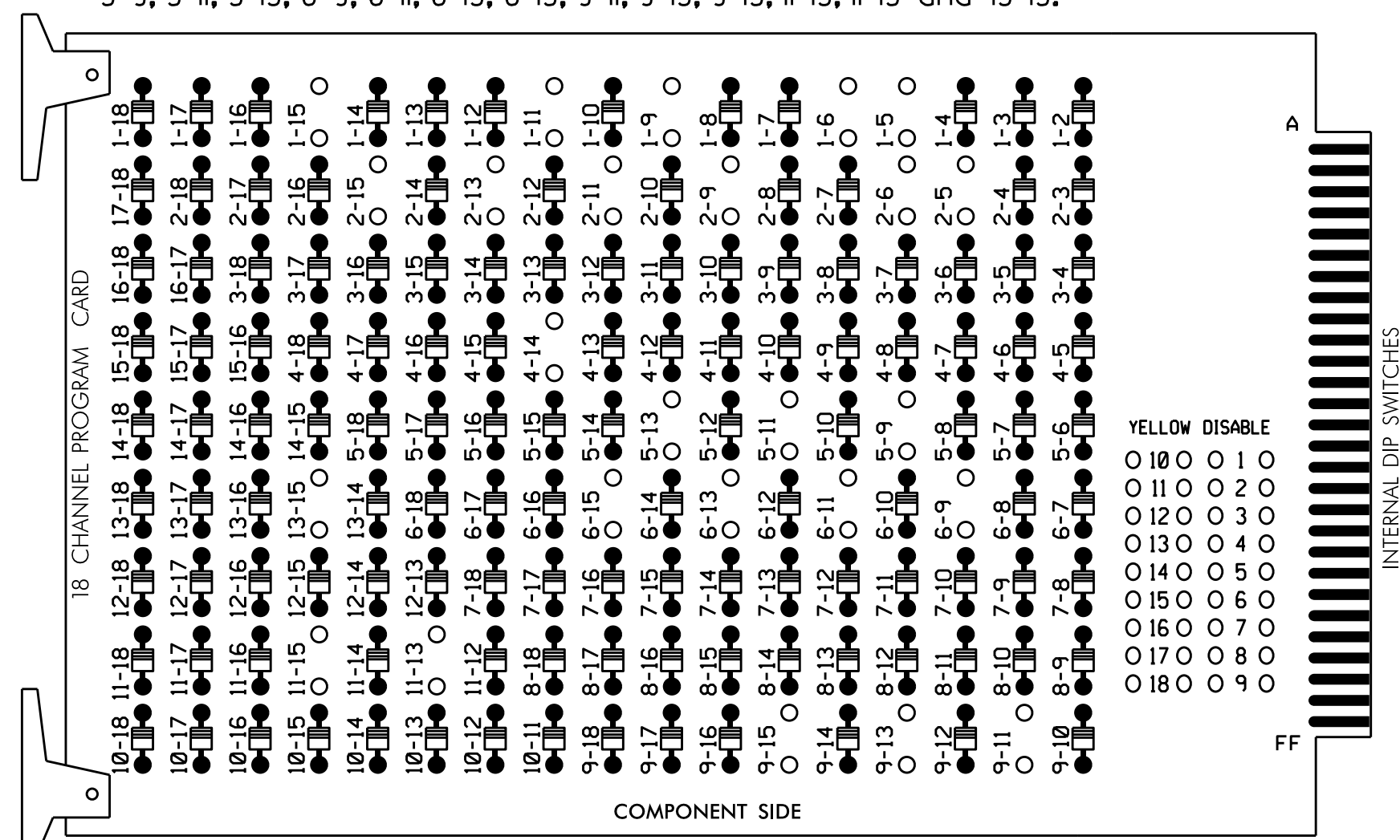


EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 4-14, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 9-11, 9-13, 9-15, 11-13, 11-15 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.
- Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2, 4 and 6 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
- The cabinet and controller are part of the NC 280 (Airport Road) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,
 AUX S1,AUX S4
 PHASES USED.....1,2,2 PED,3,4,4 PED,5,6,6 PED
 OVERLAP "A".....1+2
 OVERLAP "B".....NOT USED
 OVERLAP "C".....5+6
 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★	32	P21, P22	31	32	41	42	P41, P42	51★	61,62	P61, P62	NU	NU	NU	11★	NU	51★	NU
RED	*	128		116	116	101	101			134								
YELLOW		129		117	117	102	102		*	135								
GREEN		130		118	118	103	103			136								
RED ARROW													A121			A114		
YELLOW ARROW	126												A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127	127		118	103			104		133								
Hand				113														
Walking				115				106										

NU = Not Used

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

★ See pictorial of head wiring in detail below.

INPUT FILE POSITION LAYOUT

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1 1A	∅ 1 1B	∅ 2/SYS 2A/S17	∅ 3 3A	∅ 4 4A	S 101	S 102	S 103	S 104	S 105	S 106	∅ 2 PED DC ISOLATOR	∅ 6 PED DC ISOLATOR	FS DC ISOLATOR
L	NOT USED	NOT USED	∅ 2/SYS 2B/S18	NOT USED	∅ 4 4B	Y 101	Y 102	Y 103	Y 104	Y 105	Y 106	∅ 4 PED DC ISOLATOR	NOT USED	ST DC ISOLATOR
U	∅ 5 5A	∅ 6/SYS 6A/S19	S 101	S 102	S 103	S 104	S 105	S 106	S 107	S 108	S 109	S 110	S 111	S 112
L	NOT USED	∅ 6/SYS 6B/S20	Y 101	Y 102	Y 103	Y 104	Y 105	Y 106	Y 107	Y 108	Y 109	Y 110	Y 111	Y 112

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

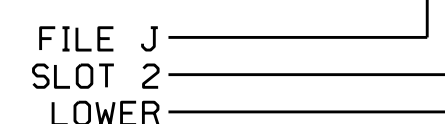
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
1B	TB2-5,6	I2U	39	1	2	1	Y	Y			15
	2A/S17	TB2-9,10	I3U	63	25	32	2/SYS	Y	Y		
2B/S18	TB2-11,12	I3L	76	38	42	2/SYS	Y	Y			
	3A	TB4-5,6	I5U	58	20	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			15
5A ²	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y	Y		3
6A/S19	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S20	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 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.

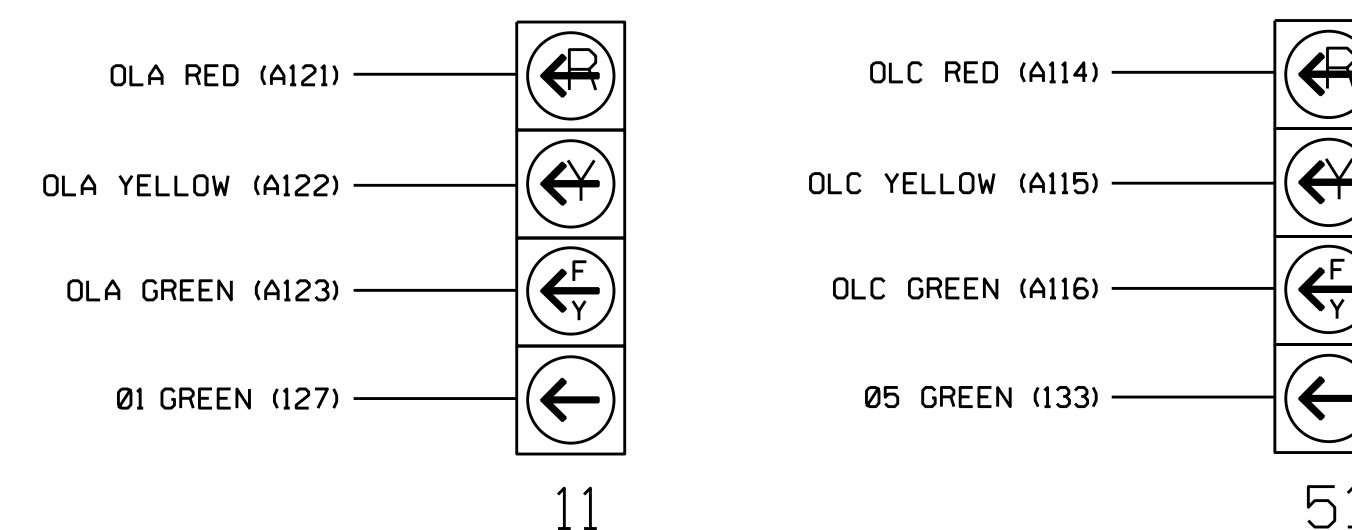
²Add jumper from J1-W to I4-W, on rear of input file.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 for programming instructions.

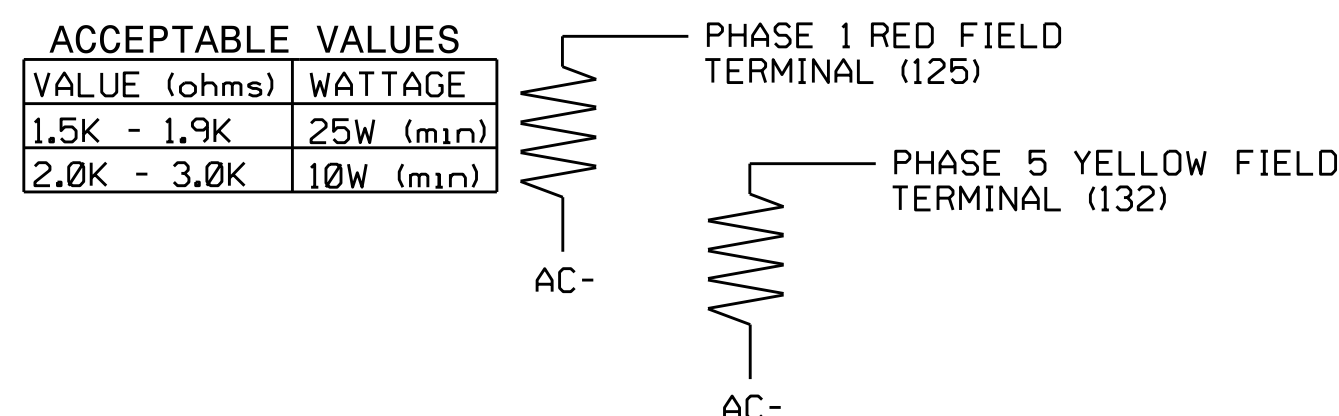
COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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: 13-0820
 DESIGNED: September 2016
 SEALED: 11/17/2016
 REVISED:

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NC 280 (Airport Road) at SR 3568 (Rockwood Road)

Division 13 Buncombe County Fletcher

PLAN DATE: October 2016 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS INIT. DATE

Sealed by: *Carlynn M. Little* 11/18/2016

SIG. INVENTORY NO. 13-0820

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

1. FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS), SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.
2. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON
AND RED CLEAR ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #50 ON
SET OUTPUT ASSIGNMENT #51 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #42 ON
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE	
OUTPUT 42 =	Overlap C Red
OUTPUT 43 =	Overlap C Yellow
OUTPUT 44 =	Overlap C Green
OUTPUT 50 =	Overlap A Red
OUTPUT 51 =	Overlap A Yellow
OUTPUT 52 =	Overlap A Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

- FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW X GREEN

← NOTICE GREEN FLASH

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW X GREEN

← NOTICE GREEN FLASH

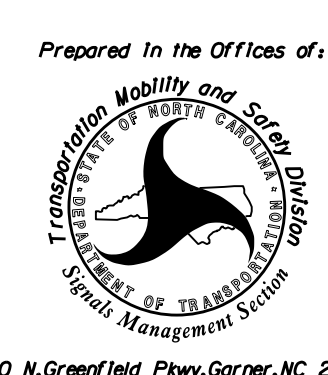
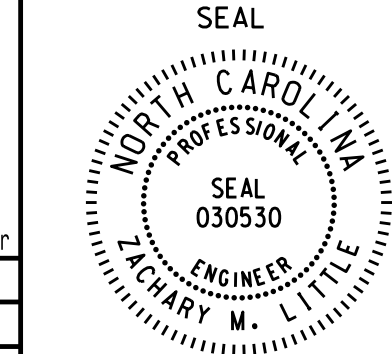
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0.0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 13-0820
DESIGNED: September 2016
SEALED: 11/17/2016
REVISED:

Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

<p>Prepared In the Offices of:</p>  <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>NC 280 (Airport Road) at SR 3568 (Rockwood Road)</p>	<p>SEAL</p>  <p>SEAL 030530 ENGINEER CARY M. LITTLE</p>	<p>Division 13 Buncombe County Fletcher</p> <p>PLAN DATE: October 2016 REVIEWED BY: T. Joyce</p> <p>PREPARED BY: C. Strickland REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>DocuSigned by: <i>Cary M. Little</i> 11/18/2016 0C21EFD04F5341F DATE</p> <p>SIG. INVENTORY NO. 13-0820</p>	REVISIONS	INIT.	DATE			
REVISIONS	INIT.	DATE							

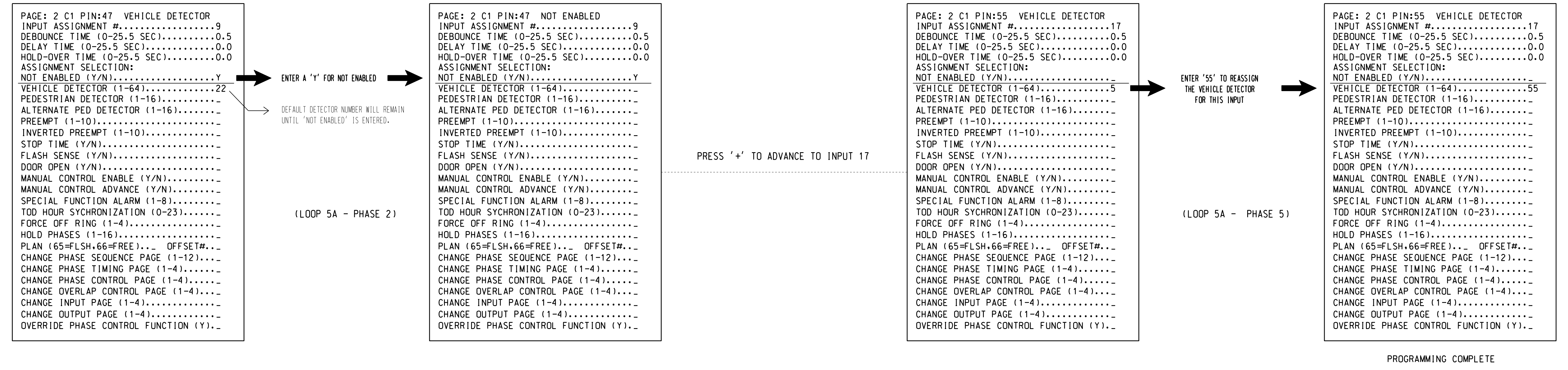
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INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9 (DETECTOR 22) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 2 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 55 TO INPUT #17 SO THAT THE DELAY ON LOOP 5A CAN BE REDUCED FROM 15 SECONDS TO 3 SECONDS.

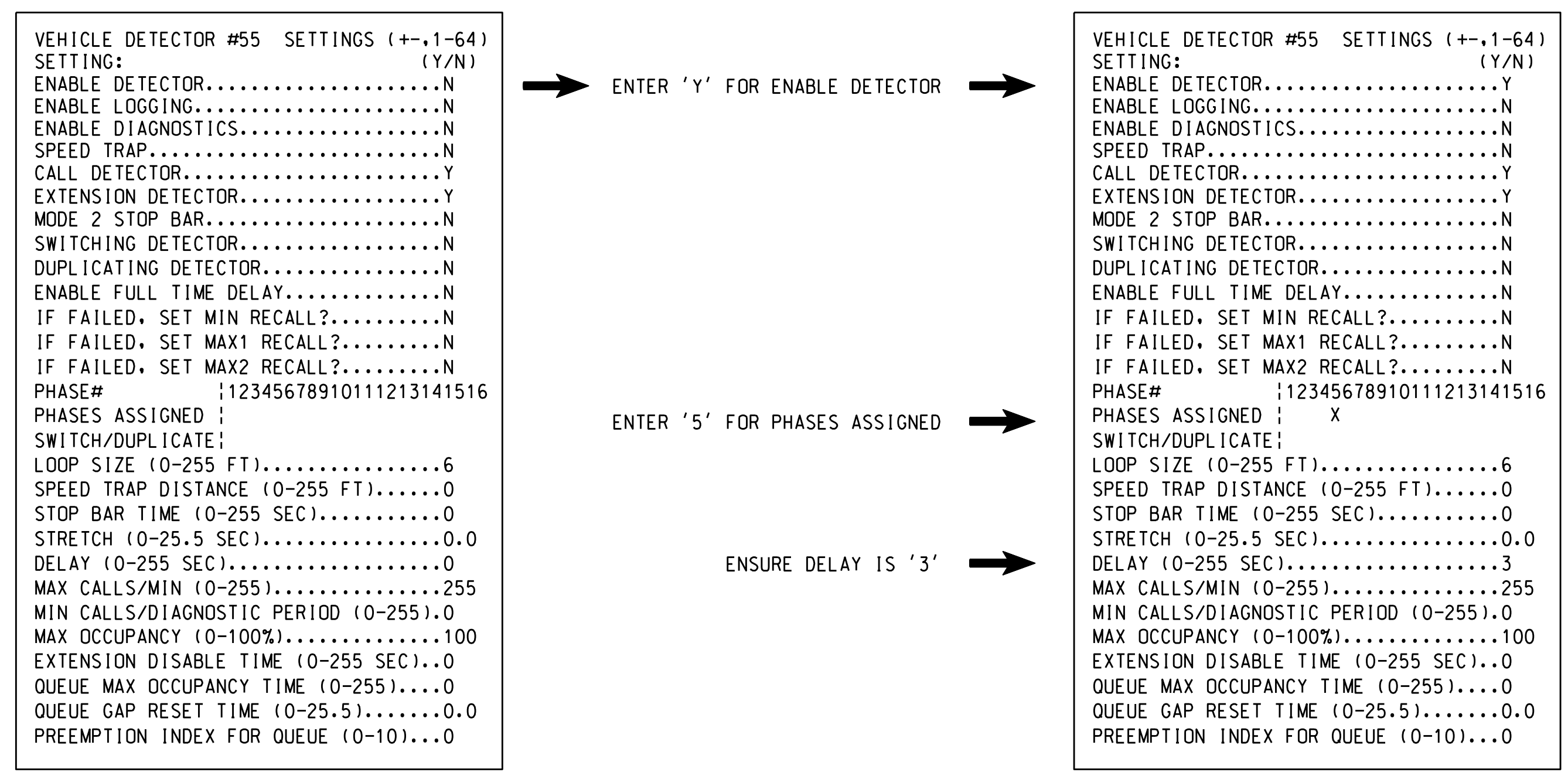
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 9 IS REACHED.



SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 5A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.



NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-1185
 DESIGNED: September 2016
 SEALED: 11/15/2016
 REVISED:

Electrical Detail - Sheet 4 of 5

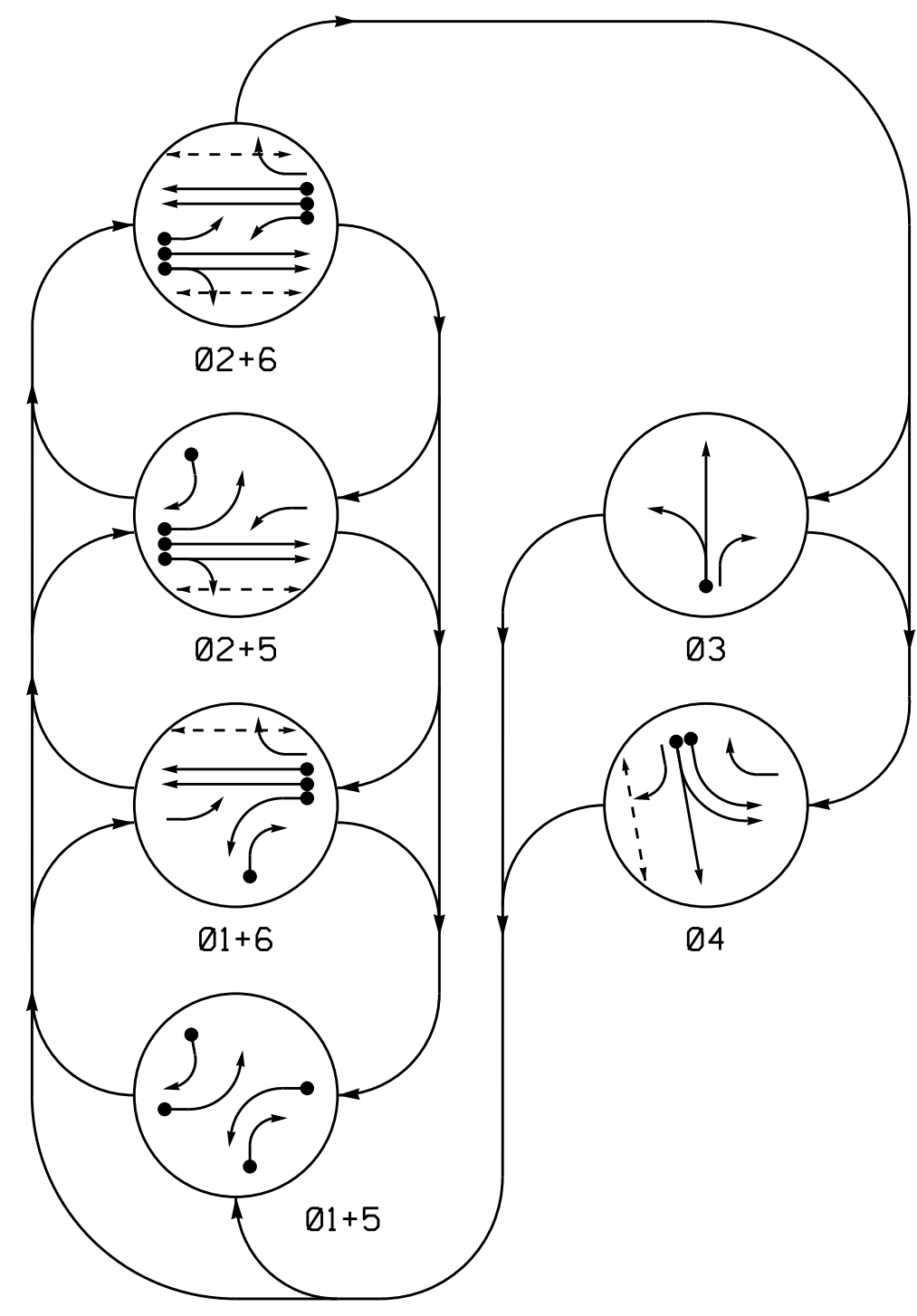
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	NC 280 (Airport Road) at SR 3542 (McKenna Road)/ New Site Access		
	Division 13 PLAN DATE: October 2016 PREPARED BY: C. Strickland	Buncombe County REVIEWED BY: T. Joyce REVIEWED BY:	

SIG. INVENTORY NO. 13-1185

17-NOV-2016 11:40
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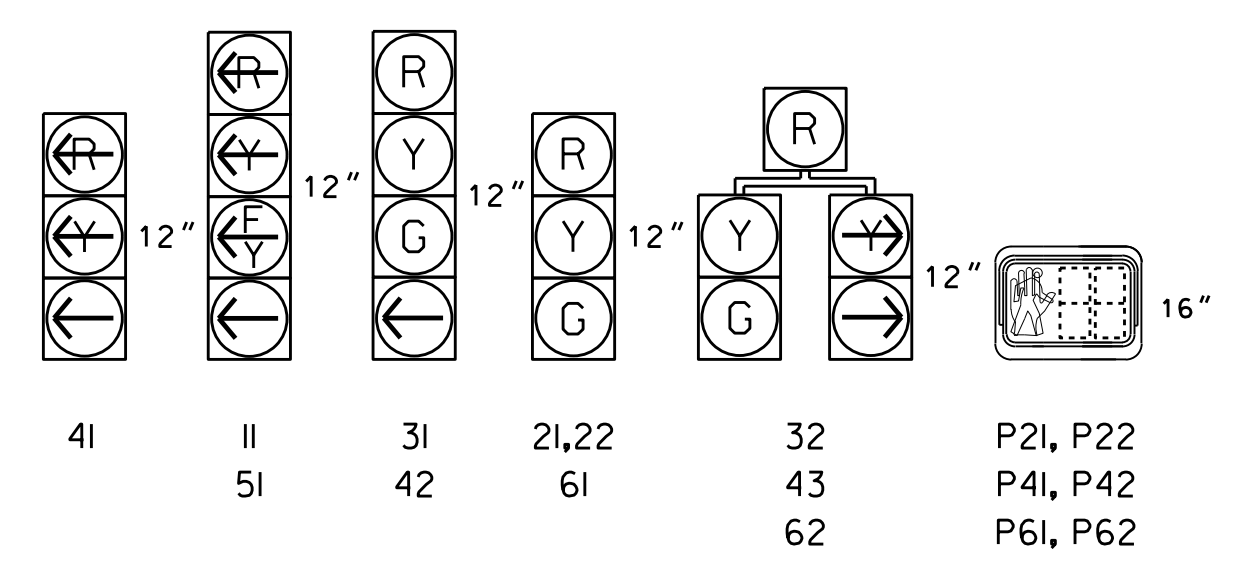
DEFAULT PHASING DIAGRAM



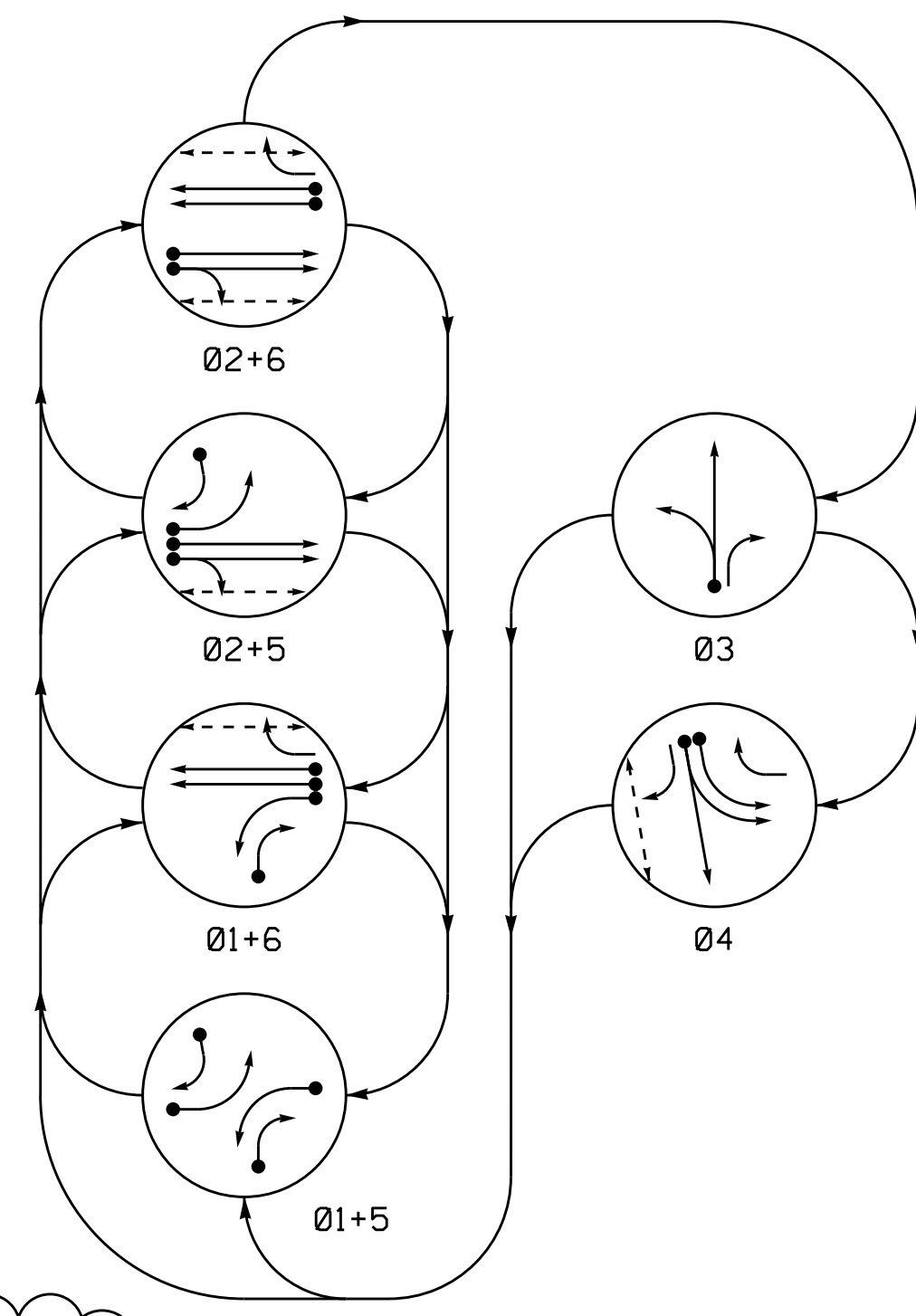
DEFAULT TABLE OF OPERATION

SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	03	04
11	---	---	---	---	---	---
21, 22	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	R	R	R	R	R	R
42	R	R	R	R	R	R
43	R	R	R	R	R	R
51	---	---	---	---	---	---
61	R	G	R	G	R	Y
62	R	G	R	G	R	Y
P21, P22	DW	DW	W	W	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DRK
P61, P62	DW	W	DW	W	DW	DRK

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



ALTERNATE PHASING DIAGRAM



ALTERNATE TABLE OF OPERATION

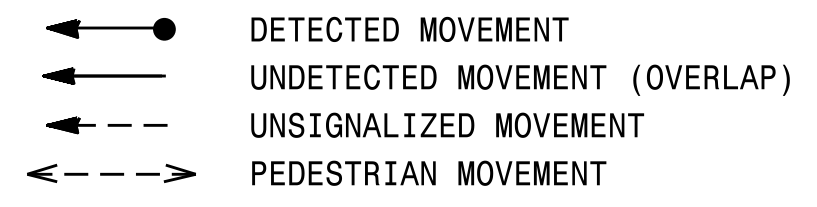
SIGNAL FACE	PHASE					
	01+5	01+6	02+5	02+6	03	04
11	---	---	---	---	---	---
21, 22	R	R	G	G	R	Y
31	R	R	R	R	G	R
32	R	R	R	R	G	R
41	R	R	R	R	R	R
42	R	R	R	R	R	R
43	R	R	R	R	R	R
51	---	---	---	---	---	---
61	R	G	R	G	R	Y
62	R	G	R	G	R	Y
P21, P22	DW	DW	W	W	DW	DRK
P41, P42	DW	DW	DW	DW	DW	DRK
P61, P62	DW	W	DW	W	DW	DRK

6 Phase Fully Actuated
W/ Alternate Phasing Operation
NC 280 (Airport Rd) CLS

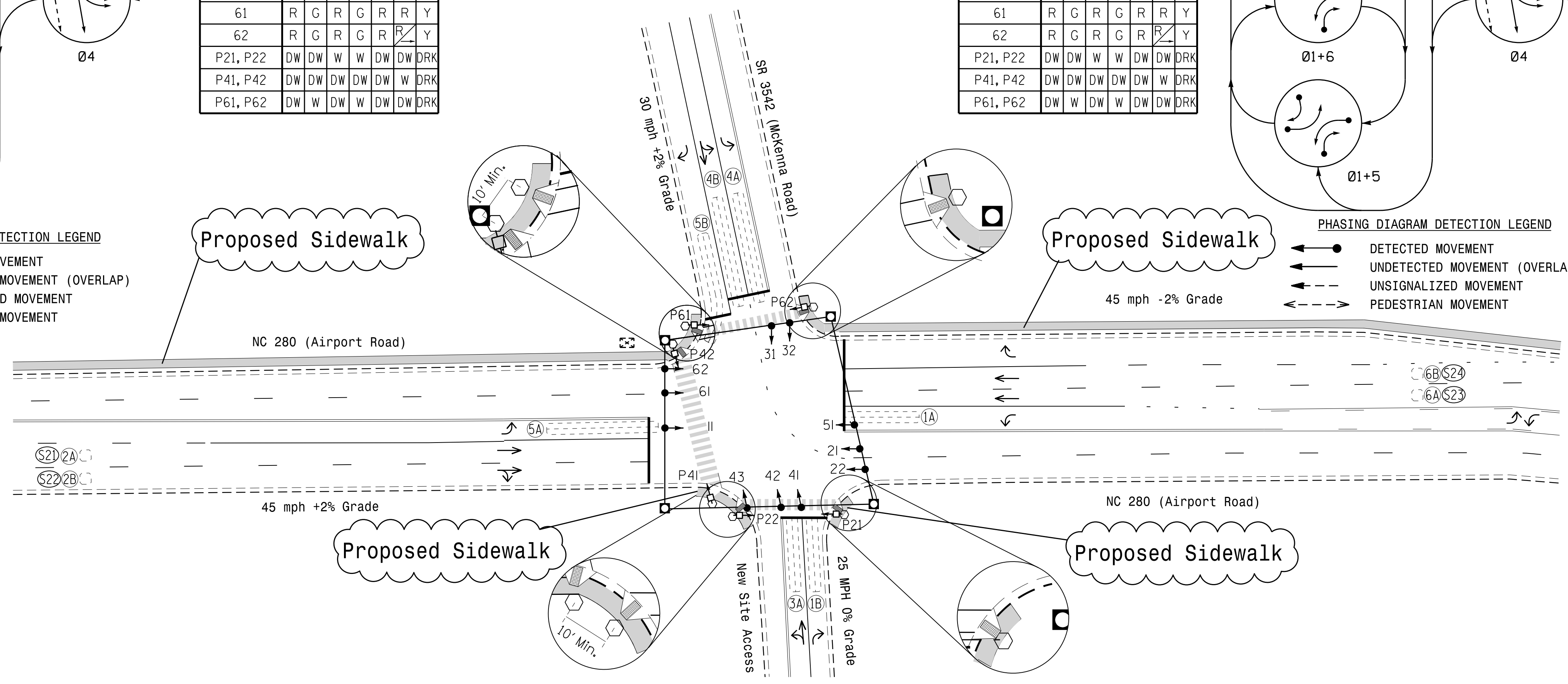
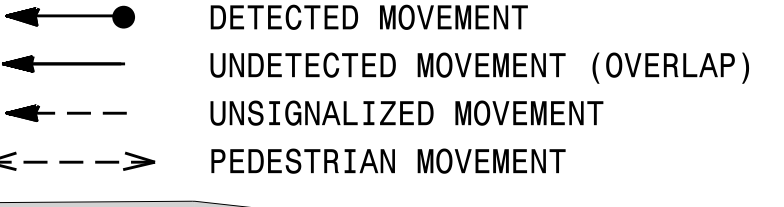
NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- 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 phase 4 may be reversed.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
- The Division 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.
- Closed loop system data: Controller Asset # 1185.

PHASING DIAGRAM DETECTION LEGEND



PHASING DIAGRAM DETECTION LEGEND

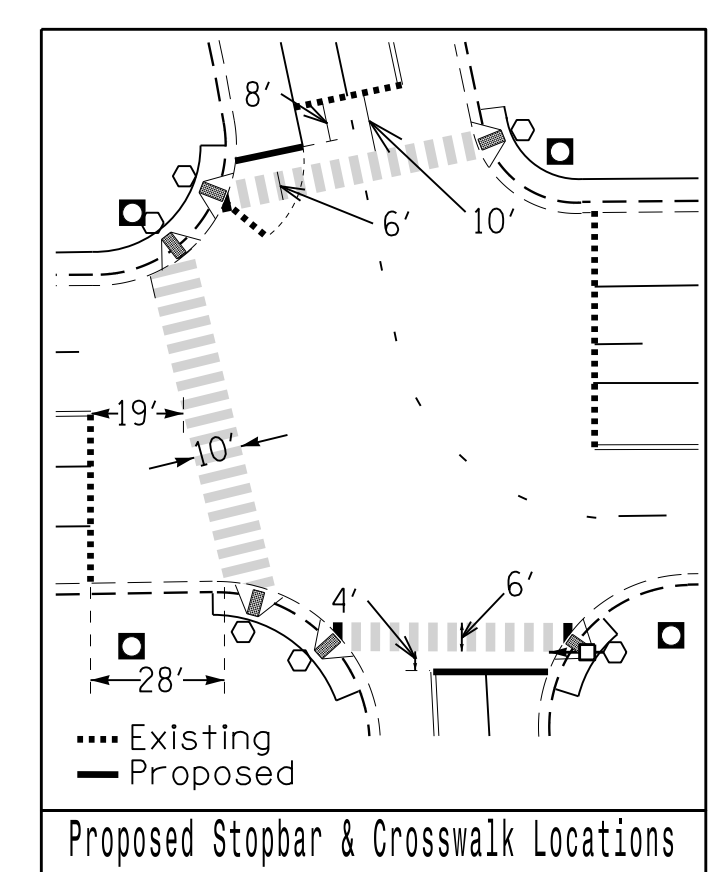


OASIS 2070L TIMING CHART

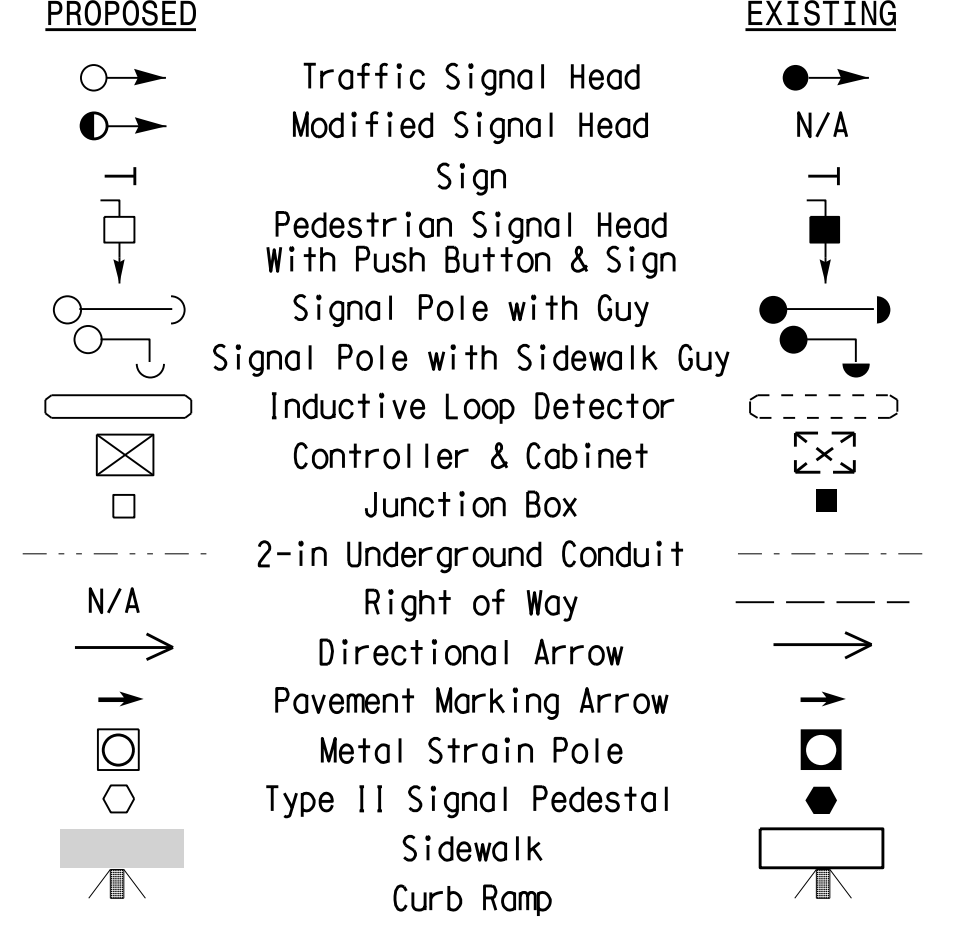
FEATURE	PHASE					
	1	2	3	4	5	6
Min Green 1 *	7	12	7	7	7	12
Extension 1	2.0	6.0	2.0	1.0	1.0	6.0
Max Green 1 *	20	90	20	20	20	90
Yellow Clearance	3.0	4.7	3.2	3.4	3.0	4.7
Red Clearance	1.9	1.8	2.9	2.9	3.1	1.8
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	7	-	7
Don't Walk 1	-	9	-	17	-	12
Seconds Per Actuation *	-	1.5	-	-	-	1.5
Max Variable Initial *	-	34	-	-	-	34
Time Before Reduction *	-	15	-	-	-	15
Time To Reduce *	-	30	-	-	-	30
Minimum Gap	-	3.0	-	-	-	3.0
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON

OASIS 2070L LOOP & DETECTOR INSTALLATION

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD	
				NEW LOOP	PHASE	CALLING	EXTENSION			
1A	6X40	0	2-4-2	-	1	Y	Y	-	15*	-
1B	6X40	0	2-4-2	-	1	Y	Y	-	15	-
2A/S21	6X6	300	EXIST	-	2	Y	Y	-	-	Y
2B/S22	6X6	300	EXIST	-	2	Y	Y	-	-	Y
3A	6X40	0	2-4-2	-	3	Y	Y	-	3	-
4A	6X60	+5	2-4-2	-	4	Y	Y	-	3	-
4B	6X60	+5	2-4-2	-	4	Y	Y	-	-	-
5A	6X60	+5	2-4-2	-	5	Y	Y	-	15*	-
5B	6X60	+15	2-4-2	-	5	Y	Y	-	15	-
6A/S23	6X6	300	EXIST	-	6	Y	Y	-	-	Y
6B/S24	6X6	300	EXIST	-	6	Y	Y	-	-	Y



LEGEND



* 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.

* Disable phase call during Alternate phasing operation.
** Reduce delay time to 3 Second during Alternate phasing operation.

Signal Upgrade Corr. File No.: 13-16-204

NC 280 (Airport Road) at SR 3542 (McKenna Road) / New Site Access

Division 13 Buncombe County Fletcher

PLAN DATE: September 2016 REVIEWED BY: R. Zinser

PREPARED BY: M. Mahbooba REVIEWED BY:

REVISIONS INIT. DATE

SCALE 0 40 1"=40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL R. N. ZINER 043914

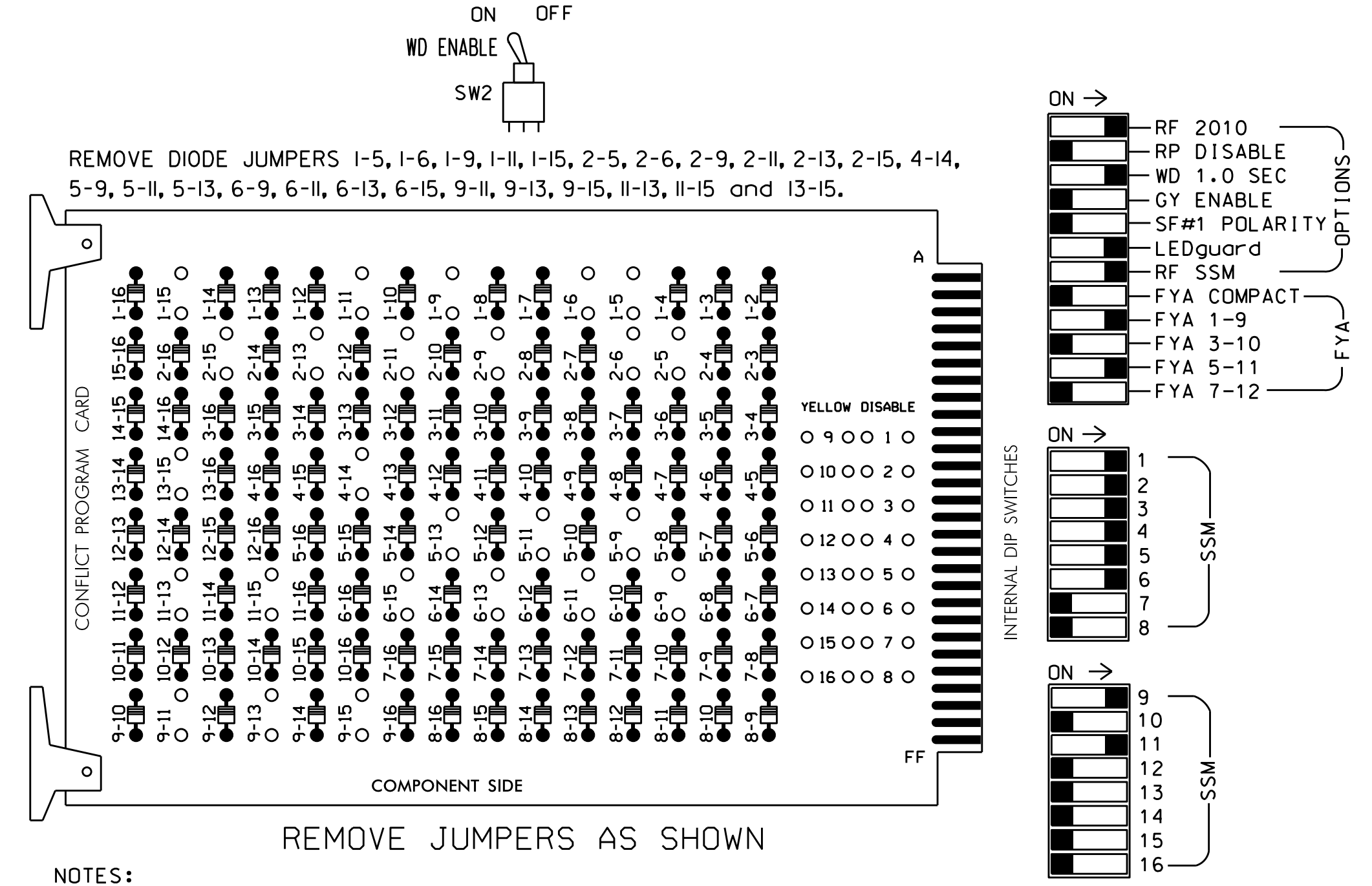
11/15/2016

SIG. INVENTORY NO. 13-1185

15-NOV-2016 10:31
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 mmhbooba

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 4-14, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 9-11, 9-13, 9-15, 11-13, 11-15 and 13-15.

REMOVE JUMPERS AS SHOWN

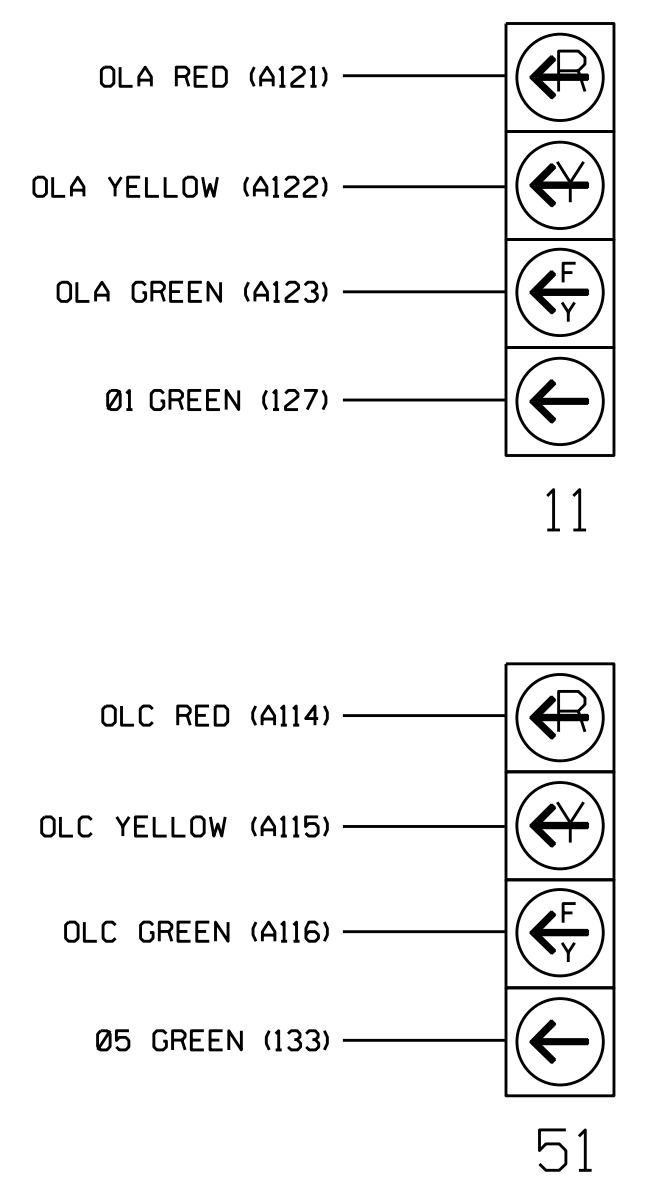
NOTES:

- Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
- Make sure jumpers SEL2-SEL5 are present on the monitor board.

■ = DENOTES POSITION OF SWITCH

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE
The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 for programming instructions.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14		
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*	32	21,22	P21, P22	31	32	41	42	43	62	P41, P42	43	51*	61,62	P61, P62	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						101												A121		A114
YELLOW ARROW		126				102		102		132								A122		A115
FLASHING YELLOW ARROW																		A123		A116
GREEN ARROW	127	127		118	103	103	103		133	133										
Hand icon				113					104				119							
Person icon				115					106				121							

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

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

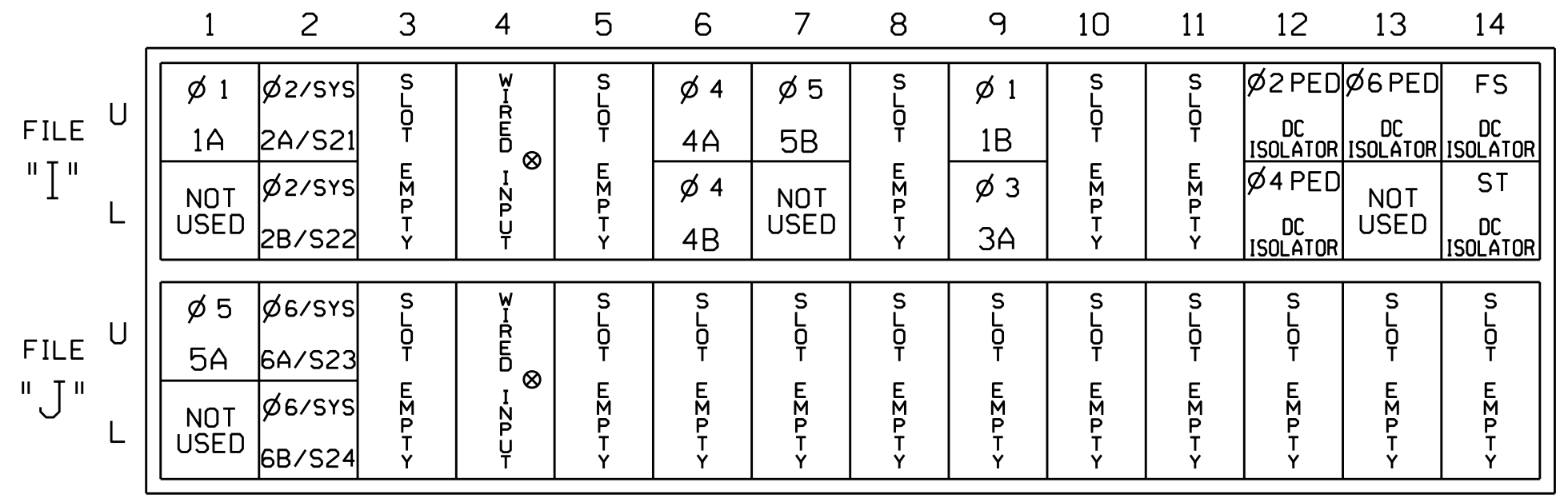
Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

EQUIPMENT INFORMATION

CONTROLLER.....2070L
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,S6,S6P,S9,S12
PHASES USED.....1,2,2 PED,3,4,4 PED,5,6,6 PED
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

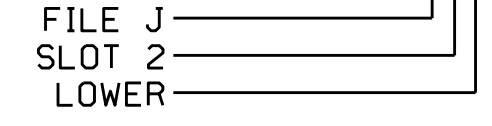
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10★	26	6	Y	Y	Y		3
	-	I1U	56	18★	51	1	Y	Y			3
1B	TB6-9,10	I9U	60	22	11	1	Y	Y			15
2A/S21	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S22	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
3A	TB6-11,12	I9L	62	24	13	3	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			
5A ²	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9★	22	2	Y	Y	Y		3
	-	J1U	55	17★	55	5	Y	Y			3
5B	TB6-1,2	I7U	65	27	34	5	Y	Y			15
6A/S23	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S24	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29		PED 2		2 PED			
P41,P42	TB8-5,6	I12L	69	31		PED 4		4 PED			
P61,P62	TB8-7,9	I13U	68	30		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.

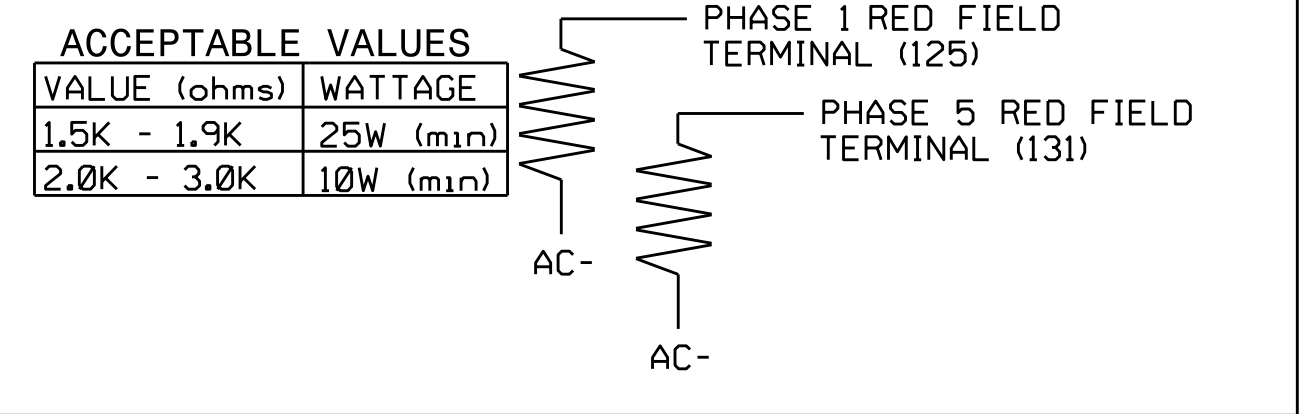
★ See Input Page Assignment programming details on sheets 3 and 4.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-1185
DESIGNED: September 2016
SEALED: 11/15/2016
REVISED:

Electrical Detail - Sheet 1 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NC 280 (Airport Road) at SR 3542 (McKenna Road)/ New Site Access

Division 13 Buncombe County Asheville

PLAN DATE: October 2016 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS INIT. DATE

Seal of Cary M. Little, Professional Engineer, License No. 030530

DocuSigned by: Cary M. Little 11/18/2016

SIG. INVENTORY NO. 13-1185

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS), SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON
AND RED CLEAR ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #50 ON
SET OUTPUT ASSIGNMENT #51 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #42 ON
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE	
OUTPUT 42	= Overlap C Red
OUTPUT 43	= Overlap C Yellow
OUTPUT 44	= Overlap C Green
OUTPUT 50	= Overlap A Red
OUTPUT 51	= Overlap A Yellow
OUTPUT 52	= Overlap A Green

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: :12345678910111213141516
VEH OVL PARENTS: :XX
VEH OVL NOT VEH: :
VEH OVL NOT PED: :
VEH OVL GRN EXT: :
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: :12345678910111213141516
VEH OVL PARENTS: : X
VEH OVL NOT VEH: :
VEH OVL NOT PED: :
VEH OVL GRN EXT: :
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS 'NEXT' TO ADVANCE TO PAGE 2.

NOTICE PAGE 2 →

PAGE 2: VEHICLE OVERLAP 'A' SETTINGS
PHASE: :12345678910111213141516
VEH OVL PARENTS: :X
VEH OVL NOT VEH: :
VEH OVL NOT PED: :
VEH OVL GRN EXT: :
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

PRESS '+' TWICE

NOTICE PAGE 2 →

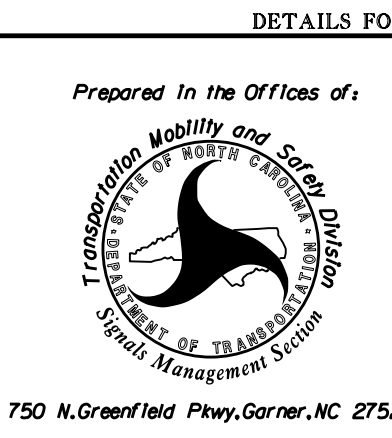
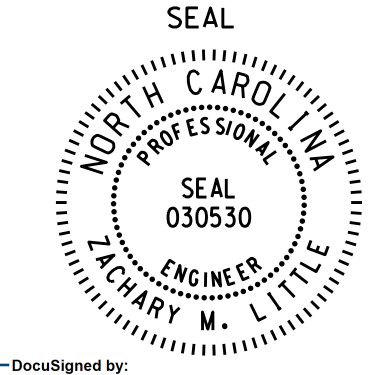
PAGE 2: VEHICLE OVERLAP 'C' SETTINGS
PHASE: :12345678910111213141516
VEH OVL PARENTS: : X
VEH OVL NOT VEH: :
VEH OVL NOT PED: :
VEH OVL GRN EXT: :
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0

OVERLAP PROGRAMMING COMPLETE

Electrical Detail - Sheet 2 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	NC 280 (Airport Road) at SR 3542 (McKenna Road)/ New Site Access		
	Division 13 PLAN DATE: October 2016 PREPARED BY: C. Strickland	Buncombe County Asheville REVIEWED BY: T. Joyce REVIEWED BY:	
REVISIONS		INIT. DATE	DocuSigned by: Cary M. Little 11/18/2016 DATE
			SIG. INVENTORY NO. 13-1185

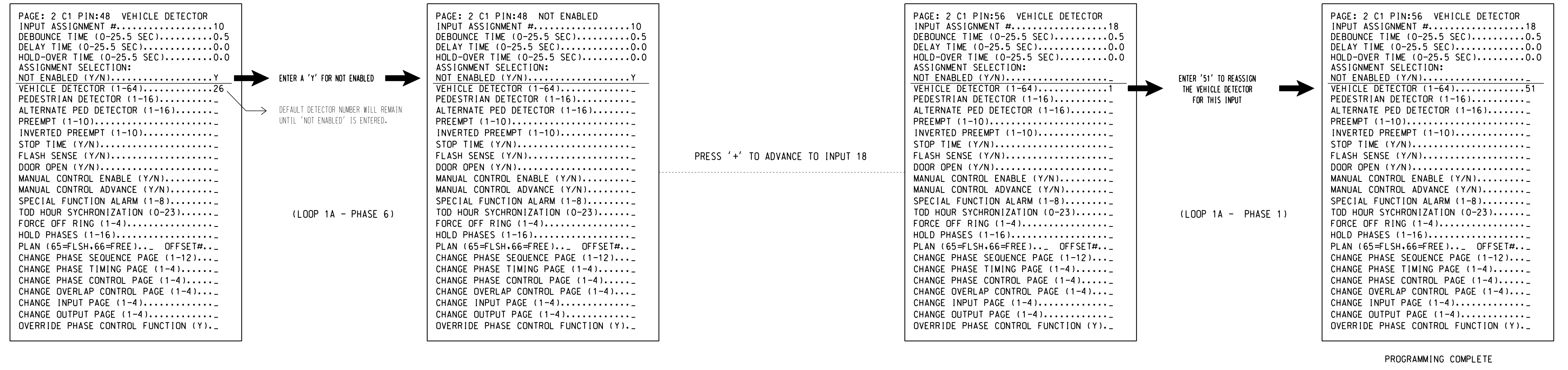
11/18/2016 1:58 PM
 S:\MITS\13-1185\Sigs\Sig_Mgmt\Strickland\Cad\Cad.dgn
 C:\Users\strickland

INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 1A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #10 (DETECTOR 26) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 6 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 51 TO INPUT #18 SO THAT THE DELAY ON LOOP 1A CAN BE REDUCED FROM 15 SECONDS TO 3 SECONDS.

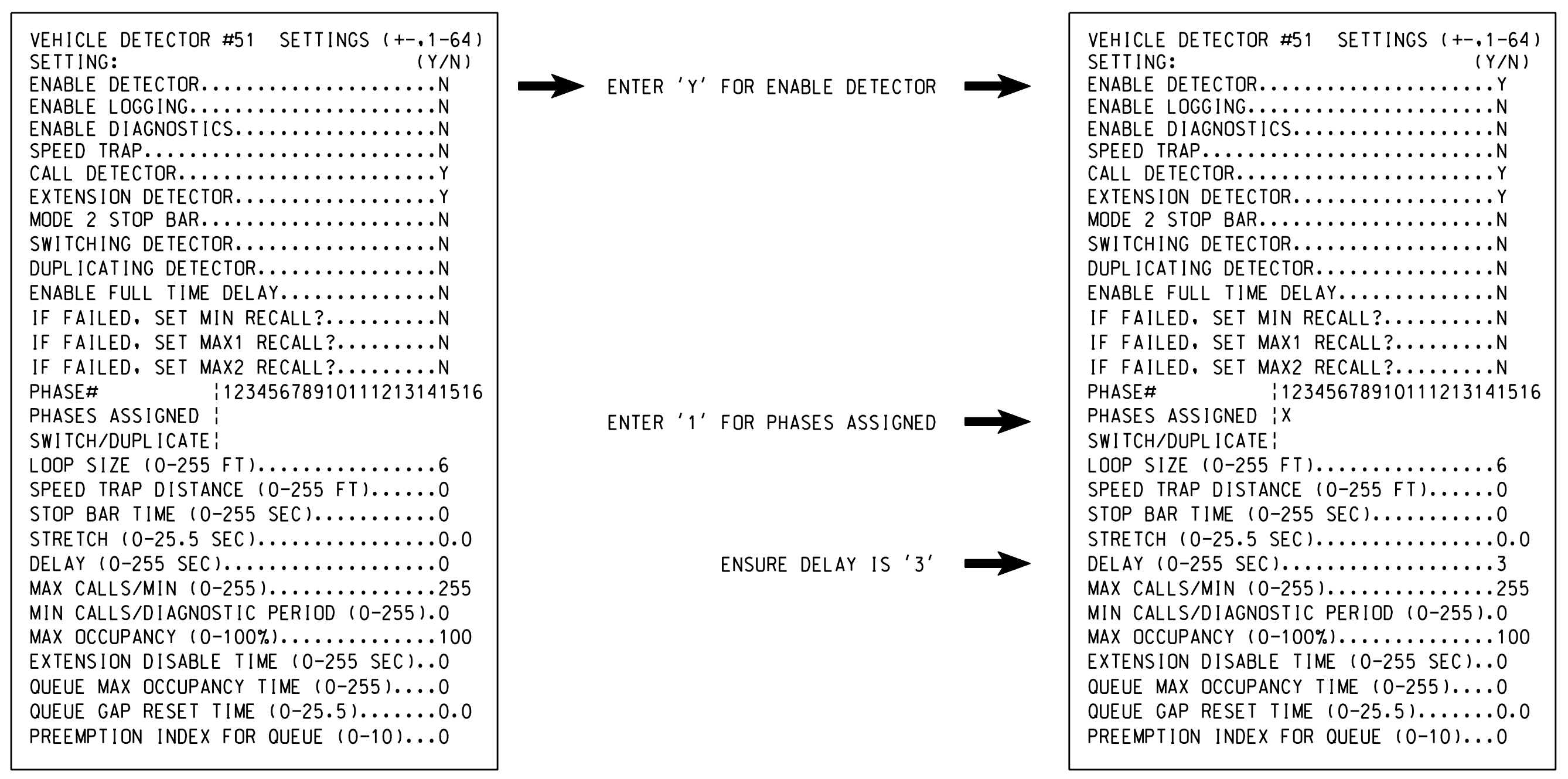
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 10 IS REACHED.



SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 1A (ALT.)

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #51.



NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-1185
DESIGNED: September 2016
SEALED: 11/15/2016
REVISED:

11/18/2016 1:59 PM C:\Users\jgibson\Documents\Signal\13-1185_Smle_xxx.dgn

Electrical Detail - Sheet 3 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	NC 280 (Airport Road) at SR 3542 (McKenna Road)/ New Site Access		
	Division 13 PLAN DATE: October 2016 PREPARED BY: C. Strickland	Buncombe County Asheville REVIEWED BY: T. Joyce REVIEWED BY:	

PHASING DIAGRAM

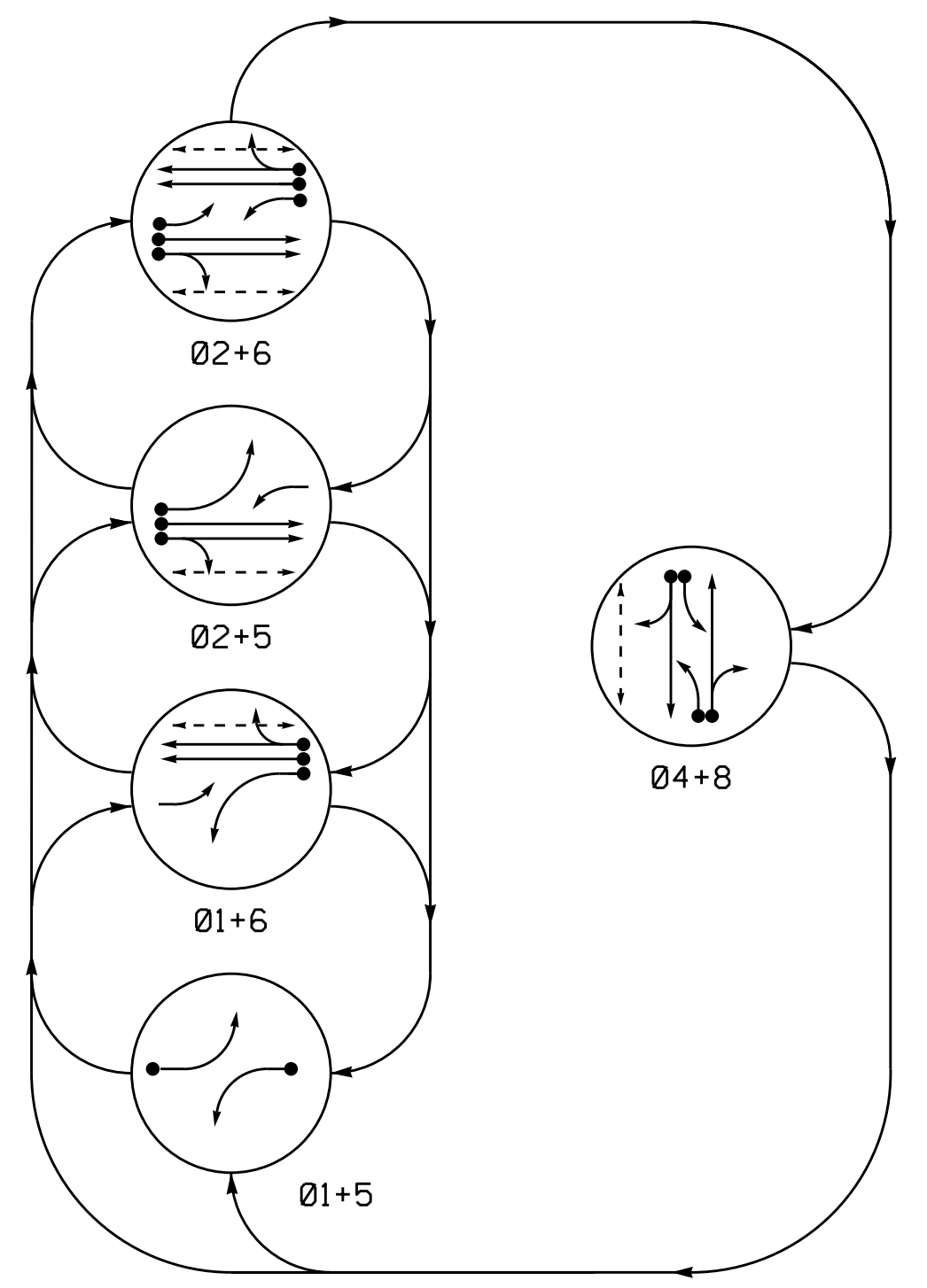
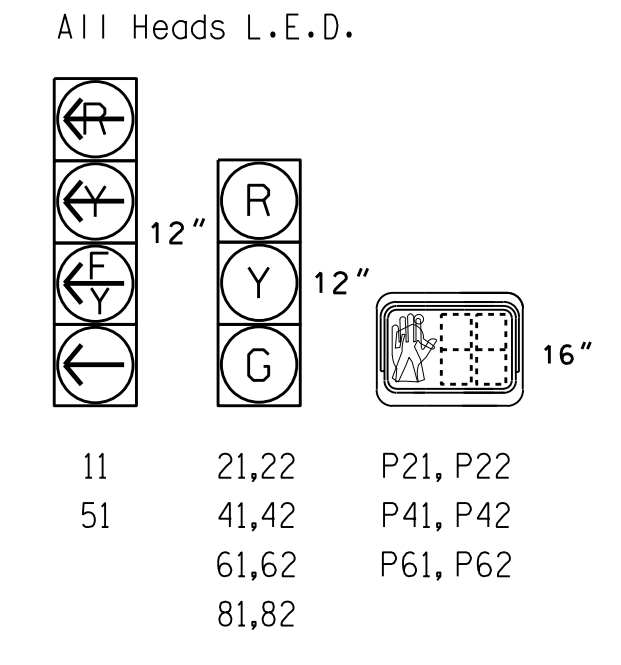


TABLE OF OPERATION

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

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
					PHASE	CALLING	EXTENSION	FULL TIME DELAY		
1A	6X40	0	2-4-2	-	1	Y	Y	-	15	-
2A	6X6	295	4	-	2	Y	Y	-	3	-
2B	6X6	295	4	-	2	Y	Y	-	-	-
4A	6X40	+5	2-4-2	-	4	Y	Y	-	3	-
4B	6X40	+5	2-4-2	-	4	Y	Y	-	10	-
5A	6X40	+5	2-4-2	-	5	Y	Y	-	15	-
6A	6X6	300	4	-	6	Y	Y	-	-	-
6B	6X6	300	4	-	6	Y	Y	-	-	-
8A	6X40	+5	2-4-2	-	8	Y	Y	-	3	-
8B	6X40	+5	2-4-2	-	8	Y	Y	-	10	-

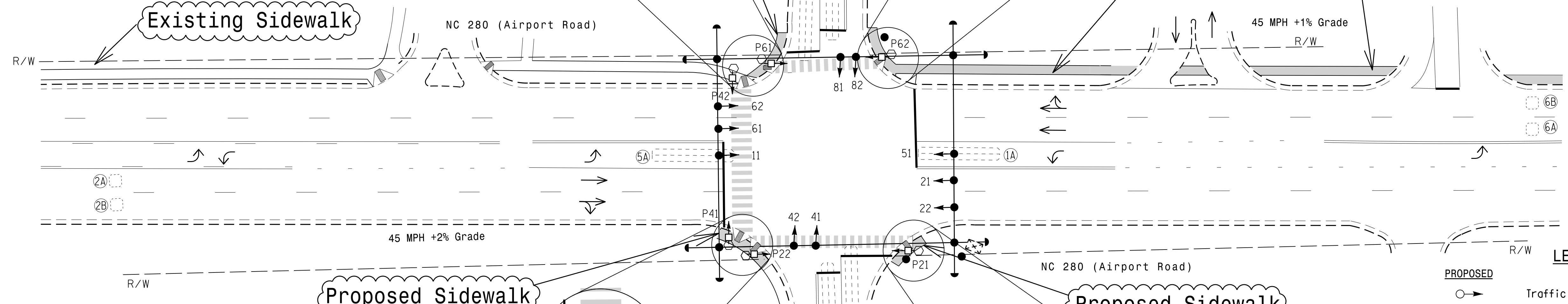
5 Phase Fully Actuated NC 280 (Airport Road) CLS

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Set all detector units to presence mode.
5. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
6. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
7. Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
9. Closed loop system data: Controller Asset #1244.

PHASING DIAGRAM DETECTION LEGEND

	DETECTED MOVEMENT
	UNDETECTED MOVEMENT (OVERLAP)
	UNSIGNALIZED MOVEMENT
	PEDESTRIAN MOVEMENT



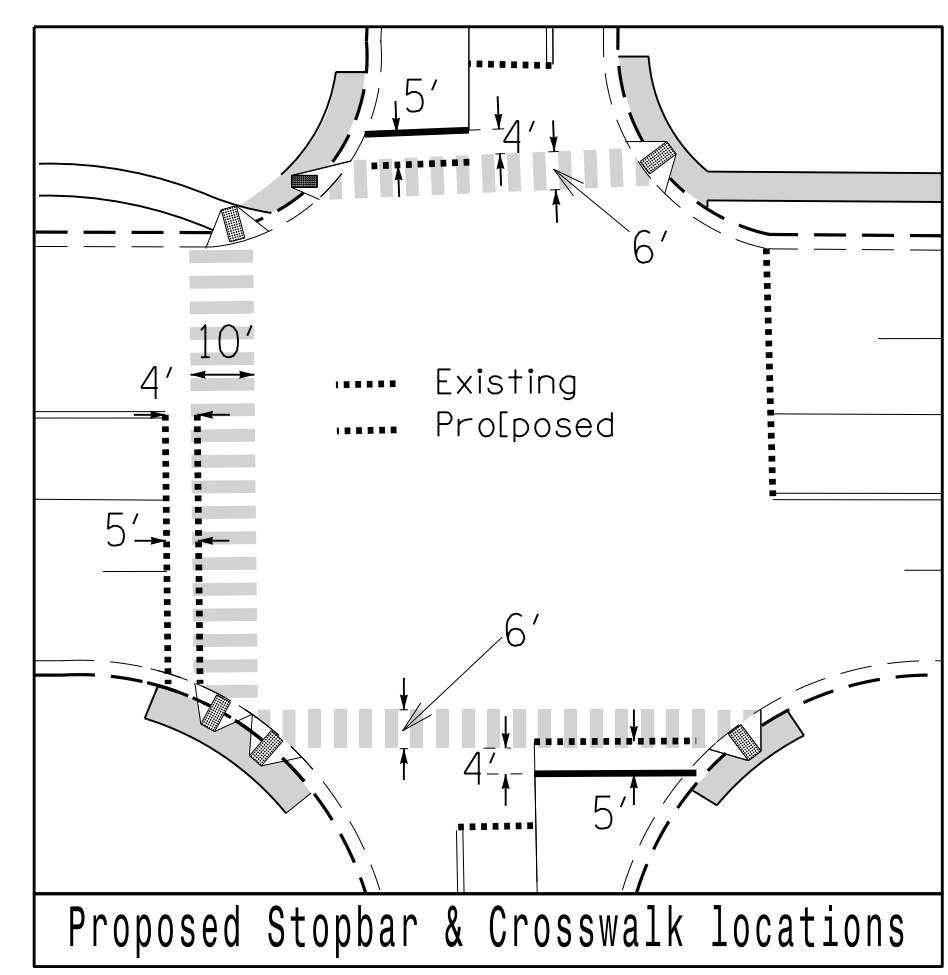
LEGEND

PROPOSED	EXISTING

OASIS 2070 TIMING CHART

FEATURE	PHASE						
	1	2	4	5	6	8	
Min Green 1 *	7	12	7	7	12	7	
Extension 1 *	2.0	6.0	2.0	2.0	6.0	2.0	
Max Green 1 *	15	90	20	10	90	20	
Yellow Clearance	3.0	4.4	3.1	3.0	4.4	3.1	
Red Clearance	2.4	1.3	2.8	2.6	1.3	2.8	
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	
Walk 1 *	-	7	7	-	7	-	
Don't Walk 1	-	18	19	-	10	-	
Seconds Per Actuation *	-	1.5	-	-	1.5	-	
Max Variable Initial *	-	34	-	-	34	-	
Time Before Reduction *	-	15	-	-	15	-	
Time To Reduce *	-	30	-	-	30	-	
Minimum Gap	-	3.0	-	-	3.0	-	
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-	
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-	
Dual Entry	-	-	ON	-	-	ON	
Simultaneous Gap	ON	ON	ON	ON	ON	ON	

* 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.



15-NOV-2016 11:47
 S:\MIS\SS\13-16-204\Sig\13-16-204_Sig.dgn
 (Ashveer) 13-16-204_Sig.dgn
 System: 131244-SS-4913-CE-001
 13-16-204-SS-4913-CE-001

Signal Upgrade Corr. File No. 13-16-204

NC 280 (Airport Road) at The Landing Development Entrance

Division 13 Buncombe County Arden

PLAN DATE: November 2016 REVIEWED BY: R. Zinser

PREPARED BY: M. Mahbooba REVIEWED BY:

REVISIONS INIT. DATE

SCALE 30 1"=30'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043914 RICHARD N. ZINSER

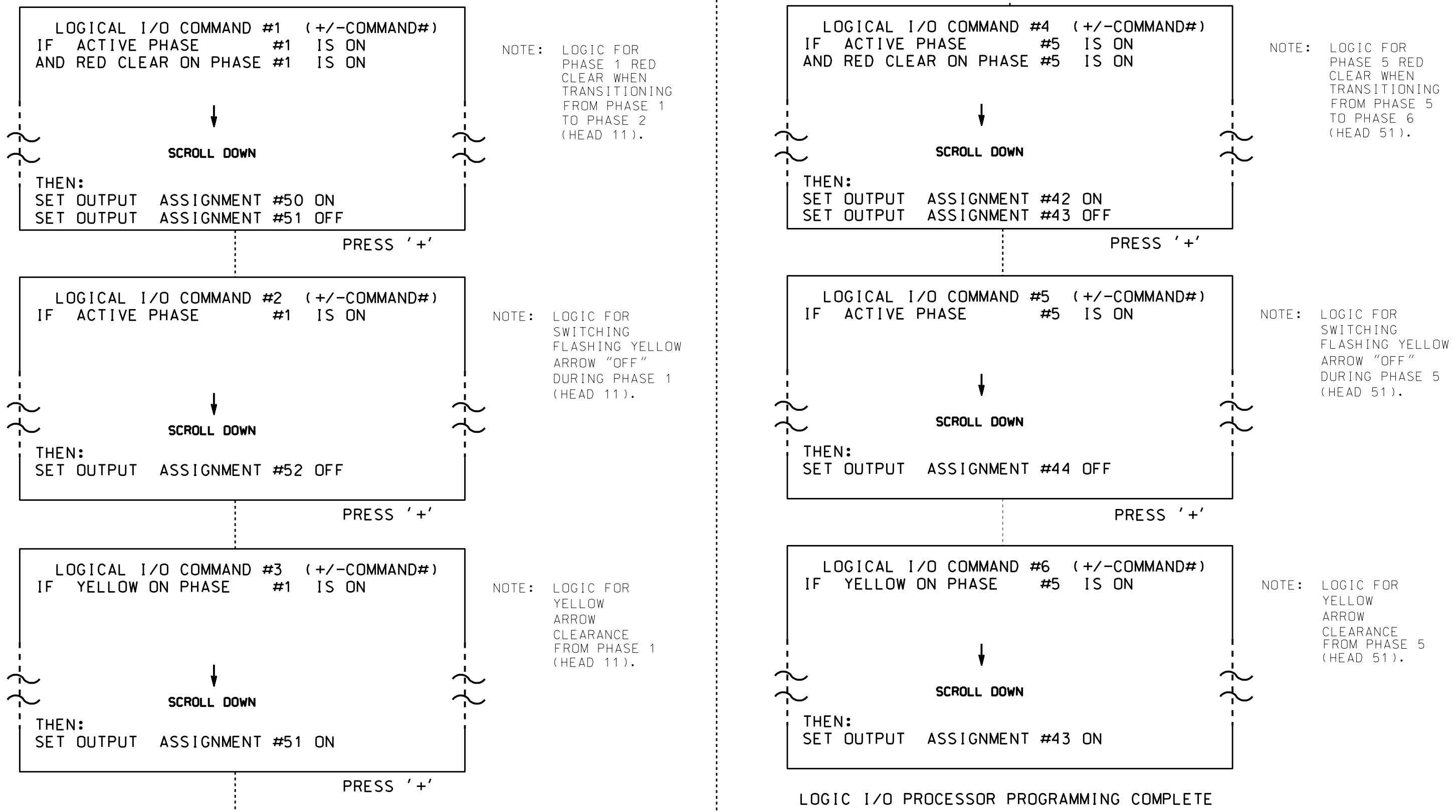
11/15/2016 DATE

SIG. INVENTORY NO. 13-1244

**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5 AND 6.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



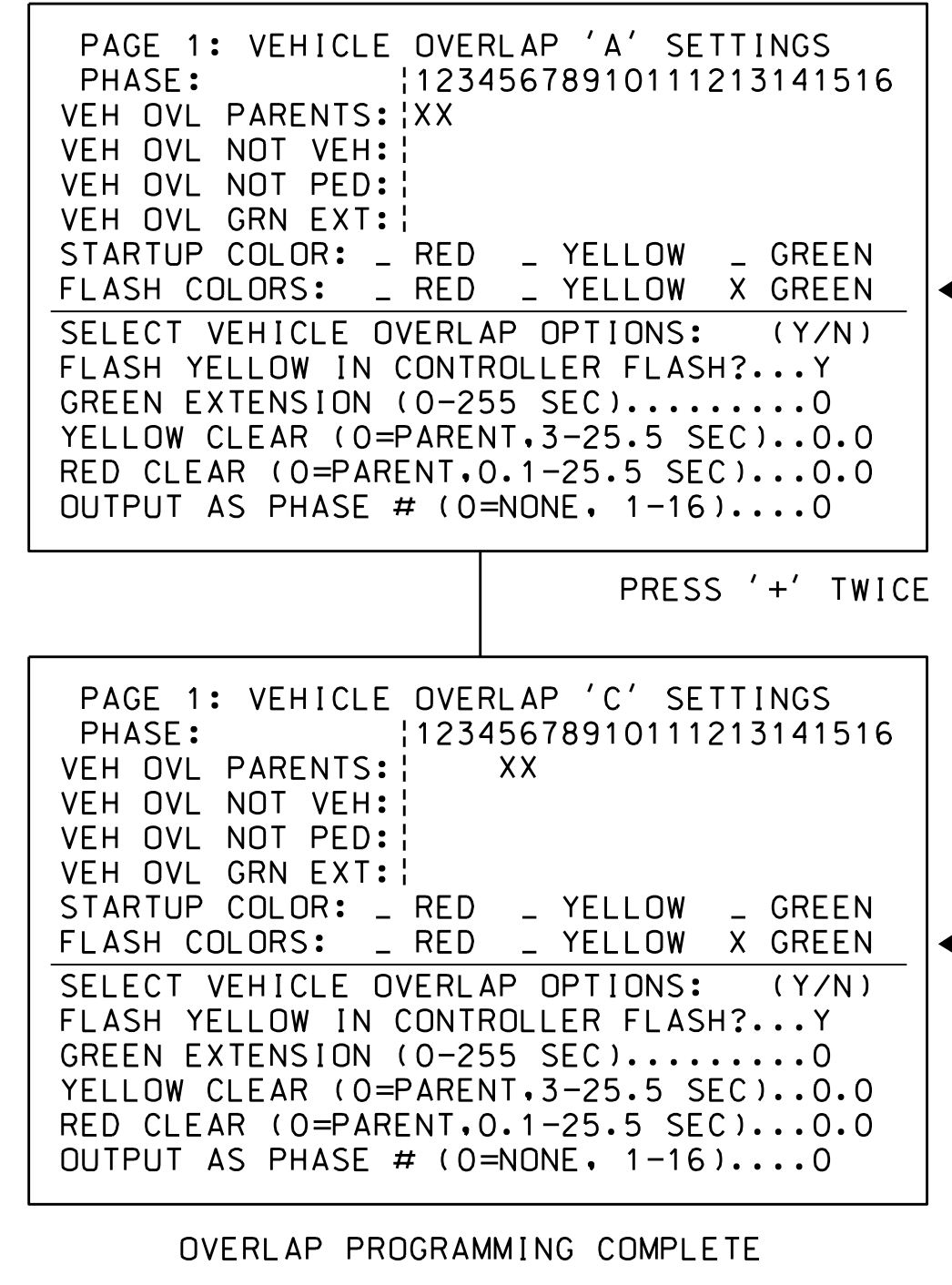
OUTPUT REFERENCE SCHEDULE

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).



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: 13-1244
DESIGNED: November 2016
SEALED: 11-15-16
REVISED: N/A

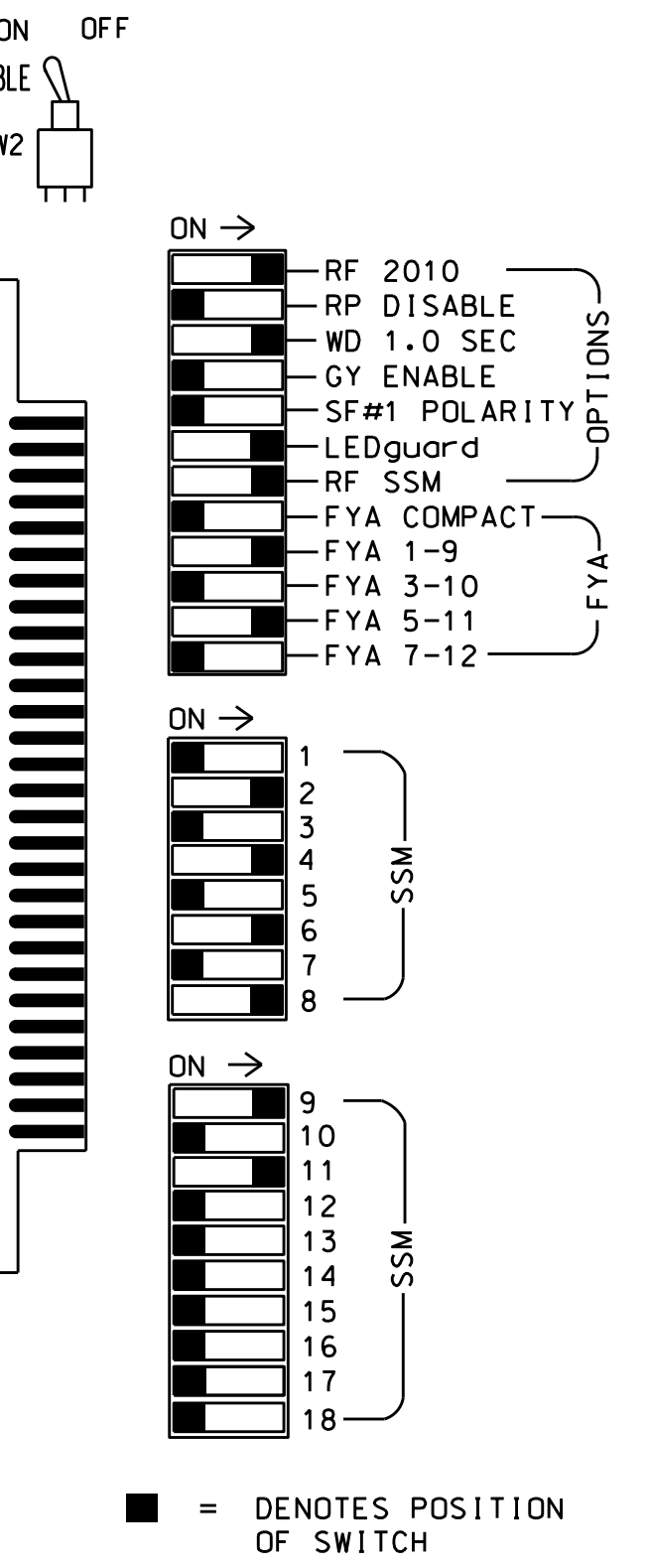
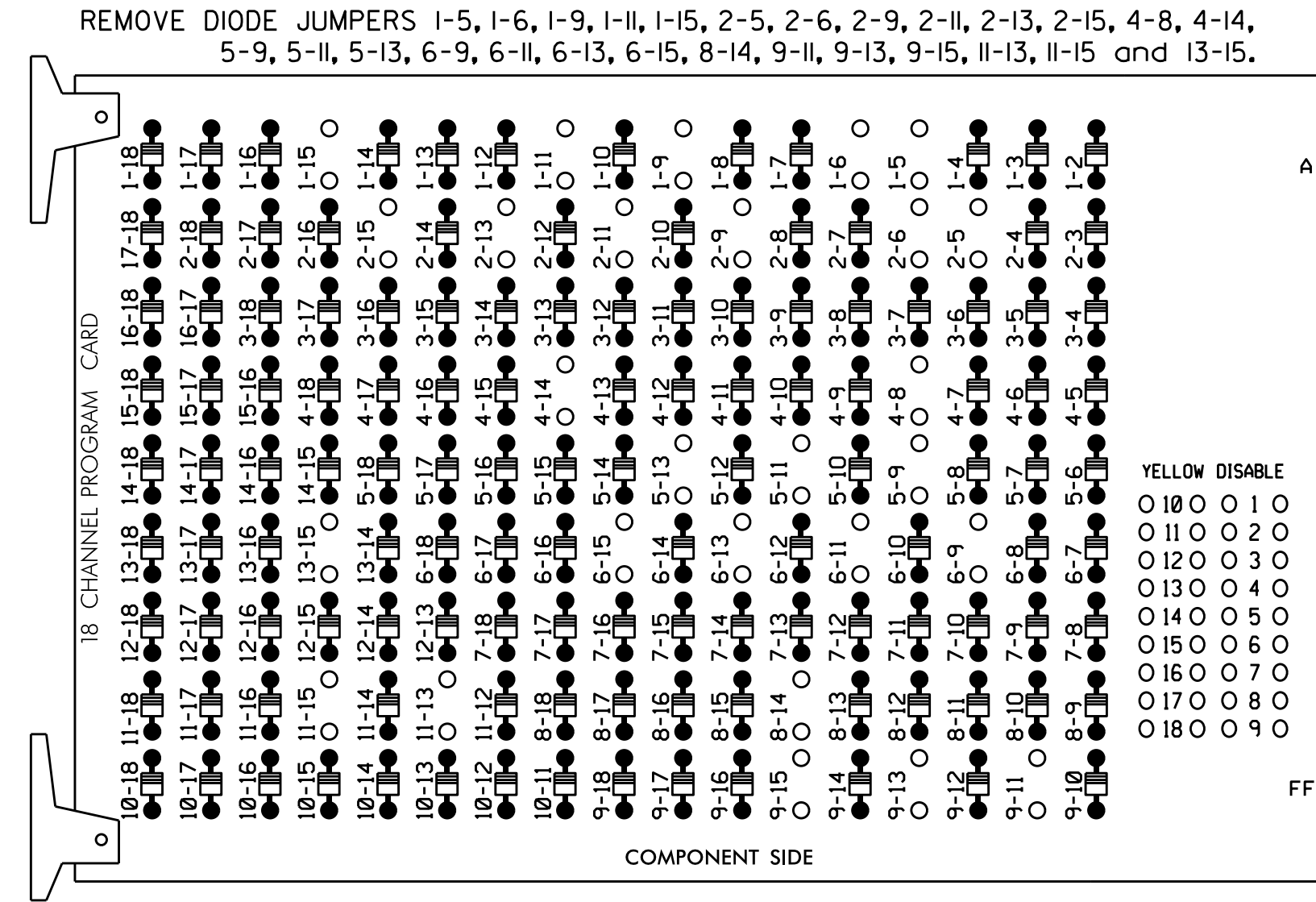
ELECTRICAL DETAIL SHEET 2 OF 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	DETAILS FOR: NC 280 (Airport Road) at The Landing Development Entrance			
	Division 13 Buncombe County Arden	SEAL		
	PLAN DATE: October 2016 REVIEWED BY:	PREPARED BY: James Peterson REVIEWED BY:		
REVISIONS		INIT. DATE	DocuSigned by: Keith M. Mins 11/22/2016 2F80788E8BCD344S DATE	
750 N. Greenfield Pkwy, Garner, NC 27529		SIG. INVENTORY NO. 13-1244		

09-1009-2016_13-11
 S:\MTS\SIG\13-11\SIG\13-11\work\hgr\output\sig\Main\Peter.som\131244_sic.ele_xxxx.dgn
 J. Peterson

EDI MODEL 2018ECL-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.
 - Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2, 4 and 6 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
- The cabinet and controller are part of the NC 280 (Airport Road) Closed Loop System.

EQUIPMENT INFORMATION

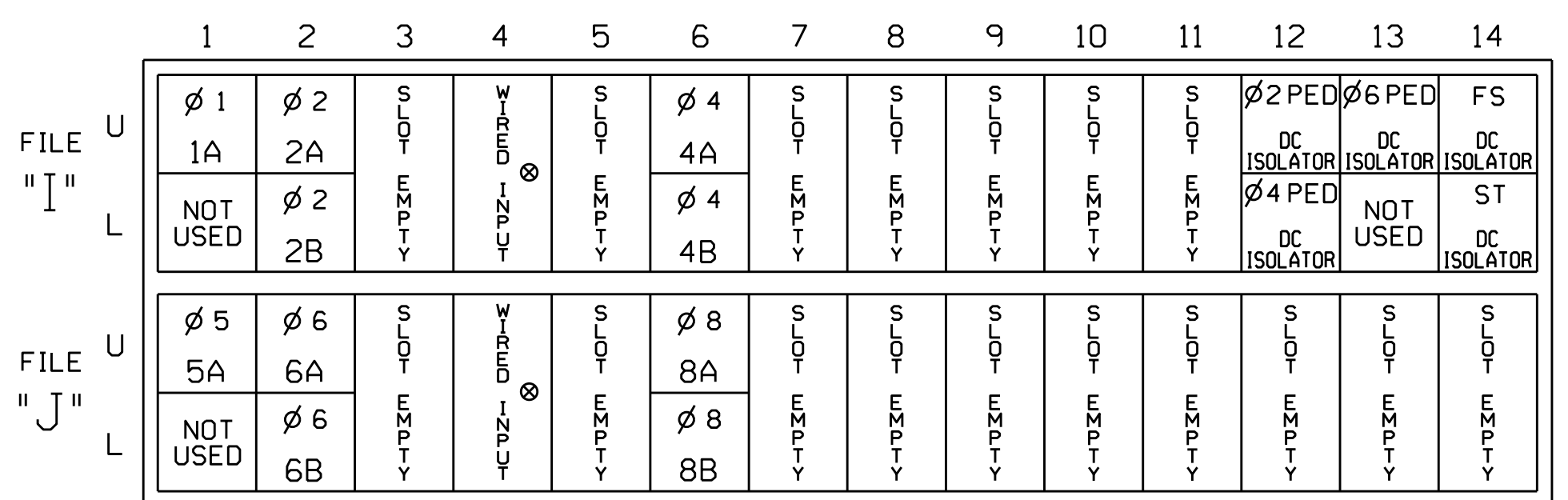
CONTROLLER.....2070
 CABINET.....332 /W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S5,S6,S7,S8,S9,S11,
 AUX S1,AUX S4.
 PHASES USED.....1,2,4,5,6,8,2 PED,4 PED,6 PED
 OVERLAP "A".....1+2
 OVERLAP "B".....NOT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

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	P21, P22	NU	41,42	P41, P42	51	61,62	P61, P62	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										
Hand			113			104			119									
Walking			115			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)

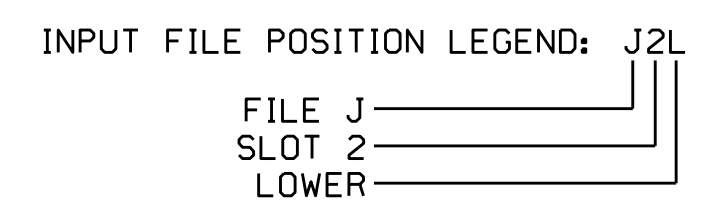


EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 ⊗ Wired Input - Do not populate slot with detector card

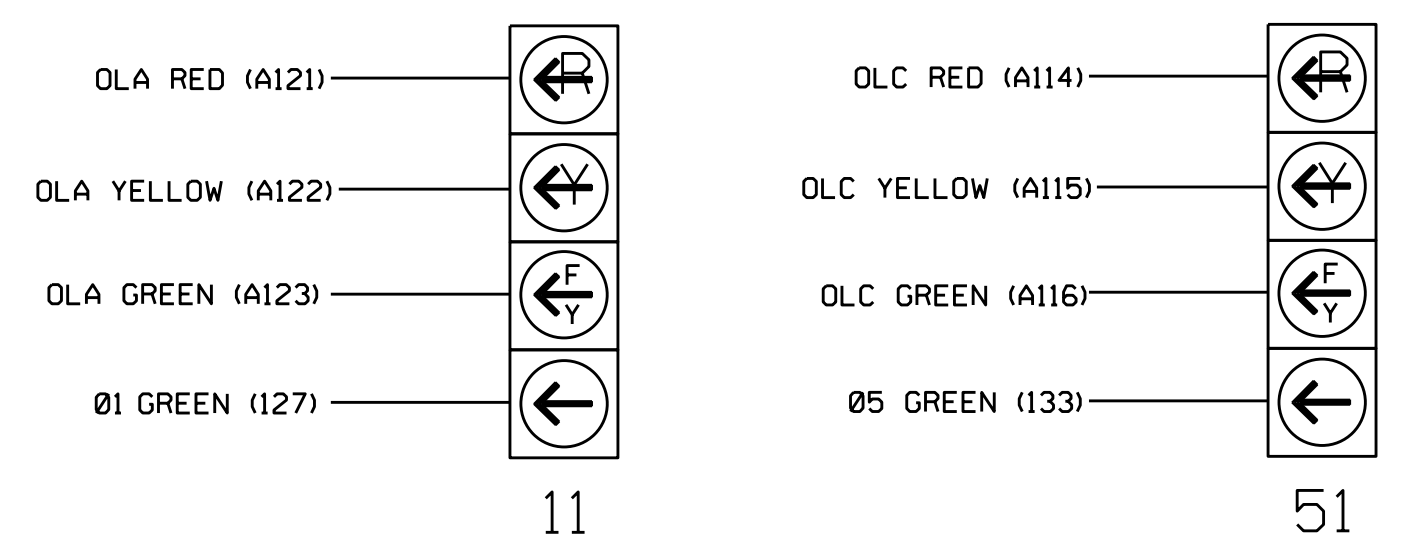
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10	26	6	Y	Y	Y		3
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
5A ²	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9	22	2	Y	Y	Y		3
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29			PED 2	2 PED			
P41,P42	TB8-5,6	I12L	69	31			PED 4	4 PED			
P61,P62	TB8-7,9	I13U	68	30			PED 6	6 PED			

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.



4 SECTION FYA PPLT SIGNAL WIRING DETAIL
(wire signal heads as shown)

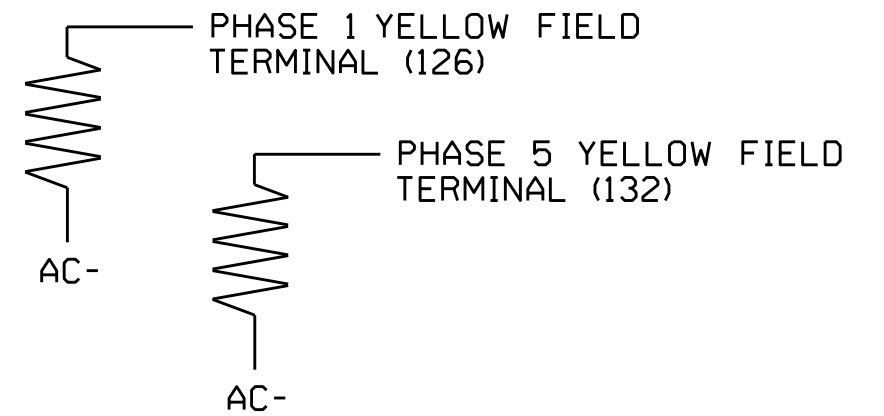


NOTE
 1. The sequence display for these signals requires special logic programming. See sheet 2 of 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-1244
 DESIGNED: November 2016
 SEALED: 11-15-16
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL
(install resistors as shown below)

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



ELECTRICAL DETAIL SHEET 1 OF 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Offices of:
 Transportation Mobility and Safety
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Management Section
 750 N. Greenfield Pkwy, Garner, NC 27529

NC 280 (Airport Road) at The Landing Development Entrance

Division 13 Buncombe County Arden

PLAN DATE: October 2016 REVIEWED BY: BAS
 PREPARED BY: James Peterson REVIEWED BY:

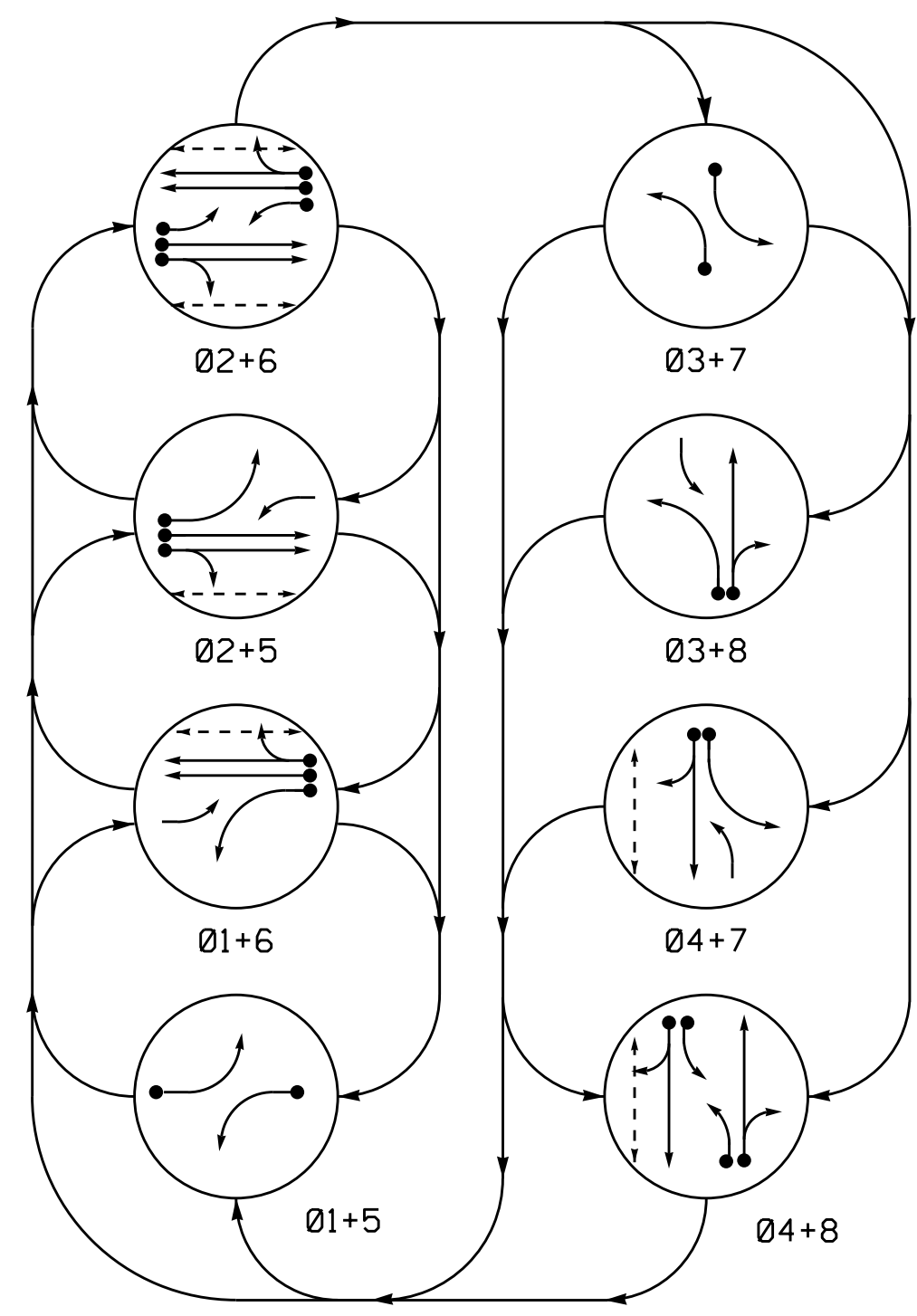
REVISIONS INIT. DATE

DocuSigned by: Keith M. Minis 11/22/2016
 2F80768ECB23445 DATE

SIG. INVENTORY NO. 13-1244

02-10-2016 11:40
 S:\MIS\SS\13-1244\Signal\work\hgr\oups\51g_Mon@eter.som\31244_snc.ele_xxxx.dgn
 J.peterson

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

SIGNAL FACE I.D.

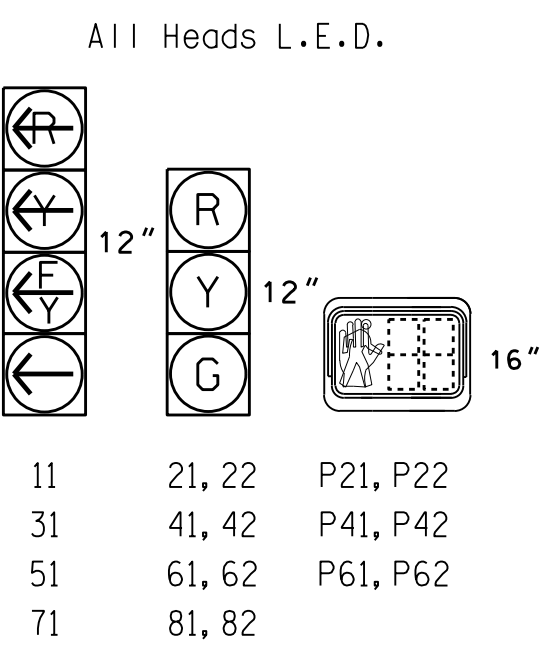


TABLE OF OPERATION

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

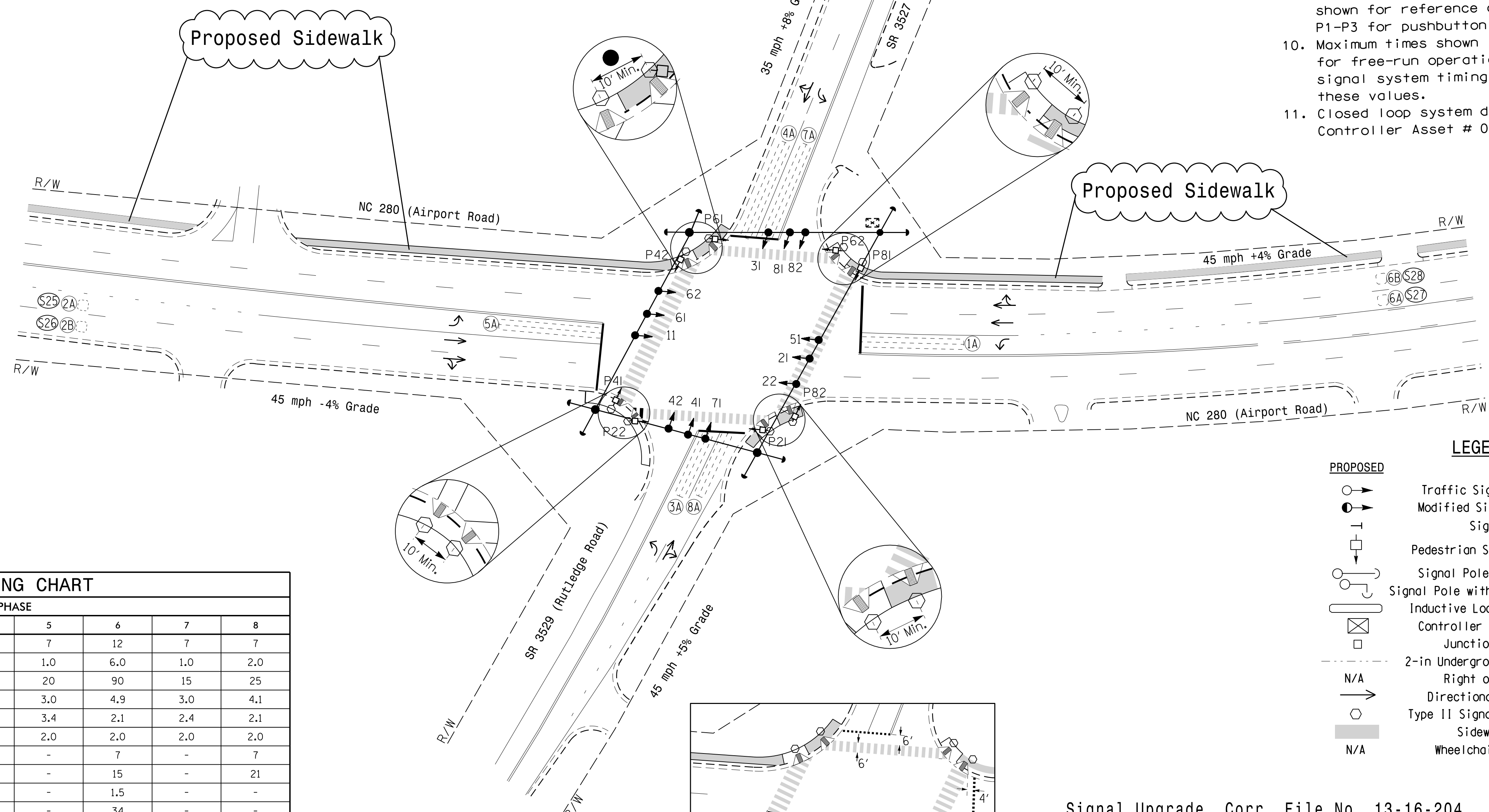
OASIS 2070L LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING								
				NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
1A	6X60	0	2-4-2	-	1	Y	Y	-	-	15	-	-
2A/S25	6X6	300	EXIST	-	2	Y	Y	-	-	3	-	-
2B/S26	6X6	300	EXIST	-	2	Y	Y	-	-	-	Y	-
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	15	-	-
4A	6X60	0	2-4-2	-	4	Y	Y	-	-	10	-	-
5A	6X60	0	2-4-2	-	5	Y	Y	-	-	15	-	-
6A/S27	6X6	300	EXIST	-	6	Y	Y	-	-	-	Y	-
6B/S28	6X6	300	EXIST	-	6	Y	Y	-	-	-	Y	-
7A	6X60	0	2-4-2	-	7	Y	Y	-	-	15	-	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	-

8 Phase Fully Actuated NC 280 (Airport Rd.) CLS

NOTES

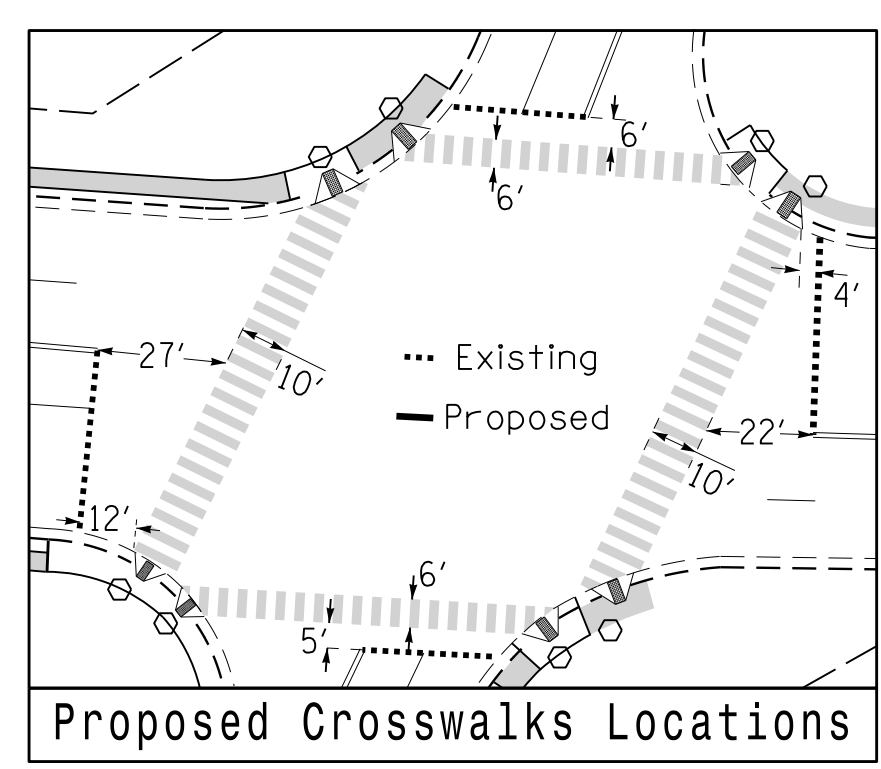
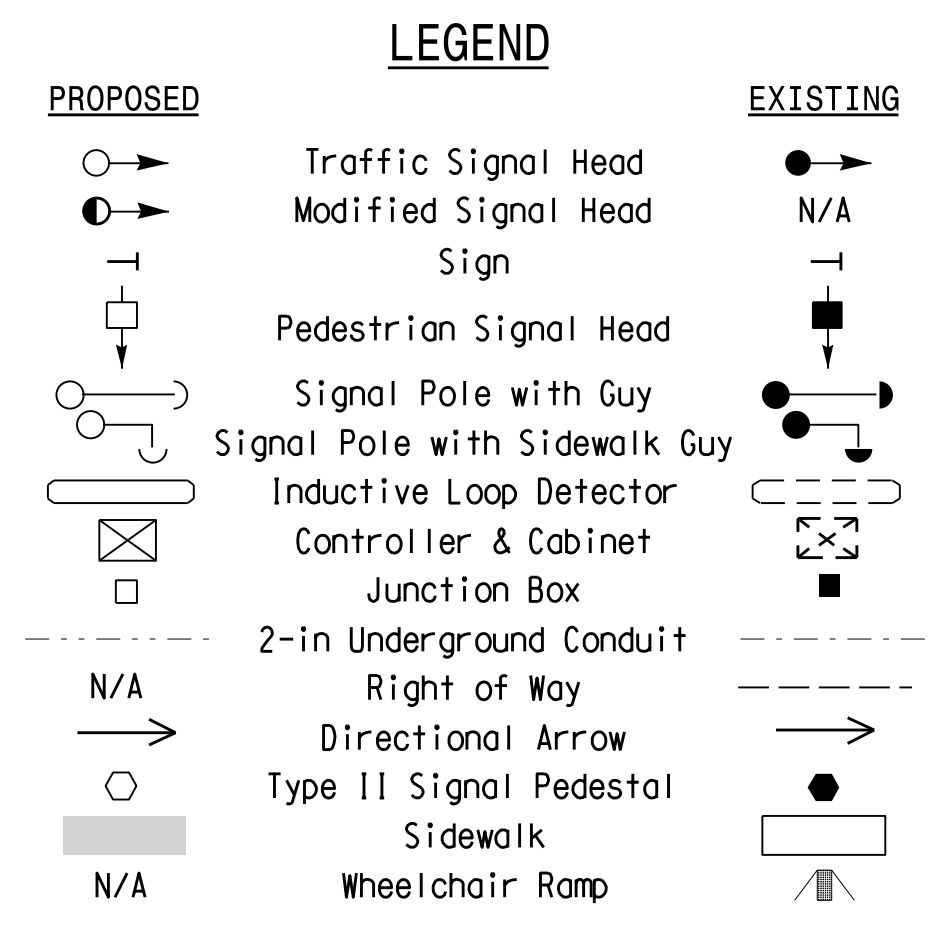
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset # 0830.



OASIS 2070L TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	12	7	7	7	12	7	7
Extension 1 *	1.0	6.0	2.0	1.0	1.0	6.0	1.0	2.0
Max Green 1 *	15	90	15	25	20	90	15	25
Yellow Clearance	3.0	4.9	3.0	4.1	3.0	4.9	3.0	4.1
Red Clearance	3.3	2.1	2.4	2.1	3.4	2.1	2.4	2.1
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	7	-	7	-	7
Don't Walk 1	-	16	-	21	-	15	-	21
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	34	-	-	-	34	-	-
Time Before Reduction *	-	15	-	-	-	15	-	-
Time To Reduce *	-	30	-	-	-	30	-	-
Minimum Gap	-	3.0	-	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	ON

* 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 Corr. File No. 13-16-204

NC 280 (Airport Road) at SR 3527 (Bradley Branch Road) / SR 3529 (Rutledge Road)

Division 13 Buncombe County Fletcher

PLAN DATE: October 2016 PREPARED BY: M. Mahbooba REVIEWED BY: R. Zinser

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40 1"=40'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL NORTH CAROLINA PROFESSIONAL ENGINEER RICHARD N. ZINSER SEAL 043914

11/15/2016 DATE

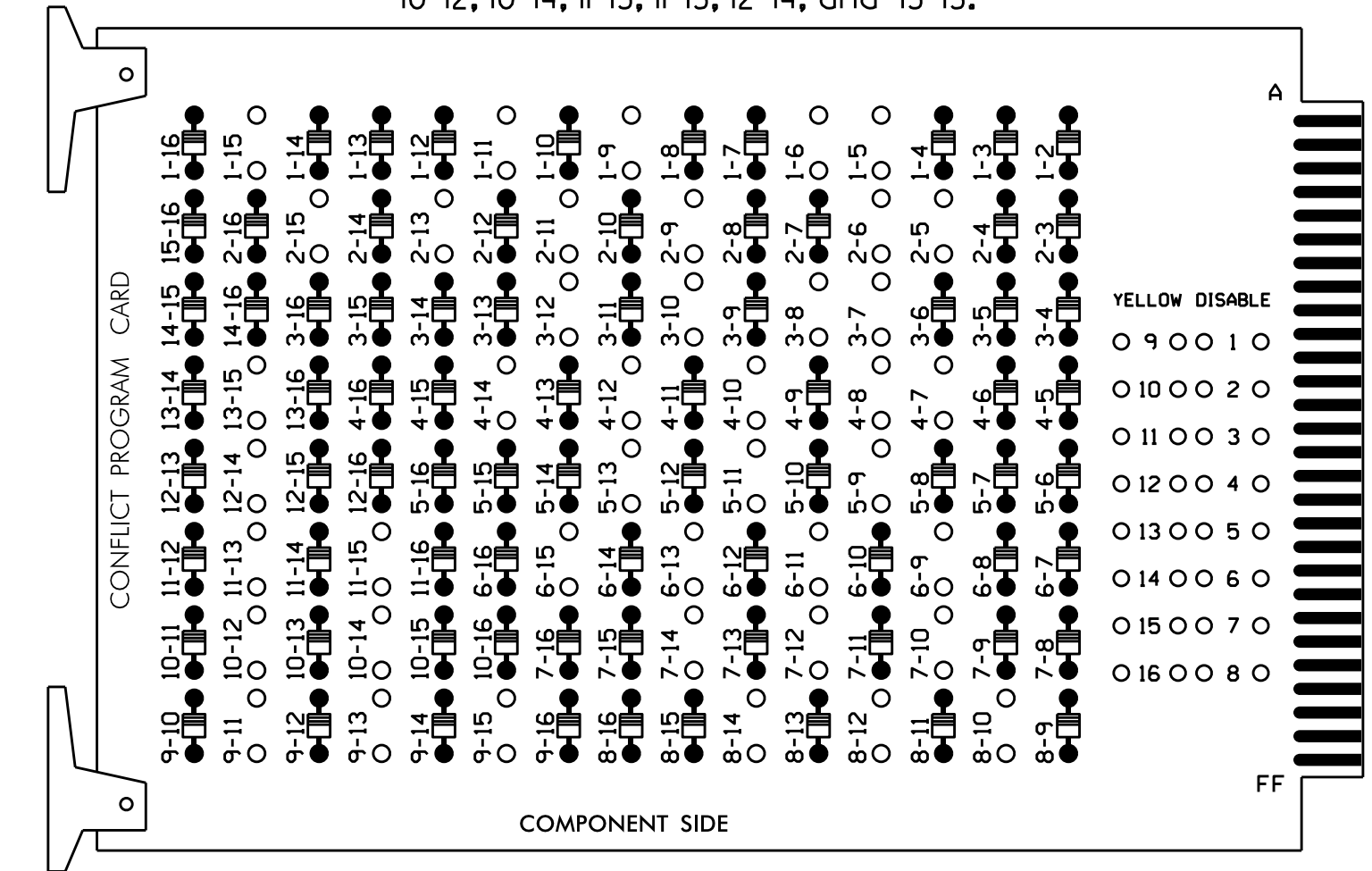
SIG. INVENTORY NO. 13-0830

15-Nov-2016 14:14 S:\ITS\SS\13-16-204\Sigs\Sig.4.0.dgn (Ashvevi) Signal System\130830_sig.dsn 20161115.dgn
 mmb0000

EDI MODEL 2010ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

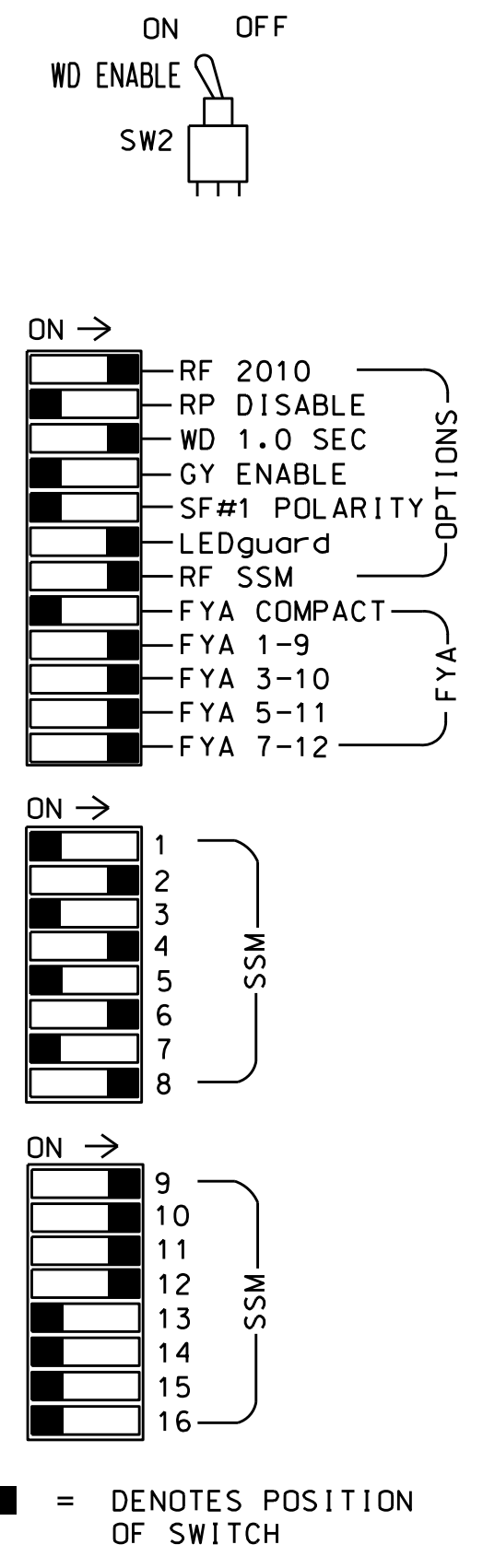
(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 4-14, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 9-11, 9-13, 9-15, 10-12, 10-14, 11-13, 11-15, 12-14, 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.
 - Make sure jumpers SEL2-SEL5 are present on the monitor board.



■ = DENOTES POSITION OF SWITCH

NOTES

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3, 5,7,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2, 4, and 6 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
- The cabinet and controller are part of the NC 280 (Airport Road) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S2P,S3,S4,S4P,S5,S6,S6P,
 S7,S8,S9,S10,S12,S13
 PHASES USED.....1,2,2PED,3,4,4PED,5,6,6PED,7,8
 OVERLAP "A".....1+2
 OVERLAP "B".....3+4
 OVERLAP "C".....5+6
 OVERLAP "D".....7+8

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P	S9	S10	S11	S12	S13	S14
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	P21, P22	31★	41,42	P41, P42	51★	61,62	P61, P62	71★	81,82	NU	11★	31★	NU	51★	71★	NU
RED		128			101			134			107							
YELLOW	*	129		*	102		*	135		*	108							
GREEN		130			103			136			109							
RED ARROW															A121	A124	A114	A101
YELLOW ARROW															A122	A125	A115	A102
FLASHING YELLOW ARROW															A123	A126	A116	A103
GREEN ARROW	127			118			133			124								
Hand				113			104			119								
Walking				115			106			121								

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

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	∅1 1A	∅2/SYS 2A/S25	∅3 3A	∅4 4A	∅5 5A	∅6/SYS 6A/S27	∅7 7A	∅8 8A	∅9 9A	∅10 10A	∅11 11A	∅12 PED DC ISOLATOR	∅13 PED DC ISOLATOR	FS DC ISOLATOR
FILE "J"	NOT USED	∅2/SYS 2B/S26	NOT USED	NOT USED	NOT USED	∅6/SYS 6B/S28	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	∅12 PED DC ISOLATOR	∅13 PED DC ISOLATOR	ST DC ISOLATOR

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

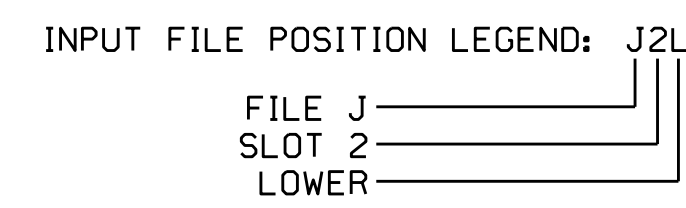
⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A ¹	TB2-1,2	I1U	56	18	1	1	Y	Y			15
		J4U	48	10	26	6	Y	Y	Y		3
2A/S25	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S26	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
3A ²	TB4-5,6	I5U	58	20	3	3	Y	Y			15
		J8U	50	12	28	8	Y	Y			3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A ³	TB3-1,2	J1U	55	17	5	5	Y	Y			15
		I4U	47	9	22	2	Y	Y	Y		3
6A/S27	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S28	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
7A ⁴	TB5-5,6	J5U	57	19	7	7	Y	Y			15
		I8U	49	11	24	4	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

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

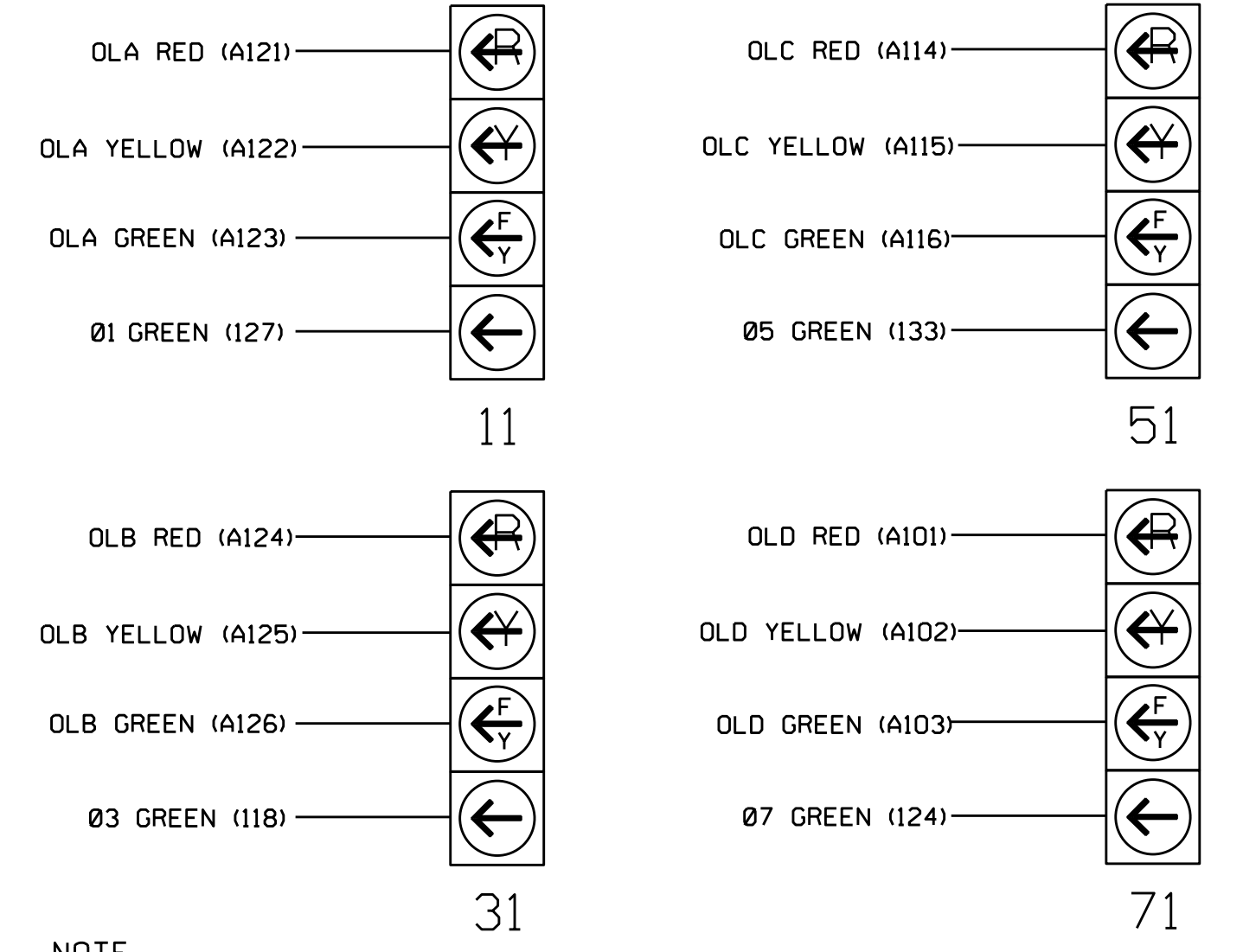
- Add jumper from I1-W to J4-W, on rear of input file.
- Add jumper from I5-W to J8-W, on rear of input file.
- Add jumper from J1-W to I4-W, on rear of input file.
- Add jumper from J5-W to I8-W, on rear of input file.



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 13-0830
 DESIGNED: October 2016
 SEALED: 11/15/2016
 REVISED:

4 SECTION FYA PPLT SIGNAL WIRING DETAIL

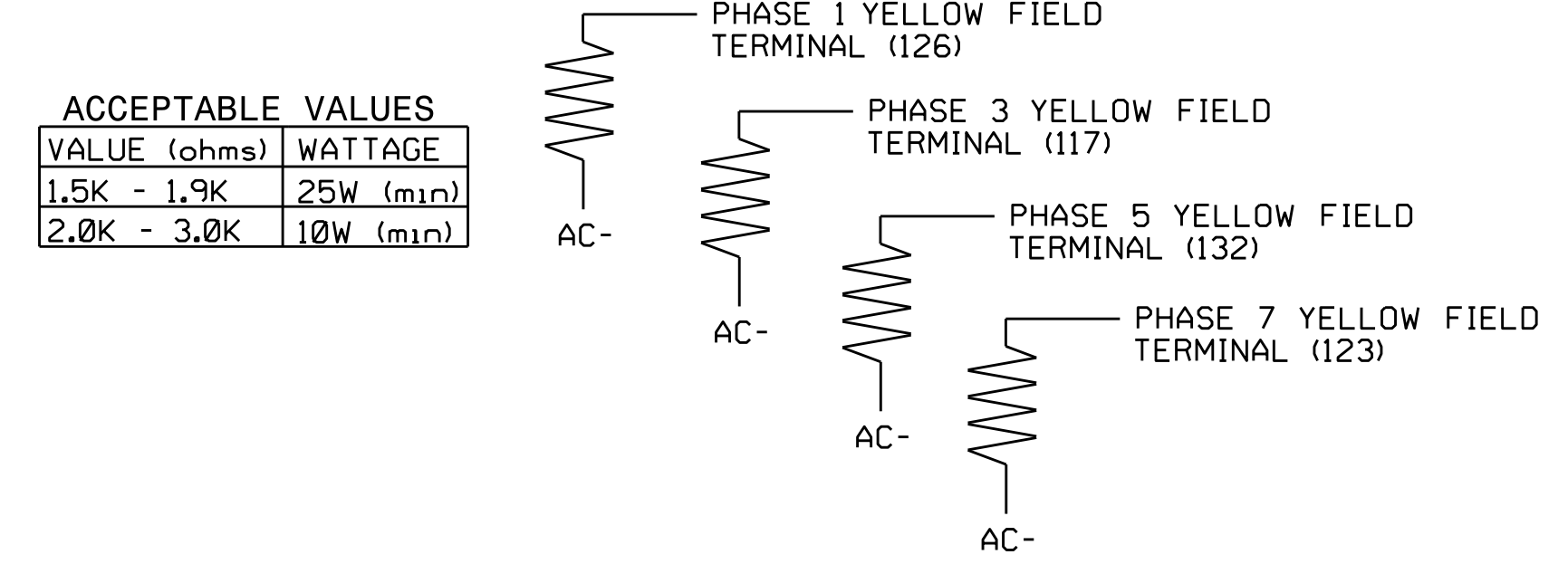
(wire signal heads as shown)



NOTE:
 1. The sequence display for these signals require special logic programming. See sheet 2 of 2 for programming instructions.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



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.

ELECTRICAL DETAIL SHEET 1 OF 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISION SEAL

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

NC 280 (Airport Road) at SR 3527 (Bradley Branch Road) / SR 3529 (Rutledge Road)

Division 13 Buncombe County Fletcher

PLAN DATE: July 2010 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY: BAS

REVISIONS

NO.	INIT.	DATE
05	KMM	11/21/2016

Added peds, revised monitor, renumbered system loops, added a note. (WSA)

SIGNATURE DATE

SIG. INVENTORY NO. 13-0830

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, AND 12.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).

LOGICAL I/O COMMAND #1 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON
AND RED CLEAR ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #50 ON
SET OUTPUT ASSIGNMENT #51 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).

LOGICAL I/O COMMAND #2 (+/-COMMAND#)
IF ACTIVE PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #3 (+/-COMMAND#)
IF YELLOW ON PHASE #1 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).

LOGICAL I/O COMMAND #4 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON
AND RED CLEAR ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #42 ON
SET OUTPUT ASSIGNMENT #43 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

LOGICAL I/O COMMAND #5 (+/-COMMAND#)
IF ACTIVE PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #6 (+/-COMMAND#)
IF YELLOW ON PHASE #5 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 51).

LOGICAL I/O COMMAND #7 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON
AND RED CLEAR ON PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #47 ON
SET OUTPUT ASSIGNMENT #48 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 3 RED CLEAR WHEN TRANSITIONING FROM PHASE 3 TO PHASE 4 (HEAD 31).

LOGICAL I/O COMMAND #8 (+/-COMMAND#)
IF ACTIVE PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #49 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 3 (HEAD 31).

LOGICAL I/O COMMAND #9 (+/-COMMAND#)
IF YELLOW ON PHASE #3 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #48 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 3 (HEAD 31).

LOGICAL I/O COMMAND #10 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON
AND RED CLEAR ON PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #39 ON
SET OUTPUT ASSIGNMENT #40 OFF

PRESS '+'

NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 TO PHASE 8 (HEAD 71).

LOGICAL I/O COMMAND #11 (+/-COMMAND#)
IF ACTIVE PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #41 OFF

PRESS '+'

NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 71).

LOGICAL I/O COMMAND #12 (+/-COMMAND#)
IF YELLOW ON PHASE #7 IS ON

↓
SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #40 ON

PRESS '+'

NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 71).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

← NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

← NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...Y
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

← NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH:
VEH OVL NOT PED:
VEH OVL GRN EXT:
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW X GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)
FLASH YELLOW IN CONTROLLER FLASH?...N
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0.0

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO INSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

THE CHANGES LISTED ABOVE TIES ALL PHASES AND OVERLAPS TO FLASHER UNIT 1.

OUTPUT REFERENCE SCHEDULE

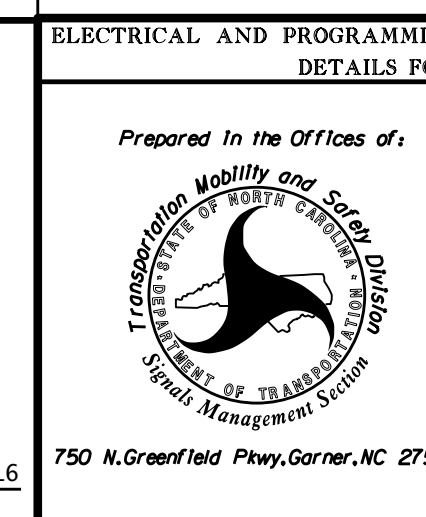
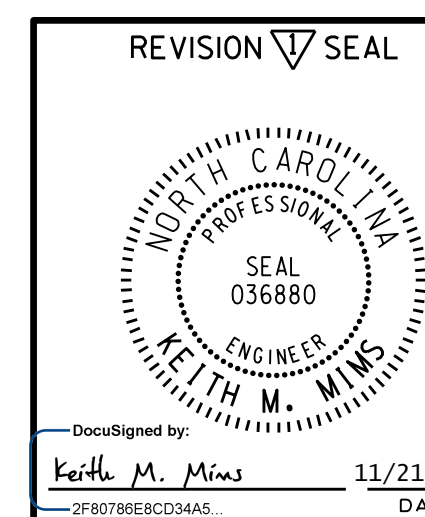
USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 39 = Overlap D Red
OUTPUT 40 = Overlap D Yellow
OUTPUT 41 = Overlap D Green
OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow
OUTPUT 44 = Overlap C Green
OUTPUT 47 = Overlap B Red
OUTPUT 48 = Overlap B Yellow
OUTPUT 49 = Overlap B Green
OUTPUT 50 = Overlap A Red
OUTPUT 51 = Overlap A Yellow
OUTPUT 52 = Overlap A Green

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 13-0830
DESIGNED: October 2016
SEALED: 11/15/2016
REVISED:

ELECTRICAL DETAIL SHEET 2 OF 2

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

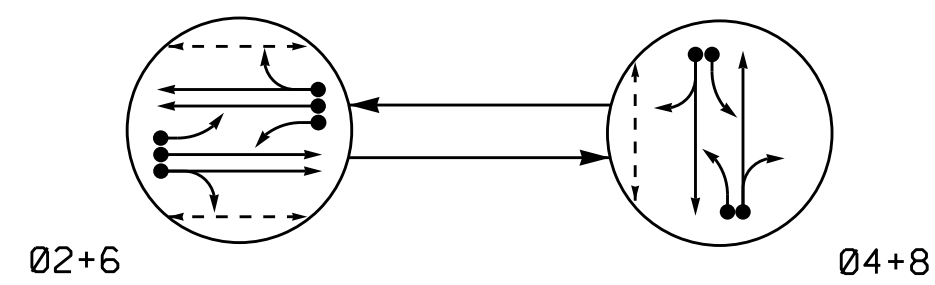


Prepared In the Offices of: Transporatio Mobility and Safety Solutions Signal Management System		750 N. Greenfield Pkwy, Garner, NC 27529	
Division 13	Buncombe County	Fletcher	
PLAN DATE: July 2010	REVIEWED BY: T. Joyce		
PREPARED BY: C. Strickland	REVIEWED BY: BAS		
REVISIONS	INIT.	DATE	
Added peds, revised monitor, renumbered system loops, added a note. (WSA)	KMM	11/21/2016	
SIGNATURE		DATE	
SIC. INVENTORY NO. 13-0830			

Not a certified document as to the Original Document but only as to the Revisions - This document originally issued and sealed by George C. Brown, #022013, on 7/16/10. This document is only certified as to the revisions.

2 Phase Fully Actuated NC 280 (Airport Rd.) CLS

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

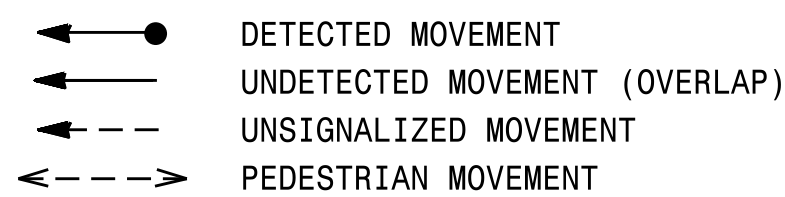
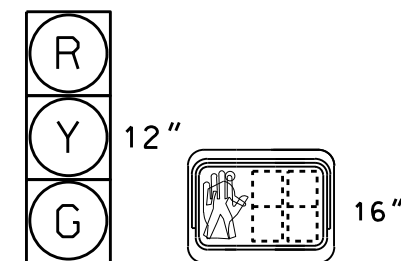


TABLE OF OPERATION

SIGNAL FACE	PHASE		
	Ø 2+6	Ø 4+8	FLIGHTS
21, 22	G R Y		
41, 42	R G R		
61, 62	G R Y		
81, 82	R G R		
P21, P22	W DW DRK		
P41, P42	DW W DRK		
P61, P62	W DW DRK		

SIGNAL FACE I.D.

All Heads L.E.D.



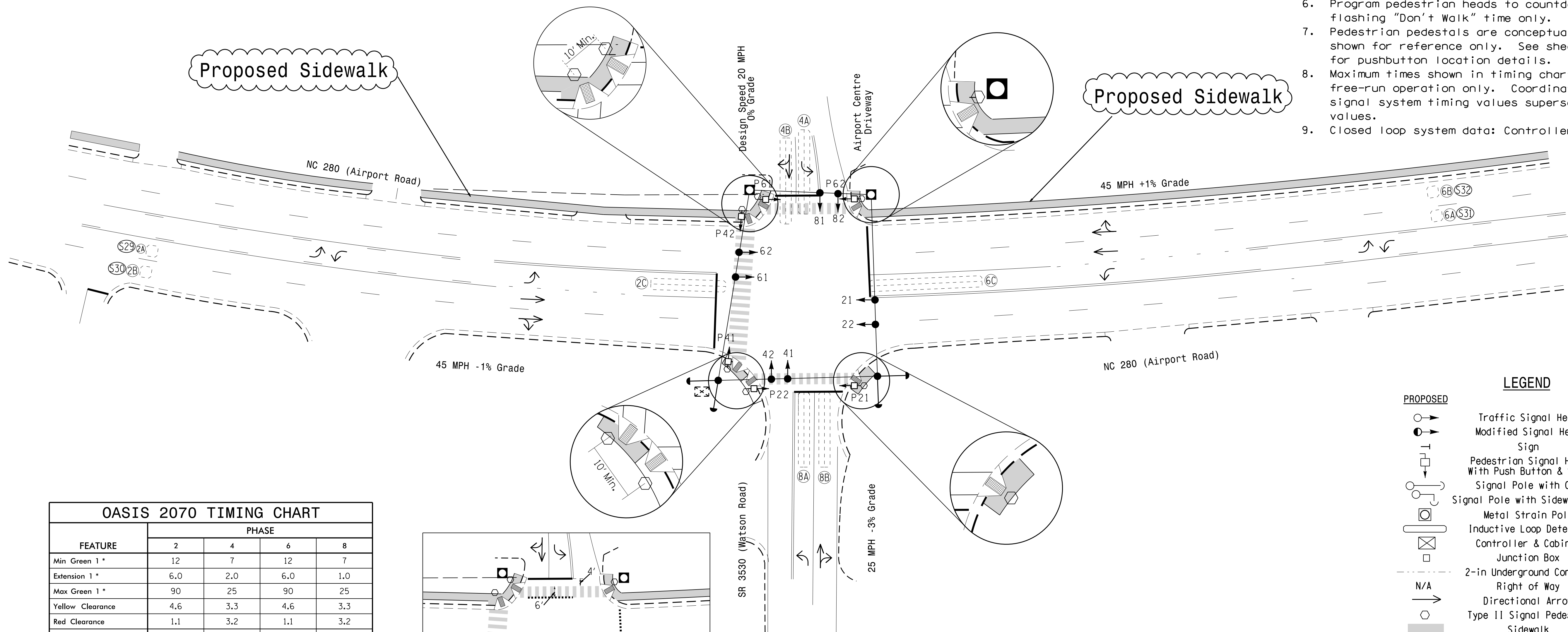
21, 22 P21, P22
41, 42 P41, P42
61, 62 P61, P62
81, 82

OASIS 2070 LOOP & DETECTOR INSTALLATION

LOOP	INDUCTIVE LOOPS			NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD
	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS		PHASE	CALLING	EXTENSION	STRETCH TIME		
2A/S29	6X6	300	EXIST	-	2	Y	Y	-	-	Y
2B/S30	6X6	300	EXIST	-	2	Y	Y	-	-	Y
2C	6X40	+5	2-4-2	-	2	Y	Y	Y	3	-
4A	6X45	+10	2-4-2	-	4	Y	Y	-	3	-
4B	6X45	+15	2-4-2	-	4	Y	Y	Y	10	-
6A/S31	6X6	300	EXIST	-	6	Y	Y	-	-	Y
6B/S32	6X6	300	EXIST	-	6	Y	Y	-	-	Y
6C	6X60	0	2-4-2	-	6	Y	Y	Y	3	-
8A	6X40	0	2-4-2	-	8	Y	Y	-	3	-
8B	6X40	0	2-4-2	-	8	Y	Y	-	10	-

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Set all detector units to presence mode.
- In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pedestrian pedestals are conceptual and shown for reference only. See sheets P1-P3 for pushbutton location details.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #0821.

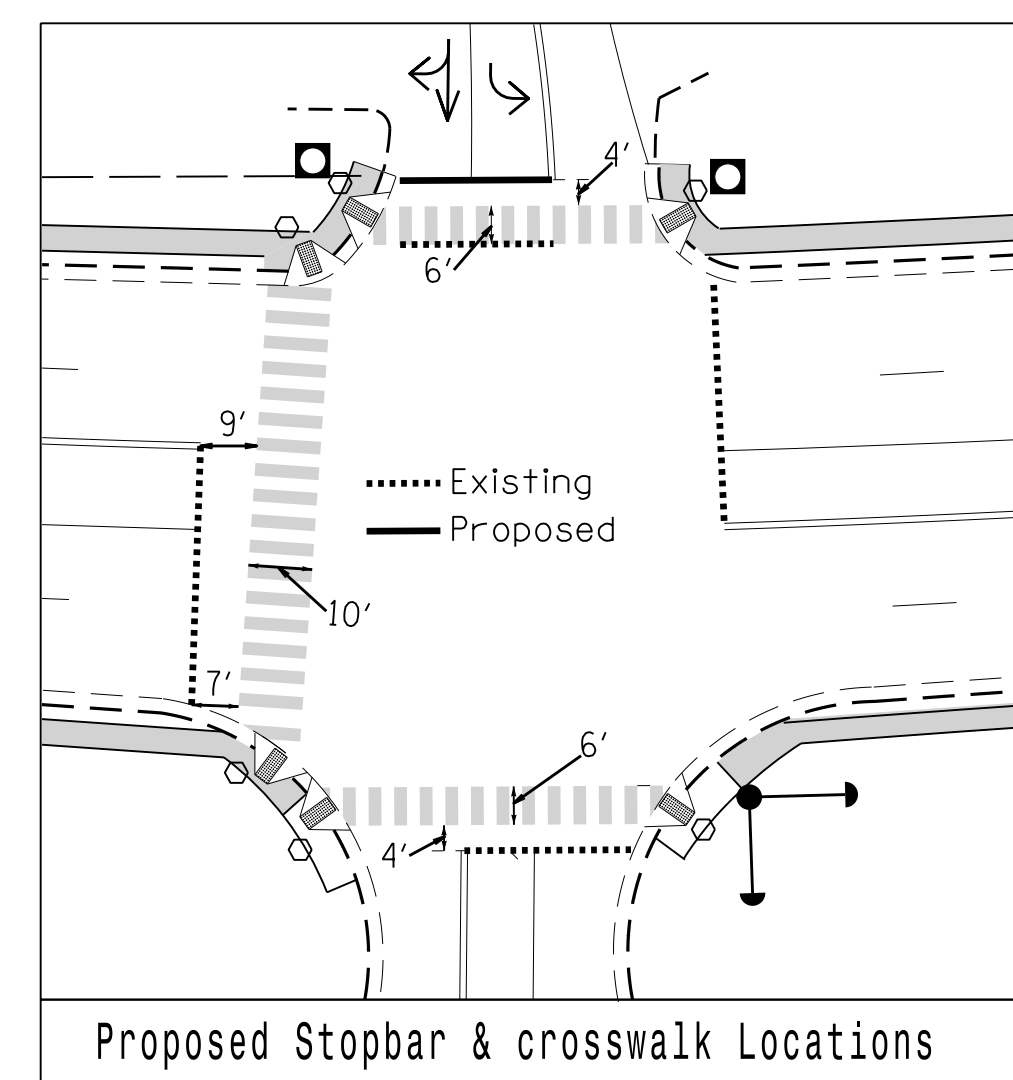
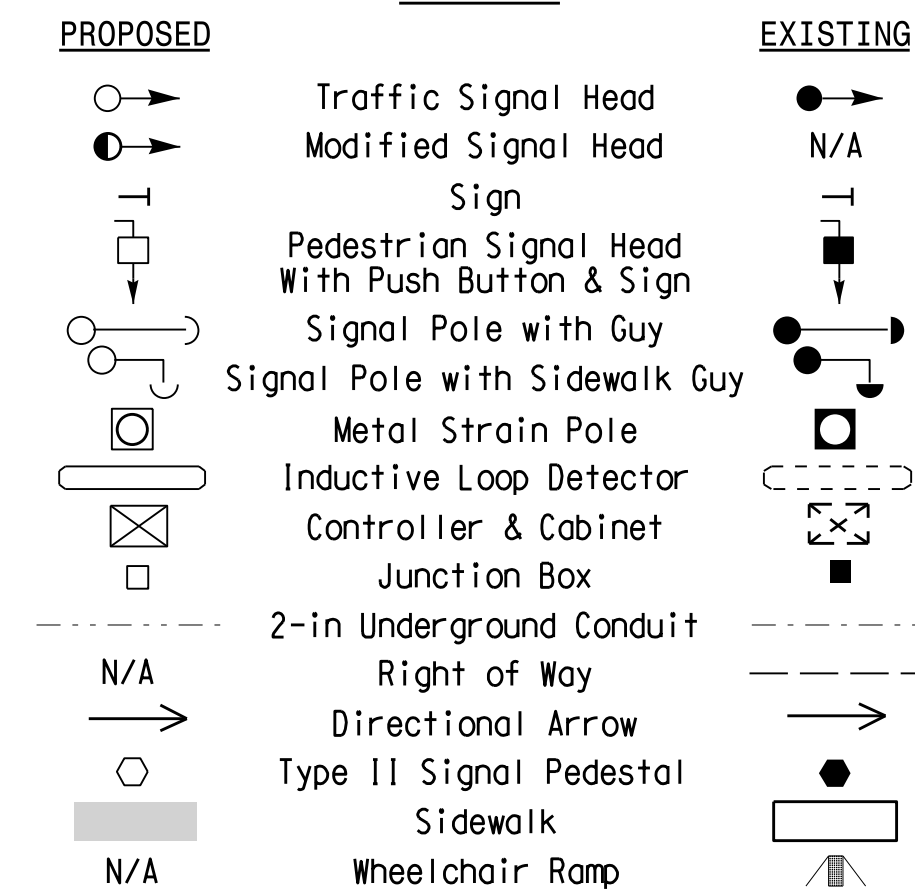


OASIS 2070 TIMING CHART

FEATURE	PHASE			
	2	4	6	8
Min Green 1 *	12	7	12	7
Extension 1 *	6.0	2.0	6.0	1.0
Max Green 1 *	90	25	90	25
Yellow Clearance	4.6	3.3	4.6	3.3
Red Clearance	1.1	3.2	1.1	3.2
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	7	7	7	-
Don't Walk 1	10	19	9	-
Seconds Per Actuation *	1.5	-	1.5	-
Max Variable Initial *	34	-	34	-
Time Before Reduction *	15	-	15	-
Time To Reduce *	30	-	30	-
Minimum Gap	3.0	-	3.0	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

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

LEGEND



Signal Upgrade Corr. File No. 13-16-204

750 N. Greenfield Pkwy, Garner, NC 27529

Prepared in the Offices of:

NC 280 (Airport Road)
 at
 SR 3530 (Watson Road)/
 Airport Centre Driveway

Division 13 Buncombe County Fletcher

PLAN DATE: October 2016 REVIEWED BY: R. Zinser
 PREPARED BY: M. Mahbooba REVIEWED BY:

REVISIONS INIT. DATE

DocuSigned by:

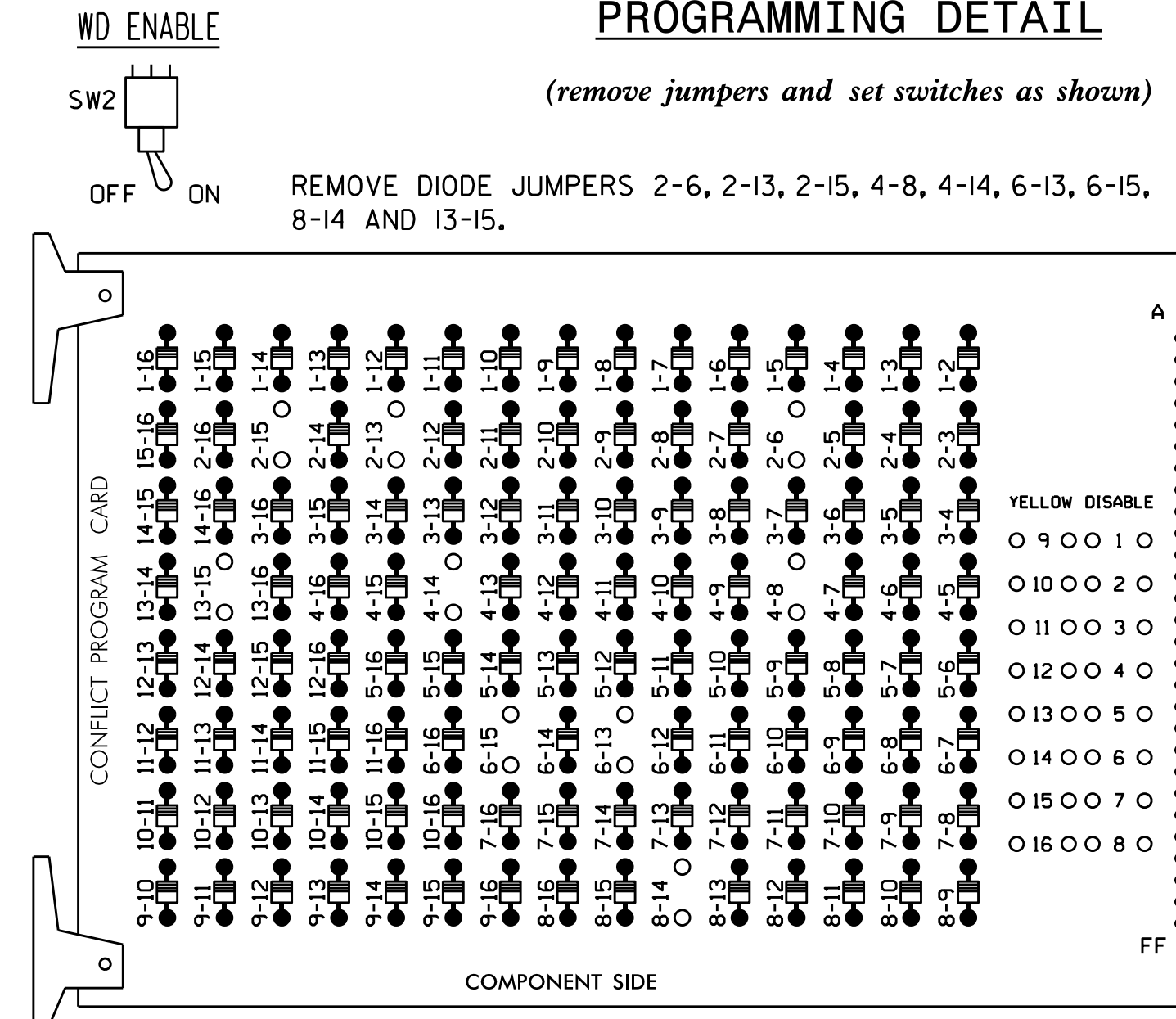
 11/15/2016

SIG. INVENTORY NO. 13-0821

15-N04-2016-09-22
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EDI MODEL 2010ECL CONFLICT MONITOR

PROGRAMMING DETAIL

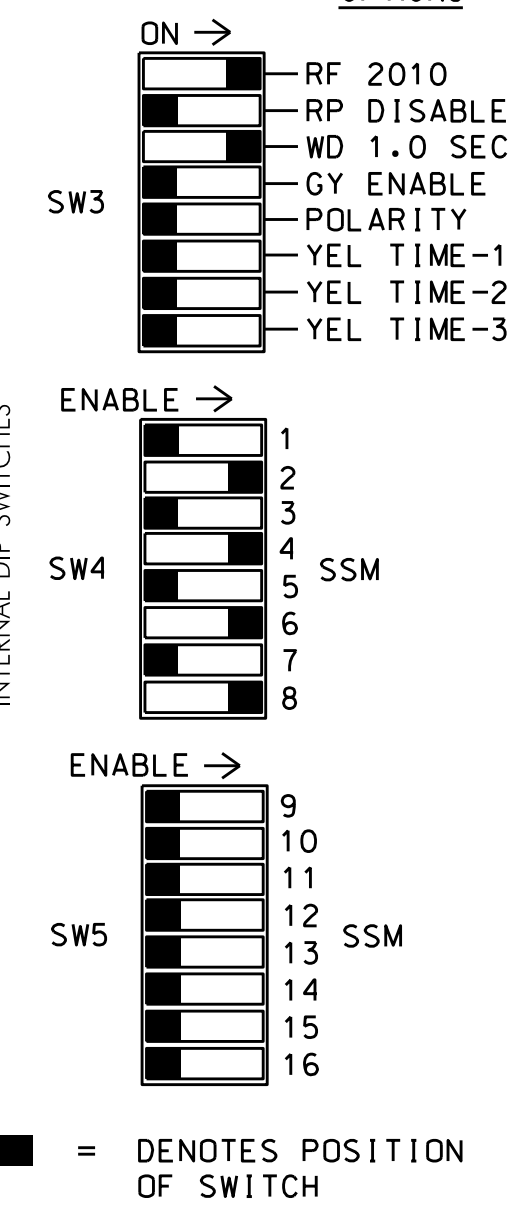


REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Make sure jumpers SEL2-SEL5 are present on the monitor board.

OPTIONS



■ = 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. Ensure that Red Enable is active at all times during normal operation. To prevent Red Failures on unused monitor channels, tie unused red monitor inputs 1,3,5,7,9,10,11,12,13,14,15 & 16 to load switch AC+ per the cabinet manufacturer's instructions.
3. Program phases 4 and 8 for Dual Entry.
4. Enable Simultaneous Gap-Out for all phases.
5. Program phases 2 and 6 for Variable Initial and Gap Reduction.
6. Program phases 2 and 6 for Start Up In Green.
7. Program phases 2, 4 and 6 for 'STARTUP PED CALL'.
8. Program phases 2 and 6 for Yellow Flash.
9. The cabinet and controller are part of the NC 280 (Airport Rd.) Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S2P	S3	S4	S4P	S5	S6	S6P	S7	S8	S8P
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED
SIGNAL HEAD NO.	NU	21,22	P21, P22	NU	41,42	P41, P42	NU	61,62	P61, P62	NU	81,82	NU
RED		128			101			134			107	
YELLOW		129			102			135			108	
GREEN		130			103			136			109	
RED ARROW												
YELLOW ARROW												
GREEN ARROW												
Hand icon			113			104			119			
Walking person icon			115			106			121			

NU = Not Used

EQUIPMENT INFORMATION

CONTROLLER.....2070L
 CABINET.....332
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S2,S2P,S4,S4P,S6,S6P,S8
 PHASES USED.....2,2 PED,4,4 PED,6,6 PED,8
 OVERLAPS.....NONE

INPUT FILE POSITION LAYOUT

(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	ø2/SYS	ø 2	ø2/SYS	ø4	ø4	ø6/SYS	ø 6	ø8	ø8	ø8	ø8	ø8	ø8	ø8
L	2A/S29	2C	2B/S30	4A	4B	6A/S31	6C	8A	8B	8B	8B	8B	8B	8B
U	ø6/SYS	ø 6	ø6/SYS	ø8	ø8	ø6/SYS	ø 6	ø8	ø8	ø8	ø8	ø8	ø8	ø8
L	6A/S31	6C	6B/S32	8A	8B	6B/S32	NOT USED	8B	8B	8B	8B	8B	8B	8B

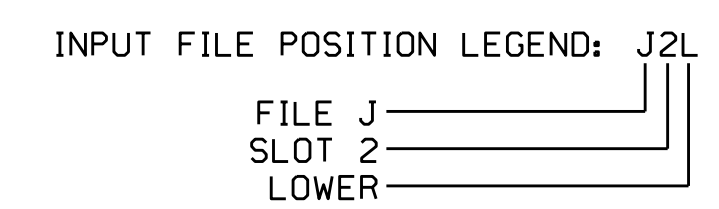
EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
2A/S29	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S30	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y	Y		3
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			3
4B	TB4-11,12	I6L	45	7	14	4	Y	Y			10
6A/S31	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S32	TB3-7,8	J2L	44	6	16	6/SYS	Y	Y			
6C	TB3-9,10	J3U	64	26	36	6	Y	Y	Y		3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
8B	TB5-11,12	J6L	46	8	18	8	Y	Y			10
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					

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



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: 13-0821
 DESIGNED: October 2016
 SEALED: 11/15/2016
 REVISED:

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
 Transportation Mobility and Safety Solutions
 A Division of WORTH ENGINEERING
 Signal Management Solutions
 750 N. Greenfield Pkwy, Garner, NC 27529

NC 280 (Airport Road) at SR 3530 (Watson Road)/ Airport Centre Driveway

Division 13 Buncombe County Fletcher

PLAN DATE: October 2016 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS INIT. DATE

Sealed by: Zachary M. Little, Professional Engineer, License No. 030530

DocuSign by: Zachary M. Little, 11/18/2016

SIG. INVENTORY NO. 13-0821

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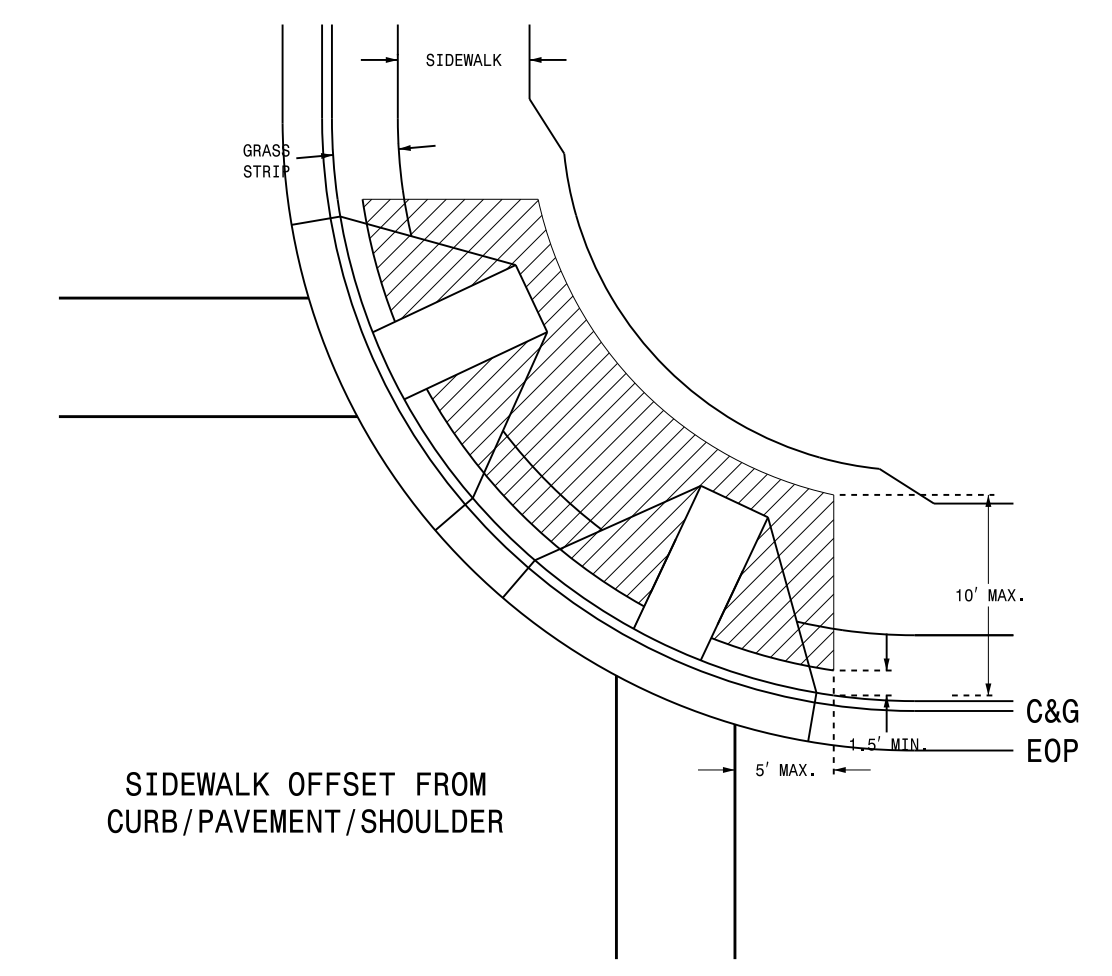
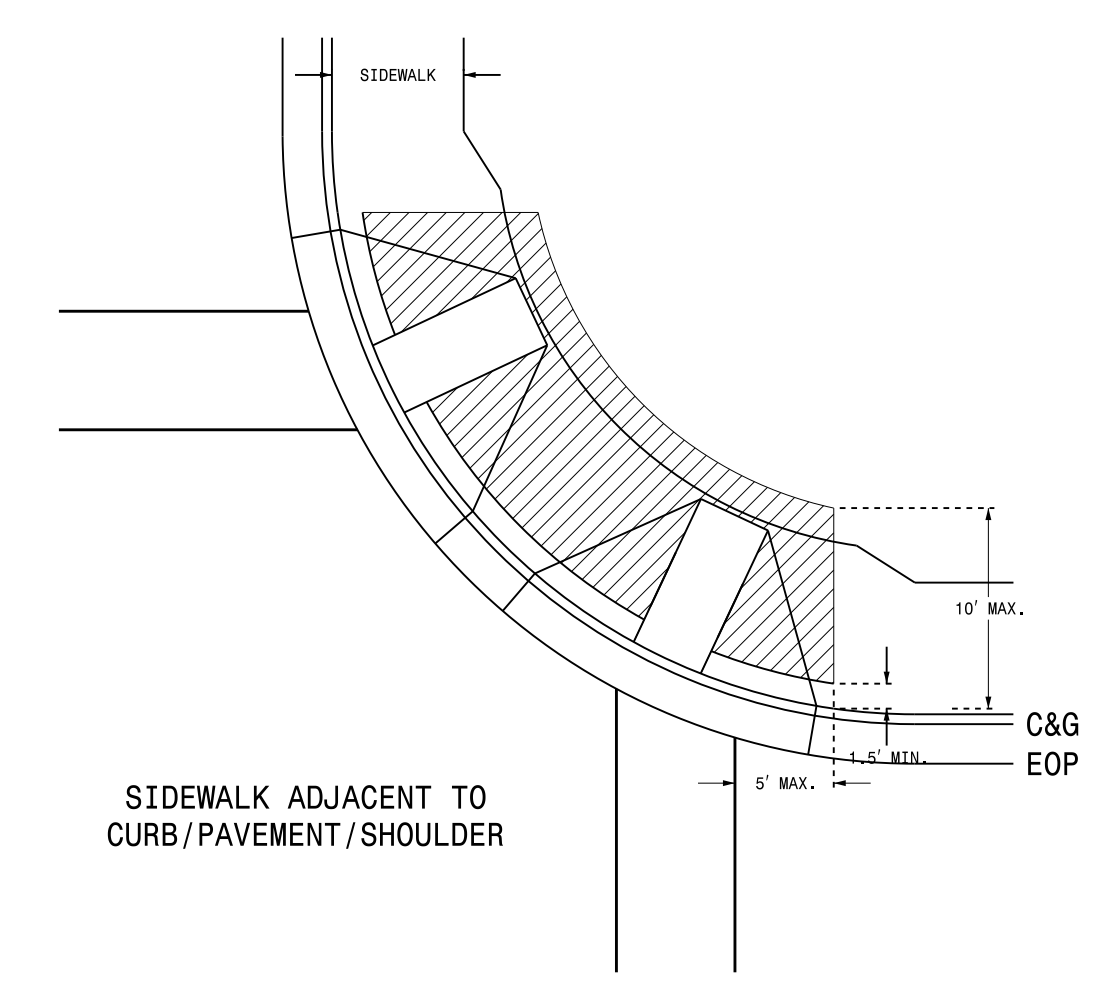
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

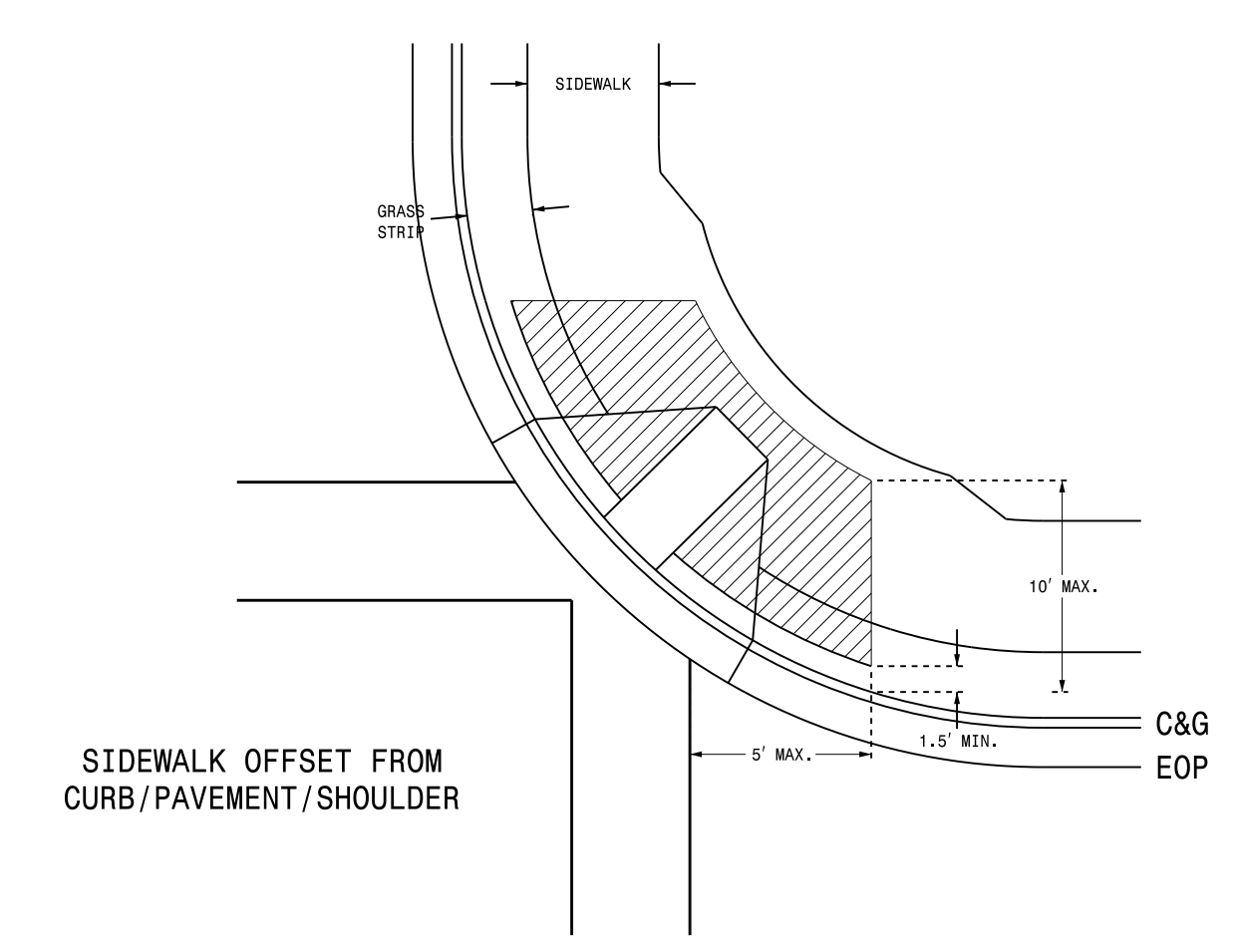
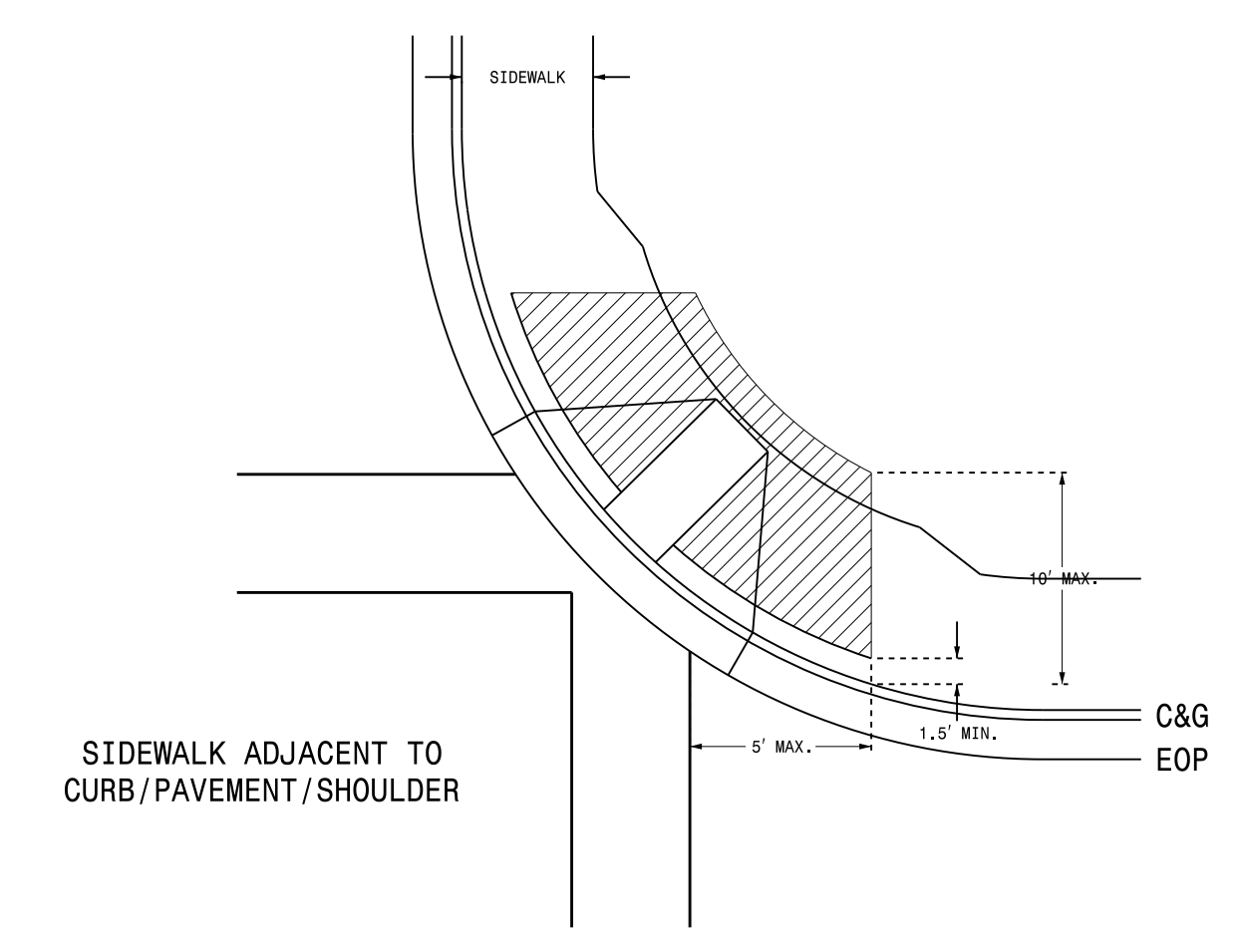
ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 1 OF 3
1705D01

PUSHBUTTON PLACEMENT
SEPARATE CURB RAMPS



PUSHBUTTON PLACEMENT
SHARED CURB RAMP



- NOTES**
1. Pushbutton pedestals should not be located further than 10 feet from the edge of curb, shoulder, or pavement.
 2. The face of the pushbutton should be parallel to the applicable crosswalk.
 3. Separate pushbuttons used on the same corner should be separated by a distance of at least 10 feet.
 4. Pushbuttons shall be installed adjacent to a level surface with a maximum reach distance of 10 inches.
 5. Maintain 4 feet of clearance around pedestal if located in sidewalk.
 6. Refer to section 1705 of the 2012 NCDOT Roadway Standard Drawings for Pushbutton Assembly details.
 7. Refer to section 1743 of the 2012 NCDOT Roadway Standard Drawings for Pedestal details.
 8. Contact Division Traffic Engineer for pushbutton location approval prior to installation.
 9. Curb ramps are for symbolic use only and may not reflect actual design or field conditions.

PROPOSED	LEGEND
	Signal Pole
	Type I Pushbutton Post
	Type II Signal Pedestal
	Pushbutton & Sign
	Pedestrian Signal Head
	Curb Ramp
	Pushbutton Location Area

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.


06-14

ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 1 OF 3
1705D01

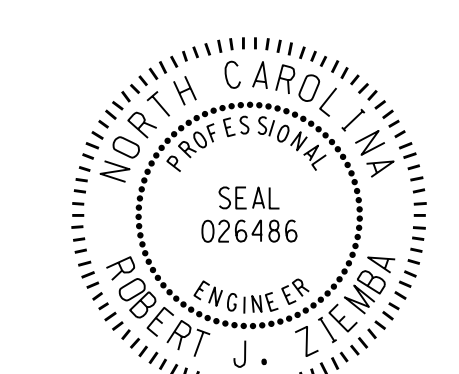
See Plate for Title


Prepared in the Offices of:



750 N. Greenfield Parkway
Garner, NC 27529

SEAL



DocuSigned by:

18084828744604

SIGNATURE DATE

6/17/2014

06-AUG-2014 16:37
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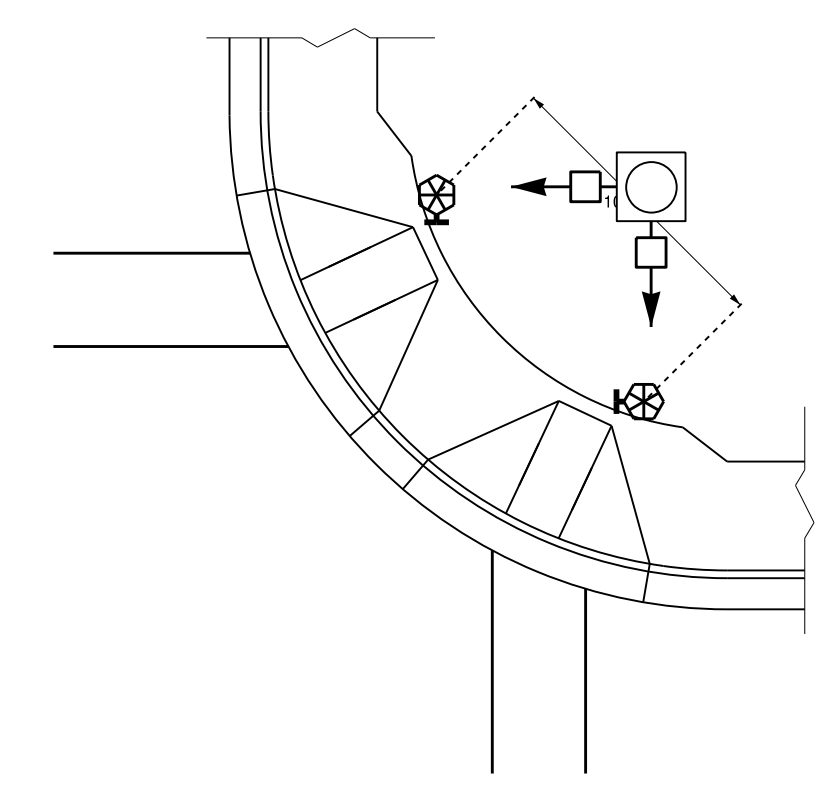
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

06-14

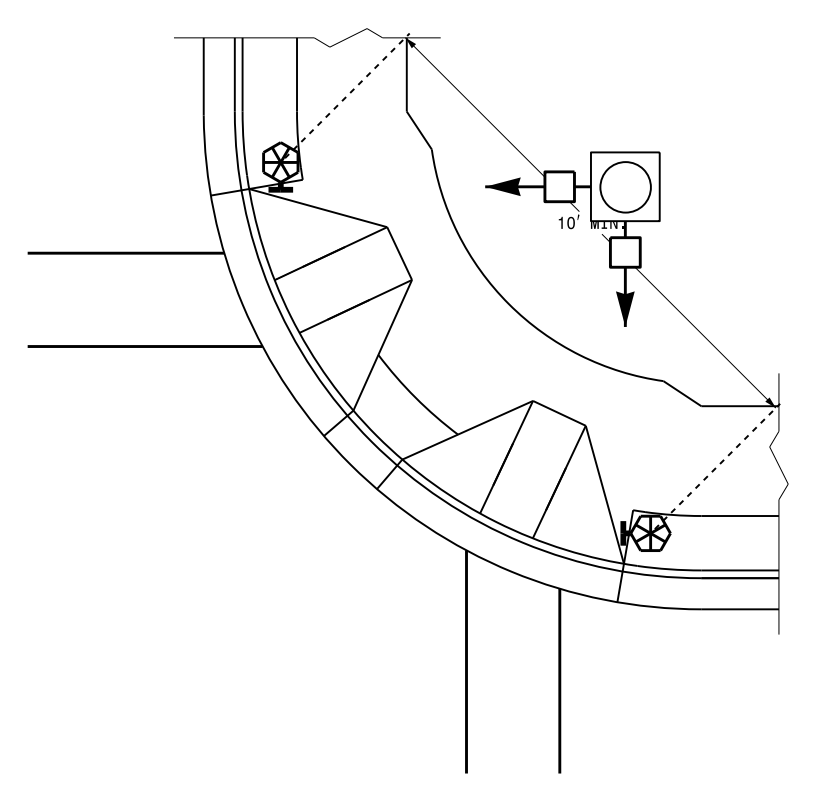
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PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 2 OF 3
1705D01

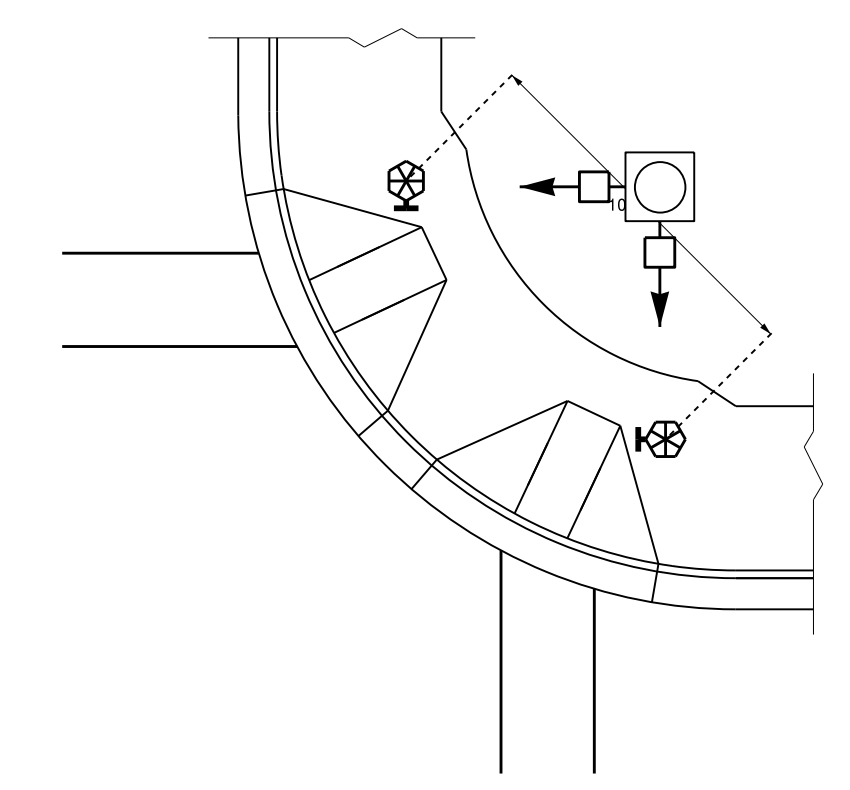
TYPICAL PUSHBUTTON LOCATIONS (CASE I)
SEPARATE CURB RAMPS W/ TYPE I PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER



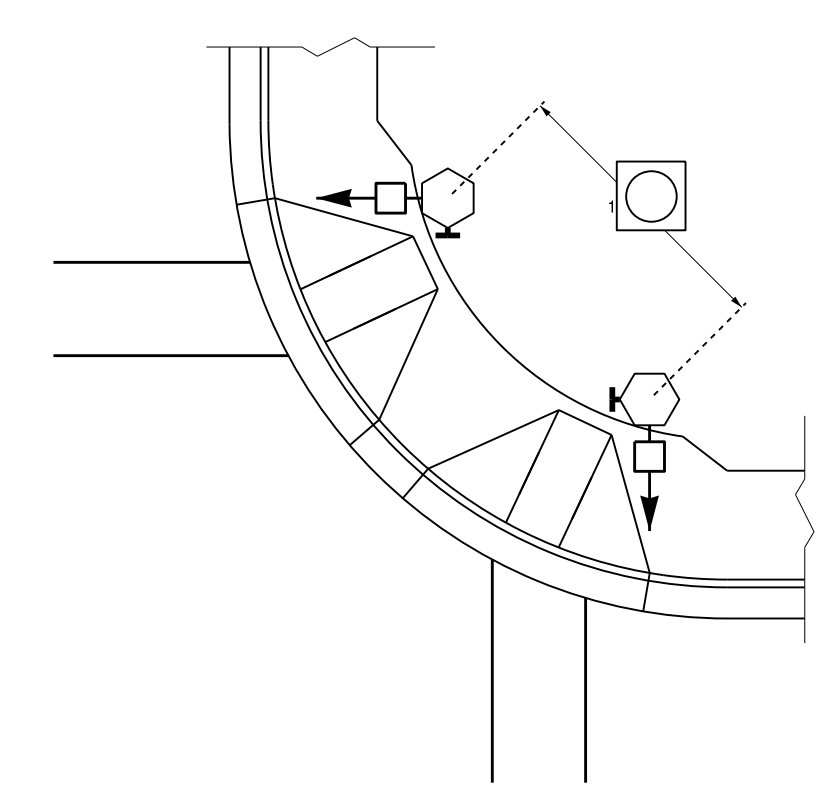
PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

PROPOSED

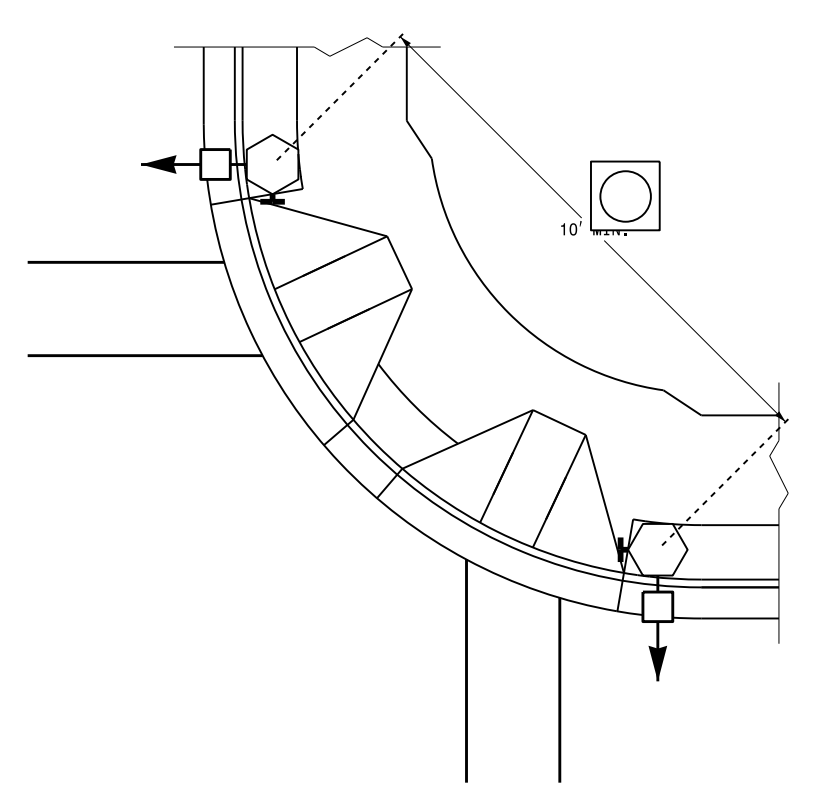
- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

LEGEND

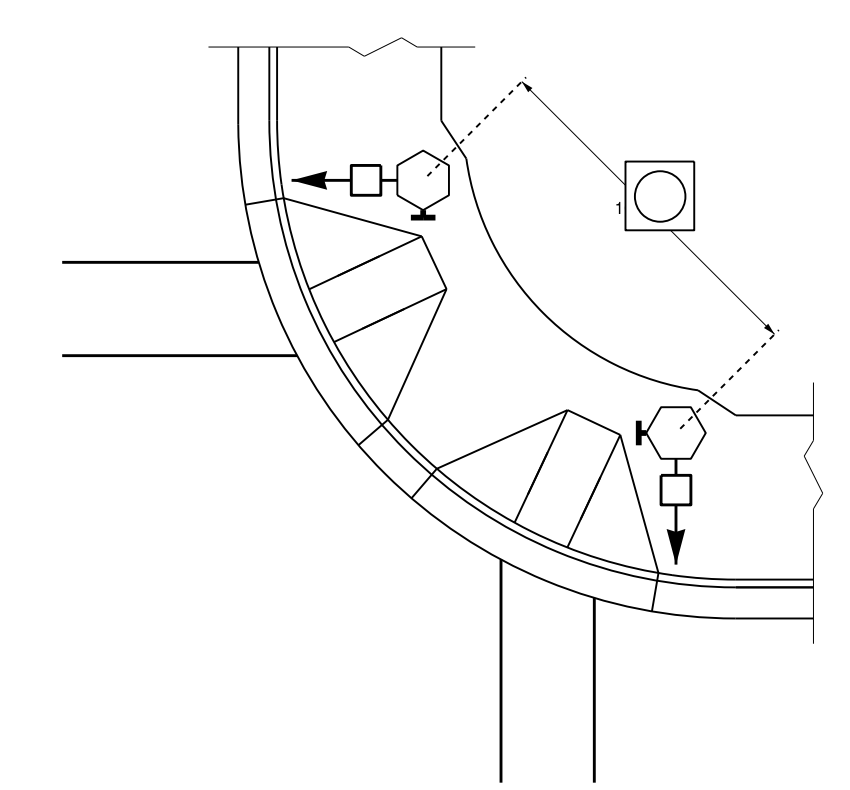
TYPICAL PUSHBUTTON LOCATIONS (CASE II)
SEPARATE CURB RAMPS W/ TYPE II PEDESTALS



BACK OF SIDEWALK IS WITHIN 10'
OF CURB OR PAVEMENT/SHOULDER

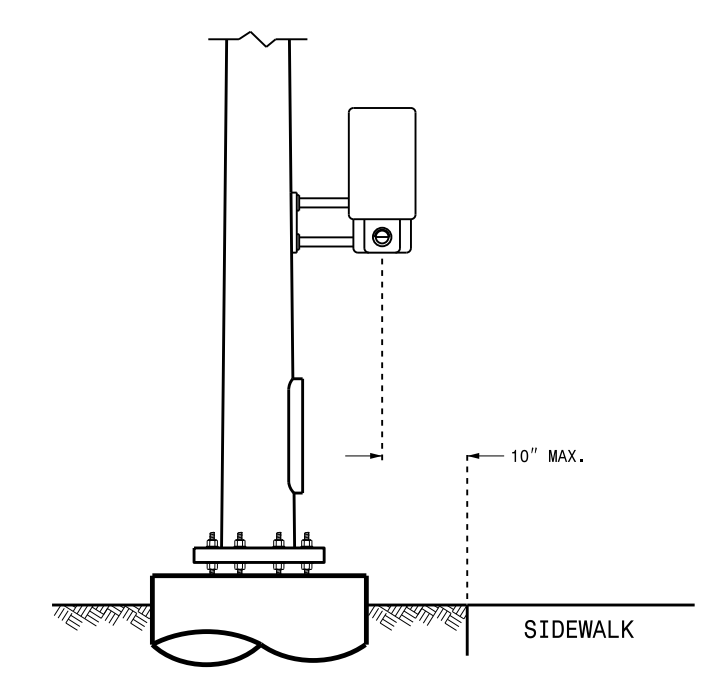


GRASS STRIP PLACEMENT IF BACK
OF SIDEWALK EXCEEDS 10' FROM
CURB OR PAVEMENT/SHOULDER



PUSHBUTTON PLACEMENT
IN WIDE SIDEWALK

OPTIONAL PUSHBUTTON EXTENSION
FACE OF PUSHBUTTON PARALLEL TO
APPLICABLE CROSSWALK



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ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 2 OF 3
1705D01

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Garner, NC 27529

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1888488274464

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6/17/2014
DATE

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RALEIGH, N.C.

06-14

ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

SHEET 3 OF 3
1705D01

STATE OF NORTH CAROLINA
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RALEIGH, N.C.

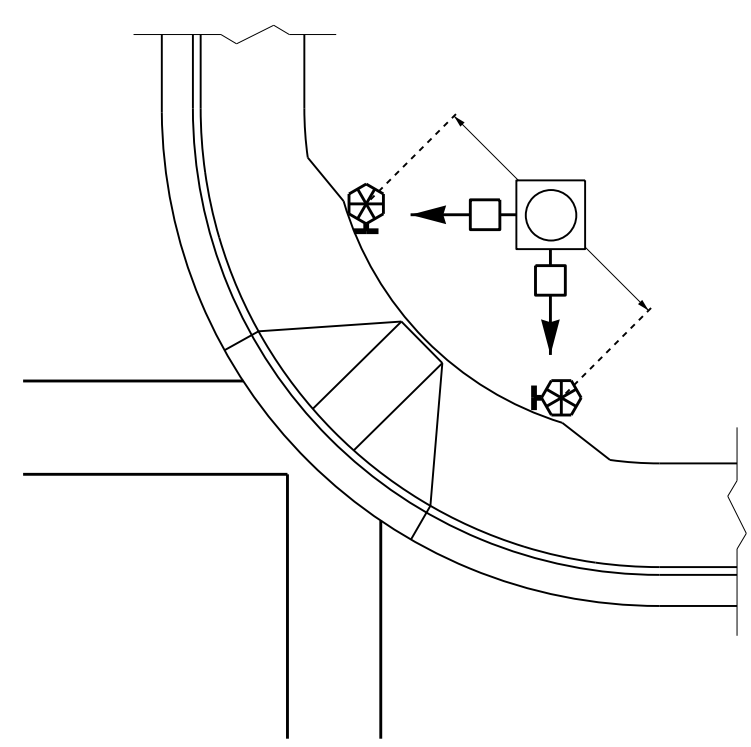
06-14

ENGLISH DETAIL DRAWING FOR
PEDESTRIAN PUSHBUTTON LOCATIONS
PLACEMENT DETAIL

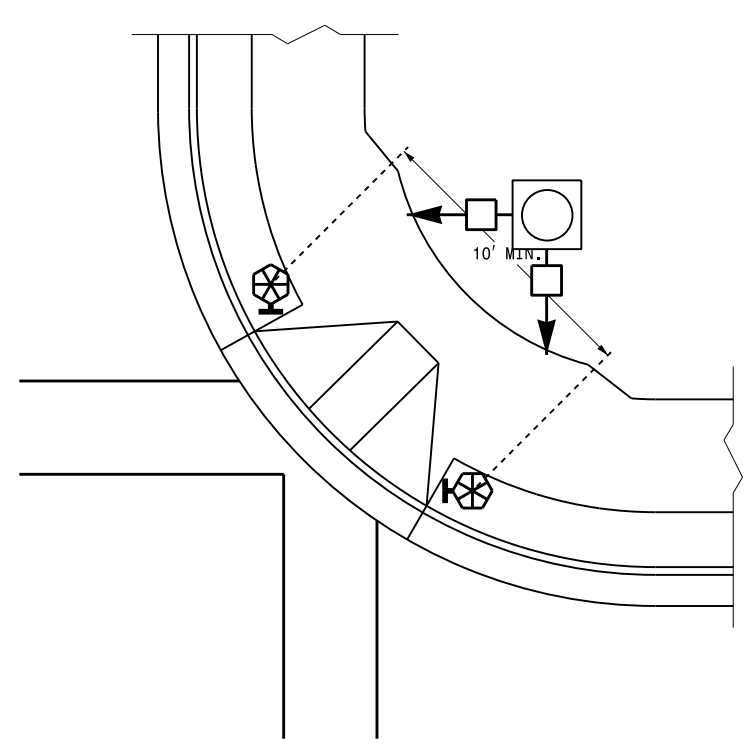
SHEET 3 OF 3
1705D01

TYPICAL PUSHBUTTON LOCATIONS (CASE III)

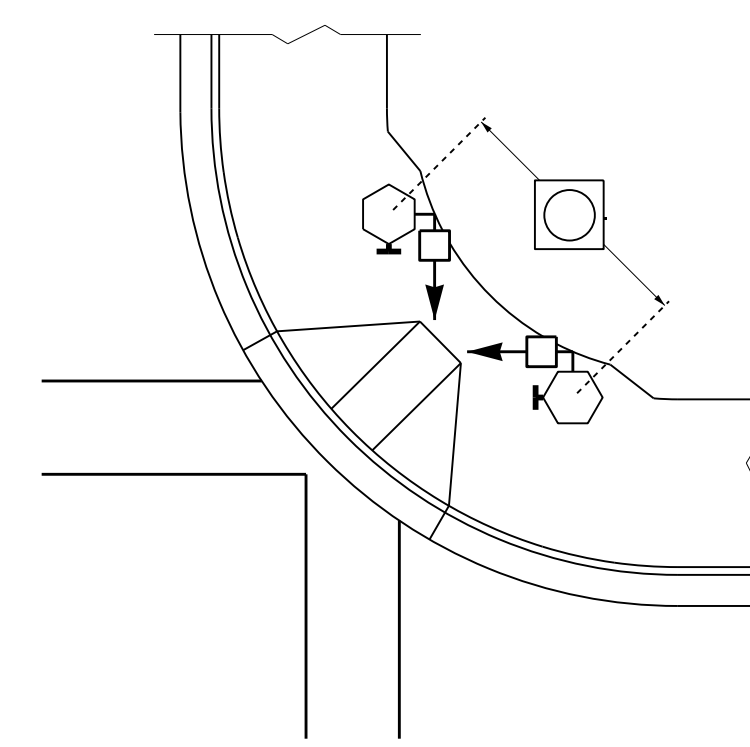
SHARED CURB RAMPS



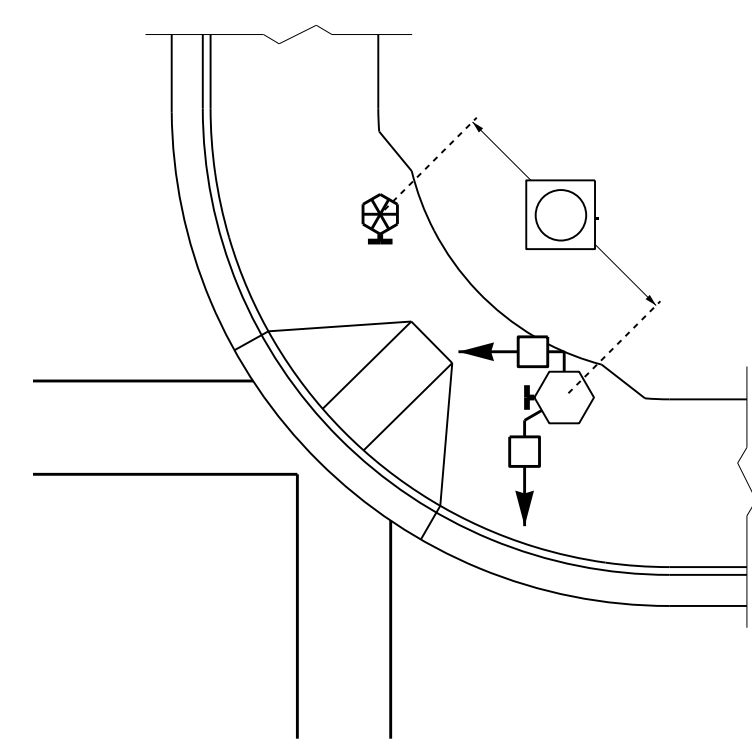
BACK OF SIDEWALK IS WITHIN 10' OF CURB OR PAVEMENT/SHOULDER



GRASS STRIP PLACEMENT IF BACK OF SIDEWALK EXCEEDS 10' FROM CURB OR PAVEMENT/SHOULDER

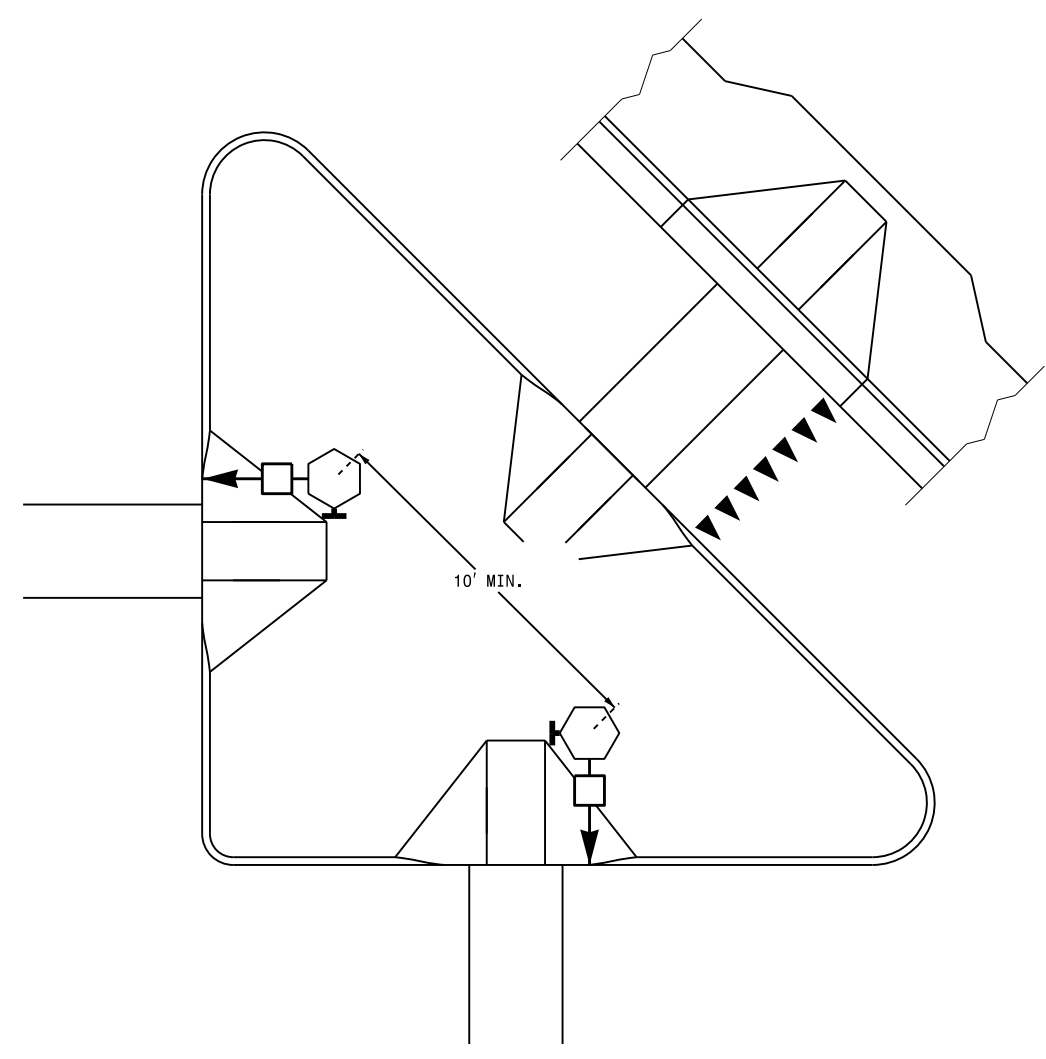


PUSHBUTTON PLACEMENT IN WIDE SIDEWALK (CORRESPONDING PUSHBUTTONS AND SIGNAL HEADS ON DIFFERENT PEDESTALS)

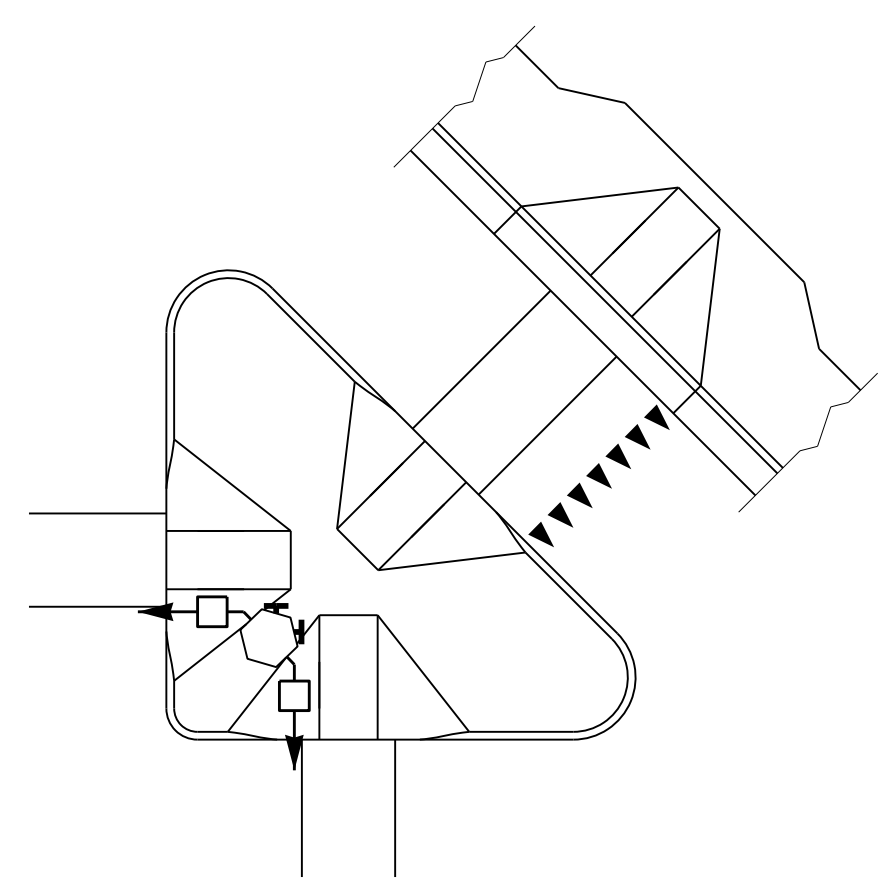


PUSHBUTTON PLACEMENT WITH SHARED TYPE II SIGNAL PEDESTAL AND TYPE I PUSHBUTTON POST

TRAFFIC ISLAND PUSHBUTTON LOCATIONS



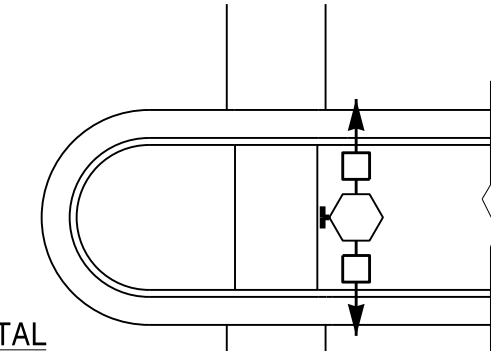
PUSHBUTTON PLACEMENT IN LARGE "PORK CHOP ISLAND" WITH SEPARATE PEDESTALS



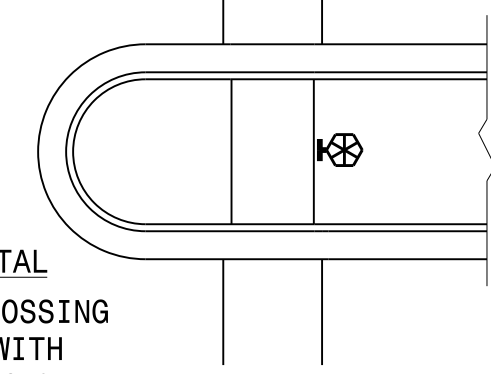
PUSHBUTTON PLACEMENT IN SMALL "PORK CHOP ISLAND" WITH SHARED PEDESTAL

PUSHBUTTON PLACEMENT IN MEDIAN

TYPE II PEDESTAL (FOR STAGED OR MULTI-PHASE CROSSING)



TYPE I PEDESTAL (FOR COMPLETE CROSSING CURB TO CURB WITH OPTIONAL REFUGE)



PROPOSED

- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

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