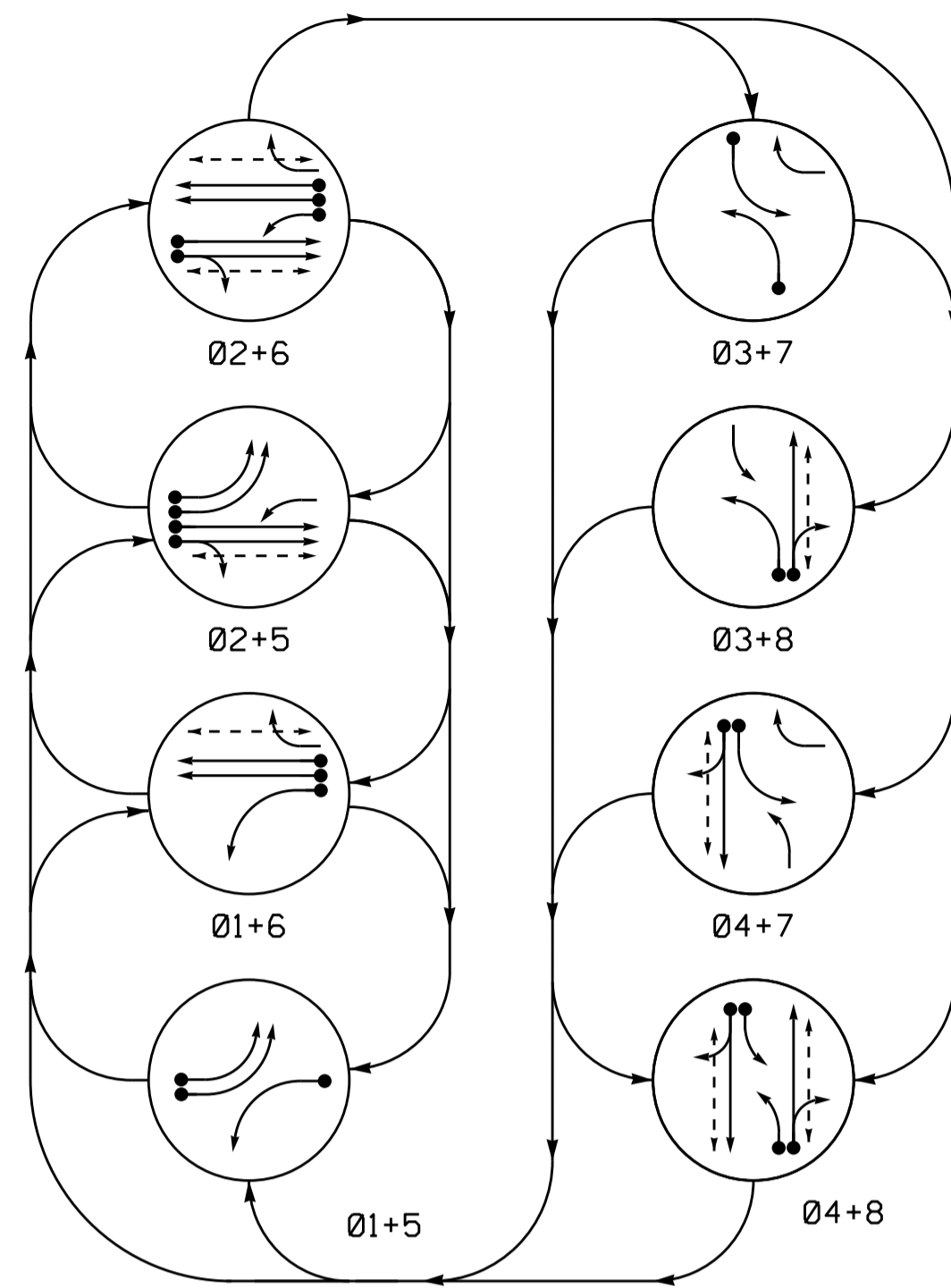


**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

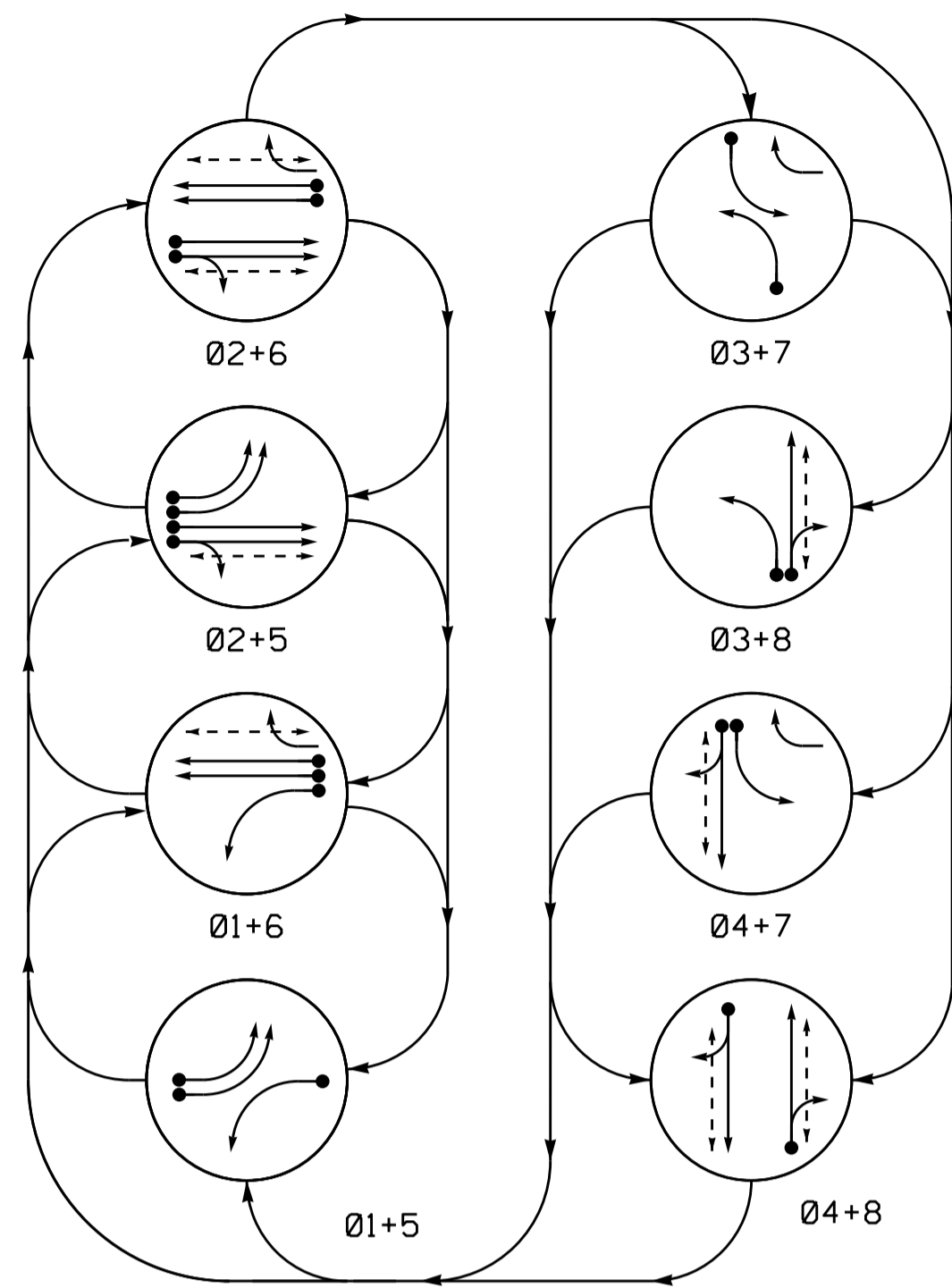
**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

**This file or an individual page  
shall not be considered a certified document.**

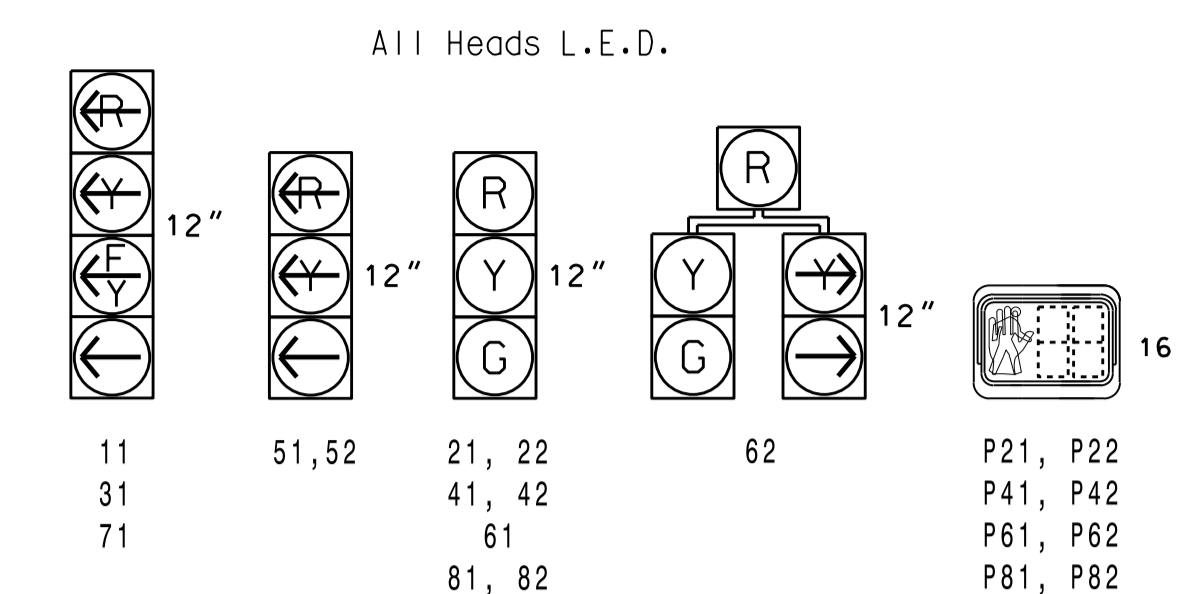
DEFAULT PHASING DIAGRAM



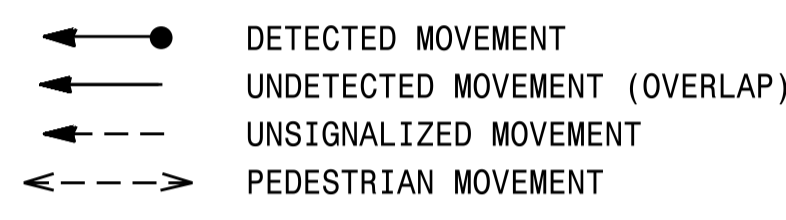
ALTERNATE PHASING DIAGRAM



SIGNAL FACE I.D.



PHASING DIAGRAM DETECTION LEGEND



OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	DETECTOR PROGRAMMING				SYSTEM LOOP	NEW CARD	
				PHASE	CALLING	EXTENSION FULL TIME DELAY	STRETCH TIME			DELAY TIME
1A	6X40	0	2-4-2	1	Y	Y	-	10*	-	Y
2A, 2B	6X6	70	5	2	Y	Y	-	-	-	Y
3A	6X40	0	2-4-2	3	Y	Y	-	15 #	-	Y
4A	6X40	0	2-4-2	4	Y	Y	-	10	-	Y
5A	6X40	0	2-4-2	5	Y	Y	-	-	-	Y
5B	6X40	0	2-4-2	5	Y	Y	-	-	-	Y
6A, 6B	6X6	70	5	6	Y	Y	-	-	-	Y
7A	6X40	0	2-4-2	7	Y	Y	-	15 #	-	Y
8A	6X40	0	2-4-2	8	Y	Y	-	10	-	Y
S1	6X6	+150	5	-	Y	Y	-	-	-	Y
S2	6X6	+150	5	-	Y	Y	-	-	-	Y

\* Disable Delay During Alternate Phasing Operation  
 \*\* Disable Phase 6 Call for Loops 1A during Alternate Phasing  
 # Disable Delay During Alternate Phasing Operation  
 ## Disable Phase 4 & 8 Call for Loops 3A and 7A during Alternate Phasing

8 Phase Fully Actuated (Kernersville CLS #1)

NOTES

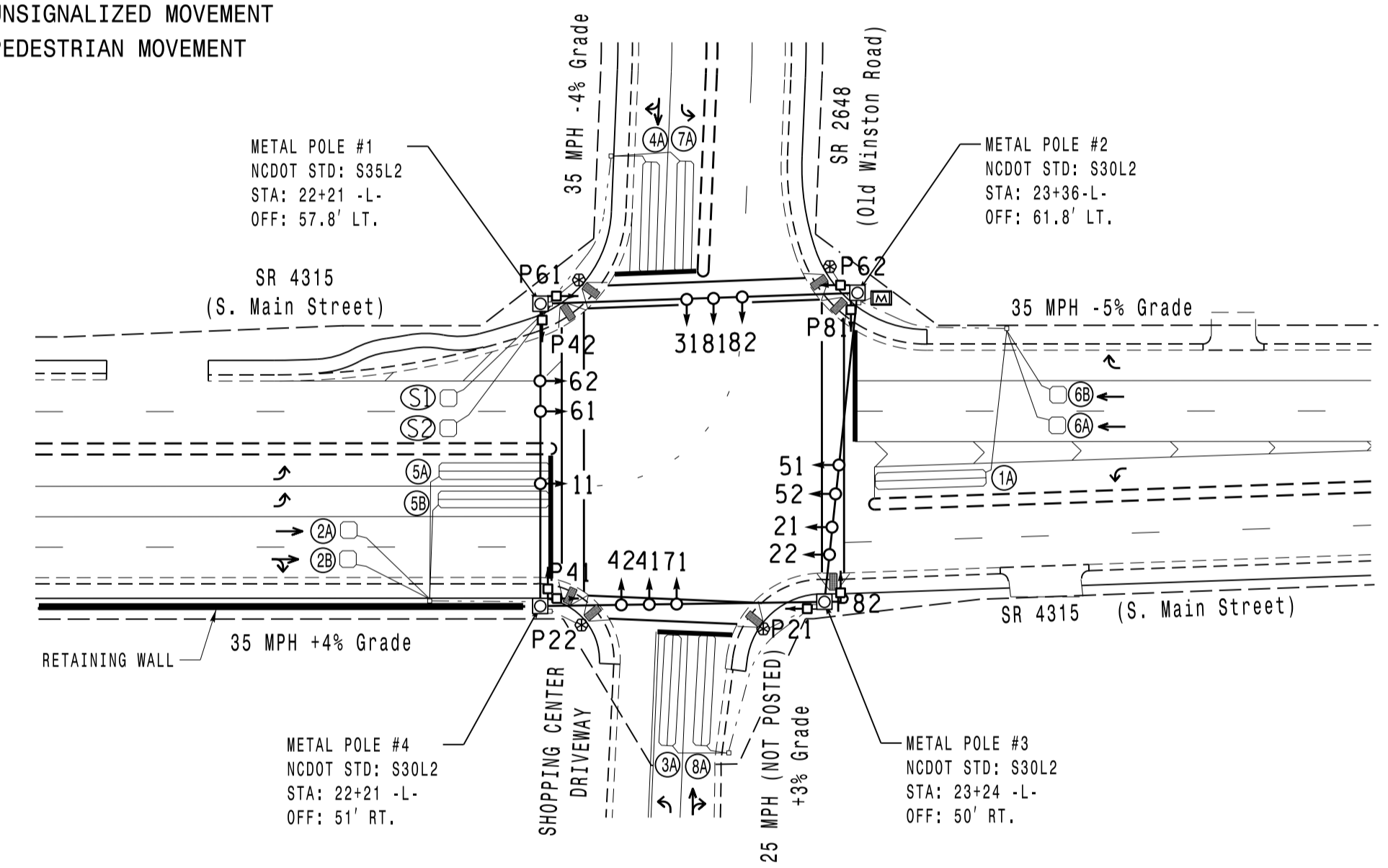
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 1 and/or phase 5 may be lagged.
- Phase 3 and/or phase 7 may be lagged.
- Set all detector units to presence mode.
- Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
- Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
- Program pedestrian heads to countdown the flashing "Don't Walk" time only.
- Pedestrians pedestals are conceptual and shown for reference only. See sheet P1-P3 for pushbuttons locations details.
- The Division Traffic Engineer will determine the hours of use for each phasing plan.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values shall supersede these values.
- Closed loop system data:  
 Master Asset #: 10905.  
 Controller Asset #: 1104.

DEFAULT PHASING TABLE OF OPERATION

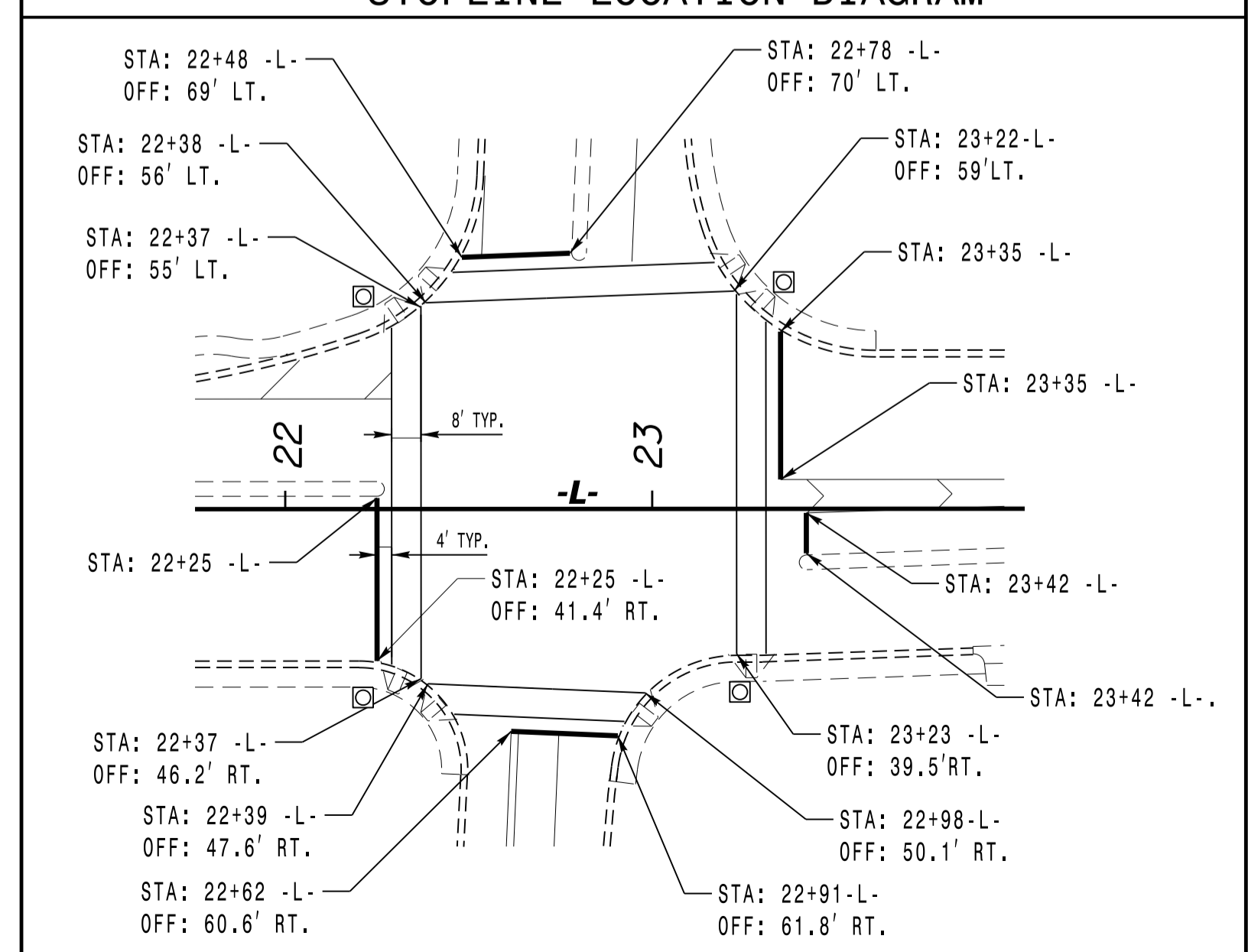
SIGNAL FACE	PHASE								L	I	S	D	R	K	
	1	2	3	4	5	6	7	8							
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21, 22	R	R	G	G	R	R	R	R	Y	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41, 42	R	R	R	R	R	R	G	G	R	-	-	-	-	-	-
51, 52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	R	G	R	G	R	R	R	R	Y	-	-	-	-	-	-
62	R	G	R	G	R	R	R	R	Y	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81, 82	R	R	R	R	R	G	R	G	R	-	-	-	-	-	-
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK	-	-	-	-	-	-
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK	-	-	-	-	-	-
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK	-	-	-	-	-	-
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK	-	-	-	-	-	-

ALTERNATE PHASING TABLE OF OPERATION

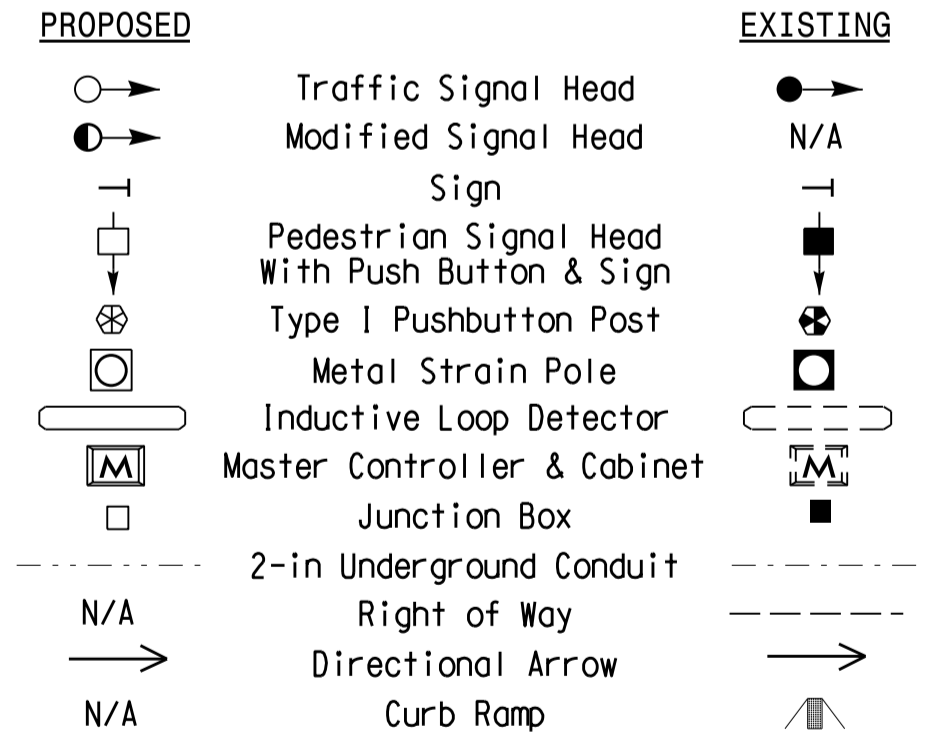
SIGNAL FACE	PHASE								L	I	S	D	R	K	
	1	2	3	4	5	6	7	8							
11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21, 22	R	R	G	G	R	R	R	R	Y	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41, 42	R	R	R	R	R	R	G	G	R	-	-	-	-	-	-
51, 52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
61	R	G	R	G	R	R	R	R	Y	-	-	-	-	-	-
62	R	G	R	G	R	R	R	R	Y	-	-	-	-	-	-
71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81, 82	R	R	R	R	R	G	R	G	R	-	-	-	-	-	-
P21, P22	DW	DW	W	W	DW	DW	DW	DW	DRK	-	-	-	-	-	-
P41, P42	DW	DW	DW	DW	DW	DW	W	W	DRK	-	-	-	-	-	-
P61, P62	DW	W	DW	W	DW	DW	DW	DW	DRK	-	-	-	-	-	-
P81, P82	DW	DW	DW	DW	DW	W	DW	W	DRK	-	-	-	-	-	-



STOPLINE LOCATION DIAGRAM



LEGEND



OASIS 2070 TIMING CHART

FEATURE	PHASE							
	1	2	3	4	5	6	7	8
Min Green 1*	7	10	7	7	7	10	7	7
Extension 1*	2.0	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Max Green 1*	15	30	15	20	15	30	15	20
Yellow Clearance	3.1	4.2	3.0	4.1	3.0	4.2	3.0	4.1
Red Clearance	3.3	2.2	2.8	3.3	3.2	2.2	3.3	3.3
Walk 1*	-	7	-	7	-	7	-	7
Don't Walk 1	-	14	-	26	-	21	-	26
Seconds Per Actuation*	-	-	-	-	-	-	-	-
Max Variable Initial*	-	-	-	-	-	-	-	-
Time Before Reduction*	-	-	-	-	-	-	-	-
Time To Reduce*	-	-	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	-	YELLOW	-	-
Dual Entry	-	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	ON	ON	ON	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

Prepared For: SR 4315 (S. Main Street) at SR 2648 (Old Winston Road) / Shopping Center Driveway

Division 9 Forsyth County Kernersville

PLAN DATE: April 2015 REVIEWED BY: M.E. Giles

PREPARED BY: M.E. Giles

SCALE: 1"=50'

5/7/2015

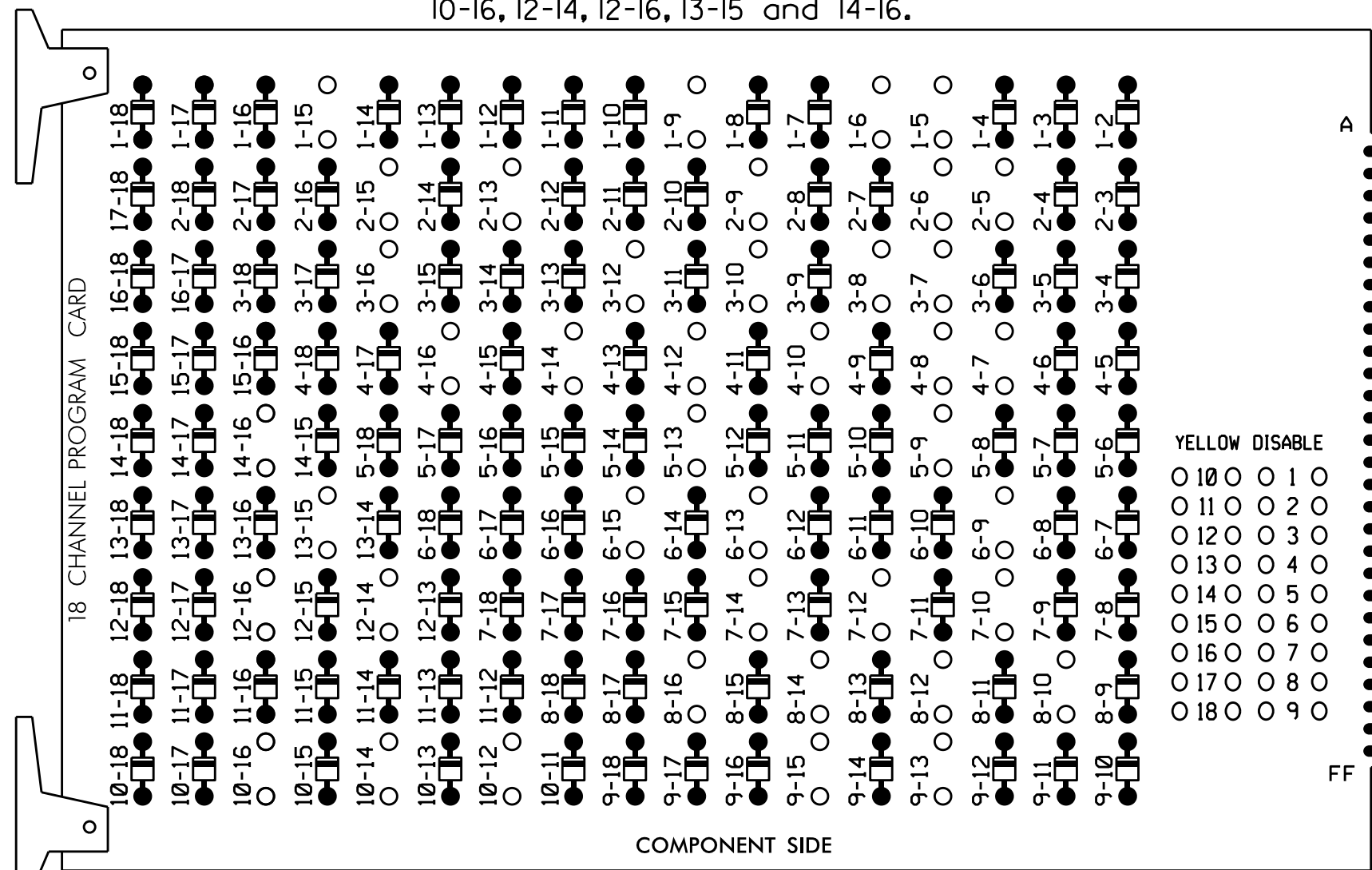
SIG. INVENTORY NO. 09-1104

05-JUN-2015 13:54  
 S:\TSS\WORK\15\SIGNAL\5510\031104.sia.dsn\_20150507.dgn  
 P21.dwg

**EDI MODEL 2018ECL-NC CONFLICT MONITOR**  
**PROGRAMMING DETAIL**

(remove jumpers and set switches as shown)

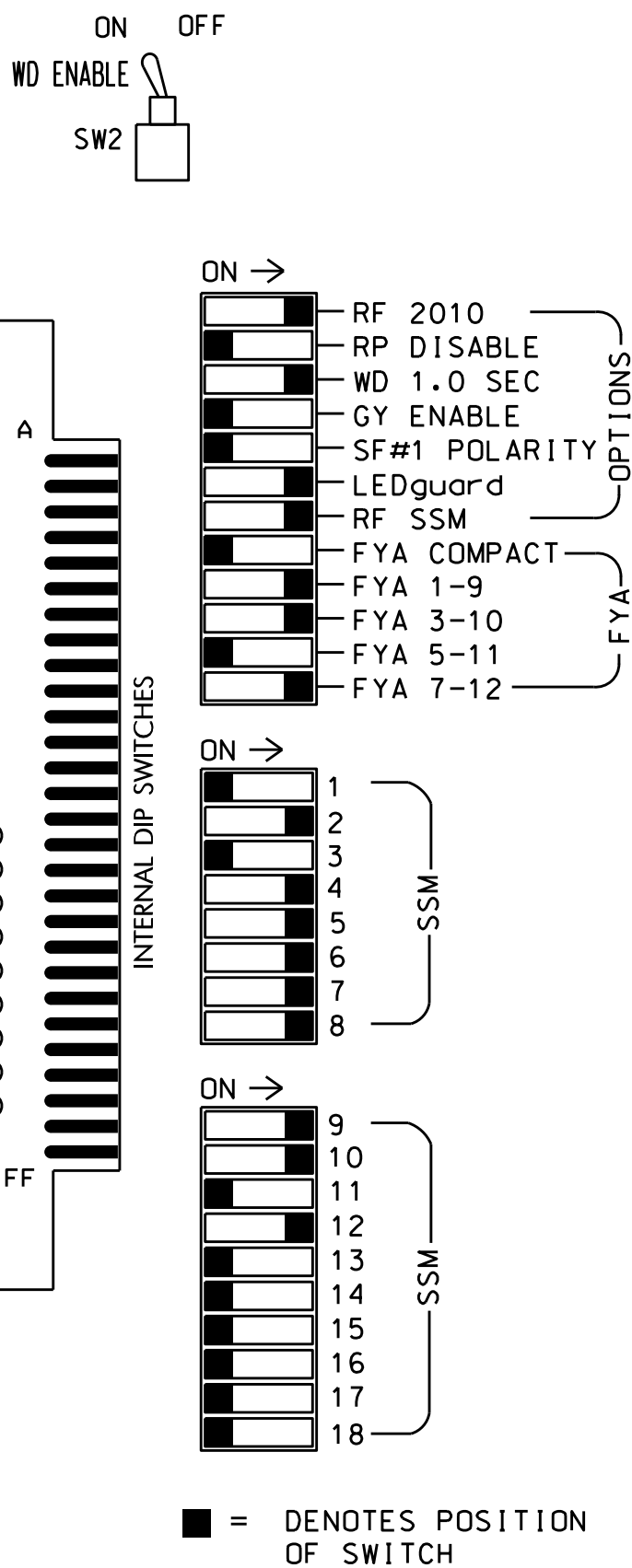
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-15, 2-5, 2-6, 2-9, 2-13, 2-15, 3-7, 3-8, 3-10, 3-12, 3-16, 4-7, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-13, 6-9, 6-13, 6-15, 7-10, 7-12, 7-14, 8-10, 8-12, 8-14, 8-16, 9-13, 9-15, 10-12, 10-14, 10-16, 12-14, 12-16, 13-15 and 14-16.



REMOVE JUMPERS AS SHOWN

**NOTES:**

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



■ = DENOTES POSITION OF SWITCH

**NOTES**

- To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
- Program phases 4 and 8 for Dual Entry.
- Enable Simultaneous Gap-Out for all phases.
- Program phases 2 and 6 for Start Up In Green.
- Program phases 2, 4, 6 and 8 for 'STARTUP PED CALL'.
- Program phases 2 and 6 for Yellow Flash and overlaps 1 and 2 as Wag Overlaps.
- The cabinet and controller are part of the Kernersville CLS #1.

**EQUIPMENT INFORMATION**

CONTROLLER.....2070  
 CABINET.....332 W/ AUX  
 SOFTWARE.....ECONOLITE OASIS  
 CABINET MOUNT.....BASE  
 OUTPUT FILE POSITIONS...18 (12-STD; 6-AUX)  
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,S12,AUX S1,AUX S2,AUX S5  
 PHASES USED.....1,2,3,4,5,6,7,8  
 OVERLAP "A".....1+2\*  
 OVERLAP "B".....3+4\*  
 OVERLAP "C".....NOT USED  
 OVERLAP "D".....7+8\*  
 \* Alternate Phasing Overlap Programming Detail shown on sheet 6.

**SIGNAL HEAD HOOK-UP CHART**

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	P21, P22	31	41,42	P41, P42	51,52	61,62	P61, P62	71	81,82	P81, P82	11	31	NU	NU	71	NU
RED		128		101			134		*	107								
YELLOW	*	129		102			135			108								
GREEN		130		103			136			109								
RED ARROW							131						A121	A124			A101	
YELLOW ARROW							132			123			A122	A125			A102	
FLASHING YELLOW ARROW													A123	A126			A103	
GREEN ARROW	127			118			133			124	124							
Hand			113			104			119			110						
Person			115			106			121			112						

NU = Not Used

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

\* See pictorial of head wiring in detail below.

**INPUT FILE POSITION LAYOUT**

(front view)

FILE "I"	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1A	∅ 1	∅ 2	∅ 3	∅ 4	∅ 5	∅ 6	∅ 7	∅ 8	SYS. DET. S1	SYS. DET. S2	∅ 2 PED	∅ 6 PED	FS	
2A,2B	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR	DC ISOLATOR
3A	∅ 5	∅ 6	∅ 7	∅ 8	∅ 9	∅ 10	∅ 11	∅ 12	∅ 13	∅ 14	∅ 15	∅ 16	∅ 17	∅ 18
4A	NOT USED	∅ 6	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
5A	NOT USED	∅ 6	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED
6A,6B	NOT USED	∅ 6	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED	NOT USED

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

FS = FLASH SENSE  
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

**INPUT FILE CONNECTION & PROGRAMMING CHART**

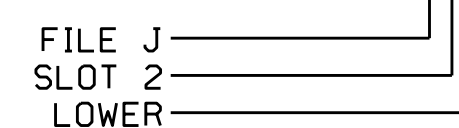
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT ASSIGNMENT NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND	FULL TIME DELAY	STRETCH TIME	DELAY TIME
1A <sup>1</sup>	TB2-1,2	I1U	56	18	1	1	Y	Y			10
	-	J4U	48	10	26	6	Y	Y			
	-	I1U	56	18	51**	1	Y	Y			
2A,2B	TB2-5,6	I2U	39	1	2	2	Y	Y			
	TB4-5,6	I5U	58	20	3	3	Y	Y			15
3A <sup>2</sup>	-	J8U	50	12	28	8	Y	Y			3
	-	I5U	58	20	53**	3	Y	Y			
4A	TB4-9,10	I6U	41	3	4	4	Y	Y			10
5A	TB3-1,2	J1U	55	17	5	5	Y	Y			
5B	TB3-5,6	J2U	40	2	6	5	Y	Y			
6A,6B	TB3-7,8	J2L	44	6	16	6	Y	Y			
7A <sup>3</sup>	TB5-5,6	J5U	57	19	7	7	Y	Y			15
	-	I8U	49	11	24	4	Y	Y			3
8A	TB5-9,10	J6U	42	4	8	8	Y	Y			10
* S1	TB6-9,10	I9U	60	22	11	SYS					
* S2	TB6-11,12	I9L	62	24	13	SYS					
PED PUSH BUTTONS											
P21,P22	TB8-4,6	I12U	67	29	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	31	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	30	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	32	PED 8	8 PED					

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

- \* System detector only. Remove the vehicle phase assigned to this detector in the default programming.
- \*\* See input Page Assignment programming detail on sheets 3, 4 and 5. detector in the default programming.

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

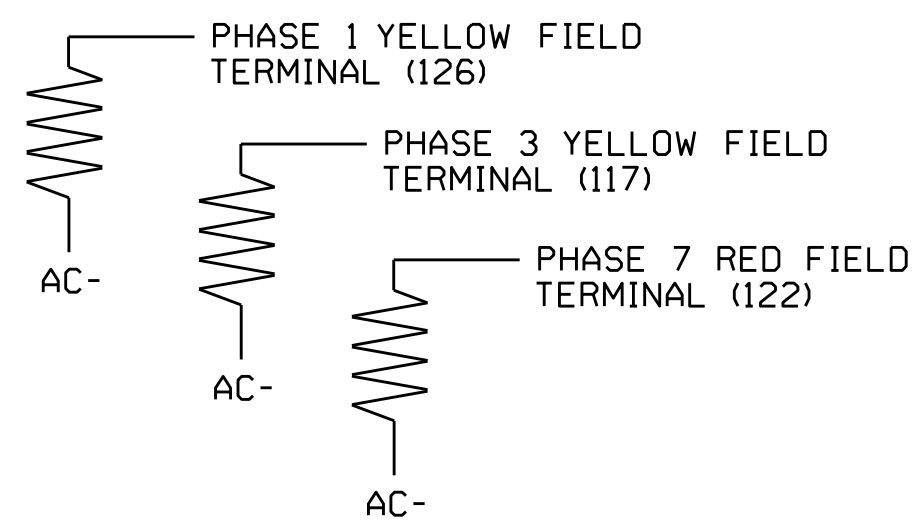
INPUT FILE POSITION LEGEND: J2L



**LOAD RESISTOR INSTALLATION DETAIL**

(install resistors as shown below)

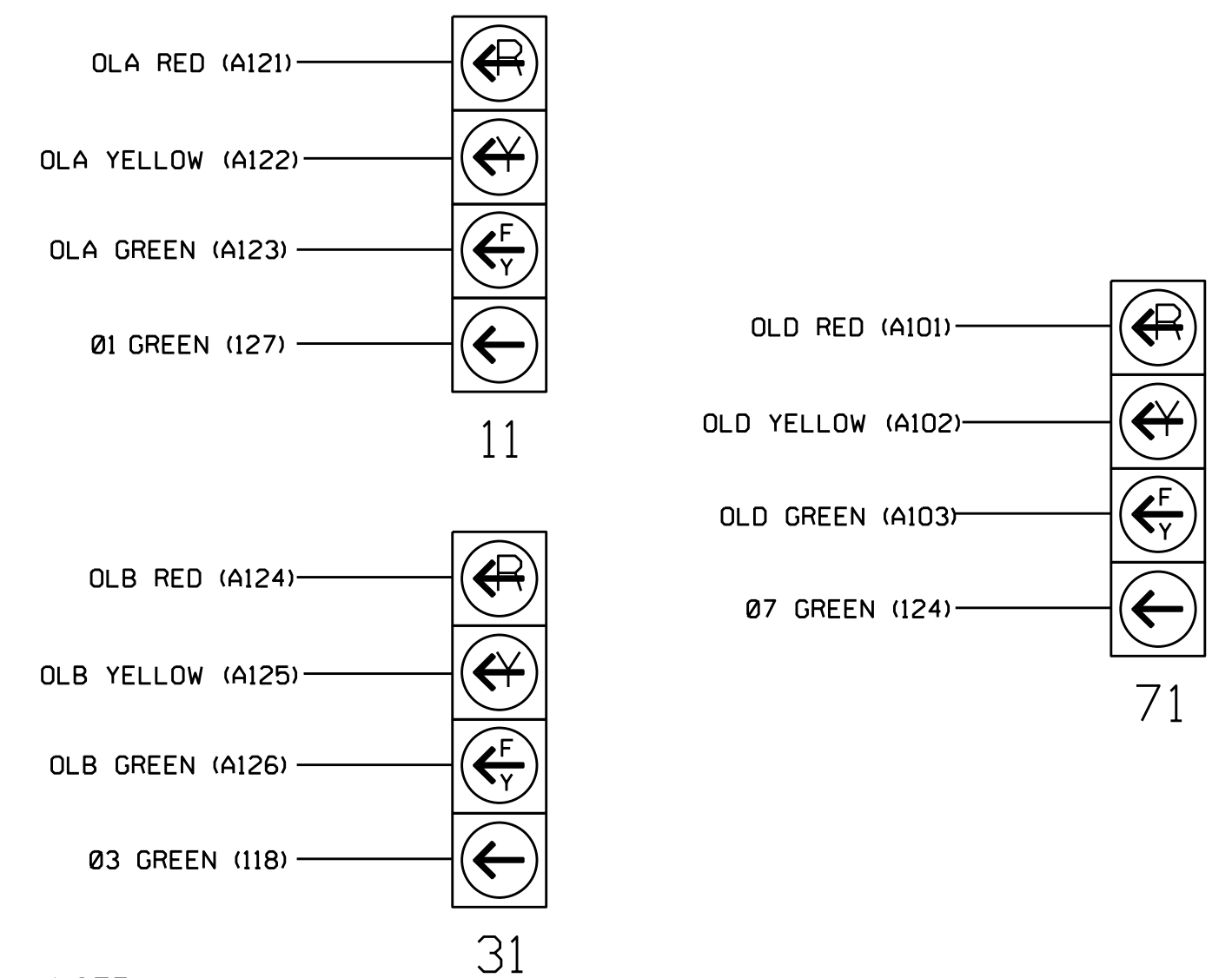
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-1104  
 DESIGNED: April 2015  
 SEALED: 5/7/15  
 REVISED: N/A

**FYA SIGNAL WIRING DETAIL**

(wire signal heads as shown)



**NOTE**

The sequence display for these signals require special logic programming. See sheet 2 for programming instructions.

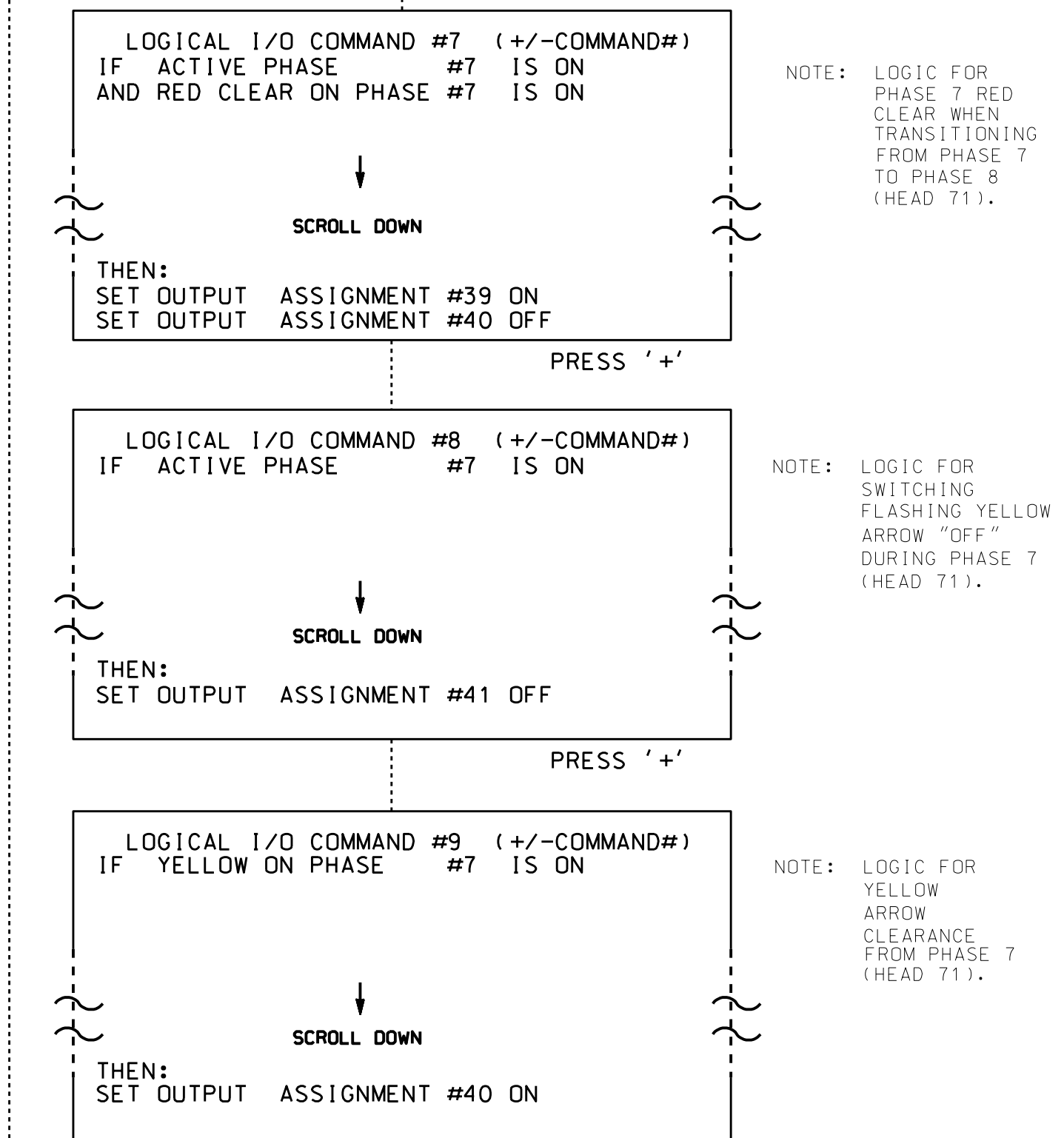
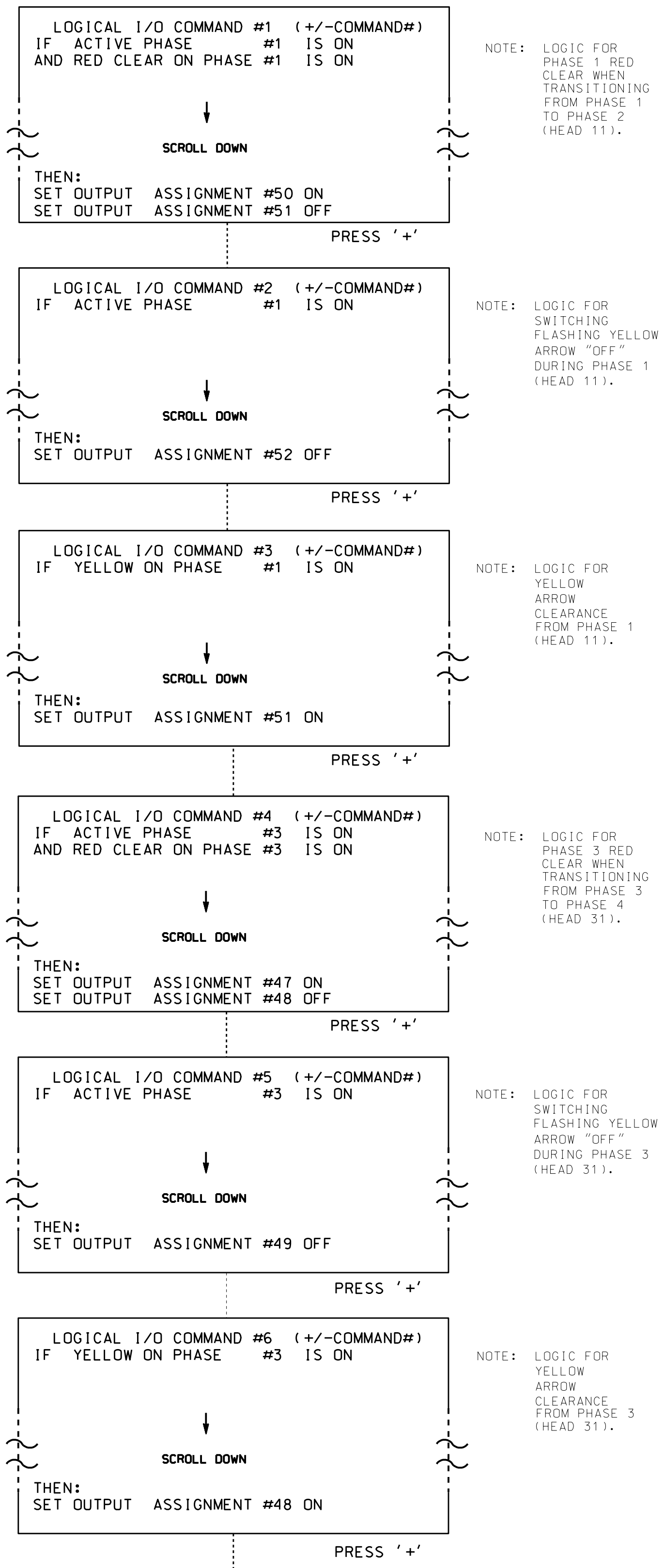
Electrical Detail - Sheet 1 of 6

ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared In the Offices of:  750 N. Greenfield Pkwy, Garner, NC 27529	SR 4315 (S. Main Street) at SR 2648 (Old Winston Road) / Shopping Center Driveway	SEAL  SEAL 022013 ENGINEER GEORGE C. BROWN
	Division 9 Forsyth County Kernersville PLAN DATE: April 2015 REVIEWED BY: T. Joyce PREPARED BY: B. SIMMONS REVIEWED BY:	REVISIONS INIT. DATE

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

(program controller as shown below)

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



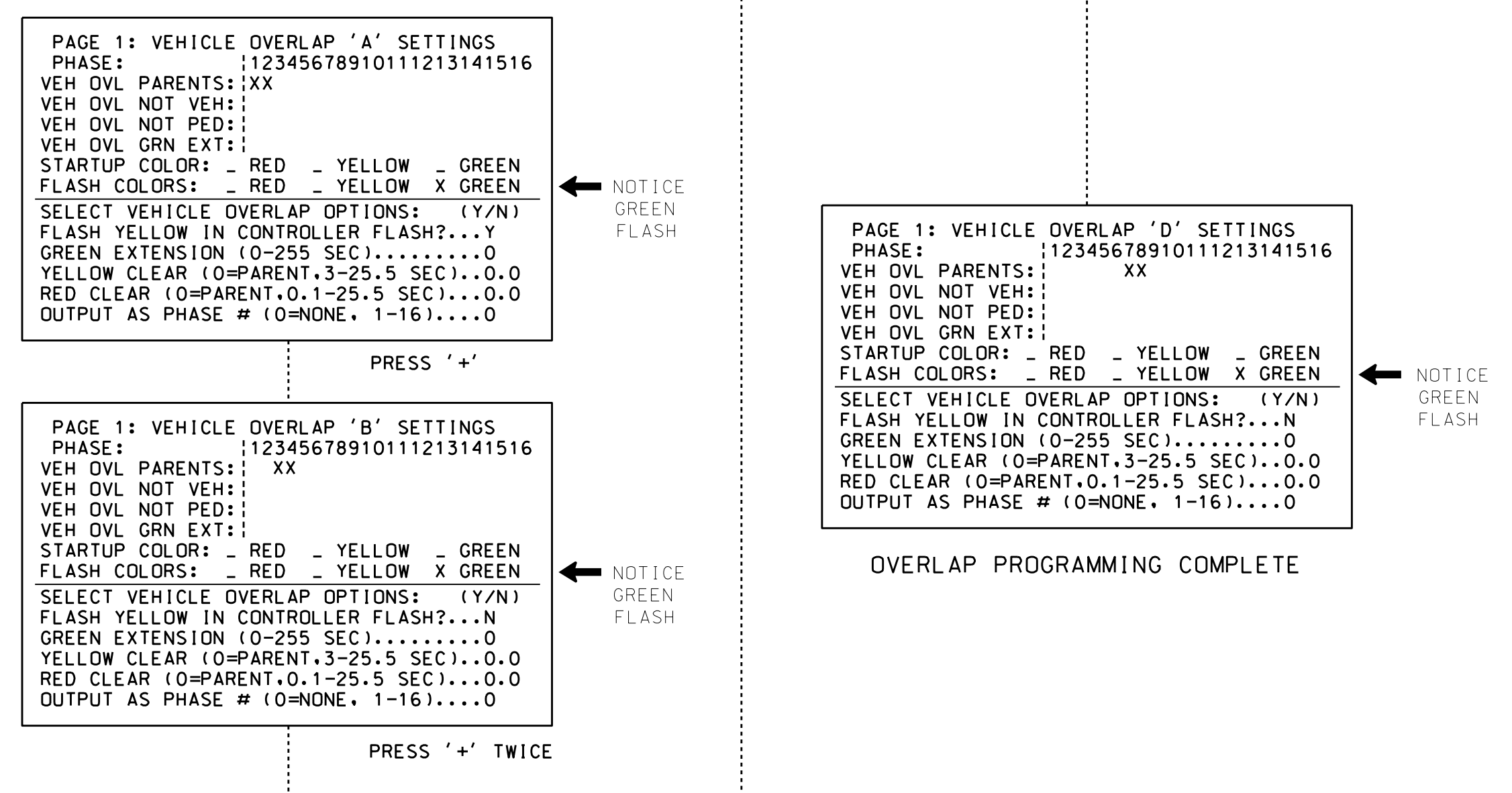
LOGIC I/O PROCESSOR PROGRAMMING COMPLETE

<b>OUTPUT REFERENCE SCHEDULE</b>	
USE TO INTERPRET LOGIC PROCESSOR	
OUTPUT 39 =	Overlap D Red
OUTPUT 40 =	Overlap D Yellow
OUTPUT 41 =	Overlap D Green
OUTPUT 47 =	Overlap B Red
OUTPUT 48 =	Overlap B Yellow
OUTPUT 49 =	Overlap B Green
OUTPUT 50 =	Overlap A Red
OUTPUT 51 =	Overlap A Yellow
OUTPUT 52 =	Overlap A Green

## OVERLAP PROGRAMMING DETAIL

(program controller as shown below)

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



OVERLAP PROGRAMMING COMPLETE

## FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

## COUNTDOWN PEDESTRIAN SIGNAL OPERATION

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

18-MAY-2015 13:06  
 S:\MIS\GIS\TIS\_Signal\working\pda\sig\_Maps\simmons\working Folder\Electrical Detail\01104\_Smalle\_xxx.dgn  
 bis\simmons

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-1104  
 DESIGNED: April 2015  
 SEALED: 5/7/15  
 REVISED: N/A

Electrical Detail - Sheet 2 of 6

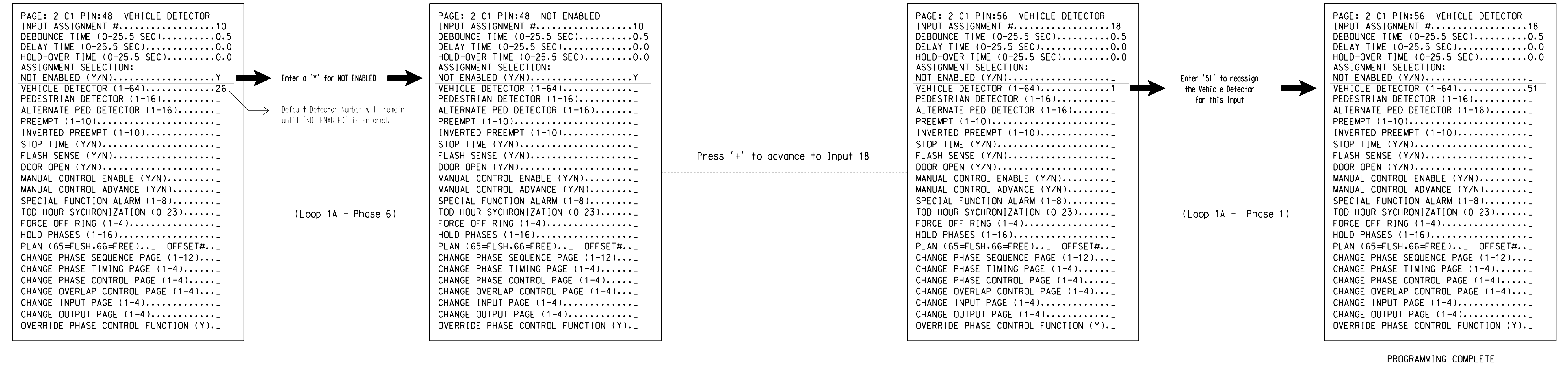
ELECTRICAL AND PROGRAMMING DETAILS FOR: 	<b>SR 4315 (S. Main Street)</b> at <b>SR 2648 (Old Winston Road) / Shopping Center Driveway</b>	SEAL 						
	Division 9 PLAN DATE: April 2015 PREPARED BY: B. SIMMONS	Forsyth County REVIEWED BY: T. Joyce REVIEWED BY:	Kernersville DATE:					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		REVISIONS	INIT.	DATE				DocuSigned by:  5/19/2015 F12061E008E8434 DATE:
REVISIONS	INIT.	DATE						
		SIG. INVENTORY NO. 09-1104						

**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 10 Seconds to 0 Seconds.

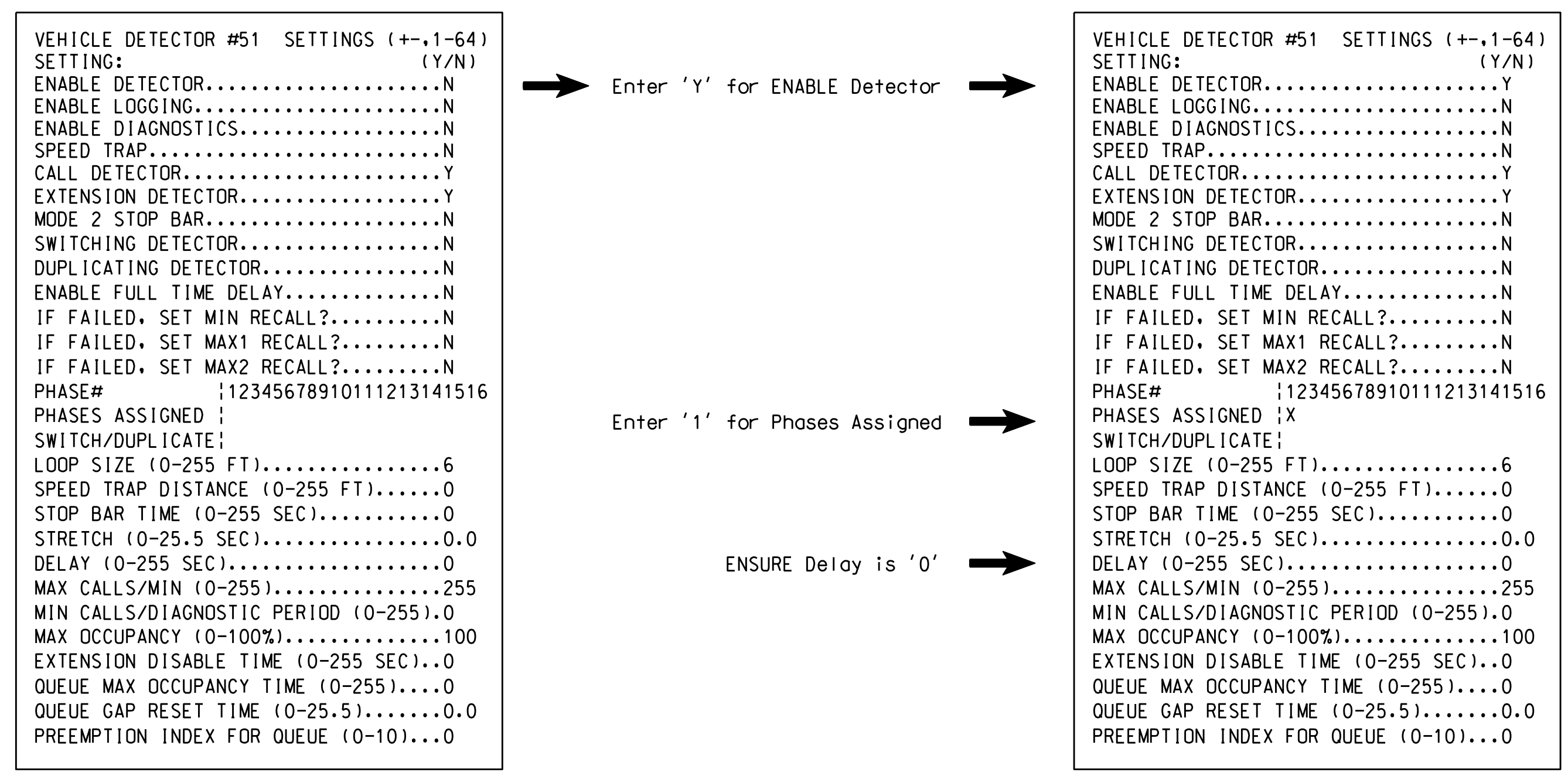
From Main Menu press '5' (INPUTS), then press 'Next' to get to Input Page '2'. Press the '+' key until Input 10 is reached.



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

(program controller as shown below)

From Main Menu press '7' (DETECTORS), then press '1' for Vehicle Detectors. Press the '-' key to get to Vehicle Detector #51.



NOTE: Detector is programmed per the Input File Connection and Programming Chart shown on Sheet 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-1104  
DESIGNED: April 2015  
SEALED: 5/7/15  
REVISED: N/A

Electrical Detail - Sheet 3 of 6

	SR 4315 (S. Main Street) at SR 2648 (Old Winston Road) / Shopping Center Driveway	SEAL 
	Division 9 Forsyth County Kernersville	
PLAN DATE: April 2015 PREPARED BY: B. SIMMONS	REVIEWED BY: T. Joyce REVIEWED BY:	DocuSigned by: George C. Brown 5/19/2015 F12061ED08E8434
REVISIONS INIT. DATE	REVISIONS INIT. DATE	SIG. INVENTORY NO. 09-1104

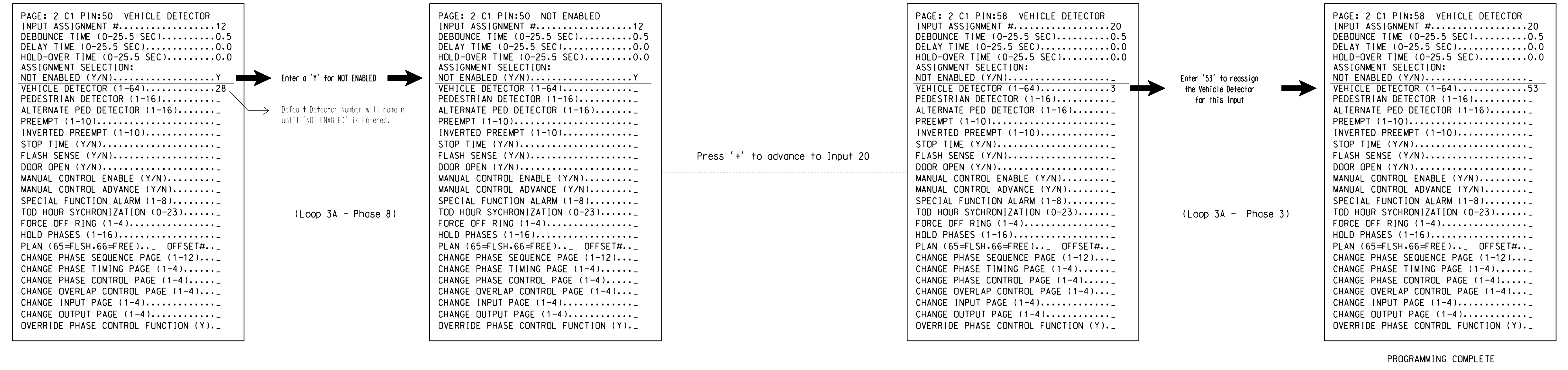
I:\MS-2015-13-07  
 S:\MITSU\T.S. Signal\working\p\Map\5\simmons\working Folder\Electrical Detail\0104\smc\_ele\_xxx.dgn  
 bis\simmons

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

(program controller as shown below)

- NOTES: 1. This programming applies for Input Page 2 only. Input Page 1 will use standard default settings. This programming is necessary for proper detector operation during Alternate Phasing operation.
2. The first task this programming accomplishes is the disabling of Input #12 (Detector 28) so that a Vehicle Call will not be placed to Phase 8 during Alternate Phasing operation. The second task this programming accomplishes is that it reassigns Detector 53 to Input #20 so that the Delay on Loop 3A can be reduced from 15 Seconds to 0 Seconds.

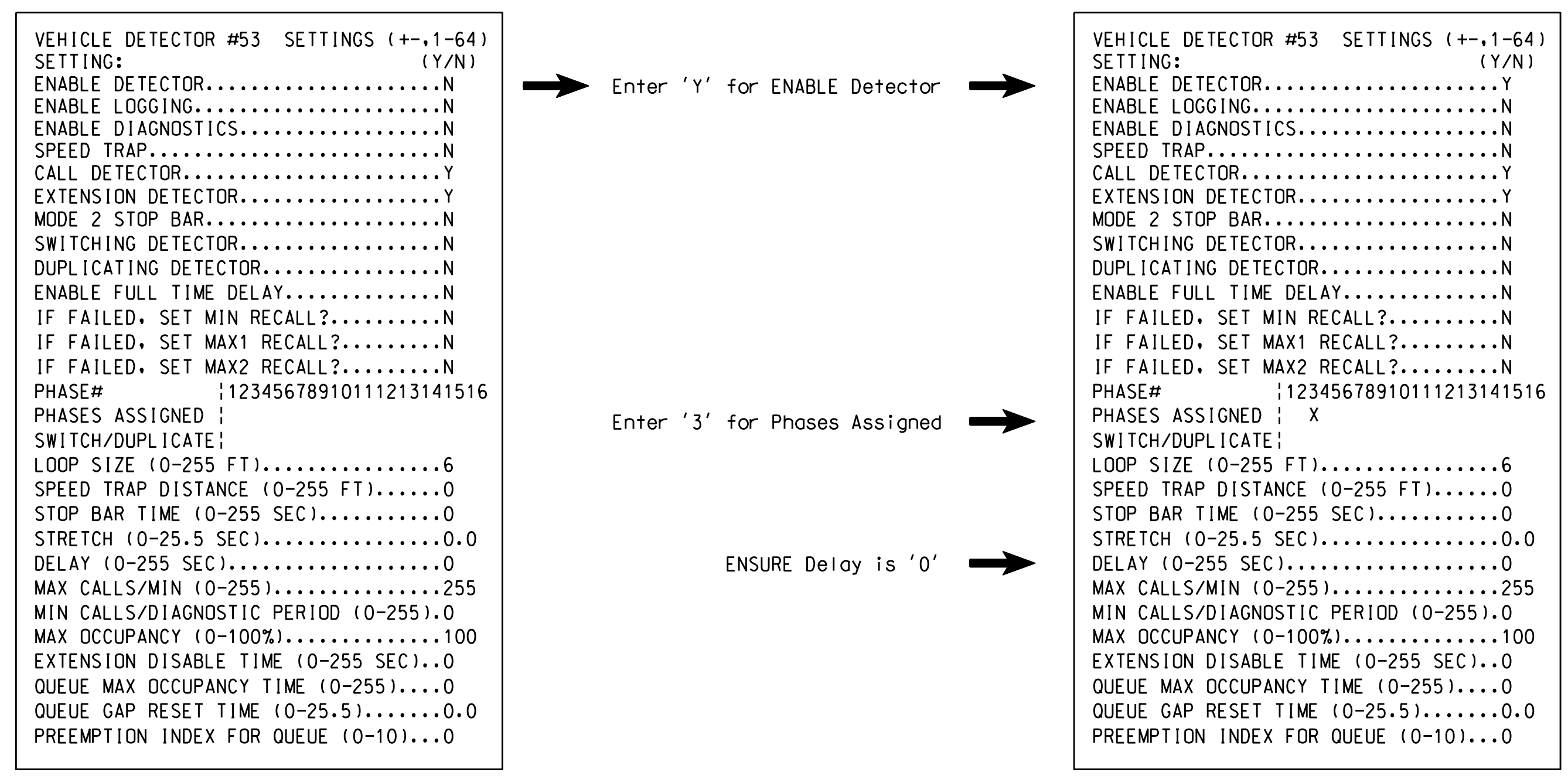
From Main Menu press '5' (INPUTS), then press 'Next' to get to Input Page '2'. Press the '+' key until Input 12 is reached.



### SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 3A (ALT.)

(program controller as shown below)

From Main Menu press '7' (DETECTORS), then press '1' for Vehicle Detectors. Press the '-' key to get to Vehicle Detector #53.



NOTE: Detector is programmed per the Input File Connection and Programming Chart shown on Sheet 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-1104  
 DESIGNED: April 2015  
 SEALED: 5/7/15  
 REVISED: N/A

Electrical Detail - Sheet 4 of 6

	<b>SR 4315 (S. Main Street)</b> at <b>SR 2648 (Old Winston Road) / Shopping Center Driveway</b>	<b>SEAL</b> PROFESSIONAL ENGINEER GEORGE C. BROWN No. 022013
	Division 9    Forsyth County    Kernersville	Prepared In the Offices of: 
PLAN DATE: April 2015    REVIEWED BY: T. Joyce	PREPARED BY: B. SIMMONS    REVIEWED BY:	DocuSigned by: George C. Brown    5/19/2015
REVISIONS    INIT.    DATE	750 N. Greenfield Pkwy, Garner, NC 27529	SIG. INVENTORY NO. 09-1104

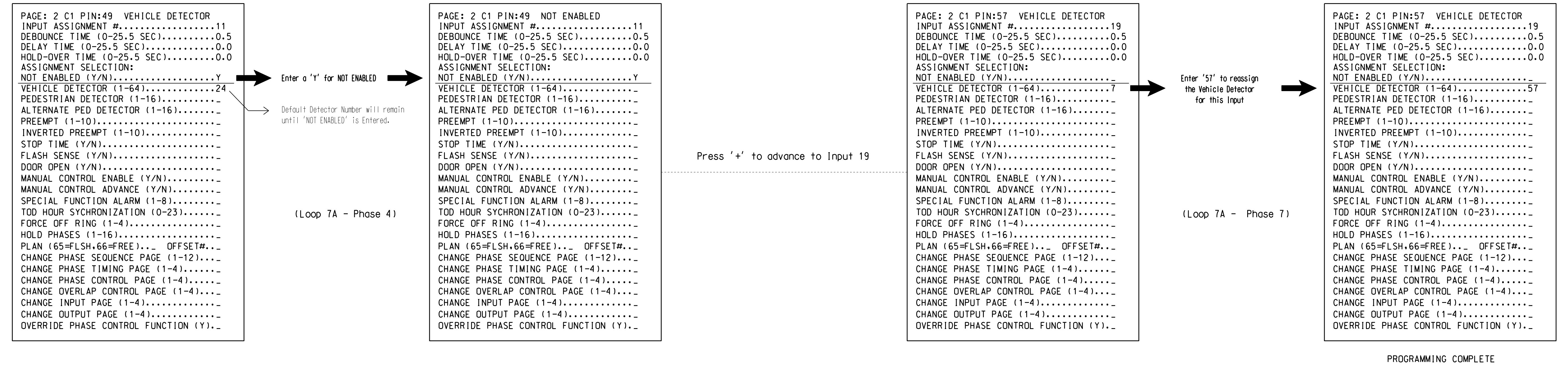
I:\MVA-2015-13108  
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 Folder: Electrical Detail\09-1104\Division 09-1104\_sml\_ele\_xxx.dgn  
 User: bsimmons

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

(program controller as shown below)

- NOTES: 1. This programming applies for Input Page 2 only. Input Page 1 will use standard default settings. This programming is necessary for proper detector operation during Alternate Phasing operation.
2. The first task this programming accomplishes is the disabling of Input #11 (Detector 24) so that a Vehicle Call will not be placed to Phase 4 during Alternate Phasing operation. The second task this programming accomplishes is that it reassigns Detector 57 to Input #19 so that the Delay on Loop 7A can be reduced from 15 Seconds to 0 Seconds.

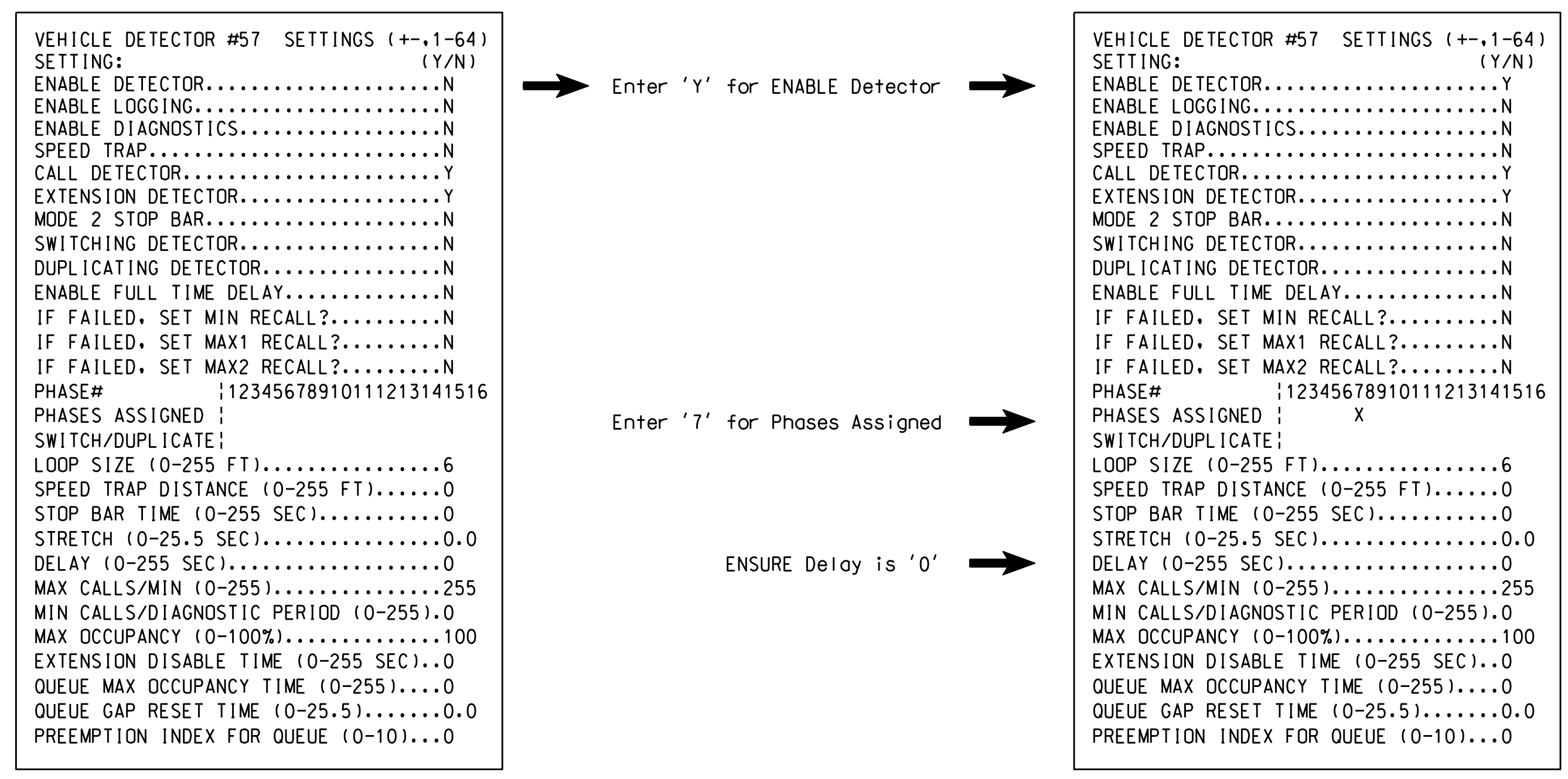
From Main Menu press '5' (INPUTS), then press 'Next' to get to Input Page '2'. Press the '+' key until Input 11 is reached.



**SPECIAL DETECTOR PROGRAMMING DETAIL - LOOP 7A (ALT.)**

(program controller as shown below)

From Main Menu press '7' (DETECTORS), then press '1' for Vehicle Detectors. Press the '-' key to get to Vehicle Detector #57.



NOTE: Detector is programmed per the Input File Connection and Programming Chart shown on Sheet 1.

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 09-1104  
 DESIGNED: April 2015  
 SEALED: 5/7/15  
 REVISED: N/A

Electrical Detail - Sheet 5 of 6

	DETAILS FOR: SR 4315 (S. Main Street) at SR 2648 (Old Winston Road) / Shopping Center Driveway	SEAL 
	Division 9 Forsyth County Kernersville	
PLAN DATE: April 2015 PREPARED BY: B. SIMMONS	REVIEWED BY: T. JOYCE REVIEWED BY:	DocuSigned by: George C. Brown 5/19/2015 F12061ED08E8434 DATE:

SIG. INVENTORY NO. 09-1104

I:\MSW-2015-13108 SS-MIT\SASU\TIS\_Signal\work\hous\sig\_Mark\Simmons\working\_Folder\Electrical\_Detail\09-1104\_smc\_ele\_xxx.dgn  
 bis\simmons

## ALTERNATE PHASING ACTIVATION DETAIL

To run ALT. Phasing during Coordination - Select all page changes (as shown below) within Coordination Plan programming.

To run ALT. Phasing during Free Run - Program page changes (shown below) in separate Time Of Day events. If page 1 is used, no event programming is necessary for that particular page.

PHASING	INPUT PAGE	OVERLAP PAGE
Active Page required to run <u>NORMAL PHASING</u>	1	1
Active Page 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 Alternate 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 the Overlap/Input page change activates to call the "Alternate Phasing":

- Overlap Page 2: Modifies Overlap Parent Phase for Heads 11, 31 and 71 to run protected turn only.
- Input Page 2: Disables Phase 6 call on Loop 1A and modifies Delay Time.  
Disables Phase 8 call on Loop 3A and modifies Delay Time.  
Disables Phase 4 call on Loop 7A and modifies Delay Time.

## OVERLAP PROGRAMMING DETAIL (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 '+'

NOTICE  
PAGE 2

```

PAGE 2: VEHICLE OVERLAP 'B' 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?...N
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
    
```

PRESS '+' TWICE

NOTICE  
PAGE 2

```

PAGE 2: VEHICLE OVERLAP 'D' 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?...N
GREEN EXTENSION (0-255 SEC)...0
YELLOW CLEAR (0=PARENT,3-25.5 SEC)...0.0
RED CLEAR (0=PARENT,0.1-25.5 SEC)...0.0
OUTPUT AS PHASE # (0=NONE, 1-16)...0
    
```

OVERLAP PROGRAMMING COMPLETE

THIS ELECTRICAL DETAIL IS FOR  
THE SIGNAL DESIGN: 09-1104  
DESIGNED: April 2015  
SEALED: 5/7/15  
REVISED: N/A

Electrical Detail - Sheet 6 of 6

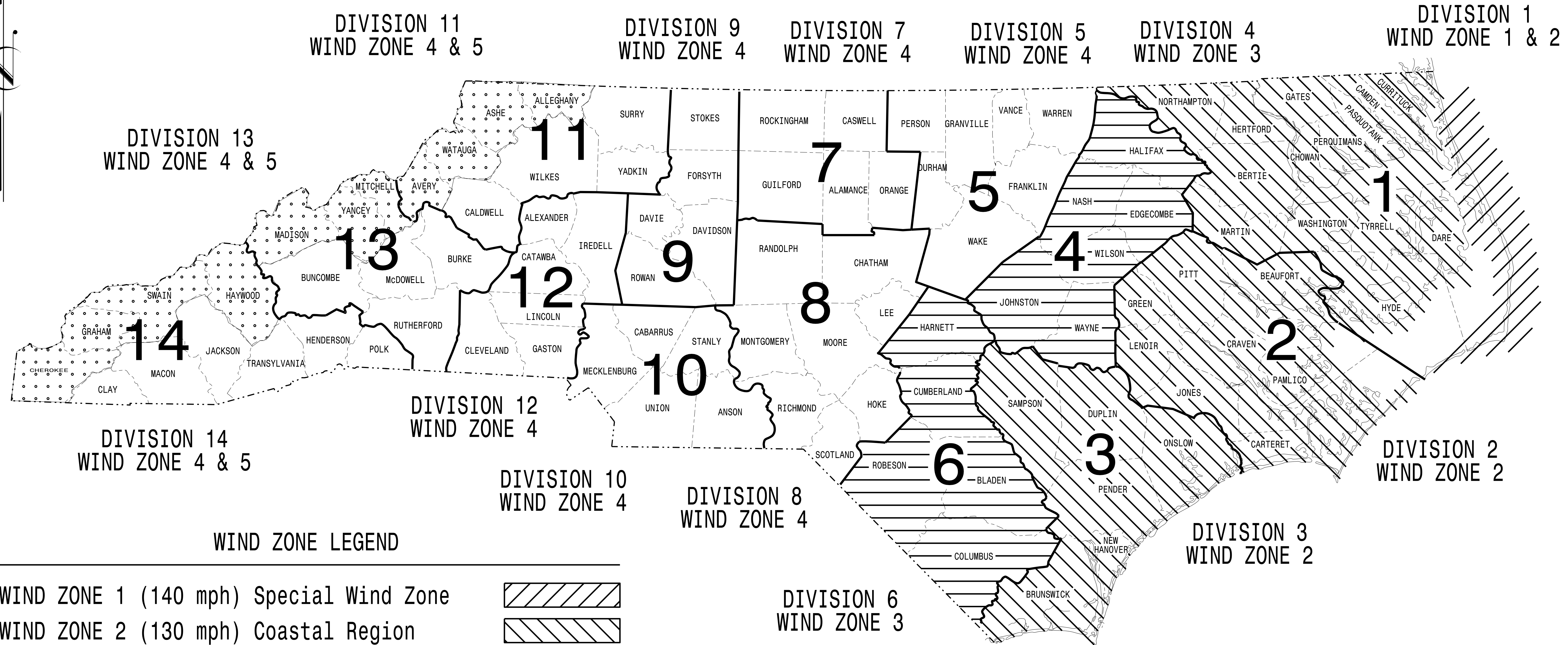
<p style="font-size: small;">ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p style="font-size: x-small;">Prepared In the Offices of:</p> <p style="font-size: x-small;">750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>SR 4315 (S. Main Street) at SR 2648 (Old Winston Road) / Shopping Center Driveway</p> <p style="font-size: x-small;">Division 9    Forsyth County    Kernersville</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; font-size: x-small;">PLAN DATE: April 2015</td> <td style="width: 50%; font-size: x-small;">REVIEWED BY: T. Joyce</td> </tr> <tr> <td style="font-size: x-small;">PREPARED BY: B. SIMMONS</td> <td style="font-size: x-small;">REVIEWED BY:</td> </tr> </table>	PLAN DATE: April 2015	REVIEWED BY: T. Joyce	PREPARED BY: B. SIMMONS	REVIEWED BY:	<p>SEAL</p> <p style="font-size: x-small;">DocuSigned by: <i>George C. Brown</i> 5/19/2015 F12061ED08E8434</p>		
PLAN DATE: April 2015	REVIEWED BY: T. Joyce							
PREPARED BY: B. SIMMONS	REVIEWED BY:							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">REVISIONS</th> <th style="width: 20%;">INIT.</th> <th style="width: 20%;">DATE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		REVISIONS	INIT.	DATE				<p>SIG. INVENTORY NO. 09-1104</p>
REVISIONS	INIT.	DATE						



# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT NO. w-5510	SHEET NO. Sig. M1
-----------------------	----------------------

## STANDARD DRAWINGS FOR METAL POLES



<https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx>

Prepared In the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

Designed in conformance  
with the latest  
2012 Interim to the  
5th Edition 2009  
**AASHTO**  
Standard Specifications for  
Structural Supports for  
Highway Signs, Luminaires,  
and Traffic Signals

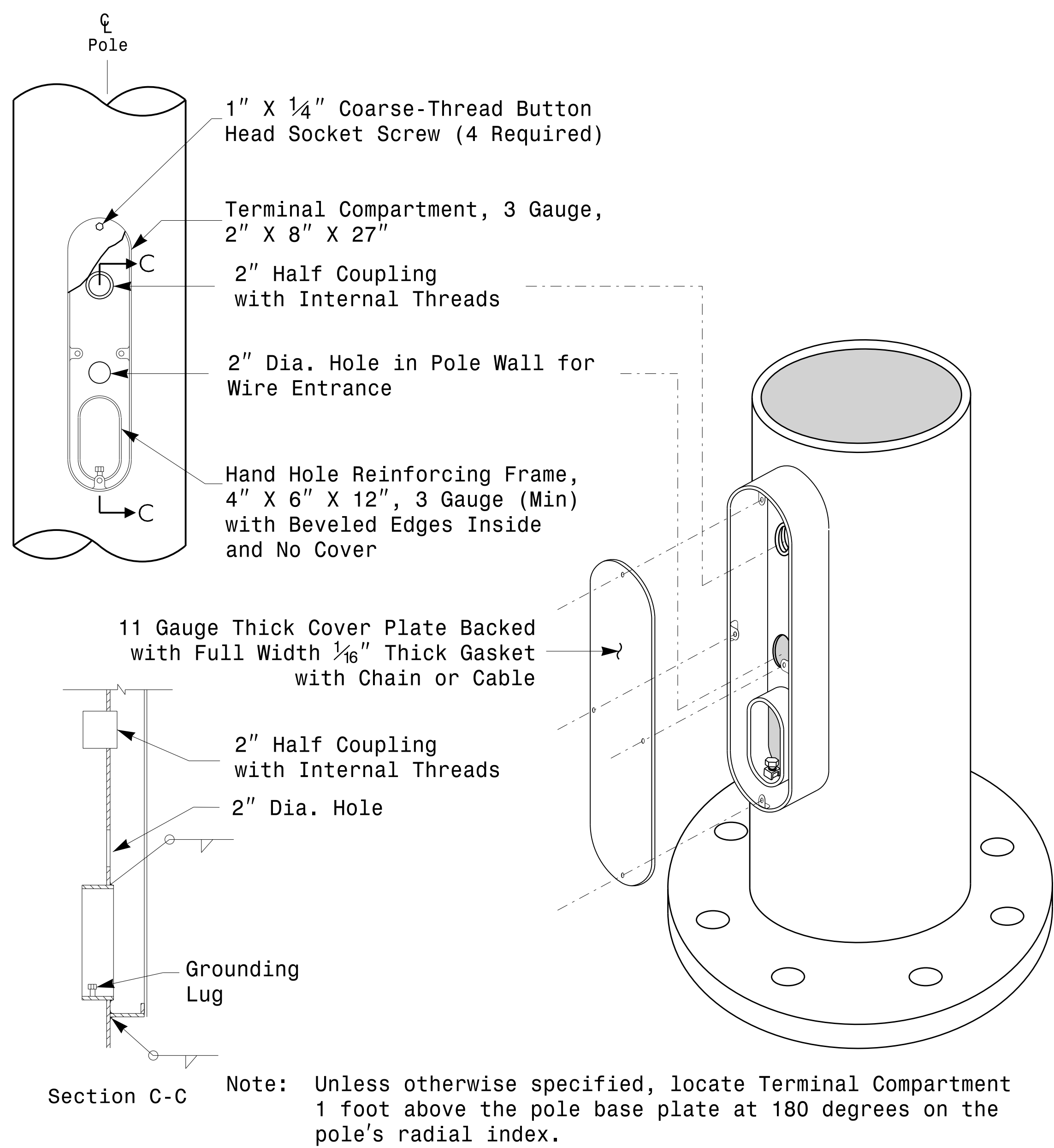
DRAWING NUMBER	DESCRIPTION
M 1	Title Sheet
M 2	Fabrication Details - All Poles
M 3	Fabrication Details - Strain Poles
M 4,5	Fabrication Details - Mast Arm Poles
M 6	Construction Details - Strain Poles
M 7	Construction Details - Foundations
M 8,9	Standard Strain Pole Foundations

**NCDOT CONTACTS:**  
**MOBILITY AND SAFETY DIVISION - ITS AND SIGNALS UNIT**

**G. A. FULLER, P.E. - STATE ITS AND SIGNALS ENGINEER**  
**G. G. MURR, JR., P.E. - STATE SIGNALS ENGINEER**  
**D.C. SARKAR, P.E. - ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER**  
**C.F. ANDREWS - ITS AND SIGNALS JOURNEY STRUCTURAL ENGINEER**

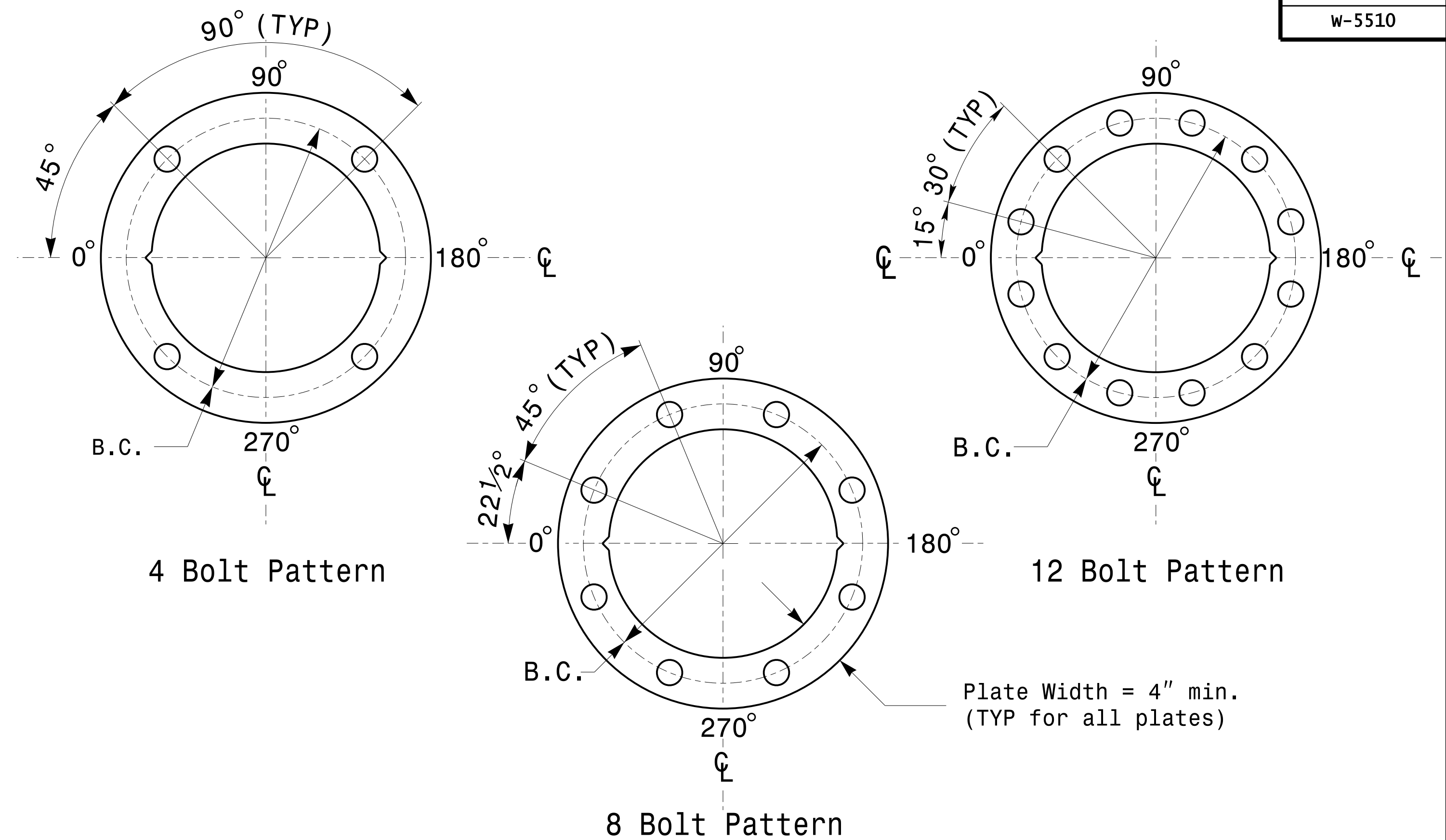
SEAL

Designed by: *Debesh C. Sarkar* 8/26/2014  
DATE



Note: Unless otherwise specified, locate Terminal Compartment 1 foot above the pole base plate at 180 degrees on the pole's radial index.

**Terminal Compartment Detail**



Construct Templates and Plates from 1/4 inch min. thick Steel. Galvanizing is not required.  
**Base Plate Template and Anchor Bolt Lock Plate Details**

MFG _____	MFG. DATE: MM/YY
SHAFT D/T/L/Y _____	
ARM-A D/T/L/Y _____	
ARM-B D/T/L/Y _____	
A.B. DIA./B.C./L/Y _____	
NCDOT STANDARD _____	

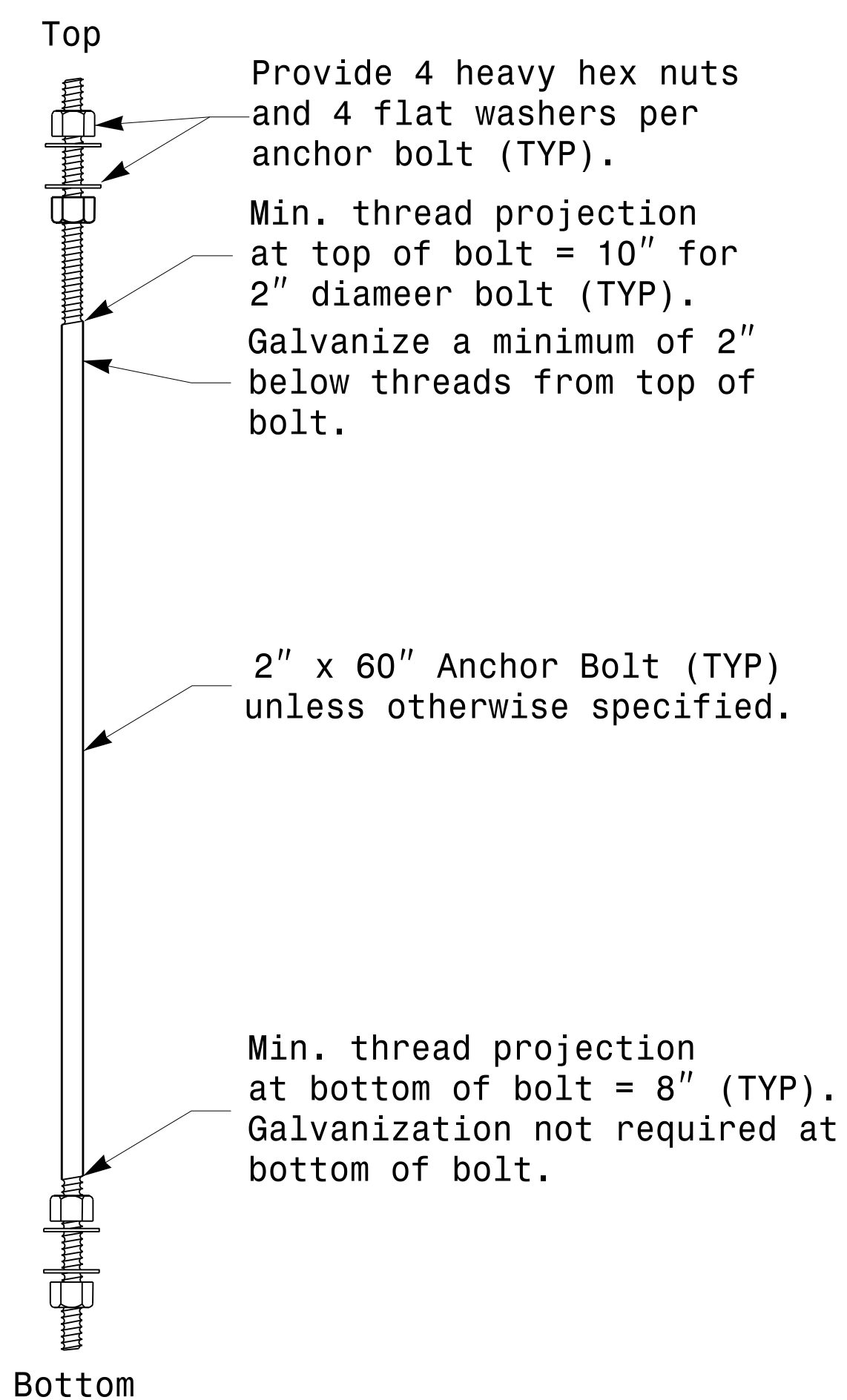
**Shaft I.D. Tag**  
 (Provide on Strain Poles and Mast Arm Poles)

MFG _____	MFG. DATE: MM/YY
SECTION D/T/L/Y _____	
NCDOT STANDARD _____	

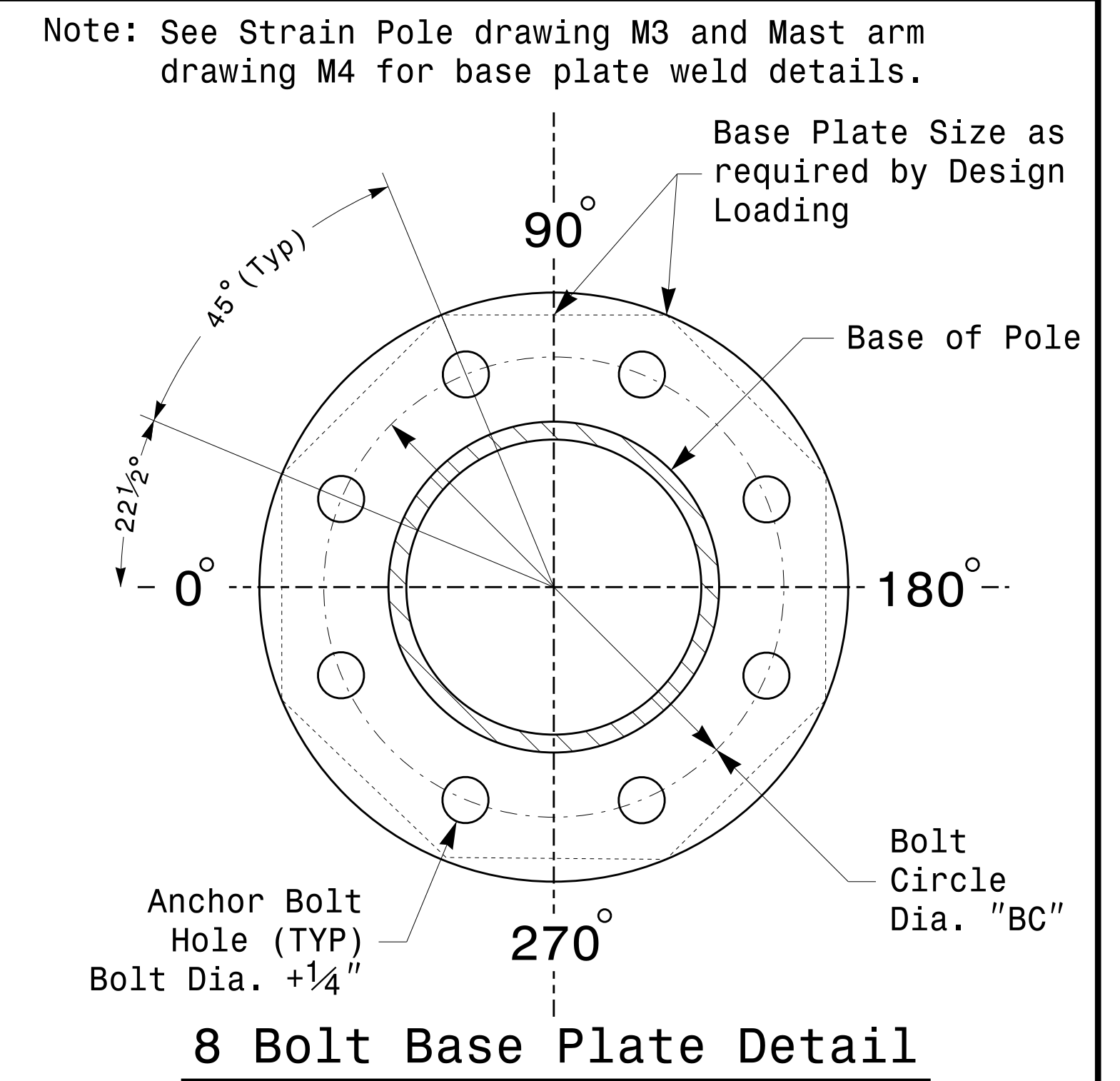
**Arm I.D. Tag**  
 (Provide on each section of a multi-section mast arm)

- Notes:
- 1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
  - 2) A.B. = Anchor Bolt
  - 3) B.C. = Bolt Circle of Anchor Bolts
  - 4) If Custom Design, use "NCDOT STANDARD" line for pole I.D. number and Signal Inv. Number.
  - 5) See drawing M4 for mounting positions of I.D. tags.

**Identification Tag Details**



**Anchor Bolt Detail**

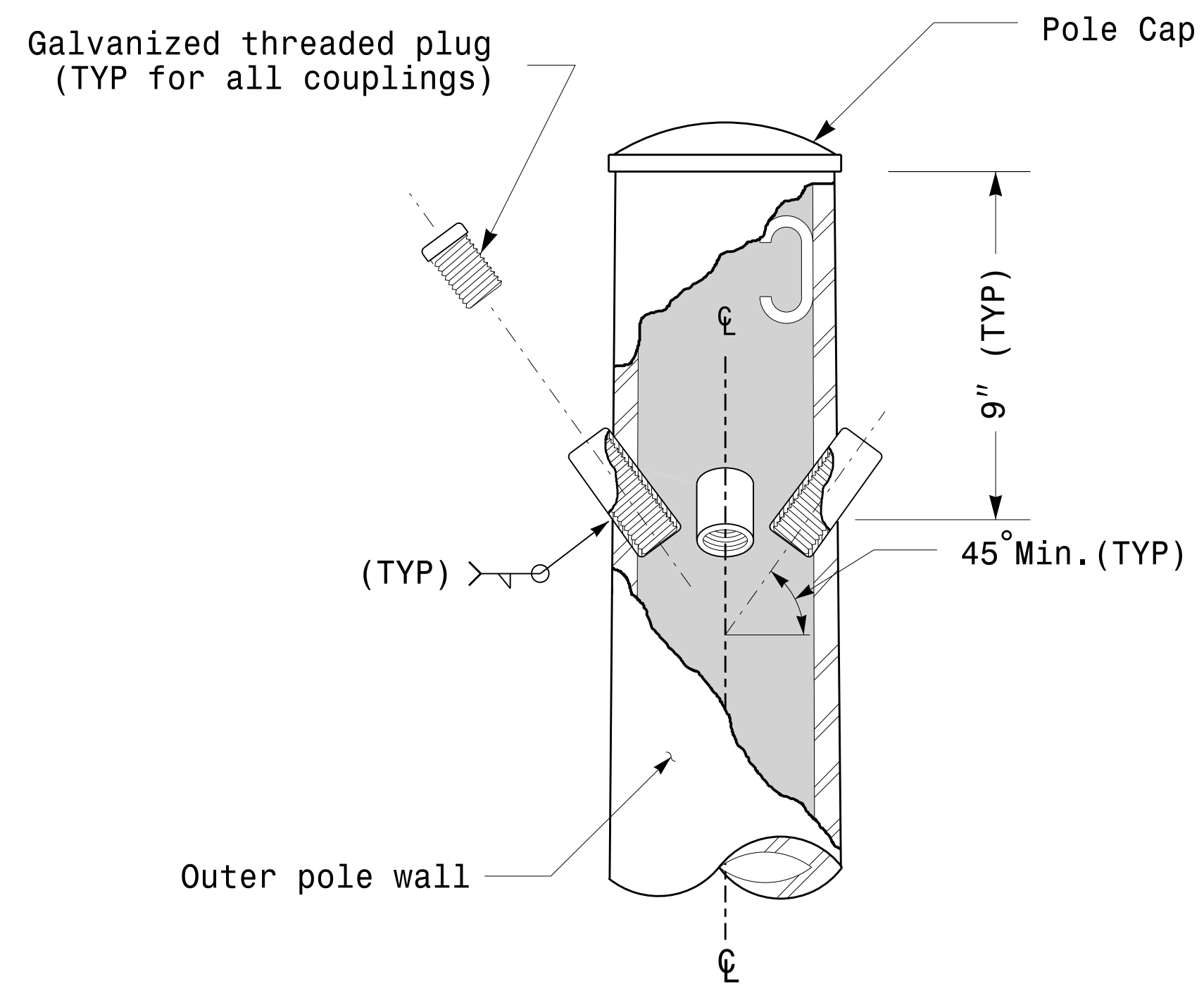


**8 Bolt Base Plate Detail**

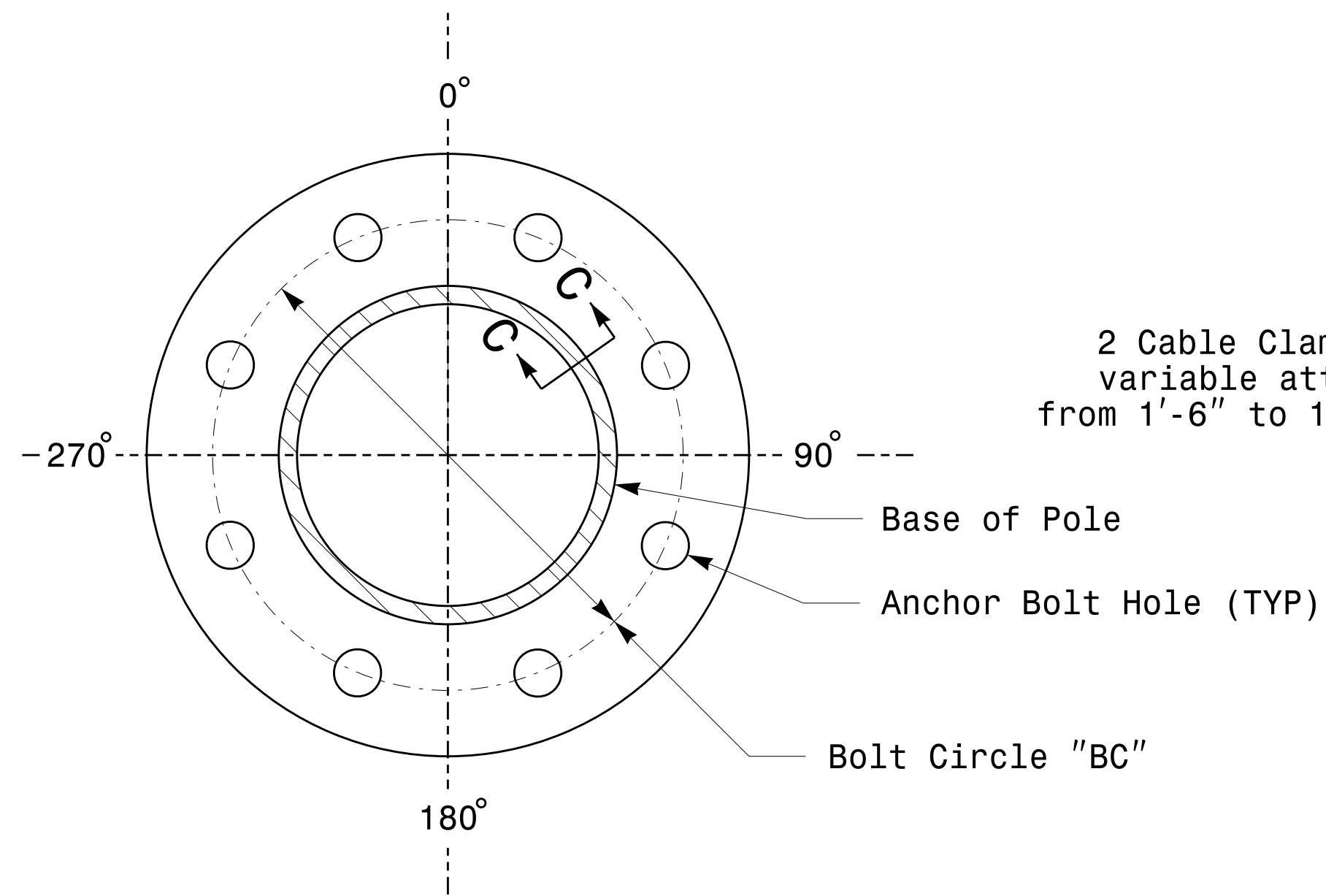
	Typical Fabrication Details Common To All Metal Poles		
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	DESIGNED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR	
SCALE: NONE	REVISIONS: _____	INIT. DATE: _____	DocuSign by: Dinesh C. Sarkar 8/26/2014 DATE: _____ SIG. INVENTORY NO. _____

06-AUG-2014 08:55  
 S:\IT\5510\115\_Signal\Signal Design Section\Eastern Region\M2\_Fab\_Details All Poles.dgn  
 Top | Lowy

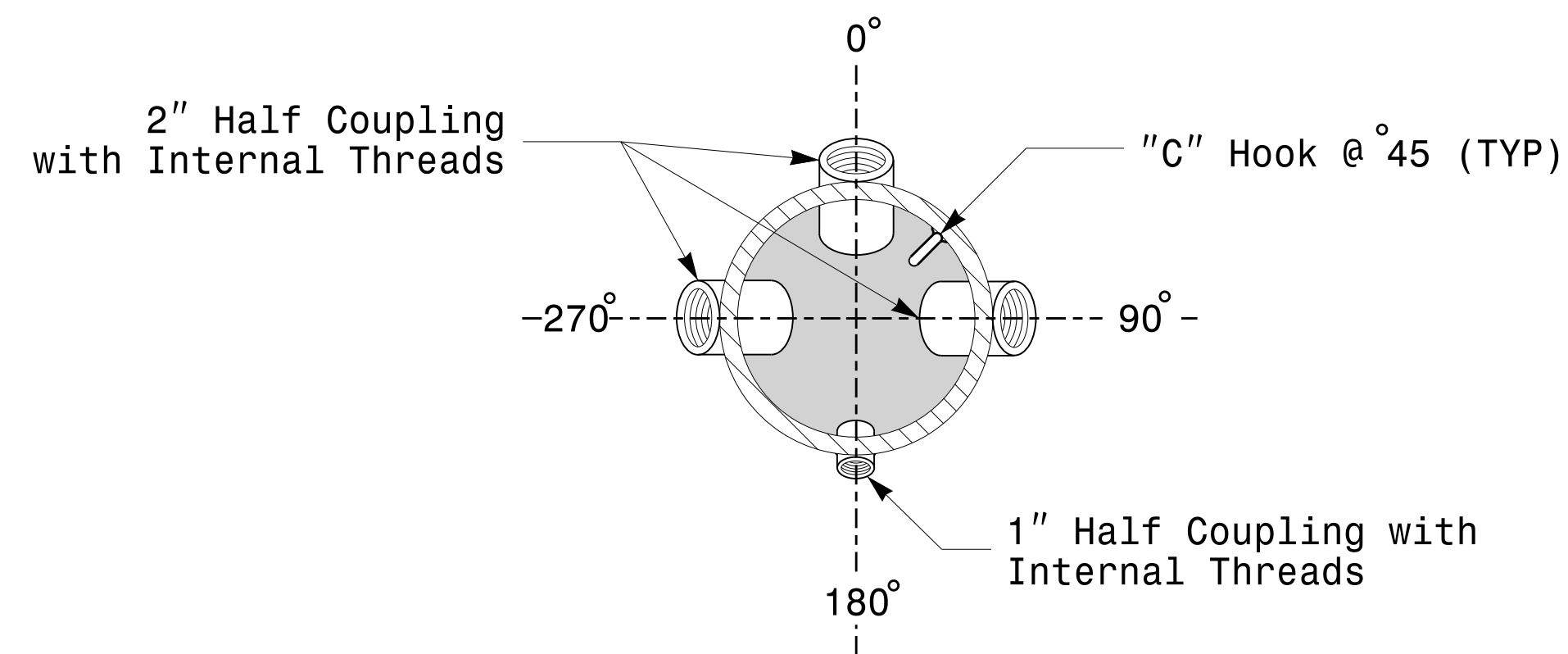
**Fabrication Details – All Poles**



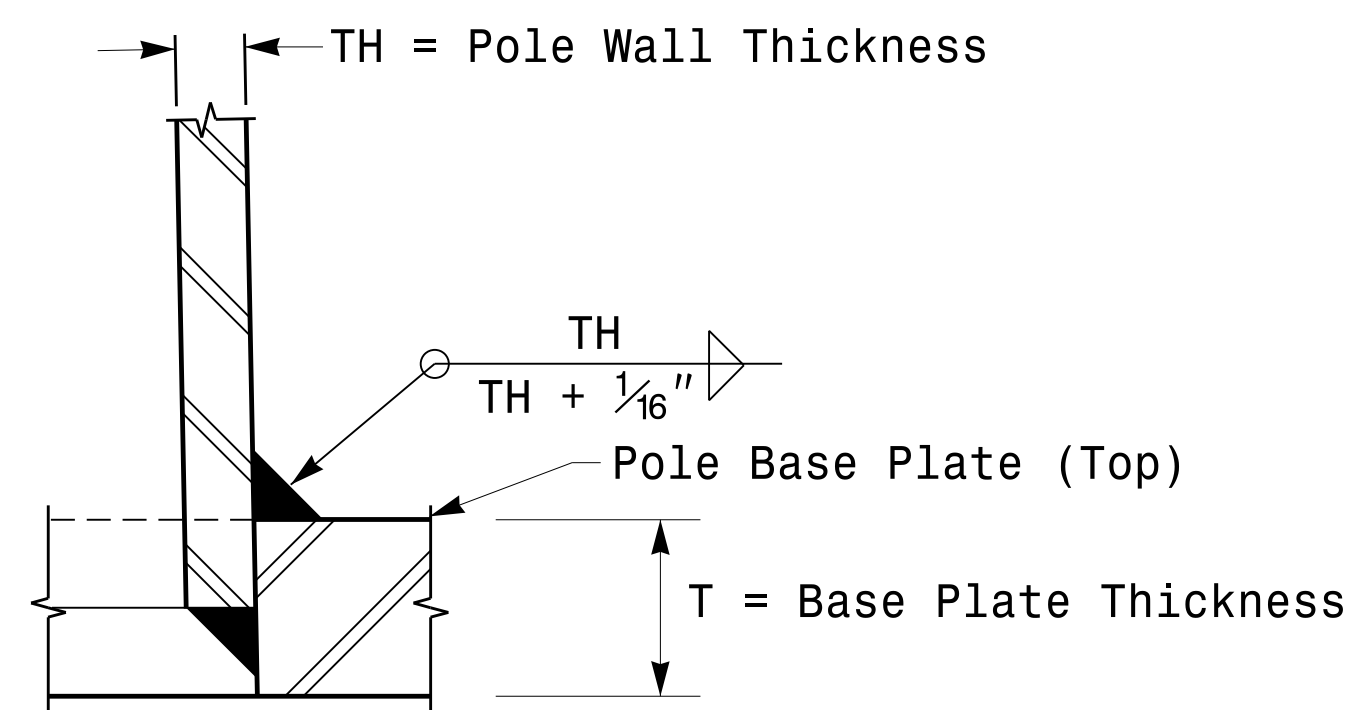
Cable Entrances at Top of Pole



Section B-B Pole Base Plate  
(See drawing M2)

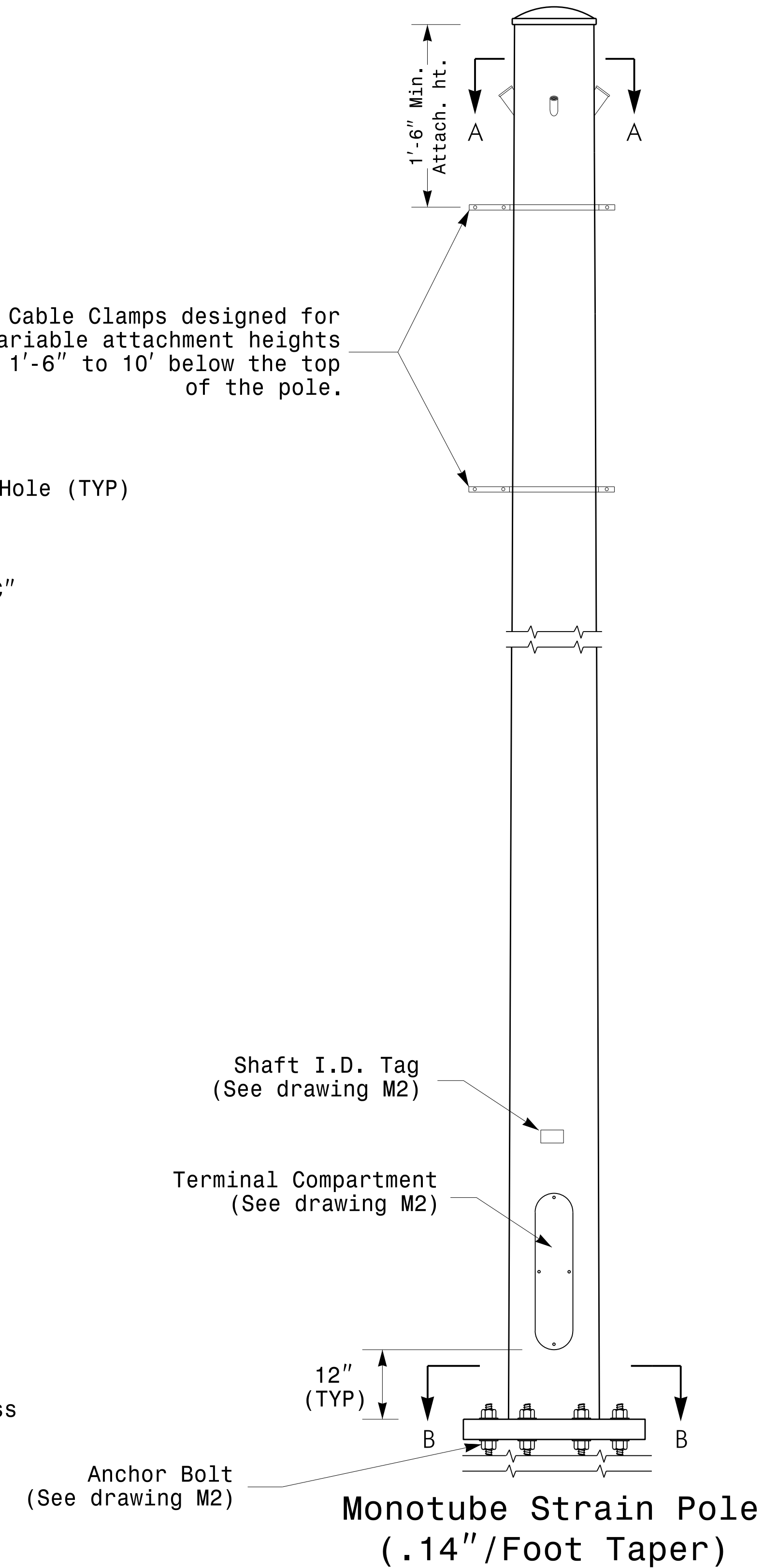


Radial Orientation for Factory Installed Accessories at Top of Pole



Socket Connection Weld Detail

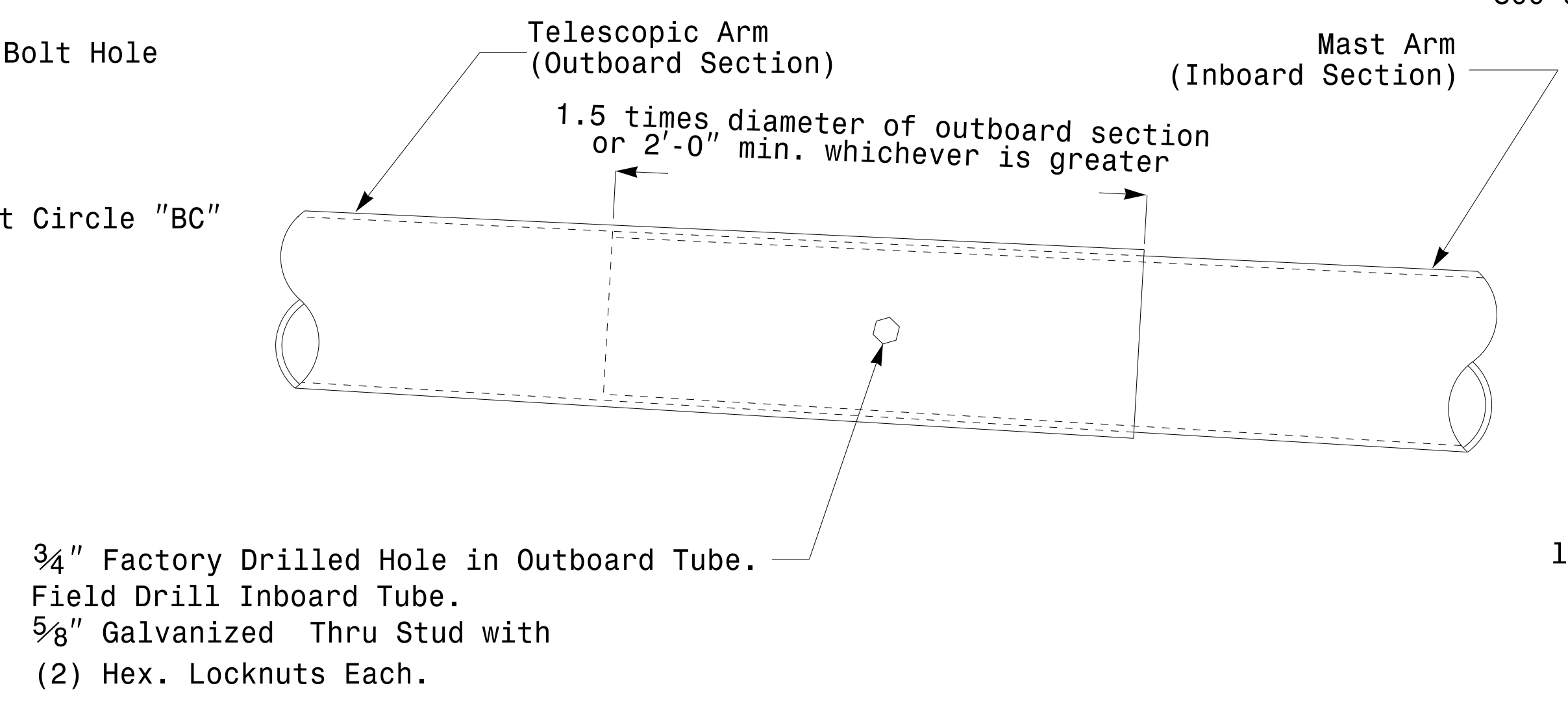
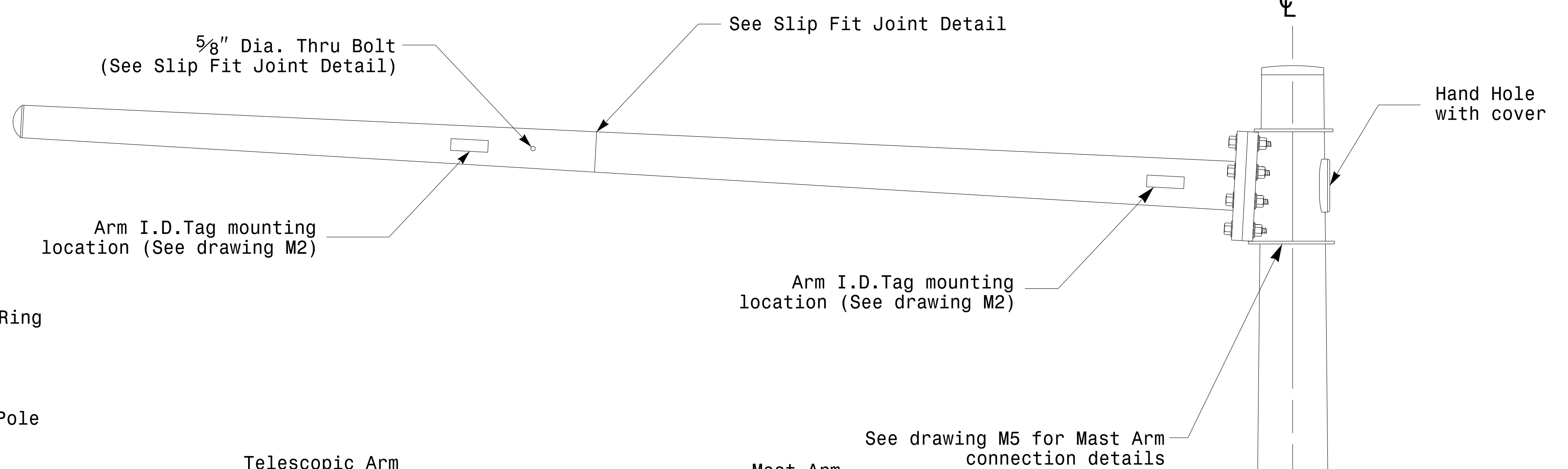
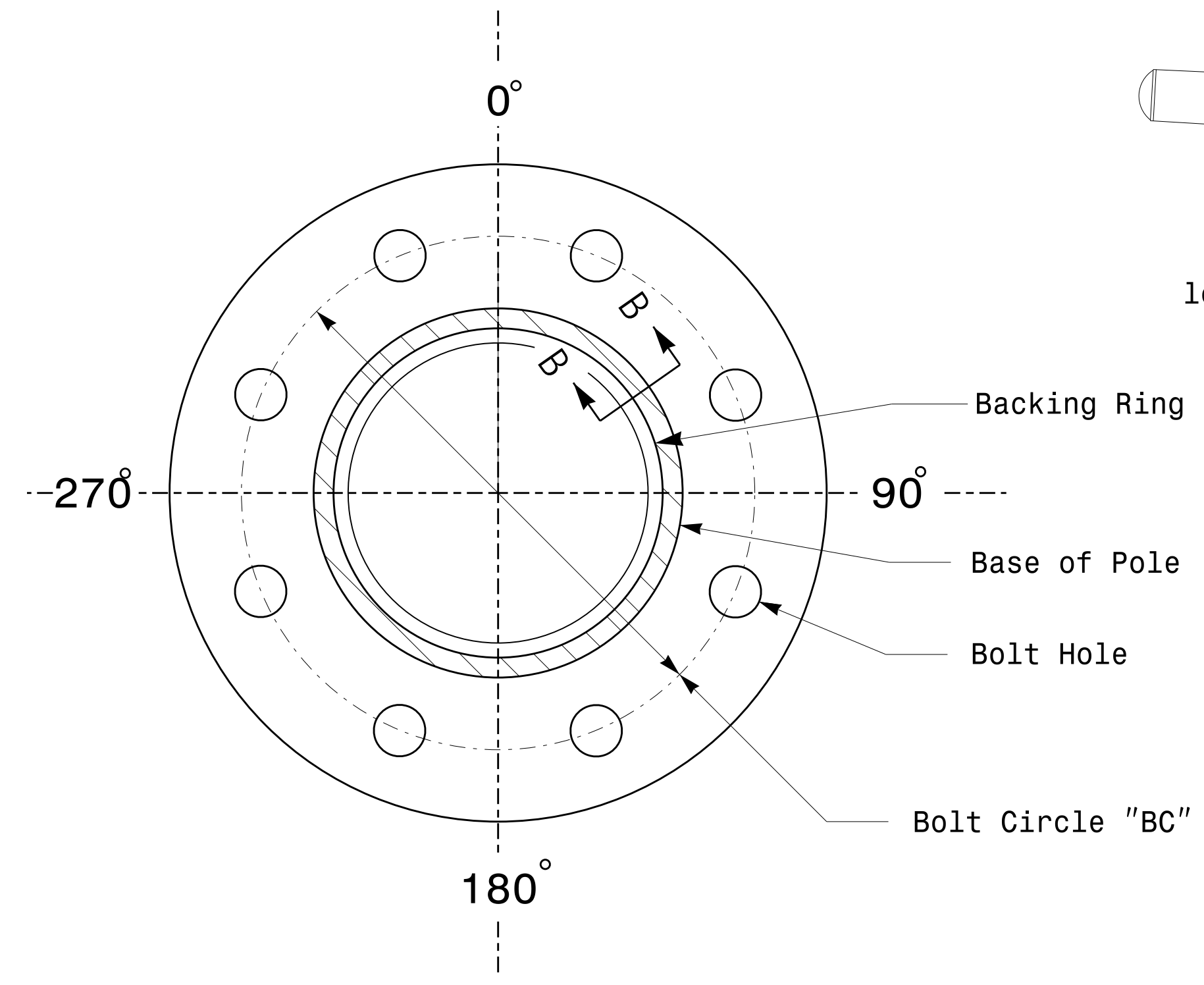
2 Cable Clamps designed for variable attachment heights from 1'-6" to 10' below the top of the pole.



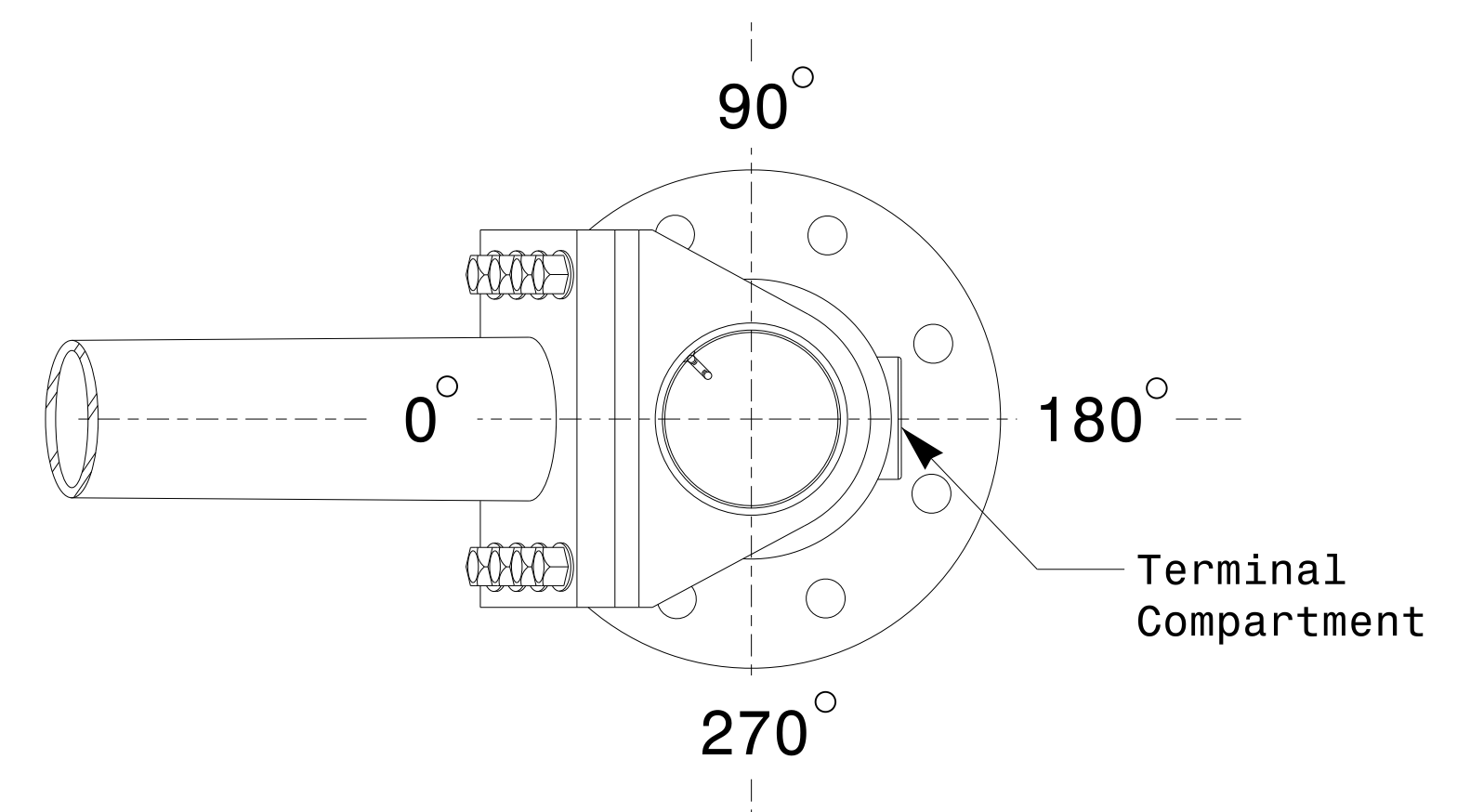
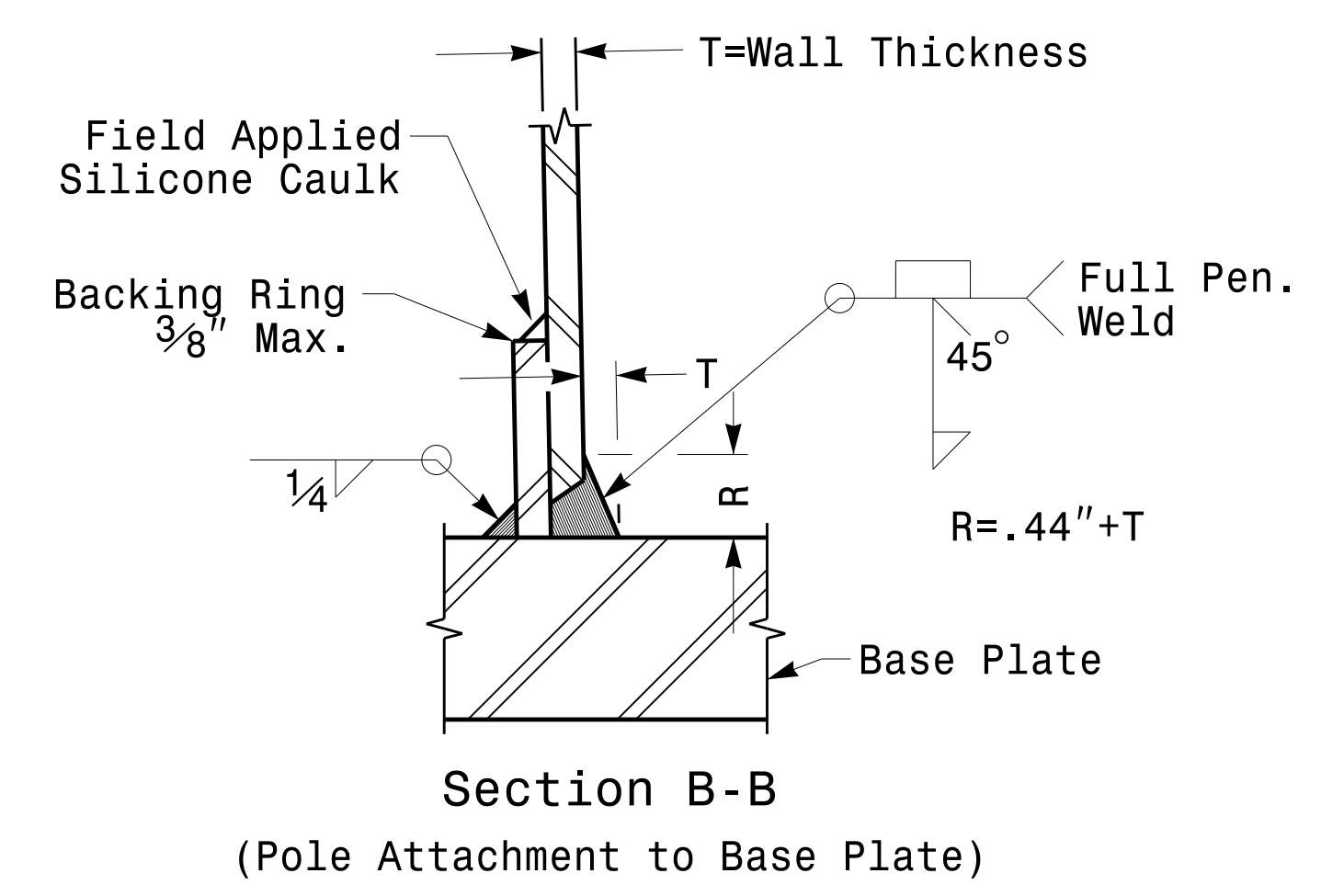
**Fabrication Details – Strain Poles**

26-AUG-2014 09:51 S:\TCS\Signal Design\Section\Eastern Region\M3\_Fab\_Details\Strain\_Poles.dgn Top/11/000

<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Typical Fabrication Details For Strain Poles</p>		
	<p>PLAN DATE: AUGUST 2013</p> <p>PREPARED BY: N. BITTING</p> <p>SCALE: 0 NA NONE</p>	<p>DESIGNED BY: C.F. ANDREWS</p> <p>REVIEWED BY: D.C. SARKAR</p>	



**Slip Fit Joint Detail for Mast Arm**



**Mast Arm Radial Orientation**

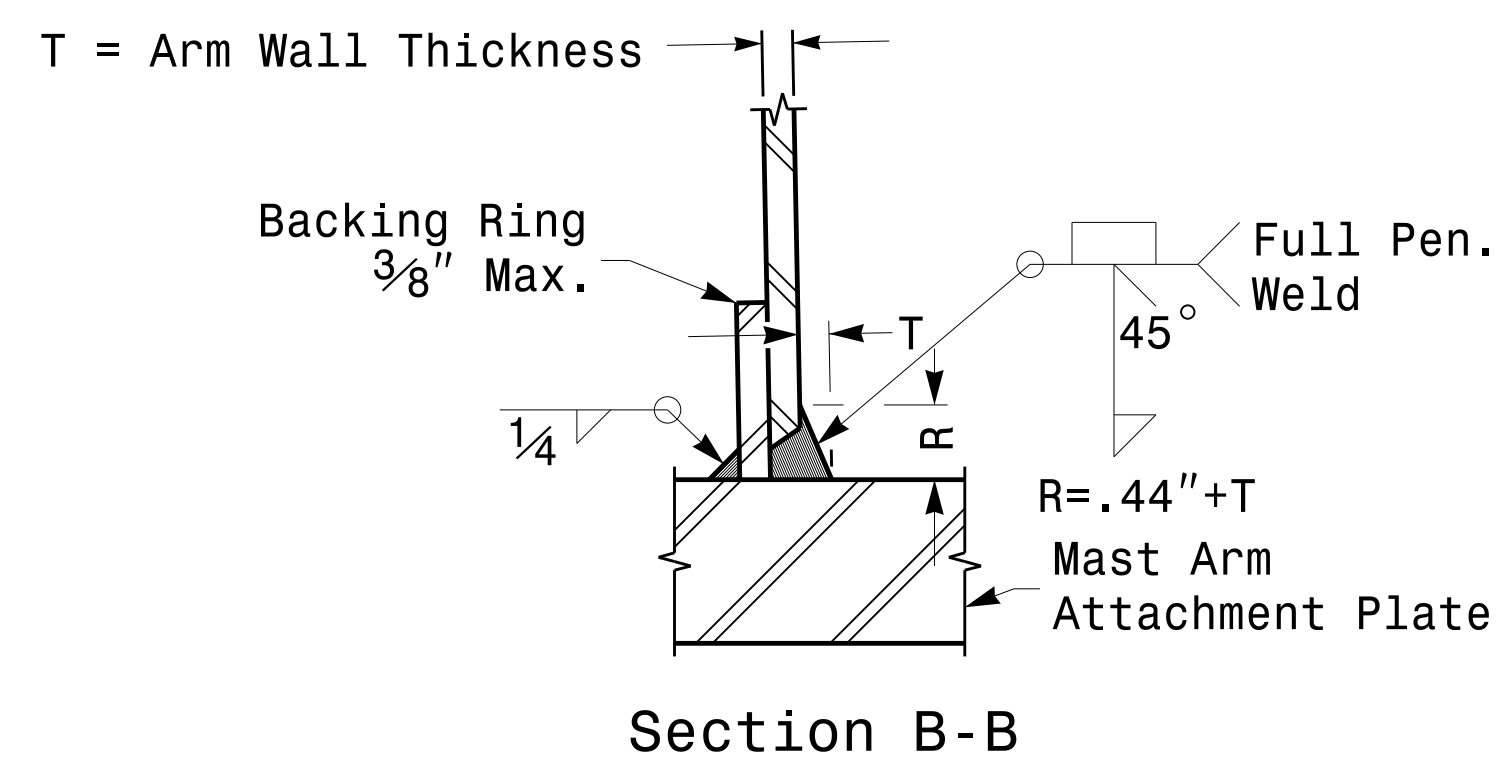
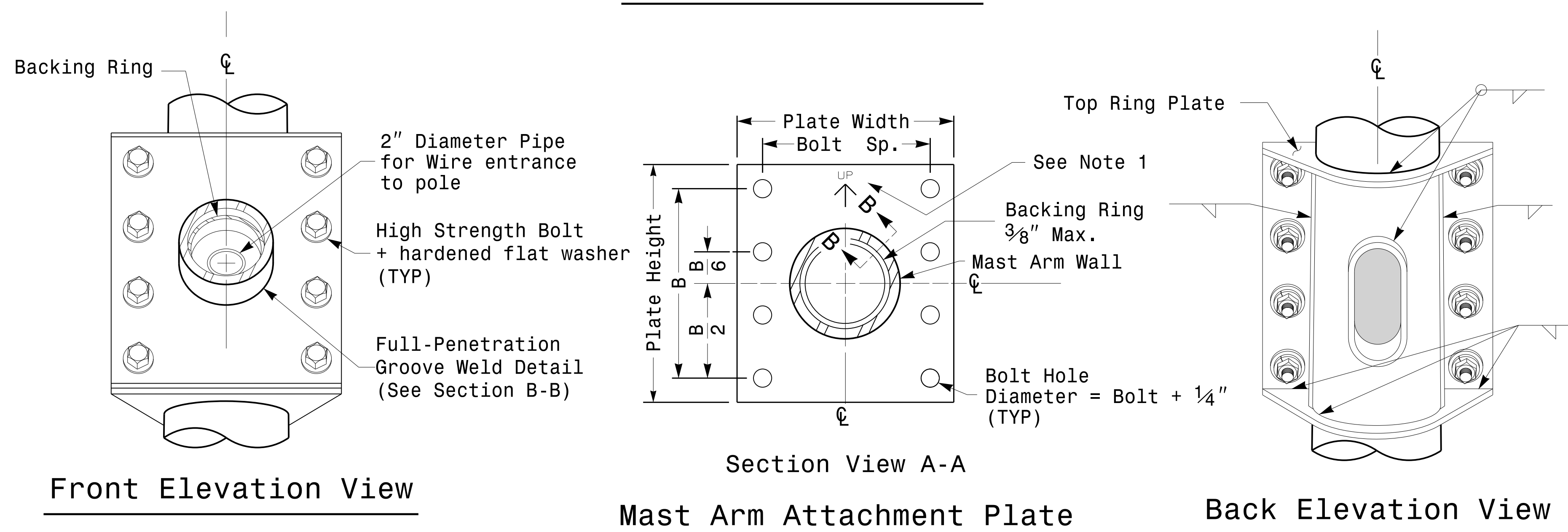
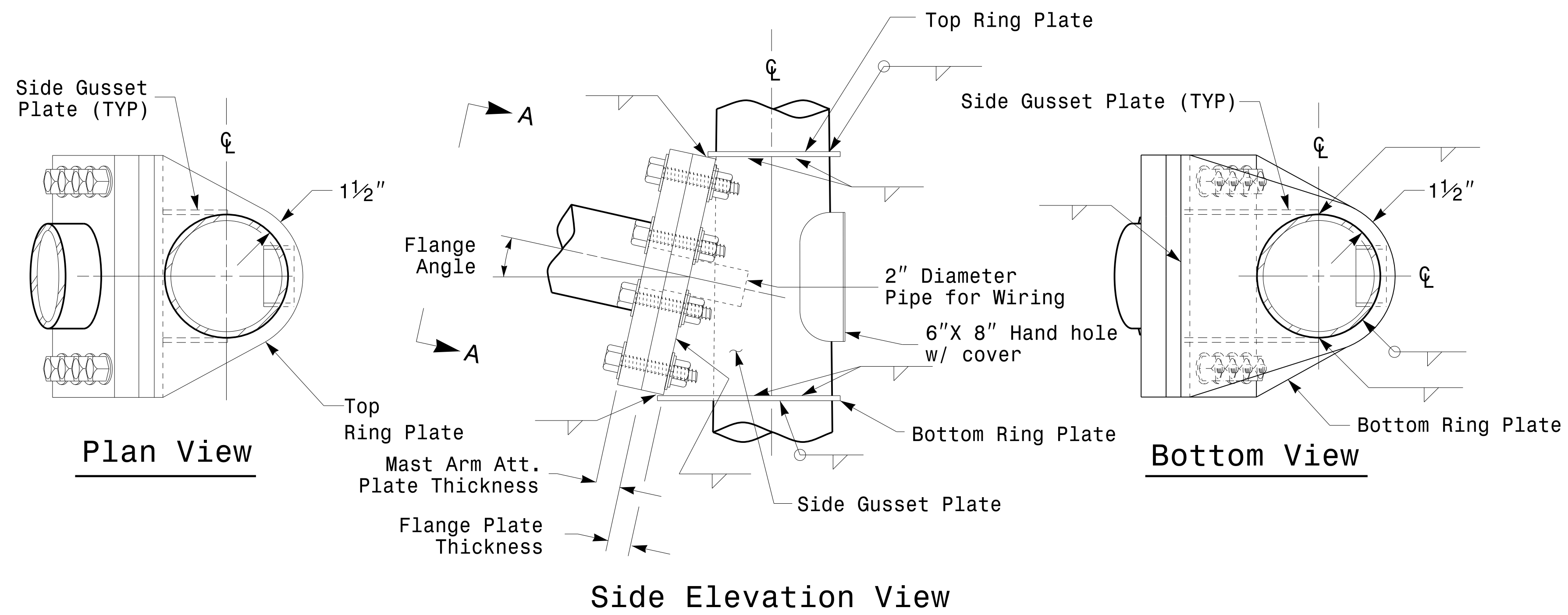
Monotube Mast Arm Pole  
(.14in./ft. taper)

	<p>Typical Fabrication Details for Mast Arm Poles</p>		
	<p>PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING</p>	<p>DESIGNED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR</p>	
<p>SCALE: 0 NA NONE</p>	<p>DocuSign by: Dinesh C. Sarkar 8/26/2014</p>		<p>SIG. INVENTORY NO.</p>

06-11-2014 08:50  
 S:\Projects\W-5510\SIG\Signal Design\Section\Eastern Region\M4\_Fab\_Details\MastArms.dgn  
 7:00:11 am

**Fabrication Details – Mast Arm Poles**

# Welded Ring Stiffened Mast Arm Connection



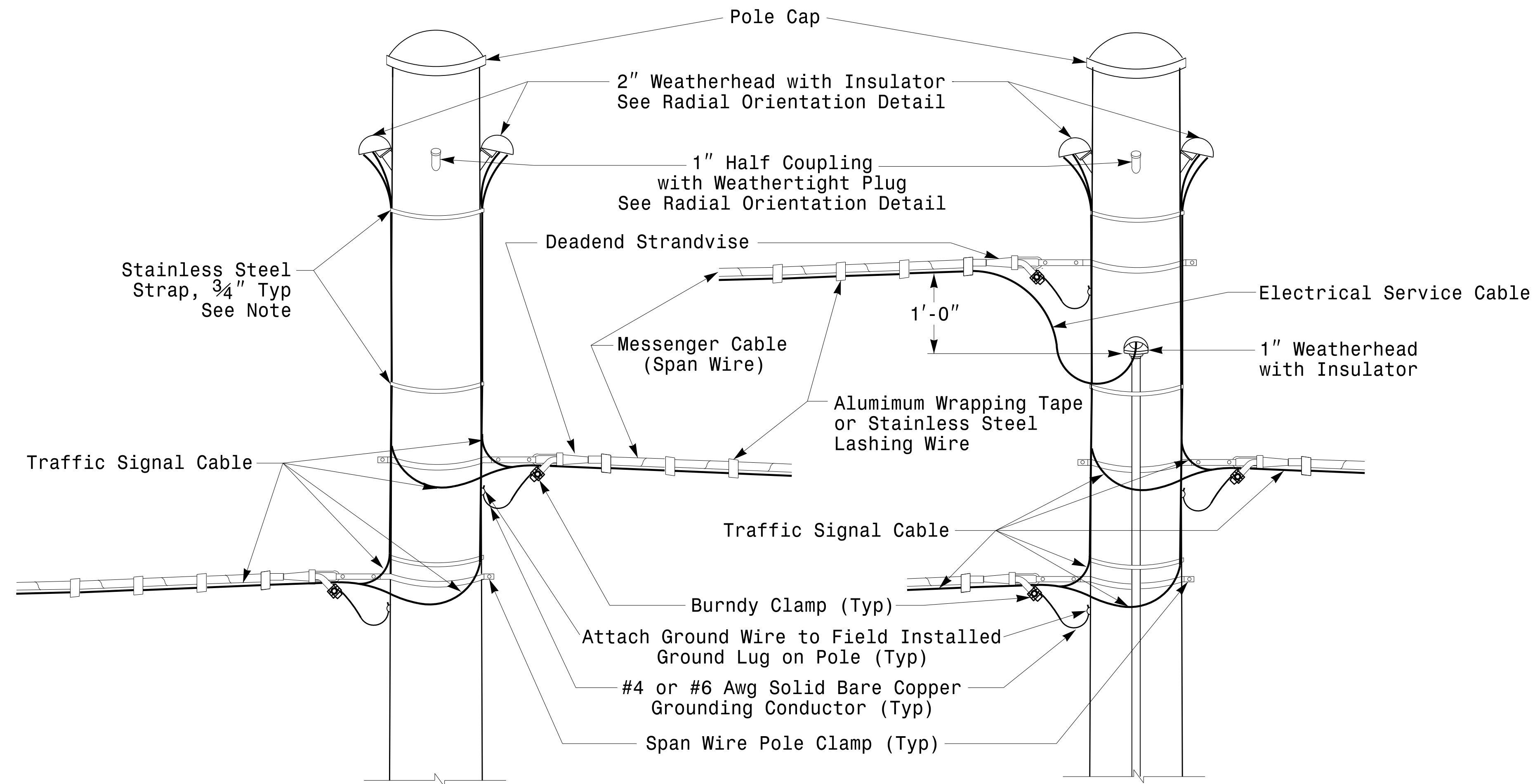
**Notes:**

1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
3. Designer is responsible for providing appropriate drainage points.

	<p>Fabrication Details For Mast Arm Connection To Pole</p>		
	<p>PLAN DATE: AUGUST 2013</p>	<p>DESIGNED BY: C.F. ANDREWS</p>	
<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>PREPARED BY: N. BITTING</p>	<p>REVIEWED BY: D.C. SARKAR</p>	<p>INIT. DATE</p>
<p>SCALE: 0 NA NONE</p>	<p>DocuSign by: D. C. Sarkar</p>		<p>8/26/2014</p>
<p>SIG. INVENTORY NO.</p>			<p>DATE</p>

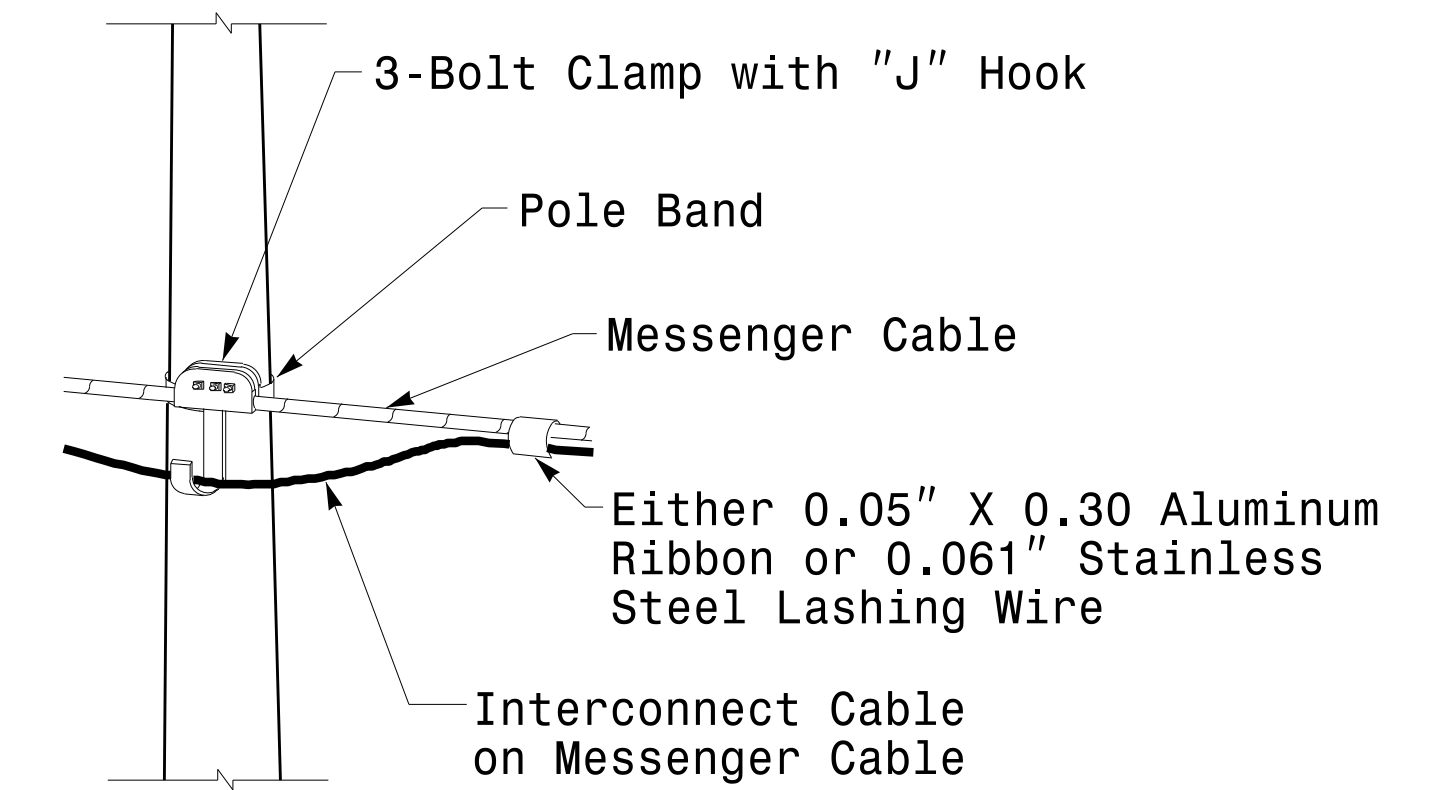
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**Fabrication Details – Mast Arm Poles**

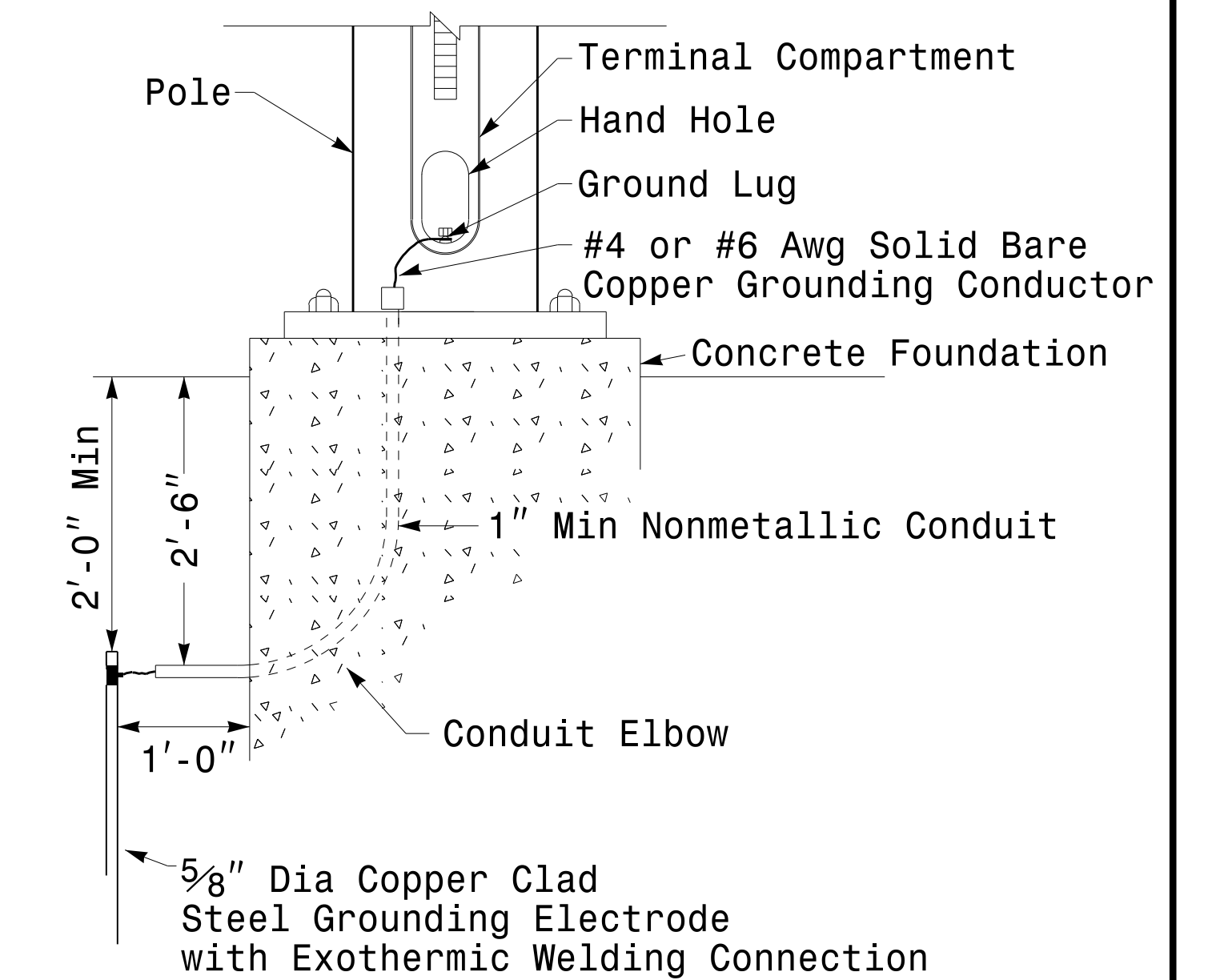


### Strain Pole Attachments

Note: Strap all signal cables to the side of the pole with 3/4" stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 36"



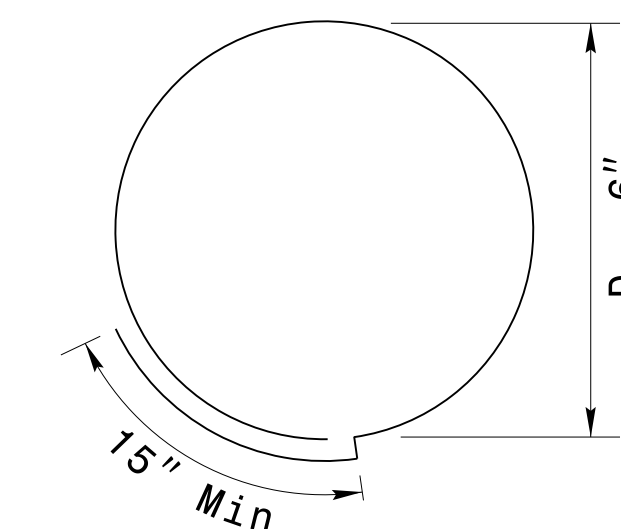
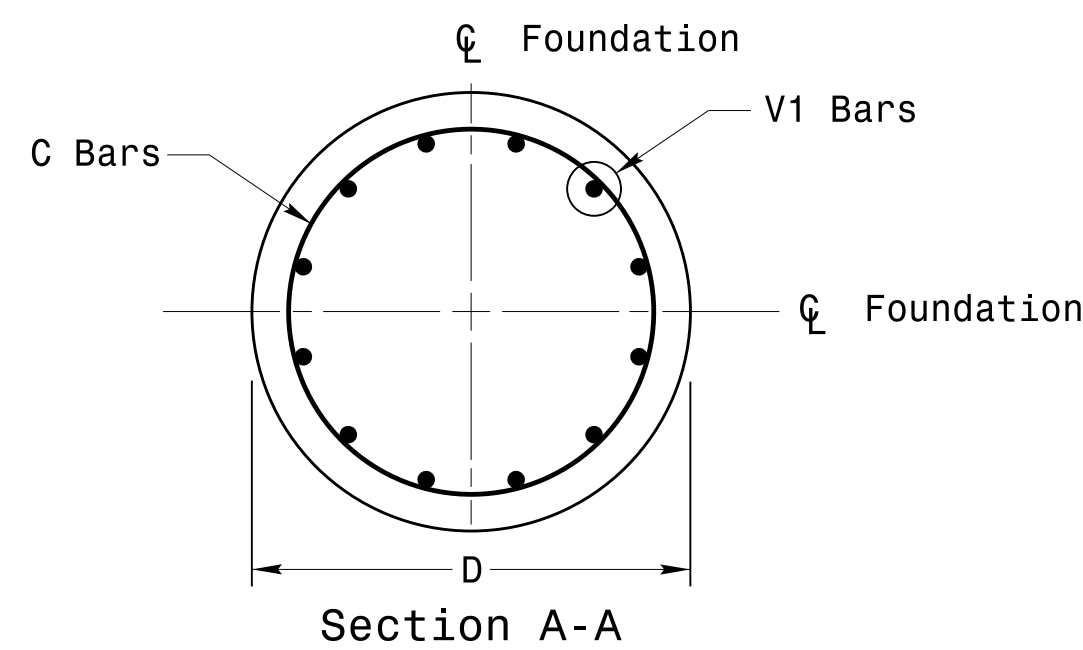
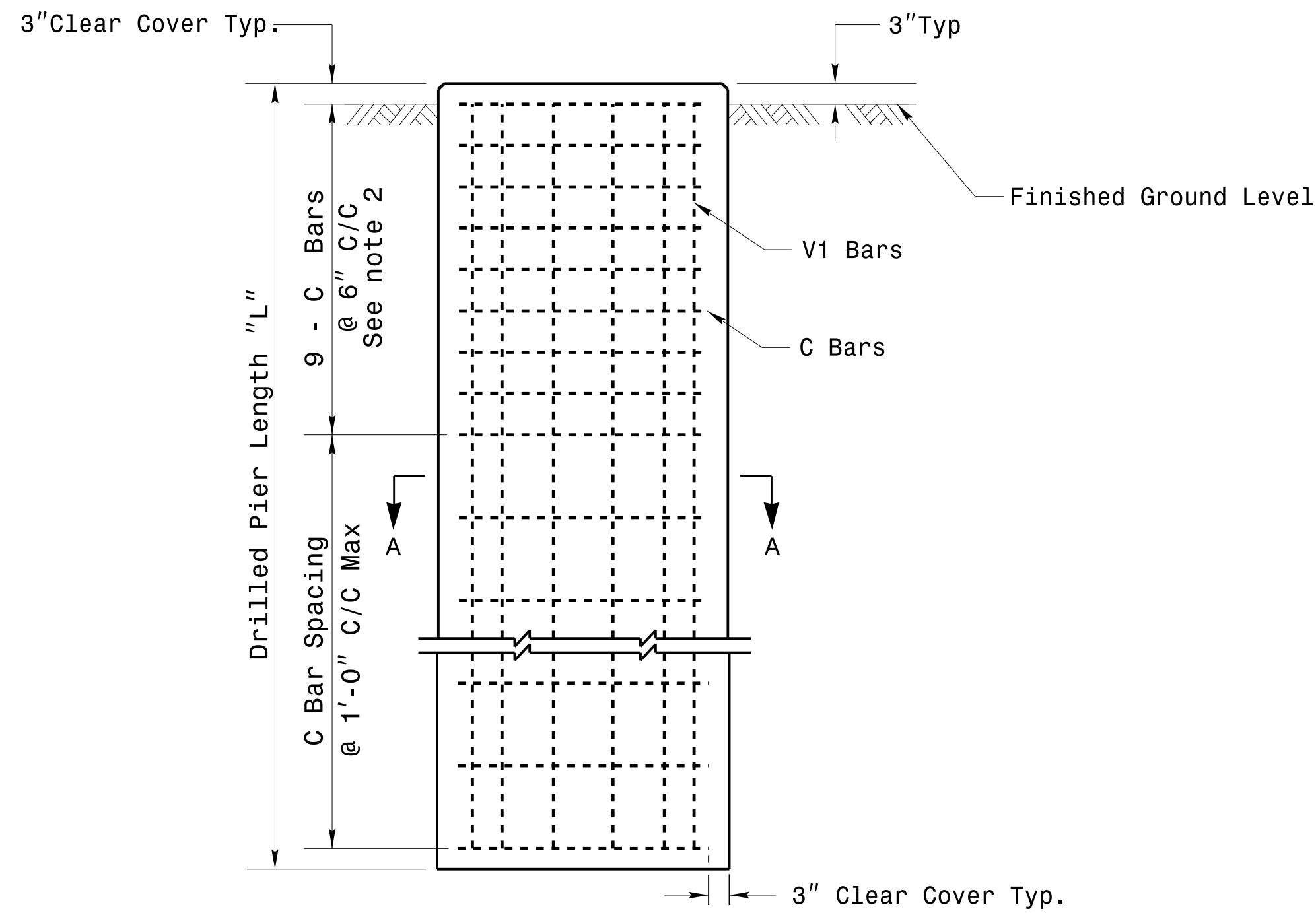
### Attachment of Cable to Intermediate Metal Pole



### Metal Pole Grounding Detail

	<b>Construction Details Strain Poles</b>		
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	REVIEWED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE	REVISIONS:	INIT. DATE:	8/26/2014 DATE:

### Reinforcing Steel Bars



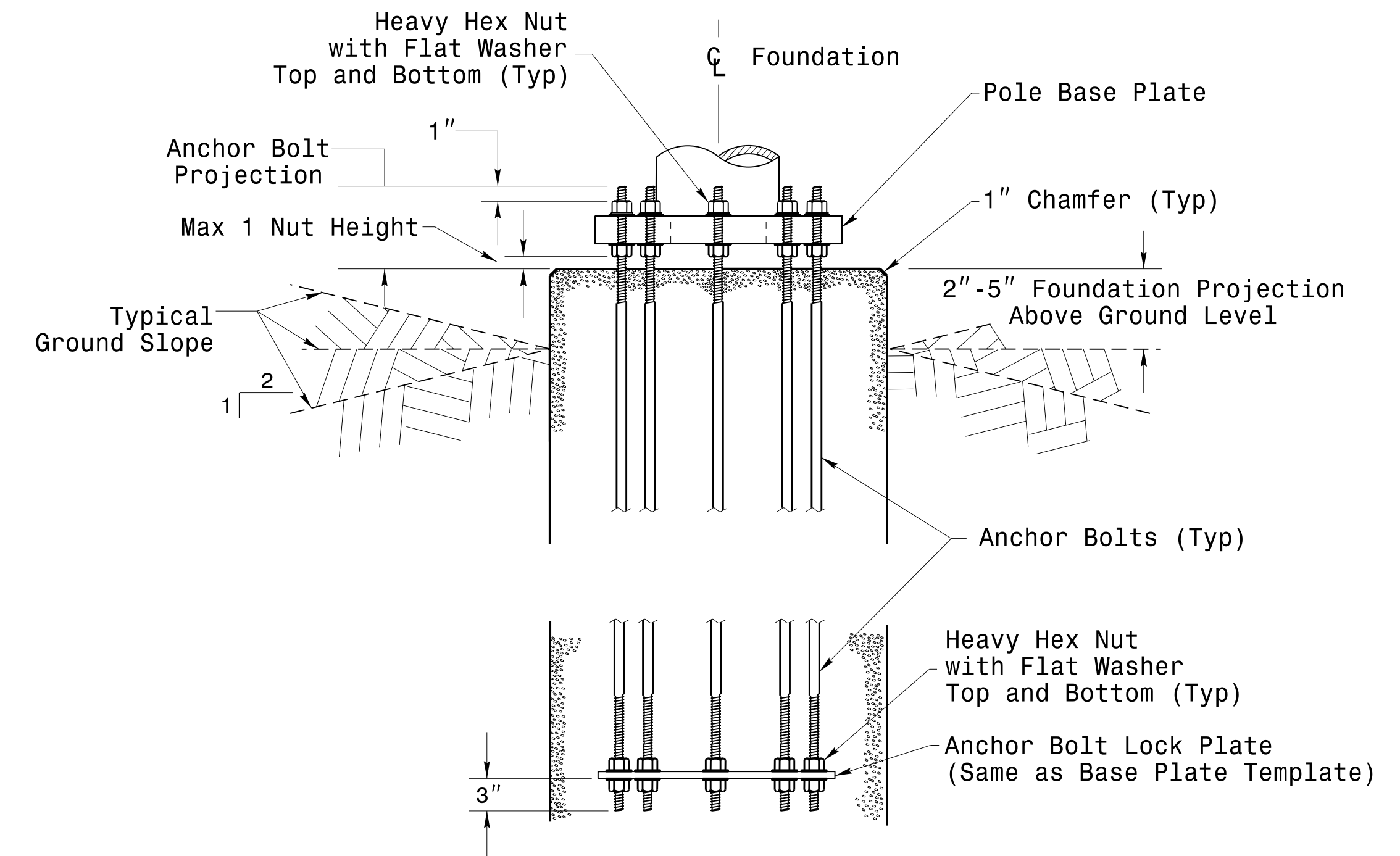
Typical "C" Bars

REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4'-0" DIAMETER)						
Shaft Dia (in.)	Conc. Volume (cu. yds.)	Bar Name	MIN.	Size	Type	Length
48"	.465 x L	V1	***	#8	STR.	**
		C	*	#4	CIR.	12'-6"

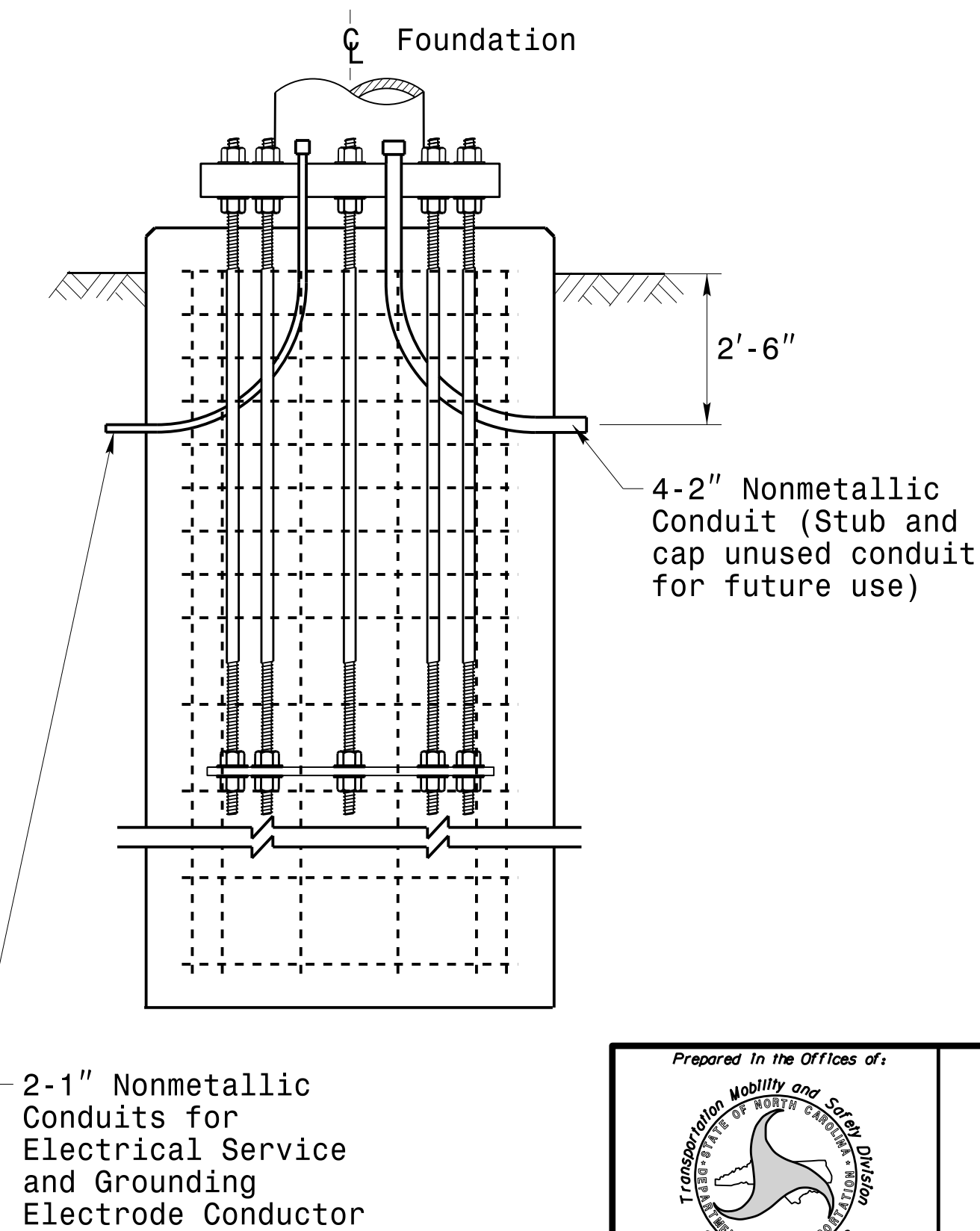
\* See Note No. 1  
 \*\* See Note No. 3  
 \*\*\* See Note No. 4

### Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)



### Typical Foundation Conduit Details



### Notes

- The number of C-bars is based on foundation depth and/or as required. For standard foundations, see sheets M 8 and M 9 for details.
- Circular tie reinforcing rings may be vertically adjusted by +/- 3" at a depth between 2'-0" and 3'-0" to facilitate the installation of electrical conduit entering in the cage.
- The length of V1-bars is based on foundation depth. For standard foundations, see sheets M 8 and M 9 for details. Vertical reinforcing bars (V1) may be horizontally adjusted by +/- 3" to facilitate the installation of electrical conduit entering into the cage.
- Provide vertical reinforcement as required per design. See sheets M 8 and M9 for details.

	<b>Construction Details Foundations</b>	
	PLAN DATE: AUGUST 2013 PREPARED BY: N. BITTING	DESIGNED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR
SCALE: 0 NA NONE	REVISIONS: _____ INITI.: _____ DATE: _____	DocuSign by: <i>Dinesh C. Sarkar</i> 8/26/2014 DATE: _____ SIG. INVENTORY NO. _____

# SATURATED SOIL CONDITION

		STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48" Diameter Drilled Pier Length (L) - Feet							Reinforcement			
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
					Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4-8	Stiff N-Value 9-15	Very Stiff N-Value 16-30	Hard N-Value >30	Loose N-Value 4-10	Medium N-Value 11-30	Dense N-Value >30	Bar Size (#)	Quantity	Bar Size (#)	Spacing (in.)
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	19	13	9	8	17	14.5	12.5	8	13	4	12
		S30L3	30	25	2	11	300	20	13.5	9	8	17.5	15	13	8	14	4	12
		S35L3	35	25	3	11	320	20	13.5	9.5	8	17.5	15	13	8	15	4	12
	HEAVY	S30H3	30	29	3	16	450	24.5	17	13	11	21	17.5	15	8	18	4	12
		S35H3	35	29	4	16	515	26	17.5	12	8.5	22	18.5	16	8	20	4	12
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	18	12.5	8.5	8	16.5	14	12	8	13	4	12
		S30L2	30	23	2	10	270	19	12.5	9	8	16.5	14	12.5	8	13	4	12
		S35L2	35	23	3	10	300	19.5	13	9	8	17	14.5	13	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	25.5	15.5	11	8	20	17	14.5	8	17	4	12
		S35H2	35	29	4	15	475	25	16.5	11.5	8	21	17.5	15.5	8	19	4	12
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	18	12.5	8.5	8	16.5	14	12	8	13	4	12
		S30L2	30	23	2	10	270	19	12.5	9	8	16.5	14	12.5	8	13	4	12
		S35L2	35	23	3	10	300	19.5	13	9	8	17	14.5	13	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	25.5	15.5	11	8	20	17	14.5	8	17	4	12
		S35H2	35	29	4	15	475	25	16.5	11.5	8	21	17.5	15.5	8	19	4	12
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	16	11	8	8	15	12.5	11	8	12	4	12
		S30L1	30	22	2	8	205	16.5	11.5	8	8	15	13	11.5	8	12	4	12
		S35L1	35	22	3	8	230	17	12	8	8	15.5	13.5	11.5	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	20.5	14	9.5	8	18	15	13.5	8	15	4	12
		S35H1	35	25	4	12	350	21	14.5	10	8	18.5	15.5	13.5	8	16	4	12
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	18	12.5	8.5	8	16.5	14	12	8	13	4	12
		S30L2	30	23	2	10	270	19	12.5	9	8	16.5	14	12.5	8	13	4	12
		S35L2	35	23	3	10	300	19.5	13	9	8	17	14.5	13	8	14	4	12
	HEAVY	S30H2	30	29	3	15	415	25.5	15.5	11	8	20	17	14.5	8	17	4	12
		S35H2	35	29	4	15	475	25	16.5	11.5	8	21	17.5	15.5	8	19	4	12

### Fabrication Design Notes:


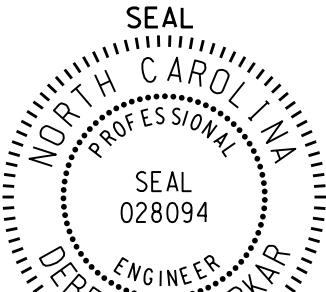
- Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
- Min. base plate thickness (T) is 2.0 inches.

### Foundation Selection:

- Perform a standard penetration test at each proposed foundation site to determine "N" value.
- Select the appropriate wind zone from M 1 drawing.
- Select the soil type (Clay or Sand) that best describes the soil characteristics.
- Get the appropriate standard pole case number from the plans or from the Engineer.
- Select the appropriate column in the chart based on soil type and "N" value. Select the appropriate row based on the pole load case.  
The foundation depth is the value where the column and the row intersect.
- Reference Drilled Shafts: Construction Procedures and Design Methods, FHWA -IF-99-025

- S30H1 - Hard Clay-Stirrup Spacing: 6 in. c/c
- S30H2 - Hard Clay-Stirrup Spacing: 6 in. c/c
- S30H3 - Hard Clay-Stirrup Spacing: 6 in. c/c
- Dense Sand-Stirrup Spacing: 6 in. c/c
- S35H1 - Hard Clay - Stirrup Spacing: 6 in. c/c
- S35H2 - Very Stiff Clay-Stirrup Spacing: 6 in. c/c
- Hard Clay- Stirrup Spacing: 6 in. c/c
- Dense Sand- Stirrup Spacing: 6 in. c/c
- S35H3 - Very Stiff Clay-Stirrup Spacing: 6 in. c/c
- Dense Sand-Stirrup Spacing: 6 in. c/c

48" Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Foundation Depth

	<p><b>Standard Strain Pole Foundation for Saturated Soil Condition</b></p> <p>PLAN DATE: SEPTEMBER 2013    DESIGNED BY: C.B. COGDRELL                  PREPARED BY: N. BITTING    REVIEWED BY: D. SARKAR</p>	
SCALE: 0 NA None	REVISIONS: _____    INIT: _____    DATE: _____	DocuSigned by: Deborah C. Sarkar 8/26/2014 44EBE32E147E4C4...    DATE: _____

06-AUG-2014 08:42  
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 Top Layer

Standard Strain Pole Foundation - Saturated Soil Condition

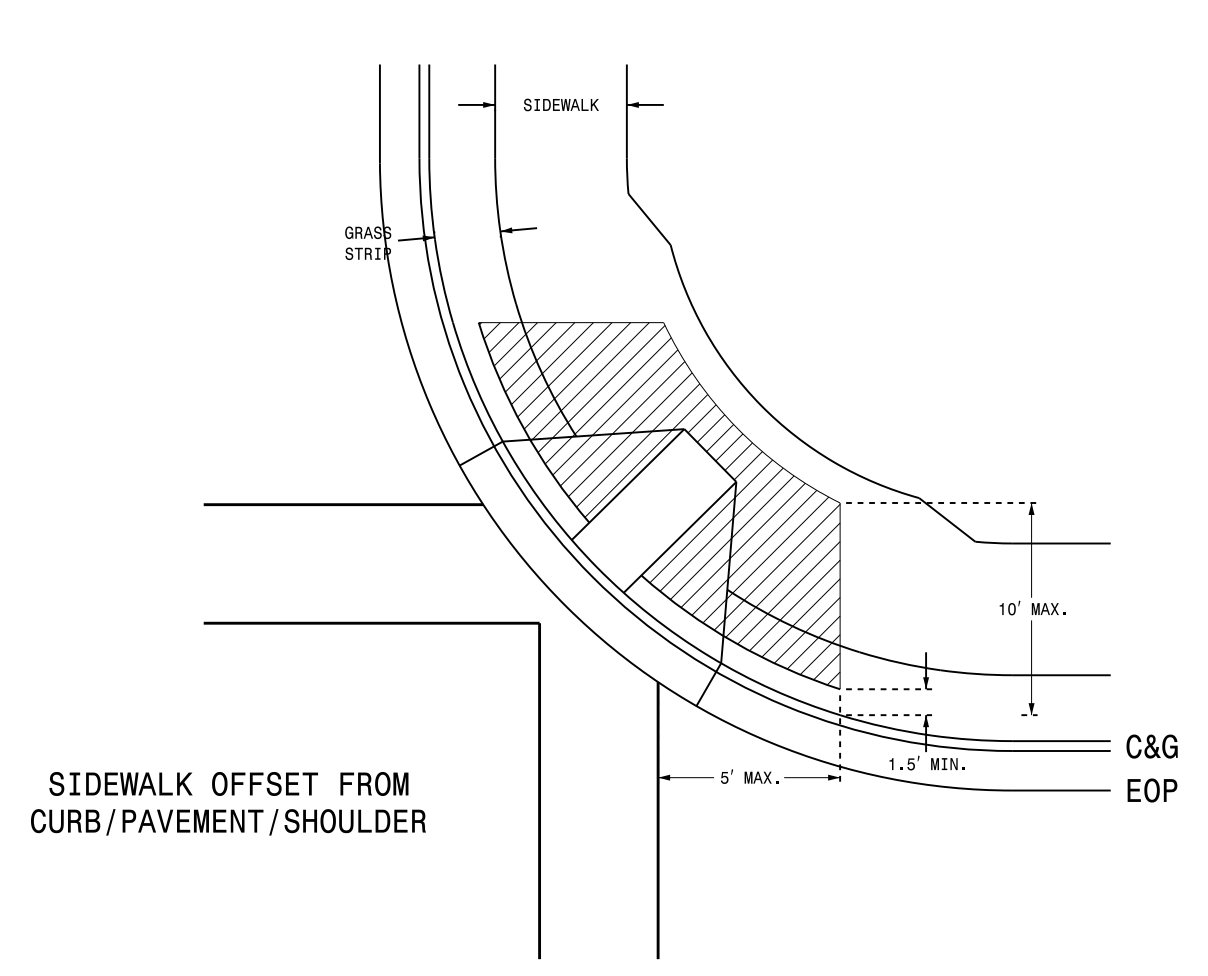
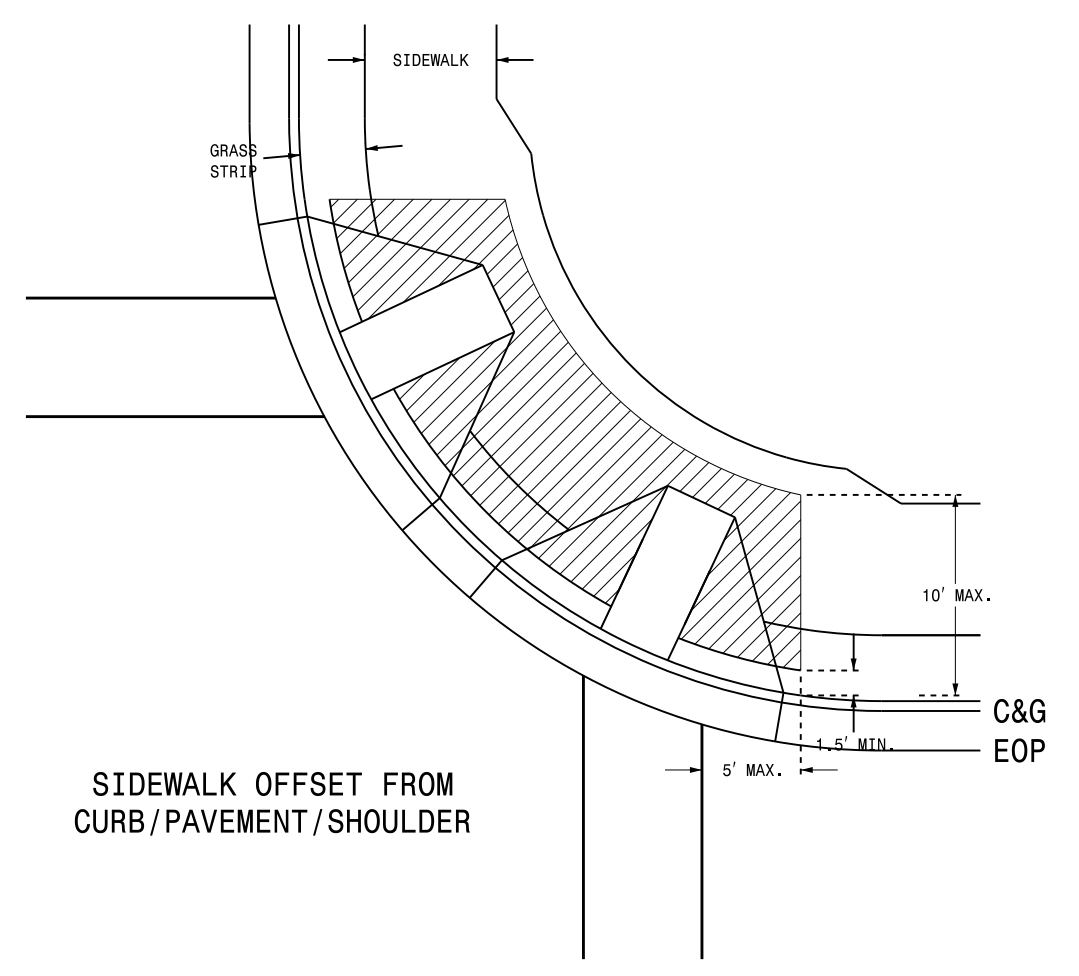
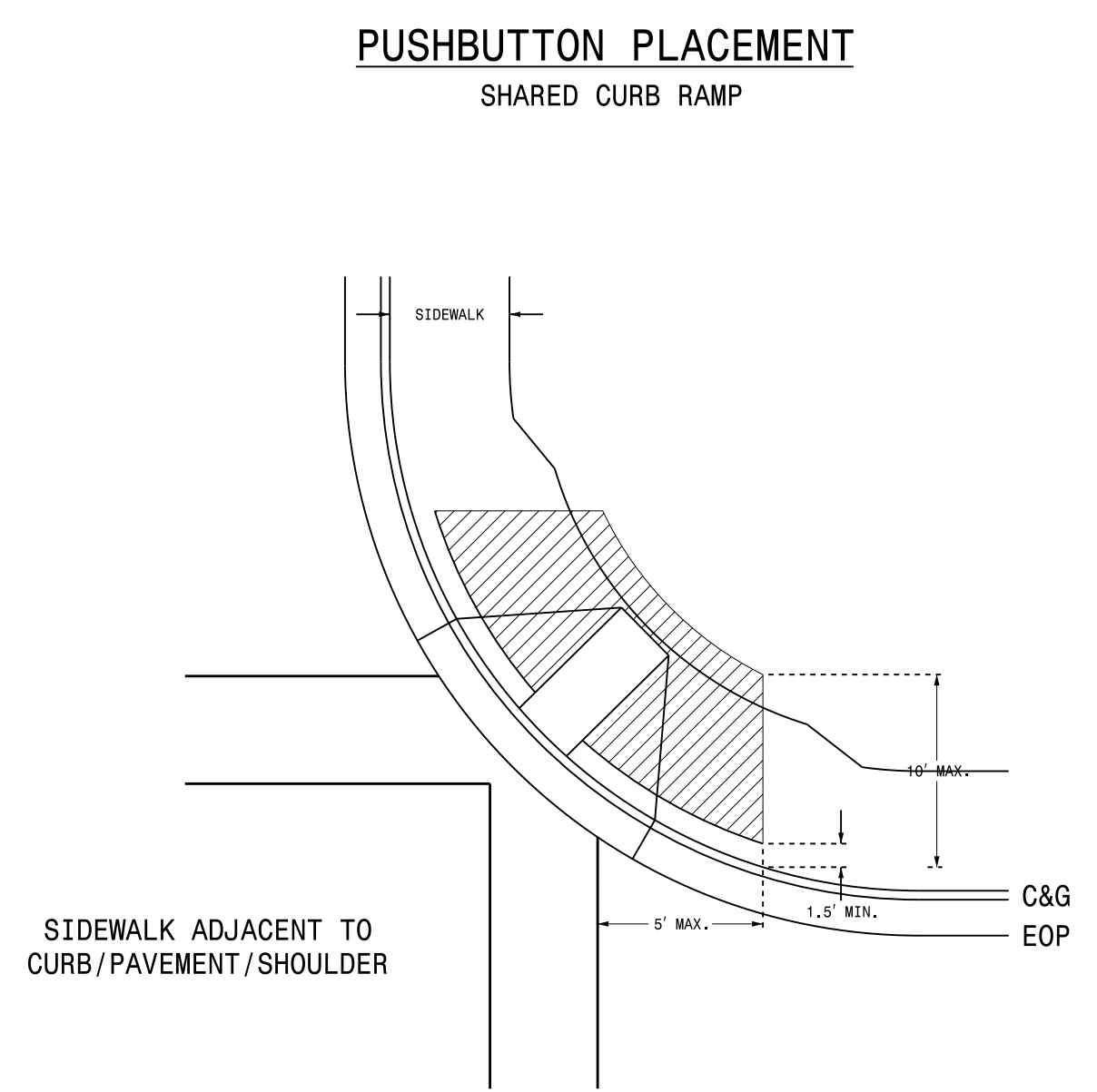
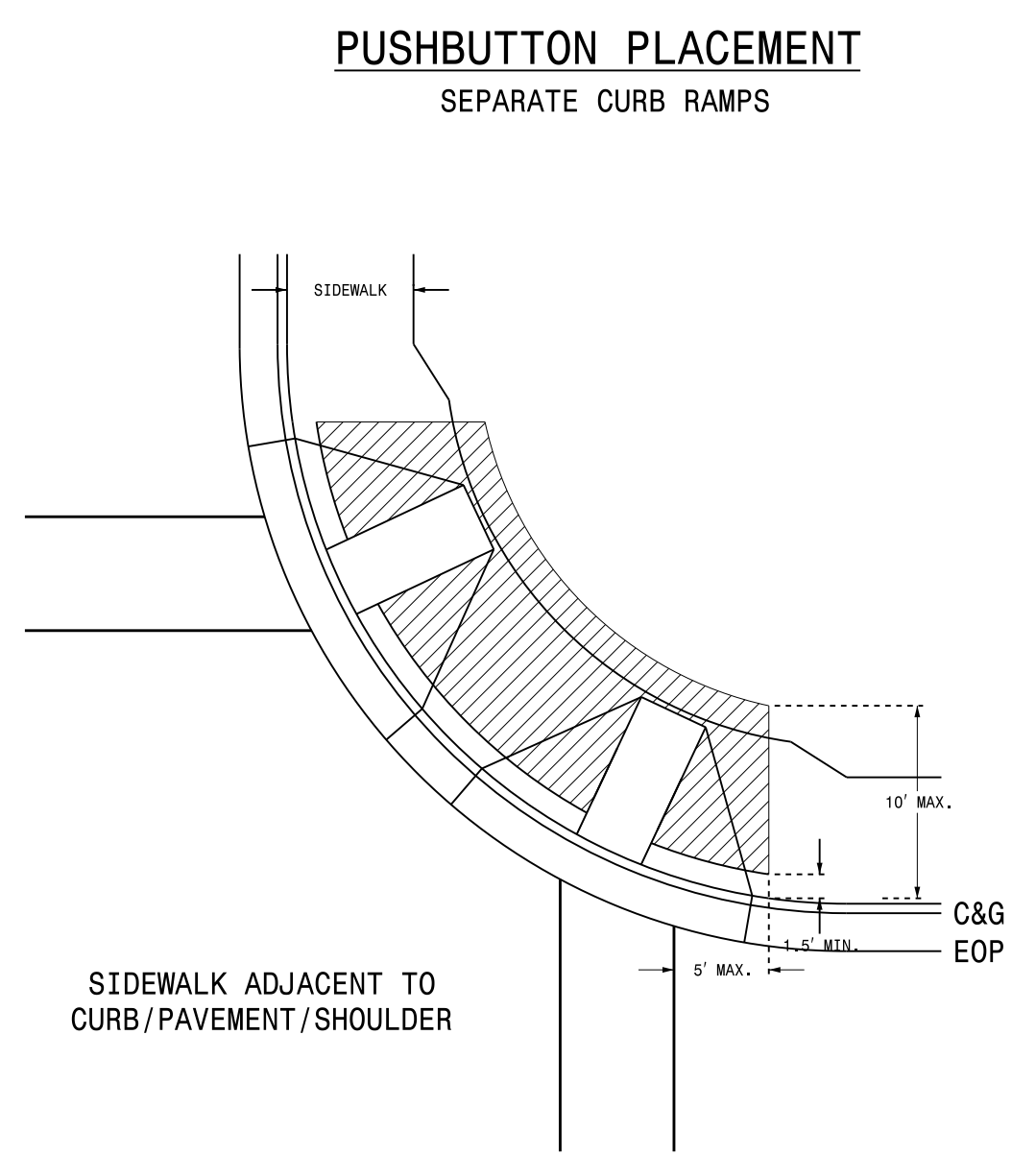




STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
 PLACEMENT DETAIL

SHEET 1 OF 3  
**1705D01**



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

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

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

ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
 PLACEMENT DETAIL

SHEET 1 OF 3  
**1705D01**

See Plate for Title

Prepared in the Offices of:

750 N. Greenfield Parkway  
Garner, NC 27529

SEAL

DocuSigned by:  
  
 18084828744604

6/17/2014  
DATE

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

06-14  
ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
PLACEMENT DETAIL

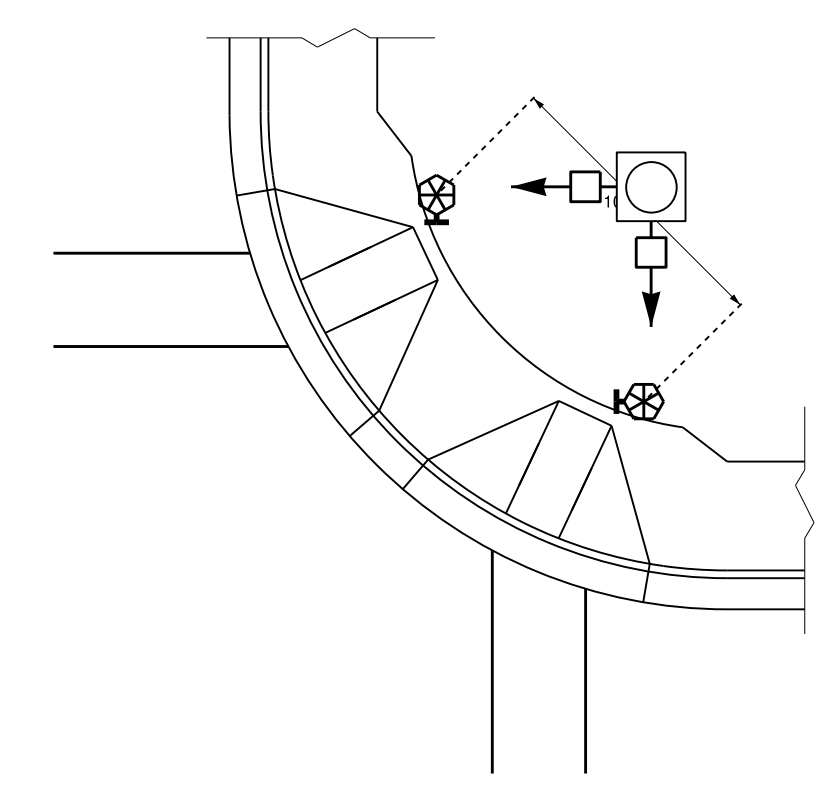
SHEET 2 OF 3  
**1705D01**

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

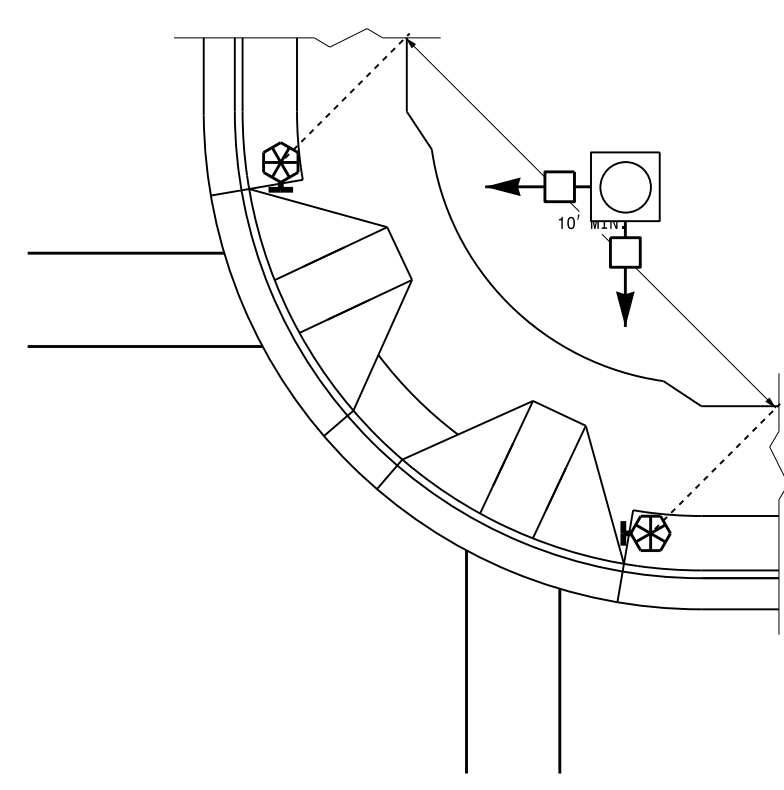
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ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
PLACEMENT DETAIL

SHEET 2 OF 3  
**1705D01**

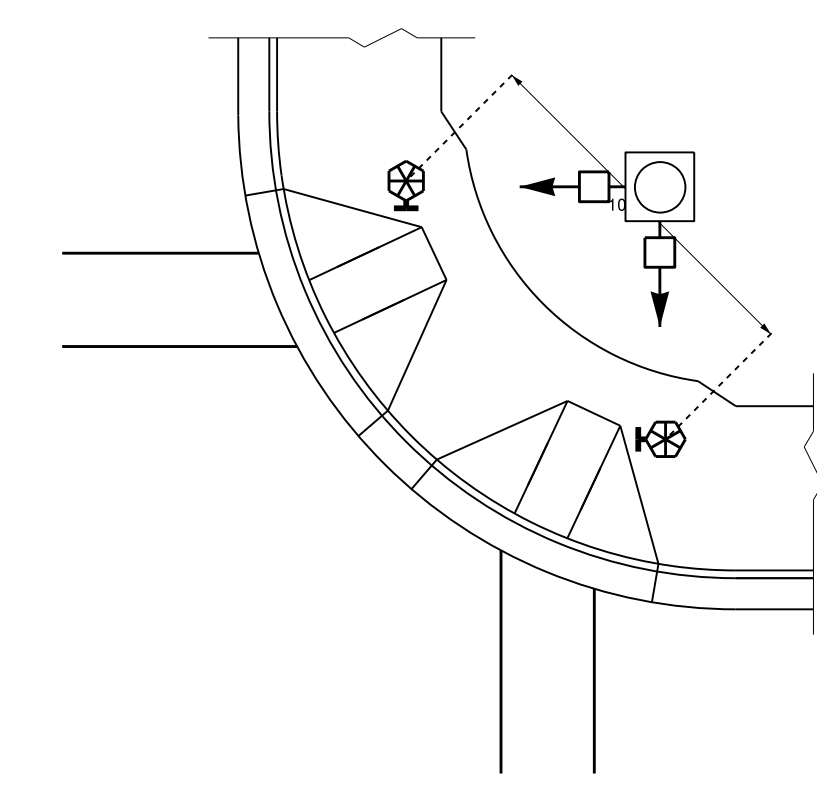
**TYPICAL PUSHBUTTON LOCATIONS (CASE I)**  
SEPARATE CURB RAMPS W/ TYPE I PEDESTALS



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



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



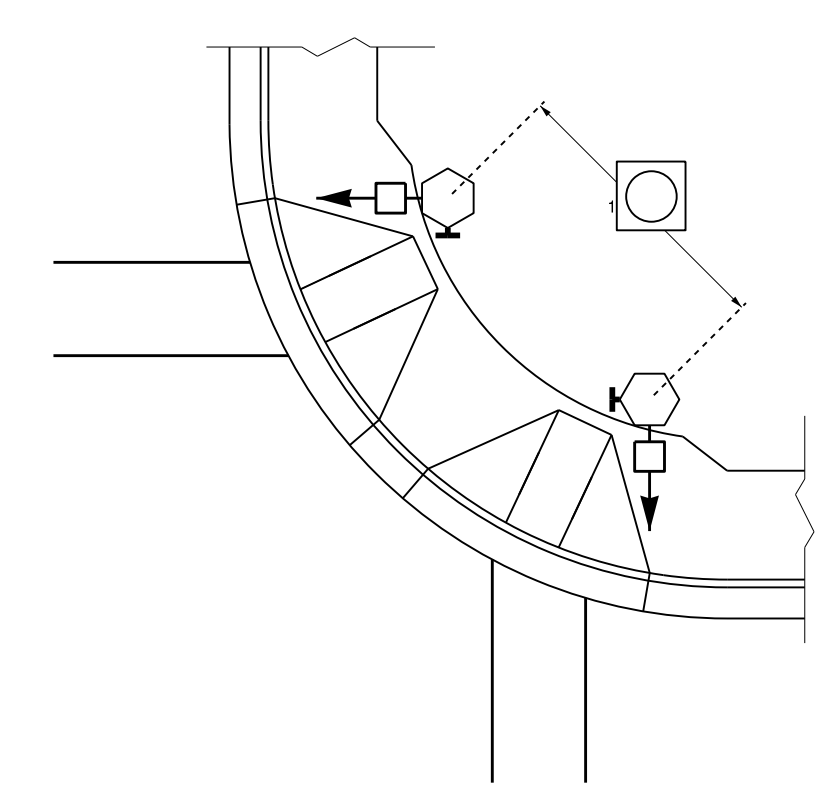
PUSHBUTTON PLACEMENT  
IN WIDE SIDEWALK

**PROPOSED**

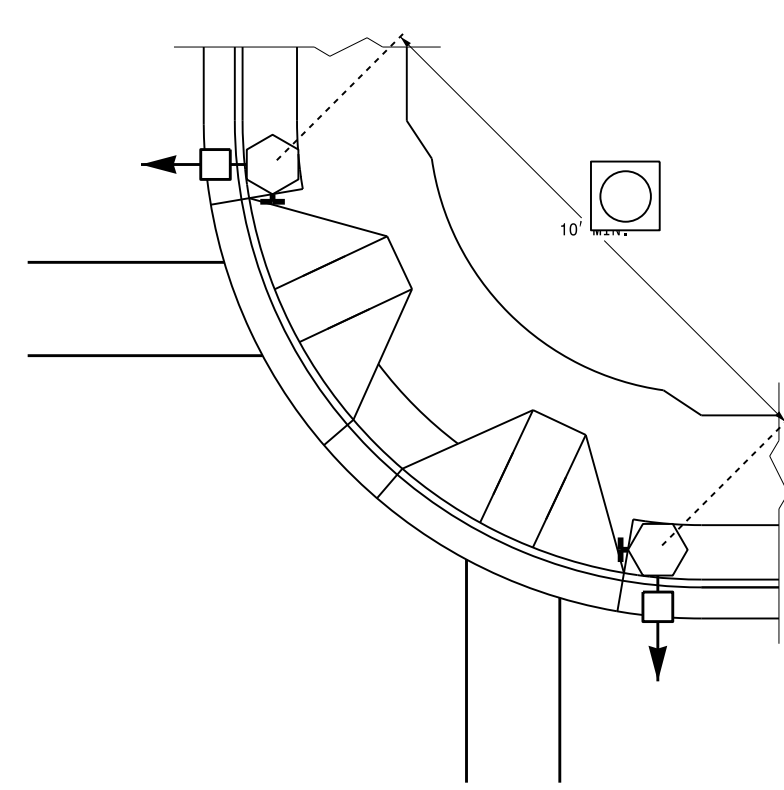
- Signal Pole
- Type I Pushbutton Post
- Type II Signal Pedestal
- Pushbutton & Sign
- Pedestrian Signal Head
- Curb Ramp
- Pushbutton Location Area

**LEGEND**

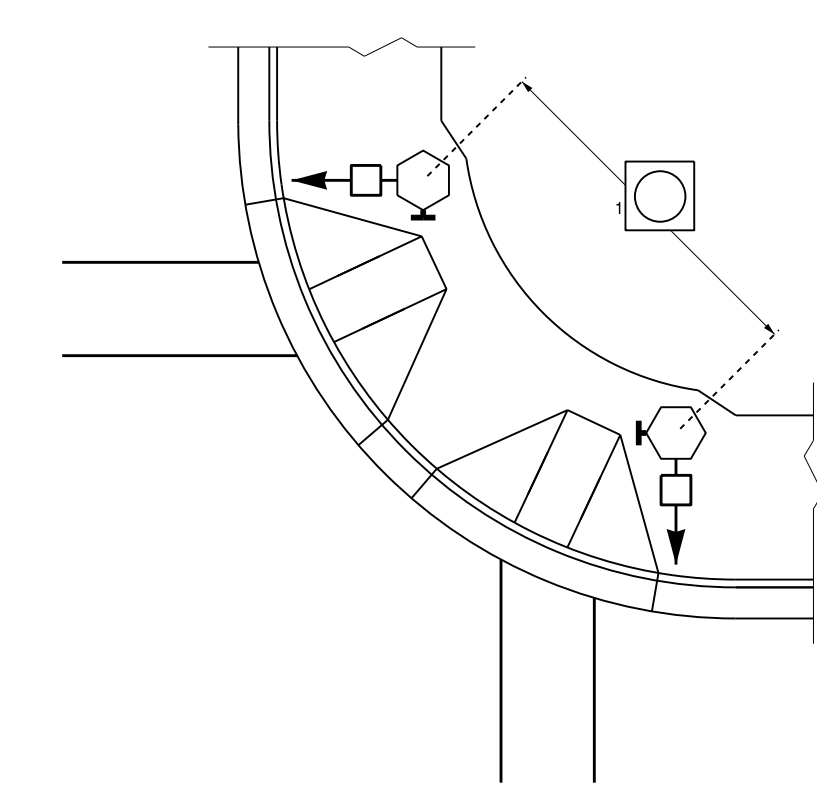
**TYPICAL PUSHBUTTON LOCATIONS (CASE II)**  
SEPARATE CURB RAMPS W/ TYPE II PEDESTALS



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

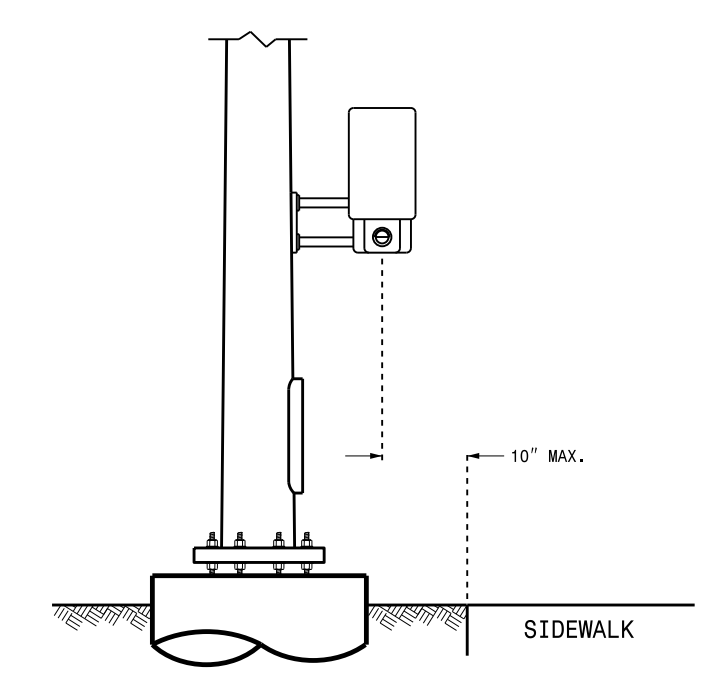


GRASS STRIP PLACEMENT IF BACK  
OF SIDEWALK EXCEEDS 10' FROM  
CURB OR PAVEMENT/SHOULDER



PUSHBUTTON PLACEMENT  
IN WIDE SIDEWALK

**OPTIONAL PUSHBUTTON EXTENSION**  
FACE OF PUSHBUTTON PARALLEL TO  
APPLICABLE CROSSWALK



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 rjz1emba

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Garner, NC 27529

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DocuSigned by:

188B486274X404

SIGNATURE DATE

6/17/2014

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DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

06-14

ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
PLACEMENT DETAIL

SHEET 3 OF 3  
**1705D01**

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

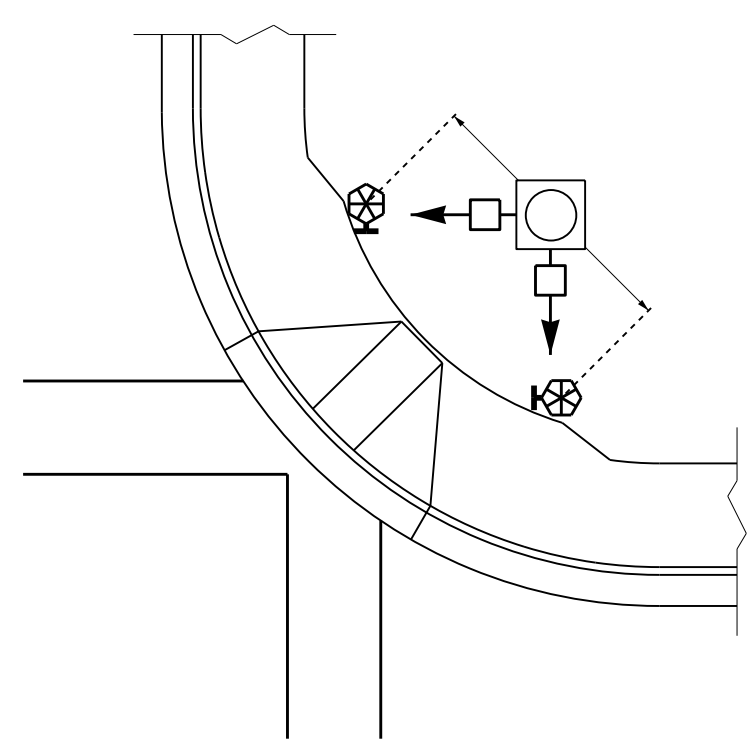
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ENGLISH DETAIL DRAWING FOR  
**PEDESTRIAN PUSHBUTTON LOCATIONS**  
PLACEMENT DETAIL

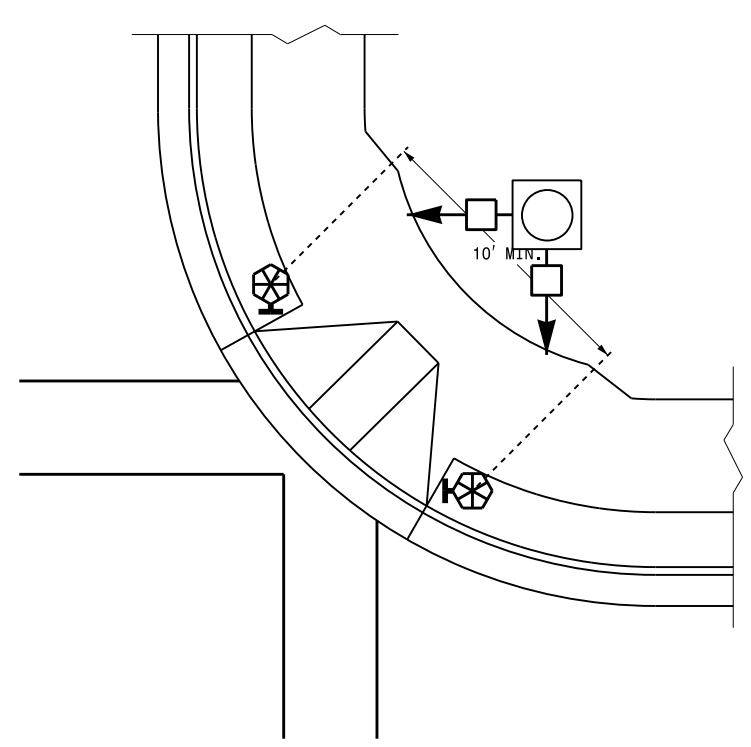
SHEET 3 OF 3  
**1705D01**

**TYPICAL PUSHBUTTON LOCATIONS (CASE III)**

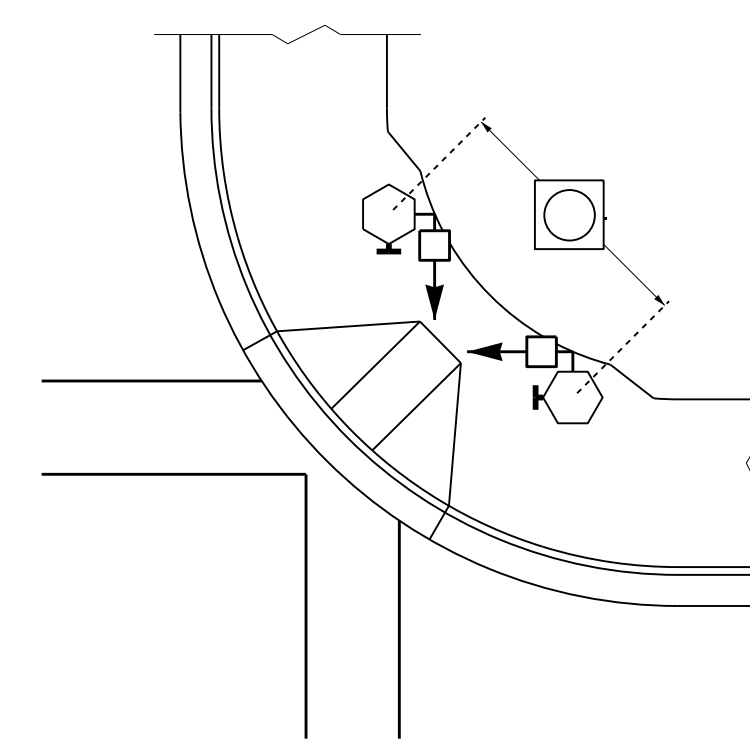
SHARED CURB RAMPS



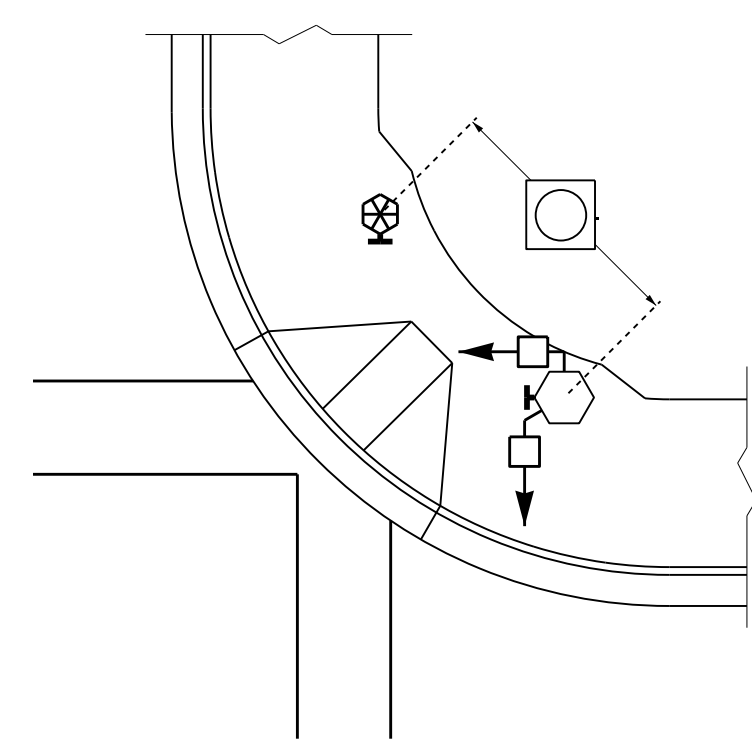
BACK OF SIDEWALK IS WITHIN 10' OF CURB OR PAVEMENT/SHOULDER



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

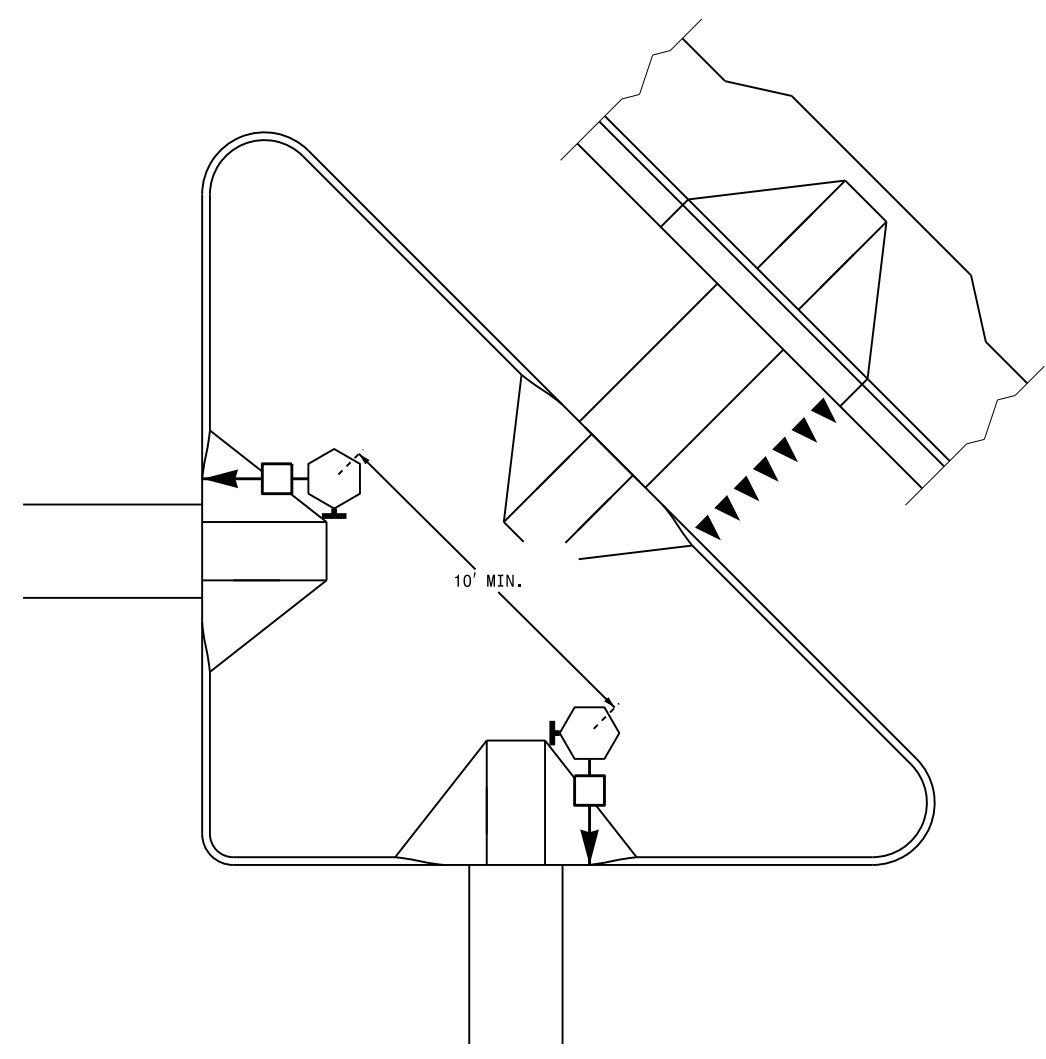


PUSHBUTTON PLACEMENT IN WIDE SIDEWALK (CORRESPONDING PUSHBUTTONS AND SIGNAL HEADS ON DIFFERENT PEDESTALS)

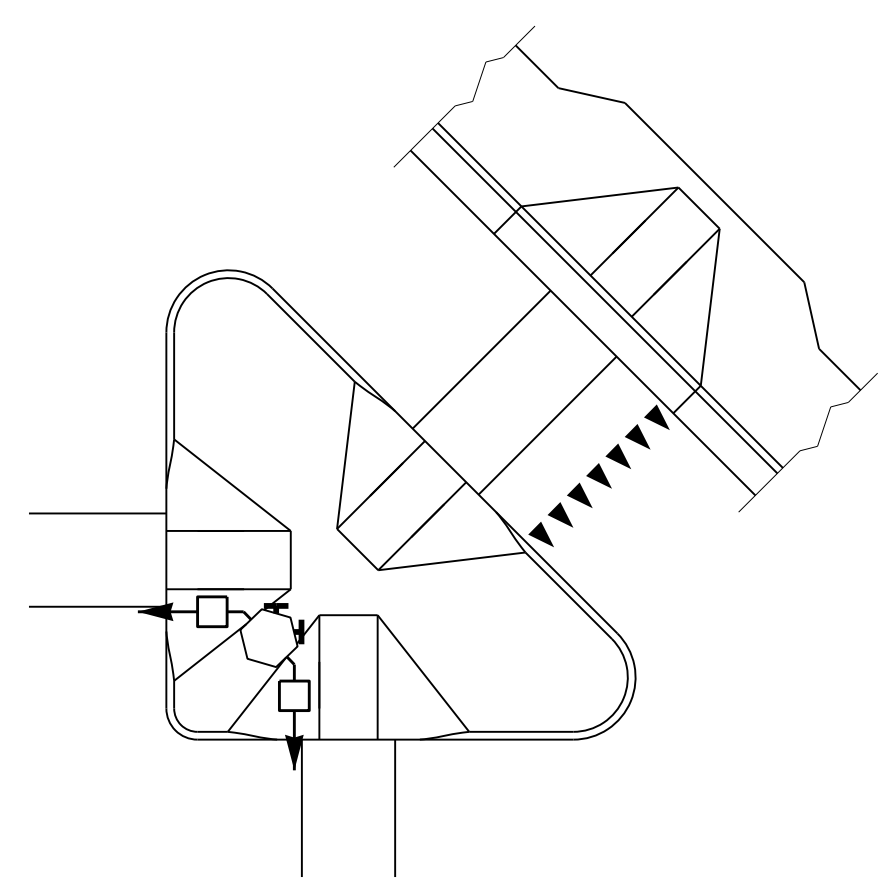


PUSHBUTTON PLACEMENT WITH SHARED TYPE II SIGNAL PEDESTAL AND TYPE I PUSHBUTTON POST

**TRAFFIC ISLAND PUSHBUTTON LOCATIONS**



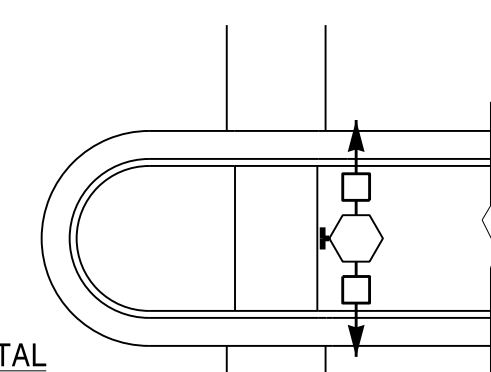
PUSHBUTTON PLACEMENT IN LARGE "PORK CHOP ISLAND" WITH SEPARATE PEDESTALS



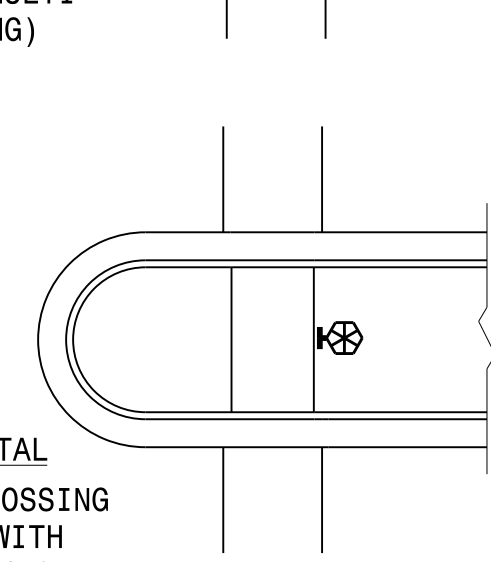
PUSHBUTTON PLACEMENT IN SMALL "PORK CHOP ISLAND" WITH SHARED PEDESTAL

**PUSHBUTTON PLACEMENT IN MEDIAN**

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



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



**PROPOSED**

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

**LEGEND**

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 rz1emba

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750 N. Greenfield Parkway  
Garner, NC 27529

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18084982744494

SIGNATURE DATE

6/17/2014

- 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
- 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
- 31 INSTALL POLE MOUNTED SPLICE CABINET
- 32 INSTALL BASE MOUNTED SPLICE CABINET
- 33 REMOVE EXISTING SPLICE CABINET
- 34 INSTALL CABINET FOUNDATION

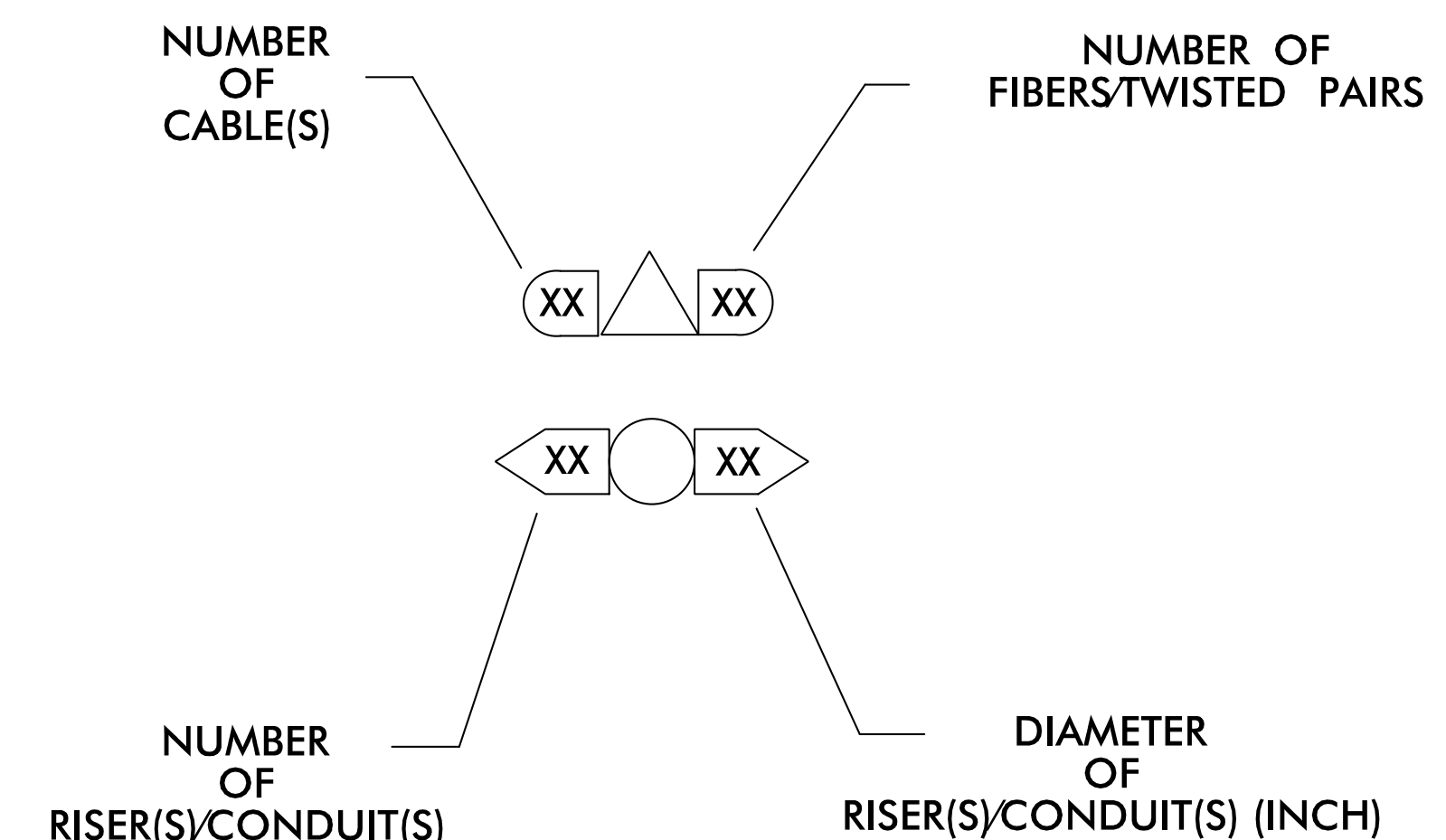
- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL WOOD POLE
- 43 REMOVE EXISTING WOOD 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
- 52 INSTALL DELINEATOR MARKER
- 53 STORE 20 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
- 59 INSTALL FIBER OPTIC TRANSCEIVER

**LEGEND**

- FO NEW FIBER OPTIC COMMUNICATIONS CABLE
- TWIST PR NEW TWISTED PAIR COMMUNICATIONS CABLE
- EXI EXISTING COMMUNICATIONS CABLE
- REM EXISTING COMMUNICATIONS CABLE TO BE REMOVED
- NEW AERIAL GUY ASSEMBLY
- EXISTING CONDUIT
- DD NEW DIRECTIONAL DRILLED CONDUIT
- BAJ NEW BORED AND JACKED CONDUIT
- NEW JUNCTION BOX
- EXISTING JUNCTION BOX
- NEW WOOD POLE
- EXISTING WOOD POLE
- S NEW AERIAL SPLICE ENCLOSURE
- NEW METAL POLE
- EXISTING METAL POLE
- NEW CCTV CAMERA ASSEMBLY
- NEW STANDARD GUY ASSEMBLY
- NEW STANDARD GUY USING EXISTING ANCHOR
- NEW SIDEWALK GUY ASSEMBLY
- NEW CABLE STORAGE RACKS (SNOW SHOES)
- EXISTING CONTROLLER AND CABINET
- S EXISTING SPLICE CABINET
- S NEW SPLICE CABINET
- SP SIGNAL POLE
- XX-XXXX SIGNAL INVENTORY NUMBER

**CONSTRUCTION NOTE SYMBOLOGY KEY**

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



	<p><b>MAIN STREET AT OLD WINSTON ROAD CABLE ROUTING PLANS</b></p>		
	<p>DIVISION 9 FORSYTH COUNTY KERNERSVILLE</p>		
<p>750 N. Greenfield Pkwy., Garner, NC 27529</p>	<p>SCALE: 0 N/A</p>	<p>PLAN DATE: SEPTEMBER 2014          PREPARED BY: SP PENNINGTON</p>	<p>REVIEWED BY: KW SMITH          REVIEWED BY: _____</p>
<p>REVISIONS</p>		<p>INIT. DATE</p>	<p>DocuSign by: <u>Kevin W. Smith</u> 4/1/2015          DATE</p>
<p>CADD Filename: _____</p>			



**COLOR CODE**  
TIA/EIA 598-A

- (1) BLUE
- (2) ORANGE
- (3) GREEN
- (4) BROWN
- (5) SLATE
- (6) WHITE

**LEGEND**

TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING / ENSURING PROPER TERMINATION.

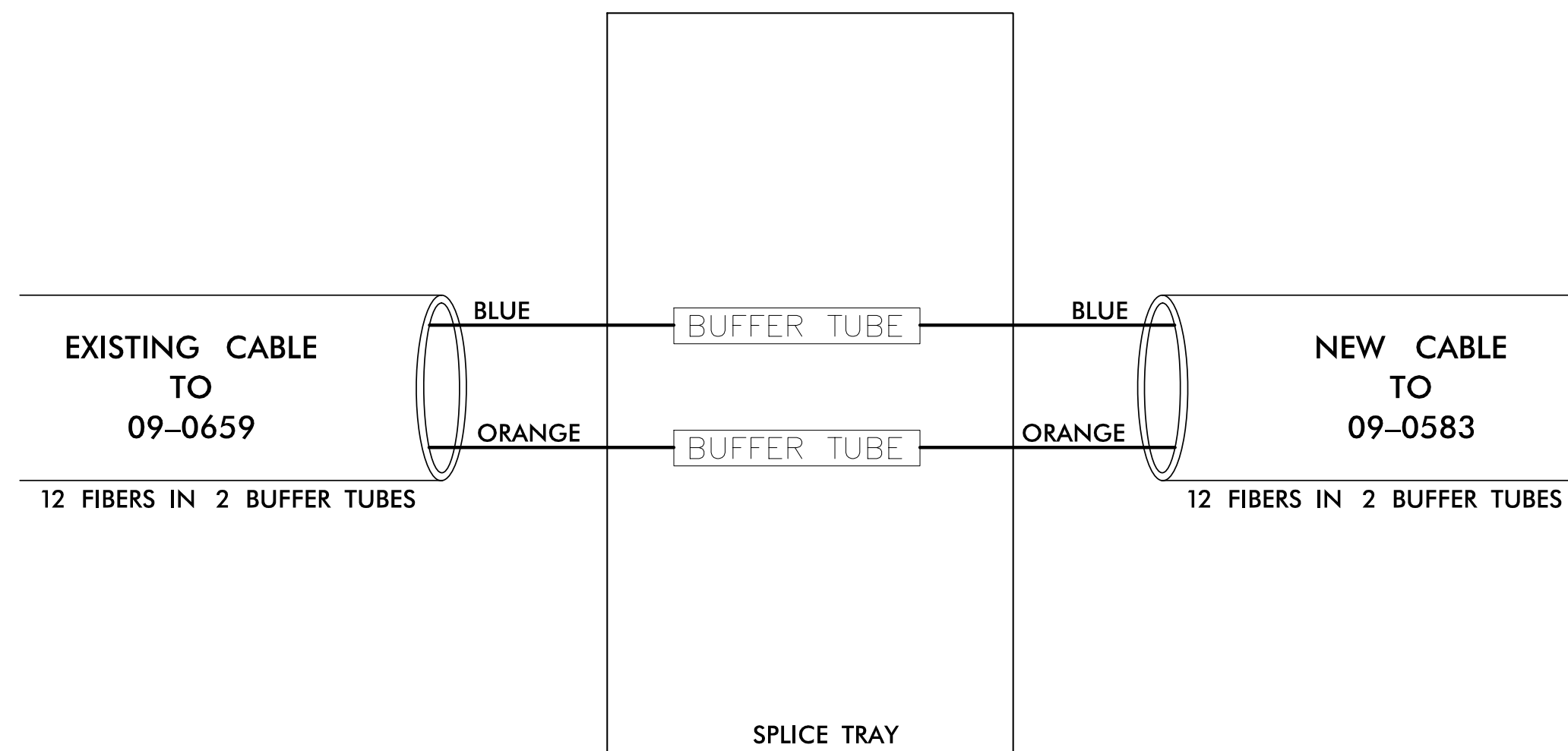
- X - FUSION SPLICE INDIVIDUAL FIBER
  - C - CAP AND SEAL
- BUFFER TUBE** FUSION SPLICE ALL FIBER IN BUFFER TUBE COLOR TO COLOR

NOTE:  
INCLUDE ON THE COVER OF EACH SPLICE TRAY THE FOLLOWING:  
REFERENCE SECTION 1731 "FIBER OPTIC SPLICE ENCLOSURE"

- 1. SPLICE LOCATION
- 2. DATE
- 3. COMPANY NAME
- 4. NAME OF INDIVIDUAL PERFORMING THE SPLICE

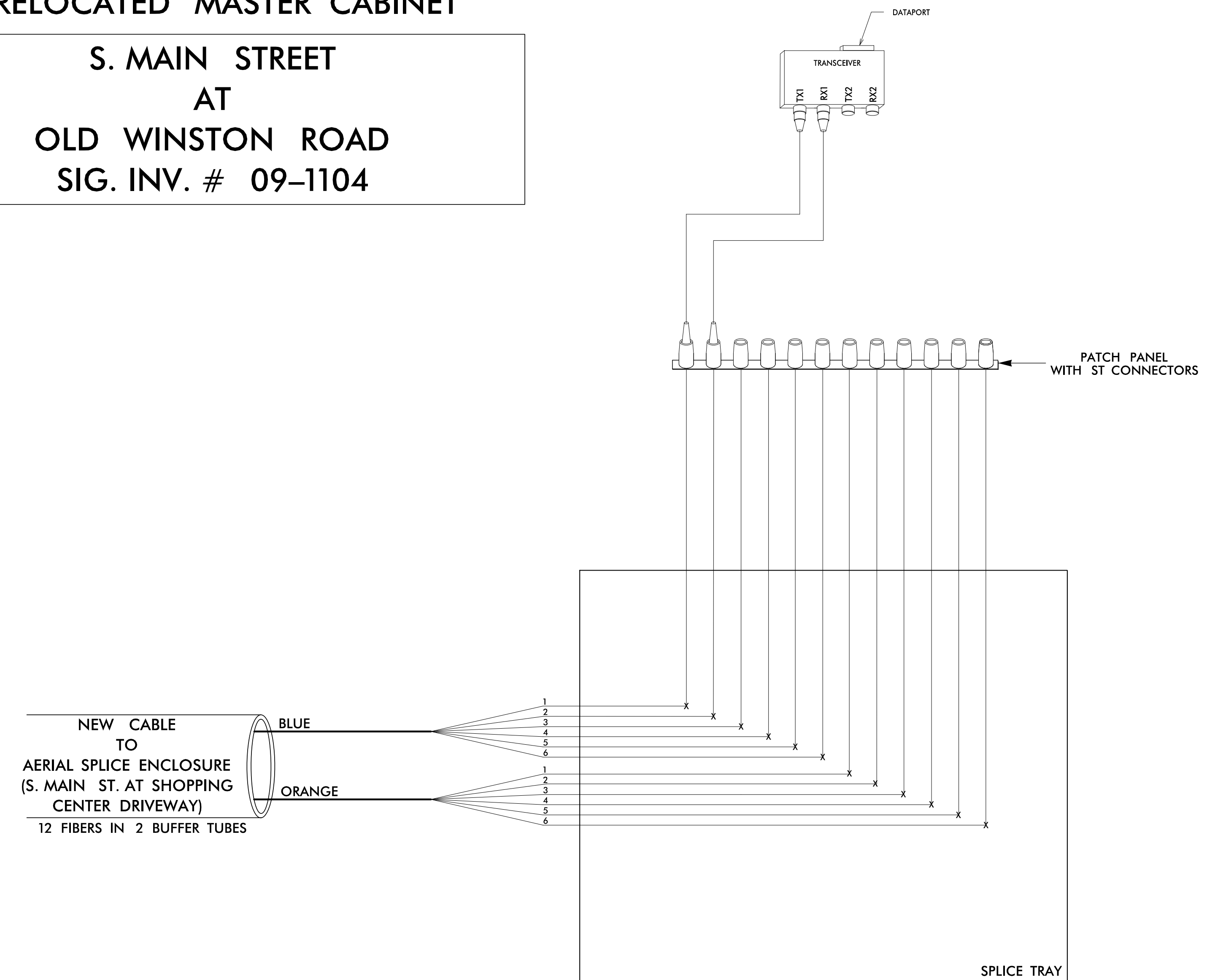
PRIOR TO INSTALLING THE COVER ON THE SPLICE TRAY TAKE A DIGITAL PHOTOGRAPH SHOWING THE SPLICE TRAY AND INFORMATION SHOWN ABOVE (1-4) AND SUBMIT PHOTOGRAPH ALONG WITH OTDR TEST RESULTS

**NEW AERIAL SPLICE ENCLOSURE**  
**S. MAIN STREET**  
**AT**  
**SHOPPING CENTER DRIVEWAY**

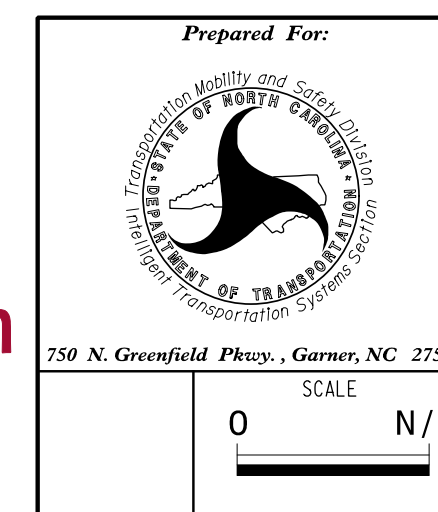


**RELOCATED MASTER CABINET**

**S. MAIN STREET**  
**AT**  
**OLD WINSTON ROAD**  
**SIG. INV. # 09-1104**



PLANS PREPARED IN THE OFFICE OF:  
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<p><b>MAIN STREET</b> <b>AT</b> <b>OLD WINSTON ROAD</b> <b>SPLICE DETAIL</b></p>	
<p>DIVISION 9 FORSYTH COUNTY KERNERSVILLE</p>	
<p>PLAN DATE: SEPTEMBER 2014</p>	<p>REVIEWED BY: KW SMITH</p>
<p>PREPARED BY: SP PENNINGTON</p>	<p>REVIEWED BY:</p>
<p>REVISIONS</p>	<p>INIT. DATE</p>
<p>0 N/A</p>	<p>SCALE</p>

DocuSigned by:  
**Kevin W. Smith**  
03/08/2015 10:08:48 AM  
4/1/2015  
DATE  
CADD Filename: