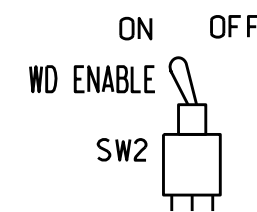
REMOVE DIODE JUMPERS 1-5, 1-6, 1-15, 2-5, 2-6, 2-13, 2-15, 3-7, 3-8, 3-16, 4-7, 4-8, 4-14, 4-16, 5-13, 6-13, 6-15, 7-14, 8-14, 8-16, 13-15 AND 14-16



REMOVE JUMPERS AS SHOWN

NOTES:

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



■ = DENOTES POSITION OF SWITCH

### NOTES

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

### EQUIPMENT INFORMATION

CONTROLLER.....2070  
 CABINET.....332  
 SOFTWARE.....ECONOLITE ASC/3-2070  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...12  
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,  
 S10,S11,S12  
 PHASES USED.....1,2,2 PED,3,4,4 PED,5,6,  
 6 PED,7,8,8 PED  
 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.	11	42	21,22	P21, P22	31	41,42	P41, P42	51	61,62	P61, P62	71	81,82	P81, P82
RED		128			101			134			107		
YELLOW			129			102			135			108	
GREEN				130			103			136			
RED ARROW	125				116			131			122		
YELLOW ARROW	126	126			117			132			123		
GREEN ARROW	127	127			118			133			124		
Hand icon				113			104			119		110	
Walking person icon				115			106			121		112	

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	∅ 1	∅ 1	∅ 2	S	∅ 3	∅ 4	S	S	S	S	S	∅ 2 PED	∅ 6 PED	FS
L	1A	1B	2A	←-→	3A	4A	←-→	←-→	←-→	←-→	←-→	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	NOT USED	NOT USED	∅ 2	←-→	NOT USED	∅ 4	←-→	←-→	←-→	←-→	←-→	∅ 4 PED	∅ 8 PED	ST
L			2B	←-→		4B	←-→	←-→	←-→	←-→	←-→	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
U	∅ 5	∅ 6	S	S	∅ 7	∅ 8	S	S	SYS. DET. S6A	S	S	S	S	S
L	5A	6A	←-→	←-→	7A	8A	←-→	←-→	←-→	←-→	←-→	←-→	←-→	←-→
U	NOT USED	∅ 6	←-→	←-→	NOT USED	∅ 8	←-→	←-→	←-→	←-→	←-→	←-→	←-→	←-→
L		6B	←-→	←-→		8B	←-→	←-→	←-→	←-→	←-→	←-→	←-→	←-→

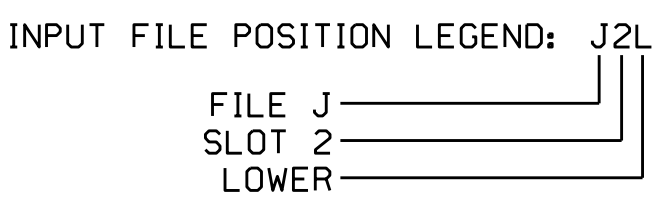
EX.: 1A, 2A, ETC. = LOOP NO.'S FS = FLASH SENSE ST = STOP TIME

### 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
1A	TB2-1,2	I1U	56	1	1	YES		3		N
1B	TB2-5,6	I2U	39	2	1	YES		15		N
2A	TB2-9,10	I3U	63	32	2	YES				N
2B	TB2-11,12	I3L	76	42	2	YES				N
3A	TB4-5,6	I5U	58	3	3	YES		3		N
4A	TB4-9,10	I6U	41	4	4	YES				N
4B	TB4-11,12	I6L	45	14	4	YES				N
5A	TB3-1,2	J1U	55	5	5	YES		3		N
6A	TB3-5,6	J2U	40	6	6	YES				N
6B	TB3-7,8	J2L	44	16	6	YES				N
7A	TB5-5,6	J5U	57	7	7	YES		3		N
8A	TB5-9,10	J6U	42	8	8	YES				N
8B	TB5-11,12	J6L	46	18	8	YES		10		N
*S6A	TB7-9,10	J9U	59	15	SYS	NO				N
*S6B	TB7-11,12	J9L	61	17	SYS	NO				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

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

\* System detector only. Remove any assigned vehicle phase.



### 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: 06-0247  
 DESIGNED: December 2022  
 SEALED: 2/1/2023  
 REVISED: N/A

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 SEAL 031001  
 TODD JOYCE

Division 6 Cumberland County Fayetteville

SR 1415 (Yadkin Road) at SR 1437 (Santa Fe Drive)

PLAN DATE: January 2023 REVIEWED BY:

PREPARED BY: Zarrar Zafar REVIEWED BY:

REVISIONS INIT. DATE

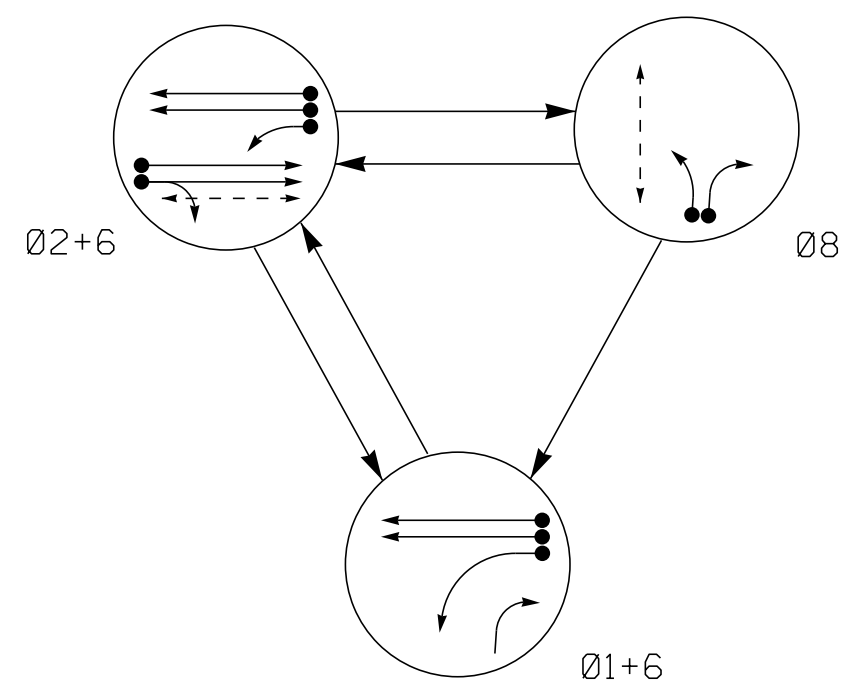
DocuSigned by: D. Todd Joyce 02/02/2023

750 N. Greenfield Pkwy, Garner, NC 27529

SIG. INVENTORY NO. 06-0247



PHASING DIAGRAM



**PHASING DIAGRAM DETECTION LEGEND**

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

SIGNAL FACE I.D.

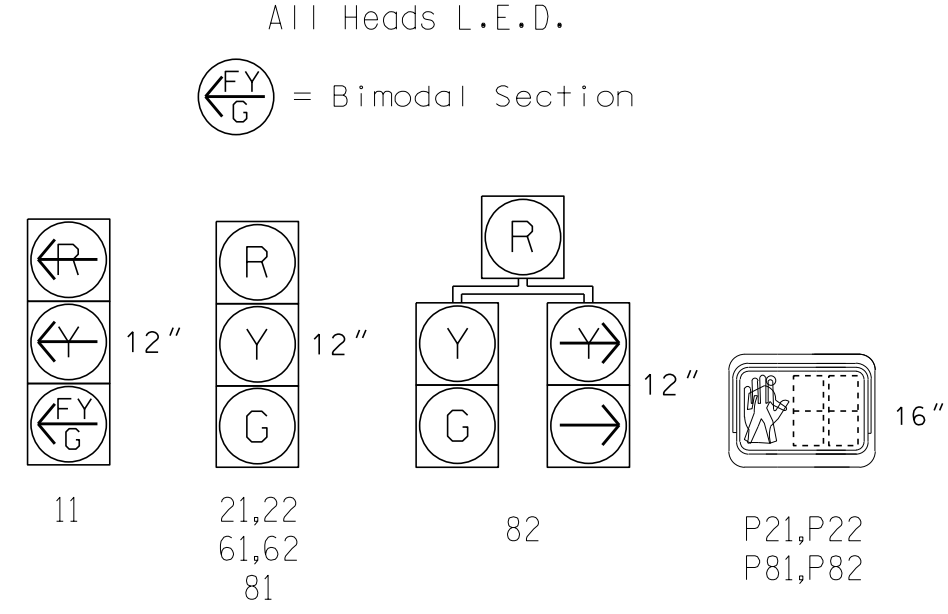


TABLE OF OPERATION

SIGNAL FACE	PHASE			
	01+6	02+6	08	F L
11	←	←	←	←
21,22	R	G	R	Y
61,62	G	G	R	Y
81	R	R	G	R
82	R	R	G	R
P21,P22	DW	W	DW	DRK
P81,P82	DW	DW	W	DRK

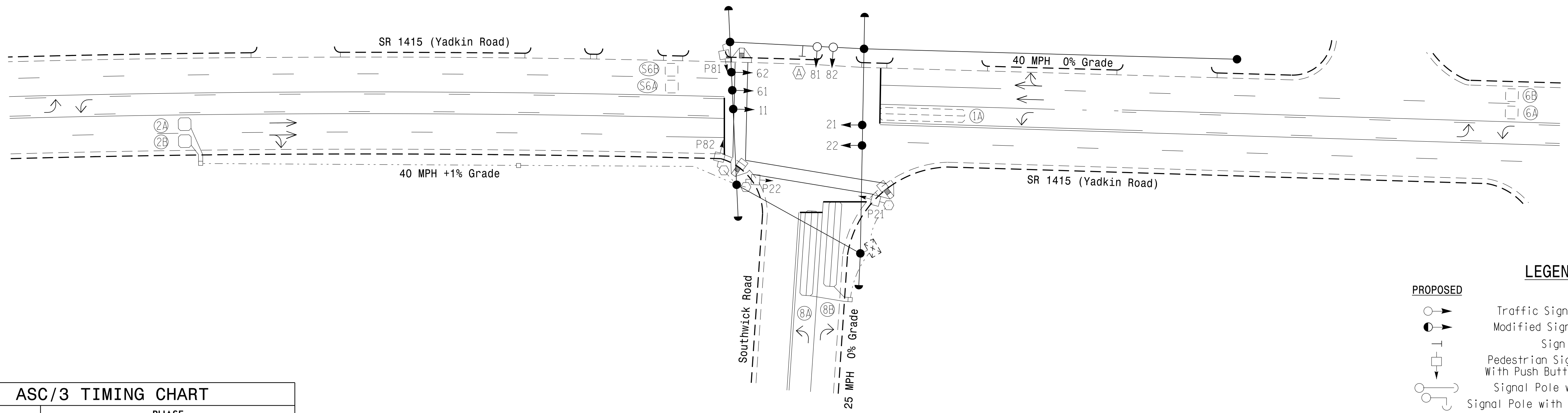
ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING				TYPE	SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTEND TIME	DELAY TIME			
1A	6X40	0	2-4-2	-	1	Yes	-	15	N	-	-
2A,2B	6X6	295	4	X	2	Yes	-	-	N	-	-
6A,6B	6X6	295	4	-	6	Yes	-	-	N	-	-
8A	6X60	0	2-4-2	X	8	Yes	-	3	N	-	-
8B	6X60	0	2-4-2	X	8	Yes	-	15	N	-	-
S6A	6X6	Exist	Exist	-	-	No	-	-	N	-	-
S6B	6X6	Exist	Exist	-	-	No	-	-	N	-	-

3 Phase Fully Actuated Fayetteville Signal System

NOTES

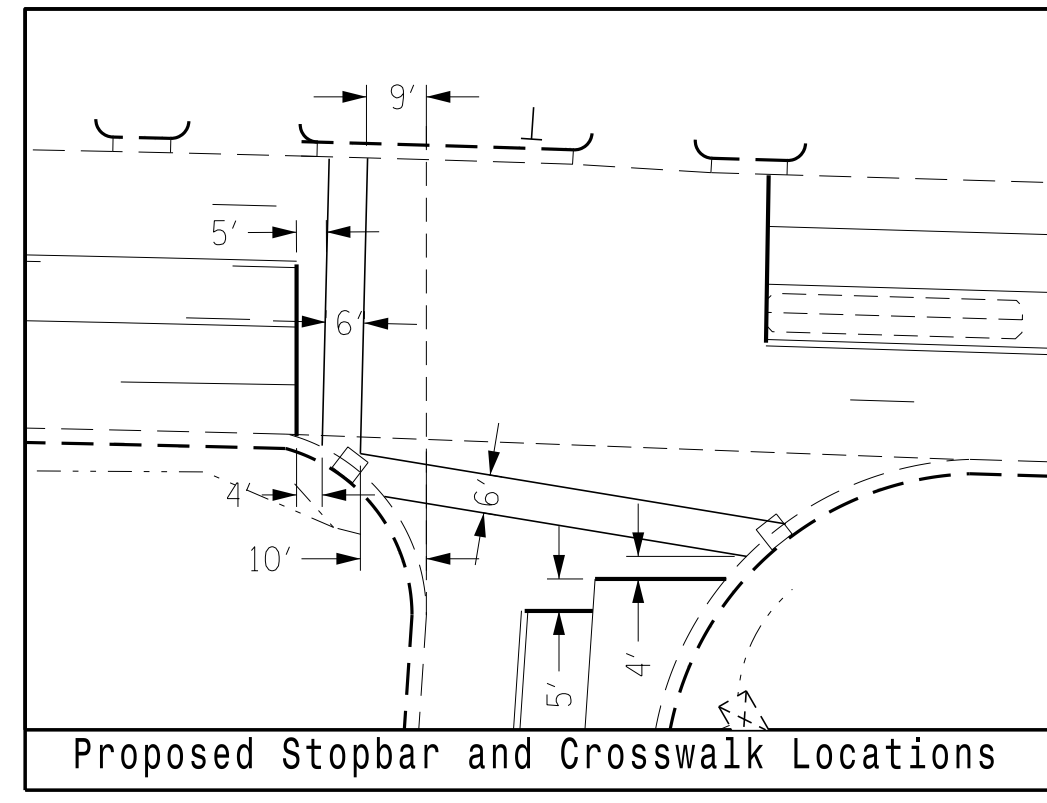
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 may be lagged.
- Set all detector units to presence mode.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



**ASC/3 TIMING CHART**

FEATURE	PHASE			
	1	2	6	8
Min Green *	7	12	12	7
Delay Green *	0	7	0	4
Walk *	0	7	0	7
Ped Clear	0	17	0	15
Veh. Extension *	2.0	6.0	6.0	2.0
Max I *	20	90	90	15
Yellow	3.0	4.2	4.2	3.0
Red Clear	1.9	1.3	1.3	2.3
Actuations B4 Add *	-	0	0	-
Seconds /Actuation *	-	1.5	1.5	-
Max Initial *	-	34	34	-
Time Before Reduction *	-	15	15	-
Time To Reduce *	-	30	30	-
Minimum Gap	-	3.0	3.0	-
Locking Detector	-	X	X	-
Recall Position	-	VEH. RECALL	VEH. RECALL	-
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

\* 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 With Push Button & Sign	⊕ → Signal Pole with Guy
⊕ → Signal Pole with Sidewalk Guy	⊕ → Inductive Loop Detector
⊕ → Junction Box	⊕ → Controller & Cabinet
⊕ → 2-in Underground Conduit	⊕ → Right of Way
N/A → Directional Arrow	⊕ → Type I Pushbutton Post
⊕ → Type II Signal Pedestal	⊕ → Curb Ramp
N/A → "LEFT TURN YIELD TO PEDESTRIANS" Sign (R10-15L)	⊕ →

Signal Upgrade - Corr. File No. 06-19-59136

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:

**SR 1415 (Yadkin Road) at Southwick Road**

Division 6 Cumberland County Fayetteville

PLAN DATE: December 2022 REVIEWED BY: ZML

PREPARED BY: KGP, Jr. REVIEWED BY:

REVISIONS INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 30 1"=30'

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ZACHARY M. LITTLE 030530 02/01/2023

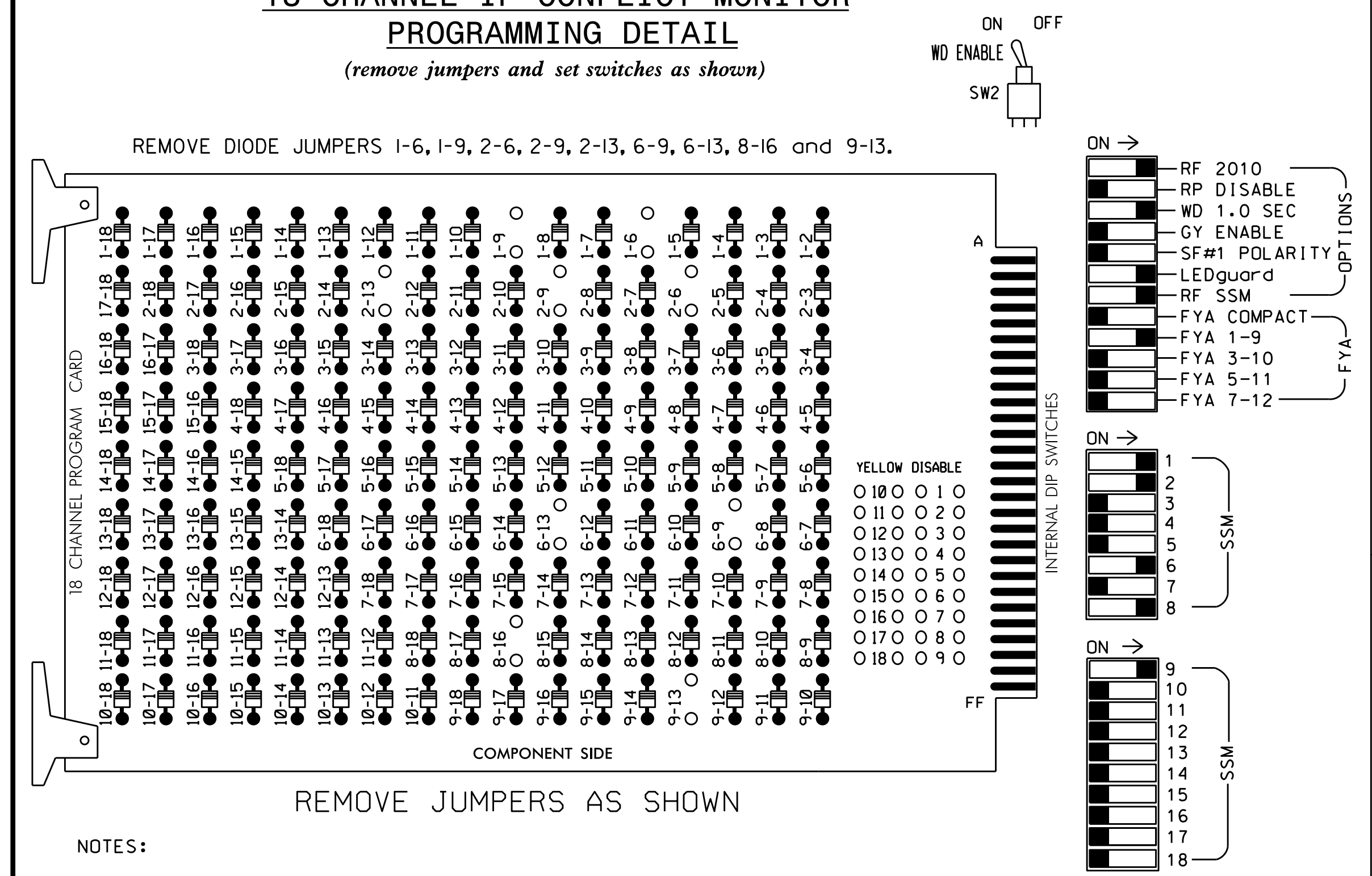
SIG. INVENTORY NO. 06-0540

31-JAN-2023 11:48 S:\IT\AS\1\T5\Sig\061959136\Sig\061959136-0540\060540\_sig\_dsn\_2022.mxd-dgn kpbredlin



### 18 CHANNEL IP 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 Fayetteville Signal System.

### EQUIPMENT INFORMATION

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

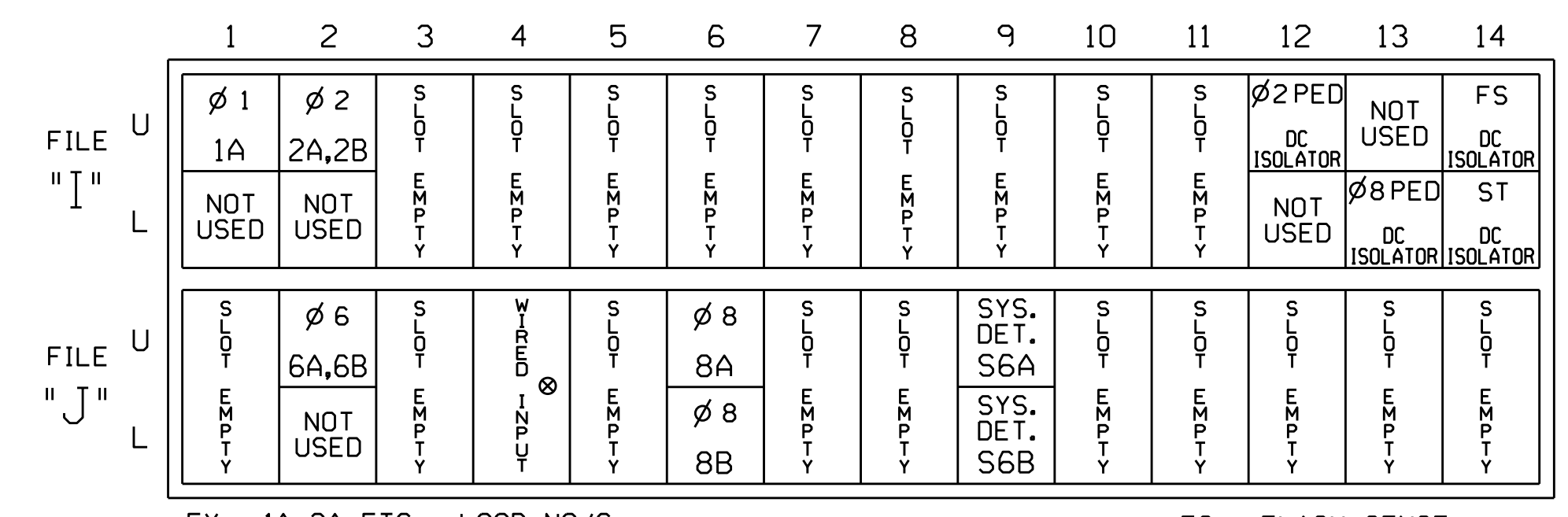
### SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	82	21,22	P21, P22	NU	NU	NU	61,62	NU	NU	81,82	P81, P82	11	NU	NU	NU	NU	NU
RED	*	128						134			107							
YELLOW		129						135										
GREEN		130						136										
RED ARROW																		A121
YELLOW ARROW	126											108						A122
FLASHING YELLOW ARROW																		A123
GREEN ARROW	127	127										109						
PEDESTRIAN																		110
WALK																		112

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

### INPUT FILE POSITION LAYOUT

(front view)



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

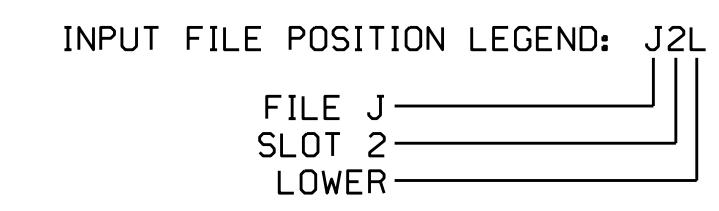
⊗ Wired Input - Do not populate slot with detector card

### 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 <sup>1</sup>	TB2-1,2	I1U	56	1	1	YES		15		N
		J4U	48	26	6	YES		3		G
2A,2B	TB2-5,6	I2U	39	2	2	YES				N
6A,6B	TB3-5,6	J2U	40	6	6	YES				N
8A	TB5-9,10	J6U	42	8	8	YES		3		N
8B	TB5-11,12	J6L	46	18	8	YES		15		N
* S6A	TB7-9,10	J9U	59	15	SYS	NO				N
* S6B	TB7-11,12	J9L	61	17	SYS	NO				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

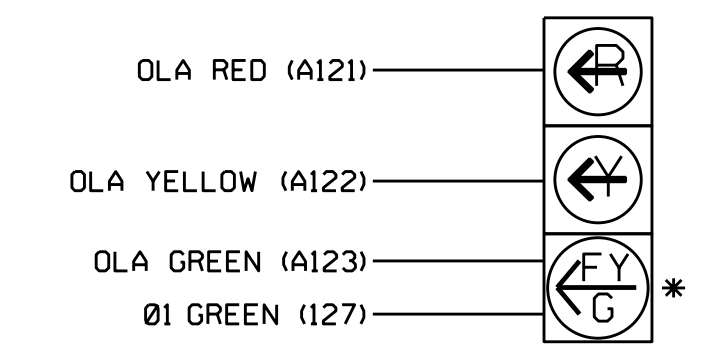
NOTE:  
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

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



### FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



11  
 \* Bimodal Section

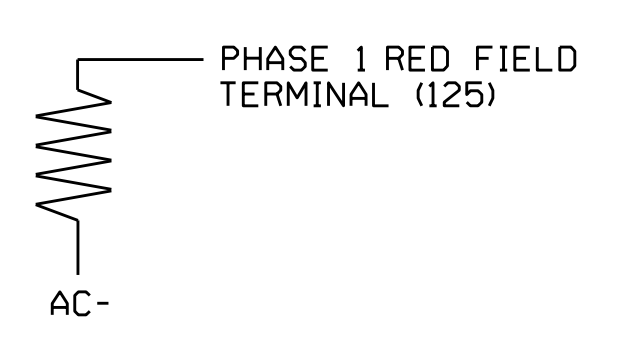
### COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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: 06-0540  
 DESIGNED: December 2022  
 SEALED: 2/01/2023  
 REVISED: N/A

### LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)



Electrical Detail Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:  
 Transportation Mobility and Safety Solutions  
 STATE OF NORTH CAROLINA  
 750 N. Greenfield Pkwy, Garner, NC 27529

SR 1415 (Yadkin Road) at Southwick Road

Division 6 Cumberland County Fayetteville

PLAN DATE: January 2023 REVIEWED BY: DTJ

PREPARED BY: D.J. Craddock REVIEWED BY:

REVISIONS	INIT.	DATE

Seal: SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031001 D. Todd Joyce ENGINEER TODD JOYCE

DocuSigned by: D. Todd Joyce 02/02/2023

SIG. INVENTORY NO. 06-0540

02-FEB-2023 07:51 S:\17565\17565\Sigonal\Workgroups\519\_Mon#Projects From Signal Design\Act1\ve Projects\CR\roaddock42\_Pending\06-0540\_49312\_1\_2\060540.sm.dwg 20160928\_cocoy.dgn djcraddock1



## ECONOLITE ASC/3-2070 LOGIC PROCESSOR PROGRAMMING DETAIL FOR LEADING PED INTERVAL (DELAYED GREEN)

(program controller as shown)

The following logic processor configuration holds the FYA's on signal heads  
11 red for the duration of the delayed green time (leading ped interval)  
when serving a ped call on the opposing through phase.

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

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

LP#:	1	COPY FROM:	1	ACTIVE:	M	(T/F)
IF	PED ON PH WALK		2	IS	ON	
AND	VEH GREEN ON PH		2	IS	OFF	
ELSE						
THEN	SIG SET OLP RED		1		ON	
	SIG SET OLP YELLOW		1		OFF	
	SIG SET OVLP GREEN		1		OFF	

HOLD SIGNAL HEAD 11 FYA  
RED DURING THE PHASE 2  
DELAYED GREEN TIME  
(LEADING PED INTERVAL)

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 1-4 BY POSITIONING  
THE CURSOR OVER THE FIELDS SHOWN BELOW AND USING THE  
TOGGLE KEY TO ENABLE THEM .

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

END PROGRAMMING

## ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

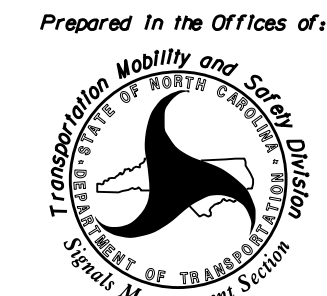
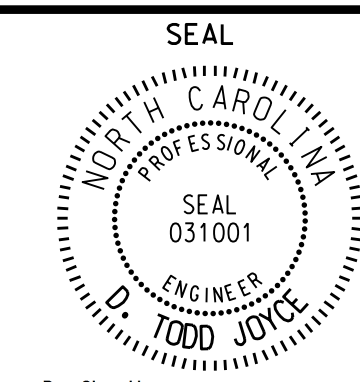
### OVERLAP A

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

TMG VEH OVLP...[A] TYPE: ....	<span style="border: 1px solid black; padding: 2px;">PPLT FYA</span>
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: 06-0540  
DESIGNED: December 2022  
SEALED: 2/01/2023  
REVISED: N/A

<p style="font-size: x-small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared in the Offices of:</p>  <p style="font-size: x-small;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p style="font-size: large;">SR 1415 (Yadkin Road) at Southwick Road</p> <p style="font-size: x-small;">Division 6 Cumberland County Fayetteville</p> <p style="font-size: x-small;">PLAN DATE: January 2023 REVIEWED BY: DTJ</p> <p style="font-size: x-small;">PREPARED BY: D.J. Craddock 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;">SEAL</p>  <p style="font-size: x-small;">DocuSigned by: <i>Todd Joyce</i> 02/02/2023</p> <p style="font-size: x-small;">SIG. INVENTORY NO. 06-0540</p>
REVISIONS	INIT.	DATE									