

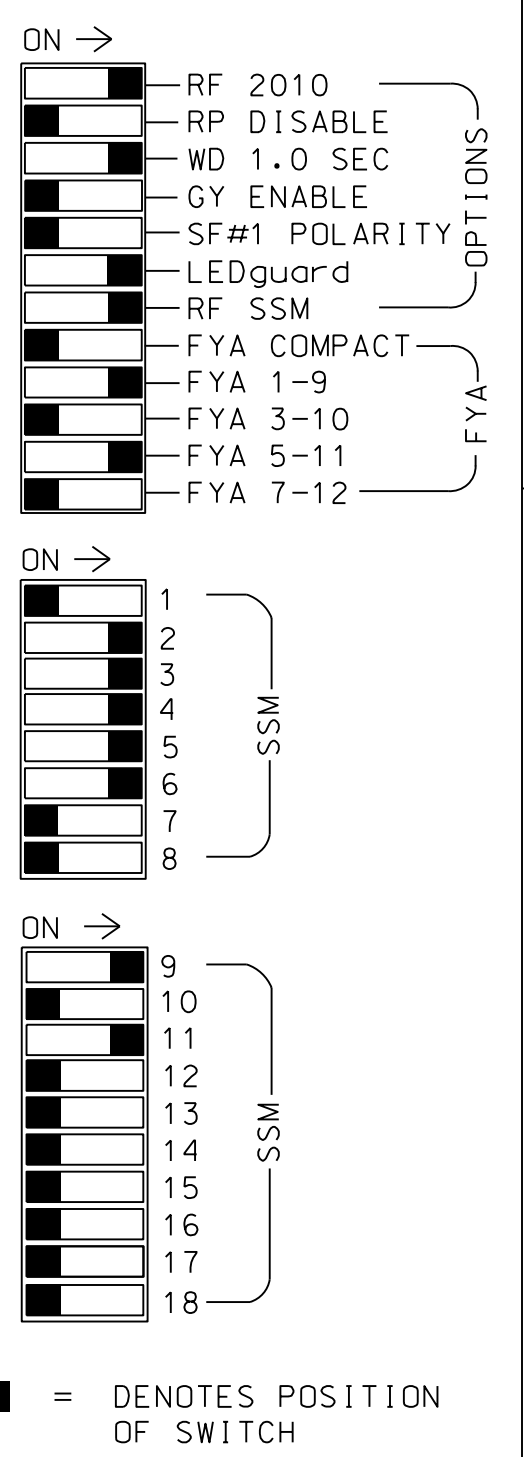
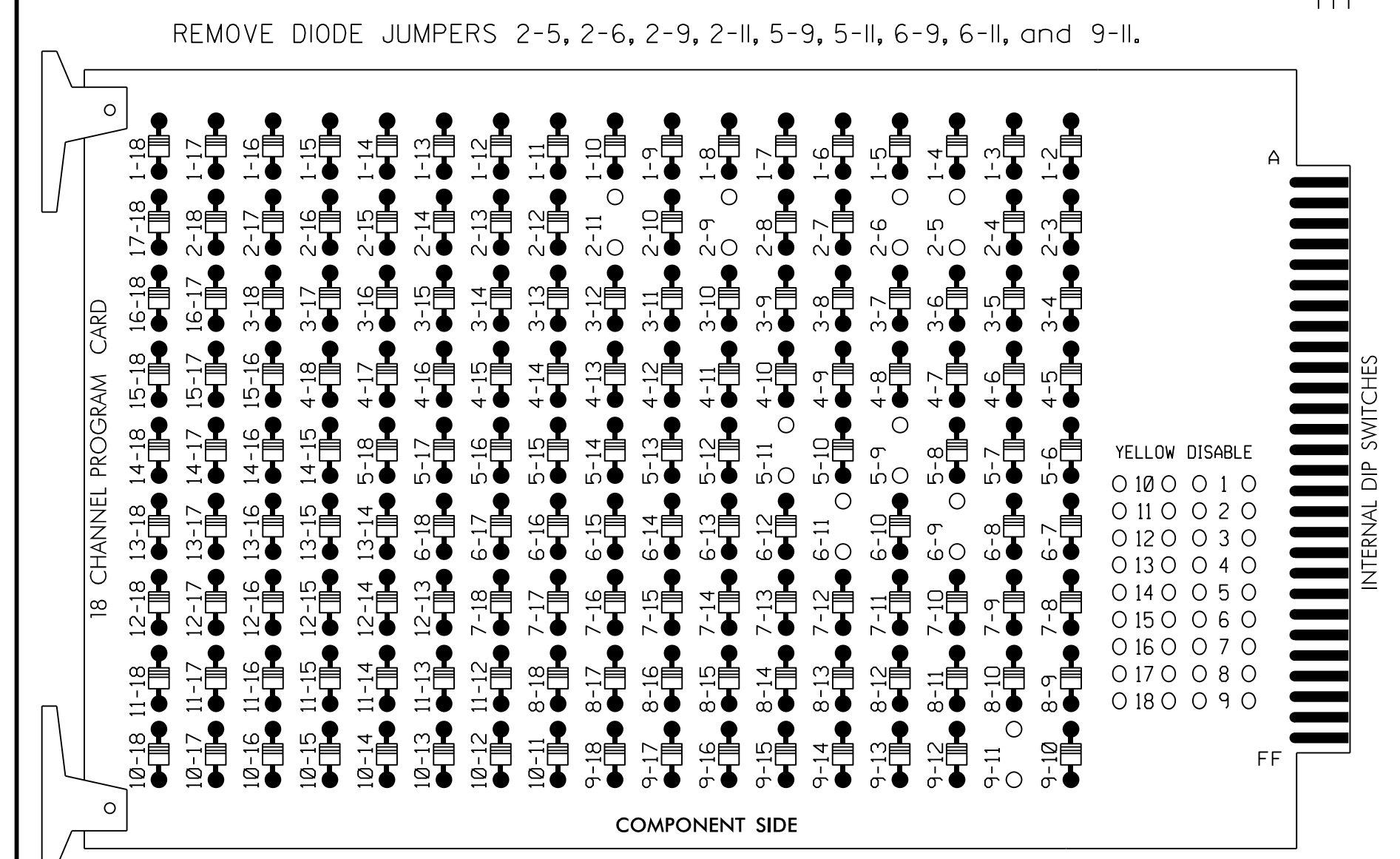
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EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(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 6 Green.
- The cabinet and controller are part of the Fayetteville Signal 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,S4,S5,S7,S8,
 AUX S1,AUX S4
 PHASES USED.....2,3,4,5,6
 OVERLAP "A".....*
 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	31,32	33,34	41	42,43	NU	51	43	62,63	NU	NU	NU	61	NU	NU	51	NU
RED		128		116	101	101		*		134									
YELLOW		129		117	102	102				135									
GREEN		130		118	103	103				136									
RED ARROW				116											A121			A114	
YELLOW ARROW				117						132					A122			A115	
FLASHING YELLOW ARROW															A123			A116	
GREEN ARROW				118	103		133	133											

NU = Not Used

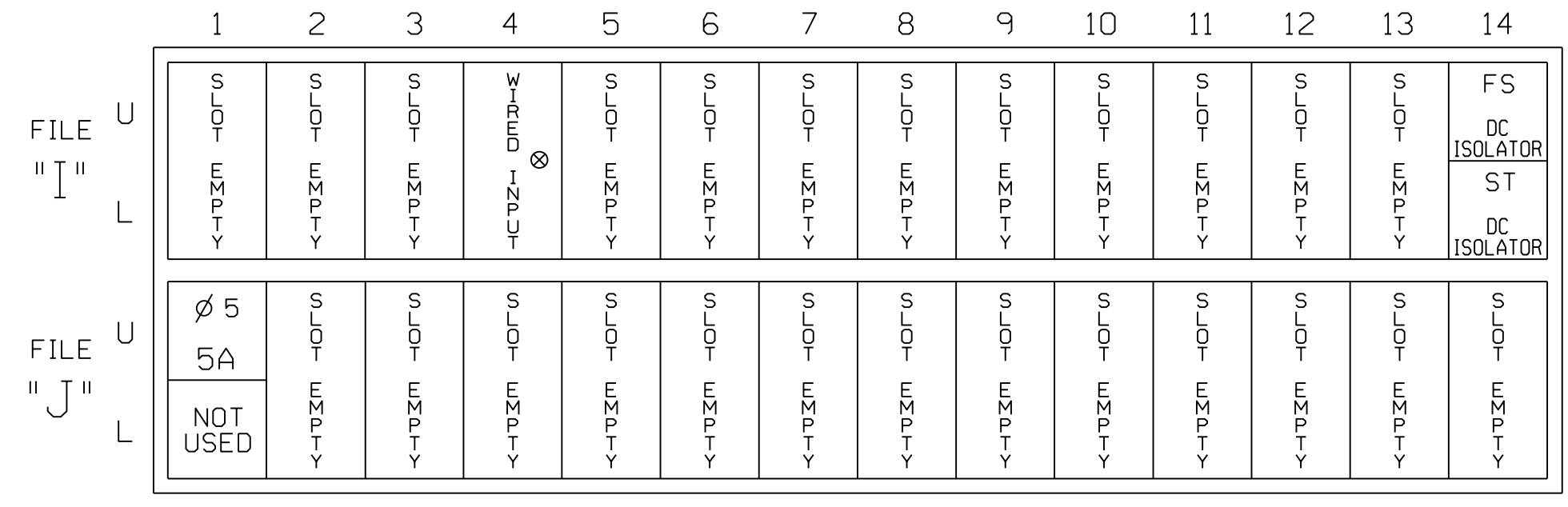
- * Denotes install load resistor. See load resistor installation detail this sheet.
- ★ See pictorial of head wiring in detail this sheet.

DETECTOR NOTES

- For all loops, 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.
- For loop 5A, detector card placement and slot reserved for wired inputs are typical for a NCDOT installation. Inputs associated with this slot are compatible with time of day instructions located on sheet 2 of this electrical detail.

INPUT FILE POSITION LAYOUT

(front view)



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

FS = FLASH SENSE
ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

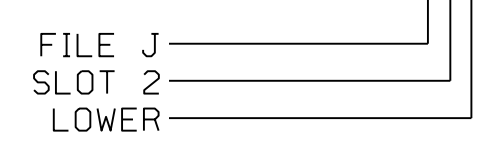
INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
5A ¹	-	J1U	58	5 ★	5	YES		15		S
	-	14U	47	22 ★	2	YES				S

¹Add jumper from J1-W to 14-W, on rear of input file.

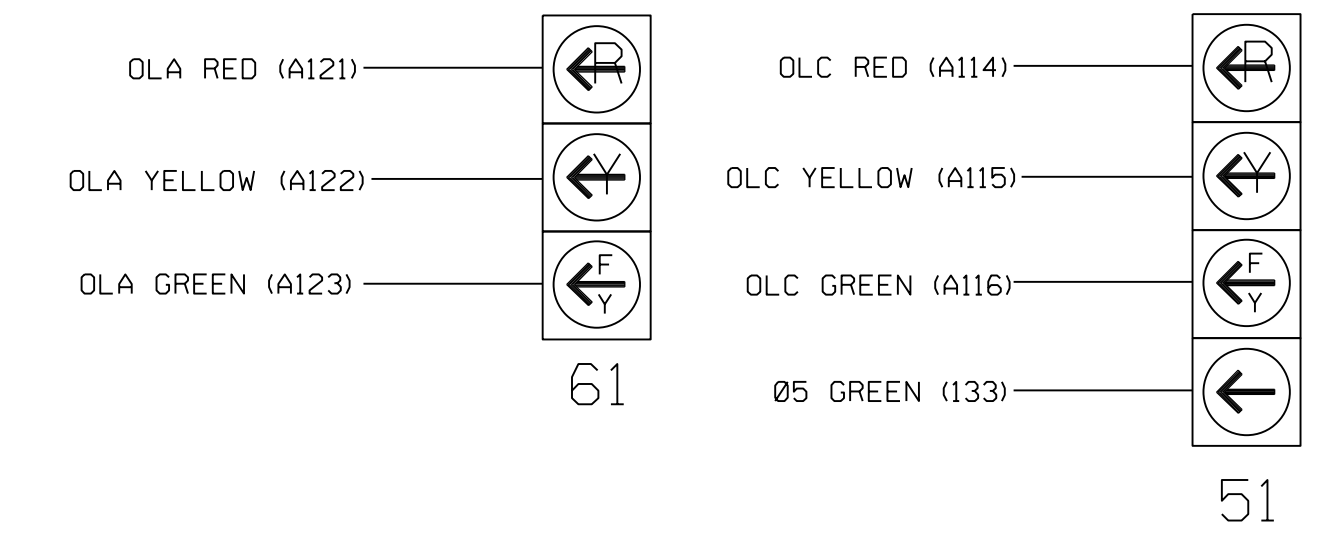
★ See vehicle detector setup programming detail for alternate phasing on sheet 2.

INPUT FILE POSITION LEGEND: J2L



FYA SIGNAL WIRING DETAIL

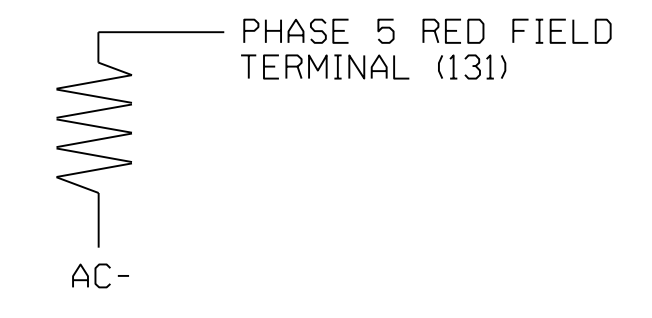
(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0002T1
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 1 - TMP Phase I Electrical Detail - Sheet 1 of 2

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Lawrence E. Overn
 Professional Engineer
 License No. 045933
 3/29/2018

REVISIONS	INIT.	DATE

US 401 Bus./SR 1414 (Raeford Road) at US 401 Bus. (Robeson Street) /McPhee Drive
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: G B Spell REVIEWED BY: L Overn

DATE: U:\Projects\Signal\Signal\Temp\Detail\Signal\Phase 1\U-4405.sig.ele.06-0002T1.dgn User: rrmunicy

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- 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 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 SF BIT DISABLE 5

END PROGRAMMING

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 "3.0".

```

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... 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 '3.0'

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

```

VEH DETECTOR [22] 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
22 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

```

NOTICE VEH DET PLAN 2

ENSURE PHASE IS SET TO "0"

END PROGRAMMING

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 . . . . .

```

DATE: 03/29/2018 11:04:11 AM User: rmlunacy

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 DEFAULT PHASING	1	NONE
ACTIONS REQUIRED TO RUN ALTERNATE PHASING	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 3 seconds.

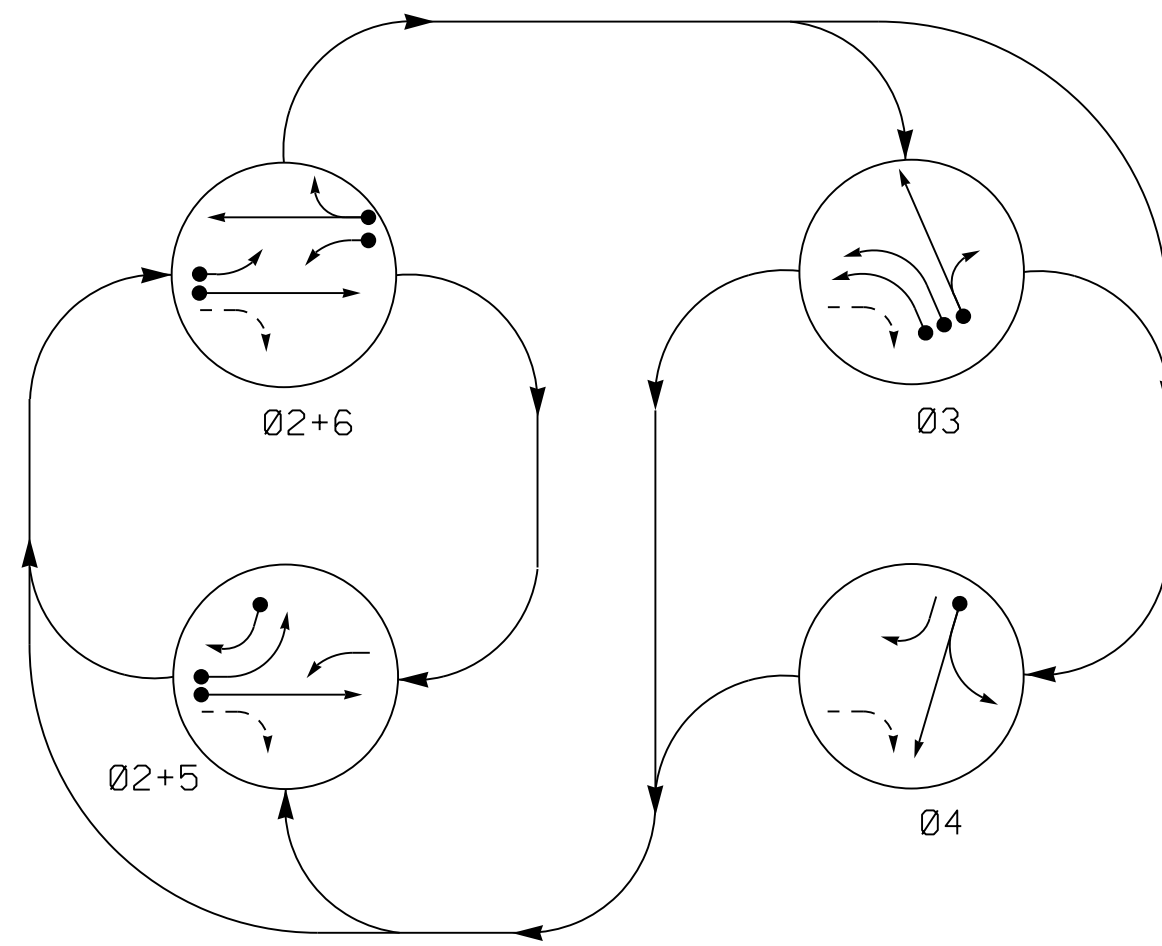
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0002T1
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 1 - TMP Phase I
Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>Prepared in the Offices of:</p> <p>750 N. Greenfield Pkwy, Garner, NC 27529</p>	<p>US 401 Bus./SR 1414 (Raeford Road) at US 401 Bus. (Robeson Street) /McPhee Drive</p> <p>Division 6 Cumberland County Fayetteville</p>		<p>SEAL LAWRENCE E. OVERN ENGINEER 045933 3/29/2018</p>				
		<p>PLAN DATE: March 2018</p> <p>REVIEWED BY: L Overn</p> <p>PREPARED BY: G B Spell</p>	<p>REVIEWED BY:</p>		<table border="1"> <tr> <th>REVISIONS</th> <th>INIT.</th> <th>DATE</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	REVISIONS	INIT.	DATE
REVISIONS	INIT.	DATE						

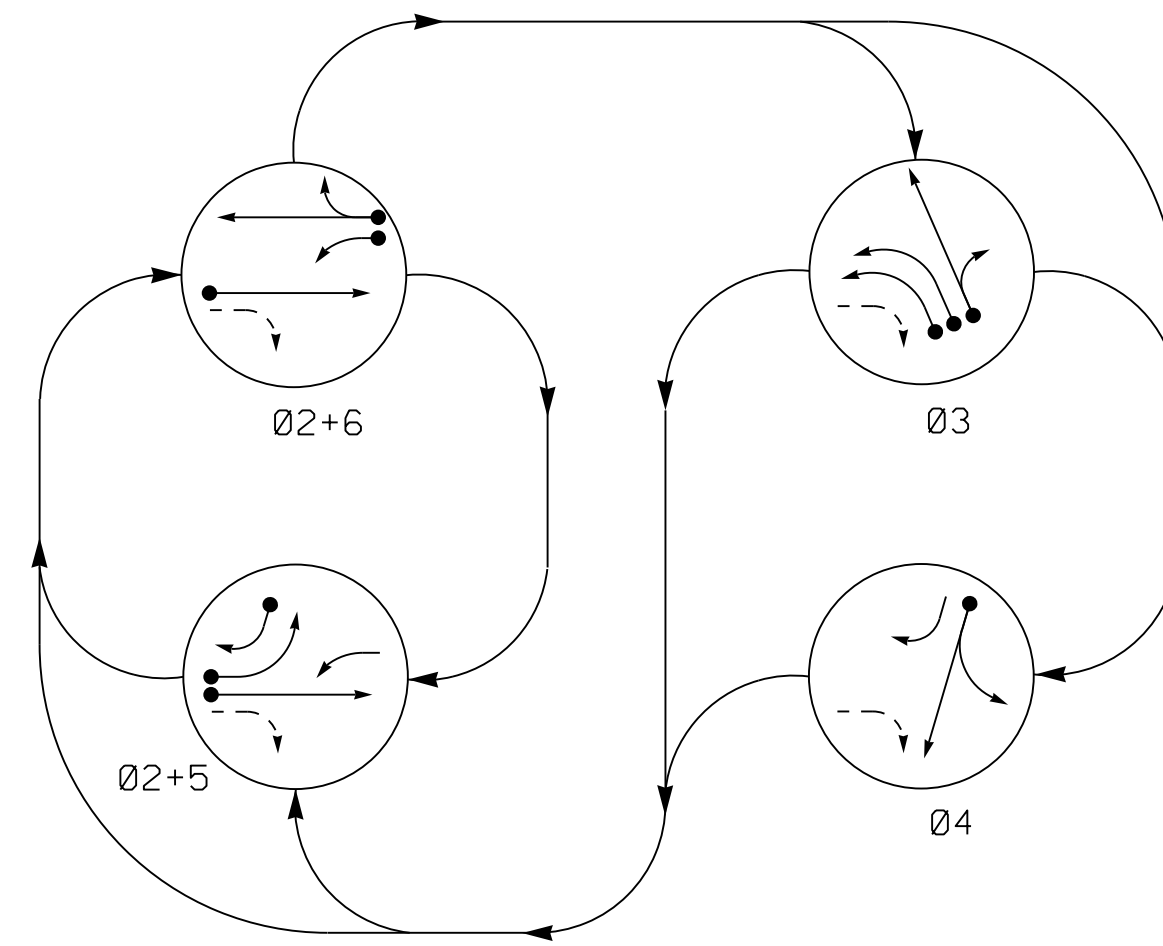
DEFAULT PHASING DIAGRAM



DEFAULT PHASING TABLE OF OPERATION

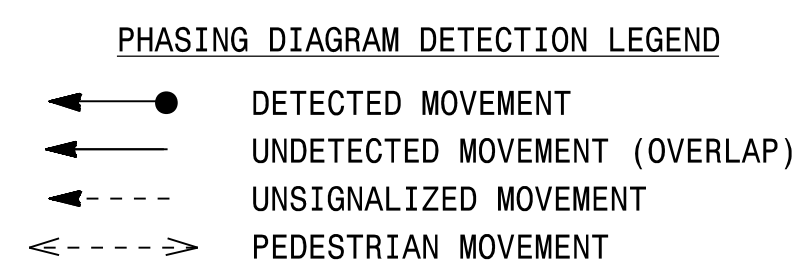
SIGNAL FACE	PHASE				
	02+5	02+6	03	04	F L P S H
21,22	G	G	R	R	Y
31,32	R	R	G	G	R
33,34	R	R	G	R	R
41	R	R	R	G	R
42	R	R	R	G	R
43	R	R	R	G	R
51	R	R	R	G	Y
61	R	R	R	G	Y
62,63	R	G	R	R	Y

ALTERNATE PHASING DIAGRAM

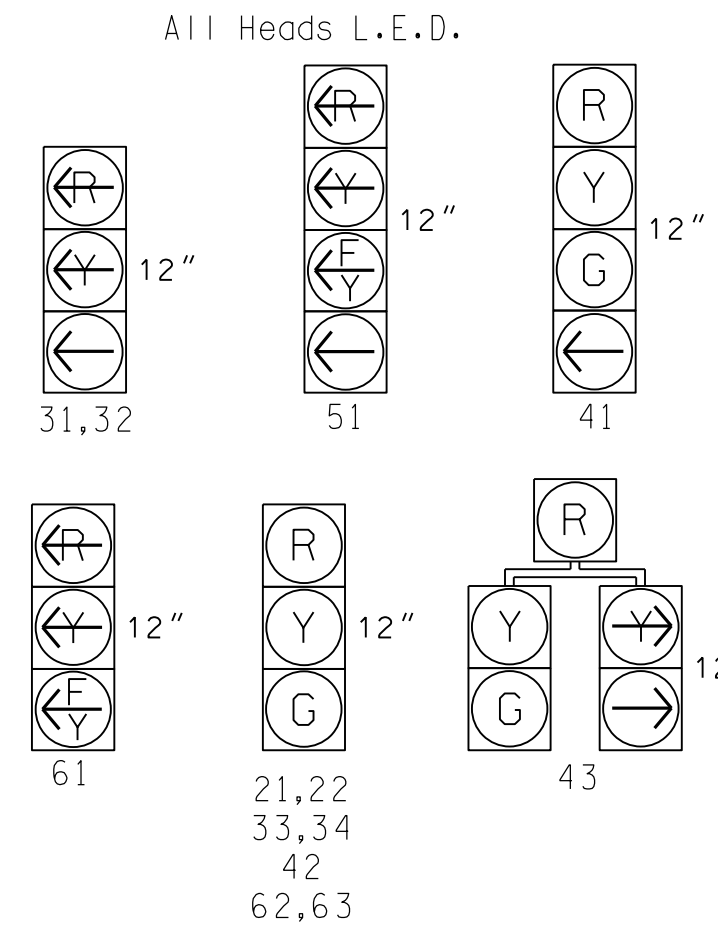


ALTERNATE PHASING TABLE OF OPERATION

SIGNAL FACE	PHASE				
	02+5	02+6	03	04	F L P S H
21,22	G	G	R	R	Y
31,32	R	R	G	G	R
33,34	R	R	G	R	R
41	R	R	R	G	R
42	R	R	R	G	R
43	R	R	R	G	R
51	R	R	R	G	Y
61	R	R	R	G	Y
62,63	R	G	R	R	Y



SIGNAL FACE I.D.



ASC/3 DETECTOR INSTALLATION CHART

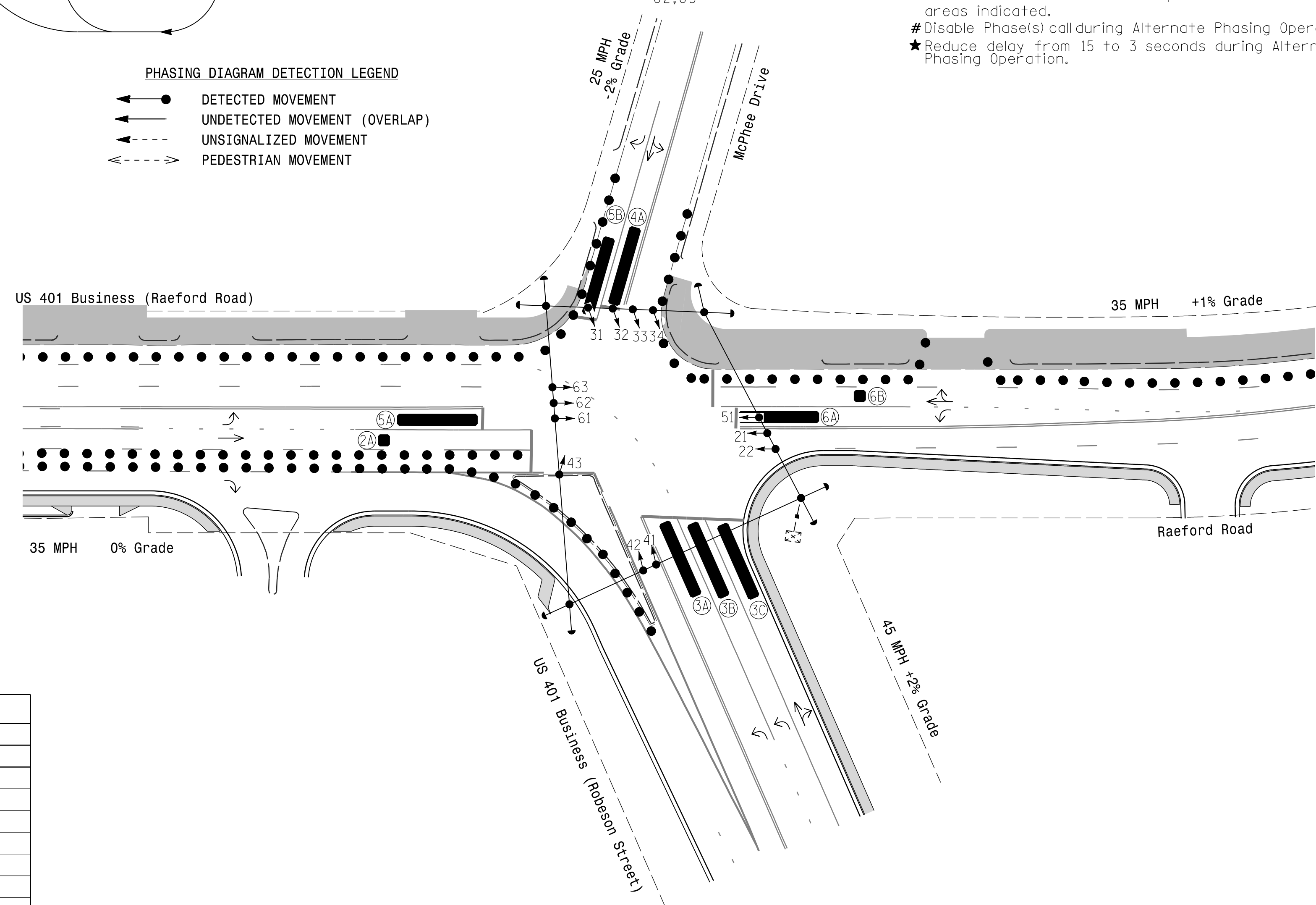
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PROGRAMMING						
					PHASE	CALLING	EXTEND TIME	DELAY TIME	UUSE ADDED INITIAL	TYPE	SYSTEM LOOP
2A	6X6	70	*	-	2	Yes	-	-	-	S	-
3A	6X40	0	*	-	3	Yes	-	3	-	S	-
3B	6X40	0	*	-	3	Yes	-	-	-	S	-
3C	6X40	0	*	-	3	Yes	-	10	-	S	-
4A	6X40	0	*	-	4	Yes	-	-	-	S	-
5A	6X40	0	*	-	5	Yes	-	15★	-	S	-
5B	6X40	0	*	-	2#	Yes	-	-	-	S	-
6A	6X40	0	*	-	5	Yes	-	15	-	S	-
6B	6X6	70	*	-	6	Yes	-	-	-	S	-

* Video Detection Area. Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.
 # Disable Phase(s) calling during Alternate Phasing Operation.
 ★ Reduce delay from 15 to 3 seconds during Alternate Phasing Operation.

4 Phase Fully Actuated Fayetteville Signal System

NOTES

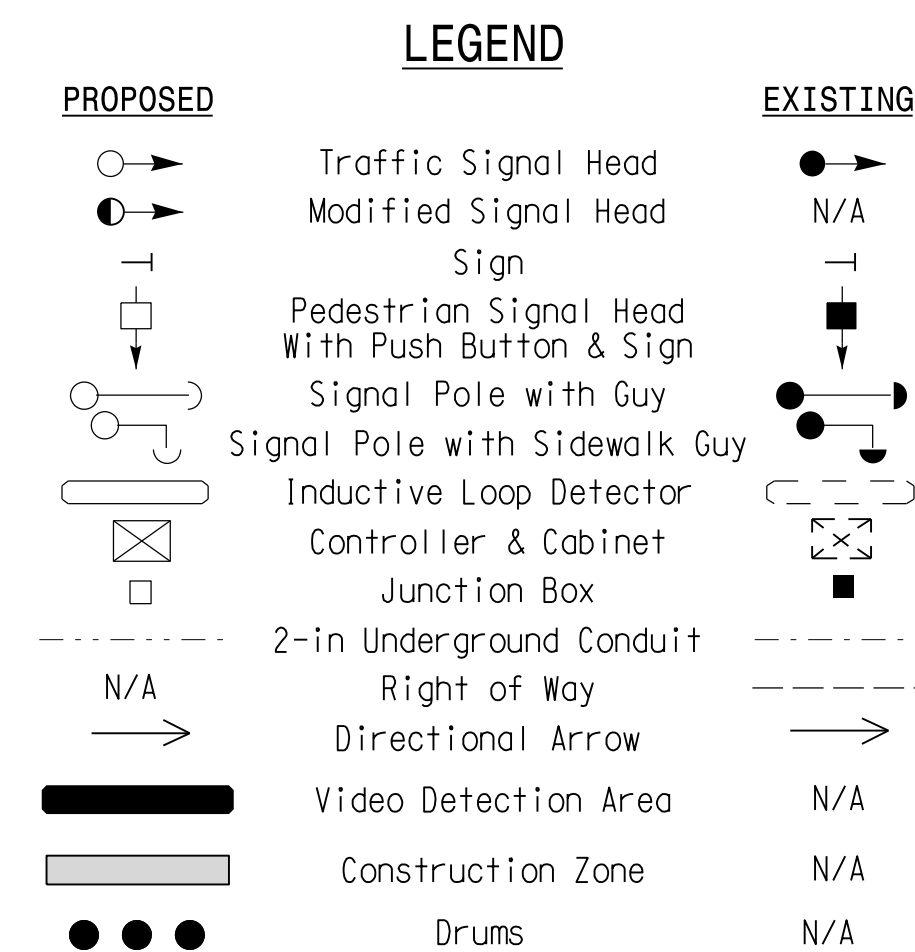
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Reposition existing signal heads numbered 61,62, and 63.
6. Set all detector units to presence mode.
7. The Division (City) Traffic Engineer will determine the hours of use for each phasing plan.
8. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



ASC/3 TIMING CHART

FEATURE	PHASE				
	2	3	4	5	6
Min Green *	10	7	7	7	10
Walk *	-	-	-	-	-
Ped Clear	-	-	-	-	-
Veh. Extension *	3.0	2.0	2.0	2.0	3.0
Max 1 *	45	25	20	15	45
Yellow	3.8	4.3	3.3	3.0	3.8
Red Clear	1.7	2.0	2.5	2.3	1.7
Red Revert	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-
Max Initial *	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-
Time To Reduce *	-	-	-	-	-
Minimum Gap	-	-	-	-	-
Locking Detector	-	X	-	-	X
Recall Position	-	VEH. RECALL	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-
Simultaneous Gap	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 Temporary Design 2 - TMP Phase II

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Prepared for the Offices of:

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 SCALE: 0 40
 1" = 40'

US 401 Bus./SR 1414 (Raeford Road) at US 401 Bus. (Robeson Street) /McPhee Drive
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: E D Harris
 PREPARED BY: G B Spell REVIEWED BY: B L Watson

REVISIONS	INIT.	DATE

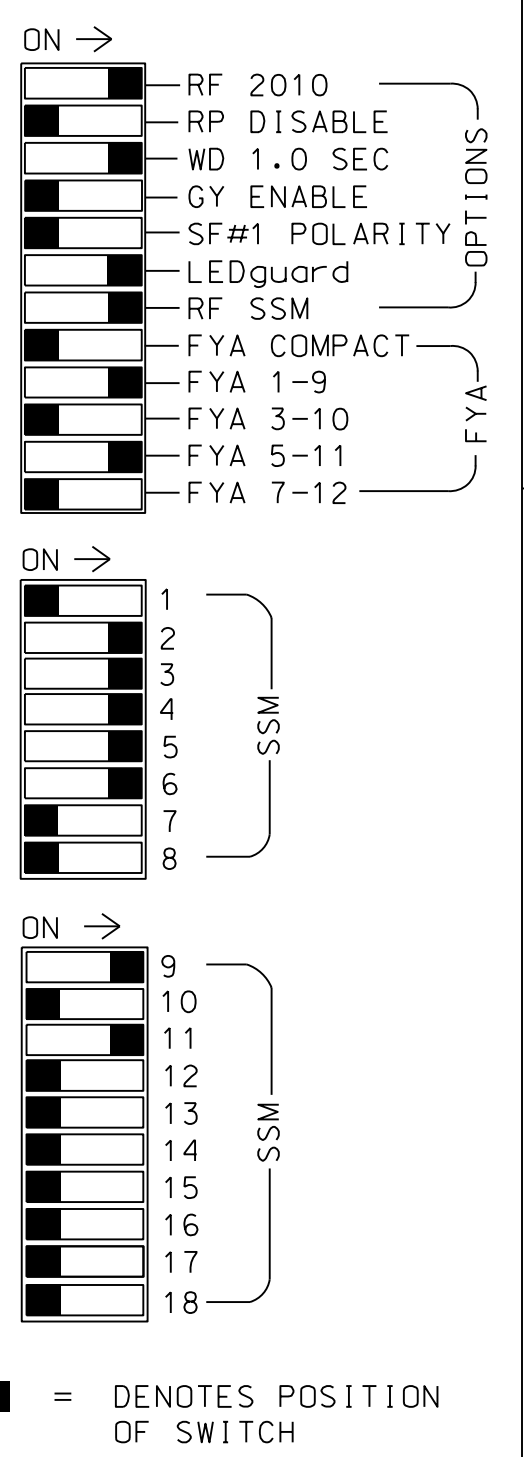
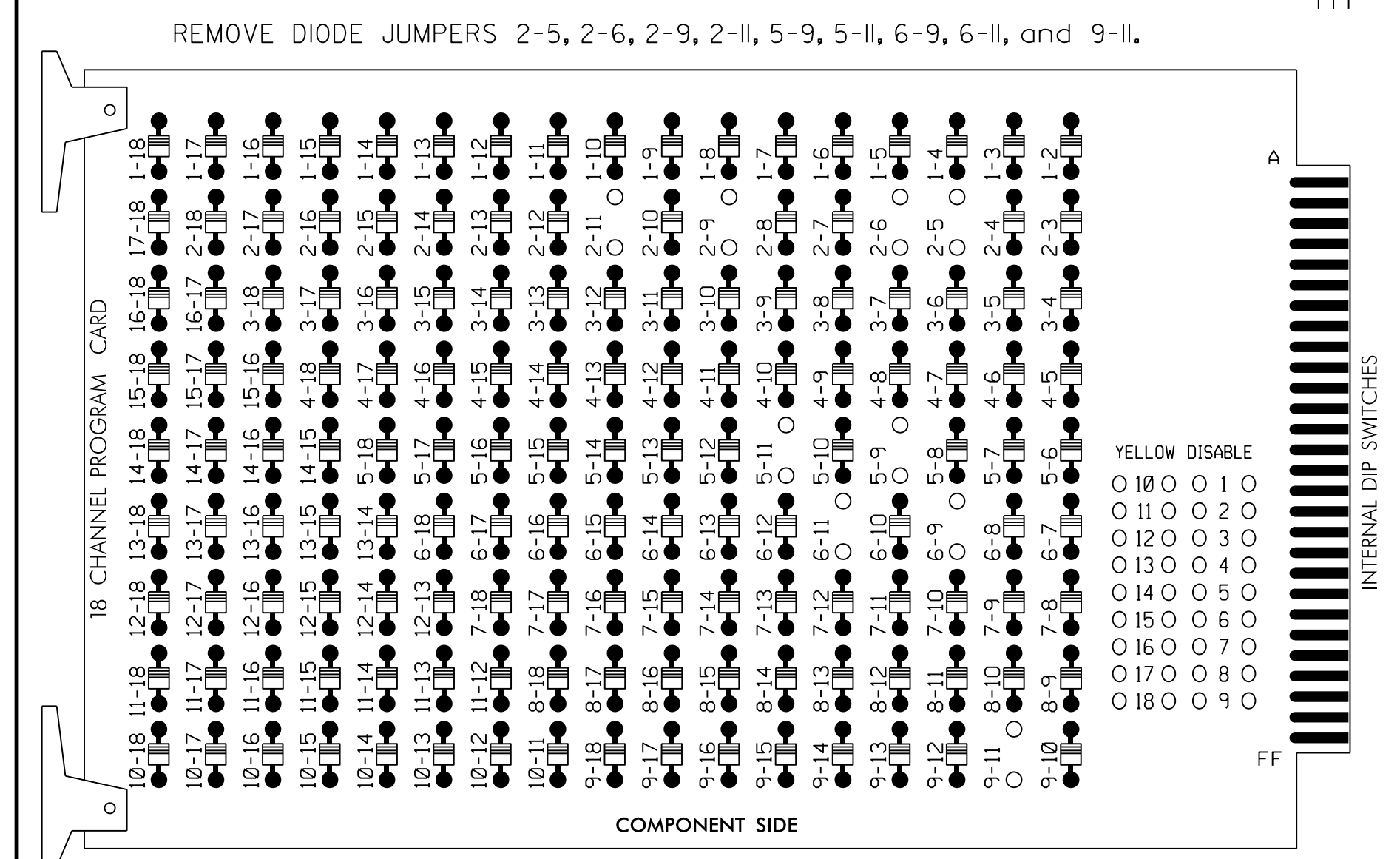
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Professional Engineer Seal 29449
 Betsy L. Watson
 DATE: 3/29/2018
 SIG. INVENTORY NO. 06-000212

3/29/2018 10:58:11 AM
 User: rfmuncy
 C:\Users\rfmuncy\Documents\Signal Design\Phase 2\U-4405.sig.dwg
 User: rfmuncy

EDI MODEL 2018EClip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. 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 controller to start up in phase 2 Green and 6 Green.
3. The cabinet and controller are part of the Fayetteville Signal 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,S4,S5,S7,S8,AUX S1 AUX S4
 PHASES USED.....2,3,4,5,6
 OVERLAP "A".....*
 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	4	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	NU	21,22	NU	31,32 33,34	41 42,43	NU	51*	43	62,63	NU	NU	NU	61*	NU	NU	51*	NU	NU	
RED		128		116	101 101		*		134										
YELLOW		129		117	102 102				135										
GREEN		130		118	103 103				136										
RED ARROW				116									A121				A114		
YELLOW ARROW				117					132				A122				A115		
FLASHING YELLOW ARROW													A123				A116		
GREEN ARROW				118	103		133	133											

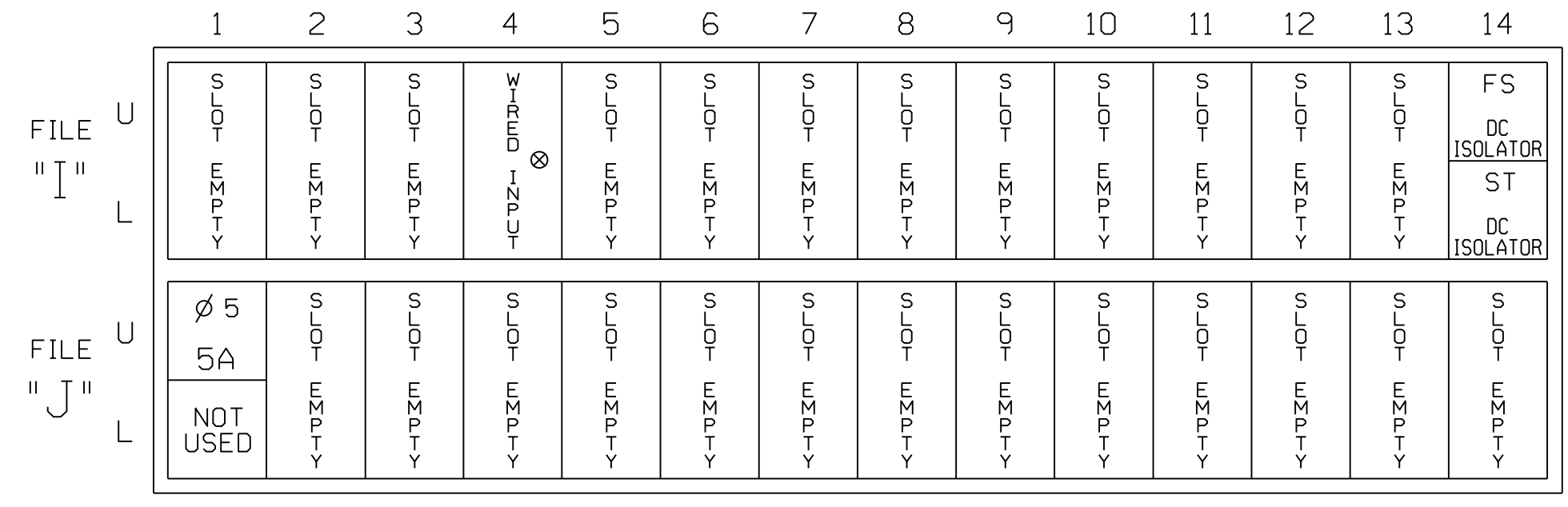
NU = Not Used
 * Denotes install load resistor. See load resistor installation detail this sheet.
 * See pictorial of head wiring in detail this sheet.

DETECTOR NOTES

1. For all loops, 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.
2. For loop 5A, detector card placement and slot reserved for wired inputs are typical for a NCDOT installation. Inputs associated with this slot are compatible with time of day instructions located on sheet 2 of this electrical detail.

INPUT FILE POSITION LAYOUT

(front view)



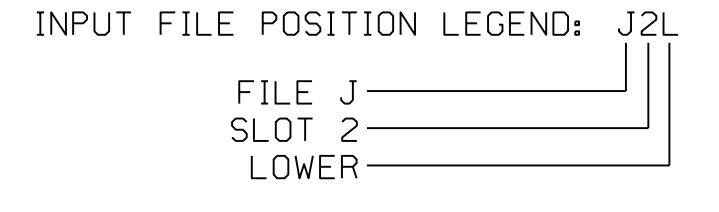
EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME

⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

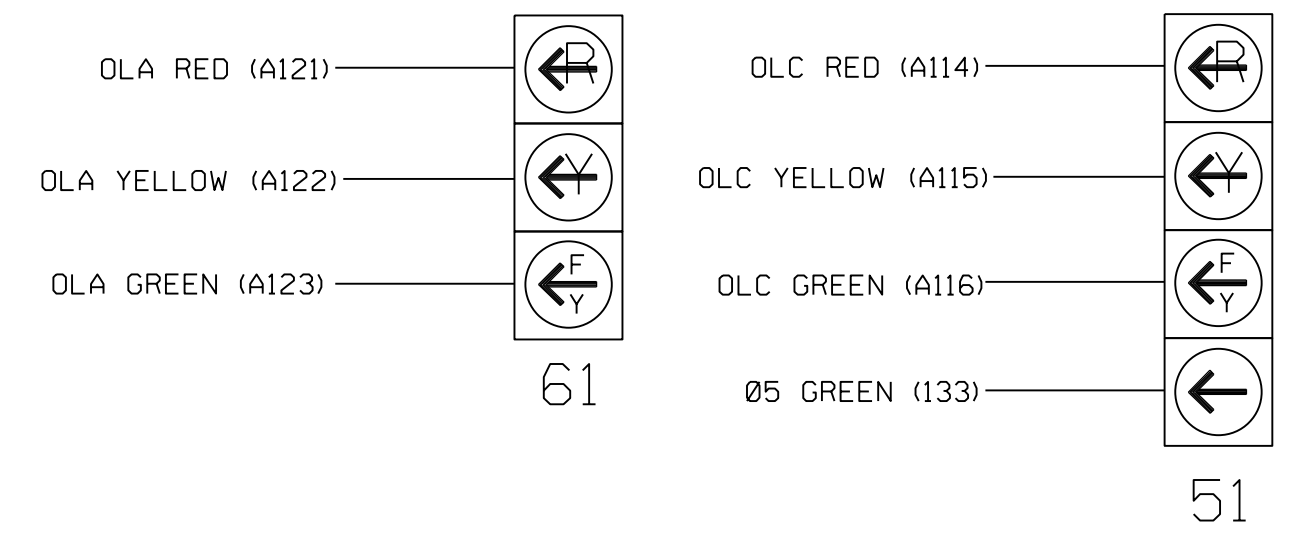
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
5A ¹	-	J1U	58	5 ★	5	YES		15		S
	-	14U	47	22 ★	2	YES				S

¹Add jumper from J1-W to 14-W, on rear of input file.
 ★ See vehicle detector setup programming detail for alternate phasing on sheet 2.



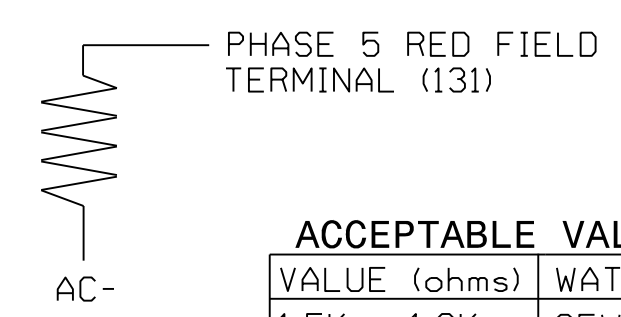
FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)



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: 06-0002T2
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 2 - TMP Phase II Electrical Detail - Sheet 1 of 2

US 401 Bus./SR 1414 (Raeford Road) at US 401 Bus. (Robeson Street) /McPhee Drive
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: G B Spell REVIEWED BY:
 REVISIONS: INIT. DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 LAWRENCE E. OVERN
 3/29/2018
 DATE
 SIG. INVENTORY NO. 06-0002T2

DATE: U:\Projects\Signal\Temp\Detail\Signal\Phase 2\U-4405.sig.ele.06-0002T2.dgn User: rmanney

ECONOLITE ASC/3-2070 OVERLAP PROGRAMMING DETAIL

(program controller as shown)

- From Main Menu select **2. CONTROLLER**
- 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 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
END PROGRAMMING
    
```

NOTICE SF BIT DISABLE 5

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 . . . . .
    
```

DATE: U:\Projects\Signal\Signal\Temp\Phase 2\U-4405\Sig\ele_06-0002T2.dgn User: rmluncney

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 "3.0".

```

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... 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 '3.0'

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

```

VEH DETECTOR [22] 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
22 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
    
```

NOTICE VEH DET PLAN 2

ENSURE PHASE IS SET TO "0"

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 3 seconds.

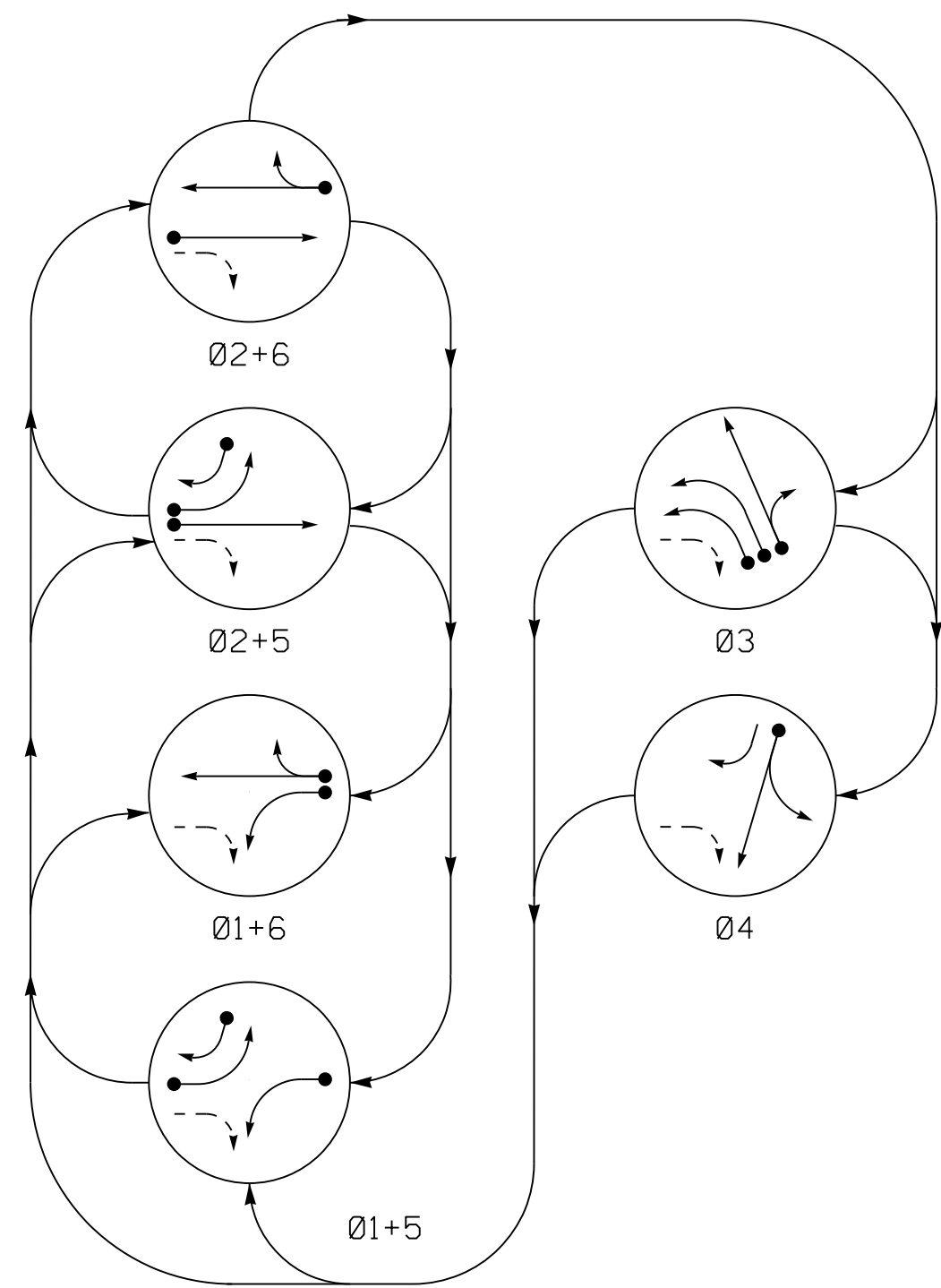
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0002T2
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Temporary Design 2 - TMP Phase II
 Electrical Detail - Sheet 2 of 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>ELECTRICAL AND PROGRAMMING DETAILS FOR:</p> <p>Prepared in the Offices of: Mobility and Traffic Division STATE OF NORTH CAROLINA Department of Transportation Signal Management Section 750 N. Greenfield Pkwy, Garner, NC 27529</p>	US 401 Bus./SR 1414 (Raeford Road) at US 401 Bus. (Robeson Street) /McPhee Drive Division 6 Cumberland County Fayetteville		<p>SEAL</p> <p>3/29/2018</p>
		PREPARED BY: G B Spell REVIEWED BY: L Overn		

PHASING DIAGRAM

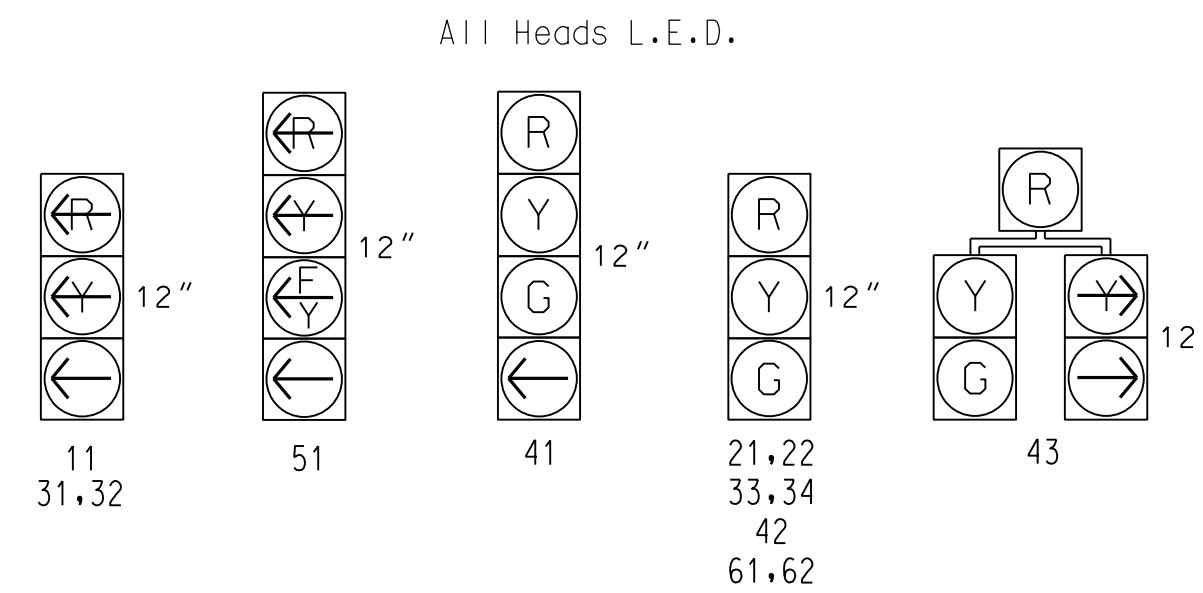


PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

SIGNAL FACE	PHASE						FLASH
	01+5	01+6	02+5	02+6	03	04	
11	←	←	→	→	→	→	Y
21,22	R	R	G	G	R	R	Y
31,32	←	←	→	→	→	→	Y
33,34	R	R	R	R	G	R	R
41	R	R	R	R	R	G	R
42	R	R	R	R	R	G	R
43	R	R	R	R	R	G	R
51	←	←	→	→	→	→	Y
61,62	R	G	R	G	R	R	Y

SIGNAL FACE I.D.



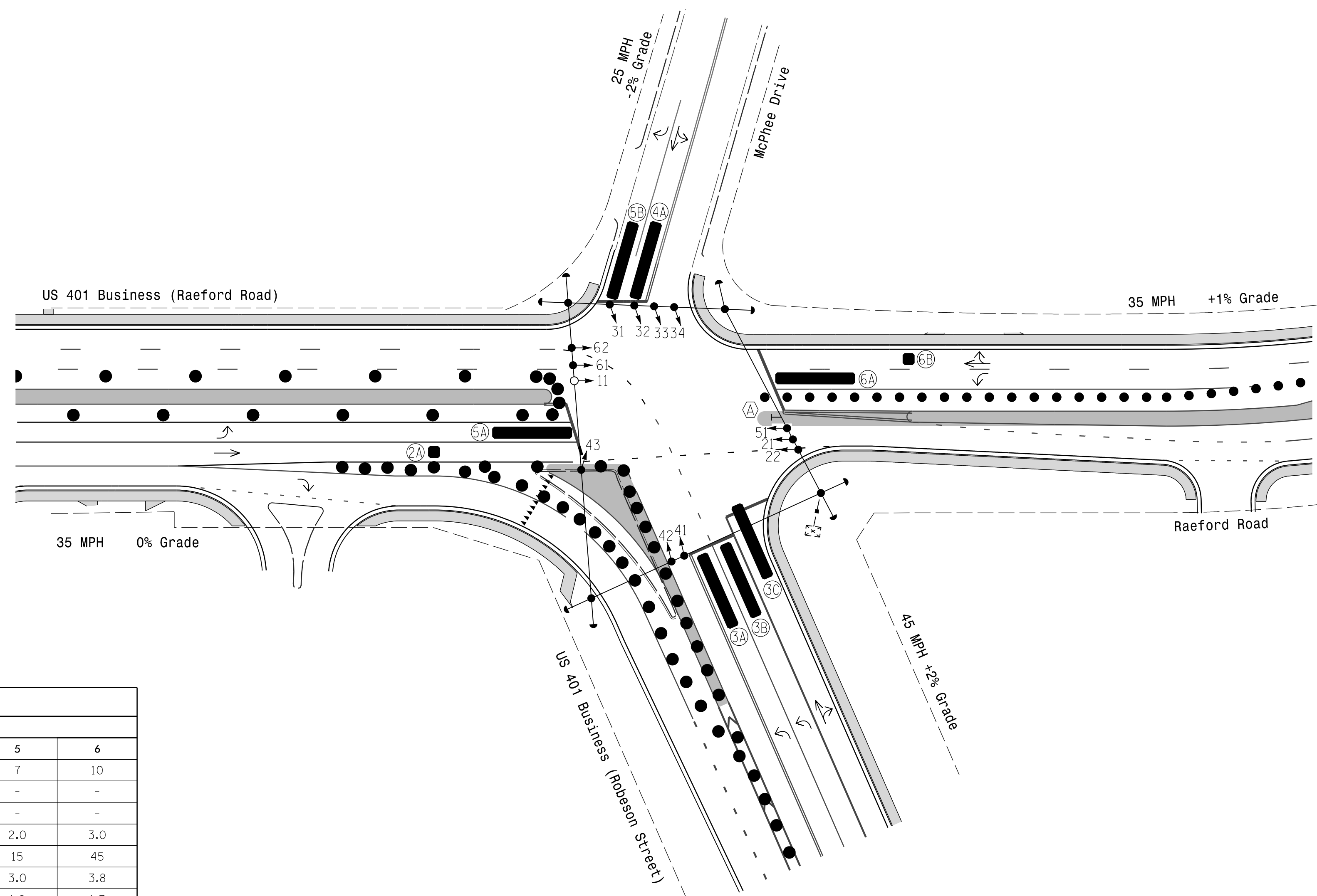
ASC/3 DETECTOR INSTALLATION CHART												
DETECTOR				PROGRAMMING								
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTEND TIME	DELAY TIME	USE ADDED INITIAL	TYPE	SYSTEM LOOP	NEW CARD
2A	6X6	10	*	-	2	Yes	-	-	-	S	-	-
3A	6X40	0	*	-	3	Yes	-	3	-	S	-	-
3B	6X40	0	*	-	3	Yes	-	-	-	S	-	-
3C	6X40	0	*	-	3	Yes	-	10	-	S	-	-
4A	6X40	0	*	-	4	Yes	-	3	-	S	-	-
5A	6X40	0	*	-	5	Yes	-	-	-	S	-	-
5B	6X40	0	*	-	5	Yes	-	15	-	S	-	-
6A	6X40	0	*	-	6	Yes	-	-	-	S	-	-
6B	6X6	70	*	-	6	Yes	-	-	-	S	-	-

* Video Detection Area. Camera locations should be confirmed in the field by the contractor in order to provide detection of the areas indicated.

6 Phase Fully Actuated Fayetteville Signal System

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 1 and/or 5 may be lagged.
- The order of phase 3 and phase 4 may be reversed.
- Reposition existing signal heads numbered 11,21,22,61, and 62.
- Set all detector units to presence mode.
- Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.



FEATURE	PHASE					
	1	2	3	4	5	6
Min Green *	7	10	7	7	7	10
Walk *	-	-	-	-	-	-
Ped Clear	-	-	-	-	-	-
Veh. Extension *	2.0	3.0	2.0	2.0	2.0	3.0
Max 1 *	15	45	25	20	15	45
Yellow	3.0	3.8	4.3	3.3	3.0	3.8
Red Clear	2.8	1.7	2.3	2.5	1.9	1.7
Red Revert	-	-	-	-	-	-
Actuations B4 Add *	-	-	-	-	-	-
Seconds / Actuation *	-	-	-	-	-	-
Max Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Locking Detector	-	X	-	-	-	X
Recall Position	-	VEH. RECALL	-	-	-	VEH. RECALL
Dual Entry	-	-	-	-	-	-
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.

PROPOSED	EXISTING
○ → Traffic Signal Head	● → N/A
○ → Modified Signal Head	○ → N/A
⊥ Sign	⊥ N/A
⊥ Pedestrian Signal Head With Push Button & Sign	⊥ N/A
⊥ Signal Pole with Guy	⊥ N/A
⊥ Signal Pole with Sidewalk Guy	⊥ N/A
⊠ Inductive Loop Detector	⊠ N/A
⊠ Controller & Cabinet	⊠ N/A
⊠ Junction Box	⊠ N/A
--- 2-in Underground Conduit	--- N/A
N/A Right of Way	--- N/A
→ Directional Arrow	→ N/A
▬ Video Detection Area	▬ N/A
▬ Construction Zone	▬ N/A
● Drums	● N/A
Ⓐ "U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	Ⓐ N/A

Signal Upgrade Temporary Design 3 - TMP Phase III

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Prepared for the Offices of:
 Transportation Mobility and Safety Division
 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 Signal Design Section
 750 N. Greenfield Pkwy, Garner, NC 27526
 SCALE: 0 40
 1" = 40'

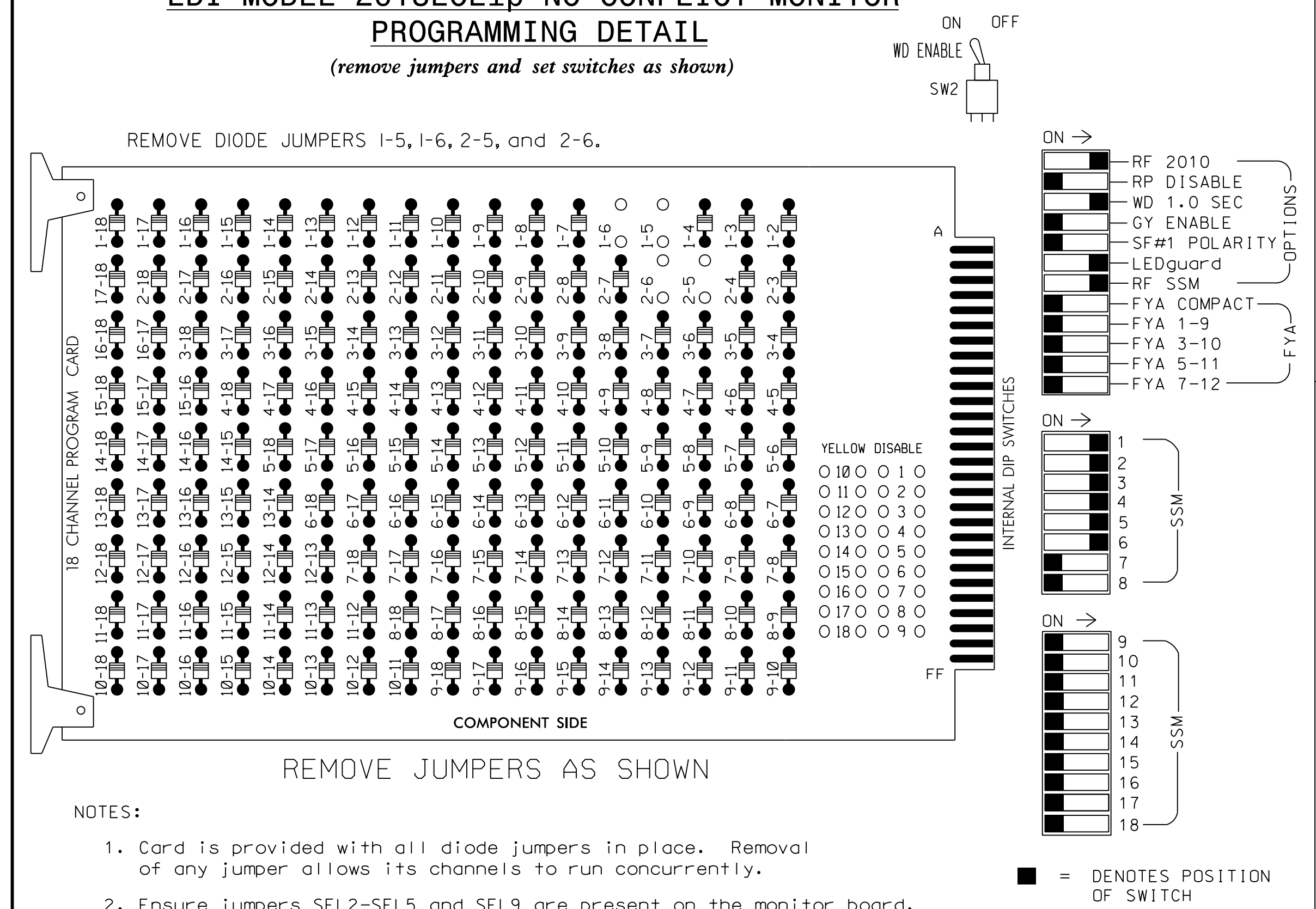
US 401 Bus./SR 1414 (Raeford Road) at US 401 Bus. (Robeson Street) /McPhee Drive
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: E D Harris
 PREPARED BY: G B Spell REVIEWED BY: B L Watson

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 29449
 JESSY L. WATSON
 DATE: 3/29/2018
 SIG. INVENTORY NO. 06-000213

3/29/2018 10:45:11 AM
 User: rfmuncy
 C:\Users\rfmuncy\Documents\Signal Design\Phase 3\U-4405\Signal Design\Phase 3\U-4405.dwg
 User: rfmuncy

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.
 - Return controller to Factory Defaults before programming per this electrical detail.
 - Program controller to start up in phase 2 Green and 6 Green.
 - The cabinet and controller are part of the Fayetteville Signal 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

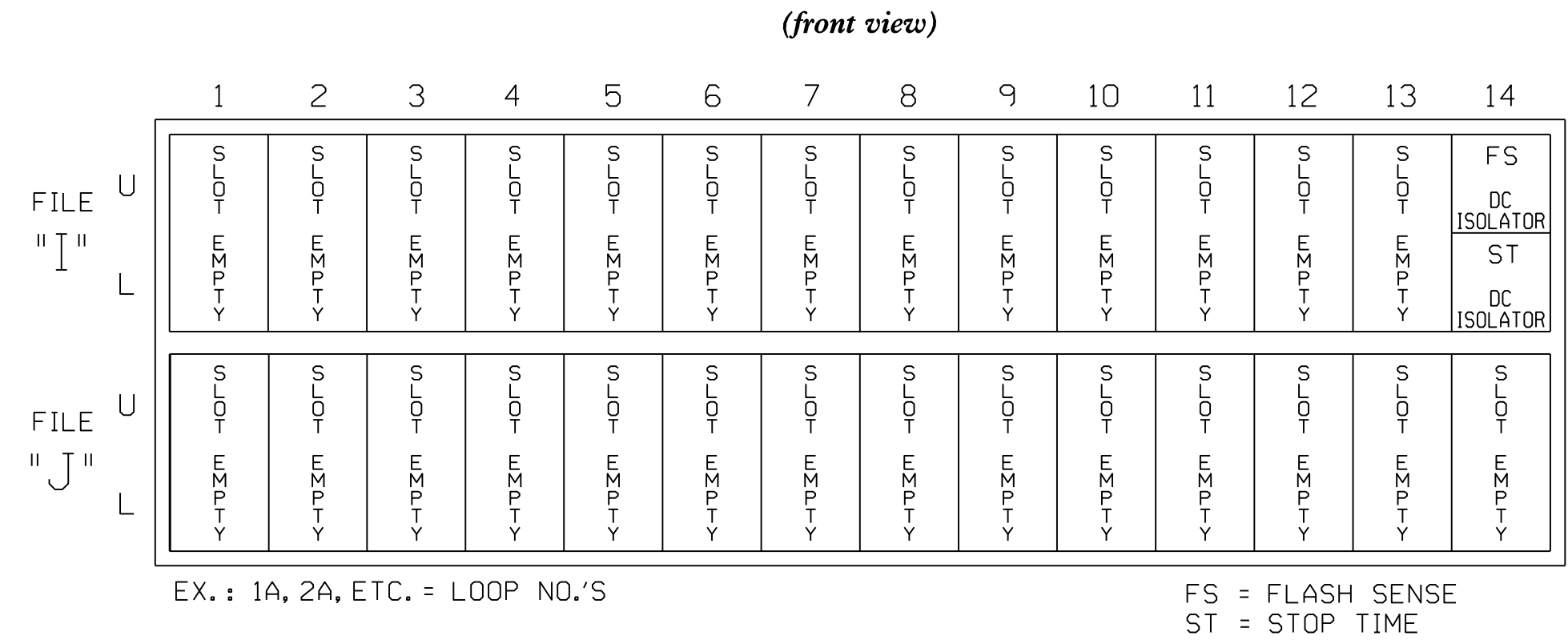
LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8
 PHASES USED.....1,2,3,4,5,6
 OVERLAP "A".....NOT USED
 OVERLAP "B".....NOT USED
 OVERLAP "C".....NOT USED
 OVERLAP "D".....NOT USED

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OLA	QLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	NU	31,32	33,34	41	42,43	NU	51	43	62,63	NU	NU	NU	NU	NU	NU	NU
RED		128			116	101	101				134							
YELLOW		129			117	102	102				135							
GREEN		130			118	103	103				136							
RED ARROW	125				116				131									
YELLOW ARROW	126				117				132	132								
GREEN ARROW	127				118	103			133	133								

NU = Not Used

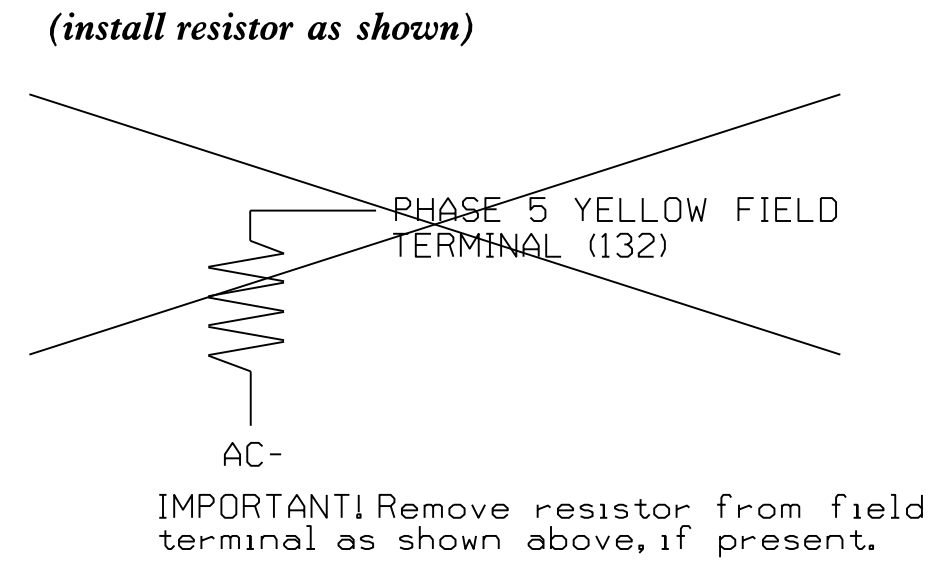
INPUT FILE POSITION LAYOUT



DETECTOR NOTES

- For all loops, 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.
- Remove "Wired Inputs" from rear of input file to prevent unwanted calls to Phase 2.

LOAD RESISTOR INSTALLATION DETAIL

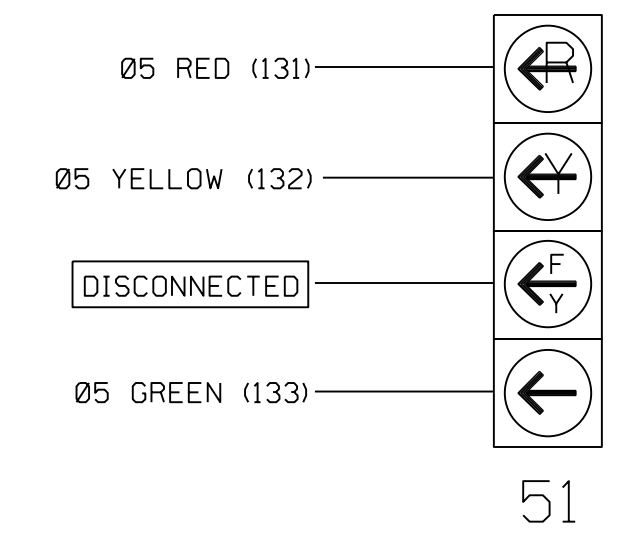


ACCEPTABLE VALUES

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

SIGNAL WIRING DETAIL

(wire signal heads as shown)



THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0002T3
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

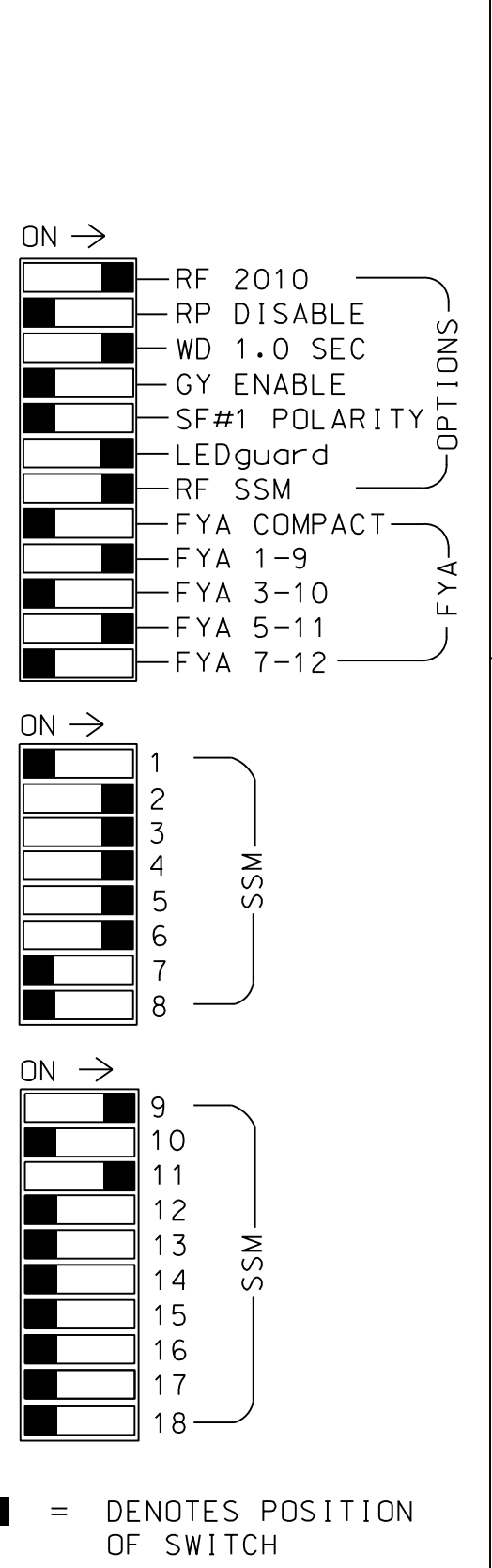
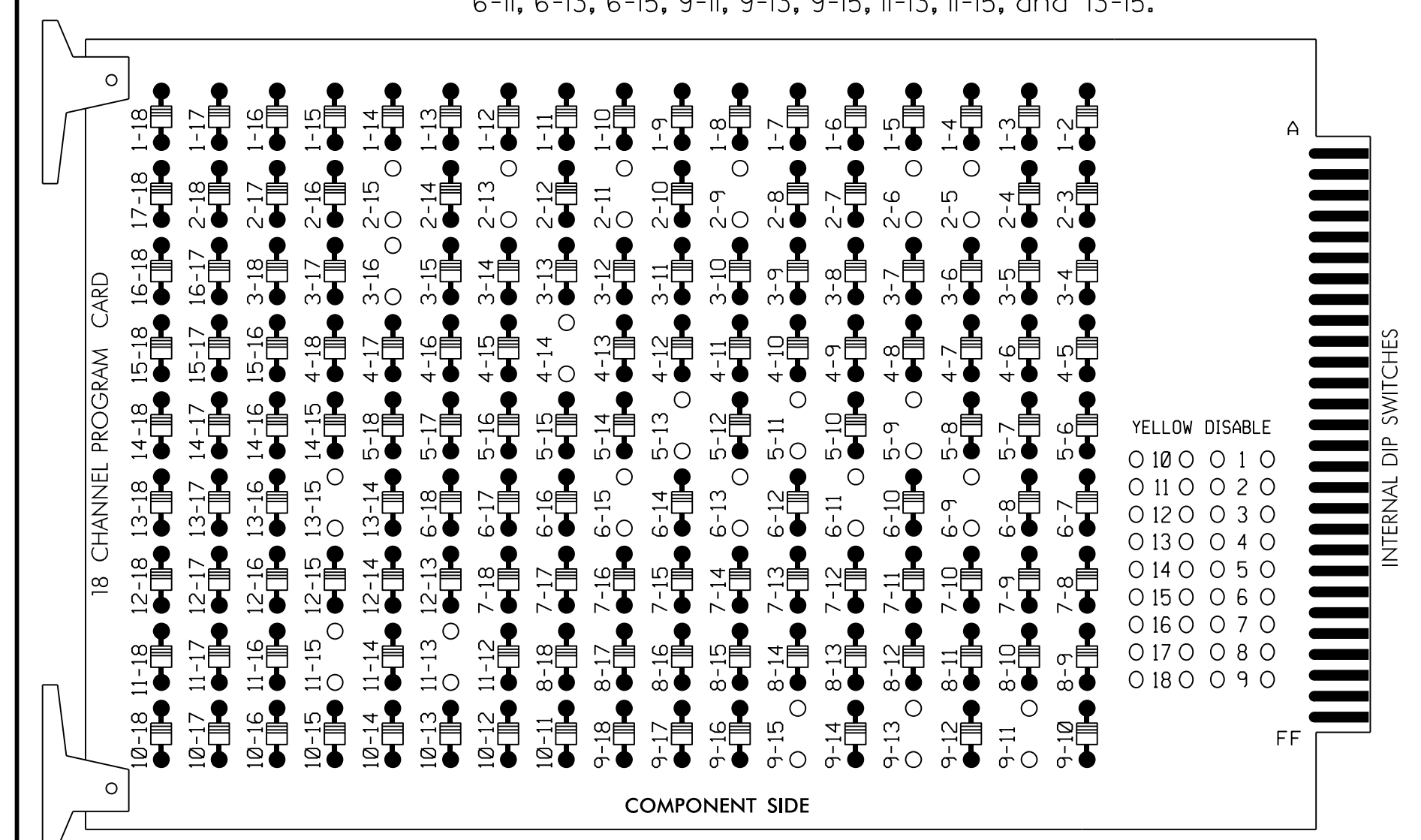
Temporary Design 3 - TMP Phase III
 Electrical Detail

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	ELECTRICAL AND PROGRAMMING DETAILS FOR: Prepared in the Offices of: 	US 401 Bus./SR 1414 (Raeford Road) at US 401 Bus. (Robeson Street) /McPhee Drive Division 6 Cumberland County Fayetteville	SEAL NORTH CAROLINA PROFESSIONAL ENGINEER LAWRENCE E. OVERN 045933 3/29/2018
	PLAN DATE: March 2018 PREPARED BY: G B Spell	REVIEWED BY: L Overn REVIEWED BY:	REVISIONS INIT. DATE

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, 3-16, 4-14, 5-9, 5-11, 5-13, 6-9, 6-11, 6-13, 6-15, 9-11, 9-13, 9-15, 11-13, 11-15, and 13-15.



- 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.

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 WALK and 6 WALK.
- The cabinet and controller are part of the Fayetteville Signal 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
 S12,AUX S1, AUX S4
 PHASES USED.....2,2PED,3,3PED,4,4PED,5,6,6PED
 OVERLAP "A".....*
 OVERLAP "B".....NOT USED
 OVERLAP "C".....*
 OVERLAP "D".....NOT USED
 * See overlap programming detail on sheet 2

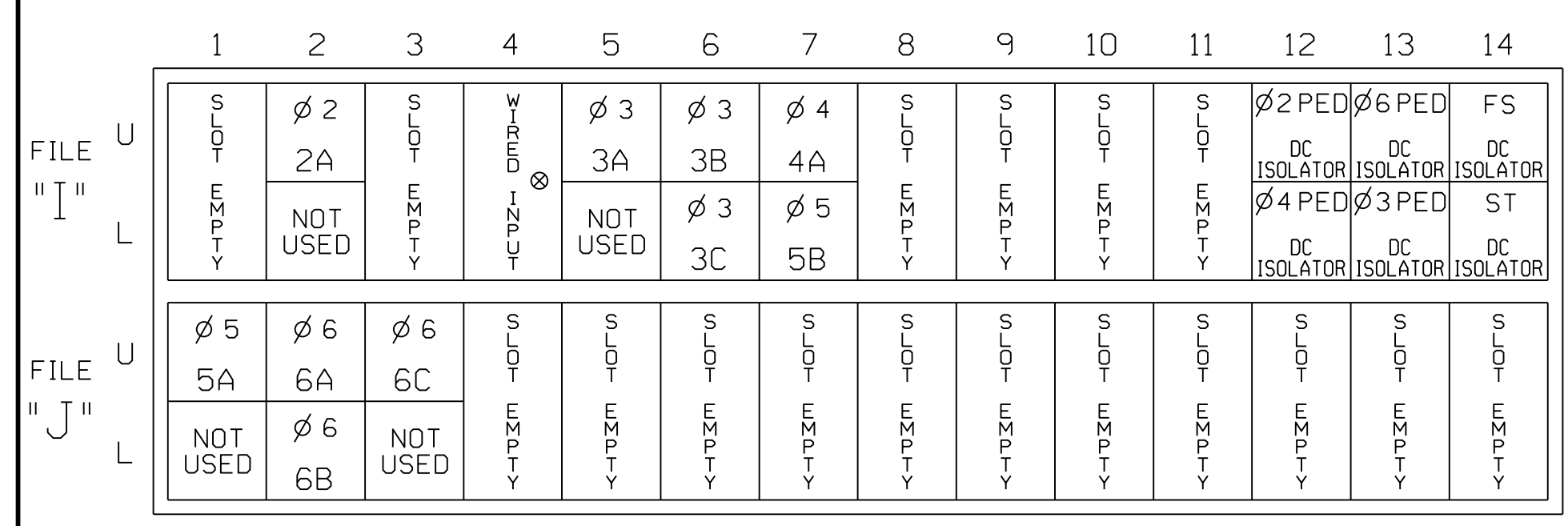
SIGNAL HEAD HOOK-UP CHART

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	3 PED	OLA	OLB	SPARE	OLC	OLD	SPARE	
SIGNAL HEAD NO.	NU	21,22	P21, P22	31,32	33,34	41	42,43	P41, P42	51	43	62,63	P61, P62	NU	NU	P31, P32	61	NU	51	NU
RED		128		116	101	101	*		134										
YELLOW		129		117	102	102			135										
GREEN		130		118	103	103			136										
RED ARROW				116									A121					A114	
YELLOW ARROW				117					132				A122					A115	
FLASHING YELLOW ARROW													A123					A116	
GREEN ARROW				118	103		133	133											
Hand			113				104			119			110						
Walking			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)

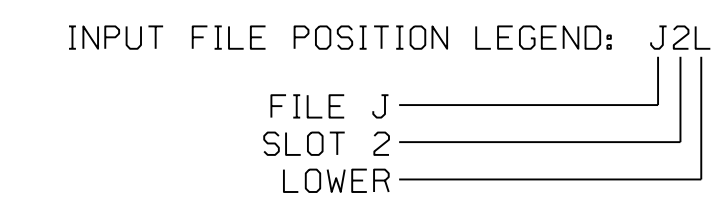


EX.: 1A, 2A, ETC. = LOOP NO.'S
 FS = FLASH SENSE
 ST = STOP TIME
 ⊗ Wired Input - Do not populate slot with detector card

INPUT FILE CONNECTION & PROGRAMMING CHART

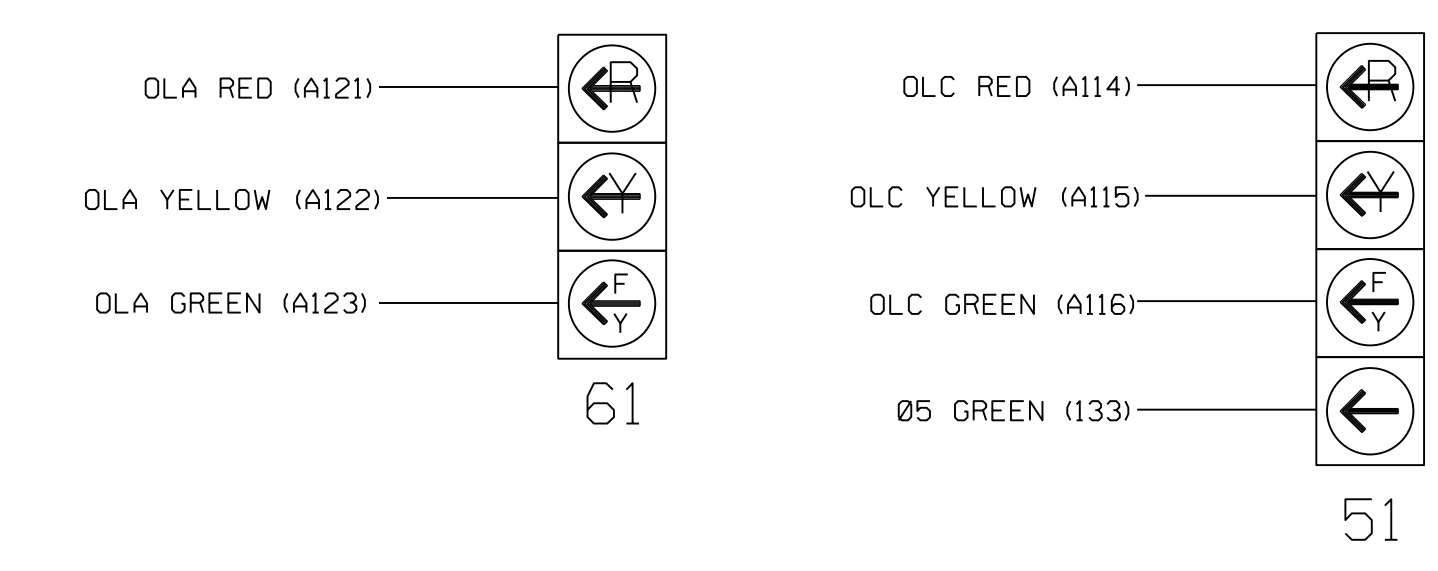
LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	CALL	EXTEND TIME	DELAY TIME	ADDED INITIAL	DETECTOR TYPE
2A	TB2-5,6	12U	39	2	2	YES				S
3A	TB4-5,6	15U	58	3	3	YES		3		S
3B	TB4-9,10	16U	41	4	3	YES				S
3C	TB4-11,12	16L	45	14	3	YES		10		S
4A	TB6-1,2	17U	65	34	4	YES		3		S
5A ¹	TB3-1,2	J1U	55	5	★	5	YES	15		S
	-	14U	47	22	★	2	YES			S
5B	TB6-3,4	17L	78	44	5	YES		15		S
6A	TB3-5,6	J2U	40	6	6	YES				S
6B	TB3-7,8	J2L	44	16	6	YES				S
6C	TB3-9,10	J3U	64	36	6	YES				S
PED PUSH BUTTONS										
P21,P22	TB8-4,6	112U	67	PED 2	2 PED					
P31,P32	TB8-8,9	113L	70	PED 8	3 PED					
P41,P42	TB8-5,6	112L	69	PED 4	4 PED					
P61,P62	TB8-7,9	113U	68	PED 6	6 PED					

NOTE:
 INSTALL DC ISOLATORS IN INPUT FILE SLOTS 112 AND 113.
¹Add jumper from J1-W to I4-W, on rear of input file.
 ★ See vehicle detector setup programming detail for alternate phasing on sheet 3.



FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)

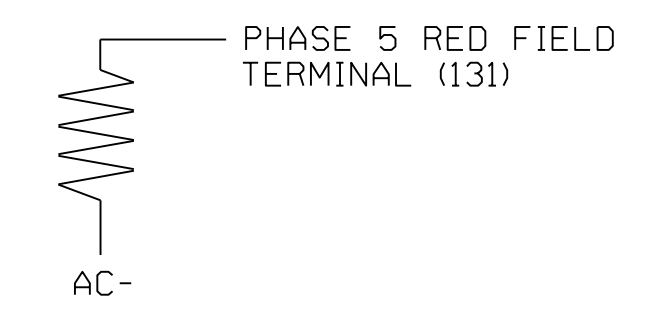


THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0002
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

LOAD RESISTOR INSTALLATION DETAIL

(install resistor as shown)

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



Final Design
 Electrical Detail - Sheet 1 of 3

US 401 Bus./SR 1414 (Raeford Road) at US 401 Bus. (Robeson Street) /McPhee Drive
 Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2018 REVIEWED BY: L Overn
 PREPARED BY: G B Spell REVIEWED BY:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 LAWRENCE E. OVERN
 3/29/2018
 DATE
 SIG. INVENTORY NO. 06-0002

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]
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 "22".
- Set assigned phase to "0".

```

VEH DETECTOR [22]  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
22 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

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.

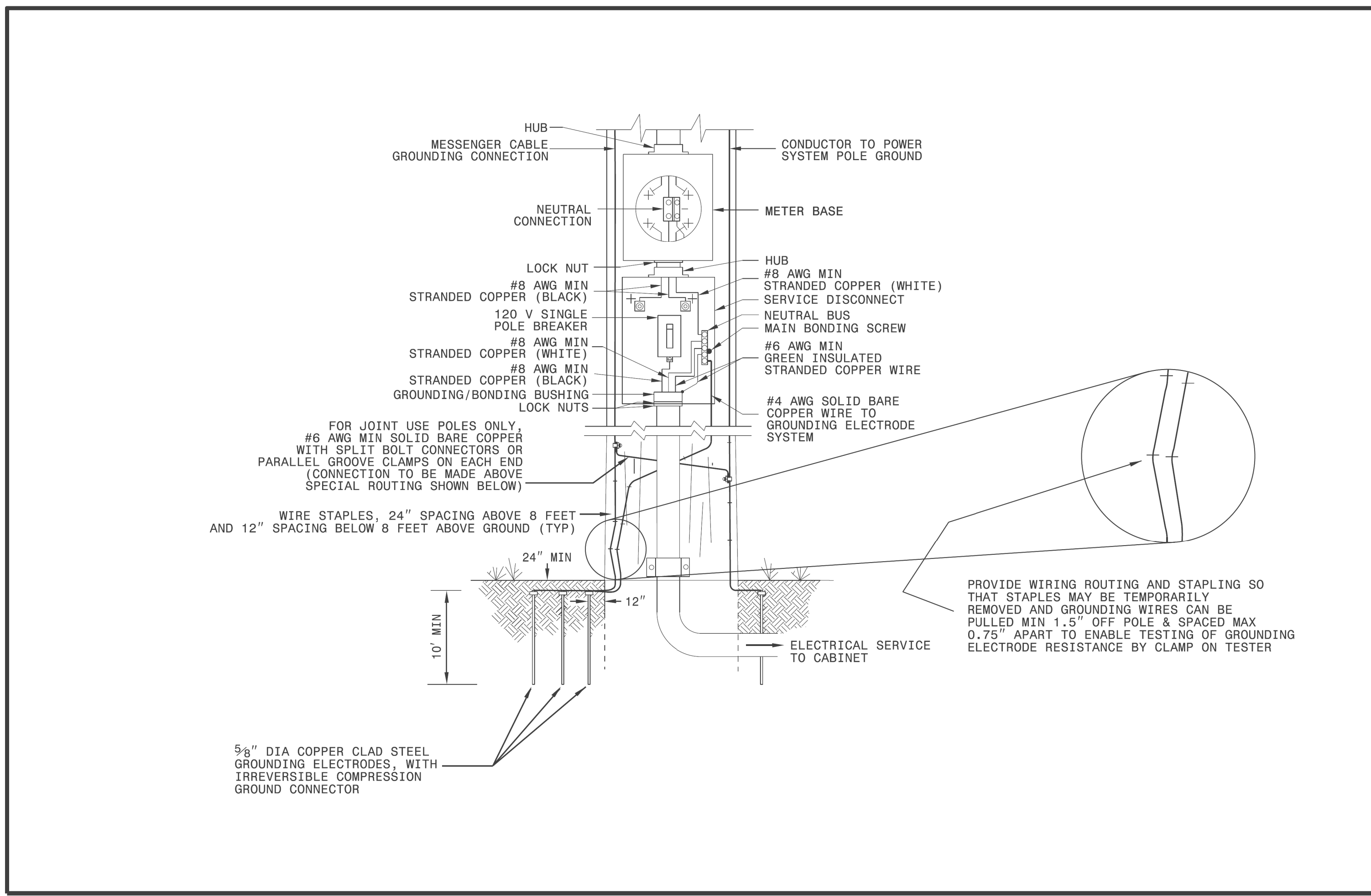
THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 06-0002
 DESIGNED: March 2018
 SEALED: 03-29-2018
 REVISED: N/A

Final Design
Electrical Detail - Sheet 3 of 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road-Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	<p>Prepared in the Offices of: Transportation, Mobility and Safety Division STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION Signal Management Section 750 N. Greenfield Pkwy, Garner, NC 27529</p>	US 401 Bus./SR 1414 (Raeford Road) at US 401 Bus. (Robeson Street) /McPhee Drive Division 6 Cumberland County Fayetteville		<p>SEAL NORTH CAROLINA PROFESSIONAL ENGINEER LAWRENCE E. OVERN 045933</p>
		PLAN DATE: March 2018 PREPARED BY: G B Spell	REVIEWED BY: L Overn REVIEWED BY:	

DATE: 03/29/2018 11:00:00 AM
USER: rfmancey



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

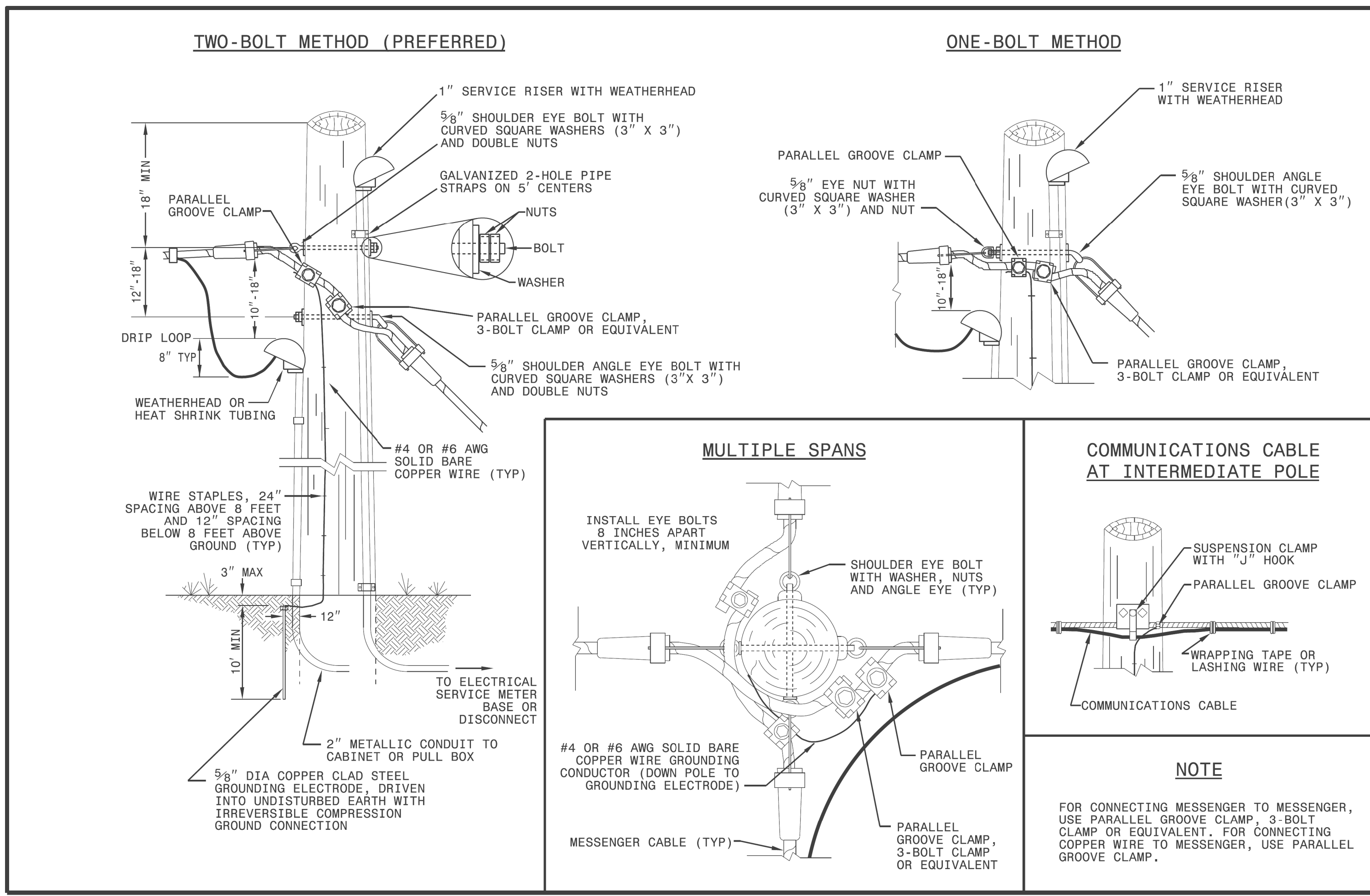
ENGLISH STANDARD DRAWING FOR

ELECTRICAL SERVICE GROUNDING

GROUNDING AND BONDING

SHEET 1 OF 1

1700D01



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

ENGLISH STANDARD DRAWING FOR

WOOD POLES

METHODS OF ATTACHMENT AND GROUNDING

SHEET 1 OF 1

1720D01

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See Plate for Title

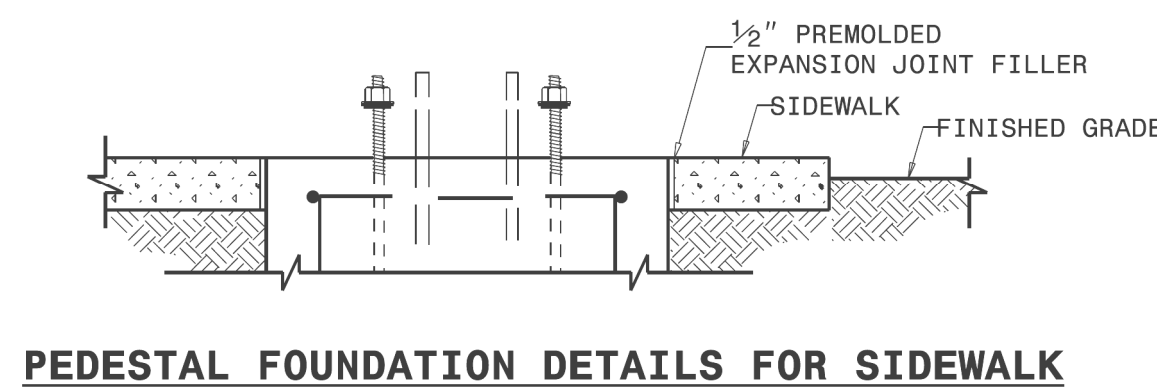
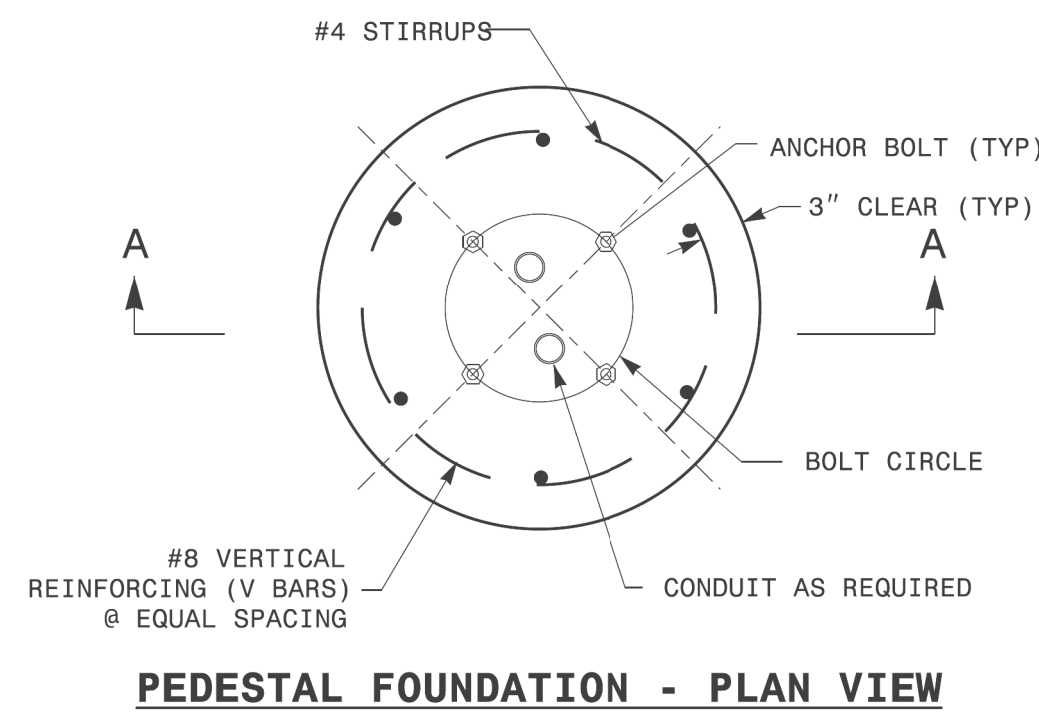
Prepared in the Offices of:

Transportation Mobility and Safety Division
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 ITS & Signals Unit

SEAL
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 032108
 ENGINEER
 MOHD A. ASLAMI

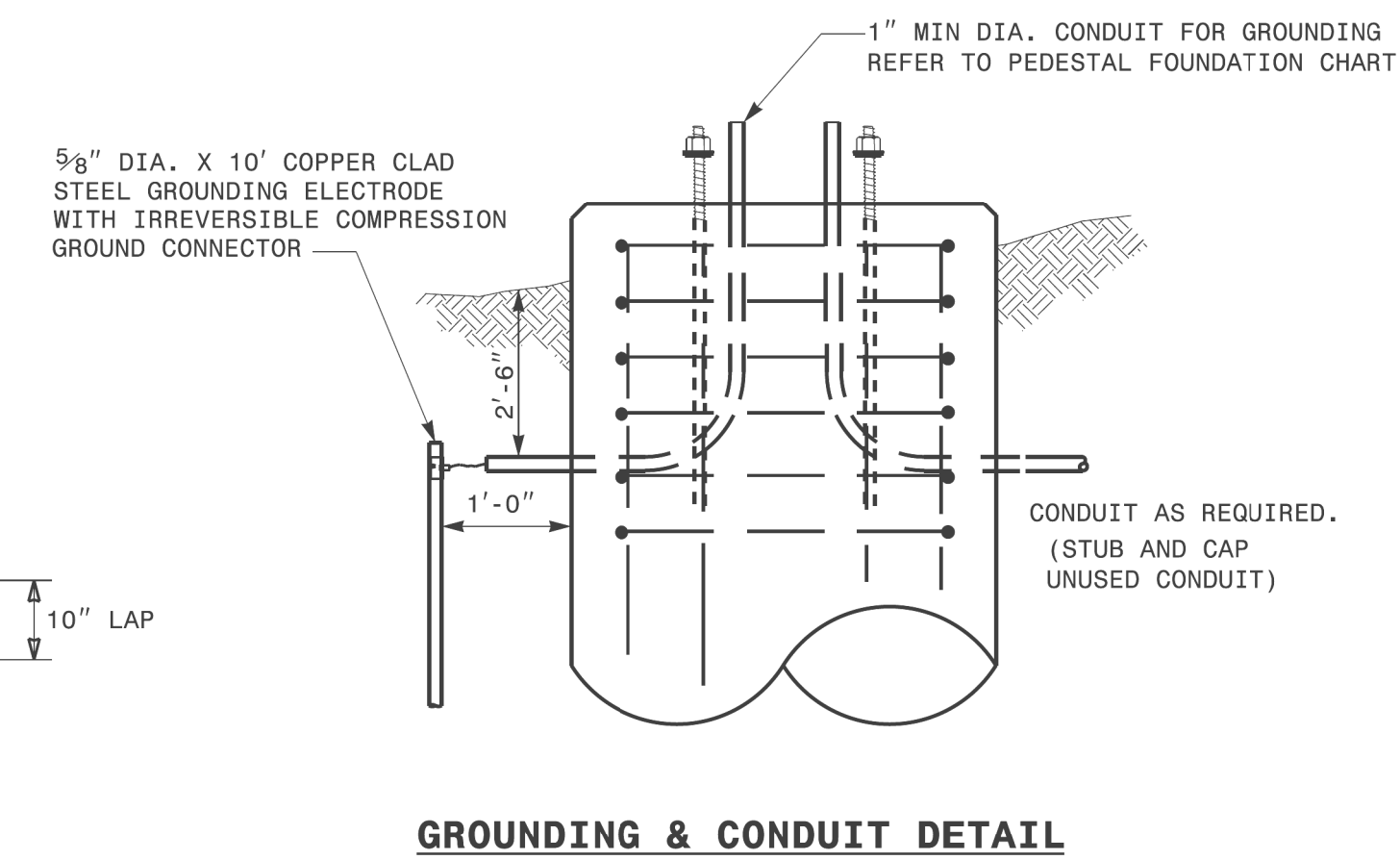
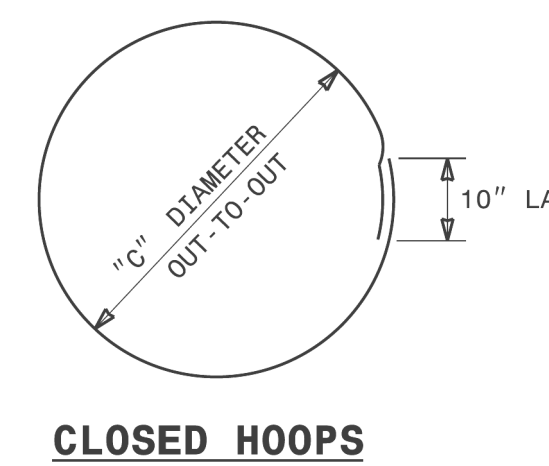
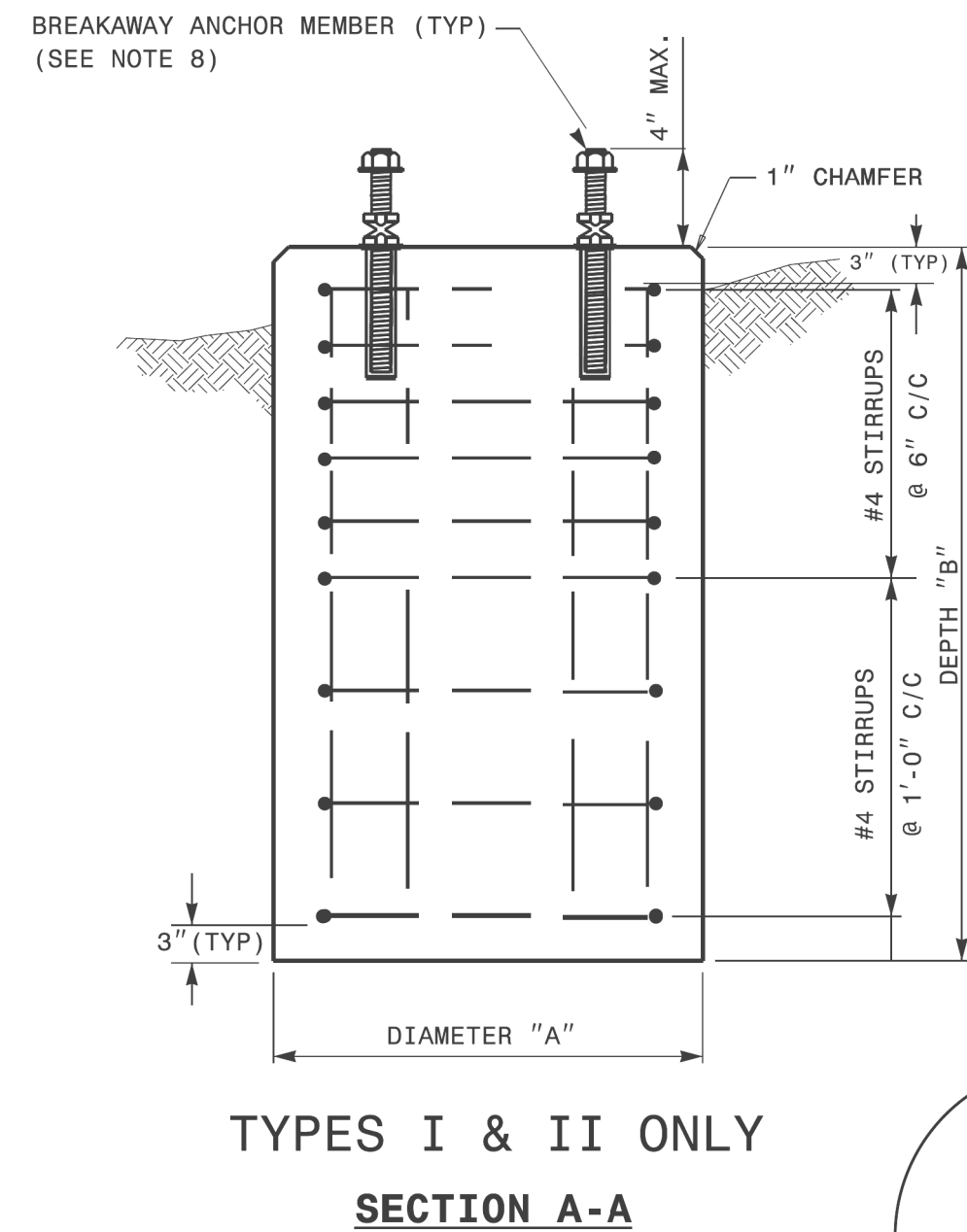
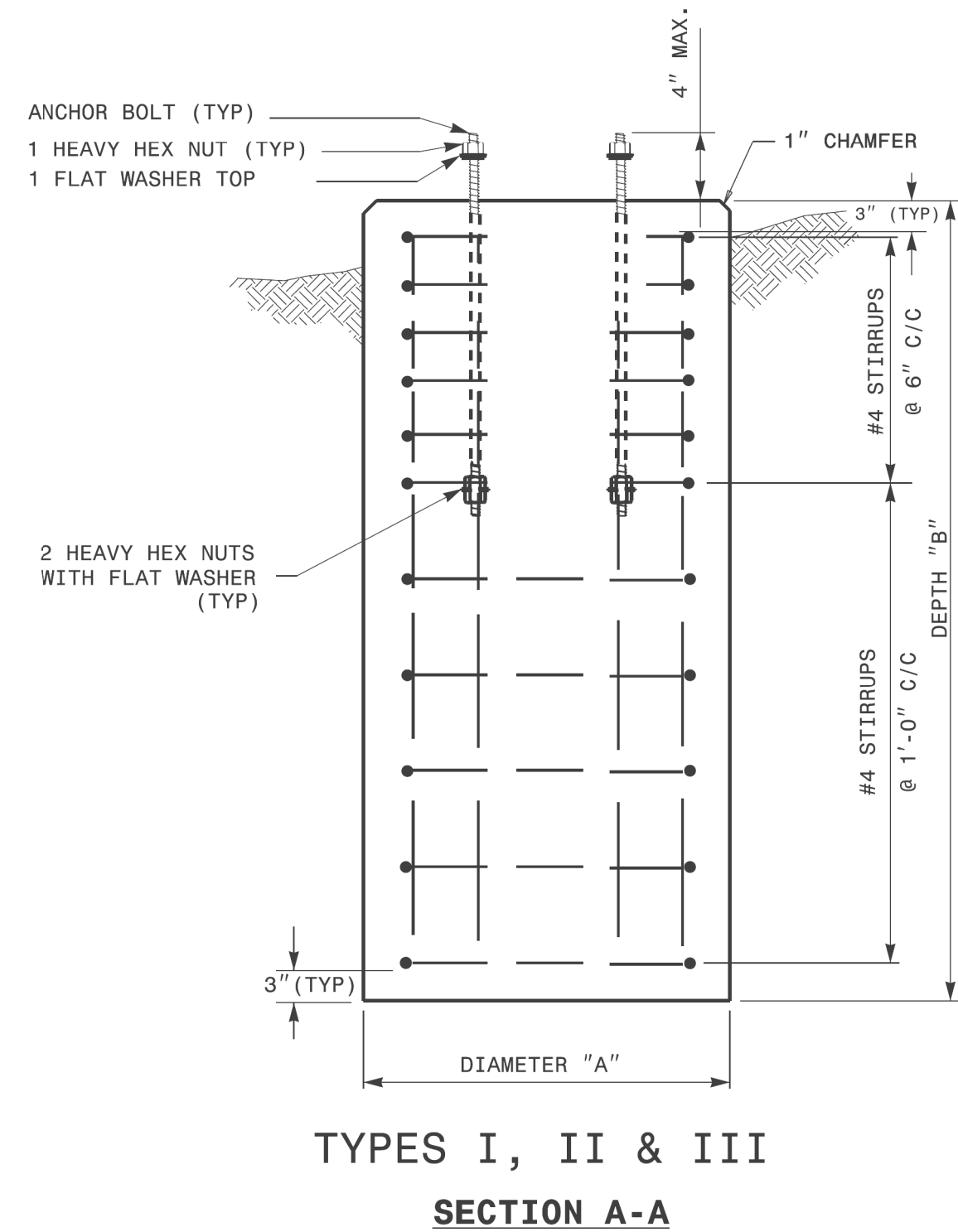
850 N. Greenfield Parkway
 Garner, NC 27529

DocuSigned by:
 Mohd Aslami
 10/11/2017
 DATE



NOTES:

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



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

REINFORCING STEEL SCHEDULE													
TYPE	V-BAR				STIRRUP								
	SIZE #	QTY	LENGTH	WEIGHT LBS	SIZE #	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	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	8	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	11	7'-2"	2'-0"	0'-10"	53	175

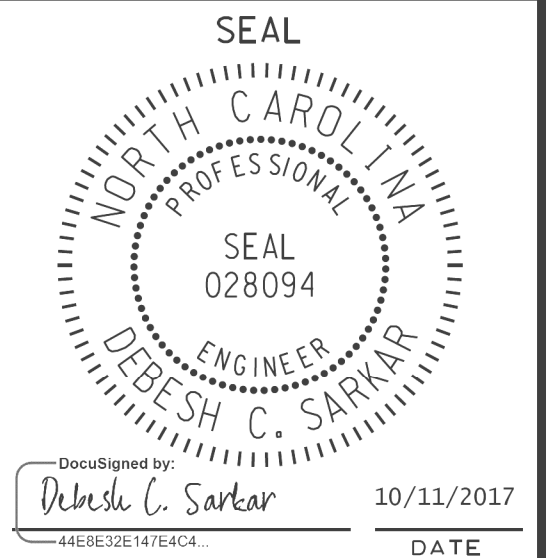
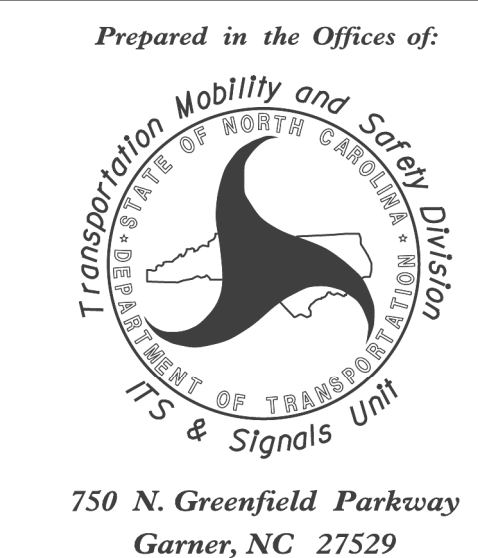
SHEET 1 OF 1
1743D01

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 ENGLISH STANDARD DRAWING FOR
PEDESTALS
 FOUNDATIONS

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FINAL UNLESS ALL
SIGNATURES COMPLETED

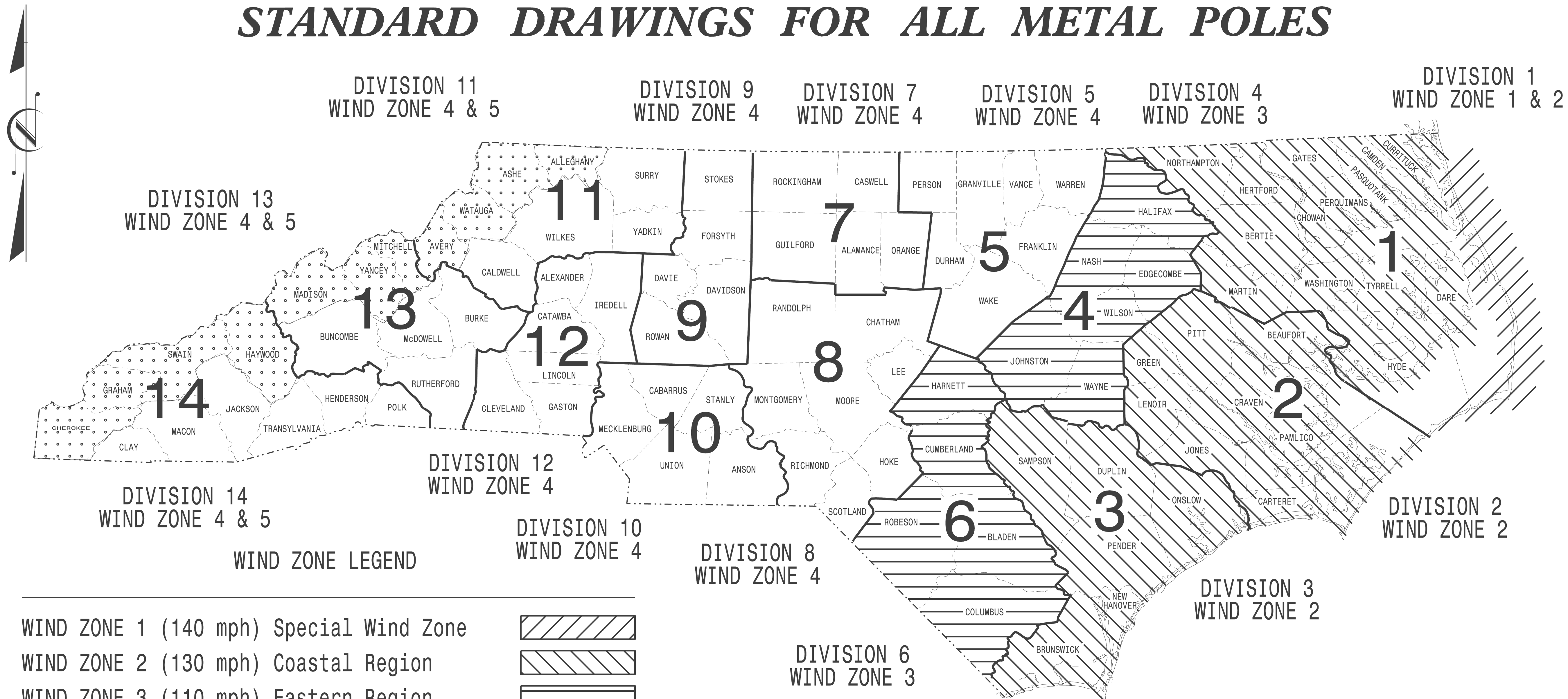
See Plate for Title



STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT I.D. NO. U-4405	SHEET NO. Sig.M1
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STANDARD DRAWINGS FOR ALL METAL POLES

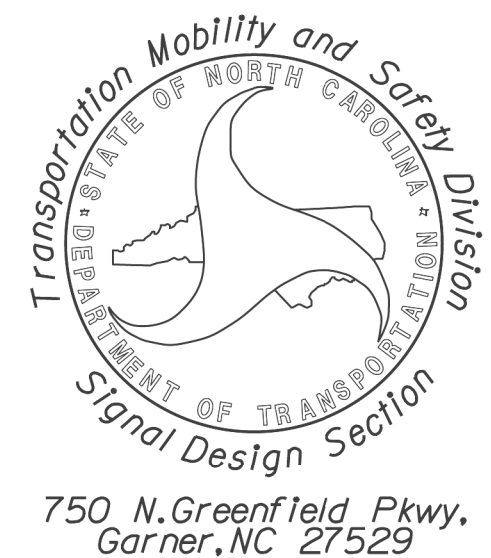


WIND ZONE LEGEND

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

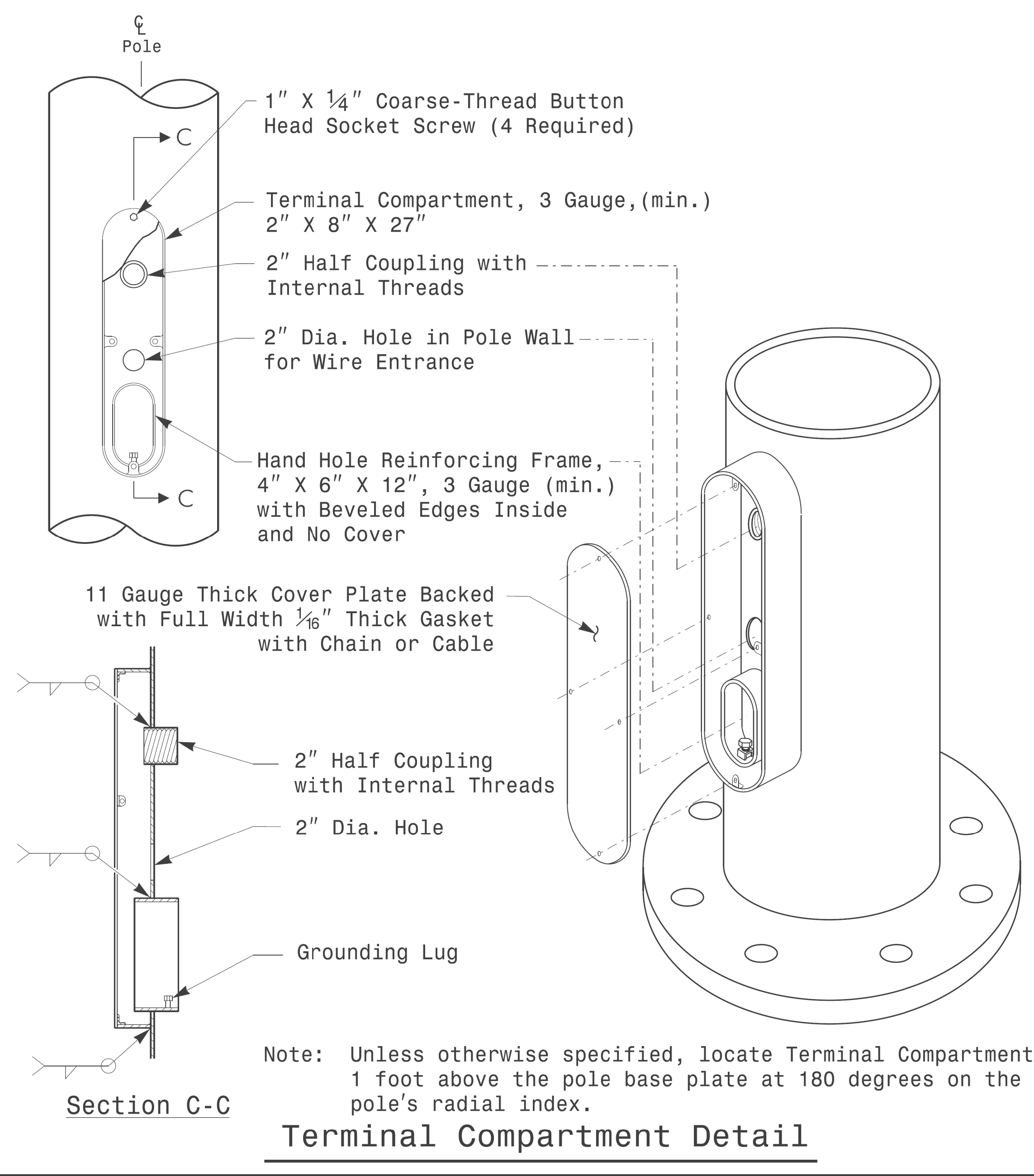
DRAWING NUMBER	DESCRIPTION
Sig. M 1	Statewide Wind Zone Map
Sig. M 2	Typical Fabrication Details-All Metal Poles
Sig. M 3	Typical Fabrication Details-Strain Poles
Sig. M 4	Typical Fabrication Details-Mast Arm Poles
Sig. M 5	Typical Fabrication Details-Mast Arm Connection
Sig. M 6	Typical Fabrication 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

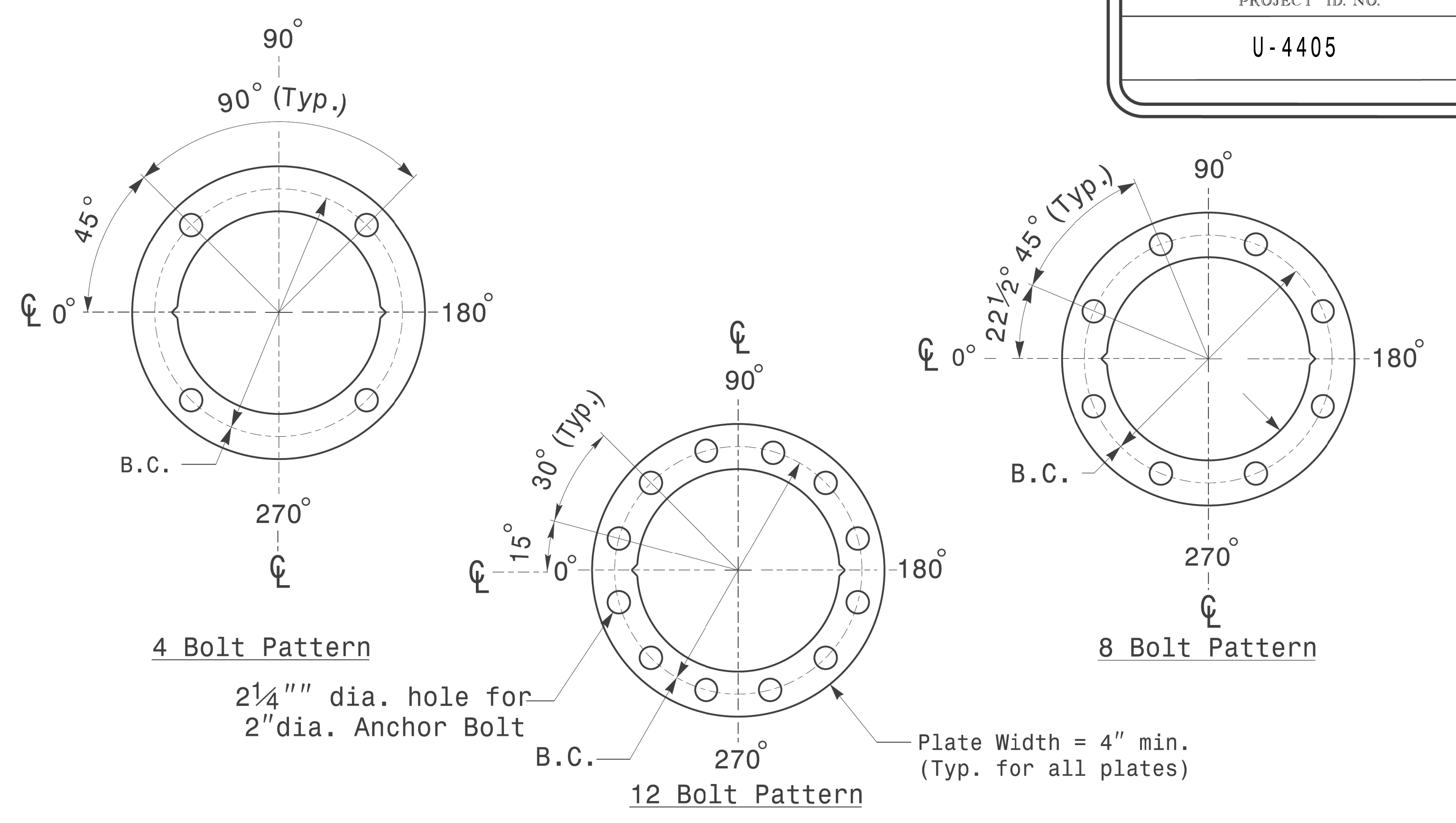
SEAL

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



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

Terminal Compartment Detail



Construct Templates and Plates from 1/4" min. thick Steel. Galvanizing is not required.

Base Plate Template and Anchor Bolt Lock Plate Details

MFG _____	MFG. DATE: MM/YY _____
SHAFT D/T/L/Y _____	_____
ARM-A D/T/L/Y _____	_____
ARM-B D/T/L/Y _____	_____
A.B. DIA./B.C./L/Y _____	_____
NCDOT SIG. INV. NO. _____	_____
NCDOT POLE NO. _____	_____

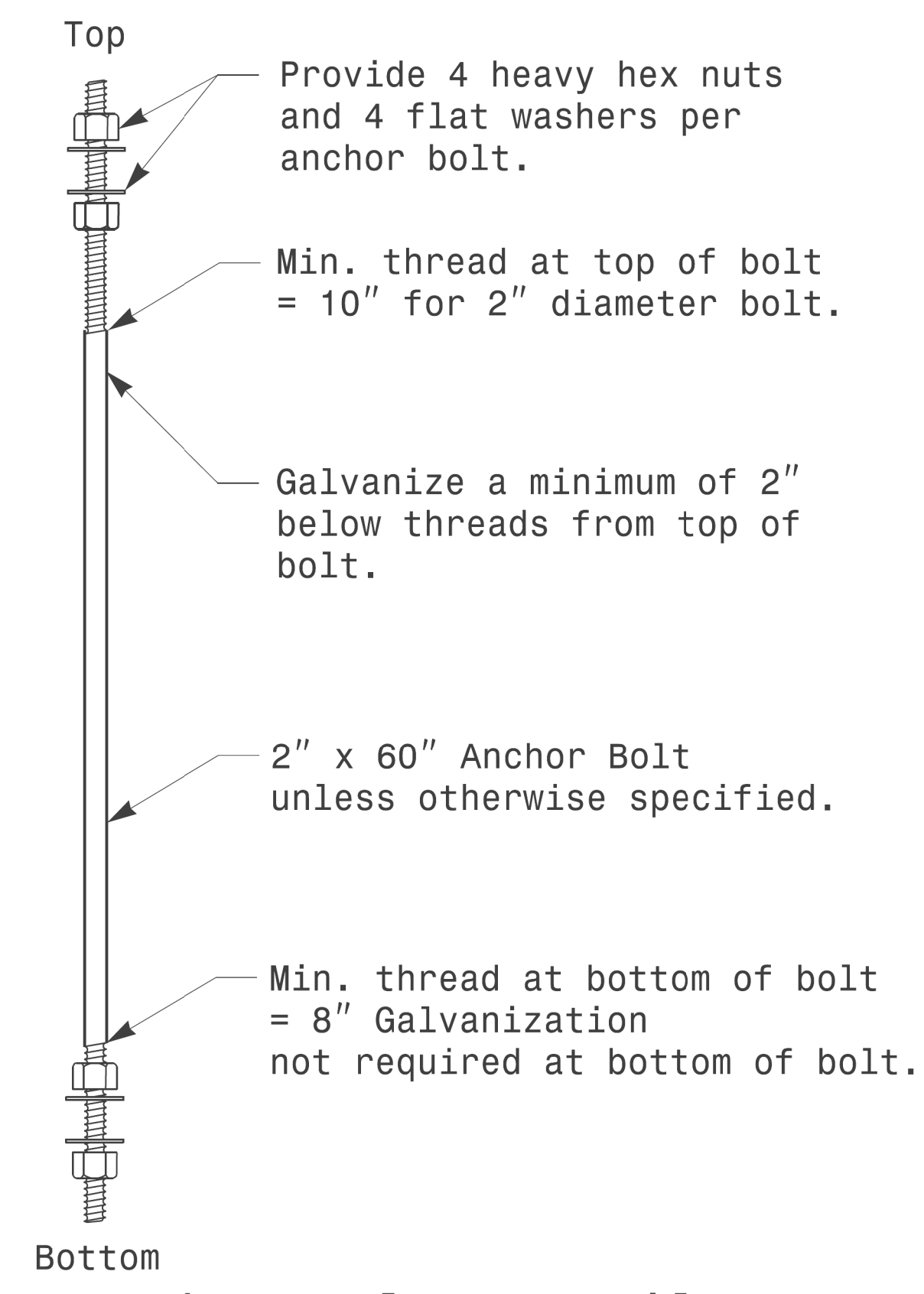
Shaft I.D. Tag
(Provide on Shaft of Strain Poles and Mast Arm Poles Shaft)

- Notes:
- 1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
 - 2) A.B. = Anchor Bolt
 - 3) B.C. = Bolt Circle of Anchor Bolts
 - 4) If Custom Design, use "NCDOT STANDARD" line for Signal Inv. Number and pole I.D. number
 - 5) See drawing M3 and M4 for mounting positions of I.D. tags.

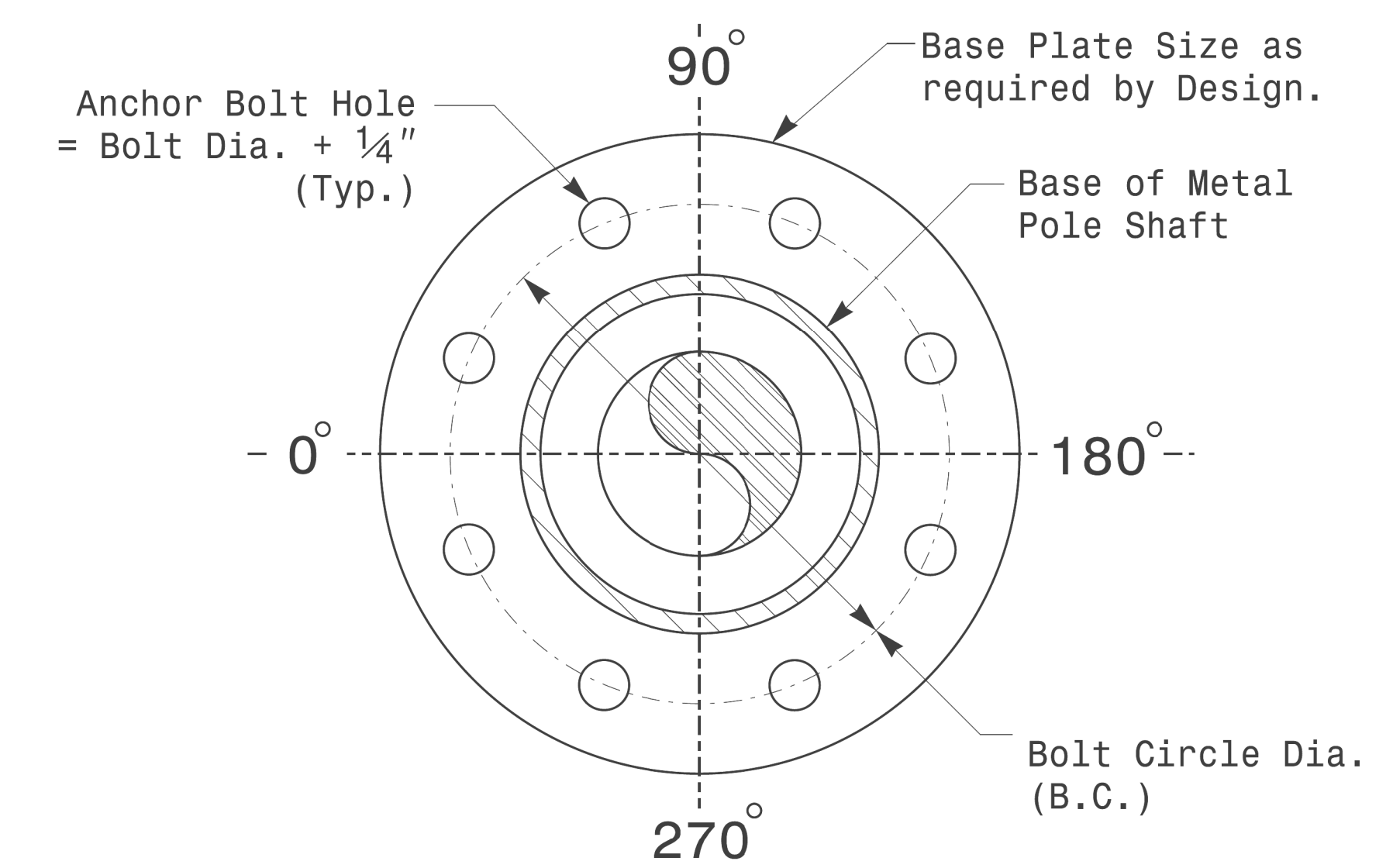
Identification Tag Details

MFG _____	MFG. DATE:MM/YY _____
SECTION D/T/L/Y _____	_____
NCDOT SIG. INV. NO. _____	_____
NCDOT POLE NO. _____	_____

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



Anchor Bolt Detail



Note: Base plate may be circular, octagonal, square or rectangular in shape.

Typical Base Plate Detail

Prepared in the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

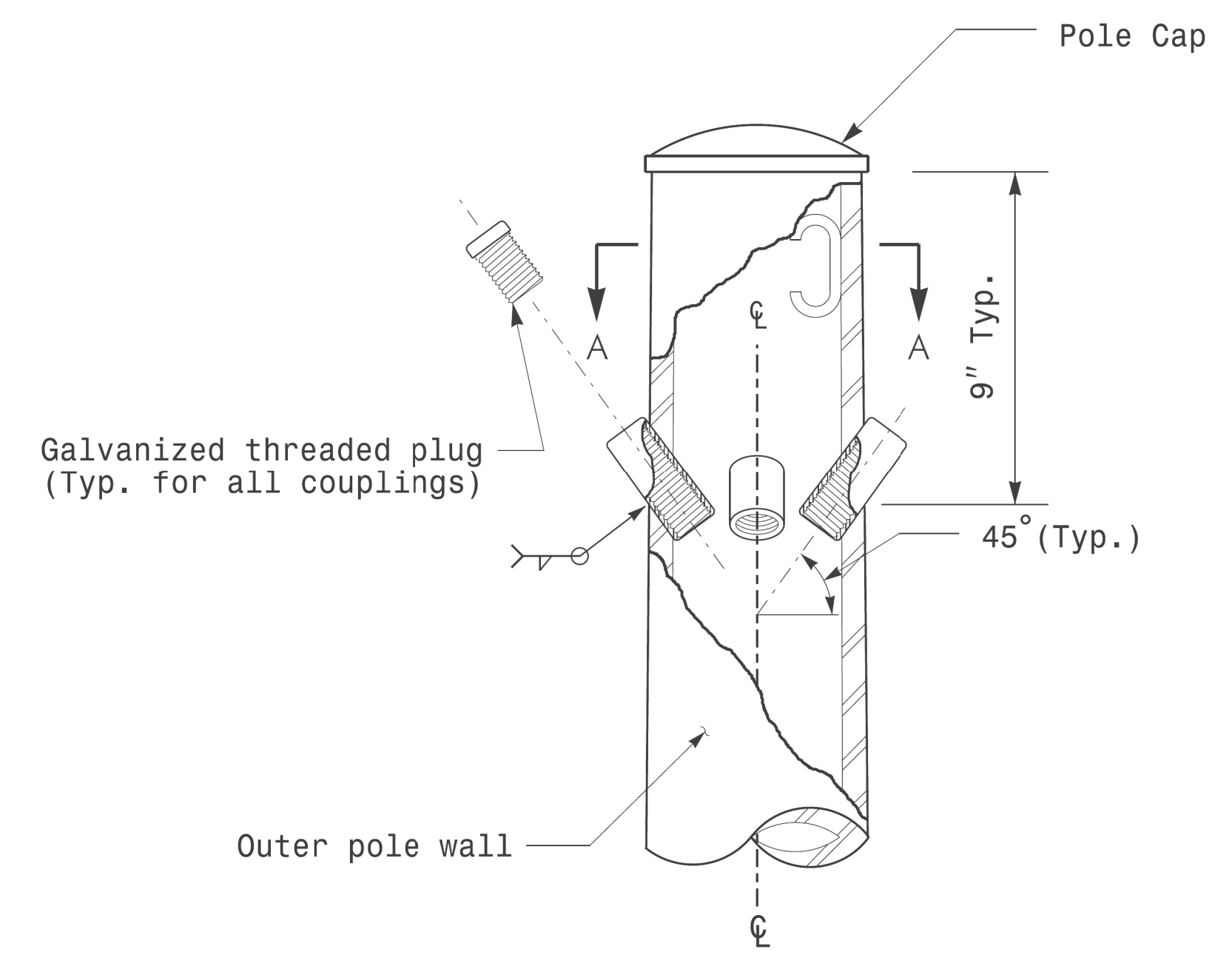
Typical Fabrication Details For All Metal Poles	
PLAN DATE: OCTOBER 2017	DESIGNED BY: C.F. ANDREWS
PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR
REVISIONS	INIT. DATE

SEAL

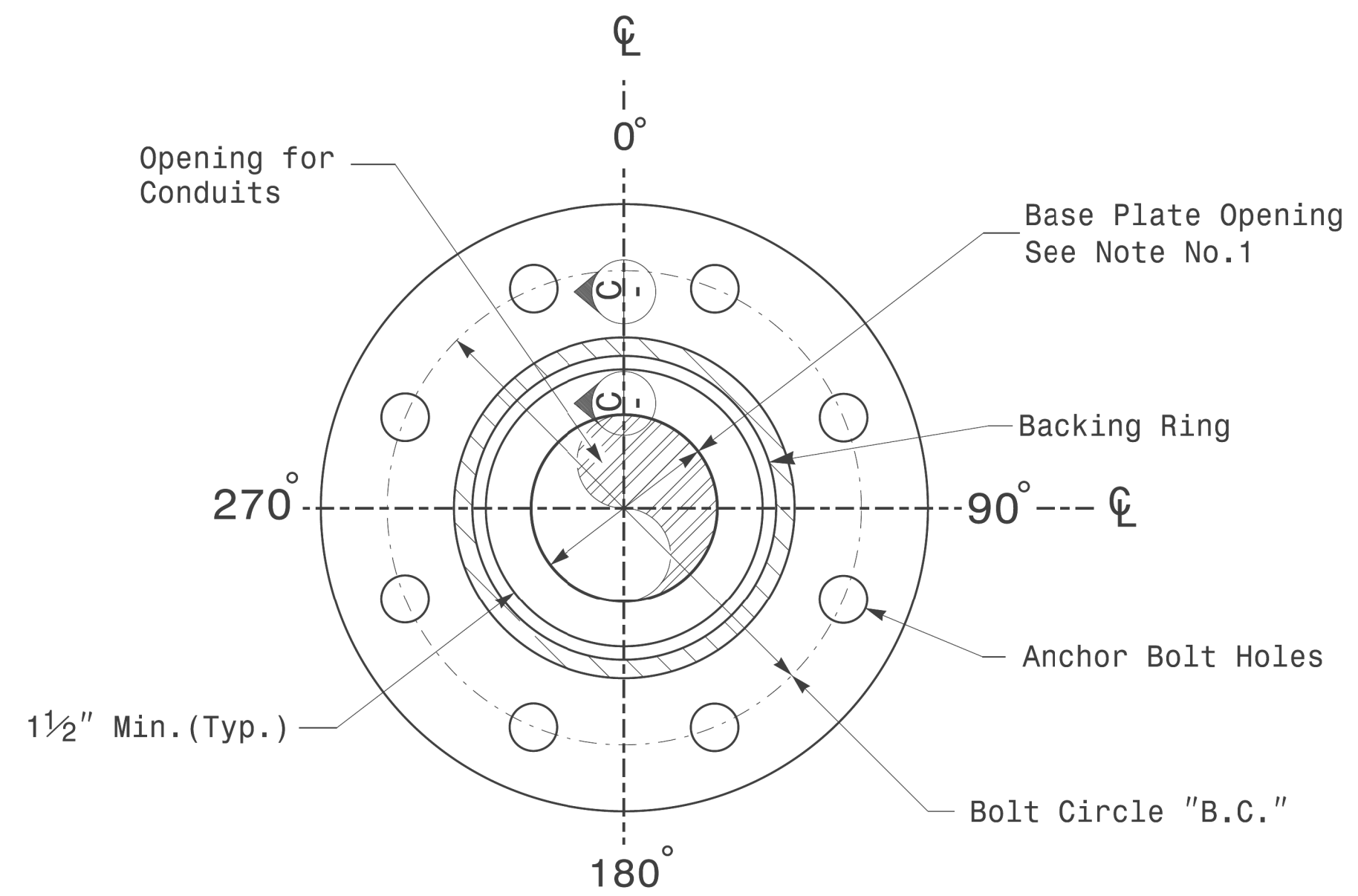
 DocuSigned by:
 D.C. Sarkar
 10/11/2017
 DATE

Fabrication Details – All Metal Poles

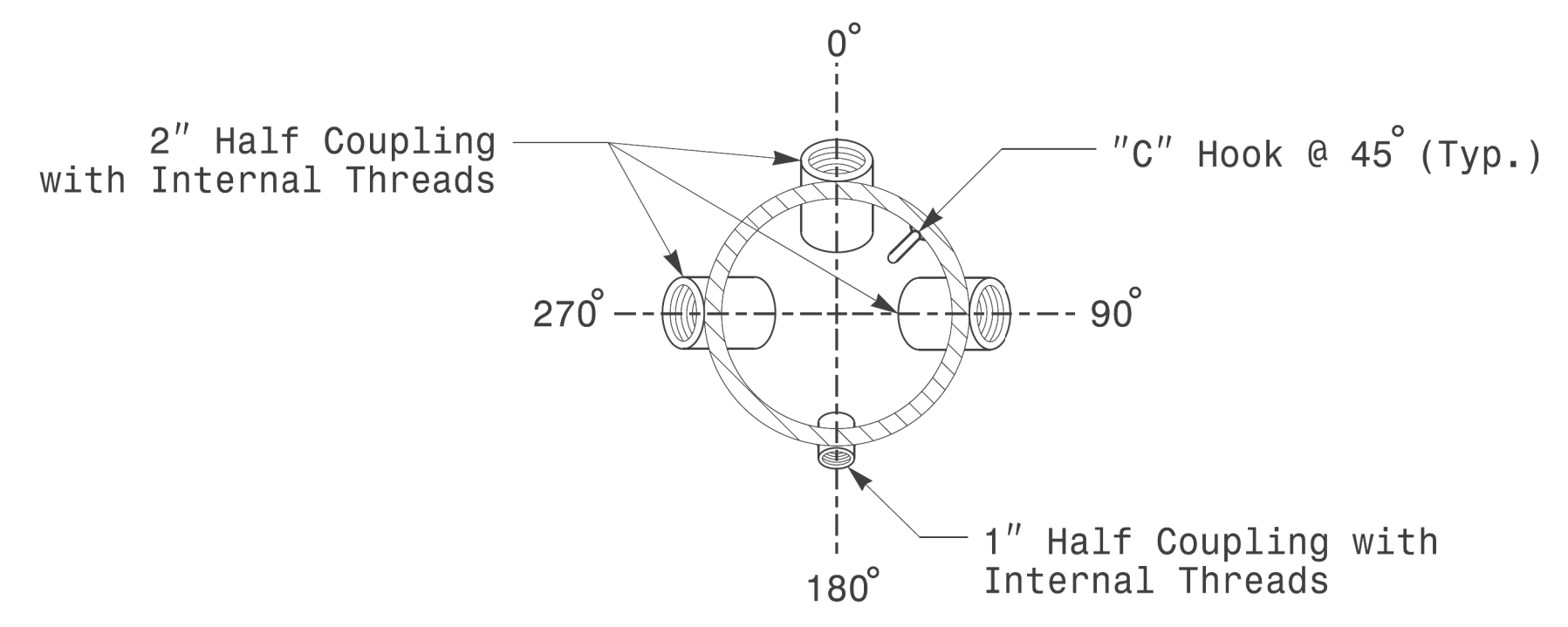
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



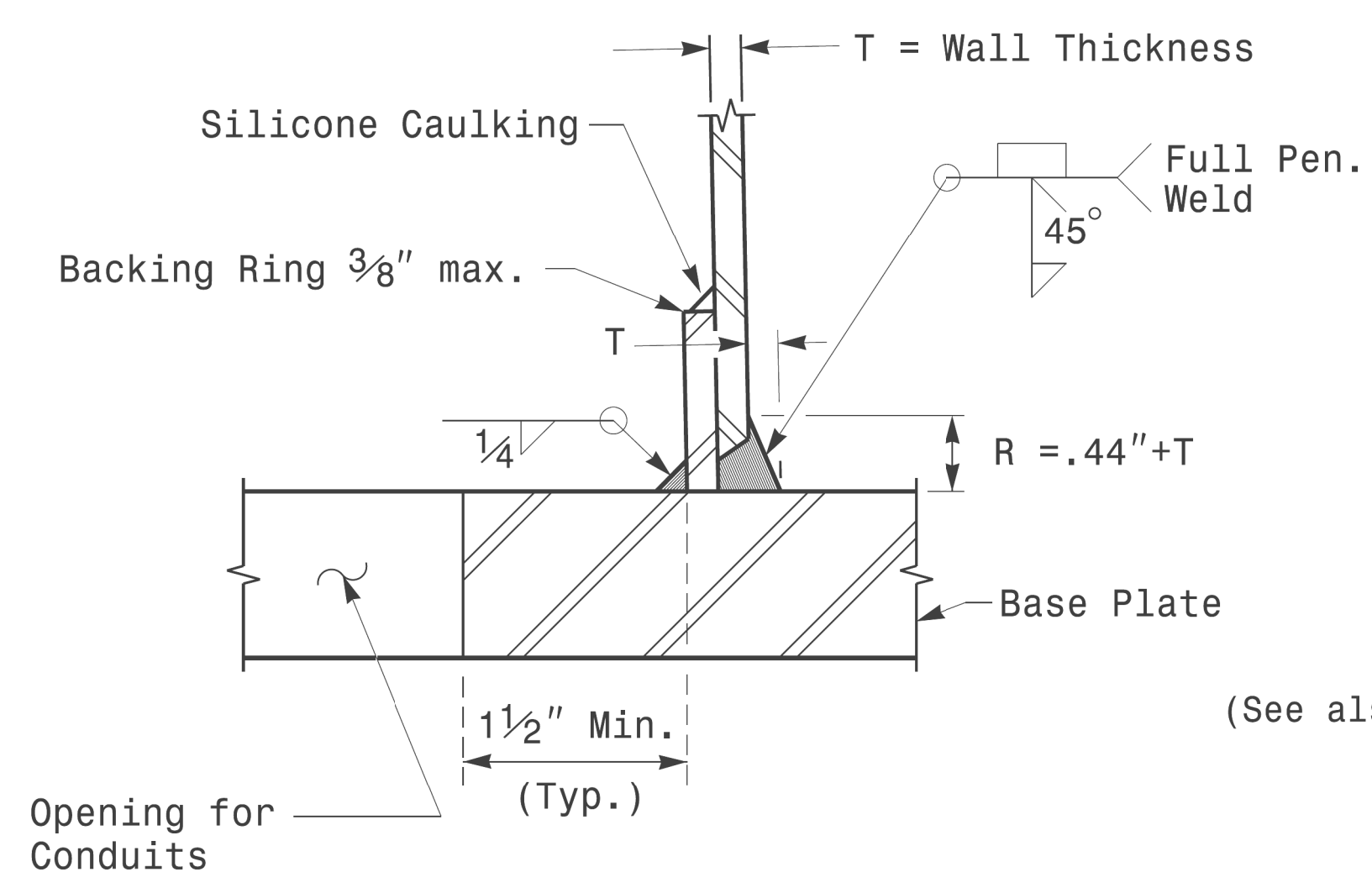
Cable Entrances at Top of Pole



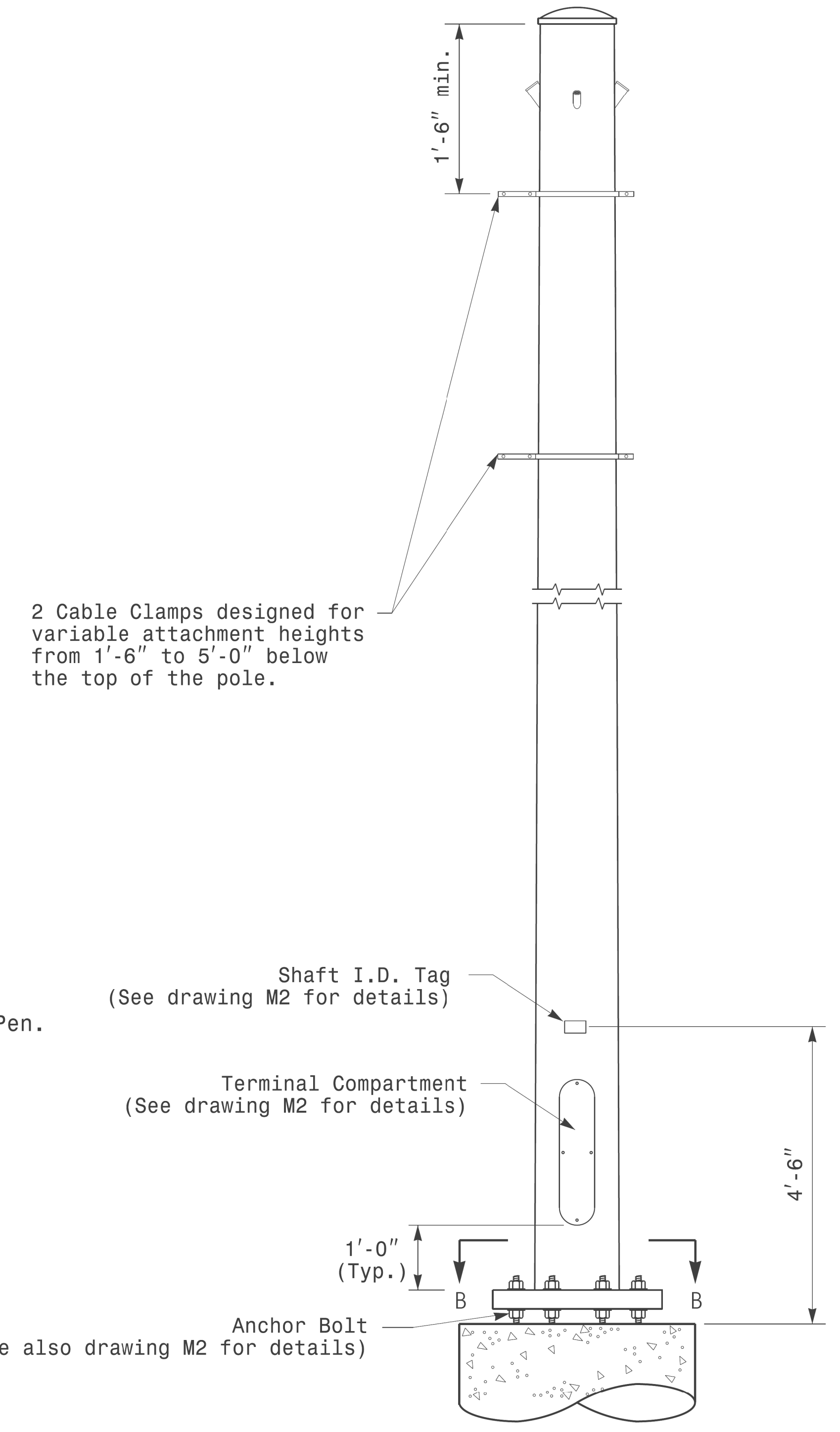
Section B-B
Pole Base Plate Details
(8 and 12 Bolt Pattern)



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



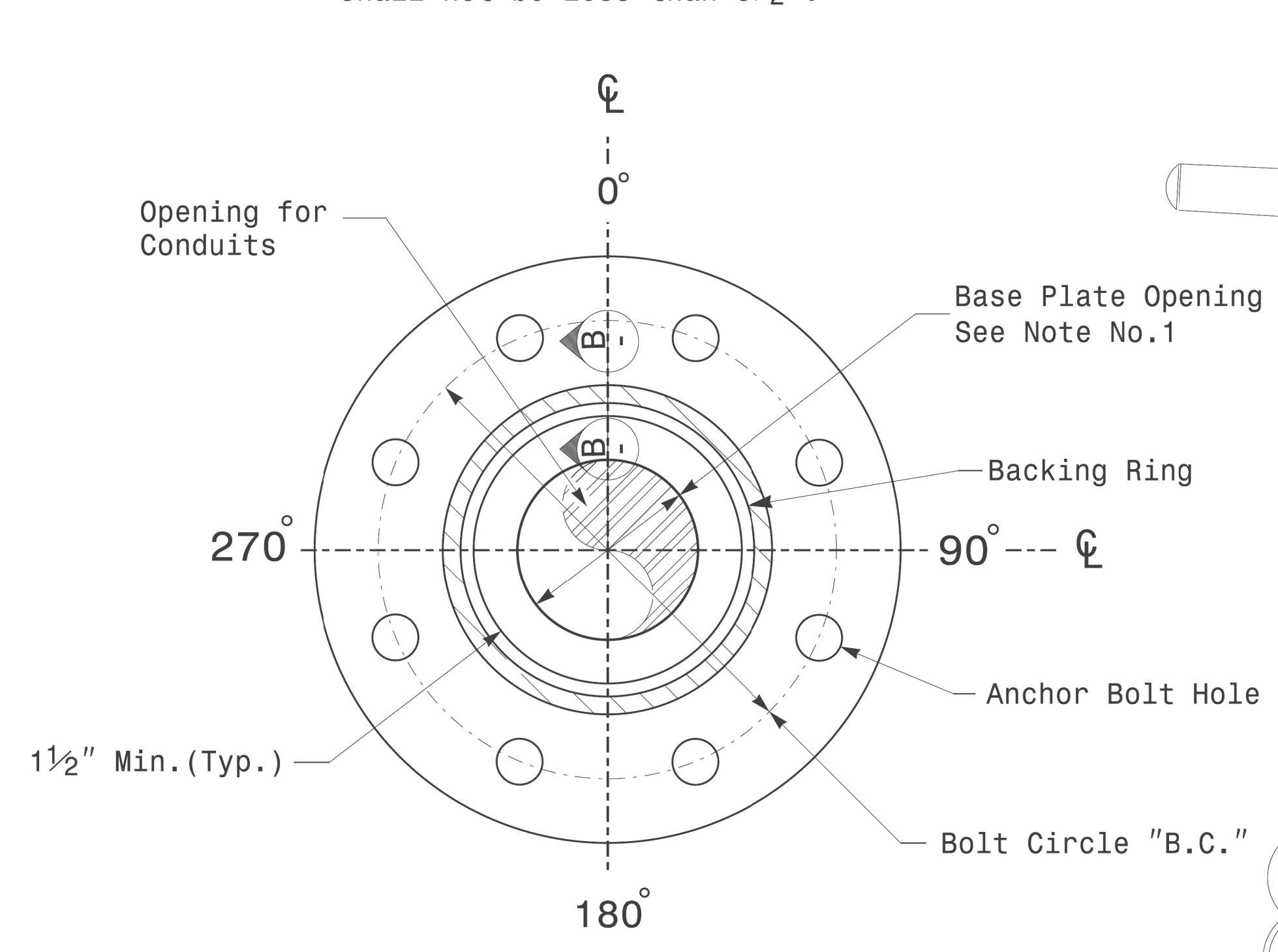
Monotube Strain Pole

Prepared In the Offices of: 750 N. Greenfield Pkwy, Garner, NC 27529	Typical Fabrication Details For Strain Poles		SEAL D.C. SARKAR ENGINEER
	PLAN DATE: OCTOBER 2017 PREPARED BY: N. BITTING	DESIGNED BY: K.C. DURIGON REVIEWED BY: D.C. SARKAR	
REVISIONS			INIT. DATE _____ _____
_____ _____			DocuSigned by: Debesu C. Sarkar 44E8E78B6A44F49E 10/11/2017 DATE

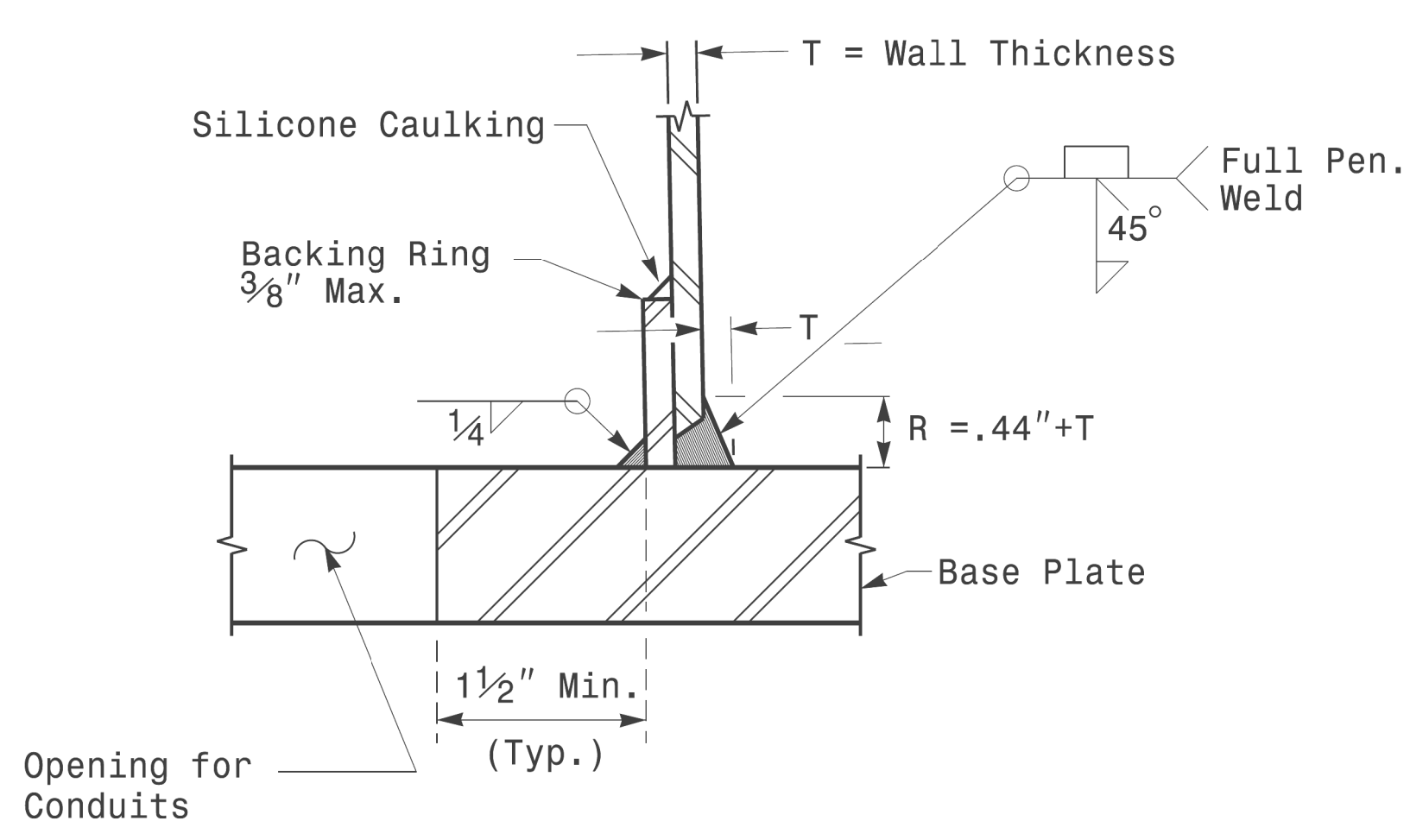
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Fabrication Details – Strain Poles

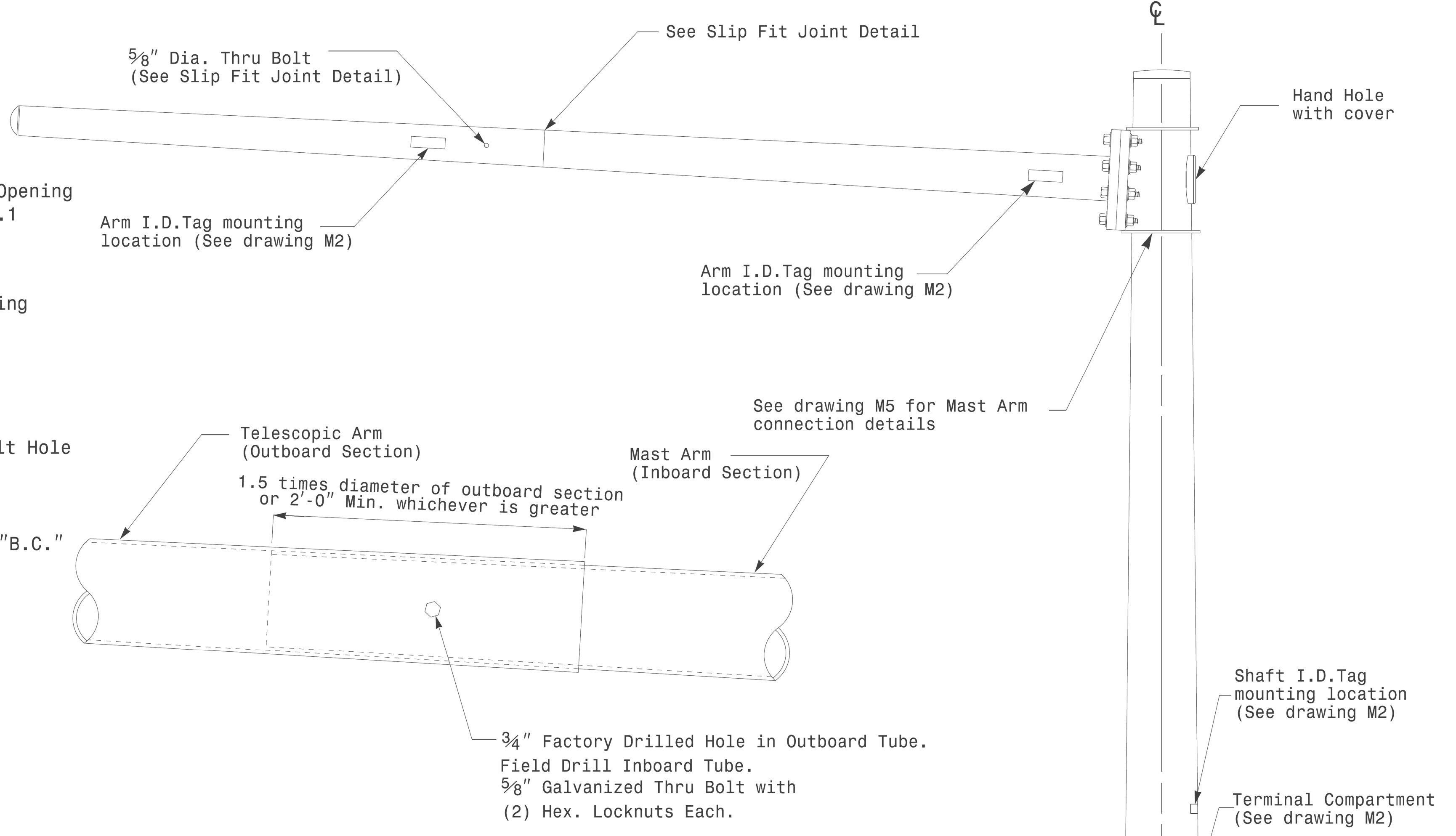
Note:
 1. Opening in pole base plate shall be equal to pole base inside diameter minus 3 1/2" but shall not be less than 8 1/2".



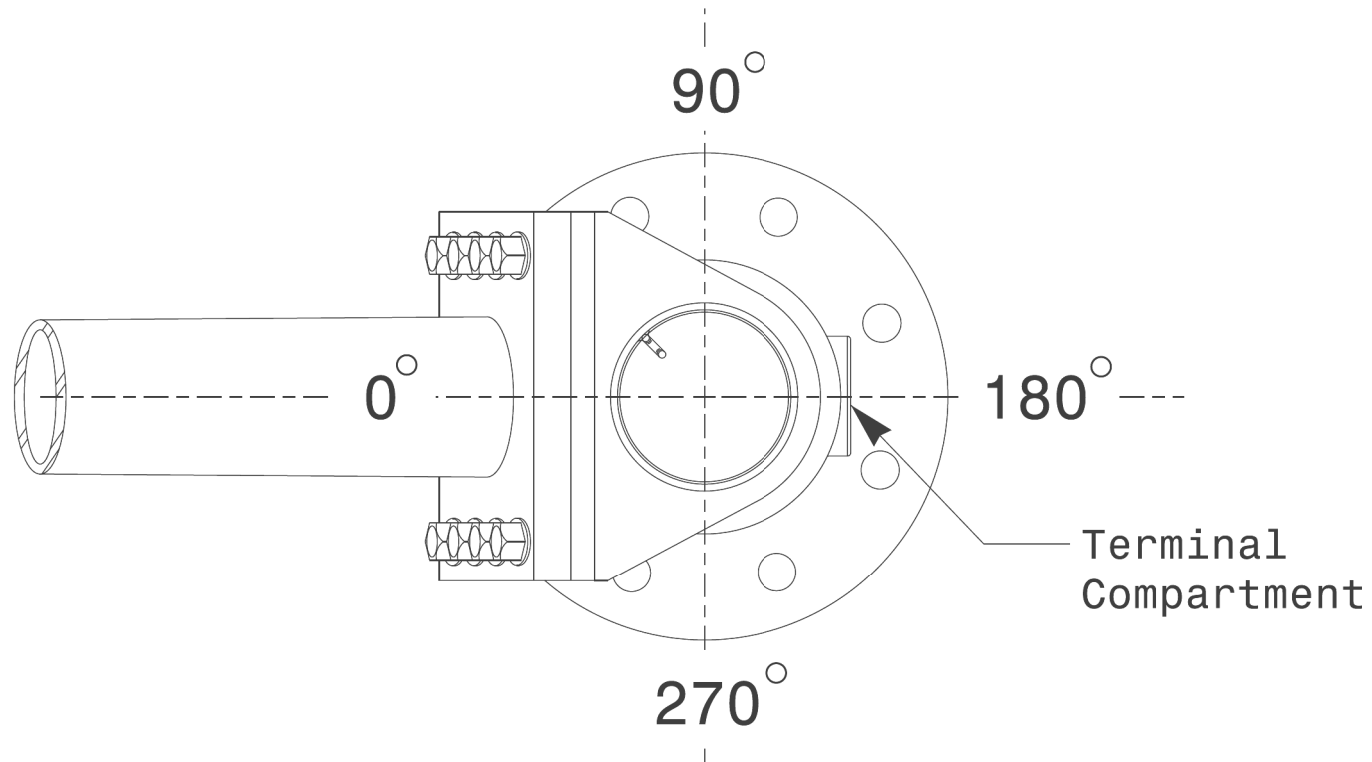
Section A-A
Pole Base Plate Details



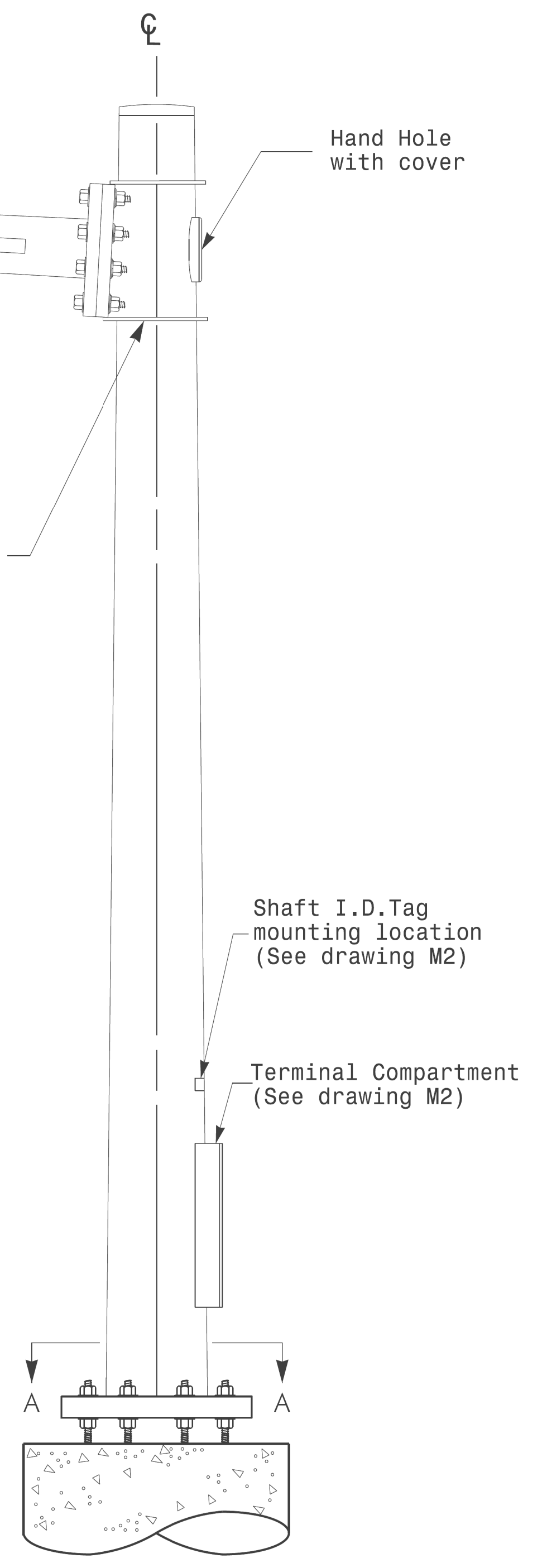
Section B-B
 (Pole Attachment to Base Plate)
Full-Penetration Groove Weld Detail



Slip Fit Joint Detail for Mast Arm



Mast Arm Radial Orientation



Mast Arm Pole

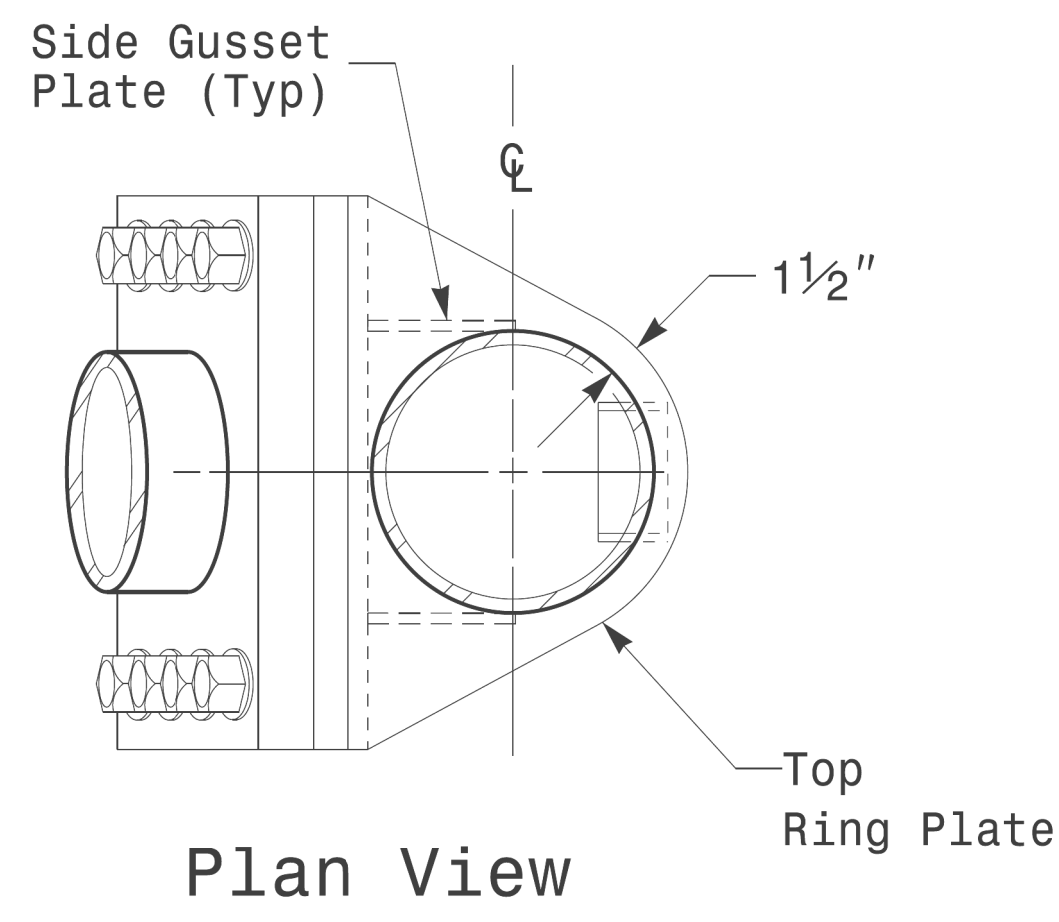
Fabrication Details - Mast Arm Poles

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

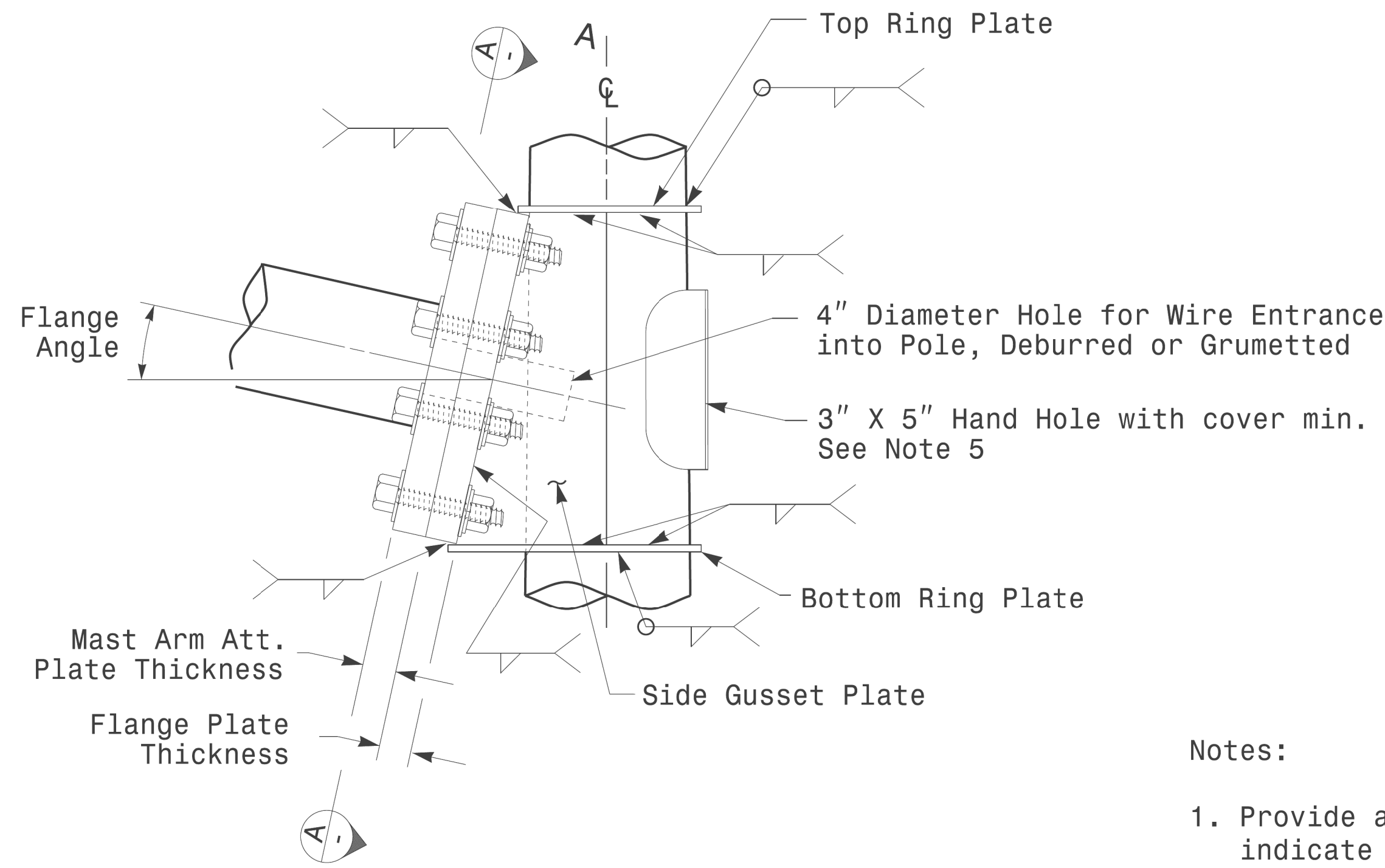
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Welded Ring Stiffened Mast Arm Connection

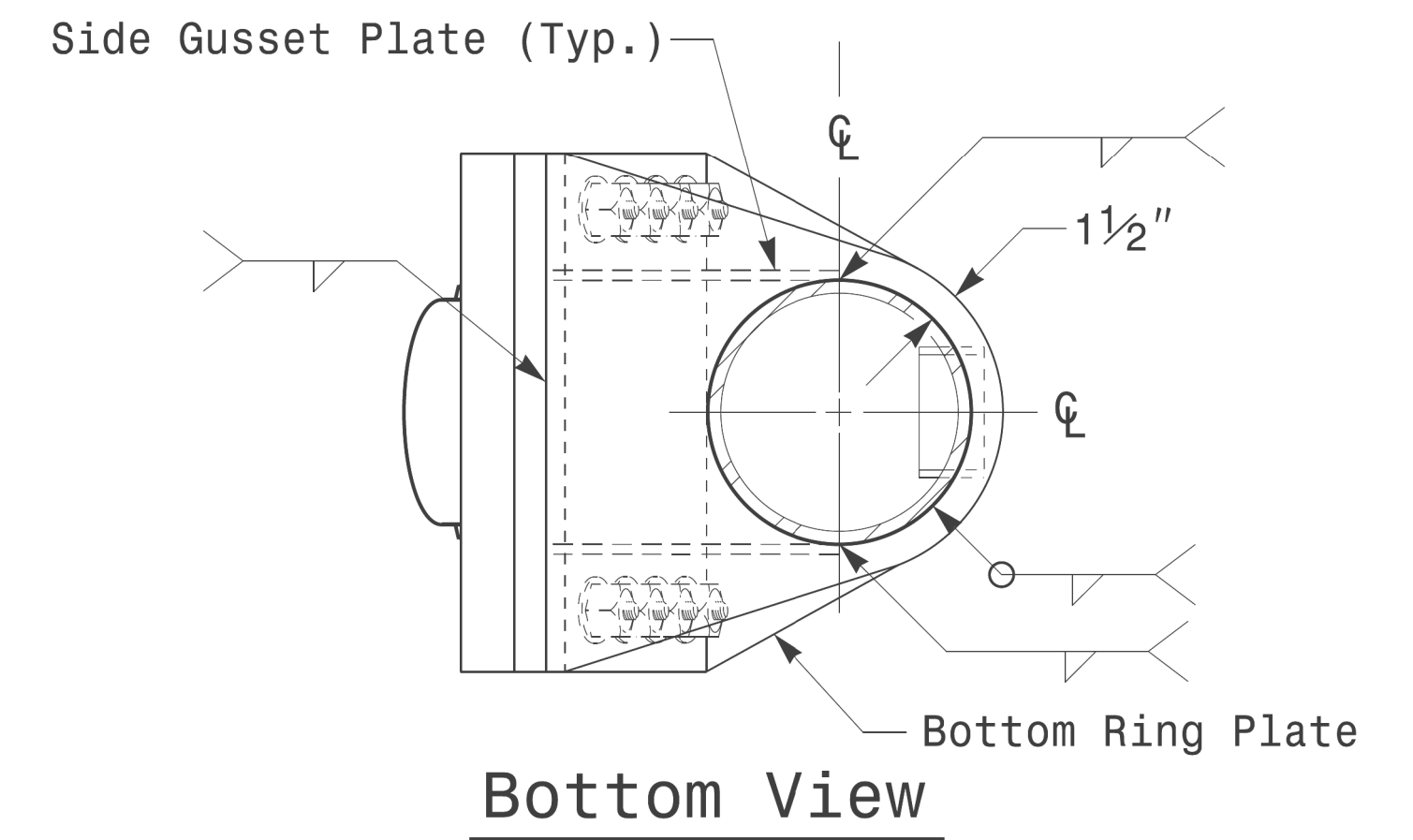
PROJECT ID. NO.	SHEET NO.
U-4405	Sig.M5



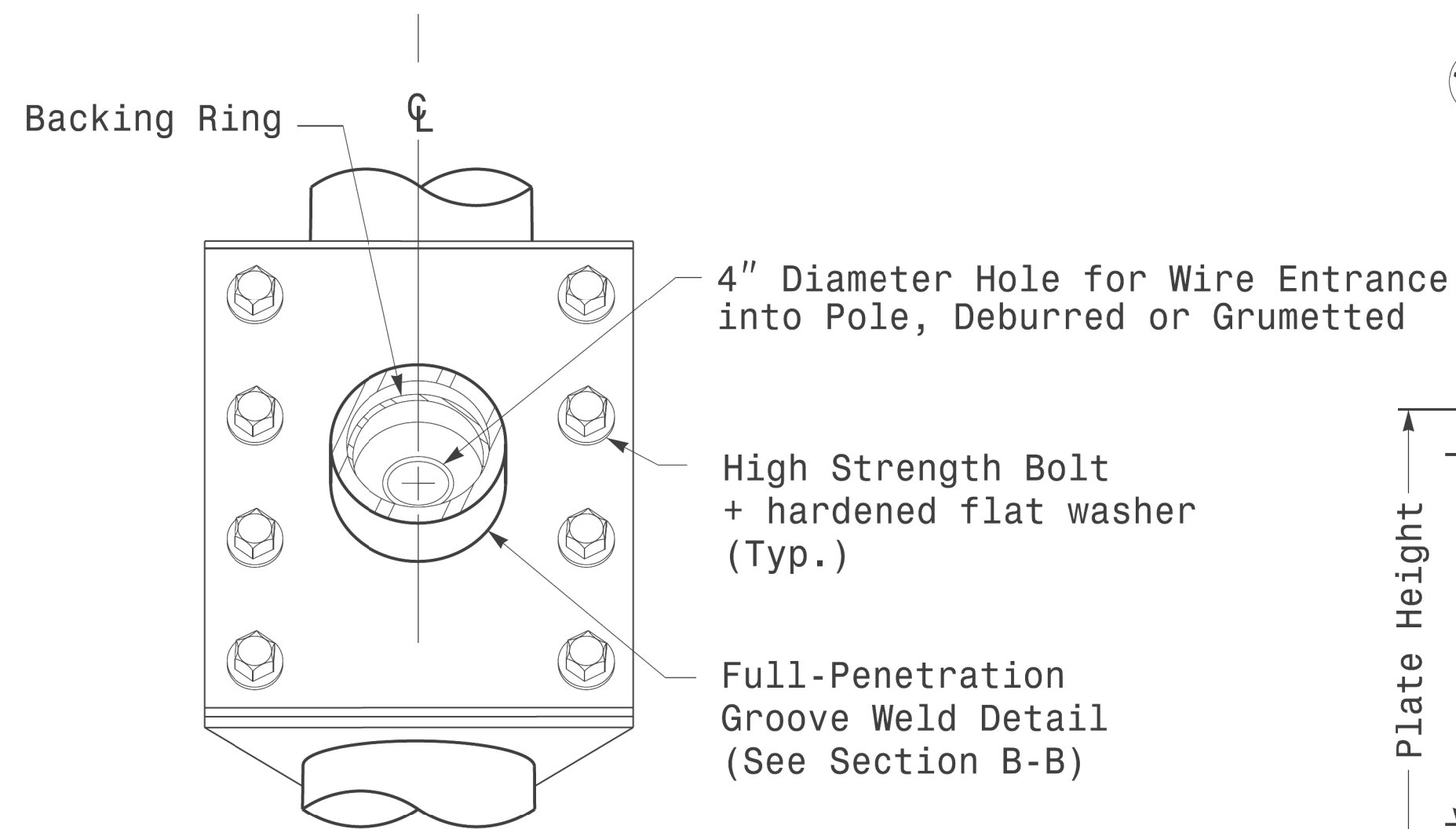
Plan View



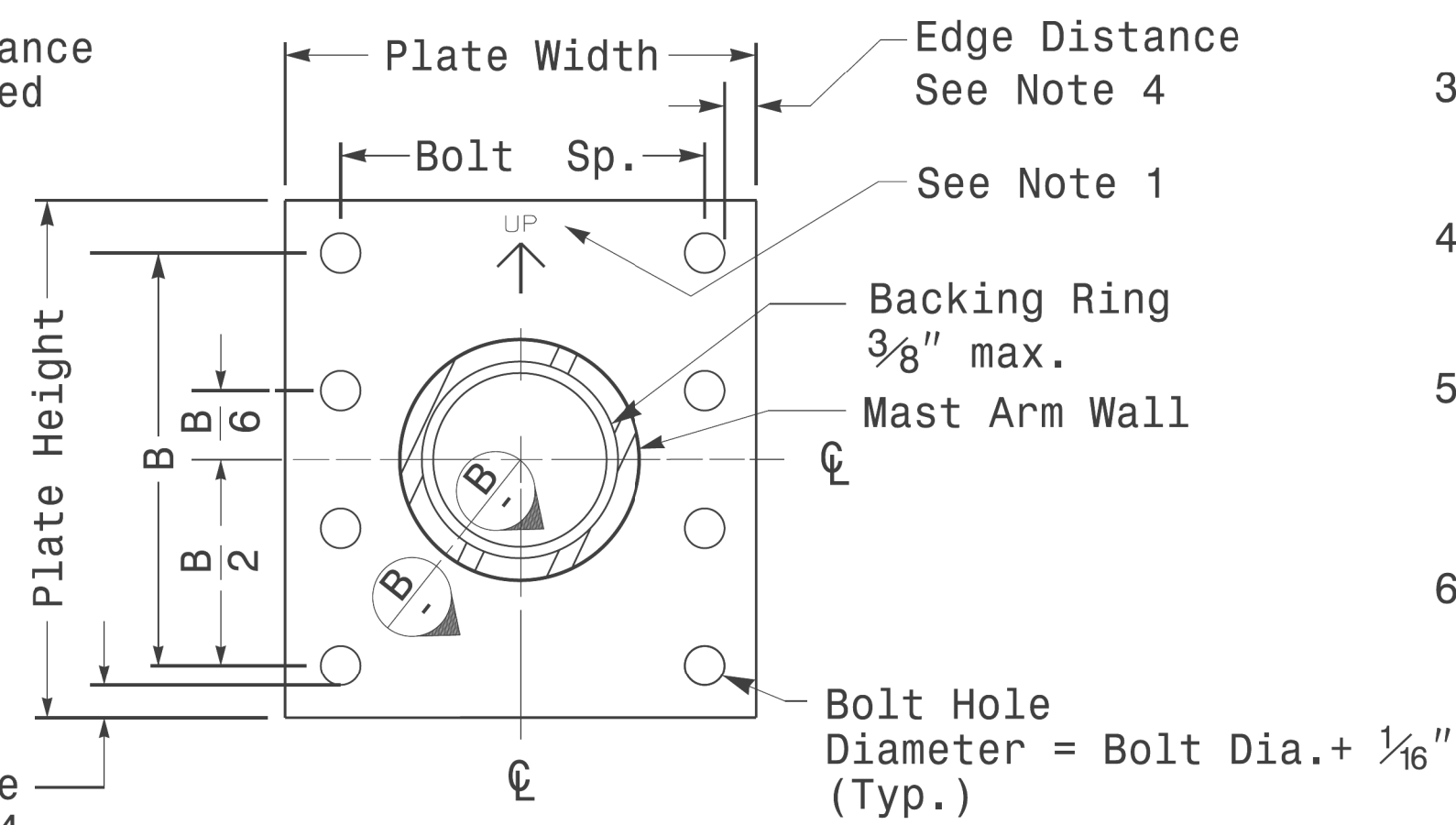
Side Elevation View



Bottom View



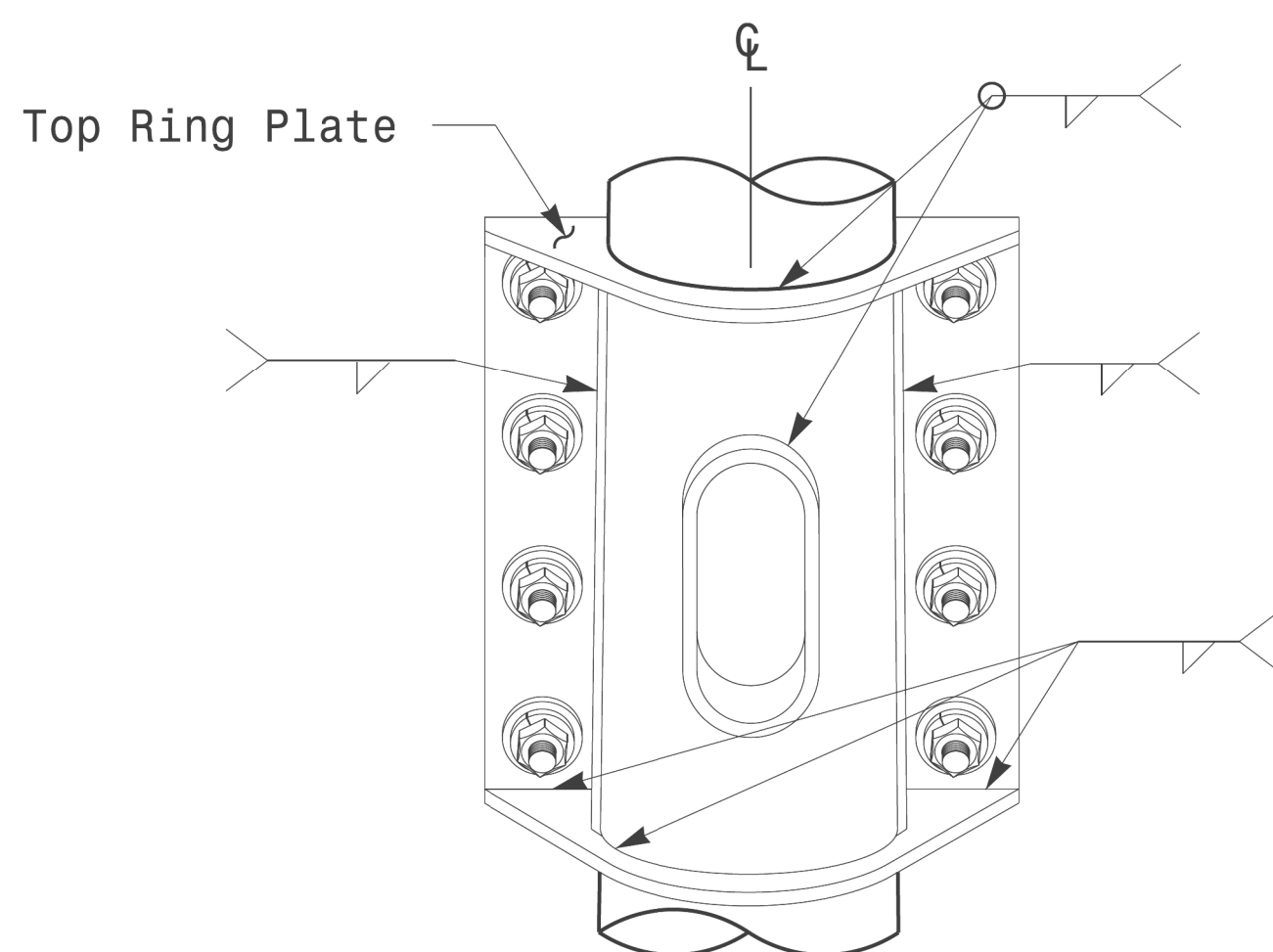
Front Elevation View



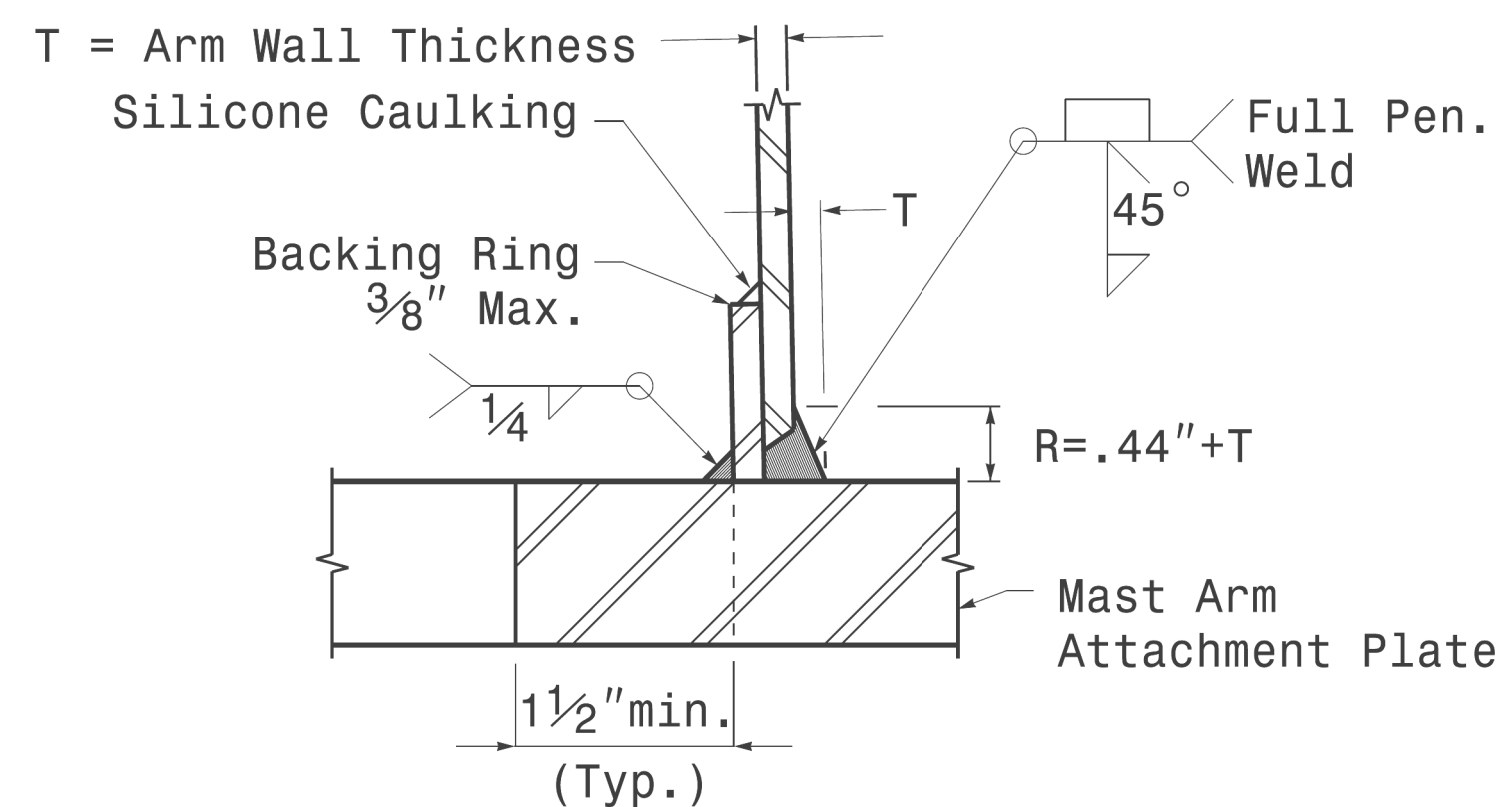
Section A-A Mast Arm Attachment Plate

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.



Back Elevation View



Section B-B Full-Penetration Groove Weld Detail

Prepared in the Offices of:

750 N. Greenfield Pkwy, Garner, NC 27529

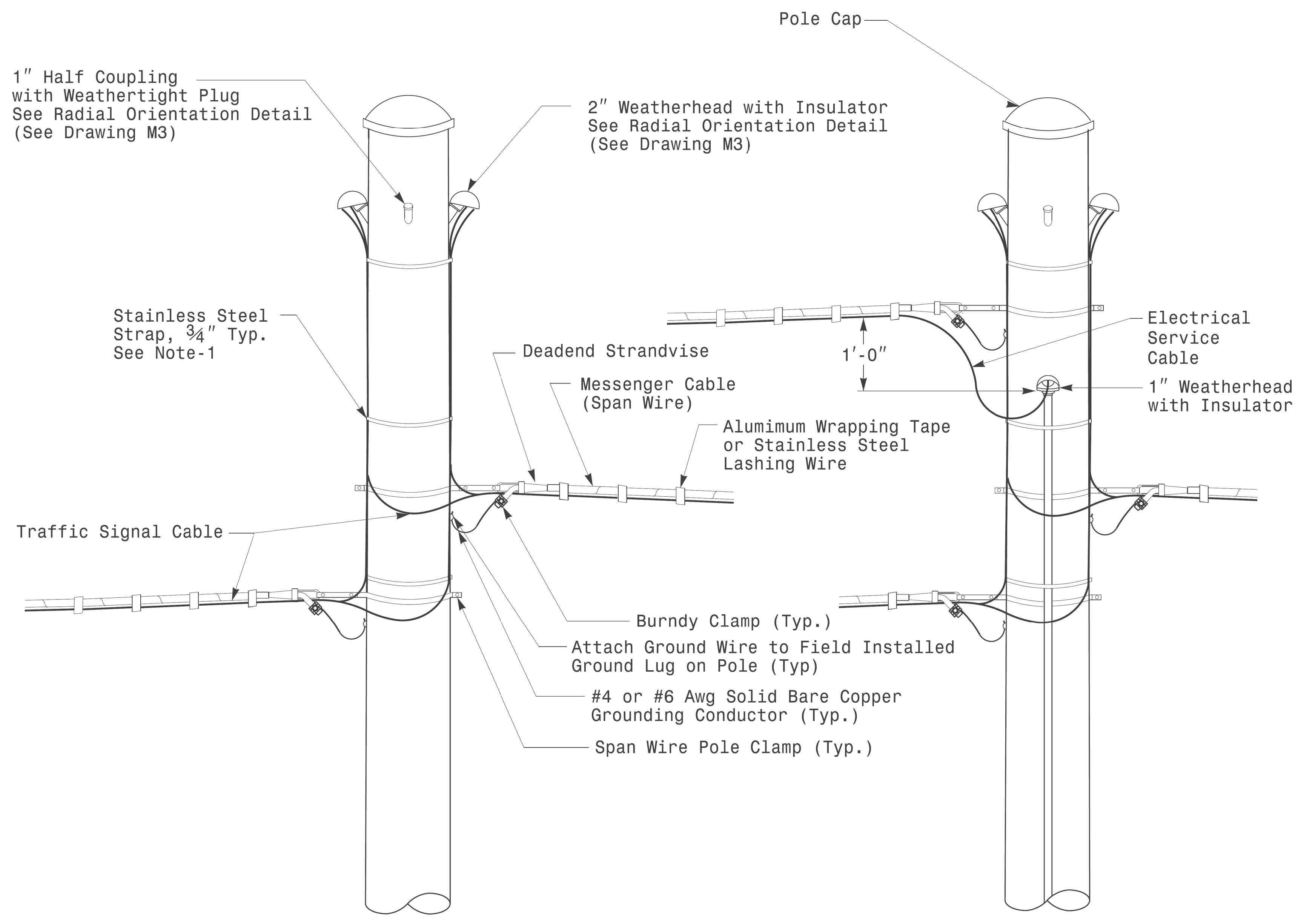
Typical Fabrication Details For Mast Arm Connection To Pole	
PLAN DATE: OCTOBER 2017	DESIGNED BY: C.F. ANDREWS
PREPARED BY: N. BITTING	REVIEWED BY: D.C. SARKAR
REVISIONS	INIT. DATE

SEAL

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

11-OCT-2017 08:35
S:\Projects\1106-44A9-92A1-BD1709805351\Sig.M5.dgn
Connection Fabricator: Detail: Is-Mast Arm Pole.dgn

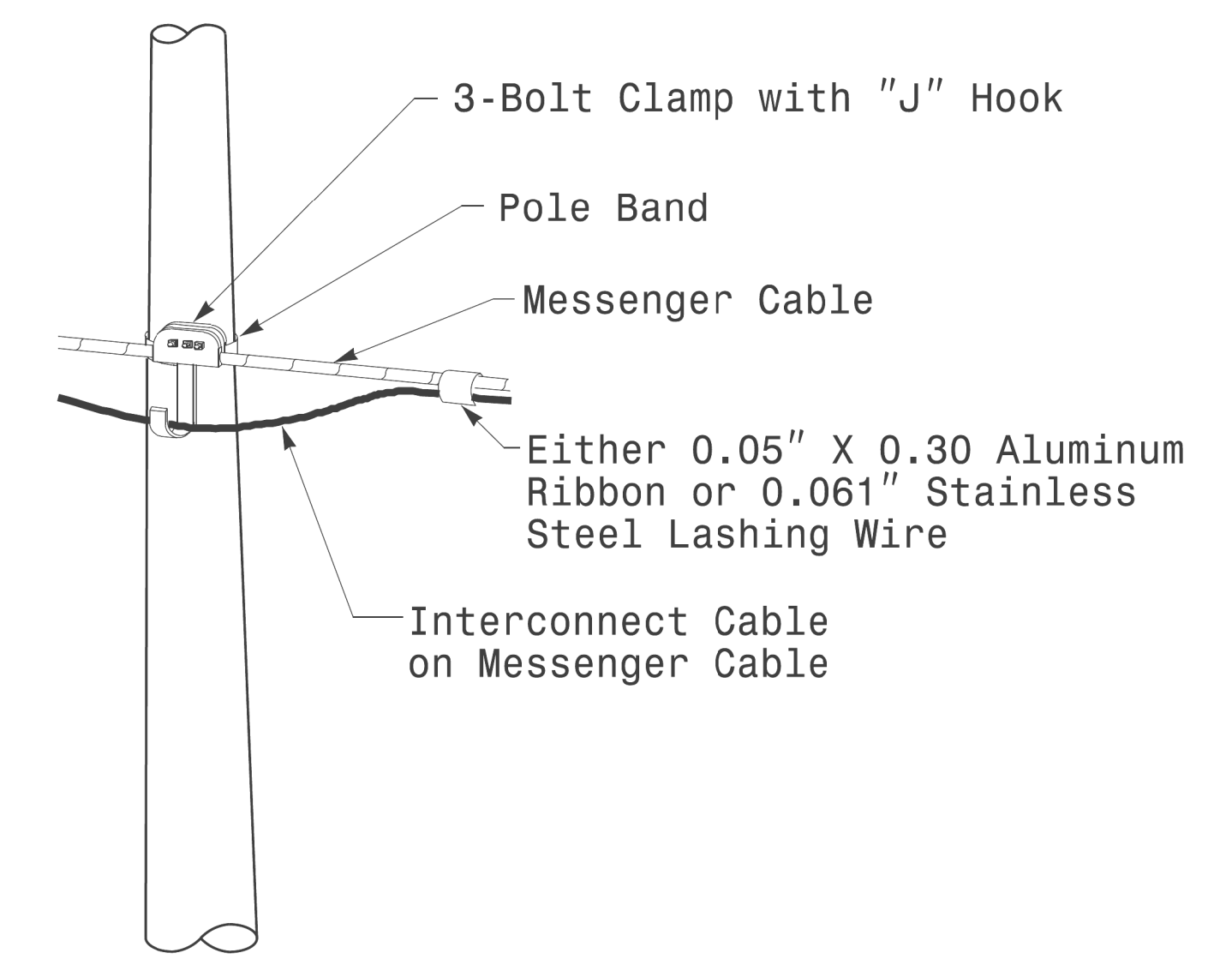
Fabrication Details - Mast Arm Connection



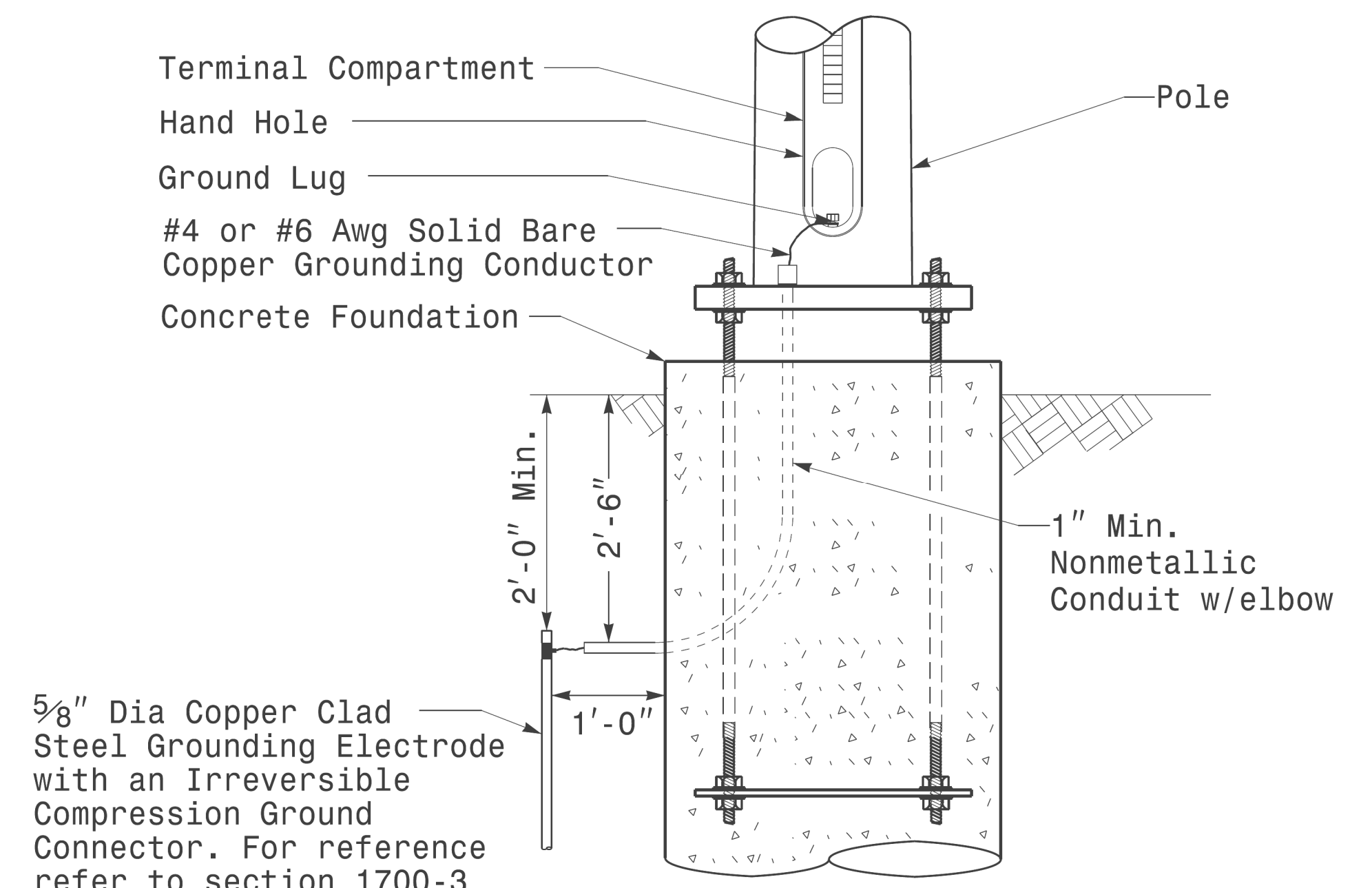
Strain Pole Attachments

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

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

11-OCT-2017 08:36 5:41:33 PM TIS Signal.scs:gnrl Design Section\Facsimile Region\mkt Sheets\2016\2014 Sig.M6 Std. Fabrication Detail-Strain Poles.dgn

SOIL CONDITION

PROJECT ID. NO. SHEET NO.

U-4405

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
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6

General Notes:

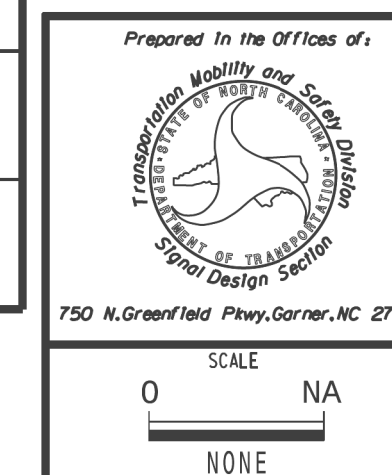
1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Use chairs and spacers to maintain proper clearance.
3. For foundation, always use air-entrain concrete mix.

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. COGDELL		
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 of Devesh C. Sarkar, Professional Engineer, State No. 028094, North Carolina. Date: 10/11/2017.

I:\Projects\2017_08-10_Signals\2017_08-10_Signals\15_Signals\Design\RegionMM_Sheets\2016\2014_Sig.M8_Std_Strain Pole Found-Structured Soil 1_Condition.dgn

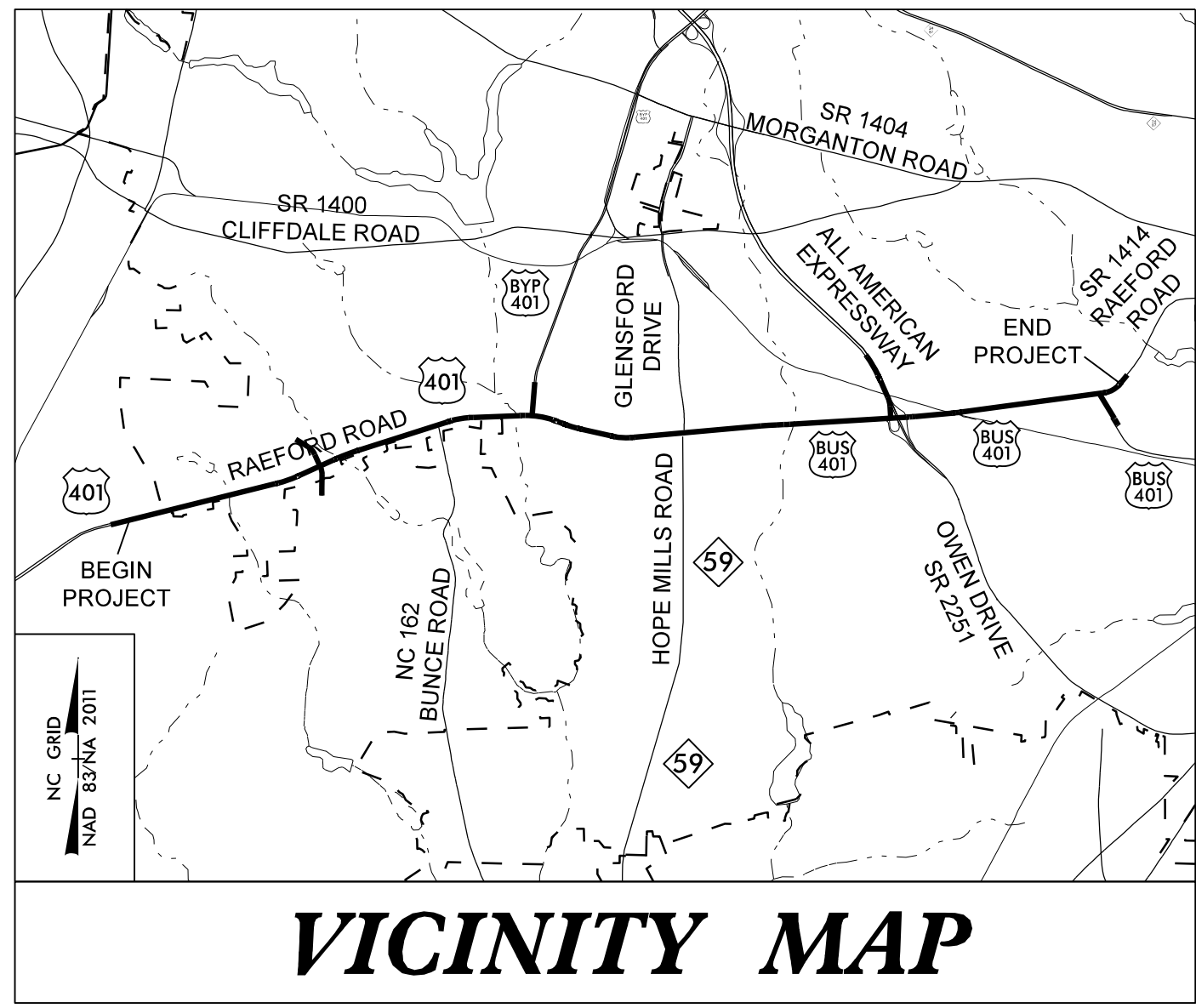
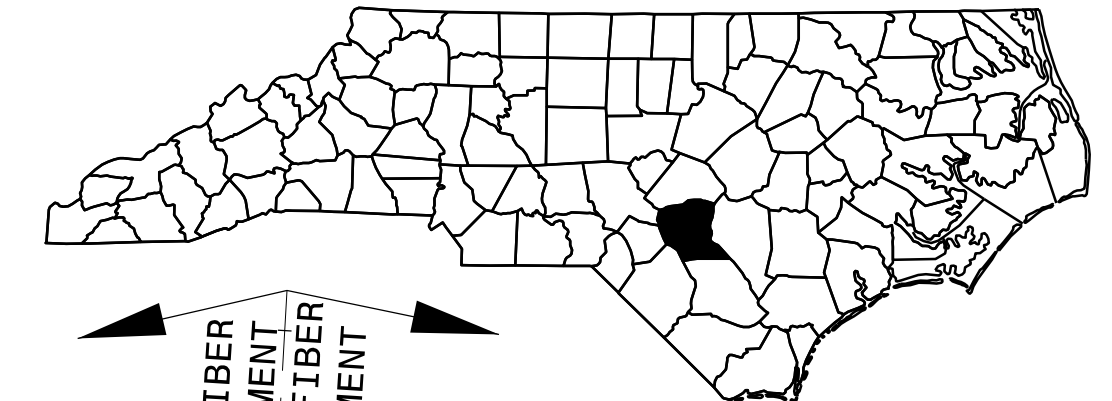
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

CUMBERLAND COUNTY

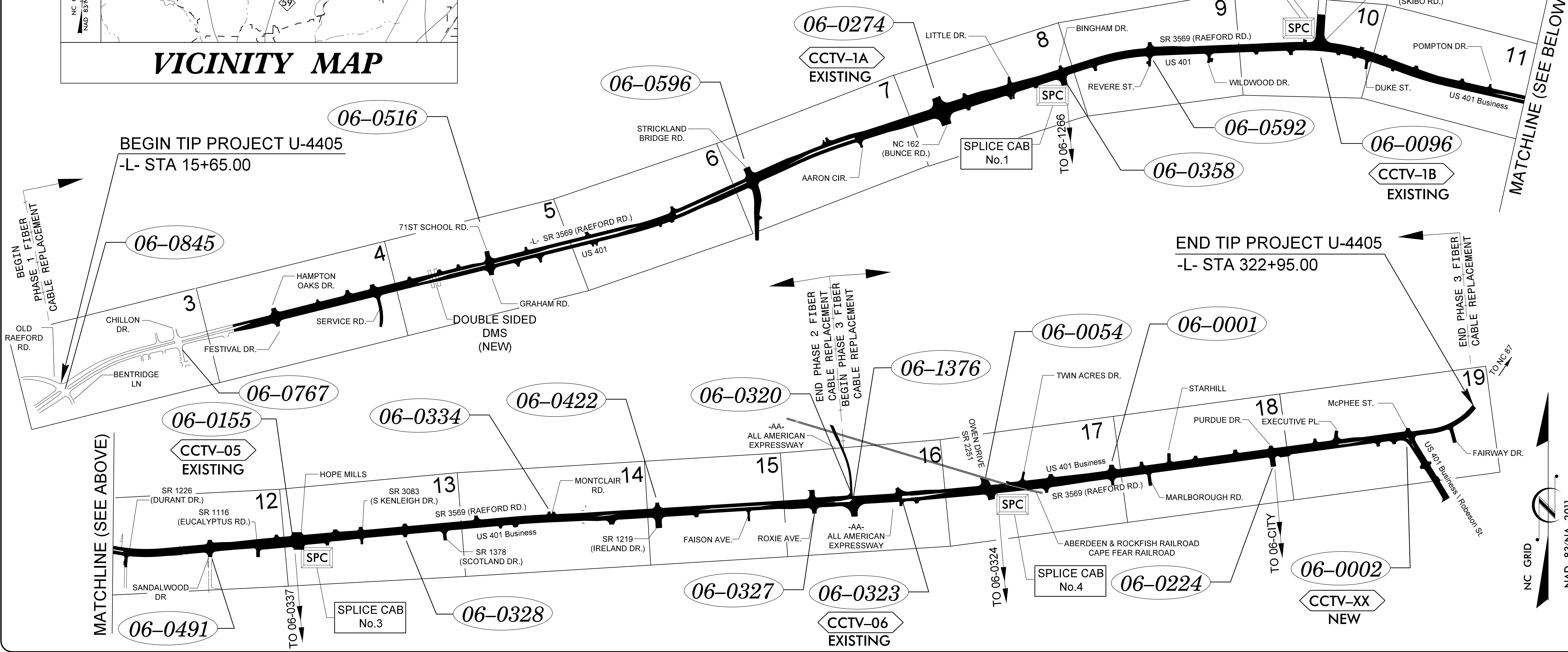
LOCATION: FAYETTEVILLE - US 401 (RAEFORD ROAD) FROM OLD RAEFORD ROAD TO ROBESON STREET (US 401 BUSINESS)

TYPE OF WORK: AERIAL TRUNK FIBER CABLE INSTALLATION, DROP CABLE INSTALLATION, SPLICE CABINETS & FUSION SPLICING



TIP PROJECT: U-4405

CONTRACT: C204107



INDEX OF PLANS table with columns for SHEET NUMBER, LOCATION / DESCRIPTION, and list of sheets (SCP 1-20).

ROADWAY STANDARD DRAWINGS table listing standards (STD. No.) and titles (e.g., WORK ZONE WARNING SIGNS, TEMPORARY LANE CLOSURE).

Professional information including NCDOT CONTACT (I. Neil Avery, Heidi Berggren), Stantec logo, and project engineer/designer details.

Professional seals and signatures for the project engineer and designer.

Vertical text on the left margin: 3/27/2018, U:\71001766\transportation\design\Traffic\Signals\Design\ITS U-4405\SCP Files\260_05_U-4405_SCP_SCP-01_180329.dgn, jingram

- 1 INSTALL REA, PE – 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 2 INSTALL REA, PE – 38, (FIGURE – 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 3 INSTALL REA, PE – 39, (UNDERGROUND) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE
- 4 INSTALL SMFO CABLE
- 5 INSTALL WEATHERPROOF CATEGORY 5e UTP – 4 PAIR 23 AWG CABLE (PoE)
- 6 INSTALL FIBER OPTIC DROP CABLE
- 7 INSTALL TRACER WIRE
- 8 TRENCH
- 9 INSTALL PVC CONDUIT
- 10 INSTALL RIGID, GALVANIZED STEEL CONDUIT
- 11 INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD
- 12A INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL
- 12B INSTALL CABLE/DROP CABLE THROUGH NIPPLE ON METAL POLE (SIGNAL OR JOINT USE). INSTALL HEAT SHRINK TUBING OVER NIPPLE.
- 13 INSTALL OUTER-DUCT POLYETHYLENE CONDUIT
- 14 INSTALL POLYETHYLENE CONDUIT
- 15 DIRECTIONAL DRILL CONDUIT
- 16 BORE AND JACK CONDUIT
- 17 INSTALL CABLE(S) IN EXISTING CONDUIT
- 18 INSTALL CABLE(S) IN NEW CONDUIT
- 19 INSTALL CABLE(S) IN EXISTING RISER
- 20 INSTALL CABLE(S) IN NEW RISER
- 21 INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS
- 22 INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 23 INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)
- 24 INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET
- 25 INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET
- 26 TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 27 INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET
- 28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPlice CABLE IN CABINET
- 29 INSTALL UNDERGROUND SPlice ENCLOSURE
- 30 INSTALL AERIAL SPlice ENCLOSURE
- 31 INSTALL POLE MOUNTED CABINET
- 32 INSTALL BASE MOUNTED SPlice CABINET (336) WITH EXTENDED BASE
- 33 REMOVE EXISTING SPlice CABINET
- 34 INSTALL CABINET FOUNDATION

- 35 REMOVE EXISTING CABINET FOUNDATION
- 36 INSTALL CCTV CAMERA ASSEMBLY
- 37 INSTALL CCTV CAMERA WOOD POLE
- 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION
- 39 INSTALL JUNCTION BOX
- 40 INSTALL OVERSIZED JUNCTION BOX
- 41 REMOVE EXISTING JUNCTION BOX
- 42 INSTALL WOOD POLE
- 43 REMOVE EXISTING WOOD POLE
- 44 INSTALL AERIAL GUY ASSEMBLY
- 45 INSTALL STANDARD GUY ASSEMBLY
- 46 INSTALL SIDEWALK GUY ASSEMBLY
- 47 INSTALL MESSENGER CABLE
- 48 REMOVE EXISTING COMMUNICATIONS CABLE AND MESSENGER CABLE
- 49 REMOVE EXISTING COMMUNICATIONS CABLE
- 50 INSTALL ETHERNET SWITCH
- 51 INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
- 52 INSTALL DELINEATOR MARKER
- 53 STORE 50 FEET OF COMMUNICATIONS CABLE
- 54 LASH CABLE(S) TO EXISTING PWC FIBER OPTIC LINE
- 55 LASH CABLE(S) TO EXISTING MESSENGER CABLE
- 56 LASH CABLE(S) TO NEW MESSENGER CABLE
- 57 MODIFY EXISTING ELECTRICAL SERVICE
- 58 INSTALL NEW ELECTRICAL SERVICE FOR DMS/CCTV
- 59 INSTALL NEW BASE MOUNTED CABINET (336)
- 60 SEAL ALL CONDUIT ENTERING JUNCTION BOXES AND SIGNAL/CCTV/DMS CONTROL CABINETS WITH MOLDABLE DUCT SEAL
- 61 ROUTE CABLE(S) INSIDE METAL POLE AND OUT TO SIGNAL CABINET. USE EXISTING JUNCTION BOXES AND CONDUIT SYSTEMS WHEN AVAILABLE. ENSURE FIBER CABLES DO NOT SHARE JUNCTION BOXES AND CONDUIT SYSTEMS WITH SIGNAL CABLES OR OTHER 120 VOLT CURRENT CARRYING CONDUCTORS.
- 62 INSTALL "TEMPORARY DROP CABLE MAINTENANCE LOOP WITH CABLE BRACKET"

TEMPORARY DROP CABLE MAINTENANCE LOOP WITH CABLE BRACKET:

WHERE INDICATED ON THE PLANS, THE CONTRACTOR WILL PROVIDE TEMPORARY SPARE LENGTHS OF DROP CABLE "TEMPORARY DROP CABLE MAINTENANCE LOOP WITH CABLE BRACKET" TO ACCOMMODATE FUTURE RELOCATIONS OF THE SIGNAL CABINETS AS THEY PROGRESS THROUGH THEIR VARIOUS CONSTRUCTION PHASES. THE TEMPORARY SPARE LENGTH OF DROP CABLE SHALL BE COILED AND STORED ON THE NEAREST METAL POLE BETWEEN THE SPlice ENCLOSURE AND THE FIBERS TRANSITION FROM ABOVE GROUND TO BELOW GROUND INSTALLATION AS IT PREPARES TO ENTER THE CONTROLLER CABINET. UPON A CABINET BEING SET IN ITS FINAL LOCATION AND FINAL SPlicing TO BE PERFORMED, REMOVE THE "TEMPORARY DROP CABLE MAINTENANCE LOOP AND BRACKET". RETURN THE BRACKET TO CITY OF FAYETTEVILLE'S SIGNAL SYSTEMS MANAGEMENT ENGINEER: CARL McCARTNEY AT (910) 433-1660.

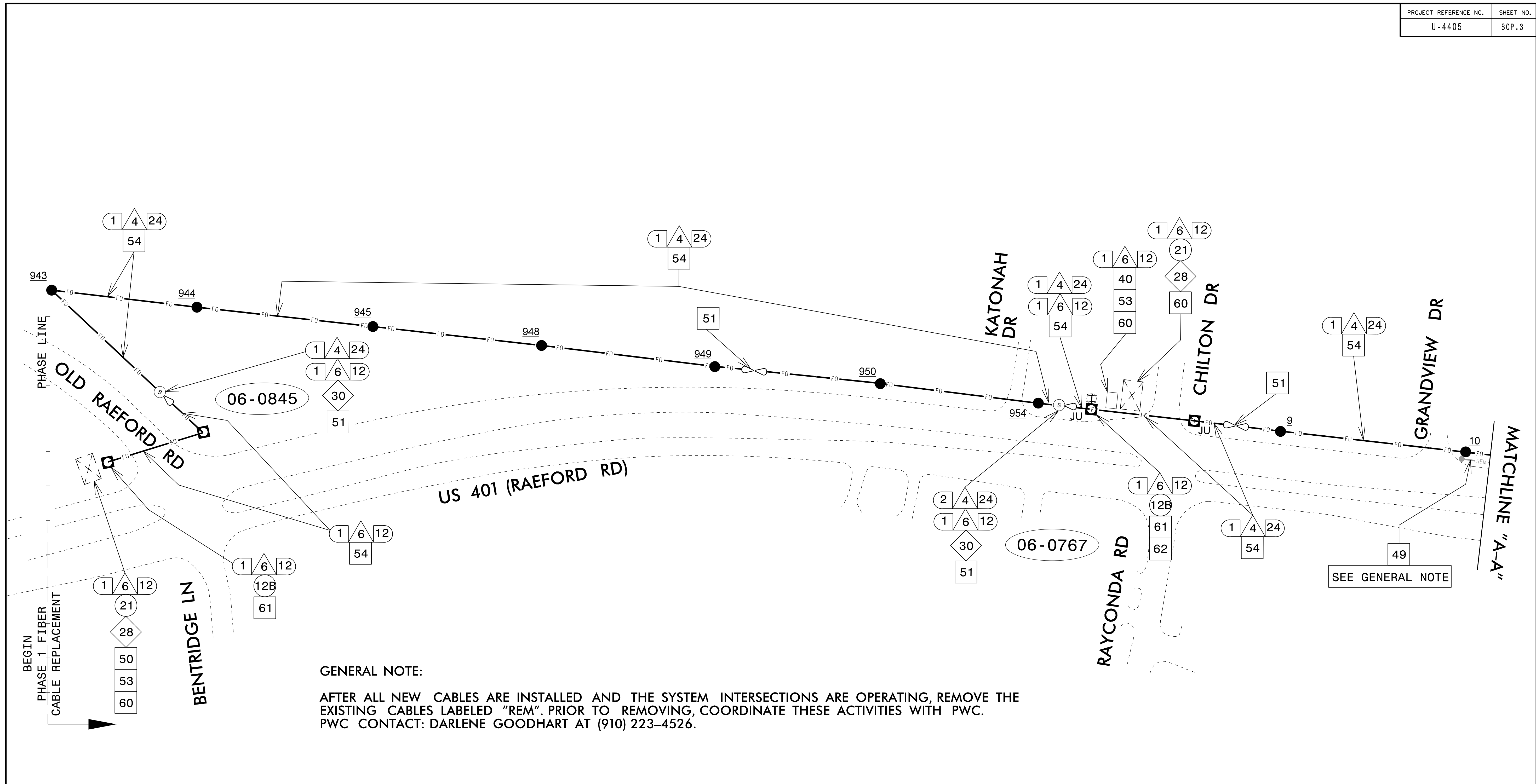
LEGEND

	NEW FIBER OPTIC COMMUNICATIONS CABLE
	NEW TWISTED PAIR COMMUNICATIONS CABLE
	EXISTING COMMUNICATIONS CABLE
	EXISTING COMMUNICATIONS CABLE TO BE REMOVED
	NEW AERIAL GUY ASSEMBLY
	NEW CONDUIT
	EXISTING CONDUIT
	NEW DIRECTIONAL DRILLED CONDUIT
	NEW BORED AND JACKED CONDUIT
	NEW JUNCTION BOX
	EXISTING JUNCTION BOX
	NEW WOOD POLE
	EXISTING WOOD POLE
	NEW AERIAL SPlice ENCLOSURE
	NEW METAL POLE
	EXISTING METAL POLE
	NEW CCTV CAMERA ASSEMBLY
	EXISTING CCTV CAMERA ASSEMBLY
	NEW STANDARD GUY ASSEMBLY
	NEW STANDARD GUY USING EXISTING ANCHOR
	NEW SIDEWALK GUY ASSEMBLY
	NEW CABLE STORAGE RACKS (SNOW SHOES)
	EXISTING CONTROLLER CABINET
	EXISTING SPlice CABINET
	NEW SPlice CABINET, BASE MOUNTED
	EXISTING CCTV CABINET
	SIGNAL POLE
	SIGNAL INVENTORY NUMBER
	CCTV IDENTIFICATION NUMBER
	YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
	YAGI ANTENNA (SINGLE)
	OMNI ANTENNA
	PROPOSED TEMPORARY DROP CABLE MAINTENANCE LOOP WITH CABLE BRACKET
	EXISTING UTILITY CABLE TO BE RELOCATED OR REMOVED
	EXISTING POWER PEDESTAL
	UTILITY POLE TAG NUMBER
	JOINT USE POLE
	METAL POLE

CONSTRUCTION NOTE SYMBOLOGY KEY

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

Prepared for the Offices of: 750 N. Greenfield Plaza, Garner, NC 27529 SCALE: N/A	US 401 (RAEFORD ROAD) SIGNAL SYSTEM CONSTRUCTION NOTES		SEAL Documented by: Lawrence E. Owen 3/29/2018 DATE: _____ CADD FILE NAME: _____
	PLAN DATE: MARCH 2018 PREPARED BY: J. INGRAM	REVIEWED BY: D. HARRIS REVIEWED BY: B. WATSON	
REVISIONS: _____ INIT.: _____ DATE: _____			



GENERAL NOTE:
 AFTER ALL NEW CABLES ARE INSTALLED AND THE SYSTEM INTERSECTIONS ARE OPERATING, REMOVE THE EXISTING CABLES LABELED "REM". PRIOR TO REMOVING, COORDINATE THESE ACTIVITIES WITH PWC.
 PWC CONTACT: DARLENE GOODHART AT (910) 223-4526.

- | | | | | |
|---|--|--|---|---|
| <ul style="list-style-type: none"> 1 INSTALL REA, PE - 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE 2 INSTALL REA, PE - 38, (FIGURE - 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE 3 INSTALL 3-CONDUCTOR, CLASS B, STRANDED UNDERGROUND POWER CABLE 4 INSTALL SMFO CABLE 5 INSTALL WEATHERPROOF CATEGORY 5e UTP - 4 PAIR 23 AWG CABLE (PcE) 6 INSTALL FIBER OPTIC DROP CABLE 7 INSTALL TRACER WIRE 8 TRENCH 9 INSTALL PVC CONDUIT 10 INSTALL RIGID, GALVANIZED STEEL CONDUIT 11 INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD 12A INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL 12B INSTALL CABLES/DROP CABLE THROUGH NIPPLE ON METAL POLE (SIGNAL OR JOINT USE). INSTALL HEAT SHRINK TUBING OVER NIPPLE. 13 INSTALL OUTER-DUCT POLYETHYLENE CONDUIT 14 INSTALL POLYETHYLENE CONDUIT | <ul style="list-style-type: none"> 15 DIRECTIONAL DRILL CONDUIT 16 BORE AND JACK CONDUIT 17 INSTALL CABLE(S) IN EXISTING CONDUIT 18 INSTALL CABLE(S) IN NEW CONDUIT 19 INSTALL CABLE(S) IN EXISTING RISER 20 INSTALL CABLE(S) IN NEW RISER 21 INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS 22 INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE) 23 INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE) 24 INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET 25 INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET 26 TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET 27 INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET 28 INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPICE CABLE IN CABINET 29 INSTALL UNDERGROUND SPICE ENCLOSURE | <ul style="list-style-type: none"> 30 INSTALL AERIAL SPICE ENCLOSURE 31 INSTALL POLE MOUNTED CABINET 32 INSTALL BASE MOUNTED SPICE CABINET (336) WITH EXTEND BASE 33 REMOVE EXISTING SPICE CABINET 34 INSTALL CABINET FOUNDATION 35 REMOVE EXISTING CABINET FOUNDATION 36 INSTALL CCTV CAMERA ASSEMBLY 37 INSTALL CCTV CAMERA WOOD POLE 38 INSTALL CCTV CAMERA METAL POLE AND FOUNDATION 39 INSTALL JUNCTION BOX 40 INSTALL OVERSIZED JUNCTION BOX 41 REMOVE EXISTING JUNCTION BOX 42 INSTALL WOOD POLE 43 REMOVE EXISTING WOOD POLE 44 INSTALL AERIAL GUY ASSEMBLY 45 INSTALL STANDARD GUY ASSEMBLY | <ul style="list-style-type: none"> 46 INSTALL SIDEWALK GUY ASSEMBLY 47 INSTALL MESSENGER CABLE 48 REMOVE EXISTING COMMUNICATIONS CABLE AND MESSENGER CABLE 49 REMOVE EXISTING COMMUNICATIONS CABLE 50 INSTALL ETHERNET SWITCH 51 INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE 52 INSTALL DELINEATOR MARKER 53 STORE 50 FEET OF COMMUNICATIONS CABLE 54 LASH CABLE(S) TO EXISTING PWC FIBER OPTIC LINE 55 LASH CABLE(S) TO EXISTING MESSENGER CABLE 56 LASH CABLE(S) TO NEW MESSENGER CABLE 57 MODIFY EXISTING ELECTRICAL SERVICE 58 INSTALL NEW ELECTRICAL SERVICE FOR DMS/CCTV 59 INSTALL NEW BASE MOUNTED CABINET (336) 60 SEAL ALL CONDUIT ENTERING JUNCTION BOXES AND SIGNAL/CCTV/DMS CONTROL CABINETS WITH MOLDABLE DUCT SEAL | <ul style="list-style-type: none"> 61 ROUTE CABLE(S) INSIDE METAL POLE AND OUT TO SIGNAL CABINET. USE EXISTING JUNCTION BOXES AND CONDUIT SYSTEMS WHEN AVAILABLE. ENSURE FIBER CABLES DO NOT SHARE JUNCTION BOXES AND CONDUIT SYSTEMS WITH SIGNAL CABLES OR OTHER 120 VOLT CURRENT CARRYING CONDUCTORS. 62 INSTALL TEMPORARY DROP CABLE MAINTENANCE LOOP WITH CABLE BRACKET |
|---|--|--|---|---|

Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

PHASE I FIBER TRUNK CABLE INSTALLATION

Prepared for the Offices of:

750 N. Greenfield Plaza, Garner, NC 27529

**US 401 (RAEFORD ROAD)
 SIGNAL SYSTEM AND
 COMMUNICATIONS CABLE /
 CONDUIT ROUTING PLANS**

DIVISION 06 CUMBERLAND CO. FAYETTEVILLE

PLAN DATE: MARCH 2018 REVIEWED BY: D. HARRIS

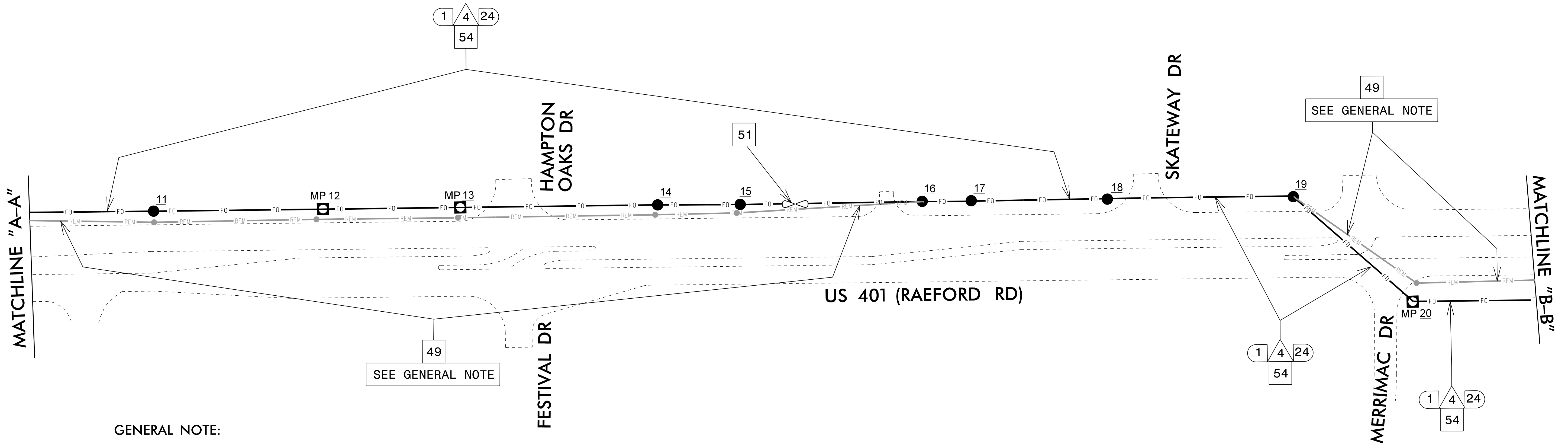
PREPARED BY: J. INGRAM REVIEWED BY: B. WATSON

REVISIONS	INIT.	DATE

SEAL

Lawrence E. Overton
 3/29/2018


3/27/2018
 U:\17100\1766\tr\transportation\des\ign\tr\off\c\5\ign\des\scp\its U-4405*SCP Cable Routing.dgn
 j.ingram



GENERAL NOTE:

AFTER ALL NEW CABLES ARE INSTALLED AND THE SYSTEM INTERSECTIONS ARE OPERATING, REMOVE THE EXISTING CABLES LABELED "REM". PRIOR TO REMOVING, COORDINATE THESE ACTIVITIES WITH PWC.
 PWC CONTACT: DARLENE GOODHART AT (910) 223-4526.

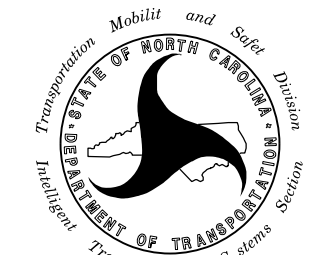
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PHASE I FIBER TRUNK CABLE INSTALLATION

Prepared for the Offices of:

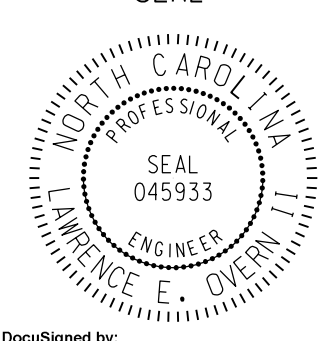


750 N. Greenfield Plaza, Garner, NC 27529

**US 401 (RAEFORD ROAD)
 SIGNAL SYSTEM AND
 COMMUNICATIONS CABLE /
 CONDUIT ROUTING PLANS**


DIVISION 06 CUMBERLAND CO. FAYETTEVILLE	
PLAN DATE: MARCH 2018	REVIEWED BY: D. HARRIS
PREPARED BY: J. INGRAM	REVIEWED BY: B. WATSON

SEAL



Lawrence E. Overton
 ENGINEER
 SEAL 045933
 DATE 3/29/2018

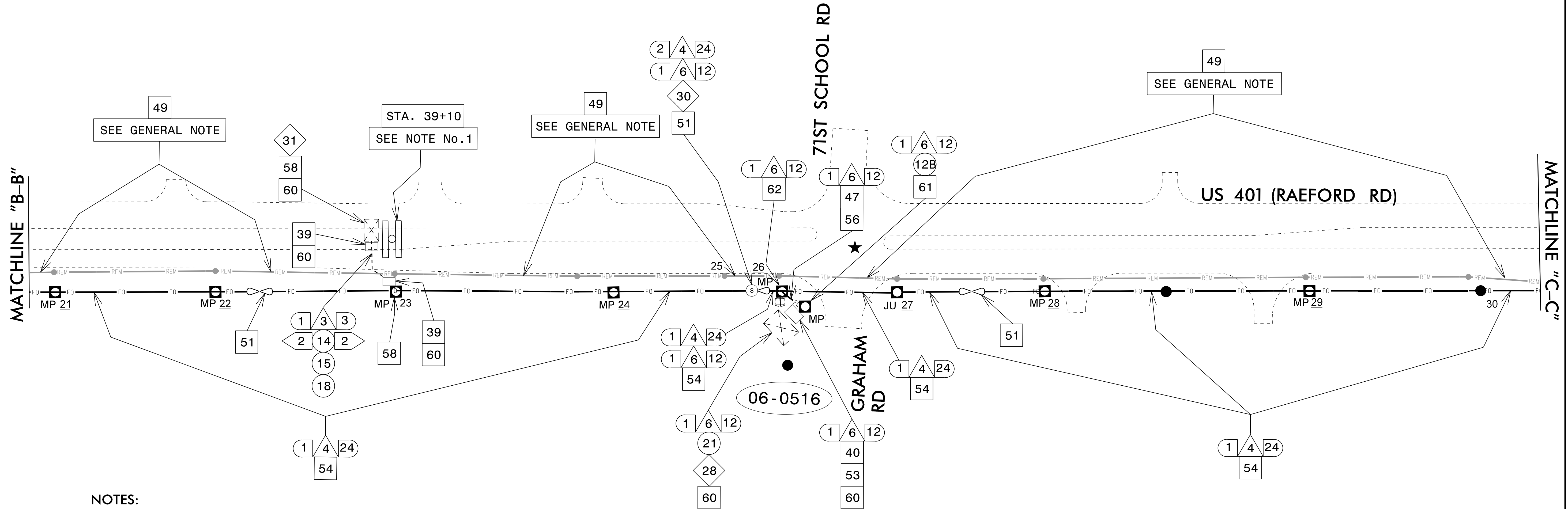
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SCALE
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DocuSigned by:
Lawrence E. Overton 3/29/2018

3/27/2018 U:*171001766*tr\transportation\des\ign*Tr\off\c\45\gnal\des\ign*ITS U-4405*SCP Cable Routing.dgn F:\les*260_20_U-4405_SCP-04_180329.dgn j.ingram



NOTES:

1. FOR DMS; CONTRACTOR SHALL INSTALL, CENTER SUPPORT STRUCTURE WITH DUAL, BACK TO BACK FRONT ACCESS DMS SIGNS. MOUNT DMS CABINET ON SUPPORT STRUCTURE. INSTALL CELLULAR MODEM PROVIDED BY ENGINEER AND TEST THE OPERATION OF DMS SIGNS. REFER TO DMS DETAIL SHEETS SCP-45, SCP-46 AND SCP-47 FOR ADDITIONAL DETAILS AND INFORMATION.

GENERAL NOTE:

AFTER ALL NEW CABLES ARE INSTALLED AND THE SYSTEM INTERSECTIONS ARE OPERATING, REMOVE THE EXISTING CABLES LABELED "REM". PRIOR TO REMOVING, COORDINATE THESE ACTIVITIES WITH PWC.
PWC CONTACT: DARLENE GOODHART AT (910) 223-4526.

1. INSTALL REA, PE - 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE	15. DIRECTIONAL DRILL CONDUIT	30. INSTALL AERIAL SPlice ENCLOSURE	46. INSTALL SIDEWALK GUY ASSEMBLY
2. INSTALL REA, PE - 38, (FIGURE - 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE	16. BORE AND JACK CONDUIT	31. INSTALL POLE MOUNTED CABINET	47. INSTALL MESSENGER CABLE
3. INSTALL 3-CONDUCTOR, CLASS B, STRANDED UNDERGROUND POWER CABLE	17. INSTALL CABLE(S) IN EXISTING CONDUIT	32. INSTALL BASE MOUNTED SPlice CABINET (336) WITH EXTEND BASE	48. REMOVE EXISTING COMMUNICATIONS CABLE AND MESSENGER CABLE
4. INSTALL SMFO CABLE	18. INSTALL CABLE(S) IN NEW CONDUIT	33. REMOVE EXISTING SPlice CABINET	49. REMOVE EXISTING COMMUNICATIONS CABLE
5. INSTALL WEATHERPROOF CATEGORY 5e UTP - 4 PAIR 23 AWG CABLE (PcE)	19. INSTALL CABLE(S) IN EXISTING RISER	34. INSTALL CABINET FOUNDATION	50. INSTALL ETHERNET SWITCH
6. INSTALL FIBER OPTIC DROP CABLE	20. INSTALL CABLE(S) IN NEW RISER	35. REMOVE EXISTING CABINET FOUNDATION	51. INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
7. INSTALL TRACER WIRE	21. INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS	36. INSTALL CCTV CAMERA ASSEMBLY	52. INSTALL DELINEATOR MARKER
8. TRENCH	22. INSTALL NEW CONDUIT INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)	37. INSTALL CCTV CAMERA WOOD POLE	53. STORE 50 FEET OF COMMUNICATIONS CABLE
9. INSTALL PVC CONDUIT	23. INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)	38. INSTALL CCTV CAMERA METAL POLE AND FOUNDATION	54. LASH CABLE(S) TO EXISTING PWC FIBER OPTIC LINE
10. INSTALL RIGID, GALVANIZED STEEL CONDUIT	24. INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET	39. INSTALL JUNCTION BOX	55. LASH CABLE(S) TO EXISTING MESSENGER CABLE
11. INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD	25. INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET	40. INSTALL OVERSIZED JUNCTION BOX	56. LASH CABLE(S) TO NEW MESSENGER CABLE
12A. INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL	26. TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET	41. REMOVE EXISTING JUNCTION BOX	57. MODIFY EXISTING ELECTRICAL SERVICE
12B. INSTALL CABLES/DROP CABLE THROUGH NIPPLE ON METAL POLE (SIGNAL OR JOINT USE). INSTALL HEAT SHRINK TUBING OVER NIPPLE.	27. INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET	42. INSTALL WOOD POLE	58. INSTALL NEW ELECTRICAL SERVICE FOR DMS/CCTV
13. INSTALL OUTER-DUCT POLYETHYLENE CONDUIT	28. INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPlice CABLE IN CABINET	43. REMOVE EXISTING WOOD POLE	59. INSTALL NEW BASE MOUNTED CABINET (336)
14. INSTALL POLYETHYLENE CONDUIT	29. INSTALL UNDERGROUND SPlice ENCLOSURE	44. INSTALL AERIAL GUY ASSEMBLY	60. SEAL ALL CONDUIT ENTERING JUNCTION BOXES AND SIGNAL/CCTV/DMS CONTROL CABINETS WITH MOLDABLE DUCT SEAL
		45. INSTALL STANDARD GUY ASSEMBLY	

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PHASE I FIBER TRUNK CABLE INSTALLATION

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SIGNAL SYSTEM AND
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DIVISION 06 CUMBERLAND CO. FAYETTEVILLE

PLAN DATE: MARCH 2018 REVIEWED BY: D. HARRIS

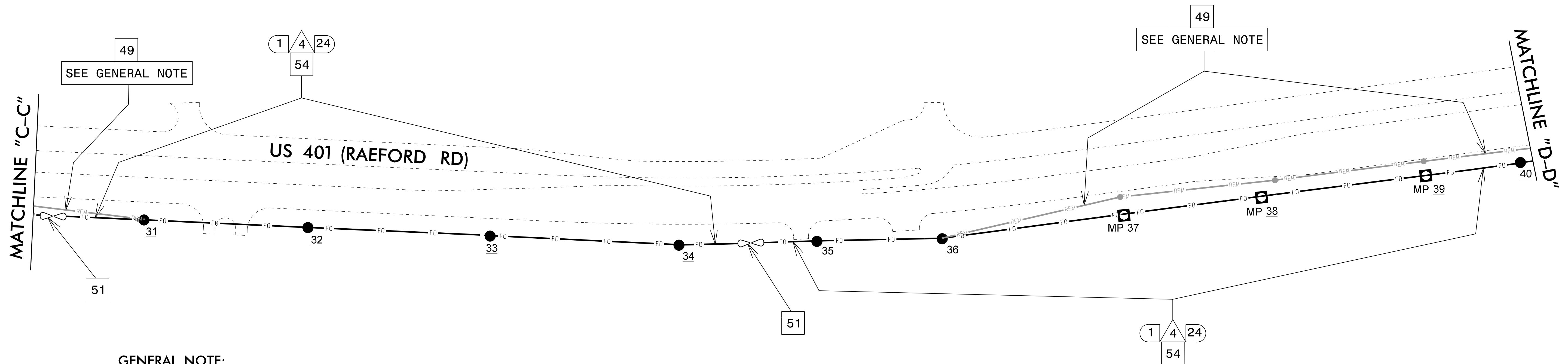
PREPARED BY: J. INGRAM REVIEWED BY: B. WATSON

SCALE: NTS

SEAL

Lawrence E. Overton
Professional Engineer
No. 045933
Date: 3/29/2018

3/27/2018
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 j.ingram



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PHASE I FIBER TRUNK CABLE INSTALLATION

Prepared for the Offices of:

750 N. Greenfield Plaza, Garner, NC 27529

**US 401 (RAEFORD ROAD)
SIGNAL SYSTEM AND
COMMUNICATIONS CABLE /
CONDUIT ROUTING PLANS**

DIVISION 06 CUMBERLAND CO. FAYETTEVILLE	
PLAN DATE: MARCH 2018	REVIEWED BY: D. HARRIS
PREPARED BY: J. INGRAM	REVIEWED BY: B. WATSON

SEAL

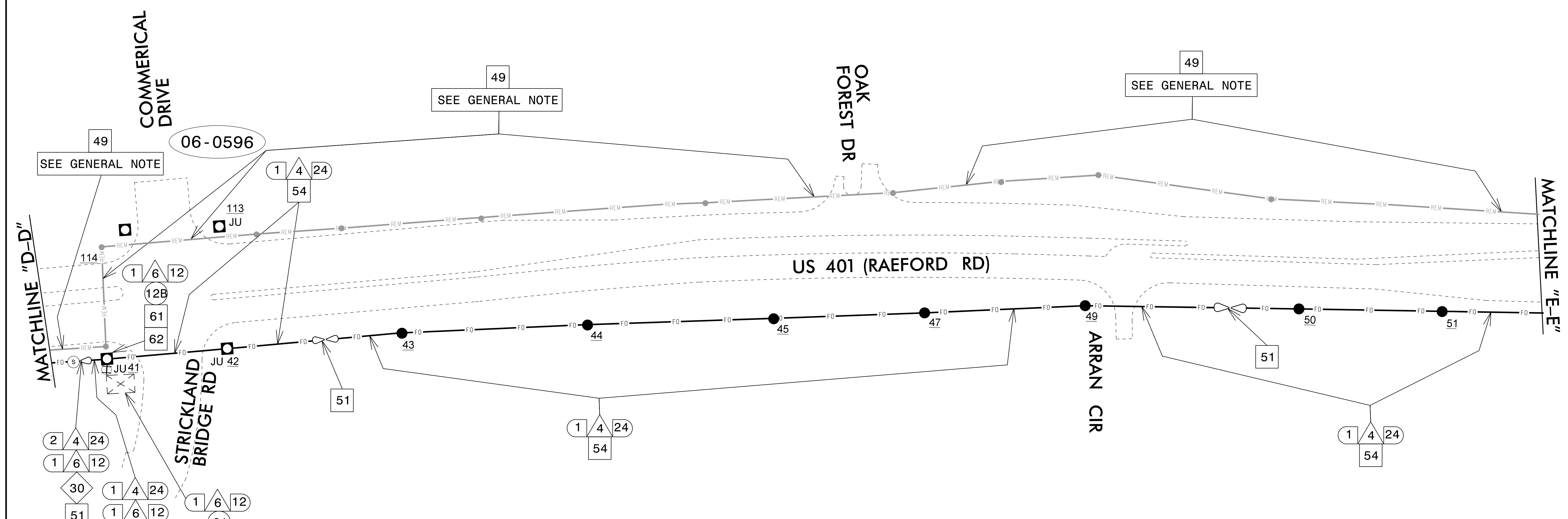
Lawrence E. Overton
Professional Engineer
No. 045933
State of North Carolina

SCALE: NTS

REVISIONS	INIT.	DATE

DocuSigned by:
Lawrence E. Overton 3/29/2018

3/27/2018
 U:*171001766*transportation\des\ign*TrOff\c\5\signal\des\ign*ITS U-4405*SCP Cable Routing.dgn
 j.ingram



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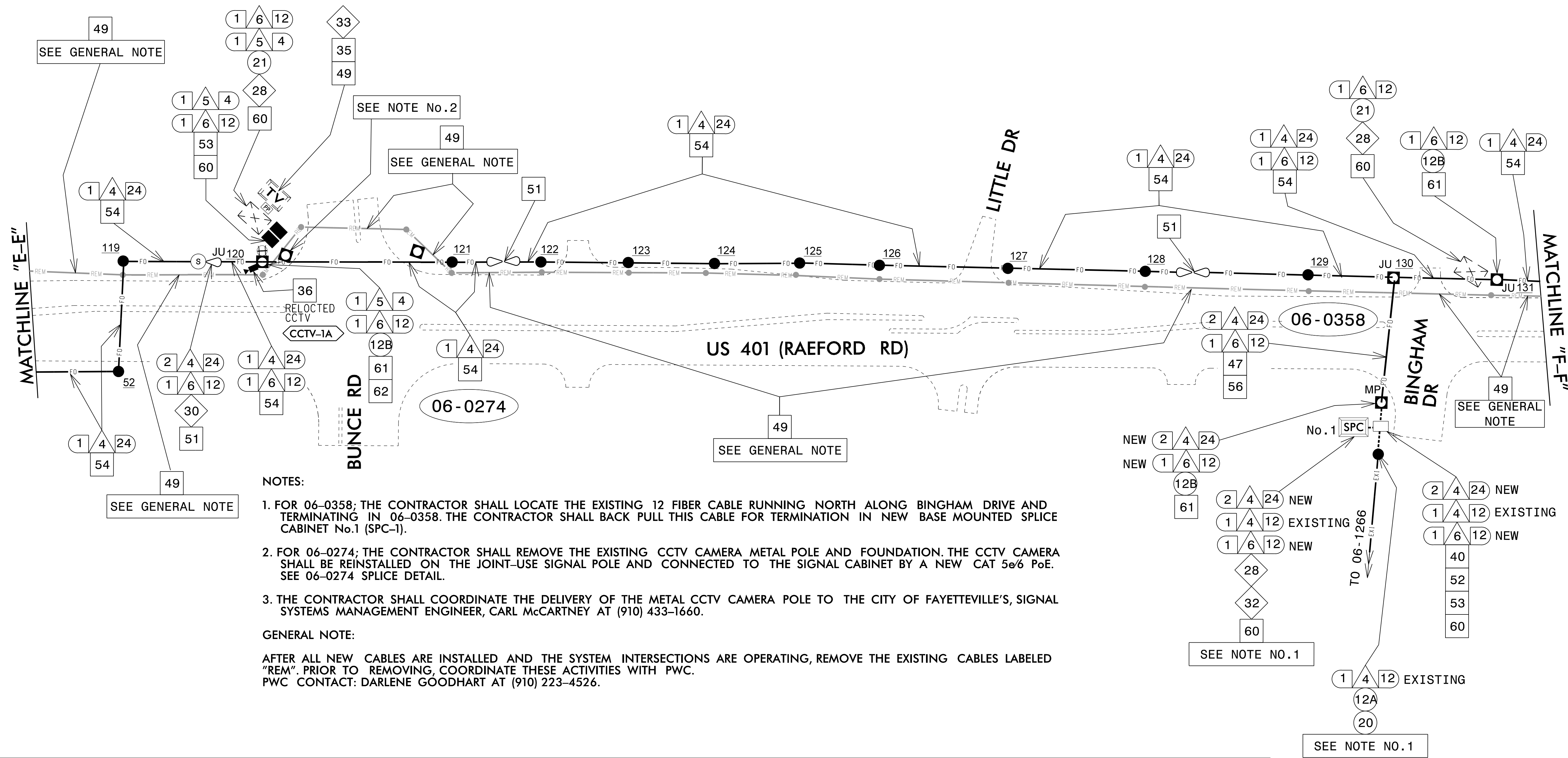
PREPARED BY: J. INGRAM REVIEWED BY: B. WATSON

REVISIONS	INIT.	DATE

SEAL

Lawrence E. Overton
 3/29/2018
 CADD FILE NAME

3/27/2018 U:*171001766*tr*transpor*ation*des*ign*Tr*off*ic*signal*des*ign*ITS U-4405*SCP Cable Route Routing.dgn F:\les*260_35_U-4405_SCP_07_180329.dgn j.ingram



- NOTES:**
- FOR 06-0358; THE CONTRACTOR SHALL LOCATE THE EXISTING 12 FIBER CABLE RUNNING NORTH ALONG BINGHAM DRIVE AND TERMINATING IN 06-0358. THE CONTRACTOR SHALL BACK PULL THIS CABLE FOR TERMINATION IN NEW BASE MOUNTED SPlice CABINET No.1 (SPC-1).
 - FOR 06-0274; THE CONTRACTOR SHALL REMOVE THE EXISTING CCTV CAMERA METAL POLE AND FOUNDATION. THE CCTV CAMERA SHALL BE REINSTALLED ON THE JOINT-USE SIGNAL POLE AND CONNECTED TO THE SIGNAL CABINET BY A NEW CAT 5e/6 PoE. SEE 06-0274 SPlice DETAIL.
 - THE CONTRACTOR SHALL COORDINATE THE DELIVERY OF THE METAL CCTV CAMERA POLE TO THE CITY OF FAYETTEVILLE'S, SIGNAL SYSTEMS MANAGEMENT ENGINEER, CARL McCARTNEY AT (910) 433-1660.
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7. INSTALL TRACER WIRE	21. INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS	36. INSTALL CCTV CAMERA ASSEMBLY	52. INSTALL DELINEATOR MARKER
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9. INSTALL PVC CONDUIT	23. INSTALL NEW RISER INTO EXISTING CABINET BASE (USE EXISTING CONDUIT STUB-OUTS WHEN AVAILABLE)	38. INSTALL CCTV CAMERA METAL POLE AND FOUNDATION	54. LASH CABLE(S) TO EXISTING PWC FIBER OPTIC LINE
10. INSTALL RIGID, GALVANIZED STEEL CONDUIT	24. INSTALL NEW CONDUIT INTO EXISTING POLE MOUNTED CABINET	39. INSTALL JUNCTION BOX	55. LASH CABLE(S) TO EXISTING MESSENGER CABLE
11. INSTALL RIGID, GALVANIZED STEEL RISER WITH WEATHERHEAD	25. INSTALL NEW RISER INTO EXISTING POLE MOUNTED CABINET	40. INSTALL OVERSIZED JUNCTION BOX	56. LASH CABLE(S) TO NEW MESSENGER CABLE
12A. INSTALL RIGID, GALVANIZED STEEL RISER WITH FIBER OPTIC CABLE SEAL	26. TERMINATE COMMUNICATIONS CABLE ON EXISTING TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET	41. REMOVE EXISTING JUNCTION BOX	57. MODIFY EXISTING ELECTRICAL SERVICE
12B. INSTALL CABLES/DROP CABLE THROUGH NIPPLE ON METAL POLE (SIGNAL OR JOINT USE). INSTALL HEAT SHRINK TUBING OVER NIPPLE.	27. INSTALL NEW TELEMETRY INTERFACE PANEL IN TRAFFIC SIGNAL CONTROLLER CABINET	42. INSTALL WOOD POLE	58. INSTALL NEW ELECTRICAL SERVICE FOR DMS/CCTV
13. INSTALL OUTER-DUCT POLYETHYLENE CONDUIT	28. INSTALL INTERCONNECT CENTER, PATCH PANEL, JUMPERS, AND FUSION SPlice CABLE IN CABINET	43. REMOVE EXISTING WOOD POLE	59. INSTALL NEW BASE MOUNTED CABINET (336)
14. INSTALL POLYETHYLENE CONDUIT	29. INSTALL UNDERGROUND SPlice ENCLOSURE	44. INSTALL AERIAL GUY ASSEMBLY	60. SEAL ALL CONDUIT ENTERING JUNCTION BOXES AND SIGNAL/CCTV/DMS CONTROL CABINETS WITH MOLDABLE DUCT SEAL

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PHASE I FIBER TRUNK CABLE INSTALLATION

**US 401 (RAEFORD ROAD)
SIGNAL SYSTEM AND
COMMUNICATIONS CABLE /
CONDUIT ROUTING PLANS**

Prepared for the Offices of:

PLAN DATE: MARCH 2018 REVIEWED BY: D. HARRIS
 PREPARED BY: J. INGRAM REVIEWED BY: B. WATSON

750 N. Greenfield Plaza, Garner, NC 27529

SCALE
NTS

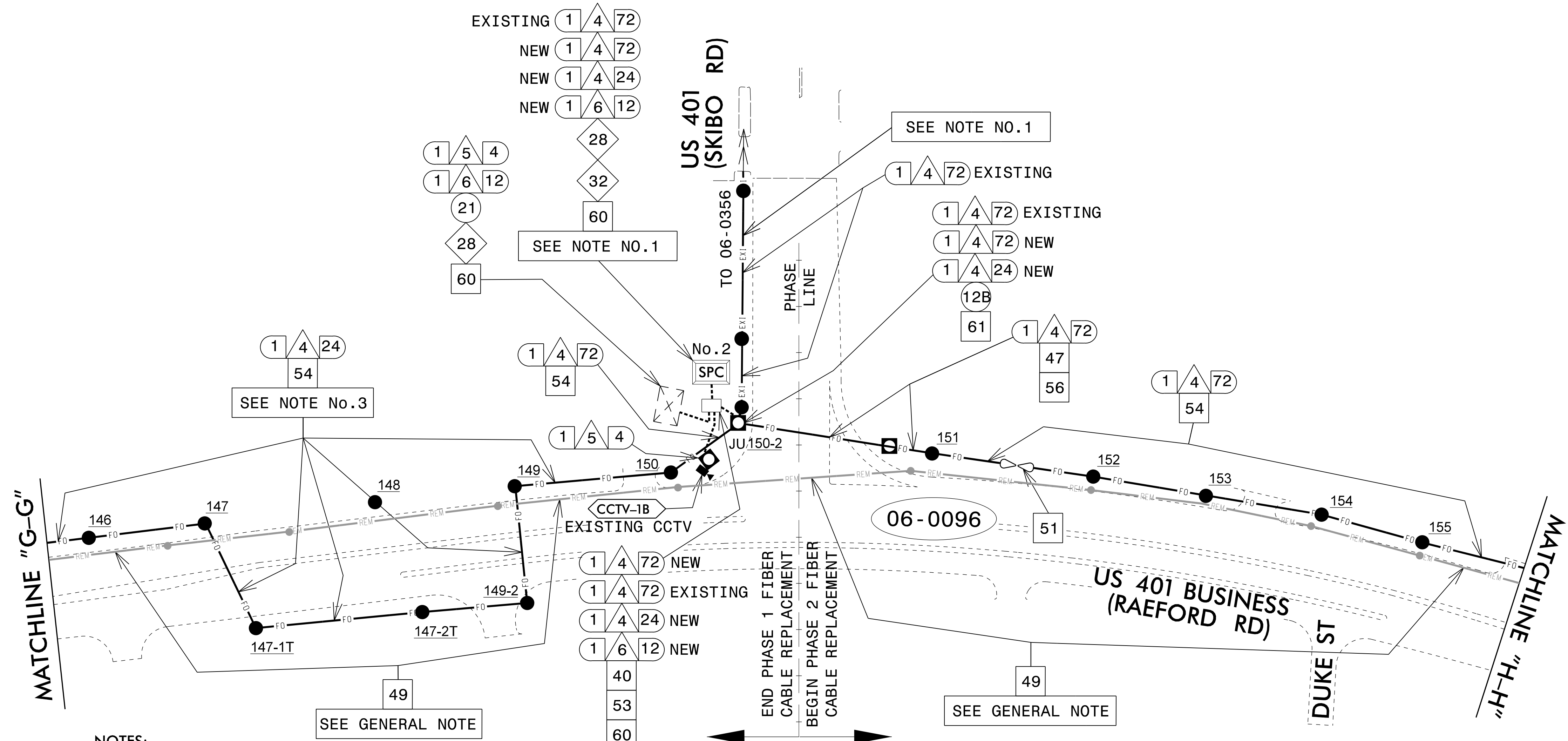
REVISIONS	INIT.	DATE

SEAL

DocuSigned by:
Lawrence E. Overton 3/29/2018

CADD FILE NAME

3/27/2018
 U:*171001766*transportation\des\ign*Tr\off\c\signal\des\ign*ITS U-4405*SCP Cable Routing.dgn F:\les*260_40_U-4405_SCP_SCP-08_180329.dgn
 j.ingram



NOTES:

1. THE CONTRACTOR SHALL LOCATE THE EXISTING FIBER CABLE RUNNING NORTH ALONG SKIBO ROAD AND TERMINATING IN 06-0096. THEN THE CONTRACTOR SHALL BACK PULL THIS CABLE FOR TERMINATION IN NEW BASE MOUNTED SPLICE CABINET No.2 (SPC-2).
2. THE CONTRACTOR SHALL BEGIN PHASE TWO CABLE INSTALLATION OF THE NEW 72F SM FO CABLE FROM THIS BASE MOUNTED SPLICE CABINET No.2 (SPC-2), AND CONTINUE THE AERIAL CABLE INSTALLATION EAST, TO 06-0491 (SANDALWOOD DRIVE) AS SHOWN ON THESE DESIGN PLANS.
3. THE SECTION OF FIBER CABLE SHOWN TO BE INSTALLED ON THE SOUTH SIDE OF THE ROAD, FROM POLE No.147, 147-1T, 147-2T, 149-2 AND BACK TO POLE No. 149, IS A TEMPORARY CABLE ROUTE TO ACCOMMODATE CULVERT CONSTRUCTION. ONCE THIS WORK IS COMPLETED, THE CONTRACTOR SHALL REINSTALL THE FO CABLE BACK TO THE NORTH SIDE OF RAEFORD ROAD UTILIZING POLE No. 147, No. 148 AND No. 149, THIS WORK SHALL BE AT THE DIRECTION OF THE ENGINEER.

GENERAL NOTE:

AFTER ALL NEW CABLES ARE INSTALLED AND THE SYSTEM INTERSECTIONS ARE OPERATING, REMOVE THE EXISTING CABLES LABELED "REM". PRIOR TO REMOVING, COORDINATE THESE ACTIVITIES WITH PWC. PWC CONTACT: DARLENE GOODHART AT (910) 223-4526.

1. INSTALL REA, PE - 22, SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE	15. DIRECTIONAL DRILL CONDUIT	30. INSTALL AERIAL SPLICE ENCLOSURE	46. INSTALL SIDEWALK GUY ASSEMBLY
2. INSTALL REA, PE - 38, (FIGURE - 8) SHIELDED, TWISTED PAIR COMMUNICATIONS CABLE	16. BORE AND JACK CONDUIT	31. INSTALL POLE MOUNTED CABINET	47. INSTALL MESSENGER CABLE
3. INSTALL 3-CONDUCTOR, CLASS B, STRANDED UNDERGROUND POWER CABLE	17. INSTALL CABLE(S) IN EXISTING CONDUIT	32. INSTALL BASE MOUNTED SPLICE CABINET (336) WITH EXTEND BASE	48. REMOVE EXISTING COMMUNICATIONS CABLE AND MESSENGER CABLE
4. INSTALL SMFO CABLE	18. INSTALL CABLE(S) IN NEW CONDUIT	33. REMOVE EXISTING SPLICE CABINET	49. REMOVE EXISTING COMMUNICATIONS CABLE
5. INSTALL WEATHERPROOF CATEGORY 5e UTP - 4 PAIR 23 AWG CABLE (PcE)	19. INSTALL CABLE(S) IN EXISTING RISER	34. INSTALL CABINET FOUNDATION	50. INSTALL ETHERNET SWITCH
6. INSTALL FIBER OPTIC DROP CABLE	20. INSTALL CABLE(S) IN NEW RISER	35. REMOVE EXISTING CABINET FOUNDATION	51. INSTALL CABLE STORAGE RACKS (SNOW SHOES) AND STORE 100 FEET OF CABLE
7. INSTALL TRACER WIRE	21. INSTALL CABLE(S) IN EXISTING CONDUIT STUBOUTS	36. INSTALL CCTV CAMERA ASSEMBLY	52. INSTALL DELINEATOR MARKER
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**END OF PHASE I AND BEGINNING OF PHASE II
FIBER TRUNK CABLE INSTALLATION**

Prepared for the Offices of:

750 N. Greenfield Plaza, Garner, NC 27529

**US 401 (RAEFORD ROAD)
SIGNAL SYSTEM AND
COMMUNICATIONS CABLE /
CONDUIT ROUTING PLANS**

DIVISION 06 CUMBERLAND CO. FAYETTEVILLE

PLAN DATE: MARCH 2018 REVIEWED BY: D. HARRIS

PREPARED BY: J. INGRAM REVIEWED BY: B. WATSON

SEAL

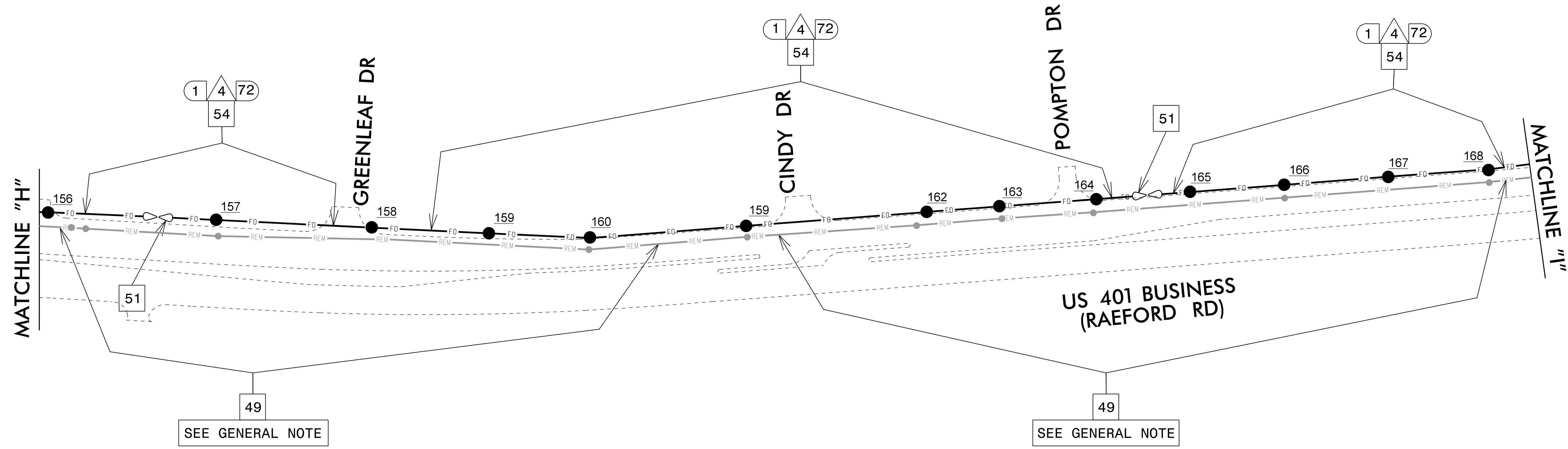
Lawrence E. Overmire
Professional Engineer
No. 045933

SCALE
NTS

REVISIONS	INIT.	DATE

DocuSigned by:
Lawrence E. Overmire 3/29/2018

3/27/2018 U:*171001766*tr\transportation\des\ign\ITS U-4405*SCP Cable Routing.dgn File: U-4405*SCP_Cable_Routing.dgn



GENERAL NOTE:

AFTER ALL NEW CABLES ARE INSTALLED AND THE SYSTEM INTERSECTIONS ARE OPERATING, REMOVE THE EXISTING CABLES LABELED "REM". PRIOR TO REMOVING, COORDINATE THESE ACTIVITIES WITH PWC. PWC CONTACT: DARLENE GOODHART AT (910) 223-4526.

- | | | | |
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| | | 45. INSTALL STANDARD GUY ASSEMBLY | |

- 61. ROUTE CABLE(S) INSIDE METAL POLE AND OUT TO SIGNAL CABINET. USE EXISTING JUNCTION BOXES AND CONDUIT SYSTEMS WHEN AVAILABLE. ENSURE FIBER CABLES DO NOT SHARE JUNCTION BOXES AND CONDUIT SYSTEMS WITH SIGNAL CABLES OR OTHER 120 VOLT CURRENT CARRYING CONDUCTORS.
- 62. INSTALL TEMPORARY DROP CABLE MAINTENANCE LOOP WITH CABLE BRACKET
- PROPOSED TEMPORARY DROP CABLE MAINTENANCE LOOP WITH CABLE BRACKET.
- SPC NEW SPlice CABINET, BASE MOUNTED
- EXISTING CCTV CABINET
- FO EXISTING FIBER OPTIC COMMUNICATIONS CABLE
- EXISTING COMMUNICATIONS CABLE TO BE REMOVED OR RELOCATED
- PP EXISTING POWER PEDESTAL
- 174 UTILITY POLE TAG NUMBER
- JU JOINT USE POLE
- MP METAL POLE

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PHASE II FIBER TRUNK CABLE INSTALLATION

Prepared for the Offices of:

SEAL

US 401 BUSINESS (RAEFORD ROAD) SIGNAL SYSTEM AND COMMUNICATIONS CABLE / CONDUIT ROUTING PLANS

DIVISION 06 CUMBERLAND CO. FAYETTEVILLE

PLAN DATE: MARCH 2018 REVIEWED BY: D. HARRIS

PREPARED BY: J. INGRAM REVIEWED BY: B. WATSON

750 N. Greenfield Plaza, Garner, NC 27529

SCALE: NTS

REVISIONS: INIT. DATE

DocuSigned by: *Lawrence E. Overton* 3/29/2018

SEAL 045933

ENGINEER LAWRENCE E. OVERTON

CADD FILE NAME

3/27/2018 U:\17100\1766\transportation\design\tr\off\c\5\signal\des\ign\its U-4405\SCP Cable Routing.dgn U-4405\SCP-11-180329.dgn j.ingram