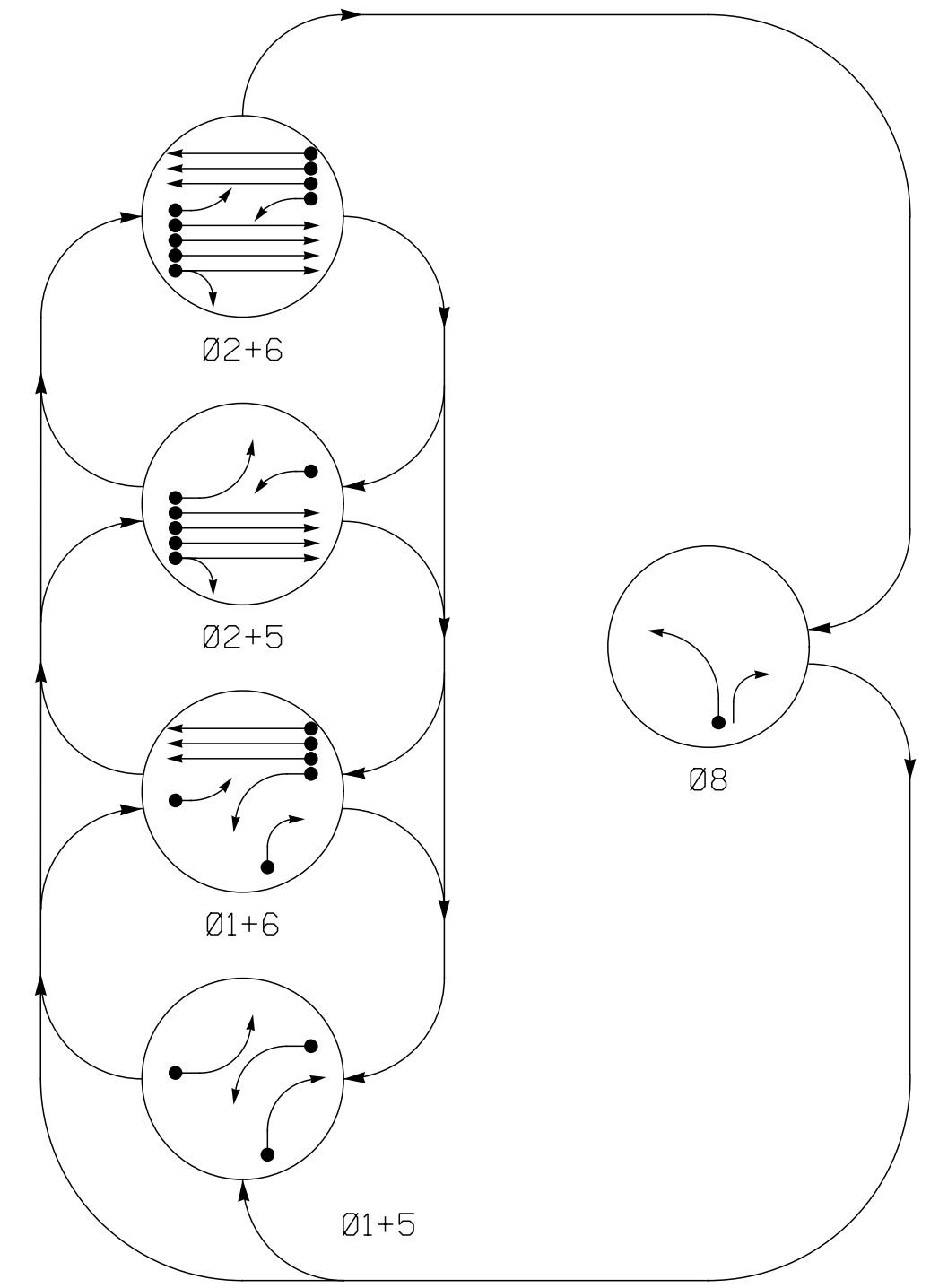


**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

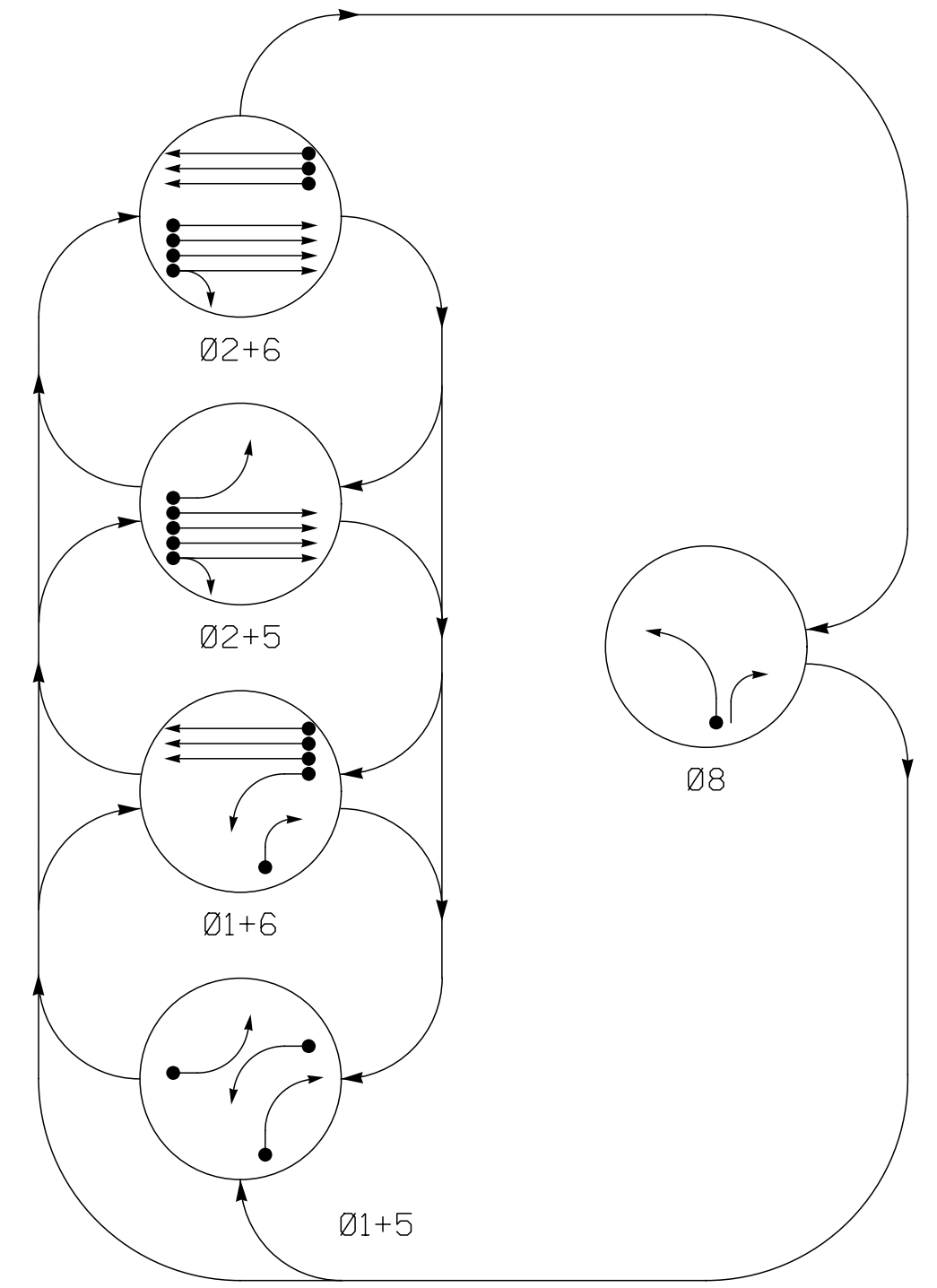
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and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

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**DEFAULT PHASING DIAGRAM**



**ALTERNATE PHASING DIAGRAM**



**DEFAULT PHASING TABLE OF OPERATION**

SIGNAL FACE	PHASE					FLASH
	01+5	01+6	02+5	02+6	08	
11	←	←	←	←	←	Y
21,22,23,24	R	R	G	G	R	Y
51	↶	↶	↶	↶	↶	Y
61,62,63	R	G	R	G	R	Y
81	R	R	R	R	G	R
82	↷	↷	R	R	G	R

**ALTERNATE PHASING TABLE OF OPERATION**

SIGNAL FACE	PHASE					FLASH
	01+5	01+6	02+5	02+6	08	
11	←	←	R	R	R	Y
21,22,23,24	R	R	G	G	R	Y
51	↶	↶	↶	↶	↶	Y
61,62,63	R	G	R	G	R	Y
81	R	R	R	R	G	R
82	↷	↷	R	R	G	R

**OASIS 2070 LOOP & DETECTOR INSTALLATION CHART**

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	DETECTOR PROGRAMMING					SYSTEM LOOP	NEW CARD	
					PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME			DELAY TIME
1A	6X40	0	2-4-2	Y	1	Y	Y	-	-	15**	-	Y
1B	6X40	0	2-4-2	Y	1	Y	Y	-	-	15	-	Y
2A	6X6	300	5	Y	2	Y	Y	-	-	-	-	Y
2B	6X6	300	5	Y	2	Y	Y	-	-	-	-	Y
2C	6X6	300	5	Y	2	Y	Y	-	-	-	-	Y
2D	6X6	300	5	Y	2	Y	Y	-	-	-	-	Y
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	15**	-	Y
6A	6X6	300	6	Y	6	Y	Y	-	-	-	-	Y
6B	6X6	300	6	Y	6	Y	Y	-	-	-	-	Y
6C	6X6	300	6	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	3	-	Y
S1X	6X6	+150	-	Y	-	-	-	-	-	-	-	Y
S2X	6X6	+150	-	Y	-	-	-	-	-	-	-	Y
S3X	6X6	+150	-	Y	-	-	-	-	-	-	-	Y
S4X	6X6	+150	-	Y	-	-	-	-	-	-	-	Y
S5X	6X6	+150	-	Y	-	-	-	-	-	-	-	Y
S6X	6X6	+150	-	Y	-	-	-	-	-	-	-	Y

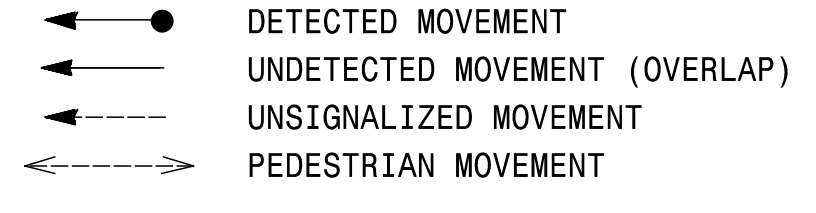
\* - Disable Phase Call for loop(s) during Alternate Phasing operation.  
 \*\* - Disable Delay during Alternate Phasing operation.

**5 Phase Fully Actuated US 70 Business - NC 42 (Clayton) CLS**

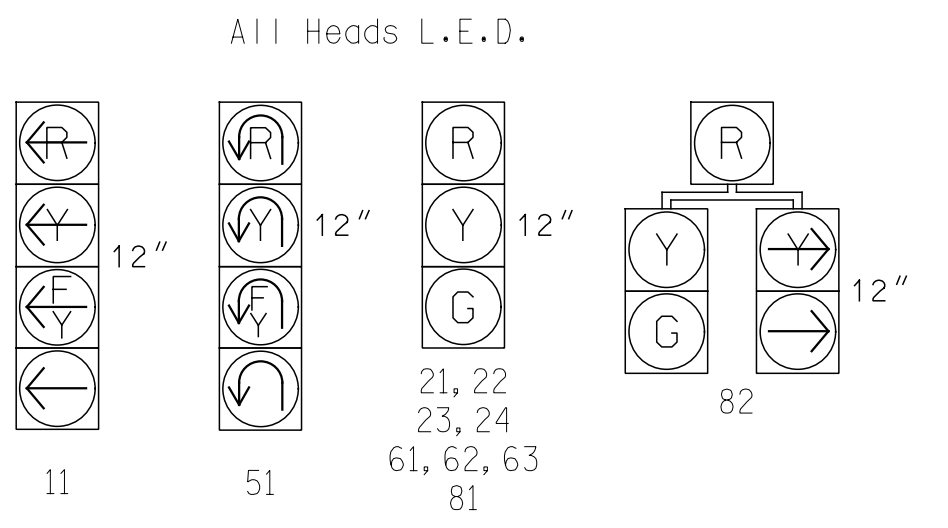
**NOTES**

- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Refer to pavement markings plan for stop bar locations.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- Closed loop system data: Controller Asset # 04-1428

**PHASING DIAGRAM DETECTION LEGEND**

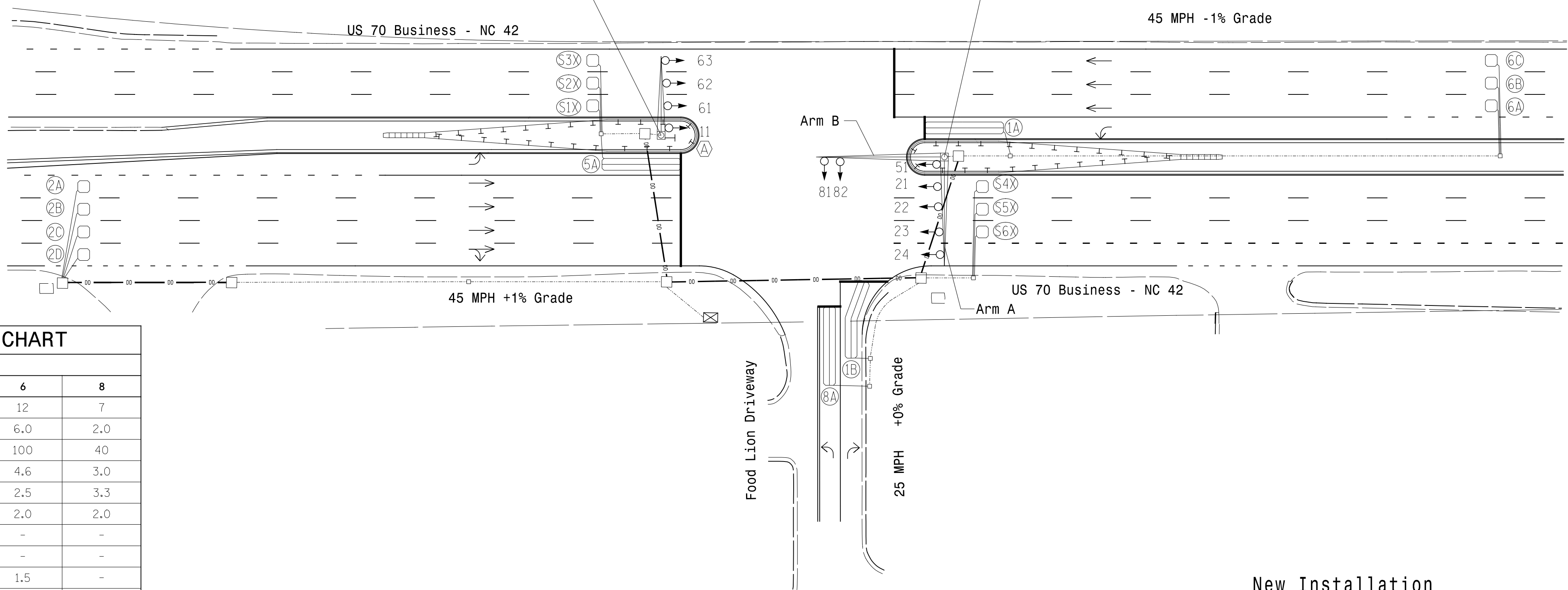


**SIGNAL FACE I.D.**



**Mast Arm #1**  
Sta. 126+18  
5.25' LT

**Mast Arm #2**  
Sta. 127+62  
5.75' RT



**LEGEND**

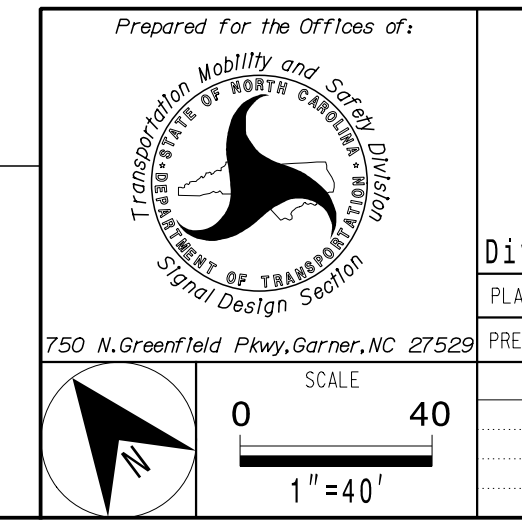
PROPOSED	EXISTING

**OASIS 2070 TIMING CHART**

FEATURE	PHASE				
	1	2	5	6	8
Min Green 1*	7	12	7	12	7
Extension 1*	2.0	6.0	2.0	6.0	2.0
Max Green 1*	30	100	30	100	40
Yellow Clearance	3.0	4.6	3.0	4.6	3.0
Red Clearance	3.9	2.5	3.9	2.5	3.3
Red Revert	2.0	2.0	2.0	2.0	2.0
Walk 1*	-	-	-	-	-
Don't Walk 1	-	-	-	-	-
Seconds Per Actuation*	-	1.5	-	1.5	-
Max Variable Initial*	-	34	-	34	-
Time Before Reduction*	-	15	-	15	-
Time To Reduce*	-	45	-	45	-
Minimum Gap	-	3.0	-	3.0	-
Recall Mode	-	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	-	YELLOW	-	YELLOW	-
Dual Entry	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON

\* 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.

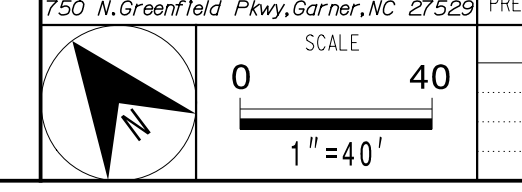
**New Installation**



**US 70 Business - NC 42 at Food Lion Driveway**  
 Division 4 Johnston County Clayton  
 PLAN DATE: August 2017 REVIEWED BY: BL Johnson  
 PREPARED BY: J. Kopaskie REVIEWED BY:  
 REVISIONS INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED  
 SEAL  
 NORTH CAROLINA PROFESSIONAL ENGINEER  
 JOSEPH B. KOPASKIE  
 029669  
 DocuSigned by: Joseph Kopaskie 10/3/2017  
 DATE  
 SIG. INVENTORY NO. 04-1428

**SEPI** ENGINEERING & CONSTRUCTION  
 1025 Wade Avenue  
 Raleigh, NC 27605  
 Tel: 919-789-9977  
 Fax: 919-789-9591  
 License: C-2197

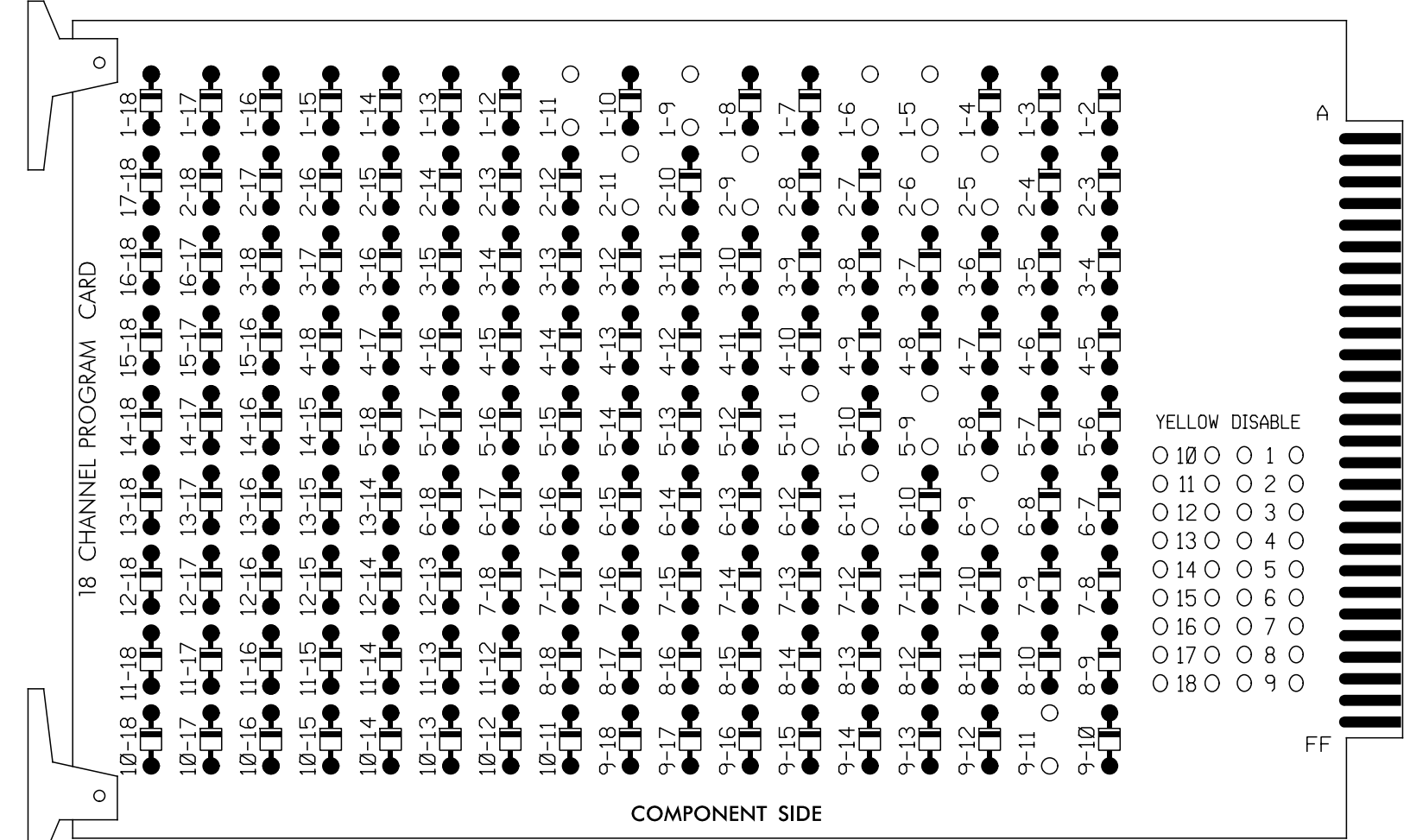


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**EDI MODEL 2018ECL-NC CONFLICT MONITOR PROGRAMMING DETAIL**  
(remove jumpers and set switches as shown)

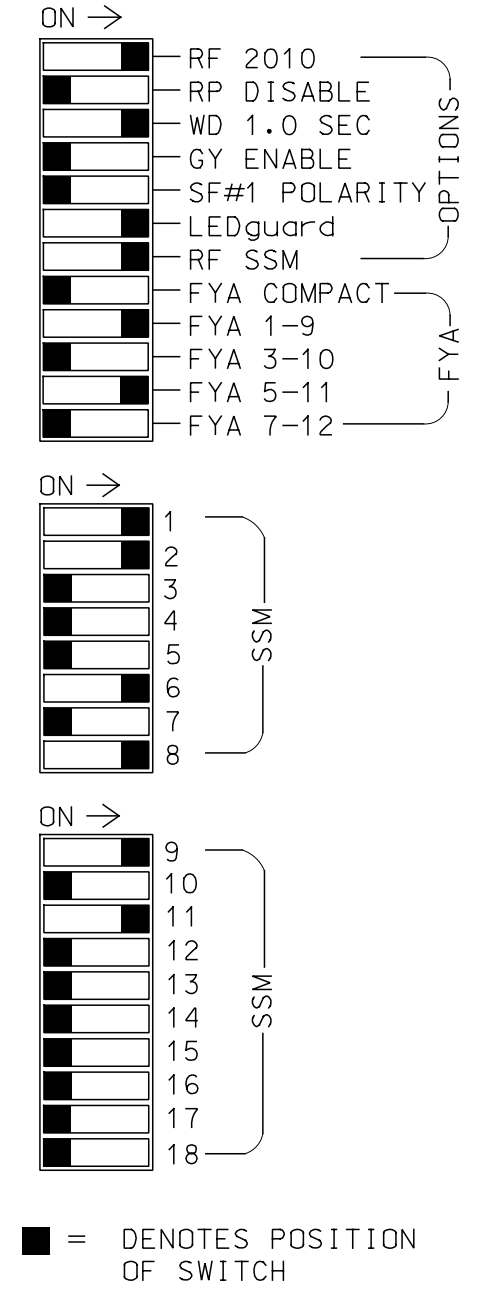
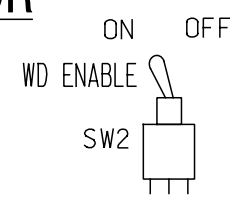
REMOVE DIODE JUMPERS I-5, I-6, I-9, I-11, 2-5, 2-6, 2-9, 2-11, 5-9, 5-11, 6-9, 6-11 and 9-11.



REMOVE JUMPERS AS SHOWN

**NOTES:**

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



**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Enable Simultaneous Gap-Out for all Phases.
- Program phases 2 and 6 for Variable Initial and Gap Reduction.
- Program phases 2 and 6 for Startup In Green.
- Program phases 2 and 6 for Yellow Flash, and overlap 1 as Wag Overlaps.
- The cabinet and controller are part of the US 70 Business - NC 42 (Clayton) Closed Loop 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,S7,S8,S11,  
 AUX S1,AUX S4  
 PHASES USED.....1,2,5,6,8  
 OVERLAP "A".....1+2  
 OVERLAP "B".....NOT USED  
 OVERLAP "C".....5+6  
 OVERLAP "D".....NOT USED

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	82	21,22 23,24	NU	NU	NU	51	61,62 63	NU	NU	81,82	NU	11	NU	NU	51	NU	NU
RED		*	128					134			107							
YELLOW			129				*	135			108							
GREEN			130					136			109							
RED ARROW													A121			A114		
YELLOW ARROW	126												A122			A115		
FLASHING YELLOW ARROW													A123			A116		
GREEN ARROW	127	127						133										

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

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

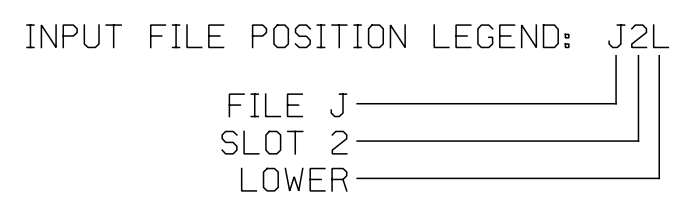
FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅ 1	∅ 2	∅ 2	∅ 2	∅ 5	∅ 6	∅ 6	∅ 8	∅ 1	∅ 1	∅ 1	∅ 1	∅ 1	∅ 1
L	1A	2A	2C	2D	5A	6A	6C	8A	1B	1B	1B	1B	1B	1B
U	NOT USED	∅ 2	∅ 2	∅ 2	∅ 6	∅ 6	∅ 6	∅ 1	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
L	2B	2D	2D	2D	6B	6C	6C	1B	1B	1B	1B	1B	1B	1B

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

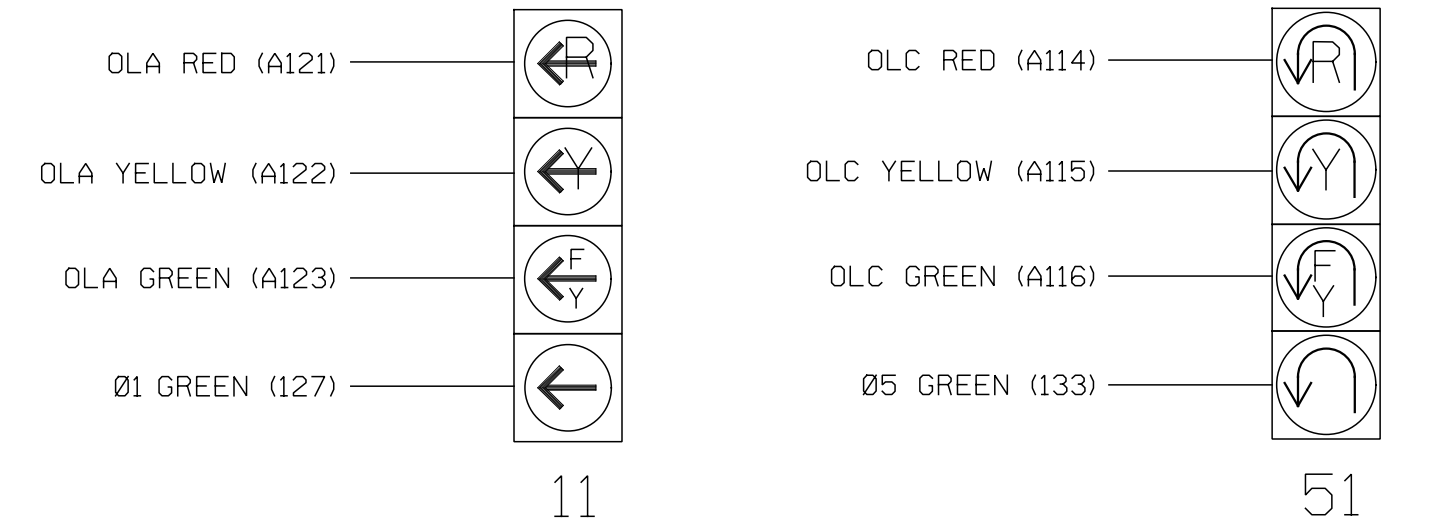
**INPUT FILE CONNECTION & PROGRAMMING CHART**

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 <sup>1</sup>	TB2-1,2	I1U	56	18	1	1	Y	Y			15
	-	J4U	48	10 ★	26	6	Y	Y	Y		3
	-	I1U	56	18 ★	51	1	Y	Y			
1B	TB5-11,12	J6L	46	8	18	1	Y	Y			15
2A	TB2-5,6	I2U	39	1	2	2	Y	Y			
2B	TB2-7,8	I2L	43	5	12	2	Y	Y			
2C	TB2-9,10	I3U	63	25	32	2	Y	Y			
2D	TB2-11,12	I3L	76	38	42	2	Y	Y			
*S1X	TB6-1,2	I7U	65	27	34	SYS					
*S2X	TB6-9,10	I9U	60	22	11	SYS					
*S3X	TB6-11,12	I9L	62	24	13	SYS					
5A <sup>2</sup>	TB3-1,2	J1U	55	17	5	5	Y	Y			15
	-	I4U	47	9 ★	22	2	Y	Y	Y		3
	-	J1U	55	17 ★	55	5	Y	Y			
6A	TB3-5,6	J2U	40	2	6	6	Y	Y			
6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
6C	TB3-9,10	J3U	64	26	36	6	Y	Y			
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			3
*S4X	TB7-1,2	J7U	66	28	38	SYS					
*S5X	TB7-9,10	J9U	59	21	15	SYS					
*S6X	TB7-11,12	J9L	61	23	17	SYS					

- Add jumper from I1-W to J4-W, on rear of input file.
  - Add jumper from J1-W to I4-W, on rear of input file.
- ★ See Input Page Assignment programming details on sheets 3 and 4.  
 \* System detector only. Remove the vehicle phase assigned to this detector in the default programming.



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

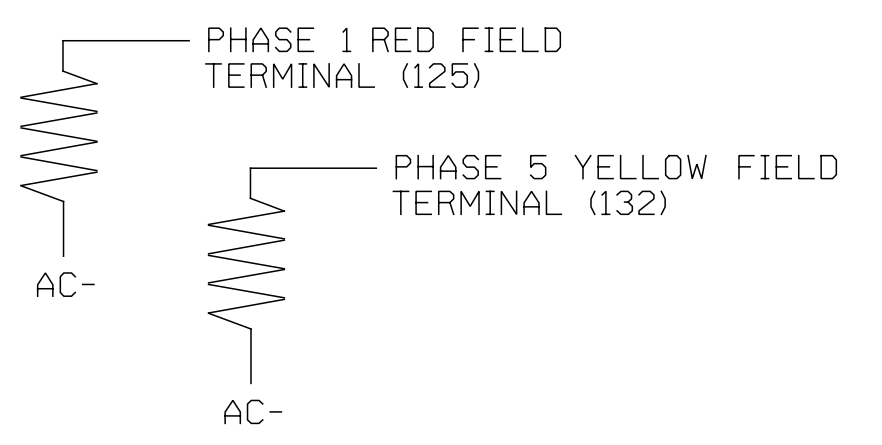


NOTE  
 The sequence display for signal heads 11 and 51 requires special logic programming. See sheet 2 for programming instructions.

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

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: 04-1428  
 DESIGNED: August 2017  
 SEALED: 10/3/2017  
 REVISED:

**SEPI**  
 ENGINEERING & CONSTRUCTION  
 1025 Wade Avenue  
 Raleigh, NC 27605  
 Tel: 919-789-9977  
 Fax: 919-789-9591  
 License: C-2197

Electrical Detail - Sheet 1 of 5

Prepared for the Offices of:  
  
 750 N. Greenfield Pkwy, Garner, NC 27529

**US 70 Business - NC 42**  
 at  
**Food Lion Driveway**  
 Division 4 Johnston County Clayton  
 PLAN DATE: August 2017 REVIEWED BY: BL Johnson  
 PREPARED BY: J. Kopaskie REVIEWED BY:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL  
  
 Documented by: Joseph Kopaskie 10/3/2017  
 DATE: 10/3/2017  
 SIG. INVENTORY NO. 04-1428

**LOGICAL I/O PROCESSOR PROGRAMMING DETAIL  
TO PRODUCE SPECIAL FYA-PPLT SIGNAL SEQUENCE**  
(program controller as shown below)

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

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

↓  
SCROLL DOWN

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

PRESS '+'

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

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

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #52 OFF

PRESS '+'

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

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

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #51 ON

PRESS '+'

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

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

↓  
SCROLL DOWN

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

PRESS '+'

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

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

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #44 OFF

PRESS '+'

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

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

↓  
SCROLL DOWN

THEN:  
SET OUTPUT ASSIGNMENT #43 ON

PRESS '+'

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

LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

**OUTPUT REFERENCE SCHEDULE**

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

**OVERLAP PROGRAMMING DETAIL  
FOR DEFAULT PHASING**  
(program controller as shown below)

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

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

← NOTICE GREEN FLASH

PRESS '+' TWICE

PAGE 1: VEHICLE OVERLAP 'C' SETTINGS  
PHASE: |12345678910111213141516  
VEH OVL PARENTS: | X  
VEH OVL NOT VEH: |  
VEH OVL NOT PED: |  
VEH OVL GRN EXT: |  
STARTUP COLOR: \_ RED \_ YELLOW \_ GREEN  
FLASH COLORS: \_ RED \_ YELLOW X GREEN  
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)  
FLASH YELLOW IN CONTROLLER FLASH?...Y  
GREEN EXTENSION (0-255 SEC)...0  
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0  
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0  
OUTPUT AS PHASE # (0=NONE, 1-16)...0

← NOTICE GREEN FLASH

OVERLAP PROGRAMMING COMPLETE

**OVERLAP PROGRAMMING DETAIL  
FOR ALTERNATE PHASING**  
(program controller as shown below)

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

NOTICE PAGE 2 →

PAGE 2: VEHICLE OVERLAP 'A' SETTINGS  
PHASE: |12345678910111213141516  
VEH OVL PARENTS: |X  
VEH OVL NOT VEH: |  
VEH OVL NOT PED: |  
VEH OVL GRN EXT: |  
STARTUP COLOR: \_ RED \_ YELLOW \_ GREEN  
FLASH COLORS: \_ RED \_ YELLOW \_ GREEN  
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)  
FLASH YELLOW IN CONTROLLER FLASH?...Y  
GREEN EXTENSION (0-255 SEC)...0  
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0  
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0  
OUTPUT AS PHASE # (0=NONE, 1-16)...0

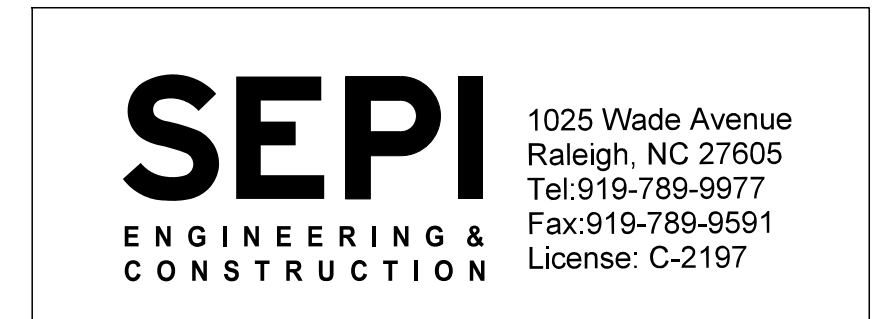
PRESS '+' TWICE

NOTICE PAGE 2 →

PAGE 2: VEHICLE OVERLAP 'C' SETTINGS  
PHASE: |12345678910111213141516  
VEH OVL PARENTS: | X  
VEH OVL NOT VEH: |  
VEH OVL NOT PED: |  
VEH OVL GRN EXT: |  
STARTUP COLOR: \_ RED \_ YELLOW \_ GREEN  
FLASH COLORS: \_ RED \_ YELLOW \_ GREEN  
SELECT VEHICLE OVERLAP OPTIONS: (Y/N)  
FLASH YELLOW IN CONTROLLER FLASH?...Y  
GREEN EXTENSION (0-255 SEC)...0  
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0  
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0  
OUTPUT AS PHASE # (0=NONE, 1-16)...0

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1428  
DESIGNED: August 2017  
SEALED: 10/3/2017  
REVISED:



Electrical Detail - Sheet 2 of 5

	<p>US 70 Business - NC 42 at Food Lion Driveway</p>		
	<p>Division 4 Johnston County Clayton</p>	<p>PLAN DATE: August 2017 REVIEWED BY: BL Johnson</p>	
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>REVISIONS</p>	<p>INIT. DATE</p>	<p>DocuSigned by: Joseph Kopaskie 10/3/2017 9CDEAEF80A54FA DATE SIG. INVENTORY NO. 04-1428</p>

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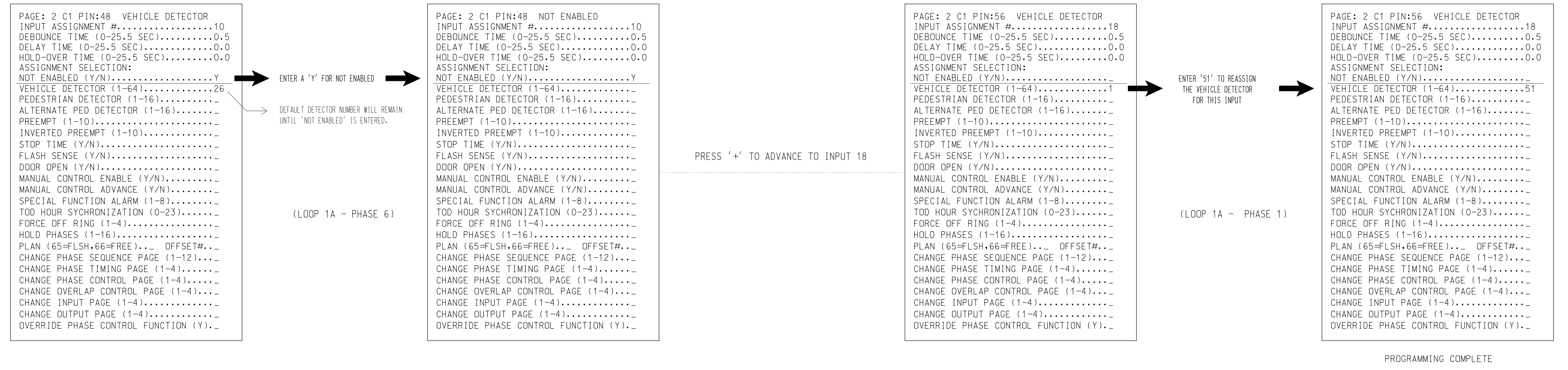


### INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 1A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION.
2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #10 (DETECTOR 26) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 6 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 51 TO INPUT #18 SO THAT THE DELAY ON LOOP 1A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

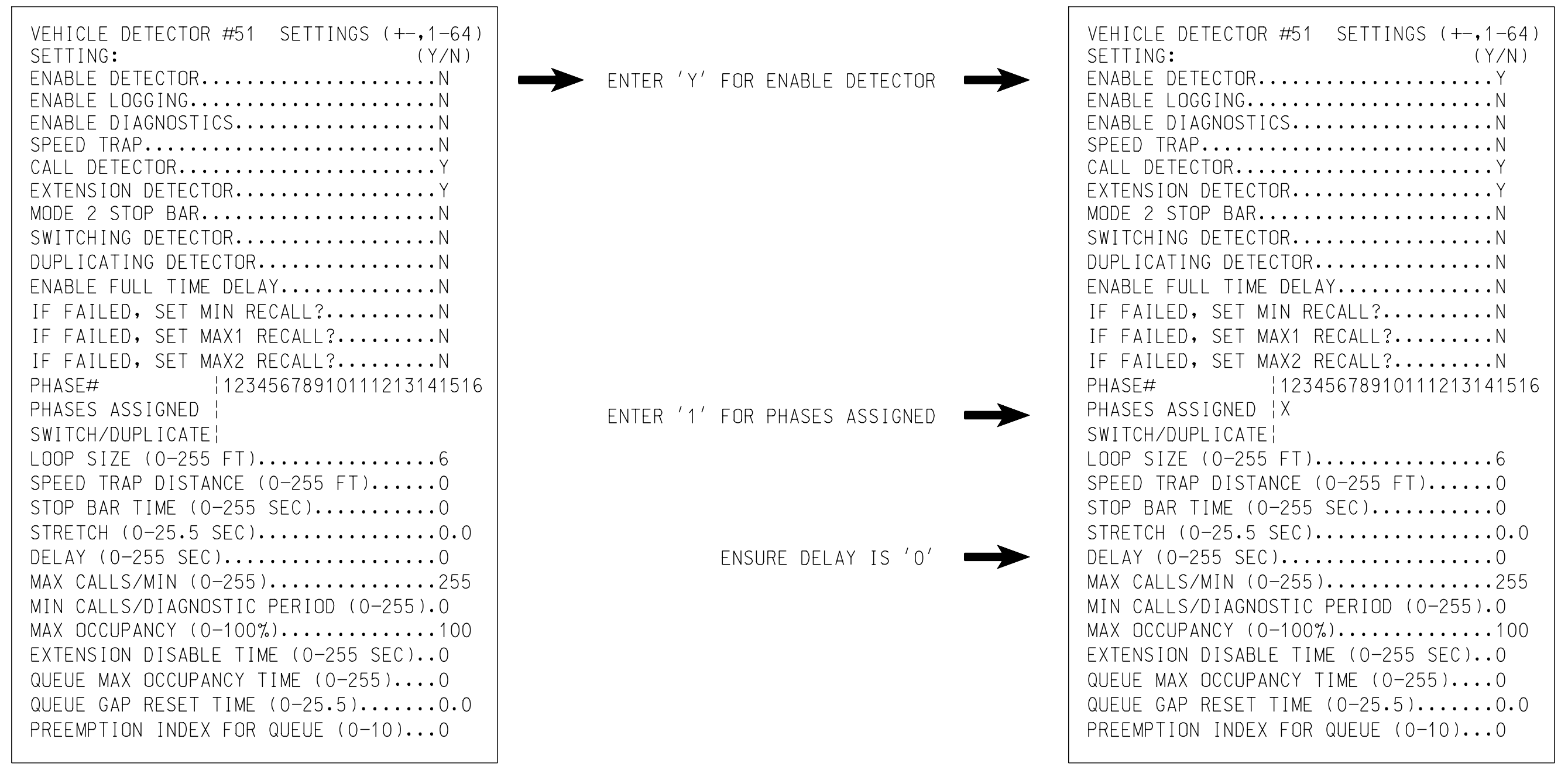
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 10 IS REACHED.



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

(program controller as shown below)

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



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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1428  
DESIGNED: August 2017  
SEALED: 10/3/2017  
REVISED:



Electrical Detail - Sheet 3 of 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

US 70 Business - NC 42 at Food Lion Driveway

Division 4 Johnston County Clayton

PLAN DATE: August 2017 REVIEWED BY: BL Johnson

PREPARED BY: J. Kopaskie REVIEWED BY:

REVISIONS INIT. DATE

750 N. Greenfield Pkwy, Garner, NC 27529

DocuSigned by: Joseph Kopaskie 10/3/2017

SIG. INVENTORY NO. 04-1428

9/19/2017 10:01:11 AM X:\2017\SETT\_075\_00\_W-5704A&B\IP\T\OFF\c:\s\gnol\sa\DESIGN\5451G-2\_04-1428(E).dgn J.Kopaskie

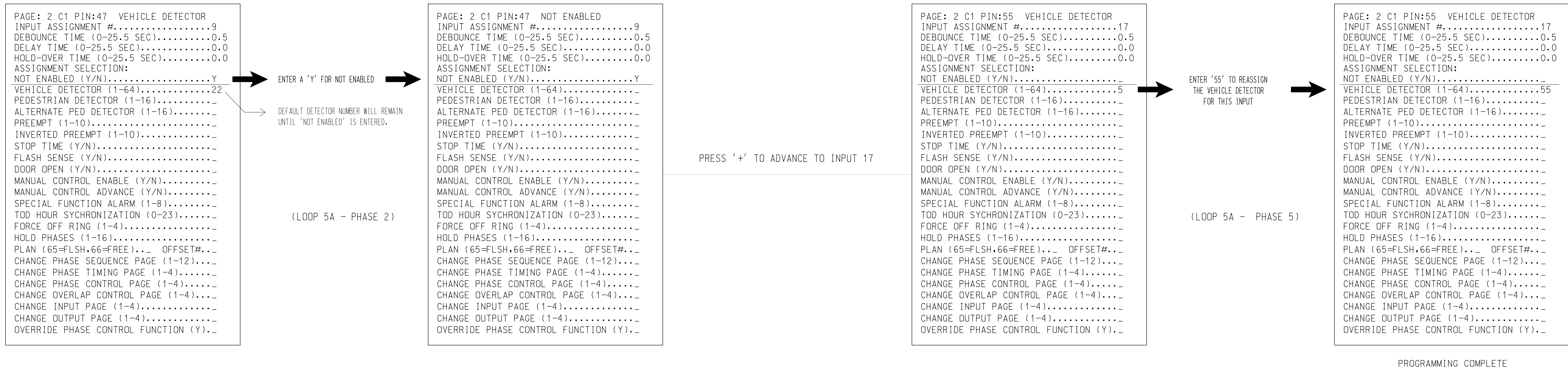


INPUT PAGE 2 ASSIGNMENT PROGRAMMING DETAIL FOR ALTERNATE PHASING - LOOP 5A

(program controller as shown below)

- NOTES: 1. THIS PROGRAMMING APPLIES FOR INPUT PAGE 2 ONLY. INPUT PAGE 1 WILL USE STANDARD DEFAULT SETTINGS. THIS PROGRAMMING IS NECESSARY FOR PROPER DETECTOR OPERATION DURING ALTERNATE PHASING OPERATION. 2. THE FIRST TASK THIS PROGRAMMING ACCOMPLISHES IS THE DISABLING OF INPUT #9 (DETECTOR 22) SO THAT A VEHICLE CALL WILL NOT BE PLACED TO PHASE 2 DURING ALTERNATE PHASING OPERATION. THE SECOND TASK THIS PROGRAMMING ACCOMPLISHES IS THAT IT REASSIGNS DETECTOR 55 TO INPUT #17 SO THAT THE DELAY ON LOOP 5A CAN BE REDUCED FROM 15 SECONDS TO 0 SECONDS.

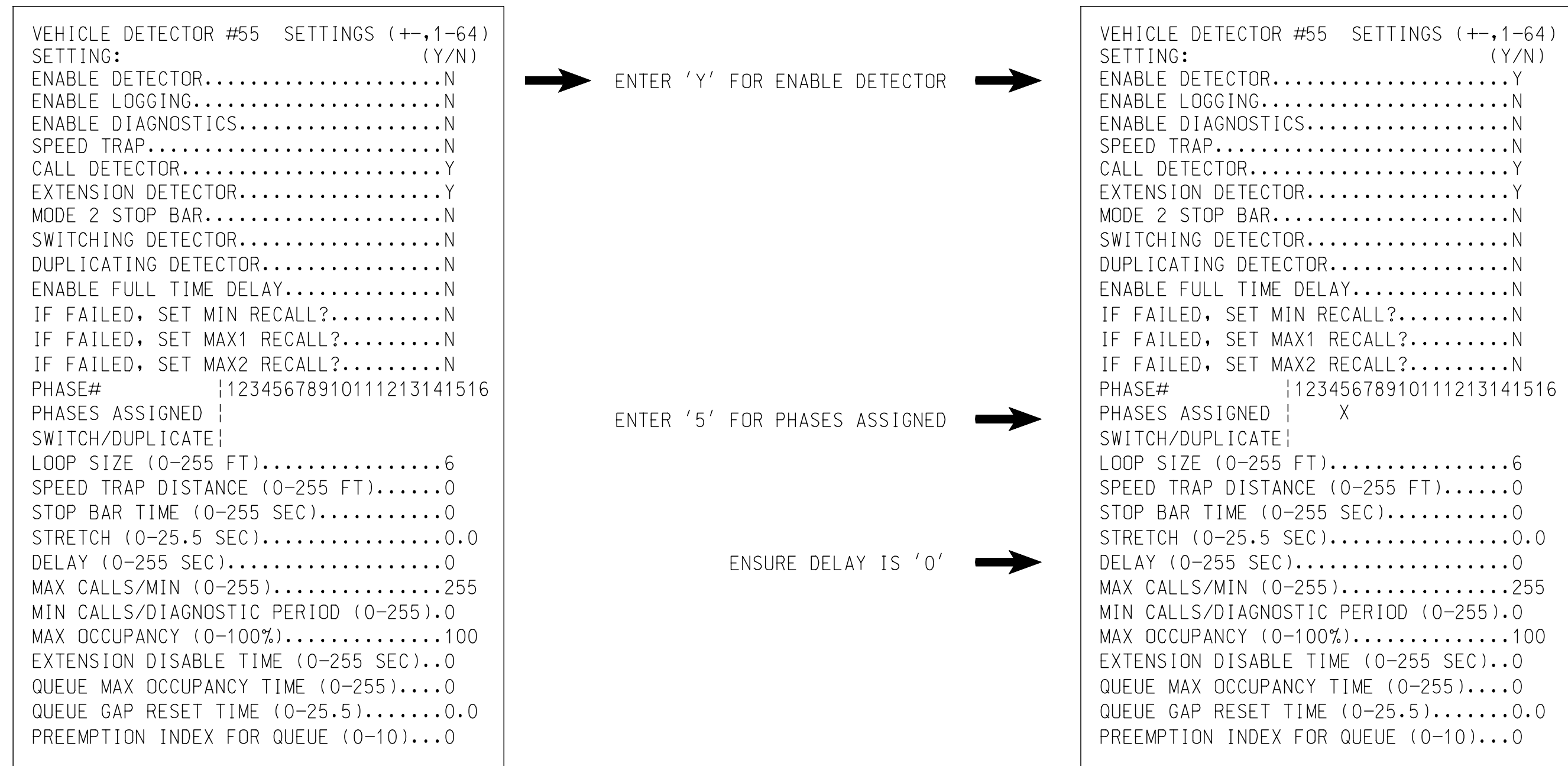
FROM MAIN MENU PRESS '5' (INPUTS), THEN PRESS 'NEXT' TO GET TO INPUT PAGE '2'. PRESS THE '+' KEY UNTIL INPUT 9 IS REACHED.



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

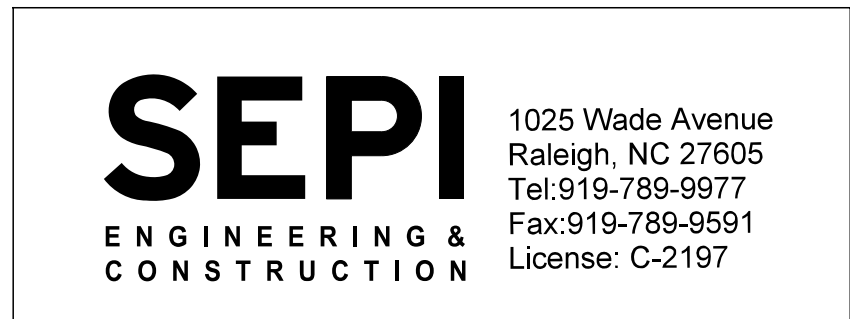
(program controller as shown below)

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



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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1428 DESIGNED: August 2017 SEALED: 10/3/2017 REVISED:



Electrical Detail - Sheet 4 of 5

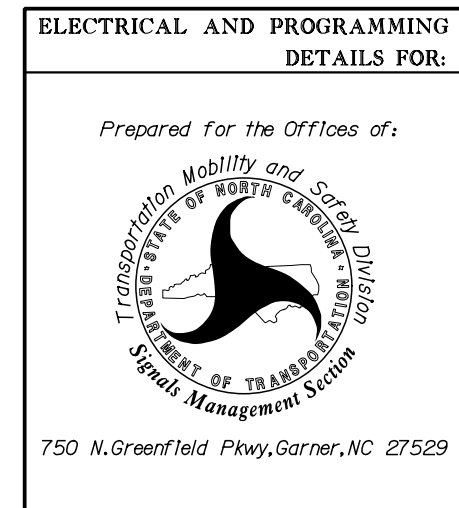


Table with project details: US 70 Business - NC 42 at Food Lion Driveway, Division 4 Johnston County Clayton. Includes dates for plan (August 2017) and review (BL Johnson), and preparer (J. Kopaskie).

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED. Includes seal and signature of Joseph B. Kopaskie dated 10/3/2017.

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## ALTERNATE PHASING ACTIVATION DETAIL

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

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

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

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

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

### ALTERNATE PHASING PAGE CHANGE SUMMARY

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

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

INPUTS PAGE 2: Disables phase 6 call on loop 1A and reduces delay time for phase 1 call on loop 1A to 0 seconds.

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

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 04-1428  
 DESIGNED: August 2017  
 SEALED: 10/3/2017  
 REVISED:

SEPI

ENGINEERING & CONSTRUCTION

1025 Wade Avenue  
 Raleigh, NC 27605  
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 Fax: 919-789-9591  
 License: C-2197

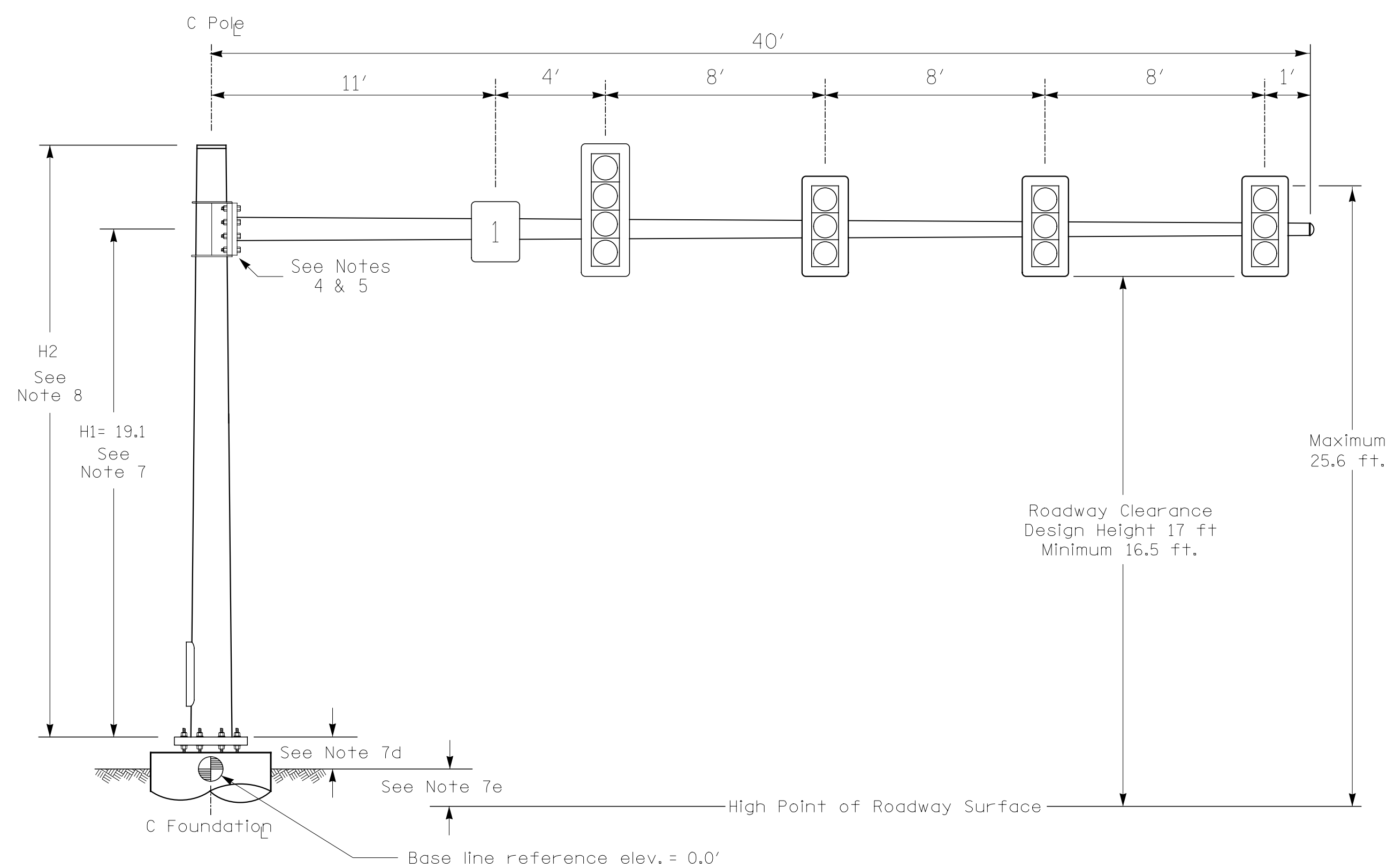
Electrical Detail - Sheet 5 of 5

<p style="font-size: 0.8em; margin: 0;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: 0.7em; margin: 0;">Prepared for the Offices of:</p> <p style="font-size: 0.7em; margin: 0;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p style="font-size: 1.2em; font-weight: bold; margin: 0;">US 70 Business - NC 42</p> <p style="font-size: 0.8em; margin: 0;">at</p> <p style="font-size: 1.1em; font-weight: bold; margin: 0;">Food Lion Driveway</p> <p style="font-size: 0.8em; margin: 0;">Division 4 Johnston County Clayton</p> <table style="width: 100%; font-size: 0.7em;"> <tr> <td>PLAN DATE: August 2017</td> <td>REVIEWED BY: BL Johnson</td> </tr> <tr> <td>PREPARED BY: J. Kopaskie</td> <td>REVIEWED BY:</td> </tr> </table>	PLAN DATE: August 2017	REVIEWED BY: BL Johnson	PREPARED BY: J. Kopaskie	REVIEWED BY:	<p style="font-size: 0.7em; margin: 0;">DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> <p style="font-size: 0.7em; margin: 0;">SEAL</p> <p style="font-size: 0.7em; margin: 0;">DocuSigned by: Joseph Kopaskie 10/3/2017</p> <p style="font-size: 0.7em; margin: 0;">SIG. INVENTORY NO. 04-1428</p>
PLAN DATE: August 2017	REVIEWED BY: BL Johnson					
PREPARED BY: J. Kopaskie	REVIEWED BY:					

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### Design Loading for METAL POLE NO. 1



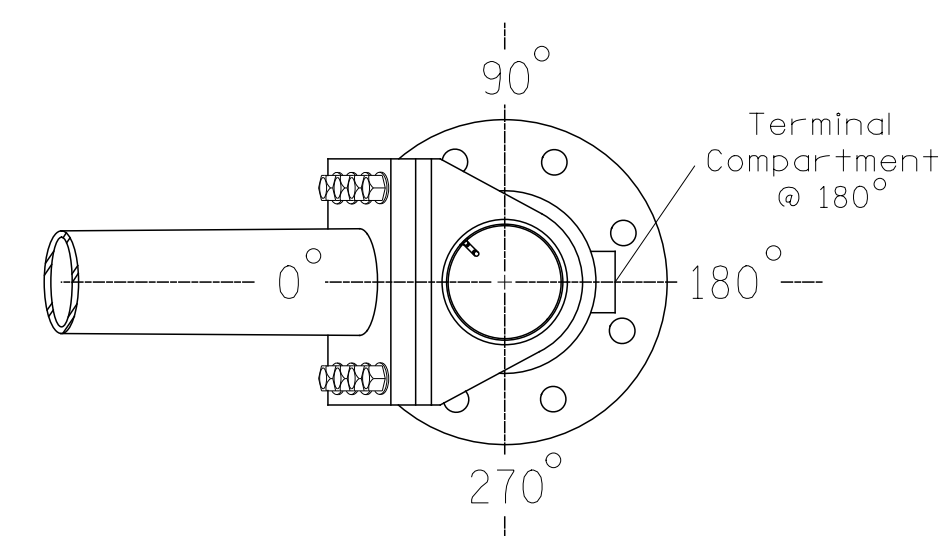
Elevation View

### SPECIAL NOTE

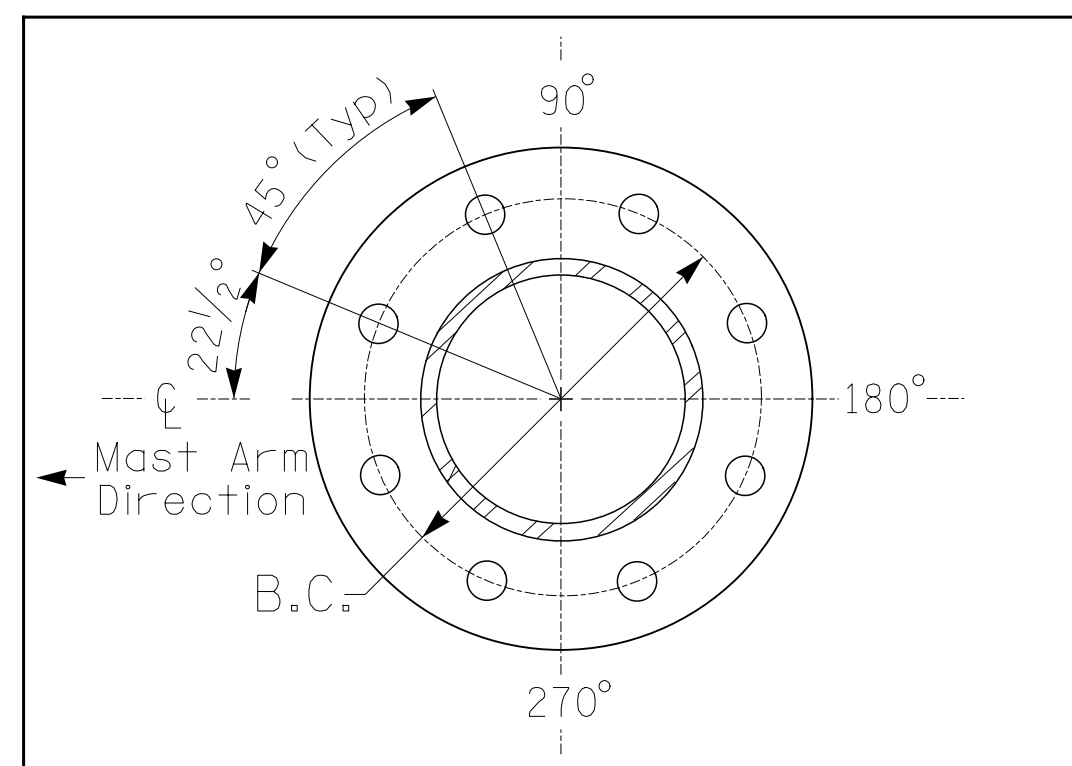
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

### Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 1	NA
Baseline reference point at C Foundation @ ground level	0.0 ft.	NA
Elevation difference at High point of roadway surface	-0.08 ft.	NA
Elevation difference at Edge of travelway or face of curb	+0.12 ft.	NA

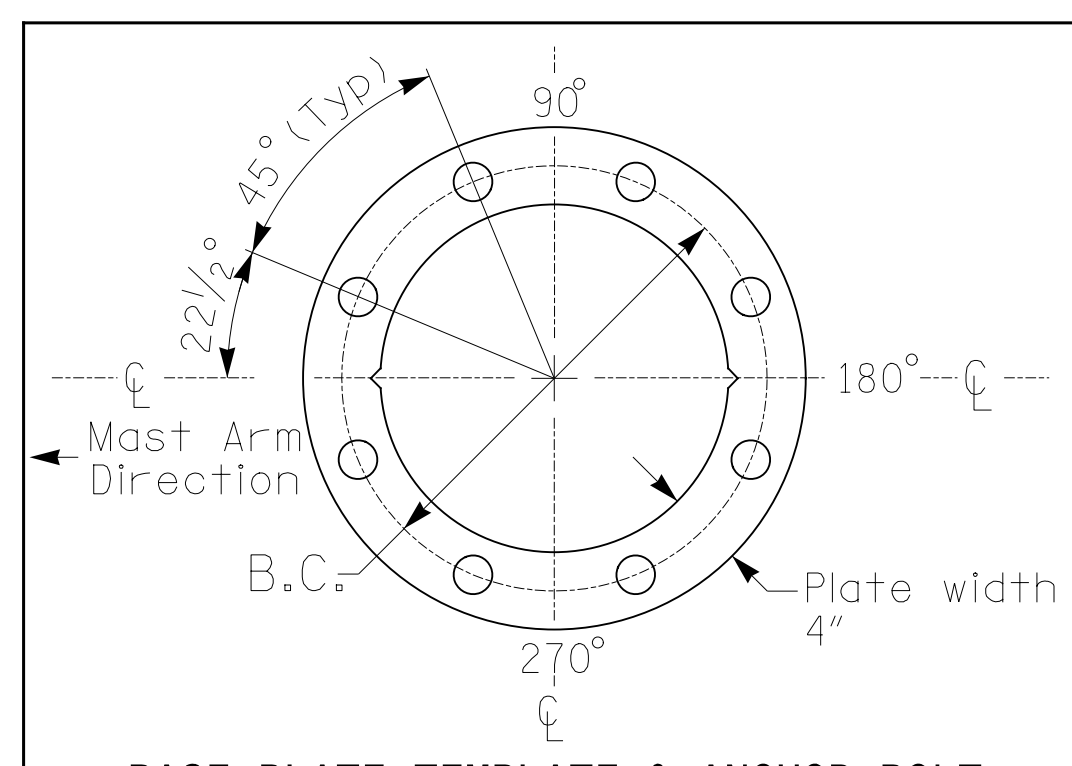


POLE RADIAL ORIENTATION



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

#### MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12'-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5"W X 66.0"L	74 LBS
	RIGID MOUNTED SIGNAL HEAD 12'-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5"W X 52.5"L	60 LBS
	SIGN RIGID MOUNTED	5.0 S.F.	24.0"W X 30.0"L	11 LBS

#### NOTES

#### DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
  - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
  - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
  - The 2012 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

- 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 stress ratios that do not exceed 0.9.
- 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.
- 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.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
  - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
  - Signal heads are rigidly mounted and vertically centered on the mast arm.
  - The roadway clearance height for design is as shown in the elevation views.
  - The top of the pole base plate is 0.75 feet above the ground elevation.
  - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- 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.
- 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.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

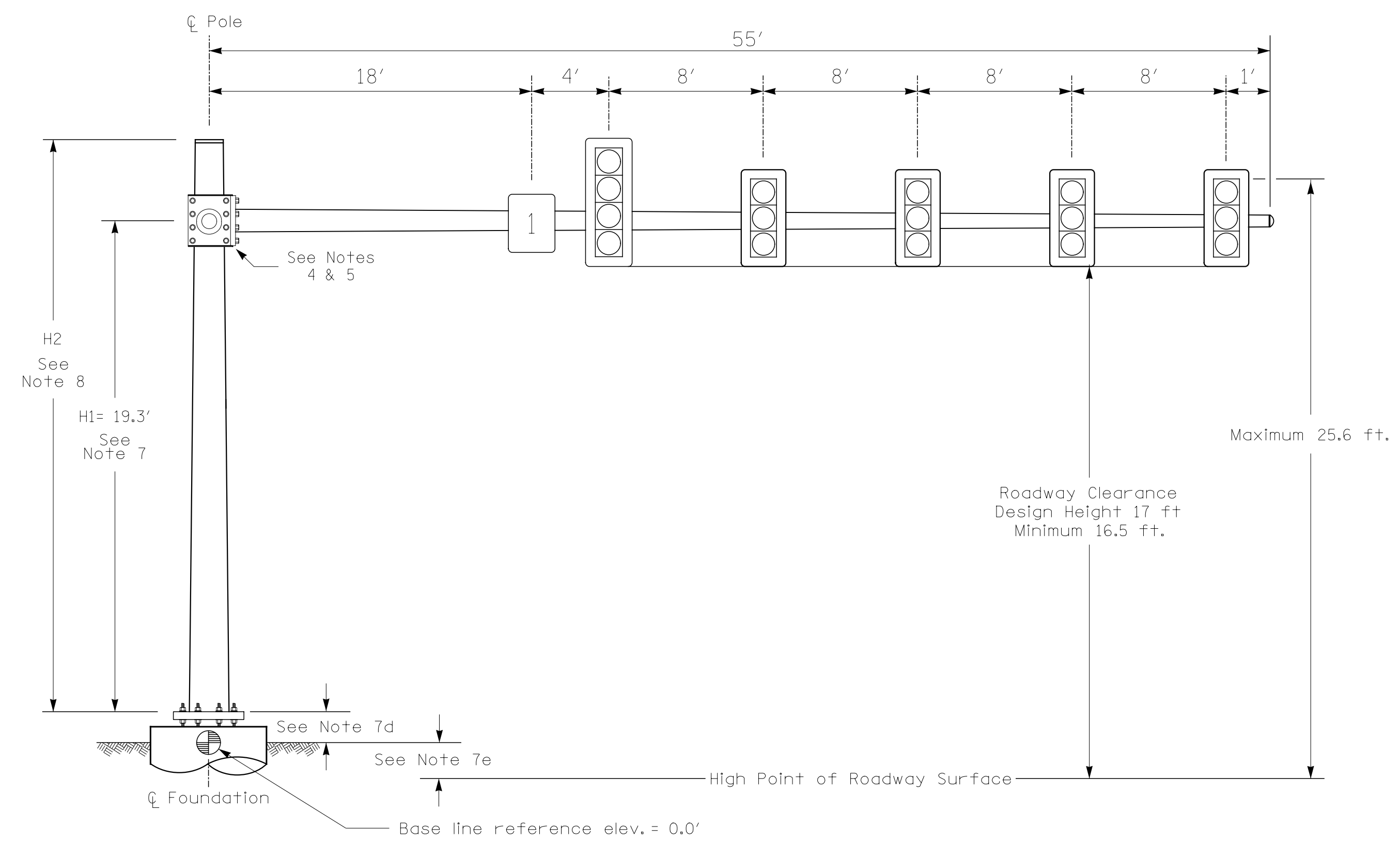
**SEPI** ENGINEERING & CONSTRUCTION  
 1025 Wade Avenue  
 Raleigh, NC 27605  
 Tel: 919-789-9977  
 Fax: 919-789-9591  
 License: C-2197

NCDOT Wind Zone 3 (110 mph)

 Prepared for the Offices of: Transportation Mobility and Safety Division NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Design Section 750 N. Greenfield Pkwy, Garner, NC 27529	<b>US 70 Business - NC 42</b> at <b>Food Lion Driveway</b>		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL  SEAL NORTH CAROLINA PROFESSIONAL ENGINEER 029669 JOSEPH B. KOPASKIE
	Division 4 Johnston County Clayton PLAN DATE: August 2017 REVIEWED BY: BL Johnson PREPARED BY: J. Kopaskie REVIEWED BY:	REVISIONS INIT. DATE	

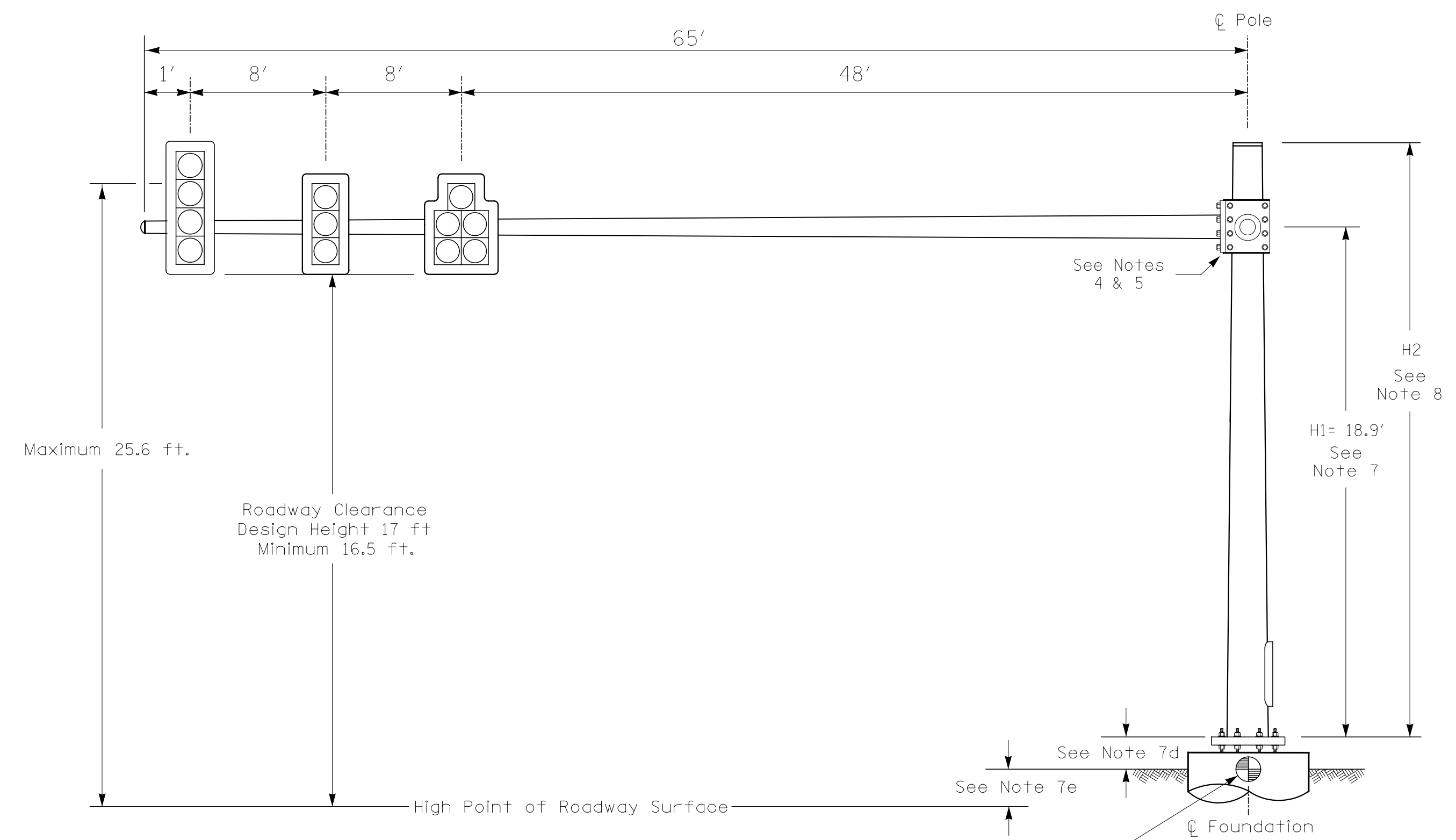


### Design Loading for METAL POLE NO. 2, MAST ARM A



Elevation View @ 0°

### Design Loading for METAL POLE NO. 2, MAST ARM B



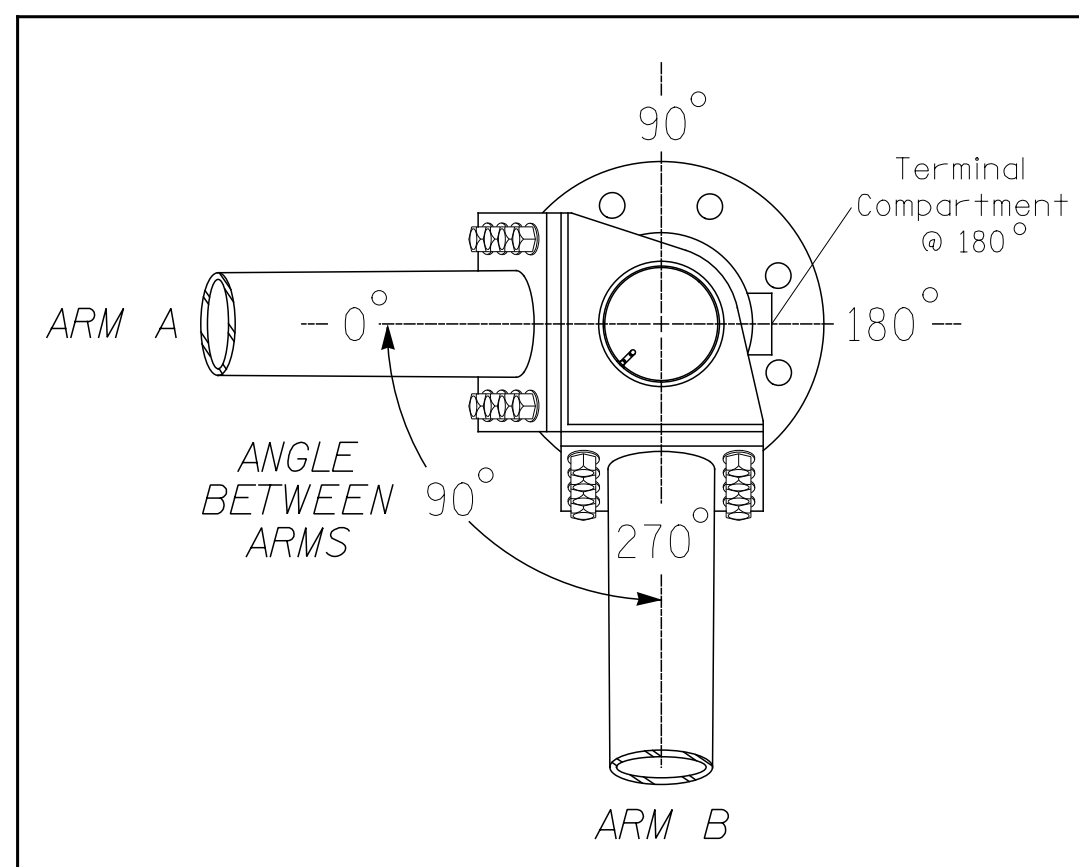
Elevation View @ 270°

### SPECIAL NOTE

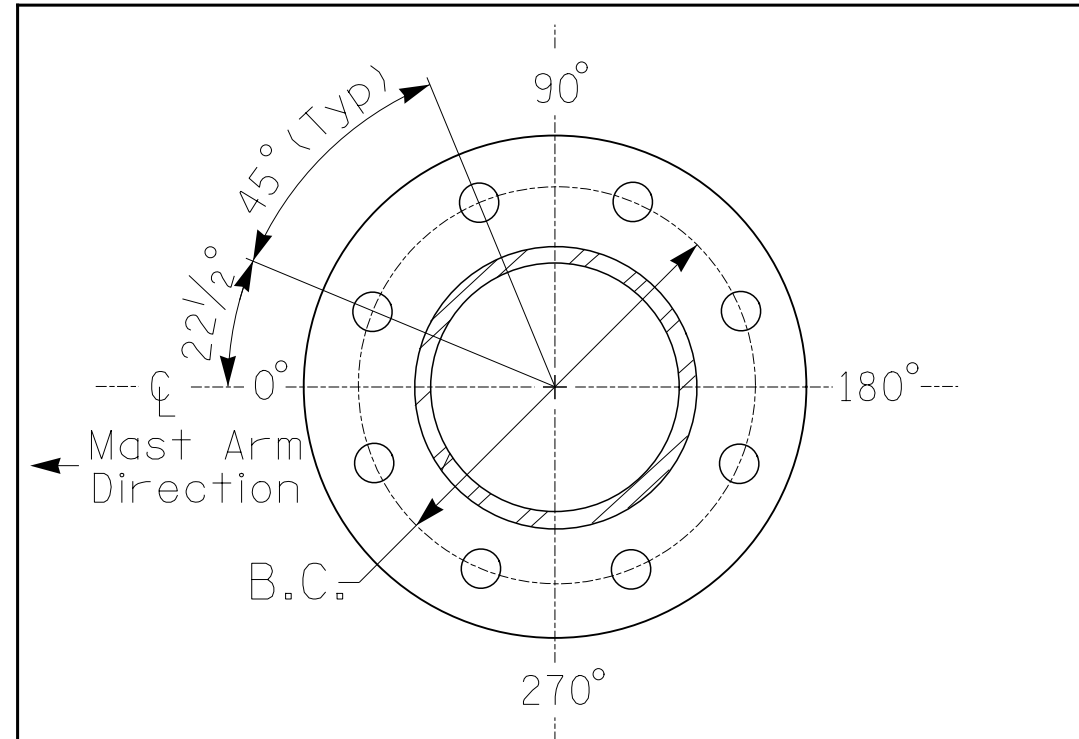
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

### Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm A	Arm B
Baseline reference point at $\phi$ Foundation @ ground level	0.0 ft.	0.0 ft.
Elevation difference at High point of roadway surface	-0.55 ft.	+0.30 ft.
Elevation difference at Edge of travelway or face of curb	-0.07 ft.	+0.19 ft.

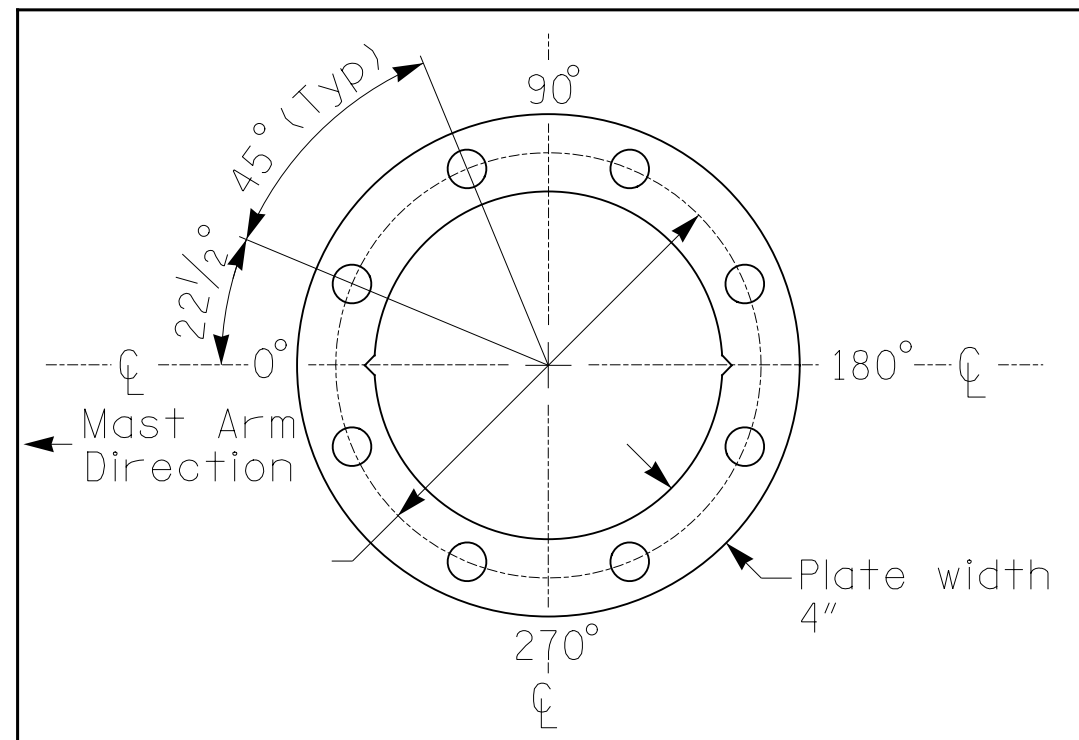


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 6



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

### METAL POLE No. 2

#### MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-4 SECTION-WITH BACKPLATE	11.5 S.F.	25.5"W X 66.0"L	74 LBS
	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"-5 SECTION-WITH BACKPLATE	16.3 S.F.	42.0"W X 56.0"L	103 LBS
	SIGN RIGID MOUNTED	5.0 S.F.	24.0"W X 30.0"L	11 LBS

#### NOTES

#### DESIGN REFERENCE MATERIAL

- Design the traffic signal structure and foundation in accordance with:
  - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
  - The 2012 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
  - The 2012 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

- 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 stress ratios that do not exceed 0.9.
- 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.
- 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.
- Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
- The mast arm attachment height (H1) shown is based on the following design assumptions:
  - Mast arm slope and deflection are not considered in determining the arm attachment height as they are assumed to offset each other.
  - Signal heads are rigidly mounted and vertically centered on the mast arm.
  - The roadway clearance height for design is as shown in the elevation views.
  - The top of the pole base plate is 0.75 feet above the ground elevation.
  - Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
- The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
  - H1 plus 2 feet, or
  - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
- 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.
- The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
- The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

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Tel: 919-789-9977  
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License: C-2197

NCDOT Wind Zone 3 (110 mph)

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 0 N/A

US 70 Business - NC 42  
at  
Food Lion Driveway

Division 4 Johnston County Clayton

PLAN DATE: August 2017 REVIEWED BY: BL Johnson

PREPARED BY: J. Kopaskie REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL

DocuSigned by:  
**Joseph Kopaskie** 10/3/2017

SIG. INVENTORY NO. 04-1428

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- 1 INSTALL REA, PE – 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 2 INSTALL REA, PE – 38, (FIGURE – 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 3 INSTALL REA, PE – 39, (UNDERGROUND) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 4 INSTALL SMFO CABLE
- 5 INSTALL MMFO CABLE
- 6 INSTALL FIBER OPTIC DROP CABLE
- 7 INSTALL TRACER WIRE
- 8 TRENCH
- 9 INSTALL PVC CONDUIT
- 10 INSTALL RIGID, GALVANIZED STEEL CONDUIT
- 11 INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
- 12 INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
- 13 INSTALL OUTER-DUCT POLYETHYLENE CONDUIT
- 14 INSTALL POLYETHYLENE CONDUIT
- 15 DIRECTIONAL DRILL CONDUIT
- 16 BORE AND JACK CONDUIT
- 17 INSTALL CABLE(S) IN EXISTING CONDUIT
- 18 INSTALL CABLE(S) IN NEW CONDUIT
- 19 INSTALL CABLE(S) IN EXISTING RISER RESEAL WITH HEAT SHRINK TUBING RETRO FIT KIT
- 20 INSTALL CABLE(S) IN NEW RISER
- 21 INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS
- 22 INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 23 INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 24 INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
- 25 INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
- 26 TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 27 INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPlice CABLE IN CABINET
- 29 INSTALL UNDERGROUND SPlice ENCLOSURE
- 30 INSTALL AERIAL SPlice ENCLOSURE
- 30A EXISTING AERIAL SPlice ENCLOSURE
- 31 INSTALL POLE MOUNTED SPlice CABINET
- 31A EXISTING POLE MOUNTED SPlice CABINET
- 32 INSTALL BASE MOUNTED SPlice CABINET
- 32A EXISTING BASE MOUNTED SPlice CABINET
- 33 REMOVE EXISTING SPlice CABINET
- 33A REMOVE EXISTING AERIAL SPlice ENCLOSURE

- 34 INSTALL CABINET FOUNDATION
- 35 REMOVE EXISTING CABINET FOUNDATION
- 35A REMOVE EXISTING CABINET
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 36A EXISTING CCTV CAMERA ASSEMBLY
- 36B REMOVE EXISTING CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 38A EXISTING CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 40A EXISTING OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL WOOD POLE
- 43 REMOVE EXISTING WOOD POLE
- 44 INSTALL AERIAL GUY ASSEMBLY
- 45 INSTALL STANDARD GUY ASSEMBLY
- 46 INSTALL SIDEWALK GUY ASSEMBLY
- 47 INSTALL MESSENGER CABLE
- 48 REMOVE EXISTING COMMUNICATIONS CABLE AND MESSENGER CABLE
- 49 REMOVE EXISTING COMMUNICATIONS CABLE
- 50 INSTALL TELEPHONE SERVICE
- 51 INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
- 51A EXISTING CABLE STORAGE RACKS (SNOW SHOES) WITH 100 FEET OF CABLE
- 52 INSTALL DELINEATOR MARKER
- 53 STORE 20 FEET OF COMMUNICATIONS CABLE
- 53A STORE 60 FEET OF COMMUNICATIONS CABLE
- 54 LASH CABLE(S) TO EXISTING SIGNAL/COMMUNICATIONS CABLE
- 55 LASH CABLE(S) TO EXISTING MESSENGER CABLE
- 56 LASH CABLE(S) TO NEW MESSENGER CABLE
- 57 MODIFY EXISTING ELECTRICAL SERVICE
- 58 INSTALL NEW ELECTRICAL SERVICE
- 58A EXISTING ELECTRICAL SERVICE
- 59 REUSE EXISTING TRANSCEIVER FOR MVD
- 59A INSTALL TRANSCEIVER FOR MVD
- 60 INSTALL POLE MOUNTED CCTV CABINET
- 60A EXISTING POLE MOUNTED CCTV CABINET
- 61 INSTALL FIBER OPTIC DATA TRANSCEIVER
- 61A EXISTING FIBER OPTIC DATA TRANSCEIVER
- 62 INSTALL FIBER OPTIC VIDEO TRANSMITTER W/DATA
- 62A EXISTING FIBER OPTIC VIDEO TRANSMITTER W/DATA

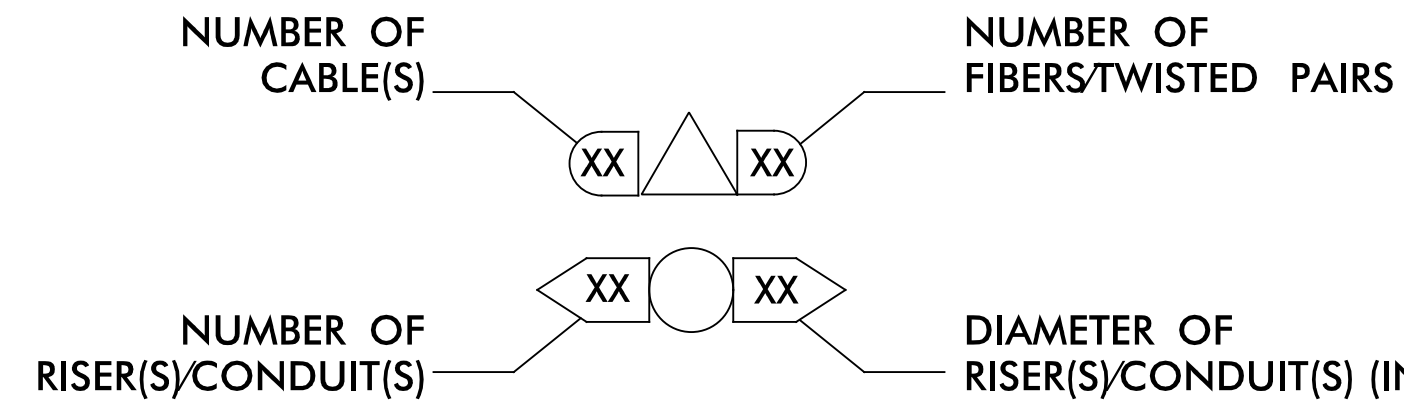
- 62B RELOCATE AND REUSE EXISTING FIBER OPTIC VIDEO TRANSMITTER W/DATA AND INSTALL NEW VIDEO ENCODER
- 63 INSTALL POLE MOUNTED MICROWAVE VEHICLE DETECTOR
- 63A EXISTING POLE MOUNTED MICROWAVE VEHICLE DETECTOR
- 63B RELOCATE AND REUSE EXISTING POLE MOUNTED MICROWAVE VEHICLE DETECTOR

**LEGEND**

- NEW FIBER OPTIC COMMUNICATIONS CABLE
- NEW TWISTED PAIR COMMUNICATIONS CABLE
- EXISTING COMMUNICATIONS CABLE
- EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- NEW CONDUIT
- EXISTING CONDUIT
- NEW DIRECTIONAL DRILLED CONDUIT
- NEW BORED AND JACKED CONDUIT
- NEW JUNCTION BOX
- EXISTING JUNCTION BOX
- EXISTING WOOD POLE (NOT AFFECTED BY PROJECT)
- EXISTING WOOD POLE (TO BE REMOVED BY OTHERS)
- NEW WOOD POLE (BY OTHERS)
- EXISTING AERIAL SPlice ENCLOSURE
- NEW AERIAL SPlice ENCLOSURE
- NEW METAL POLE
- EXISTING METAL POLE
- NEW CCTV CAMERA ASSEMBLY
- EXISTING CCTV CAMERA ASSEMBLY
- NEW STANDARD GUY ASSEMBLY
- NEW SIDEWALK GUY ASSEMBLY
- EXISTING CABLE STORAGE RACKS (SNOW SHOES)
- NEW CABLE STORAGE RACKS (SNOW SHOES)
- EXISTING CONTROLLER AND CABINET
- EXISTING SPlice CABINET
- NEW SPlice CABINET
- SIGNAL POLE
- SIGNAL INVENTORY NUMBER
- YAGI ANTENNA (SINGLE)
- OMNI ANTENNA

**CONSTRUCTION NOTE SYMBOLOGY KEY**

- INDICATES NUMBER OF CABLES, LOOPS, ETC.
- INDICATES NUMBER OF FIBERS PER CABLE, TWISTED PAIRS PER CABLE, ETC.
- INDICATES NUMBER OF RISER(S)/CONDUIT(S)
- INDICATES DIAMETER OF RISER(S)/CONDUIT(S) (INCH)



**SEPI**  
ENGINEERING & CONSTRUCTION

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Prepared for the Offices of:  
Transportation Mobility and Safety Division  
North Carolina Department of Transportation  
Signal Design Section  
750 N. Greenfield Pkwy, Garner, NC 27529

**CONSTRUCTION NOTES**

Division 4 Johnston County Clayton

PLAN DATE: August 2017 REVIEWED BY: B L Johnson

PREPARED BY: J Kopaskie REVIEWED BY:

INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

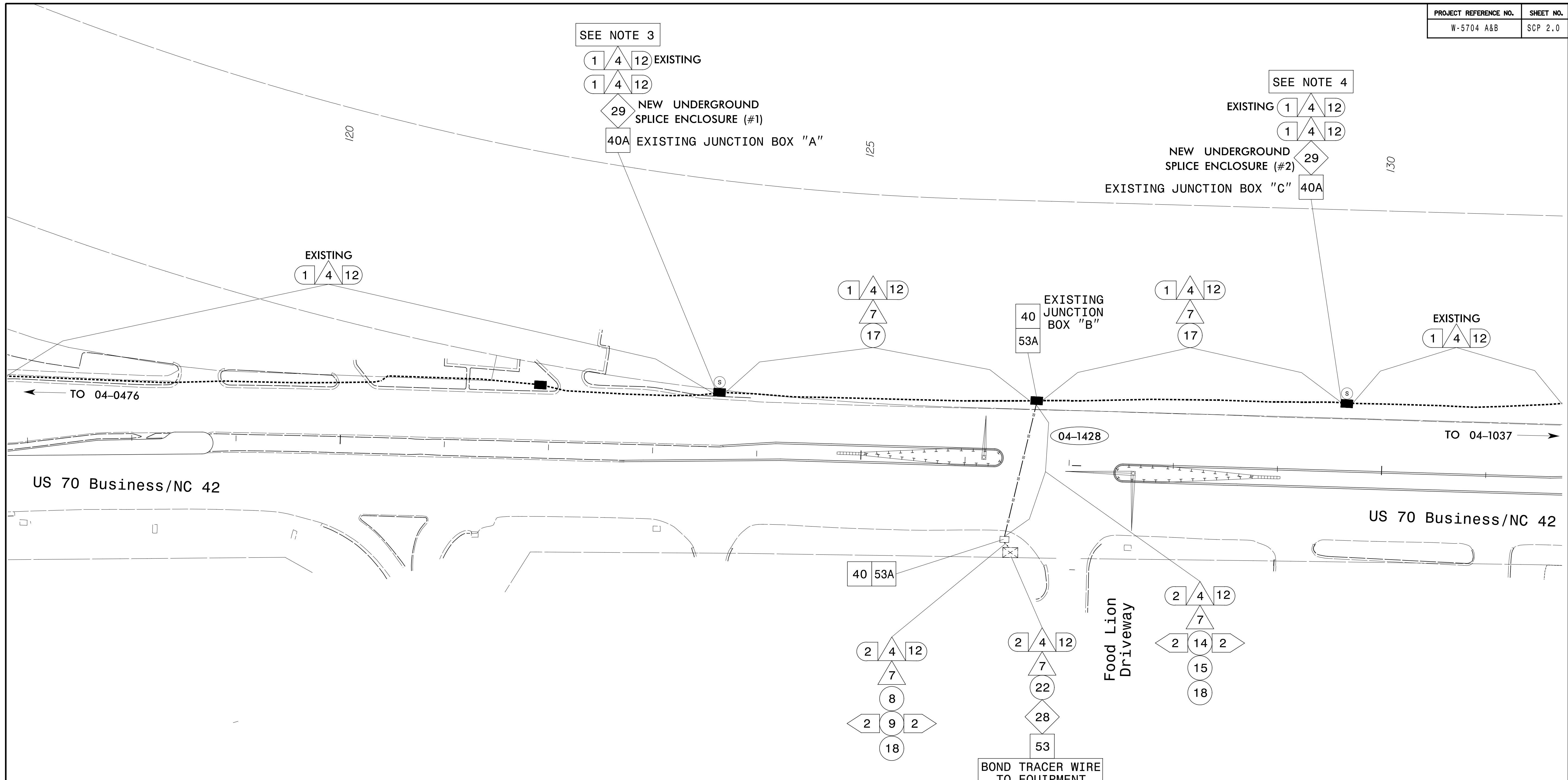
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JOSEPH B. KOPASKIE  
ENGINEER  
029669

DocuSigned by:  
Joseph Kopaskie  
10/3/2017

SIG. INVENTORY NO. 04-1428





CABLE ROUTING NOTES:

- 1) FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM CONTACT NCDOT, RUSSELL BROADWELL AT (252) 640-6507 TO COORDINATE THE NEW SIGNAL COMMUNICATIONS INSTALLATION. NOTIFY NCDOT AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. COORDINATE ALL WORK WITH THE NCDOT. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
- 2) CONTRACTOR TO RECORD AND PROVIDE AS-BUILT PLANS TO THE ENGINEER OF FINAL SPLICE ARRANGEMENT.
- 3) CUT EXISTING FIBER OPTIC CABLE AT EXISTING OVERSIZED JUNCTION BOX "B". BACKPULL EXISTING FIBER OPTIC CABLE TO EXISTING OVERSIZED JUNCTION BOX "A". INSTALL NEW UNDERGROUND SPLICE ENCLOSURE #1 AND SPLICE FIBER OPTIC CABLE IN ACCORDANCE WITH SPLICE PLANS AT EXISTING OVERSIZED JUNCTION BOX "A". COIL SPARE COMMUNICATIONS CABLE IN EXISTING OVERSIZED JUNCTION BOX "A".
- 4) BACKPULL EXISTING FIBER OPTIC CABLE FROM EXISTING OVERSIZED JUNCTION BOX "B" TO EXISTING OVERSIZED JUNCTION BOX "C". INSTALL NEW UNDERGROUND SPLICE ENCLOSURE #2 AND SPLICE FIBER OPTIC CABLE IN ACCORDANCE WITH SPLICE PLANS AT EXISTING OVERSIZED JUNCTION BOX "C". COIL SPARE COMMUNICATIONS CABLE IN EXISTING OVERSIZED JUNCTION BOX "C".
- 5) IT IS A MANDATORY REQUIREMENT THAT THE CONTRACTOR TAG AND LABEL ALL FIBER OPTIC CABLES AT UNDERGROUND SPLICE ENCLOSURE. CABLE ID MARKERS CAN BE FOUND IN SECTION 1098-10 OF THE 2012 NCDOT "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES".

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COMMUNICATIONS CABLE AND CONDUIT ROUTING PLAN	
Division 4	Johnston County Clayton
PLAN DATE: August 2017	REVIEWED BY: B L Johnson
PREPARED BY: J Kopaskie	REVIEWED BY:
REVISIONS	INIT. DATE

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DATE: 07/3/2017

Joseph Kopaskie

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