

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

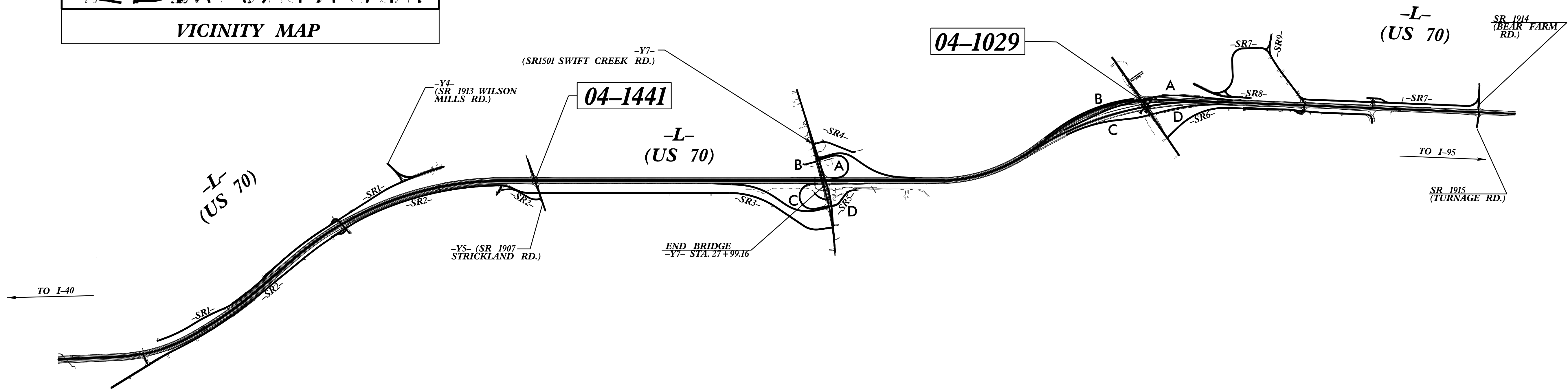
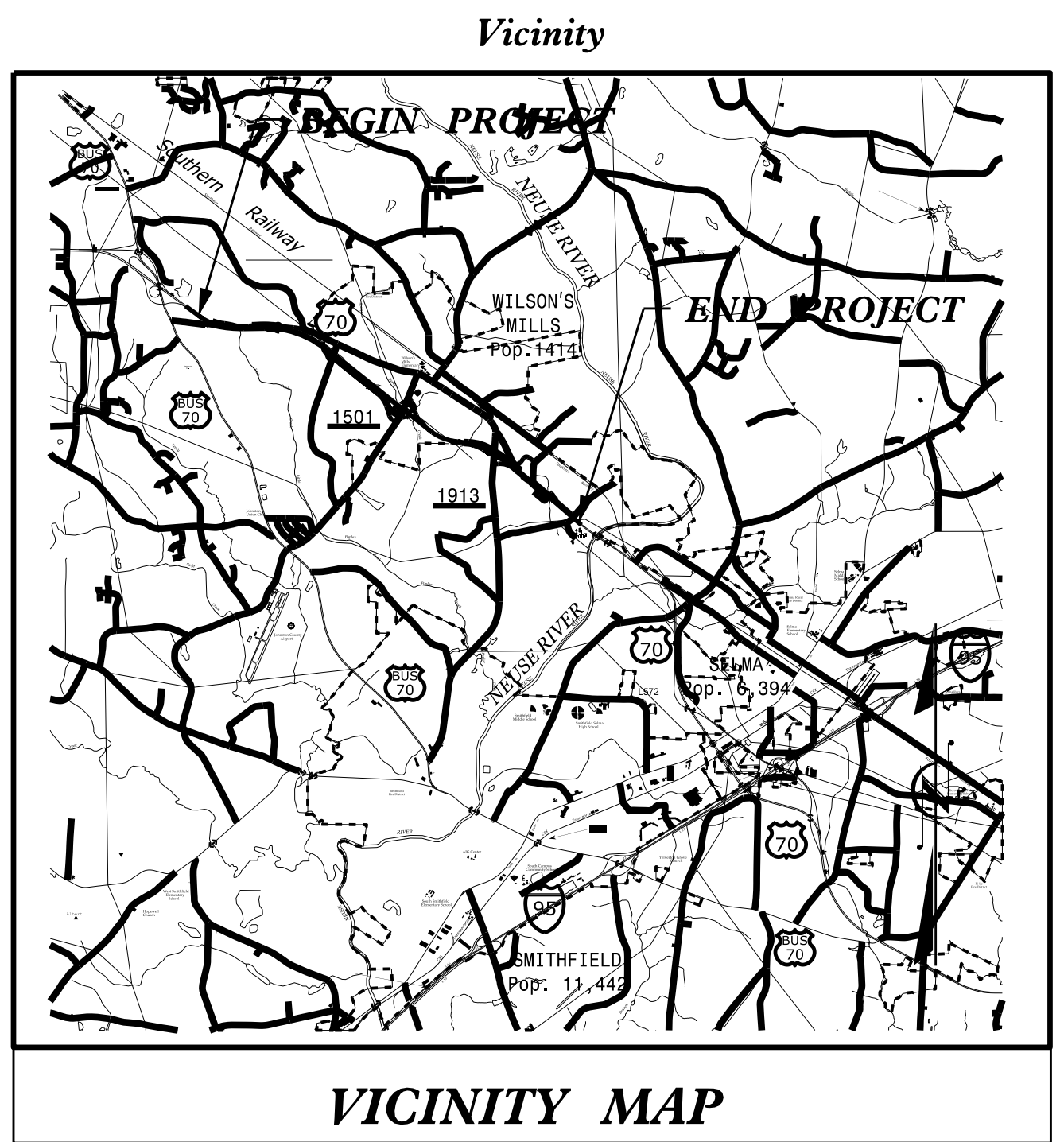
JOHNSTON COUNTY

LOCATION: US 70 FROM EAST OF US 70 BUSINESS TO WEST OF NEUSE RIVER.

TYPE OF WORK: TRAFFIC SIGNAL



Project: W-5600



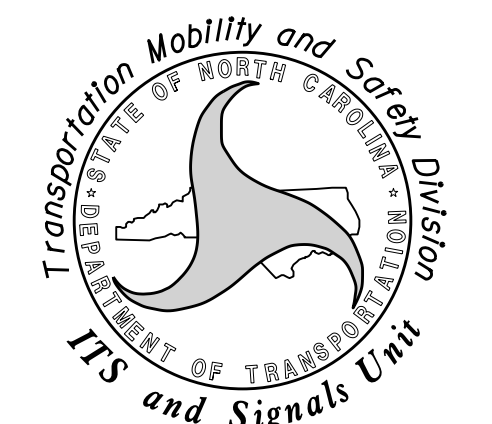
Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.

Sheet #	Reference #	Index of Plans	Location/Description
Sig. 1.0		Title Sheet	
Sig. 2.0-2.1	04-1441	US 70 at SR 1907 (Strickland Road)	
Sig. 3.0-3.5	04-1029	US 70 at SR 1913 (Wilson's Mills Road)	
Sig. 4.0-4.1	N/A	Standard Platesheets	

INTELLIGENT TRANSPORTATION AND SIGNALS UNIT
Contacts:

Zachary M. Little, PE - Eastern Region Signals Engineer
Ryan W. Hough, PE - Signals Equipment Design Engineer

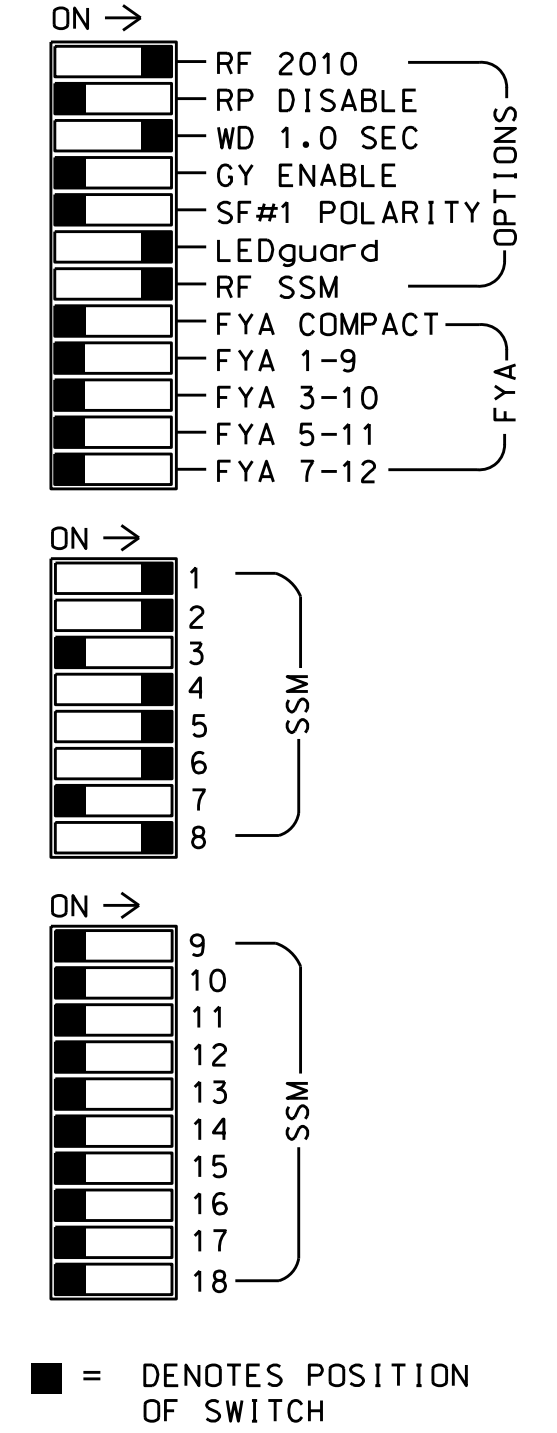
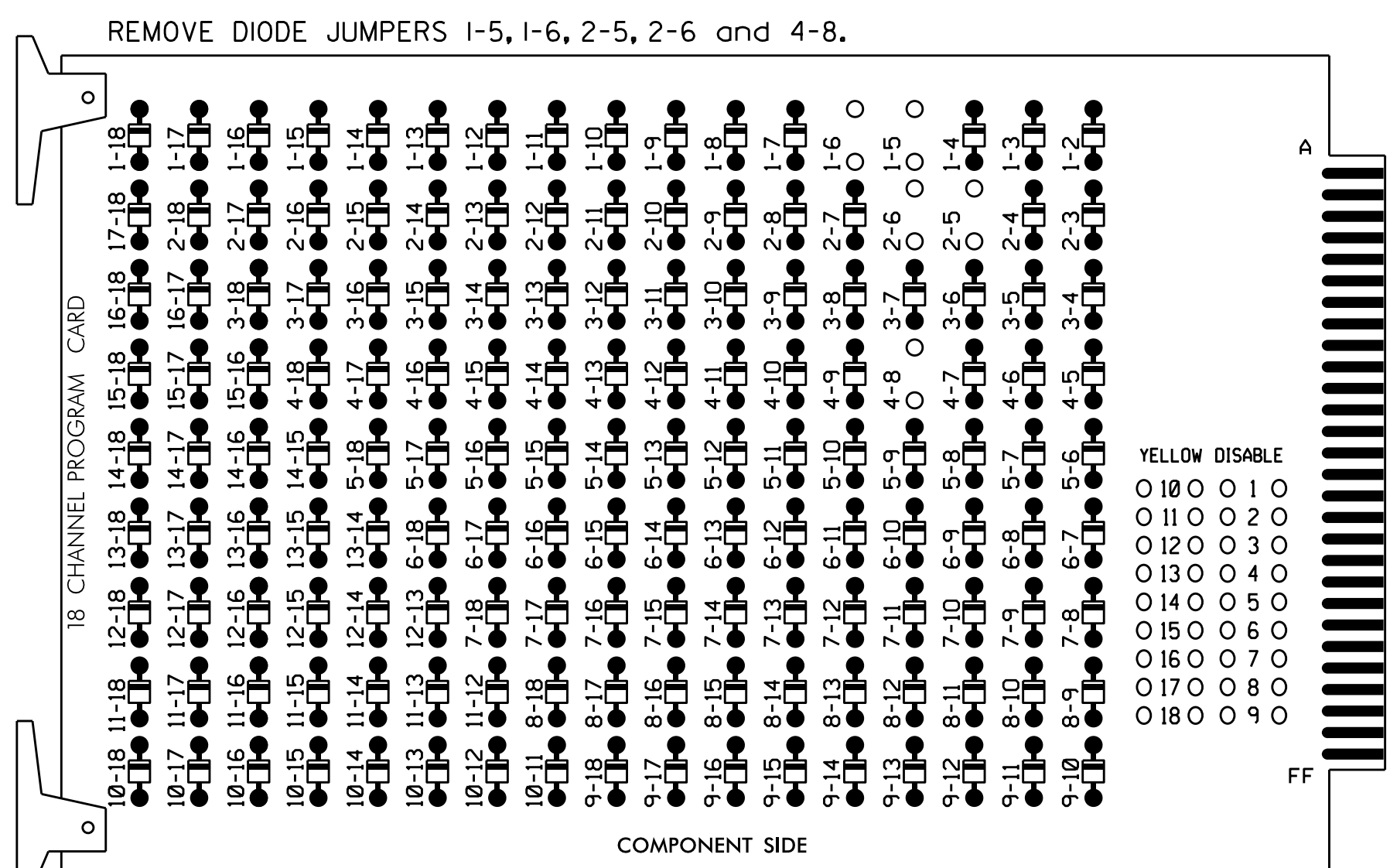
Prepared in the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY
DIVISION



P5: JUL 2019 09:46 P:\as\fric\signals\Design\Signals\04-1441\w5600-01\title sheet.dgn

EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Enable Simultaneous Gap-Out for all Phases.
4. Program phases 2 and 6 for Variable Initial and Gap Reduction.
5. Program phases 2 and 6 for Startup In Green.
6. Program phases 2 and 6 for Yellow Flash.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....336
 SOFTWARE.....ECONOLITE OASIS
 CABINET MOUNT.....POLE
 OUTPUT FILE POSITIONS...12
 LOAD SWITCHES USED.....S1,S2,*S3,S5,*S6,S7,
 S8,*S9,S11,*S12
 PHASES USED.....1,2,4,5,6,7,8
 OVERLAPS.....NONE
 *Used for advance beacons.

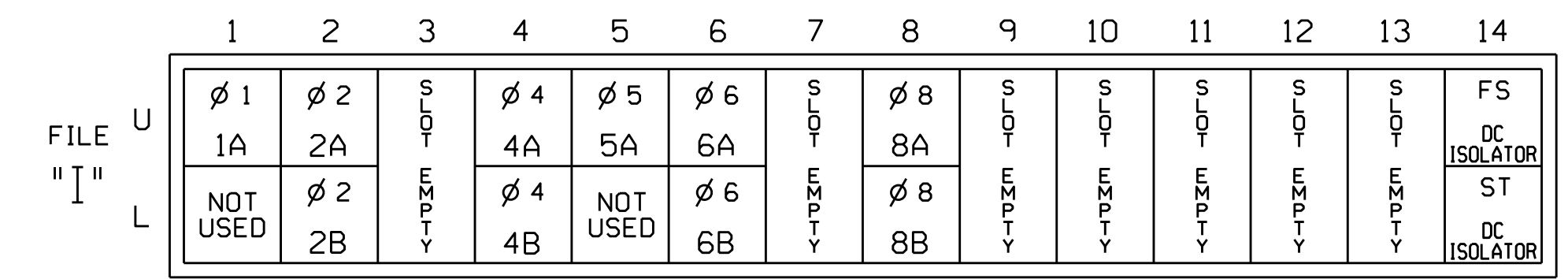
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12				
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16				
PHASE	1	2	2 PED ADVANCE BEACON	3	4	4 PED ADVANCE BEACON	5	6	6 PED ADVANCE BEACON	7	8	8 PED ADVANCE BEACON				
SIGNAL HEAD NO.	11	21,22	NU	23,25	NU	41,42	NU	24,26	51	61,62	NU	63,65	NU	81,82	NU	84,86
RED		128				101				134						107
YELLOW		129				102				135						108
GREEN		130				103				136						109
RED ARROW	125									131						
YELLOW ARROW	126									132						
GREEN ARROW	127									133						
PED YELLOW				**				**		**		**				**
			*			*		*		*		*			*	

NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 ** A Special Advanced Beacon is wired to S3-Y,S6-Y, S9-Y and S12-Y. See wiring and programming detail on Sheet 2 of this electrical detail.

INPUT FILE POSITION LAYOUT

(front view)

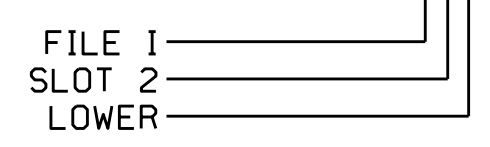


EX. : 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A	TB21-1,2	I1U	56	18	1	1	Y	Y			
2A	TB21-3,4	I2U	39	1	2	2	Y	Y			
2B	TB23-3,4	I2L	43	5	12	2	Y	Y			
4A	TB21-7,8	I4U	41	3	4	4	Y	Y			5
4B	TB23-7,8	I4L	45	7	14	4	Y	Y			15
5A	TB21-9,10	I5U	55	17	5	5	Y	Y			
6A	TB21-11,12	I6U	40	2	6	6	Y	Y			
6B	TB23-11,12	I6L	44	6	16	6	Y	Y			
8A	TB22-1,2	I8U	42	4	8	8	Y	Y			5
8B	TB24-1,2	I8L	46	8	18	8	Y	Y			15

INPUT FILE POSITION LEGEND: I2L



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1441
 DESIGNED: June 2019
 SEALED: 6-27-19
 REVISED: N/A

Electrical Detail - Temp. - Sheet 1 of 2

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 70
at
SR 1907 (Strictland Rd.)

Division 4 Johnston County Clayton

PLAN DATE: June 2019 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS: _____ INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

DocuSigned by: Ryan W. Hough 6/27/2019

SIG. INVENTORY NO. 04-1441

27-June-2019 11:19
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 J. Peterson

ADVANCE BEACON OUTPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), PRESS '+' UNTIL OUTPUT #33 (PIN 35) IS REACHED.

```

PAGE:1 C1 PIN:35 NOT ENABLED
OUTPUT ASSIGNMENT #.....33
FREQUENCY (0=DEFAULT) (0-25.5 HZ).....1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%).....50
MODE (0=SOLID,1=FLASH).....1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE FIRST THREE PROGRAMMING ROWS DEFINE THE OUTPUT TO FLASH, ALONG WITH THE RATE IN WHICH IT WILL FLASH.

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:35 NOT ENABLED
SELECT BEACON INDEX (1-4).....1
    
```

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

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

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'ADVANCE BEACON' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:35 ADVANCE BEACON
OUTPUT ASSIGNMENT #.....33
FREQUENCY (0=DEFAULT) (0-25.5 HZ).....1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%).....50
MODE (0=SOLID,1=FLASH).....1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), PRESS '+' UNTIL OUTPUT #34 (PIN 36) IS REACHED.

```

PAGE:1 C1 PIN:36 NOT ENABLED
OUTPUT ASSIGNMENT #.....34
FREQUENCY (0=DEFAULT) (0-25.5 HZ).....1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%).....50
MODE (0=SOLID,1=FLASH).....1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE FIRST THREE PROGRAMMING ROWS DEFINE THE OUTPUT TO FLASH, ALONG WITH THE RATE IN WHICH IT WILL FLASH.

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:36 NOT ENABLED
SELECT BEACON INDEX (1-4).....2
    
```

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

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

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'ADVANCE BEACON' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:36 ADVANCE BEACON
OUTPUT ASSIGNMENT #.....34
FREQUENCY (0=DEFAULT) (0-25.5 HZ).....1.0
DUTY CYCLE (0=DEFAULT) (0 - 100%).....50
MODE (0=SOLID,1=FLASH).....1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

Output #33 = Ø2 Ped Yellow
Output #34 = Ø6 Ped Yellow
Output #35 = Ø4 Ped Yellow
Output #36 = Ø8 Ped Yellow

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), PRESS '+' UNTIL OUTPUT #35 (PIN 37) IS REACHED.

```

PAGE:1 C1 PIN:37 NOT ENABLED
OUTPUT ASSIGNMENT #.....35
FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%).....0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:37 NOT ENABLED
SELECT OUTPUT ASSIGNMENT (1-64).....33
    
```

WHEN A 'Y' IS ENTERED FOR 'OUT OF PHASE FLASHER' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

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

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'OUT OF PHASE FLASHER' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:37 OUT OF PHASE FLASHER
OUTPUT ASSIGNMENT #.....35
FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%).....0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), PRESS '+' UNTIL OUTPUT #36 (PIN 38) IS REACHED.

```

PAGE:1 C1 PIN:38 NOT ENABLED
OUTPUT ASSIGNMENT #.....36
FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%).....0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:38 NOT ENABLED
SELECT OUTPUT ASSIGNMENT (1-64).....34
    
```

WHEN A 'Y' IS ENTERED FOR 'OUT OF PHASE FLASHER' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

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

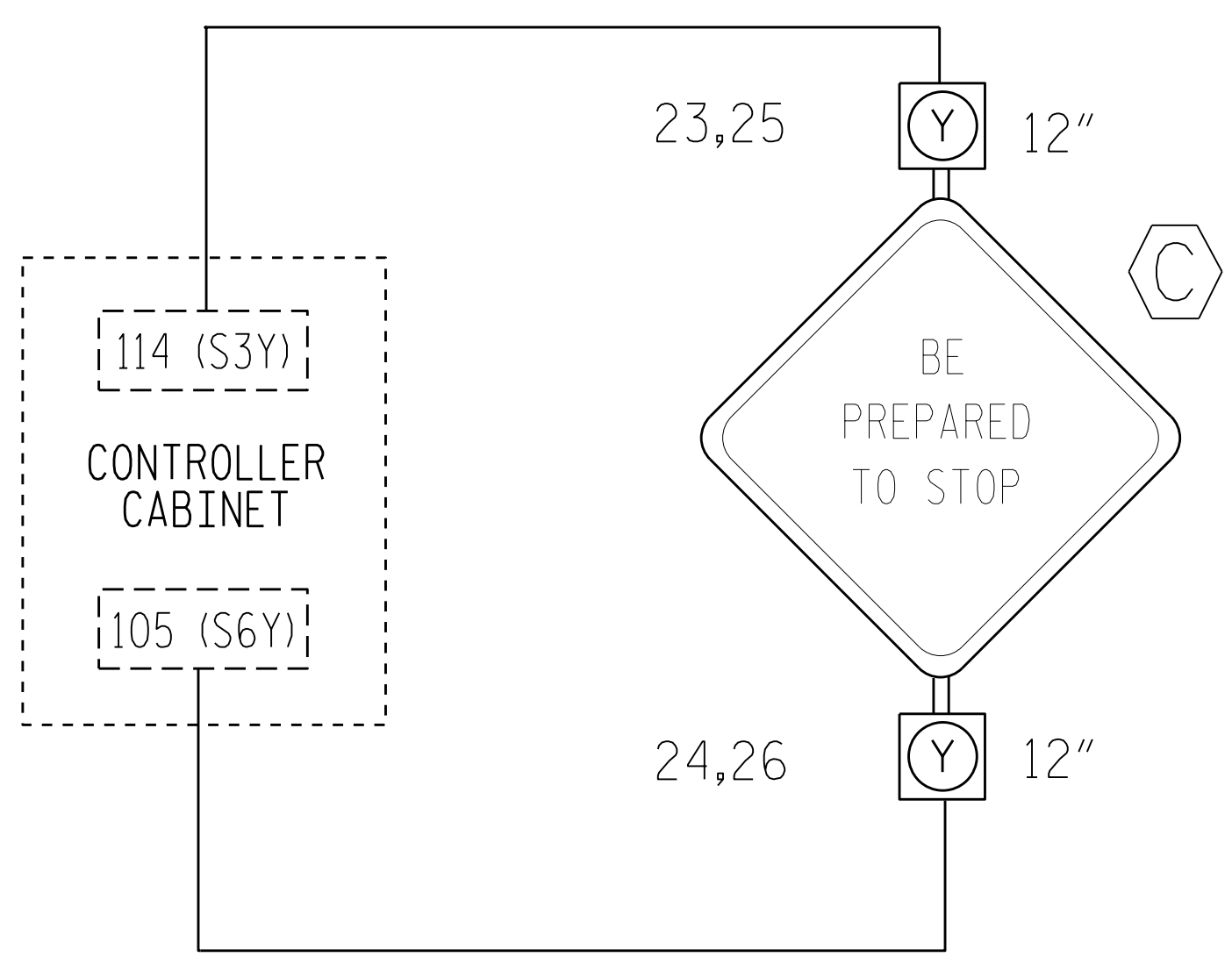
DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'OUT OF PHASE FLASHER' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:38 OUT OF PHASE FLASHER
OUTPUT ASSIGNMENT #.....36
FREQUENCY (0=DEFAULT) (0-25.5 HZ).....0.0
DUTY CYCLE (0=DEFAULT) (0 - 100%).....0
MODE (0=SOLID,1=FLASH).....0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

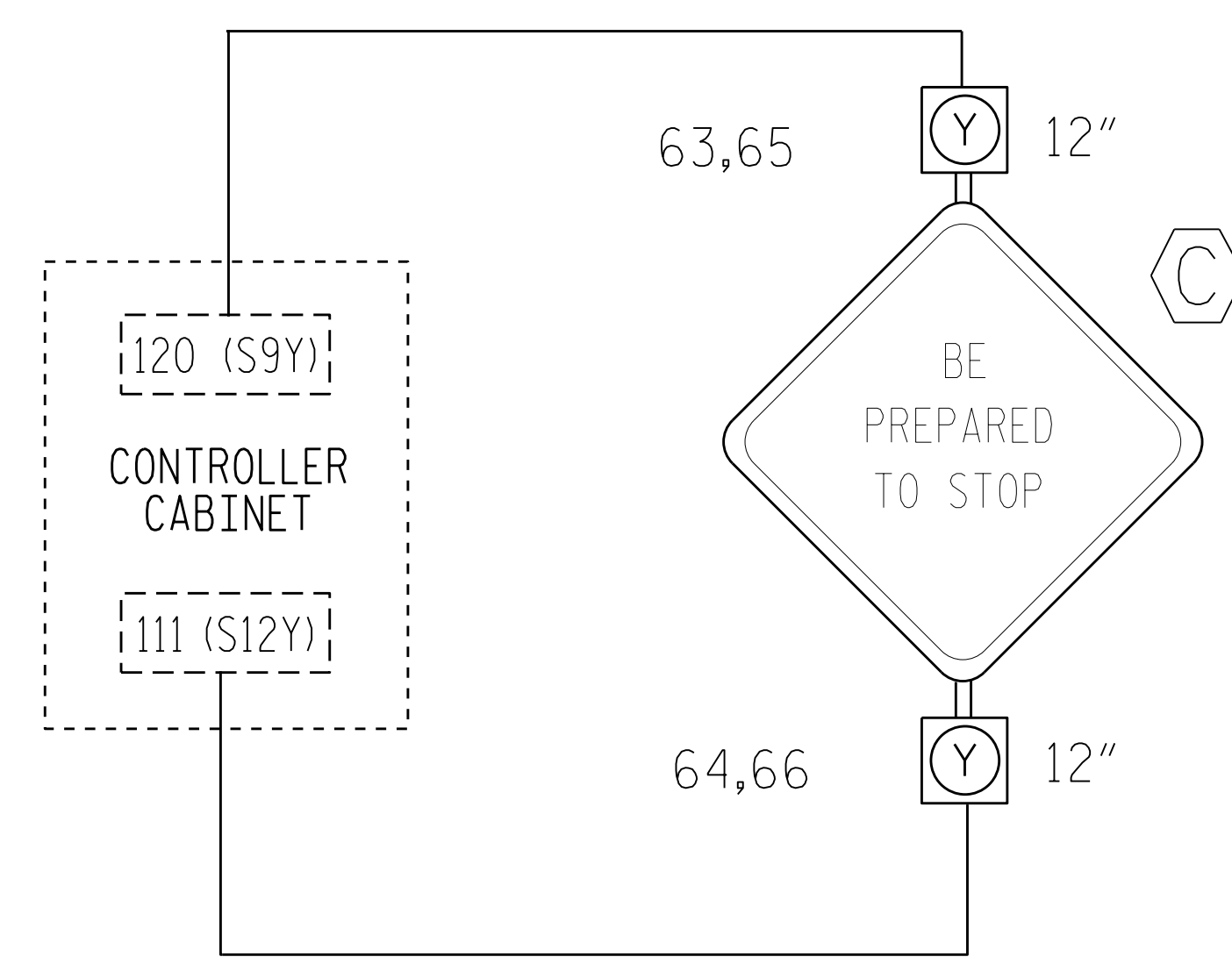
ADVANCE BEACON WIRING DETAIL

(wire flashers as shown below)



IMPORTANT

1. REMOVE, TAPE AND LABEL CONFLICT MONITOR WIRE ATTACHED TO THE REAR OF TERMINAL 114 (2PY) AND TERMINAL 105 (4PY).
2. INSERT LOADSWITCH FOR S3 AND S6.
3. MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN ON LOAD RESISTOR INSTALLATION DETAIL ON SHEET 1 OF 5.
4. TO PRODUCE FLASHING OPERATION AS INDICATED ON THE SIGNAL PLANS, RE-ASSIGN OUTPUTS 33 AND 35 AS SHOWN ON THIS SHEET.



IMPORTANT

1. REMOVE, TAPE AND LABEL CONFLICT MONITOR WIRE ATTACHED TO THE REAR OF TERMINAL 120 (6PY) AND TERMINAL 111 (8PY).
2. INSERT LOADSWITCH FOR S9 AND S12.
3. MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN ON LOAD RESISTOR INSTALLATION DETAIL ON SHEET 1 OF 5.
4. TO PRODUCE FLASHING OPERATION AS INDICATED ON THE SIGNAL PLANS, RE-ASSIGN OUTPUTS 34 AND 36 AS SHOWN ON THIS SHEET.

ADVANCE BEACON PROGRAMMING DETAIL

(program controller as shown below)

1. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '2' (OUTPUT BEACON SETTINGS).

```

OUTPUT BEACON SETTINGS
TRIGGER PHASES: 12345678910111213141516
BEACON #1 OFF X
BEACON #2 OFF X
BEACON #3 OFF
BEACON #4 OFF
OFF DELAY TIME (0-255); 0 0 0 0
ON DELAY TIME (0-255); 0 0 0 0
STOP-TIME HOLD (0-255); 2 2 0 0
    
```

SCROLL DOWN TO VIEW ALL DATA

ADVANCE BEACON PROGRAMMING COMPLETE

NOTE: AN OUTPUT HAS TO BE ASSIGNED AS AN ADVANCE BEACON IN ORDER FOR PROPER OPERATION TO OCCUR. SEE OUTPUT ASSIGNMENT DETAIL ON THIS SHEET.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1441
DESIGNED: June 2019
SEALED: 6-27-19
REVISED: N/A

Electrical Detail - Temp. - Sheet 2 of 2

Electrical and Programming Details For:

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

US 70 at SR 1907 (Strictland Rd.)

Division 4 Johnston County Clayton

PLAN DATE: June 2019 REVIEWED BY:

PREPARED BY: James Peterson REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

SEAL 036833

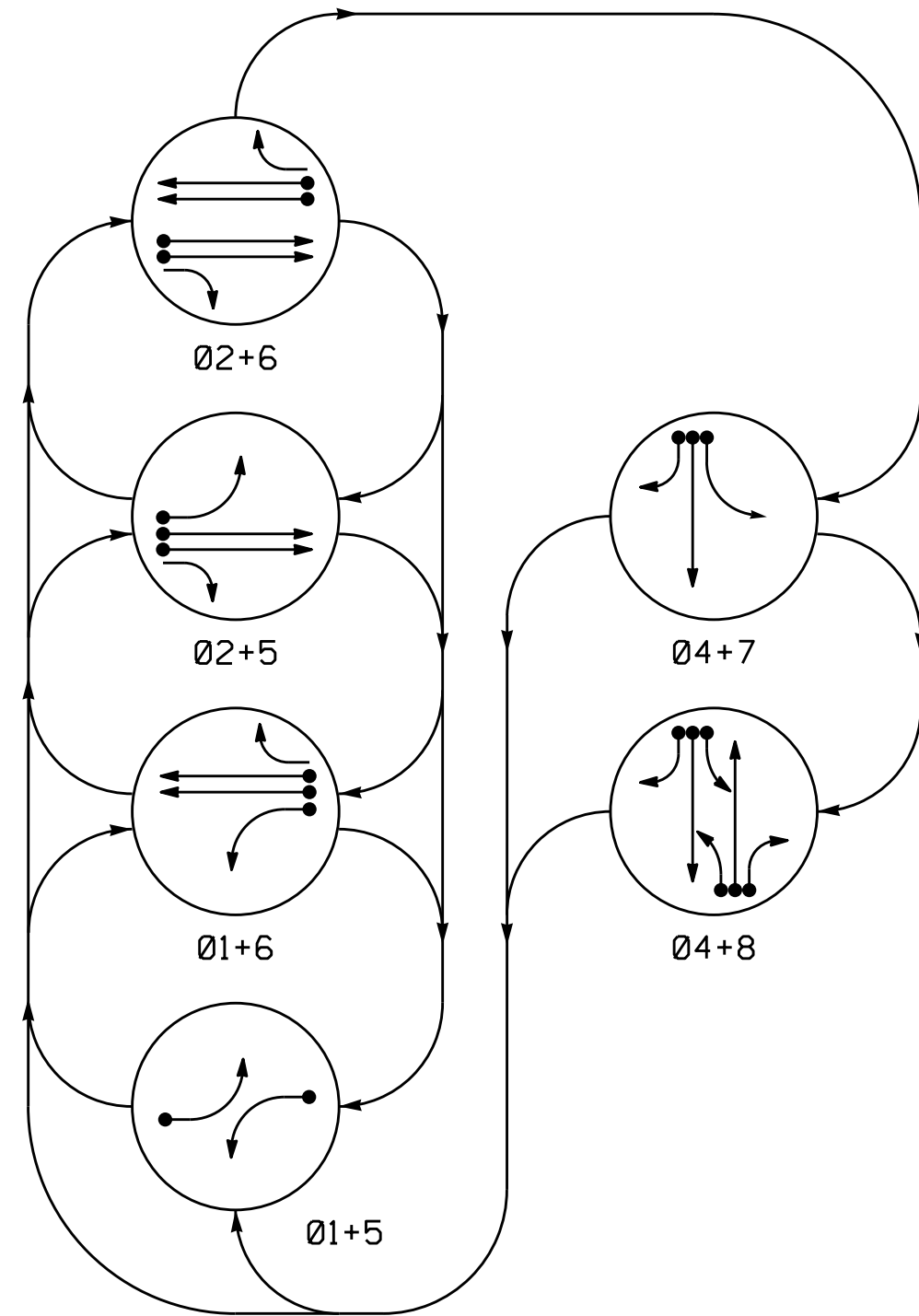
ENGINEER RYAN W. HOUGH

DocuSigned by: Ryan W. Hough 6/27/2019

SIG. INVENTORY NO. 04-1441

27-jul-2019 10:54
4011441_sml_elec_20190619.dgn
jpeterson

PHASING DIAGRAM

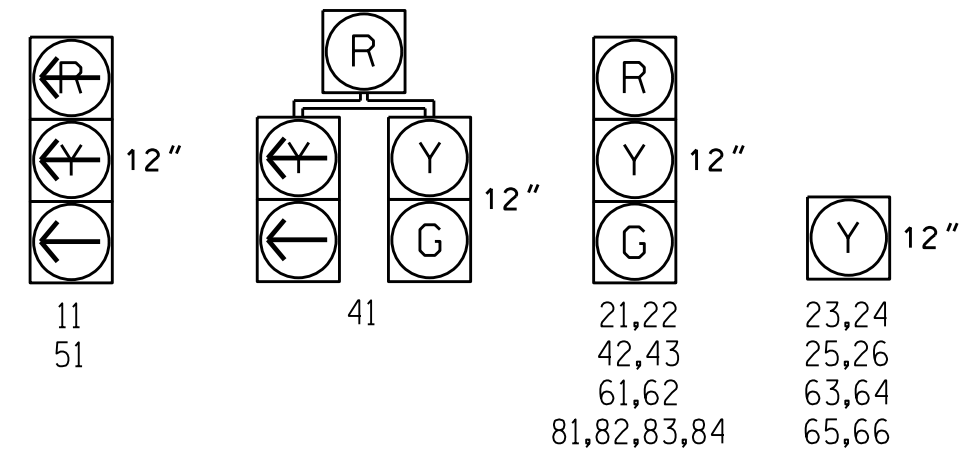


SIGNAL FACE	PHASE						
	01+5	01+6	02+5	02+6	04+7	04+8	FLTS
11	←	←	←	←	←	←	←
21,22	R	R	G	G	R	R	Y
41	R	R	R	R	G	G	R
42,43	R	R	R	R	G	G	R
51	←	←	←	←	←	←	←
61,62	R	G	R	G	R	R	Y
81,82,83,84	R	R	R	R	R	G	R

SIGNAL FACE	INTERVAL	
	1	2
23,25	ON	OFF
24,26	OFF	ON
63,65	ON	OFF
64,66	OFF	ON

SIGNAL FACE I.D.

All Heads L.E.D.

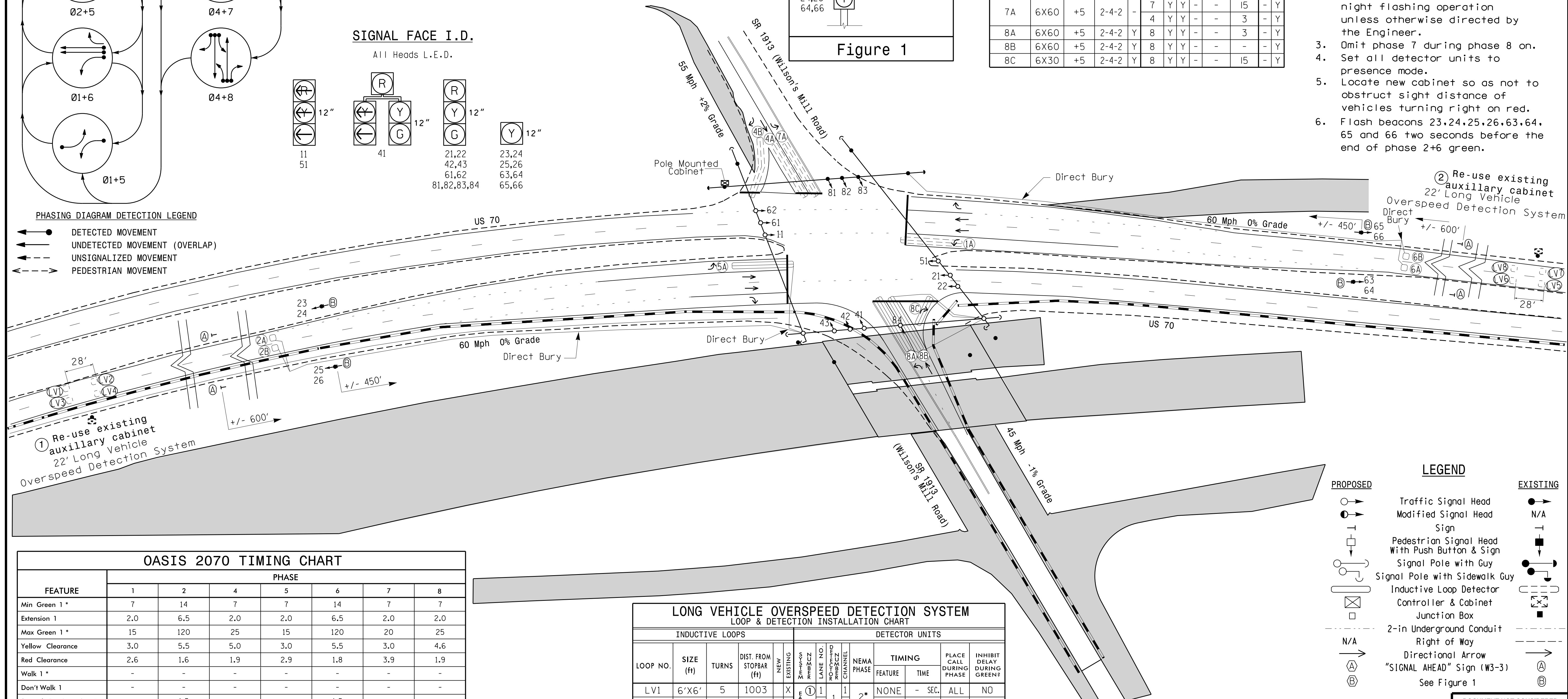
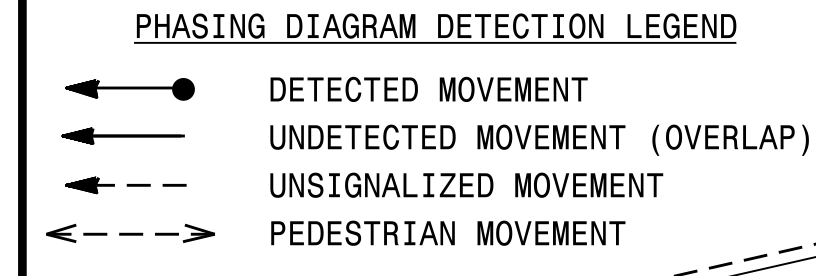
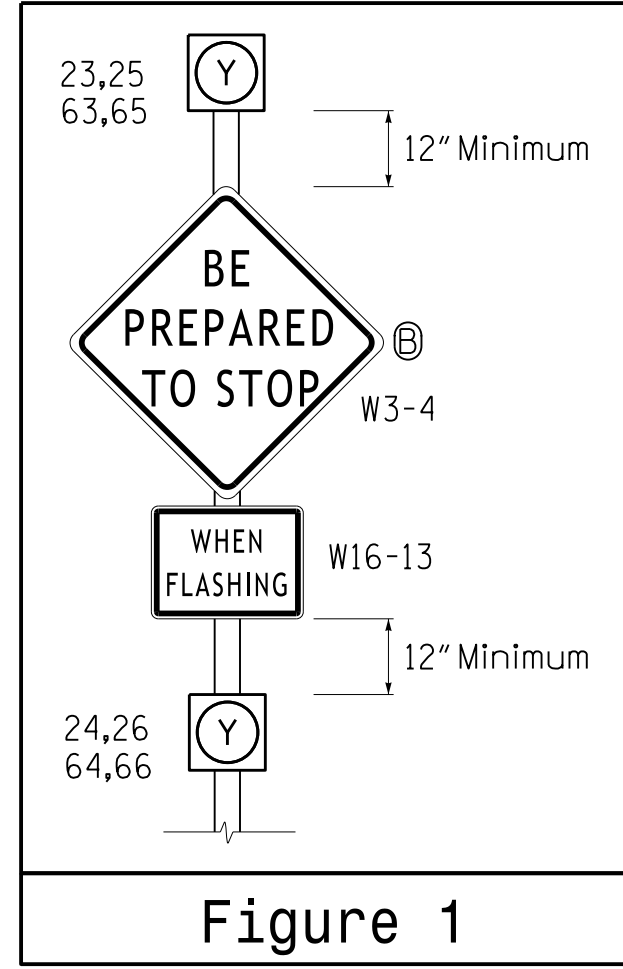


LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING						
					PHASE	CALLING	EXTENSION	STRETCH TIME	DELAY TIME	SYSTEM LOOP	
1A	6X60	+5	2-4-2	-	1	Y	Y	-	-	-	Y
2A	6X6	500	5	Y	2	Y	Y	-	-	-	Y
2B	6X6	500	5	Y	2	Y	Y	-	-	-	Y
4A	6X60	+5	2-4-2	-	4	Y	Y	-	-	-	Y
4B	6X60	+5	2-4-2	-	4	Y	Y	-	-	-	Y
5A	6X60	+5	2-4-2	Y	5	Y	Y	-	-	-	Y
6A	6X6	500	5	Y	6	Y	Y	-	-	-	Y
6B	6X6	500	5	Y	6	Y	Y	-	-	-	Y
7A	6X60	+5	2-4-2	-	7	Y	Y	-	-	-	Y
8A	6X60	+5	2-4-2	Y	8	Y	Y	-	-	-	Y
8B	6X60	+5	2-4-2	Y	8	Y	Y	-	-	-	Y
8C	6X30	+5	2-4-2	Y	8	Y	Y	-	-	-	Y

6 Phase Full Actuated Isolated

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Omit phase 7 during phase 8 on.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Flash beacons 23,24,25,26,63,64, 65 and 66 two seconds before the end of phase 2+6 green.



OASIS 2070 TIMING CHART

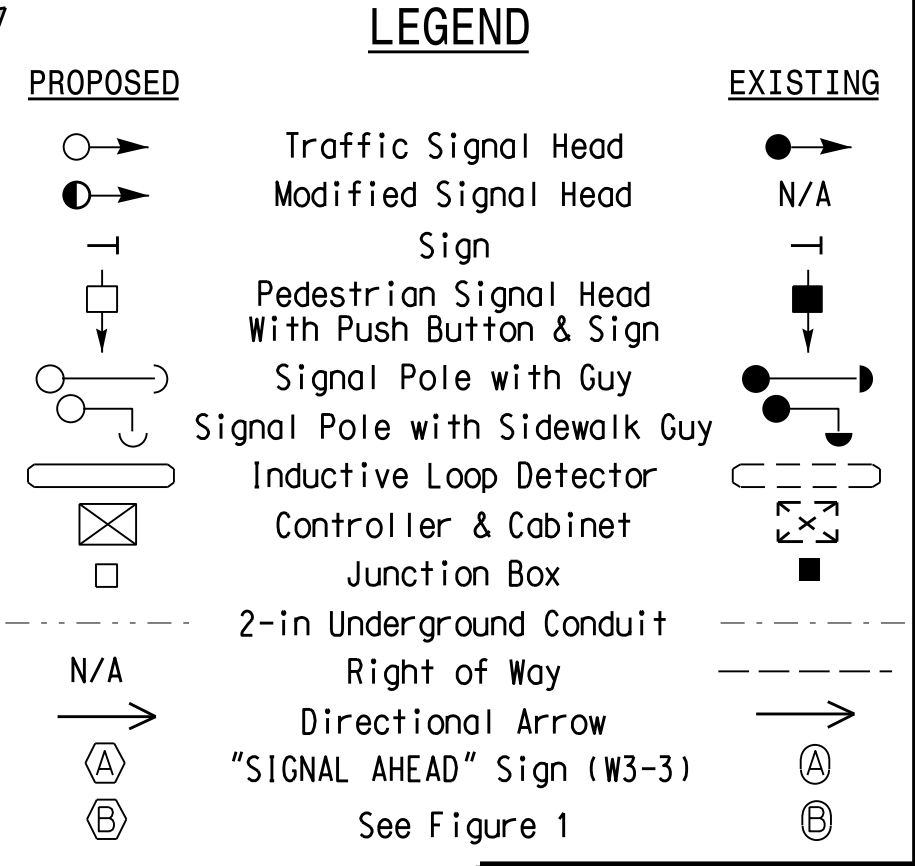
FEATURE	PHASE							
	1	2	4	5	6	7	8	
Min Green 1 *	7	14	7	7	14	7	7	
Extension 1	2.0	6.5	2.0	2.0	6.5	2.0	2.0	
Max Green 1 *	15	120	25	15	120	20	25	
Yellow Clearance	3.0	5.5	5.0	3.0	5.5	3.0	4.6	
Red Clearance	2.6	1.6	1.9	2.9	1.8	3.9	1.9	
Walk 1 *	-	-	-	-	-	-	-	
Don't Walk 1	-	-	-	-	-	-	-	
Seconds Per Actuation *	-	1.5	-	-	1.5	-	-	
Max Variable Initial *	-	54	-	-	54	-	-	
Time Before Reduction *	-	15	-	-	15	-	-	
Time To Reduce *	-	50	-	-	50	-	-	
Minimum Gap	-	3.5	-	-	3.5	-	-	
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-	-	
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-	-	
Dual Entry	-	-	ON	-	-	-	ON	
Simultaneous Gap	ON	ON	ON	ON	ON	ON	ON	

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

LONG VEHICLE OVERSPEED DETECTION SYSTEM LOOP & DETECTION INSTALLATION CHART

LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING	INDUCTIVE LOOP CHANNEL	DETECTOR UNITS	TIMING		PLACE CALL DURING PHASE	INHIBIT DELAY DURING GREEN?
								FEATURE	TIME		
LV1	6'X6'	5	1003	X	X	1	1	NONE	- SEC.	ALL	NO
LV2	6'X6'	5	975	X	X	1	2	NONE	- SEC.	ALL	NO
LV3	6'X6'	5	1003	X	X	2	1	NONE	- SEC.	ALL	NO
LV4	6'X6'	5	975	X	X	2	2	NONE	- SEC.	ALL	NO
LV5	6'X6'	5	1003	X	X	1	1	NONE	- SEC.	ALL	NO
LV6	6'X6'	5	975	X	X	1	2	NONE	- SEC.	ALL	NO
LV7	6'X6'	5	1003	X	X	2	1	NONE	- SEC.	ALL	NO
LV8	6'X6'	5	975	X	X	2	2	NONE	- SEC.	ALL	NO
LVODS THRESHOLD SPEED (MPH)							60	2			
LVODS EXTEND TIME							12 sec.	2			

*Phase hold output to controller



Temporary Signal - Phase 2

750 N. Greenfield Pkwy, Garner, NC 27529

US 70 at SR 1913 (Wilson's Mills Road)

Division 4 Johnston County W of Selma

PLAN DATE: June 2019 REVIEWED BY: ZML

PREPARED BY: Jeff Spence REVIEWED BY:

REVISIONS: INIT. DATE

6/19/2019

DocuSign by: Zachary M. Little

DocuSign ID: 021E00F8341F

SIG. INVENTORY NO. 04-1029T

24-JUN-2019 09:45 R:\Projects\04-1029\04-1029\temp\041029T1_sig.dgn, 20190619 11:11:00

INPUT ASSIGNMENT PROGRAMMING DETAIL

(program controller as shown below)

THIS PROGRAMMING TAKES EACH OF THE LVODS INPUTS AND REASSIGNS UNIQUE HOLD PHASE TO IT. FROM MAIN MENU PRESS '5' (INPUTS), THEN '+' UNTIL PIN 51 (INPUT 13) IS REACHED.

```

PAGE: 1 C1 PIN:51 HOLD PHASES
INPUT ASSIGNMENT #.....13
DEBOUNCE TIME (0-25.5 SEC).....0.5
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).....
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 SYNCHRONIZATION (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 '+'

```

PAGE: 1 C1 PIN:52 HOLD PHASES
INPUT ASSIGNMENT #.....14
DEBOUNCE TIME (0-25.5 SEC).....0.5
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).....
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 SYNCHRONIZATION (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 '+' UNTIL PIN 0 (INPUT 64) IS REACHED

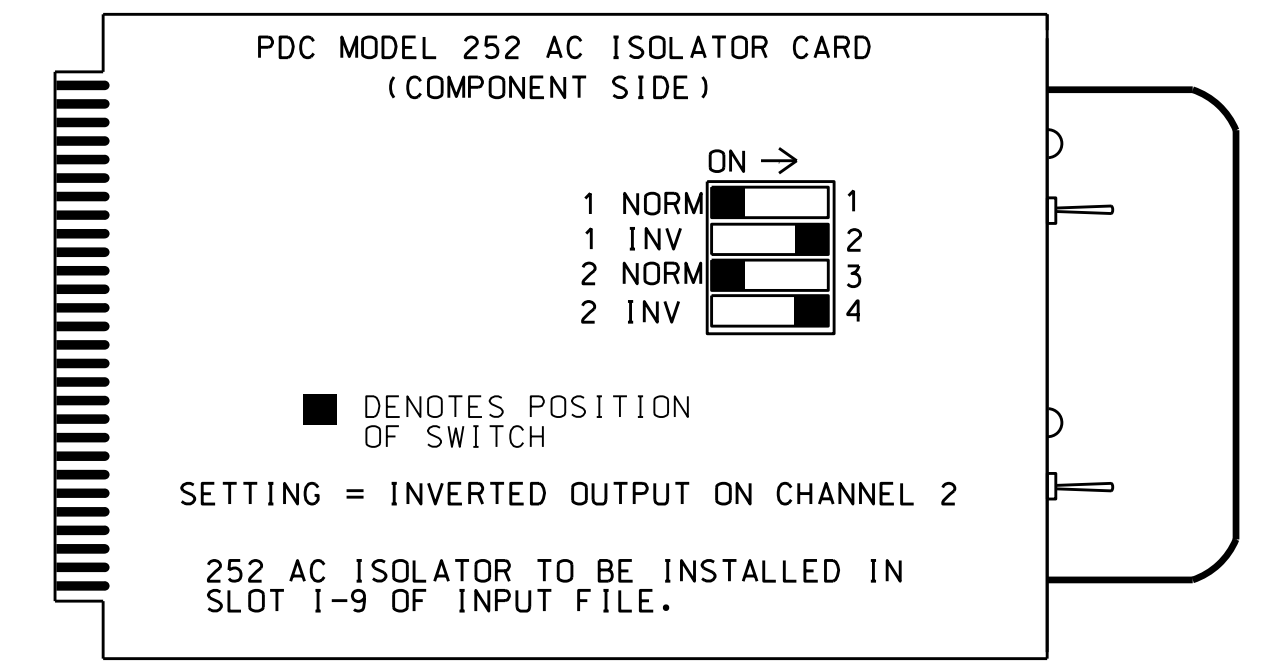
```

PAGE: 1 C1 PIN:0 PREEMPT
INPUT ASSIGNMENT #.....64
DEBOUNCE TIME (0-25.5 SEC).....0.5
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).....
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 SYNCHRONIZATION (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

AC ISOLATOR (MODEL 252) OUTPUT PROGRAMMING DETAIL

(set DIP switches as shown below)

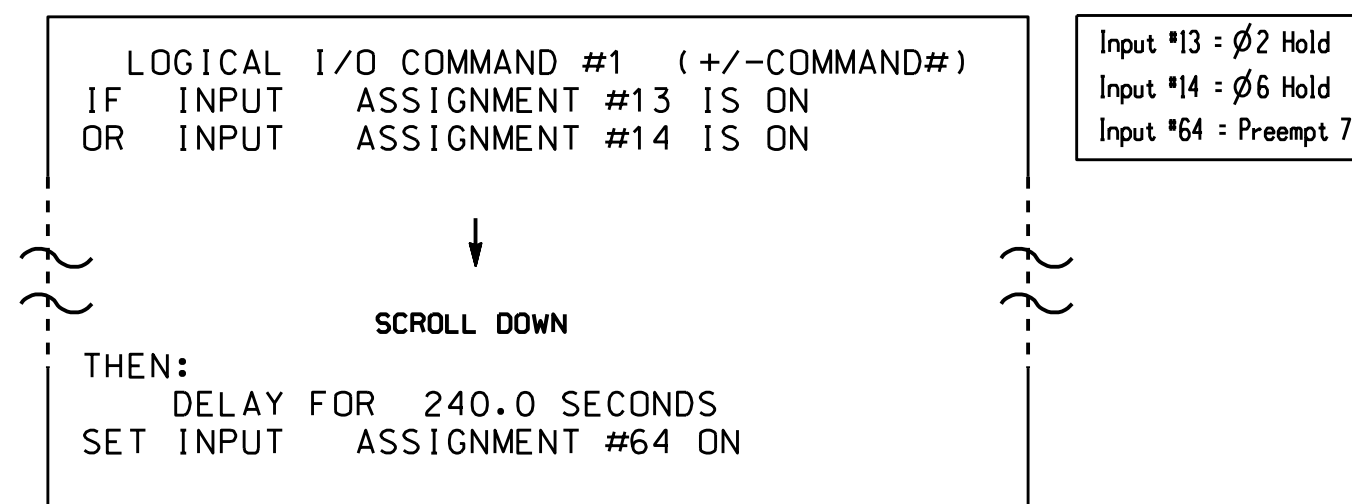


NOTE: IF ANOTHER MANUFACTURER TYPE OF AC ISOLATOR IS USED, OUTPUT PROGRAMMING IS LIKELY NOT TO EQUATE TO THAT SHOWN ABOVE.

LOGICAL I/O PROCESSOR PROGRAMMING DETAIL

(program controller as shown below)

- From Main Menu press '6' (Outputs), Then '3' (Logical I/O Processor).
- The programming shown below will place the controller in flash if the output of either Long Vehicle Detection Unit is active for longer than 4 minutes



LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

- From Main Menu press '2' (Phase Control), Then '1' (Phase Control Functions). Scroll to the bottom of the menu and enable Logic Command 1.

FLASH PREEMPTION PROGRAMMING DETAIL FOR PREEMPT 7

(program controller as shown below)

THIS PREEMPT PLACES THE CONTROLLER IN FLASH IF THE LVOD HOLD TIME EXCEEDS 240 SECONDS.

FROM MAIN MENU PRESS 'A' (PREEMPTION), THEN '1' (STANDARD PREEMPTIONS). PRESS 'NEXT' UNTIL PREEMPTION #7 IS REACHED.

PREEMPTION #7	SETTINGS (NEXT:1-10)
INTERVAL/TIMING	CLEAR/DWELL PHASES
GRN YEL RED	12345678910111213141516
1 255 0.0 0.0	X X
2 0 0.0 0.0	
3 0 0.0 0.0	
4 0 0.0 0.0	
5 1 0.0 0.0	X X
EXIT CALLS	
PRIORITY (Y/N TO SELECT)	.....HIGH
DELAY TIMER (0-255 SEC)	.....0.0
MIN GREEN BEFORE PRE (0= DEFAULT)	...1
PED CLEAR BEFORE PRE (0= DEFAULT)	...0
YELLOW CLEAR BEFORE PRE (0= DEFAULT)	...0.0
RED CLEAR BEFORE PRE (0= DEFAULT)	...0.0
DWELL MIN TIMER (0-255 SEC)	.....14
DWELL MAX TIMER (0=OFF,1-255MIN)	...0
DWELL HOLD-OVER TIMER (0-255)	.....0
LATCH CALL?	.....N
LINK TO NEXT PREEMPT?	.....N
ENABLE BACKUP PROTECTION?	.....N
HOLD CLEAR 1 PHASES DURING DELAY?	...N
FAST GREEN FLASH DWELL PHASES?	.....N
PED CLEARANCE THROUGH YELLOW?	.....N
INHIBIT OVERLAP GREEN EXTENSION?	...N
SERVICE DURING SOFTWARE FLASH?	.....N
REST IN RED DURING DWELL INTERVAL?	...N
FLASH DWELL INTERVAL?	.....Y
ALLOW PEDS IN DWELL INTERVAL?	.....N
RE-TIME DWELL INTERVAL?	.....N
OVERLAPS:	ABCDEFGHIJKLMNPO
DWELL INT FLASH YELLOW	
OMIT OVERLAPS:	

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1029T
DESIGNED: June 2019
SEALED: 6-19-19
REVISED: N/A

Electrical Detail - Temp. - Phase 2 - Sheet 2 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

US 70 at SR 1913 (Wilson's Mills Road)

Division 4 Johnston County W. of Selma

PLAN DATE: June 2019 REVIEWED BY:
 PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

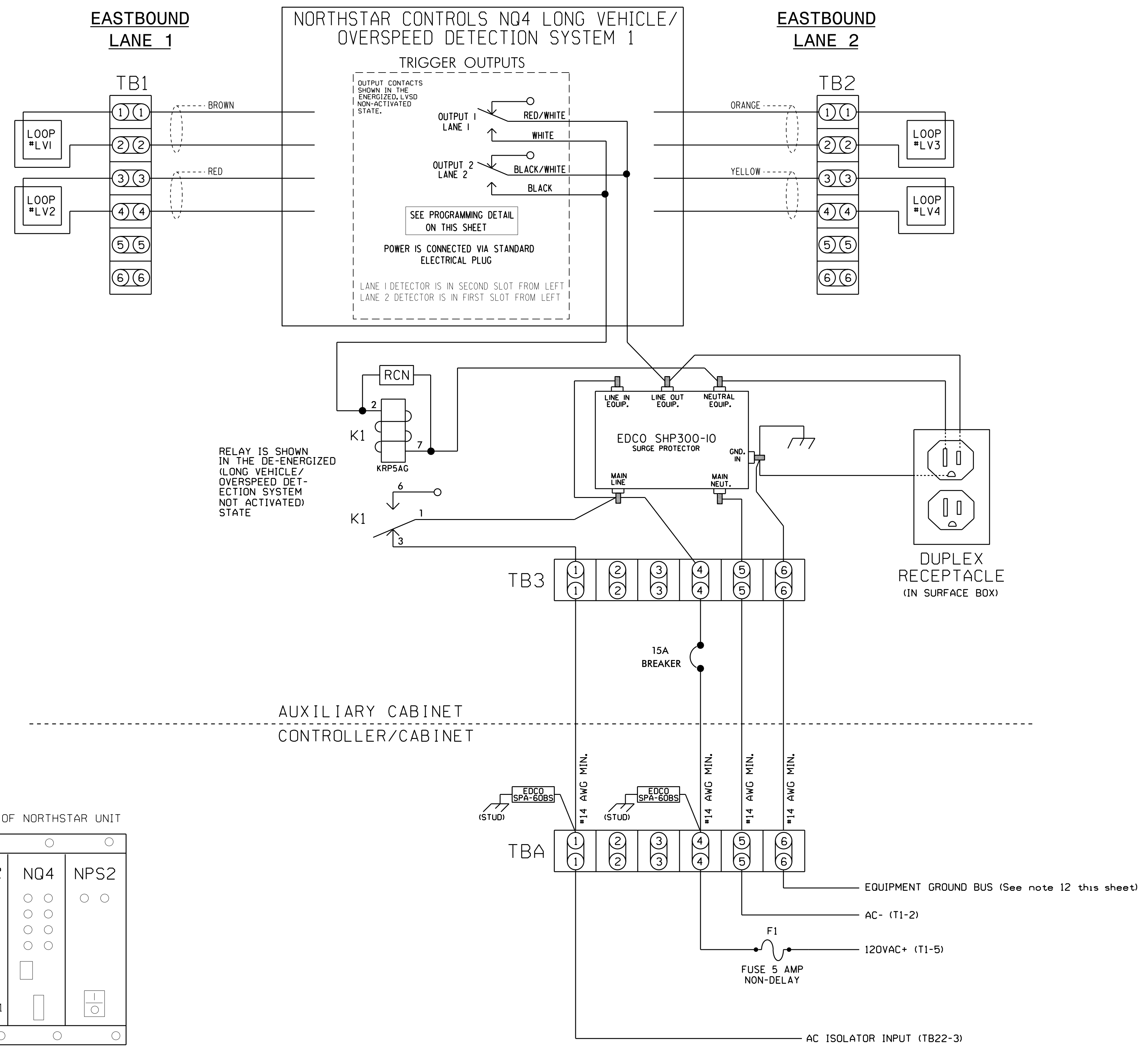
Seal of Ryan W. Hough, Professional Engineer, License No. 036833, State of North Carolina.

DocuSigned by: Ryan W. Hough 6/20/2019
 430320F-A22054C3 DATE
 SIG. INVENTORY NO. 04-1029T

20-000-2019-01-17
 041029T 04-1029T-001-001-001
 J. Peterson

WIRING DETAIL FOR NORTHSTAR CONTROLS NQ4 LONG VEHICLE / OVERSPEED DETECTION SYSTEM NO. 1
(wire unit as shown below)

NOTES



1. All loop lead-ins shall be twisted.
2. Loop spacing is critical to the proper operation of this Overspeed Detection System. Make sure loop spacing is correctly programmed in NQ4 Unit.
3. Insure that connectors on rear of NQ4 are seated securely.
4. NQ4 Unit shall be located in an auxiliary cabinet adjacent to Speed Warning System loops.
5. Unit power is connected by standard electrical plug.
6. Terminal strips TB1, TB2, TB3, & TBA to be added by installer.
7. Relay 'K1' is a SPDT with an 120VAC coil. Potter & Brumfield no. KRP5AGAG. Dot Material no. 625028600.
8. The RC Network across the coil of 'K1' is a .1 micro farad, 100 ohm. Dot Material no. 106018075. P&B no. 104M060C100
9. EDCO SPA-60BS is a surge protector for 120VAC interconnect circuits. Dot Material no. 625022076.
10. EDCO SHP300-10 is an AC service surge protector. Dot Material no. 625022075.
11. Do not install ground rods at auxiliary cabinet.
12. Install equipment ground from controller cabinet to auxiliary cabinet if not already present.
13. Install disconnect if there is no disconnect present at auxiliary cabinet.
14. IMPORTANT! A jumper must be installed between input file terminals I9-E and I9-K if not already present.
15. IMPORTANT! For proper operation of the Long Vehicle Detection Unit, tie TB24-4 to AC neutral.
16. IMPORTANT! Make sure both channels of AC Isolator card inserted at input file position I9 are set for inverted operation.

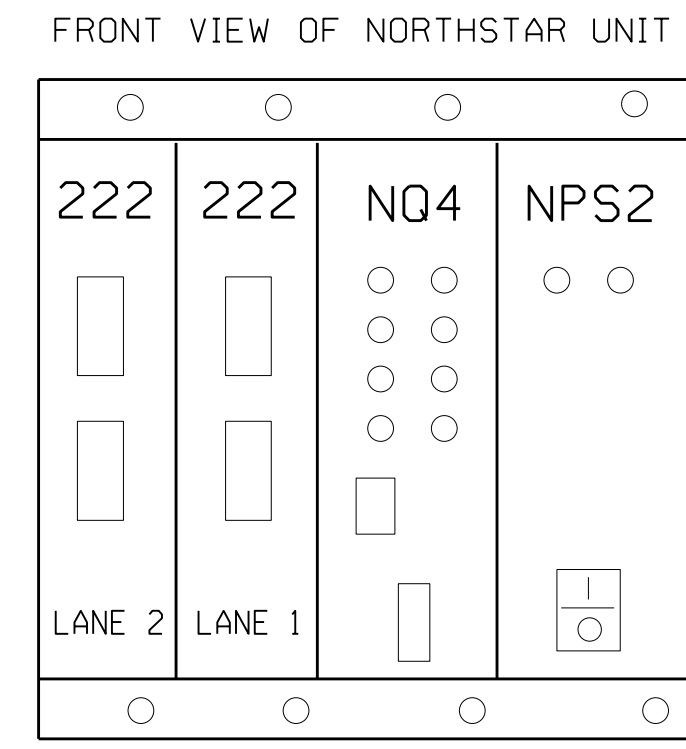
**NORTHSTAR CONTROLS MODEL NQ4
PROGRAMMING DETAIL**
(program unit as shown)

NOTE: UNIT MUST BE PROGRAMMED USING PC AND HYPERTERMINAL PROGRAM. FOR CONNECTION TO HYPERTERMINAL REFER TO NQ4 OPERATION MANUAL.

PROGRAM NQ4 BY TYPING THE FOLLOWING COMMANDS

1. SET SPEED=60
2. SET LENGTH=22'
3. SET ALARMTIME=12
4. SET SEPARATION=27' (LEADING EDGE TO LEADING EDGE) (THIS VALUE MAY VARY, PROGRAM ACTUAL MEASURED SEPARATION)
5. SET LOOP LENGTH=6' (THIS VALUE MAY VARY, PROGRAM ACTUAL MEASURED LOOP LENGTH)
6. SAVE

NOTE
PROGRAMMING APPLIES TO LANE 1



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1029T
DESIGNED: June 2019
SEALED: 6-19-19
REVISED: N/A

Electrical Detail - Temp. - Phase 2 - Sheet 3 of 5

Prepared In the Offices of:
G.L. Transportation, Mobility and Safety Division
STATE OF NORTH CAROLINA
Department of Transportation
Signal Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 70
at
SR 1913 (Wilson's Mills Road)

Division 4 Johnston County W. of Selma

PLAN DATE: June 2019 REVIEWED BY:
PREPARED BY: James Peterson REVIEWED BY:

REVISIONS	INIT.	DATE

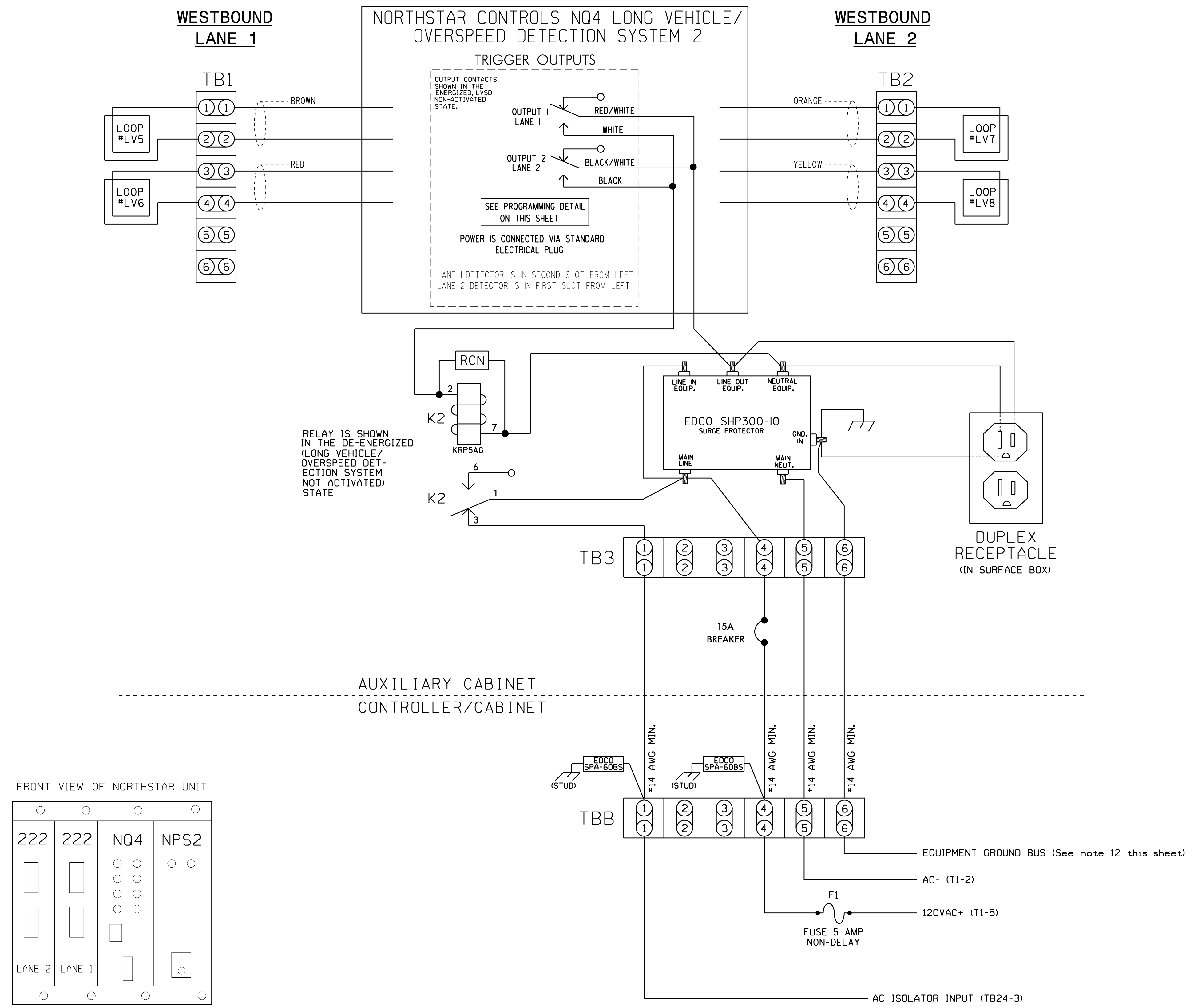
DocuSigned by:
Ryan W. Hough
6/20/2019
40332FAD2856C3
DATE

SEAL
NORTH CAROLINA
PROFESSIONAL ENGINEER
SEAL 036833
RYAN W. HOUGH

SIG. INVENTORY NO. 04-1029T

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J. Peterson

WIRING DETAIL FOR NORTHSTAR CONTROLS NQ4 LONG VEHICLE / OVERSPEED DETECTION SYSTEM NO. 2
(wire unit as shown below)



- NOTES**
1. All loop lead-ins shall be twisted.
 2. Loop spacing is critical to the proper operation of this Overspeed Detection System. Make sure loop spacing is correctly programmed in NQ4 Unit.
 3. Insure that connectors on rear of NQ4 are seated securely.
 4. NQ4 Unit shall be located in an auxiliary cabinet adjacent to Speed Warning System Loops.
 5. Unit power is connected by standard electrical plug.
 6. Terminal strips TB1, TB2, TB3, & TBB to be added by installer.
 7. Relay 'K2' is a SPDT with an 120VAC coil. Potter & Brumfield no. KRP5AGAG. Dot Material no. 625028600.
 8. The RC Network across the coil of 'K2' is a .1 micro farad, 100 ohm. Dot Material no. 106018075. P&B no. 104M060C100
 9. EDCO SPA-60BS is a surge protector for 120VAC interconnect circuits. Dot Material no. 625022076.
 10. EDCO SHP300-10 is an AC service surge protector. Dot Material no. 625022075.
 11. Do not install ground rods at auxiliary cabinet.
 12. Install equipment ground from controller cabinet to auxiliary cabinet if not already present.
 13. Install disconnect if there is no disconnect present at auxiliary cabinet.

NORTHSTAR CONTROLS MODEL NQ4
PROGRAMMING DETAIL
(program unit as shown)

NOTE: UNIT MUST BE PROGRAMMED USING PC AND HYPERTERMINAL PROGRAM. FOR CONNECTION TO HYPERTERMINAL REFER TO NQ4 OPERATION MANUAL.

PROGRAM NQ4 BY TYPING THE FOLLOWING COMMANDS

1. SET SPEED=60
2. SET LENGTH=22'
3. SET ALARMTIME=12
4. SET SEPARATION=27' (LEADING EDGE TO LEADING EDGE) (THIS VALUE MAY VARY, PROGRAM ACTUAL MEASURED SEPARATION)
5. SET LOOP LENGTH=6' (THIS VALUE MAY VARY, PROGRAM ACTUAL MEASURED LOOP LENGTH)
6. SAVE

NOTE
PROGRAMMING APPLIES TO LANE 1

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1029T
DESIGNED: June 2019
SEALED: 6-19-19
REVISED: N/A

Electrical Detail - Temp. - Phase 2 - Sheet 4 of 5

Prepared In the Offices of:
G.L. Transportation, Mobility and Safety Division
STATE OF NORTH CAROLINA
Department of Transportation
Signal Management Section

US 70 at SR 1913 (Wilson's Mills Road)
Division 4 Johnston County W. of Selma

PLAN DATE: June 2019 REVIEWED BY:
PREPARED BY: James Peterson REVIEWED BY:

REVISIONS INIT. DATE

DocuSigned by:
Ryan W. Hough 6/20/2019

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 036833
RYAN W. HOUGH

SIG. INVENTORY NO. 04-1029T

19-jun-2019 14:35
x:\1029T\smc\rc-wk-dgn
j.peterson

ADVANCE BEACON OUTPUT ASSIGNMENT PROGRAMMING DETAIL

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), PRESS '+' UNTIL OUTPUT #33 (PIN 35) IS REACHED.

```

PAGE:1 C1 PIN:35 NOT ENABLED
OUTPUT ASSIGNMENT #.....33
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...50
MODE (O=SOLID,1=FLASH)...1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE FIRST THREE PROGRAMMING ROWS DEFINE THE OUTPUT TO FLASH, ALONG WITH THE RATE IN WHICH IT WILL FLASH.

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:35 NOT ENABLED
SELECT BEACON INDEX (1-4).....1
    
```

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

PRESS THE 'ENT' KEY AFTER INPUTING DATA. THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'ADVANCE BEACON' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:35 ADVANCE BEACON
OUTPUT ASSIGNMENT #.....33
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...50
MODE (O=SOLID,1=FLASH)...1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), PRESS '+' UNTIL OUTPUT #34 (PIN 36) IS REACHED.

```

PAGE:1 C1 PIN:36 NOT ENABLED
OUTPUT ASSIGNMENT #.....34
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...50
MODE (O=SOLID,1=FLASH)...1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE FIRST THREE PROGRAMMING ROWS DEFINE THE OUTPUT TO FLASH, ALONG WITH THE RATE IN WHICH IT WILL FLASH.

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:36 NOT ENABLED
SELECT BEACON INDEX (1-4).....2
    
```

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

PRESS THE 'ENT' KEY AFTER INPUTING DATA. THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'ADVANCE BEACON' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:36 ADVANCE BEACON
OUTPUT ASSIGNMENT #.....34
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...1.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...50
MODE (O=SOLID,1=FLASH)...1
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

Output #33 = Ø2 Ped Yellow
Output #34 = Ø6 Ped Yellow
Output #35 = Ø4 Ped Yellow
Output #36 = Ø8 Ped Yellow

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), PRESS '+' UNTIL OUTPUT #35 (PIN 37) IS REACHED.

```

PAGE:1 C1 PIN:37 NOT ENABLED
OUTPUT ASSIGNMENT #.....35
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:37 NOT ENABLED
SELECT OUTPUT ASSIGNMENT (1-64).....33
    
```

WHEN A 'Y' IS ENTERED FOR 'OUT OF PHASE FLASHER' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

PRESS THE 'ENT' KEY AFTER INPUTING DATA. THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'OUT OF PHASE FLASHER' AS SHOWN BELOW.

```

PAGE:1 C1 PIN:37 OUT OF PHASE FLASHER
OUTPUT ASSIGNMENT #.....35
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '1' (OUTPUT ASSIGNMENTS), PRESS '+' UNTIL OUTPUT #36 (PIN 38) IS REACHED.

```

PAGE:1 C1 PIN:38 NOT ENABLED
OUTPUT ASSIGNMENT #.....36
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

THE NOT ENABLED 'Y' WILL REMAIN UNTIL THE FUNCTION OF THIS OUTPUT IS CHANGED. DO NOT ENTER AN 'N'.

```

PAGE:1 C1 PIN:38 NOT ENABLED
SELECT OUTPUT ASSIGNMENT (1-64).....34
    
```

WHEN A 'Y' IS ENTERED FOR 'OUT OF PHASE FLASHER' THE SCREEN SHOWN ABOVE WILL APPEAR. ENTER DATA AS SHOWN.

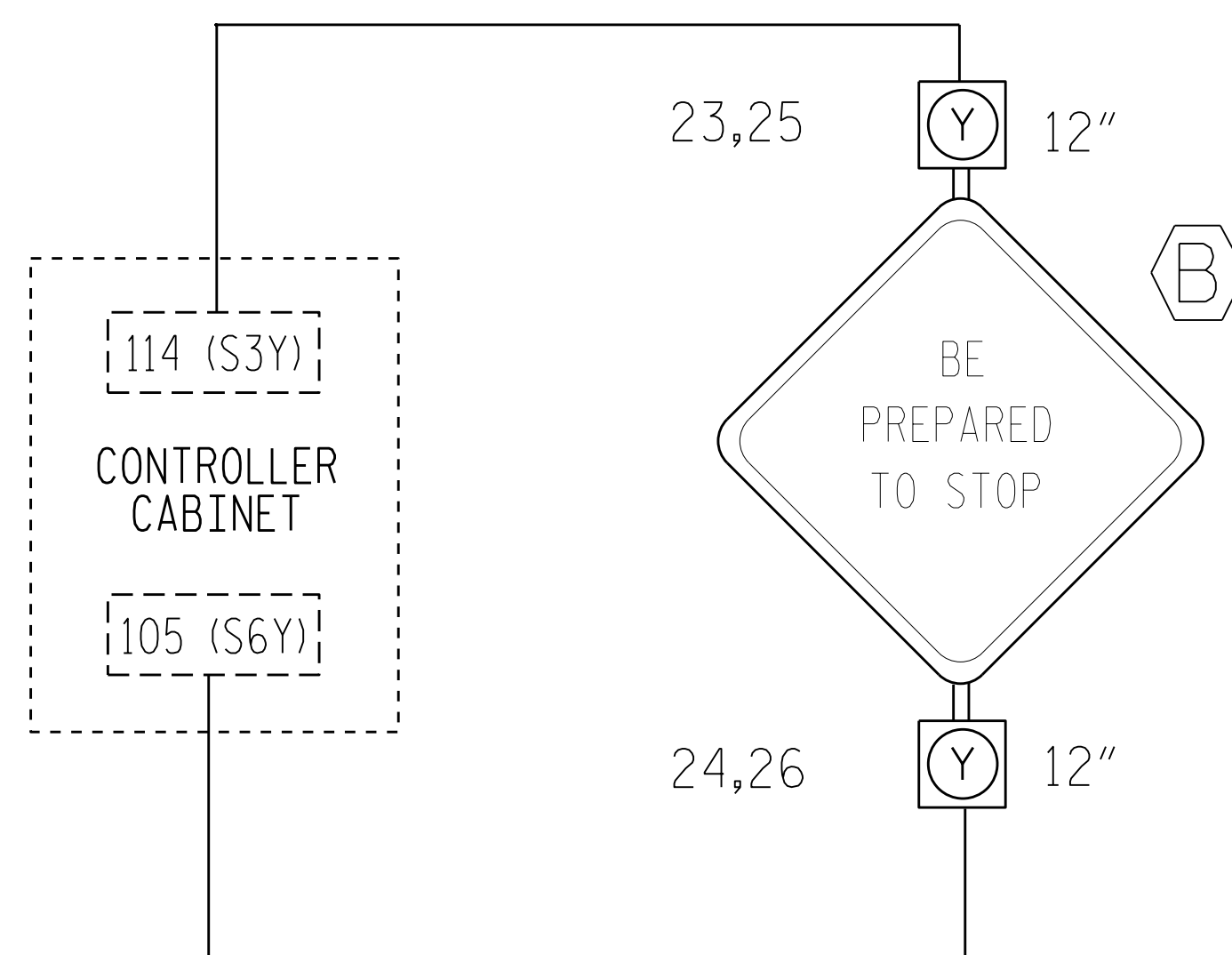
PRESS THE 'ENT' KEY AFTER INPUTING DATA. THEN 'ESC'.

DISPLAY WILL NOW SHOW THE SPECIFIED OUTPUT ASSIGNED AS 'OUT OF PHASE FLASHER' AS SHOWN BELOW.

```

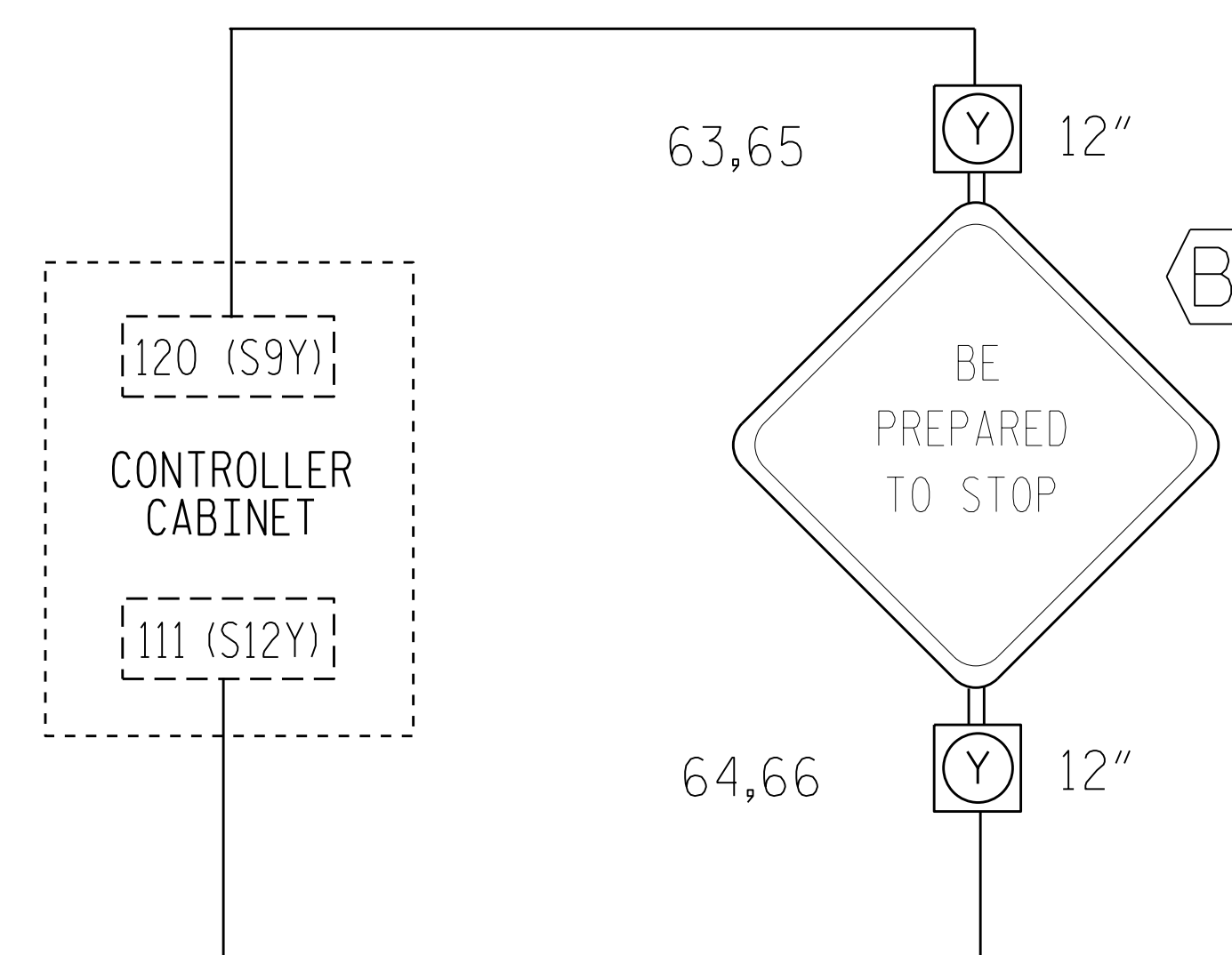
PAGE:1 C1 PIN:38 OUT OF PHASE FLASHER
OUTPUT ASSIGNMENT #.....36
FREQUENCY (O=DEFAULT) (0-25.5 HZ)...0.0
DUTY CYCLE (O=DEFAULT) (0 - 100%)...0
MODE (O=SOLID,1=FLASH)...0
SELECT ASSIGNMENT:
NOT ENABLED.....Y
VEHICLE PHASE.....
PEDESTRIAN PHASE.....
VEHICLE OVERLAP.....
PEDESTRIAN OVERLAP.....
WATCHDOG.....
DETECTOR RESET.....Y
ADVANCE BEACON.....Y
OUT OF PHASE FLASHER.....Y
CONTROLLER FLASH.....
RUN FREE.....
RESERVED.....
PREEMPT.....
SOFT PREEMPT.....
ANY PREEMPT.....
COORDINATION PLAN.....
OFFSET.....
PHASE CHECK.....
PHASE ON.....
PHASE NEXT.....
    
```

ADVANCE BEACON WIRING DETAIL (wire flashers as shown below)



IMPORTANT

1. REMOVE, TAPE AND LABEL CONFLICT MONITOR WIRE ATTACHED TO THE REAR OF TERMINAL 114 (2PY) AND TERMINAL 105 (4PY).
2. INSERT LOADSWITCH FOR S3 AND S6.
3. MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN ON LOAD RESISTOR INSTALLATION DETAIL ON SHEET 1 OF 5.
4. TO PRODUCE FLASHING OPERATION AS INDICATED ON THE SIGNAL PLANS, RE-ASSIGN OUTPUTS 33 AND 35 AS SHOWN ON THIS SHEET.



IMPORTANT

1. REMOVE, TAPE AND LABEL CONFLICT MONITOR WIRE ATTACHED TO THE REAR OF TERMINAL 120 (6PY) AND TERMINAL 111 (8PY).
2. INSERT LOADSWITCH FOR S9 AND S12.
3. MAKE SURE LOAD RESISTORS ARE IN PLACE AS SHOWN ON LOAD RESISTOR INSTALLATION DETAIL ON SHEET 1 OF 5.
4. TO PRODUCE FLASHING OPERATION AS INDICATED ON THE SIGNAL PLANS, RE-ASSIGN OUTPUTS 34 AND 36 AS SHOWN ON THIS SHEET.

ADVANCE BEACON PROGRAMMING DETAIL (program controller as shown below)

1. FROM MAIN MENU PRESS '6' (OUTPUTS), THEN '2' (OUTPUT BEACON SETTINGS).

OUTPUT BEACON SETTINGS				
TRIGGER PHASES:	1	2	3	4
BEACON #1 OFF	X			
BEACON #2 OFF		X		
BEACON #3 OFF			X	
BEACON #4 OFF				X
OFF DELAY TIME (0-255);	0	0	0	0
ON DELAY TIME (0-255);	0	0	0	0
STOP-TIME HOLD (0-255);	2	2	0	0

ADVANCE BEACON PROGRAMMING COMPLETE

NOTE: AN OUTPUT HAS TO BE ASSIGNED AS AN ADVANCE BEACON IN ORDER FOR PROPER OPERATION TO OCCUR. SEE OUTPUT ASSIGNMENT DETAIL ON THIS SHEET.

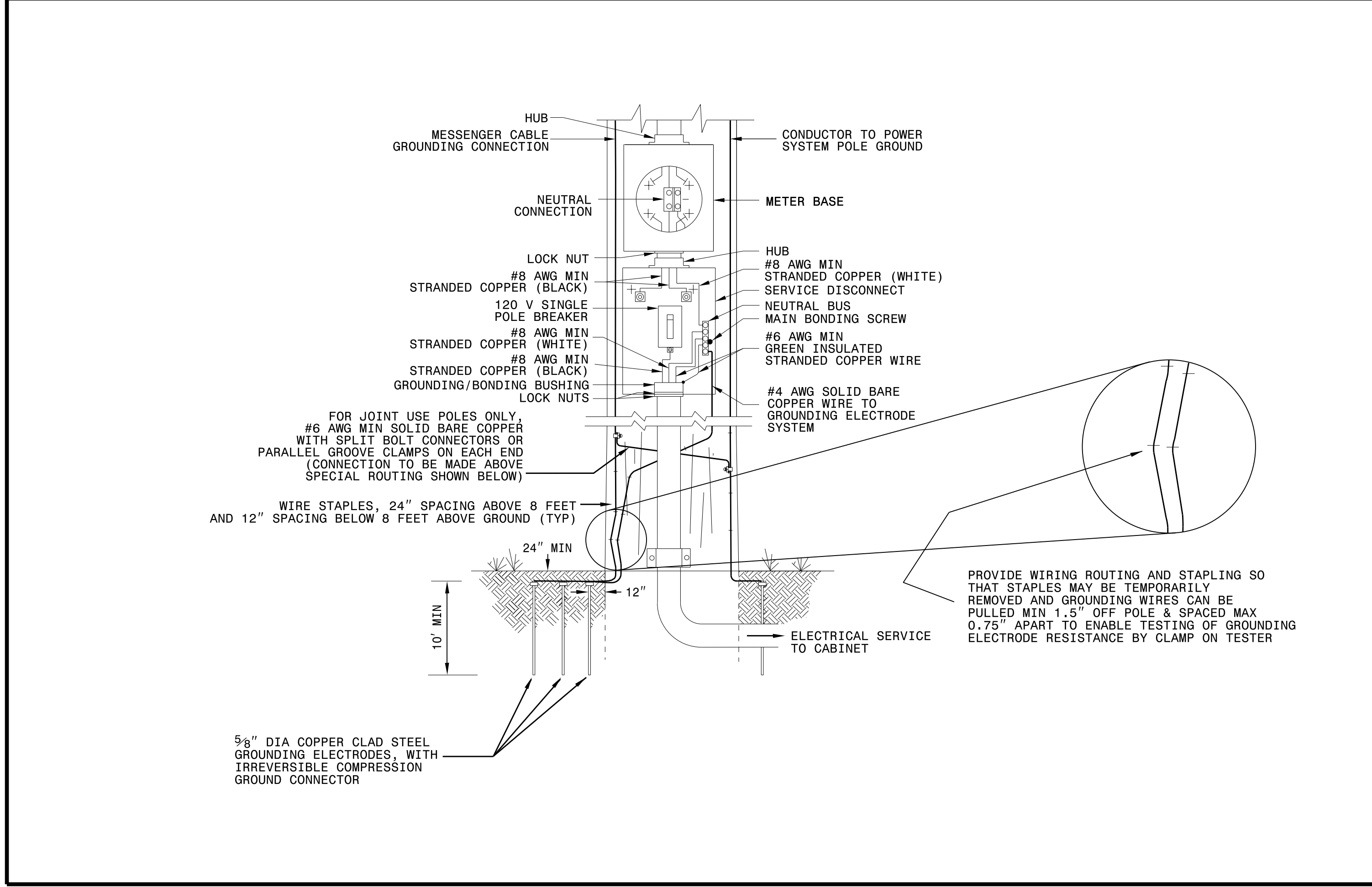
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1029T
DESIGNED: June 2019
SEALED: 6-19-19
REVISED: N/A

Electrical Detail - Temp. - Phase 2 - Sheet 5 of 5		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	US 70 at SR 1913 (Wilson's Mills Road) Johnston County, W. of Selma PLAN DATE: June 2019 PREPARED BY: James Peterson REVISIONS: _____ INIT. DATE: _____	SEAL SEAL 036833 ENGINEER RYAN W. HOUGH DocuSigned by: Ryan W. Hough 6/20/2019 DATE: _____ SIG. INVENTORY NO. 04-1029T

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

ENGLISH STANDARD DRAWING FOR
ELECTRICAL SERVICE GROUNDING
GROUNDING AND BONDING

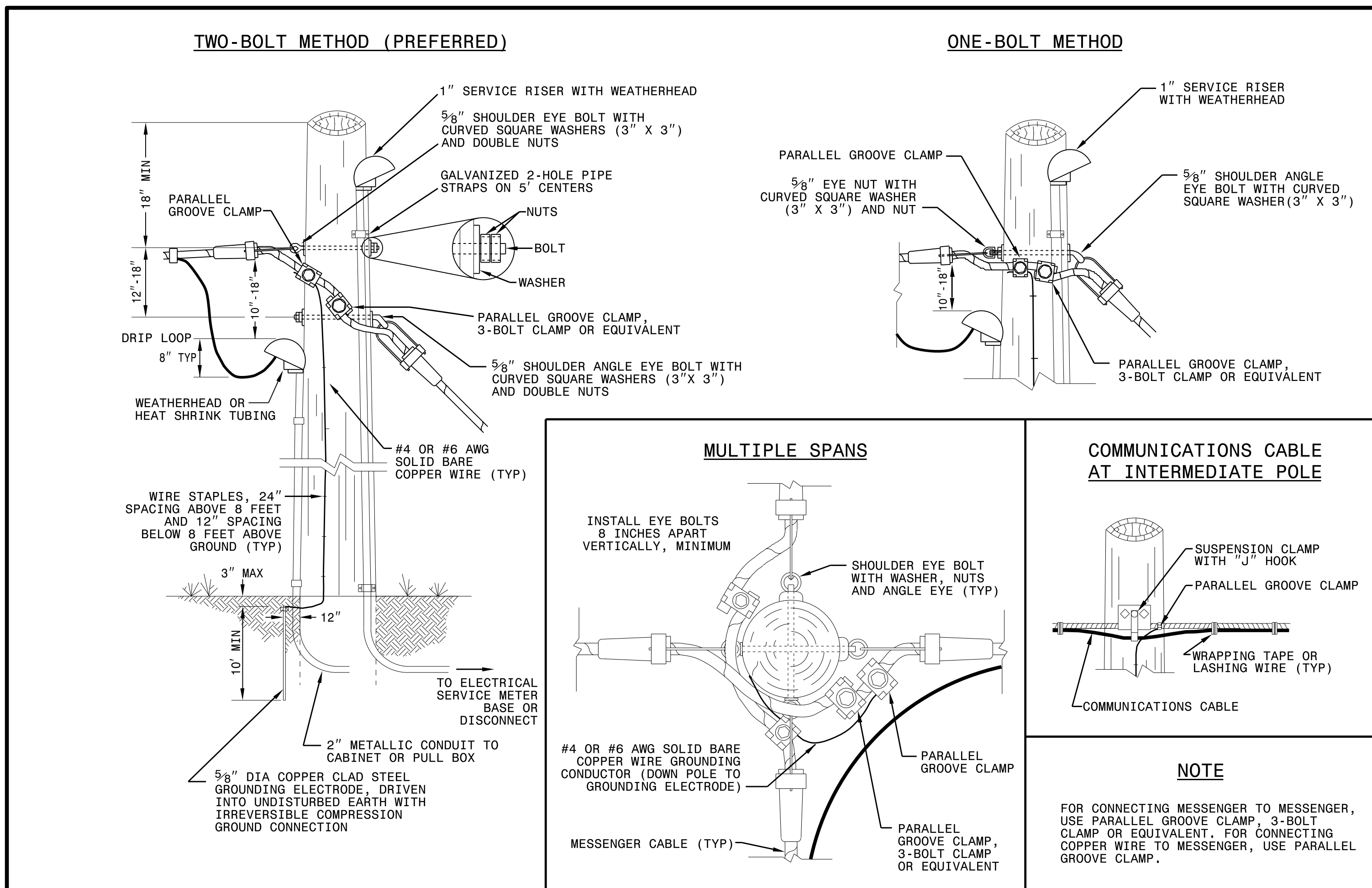
SHEET 1 OF 1
1700D01



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

ENGLISH STANDARD DRAWING FOR
WOOD POLES
METHODS OF ATTACHMENT AND GROUNDING

SHEET 1 OF 1
1720D01

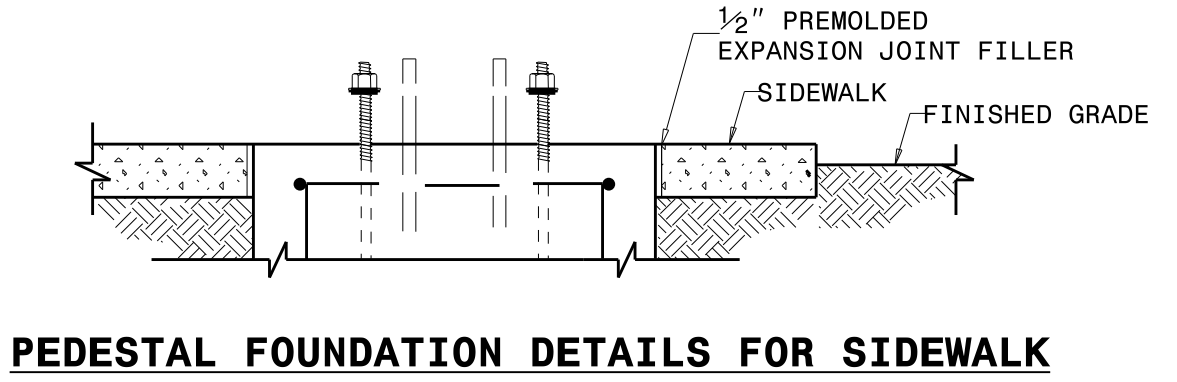
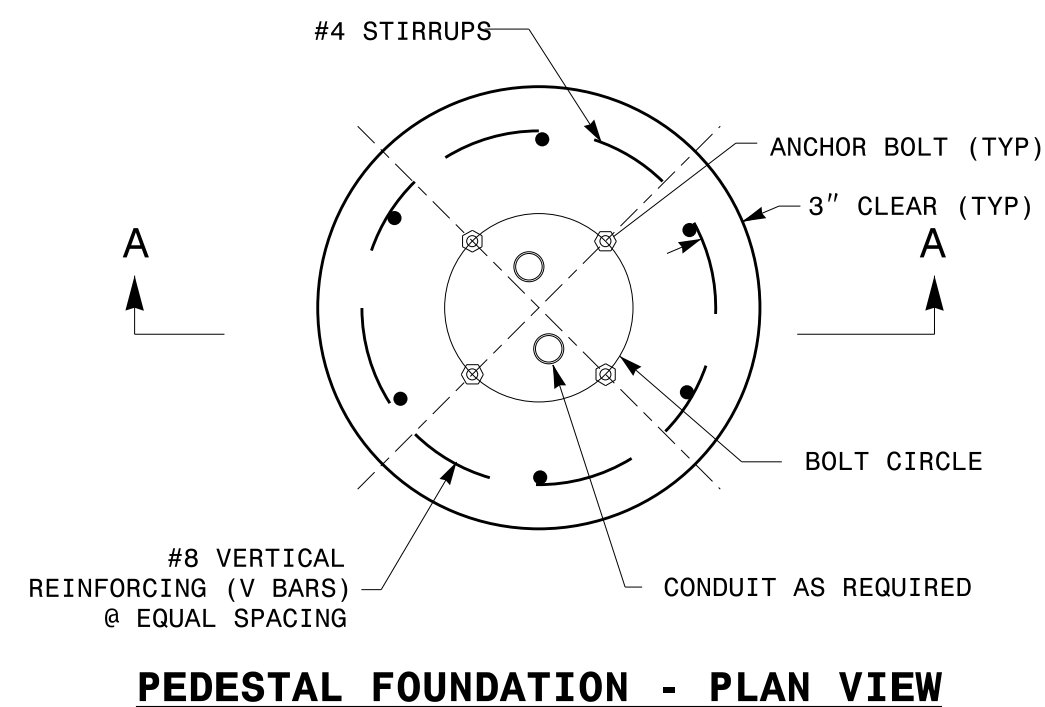


DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

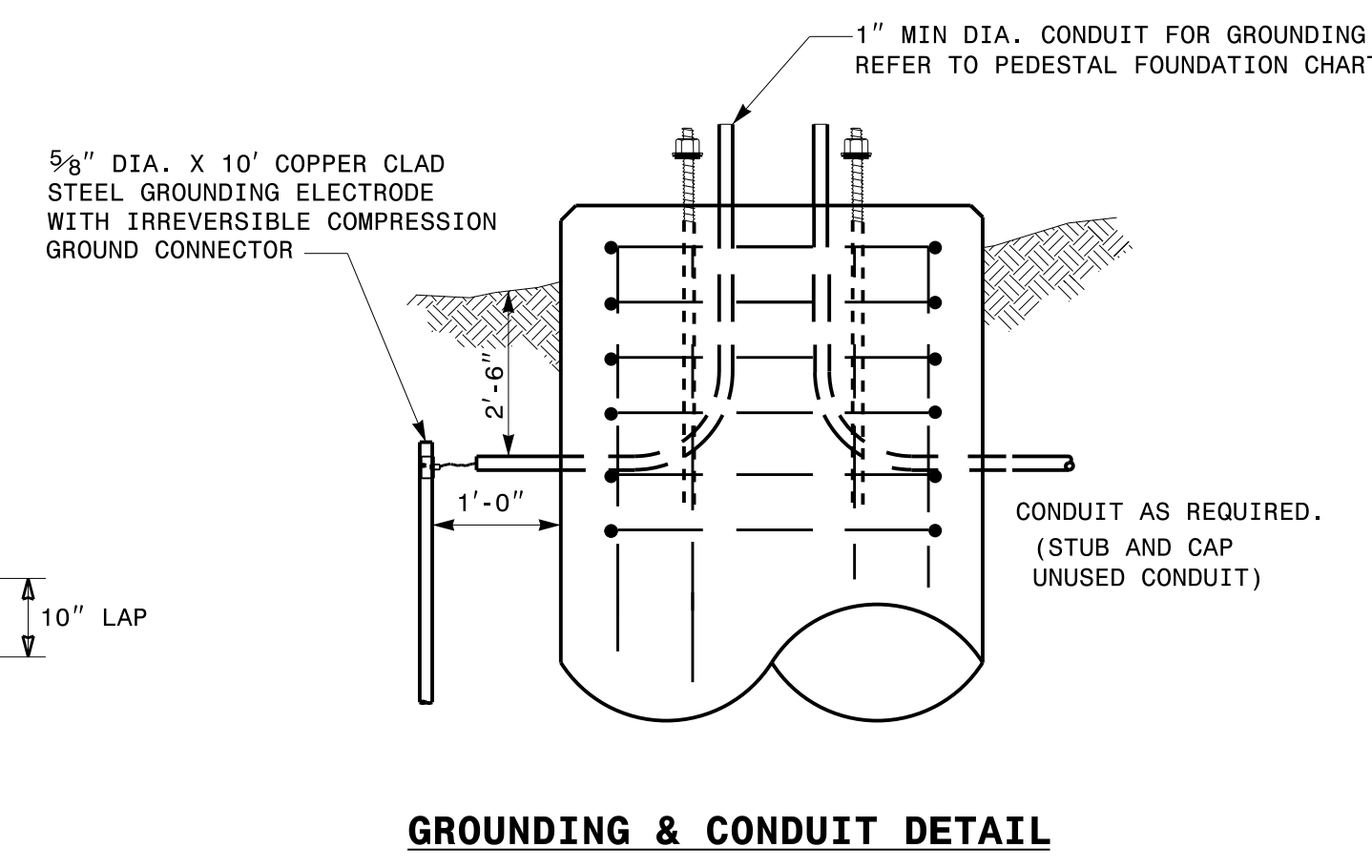
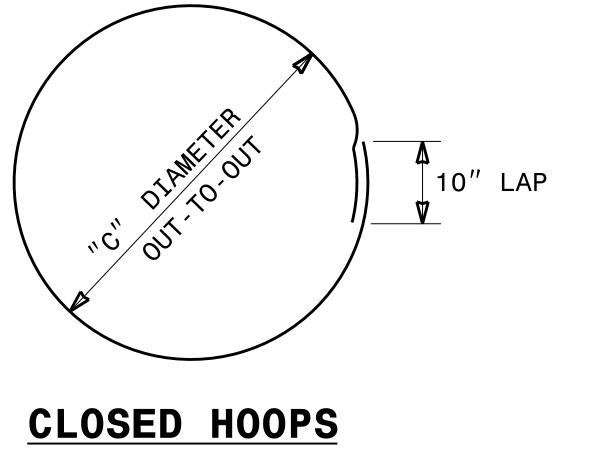
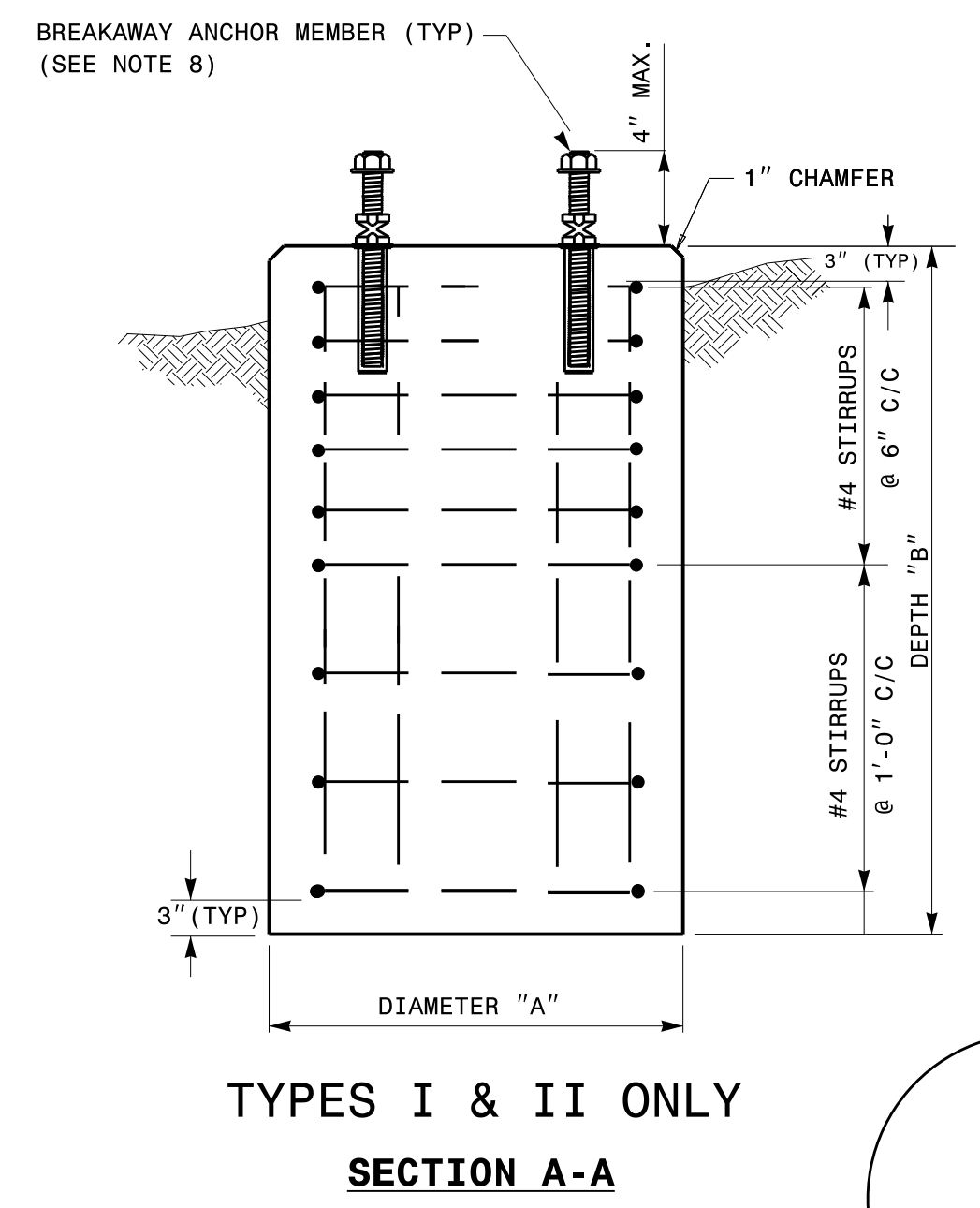
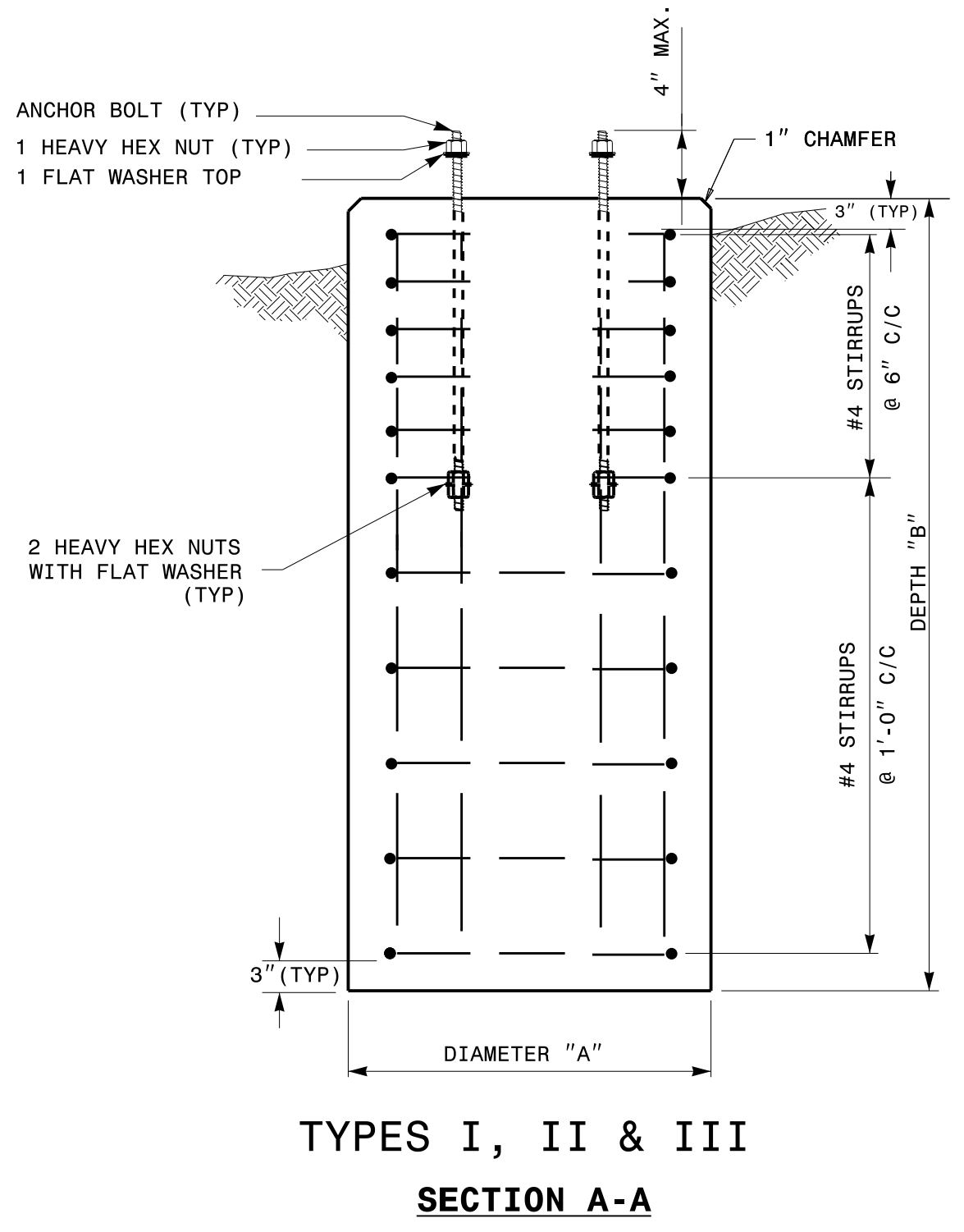
See Plate for Title

<p>Prepared in the Offices of:</p> <p>750 N. Greenfield Parkway Garner, NC 27529</p>	<p>SEAL</p> <p>DocuSigned by: <i>Mohd Aslami</i></p> <p>10/11/2017 DATE</p>
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- NOTES:**
- CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
 - COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
 - USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF $F'c = 3000$ PSI (MIN.).
 - USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
 - GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
 - SANDY TYPE SOIL
 - NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
 - WIND SPEED NOT TO EXCEED 140 MPH
 IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
 - MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
 - ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
 - USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4 1/2" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6 5/8". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



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

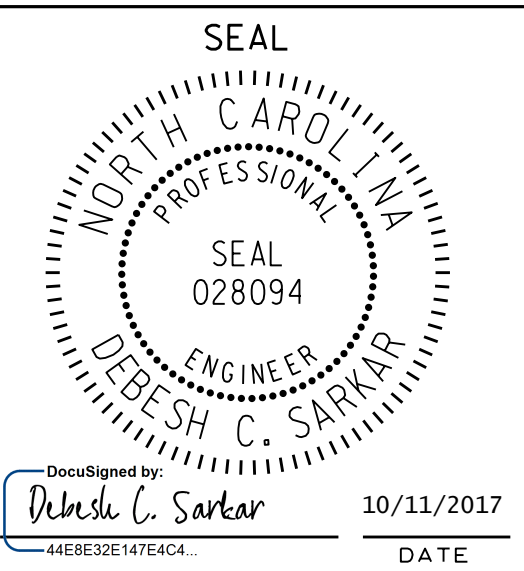
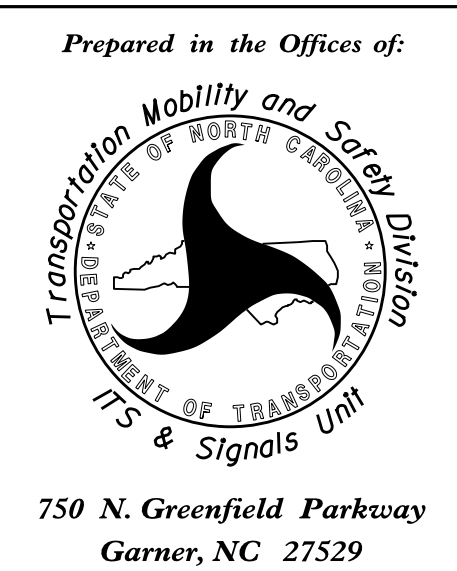
REINFORCING STEEL SCHEDULE												
TYPE	V-BAR				STIRRUP							
	SIZE #	QTY	LENGTH	WEIGHT LBS	QUANTITY			LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	TOTAL STEEL WEIGHT LBS
					VERTICAL SPACING ON 6" CENTERS	ON 12" CENTERS	TOTAL					
I	8	6	3'-0"	56	4	0	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86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

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

ENGLISH STANDARD DRAWING FOR
PEDESTALS
FOUNDATIONS

SHEET 1 OF 1
1743D01

See Plate for Title



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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