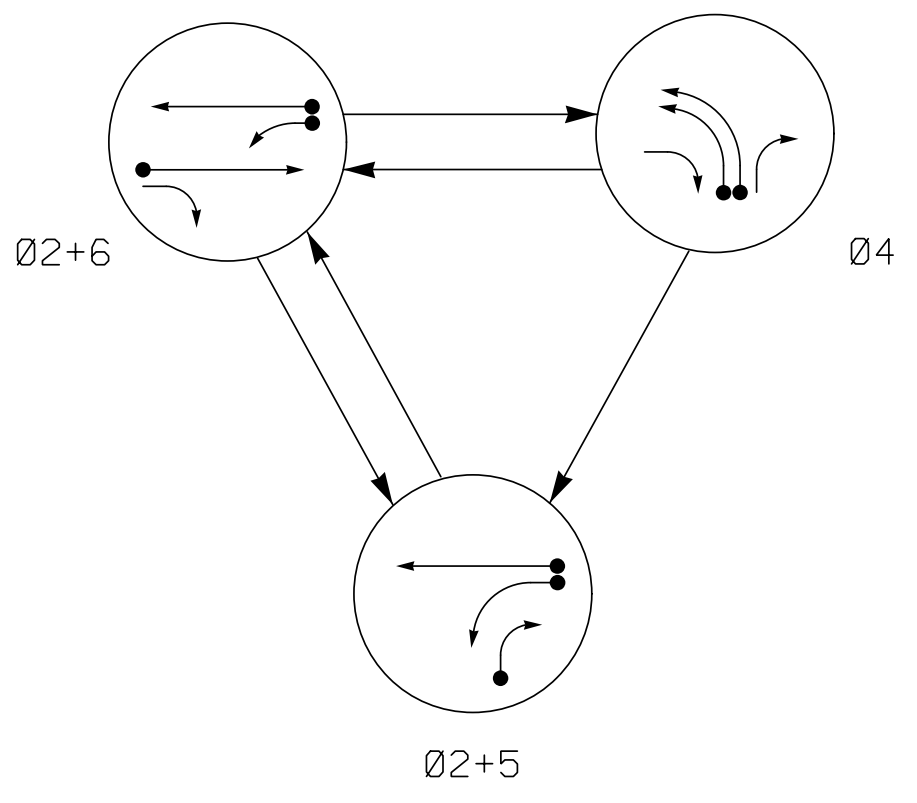


PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND
 ● → DETECTED MOVEMENT
 ○ → UNDETECTED MOVEMENT (OVERLAP)
 ○ - - - UNSIGNALIZED MOVEMENT

EV PREEMPT PHASES
(Medium Priority)

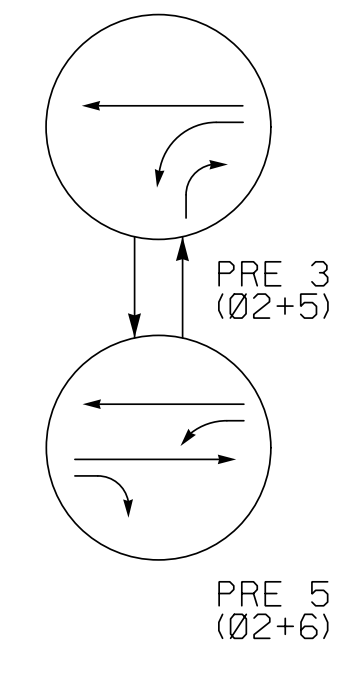
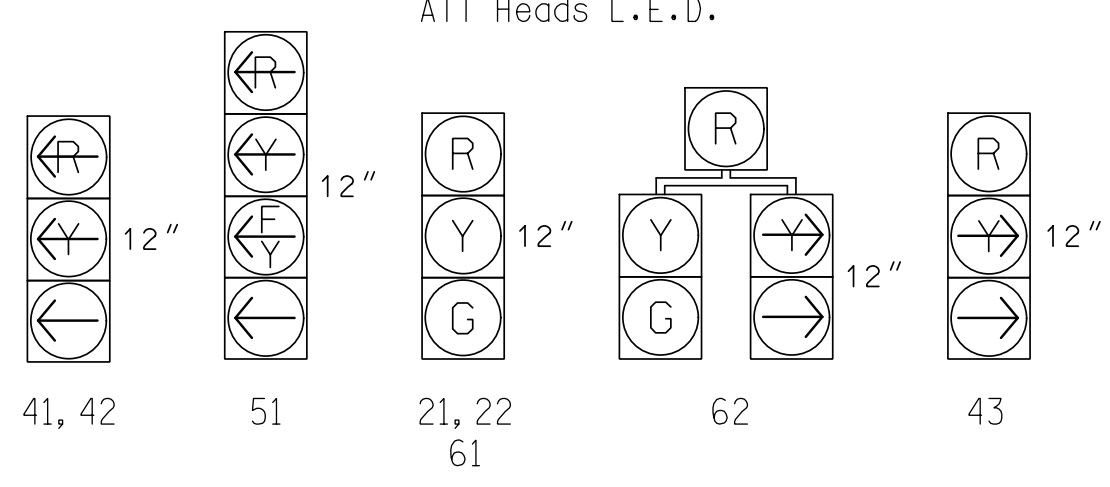


TABLE OF OPERATION

SIGNAL FACE	PHASE					
	Ø 2+5	Ø 2+6	Ø 4	P RE 3	P RE 5	F T O S
21, 22	G	G	R	G	G	Y
41, 42	←R	←R	←	←R	←R	←R
43	→	R	→	→	R	R
51	←	←	←R	←	←	←
61	R	G	R	R	G	Y
62	R	G	←R	R	G	Y

SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

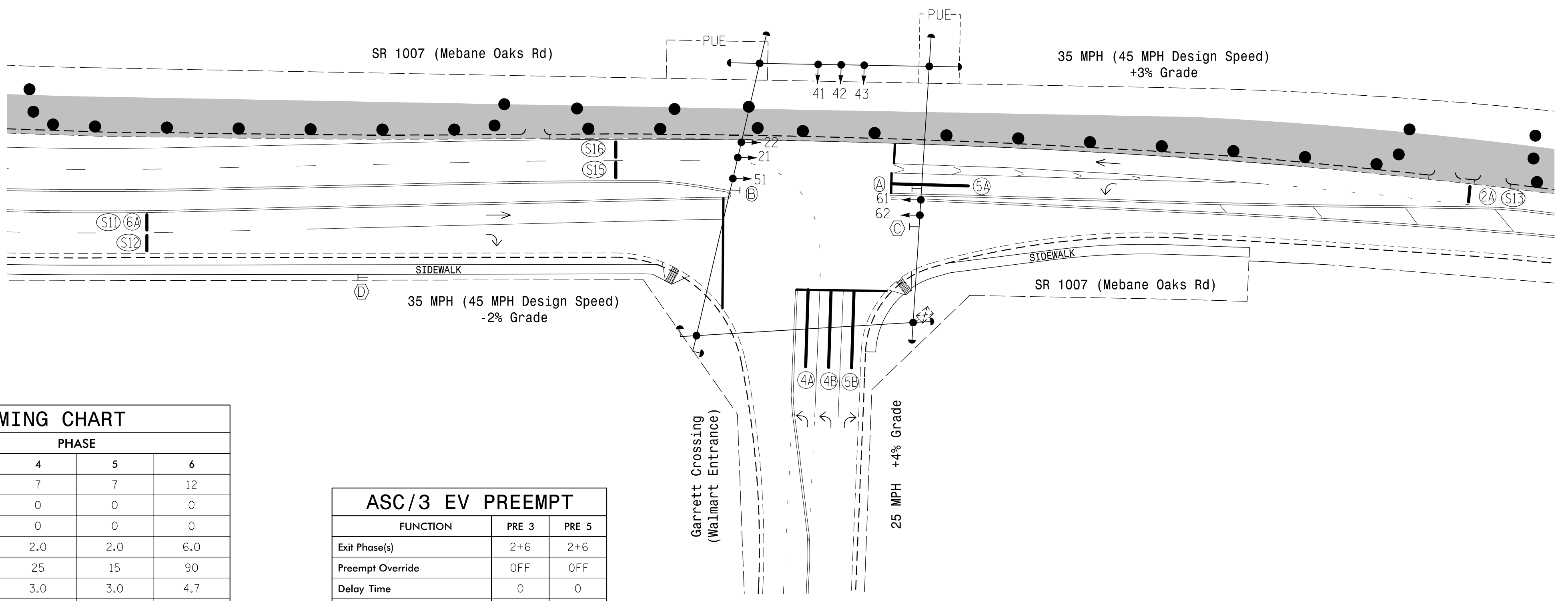
ZONE	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A/S13	6X6	300	*	*	2	Yes	-	-	X	N	X	*
4A	6X40	0	*	*	4	Yes	-	3	-	S	-	*
4B	6X40	0	*	*	4	Yes	-	-	-	S	-	*
5A	6X40	0	*	*	5	Yes	-	15	-	S	-	*
					2	Yes	-	3	-	G	-	*
5B	6X40	0	*	*	5	Yes	-	15	-	S	-	*
6A/S11	6X6	300	*	*	6	Yes	-	-	X	N	X	*
S12	6x6	300	*	*	-	No	-	-	-	N	X	*
S15	6x6	+145	*	*	-	No	-	-	-	N	X	*
S16	6x6	+145	*	*	-	No	-	-	-	N	X	*

* Video Detection Zone

3 Phase Fully Actuated w/ Emergency Vehicle Preemption
SR 1007 (Mebane Oaks Rd) CLS
Signal System: 10705

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Set all detector units to presence mode.
- This intersection features a GPS Emergency Vehicle Preemption system.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data:
Controller Asset #: 2060.



ASC/3 TIMING CHART

FEATURE	PHASE			
	2	4	5	6
Min Green *	12	7	7	12
Walk *	0	0	0	0
Ped Clear	0	0	0	0
Veh. Extension *	6.0	2.0	2.0	6.0
Max I *	90	25	15	90
Yellow	4.7	3.0	3.0	4.7
Red Clear	1.3	2.9	2.3	1.3
Red Revert	2.0	2.0	2.0	2.0
Actuations B4 Add *	0	-	-	0
Seconds / Actuation *	2.5	-	-	2.5
Max Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Locking Detector	X	-	-	X
Recall Position	VEH. RECALL	-	-	VEH. RECALL
Dual Entry	-	-	-	-
Simultaneous Gap	X	X	X	X

* 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.

ASC/3 EV PREEMPT

FUNCTION	PRE 3	PRE 5
Exit Phase(s)	2+6	2+6
Preempt Override	OFF	OFF
Delay Time	0	0
Ped Clear Through Yellow	N	N
Terminate Phases	N	N
Entrance Walk	255*	255*
Entrance Ped Clear	255*	255*
Entrance Min Green	1	1
Entrance Yellow Clear	25.5*	25.5*
Entrance Red Clear	25.5*	25.5*
Min Dwell Time	7	7
Preempt Input Extension Time	2	2
Preempt Max Time	120	120
Exit Yellow Clear	25.5*	25.5*
Exit Red Clear	25.5*	25.5*

* Time defaults to time used for phase during normal operation

LEGEND

PROPOSED	EXISTING
○ → Traffic Signal Head Sign	● → Traffic Signal Head Sign
○ → Signal Pole with Guy	● → Signal Pole with Guy
○ → Signal Pole with Sidewalk Guy	● → Signal Pole with Sidewalk Guy
⊠ Controller & Cabinet Junction Box	⊠ Controller & Cabinet Junction Box
□ 2-in Underground Conduit	□ 2-in Underground Conduit
N/A Right of Way	--- Right of Way
→ Directional Arrow	→ Directional Arrow
● Construction Zone Drums	● Construction Zone Drums
■ Construction Zone	■ Construction Zone
N/A Video Detection Area	■ Video Detection Area
N/A Curb Ramp	▲ Curb Ramp
(A) No U Turn Sign (R3-4)	(A) No U Turn Sign (R3-4)
(B) Left Arrow "ONLY" Sign (R3-5L)	(B) Left Arrow "ONLY" Sign (R3-5L)
(C) Right Arrow "ONLY" Sign (R3-5R)	(C) Right Arrow "ONLY" Sign (R3-5R)
(D) "RIGHT LANE MUST TURN RIGHT" Sign (R3-7R)	(D) "RIGHT LANE MUST TURN RIGHT" Sign (R3-7R)

(TMP Phase II)
Signal Upgrade - Temporary Design 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SR 1007 (Mebane Oaks Rd) at Garrett Crossing (Walmart Entrance)

Division 7 Alamance County Mebane

PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng

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

SEAL

PROFESSIONAL ENGINEER

SEAL 032179

ZHAOLONG TENG

12/17/2019

DATE

SIG. INVENTORY NO. 07-2060T2

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 40

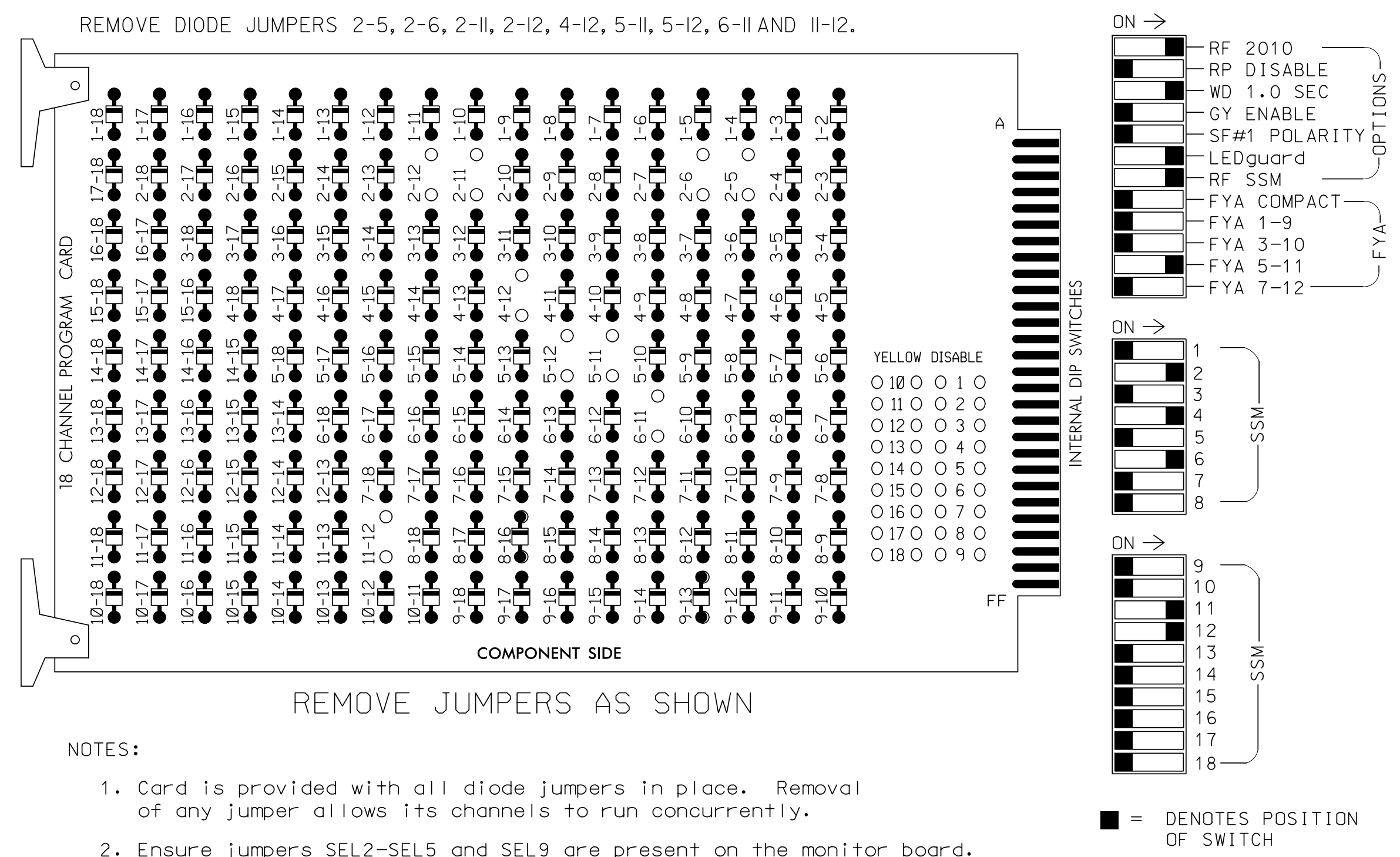
1" = 40'

PREPARED IN THE OFFICE OF:

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

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches 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.
 - Integrate monitor with Ethernet network in cabinet.

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 controller to start up in phase 2 Green and phase 6 Green.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 w/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....S2,S5,S7,S8,AUX S4,AUX S5
 PHASES USED.....2,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

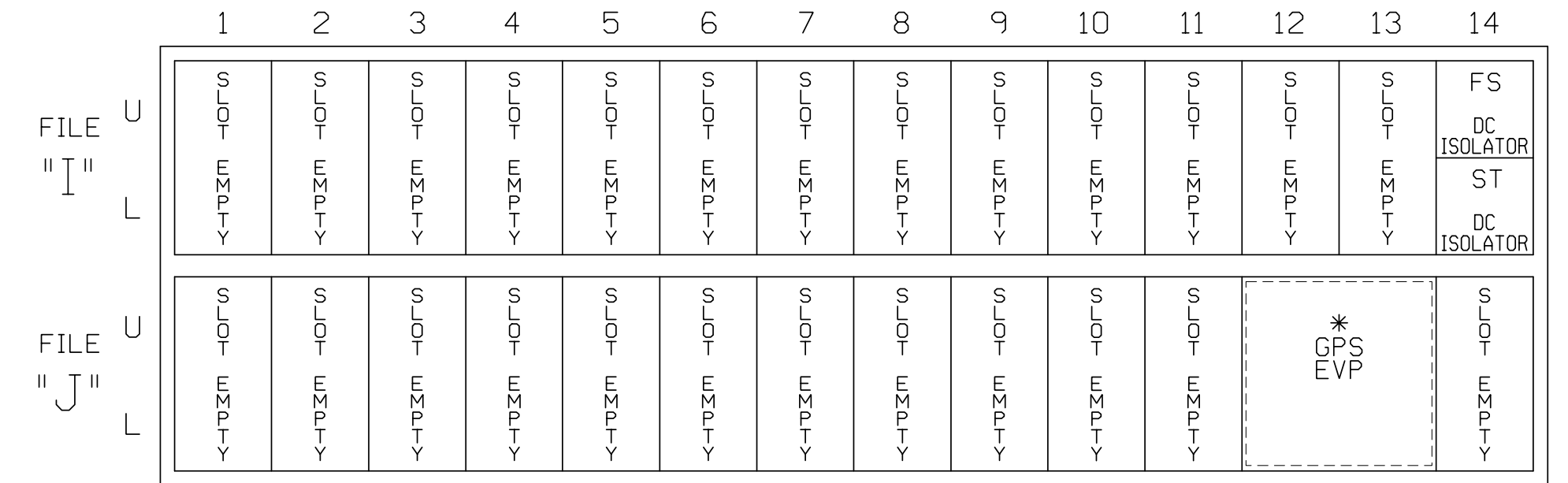
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	62	NU	51	61,62	NU	NU	NU	NU	NU	NU	51	43	NU
RED		128							134									A101
YELLOW		129					*		135									
GREEN		130							136									
RED ARROW					101													A114
YELLOW ARROW					102	102												A115 A102
FLASHING YELLOW ARROW																		A116
GREEN ARROW					103	103		133										A103

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

INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below
 FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

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

VIDEO DETECTOR NOTE

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

FLASHER CIRCUIT MODIFICATION DETAIL

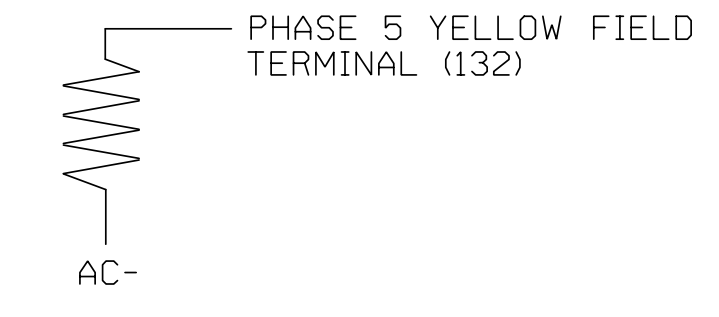
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

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

LOAD RESISTOR INSTALLATION DETAIL

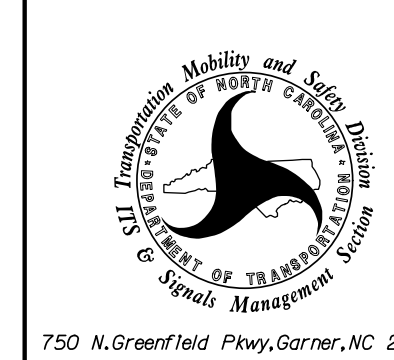
(install resistors as shown)



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

Temporary Design 2
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

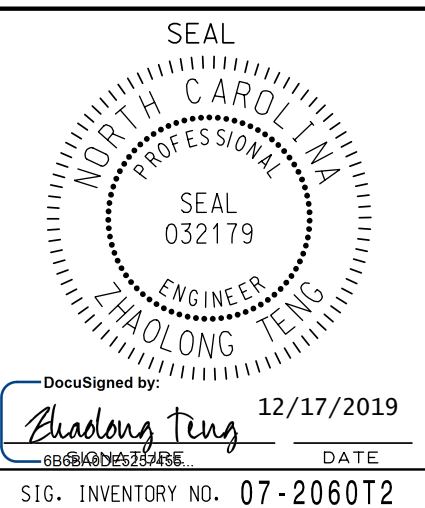


SR 1007 (Mebane Oaks Rd)
 at
 Garrett Crossing
 (Walmart Entrance)

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

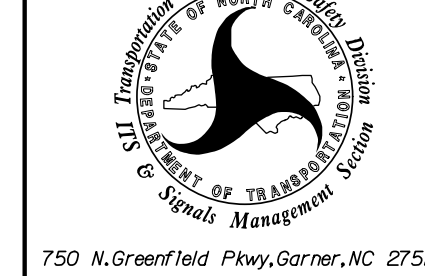
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DocuSigned by:
 Zhaolong Teng
 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2060T2

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2060T2
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

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

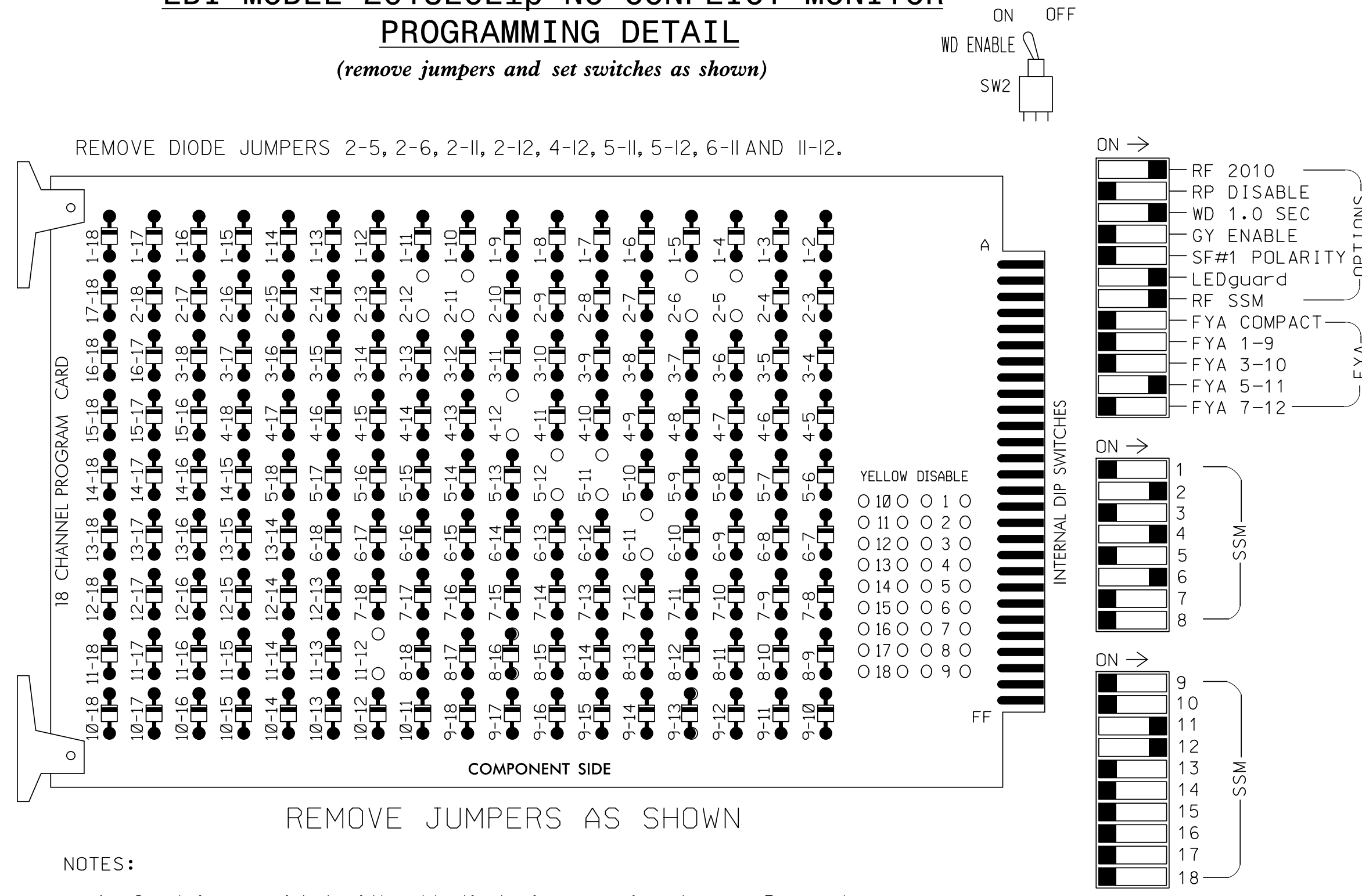


750 N. Greenfield Pkwy, Garner, NC 27529

*****SYTIME*****
 *****DON*****

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



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 controller to start up in phase 2 Green and phase 6 Green.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

SIGNAL HEAD HOOK-UP CHART

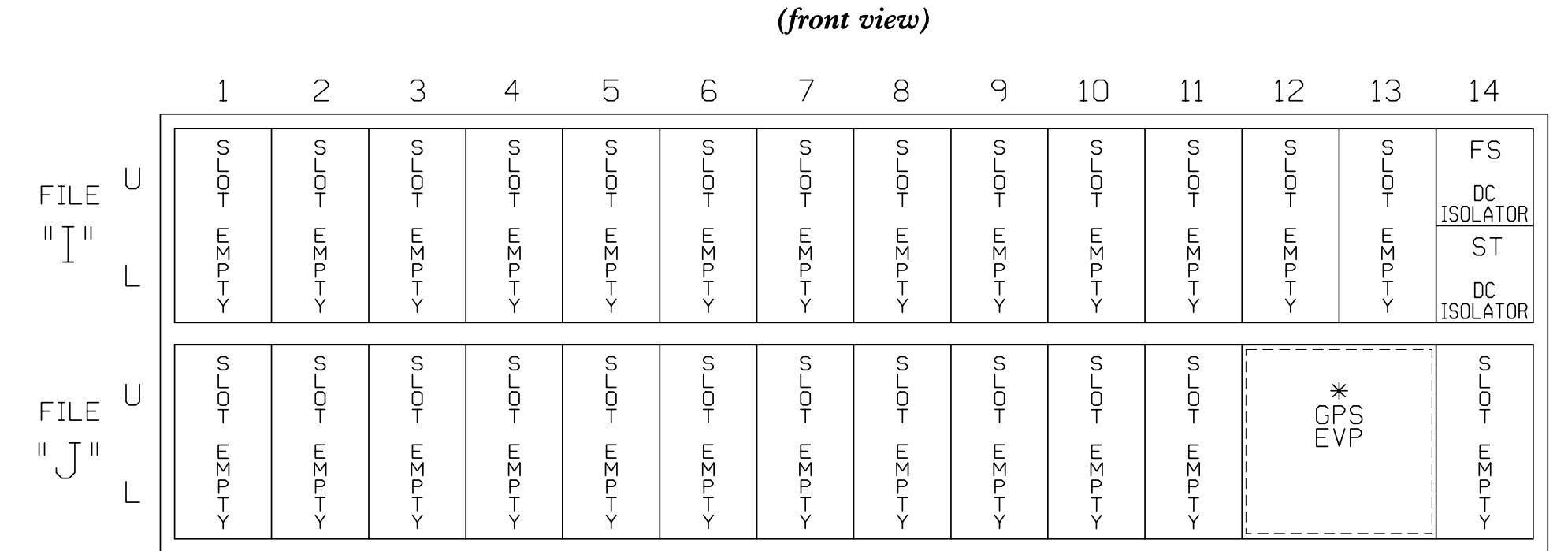
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	62	NU	51	61,62	NU	NU	NU	NU	NU	NU	51	43	NU
RED		128							134									A101
YELLOW		129						*	135									
GREEN		130							136									
RED ARROW					101													A114
YELLOW ARROW					102	102												A115 A102
FLASHING YELLOW ARROW																		A116
GREEN ARROW					103	103		133										A103

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

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 w/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S7,S8,AUX S4,AUX S5
 PHASES USED.....2,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

INPUT FILE POSITION LAYOUT



EX.: 1A, 2A, ETC. = LOOP NO.'S
 See GPS Preemption Installation Note Below
 FS = FLASH SENSE
 ST = STOP TIME

SPECIAL DETECTOR NOTE

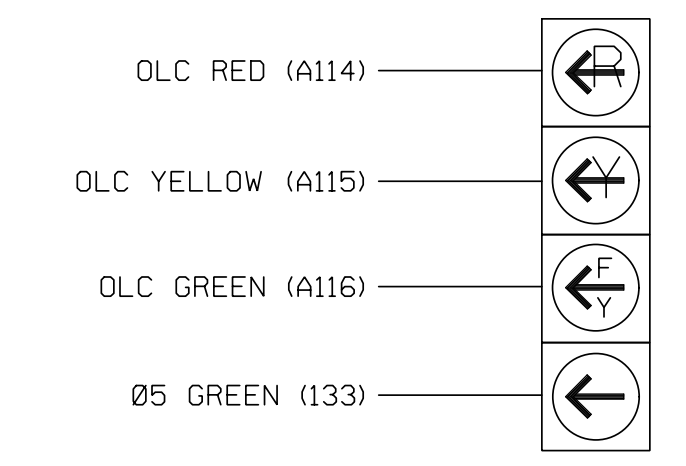
Install a GPS preemption system. Perform installation according to manufacturer's directions and NCDOT engineer approved mounting location to accomplish the preemption schemes shown on the Signal Design Plans.

VIDEO DETECTOR NOTE

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

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



51

FLASHER CIRCUIT MODIFICATION DETAIL

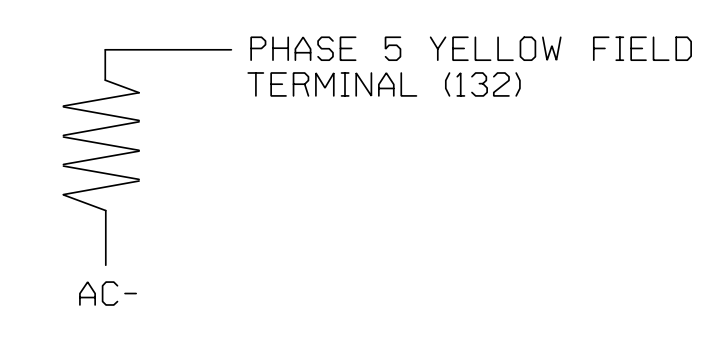
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- ON REAR OF PDA - REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
- REMOVE FLASHER UNIT 2.

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

LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown)



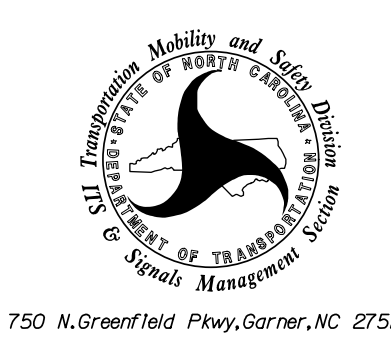
ACCEPTABLE VALUES	
VALUE (ohms)	WATTAGE
1.5K - 1.9K	25W (min)
2.0K - 3.0K	10W (min)

Temporary Design 3
 Electrical Detail - Sheet 1 of 2

ELECTRICAL AND PROGRAMMING DETAILS FOR: 	SR 1007 (Mebane Oaks Rd) at Garrett Crossing (Walmart Entrance)		SEAL SEAL 032179 ZHAOLONG TENG ENGINEER
	Division 7 Alamance County Mebane PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng PREPARED BY: Z. "Gavin" Teng REVIEWED BY:	REVISIONS: INIT. DATE	

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2060T3
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

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



\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SUN\$EPRNAME\$\$\$\$\$

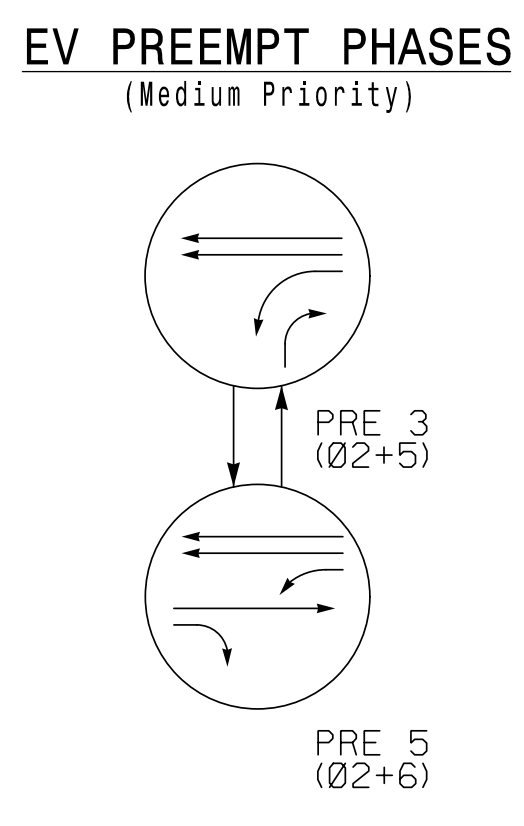
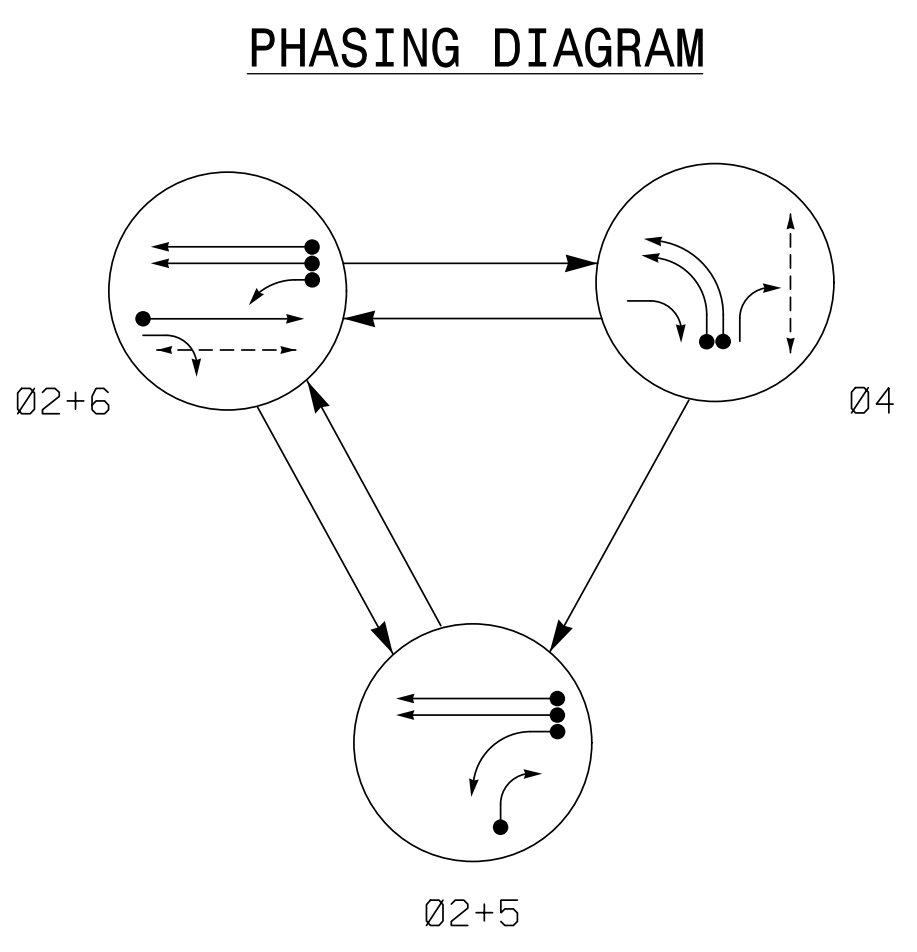


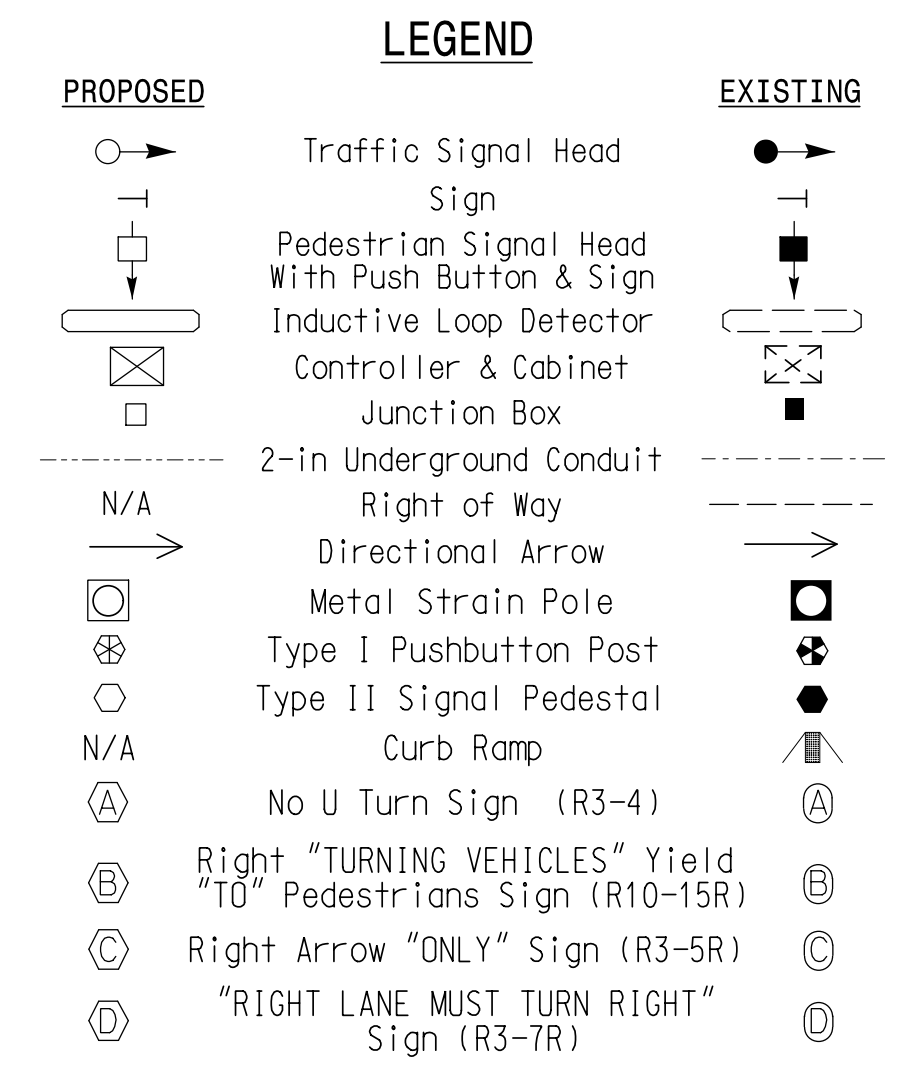
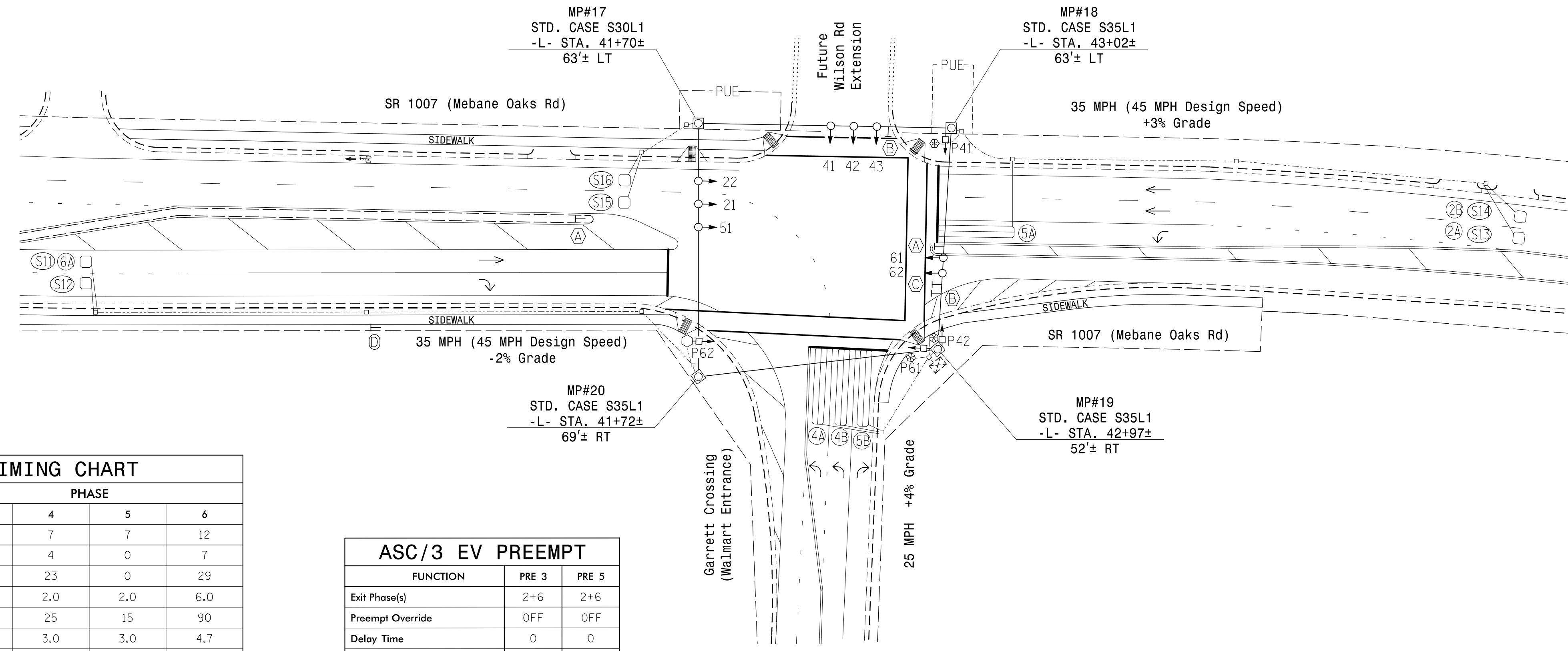
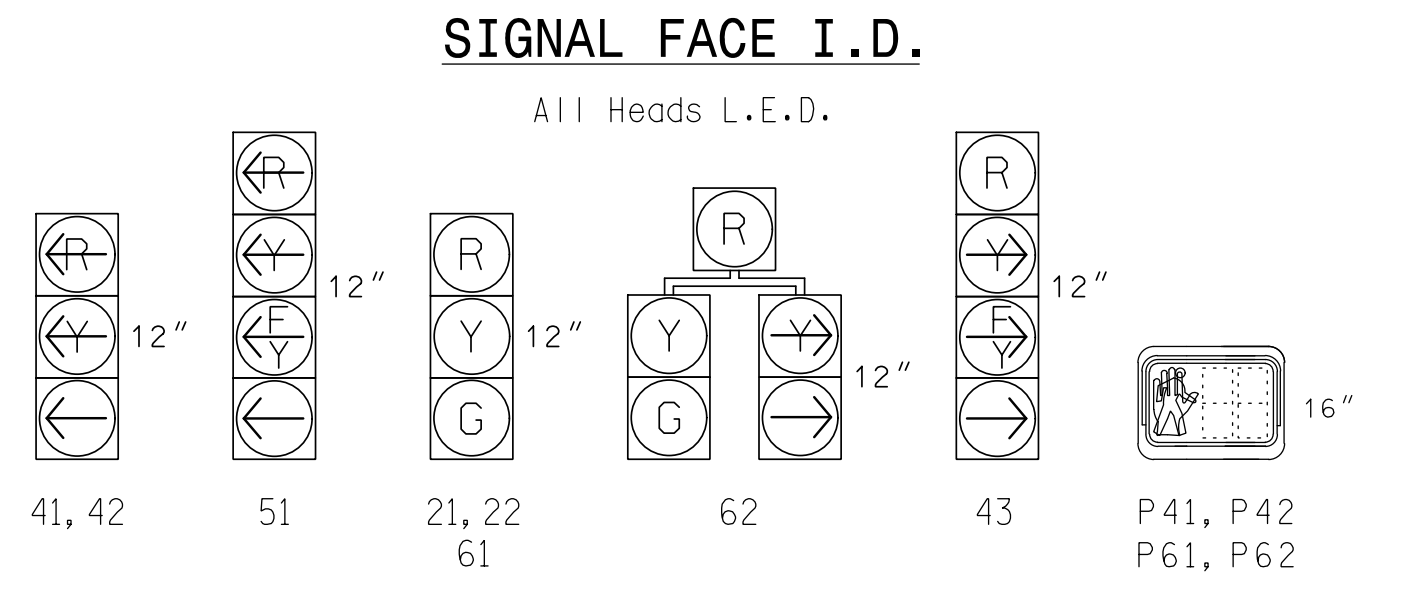
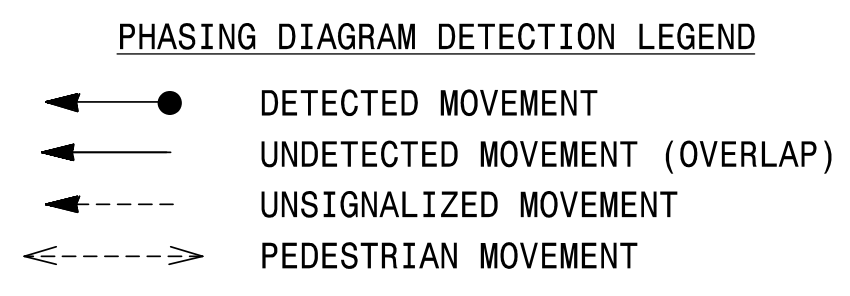
TABLE OF OPERATION table with columns for SIGNAL FACE, PHASE, and timing details for various signal faces.

ASC/3 DETECTOR INSTALLATION CHART table with columns for LOOP, SIZE, DISTANCE, TURNS, PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, and NEW CARD.

3 Phase Fully Actuated w/ Emergency Vehicle Preemption SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

- List of 9 notes providing technical specifications and references for the signal system, including references to NCDOT standards and specific system parameters.



ASC/3 TIMING CHART table showing timing parameters for phases 2, 4, 5, and 6, including Min Green, Walk, Ped Clear, Veh. Extension, Max I, Yellow, Red Clear, Red Revert, Actuations B4 Add, Seconds / Actuation, Max Initial, Time Before Reduction, Time To Reduce, Minimum Gap, Locking Detector, Recall Position, and Dual Entry.

ASC/3 EV PREEMPT table showing preemption timing parameters for PRE 3 and PRE 5, including Exit Phase(s), Preempt Override, Delay Time, Ped Clear Through Yellow, Terminate Phases, Entrance Walk, Entrance Ped Clear, Entrance Min Green, Entrance Yellow Clear, Entrance Red Clear, Min Dwell Time, Preempt Input Extension Time, Preempt Max Time, Exit Yellow Clear, and Exit Red Clear.

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

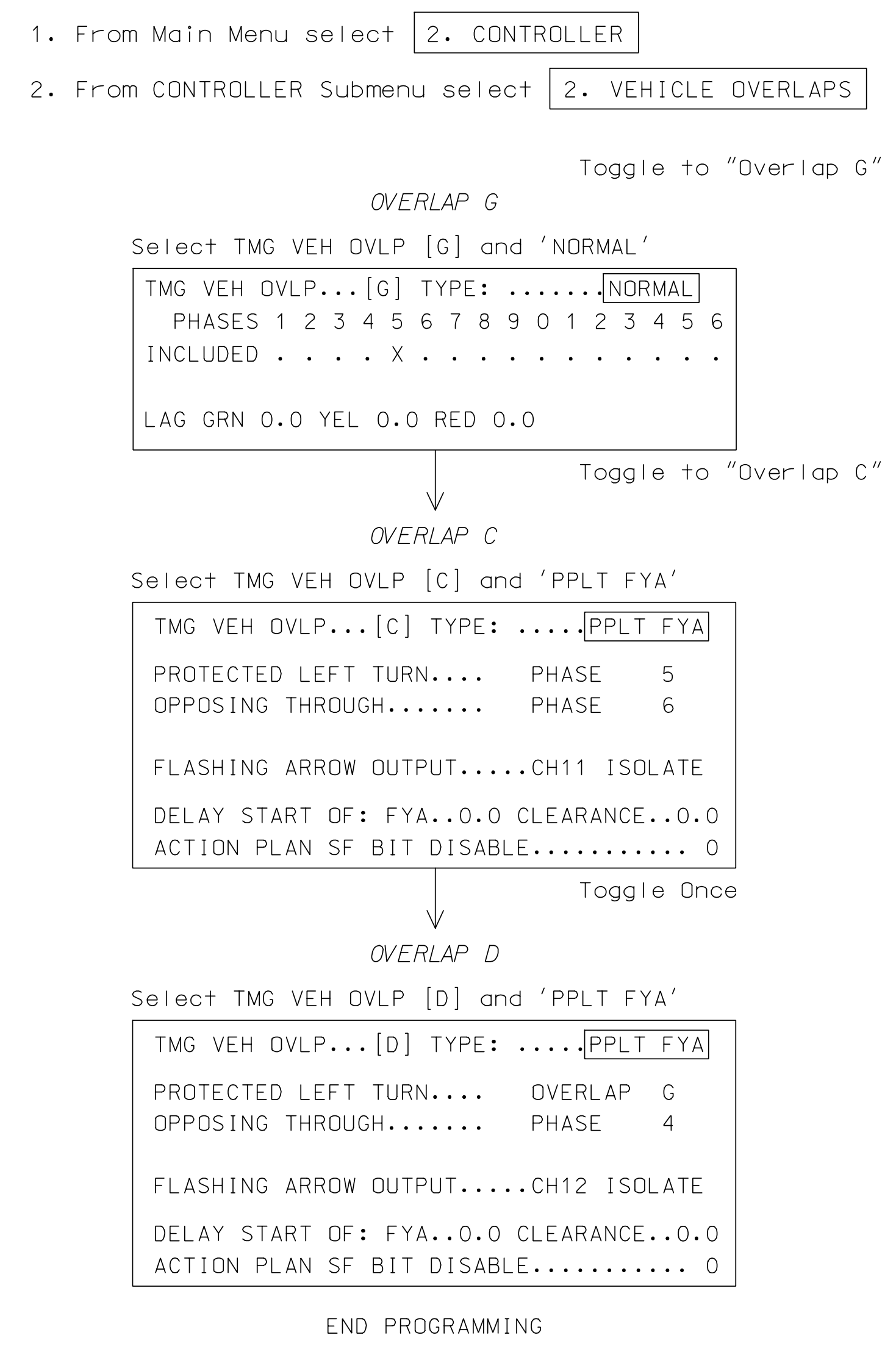
* Time defaults to time used for phase during normal operation

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

Signal Upgrade - Final Design project title, SR 1007 (Mebane Oaks Rd) at Garrett Crossing (Walmart Entrance) location, Division 7 Alamance County Mebane, and professional seal/signature area for Z. Gavin Teng.

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)



ECONOLITE ASC/3-2070 LOAD SWITCH ASSIGNMENT DETAIL

(program controller as shown)

To assign load switch S1 as OLG, program LD SWITCH 1 as DVLP '7' TYPE '0' as shown below.

1. From Main Menu select 1. CONFIGURATION
2. From CONFIGURATION Submenu select 3. LOAD SW ASSIGN

LD SWITCH	PHASE /DVLP	ASSIGN TYPE	DIMMING R Y G D	FLASH PWR	AUT	TGR
1	1	V	. . . +	A	R	X
2	2	V	. . . +	A	Y	.
3	3	V	. . . +	A	R	X
4	4	V	. . . +	A	R	.
5	5	V	. . . -	A	R	.
6	6	V	. . . -	A	Y	X
7	7	0	. . . -	A	R	.
8	8	V	. . . -	A	R	X
9	1	0	. . . +	A	R	X
10	2	0	. . . +	A	R	X
11	3	0	. . . -	A	R	.
12	4	0	. . . -	A	R	.
13	2	P	. . . +	A	.	.
14	4	P	. . . -	A	.	.
15	6	P	. . . +	A	.	.
16	8	P	. . . -	A	.	.

FLASHER CIRCUIT MODIFICATION DETAIL

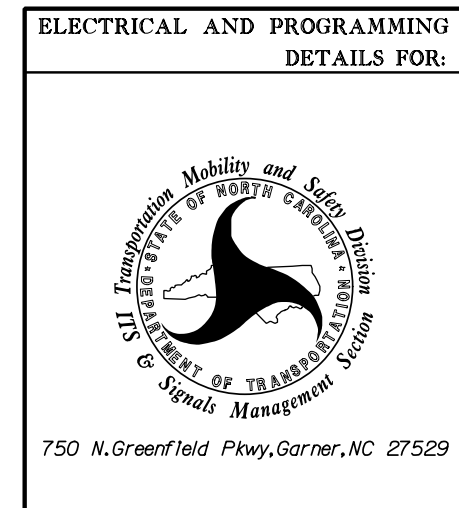
IN ORDER TO ENSURE THAT SIGNALS FLASH CONCURRENTLY ON THE SAME APPROACH, MAKE THE FOLLOWING FLASHER CIRCUIT CHANGES:

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

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

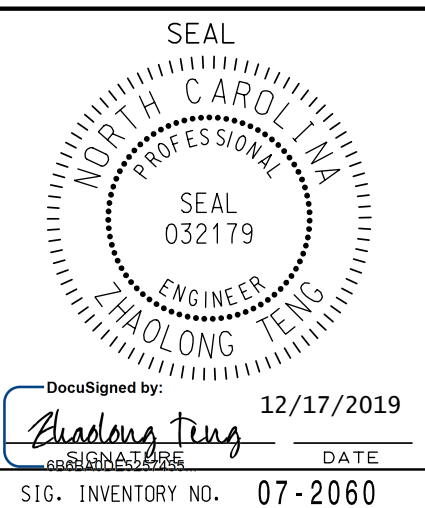
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2060
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Final Design
 Electrical Detail - Sheet 2 of 3



ELECTRICAL AND PROGRAMMING DETAILS FOR:		SR 1007 (Mebane Oaks Rd) at Garrett Crossing (Walmart Entrance)	
Division 7		Alamance County	
Mebane		Mebane	
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng	PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:
REVISIONS	INIT.	DATE	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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

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

ECONOLITE ASC/3-2070 EMERGENCY VEHICLE PREEMPT PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPTOR/TSP/SCP Submenu select 1. PREEMPT PLAN 1-10

Place cursor in [] next to Preempt Plan and press 3. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #3.

Place cursor in [] next to Preempt Plan and press 5. Then press the right cursor arrow and toggle the controller to YES. Next cursor down. This will select Emergency Vehicle Preempt #5.

```

PREEMPT PLAN [ 3]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . X . . . . .
DWEL PED . . . . .
DWEL OLP . .F1F1 . . X . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YESIPMT OVRIDE..INTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 15I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

PROGRAM EXTEND TIME ON OPTICAL DETECTOR UNITS FOR 2.0 SEC.

```

PREEMPT PLAN [ 5]  ENABLE....YES
VEH/PED 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
OVERLAP A B C D E F G H I J K L M N O P
TRKCLR V . . . . .
TRKCLR O . . . . .
ENA TRL . . . . .
DWEL VEH . X . . . X . . . . .
DWEL PED . . . . .
DWEL OLP . .F1 . . . . .
CYC VEH . . . . .
CYC PED . . . . .
CYC OLP . . . . .
EXIT PH . X . . . X . . . . .
EXIT CAL . . . . .
SP FUNC . . . . .
    
```

```

ENABLE... YESIPMT OVRIDE..INTERLOCK. NO
DET LOCK... XIDELAY.. 0IINHIBIT... 0
OVERIDE FL. .IDURATION 0ICLR-GRN... NO
TERM OLP. NOIPC>YEL YESITERM PH NO
PED DARK.. NOITC RESRV NOIDWELL FL OFF
LINK PMT...0IX FLCOLR REDIEXIT OPT. OFF
X TMG PLN...0IRE-SERV.. 0IFLT TYPE.HARD
FREE DUR PMTIR1 NOIR2 NOIR3 NOIR4 NO
--TIMING-----WALKIPED CLIMN GRI YELI RED
ENTRANCE TM. 1I 15I 1I25.5I25.5
-----MIN GRIEXT GRIMX GRI YELI RED
TRACK CLEAR 0I 0I 0I25.5I25.5
-----MIN DLIPMTEXTIMX TMI YELI RED
DWL/CYC-EXIT 7I 2.0I 120I25.5I25.5
PMT ACTIVE OUT..ON PMT ACT DWELL...NO
OTHER - PRI PMT.OFF NON-PRI PMT.....OFF
INH EXT TIME... 0.0 PED PR RETURN...OFF
PRIORITY RETURN.OFF QUEUE DELAY.... OFF
COND DELAY.....OFF
PHASES 1 2 3 4 5 6 7 8
PR RTN% 0 0 0 0 0 0 0 0
PHASES 9 10 11 12 13 14 15 16
PR RTN% 0 0 0 0 0 0 0 0
    
```

ECONOLITE ASC/3-2070 PREEMPT FILTERING PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 4. PREEMPTOR/TSP
2. From PREEMPT/TSP/SCP Submenu select 2. ENABLE PREEMPT FILTERING & TSP/SCP

```

ENABLE PREEMPT FILTERING & TSP/SCP
FILTERED SOLID PULSING
INPUT 1 ...BYPASSED.. ...BYPASSED..
2 ...BYPASSED.. ...BYPASSED..
3 ..PREEMPT 3. ...BYPASSED..
4 ...BYPASSED.. ...BYPASSED..
5 ..PREEMPT 5. ...BYPASSED..
6 ...BYPASSED.. ...BYPASSED..
7 ...BYPASSED.. ...BYPASSED..
8 ...BYPASSED.. ...BYPASSED..
9 ...BYPASSED.. ...BYPASSED..
10 ...BYPASSED.. ...BYPASSED..
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2060
DESIGNED: November 2019
SEALED: 12/17/2019
REVISED: N/A

Final Design
Electrical Detail - Sheet 3 of 3

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1007 (Mebane Oaks Rd)
at
Garrett Crossing
(Walmart Entrance)

Division 7 Alamance County Mebane
PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

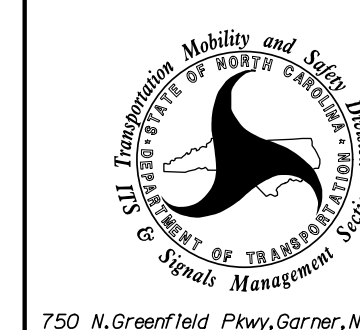
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
NORTH CAROLINA
PROFESSIONAL
ENGINEER
ZHAOLONG TENG
032179

DocuSigned by:
Zhaolong Teng
12/17/2019
DATE
SIG. INVENTORY NO. 07-2060

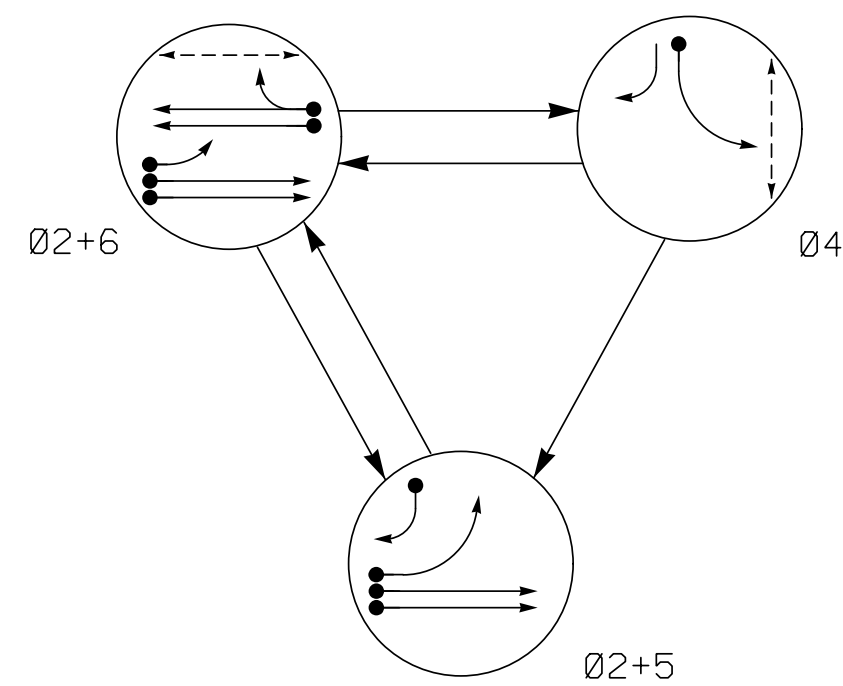
PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
875 Walnut Street, Suite 316
Cary, NC 27511
Tel: 919.263.5678 Fax: 919.263.5687
NC License No. P-1442



750 N. Greenfield Pkwy, Garner, NC 27529

*****CYTIME*****
 *****SIGNATURE*****
 *****DATE*****

DEFAULT PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE (Ø 2+5, Ø 2+6, Ø 4, FLASH), and rows for various signal faces (21,22, 41, 42, 51, 61,62, P41,P42, P61,P62).

ASC/3 DETECTOR INSTALLATION CHART

Table with columns: LOOP, SIZE (FT), DISTANCE FROM STOPBAR (FT), TURNS, NEW LOOP, PHASE, CALLING, EXTEND TIME, DELAY TIME, USE ADDED INITIAL, TYPE, SYSTEM LOOP, NEW CARD. Rows include 2A/S30, 2B/S31, 4A, 5A, 5B, 6A/S36, 6B/S37, S38, S39.

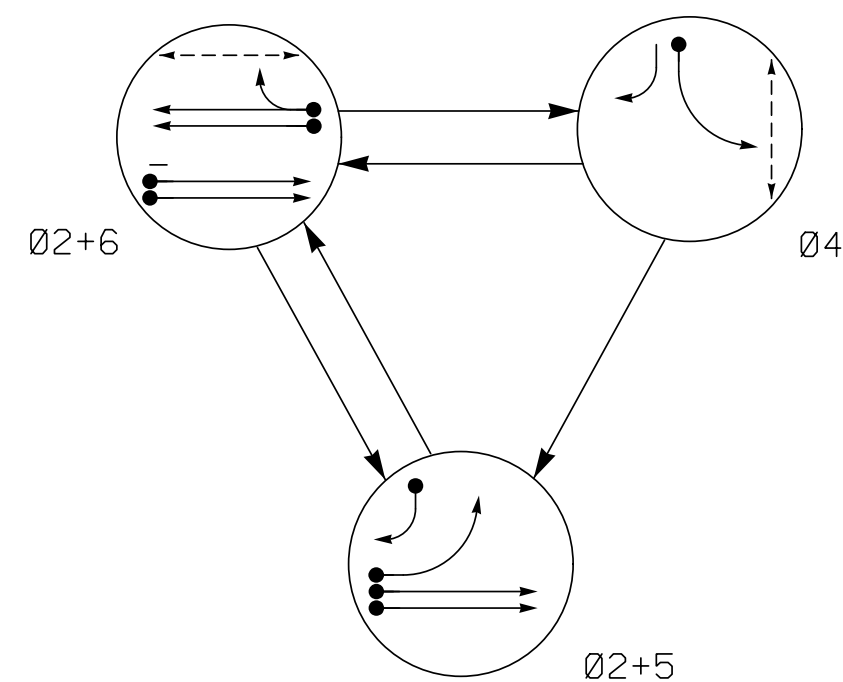
* Disable delay during Alternate Phasing Operation. # Disable Phase Call for Loop during Alternate Phasing Operation.

3 Phase Fully Actuated SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

- 1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018. 2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer. 3. Phase 5 may be lagged. 4. Set all detector units to presence mode. 5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red. 6. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls. 7. Program pedestrian heads to countdown the flashing "Don't Walk" time only. 8. Pavement markings are existing. 9. The Division Traffic Engineer will determine the hours of use for each phasing plan. 10. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values. 11. Closed loop system data: Controller Asset #: 2146.

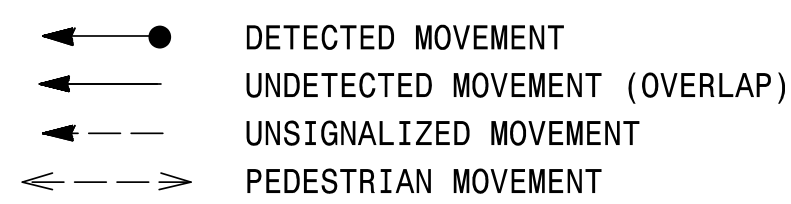
ALTERNATE PHASING DIAGRAM



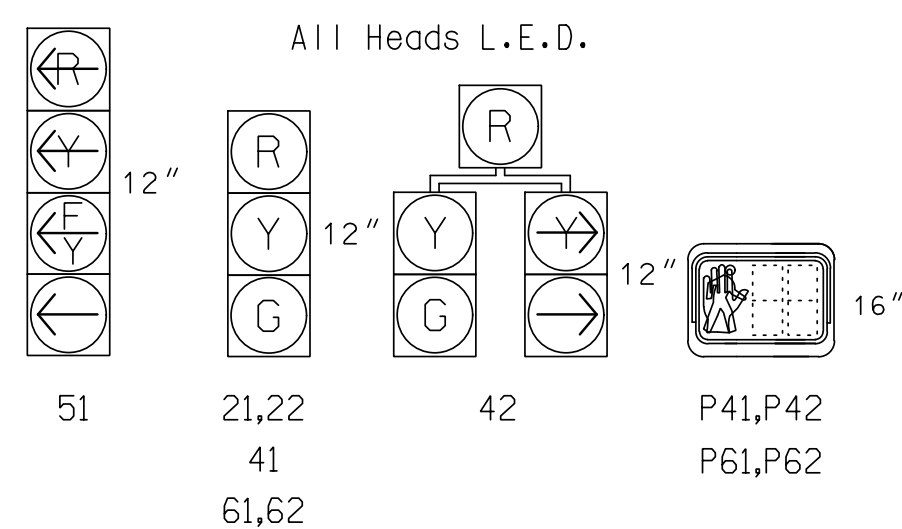
ALTERNATE PHASING TABLE OF OPERATION

Table with columns: SIGNAL FACE, PHASE (Ø 2+5, Ø 2+6, Ø 4, FLASH), and rows for various signal faces (21,22, 41, 42, 51, 61,62, P41,P42, P61,P62).

PHASING DIAGRAM DETECTION LEGEND

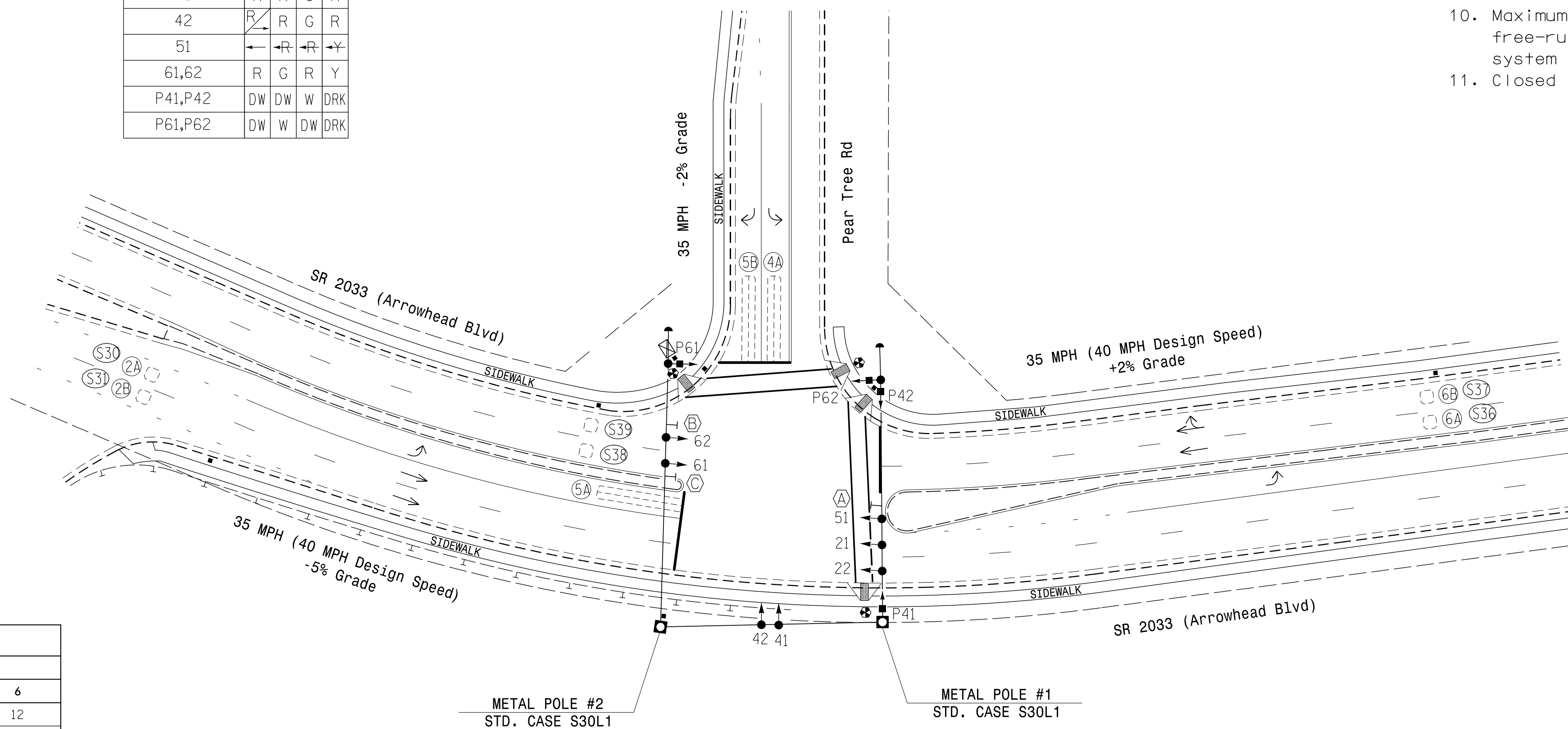


SIGNAL FACE I.D.

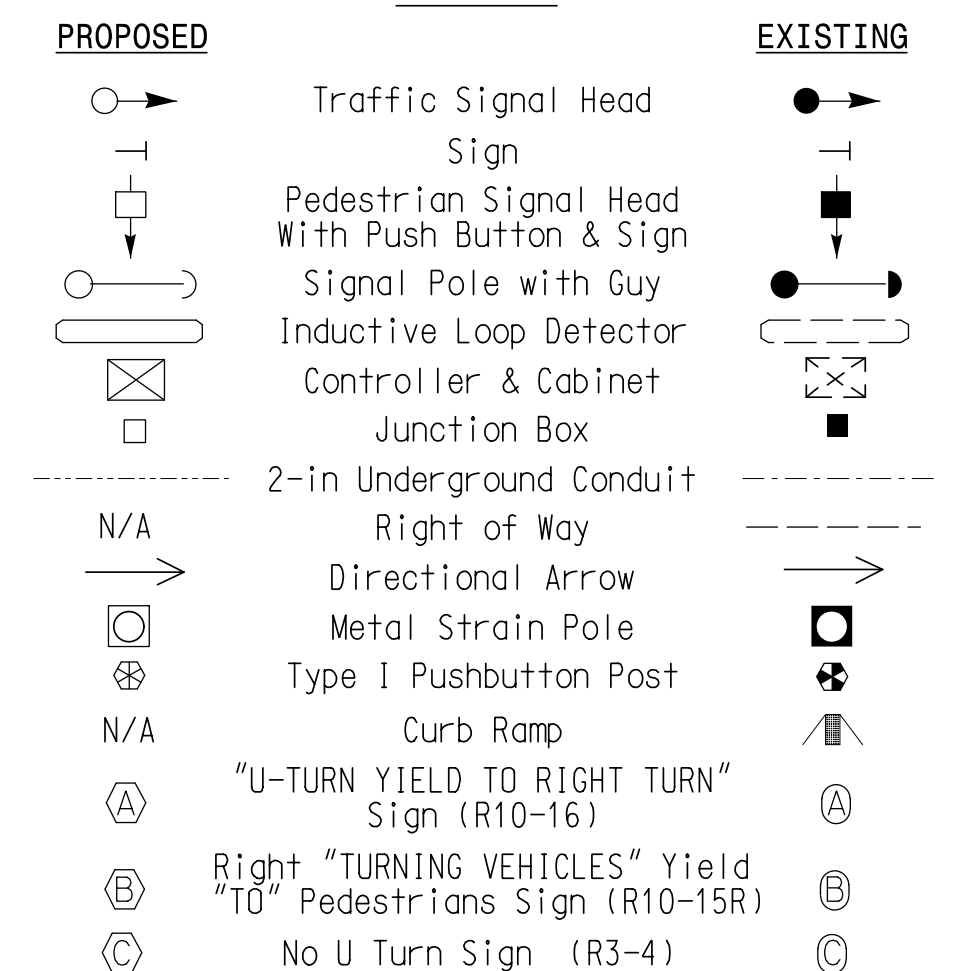


ASC/3 TIMING CHART table with columns: FEATURE, PHASE (2, 4, 5, 6) and rows for timing parameters like Min Green, Walk, Ped Clear, Veh. Extension, Max I, Yellow, Red Clear, Red Revert, Actuations B4 Add, Seconds / Actuation, Max Initial, Time Before Reduction, Time To Reduce, Minimum Gap, Locking Detector, Recall Position, Dual Entry, Simultaneous Gap.

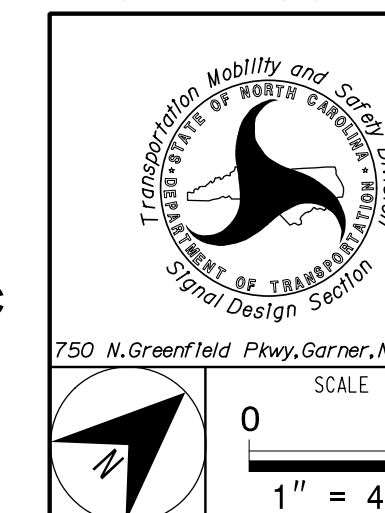
* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



LEGEND



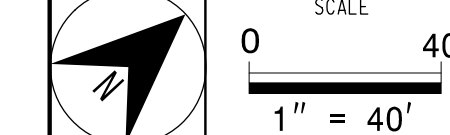
Signal Upgrade



SR 2033 (Arrowhead Boulevard) at Pear Tree Road, Mebane, Alamance County, Division 7. PLAN DATE: November 2019. REVIEWED BY: Z. "Gavin" Teng.

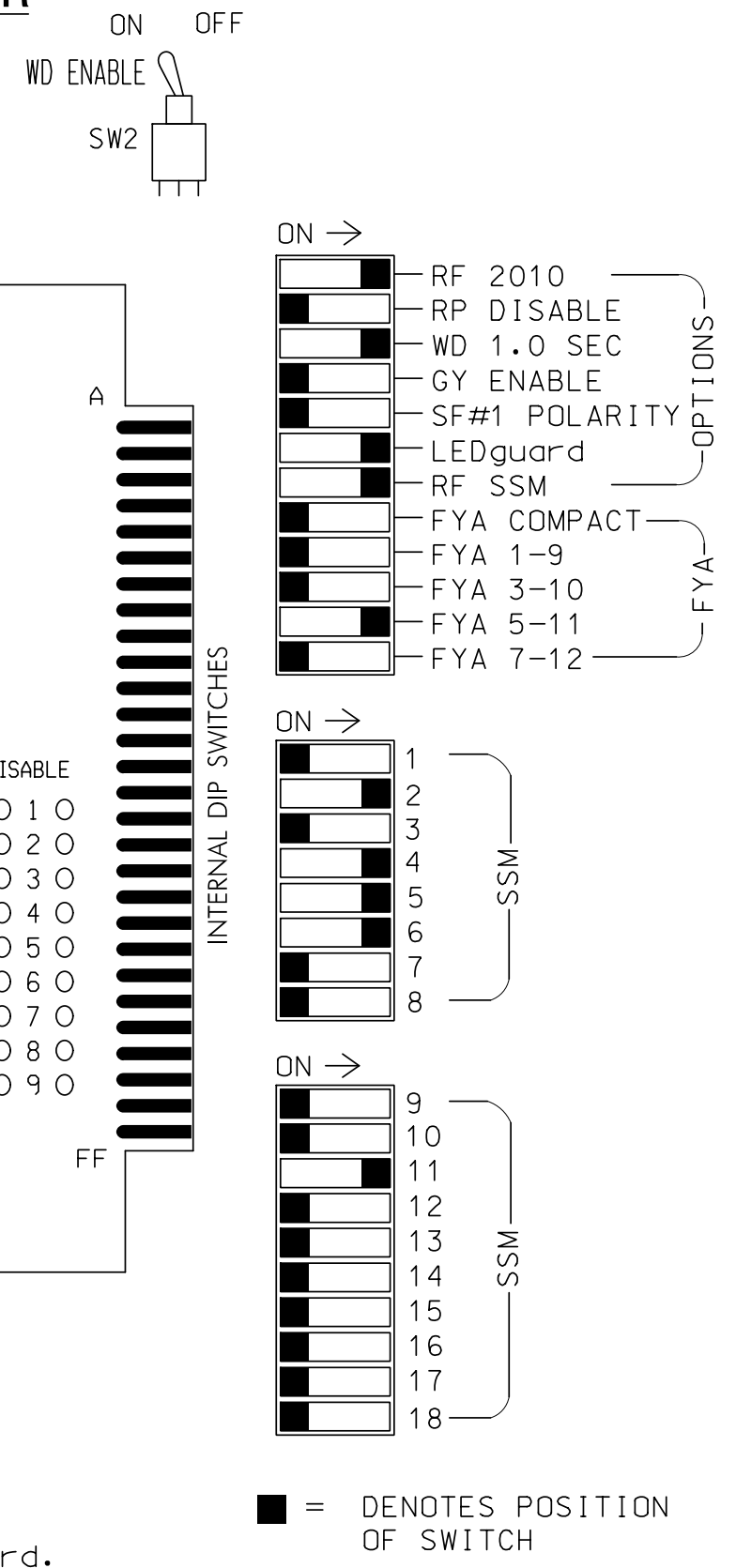
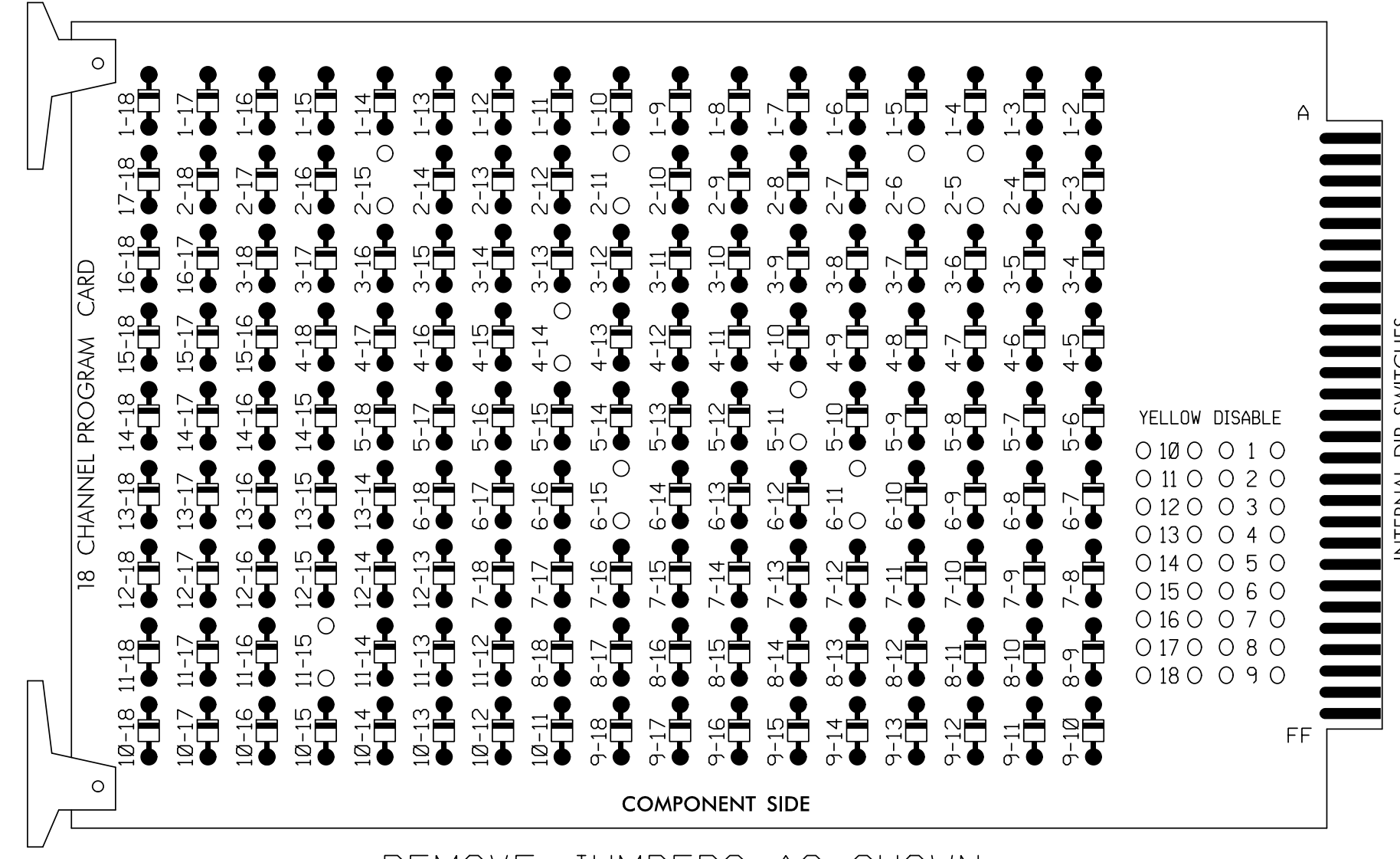
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED. SEAL: ZHAOLONG TENG, ENGINEER, 032179. DATE: 12/17/2019. SIG. INVENTORY NO. 07-2146.

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



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

REMOVE DIODE JUMPERS 2-5, 2-6, 2-11, 2-15, 4-14, 5-11, 6-11, 6-15, AND 11-15.



- 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.
 - Integrate monitor with Ethernet network in cabinet.

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 controller to start up in phase 2 Green and phase 6 Walk.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

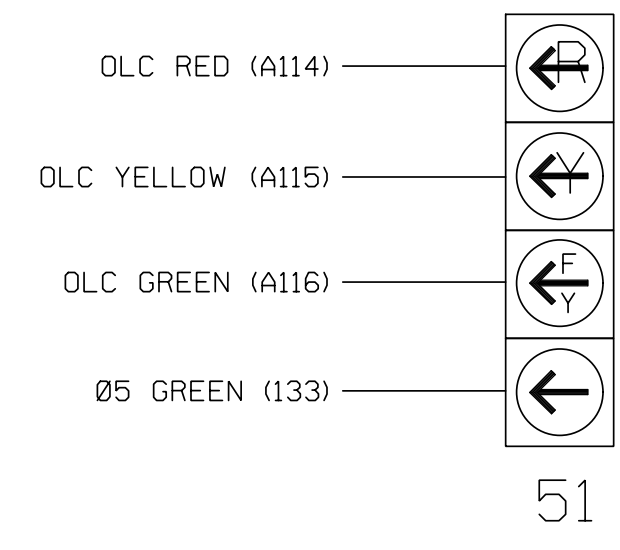
CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S2,S5,S6,S7,S8,S9,AUX S4
 PHASES USED.....2,4,4PED,5,6,6PED
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

SIGNAL HEAD HOOK-UP CHART

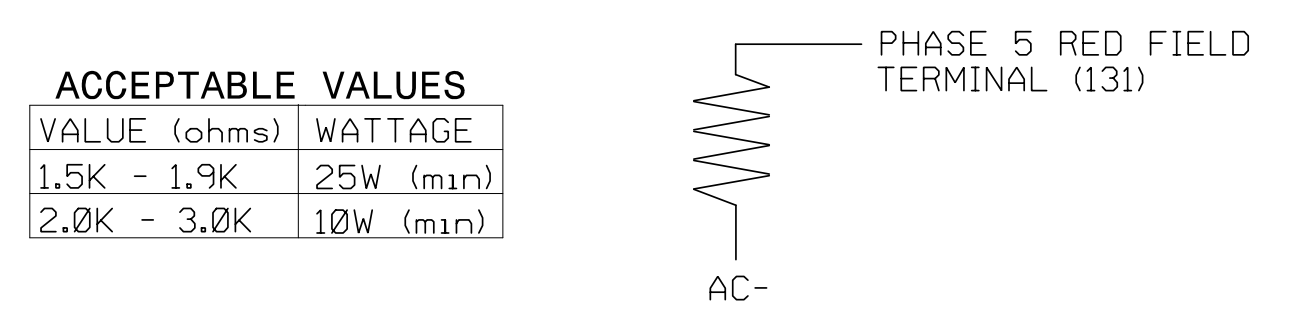
LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	NU	21,22	NU	NU	41,42	P41, P42	42	51	61,62	P61, P62	NU	NU	NU	NU	NU	51	NU	NU	
RED	128				101		*		134										
YELLOW	129				102				135										
GREEN	130				103				136										
RED ARROW																		A114	
YELLOW ARROW							132												A115
FLASHING YELLOW ARROW																			A116
GREEN ARROW							133	133											
							104			119									
							106			121									

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

FYA SIGNAL WIRING DETAIL
(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL
(install resistors as shown below)



INPUT FILE POSITION LAYOUT
(front view)

FILE	1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	∅2/SYS	∅2/SYS	∅2/SYS	∅2/SYS	∅2/SYS	∅4	∅2/SYS	∅2/SYS	SYS. DET. S38	∅2/SYS	∅2/SYS	NOT USED	∅6 PED DC ISOLATOR	FS DC ISOLATOR
L	2A/S30	2A/S30	2A/S30	2A/S30	2A/S30	4A	2A/S30	2A/S30	SYS. DET. S38	2A/S30	2A/S30	∅4 PED DC ISOLATOR	NOT USED	ST DC ISOLATOR
J	2B/S31	2B/S31	2B/S31	2B/S31	2B/S31	5B	2B/S31	2B/S31	SYS. DET. S39	2B/S31	2B/S31	∅4 PED DC ISOLATOR	NOT USED	DC ISOLATOR
U	∅5	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS
L	5A	6A/S36	6A/S36	6A/S36	6A/S36	6A/S36	6A/S36	6A/S36	6A/S36	6A/S36	6A/S36	6A/S36	6A/S36	6A/S36
J	NOT USED	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS	∅6/SYS

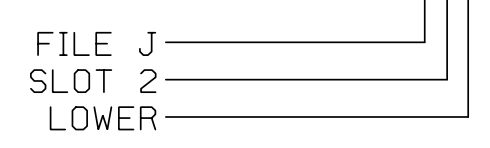
EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A/S30	TB2-5,6	I2U	39	2	2	YES			X	N
2B/S31	TB2-7,8	I2L	43	12	2	YES			X	N
4A	TB4-9,10	I6U	41	4	4	YES		3		S
5A ¹	TB3-1,2	J1U	55	5 ★	5	YES		15		S
	-	I4U	47	22 ★	2	YES		3		G
5B	TB4-11,12	I6L	45	14	5	YES		15		S
6A/S36	TB3-5,6	J2U	40	6	6	YES			X	N
6B/S37	TB3-7,8	J2L	44	16	6	YES			X	N
*S38	TB6-9,10	I9U	60	11	SYS	NO				N
*S39	TB6-11,12	I9L	62	13	SYS	NO				N
PED PUSH BUTTONS										
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED	NOTE: INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.				
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					

- ¹Add jumper from J1-W to I4-W, on rear of input file.
 * System detector only. Remove any assigned vehicle phase.
 ★ For the detectors to work as shown on the signal design plan, see the Vehicle Detector Setup Programming Detail for Alternate Phasing on Sheet 2.

INPUT FILE POSITION LEGEND:



COUNTDOWN PEDESTRIAN SIGNAL OPERATION

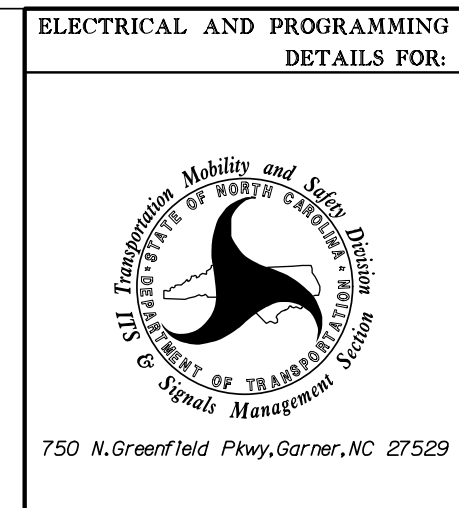
Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

Electrical Detail - Sheet 1 of 3

*****SYTIME*****
 *****DONOR*****
 *****JOB*****

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2146
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

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



SR 2033 (Arrowhead Boulevard) at Pear Tree Road

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by:

 12/17/2019
 SIG. INVENTORY NO. 07-2146

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOP 5A

(program controller as shown)

IMPORTANT!

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

- From Main Menu select **8. UTILITIES**
- From UTILITIES Submenu select **1. COPY/CLEAR**
- Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING... . > PHASE TIMING... .
TIMING PLAN.... . > TIMING PLAN.... .
PH DET OPT PLAN. . > PH DET OPT PLAN. .
DETECTOR PLAN.. 1 > DETECTOR PLAN.. 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
  
```

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
- Place cursor in VEH DET PLAN [] position and enter "2".
 - Place cursor in VEH DETECTOR [] position and enter "5".
 - Set delay time to "0".

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2] ← NOTICE VEH DET PLAN 2
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5 . . . . . ← ENSURE DELAY IS SET TO '0'
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

- Place cursor in VEH DETECTOR [] position and enter "22".
- Set assigned phase to "0".

```

VEH DETECTOR [22]  VEH DET PLAN [ 2] ← NOTICE VEH DET PLAN 2
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0 . . . . . ← ENSURE PHASE IS SET TO "0"
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

END PROGRAMMING

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL (program controller as shown)

- From Main Menu select **2. CONTROLLER**
- From CONTROLLER Submenu select **2. VEHICLE OVERLAPS**

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

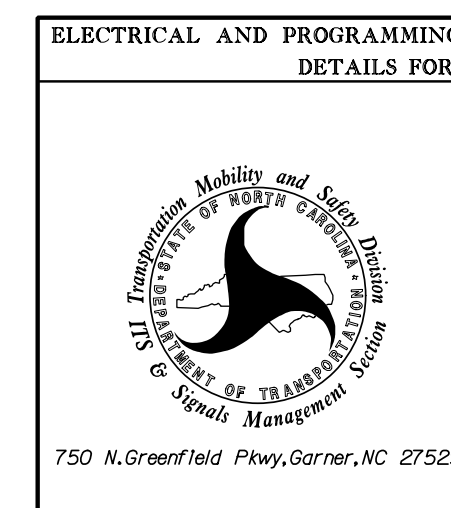
TMG VEH OVLP...[C] TYPE: ....PPLT FYA
PROTECTED LEFT TURN... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 5 ← NOTICE ACTION PLAN SF BIT "5"
  
```

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2146
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Electrical Detail - Sheet 2 of 3



SR 2033 (Arrowhead Boulevard) at Pear Tree Road

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Zhaolong Teng 12/17/2019
 SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ZHAOLONG TENG
 SEAL 032179
 DATE 12/17/2019
 SIG. INVENTORY NO. 07-2146

PREPARED IN THE OFFICE OF:
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750 N. Greenfield Pkwy, Garner, NC 27529

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

ALTERNATE PHASING ACTIVATION DETAIL

TO RUN ALT. PHASING DURING FREE RUN - PROGRAM CHANGES (SHOWN BELOW) IN A TIME BASED ACTION PLAN. SCHEDULE A DAY PLAN THAT INCLUDES THE ACTION PLAN PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

TO RUN ALT. PHASING DURING COORDINATION - SELECT THE TIME BASED ACTION PLAN THAT IS PROGRAMMED TO SELECT VEH DET PLAN 2 AND ENABLE SF BIT 5.

PHASING	VEH DET PLAN	SF BITS ENABLED
ACTIONS REQUIRED TO RUN <u>DEFAULT PHASING</u>	1	NONE
ACTIONS REQUIRED TO RUN <u>ALTERNATE PHASING</u>	2	5

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

ALTERNATE PHASING CHANGE SUMMARY

THE FOLLOWING IS A SUMMARY OF WHAT TAKES PLACE WHEN SF BIT 5 AND VEH DET PLAN 2 ACTIVATE TO CALL THE "ALTERNATE PHASING":

- SF BIT 5: Modifies overlap parent phases for head 51 to run protected turns only.
- VEH DET PLAN 2: Disables phase 2 call on loop 5A and reduces delay time for phase 5 call on loop 5A to 0 seconds.

ECONOLITE ASC/3-2070 ACTION PLAN PROGRAMMING DETAIL

- From Main Menu select **5. TIME BASE**
- From TIME BASE Submenu select **2. ACTION PLAN**

```

ACTION PLAN...[ 1]
PATTERN.....AUTO   SYS OVERRIDE.... NO
TIMING PLAN..... 0   SEQUENCE..... 0
VEH DETECTOR PLAN.. 2  DET LOG.....NONE
FLASH..... --   RED REST..... NO
VEH DET DIAG PLN... 0  PED DET DIAG PLN..0
DIMMING ENABLE.. NO  PRIORITY RETURN. NO
PED PR RETURN.. NO  QUEUE DELAY..... NO
PMT COND DELAY   NO

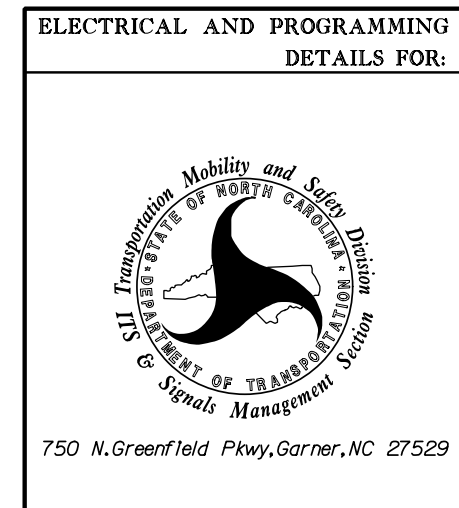
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
PED RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
WALK 2   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
VEH RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX RCL  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
MAX 2    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  PHASE  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6
MAX 3    .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
CS INH   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
OMIT     .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
SPC FCT  .  .  .  .  X  .  .  .  (1-8)
AUX FCT  .  .  .  (1-3)

  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5
LP 1-15  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 16-30 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 31-45 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 46-60 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 61-75 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 76-90 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
LP 91-100 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
    
```

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2146
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

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

Electrical Detail - Sheet 3 of 3



SR 2033 (Arrowhead Boulevard) at Pear Tree Road

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 032179
 ZHAOLONG TENG

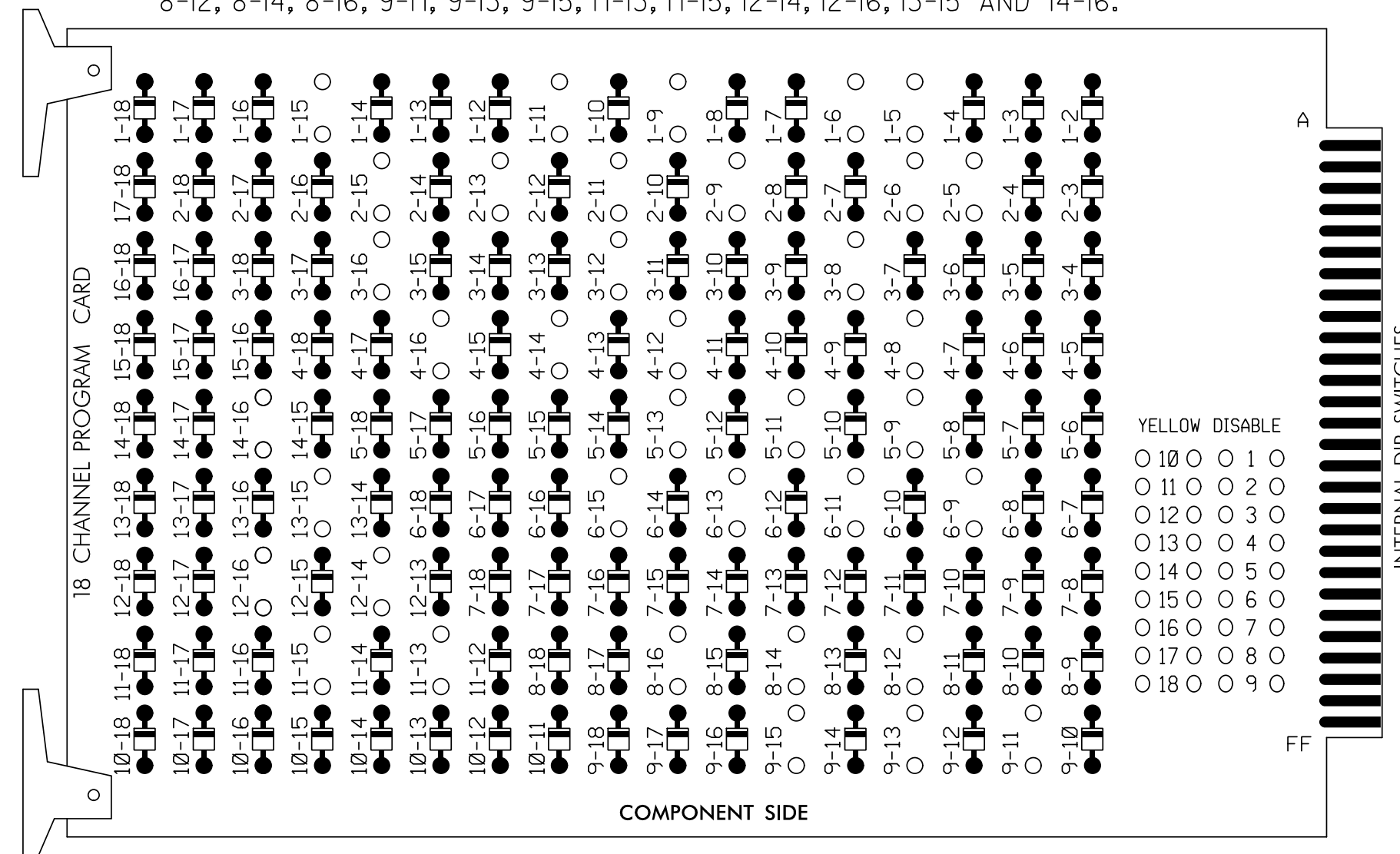
DocuSigned by: *Zhaolong Teng* 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2146

\$\$\$\$SYTIME\$\$\$\$
 \$\$\$DONOR\$\$\$\$
 \$\$\$SERIALNAME\$\$\$\$

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

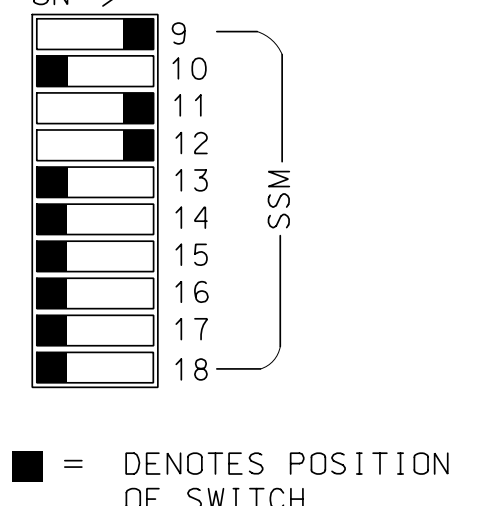
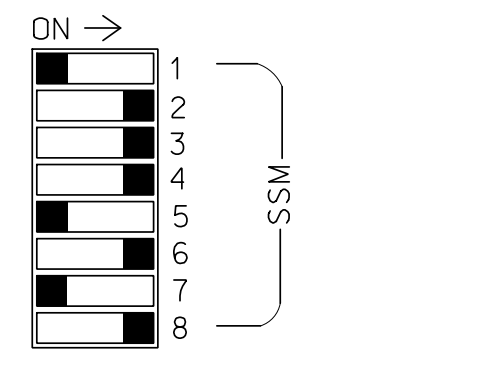
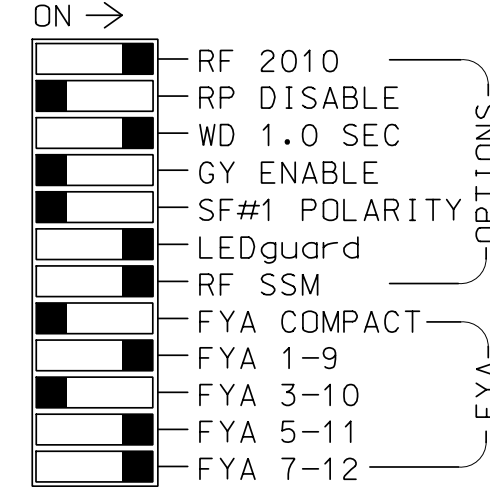
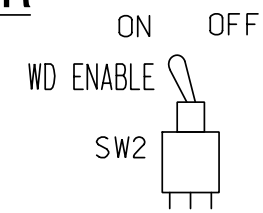
REMOVE DIODE JUMPERS 1-5, 1-6, 1-9, 1-11, 1-15, 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-8, 3-12, 3-16, 4-8, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 11-13, 11-15, 12-14, 12-16, 13-15 AND 14-16.



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.
- Integrate monitor with Ethernet network in cabinet.



■ = 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.
- Program controller to start up in phase 2 Walk and phase 6 Walk.
- The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 W/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE
 LOAD SWITCHES USED.....S1,S2,S3,S4,S5,S6,S7,S8,S9,
 S11,S12,AUX S1,AUX S4,AUX S5
 PHASES USED.....1,2,PED,3,4,4PED,5,6,6PED,
 8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

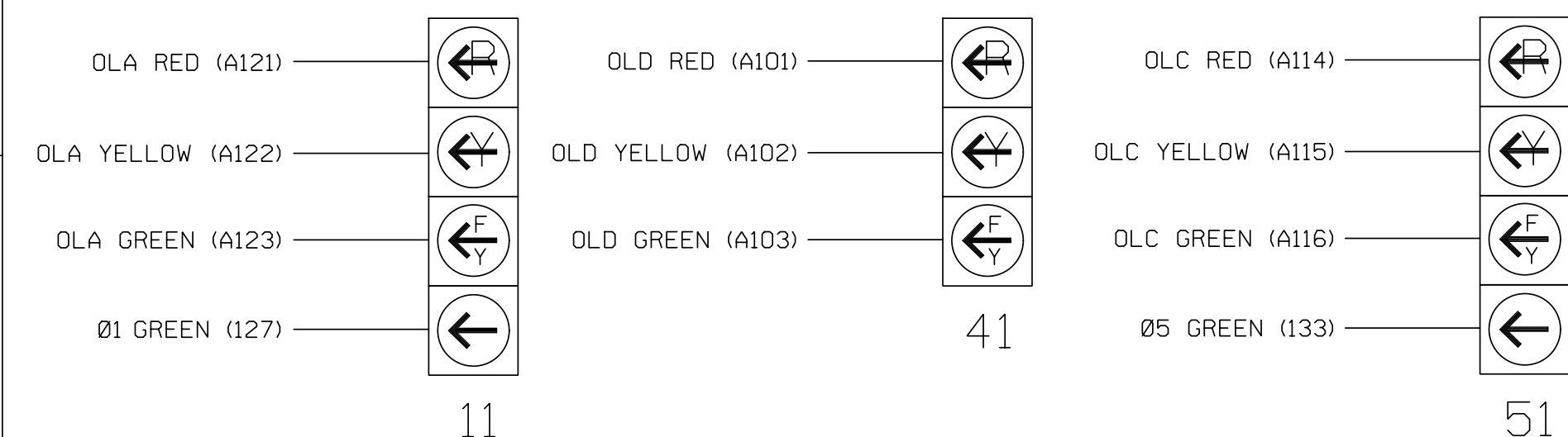
SIGNAL HEAD HOOK-UP CHART

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	22	31,32	42,43	P41, P42	51	61,62	61, P62	NU	81,82	P81, P82	11	NU	NU	51	41	NU
RED		128				101			134			107							
YELLOW	*	129				102		*	135			108							
GREEN		130				103			136			109							
RED ARROW					116								A121			A114	A101		
YELLOW ARROW				117	117								A122			A115	A102		
FLASHING YELLOW ARROW													A123			A116	A103		
GREEN ARROW	127			118	118			133											
Hand							104			119			110						
Walking			115																

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

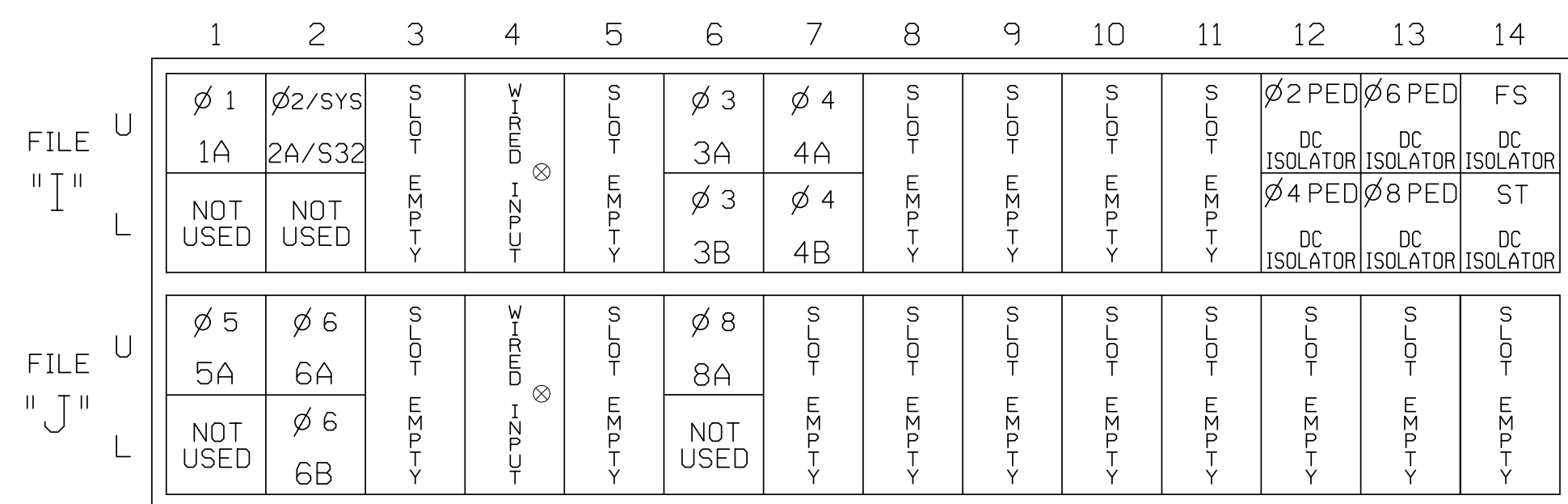
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



INPUT FILE POSITION LAYOUT

(front view)



EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 ⊗ Wired Input - Do not populate slot with detector card

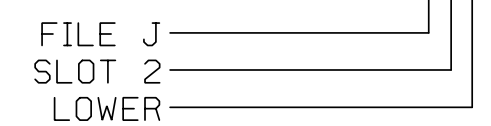
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
1A ¹	TB2-1,2	I1U	56	1 ★	1	YES		15		S
	-	J4U	48	26 ★	6	YES		3		G
	2A/S32	TB2-5,6	I2U	39	2	YES			X	N
3A	TB4-9,10	I6U	41	4	3	YES				S
3B	TB4-11,12	I6L	45	14	3	YES				S
4A	TB6-1,2	I7U	65	34	4	YES		3		S
4B	TB6-3,4	I7L	78	44	4	YES		10		S
5A ²	TB3-1,2	J1U	55	5 ★	5	YES		15		S
	-	I4U	47	22 ★	2	YES		3		G
6A	TB3-5,6	J2U	40	6	6	YES			X	N
6B	TB3-7,8	J2L	44	16	6	YES			X	N
8A	TB5-9,10	J6U	42	8	8	YES		10		S
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2	PED				
P41,P42	TB8-5,6	I12L	69	PED 4	4	PED				
P61,P62	TB8-7,9	I13U	68	PED 6	6	PED				
P81,P82	TB8-8,9	I13L	70	PED 8	8	PED				

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

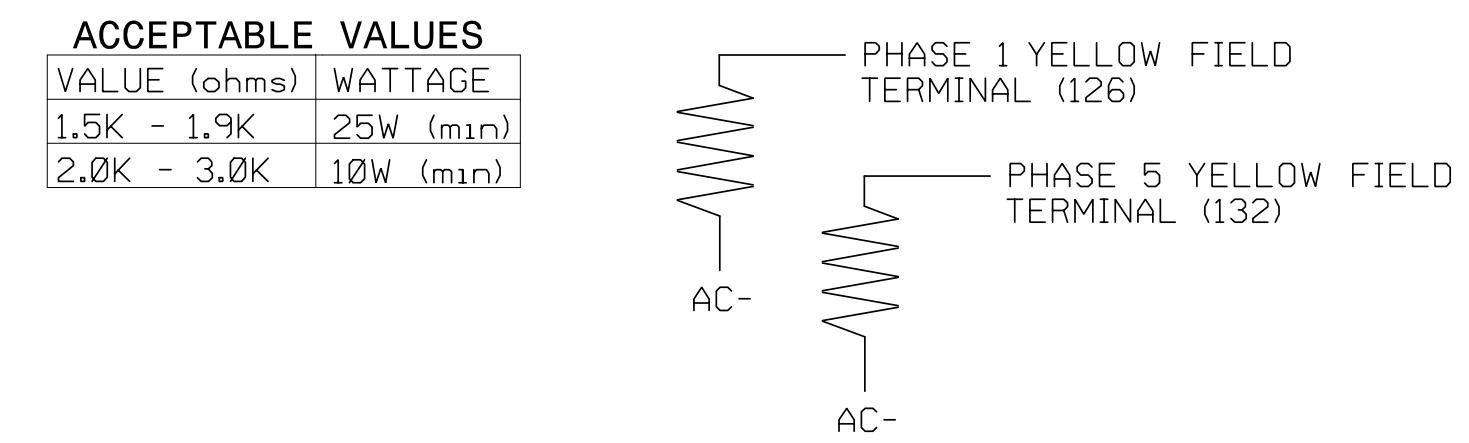
- Add jumper from I1-W to J4-W, on rear of input file.
 - Add jumper from J1-W to I4-W, on rear of input file.
- ★ For the detectors to work as shown on the signal design plan, see the Vehicle Detector Setup Programming Detail for Alternate Phasing on Sheet 3.

INPUT FILE POSITION LEGEND: J2L



LOAD RESISTOR INSTALLATION DETAIL

(install resistors as shown below)



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.

Electrical Detail - Sheet 1 of 4

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 2033 (Arrowhead Boulevard) at Garden Place Drive/ Tanger Outlet Main Entrance

Division 7	Alamance County	Mebane
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng	
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:	
REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: Zhaolong Teng 12/17/2019
 SIG. INVENTORY NO. 07-2147

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 07-2147
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

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

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'PPLT FYA'

```

TMG VEH OVLP...[A] TYPE: ....[PPLT FYA]
PROTECTED LEFT TURN.... PHASE 1
OPPOSING THROUGH..... PHASE 2

FLASHING ARROW OUTPUT.....CH9 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 1
  
```

← NOTICE ACTION
PLAN SF BIT "1"

Toggle Twice

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: ....[PPLT FYA]
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 5
  
```

← NOTICE ACTION
PLAN SF BIT "5"

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE: [OTHER/ECONOLITE]
PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
  
```

END PROGRAMMING

FLASHER CIRCUIT MODIFICATION DETAIL

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

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

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

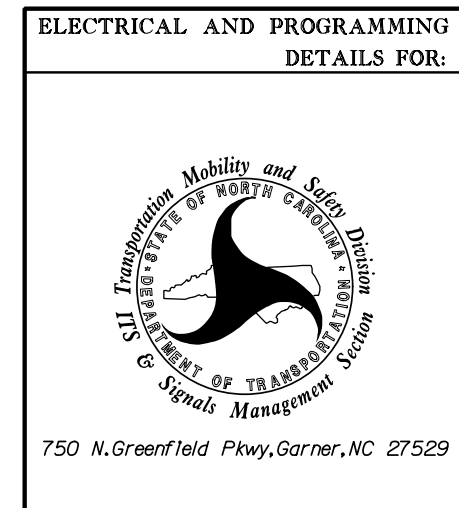
THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-2147
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

\$\$\$SYTIME\$\$\$
 \$\$\$DON\$\$\$
 \$\$\$SERIAL\$\$\$
 \$\$\$NAME\$\$\$

PREPARED IN THE OFFICE OF:

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

Electrical Detail - Sheet 2 of 4



SR 2033 (Arrowhead Boulevard) at Garden Place Drive/ Tanger Outlet Main Entrance	
Division 7	Alamance County
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:
REVISIONS	INIT. DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

SEAL

DocuSigned by:
Zhaolong Teng
12/17/2019

DATE

SIG. INVENTORY NO. 07-2147

ECONOLITE ASC/3-2070 VEHICLE DETECTOR SETUP PROGRAMMING DETAIL FOR ALTERNATE PHASING LOOPS 1A, 5A

IMPORTANT!

(program controller as shown)

Program detectors per the input file connection and programming chart shown on sheet 1 before proceeding.

- From Main Menu select **8. UTILITIES**
- From UTILITIES Submenu select **1. COPY/CLEAR**
- Copy from DETECTOR PLAN "1" to DETECTOR PLAN "2".

```

COPY / CLEAR UTILITY
FROM          TO
PHASE TIMING... > PHASE TIMING...
TIMING PLAN... > TIMING PLAN...
PH DET OPT PLAN. > PH DET OPT PLAN.
DETECTOR PLAN... 1 > DETECTOR PLAN... 2
TOGGLE TO SELECT A "FROM" AND A "TO"
THEN PRESS ENTER
  
```

- From Main Menu select **6. DETECTORS**
- From DETECTOR Submenu select **2. VEHICLE DETECTOR SETUP**
- Place cursor in VEH DET PLAN [] position and enter "2".

- Place cursor in VEH DETECTOR [] position and enter "1".
 - Set delay time to "3".

```

VEH DETECTOR [ 1]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
1 1
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH
DET PLAN 2

← ENSURE DELAY
IS SET TO '3'

- Place cursor in VEH DETECTOR [] position and enter "26".
 - Set assigned phase to "0".

ENSURE PHASE
IS SET TO "0" →

```

VEH DETECTOR [26]  VEH DET PLAN [ 2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
26 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH
DET PLAN 2

```

VEH DETECTOR [ 5]  VEH DET PLAN [ 2]
TYPE: S-STANDARD
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
5 5
EXTEND TIME... 0.0 DELAY TIME... 0.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

- Place cursor in VEH DETECTOR [] position and enter "5".
 - Set delay time to "0".

← NOTICE VEH
DET PLAN 2

← ENSURE DELAY
IS SET TO '0'

- Place cursor in VEH DETECTOR [] position and enter "22".
 - Set assigned phase to "0".

ENSURE PHASE
IS SET TO "0" →

```

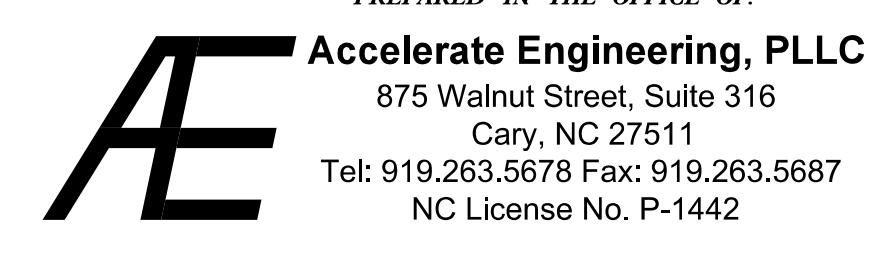
VEH DETECTOR [22]  VEH DET PLAN [ 2]
TYPE: G-GREEN EXTENSION/DELAY
TS2 DETECTOR..... ECPI LOG..... NO
DET PH - 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
22 0
EXTEND TIME... 0.0 DELAY TIME... 3.0
USE ADDED INITIAL . CROSS SWITCH PH.. 0
LOCK IN..... NONE NTCIP VOL . OR OCC .
PMT QUEUE DELAY. NO
  
```

← NOTICE VEH
DET PLAN 2

END PROGRAMMING

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-2147
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DDMMYY\$\$\$\$\$
 \$\$\$SUBFORMNAME\$\$\$\$\$

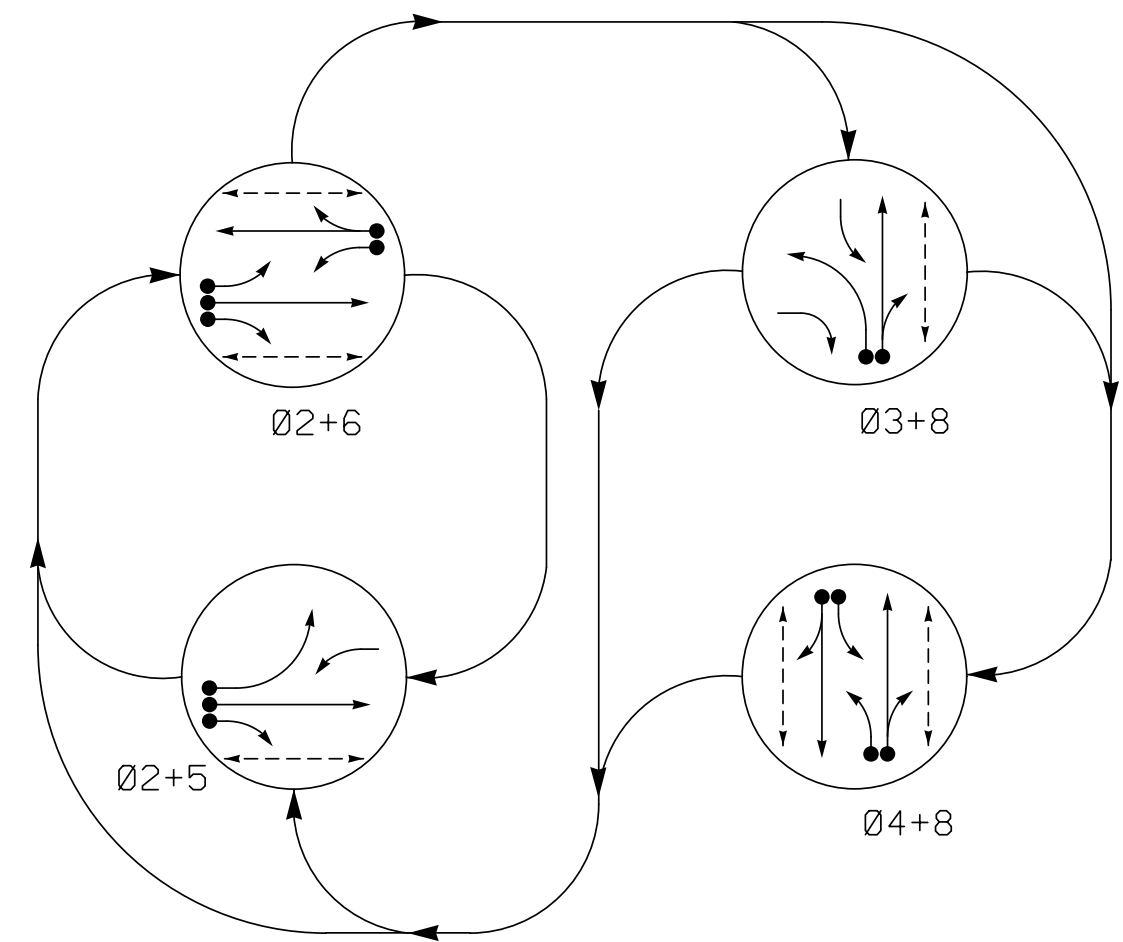


Electrical Detail - Sheet 3 of 4

	SR 2033 (Arrowhead Boulevard) at Garden Place Drive/ Tanger Outlet Main Entrance	<p>Division 7 Alamance County Mebane</p> <p>PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng</p> <p>PREPARED BY: Z. "Gavin" Teng REVIEWED BY:</p>	<p>SEAL</p> <p>STATE OF NORTH CAROLINA</p> <p>PROFESSIONAL ENGINEER</p> <p>SEAL 032179</p> <p>ZHAOLONG TENG</p>
	<p>PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC 875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442</p>		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- ◀●▶ DETECTED MOVEMENT
- ◀◊▶ UNDETECTED MOVEMENT (OVERLAP)
- ◀---▶ UNSIGNALIZED MOVEMENT
- ◀---▶ PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE				
	Ø 2 + 5	Ø 2 + 6	Ø 3 + 8	Ø 4 + 8	FLASH
21	G	G	R	R	Y
22	G	G	R	R	Y
31	R	R	F	F	R
41	R	R	F	F	R
42,43	R	R	R	G	R
51	F	F	R	R	Y
61	F	F	R	R	Y
62,63	R	G	R	R	Y
81,82	R	R	G	G	R
P21,P22	W	W	DW	DW	DRK
P41,P42	DW	DW	DW	DW	DRK
P61,P62	DW	W	DW	DW	DRK
P81,P82	DW	DW	W	W	DRK

ASC/3 DETECTOR INSTALLATION CHART

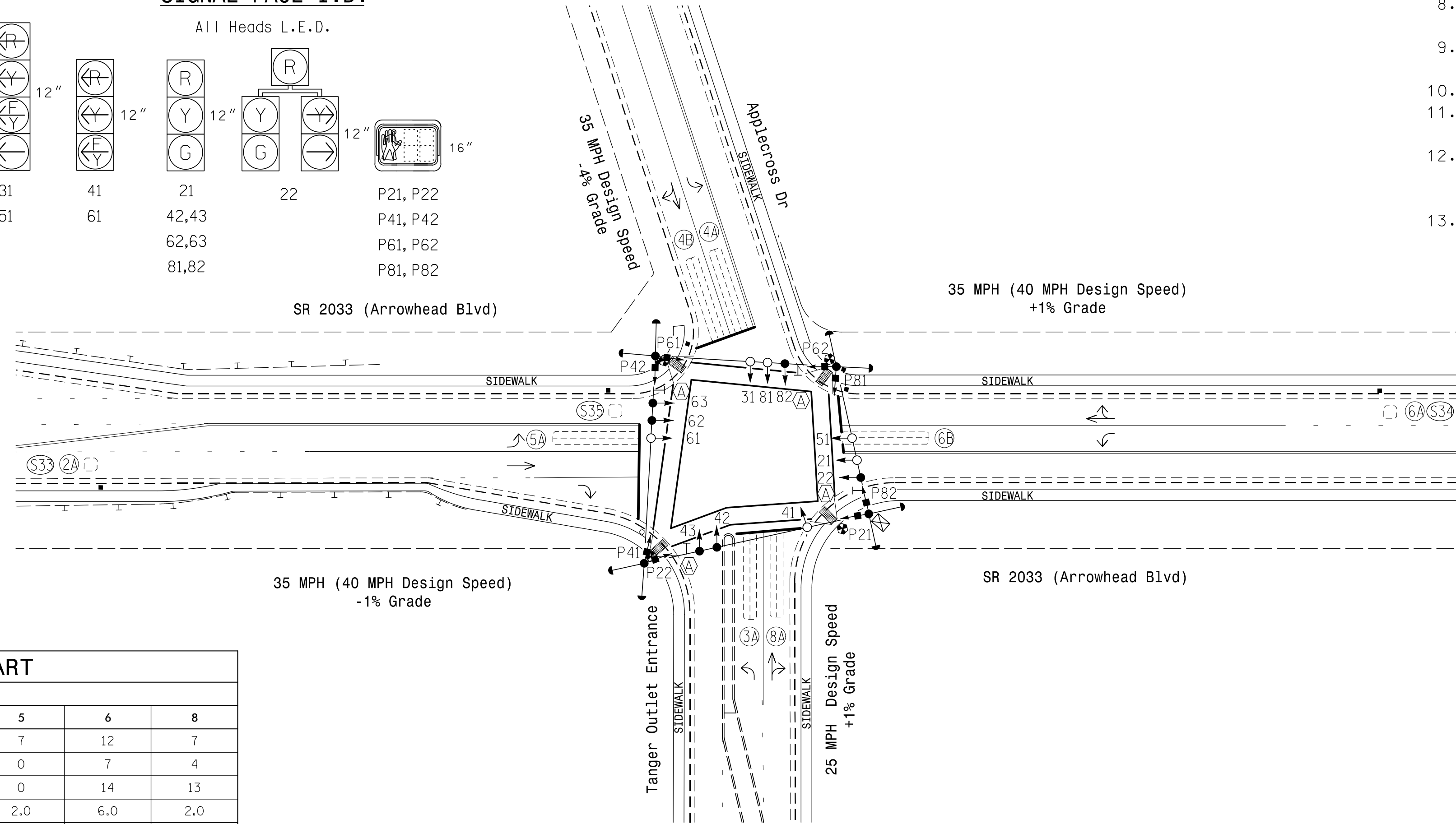
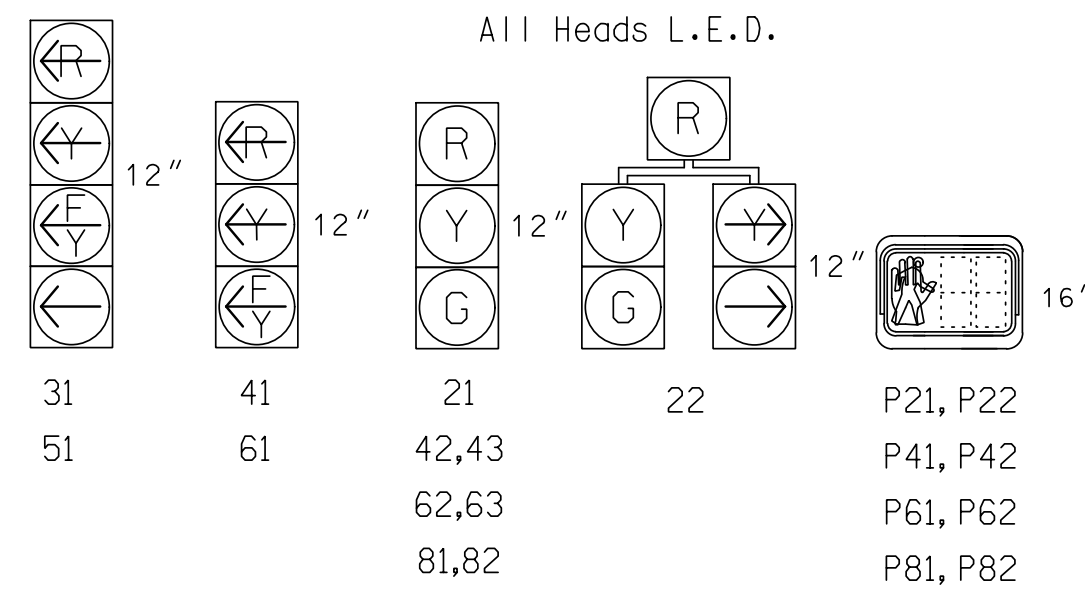
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING							
					PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	LOOP	CARD
2A/S33	6X6	250	5	-	2	Yes	-	-	X	N	X	X
3A	6X40	0	2-4-2	-	3	Yes	-	15	-	S	-	X
4A	6X40	0	2-4-2	-	4	Yes	-	3	-	S	-	X
4B	6X40	0	2-4-2	-	4	Yes	-	10	-	S	-	X
5A	6X40	0	2-4-2	-	5	Yes	-	15	-	S	-	X
6A/S34	6X6	250	5	-	2	Yes	-	3	-	G	-	X
6B	6X40	0	2-4-2	-	6	Yes	-	3	-	G	-	X
8A	6X40	0	2-4-2	-	8	Yes	-	10	-	S	-	X
S35	6X6	+100	3	-	-	No	-	-	-	N	X	X

4 Phase Fully Actuated SR 1007 (Mebane Oaks Rd) CLS Signal System: 10705

NOTES

- Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
- Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
- Phase 5 may be lagged.
- Phase 3 may be lagged.
- Renumber existing signal heads 41, 42, 61 and 62 as signal heads 42, 43, 62 and 63, respectively. Reposition signal heads 42, 43, 62, 63 and 82.
- 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.
- Pavement markings are existing.
- Replace existing junction box near the curb ramp in the SW quadrant.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
- Closed loop system data: Controller Asset #: 2148.

SIGNAL FACE I.D.



LEGEND

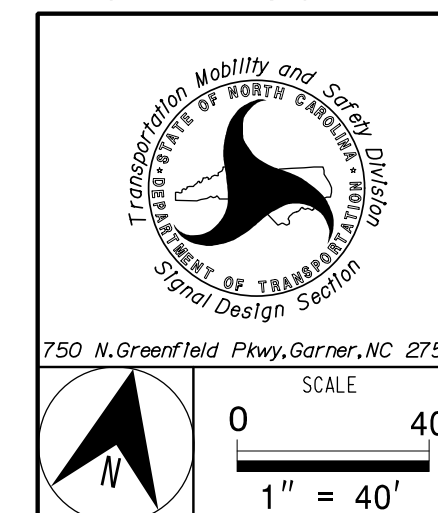
- | PROPOSED | EXISTING |
|----------|----------|
| ○→ | ●→ |
| □→ | ■→ |
| ○→ | ●→ |
| ○→ | ●→ |
| ⊠ | ⊠ |
| □ | ■ |
| ---○--- | ---○--- |
| N/A | N/A |
| → | → |
| ⊗ | ⊗ |
| N/A | N/A |
| N/A | N/A |
| ⊙ | ⊙ |

ASC/3 TIMING CHART

FEATURE	PHASE							
	2	3	4	5	6	8		
Min Green *	12	7	7	7	12	7		
Walk *	7	0	4	0	7	4		
Ped Clear	18	0	18	0	14	13		
Veh. Extension *	6.0	2.0	2.0	2.0	6.0	2.0		
Max I *	90	20	25	25	90	20		
Yellow	4.2	3.0	4.1	3.0	4.2	4.1		
Red Clear	1.5	2.3	1.7	2.4	1.5	1.7		
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0		
Actuations B4 Add *	0	-	-	-	0	-		
Seconds / Actuation *	2.5	-	-	-	2.5	-		
Max Initial *	29	-	-	-	29	-		
Time Before Reduction *	30	-	-	-	30	-		
Time To Reduce *	45	-	-	-	45	-		
Minimum Gap	3.0	-	-	-	3.0	-		
Locking Detector	X	-	-	-	X	-		
Recall Position	VEH. RECALL	-	-	-	VEH. RECALL	-		
Dual Entry	-	-	X	-	-	X		
Simultaneous Gap	X	X	X	X	X	X		

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

Signal Upgrade

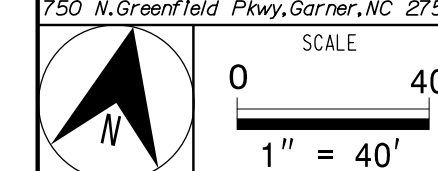


SR 2033 (Arrowhead Boulevard) at Applecross Drive/ Tanger Outlet Entrance
 Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SEAL
 ZHAOLONG TENG
 PROFESSIONAL ENGINEER
 STATE OF NORTH CAROLINA
 License No. 032179
 DATE: 12/17/2019
 SIG. INVENTORY NO. 07-2148

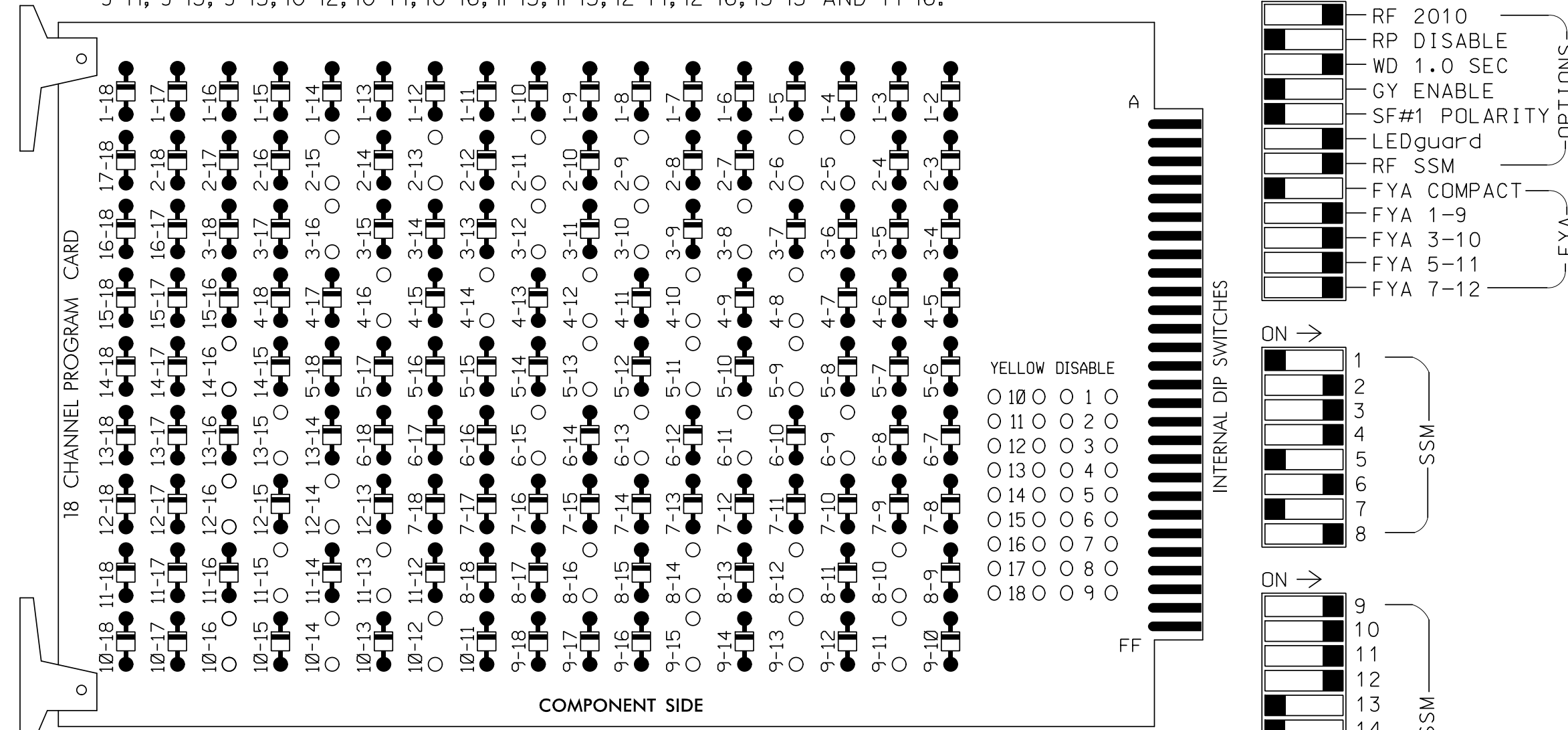
PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442



EDI MODEL 2018ECLIP-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)

REMOVE DIODE JUMPERS 2-5, 2-6, 2-9, 2-11, 2-13, 2-15, 3-8, 3-10, 3-12, 3-16, 4-8, 4-10, 4-12, 4-14, 4-16, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 8-10, 8-12, 8-14, 8-16, 9-11, 9-13, 9-15, 10-12, 10-14, 10-16, 11-13, 11-15, 12-14, 12-16, 13-15 AND 14-16.



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.

NOTES

1. To prevent "Flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Walk and phase 6 Walk.
4. The cabinet and controller are part of the SR 1007 (Mebane Oaks Rd) Closed Loop System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
 CABINET.....332 w/ AUX
 SOFTWARE.....ECONOLITE ASC/3-2070
 CABINET MOUNT.....BASE
 OUTPUT FILE POSITIONS...18 WITH AUX. OUTPUT FILE LOAD SWITCHES USED.....S2,S3,S4,S5,S6,S7,S8,S9,
 S11,S12,AUX S1,AUX S2,
 AUX S4,AUX S5
 PHASES USED.....2,2PED,3,4,4PED,5,6,6PED,
 8,8PED
 OVERLAP "A".....*
 OVERLAP "B".....*
 OVERLAP "C".....*
 OVERLAP "D".....*
 * See overlap programming detail on sheet 2

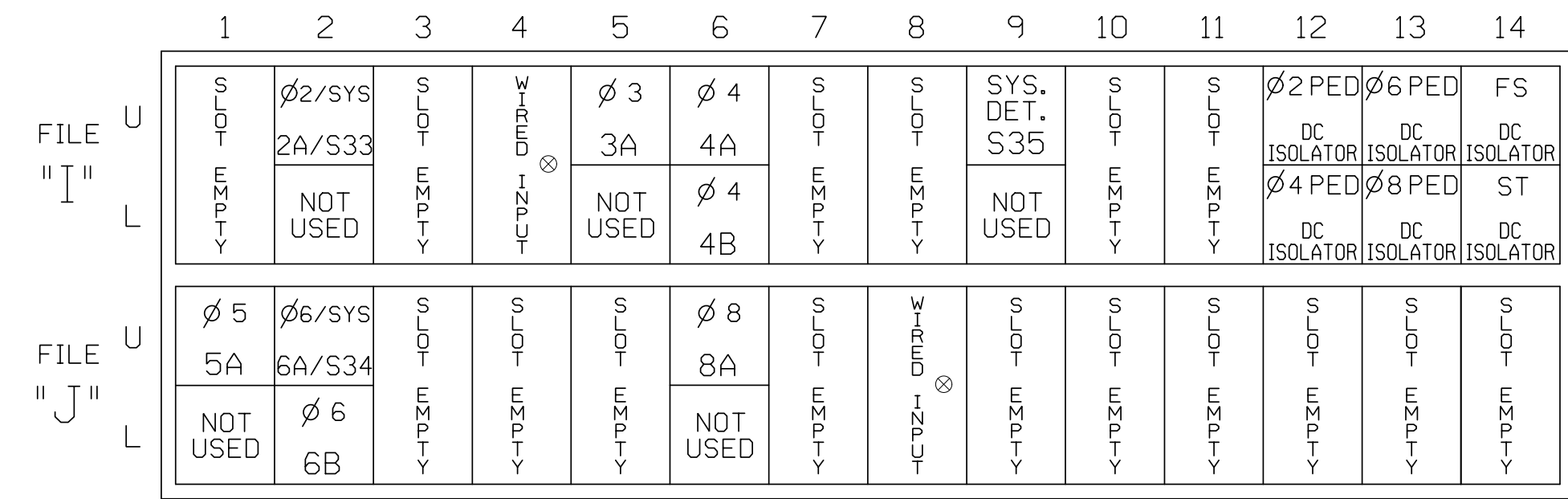
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6	
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18	
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	NU	21,22	P21, P22	22	31	42,43	P41, P42	51	62,63	P61, P62	NU	81,82	P81, P82	61	31	NU	51	41	NU
RED		128		*		101			134			107							
YELLOW		129				102		*	135			108							
GREEN		130				103			136			109							
RED ARROW													A121	A124		A114	A101		
YELLOW ARROW				117									A122	A125		A115	A102		
FLASHING YELLOW ARROW													A123	A126		A116	A103		
GREEN ARROW																			
Hand Symbol				113				104		119			110						
Walking Symbol				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 this sheet.

INPUT FILE POSITION LAYOUT

(front view)



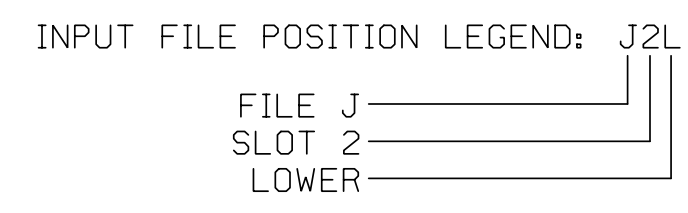
EX.: 1A, 2A, ETC. = LOOP NO.'S FS = FLASH SENSE
 * Wired Input - Do not populate slot with detector card ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A/S33	TB2-5,6	I2U	39	2	2	YES			X	N
3A ¹	TB4-5,6	I5U	58	3	3	YES		15		S
	-	J8U	50	28	8	YES				S
4A	TB4-9,10	I6U	41	4	4	YES		3		S
4B	TB4-11,12	I6L	45	14	4	YES		10		S
5A ²	TB3-1,2	J1U	55	5	5	YES		15		S
	-	I4U	47	22	2	YES		3		G
6A/S34	TB3-5,6	J2U	40	6	6	YES			X	N
6B	TB3-7,8	J2L	44	16	6	YES		3		G
8A	TB5-9,10	J6U	42	8	8	YES		10		S
*S35	TB6-9,10	I9U	60	11	SYS	NO				N
PED PUSH BUTTONS										
P21,P22	TB8-4,6	I12U	67	PED 2	2 PED					
P41,P42	TB8-5,6	I12L	69	PED 4	4 PED					
P61,P62	TB8-7,9	I13U	68	PED 6	6 PED					
P81,P82	TB8-8,9	I13L	70	PED 8	8 PED					

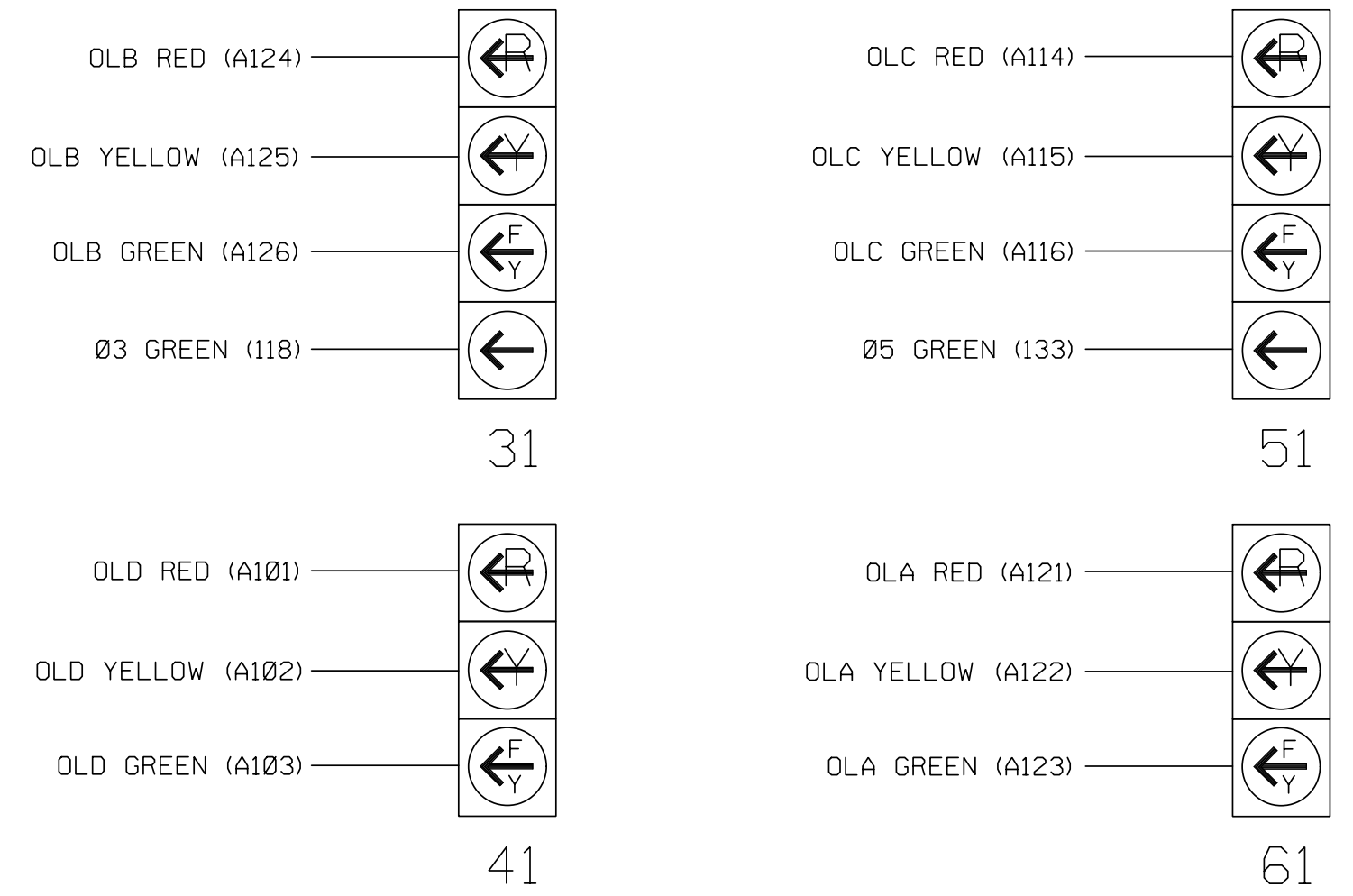
NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.

- ¹Add jumper from I5-W to J8-W, on rear of input file.
 - ²Add jumper from J1-W to I4-W, on rear of input file.
- * System detector only. Remove any assigned vehicle phase.



FYA SIGNAL WIRING DETAIL

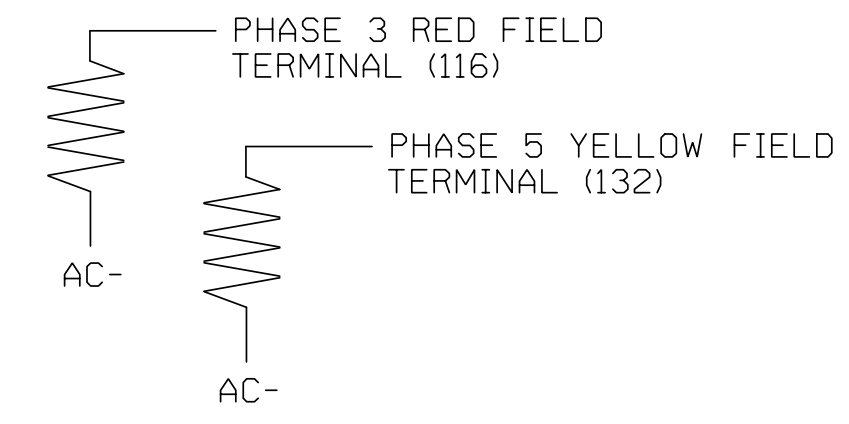
(wire signal heads as shown)



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: 07-2148
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

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

ELECTRICAL AND PROGRAMMING DETAILS FOR:
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL
 032179
 ZHAOLONG TENG

SR 2033 (Arrowhead Boulevard) at Applecross Drive/Tanger Outlet Entrance

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL
 032179
 ZHAOLONG TENG
 12/17/2019
 DATE
 SIG. INVENTORY NO. 07-2148

*****SYSTEMS*****
 *****SOFTWARE*****
 *****HARDWARE*****
 *****PERMITS*****

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

1. From Main Menu select 2. CONTROLLER
2. From CONTROLLER Submenu select 2. VEHICLE OVERLAPS

OVERLAP A

Select TMG VEH OVLP [A] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[A] TYPE:OTHER/ECONOLITE
  PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
    
```

Toggle Once

OVERLAP B

Select TMG VEH OVLP [B] and 'PPLT FYA'

```

TMG VEH OVLP...[B] TYPE: . . . . .PPLT FYA
PROTECTED LEFT TURN.... PHASE 3
OPPOSING THROUGH..... PHASE 4

FLASHING ARROW OUTPUT.....CH10 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

Toggle Once

OVERLAP C

Select TMG VEH OVLP [C] and 'PPLT FYA'

```

TMG VEH OVLP...[C] TYPE: . . . . .PPLT FYA
PROTECTED LEFT TURN.... PHASE 5
OPPOSING THROUGH..... PHASE 6

FLASHING ARROW OUTPUT.....CH11 ISOLATE
DELAY START OF: FYA..0.0 CLEARANCE..0.0
ACTION PLAN SF BIT DISABLE..... 0
    
```

Toggle Once

OVERLAP D

Select TMG VEH OVLP [D] and 'OTHER/ECONOLITE'

```

TMG VEH OVLP...[D] TYPE:OTHER/ECONOLITE
  PHASES 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
INCLUDED . . . . . X . . . . .
PROTECT . . . . .
PED PRTC . . . . .
NOT OVLP . . . . .
FLSH GRN . . . . . 1 . . . . .
LAG X PH . . . . .
LAG 2 PH . . . . .

LAG GRN 0.0 YEL 0.0 RED 0.0 ADV GRN 0.0
    
```

END PROGRAMMING

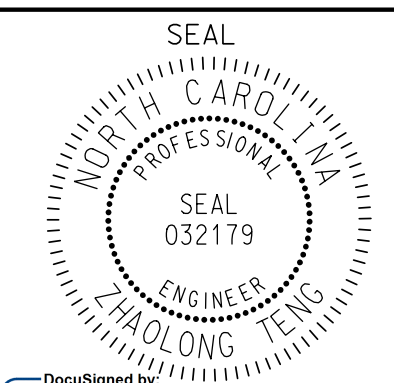

FLASHER CIRCUIT MODIFICATION DETAIL

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

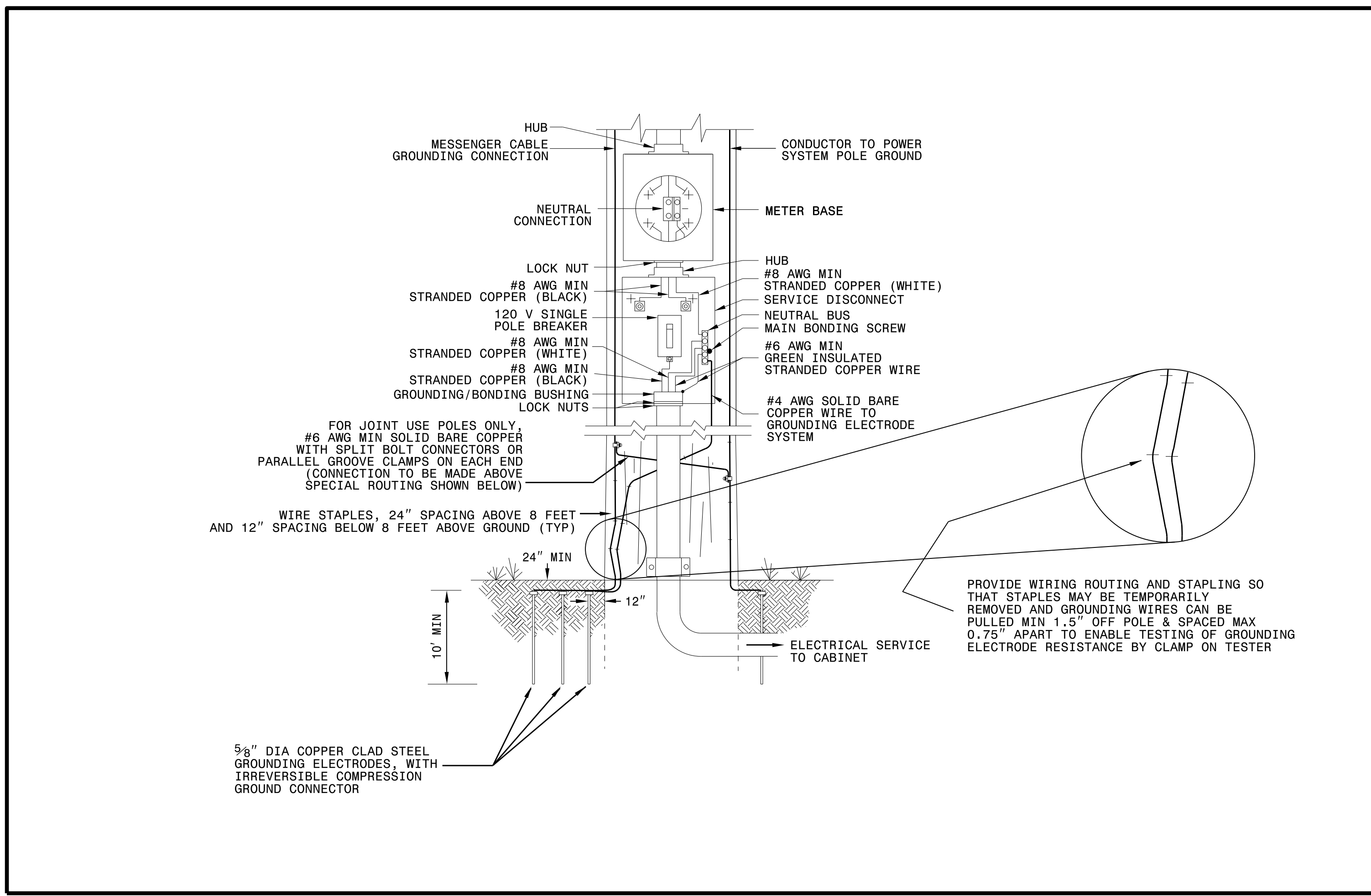
1. ON REAR OF PDA – REMOVE WIRE FROM TERM. T2-4 AND TERMINATE ON T2-2.
2. ON REAR OF PDA – REMOVE WIRE FROM TERM. T2-5 AND TERMINATE ON T2-3.
3. REMOVE FLASHER UNIT 2.

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

THIS ELECTRICAL DETAIL IS FOR
 THE SIGNAL DESIGN: 07-2148
 DESIGNED: November 2019
 SEALED: 12/17/2019
 REVISED: N/A

Electrical Detail - Sheet 2 of 2		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
ELECTRICAL AND PROGRAMMING DETAILS FOR:	SR 2033 (Arrowhead Boulevard) at Applecross Drive/ Tanger Outlet Entrance	SEAL 	
	PREPARED IN THE OFFICE OF: Accelerate Engineering, PLLC 875 Walnut Street, Suite 316 Cary, NC 27511 Tel: 919.263.5678 Fax: 919.263.5687 NC License No. P-1442	Division 7 Alamance County Mebane PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng PREPARED BY: Z. "Gavin" Teng REVIEWED BY:	SEAL ZHAOLONG TENG ENGINEER 032179 12/17/2019
REVISIONS: INIT. DATE		DocuSigned by: <i>Zhaolong Teng</i> 12/17/2019 DATE	
		SIG. INVENTORY NO. 07-2148	

\$\$\$SYTIME\$\$\$\$\$
 \$\$\$DOCSIGN\$\$\$\$\$
 \$\$\$ENVELOPE\$\$\$\$\$



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

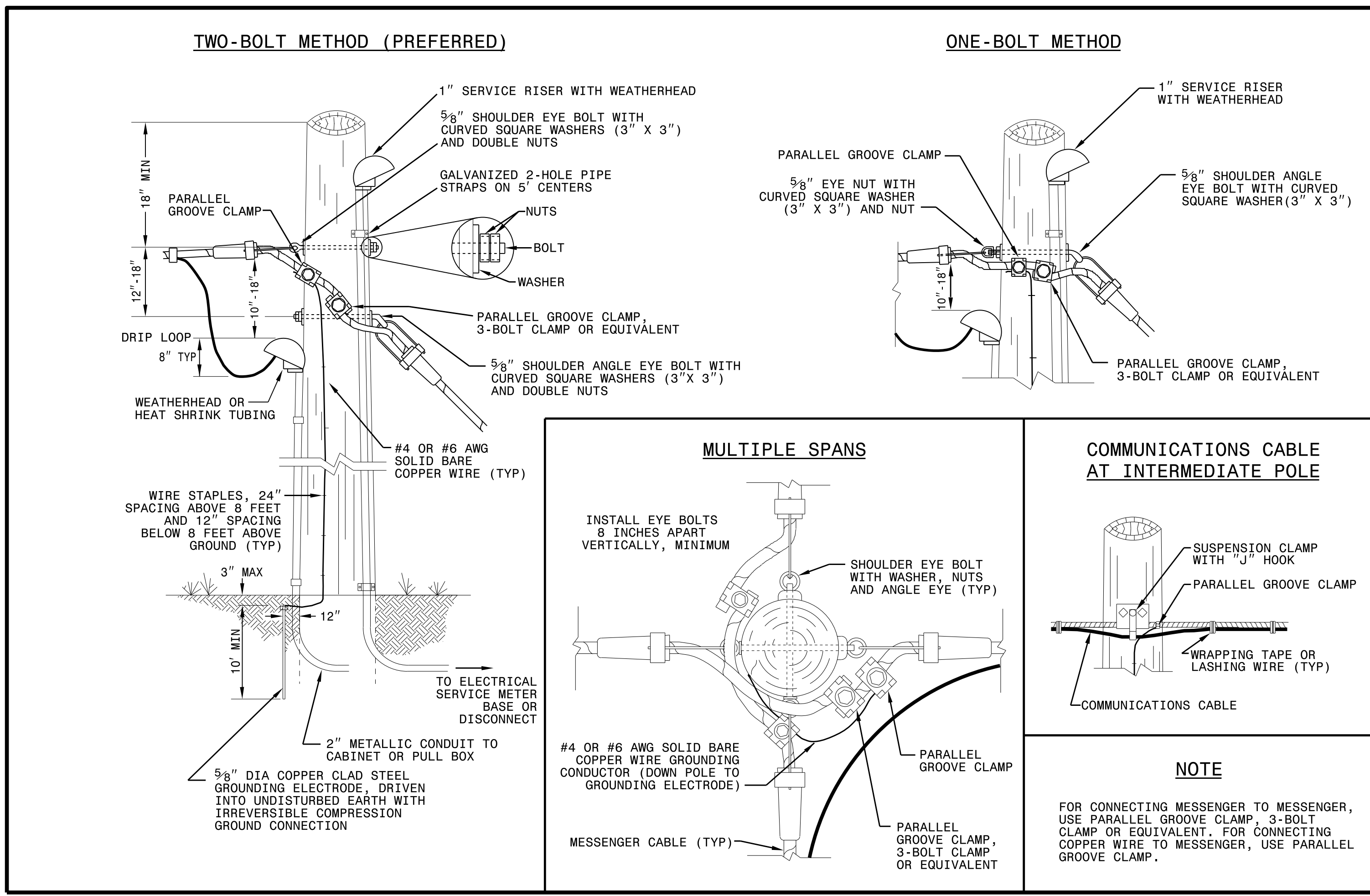
ENGLISH STANDARD DRAWING FOR

ELECTRICAL SERVICE GROUNDING

GROUNDING AND BONDING

SHEET 1 OF 1

1700D01



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

ENGLISH STANDARD DRAWING FOR

WOOD POLES

METHODS OF ATTACHMENT AND GROUNDING

SHEET 1 OF 1

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See Plate for Title

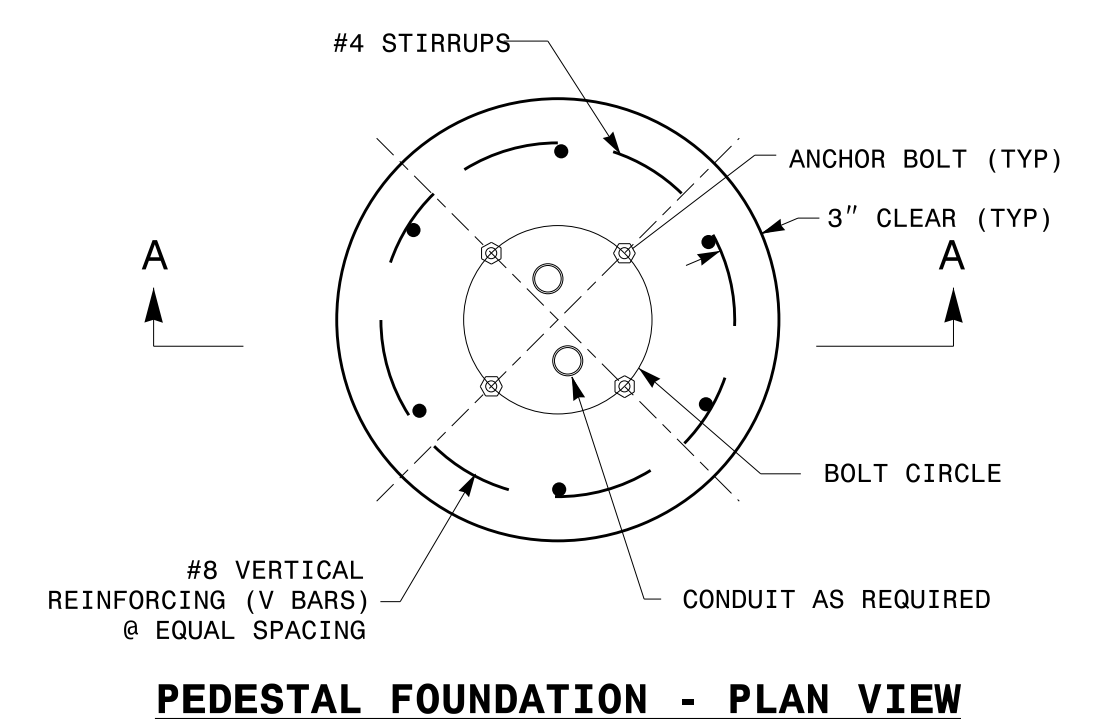
Prepared in the Offices of:

750 N. Greenfield Parkway
 Garner, NC 27529

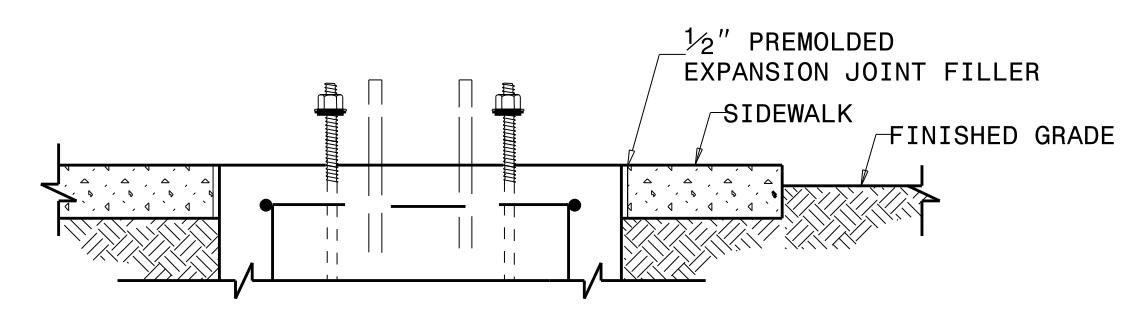
SEAL

DocuSigned by:
 Mohd Aslami

10/11/2017
 DATE



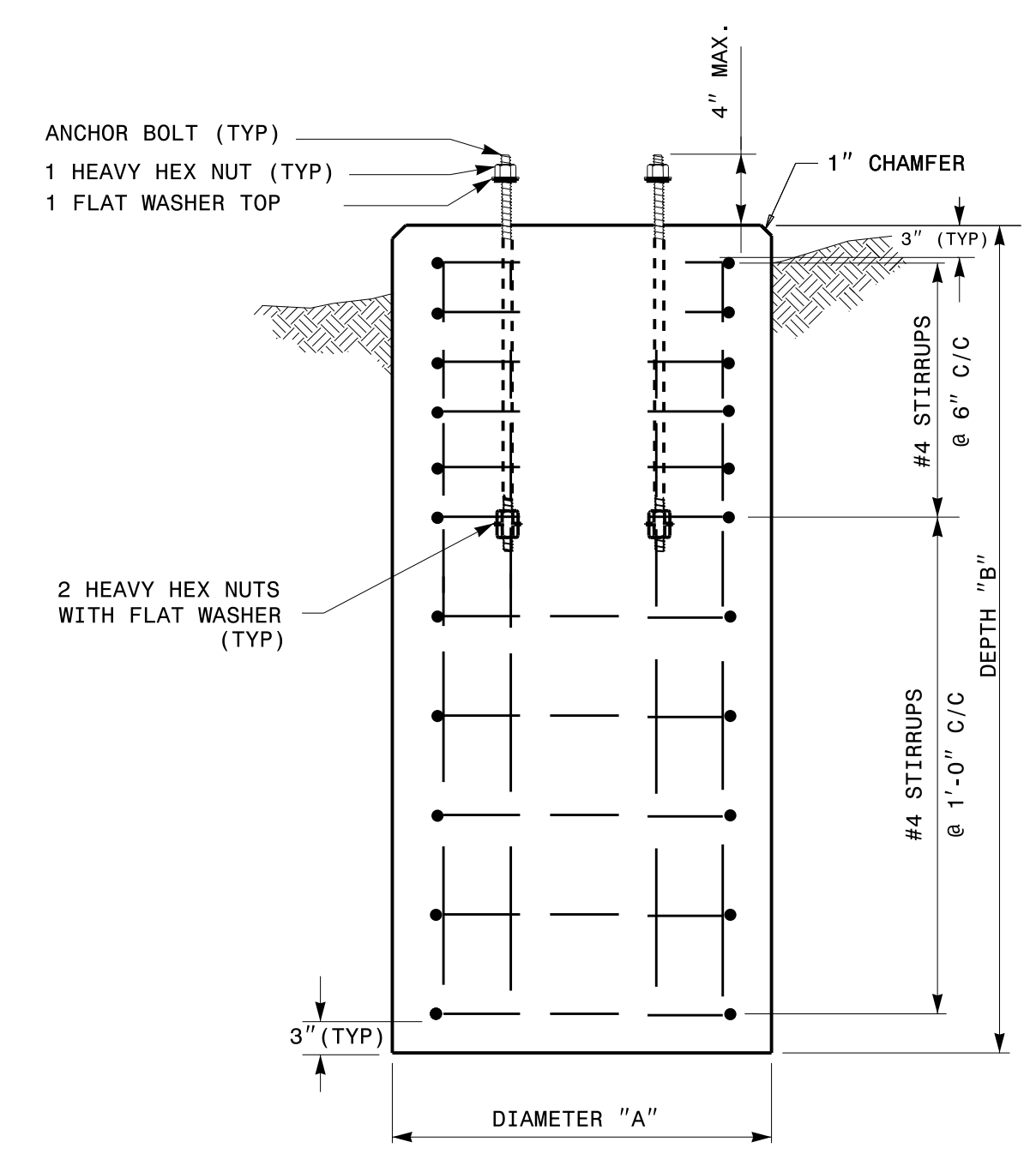
PEDESTAL FOUNDATION - PLAN VIEW



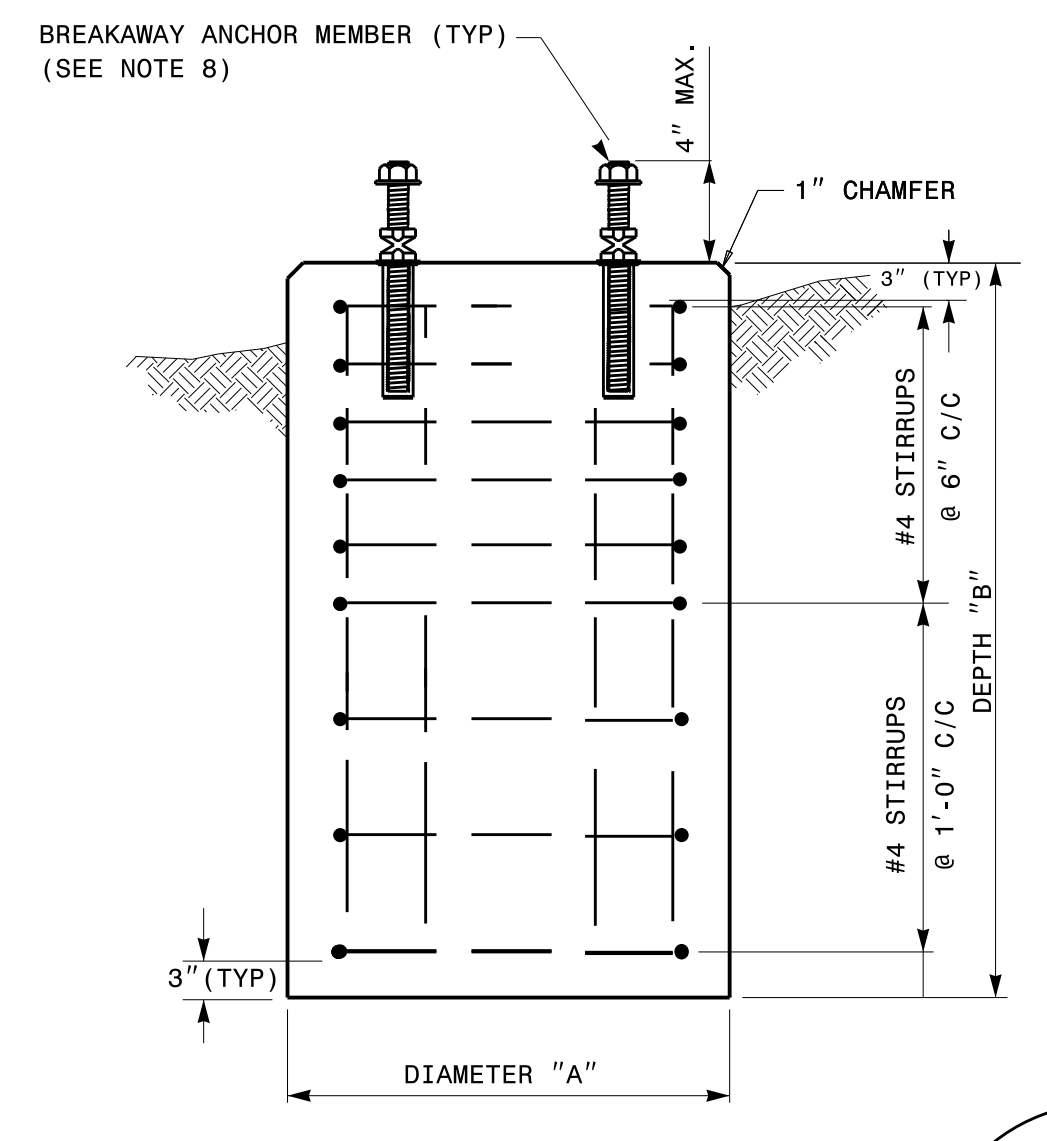
PEDESTAL FOUNDATION DETAILS FOR SIDEWALK

NOTES:

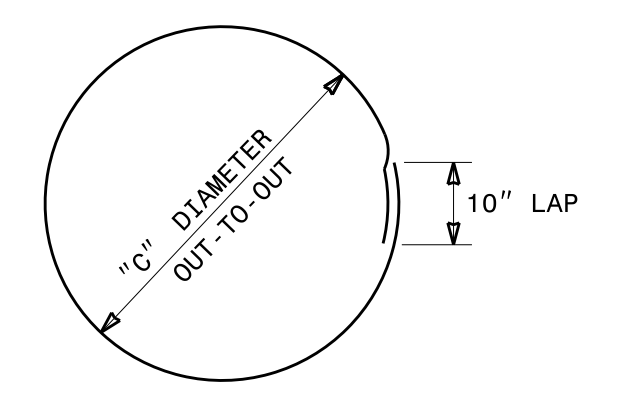
- CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
- COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
- USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION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



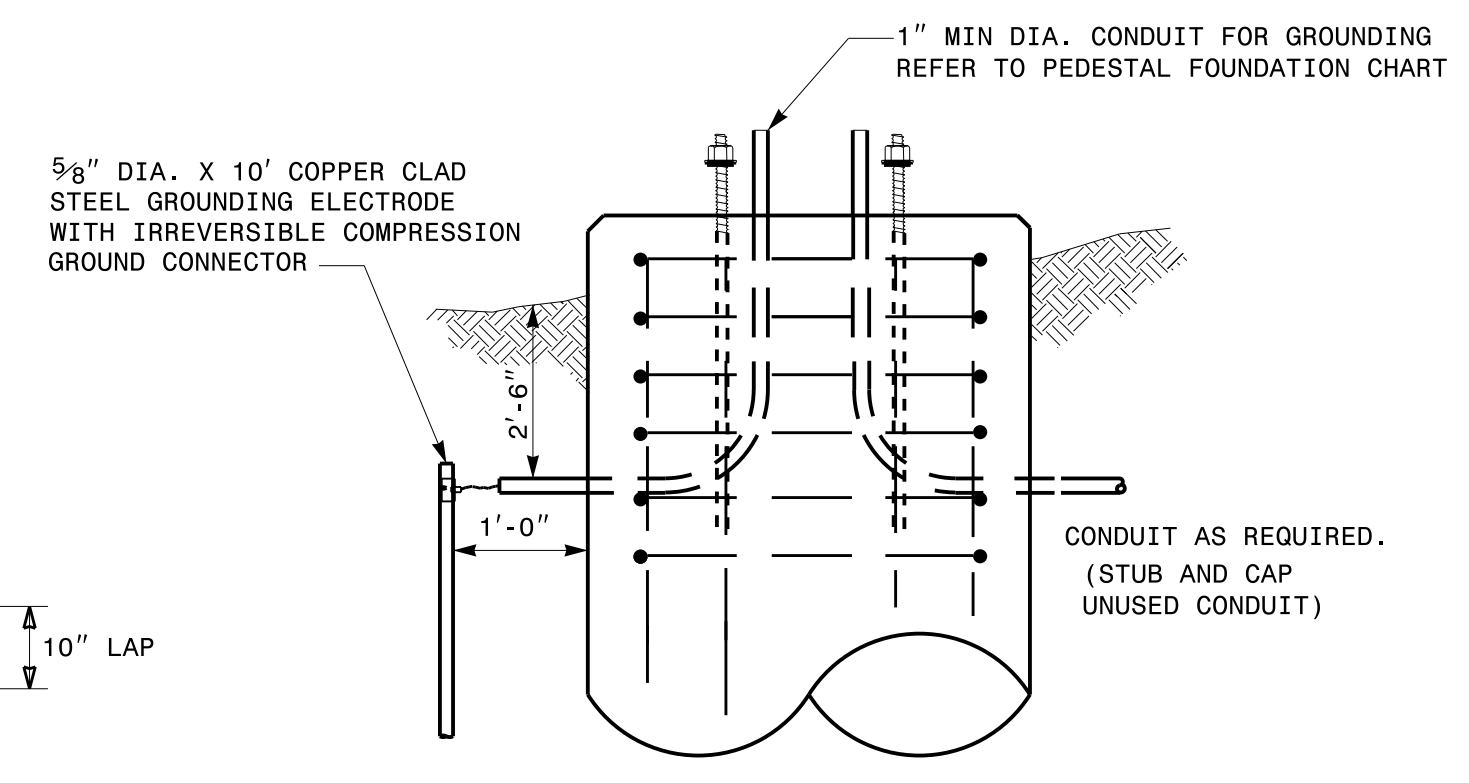
TYPES I, II & III SECTION A-A



TYPES I & II ONLY SECTION A-A



CLOSED HOOPS



GROUNDING & CONDUIT DETAIL

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

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

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

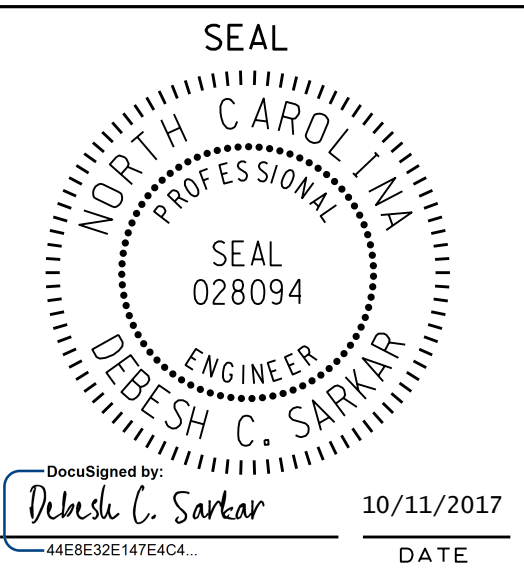
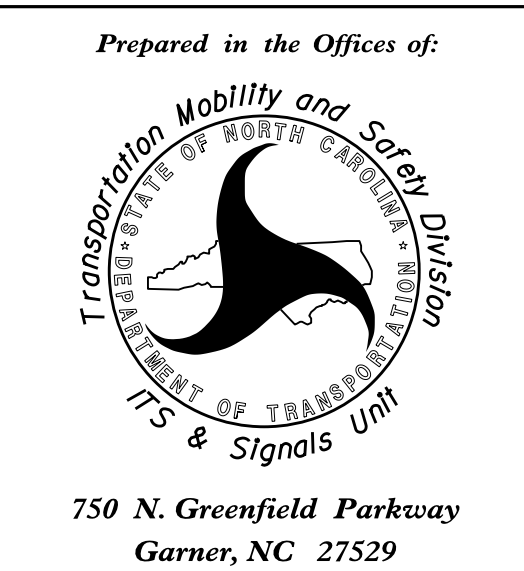
ENGLISH STANDARD DRAWING FOR
PEDESTALS
 FOUNDATIONS

SHEET 1 OF 1
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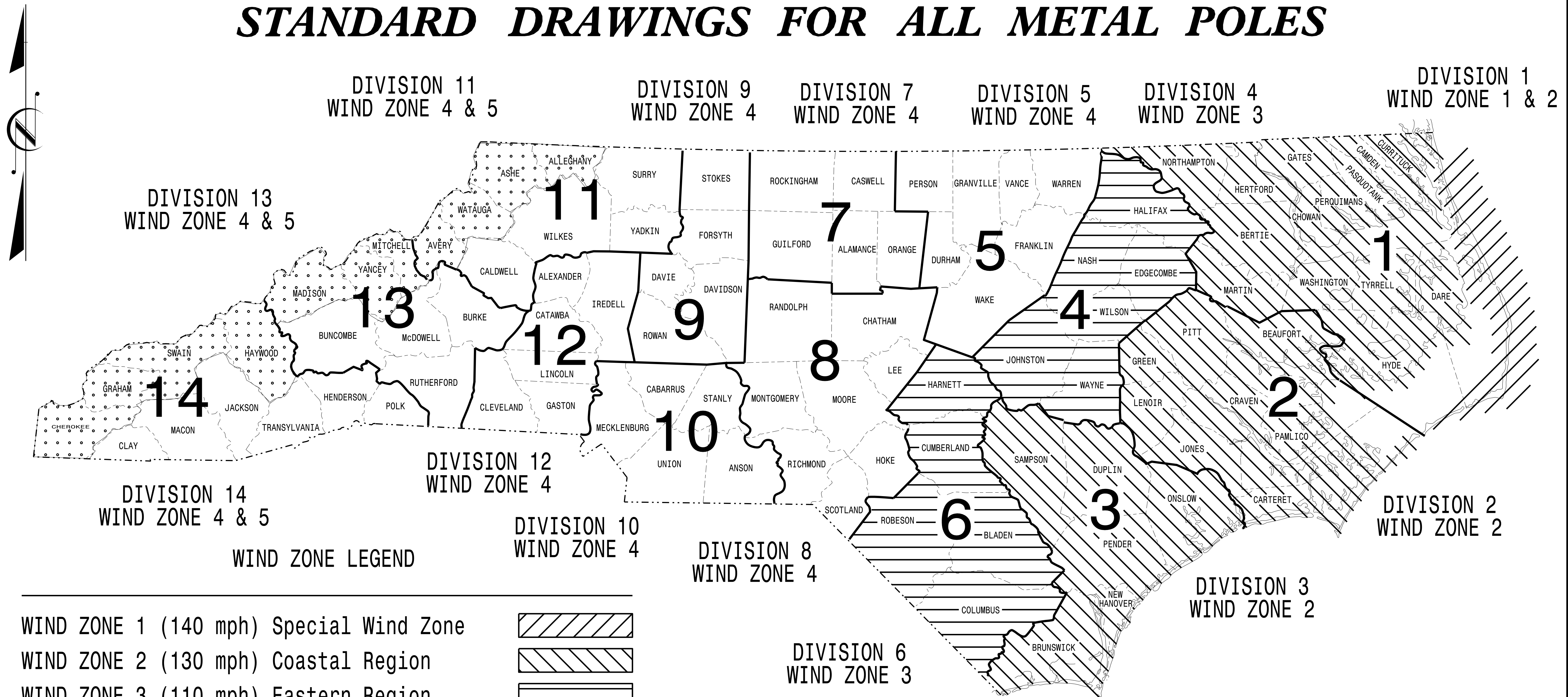
See Plate for Title



STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT I.D. NO.	SHEET NO.
I-5711	Sig.M1

STANDARD DRAWINGS FOR ALL METAL POLES

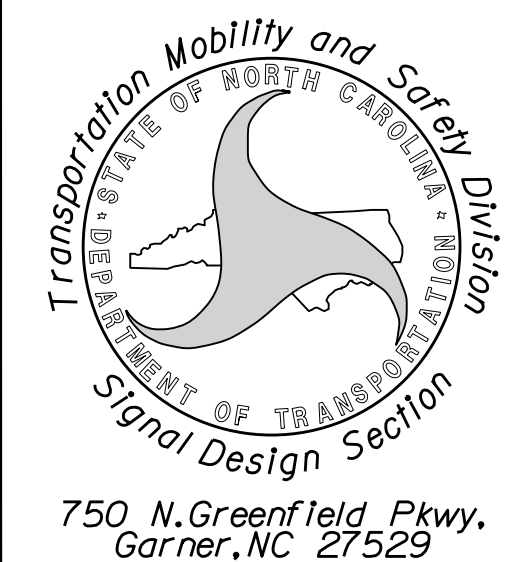


WIND ZONE LEGEND

WIND ZONE 1 (140 mph) Special Wind Zone	
WIND ZONE 2 (130 mph) Coastal Region	
WIND ZONE 3 (110 mph) Eastern Region	
WIND ZONE 4 (90 mph) Central & Mtn. Region	
WIND ZONE 5 (120 mph) Special Wind Zone	

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

Prepared In the Offices of:



Designed in conformance
with the latest
2015 Interim to the
6th Edition 2013
AASHTO
Standard Specifications for
Structural Supports for
Highway Signs, Luminaires,
and Traffic Signals

DRAWING NUMBER	DESCRIPTION
Sig. M 1	Statewide Wind Zone Map
Sig. M 2	Typical Fabrication Details-All Metal Poles
Sig. M 3	Typical Fabrication Details-Strain Poles
Sig. M 4	Typical Fabrication Details-Mast Arm Poles
Sig. M 5	Typical Fabrication Details-Mast Arm Connection
Sig. M 6	Typical Fabrication Details-Strain Pole Attachments
Sig. M 7	Construction Details-Foundations
Sig. M 8	Standard Strain Pole Foundation-All Soil Conditions

NC DOT CONTACTS:

MOBILITY AND SAFETY DIVISION - ITS AND SIGNALS UNIT

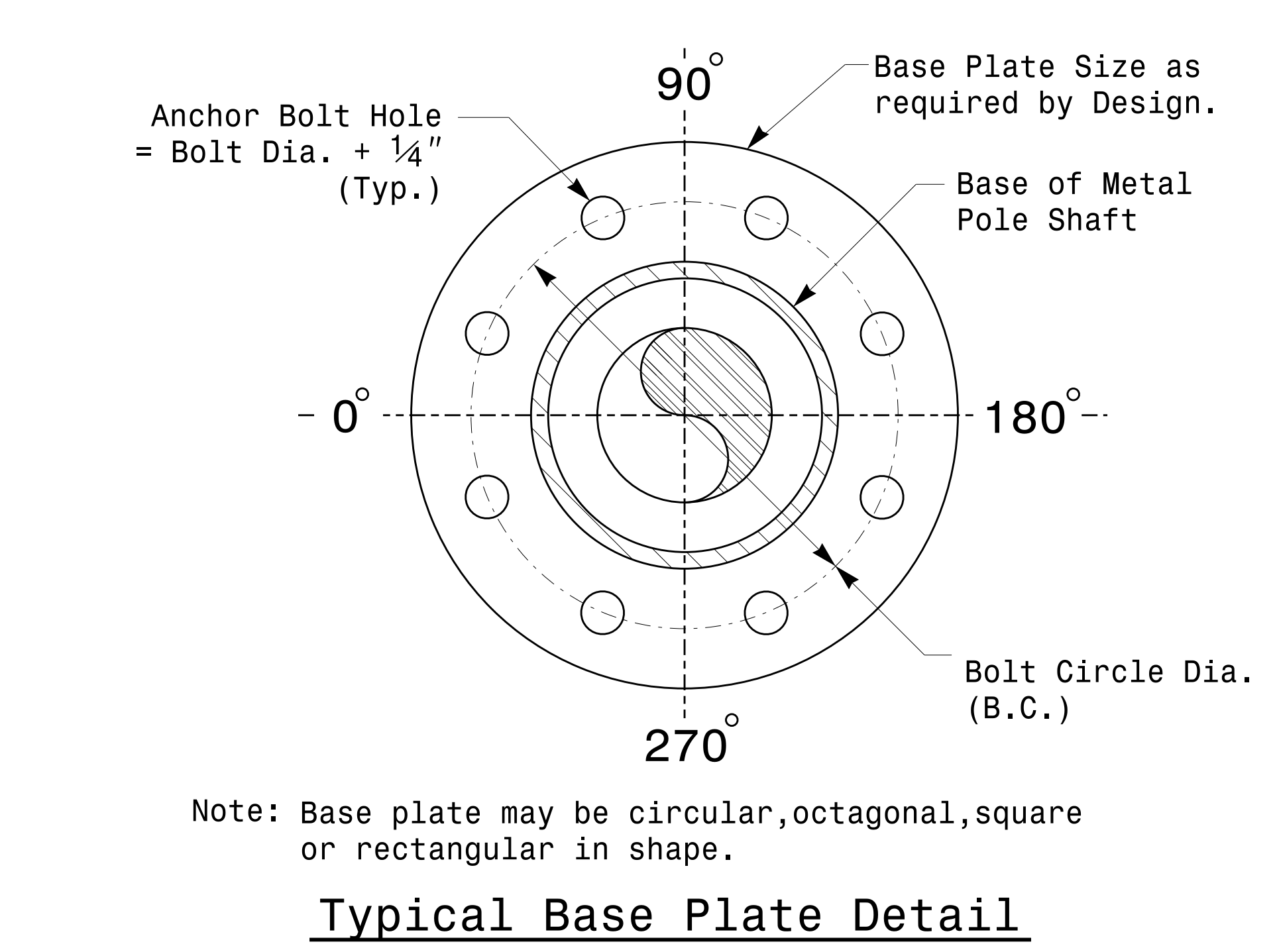
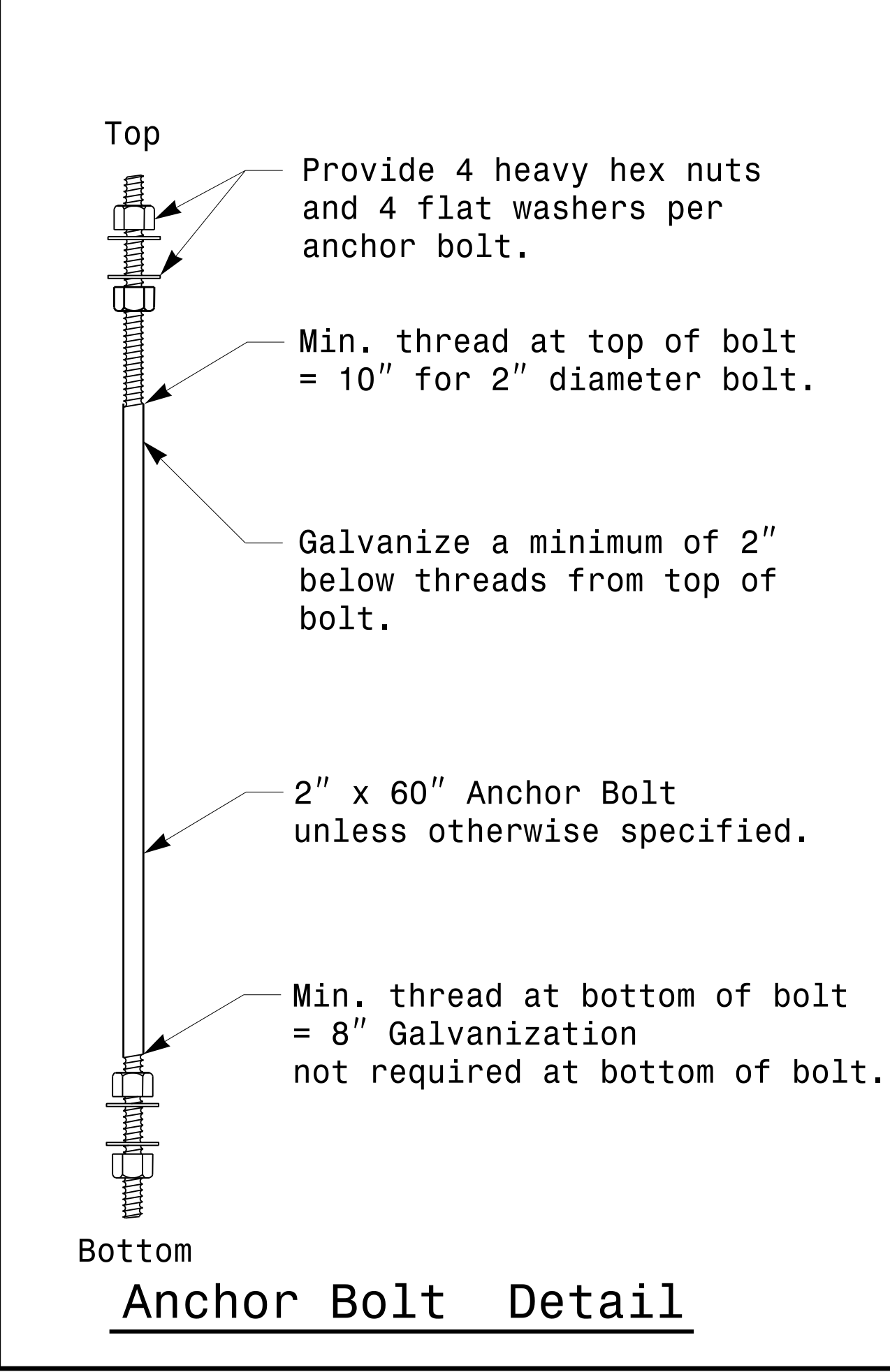
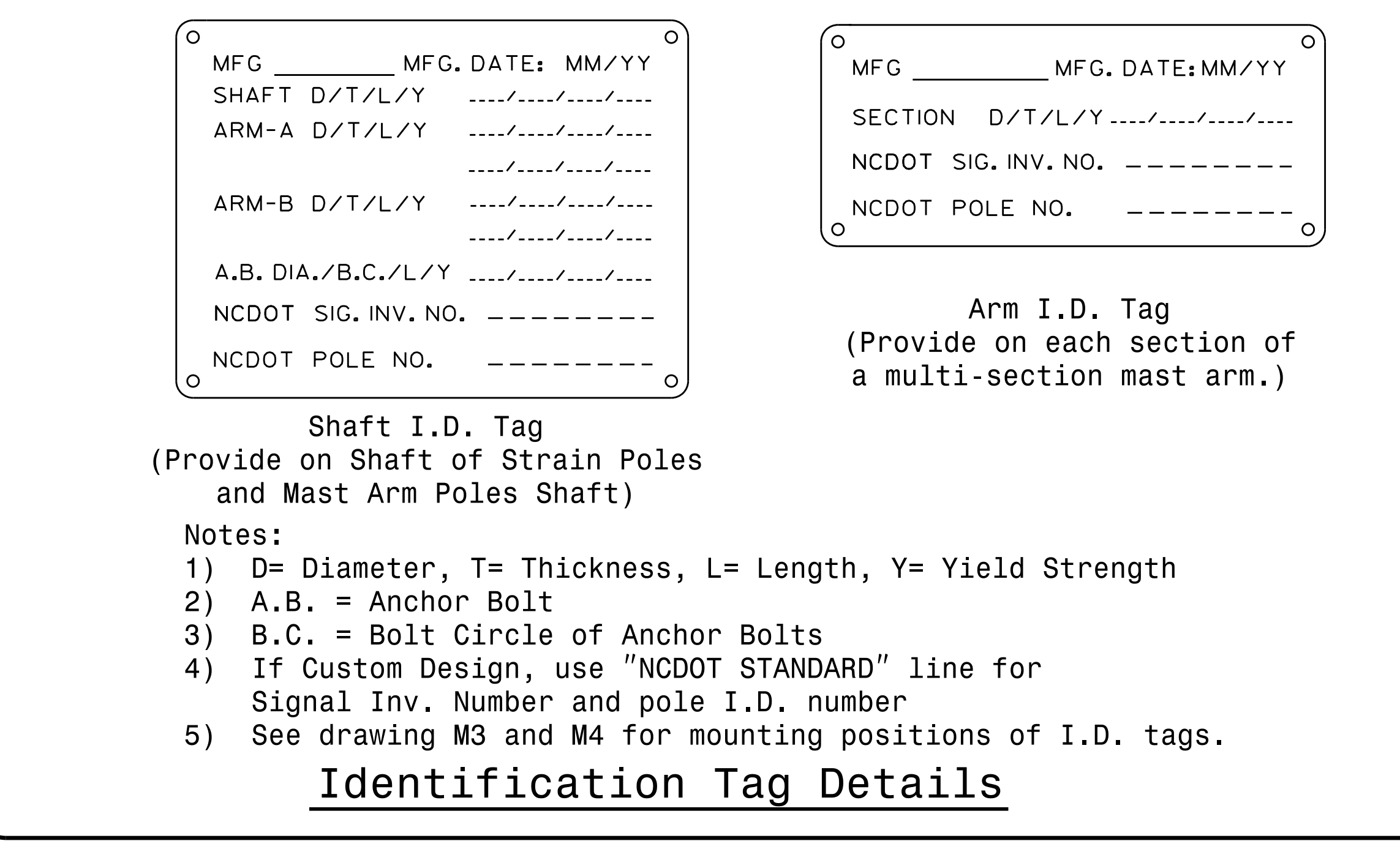
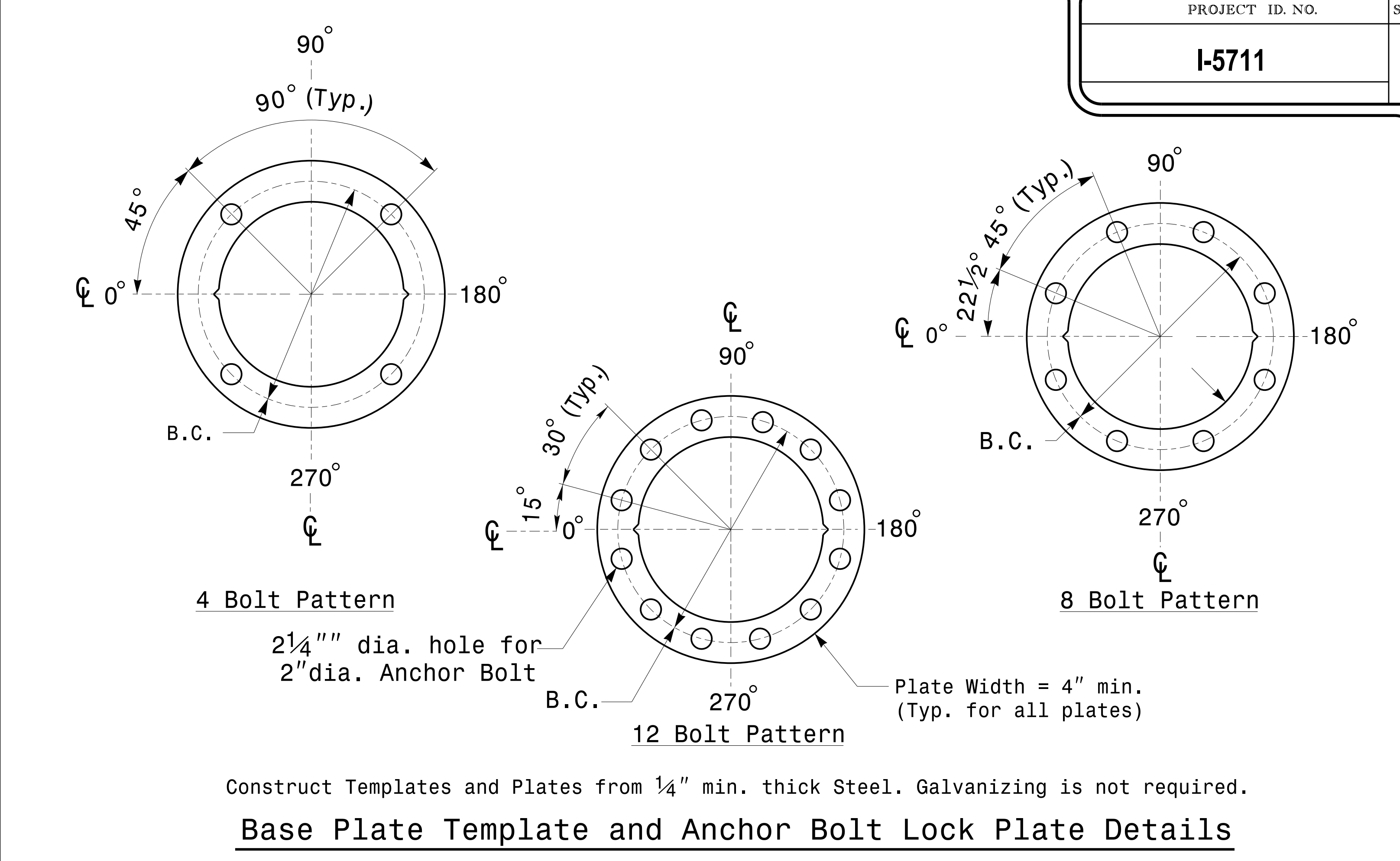
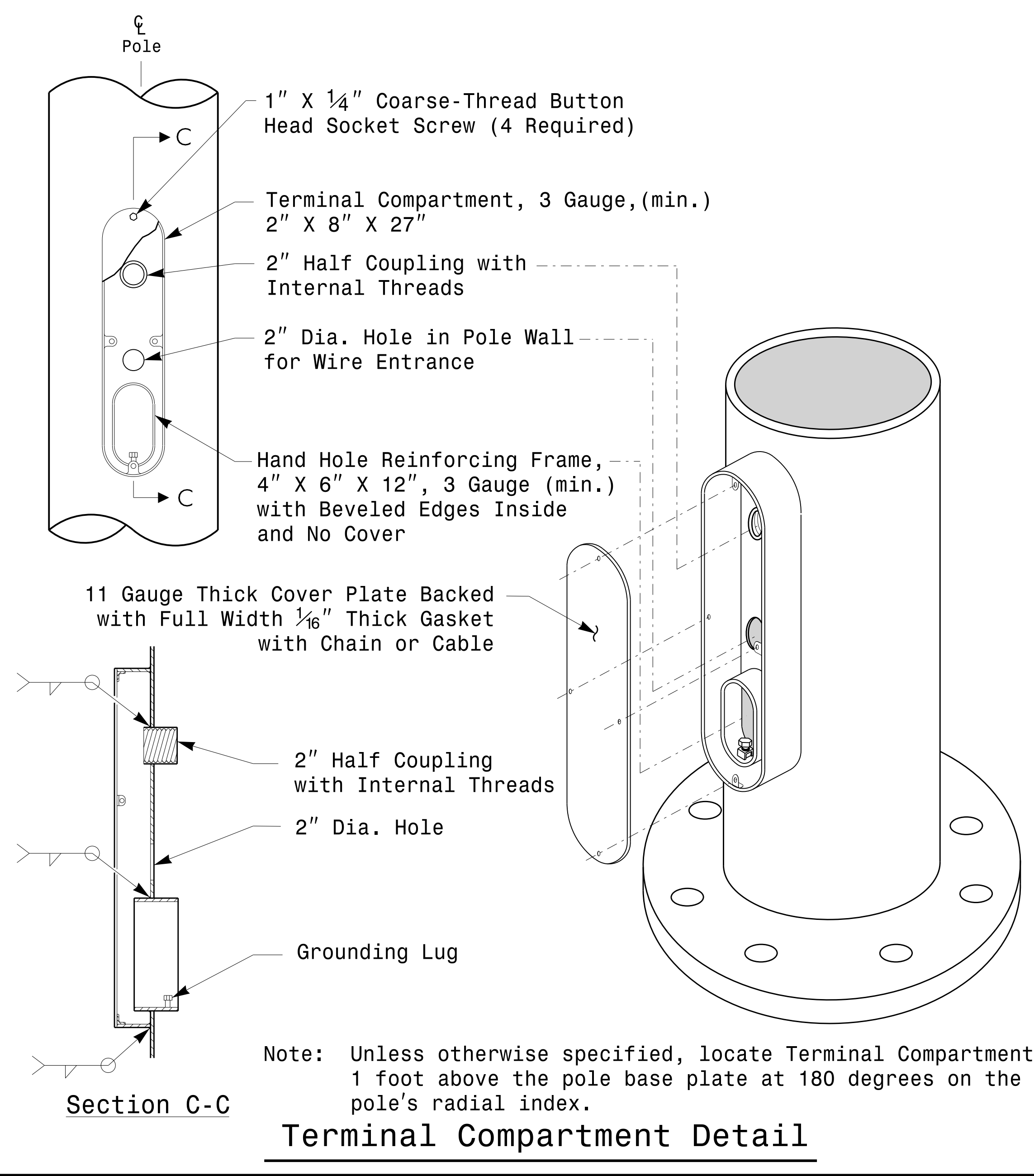
M.M. MCDIARMID, P.E. - STATE ITS AND SIGNALS ENGINEER

J.P. GALLOWAY, P.E. - STATE SIGNALS ENGINEER

D.C. SARKAR, P.E. - ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER

SEAL

DocuSigned by:
Debesh C. Sarkar
DATE: 10/11/2017

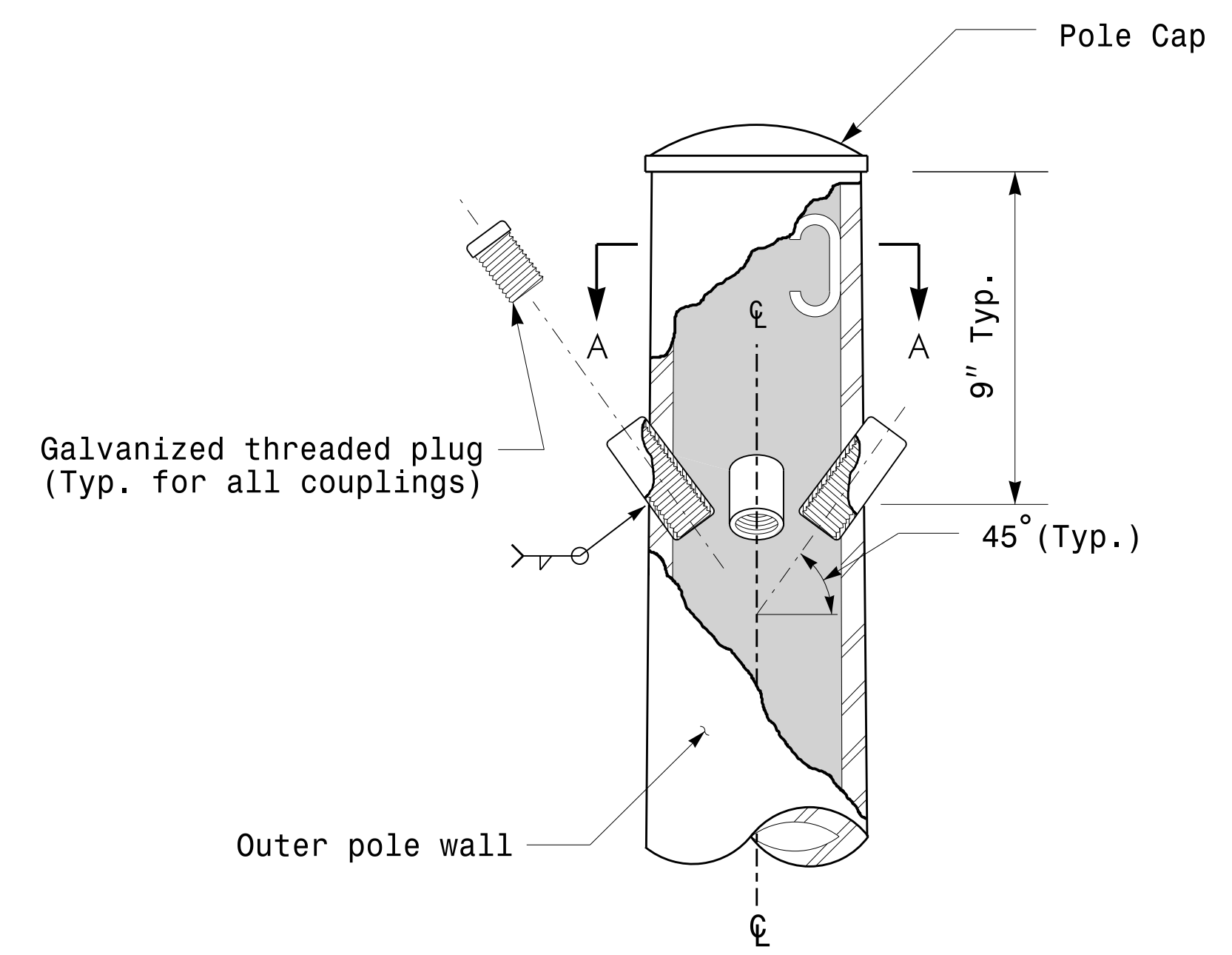


	Typical Fabrication Details For All Metal Poles		
	PLAN DATE: OCTOBER 2017 DESIGNED BY: C.F. ANDREWS	PREPARED BY: N. BITTING REVIEWED BY: D.C. SARKAR	
750 N. Greenfield Pkwy, Garner, NC 27529			DocuSigned by: <i>Dinesh C. Sarkar</i> 44E8E328

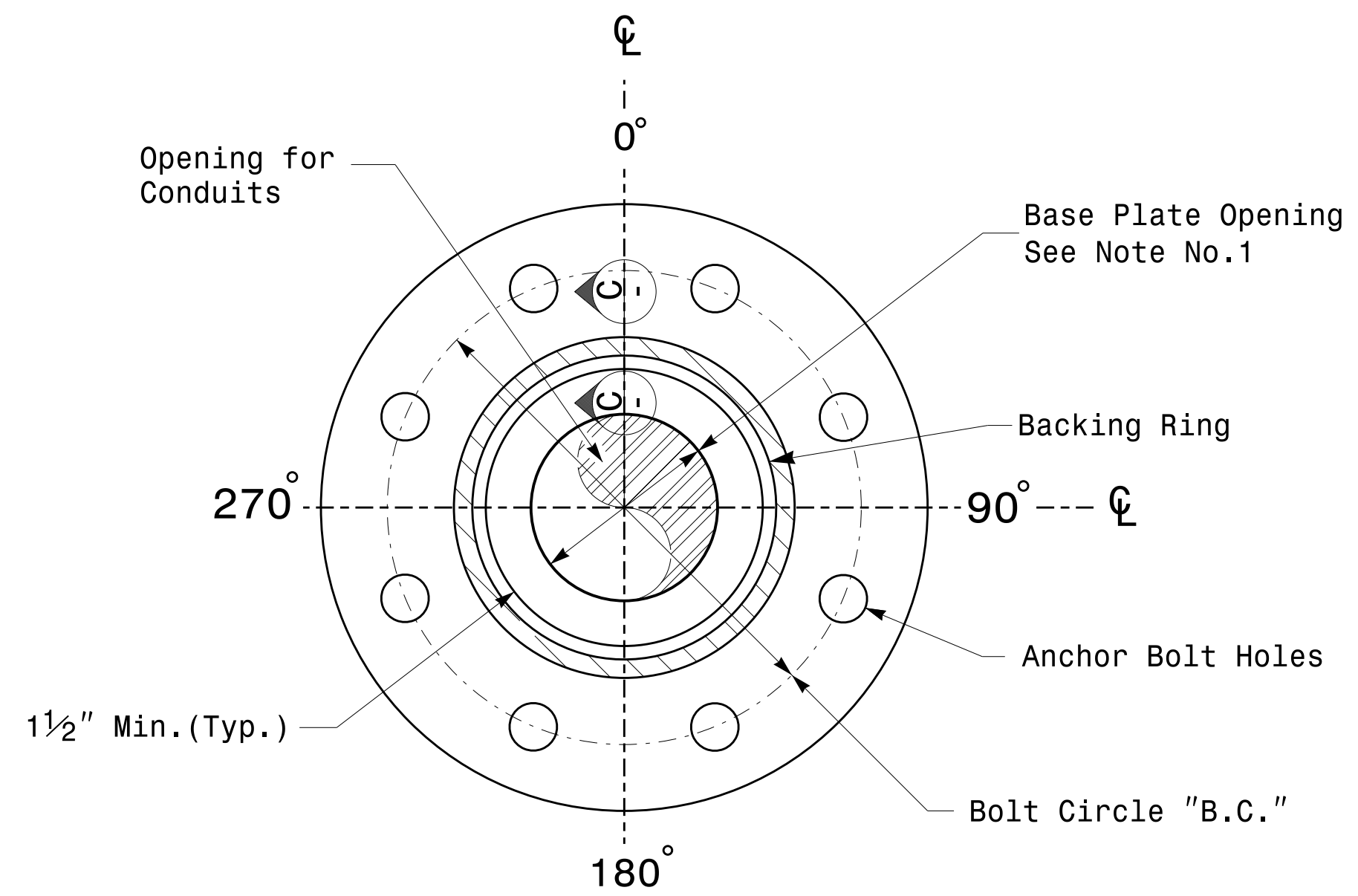
10/11/2017 DATE

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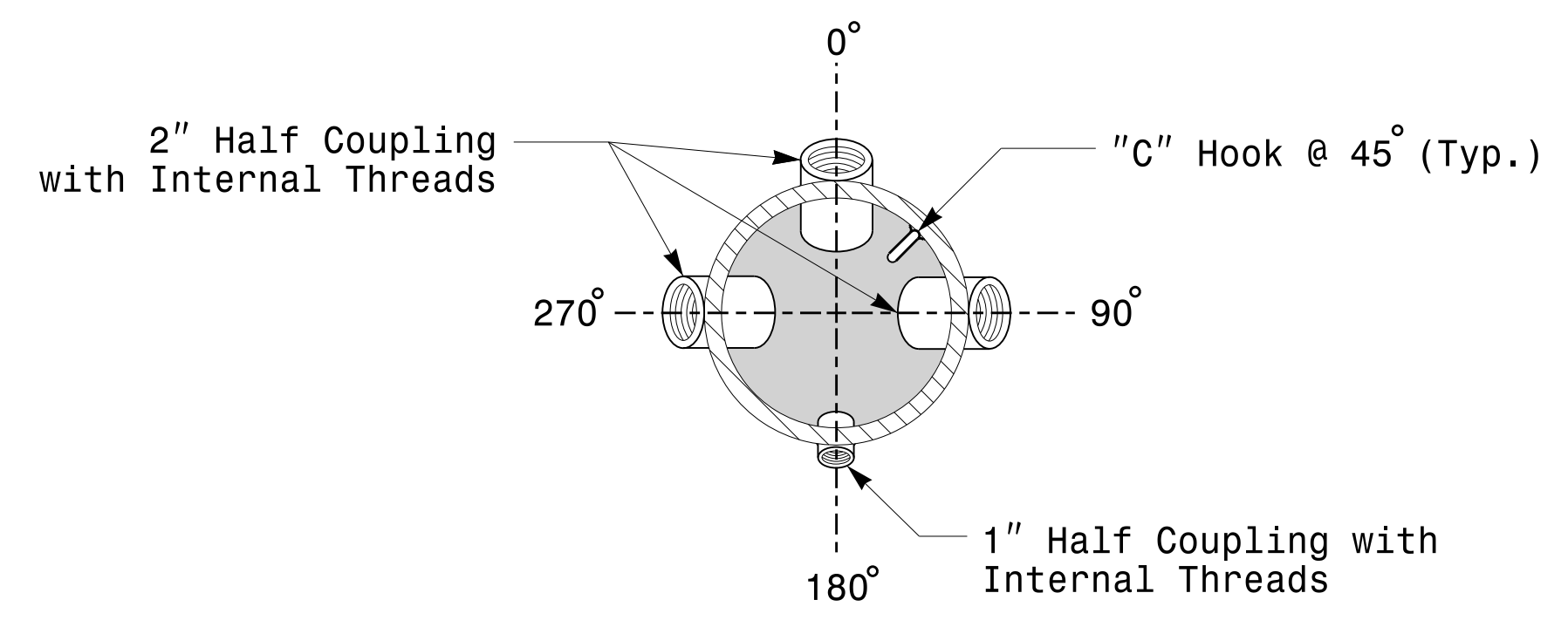
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



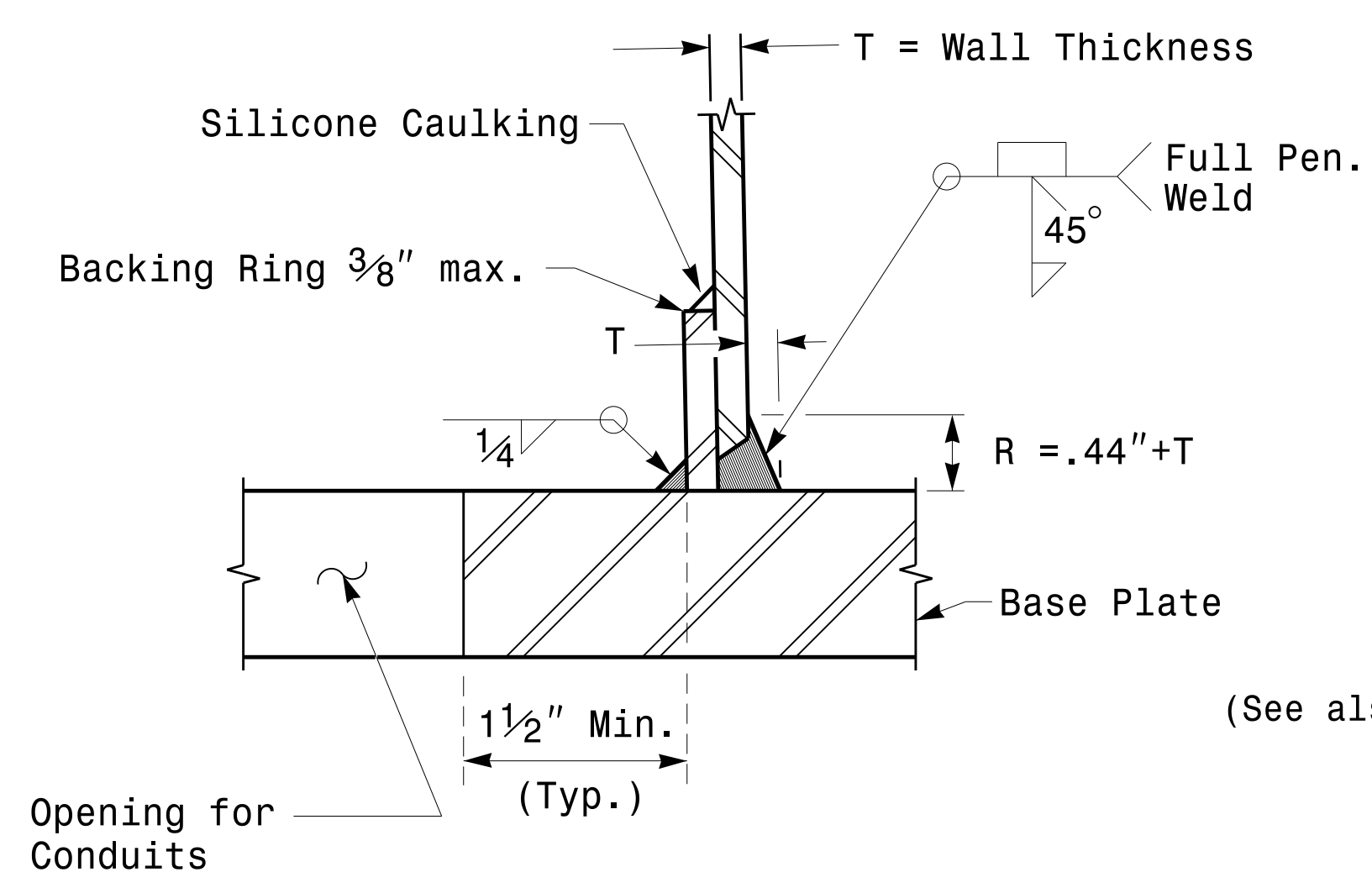
Cable Entrances at Top of Pole



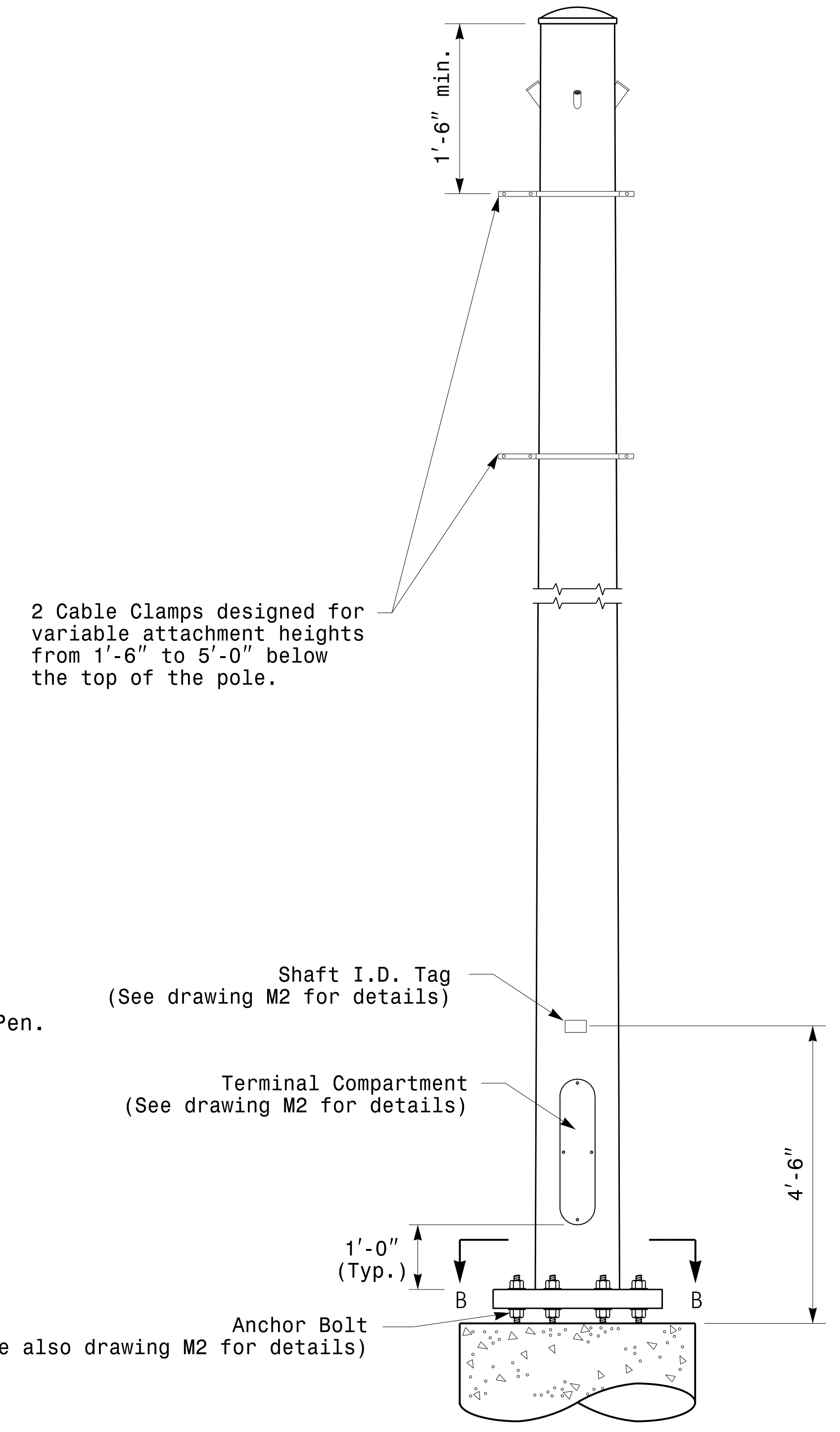
Section B-B
Pole Base Plate Details
(8 and 12 Bolt Pattern)



Section A-A
Radial Orientation for Factory Installed
Accessories at Top of Pole



Section C-C
(Pole Attachment to Base Plate)
Full-Penetration
Groove Weld Detail



Monotube Strain Pole

Prepared in the Offices of:

 750 N. Greenleaf Pkwy, Garner, NC 27529

Typical Fabrication Details For Strain Poles			
PLAN DATE:	OCTOBER 2017	DESIGNED BY:	K.C. DURIGON
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR
REVISIONS	INIT.	DATE	

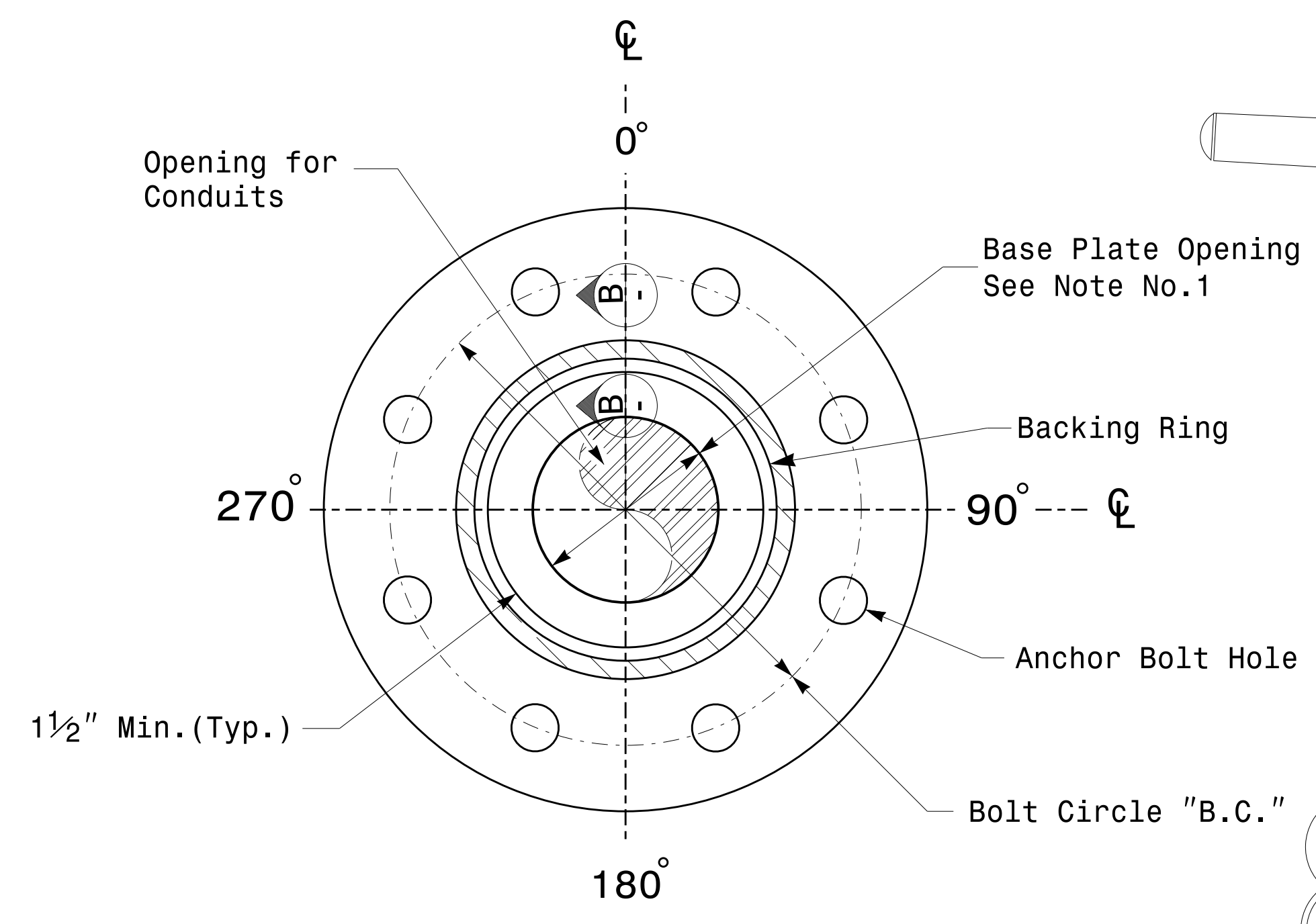
SEAL

 DocuSigned by:
 Debesh C. Sarkar
 44EBE7816FA4F49E
 10/11/2017
 DATE

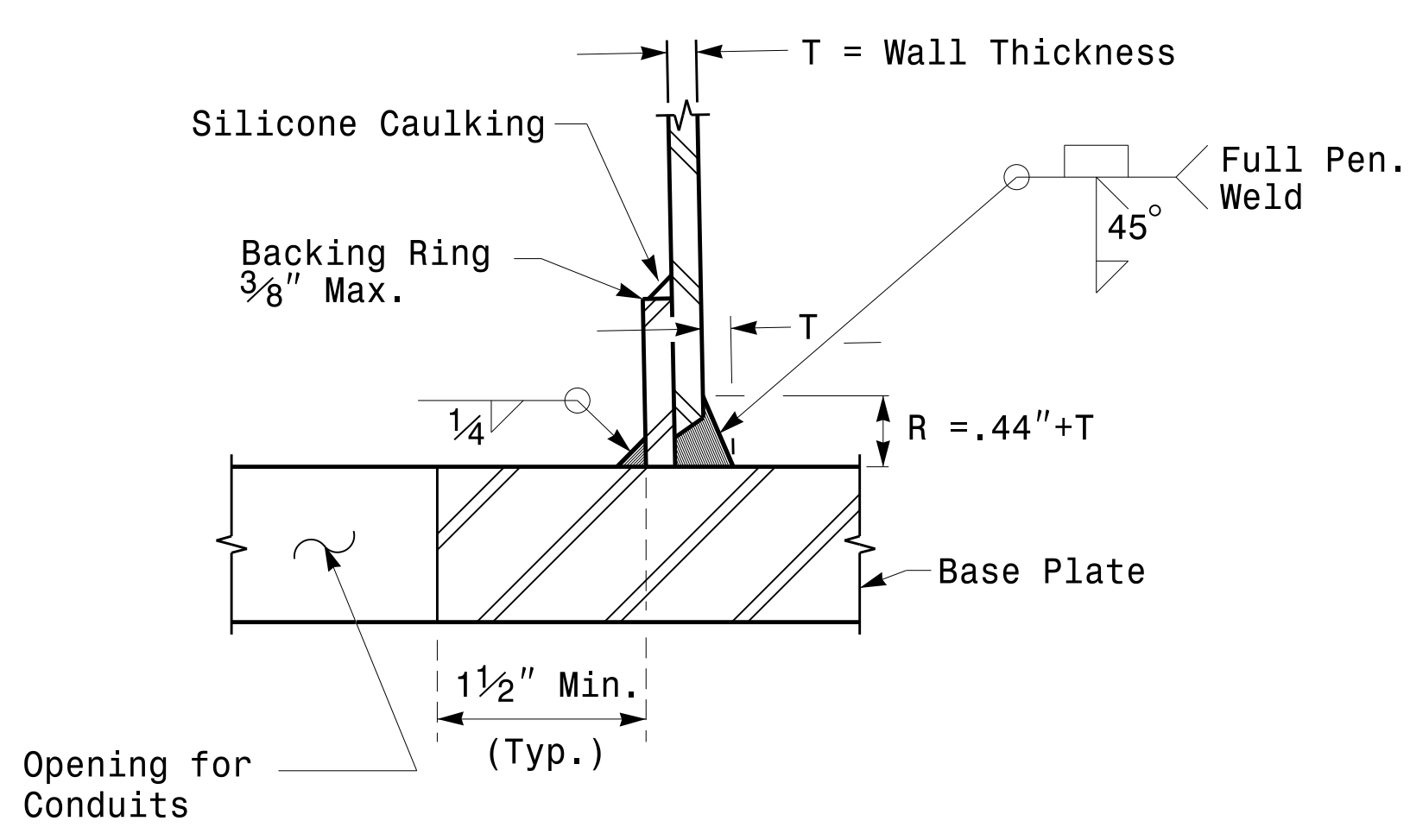
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 P1:1/2/2017

Fabrication Details – Strain Poles

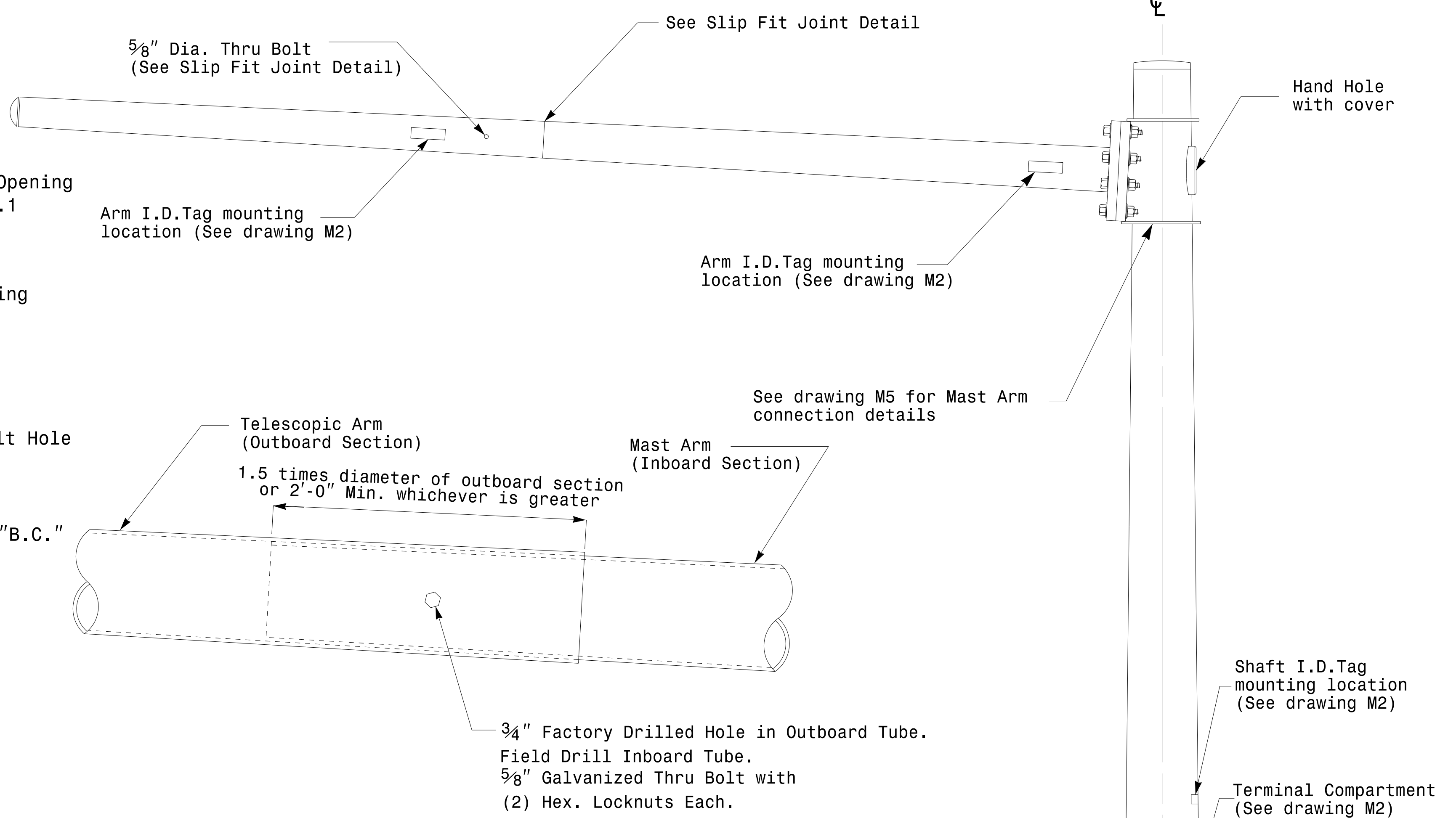
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



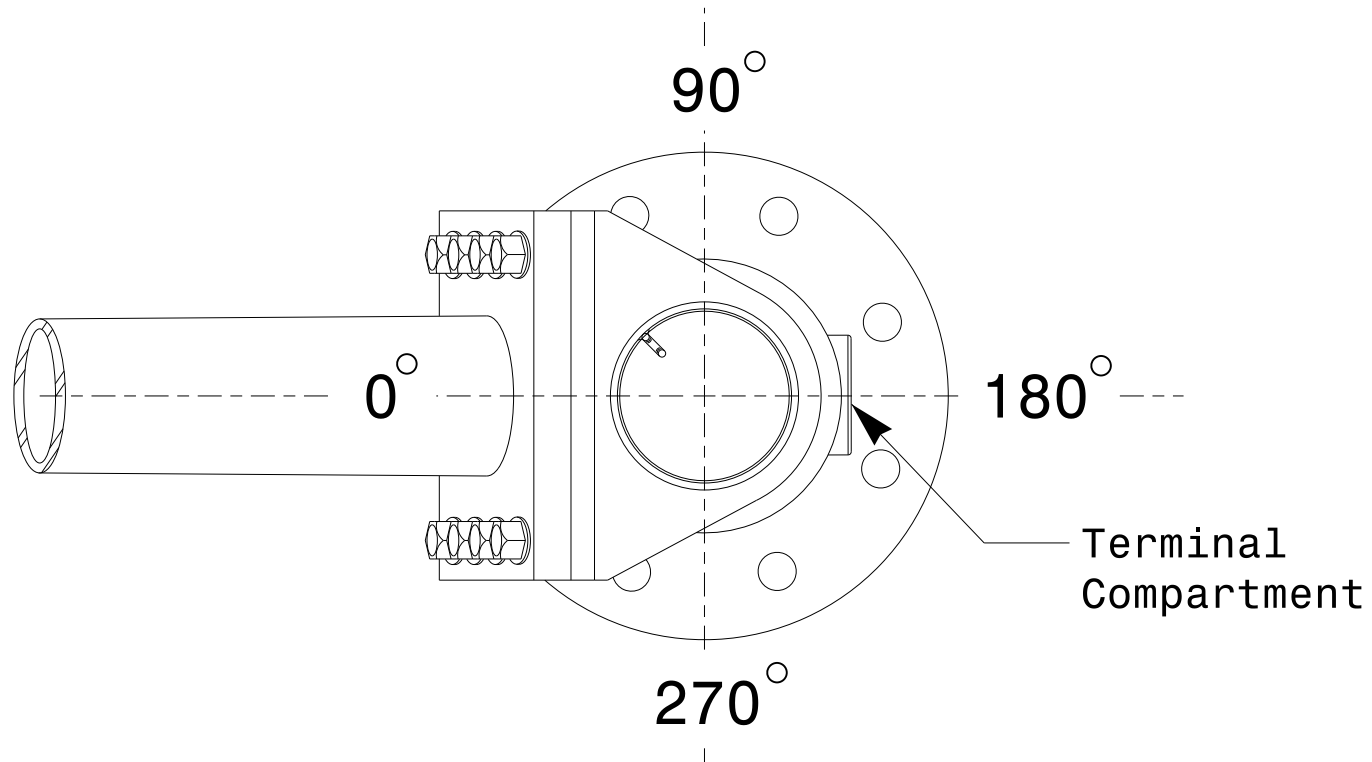
Section A-A
Pole Base Plate Details



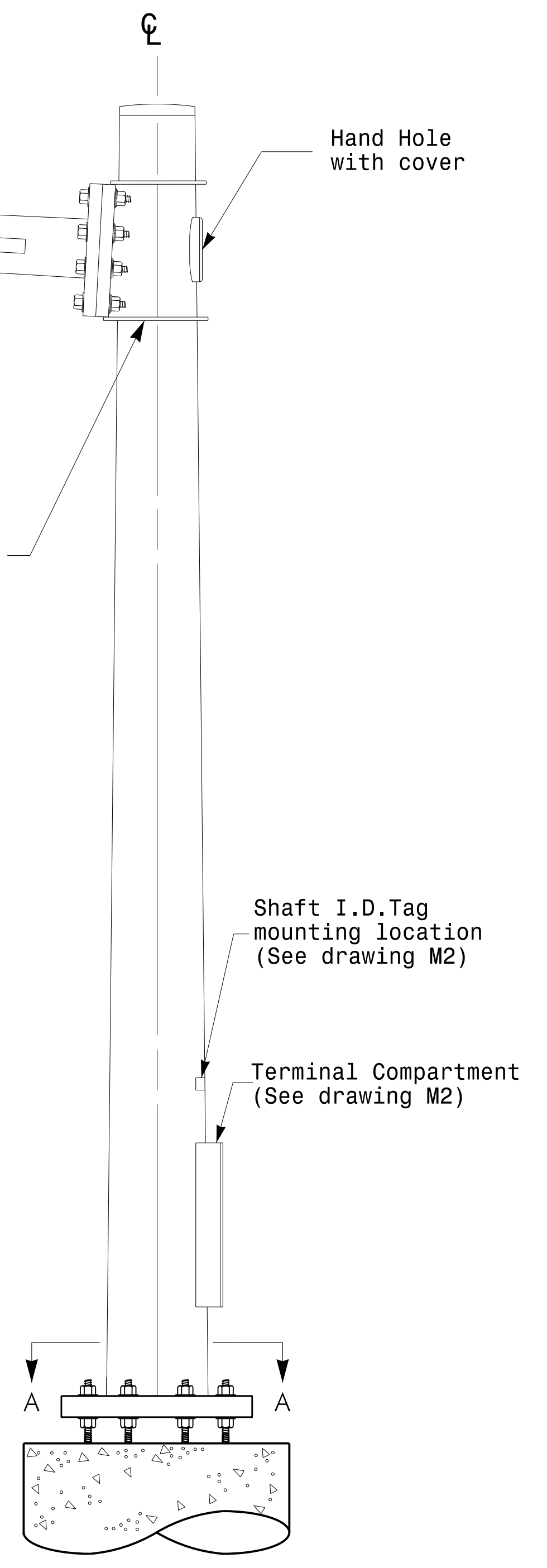
Section B-B
 (Pole Attachment to Base Plate)
Full-Penetration Groove Weld Detail



Slip Fit Joint Detail for Mast Arm



Mast Arm Radial Orientation



Mast Arm Pole

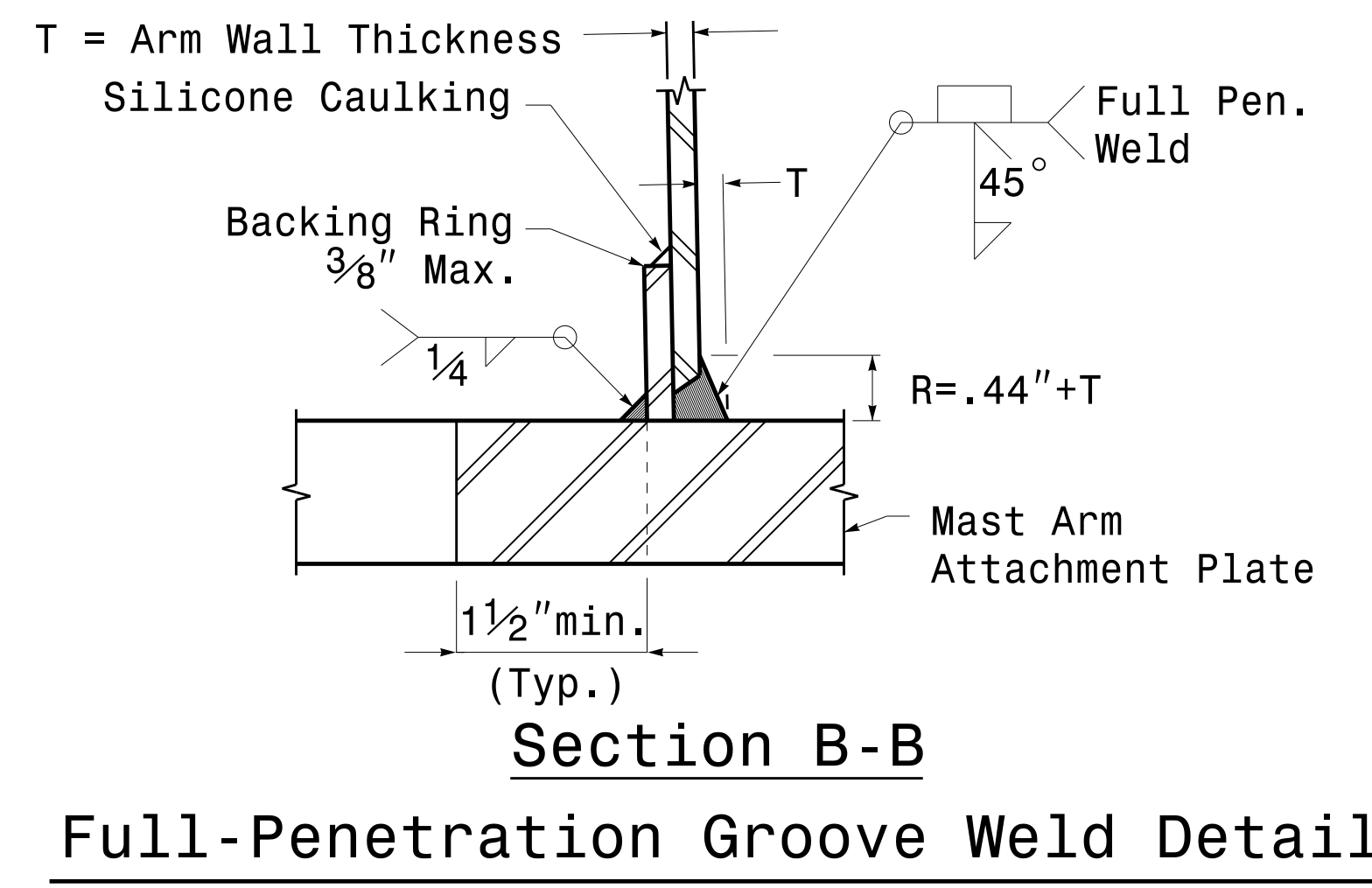
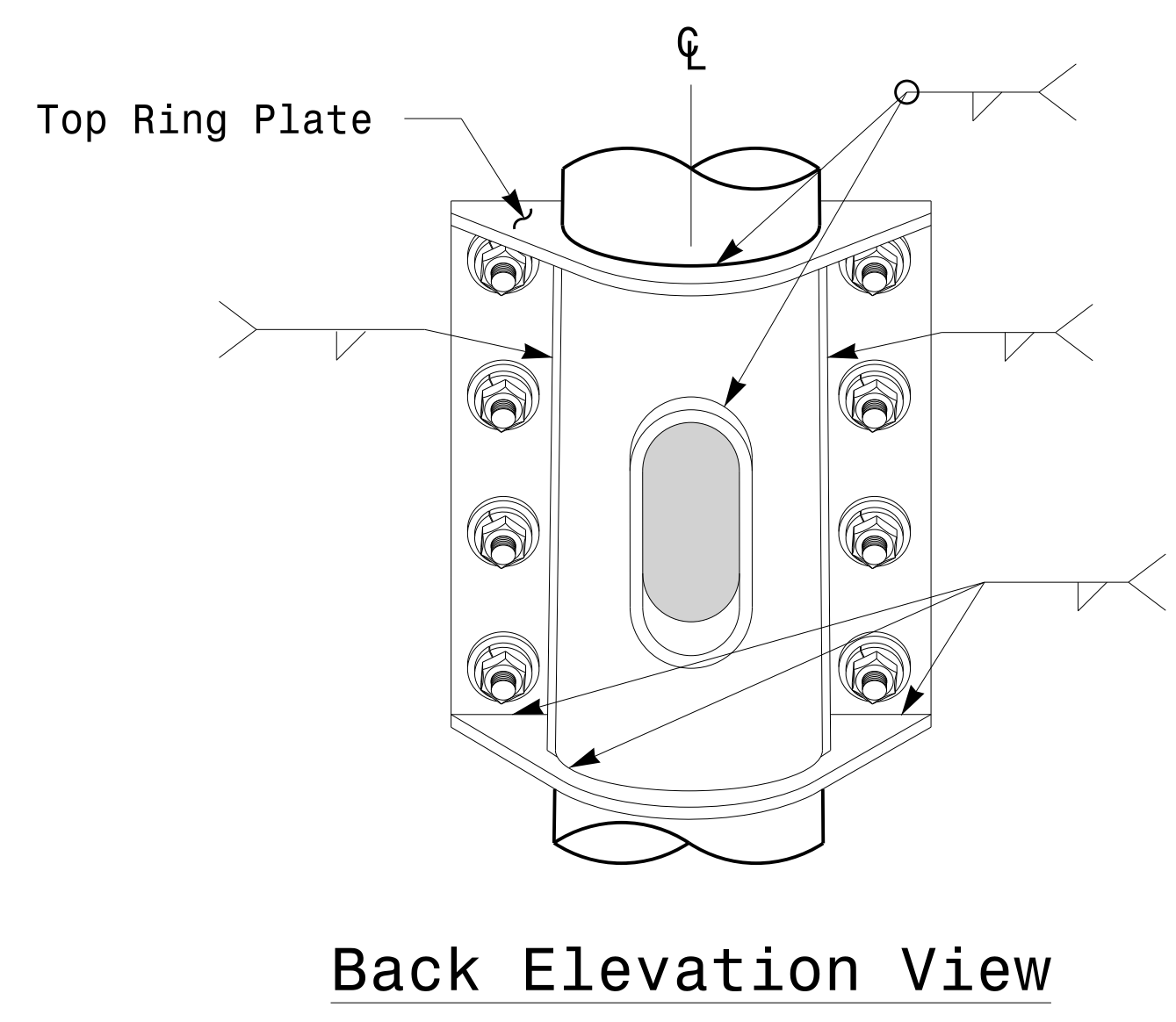
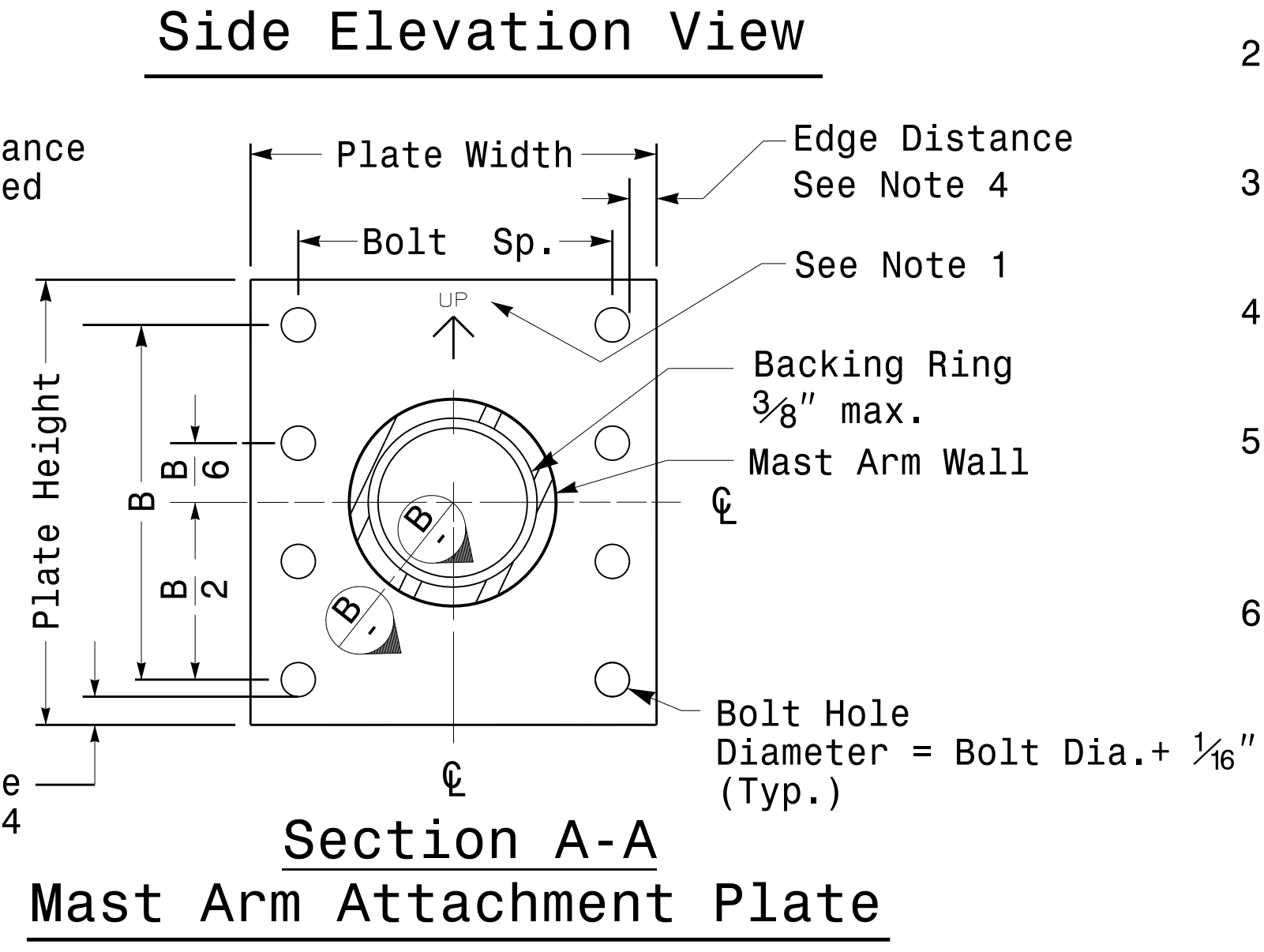
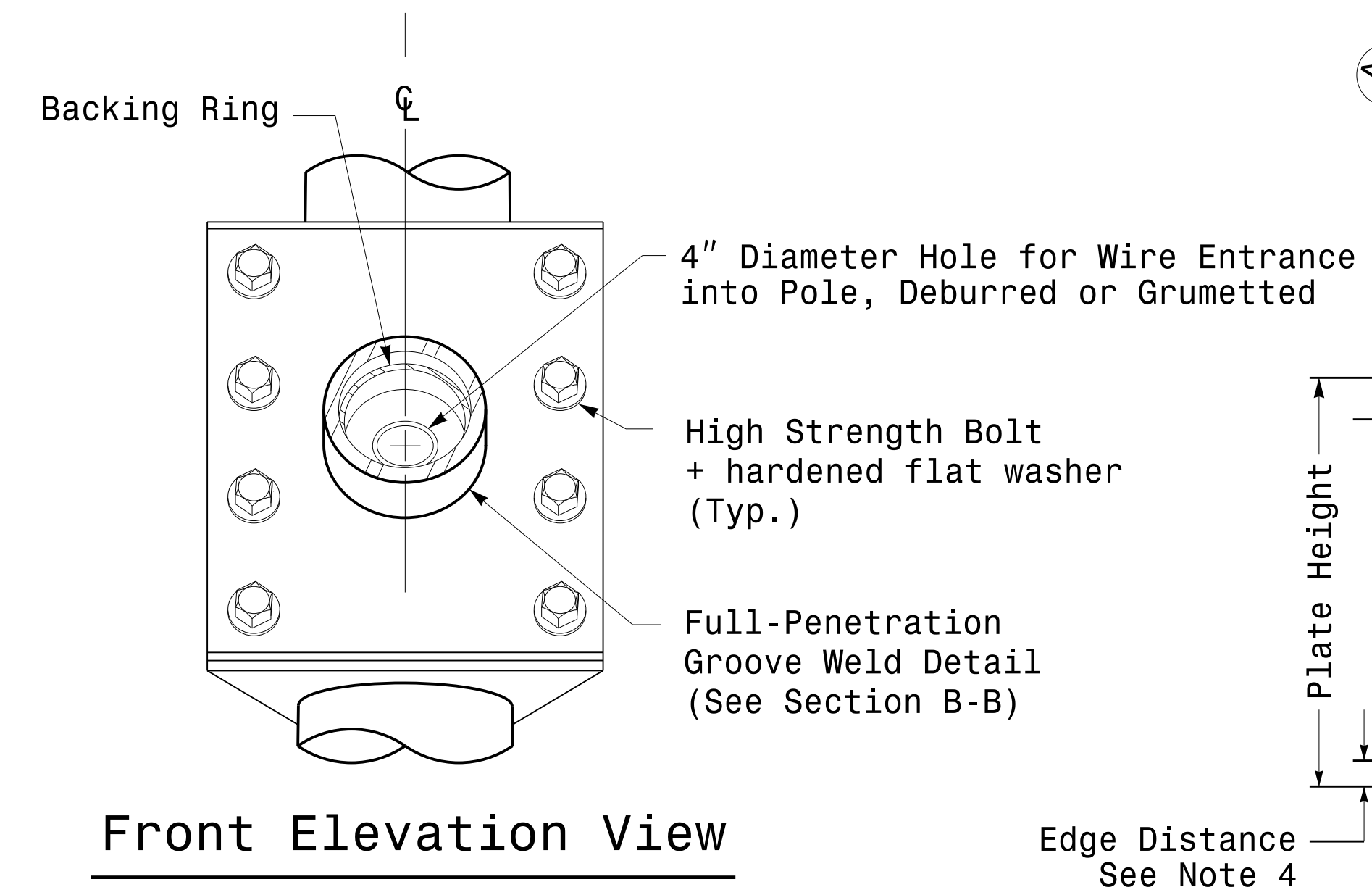
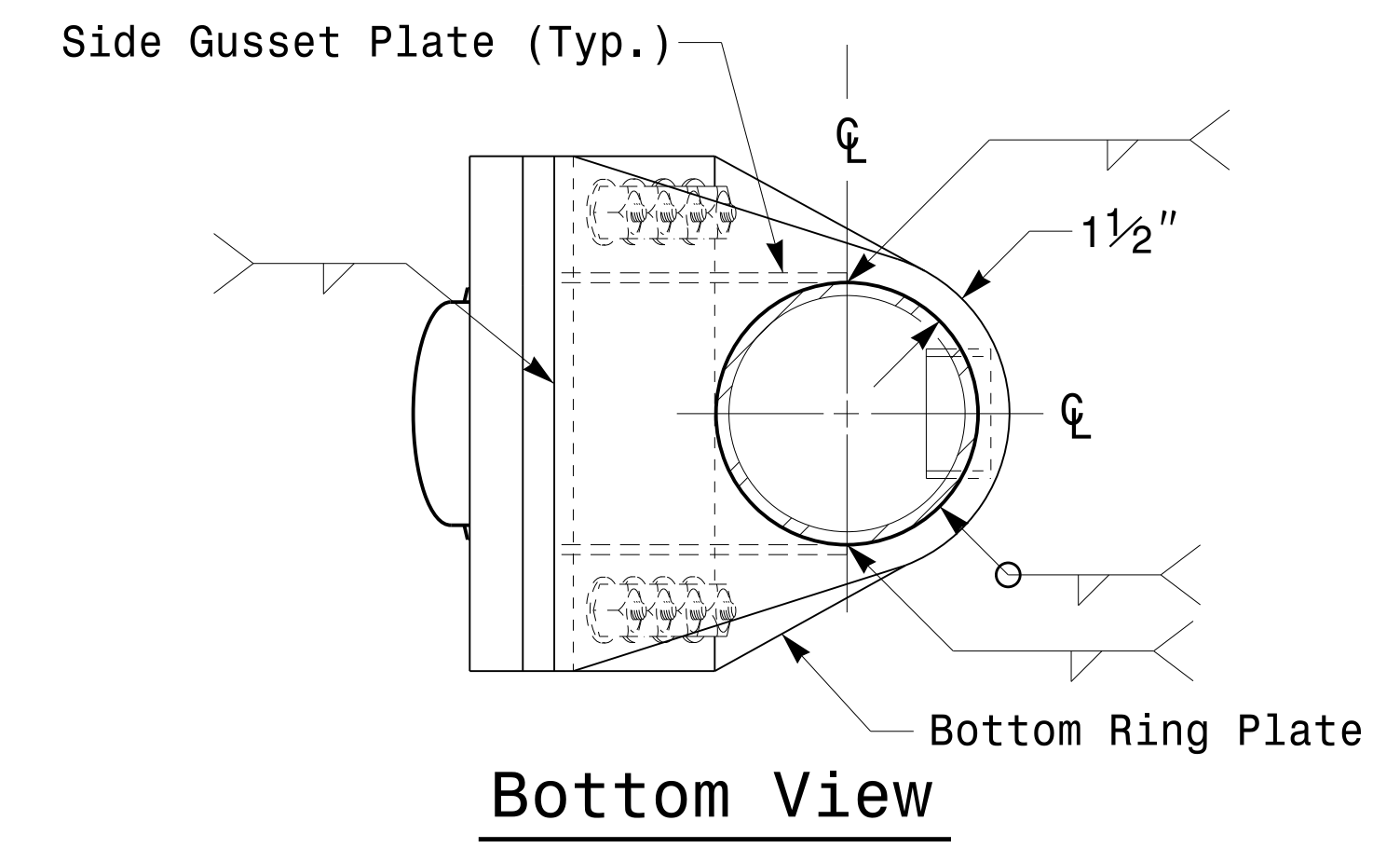
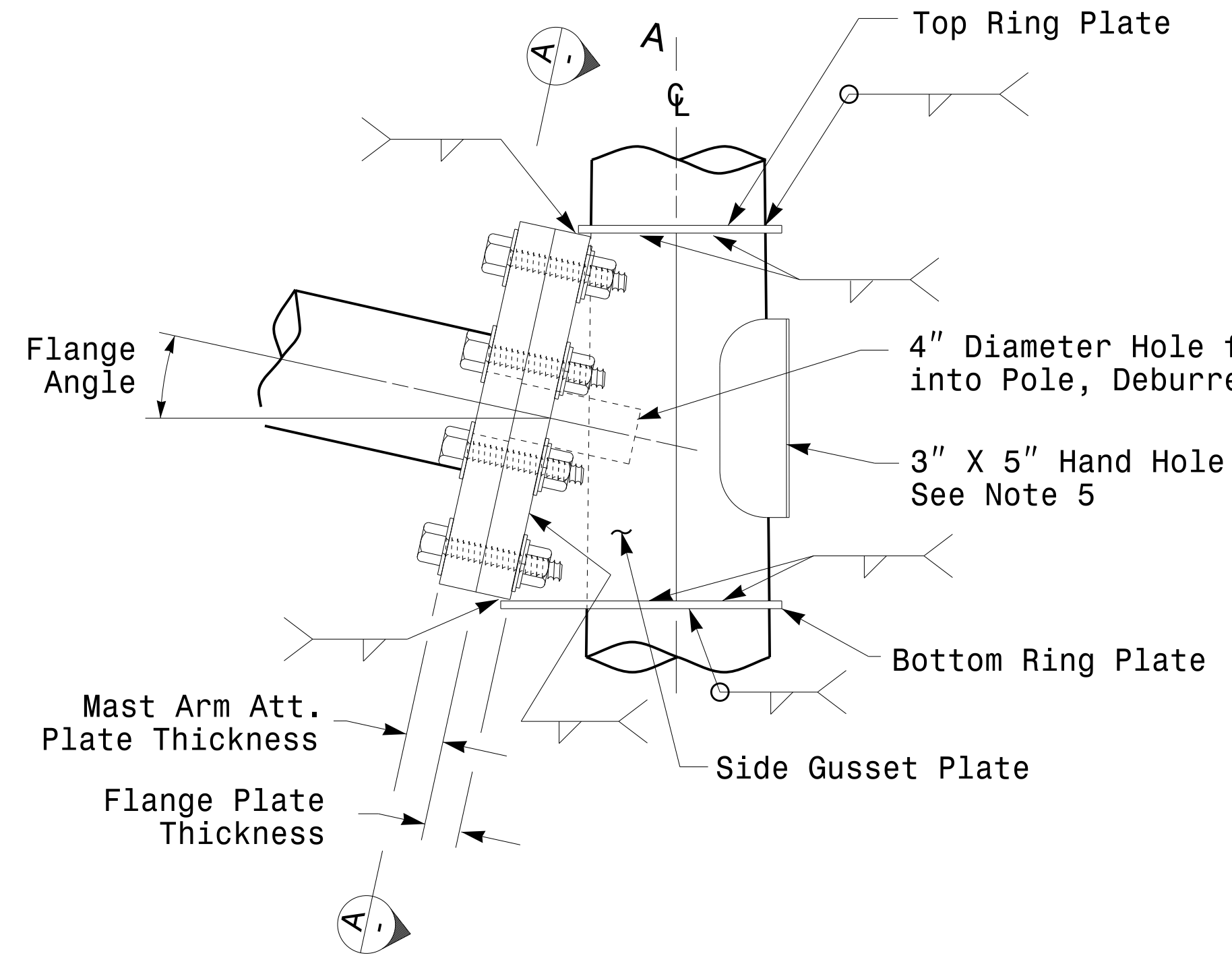
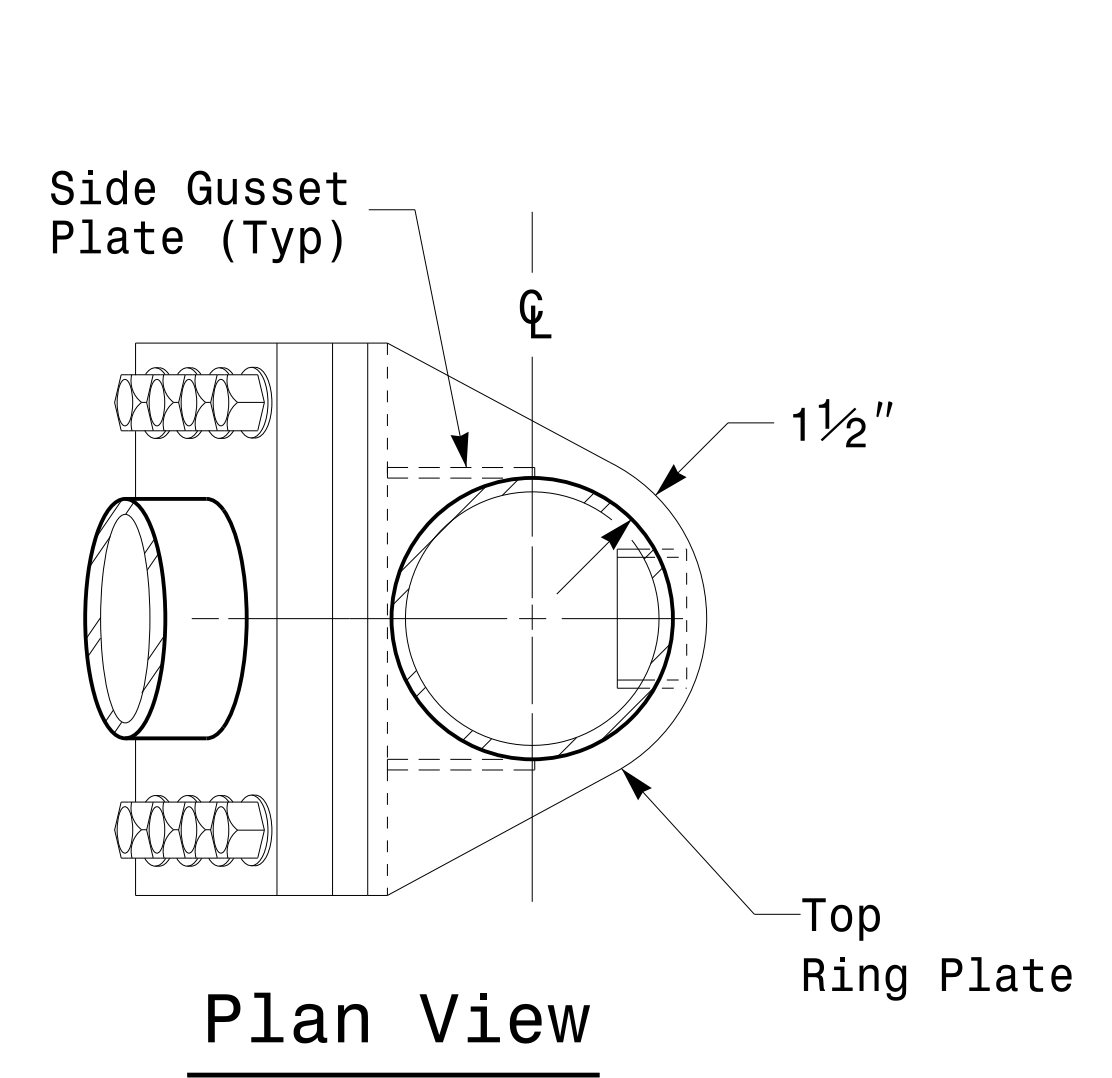
Fabrication Details - Mast Arm Poles

	Typical Fabrication Details For Mast Arm Poles		SEAL
	PLAN DATE: OCTOBER 2017 PREPARED BY: N. BITTING	DESIGNED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR	
SCALE: 0 NA NONE	DocuSigned by: Dinesh C. Sarkar DATE: 10/11/2017		DATE

11-OCT-2017 08:33
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 P:\21

Welded Ring Stiffened Mast Arm Connection

PROJECT ID. NO.	SHEET NO.
I-5711	Sig.M5



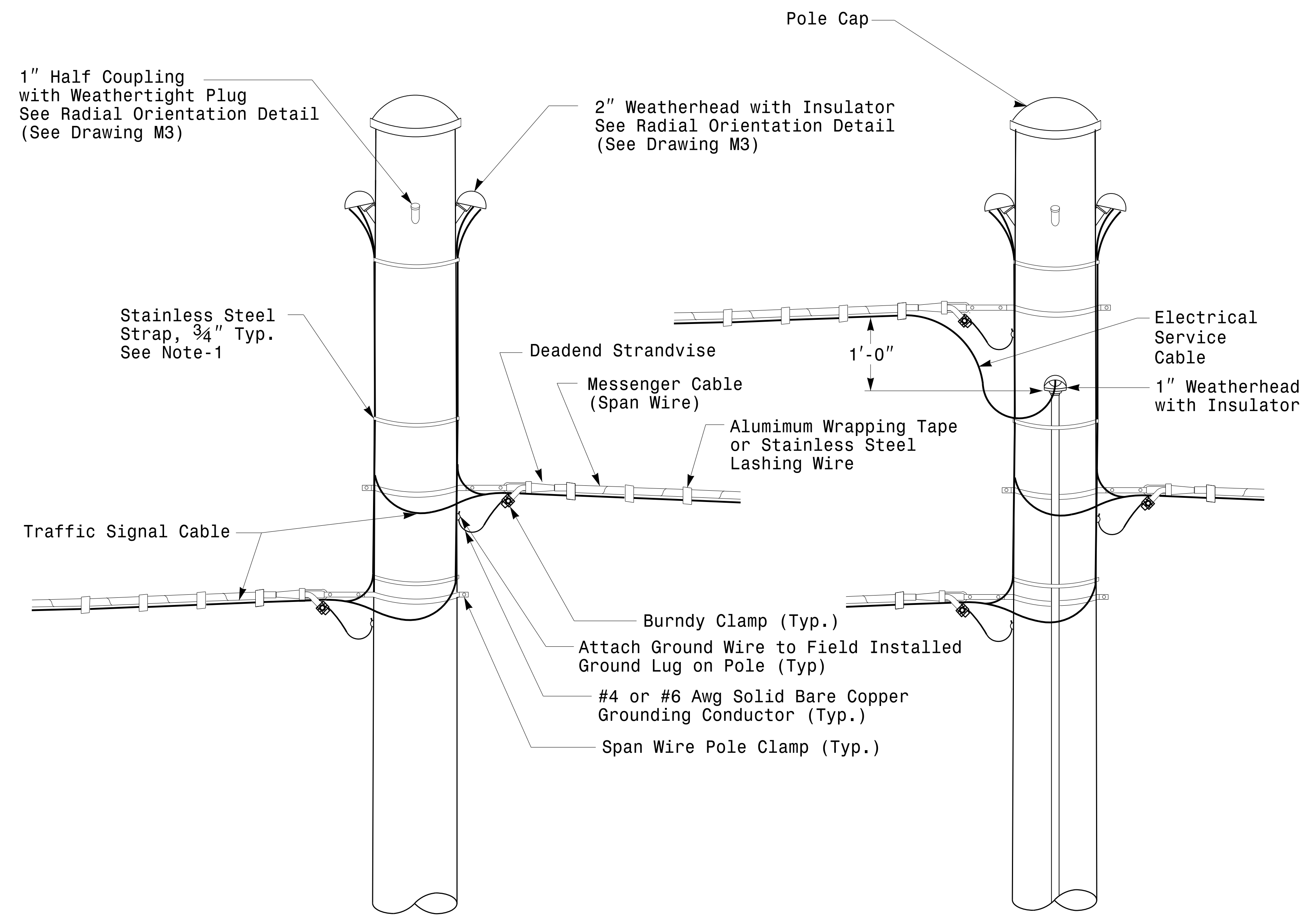
Notes:

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. Fabricator is responsible for providing appropriate holes at drainage points to drain galvanizing materials.
4. For minimum edge distance follow AISC Table J3.4 and J3.5. For nominal bolt hole size use Table J3.3.
5. Provide upper handhole as necessary when shaft extensions are required for luminaire arms or camera. For poles without luminaires/camera, wiring can be done through the top of pole.
6. Allowable range of flange tilt angle will vary from 0° to as required.

	Typical Fabrication Details For Mast Arm Connection To Pole	
	PLAN DATE: OCTOBER 2017 PREPARED BY: N. BITTING	DESIGNED BY: C.F. ANDREWS REVIEWED BY: D.C. SARKAR
SCALE: NONE	REVISIONS:	INIT. DATE:
750 N. Greenfield Pkwy, Garner, NC 27529		SEAL NORTH CAROLINA PROFESSIONAL ENGINEER 028094 DEBESH C. SARKAR
Discovered by: Debesh C. Sarkar		10/11/2017 DATE

11-OCT-2017 08:35
 I:\SSD\W115\Sig.M5.dgn
 Design Section\Eastern Region\W115\Sig.M5.dgn
 Connection Fabrication Detail\Mast Arm Poles.dgn
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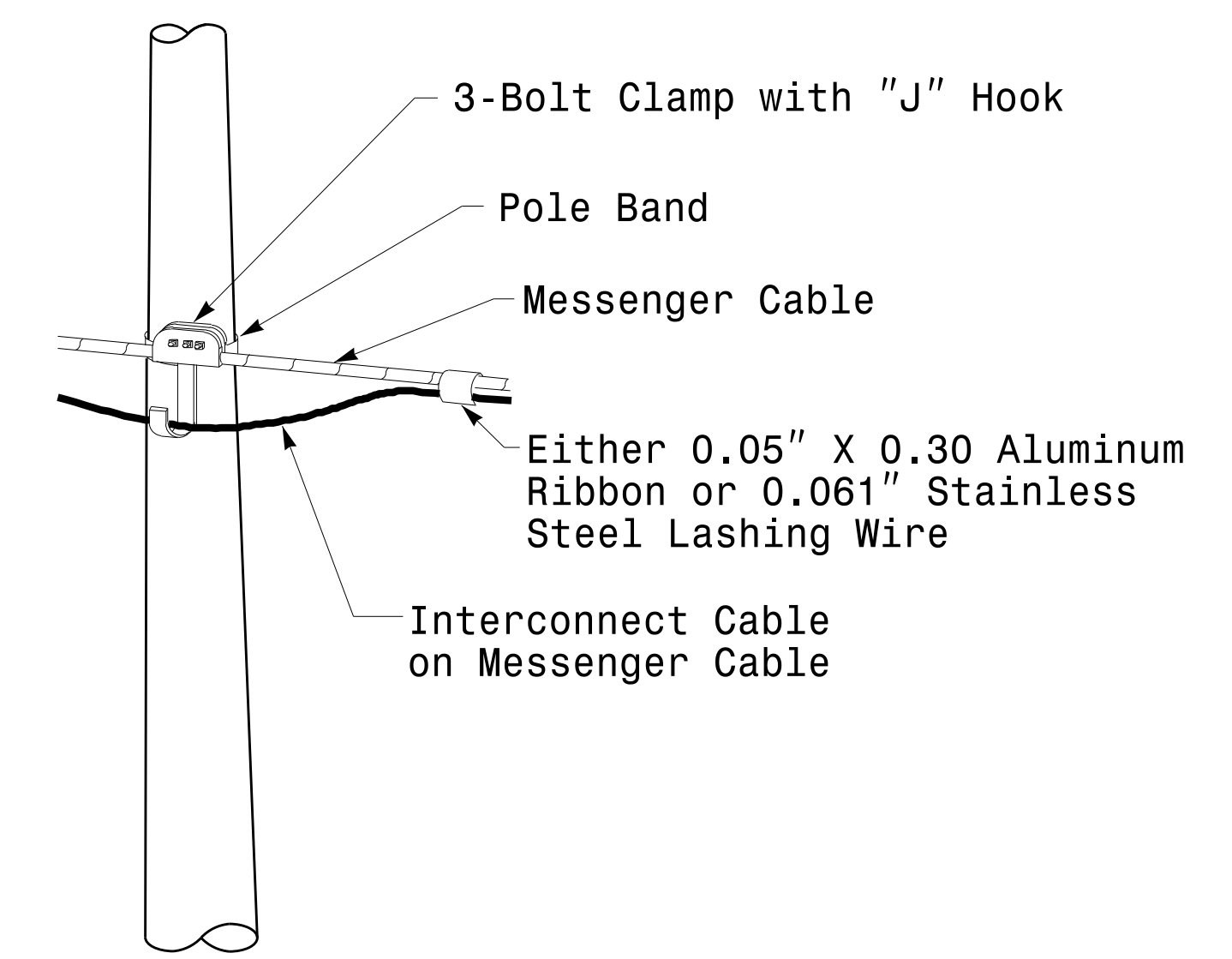
Fabrication Details – Mast Arm Connection



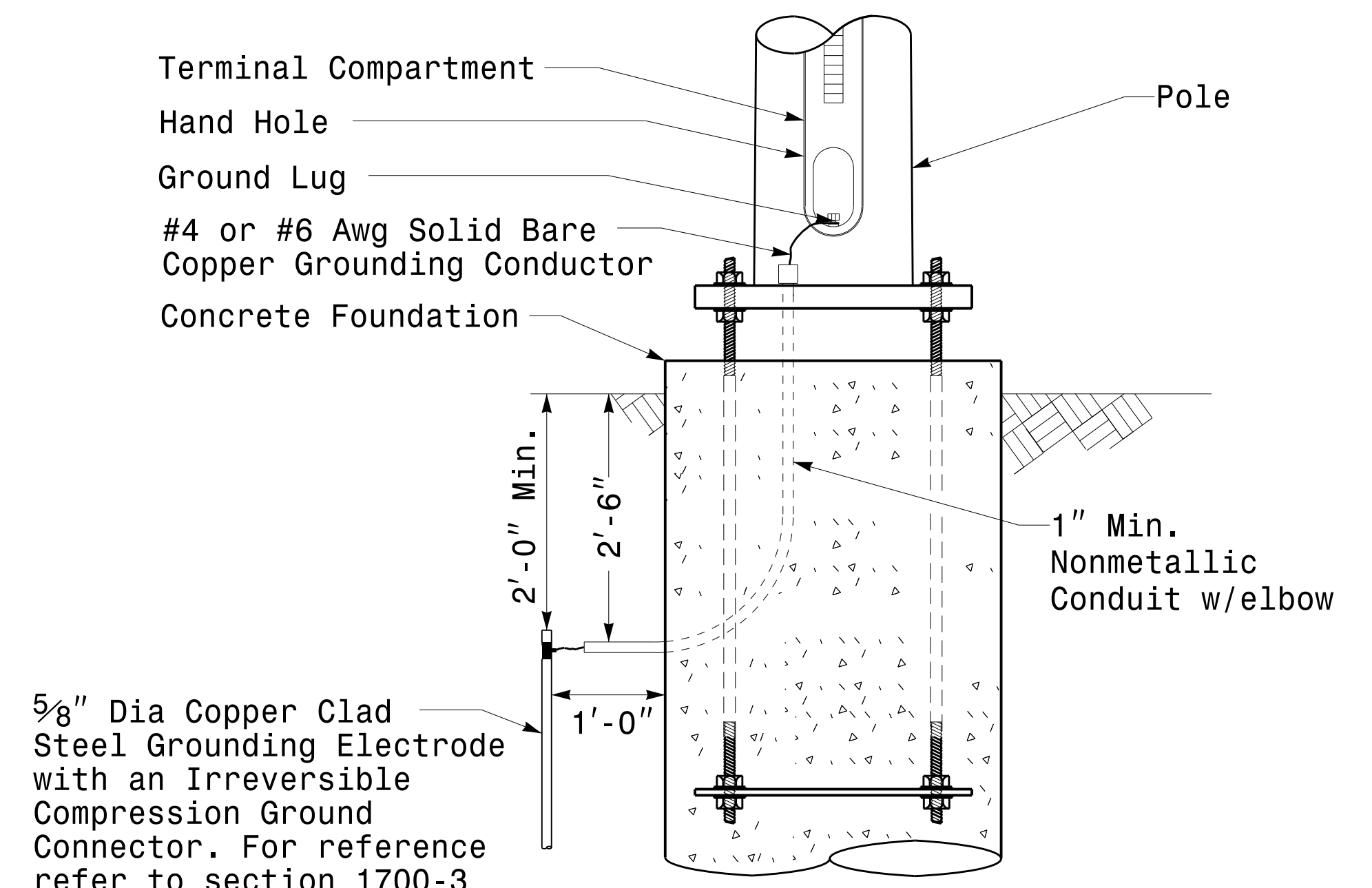
Strain Pole Attachments

NOTE:

1. 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 3'-0".
2. Provide minimum two spanwire pole clamps per pole.
3. It is prohibited to attach two span wires at one pole clamp.
4. For general requirements refer to NCDOT Standard Specifications for Roadway and Structures, January 2018.



Attachment of Cable to Intermediate Metal Pole



5/8" Dia Copper Clad Steel Grounding Electrode with an Irreversible Compression Ground Connector. For reference refer to section 1700-3 K and L for electrical grounding and bonding requirements, See Note 4.

Metal Pole Grounding Detail For Strain Pole and Mast Arm

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE: 0 NA NONE

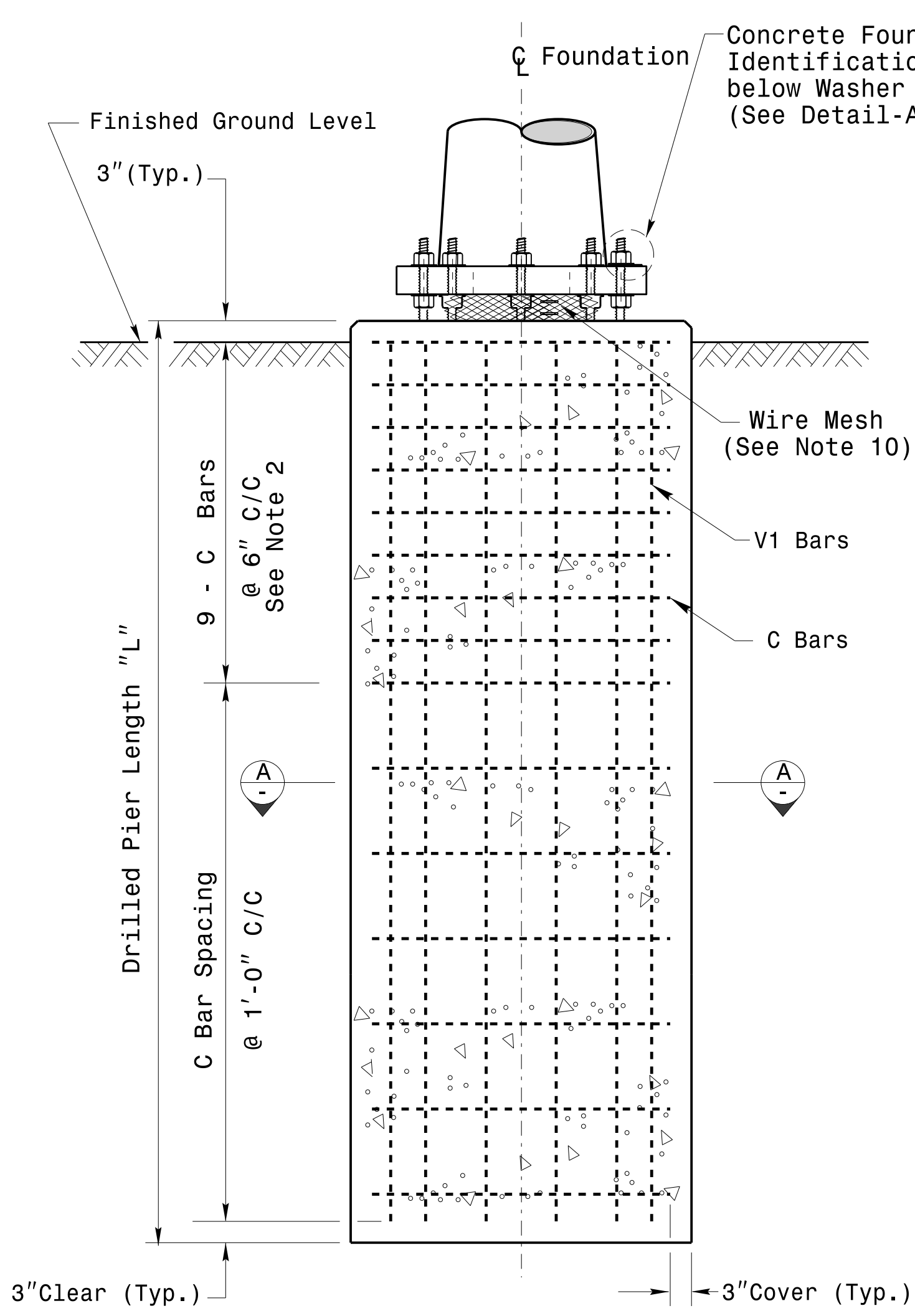
Typical Fabrication Details For Strain Pole Attachments			
PLAN DATE: OCTOBER 2017	DESIGNED BY: C.F. ANDREWS		
PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR		
REVISIONS	INIT.	DATE	

SEAL

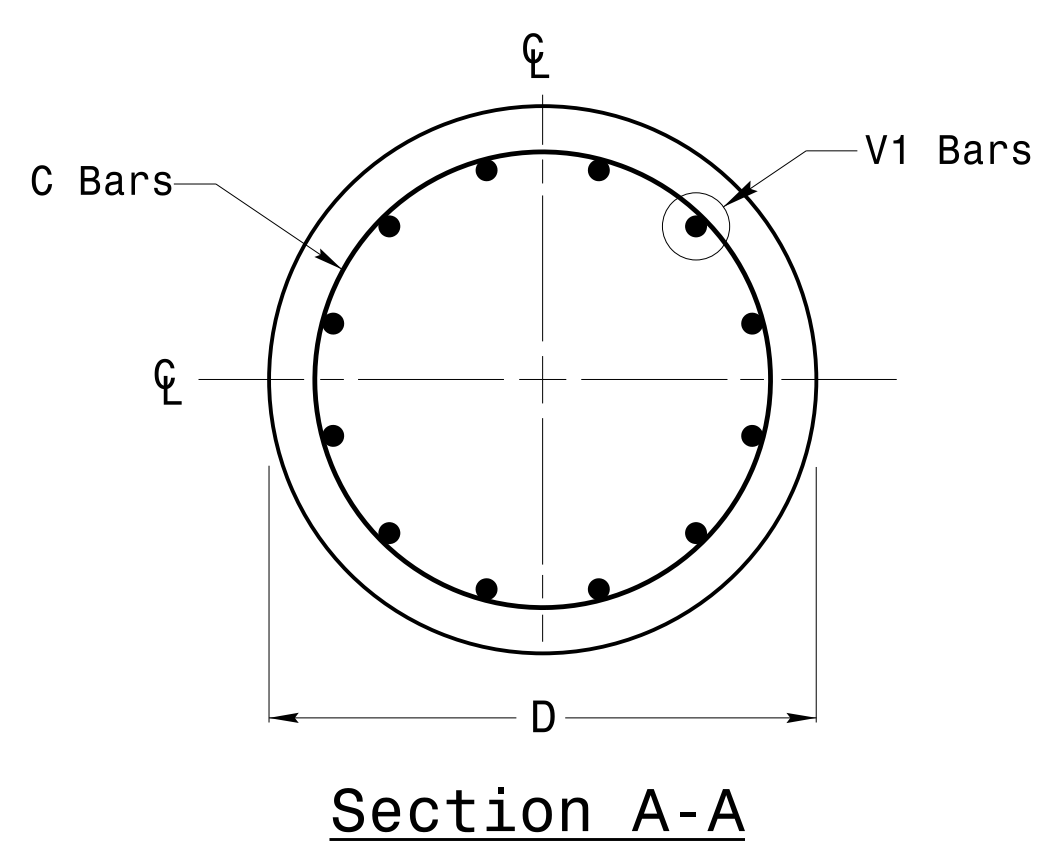
DocuSigned by: D. C. SARKAR

10/11/2017

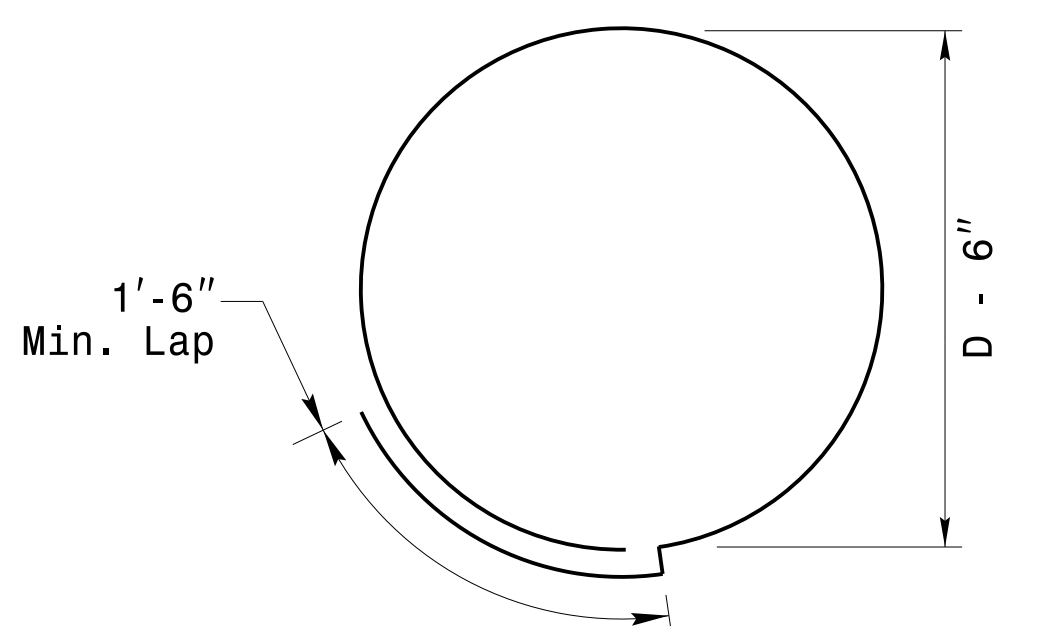
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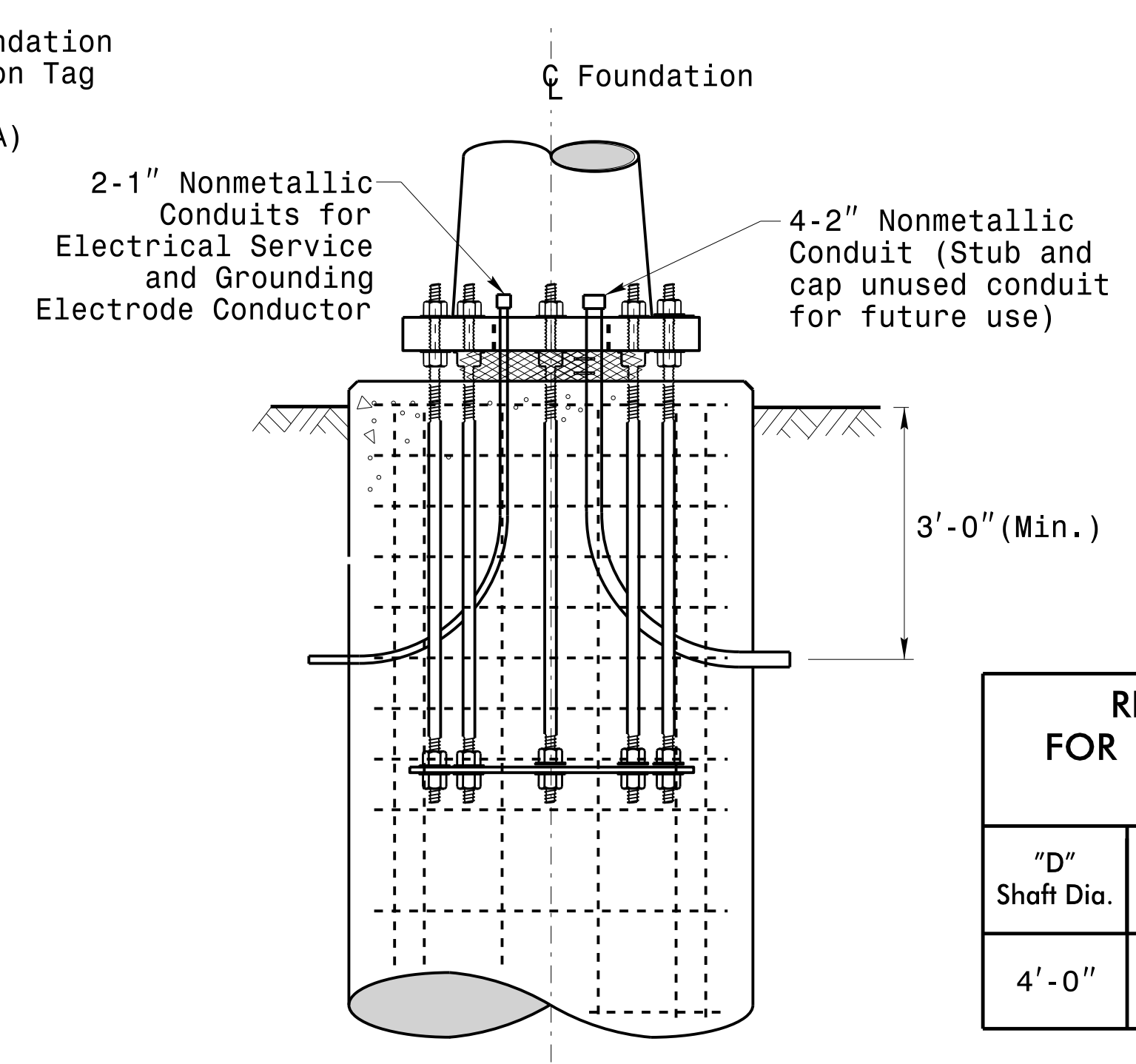
Concrete Shaft Elevation



Section A-A



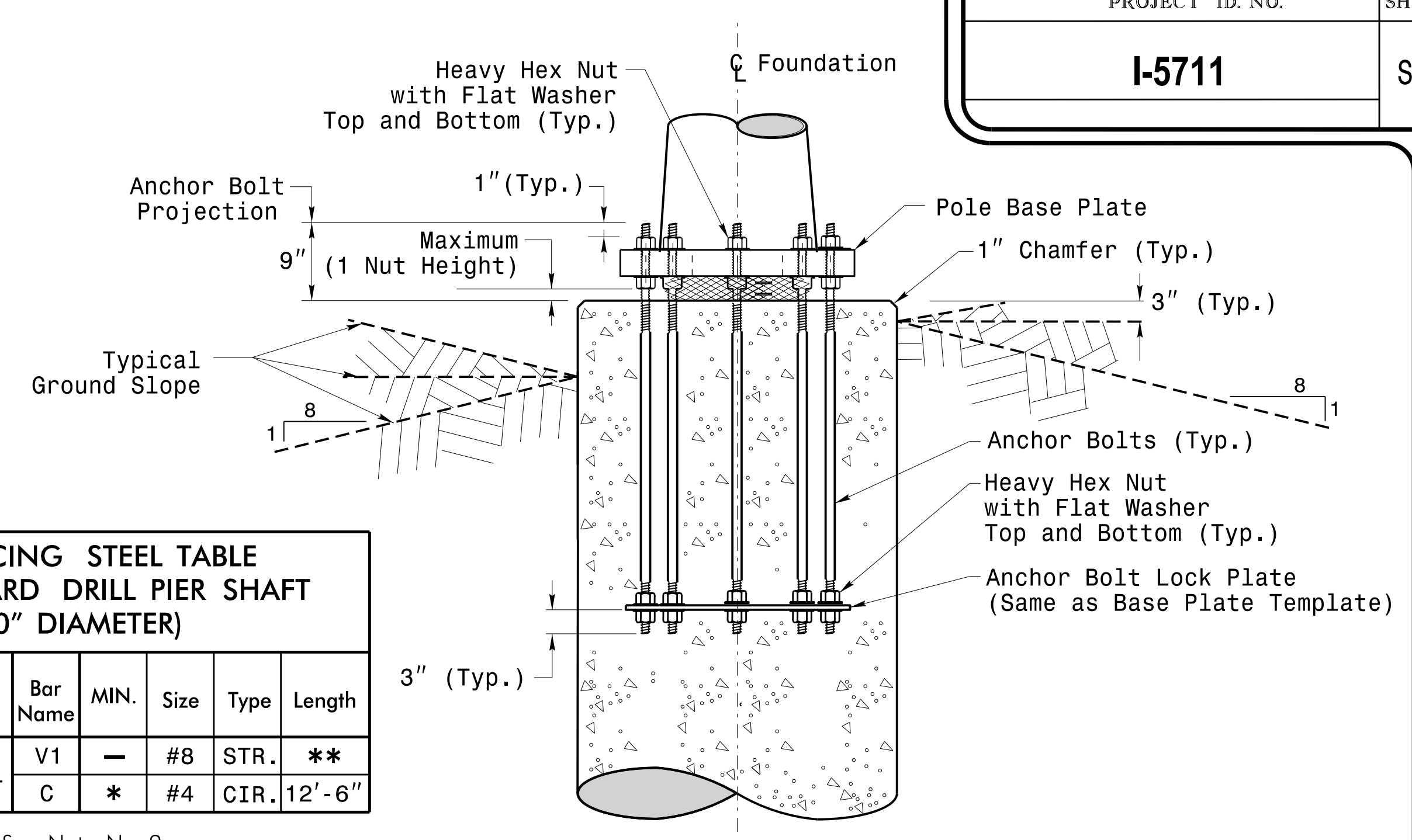
Typical "C" Bar Detail



Typical Foundation Conduit Details

"D" Shaft Dia.	Conc. Volume (cu. yds.)	Bar Name	MIN.	Size	Type	Length
4'-0"	.465 x L	V1	-	#8	STR.	**
		C	*	#4	CIR.	12'-6"

* See Note No. 2
 ** See Note No. 3

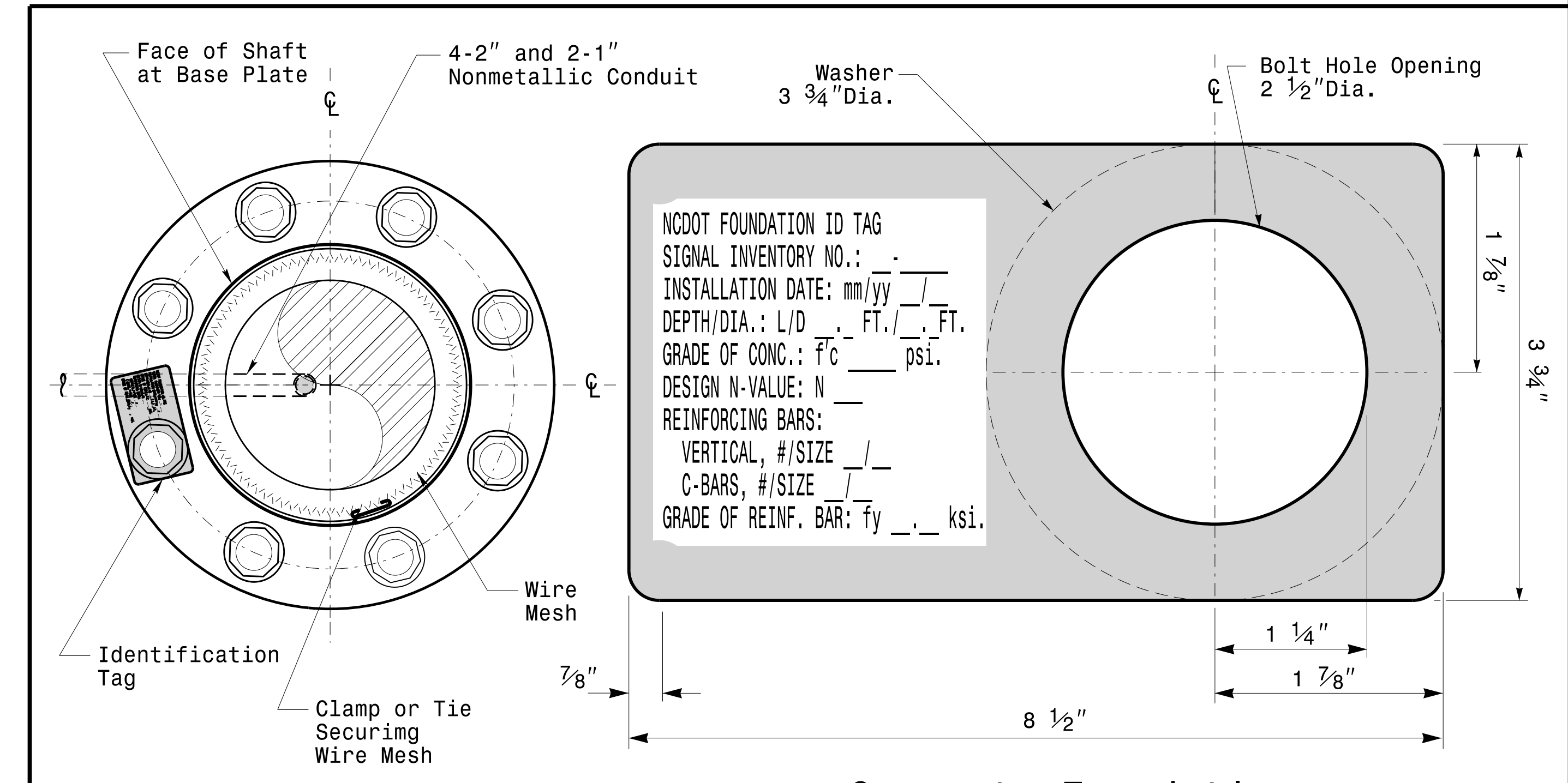


Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)

General Notes:

1. If actual subsurface conditions differ significantly from boring data contact the Engineer before excavating or placing concrete.
2. 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.
3. For standard foundations, see sheet Sig. M8 for details. Vertical reinforcing bars (V1) may be horizontally adjusted by +/-3" to facilitate the installation of electrical conduit entering into the cage.
4. Provide 2" to 5" foundation projection above ground level depending on the ground slope.
5. Unless otherwise shown, foundation designs are based on non-sloping level ground surfaces with slope ratios of 8:1 (H:V) or flatter. If actual ground line slopes are steeper contact the Engineer before excavating or placing concrete.
6. Construct foundations in accordance with NCDOT Standard Provisions SP09 R005- Foundations and Anchor Rod Assemblies for Metal Poles. All applicable 2018 NCDOT Standard Specifications are referenced in this provision. Refer to the NCDOT Resources/Specifications page located on the Connect NCDOT website.
[https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx](https://connect.ncdot.gov/resources/Specifications%20and%20Special%20Provisions.aspx)
7. Use air entrained AA concrete mix with a compression strength of f'c=4500 psi.(min.) after 28 days.
8. Use ASTM A615 grade 60 deformed bars for all reinforcing steel. Maintain at least 3" cover on all reinforcement.
9. Locate the Identification Tag on the top of the base plate, directly above the conduit's entry point.
10. Provide two layers of galvanized welded 23 gauge (0.25) 6" wide 4 mesh wire around pipes under the base plate and secure it with ties if necessary.
11. Preferred location for the I.D. Tag is as shown in Detail-A; directly above the conduit entering the foundation.



Concrete Foundation Identification Tag Details

D = Diameter
 L = Length/Depth
 mm = Month
 yy = Year

Detail-A

<p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>Construction Details For Foundations</p>		
	<p>PLAN DATE: OCTOBER 2018</p> <p>DESIGNED BY: C.B. COGDILL</p> <p>PREPARED BY: N. BITTING</p> <p>REVIEWED BY: D.C. SARKAR</p>	<p>REV. NO.</p> <p>COMMENTS</p> <p>INIT.</p> <p>DATE</p>	

Construction Details - Foundations

11-001-2017-08:33T 13560W115 Signal&Sign Design Section\Eastern Region\MM Sheets\2016\2014 Sig.M7 Std. Construction Detail\Is-Strain Poles.dgn

SOIL CONDITION

PROJECT ID. NO.	SHEET NO.
I-5711	Sig.M8

		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 (ea.)	Bar Size (#)	Spacing (in.)		
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	19	13	10	8	17	14.5	12.5	8	12	4	12
		S30L3	30	25	2	11	300	19.5	13.5	10	8	17.5	15	13	8	14	4	12
		S35L3	35	25	3	11	320	20	13.5	10.5	8	17.5	15	13	8	14	4	12
	HEAVY	S30H3	30	29	3	16	450	24.5	16	12	9	21	17.5	15	8	16	4	6
		S35H3	35	29	4	16	515	26	17	12.5	9.5	22	18.5	16	8	16	4	6
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	16	11.5	8.5	8	15	12.5	11	8	12	4	12
		S30L1	30	22	2	8	205	16.5	11.5	9	8	15	13	11.5	8	12	4	12
		S35L1	35	22	3	8	230	17	12	9	8	15.5	13.5	11.5	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	20.5	13.5	10.5	8	18	15	13.5	8	16	4	6
		S35H1	35	25	4	12	350	21	14	10.5	8.5	18.5	15.5	13.5	8	16	4	6
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
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General Notes:

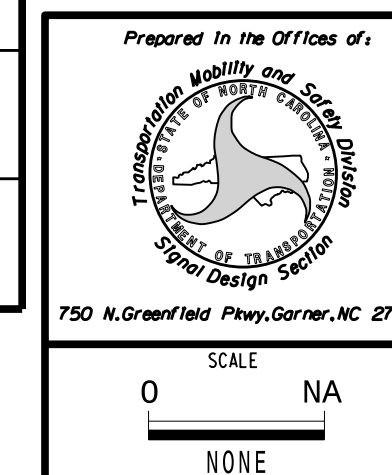
1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Use chairs and spacers to maintain proper clearance.
3. For foundation, always use air-entrain concrete mix.

Foundation Selection:

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from M 1 drawing.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate standard pole case number from the plans or from the Engineer.
5. Select the appropriate column under "Standard Foundations" based on soil type and "N" value. Select the appropriate row based on the pole load case.
6. The foundation depth is the value shown in the "Standard Foundations" category where the column and the row intersect.
7. Use Construction Procedures and Design Methods prescribed by FHWA-NHI-10-016 for Reference Drilled Shafts.

Standard Strain Pole Foundation-All Soil Condition

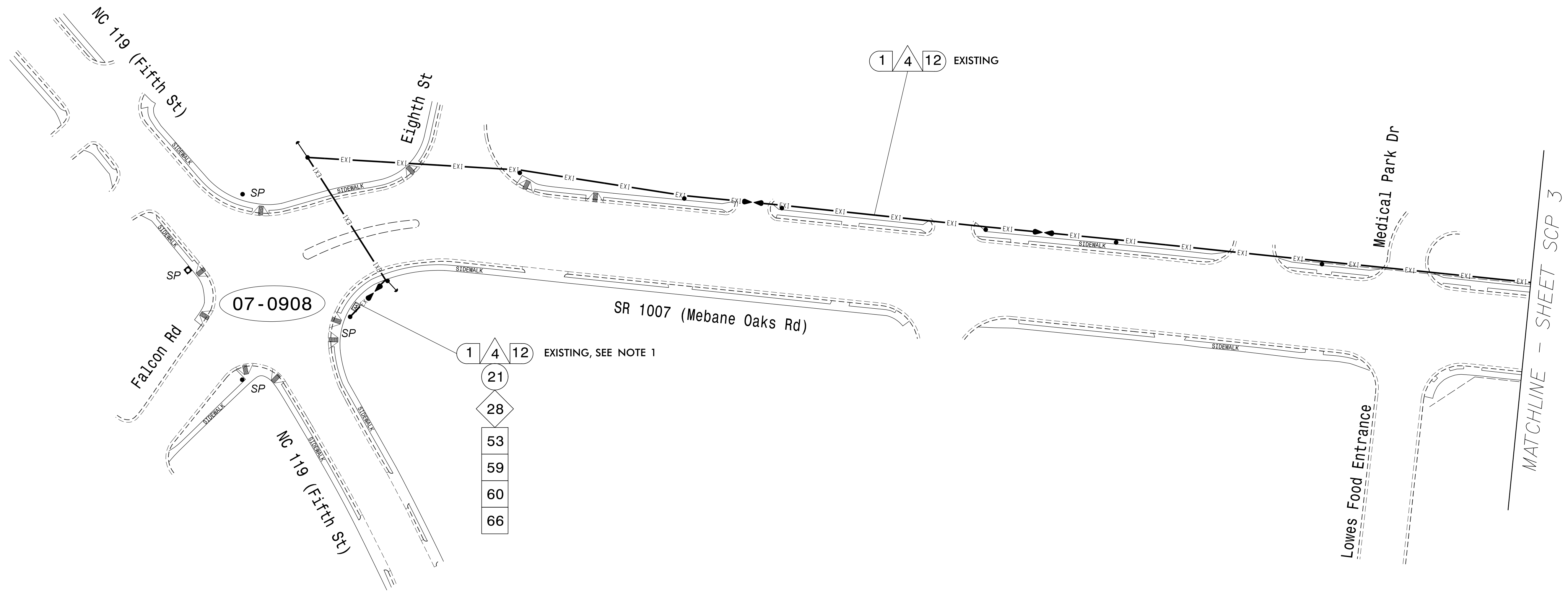
48" Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Drilled Pier Length



Standard Strain Pole Foundation for All Soil Conditions			
PLAN DATE: OCTOBER 2017	DESIGNED BY: C. B. COGDILL		
PREPARED BY: N. BITTING	REVIEWED BY: D. C. SARKAR		
REVISIONS	INIT.	DATE	
Changed "Foundation Depth" to "Drilled Pier Length" in Conc. Egn.	N.B.	7/12/2015	

SEAL	
NORTH CAROLINA PROFESSIONAL ENGINEER	
D. C. SARKAR	
10/11/2017	DATE

I:\Projects\2017_08-10\Sigs\1124250415\Sigs\M8 Std. Strain Pole Found.-Saturated Soil Cond.H11on.dgn
Sheet: 2017_08-10
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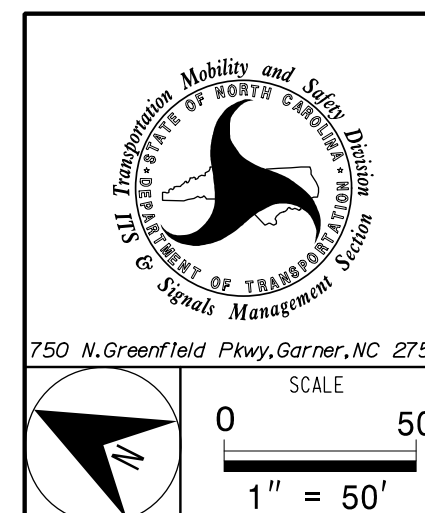


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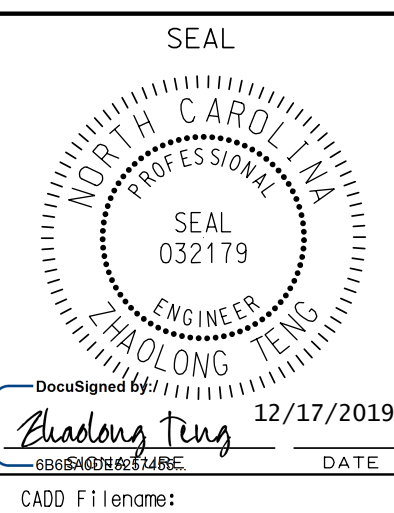
- REINSTALL THE EXISTING 12-FIBER COMMUNICATIONS CABLE IN THE NEW SIGNAL CABINET. CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE EXISTING FIBER OPTIC CABLE. IF NECESSARY, BACKPULL CABLE TO THE EXISTING AERIAL STORAGE RACK, UTILIZE AND REROUTE THE EXISTING FIBER OPTIC CABLE TO THE NEW SIGNAL CABINET.
- RETURN THE EXISTING TRANSCEIVER TO THE NCDOT DIVISION 7 SIGNAL SHOP. THE DIVISION 7 OFFICE IS LOCATED AT 1584 YANCEYVILLE STREET, GREENSBORO, NC 27415 AND CAN BE REACHED AT 336-487-0175.
- SIX (6) WEEKS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE NCDOT DIVISION 7 DEPUTY TRAFFIC ENGINEER MARK ALDRIDGE AT 336-487-0175 TO REQUEST THE DIVISION'S ASSISTANCE IN PROGRAMMING THE NEW ETHERNET EDGE SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
- CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.

TMP 1 Communications Plan

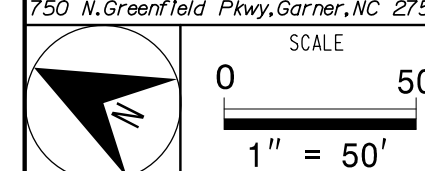
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SR 1007 (Mebane Oaks Rd) CLS Cable Routing Plan	
Division 7 Alamance County	Mebane
PLAN DATE: November 2019	REVIEWED BY: Z. "Gavin" Teng
PREPARED BY: Z. "Gavin" Teng	REVIEWED BY:
REVISIONS	INIT. DATE



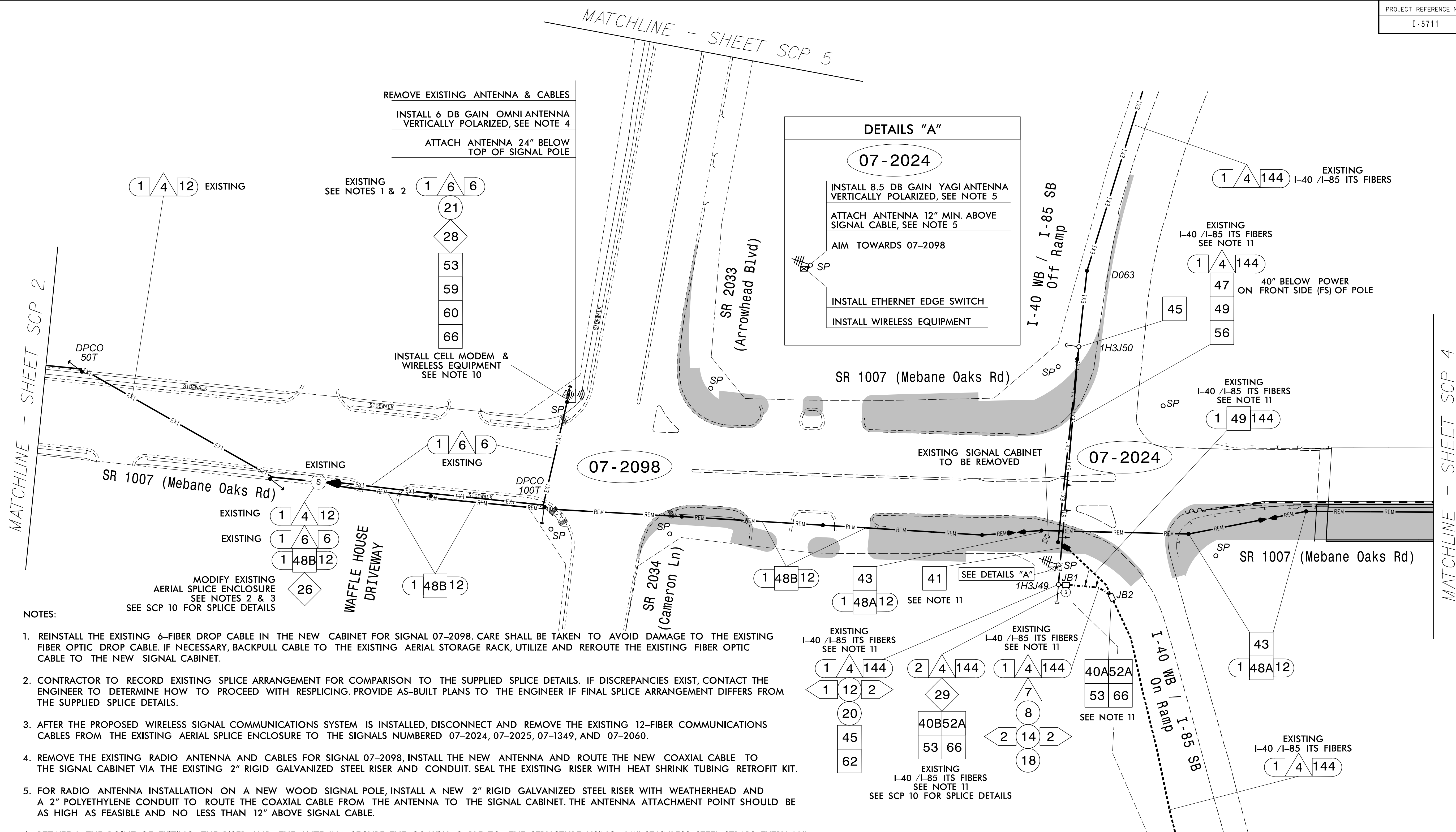
PREPARED IN THE OFFICE OF:
Accelerate Engineering, PLLC
 875 Walnut Street, Suite 316
 Cary, NC 27511
 Tel: 919.263.5678 Fax: 919.263.5687
 NC License No. P-1442



REVISIONS	INIT.	DATE

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 12/17/2019
 Zhulong Teng
 DATE
 CADD Filename:

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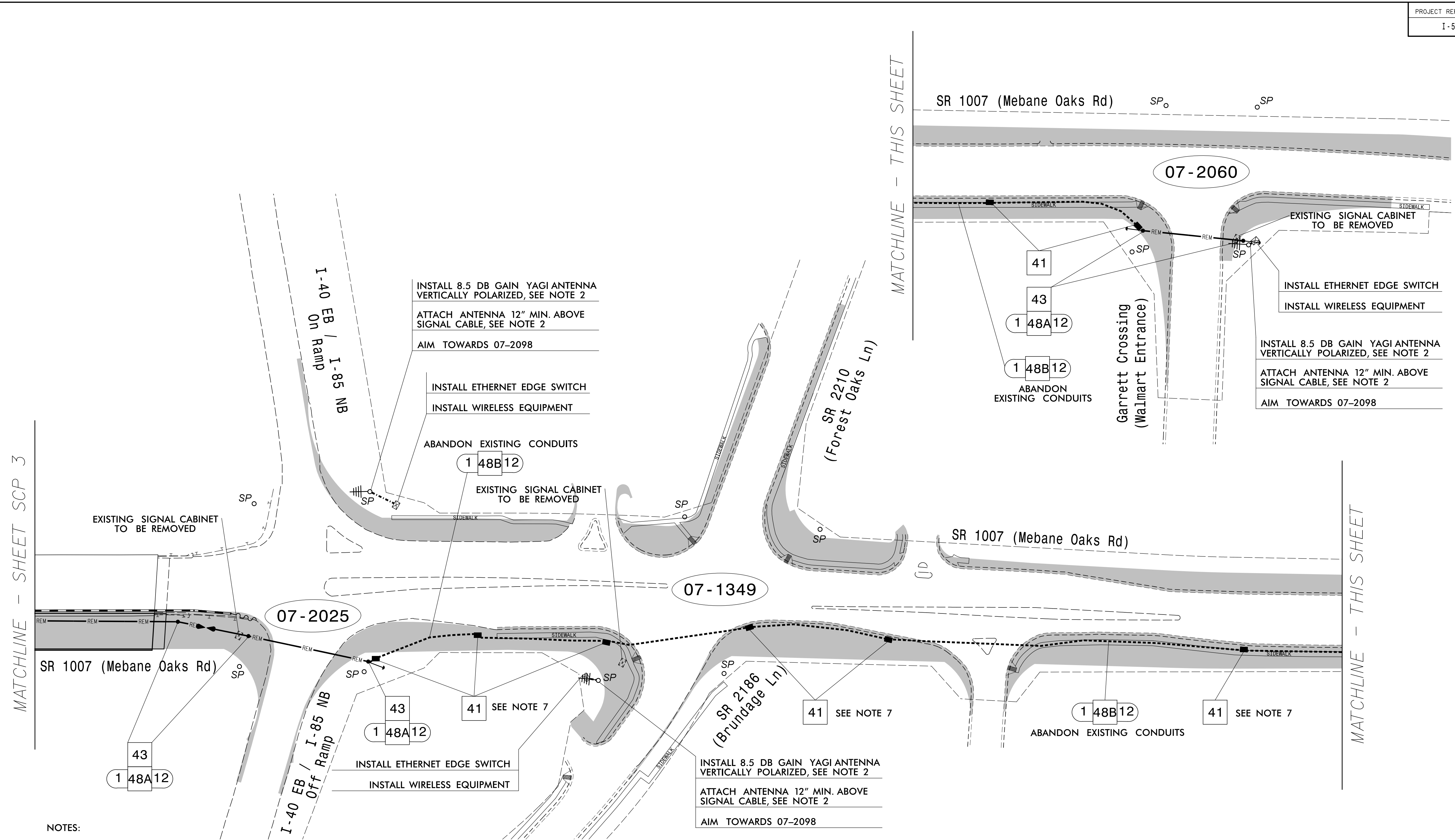


- NOTES:
- REINSTALL THE EXISTING 6-FIBER DROP CABLE IN THE NEW CABINET FOR SIGNAL 07-2098. CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE EXISTING FIBER OPTIC DROP CABLE. IF NECESSARY, BACKPULL CABLE TO THE EXISTING AERIAL STORAGE RACK, UTILIZE AND REROUTE THE EXISTING FIBER OPTIC CABLE TO THE NEW SIGNAL CABINET.
 - CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.
 - AFTER THE PROPOSED WIRELESS SIGNAL COMMUNICATIONS SYSTEM IS INSTALLED, DISCONNECT AND REMOVE THE EXISTING 12-FIBER COMMUNICATIONS CABLES FROM THE EXISTING AERIAL SPLICE ENCLOSURE TO THE SIGNALS NUMBERED 07-2024, 07-2025, 07-1349, AND 07-2060.
 - REMOVE THE EXISTING RADIO ANTENNA AND CABLES FOR SIGNAL 07-2098, INSTALL THE NEW ANTENNA AND ROUTE THE NEW COAXIAL CABLE TO THE SIGNAL CABINET VIA THE EXISTING 2" RIGID GALVANIZED STEEL RISER AND CONDUIT. SEAL THE EXISTING RISER WITH HEAT SHRINK TUBING RETROFIT KIT.
 - FOR RADIO ANTENNA INSTALLATION ON A NEW WOOD SIGNAL POLE, INSTALL A NEW 2" RIGID GALVANIZED STEEL RISER WITH WEATHERHEAD AND A 2" POLYETHYLENE CONDUIT TO ROUTE THE COAXIAL CABLE FROM THE ANTENNA TO THE SIGNAL CABINET. THE ANTENNA ATTACHMENT POINT SHOULD BE AS HIGH AS FEASIBLE AND NO LESS THAN 12" ABOVE SIGNAL CABLE.
 - BETWEEN THE POINT OF EXITING THE RISER AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
 - MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
 - SEE 2018 NCDOT ROADWAY STANDARD DRAWINGS 1736.01 FOR WIRELESS RADIO ANTENNA TYPICAL DETAILS.
 - RETURN EXISTING WIRELESS RADIO EQUIPMENT AND TRANSCEIVERS TO THE NCDOT DIVISION 7 SIGNAL SHOP. THE DIVISION 7 OFFICE IS LOCATED AT 1584 YANCEYVILLE STREET, GREENSBORO, NC 27415 AND CAN BE REACHED AT 336-487-0175.
 - THE NCDOT DIVISION 7 WILL FURNISH THE CELL MODEM. EIGHT (8) WEEKS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT NCDOT DIVISION 7 DEPUTY TRAFFIC ENGINEER MARK ALDRIDGE AT 336-487-0175 TO OBTAIN THE CELL MODEM AND REQUEST THE DIVISION'S ASSISTANCE IN PROGRAMMING THE NEW ETHERNET EDGE SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
 - CUT THE EXISTING 144-FIBER ITS CABLE INSIDE THE EXISTING JUNCTION BOX LOCATED IN THE NW QUADRANT OF THE WESTBOUND ON-RAMP INTERSECTION. INTERCEPT EXISTING CONDUIT WITH NEW JUNCTION BOX, JB2, AND BACKPULL THE EXISTING 144-FIBER CABLE TO POLE #D063, AND NEW JUNCTION BOX, JB2, AND REROUTE THROUGH NEW CONDUIT TO NEW JUNCTION BOX, JB1, AS SHOWN. SPLICE REROUTED EXISTING 144-FIBER CABLES IN NEW JUNCTION BOX, JB1, TO RESTORE ORIGINAL FIBER CONNECTIONS, AND STORE SLACK FIBER IN JB1 AND JB2. NOTIFY NCDOT REGIONAL ITS ENGINEER AT 336-315-7081 TWO (2) WEEKS PRIOR TO BEGINNING WORK ON THE 144-FIBER CABLE WHICH SERVES THE I-40/I-85 ITS SYSTEM, AND IMMEDIATELY AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE I-40/I-85 ITS SYSTEM IS BACK UP AND OPERATIONAL (SEE ICT).

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 Cary, NC 27511
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 NC License No. P-1442

Phase I Work Zone is Shown for Reference
 TMP 1 Communications Plan

	SR 1007 (Mebane Oaks Rd) CLS Cable Routing Plan		
	Division 7 Alamance County Mebane PLAN DATE: November 2019 PREPARED BY: Z. "Gavin" Teng	REVIEWED BY: Z. "Gavin" Teng REVIEWED BY:	
	REVISIONS:	INIT. DATE:	DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SEAL 12/17/2019 DATE CAD FILE NAME:



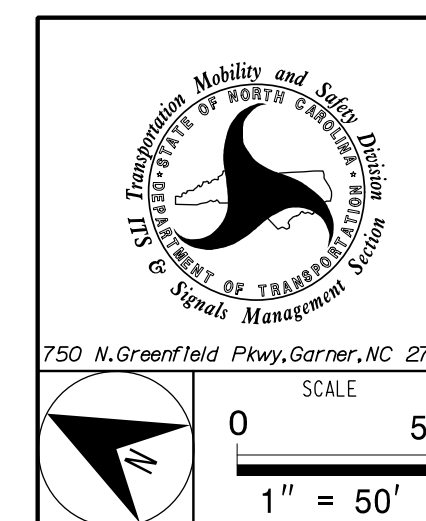
NOTES:

- AFTER WIRELESS SIGNAL COMMUNICATION IS INSTALLED, REMOVE EXISTING 12-FIBER COMMUNICATIONS CABLES AS SHOWN AND ABANDON EXISTING CONDUITS.
- FOR RADIO ANTENNA INSTALLATION ON A NEW WOOD SIGNAL POLE, INSTALL A NEW 2" RIGID GALVANIZED STEEL RISER WITH WEATHERHEAD AND A 2" POLYETHYLENE CONDUIT TO ROUTE THE COAXIAL CABLE FROM THE ANTENNA TO THE SIGNAL CABINET. THE ANTENNA ATTACHMENT POINT SHOULD BE AS HIGH AS FEASIBLE, BUT NO LESS THAN 12" ABOVE SIGNAL CABLE. BETWEEN THE POINT OF EXITING THE RISER AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
- MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
- SEE 2018 NCDOT ROADWAY STANDARD DRAWINGS 1736.01 FOR WIRELESS RADIO ANTENNA TYPICAL DETAILS.
- RETURN EXISTING TRANSCEIVERS TO THE NCDOT DIVISION 7 SIGNAL SHOP. THE DIVISION 7 OFFICE IS LOCATED AT 1584 YANCEYVILLE STREET, GREENSBORO, NC 27415 AND CAN BE REACHED AT 336-487-0175.
- SIX (6) WEEKS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE NCDOT DIVISION 7 DEPUTY TRAFFIC ENGINEER MARK ALDRIDGE AT 336-487-0175 TO REQUEST THE DIVISION'S ASSISTANCE IN PROGRAMMING THE NEW ETHERNET EDGE SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
- REMOVE EXISTING JUNCTION BOXES AND BACKFILL WITH AN APPROVED MATERIAL.

\$\$\$\$\$SYTIME\$\$\$\$\$
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\$\$\$\$\$RENAME\$\$\$\$\$

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Phase I Work Zone is Shown for Reference
TMP 1 Communications Plan



SR 1007 (Mebane Oaks Rd) CLS Cable Routing Plan

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

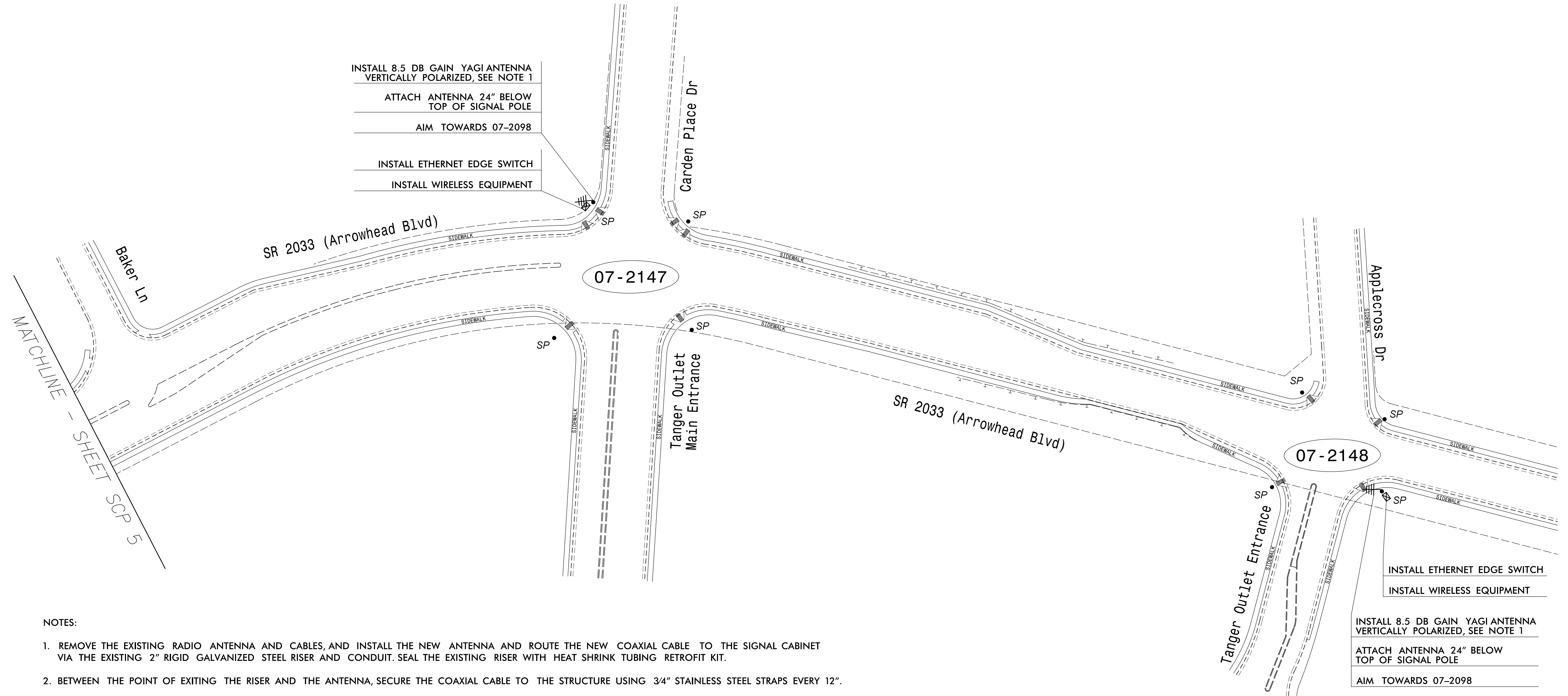
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SCALE: 0 50
1" = 50'

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SEAL

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 ZHAOLONG TENG
 032179
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INSTALL 8.5 DB GAIN YAGI ANTENNA VERTICALLY POLARIZED, SEE NOTE 1

ATTACH ANTENNA 24" BELOW TOP OF SIGNAL POLE

AIM TOWARDS 07-2098

INSTALL ETHERNET EDGE SWITCH

INSTALL WIRELESS EQUIPMENT

INSTALL ETHERNET EDGE SWITCH

INSTALL WIRELESS EQUIPMENT

INSTALL 8.5 DB GAIN YAGI ANTENNA VERTICALLY POLARIZED, SEE NOTE 1

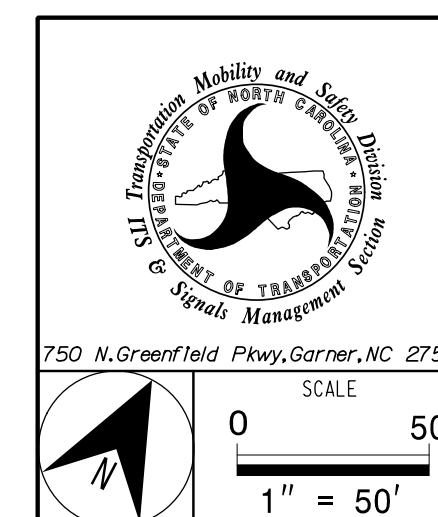
ATTACH ANTENNA 24" BELOW TOP OF SIGNAL POLE

AIM TOWARDS 07-2098

NOTES:

- 1. REMOVE THE EXISTING RADIO ANTENNA AND CABLES, AND INSTALL THE NEW ANTENNA AND ROUTE THE NEW COAXIAL CABLE TO THE SIGNAL CABINET VIA THE EXISTING 2" RIGID GALVANIZED STEEL RISER AND CONDUIT. SEAL THE EXISTING RISER WITH HEAT SHRINK TUBING RETROFIT KIT.
- 2. BETWEEN THE POINT OF EXITING THE RISER AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
- 3. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
- 4. SEE 2018 NCDOT ROADWAY STANDARD DRAWINGS 1736.01 FOR WIRELESS RADIO ANTENNA TYPICAL DETAILS.
- 5. RETURN EXISTING WIRELESS RADIO EQUIPMENT AND TRANSCEIVERS TO THE NCDOT DIVISION 7 SIGNAL SHOP. THE DIVISION 7 OFFICE IS LOCATED AT 1584 YANCEYVILLE STREET, GREENSBORO, NC 27415 AND CAN BE REACHED AT 336-487-0175.
- 6. SIX (6) WEEKS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE NCDOT DIVISION 7 DEPUTY TRAFFIC ENGINEER MARK ALDRIDGE AT 336-487-0175 TO REQUEST THE DIVISION'S ASSISTANCE IN PROGRAMMING THE NEW ETHERNET EDGE SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

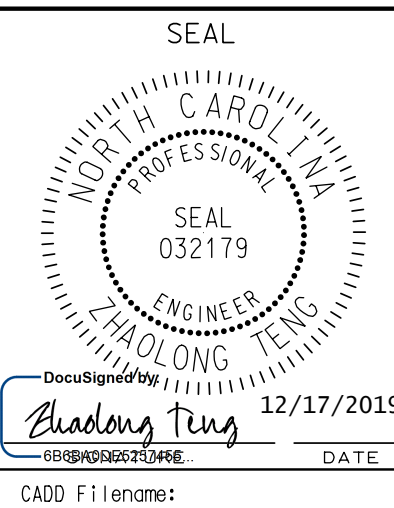
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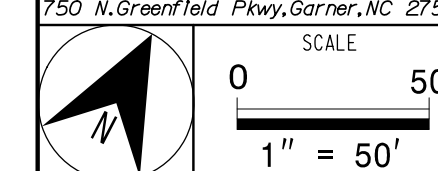
SR 1007 (Mebane Oaks Rd) CLS Cable Routing Plan

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:
 REVISIONS INIT. DATE

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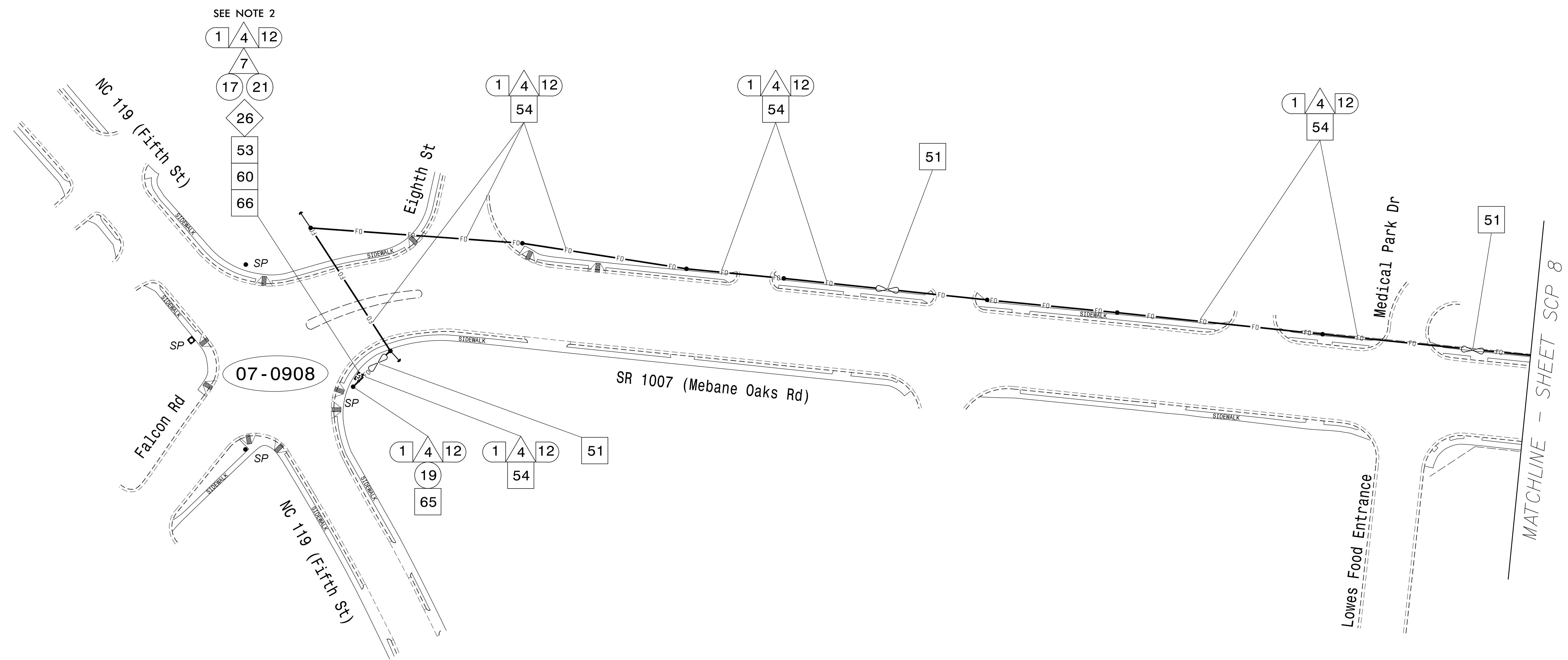


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DATE: 12/17/2019
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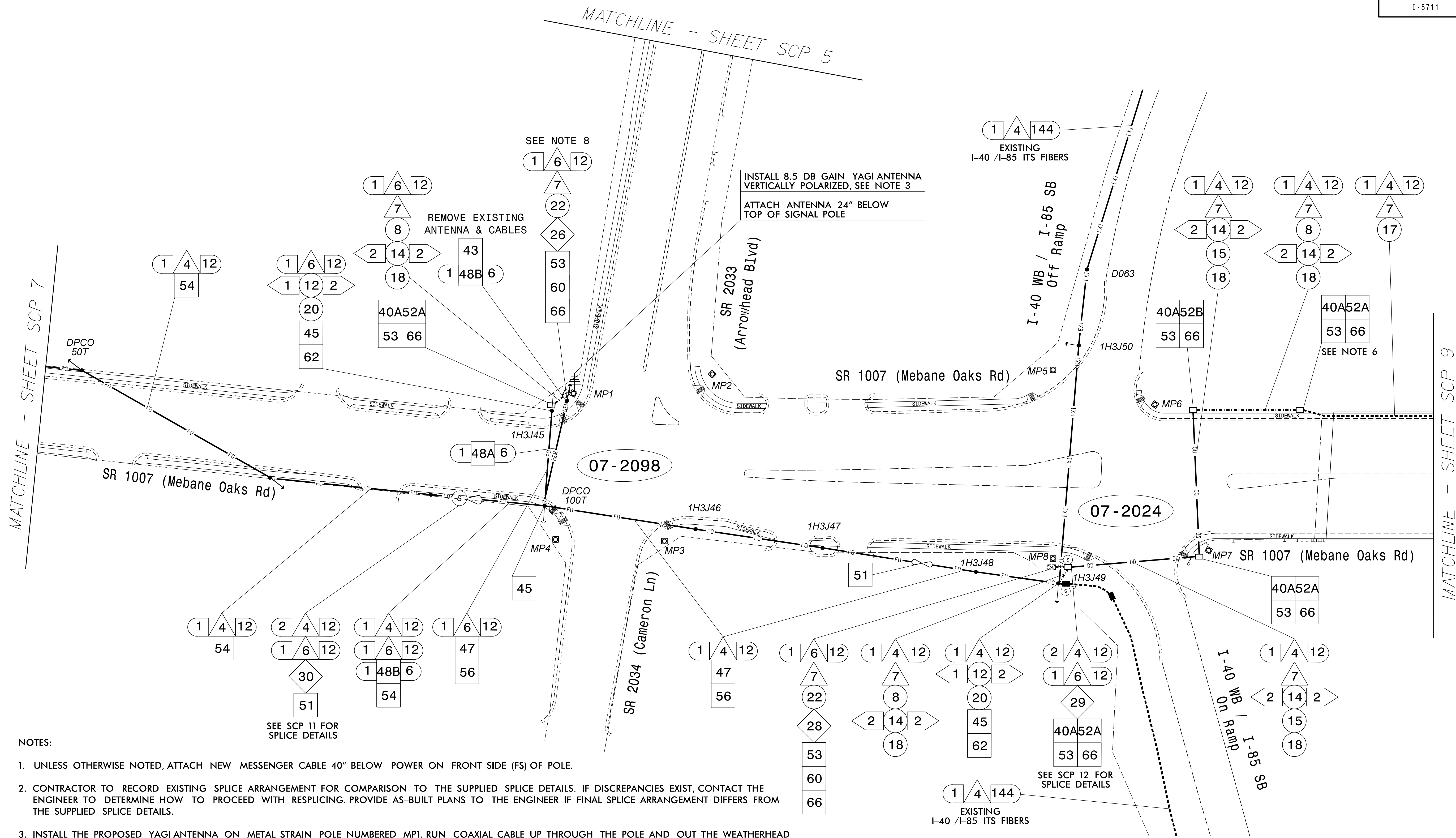
NOTES:

1. INSTALL A NEW 12-FIBER COMMUNICATIONS CABLE. UTILIZE THE EXISTING UTILITY POLES, 2" RIGID GALVANIZED STEEL RISERS AND CONDUIT FOR CABLE ROUTING AS SHOWN.
2. AFTER ALL THE PROPOSED FIBR OPTIC SIGNAL COMMUNICATIONS SYSTEM IS INSTALLED, DISCONNECT THE EXISTING COMMUNICATIONS CABLES INSIDE THE SIGNAL CABINETS AT SIGNAL 07-0908 AND SIGNAL 07-2098, AND PROMPTLY SWITCH TO THE NEW FIBER.
3. CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.
4. NOTIFY THE DEPUTY TRAFFIC ENGINEER MARK ALDRIDGE AT 336-487-0175 TWO (2) WEEKS PRIOR TO BEGINNING WORK ON SIGNAL SYSTEM COMMUNICATIONS CABLE. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

\$\$\$\$\$\$SYTIME\$\$\$\$\$\$
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TMP Final Communications Plan		DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SR 1007 (Mebane Oaks Rd) CLS Cable Routing Plan		
	Division 7 Alamance County Mebane PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng PREPARED BY: Z. "Gavin" Teng REVIEWED BY:	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER ZHAOLONG TENG 032179
750 N. Greenfield Pkwy, Garner, NC 27529 	REVISIONS INIT. DATE	SEAL ZHAOLONG TENG 12/17/2019 DATE CADD Filename:



NOTES:

- UNLESS OTHERWISE NOTED, ATTACH NEW MESSENGER CABLE 40" BELOW POWER ON FRONT SIDE (FS) OF POLE.
- CONTRACTOR TO RECORD EXISTING SPLICE ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPLICE DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPLICE ARRANGEMENT DIFFERS FROM THE SUPPLIED SPLICE DETAILS.
- INSTALL THE PROPOSED YAGI ANTENNA ON METAL STRAIN POLE NUMBERED MP1. RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA. BETWEEN THE POINT OF EXITING THE METAL POLE, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12". REESTABLISH CONNECTION BETWEEN THE RADIO AND THE EXISTING SIGNAL SYSTEM NETWORK.
- MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
- SEE 2018 NCDOT ROADWAY STANDARD DRAWINGS 1736.01 FOR WIRELESS RADIO ANTENNA TYPICAL DETAILS.
- FIELD LOCATE EXISTING MULTI-CELL CONDUIT STUB-OUTS ON BOTH SIDES OF THE BRIDGE, AND INSTALL NEW JUNCTION BOXES.
- AFTER THE PROPOSED FIBER OPTIC SIGNAL COMMUNICATIONS SYSTEM IS INSTALLED, DISCONNECT THE EXISTING COMMUNICATIONS CABLES INSIDE THE SIGNAL CABINETS AT SIGNAL 07-0908 AND SIGNAL 07-2098, PROMPTLY SWITCH TO THE NEW FIBER AND REMOVE THE EXISTING 6-FIBER DROP CABLE FOR SIGNAL 07-2098 AS SHOWN. REMOVED THE EXISTING ANTENNAS AND CABLES FOR TEMPORARY SIGNALS NUMBERED 07-2024, 07-2025, 07-1349, AND 07-2060.
- REUSE EXISTING FIELD ETHERNET SWITCH.
- NOTIFY THE DEPUTY TRAFFIC ENGINEER MARK ALDRIDGE AT 336-487-0175 TWO (2) WEEKS PRIOR TO BEGINNING WORK ON SIGNAL SYSTEM COMMUNICATIONS CABLE. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.

SEE SCP 11 FOR SPLICE DETAILS

SEE SCP 12 FOR SPLICE DETAILS

INSTALL 8.5 DB GAIN YAGI ANTENNA VERTICALLY POLARIZED, SEE NOTE 3
ATTACH ANTENNA 24" BELOW TOP OF SIGNAL POLE

REMOVE EXISTING ANTENNA & CABLES

EXISTING I-40 / I-85 ITS FIBERS

EXISTING I-40 / I-85 ITS FIBERS

SEE NOTE 6

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TMP Final Communications Plan

SR 1007 (Mebane Oaks Rd) CLS Cable Routing Plan

Division 7 Alamance County Mebane
 PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng
 PREPARED BY: Z. "Gavin" Teng REVIEWED BY:

REVISIONS	INIT.	DATE

SCALE: 1" = 50'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 NORTH CAROLINA PROFESSIONAL ENGINEER
 ZHAOLONG TENG
 032179
 12/17/2019
 DATE

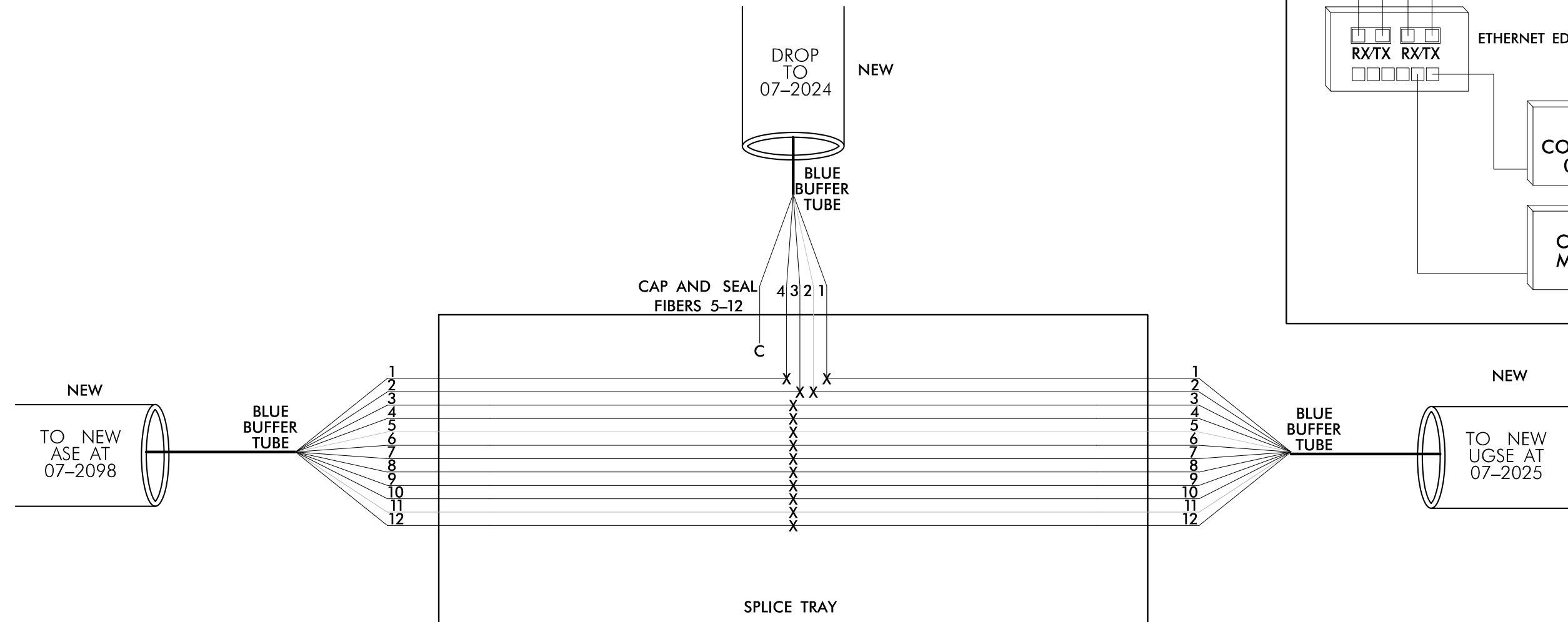
NEW UNDERGROUND SPlice ENCLOSURE
 SR 1007 (MEBANE OASK ROAD)
 AT
 I-40 WB /I-85 SB RAMPS
 SIG. INV. # 07-2024

NOTES:
 UNUSED FIBERS LEFT COILED AND STORED IN SPlice TRAY.
 UNUSED BUFFER TUBES LEFT COILED AND STORED IN SPlice TRAY.

COLOR CODE
 TIA/EIA 598-A

- (1) BLUE (7) RED
- (2) ORANGE (8) BLACK
- (3) GREEN (9) YELLOW
- (4) BROWN (10) VIOLET
- (5) SLATE (11) ROSE
- (6) WHITE (12) AQUA

LEGEND
 X = FUSION SPlice
 C = CAP IN TRAY



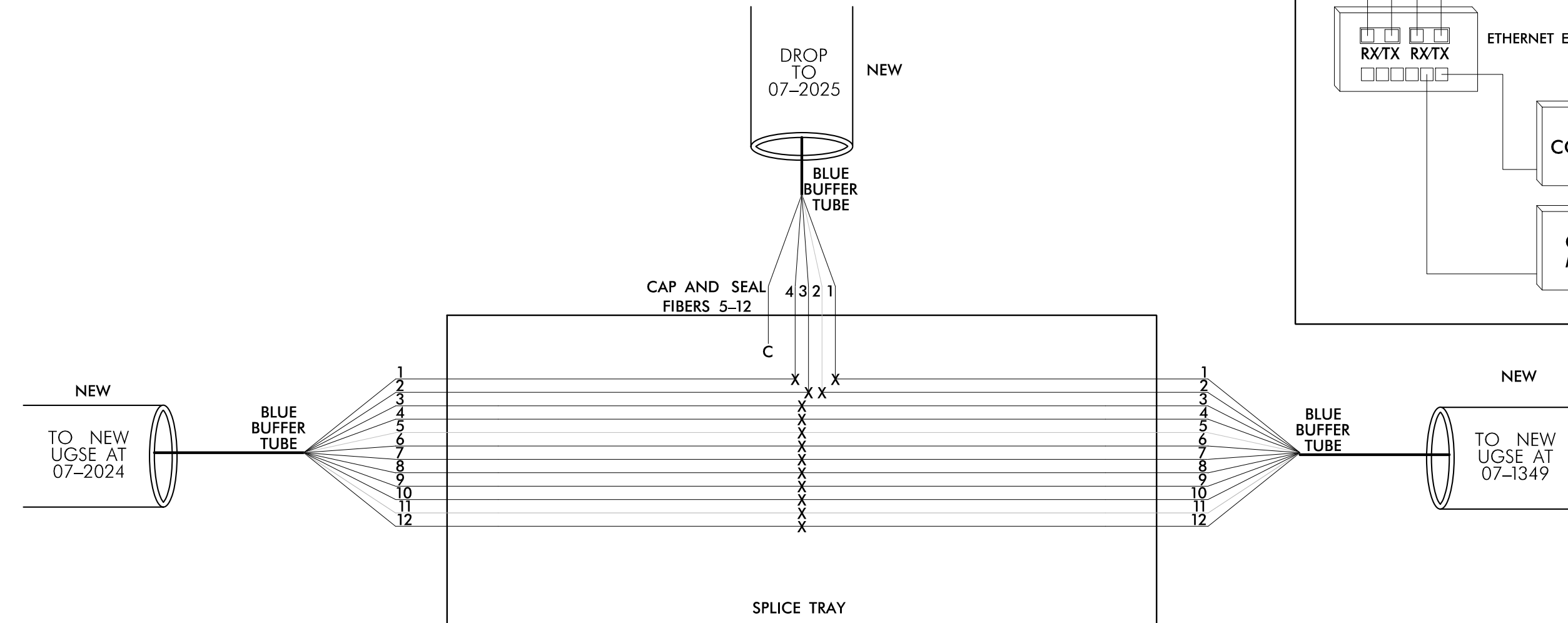
NEW UNDERGROUND SPlice ENCLOSURE
 SR 1007 (MEBANE OASK ROAD)
 AT
 I-40 EB /I-85 NB RAMPS
 SIG. INV. # 07-2025

NOTES:
 UNUSED FIBERS LEFT COILED AND STORED IN SPlice TRAY.
 UNUSED BUFFER TUBES LEFT COILED AND STORED IN SPlice TRAY.

COLOR CODE
 TIA/EIA 598-A

- (1) BLUE (7) RED
- (2) ORANGE (8) BLACK
- (3) GREEN (9) YELLOW
- (4) BROWN (10) VIOLET
- (5) SLATE (11) ROSE
- (6) WHITE (12) AQUA

LEGEND
 X = FUSION SPlice
 C = CAP IN TRAY



CONTROLLER CABINET
 SIG. INV. # 07-1349

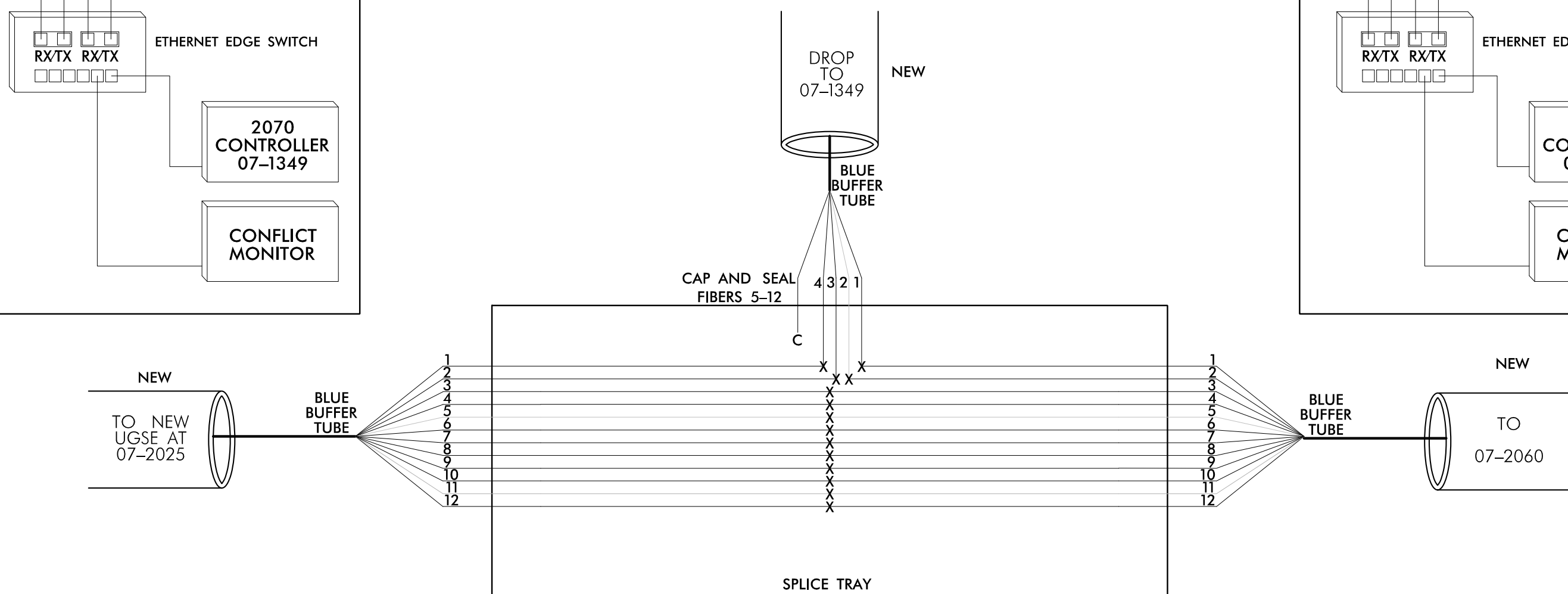
NEW UNDERGROUND SPlice ENCLOSURE
 SR 1007 (MEBANE OASK ROAD) AT
 SR 2186 (BRUNDAGE LANE) /
 SR 2210 (FOREST OAKS LANE)
 SIG. INV. # 07-1349

COLOR CODE
 TIA/EIA 598-A

- (1) BLUE (7) RED
- (2) ORANGE (8) BLACK
- (3) GREEN (9) YELLOW
- (4) BROWN (10) VIOLET
- (5) SLATE (11) ROSE
- (6) WHITE (12) AQUA

LEGEND
 X = FUSION SPlice
 C = CAP IN TRAY

NOTES:
 UNUSED FIBERS LEFT COILED AND STORED IN SPlice TRAY.
 UNUSED BUFFER TUBES LEFT COILED AND STORED IN SPlice TRAY.



CONTROLLER CABINET
 SIG. INV. # 07-2060

NOTES:

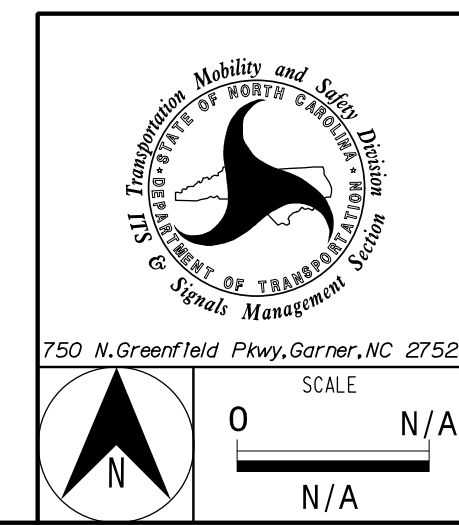
1. THE NCDOT DIVISION 7 WILL FURNISH THE CELL MODEM. EIGHT (8) WEEKS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE NCDOT DIVISION 7 DEPUTY TRAFFIC ENGINEER MARK ALDRIDGE AT 336-487-0175 TO OBTAIN THE CELL MODEM AND REQUEST THE DIVISION'S ASSISTANCE IN PROGRAMMING THE NEW ETHERNET EDGE SWITCHES WITH THE NECESSARY NETWORK CONFIGURATION DATA, INCLUDING BUT NOT LIMITED TO: THE PROJECT IP ADDRESS, DEFAULT GATEWAY, SUBNET MASK AND VLAN ID INFORMATION. NOTIFY THE DEPUTY TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL FIBER CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
2. CONTRACTOR TO RECORD EXISTING SPlice ARRANGEMENT FOR COMPARISON TO THE SUPPLIED SPlice DETAILS. IF DISCREPANCIES EXIST, CONTACT THE ENGINEER TO DETERMINE HOW TO PROCEED WITH RESPLICING. PROVIDE AS-BUILT PLANS TO THE ENGINEER IF FINAL SPlice ARRANGEMENT DIFFERS FROM THE SUPPLIED SPlice DETAILS.
3. ETHERNET SWITCH TERMINATION CONFIGURATIONS ARE GENERIC. CONTRACTOR IS RESPONSIBLE FOR DETERMINING \ ENSURING PROPER TERMINATIONS.
4. INCLUDE ON THE COVER OF EACH SPlice TRAY THE FOLLOWING:
 REFERENCE NCDOT 2018 STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTION 1731 "FIBER OPTIC SPlice ENCLOSURE"

- 1) SPlice LOCATION
- 2) DATE
- 3) COMPANY NAME
- 4) NAME OF INDIVIDUAL PERFORMING THE SPlicing

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.

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$
 \$\$\$SYTIME\$\$\$\$\$

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FINAL COMMUNICATIONS PLAN
SPlice DETAILS

Division 7 Alamance County Mebane

PLAN DATE: November 2019 REVIEWED BY: Z. "Gavin" Teng

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

REVISIONS	INIT.	DATE

SCALE: 0 N/A

DATE: 12/17/2019

CADD Filename:

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STATE OF NORTH CAROLINA

PROFESSIONAL ENGINEER

ZHAOLONG TENG

032179

DATE: 12/17/2019