

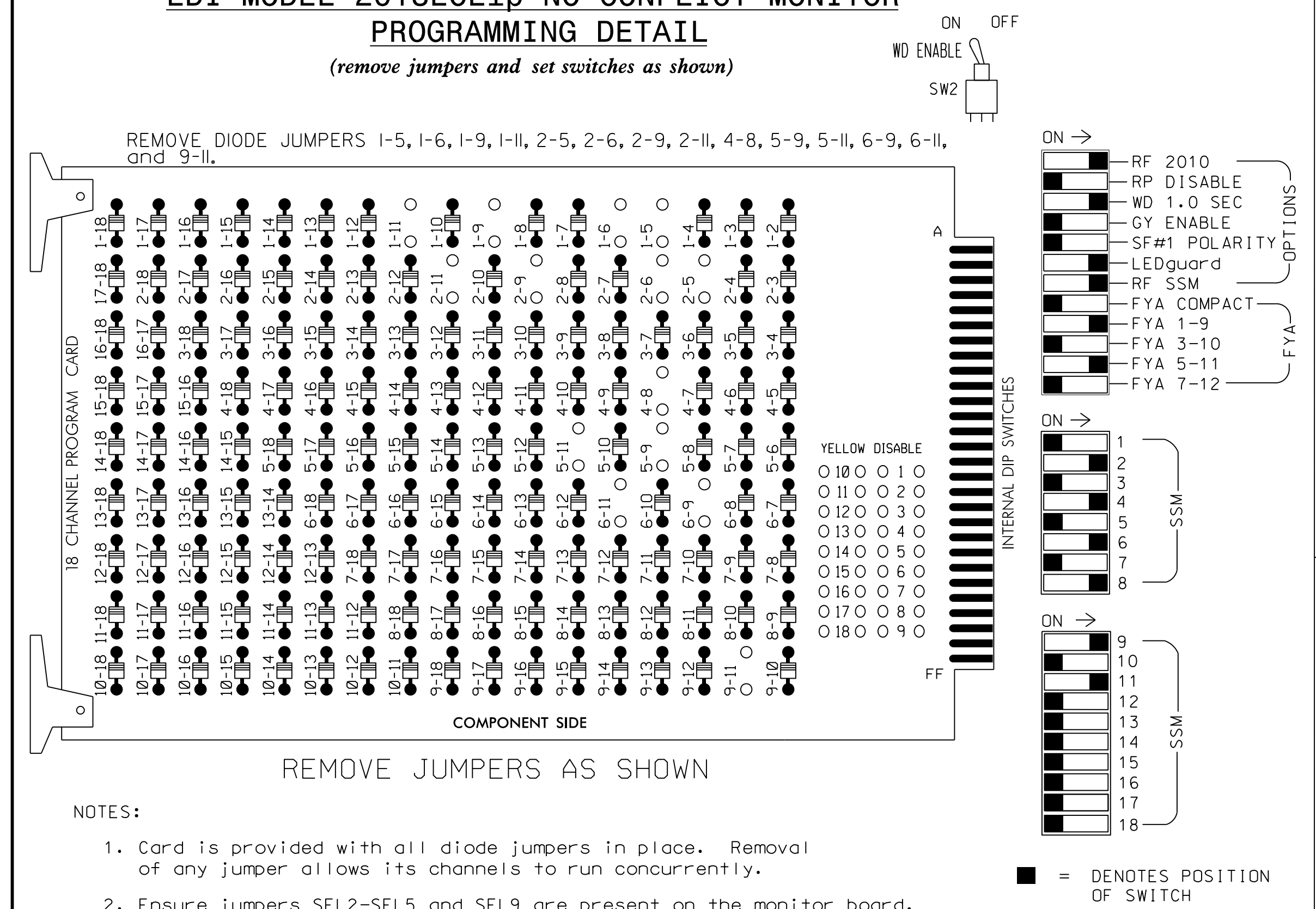
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EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

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 and 6 Green.
- 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,S5,S7,S8,S11,AUX S1,AUX S4
 PHASES USED.....1,2,4,5,6,8
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

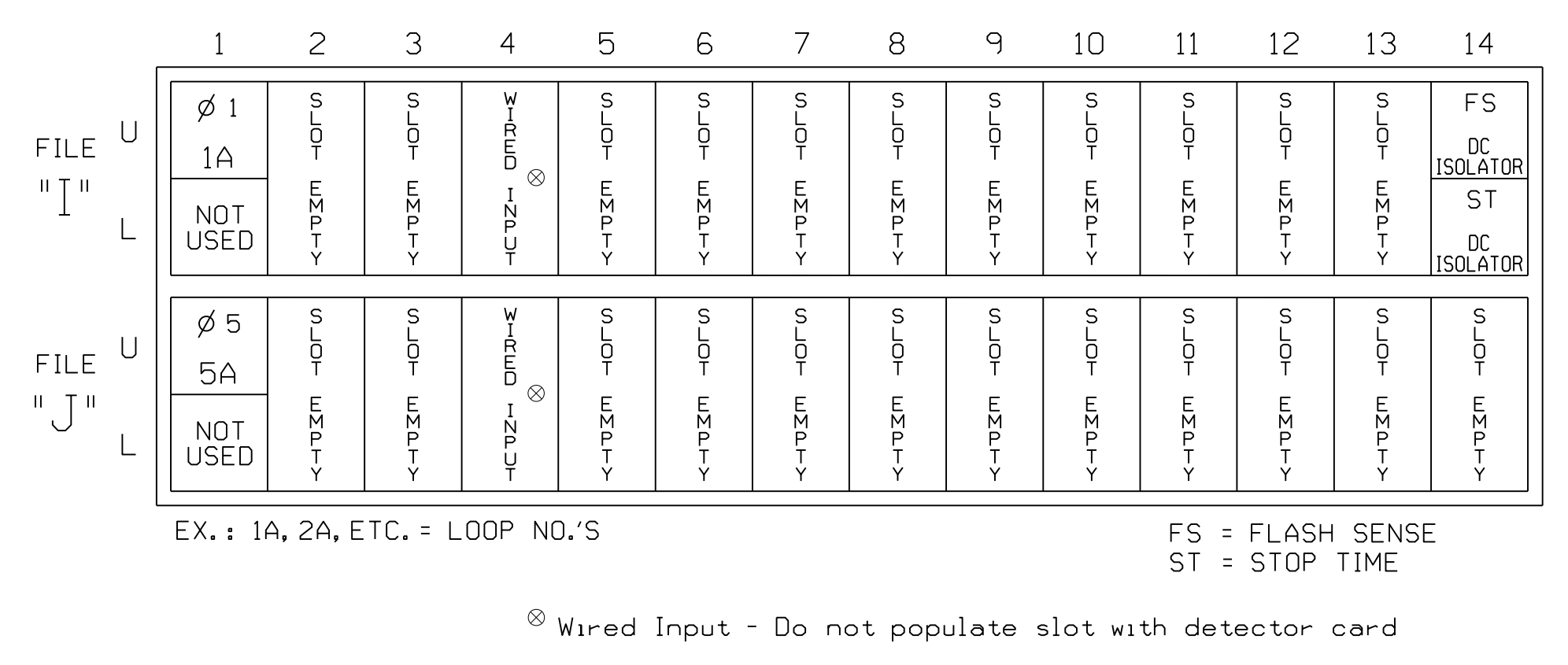
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CHU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22,23	NU	NU	41,42	NU	51	61,62	NU	NU	81,82	NU	11	NU	NU	51	NU	NU
RED	128				101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW																A122		A115
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127							133										

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

INPUT FILE POSITION LAYOUT

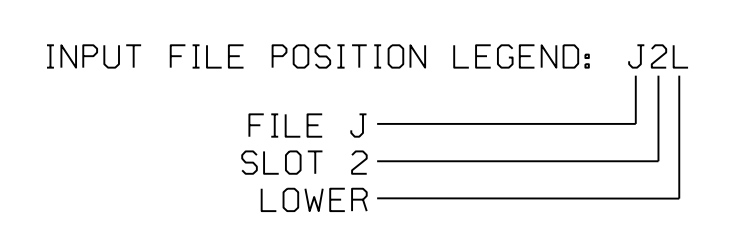
(front view)



INPUT FILE CONNECTION & PROGRAMMING CHART

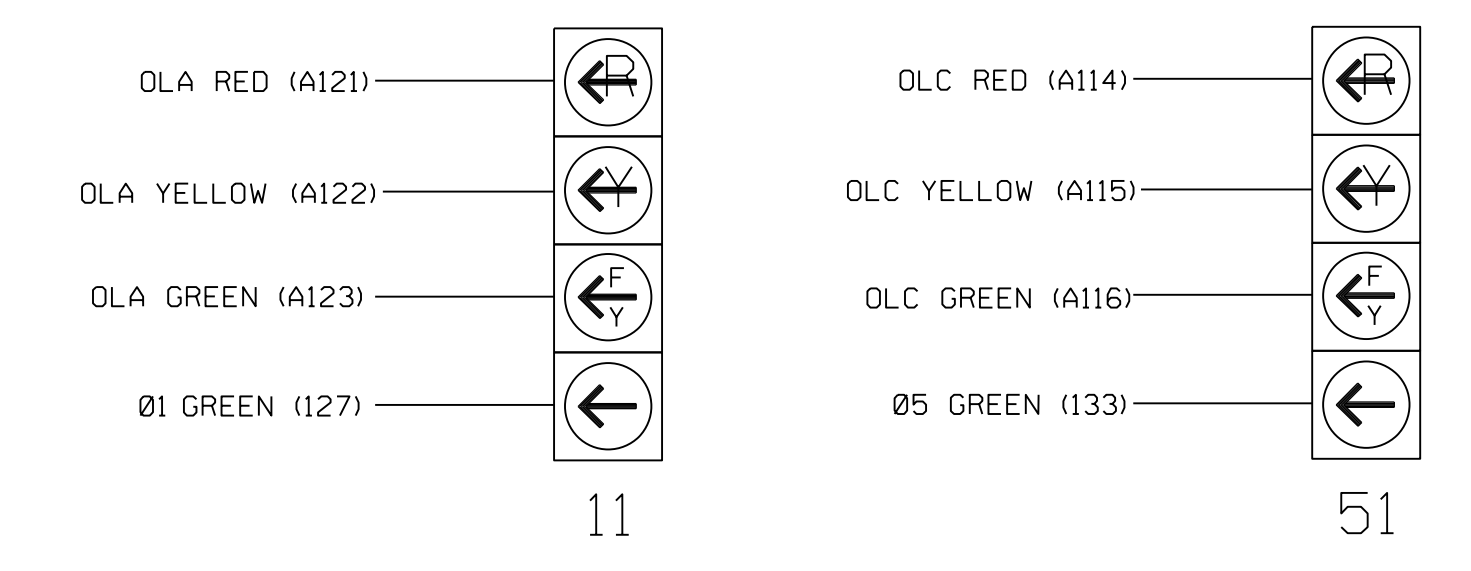
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	-	I1U	56	1 ★	1	YES		15		S
	-	J4U	48	26 ★	6	YES		3		G
5A ²	-	J1U	55	5 ★	5	YES		15		S
	-	I4U	47	22 ★	2	YES		3		G

- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
- ★ See vehicle detector setup programming detail for alternate phasing on sheet 3.



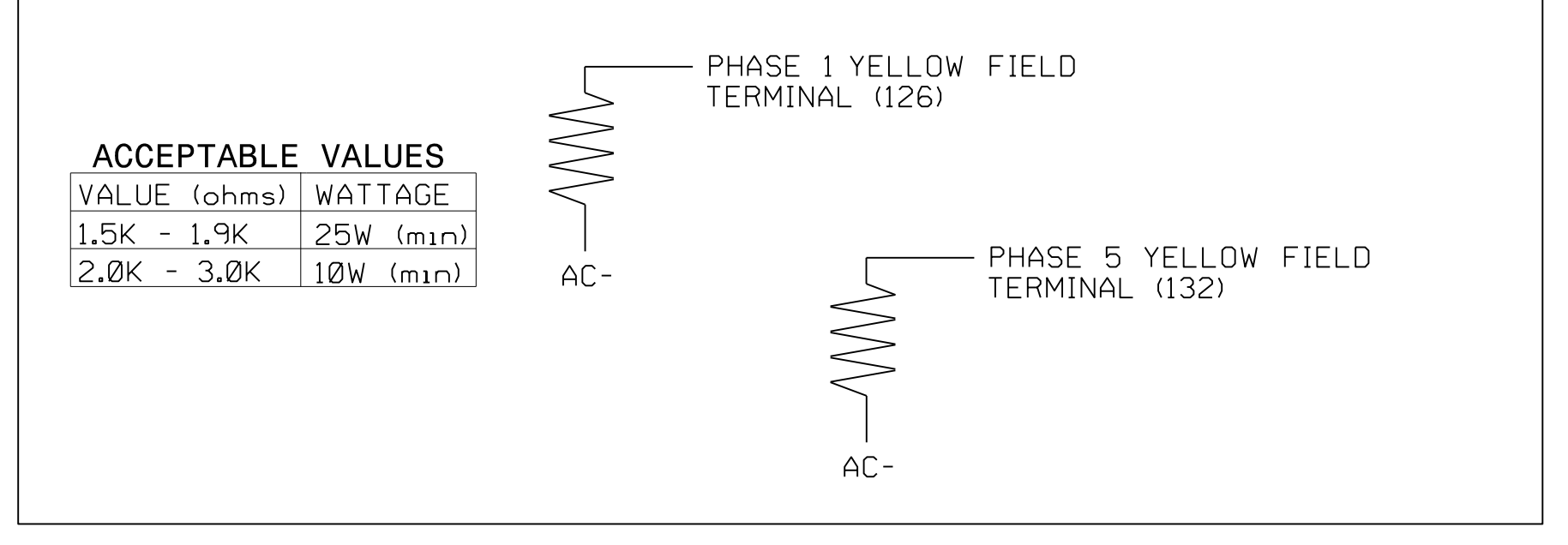
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



DETECTOR NOTES

- For all loops, 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 schemes shown on the Signal Design Plans.
- For loops 1A and 5A detector card placements and slots reserved for wired inputs are typical for a NCDOT installation. Inputs associated with these slots are compatible with time of day instructions located on sheets 2 and 3 of this electrical detail.

Temporary Design 2 - TMP Phase II Electrical Detail - Sheet 1 of 3

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Prepared in the Offices of:
 North Carolina Professional Engineer
 License No. 045933
 3/29/2018

US 401 Business (Raeford Road)
 at
 Brighton Road/
 Fred Anderson Nissan
 Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: R W Muncey REVIEWED BY:

REVISIONS	INIT.	DATE

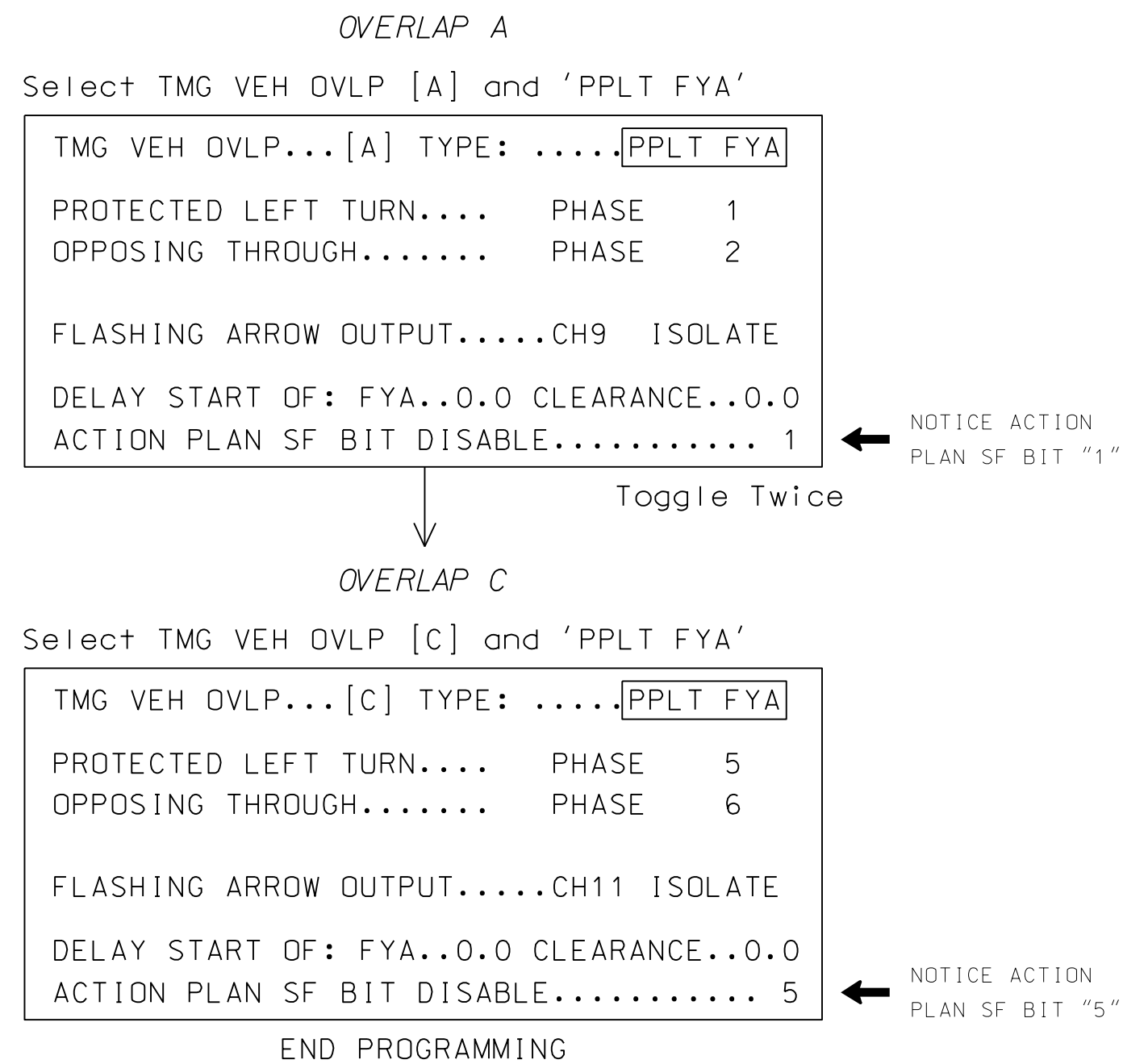
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SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 LAWRENCE E. OVERN
 045933
 3/29/2018
 SIG. INVENTORY NO. 06-032812

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



ALTERNATE PHASING ACTIVATION DETAIL

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

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

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

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

ALTERNATE PHASING CHANGE SUMMARY

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

- SF BITS 1,5: Modifies overlap parent phases for heads 11, and 51 to run protected turns only.
- VEH DET PLAN 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.
- Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0328T2
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED: N/A

Temporary Design 2 - TMP Phase II
Electrical Detail - Sheet 2 of 3

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	PLAN DATE: March 2018 REVIEWED BY: L Overn PREPARED BY: R M Muncey REVIEWED BY:		REVISIONS INIT. DATE

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP

PROGRAMMING DETAIL FOR ALTERNATE PHASING

IMPORTANT!

LOOPS 1A, 5A
(program controller as shown)

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

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

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

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

- Place cursor in VEH DETECTOR [] position and enter "1".
- Set delay time to "3.0".

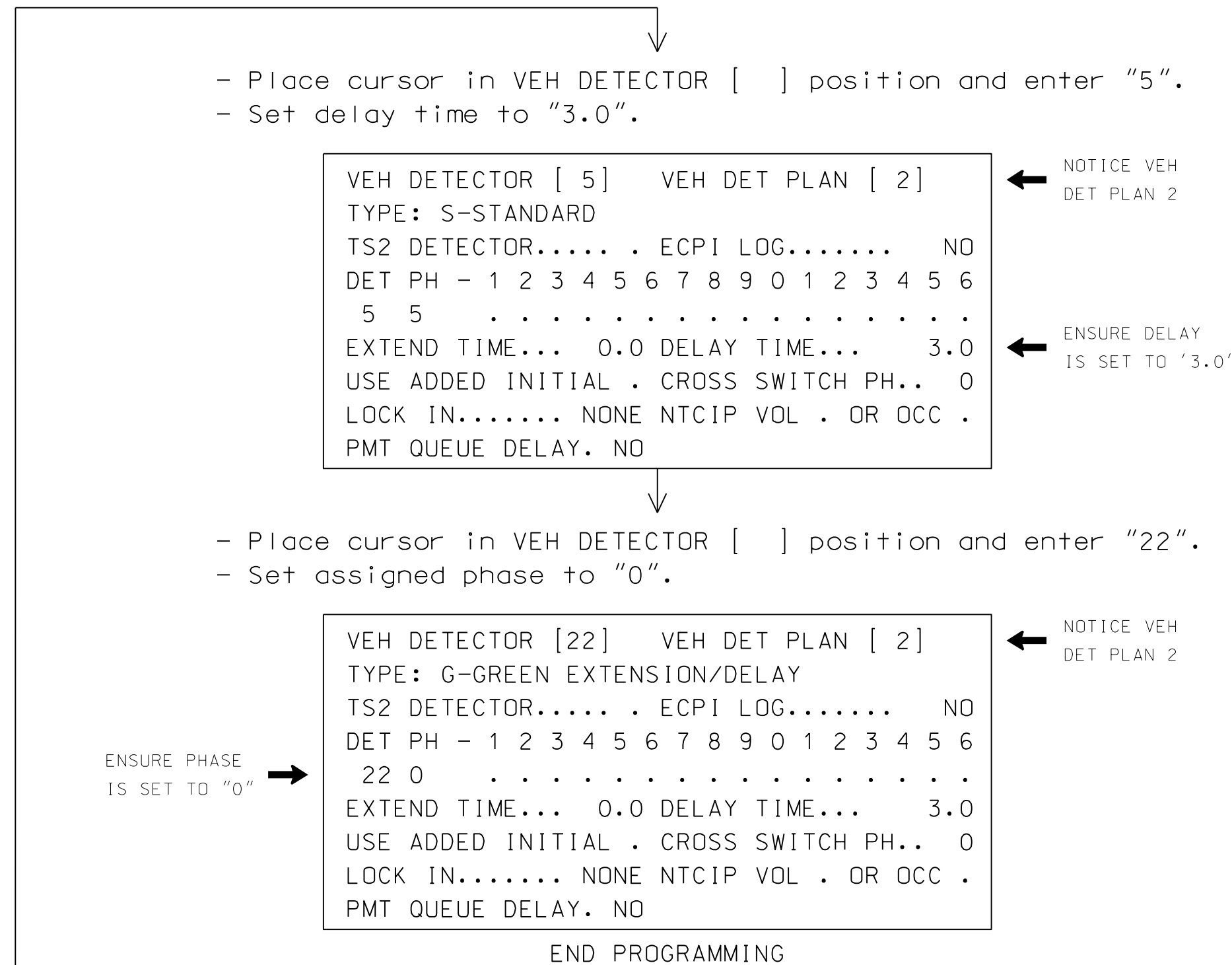
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VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC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

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

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: 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
26 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
    
```



ECONOLITE ASC/3-2070 ACTION PLAN

PROGRAMMING DETAIL

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

```

ACTION PLAN... [ 1]
PATTERN.....AUTO  SYS OVERRIDE.... NO
TIMING PLAN..... 0  SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --  RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY.... NO
PMT COND DELAY  NO
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
PED RCL . . . . .
WALK 2 . . . . .
VEX 2 . . . . .
VEH RCL . . . . .
MAX RCL . . . . .
MAX 2 . . . . .
PHASE 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
MAX 3 . . . . .
CS INH . . . . .
OMIT . . . . .
SPC FCT X . . . X . . . (1-8)
AUX FCT . . . (1-3)
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: 06-0328T2
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED: N/A

DATE: U:\Traffic\Signal\Signal\Temporary Signal\Phase 2\U-4405.sig.ele_06-0328T2.dgn
User: rlmuncey

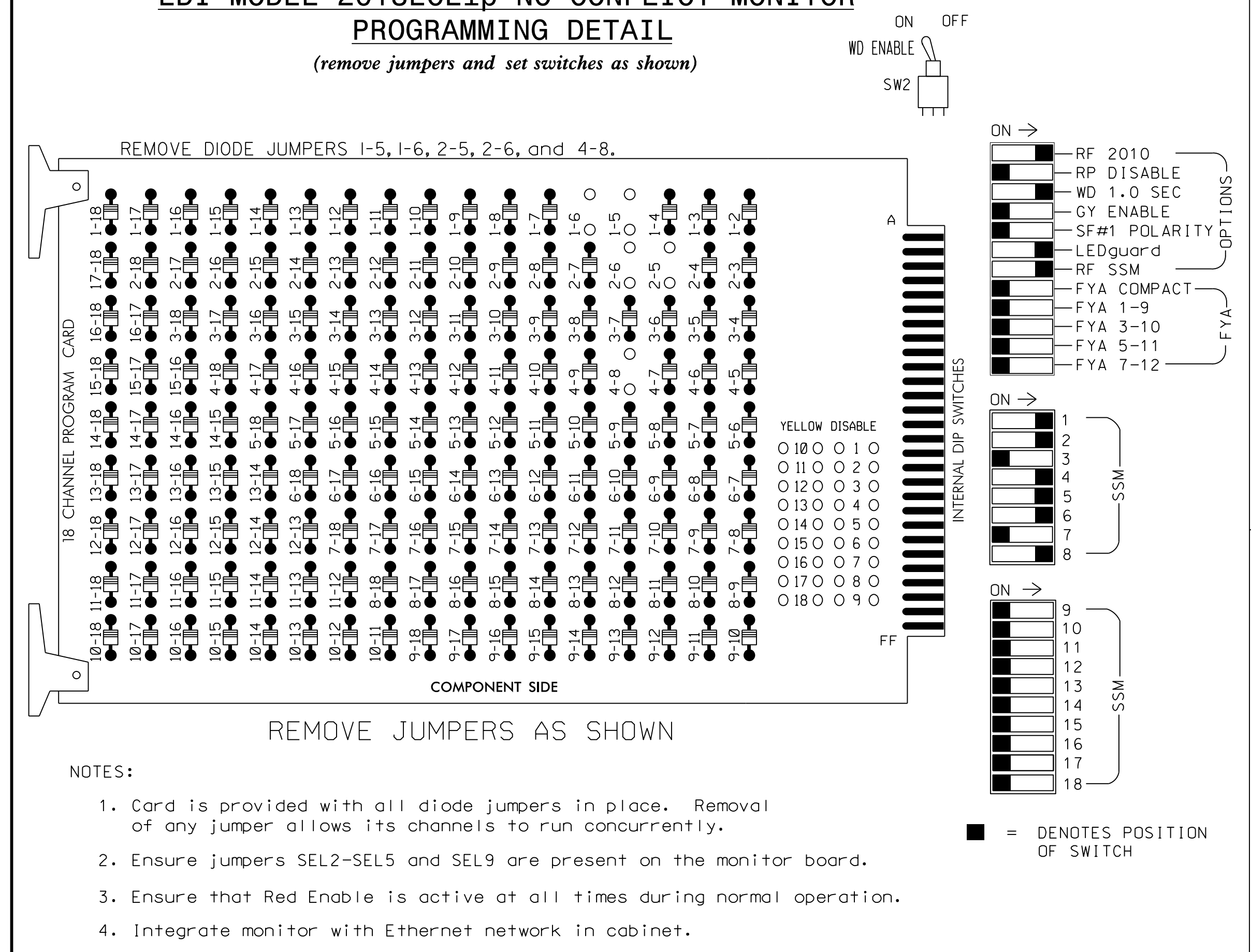
Temporary Design 2 - TMP Phase II
Electrical Detail - Sheet 3 of 3

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	PLAN DATE: March 2018 REVIEWED BY: L Overn PREPARED BY: R M Muncey REVIEWED BY:	REVISIONS INIT. DATE	DATE: 3/29/2018 SIG. INVENTORY NO. 06-0328T2

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.
- Return Controller to Factory Defaults before programming per this electrical detail.
- 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 W/AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S11
 PHASES USED.....1,2,4,5,6,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

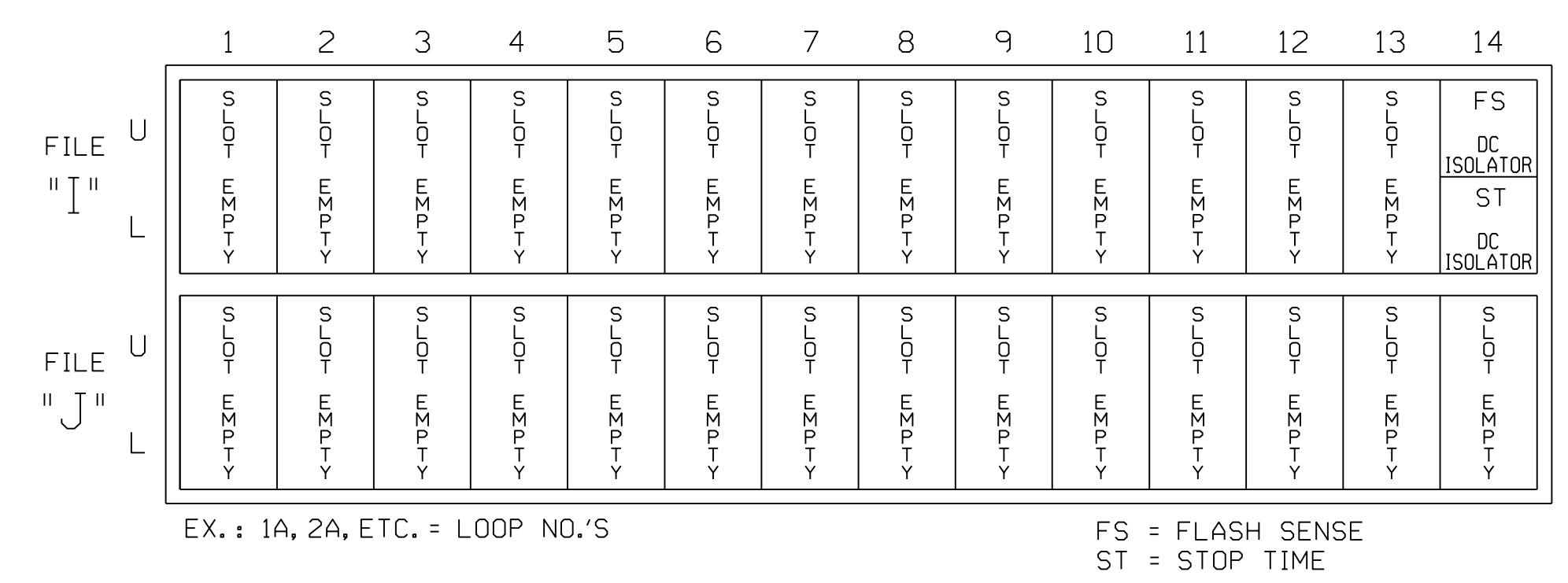
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CHU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	NU	NU	41,42	NU	51	61,62	NU	NU	81,82	NU	NU	NU	NU	NU	NU	NU
RED		128			101			134			107							
YELLOW		129			102			135			108							
GREEN		130			103			136			109							
RED ARROW	125							131										
YELLOW ARROW	126							132										
GREEN ARROW	127							133										

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

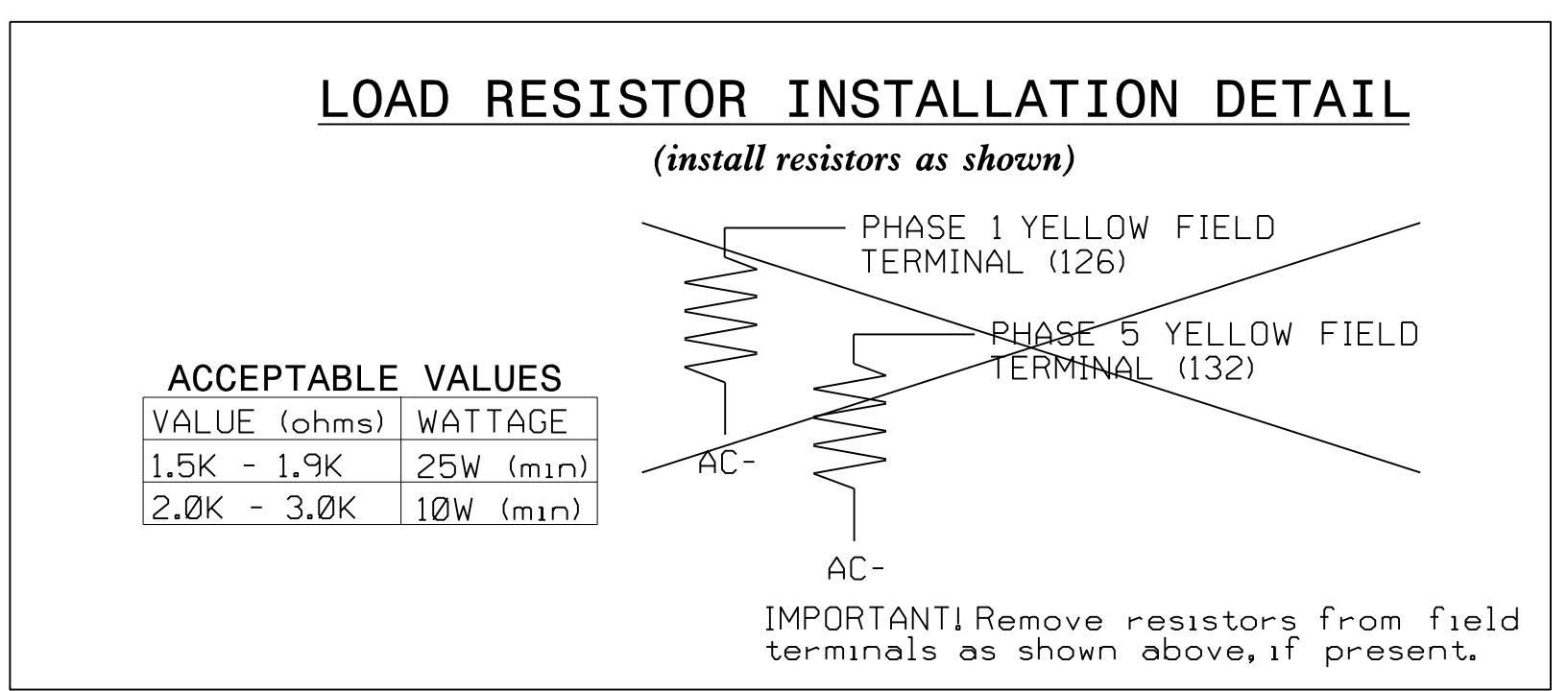
INPUT FILE POSITION LAYOUT

(front view)



LOAD RESISTOR INSTALLATION DETAIL

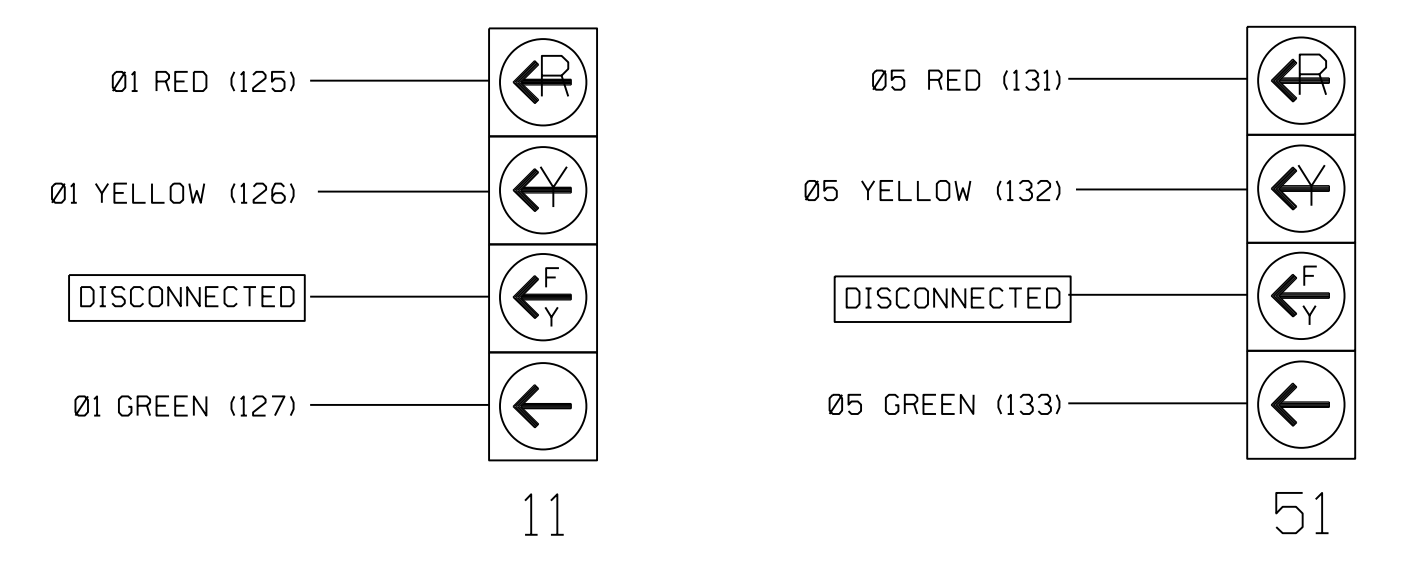
(install resistors as shown)



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

SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0328T3
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

DETECTOR NOTES

- For all loops 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 schemes shown on the Signal Design Plans.
- Remove "Wired Inputs" from rear of input file to prevent unwanted calls to Phases 2 and 6.

Temporary Design 3 - TMP Phase III
 Electrical Detail - Sheet 1 of 1

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Prepared in the Offices of:

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 at
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 Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: R M Muncy REVIEWED BY:

REVISIONS

INIT. DATE

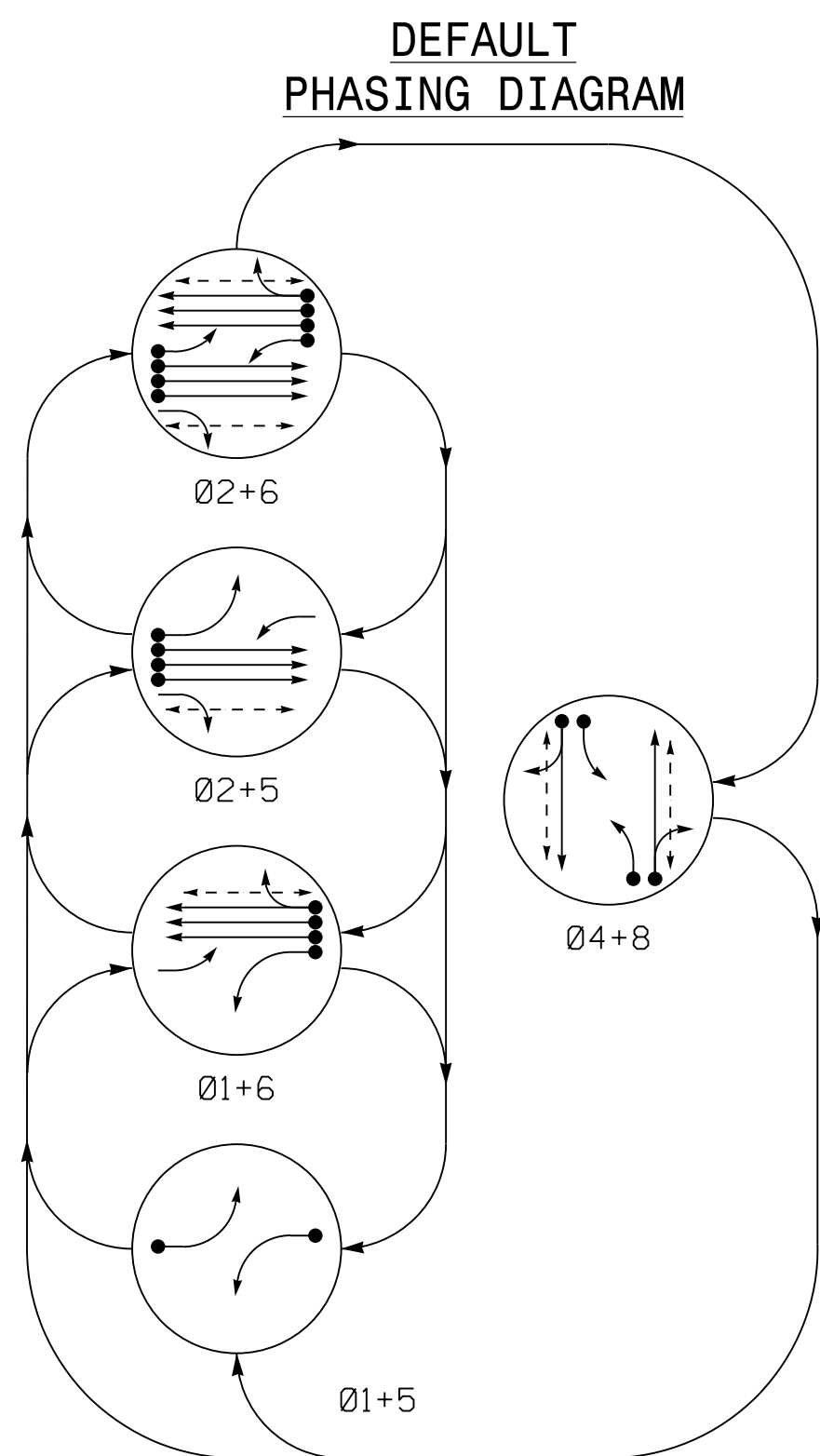
3/29/2018

SIG. INVENTORY NO. 06-0328T3

5 Phase Fully Actuated Fayetteville Signal System

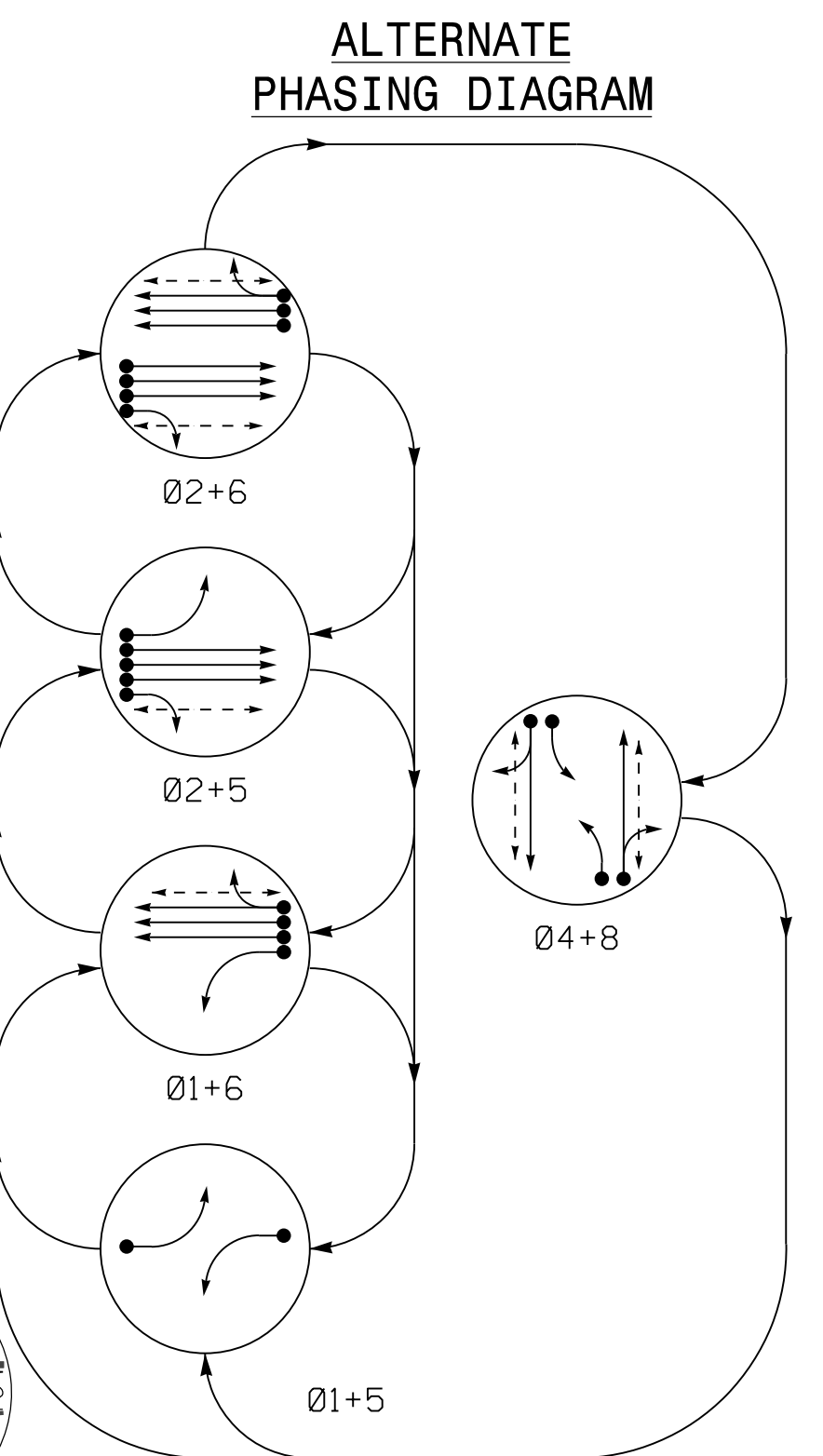
NOTES

- 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 and/or phase 5 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.
- The Division (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.
- Pedestrian pedestals are conceptual and shown for reference only. See 2018 NCDOT Roadway Standard Drawings 1705.04 Sheets 1-3 for push button location details.



DEFAULT TABLE OF OPERATION

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



ALTERNATE TABLE OF OPERATION

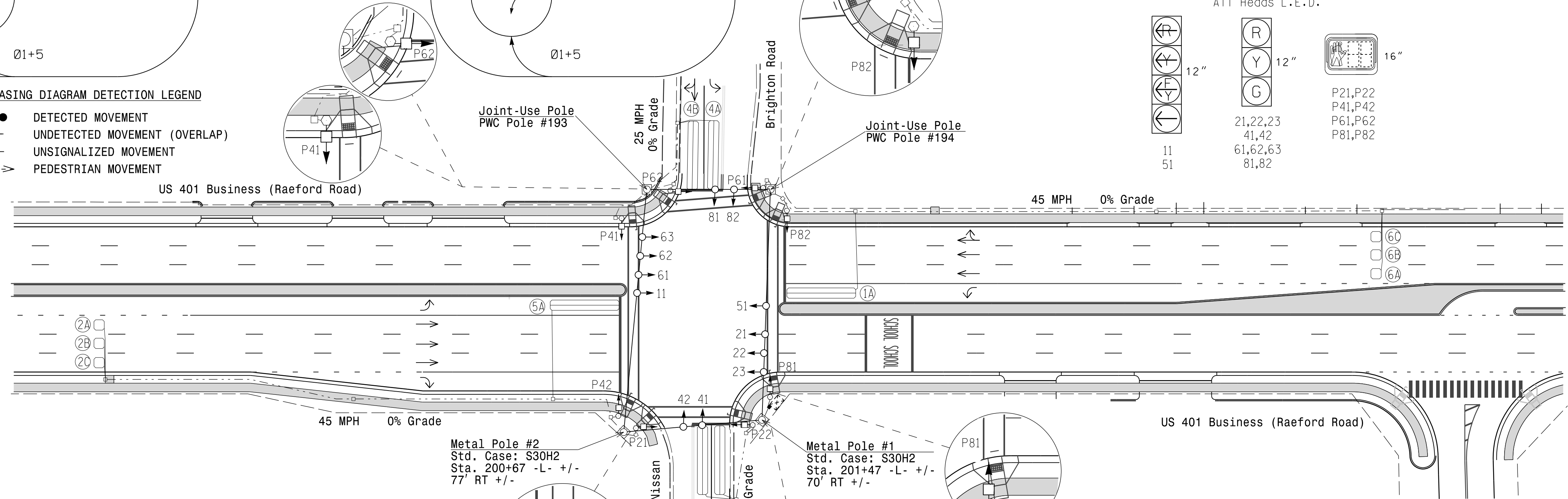
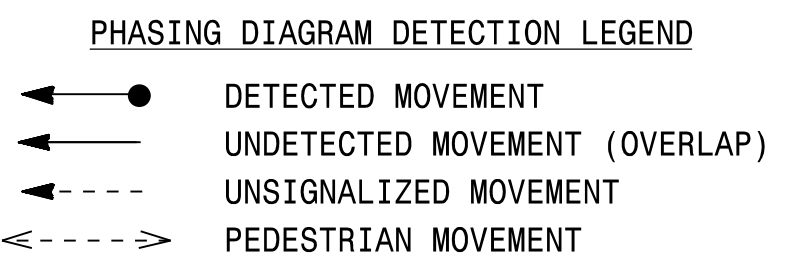
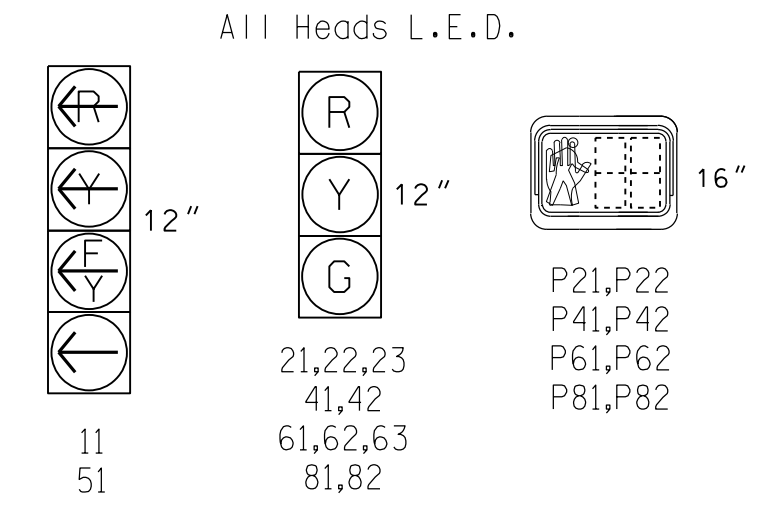
SIGNAL FACE	PHASE					FLASH
	01+5	02+6	02+5	04+8	01+6	
11						
21,22,23	R	R	G	R	Y	
41,42	R	R	R	G	R	
51						
61,62,63	R	G	R	G	R	Y
81,82	R	R	R	G	R	
P21,P22	DW	DW	W	W	DW	DRK
P41,P42	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DW	DRK
P81,P82	DW	DW	DW	W	DRK	

ASC/3 DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	X	1	Yes	-	15★	-	S	-	X
2A	6X6	300	5	X	2	Yes	-	-	X	N	-	X
2B	6X6	300	5	X	2	Yes	-	-	X	N	-	X
2C	6X6	300	5	X	2	Yes	-	-	X	N	-	X
4A	6X40	0	2-4-2	X	4	Yes	-	3	-	S	-	X
4B	6X40	0	2-4-2	X	4	Yes	-	10	-	S	-	X
5A	6X40	0	2-4-2	X	5	Yes	-	15★	-	S	-	X
6A	6X6	300	6	X	6	Yes	-	-	X	N	-	X
6B	6X6	300	6	X	6	Yes	-	-	X	N	-	X
6C	6X6	300	6	X	6	Yes	-	-	X	N	-	X
8A	6X40	0	2-4-2	X	8	Yes	-	3	-	S	-	X
8B	6X40	0	2-4-2	X	8	Yes	-	10	-	S	-	X

Disable Phase(s) call during Alternate Phasing Operation.
 ★ Disable delay during Alternate Phasing Operation.

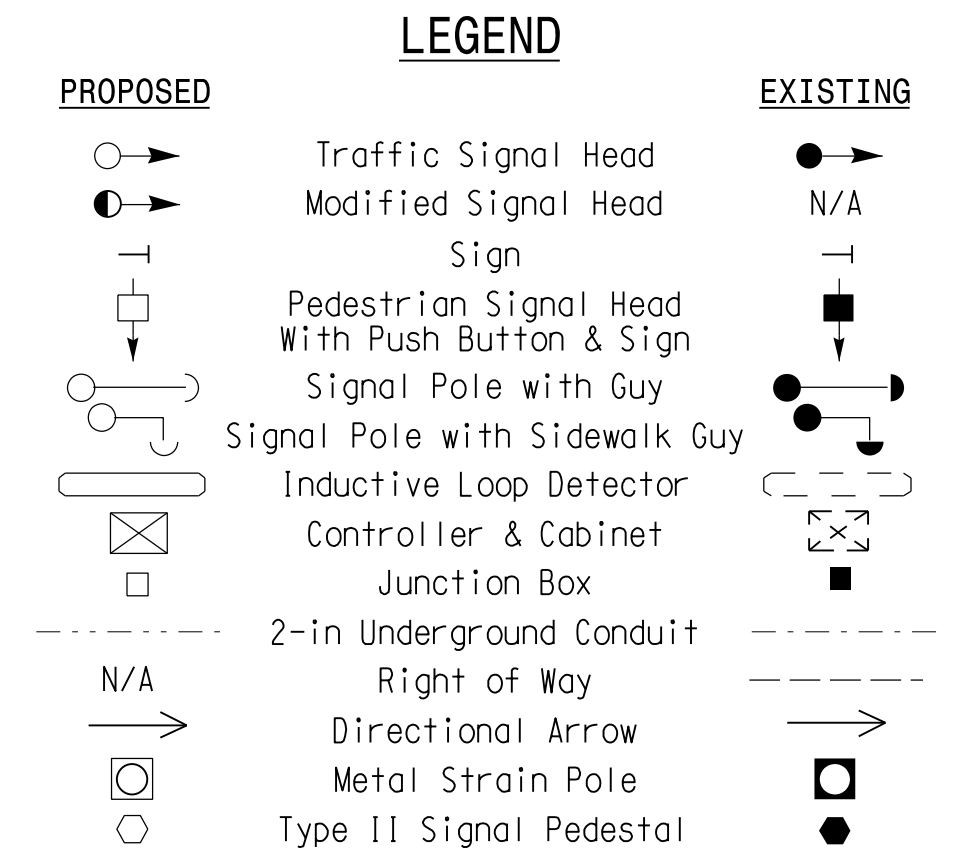
SIGNAL FACE I.D.



ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	4	5	6	8		
Min Green *	7	12	7	7	12	7		
Walk *	-	7	7	-	7	7		
Ped Clear	-	9	26	-	10	23		
Veh. Extension *	2.0	6.0	2.0	2.0	6.0	2.0		
Max 1 *	15	90	25	15	90	25		
Yellow	3.0	4.5	3.2	3.0	4.5	3.2		
Red Clear	3.3	1.8	3.3	3.3	1.8	3.3		
Red Revert	-	-	-	-	-	-		
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	-	-	X	-	-	X		
Simultaneous Gap	X	X	X	X	X	X		

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



Signal Upgrade - Final Design

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Prepared for the Offices of:
 Transportation Mobility and Safety Division
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 STATE OF NORTH CAROLINA
 Signal Design Section
 750 N. Greenfield Pkwy, Garner, NC 27526

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 PLAN DATE: March 2018 REVIEWED BY: E D Harris
 PREPARED BY: R M Muncey REVIEWED BY: B L Watson

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SEAL 29449
 PROFESSIONAL ENGINEER
 JEFFREY L. WATSON

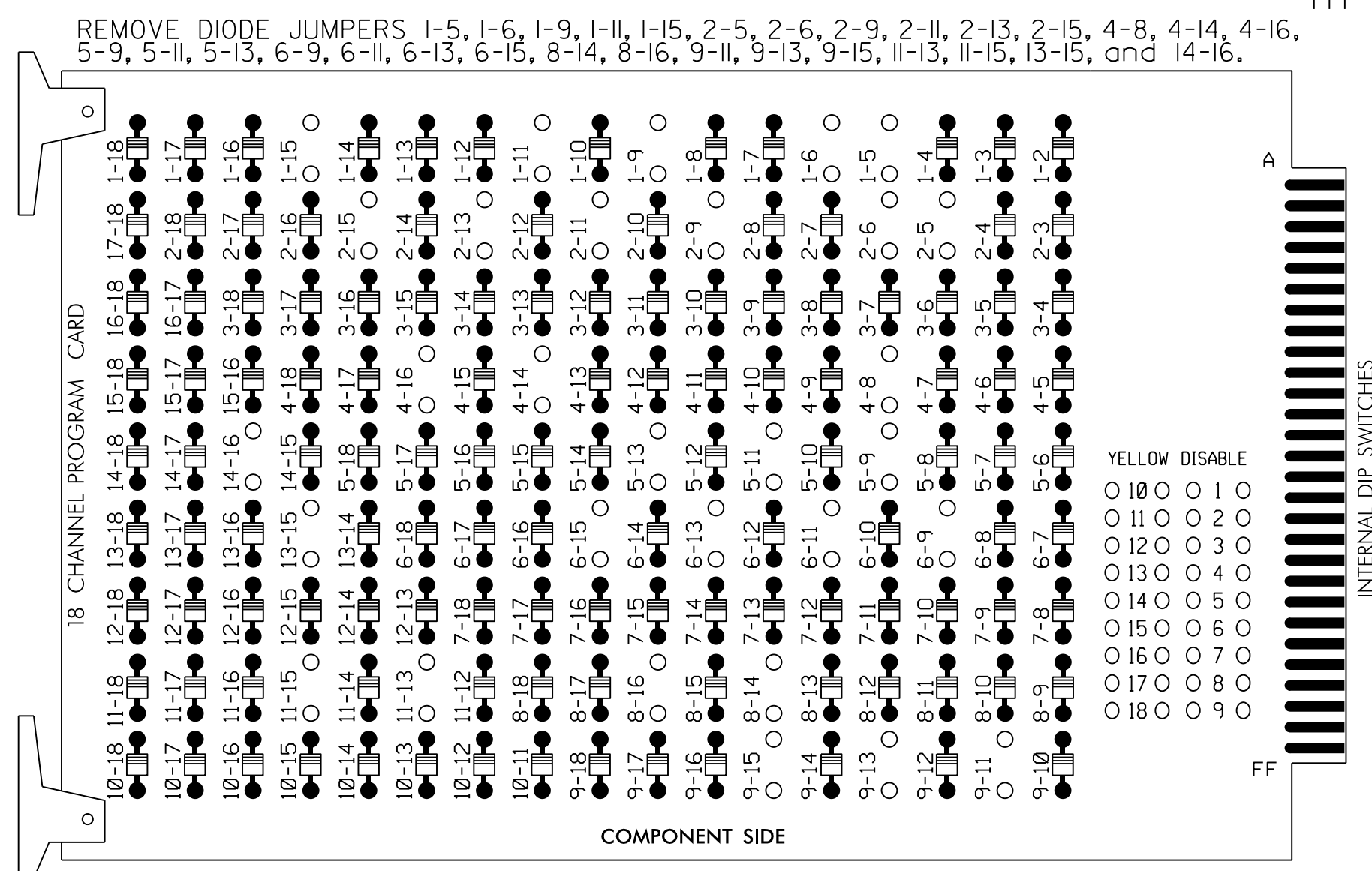
3/29/2018
 DATE

SIG. INVENTORY NO. 06-0328

3/29/2018 10:41:11 AM
 User: rlmuncey
 C:\Users\rlmuncey\Documents\Signal Design\4405\sig.dwg
 User: rlmuncey

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.

■ = 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 Walk and 6 Walk.
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,S5,S6,S7,S8,S9,S11,S12,
 AUX S1,AUX S4
 PHASES USED.....1,2,2PED,4,4PED,5,6,6PED,8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

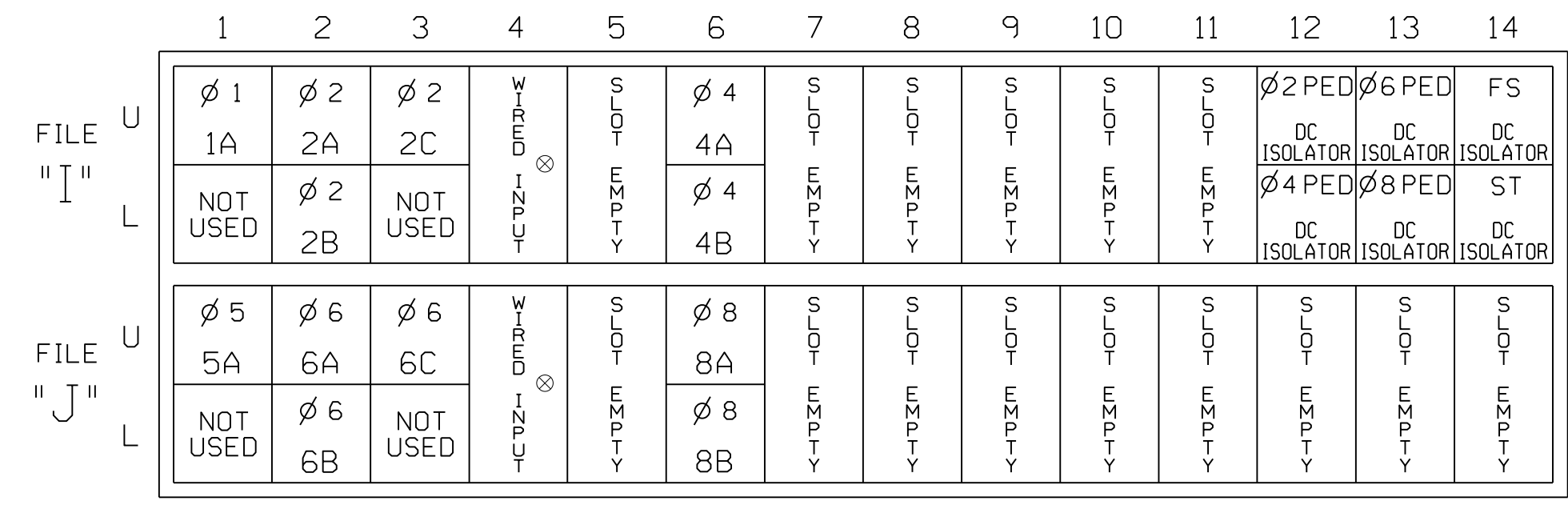
SIGNAL HEAD HOOK-UP CHART

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.	11	21,22,23	P21,P22	NU	41,42	P41,P42	51	61,62,63	P61,P62	NU	81,82	P81,P82	11	NU	NU	51	NU	NU
RED		128			101			134			107							
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121				A114	
YELLOW ARROW													A122				A115	
FLASHING YELLOW ARROW													A123				A116	
GREEN ARROW	127							133										
Hand					113			104			119						110	
Person					115			106			121						112	

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

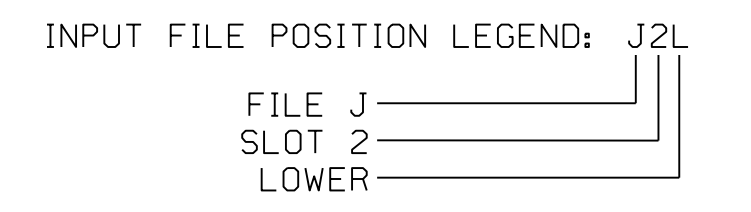
⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	USE 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
	TB2-7,8	I2L	43	12	2	YES			X	N
2C	TB2-9,10	I3U	63	32	2	YES			X	N
	TB4-9,10	I6U	41	4	4	YES		3		S
4B	TB4-11,12	I6L	45	14	4	YES		10		S
	TB3-1,2	J1U	55	5 ★	5	YES		15		S
6A	TB3-5,6	J2U	40	6	6	YES			X	N
	TB3-7,8	J2L	44	16	6	YES			X	N
6C	TB3-9,10	J3U	64	36	6	YES			X	N
	TB5-9,10	J6U	42	8	8	YES		3		S
8B	TB5-11,12	J6L	46	18	8	YES		10		S
	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					

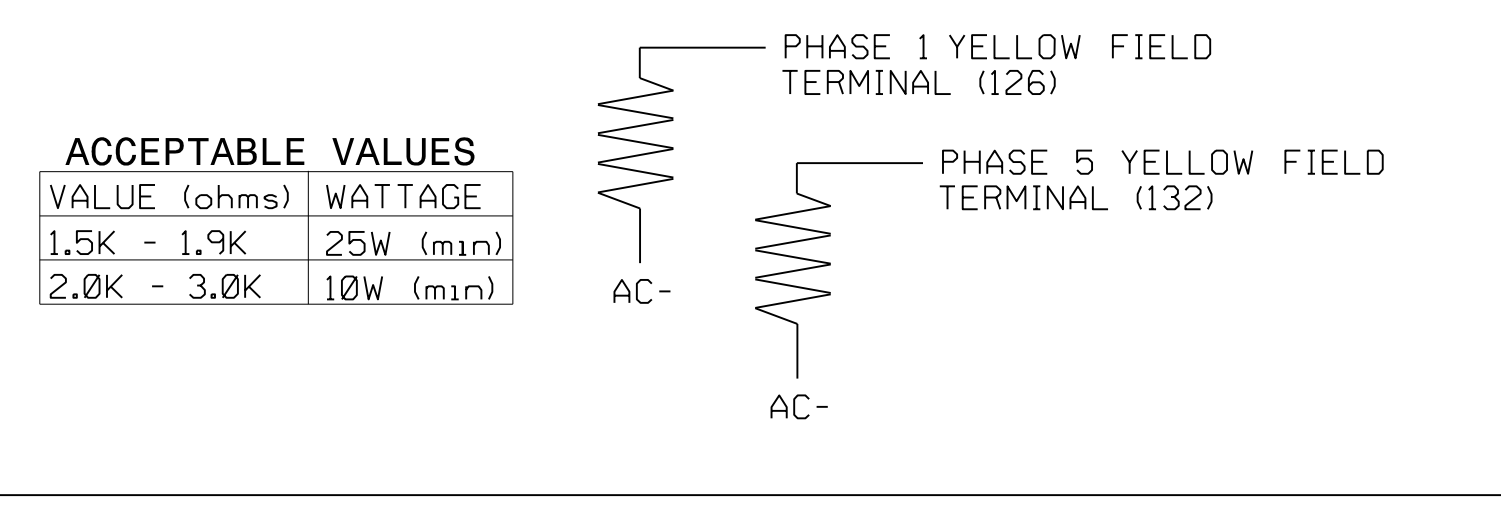
NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- ¹Add jumper from I1-W to J4-W, on rear of input file.
 - ²Add jumper from J1-W to I4-W, on rear of input file.
- * See vehicle detector setup programming detail for alternate phasing on sheet 3.



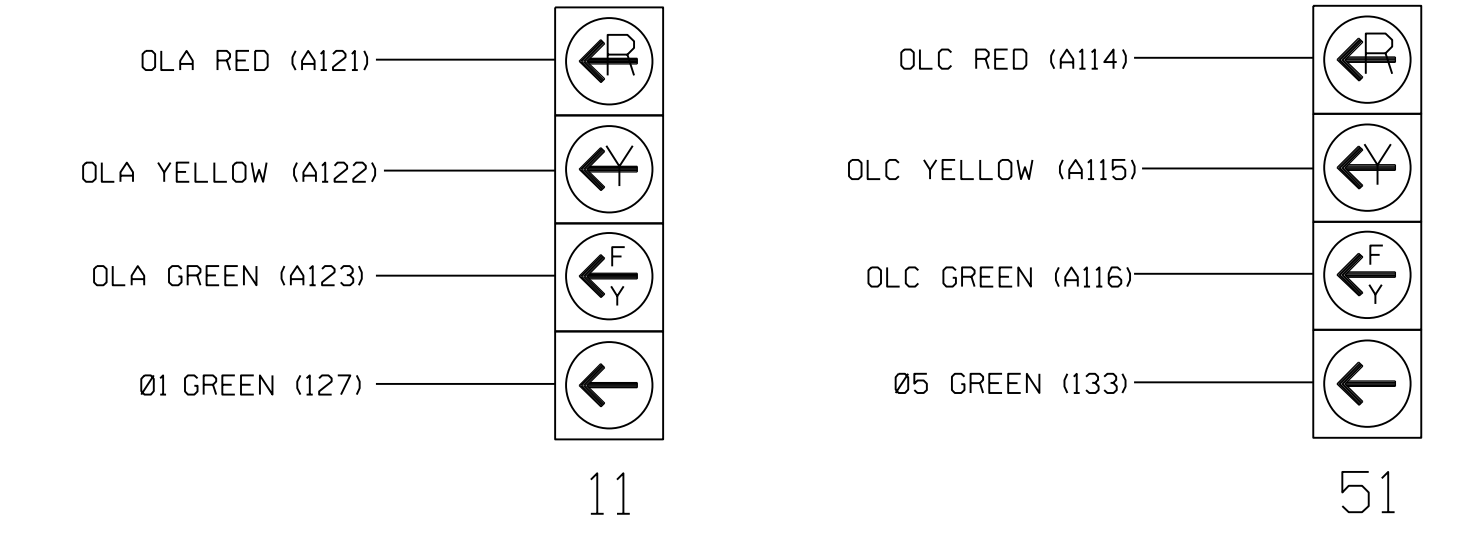
LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



Final Design
 Electrical Detail - Sheet 1 of 3

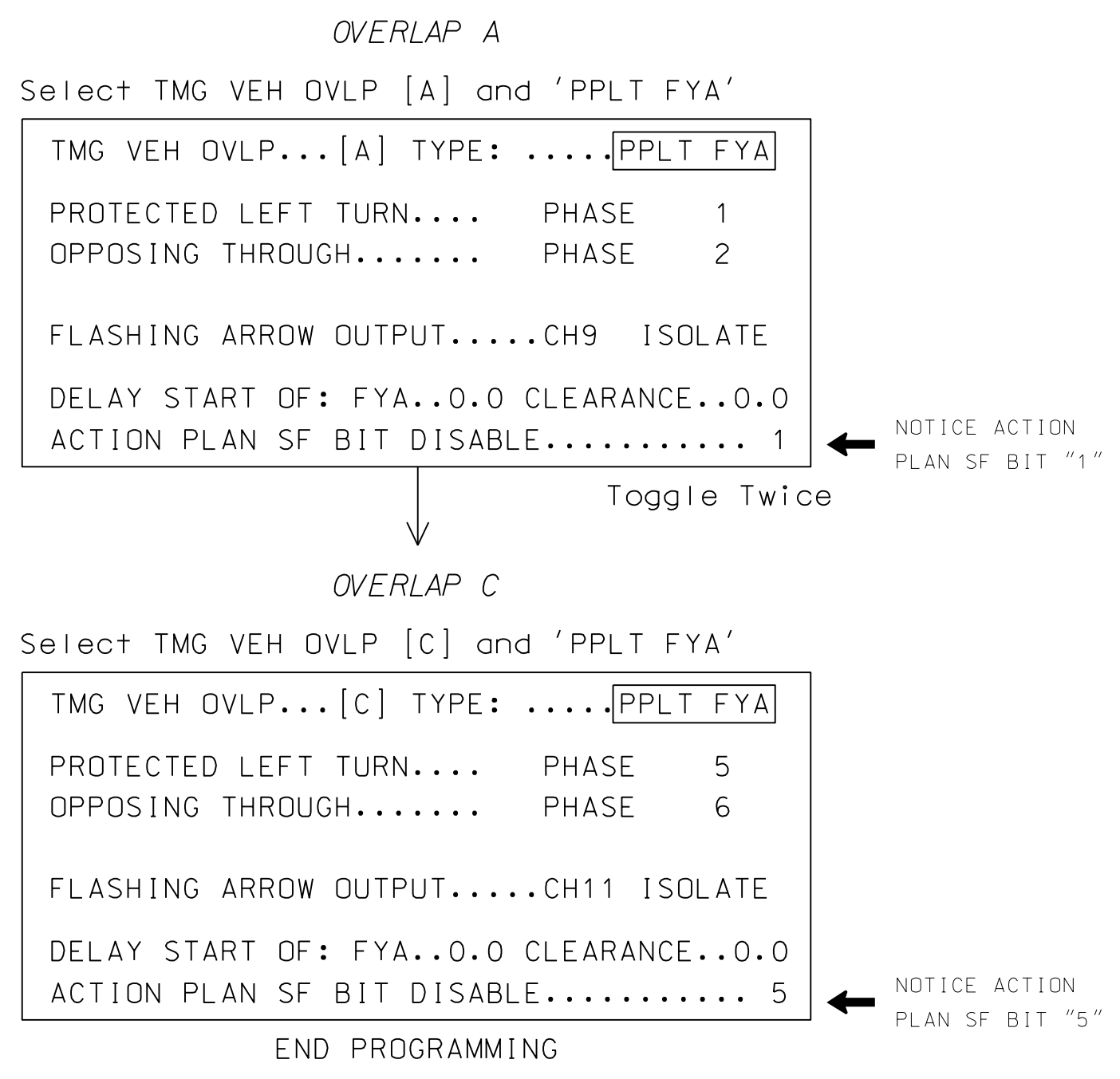
US 401 Business (Raeford Road) at Brighton Road/ Fred Anderson Nissan
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: R M Muncy REVIEWED BY:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 LAWRENCE E. OVERN
 3/29/2018
 DATE
 SIG. INVENTORY NO. 06-0328

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



ALTERNATE PHASING ACTIVATION DETAIL

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

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

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

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

ALTERNATE PHASING CHANGE SUMMARY

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

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 06-0328
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

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.

Final Design
 Electrical Detail - Sheet 2 of 3

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 Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672	ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	US 401 Business (Raeford Road) at Brighton Road/ Fred Anderson Nissan Division 6 Cumberland County Fayetteville	SEAL LAWRENCE E. OVERN ENGINEER 3/29/2018
		PLAN DATE: March 2018 REVIEWED BY: L Overn PREPARED BY: R M Muncey REVIEWED BY:	REVISIONS INIT. DATE

DATE: U:\Projects\Signal\Signal\Detail\elec\sig\el_e_06-0328.dgn User: rlmuncy

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.

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

```

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

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

- Place cursor in VEH DETECTOR [] position and enter "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

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

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

TOGGLE TWO TIMES

OVERLAP C

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

```

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

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

← NOTICE ACTION PLAN SF BIT "5"

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0334T1
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED: N/A

Temporary Design 1 - TMP Phase I
Electrical Detail - Sheet 2 of 3

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	<small>750 N. Greenfield Pkwy, Garner, NC 27529</small>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>PLAN DATE: March 2018</td> <td>REVIEWED BY: L Overn</td> </tr> <tr> <td>PREPARED BY: R M Muncey</td> <td>REVIEWED BY:</td> </tr> <tr> <td colspan="2" style="text-align: center;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">REVISIONS</th> <th style="width: 20%;">INIT.</th> <th style="width: 30%;">DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table> </td> </tr> </table>	PLAN DATE: March 2018	REVIEWED BY: L Overn	PREPARED BY: R M Muncey	REVIEWED BY:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">REVISIONS</th> <th style="width: 20%;">INIT.</th> <th style="width: 30%;">DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>		REVISIONS	INIT.	DATE				<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> <small>DocuSign Envelope ID: 86D54535-9650-4DA6-8C64-07D62DB39918</small> <small>DATE</small> </td> <td style="width: 50%; text-align: right;"> <small>3/29/2018</small> <small>DATE</small> </td> </tr> <tr> <td colspan="2" style="text-align: right;"> <small>SIG. INVENTORY NO. 06-0334T1</small> </td> </tr> </table>	<small>DocuSign Envelope ID: 86D54535-9650-4DA6-8C64-07D62DB39918</small> <small>DATE</small>	<small>3/29/2018</small> <small>DATE</small>	<small>SIG. INVENTORY NO. 06-0334T1</small>
PLAN DATE: March 2018	REVIEWED BY: L Overn																	
PREPARED BY: R M Muncey	REVIEWED BY:																	
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<small>SIG. INVENTORY NO. 06-0334T1</small>																		

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  .  .  .  .  .  .  .  .  .  .  .
AUX FCT  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
    
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THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0334T1
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED: N/A

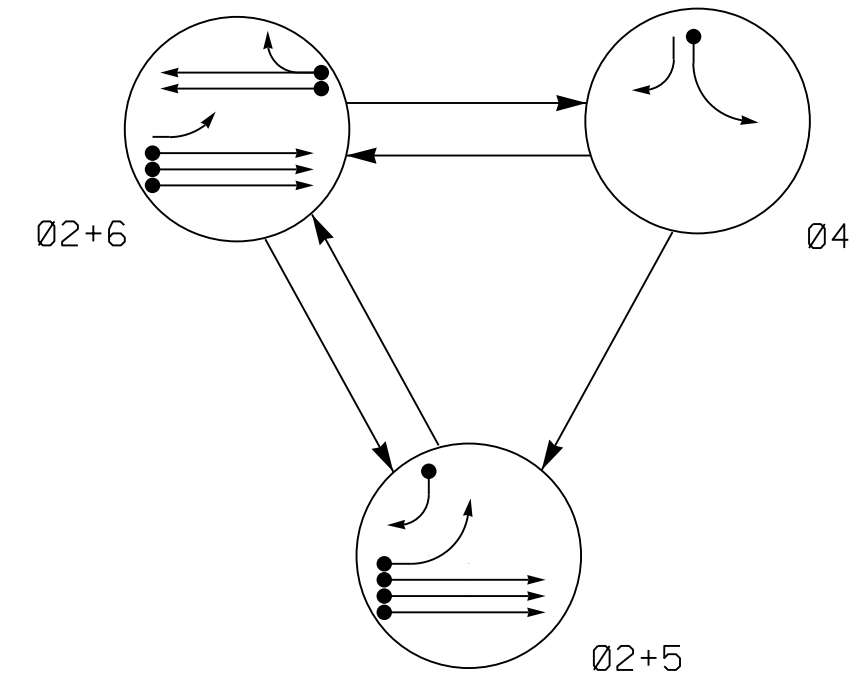
Temporary Design 1 - TMP Phase I
Electrical Detail - Sheet 3 of 3

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REVISIONS	INIT.	DATE							

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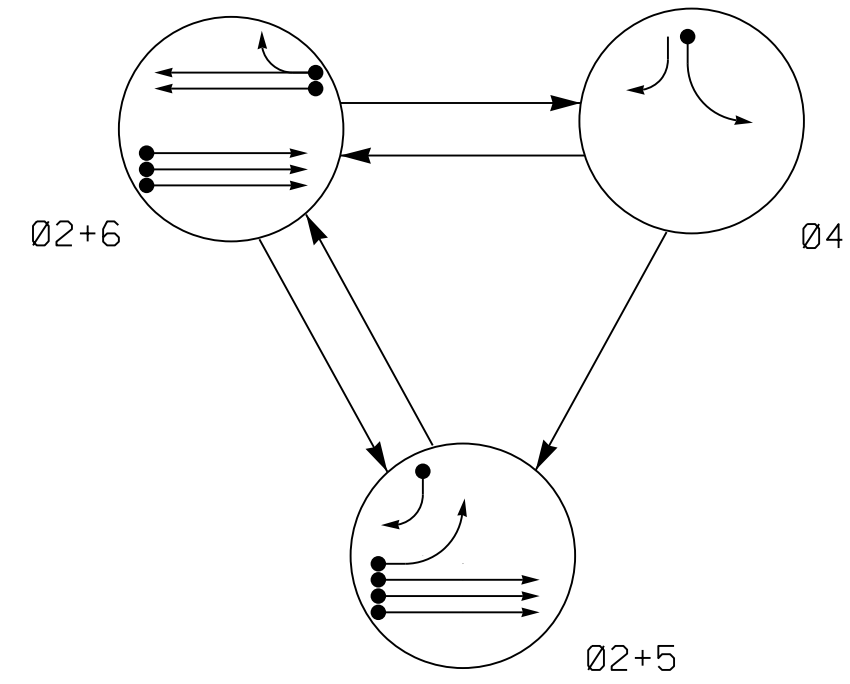
DEFAULT PHASING DIAGRAM



DEFAULT TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø 2+5	Ø 2+6	Ø 4	FLASH
21,22,23	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	←	←	←	←
61,62	R	G	R	Y

ALTERNATE PHASING DIAGRAM



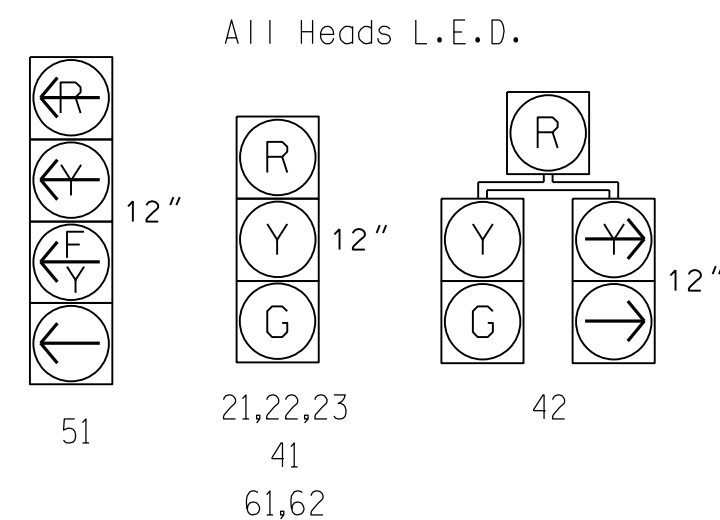
ALTERNATE TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø 2+5	Ø 2+6	Ø 4	FLASH
21,22,23	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	←	←	←	←
61,62	R	G	R	Y

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.



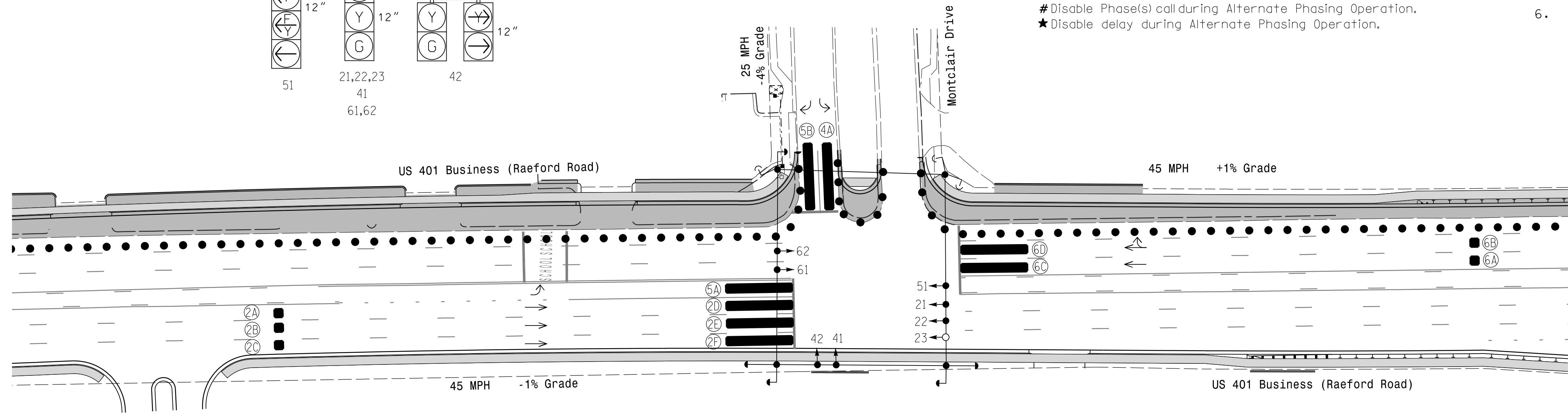
ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR				PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6X6	300	*	-	2	Yes	-	-	-	N	-	-
2B	6X6	300	*	-	2	Yes	-	-	-	N	-	-
2C	6X6	300	*	-	2	Yes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

- *Video Detection Area. Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.
- #Disable Phases) calling during Alternate Phasing Operation.
- ★Disable delay during Alternate Phasing Operation.

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 5 may be lagged.
- Set all detector units to presence mode.
- The Division (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.



ASC/3 TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green *	12	7	7	12
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Veh. Extension *	6.0	1.0	1.0	6.0
Max 1 *	90	25	15	90
Yellow	4.6	3.0	3.0	4.6
Red Clear	1.5	2.8	2.4	1.5
Red Revert	-	-	-	-
Actuations B4 Add *	-	-	-	-
Seconds / Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Locking Detector	-	-	-	-
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 | ● Traffic Signal Head |
| ○ Modified Signal Head | N/A |
| ⊥ Sign | ⊥ Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Pedestrian Signal Head With Push Button & Sign |
| ○ Signal Pole with Guy | ○ Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ○ Signal Pole with Sidewalk Guy |
| ⊠ Inductive Loop Detector | ⊠ Inductive Loop Detector |
| □ Controller & Cabinet | □ 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 |
| ■ Video Detection Area | N/A |
| ■ Construction Zone | N/A |
| ● Drums | N/A |

Signal Upgrade Temporary Design 2 - TMP Phase II

Stantec
 Stantec Consulting Services Inc.
 801 Jones Franklin Road-Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

Prepared for the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27526
 SCALE: 0 40
 1" = 40'

US 401 Business (Raeford Road) at Montclair Drive
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: E D Harris
 PREPARED BY: R M Muncey REVIEWED BY: B L Watson

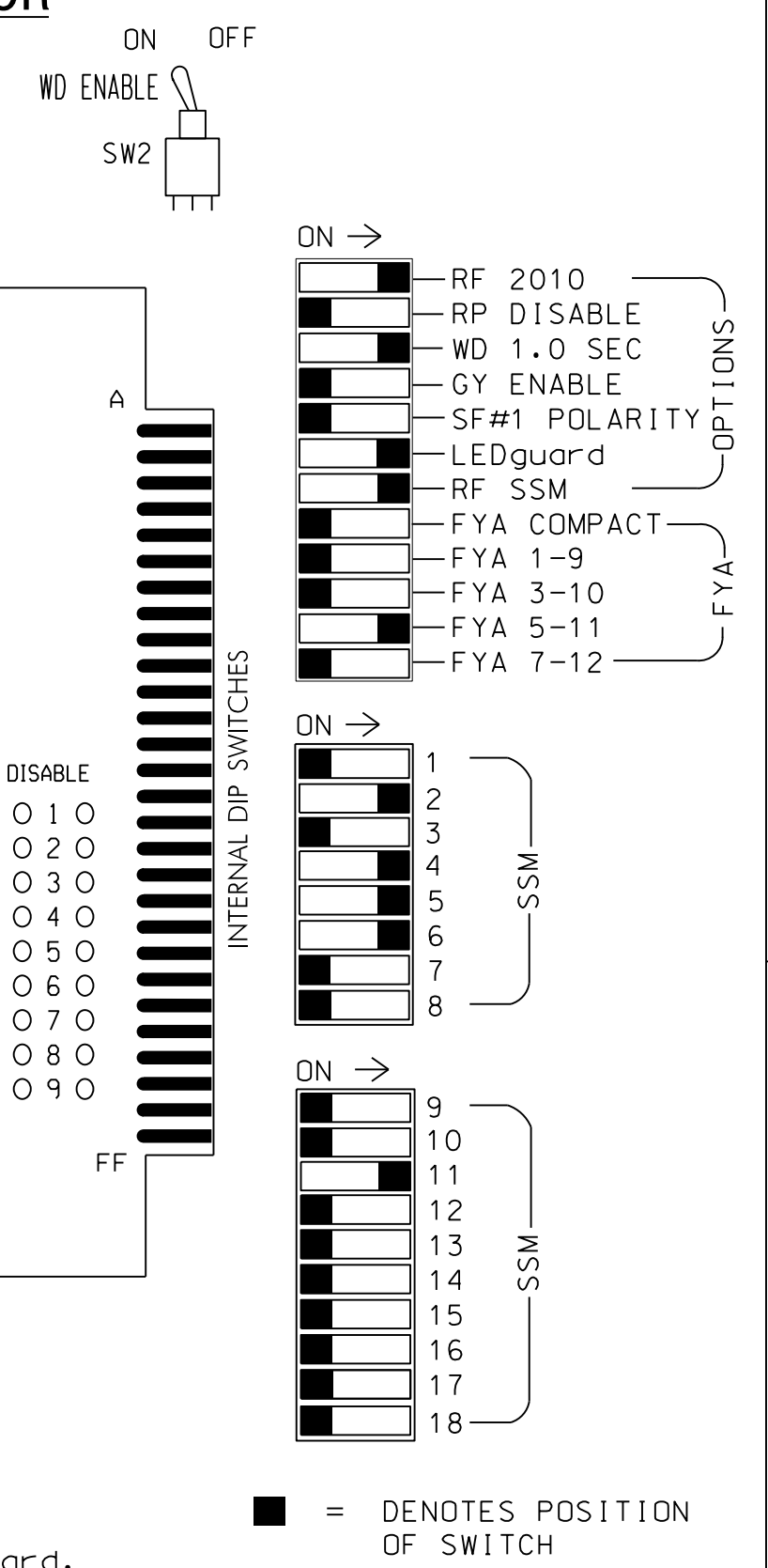
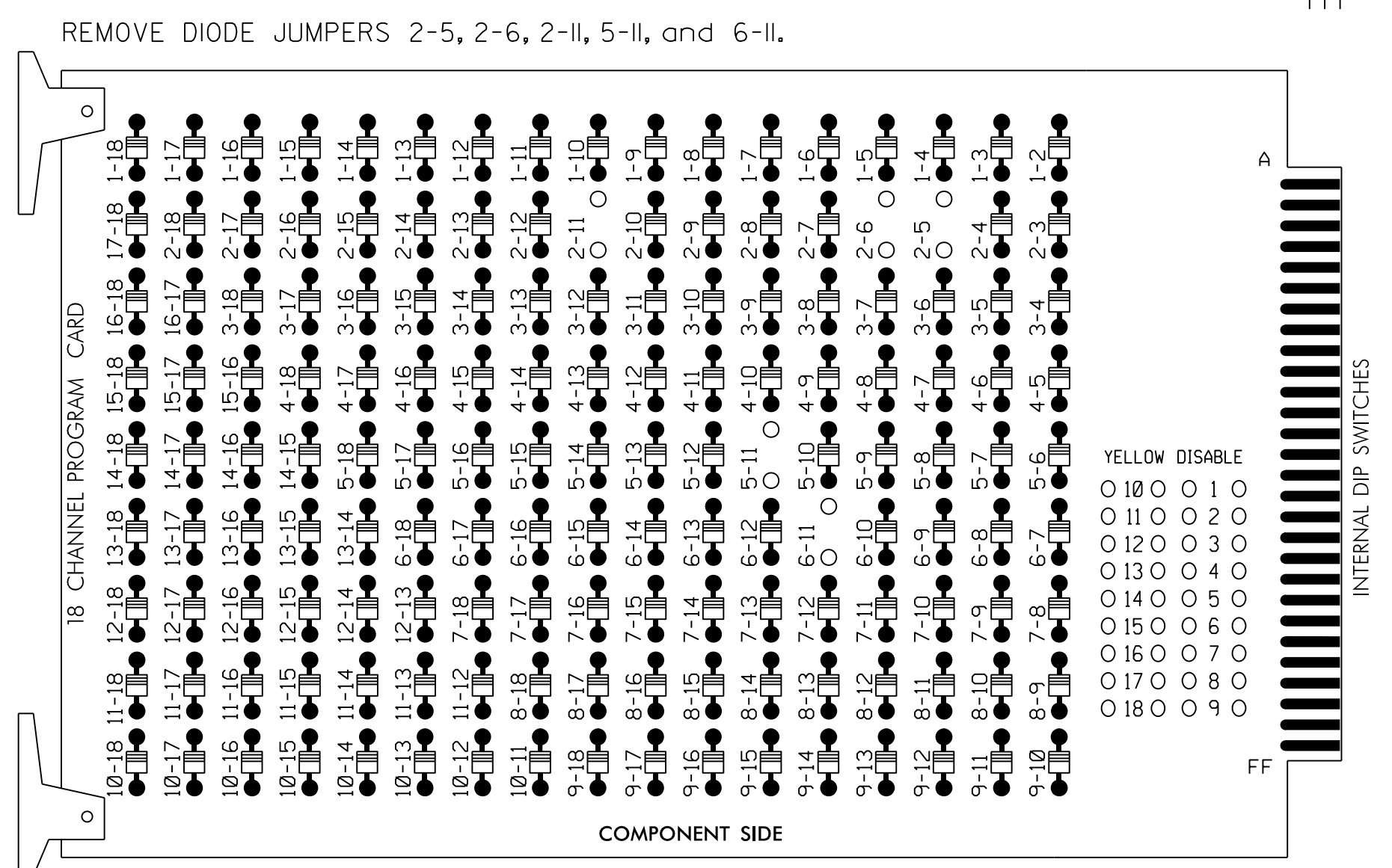
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Professional Engineer Seal 29449
 Eddy J. Watson
 3/29/2018
 SIG. INVENTORY NO. 06-033412

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 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.....S2,S5,S7,S8,AUX S4
 PHASES USED.....2,4,5,6
 OVERLAP "B".....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
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22,23	NU	NU	41,42	NU	42	51*	61,62	NU	NU	NU	NU	NU	NU	51*	NU	NU
RED		128			101		*		134									
YELLOW		129			102				135									
GREEN		130			103				136									
RED ARROW																		A114
YELLOW ARROW							132											A115
FLASHING YELLOW ARROW																		A116
GREEN ARROW							133	133										

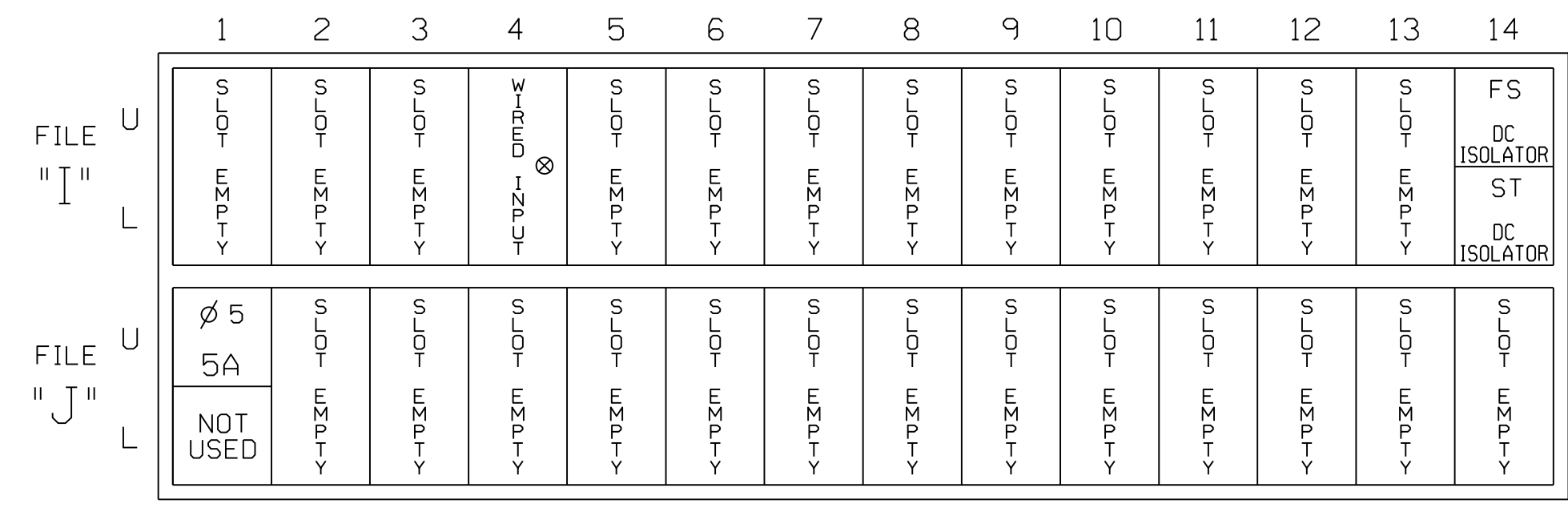
NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

DETECTOR NOTES

- For all loops, 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 schemes shown on the Signal Design Plans.
- For loop 5A detector card placement and slots reserved for wired inputs are typical for a NCDOT installation. Inputs associated with these slots are compatible with time of day instructions located on sheet 2 of this electrical detail.

INPUT FILE POSITION LAYOUT

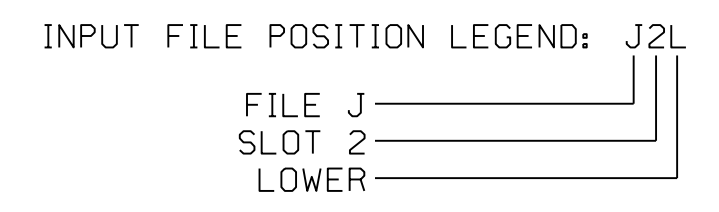
(front view)



INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
5A ¹	-	J1U	55	5 ★	5	YES		15		S
	-	I4U	47	22 ★	2	YES		3		G

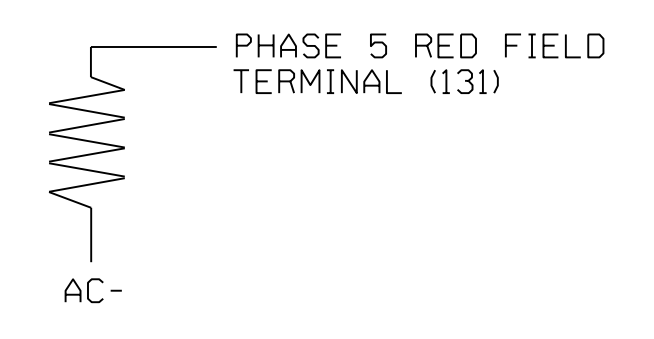
¹Add jumper from J1-W to I4-W, on rear of input file.
 ★ For the detectors to work as shown on the signal design plan, see the Vehicle Detector Setup Programming Detail for Alternate Phasing on sheet 2.



LOAD RESISTOR INSTALLATION DETAIL

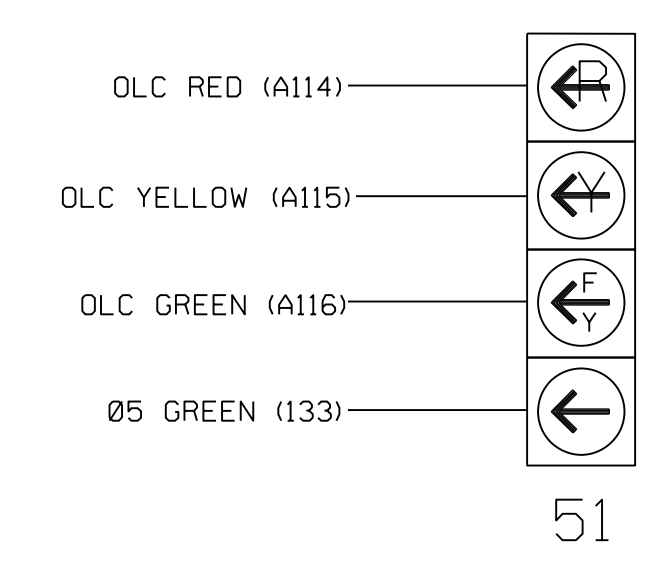
(install resistor as shown)

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



FYA SIGNAL WIRING DETAIL

(wire signal head as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0334T2
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 2 - TMP Phase II
 Electrical Detail - Sheet 1 of 3

US 401 Business (Raeford Road)
 at
 Montclair Drive
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: R W Muncy REVIEWED BY:

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 LAWRENCE E. OVERN
 3/29/2018
 DATE
 SIG. INVENTORY NO. 06-0334T2

DATE: U:\Projects\Signal\Temp\Temp\Detail\SignalPhase 2\U-4405.sig.ele.06-0334T2.dgn User: rlmuncy

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.

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

```

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

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

- Place cursor in VEH DETECTOR [] position and enter "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

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

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

TOGGLE TWO TIMES

OVERLAP C

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

```

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

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

← NOTICE ACTION PLAN SF BIT "5"

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0334T2
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED: N/A

Temporary Design 2 - TMP Phase II
Electrical Detail - Sheet 2 of 3

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

 Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672	ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	US 401 Business (Raeford Road) at Montclair Drive Division 6 Cumberland County Fayetteville PLAN DATE: March 2018 REVIEWED BY: L Overn PREPARED BY: R M Muncey REVIEWED BY:	SEAL LAWRENCE E. OVERN ENGINEER 045933 3/29/2018								
	REVISIONS <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		NO.	DESCRIPTION	INIT.	DATE					DATE: 3/29/2018 SIG. INVENTORY NO. 06-0334T2
NO.	DESCRIPTION	INIT.	DATE								

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  .  .  .  .  .  .  .  .  .  .  .
AUX FCT  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
          1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
    
```

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 06-0334T2
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED: N/A

Temporary Design 2 - TMP Phase II
Electrical Detail - Sheet 3 of 3

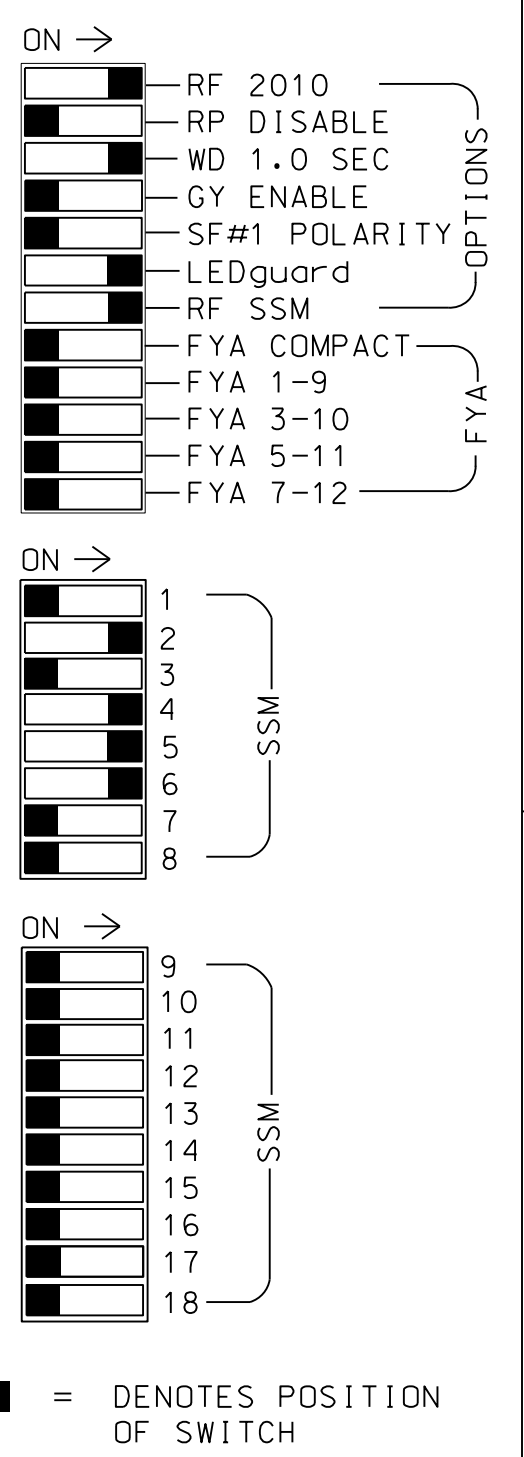
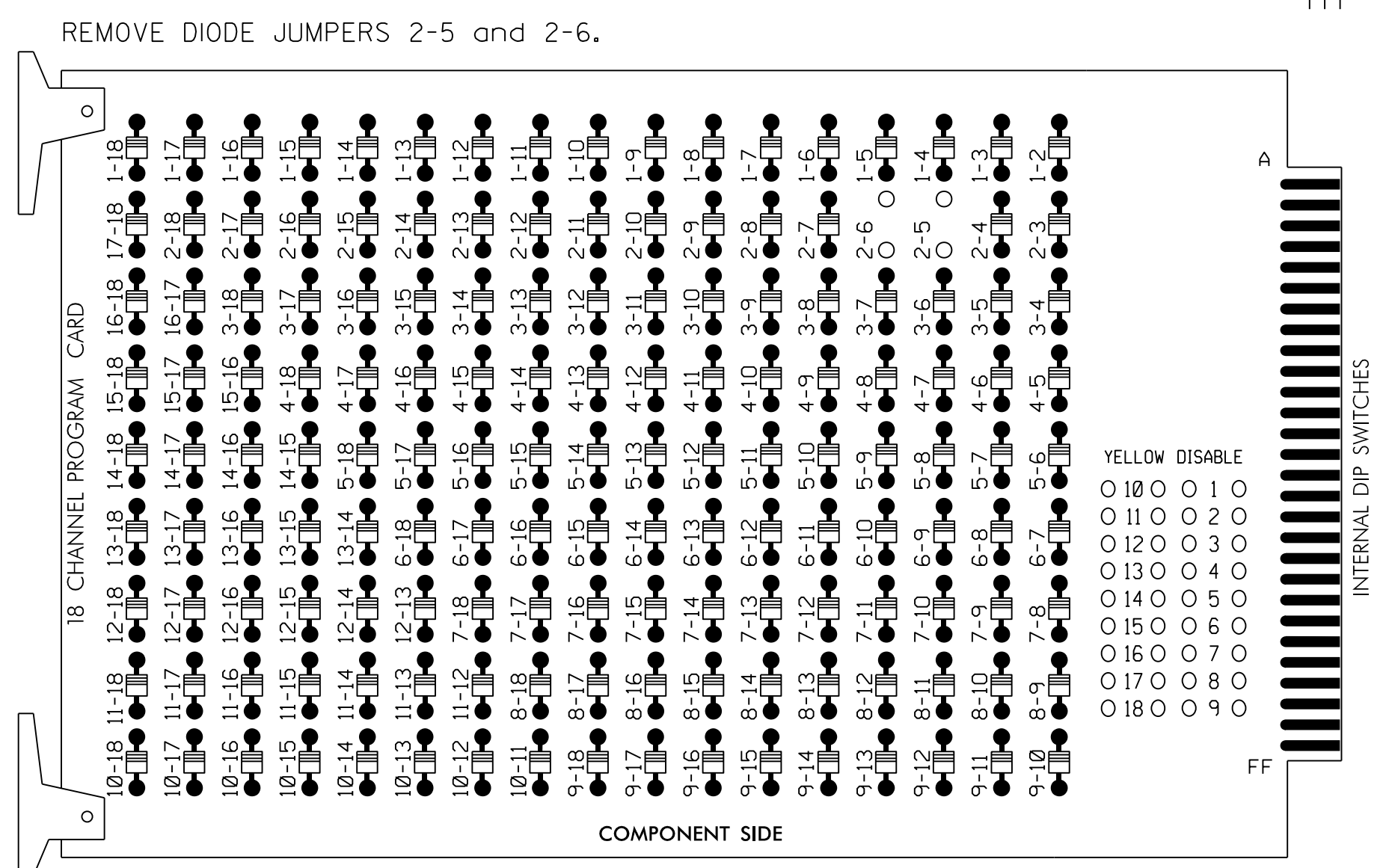
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 Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672	Prepared in the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	US 401 Business (Raeford Road) at Montclair Drive	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER LAWRENCE E. OVERN 045933
		Division 6 Cumberland County Fayetteville	PLAN DATE: March 2018 REVIEWED BY: L Overn PREPARED BY: R M Muncey REVIEWED BY:
REVISIONS INIT. DATE		DATE: 3/29/2018 SIG. INVENTORY NO. 06-0334T2	

DATE: U:\Projects\Signal\Signal\Detail\Signal\Phase 2\U-4405\Sig\ele_06-0334T2.dgn User: rlmuncey

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. Return controller to Factory Defaults before programming per this electrical detail.
3. Program controller to start up in phase 2 Green and 6 Green.
4. 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.....S2,S5,S7,S8
 PHASES USED.....2,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	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	42	51	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								131										
YELLOW ARROW							132	132										
GREEN ARROW							133	133										

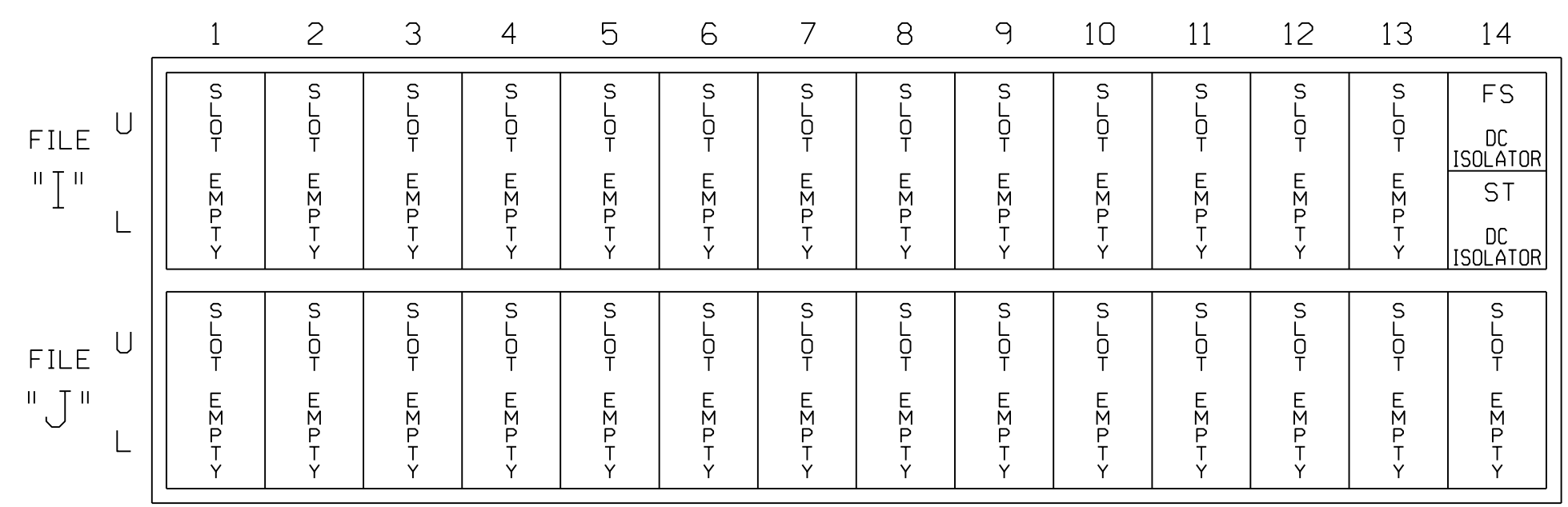
NU = Not Used
 ★ See pictorial of head wiring in detail this sheet.

DETECTOR NOTES

1. For all loops, 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 schemes shown on the Signal Design Plans.
2. Remove "Wired Inputs" from rear of input file to prevent unwanted calls to Phase 2.

INPUT FILE POSITION LAYOUT

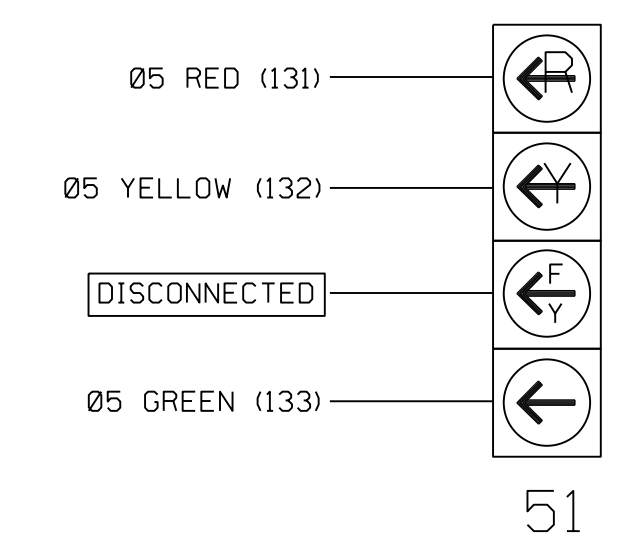
(front view)



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

SIGNAL WIRING DETAIL

(wire signal head as shown)

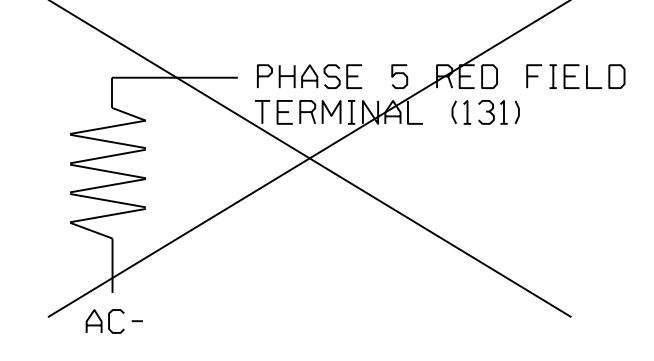


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0334T3
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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

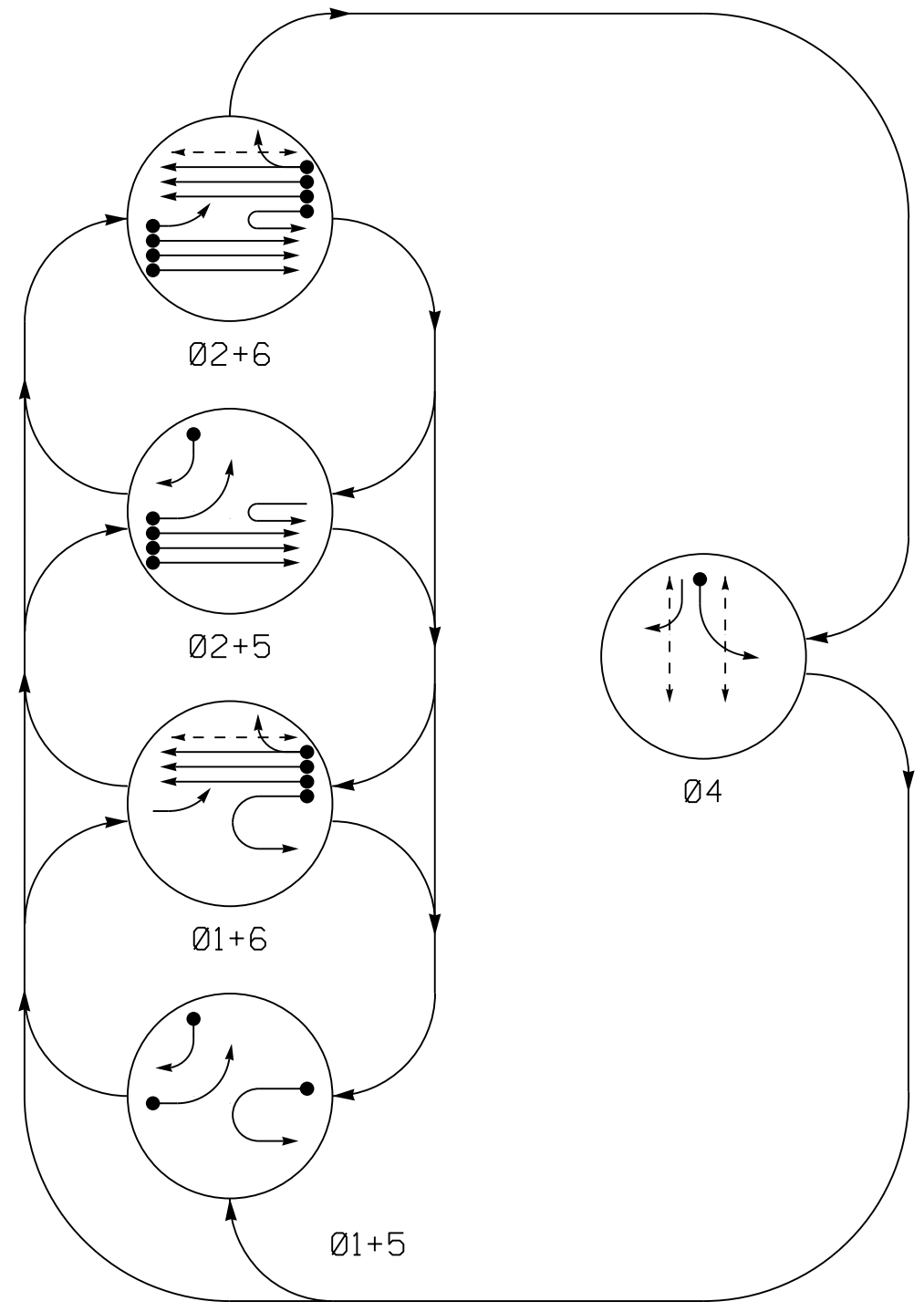


IMPORTANT! Remove resistor from field terminal as shown above, if present.

Temporary Design 3 - TMP Phase III
 Electrical Detail

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: 	US 401 Business (Raeford Road) at Montclair Drive Division 6 Cumberland County Fayetteville PLAN DATE: March 2018 REVIEWED BY: L Overn PREPARED BY: R M Muncey REVIEWED BY:	SEAL
	750 N. Greenfield Pkwy, Garner, NC 27529	REVISIONS INIT. DATE	DATE: 3/29/2018 SIG. INVENTORY NO. 06-0334T3

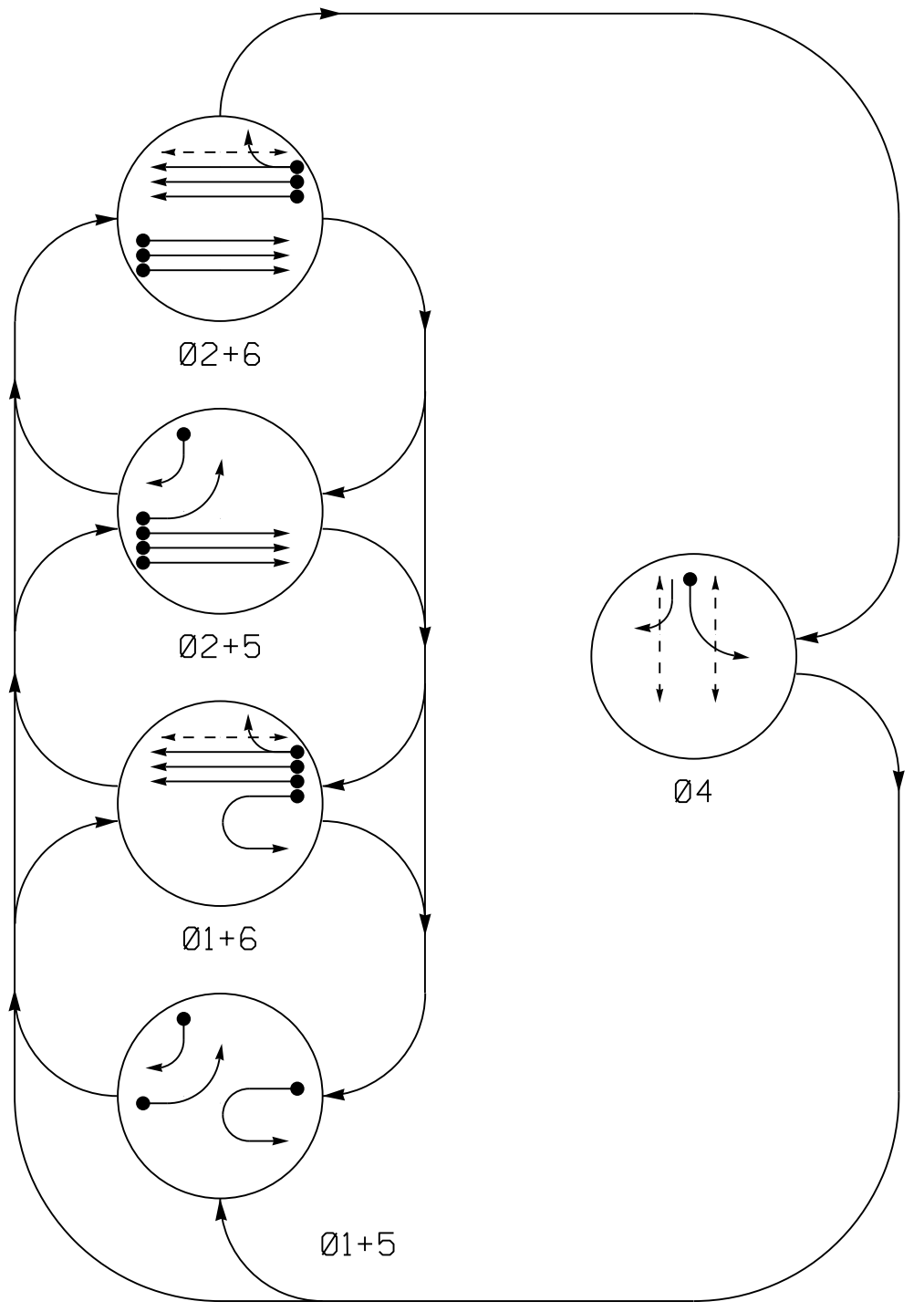
DEFAULT PHASING DIAGRAM



DEFAULT TABLE OF OPERATION

SIGNAL FACE	PHASE					FLASH
	01+5	02+5	02+6	04	Y	
11	R	R	G	R	Y	
21,22,23	R	R	G	R	Y	
41	R	R	R	G	R	
42	R	R	R	G	R	
51	R	R	R	G	R	
61,62,63	R	G	R	G	R	Y
P41,P42,P43,P44	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DRK	

ALTERNATE PHASING DIAGRAM



ALTERNATE TABLE OF OPERATION

SIGNAL FACE	PHASE					FLASH
	01+5	02+5	02+6	04	Y	
11	R	R	R	R	Y	
21,22,23	R	R	G	R	Y	
41	R	R	R	G	R	
42	R	R	R	G	R	
51	R	R	R	G	R	
61,62,63	R	G	R	G	R	Y
P41,P42,P43,P44	DW	DW	DW	DW	W	DRK
P61,P62	DW	W	DW	W	DRK	

ASC/3 DETECTOR INSTALLATION CHART

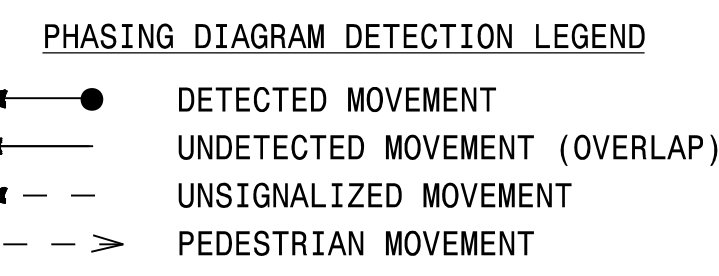
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	X	1	Yes	-	15★	-	S	-	X
2A	6X6	300	5	X	2	Yes	-	-	-	X	N	-
2B	6X6	300	5	X	2	Yes	-	-	-	X	N	-
2C	6X6	300	5	X	2	Yes	-	-	-	X	N	-
4A	6X40	0	2-4-2	X	4	Yes	-	-	-	S	-	X
5A	6X40	0	2-4-2	X	5	Yes	-	15★	-	S	-	X
5B	6X40	0	2-4-2	X	5	Yes	-	15	-	S	-	X
6A	6X6	300	5	X	6	Yes	-	-	-	X	N	-
6B	6X6	300	5	X	6	Yes	-	-	-	X	N	-
6C	6X6	300	5	X	6	Yes	-	-	-	X	N	-

★ Disable delay during Alternate Phasing Operation.
 # Disable Phase(s) calling during Alternate Phasing Operation.

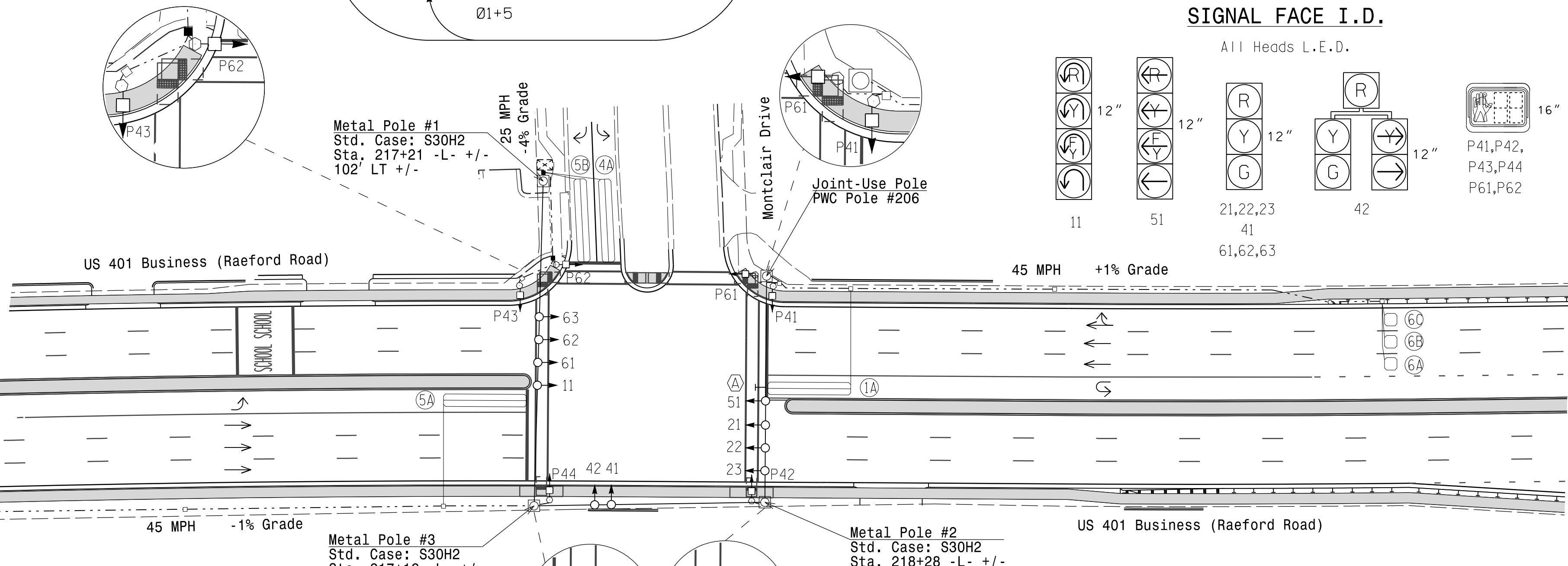
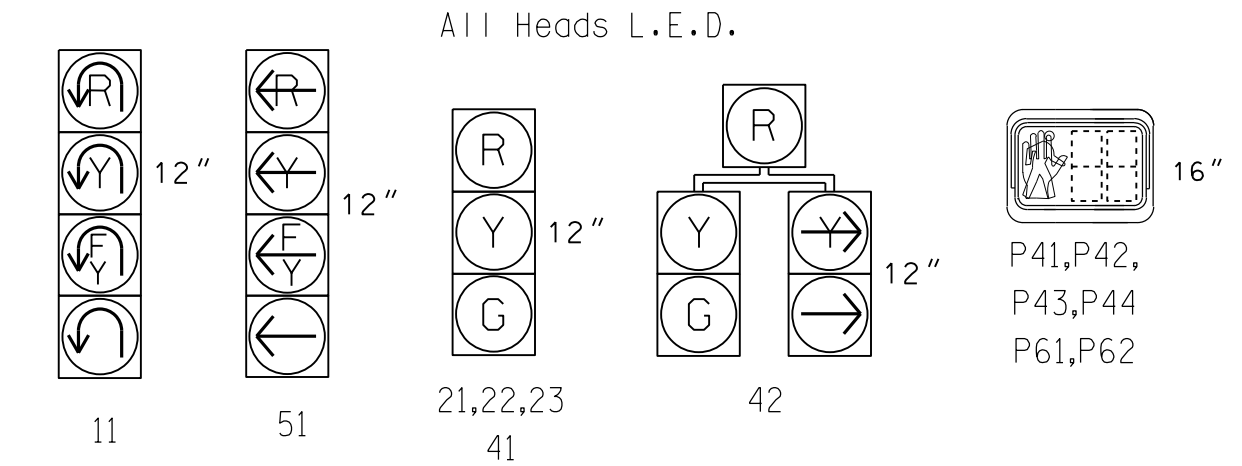
5 Phase Fully Actuated Fayetteville Signal System

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 and/or phase 5 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.
- The Division (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.
- Pedestrian pedestals are conceptual and shown for reference only. See 2018 NCDOT Roadway Standard Drawings 1705.04 Sheets 1-3 for push button location details.



SIGNAL FACE I.D.

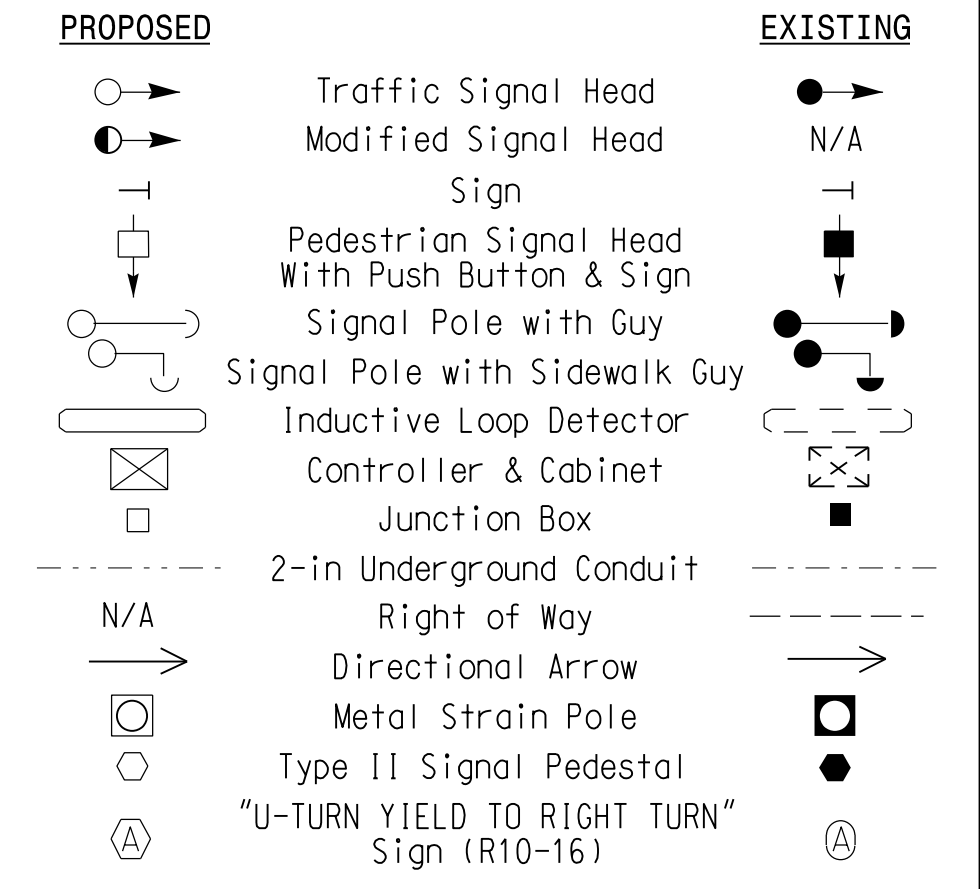


ASC/3 TIMING CHART

FEATURE	PHASE				
	1	2	4	5	6
Min Green *	7	12	7	7	12
Walk *	-	-	7	-	7
Ped Clear	-	-	23	-	20
Veh. Extension *	1.0	6.0	1.0	1.0	6.0
Max I *	15	90	25	15	90
Yellow	3.0	4.6	3.0	3.0	4.6
Red Clear	3.5	2.1	1.0	3.2	2.1
Red Revert	-	-	-	-	-
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	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



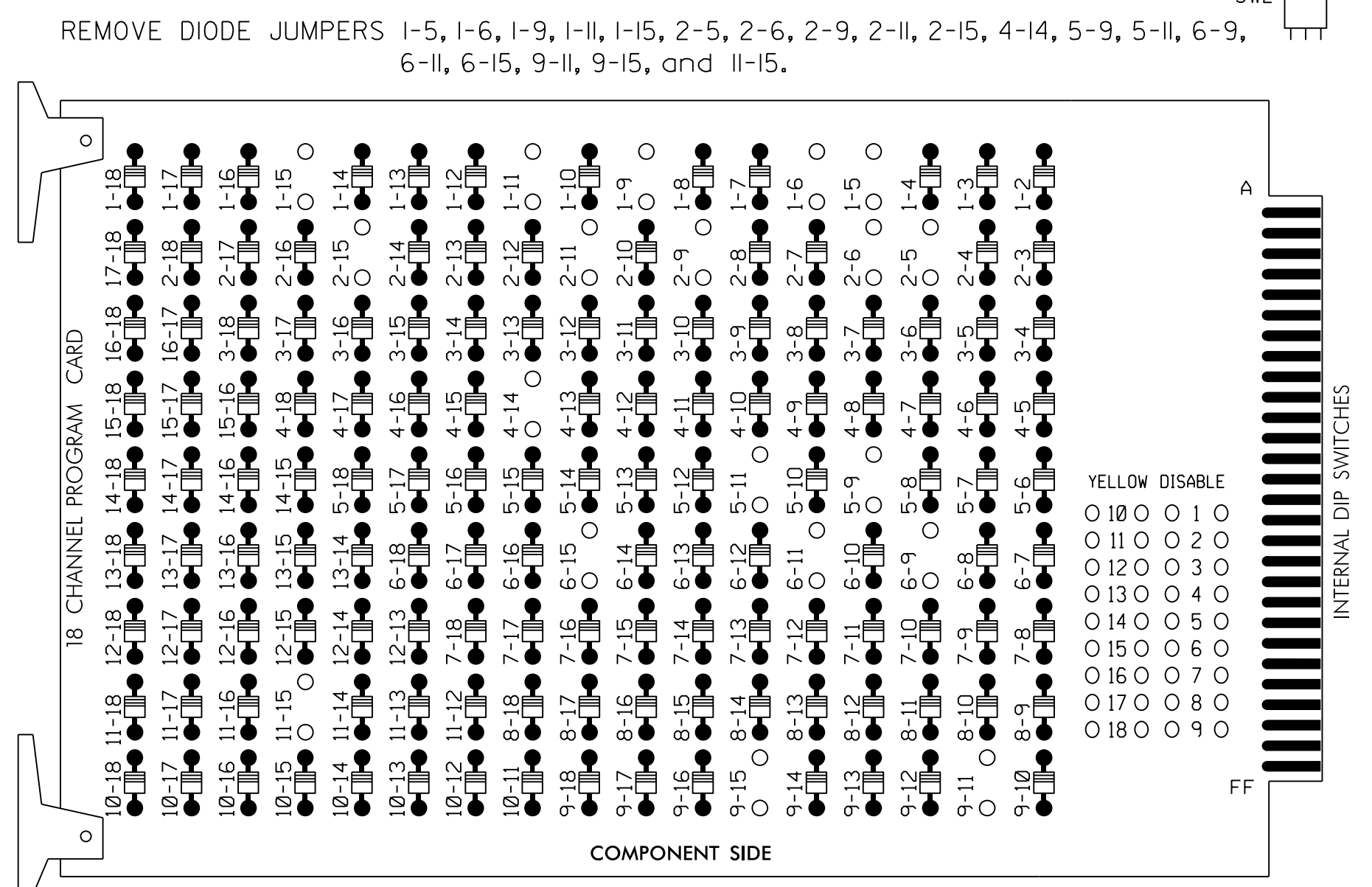
Signal Upgrade - Final Design

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>		<p>US 401 Business (Raeford Road) at Montclair Drive</p>	
		<p>Division 6 Cumberland County Fayetteville</p> <p>PLAN DATE: March 2018 REVIEWED BY: E D Harris</p> <p>PREPARED BY: R M Muncy REVIEWED BY: B L Watson</p>	<p>3/29/2018</p> <p>DATE</p>

3/29/2018 10:41:11 AM C:\Users\jgms\Documents\Signal Design\4405\sig_dsm_06-0334_Final.dgn User: jgms

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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.
- Return controller to Factory Defaults before programming per this electrical detail.
- Program controller to start up in phase 2 Green and 6 WALK.
- 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,S5,S6,S7,S8,S9,AUX S1, AUX S4
 PHASES USED.....1,2,4,4PED,5,6,6PED
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

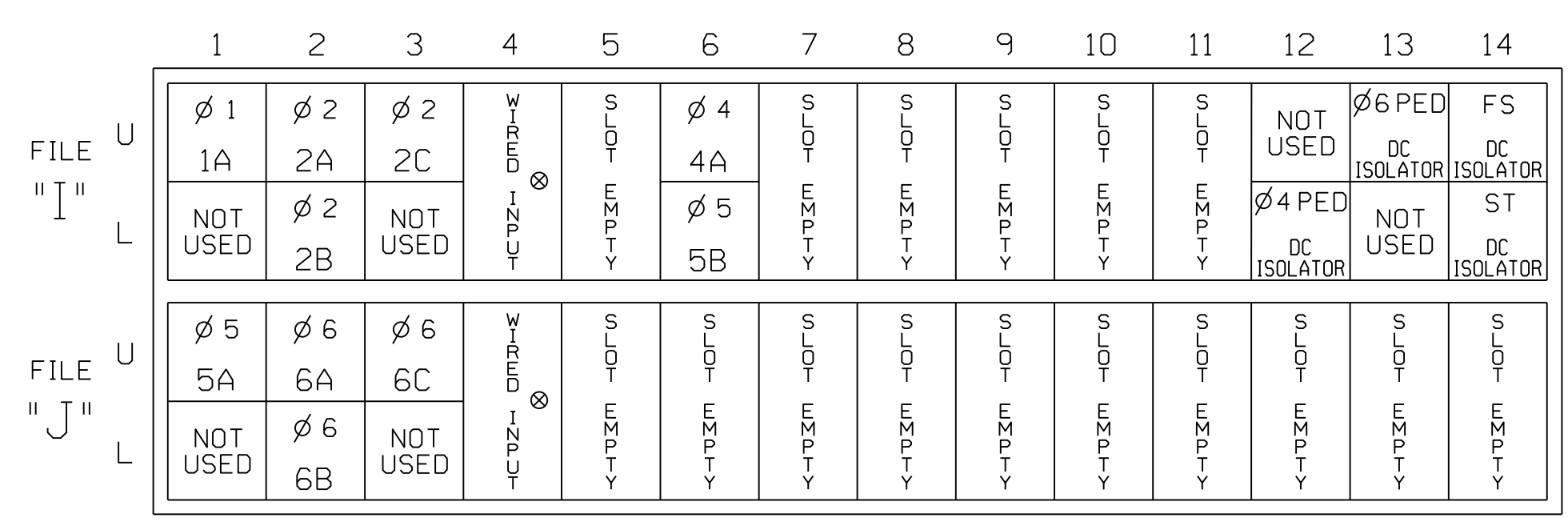
SIGNAL HEAD HOOK-UP CHART

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.	11	21,22,23	NU	NU	41,42	P41, P42, P43, P44	42	51	61,62,63	P61, P62	NU	NU	11	NU	NU	51	NU	NU
RED		128			101		*		134									
YELLOW	*	129			102				135									
GREEN		130			103				136									
RED ARROW													A121			A114		
YELLOW ARROW							132						A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127						133	133										
Hand icon						104			119									
Person icon						106			121									

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

INPUT FILE POSITION LAYOUT

(front view)



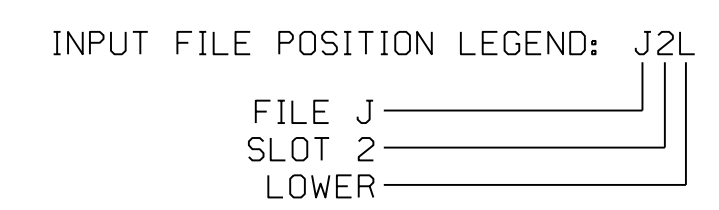
EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 ⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		S
	-	J4U	48	26 ★	6	YES		3		G
2A	TB2-5,6	I2U	39	2	2	YES			X	N
2B	TB2-7,8	I2L	43	12	2	YES			X	N
2C	TB2-9,10	I3U	63	32	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES				S
5A ²	TB3-1,2	J1U	55	5 ★	5	YES		15		S
	-	I4U	47	22 ★	2	YES		3		G
5B	TB4-11,12	I6L	45	14	5	YES		15		S
6A	TB3-5,6	J2U	40	6	6	YES			X	N
6B	TB3-7,8	J2L	44	16	6	YES			X	N
6C	TB3-9,10	J3U	64	36	6	YES			X	N
PED PUSH BUTTONS										
P41,P42, P43,P44	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					

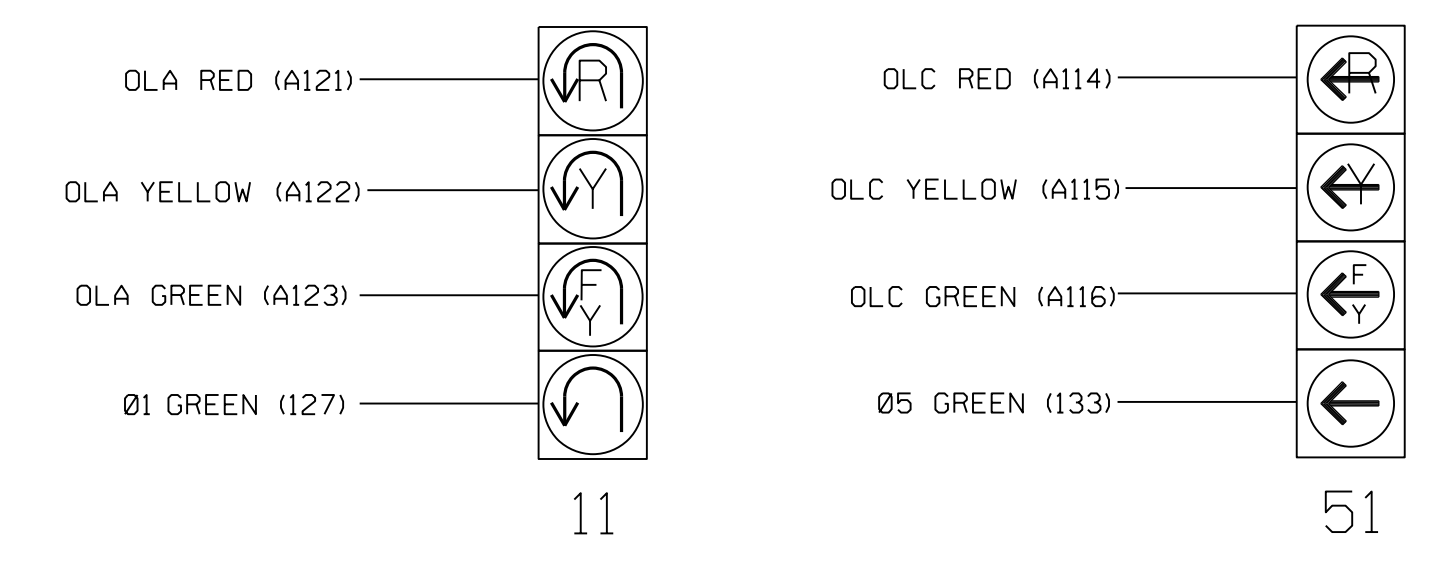
NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
- ★ See vehicle detector setup programming detail for alternate phasing on sheet 2.



FYA SIGNAL WIRING DETAIL

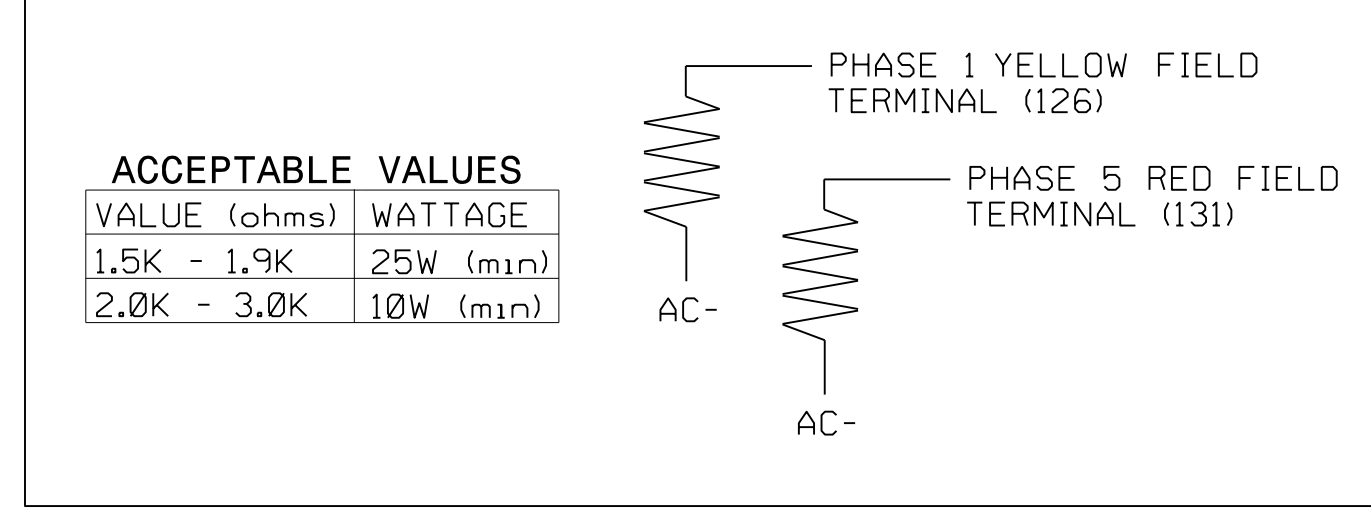
(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0334
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



Final Design
 Electrical Detail - Sheet 1 of 3

US 401 Business (Raeford Road) at Montclair Drive

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: L Overn

PREPARED BY: R W Muncy REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER LAWRENCE E. OVERN 045933 3/29/2018

SIG. INVENTORY NO. 06-0334

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

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

```

OVERLAP A
Select TMG VEH OVLP [A] and 'PPLT FYA'
TMG VEH OVLP...[A] TYPE: ....[PPLT FYA]
PROTECTED PHASE (LEFT TURN)..... 1
PERMISSIVE PHASE (OPPOSING THRU).... 2
FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 1

```

← NOTICE ACTION PLAN SF BIT "1"

Toggle Twice

```

OVERLAP C
Select TMG VEH OVLP [C] and 'PPLT FYA'
TMG VEH OVLP...[C] TYPE: ....[PPLT FYA]
PROTECTED PHASE (LEFT TURN)..... 5
PERMISSIVE PHASE (OPPOSING THRU).... 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

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

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

IMPORTANT!

(program controller as shown)

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

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

```

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

```

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

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

```

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

```

← NOTICE VEH DET PLAN 2

← ENSURE DELAY IS SET TO '0'

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

```

VEH DETECTOR [26] VEH DET PLAN [ 2]
TYPE: 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
26 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

- 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: 06-0334
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED: N/A

DATE: U:\Projects\Signal\Signal\electrical\Detail\sig\U-4405.sig.dwg, 06-0334.dgn User: rlmuncey

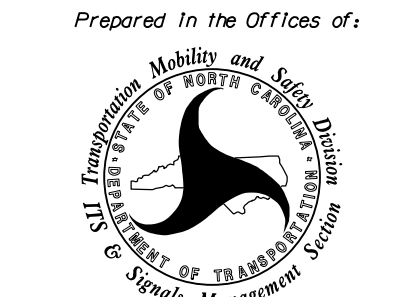
Final Design
Electrical Detail - Sheet 2 of 3



Stantec Consulting Services Inc.
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ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:



750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Business (Raeford Road)
at
Montclair Drive

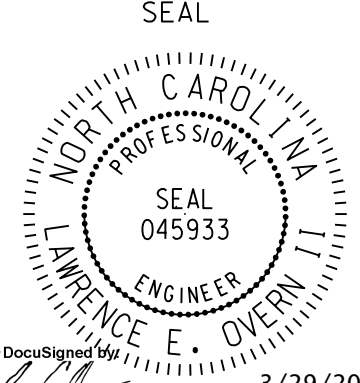
Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: L Overn

PREPARED BY: R M Muncey REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL



3/29/2018

SIG. INVENTORY NO. 06-0334

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

ALTERNATE PHASING ACTIVATION DETAIL

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

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

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

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

ALTERNATE PHASING CHANGE SUMMARY

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

SF BITS 1,5: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.

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

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

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

```

ACTION PLAN...[ 1]
PATTERN.....AUTO  SYS OVERRIDE.... NO
TIMING PLAN..... 0  SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --  RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY..... NO
PMT COND DELAY  NO
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  X  .  .  .  X  .  .  .  .  .  .  (1-8)
AUX FCT  .  .  .  (1-3)
          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: 06-0334
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED:

Final Design
Electrical Details - Sheet 3 of 3

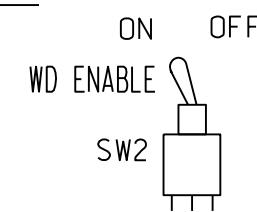
**DOCUMENT NOT CONSIDERED FINAL
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 Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672	Prepared in the Offices of: LAWRENCE E. OVERN PROFESSIONAL ENGINEER STATE OF NORTH CAROLINA License No. 045933	US 401 Business (Raeford Road) at Montclair Drive	
		Division 6 Cumberland County Fayetteville PLAN DATE: March 2018 REVIEWED BY: L Overn PREPARED BY: R M Muncey REVIEWED BY:	
REVISIONS		INIT.	DATE
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_____		_____	_____

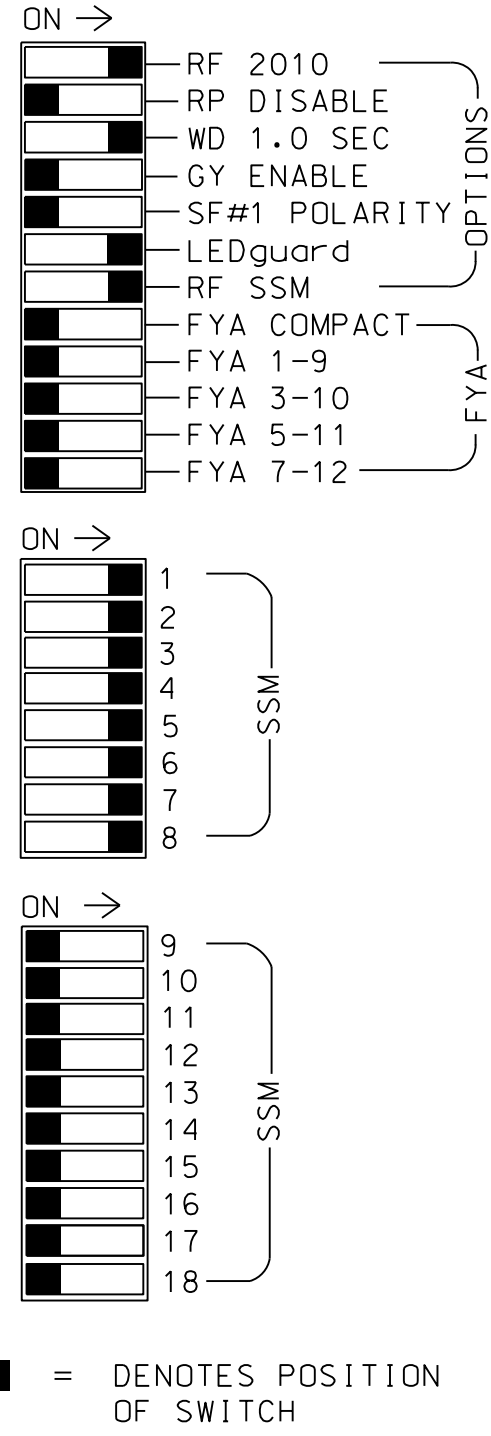
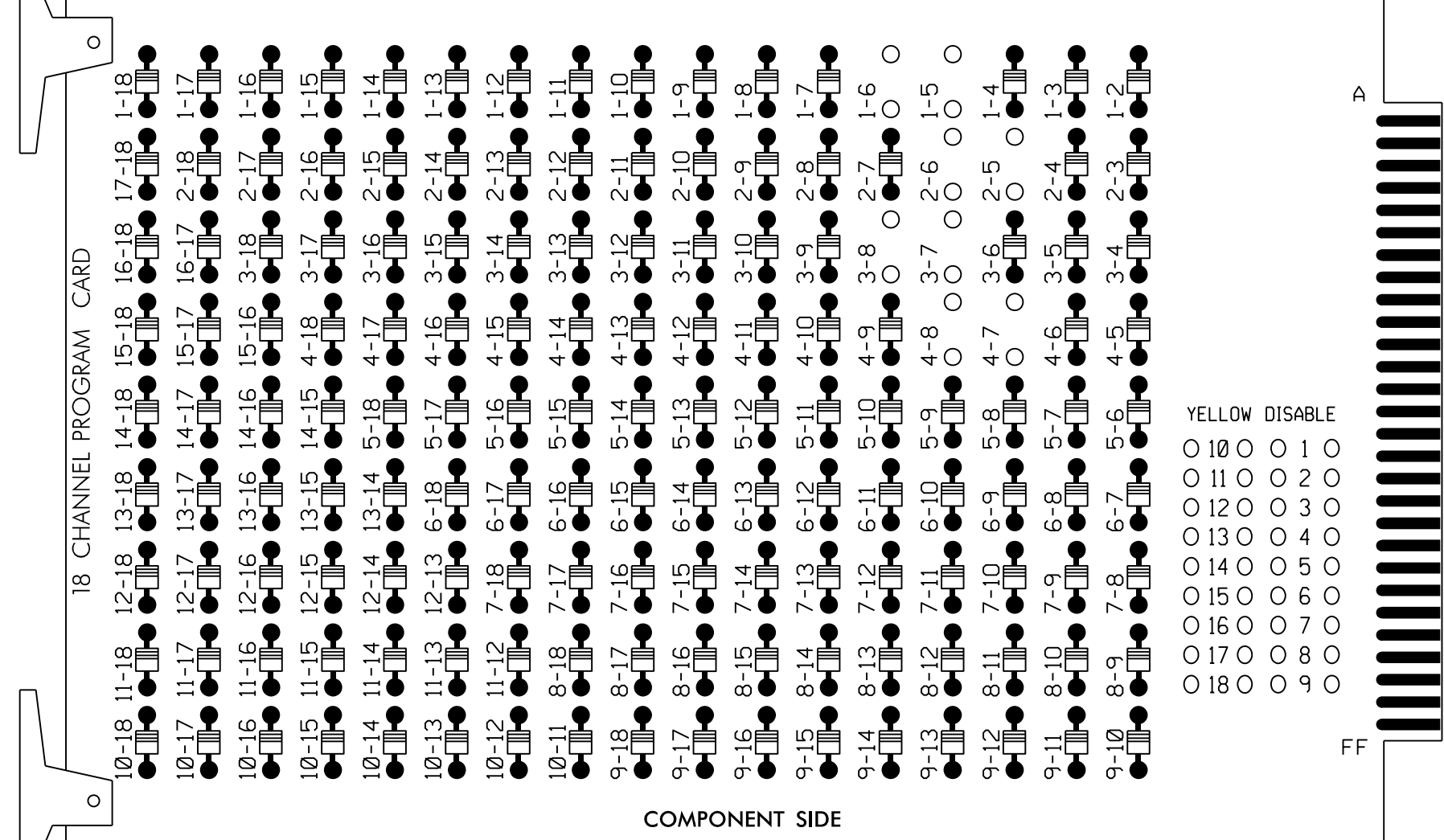
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EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 2-5, 2-6, 3-7, 3-8, 4-7, and 4-8.



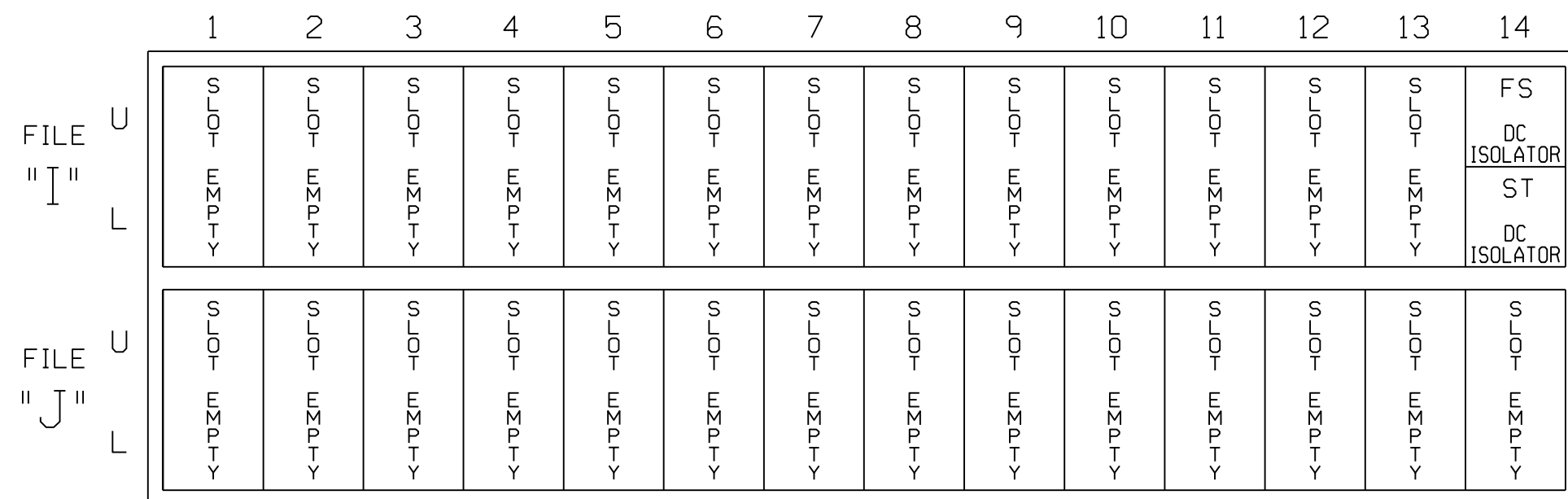
REMOVE JUMPERS AS SHOWN

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.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

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 schemes shown on the Signal Design Plans.

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.

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	NU	31,32	22	41,42	NU	51	61,62,63	NU	71	63	81,82	NU	NU	NU	NU
RED		128				101		134		107								
YELLOW		129				102		135		108								
GREEN		130				103		136		109								
RED ARROW	125			116			131		122									
YELLOW ARROW	126	126		117	117		132		123	123								
GREEN ARROW	127	127		118	118		133		124	124								

NU = Not Used

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,S4,S5,S7,S8,S10,S11
 PHASES USED.....1,2,3,4,5,6,7,8
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0422T1
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 1 - TMP Phase I
 Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	ELECTRICIAL AND PROGRAMMING DETAILS FOR:		US 401 Bus. (Raeford Road) at SR 1219 (Ireland Drive) / Shopping Center Drive		<p>SEAL 045933 LAWRENCE E. OVERN ENGINEER</p>	
		Prepared in the Offices of:		Division 6 Cumberland County Fayetteville			
PLAN DATE: March 2018		REVIEWED BY: L Overn		PREPARED BY: G B Spell		REVIEWED BY:	
REVISIONS		INIT.		DATE		3/29/2018	

PHASING DIAGRAM

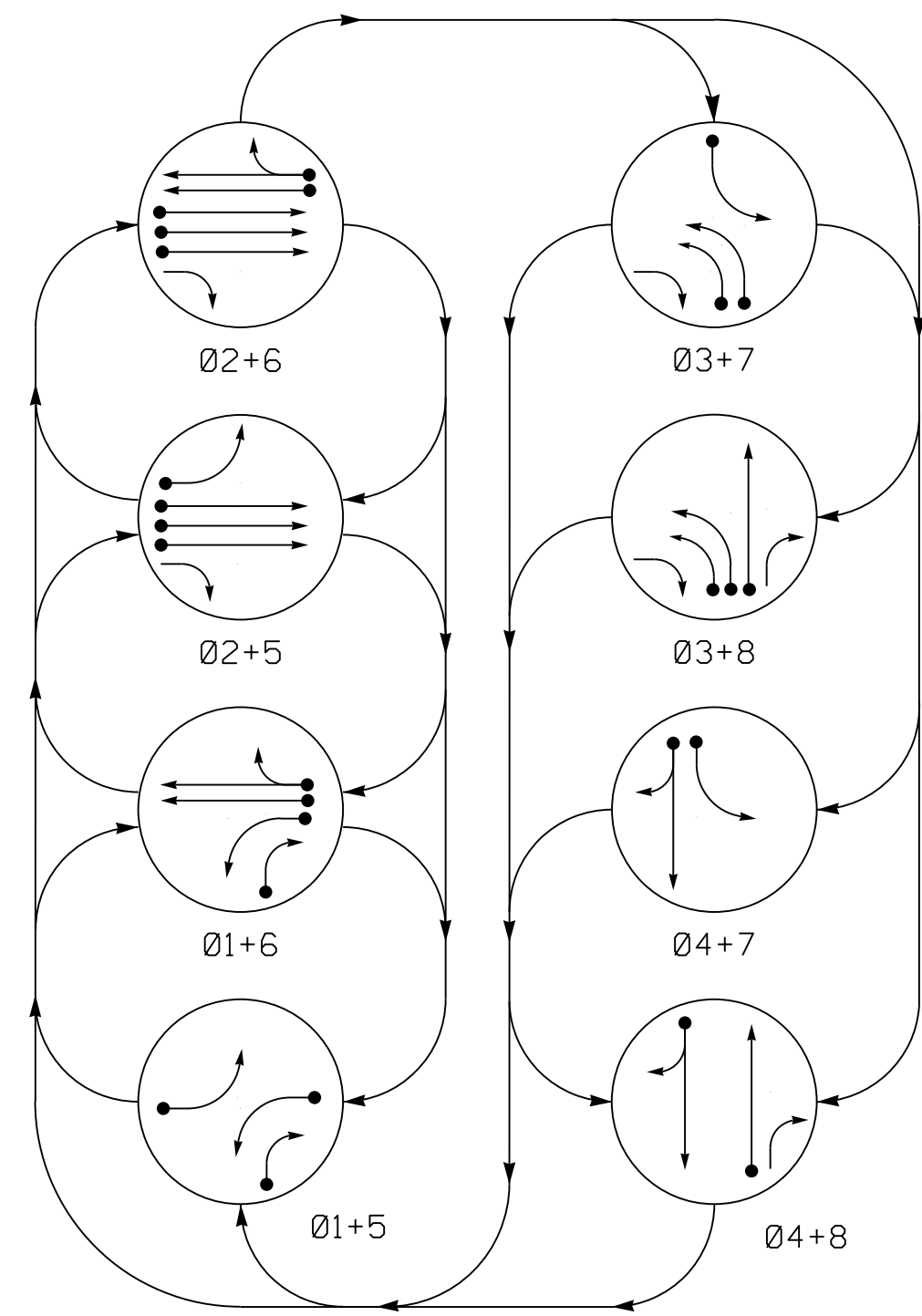


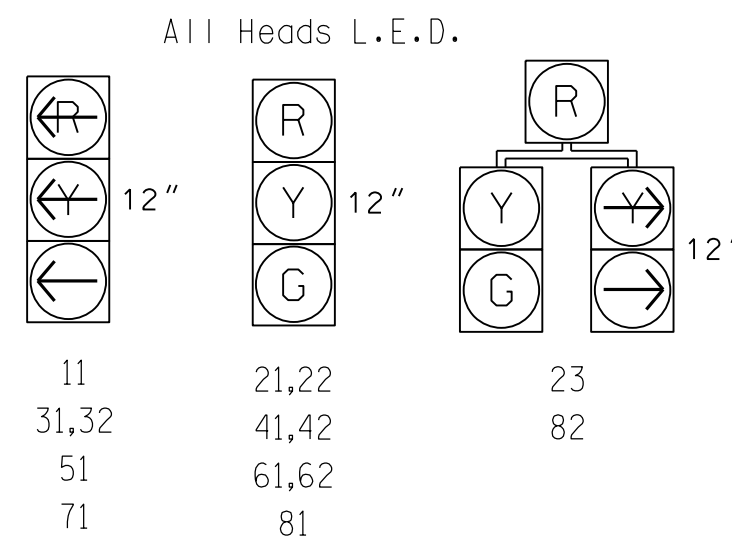
TABLE OF OPERATION

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
23	R	R	G	G	R	R	R	Y
31,32	←	←	←	←	←	←	←	←
41,42	R	R	R	R	R	R	G	G
51	←	←	←	←	←	←	←	←
61,62	R	G	R	G	R	R	R	Y
71	←	←	←	←	←	←	←	←
81	R	R	R	R	G	R	G	R
82	R	R	R	R	G	R	G	R

PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.



Entrance to Shopping Center
Speed Unposted (Design) 35 mph
+2% Grade

ASC/3 DETECTOR INSTALLATION CHART

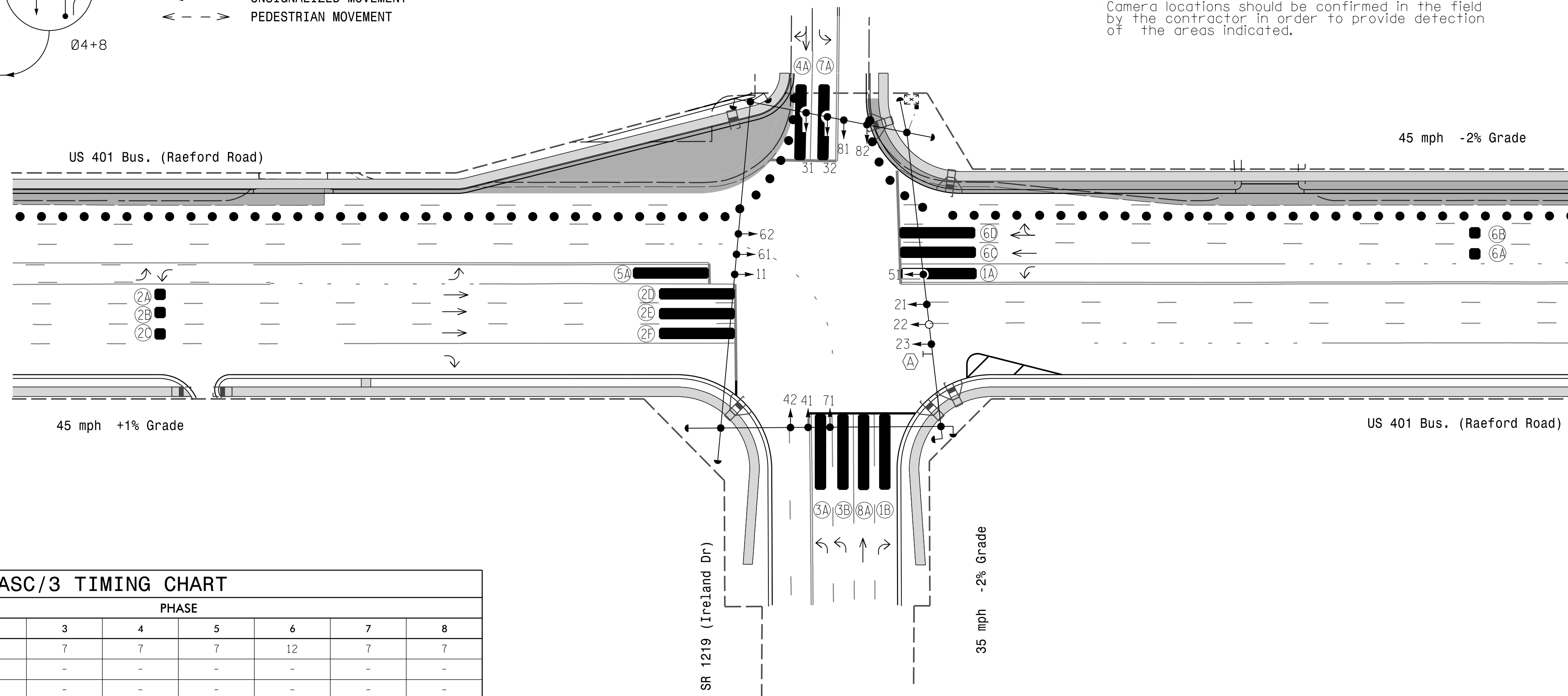
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP
1A	6X40	0	*	-	1	Yes	-	3	-	S	-
1B	6X40	0	*	-	1	Yes	-	15	-	S	-
2A	6X6	300	*	-	2	Yes	-	-	-	N	-
2B	6X6	300	*	-	2	Yes	-	-	-	N	-
2C	6X6	300	*	-	2	Yes	-	-	-	N	-
2D	6X40	0	*	-	2	Yes	2.0	5	-	G	-
2E	6X40	0	*	-	2	Yes	2.0	5	-	G	-
2F	6X40	0	*	-	2	Yes	2.0	5	-	G	-
3A	6X40	0	*	-	3	Yes	-	3	-	S	-
3B	6X40	0	*	-	3	Yes	-	-	-	S	-
4A	6X40	0	*	-	4	Yes	-	10	-	S	-
5A	6X40	0	*	-	5	Yes	-	3	-	S	-
6A	6X6	300	*	-	6	Yes	-	-	-	N	-
6B	6X6	300	*	-	6	Yes	-	-	-	N	-
6C	6X40	0	*	-	6	Yes	2.0	5	-	G	-
6D	6X40	0	*	-	6	Yes	2.0	5	-	G	-
7A	6X40	0	*	-	7	Yes	-	3	-	S	-
8A	6X40	0	*	-	8	Yes	-	-	-	S	-

*Video Detection Area
Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.

8 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 and Phase 5 may be lagged.
- Phase 3 and Phase 7 may be lagged.
- Reposition existing signal heads numbered 23,61,62.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run timing operation only. Coordinated signal system timing values supersede these values.



LEGEND

- | PROPOSED | EXISTING |
|-----------------------------------|-----------------------------------|
| ○ → Traffic Signal Head | ● → N/A |
| ● → Modified Signal Head | ○ → 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 | □ 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 |
| ■ Video Detection Area | N/A |
| ■ Construction Zone | N/A |
| ● Drums | N/A |
| Ⓐ Right Arrow "ONLY" Sign (R3-5R) | Ⓐ Right Arrow "ONLY" Sign (R3-5R) |

ASC/3 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green *	7	12	7	7	7	12	7	7
Walk *	-	-	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-	-	-
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max I *	15	60	15	15	15	60	15	15
Yellow	3.0	4.4	3.0	3.7	3.0	4.7	3.0	4.0
Red Clear	2.8	1.3	3.3	2.3	2.9	1.8	2.8	2.4
Red Revert	-	-	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Locking Detector	-	-	-	-	-	-	-	-
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.

**Signal Upgrade
Temporary Design 2 - TMP Phase-II**

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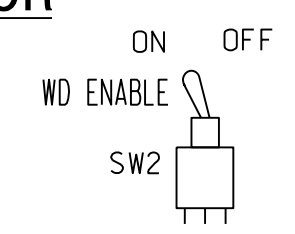
Prepared for the Offices of:
Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27526
SCALE
0 40
1" = 40'

**US 401 Bus. (Raeford Road)
at
SR 1219 (Ireland Drive) /
Shopping Center Drive**
Division 6 Cumberland County Fayetteville
PLAN DATE: March 2018 REVIEWED BY: E D Harris
PREPARED BY: J Hambricht REVIEWED BY: B L Watson
REVISIONS
INIT. DATE

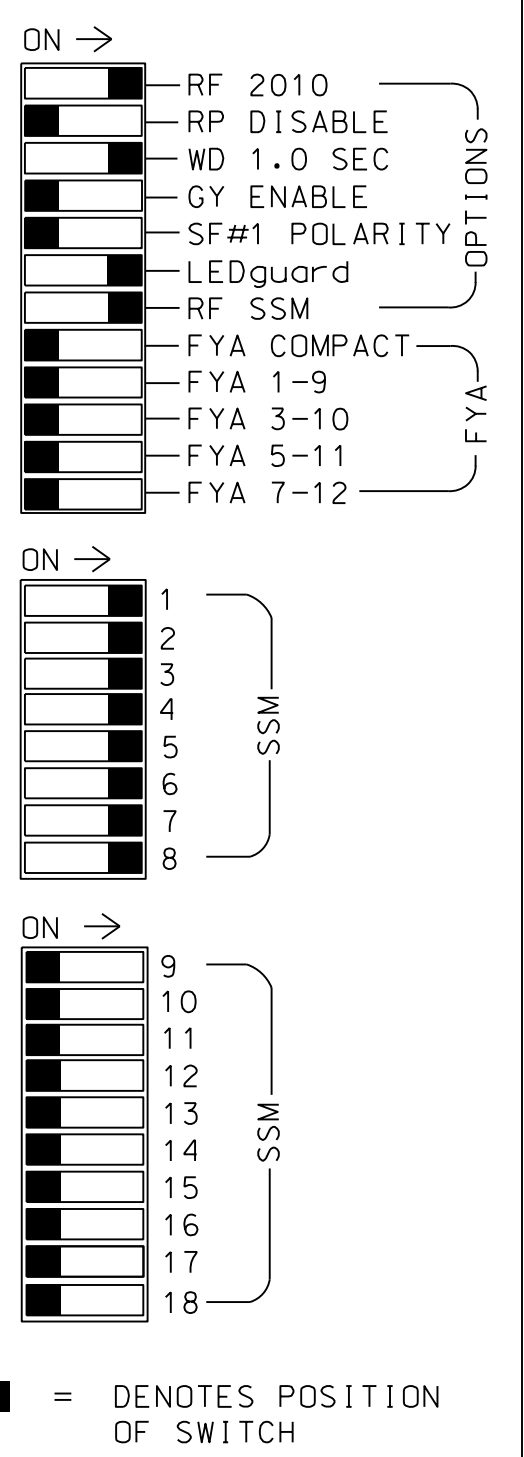
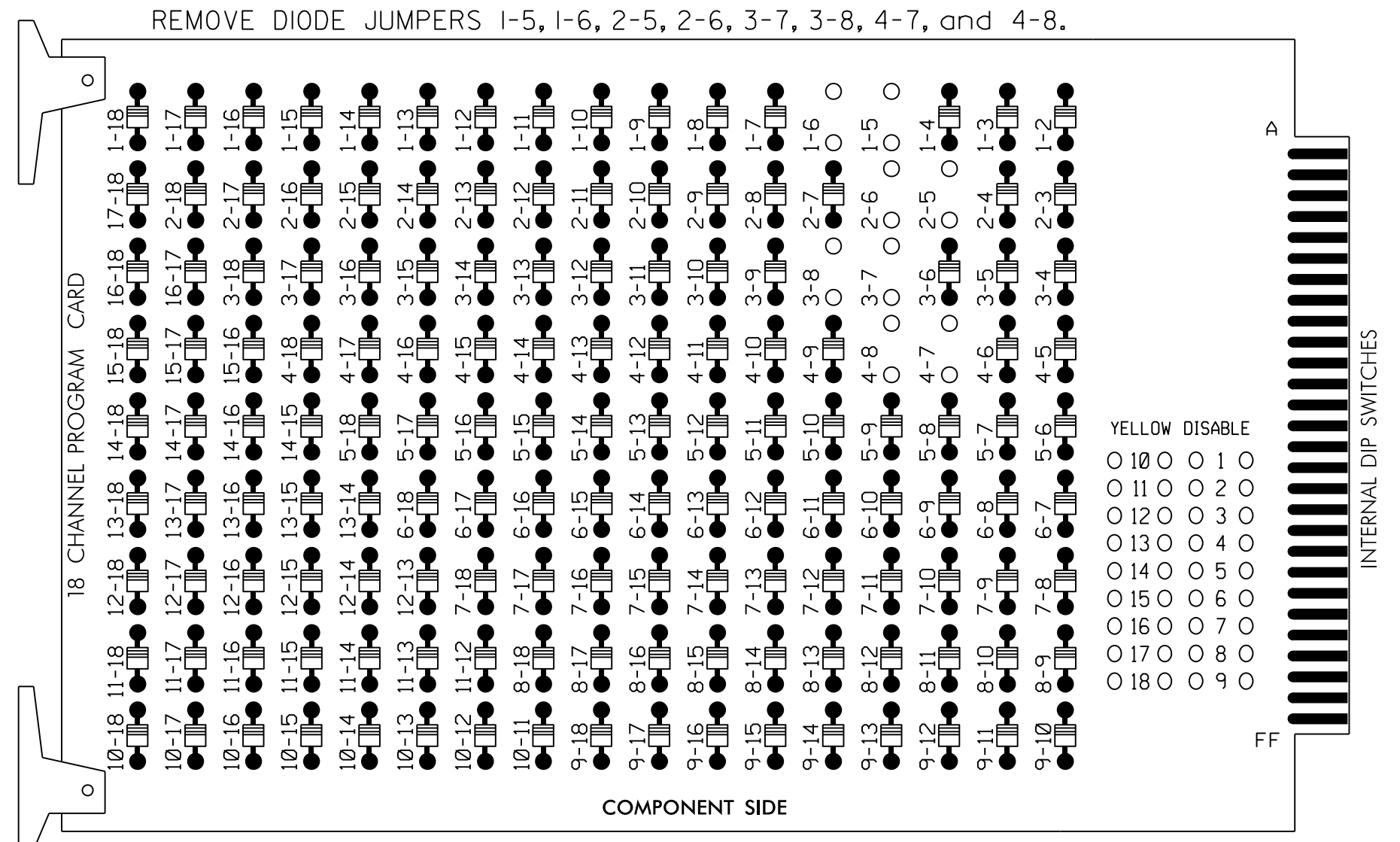
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**
NORTH CAROLINA
PROFESSIONAL
SEAL
29449
ENGINEER
Betsy L. Watson
3/29/2018
DATE
SIG. INVENTORY NO. 06-0422T2

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 2-5, 2-6, 3-7, 3-8, 4-7, and 4-8.



REMOVE JUMPERS AS SHOWN

NOTES:

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

■ = DENOTES POSITION OF SWITCH

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	21,22,23	NU	31,32	23	41,42	NU	51	61,62	NU	71	81,82	NU	NU	NU	NU	NU
RED		128				101				134		107						
YELLOW		129				102				135		108						
GREEN		130				103				136		109						
RED ARROW	125			116				131			122							
YELLOW ARROW	126	126		117				132			123							
GREEN ARROW	127	127		118	118			133			124							

NU = Not Used

NOTES

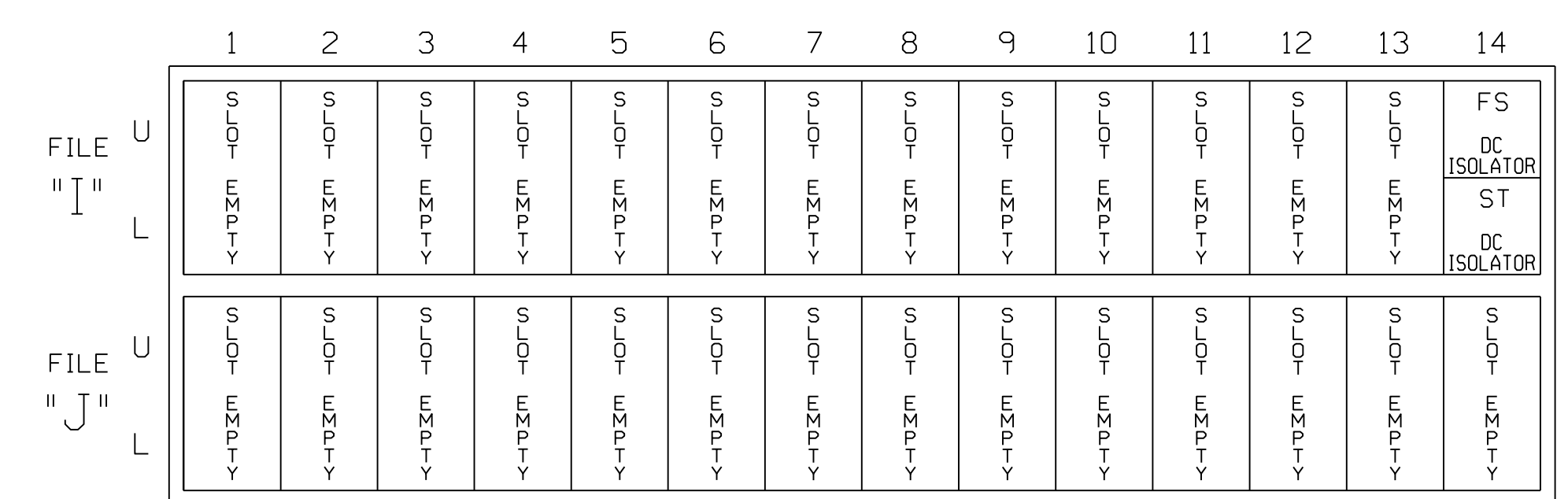
- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller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

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

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 schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0422T2
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

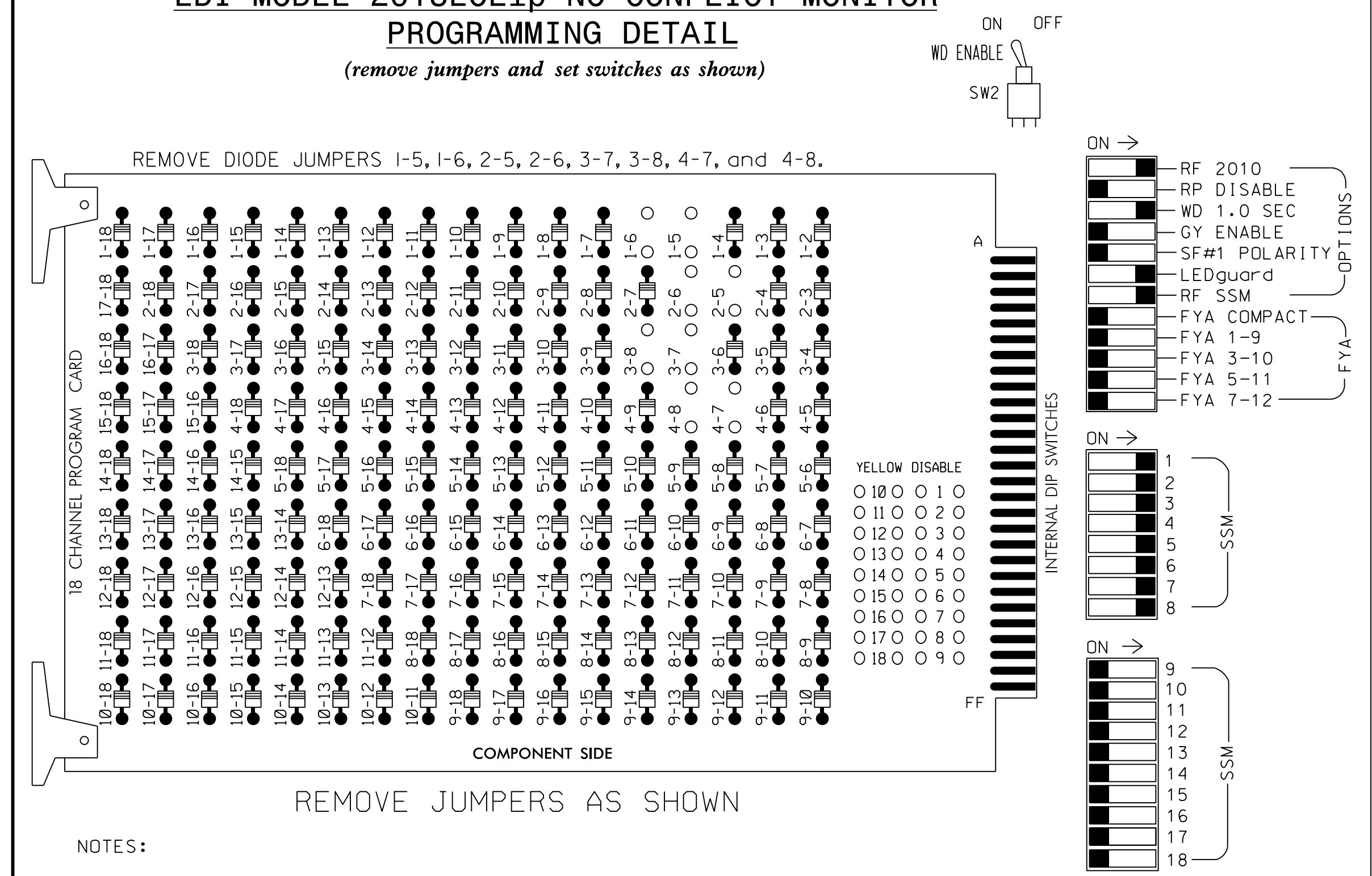
Temporary Design 2 - TMP Phase II Electrical Detail

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		PLAN DATE: March 2018 PREPARED BY: G B Spell	REVIEWED BY: L Overn REVIEWED BY:	

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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	NU	31,32	22	41,42	NU	51	61,62	NU	71	81,82	NU	NU	NU	NU	NU
RED			128				101			134		107						
YELLOW			129				102			135		108						
GREEN			130				103			136		109						
RED ARROW	125			116				131			122							
YELLOW ARROW	126	126		117	117			132			123							
GREEN ARROW	127	127		118	118			133			124							

NU = Not Used

NOTES

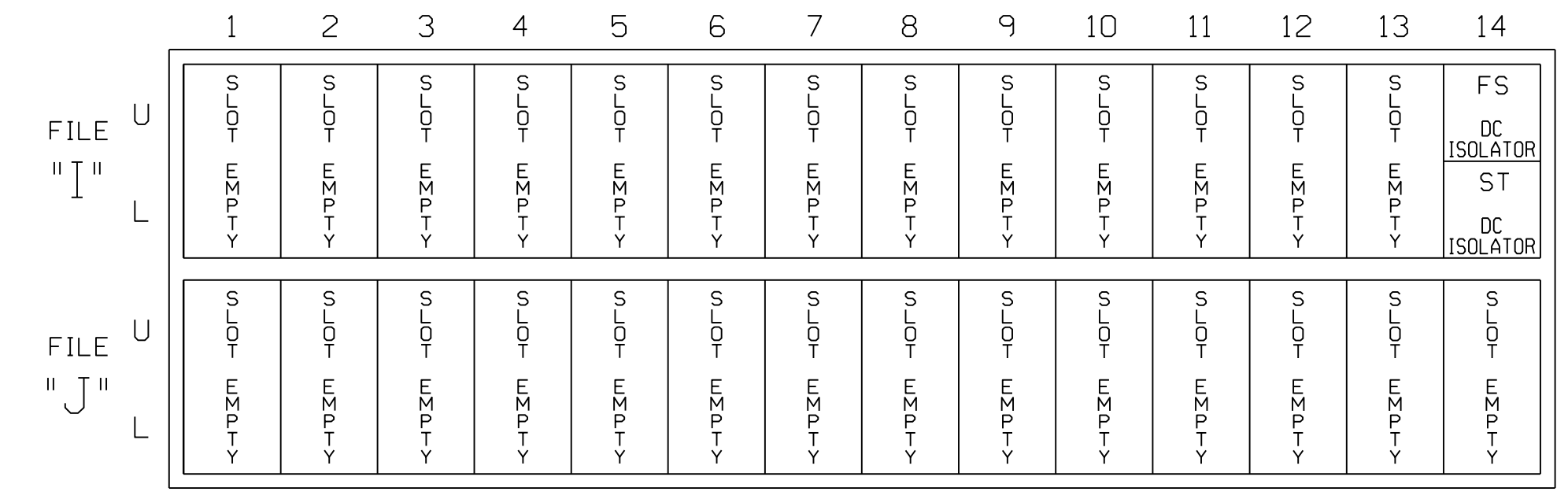
- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green and 6 Green.
- The cabinet and controller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

EQUIPMENT INFORMATION

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

INPUT FILE POSITION LAYOUT

(front view)



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

SPECIAL DETECTOR NOTE

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 schemes shown on the Signal Design Plans.

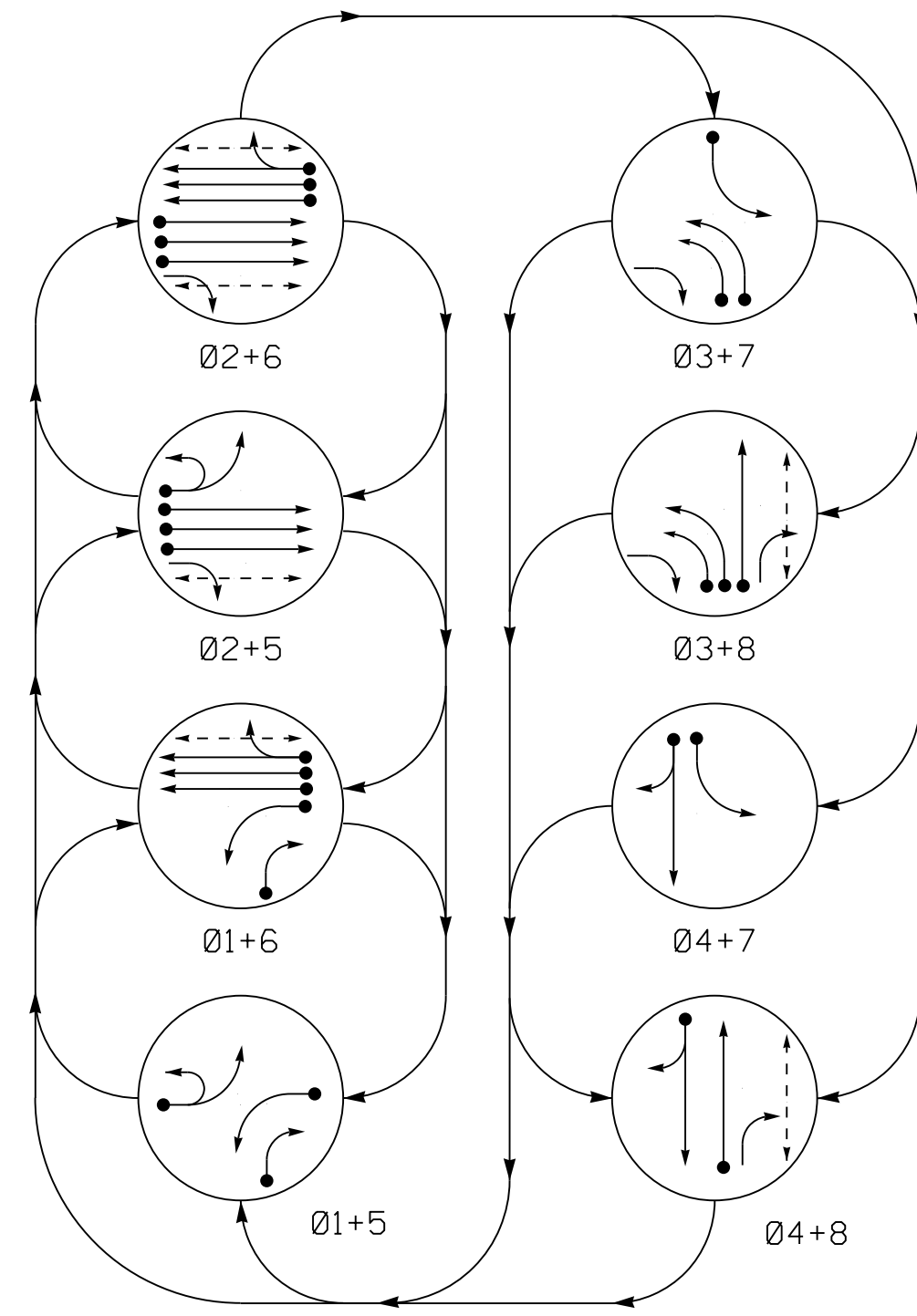
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0422T3
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 3 - TMP Phase III Electrical Detail

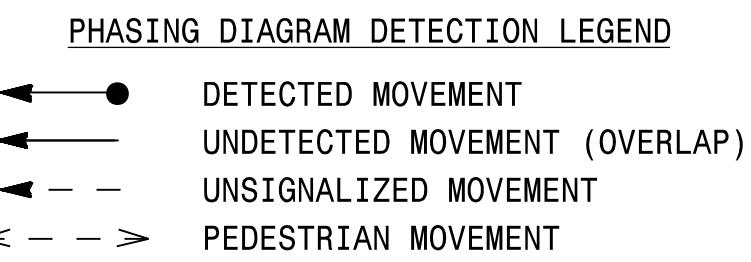
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<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>Prepared in the Offices of: Mobility and Traffic Division STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Management Section 750 N. Greenfield Pkwy, Garner, NC 27529</p>	US 401 Bus. (Raeford Road) at SR 1219 (Ireland Drive) / Shopping Center Drive Division 6 Cumberland County Fayetteville		<p>SEAL NORTH CAROLINA PROFESSIONAL ENGINEER LAWRENCE E. OVERN 045933 3/29/2018</p>
		ELECTRICAL AND PROGRAMMING DETAILS FOR:		
REVISIONS		INIT.	DATE	

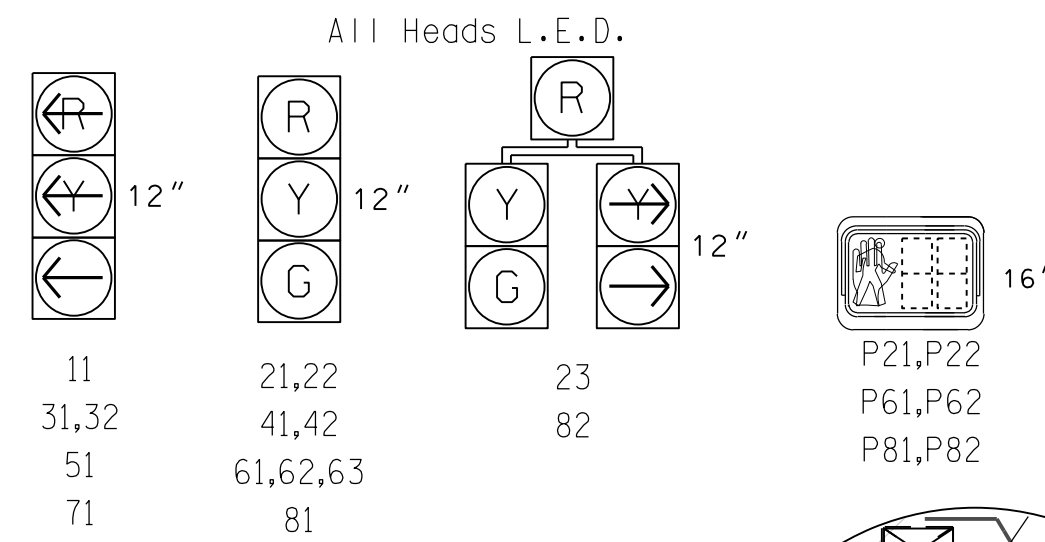
PHASING DIAGRAM



SIGNAL FACE	PHASE								E/O
	Ø1+5	Ø2+6	Ø3+7	Ø3+8	Ø4+7	Ø4+8	Ø1+6	Ø2+5	
11	←	←	←	←	←	←	←	←	←
21,22	R	R	G	G	R	R	R	R	Y
23	R	R	G	G	R	R	R	R	Y
31,32	←	←	←	←	←	←	←	←	←
41,42	R	R	R	R	R	R	G	G	R
51	←	←	←	←	←	←	←	←	←
61,62,63	R	G	R	G	R	R	R	R	Y
71	←	←	←	←	←	←	←	←	←
81	R	R	R	R	G	R	G	R	
82	R	R	R	R	G	R	G	R	
P21,P22	DW	DW	W	W	DW	DW	DW	DW	DRK
P61,P62	DW	W	DW	W	DW	DW	DW	DW	DRK
P81,P82	DW	DW	DW	DW	W	DW	W	DRK	



SIGNAL FACE I.D.

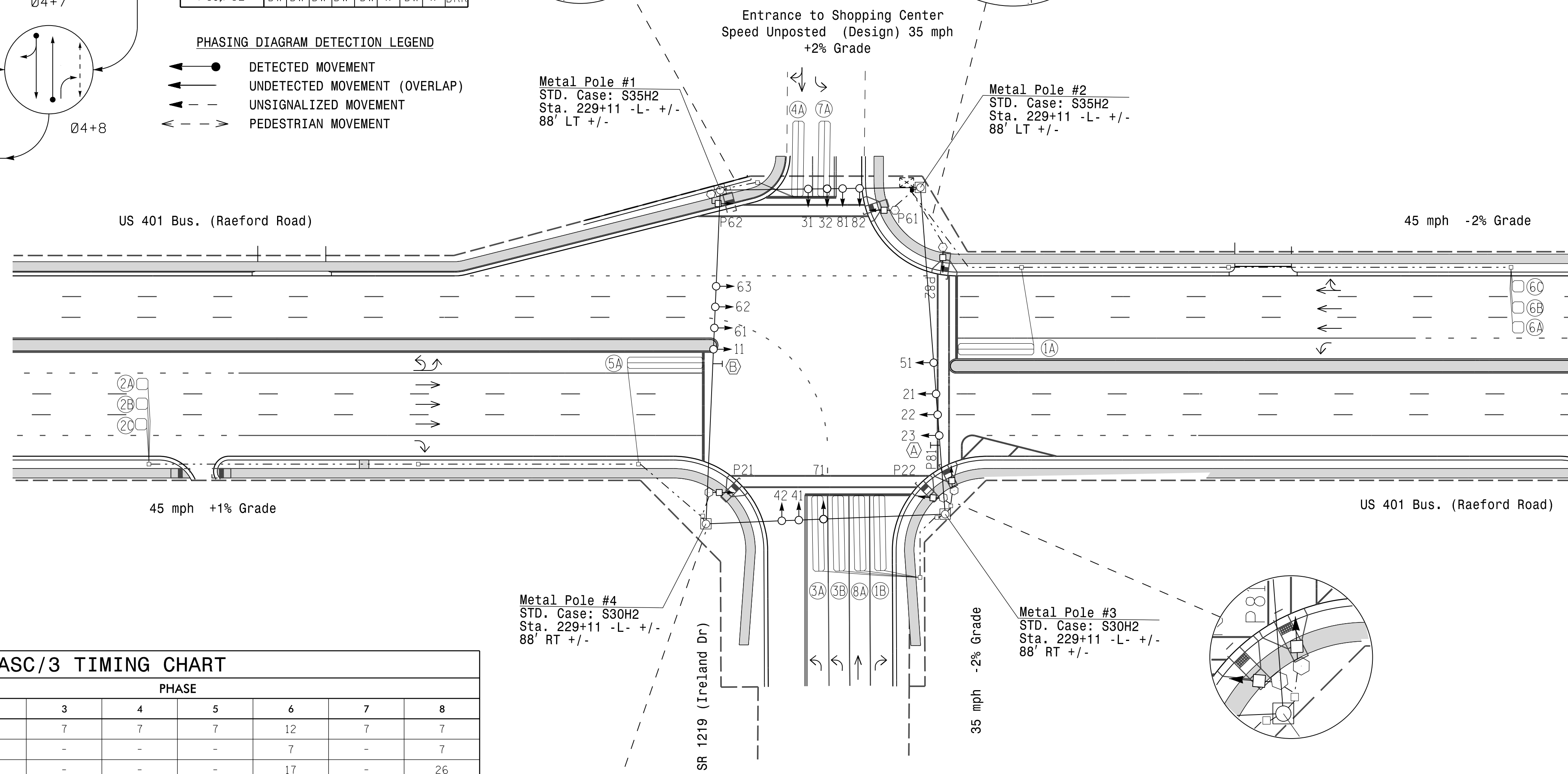


ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR				PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	2-4-2	X	1	Yes	-	-	-	S	-	X
1B	6X40	0	2-4-2	X	1	Yes	-	15	-	S	-	X
2A	6X6	300	6	X	2	Yes	-	-	X	N	-	X
2B	6X6	300	6	X	2	Yes	-	-	X	N	-	X
2C	6X6	300	6	X	2	Yes	-	-	X	N	-	X
3A	6X40	0	2-4-2	X	3	Yes	-	3	-	S	-	X
3B	6X40	0	2-4-2	X	3	Yes	-	-	-	S	-	X
4A	6X40	0	2-4-2	X	4	Yes	-	10	-	S	-	X
5A	6X40	0	2-4-2	X	5	Yes	-	-	-	S	-	X
6A	6X6	300	5	X	6	Yes	-	-	X	N	-	X
6B	6X6	300	5	X	6	Yes	-	-	X	N	-	X
6C	6X6	300	5	X	6	Yes	-	-	X	N	-	X
7A	6X40	0	2-4-2	X	7	Yes	-	3	-	S	-	X
8A	6X40	0	2-4-2	X	8	Yes	-	-	-	S	-	X

8 Phase Fully Actuated Fayetteville Signal System

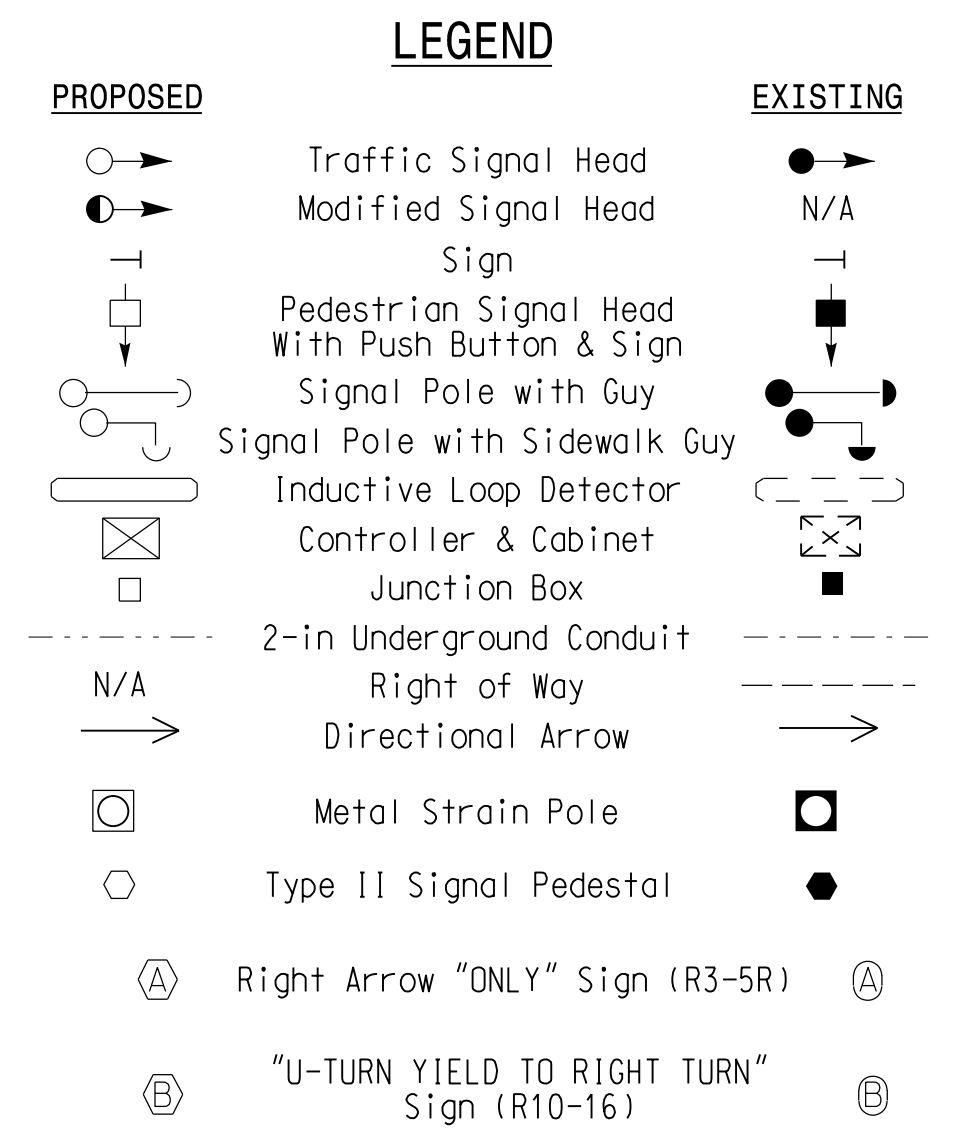
NOTES

- 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 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.
- Pedestrian pedestals are conceptual and shown for reference only. See 2018 NCDOT Roadway Standard Drawings 1705.04 Sheets 1-3 for push button location details.



FEATURE	ASC/3 TIMING CHART							
	1	2	3	4	5	6	7	8
Min Green *	7	12	7	7	7	12	7	7
Walk *	-	7	-	-	-	7	-	7
Ped Clear	-	25	-	-	-	17	-	26
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max I *	15	60	15	15	15	60	15	15
Yellow	3.0	4.4	3.0	3.7	3.0	4.7	3.0	4.0
Red Clear	3.4	1.9	3.3	3.0	3.4	1.4	3.5	3.0
Red Revert	-	-	-	-	-	-	-	-
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	X	X	X	X

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



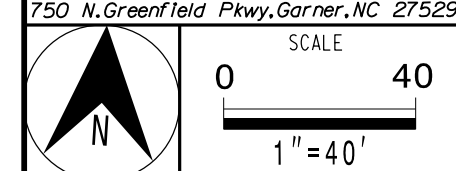
Signal Upgrade - Final Design

Stantec
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 License No. F-0672

Prepared for the Offices of:
 Transportation Mobility and Safety Division
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Design Section
 750 N. Greenfield Pkwy, Garner, NC 27526

US 401 Bus. (Raeford Road) at SR 1219 (Ireland Drive) / Shopping Center Drive
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: E D Harris
 PREPARED BY: J Hambricht REVIEWED BY: B L Watson

Professional Engineer Seal
 SEAL 29449
 Betsy L. Watson
 3/29/2018
 DATE

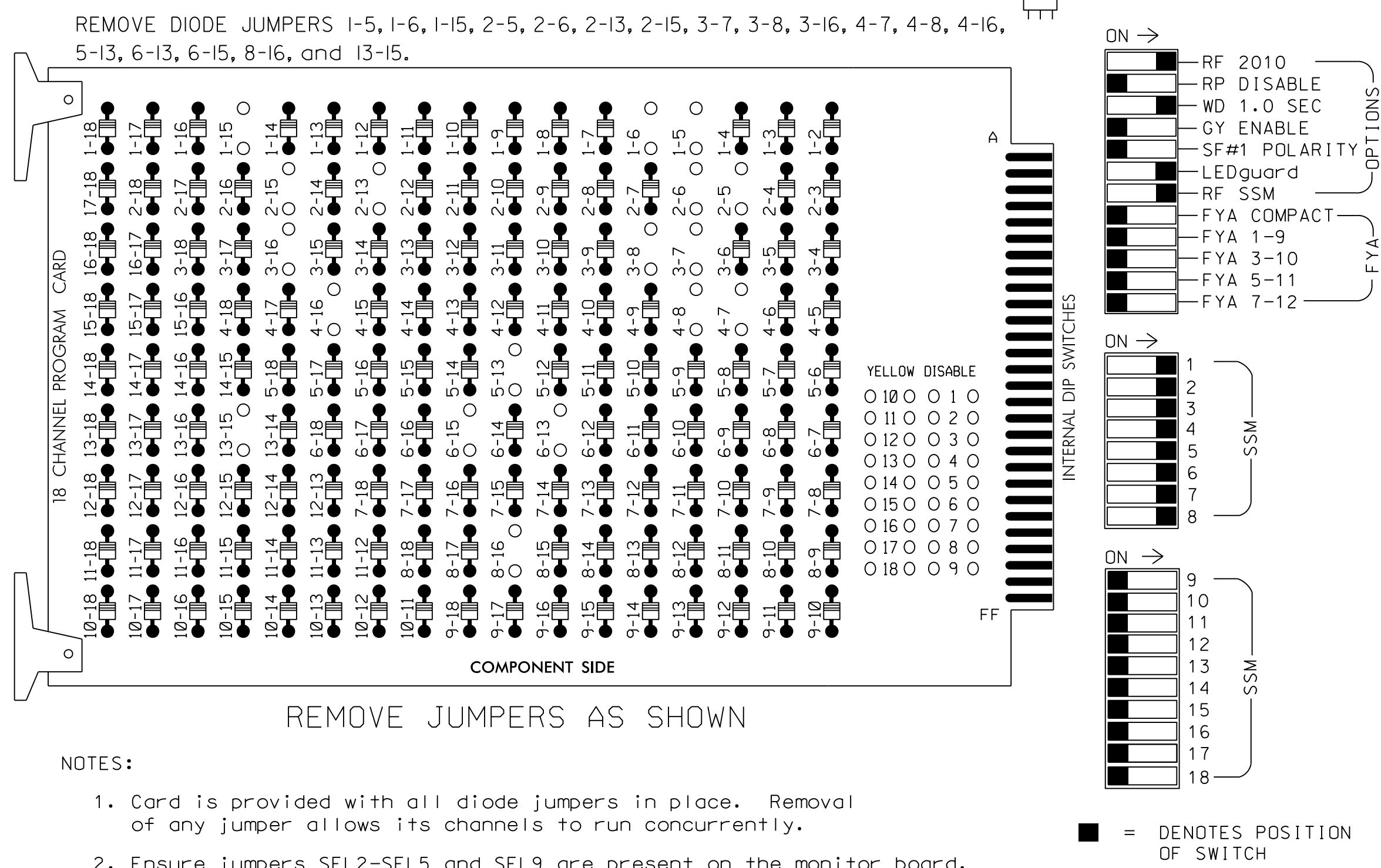


REVISIONS	INIT.	DATE

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EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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

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 controller to start up in phase 2 WALK and 6 WALK.
- 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,S4,S5,S7,S8,S9,
 S10,S11,S12
 PHASES USED.....1,2,2PED,3,4,5,6,6PED,7,
 8,8PED
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

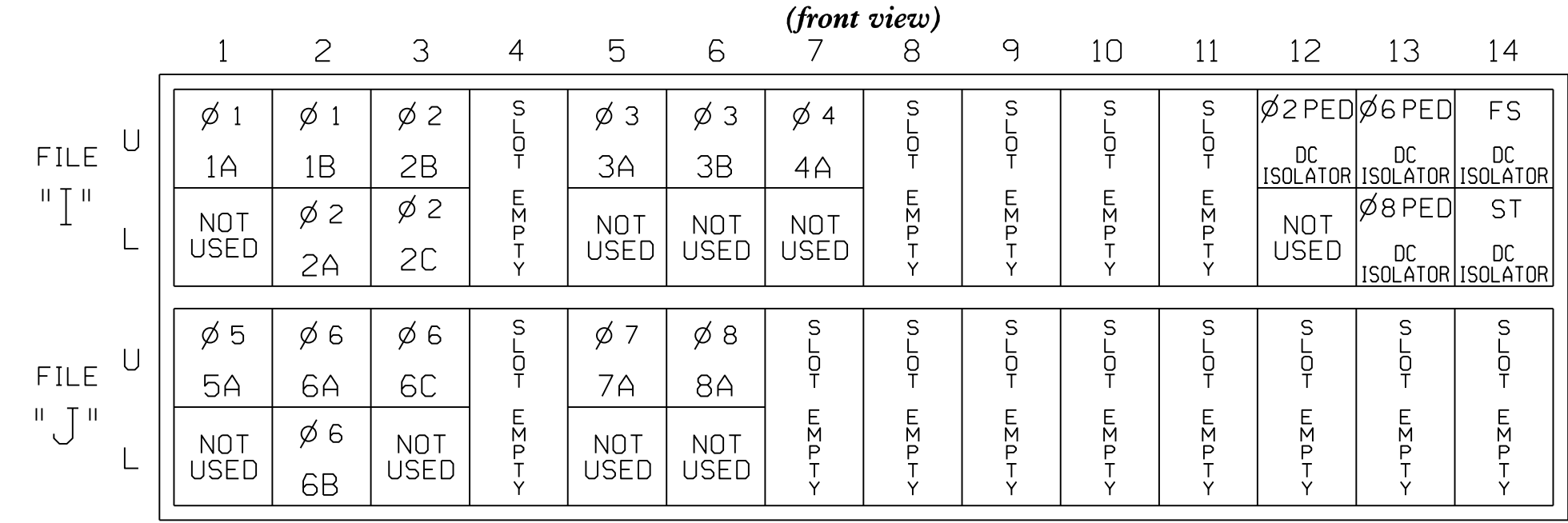
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	82	21,22, 23	P21, P22	31,32	23	41,42	NU	51	61,62,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



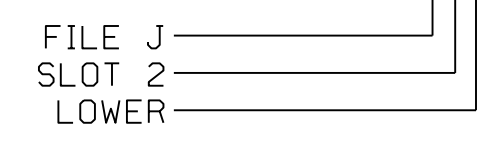
EX.: 1A, 2A, ETC. = LOOP NO.'S FS = FLASH SENSE ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-1,2	I1U	56	1	1	YES				S
1B	TB2-5,6	I2U	39	2	1	YES		15		S
2A	TB2-7,8	I2L	43	12	2	YES			X	N
2B	TB2-9,10	I3U	63	32	2	YES			X	N
2C	TB2-11,12	I3L	76	42	2	YES			X	N
3A	TB4-5,6	I5U	58	3	3	YES		3		S
3B	TB4-9,10	I6U	41	4	3	YES				S
4A	TB6-1,2	I7U	65	34	4	YES		10		S
5A	TB3-1,2	J1U	55	5	5	YES				S
6A	TB3-5,6	J2U	40	6	6	YES			X	N
6B	TB3-7,8	J2L	44	16	6	YES			X	N
6C	TB3-9,10	J3U	64	36	6	YES			X	N
7A	TB5-5,6	J5U	57	7	7	YES		3		S
8A	TB5-9,10	J6U	42	8	8	YES				S
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2	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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0422
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Final Design
 Electrical Detail

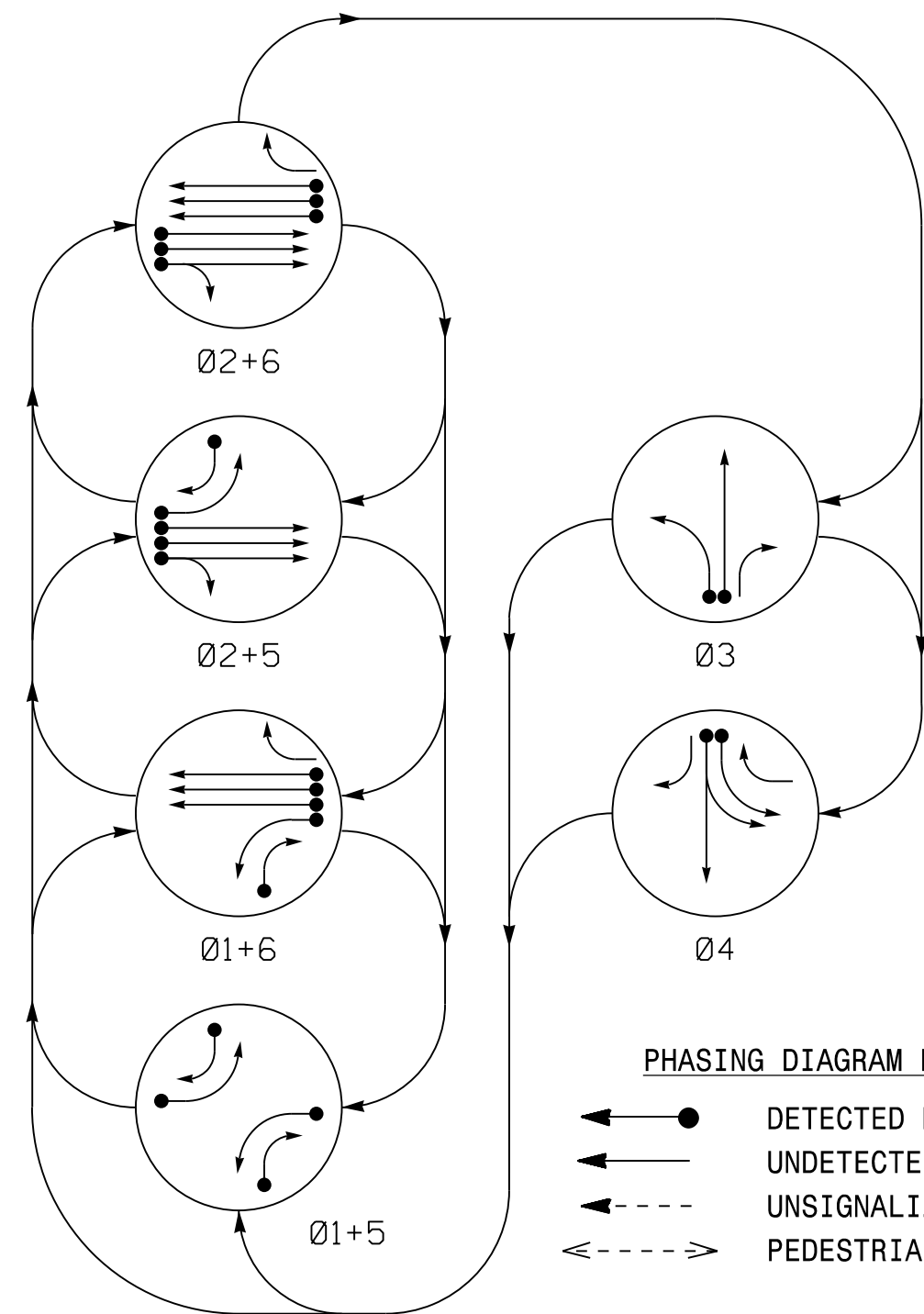
US 401 Bus. (Raeford Road) at SR 1219 (Ireland Drive) / Shopping Center Drive
 Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018	REVIEWED BY: L Overn
PREPARED BY: G B Spell	REVIEWED BY:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/29/2018
 DATE
 SIG. INVENTORY NO. 06-0422

PHASING DIAGRAM

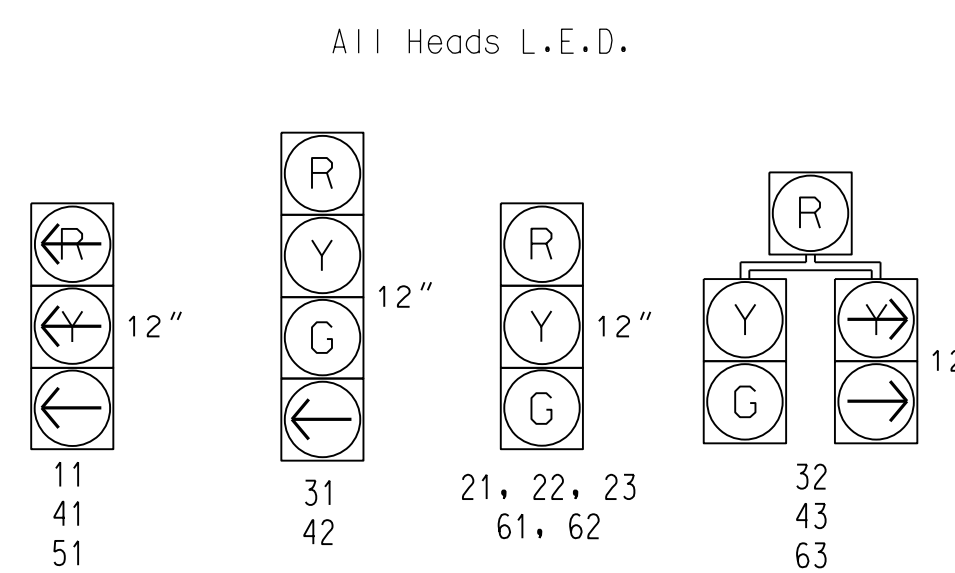


PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE					
	Ø 1+5	Ø 1+6	Ø 2+5	Ø 2+6	Ø 3	Ø 4
11	←	←	←	←	←	←
21,22,23	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	←	←	←	←	←	←
42	R	R	R	R	G	R
43	R	R	R	R	G	R
51	←	←	←	←	←	←
61,62	R	G	R	G	R	Y
63	R	G	R	G	R	Y

SIGNAL FACE I.D.



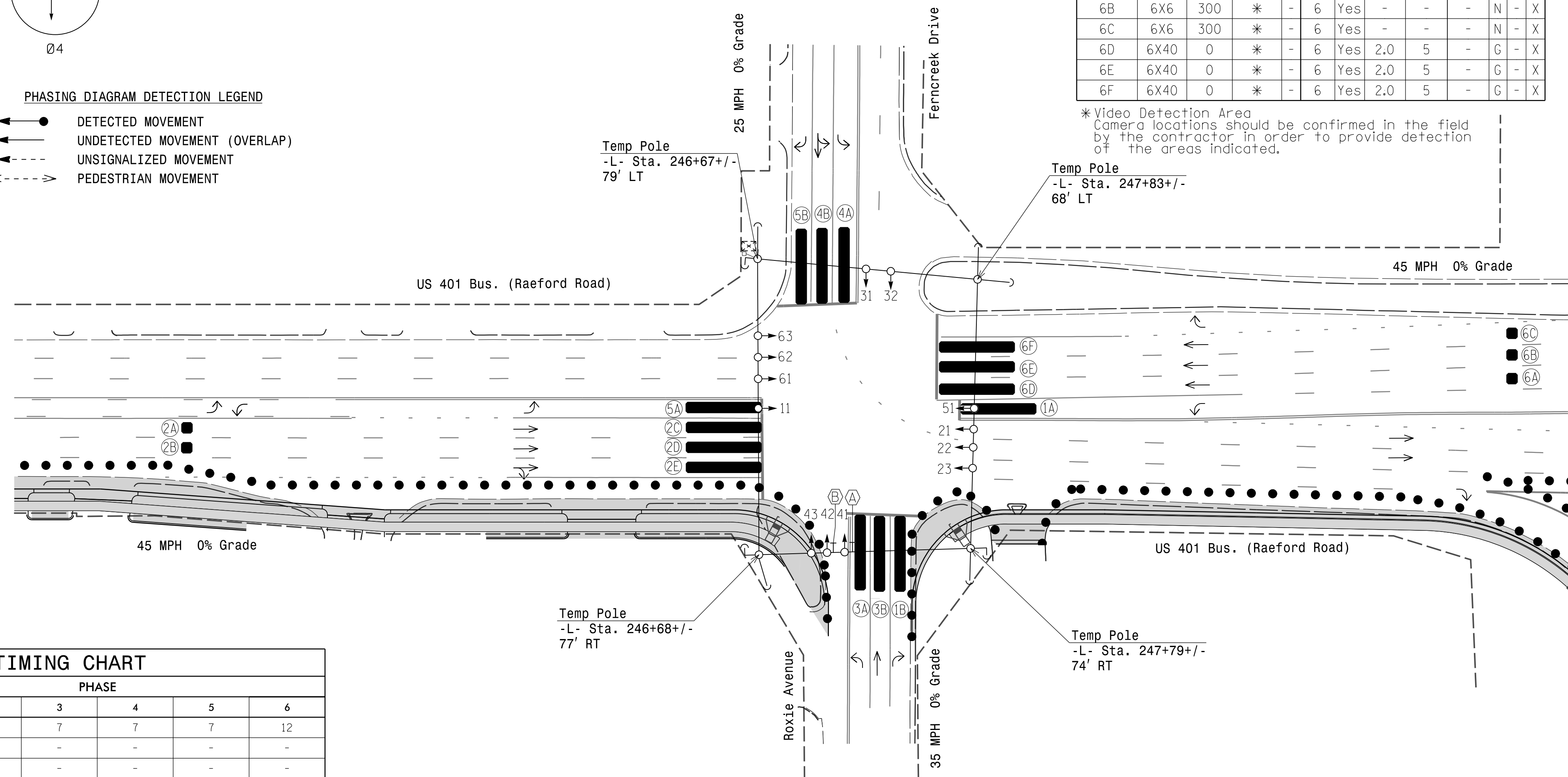
ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	*	-	1	Yes	-	3	-	S	-	X
1B	6X40	0	*	-	1	Yes	-	15	-	S	-	X
2A	6X6	300	*	-	2	Yes	-	-	-	N	-	X
2B	6X6	300	*	-	2	Yes	-	-	-	N	-	X
2C	6X40	0	*	-	2	Yes	2.0	5	-	G	-	X
2D	6X40	0	*	-	2	Yes	2.0	5	-	G	-	X
2E	6X40	0	*	-	2	Yes	2.0	5	-	G	-	X
3A	6X40	0	*	-	3	Yes	-	3	-	S	-	X
3B	6X40	0	*	-	3	Yes	-	-	-	S	-	X
4A	6X40	0	*	-	4	Yes	-	3	-	S	-	X
4B	6X40	0	*	-	4	Yes	-	-	-	S	-	X
5A	6X40	0	*	-	5	Yes	-	3	-	S	-	X
5B	6X40	0	*	-	5	Yes	-	15	-	S	-	X
6A	6X6	300	*	-	6	Yes	-	-	-	N	-	X
6B	6X6	300	*	-	6	Yes	-	-	-	N	-	X
6C	6X6	300	*	-	6	Yes	-	-	-	N	-	X
6D	6X40	0	*	-	6	Yes	2.0	5	-	G	-	X
6E	6X40	0	*	-	6	Yes	2.0	5	-	G	-	X
6F	6X40	0	*	-	6	Yes	2.0	5	-	G	-	X

* Video Detection Area
Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.

6 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 and Phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Set all detector units to presence mode.
- Locate new cabinet foundation so as not to obstruct sight distance of vehicles turning right on red. Relocate existing cabinet and controller onto new foundation.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Field adjust temporary poles as needed.



FEATURE	ASC/3 TIMING CHART					
	1	2	3	4	5	6
Min Green *	7	12	7	7	7	12
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0
Max I *	15	60	25	25	15	60
Yellow	3.0	4.5	3.8	3.2	3.0	4.5
Red Clear	2.6	1.3	2.1	2.9	2.6	1.3
Red Revert	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-
Seconds /Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Locking Detector	-	-	-	-	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X

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

LEGEND			
PROPOSED	EXISTING		
○→	Traffic Signal Head	●→	Traffic Signal Head
○→	Modified Signal Head	N/A	Modified Signal Head
○→	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
○→	Right of Way	○→	Right of Way
○→	Directional Arrow	○→	Directional Arrow
○→	Video Detection Area	N/A	Video Detection Area
○→	Construction Zone	N/A	Construction Zone
○→	Drums	N/A	Drums
○→	Combined Through and Left Arrow Sign (R3-6L)	○→	Combined Through and Left Arrow Sign (R3-6L)
○→	Left Arrow "ONLY" Sign (R3-5L)	○→	Left Arrow "ONLY" Sign (R3-5L)

Signal Upgrade Temporary Design 1 - TMP Phase I

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Prepared For the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27526

SCALE: 1" = 40'

US 401 Bus. (Raeford Road) at Ferncreek Drive / Roxie Avenue

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: E D Harris

PREPARED BY: J HAMBRIGHT REVIEWED BY: B L Watson

REVISIONS	INIT.	DATE

3/29/2018

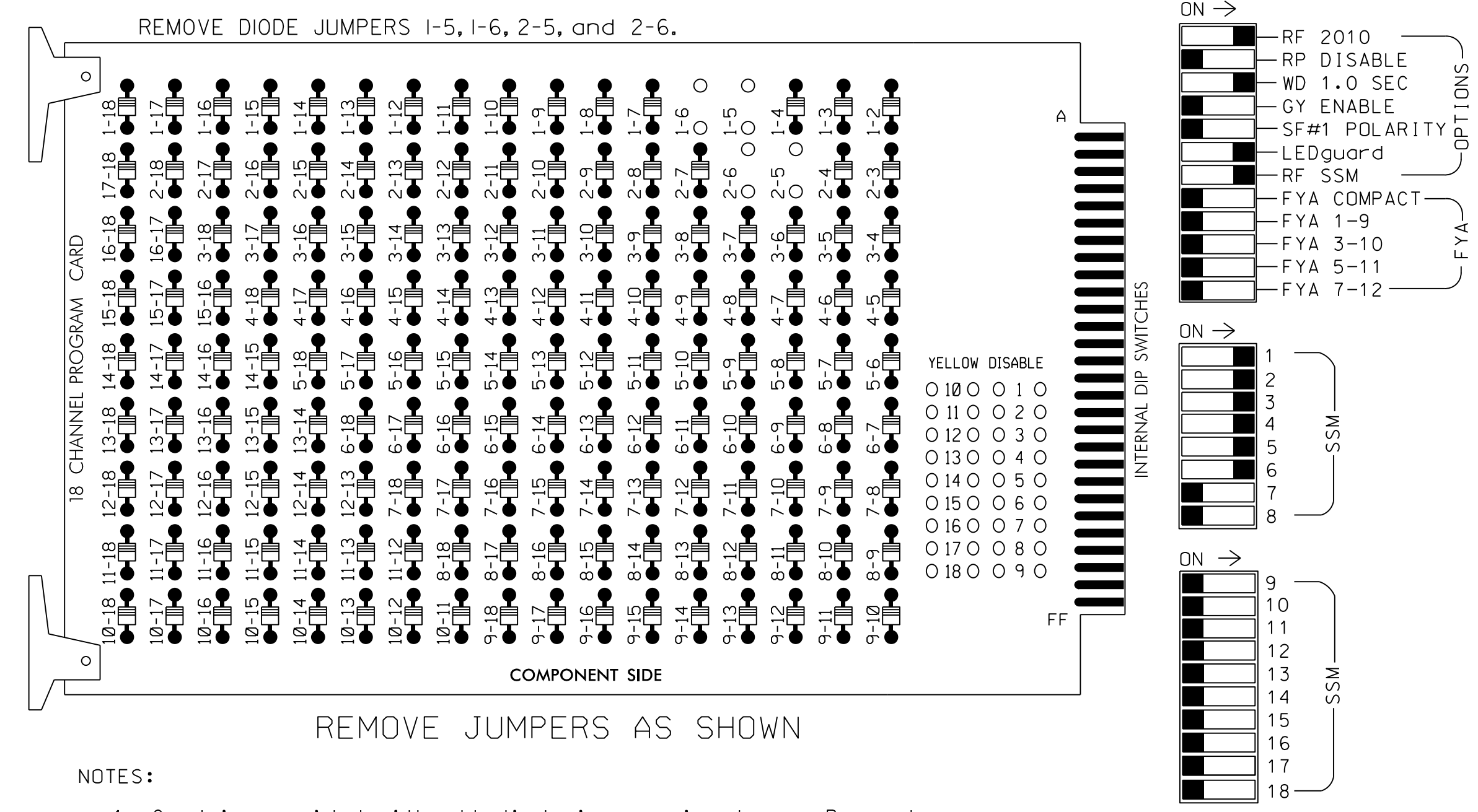
DATE: 3/29/2018

SIG. INVENTORY NO. 06-032711

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 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,S4,S5,S7,S8
 PHASES USED.....1,2,3,4,5,6
 OVERLAPS.....NONE

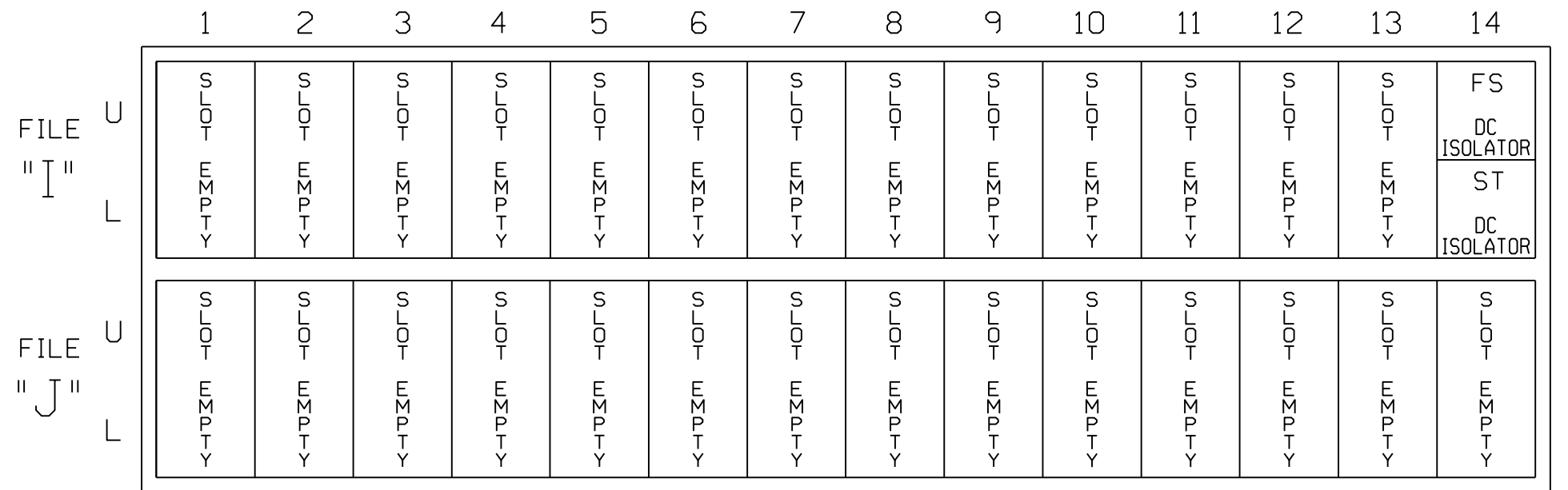
SIGNAL HEAD HOOK-UP CHART

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	32	21,22,23	31	32	41	42	43	63	51	43	61,62,63
RED		128		116	116	101	101					134
YELLOW		129		117	117	102	102					135
GREEN		130		118	118	103	103					136
RED ARROW	125					101				131		
YELLOW ARROW	126	126			102		102	132	132			
GREEN ARROW	127	127		118	103	103	103	133	133			

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



SPECIAL DETECTOR NOTE

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 schemes shown on the Signal Design Plans.

Temporary Design 1 - TMP Phase I
Electrical Detail

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ELECTRICAL AND PROGRAMMING
DETAILS FOR:

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (Raeford Road)
at
Ferncreek Drive / Roxie Avenue

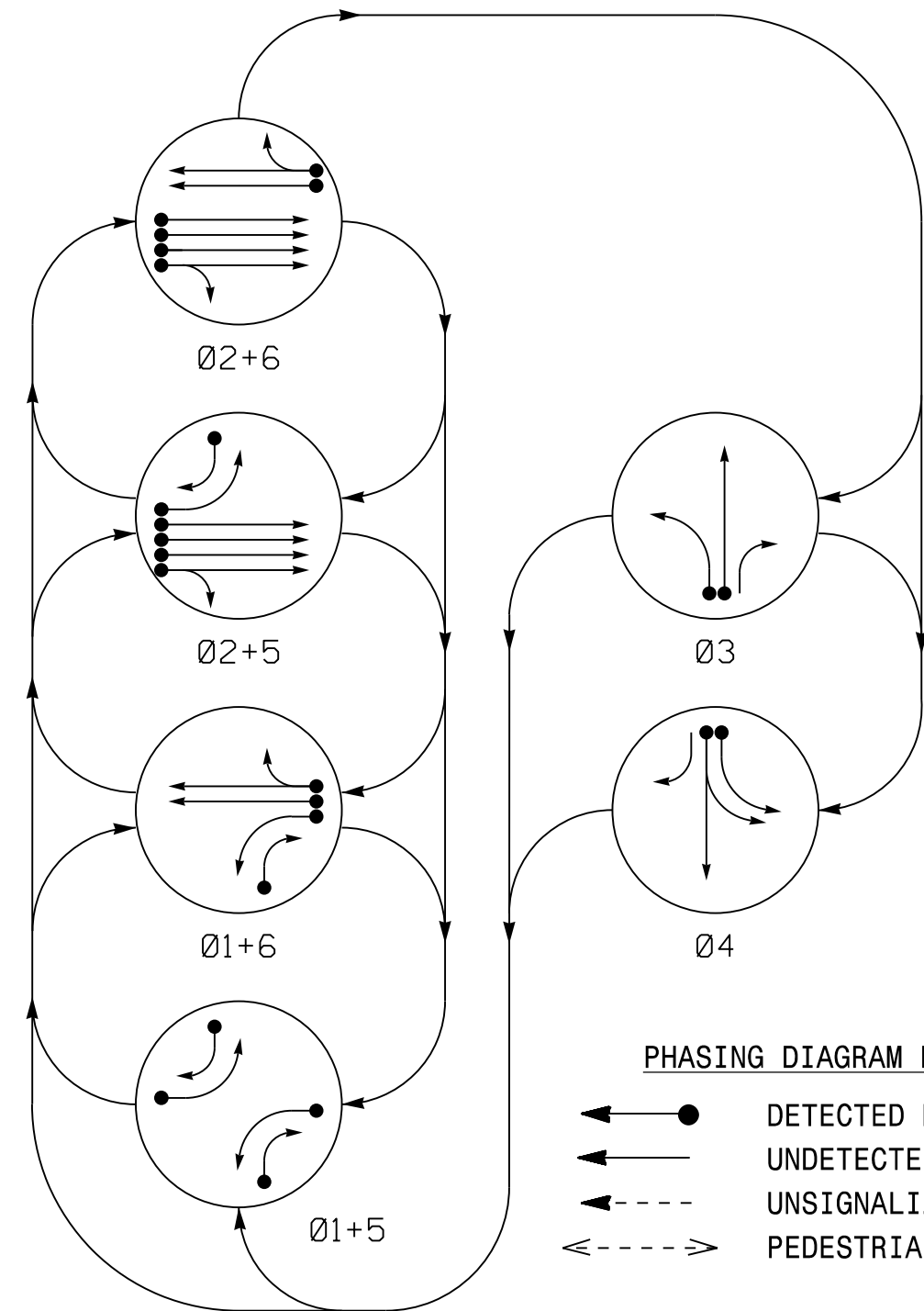
Division 6	Cumberland County	Fayetteville
PLAN DATE: March 2018	REVIEWED BY: L Overn	
PREPARED BY: G B Spell	REVIEWED BY:	
REVISIONS	INIT.	DATE

SEAL

3/29/2018

SIG. INVENTORY NO. 06-0327T1

PHASING DIAGRAM



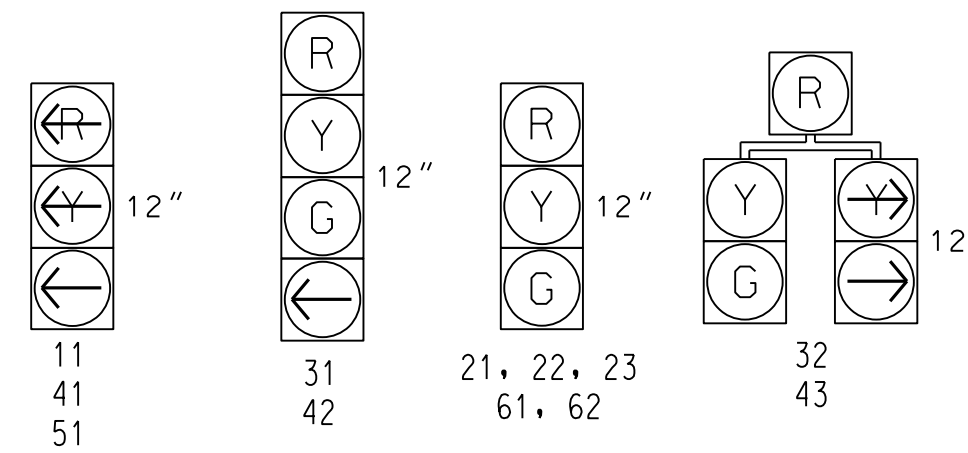
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE					
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4
11	←	←	←	←	←	←
21,22,23	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	←	←	←	←	←	←
42	R	R	R	R	G	R
43	R	R	R	R	G	R
51	←	←	←	←	←	←
61,62	R	G	R	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



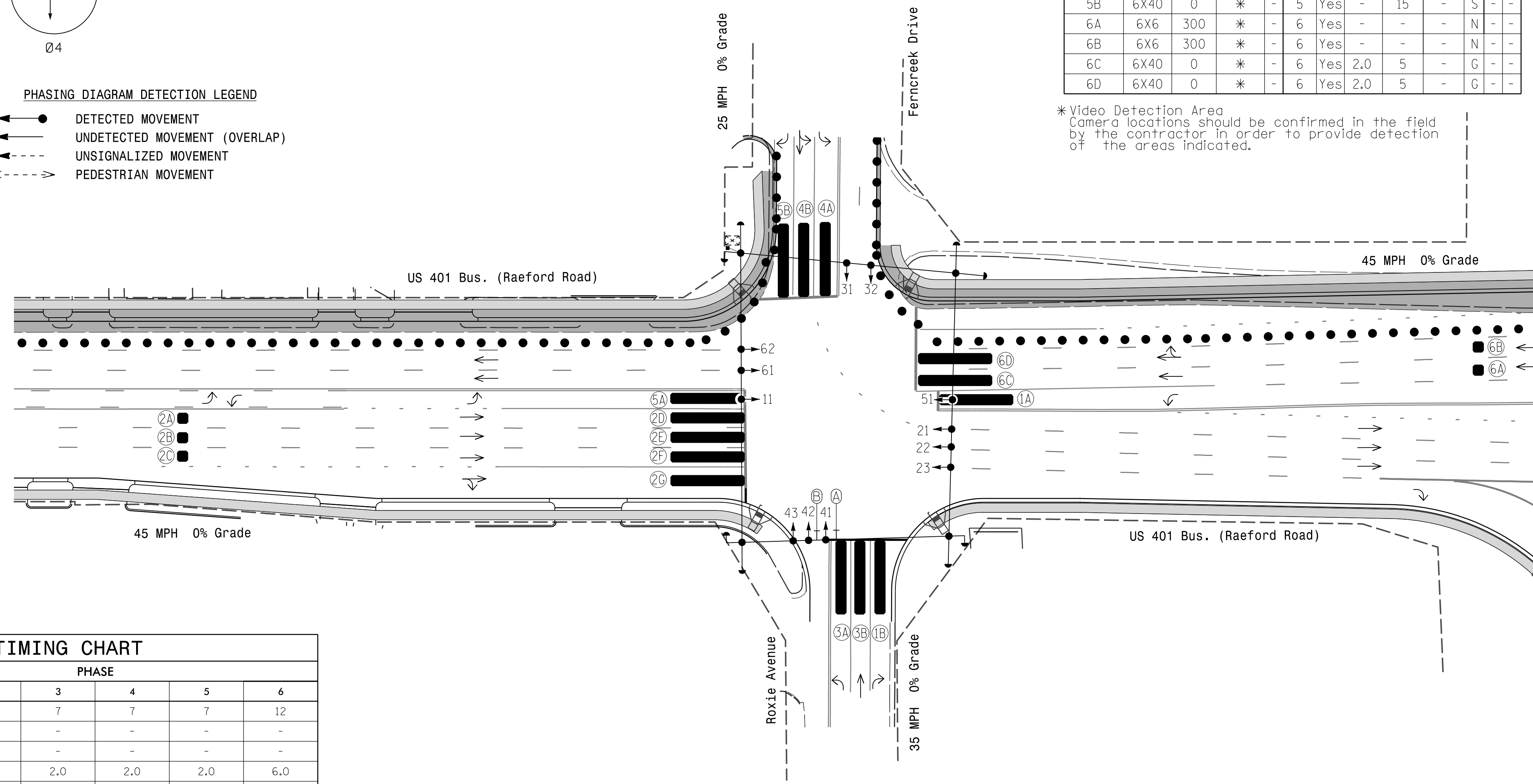
ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	*	-	1	Yes	-	3	-	S	-	-
1B	6X40	0	*	-	1	Yes	-	15	-	S	-	-
2A	6X6	300	*	-	2	Yes	-	-	-	N	-	-
2B	6X6	300	*	-	2	Yes	-	-	-	N	-	-
2D	6X40	0	*	-	2	Yes	2.0	5	-	G	-	-
2E	6X40	0	*	-	2	Yes	2.0	5	-	G	-	-
2F	6X40	0	*	-	2	Yes	2.0	5	-	G	-	-
2G	6X40	0	*	-	2	Yes	2.0	5	-	G	-	-
3A	6X40	0	*	-	3	Yes	-	3	-	S	-	-
3B	6X40	0	*	-	3	Yes	-	-	-	S	-	-
4A	6X40	0	*	-	4	Yes	-	3	-	S	-	-
4B	6X40	0	*	-	4	Yes	-	-	-	S	-	-
5A	6X40	0	*	-	5	Yes	-	3	-	S	-	-
5B	6X40	0	*	-	5	Yes	-	15	-	S	-	-
6A	6X6	300	*	-	6	Yes	-	-	-	N	-	-
6B	6X6	300	*	-	6	Yes	-	-	-	N	-	-
6C	6X40	0	*	-	6	Yes	2.0	5	-	G	-	-
6D	6X40	0	*	-	6	Yes	2.0	5	-	G	-	-

* Video Detection Area
Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.

6 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 and Phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Reposition existing signal heads numbered 21,22,23.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



FEATURE	ASC/3 TIMING CHART					
	1	2	3	4	5	6
Min Green *	7	12	7	7	7	12
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0
Max I *	15	60	25	25	5	60
Yellow	3.0	4.5	3.8	3.2	3.0	4.5
Red Clear	2.8	1.3	2.5	2.9	2.6	1.3
Red Revert	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-
Seconds /Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Locking Detector	-	-	-	-	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X

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

LEGEND

- | PROPOSED | EXISTING |
|--------------------------------------------------|------------------------------------------------|
| ○ → Traffic Signal Head | ● → N/A |
| ● → Modified Signal Head | ○ → N/A |
| ⊥ Sign | ⊥ Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Sign |
| ⊥ Signal Pole with Guy | ⊥ Sign |
| ⊥ Signal Pole with Sidewalk Guy | ⊥ Sign |
| ⊠ 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 |
| ▬ Video Detection Area | N/A |
| ▬ Construction Zone | N/A |
| ● ● ● Drums | N/A |
| ⓐ Combined Through and Left Arrow Sign (R3-6L) | ⓐ Combined Through and Left Arrow Sign (R3-6L) |
| ⓑ Left Arrow "ONLY" Sign (R3-5L) | ⓑ Left Arrow "ONLY" Sign (R3-5L) |

Signal Upgrade Temporary Design 2 - TMP Phase II

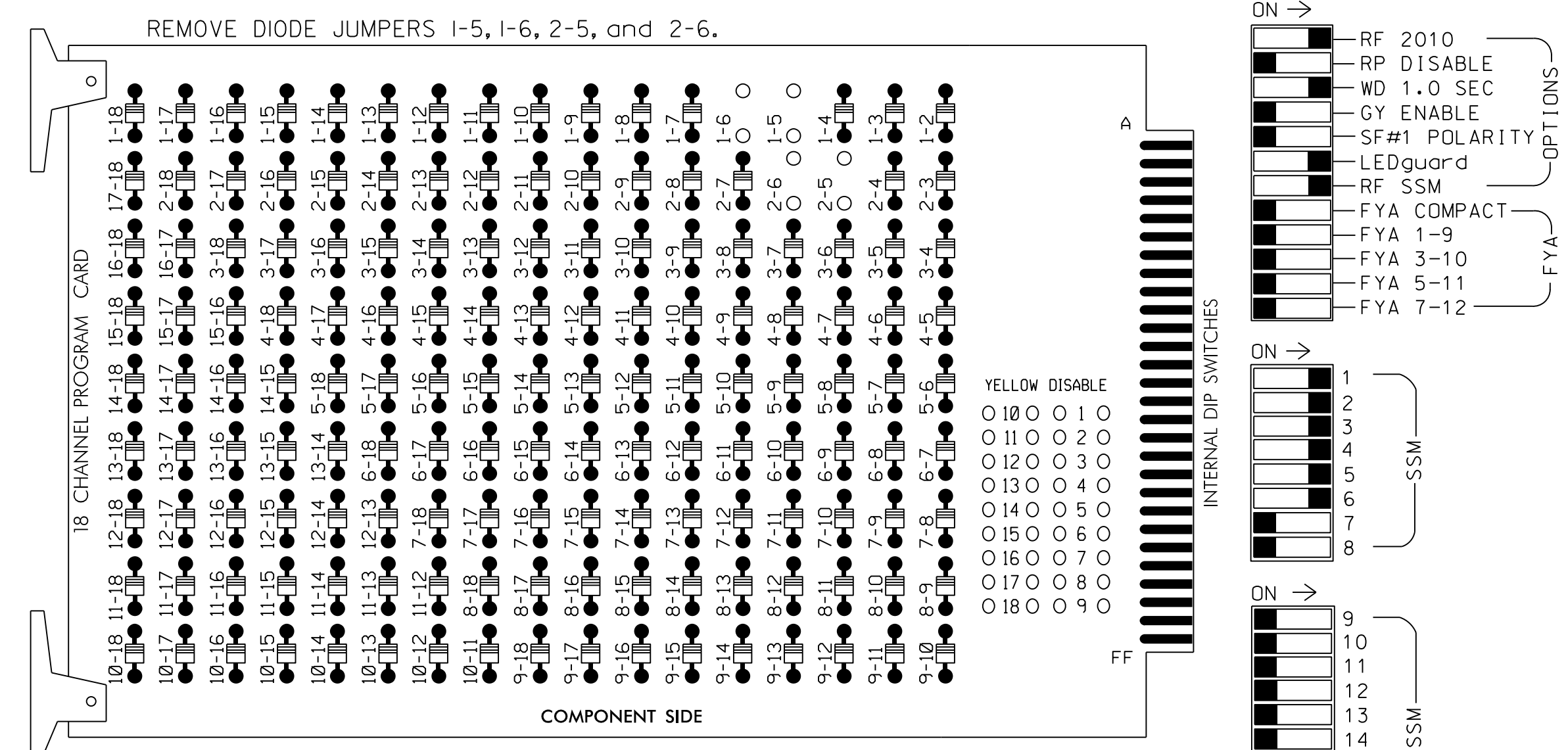
<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>		<p>US 401 Bus. (Raeford Road) at Ferncreek Drive / Roxie Avenue</p>	
		<p>Division 6 Cumberland County Fayetteville</p> <p>PLAN DATE: March 2018 REVIEWED BY: E D Harris</p> <p>PREPARED BY: J HAMBRIGHT REVIEWED BY: B L Watson</p>	<p>3/29/2018</p> <p>DATE</p>

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/29/2018 10:58:11 AM
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 User:rlmccoy

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.

■ = 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,S4,S5,S7,S8
 PHASES USED.....1,2,3,4,5,6
 OVERLAPS.....NONE

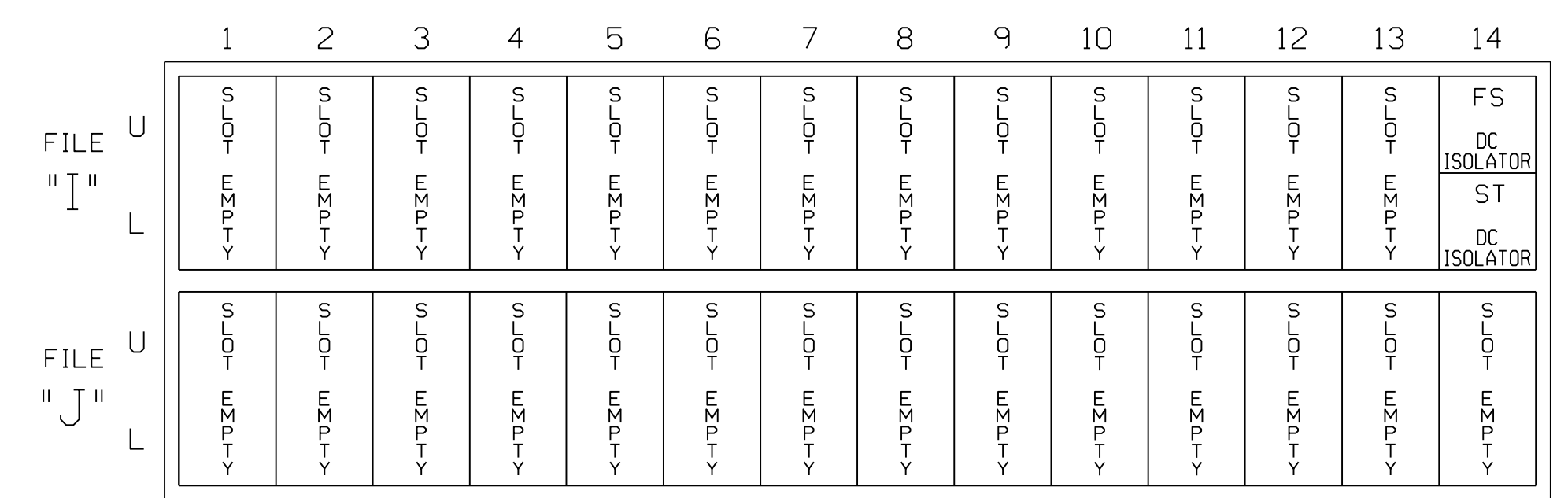
SIGNAL HEAD HOOK-UP CHART

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	32	21,22,23	NU	31	32	41	42	43	NU	51	43	61,62	NU	NU	NU	NU
RED			128	116	116	101	101						134				
YELLOW			129	117	117	102	102						135				
GREEN			130	118	118	103	103						136				
RED ARROW	125					101							131				
YELLOW ARROW	126	126				102							132	132			
GREEN ARROW	127	127				118	103	103					133	133			

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

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 schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-032712
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 2 - TMP Phase II Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (Raeford Road)
 at
 Ferncreek Drive / Roxie Avenue

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: L Overn

PREPARED BY: G B Spell REVIEWED BY:

REVISIONS	INIT.	DATE

PHASING DIAGRAM

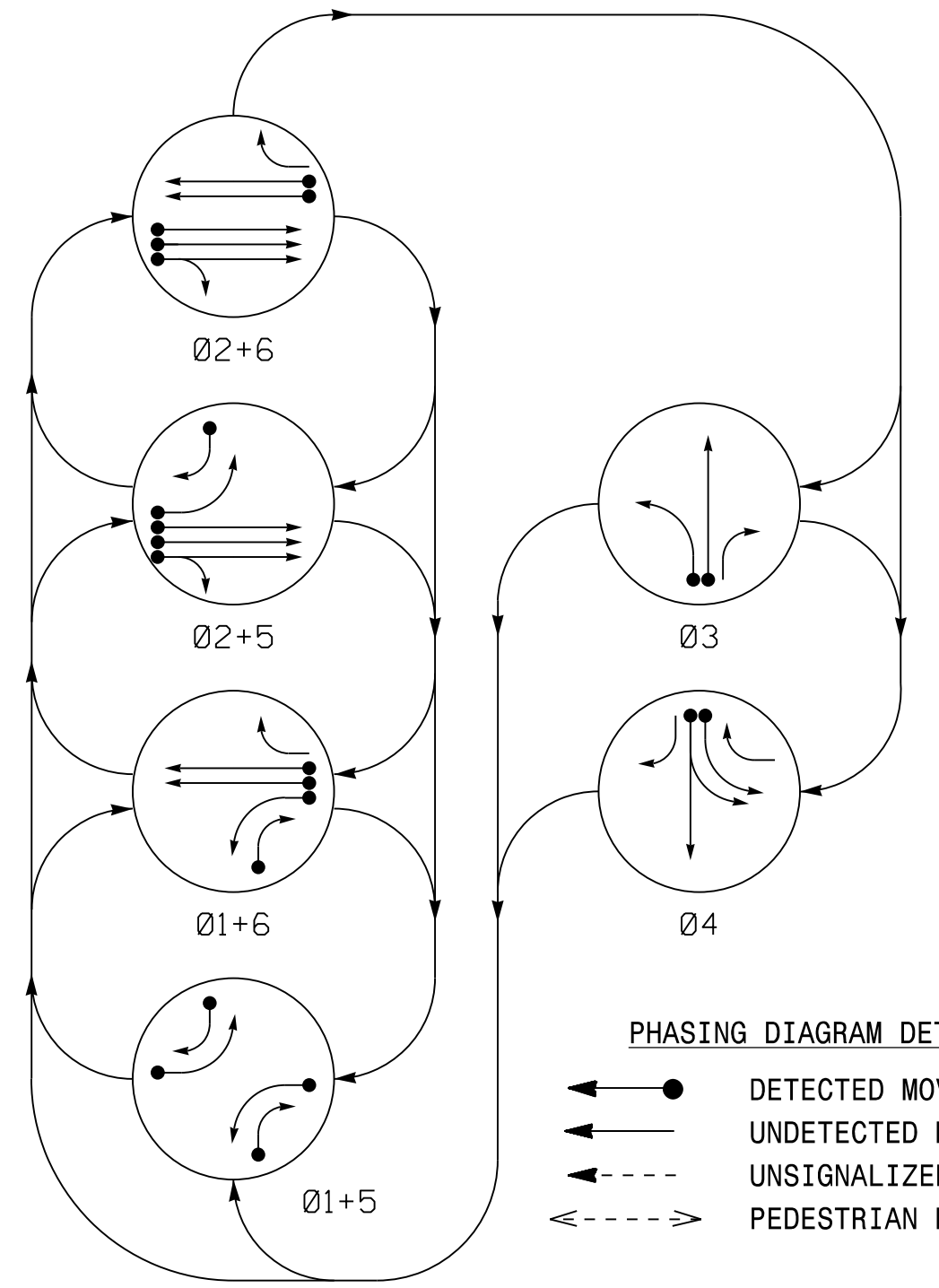
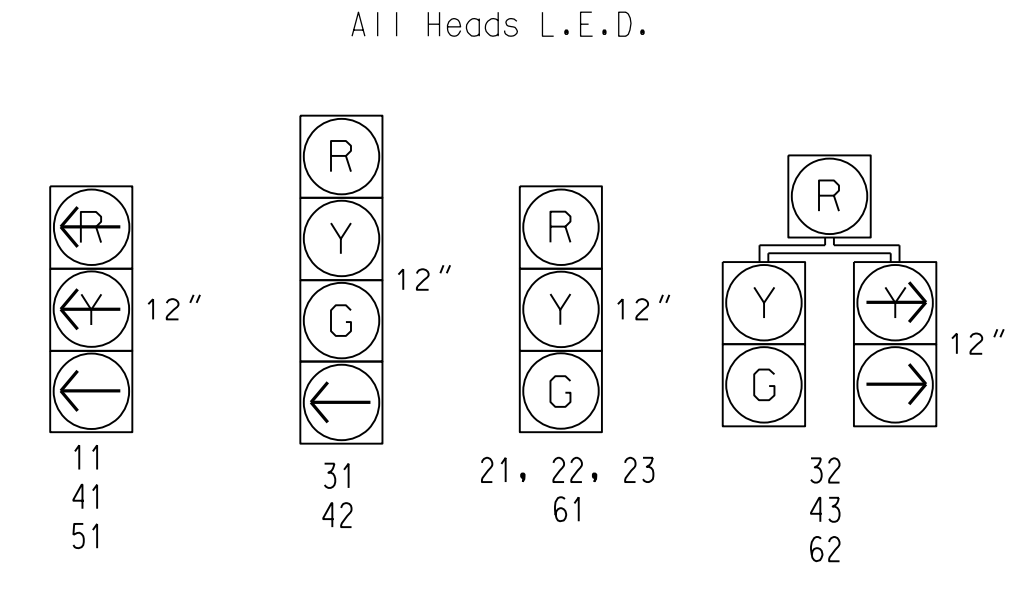


TABLE OF OPERATION

SIGNAL FACE	PHASE					
	Ø1+5	Ø1+6	Ø2+5	Ø2+6	Ø3	Ø4
11	←	←	←	←	←	←
21,22,23	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	←	←	←	←	←	←
42	R	R	R	R	G	R
43	R	R	R	R	G	R
51	←	←	←	←	←	←
61	R	G	R	G	R	Y
62	R	G	R	G	R	Y

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

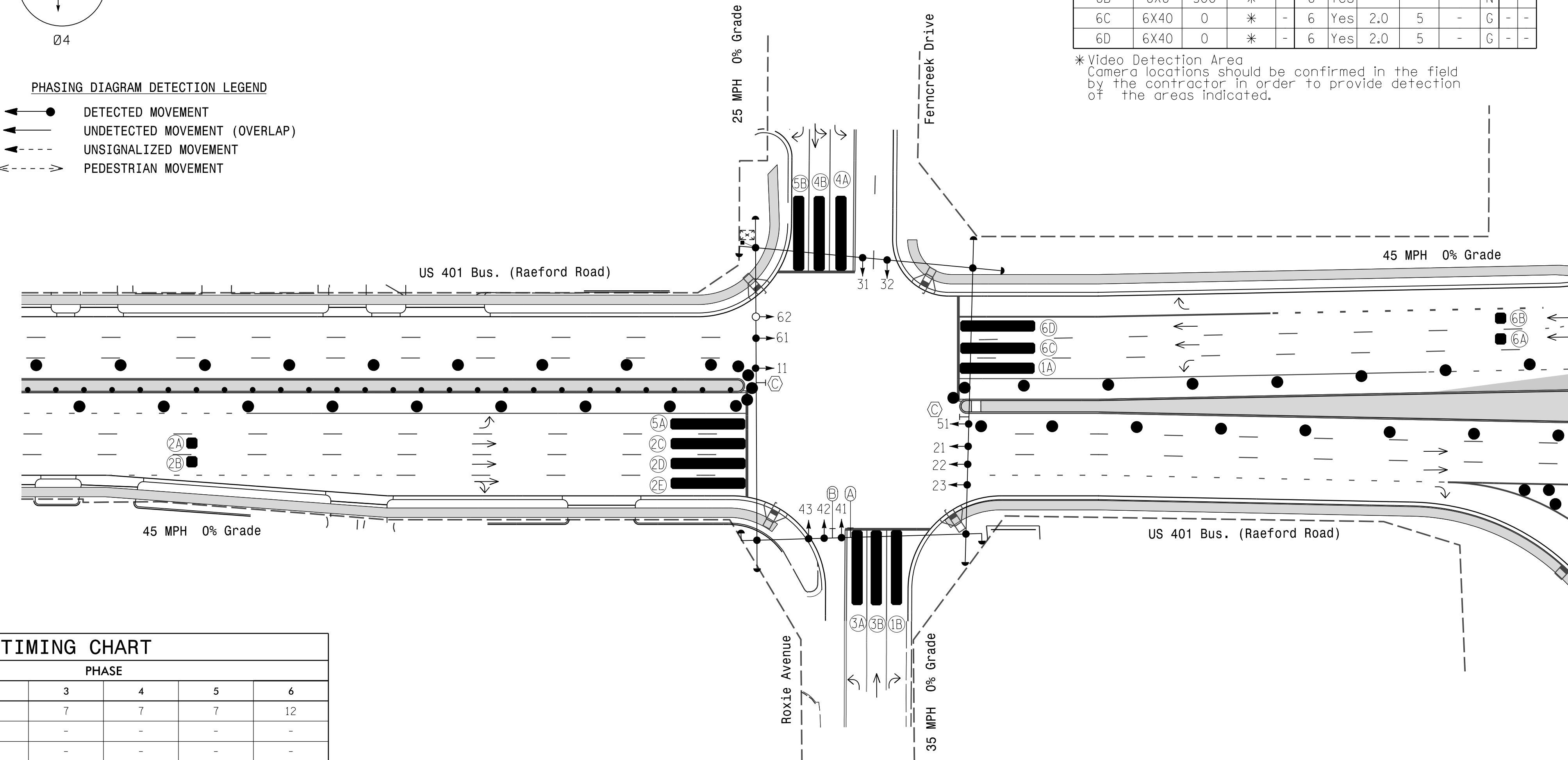
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
1A	6X40	0	*	-	1	Yes	-	-	-	S	-	-
1B	6X40	0	*	-	1	Yes	-	15	-	S	-	-
2A	6X6	300	*	-	2	Yes	-	-	-	N	-	-
2B	6X6	300	*	-	2	Yes	-	-	-	N	-	-
2C	6X40	0	*	-	2	Yes	2.0	5	-	G	-	-
2D	6X40	0	*	-	2	Yes	2.0	5	-	G	-	-
2E	6X40	0	*	-	2	Yes	2.0	5	-	G	-	-
3A	6X40	0	*	-	3	Yes	-	3	-	S	-	-
3B	6X40	0	*	-	3	Yes	-	-	-	S	-	-
4A	6X40	0	*	-	4	Yes	-	3	-	S	-	-
4B	6X40	0	*	-	4	Yes	-	-	-	S	-	-
5A	6X40	0	*	-	5	Yes	-	-	-	S	-	-
5B	6X40	0	*	-	5	Yes	-	15	-	S	-	-
6A	6X6	300	*	-	6	Yes	-	-	-	N	-	-
6B	6X6	300	*	-	6	Yes	-	-	-	N	-	-
6C	6X40	0	*	-	6	Yes	2.0	5	-	G	-	-
6D	6X40	0	*	-	6	Yes	2.0	5	-	G	-	-

*Video Detection Area
Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.

6 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 and Phase 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Reposition existing signal heads numbered 11,21,22,23,51,61.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



ASC/3 TIMING CHART

FEATURE	PHASE					
	1	2	3	4	5	6
Min Green *	7	12	7	7	7	12
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Veh. Extension *	2.0	6.0	2.0	2.0	2.0	6.0
Max I *	15	60	25	25	15	60
Yellow	3.0	4.5	3.8	3.2	3.0	4.5
Red Clear	3.2	1.4	2.5	3.3	3.2	1.4
Red Revert	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-
Seconds /Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Locking Detector	-	-	-	-	-	-
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	X	X	X	X	X	X

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

LEGEND

PROPOSED	EXISTING
Traffic Signal Head	Modified Signal Head
Pedestrian Signal Head With Push Button & Sign	Signal Pole with Guy
Signal Pole with Sidewalk Guy	Inductive Loop Detector
Controller & Cabinet	Junction Box
2-in Underground Conduit	Right of Way
Directional Arrow	Video Detection Area
Construction Zone	Drums
Combined Through and Left Arrow Sign (R3-6L)	Left Arrow "ONLY" Sign (R3-5L)
"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	

Signal Upgrade Temporary Design 3 - TMP Phase III

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Prepared for the Offices of:
Transportation Mobility and Safety Division
North Carolina Department of Transportation
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27526
SCALE: 0 40
1" = 40'

US 401 Bus. (Raeford Road) at Ferncreek Drive / Roxie Avenue
Division 6 Cumberland County Fayetteville
PLAN DATE: March 2018 REVIEWED BY: E D Harris
PREPARED BY: J HAMBRIGHT REVIEWED BY: B L Watson

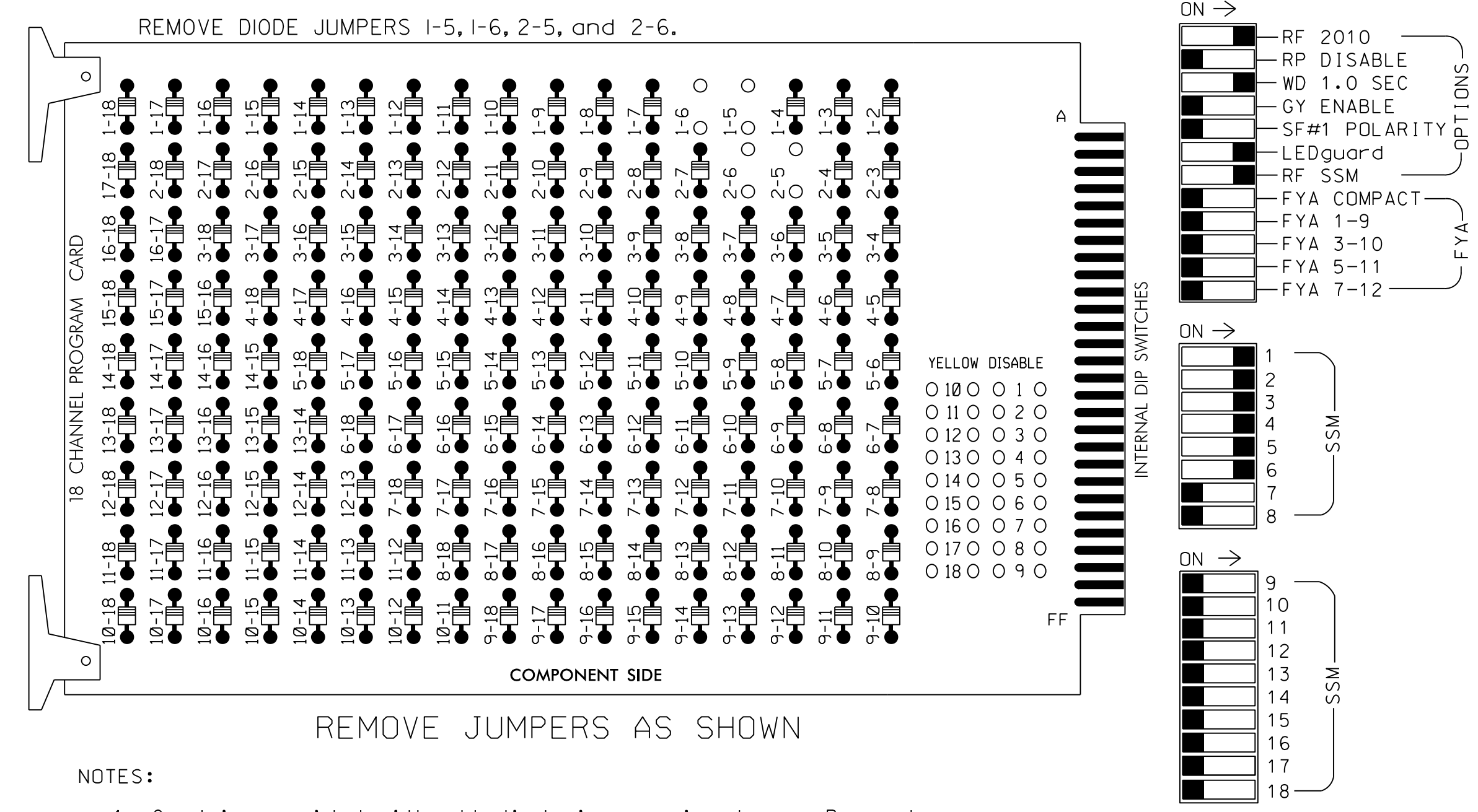
REVISIONS	INIT.	DATE

Professional Engineer Seal
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29449
JESSY L. WATSON
3/29/2018
SIG. INVENTORY NO. 06-0327-T3

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EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program 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,S4,S5,S7,S8
 PHASES USED.....1,2,3,4,5,6
 OVERLAPS.....NONE

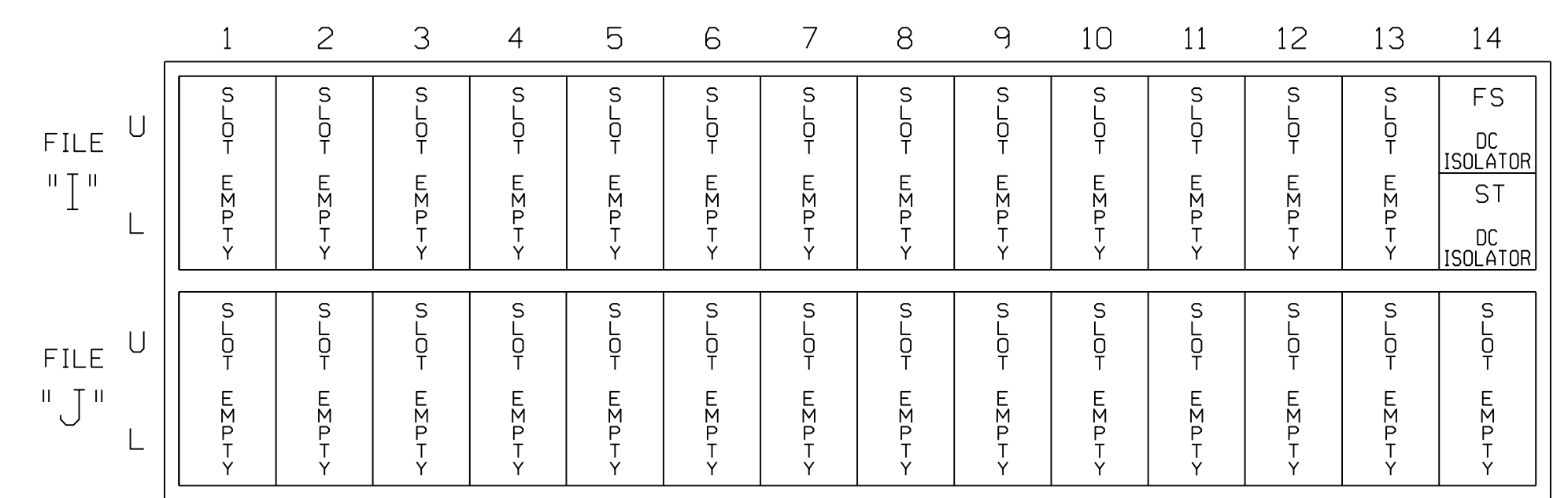
SIGNAL HEAD HOOK-UP CHART

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	32	21,22,23	31	32	41	42	43	62	51	43	61,62
RED			128	116	116	101	101					134
YELLOW			129	117	117	102	102					135
GREEN			130	118	118	103	103					136
RED ARROW	125				101					131		
YELLOW ARROW	126	126			102			102		132	132	
GREEN ARROW	127	127			118	103	103	103		133	133	

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

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 schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0327T3
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 3 - TMP Phase III
Electrical Detail

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www.stantec.com
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ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (Raeford Road)
at
Ferncreek Drive / Roxie Avenue

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: L Overn

PREPARED BY: G B Spell REVIEWED BY:

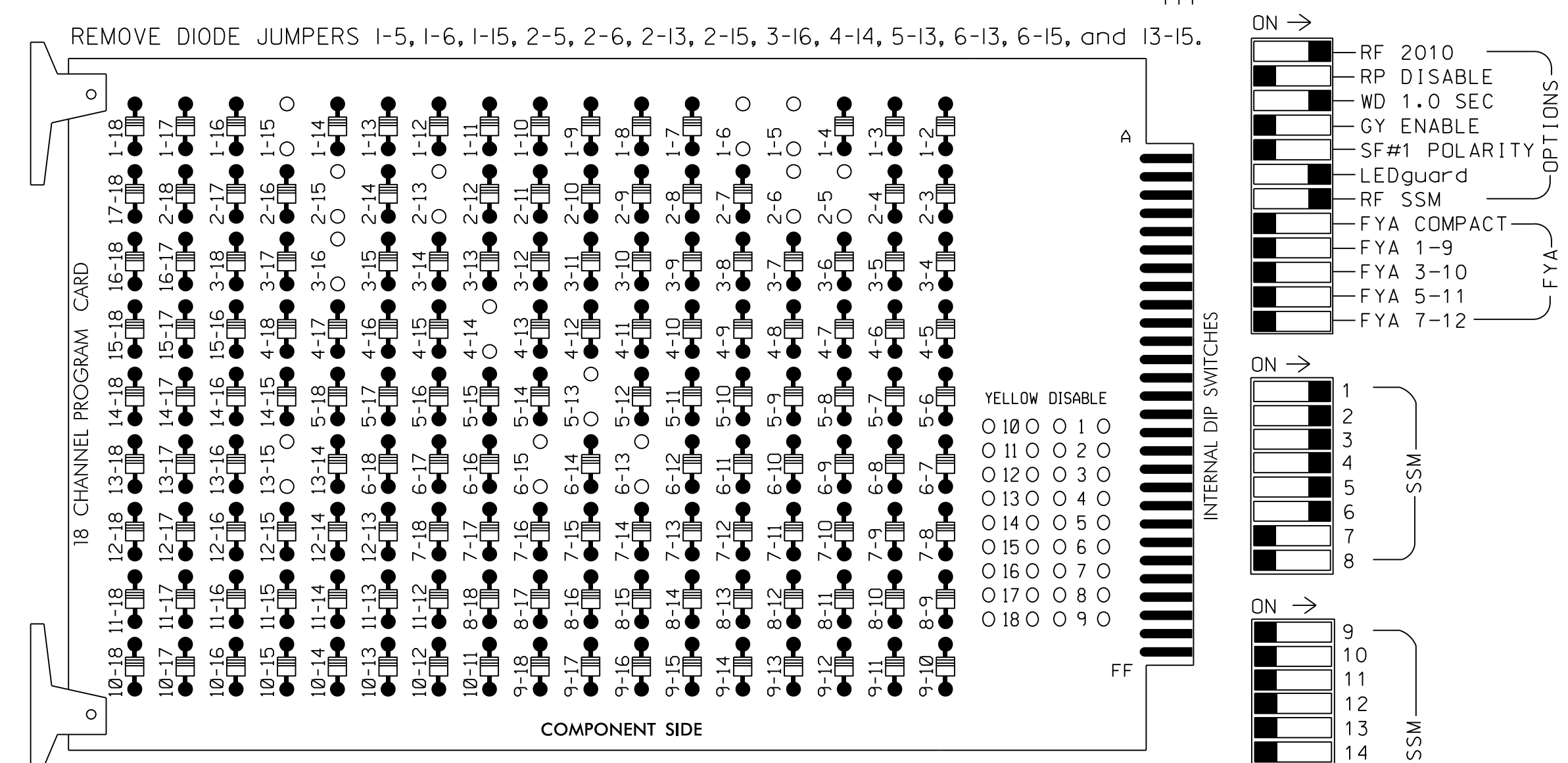
REVISIONS	INIT.	DATE

3/29/2018

SIG. INVENTORY NO. 06-0327T3

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.

■ = 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 WALK and 6 WALK.
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,S12
 PHASES USED.....1,2,2PED,3,3PED,4,
 4PED,5,6,6PED
 OVERLAPS.....NONE

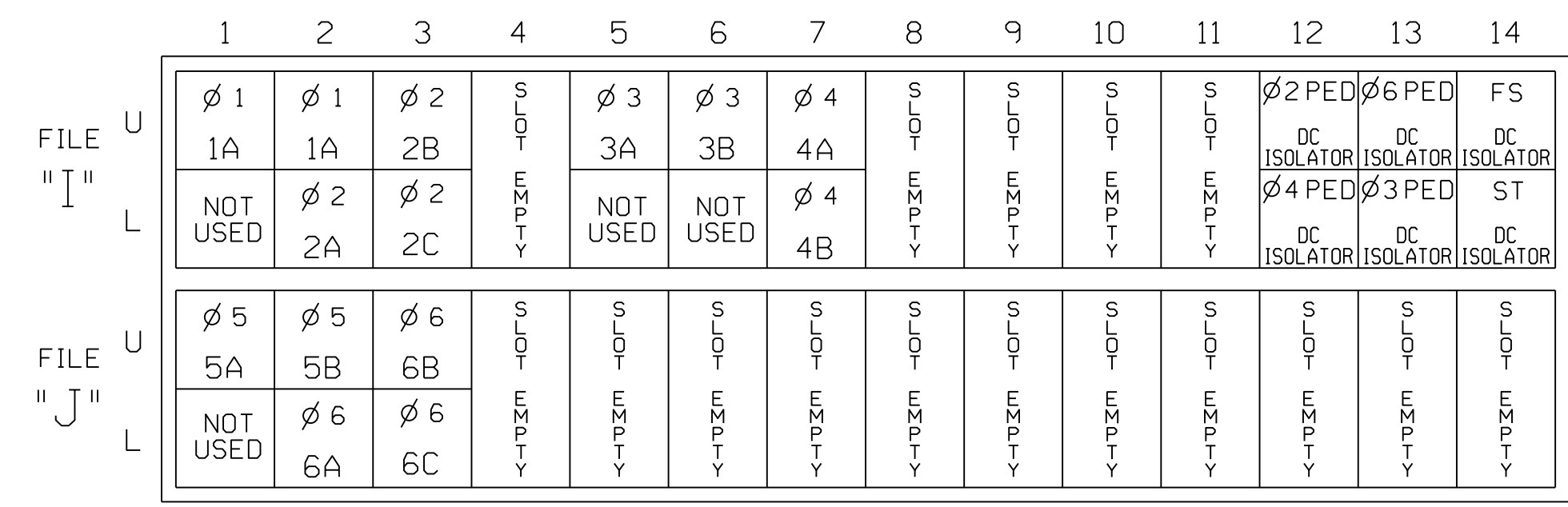
SIGNAL HEAD HOOK-UP CHART

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	3 PED						
SIGNAL HEAD NO.	11	32	21,22, 23	P21, P22	31	32	41	42	43	63	P41, P42	51	43	61,62, 63	P61, P62	NU	NU	P31, P32
RED			128	116	116	101	101							134				
YELLOW			129	117	117	102	102							135				
GREEN			130	118	118	103	103							136				
RED ARROW	125					101							131					
YELLOW ARROW	126	126				102			102				132	132				
GREEN ARROW	127	127				118	103	103	103				133	133				
Hand																		110
Walking Person																		112

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

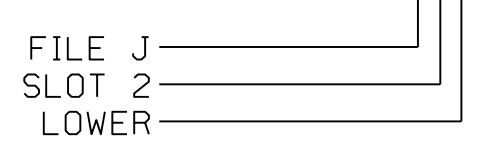
FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A	TB2-1,2	I1U	56	1	1	YES				S
1B	TB2-5,6	I2U	39	1	1	YES		15		S
2A	TB2-7,8	I2L	43	2	2	YES			X	N
2B	TB2-9,10	I3U	63	12	2	YES			X	N
2C	TB2-11,12	I3L	76	32	2	YES			X	N
3A	TB4-5,6	I5U	58	3	3	YES		3		S
3B	TB4-9,10	I6U	41	4	3	YES				S
4A	TB6-1,2	I7U	65	34	4	YES		3		S
4B	TB6-3,4	I7L	78	44	4	YES				S
5A	TB3-1,2	J1U	55	5	5	YES				S
5B	TB3-5,6	J2U	40	5	5	YES		15		S
6A	TB3-7,8	J2L	44	6	6	YES			X	N
6B	TB3-9,10	J3U	64	16	6	YES			X	N
6C	TB3-11,12	J3L	77	36	6	YES			X	N

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

INPUT FILE POSITION LEGEND: J2L



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0327
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 1 of 2

US 401 Bus. (Raeford Road) at Ferncreek Drive / Roxie Avenue

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: L Overn

PREPARED BY: G B Spell REVIEWED BY:

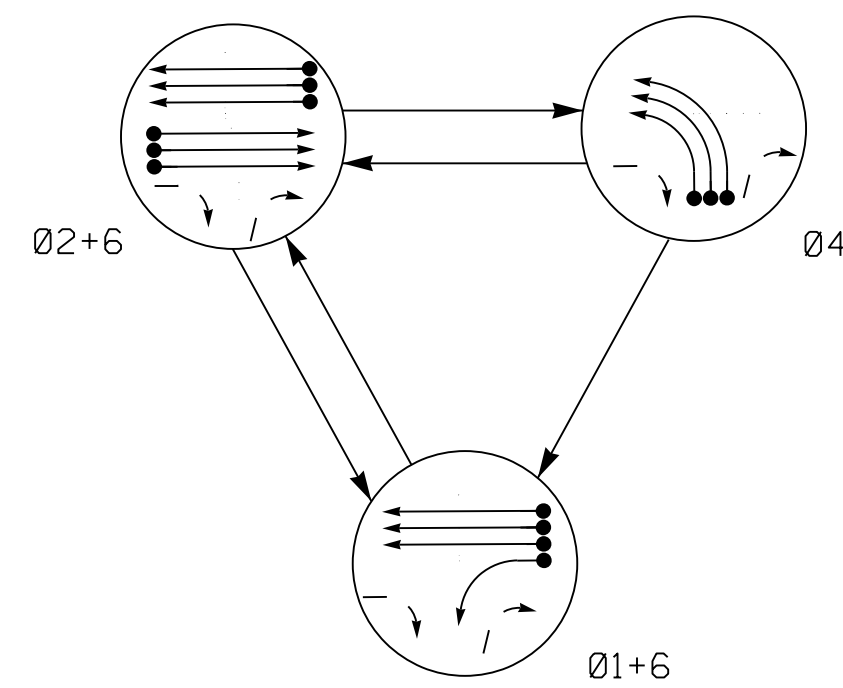
REVISIONS	INIT.	DATE

SEAL

3/29/2018

SIG. INVENTORY NO. 06-0327

PHASING DIAGRAM



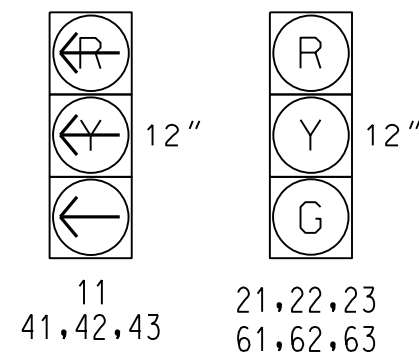
PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE	PHASE			
	01+6	02+6	04	FLASH
11	←	→	→	→
21,22,23	R	G	R	Y
41,42,43	→	→	←	→
61,62,63	G	G	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.



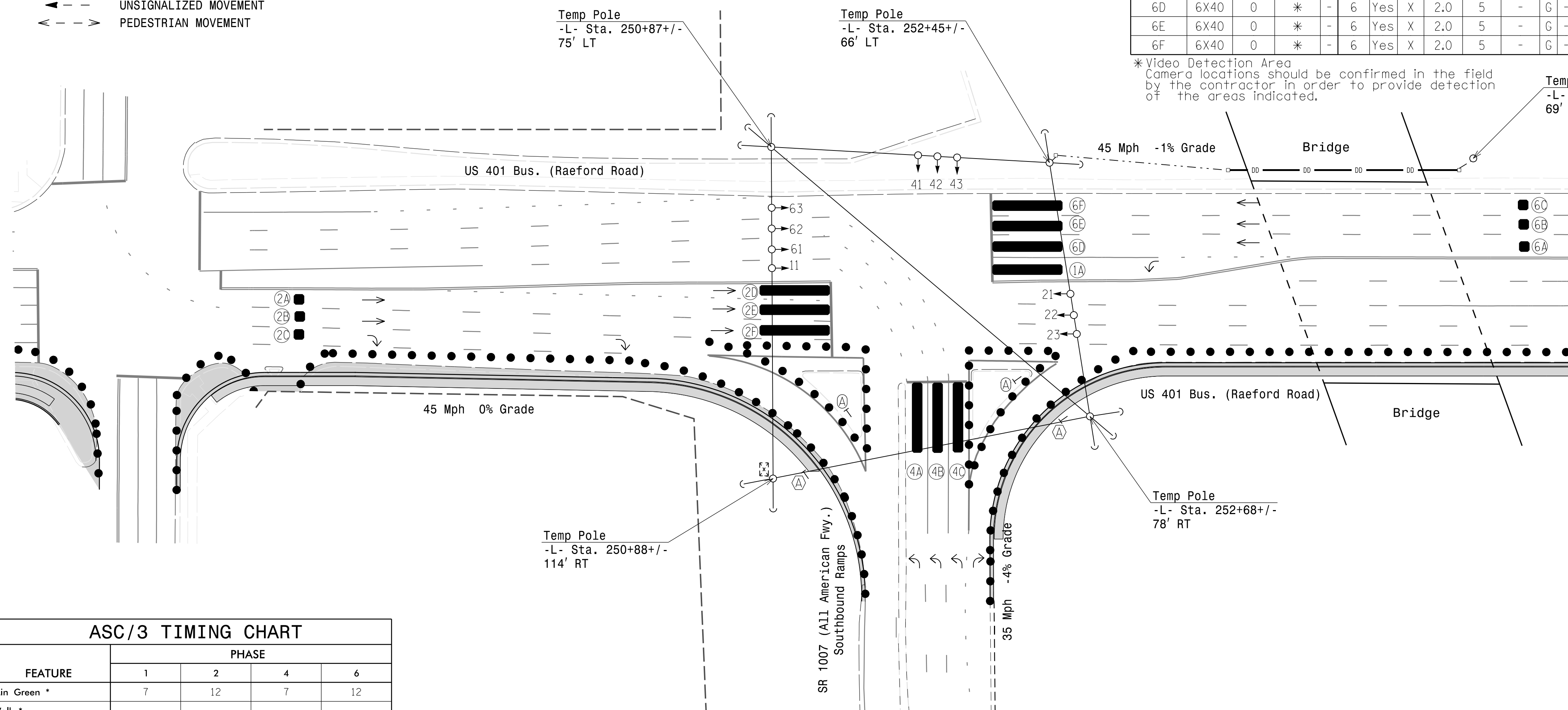
ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR				PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	USE ADDED INITIAL	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP NEW CARD
1A	6X40	0	*	-	1	Yes	-	-	-	-	S	- X
2A	6X6	300	*	-	2	Yes	X	-	-	-	N	- X
2B	6X6	300	*	-	2	Yes	X	-	-	-	N	- X
2C	6X6	300	*	-	2	Yes	X	-	-	-	N	- X
2D	6X40	0	*	-	2	Yes	X	2.0	5	-	G	- X
2E	6X40	0	*	-	2	Yes	X	2.0	5	-	G	- X
2F	6X40	0	*	-	2	Yes	X	2.0	5	-	G	- X
4A	6X40	0	*	-	4	Yes	-	-	-	-	S	- X
4B	6X40	0	*	-	4	Yes	-	-	-	-	S	- X
4C	6X40	0	*	-	4	Yes	-	-	-	-	S	- X
6A	6X6	300	*	-	6	Yes	X	-	-	-	N	- X
6B	6X6	300	*	-	6	Yes	X	-	-	-	N	- X
6C	6X6	300	*	-	6	Yes	X	-	-	-	N	- X
6D	6X40	0	*	-	6	Yes	X	2.0	5	-	G	- X
6E	6X40	0	*	-	6	Yes	X	2.0	5	-	G	- X
6F	6X40	0	*	-	6	Yes	X	2.0	5	-	G	- X

* Video Detection Area
Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.

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.
- Locate new cabinet foundation so as not to obstruct sight distance of vehicles turning right on red. Relocate existing cabinet and controller onto new foundation.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Field adjust temporary poles as needed.



ASC/3 TIMING CHART

FEATURE	PHASE			
	1	2	4	6
Min Green *	7	12	7	12
Walk *	-	-	-	-
Ped Clear	-	-	-	-
Veh. Extension *	2.0	6.0	2.0	6.0
Max 1 *	15	60	25	60
Yellow	3.0	4.5	3.0	4.6
Red Clear	2.8	1.3	3.3	1.2
Red Revert	-	-	-	-
Actuations B4 Add *	-	-	-	-
Seconds /Actuation *	-	-	-	-
Max Initial *	-	-	-	-
Time Before Reduction *	-	15	-	15
Time To Reduce *	-	30	-	30
Minimum Gap	-	3.0	-	3.0
Locking Detector	-	-	-	-
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 | ● → |
| ○ → 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 | → |
| ▬ Video Detection Area | N/A |
| ▬ Construction Zone | N/A |
| ● ● ● Drums | N/A |
| Ⓐ "YIELD" Sign (R1-2) | Ⓐ |

Signal Upgrade Temporary Design 1 - TMP Phase I

US 401 Bus. (Raeford Road) at SR 1007 (All American Freeway) Southbound Ramps

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: E D Harris

PREPARED BY: J. Hambright REVIEWED BY: B L Watson

REVISIONS	INIT.	DATE

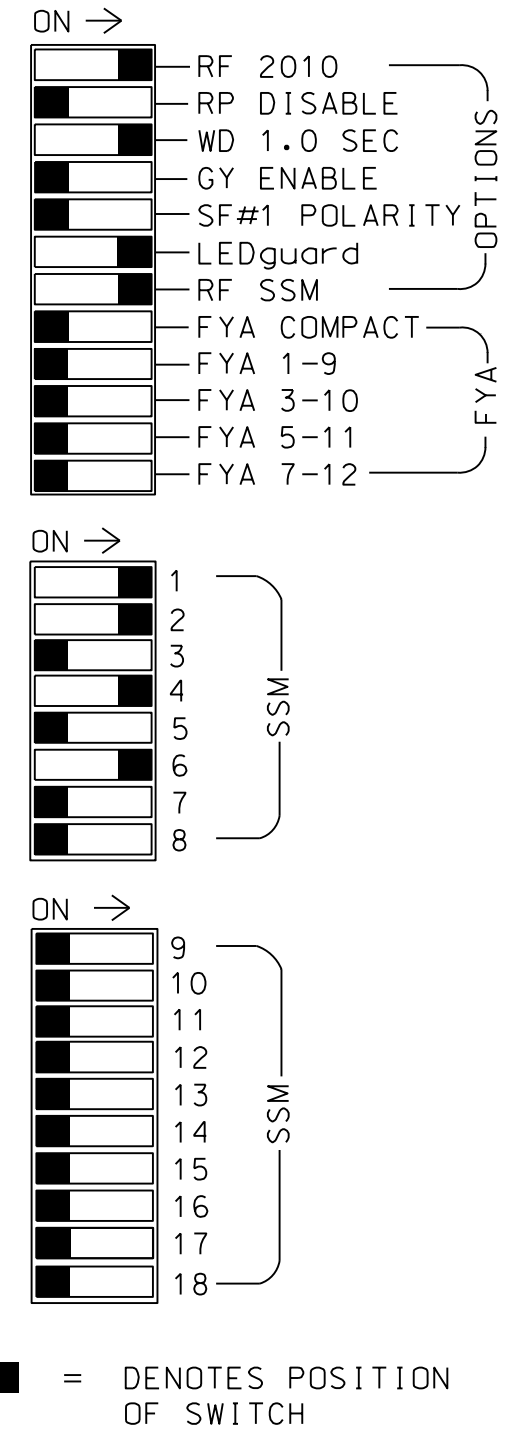
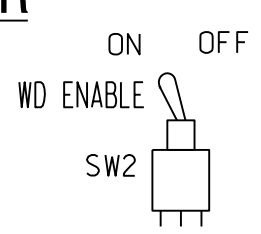
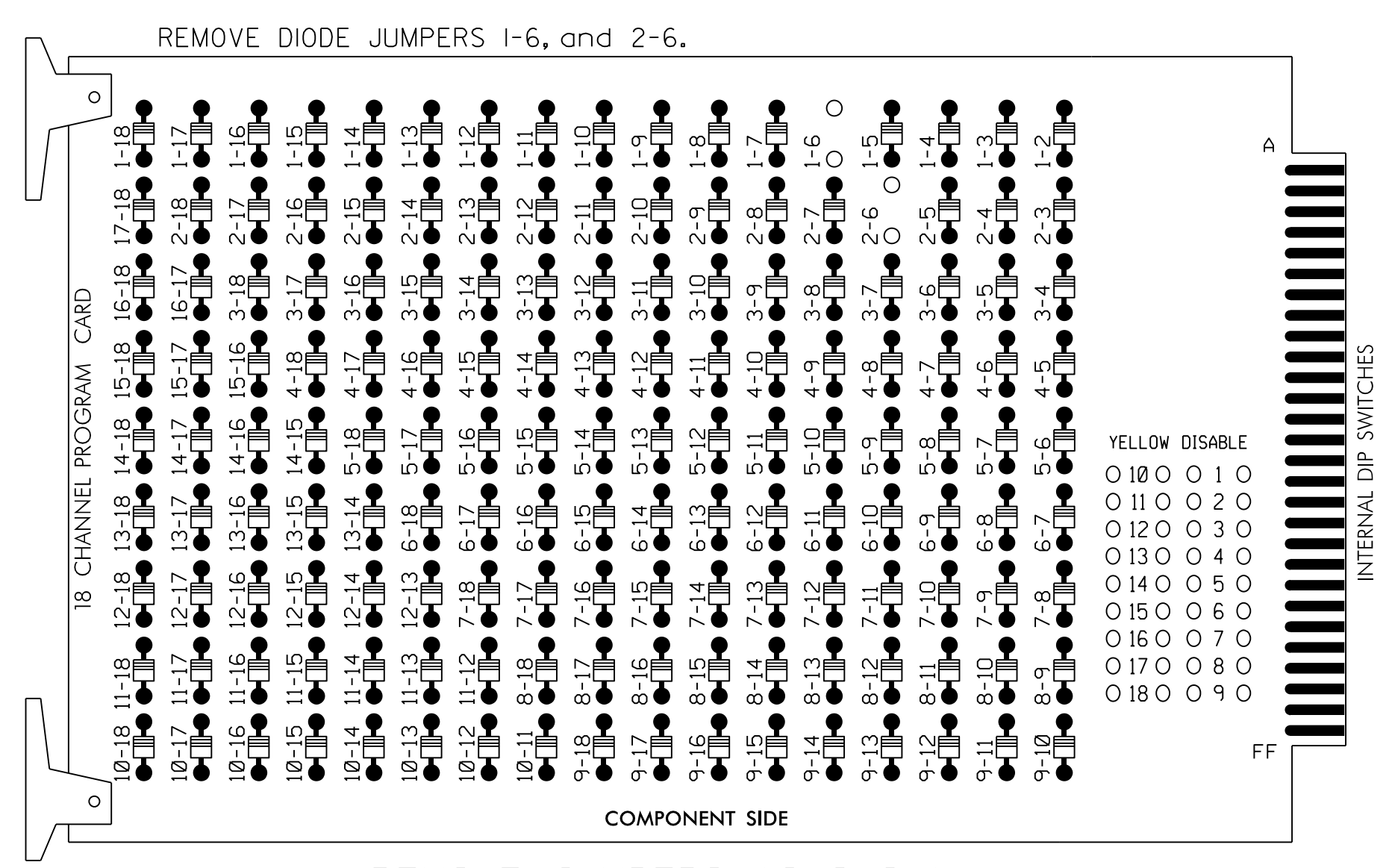
DATE: 3/29/2018

SIG. INVENTORY NO. 06-032011

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 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,S5,S8
 PHASES USED.....1,2,4,6
 OVERLAPS.....NONE

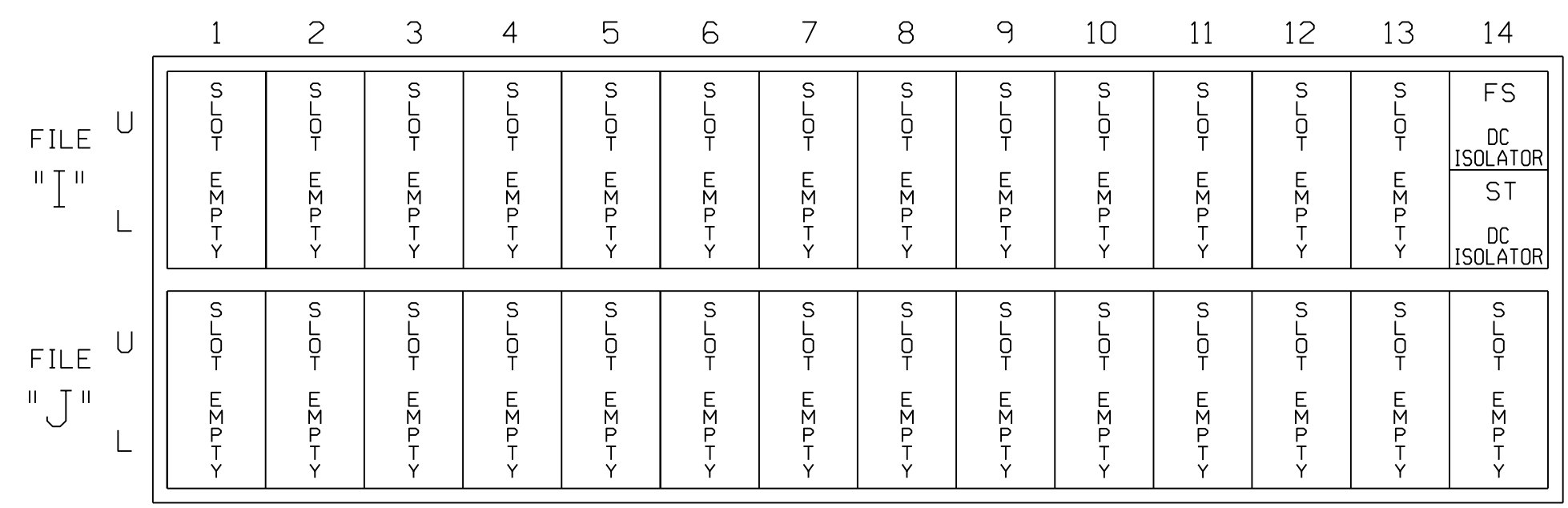
SIGNAL HEAD HOOK-UP CHART

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	21,22, 23	NU	NU	41,42, 43	NU	NU	61,62, 63	NU	NU	NU	NU
RED		128						134				
YELLOW		129						135				
GREEN		130						136				
RED ARROW	125				101							
YELLOW ARROW	126				102							
GREEN ARROW	127				103							

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



SPECIAL DETECTOR NOTE

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 schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0320T1
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 1 - TMP Phase I
 Electrical Detail

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Stantec Consulting Services Inc.
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 License No. F-0672

**ELECTRICAL AND PROGRAMMING
 DETAILS FOR:**

US 401 Bus.(Raeford Road)
 at
 SR 1007 (All American Freeway)
 Southbound Ramps

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: G B Spell REVIEWED BY:

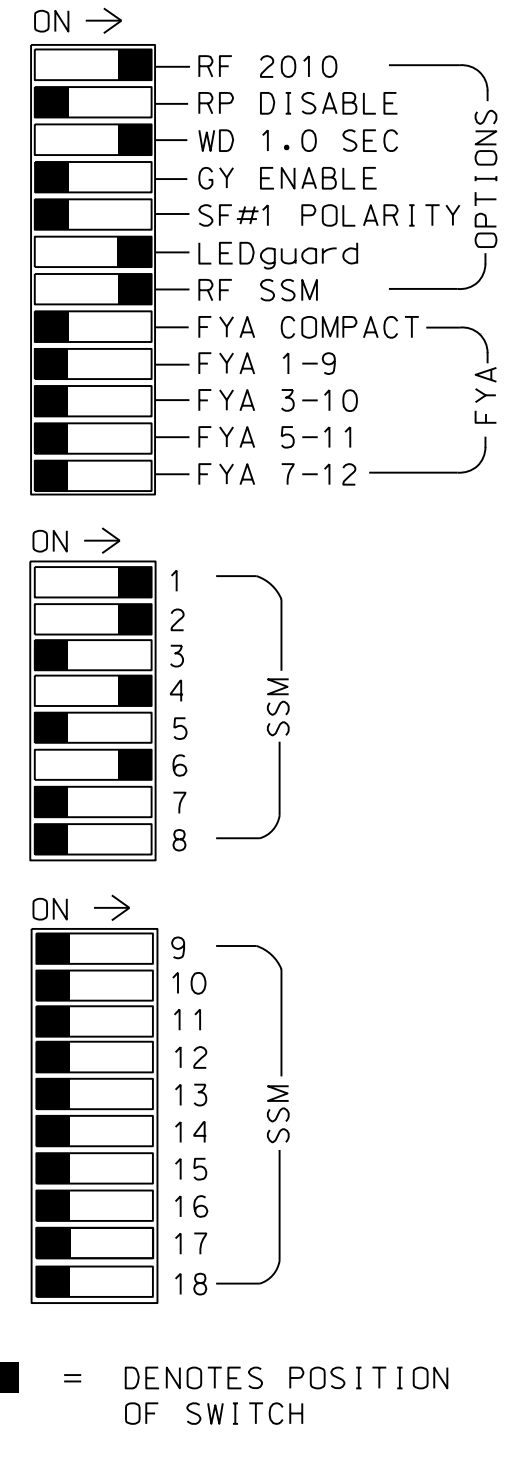
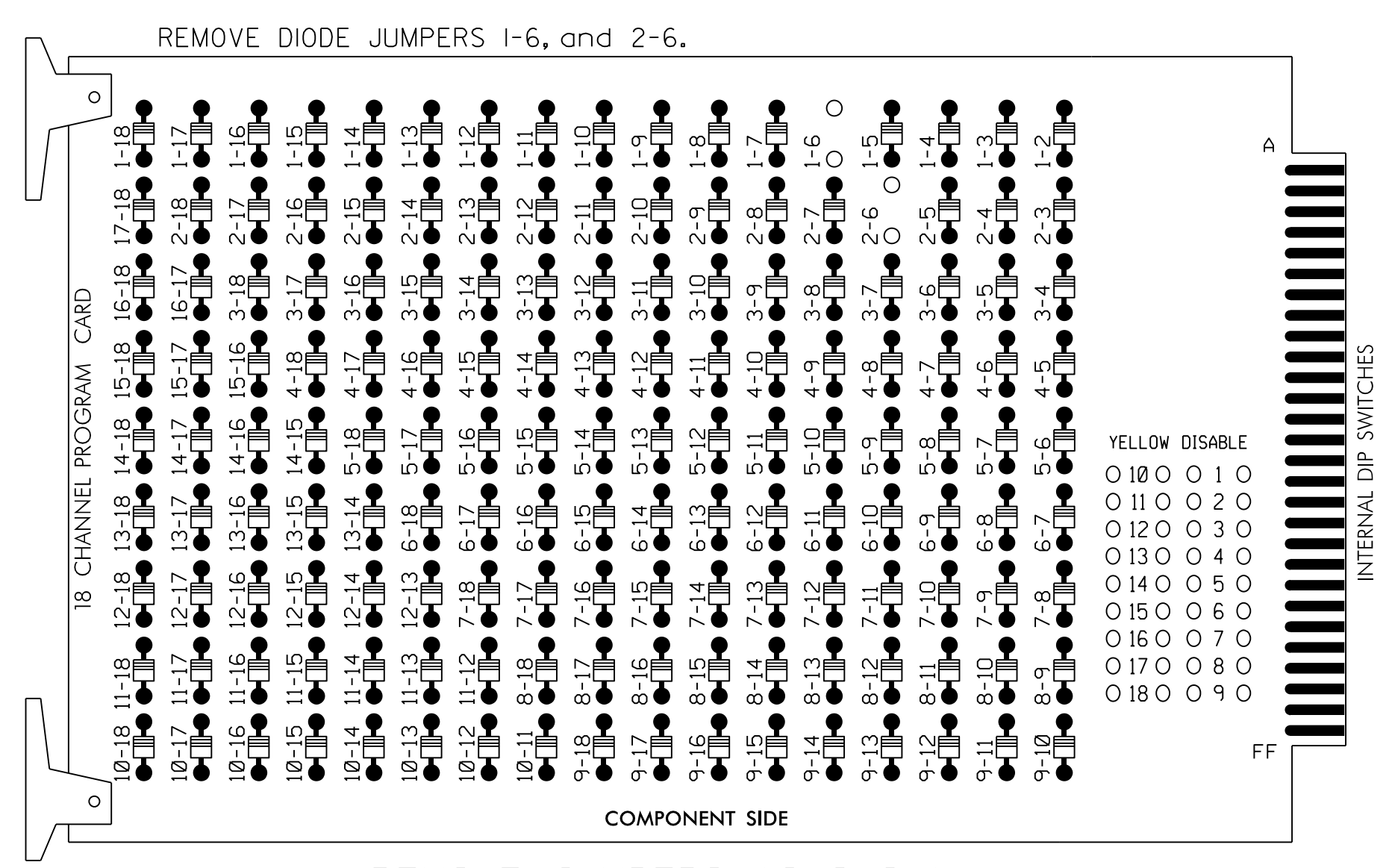
SEAL
 NORTH CAROLINA
 PROFESSIONAL
 ENGINEER
 LAWRENCE E. OVERN
 045933

3/29/2018

SIG. INVENTORY NO. 06-0320T1

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 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,S5,S8
 PHASES USED.....1,2,4,6
 OVERLAPS.....NONE

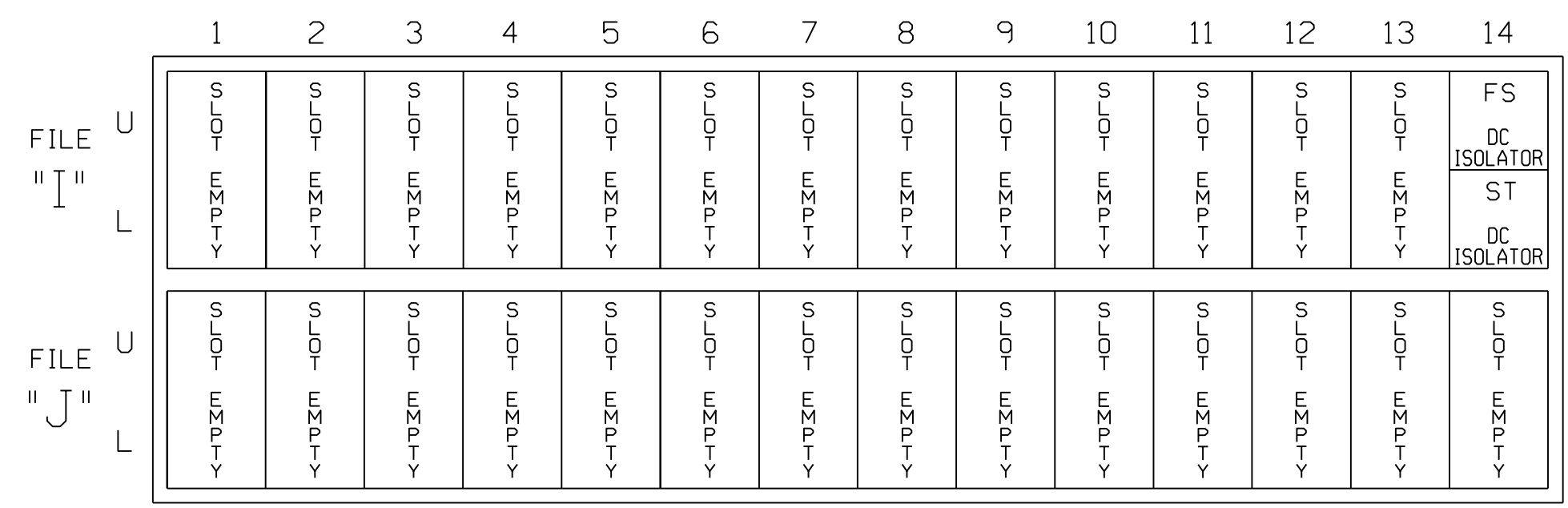
SIGNAL HEAD HOOK-UP CHART

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	21,22, 23	NU	NU	41,42	NU	NU	61,62	NU	NU	NU	NU
RED		128						134				
YELLOW		129						135				
GREEN		130						136				
RED ARROW	125				101							
YELLOW ARROW	126				102							
GREEN ARROW	127				103							

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

SPECIAL DETECTOR NOTE

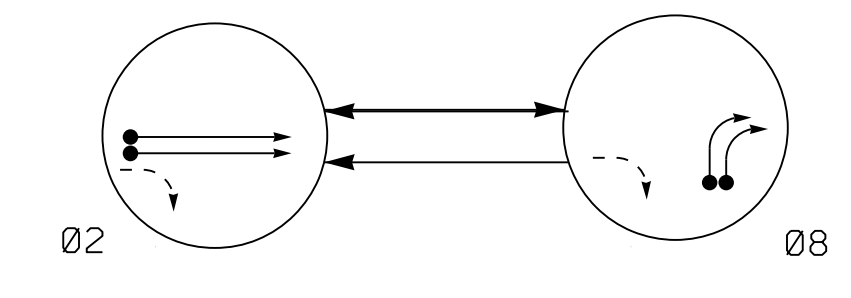
Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0320T2
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 2 - TMP Phase II Electrical Detail

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p>Prepared in the Offices of:</p>	<p>US 401 Bus. (Raeford Road) at SR 1007 (All American Freeway) Southbound Ramps</p>		<p>SEAL</p> <p>STATE OF NORTH CAROLINA</p> <p>PROFESSIONAL ENGINEER</p> <p>LAURENCE E. OVERN</p> <p>045933</p> <p>3/29/2018</p>							
		<p>Division 6 Cumberland County Fayetteville</p> <p>PLAN DATE: March 2018 REVIEWED BY: L Overn</p> <p>PREPARED BY: G B Spell REVIEWED BY:</p>									
<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		NO.	DESCRIPTION	INIT.	DATE					<p>DATE</p> <p>3/29/2018</p>	
NO.	DESCRIPTION	INIT.	DATE								

PHASING DIAGRAM

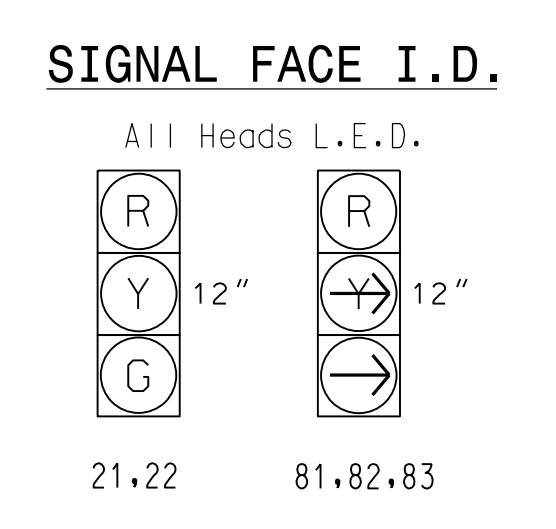


PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	02	08	FLIGHTS
21,22	G	R	Y
81,82,83	R	→	R



ASC/3 DETECTOR INSTALLATION CHART

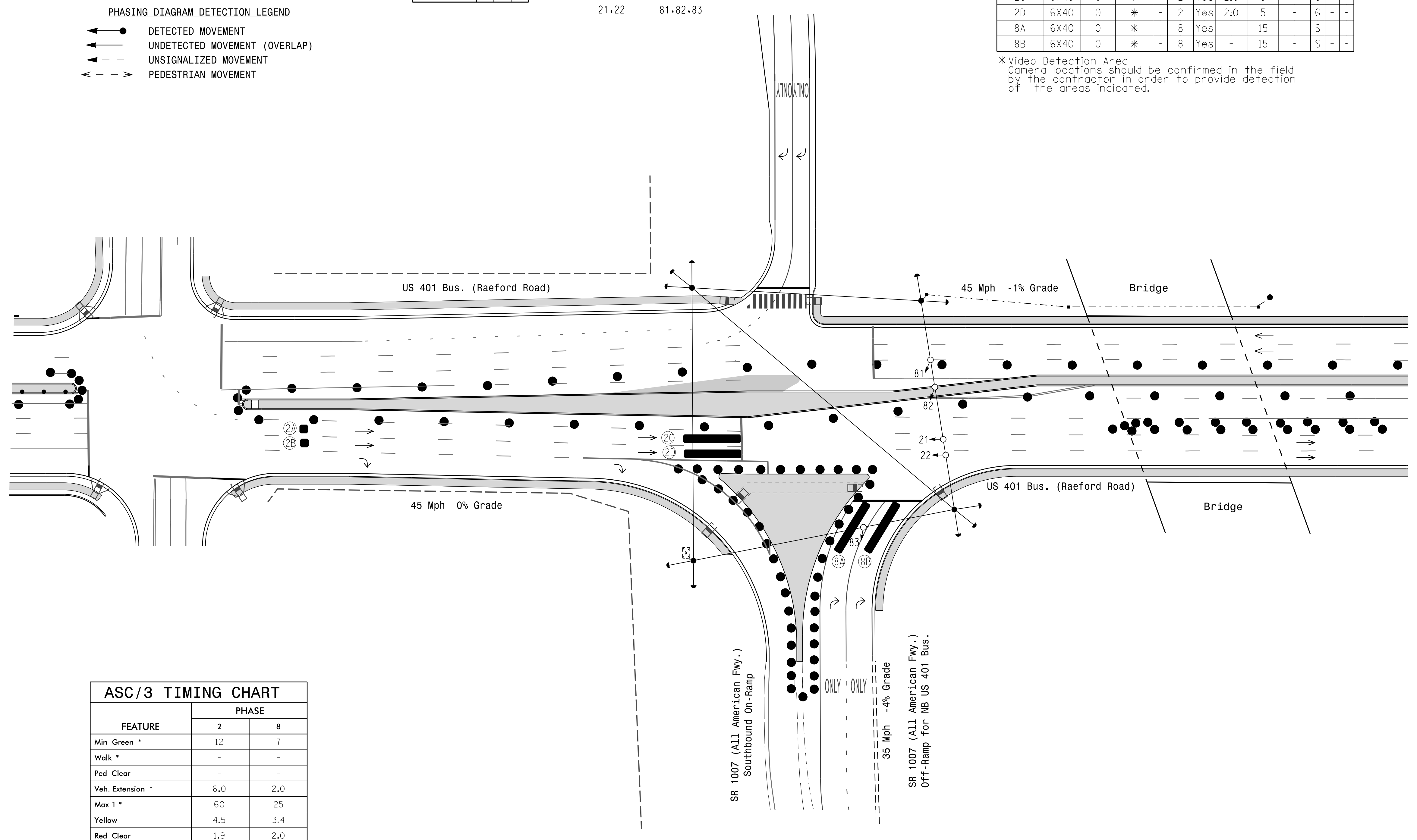
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	DETECTOR		PROGRAMMING							
			TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP SYSTEM	NEW CARD
2A	6X6	300	*	-	2	Yes	-	-	-	N	-	-
2B	6X6	300	*	-	2	Yes	-	-	-	N	-	-
2C	6X40	0	*	-	2	Yes	2.0	5	-	G	-	-
2D	6X40	0	*	-	2	Yes	2.0	5	-	G	-	-
8A	6X40	0	*	-	8	Yes	-	15	-	S	-	-
8B	6X40	0	*	-	8	Yes	-	15	-	S	-	-

*Video Detection Area
Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.

2 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. Set all detector units to presence mode.
4. 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	8
Min Green *	12	7
Walk *	-	-
Ped Clear	-	-
Veh. Extension *	6.0	2.0
Max I *	60	25
Yellow	4.5	3.4
Red Clear	1.9	2.0
Red Revert	-	-
Actuations B4 Add *	-	-
Seconds /Actuation *	-	-
Max Initial *	-	-
Time Before Reduction *	15	-
Time To Reduce *	30	-
Minimum Gap	3.0	-
Locking Detector	-	-
Recall Position	VEH. RECALL	-
Dual Entry	-	-
Simultaneous Gap	-	-

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 8 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 Guy	○ → Signal Pole with Sidewalk Guy
□ → Inductive Loop Detector	□ → Controller & Cabinet
□ → Junction Box	□ → 2-in Underground Conduit
- - - N/A	- - - Right of Way
→ Directional Arrow	→ Directional Arrow
▬ Video Detection Area	N/A
▬ Construction Zone	N/A
● ● ● Drums	N/A

Signal Upgrade Temporary Design 3 - TMP Phase III

Stantec

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Prepared for the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27526

US 401 Bus. (Raeford Road) at SR 1007 (All American Freeway) Southbound Ramps

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: E D Harris

PREPARED BY: J. Hambricht REVIEWED BY: B L Watson

REVISIONS	INIT.	DATE

Professional Engineer Seal

SEAL 29449

ENGINEER JEFFREY L. WATSON

DATE 3/29/2018

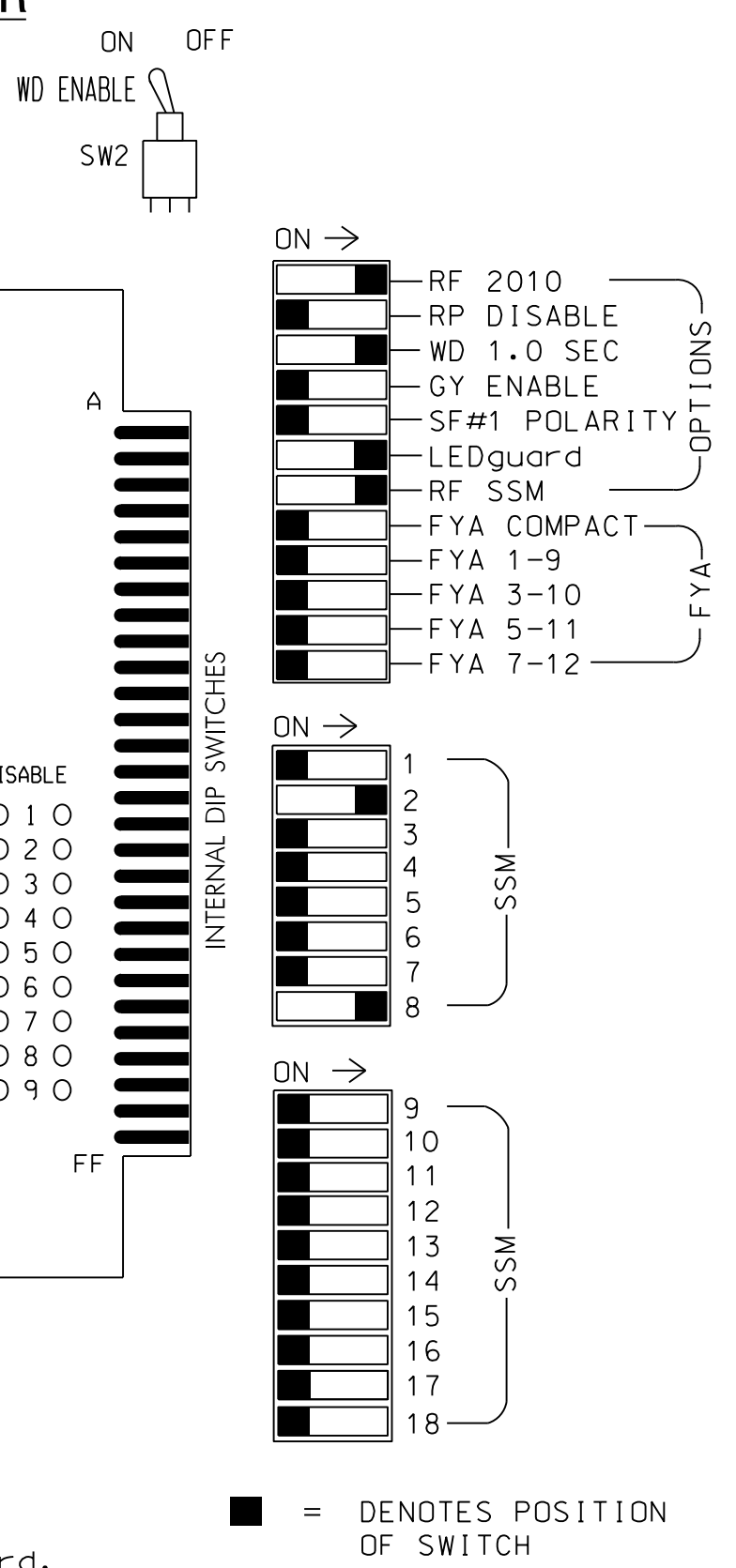
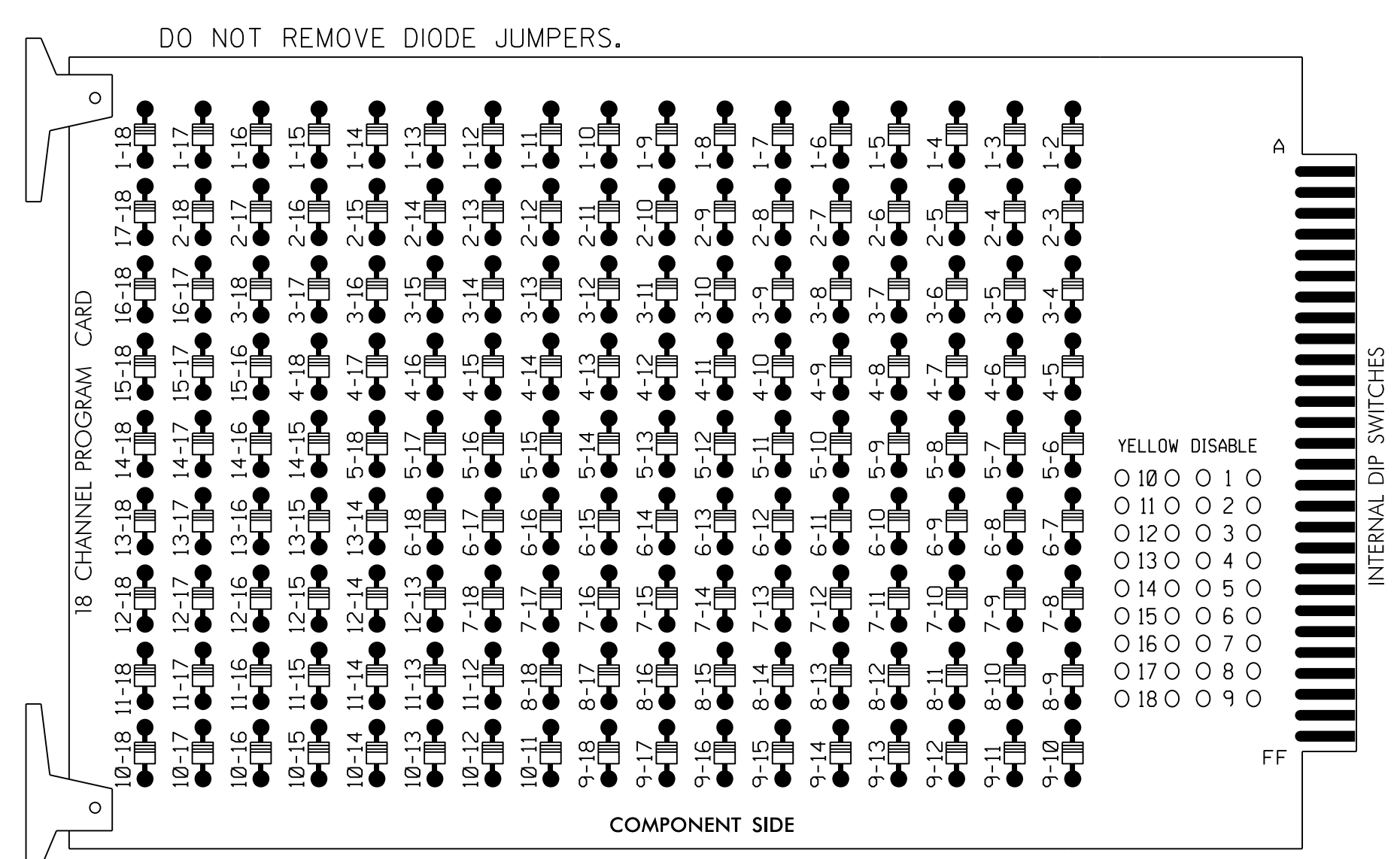
SIG. INVENTORY NO. 06-032013

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/29/2018 10:45:11 AM
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EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program controller to start up in phase 2 Green.
- Program phase 6 for Red Flash.
- 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.....S2,S11
 PHASES USED.....2,8
 OVERLAPS.....NONE

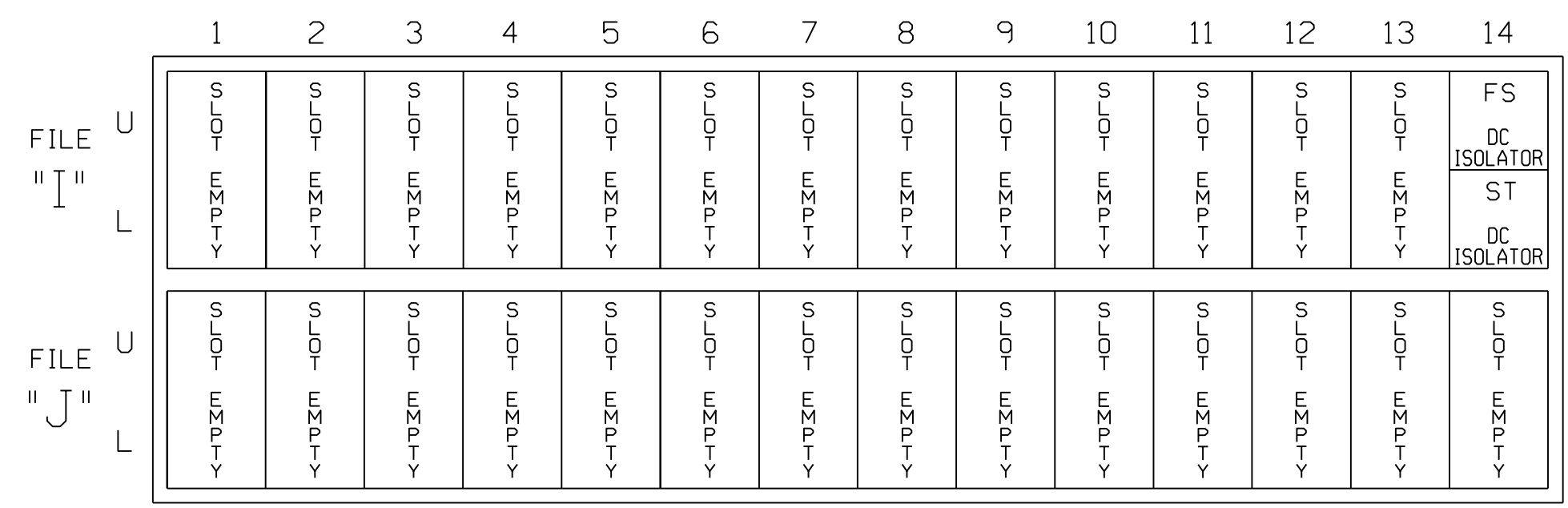
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	NU	NU	NU	NU	NU	NU	81,82, 83	NU
RED		128										107
YELLOW		129										
GREEN		130										
RED ARROW												
YELLOW ARROW											108	
GREEN ARROW											109	

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

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 schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0320T3
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 3 - TMP Phase III
 Electrical Detail

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ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 401 Bus. (Raeford Road)
 at
 SR 1007 (All American Freeway)
 Southbound Ramps

Division 6 Cumberland County Fayetteville

PLAN DATE: March 2018 REVIEWED BY: L Overn

PREPARED BY: G B Spell REVIEWED BY:

REVISIONS	INIT.	DATE

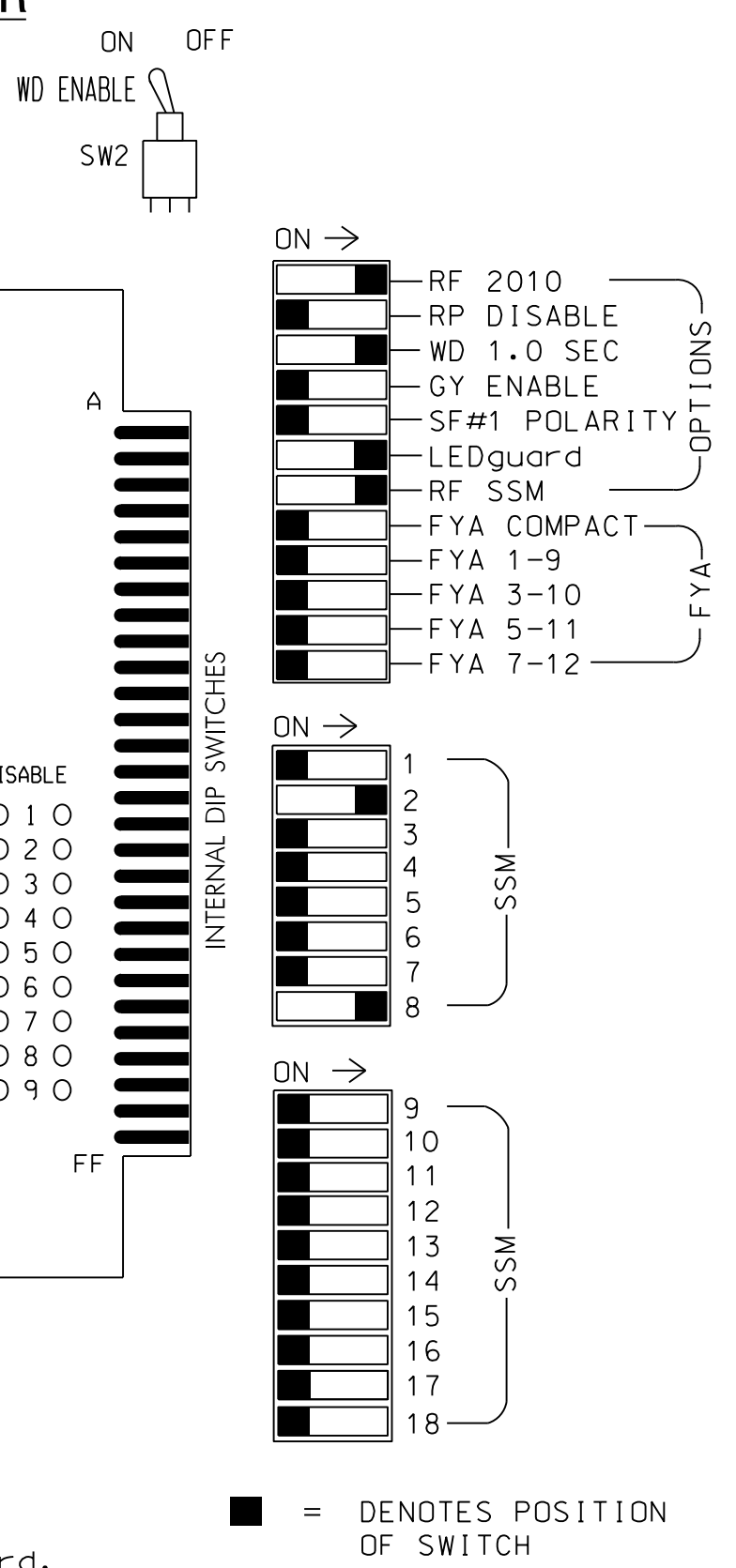
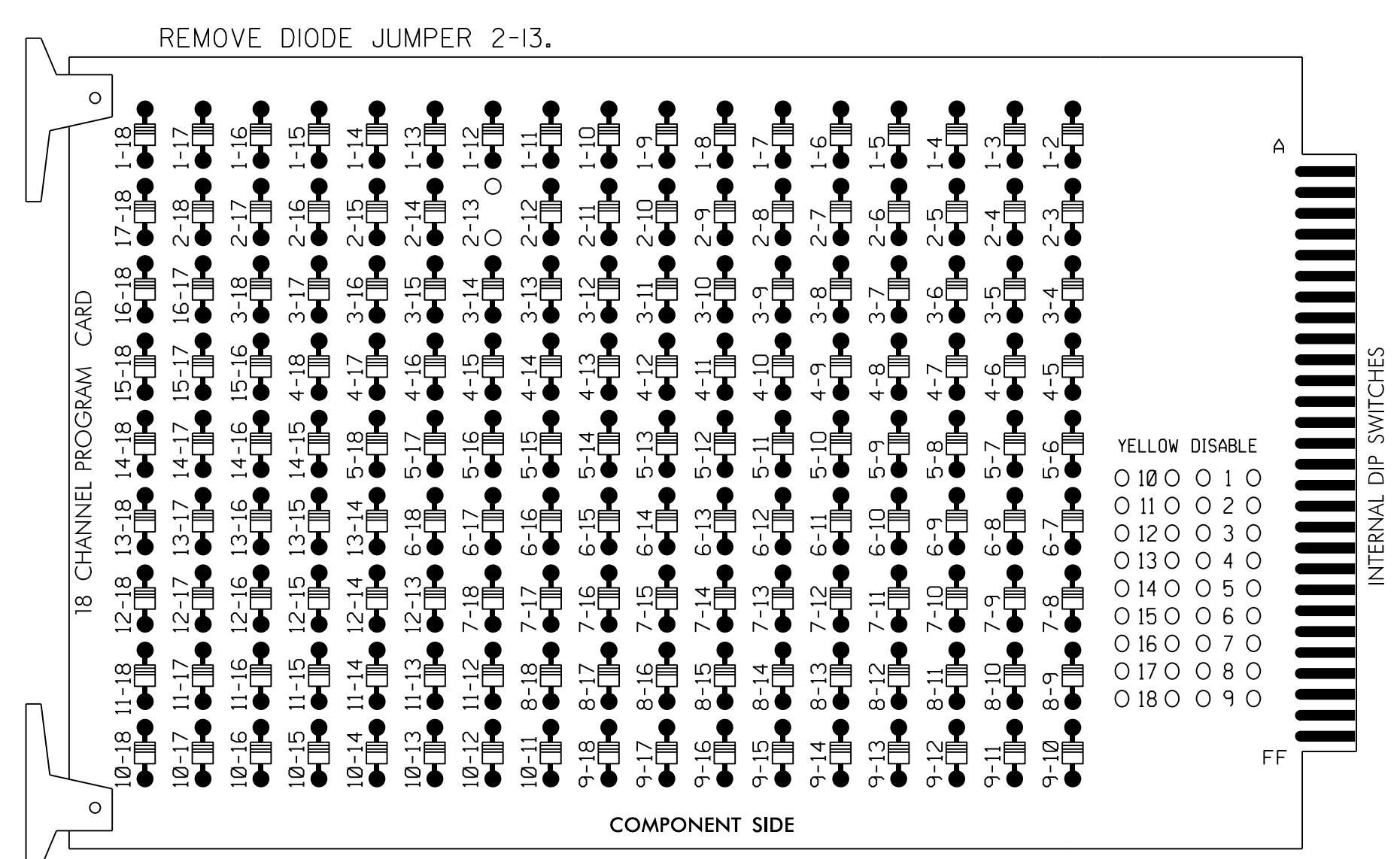
SEAL

3/29/2018

SIG. INVENTORY NO. 06-0320T3

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumper and set switches as shown)



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 2 Walk.
3. Program phase 6 for Red Flash.
4. 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.....S2,S3,S11
 PHASES USED.....2,2PED,8
 OVERLAPS.....NONE

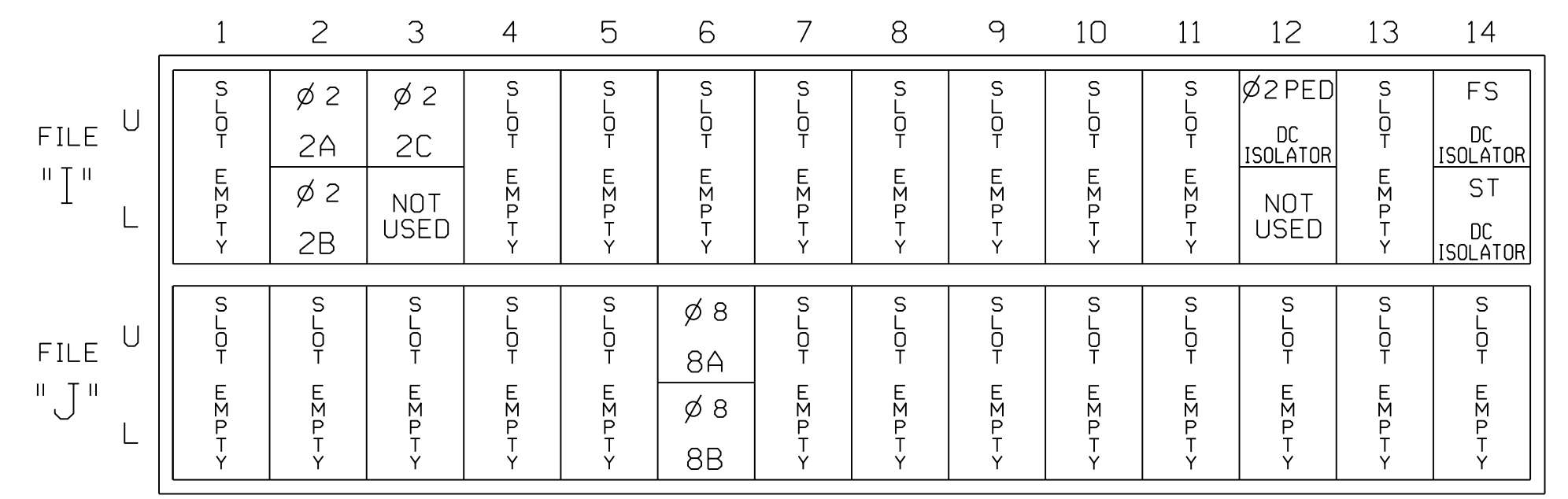
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22,23	P21, P22	NU	NU	NU	NU	NU	NU	NU	81,82,83	NU
RED		128									107	
YELLOW		129										
GREEN		130										
RED ARROW												
YELLOW ARROW											108	
GREEN ARROW											109	
Hand icon			113									
Person icon			115									

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



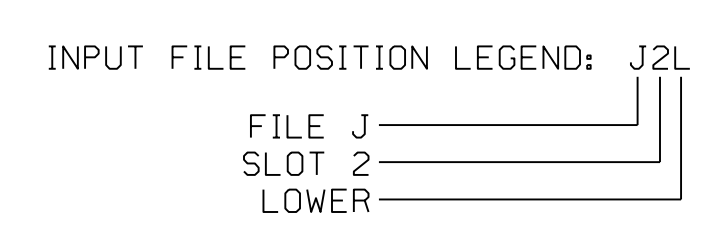
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	I2U	39	2	2	YES			X	N
2B	TB2-7,8	I2L	43	12	2	YES			X	N
2C	TB2-9,10	I3U	63	32	2	YES			X	N
8A	TB5-9,10	J6U	42	8	8	YES		15		S
8B	TB5-11,12	J6L	46	18	8	YES		15		S
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOT 112.



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: 06-0320
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Final Design
 Electrical Detail

US 401 Bus. (Raeford Road) at SR 1007 (All American Freeway) Southbound Ramp
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: G B Spell REVIEWED BY:

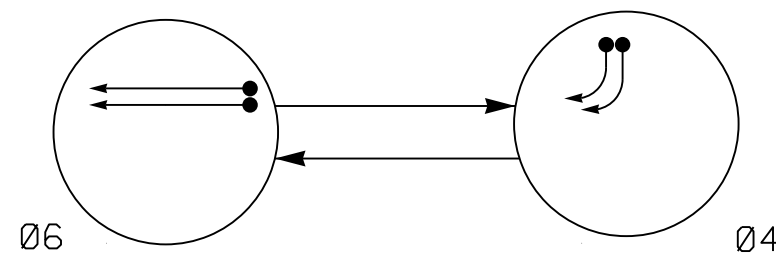
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS	INIT.	DATE

DATE: 3/29/2018
 SIG. INVENTORY NO. 06-0320

DATE: U:\Projects\Signal\Signal\electrical\Detail\sig-59.1.dwg User: rmmancy

PHASING DIAGRAM



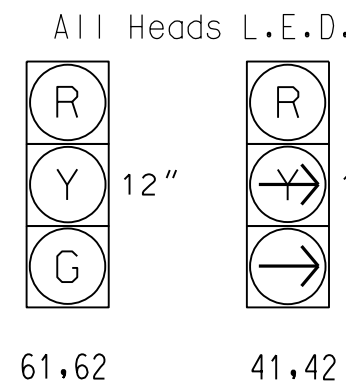
PHASING DIAGRAM DETECTION LEGEND

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

TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø 6	Ø 4	FLASH
41,42	R	→ R	
61,62	G	R	Y

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

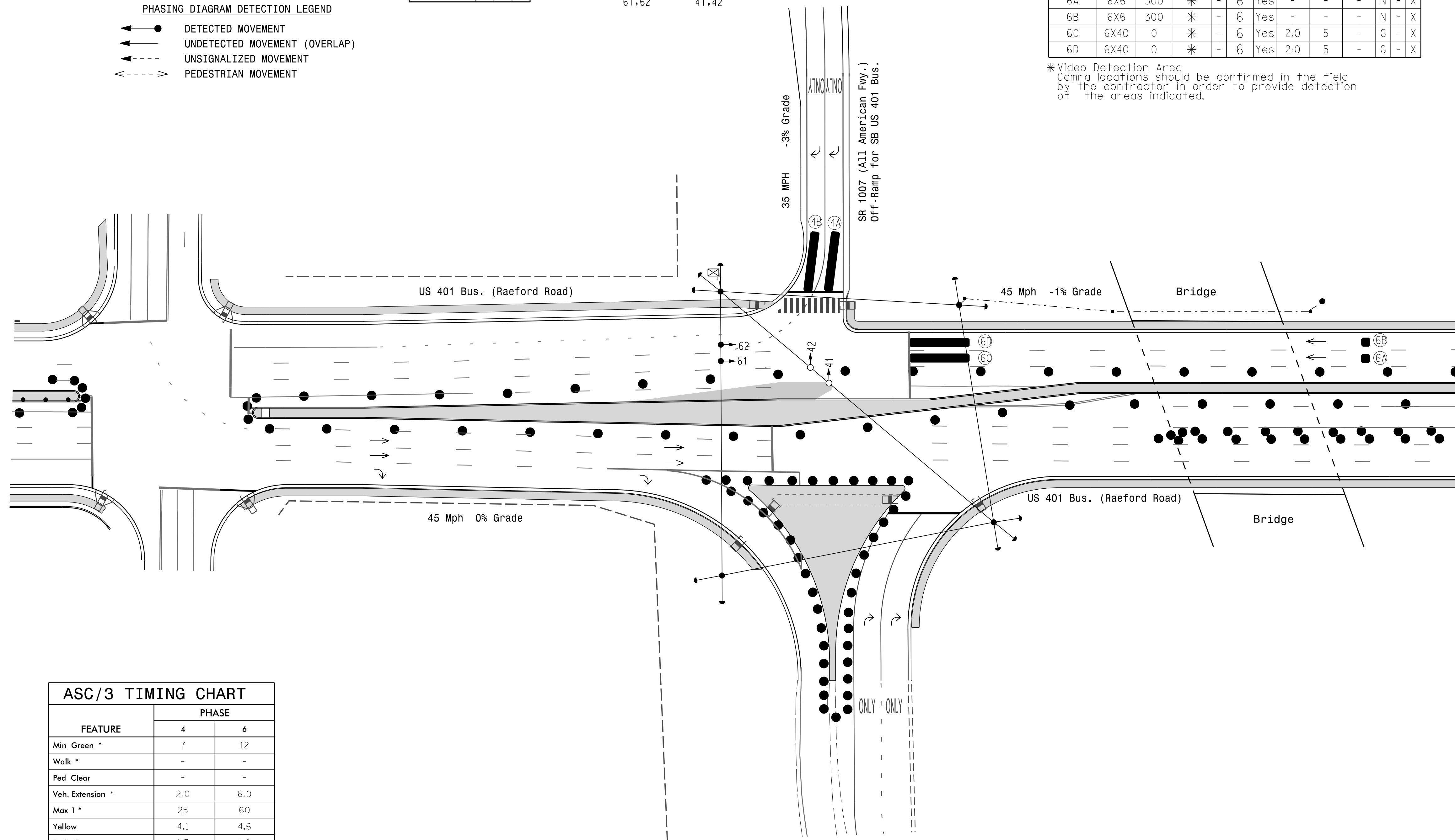
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
4A	6X40	0	*	-	4	Yes	-	15	-	S	-	X
4B	6X40	0	*	-	4	Yes	-	15	-	S	-	X
6A	6X6	300	*	-	6	Yes	-	-	-	N	-	X
6B	6X6	300	*	-	6	Yes	-	-	-	N	-	X
6C	6X40	0	*	-	6	Yes	2.0	5	-	G	-	X
6D	6X40	0	*	-	6	Yes	2.0	5	-	G	-	X

* Video Detection Area
 Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.

2 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.
- Reposition existing signal heads numbered 61,62.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- The cabinet should be designed to include an Auxiliary Output File for future use.
- 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	
	4	6
Min Green *	7	12
Walk *	-	-
Ped Clear	-	-
Veh. Extension *	2.0	6.0
Max 1 *	25	60
Yellow	4.1	4.6
Red Clear	1.3	1.0
Red Revert	-	-
Actuations B4 Add *	-	-
Seconds / Actuation *	-	-
Max Initial *	-	-
Time Before Reduction *	-	15
Time To Reduce *	-	30
Minimum Gap	-	3.0
Locking Detector	-	-
Recall Position	-	VEH. RECALL
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. Min Green for all other phases should not be lower than 4 seconds.

LEGEND

- | PROPOSED | EXISTING |
|--------------------------------------------------|--------------------------------------------------|
| ○→ Traffic Signal Head | ●→ Traffic Signal Head |
| ●→ Modified Signal Head | N/A |
| ⊥ Sign | ⊥ Sign |
| ⊥ Pedestrian Signal Head With Push Button & Sign | ⊥ Pedestrian Signal Head With Push Button & Sign |
| ○→ Signal Pole with Guy | ●→ Signal Pole with Guy |
| ○→ Signal Pole with Sidewalk Guy | ●→ Signal Pole with Sidewalk Guy |
| ⊠ Inductive Loop Detector | ⊠ Inductive Loop Detector |
| ⊠ Controller & Cabinet | ⊠ 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 |
| ■ Video Detection Area | N/A |
| ■ Construction Zone | N/A |
| ●●● Drums | N/A |

Signal Upgrade Temporary Design 1 - TMP Phase III

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Prepared For the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27526
 SCALE: 0 40
 1" = 40'

US 401 Bus. SB (Raeford Road) at SR 1007 (All American Freeway) Southbound Ramp
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: E D Harris
 PREPARED BY: J. Hambricht REVIEWED BY: B L Watson

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3/29/2018
 User: rfmuncy

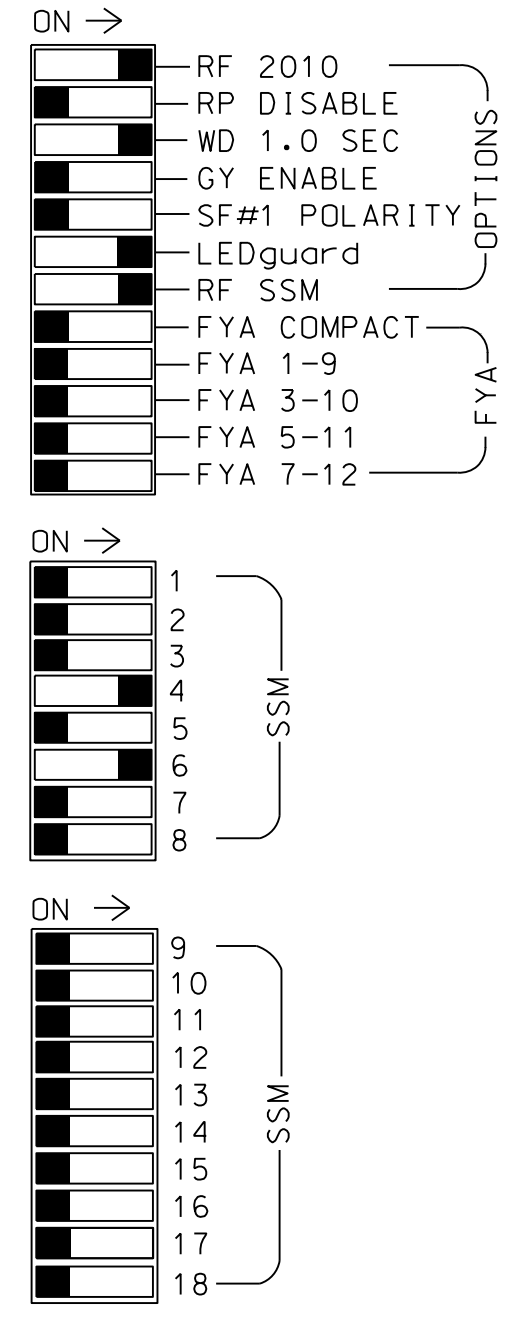
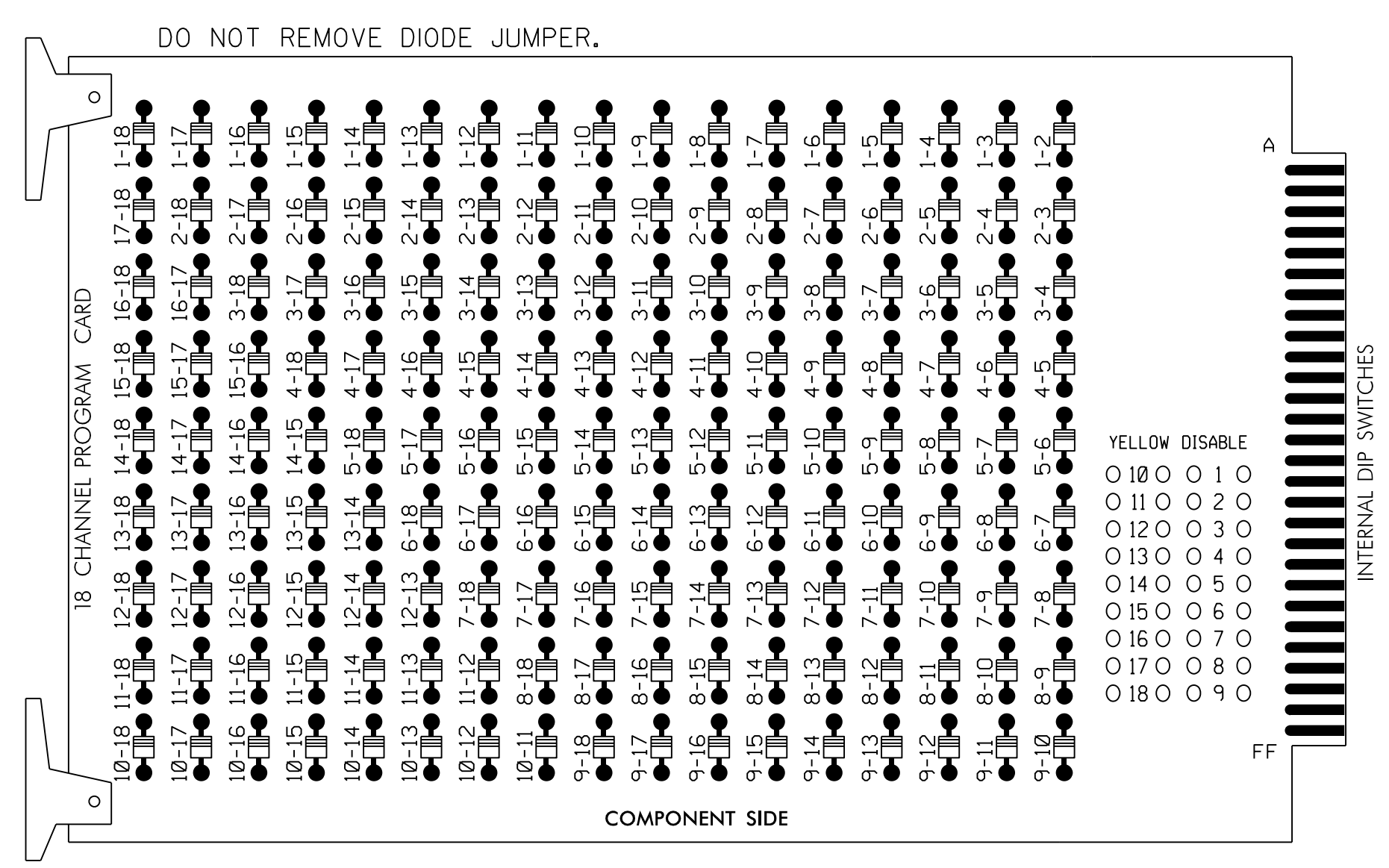
3/29/2018
 User: E D Harris

3/29/2018
 User: B L Watson

SIG. INVENTORY NO. 06-1376-11

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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 6 Green.
- Program phase 2 for Red Flash.
- The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....Contractor Supplied
ECONOLITE 2070LX

CABINET.....332 W/AUX

SOFTWARE.....ECONOLITE ASC/3-2070

CABINET MOUNT.....BASE

OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE

LOAD SWITCHES USED.....S5,S8

PHASES USED.....4,6

OVERLAP "A".....NOT USED

OVERLAP "B".....NOT USED

OVERLAP "C".....NOT USED

OVERLAP "D".....NOT USED

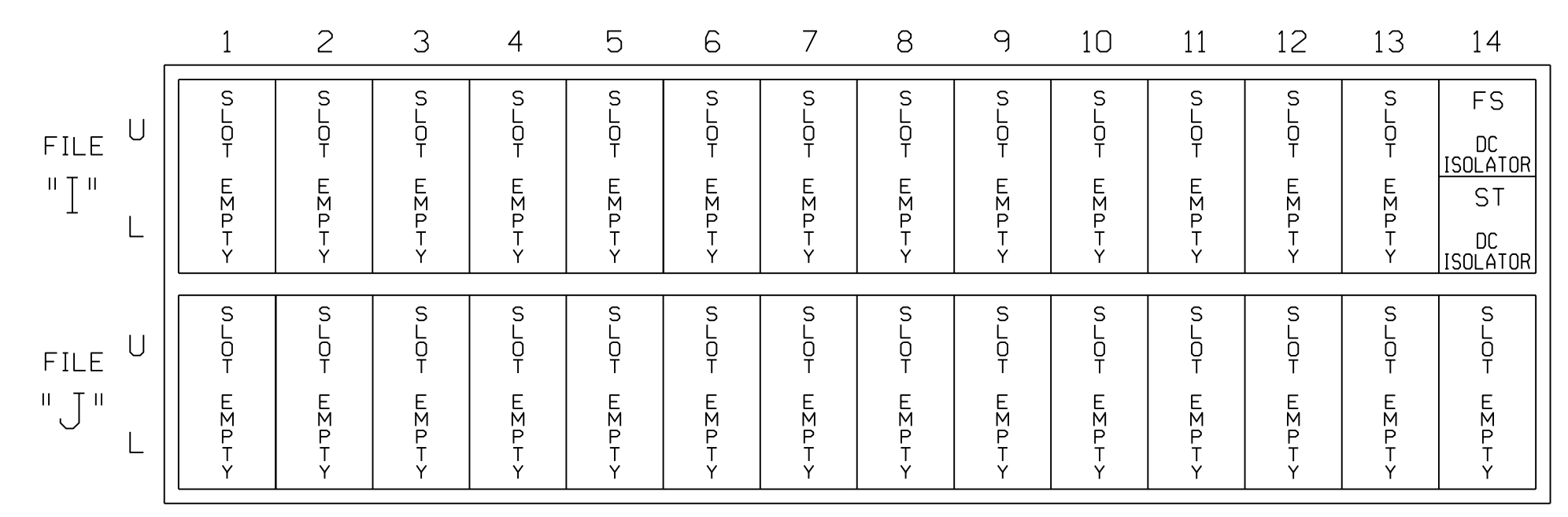
SIGNAL HEAD HOOK-UP CHART

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

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

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 schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1376T1
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED: N/A

Temporary Design 1 - TMP Phase III
Electrical Detail

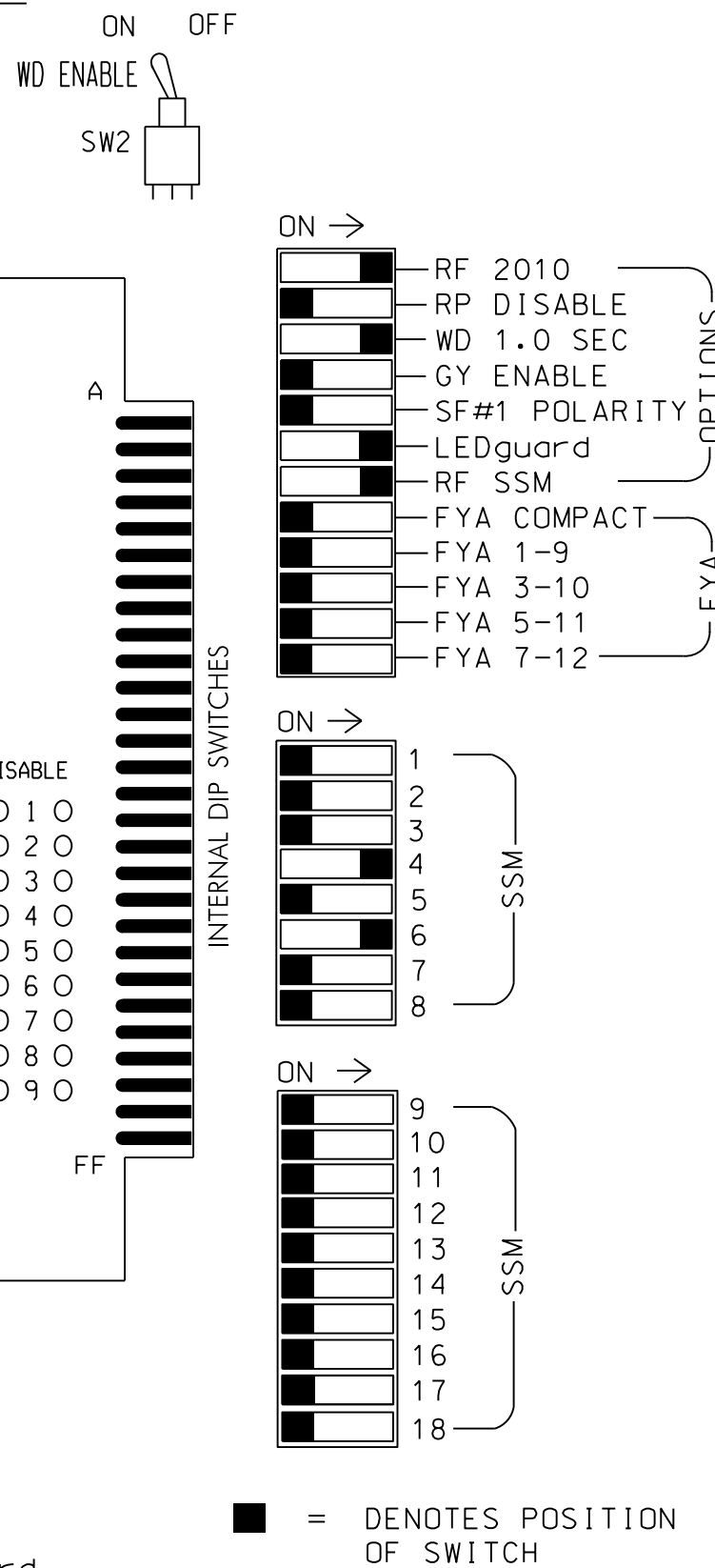
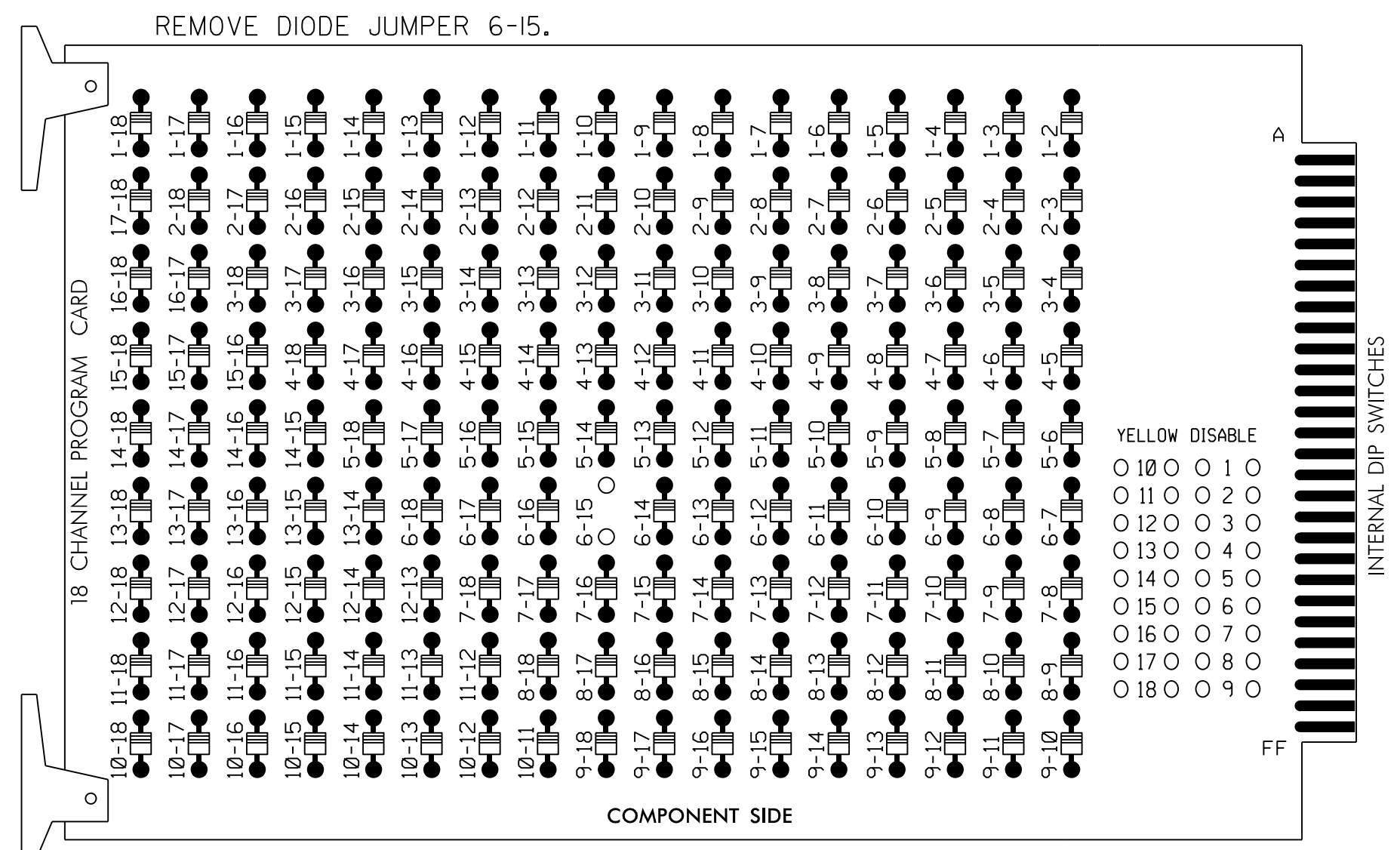
<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p>Prepared in the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 401 Bus. SB (Raeford Road) at SR 1007 (All American Freeway) Southbound Ramp</p>		<p>SEAL</p> <p>3/29/2018</p>						
		<p>Division 6 Cumberland County Fayetteville</p> <p>PLAN DATE: March 2018 REVIEWED BY: L Overn</p> <p>PREPARED BY: G B Spell REVIEWED BY:</p>			<p>REVISIONS</p> <table border="1"> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	NO.	DESCRIPTION	INIT.	DATE	
NO.	DESCRIPTION	INIT.	DATE							

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SIG. INVENTORY NO. 06-1376T1

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 Walk.
3. Program Phase 2 for Red Flash.
4. The cabinet and controller are part of the Fayetteville Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....Contractor Supplied
Econolite 2070LX
CABINET.....332 W/AUX
SOFTWARE.....ECONOLITE ASC/3-2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S5,S8,S9
PHASES USED.....4,6,6PED
OVERLAP "A".....NOT USED
OVERLAP "B".....NOT USED
OVERLAP "C".....NOT USED
OVERLAP "D".....NOT USED

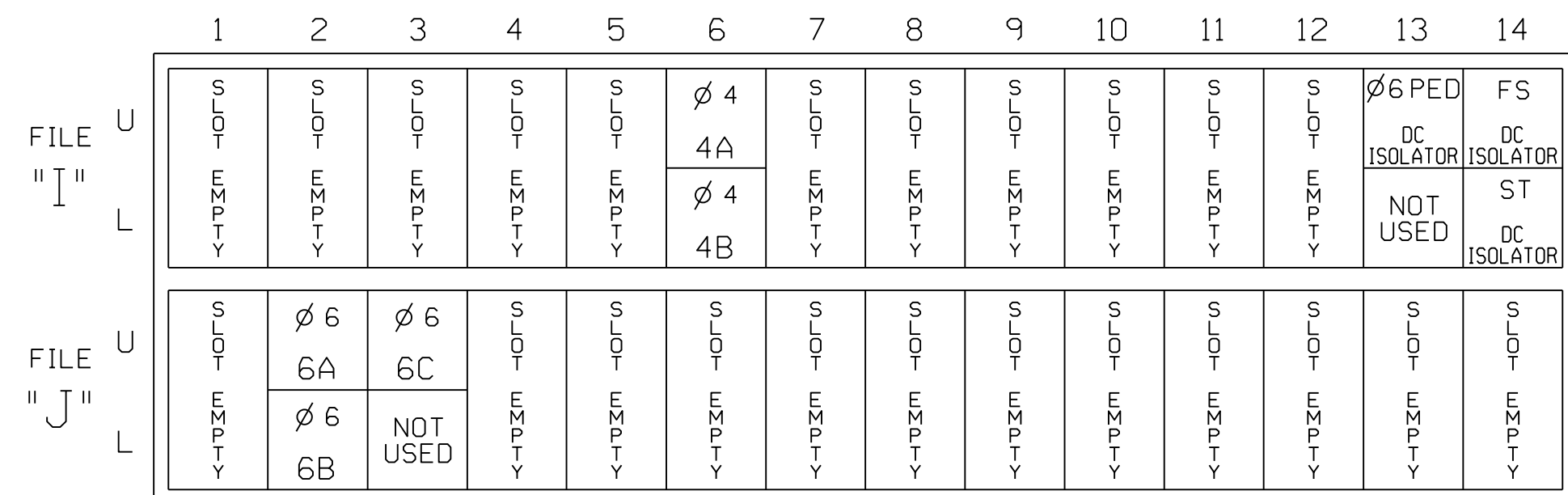
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	NU	NU	NU	41,42	NU	NU	61,62, 63	P61, P62	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED					101			134										
YELLOW								135										
GREEN								136										
RED ARROW																		
YELLOW ARROW					102													
GREEN ARROW					103													
Hand icon									119									
Person icon									121									

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

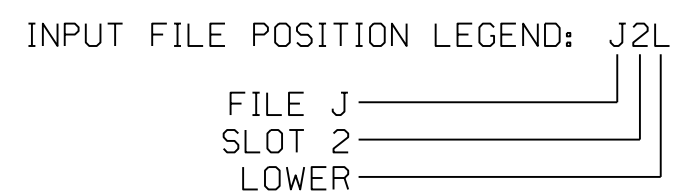


INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
4A	TB4-9,10	I6U	41	4	4	YES		15		S
4B	TB4-11,12	I6L	45	14	4	YES		15		S
6A	TB3-5,6	J2U	40	6	6	YES			X	N
6B	TB3-7,8	J2L	44	16	6	YES			X	N
6C	TB3-9,10	J3U	64	36	6	YES			X	N
PED PUSH BUTTONS										
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					

NOTE:

INSTALL DC ISOLATORS IN INPUT FILE SLOT I13.



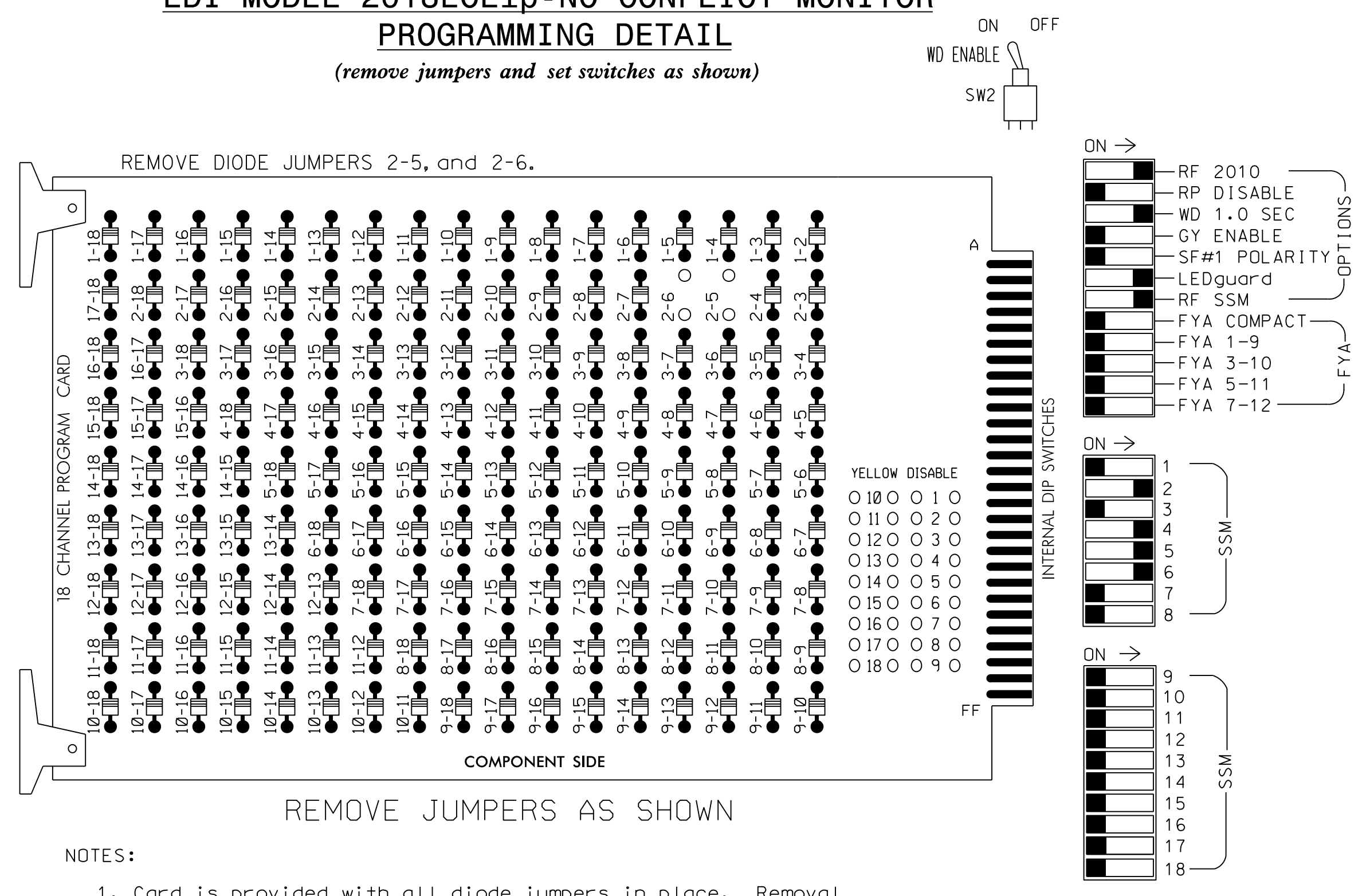
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-1376
DESIGNED: March 2018
SEALED: 03-29-2018
REVISED: N/A

Final Design
Electrical Detail

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p>Prepared in the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 401 Bus. SB (Raeford Road) at SR 1007 (All American Freeway) Southbound Ramp</p> <p>Division 6 Cumberland County Fayetteville</p>		<p>SEAL</p> <p>3/29/2018</p>	
		<p>PLAN DATE: March 2018</p> <p>PREPARED BY: G B Spell</p>	<p>REVIEWED BY: L Overn</p> <p>REVISIONS</p> <table border="1"> <tr> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> </tr> </table>		INIT.
INIT.	DATE				

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

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

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phase 2 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.....S2,S5,S7,S8
 PHASES USED.....2,4,5,6
 OVERLAPS.....NONE

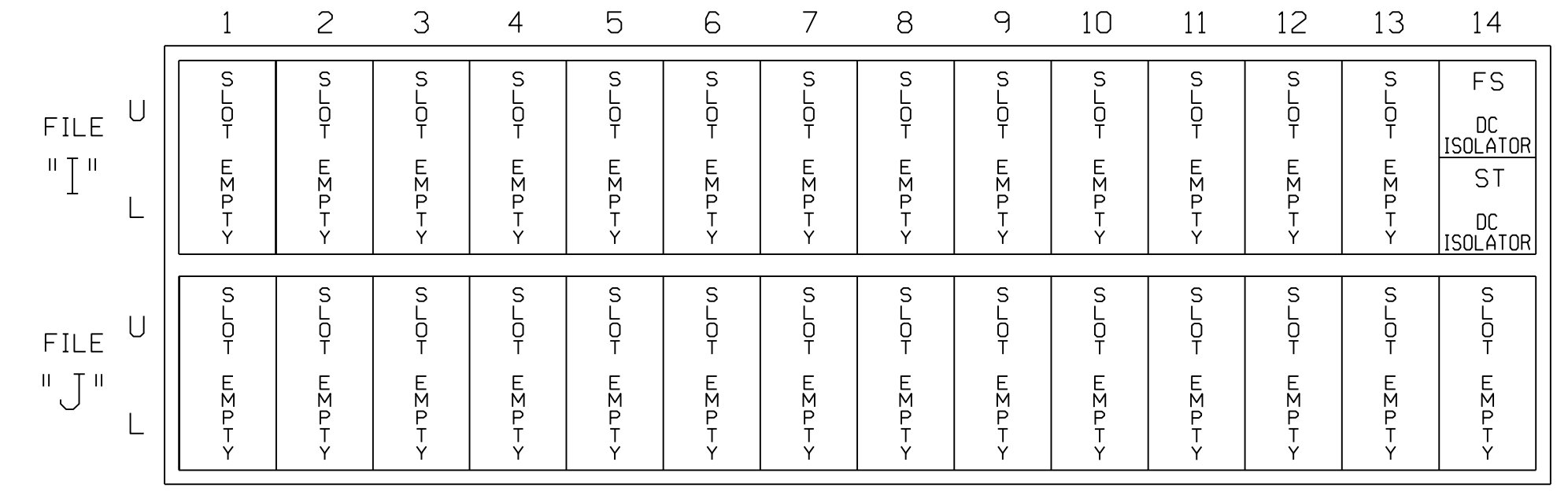
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	51,52	61,62,63	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW								131				
YELLOW ARROW								132				
GREEN ARROW								133				

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

SPECIAL DETECTOR NOTE

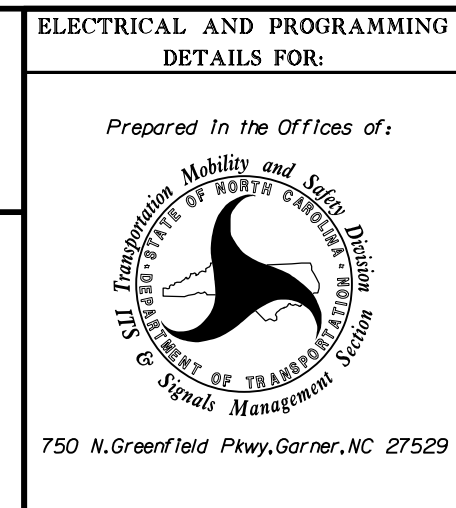
Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0323T1
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 1 - TMP Phase I
Electrical Detail



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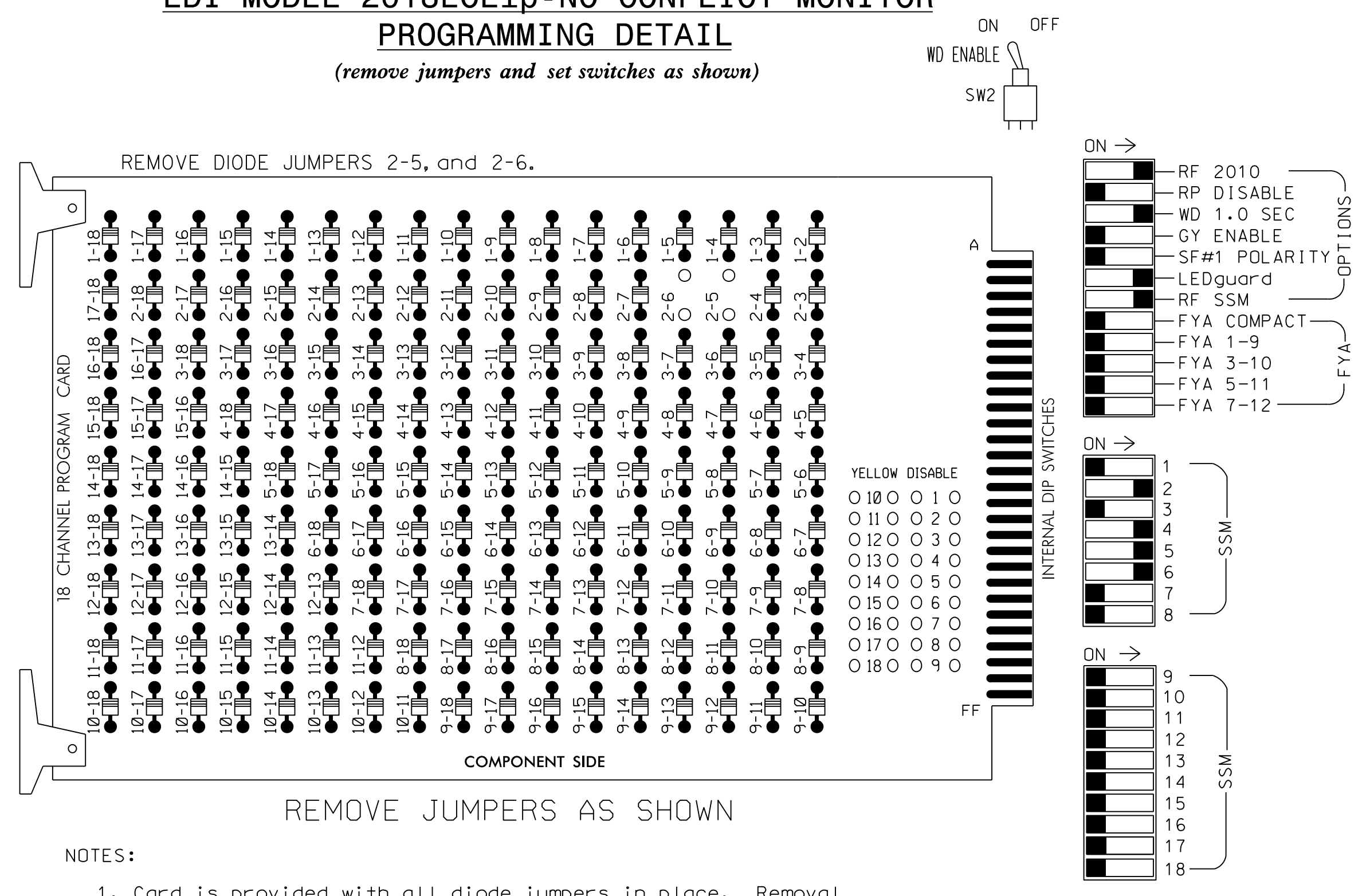
ELECTRICAL AND PROGRAMMING DETAILS FOR:
 US 401 Business (Raeford Road) at SR 1007 (All American Freeway) Northbound Ramps
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: G B Spell REVIEWED BY:
 REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 LAWRENCE E. OVERN
 3/29/2018
 SIG. INVENTORY NO. 06-0323T1

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 and 6 Green.
3. The cabinet and controller are part of the Fayetteville Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	NU	51,52	61,62	NU	NU	NU	NU
RED		128			101			134				
YELLOW		129			102			135				
GREEN		130			103			136				
RED ARROW								131				
YELLOW ARROW								132				
GREEN ARROW								133				

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S5,S7,S8
 PHASES USED.....2,4,5,6
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	U	U	U	U	U	U	U	U	U	U	U	U	U
FILE "J"	U	U	U	U	U	U	U	U	U	U	U	U	U	U

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

FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

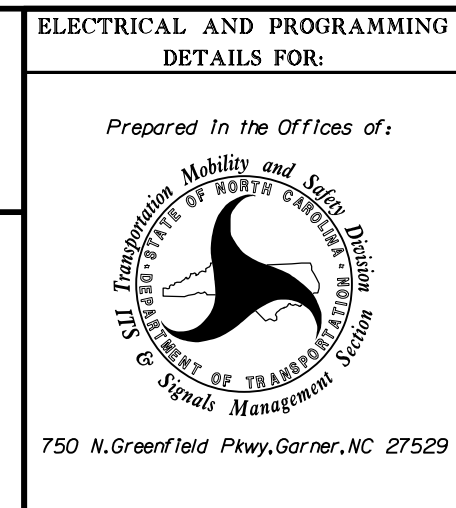
Install a video detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to accomplish the detection schemes shown on the Signal Design Plans.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0323T2
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 2 - TMP Phase II Electrical Detail



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ELECTRICAL AND PROGRAMMING DETAILS FOR:
 US 401 Business (Raeford Road) at SR 1007 (All American Freeway) Northbound Ramps
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: G B Spell REVIEWED BY:
 REVISIONS: _____ INIT. DATE _____

SEAL
 NORTH CAROLINA
 PROFESSIONAL ENGINEER
 LAWRENCE E. OVERN
 License No. 045933
 DATE: 3/29/2018
 SIG. INVENTORY NO. 06-0323T2

