

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

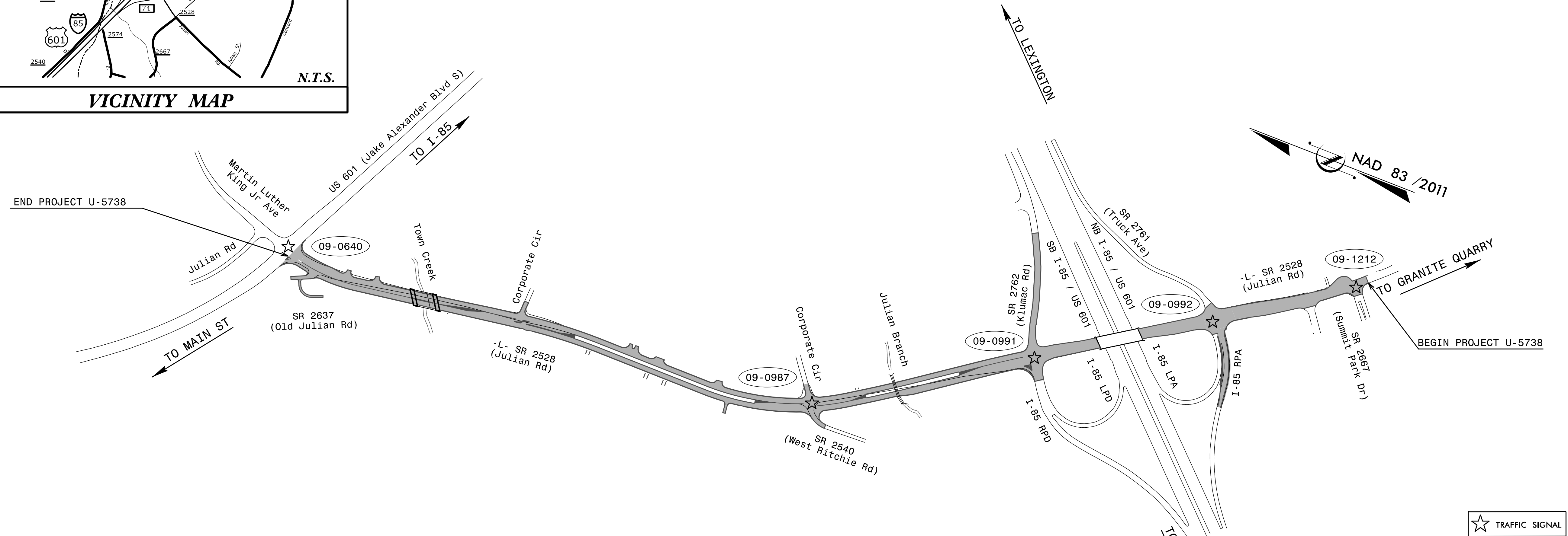
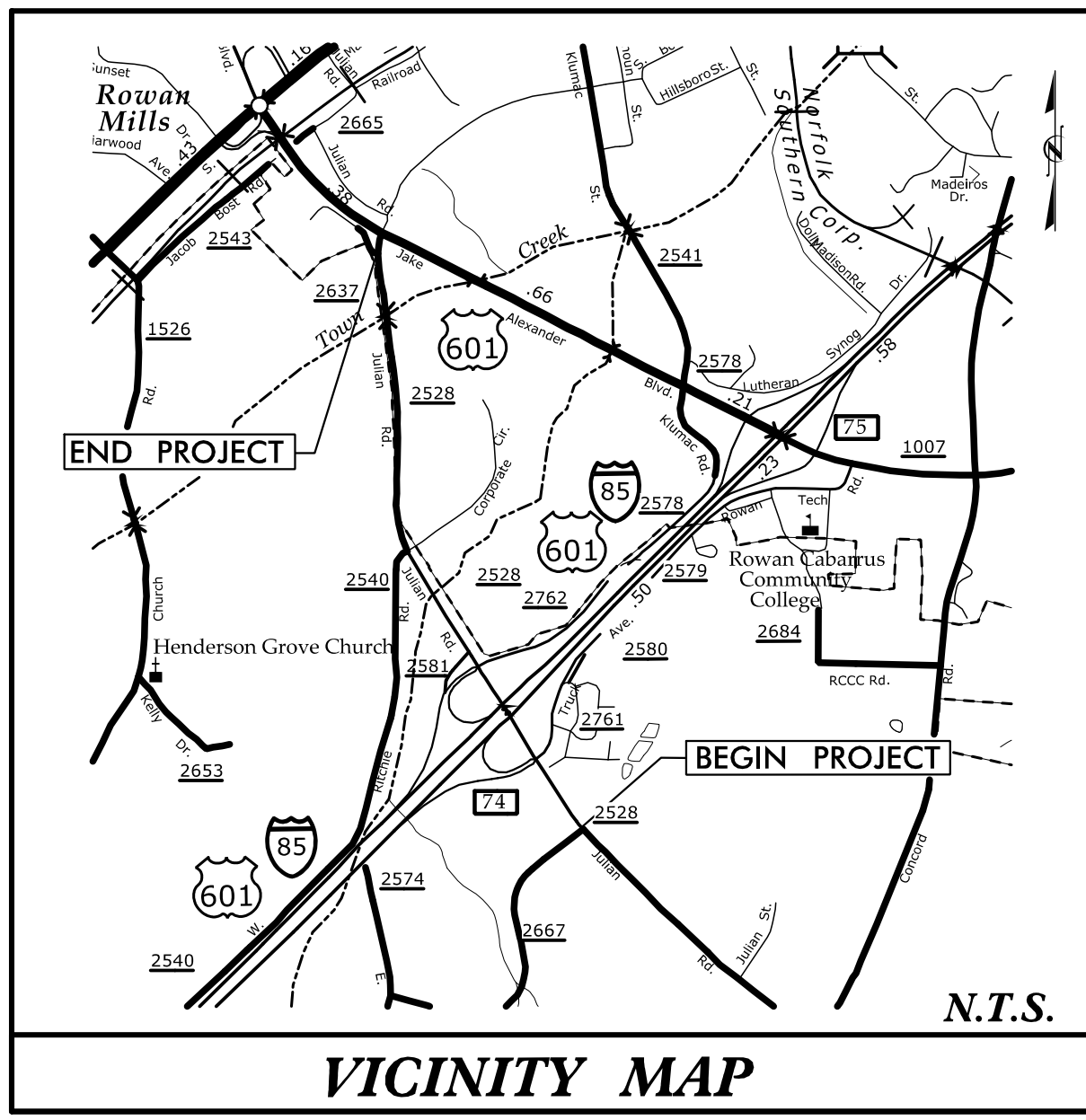
ROWAN COUNTY

**LOCATION: SR 2528 (JULIAN ROAD) FROM
SR 2667 (SUMMIT PARK DRIVE) TO
US 601 (JAKE ALEXANDER BOULEVARD)
IN SALISBURY**

TYPE OF WORK: TRAFFIC SIGNALS AND SIGNAL COMMUNICATIONS

T.I.P. Project: U-5738

CONTRACT: C-204426



PLANS PREPARED BY:		ACCELERATE ENGINEERING, PLLC	
ZHAOLONG (GAVIN) TENG, PE, PTOE	PROJECT MANAGER	875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442	
BRIANA N. PHILLIPS, PE	TRANSPORTATION ENGINEER		

Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.

Index of Plans		
Sheet #	Reference #	Location/Description
Sig. 1.0	-----	Title Sheet
Sig. 1.1-1.2	-----	Standard Plate Sheets
Sig. 2.0-2.7	09-1212	SR 2528 (Julian Rd) at SR 2667 (Summit Park Dr)
Sig. 3.0-4.6	09-0992	SR 2528 (Julian Rd) at I-85/US 601 NB Ramps and SR 2761 (Truck Ave)
Sig. 5.0-7.5	09-0991	SR 2528 (Julian Rd) at I-85/US 601 SB Ramps and SR 2762 (Klumac Rd)
Sig. 8.0-8.5	09-0987	SR 2528 (Julian Rd) at Corporate Cir and SR 2540 (W. Ritchie Rd)
Sig. 9.0-11.9	09-0640	US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave
Sig. M1-M8	-----	Metal Pole Standard Drawings
Scp. 1-10	-----	Signal Communications Plans

INTELLIGENT TRANSPORTATION AND SIGNALS UNIT

Contacts:

Robert J. Ziemba, PE - Central Region Signals Engineer
Keith M. Mims, PE - Signal Equipment Design Engineer
Gregory A. Green - Signal Communications Project Engineer

DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY
DIVISION

TSMO Unit

750 N. Greenfield Parkway, Garner, NC 27529

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

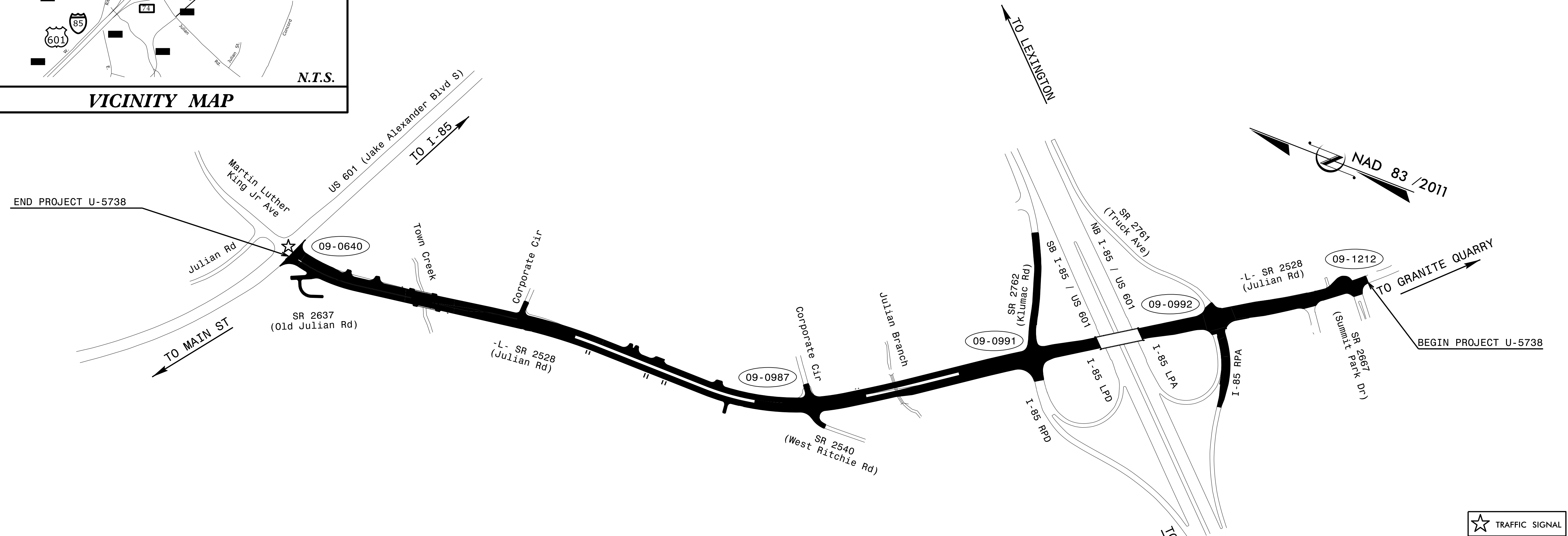
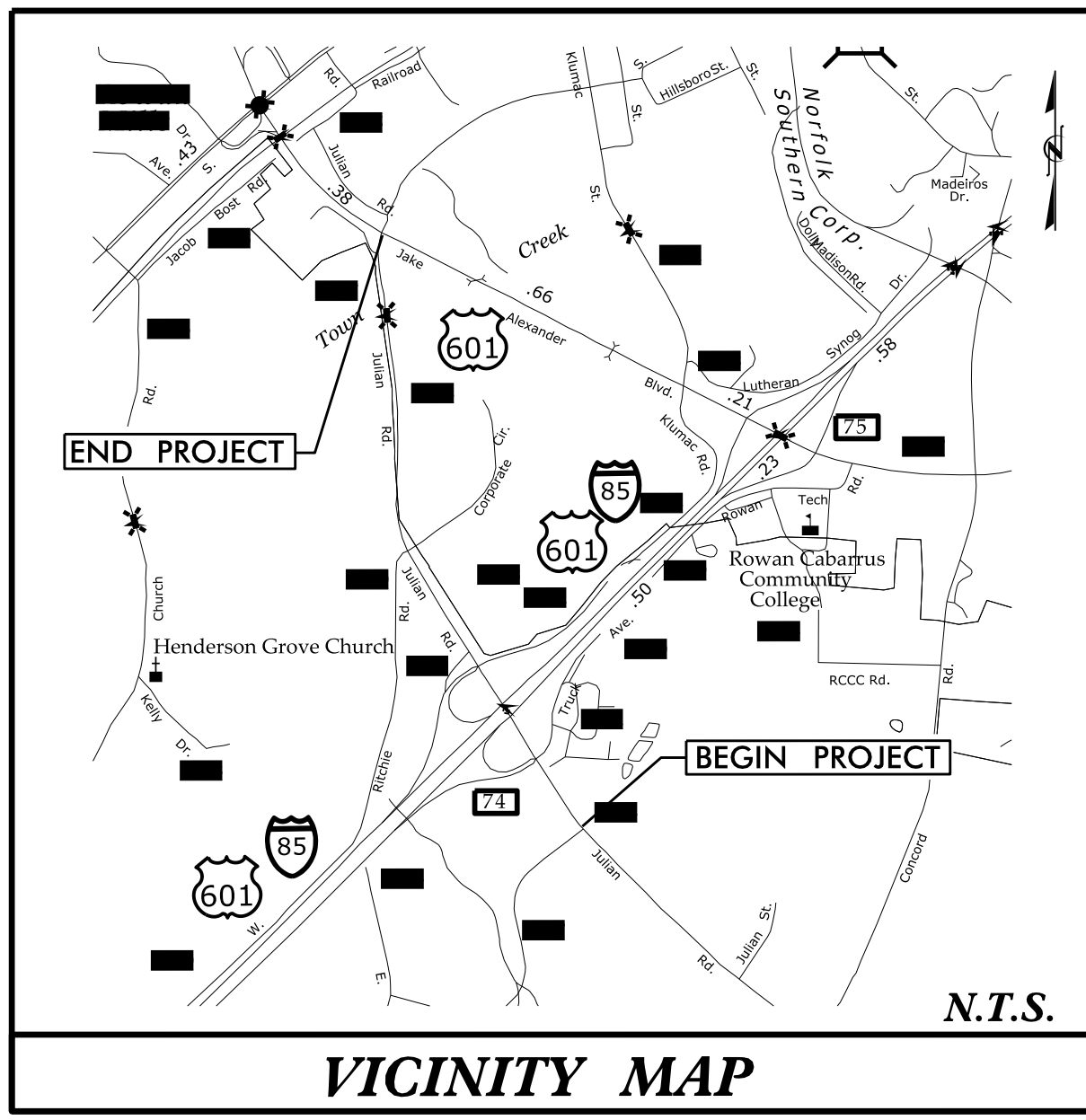
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TRANSPORTATION MOBILITY AND SAFETY
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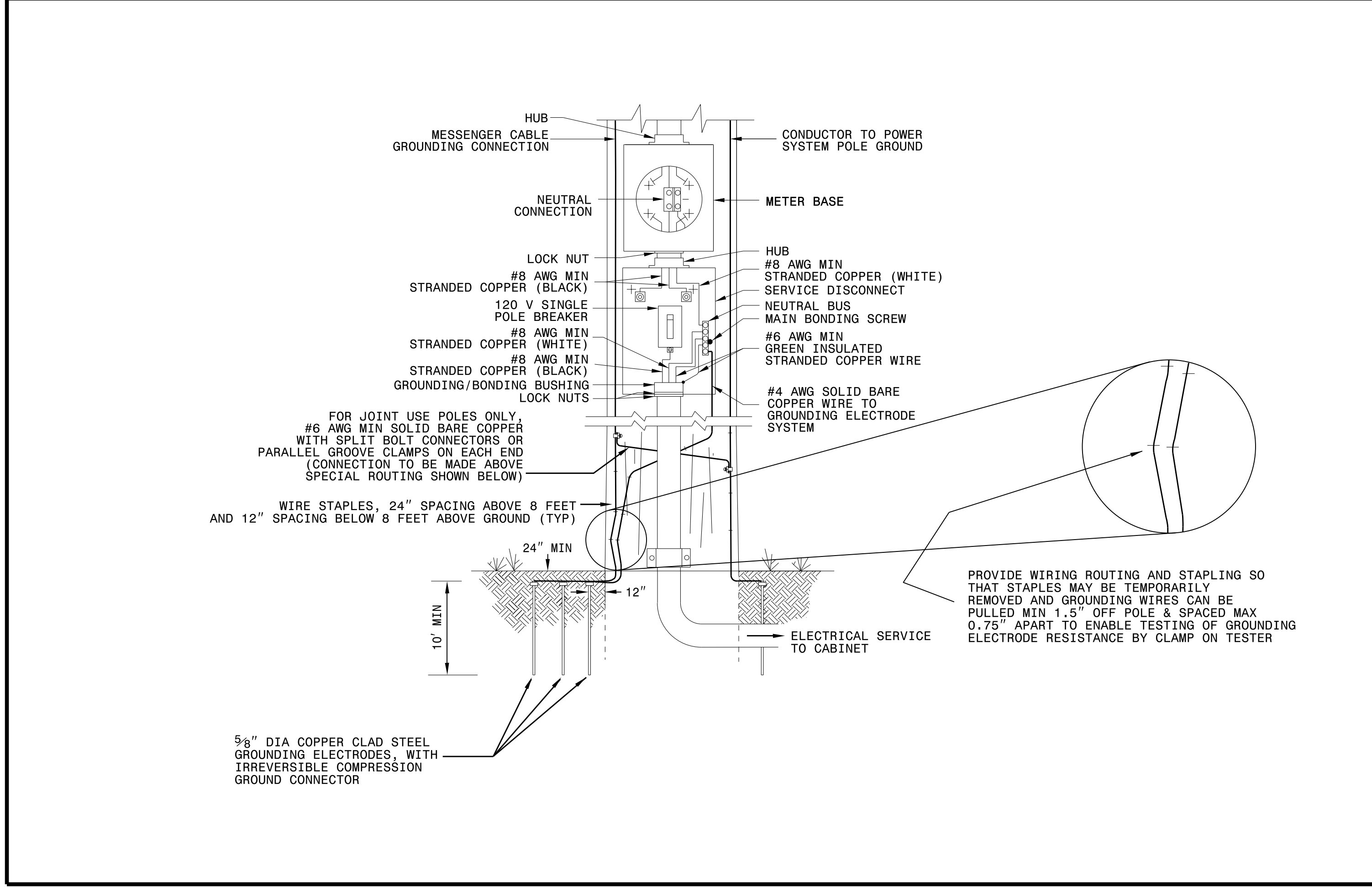
750 N. Greenfield Parkway, Garner, NC 27529

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1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
ELECTRICAL SERVICE GROUNDING
GROUNDING AND BONDING

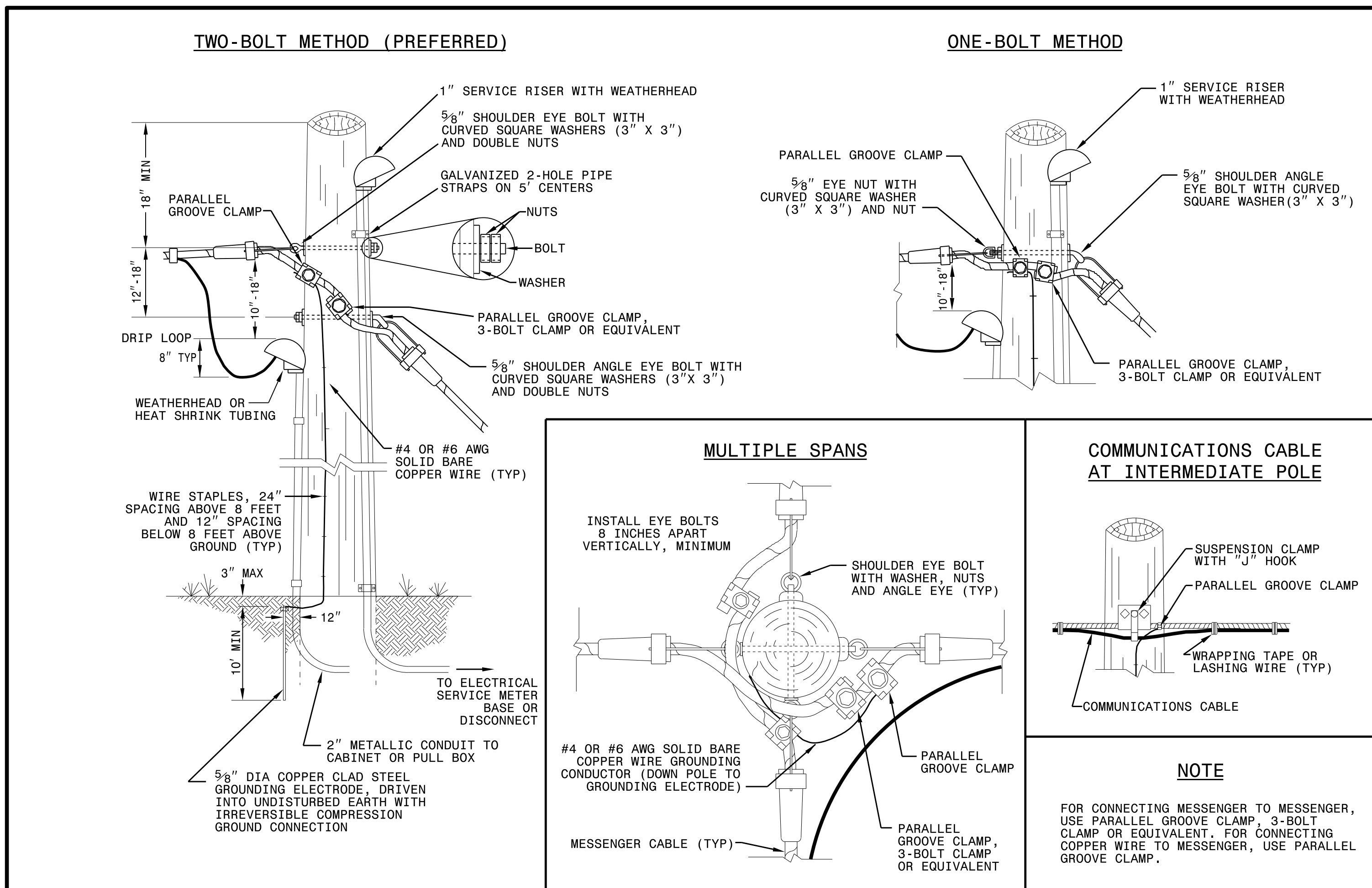
SHEET 1 OF 1
1700D01



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
WOOD POLES
METHODS OF ATTACHMENT AND GROUNDING

SHEET 1 OF 1
1720D01

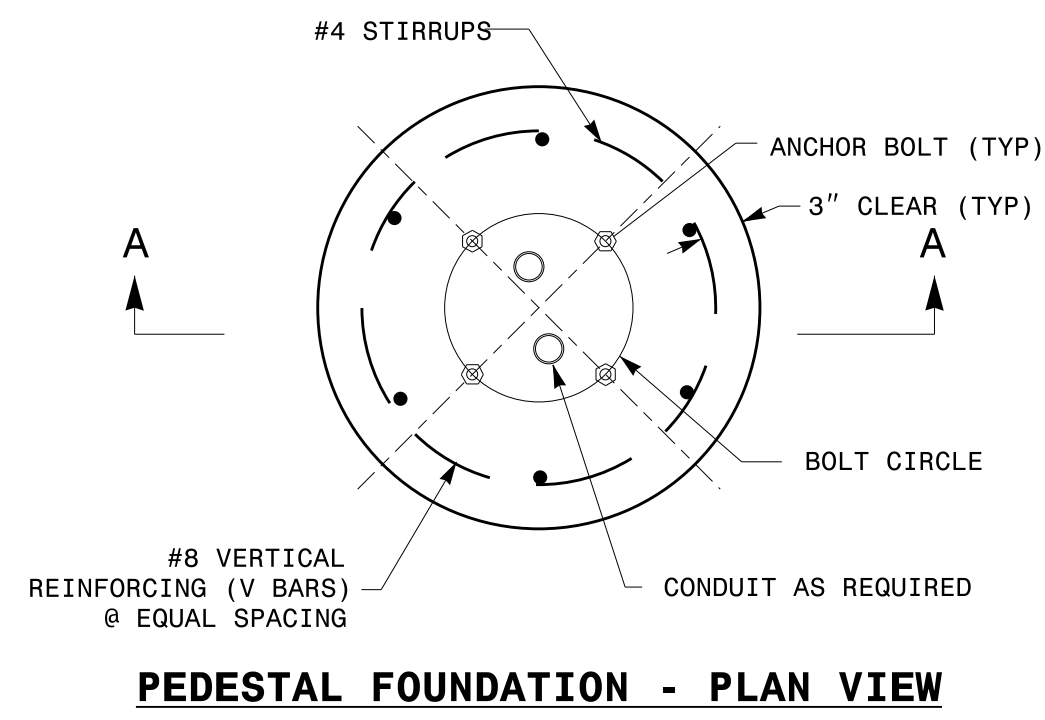


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SIGNATURES COMPLETED

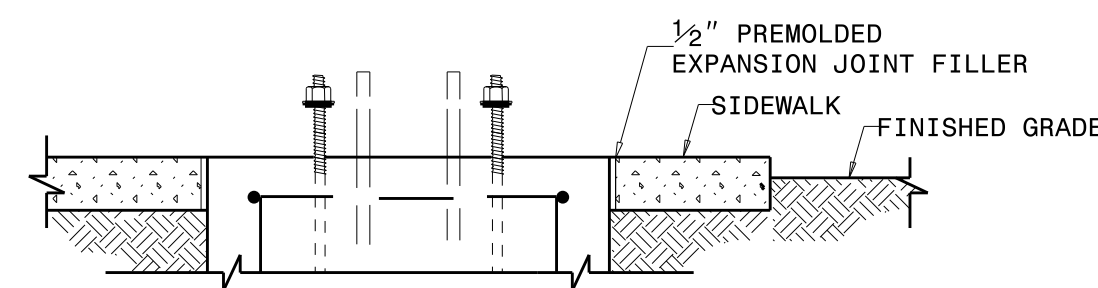
See Plate for Title

<p>Prepared in the Offices of:</p>	<p>SEAL</p>
<p>750 N. Greenfield Parkway Garner, NC 27529</p>	<p>DocuSigned by: <i>Mohd Aslami</i> 10/11/2017 DATE</p>

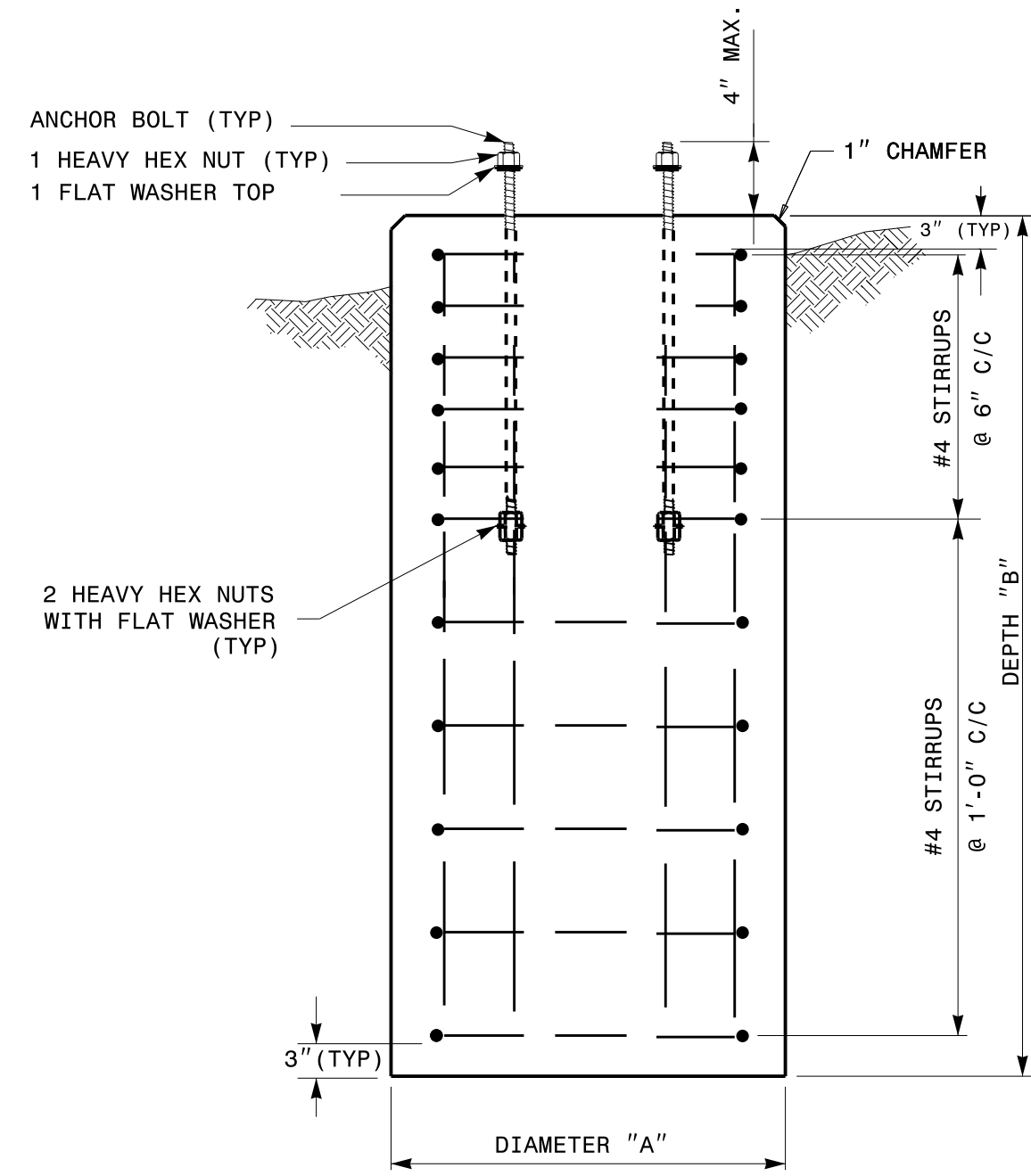
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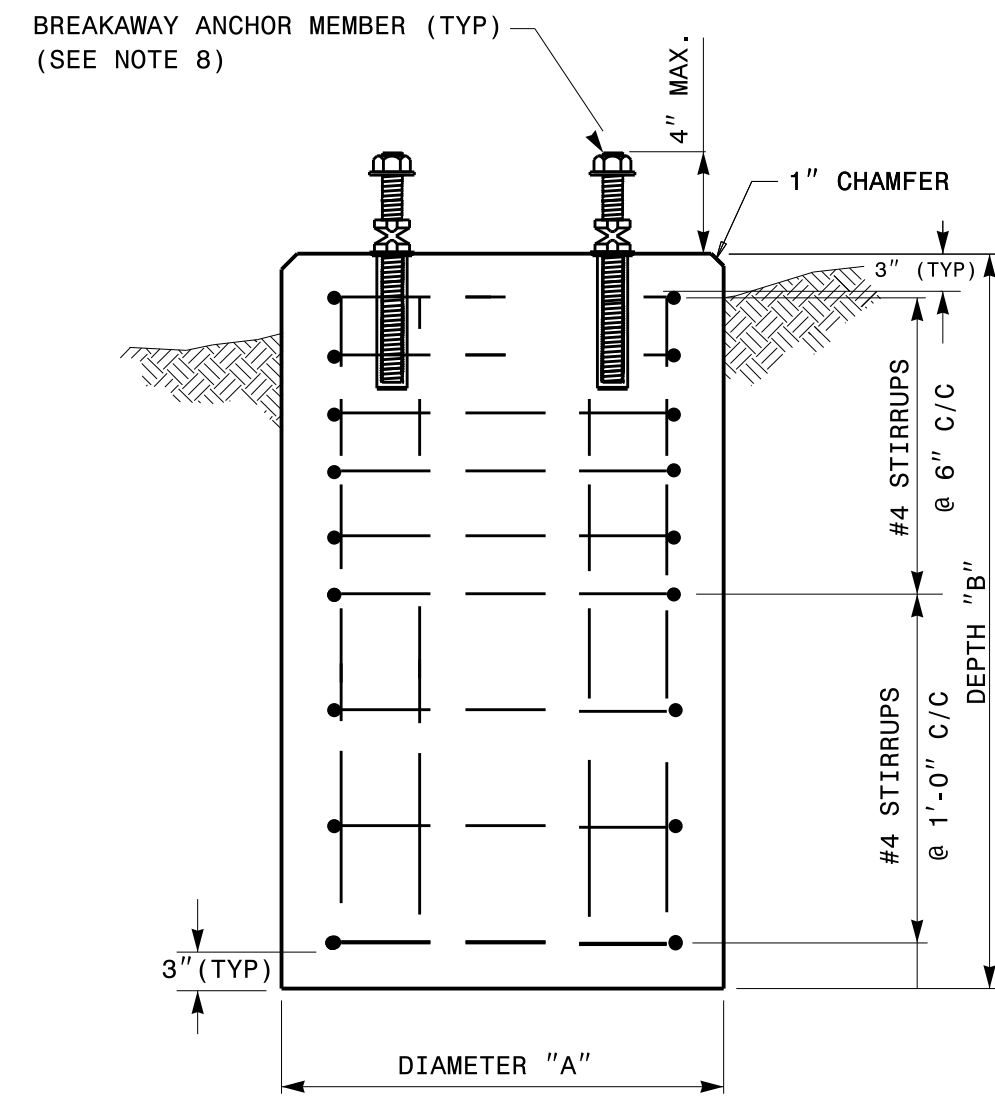
PEDESTAL FOUNDATION - PLAN VIEW



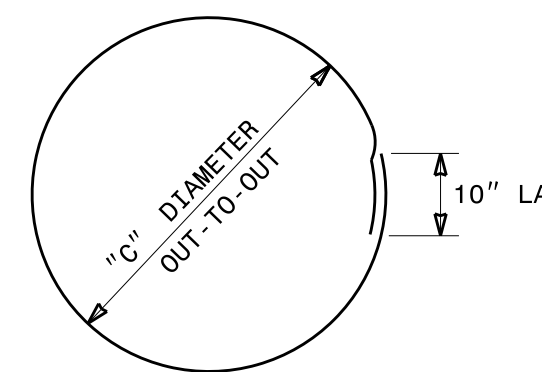
PEDESTAL FOUNDATION DETAILS FOR SIDEWALK



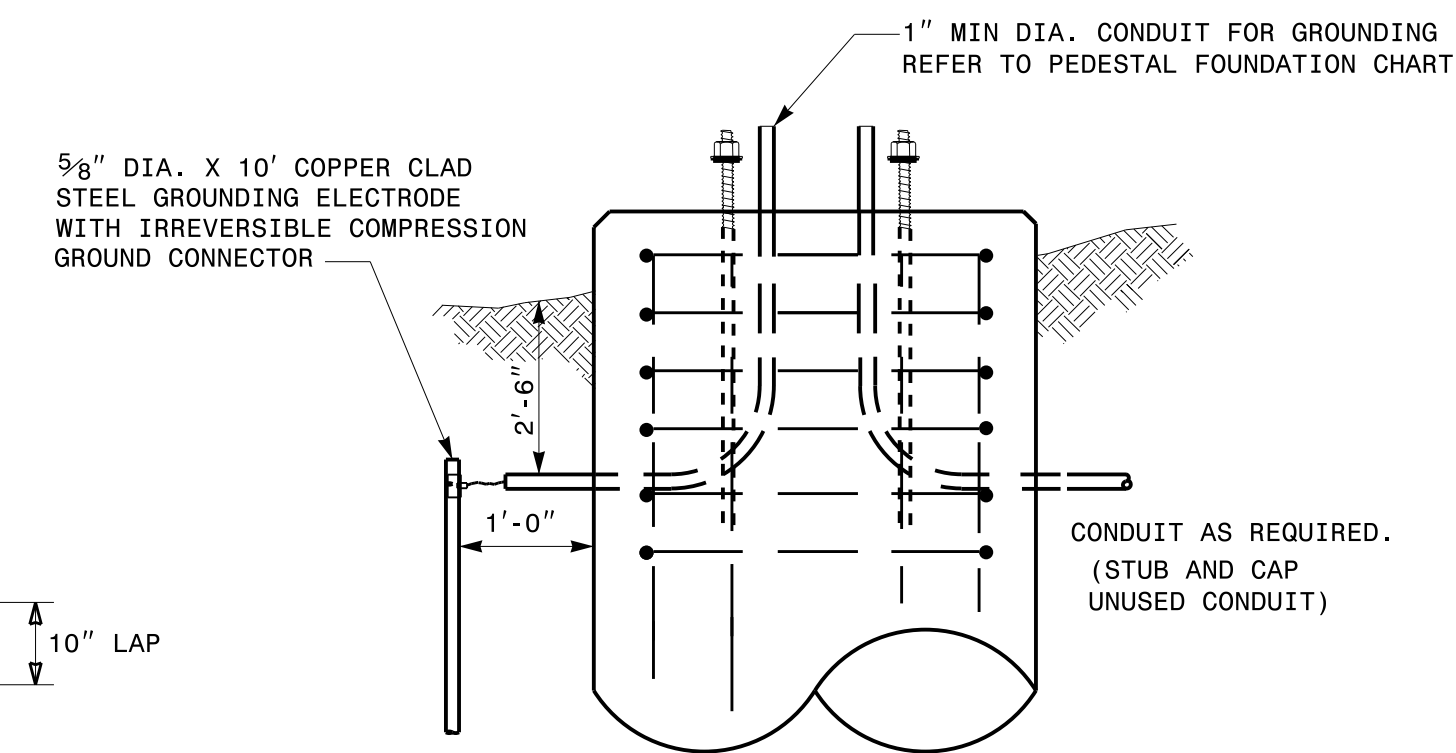
TYPES I, II & III
SECTION A-A



TYPES I & II ONLY
SECTION A-A



CLOSED HOOPS



GROUNDING & CONDUIT DETAIL

NOTES:

- CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
- COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
- USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF $F'c = 3000$ PSI (MIN.).
- USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
- GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
 - SANDY TYPE SOIL
 - NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
 - WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
- MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
- ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
- USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.

PEDESTAL FOUNDATION TYPE AND SIZE							
TYPE	PEDESTAL DESCRIPTION	SIZE			ANCHOR BOLT		INSTALL GROUNDING SYSTEM (YES/NO)
		DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	1/2	1'-6"	NO
II	NORMAL-DUTY	2'-0"	5'-0"	.58	3/4	2'-0"	YES
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES

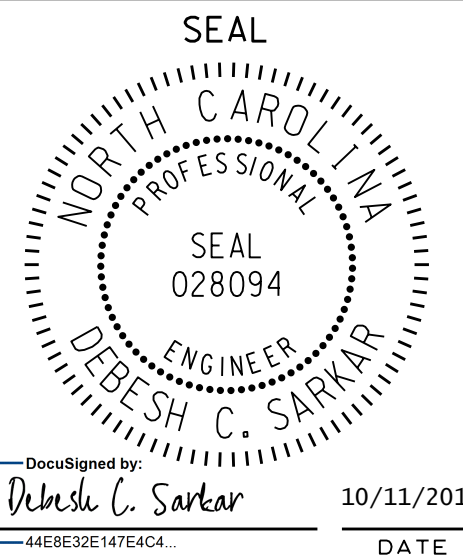
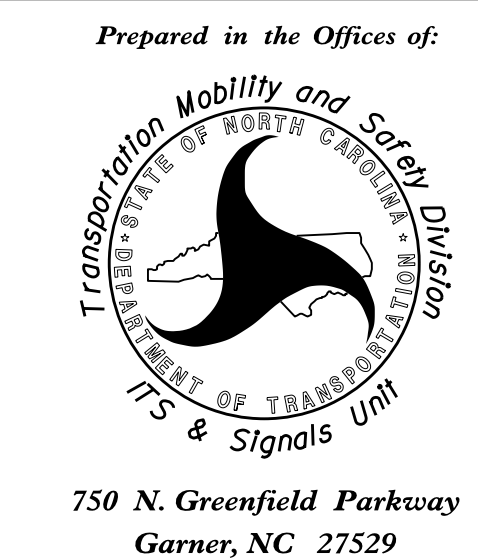
REINFORCING STEEL SCHEDULE													
TYPE	V-BAR				STIRRUP								
	SIZE #	QTY	LENGTH	WEIGHT LBS	SIZE #	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS
						VERTICAL ON 6" CENTERS	ON 12" CENTERS	TOTAL					
I	8	6	3'-0"	56	4	0	4	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	8	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	11	7'-2"	2'-0"	0'-10"	53	175

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

ENGLISH STANDARD DRAWING FOR
PEDESTALS
FOUNDATIONS

SHEET 1 OF 1
1743D01

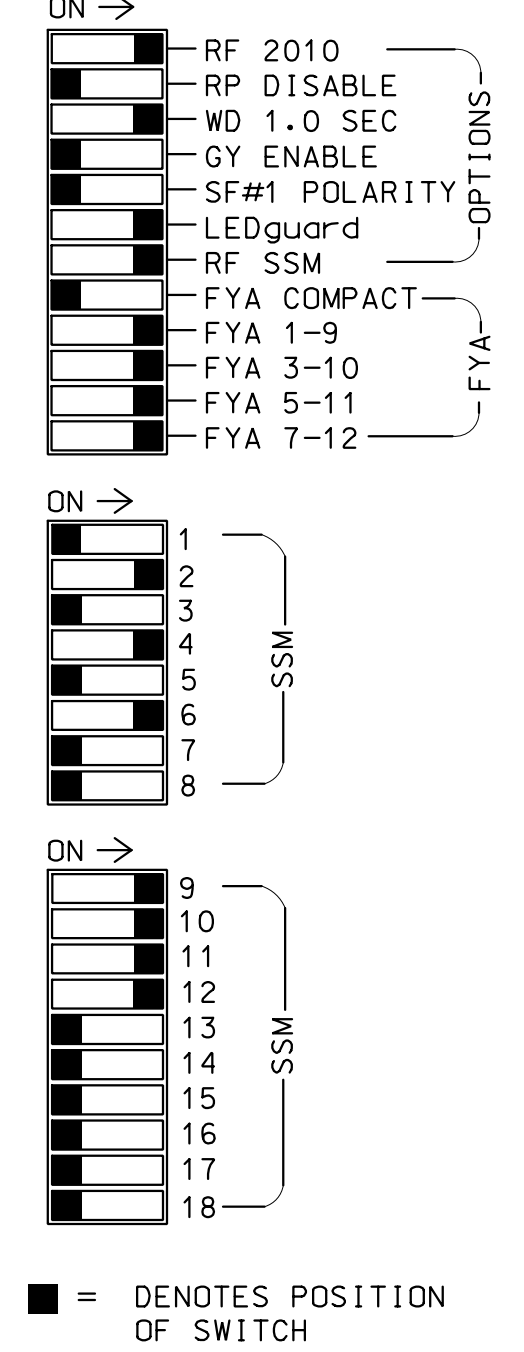
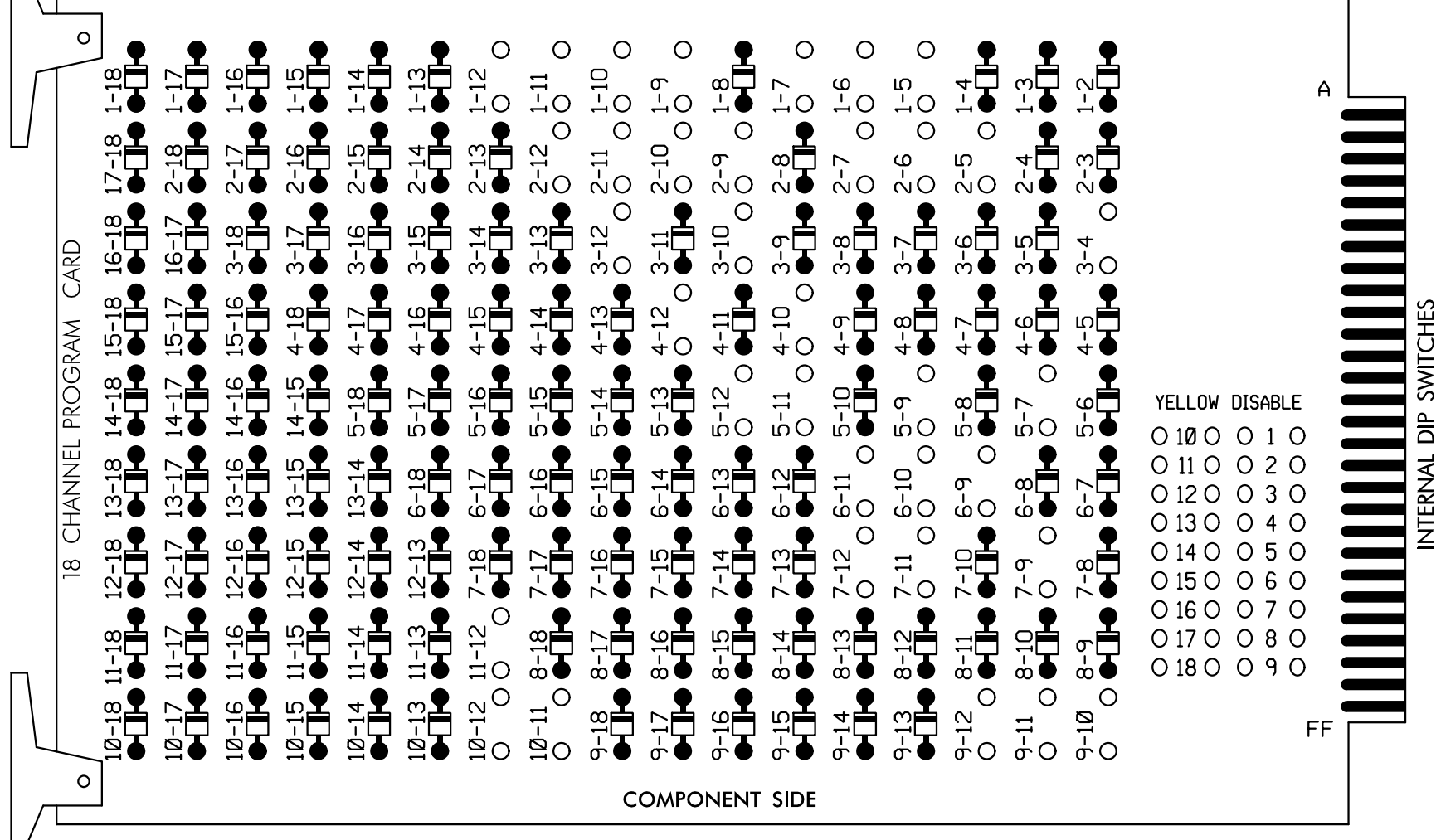
See Plate for Title



DOCUMENT NOT CONSIDERED
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EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)
REMOVE DIODE JUMPERS 1-5, 1-6, 1-7, 1-9, 1-10, 1-11, 1-12, 2-5, 2-6, 2-7, 2-9, 2-10, 2-11, 2-12, 3-4, 3-10, 3-12, 4-10, 4-12, 5-7, 5-9, 5-11, 5-12, 6-9, 6-10, 6-11, 7-9, 7-11, 7-12, 9-10, 9-11, 9-12, 10-11, 10-12 and 11-12.



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 Startup In Green.
- Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Salisbury Signal 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,S4,S5,S7,S8,S10,
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,4,5,6
 OVERLAP "A".....1+2
 OVERLAP "B".....4+6
 OVERLAP "C".....5+6
 OVERLAP "D".....4+5
 OVERLAP "G".....4
 OVERLAP "H".....5

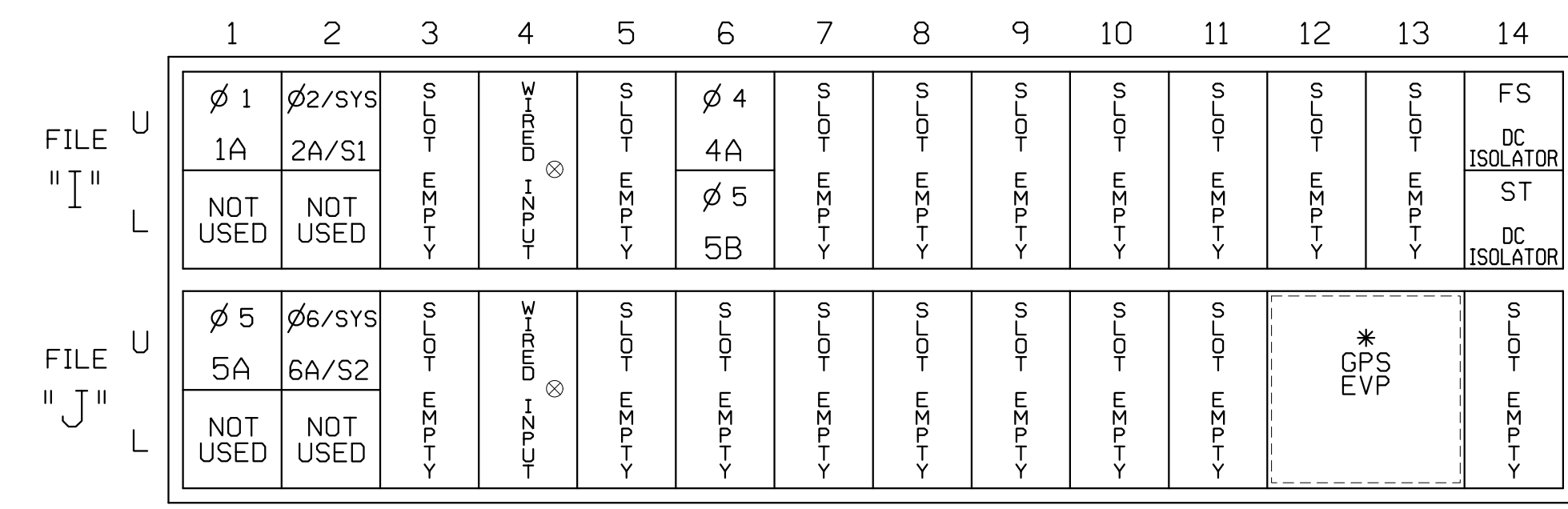
SIGNAL HEAD HOOK-UP CHART

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	OLG	4	4	5	6	6	OLH	8	8	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	NU	63	41,42	NU	51	61,62	NU	43	NU	NU	11	63	NU	51	43	NU
RED		128						134						A124				A101
YELLOW	*	129		*			*	135		*								
GREEN		130						136										
RED ARROW						101								A121				A114
YELLOW ARROW						102								A122	A125			A115 A102
FLASHING YELLOW ARROW														A123	A126			A116 A103
GREEN ARROW	127			118	103		133			124								

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
 See GPS Preemption Installation Note Below
 FS = FLASH SENSE
 ST = STOP TIME
 * Wired Input - Do not populate slot with detector card

SPECIAL DETECTOR NOTE

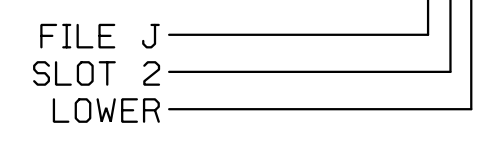
Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

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			
2A/S1	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
4A	TB4-9,10	I6U	41	3	4	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			
5B	TB4-11,12	I6L	45	7	14	5	Y	Y			15
6A/S2	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			

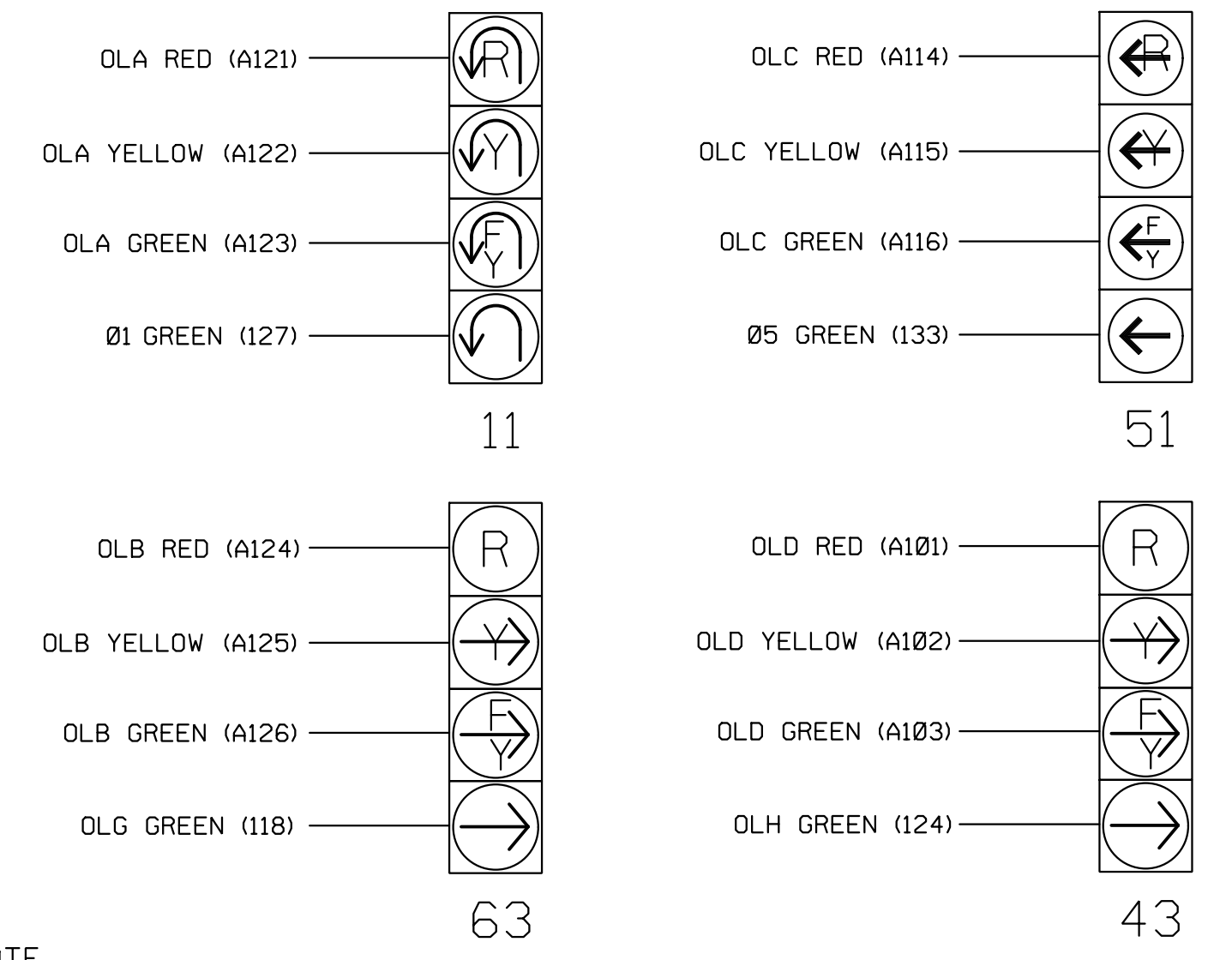
- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
- ★ See Input Page Assignment programming details on sheets 5 and 6.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

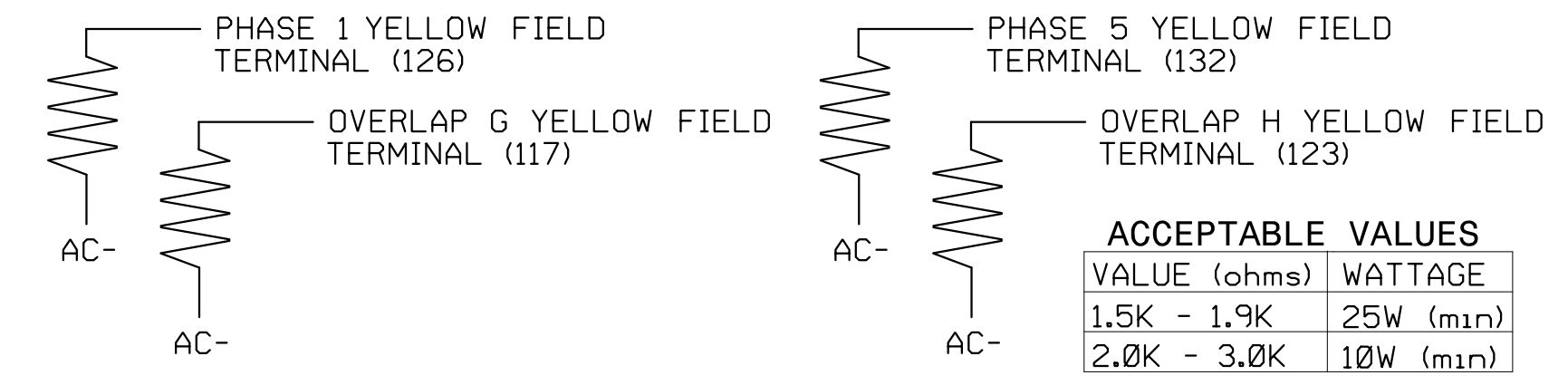


NOTE

The sequence display for signal heads 11, 43, 51, and 63 requires special logic programming. See sheet 4 for programming instructions.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



Electrical Detail - Sheet 1 of 7

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 2528 (Julian Rd)
 at
 SR 2667 (Summit Park Dr)

Division 9 Rowan County Salisbury

PLAN DATE: November 2021 REVIEWED BY: B. Phillips
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS: INIT. DATE

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER ZHAOLONG TENG SEAL 032179

DocuSign by: Zhaolong Teng 12/3/2021

SIG. INVENTORY NO. 09-1212

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442



OUTPUT PHASE REASSIGNMENT FOR LOADSWITCH S4

(REASSIGN AS OVERLAP G)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). WITH CURSOR IN "OUTPUT ASSIGNMENT #" POSITION, ENTER "6"

PAGE:1 C1 PIN:7 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....6
FREQUENCY (0=DEFAULT) (0-25.5 HZ)....0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

LOADSWITCH S4 RED

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT:
ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

PAGE:1 C1 PIN:7 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...7
SELECT COLOR (0=RED,1=YEL,2=GRN)....0

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP'
THE SCREEN SHOWN ABOVE WILL APPEAR.
ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER INPUTTING DATA,
THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT
ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

PAGE:1 C1 PIN:7 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....6
FREQUENCY (0=DEFAULT) (0-25.5 HZ)....0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

PRESS "+" KEY FOR OUTPUT 7

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT
ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

PAGE:1 C1 PIN:8 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....7
FREQUENCY (0=DEFAULT) (0-25.5 HZ)....0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

LOADSWITCH S4 YELLOW

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT:
ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

PAGE:1 C1 PIN:8 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...7
SELECT COLOR (0=RED,1=YEL,2=GRN)....1

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP'
THE SCREEN SHOWN ABOVE WILL APPEAR.
ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER INPUTTING DATA,
THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 8

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT
ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

PAGE:1 C1 PIN:9 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....8
FREQUENCY (0=DEFAULT) (0-25.5 HZ)....0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

LOADSWITCH S4 GREEN

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT:
ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

PAGE:1 C1 PIN:9 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...7
SELECT COLOR (0=RED,1=YEL,2=GRN)....2

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP'
THE SCREEN SHOWN ABOVE WILL APPEAR.
ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER INPUTTING DATA,
THEN 'ESC'.

OUTPUT PROGRAMMING FOR LOADSWITCH S4 COMPLETE

OUTPUT PHASE REASSIGNMENT FOR LOADSWITCH S10

(REASSIGN AS OVERLAP H)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS). WITH CURSOR IN "OUTPUT ASSIGNMENT #" POSITION, ENTER "22"

PAGE:1 C1 PIN:24 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....22
FREQUENCY (0=DEFAULT) (0-25.5 HZ)....0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

LOADSWITCH S10 RED

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT:
ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

PAGE:1 C1 PIN:24 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...8
SELECT COLOR (0=RED,1=YEL,2=GRN)....0

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP'
THE SCREEN SHOWN ABOVE WILL APPEAR.
ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER INPUTTING DATA,
THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 23

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT
ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

PAGE:1 C1 PIN:24 VEHICLE OVERLAP
OUTPUT ASSIGNMENT #.....22
FREQUENCY (0=DEFAULT) (0-25.5 HZ)....0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT
ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

PAGE:1 C1 PIN:25 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....23
FREQUENCY (0=DEFAULT) (0-25.5 HZ)....0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

LOADSWITCH S10 YELLOW

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT:
ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

PAGE:1 C1 PIN:25 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...8
SELECT COLOR (0=RED,1=YEL,2=GRN)....1

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP'
THE SCREEN SHOWN ABOVE WILL APPEAR.
ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER INPUTTING DATA,
THEN 'ESC'.

PRESS "+" KEY FOR OUTPUT 24

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT
ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

PAGE:1 C1 PIN:26 VEHICLE PHASE
OUTPUT ASSIGNMENT #.....24
FREQUENCY (0=DEFAULT) (0-25.5 HZ)....0
DUTY CYCLE (0=DEFAULT) (0 - 100%)...0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....
VEHICLE PHASE.....Y
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....Y
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....
ADVANCE BEACON.....
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....

LOADSWITCH S10 GREEN

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT:
ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

PAGE:1 C1 PIN:26 VEHICLE PHASE
SELECT VEHICLE OVERLAP (A=1, P=16)...8
SELECT COLOR (0=RED,1=YEL,2=GRN)....2

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP'
THE SCREEN SHOWN ABOVE WILL APPEAR.
ENTER DATA AS SHOWN.
PRESS THE 'ENT' KEY AFTER INPUTTING DATA,
THEN 'ESC'.

OUTPUT PROGRAMMING FOR LOADSWITCH S10 COMPLETE

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-1212
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Electrical Detail - Sheet 2 of 7

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Table with columns: REVISIONS, INIT, DATE. Includes project details: SR 2528 (Julian Rd) at SR 2667 (Summit Park Dr), Division 9, Rowan County, Salisbury, NC. Prepared by: Z. Gavin Teng, Reviewed by: B. Phillips. Date: November 2021.

Professional Engineer Seal for Zhaolong Teng, License No. 032179, State of North Carolina. Includes text: DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED.

Vertical barcode/ID string on the left edge of the page.

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

NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X X
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

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

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

NOTICE GREEN FLASH

PRESS '+' THREE TIMES

PAGE 1: VEHICLE OVERLAP 'G' 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 - GREEN

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'H' 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 - GREEN

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 - GREEN

PRESS '+'

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 - GREEN

PRESS '+'

NOTICE PAGE 2

PAGE 2: VEHICLE OVERLAP 'G' 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 - GREEN

PRESS '+'

NOTICE PAGE 2

PAGE 2: VEHICLE OVERLAP 'B' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: X X
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

PRESS '+'

NOTICE PAGE 2

PAGE 2: 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

NOTICE GREEN FLASH

PRESS '+' THREE TIMES

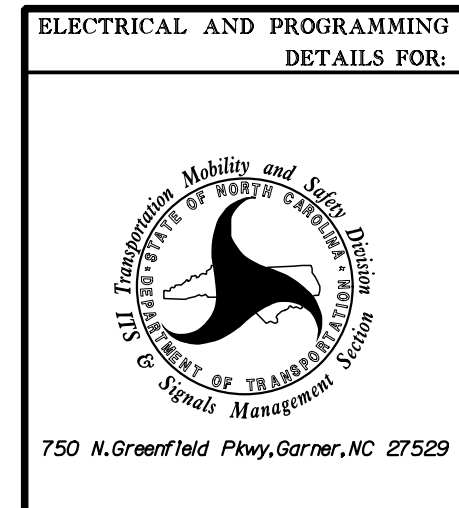
NOTICE PAGE 2

PAGE 2: VEHICLE OVERLAP 'H' 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 - GREEN

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-1212
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Electrical Detail - Sheet 3 of 7



PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC
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Table with project details: SR 2528 (Julian Rd) at SR 2667 (Summit Park Dr), Division 9, Rowan County, Salisbury, prepared by Z. 'Gavin' Teng, reviewed by B. Phillips, dated November 2021.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

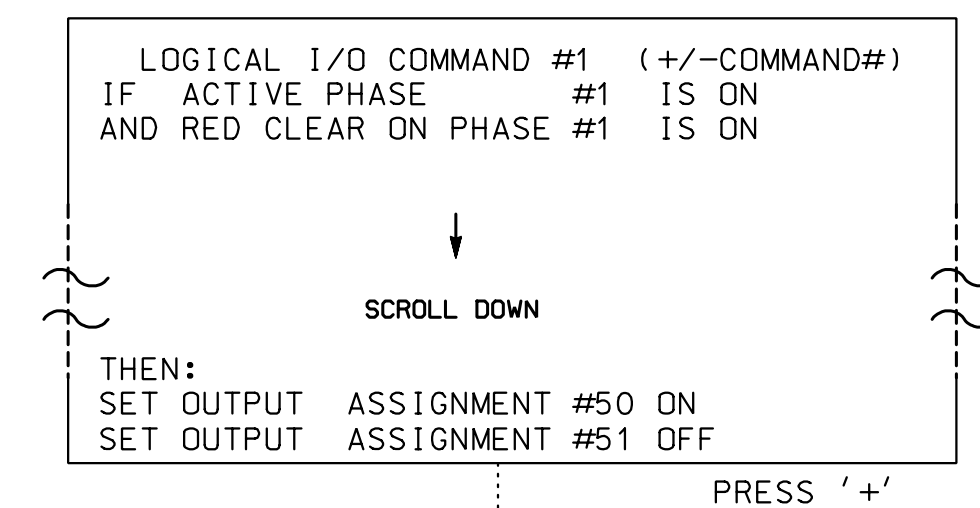
Professional Engineer Seal for Zhaolong Teng, State of North Carolina, License No. 032179, dated 12/3/2021.

Vertical barcode and reference numbers on the left margin.

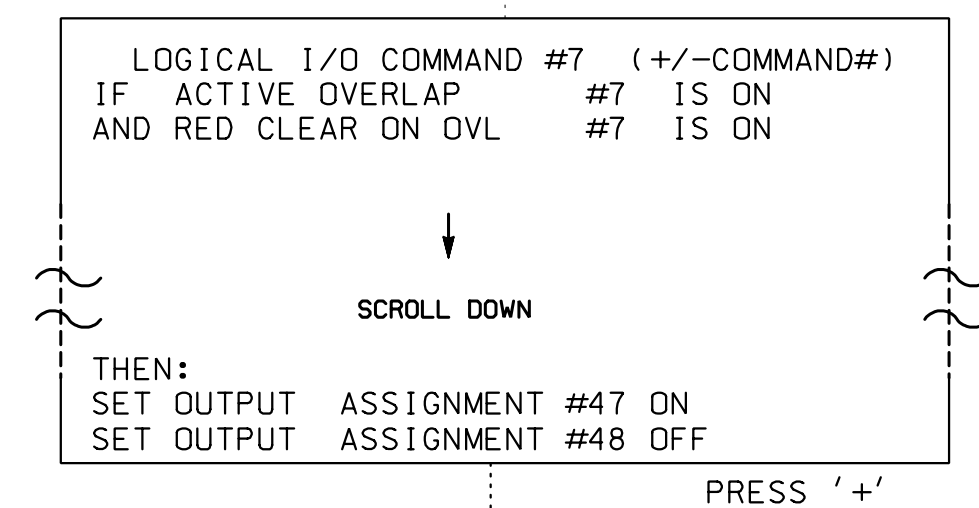
LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

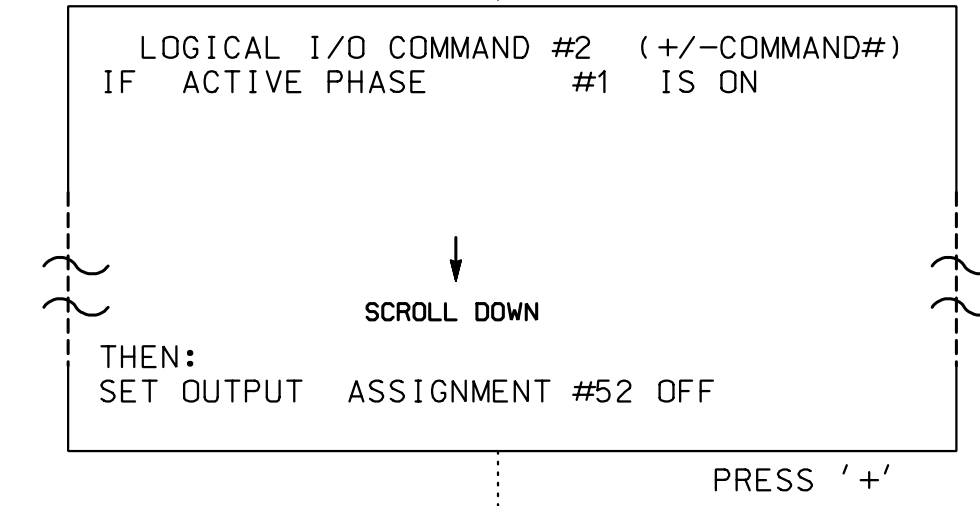
- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 AND 12.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



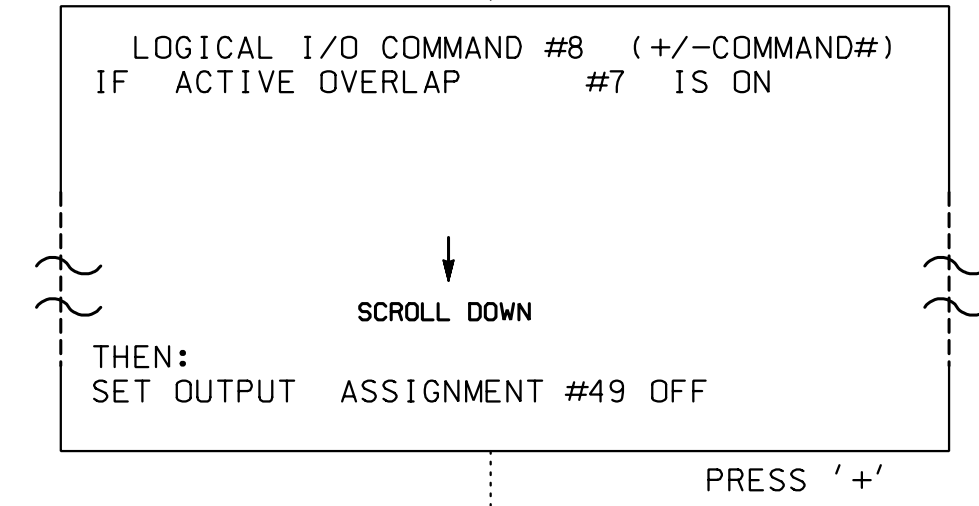
NOTE: LOGIC FOR PHASE 1 RED CLEAR WHEN TRANSITIONING FROM PHASE 1 TO PHASE 2 (HEAD 11).



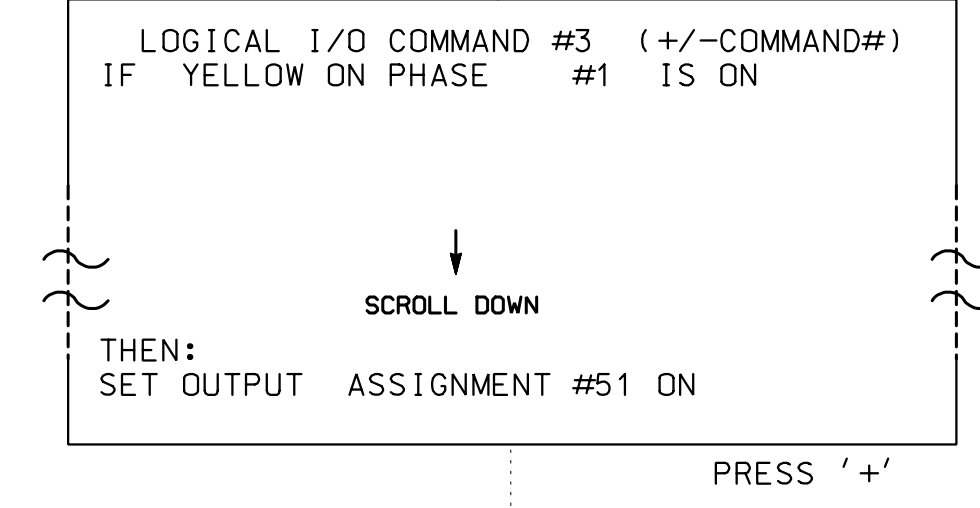
NOTE: LOGIC FOR PHASE 4 RED CLEAR WHEN TRANSITIONING FROM PHASE 4 (HEAD 63).



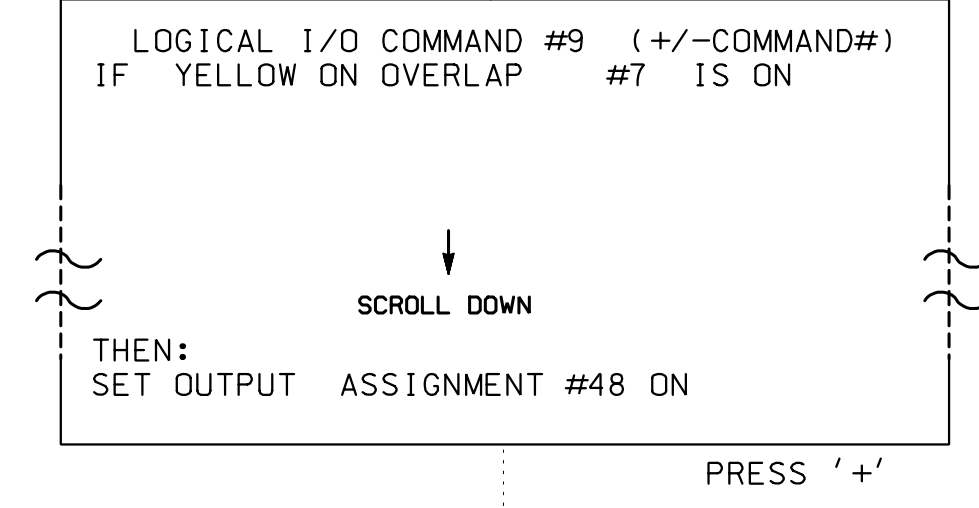
NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 1 (HEAD 11).



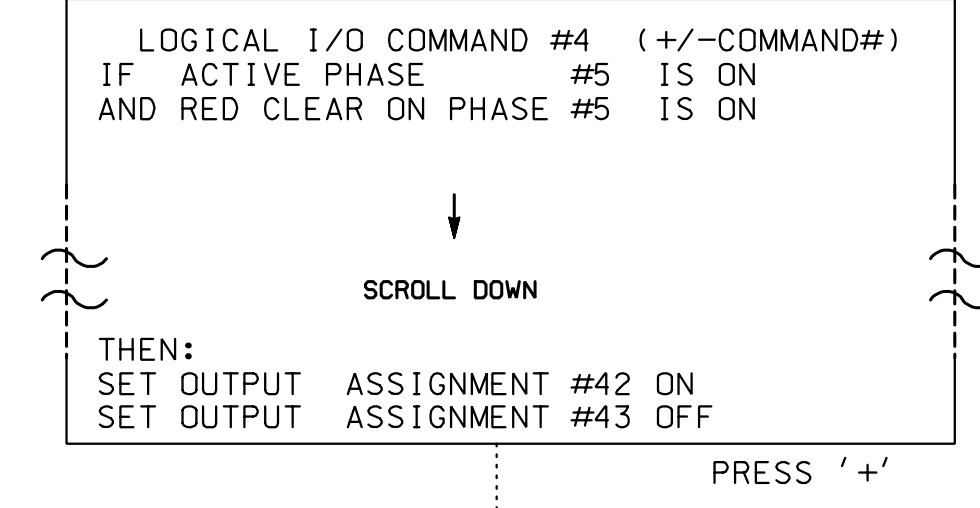
NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 4 (HEAD 63).



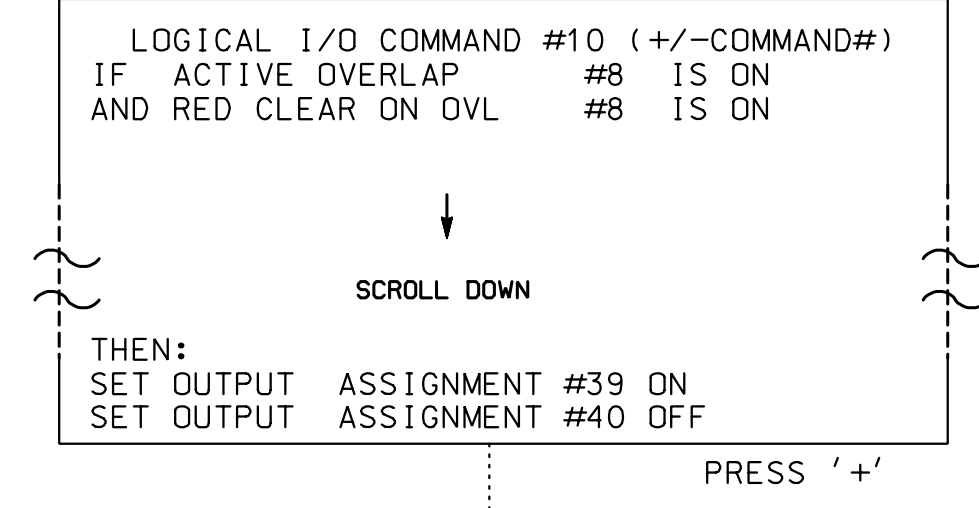
NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 1 (HEAD 11).



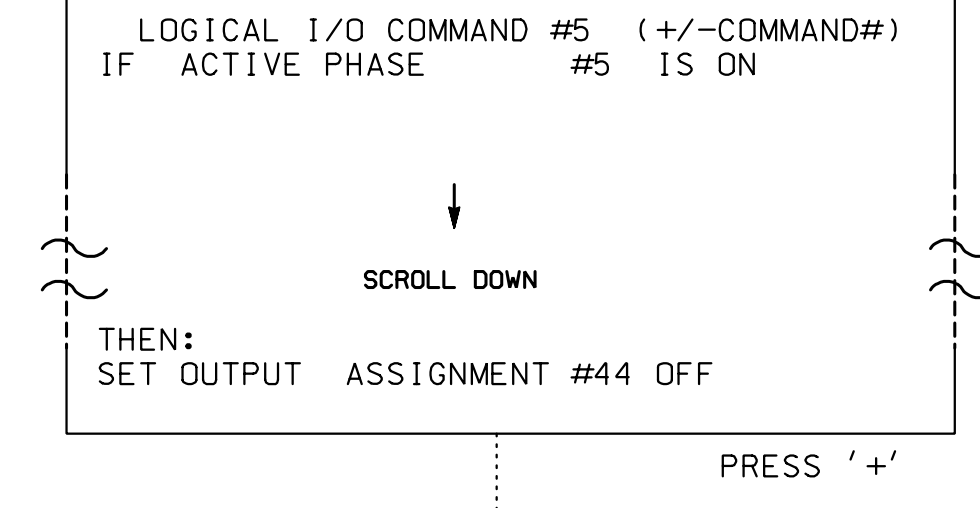
NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 4 (HEAD 63).



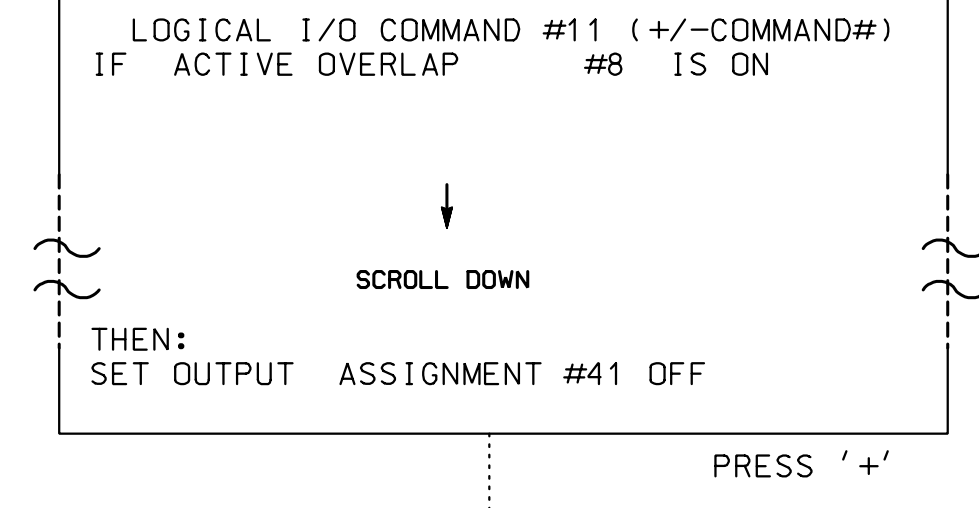
NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).



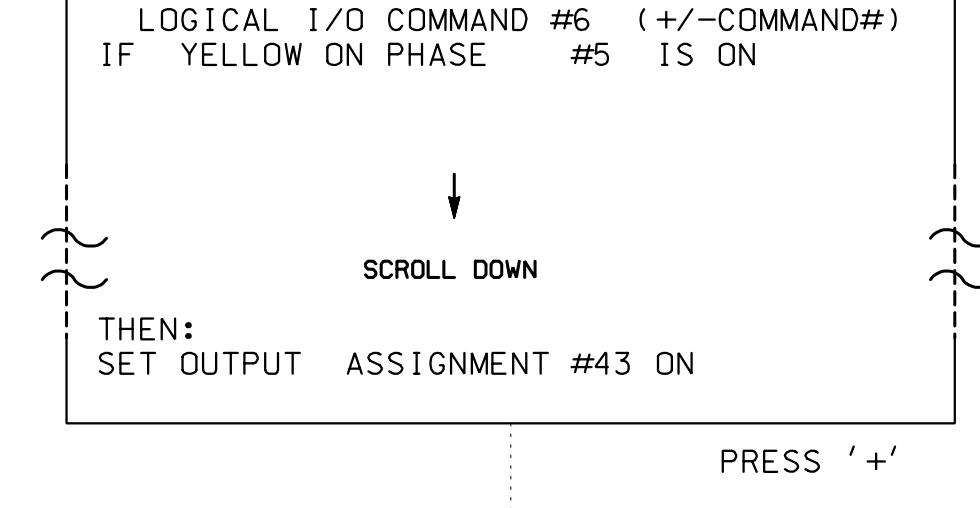
NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 (HEAD 43).



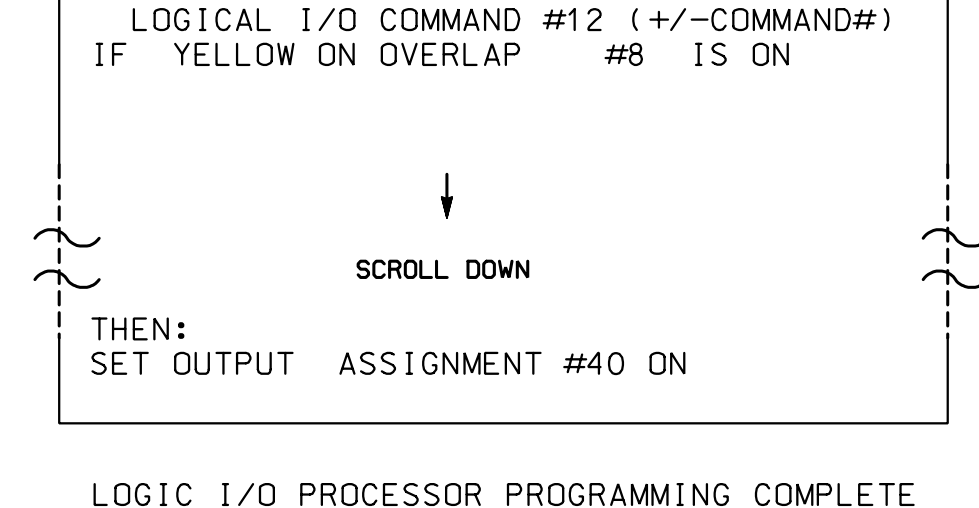
NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).



NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 43).



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



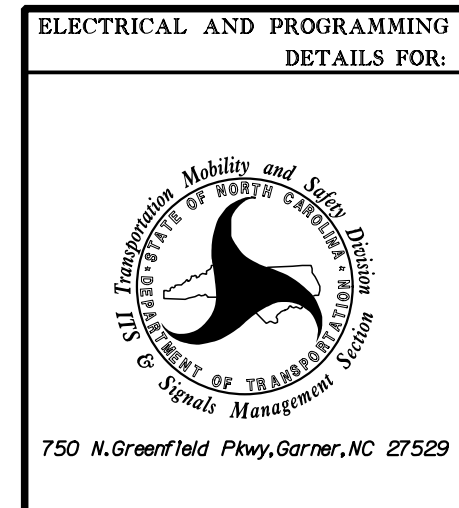
NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 5 (HEAD 43).

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: 09-1212
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Electrical Detail - Sheet 4 of 7



SR 2528 (Julian Rd) at SR 2667 (Summit Park Dr)	
Division 9	Rowan County Salisbury
PLAN DATE: November 2021	REVIEWED BY: B. Phillips
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL	12/3/2021
ZHAOLONG TENG	DATE
SIG. INVENTORY NO. 09-1212	

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\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DOCSIGN\$\$\$\$\$
\$\$\$\$\$SERIAL\$\$\$\$\$

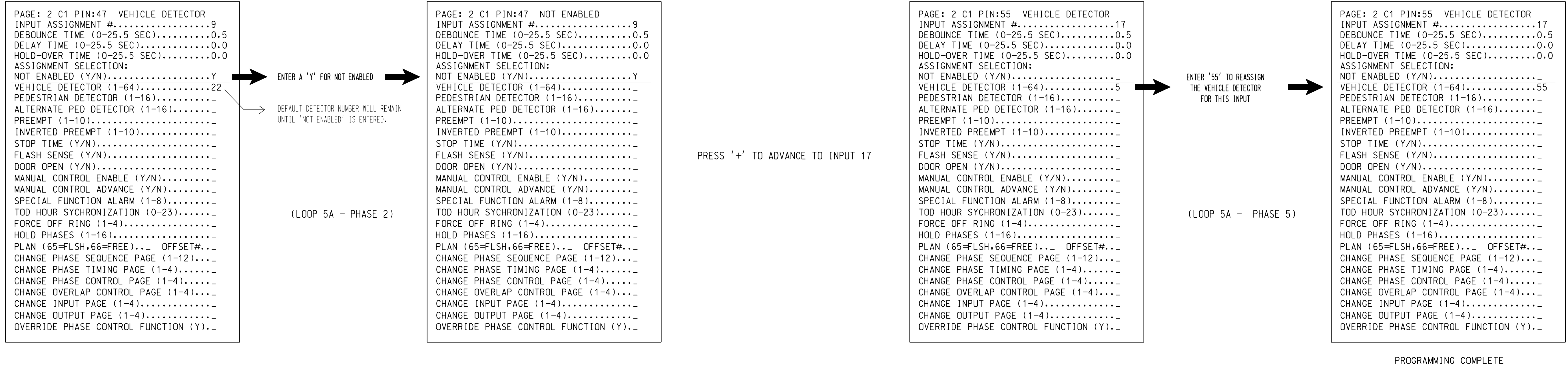
LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

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 0 SECONDS.

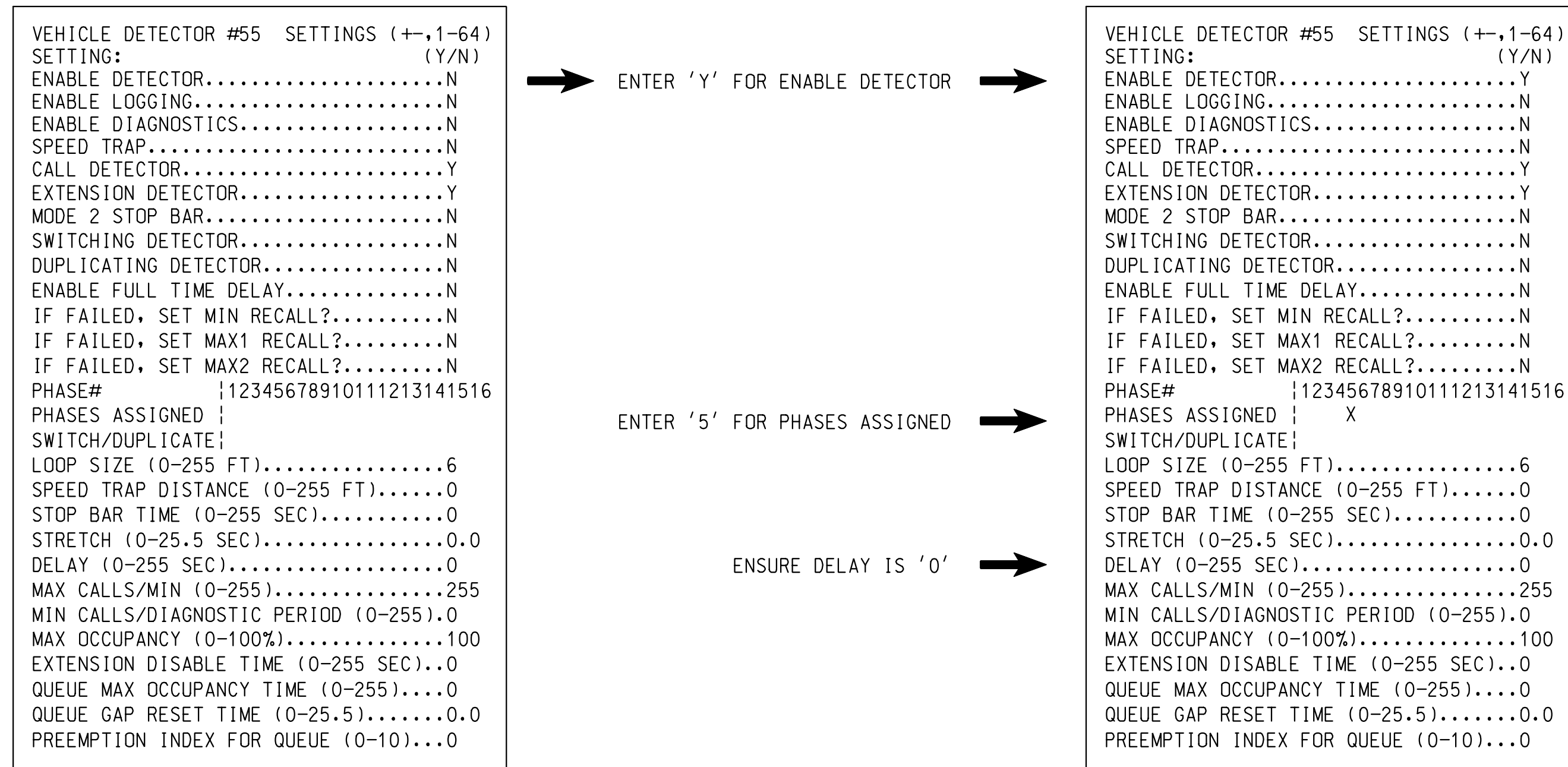
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 9 IS REACHED.



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: 09-1212
 DESIGNED: NOVEMBER 2021
 SEALED: 12/3/2021
 REVISED: N/A

Electrical Detail - Sheet 6 of 7

	SR 2528 (Julian Rd) at SR 2667 (Summit Park Dr)		
	Division 9 PLAN DATE: November 2021 PREPARED BY: Z. "Gavin" Teng	Rowan County REVIEWED BY: B. Phillips REVIEWED BY:	

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS: _____ INIT. DATE _____

DATE: 12/3/2021

SIG. INVENTORY NO. 09-1212

FLASHER CIRCUIT MODIFICATION DETAIL

IN ORDER TO ENSURE 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.

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

PHASING	INPUTS PAGE	OVERLAPS PAGE
ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	1
ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

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

EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

PREEMPTION #3	SETTINGS (NEXT:1-10)
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

EXIT CALLS	OPTIONS
PRIORITY (Y/N TO SELECT)	MED
DELAY TIMER (0-255 SEC)	0
MIN GREEN BEFORE PRE (0= DEFAULT)...	1
PED CLEAR BEFORE PRE (0= DEFAULT)...	0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)...	0.0
RED CLEAR BEFORE PRE (0= DEFAULT)...	0.0
DWELL MIN TIMER (0-255 SEC)	7
DWELL MAX TIMER (0=OFF,1-255MIN) ...	2
DWELL HOLD-OVER TIMER (0-255)	0
LATCH CALL?	N
LINK TO NEXT PREEMPT?	N
ENABLE BACKUP PROTECTION?	N
HOLD CLEAR 1 PHASES DURING DELAY?	N
FAST GREEN FLASH DWELL PHASES?	N
PED CLEARANCE THROUGH YELLOW?	N
INHIBIT OVERLAP GREEN EXTENSION?	N
SERVICE DURING SOFTWARE FLASH?	N
REST IN RED DURING DWELL INTERVAL?	N
FLASH DWELL INTERVAL?	N
ALLOW PEDS IN DWELL INTERVAL?	N
RE-TIME DWELL INTERVAL?	N
OVERLAPS:	ABCDEFGHIJKLMNPO
DWELL INT FLASH YELLOW	
OMIT OVERLAPS:	

PRESS 'NEXT' TWICE

PREEMPTION #5	SETTINGS (NEXT:1-10)
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

EXIT CALLS	OPTIONS
PRIORITY (Y/N TO SELECT)	MED
DELAY TIMER (0-255 SEC)	0
MIN GREEN BEFORE PRE (0= DEFAULT)...	1
PED CLEAR BEFORE PRE (0= DEFAULT)...	0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)...	0.0
RED CLEAR BEFORE PRE (0= DEFAULT)...	0.0
DWELL MIN TIMER (0-255 SEC)	7
DWELL MAX TIMER (0=OFF,1-255MIN) ...	2
DWELL HOLD-OVER TIMER (0-255)	0
LATCH CALL?	N
LINK TO NEXT PREEMPT?	N
ENABLE BACKUP PROTECTION?	N
HOLD CLEAR 1 PHASES DURING DELAY?	N
FAST GREEN FLASH DWELL PHASES?	N
PED CLEARANCE THROUGH YELLOW?	N
INHIBIT OVERLAP GREEN EXTENSION?	N
SERVICE DURING SOFTWARE FLASH?	N
REST IN RED DURING DWELL INTERVAL?	N
FLASH DWELL INTERVAL?	N
ALLOW PEDS IN DWELL INTERVAL?	N
RE-TIME DWELL INTERVAL?	N
OVERLAPS:	ABCDEFGHIJKLMNPO
DWELL INT FLASH YELLOW	
OMIT OVERLAPS:	

PROGRAMMING COMPLETE

Program extend time on detector unit for 2.0 seconds.

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

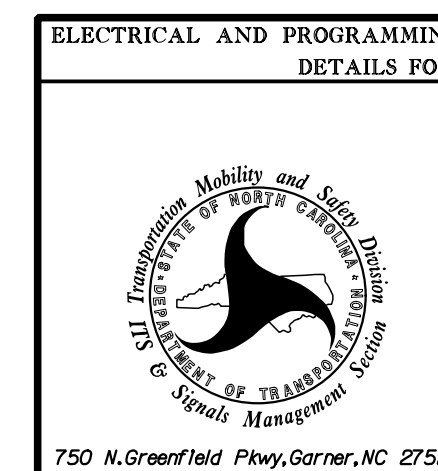
OVERLAPS PAGE 2: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.

INPUTS PAGE 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.

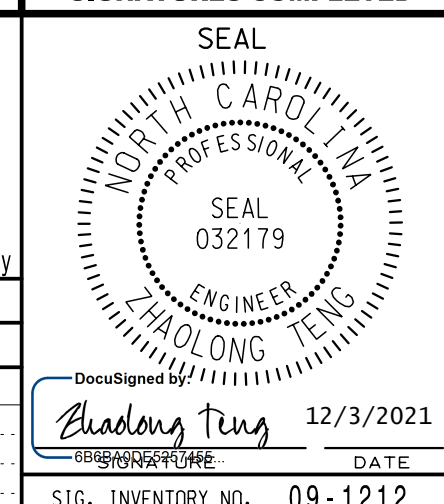
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-1212
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Electrical Detail - Sheet 7 of 7



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 2528 (Julian Rd) at SR 2667 (Summit Park Dr)	
Division 9	Rowan County	Salisbury	
PLAN DATE: November 2021	REVIEWED BY: B. Phillips		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

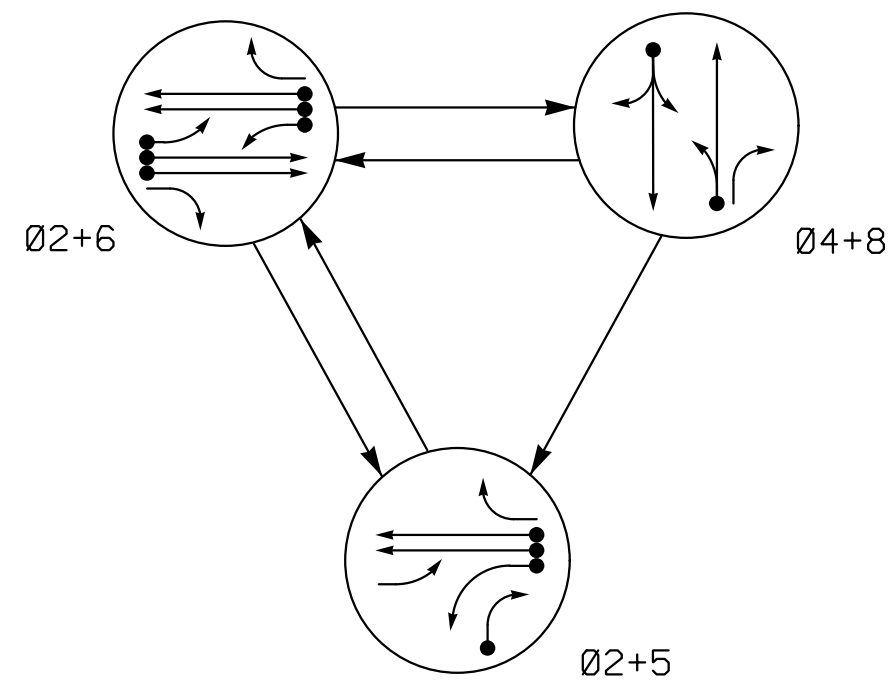
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SIG. INVENTORY NO. 09-1212

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442

PHASING DIAGRAM

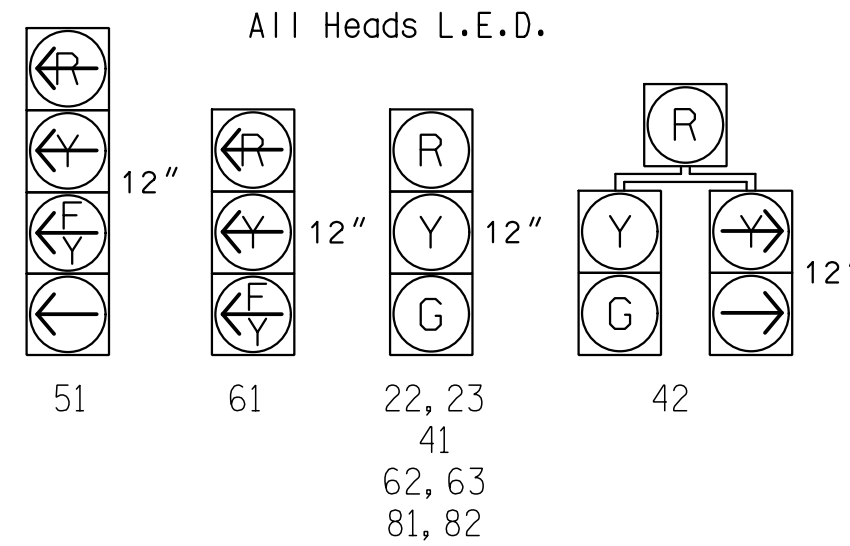


PHASING DIAGRAM DETECTION LEGEND

TABLE OF OPERATION

SIGNAL FACE	PHASE			
	Ø 2 + 5	Ø 2 + 6	Ø 4 + 8	L/Ø 2 + 5
22, 23	G	G	R	Y
41	R	R	G	R
42	R	R	G	R
51	Y	Y	R	Y
61	Y	Y	R	Y
62, 63	R	G	R	Y
81, 82	R	R	G	R

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

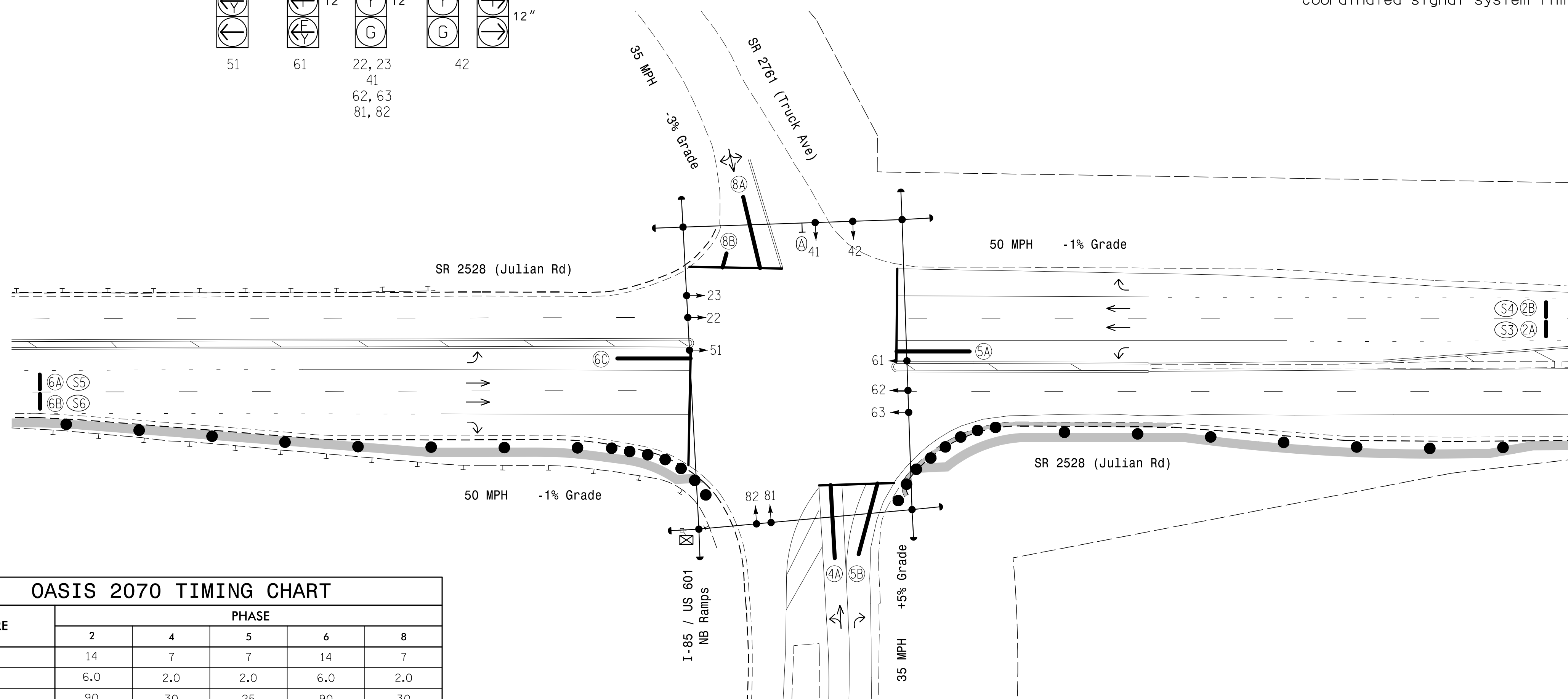
ZONE	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING							
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S3	6X6	355	*	*	2	Y	Y	-	-	-	Y	*
2B/S4	6X6	355	*	*	2	Y	Y	-	-	-	Y	*
4A	6X40	0	*	*	4	Y	Y	-	-	-	-	*
5A	6X40	0	*	*	5	Y	Y	-	-	15	-	*
5B	6X40	0	*	*	5	Y	Y	-	-	15	-	*
6A/S5	6X6	355	*	*	6	Y	Y	-	-	-	Y	*
6B/S6	6X6	355	*	*	6	Y	Y	-	-	-	Y	*
6C	6X40	0	*	*	6	Y	Y	Y	-	3	-	*
8A	6X40	0	*	*	8	Y	Y	-	-	5	-	*
8B	6X6	0	*	*	8	Y	Y	-	-	15	-	*

* Video Detection Zone

3 Phase Fully Actuated (Salisbury 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.
- Install a video imaging loop emulator detection system to maintain vehicle detection during construction. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to obtain optimum detection zones as shown.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



LEGEND

PROPOSED	EXISTING
	N/A
N/A	
N/A	

OASIS 2070 TIMING CHART

FEATURE	PHASE				
	2	4	5	6	8
Min Green 1 *	14	7	7	14	7
Extension 1 *	6.0	2.0	2.0	6.0	2.0
Max Green 1 *	90	30	25	90	30
Yellow Clearance	4.9	3.6	3.0	4.9	4.1
Red Clearance	1.6	2.7	2.8	1.6	2.2
Red Revert	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation *	1.5	-	-	1.5	-
Max Variable Initial *	40	-	-	40	-
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

* 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.

(TMP Phases I & II) Signal Upgrade - Temporary Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SR 2528 (Julian Rd) at I-85/US 601 NB Ramps and SR 2761 (Truck Ave)

Division 9 Rowan County Salisbury

PLAN DATE: November 2021 REVIEWED BY: B. Phillips

PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS: _____ INIT. DATE _____

DATE: 12/3/2021

SIG. INVENTORY NO. 09-0992T

PREPARED IN THE OFFICE OF:

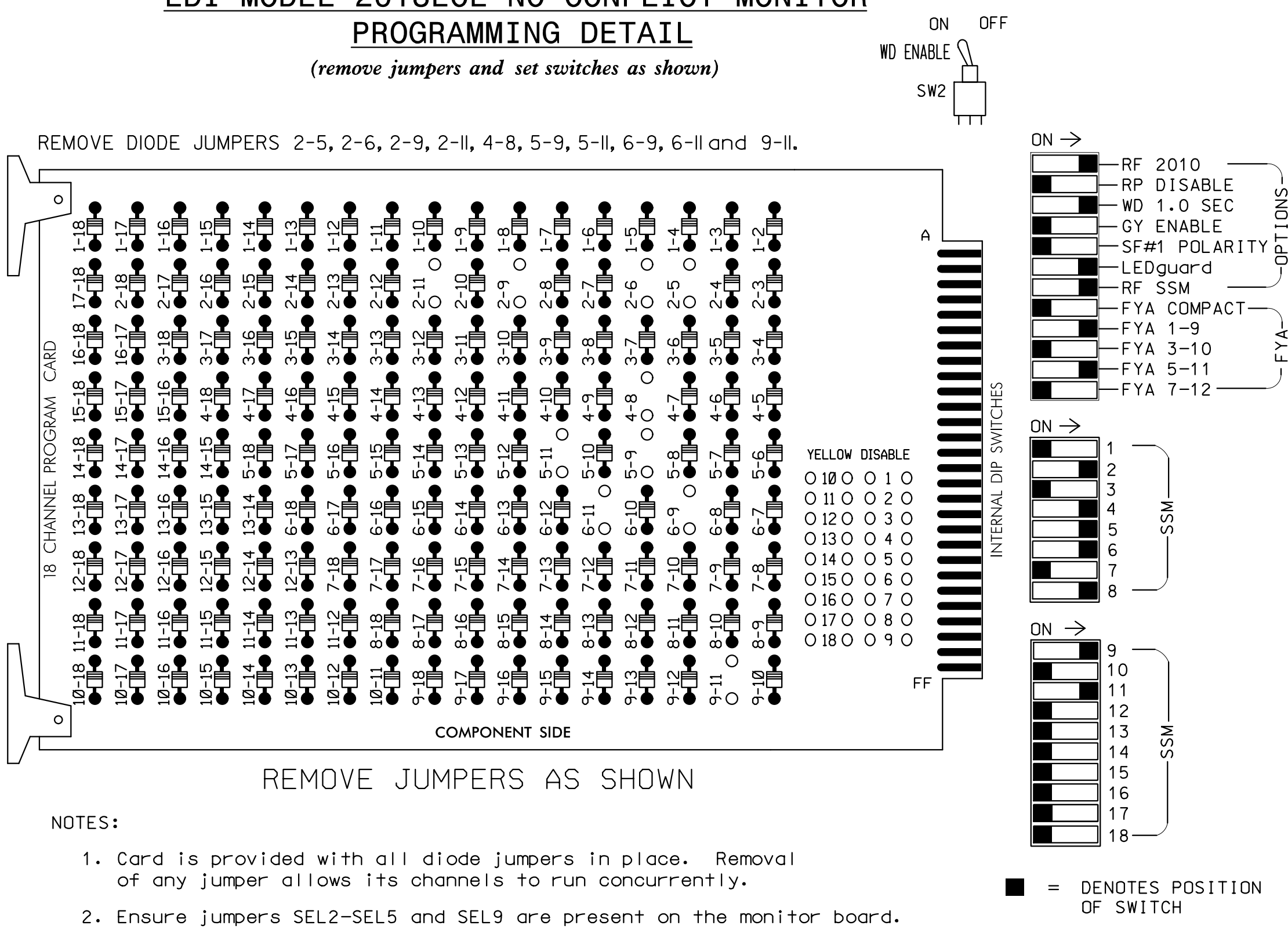
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

SCALE: 1" = 40'

444444SYTIME\$\$\$\$\$
 444444SYTIME\$\$\$\$\$
 444444SYTIME\$\$\$\$\$
 444444SYTIME\$\$\$\$\$
 444444SYTIME\$\$\$\$\$

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

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 phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Startup In Green.
6. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlap.
7. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
8. The cabinet and controller are part of the Salisbury Signal System.

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	22,23	NU	NU	41,42	NU	42	51	62,63	NU	NU	81,82	NU	61	NU	51	NU	NU
RED		128			101		*		134			107						
YELLOW		129			102				135			108						
GREEN		130			103				136			109						
RED ARROW													A121				A114	
YELLOW ARROW									132				A122				A115	
FLASHING YELLOW ARROW													A123				A116	
GREEN ARROW								133	133									

NU = Not Used

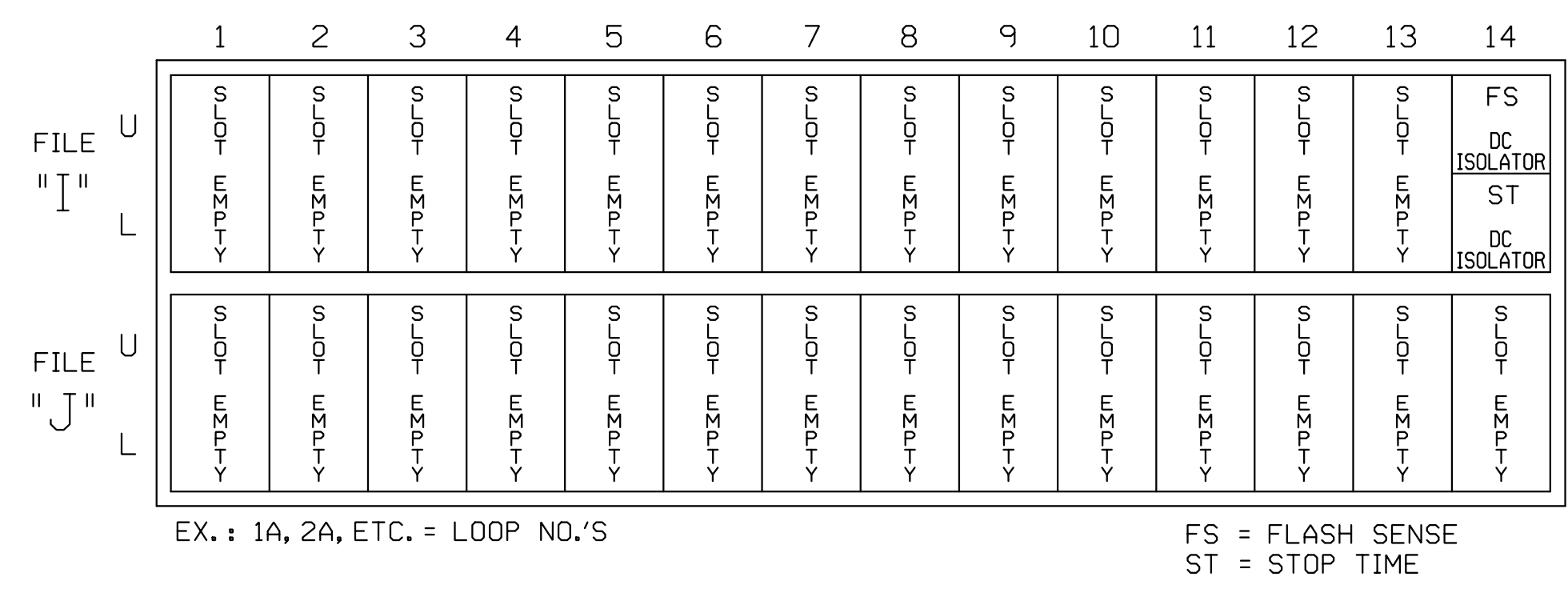
* Denotes install load resistor. See load resistor installation detail this sheet.
 ★ See pictorial of head wiring in detail this sheet.

EQUIPMENT INFORMATION

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

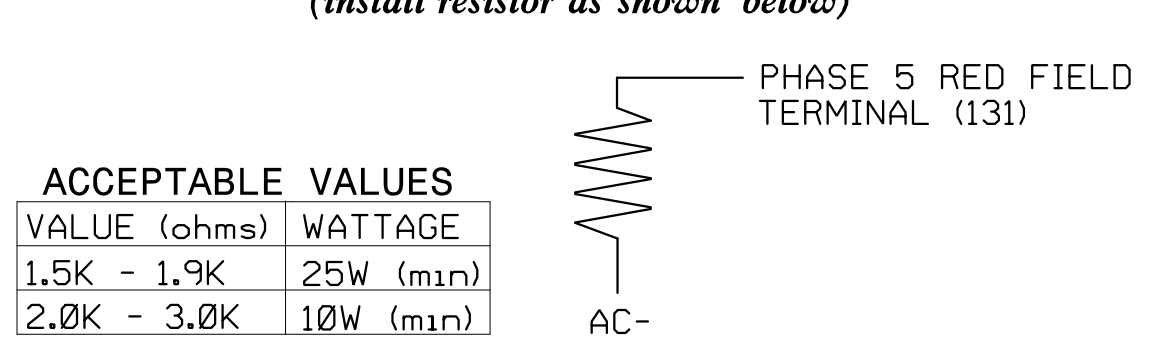
INPUT FILE POSITION LAYOUT

(front view)



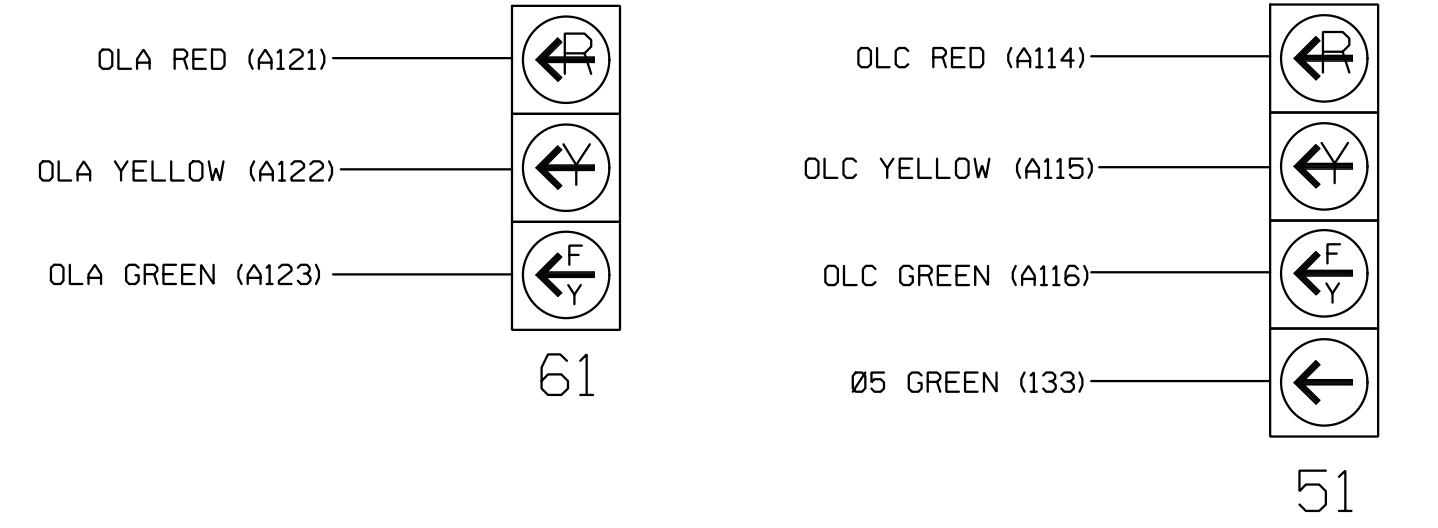
LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

1. The sequence display for signal head 51 requires special logic programming. See sheet 2 for programming instructions.

VIDEO 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: 09-0992T
 DESIGNED: NOVEMBER 2021
 SEALED: 12/3/2021
 REVISED: N/A

Temporary Design
 Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

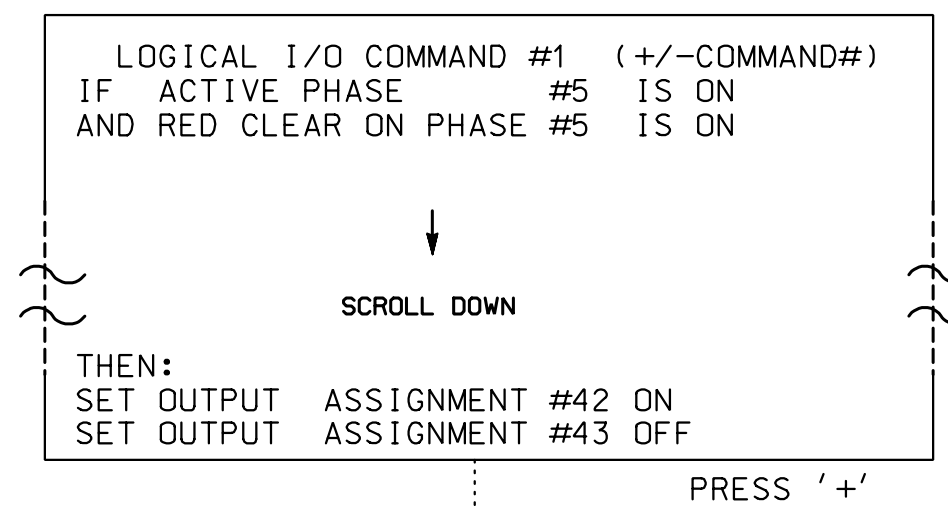
	PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC 875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442		SEAL
	SR 2528 (Julian Rd) at I-85/US 601 NB Ramps and SR 2761 (Truck Ave)		
	Division 9 Rowan County Salisbury PLAN DATE: November 2021 REVIEWED BY: B. Phillips PREPARED BY: Z. "Gavin" Teng REVIEWED BY:		
REVISIONS: _____ INIT. DATE _____		DocuSign ID: _____ SEAL Zhaolong Teng DATE: 12/3/2021 SIG. INVENTORY NO. 09-0992T	

Vertical barcode and identification text on the left margin.

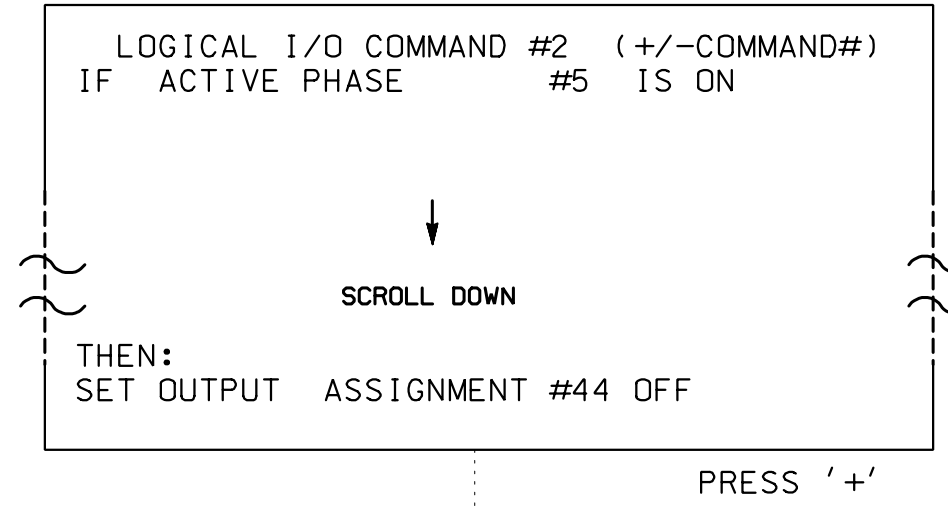
**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**

(program controller as shown below)

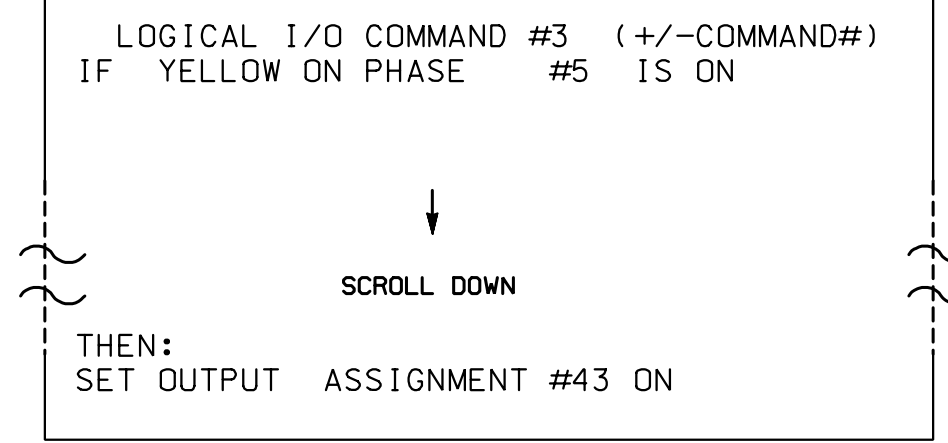
- FROM MAIN MENU PRESS '2' (PHASE CONTROL), THEN '1' (PHASE CONTROL FUNCTIONS). SCROLL TO THE BOTTOM OF THE MENU AND ENABLE ACT LOGIC COMMANDS 1, 2 AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



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



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



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

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: | 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
  
```

← NOTICE GREEN FLASH

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
  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
  
```

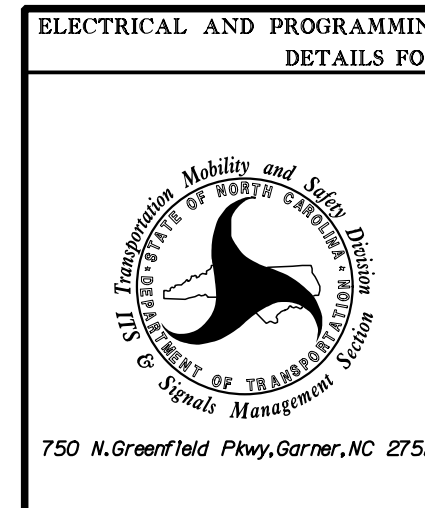
← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0992T
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Temporary Design
Electrical Detail - Sheet 2 of 2

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442



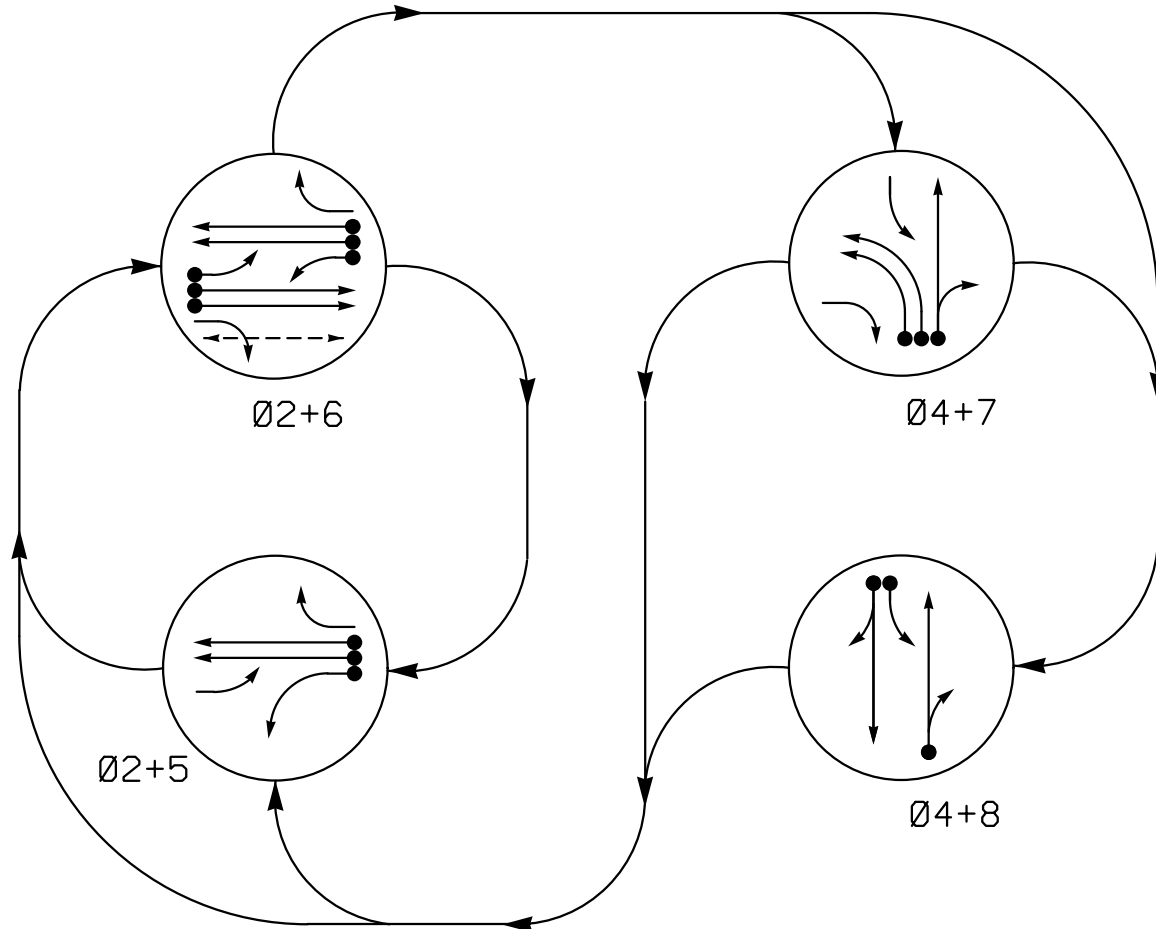
ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 2528 (Julian Rd) at I-85/US 601 NB Ramps and SR 2761 (Truck Ave)	
Division 9		Rowan County	Salisbury
PLAN DATE: November 2021	REVIEWED BY: B. Phillips	PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:
REVISIONS	INIT.	DATE	

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

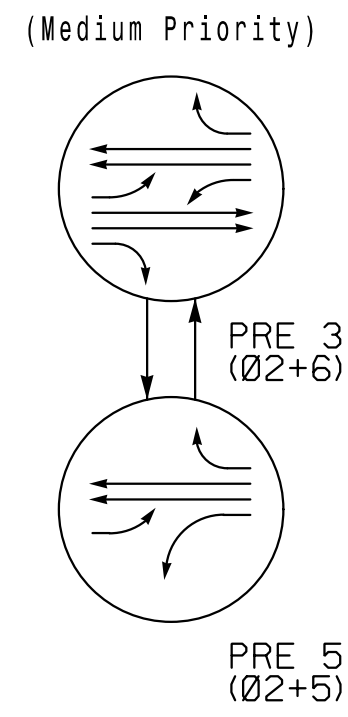
DocuSigned by:
Zhaolong Teng
12/3/2021
DATE
SIG. INVENTORY NO. 09-0992T

48884557 TIME 488845
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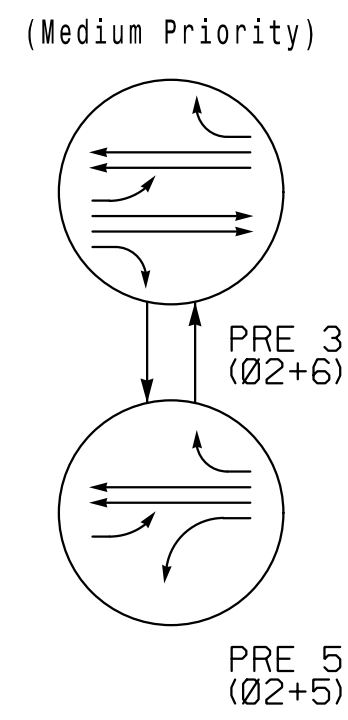
DEFAULT PHASING DIAGRAM



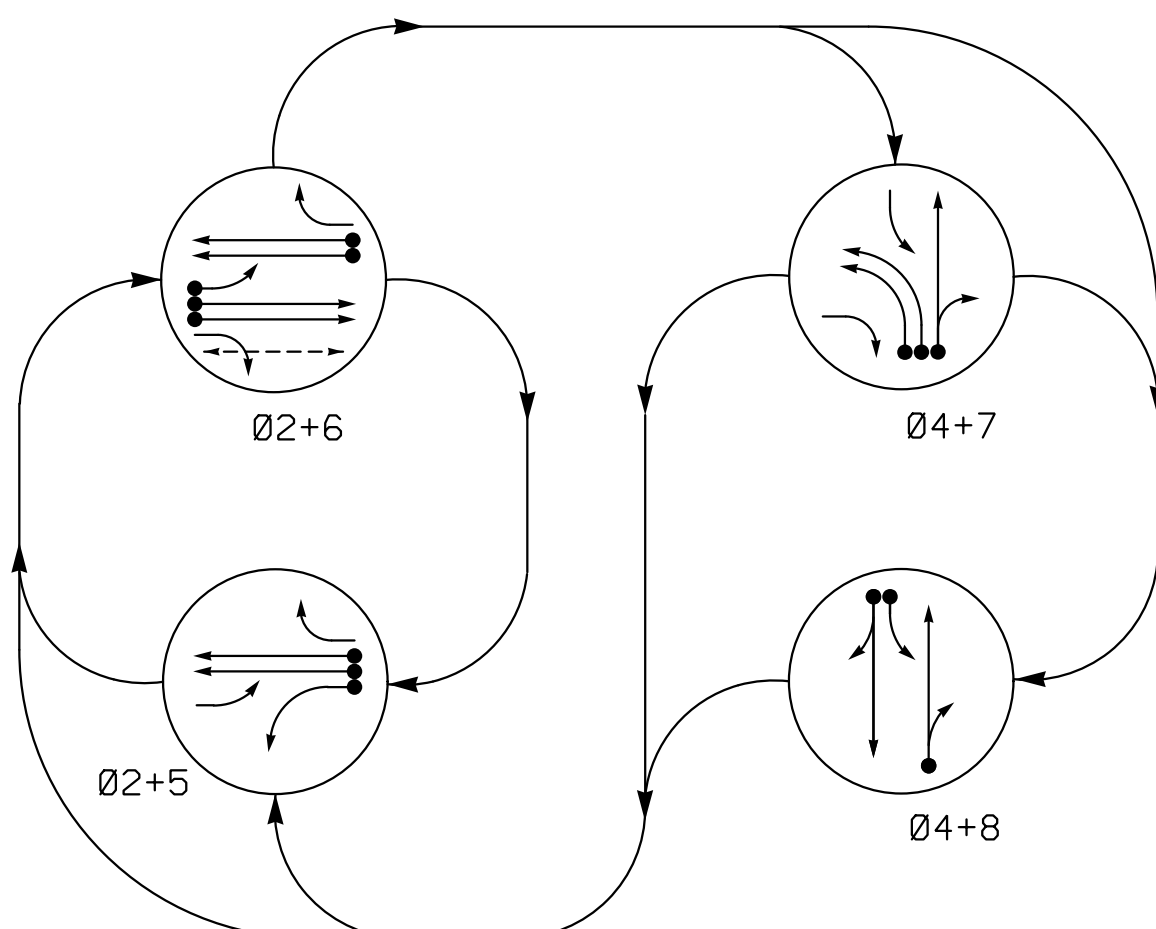
DEFAULT PHASING EV PREEMPT PHASES (Medium Priority)



ALTERNATE PHASING EV PREEMPT PHASES (Medium Priority)



ALTERNATE PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

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

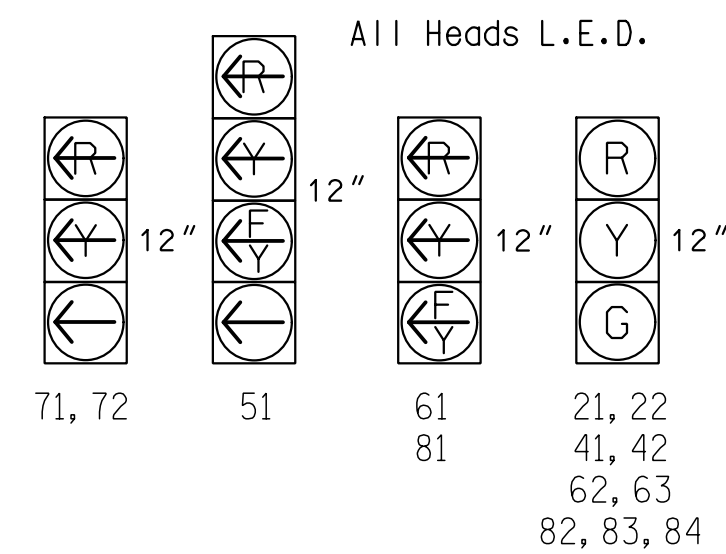
DEFAULT PHASING TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE, and timing values for various signal faces.

ALTERNATE PHASING TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE, and timing values for various signal faces.

SIGNAL FACE I.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

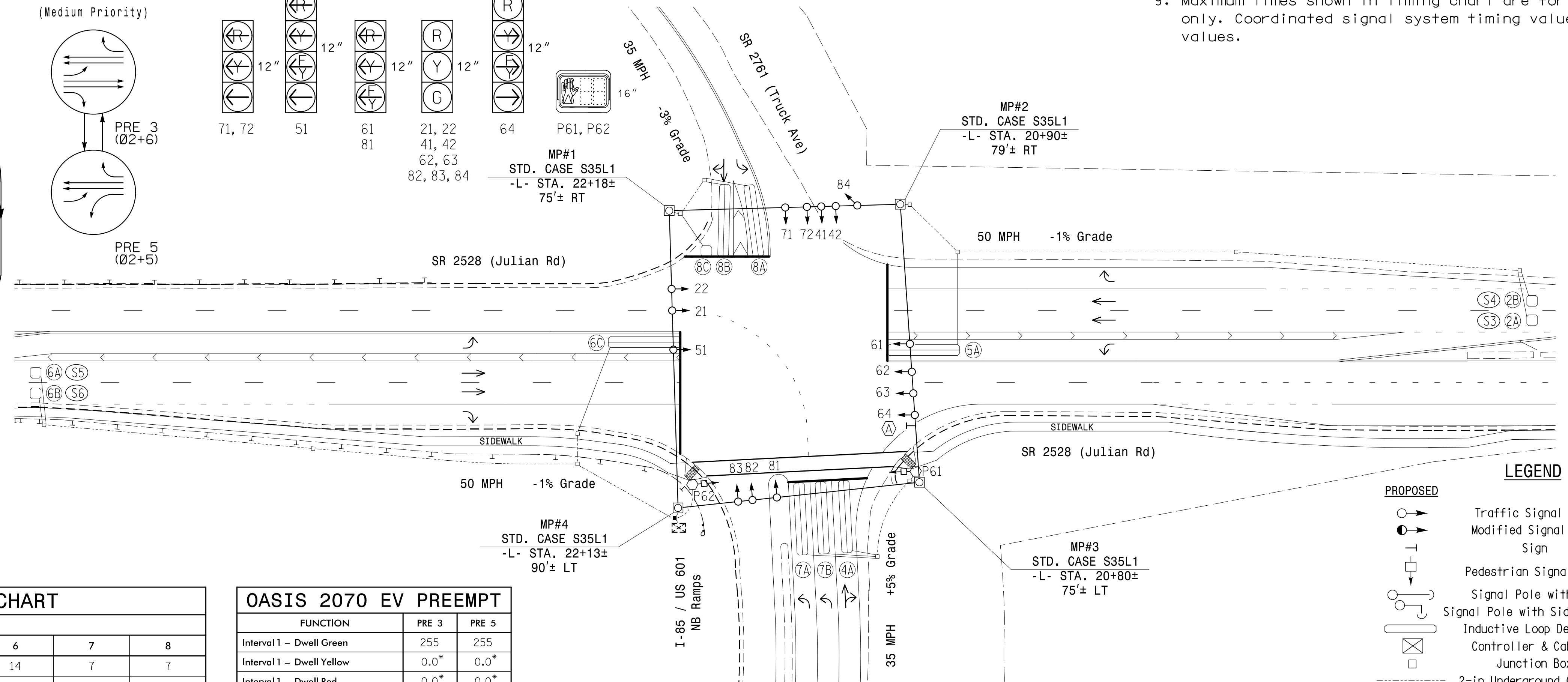
Table with columns: LOOP, SIZE (FT), DISTANCE FROM STOP LINE (FT), TURNS, NEW LOOP, PHASE, CALLING, EXTENSION, FULL TIME DELAY, STRETCH TIME, DELAY TIME, SYSTEM LOOP, NEW CARD.

* Reduce delay to 3 seconds during Alternate Phasing Operation.
Disable Phase Call for Loop during Alternate Phasing Operation.

4 Phase Fully Actuated with Emergency Vehicle Preemption (Salisbury Signal System)

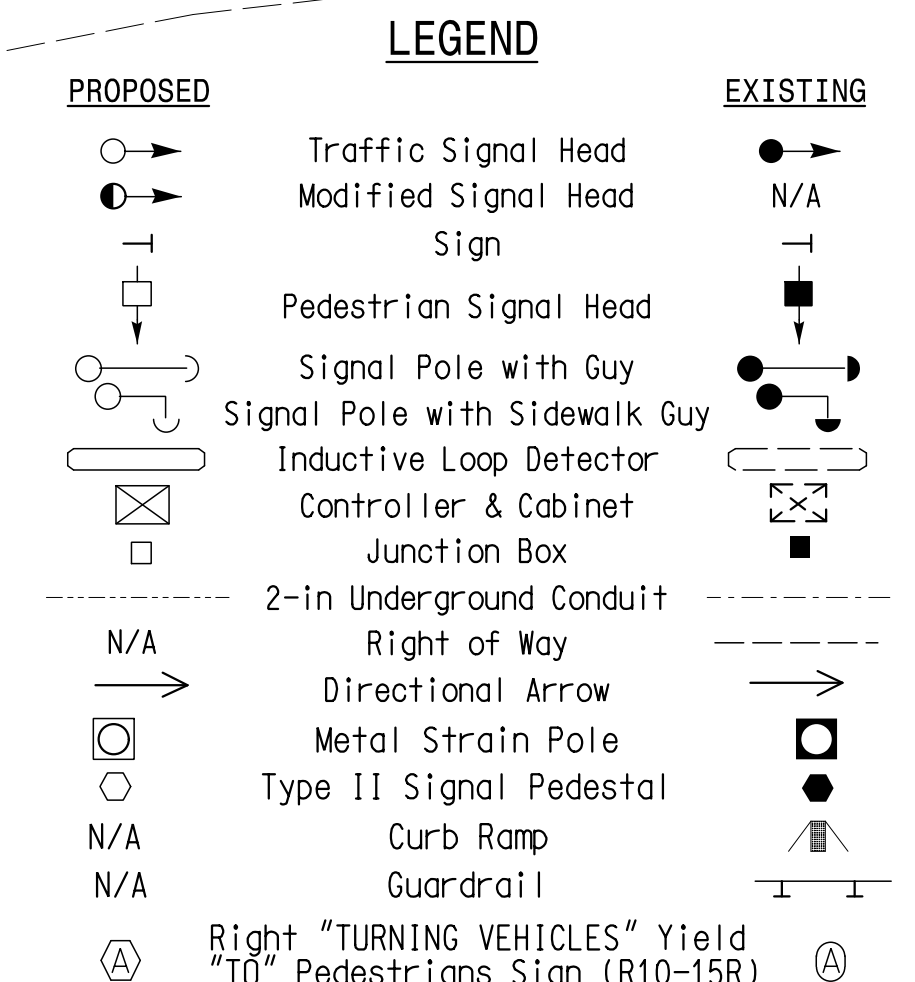
NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. 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. This intersection features a GPS Emergency Vehicle Preemption system.
8. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
9. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



OASIS 2070 TIMING CHART table with columns: FEATURE, PHASE (2, 4, 5, 6, 7, 8) and timing values.

OASIS 2070 EV PREEMPT table with columns: FUNCTION, PRE 3, PRE 5 and preempt timing values.



Signal Upgrade - Final Design

Project information block including: SR 2528 (Julian Rd) at I-85/US 601 NB Ramps and SR 2761 (Truck Ave), Division 9 Rowan County Salisbury, PLAN DATE: November 2021, REVIEWED BY: B. Phillips, PREPARED BY: Z. "Gavin" Teng, REVIEWED BY: [Signature], SCALE: 1" = 40', DATE: 12/3/2021.

Accelerate Engineering, PLLC logo and contact information: 875 Walnut Street, Suite 316 Cary, NC 27511. Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442

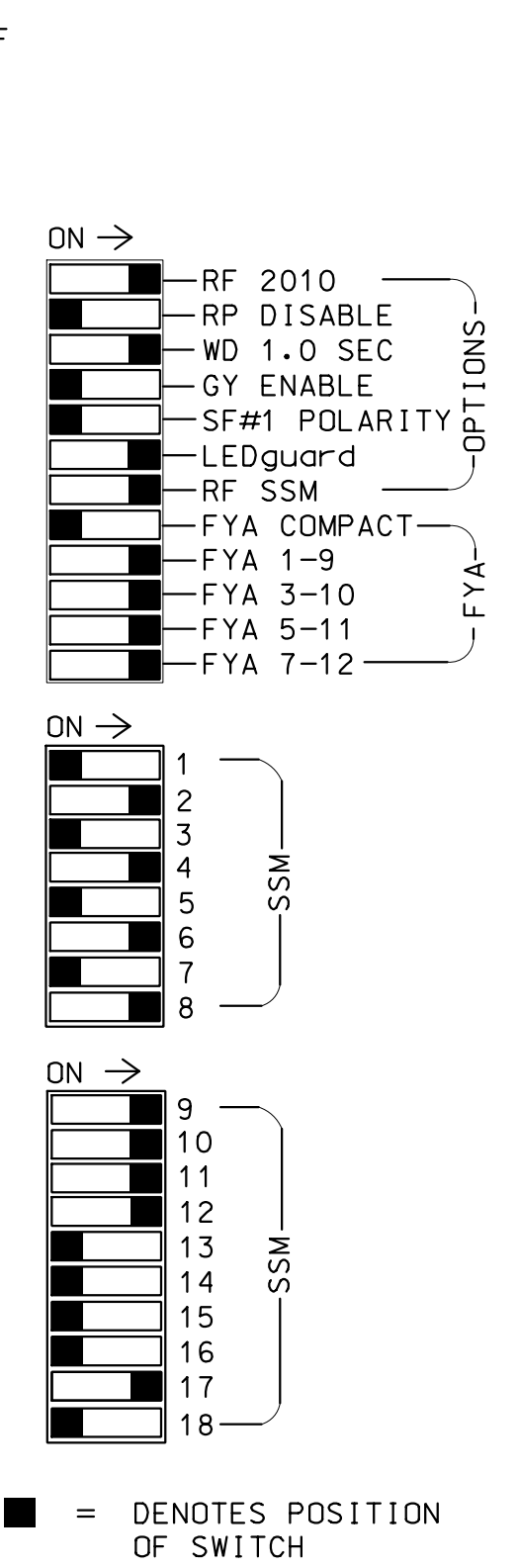
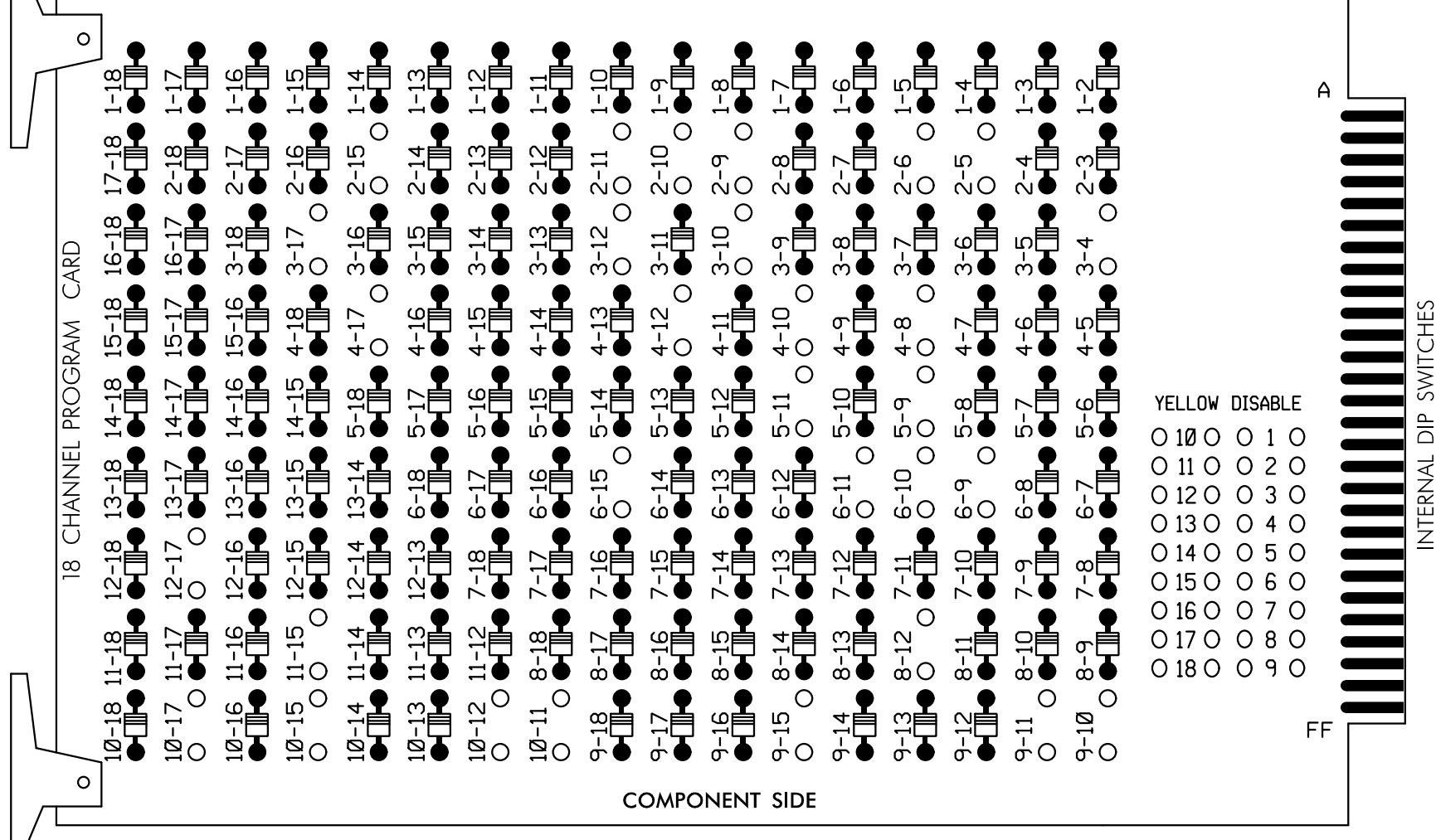
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

* Time defaults to time used for phase during normal operation
** Program Timing on Detection Unit

Professional Engineer seal for Zhaolong Teng, State of North Carolina, License No. 032179, dated 12/3/2021.

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown) REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-10, 2-11, 2-15, 3-4, 3-10, 3-12, 3-17, 4-8, 4-10, 4-12 4-17, 5-9, 5-11, 6-9, 6-10, 6-11, 6-15, 8-12, 9-10, 9-11, 9-15, 10-11, 10-12, 10-15, 10-17, 11-15 AND 12-17.



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

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 phases 4 and 8 for Dual Entry. 3. Enable Simultaneous Gap-Out for all Phases. 4. Program phases 2 and 6 for Variable Initial and Gap Reduction. 5. Program phases 2 and 6 for Startup In Green and Yellow Flash. 6. Program phase 6 for Startup Ped Call. 7. Program overlaps 1, 2 and 4 as Wag Overlaps. 8. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location. 9. The cabinet and controller are part of the Salisbury Signal System.

EQUIPMENT INFORMATION

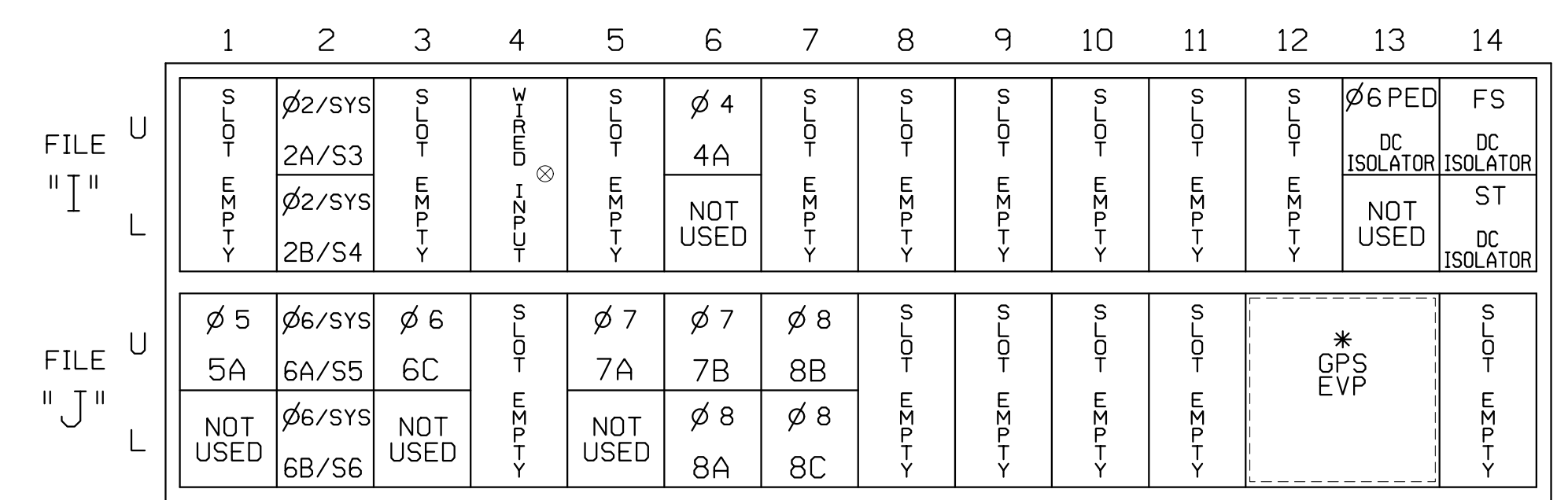
CONTROLLER.....2070 CABINET.....332 w/ AUX SOFTWARE.....ECONOLITE OASIS CABINET MOUNT.....BASE OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....S2,S4,S5,S7,S8,S9,S11 AUX S1,AUX S2,AUX S3,AUX S4,AUX S5 PHASES USED.....2,4,5,6,6PED,7,8 OVERLAP "A".....2 OVERLAP "B".....6+7 OVERLAP "C".....5+6 OVERLAP "D".....4 OVERLAP "E".....7 OVERLAP "G".....7

SIGNAL HEAD HOOK-UP CHART

Table with columns for LOAD SWITCH NO., S1-S12, AUX S1-S6, PHASE, and SIGNAL HEAD NO. (RED, YELLOW, GREEN, RED ARROW, YELLOW ARROW, FLASHING YELLOW ARROW, GREEN ARROW). Includes values like 128, 101, 134, 107, 129, 102, 135, 108, 130, 103, 136, 109, 118, 133, 119, 121.

NU = Not Used NC = Not Connected * 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)

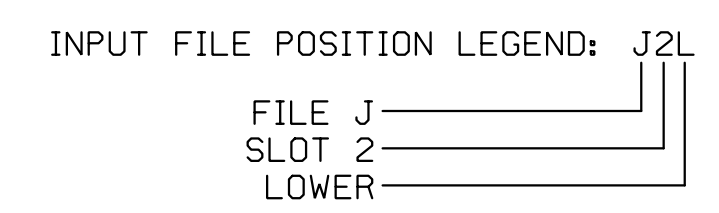


EX.: 1A, 2A, ETC. = LOOP NO.'S See GPS Preemption Installation Note Below * Wired Input - Do not populate slot with detector card FS = FLASH SENSE ST = STOP TIME

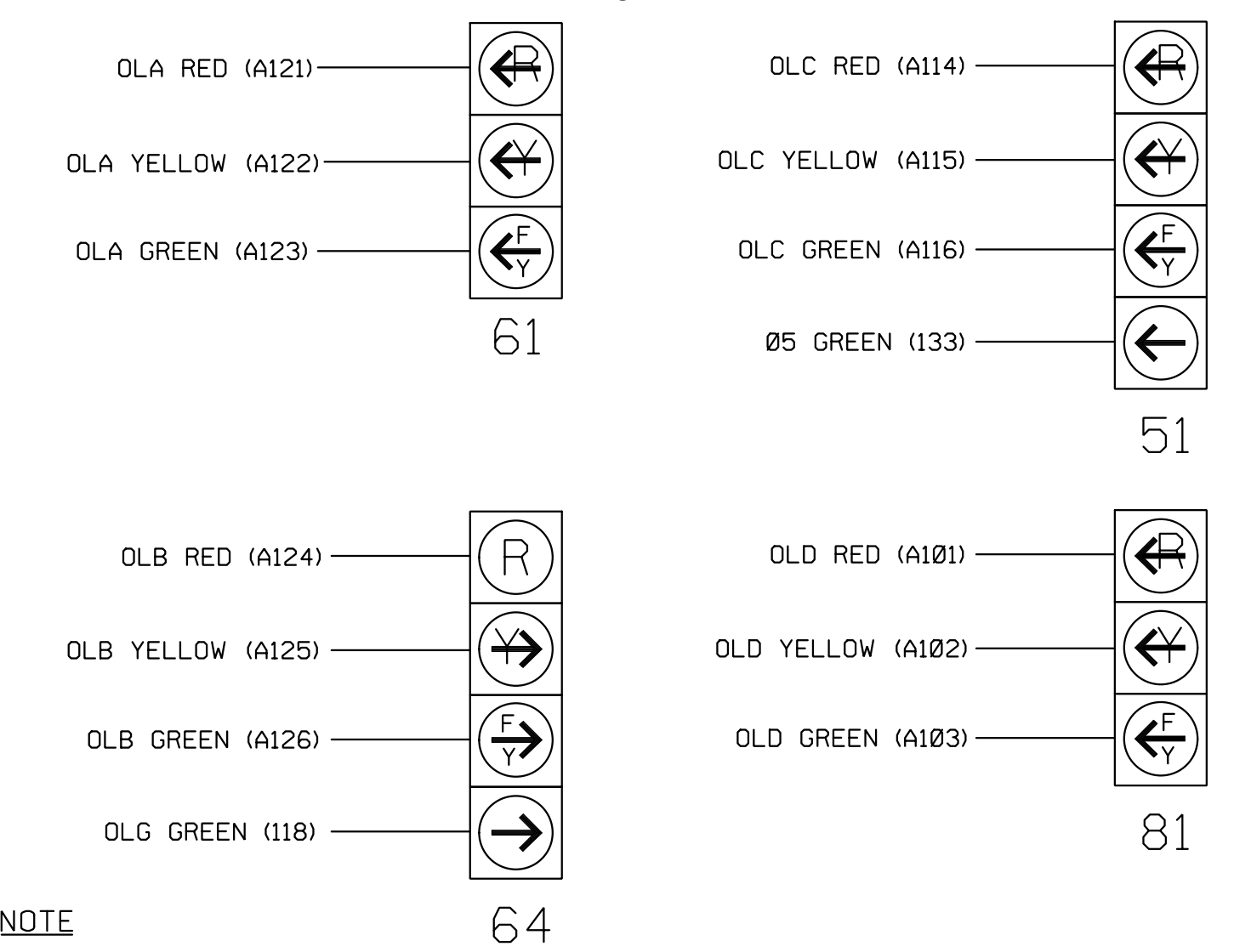
INPUT FILE CONNECTION & PROGRAMMING CHART

Table with columns: 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. Includes rows for 2A/S3, 2B/S4, 4A, 5A, 6A/S5, 6B/S6, 7A, 7B, 7C, 8A, 8B, 8C, PED PUSH BUTTONS, P61,P62.

1 Add jumper from J1-W to I4-W, on rear of input file. * See Input Page Assignment programming details on sheet 5.



FYA SIGNAL WIRING DETAIL (wire signal heads as shown)



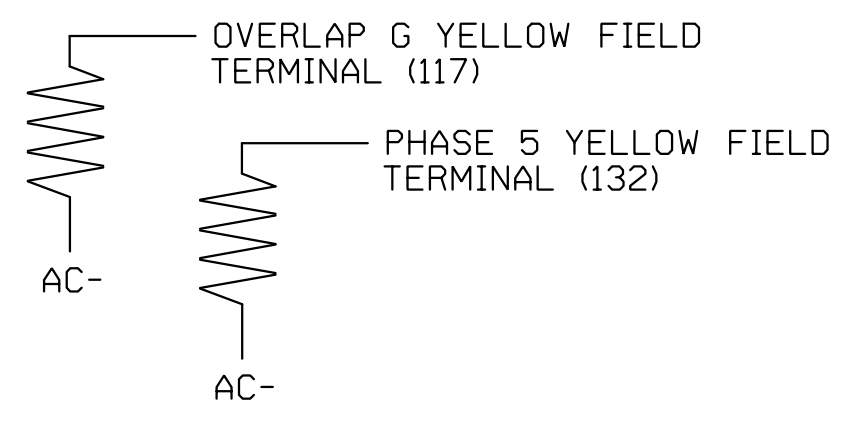
NOTE The sequence display for signal heads 51 and 64 requires special logic programming. See sheet 4 for programming instructions.

SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

LOAD RESISTOR INSTALLATION DETAIL (install resistors as shown)

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



Final Design Electrical Detail - Sheet 1 of 6

Professional Engineer seal for Zhaolong Teng, Division 9, Rowan County, Salisbury. Includes project details: SR 2528 (Julian Rd) at I-85/US 601 NB Ramps and SR 2761 (Truck Ave). Prepared by Z. Gavin Teng, reviewed by B. Phillips. Date: 12/3/2021.

PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC 875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442

Vertical text on the left edge of the page.

OUTPUT PHASE ASSIGNMENT FOR LOADSWITCH AUX S3 (OVERLAP E)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), WITH CURSOR IN 'OUTPUT ASSIGNMENT #' POSITION, ENTER '45'

Terminal screen display for LOADSWITCH AUX S3 RED. Fields include: PAGE:1, C1 PIN:91, NOT ENABLED, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH), and a list of output options like VEHICLE PHASE, PEDESTRIAN PHASE, etc.

LOADSWITCH AUX S3 RED

THE NOT ENABLED ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

Terminal screen display for selecting vehicle overlap and color for output 91: PAGE:1, C1 PIN:91, NOT ENABLED, SELECT VEHICLE OVERLAP (A=1, P=16), SELECT COLOR (0=RED,1=YEL,2=GRN).

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

Terminal screen display for LOADSWITCH AUX S3 RED with 'VEHICLE OVERLAP' assigned: PAGE:1, C1 PIN:91, VEHICLE OVERLAP, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH).

PRESS "+" KEY FOR OUTPUT 46

Terminal screen display for LOADSWITCH AUX S3 GREEN. Fields include: PAGE:1, C1 PIN:93, NOT ENABLED, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH), and a list of output options.

LOADSWITCH AUX S3 GREEN

THE NOT ENABLED ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

Terminal screen display for selecting vehicle overlap and color for output 93: PAGE:1, C1 PIN:93, NOT ENABLED, SELECT VEHICLE OVERLAP (A=1, P=16), SELECT COLOR (0=RED,1=YEL,2=GRN).

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

Terminal screen display for LOADSWITCH AUX S3 GREEN with 'VEHICLE OVERLAP' assigned: PAGE:1, C1 PIN:93, VEHICLE OVERLAP, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH).

PRESS "+" KEY TO ADVANCE TO OUTPUT 54

Terminal screen display for LOADSWITCH AUX S3 YELLOW. Fields include: PAGE:1, C1 PIN:101, CONTROLLER FLASH, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH), and a list of output options.

LOADSWITCH AUX S3 YELLOW

THE CONTROLLER FLASH ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

Terminal screen display for selecting vehicle overlap and color for output 101: PAGE:1, C1 PIN:101, CONTROLLER FLASH, SELECT VEHICLE OVERLAP (A=1, P=16), SELECT COLOR (0=RED,1=YEL,2=GRN).

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

Terminal screen display for LOADSWITCH AUX S3 YELLOW with 'VEHICLE OVERLAP' assigned: PAGE:1, C1 PIN:101, VEHICLE OVERLAP, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH).

OUTPUT PROGRAMMING FOR LOADSWITCH AUX S3 COMPLETE

OUTPUT PHASE REASSIGNMENT FOR LOADSWITCH S4 (REASSIGN AS OVERLAP G)

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), WITH CURSOR IN 'OUTPUT ASSIGNMENT #' POSITION, ENTER '6'

Terminal screen display for LOADSWITCH S4 RED. Fields include: PAGE:1, C1 PIN:7, VEHICLE PHASE, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH), and a list of output options.

LOADSWITCH S4 RED

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

Terminal screen display for selecting vehicle overlap and color for output 7: PAGE:1, C1 PIN:7, VEHICLE PHASE, SELECT VEHICLE OVERLAP (A=1, P=16), SELECT COLOR (0=RED,1=YEL,2=GRN).

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

Terminal screen display for LOADSWITCH S4 RED with 'VEHICLE OVERLAP' assigned: PAGE:1, C1 PIN:7, VEHICLE OVERLAP, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH).

PRESS "+" KEY FOR OUTPUT 7

Terminal screen display for LOADSWITCH S4 YELLOW. Fields include: PAGE:1, C1 PIN:8, VEHICLE PHASE, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH), and a list of output options.

LOADSWITCH S4 YELLOW

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

Terminal screen display for selecting vehicle overlap and color for output 8: PAGE:1, C1 PIN:8, VEHICLE PHASE, SELECT VEHICLE OVERLAP (A=1, P=16), SELECT COLOR (0=RED,1=YEL,2=GRN).

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

Terminal screen display for LOADSWITCH S4 YELLOW with 'VEHICLE OVERLAP' assigned: PAGE:1, C1 PIN:8, VEHICLE OVERLAP, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH).

PRESS "+" KEY FOR OUTPUT 8

Terminal screen display for LOADSWITCH S4 GREEN. Fields include: PAGE:1, C1 PIN:9, VEHICLE PHASE, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH), and a list of output options.

LOADSWITCH S4 GREEN

THE VEHICLE PHASE ENTRY IS EXISTING BY DEFAULT: ENTER A 'Y' IN THE VEHICLE OVERLAP FIELD.

Terminal screen display for selecting vehicle overlap and color for output 9: PAGE:1, C1 PIN:9, VEHICLE PHASE, SELECT VEHICLE OVERLAP (A=1, P=16), SELECT COLOR (0=RED,1=YEL,2=GRN).

WHEN A 'Y' IS ENTERED FOR 'VEHICLE OVERLAP' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTTING DATA, THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'VEHICLE OVERLAP' AS SHOWN BELOW.

Terminal screen display for LOADSWITCH S4 GREEN with 'VEHICLE OVERLAP' assigned: PAGE:1, C1 PIN:9, VEHICLE OVERLAP, OUTPUT ASSIGNMENT #, FREQUENCY (0=DEFAULT) (0-25.5 HZ), DUTY CYCLE (0=DEFAULT) (0-100%), MODE (0=SOLID,1=FLASH).

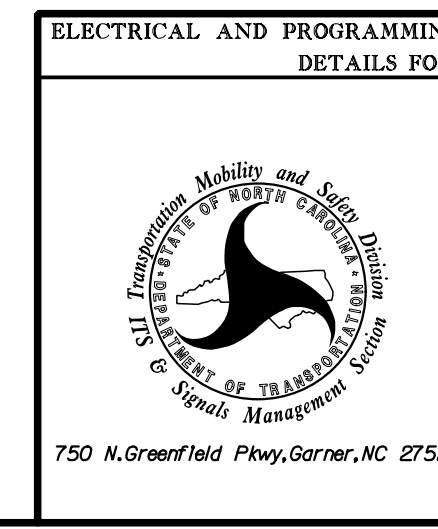
OUTPUT PROGRAMMING FOR LOADSWITCH S4 COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0992 DESIGNED: NOVEMBER 2021 SEALED: 12/3/2021 REVISED: N/A

PREPARED IN THE OFFICE OF:

Accelerate Engineering, PLLC 875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442

Final Design Electrical Detail - Sheet 2 of 6



Project details form for SR 2528 (Julian Rd) at I-85/US 601 NB Ramps and SR 2761 (Truck Ave). Includes fields for Division 9, Rowan County, Salisbury, and various dates and signatures.

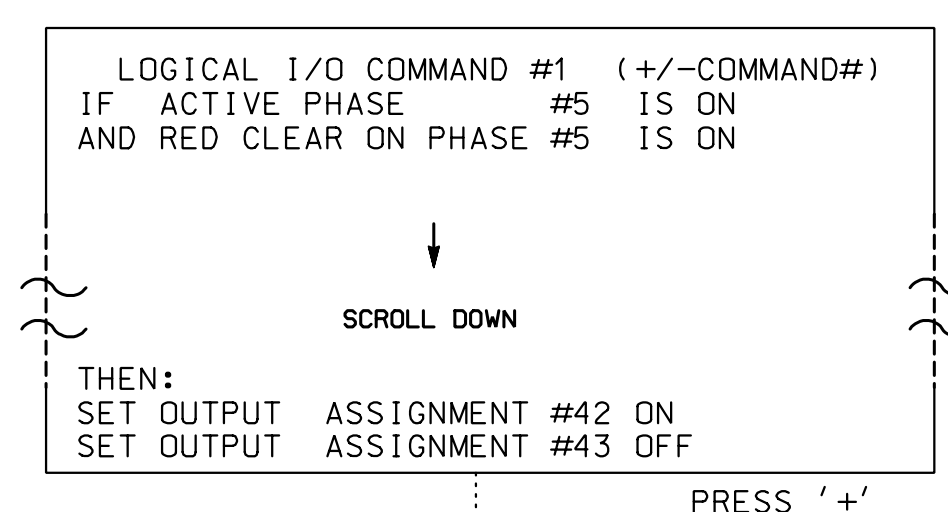
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Professional Engineer seal for Zhaolong Teng, State of North Carolina, License No. 032179, dated 12/3/2021.

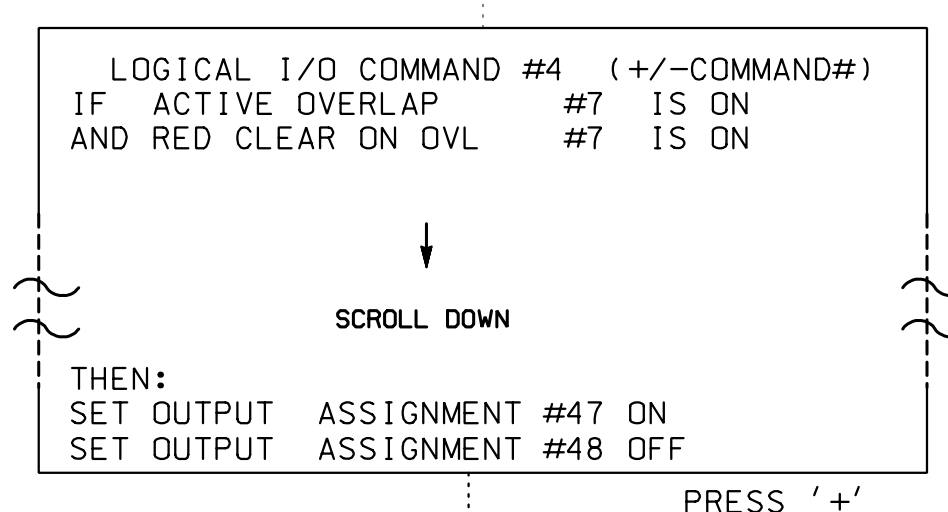
LOGICAL I/O PROCESSOR PROGRAMMING DETAIL TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(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).

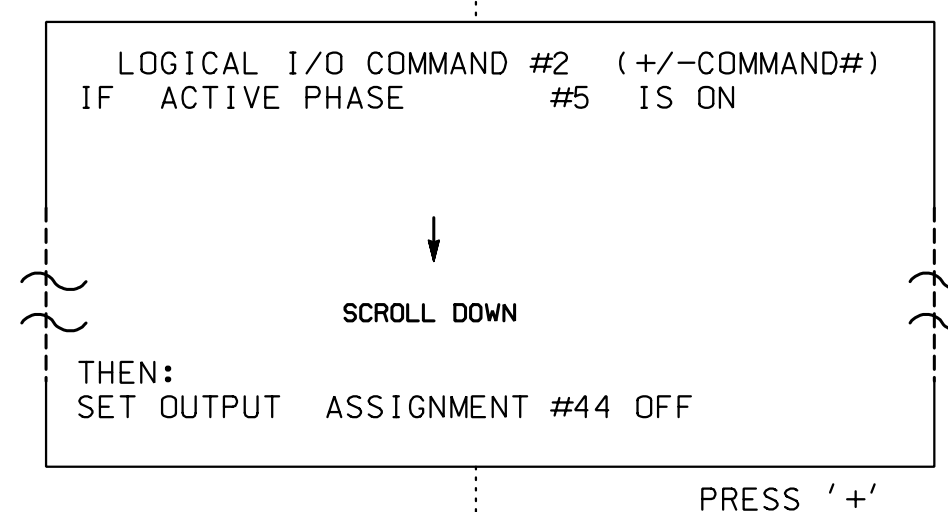


NOTE: LOGIC FOR PHASE 5 RED CLEAR WHEN TRANSITIONING FROM PHASE 5 TO PHASE 6 (HEAD 51).

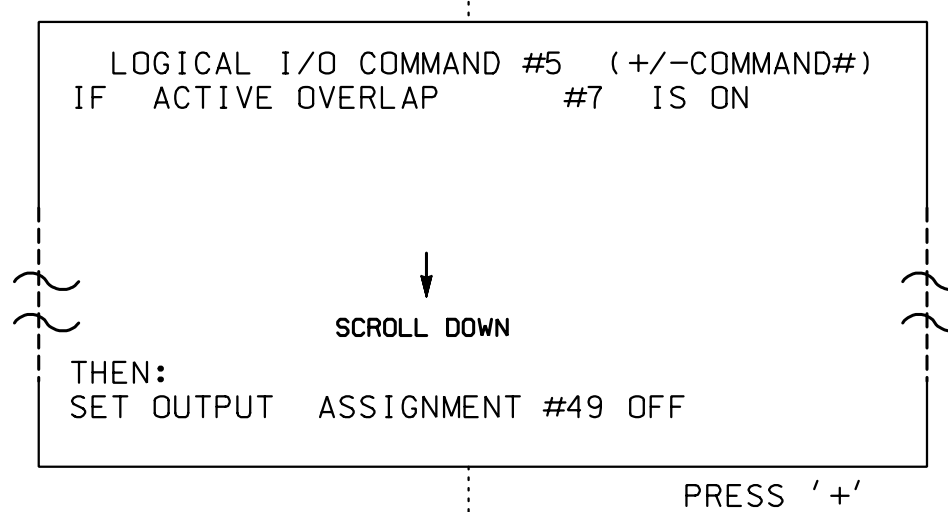


NOTE: LOGIC FOR PHASE 7 RED CLEAR WHEN TRANSITIONING FROM PHASE 7 (HEAD 64).

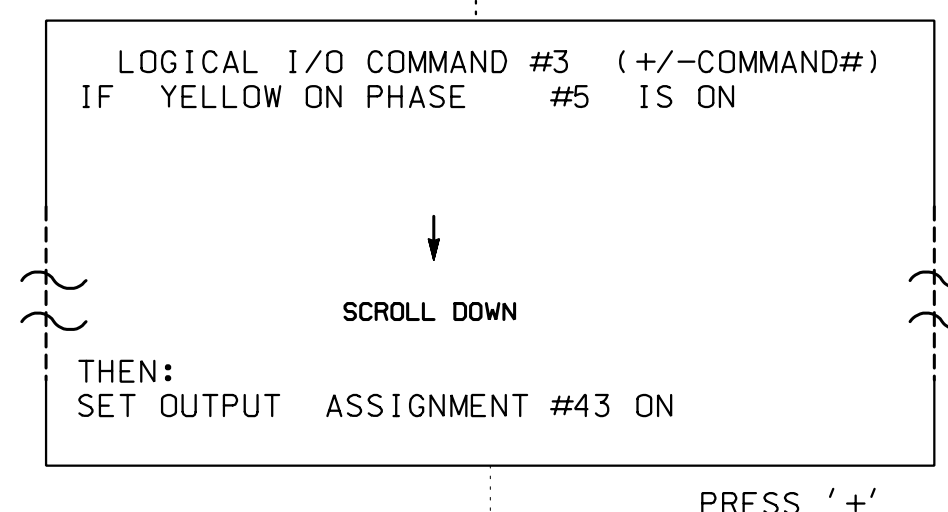
OUTPUT REFERENCE SCHEDULE	
USE TO INTERPRET LOGIC PROCESSOR	
OUTPUT 42 =	Overlap C Red
OUTPUT 43 =	Overlap C Yellow
OUTPUT 44 =	Overlap C Green
OUTPUT 47 =	Overlap B Red
OUTPUT 48 =	Overlap B Yellow
OUTPUT 49 =	Overlap B Green



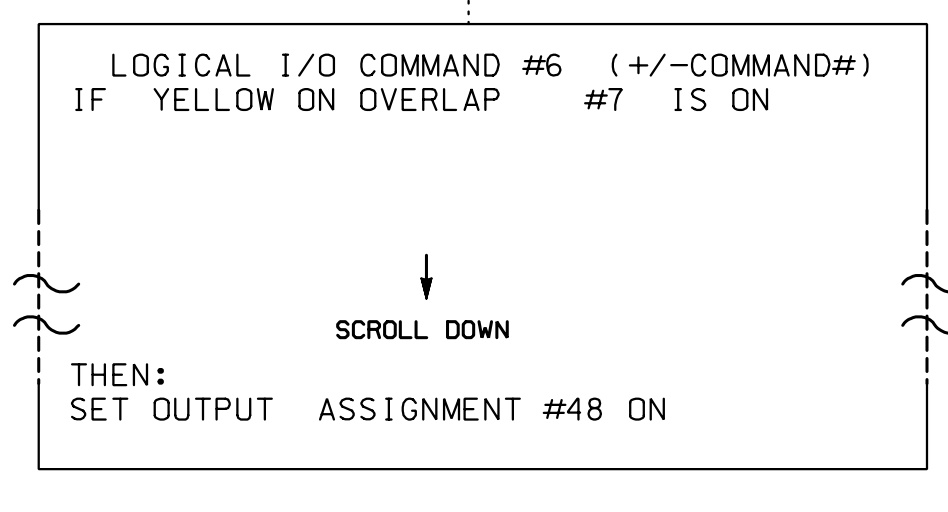
NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 5 (HEAD 51).



NOTE: LOGIC FOR SWITCHING FLASHING YELLOW ARROW "OFF" DURING PHASE 7 (HEAD 64).



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



NOTE: LOGIC FOR YELLOW ARROW CLEARANCE FROM PHASE 7 (HEAD 64).

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

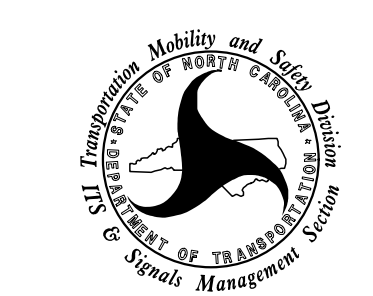
THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0992
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Final Design
Electrical Detail - Sheet 4 of 6

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DOWNSH\$\$\$
 \$\$\$FILENAME\$\$\$

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442



750 N. Greenfield Pkwy, Garner, NC 27529

SR 2528 (Julian Rd)			
at			
I-85/US 601 NB Ramps and			
SR 2761 (Truck Ave)			
Division 9	Rowan County	Salisbury	
PLAN DATE: November 2021	REVIEWED BY: B. Phillips		
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:		
REVISIONS	INIT.	DATE	

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
032179
ZHAOLONG TENG

DocuSigned by:
Zhaolong Teng
12/3/2021
DATE

SIG. INVENTORY NO. 09-0992

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.

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

PREEMPTION #3	SETTINGS (NEXT:1-10)
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

EXIT CALLS

OPTIONS

PRIORITY (Y/N TO SELECT)MED

DELAY TIMER (0-255 SEC)0

MIN GREEN BEFORE PRE (0= DEFAULT)....1

PED CLEAR BEFORE PRE (0= DEFAULT)....0*

YELLOW CLEAR BEFORE PRE (0= DEFAULT).....0.0

RED CLEAR BEFORE PRE (0= DEFAULT).....0.0

DWELL MIN TIMER (0-255 SEC)7

DWELL MAX TIMER (0=OFF,1-255MIN) ...2

DWELL HOLD-OVER TIMER (0-255)0

LATCH CALL?N

LINK TO NEXT PREEMPT?N

ENABLE BACKUP PROTECTION?N

HOLD CLEAR 1 PHASES DURING DELAY? ...N

FAST GREEN FLASH DWELL PHASES?N

PED CLEARANCE THROUGH YELLOW?Y

INHIBIT OVERLAP GREEN EXTENSION? ...N

SERVICE DURING SOFTWARE FLASH?N

REST IN RED DURING DWELL INTERVAL? ..N

FLASH DWELL INTERVAL?N

ALLOW PEDS IN DWELL INTERVAL?N

RE-TIME DWELL INTERVAL?N

OVERLAPS: ABCDEFGHIJKLMNPO

DWELL INT FLASH YELLOW

OMIT OVERLAPS:

PRESS 'NEXT' TWICE

PREEMPTION #5	SETTINGS (NEXT:1-10)
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

EXIT CALLS

OPTIONS

PRIORITY (Y/N TO SELECT)MED

DELAY TIMER (0-255 SEC)0

MIN GREEN BEFORE PRE (0= DEFAULT)....1

PED CLEAR BEFORE PRE (0= DEFAULT)....0*

YELLOW CLEAR BEFORE PRE (0= DEFAULT).....0.0

RED CLEAR BEFORE PRE (0= DEFAULT).....0.0

DWELL MIN TIMER (0-255 SEC)7

DWELL MAX TIMER (0=OFF,1-255MIN) ...2

DWELL HOLD-OVER TIMER (0-255)0

LATCH CALL?N

LINK TO NEXT PREEMPT?N

ENABLE BACKUP PROTECTION?N

HOLD CLEAR 1 PHASES DURING DELAY? ...N

FAST GREEN FLASH DWELL PHASES?N

PED CLEARANCE THROUGH YELLOW?Y

INHIBIT OVERLAP GREEN EXTENSION? ...N

SERVICE DURING SOFTWARE FLASH?N

REST IN RED DURING DWELL INTERVAL? ..N

FLASH DWELL INTERVAL?N

ALLOW PEDS IN DWELL INTERVAL?N

RE-TIME DWELL INTERVAL?N

OVERLAPS: ABCDEFGHIJKLMNPO

DWELL INT FLASH YELLOW

OMIT OVERLAPS:

PROGRAMMING COMPLETE

Program extend time on detector unit for 2.0 seconds.

* Time defaults to time used for phase during normal operation.

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

PHASING	INPUTS PAGE	OVERLAPS PAGE
ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	1
ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

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

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for head 51 to run protected turns only.

INPUTS PAGE 2: 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: 09-0992
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Final Design
Electrical Detail - Sheet 6 of 6

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 2528 (Julian Rd)
at
I-85/US 601 NB Ramps and
SR 2761 (Truck Ave)

Division 9 Rowan County Salisbury

PLAN DATE: November 2021 REVIEWED BY: B. Phillips

PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER

SEAL 032179

ZHAOLONG TENG

DocuSigned by: Zhaolong Teng 12/3/2021

SIGNATURE DATE

SIG. INVENTORY NO. 09-0992

PREPARED IN THE OFFICE OF:

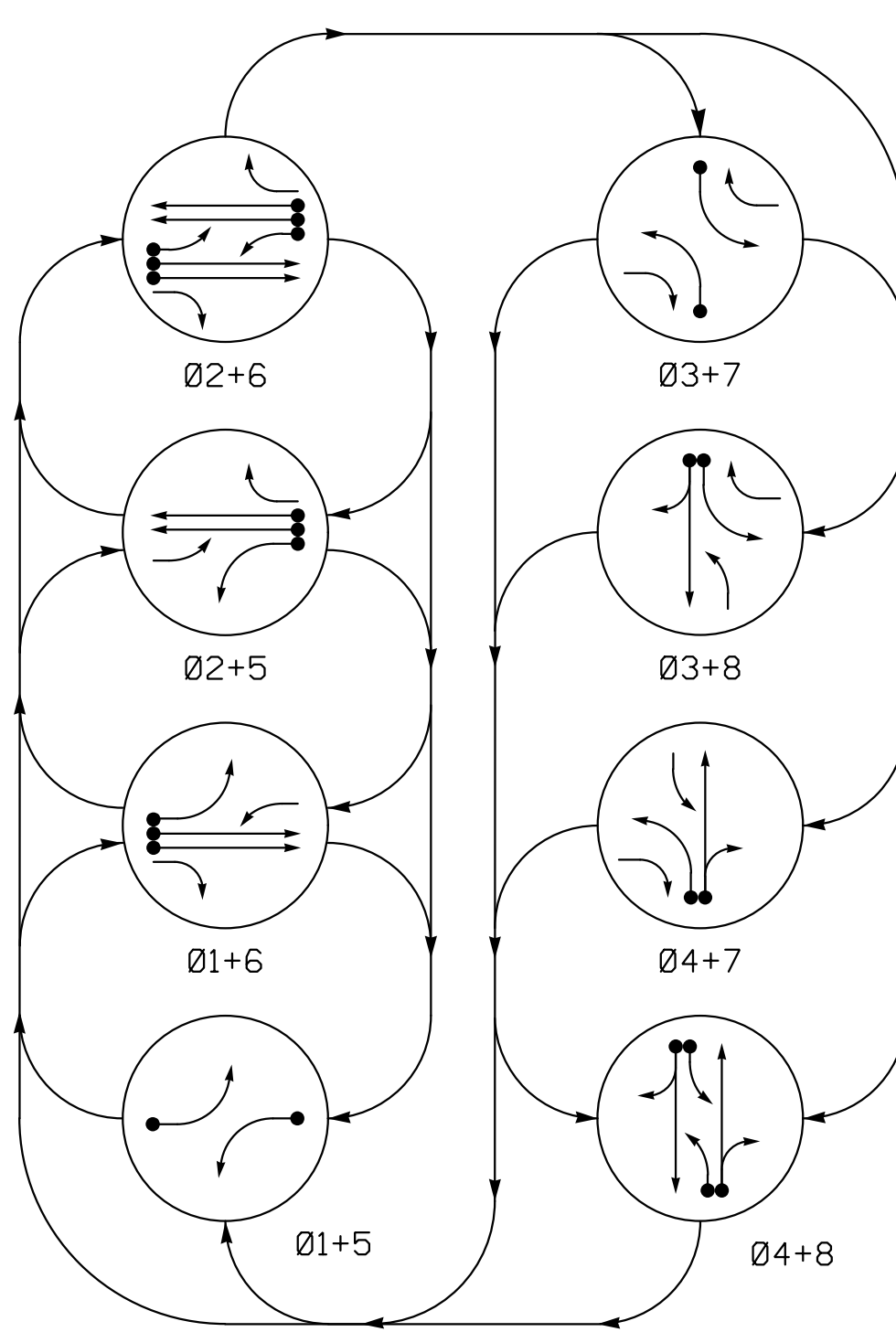
AE Accelerate Engineering, PLLC

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Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442



750 N. Greenfield Pkwy, Garner, NC 27529

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

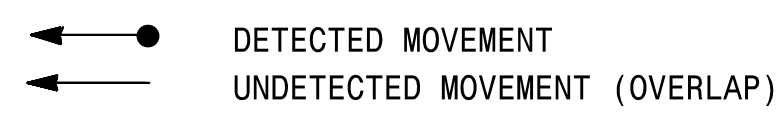
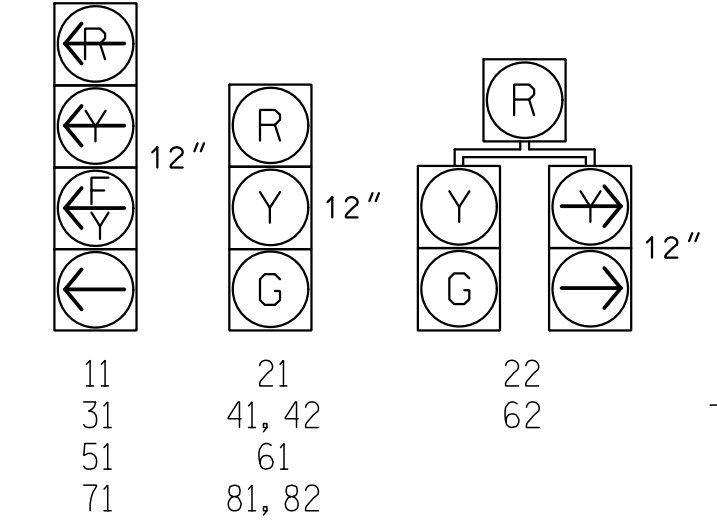


TABLE OF OPERATION

SIGNAL FACE	PHASE							
	Ø 1 + 5	Ø 1 + 6	Ø 2 + 5	Ø 2 + 6	Ø 3 + 7	Ø 3 + 8	Ø 4 + 7	Ø 4 + 8
11	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	Y
22	R	R	G	G	R	R	R	Y
31	←	←	←	←	←	←	←	←
41, 42	R	R	R	R	R	R	G	G
51	←	←	←	←	←	←	←	←
61	R	G	R	G	R	R	R	Y
62	R	G	R	G	R	R	R	Y
71	←	←	←	←	←	←	←	←
81, 82	R	R	R	R	R	G	R	G

SIGNAL FACE I.D.

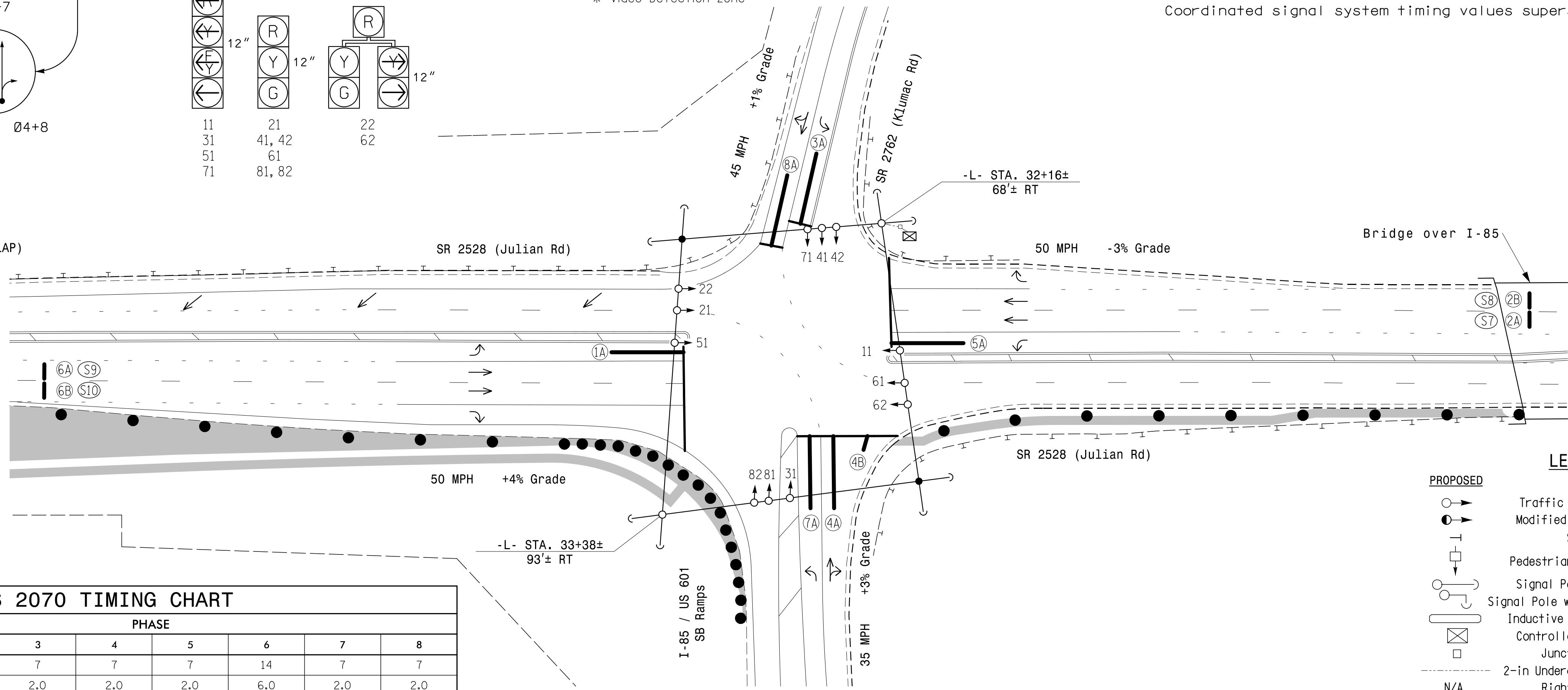
All Heads L.E.D.



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

ZONE	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD	
					PHASE	CALLING EXTENSION	STRETCH TIME	DELAY TIME			
1A	6X40	0	*	*	1	Y	Y	-	15	-	*
2A/S7	6X6	355	*	*	2	Y	Y	-	3	-	*
2B/S8	6X6	355	*	*	2	Y	Y	-	-	-	Y
3A	6X40	0	*	*	3	Y	Y	-	15	-	*
4A	6X40	0	*	*	4	Y	Y	-	10	-	*
4B	6X6	0	*	*	4	Y	Y	-	15	-	*
5A	6X40	0	*	*	5	Y	Y	-	15	-	*
6A/S9	6X6	355	*	*	6	Y	Y	-	-	-	Y
6B/S10	6X6	355	*	*	6	Y	Y	-	-	-	Y
7A	6X40	0	*	*	7	Y	Y	-	15	-	*
8A	6X40	0	*	*	8	Y	Y	-	10	-	*

* Video Detection Zone



8 Phase Fully Actuated (Salisbury Signal System)

NOTES

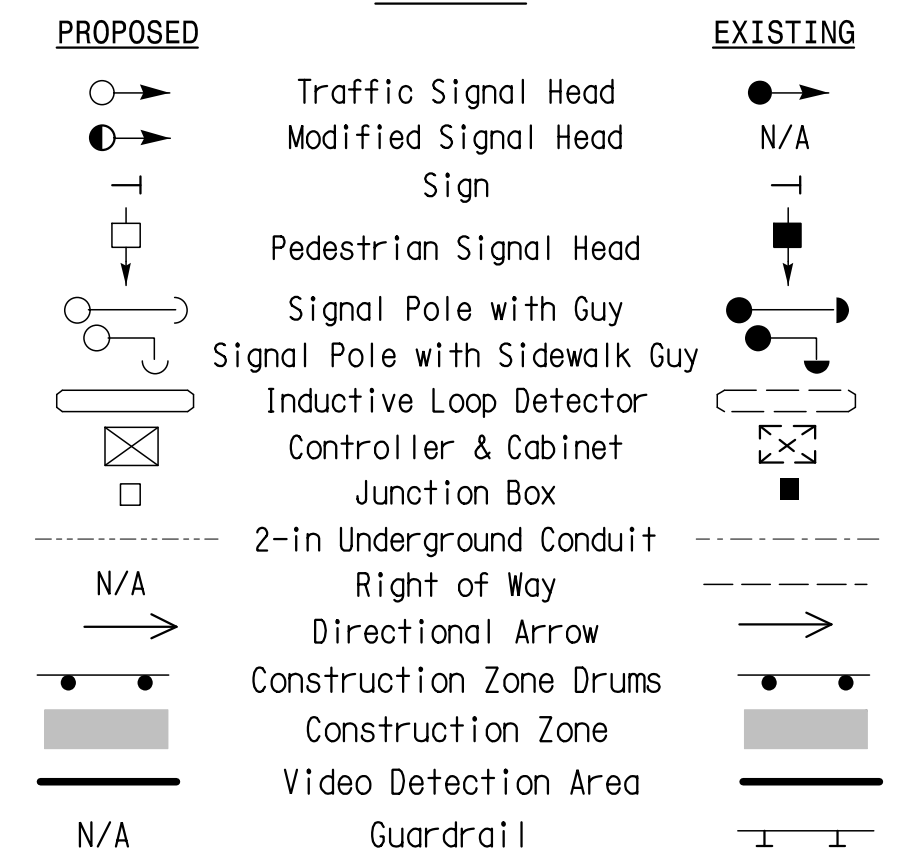
- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Install a video imaging loop emulator detection system to maintain vehicle detection during construction. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to obtain optimum detection zones as shown.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1 *	7	14	7	7	7	14	7	7
Extension 1 *	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1 *	25	90	20	35	25	90	20	35
Yellow Clearance	3.0	5.1	3.0	4.4	3.0	5.1	3.0	4.4
Red Clearance	2.9	1.4	3.1	2.2	2.9	1.4	2.9	2.2
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation *	-	1.5	-	-	-	1.5	-	-
Max Variable Initial *	-	40	-	-	-	40	-	-
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.

LEGEND



(TMP Phase I)
Signal Upgrade - Temporary Design 1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
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Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442

SR 2528 (Julian Rd) at I-85/US 601 SB Ramps and SR 2762 (Klumac Rd)

Division 9 Rowan County Salisbury

PLAN DATE: November 2021 REVIEWED BY: B. Phillips

PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

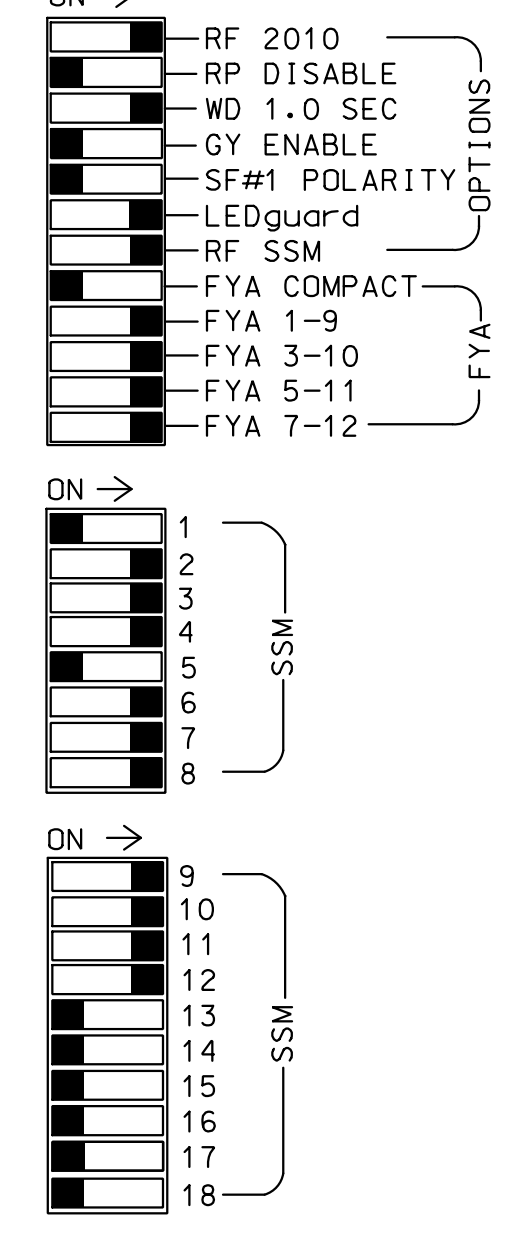
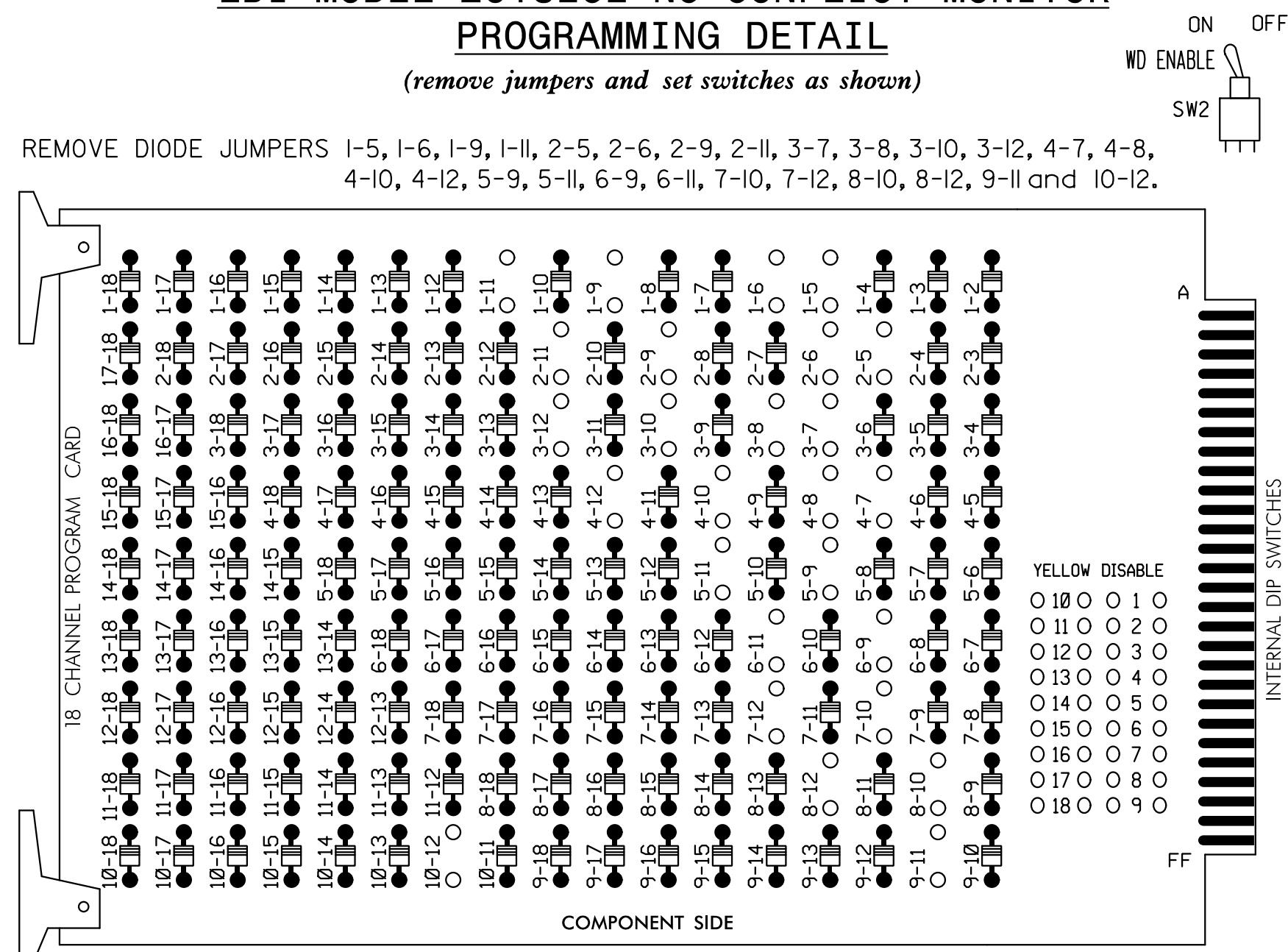
REVISIONS	INIT.	DATE

12/3/2021

SIG. INVENTORY NO. 09-0991T1

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, 2-5, 2-6, 2-9, 2-11, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 7-10, 7-12, 8-10, 8-12, 9-11 and 10-12.
- 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. 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 Startup In Green.
 - Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
 - If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
 - The cabinet and controller are part of the Salisbury Signal System.

SIGNAL HEAD HOOK-UP CHART

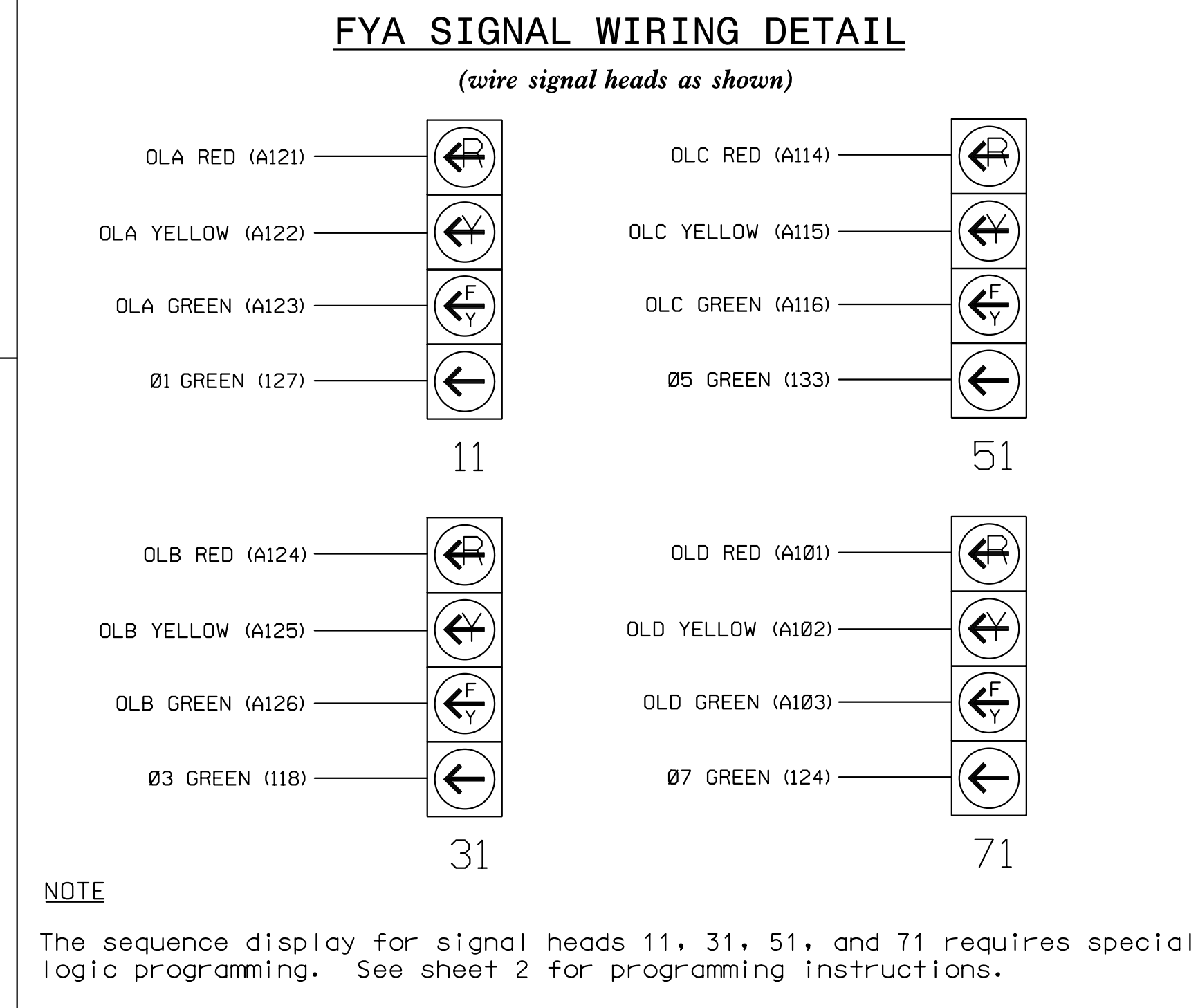
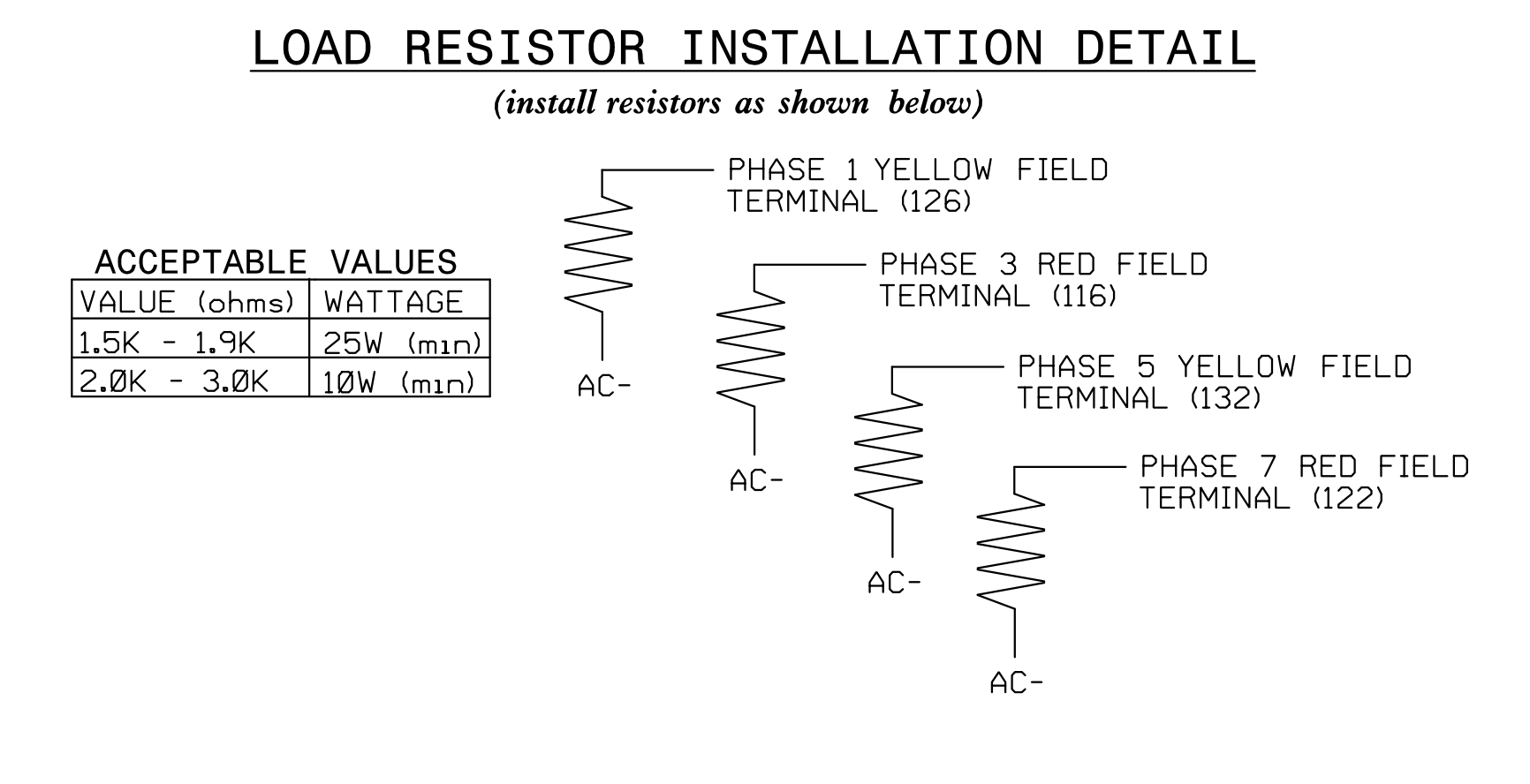
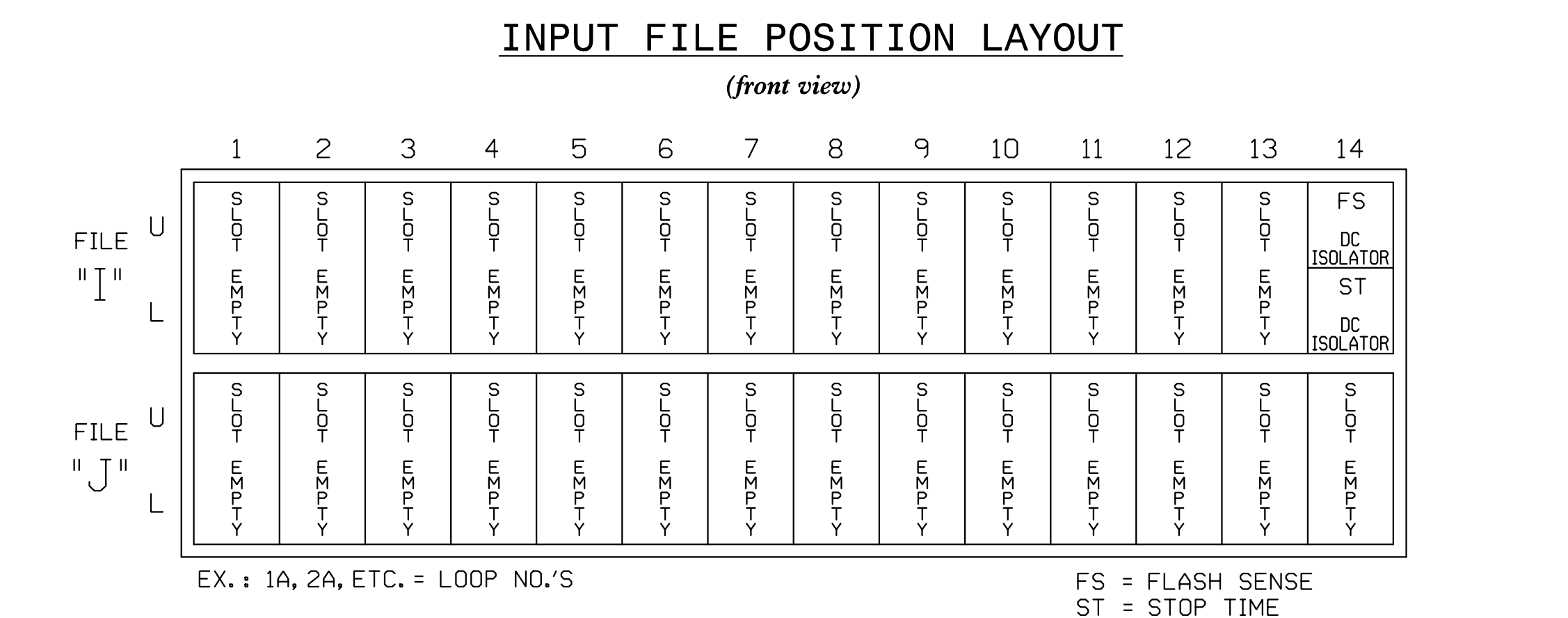
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6		
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18		
PHASE	1	2	2	3	4	4	5	6	6	7	8	8	OLA	OLB	SPARE	OLC	OLD	SPARE		
SIGNAL HEAD NO.	11	21,22	NU	22	31	41,42	NU	51	61,62	NU	62	71	81,82	NU	11	31	NU	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												123				A122	A125		A115	A102
FLASHING YELLOW ARROW																A123	A126		A116	A103
GREEN ARROW	127			118	118				133			124	124							

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

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....ECONOLITE OASIS
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8,S10,S11,
AUX S1,AUX S2,AUX S4,AUX S5

PHASES USED.....1,2,3,4,5,6,7,8
OVERLAP "A".....1+2
OVERLAP "B".....3+4
OVERLAP "C".....5+6
OVERLAP "D".....7+8



VIDEO 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: 09-0991T1
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Temporary Design 1
Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:	SR 2528 (Julian Rd)	
	at I-85/US 601 SB Ramps and SR 2762 (Klumac Rd)	
Division 9	Rowan County	Salisbury
PLAN DATE: November 2021	REVIEWED BY: B. Phillips	
PREPARED BY: Z. Gavin Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442

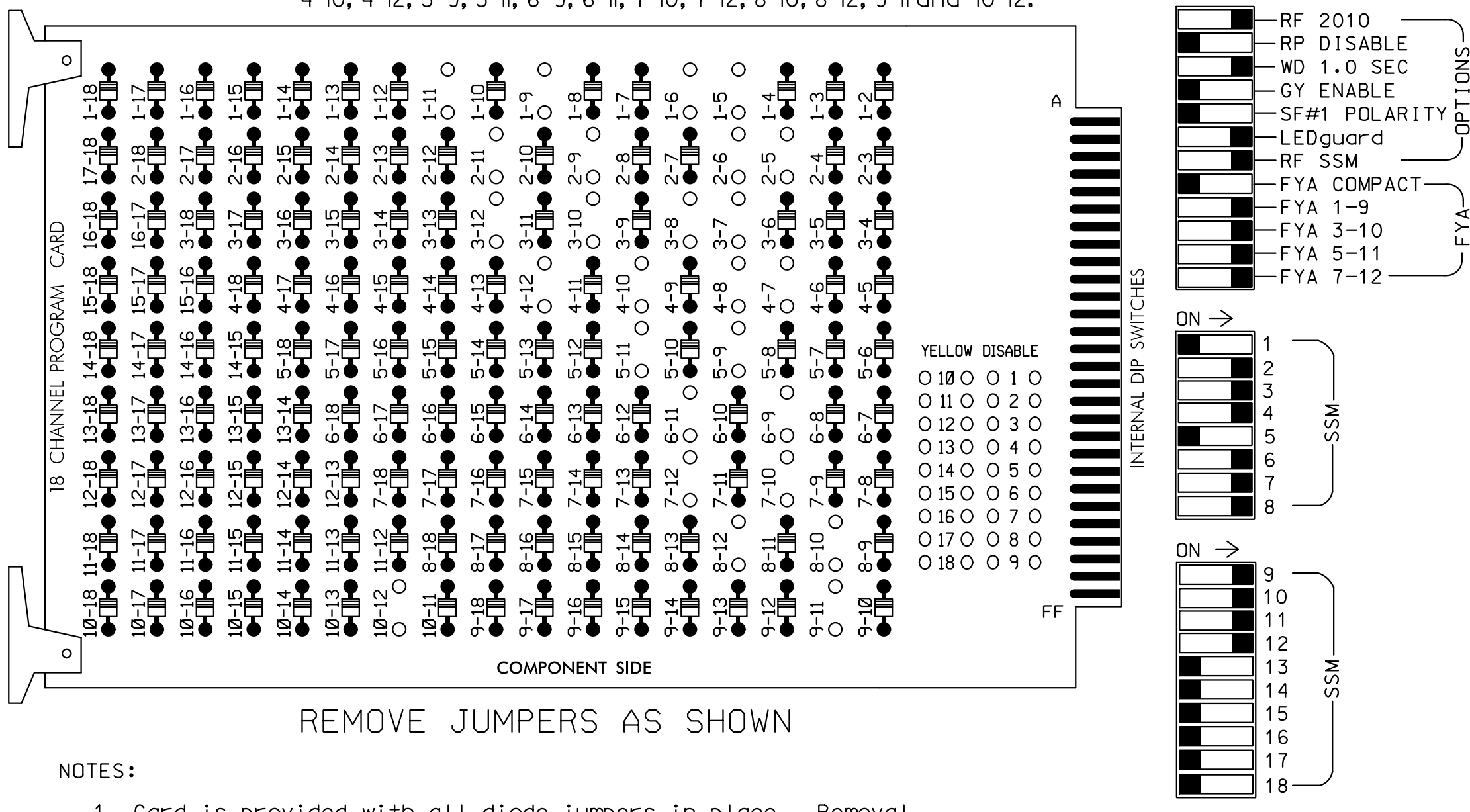
750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
ZHAOLONG TENG
032179
12/3/2021
DATE
SIG. INVENTORY NO. 09-0991T1

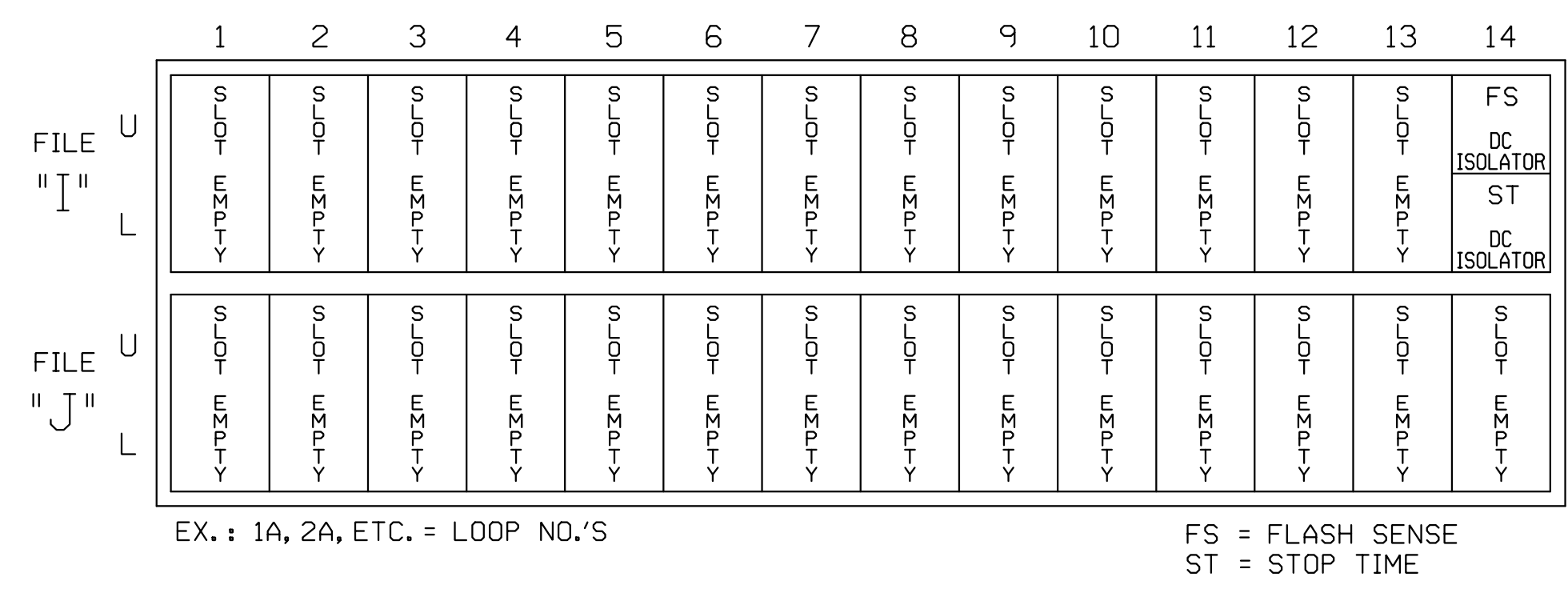
**EDI MODEL 2018ECL-NC CONFLICT MONITOR
PROGRAMMING DETAIL**
(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 2-5, 2-6, 2-9, 2-11, 3-7, 3-8, 3-10, 3-12, 4-7, 4-8, 4-10, 4-12, 5-9, 5-11, 6-9, 6-11, 7-10, 7-12, 8-10, 8-12, 9-11 and 10-12.



- 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.

**INPUT FILE POSITION LAYOUT
(front view)**



VIDEO 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

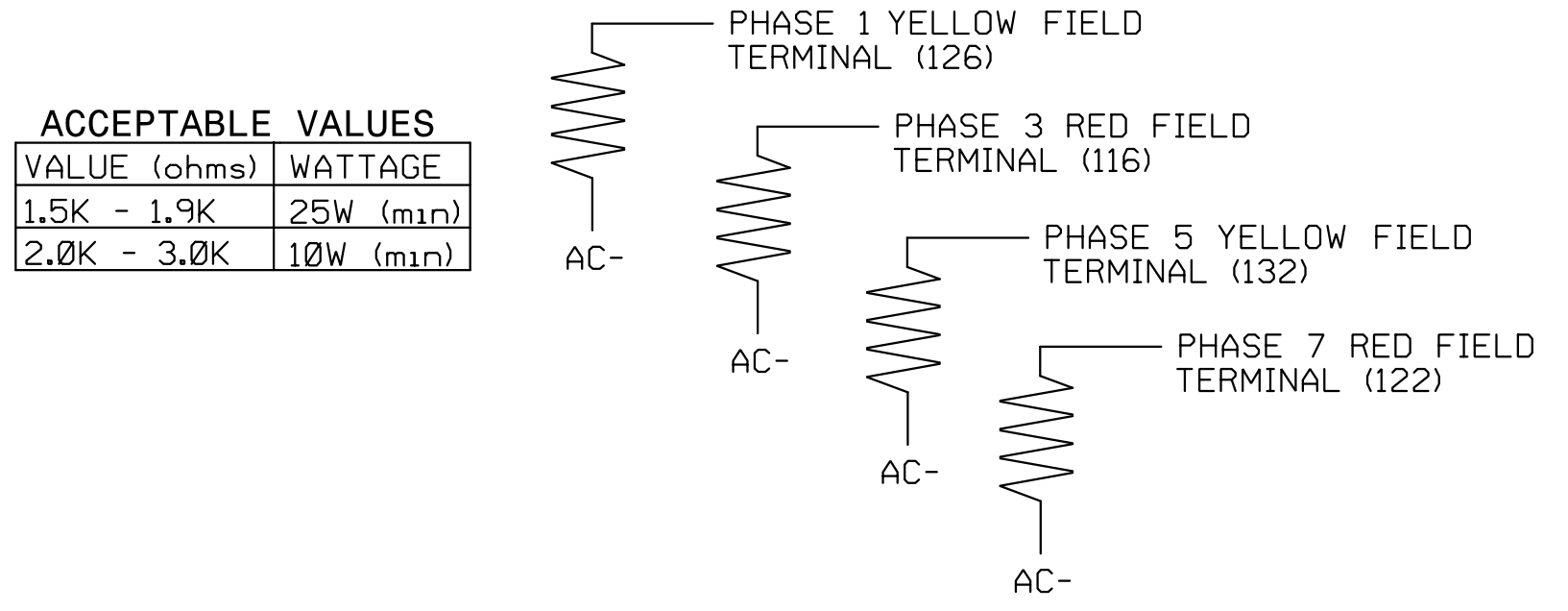
- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Salisbury Signal 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,S4,S5,S7,S8,S10,S11,
 AUX S1,AUX S2,AUX S4,AUX S5

PHASES USED.....1,2,3,4,5,6,7,8
 OVERLAP "A".....1+2
 OVERLAP "B".....3+4
 OVERLAP "C".....5+6
 OVERLAP "D".....7+8

**LOAD RESISTOR INSTALLATION DETAIL
(install resistors as shown below)**

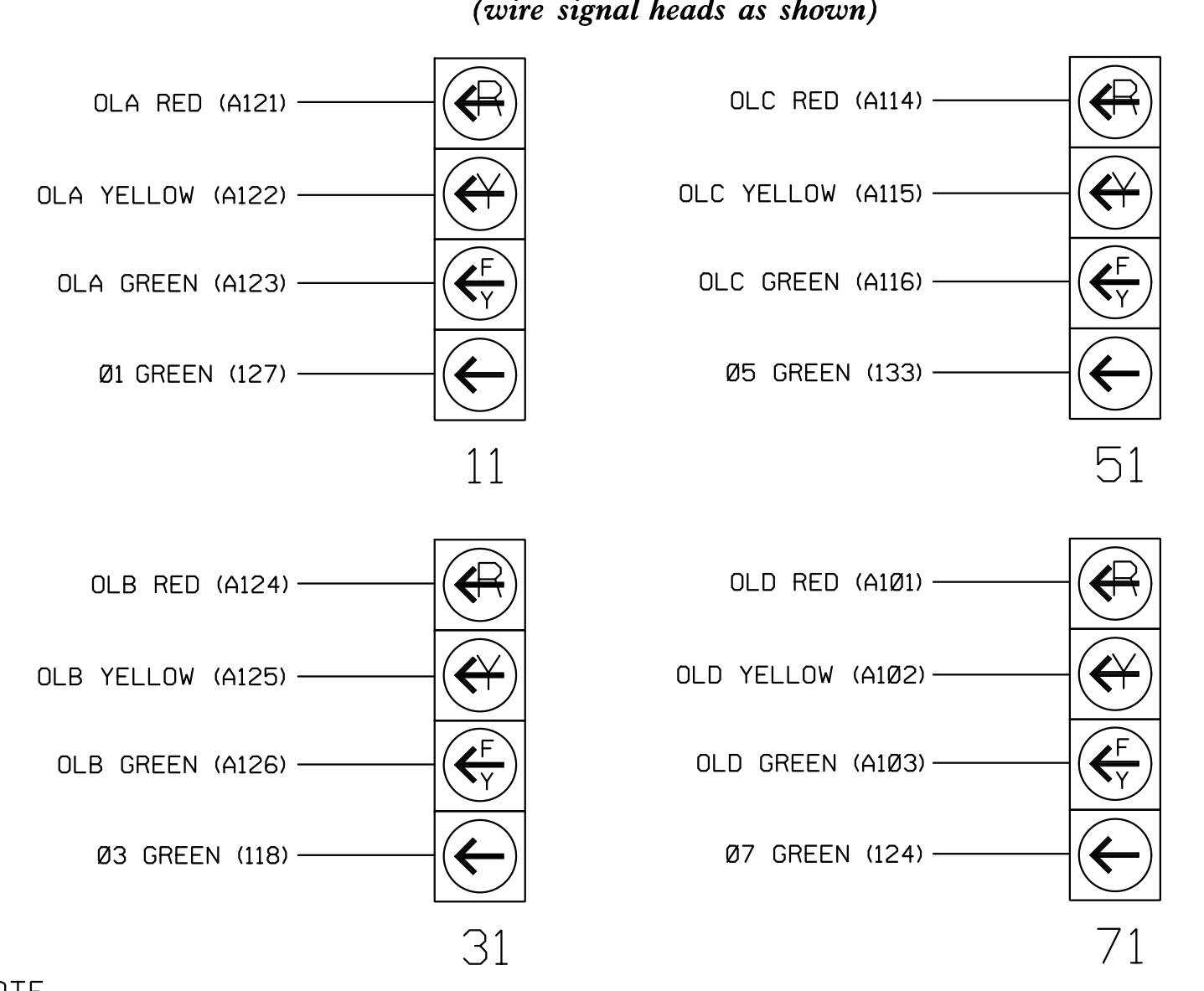


SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	11	21,22	NU	22	31	41,42	NU	51	61,62	NU	62	71	81,82	NU	11	31	NU	51	71
RED		128		*		101			134	*		107							
YELLOW	*	129				102		*	135			108							
GREEN		130				103			136			109							
RED ARROW															A121	A124		A114	A101
YELLOW ARROW						117						123			A122	A125		A115	A102
FLASHING YELLOW ARROW															A123	A126		A116	A103
GREEN ARROW	127			118	118				133		124	124							

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

**FYA SIGNAL WIRING DETAIL
(wire signal heads as shown)**



NOTE
 The sequence display for signal heads 11, 31, 51, and 71 requires special logic programming. See sheet 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0991T2
 DESIGNED: NOVEMBER 2021
 SEALED: 12/3/2021
 REVISED: N/A

Temporary Design 2
 Electrical Detail - Sheet 1 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED IN THE OFFICE OF:
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 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

Electrical and Programming Details For:

**SR 2528 (Julian Rd)
at
I-85/US 601 SB Ramps and
SR 2762 (Klumac Rd)**

Division 9 Rowan County Salisbury

PLAN DATE: November 2021 REVIEWED BY: B. Phillips

PREPARED BY: Z. Gavin TENG REVIEWED BY:

SEAL

ZHAOLONG FENG
PROFESSIONAL ENGINEER
STATE OF NORTH CAROLINA
LICENSE NO. 032179

REVISIONS	INIT.	DATE

DocuSigned by:

 12/3/2021

SIG. INVENTORY NO. 09-0991T2

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DOCSIGN\$\$\$\$\$
 \$\$\$USERNAME\$\$\$\$\$

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)... 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

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

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

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

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

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

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

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

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

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

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

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

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

NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'B' SETTINGS PHASE: 12345678910111213141516

NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS PHASE: 12345678910111213141516

NOTICE GREEN FLASH

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS PHASE: 12345678910111213141516

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:

- 1. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2. 2. ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3. 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: 09-0991T2 DESIGNED: NOVEMBER 2021 SEALED: 12/3/2021 REVISED: N/A

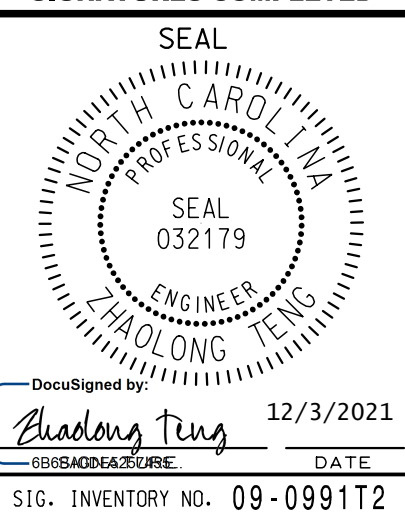
Temporary Design 2 Electrical Detail - Sheet 2 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

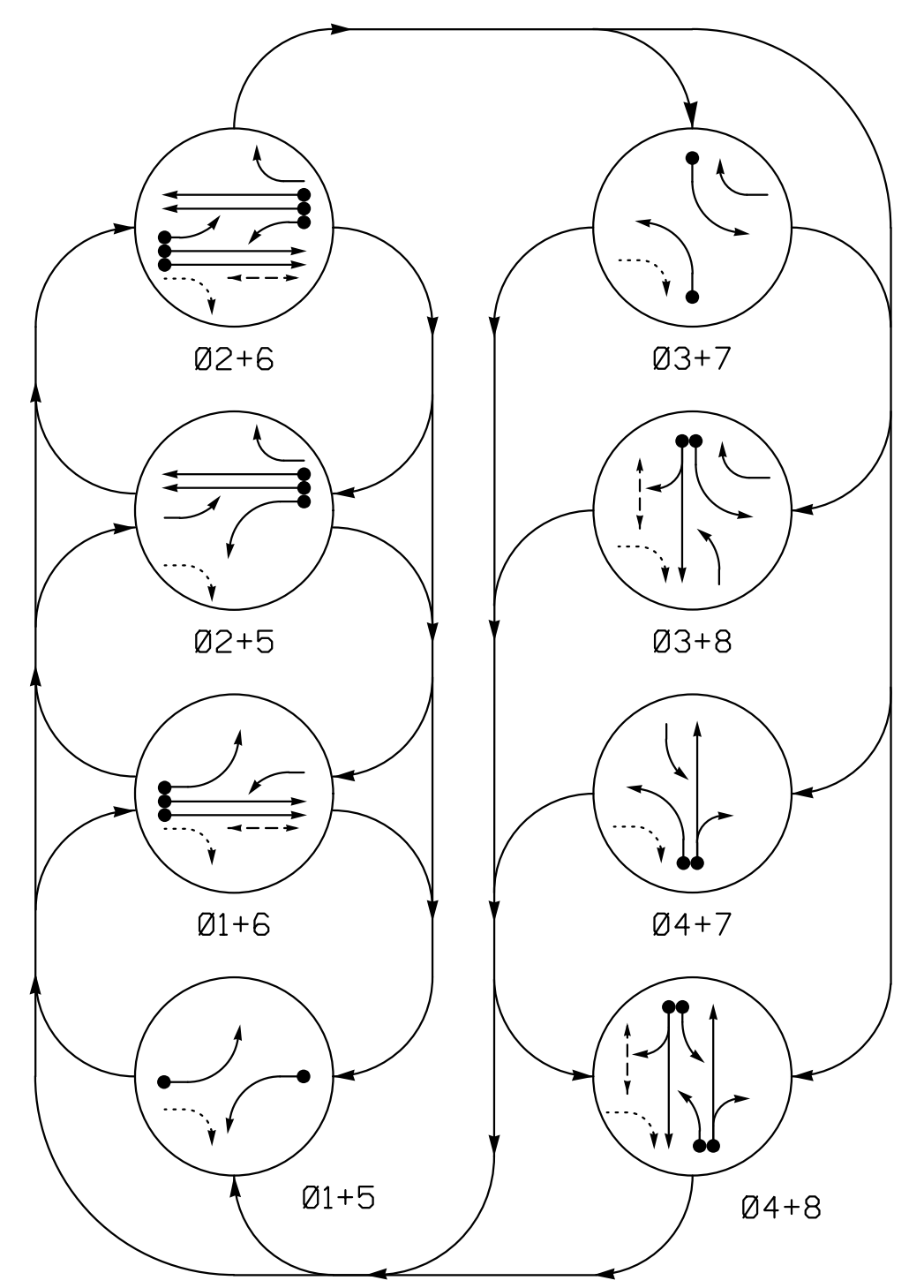


Table with project details: SR 2528 (Julian Rd) at I-85/US 601 SB Ramps and SR 2762 (Klumac Rd), Division 9, Rowan County, Salisbury. Includes dates and names of those involved.

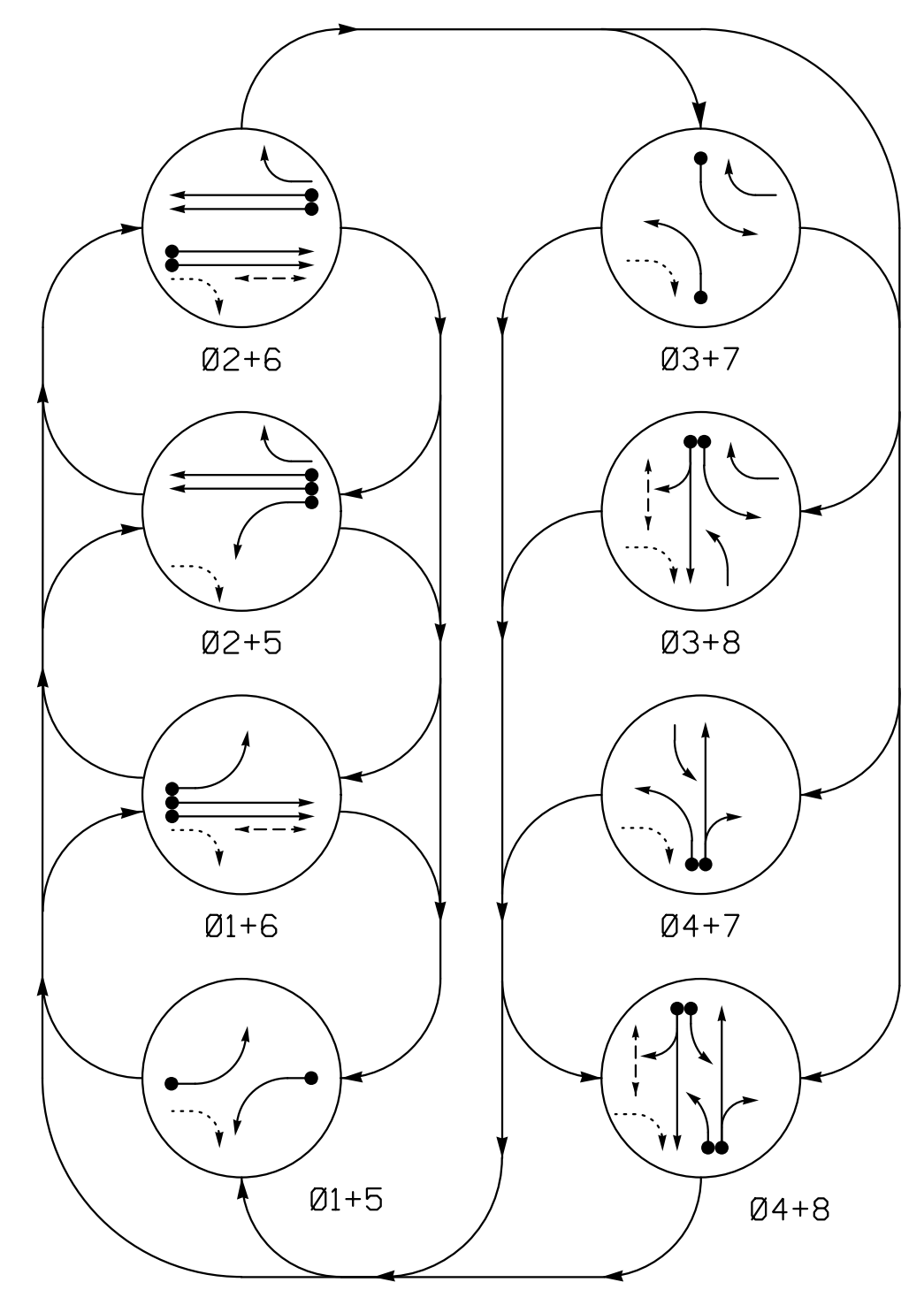
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DEFAULT PHASING DIAGRAM



ALTERNATE PHASING DIAGRAM



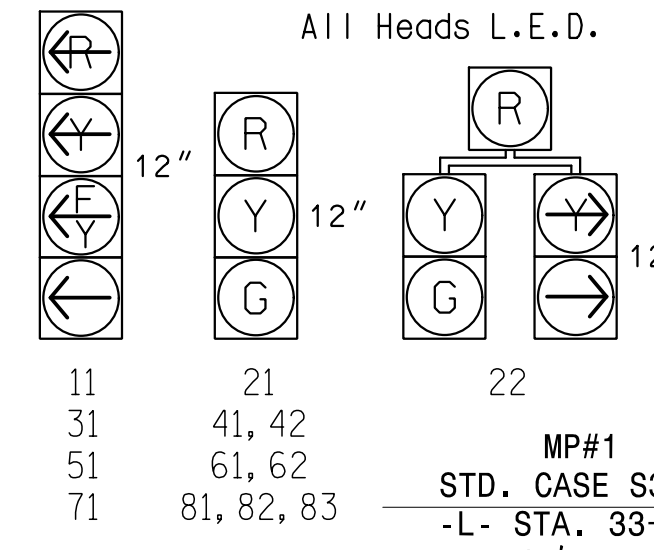
DEFAULT PHASING TABLE OF OPERATION

Table with 8 columns (PHASE 0-7) and rows for signal faces 11, 21, 22, 31, 41, 42, 51, 61, 62, 71, 81, 82, 83, P61, P62, P81, P82.

ALTERNATE PHASING TABLE OF OPERATION

Table with 8 columns (PHASE 0-7) and rows for signal faces 11, 21, 22, 31, 41, 42, 51, 61, 62, 71, 81, 82, 83, P61, P62, P81, P82.

SIGNAL FACE I.D.

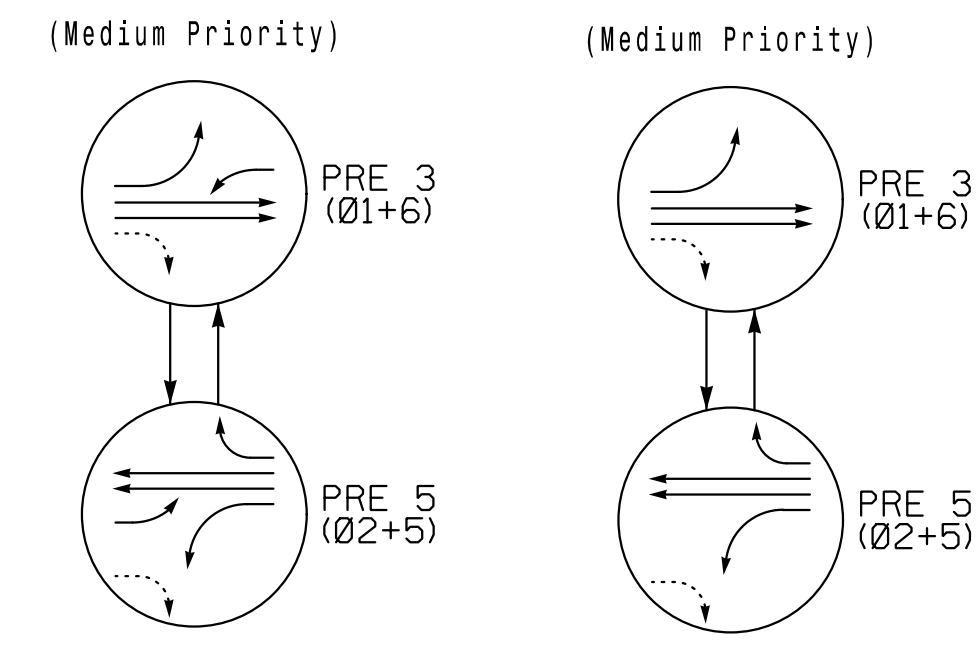


8 Phase Fully Actuated with Emergency Vehicle Preemption (Salisbury Signal System)

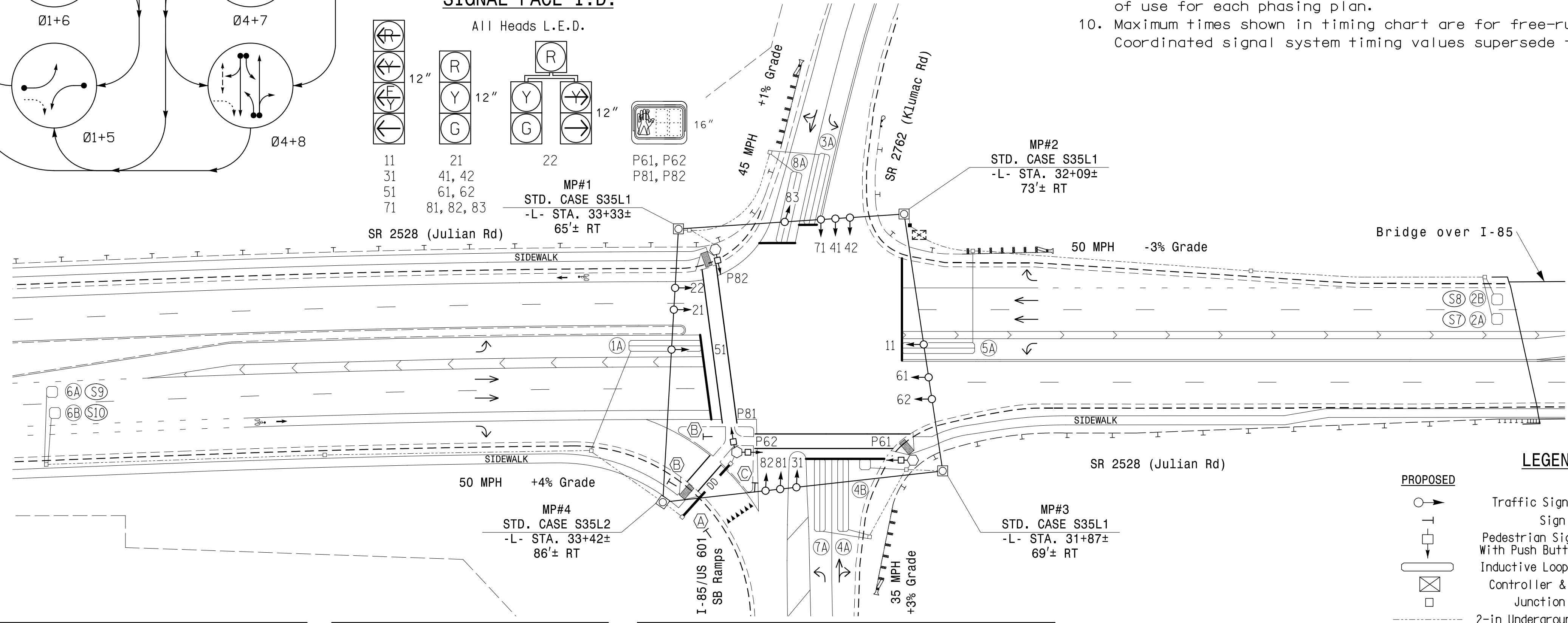
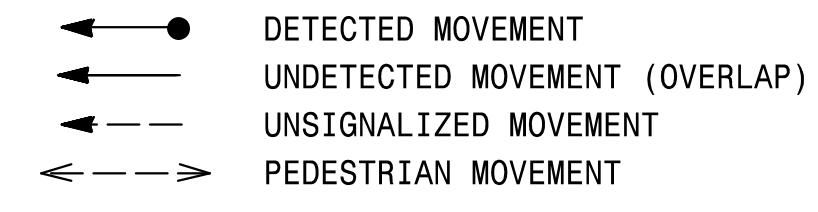
NOTES

- 10 numbered notes detailing signal operation rules, including references to NCDOT standards and emergency vehicle preemption.

DEFAULT PHASING EV PREEMPT PHASES ALTERNATE PHASING EV PREEMPT PHASES



PHASING DIAGRAM DETECTION LEGEND



LEGEND section listing symbols for proposed and existing traffic signal heads, pedestrian heads, inductive loops, junction boxes, and various signs.

OASIS 2070 TIMING CHART table with columns for Feature and Phases 1-8, listing timing values like Min Green, Extension, and Max Green.

OASIS 2070 EV PREEMPT table with columns for Function, Pre 3, and Pre 5, detailing preemption timing for various functions.

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART table with columns for Loop, Size, Distance, Turns, and Detector Programming details.

Accelerate Engineering, PLLC logo and contact information including address and phone number.

Project title block for 'Signal Upgrade - Final Design' at SR 2528 and I-85/US 601 SB Ramps, including dates, signatures, and a seal.

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

* Time defaults to time used for phase during normal operation. * Disable delay during Alternate Phasing Operation. # Reduce delay to 3 seconds during Alternate Phasing Operation.

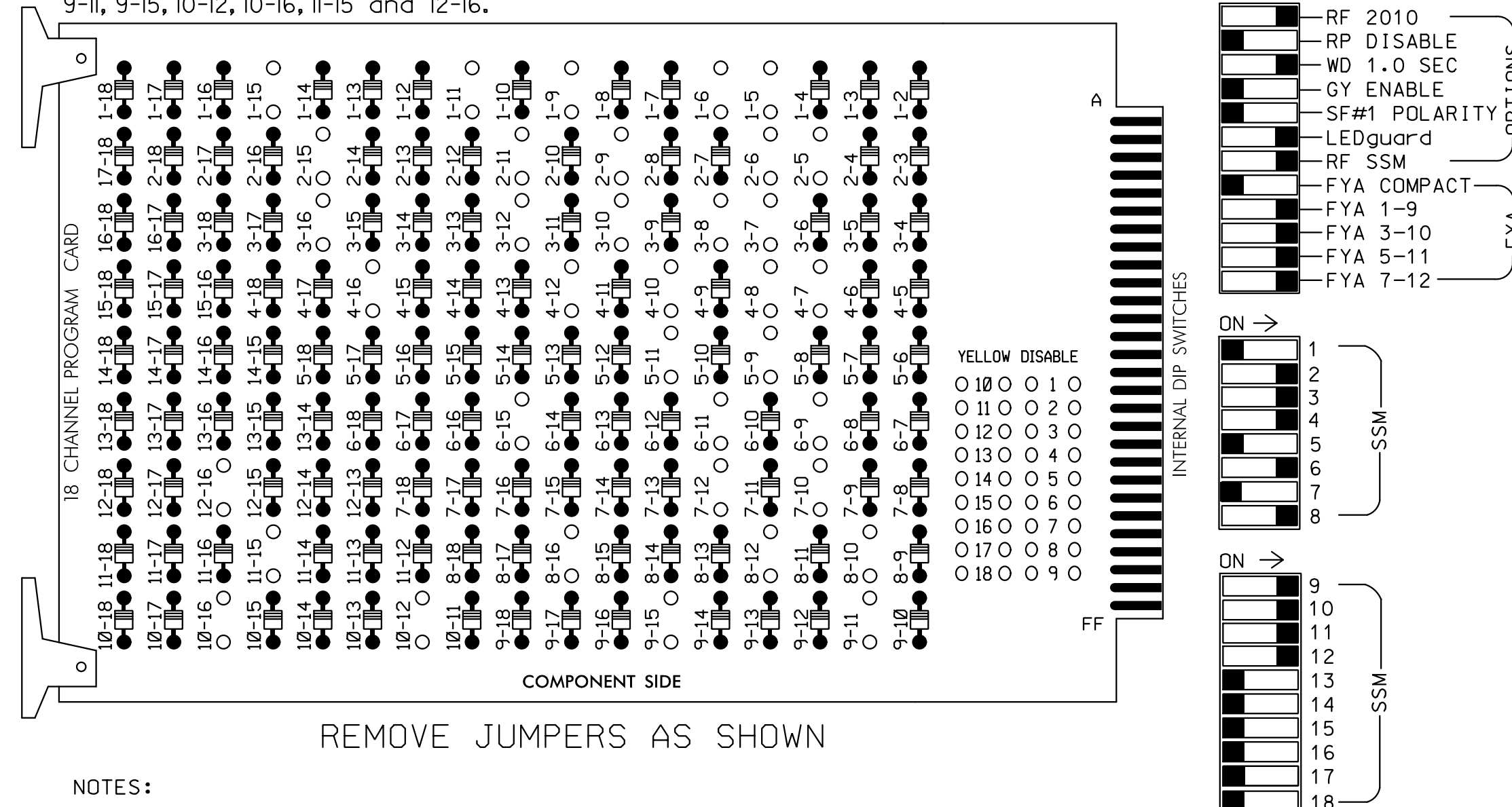
Vertical text on the left edge containing a long alphanumeric string.

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, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-16, 5-9, 5-11, 6-9, 6-11, 6-15, 7-10, 7-12, 8-10, 8-12, 8-16, 9-11, 9-15, 10-12, 10-16, 11-15 and 12-16.



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 Startup In Green.
- Program phases 6 and 8 for Startup Ped Call.
- Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Salisbury Signal 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,S4,S5,S7,S8,S9,S10,S11,S12
 AUX S1,AUX S2,AUX S4,AUX S5
 PHASES USED.....1,2,3,4,5,6,6PED,7,8,8PED
 OVERLAP "A".....1+2
 OVERLAP "B".....3+4
 OVERLAP "C".....5+6
 OVERLAP "D".....7+8

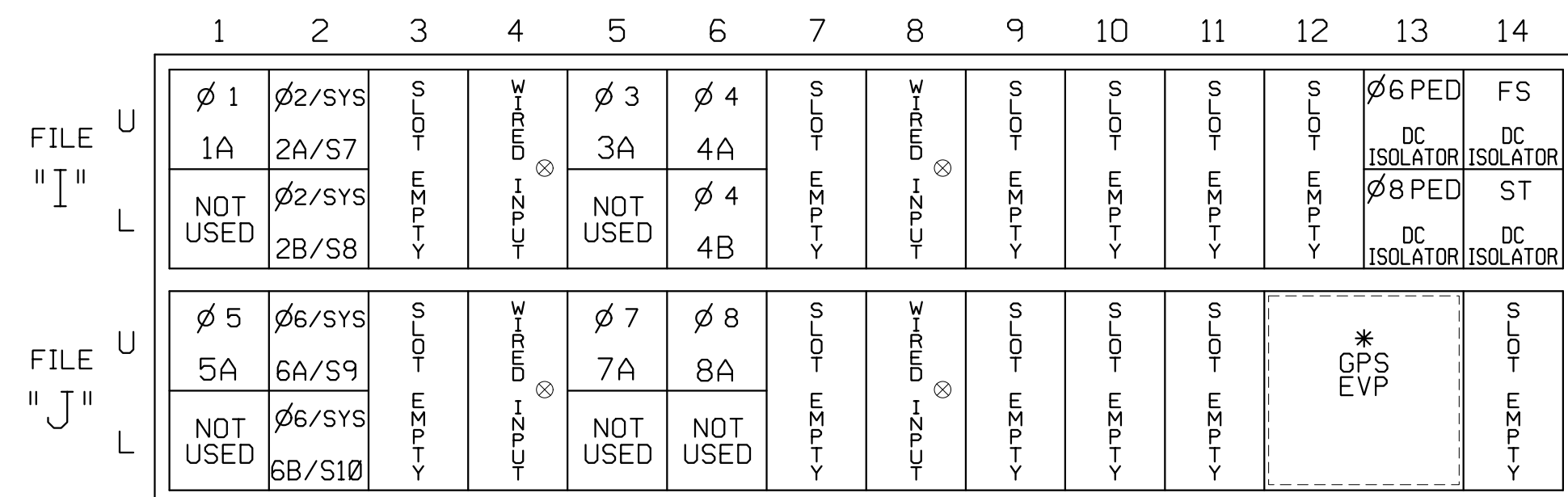
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO. / CMU CHANNEL 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
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	22	31	41,42	NU	51	61,62	P61 P62	71	81,82 83	P81 P82	11	31	NU	51	71
RED		128		*		101			134			107						
YELLOW	*					102		*	135		*	108						
GREEN		130				103			136			109						
RED ARROW													A121	A124		A114	A101	
YELLOW ARROW				117									A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127			118	118				133				119			110		
Hand icon													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)



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			
2A/S7	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
	2B/S8	TB2-7,8	I2L	43	5	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
	4B	TB4-11,12	I6L	45	7	14	4	Y	Y		15
5A ³	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
6A/S9	TB3-5,6	J2U	40	2	6	6/SYS	Y	Y			
6B/S10	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			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
PED PUSH BUTTONS											
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOT I13.

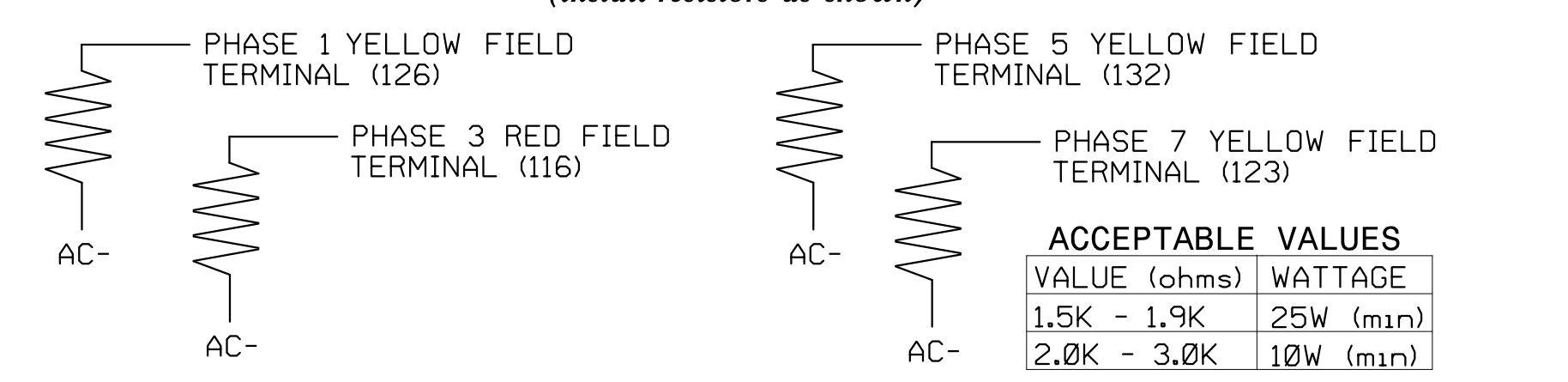
- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from I5-W to J8-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
 - Add jumper from J5-W to I8-W, on rear of input file.
- ★ See Input Page Assignment programming details on sheets 3 and 4.

SPECIAL DETECTOR NOTE

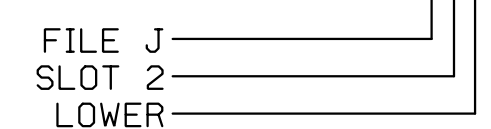
Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)

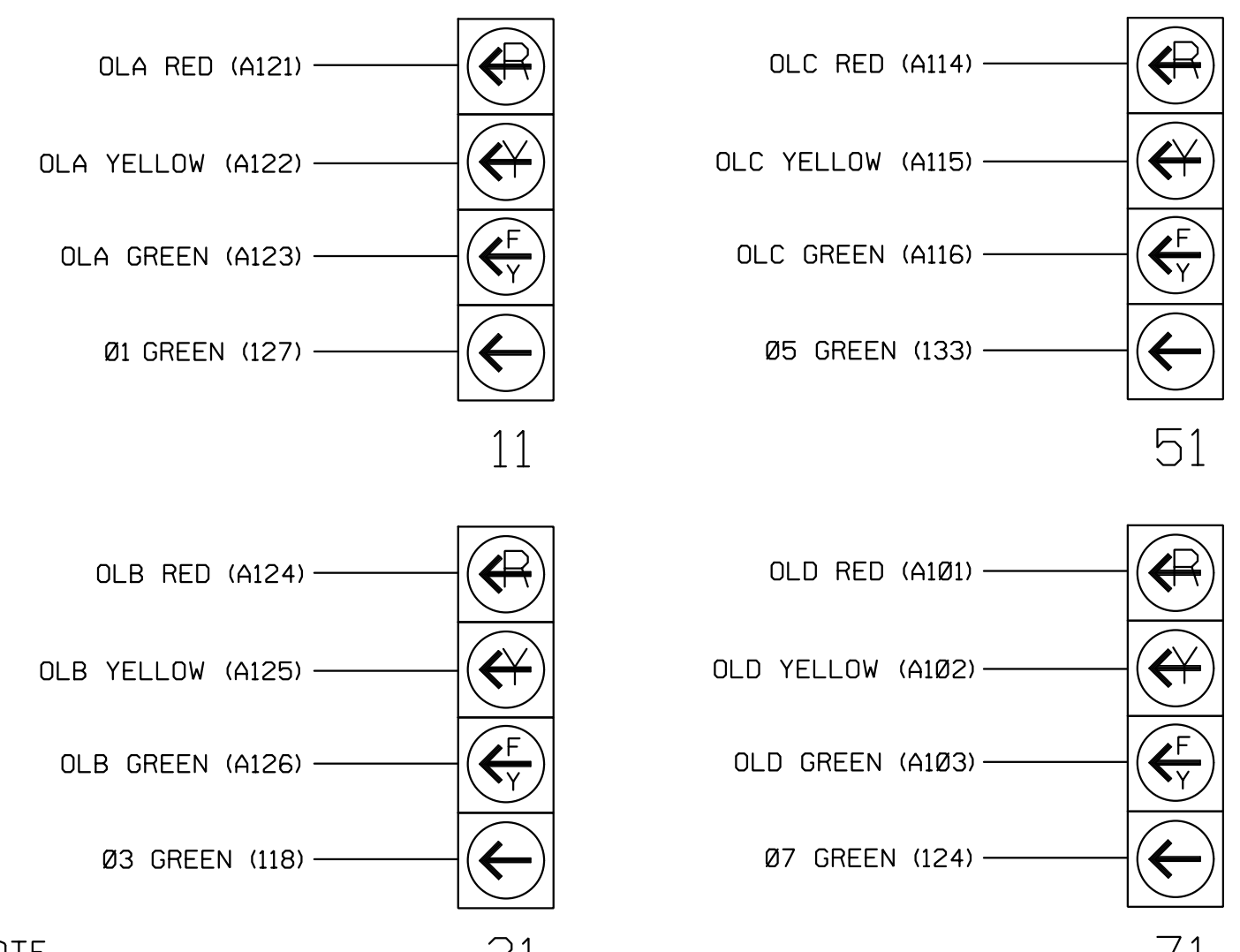


INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE: The sequence display for signal heads 11, 31, 51, and 71 requires special logic programming. See sheet 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0991
 DESIGNED: NOVEMBER 2021
 SEALED: 12/3/2021
 REVISED: N/A

Final Design
Electrical Detail - Sheet 1 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
ZHAOLONG TENG
SEAL 032179

Division 9 Rowan County Salisbury

SR 2528 (Julian Rd)
at
I-85/US 601 SB Ramps and
SR 2762 (Klumac Rd)

PLAN DATE: November 2021 REVIEWED BY: B. Phillips
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

SIG. INVENTORY NO. 09-0991

12/3/2021

*****ST*****

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

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

SCROLL DOWN

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

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

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

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

SCROLL DOWN

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

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

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

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

SCROLL DOWN

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

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #49 OFF

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #48 ON

PRESS '+'

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

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

SCROLL DOWN

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

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #41 OFF

PRESS '+'

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

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

SCROLL DOWN

THEN:
SET OUTPUT ASSIGNMENT #40 ON

PRESS '+'

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

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: XX
VEH OVL NOT PED: XX
VEH OVL GRN EXT: XX
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

← NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'B' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH: XX
VEH OVL NOT PED: XX
VEH OVL GRN EXT: XX
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

← NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH: XX
VEH OVL NOT PED: XX
VEH OVL GRN EXT: XX
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

← NOTICE GREEN FLASH

PRESS '+'

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH: XX
VEH OVL NOT PED: XX
VEH OVL GRN EXT: XX
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

← NOTICE GREEN FLASH

PRESS '+'

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: X
VEH OVL NOT PED: X
VEH OVL GRN EXT: X
STARTUP COLOR: - RED - YELLOW - GREEN
FLASH COLORS: - RED - YELLOW - 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

← NOTICE GREEN FLASH

PRESS '+'

NOTICE PAGE 2 → PAGE 2: VEHICLE OVERLAP 'B' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH: XX
VEH OVL NOT PED: XX
VEH OVL GRN EXT: XX
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

← NOTICE GREEN FLASH

PRESS '+'

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

← NOTICE GREEN FLASH

PRESS '+'

NOTICE PAGE 2 → PAGE 2: VEHICLE OVERLAP 'D' SETTINGS
PHASE: 12345678910111213141516
VEH OVL PARENTS: XX
VEH OVL NOT VEH: XX
VEH OVL NOT PED: XX
VEH OVL GRN EXT: XX
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

← NOTICE GREEN FLASH

PRESS '+'

OVERLAP PROGRAMMING COMPLETE

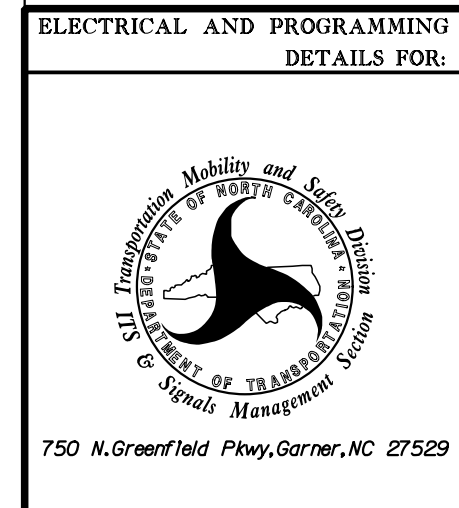
OUTPUT REFERENCE SCHEDULE

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: 09-0991
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Final Design
Electrical Detail - Sheet 2 of 5



SR 2528 (Julian Rd) at I-85/US 601 SB Ramps and SR 2762 (Klumac Rd)	
Division 9	Rowan County Salisbury
PLAN DATE: November 2021	REVIEWED BY: B. Phillips
PREPARED BY: Z. Gavin Teng	REVIEWED BY:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL	12/3/2021
SIG. INVENTORY NO. 09-0991	

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442

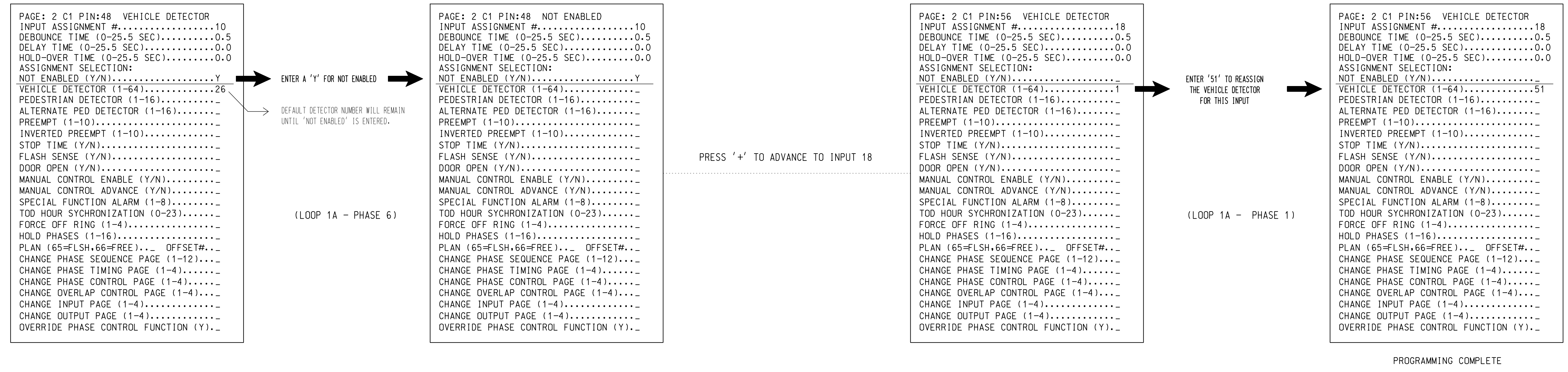
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INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 1A

(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 0 SECONDS.

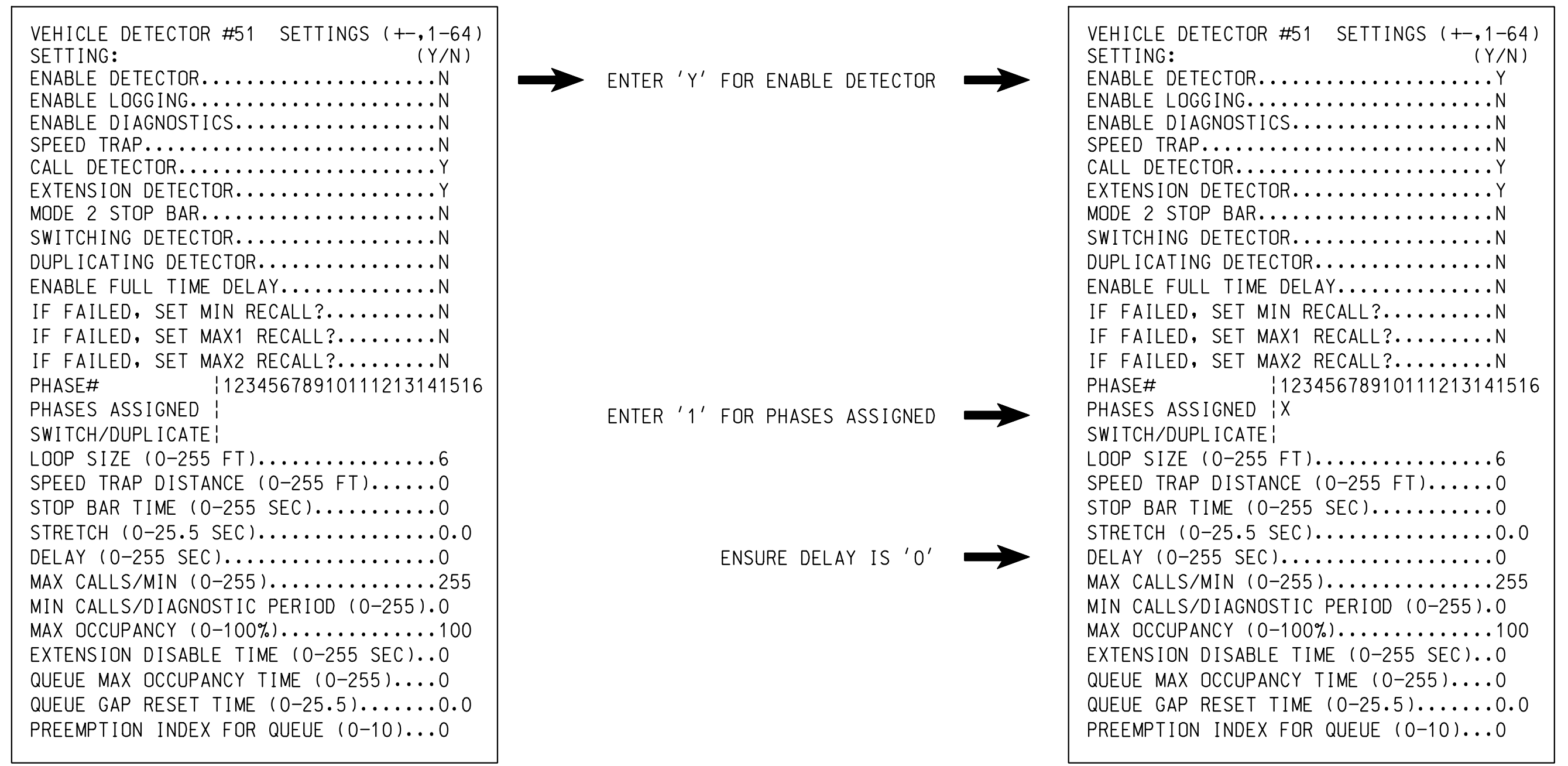
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 10 IS REACHED.



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: 09-0991
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Final Design
Electrical Detail - Sheet 3 of 5

	SR 2528 (Julian Rd) at I-85/US 601 SB Ramps and SR 2762 (Klumac Rd)		
	Division 9 Rowan County Salisbury	PREPARED BY: Z. "Gavin" Teng REVIEWED BY: B. Phillips	
ELECTRICAL AND PROGRAMMING DETAILS FOR:	PLAN DATE: November 2021 PREPARED BY: Z. "Gavin" Teng	REVIEWED BY: B. Phillips REVIEWED BY:	REVISIONS INIT. DATE

PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

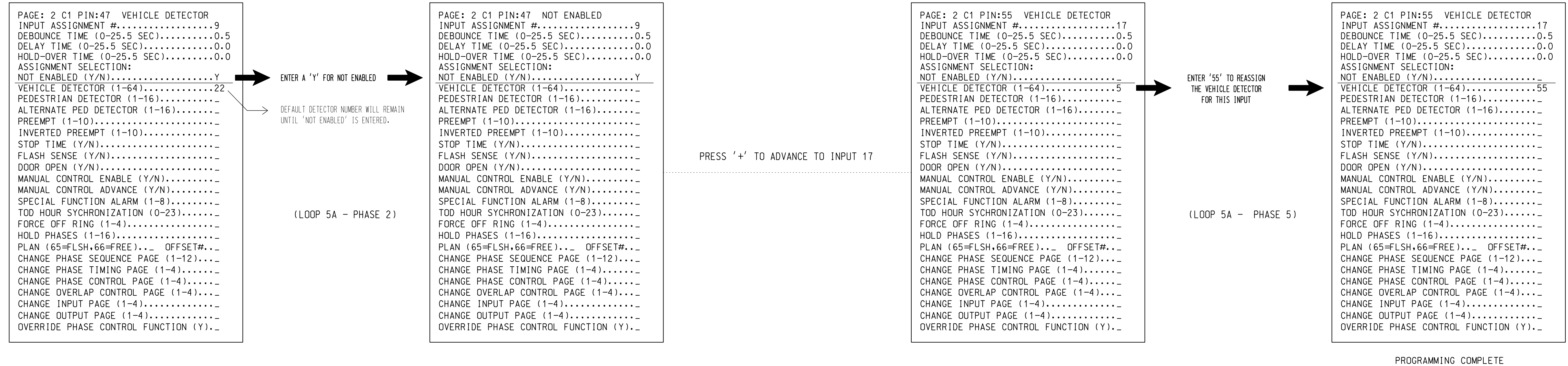
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12/3/2021
DATE
SIG. INVENTORY NO. 09-0991

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... 2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9 (DETECTOR 22)...

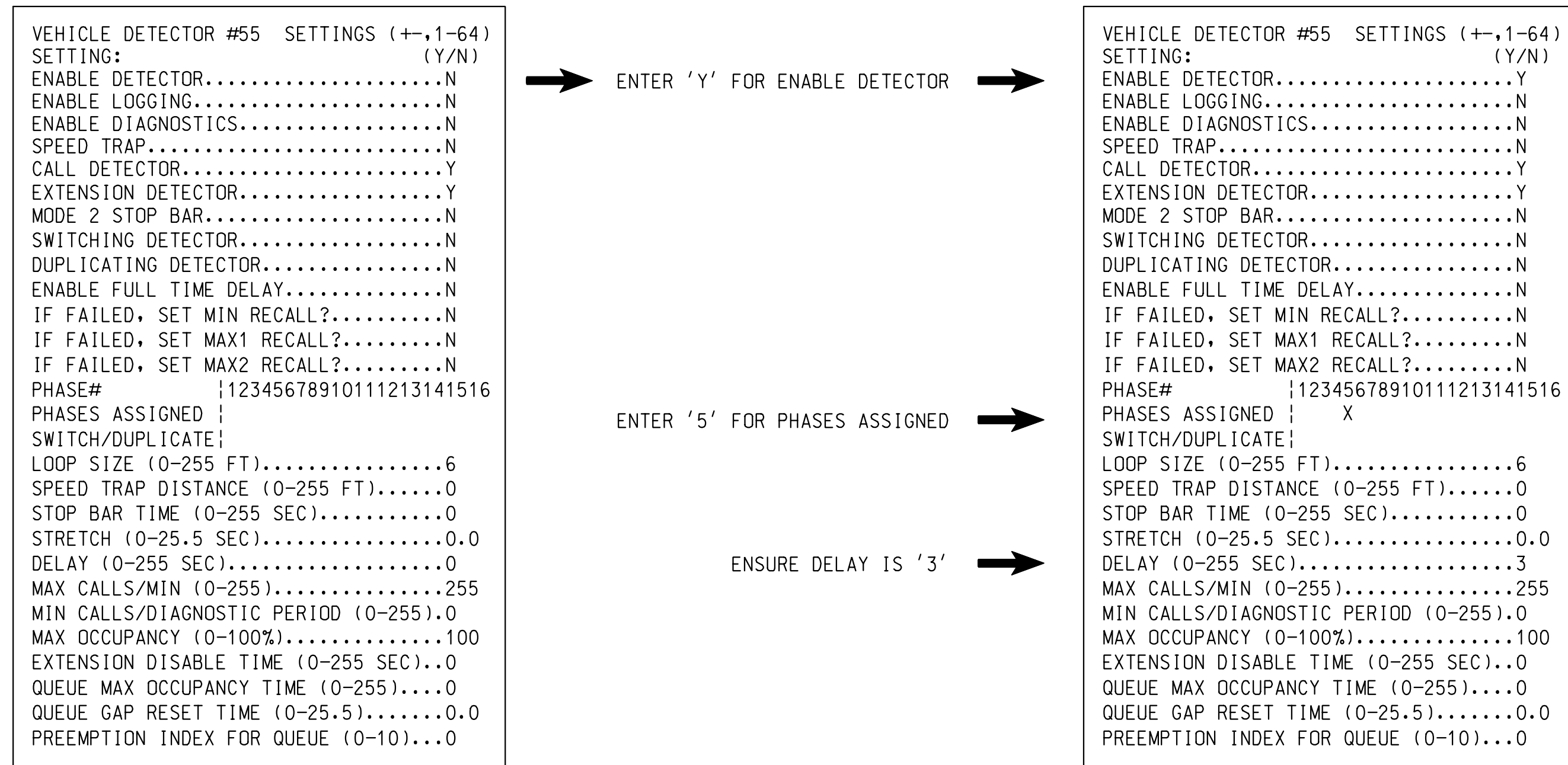
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 9 IS REACHED.



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: 09-0991 DESIGNED: NOVEMBER 2021 SEALED: 12/3/2021 REVISED: N/A

Final Design Electrical Detail - Sheet 4 of 5

PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC 875 Walnut Street, Suite 316 Cary, NC 27511

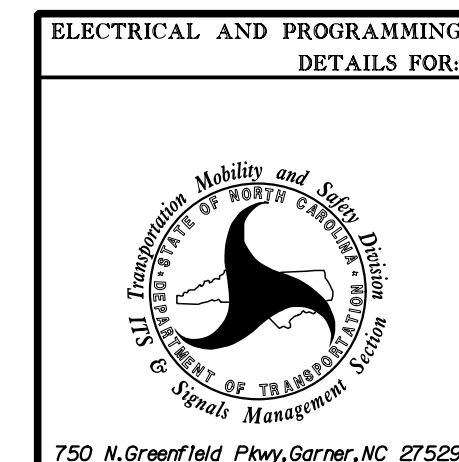


Table with project details: SR 2528 (Julian Rd) at I-85/US 601 SB Ramps and SR 2762 (Klumac Rd), Division 9, Rowan County, Salisbury.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SIG. INVENTORY NO. 09-0991

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.

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3 and 5.

PREEMPTION #3	SETTINGS (NEXT:1-10)
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

- EXIT CALLS
- OPTIONS
- PRIORITY (Y/N TO SELECT)MED
 - DELAY TIMER (0-255 SEC)0
 - MIN GREEN BEFORE PRE (0= DEFAULT)....1
 - PED CLEAR BEFORE PRE (0= DEFAULT)....0*
 - YELLOW CLEAR BEFORE PRE (0= DEFAULT).....0
 - RED CLEAR BEFORE PRE (0= DEFAULT).....0
 - DWELL MIN TIMER (0-255 SEC)7
 - DWELL MAX TIMER (0=OFF,1-255MIN) ...2
 - DWELL HOLD-OVER TIMER (0-255)0
 - LATCH CALL?N
 - LINK TO NEXT PREEMPT?N
 - ENABLE BACKUP PROTECTION?N
 - HOLD CLEAR 1 PHASES DURING DELAY? ...N
 - FAST GREEN FLASH DWELL PHASES?N
 - PED CLEARANCE THROUGH YELLOW?Y
 - INHIBIT OVERLAP GREEN EXTENSION? ...N
 - SERVICE DURING SOFTWARE FLASH?N
 - REST IN RED DURING DWELL INTERVAL? ..N
 - FLASH DWELL INTERVAL?N
 - ALLOW PEDS IN DWELL INTERVAL?N
 - RE-TIME DWELL INTERVAL?N
- OVERLAPS: ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW
 OMIT OVERLAPS:

PREEMPTION #5	SETTINGS (NEXT:1-10)
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

- EXIT CALLS
- OPTIONS
- PRIORITY (Y/N TO SELECT)MED
 - DELAY TIMER (0-255 SEC)0
 - MIN GREEN BEFORE PRE (0= DEFAULT)....1
 - PED CLEAR BEFORE PRE (0= DEFAULT)....0*
 - YELLOW CLEAR BEFORE PRE (0= DEFAULT).....0
 - RED CLEAR BEFORE PRE (0= DEFAULT).....0
 - DWELL MIN TIMER (0-255 SEC)7
 - DWELL MAX TIMER (0=OFF,1-255MIN) ...2
 - DWELL HOLD-OVER TIMER (0-255)0
 - LATCH CALL?N
 - LINK TO NEXT PREEMPT?N
 - ENABLE BACKUP PROTECTION?N
 - HOLD CLEAR 1 PHASES DURING DELAY? ...N
 - FAST GREEN FLASH DWELL PHASES?N
 - PED CLEARANCE THROUGH YELLOW?Y
 - INHIBIT OVERLAP GREEN EXTENSION? ...N
 - SERVICE DURING SOFTWARE FLASH?N
 - REST IN RED DURING DWELL INTERVAL? ..N
 - FLASH DWELL INTERVAL?N
 - ALLOW PEDS IN DWELL INTERVAL?N
 - RE-TIME DWELL INTERVAL?N
- OVERLAPS: ABCDEFGHIJKLMNOP
 DWELL INT FLASH YELLOW
 OMIT OVERLAPS:

PRESS 'NEXT' TWICE

PROGRAMMING COMPLETE

Program extend time on detector unit for 2.0 seconds.

* Time defaults to time used for phase during normal operation.

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

PHASING	INPUTS PAGE	OVERLAPS PAGE
ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	1
ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

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

ALTERNATE PHASING PAGE CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for heads 11 and 51 to run protected turns only.

INPUTS PAGE 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 3 seconds.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0991
 DESIGNED: NOVEMBER 2021
 SEALED: 12/3/2021
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 5 of 5

	SR 2528 (Julian Rd) at I-85/US 601 SB Ramps and SR 2762 (Klumac Rd)		SEAL STATE OF NORTH CAROLINA PROFESSIONAL ENGINEER ZHAOLONG TENG SEAL 032179
	Division 9 Rowan County Salisbury	Division 9 Rowan County Salisbury	
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:	PREPARED BY: Z. "Gavin" Teng REVIEWED BY: B. Phillips	PREPARED BY: Z. "Gavin" Teng REVIEWED BY:	PREPARED BY: Z. "Gavin" Teng REVIEWED BY:
REVISIONS	REVISIONS	REVISIONS	REVISIONS
INITIALS	INITIALS	INITIALS	INITIALS
DATE	DATE	DATE	DATE
SIGNATURE	SIGNATURE	SIGNATURE	SIGNATURE
SIGNATURE	SIGNATURE	SIGNATURE	SIGNATURE

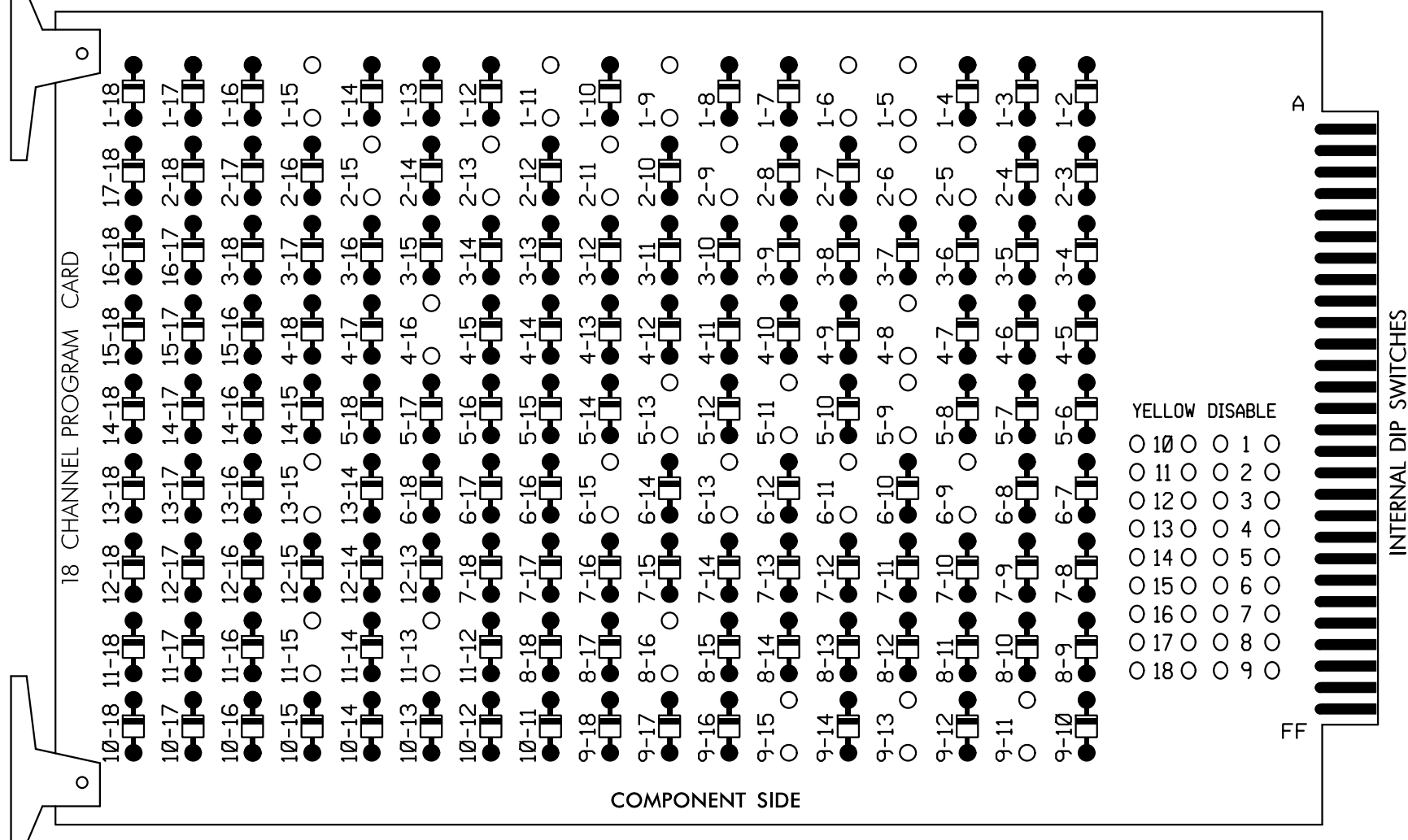
750 N. Greenfield Pkwy, Garner, NC 27529
 PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
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 NC License No. P-1442

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 12/3/2021
 09-0991

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

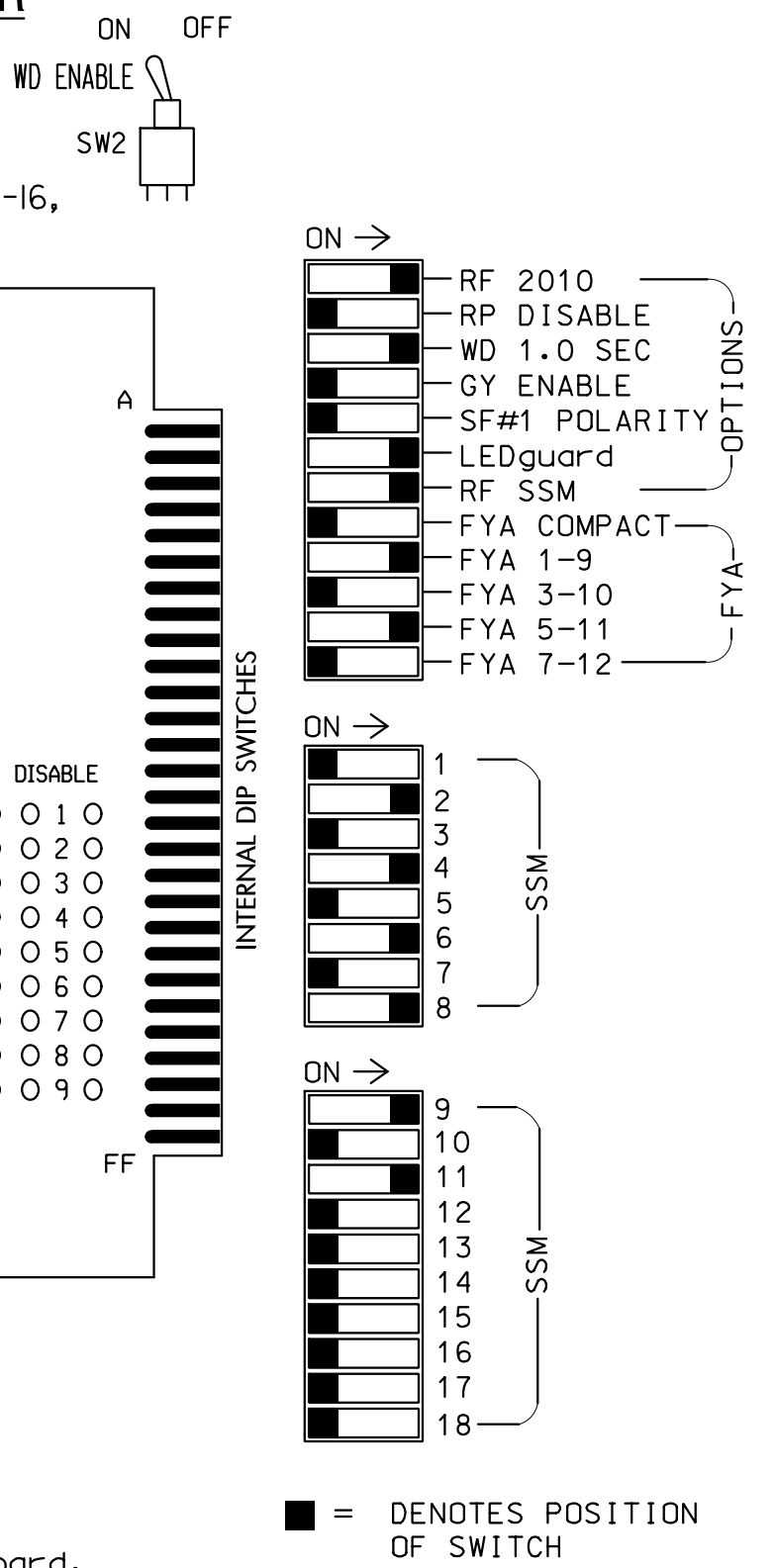
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 4-8, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 8-16, 9-11, 9-13, 9-15, 11-13, 11-15 AND 13-15.



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. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.



NOTES

- 1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file.
2. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Startup In Green.
6. Program phases 2, 6 and 8 for Startup Ped Call.
7. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlap.
8. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
9. The cabinet and controller are part of the Salisbury Signal 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,S7,S8,S9,S11,S12
AUX S1,AUX S4
PHASES USED.....1,2,2PED,4,5,6,6PED,8,8PED
OVERLAP "A".....1+2
OVERLAP "B".....NOT USED
OVERLAP "C".....5+6
OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

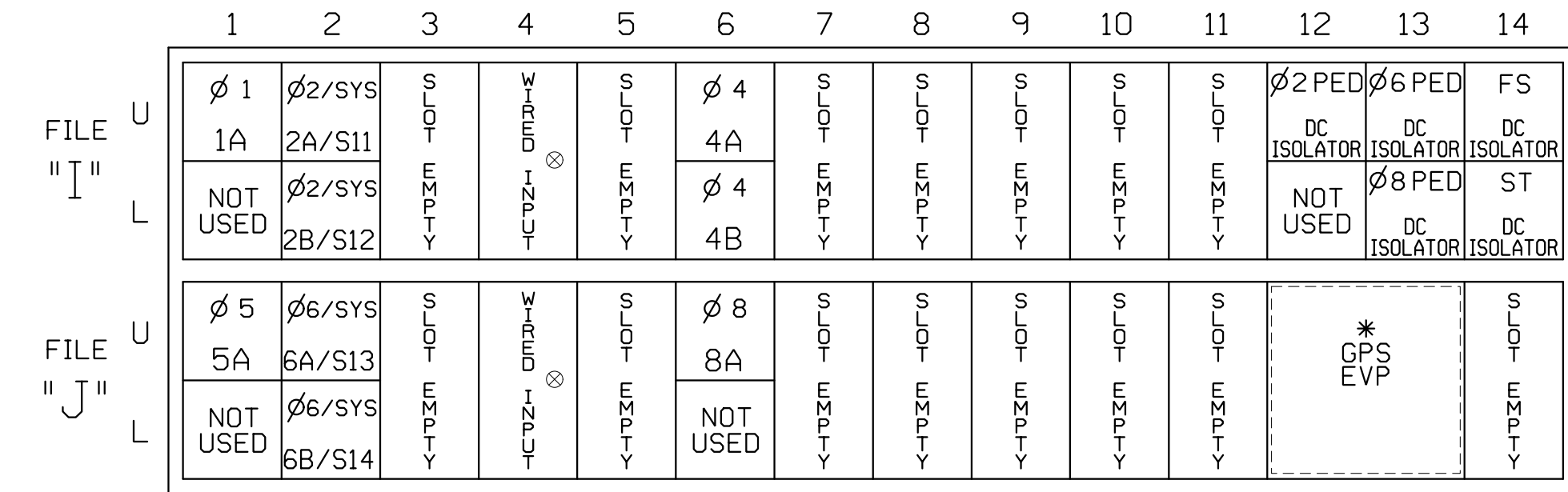
Table with columns for Load Switch No., CMU Channel No., Phase, Signal Head No., and various signal types (RED, YELLOW, GREEN, RED ARROW, YELLOW ARROW, FLASHING YELLOW ARROW, GREEN ARROW) with corresponding terminal numbers and auxiliary connections.

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
See GPS Preemption Installation Note Below
* Wired Input - Do not populate slot with detector card
FS = FLASH SENSE
ST = STOP TIME

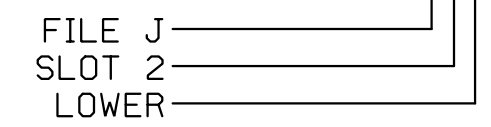
INPUT FILE CONNECTION & PROGRAMMING CHART

Table with columns: 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. Includes rows for loop 1A, 2A/S11, 4A, 5A, 6A/S13, 6B/S14, PED PUSH BUTTONS, and P21,P22.

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

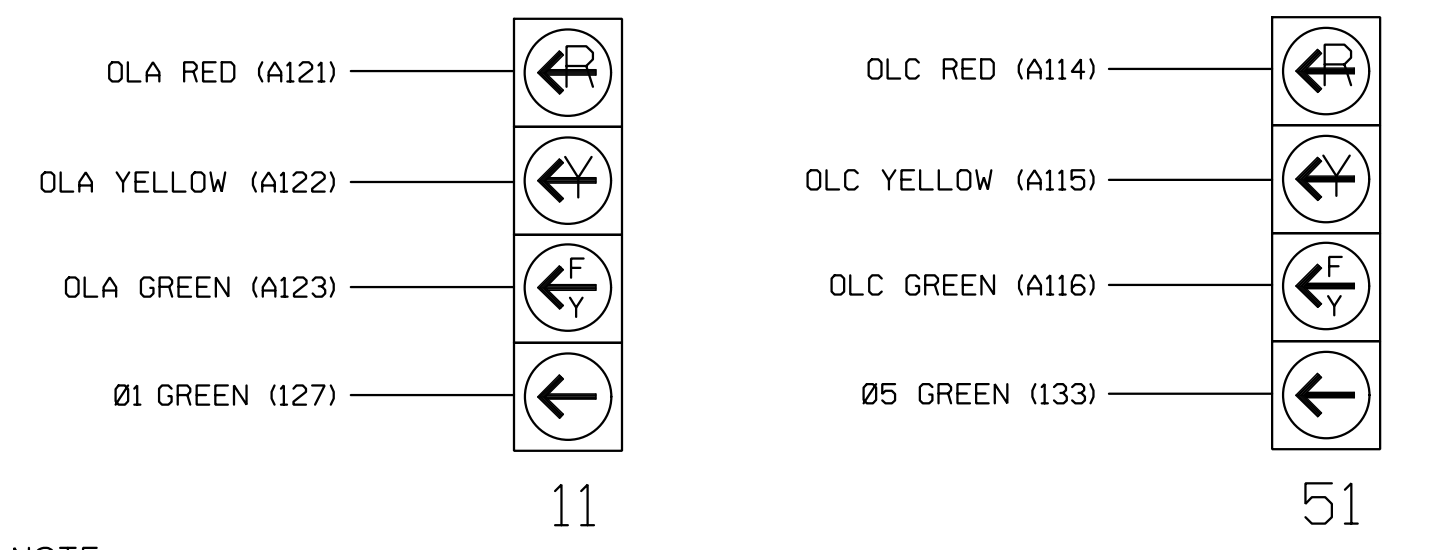
- 1 Add jumper from I1-W to J4-W, on rear of input file.
2 Add jumper from J1-W to I4-W, on rear of input file.
★ See Input Page Assignment programming details on sheets 3 and 4.

INPUT FILE POSITION LEGEND: J2L



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.

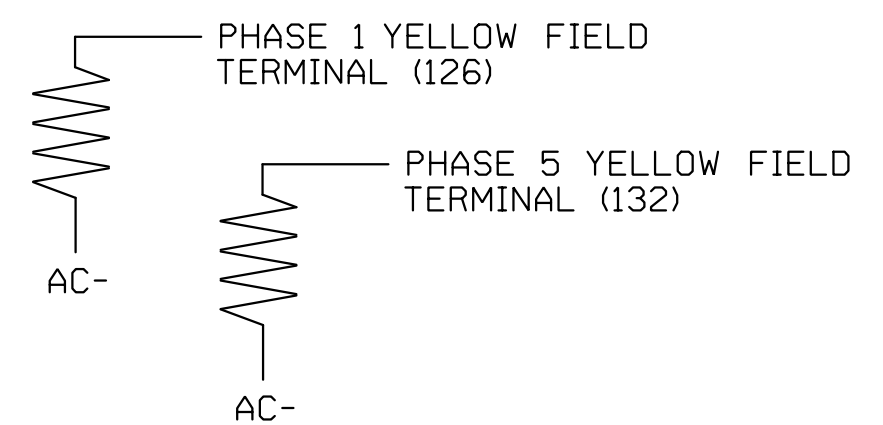
SPECIAL DETECTOR NOTE

Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

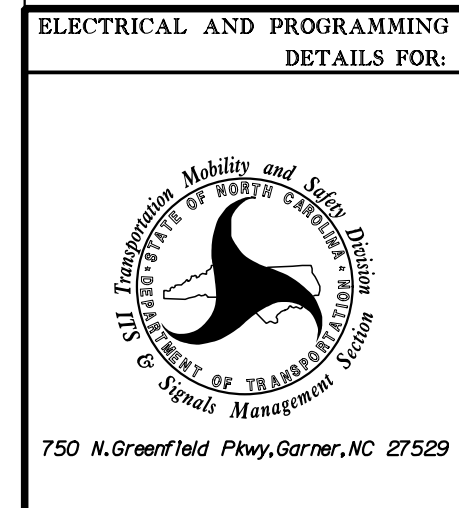
LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

Table with columns: VALUE (ohms), WATTAGE. Values include 1.5K - 1.9K (25W min) and 2.0K - 3.0K (10W min).



Electrical Detail - Sheet 1 of 5



SR 2528 (Julian Rd) at Corporate Cir and SR 2540 (W. Ritchie Rd)
Division 9 Rowan County Salisbury
PLAN DATE: November 2021 REVIEWED BY: B. Phillips
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:
REVISIONS INIT. DATE
DocuSigned by: Zhaolong Teng 12/3/2021
DATE
SIG. INVENTORY NO. 09-0987

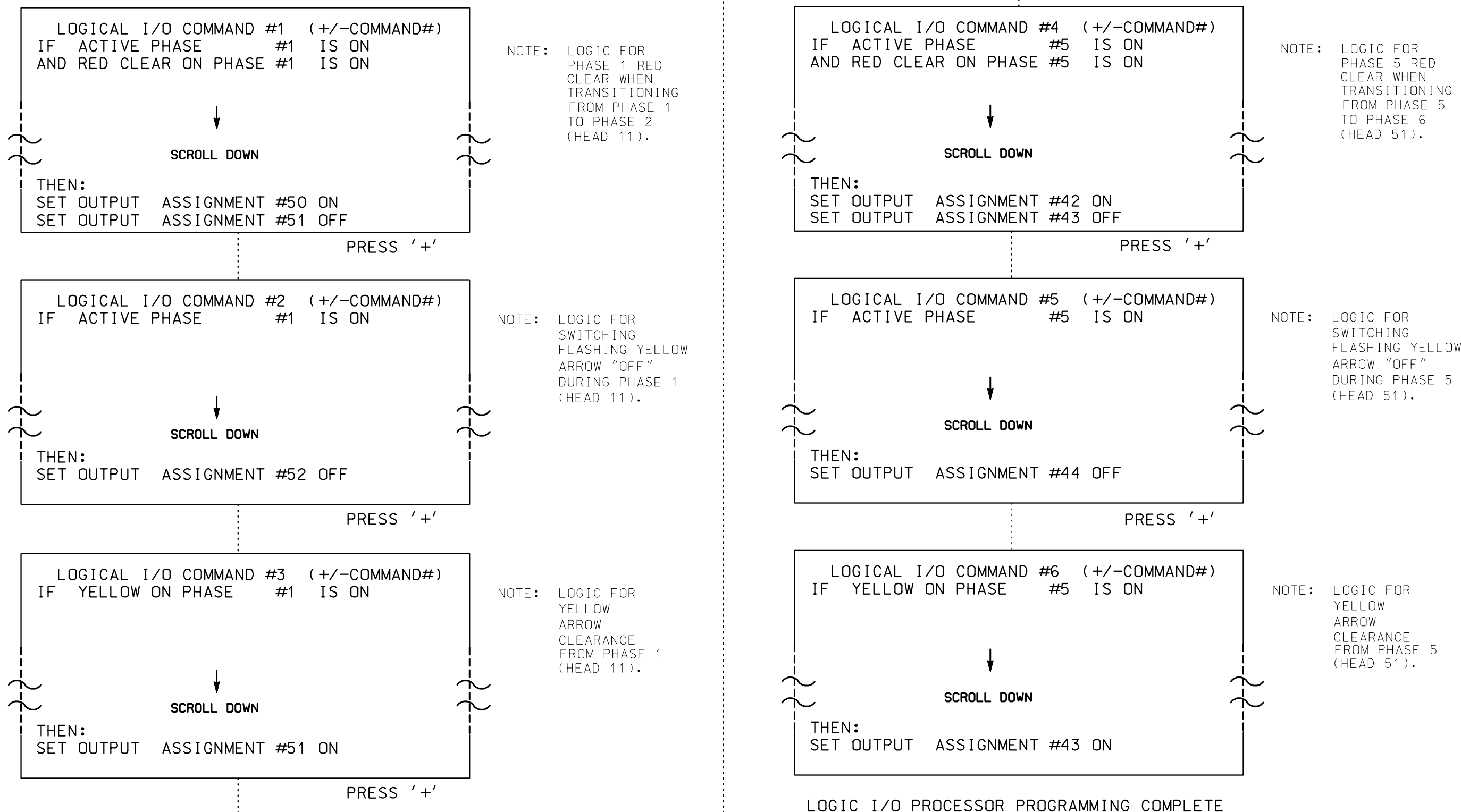
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**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**

(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 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 - 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 - 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

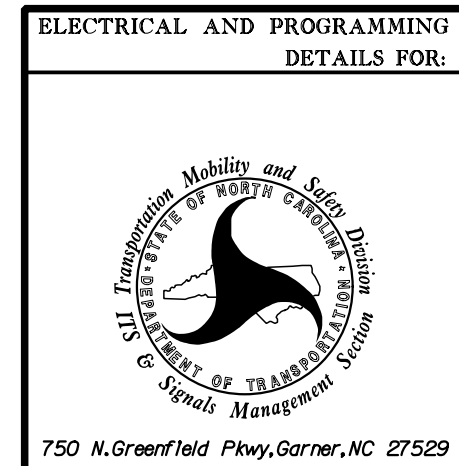
OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0987
DESIGNED: NOVEMBER 2021
SEALED: 12/3/2021
REVISED: N/A

Electrical Detail - Sheet 2 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED IN THE OFFICE OF:
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NC License No. P-1442



**SR 2528 (Julian Rd)
at
Corporate Cir and
SR 2540 (W. Ritchie Rd)**

Division 9 Rowan County Salisbury

PLAN DATE: November 2021 REVIEWED BY: B. Phillips
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
PROFESSIONAL ENGINEER
ZHAOLONG TENG
NOVEMBER 12, 2021
DATE

DocuSigned by:
Zhaolong Teng
12/3/2021
DATE
SIG. INVENTORY NO. 09-0987

750 N. Greenfield Pkwy, Garner, NC 27529

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... 2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9...

FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'.

PAGE: 2 C1 PIN:47 VEHICLE DETECTOR INPUT ASSIGNMENT #.....9 DEBOUNCE TIME (0-25.5 SEC).....0.5

ENTER A 'Y' FOR NOT ENABLED

DEFAULT DETECTOR NUMBER WILL REMAIN UNTIL 'NOT ENABLED' IS ENTERED.

(LOOP 5A - PHASE 2)

PAGE: 2 C1 PIN:47 NOT ENABLED INPUT ASSIGNMENT #.....9 DEBOUNCE TIME (0-25.5 SEC).....0.5

PRESS '+' TO ADVANCE TO INPUT 17

PAGE: 2 C1 PIN:55 VEHICLE DETECTOR INPUT ASSIGNMENT #.....17 DEBOUNCE TIME (0-25.5 SEC).....0.5

ENTER '55' TO REASSIGN THE VEHICLE DETECTOR FOR THIS INPUT

(LOOP 5A - PHASE 5)

PAGE: 2 C1 PIN:55 VEHICLE DETECTOR INPUT ASSIGNMENT #.....17 DEBOUNCE TIME (0-25.5 SEC).....0.5

PROGRAMMING COMPLETE

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

(program controller as shown below)

FROM MAIN MENU PRESS '7' (DETECTORS), THEN PRESS '1' FOR VEHICLE DETECTORS.

VEHICLE DETECTOR #55 SETTINGS (+,-,1-64) SETTING: (Y/N) ENABLE DETECTOR.....N

ENTER 'Y' FOR ENABLE DETECTOR

ENTER '5' FOR PHASES ASSIGNED

ENSURE DELAY IS '0'

VEHICLE DETECTOR #55 SETTINGS (+,-,1-64) SETTING: (Y/N) ENABLE DETECTOR.....Y

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0987

DETECTOR PROGRAMMING COMPLETE

Electrical Detail - Sheet 4 of 5

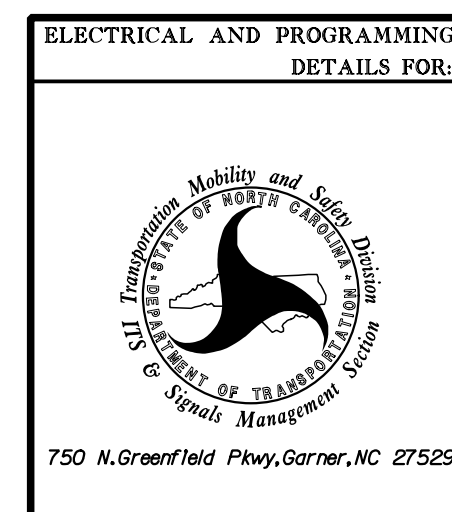


Table with project details: SR 2528 (Julian Rd) at Corporate Cir and SR 2540 (W. Ritchie Rd). Includes dates and names of staff.

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INDUCTIVE LOOPS				DETECTOR PROGRAMMING							SYSTEM LOOP	NEW CARD
ZONE	SIZE (FT)	DISTANCE FROM STOP LINE (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME		
1A	6X40	0	*	*	1	Y	Y	-	-	@15	-	*
2A/S16	6X6	355	EXIST	-	2	Y	Y	-	-	-	Y	Y
2B/S17	6X6	355	EXIST	-	2	Y	Y	-	-	-	Y	Y
3A	6X40	0	2-4-2	-	3	Y	Y	-	-	3	-	Y
4A	6X40	0	*	*	4	Y	Y	-	-	-	-	*
5A	6X40	0	2-4-2	-	5	Y	Y	-	-	3	-	Y
5B	6X40	0	*	*	5	Y	Y	-	-	15	-	*
6A/S18	6X6	355	*	*	6	Y	Y	-	-	-	Y	*
6B/S19	6X6	355	*	*	6	Y	Y	-	-	-	Y	*
7A	6X40	0	*	*	7	Y	Y	-	-	3	-	*
7B	6X40	0	*	*	7	Y	Y	-	-	-	-	*
8A	6X40	0	2-4-2	-	8	Y	Y	-	-	10	-	Y

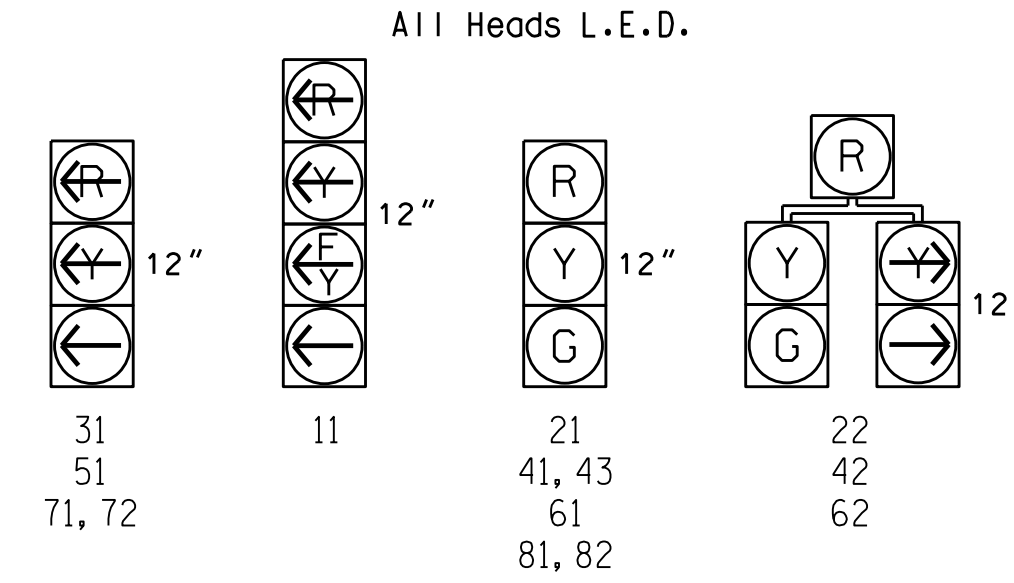
@ Reduce Delay to 3 Seconds During Alternate Phasing Operation.
 # Disable Phase Call For Loop(s) During Alternate Phasing Operation.
 * Video Detection Zone

FUNCTION	PRE 3	PRE 4	PRE 5	PRE 6
Interval 1 - Dwell Green	255	255	255	255
Interval 1 - Dwell Yellow	0.0*	0.0*	0.0*	0.0*
Interval 1 - Dwell Red	0.0*	0.0*	0.0*	0.0*
Interval 5 - Exit Green	1	1	1	1
Interval 5 - Yellow	0.0	0.0	0.0	0.0
Interval 5 - Red	0.0	0.0	0.0	0.0
Exit Phase(s)	2+6	2+6	4+8	4+8
Priority	MED	MED	MED	MED
Delay Time	0.0	0.0	0.0	0.0
Min Green Before Pre	1	1	1	1
Ped Clear Before Pre	0	0	0	0
Yellow Clear Before Pre	0.0*	0.0*	0.0*	0.0*
Red Clear Before Pre	0.0*	0.0*	0.0*	0.0*
Dwell Min Time	7	7	7	7
Dwell Max Time (Minutes)	2	2	2	2
Enable Backup Protection	N	N	N	N
Ped Clear Through Yellow	N	N	N	N
Omit Overlaps	-	-	-	-
Preempt Extend**	2	2	2	2

* Time defaults to time used for phase during normal operation
 ** Program Timing on Detection Unit

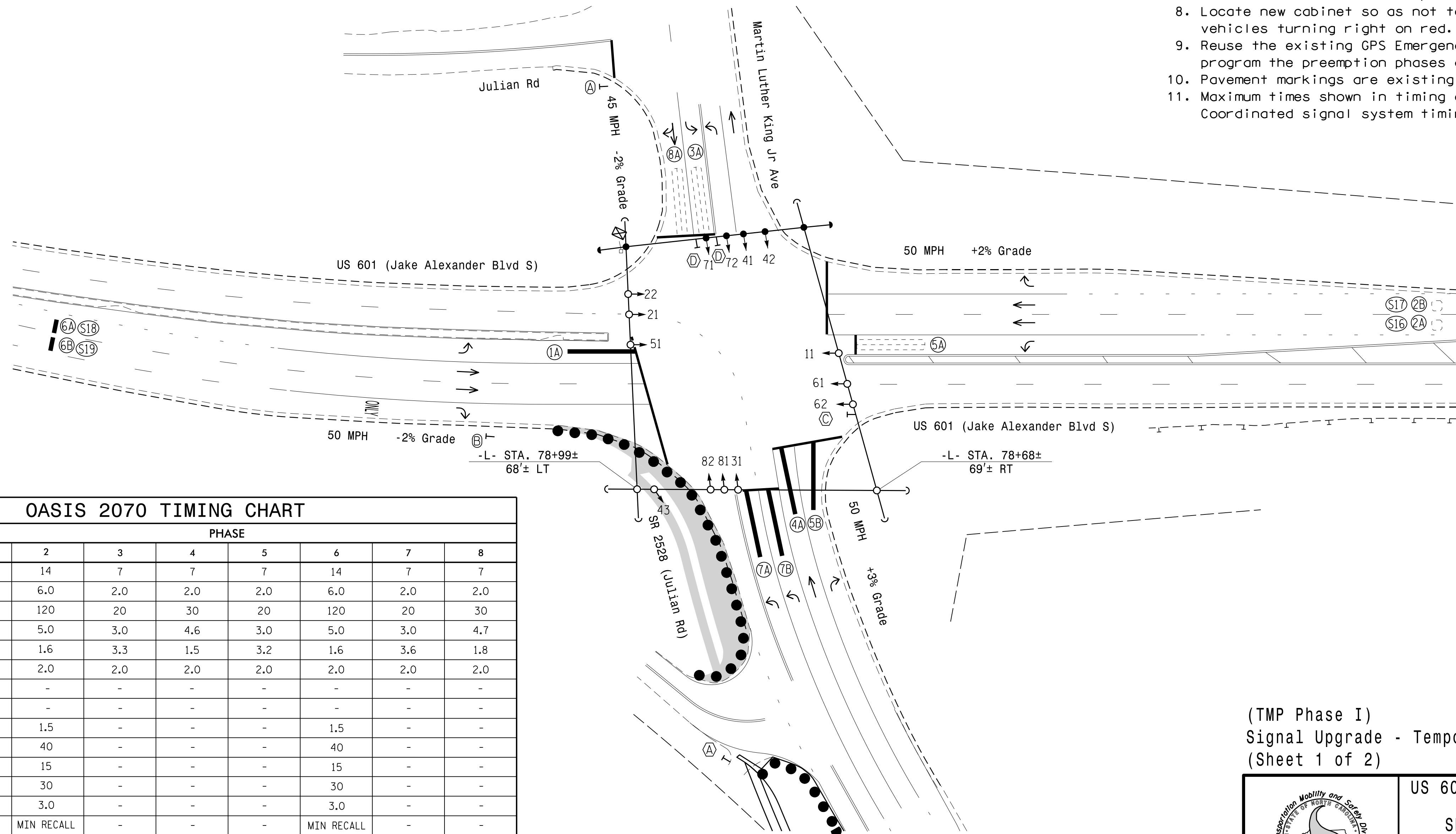
8 Phase Fully Actuated with Emergency Vehicle Preempt (Salisbury Signal System)

SIGNAL FACE I.D.



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.
- Reuse the existing loops and lead-in cables for detectors 2A, 2B, 3A, 5A and 8A.
- Install a video imaging loop emulator detection system to maintain vehicle detection during construction. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to obtain optimum detection zones as shown.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Reuse the existing GPS Emergency Vehicle Preempt equipment and program the preempt phases as shown.
- Pavement markings are existing.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1*	7	14	7	7	7	14	7	7
Extension 1*	2.0	6.0	2.0	2.0	2.0	6.0	2.0	2.0
Max Green 1*	20	120	20	30	20	120	20	30
Yellow Clearance	3.0	5.0	3.0	4.6	3.0	5.0	3.0	4.7
Red Clearance	2.6	1.6	3.3	1.5	3.2	1.6	3.6	1.8
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1*	-	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-	-
Seconds Per Actuation*	-	1.5	-	-	-	1.5	-	-
Max Variable Initial*	-	40	-	-	-	40	-	-
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	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

PROPOSED	EXISTING
○ (Traffic Signal Head)	● (Modified Signal Head)
○ (Pedestrian Signal Head)	N/A
⊕ (Signal Pole with Guy)	⊕ (Signal Pole with Sidewalk Guy)
⊙ (Inductive Loop Detector)	⊙ (Inductive Loop Detector)
⊘ (Junction Box)	⊘ (Junction Box)
- (2-in Underground Conduit)	- (2-in Underground Conduit)
- (Right of Way)	- (Right of Way)
- (Directional Arrow)	- (Directional Arrow)
- (Construction Zone Drums)	- (Construction Zone Drums)
- (Construction Zone)	- (Construction Zone)
- (Video Detection Area)	- (Video Detection Area)
- (Guardrail)	- (Guardrail)

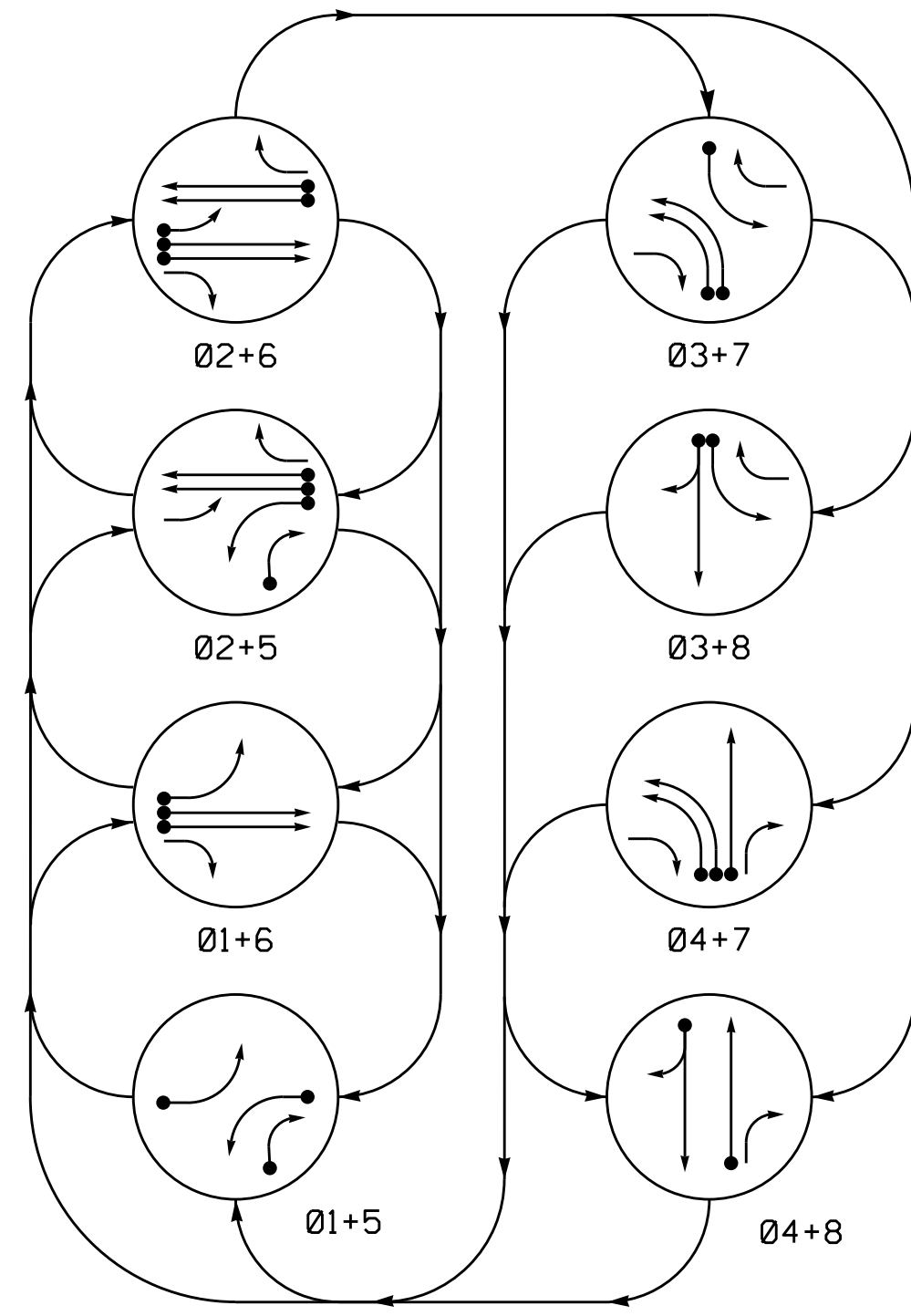
(A) "STOP" Sign (R1-1)	(A)
(B) "RIGHT LANE MUST TURN RIGHT" Sign (R3-7R)	(B)
(C) Right Arrow "ONLY" Sign (R3-5R)	(C)
(D) Left Arrow "ONLY" Sign (R3-5L)	(D)

(TMP Phase I)
 Signal Upgrade - Temporary Design 1
 (Sheet 1 of 2)

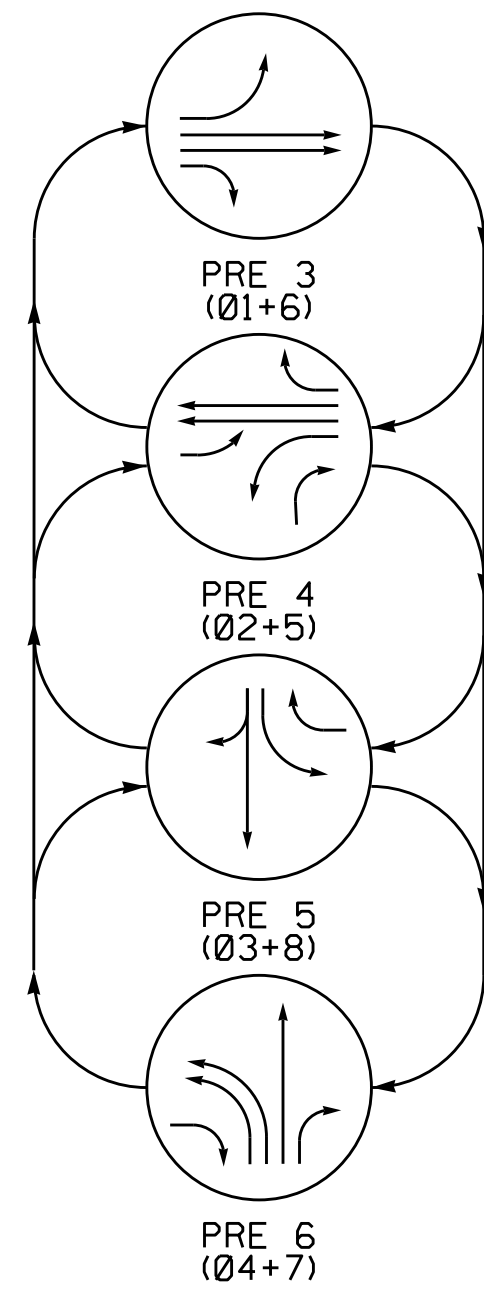
	US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave	
	Division 9 Rowan County Salisbury	
	PLAN DATE: January 2022 REVIEWED BY:	
	PREPARED BY: I.O. Umozurike REVIEWED BY:	
SCALE 0 40 1" = 40'	REVISIONS _____ INIT. DATE _____ INIT. DATE	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ROBERT J. ZIEMBA No. 026486 DocuSigned by: Robert J. Ziemba 01/27/2022 SIGNATURE DATE SIG. INVENTORY NO. 09-0640T1		

8 Phase Fully Actuated with Emergency Vehicle Preemption (Salisbury Signal System)

DEFAULT PHASING DIAGRAM



DEFAULT PHASING EV PREEMPT PHASES (Medium Priority)



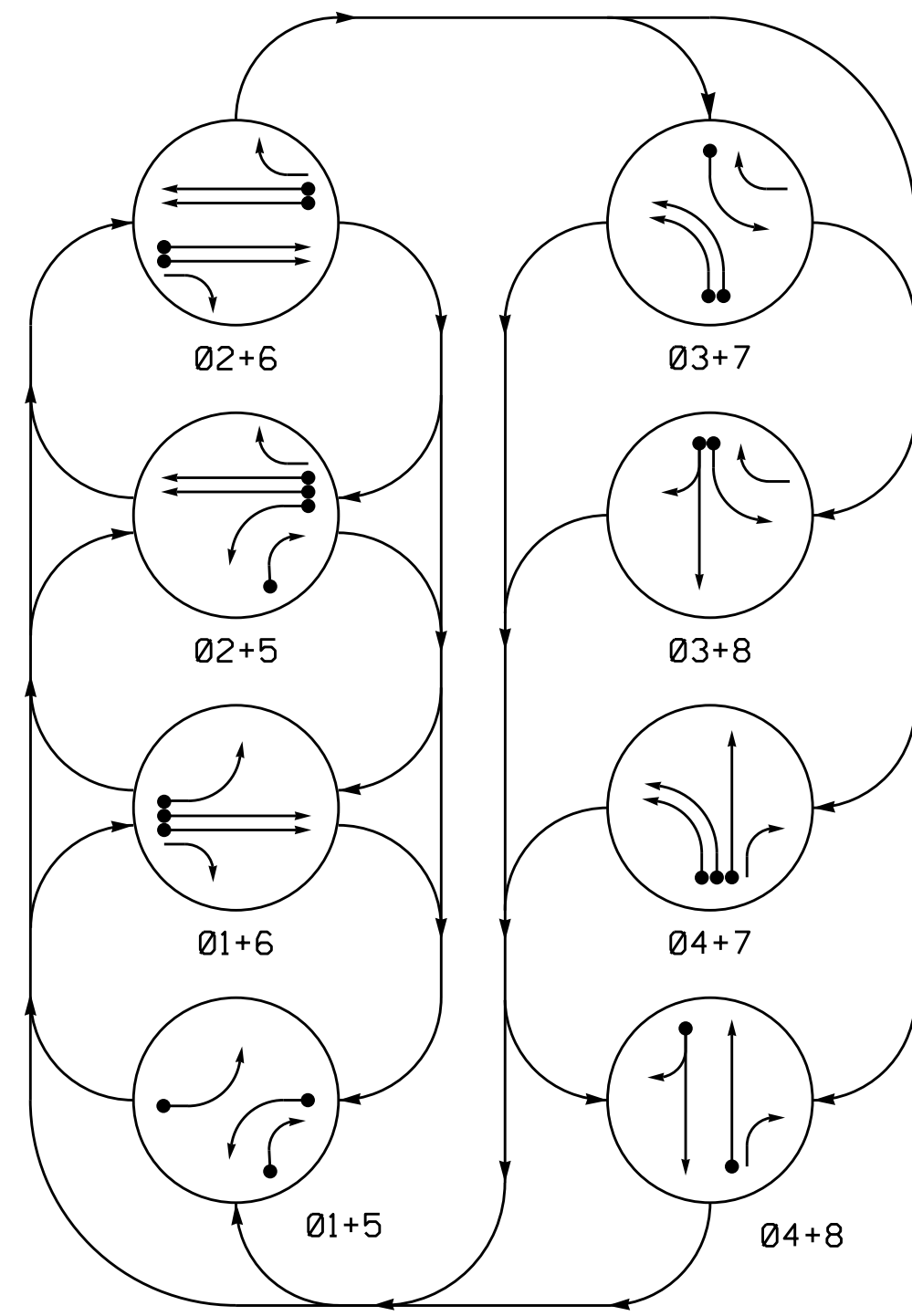
DEFAULT PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE												
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	PRE 3	PRE 4	PRE 5	PRE 6	FLASH
11	←	←	←	←	←	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	R	R	G	R	R	Y
22	R	R	G	G	R	R	R	R	R	G	R	R	Y
31	←	←	←	←	←	←	←	←	←	←	←	←	←
41, 43	R	R	R	R	R	R	R	G	G	R	R	R	G
42	R	R	R	R	R	R	R	G	G	R	R	R	G
51	←	←	←	←	←	←	←	←	←	←	←	←	←
61	R	G	R	G	R	R	R	R	G	R	R	R	Y
62	R	G	R	G	R	R	R	R	G	R	R	R	Y
71, 72	←	←	←	←	←	←	←	←	←	←	←	←	←
81, 82	R	R	R	R	R	G	R	G	R	R	G	R	R

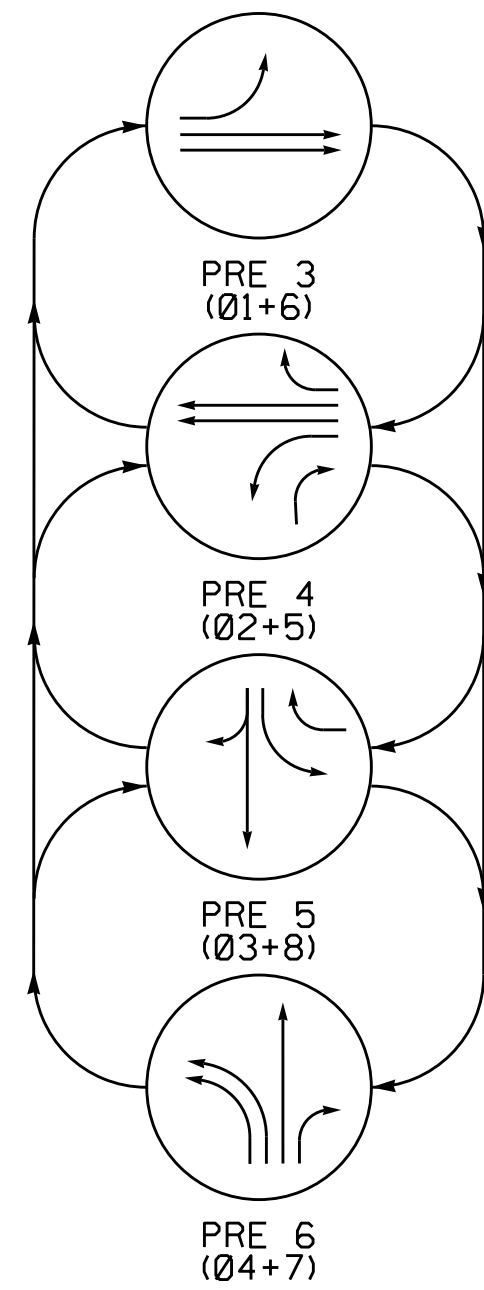
NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. Phase 3 and/or phase 7 may be lagged.
5. Reuse the existing loops and lead-in cables for detectors 2A, 2B, 3A, 5A and 8A.
6. Install a video imaging loop emulator detection system to maintain vehicle detection during construction. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to obtain optimum detection zones as shown.
7. Set all detector units to presence mode.
8. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
9. Reuse the existing GPS Emergency Vehicle Preemption equipment, and program the preemption phases as shown.
10. Pavement markings are existing.
11. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

ALTERNATE PHASING DIAGRAM



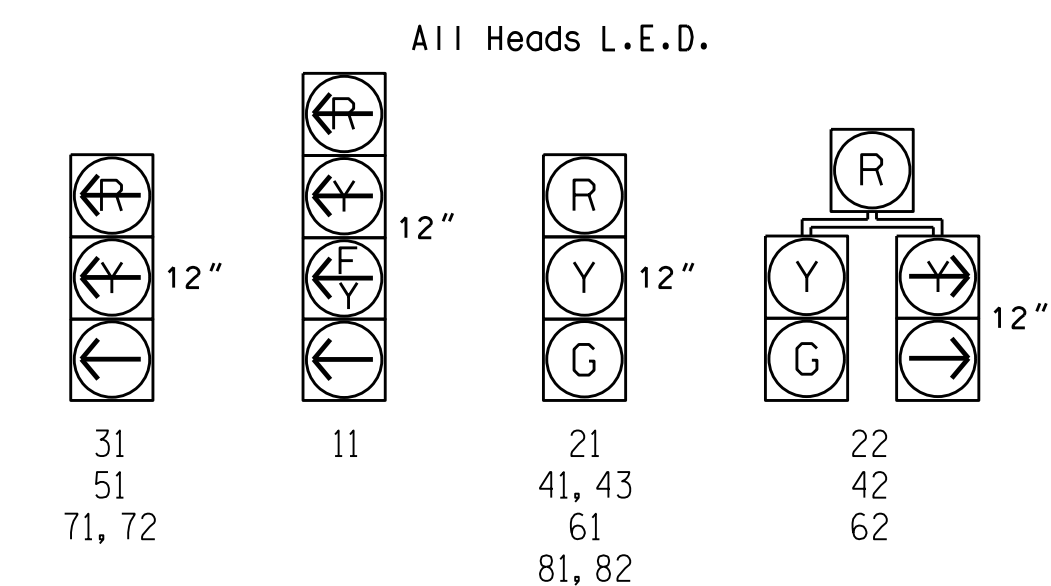
ALTERNATE PHASING EV PREEMPT PHASES (Medium Priority)



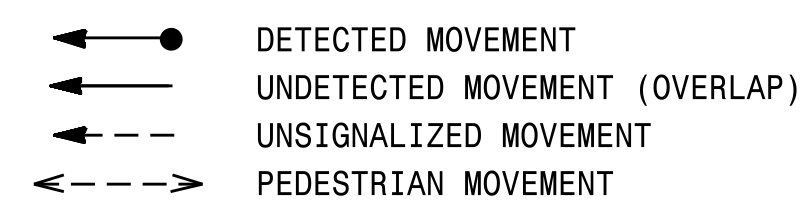
ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE												
	01+5	01+6	02+5	02+6	03+7	03+8	04+7	04+8	PRE 3	PRE 4	PRE 5	PRE 6	FLASH
11	←	←	←	←	←	←	←	←	←	←	←	←	←
21	R	R	G	G	R	R	R	R	R	G	R	R	Y
22	R	R	G	G	R	R	R	R	R	G	R	R	Y
31	←	←	←	←	←	←	←	←	←	←	←	←	←
41, 43	R	R	R	R	R	R	R	G	G	R	R	R	G
42	R	R	R	R	R	R	R	G	G	R	R	R	G
51	←	←	←	←	←	←	←	←	←	←	←	←	←
61	R	G	R	G	R	R	R	R	G	R	R	R	Y
62	R	G	R	G	R	R	R	R	G	R	R	R	Y
71, 72	←	←	←	←	←	←	←	←	←	←	←	←	←
81, 82	R	R	R	R	R	G	R	G	R	R	G	R	R

SIGNAL FACE I.D.



PHASING DIAGRAM DETECTION LEGEND

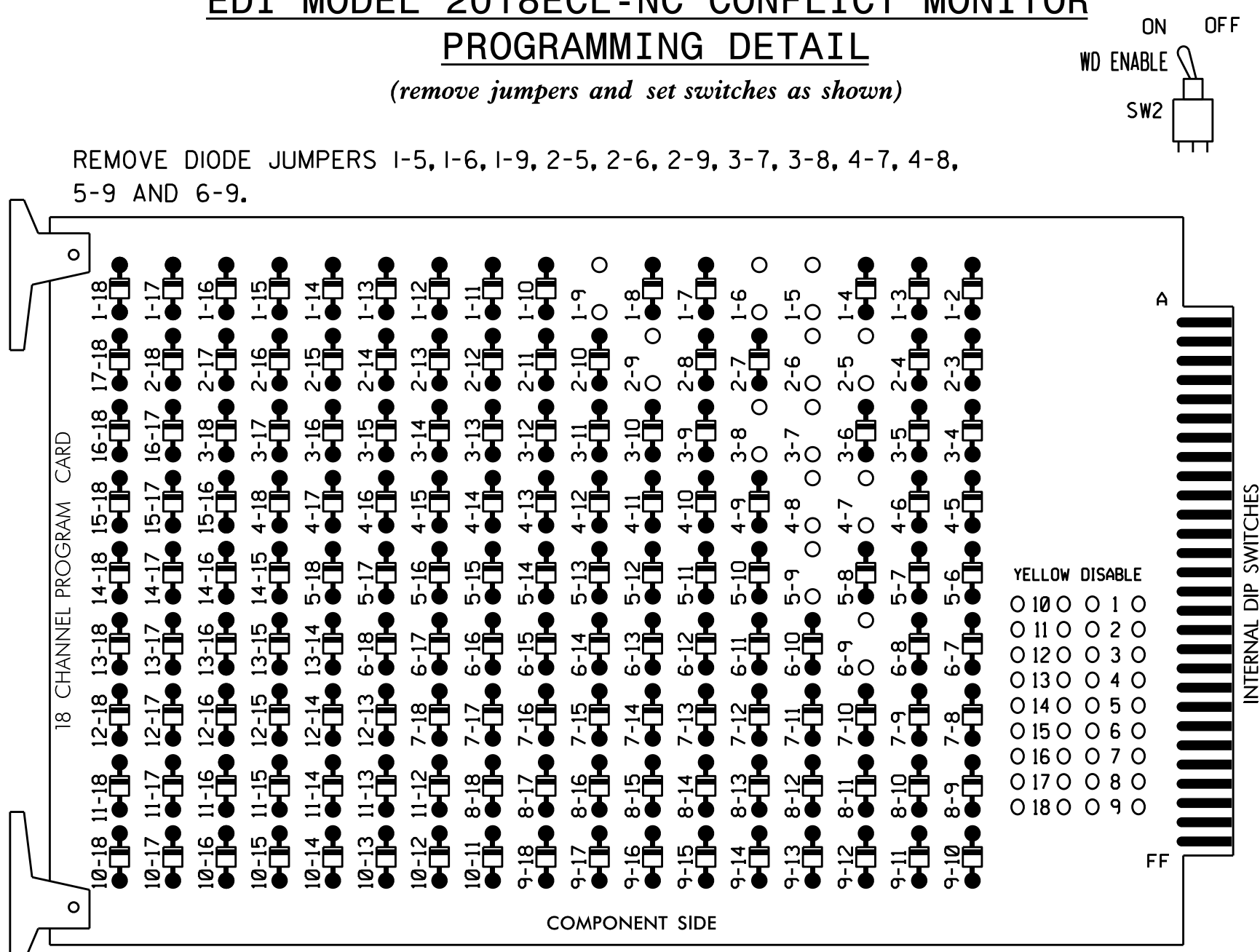


(TMP Phase I)
Signal Upgrade - Temporary Design 1
(Sheet 2 of 2)

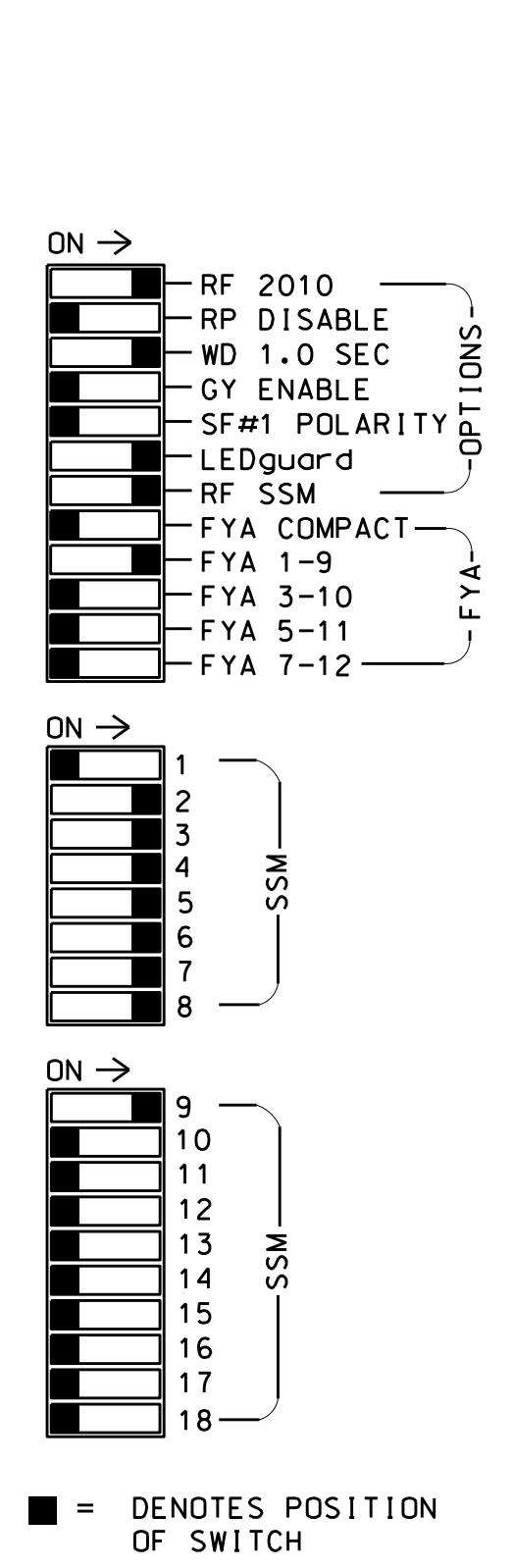
	US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave Division 9 Rowan County Salisbury		SEAL ROBERT J. ZIEMBA ENGINEER 026486 01/27/2022
	PLAN DATE: January 2022 PREPARED BY: I.O. Umozurike	REVIEWED BY: REVISIONS INIT. DATE	

27-Jan-2022 10:58
 S:\IT\GIS\WITS\Symbols\Signal Design Section\Central Region\401v 9\U-5738\09064011.sfg.dsn, 20220127.dgn
 Loumzurike

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL



- 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.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlap.
- If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.
- The cabinet and controller are part of the Salisbury Signal 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,S4,S5,S7,S8,S10,S11,AUX S1
PHASES USED.....1,2,3,4,5,6,7,8
OVERLAP "A".....1+2
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	21,22	NU	22	31	41,42 43	NU	42	51	61,62	NU	62	71,72	81,82	NU	11	NU	NU	NU
RED		128				101				134				107					
YELLOW	*	129				102				135				108					
GREEN		130				103				136				109					
RED ARROW						116				131				122					A121
YELLOW ARROW						117	117			132	132			123	123				A122
FLASHING YELLOW ARROW																			A123
GREEN ARROW	127					118	118			133	133			124	124				

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

INPUT FILE POSITION LAYOUT (front view)

FILE U	1	2	3	4	5	6	7	8	9	10	11	12	13	14
∅ 1	∅2/SYS	∅3												FS
1A	2A/S16	3A												DC ISOLATOR
NOT USED	∅2/SYS	NOT USED												ST
	2B/S17													DC ISOLATOR
FILE U	∅5				NOT USED									
5A					∅8								* GPS EVIP	
NOT USED					8A									

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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

GPS PREEMPTION INSTALLATION NOTE

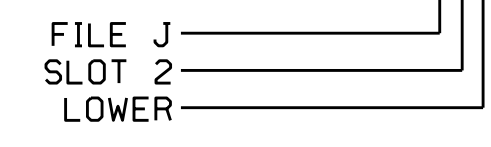
Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

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	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
2A/S16	TB2-5,6	I2U	39	1	2	2/SYS	Y	Y			
2B/S17	TB2-7,8	I2L	43	5	12	2/SYS	Y	Y			
3A	TB4-5,6	I5U	58	20	3	3	Y	Y			3
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			3
8A	TB5-11,12	J6L	46	8	18	8	Y	Y			10

* Add jumper from I1-W to J4-W, on rear of input file.
★ See Input Page Assignment programming details on sheet 3.

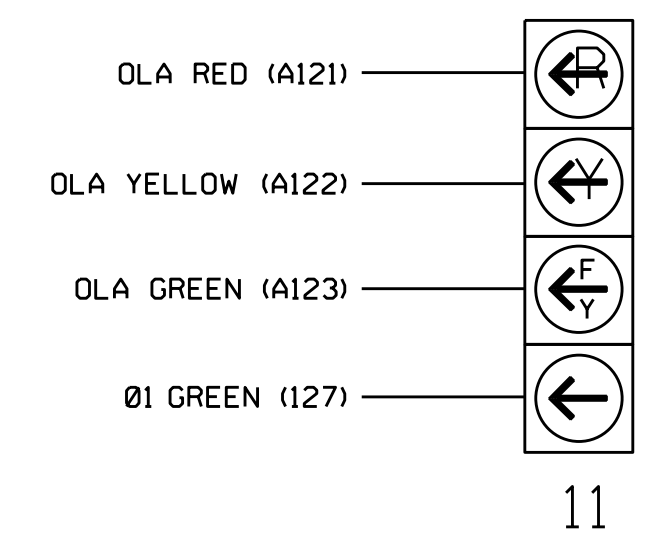
INPUT FILE POSITION LEGEND: J2L



DETECTOR NOTES

- Install a video detection system for detection zones 1A, 4A, 5B, 6A/S18, 6B/S19, 7A and 7B. 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 detection area 1A 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 3 of this electrical detail.

FYA SIGNAL WIRING DETAIL (wire signal head as shown)



NOTE: The sequence display for signal head 11 requires special logic programming. See sheet 2 for programming instructions.

LOAD RESISTOR INSTALLATION DETAIL (install resistor as shown below)

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

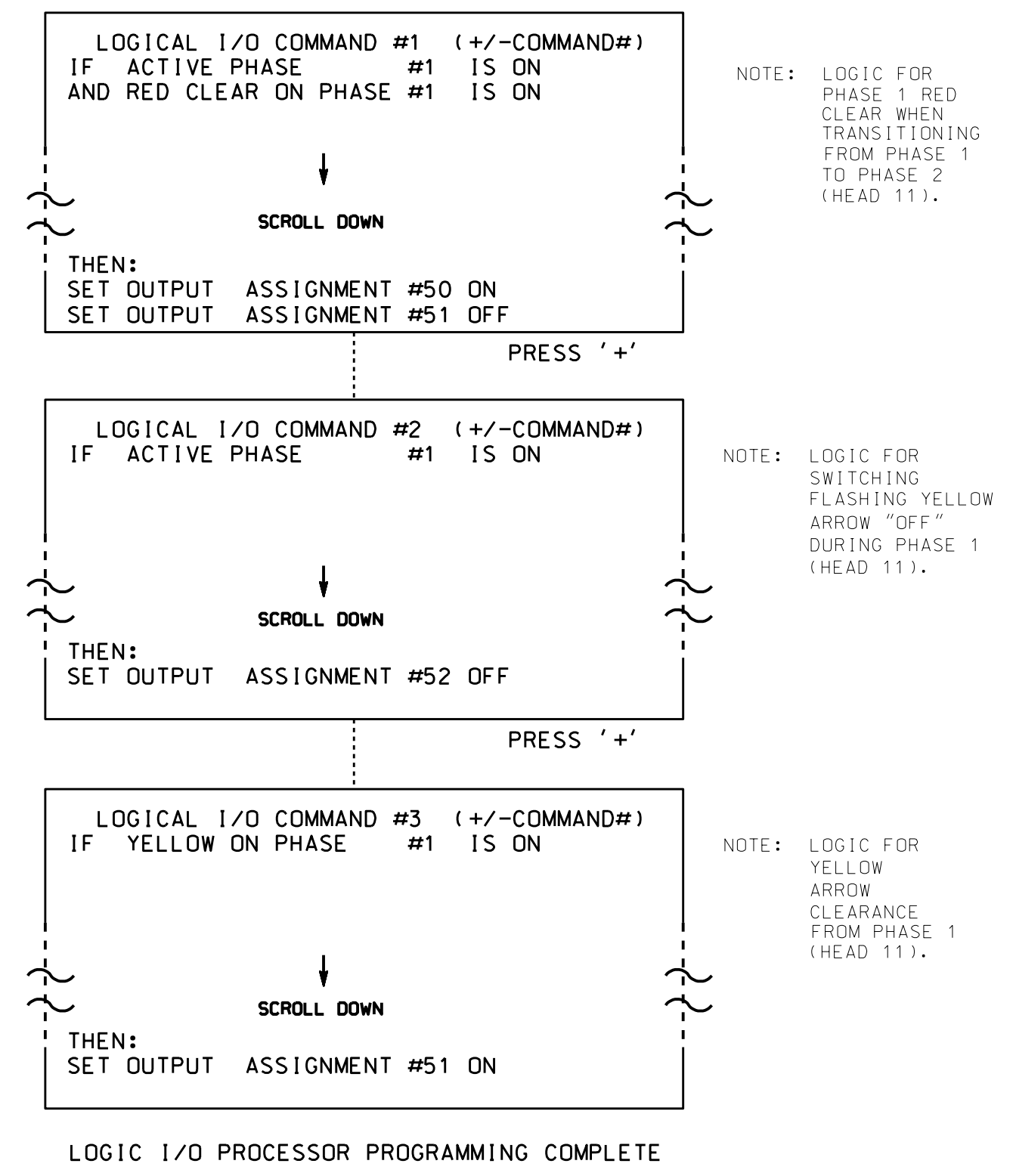
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-0640T1
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

ELECTRICAL AND PROGRAMMING DETAILS FOR: US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave
Division 9 Rowan County Salisbury
PLAN DATE: January 2022 REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland REVIEWED BY:
REVISIONS INIT. DATE
750 N. Greenfield Pkwy, Garner, NC 27529
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SEAL
D. Todd Joyce
01/28/2022
SIG. INVENTORY NO. 09-0640T1

**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 AND 3.
- FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '3' (LOGICAL I/O PROCESSOR).



OUTPUT REFERENCE SCHEDULE

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
    
```

← NOTICE GREEN FLASH

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  - 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

27-1116-2022 14:43
K:\09640\sem\elc\wv-11.dgn
CASSI TCK1010

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640T1
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 1 - Sheet 2 of 5

US 601 (Jake Alexander Blvd S)
at
SR 2528 (Julian Rd) and
Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS

INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

STATE OF NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL 031001
D. Todd Joyce

DocuSigned by:
D. Todd Joyce 01/28/2022

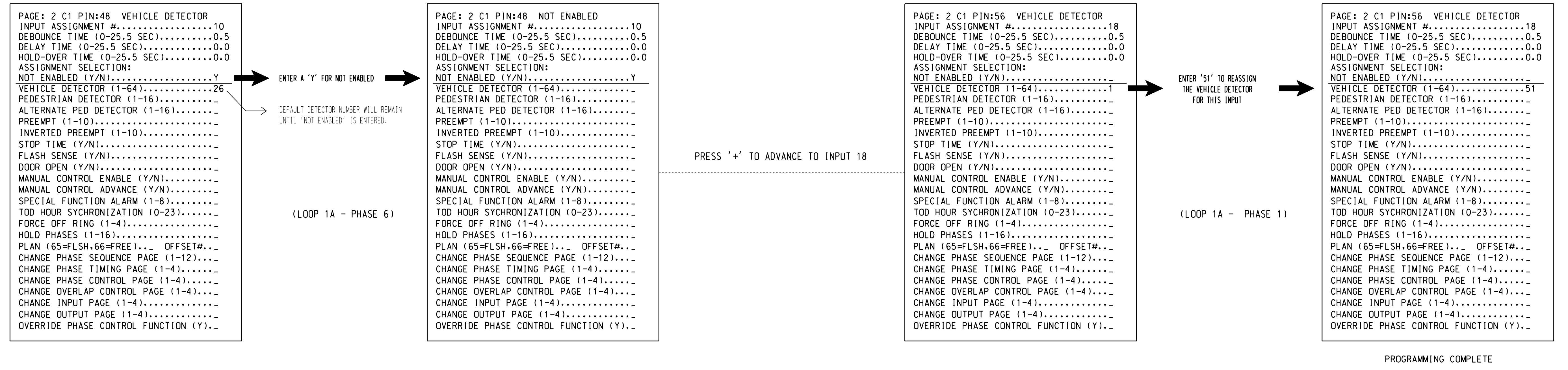
SIG. INVENTORY NO. 09-0640T1

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.

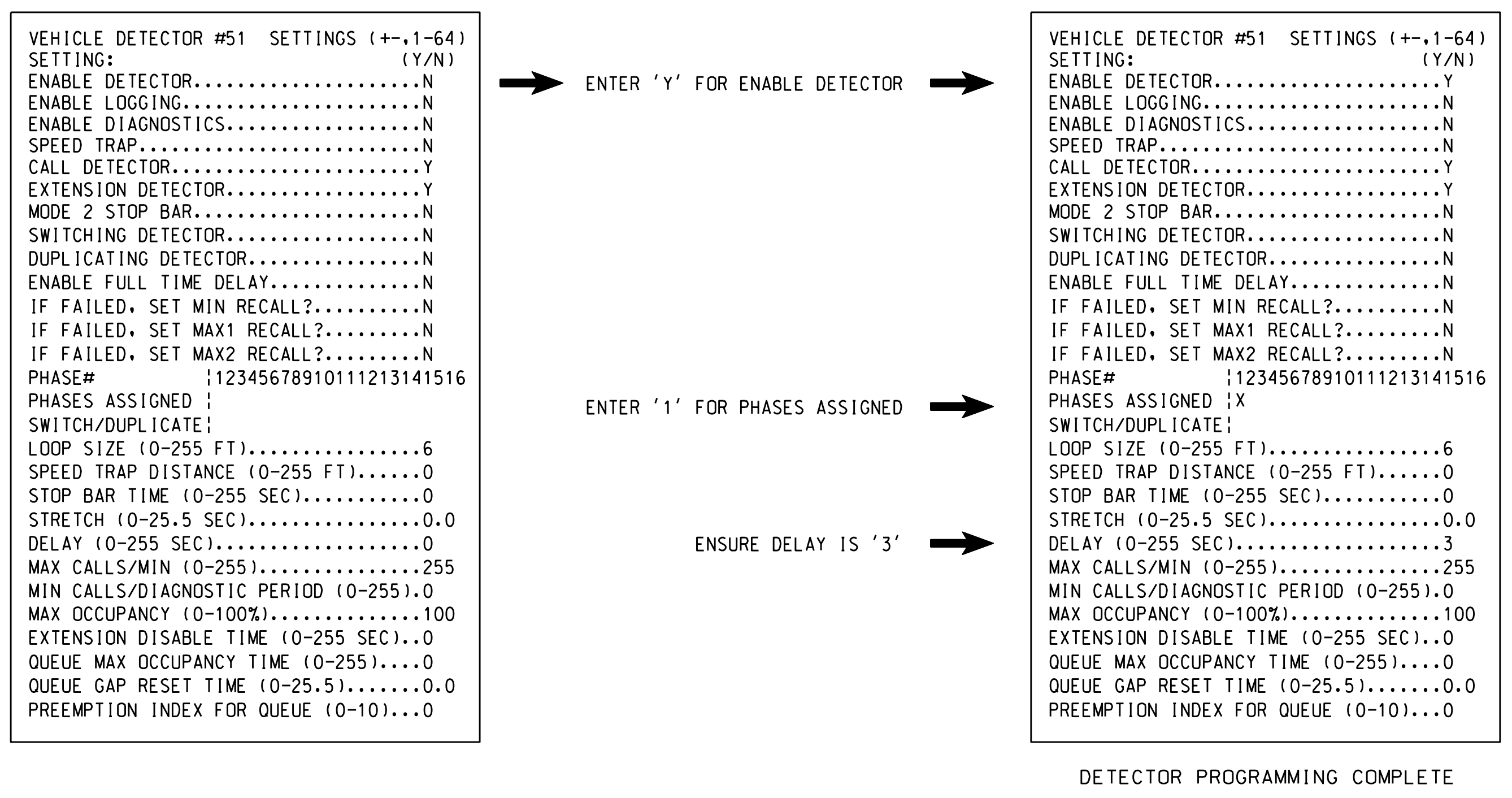
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 10 IS REACHED.



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: 09-0640T1
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 1 - Sheet 3 of 5

US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave

Division 9 Rowan County Salisbury

PLAN DATE: January 2022 REVIEWED BY: T. Joyce

PREPARED BY: C. Strickland REVIEWED BY:

REVISIONS INIT. DATE

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SEAL

PROFESSIONAL ENGINEER

01/28/2022

SIG. INVENTORY NO. 09-0640T1

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K:\0640\user\enr\09-0640T1.dgn
C:\EST\1\01.dwg

EMERGENCY VEHICLE PREEMPTION PROGRAMMING DETAIL

(program controller as shown below)

From Main Menu press 'A' (Preemption), then '1' (Standard Preemptions). Press 'NEXT' as needed to advance to Preempts 3, 4, 5 and 6.

PREEMPTION #3 SETTINGS (NEXT:1-10)	
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

EXIT CALLS	OPTIONS
PRIORITY (Y/N TO SELECT)	MED
DELAY TIMER (0-255 SEC)	0
MIN GREEN BEFORE PRE (0= DEFAULT)...	1
PED CLEAR BEFORE PRE (0= DEFAULT)...	0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)...	0.0
RED CLEAR BEFORE PRE (0= DEFAULT)...	0.0
DWELL MIN TIMER (0-255 SEC)	7
DWELL MAX TIMER (0=OFF,1-255MIN) ...	2
DWELL HOLD-OVER TIMER (0-255)	0
LATCH CALL?	N
LINK TO NEXT PREEMPT?	N
ENABLE BACKUP PROTECTION?	N
HOLD CLEAR 1 PHASES DURING DELAY? ..	N
FAST GREEN FLASH DWELL PHASES?	N
PED CLEARANCE THROUGH YELLOW?	N
INHIBIT OVERLAP GREEN EXTENSION? ..	N
SERVICE DURING SOFTWARE FLASH?	N
REST IN RED DURING DWELL INTERVAL? ..	N
FLASH DWELL INTERVAL?	N
ALLOW PEDS IN DWELL INTERVAL?	N
RE-TIME DWELL INTERVAL?	N
OVERLAPS:	ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW	
OMIT OVERLAPS:	

PRESS 'NEXT' ONCE

PREEMPTION #4 SETTINGS (NEXT:1-10)	
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

EXIT CALLS	OPTIONS
PRIORITY (Y/N TO SELECT)	MED
DELAY TIMER (0-255 SEC)	0
MIN GREEN BEFORE PRE (0= DEFAULT)...	1
PED CLEAR BEFORE PRE (0= DEFAULT)...	0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)...	0.0
RED CLEAR BEFORE PRE (0= DEFAULT)...	0.0
DWELL MIN TIMER (0-255 SEC)	7
DWELL MAX TIMER (0=OFF,1-255MIN) ...	2
DWELL HOLD-OVER TIMER (0-255)	0
LATCH CALL?	N
LINK TO NEXT PREEMPT?	N
ENABLE BACKUP PROTECTION?	N
HOLD CLEAR 1 PHASES DURING DELAY? ..	N
FAST GREEN FLASH DWELL PHASES?	N
PED CLEARANCE THROUGH YELLOW?	N
INHIBIT OVERLAP GREEN EXTENSION? ..	N
SERVICE DURING SOFTWARE FLASH?	N
REST IN RED DURING DWELL INTERVAL? ..	N
FLASH DWELL INTERVAL?	N
ALLOW PEDS IN DWELL INTERVAL?	N
RE-TIME DWELL INTERVAL?	N
OVERLAPS:	ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW	
OMIT OVERLAPS:	

PRESS 'NEXT' ONCE

PREEMPTION #5 SETTINGS (NEXT:1-10)	
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

EXIT CALLS	OPTIONS
PRIORITY (Y/N TO SELECT)	MED
DELAY TIMER (0-255 SEC)	0
MIN GREEN BEFORE PRE (0= DEFAULT)...	1
PED CLEAR BEFORE PRE (0= DEFAULT)...	0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)...	0.0
RED CLEAR BEFORE PRE (0= DEFAULT)...	0.0
DWELL MIN TIMER (0-255 SEC)	7
DWELL MAX TIMER (0=OFF,1-255MIN) ...	2
DWELL HOLD-OVER TIMER (0-255)	0
LATCH CALL?	N
LINK TO NEXT PREEMPT?	N
ENABLE BACKUP PROTECTION?	N
HOLD CLEAR 1 PHASES DURING DELAY? ..	N
FAST GREEN FLASH DWELL PHASES?	N
PED CLEARANCE THROUGH YELLOW?	N
INHIBIT OVERLAP GREEN EXTENSION? ..	N
SERVICE DURING SOFTWARE FLASH?	N
REST IN RED DURING DWELL INTERVAL? ..	N
FLASH DWELL INTERVAL?	N
ALLOW PEDS IN DWELL INTERVAL?	N
RE-TIME DWELL INTERVAL?	N
OVERLAPS:	ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW	
OMIT OVERLAPS:	

PRESS 'NEXT' ONCE

PREEMPTION #6 SETTINGS (NEXT:1-10)	
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X

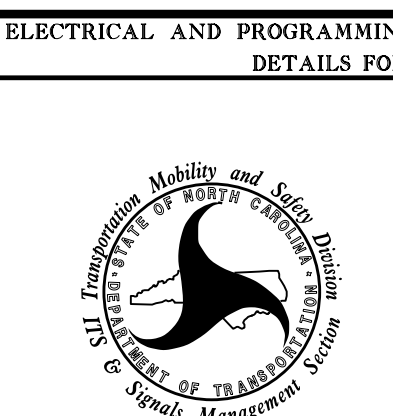
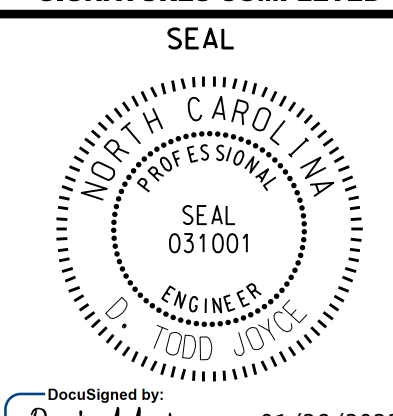
EXIT CALLS	OPTIONS
PRIORITY (Y/N TO SELECT)	MED
DELAY TIMER (0-255 SEC)	0
MIN GREEN BEFORE PRE (0= DEFAULT)...	1
PED CLEAR BEFORE PRE (0= DEFAULT)...	0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)...	0.0
RED CLEAR BEFORE PRE (0= DEFAULT)...	0.0
DWELL MIN TIMER (0-255 SEC)	7
DWELL MAX TIMER (0=OFF,1-255MIN) ...	2
DWELL HOLD-OVER TIMER (0-255)	0
LATCH CALL?	N
LINK TO NEXT PREEMPT?	N
ENABLE BACKUP PROTECTION?	N
HOLD CLEAR 1 PHASES DURING DELAY? ..	N
FAST GREEN FLASH DWELL PHASES?	N
PED CLEARANCE THROUGH YELLOW?	N
INHIBIT OVERLAP GREEN EXTENSION? ..	N
SERVICE DURING SOFTWARE FLASH?	N
REST IN RED DURING DWELL INTERVAL? ..	N
FLASH DWELL INTERVAL?	N
ALLOW PEDS IN DWELL INTERVAL?	N
RE-TIME DWELL INTERVAL?	N
OVERLAPS:	ABCDEFGHIJKLMNOP
DWELL INT FLASH YELLOW	
OMIT OVERLAPS:	

PROGRAMMING COMPLETE

Program extend time on
detector unit for 2.0 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640T1
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 1 - Sheet 4 of 5

	<p style="text-align: center;">ELECTRICAL AND PROGRAMMING DETAILS FOR: US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave</p> <p style="text-align: center;">Division 9 Rowan County Salisbury</p> <p>PLAN DATE: January 2022 REVIEWED BY: T. Joyce</p> <p>PREPARED BY: C. Strickland REVIEWED BY:</p>								
	<p style="text-align: center;">REVISIONS</p> <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				
NO.	DESCRIPTION	INIT.	DATE						

750 N. Greenfield Pkwy, Garner, NC 27529

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

SEAL

NORTH CAROLINA
PROFESSIONAL
ENGINEER
TODD JOYCE

DocuSigned by:
T. Todd Joyce 01/28/2022

SIC. INVENTORY NO. 09-0640T1

27-Jan-2022 14:45
K:\0640\em.enr\09-0640T1.dgn
C:\STR\CK1\09

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING COORDINATION - SELECT ALL PAGE CHANGES (AS SHOWN BELOW) WITHIN COORDINATION PLAN PROGRAMMING.

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM PAGE CHANGES (SHOWN BELOW) IN SEPARATE TIME OF DAY EVENTS. IF PAGE 1 IS USED, NO EVENT PROGRAMMING IS NECESSARY FOR THAT PARTICULAR PAGE.

<u>PHASING</u>	<u>INPUTS PAGE</u>	<u>OVERLAPS PAGE</u>
ACTIVE PAGES REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	1
ACTIVE PAGES REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	2

NOTE: PAGES NOT SHOWN (i.e. sequence, phase control, etc.) SHOULD REMAIN AS '1', OR AS DEFINED BY TIMING ENGINEER.

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

ALTERNATE PHASING PAGE CHANGE SUMMARY

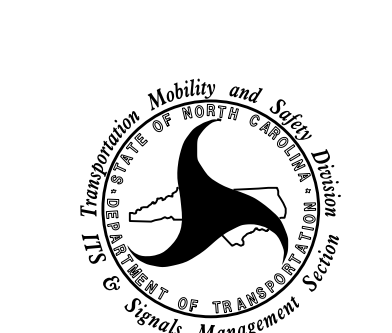
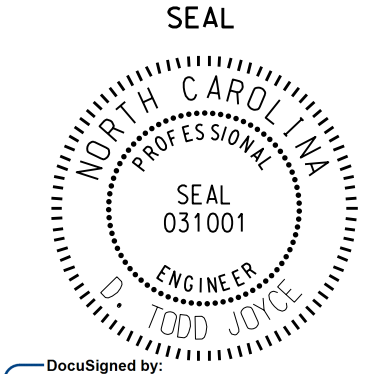
THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN THESE OVERLAP/INPUT PAGE CHANGES ACTIVATE TO CALL THE "ALTERNATE PHASING":

OVERLAPS PAGE 2: Modifies overlap parent phases for heads 11 to run protected turns only.

INPUTS PAGE 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 3 seconds.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 09-0640T1
DESIGNED: January 2022
SEALED: 1/27/2022
REVISED:

Electrical Detail - Temp 1 - Sheet 5 of 5

<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p>  <p style="font-size: 8px;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 601 (Jake Alexander Blvd S) at SR 2528 (Julian Rd) and Martin Luther King Jr Ave</p> <p>Division 9 Rowan County Salisbury</p> <p>PLAN DATE: January 2022 REVIEWED BY: T. Joyce</p> <p>PREPARED BY: C. Strickland REVIEWED BY:</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	REVISIONS	INIT.	DATE										<p style="text-align: center; font-weight: bold; font-size: 8px;">DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <div style="text-align: center;">  <p style="font-size: 8px;">DocuSigned by: <i>Todd Joyce</i> 01/28/2022 ASACADFB0842410 DATE</p> </div> <p style="font-size: 8px;">SIG. INVENTORY NO. 09-0640T1</p>
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