PROJECT REFERENCE NO. U-6202

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

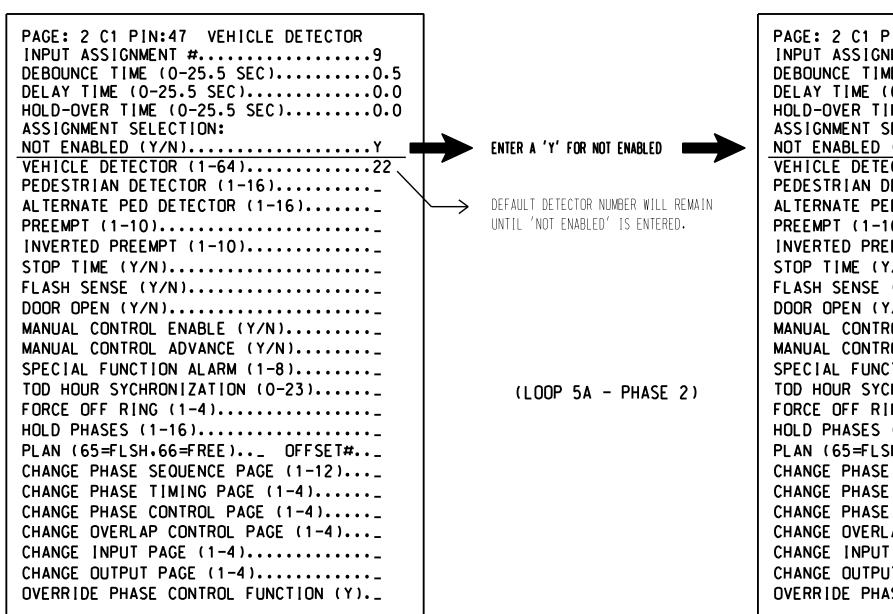
(program controller as shown below)

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.

PRESS '+' TO ADVANCE TO INPUT 17

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



PAGE: 2 C1 PIN:47 NOT ENABLED INPUT ASSIGNMENT #.....9 DEBOUNCE TIME (0-25.5 SEC).................0.5 DELAY TIME (0-25.5 SEC)............ HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64)..... PEDESTRIAN DETECTOR (1-16).... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)..._ CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4).... OVERRIDE PHASE CONTROL FUNCTION (Y)._

INPUT ASSIGNMENT #......17 DELAY TIME (0-25.5 SEC).............. HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....5 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4).... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PAGE: 2 C1 PIN:55 VEHICLE DETECTOR

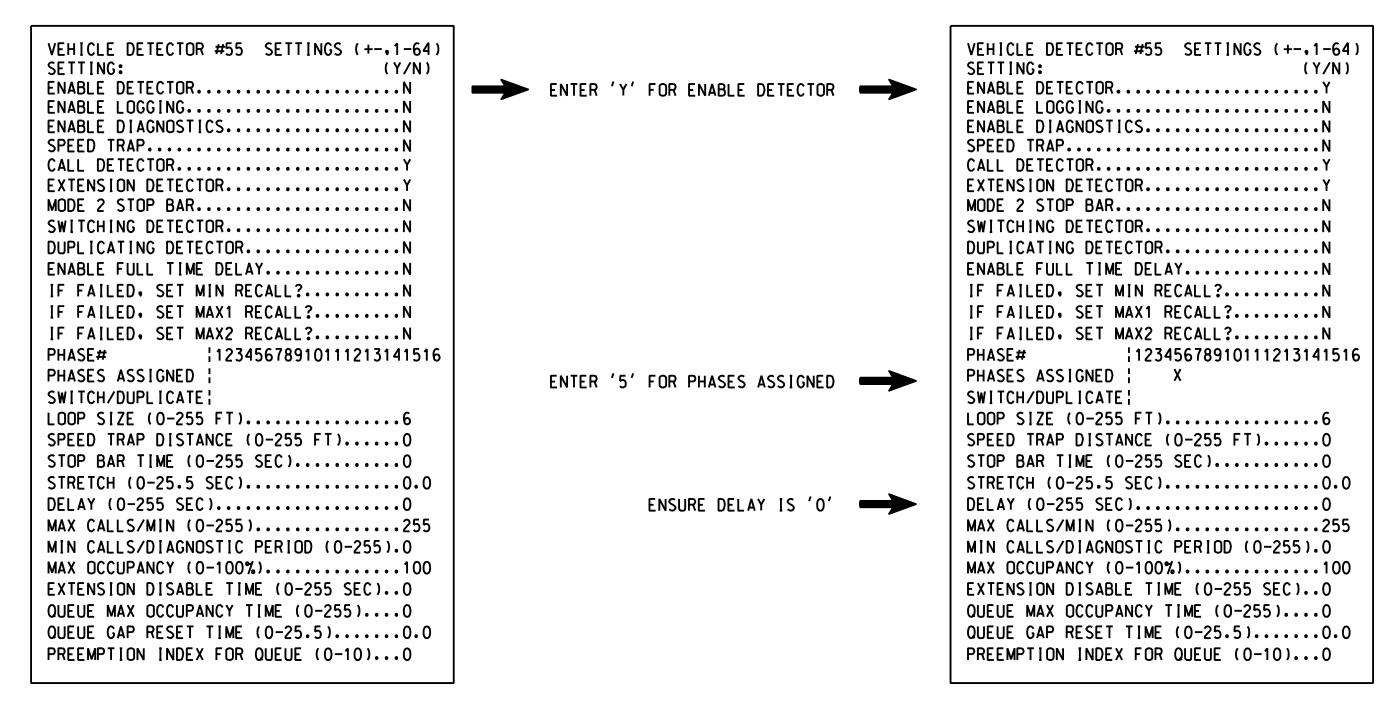
PAGE: 2 C1 PIN:55 VEHICLE DETECTOR DELAY TIME (0-25.5 SEC)............0.0 HOLD-OVER TIME (0-25.5 SEC).........0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).... VEHICLE DETECTOR (1-64).....55 PEDESTRIAN DETECTOR (1-16).... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... (LOOP 5A - PHASE 5)FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

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. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.



INPUT FILE CONNECTION AND PROGRAMMING

NOTE: DETECTOR IS PROGRAMMED PER THE

CHART SHOWN ON SHEET 1.

DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade-Electrical Detail - Sheet 4 of 5 (Construction Phase 3)

ENTER '55' TO REASSIGN

THE VEHICLE DETECTOR

FOR THIS INPUT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 03-0893T3

ELECTRICAL AND PROGRAMMIN DETAILS FOR: Prepared in the Offices of:

SR 2048 (Gordon Rd) PLAN DATE: PREPARED BY: E.E. Tiller

SR 1328 (White Rd) ivision 3 New Hanover County Wilmington August 2023 REVIEWED BY: N.K. Vlanich REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

TH CARO CHOKESS 1011 031464

SIG. INVENTORY NO. 03-0893T

DETECTOR PROGRAMMING COMPLETE

PROJECT REFERENCE NO. U-6202

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING <u>COORDINATION</u> - 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	DEFAULT PHASING	1	1
ACTIVE PAGES	REQUIRED	TO RUN	ALTERNATE PHASING	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:

and reduces delay time for Phase 2 call on loop 1A to 0 seconds.

Disables phase 6 call on loop 1A

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

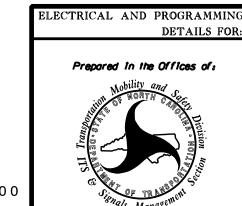
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0893T3 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade-Electrical Detail - Sheet 5 of 5 (Construction Phase 3)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CAROL OF ESSION AND

SIG. INVENTORY NO. 03-0893T3

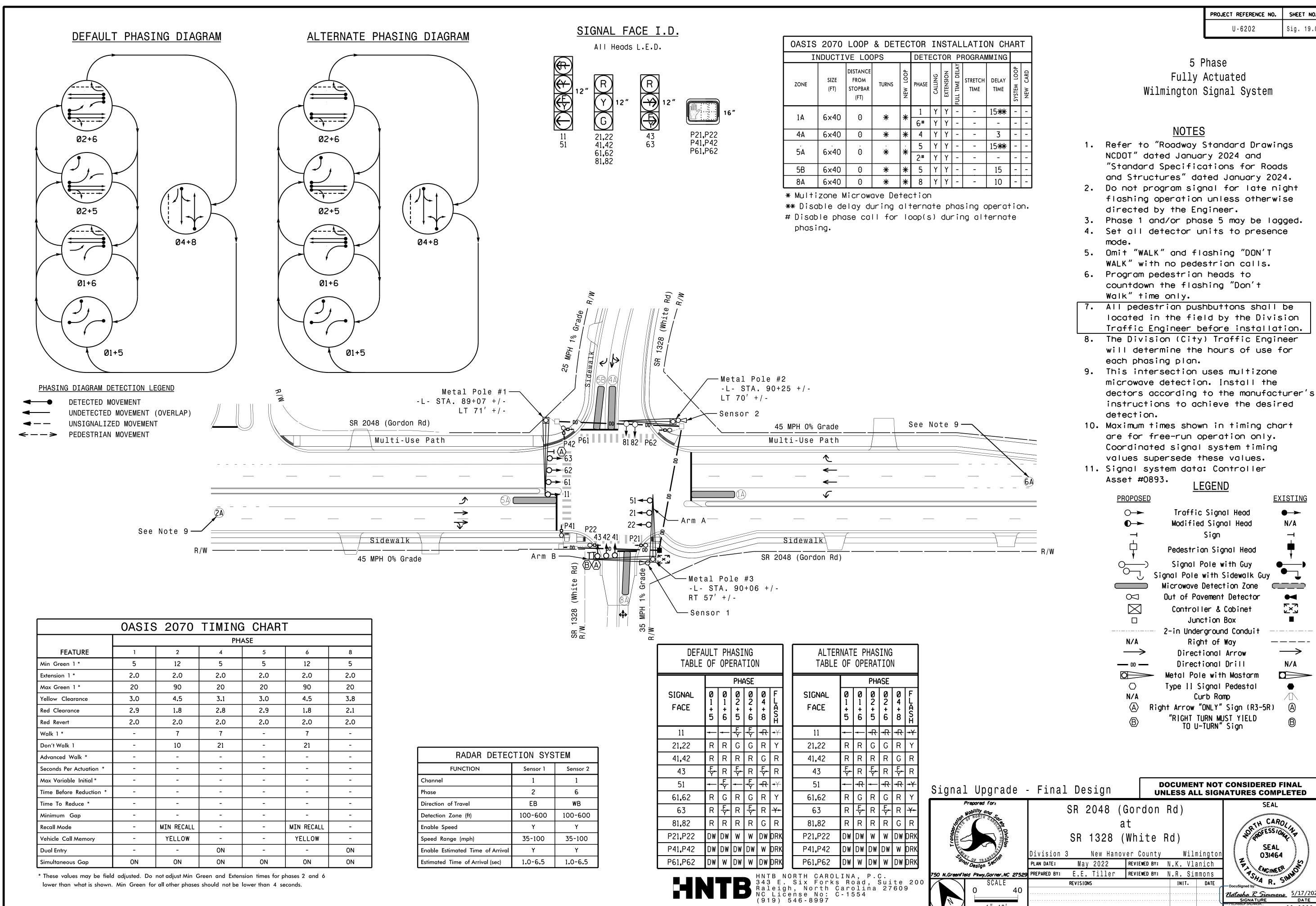


SR 2048 (Gordon Rd) SR 1328 (White Rd)

Division 3 New Hanover County Wilmington August 2023 REVIEWED BY: N.K. Vlanich PLAN DATE: PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

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Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

SEAL 031464 REVISIONS INIT. DATE

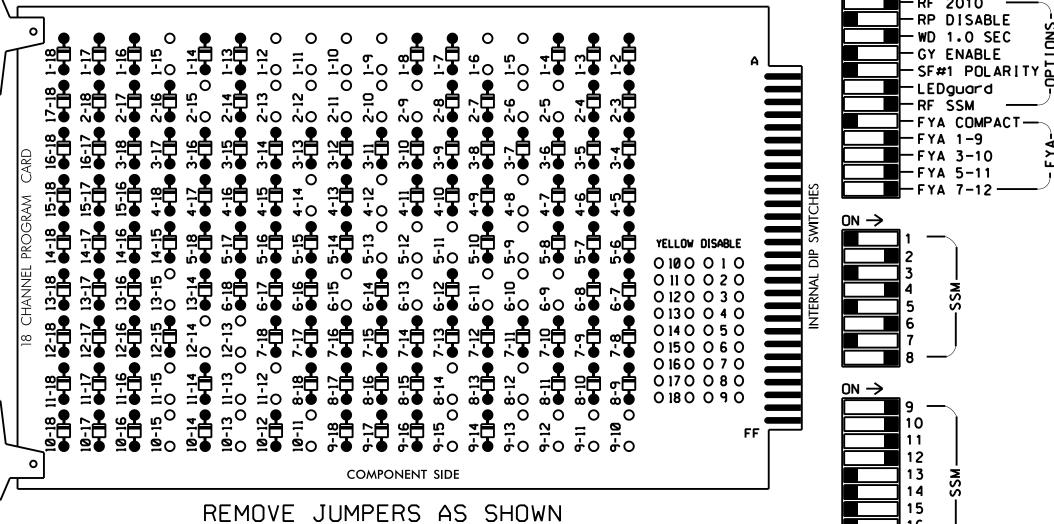


<u>PROPOSED</u>	<u>!</u>	<u>EXISTING</u>
\bigcirc	Traffic Signal Head	
0-	Modified Signal Head	N/A
_	Sign	-
\Rightarrow	Pedestrian Signal Head	•
0	Signal Pole with Guy	•
$\mathcal{O}_{\mathcal{I}}$	Signal Pole with Sidewalk Guy	
	Microwave Detection Zone (
∞	Out of Pavement Detector	•
\boxtimes	Controller & Cabinet	K_X N_X
	Junction Box	
	- 2-in Underground Conduit —	
N/A	Right of Way -	
\longrightarrow	Directional Arrow	\longrightarrow
<u> </u>	Directional Drill	N/A
0	- Metal Pole with Mastarm	
\bigcirc	Type II Signal Pedestal	
N/A	Curb Ramp	
A F	Right Arrow "ONLY" Sign (R3-5R)	\triangle
	"DICHT THOM MUCT VICED	

1"=40'

SIG. INVENTORY NO. 03-0893

18 CHANNEL CONFLICT MONITOR ON OFF PROGRAMMING DETAIL WD ENABLE ((remove jumpers and set switches as shown)



- 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 are present on the monitor board.
- 3. Ensure that Red Enable is active 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 Startup In Green.
- 5. Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
- 6. The cabinet and controller are part of the Wilmington 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.S6.S7.S8.S9.S11.

AUX S1, AUX S2, AUX S4, AUX S5 OVERLAP "A".....1+2

OVERLAP "B".....6

OVERLAP "C".....5+6 OVERLAP "D".....4+5

PROJECT REFERENCE NO. U-6202

				SI	GNA	L I	HEA	D I	100	K-l	JP	CH	4RT	•				
LOAD SWITCH NO.	Sl	S2	S 3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	P21. P22	NU	41,42	P41. P42	★ 51	61,62	P61. P62	NU	81,82	NU	11	★	NU	★ 51	★	NU
RED		128			101			134			107			A124			A101	
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121			A114		
YELLOW ARROW													A122	A125		A115	A102	
FLASHING YELLOW ARROW													A123	A126		A116	A103	
GREEN ARROW	127																	
₩			113			104			119									
×			115			106			121									

NU = Not Used

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

OLC YELLOW (A115)

OLC GREEN (A116)

05 GREEN (133)

OLD RED (A101) -

OLD YELLOW (A102)

OLD GREEN (A103)

★ See pictorial of head wiring in detail this sheet.

OLA RED (A121) -

OLA YELLOW (A122) -

OLA GREEN (A123) -

Ø1 GREEN (127) —

OLB RED (A124)-

OLB YELLOW (A125) -

OLB GREEN (A126)

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE U "I" L	Ø 1 1A NOT USED	SLOF EXPT	SLOF EXPFY	מוסר שעפרי	מוסר שצפרי	SLOT EMPTY	SLOT EXPT	מוסר שעפרי	SLOT EXPT	SLOT EMPTY	SLOT EMPTY	DC ISOLATOR Ø 4PED DC	USED	DC ISOLATOR ST DC
FILE U "J" L	Ø 5 5A NOT USED	SLOT EMPTY	SLOT EXPTY	Y	Y	SLOT EMPTY	SLOT EMPTY	Y	SLOT EMPTY	SLOT EMPTY	SLOT EXPTY	S L OT E M P T Y	SLOT EMPTY	S L O T E M P T

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

FS = FLASH SENSE ST = STOP TIME

SPECIAL DETECTOR NOTE

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

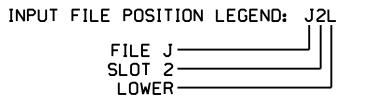
COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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.

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
	TB2-1,2	IIU	56	18	1	1	Υ	Υ			15
1A	-	J4U	48	10 ★	26	6	Υ	Υ			
	-	IIU	56	18 ★	51	1	Υ	Υ			
	TB3-1,2	JlU	55	17	5	5	Υ	Υ			15
5A	-	I4U	47	9 ★	22	2	Υ	Υ			
	-	JlU	55	17 ★	55	5	Y	Y			
PED PUSH BUTTONS							NOTE:				
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED]	INSTALL DC ISOLATORS			
P41,P42	TB8-5 . 6	I12L	69	31	PED 4	4 PED]	IN INPUT FILE SLOTS			
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED]	I12 AND I13.			

INPUT FILE CONNECTION & PROGRAMMING CHART

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



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

Signal Upgrade - Final Design Electrical Detail - Sheet 1 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING Prepared in the Offices of:

NOTE

SR 1328 (White Rd)

REVISIONS

SR 2048 (Gordon Rd)

Division 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

INIT. DATE SIG. INVENTORY NO. 03-0893

TH CARO,

OR WESSION N

031464

<u>E</u>

F

RP DISABLE ₩D 1.0 SEC

GY ENABLE

├ LEDguard

RF SSM FYA COMPACT—

FYA 1-9

FYA 3-10 FYA 5-11

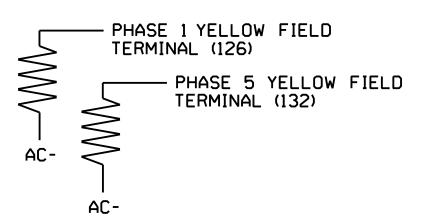
DENOTES POSITION

OF SWITCH

(install resistors as shown below)

LOAD RESISTOR INSTALLATION DETAIL

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



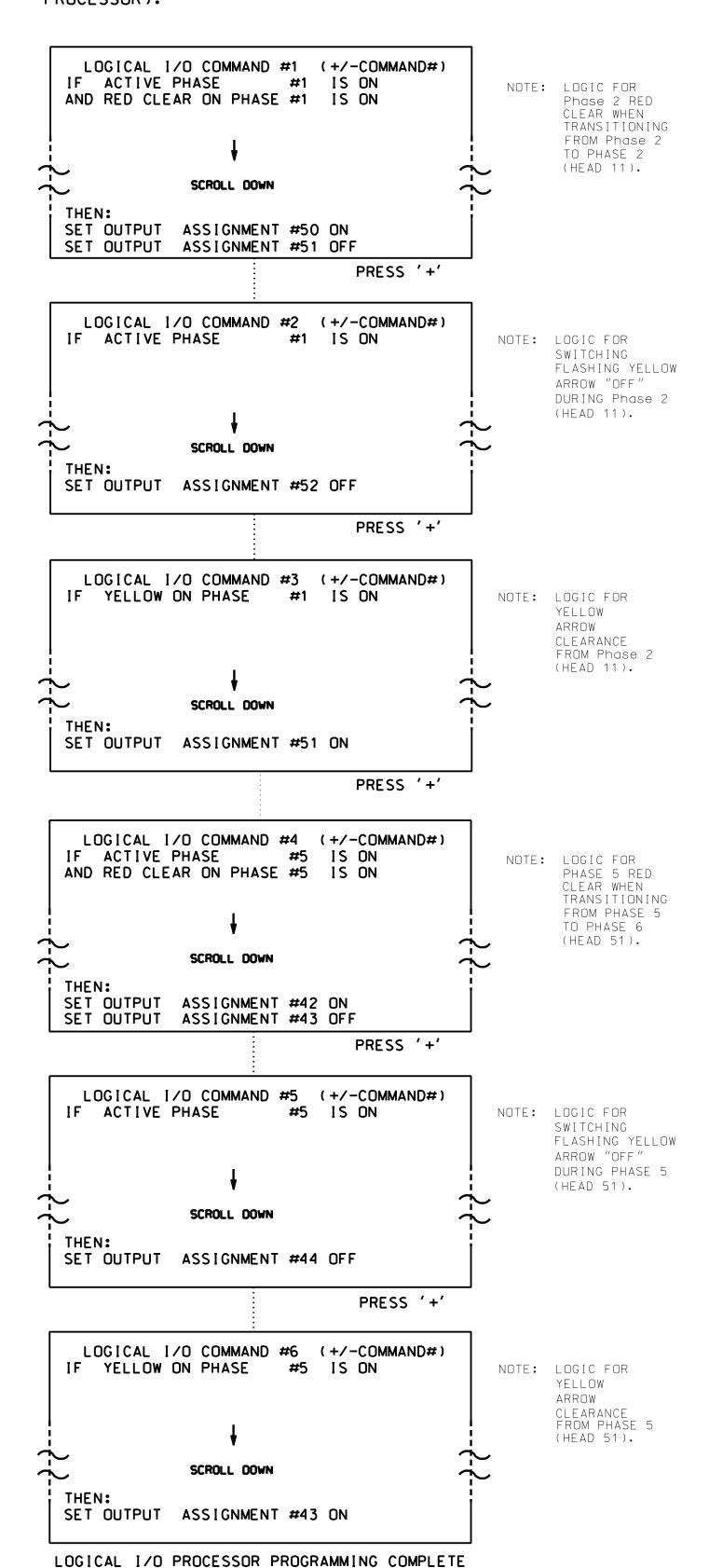
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0893 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

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



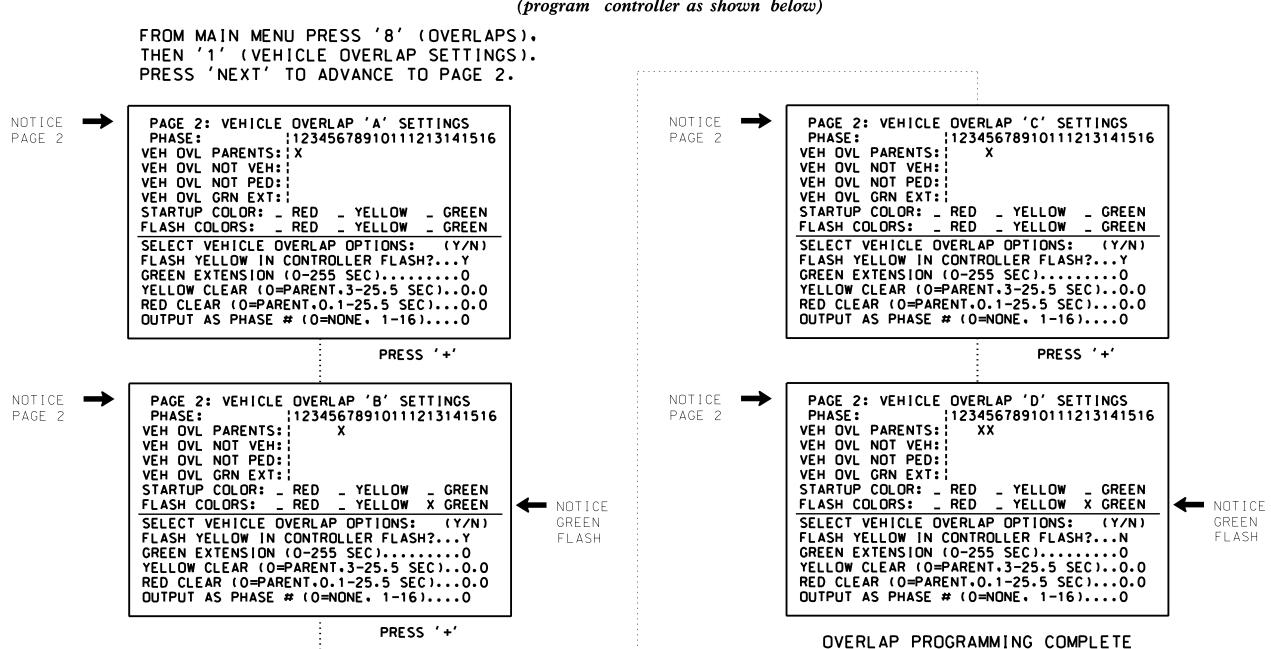
OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS). THEN '1' (VEHICLE OVERLAP SETTINGS). PAGE 1: VEHICLE OVERLAP 'C' SETTINGS PAGE 1: VEHICLE OVERLAP 'A' SETTINGS 112345678910111213141516 112345678910111213141516 VEH OVL PARENTS: XX VEH OVL PARENTS: VEH OVL NOT VEH: !
VEH OVL NOT PED: ! VEH OVL NOT VEH: VEH OVL NOT PED: VEH OVL GRN EXT: VEH OVL GRN EXT: : STARTUP COLOR: _ RED _ YELLOW _ GREEN FLASH COLORS: _ RED _ YELLOW X GREEN STARTUP COLOR: _ RED _ YELLOW _ GREEN FLASH COLORS: _ RED _ YELLOW X GREEN SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH GREEN EXTENSION (0-255 SEC)..... GREEN EXTENSION (0-255 SEC)..... YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 OUTPUT AS PHASE # (0=NONE, 1-16)....0 OUTPUT AS PHASE # (0=NONE. 1-16)....0 PRESS '+' PRESS '+' PAGE 1: VEHICLE OVERLAP 'D' SETTINGS PAGE 1: VEHICLE OVERLAP 'B' SETTINGS 12345678910111213141516 12345678910111213141516 VEH OVL PARENTS: | XX VEH OVL PARENTS: VEH OVL NOT VEH: VEH OVL NOT VEH: VEH OVL NOT PED: | VEH OVL GRN EXT: | VEH OVL NOT PED: :
VEH OVL GRN EXT: : STARTUP COLOR: _ RED _ YELLOW _ GREEN FLASH COLORS: _ RED _ YELLOW X GREEN STARTUP COLOR: _ RED _ YELLOW _ GREEN FLASH COLORS: _ RED _ YELLOW X GREEN SELECT VEHICLE OVERLAP OPTIONS: (Y/N) SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN GREEN FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH YELLOW IN CONTROLLER FLASH?...N FLASH FLASH GREEN EXTENSION (0-255 SEC).....0 GREEN EXTENSION (0-255 SEC)..... YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 OUTPUT AS PHASE # (0=NONE, 1-16)...0 OUTPUT AS PHASE # (0=NONE, 1-16)....0

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)



Signal Upgrade - Final Design Electrical Detail - Sheet 2 of 5

OVERLAP PROGRAMMING COMPLETE

DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

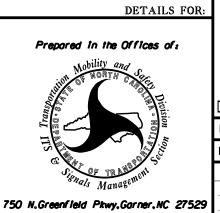
THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 03-0893

PROJECT REFERENCE NO.

U-6202

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ELECTRICAL AND PROGRAMMIN

SR 2048 (Gordon Rd) PLAN DATE: PREPARED BY: REVISIONS

SR 1328 (White Rd) ivision 3 New Hanover County Wilmingtor August 2023 REVIEWED BY: N.K. Vlanich E.E. Tiller REVIEWED BY: N.R. Simmons INIT. DATE

TH CARO OF OFESSION 1 031464 COUNTER Notasha R Simmons 5/17/202 SIGNATURE DATE SIG. INVENTORY NO. 03-0893

HNTB NORTH CAROLINA, P.C. HNTB NURTH CARULINA, F.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997

OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 43 = Overlap C Yellow

OUTPUT 51 = Overlap A Yellow OUTPUT 52 = Overlap A Green

OUTPUT 44 = Overlap C Green

OUTPUT 42 = Overlap C Red

OUTPUT 50 = Overlap A Red

PRESS '+'

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

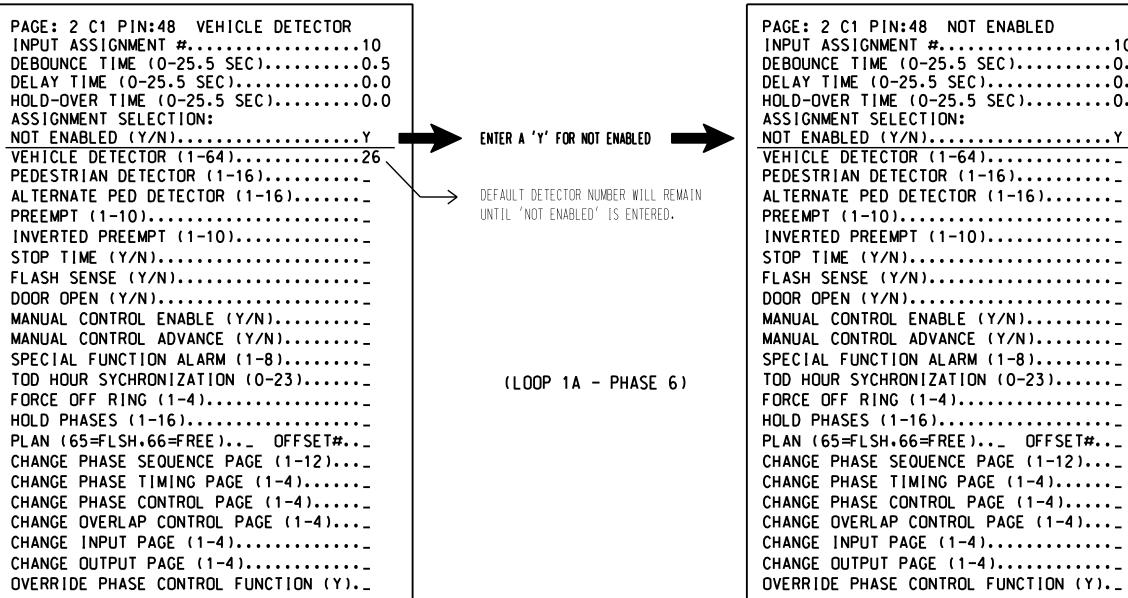
(program controller as shown below)

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.

PRESS '+' TO ADVANCE TO INPUT 18

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.



PAGE: 2 C1 PIN:48 NOT ENABLED INPUT ASSIGNMENT #.....10 DELAY TIME (0-25.5 SEC).............. HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64)..... PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4)..... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)...

INPUT ASSIGNMENT #.....18 DELAY TIME (0-25.5 SEC).............. HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....1 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4)..... HOLD PHASES (1-16)..... PLAN (65=FLSH,66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)..._ CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4)..... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR INPUT ASSIGNMENT #.....18 DELAY TIME (0-25.5 SEC)............... HOLD-OVER TIME (0-25.5 SEC)........0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....51 PEDESTRIAN DETECTOR (1-16).... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... (LOOP 1A - Phase 2) FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4)..... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PROJECT REFERENCE NO.

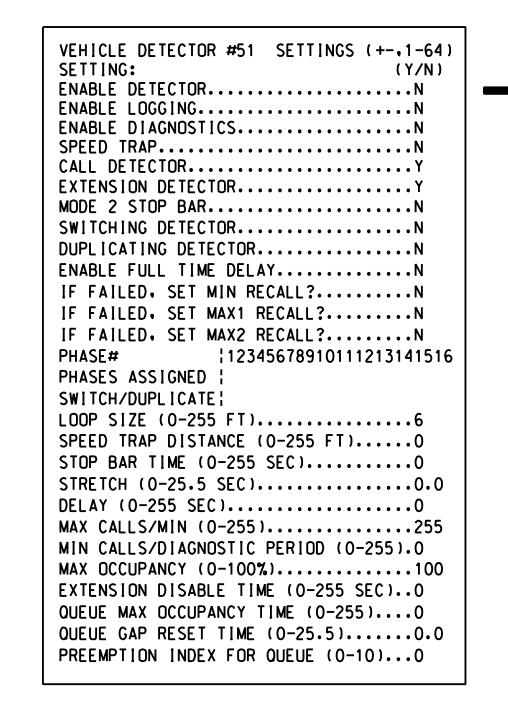
U-6202

PROGRAMMING COMPLETE

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.



VEHICLE DETECTOR #51 SETTINGS (+-,1-64) SETTING: ENTER 'Y' FOR ENABLE DETECTOR ENABLE DETECTOR.....Y ENABLE LOGGING...... ENABLE DIAGNOSTICS..... SPEED TRAP......N CALL DETECTOR.....Y EXTENSION DETECTOR.....Y MODE 2 STOP BAR.....N SWITCHING DETECTOR..... DUPLICATING DETECTOR..... ENABLE FULL TIME DELAY..... IF FAILED. SET MIN RECALL?..... IF FAILED. SET MAX1 RECALL?..... IF FAILED. SET MAX2 RECALL?..... PHASE# 12345678910111213141516 PHASES ASSIGNED |X ENTER '1' FOR PHASES ASSIGNED SWITCH/DUPLICATE; LOOP SIZE (0-255 FT).....6 SPEED TRAP DISTANCE (0-255 FT).....0 STOP BAR TIME (0-255 SEC)..... STRETCH (0-25.5 SEC).................0.0 ENSURE DELAY IS '0' DELAY (0-255 SEC)...... MAX CALLS/MIN (0-255)......255 MIN CALLS/DIAGNOSTIC PERIOD (0-255).0 MAX OCCUPANCY (0-100%).....100 EXTENSION DISABLE TIME (0-255 SEC)..0 QUEUE MAX OCCUPANCY TIME (0-255)....0 QUEUE GAP RESET TIME (0-25.5).....0.0 PREEMPTION INDEX FOR QUEUE (0-10)...0

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

> THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0893 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade - Final Design Electrical Detail - Sheet 3 of 5

ENTER '51' TO REASSIGN

THE VEHICLE DETECTOR

FOR THIS INPUT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMIN Prepared in the Offices of:

SR 2048 (Gordon Rd) SR 1328 (White Rd)

ivision 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

TH CARO COFESSION 1 031464

DETECTOR PROGRAMMING COMPLETE

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

REVISIONS INIT. DATE SIG. INVENTORY NO. 03-0893

U-6202 Sig. 19.

<u>INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A</u>

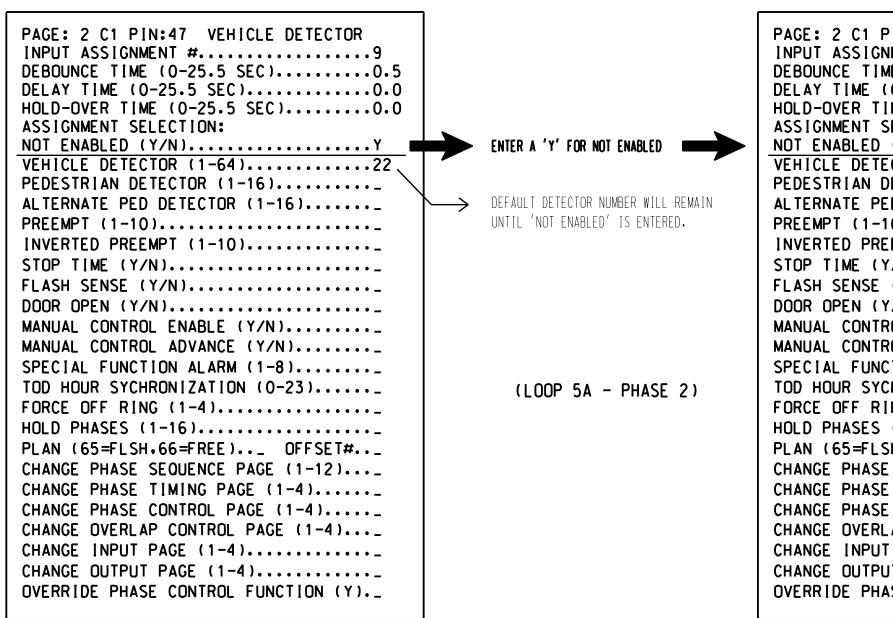
(program controller as shown below)

NOTES: 1. THIS PROGRAMMING APPLIES <u>FOR INPUT PAGE 2</u> 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.

PRESS '+' TO ADVANCE TO INPUT 17

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



PAGE: 2 C1 PIN:47 NOT ENABLED INPUT ASSIGNMENT #.....9 DEBOUNCE TIME (0-25.5 SEC).................0.5 DELAY TIME (0-25.5 SEC)............ HOLD-OVER TIME (0-25.5 SEC).........0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64)..... PEDESTRIAN DETECTOR (1-16).... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)..._ CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4).... OVERRIDE PHASE CONTROL FUNCTION (Y)._

DELAY TIME (0-25.5 SEC).............. HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....5 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4).... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PAGE: 2 C1 PIN:55 VEHICLE DETECTOR

INPUT ASSIGNMENT #......17

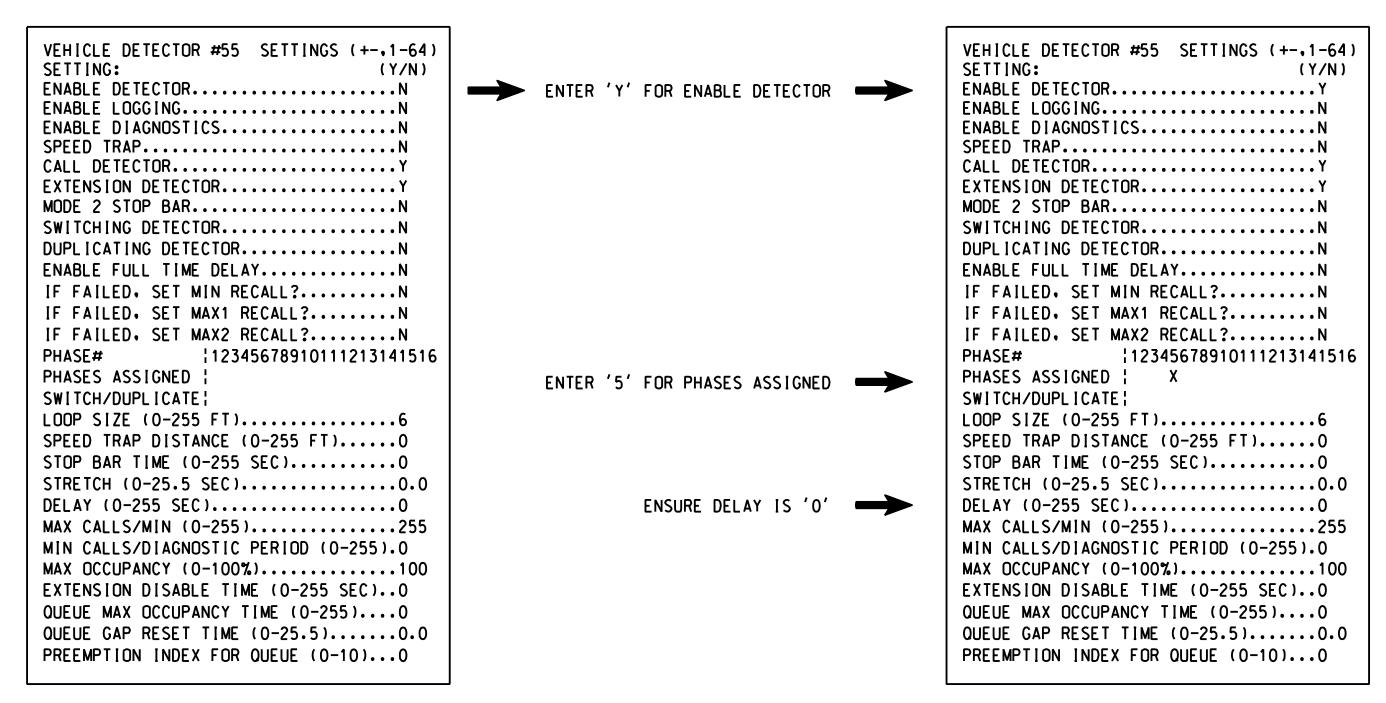
PAGE: 2 C1 PIN:55 VEHICLE DETECTOR DELAY TIME (0-25.5 SEC)............0.0 HOLD-OVER TIME (0-25.5 SEC).........0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).... VEHICLE DETECTOR (1-64).....55 PEDESTRIAN DETECTOR (1-16).... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

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. 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: 03-0893
DESIGNED: May 2022
SEALED: 5/17/2024
REVISED:

Signal Upgrade - Final Design Electrical Detail - Sheet 4 of 5

ENTER '55' TO REASSIGN

THE VEHICLE DETECTOR

FOR THIS INPUT

(LOOP 5A - PHASE 5)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

750 N.Greenfield Pkwy.Garner.NC 27529

SR 2048 (Gordon Rd)
at
SR 1328 (White Rd)
ision 3 New Hanover County V

Division 3 New Hanover County Wilmington
PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich
PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons
REVISIONS INIT. DATE

SEAL
031464

Docusigned by:

Masha R Simmons
SIGNATURE
FIDLAGOUPSACUARD.
SIG. INVENTORY NO. 03-0893

DETECTOR PROGRAMMING COMPLETE

U-6202 Sig. 19.5

ALTERNATE PHASING ACTIVATION DETAIL

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

TO RUN ALT. PHASING DURING <u>FREE RUN</u> - 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 DEFAULT PHASING	1	1
ACTIVE PAGES REQUIRED TO RUN ALTERNATE PHASING	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 2 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.

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. T3-4 AND TERMINATE ON T3-2.

2. ON REAR OF PDA - REMOVE WIRE FROM TERM, T3-5 AND TERMINATE ON T3-3.

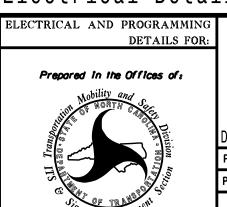
3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0893
DESIGNED: May 2022
SEALED: 5/17/2024
REVISED:

Signal Upgrade - Final Design Electrical Detail - Sheet 5 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SR 2048 (Gordon Rd) at

SR 1328 (White Rd)

Division 3 New Hanover County Wilmington

PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich

PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS INIT. DATE

Docusigned by:

Matasha R Simmons
SIGNATURE
PODASSUFSAD44SA...
SIG. INVENTORY NO. 03-0893

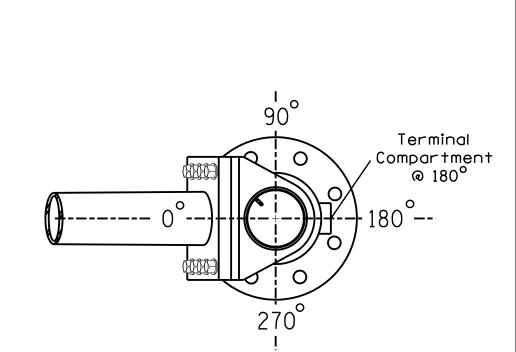
TH CAROL OF ESSION NA

SPECIAL NOTE

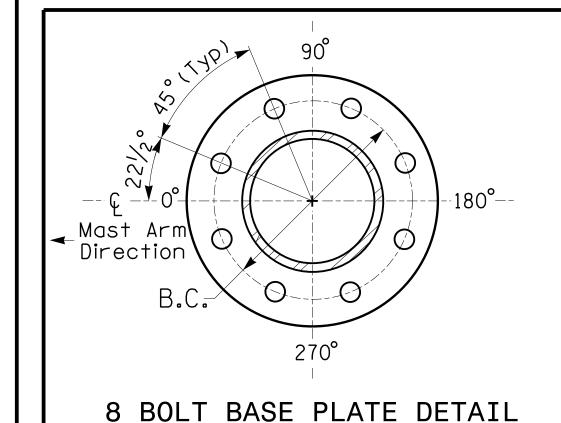
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available

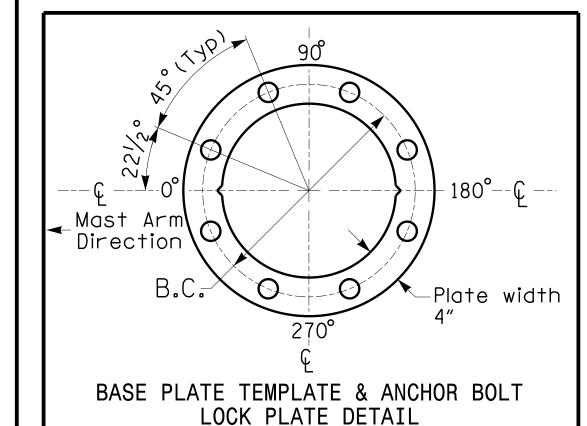
Elevation Data for Mast Arm

Elevation Differences for:	Pole 1	Pole 2
Baseline reference point at & Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	2.70 ft.	-0.19 ft.
Elevation difference at Edge of travelway or face of curb	0.72 ft.	-0.31 ft.



POLE RADIAL ORIENTATION





For 8 Bolt Base Plate

See Note 6

METAL POLE No. 1 & 2

PROJECT REFERENCE NO.	SHEE	T NO.
U - 6202	Sig.	19.7

	MAST ARM LOADING SC	HEDU	LE	
loading Symbol	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25 . 5" W X 66 . 0" L	74 LBS
2	SIGN RIGID MOUNTED	7.5 S.F.	30.0" W X 36.0" L	14 LBS
Street Name	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0"L	36 LBS

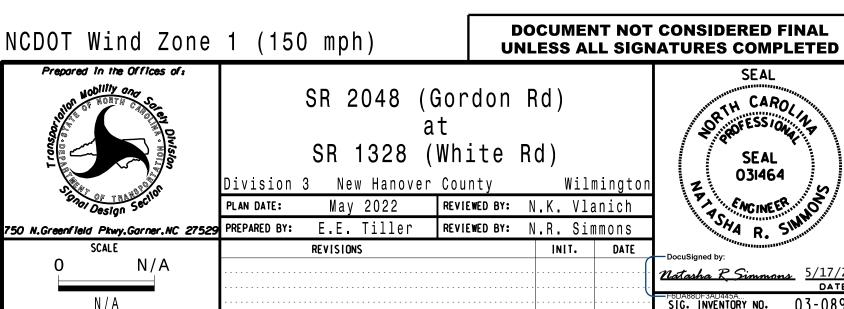
<u>NOTES</u>

DESIGN REFERENCE MATERIAL

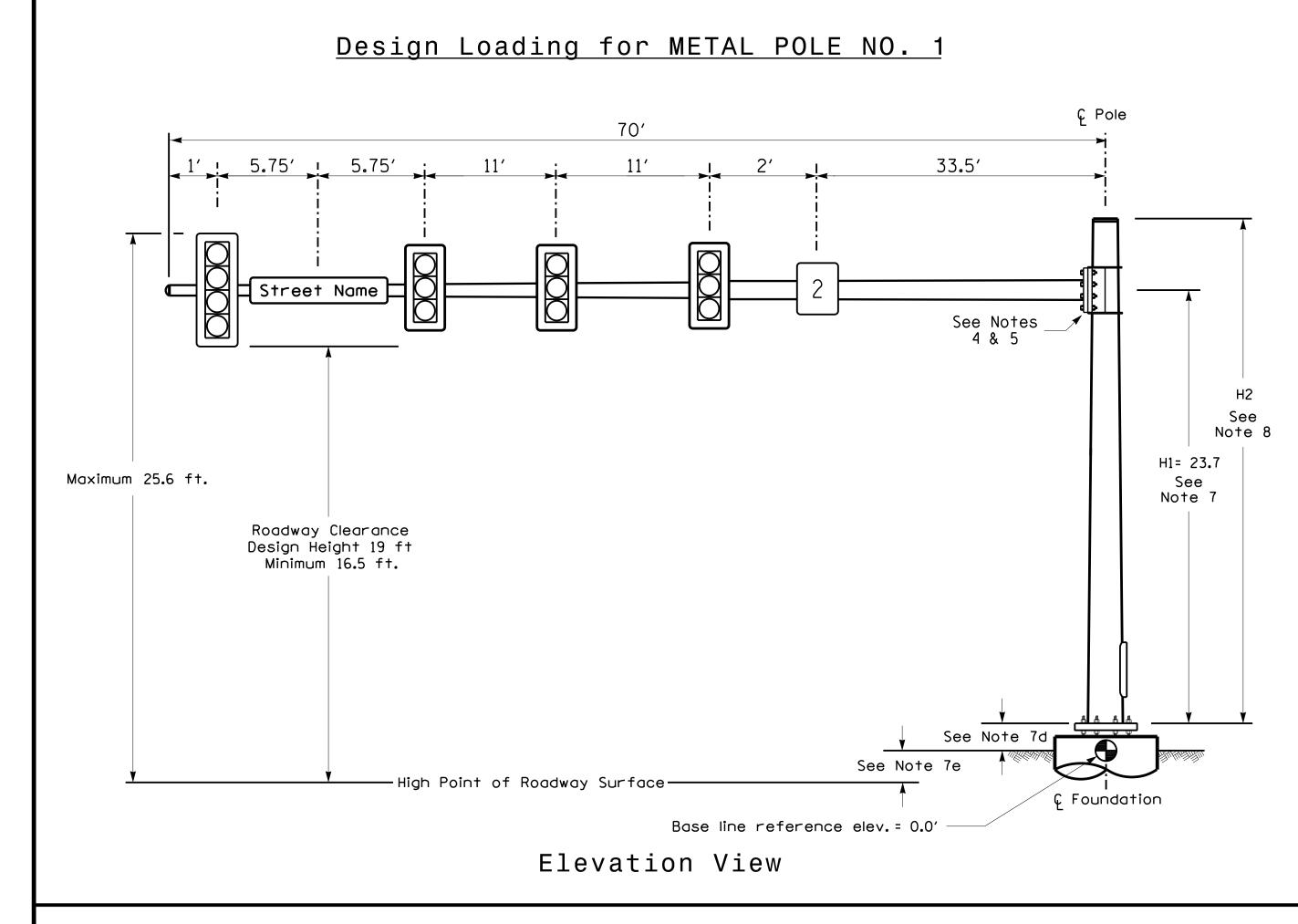
- 1. Design the traffic signal structure and foundation in accordance with:
- The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway
- Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions. • The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to
- the specifications can be found in the traffic signal project special provisions.
- The 2024 NCDOT Roadway Standard Drawings.
- The traffic signal project plans and special provisions.
- The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

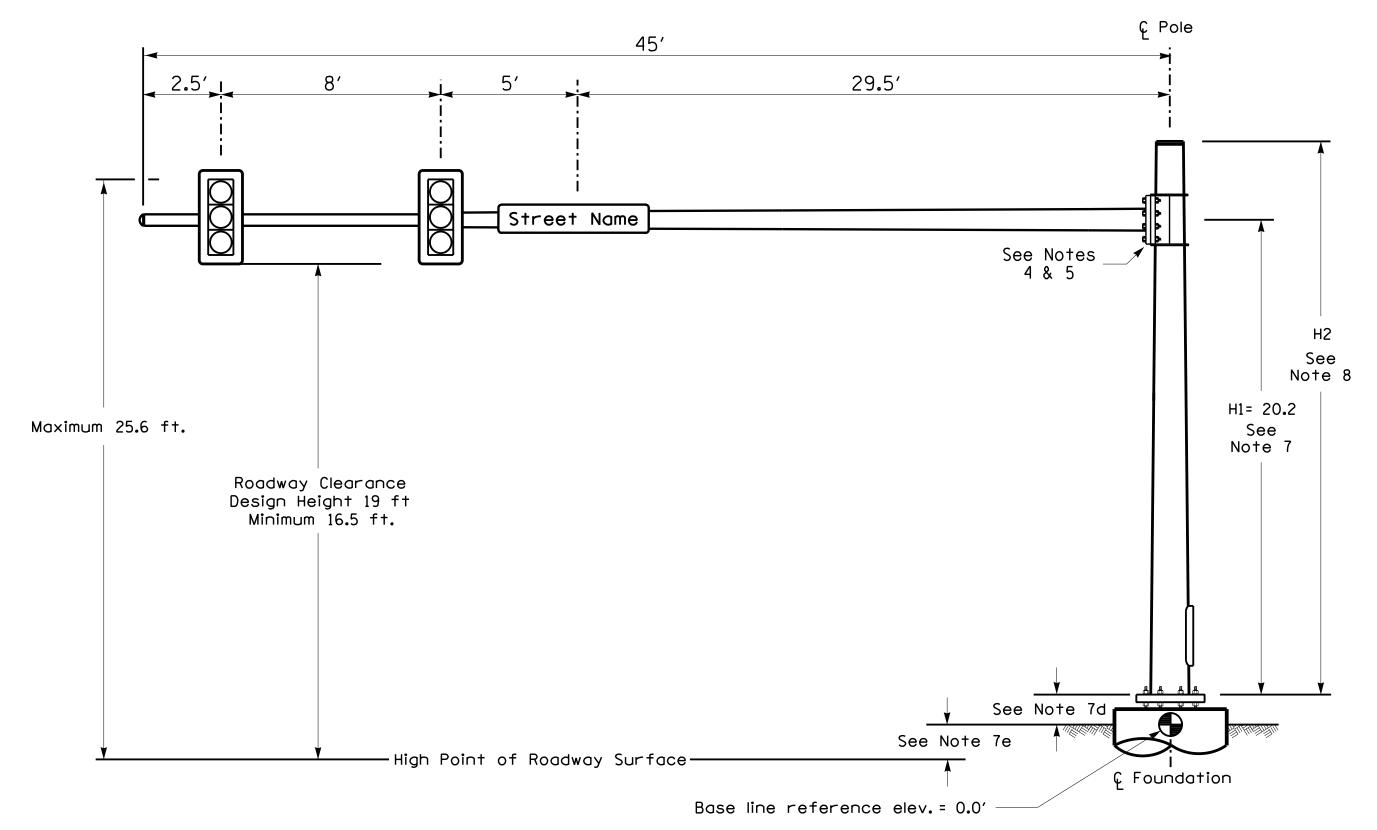
- 2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using force ratios that do not exceed 0.9.
- 4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- 5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate arm connection points.
- 6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- 7. The mast arm attachment height (H1) shown is based on the following design assumptions: a. Mast arm slope and deflection are not considered in determining the arm attachment
- height as they are assumed to offset each other. b. Signal heads are rigidly mounted and vertically centered on the mast arm.
- c. The roadway clearance height for design is as shown in the elevation views.
- d. The top of the pole base plate is 0.75 feet above the ground elevation.
- e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- 8. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
- Mast arm attachment height (H1) plus 2 feet, or
- H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- 9. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- 10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- 11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.



SIG. INVENTORY NO. 03-0893



Design Loading for METAL POLE NO. 2

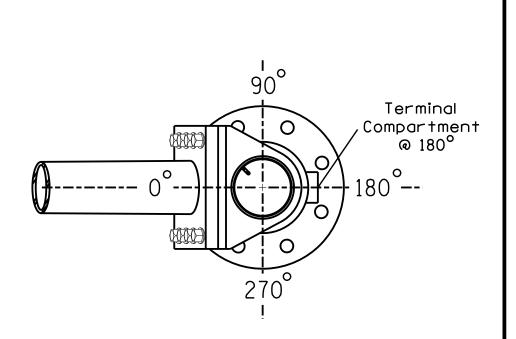


Elevation View

project survey data.

Attachment (H1)

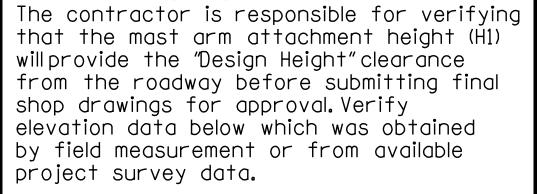
Elevation Differences for:	Pole 1	Pole 2
Baseline reference point at © Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	2.70 ft.	-0.19 ft.
Elevation difference at Edge of travelway or face of curb	0.72 ft.	-0.31 ft.



METAL POLE No. 3

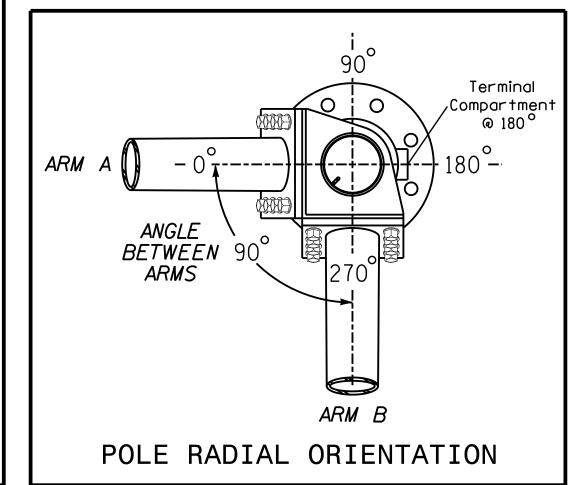
PROJECT REFERENCE NO. U-6202



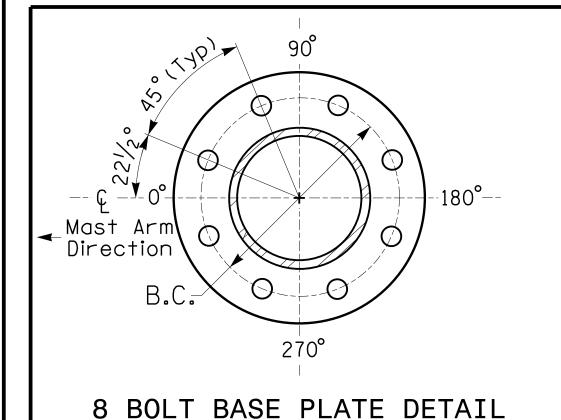


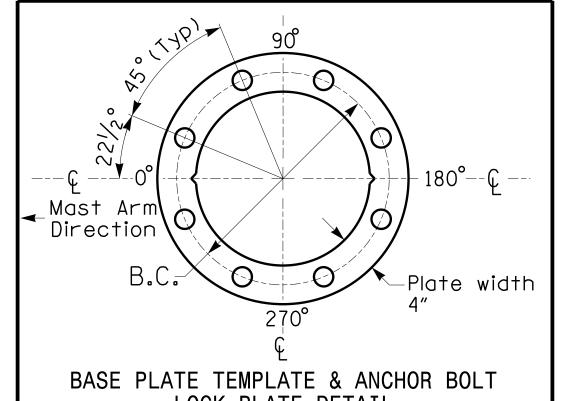
Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm A	Arm B
Baseline reference point at & Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	0.37 ft.	-0.08 ft.
Elevation difference at Edge of travelway or face of curb	-0.54 ft.	-0.38 ft.

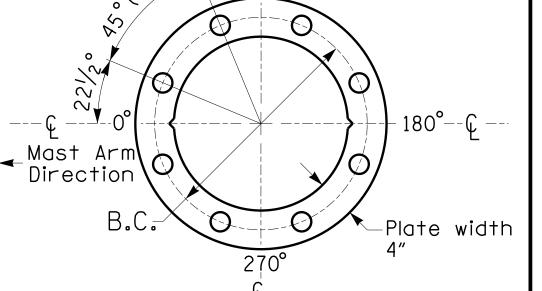


€ Foundation





See Note 6



LOCK PLATE DETAIL For 8 Bolt Base Plate

loading Symbol	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11 . 5 S . F.	25 . 5" W X 66 . 0" L	74 LBS
2	SIGN RIGID MOUNTED	7.5 S.F.	30.0" W X 36.0" L	14 LBS
Street Name	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0"L	36 LBS

MAST ARM LOADING SCHEDULE

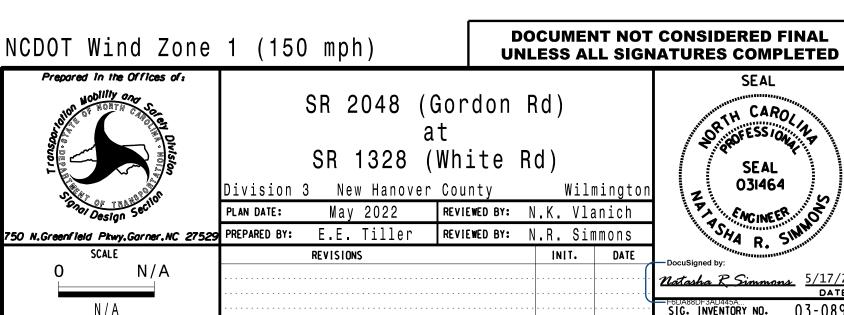
<u>NOTES</u>

DESIGN REFERENCE MATERIAL

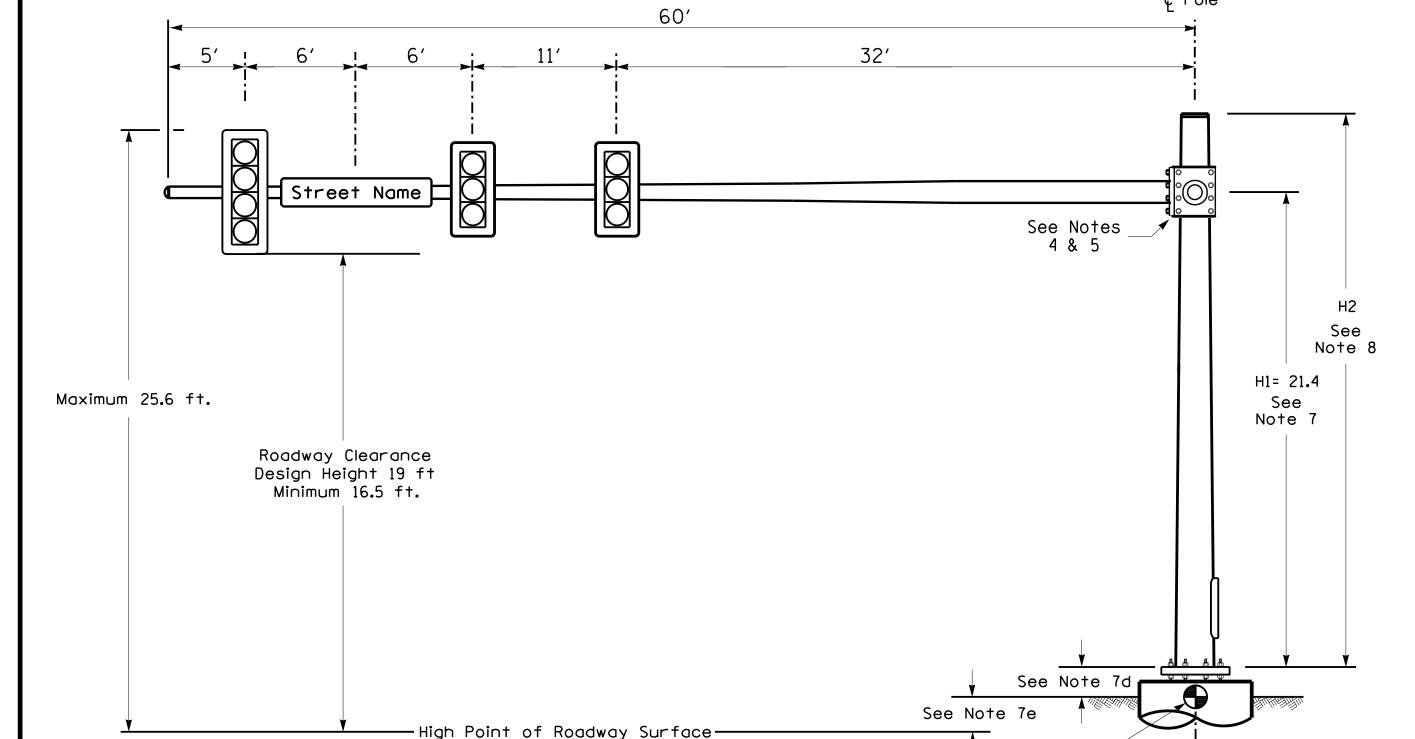
- 1. Design the traffic signal structure and foundation in accordance with:
- The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
- The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to
- the specifications can be found in the traffic signal project special provisions.
- The 2024 NCDOT Roadway Standard Drawings.
- The traffic signal project plans and special provisions.
- The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

- 2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using force ratios that do not exceed 0.9.
- 4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- 5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate arm connection points.
- 6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- 7. The mast arm attachment height (H1) shown is based on the following design assumptions: a. Mast arm slope and deflection are not considered in determining the arm attachment
- height as they are assumed to offset each other. b. Signal heads are rigidly mounted and vertically centered on the mast arm.
- c. The roadway clearance height for design is as shown in the elevation views.
- d. The top of the pole base plate is 0.75 feet above the ground elevation.
- e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- 8. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
- Mast arm attachment height (H1) plus 2 feet, or
- H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot. 9. If pole location adjustments are required, the contractor must gain approval from the
- Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- 10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- 11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.



SIG. INVENTORY NO. 03-0893

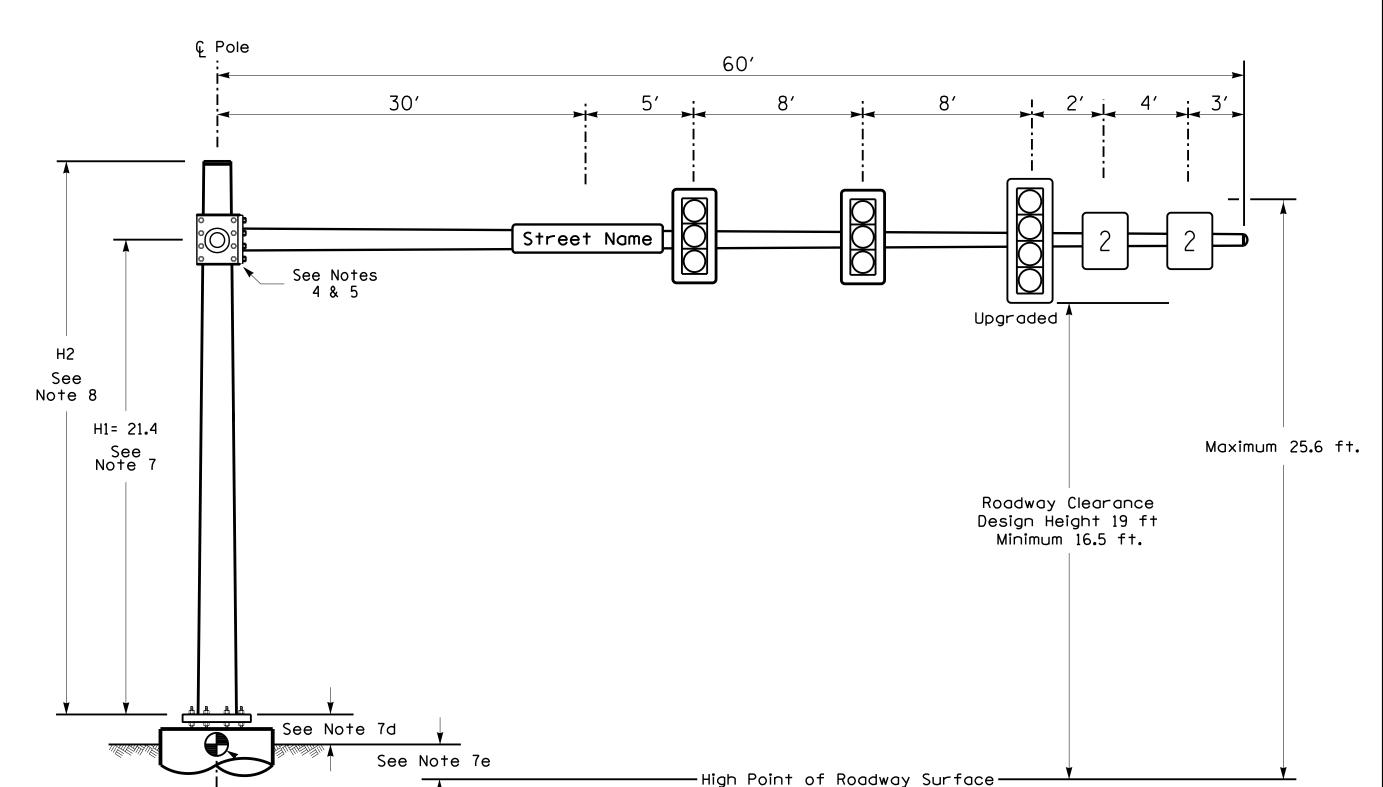


Elevation View @ 0°

Design Loading for METAL POLE NO. 3 Mast Arm "B"

Base line reference elev. = 0.0'

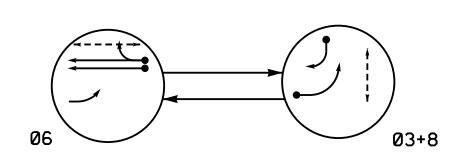
Design Loading for METAL POLE NO. 3 Mast Arm "A"



Elevation View @ 270°

G Foundation

DEFAULT PHASING DIAGRAM

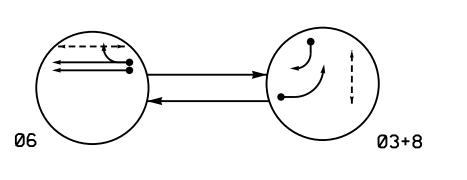


PHASING DIAGRAM DETECTION LEGEND

■ DETECTED MOVEMENT UNDETECTED MOVEMENT (OVERLAP) UNSIGNALIZED MOVEMENT

← - - > PEDESTRIAN MOVEMENT

ALTERNATE PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION					
	Р	HAS	E		
SIGNAL FACE	06	യთ+®	FLAOI		
31,32,33	누	₩	- Y		
61,62	G	R	Υ		
81,82,83	R	나	R		
P61,P62	W	DW	DRK		
P81 , P82	DW	W	DRK		

ALTERNATE TABLE OF O			
	Р	HAS	E
SIGNAL FACE	06	Ø3+8	FLANI
31,32,33	#	₩	- ¥
61,62	G	R	Υ
81,82,83	R	F∱	R
P61,P62	W	DW	DRK
P81 , P82	DW	W	DRK

OASIS	2070	L00P	& DET	EC	TOR	IN	ST	AL	LATIC	N CH	AR	Т
ΙI	NDUCTI	VE LOC)PS		DETE	ECT	OR	PI	ROGRAN	MMING		
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
3A	6X40	0	*	*	3	Y	Y	1	-	10 ***	ı	Υ
JA	0240		\overline{x}	6#	Υ	Υ	ı	-	-	-	Υ	
88	6X40	0	*	*	8	Υ	Υ	_	-	15	_	Υ

- * Multizone Microwave Detection
- ** Disable Delay During Alternate Phasing Operation.
- # Disable phase call for loop(s) during alternate phasing.

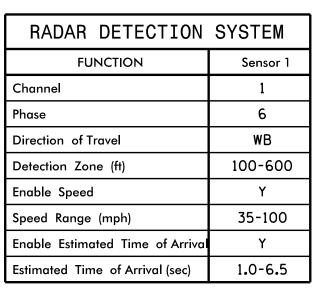
R/W SR 2048 (Gordon Rd) Multi-Use Path	Metal Po -L- STA LT 52' + Sensor P81 P82 62 P83 P82 62 P83 P82 62	. 104+85 +//- 1 45 MPH 0% Grade Multi-Use Path	See Note 9 R/W
## Sidewalk Sidewalk	e #2 — +/-	Signal Pedestal #1 -L- STA. 104+62 +/- LT 6' +/-	Sidewalk R/W

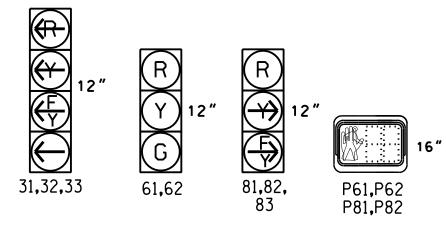
OASIS 20	70 TIM	IING CH	IART			
	PHASE					
FEATURE	3	6	8			
Min Green 1 *	5	12	5			
Extension 1 *	2.0	2.0	2.0			
Max Green 1 *	20	90	20			
Yellow Clearance	3.0	4.5	3.0			
Red Clearance	1.9	1 . 5	1.9			
Red Revert	2.0	2.0	2.0			
Walk 1 *	7	7	7			
Don't Walk 1	7	13	7			
Advanced Walk *	-	-	-			
Seconds Per Actuation *	1	1	ı			
Max Variable Initial *	1	-	-			
Time Before Reduction *	-	1	-			
Time To Reduce *	1	1	ı			
Minimum Gap	ı	ı	1			
Recall Mode	-	MIN RECALL	-			
Vehicle Call Memory	-	YELLOW	-			
Dual Entry	ON	-	ON			
Simultaneous Gap	ON	ON	ON			

Extension times for phase 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

SIGNAL FACE I.D.

All Heads L.E.D.





New Installation

SR 2048 (Gordon Rd) Westbound



Daniel Boone Trl

New Hanover County May 2022 REVIEWED BY: N.K. Vlanich REVIEWED BY: N.R. Simmons 750 N.Greenfield Pkwy.Garner.NC 27529 PREPARED BY: E.E. Tiller

TH CAROL 031464

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

U-6202

2 Phase Fully Actuated Wilmington Signal System

PROJECT REFERENCE NO.

NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- 2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- 3. Set all detector units to presence mode.
- 4. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- 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. All pedestrian pushbuttons shall be located in the field by the Division Traffic Engineer before installation.
- 8. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
- 9. This intersection uses multizone microwave detection. Install the detectors according to the manufacturer's instructions to achieve the desired detection.
- 10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- 11. Signal system data: Controller Asset #1232.

LEGEND

	<u> </u>	
POSED		EXISTING
—	Traffic Signal Head	
)	Modified Signal Head	N/A
_	Sign	_
\downarrow	Pedestrian Signal Head	•
)	Signal Pole with Guy	•
	Signal Pole with Sidewalk Gu	ıy •
	Microwave Detection Zone	
\bowtie	Out of Pavement Detector	•
\boxtimes	Controller & Cabinet	K×3
	Junction Box	
	2-in Underground Conduit	
A/A	Right of Way	
\rightarrow	Directional Arrow	\longrightarrow
00 —	Directional Drill	N/A
\gg	- Metal Pole with Mastarm	
\bigcirc	Type II Signal Pedestal	•

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Curb Ramp

Right Arrow "ONLY" Sign (R3-5R)

"RIGHT TURN YIELD TO U-TURN" Sign

PROJECT REFERENCE NO. U-6202

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 3 and 8 for Dual Entry.
- 3. Enable Simultaneous Gap-Out for all Phases.
- Wilmington Signal System.

S4 S5 S6 S7 S8 S9 S10 S11 S12 AUX S1 AUX S2 AUX S3 AUX S4 AUX S5 S6 CMU CHANNEL NO. 7 8 8 OLA OLB SPARE OLC OLD SPARE SIGNAL HEAD NO. NU NU 31.32. NU NU NU 61.62 P61. NU NC P81. 81.82. 31.32. NU NU NU NU 135 YELLOW GREEN 136 RED ARROW A124 YELLOW ARROW A122 A125 FLASHING YELLOW ARROW A123 A126 GREEN ARROW

SIGNAL HEAD HOOK-UP CHART

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.

OLA YELLOW (A122) -

OLA GREEN (A123) -

<u>NOTE</u>

4. Program phase 6 for Startup In Green.

CABINET MOUNT.....BASE

OVERLAP "C".....NOT USED

OVERLAP "D".....NOT USED

* PHASE USED FOR TIMING PURPOSES ONLY

OVERLAP "A".....8

OVERLAP "B".....3+6

CABINET......332 W/ AUX

SOFTWARE......ECONOLITE OASIS

5. Program phase 6 for Yellow Flash, and overlaps 1 and 2 as a Wag Overlap.

EQUIPMENT INFORMATION

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

LOAD SWITCHES USED.....S4.S8.S9.S12.AUX S1.AUX S2

6. The cabinet and controller are part of the

NOTES:

FILE

- 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.

COMPONENT SIDE

REMOVE JUMPERS AS SHOWN

3. Ensure that Red Enable is active at all times during normal operation.

18 CHANNEL CONFLICT MONITOR

PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 3-9, 3-10, 3-16, 6-10, 6-15, 9-10, 9-16, 10-15, and 10-16.

ON OF F

-RP DISABLE - WD 1.0 SEC GY ENABLE

☐ SF#1 POLARITY ☐

- FYA COMPACT-

— LEDguard

FYA 5-11 FYA 7-12

-RF SSM

FYA 1-9

FYA 3-10

= DENOTES POSITION

OF SWITCH

ST

Ø8PED

FS = FLASH SENSE

ST = STOP TIME

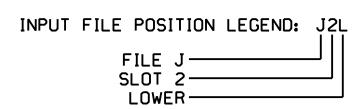
WD ENABLE

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

INPUT FILE CONNECTION & PROGRAMMING CHART

L00P NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME	
	TB4-5,6	I5U	58	20*	3	3	Υ	Υ			10	
3A1	-	J8U	50	12*	28	6	Υ	Υ				
	-	15 U	58	20★	53	3	Υ	Y				
PED PUSH BUTTONS							NOTE:					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED	INSTALL DC ISOLATORS					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED	IN INPUT FILE SLOT 113.					

★ See Input Page Assignment programming details on sheet 3. Add jumper from 15-W to J8-W, on rear of input file.



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.

[⊗] Wired Input - Do not populate slot with detector card SPECIAL DETECTOR NOTE

INPUT FILE POSITION LAYOUT

(front view)

1 2 3 4 5 6 7 8 9 10 11 12 13 14

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

For Zone 3A, inputs associated with the typical slots for a NCDOT installation are compatible with time of day instructions located on sheet 3 of this electrical detail.

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

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

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

PHASE 3 YELLOW FIELD TERMINAL (117)

HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1232 DESIGNED: May 2022

112

FYA SIGNAL WIRING DETAIL

The sequence display for signal heads 31, 32, and 33 require special

logic programming. See sheet 2 for programming instructions.

(wire signal heads as shown)

OLB RED (A124) -

OLB YELLOW (A125) -

OLB GREEN (A126) -

03 GREEN (118) —

| Electrical Detail - Sheet 1 of 4 New Installation

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SEALED: 5/17/2024

REVISED:

31,32,33

81,82,83



ELECTRICAL AND PROGRAMMIN

Daniel Boone Trl

Division 3 New Hanover County Wilmington March 2024 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

SR 2048 (Gordon Rd) Westbound

031464

SIG. INVENTORY NO. 03-1232

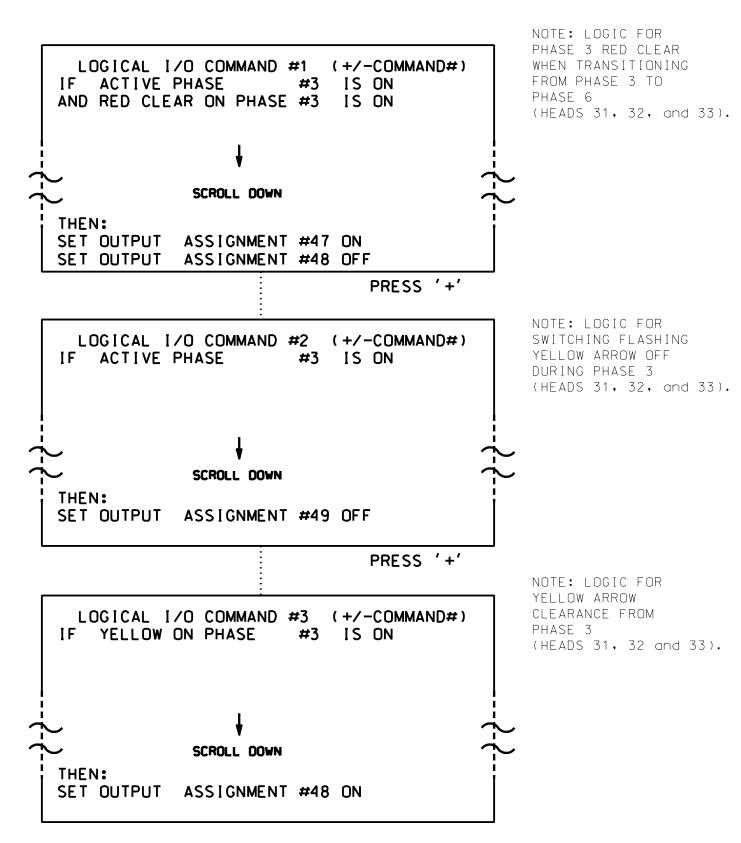
TH CARO,

PROJECT REFERENCE NO. U-6202 Sig. 20.

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

(program controller as shown below)

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



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

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

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

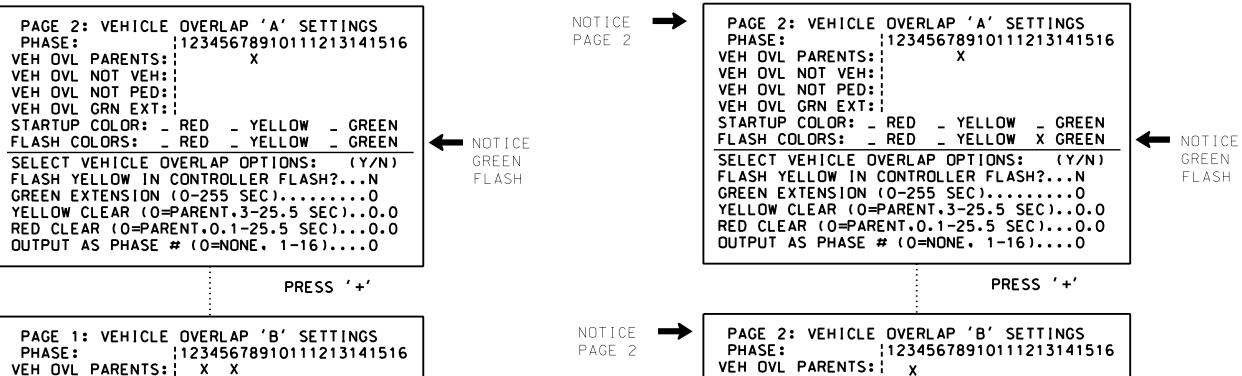
FROM MAIN MENU PRESS '8' (OVERLAPS), THEN '1' (VEHICLE OVERLAP SETTINGS).

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.



VEH OVL NOT VEH: VEH OVL NOT VEH: ; VEH OVL NOT PED: VEH OVL NOT PED: VEH OVL GRN EXT: : VEH OVL GRN EXT: STARTUP COLOR: _ RED _ YELLOW _ GREEN STARTUP COLOR: _ RED _ YELLOW _ GREEN FLASH COLORS: _ RED _ YELLOW _ GREEN FLASH COLORS: _ RED _ YELLOW X GREEN SELECT VEHICLE OVERLAP OPTIONS: (Y/N) SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH GREEN EXTENSION (0-255 SEC)..... GREEN EXTENSION (0-255 SEC)..... YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 OUTPUT AS PHASE # (0=NONE, 1-16)....0 OUTPUT AS PHASE # (0=NONE, 1-16)....0

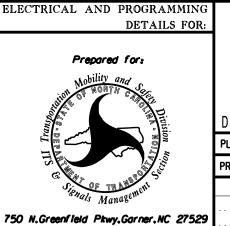
OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1232 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

| Electrical Detail - Sheet 2 of 4 New Installation

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INIT. DATE



SR 2048 (Gordon Rd) Westbound Daniel Boone Trl

REVISIONS

Division 3 New Hanover County Wilmington March 2024 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N R SIMMONS

031464

TH CAROL

SIG. INVENTORY NO. 03-1232

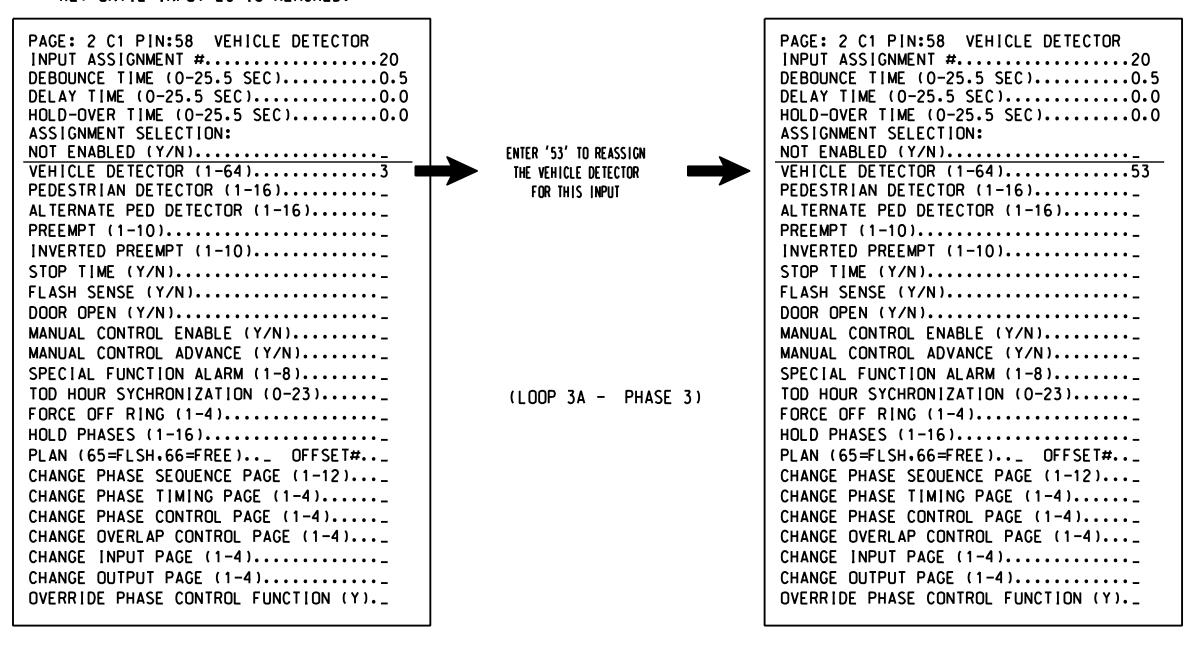
INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 3A

(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 #12 (DETECTOR 28) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 8 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 53 TO INPUT #20 SO THAT THE DELAY ON LOOP 3A CAN BE REDUCED FROM 10 SECONDS TO 0 SECONDS.

FROM MAIN MENU PRESS '5' (INPUTS). THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 20 IS REACHED.

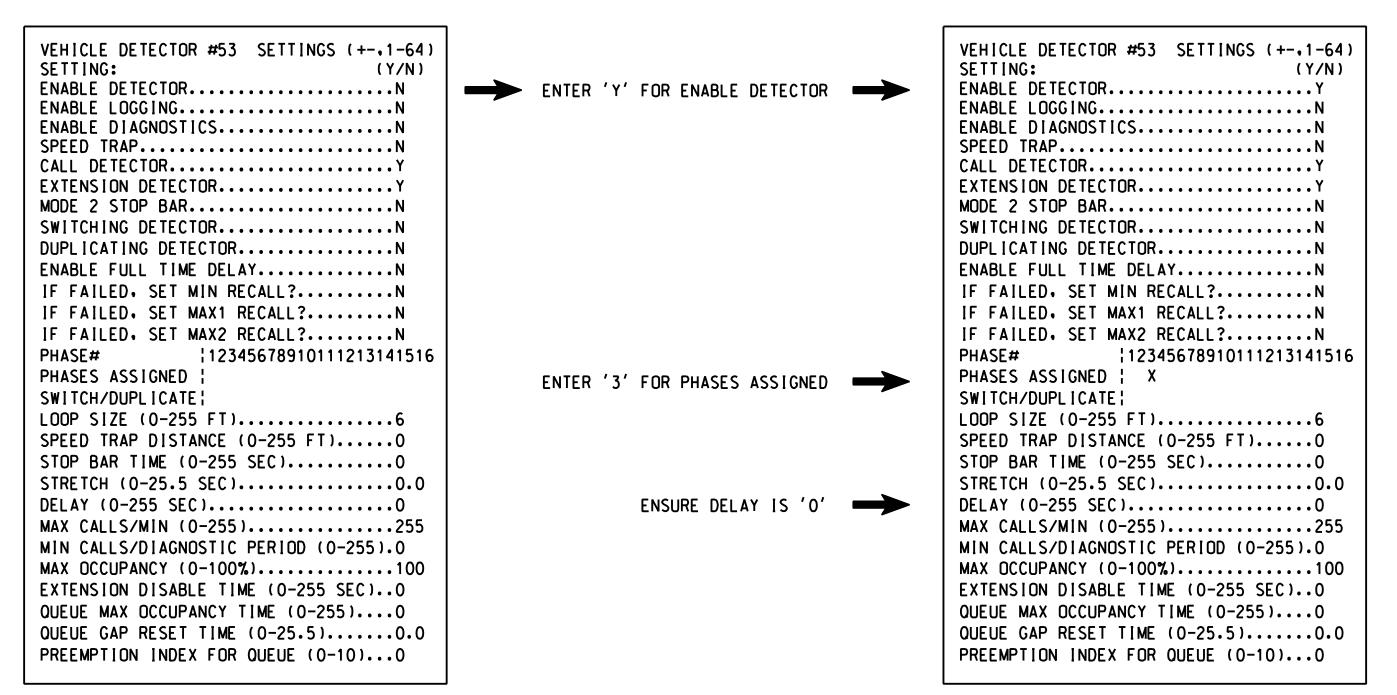


PROGRAMMING COMPLETE

SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 3A (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 #53.



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

> THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1232 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

PROJECT REFERENCE NO.

U-6202

Sig. 20

Electrical Detail - Sheet 3 of 4 New Installation

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ELECTRICAL AND PROGRAMMIN SR 2048 (Gordon Rd) Westbound Prepared for:

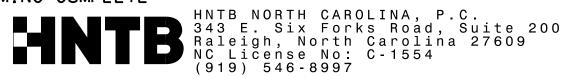
750 N.Greenfield Pkwy.Garner.NC 27529

Daniel Boone Trl

Division 3 New Hanover County Wilmington PLAN DATE: March 2024 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

TH CAROL 031464

DETECTOR PROGRAMMING COMPLETE



SIG. INVENTORY NO. 03-1232

PROJECT REFERENCE NO. Sig 20. U-6202

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING <u>COORDINATION</u> - 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	NG				INPUTS PA	GE OVER	LAPS PAGE
ACTIVE	E PAGES	REQUIRED	TO RUN	DEFAULT PHASING	1		1
ACTIVE	E PAGES	REQUIRED	TO RUN	ALTERNATE PHASING	2		2
AOTIVE	_	NEGO INED	10 11011	AL ILMAND I MASTING	_		_

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 phase for heads 31, 32, and 33 to run

protected turn only.

INPUTS PAGE 2:

Disables phase 6 call on loop 3A and reduces delay time for phase 3 call on loop 3A to 0 seconds.

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.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1232 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Electrical Detail - Sheet 4 of 4 New Installation

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ELECTRICAL AND PROGRAMMING SR 2048 (Gordon Rd) Westbound

Daniel Boone Trl

Division 3 New Hanover County Wilmington March 2024 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

SIG. INVENTORY NO. 03-1232

TH CAROL

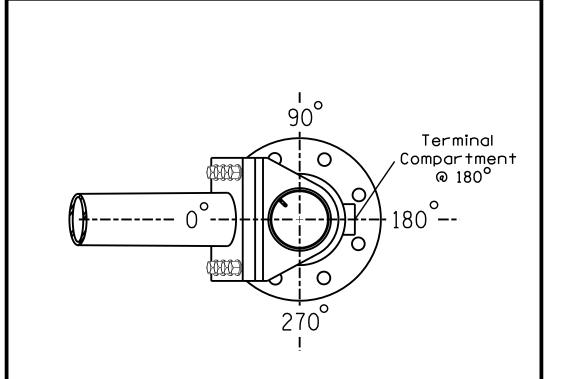
031464

SPECIAL NOTE

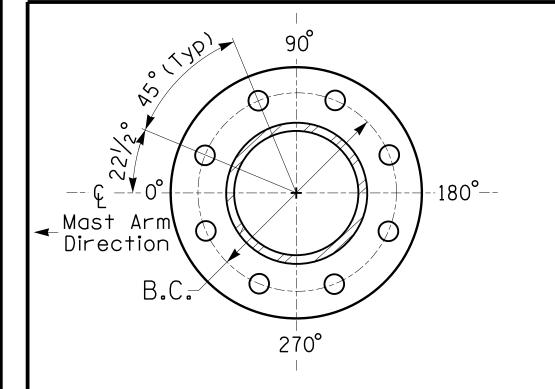
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 1	
Baseline reference point at © Foundation @ ground level	0.0 ft.	
Elevation difference at High point of roadway surface	+2.35 ft.	
Elevation difference at Edge of travelway or face of curb	+1.03 ft.	

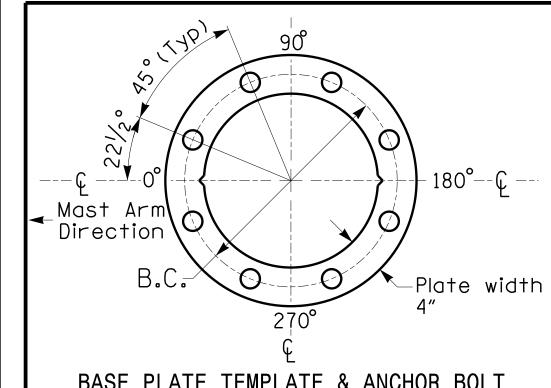


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL For 8 Bolt Base Plate

METAL POLE No. 1

PROJECT REFERENCE NO.	SHE	T NO.
U-6202	Sig	20.5

	MAST ARM LOADING SC	HEDU	LE	
LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5" W X 66.0" L	74 LBS
Street Name	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0"L	36 LBS

<u>NOTES</u>

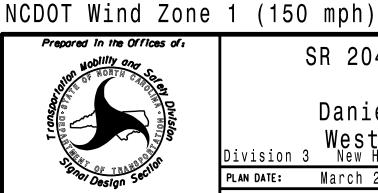
DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:

- The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
- The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to
- the specifications can be found in the traffic signal project special provisions.
- The 2024 NCDOT Roadway Standard Drawings.
- The traffic signal project plans and special provisions.
- The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

- 2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using force ratios that do not exceed 0.9.
- 4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- 5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate arm connection points.
- 6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- 7. The mast arm attachment height (H1) shown is based on the following design assumptions: a. Mast arm slope and deflection are not considered in determining the arm attachment
- height as they are assumed to offset each other. b. Signal heads are rigidly mounted and vertically centered on the mast arm.
- c. The roadway clearance height for design is as shown in the elevation views.
- d. The top of the pole base plate is 0.75 feet above the ground elevation.
- e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- 8. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
- Mast arm attachment height (H1) plus 2 feet, or
- H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- 9. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- 10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- 11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.



SR 2048 (Gordon Rd) Daniel Boone Trl/

SIG. INVENTORY NO.03-1232,03-123

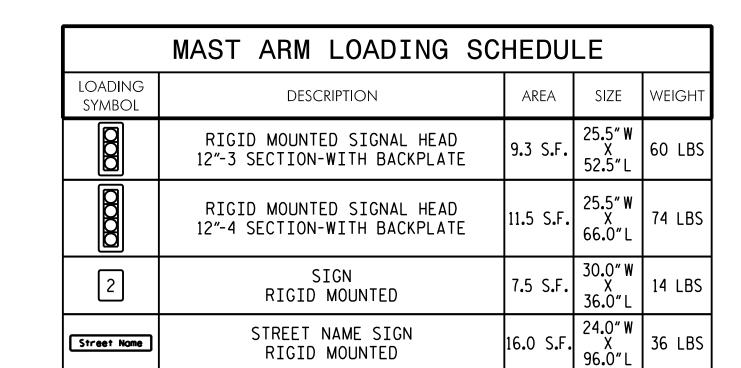
TH CAROL

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LOR TOFESSION 14 Westbound U-Turn
Division 3 New Hanover County 031464 Wilmington Z. ACINEER. March 2024 REVIEWED BY: N.K. Vlanich 750 N.Greenfleid Pkwy.Garner.NC 27529 PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE N/A





Elevation Data for Mast Arm Attachment (H1)

The contractor is responsible for verifying that the mast arm attachment height (H1)

will provide the "Design Height" clearance

elevation data below which was obtained

by field measurement or from available

shop drawings for approval. Verify

project survey data.

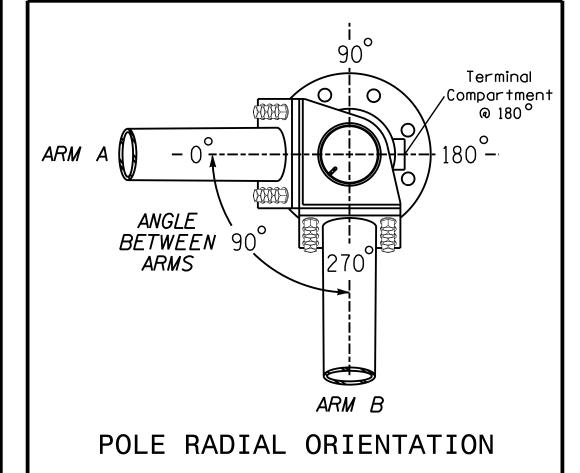
Note 8

H1 = 20.2

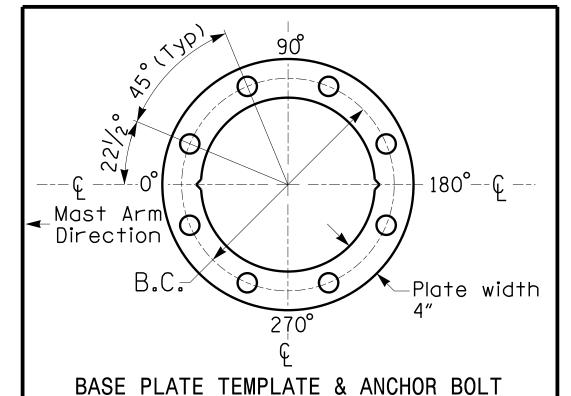
Note 7

from the roadway before submitting final

Elevation Differences for:	Arm "A"	Arm "B"
Baseline reference point at © Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-0.78 ft.	0.21 ft.
Elevation difference at Edge of travelway or face of curb	-1.54 ft.	0.00 ft.



Mast Arm Direction 8 BOLT BASE PLATE DETAIL



LOCK PLATE DETAIL

For 8 Bolt Base Plate

See Note 6

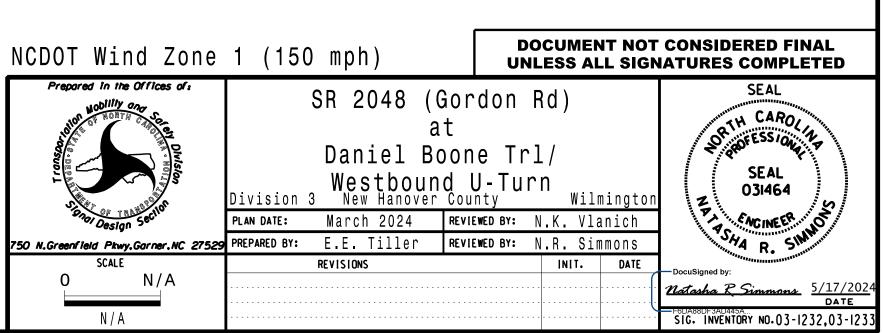
<u>NOTES</u>

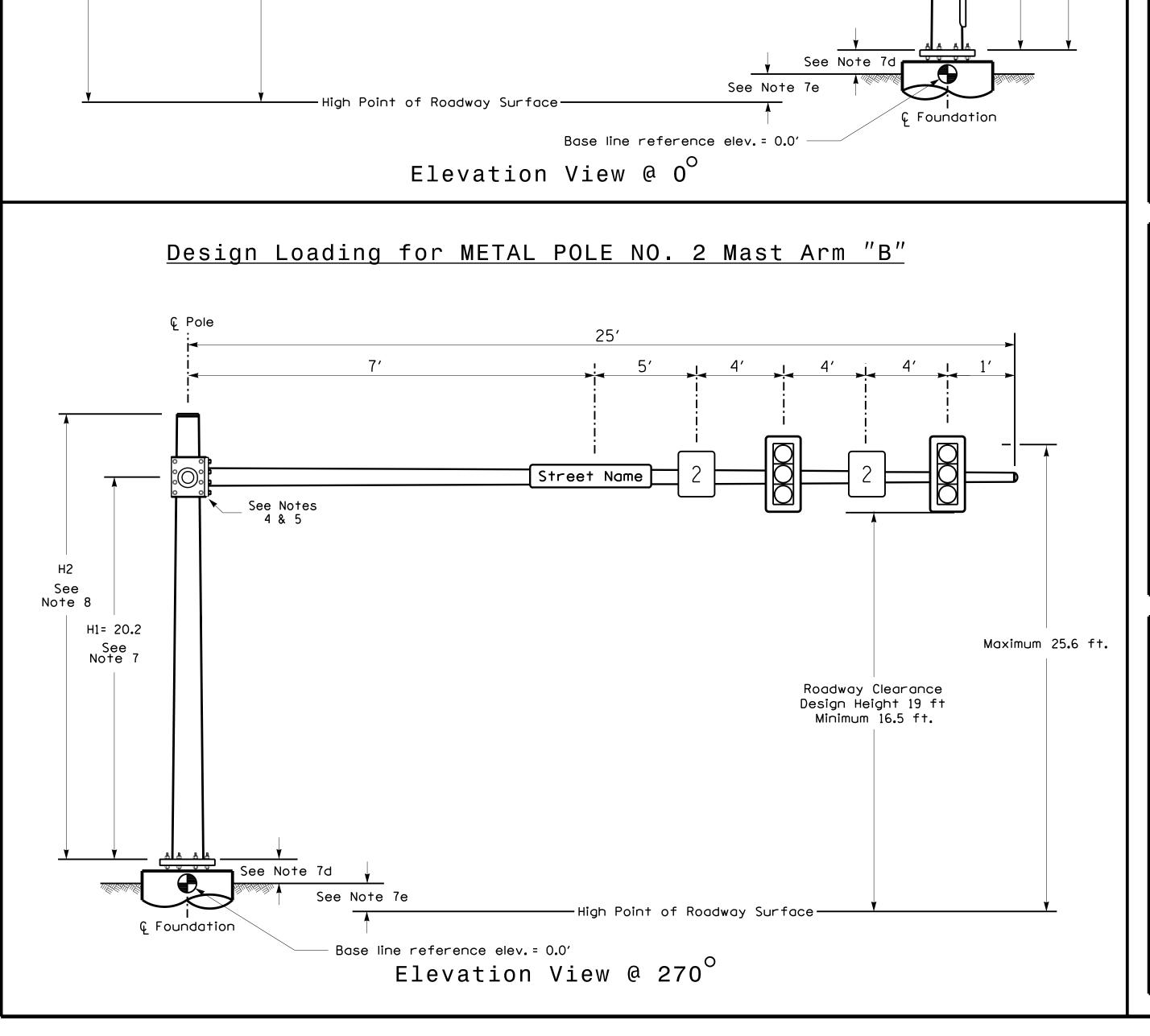
DESIGN REFERENCE MATERIAL

- 1. Design the traffic signal structure and foundation in accordance with:
- The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
- The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to
- the specifications can be found in the traffic signal project special provisions.
- The 2024 NCDOT Roadway Standard Drawings.
- The traffic signal project plans and special provisions.
- The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

- 2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using force ratios that do not exceed 0.9.
- 4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- 5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate arm connection points.
- 6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- 7. The mast arm attachment height (H1) shown is based on the following design assumptions: a. Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
- b. Signal heads are rigidly mounted and vertically centered on the mast arm.
- c. The roadway clearance height for design is as shown in the elevation views.
- d. The top of the pole base plate is 0.75 feet above the ground elevation.
- e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- 8. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
- Mast arm attachment height (H1) plus 2 feet, or
- H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- 9. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- 10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- 11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.





Design Loading for METAL POLE NO. 2 Mast Arm "A"

60'

See Notes _ 4 & 5

11'

5' : 4' : 6.5'

Roadway Clearance

Design Height 19 ft

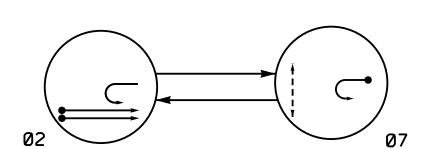
Minimum 16.5 ft.

Maximum 25.6 ft.

6.5′

Street Name

DEFAULT PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

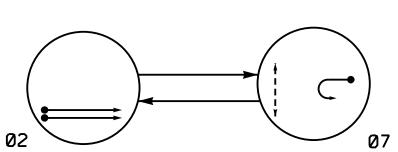
UNSIGNALIZED MOVEMENT

UNDETECTED MOVEMENT (OVERLAP)

DETECTED MOVEMENT

← - - > PEDESTRIAN MOVEMENT

ALTERNATE PHASING DIAGRAM

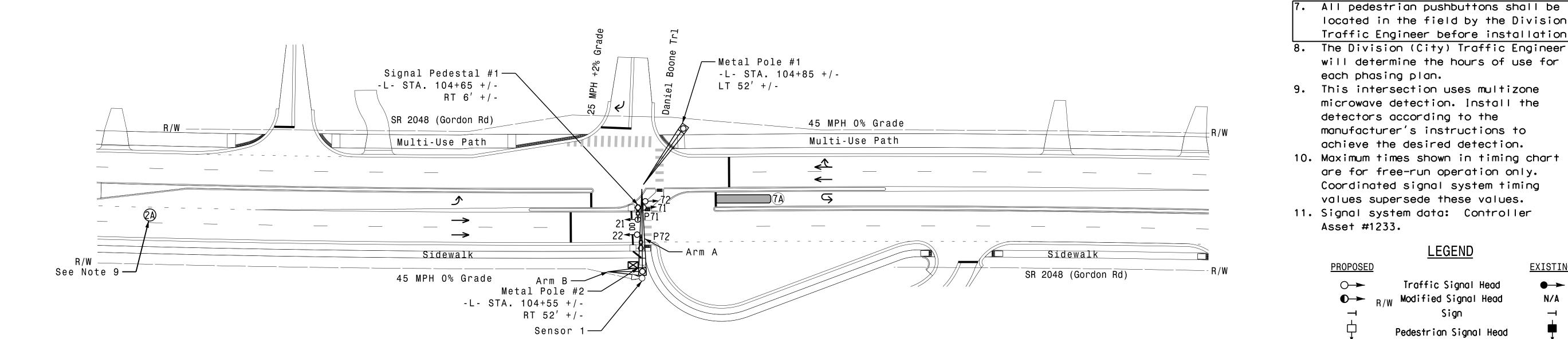


DEFAULT PHASING BLE OF OPERATION			ALTERNATE TABLE OF O				
PHASE					Р	HAS	E
SIGNAL FACE	0 2	07	上しないエ	SIGNAL FACE	0 2	07	FUGOI
21,22	G	R	Υ	21,22	G	R	Υ
71,72	(}	\bigcap	P	71,72	R	\bigcap	P
P71 , P72	DW	W	DRK	P71 , P72	DW	W	DRK

OASIS	2070	LOOP	& DET	EC	TOR	ΙN	IST	AL	LATIC	ON CH	AR	Т
I	INDUCTIVE LOOPS DETECTOR PROGRAMMIN								MMING			
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
7A	6X40		*	*	7	Υ	Y	1	-	10 **	-	Y
'A	0040		不	不	2#	Υ	Υ	_	-	_	_	Υ

- * N
- **

ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELA	STRETCH TIME	DELAY TIME	SYSTEM LOOF	NEW CARD
7A	6X40	0	*	*	7	Υ	Υ	ı	-	10 ***	-	Υ
1 A	6740	U	*	不	2#	Υ	Υ	ı	ı	-	-	Υ
€ Disa	zone M ble De le pha ng.	lay Du	iring A	41+	erna	te				-		ก•

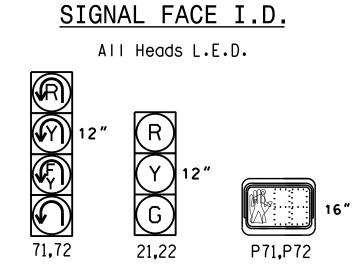


	PH	ASE
FEATURE	2	7
Min Green 1 *	12	5
Extension 1 *	2.0	2.0
Max Green 1 *	90	20
Yellow Clearance	4.5	3.0
Red Clearance	1.6	2.1
Red Revert	2.0	2.0
Walk 1 *	-	7
Don't Walk 1	-	5
Advanced Walk *	-	-
Seconds Per Actuation *	-	-
Max Variable Initial *	-	-
Time Before Reduction *	-	-
Time To Reduce *	-	-
Minimum Gap	-	-
Recall Mode	MIN RECALL	-
Vehicle Call Memory	YELLOW	-
Dual Entry	-	-
Simultaneous Gap	ON	ON

OASIS 2070 TIMING CHART

* These values may be field	l adjusted. Do	not adjust Min
Green and Extension times	for phase 2 lov	ver than what i
shown. Min Green for all o	ther phases show	uld not be
lower than 1 seconds		

RADAR DETECTION	SYSTEM
FUNCTION	Sensor 1
Channel	1
Phase	2
Direction of Travel	EB
Detection Zone (ft)	100-600
Enable Speed	Y
Speed Range (mph)	35-100
Enable Estimated Time of Arrival	Y
Estimated Time of Arrival (sec)	1.0-6.5



New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.

U-6202

2 Phase

Fully Actuated

Wilmington Signal System

NOTES

1. Refer to "Roadway Standard Drawings

"Standard Specifications for Roads

and Structures" dated January 2024.

flashing operation unless otherwise

obstruct sight distance of vehicles

located in the field by the Division Traffic Engineer before installation.

will determine the hours of use for

microwave detection. Install the

manufacturer's instructions to

achieve the desired detection.

values supersede these values.

are for free-run operation only. Coordinated signal system timing

LEGEND

Traffic Signal Head

Sign

Pedestrian Signal Head

Signal Pole with Guy Signal Pole with Sidewalk Guy Microwave Detection Zone Out of Pavement Detector

Controller & Cabinet

Junction Box 2-in Underground Conduit

Right of Way

Directional Arrow Directional Drill

Metal Pole with Mastarm

Type II Signal Pedestal

Curb Ramp

_{R/W} Modified Signal Head

<u>EXISTING</u>

N/A

_-----

_____ \longrightarrow

N/A

detectors according to the

2. Do not program signal for late night

3. Set all detector units to presence

4. Locate new cabinet so as not to

5. Omit "WALK" and flashing "DON'T

WALK" with no pedestrian calls.

countdown the flashing "Don't

NCDOT" dated January 2024 and

directed by the Engineer.

turning right on red.

Walk" time only.

each phasing plan.

Asset #1233.

<u>PROPOSED</u>

 \boxtimes

 \boxtimes

N/A

6. Program pedestrian heads to

mode.



SR 2048 (Gordon Rd) Eastbound

Westbound U-Turn Division 3 New Hanover County

PLAN DATE: May 2022 REVIEWED BY: N K Vlanich 750 N.Greenfleid Phwy.Garner.NC 27529 PREPARED BY: E.E. Tiller REVIEWED BY: N.R. SIMMONS INIT. DATE

TH CAROLLA 031464 SIG. INVENTORY NO. 03-1233

PROJECT REFERENCE NO. U-6202

SIGNAL HEAD HOOK-UP CHART CMU CHANNEL NO. 5 6 PED 7 8 PED OLA OLB SPARE OLC OLD SPARE NU 21,22 NU NU NU P71 NU NU NU 71,72 NU NU NU NU NU SIGNAL HEAD NO. YELLOW GREEN RED A101 ARROW YELLOW A102 ARROW FLASHING YELLOW ARROW A103 GREEN ARROW 124

NU = Not Used

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

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. Enable Simultaneous Gap-Out for all Phases.
- 3. Program phase 2 for Startup In Green.
- 4. Program phase 2 for Yellow Flash.
- 5. The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

SOFTWARE......ECONOLITE OASIS

CABINET MOUNT.....BASE

OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....S2.S6.S10.AUX S5

PHASES USED.....2.7 OVERLAP "A".....NOT USED

OVERLAP "B".....NOT USED OVERLAP "C".....NOT USED

OVERLAP "D".....2+7

INPUT FILE CONNECTION & PROGRAMMING CHART

TB5-5,6 J5U 57 19* 7 7 Y Y	.00P NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
- J5U 57 19* 57 7 Y Y PED PUSH		TB5-5 , 6	J5U	57	19*	7	7	Υ	Υ			10
PED PUSH	7A1	-	I8U	49	11★	24	2	T T				
		-	J5U	57	19*	57	7					
	PED PUSH BUTTONS						NOTE:					
P71,P72 TB8-5,6 I12L 69 31 PED 4 7 PED INSTALL DC ISOLATOR	P71,P72	TB8-5,6	I12L	69	31	PED 4	7 PED	INSTALL DC ISOLATORS				

The sequence display for signal heads 71 and 72 require special

FYA SIGNAL WIRING DETAIL

OLD RED (A101)

OLD YELLOW (A102) -

OLD GREEN (A103) -

07 GREEN (124)

(wire signal heads as shown)

THE SIGNAL DESIGN: 03-1233 REVISED:

| Electrical Detail - Sheet 1 of 4 New Installation

UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMIN

REVISIONS

March 2024 REVIEWED BY: N.K. Vlanich E.E. Tiller REVIEWED BY: N.R. Simmons

031464 Wilmington INIT. DATE

SIG. INVENTORY NO. 03-1233

TH CARO,

LOAD RESISTOR INSTALLATION DETAIL

installation are compatible with time of day instructions

located on sheet 3 of this electrical detail.

INPUT FILE POSITION LAYOUT

(front view)

1 2 3 4 5 6 7 8 9 10 11 12 13 14

(install resistor as shown below)

SPECIAL DETECTOR NOTE

Install a multizone microwave detection system for vehicle

detection. Perform installation according to manufacturer's

directions and NCDOT engineer-approved mounting locations to

accomplish detection schemes shown on the Signal Design Plans.

For Zone 7A, inputs associated with the typical slots for a NCDOT

18 CHANNEL CONFLICT MONITOR

PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

COMPONENT SIDE

REMOVE JUMPERS AS SHOWN

2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.

4. Connect serial cable from conflict monitor to comm. port 1 of 2070

controller. Ensure conflict monitor communicates with 2070.

[⊗] Wired Input - Do not populate slot with detector card

3. Ensure that Red Enable is active at all times during normal operation.

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.

NOTES:

FILE

REMOVE DIODE JUMPERS 2-12, 7-12, 7-14, and 12-14.

WD ENABLE (

USED

Ø7 PED

FS = FLASH SENSE ST = STOP TIME

RP DISABLE - WD 1.0 SEC -GY ENABLE

-LEDguard

-RF SSM

FYA 1-9

──FYA 7-12 ──

□⊢FYA 3-10 FYA 5-11

■ = DENOTES POSITION

ST

-SF#1 POLARITY ☐

-FYA COMPACT-

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

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

PHASE 7 YELLOW FIELD TERMINAL (123)

HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997

★See Input Page Assignment programming details on sheet 3. IN INPULTILE SLUL Add jumper from J5-W to I8-W, on rear of input file.

for instructions on selecting this feature.

INPUT FILE POSITION LEGEND: J2L LOWER-

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during

Ped Clearance Interval. Consult Ped Signal Module user's manual

<u>NOTE</u>

logic programming. See sheet 2 for programming instructions.

THIS ELECTRICAL DETAIL IS FOR DESIGNED: May 2022 SEALED: 5/17/2024

DOCUMENT NOT CONSIDERED FINAL

SR 2048 (Gordon Rd) Eastbound

Westbound U-Turn

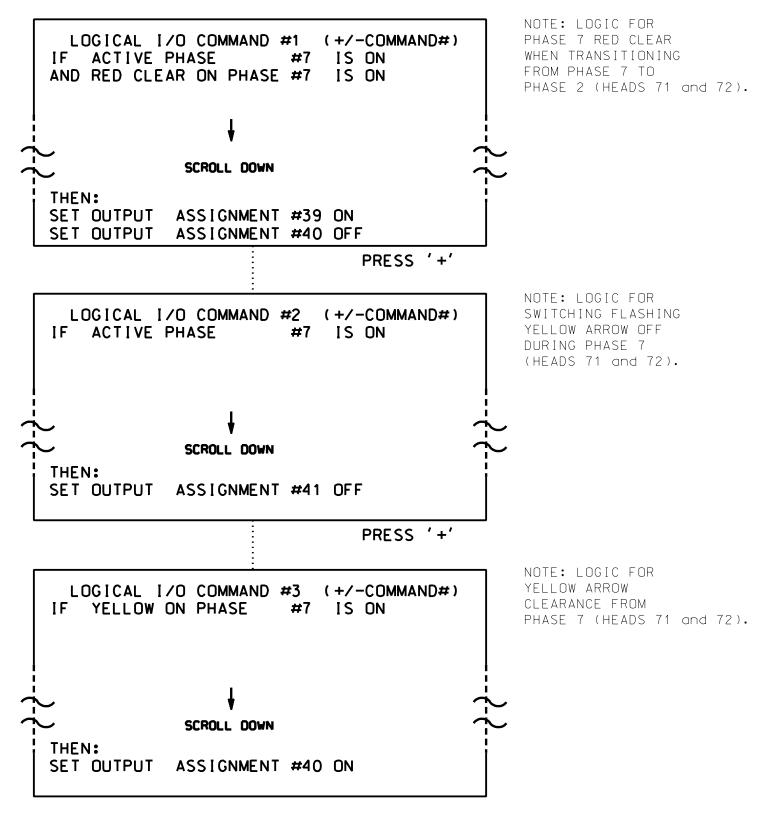
Division 3 New Hanover County PREPARED BY:

PROJECT REFERENCE NO. U-6202 Sig 21

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

(program controller as shown below)

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



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

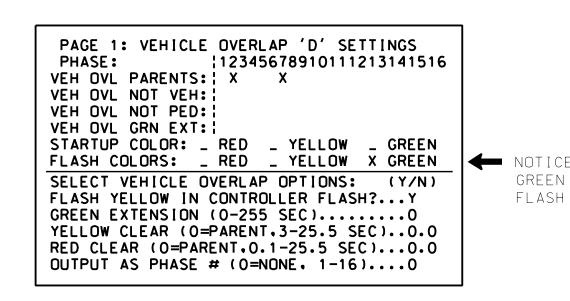
OUTPUT REFERENCE SCHEDULE USE TO INTERPRET LOGIC PROCESSOR OUTPUT 39 = Overlap D Red OUTPUT 40 = Overlap D Yellow OUTPUT 41 = Overlap D Green

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

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

PRESS '+' THREE TIMES



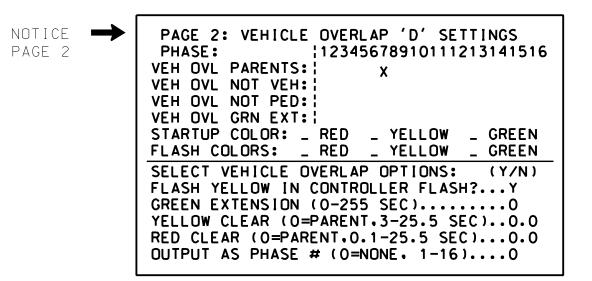
OVERLAP PROGRAMMING COMPLETE

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.

PRESS '+' THREE TIMES



OVERLAP PROGRAMMING COMPLETE

PED 7 PROGRAMMING DETAIL

(program controller as shown below)

CHANGING OUTPUT ASSIGNMENTS

- 1. FROM MAIN MENU SELECT '6' (OUTPUTS). THEN '1' (OUTPUT ASSIGNMENTS)
- 2. ENTER 1 (PHASE 4 DW) FOR OUTPUT ASSIGNMENT #.
- 3. SCROLL DOWN TO 'PEDESTRIAN PHASE' AND ENTER 'Y' REGARDLESS OF DEFAULT PROGRAMMING!
- 4. ENTER '7' FOR 'SELECT PEDESTRIAN PHASE'. NO CHANGE NEEDED FOR 'SELECT COLOR'
- 5. BACKUP TO 'OUTPUT ASSIGNMENTS AND SETTINGS MENU: BY PRESSING THE 'ESC' BUTTON ON KEYBOARD.
- 6. SELECT '1' (OUTPUT ASSIGNMENTS)
- 7. ENTER 2 (PHASE 4 W) FOR OUTPUT ASSIGNMENT #.
- 8. REPEAT STEPS # 3 AND # 4.

CHANGING INPUT ASSIGNMENTS

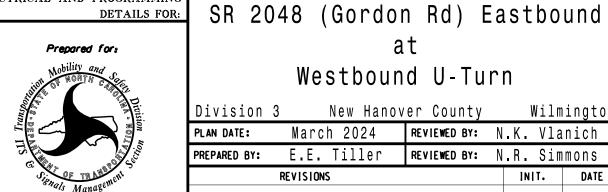
- 1. FROM MAIN MENU SELECT '7' (DETECTORS). THEN '2' (PEDESTRIAN DETECTOR ASSIGNMENTS)
- 2. CYCLE TO PED DETECTOR #4 BY REPEATEDLY DEPRESSING '+' KEY
- 3. MODIFY PHASE ASSIGNED TO PED DETECTOR # 4 FROM PHASE 4 TO PHASE 7

PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1233 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Electrical Detail - Sheet 2 of 4 New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ELECTRICAL AND PROGRAMMIN

Westbound U-Turn

Division 3 New Hanover County Wilmington

March 2024 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE TH CAROL 031464

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SIG. INVENTORY NO. 03-1233

PROJECT REFERENCE NO. U-6202 Sig. 21

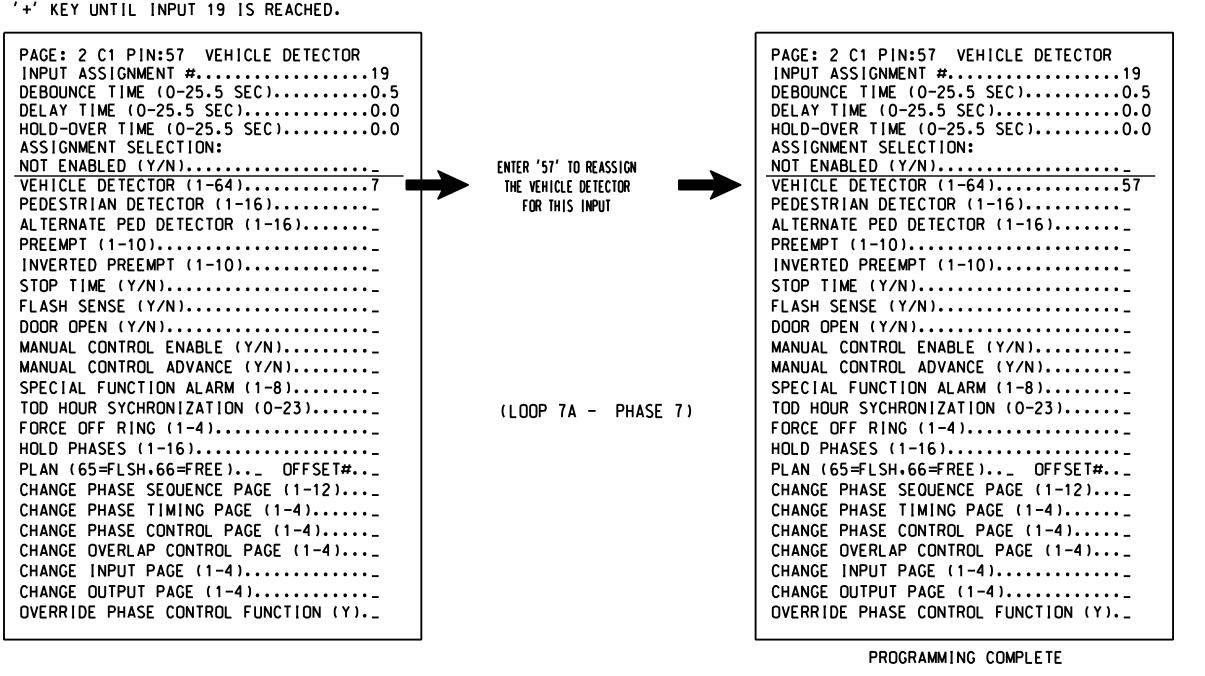
INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 7A

(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 #11 (DETECTOR 24) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 4 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 57 TO INPUT #19 SO THAT THE DELAY ON LOOP 7A CAN BE REDUCED FROM 10 SECONDS TO 0 SECONDS.

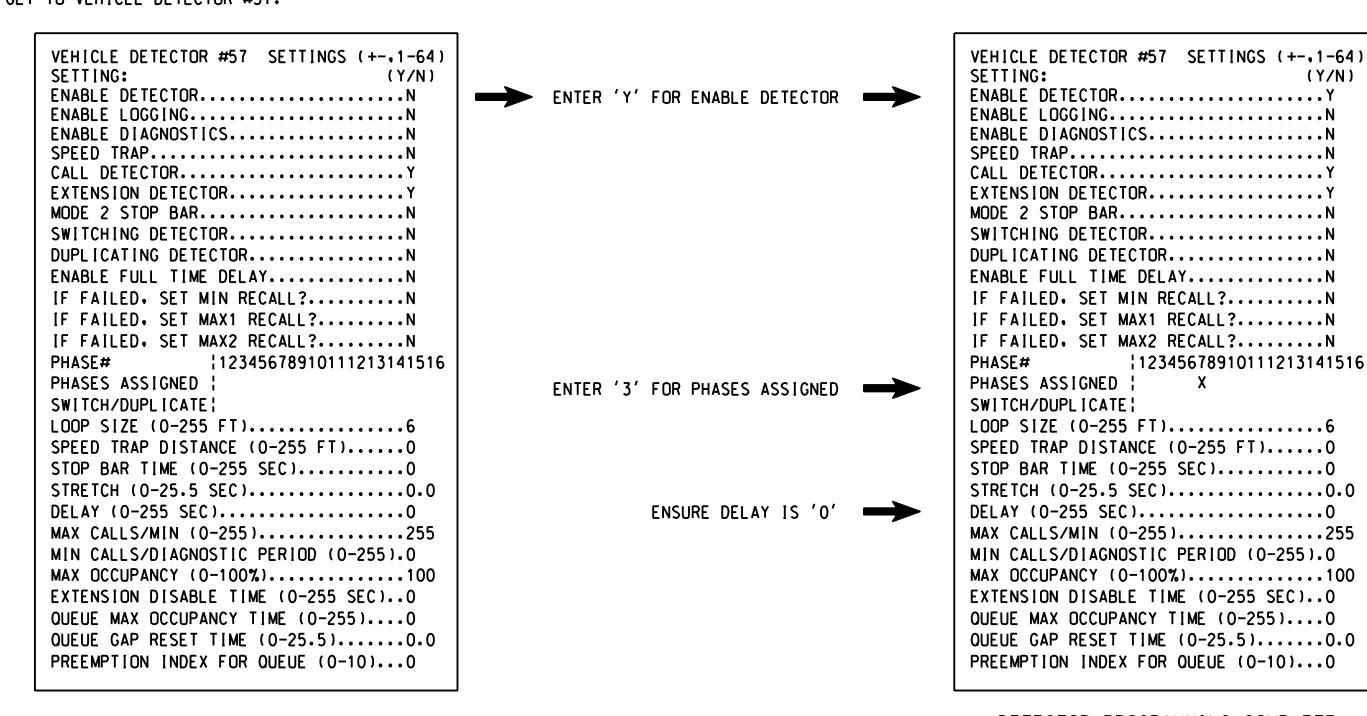
FROM MAIN MENU PRESS '5' (INPUTS). THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE



SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 7A (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 #57.



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

> THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1233 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Electrical Detail - Sheet 3 of 4 New Installation

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ELECTRICAL AND PROGRAMMIN

SR 2048 (Gordon Rd) Eastbound Westbound U-Turn

REVISIONS

Division 3 New Hanover County Wilmington PLAN DATE: March 2024 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. SIMMONS

TH CARO, 031464

DETECTOR PROGRAMMING COMPLETE

(Y/N)

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

INIT. DATE SIG. INVENTORY NO. 03-1233

U-6202 Sig. 21.4

ALTERNATE PHASING ACTIVATION DETAIL

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

TO RUN ALT. PHASING DURING <u>FREE RUN</u> - 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 DEFAULT PHASING	1	1
ACTIVE PAGES REQUIRED TO RUN ALTERNATE PHASING	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 phase

for heads 71 and 72 to run protected

turn only.

INPUTS PAGE 2: Disables phase 2 call on loop 7A

and reduces delay time for phase 7 call on loop 7A to 0 seconds.

FLASHER CIRCUIT MODIFICATION DETAIL

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

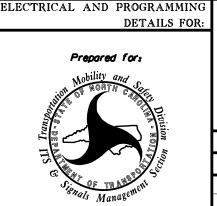
- 1. ON REAR OF PDA REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- 2. ON REAR OF PDA REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- 3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1233
DESIGNED: May 2022
SEALED: 5/17/2024
REVISED:

Electrical Detail - Sheet 4 of 4 New Installation

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SR 2048 (Gordon Rd) Eastbound at

Westbound U-Turn

Division 3 New Hanover County Wilmington

PLAN DATE: March 2024 REVIEWED BY: N.K. Vlanich
PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons
REVISIONS INIT. DATE

DocuSigned by:

Matasha R Simmons
SIGNATURE
POUNDOUT SADVADAN
SIGNATURE
SIGNATURE
DATE
SIGNATURE
031464

5/17/2
DATE
03-1233

TH CAROL

PROJECT REFERENCE NO. U-6202

3 Phase Fully Actuated Wilmington Signal System

NOTES

- NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- 2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- mode.
- 5. Locate new cabinet so as to not obstruct sight distance of vehicles turning right on red.
- 6. The Division (City) Traffic Engineer each phasing plan.
- values supersede these values.
- Asset #1216.

◆ Modified Signal Head N/A
→ Sign →
Pedestrian Signal Head
Signal Pole with Guy
Signal Pole with Sidewalk Guy
Microwave Detection Zone
Out of Pavement Detector
Controller & Cabinet
☐ Junction Box ■
2-in Underground Conduit
N/A Right of Way —————
N/A Permanent Utility Easement PUE
N/A Construction Easement —— E——
\longrightarrow Directional Arrow \longrightarrow
Construction Zone
Wedge/Widen
⟨A⟩ "RIGHT TURN YIELD TO U-TURN" Sign (A)
⟨B⟩ Right Arrow "ONLY" Sign (R3-5R) ⟨B⟩

New Installation-Temporary Design 1

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Prepared for:		SR	2048	(Gor	don	Rd)
				at		
NOIN S. NOIN S	SR	2772	(Farr	ringt	on F	arms
A second	Divisi	lon 3	New Ha	nover (County	W
OF TRANSCHOR	PLAN DAT	E: M:	ay 2022	REVIE	WED BY:	N.K.
	חחרה	nv. F F	T:110	DEVIC	- WED DV.	N D

(Construction Phase 2A)

gton Farms Dr)

eviewed by: N.K. Vlanich 750 N.Greenfield Pkwy.Garner.NC 27529 PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

ORIGINATION TO CAROLINA SEAL 031464

- 1. Refer to "Roadway Standard Drawings
- 3. Phase 5 may be lagged.
- 4. Set all detector units to presence
- will determine the hours of use for
- 7. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- are for free-run operation only. Coordinated signal system timing
- 9. Signal system data: Controller

-L- STA. 129+04 +/- LT 68' +/- PUE	 4. 5. 7. 8. 9. 	mode. Locate new cabinet so as to not obstruct sight distance of vehicles turning right on red. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan. This intersection uses multi-zone microwave detection. Install detector according to the manufacturer's instructions to achieve the desired detection. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values. Signal system data: Controller
6B S	J•	Asset #1216. LEGEND PROPOSED EXISTING
SR 2048 (Gordon Rd)		○→ Traffic Signal Head ◆→

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

DETECTOR PROGRAMMING

15***

5 | Y | Y | -

* |*| 5 |Y|Y|

** Disable Delay During Alternate Phasing Operation.

Disable phase call for loop(s) during alternate

INDUCTIVE LOOPS

FROM

STOPBAR

* Multizone Microwave Detection

SIZE

6X:40

6X·40

6X:40

5B 6X40

phasing.

ZONE

OASIS 2070 TIMING CHART									
		PHASE							
FEATURE	2	4	5	6					
Min Green 1 *	12	5	5	12					
Extension 1 *	2.0	2.0	2.0	2.0					
Max Green 1 *	90	30	20	90					
Yellow Clearance	4.5	3.0	3.0	4.5					
Red Clearance	1.5	3 . 2	2.1	1.5					
Red Revert	2.0	2.0	2.0	2.0					
Walk 1 *	-	-	-	-					
Don't Walk 1	-	-	-	-					
Seconds Per Actuation *	-	-	-	-					
Max Variable Initial *	-	-	-	-					
Time Before Reduction *	-	-	-	-					
Time To Reduce *	-	-	-	-					
Minimum Gap	_	-	-	-					
Recall Mode	MIN RECALL	-	-	MIN RECALL					
Vehicle Call Memory	YELLOW	-	-	YELLOW					
Dual Entry	-	-	-	-					

DEFAULT PHASING DIAGRAM

PHASING DIAGRAM DETECTION LEGEND

UNSIGNALIZED MOVEMENT

UNDETECTED MOVEMENT (OVERLAP)

See Note 7

DETECTED MOVEMENT

← - - > PEDESTRIAN MOVEMENT

02+6

phases 2 and 6 lower than what is shown. Min Green for all other phases should not

SIGNAL FACE I.D.

ALTERNATE PHASING DIAGRAM

SR 2048 (Gordon Rd)

45 MPH 0% Grade

└ PUE ─

02+6

DEFAULT PHASING

TABLE OF OPERATION

SIGNAL

FACE

21,22

41,43

62

63

-L- STA. 128+36 +/-

LT 67' +/-

Sensor 1—

RT 48′ +/-

-L- STA. 128+31 +/-

PHASE

ALTERNATE PHASING

TABLE OF OPERATION

SIGNAL

FACE

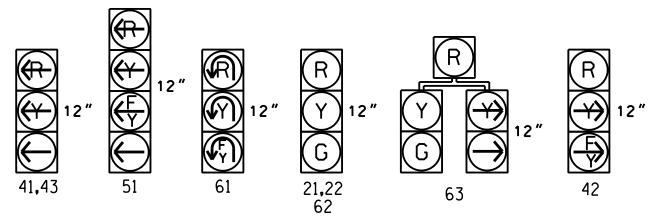
21,22

41,43

6.2

PHASE

All Heads L.E.D.



RADAR DETECT	ION SYST	EM
FUNCTION	Sensor 1	Sensor 2
Channel	1	1
Phase	2	6
Direction of Travel	EB	WB
Detection Zone (ft)	100-600	100-600
Enable Speed	Y	Y
Speed Range (mph)	35-100	35-100
Enable Estimated Time of Arrival	Y	Y
Estimated Time of Arrival (sec)	1.0-6.5	2.5-6.5

-L- STA. 128+98 +/-RT 48' +/-

18 CHANNEL CONFLICT MONITOR ON OFF PROGRAMMING DETAIL

☐—RP DISABLE

₩D 1.0 SEC GY ENABLE

─ LEDguard

─FYA 1-9 ___⊢FYA 3-10

= DENOTES POSITION

OF SWITCH

FYA COMPACT

WD ENABLE (

(remove jumpers and set switches as shown) SW2 REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-11, 2-12, 4-12, 5-9, 5-11, 5-12, 6-9, 6-11, 9-11, 9-12, and 11-12.

FYA 5-11
FYA 7-12

REMOVE JUMPERS AS SHOWN

COMPONENT SIDE

- 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 are present on the monitor board.
- 4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

3. Ensure th Red Enable is active all times during normal operation.

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. Enable Simultaneous Gap-Out for all Phases.
- ——├SF#1 POLARITY뒀│3. Program phases 2 and 6 for Startup in Green.
 - 4. Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
 - 5. The cabinet and controller are part of the Wilmington Signal

EQUIPMENT INFORMATION

SOFTWARE.....ECONOLITE DASIS CABINET MOUNT.....BASE

OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....S2,S5,S7,S8,AUX S1,AUX S4,AUX S5

PHASES USED......2,4,5,6 OVERLAP "A"......2 OVERLAP "B".....NOT USED

OVERLAP "C".....5+6 OVERLAP "D".....4+5 PROJECT REFERENCE NO. U-6202

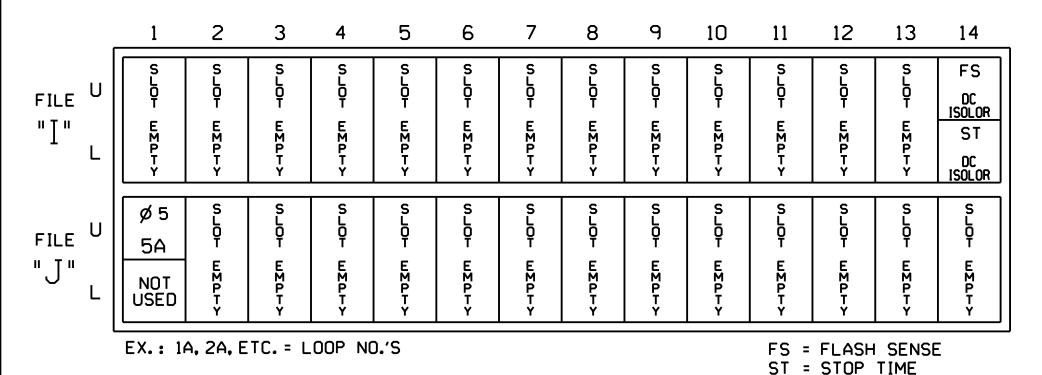
SIGNAL HEAD HOOK-UP CHART																			
LOAD SWITCH NO.	Sl	S2	S3	S4	S	5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	1	14	5	6	15	7	8	16	σ	10	17	11	12	18
PHASE	1	2	2 PED	3	4)	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,43	63	NU	★ 51	62,63	NU	NU	NU	NU	★	NU	NU	★ 51	★ 42	NU
RED		128							134									A101	
YELLOW		129						*	135										
GREEN		130							136										
RED ARROW					101									A121			A114		
YELLOW ARROW					102	102								A122			A115	A102	
FLASHING YELLOW ARROW														A123			A116	A103	
GREEN ARROW					103	103		133											
₩																			
Ķ																			

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)



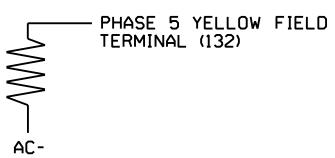
SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

ACCEPTABLE VALUES VALUE (ohms) WTAGE 1.5K - 1.9K 25W (m1n) 2.0K - 3.0K | 10W (min)



INPUT FILE CONNECTION & PROGRAMMING CHART

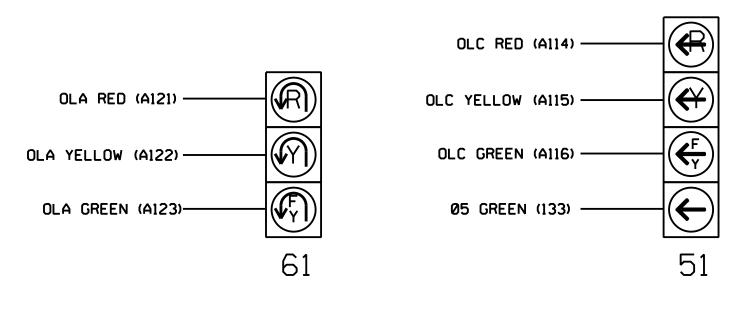
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
	TB3-1,2	JlU	55	17	5	5	Y	Y			15
5A	-	I4U	47	9 ★	22	2	Y	Y			
	-	J1U	55	17 ★	55	5	Υ	Υ			

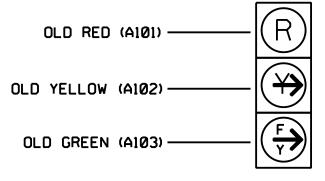
★ See Input Page Assignment programming details on sheet 3.

INPUT FILE POSITION LEGEND: J2L LOWER-

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)





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

New Installation-

NOTE

Electrical Detail - Sheet 1 of 4

(Construction Phase 2A)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMIN DETAILS FOR: Prepared in the Offices of:

SR 2048 (Gordon Rd)

SR 2772 (Farrington Farms Dr)

Division 3 New Hanover County PLAN DATE:

August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

RTH CAROL SOF ESSION N 031464 SIG. INVENTORY NO. 03-1216T

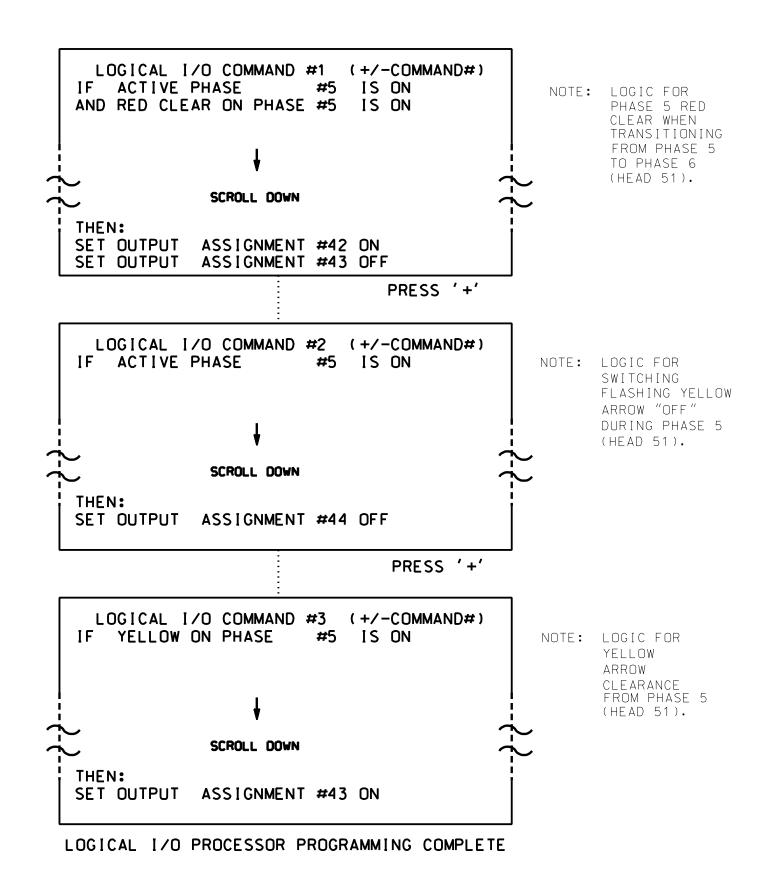
This plan supersedes the plan signed and sealed on 5/17/2024.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1216T1 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

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

(program controller as shown below)

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



OUTPUT REFERENCE SCHEDULE USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 42 = Overlap C Red OUTPUT 43 = Overlap C Yellow OUTPUT 44 = Overlap C Green

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

PROJECT REFERENCE NO. U-6202 Sig. 22.

GREEN

THEN '1' (VEHICLE OVERLAP SETTINGS). PAGE 1: VEHICLE OVERLAP 'D' SETTINGS PAGE 2: VEHICLE OVERLAP 'A' SETTINGS 12345678910111213141516 112345678910111213141516 VEH OVL PARENTS: X VEH OVL PARENTS: XX VEH OVL NOT VEH: ! VEH OVL NOT VEH: VEH OVL NOT PED: 1 VEH OVL NOT PED: VEH OVL GRN EXT: |
STARTUP COLOR: _ RED _ YELLOW _ GREEN
FLASH COLORS: _ RED _ YELLOW X GREEN

NOTICE VEH OVL GRN EXT: STARTUP COLOR: _ RED _ YELLOW _ GREEN SELECT VEHICLE OVERLAP OPTIONS: (Y/N) SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN GREEN FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH FLASH YELLOW IN CONTROLLER FLASH?...N FLASH GREEN EXTENSION (0-255 SEC)..... GREEN EXTENSION (0-255 SEC)..... YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 OUTPUT AS PHASE # (0=NONE. 1-16)....0 OUTPUT AS PHASE # (0=NONE. 1-16)....0 PRESS '+' TWICE OVERLAP PROGRAMMING COMPLETE PAGE 1: VEHICLE OVERLAP 'C' SETTINGS PHASE: 112345678910111213141516 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 SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

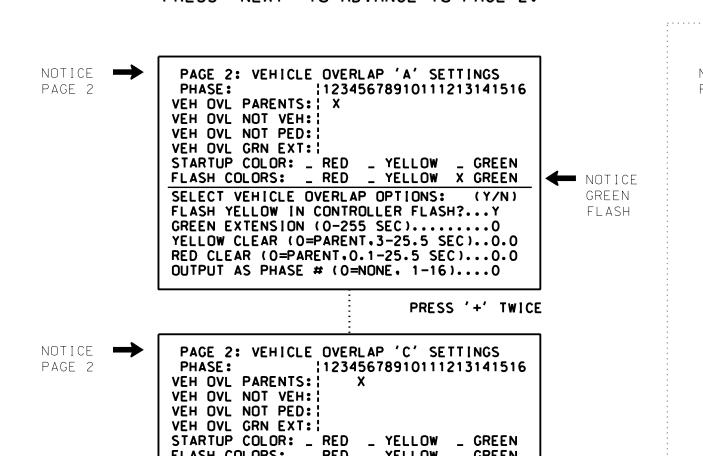
FROM MAIN MENU PRESS '8' (OVERLAPS). THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS 'NEXT' TO ADVANCE TO PAGE 2.

GREEN EXTENSION (0-255 SEC)..... 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 '+'

FROM MAIN MENU PRESS '8' (OVERLAPS).



FLASH COLORS: _ RED _ YELLOW _ GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N) FLASH YELLOW IN CONTROLLER FLASH?...Y GREEN EXTENSION (0-255 SEC)..... YELLOW CLEAR (O=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

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 SELECT VEHICLE OVERLAP OPTIONS: (Y/N) FLASH YELLOW IN CONTROLLER FLASH?...N GREEN EXTENSION (0-255 SEC)..... 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

PRESS '+'

New Installation-Electrical Detail - Sheet 2 of 4 (Construction Phase 2A)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ATH CAROL

SOFESSION N

031464

<u>Natasha R. Simmons</u> 5/17/202 SIGNATURE DATE

SIG. INVENTORY NO. 03-1216T

ELECTRICAL AND PROGRAMMIN DETAILS FOR: Prepared in the Offices of:

750 N. Greenfield Pkwy. Garner, NC 27529

SR 2048 (Gordon Rd) SR 2772 (Farrington Farms Dr) Division 3 New Hanover County

August 2023 REVIEWED BY: N.K. Vlanich PLAN DATE: REVIEWED BY: N.R. Simmons PREPARED BY: E E. Tiller REVISIONS INIT. DATE

HNTB NORTH CAROLINA, P.C.

THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 03-1216T1

DESIGNED: May 2022

SEALED: 5/17/2024

REVISED:

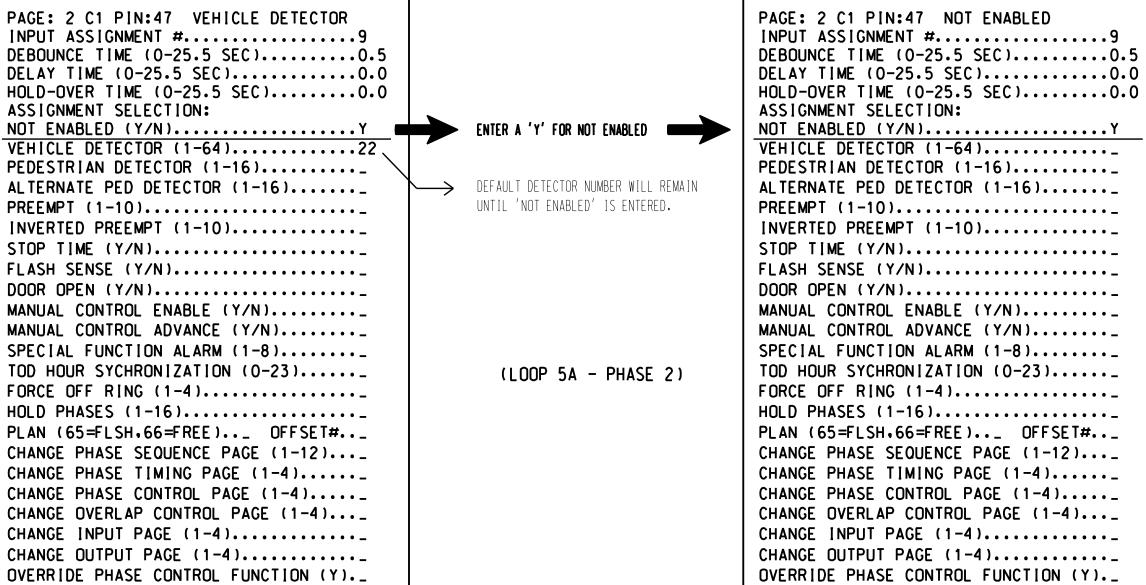
INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

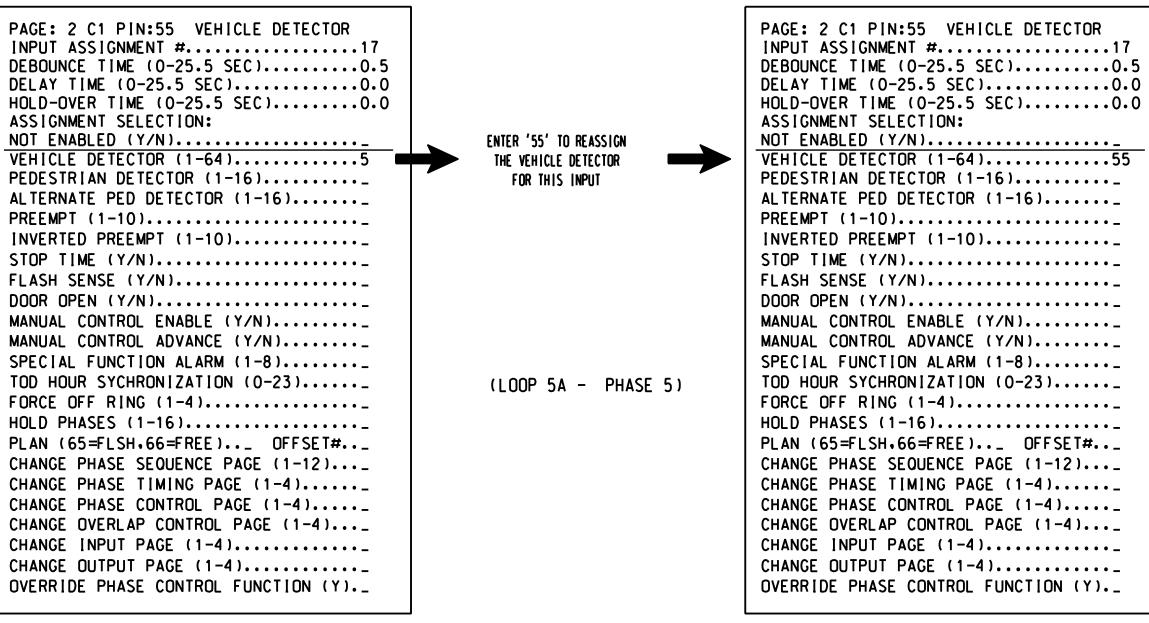
(program controller as shown below)

NOTES: 1. THIS PROGRAMMING APPLIES <u>FOR INPUT PAGE 2</u> 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.





PROGRAMMING COMPLETE

PROJECT REFERENCE NO.

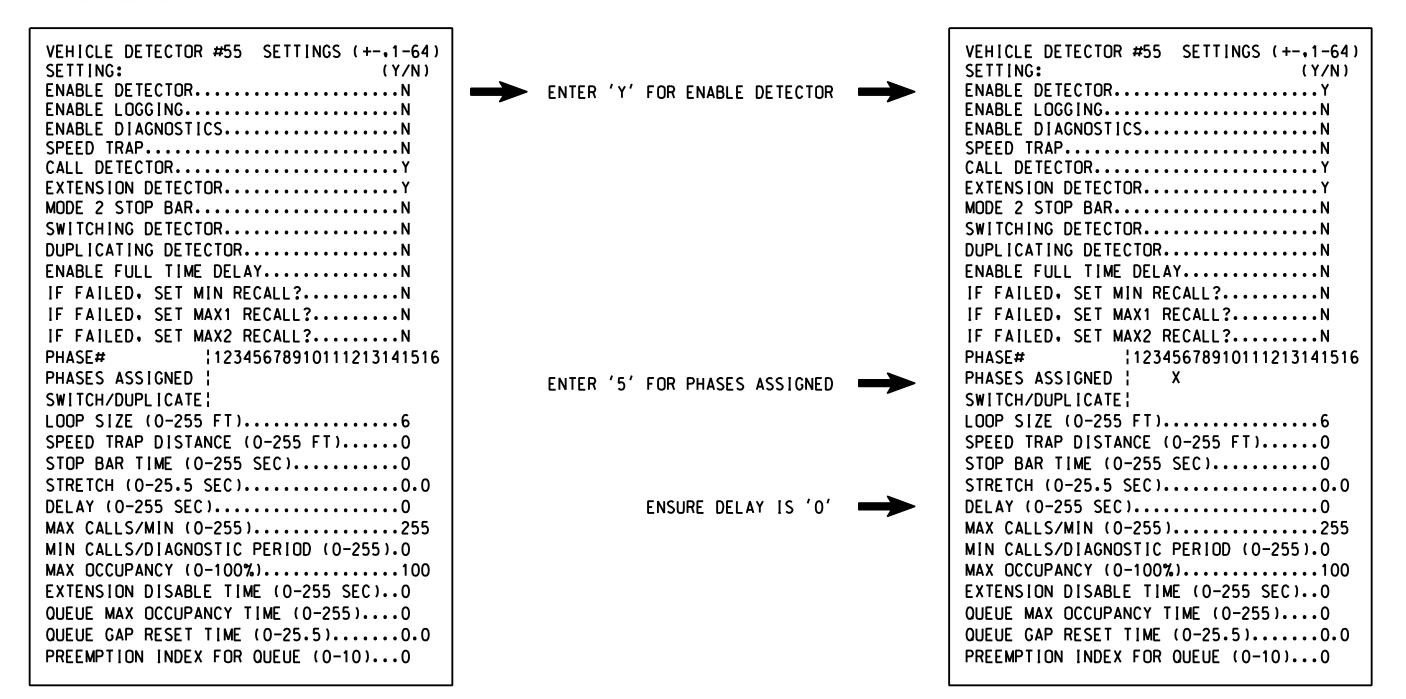
U-6202

Sig 22

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.



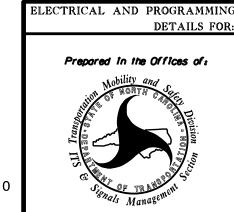
DETECTOR PROGRAMMING COMPLETE

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1216T1 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

New Installation-Electrical Detail - Sheet 3 of 4 (Construction Phase 2A)

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at
SR 2772 (Farrington Farms Dr)
Division 3 New Hanover County Wilmington

SR 2048 (Gordon Rd)

Division 3 New Hanover County Wilmington

PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich

PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

O3I464

—DocuSigned by:

—Matasha R. Simmons

SIGNATURE

FODNOODS JACKSTORY NO. 03-1216T

TH CARO

STOFFESSION 1

HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997

REVISIONS INIT. DATE

| Docusigned by: | Management | Date | Docusigned by: | Management | Date | Docusigned by: | Date |

PROJECT REFERENCE NO. U-6202

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING <u>COORDINATION</u> - 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 DEFAULT PHASING	1	1
ACTIVE PAGES REQUIRED TO RUN ALTERNATE PHASING	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.

Disables phase 2 call on loop 5A INPUTS PAGE 2:

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

FLASHER CIRCUIT MODIFICATION DETAIL

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

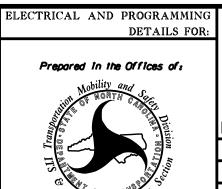
- 1. ON REAR OF PDA REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- 2. ON REAR OF PDA REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- 3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1216T1 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

New Installation-Electrical Detail - Sheet 4 of 4 (Construction Phase 2A)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SR 2772 (Farrington Farms Dr)

SR 2048 (Gordon Rd)

Division 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

031464 SIG. INVENTORY NO. 03-1216T

OR FORESSION 1/2

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

REVISIONS INIT. DATE

U-6202 Sig. 2

3 Phase Fully Actuated Wilmington Signal System

<u>NOTES</u>

- Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- 3. Phase 5 may be lagged.
- 4. Renumber loop 6B to 6C.
- 5. Reposition existing signal heads numbered 62 and 63.
- 6. Set all detector units to presence mode.
- 7. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
- 8. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND

Traffic Signal Head

Modified Signal Head

Pedestrian Signal Head

Signal Pole with Guy
Signal Pole with Sidewalk Guy
Microwave Detection Zone
Out of Pavement Detector

Controller & Cabinet
Junction Box

2-in Underground Conduit
Right of Way
Permanent Utility Easement

Construction Easement

Wedge/Widen

(A) "RIGHT TURN YIELD TO U-TURN" Sign (A)

Directional Arrow Construction Zone

EXISTING

-

—— PUE ——

 \longrightarrow

10. Signal system data: Controller Asset #1216.

PROPOSED

 \bigcirc

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
INDUCTIVE LOOPS DETECTOR PROGRAMMING												
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
4∙A	6X·40	0	*	*	4	Υ	Υ	-	-	-	-	-
· • A		0	y	*	5	Υ	Υ	-	-	15 ***	1	-
5·A	6X·40		*	*	2.#	Υ	Υ	-	-	-	-	-
5B	6X40	0	*	*	5	Υ	Υ	-	-	15	1	Υ
6:€	6X·40	0	*	*	6	Υ	Υ	-	-	-	ı	Υ
* Multizone Microwave Detection												

** Disable Delay During Alternate Phasing Operation.
Disable phase call for loop(s) during alternate
phasing.

DEFAULT PHASING

TABLE OF OPERATION

SIGNAL

FACE

21,22

41,43

62

63

PHASE

ALTERNATE PHASING

TABLE OF OPERATION

SIGNAL

FACE

21,22

41,43

61

62

PHASE

												<u>, Þ.</u>	1 1					
				R /	/ W ———	PUE	45 필 - PUE —	MPH 0% Gra	de			Ţ	A				PUE	SR 2048 (G
OASI	S 2070	TIMINO	G CHAR	<u></u> Т]													
		PH	ASE]													
FEATURE	2	4	5	6														
Min Green 1 *	12	5	5	12				C T C		= T D								
Extension 1 *	2.0	2.0	2.0	2.0	1			<u> 510</u>	NAL FACE	<u> </u>								
Max Green 1 *	90	30	20	90	1			,	All Heads L.	E.D.								
Yellow Clearance	4.5	3.0	3.0	4.5	1													
Red Clearance	1.5	3.2	2.4	1.5	1													
Red Revert	2.0	2.0	2.0	2.0	1		$\langle \cdot \rangle$		$\overline{\mathbb{R}}$	R	(i	\mathbb{R}		В	ΛDΛΒ DE:	TECTION S	SVSTEM	

ALTERNATE PHASING DIAGRAM

02+6

RADAR DETECT	ION SYST	EM
FUNCTION	Sensor 1	Sensor 2
Channel	1	1
Phase	2	6
Direction of Travel	EB	WB
Detection Zone (ft)	100-600	100-600
Enable Speed	Y	Y
Speed Range (mph)	35-100	35-100
Enable Estimated Time of Arrival	Y	Y
Estimated Time of Arrival (sec)	1.0-6.5	1.0-6.5

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

Signal Upgrade-Temporary Design 2 (Construction Phase 3)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



Farms Dr)

SEAL

O31464

BY: N.K. Vlanich

BY: N.R. Simmons

INIT. DATE

Docusigned by:

Natasha R. Simmons

SIGNATURE

POLICIONES DATE

SIGNATURE

SIGNATURE

SIG. INVENTORY NO. 03-1216T2

* These values may be field	adjusted. Do not ad	just Min Green and	Extension times fo
phases 2 and 6 lower than	n what is shown. Min	Green for all othe	r phases should not
be lower than 4 seconds.			

MIN RECALL

YELLOW

ON

-

MIN RECALL

YELLOW

-

ON

ON

Walk 1 *

Don't Walk 1

Seconds Per Actuation

Time Before Reduction

Max Variable Initial *

Time To Reduce *

Vehicle Call Memory

Simultaneous Gap

Minimum Gap

Recall Mode

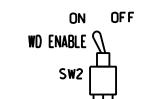
Dual Entry

DEFAULT PHASING DIAGRAM

PHASING DIAGRAM DETECTION LEGEND

02+6

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL



⊩RP DISABLE

₩D 1.0 SEC GY ENABLE

─ LEDguard

─FYA 1-9 ___⊢FYA 3-10

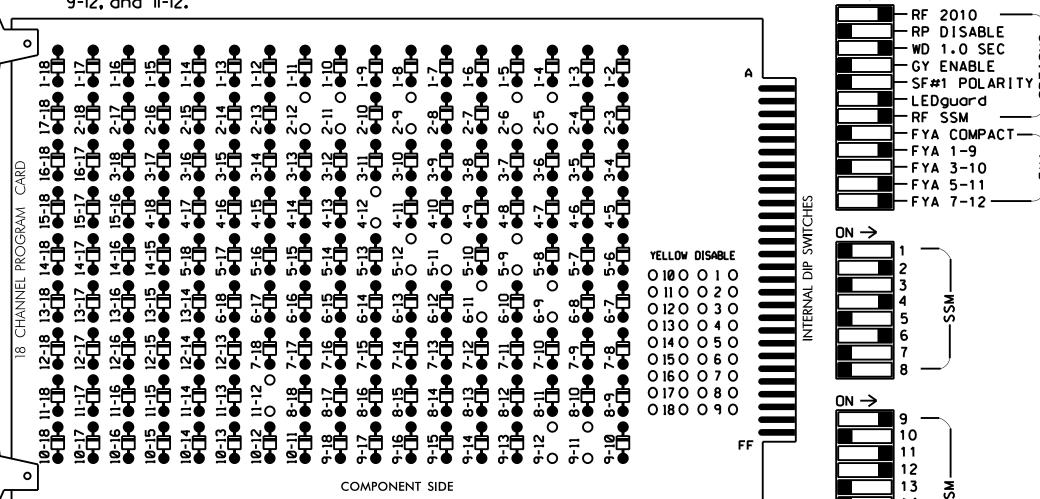
= DENOTES POSITION

OF SWITCH

ST = STOP TIME

FYA COMPACT—

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



REMOVE JUMPERS AS SHOWN

- 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 are present on the monitor board.
- 3. Ensure th Red Enable is active 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. Enable Simultaneous Gap-Out for all Phases.
- ——├SF#1 POLARITY뒀│3. Program phases 2 and 6 for Startup in Green.
 - 4. Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as a Wag Overlap.
 - 5. The cabinet and controller are part of the Wilmington Signal

EQUIPMENT INFORMATION

SOFTWARE.....ECONOLITE DASIS

CABINET MOUNT.....BASE OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE

LOAD SWITCHES USED.....S2,S5,S7,S8,AUX S2,AUX S4,AUX S5

PHASES USED.....2,4,5,6 OVERLAP "A"..........2 OVERLAP "B".....NOT USED

OVERLAP "C".....5+6 OVERLAP "D".....4+5

PROJECT REFERENCE NO. U-6202

SIGNAL HEAD HOOK-UP CHART																			
LOAD SWITCH NO.	Sì	S2	S 3	S4	S	5	S6	S 7	S8	S 9	S10	SII	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	1	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3		1	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,43	63	NU	★ 51	62,63	NU	NU	NU	NU	61	NU	NU	★ 51	★ 42	NU
RED		128							134									A101	
YELLOW		129						*	135										
GREEN		130							136										
RED ARROW					101									A121			A114		
YELLOW ARROW					102	102								A122			A115	A102	
FLASHING YELLOW ARROW														A123			A116	A103	
GREEN ARROW					103	103		133											
₩																			
Ϋ́																			

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)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE U "I" L	SLOT WERTY	משפר>	ഗപ⊙⊢ ш∑ ഫ⊢≻	מוסר שצפרי	משפר>	SLO⊢ ш∑₽⊢≻	ഗപ⊙⊢ ш∑ ഫ⊢≻	משפר>	%LO⊢ ш∑₽⊢ ≻	ഗപ⊙⊢ ш∑ ഫ⊢≻	SLOT E 2 0+>	810F m ∑ £FY	SLOT EXPTY	FS DC ISOLOR ST DC ISOLOR
FILE U "J" L	Ø 5 5A NOT USED	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EXPTY	SLOT EMPTY	SLOT EMPTY	SLOT EXPTY	SLOT EMPTY S	SLOT EMPTY	SLOT EMPTY	SLOT EXPTY

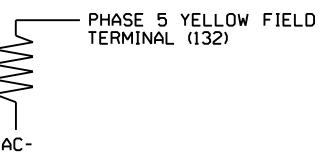
SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

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



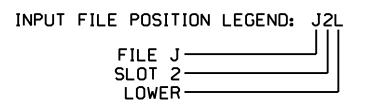
INPUT FILE CONNECTION & PROGRAMMING CHART

L00P NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
	TB3-1,2	JlU	55	17	5	5	Y	Y			15
5A	-	I4U	47	9 🛨	22	2	Y	Y			
	-	J1U	55	17 ★	55	5	Y	Y			

★ See Input Page Assignment programming details on sheet 3.

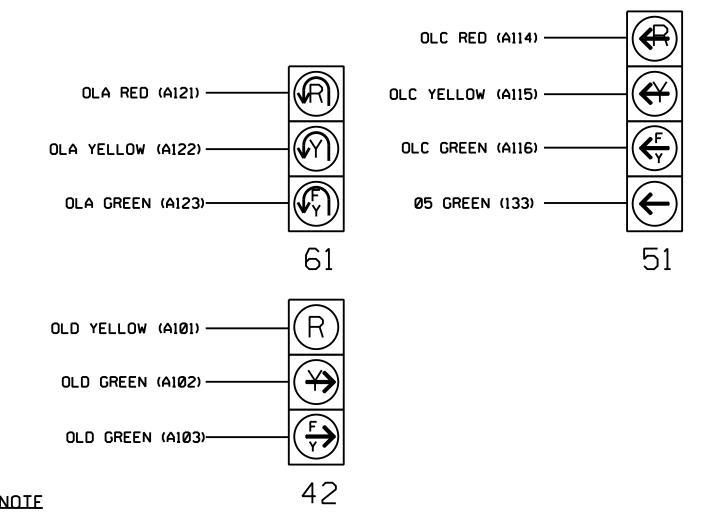
This plan supersedes the plan

signed and sealed on 5/17/2024.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



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

Signal Upgrade-

Electrical Detail - Sheet 1 of 4

(Construction Phase 3)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MARTH CAROL

SOFESSION 14

031464

SIG. INVENTORY NO. 03-1216T2

ELECTRICAL AND PROGRAMMIN DETAILS FOR: Prepared in the Offices of:

SR 2048 (Gordon Rd)

SR 2772 (Farrington Farms Dr)

Division 3 New Hanover County PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS

INIT. DATE

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

DESIGNED: May 2022

SEALED: 5/17/2024

REVISED:

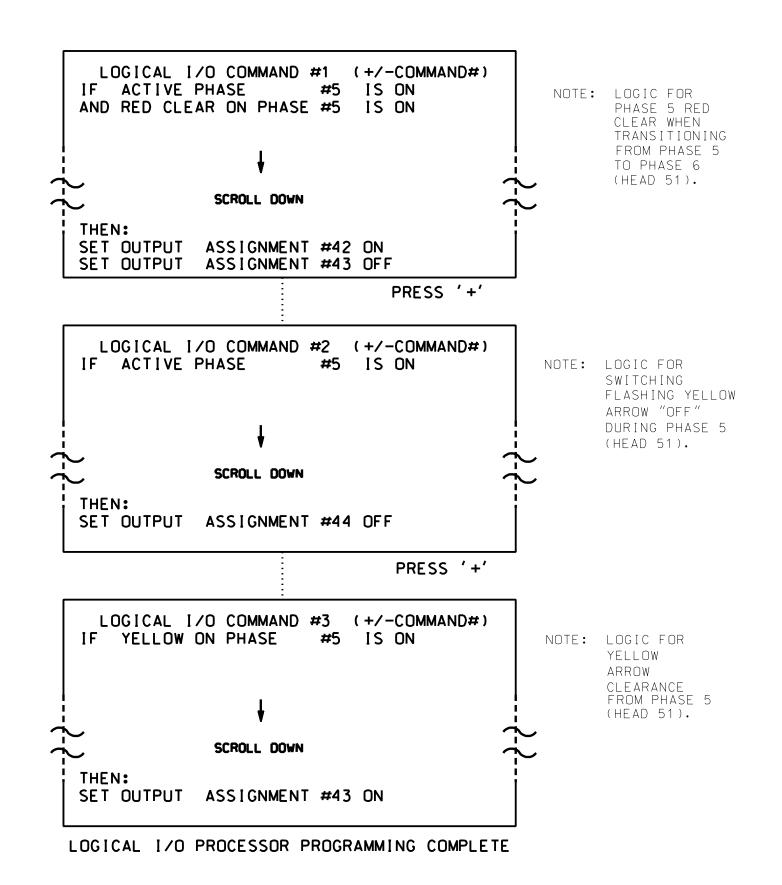
THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 03-1216T2

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

(program controller as shown below)

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



OUTPUT REFERENCE SCHEDULE USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 42 = Overlap C Red OUTPUT 43 = Overlap C Yellow OUTPUT 44 = Overlap C Green

OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS). THEN '1' (VEHICLE OVERLAP SETTINGS). PAGE 2: VEHICLE OVERLAP 'A' SETTINGS PAGE 1: VEHICLE OVERLAP 'D' SETTINGS 12345678910111213141516 12345678910111213141516 VEH OVL PARENTS: X VEH OVL PARENTS: XX VEH OVL NOT VEH: VEH OVL NOT VEH: VEH OVL NOT PED: VEH OVL NOT PED: VEH OVL GRN EXT:: VEH OVL GRN EXT: STARTUP COLOR: _ RED _ YELLOW _ GREEN STARTUP COLOR: _ RED _ YELLOW _ GREEN FLASH COLORS: _ RED _ YELLOW X GREEN SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH YELLOW IN CONTROLLER FLASH?...N FLASH FLASH GREEN EXTENSION (0-255 SEC)..... GREEN EXTENSION (0-255 SEC).....0 YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 OUTPUT AS PHASE # (0=NONE. 1-16)....0 OUTPUT AS PHASE # (0=NONE, 1-16)....0 PRESS '+' TWICE OVERLAP PROGRAMMING COMPLETE PAGE 1: VEHICLE OVERLAP 'C' SETTINGS PHASE: 12345678910111213141516 VEH OVL PARENTS:

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

NOTICE

GREEN

FLASH

(program controller as shown below)

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

STARTUP COLOR: _ RED _ YELLOW _ GREEN

SELECT VEHICLE OVERLAP OPTIONS: (Y/N)

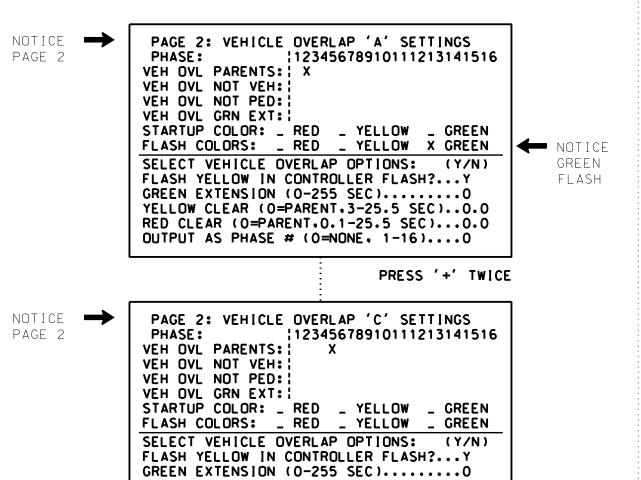
GREEN EXTENSION (0-255 SEC).....0
YELLOW CLEAR (0=PARENT.3-25.5 SEC)...0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0

FLASH YELLOW IN CONTROLLER FLASH?...Y

OUTPUT AS PHASE # (0=NONE, 1-16)....0

PRESS '+'

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



YELLOW CLEAR (O=PARENT.3-25.5 SEC)..0.0

RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0 OUTPUT AS PHASE # (O=NONE, 1-16)....0

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 SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN FLASH YELLOW IN CONTROLLER FLASH?...N GREEN EXTENSION (0-255 SEC)..... YELLOW CLEAR (O=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

PROJECT REFERENCE NO.

U-6202

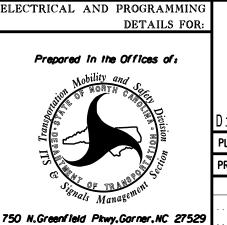
Sig 23.

OVERLAP PROGRAMMING COMPLETE

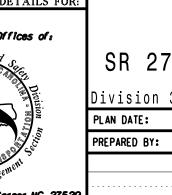
Electrical Detail - Sheet 2 of 4 (Construction Phase 3) THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1216T2 ELECTRICAL AND PROGRAMMIN DETAILS FOR:

PRESS '+'

UNLESS ALL SIGNATURES COMPLETED SR 2048 (Gordon Rd)



Signal Upgrade-



SR 2772 (Farrington Farms Dr) Division 3 New Hanover County August 2023 REVIEWED BY: N.K. Vlanich E E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS

ARTH CAROL SOF ESSION N 031464 INIT. DATE Natasha R Simmons 5/17/202 SIGNATURE DATE SIG. INVENTORY NO. 03-1216T2

DOCUMENT NOT CONSIDERED FINAL

HNTB NORTH CAROLINA, P.C.

DESIGNED: May 2022

SEALED: 5/17/2024

REVISED:

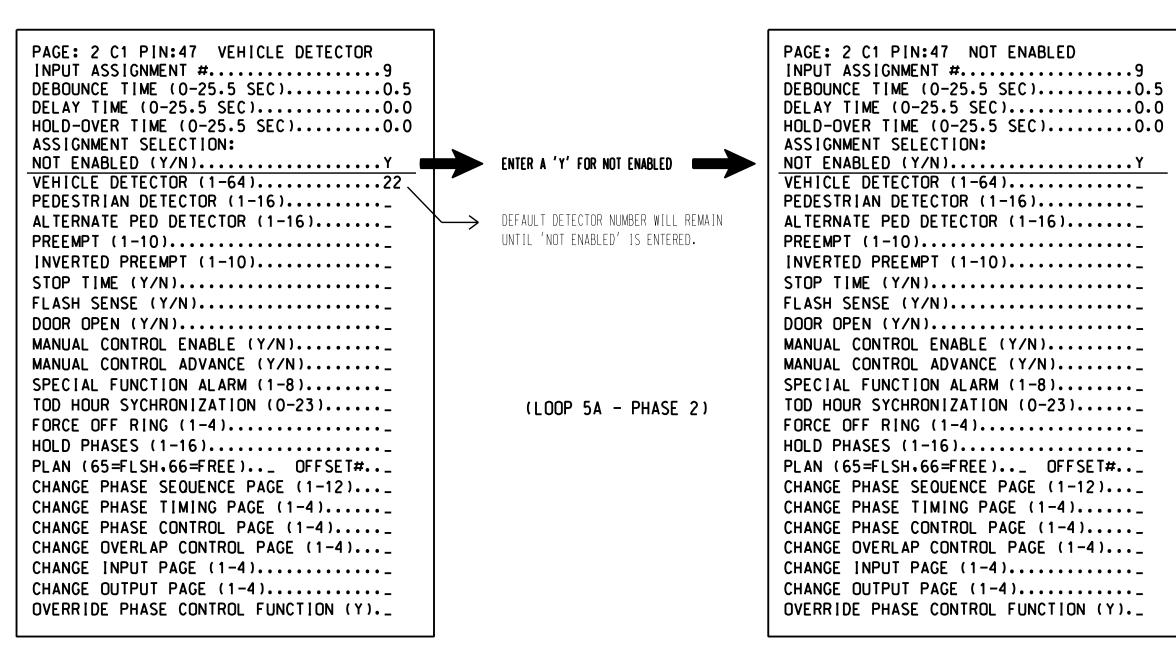
INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(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.



DELAY TIME (0-25.5 SEC).............. HOLD-OVER TIME (0-25.5 SEC).......... ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....5 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... PRESS '+' TO ADVANCE TO INPUT 17 DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4)..... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)..._ CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)...

PAGE: 2 C1 PIN:55 VEHICLE DETECTOR

INPUT ASSIGNMENT #......17

DEBOUNCE TIME (0-25.5 SEC)...........0.5

CHANGE INPUT PAGE (1-4).....

CHANGE OUTPUT PAGE (1-4).....

OVERRIDE PHASE CONTROL FUNCTION (Y)._

PAGE: 2 C1 PIN:55 VEHICLE DETECTOR INPUT ASSIGNMENT #......17 DEBOUNCE TIME (0-25.5 SEC)...........0.5 DELAY TIME (0-25.5 SEC).............. HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....55 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... (LOOP 5A - PHASE 5) FORCE OFF RING (1-4)..... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)..._ CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4)..... CHANGE OVERLAP CONTROL PAGE (1-4)..._ CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PROJECT REFERENCE NO.

U-6202

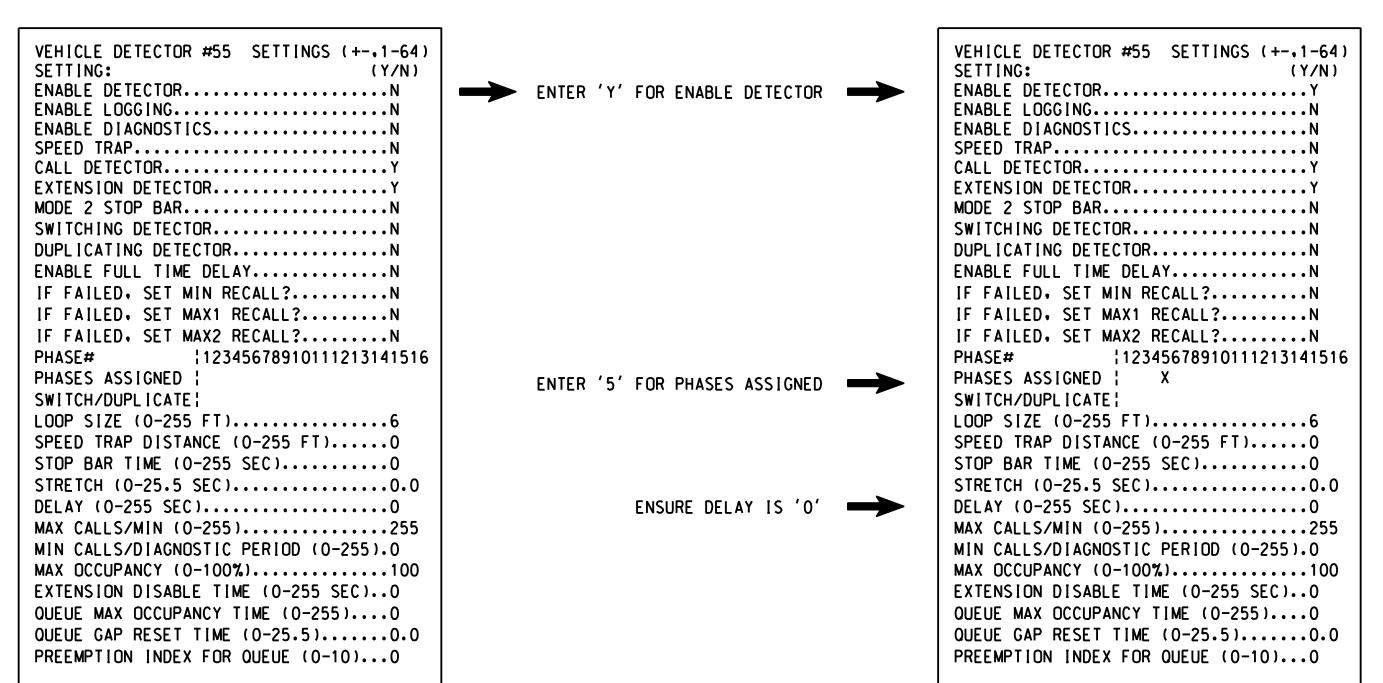
Sig 23

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. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.



DETECTOR PROGRAMMING COMPLETE

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

> THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1216T2 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

> > INIT. DATE

Signal Upgrade-Electrical Detail - Sheet 3 of 4 (Construction Phase 3)

ENTER '55' TO REASSIGN

FOR THIS INPUT

THE VEHICLE DETECTOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMIN DETAILS FOR: Prepared in the Offices of:

SR 2048 (Gordon Rd) SR 2772 (Farrington Farms Dr) ivision 3 New Hanover County PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich

PREPARED BY: E.E. Tiller

REVISIONS

TH CARO STOFESSION 1 031464 REVIEWED BY: N.R. Simmons

SIG. INVENTORY NO. 03-1216T

750 N.Greenfield Pkwy.Garner.NC 27529

U-6202 Sig. 23.4

ALTERNATE PHASING ACTIVATION DETAIL

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

TO RUN ALT. PHASING DURING <u>FREE RUN</u> - 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 DEFAULT PHASING	1	1
ACTIVE PAGES REQUIRED TO RUN ALTERNATE PHASING	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 0 seconds.

FLASHER CIRCUIT MODIFICATION DETAIL

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

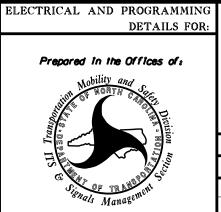
- 1. ON REAR OF PDA REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
- 2. ON REAR OF PDA REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- 3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1216T2
DESIGNED: May 2022
SEALED: 5/17/2024
REVISED:

Signal Upgrade-Electrical Detail - Sheet 4 of 4 (Construction Phase 3)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SR 2772 (Farrington Farms Dr)

Division 3 New Hanover County Wilmington Market August 2002 Anguston and New Yeleniah

SR 2048 (Gordon Rd)

PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich
PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons
REVISIONS INIT. DATE

SEAL
031464

Docusigned by:

Masha R Simmons
SIGNATURE

FIGURATION
SIGNATURE

FIGURATION
SIGNATURE

SIGNITURE

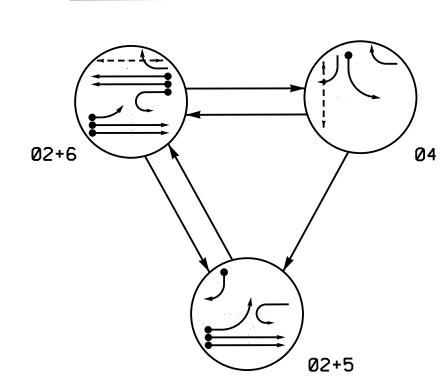
SIGNITURE

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O 3 - 121672

PROJECT REFERENCE NO. U-6202 Sig. 24 (

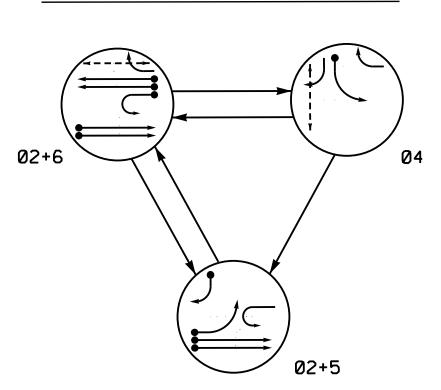
DEFAULT PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

DETECTED MOVEMENT

ALTERNATE PHASING DIAGRAM



DEFAULT PHASING BLE OF OPERATION					ALTERNAT TABLE OF		_		
		PHA	SE				PHA	SE	
IGNAL FACE	0 2+5	02+6	0 4	トーセのエ	SIGNAL FACE	0 2+5	02+6	0 4	FLASI
21,22	G	G	R	Υ	21,22	G	G	R	Υ
41,43	#	#	ļ	₹	41,43	#	#	ļ	┿
42	₽	R	ц∱≻	R	42	₽	R	누	R
51	+	щ≻	#	≺	51	\	#	#	- +
61	€)	Ð	₽R)	3	61	€ >	€₹	æ	$\widehat{ \langle Y \rangle}$
52,63	R	G	R	Υ	62,63	R	G	R	Υ
64	R	F	<u> </u>	Y ►	64	R	F >	\rightarrow	Y-
41 , P42	DW	DW	W	DRK	P41,P42	DW	DW	W	DRK
61 , P62	D₩	W	DW	DRK	P61,P62	D _W	W	DW	DRK

OASIS 2070 LOOP & DETECTOR INSTALLATION CHART												
1I	NDUCTI	VE LOC)PS	DETE	СТ	OR	PF	ROGRAN	MMING			
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
4·A	6X·40	0	*	*	4	Y	Y	1	1	ı	ı	1
		O	¥	· •	5	Y	Υ	-	-	15 ***	1	1
5·A	6X·40	0	*	*	2.#	Υ	Υ	-	-	-	-	
5B	6X·40	0	*	*	5	Υ	Υ	-	-	15	-	-
6€	6X·40	0	*	*	6	Υ	Υ	_	-	-	-	_

- * Multizone Microwave Detection
- ** Disable Delay During Alternate Phasing Operation. # Disable phase call for loop(s) during alternate phasing.

3	Phase	
Fully	Actuate	ed
Wilmington	Signal	System

NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- 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.
- All pedestrian pushbuttons shall be located in the field by the Division Traffic Engineer before installation.
- 8. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
- This intersection uses multizone microwave detection. Install the detectors according to the /W manufacturer's instructions to achieve the desired detection. 10. Maximum times shown in timing chart
- are for free-run operation only. Coordinated signal system timing values supersede these values.

<u>LEGEND</u>

Traffic Signal Head

Modified Signal Head Sign

Pedestrian Signal Head

Signal Pole with Guy Signal Pole with Sidewalk Guy Microwave Detection Zone Out of Pavement Detector

Controller & Cabinet

Junction Box

2-in Underground Conduit Right of Way

Directional Arrow

Directional Drill

Metal Pole with Mastarm

Curb Ramp

"RIGHT TURN YIELD TO U-TURN" Sign

Type II Signal Pedestal

<u>EXISTING</u>

K×Z

____ \longrightarrow

N/A

11. Signal system data: Controller Asset #1216.

PROPOSED

 ∇

N/A

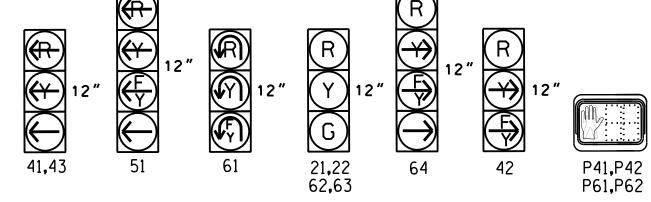
Sensor 2 Sensor 2	7	7.
Metal Pole #1 12 12 12 12 12 12 12	8	8.
SR 2048 (Gordon Rd) Multi-Use Path P42 Arm A Sidewalk Sidewalk Sidewalk Sidewalk Sidewalk Sidewalk	, 9 9	9.
See Note 9 Sidewalk Sidewalk Sidewalk Sidewalk Sidewalk Sidewalk		/W
See Note 9 Sidewalk Sidewalk Sidewalk Sidewalk	1 6A	10.
Sidewalk Sidewalk Sidewalk Sidewalk	1	11.
Sensor 1— Sensor 1— Metal Pole #2	R/	/ W
LT 45' +/-		

OASIS	2070	TIMING	CHAR1	-
		PHA	ASE	
FEATURE	2	4	5	6
Min Green 1 *	12	5	5	12
Extension 1 *	2.0	2.0	2.0	2.0
Max Green 1 *	90	30	20	90
Yellow Clearance	4.5	3.0	3.0	4.5
Red Clearance	1.5	3.2	2.6	1.5
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	7	-	7
Don't Walk 1	-	21	-	11
Advanced Walk *	-	-	-	-
Seconds Per Actuation *	-	-	1	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON

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

SIGNAL FACE I.D.

All Heads L.E.D.



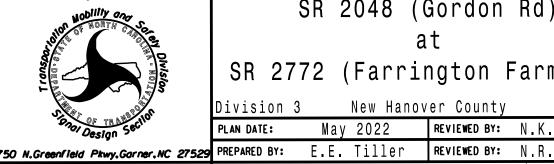
RADAR DETECT	ION SYST	EM		
FUNCTION	Sensor 1	Sensor 2		
Channel	1	1		
Phase	2	6		
Direction of Travel	EB	WB		
Detection Zone (ft)	100-600	100-600		
Enable Speed	Y	Y		
Speed Range (mph)	35-100	35-100		
Enable Estimated Time of Arrival	Y	Y		
Estimated Time of Arrival (sec)	1.0-6.5	1.0-6.5		

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gnal Upgrade Prepared for: 40011111y 022								
Hobility and								
Prepared for:								
Spari								

1"=40'

- Final Design **UNLESS ALL SIGNATURES COMPLETED** SR 2048 (Gordon Rd)



RTH CAROL	, J.			t	a	
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A. F. CAGINEER. I.	Z	anich	N.K. Vl	REVIEWED BY:	ay 2022	Ma
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SIGNATURE SIG. INVENTORY NO. 03-1216

18 CHANNEL CONFLICT MONITOR ON OFF PROGRAMMING DETAIL WD ENABLE ((remove jumpers and set switches as shown) SW2 ⊩RP DISABLE ₩D 1.0 SEC GY ENABLE ├ LEDguard FYA COMPACT— FYA 1-9 FYA 3-10 FYA 5-11 FYA 7-12 COMPONENT SIDE REMOVE JUMPERS AS SHOWN 1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently. DENOTES POSITION OF SWITCH 2. Ensure jumpers SEL2-SEL5 are present on the monitor board. 3. Ensure th Red Enable is active 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. Enable Simultaneous Gap-Out for all Phases.
- ——├SF#1 POLARITY뒀│3. Program phases 2 and 6 for Startup in Green.
 - 4. Program phases 2 and 6 for Yellow Flash, and overlaps 1 and 2 as Wag Overlaps.
 - 5. The cabinet and controller are part of the Wilmington Signal

EQUIPMENT INFORMATION

CONTROLLER	.2070
CABINET	.332 W/ AUX
SOFTWARE	.ECONOLITE OASIS
CABINET MOUNT	.BASE
OUTPUT FILE POSITIONS	.18 WITH AUX. OUTPUT FILE
I OVD SMITCHES TISED	\$2.\$4.\$5.\$6.\$7.\$8.\$9.AHY \$

LUAD SWITCHES USED.....S2.S4.S5.S6.S7.S8.S9.AUX S1. AUX S2, AUX S4, AUX S5

		AUA	32 • AU
PHASES L	JSED	.2.4.	5.6
OVERLAP	"A"	. 2	
OVERLAP	"B"	. 4+6	
OVERLAP	"C"	5+6	
OVERLAP	"D"	. 4	
OVERLAP	"E"	NOT	USED
OVERLAP	"F"	NOT	USED
OVERLAP	"G"	. 4	

PROJECT REFERENCE NO. U-6202

	SIGNAL HEAD HOOK-UP CHART																	
LOAD SWITCH NO.	S1	S2	S 3	S4	S 5	S6	S 7	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	g	10	17	11	12	18
PHASE	1	2	2 PED	OLG	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC		SPARE
SIGNAL HEAD NO.	NU	21,22	NU	★	41,43	P41. P42	★ 51	62,63	P61. P62	NU	NU	NU	6 1	★ 64	NU	★ 51	★ 42	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				118	103		133											
₩						104			119									
×						106			121									

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

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE U	SLOT	SLOT	SLOT	SLOH	SLOT	SLOT	SLOT	SLOF	SLOT	SLOT	S L O T	NOT USED	Ø 6PED DC ISOLATOR	FS DC ISOLATOR
"I" L	E M P T Y	E M P T Y	EMPTY	EMPTY	EMPHY	E M P T Y	E M P T Y	EMPTY	E M P T Y	E M P T Y	E M P T Y	Ø 4PED DC ISOLATOR	NOT	ST DC ISOLATOR
FILE U	ø 5 5A	S L O T	SLOT	SLOF	SLOT	S L O	S L O T	SLOT	S L O T	S L O T	S L O T	S L O T	S L O T	S L O T
"J" L	NOT USED	EMPTY	₩¥₽₩	E∑₽⊢ϒ	E∑₽⊢≻	E P T Y	E M P T Y	田MPTY	E M P T Y	E M P T Y	E M P T Y	E M P T Y	E M P T Y	E M P T Y

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

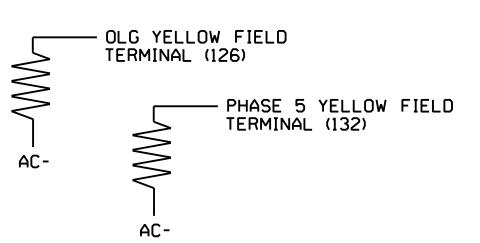
SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown below)

ACCEPTABLE VALUES VALUE (ohms) WTAGE 1.5K - 1.9K 25W (m1n) 2.0K - 3.0K 10W (m10)



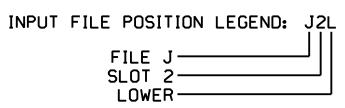
INPUT FILE CONNECTION & PROGRAMMING CHART

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	
5A	TB3-1,2	JlU	55	17	5	5	Y	Υ			15	
	-	I4U	47	9 🛨	22	2	Υ	Y				
	-	JlU	55	17 ★	55	5	Y	Y				
PED PUSH BUTTONS							NOTE:					
P41,P42	TB8-5 , 6	I12L	69	31	PED 4	4 PED	INSTALL DC ISOLATORS IN INPUT FILE SLOTS					
P61,P62	TB8-7 , 9	I13U	68	30	PED 6	6 PED						
	I12 AND I13.											

★ See Input Page Assignment programming details on sheet 3.

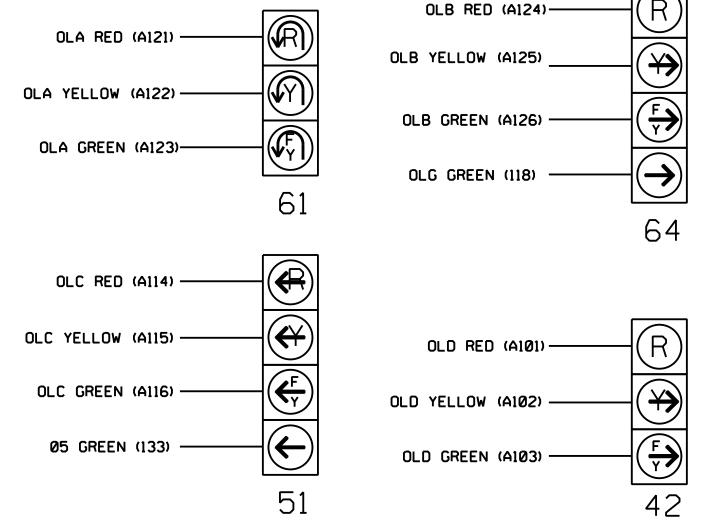
This plan supersedes the plan

signed and sealed on 5/17/2024.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

The sequence display for signal heads 51 and 64 require special logic programming. See sheet 2 for programming instructions.

Signal Upgrade - Final Design Electrical Detail - Sheet 1 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ORIGINATION OF THE CAROL NAME OF THE SERVICE OF THE

031464

SIG. INVENTORY NO. 03-1216

ELECTRICAL AND PROGRAMMING Prepared in the Offices of:

SR 2048 (Gordon Rd)

SR 2772 (Farrington Farms Dr)

Division 3 New Hanover County PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS

INIT. DATE

THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 03-1216

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

DESIGNED: May 2022

SEALED: 5/17/2024

REVISED:

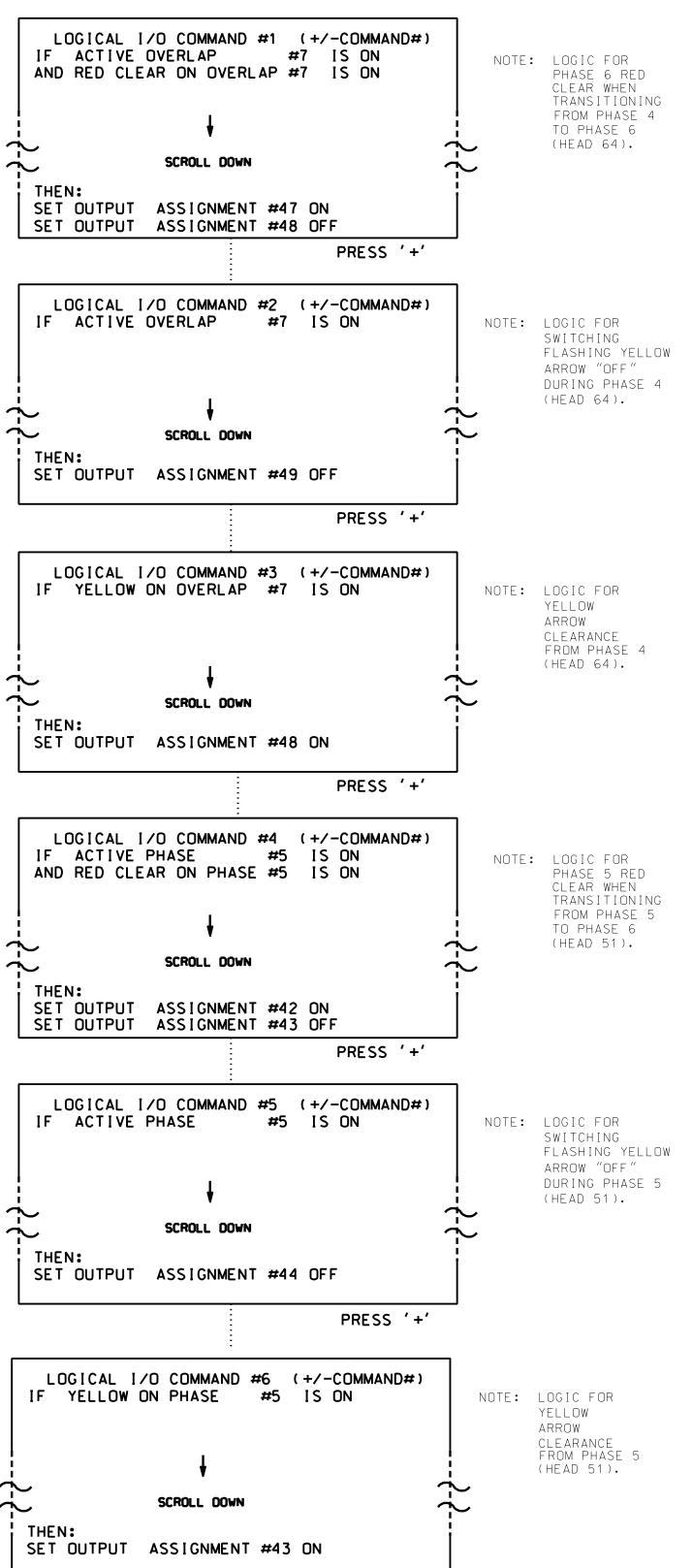
U-6202 Sig. 24.2

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

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



LOGICAL I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 49 = Overlap B 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

Signal Upgrade - Final Design
Electrical Detail - Sheet 2 of 6

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 2048 (Gordon Rd)

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INIT. DATE

Prepared in the Offices of:

| Discourse | Prepared | P

750 N. Greenfield Pkwy. Garner, NC 27529

at SR 2772 (Farrington Farms Dr)

Division 3 New Hanover County Wilmington

PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich

PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS

DocuSigned by DATE

POOLOGUE SIGNATURE

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343 E. Six Forks Road, Suite 200
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(919) 546-8997

DESIGNED: May 2022

SEALED: 5/17/2024

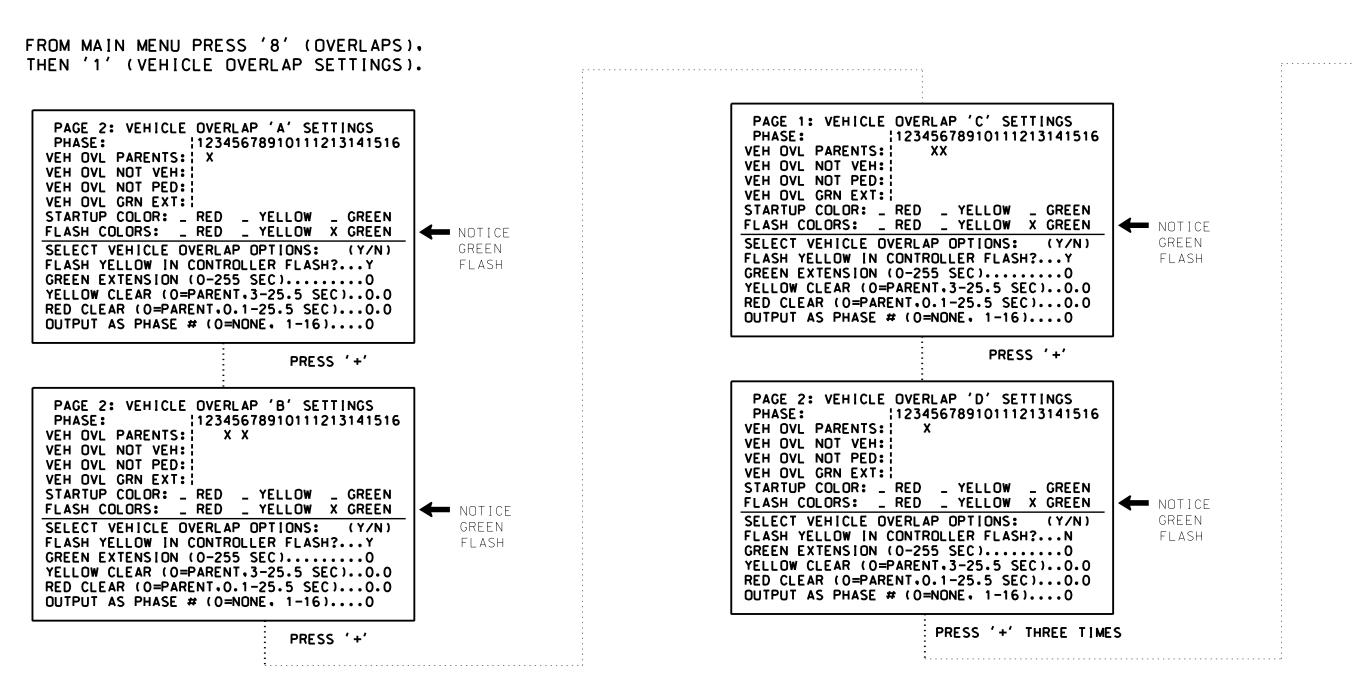
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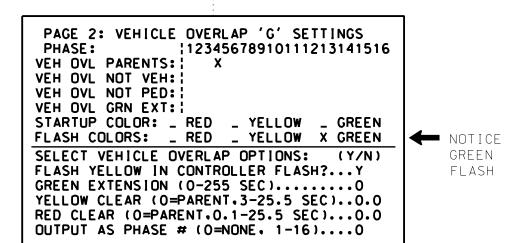
THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 03-1216

PROJECT REFERENCE NO. OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING U-6202 Sig. 24.

(program controller as shown below)

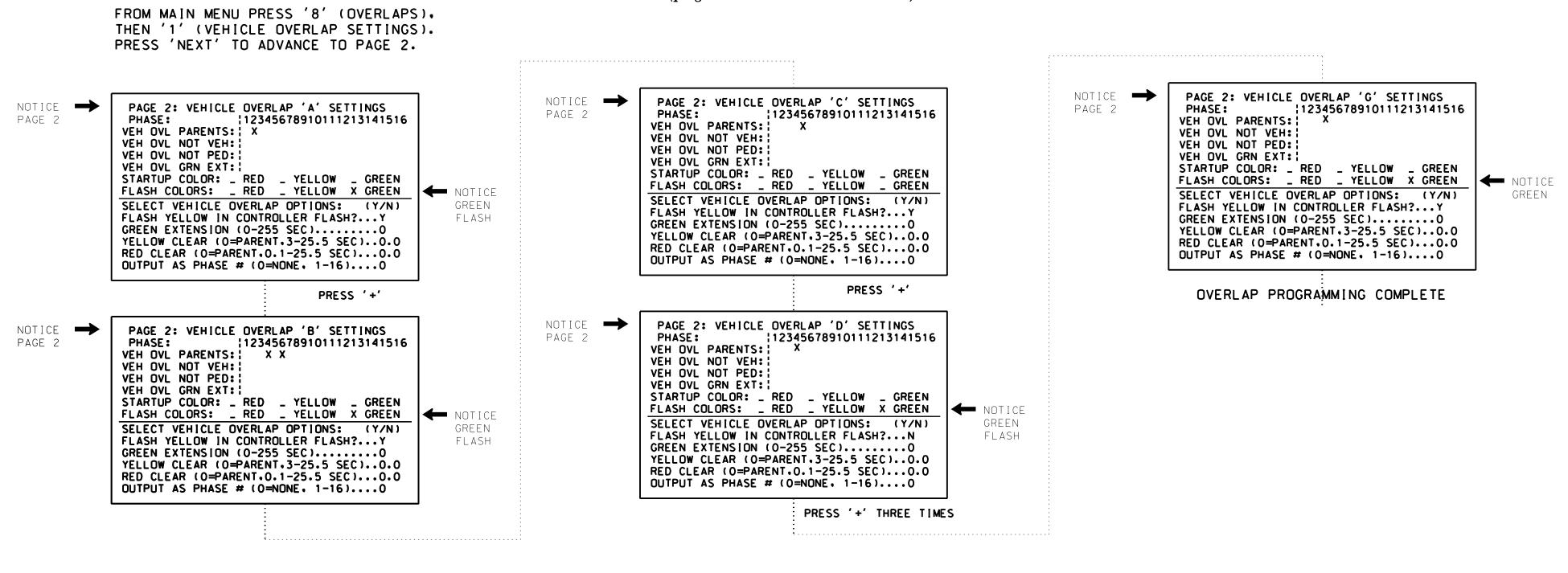




OVERLAP PROGRAMMING COMPLETE

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

(program controller as shown below)

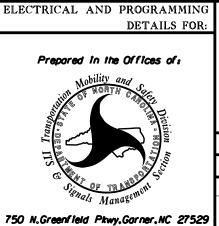


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1216 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

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Signal Upgrade - Final Design Electrical Detail - Sheet 3 of 6

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SR 2772 (Farrington Farms Dr)

SR 2048 (Gordon Rd)

Division 3 New Hanover County PLAN DATE: PREPARED BY: E.E. Tiller

August 2023 REVIEWED BY: N.K. Vlanich REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

Natasha R Simmons 5/17/202 SIGNATURE DATE SIG. INVENTORY NO. 03-1216

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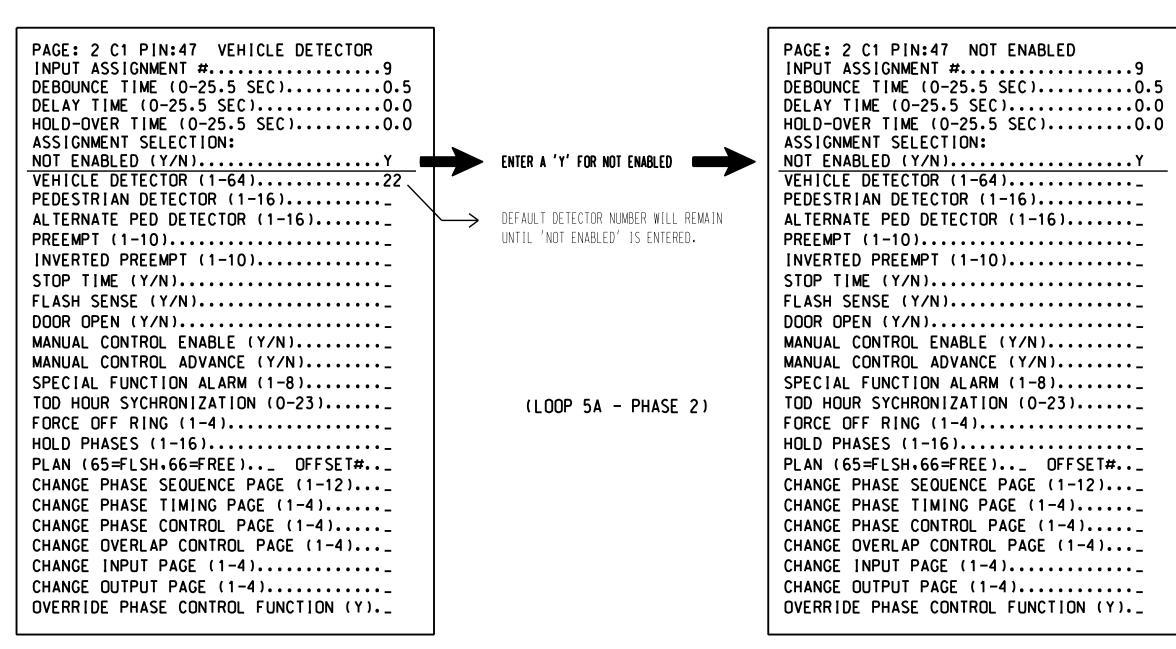
INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(program controller as shown below)

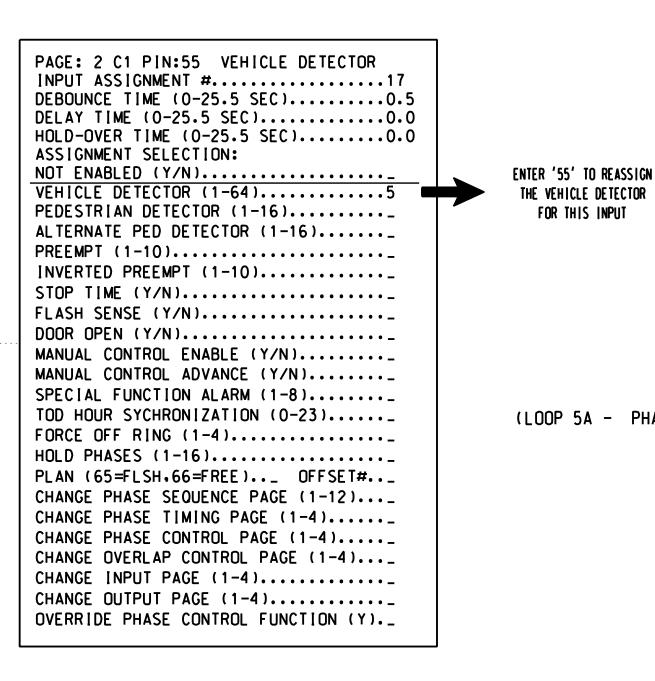
NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.

2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9 (DETECTOR 22) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 2 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 55 TO INPUT #17 SO THAT THE DELAY ON LOOP 5A CAN BE REDUCED FROM 15 SECONDS TO 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.



PRESS '+' TO ADVANCE TO INPUT 17



PAGE: 2 C1 PIN:55 VEHICLE DETECTOR INPUT ASSIGNMENT #......17 DEBOUNCE TIME (0-25.5 SEC)................ DELAY TIME (0-25.5 SEC)............. HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....55 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... (LOOP 5A - PHASE 5) FORCE OFF RING (1-4)..... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)..._ CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4)..... CHANGE OVERLAP CONTROL PAGE (1-4)..._ CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PROJECT REFERENCE NO.

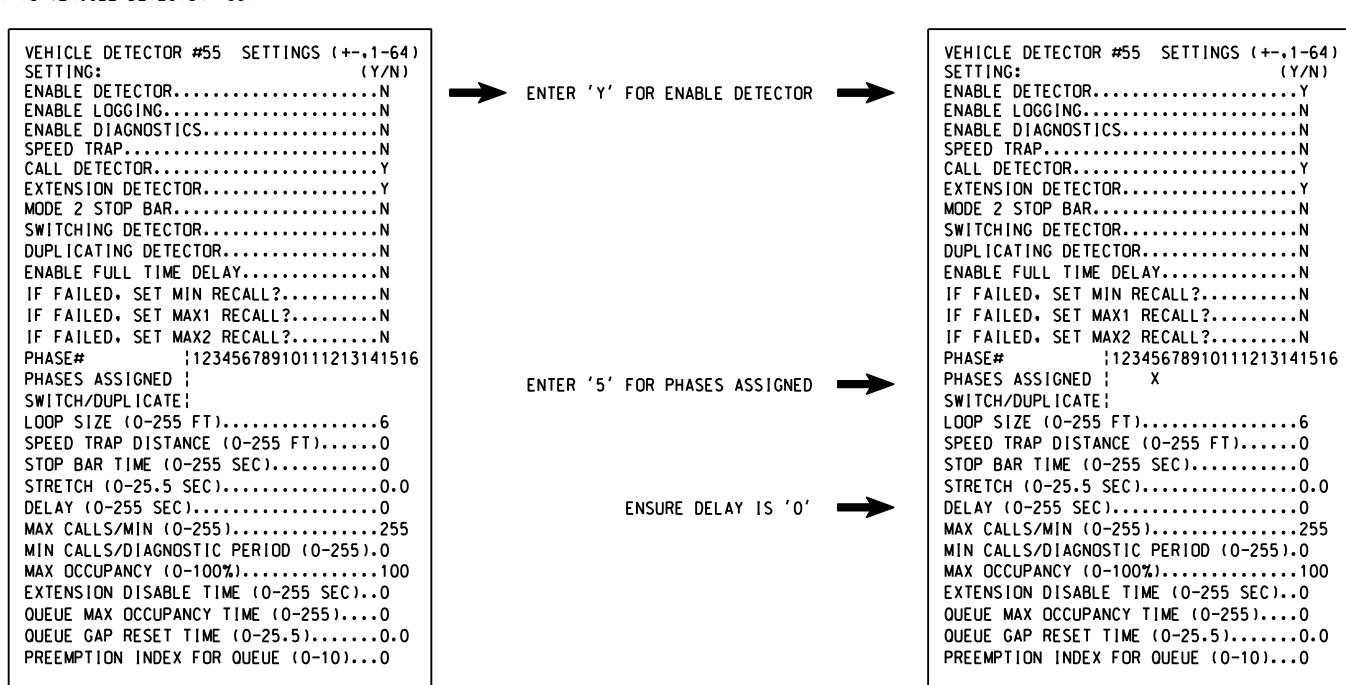
U-6202

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. 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: 03-1216 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade - Final Design Electrical Detail - Sheet 4 of 6

THE VEHICLE DETECTOR

FOR THIS INPUT

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ELECTRICAL AND PROGRAMMIN DETAILS FOR: Prepared in the Offices of:

750 N.Greenfield Pkwy.Garner.NC 27529

SR 2772 (Farrington Farms Dr)

SR 2048 (Gordon Rd)

ivision 3 New Hanover County PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

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DETECTOR PROGRAMMING COMPLETE

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING <u>COORDINATION</u> - 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 DEFAULT PHASING	1	1
ACTIVE PAGES REQUIRED TO RUN ALTERNATE PHASING	. 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.

Disables phase 2 call on loop 5A INPUTS PAGE 2:

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

FLASHER CIRCUIT MODIFICION DETAIL

IN ORDER TO ENSURE TH 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 TERMINE ON T2-2. 2. ON REAR OF PDA - REMOVE WIRE FROM TERM, T2-5 AND TERMINE ON T2-3.

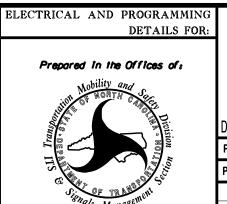
3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1216 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade - Final Design Electrical Detail - Sheet 5 of 6

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SR 2772 (Farrington Farms Dr)

SR 2048 (Gordon Rd)

Division 3 New Hanover County PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons INIT. DATE

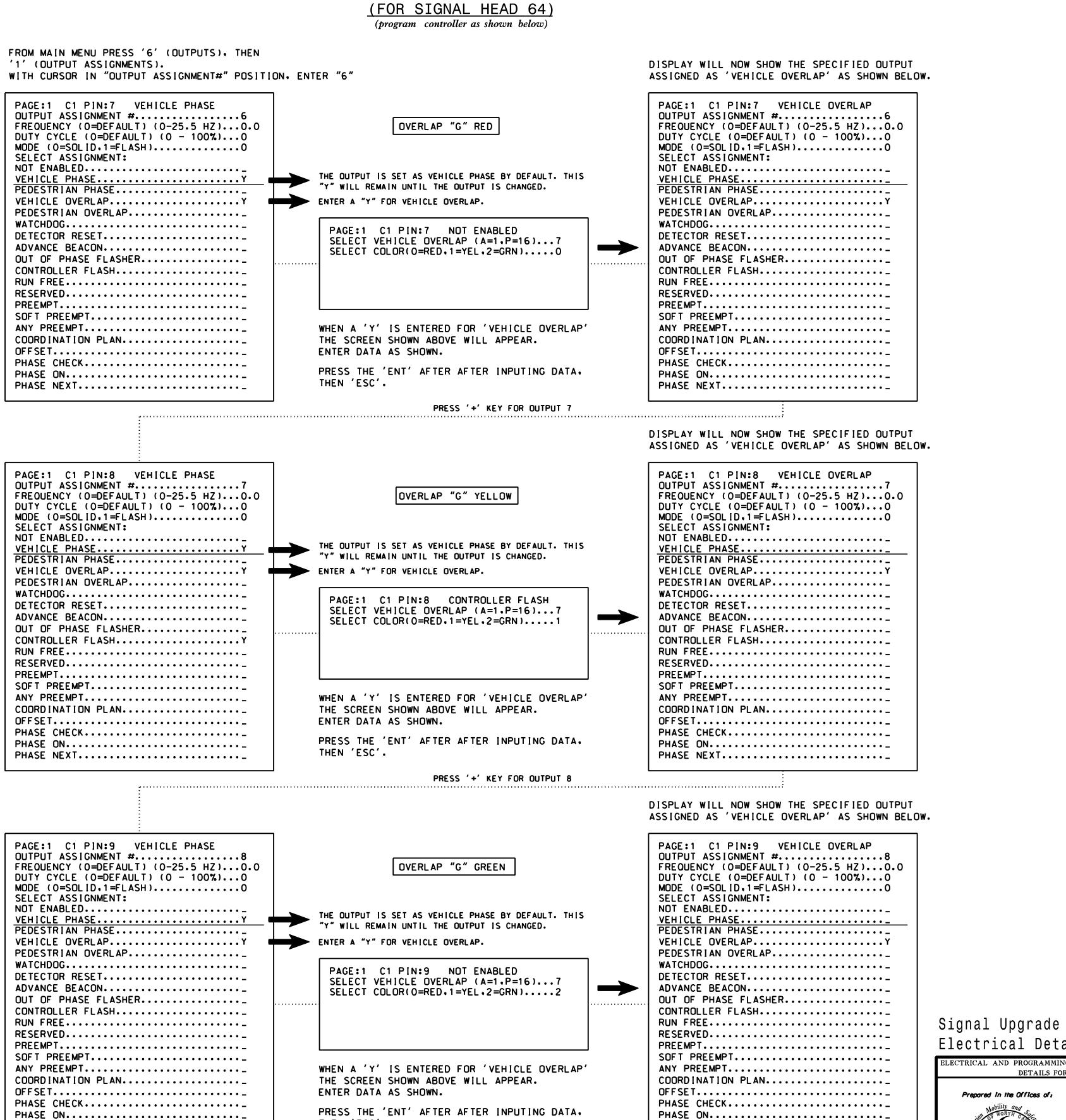
REVISIONS

OR FORESSION 1 031464

SIG. INVENTORY NO. 03-1216

OUTPUT REMAPPING ASSIGNMENT PROGRAMMING DETAIL

TO ASSIGN LOADSWITCH S4 TO OVERLAP 'G'



THEN 'ESC'.

PHASE NEXT.....

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-1216 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade - Final Design Electrical Detail - Sheet 6 of 6

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DETAILS FOR: Prepared in the Offices of:

SR 2772 (Farrington Farms Dr)

SR 2048 (Gordon Rd)

ivision 3 New Hanover County August 2023 REVIEWED BY: N.K. Vlanich PLAN DATE: PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS

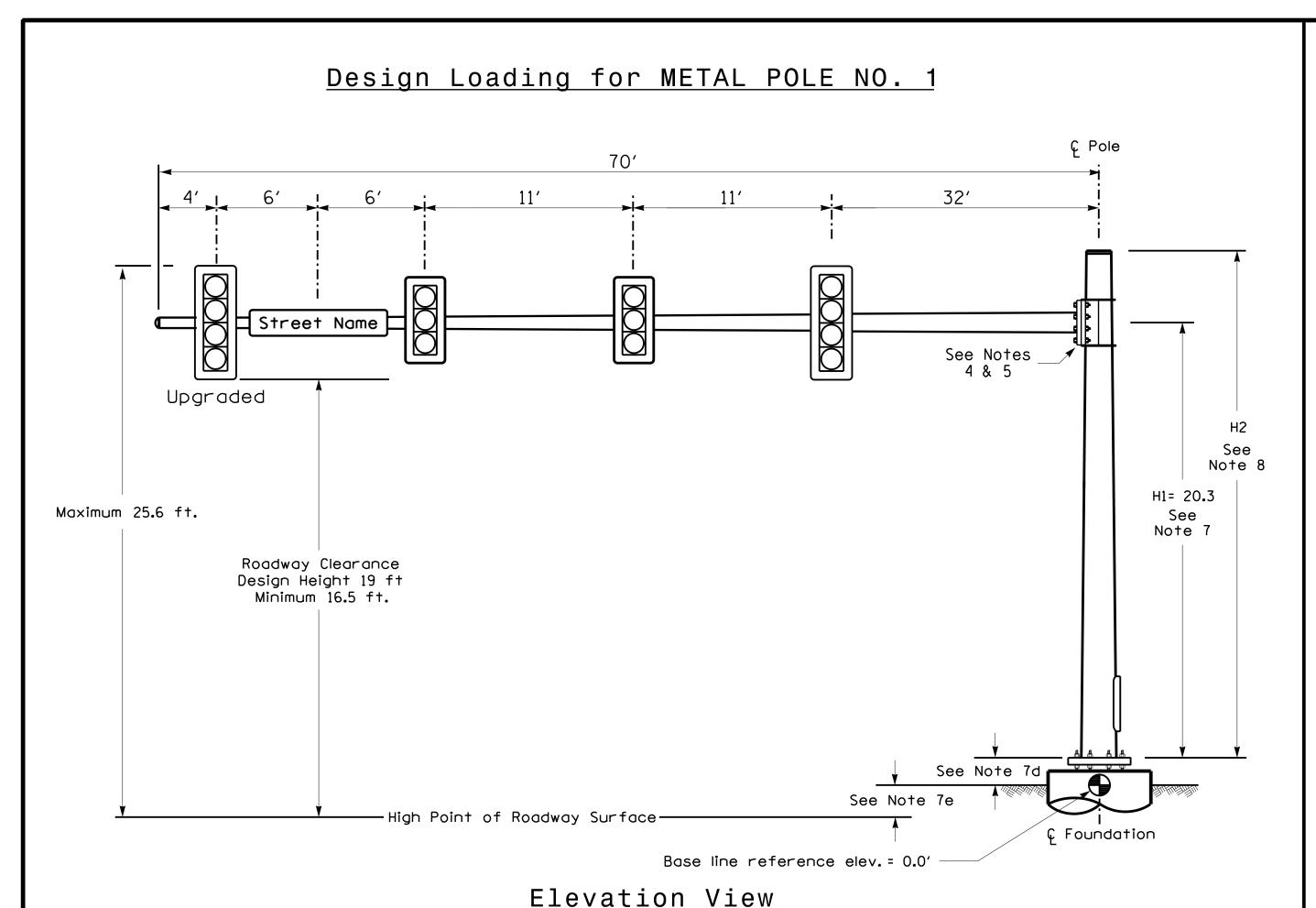
031464 INIT. DATE

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

PHASE NEXT.....

SIG. INVENTORY NO. 03-1216

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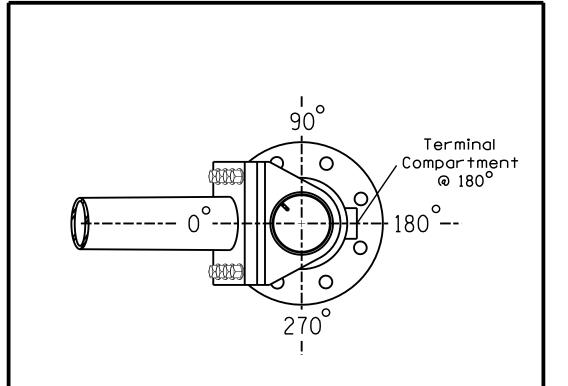


SPECIAL NOTE

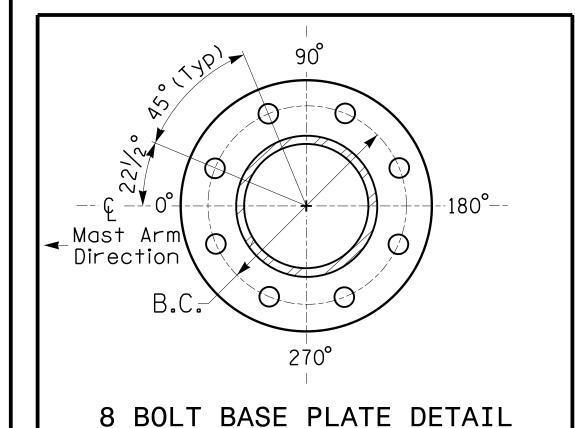
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

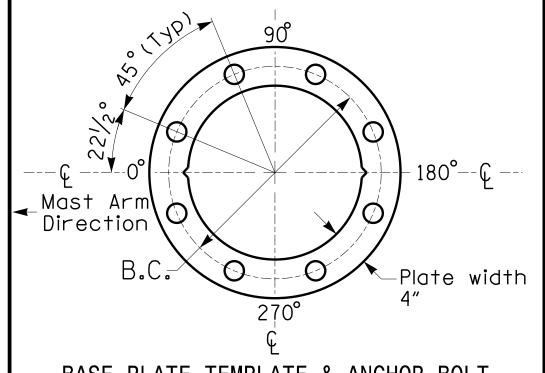
Elevation Differences for:	Pole 1	
Baseline reference point at & Foundation @ ground level	0.0 ft.	
Elevation difference at High point of roadway surface	-0.72 ft.	
Elevation difference at Edge of travelway or face of curb	-1.05 ft.	



POLE RADIAL ORIENTATION



See Note 6



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL For 8 Bolt Base Plate

METAL POLE No. 1

PROJECT REFERENCE NO.	SHEE	T NO.
U-6202	Sig	24.7

	MAST ARM LOADING SC	HEDU	LE	
loading symbol	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5" W X 66.0" L	74 LBS
Street Name	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0"L	36 LBS

<u>NOTES</u>

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:

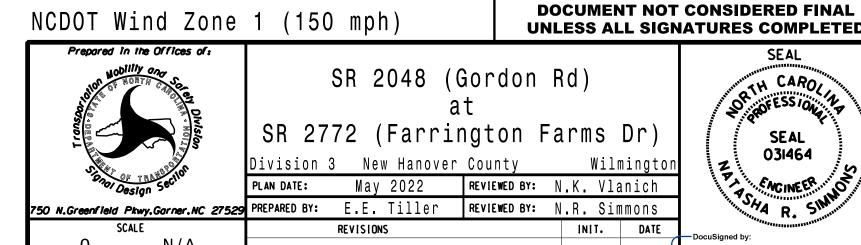
- The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
- The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to
- the specifications can be found in the traffic signal project special provisions.
- The 2024 NCDOT Roadway Standard Drawings.
- The traffic signal project plans and special provisions.
- The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

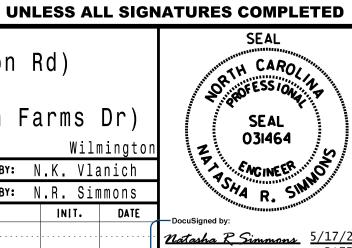
DESIGN REQUIREMENTS

- 2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using force ratios that do not exceed 0.9.
- 4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- 5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate arm connection points.
- 6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- 7. The mast arm attachment height (H1) shown is based on the following design assumptions: a. Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
- b. Signal heads are rigidly mounted and vertically centered on the mast arm.
- c. The roadway clearance height for design is as shown in the elevation views.
- d. The top of the pole base plate is 0.75 feet above the ground elevation. e. Refer to the Elevation Data Chart for the elevation differences between the proposed
- foundation ground level and the high point of the roadway.
- 8. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
- Mast arm attachment height (H1) plus 2 feet, or

N/A

- H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- 9. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- 10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- 11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.





SIG. INVENTORY NO. 03-1216

Design Loading for METAL POLE NO. 2 Mast Arm "A"

45'

-High Point of Roadway Surface

20'

See Notes 4 & 5

See Note 7d

G Foundation

See Note 7e

Base line reference elev. = 0.0'

Elevation View @ 270°

Elevation View @ 0°

40'

Design Loading for METAL POLE NO. 2 Mast Arm "B"

□ Street Name[

Roadway Clearance

Design Height 19 ft

Minimum 16.5 ft.

Ç Pole

Maximum 25.6 ft.

H2

See

Note 8

H1 = 21.3

See Note 7

18′

Base line reference elev. = 0.0

5.5′ 1 5.5′

□ Street Name □

-High Point of Roadway Surface-

See Notes _ 4 & 5

Note 8

H1 = 21.3

Note 7

Maximum 25.6 ft.

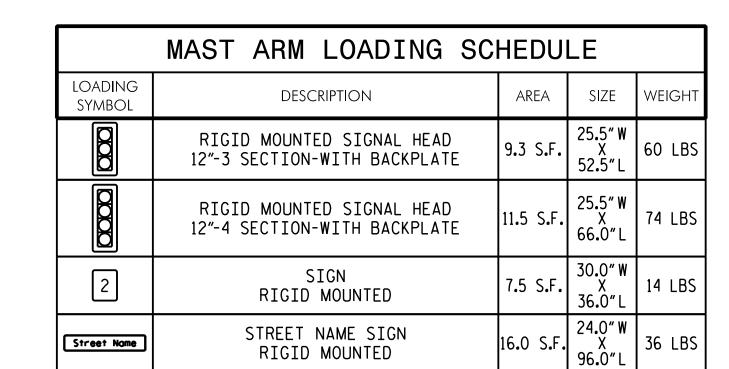
Roadway Clearance

Design Height 19 ft

Minimum 16.5 ft.

Foundation





that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

SPECIAL NOTE

The contractor is responsible for verifying

Elevation Data for Mast Arm Attachment (H1)

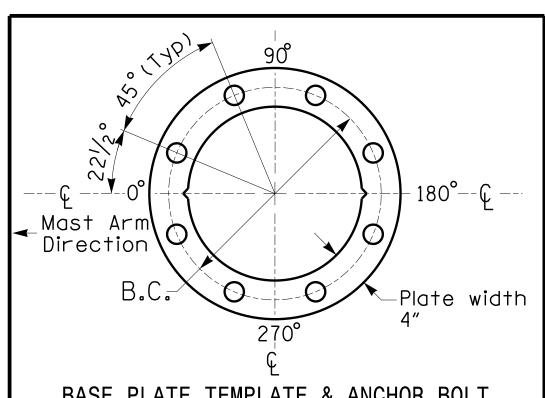
Elevation Differences for:	Arm "A"	Arm "B"
Baseline reference point at © Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	0.25 ft.	0.00 ft.
Elevation difference at Edge of travelway or face of curb	-0.51 ft.	0.00 ft.

Compartmen ANGLE BETWEEN 90° ARM B

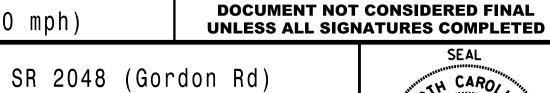
POLE RADIAL ORIENTATION -180°-Mast Arm Direction

8 BOLT BASE PLATE DETAIL

See Note 6



NCDOT Wind Zone 1 (150 mph)

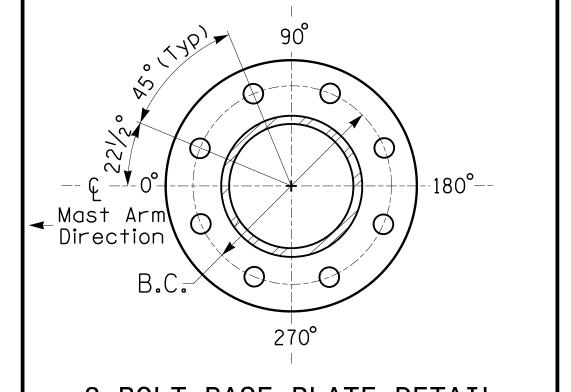


SR 2772 (Farrington Farms Dr) Division 3 New Hanover County Wilmington

PLAN DATE: REVIEWED BY: N.K. Vlanich May 2022 REVISIONS INIT. DATE

TH CARO OR OFESSION 1 ACINEER

DESIGN REFERENCE MATERIAL



LOCK PLATE DETAIL For 8 Bolt Base Plate

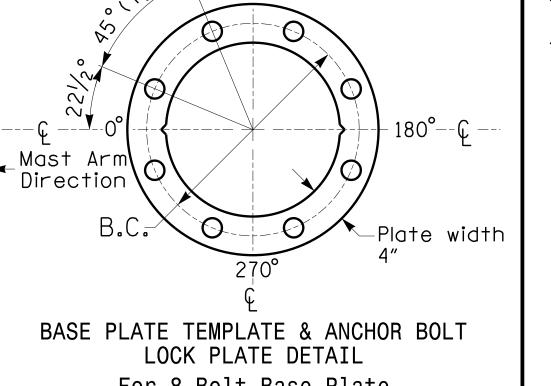
- 1. Design the traffic signal structure and foundation in accordance with:
- The 1st Edition 2015 AASHTO LRFD "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.

<u>NOTES</u>

- The 2024 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to
- the specifications can be found in the traffic signal project special provisions.
- The 2024 NCDOT Roadway Standard Drawings.
- The traffic signal project plans and special provisions.
- The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

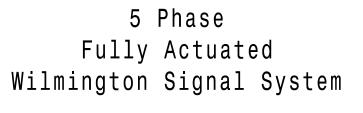
- 2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
- Design all signal supports using force ratios that do not exceed 0.9.
- 4. The camber design for the mast arm deflection should provide an appearance of a low pitched arch where the tip or the free end of the mast arm does not deflect below horizontal when fully loaded.
- 5. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection meets all of the design requirements. This requires staggering the connections. Use elevation data for each arm to determine appropriate arm connection points.
- 6. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- 7. The mast arm attachment height (H1) shown is based on the following design assumptions: a. Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
- b. Signal heads are rigidly mounted and vertically centered on the mast arm.
- c. The roadway clearance height for design is as shown in the elevation views.
- d. The top of the pole base plate is 0.75 feet above the ground elevation.
- e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- 8. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
- Mast arm attachment height (H1) plus 2 feet, or
- H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- 9. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
- 10. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- 11. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.



Prepared in the Offices of:

750 N.Greenfleid Pkwy.Garner.NC 27529 PREPARED BY: E.E. Tiller REVIEWED BY: N.R. SIMMONS N/A

SIG. INVENTORY NO. 03-1216



NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024. 2. Do not program signal for late night flashing operation unless otherwise
- directed by the Engineer. 3. Phases 1 and/or 5 may be lagged.
- 4. Set all detector units to presence
- 5. Locate new cabinet so as to not obstruct sight distance of vehicles turning right on red.
- 6. The Division (City) Traffic Engineer will determine the hours of use or each phasing plan.
- 7. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- 8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- 9. Signal system data: Controller Asset #0847.

PROPOSED

 \bigcirc

0 ->	Modified Signal Head	N/A
\dashv	Sign	\dashv
\Rightarrow	Pedestrian Signal Head	•
\bigcirc	Signal Pole with Guy	
9	Signal Pole with Sidewalk Guy	
	Microwave Detection Zone	
∞	Out of Pavement Detector	
\boxtimes	Controller & Cabinet	K×7
	Junction Box	
	2-in Underground Conduit	
N/A	Right of Way	
N/A	Permanent Utility Easement	—— PUE ——
N/A	Construction Easement	——Е——
\longrightarrow	Directional Arrow	\longrightarrow
	Construction Zone	
N/A	Wedge/Widen Curb Ramp	
A R	ight Arrow "ONLY" Sign (R3-5R) (A)
B	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	B

DOCUMENT NOT CONSIDERED FINAL

UNLESS ALL SIGNATURES COMPLETED

LEGEND

Traffic Signal Head

EXISTING

Signal Upgrade-Temporary Design 1 (Construction Phase 1)

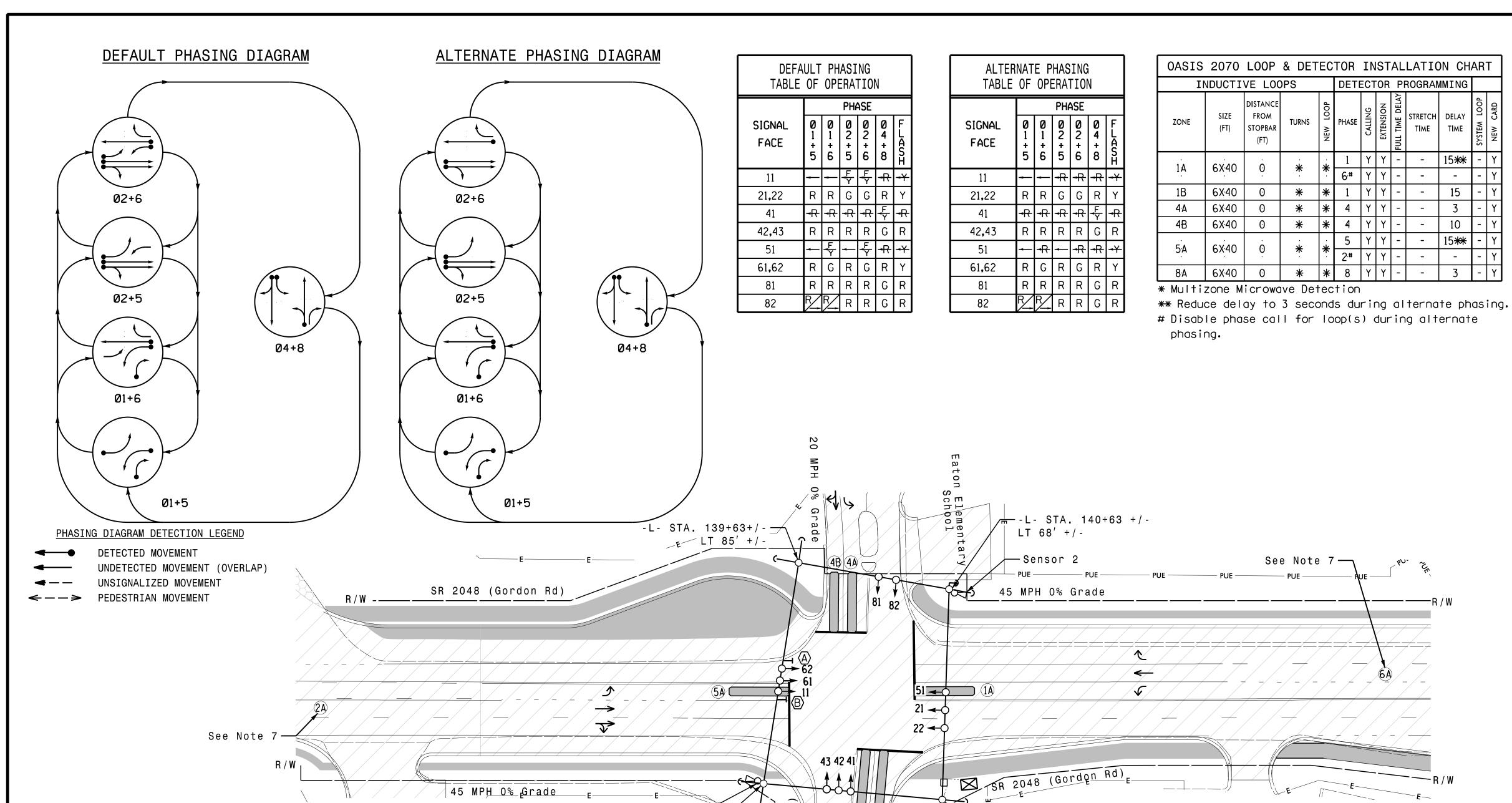
SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr)/ Eaton Elementary School

Division 3 New Hanover County May 2022 REVIEWED BY: N.K. Vlanich 750 N.Greenfleid Pkwy.Garner.NC 27529 PREPARED BY: E.E. Tiller

REVIEWED BY: N.R. Simmons

SEAL 031464 SIG. INVENTORY NO. 03-0847

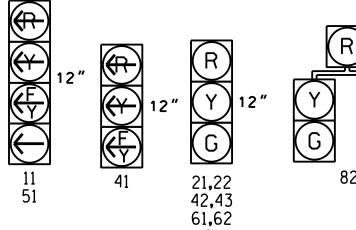
OR THE CAROL



	OASIS	2070	TIMING	CHART	Γ						
		PHASE									
FEATURE	1	2	4	5	6	8					
Min Green 1 *	5	12	5	5	12	5					
Extension 1 *	2.0	2.0	2.0	2.0	2.0	2.0					
Max Green 1 *	25	90	35	25	90	35					
Yellow Clearance	3.0	4.5	3.8	3.0	4.5	3.8					
Red Clearance	1.9	1.3	2.6	2.3	1.3	2.6					
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0					
Walk 1 *	-	-	-	-	-	1					
Don't Walk 1	-	-	-	-	-						
Seconds Per Actuation *	-	-	-	-	-	-					
Max Variable Initial*	-	-	-	-	-	-					
Time Before Reduction *	-	-	-	-	-	-					
Time To Reduce *	-	-	-	-	-	=					
Minimum Gap	-	-	-	-	-	-					
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-					
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-					
Dual Entry	-	-	ON	-	-	ON					
Simultaneous Gap	ON	ON	ON	ON	ON	ON					

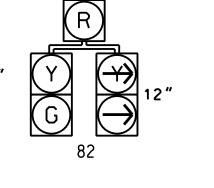
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

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



Sensor 1

-L- STA. 139+39 +/- — RT 62' +/-



Gr

%

FUNCTION Sensor 1 Sensor 2 EB WB Direction of Travel 100-600 100-600 Detection Zone (ft) **Enable Speed** 35-100 35-100 Speed Range (mph) **Enable Estimated Time of Arrivo** 1.0-6.5 2.5-6.5 Estimated Time of Arrival (sec)

HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997

-L- STA. 140+58 +/-

RADAR DETECTION SYSTEM

RT 73′ +/-

18 CHANNEL CONFLICT MONITOR ON OFF PROGRAMMING DETAIL WD ENABLE ((remove jumpers and set switches as shown) SW2 REMOVE DIODE JUMPERS I-5, I-6, I-9, I-II, 2-5, 2-6, 2-9, 2-II, 4-8, 4-I2, 5-9, 5-II, 6-9, 6-II, 8-I2, AND 9-II. ⊩RP DISABLE ₩D 1.0 SEC ☐ GY ENABLE ├ LEDguard FYA COMPACT **─**FYA 1-9 ___⊢FYA 3-10 FYA 5-11 FYA 7-12 COMPONENT SIDE REMOVE JUMPERS AS SHOWN

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.
- ——├SF#1 POLARITY┗ │3. Enable Simultaneous Gap-Out for all Phases.
 - 4. Program phases 2 and 6 for Startup In Green.
 - 5. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Waq Overlap.
 - 6. The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

SOFTWARE.....ECONOLITE OASIS CABINET MOUNT.....BASE

OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....S1,S2,S5,S7,S8,S11,AUX S1,

AUX S4. AUX S5 OVERLAP "A".....1+2

OVERLAP "B".....NOT USED OVERLAP "C".....5+6 OVERLAP "D".....8

= DENOTES POSITION

OF SWITCH

ST = STOP TIME

PROJECT REFERENCE NO. U-6202

SIGNAL HEAD HOOK-UP CHART																			
LOAD SWITCH NO.	S	51	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	g	10	17	11	12	18
PHASE	1		2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	82	21,22	NU	NU	42,43	NU	★ 51	61,62	NU	NU	81,82	NU	11	NU	NU	★ 51	41	NU
RED		*	128			101			134			107							
YELLOW			129			102		*	135			108							
GREEN			130			103			136			109							
RED ARROW														A121			A114	A101	
YELLOW ARROW		126												A122			A115	A102	
FLASHING YELLOW ARROW														A123			A116	A103	
GREEN ARROW	127	127						133											
₩																			
Ķ																			

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)

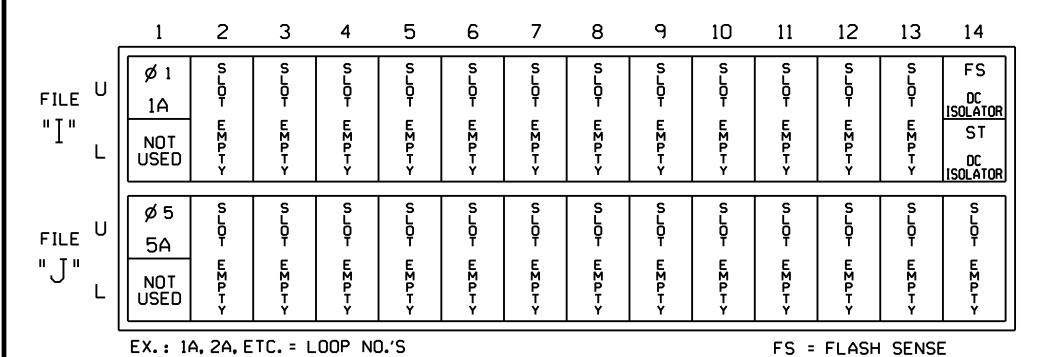
1. Card is provided with all diode jumpers in place. Removal

of any jumper allows its channels to run concurrently.

2. Ensure jumpers SEL2-SEL5 are present on the monitor board.

3. Ensure that Red Enable is active 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.



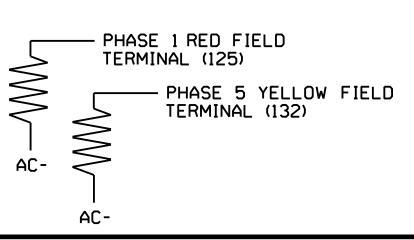
SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

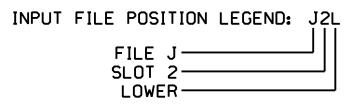
ACCEPTABLE VALUES VALUE (ohms) WATTAGE 1.5K - 1.9K 25W (m1n) 2.0K - 3.0K | 10W (min)



INPUT FILE CONNECTION & PROGRAMMING CHART

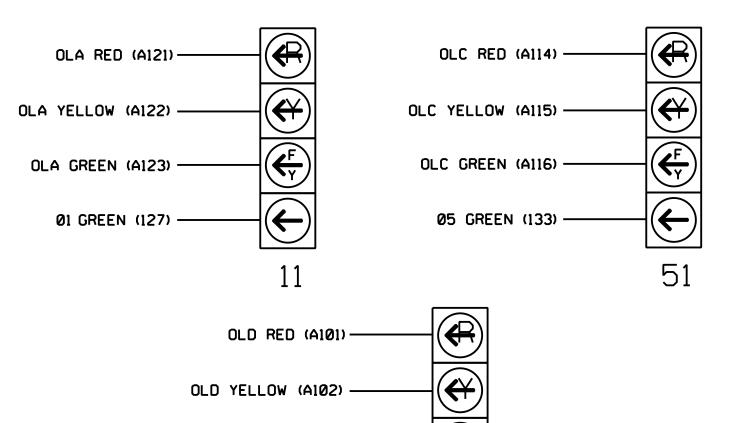
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
	TB2-1,2	IIU	56	18	1	1	Y	Y			15
1A	-	J4U	48	10 ★	26	6	Y	Y			
	-	IIU	56	18 ★	51	1	Y	Y			3
	TB3-1.2	JlU	55	17	5	5	Y	Y			15
5A	-	I4U	47	9 🖈	22	2	Y	Y			
	_	JlU	55	17 ★	55	5	Y	Y			3

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



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



OLD GREEN (A103) -

REVISIONS

NOTE

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

Signal Upgrade-

Electrical Detail - Sheet 1 of 5

(Construction Phase 1)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMIN DETAILS FOR: Prepared in the Offices of:

SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr/ Eaton Elementary School

Division 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

OR ROFESSION N 031464 INIT. DATE

SIG. INVENTORY NO. 03-0847T

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

DESIGNED: May 2022

SEALED: 5/17/2024

REVISED:

THIS ELECTRICAL DETAIL IS FOR

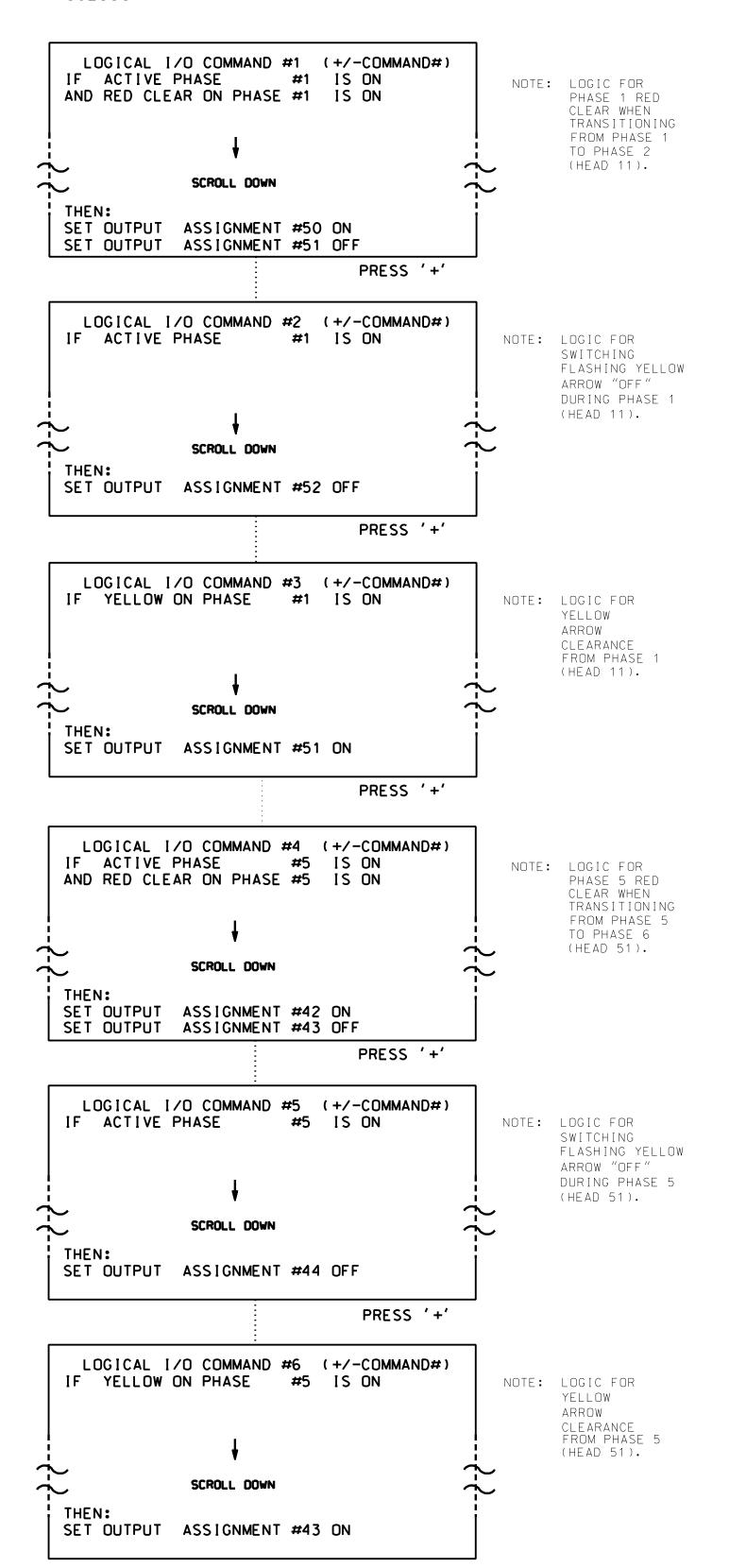
THE SIGNAL DESIGN: 03-0847T1

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

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



LOGICAL I/O PROCESSOR PROGRAMMING COMPLETE

OUTPUT REFERENCE SCHEDULE USE TO INTERPRET LOGIC 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

PROJECT REFERENCE NO. Sig 25. U-6202

(program controller as shown below)

FROM MAIN MENU PRESS '8' (OVERLAPS). THEN '1' (VEHICLE OVERLAP SETTINGS). PAGE 1: VEHICLE OVERLAP 'A' SETTINGS **112345678910111213141516**

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 SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH GREEN EXTENSION (0-255 SEC)..... 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 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 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 '+'

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS PHASE: 12345678910111213141516 VEH OVL PARENTS: 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) GREEN FLASH YELLOW IN CONTROLLER FLASH?...N FLASH GREEN EXTENSION (0-255 SEC)..... YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0 RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0

OVERLAP PROGRAMMING COMPLETE

OUTPUT AS PHASE # (0=NONE, 1-16)....0

OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

NOTICE -

PHASE:

VEH OVL PARENTS:

VEH OVL NOT VEH:

VEH OVL NOT PED: VEH OVL GRN EXT: :

PAGE 2

(program controller as shown below)

GREEN

FLASH

THEN '1' (VEHICLE OVERLAP SETTINGS). PRESS 'NEXT' TO ADVANCE TO PAGE 2. PAGE 2: VEHICLE OVERLAP 'A' SETTINGS PHASE: 12345678910111213141516 VEH OVL PARENTS: X VEH OVL NOT VEH: : VEH OVL NOT PED: :

FROM MAIN MENU PRESS '8' (OVERLAPS).

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)..... 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 PAGE 2

PRESS '+' TWICE PAGE 2: VEHICLE OVERLAP 'C' SETTINGS 112345678910111213141516 PAGE 2 PHASE: 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)...... 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 '+'

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 (O=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

PAGE 2: VEHICLE OVERLAP 'D' SETTINGS

STARTUP COLOR: _ RED _ YELLOW _ GREEN

12345678910111213141516

FLASH

OVERLAP PROGRAMMING COMPLETE

Signal Upgrade-Electrical Detail - Sheet 2 of 5 (Construction Phase 1)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMIN DETAILS FOR: Prepared in the Offices of: 750 N. Greenfield Pkwy. Garner, NC 27529

SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr/ Eaton Elementary School

Division 3 New Hanover County Wilmington August 2023 REVIEWED BY: N.K. Vlanich PLAN DATE: REVIEWED BY: N.R. Simmons PREPARED BY: E E. Tiller REVISIONS INIT. DATE

031464 COUNTER Notasha R Simmons 5/17/202 SIGNATURE DATE SIG. INVENTORY NO. 03-0847T

TH CARO

SOR WESSION N

REVISED: HNTB NORTH CAROLINA, P.C.

THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 03-0847T1

HNIB NUMIH CAMULINA, F.O.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

DESIGNED: May 2022

SEALED: 5/17/2024

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

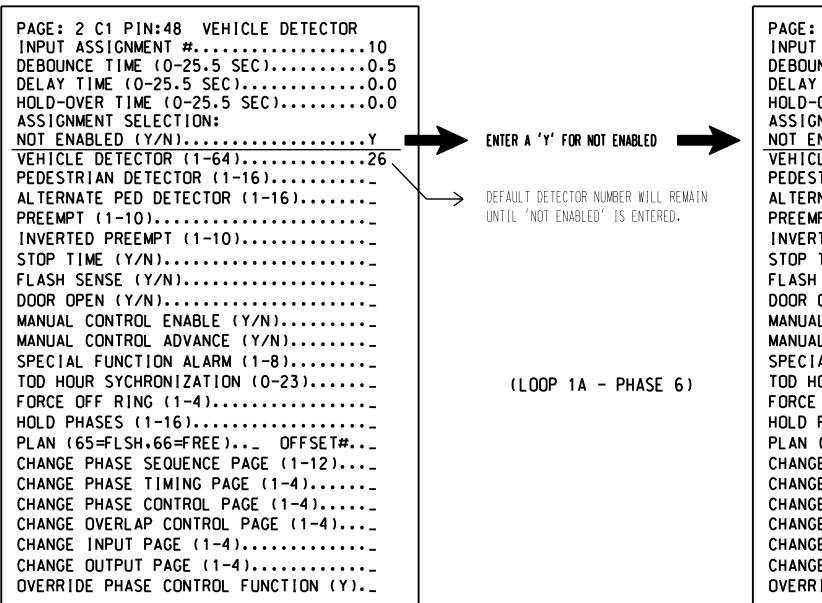
(program controller as shown below)

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.

PRESS '+' TO ADVANCE TO INPUT 18

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.



PAGE: 2 C1 PIN:48 NOT ENABLED INPUT ASSIGNMENT #.....10 DELAY TIME (0-25.5 SEC).............. HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64)..... PEDESTRIAN DETECTOR (1-16).... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4)..... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

INPUT ASSIGNMENT #.....18 DELAY TIME (0-25.5 SEC)............... HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....1 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4)..... HOLD PHASES (1-16)..... PLAN (65=FLSH,66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)..._ CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4)..... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR INPUT ASSIGNMENT #.....18 DELAY TIME (0-25.5 SEC)................ HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....51 PEDESTRIAN DETECTOR (1-16).... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... (LOOP 1A - PHASE 1) FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PROJECT REFERENCE NO.

U-6202

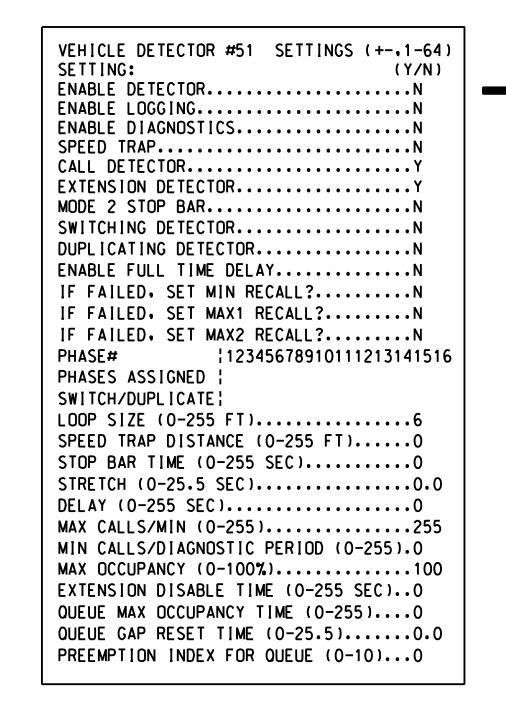
Sig 25

PROGRAMMING COMPLETE

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.



VEHICLE DETECTOR #51 SETTINGS (+-,1-64) SETTING: ENTER 'Y' FOR ENABLE DETECTOR ENABLE DETECTOR.....Y ENABLE LOGGING...... ENABLE DIAGNOSTICS..... SPEED TRAP......N CALL DETECTOR.....Y EXTENSION DETECTOR.....Y MODE 2 STOP BAR.....N SWITCHING DETECTOR.....N DUPLICATING DETECTOR..... ENABLE FULL TIME DELAY.....N IF FAILED, SET MIN RECALL?..... IF FAILED. SET MAX1 RECALL?..... IF FAILED. SET MAX2 RECALL?..... PHASE# 112345678910111213141516 PHASES ASSIGNED |X ENTER '1' FOR PHASES ASSIGNED SWITCH/DUPLICATE; LOOP SIZE (0-255 FT).....6 SPEED TRAP DISTANCE (0-255 FT).....0 STOP BAR TIME (0-255 SEC)..... STRETCH (0-25.5 SEC)................0.0 ENSURE DELAY IS '3' MAX CALLS/MIN (0-255)......255 MIN CALLS/DIAGNOSTIC PERIOD (0-255).0 MAX OCCUPANCY (0-100%).....100 EXTENSION DISABLE TIME (0-255 SEC)..0 QUEUE MAX OCCUPANCY TIME (0-255)....0 QUEUE GAP RESET TIME (0-25.5).....0.0 PREEMPTION INDEX FOR QUEUE (0-10)...0

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

> THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0847T1 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

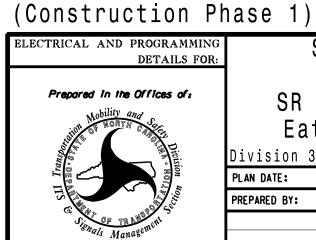
Signal Upgrade-Electrical Detail - Sheet 3 of 5

ENTER '51' TO REASSIGN

THE VEHICLE DETECTOR

FOR THIS INPUT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr/ Eaton Elementary School

ivision 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

031464

TH CARO

STESSION A

DETECTOR PROGRAMMING COMPLETE

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

SIG. INVENTORY NO. 03-0847T

U-6202 Sig. 25.4

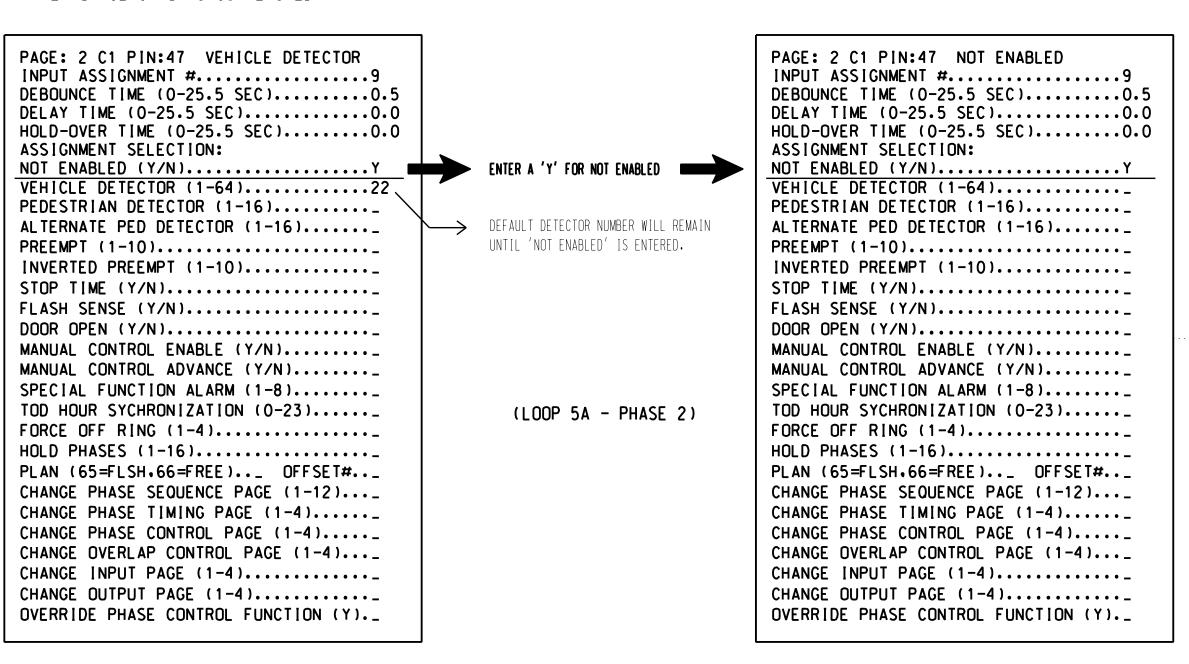
INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(program controller as shown below)

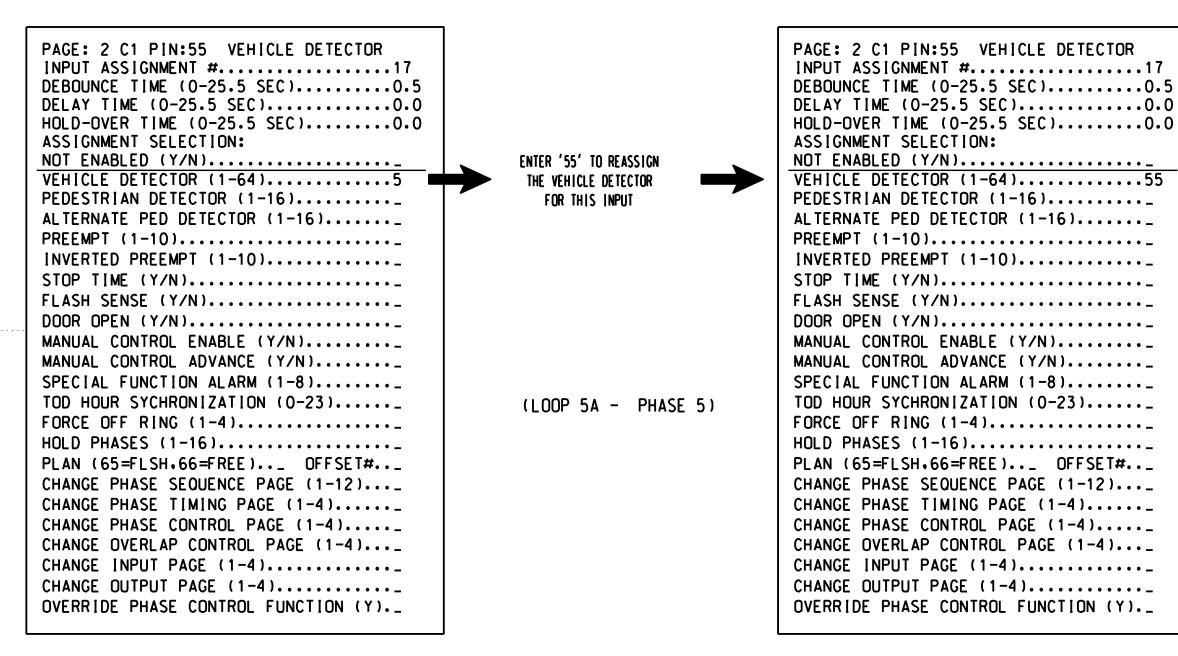
NOTES: 1. THIS PROGRAMMING APPLIES <u>FOR INPUT PAGE 2</u> ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.

2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9 (DETECTOR 22) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 2 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 55 TO INPUT #17 SO THAT THE DELAY ON LOOP 5A CAN BE REDUCED FROM 15 SECONDS TO 3 SECONDS.

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



PRESS '+' TO ADVANCE TO INPUT 17



NOTE: DETECTOR IS PROGRAMMED PER THE

CHART SHOWN ON SHEET 1.

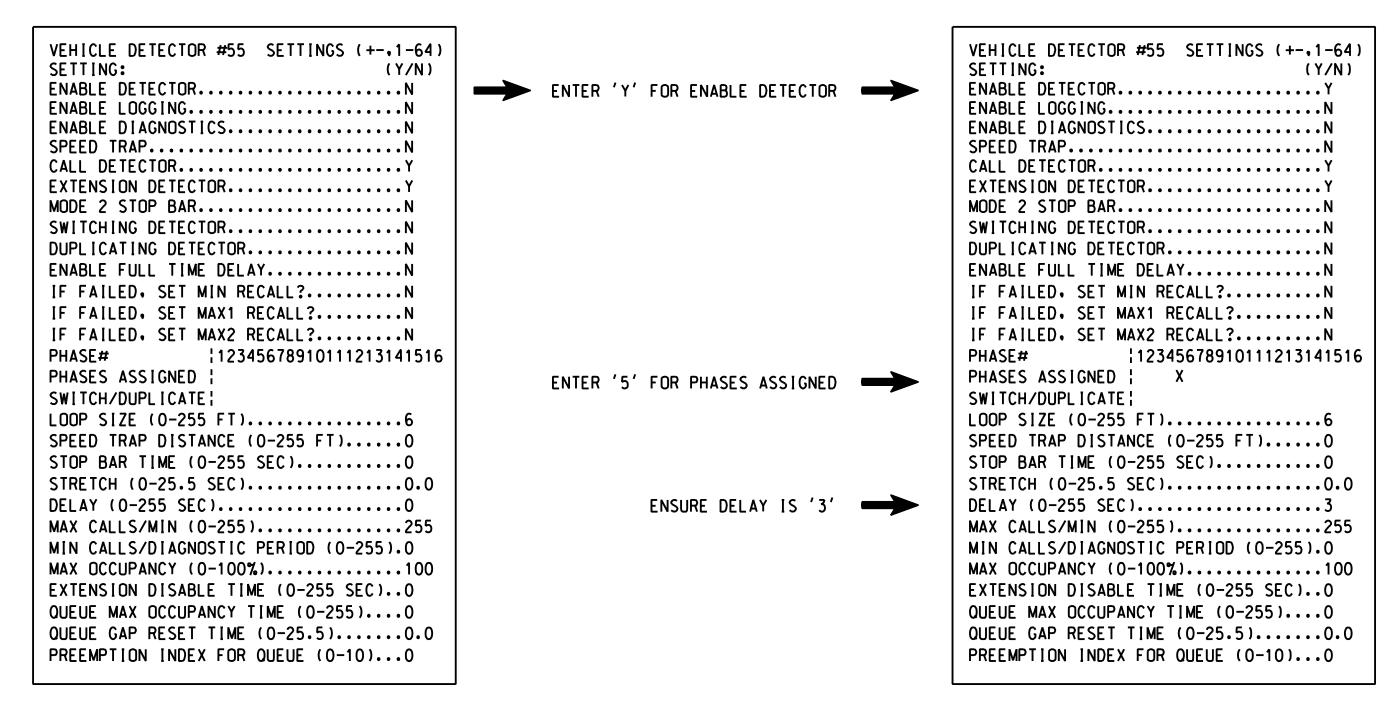
INPUT FILE CONNECTION AND PROGRAMMING

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. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.



Signal Upgrade-Electrical Detail - Sheet 4 of 5 THE SIGNAL DESIGN: 03-0847T1
DESIGNED: May 2022
SEALED: 5/17/2024
REVISED:

THIS ELECTRICAL DETAIL IS FOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Construction Phase 1)

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:

SR

Eat

Division 3

PLAN DATE:

PREPARED BY:

SR 2048 (Gordon Rd)
at
SR 2698 (Netherlands Dr/
Eaton Elementary School
vision 3 New Hanover County Wilm

Division 3 New Hanover County Wilmington
PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich
PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons
REVISIONS INIT. DATE

SEAL
031464

Docusigned by:

Matasha R Simmons
SIGNATURE

DATE

DA

SIG. INVENTORY NO. 03-0847T

DETECTOR PROGRAMMING COMPLETE

U-6202 Sig. 25.5

ALTERNATE PHASING ACTIVATION DETAIL

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

TO RUN ALT. PHASING DURING <u>FREE RUN</u> - 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 PHASIN</u> G	1	1
ACTIVE PAGES REQUIRED	TO RUN ALTERNATE PHASING	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: Disable

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

Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 3 seconds.

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.

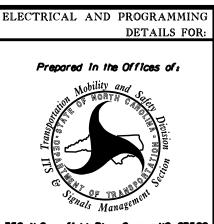
3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0847T1 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade-Electrical Detail - Sheet 5 of 5 (Construction Phase 1)

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SR 2048 (Gordon Rd)
at
SR 2698 (Netherlands Dr/
Eaton Elementary School

Division 3 New Hanover County Wilmington

PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich

PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS INIT. DATE

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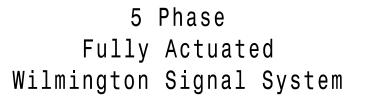
Market R. Simmons

SIGNATURE

DATE

DATE

SIG. INVENTORY NO. 03-0847T



NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2024 and "Standard Specifications for Roads and Structures" dated January 2024.
- 2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- 3. Phases 1 and/or 5 may be lagged.
- 4. Reposition existing signal heads numbered 11, 21, 22, 51, 61, and 62 and existing sign $oldsymbol{eta}_{oldsymbol{\cdot}}$
- 5. Set all detector units to presence mode.
- 6. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
- 7. This intersection uses multi-zone microwave detection. Install detectors according to the manufacturer's instructions to achieve the desired detection.
- 8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- 9. Signal system data: Controller Asset #0847.

PROPOSED

 \bigcirc

•		•
O ->	- Modified Signal Head	N/A
-	Sign	<u> </u>
\Rightarrow	Pedestrian Signal Head	•
0	-) Signal Pole with Guy	
0_	, Signal Pole with Sidewalk Guy	
abla	Out of Pavement Detector	•
\boxtimes	Controller & Cabinet	K×3
	Junction Box	
	2-in Underground Conduit —	
N/A	Right of Way -	
N/A	Permanent Utility Easement -	—— PUE ——
N/A	Construction Easement -	—Е—
>	Directional Arrow	\longrightarrow
	Construction Zone	
N/A	Curb Ramp	
$\langle A \rangle$	Right Arrow "ONLY" Sign (R3-5R)	A
(B)	"U-TURN YIELD TO RIGHT	B
٧	TURN" Sign (R10-16)	9

LEGEND

Traffic Signal Head

EXISTING

Signal Upgrade-Temporary Design 2 (Construction Phase 2A)

SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr)

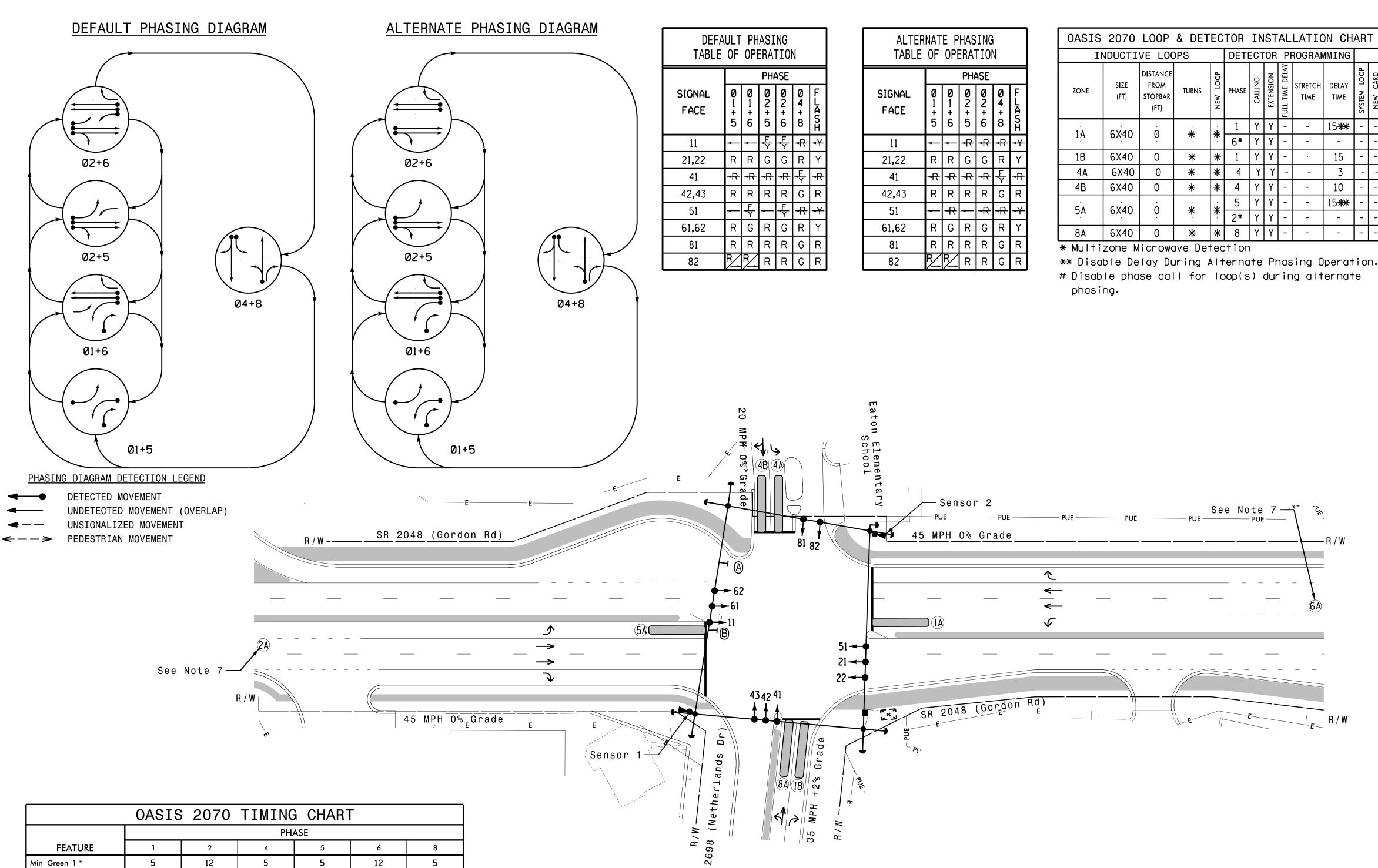
Eaton Elementary School New Hanover County May 2022 REVIEWED BY: N.K. Vlanich REVIEWED BY: N.R. Simmons

SEAL 031464

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UNLESS ALL SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997 750 N.Greenfleid Pkwy.Garner.NC 27529 PREPARED BY: E.E. Tiller

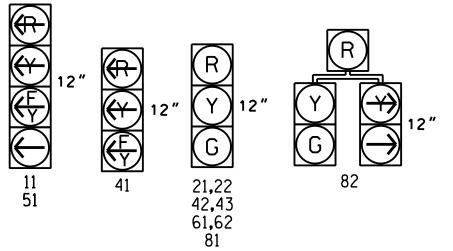


	OASIS	2070	TIMING	CHAR	Γ				
		PHASE							
FEATURE	1	2	4	5	6	8			
Min Green 1 *	5	12	5	5	12	5			
Extension 1 *	2.0	2.0	2.0	2.0	2.0	2.0			
Max Green 1 *	25	90	35	25	90	35			
Yellow Clearance	3.0	4.5	3.7	3.0	4.5	3.7			
Red Clearance	3.1	1.6	3.5	2.9	1.6	3.5			
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0			
Walk 1 *	-	-	-	-	-	-			
Don't Walk 1	-	-	-	-	-	_			
Seconds Per Actuation *	-	-	-	-	-	-			
Max Variable Initial*	-	-	-	-	-	-			
Time Before Reduction *	-	-	-	-	-	-			
Time To Reduce *	-	-	-	-	-	-			
Minimum Gap	-	-	-	-	-	-			
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-			
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-			
Dual Entry	-	-	ON	-	-	ON			
Simultaneous Gap	ON	ON	ON	ON	ON	ON			

is shown. Min Green for all other phases should not be lower than 4 seconds.

SIGNAL FACE I.D.

All Heads L.E.D.



FUNCTION Sensor 1 Sensor 2 EB Direction of Travel 100-600 100-600 Detection Zone (ft) 35-100 35-100 Speed Range (mph) Enable Estimated Time of Arrivo

Estimated Time of Arrival (sec)

RADAR DETECTION SYSTEM

1.0-6.5

1.0-6.5

18 CHANNEL CONFLICT MONITOR ON OFF PROGRAMMING DETAIL WD ENABLE (\) (remove jumpers and set switches as shown) SW2 REMOVE DIODE JUMPERS I-5, I-6, I-9, I-II, 2-5, 2-6, 2-9, 2-II, 4-8, 4-I2, 5-9, 5-II, 6-9, 6-II, 8-I2, AND 9-II. RP DISABLE WD 1.0 SEC GY ENABLE ■ LEDguard ⊢RF SSM FYA COMPACT— **─**FYA 1-9 ____⊢FYA 3-10 FYA 5-11 FYA 7-12 COMPONENT SIDE REMOVE JUMPERS AS SHOWN

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.
- ——⊢SF#1 POLARITY 3. Enable Simultaneous Gap-Out for all Phases.
 - 4. Program phases 2 and 6 for Startup In Green.
 - 5. Program phases 2 and 6 for Yellow Flash, and overlap 1 as Waq Overlap.
 - 6. The cabinet and controller are part of the Wilmington Signal System.

EQUIPMENT INFORMATION

SOFTWARE.....ECONOLITE OASIS CABINET MOUNT.....BASE

OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....\$1,\$2,\$5,\$7,\$8,\$11,AUX \$1,

AUX S4. AUX S5

OVERLAP "A".....1+2 OVERLAP "B".....NOT USED OVERLAP "C".....5+6 OVERLAP "D".....8

= DENOTES POSITION

OF SWITCH

ST = STOP TIME

SIGNAL HEAD HOOK-UP CHART LOAD SWITCH NO S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 AUX AUX AUX AUX S5 S6 S6 CMU CHANNEL NO. 16 | 9 | 10 | 17 | 11 | 12 | 18 PED OLA OLB SPARE OLC OLD SPARE PHASE 82 21,22 NU NU 42,43 NU 51 61,62 NU NU 81,82 NU 11 NU NU 51 SIGNAL HEAD NO. * 128 134 ***** 135 108 YELLOW 130 109 **GREEN** A114 | A101 | ARROW YELLOW ARROW A122 A115 A102 FLASHING YELLOW ARROW A123 A116 A103 GREEN ARROW 127 | 127

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)

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 are present on the monitor board.

3. Ensure that Red Enable is active 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.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
11	ø 1	S	SL	ىL ₀	S	S L O	S	S	S	S	S	S	S	FS
FILE	1A	Ď	Ō	JOH	LOT	Ť	Ď	P	Ģ	Ď	Ď	Ď	Ť	DC ISOLATOR
"I" .	NOT	EΜP	ωΣo	EΣP	EMPT	E M P	E M P	E M P	E M	E M P	E M P	E M P	E M P	ST
L	USED	T Y	T Y	T Y	T Y	T Y	T Y	T Y	T Y	T Y	T Y	T Y	Ť	DC ISOLATOR
	Ø 5	S	S	S	S	S	S	S	S	S	S	S	S	S
FILE U	5A	Ģ	Ď	Ģ		Ď	ģ	Ď	Ď	Ď	ģ	Ď		ļ ģ
"J" .	NOT	E M P	E M	EΣP	ω Σ ΦΤ	E M	E M P	E M P	E M	E M P	E M P	E M P	E M P	E M P
L	NOT USED	P T Y	P T Y	PTY	PTY	P T Y								
	EX.: 14	4, 2A, E	TC. = L	00P NO) . ′S						FS =	FLASH	SENS	 E

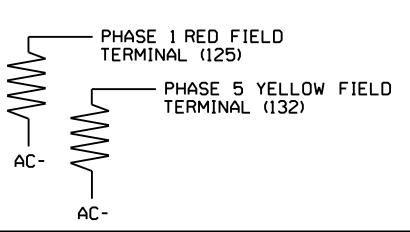
SPECIAL DETECTOR NOTE

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)

ACCEPTABLE VALUES VALUE (ohms) WATTAGE 1.5K - 1.9K 25W (m1n) 2.0K - 3.0K | 10W (min)



INPUT FILE CONNECTION & PROGRAMMING CHART

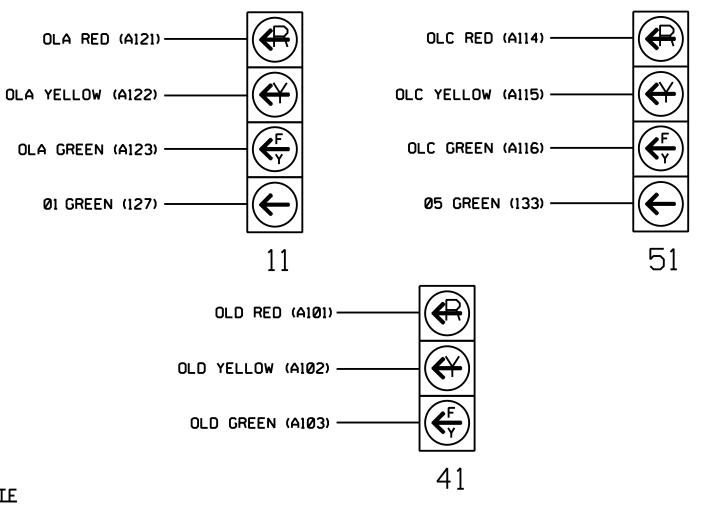
L00P NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME	
	TB2-1,2	IIU	56	18	1	1	Y	Y			15	
1A	-	J4U	48	10 ★	26	6	Y	Y				
	-	IIU	56	18 ★	51	1	Y	Y				
	TB3-1,2	JlU	55	17	5	5	Y	Y			15	
5A	-	I4U	47	9 ★	22	2	Y	Y				
	-	JlU	55	17 ★	55	5	Y	Y				

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

INPUT FILE POSITION LEGEND: J2L SLOT 2-LOWER

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



NOTE

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

Signal Upgrade-

Electrical Detail - Sheet 1 of 5

(Construction Phase 2A)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INIT. DATE

PROJECT REFERENCE NO.

U-6202

ELECTRICAL AND PROGRAMMIN DETAILS FOR: Prepared in the Offices of:

SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr/ Eaton Elementary School

Division 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons

REVISIONS

SOF ESSION 1 031464

SIG. INVENTORY NO. 03-0847T

TH CARO

DESIGNED: May 2022

SEALED: 5/17/2024

REVISED:

THIS ELECTRICAL DETAIL IS FOR

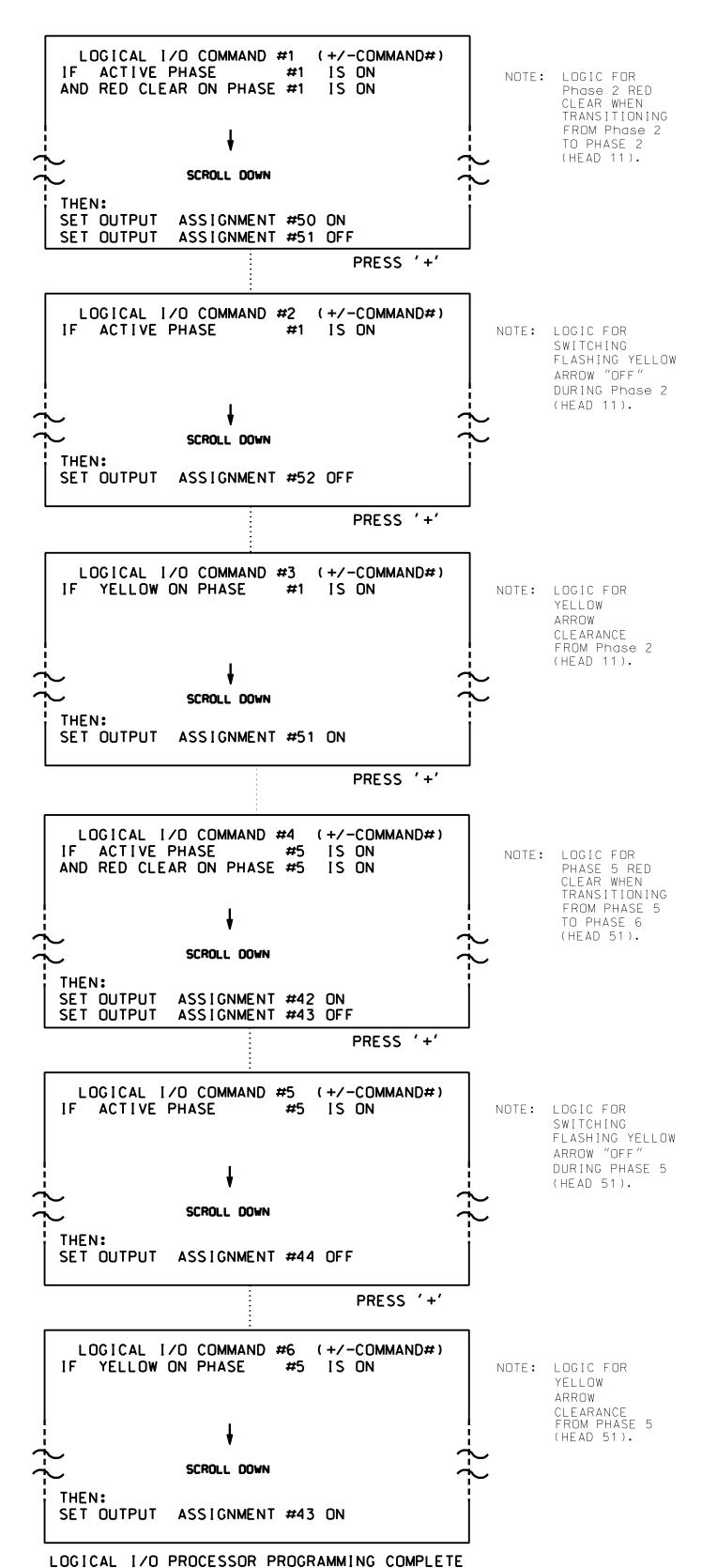
THE SIGNAL DESIGN: 03-0847T2

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

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



OUTPUT REFERENCE SCHEDULE USE TO INTERPRET LOGIC 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

PROJECT REFERENCE NO. Sig 26. U-6202

(program controller as shown below)

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

PAGE 1: VEHICLE OVERLAP 'A' SETTINGS **112345678910111213141516** 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 SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH GREEN EXTENSION (0-255 SEC)..... 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 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 SELECT VEHICLE OVERLAP OPTIONS: (Y/N) GREEN FLASH YELLOW IN CONTROLLER FLASH?...Y FLASH 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

PRESS '+'

112345678910111213141516

PRESS '+'

STARTUP COLOR: _ RED _ YELLOW _ GREEN

FLASH COLORS: _ RED _ YELLOW _ GREEN SELECT VEHICLE OVERLAP OPTIONS: (Y/N)

RED CLEAR (0=PARENT.0.1-25.5 SEC)...0.0

OUTPUT AS PHASE # (0=NONE, 1-16)....0

FLASH YELLOW IN CONTROLLER FLASH?...Y GREEN EXTENSION (0-255 SEC)...... YELLOW CLEAR (0=PARENT.3-25.5 SEC)..0.0

OUTPUT AS PHASE # (0=NONE. 1-16)....0

PAGE 1: VEHICLE OVERLAP 'D' SETTINGS PHASE: 12345678910111213141516 VEH OVL PARENTS: 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) GREEN FLASH YELLOW IN CONTROLLER FLASH?...N FLASH GREEN EXTENSION (0-255 SEC)..... 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)

PAGE 2

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

PHASE:

VEH OVL PARENTS: X

VEH OVL NOT VEH: |
VEH OVL NOT PED: |
VEH OVL GRN EXT: |

THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 03-0847T2

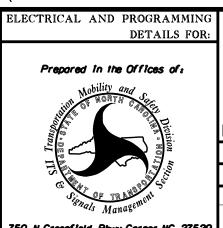
PAGE 2: VEHICLE OVERLAP 'D' SETTINGS NOTICE -PHASE: 12345678910111213141516 VEH OVL PARENTS: VEH OVL NOT VEH: VEH OVL NOT PED: VEH OVL GRN EXT: : STARTUP COLOR: _ RED _ YELLOW _ GREEN FLASH COLORS: _ RED _ YELLOW X GREEN SELECT VEHICLE OVERLAP OPTIONS: (Y/N) FLASH YELLOW IN CONTROLLER FLASH?...N FLASH GREEN EXTENSION (0-255 SEC).....0 YELLOW CLEAR (O=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

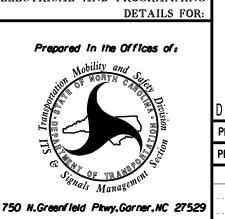
OVERLAP PROGRAMMING COMPLETE

Signal Upgrade-Electrical Detail - Sheet 2 of 5 (Construction Phase 2A)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INIT. DATE





SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr/ Eaton Elementary School Division 3 New Hanover County Wilmingtor August 2023 REVIEWED BY: N.K. Vlanich PLAN DATE: PREPARED BY: REVIEWED BY: N.R. Simmons E E. Tiller

REVISIONS

TH CARO SOR WESSION N 031464 COUNTER Notasha R Simmons 5/17/202 SIGNATURE DATE

SIG. INVENTORY NO. 03-0847T

HNTB NORTH CAROLINA, P.C. HNIB NUMIH CAMULINA, F.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554 (919) 546-8997

DESIGNED: May 2022

SEALED: 5/17/2024

REVISED:

PAGE 2

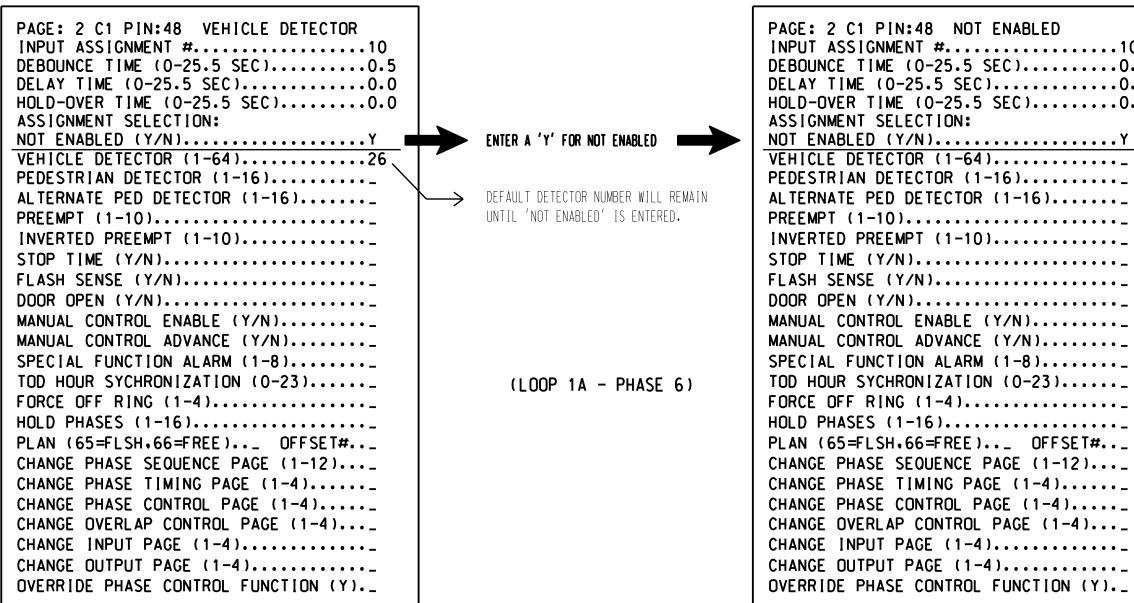
INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 1A

(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.



PAGE: 2 C1 PIN:48 NOT ENABLED INPUT ASSIGNMENT #.....10 DELAY TIME (0-25.5 SEC).............. HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64)..... PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4)..... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4).....

ENTER '1' FOR PHASES ASSIGNED

PRESS '+' TO ADVANCE TO INPUT 18

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR INPUT ASSIGNMENT #.....18 DELAY TIME (0-25.5 SEC)............... HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....1 PEDESTRIAN DETECTOR (1-16)..... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4)..... HOLD PHASES (1-16)..... PLAN (65=FLSH,66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)..._ CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4)..... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PAGE: 2 C1 PIN:56 VEHICLE DETECTOR INPUT ASSIGNMENT #.....18 DELAY TIME (0-25.5 SEC)................ HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... VEHICLE DETECTOR (1-64).....51 PEDESTRIAN DETECTOR (1-16).... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4).....

PROJECT REFERENCE NO.

U-6202

PROGRAMMING COMPLETE

CHANGE PHASE CONTROL PAGE (1-4).....

CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4).....

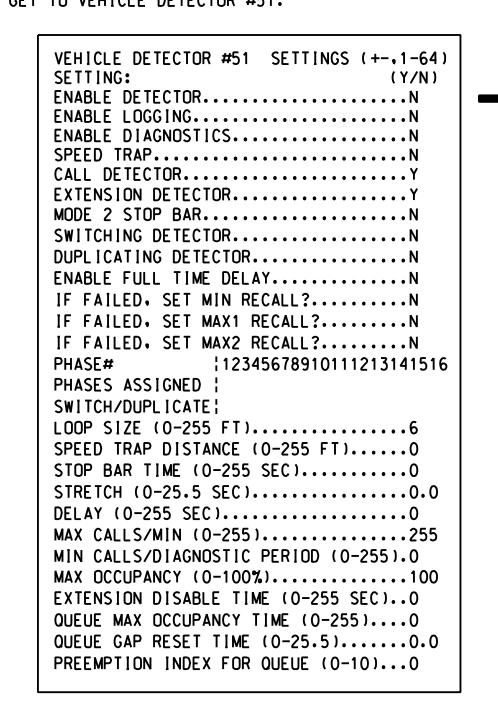
CHANGE OUTPUT PAGE (1-4).....

OVERRIDE PHASE CONTROL FUNCTION (Y)._

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.



VEHICLE DETECTOR #51 SETTINGS (+-,1-64) SETTING: ENTER 'Y' FOR ENABLE DETECTOR ENABLE DETECTOR.....Y ENABLE LOGGING...... ENABLE DIAGNOSTICS..... SPEED TRAP......N CALL DETECTOR.....Y EXTENSION DETECTOR.....Y MODE 2 STOP BAR.....N SWITCHING DETECTOR.....N DUPLICATING DETECTOR..... ENABLE FULL TIME DELAY.....N IF FAILED, SET MIN RECALL?..... IF FAILED. SET MAX1 RECALL?..... IF FAILED. SET MAX2 RECALL?..... PHASE# 112345678910111213141516 PHASES ASSIGNED |X SWITCH/DUPLICATE; LOOP SIZE (0-255 FT).....6 SPEED TRAP DISTANCE (0-255 FT).....0 STOP BAR TIME (0-255 SEC)..... STRETCH (0-25.5 SEC)................0.0 ENSURE DELAY IS '0' DELAY (0-255 SEC)...... MAX CALLS/MIN (0-255)......255 MIN CALLS/DIAGNOSTIC PERIOD (0-255).0 MAX OCCUPANCY (0-100%).....100 EXTENSION DISABLE TIME (0-255 SEC)..0 QUEUE MAX OCCUPANCY TIME (0-255)....0 QUEUE GAP RESET TIME (0-25.5).....0.0 PREEMPTION INDEX FOR QUEUE (0-10)...0

DETECTOR PROGRAMMING COMPLETE

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

> THE SIGNAL DESIGN: 03-0847T2 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade-Electrical Detail - Sheet 3 of 5 (Construction Phase 2A)

ENTER '51' TO REASSIGN

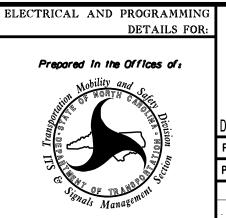
THE VEHICLE DETECTOR

FOR THIS INPUT

(LOOP 1A - Phase 2)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS ELECTRICAL DETAIL IS FOR



SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr/ Eaton Elementary School

ivision 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS

TH CARO STESSION A 031464

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554
(919) 546-8997

INIT. DATE SIG. INVENTORY NO. 03-0847T

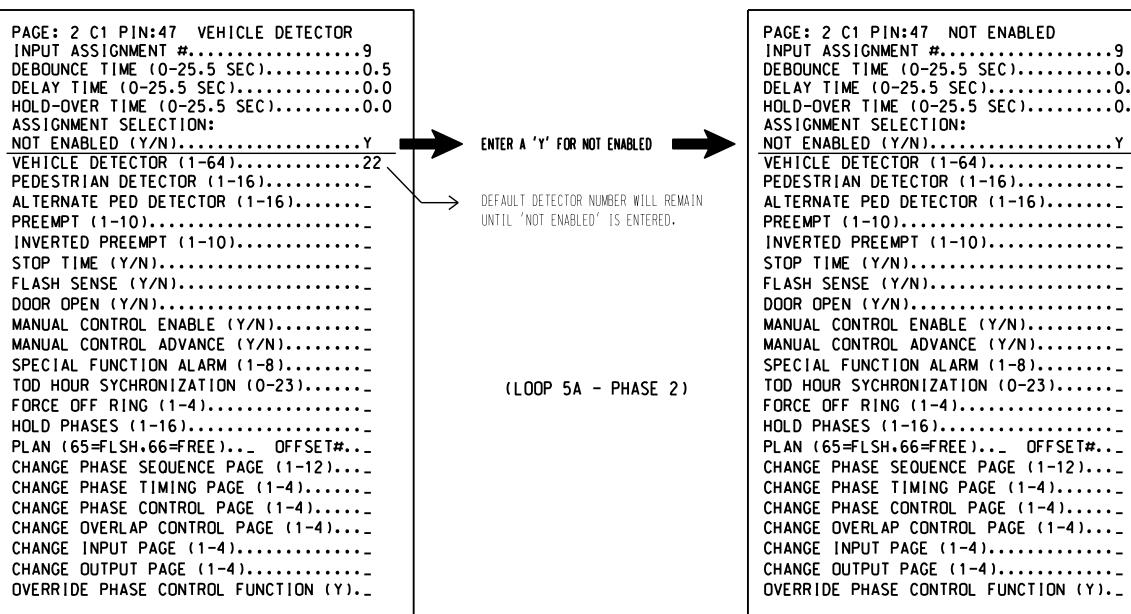
INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(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.



DEBOUNCE TIME (0-25.5 SEC).................0.5 DELAY TIME (0-25.5 SEC)............. HOLD-OVER TIME (0-25.5 SEC).........0.0 NOT ENABLED (Y/N).....Y VEHICLE DETECTOR (1-64)..... PEDESTRIAN DETECTOR (1-16).... ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)..._ CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4).... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PRESS '+' TO ADVANCE TO INPUT 17

PAGE: 2 C1 PIN:55 VEHICLE DETECTOR INPUT ASSIGNMENT #......17 DELAY TIME (0-25.5 SEC).............. HOLD-OVER TIME (0-25.5 SEC)......0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N)..... ENTER '55' TO REASSIGN VEHICLE DETECTOR (1-64).....5 THE VEHICLE DETECTOR PEDESTRIAN DETECTOR (1-16)..... FOR THIS INPUT ALTERNATE PED DETECTOR (1-16)..... PREEMPT (1-10)..... INVERTED PREEMPT (1-10)..... STOP TIME (Y/N)..... FLASH SENSE (Y/N)..... DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8)..... TOD HOUR SYCHRONIZATION (0-23)..... (LOOP 5A - PHASE 5)FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4)..... CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4).... OVERRIDE PHASE CONTROL FUNCTION (Y)._

PAGE: 2 C1 PIN:55 VEHICLE DETECTOR DELAY TIME (0-25.5 SEC)............0.0 HOLD-OVER TIME (0-25.5 SEC).........0.0 ASSIGNMENT SELECTION: NOT ENABLED (Y/N).... VEHICLE DETECTOR (1-64).....55 PEDESTRIAN DETECTOR (1-16)....

ALTERNATE PED DETECTOR (1-16).....

PREEMPT (1-10).....

INVERTED PREEMPT (1-10).....

STOP TIME (Y/N).....

FLASH SENSE (Y/N).....

DOOR OPEN (Y/N)..... MANUAL CONTROL ENABLE (Y/N)..... MANUAL CONTROL ADVANCE (Y/N)..... SPECIAL FUNCTION ALARM (1-8).....

TOD HOUR SYCHRONIZATION (0-23)..... FORCE OFF RING (1-4).... HOLD PHASES (1-16)..... PLAN (65=FLSH.66=FREE)... OFFSET#... CHANGE PHASE SEQUENCE PAGE (1-12)... CHANGE PHASE TIMING PAGE (1-4).....

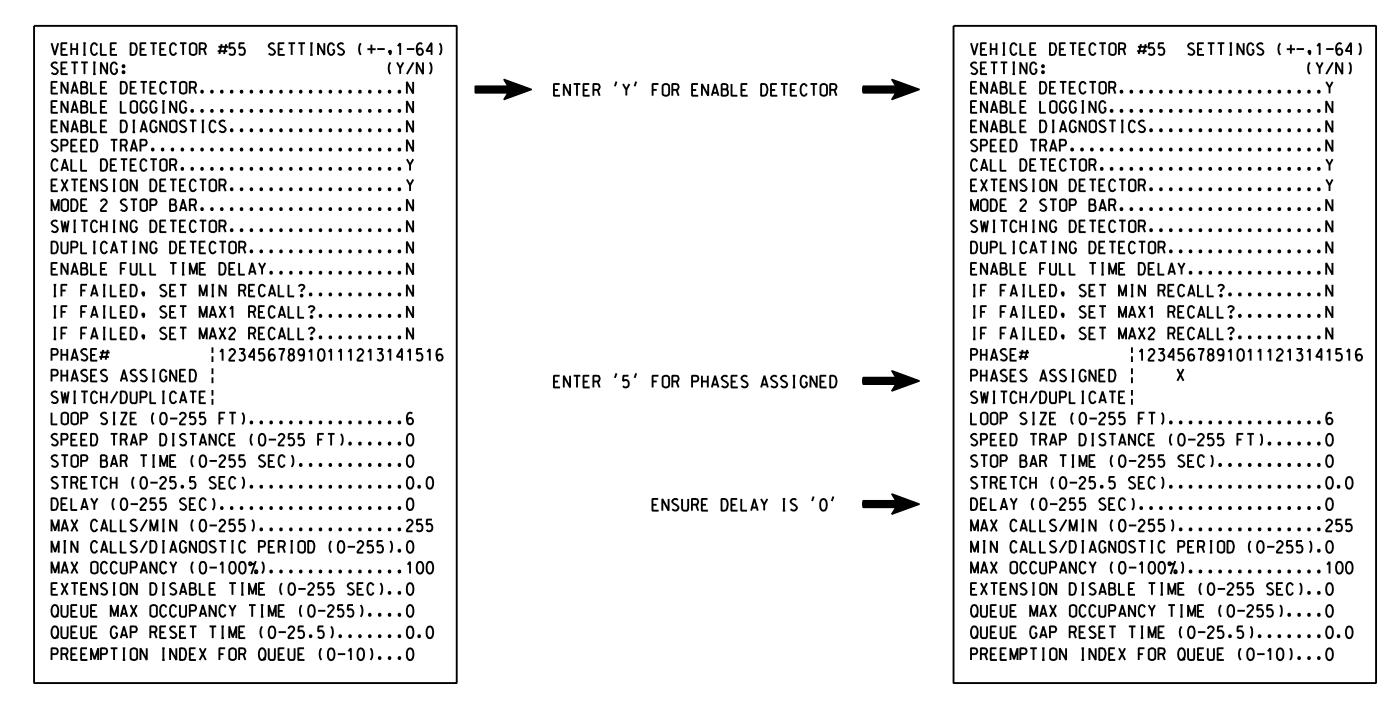
CHANGE PHASE CONTROL PAGE (1-4).... CHANGE OVERLAP CONTROL PAGE (1-4)... CHANGE INPUT PAGE (1-4)..... CHANGE OUTPUT PAGE (1-4)..... OVERRIDE PHASE CONTROL FUNCTION (Y)._

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. PRESS THE '-' KEY TO GET TO VEHICLE DETECTOR #55.

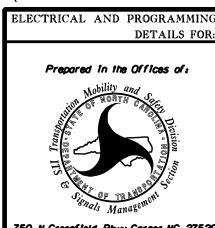


NOTE: DETECTOR IS PROGRAMMED PER THE INPUT FILE CONNECTION AND PROGRAMMING CHART SHOWN ON SHEET 1.

> THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0847T2 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade-Electrical Detail - Sheet 4 of 5 (Construction Phase 2A)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr/ Eaton Elementary School

ivision 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

COFESSION 1 031464 SIG. INVENTORY NO. 03-0847T

TH CARO,

DETECTOR PROGRAMMING COMPLETE

ALTERNATE PHASING ACTIVATION DETAIL

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

TO RUN ALT. PHASING DURING <u>FREE RUN</u> - 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 PHASIN</u> G	1	1
ACTIVE PAGES REQUIRED	TO RUN ALTERNATE PHASING	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 2

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.

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.

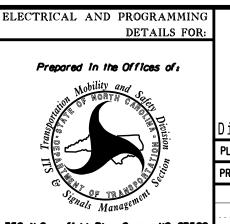
- 2. ON REAR OF PDA REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- 3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0847T2 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

Signal Upgrade-Electrical Detail - Sheet 5 of 5 (Construction Phase 2A)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr/ Eaton Elementary School

Division 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS

INIT. DATE

SIG. INVENTORY NO. 03-0847T2

CAROL NO SEESSION NO

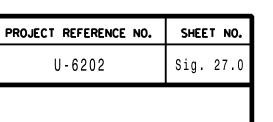
031464

DEFAULT PHASING DIAGRAM

02+6

02+5

01+6



5 Phase

Fully Actuated

Wilmington Signal System

NOTES

1. Refer to "Roadway Standard Drawings

"Standard Specifications for Roads

and Structures" dated January 2024.

flashing operation unless otherwise

2. Do not program signal for late night

directed by the Engineer.

mode

3. Phases 1 and/or 5 may be lagged.

5. Omit "WALK" and flashing "DON'T

6. Program pedestrian heads to

Walk" time only.

each phasing plan.

4. Set all detector units to presence

WALK" with no pedestrian calls.

All pedestrian pushbuttons shall be located in the field by the Division Traffic Engineer before installation.

will determine the hours of use for

8. The Division (City) Traffic Engineer

microwave detection. Install the

manufacturer's instructions to achieve the desired detection. 10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing

values supersede these values.

LEGEND

Traffic Signal Head

Modified Signal Head

Pedestrian Signal Head

Signal Pole with Guy Signal Pole with Sidewalk Guy Microwave Detection Zone Out of Pavement Detector

> Controller & Cabinet Junction Box

2-in Underground Conduit Right of Way

> Directional Arrow Directional Drill

Metal Strain Pole Type || Signal Pedestal

Curb Ramp

Right Arrow "Only" Sign (R3-5R)

(B) "RIGHT TURN YIELD TO U-TURN" Sign (B)

EXISTING

-

N/A

SEAL

TH CAROL NO PERSON NO PERS

031464

ACINEER.

Motasha R Simmons 5/17/202 SIGNATURE DATE SIG. INVENTORY NO. 03-0847

11. Signal system data: Controller

Asset #0847.

PROPOSED

 \bigcirc

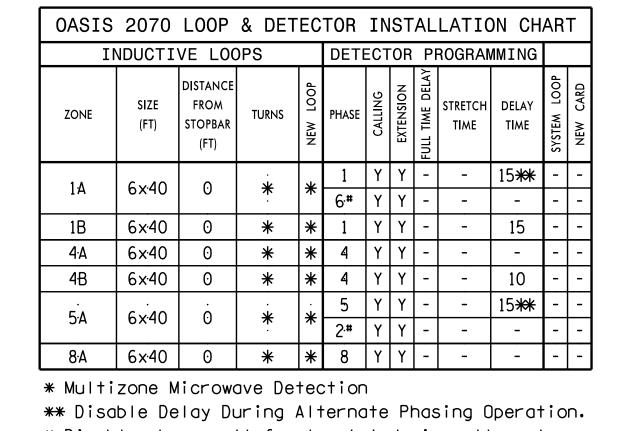
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9. This intersection uses multizone

detectors according to the

countdown the flashing "Don't

NCDOT" dated January 2024 and



- # Disable phase call for loop(s) during alternate
- phasing.

PHASING DIAGRAM I		LAP)		R / W-			-L- 8	sor 1 #4 5L1	02 0 - 63 0 - 62 0 - 61 11 11 43 P22	P61 81 82 83	P81 51 -0 21 -0 22 -0 23 -0 P82	Metal Pole #2 Std. Case S35L -L- STA. 140+5 LT 70' +/- Sensor 2 45 MPH 0% Gra Sidewalk Multi-Use Path	dededon Rd)	See Note 9	R/W R/W
	OASIS 20	70	ΓIMING	CHART	Γ		RT 59' -	+ / - 	land	8A B %					
			PHA					1	ther	WPH WPH	j				
FEATURE	1 2	2	4	5	6	8		, -	et/						
Min Green 1 *	5 1	2	5	5	12	5		R/W	Ne.	35	≥				
Extension 1 *	2.0 2.		2.0	2.0	2.0	2.0		E	8		A/				
Max Green 1 *		00	35	25	90	35			2698						
			-	7.0	4.5				• •						

SIGNAL FACE I.D.

All Heads L.E.D.

21,22 42,43

DEFAULT PHASING

TABLE OF OPERATION

SIGNAL

FACE

21,22

23

42,43

61,62

63

P21**,**P22

P61**,**P62

P81**,**P82

PHASE

R R G G R Y

RRFFRY

DW DW W W DW DRI

DW W DW W DW DRI

DW DW DW DW W DRI

ALTERNATE PHASING

TABLE OF OPERATION

SIGNAL

FACE

21,22

23

42,43

51

81,82

P21**,**P22

P61**,**P62

P81**,**P82

PHASE

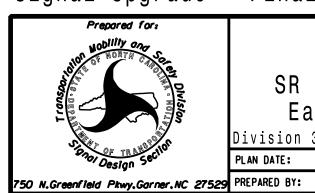
DW DW W W DW DRK

DW W DW W DW DRK

DW DW DW DW W DRK

Signal Upgrade - Final Design

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



1"=40'

SR 2048 (Gordon Rd) SR 2698 (Netherlands Dr)/ Eaton Elementary School

Division 3 New Hanover County May 2022 REVIEWED BY: N.K. Vlanich REVIEWED BY: N.R. SIMMONS E.E. Tiller

PLAN DATE: INIT. DATE REVISIONS

ALTERNATE PHASING DIAGRAM

02+6

02+5

P21,P22 P61,P62 P81,P82

23 63 83

Direction of Travel Detection Zone (ft) Enable Speed Speed Range (mph) **Enable Estimated Time of Arrivo** Estimated Time of Arrival (sec)

HNTB

* 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.

3.0

3.2

2.0

Yellow Clearance

Red Clearance

Red Revert

Don't Walk 1

Walk Advance Time

Seconds Per Actuation

Max Variable Initial *

Time To Reduce '

Vehicle Call Memory

Simultaneous Gap

Minimum Gap

Dual Entry

Time Before Reduction

4.5

1.7

2.0

19

MIN RECALL

YELLOW

_

3.7

3.6

2.0

-

ON

3.0

3.1

2.0

4.5

1.7

2.0

13

MIN RECALL

YELLOW

3.7

3.6

2.0

23

ON

ON

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RADAR DETECTION SYSTEM

Sensor 1

2

EB

100-600

35-100

1.0-6.5

Sensor 2

6

WB

100-600

35-100

Υ

1.0-6.5

FUNCTION

18 CHANNEL CONFLICT MONITOR ON OFF PROGRAMMING DETAIL WD ENABLE ((remove jumpers and set switches as shown) RP DISABLE **■** WD 1.0 SEC GY ENABLE 3. Enable Simultaneous Gap-Out for all Phases. SF#1 POLARITY ─ LEDguard ⊢RF SSM FYA COMPACT— 5. Program phases 2 and 6 for Yellow Flash, and overlaps **─**FYA 1-9 FYA 3-10 FYA 5-11 FYA 7-12 6. The cabinet and controller are part of the Wilmington Signal COMPONENT SIDE REMOVE JUMPERS AS SHOWN 1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently. DENOTES POSITION OF SWITCH 2. Ensure jumpers SEL2-SEL5 are present on the monitor board. 3. Ensure that Red Enable is active 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. INPUT FILE POSITION LAYOUT (front view) 11 12 13 14 10 Ø2PEDØ6PED FS

INPUT FILE CONNECTION & PROGRAMMING CHART

EQUIPMENT INFORMATION

LOAD SWITCHES USED......S1,S2,S3,S5,S7,S8,S9,S11,S12,AUX S1,

AUX S2.AUX S3.AUX S4.AUX S5.AUX S6

NOTES

heads flash in accordance with the Signal Plans.

2. Program phases 4 and 8 for Dual Entry.

1. 2 and 5 as Wag Overlaps.

CONTROLLER.....2070

CABINET MOUNT.....BASE

OVERLAP "A".....1+2

OVERLAP "B".....1+8

OVERLAP "C".....5+6

OVERLAP "D".....8

OVERLAP "E".....6 OVERLAP "F"...........2

SOFTWARE......ECONOLITE OASIS

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

System.

4. Program phases 2 and 6 for Startup In Green.

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

L00P NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME				
	TB2-1,2	IIU	56	18	1	1	Y	Υ			15				
1A	-	J4U	48	10 🛨	26	6	Y	Υ							
	-	IIU	56	18 ★	51	1	Y	Υ							
	TB3-1,2	JlU	55	17	5	5	Y	Υ			15				
5A	-	I4U	47	9 ★	22	2	Y	Υ							
	-	JlU	55	17 ★	55	5	Y	Υ							
PED PUSH BUTTONS							NOTE:								
P21 , P22	TB8-4,6	I12U	67	29	PED 2	2 PED	j	INSTALL	DC I	SOLATOR	S				
P61,P62	TB8-7 , 9	I13U	68	30	PED 6	6 PED]	IN INPL	JT FILI	E SLOTS					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED	I12 AND I13.								

★ See Input Page Assignment programming details on sheets 4 and 5.

INPUT FILE POSITION LEGEND: J2L FILE J SLOT 2-LOWER-

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.

LOAD RESISTOR INSTALLATION DETAIL

SPECIAL DETECTOR NOTE

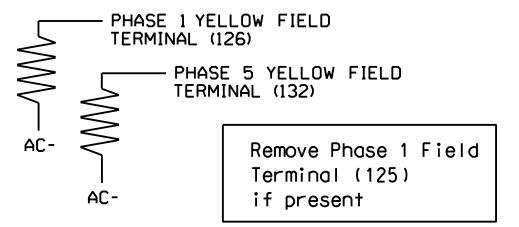
Install a multizone microwave detection system for vehicle detection. Perform installation according to manufacturer's directions and NCDOT engineer-approved mounting locations to

accomplish detection schemes shown on the Signal Design Plans.

(install resistors as shown below)

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

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



FS = FLASH SENSE ST = STOP TIME

> THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 03-0847 DESIGNED: May 2022 SEALED: 5/17/2024 REVISED:

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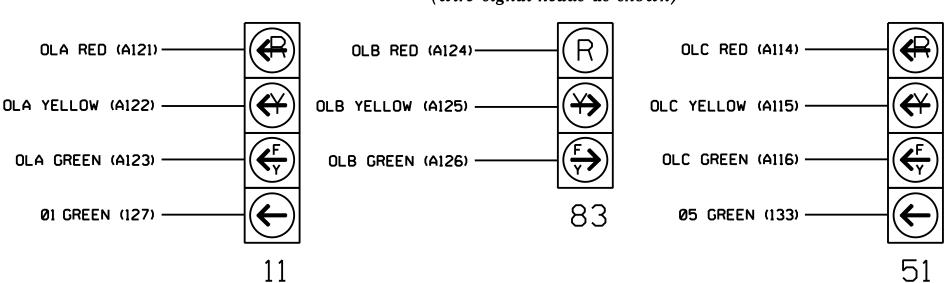
PROJECT REFERENCE NO. U-6202

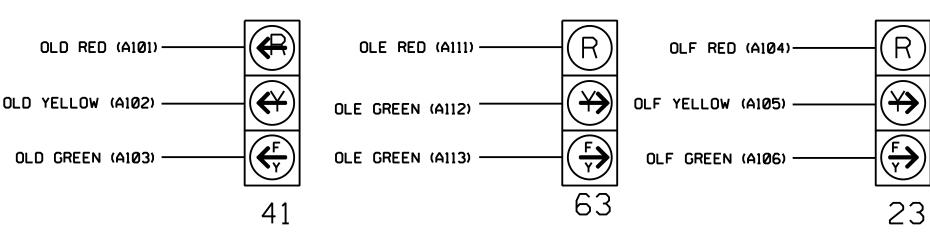
SIGNAL HEAD HOOK-UP CHART																		
LOAD SWITCH NO.	S1	S2	S 3	S4	S5	S6	S 7	S8	S 9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	OLE	OLC	OLD	OLF
SIGNAL HEAD NO.	11*	21,22	P21. P22	NU	42,43	NU	★ 51	61,62	P61. P62	NU	81,82	P81. P82	11	83 **	★ 63	★ 51	41	23
RED		128			101			134			107			A124				A104
YELLOW	*	129			102		*	135			108							
GREEN		130			103			136			109							
RED ARROW													A121		A111	A114	A101	
YELLOW ARROW													A122	A125	A112	A115	A102	A105
FLASHING YELLOW ARROW													A123	A126	A113	A116	A103	A106
GREEN ARROW	127						133											
₩			113						119			110						
χ̈́			115						121			112						
 NU = 1		Usec	<u> </u>								•	ı	•					

- * Denotes install load resistor. See load resistor installation detail
- ★ See pictorial of head wiring in detail this sheet. NOTE: Load switches AUX S3 and AUX S6 require output remapping. See Sheets 7 and 8 of this electrical detail for instructions.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

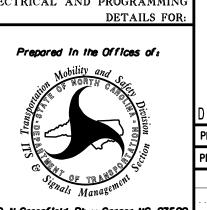




The sequence display for signal heads 11 and 51 require special logic programming. See sheet 2 for programming instructions.

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NOTE

Electrical Detail - Sheet 1 of 8 ELECTRICAL AND PROGRAMMING

SR 2048 (Gordon Rd)

Division 3 New Hanover County Wilmington PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons REVISIONS INIT. DATE

SIG. INVENTORY NO. 03-0847

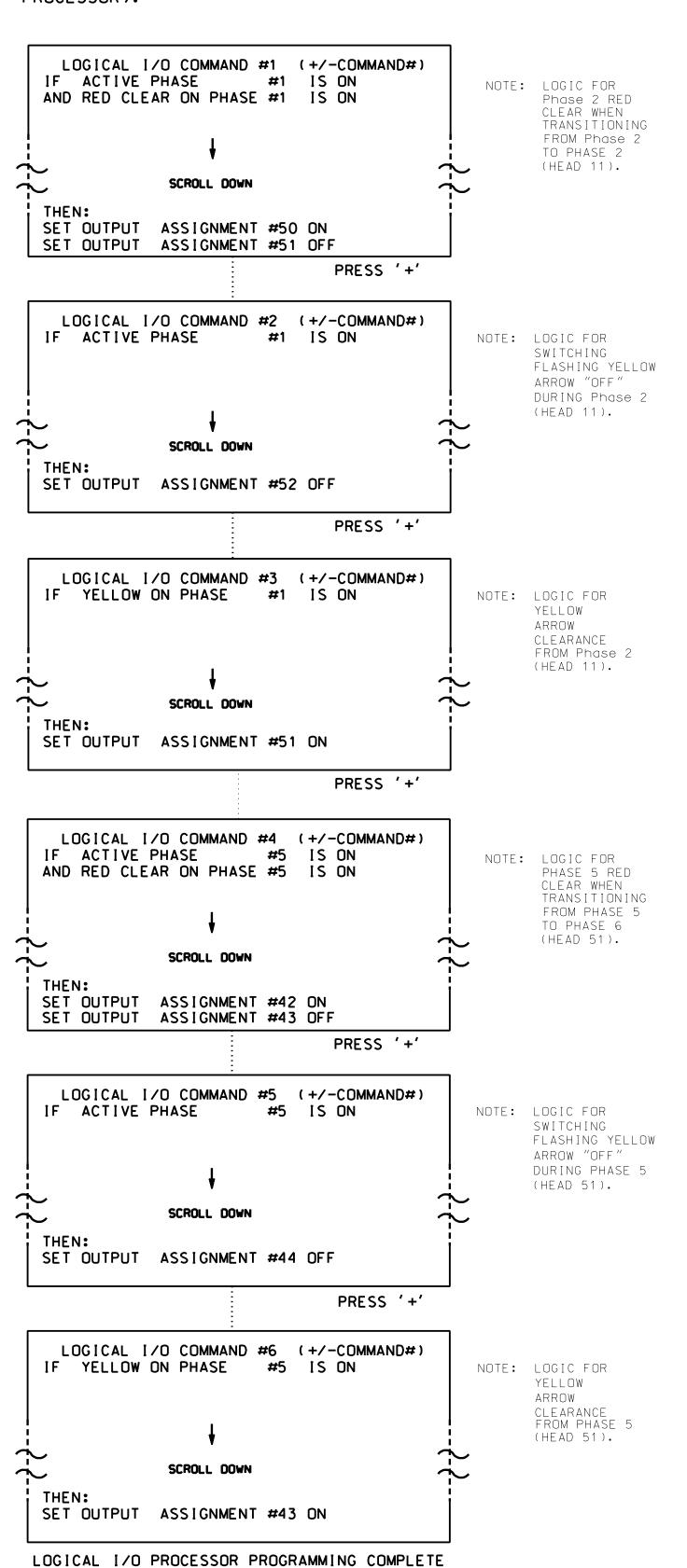
U-6202 Sig. 27.2

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE

(program controller as shown below)

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



OUTPUT REFERENCE SCHEDULE

USE TO INTERPRET LOGIC PROCESSOR

OUTPUT 42 = Overlap C Red
OUTPUT 43 = Overlap C Yellow

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

Prepared In the Offices of:

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A

Signal Upgrade - Final Design
Electrical Detail - Sheet 2 of 8

ELECTRICAL AND PROGRAMMING SR 2048 (Gordon

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THIS ELECTRICAL DETAIL IS FOR

THE SIGNAL DESIGN: 03-0847

DESIGNED: May 2022 SEALED: 5/17/2024

REVISED:

SR 2048 (Gordon Rd)

at

SR 2698 (Netherlands Dr/

Eaton Elementary School

Division 3 New Hanover County Wilmington

PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich
PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons
REVISIONS INIT. DATE

O3I464

Docusigned by Matasha R Simmons
SIGNATURE
FOLDAGOUF SALUADA...
SIG. INVENTORY NO. 03-0847

CAROLINE ESSION NO

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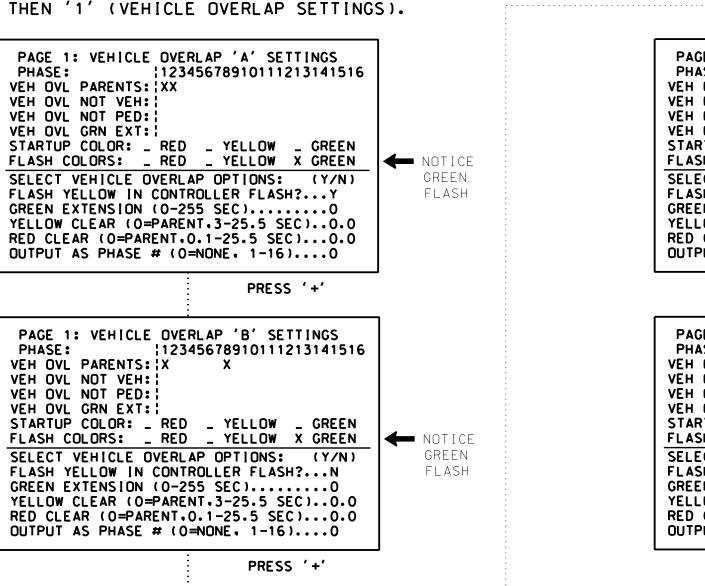
HNTB NORTH CAROLINA, P.C.

750 N.Greenfield Pkwy.Garner.NC 27529

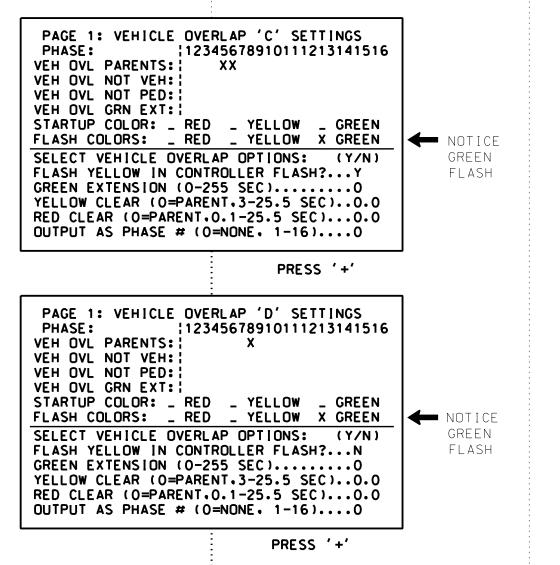
OVERLAP PROGRAMMING DETAIL FOR DEFAULT PHASING

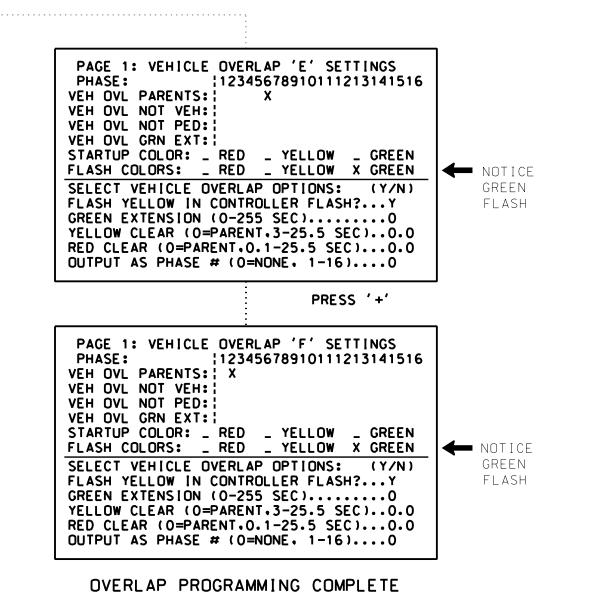
(program controller as shown below)

PROJECT REFERENCE NO. Sig 27 U-6202



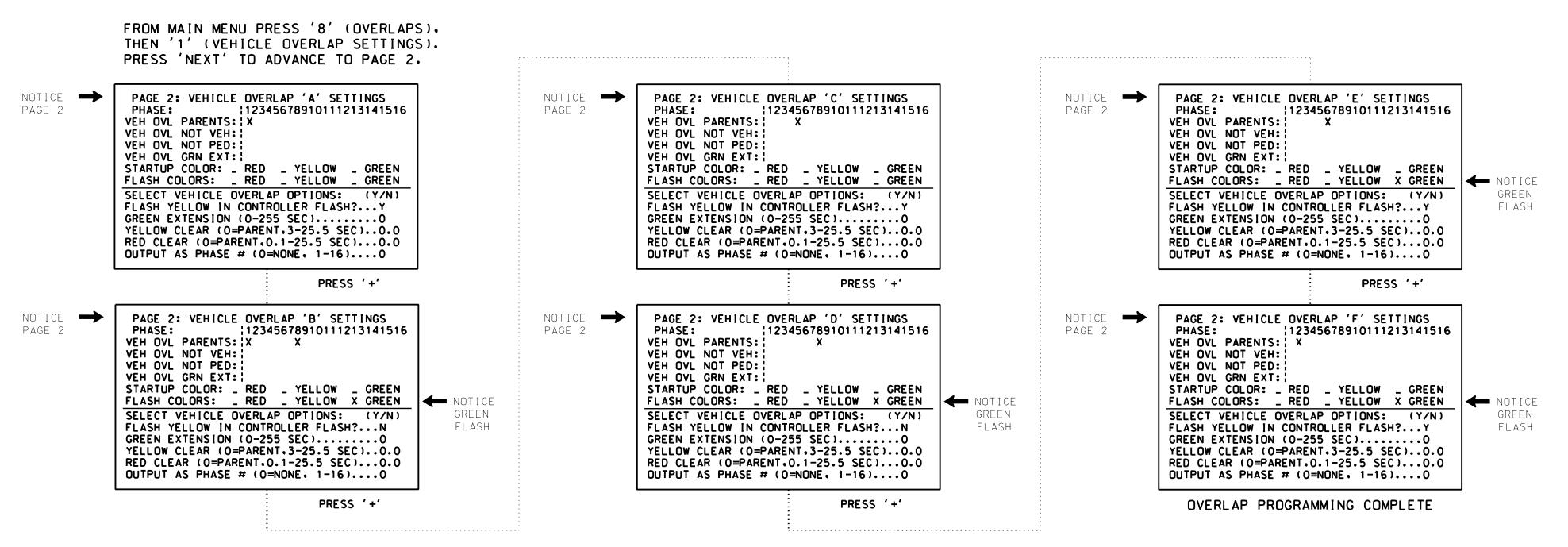
FROM MAIN MENU PRESS '8' (OVERLAPS).





OVERLAP PROGRAMMING DETAIL FOR ALTERNATE PHASING

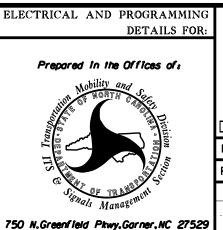
(program controller as shown below)



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Signal Upgrade - Final Design Electrical Detail - Sheet 3 of 8

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ivision 3 New Hanover County PLAN DATE: August 2023 REVIEWED BY: N.K. Vlanich PREPARED BY: E.E. Tiller REVIEWED BY: N.R. Simmons INIT. DATE REVISIONS

031464 ENCINEER <u>Natasha R Simmons</u> SIGNATURE

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